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Symbols and Notations

1. Character of the Earthquake—

I. Perceptible. II. Moderately strong. III. Strong.

d (terrae motus domesticus)	Local shock (origin less than 100 km. distant)
v (terrae motus vicinus)	Near shock (origin from 100 to 1,000 km distant).
r (terrae motus remotus)	Distant shock (origin from 1,000 to 5,000 km distant).
u (terrae motus ultimus)	Very distant shock or teleseism (origin more. than 5,000 km. distant).

2. Phases of the Seismogram—

P (undae primae)	Normal first phase, or first preliminary tremors (longitudinal).
P'	First preliminary tremors which have penetrated the core of the earth.
PRn	Waves n times reflected at the earth's surface.
S (undae secundae)	Second phase, or second preliminary tremors (transverse).
SRn	Waves n times reflected at the earth's surface.
PS, SP	Waves changed from longitudinal to transverse oscillation or vice versa through reflection at the earth's surface.
PPS	Waves twice reflected at the earth's surface, having been longitudinal on two branches of the path and transverse on one branch.

In general, a bar over two letters denoting types of waves indicates refraction. The subscript c denotes the boundary at about 2900 km. depth between the metallic core and the middle shell which surrounds it. Thus:

$\overline{S_c P_c S}$	Waves which have penetrated the core, having been tranverse before entering and after leaving the core, and longitudinal within the core.
$\overline{P_c P_c P_c P}$	Waves refracted at the core boundary into the core, reflected once at this boundary while within the core and again refracted out of the core, having remained longitudinal on all branches of the path.

L (undae longae)	Long waves of surface phase preceding M.
M (undae maximae)	Shorter and more regular waves of large amplitude in the surface phase.
Mn	Maximum waves in the surface phase.
W_2. W_3. W_4...	The maximum waves coming again to the station after circumscribing the earth once, twice, etc.
C (coda)	Tail or end portion.
F (finis)	End of discernible movement.

For local earthquakes a special notation is used:

$\overline{P}$	The longitudinal wave which has traveled its whole path in the surface layer or crust of the earth.
$\overline{S}$	The transverse wave which has traveled its whole path in the surface layer of the earth,
P*	The longitudinal wave which has traveled the horizontal portion of its path in the intermediate layer.
S*	The corresponding transverse wave.

3. Nature of the motion—

i (impetus)	Sudden beginning of the motion.
e (emersio)	Gradual beginning of the motion.
?	Questionable or uncertain.
m	Maximum wave in any phase.

4. Time—

All determinations are reduced to Greenwich mean time. The contact clock which gives the time mark is daily corrected by radio with the time signal from Zi-ka-wei Observatory.

Constants of the Seismographs

Apparatus	Component	V	T_o	$\in$	r
Wiechert 17,000 kg.	N	1500	1.60	3.2	0.18
	E	1375	1.52	4.0	0.15
Wiechert 1,300 kg.	Z	152	4.41	3.2	0.60

$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
222	1933 Jul. 2	Ir	P_N	17	16	57							2680	Feebly recorded on other components.
			eS_N	17	21	17								
			F	17	29									
223	Jul. 3		e	12	48	10								Very small
			F	12	55									
224	Jul. 3	Iu	e	15	14	20							5890	
			eS	15	21	54								Much stronger than P phase.
			F	15	38									
225	Jul. 9	IIr	P	1	35	50							2978	Dilatation. Kurile Islands.
			eS_E	1	40	31								45_0N, 150°E (U.S.C.G.S.)
			S_N	1	40	42								
			i_N	1	41	02				8				
			L_N	1	43	39								
			M_1	1	48	39						17		
			M_2	1	53	39								
			F	2	45									
226	Jul. 9	Ir	eP	9	33	45							3165	Ditto.
			eS	9	38	40								
			L	9	42	02								
			F	-	—									Continued by next.
227	Jul. 9	Ir	P	9	54	04							3323	
			eS	9	59	08								
			eL?	10	03	05								
			M_N	10	05	55				14				
			F	10	31									

N. B. "New Travel Time Tables" published by Rev. Fr. J. B. Macelwane is now being used.

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No	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
228	1933 Jul. 9	Ir	eP	11	27	22							3280?	
			S?	11	32	23								
			F	12	00									
229	Jul. 9	IIIr	iP	12	36	23							3124	Kurile Islands.
			i(PR$_2$)	12	37	21								45°N, 150°E. (U.S.C.G.S.)
			iS	12	41	14								
			i_N	12	43	07								
			iL	12	43	56								
			M_1	12	47	12				22				
			M_2	12	49	20				17	16			
			F	14	19									
230	Jul. 9	Ir	eP	16	12	52							3110	Kurile Islands.
			eS	16	17	42								
			eL?	16	21	01								
			M	16	24	54				15				
			F	16	44									
231	Jul. 9	I	eP	17	57	19								
			e	18	02	09								
			eL	18	07									Trace.
			F	18	20									
232	Jul. 9		eL	22	30									Trace of surface waves.
233	Jul. 9	I	e	23	26	35								
			i_E	23	27	19								
			F	23	33									

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
234	1933 Jul. 10	IIr	iP	0	26	28							2533	144.8°E, 38.9°N by Taihoku.
			iS_E	0	30	36								
			eL	0	33	49								
			M	0	36	01					14			
			F	0	55									
235	Jul. 10	Ir	iP	10	40	54							4295	
			i_N	10	41	11								
			iS	10	46	59								
			e_N	10	50	09								Surface waves are very flat.
			F	11	—									
236	Jul. 11		e	6	02	52								Weak beginning.
			e?	6	10	36								
			F	6	--									
237	Jul. 11	Ir	e	6	54	47							2110	
			eL	7	00	02								
			F	7	13									
238	Jul. 13	Ir	P_E	8	02	00								Time marks failed on N-S.
			eS_N	8	05	39							2165	
			iS_Z	8	05	45							2245	
			M	8	08	44					12	12		
			F	8	35									
239	Jul. 14		e	6	21	18								Very small.
			F	6	26									
240	Jul. 14	Ir	iP	16	06	42							1511	

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240	1933 Jul. 14 (Cont'd)	Ir	iS	16	09	23								
			F	16	25									
241	Jul. 18	Iv	e	5	08	20							876	Very weak beginning.
			eS?	5	10	18								Felt in the central part of Formosa.
			i_N	5	10	28								
			M_1	5	10	59				1.0	1.0			
			M_2	5	11	19				1.1	1.6			
			i	5	11	47								
			F	5	17									
242	Jul. 18	Ir	eP	11	27	12							1120	Condensation.
			i_E	11	27	14								
			eS_E	11	29	16								
			$e(L)_N$	11	29	33								
			M	11	29	59				3.0	2.9	3		
			M_Z	11	30	25						3		
			F	11	39									
243	Jul. 18	Ir	eP	19	11	13							3045?	Dilatation.
			eS?	19	15	59								
			eL_Z	19	19	18								
			m	19	23	44								
			M	19	25	53						15		
			F	20	00									
244	Jul. 19		P	13	41	29								Dilatation,
			F	14	11									
245	Jul. 19	I	iP	15	08	59								Condensation.

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245	1933 Jul. 19 (Cont'd)	I	eL_Z	15	27	—								Trace.
			F	15	48									
246	Jul. 19	Ir	P	20	52	37							(3985)	
			$e(S)_E$	20	58	23								
			e_E	20	58	49								
			M_Z ?	21	00	02						10		
			F	21	—									
247	Jul. 20	Ir	iP	23	18	53							2170?	Dilatation.
			i_N	23	18	57								
			S?	23	22	32								
			i_E	23	23	03								
			L	23	27	03								
			eM	23	28	51					14			Masked by micro.
			F	23	—									
248	Jul. 21	I	P	20	26	18								At minute mark. Quite-prominent, other phases masked by micro.
			F	20	35									
249	Jul. 21		eL_Z	21	22	—								A teleseism.
			M_Z	21	37	18								
			F	22	08									
250	Jul. 22	IIu	iP	21	04	42							5940	Condensation.
			i_N	21	09	49								Aleutian Isl. 51.9°N, 166.1°W. (J.S.A.)
			iS	21	12	19								
			i_N	21	14	27								
			L_1	21	16	46								
			$e(L)_E$	21	17	00								

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No	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
250	1933 Jul. 22 (Cont'd.)	IIr	L_2	21	19	30				25				
			M_{1Z}	21	24	03						26		
			M_{2Z}	21	27	44								
			M_{3Z}	21	32	21						17		
			F	23	00									
251	Jul. 24	Ir	P	8	40	55							1375	Small.
			S	8	43	23								
			F	8	57									
252	Jul. 24		i_E	19	16	19								A teleseism 15.2°S, 174.5°W.
			eL	19	33									Trace.
			F	20	—									
253	Jul. 28		e_N	16	50	33								Very small.
			e_Z	16	50	58								
			F	17	02									
254	Jul. 29		e	20	33	40								Obscured by strong micro.
			F	20	36									
255	Jul. 30		P	17	26	04								Dilatation
			i_Z	17	26	42								
			e_Z	17	34	21								
			F	—	—									Masked by strong micro.
256	Aug. 4	I	P	17	37	02								Dilatation.
			e_E	17	42	30								
			i_N	17	42	42								
			e(M?)	17	43	48					6	6		Increase of period.

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257	1933 Aug. 6		e_N	10	21	53								Very small.
			e_E	10	22	19								
258	Aug. 7		i	0	46	49								Very small.
			e	0	51	06								
259	Aug. 7	I	e?	8	17	12								Small,
			m_N	8	18	14				1.8				
			F	8	22									
260	Aug. 7	Ir	e	12	39	53							2590	Feebly recorded.
			eS	12	44	06								
			F	12	—									
261	Aug. 8		e	0	36	—								Beginning uncertain.
			m	0	36	56				2.9	2.8			
			F	0	41									
262	Aug. 8		e	14	17	26							(430)	
			e(S)	15	18	24								
			F	14	23									
263	Aug. 11	IIIr	iP	8	58	27							1545	Condensation.
			i_E	8	58	34								
			l_E	8	58	51								
			iS	9	01	11					3			
			L_{1E}	9	04	14								
			L_{2N}	9	04	25								
			i_N	9	05	15				6				
			F	9	50									

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No	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
264	1933 Aug. 11		M?	11	24	23								Initials indistinct.
			F	11	36									
265	Aug. 12		e_E?	7	37	51								
			i_Z	7	40	02								
			e_N	7	40	13								
			F	7	48									
266	Aug. 13	Iu	P	9	40	55							9555	Condensation.
			iS	9	51	31								
			M_{1Z}	10	17	26						24		
			M_{2Z}	10	21	21						18		
			F	10	33									
267	Aug. 14	Id	e	14	37	04							341	
			iS	14	37	50								
			F	14	43									
268	Aug. 15	IIr	iP	3	02	46							2420	Surface waves not well developed.
			iPP	3	03	00								
			iS	3	06	45								
			iSS	3	06	53								
			F	3	26									
269	Aug. 18	Ir	iP	8	22	14							(2070)	Small.
			e(S)	8	25	45								May be earlier.
			F	8	32									
270	Aug. 20	Ir	eP	11	49	41							(2070)	Beginning uncertain.
			e	11	52	26								Time marks failed on E. & Z.

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
270	1933 Aug. 20 (Cont'd)	Ir	e(S)	11	53	12							2461	
			iL	11	55	50								Continued by next.
			F	—	—									
271	Aug. 20	Ir	e	12	10	29							2110?	
			eS?	12	14	03								
			F	12	45									
272	Aug. 22	Ir	e	13	17	34							2196	Feebly recorded.
			eS	13	21	15								
			M_Z	13	29	08						16		
			F	14	00									
273	Aug. 25	IIIr	$iP_{E,Z}$	7	53	33		−3	−9		3	3		Azi. due west. Tent. Epc: 104°E 32°N.
			PR_1	7	53	42								Destructive at the upper Min kiang, Szechwan, causing heavy damages and casualtus (about 5–6,000) along Mowchow, Lifan andSungpan. Felt throughout all the province.
			eS_E	7	56	11							1478	
			eS_N	7	56	14							1511	
			iL_N	7	57	04	117			6				
				—	—									Out of limit. 岷江上游茂縣，理番，松潘一帶災震全川感覺震動。
			F	10	05									
274	Aug. 25	Ir	P_E	11	41	53							1635?	
			S?	11	44	46								
			i_N	11	45	31								
			L?	11	45	48				1.8	2.0			
			M	11	46	00								
			F	11	55									
275	Aug. 25	I	e	18	05	01								
			e	18	07	38								

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No	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
275	1933 Aug. 25 (Cont'd)		eL?	18	09	03								
			F	18	15									
276	Aug. 25		e	18	43	33								Very small.
			F	18	49									
277	Aug. 26		e	3	11	47								
			F	3	23									
278	Aug. 26		e	8	25	13								
			F	8	32									
279	Aug. 26		e	10	34	18								
			F	10	40									
280	Aug. 28	IIIu	P	22	39	13							15445	Time marks failed on E-W.
			i_z	22	40	21							139°	Epc. 60°S, 28°W. South Atlantic, Sandwich Islands. (U. G. E.G.I.)
			P^1	22	42	55								
			PR_2	22	47	19								
			ScPcS	22	50	34								
			S	22	52	55				10				May be earlier.
			L_N	23	26	32								
			iL_z	23	26	37						37		
			M_{1z}	23	33	33						25		
			M_{2z}	23	37	25						24		
			M_{3z}	23	43	40						17		Followed by a group of sinusoidal waves lasting about 8 minutes.
	Aug. 29		F	1	30									
281	Aug. 30		e	3	43	45								
			F	3	52									

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282	1933 Aug. 30	Iu	iP	6	11	47							104	Sharply defined.
			iS	6	12	01								
			F	6	13									
283	Sept. 2	IIr	iP	16	44	54							1676	Very strong micro.
			iS	16	47	51				6				
			i_E	16	48	04								
			eL_N	16	49	30								
			F	—	—									Continued by next.
284	Sept. 2	Ir	e	16	52	07							2165	
			iS	16	55	46								
			F	17	—									Masked by strong micro.
285	Sept. 6	IIu	iP	22	19	41							7870	Dilatation 24°S, 178°W (J.S.A.) Deep focus. Depth
			i_N	22	19	48								
			i_Z	22	21	49								equals 600 km.
			i_N	22	22	54								
			iS	22	29	00				6	7	6		
			i_Z	22	29	52								
			m	22	34	30				7		6		
			e_N	22	37	48								Surface waves are very flat.
			eL_N	22	41	03								
			$i_{N.E.Z}$	22	48	51								A sudden impulse.
	Sept. 7		F	2	00									
286	Sept. 7		e	4	37	01								Very small
			i	4	37	50								
			F	4	40									

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287	1933 Sept. 7	Ir	iP	17	59	06							3030?	Feebly recorded.
			i_Z	17	59	13								
			eS?	18	03	51								
			F	18	16									
288	Sept. 7		e(L)	23	06	—								Trace of surface waves.
			F	23	20									
289	Sept. 9	IIr	iP	5	05	45							1445	Dilatation. Azi. NNW.
			iS_N	5	08	20								
			$iS_{E,Z}$	5	08	23								
			m_N	5	08	31				3				Large amplitude.
			m_N	5	09	44								
			F	5	25									
290	Sept. 9	Iu	P	21	30	26							6825?	P phase rather dominant; the rest feebly recorded. Epc: 30°N, 141°E. Near the Island of Ponafidin, Bonin Archiplago.
			S?	21	38	54								
			i(PS)	21	39	31				9	8			
			ez(L?)	21	42	44								
			F	22	00									
291	Sept. 10	Iv	eP	12	37	05							171	
			i_N	12	37	08								
			iS	12	37	28								
			i_N	12	37	30								
			i_N	12	37	45								
			F	12	40									
292	Sept. 15		e	15	02	02								Very small.
			F	15	08									

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293	1933 Sept. 15	Ir	iP	16	22	32							1880?	Small. Dilatation.
			L_Z ?	16	27	13								
			F	16	38									
294	Sept. 20	Ir	iP	23	38	00							2610	Dilatation.
			i_N	23	38	27								
			e_Z	23	42	26								
			iL_E	23	44	31								
			L_Z	23	45	23								
			M_{1Z}	23	46	57						17		
			M_{2Z}	23	49	14						14		
	Sept. 21		F	0	09									
295	Sept. 21	IIr	P_E	3	18	12							2567	Destructive around Kanazawa, Japan. Obscured by micro. 日本金澤激震
			eS	3	22	23								
			$L_{E,Z}$	3	24	19								
			L_N	3	25	03								
			M_Z	3	25	47						9		
			F	3	52									
296	Sept. 21	Ir	e	9	27	00							(1533)	
			i(S)	9	29	43								Masked by micro.
			F	9	31									
297	Sept. 21	IIr	e	9	52	42							2385	
			i_N	9	52	53								
			eS	9	56	39								
			e_Z	9	57	41								
			M	10	03	26				12				
			F	10	26									

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Quarterly Seismological Bulletin of the Institute of Meteorology

$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Undergrcund: Conglomerate.

No	Date	Char-acter	Phase	G. M. T.			Amplitude			Period			△	Remark
				h.	m.	s.	A_N	A_E	A_Z	T_N	T_E	T_Z		
	1933													
298	Sept, 21	Iv	e_N	15	29	08							297	
			eS_N	15	29	48								
			M_1	15	30	13				1.6				
			M_2	15	30	25				1.5				
			F	15	34									
299	Sept. 24	Ir	iP	15	27	31							4335	Condensation.
			eP_E	15	27	32								Bering Sea.
			e_N	15	32	39								
			eS	15	34	39								
			M_{1Z}	15	44	39						24		
			M_{2Z}	15	51	22						18		
			F	16	21									
300	Sept. 25	Ir	eP	13	50	31							3110	
			e(S)	13	55	21								
			eL_E	13	58	36								
			F	—	—									Masked by strong micro.
301	Sept. 25	IIr	P_E	18	56	12							3030	
			eS_E	19	00	57								
			i_N	19	02	06								
			eL_E	19	04	52								
			iL_N	19	05	04								
			F	19	53									
302	Sept. 27		P	21	50	11								Condensation.
			i	21	50	22								
			M?	22	07	28						24		
			F	22	16									

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$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
303	1933 Sept. 28		i	19	01	35								Dilatation.
			F	19	04									No further phases distinguishable.
304	Sept. 30	Ir	iP	14	28	32							4170	Dilatation.
			iS_Z	14	34	30								
			e(SS)	14	37	15								
			eL_Z	14	40	23								
			$L_{N,E}$	14	42	07								
			M_Z	14	43	55						20		
			F	15	18									
305	Sept. 30		e	22	58	44								Very small.
			e?	22	59	15								
			F	23	03									

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The National Research Institute of Meteorology acknowledges with thanks the receipt of the following seismological publications and bulletins from September 1st to December 1st 1933.

Stations	Bulletins
Apia	July-September, 1933.
Chiufeng	August, 1933.
Christchurch---(Provisional)	July-August, 1933.
Florissant	April-May, 1933.
Georgetown--	
Instrumental	July-September, 1933,
Seism. Despatches	July-September, 1933.
Helwan	June-July, 1933.
Jesuit Seis. Assoc.	June 25-September 24, 1933.
Karlsruhe	January-June, 1933.
Kew	July-September, 1933.
Ksara	January-December, 1932.
Leningrad	Jan.-Sept. Nov.-Dec. 1932,
	July-December 1931.
Little Rock	January-May 1933.
Manila	July-December, 1932.
Ootomari	January-December, 1932.
Ottawa	June-September, 1933,
Correlation Table	June-September, 1933,
Correlation of Earthquakes	1933,
Bibliography of Seismology, No. 18,	
"Smoothed time-distance tables for a Normal-Focus Earthquake' by B. Gold.	
Parc St.Maur	July-September, 1933.
Pasadena	July-September, 1933.
Perth	May 20-September 6, 1933.
Potsdam	January-December, 1932.
Reykjavik	March 2-June 23, 1933.
Riverview---(Provisional)	July-September, 1933.
San Fernando	July-August, 1933.
Saint Louis	June 2-August, 1933.
Strasbourg	
L'Institut	June-August, 1933.
Bureau Central	June-August, 1933.
Union International	June August, 1933.
Taihoku	June-August, 1933,
(Preliminary)	September-October, 1933.
Tananarive	January-March, 1933.
Wellington---(Preliminary)	July-August, 1933,
Report for the Year	1930, 1931,
Seismological Reports for July-December 1931.	

國立中央研究院氣象研究所

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ACADEMIA SINICA

PEICHIKO, NANKING, CHINA.

符號凡例

1. 地震之性質

I. 可辨別　II. 稍强　III. 强

d.	局部地震　(震源在一百粁以內)
v.	近地地震　(震源在一千粁以內)
r.	遠地地震　(震源在五千粁以內)
u.	極遠地震　(震源在五千粁之外)

2. 震波圖之相位

P	縱波　(或初期微動之第一前走波)
PR_1, PP	縱波對於地球表面經一次反射之波
PR_2, PPP	縱波對於地球表面經二次反射之波
S	橫波　(或初期微動之第二前走波)
SR_1, SS	橫波對於地球表面經一次反射之波
SR_2, SSS	橫波對於地球表面經二次反射之波
PS, SP	變轉波卽縱波(橫波)對於地球表面反射時所變轉之橫波(縱波)
L	主要動之地面波
$M_1, M_2, \cdots$	地面波之極大動
C	終期尾動
F	能認別之最終動

3. 運動之種類等

i	相位之明顯者
e	相位之不明顯者
?	相位之可疑者
T	週期(以秒爲單位)
A	實際上地面震動之半震幅(以μ千分之一耗，爲單位)
△	震央距離(以粁爲單位)

Symbols and Notations

1. Character of the Earthquake—

I. Perceptible. II. Moderately strong. III. Strong.

d (terrae motus domesticus)	Local shock (origin less than 100 km. distant).
v (terrae motus vicinus)	Near shock (origin from 100 to 1,000 km. distant).
r (terrae motus remotus)	Distant shock (origin from 1,000 to 5,000 km. distant).
u (terrae motus ultimus)	Very distant shock or teleseism (origin more than 5,000 km. distant).

2. Phases of the Seismogram—

P (undae primae)	Normal first phase, or first preliminary tremors (longitudinal).
P'	First preliminary tremors which have penetrated the core of the earth.
PRn	Waves n times reflected at the earth's surface.
S (undae secundae)	Second phase, or second preliminary tremors (transverse).
SRn	Waves n times reflected at the earth's surface.
PS, SP	Waves changed from longitudiual to transverse oscillation or vice versa through reflection at the earth's surface.
PPS	Waves twice reflected at the earth's surface, having been longitudinal on two branches of the path and transverse on one branch.

In general, a bar over two letters denoting types of waves indicates refraction. The subscript c denotes the boundary at about 2900 km. depth between the metallic core and the middle shell which surrounds it. Thus:

$\overline{\text{ScPcS}}$	Waves which have penetrated the core, having been tranverse before entering and after leaving the core, and longitudinal within the core.
$\overline{\text{PcPcPcP}}$	Waves refracted at the core boundary into the core, reflected once at this boundary while within the core and again refracted out of the core, having remained longitudinal on all branches of the path.

L (undae longae)	Long wavs of surface phaso preceding M.
M (undae maximae)	Shorter and more regular waves of large amplitude in the surface phase.
Mn	Maximum waves in the surface phase.
W_2. W_3. W_4...	The maximum waves coming again to the station after circumscribing the earth once, twice, etc.
C (coda)	Tail or end portion.
F (finis)	End of discernible movement.

For local earthquakes a special notation is used:

$\overline{P}$	The longitudinal wave which has traveled its whole path in the surface layer or crust of the earth.
$\overline{S}$	The transverse wave which has traveled its whole path in the surface layer of the earth.
P*	The longitudinal wave which has traveled the horizontal portion of its path in the intermediate layer.
S*	The corresponding transverse wave.

3. Nature of the motion—

i (impetus)	Sudden beginning of the motion.
e (emersio)	Gradual beginning of the motion.
?	Questionable or uncertain.
m	Maximum wave in any phase.

4. Time—

All determinations are reduced to Greenwich mean time. The contact clock which gives the time mark is daily corrected by radio with the time signal from Zi-ka-wei Observatory

Constants of the Seismographs

Apparatus	Component	V	T_o	$\in$	r
Wiechert 17,000 kg.	N	1500	1.60	3.2	0.18
	E	1375	1.52	4.0	0.15
Wiechert 1,300 kg.	Z	152	4.41	3.2	0.60

$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
306	Oct. 1		e	9	35	—								Strong micro.
			F	9	39									
307	Oct. 2	Iu	$P_{E,Z}$	15	49	06							130°	Dilatation.
			i_Z	15	50	33								Epc; 3°S, 80°W (J.S.A.)
			iP'_Z	15	52	23								Pacific Ocean west of Central
			$(ScPcS)_Z$	15	59	24								America.
			i_Z	16	02	36								
			iPS_Z	16	04	32								
			SS	16	11	13					14	13		
			e_Z	16	27	24								A train of regular waves.
			eL_Z	16	42									
			M_{1Z}	16	51	20						24		
			M_{2Z}	17	01	25								
			C	17	24	25								
			F	18	10									
308	Oct. 2		e?	21	43	57							650	
			$S_{N,E}$	21	45	01								
			F	21	47									
309	Oct. 3	Iv	$P_{N,E}$	2	13	01							660	
			$S_{N,E}$	2	14	06								
			F	2	17									
310	Oct. 3	Ir	P	18	42	55							2050	
			i_E	18	43	02								
			iS_Z	18	46	24								
			M	18	50	30					14	15		
			F	17	16									

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$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
311	1933 Oct. 5		e_E	13	38	48								Small initials,
			eL_N	13	57									
			M_Z	14	03	54						15		
			F	14	26									
312	Oct. 5	Iv	e	19	36	42							720	
			eS	19	37	53								
			M_1	19	38	05				1.2	1.0			
			M_2	19	38	13				1.1	1.0			
			F	19	41									
313	Oct. 12		$e?_N$	5	32	30								E component missed.
			$e(S)_N$	5	36	45								Small.
314	Oct. 12		e_N	7	41	16								Ditto. May be other disturbances.
315	Oct. 14		$e_{N.E}$	7	53	40								
			e	7	54	02								
			F	7	57									
316	Oct. 14		e	22	28	52								A distant earthquake.
			F	23	05									
317	Oct. 15		i_N	5	46	28								Other phases being masked by micro.
318	Oct. 16		e(S)?	18	07	20								Trace.
			F	18	21									
319	Oct. 17	Ir	P	12	31	17							4125	Condensation.
			$e_{E.Z}$	12	31	43								

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
319	1933 Oct. 17 (Cont'd)	Ir	eS_E	12	37	12								
			F	12	—									Masked by strong micro.
320	Oct. 21	Ir	eP_E	2	48	49								Records were being changed and
			$i_{E,Z}$	2	49	03								some phases missed.
			eL_N	2	56									
			M_Z	2	59	03						12		
321	Oct. 22		eL_Z	12	13	02								
			M_{1Z}	12	16	35								
			M_{2Z}	12	18	47								
			F	12	27									
322	Oct. 23		e	13	00	29								Trace.
323	Oct. 24		$e_{E,Z}$	21	55	41								No record on N-S.
			i_Z	21	57	13								
			F	22	08									
324	Oct. 25	Iu	i_Z	23	47	32								Time signal missed.
			$P_{N,E}$	23	48	04								Epc. 22°S, 68°W (J.S.A.)
			i_N	23	48	17								
			$e_{N,Z}$	23	49	10								
			i_Z	23	54	10								
	Oct. 26		$e_{N,Z}$	00	05	07								
			i_Z	00	09	10								
			$i(L)_N$	00	13	45								
			M_Z	00	16	28						18		
			F	1	35									

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
325	1933 Oct. 26	Iu	$e?_{N,E}$	12	26	55								Much obscured by micro.
			iP_Z	12	27	08								Condensation.
			e_Z	12	30	19								
			i_Z	12	33	10								
			M_{1Z}	13	32	19						40		Long period shallew waves,
			M_{2Z}	13	56	42						31		,,
			M_{3Z}	14	10	22						25		,,
			F	14	40									
326	Oct. 30		$P_{N.E}$	7	11	46								Z Component partly missed.
			eL_Z	7	24									
			F	8	15									
327	Nov. 2	Iu	iP_E	12	35	50							5765	Condensation.
			m_Z	12	38	12								Epc. 52°N,176°W(Chiufeng.)
			S	12	43	17								
			M_Z	12	53	34						27		
			F	14	—									Masked by micro..
328	Nov. 2		e	15	58	09								Doubtful.
			i(S)	15	58	21								
			F	15	59									
329	Nov. 3		e	16	56	20								Small.
			F	17	12									
330	Nov. 5	IIr	$iP_{E,Z}$	20	31	37							2370	Dilatation.
			eS_N	20	35	32								
			L	20	37	37								
			M_1	20	38	46					7	6		

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
331	1933 Nov. 6	I	e?	7	28	15								Strong micro.
			e	7	29	19								
			M_1	7	30	17								
			M_2	7	30	25								
			F	7	35									
334	Nov. 7	Ir	eP	11	15	23							2974	
			e(S)	11	20	04								Surface waves not well developed.
			F	11	—									Masked by micro.
335	Nov. 14		ez	14	25	08								Time signal missed.
			iz	14	26	31								
			iz	14	30	21								
			F	14	33									
336	Nov. 17		e	14	15	06							186	Earthquake swarms to the NW of Yiencheng, Kiangsu. No. 1. 江蘇鹽城西北鄉地震羣
			eS	14	15	31								
			F	14	16									
337	Nov. 18	Iu	P	4	03	02							5645	
			S	4	10	23								
			F	4	—									Surface waves not developed.
338	Nov. 18		eP	14	14	17							178	
			iS	14	14	41								
			F	14	16									
339	Nov. 19		iP	2	30	45							163	
			iS	2	31	07								Time signal missed.
			F	2	33									

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
340	1933 Nov. 19	I u	P	3	22	21							7460	Dilatation.
			iS_N	3	31	20								
			ez	3	36	02								
			Mz	3	46	21						24		
			F	4	19									
341	Nov. 19	Ir	P_E	9	13	00							2830	
			$e_{Z.N}$	9	16	43								
			iz	9	19	06								
			i(L)	9	20	08								
			F	9	32									
342	Nov. 19		eP	19	07	23							178	Earthquake swarms to the NW of Yiencheng, Kiangsu. No. 2.
			eS	19	07	47								
			F	19	08									
343	Nov. 20		e	17	51	21							163	Earthguake swarms to the NW of Yiencheng, Kiangsu. No. 3.
			S	17	51	43								
			F	17	52									
344	Nov. 20		e	21	51	59							171	Ditto. No. 4.
			eS?	21	52	22								
			F	21	53									
345	Nov. 20		e	21	54	13							193	Ditto. No. 5
			iS	21	54	39								
			F	21	56									
346	Nov. 20	IIIu	iP	23	33	15							8270	Condensation.
			$PcP_{N.Z}$	23	34	08								Epc. 72°N, 70°W. Baffin Bay (J.S.A.)

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
346	1933 Nov. 20 (Cont'd.)	IIIu	$PP_{N,Z}$	23	35	57								
			i_N	23	36	06								
			e_E	23	36	58								
			$iS_{N,Z}$	23	42	54				7				
			i_N	23	45	48								
			SS	23	47	46								
			i_Z	23	51	39								
			$i_{N,E}$	23	52	39								
			i_E	23	57	15								
			L_1	23	59	22								
	Nov. 21		L_2	0	02	48								
			M_{1N}	0	09	18				18				
			M_2	0	11	07			140			18		
			M_3	0	13	15			100			14		
			M_4	0	14	55			167			15		
			M_5	0	16	43			153			15		
			M_6	0	17	59						14		
			F	2	51									
347	Nov. 22		eP	0	11	24							171	Earthquake swarms to the NW of Yiencheng, Kiangsu. No. 6.
			S	0	11	47								
			F	0	13									
348	Nov. 22	Ir	eP_E	12	23	13								
			eS_N	12	25	31							1264	
			eS_E	12	25	45							1415	
			i_E	12	26	12								
			M?	12	33	53								
			F	12	41									

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
349	1933 Nov. 22	IIu	$iP_{N,E}$	12	51	07							5355	Condensation.
			i_Z	12	51	27								Epc. 3°S, 150°E. (J.S.A.)
			i_Z	12	56	24								
			i_E	12	52	31								
			$iS_{N,E}$	12	58	11								
			m_E	12	59	25								
			eL	13	03	12								
			M	13	09	15				21	20	20		
			F	13	42									
350	Nov. 22	Ir	e	19	01	30							1685	
			m_E	19	02	33								
			eS	19	04	28								
			$i(L)_E$	19	08	09								Increase of period.
			M_Z	19	08	24								
			M_E	19	11	09					8			
			F	19	21									
351	Nov. 22	IIr	P	22	34	00							1475	
			i_N	22	36	20								
			$iS_{N,Z}$	22	36	38								
			i_E	22	37	19								
			L	22	37	52								
			M_1	22	39	47			20		8	7		
			M_2	22	40	52								
			M_3	22	41	54				7	8			
352	Nov. 23		e	3	—									Trace only.
			e	3	11	44								
			F	3	20									

N. B. "New Travel Time Tables, 1933" published by Rev. Fr. J. B. Macelwane is now being used.

Quarterly Seismological Bulletin of the Institute of Meteorology

$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
353	1933 Nov. 23		e_N	10	24	03								Very small.
			e_E	10	24	50								
			F	10	28									
354	Nov. 24	Iv	eP	10	26	28							171	Earthquake swarms to the NW of Yiencheng, Kiangsu. No. 7.
			S	10	26	51								
			F	10	28									
355	Nov. 25		e_E	0	37	19								Trace only.
			$e_{N.E}$	0	38	04								
			e_E	0	40	12								
356	Nov. 26		P	13	20	05							186	Earthquake swarms to the NW of Yiencheng, Kiangsu. No. 8.
			eS	13	20	30								
			F	13	21									
357	Nov. 27		i_E	19	19	05								Small.
			F	19	23									
358	Nov. 28	Iu	eP_N	11	18	41							5720	Time marks failed on E-W.
			iS_N	11	26	06								
			eL	11	36	39				32				
			M_{1Z}	11	42	28						22		
			M_{2Z}	11	48	33						10		
			F	12	34									
359	Nov. 28		e	15	45	37							171	Earthquake swarms to the NW of Yiencheng, Kiangsu. No. 9.
			S	15	45	50								
			F	15	47									

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Quarterly Seismological Bulletin of the Institute of Meteorology

$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
360	1933 Nov. 29		P	11	56	21							156	Earthquake swarms to the NW of Yiencheng, Kiangsu. No. 10.
			S	11	56	42								
			F	11	58									
361	Dec. 1		e?	7	24	46							178	Ditto. No. 11.
			S	7	25	10								
			F	7	26									
362	Dec. 2	I	eP_N	8	45	58								May be two quakes.
			e_N	8	48	48								
			i_Z	8	50	38								
			i_N	8	50	53								
			F	9	15									
363	Dec. 3	I	e_E	3	16	18								Beginning uncertain.
			$e_{N,E}$	3	16	52								
			M_N	3	17	27				1.0				
			M_E	3	17	46					1.1			
			F	3	22									
364	Dec. 4	Ir	P	14	44	58							2290	
			$e(S)_E$	14	48	47								
			$e(S)_N$	14	49	33								
			F	15	00									
365	Dec. 4	IIr	iP	19	38	46							2505	Azi. NE.
			iPR_{1E}	19	39	17								
			iPR_{2Z}	19	39	46								
			i_N	19	39	53								
			iS	19	42	52								

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$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
365	1933 Dec. 4 (Cont'd)	IIr	i_E	19	44	20								
			iL_N	19	45	34								
			i_E	19	45	20								May be the intervention of another quake.
			$i_{E,N}$	19	49	07								
			F	20	10									
366	Dec. 6		e_E	15	32	29								Very Small.
			e?	15	38	00								
			F	15	42									
367	Dec. 6		eS?	15	51	47								
			e_E	15	52	16								
			eL_E	15	55	29								
			F	—	—									Continued by next.
368	Dec. 6		e_E	16	03	21								
			F	16	10									
369	Dec. 9		P	19	44	00							178	Earthquake swarms to the NW of Yiencheng, Kiangsu. No. 12.
			S	19	44	24								
			F	19	46									
370	Dec. 10		e_E	17	24	51								Very small.
			F	17	28									
371	Dec. 12	Iu	iP	14	20	00							5300	Condensation.
			iS	14	27	01				5	4			
			i_N	14	27	19				6				
			iSS	14	33	06				16				
			L_Z	14	35									

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$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
371	1933 Dec. 12 (Cont'd.)	Iu	M_Z	14	45	05						18		
			F	15	15									
372	Dec. 13		e_Z	22	28	09								
			eL_Z	22	33									Trace.
			F	23	07									
373	Dec. 14		$e_{N,E}$	1	12	29								
			$e_{N,E}$	1	14	43								
			F	1	31									
374	Dec. 14		e_E	19	00	58								Trace only.
			M_Z	19	28									
375	Dec. 21		e	15	42	49								Small.
			F	15	47									
376	Dec. 24	I	eP_Z	10	54	10								
			M_Z	11	10	08						22		
			F	11	34									
377	Dec. 30	Iv	P	8	48	06							>1000	
			i_N	8	50	15								
			$i_{N,E}$	8	50	34								
			$i_{N,E}$	8	50	46								
			M	8	51	23				1.2	1.3			
			F	9	—									Masked by strong micro.

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The National Research Institute of Meteorology acknowledges with thanks the receipt of the following seismological publications and bulletins from December 1st to February 1st 1934.

Stations	Bulletins
Athens	April-May 1933.
Berkeley	October 1931 to March 1932.
Chiufeng	September-December 1933.
Christchurch (Provisional)	September-November 1933.
Florissant	June-July 1933.
Georgetown	
Instrumental	October-November 1933,
Seis. Despatches	October-November 1933,
'The Seismic Receiver' by F.W.Sohon.	
Goettingen	April-September 1933.
Helwan	August-October 1933.
Hamburg	May 20 to September 30, 1933.
Jesuit Sis. Assoc.	October 2 to November 23, 1933.
Kew	October-November 1933.
Melbourne	July-September 1933.
Nagasaki	October 1932 to September 1933.
Ottawa	October-November 1933.
Correlation Table	October-November 1933.
Correlation of Earthquakes	" " "
Parc St. Maur	October-November 1933.
Pasadena	October-November 1933.
Perth	September 6 to December 12, 1933.
Riverview (Provisional)	October-November 1933.
Saint Louis	September-November 1933.
'A Preliminary Table of Observed Travel Times of Earthquake Waves for Distance bet. 10 ° & 180'	
Strasbourg	
L'Institut	September-October 1933.
Bureau Central	" " "
Union International	" " "
Taihoku	September-October 1933,
(Preliminary)	November-December 1933.
Tokyo	1924 to 1930,
Bulletin of the Earthquake Research Institute, Vol. 11, part 4.	
Wellington (Preliminary)	September-November 1933,
Some seismological aspects of the Buller earthquake, 1929,	
Seismology in New Zealand,	
Seismological report of the Hawke's earthquake of Feb. 3, 1931.	

P. S. We beg to inform you that, in addition to our Wiechert pendulums, two Galitzin-Wilip Horizontal Seismographs have been equipped and we are going to install them right now. As it is known to all that among the modern seismographs, G-W instrument assures the best satisfaction. Hence we believe that considerable improvements will be effected in our seismometrical observations and geophysical studies as well.

Johnson King, in charge.

國立中央研究院氣象研究所

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ACADEMIA SINICA

PEICHIKO, NANKING, CHINA.

The National Research Institute of Meteorology Acknowledges with thanks the receipt of the following seismological publications and bulletins from March 1st 1933 to June 1st 1933.

Stations	Bulletins
Apia	January-March, 1933.
Batavia	March, 1933.
Buffalo	March-December, 1932.
Cambridge	December 1929-November 1932.
Chiufeng	September-December, 1932, Jan/Apr., 1933.
Denver	November-December, 1932.
Florissant	November-December, 1932.
Georgetown	January-March, 1933.
Helwan	January-April, 1933.
Hohenhelm) Ravensburg) Stuttgart)	July-December, 1932.
Goettingen	July-December, 1932.
Karlsrule	July-December, 1932.
Kew	February-April, 1933.
La Paz	January-December, 1932.
Little Rock	October-December, 1932.
Manila	January-June, 1932.
Melbourne	January-March, 1933.
Osaka	April-June, 1932.
Ottawa	January, March-April, 1933.
Parc St.-Maur	January-April, 1933.
Pasadena	November-December, 1932, January-February, 1933.
Perth	December, 1932.
Riverview (Provisional)	January-April, 1933.
St. Louis	December 1932, January-February, 1933.
San Fernando	January-February, 1933.
Strasbourg	January-March, 1933.
Taihoku	January-April, 1933.
Tananarive	July-September, 1932.
Tsingtao	October, 1931-February, 1932.
Uccle	January-December, 1932.
Wellington (Preliminary)	January-April, 1933.

符號凡例

1. 地震之性質

I.	可辨別	II. 稍强 III. 强
d.	局部地震	(震源在一百粁以內)
v.	近地地震	(震源在一千粁以內)
r.	遠地地震	(震源在五千粁以內)
u.	極遠地震	(震源遠在五千粁之外)

2. 震波圖之相位

P	縱波 (或初期微動之第一前走波)
PR_1, PP	縱波對於地球表面經一次反射之波
PR_2, PPP	縱波對於地球表面經二次反射之波
S	橫波 (或初期微動之第二前走波)
SR_1, SS	橫波對於地球表面經一次反射之波
SR_2, SSS	橫波對於地球表面經二次反射之波
PS, SP	變轉波卽縱波(橫波)對於地球表面反射時所變轉之橫波(縱波)
L	主要動之地面波
M_1, M_2, ...	地面波之極大動
C	終期尾動
F	能認別之最終動

3. 運動之種類等

i	相位之明顯者
e	相位之不明顯者
?	相位之可疑者
T	週期(以秒爲單位)
A	實際上地面震動之半震幅(以μ,千分之一耗,爲單位)
△	震央距離(以粁爲單位)

Symbols and Notations

1. Character of the Earthquake—

I. Perceptible. II. Moderately strong. III. Strong.

d (terrae motus domesticus)	Local shock (origin less than 100 km. distant)
v (terrae motus vicinus)	Near shock (origin from 100 to 1,000 km. distant).
r (terrae motus remotus)	Distant shock (origin from 1,000 to 5,000 km. distant).
u (terrae motus ultimus)	Very distant shock or teleseism (origin more than 5,000 km. distant).

2. Phases of the Seismogram—

P (undae primae)	Normal first phase, or first preliminary tremors (longitudinal).
P'	First preliminary tremors which have penetrated the core of the earth.
PRn	Waves n times reflected at the earth's surface.
S (undae secundae)	Second phase, or second preliminary tremors (transverse).
SRn	Waves n times reflected at the earth's surface.
PS, SP	Waves changed from longitudinal to transverse oscillation or vice versa through reflection at the earth's surface.
PPS	Waves twice reflected at the earth's surface, having been longitudinal on two branches of the path and transverse on one branch.

In general, a bar over two letters denoting types of waves indicates refraction. The subscript c denotes the boundary at about 2900 km. depth between the metallic core and the middle shell which surrounds it. Thus:

$\overline{S_c P_c S}$	Waves which have penetrated the core, having been tranverse before entering and after leaving the core, and longitudinal within the core.
$\overline{P_c P_c P_c P}$	Waves refracted at the core boundary into the core, reflected once at this boundary while within the core and again refracted out of the core, having remained longitudinal on all branches of the path.

L (undae longae)	Long waves of surface phase preceding M.
M (undae maximae)	Shorter and more regular waves of large amplitude in the surface phase.
Mn	Maximum waves in the surface phase.
W_2. W_3. W_4...	The maximum waves coming again to the station after circumscribing the earth once, twice, etc.
C (coda)	Tail or end portion.
F (finis)	End of discernible movement.

For local earthquakes a special notation is used:

$\overline{P}$	The longitudinal wave which has traveled its whole path in the surface layer or crust of the earth.
$\overline{S}$	The transverse wave which has traveled its whole path in the surface layer of the earth,
P*	The longitudinal wave which has traveled the horizontal portion of its path in the intermediate layer.
S*	The corresponding transverse wave.

3. Nature of the motion—

i (impetus)	Sudden beginning of the motion.
e (emersio)	Gradual beginning of the motion.
?	Questionable or uncertain.
m	Maximum wave in any phase.

4. Time—

All determinations are reduced to Greenwich mean time. The contact clock which gives the time mark is daily corrected by radio with the time signal from Zi-ka-wei Observatory.

Constants of the Seismographs

Apparatus	Component	V	T_o	$\in$	r
Wiechert 17,000 kg.	N	1527	1.60	3.0	0.15
	E	1510	1.50	4.2	0.10
Wiechert 1,300 kg.	Z	150	4.80	3.4	0.45

$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
75	1933 Jan. 1	IIu	iP_Z	8	59	15							7000	Condensation.
			$iPP_{E,Z}$	8	59	51								
			iS_E	9	07	52								
			eL_N	9	13	03								
			M_N	9	18	14								
			F	9	49									
76	Jan. 3	Ir	$eP_{N,E}$	15	31	55							2400	
			eS_E	15	35	50								
			L	15	38	34								
			M_{1Z}	15	41	23						12		
			M_{2Z}	15	44	21								
			C_Z	15	55	47								
			F	16	10									
77	Jan. 3	Ir	P_N	22	44	40							1860	Very feeble.
			eS_N	22	47	49								
			F	22	—									Masked by microseisms.
	Jan. 4-5		Strong Microseisms.											
78	Jan. 4	IIr	iP	1	29	52							2560	Condensation.
			iS_E	1	33	59						8		
			i_N	1	35	17								
			eL	1	38	21								
			M_1	1	40	06						18		
			M_2	1	43	06								
			F	2	20									
79	Jan. 4	I	P	4	10	04								A distant earthquake.

N. B. We are using the "Table of Travel Times, 1931." published by Rev. Fr. J. B. Macelwane (St. Louis University).

$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground; Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
79	1933 Jan. 4 (Contd.)	I	eL	4	34	30								Epc. Alaska. J.S.A. (Jesuit Seismological Association): 60.3°N, 145° W.
			M_{1Z}	4	38	00								
			M_{2Z}	4	40	10								
			F	4	56									
80	Jan. 5	I	e_N	18	06	8								Feebly recorded.
			eS_E	18	08	18								
			F	18	16									
81	Jan. 7	IIr	eP	4	11	28							2720	Very weak beginning.
			eS_N	4	15	49								
			i_N	4	16	56								
			L_E	4	17	25								
			M_{1Z}	4	19	53						19		Large amplitude.
			M_{2Z}	4	21	16								
			F	5	46									
82	Jan. 8	I	P	6	33	42								At minute mark.
			e_E	6	37	53								
			L	6	41	03								
			F	7	10									
83	Jan. 9	IIr	iP	2	08	56							4080	Condensation.
			iS_E	2	14	46								Epc: Samarkand. UGEGI (Union Geodesique et Geophysique Internationale): 40°N, 67.5°E
			L	2	18	02								
			F	2	44									
84	Jan. 10	Ir	eP	3	10	31							1730	
			eS	3	13	27								
			L_E	3	15	53								

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$\varnothing = 32^0 03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
84	1933 Jan. 10 (Contd.)	Ir	F	3	25									
	Jan. 12-16		Strong Microseisms.											
85	Jan. 15	Iv	P	4	59	24							980	
			eS_E	5	01	01								
			F	5	10									
86	Jan. 15	Ir	iP	18	10	21							4890	Condensation.
			i	18	10	47								
			iS	18	17	01				7				
			i	18	17	46								
			e_E	18	20	18								
			F	18	--									Masked by microseisms.
	Jan. 17-18		Strong Microseisms.											
87	Jan. 17		e_N	0	47	48								Masked by strong microseisms.
88	Jan. 17		e	16	10	50								Masked by strong microseisms.
89	Jan. 17	I_r	P	22	21	53							1590	
			S?	22	24	35								
			i_N	22	30	36								
			L?	22	33	49								Very flat.
			F	22	50									
90	Jan. 21	I	eP	16	29	32								Very small
			i	16	37	51								May be another quake. Faints gradually
			F	17	--									

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Quarterly Seismollogical Buletin of the Institute of Meteorology

$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
	1933													
91	Jan. 21	IIu	iP'z	19	33	54							100°	Dilatation.
			PPP	19	39	29								Epc: Indian Ocean.
			$\overline{S_cP_cS}$	19	44	29								J. S. A: 41°S, 59E°
			$\overline{S_cP_cP_cS}$	19	44	51				17				U.G.E.G.I:34°S, 58.5°E.
			i_z	19	45	48								
			$\overline{P_cP_cP_cP}$	19	50	32								
			SSS	19	57	03								
			PPP	19	59	20						18		(△ > 180°)
			M_1	20	10	28				21				
			M_2	20	14	34						15		
			M_3	20	20	41								
			F	21	09									
92	Jan. 23		eP	18	25	47								Very small
			F	18	—									
93	Jan. 23	Ir	P	19	43	37							1220	
			e	19	45	08								
			eS	19	45	38								
			F	19	57									
94	Jan. 23	Ir	eP	20	10	15								Same type as No. 93. Very small.
			S	20	12	08								
			i(L?)	20	12	36								
			F	20	18									
95	Jan. 24		eP	7	05	15								Very small.
			F	7	11									
	Jan. 26-28		Microseisms Strong.											

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$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
96	1933 Jan. 27	Iu	iP_Z	22	48	57							8890	Dilatation. After P, the horizontal components are very flat. Epc: Samoa. J. S. A: 9.5°S, 173.1°W.
			S_Z	22	59	17								
			m_Z	23	04	36								
			M_Z	23	22	—								
			F	23	50									
97	Jan. 29	Iv	iP	18	07	13							925	
			iS	18	08	48								
			L	18	09	30								
			F	18	23									
98	Feb. 3	Ir	P	22	17	48							3010	Condensation.
			S_z	22	22	30								
			eL	22	27	15								
			M_{1z}	22	30	28						18		
			M_{2z}	22	31	43						20		
			M_{3z}	22	36	11								
			F	22	57									
99	Feb. 4	Ir	P	6	21	34							1760	Very sharp beginning on E-W.
			S	6	24	34								
			F	6	—									
100	Feb. 9	Ir	P	4	00	25							1710	
			S	4	03	19								
			L_z?	4	05	33								
			F	4	—									
101	Feb. 9	I	P_z	15	42	57								Rather small. A distant quake.
			e_z	15	53	05								

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$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground; Conglomerate.

No.	Date	Char. acter	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
101	1933 Feb. 9 (Contd.)	I	L_Z	15	56	40						20		
			F	16	20									
102	Feb. 13	IIr	iP	2	54	47							3070	Surface waves are of large amplitude.
			iS	2	59	33								
			eL_1	3	02	42								
			iL_2	3	03	10								
			M_E	3	05	49								
			F	3	46									
103	Feb. 13	Ir	eP_E	4	29	08							2820	Very feebly recorded on N-S.
			eS_E	4	33	40								
			eL_E	4	37	25								
			F	4	51									
104	Feb. 13	Ir	eP_E	23	12	28							3110	Feebly recorded.
			eS_E	23	17	17								
			L_Z	23	23	33								
			M_{1Z}	23	27	36								
			M_{2Z}	23	31	56								
	Feb. 14		F	0	04									
105	Feb. 14	Id	P	7	21	08							30	
			iS	7	21	12	+22	−11						
			F	7	21	33								
	Feb. 16–18		Microseisms											
106	Feb. 18	I	e	6	15	24								
			F	6	21									

N. B. We are using the "Table of Travel Times, 1931." published by Rev. Fr. J. B. Macelwane (St. Louis University).

$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
107	1933 Feb. 19	IIv	iP	4	28	10							910	
			S	4	29	40								
			eL	4	30	16								
			M	4	31	01								
			C	4	5-	—								Masked by next initials.
			F	5	—									
108	Feb. 19	I	eL	4	45	58								Preliminary phases masked by the end portion of the former.
			F	5	03									
109	Feb. 19	I	P	8	44	49								A distant earthquake.
			S?	8	53	11								Very feeble.
110	Feb. 20		eP	9	55	47								Very small.
			L?	10	05	27								
			F	10	--									
111	Feb. 22			4	—	—								Very slight trace of surface waves was recorded about 4h.
112	Feb. 22		e	18	14	17								Very small.
			F	18	25									
113	Feb. 23	IIu	$eP_{N,E}$	8	29	23							112°	Condensation. A teleseism.
			iP_Z	8	29	22								J.S.A. Epc. 19.5°S, 71°W.
			i_N	8	30	23								
			PR_1	8	34	04								
			PR_{2Z}	8	35	58								
			S	8	41	18								
			PS	8	43	00								
			SS	8	49	20								

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$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground; Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
113	1933 Feb. 23 (Contd.)	IIu	SSS	8	54	25						23		
			L	9	06	10								
			M_{1Z}	9	30	19								
			M_{2Z}	9	32	38								
			M_{3Z}	9	34	55								
			M_{4N}	9	37	48								
			M_{5Z}	9	41	10								
			C	10	04	07								
			F	12	28									
	Feb. 24		Strong Microseisms.											
	Feb. 27-28		Microseisms											
	Mar. 1-3		Microseisms.											
114	Mar. 1	Ir	eP	16	18	28							3940	Masked by microseisms.
			S_N	16	24	10								
			F	16	—									
115	Mar. 2	IIIr	$P_{N.E.Z}$	17	35	50								Preceded by a few micro-tremors.
			S_Z	17	40	06								Disastrous earthquake of Japan.
			eS_N	17	40	07							2670	J.S.A. Epc. 39.5°N 143°E
			iS_E	17	40	11					8		2720	
			L_E	17	42	13					33			After L, all three components are out of limit.
			L_N	17	42	28								
116	Mar. 2	Ir	P	18	31	05							2640	First after-shock of No. 115.
			eS?	18	35	19								Superposed on the main shock.

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$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
117	1933 Mar. 2	Ir	P	19	46	30							2830	2nd after shock of No.115.
			eS_E	19	50	59								
118	Mar. 2	IIr	P	20	47	38							2500	3rd after-shock of No. 115.
			S	20	51	41								
			L_E	20	54	21								
			L_N	20	54	46								
119	Mar. 2		e	22	39	36								Small
120	Mar. 3		e	0	23	06								Very Small.
121	Mar. 3	Ir	iP	2	23	32							1960	Epc. Philippine.
			eS	2	26	51								
			F	2	35									
122	Mar. 3	Ir	P	4	42	40							2410	After shock of No. 115.
			S	4	46	36								
			L	4	51	04								
			F	5	05									
123	Mar. 3	IIr	P	9	17	35							2560	,,
			S	9	21	43								
			eL	9	25	11								Continued by next initials.
124	Mar. 3	IIr	iP	9	43	25							2590	After shock of No. 115.
			S	9	47	35								
125	Mar. 3	I	eP	10	08	42								,,
			eL	10	16	46								

N. B. We are using the "Table of Travel Times, 1931." published by Rev. Fr. J. B. Macelwane (St. Louis University).

$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground; Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
125	1933 Mar. 3 (Contd.)	I	F	10	32									
126	Mar. 3	I	P	10	37	00								After shock of No. 115.
			eL	10	45	30								
			F	11	00									
127	Mar. 3	I	e	11	50	54								,,
			e	11	56	11								
			F	12	—									
128	Mar. 3	I	P	12	01	21								,,
			L?	12	10	16								
129	Mar. 3	Ir	P	12	18	43							2600	,,
			S?	12	22	54								
			eL	12	27	22								
130	Mar. 3	I	P	15	06	58								,,
			e	15	12	00								
			eL	15	16	04								
			F	15	35									
131	Mar. 3	I	eP	15	55	37								Very small.
			F	16	—									
132	Mar. 3	Ir	P	16	16	39							2500	After shock of No. 115.
			eS	16	20	42								
			F	16	45									
133	Mar. 3	I	e	18	52	13								Very small.

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$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
133	1933 Mar. 3		eS?	18	55	34								
134	Mar. 3	Ir	eP	19	12	11							2500	After shock of No. 115.
			eS	19	16	14								
			M	19	22	49								
			F	19	—									
135	Mar. 3	I	eP	19	55	17								,,
			F	20	—									
136	Mar. 3	I	eP	20	25	09								,,
			F	20	50									
137	Mar. 4		e	6	48	09								Very small.
138	Mar. 4		e	16	18	58								Very small.
139	Mar. 4		e	20	32	31								Very small.
140	Mar. 5	I	e_N	8	26	42								
			L?	8	32	28								
			F	8	—									Masked by microseisms.
141	Mar. 6	Ir	P	13	11	01							3030	Dilatation.
			S	13	15	44								
			i_N	13	18	17								Increase of period.
			L	13	19	35								
			F	13	44									
142	Mar. 6	Iv	P_N	22	49	49							450	

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Quarterly Seismological Bulletin of the Institute of Meteorology

$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground; Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
142	1933 Mar. 6 (Contd.)	Iv	S_N	22	51	20								
			i_Z	22	52	07								
			i_N	22	58	18								
143	Mar. 8	Ir	eP	1	40	25							3170	
			eS	1	45	17								
			L_Z	1	48	17								
			F	2	20									
	Mar. 10-11		Strong Microseisms.											
144	Mar. 10		e	15	14	52								Very small.
			i	15	15	32								
			F	15	18									
145	Mar. 11	Iu	eP	2	07	58								Disastrous earthquake of Los Angeles, U.S.A. Rather feebly recorded. J. S. A. Epc: 32.8°N, 118.5°W.
			$\overline{ScPcSN}$	2	18	12								
			SS	2	29	58								
			M	2	52	25								
146	Mar. 11	IIr	P	14	27	31							2930	
			i_Z	14	27	55								
			iS	14	32	7								
			L	14	35	33								
			M_{1Z}	14	37	19								
			M_{2Z}	14	38	52								
			M_{3Z}	14	39	49								
			M_{4Z}	14	42	00								
			F	16	05									

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Quarterly Seismological Bulletin of the Institute of Meteorology

$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
147	1933 Mar. 11	IIr	iP	19	36	36	-7	+37	-30			4	1910	Dilatation. Very sharp beginning.
			iS_E	19	39	44					9			
			$iS_{N,Z}$	19	39	49								
			m_Z	19	41	19								
			i_Z	19	43	21								
			L_Z	19	44	03								
			M	19	45	—								
			C	19	56	26								
			F	20	25									
148	Mar. 13	I	eP	7	19	58								Very small. A distant earthquake.
			eL_Z	7	29	18								
			F	7	40									
149	Mar. 15		e	5	10	48								A distant earthquake.
			e	5	20	24								Masked by microseisms.
150	Mar. 17	IIr	eP	16	02	40							4100	Condensation.
			i_Z	16	04	16								
			m_N	16	04	43								
			S_E	16	08	31								
			i_N	16	12	49					5			
			L	16	13	46								
			M_{1Z}	16	18	07							15	
			M_{2Z}	16	20	18								
			C	16	37	00								
			F	17	26									
151	Mar. 17	IIr	iP	19	38	07							3175	Dilatation
			i_Z	19	39	48								

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$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
	1933													
151	Mar. 17	I	S	19	43	01								At minute mark.
			S_N	19	43	10								
			L	19	46	28								
			M_{1Z}	19	50	00						18		
			M_{2Z}	19	53	40						15		
			F	21	10									
152	Mar. 18	I	eL	4	9	—								A distant earthquake.
			M	4	18	—						28		
			F	5	—									
153	Mar. 18	Ir	iP	15	55	25				3			2010	Surface waves are of very small amplitude.
			eS	15	58	48								
			F	16	15									
154	Mar. 19	Iv	P	17	35	00							830	At minute mark.
			S_N	17	36	32								
			L	17	37	15								
			F	17	50									
155	Mar. 19			23	41	—								Trace of surface waves.
156	Mar. 20			10	—	—								Trace of surface waves.
157	Mar. 22	Iv	e(P?)	14	51	11							770	Very weak beginning.
			S	14	52	28								
			F	14	55									
	Mar. 23			Strong Microseisms.										

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$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
158	1933 Mar. 23	IIv	eP	17	42	20								
			iz	17	43	27								
			L	17	46	57								
			M_1	17	49	07								
			M_2	17	50	25						5		In the end portion, it seems to be followed by the surface waves of a distant earthquake.
			F	18	40									
159	Mar. 24	Iv		23	—	—								A very feeble near shock. Time marks failed.
160	Mar. 25	Ir	eP_E	12	52	53							1950	At minute mark.
			eS_E	12	56	10								
			eL_E	12	58	12								
			F	13	07									
161	Mar. 31	Ir	eP_E	22	03	47							1950	Feebly recorded on Z.
			eS_N	22	09	05								
			L	22	10	52								
			F	22	25									

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Symbols and Notations

1. Character of the Earthquake—

I. Perceptible. II. Moderately strong. III. Strong.

d (terrae motus domesticus)	Local shock (origin less than 100 km. distant).
v (terrae motus vicinus)	Near shock (origin from 100 to 1,000 km. distant).
r (terrae motus remotus)	Distant shock (origin from 1,000 to 5,000 km. distant).
u (terrae motus ultimus)	Very distant shock or teleseism (origin more than 5,000 km. distant).

2. Phases of the Seismogram—

P (undae primae)	Normal first phase, or first preliminary tremors (longitudinal).
P'	First preliminary tremors which have penetrated the core of the earth.
PRn	Waves n times reflected at the earth's surface.
S (undae secundae)	Second phase, or second preliminary tremors (transverse).
SRn	Waves n times reflected at the earth's surface.
PS, SP	Waves changed from longitudinal to transverse oscillation or vice versa through reflection at the earth's surface.
PPS	Waves twice reflected at the earth's surface, having been longitudinal on two branches of the path and transverse on one branch.

In general, a bar over two letters denoting types of waves indicates refraction. The subscript c denotes the boundary at about 2900 km. depth between the metallic core and the middle shell which surrounds it. Thus:

$\overline{S_cP_cS}$	Waves which have penetrated the core, having been tranverse before entering and after leaving the core, and longitudinal within the core.
$\overline{P_cP_cP_cP}$	Waves refracted at the core boundary into the core, reflected once at this boundary while within the core and again refracted out of the core, having remained longitudinal on all branches of the path.

L (undae longae)	Long waves of surface phase preceding M.
M (undae maximae)	Shorter and more regular waves of large amplitude in the surface phase.
Mn	Maximum waves in the surface phase.
W_2. W_3. W_4...	The maximum waves coming again to the station after circumscribing the earth once, twice, etc.
C (coda)	Tail or end portion.
F (finis)	End of discernible movement.

For local earthquakes a special notation is used:

$\overline{P}$	The longitudinal wave which has traveled its whole path in the surface layer or crust of the earth.
$\overline{S}$	The transverse wave which has traveled its whole path in the surface layer of the earth,
P*	The longitudinal wave which has traveled the horizontal portion of its path in the intermediate layer.
S*	The corresponding transverse wave.

3. Nature of the motion—

i (impetus)	Sudden beginning of the motion.
e (emersio)	Gradual beginning of the motion.
?	Questionable or uncertain.
m	Maximum wave in any phase.

4. Time—

All determinations are reduced to Greenwich mean time. The contact clock which gives the time mark is daily corrected by radio with the time signal from Zi-ka-wei Observatory.

Constants of the Seismographs

Apparatus	Component	V	T_0	$\in$	r
Wiechert 17,000 kg.	N	1527	1.60	3.0	0.15
	E	1510	1.50	4.2	0.10
Wiechert 1,300 kg.	Z	150	4.80	3.4	0.45

$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
162	1933 Apr. 1	Ir	iP	16	03	43							2380	
			$S_{E,Z}$	16	07	36								
			i_N	16	08	03								
			eL_E	16	10	42								
			M_Z	16	12	10						18		
			F	16	38									
163	Apr, 1	Ir	iP	22	45	51							2440	Dilatation.
			eS_E	22	49	50								
			eL_E	22	53	52								
			M_2	22	57	30								
			F	7	00									
164	Apr. 2		ep	10	15	17								Small.
			F	10	28									
165	Apr. 2		ep	21	00	31								Small.
			e	21	04	42								
			F	21	12									
166	Apr. 9	IIr	ip	2	51	23							2640	Dilatation
			PP	2	51	43								
			is	2	55	37								At minute mark.
			L_N	2	57	54								
			L_E	2	58	48								
			M_1	3	00	17					15	14		
			M_2	3	01	20					15			
			i	3	02	02								Superposed with regular waves of short period.
			F	4	05									

N. B. We are using the "Table of Travel Times, 1931." published by Rev. Fr. J. B. Macelwane (St. Louis University).

Ø = 32°03'11"N λ = 118°46'55"E h = 60m. Underground; Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
167	1933 Apr. 9		i(S?)	3	14	32								Probably a slight near shock.
168	Apr. 9	Ir	P	10	35	09							2560	
			eS	10	39	17								
			eL	10	43	16								
			M	10	45	05				15				
			F	11	02									
169	Apr. 9		e	11	09	44								Very small
			F	11	12									
170	Apr. 15	Iv	P	17	52	33							425	small.
			eS	17	53	18								
			F	17	56									
171	Apr. 16	IIr	iP	19	24	09							4290	Dilatation.
			S	19	30	13								
			L	19	36	21						22		
			M	19	38	51								
			F	20	00									
172	Apr. 19	Ir	P_Z	3	00	28							2450	
			$iS_{N,E}$	3	04	27								
			eL	3	08	18								
			F	3	27									
173	Apr. 20	IIIv	ip	6	46	39							930	Azi. S22.5°E. Epc.25.8°N, 121.5°E.
			i_N	6	46	47								Moderately felt at Foochow.
			iS_E	6	48	09								In the main phase, the pointers of all three components are out of scale.
			iS_N	6	48	11								

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$\varphi = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
173	1933 Apr. 20 (Cont'd)	IIIv	L_N	6	48	38								
			F	—	—									
174	Apr. 21	Iv	eP_N	2	22	16							660	Initials are feebly recorded.
			$eS?_N$	2	23	21								
			F	2	31									
175	Apr. 22		eE	10	52	46								Very feeble.
			F	10	57									
176	Apr. 23	Iu	P	6	09	04							7950	Condensation.
			eS	6	18	29								Surface waves are very flat.
			F	—	—									Continued by next.
177	Apr. 23	IIr	eP_E	7	18	31							2490	
			i_Z	7	21	46								
			iS_E	7	22	33					6			
			L_E	7	26	48								
			M_1	7	27	45				13	14	14		
			M_2	7	29	39								
			i_Z	8	39	27								A train of regular waves.
			F	8	57									
178	Apr. 27	IIu	iP	2	46	29								Condensation.
			iS_N	2	54	58				8			6850	
			iS_Z	2	55	01							6900	
			eSS_E	2	57	27								
			e_Z	3	00	24								
			i_Z	3	02	35								
			$L_{N,Z}$	3	08	25				27		46		

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$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground; Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
	1933													
178	Apr. 27 (Cont'd)	IIu	M_{1Z}	3	10	08					24			
			M_{2Z}	3	14	05								
			M_{3Z}	3	16	08								
			M_{4Z}	3	18	08								Greatest amplitude.
			M_{5Z}	3	20	02								
			F	5	10									
179	Apr. 27	Iu	P	12	05	20							5770	Condensation.
			e(S?)	12	12	49								Feebly recorded. Only slight trace.
			eL	12	24	28								
			F	12	55									
180	Apr, 30	Iv	eP	7	53	14							350	Reported shaken severely at Lin-cheng, Shangtung. 山東臨城夏口地震
			iS	7	53	52								
			F	7	56									
181	May. 1	Ir	P	18	35	50								Faintly recorded on the horizontal components.
			eL?	18	44	59								
			M_{1Z}	18	47	24								
			M_{2Z}	18	48	57								
			F	19	—									
182	May. 1		e(L)	19	20	—								Regular long period waves.
			F	20	—									Continued by next.
183	May. 1	Ir	P	19	56	48								Condensation.
			eS_E	20	01	27							2960?	
			iS_N	20	01	57							3375	
			L	20	05	53								
			M_1	20	07	28						18		

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$\varnothing = 32°03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground: Conglomerate.

No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
	1933 May, 1 (Cont'd.)	Ir	M_2	20	09	32						14		
			M_3	20	10	28								
			F	21	07									
184	May. 1	Ir	eP	23	22	00								Obscured by heavy microseisms. Feebly recorded through out.
			M_1	23	30	17								
			M_2	23	34	51								
			F	23	—									
185	May, 3	IIv	iP	23	33	02							900	Dilatation.
			i_N	23	33	07								
			S_N	23	34	30								
			L	23	34	59								
			F	23	53									
186	May. 5		e_E	15	26	39								Very small.
			F	15	33									
187	May, 8	Iv	eP	8	19	07							370	May be analogous to No. 180.
			eS	8	19	46								
			F	8	24									
188	May. 8		e	8	27	—								Very small.
			F	8	29									
189	May. 8	Iv	e(P)	15	26	02							300	
			eS	15	26	35								
			L?	15	26	43								
			F	15	30									

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
190	May. 12	Ir	eP_E	16	15	00							4130	Feebly recorded.
			S_N ?	16	20	53				14				
			e_E	16	22	36								
			F	16	35									
191	May. 13		eP	20	15	43								Very small.
			F	20	27									
192	May. 16	IIr	P	1	18	58								Weak beginning.
			S_Z	1	24	08							3390	
			S_E	1	24	13							3475	
			L_E	1	28	55								
			L_Z	1	29	32								
			M_{1N}	1	33	17				10				
			M_E	1	34	54					12			
			M_1	1	35	50				13	13			
			F	2	08									
193	May. 18		P_Z	0	02	36								Faintly recorded.
			M^Z	0	17	41								
			F	0	50									
194	May. 20		iP_Z	4	50	48								Condensation.
			F	—	—									Masked by microseisms.
195	May. 21	Ir	eP	11	58	48							2620	
			i_E	11	59	29								
			eS_E	12	03	00								
			M_Z	12	10	—								
			F	12	22									

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
196	1933 May. 21		e_E	21	31	05								Trace.
			i_E	21	37	06					3			
197	May. 21		e	21	59	24								Trace.
			e(S)?	22	03	44								
			F	22	20									
198	May. 22	Ir	P	15	32	47							1810	Small.
			S	15	35	51								
			F	15	45									
199	May. 23	Iv	P	10	19	36							200	Well defined on horizontal components.
			S	10	19	58								
			F	10	22									
200	May. 23	Ir	P	16	39	10							1720	Beginning uncertain.
			S_N	16	42	05				7				
			F	17	—									Continued by next.
201	May. 23	Ir	$e(P)_E$	16	54	26							1650	
			eS_N	16	57	14								
			L_E ?	16	58	19								
			F	17	12									
202	May. 30	Ir	P	13	55	50							1500	
			eS	13	58	23								May be earlier.
			F	14	09									
203	June. 2	IIr	iP	7	41	25								Condensation.
			S_N	7	44	09							1610	

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No.	Date	Char-acter	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
203	1933 June. 2 (Cont'd).	IIr	S_E	7	44	12							1640	
			eL_E ?	7	46	05								
			F	8	20									Masked by heavy micro
204	June. 3	IIr	iP	17	11	28							1510	
			i_Z	17	13	28								
			S_E	17	14	03								
			L_E	17	16	50								
			M_E	17	18	26					6			
			F	18	14									
205	June. 5	IIr	iP	2	32	42				3			2125	Condensation. Felt at Manila.
			iS	2	36	16								
			L_E	2	38	12								
			$L_{Z,N}$	2	39	02								
			M_1	2	40	44						18		
			M_2	2	43	05						11		
			F	3	—									Masked by heavy micro.
206	June. 6		eP	6	49	32								Small.
			F	7	—									Masked by strong micro-seisms.
207	June. 7		eP	5	59	20								Heavy microseism.
208	June. 7	IIr	iP	11	50	05				4			2000	Condensation. Azi. N 68.2°E up. Epc. Yunnan?
			S	11	53	26								
			L_N	11	55	11								
			i_E	11	55	53								
			M_1	11	56	53					10			
			M_2	11	58	05								

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
208	1933 June. 7 (Cont'd)	IIr	F	12	28									
209	June. 8	Ir	iP	18	15	40							2640	
			e(S)	18	19	40								
			iS	18	19	54					7			
			L	18	23	29								
			M_1	18	25	04						18		
			M_2	18	26	49						14		
			M_3	18	28	49								
			F	19	03									
210	June. 11		e	13	21	32								Trace.
211	June. 12	Ir	P	21	12	51							2400	
			eS	21	16	46								
			L?	21	18	56								
			M_Z	21	21	40								
			F	21	32									
212	June. 13	Ir	P	20	38	24							2660	At minute mark.
			iS_E	20	42	40					8			
			L_Z	20	45	12								
			M_{1N}	20	46	00				18				
			M_{2N}	20	47	58				13				
			F	21	40									
213	June. 13	I	P	22	30	14								Condensation.
			M_Z	22	57	—								
			F	23	15									

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$\varnothing = 32^{0}03'11''N$ $\lambda = 118°46'55''E$ h = 60m. Underground; Conglomerate.

No.	Date	Char. acter	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
214	1933 June. 14	Ir	eP_N	20	49	00							1370	
			i_E	20	49	27								
			eS_N	20	51	19								
			M_E	20	53	56								
			F	21	11									
215	June. 18	Ir	P	13	15	41							2320	
			eS	13	19	30								
			M_Z	13	24	39								
			F	13	42									
216	June. 18	IIIr	iP	21	42	07				15			2420	Condensation. Epc: Japan. 日本金華山南方之海灣.
			i_Z	21	42	44								
			i_Z	21	43	30								
			iS_E	21	46	04								
			$iL_{N,Z}$	21	47	42								
			M_Z	21	50	30					18	18		
			C?	22	27	24								
	June. 19		F	00	05									
217	June. 19		e	18	58	09								Small.
			M?	19	29	42								May be surface waves of a different quake.
			F	19	40									
218	June. 24	IIIr	eP	22	02	20							4560	Dilatation. Disastrous earthquake of Sumatra, Netherland East Indies.
			i_Z	22	03	10								
			PP_Z	22	04	04								
			PPP_N	22	04	49								
			$iS_{N.E}$	22	08	41								
			PS_N	22	09	04								At minute mark.

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No.	Date	Character	Phase	G. M. T. h.	m.	s.	Amplitude A_N	A_E	A_Z	Period T_N	T_E	T_Z	△	Remark
218	1933 June. 24 (Cont'd)	IIIr	m_E	22	09	27								
			PPS_N	22	09	34								
			SS_Z	22	11	47								
			SSS	22	12	50								
			L_{1E}	22	13	37								
			L_{2N}	22	14	19								
			L_Z	22	15	28								
			L_{3N}	22	15	41								
			L_{4N}	22	17	48								
			M_Z	22	23	58			881			12		Maximum amplitude.
			m	00	29	40								Reenforcement of a train of surface waves, may be another quake.
			F	1	10									
219	June. 27	Iv	e(P)	11	21	04							425	Small
			eS	11	21	49								
			F	11	28									
220	June. 28	Id	eP	4	21	05								
			eS	4	21	08								
			F	4	22									
221	June. 29		e_N	2	39	12								Very small
			F	2	44									

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The National Research Institute of Meteorology acknowledges with thanks the receipt of the following seismological publications and bulletins from 1st to June to 1st September, 1933.

Stations	Publications
Apia	Bulletin Apr.-June, 1933.
Athens	Bulletin Jan.-Mars, 1933.
Chiufeng	Bulletin May-July, 1933.
	Note on the Earthquake of August 10, 1931. By Dr. S. C. Lee.
Christchurch	Provisional Bulletin Jan.-June, 1933.
Denver	Bulletin Jan.-June, 1933.
Florissant	BulletinJanuary-June, 1933.
Georgetown	Instrumental Bull. April-June, 1933.
	Seism. Despatches April-June, 1933.
Goettingen	Bulletin January-March, 1933.
Hamburg	Bulletin January- June, to May, 1933.
Harvard	Bulletin Dec. 1929 to Nov., 1932.
	3 Reprinted Pamphlets.
Helvane	Bulletin May, 1933.
Jesuit Seis. Assoc.	pril to June, 1933.
	New Travel Time Tables, 1933. by Dr. Jaccluone.
Kew	Bulletin May-June, 1933.
Melbourne	Bulletin April-June, 1933.
Cotomari	Bulletin for the year of 1931.
Osaka	Bulletin July-Sept., 1932.
Ottawa	Bulletin May 1931.
	Earthquake Correlation
	Bibliography of Seismology, No. 17.
Parc St. Maur	Bulletin May-June, 1933.
Perth	Bulletin February-May, 1933.
Riverview	Provisional Bulletin May-June, 1933.
San Fernando	Bulletin March-April, 1933.
Santiago, Chile	Bulletin for the year of 1931.
Seismological Inst. Tokyo.	Journal of Astronomy and Geophysics.
	5 Reprinted Pamphlets by Dr. Imamura, Dr. Katsuzawa.
St. Louis	Bulletin March-May, 1933.
Strassbourg	
L'Institut	Bulletin April-May, 1933.
Bureau Central	Bulletin April-May, 1933.
Union International	Bulletin April-May, 1933.
Taihoku	Bulletin May, 1933.
	Preliminary Bulletin June-July, 1933.
Tanan rive	Bulletin October-December, 1932.
Tokyo, C. I. C.	2/ Reprinted Pamphlets by Dr. H. Honda.
Ucele	Bulletin January to March, 1933.
Upsala	Bulletin 1930-1931.
Wellington	Preliminary Bulletin May & June, 1933.
Württemberg	Bulletin July to December, 1932.
Zi-k -wei	Bulletin Janvrier-Mars., 1933.