The International Seismological Summary.

1934 January, February, March.

FORMERLY THE BULLETIN OF THE BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

In the present quarter there are 127 epicentres, 47 being new and 80 from old epicentres. According to the notation the quality of the material is as follows :—

N.1=14	R.1=2	X.=42
N.2=18	R.2=19	
N.3=15	R.3=17	

The epicentres giving abnormal focal depth are :—

	Date. d.	h.	m.	s.	Epicentre. °	°	Focal Depth. (Below Normal).
Jan.	3	9	42	30	53°·6N.	155°·8E.	+0·030
Jan.	18	3	21	0	22°·0S.	180°·0	+0·090
Feb.	4	3	10	45	18°·3N.	146°·8E.	+0·080
Feb.	9	22	32	17	21°·0S.	176°·5W.	+0·040
Feb.	24	5	33	30	12°·7N.	86°·7W.	+0·020
Mar.	1	21	45	31	40°·0S.	72°·8W.	+0·015

In order that a determination of epicentre can be made, it is now assumed in the International Seismological Summary that three consistent observations of P and S are necessary to justify using the observations. The reason for this assumption is that if the S phase is not read with some accuracy at a few of the stations the value of the times of P wave, whose amptitude is much smaller, cannot be expected to give a reliable determination of epicentre. Such determinations do not justify the time involved in making them, and it has now been decided to relegate the observations to the notes. In cases where it is thought the

readings might perhaps be of interest in spite of their paucity, they have been entered in the text exactly as given by the stations (e.g., 1934 March 1d.3h.), so that it is hoped nothing of value in the summary has been lost. Examples of determinations which might well have been omitted are those of 1926 Sept. 22d., 24d., and 27d., 1930 Nov. 4d.4h., May 8d.14h., Dec. 4d.6h., and more recently 1933 Sept. 2d.21h., 25d.9h., Nov. 23d.18h.44m.

Exception to the above rule are made when local shocks are under consideration or when shocks have been attributed to a definite epicentre as a result of information of a kind which cannot be used as data for a geometrical problem such as Macro seismic evidence and the experience of persons recorded from the vicinity of the epicentre. When, as a result of such evidence, an epicentre is allocated to a shock not well observed instrumentally, the summary will take the suggested position of the epicentre or a nearby old epicentre and give the observations and epicentrical distances referred to the adopted source. A case in point occurs on 1933 July 11d.7h.

UNIVERSITY OBSERVATORY,
OXFORD.

1939, August 10.

1934 JANUARY, FEBRUARY, MARCH.

Jan. 1d. 4h. 54m. 29s. Epicentre 44°·5N. 1°·5W. (as on 1931 Nov. 12d.). **X.**

A = +·713, B = −·019, C = +·701; D = −·026, E = −1·000;
G = +·701, H = −·018, K = −·713.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Bagnères		2·0	140	0 24	− 5	0 39	−12	—
Puy de Dôme		3·4	68	e 1 48	+59	2 35	+68	—
Barcelona		4·1	138	1 17	P_g	1 47	+ 2	2·0
Toledo		5·0	206	1 38	P_g	2 32	S*	—
Paris		5·1	31	e 3 7	?	e 3 45	?	—
Neuchatel		6·4	64	e 1 57	P_g	e 4 4	?	—
Basle		7·0	61	e 2 30	P_g	e 4 35	?	—
Uccle	E.	7·4	30	—	—	e 3 7	− 2	—
Zurich		7·6	64	e 2 16	P*	e 4 9	S_g	—
Malaga		8·1	197	e 2 0	+ 5	—	—	—
Stuttgart		8·5	56	—	—	e 4 31	S_g	e 5·2

Additional readings:—
Puy de Dôme e = +2m.5s. and +2m.25s.
Toledo PS = +2m.4s. = S − 4s.
Uccle eE = +3m.55s. = S_g − 3s., eN = +4m.17s. and +4m.47s.
Stuttgart iN = +5m.28s.
Long waves were also recorded at Ravensburg, Strasbourg, De Bilt, and Kew.

Jan. 1d. 6h. 16m. 41s. Epicentre 8°·0S. 121°·5E. N.2.

A = −·517, B = +·844, C = −·139; D = +·853, E = +·522;
G = +·073, H = −·119, K = −·990.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		7·9	57	1 6	−46	i 2 51	−30	—	—
Malabar		13·8	272	e 3 2	−11	—	—	—	—
Batavia		14·7	276	3 28	+ 3	i 6 25	+17	i 7·3	—
Manila		22·6	359	i 4 59	+ 2	i 9 1	+ 4	—	—
Perth		24·5	192	(5 13)	− 2	9 31	− 1	14·3	16·3
Medan		25·5	293	e 5 35	+10	10 4	+14	—	—
Adelaide		31·2	153	—	—	e 13 9?	SS	17·0	20·6
Hong Kong		31·2	347	6 28	+12	11 19	− 4	14·5	22·6
Phu-Lien		32·3	334	6 19?	− 6	—	—	16·3	—
Melbourne		36·6	148	—	—	e 13 7	+22	23·4	24·2
Riverview		37·6	138	—	—	e 13 13	+13	e 22·6	23·8
Sydney		37·6	138	e 13 1	S	(e 13 1)	+ 1	23·7	24·3
Nanking		40·1	356	e 7 31	− 2	e 13 34	− 4	—	—
Calcutta		44·5	314	e 6 0	−129	14 55	+12	28·6	32·6
Chiufeng		48·3	355	e 8 38	0	15 34	− 3	—	—
Hyderabad		49·5	301	8 50	+ 3	16 50	+56	25·7	34·6
Agra	E.	54·8	312	e 9 25	− 2	i 16 54	−12	e 25·9	35·5
Bombay		55·0	300	9 25	− 4	16 58	−11	27·7	35·3
Christchurch		56·9	138	9 34	− 8	17 39	+ 4	e 28·0	—
Almata		65·2	327	i 10 49	+ 9	—	—	—	—
Frunse		66·4	325	e 10 46	− 2	—	—	—	—
Tashkent		68·6	321	i 10 54	− 8	i 19 56	− 8	e 32·3	47·7
Baku		81·5	314	e 12 13	− 3	e 23 2	PS	46·3	—
Sverdlovsk		81·5	332	i 11 28	−48	21 13	−79	41·8	43·7
Ksara		90·8	304	e 13 7	+ 6	e 23 57	− 7	—	—
De Bilt		112·3	324	—	—	e 28 19?	PS	e 59·3	—
Oak Ridge		143·6	16	i 19 27	[− 2]	e 32 49	SKSP	e 80·3	—
La Paz		153·7	160	e 19 41	[− 6]	26 51	SKS	81·3	91·1
Huancayo		153·9	140	—	—	e 44 1	SS	e 79·8	—

For Notes see next page.

NOTES TO JAN. 1d. 6h. 16m. 41s.

Additional readings and notes :—
Amboina i = +3m.4s.
Malabar i = +3m.8s. =PP − 8s.
Manila iEN = +5m.3s.
Perth P = +3m.56s., PPP = +5m.39s., P_eS = +10m.26s., SS = +12m.5s., SSS = +12m.29s., SSSS = +13m.4s. ; true P is recorded as PP so that the observed P is mistaken.
Melbourne i = +15m.24s. =SS +21s., +17m.26s. =S_eS +4s., +19m.52s. and +21m.2s.
Riverview e = +20m.37s.
Sydney iS = +19m.59s.
Agra PSE = +17m.30s., SSSE = +21m.41s.
Christchurch L_q = +25·2m.
Baku e = +29m.25s.
Ksara e = +16m.49s. =PP +17s., eS = +24m.31s. =PS − 30s.
Oak Ridge eNE = +41m.19s.?
La Paz PPN = +22m.57s.
Long waves were also recorded at Arapuni, Wellington, Kucino, and other European stations.

Jan. 1d. 8h. 5m. 19s. Epicentre 29°·5S. 71°·0W. (as on 1933 Dec. 10d.). X.

A = +·283, B = −·823, C = −·492 ; D = −·946, E = −·326 ;
G = −·160, H = +·466, K = −·870.

		△	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago		4·0	176	0 58	+ 1	1 39	− 3	—	1·7
La Plata		12·3	119	2 57	+ 5	5 9	− 1	5·8	7·2
La Paz		13·3	12	3 17	+11	—	—	7·2	9·9
Oak Ridge	z.	72·0	0	i 11 21	− 2	—	—	—	—
Riverside	z.	77·1	323	i 11 51a	− 2	—	—	—	—
Pasadena	z.	77·6	322	i 11 54a	− 1	—	—	—	—
Mount Wilson	z.	77·7	322	i 11 54a	− 2	—	—	—	—
Haiwee		79·0	323	i 12 1a	− 2	—	—	—	—
Tinemaha		79·9	323	i 12 6a	− 1	—	—	—	—
Tashkent		145·9	58	e 19 37	[+ 1]	—	—	—	—

Additional readings :—
La Plata eSE = +5m.17s.
Long waves were also recorded at Sverdlovsk.

Jan. 1d. 14h. 26m. 24s. Epicentre 48°·3N. 9°·0E. (as on 1933 Dec. 30d.). R.2.

A = +·657, B = +·104, C = +·747.

		△	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ebingen		0·1	190	i − 0 1	− 2	i 0 2	− 1	—	—
Stuttgart		0·4	16	i 0 4a	− 2	i 0 10	0	—	—
Hohenheim		0·5	19	i 0 3	− 4	i 0 8	− 5	—	—
Ravensburg		0·6	141	e 0 10	+ 1	e 0 20	+ 5	—	—
Zurich		1·0	197	e 0 14	0	e 0 29	+ 3	—	—
Basel		1·2	232	e 0 19	+ 2	e 0 35	+ 4	—	—
Chur		1·5	166	e 0 26	+ 5	e 0 46	+ 7	—	—
Neuchatel		1·9	227	e 0 30	+ 2	e 0 58	+ 9	—	—
Jena	E.	3·0	32	e 0 49	+ 6	—	—	e 1·5	1·6
Göttingen		3·3	12	e 0 56	P_g	e 1 38	S*	—	—

Additional readings :—
Stuttgart iEN = +8s. and +15s.
Hohenheim eE = +7s.
Ravensburg iEN = +22s.
Chur e = +42s.
Neuchatel iP_g = +32s.

Jan. 1d. 21h. 55m. 55s. Epicentre 32°·0N. 56°·1E. (as on 1933 Nov. 28d.). X.

A = +·473, B = +·704, C = +·530; D = +·830, E = −·558; G = +·296, H = +·440, K = −·848.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Baku		9·7	331	e 4 7	S	(e 4 7)	+ 1	7·8	10·9
Erevan		12·4	313	e 3 16	+22	—	—	—	—
Tiflis		13·2	320	e 3 5	0	—	—	e 6·9	—
Grozny		14·0	326	e 3 18	+ 3	—	—	—	—
Tashkent		14·0	46	e 2 38	−37	i 6 0	+ 9	7·1	9·1
Ksara		17·0	282	e 3 28?	−26	e 7 22	+20	e 9·5	—
Sotchi		17·3	317	e 3 18	−40	—	—	—	—
Frunse		18·2	48	—	—	e 7 11	−18	—	—
Agra	E.	19·6	99	e 4 22	− 3	—	—	—	14·0
Almata		19·9	50	—	—	e 9 5	+61	—	—
Sverdlovsk		25·0	6	e 5 20	0	e 9 41	0	13·6	—

Additional readings:—
Baku eS = +7m.4s. ?
Tashkent e = +3m.23s. = P +8s., i = +6m.14s., e = +7m.2s.
Long waves were also recorded at Kucino.

Jan. 1d. Readings also at 0h. (near Tyosi), 5h. (Colombo and Tortosa), 17h. (Sverdlovsk, Tashkent, near Almata, Frunse, and near Taihoku), 23h. (near Wellington).

Jan. 2d. 17h. Readings for a shock not giving a determination of epicentre.

Amboina e = 17h.25m.29s.
Manila iP = 17h.29m.49s., iSEN = 34m.19s., LN = 37m.9s., MN = 39m.44s.
Frunse eP = 17h.32m.55s.
Almata eL = 17h.34m.33s., M = 34m.41s.
Adelaide e = 17h.37m.0s., e? = 38m.36s., eL = 40m.54s., ME = 42m.6s.
Melbourne e = 17h.38m.13s.?, e = 40m.35s., L = 42m.30s., M = 44m.54s.
Sydney e = 17h.39m.18s., L = 42m.36s., M = 43m.18s.
Riverview eE = 17h.39m.48s., eSE = 41m.48s., LE = 43m.0s.
Perth S = 17h.40m.0s., P_cS = 40m.25s., S = 41m.5s., SS = 42m.10s., SSS = 42m.50s., L = 45m.0s.
Wellington i = 17h.47m.54s.
Christchurch 17h.53m.

Jan. 2d. 20h. 55m. 45s. Epicentre 30°·0N. 57°·5E. N.2.

A = +·465, B = +·730, C = +·500; D = +·843, E = −·537; G = +·269, H = +·422, K = −·866.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Baku		12·1	331	e 2 54	+ 4	6 27	S_g	9·8	13·4
Tashkent		14·7	37	i 3 23	− 2	e 6 5	− 3	8·2	16·2
Erevan		14·7	317	e 3 33	+ 8	—	—	e 7·8	—
Tiflis		15·5	323	3 34	− 1	e 6 38	+11	e 8·8	—
Grozny		16·3	329	e 3 57	+12	e 7 7	+22	e 16·2	—
Dehra Dun		17·7	84	4 5	+ 2	7 25	+ 8	9·9	10·2
Bombay		17·8	125	i 4 4	0	i 7 37	+17	9·5	13·6
Agra	E.	18·2	94	4 9	0	7 27	− 2	—	—
	N.	18·2	94	e 4 5	− 4	e 7 23	− 6	—	—
Ksara		18·7	288	4 19	+ 4	i 8 0	+20	9·8	11·2
Frunse		18·8	42	4 13	− 3	e 7 51	+ 9	—	—
Almata		20·4	44	4 35	+ 1	8 26	+12	—	—
Helwan		22·6	276	i 4 58?	+ 1	i 9 12	+15	—	15·4
Hyderabad		22·9	119	5 0	0	9 20	+17	11·8	16·8
Theodosia		22·9	317	e 4 57	− 3	e 9 20	+17	14·2	—
Yalta		23·4	315	e 5 6	+ 1	—	—	16·2	—
Sebastopol		23·8	315	e 5 12	+ 4	—	—	—	—
Sverdlovsk		26·9	4	i 5 39	+ 2	e 10 15	+ 1	i 16·4	17·8
Kodaikanal	E.	27·1	133	5 43	+ 4	10 59	+42	16·8	18·5
Calcutta		28·6	98	5 38	−15	10 52	+10	15·0	16·6

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Pulkovo		35·0	336	e 8 3	+74	e 14 15	SS	19·4	22·6
Zagreb		35·8	308	e 6 45	−11	e 16 57	(−20)	e 22·2	26·8
Vienna	z.	36·1	312	e 7 16	+17	—	—	—	—
Helsingfors		37·1	334	e 9 33	(+ 1)	e 14 15?	?	e 19·2	—
Triest		37·4	308	i 0 18?	?	i 8 47	PPP	—	23·7
Venice		38·3	307	i 0 18	?	8 46	PP	—	—
Florence		38·9	304	e 0 44	?	8 59	PP	17·2	23·2
Prato		39·0	304	e 7 27	+ 3	13 15	− 6	—	20·8
Jena		39·8	314	e 7 27	− 3	—	—	e 24·2	30·2
Piacenza		40·1	306	15 42	SS	—	—	—	26·6
Chur		40·4	309	e 7 34	− 1	—	—	—	—
Göttingen		40·9	316	—	—	e 16 15?	SS	e 23·2	28·0
Stuttgart		40·9	312	e 8 15	+35	e 13 39	−11	e 26·8	—
Zurich		41·1	309	e 7 34	− 7	—	—	—	—
Hamburg		41·4	318	e 7 43	− 1	—	—	e 24·2	30·2
Strasbourg		41·8	312	e 8 15?	+28	—	—	e 24·2	—
Neuchatel		42·1	309	e 7 48	− 1	—	—	—	—
De Bilt		44·0	316	—	—	e 14 45	+ 9	e 23·2	33·5
Uccle		44·3	314	e 8 3	− 4	e 14 49	+ 9	e 22·2	—
Phu-Lien		45·0	89	—	—	14 15?	−35	24·2	—
Kew		47·3	314	—	—	e 15 15?	− 8	e 23·2	34·7
Chiufeng		48·1	60	e 8 39	+ 2	e 15 36	+ 2	e 23·4	31·6
Hong Kong		50·9	84	16 16	S	(16 16)	+ 3	—	30·5
Nanking		51·8	71	e 9 4	− 1	—	—	—	29·8
Manila		60·0	89	i 9 36	−28	18 18	+ 2	30·1	35·2
Ottawa		93·5	329	—	—	e 27 15?	?	e 51·2	—

Additional readings :—
Sverdlovsk iL_q = +12·6m.
Pulkovo e = +14m.23s. =SS − 3s. and +15m.15s.
Zagreb eNW = +7m.31s., +7m.53s. =PP − 18s., and +19m.15s. ?
Helsingfors e?E = +17m.15s.? =S_eS − 9s.
Stuttgart e = +21m.15s., eL_qN = +24·2m.
Strasbourg eE = +11m.15s.?, eN = +17m.15s. ?
Hong Kong S = +19m.36s. =SS − 2s.
Ottawa eE = +35m.15s. ?
Long waves were also recorded at Kucino, Vladivostok, Cape Town, Riverview, Sydney, Melbourne, Oak Ridge, Scoresby Sund, and at other European stations.

Jan. 2d. Readings also at 0h. (Tucson and near Tyosi), 3h. (near Manila), 4h. (near Tyosi), 5h. (near Nagoya, Susaki, and Tyosi), 6h. (near Almata and Frunse), 7h. (La Paz), 10h. (near Wellington), 15h. (Branner, near Berkeley, and Lick), 18h. (New Plymouth, near Wellington, Hastings, and near La Paz), 19h. (Amboina, Manila, Adelaide, Riverview, Sydney, Perth, and La Paz), 23h. (Tyosi).

Jan. 3d. 9h. 42m. 30s. Epicentre 53°·6N. 155°·8E. N.1.

A = −·541, B = +·243, C = +·805 ; D = +·410, E = +·912 ;
G = −·734, H = +·330, K = −·593.

A *depth* of focus 0·030 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Nemuro	−0·6	12·3	217	2 46	+ 2	4 53	− 2	—	—
Sapporo	−0·7	14·2	228	3 16	+ 7	—	—	—	—
Aomori	−0·9	16·3	224	3 36	+ 2	6 20	− 4	—	—
Morioka	−1·0	17·1	221	3 45	+ 2	6 43	+ 2	—	—
Mizusawa	−1·0	17·6	221	i 3 33	−16	i 6 38	−14	—	—
Sendai	−1·1	18·4	220	3 59	+ 1	7 11	+ 2	—	—
Vladivostok	−1·1	18·9	235	i 4 4	0	i 7 20	0	9·3	—
Hukusima	−1·1	19·1	220	4 4	− 3	7 21	− 4	—	—
Kakioka	−1·2	20·5	218	4 19	− 3	7 48	− 4	—	—
Tukubasan	−1·2	20·6	218	4 19	− 4	7 49	− 5	—	—

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		Corr. for Focus	Δ	Az.	P.	O–C.	S.	O–C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi		−1·2	20·7	216	i 4 24a	0	7 55	− 1	—	8·0
Maebasi		−1·2	20·8	221	4 22	− 3	7 56	− 2	—	—
Nagano		−1·2	20·9	223	4 25	− 1	7 57	− 3	—	—
Oiwake		−1·3	21·0	222	4 26	0	8 1	+ 1	—	—
Tokyo		−1·3	21·2	218	4 23	− 6	7 58	− 6	—	—
Humatu		−1·3	21·7	220	4 31	− 3	8 10	− 4	—	—
Misima		−1·4	22·0	219	4 35	− 1	8 21	+ 3	—	—
Susaki	E.	−1·4	22·4	219	e 4 38	− 2	8 30	+ 4	—	—
Nagoya		−1·4	22·7	223	4 27	−16	(8 13)	−19	8·2	—
Ibukisan		−1·4	22·8	224	4 43	− 1	8 30	− 4	—	—
Hikone		−1·4	22·9	225	4 39	− 6	8 26	−10	—	—
Toyooka		−1·5	23·2	227	4 47	− 1	8 35	− 5	—	10·3
Kyoto		−1·5	23·3	225	4 49	0	8 36	− 6	—	—
Osaka		−1·5	23·7	225	4 33	−20	8 42	− 8	—	9·4
Kobe		−1·5	23·9	226	i 4 52	− 3	i 8 44	− 9	—	10·5
Wakayama		−1·6	24·2	225	4 57	0	8 55	− 2	—	—
Sumoto		−1·6	24·3	226	4 54k	− 4	8 52	− 7	—	9·6
Hamada		−1·6	25·0	232	5 5	0	9 4	− 8	—	—
Heizyo		−1·6	25·1	247	i 5 7	+ 2	9 10	− 4	—	11·0
Koti		−1·6	25·5	227	i 5 8k	− 1	i 9 13	− 8	—	—
Keizyo		−1·6	25·5	243	5 8	− 1	9 13	− 8	10·9	—
Zinsen		−1·6	25·7	243	e 5 3	− 8	e 9 15	−10	i 10·9	11·1
Taikyu		−1·6	25·9	238	5 13	0	9 19	− 9	—	—
Hukuoka		−1·8	27·0	232	5 19	− 3	9 36	− 8	—	—
Hukuoka B.		−1·8	27·0	232	5 1	−21	6 3	?	—	—
Miyazaki		−1·8	27·8	229	5 29	0	9 50	− 8	—	—
Nagasaki		−1·8	27·9	232	5 28k	− 2	e 9 49	−11	—	—
Chiufeng		−2·0	29·8	259	i 5 47k	+ 2	10 23	− 5	—	15·8
Zi-ka-wei	z.	−2·2	33·3	241	i 6 15k	0	11 11	−10	—	22·6
Nanking	z.	−2·2	34·0	246	i 6 21k	0	i 14 23	?	—	—
Sitka		−2·4	37·6	56	i 6 53	+ 2	i 12 25	+ 1	—	—
Hong Kong		−2·8	44·3	242	7 43	− 1	13 54	− 5	—	31·7
Manila		−3·0	47·6	228	i 8 12k	+ 2	i 14 46	+ 2	—	—
Honolulu		−3·0	47·7	113	i 8 8	− 2	i 14 41	− 5	20·8	—
Victoria		−3·0	48·3	61	i 8 17	+ 2	(i 14 57)	+ 2	i 14·9	18·0
Seattle		−3·1	49·4	61	e 8 23	0	e 15 2	− 7	—	—
Phu-Lien		−3·1	49·6	248	9 30?	+65	e 17 44	?	30·5	—
Sverdlovsk		−3·1	49·6	315	i 8 32	+ 7	i 15 22	+10	24·4	30·3
Almata		−3·1	50·6	293	8 40	+ 8	—	—	—	—
Frunse		−3·2	52·1	294	e 8 48	+ 5	e 15 54	+ 9	—	—
Ukiah		−3·4	54·5	70	e 9 2	+ 2	i 16 22	+ 6	—	—
Scoresby Sund		−3·4	55·9	359	i 9 17	+ 7	i 16 47	+12	—	—
Berkeley		−3·4	56·0	70	e 9 12	+ 1	i 16 36	− 1	—	—
Tashkent		−3·4	56·1	295	i 9 16	+ 4	i 16 43	+ 5	23·5	30·3
Branner		−3·5	56·3	71	e 9 17	+ 5	e 16 45	+ 6	—	—
Bozeman		−3·5	56·4	57	e 9 16	+ 3	i 16 47	+ 6	—	—
Pulkovo		−3·5	58·5	331	i 9 31	+ 2	e 17 11	+ 2	24·1	28·5
Tinemaha		−3·5	58·7	69	i 9 33a	+ 3	i 17 19	+ 7	—	—
Calcutta		−3·6	58·8	266	10 17	?	e 19 5	?	33·6	—
Kucino		−3·6	59·4	325	i 9 44	+10	17 31	+11	e 21·2	24·6
Helsingfors		−3·6	59·6	335	e 9 41	+ 5	e 17 32	+ 9	25·5	—
Haiwee		−3·6	59·6	69	i 9 37a	+ 1	i 17 22	− 1	—	—
Santa Barbara		−3·6	59·8	72	i 9 39	+ 2	i 17 30	+ 5	—	—
Pasadena		−3·6	60·9	71	i 9 47a	+ 2	i 17 43	+ 3	—	—
Mount Wilson		−3·6	61·0	71	i 9 47	+ 1	i 17 42	0	—	—
Agra		−3·6	61·3	277	i 9 51	+ 3	i 17 46	0	—	—
Riverside		−3·6	61·5	70	i 9 49a	− 1	i 17 47	− 1	—	—
Upsala		−3·6	61·7	338	i 9 52	+ 1	i 17 59	+ 8	—	—
La Jolla		−3·6	62·4	71	i 10 0	+ 4	i 18 8	+ 8	—	—
Ivigtut		−3·7	63·6	13	i 10 6k	+ 2	i 18 15	0	—	—

Continued on next page.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Königsberg	Z.	−3·7	65·6	334	i 12 23	PP	—	—	—	—
Grozny		−3·7	66·2	312	e 10 28	+ 6	—	—	27·7	—
Tucson		−3·7	66·4	67	i 10 24	+ 1	i 18 53	+ 2	—	—
Baku		−3·7	66·6	307	i 10 27	+ 2	—	—	27·0	31·4
Copenhagen		−3·7	66·6	339	e 10 27	+ 2	i 19 2	+ 8	—	—
Tiflis	E.	−3·8	67·9	311	e 10 27	− 6	—	—	—	—
Medan		−3·8	68·1	245	e 10 20	−14	i 19 10	− 1	—	—
Sotchi		−3·8	68·5	316	e 10 41	+ 4	e 19 23	+ 7	—	—
Hyderabad		−3·8	68·6	270	10 38	+ 1	19 18	+ 1	29·1	46·1
Hamburg		−3·8	69·1	340	i 10 43k	+ 2	i 19 33?	+ 9	e 28·5	—
Theodosia		−3·8	69·1	319	10 42	+ 1	e 20 14	PS	29·5	—
Edinburgh		−3·8	69·1	348	—	—	i 19 29	+ 5	—	—
Erevan		−3·8	69·2	310	e 10 45	+ 4	—	—	—	—
Simferopol		−3·8	69·6	321	e 10 45	+ 1	—	—	—	—
Yalta		−3·8	70·0	320	10 48	+ 1	20 21	PS	28·5	—
Sebastopol		−3·8	70·1	321	10 49	+ 2	20 22	PS	30·5	—
Bombay		−3·8	70·8	276	i 10 51	− 1	i 19 44	− 1	—	37·6
Göttingen		−3·8	71·0	339	i 10 54	+ 1	e 19 50	+ 3	—	—
Jena	E.	−3·8	71·3	337	i 10 48	− 7	e 20 30	PS	e 27·5	—
	N.	−3·8	71·3	337	i 10 52	− 3	e 19 30	−21	e 27·5	—
Prague		−3·8	71·3	336	e 11 18	+23	e 20 34	PS	e 30·5	35·5
Ann Arbor		−3·8	71·4	42	—	—	i 19 48	− 4	30·8	—
Florissant		−3·8	71·5	48	i 10 54	− 2	i 19 48	− 5	—	—
De Bilt		−3·8	71·5	342	i 10 58k	+ 2	19 58	+ 5	—	—
St. Louis		−3·8	71·7	48	i 10 56	− 2	i 19 51	− 5	—	—
Ottawa		−3·8	71·7	35	i 10 56	− 2	i 19 50	− 6	e 33·5	—
Cheb		−3·8	71·8	337	e 11 30	+32	e 21 5	PS	e 30·5	38·5
Toronto		−3·8	71·9	38	e 10 56	− 3	i 19 51	− 7	32·2	—
Vienna		−3·8	72·5	334	i 11 4k	+ 1	20 44	PS	—	—
Batavia		−3·8	72·5	232	i 10 55k	− 8	i 19 55	−10	—	—
Oxford		−3·9	72·9	346	i 11 6k	+ 1	i 20 9	0	—	—
Uccle		−3·9	72·9	343	i 11 5k	0	i 20 11	+ 2	—	—
Kew		−3·9	73·0	345	i 11 6	+ 1	i 20 12	+ 2	e 29·5	—
Kärlsruhe		−3·9	73·7	339	i 11 12	+ 3	e 19 30?	−49	e 36·5	—
Stuttgart		−3·9	73·8	338	i 11 10k	0	i 20 21	+ 1	e 30·6	—
Little Rock		−3·9	73·9	53	e 11 10	− 1	i 20 17	− 4	—	—
Suva		−3·9	74·3	158	e 9 30?	?	—	—	—	—
Strasbourg		−3·9	74·3	339	i 11 10k	− 3	i 20 27	+ 1	e 30·5	—
Pittsburgh		−3·9	74·4	40	e 11 11	− 3	e 20 20	− 7	e 36·1	—
Belgrade		−3·9	74·5	329	e 11 13a	− 1	e 22 47	?	35·7	—
Zagreb		−3·9	74·8	333	e 11 16	0	e 20 30?	− 2	—	—
Kodaikanal	E.	−3·9	74·9	267	i 11 15	− 2	20 27	− 6	—	—
Paris		−3·9	75·1	343	i 11 19k	+ 1	i 20 35	0	30·5	43·5
Zurich		−3·9	75·3	338	e 11 19	0	e 20 40	+ 2	—	—
Basle		−3·9	75·3	339	e 11 19	0	—	—	—	—
Chur		−3·9	75·5	338	e 11 21	+ 1	20 37	− 3	—	—
Triest		−3·9	75·6	334	i 11 19k	− 2	i 20 38	− 3	—	—
Oak Ridge		−3·9	75·6	33	i 11 19	− 2	i 20 38	− 3	e 34·0	—
Neuchatel		−3·9	76·0	340	e 11 23	0	e 20 43	− 3	—	—
Venice		−3·9	76·2	336	i 11 26	+ 1	20 53	+ 5	—	—
Fordham		−3·9	76·3	36	i 11 22	− 3	i 20 42	− 8	—	—
Georgetown		−3·9	76·9	39	i 11 26k	− 3	i 20 49	− 8	37·5	—
Charlottesville		−3·9	77·1	41	12 32	+62	i 20 54	− 5	—	—
Piacenza		−3·9	77·2	338	11 32	+ 1	i 21 1	+ 1	31·7	42·2
Prato		−4·0	77·9	335	i 11 34	0	i 21 7	0	31·8	—
Florence		−4·0	78·0	335	11 43	+ 8	21 2	− 6	32·5	—
Ksara		−4·0	78·3	312	11 35	− 1	i 21 26	+14	—	—
Columbia		−4·0	79·6	45	—	—	i 21 16	−11	e 39·4	—
Naples	N.	−4·0	79·9	332	e 11 50	+ 5	e 21 22	− 8	—	41·5
Barcelona		−4·1	82·3	341	11 57	− 1	21 46	−10	e 22·4	—

Continued on next page.

	Corr. for Focus	Δ	Az.	P.	O–C.	S.	O–C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Helwan	—4·1	83·7	314	i 12 3	− 3	i 21 53	−18	—	—
Serra do Pilar	—4·1	83·4	348	12 15	+ 6	21 56	−22	—	—
Toledo	—4·1	84·9	345	i 12 9	− 3	22 5	−19	—	—
Alicante	—4·1	85·8	342	e 12 17	0	i 22 12	−22	—	—
Algiers	—4·1	86·6	339	i 12 17	− 4	i 22 14	−28	36·5	—
Riverview	—4·2	87·5	183	i 12 17k	− 8	i 22 11	−39	37·1	—
Granada	—4·2	87·5	344	e 12 30	+ 5	i 22 30	−20	39·0	—
Almeria	—4·2	87·6	343	i 12 1	−24	i 22 15	−36	—	—
Malaga	—4·2	88·0	345	e 12 21	− 6	i 22 24	−31	—	—
San Fernando	—4·2	88·6	346	12 30	0	22 24	−38	36·5	40·0
Adelaide	—4·2	89·8	194	i 12 26	−10	i 22 24	[−67]	35·8?	47·7
Melbourne	—4·2	91·9	188	e 13 0	+14	i 23 15	−19	37·5	—
Perth	—4·2	92·3	212	19 5	?	22 40	[−66]	—	—
Wellington	—4·3	96·3	165	14 5	+58	22 56	[−72]	—	—
Christchurch	—4·4	98·2	167	13 4	−11	i 24 13	−18	40·5	—
San Juan	—4·4	99·5	40	e 17 23	PP	i 24 18	−25	e 40·3	—
Huancayo	—	122·2	64	20 8	PP	26 25	{−66}	—	—
La Paz z.	—	129·7	59	e 18 43	[−23]	—	—	—	—
Cape Town	—	144·3	286	19 4	[−28]	32 40	SKSP	68·5	—

Additional readings and note :—
Sikka ($\Delta = 9°{\cdot}0$) S − P = 1m.47s.
Vladivostok i = +4m.54s., +5m.22s., +8m.12s., and +8m.54s.
Susaki PPE = +5m.25s., SSE = +10m.0s.
Toyooka ePE = +4m.50s.
Osaka i = +5m.15s. = PP + 3s. and +6m.6s.
Kobe iNZ = +5m.43s., iE = +5m.48s.
Heizyo eEN = +6m.41s.
Koti ipP = +6m.4s., PP = +6m.8s., sP = +6m.37s., sS = +10m.51s., SS = +11m.7s., iS_cP = +11m.41s., eS_cS = +15m.29s., i = +15m.32s.
Keizyo PP = +6m.4s.
Zinsen iEN = +6m.5s.
Nagasaki eSSE = +11m.32s., S_cS? = +15m.38s.
Chiufeng records for a second shock, iP = +7m.43s., iSZ = +11m.58s., iSEZ = +12m.7s.
Zi-ka-wei PPZ = +7m.11s., iZ = +7m.41s., +12m.7s. and +13m.41s.
Nanking iZ = +7m.52s., eZ = +17m.26s. = S_cS + 20s.
Sitka iPP = +8m.20s., isPP = +9m.48s., isS = +14m.16s., SS = +15m.22s., i = +16m.30s.
Hong Kong PP = +8m.44s., SS = +15m.42s., SSS = +17m.10s., SSSS = +18m.46s.
Honolulu ePP = +10m.7s., SS = +17m.30s., SSS = +19m.40s.
Seattle esS = +17m.4s.
Sverdlovsk i = +9m.32s. and +17m.8s.
Frunse e = +9m.51s.
Ukiah esS = +18m.14s., eSS = +22m.42s.
Scoresby Sund eZ = +10m.20s., +10m.55s. = PP − 8s., eNZ = +12m.58s., eNE = +18m.36s., eE = +20m.42s., eN = +23m.25s.
Berkeley iZ = +10m.16s., eS = +16m.40s., iSN = +16m.42s.
Branner eN = +18m.36s.
Bozeman esS = +18m.36s., eSS = +20m.40s.
Pulkovo i = +10m.36s. and +18m.36s.
Tinemaha iPKP, PKPZ = +39m.4s.
Helsingfors $ePcP$ = +10m.46s., e? = +11m.58s., ePPEZ = +12m.16s., ePSEN = +18m.51s., eSKSEN = +19m.33s., eSSSEN = +23m.24s. ; T_o = 9h.42m.18s.
Haiwee iPKP, PKPZ = +38m.53s.
Pasadena $iPcP$ = +10m.50s., ipPZ = +11m.9s., isPZ = +12m.3s., iN = +19m.10s., ePKP, PKPZ = +38m.58s.
Agra PPPE = +13m.0s., PSE = +18m.20s., SSE = +21m.42s., SSSE = +23m.35s.
Riverside iPKP, PKPZ = +38m.54s.
Upsala iN = +19m.9s.
Ivigtut iNZ = +11m.11s., eNZ = +11m.45s., i = +19m.30s., e = +20m.15s., +21m.36s.
Königsberg eZ = +13m.47s., +14m.50s., and +15m.55s.
Tucson epP = +11m.26s., ePP = +12m.51s., isP = +19m.48s., esS = +20m.46s.
Baku e = +16m.50s.
Copenhagen iZ = +11m.36s. and +12m.10s., iNZ = +13m.0s., eN = +19m.52s., eN = iE = +21m.3s.
Medan i = +20m.2s.
Hamburg iZ = +11m.49s., +12m.24s., +13m.26s., and +15m.5s.

Continued on next page.

Bombay PP = +13m.28s., PPPP = +14m.29s., PSE = +20m.19s., SSS = +26m.28s.
Göttingen eNZ = +15m.30s.?
Jena iZ = +12m.3s., eN = +13m.28s. =PP +12s., eE = +13m.30s.
Ann Arbor i = +20m.30s., e = +21m.48s., eE = +28m.24s.
Florissant ipPZ = +11m.59s., isPZ = +12m.30s., iPPZ = +13m.45s., iSPZ = +20m.29s., ipSE = +21m.12s., isSE = +21m.47s., iS_cSE = +22m.35s.
De Bilt iZ = +12m.3s., iPPZ = +13m.44s., eE = +21m.58s. and +29m.56s.
St. Louis ipP = +12m.0s., ePPE = +13m.44s., iSPEN = +20m.32s., isS = +21m.48s., iE = +22m.36s. ; T_0 =9h.42m.42s.
Ottawa PPPP = +16m.0s., PSE = +20m.26s. ; T_0 =9h.42m.36s.
Toronto ipP = +12m.0s., e = +16m.59s., PSN = +20m.19s. ; T_0 =9h.42m.43s.
Vienna PP = +13m.58s., PPP = +15m.46s.
Batavia i = +11m.0s.
Uccle iZ = +12m.13s., +12m.46s., and +13m.53s., iN = +20m.41s., and +21m.34s.
Kew iE = +20m.47s. =PS − 30s.
Stuttgart ipPNZ = +12m.17s., isPNZ = +12m.52s., iPPNZ = +14m.3s., iPS = +20m.52s., isSEN = +22m.12s.
Little Rock ipSN = +20m.53s., isSN = +22m.17s. ; T_0 =9h.42m.38s.
Strasbourg ipPZ = +12m.16s., isPNZ = +12m.52s., iPPEZ = +14m.2s., ipPPZ = +15m.5s., ePPPPZ = +16m.41s., iPSEN = +20m.53s., isSEN = +21m.47s., iSSE = +24m.42s.
Pittsburgh esS = +22m.20s., eSS = +25m.14s., eSSS = +28m.46s.
Belgrade e = +12m.24s. and +14m.18s., L = +30m.51s.
Zagreb e = +11m.23s., eZ = +12m.24s., e = +14m.11s., eZ = +15m.14s., eNW = +22m.30s. ?
Paris i = +13m.0s., PP = +14m.13s.
Zurich epP = +12m.10s.
Triest iP_cP = +11m.22s., eZ = +12m.28s., epP = +12m.45s., iPP = +14m.16s., ipPP = +15m.52s., i = +22m.9s., iSS = +22m.33s., i = +31m.18s.
Oak Ridge ipP = +12m.27s., isP = +12m.57s., iZ = +14m.14s., eNW = +16m.53s., iZ = +17m.1s., eSZ = +20m.50s., esSNW = +21m.52s., esSEN = +22m.34s., isSNE = +22m.37s., ePSNE = +24m.30s., eSSNE = +27m.0s., eSSNW = +27m.36s., eSSSNE = +28m.46s., eNE = +30m.0s.
Fordham epPZ = +12m.29s., esPZ = +13m.1s., iE = +21m.1s., iEN = +21m.9s.
Charlottesville e = +22m.55s., eSS = +25m.52s., eSSS = +30m.2s.
Piacenza PS = +21m.12s.
Florence i = +11m.45s., +13m.18s. and +14m.45s.
Columbia ePS = +22m.59s., eSSS = +32m.42s.
Algiers i? = +24m.18s.
Riverview iNZ = +13m.24s., iE = +22m.30s.
Granada PP = +16m.2s.
Almeria PP = +13m.31s.
Malaga e = +22m.44s., PS = +22m.50s., e = +24m.59s. and +26m.33s.
Adelaide i = +13m.35s., iPS = +22m.49s., i = +24m.33s.
Melbourne i = +25m.13s.
Perth PPS = +24m.25s., +24m.45s., SS = +29m.0s., +29m.30s.
Wellington i = +23m.39s.
Christchurch iNZ = +13m.54s., PPNZ = +17m.3s., NZ = +18m.1s., SKSN = +23m.1s., PSN = +25m.20s., SS = +30m.39s.
San Juan iPS = +26m.25s., iSS = +31m.19s.
Huancayo SKS = +24m.41s., PS = +29m.50s., SS = +35m.48s., e = +39m.26s.
Cape Town PP = +24m.42s., SKP = +25m.41s., PPP = +27m.45s., +34m.26s., +36m.37s., SS = +43m.0s.

Jan. 3d. Readings also at 1h. (near Amboina), 2h. (near Hastings, New Plymouth, and Wellington), 3h. (Hastings), 4h. (Medan and Wellington), 5h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, and Wellington), 9h. (near Santiago), 12h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, and Oak Ridge), 15h. (Cheb), 21h. (near Tananarive).

Jan. 4d. Readings at 0h. (Apia and near Amboina), 2h. (Frunse and near Almata). 3h. (near Batavia (2) and Malabar), 10h. (Paris, Chur, near Neuchatel, Zurich, and Puy de Dôme), 11h. (Ravensburg and Stuttgart), 16h. (La Paz and La Plata), 20h. (near Mizusawa), 21h. (Tucson).

Jan. 5d. Readings at 3h. (near Tyosi), 5h. (Frunse and near Almata (3)), 6h., 7h., and 8h. (Almata), 10h. (Almata, Tyosi, and near Mizusawa), 12h. (Almeria and Tyosi), 13h. (near Almata), 14h. (near Tyosi), 16h. (Tifiis), 17h. (Sydney, Mount Wilson, Pasadena, Riverside, Tinemaha, Sverdlovsk, and Kucino), 19h. (Almata, near Karenko, and Taihoku), 23h. (Little Rock).

Jan. 6d. Readings at 1h. (near Sumoto), 2h. (Almata), 3h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 7h. (near Malabar), 12h. (Baku, Tiflis, Tashkent, Sverdlovsk, near Almata, and Frunse), 13h. (Cape Town, Nanking, Oak Ridge, Riverside, Mount Wilson, Pasadena, La Paz, near Almata, and Frunse), 14h. (Baku, Tashkent, Tiflis, De Bilt, Paris, Strasbourg, and Stuttgart), 16h. (near Tyosi (2)), 18h. (Tiflis and Mount Wilson), 22h. (Grozny), 23h. (Frunse and near Almata).

Jan. 7d. Readings at 8h. (Hastings and near Apia), 11h. (Florence and near Prato), 12h. (Wellington), 14h. (Oak Ridge and San Juan), 15h. (Almata and Frunse), 23h. (Berkeley and Tiflis).

Jan. 8d. 23h. 7m. 9s. Epicentre 34°·0N. 133°·9E. N.1.
(as given by the Japanese stations).

Probable error of epicentre ±0°·13.

A = −·575, B = +·597, C = +·559; D = +·721, E = +·693;
G = −·388, H = +·403, K = −·829.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tadotu	0·3	339	0 5k	+ 1	0 11	+ 3	—	—
Koti	0·5	214	i 0 8k	+ 1	i 0 16	+ 3	—	0·3
Tokusima	0·5	83	0 6a	− 1	0 13	0	—	—
Niihama	0·6	265	0 7a	− 2	0 15	0	—	—
Okayama	0·7	2	0 0	−10	0 8	−10	—	—
Muroto	0·8	163	0 11k	0	0 21	0	—	—
Sumoto	0·9	67	i 0 13a	0	i 0 24	+ 1	—	0·4
Matuyama	1·0	260	0 14a	0	0 26	0	—	—
Wakayama	1·0	77	0 15a	+ 1	0 28	+ 2	—	—
Kobe	1·2	57	e 0 18	+ 1	i 0 32	+ 1	—	0·7
Kure	1·2	282	0 9k	− 8	0 27	− 4	—	—
Hirosima	1·3	288	0 19a	+ 1	0 36	+ 3	—	—
Osaka	1·5	64	0 20a	− 1	0 40	+ 1	—	1·3
Simisaki	1·6	110	0 22	− 1	0 53	+12	—	—
Sakai	1·6	341	0 25k	+ 2	0 46	+ 5	—	—
Toyooka	1·7	26	0 24k	0	0 55	S_g	—	1·0
Hamada	1·8	301	0 25a	− 1	1 2	S_g	—	—
Kyoto	1·8	56	0 25	− 1	0 56	S*	—	—
Miyadu	1·9	34	0 25k	− 3	0 47	− 2	—	—
Hikone	2·3	57	0 38	+ 5	0 59	0	—	—
Kameyama	2·3	68	0 32a	− 1	0 57	− 2	—	—
Ibukisan	2·5	56	0 37	+ 1	0 58	− 6	—	—
Gihu	2·7	59	0 40k	+ 1	1 11	+ 2	—	—
Nagoya	2·7	67	i 0 41k	+ 2	1 12	+ 3	—	1·6
Kumamoto	2·9	246	0 41a	0	1 27	S*	—	—
Hukuoka	2·9	262	0 41	0	1 26	S*	—	1·6
Hukuoka B.	2·9	262	i 0 41a	0	1 27	S*	—	1·6
Miyazaki	2·9	225	0 51k	P_g	1 26	S*	—	—
Hamamatu	3·2	77	0 51	+ 5	1 31	S*	—	—
Nagasaki	3·6	251	e 0 50a	− 1	1 42	S*	—	2·0
Omaesaki	3·6	79	0 56	+ 5	1 42	S*	—	—
Toyama	3·8	44	0 59	+ 5	1 47	S*	—	—
Kohu	4·1	65	0 59	+ 1	1 47	+ 2	—	—
Wazima	4·2	34	0 55	− 5	1 43	− 5	—	—
Hunatu	4·2	67	0 59	− 1	1 46	− 2	—	—
Numadu	4·2	74	1 0	0	1 54	+ 6	—	—
Susaki	4·2	79	1 11	+11	2 3	S*	—	—
Misima	4·3	75	1 2	+ 1	1 48	− 2	—	—
Nagano	4·4	52	1 8	+ 5	2 4	S*	—	—
Tomie	4·6	254	1 5	− 1	2 15	S*	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taikyu		4·7	295	1 4	− 3	1 57	− 3	—	—
Maebasi		4·8	60	1 9	+ 1	2 9	+ 6	—	—
Yokohama		4·9	71	1 14	+ 4	2 13	+ 8	—	—
Kumagaya		4·9	62	1 6	− 4	2 5	0	—	—
Hatidyozima		5·0	99	1 10	− 1	—	—	—	—
Mera		5·0	78	1 21	P*	3 7	?	—	—
Tokyo		5·1	70	1 17	+ 4	2 41	S_g	—	—
Tyosi		6·0	71	e 1 29	+ 4	2 42	+ 9	—	3·2
Zinsen	E.	6·9	303	e 1 43	+ 5	e 3 19	S*	—	—
Mizusawa		7·7	46	e 1 54	+ 5	i 3 20	+ 4	—	—
Heizyo		8·3	310	e 1 56	− 2	e 3 33	+ 2	—	4·9
Vladivostok		9·2	352	e 2 13	+ 3	(3 57)	+ 3	4·0	4·6
Sapporo		10·8	30	2 33	+ 1	—	—	—	—
Nanking	z.	12·8	266	i 3 7	+ 8	e 6 17	S*	—	—
Chiufeng	z.	15·4	299	e 3 33	− 1	—	—	i 8·8	—
Manila		22·7	214	5 9	+11	9 2	+ 3	—	—
Sverdlovsk		53·2	319	—	—	e 16 48	+ 3	26·8	—
Tiflis	E.	67·6	306	—	—	e 19 10	−42	e 34·4	—

Additional readings :—
Kobe iN = +21s. = P_g +3s.
Osaka i = +22s. = P* −1s., +26s. = P_g +2s. and +30s.
Toyooka iZ = +31s. and +36s., iN = +40s., iEN = +44s. = S +0s.
Long waves were also recorded at Baku and Tashkent.

Jan. 8d. Readings also at 2h. (near Amboina), 3h. (near Almata and Frunse), 4h. (near Apia), 7h. (Berkeley), 11h. and 13h. (near Mizusawa), 15h. (near Almata and Frunse), 16h. (New Plymouth, Takaka, and near Wellington), 19h. (near Manila), 21h. (Tiflis), 23h. (Sumoto and San Juan).

Jan. 9d. 7h. Earthquake in South America.

Santiago P = 7h.34m.32s., S = 36m.18s., M = 36m.21s.
La Plata iPZ = 7h.34m.32s., iPN = 34m.33s., iPE = 34m.34s., SE = 36m.6s., SZ = 36m.7s., SN = 36m.8s., L = 36m.36s., M = 36m.39s.
La Paz iPN = 7h.35m.19s., iS = 37m.33s., L = 38m.14s., M = 39m.29s.
La Jolla iPZ = 7h.43m.38s.
Riverside iPEN = 7h.43m.42s., iZ = 45m.39s.
Mount Wilson iP = 7h.43m.45s.
Pasadena iP = 7h.43m.45s., eZ = 45m.50s.
Frunse e = 7h.50m.37s.
Almata e = 7h.51m.7s.
Sverdlovsk iP = 7h.53m.7s., e = 8h.9m.50s., L = 18m.
Tinemaha eSE = 7h.53m.19s.
Haiwee eSEN = 7h.53m.21s

Jan. 9d. Readings also at 0h. (Almata and Frunse), 3h. (Tiflis, near Batavia, Malabar, and near Apia), 5h. (near Algiers), 6h. (Takaka and near Wellington), 7h. (near Branner and Lick), 14h. (Berkeley, Branner, Lick, Tucson, San Juan, and near Mizusawa), 15h. (Cheb), 16h. (near Nagoya and Tyosi), 18h. (Mount Wilson and Pasadena), 19h. (near Wellington and New Plymouth), 20h. (near Wellington and New Plymouth (2)), 21h. (Zurich, Sion, and near Manila).

Jan. 10d. Readings at 0h. (Tananarive), 1h. (La Plata), 3h. (near Manila), 7h. (near Apia), 11h. (Mizusawa and near Tyosi (2)), 13h. (Baku, Tashkent, and near Tananarive), 18h. (Agra), 19h. (near Batavia and Malabar), 20h. (Malaga and near Granada), 21h. (Granada (2)), 23h. (Mizusawa, near Nagoya, Sumoto, and Tyosi).

Jan. 11d. 10h. 21m. 55s. Epicentre 50°·5N. 177°·5W. (as on 1926 Nov. 13d.). R.2.

A = −·635, B = −·028, C = +·772; D = −·044, E = +·999; G = −·771, H = −·034, K = −·636.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka		25·3	59	i 5 15	− 8	i 9 51	+ 5	14·4	—
Vladivostok		34·7	277	e 6 1	−45	12 23	+ 6	16·1	—
Berkeley		40·5	86	7 37	+ 1	—	—	—	—
Branner	E.	40·8	87	e 7 43	+ 4	—	—	—	—
Bozeman		43·1	69	—	—	e 18 11	(+10)	—	—
Tinemaha		43·5	84	i 8 2k	+ 1	—	—	—	—
Haiwee		44·3	85	i 8 9	+ 2	—	—	—	—
Pasadena		45·4	87	i 8 14k	− 2	—	—	e 19·5	—
Mount Wilson		45·5	87	i 8 17k	0	—	—	—	—
Riverside		46·0	87	i 8 21k	0	—	—	—	—
Chiufeng		46·2	285	e 8 21	− 1	e 15 10	+ 3	18·8	24·9
La Jolla	Z.	46·8	88	i 8 28	+ 1	—	—	—	—
Nanking	E.	49·6	274	e 8 46	− 2	—	—	—	—
Tucson		51·3	84	e 9 9	+ 8	—	—	e 23·1	—
Florissant		59·4	65	i 9 58	− 2	e 18 12	+ 4	—	—
St. Louis		59·6	65	e 10 2	0	e 18 15	+ 4	—	—
Manila		60·8	257	9 45	−25	17 2	?	25·1	—
Toronto		62·1	55	—	—	i 18 50	+ 7	29·4	—
Sverdlovsk		62·5	330	i 10 20	− 2	i 18 49	+ 1	28·1	36·2
Ottawa		62·7	51	—	—	e 18 51	0	e 26·1	—
Almata		66·1	310	e 10 50	+ 4	—	—	—	—
Charlottesville		66·6	58	—	—	e 19 44	+ 4	e 34·5	—
Georgetown		66·7	56	e 10 49	− 1	i 19 41	0	e 33·1	—
Oak Ridge		66·8	50	i 10 46	− 5	e 19 43	+ 1	e 34·1	—
Fordham		66·9	53	i 10 50	− 1	i 19 46	+ 3	e 34·1	—
Pulkovo		67·5	347	—	—	e 19 43	− 8	43·6	44·7
Frunse		67·5	312	e 10 53	− 2	—	—	—	—
Columbia		68·1	63	—	—	e 20 8	PS	e 35·2	—
Kucino		69·7	340	e 14 6	?	e 19 14	?	e 28·6	39·0
Tchimkent		70·3	314	11 17	+ 4	—	—	—	—
Tashkent		71·3	314	11 21	+ 2	i 20 38	+ 1	34·1	39·1
De Bilt		77·4	359	—	—	e 22 35	PS	e 37·1	47·8
Agra	E.	77·8	298	e 11 54	− 3	i 21 46	− 6	—	—
Uccle		78·6	359	e 11 59	− 1	—	—	e 37·1	—
Grozny		78·9	330	e 12 11	+ 9	—	—	—	—
Baku		80·1	326	12 11	+ 3	i 22 8	− 9	38·1	50·6
Stuttgart		80·5	356	—	—	e 28 5?	SS	e 45·1	—
Vienna	Z.	80·5	352	12 11	+ 1	—	—	—	—
Tiflis		80·7	330	12 10	− 2	22 18	− 5	e 39·7	—
Strasbourg		80·8	357	e 12 5?	− 7	e 23 5?	PS	e 40·1	—
Hyderabad		85·2	292	23 0	S	(23 0)	−10	—	54·2
San Juan		88·6	62	—	—	e 23 36	− 7	e 45·5	—

Additional readings:—
Sitka eSSS = +12m.19s.
Vladivostok ePPP = +8m.19s.
Oak Ridge iZ = +11m.0s. = P_cP − 20s.; T_0 = 10h.22m.8s.
Fordham eN = +20m.12s.
Pulkovo e = +27m.38s.
Kucino e = +24m.37s. = SS − 1s.
De Bilt eSSN = +27m.17s.
Agra PSE = +22m.23s., SSE = +26m.52s.
Strasbourg eSSN = +28m.5s.?
Long waves were also recorded at Honolulu, Hong Kong, Bombay, and other American and European stations.

Jan. 11d. Readings also at 0h. (Tucson), 1h. (Perth, La Paz, and Santiago), 2h. (near La Paz), 3h. (Piatigorsk), 4h. (Hong Kong), 5h. (Malaga and near Granada), 7h. (Mount Wilson, Pasadena, and Riverside), 8h. (Manila), 19h. (near Tyosi), 23h. (La Paz).

Jan. 12d. 13h. 31m. 57s. Epicentre 23°·5N. 102°·5E. (as on 1929 Feb. 9d.). R.3.

A = −·198, B = +·895, C = +·399 ; D = +·976, E = +·216 ;
G = −·086, H = +·389, K = −·917.

		△	Az.	P.	P−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Phu-Lien		4·7	125	e 1 1	− 6	i 1 53	− 7	2·1	—
Hong Kong		10·9	94	2 22	−11	4 41	+ 5	5·4	5·9
Calcutta		13·0	268	3 29	+27	6 17	S*	7·4	—
Nanking		16·7	55	e 3 43	− 7	6 59	+ 4	8·6	10·9
Karenko		17·5	84	e 4 18	+18	7 48	+35	—	—
Manila		19·6	113	4 24	− 1	8 17	SS	10·6	—
Chiufeng		20·2	32	i 4 27k	− 5	i 8 10	0	i 9·8	12·8
Medan		20·3	192	e 3 6	?	i 8 27	+15	i 10·8	—
Agra	E.	22·4	284	4 53	− 2	8 54	+ 1	—	—
	N.	22·4	284	e 4 58	+ 3	8 58	+ 5	—	—
Hyderabad		23·3	259	5 8	+ 4	9 15	+ 5	10·8	17·0
Colombo		27·4	236	6 23	PP	10 30	+ 8	15·0	19·1
Bombay		27·9	266	e 5 46	0	e 10 33	+ 3	e 13·5	19·0
Almata		28·8	319	e 5 58	+ 4	—	—	15·6	—
Batavia		30·0	171	e 6 4	− 1	—	—	e 14·6	—
Frunse		30·1	317	e 6 22	+16	e 11 37	+31	e 17·2	—
Vladivostok		31·2	45	—	—	e 10 59	−24	e 15·0	18·4
Tashkent		32·9	311	e 2 16	?	i 11 50	+ 1	e 19·4	—
Tchimkent		33·1	314	6 43	+10	e 12 3	+11	e 19·6	—
Sverdlovsk		44·9	329	i 8 11	− 1	—	—	18·0	28·6
Baku		47·0	305	e 8 28	− 1	15 24	+ 5	24·0	—
Grozny		50·2	308	e 8 57	+ 4	—	—	29·0	—
Tiflis		50·8	306	9 4	+ 7	e 16 14	+ 2	e 28·6	30·4
Kucino		56·5	322	e 8 21	−78	e 16 27	−63	e 24·0	30·2
Pulkovo		60·9	327	—	—	e 18 24	− 4	32·0	37·0
Vienna	Z.	70·1	315	11 17	+ 6	—	—	—	—
Triest		72·5	314	—	—	e 17 9	?	e 39·6	—
La Paz	N.	168·7	306	e 25 8	PP	—	—	—	—

Additional readings :—
Nanking iPEN = +3m.47s., iE = +7m.40s.
Chiufeng iSZ = +8m.14s. ; T_o = 13h.31m.51s.
Vladivostok e = +13m.39s.
Tashkent i = +14m.2s.
Tiflis ePPE = +10m.56s., eSSE = +20m.3s.
Pulkovo e = +27m.3s.
Triest i = +28m.57s.
La Paz i = +26m.43s.
Long waves were also recorded at Perth, Riverview, and other American, European, and Japanese stations.

Several Japanese Stations record observations which may appertain to the above shock, but which do not tt the phases on the basis of the determination made. In view of the doubt as to the origin of these records the times are entered separately.

Taityu eP = 13h.37m.48s., S = 39m.20s.
Takao eP = 13h.37m.57s., S = 39m.27s.
Hokoto eP = 13h.38m.28s., S = 39m.50s.
Osaka P = 13h.39m.0s., S = 43m.52s., L = 47m.24s., M = 49m.18s.
Hukuoka B P? = 13h.39m.56s., S = 42m.14s., eL = 46m.22s., M = 46m.48s.
Taihoku eP = 13h.40m.4s., S? = 41m.5s.
Dairen eP = 13h.40m.37s., S = 43m.50s.
Zinsen iPE = 13h.41m.43s., eSE? = 44m.31s., eSZ = 44m.33s., eLN = 45m.28s., ME = 46m.21s.
Heizyo eP = 13h.41m.44s., LEN = 45m.32s., ME = 47m.9s.
Keizyo eP = 13h.41m.55s., L = 45m.33s.
Nagasaki eP = 13h.41m.57s.?, eS(or L)? = 45m.45s.
Taikyu P = 13h.41m.58s., S = 44m.27s., L = 45m.52s.
Hukuoka e = 13h.43m.36s.
Sumoto ePN = 13h.44m.10s., ePE = 44m.17s., SN = 47m.48s., SE = 48m.3s., iZ = 48m.31s., MN = 48m.48s.

Jan. 12d. Readings also at 0h. (Tucson), 1h. and 2h. (near Tyosi), 5h. (Phu-Lien), 11h. (near Tyosi), 12h. (near Mizusawa), 13h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and Hong Kong), 16h. (Hong Kong, Nanking, and Phu-Lien), 17h. (Sumoto, near Koti, and Nagoya), 18h. (Zurich), 20h. (Huancayo, La Paz, San Juan, Mount Wilson, Pasadena, Tinemaha, and Tiflis), 21h. (Phu-Lien).

Jan. 13d. Readings at 0h. (near Nagoya and Tyosi), 3h. (near Triest), 4h. (Tchimkent), 5h. (Baku, Sverdlovsk, and Triest), 6h. (Tchimkent and near Nagoya), 7h. (Almata and Frunse), 8h. (Almata and near Frunse), 11h. (near Tiflis), 12h. (Almata, Frunse, Hastings, and Wellington), 15h. (Tchimkent and near Algiers), 21h. (Perth), 22h. (Manila).

Jan. 14d. 12h. Readings for which no determination is made were recorded :—

Tucson P = 12h.3m.6s., ePP = 3m.43s., e = 4m.32s., iS = 5m.23s., iL = 6m.6s.
Riverside ePZ = 12h.3m.53s.
Pasadena eP = 12h.3m.59s., iZ = 4m.17s., iN = 5m.12s., eLN = 7m.39s.
Mount Wilson ePE = 12h.4m.1s., i = 4m.17s.
Haiwee iP = 12h.4m.20s.
Tinemaha iP = 12h.4m.31s.
St. Louis ePEN = 12h.5m.49s., eSEN = 9m.46s., eL = 11m.47s., M = 12m.26s.
Florissant eP = 12h.5m.50s., iS = 9m.53s., eL = 11m., M = 12m.34s.
Berkeley eN = 12h.9m.4s.
Ukiah eS = 12h.9m.6s., eL = 11m.0s.
Bozeman eS = 12h.10m.0s., eL = 12h.30m.
Columbia eS = 12h.11m.24s., eL = 15m.48s.
Chicago eSS = 12h.11m.52s., i = 15m.12s., L = 15m.32s.
Ottawa eN = 12h.13m.8s., e = 16m.44s., eL = 19m.
Ann Arbor e = 12h.15m.30s., iN = 15m.48s.
Long waves were also recorded at Seattle, Charlottesville, Oak Ridge, Pittsburgh, Scoresby Sund, Baku, and Sverdlovsk.

Jan. 14d. Readings also at 1h. (Ksara, Baku, Grozny, Tiflis, and near Erevan), 2h. (Almata), 3h. (Agra, Chiufeng, Nanking, Hong Kong, Phu-Lien, Almata, Calcutta, Tiflis, near Sebastopol, Simferopol, and Yalta), 4h. (Grozny and Erevan), 5h. (Baku, Tiflis, Sverdlovsk, Almata, Tashkent, Frunse, Vladivostok, Chiufeng, and Hong Kong), 6h. (near Mizusawa and Tyosi), 7h. (near Wellington), 8h. (Yalta), 10h. (San Juan), 11h. (Wellington and Baku), 14h. (Tiflis), 15h. (near Calcutta), 17h. (near Taihoku), 18h. (Agra, Phu-Lien, and near Calcutta), 19h. (Hong Kong), 20h. (near Taihoku and near Tyosi), 21h. (near Hukuoka), 22h. (Agra).

Jan. 15d. 8h. 43m. 25s. Epicentre 26°·6N. 86°·8E. **N.1.**

Probable error of epicentre ±0°·27.

Geological Survey of India, Vol. LXVIII, pt. 2, pp. 177-239, 1934, gives preliminary account.

A = +·050, B = +·893, C = +·448 ; D = +·998, E = −·056 ;
G = +·025, H = +·447, K = −·894.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta		4·3	161	0 53	− 8	—	—	—	—
Agra		7·8	281	i 1 45	− 6	i 2 45	P_g	—	—
Dehra Dun		8·5	298	1 45	−15	—	—	—	5·6
Bombay		15·0	242	e 3 21	− 7	6 13	− 2	7·1	—
Almata		18·5	337	i 4 15	+ 2	7 11	−25	—	—
Kodaikanal	E.	18·6	210	i 4 11	− 3	8 7?	+29	—	—
Phu-Lien		19·0	104	i 4 22	+ 3	i 8 4	+18	—	—
Frunse		19·1	332	e 4 18	− 2	7 42	− 6	—	—
Tashkent		20·6	320	i 4 30	− 6	—	—	—	—
Colombo		20·9	200	4 40	+ 1	8 35?	+11	—	—
Tchimkent		21·1	322	e 4 51	+10	—	—	—	—
Hong Kong		25·2	94	5 20	− 2	9 51	+ 7	11·1	15·1
Medan		25·7	152	i 5 37	+11	—	—	—	—
Chiufeng		27·7	53	5 46k	+ 2	i 10 33	+ 6	e 13·4	15·6
Nanking		28·2	71	5 50	+ 1	e 10 36	+ 1	i 15·2	18·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tainan		30·5	89	e 6 24	+15	12 12	+60	—	—
Zi-ka-wei	z.	30·5	73	e 6 11	+ 2	12 15	+63	—	17·2
Taityu		30·6	86	e 6 49	+39	11 42	+28	—	—
Takao		30·6	89	e 6 31	+21	12 11	+57	—	—
Arison		30·8	87	i 6 28	+16	i 11 47	+30	—	—
Kôsyun		31·1	90	e 5 34	−41	11 30	+ 9	—	—
Taihoku		31·2	84	6 23	+ 7	i 11 36	+13	16·9	20·2
Taito		31·3	89	6 29	+12	11 50	+26	—	—
Karenko		31·4	86	i 6 35	+18	i 11 50	+24	—	—
Dairen		31·5	58	6 18	0	11 33	+ 5	—	—
Baku		33·3	304	i 6 39	+ 5	—	—	—	—
Isigakizima		33·7	84	6 45	+ 7	12 28	+27	—	—
Manila		34·0	103	6 43a	+ 3	12 8	+ 2	—	19·3
Heizyo		34·7	59	i 6 58	+12	i 12 22	+ 5	14·9	20·8
Zinsen		35·1	62	i 6 49a	− 1	i 12 19	− 4	e 16·6	23·0
Keizyo		35·4	62	6 52	− 1	12 32	+ 5	16·6	21·2
Sverdlovsk		35·5	336	e 6 52	− 1	i 12 30	+ 1	—	—
Soengei Langka		36·6	147	6 41	−22	—	—	—	—
Taikyu		36·6	64	7 4	+ 1	12 52	+ 7	19·4	20·7
Grozny		37·1	308	7 8	+ 1	—	—	—	—
Tiflis	N.	37·4	305	7 6	− 4	i 13 0	+ 3	20·3	—
Erevan		37·4	302	7 15	+ 5	12 49	− 8	e 20·6	—
Nagasaki		37·6	69	e 7 11a	− 1	i 13 9	+ 9	—	24·6
Hukuoka		38·1	68	7 15	− 1	13 19	+11	21·3	24·9
Hukuoka B.		38·1	68	e 7 15	− 1	13 15	+ 7	22·5	22·7
Batavia		38·1	145	i 7 22k	+ 6	—	—	20·1	22·6
Kumamoto		38·3	69	7 18	0	13 19	+ 8	—	—
Kagosima		38·3	72	7 31	+13	13 21	+10	—	—
Miyazaki		39·0	71	7 22	− 2	13 10	−11	—	—
Malabar		39·3	146	7 41	+15	i 13 36	+10	16·7	27·9
Hamada		39·4	66	7 26	− 1	13 33	+ 6	—	—
Hirosima		39·7	67	7 34	+ 5	13 44	+12	—	—
Vladivostok		40·0	54	7 28	− 4	13 24	−12	e 17·6	31·3
Simidu		40·2	69	7 31	− 3	13 34	− 5	—	—
Koti		40·7	68	7 38	0	i 13 54	+ 7	17·6	23·2
Muroto		41·2	69	7 42	0	14 2	+ 8	—	—
Sotchi		41·4	307	8 1	+17	14 15	+18	e 17·6	—
Toyooka		41·7	65	e 7 53	+ 7	14 4	+ 2	17·4	25·7
Sumoto		41·8	66	7 46a	− 1	14 1	− 2	20·6	24·3
Wakayama		42·0	66	7 47	− 2	14 9	+ 3	—	—
Kobe		42·0	65	i 7 48a	− 1	i 14 14	+ 8	e 23·2	26·2
Osaka		42·3	65	7 50	− 1	14 18	+ 8	23·1	27·6
Kyoto		42·3	65	7 52	+ 1	14 14	+ 4	—	—
Yagi		42·3	66	7 53	+ 2	14 15	+ 5	—	—
Siomisaki		42·6	68	7 52	− 1	14 22	+ 7	—	—
Hikone		42·8	65	7 56	+ 1	14 19	+ 1	—	—
Kameyama		43·1	66	7 57	− 1	14 25	+ 3	—	—
Wazima		43·3	62	7 57	− 2	14 22	− 3	—	—
Gihu		43·3	65	7 57	− 2	14 26	+ 1	—	—
Nagoya		43·4	65	e 7 59	− 1	14 36	+ 9	23·0	28·4
Hamamatu		44·0	66	8 6	+ 1	14 47	+11	—	—
Ksara		44·1	291	e 8 8	+ 2	i 14 38	+ 1	20·2	—
Nagano		44·3	63	8 8	+ 1	14 53	+13	—	—
Oiwake		44·6	64	8 9	− 1	14 45	+ 1	—	—
Hunatu		44·8	64	8 4	− 7	14 47	0	—	—
Susaki		45·1	66	e 8 23	+ 9	14 56	+ 4	19·7	28·7
Maebasi		45·1	64	8 17	+ 3	14 53	+ 1	—	—
Kumagaya		45·3	64	8 18	+ 3	14 58	+ 3	—	—
Yalta		45·3	307	e 8 18	+ 3	e 14 57	+ 2	18·4	30·8
Simferopol		45·5	308	8 15	− 2	14 57	0	17·7	31·4

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tokyo (Univ.)		45·6	64	8 29	+11	15 5	+ 6	21·2	29·7
Tokyo (Meteor.)		45·6	64	8 23	+ 5	15 8	+ 9	—	—
Akita		45·8	59	8 34	+15	15 43	+41	—	—
Tukubasan		45·9	65	8 17	− 3	15 2	− 1	—	—
Kakioka		45·9	65	8 18	− 2	15 4	+ 1	—	—
Sebastopol		46·0	307	8 20	− 1	15 3	− 1	—	—
Mito		46·2	65	8 17	− 5	15 7	0	—	—
Aomori		46·3	57	8 29	+ 6	15 27	+18	—	—
Sendai		46·5	61	8 23	− 2	15 18	+ 6	—	—
Morioka		46·6	59	8 30	+ 5	15 27	+14	—	—
Mizusawa		46·6	60	i 8 25	0	i 15 18	+ 5	26·1	—
Tyosi		46·6	64	e 8 27	+ 2	15 24	+11	24·6	31·0
Sapporo		46·8	54	8 27	0	15 12	− 4	—	—
Asahigawa		47·5	53	8 48	+16	15 40	+14	—	—
Urakawa		47·8	55	8 36	+ 1	15 36	+ 6	—	—
Helwan		48·7	287	7 39	−62	14 40	−63	—	—
Kusiro		49·0	55	8 44	0	15 48	+ 1	—	—
Titizima		49·0	75	8 41	− 3	15 47	0	—	—
Palau		49·1	103	9 3	+19	15 56	+ 8	—	—
Amboina		50·2	120	i 8 57	+ 4	i 16 10	+ 6	23·6	30·6
Pulkovo		50·5	327	e 8 54	− 1	i 16 0	− 8	21·6	26·6
Lemberg		52·7	314	e 9 19	+ 7	e 16 44	+ 6	e 29·7	31·5
Helsingfors		53·2	327	i 9 19	+ 4	i 16 42	− 3	e 32·6	—
Belgrade		55·2	307	e 9 31a	+ 1	i 17 13	+ 1	e 28·4	34·3
Upsala		56·8	326	i 9 41	− 1	i 17 29	− 5	—	30·3
Vienna		57·7	312	i 9 49a	+ 1	17 49	+ 3	—	39·1
Zagreb		58·3	309	e 9 46	− 6	i 17 52	− 1	i 29·3	35·6
Graz		58·5	310	e 9 46	− 8	i 18 1	+ 5	e 34·6	36·0
Prague		58·8	314	e 9 55	− 1	i 18 13	+13	e 28·6	33·6
Laibach		59·2	310	i 10 2	+ 3	i 18 5	0	—	35·7
Tananarive		59·3	224	9 59	− 1	18 11	+ 4	28·4	31·6
Copenhagen		59·6	321	i 10 3	+ 1	18 10	− 1	—	—
Triest		59·8	310	e 9 56	− 7	i 18 9	− 4	e 31·6	36·3
Leipzig		60·0	315	e 10 4	0	18 13	− 3	e 27·6	33·6
Cheb		60·1	314	e 10 7	+ 2	e 18 18	+ 1	e 24·6	34·6
Naples	N.	60·3	304	e 10 19	+12	e 18 44	+24	35·6	40·6
Jena	E.	60·5	315	e 10 3	− 5	i 18 19	− 4	e 27·6	38·2
	N.	60·5	315	i 10 9	+ 1	i 18 21	− 2	e 27·6	33·7
	Z.	60·5	315	i 10 9	+ 1	i 18 17	− 6	e 29·6	38·1
Venice		60·8	309	i 10 11	+ 1	i 18 27	+ 1	35·6	—
Hamburg		61·2	319	e 10 14	+ 1	i 18 37	+ 5	e 32·2	32·6
Göttingen		61·5	317	e 10 11	− 4	e 18 26	−10	e 24·6	33·6
Florence		61·9	307	e 10 21	+ 3	i 18 38	− 3	—	—
Prato		62·0	307	i 10 23	+ 5	i 18 38	− 4	—	—
Stuttgart		62·4	313	e 10 14k	− 7	i 18 57	+10	e 31·1	34·6
Chur		62·5	312	e 10 15	− 7	e 18 37	−11	—	—
Feldberg		62·6	315	e 10 22	0	i 18 53	+ 3	—	39·4
Piacenza		62·7	309	9 54	−29	i 18 53	+ 2	i 34·1	42·0
Karlsruhe		62·8	314	10 24	0	18 52	0	e 34·1	35·7
Bergen		62·9	327	10 27	+ 2	19 2	PS	28·6	33·6
Zurich		63·0	312	e 10 19	− 6	e 18 55	0	—	—
Strasbourg		63·4	313	e 10 19	− 9	i 18 49	−11	30·6	37·1
Basle		63·7	312	e 10 30	0	e 19 4	0	—	—
Neuchatel		64·2	312	e 10 26	− 8	e 18 57	−13	—	—
De Bilt		64·3	318	i 10 38	+ 4	19 10	− 1	e 31·6	36·4
Tunis		64·3	299	i 10 35	+ 1	i 18 59	−12	31·6	—
Perth		64·7	152	i 10 42	+ 5	i 19 18	+ 2	31·3	33·7
Uccle		65·1	316	13 27	PP	19 18	− 3	30·6	35·8
Marseilles		66·2	308	9 45	−62	18 27	−68	33·6	—
Paris		66·7	314	e 10 47	− 3	19 35	− 6	23·6	36·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Puy de Dôme		67·1	311	e 10 52	0	i 19 54	+ 8	33·6	—
Durham		67·6	321	11 0	+ 4	19 51	− 1	—	—
Kew		67·7	317	e 10 55	− 1	i 19 52	− 1	e 25·6	37·1
Edinburgh		68·2	322	i 11 7	+ 8	i 20 2	− 3	30·6	36·1
Oxford	E.	68·2	318	i 11 2k	+ 3	19 57	− 2	—	39·6
	N.	68·2	318	i 11 6	+ 7	i 19 52	− 7	—	—
Bidston		68·8	320	i 11 0	− 3	i 20 0	− 7	e 25·6	36·6
Barcelona		69·0	307	e 11 2	− 3	20 4	− 5	33·2	40·0
Algiers		69·8	301	11 2	− 7	20 6	−13	—	—
Bagnères		69·9	309	e 11 15	+ 5	—	—	34·6	—
Tortosa	E.	70·3	306	10 45?	−28	20 3?	−22	—	—
	N.	70·3	306	10 48?	−25	20 0?	−25	e 27·6	41·0
Scoresby Sund		71·0	341	11 26	+ 9	i 20 36	+ 3	—	—
Alicante		71·9	304	e 11 26	+ 4	i 20 42	− 2	35·0	42·0
Almeria		73·9	302	e 11 22	−12	i 20 56	−11	36·9	51·1
Reykjavik		73·9	335	e 11 42	+ 8	e 21 13	+ 6	—	—
Toledo		73·9	307	e 11 28	− 6	i 21 5	− 2	e 35·2	43·1
Granada		74·6	303	i 11 32	− 6	i 21 5	−10	44·6	50·8
Malaga		75·4	303	e 11 38	− 5	i 21 13	−12	35·3	—
Serra do Pilar		76·6	309	11 57	+ 8	21 31	− 7	26·2	—
San Fernando	E.	76·8	304	11 48	− 2	21 36	− 5	—	—
	N.	76·8	304	11 56	+ 6	21 25	−16	—	49·6
Johannesburg		77·4	231	11 53	− 1	21 47	0	40·6	43·6
Adelaide		78·7	138	i 12 6	+ 5	i 21 56	− 6	34·1	42·3
Melbourne		84·4	137	12 35	+ 5	22 59	− 3	39·6	50·6
Ivigtut		85·0	340	i 12 39a	+ 6	23 22	+14	34·6	—
Riverview		85·9	131	e 12 44	+ 6	i 23 7	[+ 1]	34·6	47·6
Sydney		85·9	131	i 12 41	+ 3	i 23 11	− 6	42·6	57·1
Cape Town		88·6	230	12 56	+ 5	23 19	[− 5]	38·6	45·6
Sitka		89·1	21	i 13 4	+11	i 22 45	−62	i 44·6	—
Dakar		95·7	288	13 35?	+11	—	—	—	—
Suva		99·4	105	13 35?	− 6	24 30	[+ 7]	48·6	—
Victoria	N.	100·3	20	e 13 46	+ 1	i 24 24	[− 3]	i 49·2	59·7
Saskatoon		100·4	8	18 6	PP	24 35	[+ 7]	e 46·6	—
Seattle		101·2	19	e 14 19	+30	e 24 35	[+ 3]	e 42·9	—
Honolulu		101·2	59	e 14 15	+26	i 24 38	[+ 6]	e 41·7	—
Halifax		103·8	338	18 29	PP	24 44	[0]	e 51·6	—
New Plymouth		104·8	127	18 35?	PP	—	—	—	—
Christchurch		105·2	132	e 14 13	+ 5	i 24 46	[− 5]	51·8	—
Arapuni		105·2	126	e 19 17	PP	25 2	[+11]	51·1	64·6
Glenmuick		105·3	130	e 20 17	PPP	26 59	PS	e 43·6	—
Wellington		105·8	129	14 5	− 5	26 5	−10	43·9	50·6
Bozeman		105·9	12	e 14 40	+29	e 26 9	− 6	e 47·9	—
Apia		106·2	98	e 18 53	PP	i 25 5	[+ 9]	e 44·7	—
Ottawa		106·3	347	e 17 53	[−13]	24 55	[− 1]	e 49·6	—
Oak Ridge		108·0	343	e 14 36	+15	e 26 11	{+18}	e 44·6	—
Ukiah		108·5	24	e 14 51	+17	i 25 5	[− 1]	46·6	—
Toronto		108·6	350	e 14 33	+ 9	25 7	[0]	52·6	—
Berkeley		110·0	24	e 18 24	[+ 6]	e 27 35	PS	—	—
Fordham		110·2	345	i 19 12	PP	25 14	[0]	56·6	—
Branner		110·4	24	e 18 53	PP	—	—	—	—
Ann Arbor		110·5	353	e 18 29	[+ 9]	i 25 41	[+25]	i 47·7	55·9
Lick	N.	110·7	24	e 18 41	[+21]	—	—	—	—
Pittsburgh		111·8	349	i 19 27	PP	e 25 7	[−14]	—	—
Tinemaha		112·1	21	e 15 17	+36	i 29 3	PS	—	—
Georgetown		112·8	346	e 14 51	+ 7	i 29 18	PS	—	—
Haiwee		113·0	21	e 19 33	PP	i 29 35	PS	—	—
Charlottesville		113·9	347	e 19 15	PP	e 26 33	{− 1}	e 46·5	—
Florissant		114·5	357	e 14 53	0	i 25 26	[− 6]	54·6	62·6
St. Louis	N.	114·7	357	e 18 28	[− 4]	e 25 24	[− 9]	—	—
Pasadena		114·8	22	e 14 53	− 1	i 29 32	PS	e 51·9	—
Mount Wilson		114·8	22	e 15 4	+10	i 29 31	PS	—	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverside		115·2	22	e 18 41	[+ 8]	—	—	—	—
La Jolla		116·3	22	e 18 55	[+19]	e 25 42	+ 4	—	—
Columbia		118·3	349	e 20 8	PP	e 25 21	[−24]	e 47·6	—
Little Rock		118·7	359	e 15 16	+ 3	e 25 38	[− 8]	—	—
Tucson		118·8	17	e 19 12	[+29]	25 47	[+ 1]	52·3	—
San Juan		127·9	327	e 19 27	[+24]	i 31 33	PS	49·3	—
Port au Prince		130·5	333	e 19 22	[+14]	—	—	e 54·4	60·7
La Plata	E.	148·8	247	19 45	[+ 5]	30 18	{+ 2}	69·5	79·2
	N.	148·8	247	19 48	[+ 8]	—	—	61·6	78·0
	Z.	148·8	247	19 51	[+11]	26 41	SKS	68·2	79·6
Sucre		153·3	280	19 55	[+ 9]	26 34	PPP	70·3	—
La Paz		154·7	288	i 19 55	[+ 7]	i 31 10	{+21}	68·6	78·1
Montezuma		157·6	275	—	—	e 41 26	?	e 79·1	—
Huancayo		157·8	307	20 0	[+ 9]	e 30 17	PPPP	i 59·9	—

Additional readings :—
Calcutta P_g = +1m.4s.
Bombay iPN = +3m.27s., PPN = +3m.36s., P = +4m.54s.
Hong Kong ? = +5m.26s.
Medan i = +6m.24s.
Chiufeng iP = +5m.52s. ; T_0 = 8h.43m.22s.
Nanking iPZ = +5m.57s., iSE = +10m.56s., SSN = +11m.45s.
Baku i = +6m.43s.
Manila iN = +8m.30s.
Zinsen iPEZ = +7m.4s., iPP? = +8m.18s., iPPP?E = +9m.21s. = P_cP − 5s., iPPP?Z = +9m.32s., iSZ = +12m.33s.
Soengei Langka i = +9m.15s. = P_cP − 16s. and +15m.5s.
Taikyu PP = +8m.39s. = PPPP + 2s., SS = +15m.15s.
Grozny i = +7m.20s.
Tiflis iN = +7m.12s.
Nagasaki iPP? = +7m.19s., iSP? = +7m.25s., iN = +7m.27s., iPPZ = +8m.36s., iPPPEZ = +8m.53s., SSN = +15m.47s., SSSN = +16m.15s.
Batavia i = +8m.59s. = PPPP + 1.
Malabar i = +9m.18s. = PPPP + 3s., +9m.29s., +9m.40s. = P_cP + 1s., and +17m.38s. = S_cS + 1s.
Koti i = +7m.50s., PP = +9m.23s. = PPP − 5s.
Toyooka P = +7m.58s., eZ = +13m.40s., SN = +14m.11s.
Sumoto iEZ = +9m.46s. = P_cP − 2s., iN = +9m.50s., S?Z = +13m.41s., SN = +14m.11s.
Kobe iEZ = +8m.2s., iZ = +9m.19s., iN = +9m.22s. = PP + 1s., iPPE = +9m.32s., iPPPZ = +9m.50s., iEN = +14m.31s., iE = +14m.49s., eL_gZ = +17m.18s., eL_gN = +17m.24s., iE = +17m.38s. = S_cS − 16s. and +19m.50s.
Osaka PP = +9m.46s. = P_cP − 3s., PPP = +10m.6s., SS = +17m.33s. = SSS − 7s., SSS = +17m.50s. = S_cS − 6s.
Nagoya PP = +9m.51s. = P_cP − 2s., SS = +18m.7s. = S_cS + 5s.
Ksara PPP = +10m.19s.
Susaki PPN = +10m.27s. = PPP + 0s., SSN = +18m.1s. = S_cS − 12s.
Amboina i = +9m.22s. and +18m.32s. = S_cS − 14s.
Lemberg eSE = +16m.41s.
Helsingfors iPP = +11m.26s., iPPP = +11m.58s., iPS = +16m.59s., iS_cSEN = +19m.33s., iSSEN = +20m.36s. ; T_0 = 8h.43m.21s.
Belgrade e = +9m.57s.
Upsala iN = +19m.41s. = S_cS + 11s., iSS = +21m.41s.
Vienna iN = +12m.8s., PP = +12m.27s., iZ = +13m.24s., PPP = +13m.44s., iZ = +15m.18s. and +15m.54s., iE = +16m.48s., S_cS = +19m.43s., iZ = +20m.14s., SS = +22m.4s., SSS = L? = +23m.10s.
Zagreb e = +9m.51s., iZ = +9m.58s., i = +10m.18s., iEN = +11m.32s., iPPNE = +12m.16s., iPPP = +13m.48s. = PPPP + 16s., iNE = +16m.26s., iNW = +17m.12s., iSNW = +17m.58s. = PS + 0s., iPS = +18m.17s., i = +19m.53s. = S_cS + 14s., iNE = +20m.50s., eZ = +22m.15s., iNEZ = +23m.3s., iNE = +24m.1s. = SSSS − 16s., eZ = +25m.23s. and +26m.22s., iEeZ = +29m.20s., eZ = +31m.23s., i = +32m.26s.
Graz ip = +9m.53s., i = +10m.19s., iPP = +12m.26s., iPPP = +13m.47s., iPS = +18m.19s., iS_cS = +20m.11s., iSS = +22m.22s., i = +23m.7s. and +23m.28s., eSSS = +24m.43s.
Prague iP = +10m.1s., iPP = +12m.32s., ePPP = +13m.43s.
Laibach i = +11m.35s., iPP = +12m.33s., iPPP = +13m.40s.
Tananarive i = +10m.5s. and +10m.12s., PP = +12m.21s., E = +12m.32s. and +14m.11s., N = +14m.32s., E = +16m.5s., N = +16m.17s., EN = +17m.11s., SSE = +22m.17s., SSSN = +24m.55s., N = +26m.50s.
Copenhagen i = +10m.8s. and +10m.18s., PPP = +13m.55s., SE = +18m.14s., iE = +18m.54s., eN = +20m.5s., eE = +22m.3s., iN = +22m.28s., eN = +24m.47s.

Continued on next page.

Triest iP = +10m.2s., iPS = +18m.32s., i = +22m.39s., +23m.38s., and +24m.38s.
Leipzig iP = +10m.9s., iPP = +12m.43s., ePPP = +14m.5s., i = +18m.41s., eSS = +22m.35s., eSSS = +23m.53s.
Cheb ePPP = +13m.50s., e = +15m.57s., e = +20m.23s.
Jena iPZ = +10m.12s., iPE = +10m.14s., iPZ = +10m.17s., iPPN = +12m.41s., iPPZ = +12m.45s., iPPP = +14m.8s., iSSE = +22m.8s. and +22m.11s., iSSNZ = +22m.35s., iSSN = +24m.5s., iSSSE = +24m.23s. and +24m.29s.
Venice iS = +18m.9s.
Hamburg ePPE = +13m.4s., ePPPE = +14m.21s.
Göttingen iPE = +10m.14s., ePEZ = +10m.17s., iEZ = +10m.39s., iPPN = +12m.57s., iPPE = +13m.2s., ePPPEN = +14m.3s., eEN = +15m.5s., eSN = +18m.31s., iSEN = +18m.39s. = PS − 4s., eSKSEN = +20m.5s. = S_cS +2s., eSSEN = +22m.39s., eSSSN = +24m.11s.
Florence i = +10m.28s.
Stuttgart ePN = iPEZ = +10m.21s., i = +10m.25s., +10m.50s., and +12m.23s. = PP − 8s., iPPP = +14m.16s., eS = +18m.30s., i = +19m.10s. = PS + 15s., iSKKS = +20m.30s. = S_cS + 21s., i = +21m.4s., iSSS = +25m.35s.
Feldberg i = +10m.43s., e = +13m.5s. = PP − 28s., iE = +14m.23s. = PPP − 5s.
Piacenza iP = +10m.31s., PP = +12m.39s., PPP = +14m.11s., PPPP = +15m.41s., iPS = +19m.15s., iSS = +26m.19s.
Bergen P = +10m.40s., PP = +13m.2s., SS = +23m.18s., e = +25m.55s.
Strasbourg ipPEZ = +10m.52s., isPZ = +11m.23s., iPP = +13m.4s., iPPP = +14m.37s., iPS = +19m.4s., i = +20m.31s. = S_cS + 14s., SS = +23m.14s., SSS = +26m.6s., SSSS = +26m.40s.
Tunis PP = +12m.35s., PPP = +13m.38s., iPS = +19m.35s., iSS = +23m.0s.
Perth eP_cP = +11m.19s., iPP = +13m.25s., PPP = +14m.45s., PPPP = +15m.40s., iPS = +19m.42s., +19m.57s., SS = +24m.7s., SSS = +26m.53s., SSSS = +28m.10s., SSSSS = +29m.21s.
Uccle iPPPE = +14m.54s. = PPPP − 6s., iSSN = +23m.48s., iSSSN = +26m.28s.
Marseilles SS = +22m.24s.
Paris iP = +10m.52s.
Puy de Dôme iPP = +13m.29s., ePPP = +14m.49s., PS? = +20m.10s., SS = +23m.58s.
Kew iPZ = +11m.0s., iPPNZ = +13m.47s., iPPE = +13m.50s., iN = +15m.13s., iE = +15m.25s., iZ = +15m.30s., iN = +18m.25s., iN = +21m.10s. = S_cS +22s., iE = +21m.16s., iN = +23m.12s., iE = +23m.53s. = SS − 14s.
Edinburgh i = +11m.27s. = P_cP + 1s., +14m.0s., +14m.49s. = PPP − 5s., +15m.37s. = PPPP − 2s. and +16m.49s.
Bidston iPP = +13m.30s., i = +15m.40s. = PPPP − 7s., +18m.5s., +21m.15s. = S_cS + 19s. and +24m.50s. = SS + 26s.; T_o = 8h.43m.36s.
Barcelona PP = +14m.43s. = PPP − 19s.
Algiers PP = +14m.9s., SS = +25m.2s., SSS = +28m.20s.
Bagnères e? = +11m.30s. = P_cP − 3s., SS? = +24m.42s.
Scoresby Sund P = +11m.34s., PP = +13m.59s., PPP = +15m.52s., eE = +17m.17s., iPSN = +21m.3s., iPSE = +21m.47s., SS = +25m.35s., SSSN = +28m.35s., SSSE = +28m.53s.
Alicante iP = +11m.42s., PP = +14m.32s., PPP = +15m.56s.
Almeria iP = +11m.30s., PP = +14m.22s., PPP = +15m.58s.
Reykjavik PS = +21m.37s.
Toledo iP = +11m.34s.
Granada P_cP = +11m.54s., PP = +14m.35s.
Malaga PP? = +14m.41s., PS = +21m.37s., e = +21m.48s., SS = +25m.49s., SSS = +29m.23s.
San Fernando SE = +21m.45s.
Johannesburg +14m.17s., PP = +14m.53s., PPP = +16m.41s., +24m.29s., +25m.11s., SS = +27m.5s., SSS = +30m.35s., +33m.17s.
Adelaide i = +12m.17s., +22m.10s. and +22m.40s. = PS + 8s., iSS = +26m.41s., iSSS = +30m.25s., i = +33m.1s.
Melbourne i = +12m.49s., SS = +28m.48s., SSS = +32m.37s.
Ivigtut eZ = +13m.27s., PP = +16m.5s., SKS = +23m.2s., iSS = +28m.54s.
Riverview iSN = +23m.10s., iN = +23m.22s.
Sydney SS = +29m.5s., SSS = +35m.47s.
Cape Town pP? = +13m.12s., PP = +16m.46s., PS = +24m.9s., +25m.4s., SS = +29m.54s., +36m.29s.
Sitka iPP = +16m.18s., PPP = +20m.3s., ePS = +24m.55s., SSS = +33m.35s.
Suva PP? = +17m.59s., PS = +27m.35s. ?
Saskatoon PPPN = +20m.19s., SE? = +25m.23s., SSE = +32m.20s., SSSE = +37m.35s.
Seattle ePP = +17m.7s., ePPP = +20m.29s., ePS = +27m.16s., eSS = +32m.9s.
Honolulu PP = +18m.5s., ePP = +20m.26s., ePS = +24m.30s. = SKS − 2s., iPS = +27m.0s., eSS = +33m.4s.
Halifax PSE = +27m.50s., SS = +33m.20s., SSSE = +40m.59s.
Christchurch iPP = +18m.36s., iPPP = +21m.1s., iPPPP = +22m.58s., PPPPP = +24m.8s., iSKKSEN = +25m.49s., iPS = +27m.54s., SSZ = +34m.12s., SSS = +39m.21s., SSSSEN = +43m.7s., SSSSSEN = +45m.5s.
Arapuni PS = +28m.11s., SS = +33m.50s., SSS = +39m.15s., SSSS = +41m.59s.

Continued on next page.

Glenmuick ePP = +20m.47s. =PPP +17s., ePPP = +24m.11s., e = +24m.35s. = SKS −16s., +32m.53s., and +35m.17s.
Wellington PKP? = +17m.55s., PP = +18m.39s., PPP = +21m.12s., SKS = +24m.46s., PS = +28m.1s., SS = +33m.30s., SSS = +38m.21s., SSSS = +41m.22s.
Bozeman ePKP = +18m.17s., ePP = +18m.44s., iPPP = +21m.16s., eSKS = +25m.18s., PS = +28m.4s., eSS = +33m.58s., eSSS = +38m.5s.
Apia e? = +24m.8s., iPS = +28m.6s., i? = +28m.58s., eSS = +33m.37s., iSSS = +38m.5s. ; T_0 = 8h.43m.16s.
Ottawa PP = +18m.46s., iE = +26m.31s. =S +16s., PSN = +27m.46s., PPPS = +29m.7s., SS = +33m.59s., i = +36m.45s., SSS = +38m.39s., SSSS = +41m.11s., i = +44m.1s., e = +45m.55s.
Oak Ridge iPKPZ = +17m.32s., eNE = +17m.43s., iPPZ = +18m.52s., ePPZ = +18m.55s., iPPNE +18m.59s., iZ = +20m.24s., ePPPZ = +21m.17s., ePPPNE = +21m.27s., eSKSNE = +24m.39s., eSNE = +26m.35s., PS = +28m.36s., ePPSZ = +29m.35s., e = +33m.47s., eSSNE = +33m.51s., eSSZ = +34m.7s., eZ = +34m.47s., eSSSNE = +38m.5s., eSSZ = +38m.55s., eNE = +40m.47s.
Ukiah ePKP = +18m.31s., iPP = +19m.19s., iPPP = +21m.37s., iPS = +28m.27s., iSSS = +38m.35s.
Toronto PKP = +17m.48s., iPP = +19m.3s., iPPP = +21m.12s., S? = +27m.10s., PS = +28m.33s., SS = +34m.33s. ; T_0 = 8h.43m.20s.
Berkeley eZ = +18m.30s., iN = +18m.44s. =PP −13s., iZ = +18m.49s., iE = +19m.29s., eE = +20m.15s.
Fordham iPPPN = +21m.40s., iPSN = +28m.44s., iSSEN = +34m.35s.
Branner eN = +18m.59s. =PP −1s. and +19m.19s., eE = +19m.28s., eN = +19m.32s., eE = +19m.35s., eEN = +19m.43s., eN = +20m.25s.
Ann Arbor eP = +19m.17s., iS = +27m.11s., iPS = +29m.5s., iSS = +35m.11s., iSSS = +39m.23s. ; T_0 = 8h.43m.48s.
Pittsburgh eS = +27m.16s., ePS = +28m.45s., eSS = +34m.18s.
Tinemaha iPPE = +19m.31s.
Georgetown eZ = +14m.1s., ePKPZ = +17m.50s., iPPNZ = +19m.33s.
Charlottesville ePPP = +22m.18s., eSKS = +25m.23s., ePS = +29m.23s., eSS = +35m.31s., eSSS = +39m.15s.
Florissant iPKPZ = +18m.28s., iPPZ = +19m.25s., iSKKS = +26m.28s., iS = +27m.28s., iPS = +29m.16s., iSS = +35m.40s., iSSS = +39m.45s.
St. Louis ePPN = +19m.31s., eSKSE = +25m.29s., eSKKSEN = +26m.40s., iSE = +27m.21s., iE = +27m.43s., iPSN = +29m.27s., iPSE = +29m.31s., iPPSN = +30m.31s., eSSE = +35m.37s., eSSSE = +39m.36s., eE = +50m.55s. ; T_0 = 8h.43m.16s.
Pasadena eZ = +15m.7s., iPKPZ = +18m.35s., iPPEZ = +19m.43s., iPPPZ = +22m.12s., iPKKPZ = +29m.22s., iSKSPZ = +29m.56s., iPPSNZ = +39m.56s., eSSN = +35m.5s., eSSSN = +40m.5s.
Mount Wilson iPKPZ = +18m.35s., iPP = +19m.49s., iPKKPZ = +29m.25s.
Riverside iPPNZ = +19m.50s., iPKKPZ = +29m.21s. =PS +3s.
La Jolla iPPN = +20m.0s., eSN = +29m.29s., ePSN = +29m.46s.
Columbia iPP = +20m.12s., ePPP = +22m.55s., eS = +27m.54s., ePS = +29m.59s., iPS = +30m.11s., eSS = +36m.15s. and +36m.44s., eSSS = +40m.11s. and +40m.15s.
Little Rock ePKPN = +18m.44s., iPPN = +20m.8s., eSKP = +21m.36s., ePPPN = +22m.46s., ePSN = +30m.5s., iPPSN = +31m.17s.
Tucson iPP = +20m.13s., ePPP = +22m.47s., S = +26m.53s. =SKKS −15s., PS = +29m.57s., ePS = +31m.25s., SS = +36m.39s.
San Juan ePP = +21m.14s., ePPP = +24m.9s., iSS = +38m.11s.
Port au Prince PP = +22m.22s., SKP = +22m.49s., PPP = +25m.31s., PPS = +34m.32s.
La Plata PKPN = +20m.0s., PKPEZ = +20m.3s., PP?Z = +23m.23s., PP?N = +23m.29s., PKSE = +23m.46s., e?N = +27m.45s., SKKS?Z = +30m.59s., N = +32m.5s., SKSPZ = +33m.47s., SKSPE = +33m.55s., PPSZ = +36m.11s., PPSE = +36m.40s., PPSN = +36m.47s., E = +39m.32s., SSN = +42m.29s., SSE = +42m.37s., SSZ = +42m.41s., SSSEN = +47m.47s., N = +49m.5s., and +52m.5s., E = +52m.23s.
La Paz iN = +20m.1s., iPKP$_2$ = +20m.16s., ipP = +21m.10s., iPP = +24m.3s., SKS = +27m.3s., iPPP = +27m.38s., PSKS = +34m.36s., PPS = +37m.21s., i = +39m.23s., SS = +43m.21s., SSS = +49m.25s., SSSS = +53m.23s., L_0 = +62·6m.
Montezuma e = +46m.46s.
Huancayo PP = +24m.20s., iPP = +27m.41s., iPS = +34m.35s. =SKSP +5s., iPPS = +37m.47s., iSS = +43m.57s.
Long waves were recorded at Balboa Heights and Denver.

Jan. 15d. Readings also at 1h. (near Lick and near La Paz), 4h. (Mizusawa and near Taihoku), 7h. (Budapest), 11h. (Almata, Frunse, Tchimkent, and Tiflis), 13h. (near Ksara), 14h. (Tiflis, Calcutta (2) and near Agra (2)), 15h. (Florence, Calcutta (3) and near Agra (4)), 16h. (Agra (2) and near Mizusawa), 17h. (Agra, Calcutta, La Paz, Mount Wilson, Pasadena, and Tinemaha), 18h. (Calcutta, Tyosi, and Agra), 19h. (Agra and Calcutta),20h. (Calcutta (2), near Agra (2), and near Mizusawa), 21h. (Calcutta (2), near Agra (2), and near Manila), 22h. (Agra and Calcutta), 23h. (Agra).

Jan. 16d. 4h. 59m. 22s. Epicentre 28°·0N. 86°·0E. N.3.

$A = +·062$, $B = +·881$, $C = +·469$; $D = +·998$, $E = -·070$; $G = +·033$, $H = +·468$, $K = -·883$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta		5·9	158	1 24	0	2 6	P_g	2·5	2·6
Agra	E.	7·0	266	i 1 33	− 6	—	—	—	—
Hyderabad		12·6	215	4 48	?	5 43	S*	5·8	6·4
Bombay		15·1	236	e 3 7	−23	e 5 41	−36	e 6·4	7·5
Almata		16·9	337	5 2	+69	i 8 28	L	(i 8·5)	—
Frunse		17·6	331	e 4 2	0	e 7 25	+10	—	—
Tashkent		19·1	319	4 21	+ 1	7 44	− 4	e 9·8	11·0
Kodaikanal	E.	19·5	206	—	—	7 13	−43	9·2	—
Tchimkent		19·6	322	4 46	+21	e 8 21	+23	—	—
Hong Kong		26·1	96	9 55	S	(9 55)	− 5	(14·1)	16·4
Chiufeng		27·6	56	—	—	e 10 22	− 3	—	15·8
Baku		32·0	303	—	—	e 11 45	+10	30·1	32·9
Sverdlovsk		34·0	336	e 6 50	+10	e 12 12	+ 6	17·6	—
Tiflis		36·1	304	6 57	− 2	—	—	e 28·2	—
Florence		60·5	308	e 5 36	?	—	—	—	—

Additional readings and note :—
Agra eN = +1m.43s.
Bombay SS = +6m.4s.
Tashkent i = +5m.27s., e = +7m.47s.
Hong Kong gives S as P and L as S.
Baku e = +19m.31s., +22m.16s., and +24m.48s.
Long waves were also recorded at Copenhagen, De Bilt, and San Fernando.

Jan. 16d. 18h. 39m. 48s. Epicentre 6°·1N. 124°·8E. N.2.

$A = -·567$, $B = +·816$, $C = +·106$; $D = +·821$, $E = +·571$; $G = -·061$, $H = +·087$, $K = -·994$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		9·3	336	i 2 14	+ 3	4 42	S*	—	—
Palau		9·7	82	2 27	+10	5 5	S_g	—	—
Amboina		10·3	161	i 2 21	− 4	—	—	—	—
Hong Kong		19·2	329	4 18	− 3	8 9	+19	—	12·1
Batavia		21·7	236	4 52	+ 4	i 8 59	+19	—	—
Nake		22·7	11	4 56	− 2	9 2	+ 3	—	—
Phu-Lien		23·0	311	e 5 1	0	e 9 18	+13	10·2	—
Zi-ka-wei	Z.	25·3	353	5 22	− 1	9 36	−10	i 12·9	—
Medan		26·1	266	i 5 34	+ 4	i 10 8	+ 8	—	—
Nanking	Z.	26·6	349	e 5 36k	+ 1	10 34	+25	15·2	—
Miyazaki		26·6	13	5 35	0	9 42	−27	—	—
Nagasaki		27·1	10	e 5 42	+ 3	e 10 21	+ 4	—	—
Hukuoka B.		28·0	10	—	—	(e 10 36)	+ 4	e 10·6	—
Koti		28·6	15	—	—	e 10 20	−22	—	—
Hatidyozima		30·4	25	5 41	−28	—	—	—	—
Chiufeng		34·9	349	6 46k	− 2	i 12 16	− 4	e 15·9	—
Sendai		35·3	24	6 51	− 1	12 21	− 5	—	—
Mizusawa		36·2	21	e 6 58	− 2	i 10 44	?	—	—
Vladivostok		37·5	10	i 7 13	+ 2	13 1	+ 2	18·2	—
Calcutta		38·7	299	6 8	−73	12 20	−57	—	28·6
Sapporo		39·8	20	7 19	−11	—	—	—	—
Adelaide		43·0	163	i 7 55	− 2	i 14 19	− 2	—	—
Hyderabad		46·6	289	8 33	+ 8	15 33	+20	25·6	34·9
Kodaikanal	E.	47·0	278	(i 8 30)	+ 1	(15 20)	+ 1	—	—
Riverview		47·1	150	e 8 30	+ 1	e 18 49	SS	—	36·2
Sydney		47·1	150	—	—	e 14 54	−26	18·9	19·7
Melbourne		47·7	159	i 8 35	+ 1	i 15 32	+ 3	27·2	—
Agra	E.	49·1	301	8 41	− 3	i 15 48	0	23·4	—
Bombay		52·1	289	9 6	− 1	16 28	− 2	26·4	37·4
Almata		56·0	320	e 10 37	+61	—	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Frunse	57·4	318	e 9 47	+ 1	—	—	—	—
Tashkent	60·5	315	i 10 4	− 4	i 18 24	+ 1	32·6	38·0
Tchimkent	60·6	316	e 10 38	+29	—	—	—	—
Wellington	65·7	142	—	—	e 17 12?	?	—	—
Sverdlovsk	70·9	329	i 11 15	− 1	i 20 30	− 2	34·2	41·5
Baku	74·6	311	e 11 36	− 2	i 21 18	+ 3	39·2	46·1
Grozny	77·8	313	e 11 59	+ 2	—	—	—	—
Tiflis	78·5	313	e 11 58	− 2	21 57	− 2	e 32·8	—
Erevan	78·6	310	e 12 6	+ 6	—	—	—	—
Sotchi	82·2	313	e 12 24	+ 5	—	—	—	—
Theodosia	85·2	316	e 12 35	+ 1	23 11	+ 1	—	—
Ksara	85·7	303	e 13 28	+51	e 22 13	− 2	—	—
Yalta	86·1	315	e 12 39	0	23 18	0	—	—
Simferopol	86·2	316	e 12 37	− 2	—	—	—	—
Sebastopol	86·6	315	e 12 41	0	—	—	—	—
Pulkovo	87·0	330	e 12 38	− 5	e 23 5	[− 8]	48·2	53·0
Helsingfors	90·5	332	—	—	e 23 18	[−18]	e 42·2	—
Copenhagen	97·3	329	17 32	PP	24 9	[− 4]	50·2	—
Cheb	99·3	323	—	—	e 24 15	[− 7]	e 51·2	56·2
Triest	100·1	318	i 14 0	+16	e 24 16	[−10]	e 48·2	—
Stuttgart	101·8	323	—	—	e 27 12?	PS	e 54·2	—
Florence	102·4	319	e 21 57	?	—	—	e 55·2	64·2
Strasbourg	102·7	324	e 22 12?	?	e 25 12?	−38	e 50·2	—
Paris	105·7	325	e 29 12?	?	—	—	61·2	—
Ottawa	125·4	18	—	—	e 37 42	SS	e 58·2	—
La Paz	163·6	130	e 20 7	[+ 9]	31 30	{− 8}	—	—

Additional readings and note :—
Amboina i = +15m.19s.
Hong Kong ? = +8m.1s.
Zi-ka-wei iZ = +5m.27s.
Chiufeng i = +8m.6s. =PPP −4s., eSN = +12m.20s., iSN = +12m.26s.
Mizusawa ePE = +7m.2s.
Calcutta SS = +14m.6s.
Adelaide i = +14m.27s., e = +17m.25s. =SS +13s.
Kodaikanal PPE =(+10m.17s.?); readings have been *increased* by 10m.
Melbourne iSS? = +19m.2s.
Agra PPE = +10m.31s., PPPE = +11m.21s., PSE = +16m.27s.
Tiflis ePPE = +14m.59s., ePPPE = +16m.36s., eSSE = +27m.12s.
Ksara e = +24m.28s.
Pulkovo ePP = +16m.8s., ePS = +24m.20s.
Helsingfors eSKKSEN = +23m.42s., eSEN = +23m.49s., ePSEN = +24m.53s., ePPSN = +25m.37s., eSSEN = +29m.38s., eSSSN = +35m.17s.
Triest i = +25m.17s. =S −10s. and +26m.46s. =PS +0s., e = +31m.57s. = SS −6s.
Strasbourg e = +28m.12s.?
La Paz SKSP = +35m.39s., SS = +44m.25s.
Long waves were also recorded at Oak Ridge, Scoresby Sund, and at other European stations.

Jan. 16d. 23h. 20m. 20s. Epicentre 36°·5N. 70°·5E. (as on 1933 Jan. 20d.). X.

A = +·268, B = +·758, C = +·595; D = +·943, E = −·334; G = +·199, H = +·561, K = −·804.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent		4·9	350	i 1 13	+ 3	i 2 10	+ 5	2·3	2·6
Tchimkent		5·8	353	i 1 51	P_g	—	—	i 3·0	3·0
Almata		8·4	34	e 2 59	P_g	4 30	S_g	4·6	—
Agra	E.	11·3	143	e 2 28	−11	—	—	—	—
Grozny		20·1	298	e 4 34	+ 3	—	—	—	—
Tiflis		20·5	293	4 35	0	e 8 11	− 5	—	—
Sverdlovsk		21·4	345	e 4 38	− 6	e 8 18	−16	—	—

Long waves were also recorded at Baku.

Jan. 16d. Readings also at 0h. and 2h. (Agra), 3h. (Almata, Agra (2), and Calcutta), 4h. (Agra, Cape Town, Mount Wilson, Pasadena, Riverside, Tinemaha, La Paz, Tyosi, and near Nagasaki), 5h. (Agra, Sverdlovsk, Tashkent, and Port au Prince), 6h. (Apia), 8h. (near Grozny), 9h. (Erevan, Haiwee, Mount Wilson, Pasadena, Riverside, and Tinemaha), 10h. (near Berkeley, Branner (2), and Lick (2)), 11h. (near Malabar), 12h. (near Sumoto (2)), 14h. (Calcutta and near Santiago), 16h. (near Calcutta), 19h. (Florence and Tiflis), 23h. (Hong Kong and Manila).

Jan. 17d. 2h. A shock in the South Pacific, probably of deep seated origin, for which the observations are :—

New Plymouth P = 2h.10m.44s., S = 12m.22s.
Wellington P = 2h.10m.58s., S = 12m.50s.
Apia i = 2h.12m.37s., 15m.37s., and 3h.2m.27s.
Christchurch 2h.13m.
Hastings 2h.13m.
Santa Barbara iPZ = 2h.20m.39s.k
La Jolla iP = 2h.20m.40s.k
Pasadena iP = 2h.20m.42s.k
Mount Wilson iP = 2h.20m.43s.k
Riverside iP = 2h.20m.44s.k
Haiwee iP = 2h.20m.48s.
Tinemaha iPZ = 2h.20m.51s., eNZ = 31m.13s.
Tiflis PN = 2h.27m.18s.
Grozny e = 2h.27m.20s.
Pulkovo i = 2h.27m.24s.
Sverdlovsk iP = 2h.27m.32s., i = 29m.49s., L = 3h.0m.
Sotchi e = 2h.27m.36s.
Theodosia eP = 2h.27m.39s.
Yalta eP = 2h.27m.40s.
Simferopol eP = 2h.27m.41s.
Sebastopol eP = 2h.27m.42s.

Jan. 17d. 8h. 22m. 48s. Epicentre 43°·0N. 48°·0E. N.3.

A = +·489, B = +·544, C = +·682 ; D = +·743, E = −·669 ;
G = +·456, H = +·507, K = −·731.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Grozny		1·7	281	e 0 38	P_g	0 53	S_g	—	—
Tiflis		2·7	242	i 0 33	− 6	e 1 9	0	—	—
Baku		3·0	152	i 0 1	?	—	—	0·4	—
Erevan		3·9	224	e 0 47	− 9	1 17	P_g	—	2·2
Sotchi		6·1	278	e 1 39	P*	e 3 12	S_g	—	—
Theodosia		9·3	287	e 2 16	+ 5	—	—	—	—
Yalta		10·1	283	e 2 25	+ 3	4 57	S*	e 10·6	—
Simferopol		10·2	285	e 2 27	+ 3	i 5 1	S*	—	—
Sebastopol		10·6	284	e 2 32	+ 3	i 5 8	S*	—	—
Ksara		13·2	230	2 47	−18	5 17	−15	—	—
Tchimkent		15·8	85	3 28	−11	6 8	−26	e 7·3	—
Tashkent		15·8	89	2 59	−40	i 5 27	−67	7·3	8·6
Sverdlovsk		16·0	26	i 3 26	−15	i 6 22	−16	9·4	—
Frunse		19·3	81	3 48	−34	—	—	—	—
Pulkovo		20·0	333	5 24	?	e 9 29	?	11·7	12·1
Almata		21·0	79	4 10	−30	e 8 20	− 6	—	—
Helsingfors		22·1	329	e 4 49	− 3	e 8 58	+10	e 9·7	—
Vienna	z.	22·6	294	e 4 51	− 6	—	—	—	—
Chur		27·3	292	e 5 33	− 8	—	—	—	—
Stuttgart		27·4	296	e 5 53	+11	—	—	—	—
Zurich		27·9	293	e 5 39	− 7	—	—	—	—
Neuchatel		29·0	292	e 5 49	− 7	—	—	—	—

Additional readings :—
Grozny ePP = +42s. = S − 2s.
Tiflis eEN = +49s. = P_g + 1s., eE = +1m.54s.
Erevan eP_g = +51s., iPP = +55s., ePP = +59s., S_g = +1m.21s.
Sverdlovsk iL_q = +7m.48s.
Frunse e = +4m.29s. = PP − 3s.
Helsingfors ePP = +5m.6s., ePPP = +5m.13s., e?EN = +5m.24s., eP_cPEN = +9m.10s. = SS − 9s., eSSEN = +9m.16s., eSSSEN = +9m.29s.
Long waves were also recorded at Chiufeng and Vladivostok.

Jan. 17d. Readings also at 2h. (Calcutta), 3h. (Calcutta (3), Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, and near Santiago), 5h. (near Almata, Frunse, Tchimkent, and Tashkent), 6h. (Agra and Calcutta), 7h. (Agra, Calcutta, Almata, Tchimkent, Frunse, near Berkeley, Branner, and Lick), 8h. (Calcutta and near Tiflis), 9h. (Mizusawa), 13h. (Sumoto), 14h. (near La Paz), 15h. (Wellington), 17h. (near Tyosi (2)), 18h. (Calcutta, Hastings, Tyosi, near Agra, near Batavia, and Malabar), 19h. (Calcutta, Agra, and Sumoto), 20h. (Sverdlovsk, Tashkent, Agra, Calcutta (2), Hong Kong, and Phu-Lien), 21h., 22h., and 23h. (Calcutta).

Jan. 18d. 3h. 21m. 0s. Epicentre 22°·0S. 180°·0 (as on 1922 March 10d.). X.

A = −·927, B = ·000, C = −·375; D = ·000, E = +1·000;
G = +·375, H = ·000, K = −·927.

A *depth* of focus 0·090 has been assumed.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	°	m. s.	s.	m. s.	s.	m.
Suva		+ 1·7	4·2	339	0 51	−33	1 57	−34	—
Apia		− 1·4	11·3	45	i 2 21	+ 2	(i 4 8)	− 3	i 4·1
Wellington		− 3·6	19·8	191	—	—	e 7 0	+17	—
Santa Barbara		−10·0	80·4	47	i 11 12k	− 1	—	—	—
Branner		−10·0	80·6	42	e 11 17	+ 3	—	—	—
Berkeley		−10·0	80·7	42	i 11 14	− 1	—	—	—
Lick		−10·1	80·9	43	e 11 16	0	—	—	—
La Jolla		−10·1	81·2	49	i 11 18	+ 1	—	—	—
Pasadena		−10·1	81·3	48	i 11 17k	− 1	i 20 35	0	—
Mount Wilson		−10·1	81·4	48	i 11 18k	− 1	—	—	—
Riverside		−10·1	81·7	48	i 11 19k	− 1	—	—	—
Haiwee		−10·2	82·5	46	i 11 24	− 1	e 20 49	+ 1	—
Tinemaha		−10·2	82·9	45	i 11 25	− 2	i 20 52	− 1	—
Theodosia		—	143·1	317	e 18 37	[−50]	—	—	—
Simferopol		—	143·9	318	e 18 40	[−51]	—	—	—
Yalta		—	144·1	317	e 18 41	[−50]	—	—	—
Sebastopol		—	144·4	318	e 18 41	[−51]	—	—	—
Ksara		—	146·4	297	e 18 52	[−44]	—	—	—
Vienna	Z.	—	150·7	337	e 18 49	[−54]	—	—	—
Zagreb		—	152·9	335	e 18 54	[−52]	—	—	—
Zurich		—	153·7	347	e 19 0?	[−47]	—	—	—
Chur		—	154·0	345	e 18 55	[−52]	—	—	—
Neuchatel		—	154·4	349	e 18 55	[−52]	—	—	—

Additional readings:—
Santa Barbara eZ = +13m.16s. = PP − 26s.
Berkeley eE = +11m.29s.
Pasadena eZ = +11m.59s. and +13m.19s. = PP − 30s.
Riverside eZ = +13m.24s. = PP − 18s.
Tinemaha iZ = +13m.30s. = PP − 32s.
Ksara e = +20m.17s.
Chur e = +19m.17s.
Neuchatel e = +19m.19s.

Jan. 18d. 15h. 47m. 31s. Epicentre 38°·8N. 71°·2E. (as on 1933 April 30d.). X.

A = +·251, B = +·738, C = +·627; D = +·947, E = −·322;
G = +·202, H = +·593, K = −·779.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent		2·9	330	i 0 40	− 1	(i 1 10)	− 4	i 1·2	1·9
Tchimkent		3·7	341	i 1 21	P_g	i 1 41	+ 6	i 2·2	—
Frunse		4·8	31	i 1 5	− 3	e 2 2	− 1	e 2·3	2·4
Almata		6·2	42	1 31	+ 3	i 3 4	S*	—	3·1
Agra	E.	13·0	152	—	—	e 5 18	− 9	—	—
Baku		16·5	283	—	—	e 7 37	?	9·5	—
Sverdlovsk		19·3	342	e 4 10	−12	—	—	e 9·8	—
Grozny		19·7	291	e 4 29	+ 3	—	—	—	—
Tiflis	N.	20·3	287	4 33	0	e 8 26	+14	—	—
Calcutta		21·9	133	8 59	S	(8 59)	+15	—	—

Frunse gives also e = +1m.13s. = P* − 6s.

Jan. 18d. Readings also at 1h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, and Mizusawa), 2h. (Baku, Sverdlovsk, Vladivostok, Mizusawa, near Nagoya, and Tyosi), 4h. (Calcutta), 5h. (Erevan and Grozny), 8h. (Mizusawa and near Malabar), 10h. (Arapuni, Christchurch, Wellington, Suva, Riverview, Sydney, Perth, Mount Wilson, Pasadena, Riverside, and Tinemaha), 11h. (Calcutta and Sverdlovsk), 12h. (Baku and San Fernando), 13h. (Calcutta), 15h. (Almata, Frunse, and Tchimkent), 16h. (near Almata, Frunse, and Tchimkent), 19h. (near Göttingen), 23h. (Tiflis).

Jan. 19d. 9h. 55m. 49s. Epicentre 22°·3N. 109°·2W. N.3.

$A = -\cdot304$, $B = -\cdot874$, $C = +\cdot379$; $D = -\cdot944$, $E = +\cdot329$; $G = -\cdot125$, $H = -\cdot358$, $K = -\cdot925$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		10·1	352	e 2 19	− 3	i 4 29	+13	i 5·3	—
La Jolla		12·8	328	e 2 57	− 2	—	—	—	—
Riverside	Z.	13·8	330	e 3 12	− 1	—	—	—	—
Mount Wilson		14·2	329	e 3 17	− 1	—	—	—	—
Pasadena		14·2	328	i 3 17k	− 1	(e 5 56)	0	e 5·9	—
Santa Barbara	Z.	15·3	325	e 3 34	+ 2	—	—	—	—
Haiwee		15·8	333	i 3 41	+ 2	—	—	—	—
Tinemaha		16·8	334	e 3 51	− 1	—	—	—	—
Branner		18·9	326	e 4 23	+ 6	—	—	—	—
Little Rock	N.	19·1	46	e 4 22	+ 2	—	—	e 9·7	11·3
Berkeley		19·2	327	e 4 22	+ 1	e 7 55	+ 5	—	—
Ukiah		20·7	328	—	—	e 8 17	− 3	—	—
St. Louis		23·0	40	e 5 1	0	e 9 1	− 4	e 11·0	11·8
Florissant		23·1	40	e 5 0	− 2	i 9 5	− 2	e 10·8	13·4
Bozeman		23·4	357	—	—	e 9 17	+ 5	e 12·8	—
Chicago		26·7	38	—	—	e 10 2	− 8	i 13·4	—
Columbia		27·3	58	—	—	e 10 31	+11	e 15·4	—
Victoria	E.	28·5	340	e 10 59	S	(e 10 59)	+19	e 14·6	16·6
Toronto		32·6	43	—	—	e 12 19	+34	16·2	—
Fordham		35·0	51	e 6 58	+ 9	e 14 19	SS	e 17·2	—
Ottawa		35·7	43	—	—	e 12 29	− 3	e 16·2	—
Oak Ridge		37·2	48	i 7 12	+ 4	e 12 41	−13	e 18·5	—
San Juan		40·4	87	e 9 22	PPP	e 14 0	+18	e 19·8	—
Sverdlovsk		100·5	6	—	—	e 32 25	SS	46·2	—

Additional readings:—
Tucson i = +4m.44s. and +4m.59s. = S* +1s.
Little Rock ePPN = +4m.45s.
Berkeley iZ = +4m.24s. = PP − 7s., and +4m.29s. = PPP − 4s.
St. Louis iSE = +9m.6s.; T_o = 9h.55m.57s.
Chicago e = +12m.32s.
Fordham eN = +15m.15s.
Oak Ridge iZ = +7m.18s.
Long waves were also recorded at Ivigtut, Scoresby Sund, Baku, Tashkent, and other American and European stations.

Jan. 19d. 12h. 33m. 14s. Epicentre 25°·5N. 98°·5E. (as on 1932 Jan. 3d.). R.2.

$A = -\cdot133$, $B = +\cdot893$, $C = +\cdot431$; $D = +\cdot989$, $E = +\cdot148$; $G = -\cdot064$, $H = +\cdot426$, $K = -\cdot903$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Phu-Lien		8·9	120	e 2 6	0	e 3 45	− 1	4·7	—
Calcutta		9·7	254	2 35	+18	4 14	+ 8	5·0	8·5
Hong Kong		14·7	99	3 21	− 4	6 28	+20	7·6	8·3
Agra		18·4	280	i 4 5	− 6	e 7 15	−18	—	—
Nanking	Z.	19·0	65	i 4 20a	+ 1	8 0	+14	i 10·3	11·6
Hyderabad		20·3	251	4 37	+ 4	8 27	+15	10·7	14·2
Chiufeng		20·7	41	i 4 35k	− 2	e 8 26	+ 6	11·0	12·8
Zi-ka-wei	Z.	21·0	69	e 4 42	+ 2	8 39	+13	—	13·0
Medan		21·9	179	i 4 55	+ 5	10 32	L	(10·5)	—
Manila		23·7	113	e 5 12	+ 5	9 43	+25	12·6	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bombay		24·6	260	i 5 20	+ 4	i 9 34	0	—	14·4
Almata		24·9	321	e 5 24	+ 5	9 51	+12	—	—
Frunse		26·2	318	e 5 29	− 2	e 10 4	+ 2	—	—
Zinsen		26·7	56	e 10 10	S	(e 10 10)	0	14·2	—
Keizyo		27·0	57	e 10 35	S	(e 10 35)	+20	e 14·8	—
Taikyu		27·8	61	e 10 22	S	(e 10 22)	− 6	e 15·2	—
Tashkent		28·8	311	5 49	− 5	10 38	− 7	16·2	19·6
Vladivostok		32·4	48	e 6 28	+ 2	e 11 47	+ 6	—	18·7
Batavia		32·8	165	—	—	e 11 10	−38	e 18·2	—
Mizusawa	E.	38·1	58	(e 7 19)	+ 3	e 7 19	P	—	—
Sverdlovsk		41·4	330	e 7 43	− 1	i 13 58	+ 1	i 21·0	23·4
Baku		42·8	304	e 9 56	(+ 5)	e 14 21	+ 3	23·1	32·3
Grozny		46·1	307	e 8 20	− 1	—	—	—	—
Tiflis		46·7	305	e 8 28	+ 2	e 15 14	0	e 24·4	30·7
Sotchi		50·5	307	e 8 18	−37	—	—	—	—
Theodosia		53·6	310	e 9 17	− 1	e 16 49	− 1	—	—
Ksara		54·2	295	e 9 16	− 7	17 4	+ 6	—	—
Yalta		54·5	310	—	—	e 17 3	+ 1	—	—
Sebastopol		54·9	310	—	—	e 17 8	0	—	—
Florence		70·8	310	e 22 56	?	29 2	?	37·8	40·8
Strasbourg		71·6	317	—	—	(e 28 46?)	?	e 28·8	—
De Bilt		72·1	320	—	—	e 29 10	?	e 38·8	40·4
Uccle		73·0	319	—	—	e 28 46?	SS	e 38·8	—

Additional readings :—
Agra SE = +7m.19s.
Chiufeng iS = +8m.34s.
Zi-ka-wei iZ = +4m.48s.
Medan i = +11m.10s.
Taikyu eS = +12m.37s.
Tiflis eSSE = +18m.40s., eE = +20m.57s.
Long waves were also recorded at Taihoku, Nagasaki, Koti, Sumoto, Kucino, Pulkovo, and other European stations.

Jan. 19d. 18h. 49m. 54s. Epicentre 26°·6N. 86°·8E. (as on 15d.). R.3.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta		4·3	161	0 57	− 4	1 49	− 1	2·1	2·6
Agra	N.	7·8	281	e 1 47	− 4	i 3 7	−12	—	4·5?
Dehra Dun		8·5	298	4 26	S_g	—	—	—	6·1
Hyderabad		12·0	221	3 15	+27	5 15	+12	6·3	6·7
Bombay		15·0	242	e 3 22	− 6	i 6 1	−14	e 6·8	8·0
Almata		18·5	337	e 4 14	+ 1	e 7 32	− 4	—	—
Kodaikanal	E.	18·6	210	7 46	S	(7 46)	+ 8	—	—
Phu-Lien		19·0	104	4 6?	−13	—	—	—	—
Frunse		19·1	332	e 4 24	+ 4	e 7 45	− 3	—	—
Tashkent		20·6	320	i 4 35	− 1	i 8 9	− 9	10·7	11·4
Chiufeng		27·7	53	e 5 51	+ 7	—	—	—	15·8
Sverdlovsk		35·5	336	—	—	i 12 17	−12	17·1	—

Additional readings :—
Agra iE = +1m.43s., eP_gN = +2m.32s., S_gN? = +4m.2s.
Bombay PPP = +3m.32s., SS = +6m.27s.
Long waves were also recorded at Hong Kong, Vladivostok, and De Bilt.

Jan. 19d. Readings also at 0h. (near Tiflis), 1h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, Santa Barbara, Oak Ridge, Sverdlovsk, and Tiflis), 2h. (Ottawa, Pittsburgh, Baku, and Tashkent), 4h. (Göttingen, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, and near La Paz), 5h. (near Mizusawa), 7h. (near Tyosi (2)), 8h. (Tiflis, Denver, and near Mizusawa), 9h. (near Mizusawa, Nagoya, Tyosi, and near Santiago), 11h. (Tyosi), 12h. (near Malabar), 14h. (Phu-Lien and Marseilles), 17h. (Manila), 18h. (Baku, Sverdlovsk, Tashkent, Uccle, Hong Kong, and near Santiago), 20h. (near Tananarive), 21h. (Neuchatel).

Jan. 20d. 17h. 56m. 15s. Epicentre 40°·7N. 108°·7E. N.2.

A = −·243, B = +·718, C = +·652; D = +·947, E = +·321; G = −·209, H = +·618, K = −·758.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Chiufeng		5·7	95	1 24	+ 3	2 32	+ 7	—	—
Nanking		11·8	134	i 2 53	+ 7	i 4 49	− 9	6·3	6·6
Heizyo		13·2	91	3 9	+ 4	—	—	7·0	7·5
Zinsen		14·1	97	e 3 13	− 4	e 6 19	+26	e 7·8	10·0
Keizyo		14·5	97	e 3 26	+ 4	e 6 44	+41	8·8	—
Hukuoka		18·6	106	(e 4 19)	+ 5	4 19	P	—	—
Nagasaki		18·7	109	e 4 39	+24	e 8 1	+21	e 10·1	—
Hong Kong		18·9	164	4 24	+ 7	8 1	+17	9·9	12·3
Phu-Lien		20·0	186	e 4 32	+ 2	e 8 16	+10	9·8	11·0
Miyazaki		20·2	109	4 11	−21	8 32	SS	—	—
Koti		21·0	102	—	—	e 8 53	SS	—	13·6
Sumoto		21·6	99	—	—	e 8 45?	+ 7	(14·5)	14·8
Wakayama		21·9	99	4 50	0	8 48	+ 4	—	—
Osaka		22·0	97	7 25	?	12 14	L	(12·2)	15·6
Almata		23·6	287	5 11	+ 5	9 17	+ 1	—	—
Mizusawa	E.	24·8	83	5 17	− 1	11 36	L	(11·6)	—
	N.	24·8	83	5 30	+12	11 52	L	(11·9)	—
Calcutta		25·0	229	5 7	−13	9 55	+14	14·0	17·2
Frunse		25·4	286	5 20	− 4	e 9 45	− 3	—	—
Dehra Dun		26·9	257	11 55	SS	—	—	16·9	17·8
Manila		28·2	154	5 48	− 1	10 40	+ 5	14·0	—
Agra	E.	28·6	259	5 50	− 3	i 10 40	− 2	—	—
Tchimkent		29·1	286	6 32	PP	—	—	—	—
Tashkent		29·5	284	5 57	− 4	e 10 50	− 6	e 13·6	17·8
Sverdlovsk		34·1	315	i 6 42	+ 1	i 12 8	0	20·6	21·2
Hyderabad		34·9	237	6 52	+ 4	12 22	+ 2	17·6	22·2
Bombay		37·6	245	7 12	0	13 0	0	18·5	23·5
Medan		38·2	196	i 13 2	S	(i 13 2)	− 7	—	—
Grozny		45·7	295	8 27	+ 9	—	—	22·8	—
Batavia		46·9	182	e 8 29	+ 1	i 15 25	+ 8	i 25·0	—
Tiflis	E.	46·9	293	e 8 32	+ 4	e 15 26	+ 9	28·0	33·2
Sotchi		49·7	298	e 8 51	+ 2	e 16 0	+ 3	e 30·2	—
Pulkovo		50·2	320	—	—	e 15 56	− 8	27·8	31·6
Theodosia		52·0	301	e 9 11	+ 5	16 28	0	27·8	—
Yalta		53·0	301	e 9 19	+ 5	—	—	—	—
Sebastopol		53·4	302	e 9 22	+ 5	—	—	—	—
Bergen		61·3	327	—	—	e 27 39	?	e 32·8	—
Vienna		62·2	311	e 10 14	− 6	—	—	—	32·8
Zagreb		63·7	309	e 10 25	− 5	—	—	e 34·8	38·8
Göttingen		64·0	317	i 10 27	− 5	—	—	e 32·8	40·0
Triest		65·3	310	—	—	e 20 39	(+ 9)	e 32·1	34·4
Florence		67·6	309	8 44	?	20 24	(−23)	—	33·8
Neuchatel		68·2	314	e 10 52	− 7	—	—	—	—
Paris		69·4	317	e 10 45?	−22	—	—	36·8	43·8
Perth		72·9	175	20 45	S	(20 45)	−11	—	—
Tinemaha		91·1	36	i 13 1	− 2	—	—	—	—
Mount Wilson	Z.	93·6	37	i 13 12	− 2	—	—	—	—
Pasadena	Z.	93·6	37	i 13 11	− 3	—	—	—	—
La Jolla	Z.	95·1	37	i 13 18	− 3	—	—	—	—
Oak Ridge		96·8	0	i 13 25	− 4	—	—	e 53·8	—

Additional readings and notes :—
Chiufeng P*EZ = +1m.40s., P_gEZ = +1m.45s., S_gZ = +2m.48s.
Nanking iEN = +3m.1s.
Sumoto S is given as e, the L entered is given as SEZ with SN = +14m.41s.
Agra eN = +8m.7s.
Sverdlovsk iL_q = +17·4m.
Medan iN = +13m.17s., i = +20m.49s., iS = +21m.4s.
Tiflis eE = +19m.32s. =SSS +2s. and +25m.6s.
Pulkovo eSS = +19m.42s., e = +22m.50s.
Oak Ridge iZ = +13m.34s.
Long waves were also recorded at Taihoku, Kobe, Scoresby Sund, Toyooka, San Juan, Huancayo, and other American and European stations.

Jan. 20d. 22h. 28m. 20s. Epicentre 25°·5N. 122°0E. (as on 1931 Feb. 13d.). X.

A = −·478, B = +·765, C = +·431 ; D = +·848, E = +·530 ;
G = −·228, H = +·365, K = −·903.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku	0·6	223	e 0 13	+ 4	0 32	+17	—	0·7
Karenko	1·6	194	i 0 21k	− 2	1 16	+35	—	—
Taityu	1·8	222	(e 0 17)	− 9	(0 48)	+ 2	—	—
Nanking	7·1	337	e 1 47	+ 6	e 3 19	+18	e 3·6	—
Hong Kong	7·8	248	(1 50)	− 1	1 50	P	—	4·7
Nagasaki	10·0	41	e 2 37	+16	—	—	—	—
Zinsen	12·6	17	e 4 56	S	(e 4 56)	−21	(e 6·8)	—
Chiufeng	15·4	244	3 36	+ 2	6 51	+27	8·7	10·9

Additional readings and notes :—
Taityu readings have been *increased* by 1m.
Nanking eEN = +2m.1s. =P* +3s.
Hong Kong P? =22h.26m.10s.
Zinsen gives S as P and L as S.
Long waves were also recorded at Phu-Lien, Agra, Bombay, and some European stations.

Jan. 20d. 22h. 52m. 30s. Epicentre 25°·5N. 122°·0E. (as at 22h. 28m.). R.3.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku		0·6	223	0 14k	+ 5	i 0 35	+20	—	1·1
Karenko		1·6	194	i 0 23k	0	1 16	+35	—	—
Taityu		1·8	222	(e 0 18)	− 8	(0 48)	+ 2	—	—
Arisan		2·2	209	1 32	+61	2 42	?	—	—
Taito		2·9	196	(e 0 56)	+15	1 48	S_g	—	—
Takao		3·3	209	e 0 29	−18	1 37	S*	—	—
Zi-ka-wei	z.	5·7	357	(e 1 18)	− 3	(2 14)	−11	—	(3·4)
Nanking		7·1	337	e 1 42	+ 1	i 2 30	P_g	i 3·6	4·3
Hong Kong		7·8	248	(1 54)	+ 3	1 54	P	3·7	5·8
Nagasaki		10·0	41	2 17	− 4	4 55	S*	e 6·8	—
Hukuoka		10·9	40	e 2 31	− 2	e 4 39	+ 3	—	8·4
Hukuoka B.		10·9	40	2 31	− 2	e 4 35	− 1	e 6·0	7·6
Taikyu		11·8	27	2 50	+ 4	6 52	L	9·4	—
Zinsen		12·6	17	e 3 2	+ 6	e 5 27	+10	i 6·9	7·9
Heizyo		13·9	12.	e 3 12	− 2	e 5 25	−24	7·4	9·2
Sumoto		14·2	48	e 3 11	− 7	—	—	e 9·8	11·6
Kobe		14·6	48	4 33	+70	—	—	e 8·3	11·1
Osaka		14·8	49	3 46	+20	7 18	L	(7·3)	11·0
Phu-Lien		14·9	255	e 3 32	+ 5	—	—	8·5	—
Chiufeng		15·4	344	(3 37)	+ 3	3 37	P	e 6·8	10·8
Medan		31·3	231	12 33	S	(12 33)	+69	i 16·8	—
Batavia		34·9	210	i 6 40	− 8	—	—	—	—
Almata		40·5	310	e 7 33	− 3	—	—	—	—
Frunse		42·2	308	e 8 6	+16	—	—	—	—
Tchimkent		45·8	307	e 9 4	+45	—	—	—	—
Sverdlovsk		53·3	325	e 9 20	+ 4	21 10	?	26·5	32·2
Tiflis		64·2	307	10 27	− 7	e 17 39	?	e 38·1	45·3

Additional readings and notes :—
Taityu readings have been *increased* by 2m.
Taito P has been *increased* by 2m.
Zi-ka-wei iZ = (+1m.48s.) ; all readings have been *diminished* by 3m.
Nanking iP = +1m.51s. =P* −7s.
Hong Kong P? =22h.50m.19s.
Kobe ePE? = +4m.40s.
Chiufeng P =22h.51m.36s.
Batavia iN = +7m.53s. =PP −6s.
Long waves were also recorded at Toyooka, Hyderabad, Kucino, Scoresby Sund, Oak Ridge, and several European stations.

Jan. 20d. Readings also at 1h. (Branner, Hong Kong, and near Apia), 3h. (Wellington), 4h. (near La Paz), 8h. (Haiwee, Mount Wilson, Pasadena, Riverside, and Tinemaha), 9h. (near Berkeley, Branner, and Lick), 11h. (Florence, Triest, La Paz, and near Nagasaki), 12h. (near Apia), 13h. (near Tananarive), 16h. (Branner and Lick), 17h. (Bombay, Almata, Frunse, Tchimkent, Kucino, Sverdlovsk, Tashkent, Phu-Lien, Nanking, and near Chiufeng), 18h. (Hukuoka), 19h. (Mizusawa), 21h. (Tiflis), 22h. (Taihoku (2), Manila Chiufeng, Nanking (2), Phu-Lien, Hong Kong (2), Zinsen (2), and Calcutta), 23h. (near Nagasaki, Sumoto, near Hukuoka, and Hukuoka B.).

Jan. 21d. 6h. 55m. 40s. Epicentre 25°·5N. 122°·0E. (as on 20d.). R.3.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku		0·6	223	e 0 12a	+ 3	i 0 34	+19	—	1·4
Karenko		1·6	194	(i 0 22)k	− 1	(1 0)	+19	—	—
Taityu		1·8	222	(e 1 9)	?	(1 36)	+50	—	—
Arisan		2·2	209	0 29k	− 2	1 24	+27	—	—
Taito		2·9	196	(e 1 20)	S	(1 46)	S_g	—	—
Takao		3·3	209	(e 0 53)	+ 6	1 31	+ 6	—	—
Kosyun		3·7	199	e 1 20	?	1 57	S_g	—	—
Zi-ka-wei	E.	5·7	357	—	—	i 3 34	S_g	—	6·3
Nanking		7·1	337	e 2 5	P*	(e 3 48)	S_g	e 3·8	5·5
Hong Kong		7·8	248	(1 48)	− 3	(3 50)	S*	(5·6)	(7·8)
Nagasaki		10·0	41	2 13	− 8	4 56	S*	—	—
Hukuoka		10·9	40	e 2 21	−12	e 4 42	+ 6	—	—
Hukuoka B.		10·9	40	2 24	− 9	e 4 59	+23	e 8·2	10·2
Manila		10·9	185	e 1 57	−36	5 34	S*	—	—
Taikyu		11·8	27	e 5 11	S	(e 5 11)	+13	e 12·5	—
Zinsen		12·6	17	e 2 59	+ 3	e 5 38	+21	i 6·9	10·2
Heizyo	E.	13·9	12	e 6 11	?	7 56	L	(7·9)	8·7
Sumoto		14·2	48	e 3 48	+30	8 44	?	—	—
Osaka		14·8	49	3 34	+ 8	7 8	+58	—	9·7
Phu-Lien		14·9	255	e 3 32	+ 5	e 8 23	?	10·3	—
Chiufeng		15·4	344	3 32a	− 2	e 6 18	− 6	9·3	25·0
Calcutta		30·8	272	2 45	?	9 23	P_cP	17·1	21·3
Medan		31·3	231	e 7 19	PP	—	—	i 15·1	—
Agra	E.	39·3	284	—	—	e 13 21	− 5	—	—
Bombay	N.	45·7	275	—	—	i 15 18	+18	—	28·4
Tiflis	N.	64·2	307	11 22	+48	—	—	—	—

Additional readings and notes :—
Taihoku SE = +36s., iN = +48s.
Taityu readings have been *increased* by 2m.
Karenko readings have been *increased* by 1m.
Taito readings have been *increased* by 4m.
Takao P has been *increased* by 2m.
Zi-ka-wei eE =6h.52m.30s., iE = +3m.54s., +4m.15s., and +4m.35s.
Nanking e =6h.52m., eN =6h.53m.32s., iN =6h.54m.10s., iE = +2m.55s. =S − 6s.
Hong Kong ? =(+4m.50s.) readings have been *increased* by 2m.
Hukuoka e = +43s.
Taikyu eS = +8m.54s.
Sumoto SN = +9m.6s., SE = +9m.32s.
Chiufeng iSE = +6m.40s.
Long waves were also recorded at Koti, Kobe, Toyooka, Dehra Dun, Hyderabad, Oak Ridge, and several European stations.

Jan. 21d. Readings also at 1h. (La Paz and Sucre), 2h. (Theodosia, Yalta, Taihoku, Nanking, near Tyosi, and near Calcutta), 5h. (Sucre, near La Paz, Tyosi, and near Mizusawa), 6h. (Taihoku, Agra, Bombay, and near Calcutta), 7h. (Phu-Lien, near Nagoya, and Tyosi (2)), 10h. (Pittsburgh), 12h. (Sotchi, Ksara (2), and Tiflis (2)), 14h. (near Calcutta), 16h. (near Grozny and Tiflis), 19h. (Jena, Dehra Dun, Agra, Bombay, Hyderabad, and near Calcutta), 20h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 22h. (Wellington), 23h. (Ann Arbor, Oak Ridge, Ottawa, Pittsburgh, Little Rock, St. Louis, and Seattle).

Jan. 22d. 7h. 49m. 50s. Epicentre 25°·5N. 122°·0E. (as on 21d.). X.

A = −·478, B = +·765, C = +·431; D = +·848, E = +·530;
G = −·228, H = +·365, K = −·903.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku		0·6	223	e 0 18	S	(e 0 18)	+ 3	—	1·8
Karenko		1·6	194	0 39	?	1 13	?	—	—
Taito		2·9	196	(e 0 45)	+ 4	(1 25)	S*	—	—
Zi-ka-wei	E.	5·7	357	e 1 42	P_g	—	—	—	—
Nanking		7·1	337	e 1 58	P*	i 3 53	S_g	—	8·4
Hong Kong		7·8	248	—	—	2 12	P*	4·0	6·1
Nagasaki		10·0	41	e 2 17	− 4	e 5 6	S*	5·8	—
Hukuoka		10·9	40	2 33	0	e 5 20	S*	—	—
Hukuoka B.		10·9	40	e 2 41	+ 8	e 5 25	S*	e 8·7	12·0
Taikyu		11·8	27	2 50	+ 4	6 57	?	9·4	—
Zinsen		12·6	17	e 2 54	− 2	e 5 24	+ 7	i 7·0	10·6
Keizyo		12·8	18	5 17	S	(5 17)	− 5	—	—
Heizyo		13·9	12	6 10	?	7 51	?	—	9·4
Sumoto		14·2	48	—	—	e 6 0	+ 4	9·8	10·7
Chiufeng		15·4	344	i 3 44a	+10	6 43	+19	8·8	10·8
Bombay		45·7	275	e 9 59	PP	—	—	—	28·6
Tashkent		46·0	305	—	—	e 15 19	+15	e 22·3	28·2
Sverdlovsk		53·3	325	—	—	e 21 16	?	26·2	30·4

Additional readings and notes:—
Taito readings have been *increased* by 2m.
Zi-ka-wei iE = +3m.24s., +3m.51s., and +4m.14s.
Nanking iPP = +2m.32s., iS = +4m.14s., iEZ = +6m.55s.
Hong Kong P? = 7h.48m.14s.
Keizyo S = +7m.20s.
Tashkent e = +19m.19s. = SSSS − 2s.
Long waves were also recorded at Phu-Lien, Koti, Kobe, Toyooka, Agra, Pulkovo, Oak Ridge, and several European stations.

Jan. 22d. 10h. 7m. 26s. Epicentre 48°·6N. 28°·4W. N.2.

A = +·582, B = −·315. C = +·750; D = −·476, E = −·880;
G = +·660, H = −·357, K = −·661.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Toledo	19·4	108	4 24	+ 1	—	—	e 9·6	10·6
Paris	20·3	78	i 4 32	− 1	—	—	9·6	11·6
Uccle	21·1	72	4 39	− 2	8 41	+13	e 9·6	11·6
Granada	21·3	113	e 4 52	+ 9	8 58	SS	11·1	—
De Bilt	21·6	68	4 42	− 4	—	—	e 9·6	12·6
Almeria	22·3	112	e 5 7	+13	e 8 57	+ 5	e 11·0	—
Alicante	22·5	107	e 4 44	−12	e 8 50	− 5	e 11·0	—
Neuchatel	23·6	81	e 5 5	− 1	—	—	—	—
Strasbourg	23·7	76	5 7k	0	e 9 27	+ 9	e 11·6	15·1
Basle	23·8	79	e 5 7	− 1	—	—	—	—
Hamburg	24·3	64	i 5 16a	+ 3	—	—	—	14·6
Zurich	24·6	78	e 5 13	− 3	—	—	—	—
Stuttgart	24·6	75	e 5 17	+ 1	e 9 40	+ 6	e 12·1	14·6
Chur	25·3	79	e 5 23	0	—	—	—	—
Piacenza	26·1	83	e 5 39	+ 9	—	—	—	19·7
Cheb	26·3	71	e 5 34?	+ 2	—	—	e 12·6	15·6
Florence	27·6	85	(7 34?)	?	—	—	7·6	14·6
Triest	28·5	80	e 6 34?	PP	—	—	—	15·3
Oak Ridge	31·0	275	i 6 8	− 6	e 11 15	− 5	e 15·2	—
Ottawa	31·9	283	—	—	e 11 34?	0	e 15·6	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
San Juan		42·8	239	—	—	e 14 21	+ 3	e 18·1	—
St. Louis	E.	44·6	281	e 8 8	− 2	e 14 43	− 1	e 24·1	—
Ksara		49·0	83	e 8 41	− 3	15 56	+ 9	—	—
Sverdlovsk		50·7	45	—	—	e 16 15	+ 4	23·6	29·2
Tinemaha		63·1	296	i 10 24	− 2	—	—	—	—
Haiwee	E.	63·5	295	i 10 33	+ 4	—	—	—	—
Riverside	Z.	64·5	294	i 10 39	+ 4	—	—	—	—
Mount Wilson	Z.	64·8	294	e 10 35	− 2	—	—	—	—
Pasadena	Z.	65·0	294	i 10 37	− 2	—	—	—	—

Additional readings :—
Strasbourg PPZ = +5m.45s., SSEZ = +9m.43s.
Florence P =10h.6m.0s.
Long waves were also recorded at San Fernando, Göttingen, Helsingfors, Tashkent, Little Rock, and Florissant.

Jan. 22d. Readings also at 2h. (near Tyosi and near Apia), 3h. (Tinemaha and Tucson), 9h. (near Tyosi), 11h. (Sitka), 12h. (near Santiago), 13h. (Little Rock), 15h. (near Amboina), 18h. (St. Louis Little Rock and Tinemaha), 21h. (Calcutta, Dehra Dun, Almata, and Frunse).

Jan. 23d. 2h. 2m. 30s. Epicentre 34°·2N. 135°·0E. (as on 1933 July 28d.). X.

A = −·585, B = +·585, C = +·562 ; D = +·707, E = +·707 ;
G = −·397, H = +·397, K = −·827.

	△	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Sumoto	0·2	327	0 3k	0	0 8	+ 3	0·2
Kobe	0·5	17	0 9	+ 2	0 19	+ 6	0·3
Osaka	0·7	44	0 10	0	0 21	+ 3	0·8
Koti	1·4	242	0 18	− 2	0 38	+ 2	—
Toyooka	1·4	354	e 0 40	S	0 44	S*	0·8
Nagoya	1·9	59	e 0 33	+ 5	0 59	+10	—

Jan. 23d. Readings also at 0h. (Tucson), 1h. (Tananarive (2) and near Mizusawa), 2h. (Cape Town and Perth), 3h. (near Arisan, Karenko (2), and Taihoku (2)), 4h. (near Sumoto), 5h. (Huancayo, La Paz, La Plata, Sucre, San Juan, Oak Ridge, Cape Town, Agra, and near Calcutta), 7h. (Ferndale), 10h. (Tiflis), 13h. (Tananarive), 15h. (La Paz and near Mizusawa), 17h. (La Paz and near Santiago), 18h. (Chiufeng, Nanking, Zinsen, Koti, near Hukuoka, Nagasaki, also near Karenko and Taihoku), 19h. (Hong Kong, Phu-Lien, Vladivostok, Tashkent, Sverdlovsk, and Baku), 20h. (Almata and Frunse), 22h. (Tiflis), 23h. (Almata, Frunse, and Wellington).

Jan. 24d. 21h. 41m. 37s. Epicentre 37°·1N. 141°·3E. (as on 1929 June 24d.). R.3.

The Japanese stations give 37°·0N. 141°·1E.

A = −·622, B = +·499, C = +·603.

		△	Az.	P.	O−C.	S.	O−C.	L.	M
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi		1·4	194	e 0 20	0	0 37	+ 1	—	0·9
Tokyo		1·9	221	0 26	− 2	0 47	− 2	—	0·8
Mizusawa	E.	2·0	356	e 0 31	+ 2	i 0 53	+ 2	—	—
	N.	2·0	356	e 0 28	− 1	e 0 55	+ 4	—	—
Susaki		3·1	218	1 12?	S	1 41	S_g	—	—
Nagoya		4·0	242	e 1 0	+ 3	1 46	+ 4	—	2·1

Jan. 24d. Readings also at 0h. (Malabar, near Batavia, and Soengei Langka), 4h. (near La Paz), 7h. (Takaka and near Wellington and near Calcutta), 10h. (near Malabar), 14h. (Wellington, near Nagoya, and near Tyosi), 19h. (Batavia and near Malabar), 20h. (Huancayo, La Paz, Tiflis, and Wellington).

Jan. 25d. Readings at 5h. (Apia), 6h. (La Paz), 10h. (Berkeley and San Francisco), 11h. (Berkeley, near San Francisco, and near Apia), 12h. (Agra and Dehra Dun), 13h. (La Paz, Perth, and near Mizusawa), 14h. (La Paz), 15h. (Berkeley, Branner, Lick, near Batavia, Malabar, and Soengei Langka), 18h. (near Manila), 19h. (La Jolla, Mount Wilson, Pasadena, Riverside, Santa Barbara, Tinemaha, Berkeley, Little Rock, and Grozny), 21h. (Almata, Frunse, and La Paz), 23h. (near Calcutta).

Jan. 26d. Readings at 0h. (Agra and near Soengei Langka), 9h. (near Mizusawa), 14h. (Apia, Perth, Florence, and Suva), 16h. (near Mizusawa), 19h. (La Paz), 20h. (near Algiers), 22h. (near Sotchi), 23h. (Grozny, near Tyosi, and Nagoya).

Jan. 27d. Readings at 0h. (near Mizusawa (2), Nagoya, and Tyosi), 1h. (near Tyosi), 4h. (near Mizusawa), 5h. (Melbourne and near Santiago), 6h. (Perth), 9h. (near Algiers), 10h. (near Sumoto), 11h. (near Mizusawa), 13h. (Mount Wilson, Pasadena, Riverside, Santa Barbara, Tinemaha, St. Louis, Oak Ridge, Fordham, La Paz (2), Neuchatel, Chiufeng, Sverdlovsk, and Tashkent), 15h. (Tiflis), 20h. (near Mizusawa), 22h. (Almata, Tchimkent, and Frunse), 23h. (Nagoya).

Jan. 28d. 14h. Reading of an earthquake from an epicentre in the North Atlantic.

Oak Ridge iPZ = 14h.47m.2s., eSNW = 51m.28s., eLNW = 53m.35s.
Strasbourg eP?Z = 14h.49m., eEN = 55m.11s., eL = 58m.
Stuttgart e = 14h.49m.30s., eE = 55m.22s., eL = 15h.0m.
Triest e = 14h.49m.35s. and 56m.9s.
La Paz PE = 14h.50m.59s.
San Juan e = 14h.51m.30s.
Pasadena eZ = 14h.51m.45s.
Mount Wilson eZ = 14h.51m.48s.
Riverside eZ = 14h.51m.48s.
Sverdlovsk eP = 14h.52m.32s., eS = 15h.1m.48s., L = 12m.
Ottawa eE = 14h.52m.36s., eL = 56m.
Baku e = 14h.52m.39s.
Tashkent e = 14h.54m.36s., 15h.3m.42s., eL = 20m., M = 22m.36s.
Uccle e = 14h.54m.41s., eL = 59m.
De Bilt eE = 14h.54m.54s., eL = 59m., M = 15h.2m.30s.
Bidston e = 14h.56m.
Copenhagen 14h.56m.6s., L = 15h.3m.
Long waves were also recorded at Scoresby Sund, Pulkovo, Sitka, and other European stations.

Jan. 28d. 19h. 10m. 10s. Epicentre 16°·9N. 99°·6W. N.1.

Probable error of epicentre ±0°·23.

A = −·160, B = −·943, C = +·291; D = −·986, E = +·167; G = −·048, H = −·287, K = −·957.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		18·4	329	i 4 11	0	i 7 40	+ 7	i 9·6	—
Little Rock	E.	19·0	19	i 4 16	− 3	i 7 51	+ 5	—	—
Balboa Heights		21·1	110	e 4 50?	+ 9	—	—	—	—
La Jolla		22·5	318	i 4 55	− 1	e 9 9	+14	—	—
St. Louis		23·3	19	i 5 1	− 3	i 9 14	+ 4	e 11·4	13·8
Florissant		23·4	18	i 5 2	− 3	i 9 16	+ 4	e 11·3	13·8
Riverside		23·4	320	i 5 3	− 2	e 9 21	+ 9	—	—
Mount Wilson		23·9	320	i 5 9	0	—	—	—	—
Pasadena		23·9	320	i 5 9a	0	i 9 29	+ 8	i 11·0	—
Columbia		23·9	41	i 5 10	+ 1	i 9 23	+ 2	e 11·9	—
Santa Barbara		25·1	318	e 5 21	0	—	—	—	—
Tinemaha		26·0	325	i 5 29a	0	—	—	—	—
Port au Prince		26·1	84	i 5 35	+ 5	i 9 59	− 1	e 14·9	—
Chicago		27·0	20	i 5 37	− 1	i 10 17	+ 2	i 14·4	—
Charlottesville		28·1	37	i 5 50	+ 2	i 10 32	− 2	e 14·5	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Lick	N.	28·1	321	e 5 48	0	—	—	e 13·5	—
Branner		28·6	320	e 5 52	− 1	e 10 38	− 4	e 13·9	—
Berkeley		28·8	321	i 5 54	0	i 10 46	+ 1	i 15·3	—
Ann Arbor		28·8	25	e 5 56	+ 2	11 20	+35	e 15·0	19·7
San Francisco		29·0	321	—	—	e 11 4	+16	e 14·7	—
Pittsburgh		29·1	32	i 5 55	− 2	i 11 12	+22	—	—
Georgetown		29·6	37	i 6 0a	− 1	i 10 29	−29	—	—
Bozeman		30·3	344	6 3	− 5	e 11 4	− 5	i 15·6	—
Ukiah		30·3	322	e 6 9	+ 1	i 11 13	+ 4	14·1	—
Toronto		31·8	28	i 6 18	− 3	i 11 49	+17	i 16·2	19·1
San Juan		31·9	81	i 6 24	+ 2	i 11 39	+ 5	i 13·5	—
Fordham		32·7	37	i 6 26	− 3	i 11 46	0	i 16·8	23·4
Ottawa		34·7	30	i 6 46	0	i 12 18	+ 1	e 16·1	—
Oak Ridge		35·1	37	i 6 48	− 2	12 19	− 4	e 21·8	—
Weston		35·1	37	e 6 53	+ 3	e 12 28	+ 5	—	—
Seattle		36·0	334	e 7 3	+ 5	e 12 34	− 2	e 17·6	—
Victoria		36·9	334	i 7 4	− 2	i 12 52	+ 2	i 17·7	20·8
Huancayo		37·7	138	i 7 12	0	i 13 1	− 1	i 15·8	—
La Paz		45·6	134	8 21	+ 3	i 14 59	0	i 21·3	22·2
Sitka		48·2	335	e 8 33	− 5	e 15 32	− 4	i 22·8	—
Sucre		49·3	135	8 34	−12	i 15 39	−12	22·4	—
Honolulu		54·9	284	—	—	e 17 16	+ 8	e 25·5	—
Ivigtut		57·2	27	9 45	0	17 45	+ 6	25·8	—
La Plata		65·2	143	10 46	+ 6	19 20	− 2	29·2	39·9
Scoresby Sund		70·0	20	11 8	− 3	20 28	+ 7	31·8	—
Edinburgh		79·6	35	i 12 6	0	22 2	− 9	36·8	47·5
Serra do Pilar		79·7	50	11 58	− 8	22 58	PS	42·8	—
Bidston		80·3	38	i 12 20	+11	i 22 23	+ 4	e 37·8	49·7
Durham		80·8	35	12 19	+ 7	22 39	+15	—	49·8
Oxford		81·8	39	e 12 19	+ 2	e 22 32	− 3	e 40·8	50·5
Kew		82·5	39	i 12 19a	− 2	e 22 38	− 4	e 38·8	46·2
Bergen		82·5	28	12 11	−10	22 51	+ 9	37·5	45·8
San Fernando	E.	82·7	55	12 26	+ 4	22 50	+ 6	37·8	51·3
	N.	82·7	55	12 22	0	22 56	+12	37·3	—
Toledo		83·4	51	e 12 20	− 5	i 22 41	[− 6]	39·7	52·2
Malaga		84·0	53	e 12 24	− 4	22 51	[− 1]	41·8	—
Granada		84·5	53	i 12 26	− 5	i 23 3	0	39·8	46·3
Paris		85·0	40	12 33	0	23 8	0	37·8	52·8
De Bilt		85·4	36	i 12 35a	0	e 23 18	+ 6	e 40·8	47·7
Uccle		85·4	38	i 12 34a	− 1	i 23 17	+ 5	36·8	48·0
Almeria		85·5	53	e 12 38	+ 2	e 23 10	− 3	e 38·4	46·7
Alicante		86·5	51	e 12 50	+ 9	e 23 32	+10	e 43·1	54·1
Barcelona		87·3	47	—	—	e 23 8	[− 7]	e 37·4	51·4
Hamburg		87·5	34	e 12 44a	− 1	e 23 24	[+ 7]	e 41·8	53·8
Copenhagen		87·8	31	12 46	− 1	e 23 30	− 5	37·8	—
Upsala		88·2	27	16 12	PP	e 23 19	[− 2]	e 39·8	54·1
Strasbourg		88·3	39	12 51	+ 2	23 48	+ 8	e 39·8	55·2
Göttingen		88·4	36	e 12 46	− 4	e 23 26	[+ 3]	e 41·8	53·0
Karlsruhe		88·5	38	e 13 50?	+60	e 24 50?	+68	e 52·8	—
Neuchatel		88·5	40	e 12 47	− 3	e 23 28	[+ 5]	—	—
Basle		88·6	40	e 12 49	− 2	—	—	—	—
Stuttgart		89·1	39	e 12 52a	− 1	e 23 25	[− 2]	e 44·8	53·8
Zurich		89·3	40	e 12 8	−46	—	—	—	—
Algiers		89·6	51	e 12 50?	− 6	i 23 37	[+ 7]	39·8	44·8
Jena		89·6	37	e 12 50	− 6	e 23 20	[−10]	e 39·8	52·8
Leipzig		89·8	36	e 16 20	PP	e 24 2	+ 8	e 38·8	53·8
Chur		90·1	40	e 12 49	− 9	e 23 21	[−13]	—	—
Cheb		90·4	37	e 13 0	+ 1	e 23 35	[0]	e 42·8	55·8
Helsingfors		91·0	24	e 14 0	+58	23 30	[− 9]	e 37·8	—
Piacenza		91·0	41	13 5	+ 3	23 42	[+ 3]	39·8	51·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Prague		91·6	36	e 13 8	+ 3	e 16 44	PP	e 34·8	49·8
Königsberg		92·2	29	—	—	e 25 28	PS	e 47·5	55·6
Prato		92·4	42	e 13 8	− 1	23 39	[− 8]	44·6	57·3
Venice		92·5	40	e 13 13	+ 4	i 23 51	[+ 4]	—	—
Florence		92·6	42	13 8	− 1	21 50	?	44·8	50·8
Triest		93·3	39	e 13 9	− 4	i 24 32	+ 5	e 43·8	57·0
Pulkovo		93·2	22	e 13 12	− 1	23 47	[− 5]	46·9	54·9
Graz		93·6	38	e 14 8	+54	e 25 44	PS	e 42·8	59·3
Vienna		93·6	36	i 13 14k	0	23 46	[− 7]	—	55·8
Zagreb		94·6	39	e 13 6?	−13	e 23 50?	[− 9]	e 46·8	—
Budapest		95·5	36	e 13 50?	+27	(25 50?)	PS	25·8	54·8
Wellington		97·9	229	—	—	24 8	[− 8]	44·8	—
Kucino		99·0	23	e 13 49	+10	e 24 21	[0]	e 43·9	56·1
Christchurch		100·0	227	e 13 34	−10	e 25 32	+ 6	46·0	—
Vladivostok		103·6	323	e 18 17	PP	e 24 1	[−42]	—	59·0
Sverdlovsk		104·4	10	i 14 1	− 3	—	—	47·8	65·1
Yalta		105·4	32	—	—	(27 50)	PS	27·8	—
Theodosia		105·8	30	—	—	(25 2)	[+ 8]	25·0	—
Kobe		106·7	315	—	—	e 44 50	?	e 63·1	70·0
Keizyo		110·1	321	—	—	e 28 37	PS	—	—
Tiflis	N.	112·8	28	e 15 23	+39	e 29 13	PS	e 54·8	—
Helwan		113·5	46	19 24	PP	28 54	PS	—	76·5
Ksara		113·9	40	e 19 32	PP	29 12	PS	54·8	63·3
Chiufeng		114·0	331	19 31a	PP	e 29 10	PS	e 52·3	73·8
Riverview		115·1	239	—	—	e 25 26	[− 8]	e 52·8	—
Baku		116·1	25	e 15 0	− 1	—	—	61·8	72·6
Melbourne		120·2	235	e 20 17	PP	25 42	[− 9]	55·7	60·6
Tashkent		120·9	9	i 15 22	?	—	—	58·8	73·5
Adelaide		125·4	238	—	—	e 25 50	[−16]	e 60·0	63·3
Hong Kong		128·7	318	21 9	PP	31 10	PS	—	72·3
Manila		129·0	305	21 23	PP	—	—	61·1	70·8
Dehra Dun		132·7	2	19 0	[−11]	—	—	—	—
Agra		135·9	1	18 48	[−28]	25 55	—	—	74·9
Calcutta		139·7	348	e 22 28	PP	—	—	e 72·5	88·7
Bombay		143·4	11	e 19 32	[+ 3]	29 23	{−21}	e 68·8	92·7
Perth		144·6	238	19 50	[+17]	—	—	—	—
Hyderabad		145·6	3	19 44	[+ 9]	33 41	SKSP	68·0	90·0
Tananarive		148·7	98	19 52	[+12]	—	—	70·0	82·4
Medan		152·7	317	—	—	e 25 55	?	e 84·8	—
Kodaikanal	E.	152·7	6	19 50	[+ 5]	—	—	77·6	94·7
Colombo		156·1	1	16 20	?	—	—	73·3	79·2

Additional readings :—
Tucson eSS = +8m.33s.
Little Rock iSSE = +8m.4s., iSSSE = +8m.10s. ; T_0 = 9h.10m.3s.
St. Louis iPPEN = +5m.29s., iP_cPEN = +8m.50s., iSSE = +9m.57s., iSSN = +10m.8s. ; T_0 = 19h.10m.3s.
Florissant iPPZ = +5m.30s., iPPPZ = +5m.41s., iP_cPZ = +8m.51s., iSSEN = +9m.52s. ; T_0 = 19h.10m.3s.
Columbia ePP = +6m.32s.
Port au Prince PP = +6m.21s., PPP = +6m.35s., i = +6m.59s., SS = +11m.19s.
Charlottesville ePP = +7m.40s.
Berkeley eE = +5m.57s., iZ = +9m.3s. = P_cP − 3s., iSEN = +10m.50s., iSZ = +11m.10s., eSZ = +11m.21s., eE = +12m.58s., iE = +13m.28s.
Ann Arbor eP = +7m.8s., iS = +12m.14s. = SSS + 4s. ; T_0 = 19h.10m.48s.
Pittsburgh iPP = +7m.48s., iSS = +12m.7s.
Bozeman ePP = +7m.17s., iSP = +11m.38s., eSS = +13m.22s.
Toronto iPP = +7m.21s., SS = +13m.50s.? ; T_0 = 19h.9m.44s.
Fordham iPP = +7m.22s., iPPPN = +7m.39s., iN = +12m.21s.
Ottawa PPP = +7m.58s. = PP + 1s., SSE = +14m.18s. ; T_0 = 19h.10m.12s.
Oak Ridge iPPNE = +7m.57s., iP_cPNE = +9m.15s., eSSNW = +15m.17s.
Seattle ePP = +8m.29s., eSS = +15m.14s.
Huancayo ePPP = +9m.50s. = P_cP + 16s.
La Paz iPP = +9m.55s., iSN = +15m.3s., iSS = +18m.15s. = S_cS − 1s., iE = +18m.50s. = SS − 9s.
Sitka iPP = +10m.27s., iS = +15m.44s., SS = +19m.39s.
Ivigtut +12m.56s. = PPP − 3s. and +18m.14s.

Continued on next page.

La Plata PP?N = +12m.30s., PSE = +19m.28s., SSN = +23m.26s., SSE = +23m.56s., SSSN = +26m.44s.
Scoresby Sund +13m.38s. =PP +0s., PPP = +15m.32s., also +24m.32s. = SS −10s.
Edinburgh i = +15m.12s. =PP +11s., +17m.0s., +22m.18s., +24m.3s., +27m.58s., and +31m.32s.
Bidston iPP = +15m.20s., ePPP = +17m.10s., eSS = +26m.50s., eSSS = +30m.50s., e = +33m.50s. ? ; T_0 =19h.10m.5s.
Oxford iP = +12m.25s.
Kew iPPZ = +15m.29s., eSSE = +28m.0s., eSSSE = +31m.48s.
Bergen PP = +15m.21s.
Toledo iP = +12m.23s., PP = +15m.36s., PPP = +17m.23s., PS = +23m.27s., SS = +28m.11s.
Malaga PP = +15m.43s., PPP = +17m.37s., PS = +23m.47s., e = +25m.7s., SS = +28m.12s.
Paris PP = +15m.50s.
De Bilt iPPZ = +15m.53s.
Uccle iPPE = +15m.54s.
Hamburg ePPE = +16m.7s., eSSE = +29m.30s.
Copenhagen eZ = +14m.36s., iPPEZ = +16m.13s., eN = +22m.50s., eNZ = +23m.53s., SS = +29m.14s.
Upsala iE = +23m.49s. =S +10s.
Strasbourg PPZ = +16m.16s., eS = +24m.13s., PS = +25m.7s.
Göttingen ePP = +16m.8s., eSN = +22m.56s., eSSEN = +29m.38s., eE = +33m.38s., eN = +37m.50s. ?
Stuttgart ePP = +16m.20s., ePS = +25m.7s., eSS = +29m.50s. ; T_0 =19h.10m.2s.
Jena eEZ = +16m.21s. =PP −1s., eN = +16m.25s. =PP +3s., eE = +23m.38s., eN = +29m.50s. =SS +16s., and +33m.50s.
Leipzig eE = +29m.50s. ? =SS +13s., e = +33m.50s. ?
Cheb ePP = +16m.32s., eSS = +30m.5s.
Helsingfors ePPEN = +16m.30s., ePSEN = +25m.10s., eSSN = +29m.50s. ?
Piacenza PP = +16m.58s.
Venice eP = +13m.30s., iS = +23m.58s. =SKKS +3s.
Triest iPP = +16m.54s., iSKS = +23m.43s., iE = +24m.53s., iPS = +25m.30s.
Pulkovo PPP = +18m.54s., ePPS = +25m.39s. =PS +9s., SSS = +35m.38s.
Zagreb e = +13m.17s., +16m.50s.? =PP −12s. and +25m.28s. =PS −17s., eNW = +37m.50s.?
Wellington e = +37m.36s. =SSSS −30s.
Kucino ePP = +17m.45s., ePS = +26m.52s.
Christchurch eZ = +24m.7s., i = +24m.24s. =SKS −2s., PSEZ = +26m.41s., iE = +27m.36s., SS = +32m.7s., L_G = +41·8m.
Vladivostok ePPS = +28m.7s.
Sverdlovsk iPP = +18m.16s., iPPP = +20m.40s., iPS = +27m.34s., iSS = +34m.8s.
Kobe eN = +44m.56s., eE = +51m.59s., eZ = +56m.35s., eN = +57m.1s., eE = +57m.46s.
Tiflis eN = +19m.9s. =PP −8s., +30m.16s., and +38m.57s.
Ksara PPS = +30m.26s.
Chiufeng iS = +29m.15s. =PS +8s.
Riverview e = +29m.26s. =PS +9s. and +36m.2s.
Baku iPP = +19m.48s., iPS = +29m.35s.
Melbourne SKKS = +30m.5s. =PS +1s., PS = +31m.23s., i = +37m.5s. and +41m.10s.
Tashkent iPP = +20m.5s., iPS = +30m.10s., iPPS = +31m.34s., eSSS = +41m.50s.?
Adelaide e = +30m.50s. =PS −1s. and +37m.45s. =SS +3s.
Hong Kong PP? = +22m.26s., SS? = +38m.30s.
Agra eN = +21m.55s. =PP −1s., SKPE = +22m.9s., PPSE = +34m.8s., SSE = +39m.51s.
Calcutta PP = +25m.49s., SS = +44m.51s.
Bombay PPN = +22m.46s., SKP = +23m.5s., PPP = +25m.57s., SKS = +26m.23s., PSKS = +32m.46s., SS = +41m.25s.
Tananarive E = +31m.31s. and +33m.40s. =SKSP +10s., PPS = +36m.17s., SS = +43m.30s.
Medan i = +27m.42s. and +36m.13s.
Kodaikanal PPE = +23m.42s.?
Long waves were also recorded at Tortosa, Belgrade, Tunis, Frunse, Sebastopol, Tchimkent, Arapuni, Phu-Lien, Nanking, Taikyu, Nagasaki, and Koti.

Jan. 28d. Readings also at 0h. (Tchimkent, near Almata and Frunse), 5h. (La Paz, Frunse, and near Mizusawa), 6h. (Agra, Tashkent, Almata, near Frunse, Tchimkent (2), and near Santiago), 8h. (Tananarive), 12h. (near Wellington), 13h. (near Mizusawa), 15h. (Agra and Oak Ridge), 16h. (near Nagoya and near Sumoto), 17h. (Wellington, near Hastings, and Tuai), 20h. (Dehra Dun and near Mizusawa), 23h. (Paris).

Jan. 29d. 1h. 38m. 53s. Epicentre 33°·0N. 131°·0E. N.1.

Given by Tokyo: 32°·95N. 130°·97E.

Probable error of epicentre ±0°·11.

A = −·550, B = +·633, C = +·545; D = +·755, E = +·656; G = −·357, H = +·411, K = −·839.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kumamoto	0·3	234	−0 2a	− 6	0 1	− 7	—	—
Ooita	0·6	66	−0 6a	−15	0 1	−14	—	—
Saya	0·6	291	−0 3	−12	0 5	−10	—	—
Hukuoka	0·7	320	i 0 7a	− 3	0 17	− 1	—	0·3
Hukuoka B.	0·7	320	i 0 8a	− 2	0 19	+ 1	—	0·3
Unzendake	0·7	247	0 16	+ 6	0 28	+10	—	—
Simonoseki	1·0	357	0 10a	− 4	0 22	− 4	—	—
Nagasaki	1·0	254	i 0 10k	− 4	i 0 21	− 5	—	0·4
Miyazaki	1·2	161	0 15a	− 2	0 30	− 1	—	—
Kagosima	1·5	195	0 22	+ 1	0 46	+ 7	—	—
Matuyama	1·7	60	0 23a	− 1	0 48	+ 4	—	—
Simidu	1·7	97	0 24	0	0 47	+ 3	—	—
Hirosima	1·8	41	0 20	− 6	0 46	0	—	—
Ituhara	1·8	310	0 26k	0	0 47	+ 1	—	—
Kure	1·8	47	0 29k	+ 3	0 52	+ 6	—	—
Tomie	1·9	258	0 27k	− 1	0 52	+ 3	—	—
Hamada	2·1	25	0 29	− 1	0 58	+ 4	—	—
Niihama	2·1	63	0 30	0	0 55	+ 1	—	—
Koti	2·2	75	0 28	− 3	0 57	0	1·3	—
Tadotu	2·6	61	0 37a	0	1 17	S*	—	—
Muroto	2·7	84	0 36	− 3	1 6	− 3	—	—
Tokusima	3·2	70	0 48	+ 2	1 31	S*	—	—
Taikyu	3·4	326	1 5	P_g	1 45	S_g	—	—
Sumoto	3·5	66	e 0 49k	− 1	1 45	S*	—	1·9
Wakayama	3·7	69	0 52	− 1	1 52	S*	—	—
Kobe	3·8	62	0 54a	0	1 52	S_g	—	2·1
Siomisaki	4·0	82	0 51a	− 6	2 0	S*	—	—
Osaka	4·1	64	1 4	P*	2 9	S_g	—	2·9
Toyooka	4·1	50	0 58	0	2 2	S*	—	2·3
Miyadu	4·3	53	1 0	− 1	2 7	S*	—	—
Yagi	4·3	67	1 7	P*	2 13	S_g	—	—
Kyoto	4·4	61	1 3	0	2 15	S_g	—	—
Hikone	4·9	61	1 11a	+ 1	2 22	S*	—	—
Kameyama	4·9	66	1 9	− 1	2 40	S_g	—	—
Ibukisan	5·1	60	1 12	− 1	2 40	S_g	—	—
Gihu	5·3	62	1 15k	0	2 39	S*	—	—
Nagoya	5·4	65	1 17	0	2 31	S*	—	3·1
Keizyo	5·6	326	e 1 42	P_g	2 47	S*	—	—
Hamamatu	5·8	71	1 25	+ 3	3 9	S_g	—	—
Zinsen	5·8	323	e 1 45	P_g	i 2 52	S*	—	—
Omaesaki	6·2	72	1 28	0	2 55	S*	—	—
Toyama	6·2	52	1 28	0	3 14	S_g	—	—
Wazima	6·5	46	1 32	0	3 33	S_g	—	—
Hunatu	6·8	66	1 37	0	3 34	S_g	—	—
Kohu	6·8	65	1 37	0	3 13	S*	—	—
Nagano	6·9	56	1 41	+ 3	3 29	S*	—	—
Oiwake	7·1	59	1 43	+ 2	3 37	S*	—	—
Heizyo	7·3	327	e 2 30	P_g	3 44	S*	—	—
Maebasi	7·4	60	1 46	+ 1	3 44	S*	—	—
Tokyo	7·7	67	3 36	S	(3 36)	S*	—	—
Nanking	10·3	267	i 2 25	0	—	—	e 5·3	5·8
Chiufeng	13·8	305	—	—	e 6 0	+14	—	—

Additional readings:—
Koti S* = +1m.5s.
Kobe iSEZ = +1m.55s. = S_g −4s.
Osaka i = +1m.19s. = P_g +3s.
Chiufeng e = +7m.15s. and +7m.30s., S_g Z = +8m.21s.
Long waves were also recorded at Hong Kong, Phu-Lien, and other European and Russian stations.

Jan. 29d. 12h. 34m. 53s. Epicentre 37°·6N. 143°·8E. N.1.
(as given by the Japanese stations).

Probable error of epicentre ±0°·16.

A = −·639, B = +·468, C = +·610; D = +·591, E = +·807;
G = −·492, H = +·360, K = −·792.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Onahama		2·4	254	0 38	+ 4	1 1	− 1	—	—
Sendai		2·4	286	0 36a	+ 2	1 10	+ 8	—	—
Hukusima		2·6	273	0 37a	0	1 12	+ 5	—	—
Mizusawa		2·6	306	i 0 39	+ 2	i 1 16	+ 9	—	—
Yamagata		2·8	283	0 40	0	1 20	S*	—	—
Mito		2·9	245	0 39	− 2	1 15	+ 1	—	—
Tyosi		3·0	232	0 40	− 3	1 17	0	—	1·4
Kakioka		3·2	245	0 43	− 3	1 24	+ 2	—	—
Tukubasan		3·3	245	0 44	− 3	1 25	0	—	—
Utunomiya		3·3	252	0 47	0	1 30	+ 5	—	—
Akita		3·6	307	0 59	P*	1 43	S*	—	—
Tokyo		3·8	240	0 52	− 2	1 41	+ 4	—	—
Kumagaya		3·8	249	0 53	− 1	1 39	+ 2	—	—
Maebasi		3·9	252	0 57	+ 1	1 44	+ 4	—	—
Aomori		4·0	326	1 1	+ 4	1 45	+ 3	—	—
Yokohama		4·0	238	0 53	− 4	1 49	+ 7	—	—
Mera		4·2	231	0 59	− 1	2 12	S_g	—	—
Hunatu		4·6	244	1 4	− 2	1 57	− 1	—	—
Kohu		4·6	246	1 4	− 2	1 58	0	—	—
Nagano		4·6	259	1 7	+ 1	2 7	+ 9	—	—
Urakawa		4·6	350	1 1	− 5	1 56	− 2	—	—
Susaki		4·9	235	1 3	− 7	2 3	− 2	—	—
Toyama		5·3	260	1 16	+ 1	2 21	+ 6	—	—
Hatidyozima		5·5	217	1 12	− 6	2 11	− 9	—	—
Wazima		5·5	269	1 18	0	2 32	+12	—	—
Hamamatu		5·7	241	1 28	+ 7	2 42	S*	—	—
Gihu		6·0	250	1 28	+ 3	2 43	+10	—	—
Nagoya		6·0	249	e 1 28	+ 3	2 43	+10	—	3·4
Hikone		6·5	251	1 37	+ 5	2 56	+10	—	—
Kameyama		6·5	247	1 52	P*	3 13	S*	—	—
Osaka		7·3	249	1 45	+ 1	3 28	S*	—	6·1
Kobe		7·5	250	e 1 56	+10	e 3 22	+11	—	—
Wakayama		7·7	247	1 50	+ 1	4 3	S_g	—	—
Sumoto	E.	7·9	248	e 2 3	+11	—	—	—	—
Vladivostok		10·5	305	i 2 30	+ 2	4 42	+16	5·3	6·6
Titizima		10·6	187	2 14	−15	3 59	−29	—	—
Miyazaki		11·6	244	2 49	+ 6	4 57	+ 4	—	—
Chufeng		21·6	285	e 4 45	− 1	8 48	+10	e 10·9	13·2
Sverdlovsk		55·7	319	e 10 13	+39	e 17 24	+ 5	29·1	36·5
Tashkent		55·8	299	—	—	e 17 24	+ 4	e 31·1	37·0
Tinemaha		73·7	56	i 11 21	−12	e 21 47	PS	—	—
Santa Barbara		74·2	58	i 11 24	−12	—	—	—	—
Melbourne		75·4	178	—	—	i 27 22	SS	—	37·8
Mount Wilson		75·5	57	i 11 31	−12	e 21 36	+10	—	—
Pasadena		75·5	57	i 11 29	−14	e 21 29	+ 3	—	—
Riverside		76·1	57	i 11 33	−14	e 21 20	−13	—	—
La Jolla		76·8	58	i 11 40	−10	—	—	—	—

Additional readings:—
Osaka i = +2m.19s. = P_g −1s., +3m.16s., +4m.1s. = S_g +6s., and +5m.32s.
Kobe eE = +3m.30s., eZ = +5m.13s., eN = +5m.48s., eE = +5m.57s., eZ = +6m.2s.
Sumoto PN = +2m.9s. = P* −3s., eZ = +4m.30s., SN = +5m.57s., SE = +6m.13s.
Tashkent e = +21m.31s.
Melbourne i = +31m.22s., +32m.50s.
Long waves were also recorded at Hong Kong, Koti, and other Australian, Russian, and European stations.

Jan. 29d. Readings also at 0h. (Agra), 2h. (Koti), 5h. (near Manila), 8h. (near Amboina, and near Apia), 9h. (Florence), 10h. (Batavia), 11h. (Yalta), 12h. (Agra, Batavia, Manila, and near Amboina), 13h. (Mount Wilson, Pasadena, Tinemaha, and Riverside), 16h. (Koti), 22h. (Nagoya and near Tyosi), 23h. (Chiufeng, Sverdlovsk, and Vladivostok).

Jan. 30d. 19h. 24m. 2s. Epicentre 38°·0N. 118°·5W. N.2.
(The determination adopted for 20h. 16m.).

A = − ·376, B = − ·692, C = + ·616 ; D = − ·879, E = + ·477 ;
G = − ·294, H = − ·541, K = − ·788.

		Δ	Az.	P.	O − C.	S.	O − C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tinemaha		1·0	168	i 0 39	S	(i 0 39)	+13	—
Lick		2·6	255	e 0 36	− 1	i 1 6	− 1	—
Berkeley		2·9	267	i 0 40	− 1	i 1 24	S*	—
Branner		3·0	259	e 0 43	0	i 1 30	S*	—
San Francisco		3·1	266	e 0 47	+ 3	e 1 27	S*	—
Santa Barbara	z.	3·7	196	i 0 57	+ 4	—	—	—
Ukiah		3·8	289	e 1 2	P*	—	—	2·2
Mount Wilson	z.	3·8	174	i 0 55	+ 1	—	—	—
Pasadena	z.	3·9	174	i 0 55	− 1	—	—	—
Riverside	z.	4·1	168	i 0 57	− 1	—	—	—
La Jolla	z.	5·3	168	i 1 16	+ 1	—	—	—
Tucson		8·5	130	e 2 10	+10	e 3 51	+15	i 4·4
Seattle		10·0	345	—	—	e 4 36	+23	e 5·4
Little Rock		21·2	91	4 48	+ 6	—	—	—
Florissant		22·0	79	e 4 47	− 4	e 8 55	+ 9	—
St. Louis		22·1	79	e 4 50	− 2	e 9 0	+12	e 13·5
Toronto		29·9	66	—	—	i 13 37	?	i 16·0
Georgetown		32·2	75	e 6 28	+ 4	e 11 43	+ 5	e 16·3

Additional readings :—
Lick iEN = +47s. = P_g +1s., iN = +1m.15s. = S* −1s., iE = +1m.18s., iEN = +1m.21s. = S_g +1s.
Berkeley iEZ = +44s. = P* − 2s.
Branner iP = +53s. = P_g − 1s., iE = +2m.5s.
Long waves were also recorded at San Juan, Scoresby Sund, and other American and European stations.

Jan. 30d. 20h. 16m. 36s. Epicentre 38°·0N. 118°·5W. (as at 19h.). R.2.

A = − ·376, B = − ·692, C = + ·616 ; D = − ·879, E = + ·477 ;
G = − ·294, H = − ·541, K = − ·788.

		Δ	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tinemaha		1·0	168	i 0 13	− 1	—	—	—	—
Lick		2·6	255	e 0 37	0	i 1 8	+ 1	—	—
Berkeley		2·9	267	e 0 39	− 2	(e 1 18)	+ 4	—	—
Branner		3·0	259	e 0 43	0	—	—	—	—
San Francisco		3·1	266	e 0 44	0	—	—	—	—
Santa Barbara	z.	3·7	196	e 0 55	+ 2	—	—	—	—
Ukiah		3·8	289	i 0 52	− 2	i 1 47	S*	i 2·4	—
Mount Wilson		3·8	174	i 0 56	+ 2	—	—	—	—
Pasadena		3·9	174	i 0 54	− 2	—	—	—	—
Riverside		4·1	168	i 0 57	− 1	—	—	—	—
La Jolla		5·3	168	e 1 16	+ 1	—	—	—	—
Tucson		8·5	130	2 0	0	i 3 35	− 1	i 4·4	—
Bozeman		9·4	33	2 10	− 3	4 6	+ 7	—	—
Seattle		10·0	345	e 2 25	+ 4	e 4 18	+ 5	i 5·3	—
Denver		10·7	77	e 2 30	− 1	e 4 35	+ 4	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Victoria		10·9	344	i 2 33	0	i 4 30	− 6	i 4·6	6·3
Saskatoon		16·3	27	e 3 14	−31	e 6 24	−21	i 7·8	—
Little Rock		21·2	91	e 4 38	− 4	e 8 29	− 1	i 11·0	—
Sitka		22·0	335	e 4 50	− 1	i 8 54	+ 8	i 10·6	—
Florissant		22·0	79	i 4 48	− 3	i 8 50	+ 4	i 10·7	—
St. Louis		22·1	79	e 4 49	− 3	e 8 53	+ 5	e 10·8	11·8
Chicago		23·8	71	e 5 13	+ 5	i 9 26	+ 7	i 11·5	—
Ann Arbor		26·8	70	e 5 30	− 6	e 10 12	0	e 12·8	14·8
Pittsburgh		29·8	73	—	—	e 12 54	SS	e 14·3	—
Toronto		29·9	66	e 6 19	+15	i 12 4	+61	15·2	—
Columbia		30·4	86	—	—	e 11 7	− 3	e 15·0	—
Charlottesville		31·3	78	—	—	e 11 24	0	e 15·7	—
Georgetown		32·2	75	e 6 24	0	e 11 32	− 6	e 14·4	—
Ottawa		32·4	64	e 10 6	?	e 11 0	−41	e 13·4	—
Fordham		34·3	72	—	—	i 12 12	+ 1	i 16·5	19·0
Oak Ridge		35·7	68	i 6 51	− 4	e 12 24	− 8	e 14·4	—
San Juan		49·4	98	e 8 51	+ 4	i 15 54	+ 2	e 25·1	—
Scoresby Sund		56·6	25	—	—	19 24?	(− 4)	27·4	—
Huancayo		64·4	132	—	—	e 19 14	+ 2	e 32·5	—
Edinburgh		71·3	33	—	—	e 21 24?	+47	e 35·4	41·7
La Paz		72·1	128	e 11 31	+ 8	i 20 43	− 3	33·4	37·0
Bidston		73·0	35	—	—	e 20 54	− 3	e 29·4	41·6
Oxford		74·9	35	—	—	e 21 19	0	e 32·6	41·4
Kew		75·6	35	e 11 24?	−20	e 21 29	+ 2	e 31·4	42·1
Sucre		75·8	128	11 45	0	i 21 25	− 4	35·3	—
Vladivostok		76·8	315	—	—	e 20 37	−64	33·4	43·0
De Bilt		77·6	32	e 11 59	+ 4	21 48	0	e 35·4	44·6
Uccle		78·0	34	—	—	e 21 48	− 6	32·4	43·6
Pulkovo		78·9	16	—	—	e 22 3	− 1	39·4	45·9
Strasbourg		81·2	33	e 12 24?	+10	e 23 24?	PS	e 35·4	46·9
Stuttgart		81·6	32	e 12 12	− 4	e 22 33	0	e 39·4	—
San Fernando	N.	82·8	50	12 53	+31	23 25	PS	38·4	44·9
Granada		83·8	48	e 12 32	+ 5	e 23 2	+ 7	40·9	43·3
Piacenza		84·7	34	23 4	S	(23 4)	− 1	39·7	48·2
Vienna		84·9	29	e 12 31	− 2	—	—	e 44·4	53·4
Sverdlovsk		85·1	1	—	—	i 23 1	[+ 1]	42·9	50·3
Triest		86·0	32	e 13 5	+27	i 23 5	[− 1]	e 38·4	45·1
Florence		86·4	35	—	—	e 23 0	[− 9]	31·3	41·4
Chiufeng		87·2	322	23 9	S	(23 9)	[− 6]	e 39·9	49·1
Algiers		87·8	43	13 24?	+37	23 24?	−11	40·4	45·9
Zi-ka-wei	Z.	91·1	313	—	—	e 23 18	[−21]	—	60·6
Tiflis		98·8	13	13 52	+14	e 24 15	[− 5]	54·7	62·5
Wellington		100·0	225	—	—	e 28 54	?	53·4	—
Tashkent		100·4	354	e 10 24	?	i 24 27	[− 1]	e 40·4	63·5
Baku		100·9	9	—	—	e 24 33	[+ 3]	46·4	61·8
Hong Kong		102·0	311	27 14	PS	32 57	SS	—	68·6
Ksara		104·3	22	e 19 9	?	e 29 34	?	—	—
Agra	E.	113·0	343	—	—	e 29 47	?	—	—
Calcutta		114·4	332	10 54	?	24 0	?	55·5	—

Additional readings and notes :—
Lick iE = +44s. = P_g − 2s.
Berkeley iPZ = +44s. = P* − 2s., iPEN = +47s., iE = +58s. = P_g + 6s., iEZ = +1m.32s. = S_g + 2s., iZ = +1m.51s.; S is given as ePZ.
Branner iEN = +50s. = P* + 2s. and +57s. = P_g + 3s., iN = +1m.54s. and +2m.28s., iE = +4m.52s. and +5m.58s., iN = +6m.4s.
San Francisco iPEN = +50s. = P* + 0s.
Ukiah iP* = +1m.4s., iP_g = +1m.13s., iS* = +1m.55s.
Tucson iP_g = +2m.46s., iS* = +3m.58s.
Bozeman P* = +2m.15s., iS* = +4m.27s.
Seattle e = +3m.29s. and +4m.44s. = S* − 11s.
Little Rock iPPE = +4m.58s., iSSE = +8m.52s.; T_o = 20h.16m.32s.
Sitka eSS = +10m.34s.
Florissant iPPEZ = +5m.13s., iP_cPZ = +9m.2s., iSS = +9m.18s., iSSS = +9m.23s.; T_o = 20h.16m.27s.

Continued on next page.

St. Louis ePPE = +5m.14s. ; T_0 = 20h.16m.27s.
Ann Arbor i = +10m.42s.
Toronto i = +10m.56s. = S − 7s. ; T_0 = 20h.16m.8s.
Charlottesville eSS = +12m.56s., e = +14m.31s.
San Juan eSS = +18m.38s. = S_0S − 3s., eSSS = +21m.36s.
Huancayo eSS = +23m.28s., eSSS = +26m.48s.
La Paz PSE = +21m.21s., SS = +25m.41s.
Bidston e = +24m.4s. and +29m.4s.
Kew eSS = +25m.57s., eSSS = +28m.36s.
De Bilt eSS = +26m.54s.
Uccle eN = +27m.27s. and +30m.21s.
Pulkovo e = +31m.2s.
Strasbourg eE = +17m.24s.? ; T_0 = 20h.16m.27s.
Stuttgart eSSS = +31m.24s. ?
Sverdlovsk i = +23m.21s. = S +12s., iSS = +33m.6s., L_q = +37·6m.
Tiflis ePPPE = +20m.45s.
Tashkent e = +32m.24s. = SS +17s.
Long waves were also recorded at Honolulu, La Plata, Christchurch, Sydney, Phu-Lien, Bombay, Sotchi, Kucino, Ivigtut, and at other European stations.

Jan. 30d. Lesser shocks from the origin 38°·0N. 118°·5W. of 19h. and 20h. were also recorded. The list below gives the times of the first recorded phase at each station :—

Lick.

h.	m.	s.	h.	m.	s.	h.	m.	s.
3	12	31	21	4	13	21	48	5
19	29	8	21	12	28	21	50	56
20	22	16	21	27	27	22	5	3
20	27	58	21	31	53	23	40	19
			21	38	54			

Berkeley.

h.	m.	s.	h.	m.	s.	h.	m.	s.
3	12	37	20	22	21	21	12	37
19	29	9	21	4	15	23	39	7

Branner.

h.	m.	s.	h.	m.	s.	h.	m.	s.
3	12	37	21	27	33	21	48	18
19	29	13	21	32	2	21	51	16
21	4	27	21	39	5	22	5	11
21	12	37	21	45	16	23	40	28

San Francisco.

h.	m.	s.	h.	m.	s.	h.	m.	s.
19	29	16	20	22	17	23	40	30

Ukiah.

h.	m.	s.
23	40	37

Tucson.

h.	m.	s.
23	42	30

Bozeman.

h.	m.	s.	
23	44	18	(given as a local shock for which L − P = 12s.).

Jan. 30d. Readings also at 0h. (Tashkent and Tiflis, La Plata, and near Santiago), 5h. (near Arisan, Karenko, and Taihoku), 7h. (near Mizusawa, near Triest, Venice, Chur, Zurich, and near Amboina), 8h. (Riverview (2)), 9h. (near Malabar), 14h. (Vladivostok), 15h. (Calcutta, Chiufeng, Sverdlovsk, and Riverview), 16h. (near Tyosi), 17h. (Tyosi, near Berkeley, Branner, and Lick), 19h. (Christchurch and Wellington), 20h. (Riverview, Melbourne, and Manila), 23h. (Christchurch, Wellington, San Fernando, and Calcutta).

Jan. 31d. 10h. 6m. 37s. Epicentre 16°·0S. 172°·0W. N.2.

A = −·952, B = −·134, C = −·276; D = −·139, E = +·990; G = +·273, H = +·038, K = −·961.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Apia		2·2	5	i 0 31	0	i 0 50	− 7	—	1·1
Wellington		27·8	202	5 43	− 2	—	—	14·4	15·4
Christchurch		30·5	202	i 6 10	+ 1	e 11 11	− 1	14·9	—
Riverview		37·6	235	i 8 34	PP	—	—	e 17·6	20·5
Sydney		37·6	235	e 8 47	PPP	e 13 11	+11	17·7	20·7
Melbourne		43·6	232	i 7 54	− 8	i 14 45	+15	20·9	21·3
Mizusawa	E.	70·4	323	11 7	− 6	—	—	—	—
Santa Barbara	Z.	70·8	44	i 11 16k	0	—	—	—	—
Branner		71·1	40	e 11 20	+ 3	—	—	—	—
Berkeley		71·3	40	11 18	− 1	—	—	—	—
Ukiah		71·5	38	—	—	e 20 39	0	e 32·4	—
La Jolla		71·6	46	i 11 23k	+ 3	e 20 47	+ 7	—	—
Pasadena		71·6	45	i 11 22k	+ 2	i 20 44	+ 4	e 32·6	—
Mount Wilson		71·8	45	i 11 22k	0	—	—	—	—
Riverside		72·1	45	i 11 24k	+ 1	—	—	—	—
Manila		73·0	292	i 11 19	−10	20 36	−21	—	—
Tinemaha		73·3	43	i 11 31k	0	—	—	—	—
Tucson		75·8	50	e 11 47	+ 2	e 21 33	+ 4	34·9	—
Victoria		77·6	31	i 21 43	S	(i 21 43)	− 6	e 35·7	39·1
Chiufeng		87·1	313	12 35a	− 9	i 22 56	[−18]	—	—
Little Rock		90·9	54	8 42	?	—	—	—	—
Huancayo		93·0	103	—	—	e 23 59	[+ 9]	e 44·8	—
La Paz		98·2	110	e 14 38	+63	i 25 35	+24	49·4	56·8
Ottawa		105·7	46	—	—	e 33 23?	SS	e 49·4	—
Oak Ridge	N.E.	108·3	50	—	—	e 28 19	PS	e 50·9	—
San Juan		109·7	76	—	—	e 25 8	[− 4]	e 51·8	—
Tashkent		122·0	309	—	—	e 30 16	PS	e 63·4	68·8
Sverdlovsk		123·4	328	i 20 36	PP	e 25 52	[− 8]	48·4	66·2
Helsingfors	N.	134·1	349	e 18 23?	[−50]	e 28 23?	{−25}	e 63·4	—
Baku		136·4	312	e 22 50	PKS	e 39 52	SS	63·4	75·2
Tiflis		139·3	316	19 22	[+ 2]	—	—	e 71·1	78·6
De Bilt		143·9	3	e 19 41	[+10]	—	—	e 66·4	73·9
Kew		144·0	8	—	—	e 56 23	?	e 69·4	77·1
Uccle		145·1	5	19 34	[0]	—	—	67·4	—
Paris		146·9	7	e 19 40	[+ 3]	—	—	74·4	78·4
Karlsruhe		147·0	0	19 44	[+ 7]	—	—	—	—
Vienna	Z.	147·0	349	e 19 38a	[+ 1]	—	—	—	—
Stuttgart		147·2	358	e 19 42k	[+ 5]	—	—	e 69·4	—
Strasbourg		147·4	0	19 41k	[+ 3]	—	—	e 67·4	—
Basle		148·5	1	e 19 44	[+ 4]	—	—	—	—
Zurich		148·6	0	e 19 41	[+ 1]	—	—	—	—
Neuchatel		149·0	1	e 19 40	[0]	—	—	—	—
Chur		149·1	0	e 19 41	[+ 1]	—	—	—	—
Zagreb		149·5	349	e 19 39	[− 2]	—	—	—	—
Triest		150·0	352	e 19 47	[+ 5]	—	—	—	78·4
Venice		150·4	354	e 19 48	[+ 6]	—	—	—	—
Piacenza		150·9	358	19 51	[+ 8]	—	—	—	84·6
Florence		152·1	354	19 48	[+ 4]	26 23	PPP	—	—
Granada		156·5	24	19 51	[+ 1]	—	—	72·7	84·8

Additional readings :—
Christchurch iEN = +11m.21s., L_q = +13·1m.
Melbourne i = +9m.51s. = P_cP − 3s. and +18m.5s. = S_cS +1s.
Branner eE = +11m.31s.
Pasadena iZ = +14m.0s. = PP + 8s.
Chiufeng i = +23m.7s.
Huancayo eS = +24m.40s., eSSS = +37m.13s.
Oak Ridge eNE = +34m.16s.
San Juan eS = +26m.44s.
Tashkent e = +36m.23s. and +39m.59s.

Continued on next page.

Sverdlovsk e = +28m.24s., i = +37m.6s. and +37m.26s. =SS +10s.
Helsingfors ePPN = +22m.23s.?
Tiflis ePKSN = +22m.54s., eE = +35m.35s. and +40m.28s. =SS − 6s.
Uccle iZ = +19m.45s.
Paris iP = +19m.51s.
Vienna iPZ = +19m.51s., iZ = +23m.15s. =PKS − 8s.
Stuttgart i = +19m.51s.
Strasbourg iZ = +19m.53s.
Triest i = +19m.58s.
Florence i = +20m.22s.
Granada i = +24m.13s. =PP +16s., SKSP = +32m.51s.
Long waves were also recorded at San Francisco, Arapuni, Honolulu, Adelaide, Perth, Sitka, Lick, Bozeman, Kucino, Pulkovo, Scoresby Sund, and at other European stations.

Jan. 31d. A further list of shocks from the epicentre 38°·0N. 118°·5W. The first phase only of each shock is recorded.

Lick.

h.	m.	s.	h.	m.	s.	h.	m.	s.
0	25	14	3	51	35	14	28	0
1	54	33	3	55	37	19	44	36
2	31	41				21	31	6

Berkeley.

h.	m.	s.	h.	m.	s.	h.	m.	s.
0	24	57	3	54	59	19	44	38
3	51	36	10	42	59	21	31	10
			14	28	1			

Branner.

h.	m.	s.	h.	m.	s.	h.	m.	s.
0	25	21	2	31	54	14	28	10
1	49	38	3	51	41	19	44	43
1	54	44	3	55	47	21	31	13
			10	43	9			

San Francisco.

h.	m.	s.	h.	m.	s.	h.	m.	s.
0	25	25	14	28	6	21	31	15
3	55	46						

Ukiah.

h.	m.	s.	h.	m.	s.	h.	m.	s.
0	26	28	3	56	54	14	29	30

Tucson.

h.	m.	s.	h.	m.	s.	h.	m.	s.
0	27	18	3	55	18	14	31	48

Jan. 31d. Readings also at 0h. (Erevan and near Hukuoka), 4h. (Oak Ridge), 10h. (near Tananarive), 16h. (Tyosi and near Mizusawa), 15h. (near Berkeley), 18h. (Mizusawa), 22h. (near La Paz (2)), 23h. (Tiflis, Ksara, Zurich, near Chur, Neuchatel, and near Mizusawa).

Feb. 1d. 0h. 16m. 6s. Epicentre 35°·6N. 139°·4E. R.1.
(as on 1931 June 17d. and close to the position 35° 33′N. 139° 33′E. given by the Japanese stations).

Probable error of epicentre ±0°·13.

A = −·617, B = +·529, C = +·582; D = +·651, E = +·759;
G = −·442, H = +·379, K = −·813.

	△	Az.	P.	O—C.	S.	O—C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Tokyo	0·3	74	0 9	+ 5	0 23	+15	0·4
Yokohama	0·3	129	0 9	+ 5	0 22	+14	—
Yokosuka	0·4	144	0 8a	+ 2	0 18	+ 8	—
Hunatu	0·5	259	0 8	+ 1	0 21	+ 8	—
Kumagaya	0·6	359	0 12k	+ 3	0 26	+11	—

Continued on next page.

		Δ	Az.	P.	O—C.	S.	O—C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Misima		0·6	217	0 8	− 1	0 21	+ 6	—
Ito		0·7	202	0 9	− 1	0 20	+ 2	—
Kohu		0·7	273	0 11a	+ 1	0 25	+ 7	—
Maebasi		0·8	342	0 14a	+ 3	0 32	+11	—
Mera		0·8	153	0 10k	− 1	0 21	0	—
Tukubasan		0·8	43	0 13	+ 2	0 29	+ 8	—
Oiwake		1·0	317	0 16a	+ 2	0 33	+ 7	—
Susaki		1·0	200	0 11	− 3	0 24	− 2	—
Utunomiya		1·0	22	0 14a	0	0 34	+ 8	—
Iida		1·2	266	0 18	+ 1	0 36	+ 5	—
Mito		1·2	48	0 16a	− 1	0 35	+ 4	—
Tyosi		1·2	84	0 19	+ 2	0 36	+ 5	0·8
Matumoto		1·3	298	0 19	+ 1	0 35	+ 2	—
Nagano		1·4	318	0 21	+ 1	0 42	+ 6	—
Omaesaki		1·4	224	0 15	− 5	0 46	+10	—
Onahama		1·8	42	0 36a	+10	1 3	+17	—
Nagoya		2·0	258	0 25	− 4	0 49	− 2	0·9
Gihu		2·1	265	0 26	− 4	0 50	− 4	—
Aidu		2·1	17	0 36	+ 6	1 1	+ 7	—
Toyama		2·1	301	0 28	− 2	0 57	+ 3	—
Hukusima		2·3	22	0 32	− 1	1 0	+ 1	—
Ibukisan		2·4	265	0 32a	− 2	1 2	0	—
Hatidyozima		2·5	172	0 31	− 5	0 57	− 7	—
Kameyama		2·5	253	0 35	− 1	0 59	− 5	—
Hikone		2·6	263	0 35	− 2	1 4	− 3	—
Sendai		2·9	24	0 39	− 2	1 15	+ 1	—
Osaka		3·3	253	0 27	−20	1 18	− 7	1·8
Osaka B.		3·3	253	0 54	+ 7	1 25	0	—
Mizusawa		3·8	21	e 0 51	− 3	i 1 36	− 1	—
Sumoto	E.	3·9	252	e 1 14	P_g	e 1 44	+ 4	2·0
	N.	3·9	252	e 1 28	P_g	1 42	+ 2	1·7
Morioka		4·3	18	0 58	− 3	1 51	+ 1	—

The Japanese stations suggest a deep focus about 100 km., which accounts for the larger positive residuals near the epicentre.

Feb. 1d. 11h. 46m. 4s. Epicentre 38°·0N. 118°·5W. (as on Jan. 30d.) **X.**

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Lick	2·6	255	e 0 34	− 3	i 1 17	S*	—	—
Berkeley	2·9	267	e 0 41	0	i 1 27	S*	—	—
Branner	3·0	259	e 0 47	+ 4	i 1 14	− 3	—	—
San Francisco	3·1	266	e 0 44	0	i 1 32	S*	—	—
Ukiah	3·8	289	e 1 12	P_g	i 1 52	S*	i 2·3	—
Tucson	8·5	130	e 2 20	+20	i 4 2	S*	i 4·6	—
Bozeman	9·4	33	e 4 3	S	(e 4 3)	+ 4	i 5·1	—
Seattle	10·0	345	—	—	e 4 42	S*	e 5·5	—
St. Louis	22·1	79	e 4 48	− 4	e 8 50	+ 2	e 10·9	11·7
Toronto	29·9	66	—	—	e 12 23	SS	15·8	—

Additional readings :—
Lick iE = +38s.
Berkeley iE = +48s. = P* + 2s. and +1m.30s. = S_g + 0s.
Branner iE = +1m.1s., iN = +1m.4s. and +1m.7s., iEN = +1m.27s. = S* − 1s., iE = +1m.31s. = S_g − 2s., iEN = +1m.36s., iN = +1m.41s.
San Francisco iPE = +51s. = P* + 1s.
Bozeman eS = +4m.44s. = S* + 6s.
Long waves were also recorded at Scoresby Sund and at other American stations.

Feb. 1d. 15h. 27m. 48s. Epicentre 30°·6N. 139°·5E. (as on 1932 April 4d.). X.

$A = -\cdot654$, $B = +\cdot559$, $C = +\cdot509$; $D = +\cdot649$, $E = +\cdot760$; $G = -\cdot387$, $H = +\cdot331$, $K = -\cdot861$.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Nagoya		5·0	335	e 1 21	P*	2 28	S*	—
Osaka		5·2	321	1 16	+ 2	2 22	+ 9	2·6
Tyosi		5·2	12	—	—	2 41	S_g	—
Sumoto		5·3	315	—	—	e 2 13	− 2	2·4
Kobe		5·4	320	e 1 15	− 2	i 2 23	+ 5	4·2
Mizusawa	E.	8·6	8	—	—	e 3 39	0	—

Sumoto S = +2m.19s.
Kobe gives also eN = +3m.17s., eZ = +3m.35s.

Feb. 1d. Further shocks from the epicentre 38°·0N. 118°·5W. of 1934 Jan. 30d., and above at 11h. were recorded as follows:—

Lick.

h.	m.	s.	h.	m.	s.	h.	m.	s.
3	20	5	12	11	20	13	21	42
11	1	46	12	51	23	18	35	38
11	19	44	12	53	50			

Berkeley.

h.	m.	s.	h.	m.	s.	h.	m.	s.
3	20	0	11	19	48	18	35	43
11	1	50	13	21	46			

Branner.

h.	m.	s.	h.	m.	s.	h.	m.	s.
3	20	6	12	11	25	13	21	55
11	1	56	12	51	35	18	35	47
11	19	54	12	53	58			

San Francisco.

h.	m.	s.	h.	m.	s.	h.	m.	s.
4	27	20	11	19	49	13	21	34
11	1	52	12	11	25			

Ukiah.

h.	m.	s.	h.	m.	s.
11	2	22	11	20	9

Tucson.

h.	m.	s.	h.	m.	s.	h.	m.	s
3	23	54	11	3	50	13	25	24
			12	57	30			

Toronto.

h.	m.	s.
11	16	50

Oak Ridge.

h.	m.	s.	h.	m.	s.
L 11	19	54	L 11	33	48

Feb. 1d. Readings also at 4h. (Barcelona), 7h. (Huancayo and La Paz), 8h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 9h. (Little Rock), 11h. (Agra and Huancayo), 14h. (Nagoya), 16h. (Nagoya, near Osaka, and Sumoto), 17h. (Huancayo and La Paz), 19h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 21h. (Berkeley), 22h. (Nagoya).

Feb. 2d. 15h. 5m. 21s. Epicentre 4°·5S. 135°·0E. N.3.

A = −·705, B = +·705, C = −·078; D = +·707, E = +·707; G = +·055, H = −·055, K = −·997.

		△	Az.	P.	O—C.	S.	O—C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		6·8	276	1 23	−14	i 2 34	−19	—	—
Manila		23·6	324	i 5 7a	+ 1	i 9 19	+ 3	12·0	14·1
Batavia		28·1	265	i 5 48	0	10 52	+18	16·4	—
Adelaide		30·7	175	i 6 14	+ 3	i 11 28	+12	i 16·1	17·0
Perth		32·8	211	e 6 29	− 1	i 11 46	− 2	i 16·3	18·1
Riverview		33·0	155	—	—	e 14 15	?	i 16·8	18·6
Sydney		33·0	155	i 11 33	S	(i 11 33)	−18	17·4	18·6
Hong Kong		33·7	324	6 50	+12	11 52	− 9	14·6	16·0
Melbourne		34·5	166	—	—	12 14	0	16·8	19·6
Medan		37·2	282	7 8	0	i 12 49	− 5	i 17·5	—
Phu-Lien		37·6	313	e 7 11	− 1	(12 39?)	−21	12·6	—
Zi-ka-wei	Z.	38·0	342	e 7 16	+ 1	15 41	SS	18·2	20·1
Sumoto	N.	38·8	1	—	—	e 13 9	− 9	20·6	—
Osaka		39·2	1	8 42	PP	13 39	+15	18·8	23·2
Kobe		39·2	1	—	—	(16 24)	SSS	e 19·2	23·5
Vladivostok		47·6	358	7 39	−54	e 14 25	−62	20·2	25·8
Chiufeng		47·8	341	e 8 32a	− 3	i 15 21	− 9	20·4	23·9
Arapuni		49·9	138	16 15	S	(16 15)	+16	23·6	25·6
Christchurch		51·2	145	8 55	− 5	16 19	+ 1	25·3	—
Wellington		51·2	142	16 8	S	(16 8)	−10	22·6	27·6
Calcutta		52·9	303	8 32	−41	15 59	−42	23·1	29·6
Kodaikanal		59·2	285	10 1	+ 2	18 3	− 2	25·0	34·8
Hyderabad		60·0	293	13 44	PPP	18 14	− 2	20·4	25·8
Agra	E.	63·4	304	10 23	− 5	18 49	−11	29·8	—
Bombay		65·4	293	10 38	− 3	19 21	− 4	32·8	38·9
Tashkent		75·1	315	e 11 39	− 2	e 21 17	− 4	34·6	39·4
Sverdlovsk		85·3	328	i 12 40	+ 5	i 22 54	[− 7]	39·6	45·4
Baku		89·2	310	e 12 56	+ 2	e 23 57	+ 9	e 47·6	54·0
Tiflis	E.	93·1	311	13 23	+11	e 23 40	[−11]	e 46·4	—
Ksara		100·0	303	e 18 19	PP	27 27	PS	—	—
Pulkovo		101·2	330	e 14 34	?	e 25 31	− 6	48·6	57·6
Tinemaha		106·0	53	i 17 26	?	—	—	—	—
Pasadena		106·4	56	e 17 13	?	—	—	—	—
Mount Wilson		106·5	56	i 17 13	?	—	—	—	—
Riverside		107·1	56	i 17 9	?	—	—	—	—
Cape Town		109·0	232	—	—	27 39?	PS	—	—
Scoresby Sund		112·3	352	—	—	24 39?	?	—	—
Cheb		113·8	323	—	—	e 30 39?	?	e 55·6	60·6
Triest		114·7	319	—	—	e 26 49	{+ 9}	e 40·6	58·6
Stuttgart		116·3	323	—	—	e 26 39?	{−12}	e 60·6	—
De Bilt		116·9	328	—	—	e 27 39?	?	e 53·6	63·1
Edinburgh		118·8	335	—	—	e 39 39?	?	e 55·6	61·6
Kew		120·2	329	—	—	e 45 51	?	e 54·6	59·9
Bidston		120·3	333	—	—	e 36 54	SS	e 55·6	73·6
Huancayo		145·6	119	—	—	e 30 3	{+ 6}	e 73·4	—
La Paz		149·0	134	e 19 25	[−15]	—	—	72·6	97·8
Sucre	Z.	149·2	141	i 19 57	[+17]	—	—	—	—

Additional readings and note:—
Manila iE = +5m.12s., iN = +5m.19s.
Batavia i = +6m.32s. = PP +0s.
Adelaide iSS = +12m.52s., i = +14m.29s. and +15m.12s.
Perth PP = +8m.26s., P_cP = +12m.19s., SP = +13m.21s. = SS −15s.
Sydney iS = +16m.10s.
Hong Kong PP = +7m.55s.
Melbourne SS = +14m.41s. = SSS +10s.
Medan i = +9m.39s. = P_cP +6s.
Zi-ka-wei iZ = +14m.47s.
Sumoto eE = +16m.9s.

Continued on next page.

Kobe SS is given as LE.
Chiufeng iP = +8m.40s.
Christchurch SSEN = +19m.44s., SSSN = +21m.16s., L_qN = +22·6m.
Wellington S = +20m.44s.
Agra PSE = +19m.18s., SSE = +23m.8s., SSSE = +25m.9s.
Sverdlovsk iSKS = +23m.12s. =S +1s., iPS = +24m.4s.
Tiflis eE = +17m.5s. =PP +15s., +24m.0s. =SKKS +0s., and +25m.38s. = PS +10s.
Pulkovo eSS = +32m.21s.
De Bilt eEN = +36m.3s. =SS +12s.
Bidston e = +41m.39s. and +48m.9s.
Huancayo e = +43m.19s.
La Paz iPN = +19m.57s.
Long waves were also recorded at New Plymouth, Koti, Hukuoka, Kucino, San Juan, La Plata, and other American and European stations.

Feb. 2d. 19h. 59m. 13s. Epicentre 45°·7N 26°·1E. N.2.

A = +·627, B = +·307, C = +·716; D = +·440, E = −·898; G = +·643, H = +·315, K = −·698.

		△	Az.	P.	O—C.	S.	O—C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Lemberg		4·3	342	—	—	e 1 47	− 3	—	2·6
Budapest		5·1	293	1 18	+ 5	2 20	+10	2·8	—
Sebastopol		5·4	100	i 1 15	− 2	(e 2 14)	− 4	e 2·2	—
Simferopol		5·7	95	e 1 18	− 3	(e 2 18)	− 7	e 2·3	—
Yalta		5·8	100	e 1 23	+ 1	(e 2 25)	− 3	e 2·4	—
Theodosia		6·6	93	e 1 33	− 1	(i 2 46)	− 2	i 2·8	—
Vienna		7·1	294	e 1 35a	− 6	—	—	—	4·8
Sotchi		9·9	97	e 2 19	0	e 4 20	+ 9	—	—
Chur		11·5	282	e 2 43	+ 1	—	—	—	—
Stuttgart		11·9	291	e 2 47?	0	—	—	—	—
Zurich		12·1	285	e 2 49	− 1	e 5 7	+ 2	—	—
Basle		12·8	285	e 2 58	− 1	—	—	—	—
Strasbourg		12·8	290	e 2 47?	−12	—	—	—	—
Neuchatel		13·2	286	e 3 3	− 2	e 5 45	+13	—	—
Ksara		14·0	144	e 3 38	+23	—	—	—	—
Grozny		14·2	93	e 3 19	+ 1	e 8 37	?	—	—
Pulkovo		14·3	9	e 3 19	0	e 6 5	+ 7	7·3	—
De Bilt		15·0	303	e 3 30	+ 2	—	—	e 7·8	—
Uccle		15·3	297	e 3 32	0	—	—	—	—
Paris	z.	16·2	290	—	—	(e 5 47?)	−56	e 5·8	—
Kew		18·2	298	e 0 47?	?	—	—	—	—
Scoresby Sund		33·9	334	—	—	(12 47?)	+43	12·8	—

Additional readings :—
Lemberg eE = +1m.53s.
Long waves were also recorded at San Fernando.

Feb 2d. Continuation of the list of after-shocks from the epicentre 38°·0N. 118°·5W.

Lick	h.	m.	s.	h.	m.	s.
	4	7	22	6	0	41
Berkeley.	4	7	21	6	0	40
Branner.	4	7	34	6	0	49

Feb. 2d. Readings also at 4h. (La Paz), 9h. (Balboa Heights and La Paz), 11h. (Tiflis), 12h. (Agra), 14h. (near Amboina), 15h. (Huancayo and La Paz), 16h. (near Ottawa), 17h. (Kew, Edinburgh, Paris, and Uccle), 18h. (Arapuni, Christchurch, Wellington, Melbourne, Perth, Nagoya, near Tyosi, and Susaki), 19h. (Bombay, Baku, Tiflis, Sverdlovsk, Tashkent, Cape Town, and La Paz), 20h. (Sverdlovsk), 22h. (near Apia).

Feb. 3d. 14h. 33m. 13s. Epicentre 5°·6S. 151°·5E. N.2.

$A = -\cdot 875$, $B = +\cdot 475$, $C = -\cdot 098$; $D = +\cdot 477$, $E = +\cdot 879$; $G = +\cdot 086$, $H = -\cdot 047$, $K = -\cdot 995$.

		△	Az.	P.	O—C.	S.	O—C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Palau		21·4	307	4 45	+ 1	8 53	+19	—	—
Amboina		23·3	274	5 0	− 4	9 40	SS	13·8	—
Riverview		28·1	181	e 6 5	+17	i 10 39	+ 5	15·1	16·8
Sydney		28·1	181	e 9 47	?	i 13 53	?	16·1	17·3
Adelaide		31·6	200	i 6 18	− 1	i 11 33	+ 4	15·0	19·0
Melbourne		32·7	189	7 7?	+38	10 50	−56	15·0	16·9
Titizima		33·9	346	6 43	+ 4	12 13	+ 9	—	—
Manila		36·4	305	i 7 1a	0	13 10	+28	18·9	—
Arapuni		39·1	149	—	—	13 47	+25	18·8	20·8
New Plymouth		39·2	151	6 47?	−38	—	—	—	—
Wellington		41·2	153	7 41	− 1	13 51	− 3	19·4	20·8
Miyazaki		42·1	334	7 26	−23	13 8	−60	—	—
Christchurch		42·1	157	e 7 49	0	i 14 11	+ 3	22·5	23·4
Perth		42·4	228	e 8 4	+12	13 24	−47	18·8	—
Koti		42·7	339	i 7 54	0	(14 17)	+ 1	14·3	—
Sumoto		42·9	340	e 8 11	+15	—	—	19·2	23·8
Nagoya		43·0	343	e 8 10	+13	—	—	e 20·8	—
Kobe		43·1	340	e 10 2	(+10)	—	—	e 18·6	22·1
Nagasaki		43·5	334	8 0	− 1	14 31	+ 3	20·9	—
Malabar		43·6	266	8 6	+ 4	—	—	—	—
Hukuoka	B	44·0	335	8 8	+ 3	e 14 25	−11	e 19·6	—
Batavia		44·3	268	8 9	+ 2	e 14 12	−28	24·8	—
Mizusawa		45·7	350	e 8 8	−10	15 2	+ 2	21·2	—
Hong Kong		46·0	309	8 19	− 2	14 0	−64	18·6	23·8
Taikyu		46·7	335	e 8 9	−17	e 14 55	−19	e 20·2	—
Zi-ka-wei	N.	46·7	324	e 8 24	− 2	—	—	—	24·8
Keizyo		48·8	335	e 8 40	− 2	e 15 34	−10	—	—
Zinsen		48·9	334	e 8 40	− 3	e 15 35	−10	e 23·6	—
Nanking		48·9	322	i 9 35?a	+52	i 15 52	+ 7	21·2	26·1
Sapporo		49·6	350	8 53	+ 5	—	—	—	—
Phu-Lien		51·4	304	e 9 1	− 1	e 16 22	+ 2	23·8	—
Vladivostok		51·8	341	i 9 6	+ 1	16 18	− 7	22·5	26·7
Medan		53·5	278	e 9 36	+18	—	—	e 33·8	—
Chiufeng		56·1	328	i 9 34a	− 3	17 17	− 7	23·6	31·0
Honolulu		56·5	59	e 9 47	+ 8	i 17 30	0	e 24·7	—
Calcutta		67·8	297	8 31	?	17 21	?	29·4	35·0
Colombo		72·6	279	11 25	− 1	—	—	—	39·8
Hyderabad		75·7	290	11 42	− 2	21 42	+14	36·4	51·8
Agra	E.	78·0	300	11 55	− 2	21 39	−15	e 36·6	45·1
Bombay		81·2	290	12 9	− 5	22 14	−14	36·2	45·6
Frunse		84·4	314	13 25	+55	—	—	44·3	—
Sitka		85·7	31	—	—	i 23 2	[− 2]	e 35·1	—
Tashkent		87·9	314	i 12 43	− 4	i 23 8	[−11]	38·5	53·9
Tchimkent		87·9	314	12 35	−12	—	—	—	—
Ukiah		89·9	51	—	—	e 23 47	− 8	e 41·3	—
Berkeley		90·5	52	e 12 58	− 2	e 23 8	[−28]	e 45·8	—
Lick	E.	90·9	52	e 13 1	− 1	—	—	—	—
Victoria		91·0	41	i 23 43	SKS	(i 23 43)	[+ 4]	i 41·7	45·6
Seattle		91·6	42	e 23 39	SKS	(e 23 39)	[− 3]	e 41·8	—
Santa Barbara	Z.	92·2	56	e 13 7	− 1	—	—	—	—
Pasadena		93·4	56	i 13 13a	0	e 24 29	+ 1	e 43·0	—
Mount Wilson		93·5	56	i 13 13	− 1	—	—	—	—
Tinemaha		93·6	53	e 13 14	0	i 24 58	+29	—	—
La Jolla		94·1	57	e 13 16	0	e 24 31	− 3	—	—
Riverside		94·1	56	i 13 21	+ 5	—	—	—	—
Sverdlovsk		95·2	327	i 13 21	0	i 23 47	[−15]	48·8	54·8
Bozeman		99·2	44	—	—	e 24 23	[+ 1]	e 46·4	—
Tucson		99·5	58	—	—	e 25 39	+17	41·3	—
Baku		102·5	311	e 17 56	PP	e 27 30	PS	43·8	57·6
Grozny		105·3	314	e 19 2	PP	—	—	e 55·8	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tiflis		106·2	312	13 49	−23	25 9	[+13]	e 41·6	—
Kucino		107·8	327	—	—	e 29 6	?	e 46·1	64·3
Pulkovo		110·2	333	e 19 5	PP	25 29	[+15]	54·8	59·7
Helsingfors		112·3	335	—	—	e 28 47?	PS	e 52·8	—
Theodosia		112·3	317	e 19 22	PP	28 49	PS	54·8	—
Simferopol		113·2	317	e 19 17	PP	—	—	—	—
Yalta		113·2	317	e 19 20	PP	—	—	—	—
Ksara		114·3	305	19 35	PP	29 18	PS	53·8	—
Scoresby Sund		115·0	358	19 44	PP	29 17	PS	56·8	—
Florissant		115·3	49	e 17 26	[−68]	i 26 29	{−15}	—	—
St. Louis		115·4	49	e 19 33	PP	e 29 28	PS	56·8	—
Upsala		115·6	336	—	—	e 35 47?	SS	e 64·8	—
Chicago		116·5	45	—	—	e 27 55	?	e 54·1	—
Helwan		118·9	302	20 10	PP	30 2	PS	37·2	70·2
Copenhagen		120·3	335	—	—	30 11	PS	56·8	—
Toronto		121·4	40	e 17 17	?	i 36 59	SS	49·8	—
Pittsburgh		122·4	45	—	—	e 37 24	SS	e 53·4	—
Prague		122·9	328	—	—	e 28 47?	?	e 57·8	66·8
Vienna		122·9	326	e 18 53	[0]	—	—	e 61·8	73·8
Ottawa		123·0	37	e 20 47?	PP	e 27 29	{− 8}	e 51·8	—
Columbia		123·8	52	—	—	e 25 47	[−15]	e 59·8	—
Jena		123·8	330	—	—	e 30 47?	PS	e 59·8	76·3
Cheb		123·9	330	e 20 47?	PP	e 30 32	PS	e 63·8	72·8
Göttingen		124·2	332	—	—	e 41 47	SSS	e 52·8	69·8
Georgetown	Z.	125·0	45	e 18 57	[0]	e 31 8	PS	e 58·8	—
Triest		125·8	325	e 21 4	PP	i 30 53	PS	e 56·8	68·4
De Bilt		125·9	335	i 18 59	[0]	—	—	e 57·8	73·8
Edinburgh		125·9	341	—	—	e 30 47?	PS	e 59·8	76·8
Fordham		126·3	41	—	—	e 41 12	?	e 58·8	—
Stuttgart		126·4	330	e 19 1k	[+ 1]	e 30 53	PS	e 60·8	74·8
Oak Ridge		127·0	39	i 19 2	[+ 1]	—	—	e 52·8	—
Strasbourg		127·2	330	e 19 4	[+ 3]	e 26 0	[−11]	e 58·8	76·0
Uccle		127·2	335	19 1	[0]	e 30 47?	SKSP	e 55·8	76·4
Chur		127·4	326	e 19 1	[− 1]	—	—	—	—
Zurich		127·6	327	e 19 0	[− 2]	—	—	—	—
Bidston		127·9	339	e 22 27	?	31 17	PS	—	—
Basle		128·0	329	e 19 3	[0]	—	—	—	—
Florence		128·3	324	e 21 6	PP	—	—	71·8	78·8
Piacenza		128·5	325	e 21 47?	?	—	—	—	75·0
Kew		128·5	337	e 21 3	PP	—	—	e 58·8	77·3
Neuchatel		128·7	329	e 19 3	[− 1]	—	—	—	—
Oxford		128·7	338	e 20 57	PP	—	—	e 63·2	76·2
Paris		129·4	333	e 19 12	[+ 6]	e 21 20	PP	e 64·8	79·8
Huancayo		130·2	111	e 19 27	[+20]	e 33 37	?	e 53·7	—
La Paz		135·0	121	i 19 19	[+ 4]	—	—	66·3	96·4
Sucre		136·3	125	19 23	[+ 6]	—	—	66·8	—
Alicante		138·6	326	—	—	e 26 31	SKS	e 76·6	—
Toledo		139·3	330	e 19 55	[+35]	—	—	e 69·2	—
Almeria		140·7	326	—	—	e 46 36	SSS	e 76·3	—
San Juan		141·2	67	e 19 24	[+ 1]	—	—	e 62·8	—
San Fernando	E.	143·1	330	20 1	[+34]	32 44	SKSP	52·8	91·8

Additional readings :—

Sydney eP = +10m.41s. =S +7s.
Adelaide i = +11m.45s.
Wellington PP = +9m.37s. =PPP +2s., SS = +17m.12s. =SSS −2s.
Christchurch iEN = +8m.7s., iPPE = +9m.17s., iP_cPEN = +9m.43s., iN = +9m.51s. =PPP +4s., iPPP = +9m.57s. =PPPP +4s., P_cSEN = +13m.45s., iPS?EN = +14m.30s., S_cSN = +16m.23s., L_q = +18.6m.
Perth PP = +9m.47s. =PPP +3s., PPP = +10m.45s., P_cS = +13m.14s., PS = +13m.33s., iSS = +16m.26s., SSS = +16m.42s.
Koti e = +8m.17s.
Sumoto eZ = +8m.54s., eEN = +17m.36s.
Nagasaki SSN = +17m.40s.

Continued on next page.

Mizusawa ePN = +8m.21s.
Hong Kong PP = +10m.4s., SS = +15m.7s. =S +3s.
Nanking eE = +20m.29s. =SSSS −3s.
Medan i = +10m.49s.
Chiufeng PP = +11m.38s., SS?N = +20m.54s.
Honolulu i = +19m.40s. =S_cS +13s.
Agra PPE = +13m.53s., PSE = +22m.17s., SSE = +26m.48s.
Bombay PS = +22m.51s.
Tashkent ePP = +16m.11s., ePS = +24m.11s.
Berkeley eZ = +41m.47s.
Lick eN = +13m.4s.
Pasadena eSKSE = +23m.50s., iSEN = +24m.47s., ePS = +25m.30s.
Sverdlovsk iPP = +17m.10s. iPPS = +25m.56s., iSS = +31m.5s.
Bozeman eS = +25m.35s., eSSS = +36m.31s.
Tucson ePS = +29m.7s.
Tiflis PPN = +18m.9s. =PKP +4s., ePPSE = +27m.55s., eSSSE = +33m.29s.
Kucino e = +35m.45s. and +39m.35s.
Pulkovo PPP = +21m.31s., PS = +28m.27s., SS = +34m.35s.
Helsingfors eSSEN = +34m.47s? eSSSEN = +38m.47s.?
Scoresby Sund +36m.17s.
Florissant iPP = +19m.22s., eSKKS = +28m.57s., eS = +29m.18s. =PS −1s., eSS = +34m.47s.?
St. Louis eSSN = +35m.54s.
Chicago ePS = +28m.54s., eSS = +35m.37s., eSSS = +39m.45s.
Toronto iN = +40m.10s.
Pittsburgh eSSS = +41m.22s.
Ottawa e = +37m.5s. =SS −6s.
Cheb e = +42m.38s.
Georgetown eZ = +15m.32s., iSSE = +37m.54s.; T_o =14h.32m.55s.
Triest i = +22m.19s., e = +42m.51s. and +47m.12s.
De Bilt eZ = +21m.2s. =PP +12s., eEN = +22m.17s., eZ = +32m.36s., eEN = +38m.5s.
Edinburgh e = +38m.17s.
Stuttgart ePP = +21m.6s., e = +32m.22s., eSS = +38m.47s., eSSS = +42m.47s.
Oak Ridge iZ = +19m.6s. and +20m.0s., ePPNW = +20m.50s., eNW = +22m.24s., ePPSNW = +32m.30s., eSSNW = +37m.38s., eSSNE = +37m.47s., eSSSNW = +43m.16s., eNE = +45m.22s., eNW = +46m.12s. =SSSS +6s. and +49m.47s.; To =14h.33m.11s.
Strasbourg iPPZ = +21m.4s., iZ = +21m.31s., ePPP = +37m.47s.?, iZ = +24m.11s., ePSNZ = +31m.7s., eSSN = +38m.17s., eSSS = +43m.22s.
Uccle iZ = +21m.3s. =PP +5s., eE = +22m.24s., eN = +23m.52s. and +38m.41s.
Kew iPKSEN = +22m.28s., eSSEN = +39m.0s.
Oxford i = +22m.28s.
Huancayo ePKP = +21m.33s. =PP +14s., iPP = +22m.32s. =PKS −2s., eSS = +39m.7s.
La Paz iPKPN = +19m.23s., iPPN = +22m.51s. =PKS −3s., iPPE = +22m.56s., SSN = +39m.53s., iSSE = +40m.17s., SSSE = +44m.47s.
Sucre PP = +22m.58s. =PKS +0s.
San Juan iPP = +23m.11s. =PKS −1s., eSS = +40m.57s.,
San Fernando PN = +20m.4s. and +20m.7s.
Long waves were also recorded at Sotchi, Little Rock, Ann Arbor, Charlottesville, Cape Town, Ivigtut, and at other European stations.

Feb. 3d. Continuation of the list of records of aftershocks from the epicentre 38°·0N. 118°·5W.

Lick.

h.	m.	s.
1	17	2
2	34	16
4	22	4
14	39	18
16	32	13

Berkeley.

h.	m.	s.
1	17	6
2	34	24
4	22	7
14	39	22
16	32	15
18	5	9
18	35	10

Branner.

h.	m.	s.
1	17	12
2	34	31
4	22	12
14	39	30
16	32	24
18	5	26
'18	35	18

Feb. 3d. Readings also at 1h. (Bagnères), 3h. (Medan, Malabar, near Batavia. and Soengei Langka), 4h. (Tashkent), 5h. (Sverdlovsk, Frunse, and near Tchimkent), 7h. (near Batavia and Malabar), 11h. (Christchurch, Wellington, and La Paz), 12h. (near Batavia), 13h. (Manila and near Tyosi), 16h. (near Mizusawa), 20h. (Chiufeng and Nanking), 23h. (near Apia).

Feb. 4d. 3h. 10m. 45s. Epicentre 18°·3N. 146°·8E. (as on 1930 Oct. 28d.). R.2.

A = −·794, B = +·520, C = +·314 ; D = +·548, E = +·837 ;
G = −·263, H = +·172, K = −·949.

A *depth* of focus 0·080 has been assumed.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Titizima		−0·8	9·8	335	2 9	+ 2	3 31	−18	—	—
Palau		−2·4	16·2	229	3 46	+33	6 28	+42	—	—
Mera		−2·7	17·7	341	3 29	+ 1	6 16	+ 1	—	—
Misima		−2·8	18·2	339	3 32	− 2	6 24	0	—	—
Numadu		−2·8	18·2	339	3 34	0	6 35	+11	—	—
Tyosi		−2·8	18·2	345	e 3 37	+ 3	6 39	+15	—	—
Hamamatu		−2·8	18·3	335	3 32	− 3	6 19	− 8	—	—
Yokohama		−2·8	18·3	341	3 32	− 3	6 23	− 4	—	—
Hunatu		−2·9	18·6	339	3 37	− 1	6 28	− 3	—	—
Kakioka		−3·0	18·8	343	3 38	− 1	6 32	− 2	—	—
Mito		−3·0	18·9	344	3 43	+ 3	6 41	+ 5	—	—
Kumagaya		−3·0	19·0	341	3 42	+ 1	6 39	+ 1	—	—
Nagoya		−3·0	19·0	335	e 3 40	− 1	e 6 32	− 6	—	—
Maebasi		−3·1	19·3	341	3 45	+ 1	6 41	− 2	—	—
Nagano		−3·2	19·8	339	3 48	− 1	6 50	− 2	—	—
Hukusima		−3·2	20·2	345	3 53	− 1	7 4	+ 2	—	—
Mizusawa	E.	−3·4	21·4	348	4 36	+29	6 8	−77	—	—
	N.	−3·4	21·4	348	4 42	+35	6 5	−80	—	—
Manila		−4·0	25·0	265	3 41	−59	7 12	−74	—	—
Vladivostok		−4·5	27·8	336	e 6 28	?	i 8 54	−16	i 14·6	—
Hong Kong		−5·0	30·8	284	—	—	9 35	−20	12·4	—
Chiufeng		−5·3	34·2	318	i 5 51k	− 4	i 10 27	−20	—	—
Phu-Lien		−5·8	37·9	282	7 15?	+51	—	—	—	—
Batavia		−6·7	46·4	243	i 7 28a	− 1	i 13 28	− 4	—	—
Medan		−7·1	49·2	260	—	—	i 14 18	+10	—	—
Hyderabad		−8·1	64·6	281	—	—	17 18	−12	21·2	21·8
Tashkent		−8·4	68·8	310	i 10 3	− 4	i 18 8	−13	—	39·2
Bombay		−8·5	69·5	285	i 10 3	− 8	i 18 16	−13	—	—
Sverdlovsk		−8·7	72·6	326	i 10 25	− 6	i 18 56	−10	34·2	—
Berkeley	N.	−9·2	79·5	52	—	—	e 20 35	+10	—	—
Branner	E.	−9·2	79·8	53	—	—	e 20 40	+12	—	—
Santa Barbara		−9·3	82·5	56	i 11 33	+ 3	e 21 6	+ 7	—	—
Tinemaha		−9·3	82·9	53	i 11 34	+ 2	—	—	—	—
Baku		−9·3	83·3	311	i 11 24	−11	i 20 52	−16	—	—
Mount Wilson		−9·4	83·9	55	i 11 39	+ 2	i 21 18	+ 4	—	—
Pasadena		−9·4	83·9	55	i 11 37k	0	i 21 17	+ 3	—	—
Riverside		−9·4	84·5	55	i 11 43	+ 2	i 21 11	−10	—	—
La Jolla		−9·4	85·0	57	i 11 45	+ 1	i 21 15	−12	—	—
Grozny		−9·4	85·2	314	e 11 45	0	e 21 15	−14	—	—
Tiflis		−9·5	86·4	313	11 38	−13	21 17	−25	e 48·3	—
Tucson		−9·7	90·2	55	—	—	e 21 49	−32	—	—
Ksara		−9·8	96·0	310	e 12 46	+ 7	e 23 36	+17	—	—
La Paz		—	146·7	90	18 45	[−52]	i 28 15	{−109}	—	—

Additional readings :—
Vladivostok e = +7m.32s.
Chiufeng pP = +6m.19s.
Batavia eP = +8m.46s. =PP −10s.
Bombay eN = +10m.10s.
Pasadena iZ = +13m.42s., iEN = +21m.4s., eE = +22m.21s.
Riverside iZ = +15m.12s.
Ksara PS = +24m.35s.
La Paz SKP = +21m.53s., PPPE = +23m.35s.
Long waves were also recorded at De Bilt and San Francisco.

Feb. 4d. 9h. 35m. 30s. Epicentre 41°·4N. 19°·3E. N.2.

$A = +\cdot708$, $B = +\cdot248$, $C = +\cdot661$; $D = +\cdot331$, $E = -\cdot944$; $G = +\cdot624$, $H = +\cdot219$, $K = -\cdot750$.

		△	Az.	P.	O—C.	S.	O—C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Belgrade		3·5	14	0 49	− 1	i 1 42	S*	—	2·3
Naples	N.	3·9	264	e 1 39	S	(e 1 39)	− 1	—	3·3
Zagreb		5·0	333	e 1 11	0	i 2 28	S*	—	3·3
Triest		5·8	318	i 1 21k	− 1	i 2 43	S*	—	—
Budapest		6·1	359	1 28	+ 1	2 48	+12	3·0	4·5
Florence		6·4	295	i 1 30	− 1	i 3 12	S*	—	3·5
Venice		6·4	311	i 1 55	P*	3 12	S*	—	3·6
Prato		6·5	295	e 1 38	+ 6	i 2 53	+ 7	—	5·0
Vienna		7·2	345	e 1 41	− 1	3 0	− 4	3·8	4·4
Piacenza		7·9	301	e 1 52	0	3 47	S*	4·7	7·0
Chur		8·9	311	e 2 7	+ 1	—	—	—	—
Prague		9·3	341	e 2 12	+ 1	e 4 29	S*	e 5·3	—
Ravensburg		9·4	316	e 2 10	− 3	e 4 20	+21	—	5·8
Zurich		9·7	312	e 2 18	+ 1	e 4 19	+13	—	—
Cheb		9·9	333	e 2 23	+ 4	e 5 33	S_g	—	5·8
Stuttgart		10·3	320	e 2 22k	− 3	e 4 36	+15	e 5·4	6·2
Basle		10·4	310	e 2 23	− 3	e 4 33	+10	—	—
Neuchatel		10·4	306	e 2 24	− 2	e 4 18	− 5	—	—
Karlsruhe		10·8	319	2 30?	− 2	5 24	S*	5·8	6·4
Jena	E.	10·9	333	e 2 26	− 7	e 5 18	S*	e 5·9	6·3
	N.	10·9	333	e 2 30	− 3	e 5 15	S*	e 5·9	6·3
Strasbourg		10·9	316	2 29k	− 4	e 4 46	+10	e 6·5	6·5
Sebastopol		10·9	68	2 30	− 3	—	—	—	—
Leipzig		11·0	337	—	—	e 5 0	+22	i 5·5	6·3
Yalta		11·3	69	e 2 46	+ 7	e 5 17	S*	—	—
Feldberg	E.	11·6	323	e 5 16	S	(e 5 16)	+23	—	6·8
Göttingen		12·0	331	e 2 47	− 1	e 5 16	+13	—	8·5
Theodosia		12·2	68	i 2 51	0	5 33	+25	6·5	—
Hamburg		13·7	336	e 3 10	− 1	e 6 59	S*	8·2	9·5
Paris		13·9	308	e 6 22	?	e 8 59	?	9·5	9·5
Uccle		14·0	318	e 3 13	− 2	—	—	7·3	—
De Bilt		14·1	322	e 3 24	+ 7	—	—	e 7·0	10·0
Ksara		15·1	115	e 3 30	0	6 29	+12	—	—
Kew		16·7	314	i 3 51	+ 1	i 7 34	+39	9·2	13·1
Toledo		17·7	273	e 4 6	+ 3	7 27	+10	9·5	12·9
Granada		18·2	264	i 4 11	+ 2	i 7 40	+11	8·8	12·5
Upsala	N.	18·5	357	4 25?	+12	—	—	e 9·5	—
Malaga		18·9	264	4 16	− 1	7 55	+11	—	11·0
Erevan		19·0	86	e 4 42	+23	—	—	—	—
Tiflis		19·0	81	e 4 15	− 4	7 50	+ 4	e 12·2	—
Durham		19·2	321	8 6	S	(8 6)	+16	—	13·7
Bidston		19·2	316	i 3 40	−41	i 8 20	+30	10·7	—
Grozny		19·5	76	e 4 40	+16	8 15	+19	—	—
Pulkovo		19·6	17	i 4 24	− 1	e 8 11	+13	10·5	11·9
Baku		23·0	82	e 5 6	+ 5	e 9 15	+10	e 12·5	15·9
Sverdlovsk		30·5	46	i 6 6	− 3	e 11 2	−10	18·8	19·3
Tashkent		37·1	73	—	—	e 11 30?	−85	e 21·1	28·1
Oak Ridge		64·0	304	i 10 30	− 2	—	—	e 33·0	—
Tinemaha	Z.	92·5	327	e 13 15	+ 6	—	—	—	—
Riverside	Z.	94·8	325	e 13 25	+ 5	—	—	—	—
Mount Wilson	Z.	94·9	325	e 13 18	− 2	—	—	—	—
Pasadena	Z.	95·0	325	e 13 14	− 6	—	—	—	—

Additional readings :—
Belgrade i = +57s. = P* +0s., +1m.2s. = P_g −2s., +1m.31s. = S +1s. and +1m.58s. = S_g +8s.
Naples eSN = +2m.22s.
Zagreb i = +1m.22s. = P* +0s., iP_g = +1m.29s., iNE = +1m.48s., iPPSS = +2m.15s., iNW = +2m.33s., iNE = +2m.46s., iSSNW = +2m.49s.

Continued on next page.

Triest iPP = +1m.47s. =P_g − 3s., i = +1m.52s., iPPP = +1m.56s., i = +2m.29s., iSS = +3m.18s., iSSS = +3m.31s., i = +3m.44s.
Vienna iZ = +1m.55s., P* = +1m.59s., iZ = +2m.5s., P_g = +2m.14s., i = +2m.34s., iE = +2m.38s., a = +3m.14s., iZ = +3m.23s., S* = +3m.29s., iN = +3m.32s.
Piacenza P = +2m.46s., P_g = +3m.21s., SS = +4m.7s.
Cheb = +4m.46s.
Stuttgart e = +2m.56s. and +4m.3s.; To = 9h.35m.12s.
Strasbourg i = +2m.49s., ePPP = +4m.36s., e = +5m.52s. =S_g − 2s.
Feldberg iE = +6m.11s. =S_g − 6s., eE = +6m.26s.
Göttingen eS = +6m.36s. =S_g + 6s., iEN = +6m.43s.
Paris eS = +8m.59s.
Ksara PP = +3m.44s., SS = +7m.0s.
Kew iEN = +9m.57s.
Toledo iP = +4m.11s. =PP + 1s.
Granada PP = +4m.26s.
Malaga e = +4m.53s. and +5m.35s., SS = +8m.43s.
Durham S? = +10m.58s.
Grozny i = +4m.52s.
Sverdlovsk L_Q = +15·9m.
Oak Ridge iZ = +10m.37s.
Long waves were also recorded at Sotchi, Chiufeng, Vladivostok, Pittsburgh, Algiers, Scoresby Sund, and other European stations.

Feb. 4d. 13h. 27m. 20s. Epicentre 30°·5N. 51°·7E. N.2.

A = +·534, B = +·676, C = +·508; D = +·785, E = −·620; G = +·315, H = +·398, K = −·862.

		Δ	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Baku		10·0	352	e 2 22	+ 1	—	—	i 6·3	—
Erevan		11·3	331	e 3 5	+26	i 6 27	?	—	—
Tiflis		12·5	336	2 55	0	5 24	+ 9	6·9	—
Grozny		13·6	342	e 3 19	+ 9	—	—	e 8·2	—
Ksara		13·8	288	e 3 15	+ 2	i 5 59	+13	—	8·0
Helwan		17·6	273	i 4 3	+ 1	i 7 24	+ 9	—	12·7
Tashkent		17·8	48	i 4 8	+ 4	—	—	—	—
Theodosia		19·3	323	4 23	+ 1	i 7 57	+ 5	10·4	—
Yalta		19·6	320	e 4 24	− 1	7 59	+ 1	9·2	—
Sebastopol		20·0	320	4 29	− 1	8 8	+ 2	—	—
Simferopol		20·0	321	—	—	e 8 9	+ 3	—	—
Frunse		22·0	49	5 52	+61	9 58	+72	e 11·6	—
Bombay		22·3	116	4 58	+ 4	9 2	+10	11·4	—
Dehra Dun		22·7	84	5 0	+ 2	9 0	+ 1	13·5	15·7
Agra	N.	23·2	91	5 2	− 1	9 15	+ 7	—	—
Almata		23·8	50	5 16	+ 8	e 9 29	+10	—	—
Sverdlovsk		27·0	11	e 5 36	− 2	i 10 10	− 5	i 13·5	—
Hyderabad		27·6	112	6 46	+62	11 31	+66	13·9	20·1
Budapest		30·1	314	5 58	− 8	11 0	− 6	16·7	19·2
Zagreb		31·6	310	e 6 19	0	e 11 31	+ 2	e 17·6	20·0
Naples	N.	31·9	300	e 11 7	S	(e 11 7)	−27	(e 24·0)	—
Vienna		32·1	314	i 6 24	0	11 25	−12	i 16·0	22·7
Pulkovo		32·6	341	e 7 21	+53	e 12 15	+30	17·7	20·9
Triest		33·1	309	i 6 32a	− 1	i 11 50	− 2	15·5	19·8
Calcutta		33·7	94	6 29	− 9	11 29	−32	15·6	19·1
Prague		33·9	317	e 6 57	+18	e 12 2	− 2	e 18·7	21·2
Venice		34·0	308	6 40?	0	—	—	24·7	—
Florence		34·4	305	6 52	+ 8	12 0	−12	16·7	19·7
Helsingfors		34·5	337	e 6 41	− 4	e 12 1	−13	e 17·7	—
Prato		34·6	305	e 6 48	+ 2	12 11	− 4	—	19·2
Cheb		35·2	316	e 6 57	+ 6	e 12 19	− 5	e 18·7	25·2
Colombo		35·4	127	6 51	− 2	12 35	+ 8	18·5	24·7
Leipzig		35·6	316	e 7 16	+22	e 13 22	+52	e 17·7	19·7
Piacenza		35·7	307	7 20	+25	12 32	0	18·0	23·2
Jena		35·9	316	6 59	+ 2	e 12 24	−11	e 16·2	20·2

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Chur		36·2	310	e 6 58	− 2	e 12 35	− 4	—	—
Stuttgart		36·8	313	e 7 2	− 3	e 12 47	− 1	e 18·7	25·7
Zurich		36·9	310	e 7 4	− 2	e 12 47	− 3	—	—
Göttingen		37·1	317	e 7 7	0	e 12 41	−12	e 16·7	21·5
Upsala		37·1	332	e 8 43	PPP	e 12 50	− 3	e 20·7	23·4
Karlsruhe		37·3	313	e 7 40?	+31	—	—	e 22·7	—
Copenhagen		37·3	324	7 9	0	12 54	− 2	—	—
Basle		37·6	309	e 7 9	− 3	e 12 59	− 1	—	—
Feldberg	E.	37·7	314	e 7 14	+ 2	—	—	e 18·7	23·7
Strasbourg		37·7	312	e 7 10	− 2	e 12 54	− 8	e 17·7	23·8
Hamburg		37·7	320	e 7 13	+ 1	e 13 5	+ 3	e 21·9	23·7
Neuchatel		37·9	310	e 7 13	− 1	e 12 54	−11	—	—
De Bilt		40·0	317	e 7 39	+ 7	13 37	+ 1	e 18·7	24·2
Uccle		40·3	314	e 7 34	− 1	13 34	− 7	e 18·7	23·3
Algiers		40·5	292	e 7 24	−12	e 13 30	−14	e 18·7	26·7
Paris		41·1	311	e 7 45	+ 4	i 13 53	0	18·7	23·7
Tortosa	Z.	42·2	299	7 52	+ 2	—	—	—	—
Bergen		42·6	329	e 14 17	S	(e 14 17)	+ 2	e 23·4	31·7
Kew		43·3	315	i 7 57	− 2	i 14 22	− 3	e 19·7	26·9
Oxford		43·9	315	8 5	+ 1	i 14 35	+ 1	—	27·5
Durham		44·6	319	14 44	S	(14 44)	0	—	26·0
Almeria		44·8	293	—	—	e 17 18	?	e 21·9	39·5
Bidston		45·2	317	—	—	i 14 40	−14	e 20·7	—
Edinburgh		45·7	320	—	—	e 15 0	0	e 22·7	28·3
Toledo		45·7	297	8 19	+ 1	i 15 3	+ 3	e 22·2	28·2
Granada		45·8	294	e 8 40	+21	15 22	+20	21·8	28·4
Malaga		46·5	294	8 19	− 6	15 10	− 2	25·7	—
San Fernando	N.	47·9	293	8 38	+ 3	15 36	+ 5	22·7	30·2
Tananarive		49·6	186	—	—	15 38	−17	23·9	29·3
Phu-Lien		49·9	88	e 8 40?	−11	(15 40?)	−19	15·7	—
Medan		51·8	112	—	—	e 15 42	?	—	—
Chiufeng		52·3	61	e 9 19	+10	e 16 35	+ 2	27·8	31·6
Scoresby Sund		55·9	338	—	—	17 33	+12	32·7	—
Hong Kong		55·9	83	17 29	S	(17 29)	+ 8	30·8	37·2
Nanking		56·2	70	9 23	−14	i 17 40	+15	—	36·5
Keizyo		61·1	62	e 28 41	?	—	—	e 33·7	—
Taikyu		62·9	63	e 21 14	SS	—	—	e 36·8	—
Vladivostok		63·0	54	e 10 34	+ 9	e 19 1	+ 6	26·7	37·7
Batavia		64·2	115	—	—	e 18 56	−14	—	—
Dakar		64·8	273	12 17	PP	—	—	—	45·9
Manila		65·0	87	18 44	S	(18 44)	−36	38·2	—
Sumoto		68·2	62	—	—	e 20 8	+ 9	33·3	—
Oak Ridge	N.E.	90·3	322	—	—	e 23 34	[0]	e 42·0	—
Ottawa		90·4	326	—	—	e 23 40?	[+ 5]	e 45·7	—
Pasadena		114·6	350	18 40?	[+ 8]	—	—	e 70·3	—
Sucre		122·3	265	20 37	PP	—	—	67·7	—
La Paz		123·7	270	e 19 5	[+11]	—	—	59·8	76·7

Additional readings and note :—
Erevan e = +3m.58s. and +5m.55s.
Tiflis eN = +3m.2s., iSN = +5m.27s.
Tashkent e = +4m.13s.
Bombay PP = +5m.28s., SS = +10m.2s.
Zagreb e = +6m.35s., eNE = +7m.16s. = PP − 2s. and +8m.1s., eZ = +15m.22s. and +16m.25s.
Naples gives S as P and L as S.
Vienna PP = +7m.23s., P_cP = +9m.36s., iE = +10m.36s. and +12m.17s., eL = +12m.41s., SS = +13m.34s. = SSS + 2s., iN = +14m.48s.
Pulkovo e = +11m.26s. and +13m.21s. = SS − 10s.
Triest i = +6m.35s., SS = +13m.28s., i = +14m.40s., +15m.4s., and +15m.24s.
Helsingfors ePPE = +7m.47s., eP_cPEN = +8m.52s., e?EN = +16m.10s. and +16m.59s.; T_e = 13h.27m.4s.
Leipzig e = +15m.10s.
Jena ePN = +7m.4s., eE = +8m.12s. = PP + 0s., +8m.19s. = PPP − 5s., and +15m.10s. = SSSS + 5s.

Continued on next page.

Stuttgart ePP = +8m.26s. ; T_0 =13h.27m.20s.
Feldberg eE = +10m.24s. and +15m.40s.?
Strasbourg eP?PPEZ = +8m.53s., eSSN = +15m.40s.
Hamburg eSSZ = +15m.46s. =SSS − 3s., eSSE = +16m.0s. =SSSS + 3s.
De Bilt SS = +16m.39s. =SSS − 6s.
Uccle iSS = +16m.36s.
Bergen S = +19m.58s.
Kew eEN = +17m.33s. =SS + 15s.
Oxford e = +18m.33s. =SSS + 3s.
Durham S? = +18m.8s. =S_cS − 2s.
Bidston i = +18m.20s. =S_cS + 7s.
Edinburgh i = +18m.20s. =S_cS + 3s., +18m.30s., +18m.46s., and +18m.57s. = SSS − 4s.
Malaga PP = +9m.52s., i = +12m.32s., P_cS = +13m.52s., SS = +17m.52s.
Tananarive E = +13m.20s., SN = +14m.23s., SSE = +18m.2s., SSS = +19m.22s. =SS + 7s.
Hong Kong PP = +18m.32s., S = +23m.47s., SS = +26m.2s.
Dakar PPP = +13m.33s., SS = +22m.7s.
Manila S?EN = +26m.49s.
Sumoto eN = +20m.22s. =PS + 8s.
Oak Ridge eNW = +23m.40s. =SKKS + 3s., eNE = +29m.48s. =SS + 4s., eNW = +31m.14s., eNE = +33m.2s., eNW = +35m.10s.
Ottawa eE = +36m.40s.?
Long waves were also recorded at Sotchi, Barcelona, Alicante, San Juan, Huancayo, Pittsburgh, Bozeman, Cape Town, Christchurch, Wellington, Melbourne, Sydney, and other Japanese stations.

Feb. 4d. 16h. 9m. 0s. Epicentre 35°·0N. 134°·4E. (as on 1933 Aug. 24d.). X.

A = −·573, B = +·586, C = +·574 ; D = +·715, E = +·700 ;
G = −·401, H = +·410, K = −·819.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Kobe	0·7	117	i 0 13k	+ 3	i 0 28	+10	0·5
Toyooka	0·7	32	0 10k	0	0 23	+ 5	0·4
Sumoto	0·8	148	i 0 12k	+ 1	i 0 27	+ 6	0·5
Osaka	1·0	110	0 18	+ 4	0 38	+12	1·3
Koti	1·6	206	i 0 19	− 4	0 37	− 4	—
Nagoya	2·2	85	e 0 38	+ 7	1 13	S_g	1·3
Hukuoka	3·5	246	0 50	0	1 29	− 1	1·5
Hukuoka B	3·5	246	0 50	0	1 30	0	1·7
Nagasaki	4·4	240	1 9	+ 6	1 56	+ 3	—

Feb. 4d. 22h. 1m. 19s. Epicentre 5°·0S. 129°·8E. N.2.

A = −·638, B = +·765, C = −·087 ; D = +·768, E = +·640 ;
G = +·056, H = −·067, K = −·996.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	2·1	309	i 0 20	−10	0 53	− 1	—	—
Palau	13·2	21	3 7	+ 2	—	—	—	—
Manila	21·5	336	i 4 47a	+ 2	8 45	+ 9	—	—
Malabar	22·2	263	i 5 4	+11	8 56	+ 6	—	—
Batavia	22·9	266	i 5 0k	0	i 9 3	0	23·4	—
Perth	29·9	204	4 31	−93	i 10 59	− 4	i 16·4	19·9
Adelaide	31·0	167	e 6 16?	+ 2	i 11 22	+ 2	15·4	17·5
Hong Kong	31·3	331	6 40	+23	11 16	− 8	13·7	14·0
Medan	32·2	285	7 21	+57	—	—	i 17·2	—
Phu-Lien	34·4	320	e 6 45	+ 1	e 12 9	− 3	14·7	—
Riverview	35·0	148	—	—	e 12 19	− 2	e 18·7	20·2
Sydney	35·0	148	e 11 17	S	(e 11 17)	−64	18·8	20·7
Melbourne	35·6	159	7 45?	+51	12 25	− 5	17·1	23·0
Miyazaki	37·0	3	7 6	0	12 28	−23	—	—
Nagasaki	37·7	1	7 12k	0	e 12 46	−16	—	—

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Nanking		38·5	345	7 24$_a$	+ 5	e 13 18	+ 4	—	—
Hukuoka B		38·6	1	7 19	− 1	e 13 11	− 4	—	—
Koti		38·7	5	7 18	− 3	e 13 19	+ 2	e 18·5	24·7
Sumoto		39·6	8	e 7 28	− 1	13 32	+ 2	—	—
Kobe		40·0	8	7 34	+ 2	e 14 12	+36	e 19·3	22·6
Osaka		40·0	8	7 43	+11	13 28	− 8	—	—
Kameyama		40·3	9	7 35	0	13 42	+ 1	—	—
Nagoya		40·7	10	e 6 25	−73	e 7 47	P	—	—
Oiwake		42·2	11	7 52	+ 2	14 8	− 1	—	—
Nagano		42·4	11	7 51	− 1	14 10	− 1	—	—
Keizyo		42·6	357	7 53	0	14 13	− 2	—	—
Zinsen		42·6	355	e 7 51	− 2	e 14 12	− 3	—	—
Mito		42·6	13	7 53	0	14 9	− 6	—	—
Hukusima		43·9	13	8 0	− 4	14 34	0	—	—
Sendai		44·5	13	8 6	− 3	14 41	− 2	—	—
Mizusawa		45·3	13	e 8 15	0	14 53	− 2	—	—
Chiufeng		46·8	345	9 27$_a$	+60	15 8	− 8	19·5	—
Vladivostok		48·1	2	8 36	− 1	15 36	+ 2	22·7	29·0
Calcutta		49·0	306	9 10	+26	16 20	+33	26·3	28·0
Colombo		51·3	283	8 59	− 2	—	—	—	31·8
Christchurch		53·9	142	e 9 37	+16	i 16 55	+ 1	23·4	—
Wellington		54·0	138	9 27	+ 6	17 46	+50	25·7	—
Hyderabad		55·4	295	10 27	+55	18 35	+80	28·7	40·2
Bombay		61·0	295	10 8	− 3	18 24	− 5	31·1	36·7
Almata		67·8	321	e 10 59	+ 2	—	—	—	—
Tashkent		71·9	316	11 20	− 2	i 20 37	− 7	34·7	45·6
Sverdlovsk		83·0	329	i 12 22	− 1	i 22 35	−12	i 38·7	55·4
Baku		85·6	311	i 12 38	+ 2	i 23 9	− 5	42·7	48·4
Grozny		89·2	313	e 13 9	+15	e 23 57	+ 9	—	—
Tiflis		89·6	312	e 12 56	0	e 23 41	−11	e 50·4	—
Erevan		89·7	310	e 13 27	−29	e 24 17	PS	—	—
Ksara		96·0	303	e 13 34?	+ 9	e 25 28	PS	—	—
Pulkovo		99·1	330	e 18 10	PP	e 25 6	−13	46·7	56·0
Pasadena	z.	111·0	55	e 18 49	PP	—	—	—	—
Cheb		111·2	322	e 17 24	?	e 27 50	?	e 56·7	64·7
Triest		111·6	317	i 19 52	?	e 30 23	?	e 50·7	63·7
Stuttgart		113·6	321	—	—	e 24 11	[−77]	e 68·7	—
De Bilt		114·6	326	e 20 11	?	—	—	e 55·7	74·5
Strasbourg		114·6	322	—	—	(e 24 41?)	[−51]	e 24·7	—
Paris		117·6	323	e 20 41?	?	—	—	66·7	—
Ottawa		133·9	24	—	—	e 24 41?	?	e 57·7	—
Huancayo		149·7	125	—	—	e 41 25	?	e 74·1	—
Sucre		151·8	149	e 19 59	[+15]	—	—	—	—
La Paz		152·1	141	e 19 52	[+ 8]	25 52	?	77·7	100·2
San Juan		159·5	48	20 27	{−15}	—	—	e 77·7	—

Additional readings :—
Malabar i = +5m.31s.
Perth PP = +5m.58s., PPP = +6m.21s., PPPP = +6m.51s., P_cS = +10m.41s., SS = +13m.21s., SSS = +14m.6s., SSSS = +14m.36s.
Adelaide i = +12m.44s. =SS − 9s. and +13m.41s.
Hong Kong SS = +13m.0s.
Medan i = +9m.11s. = P_cP − 6s. and +13m.35s. =SSS + 0s.
Koti e = +15m.59s. =SS + 11s.
Kobe ePN = +7m.39s., SNZ = +14m.31s.
Mizusawa eSN = +14m.56s.
Christchurch S_cS = +18m.37s., L_qN = +21·5m.
Ksara PP = +17m.28s.?
Stuttgart e = +29m.59s. and +61m.5s.
La Paz pPKP = +21m.6s., PP = +24m.14s., SS = +43m.4s.
San Juan e = +20m.49s. = PKP_2 + 7s., +33m.21s., +35m.15s., and +44m.24s. = SS − 2s.
Long waves were also recorded at Copenhagen, Uccle, Kew, Scoresby Sund, and Oak Ridge.

Feb. 4d. Readings also at 1h. (Tiflis), 2h. (near Arisan, Karenko, and Taihoku), 3h. (Nagoya), 6h. (San Francisco), 7h. (Theodosia and near Malabar), 10h. (Florence, Triest, and Zagreb), 11h. (Berkeley, Branner, and Tiflis), 12h. (Agra, Bombay, Calcutta, Hyderabad, Pasadena, Mount Wilson, Riverside, and Tinemaha), 15h. (Berkeley, New Plymouth, and Wellington), 16h. (Christchurch, Sverdlovsk, Tashkent, near Batavia, and Soengei Langka), 17h. (Christchurch and Wellington), 18h. (near Grozny, Tiflis, and near Mizusawa), 21h. (Little Rock), 22h. (near Amboina), 23h. (San Fernando).

Feb. 5d. 13h. 40m. 34s. Epicentre 28°·0S. 69°·0W. (as on 1927 June 5d.). X.

A = +·316, B = −·824, C = −·469; D = −·934, E = −·358;
G = −·168, H = +·438, K = −·883.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago		5·6	194	1 26	+ 6	2 30	+ 7	—	—
Sucre		9·6	22	4 16	S	(4 16)	+13	—	—
La Paz		11·5	4	e 2 58	+16	i 5 22	S*	6·3	7·9
La Plata		11·7	129	2 29	−15	4 42	SS	5·3	5·5
La Jolla		76·1	320	i 11 44	− 3	—	—	—	—
Riverside	z.	77·0	320	i 11 48a	− 4	—	—	—	—
Mount Wilson	z.	77·6	320	i 11 51	− 4	—	—	—	—
Pasadena	z.	77·6	320	i 11 53a	− 2	—	—	—	—
Tinemaha		79·8	321	i 12 10a	+ 3	—	—	—	—

Additional readings:—
Sucre S? = +7m.25s.
La Plata SN = +4m.19s.
Riverside iZ = +12m.24s.
Pasadena iZ = +12m.28s.

Feb. 5d. Continuation of the list of after-shocks from the epicentre 38°·0N. 118°·5W.

Berkeley.

h.	m.	s.	h.	m.	s.
0	2	15	5	43	33

Branner.

h.	m.	s.	h.	m.	s.	h.	m.	s.
0	2	23	3	10	44	5	43	42

Feb. 5d. Readings also at 2h. (La Paz and near Tyosi), 3h. (near Prato), 6h. (Grozny, Tashkent, Vladivostok, Nagoya, Sverdlovsk, Batavia, near Medan, and near Tyosi), 7h. (La Paz and near Mizusawa), 10h. (Adelaide, Melbourne, Riverview, Christchurch, and Wellington), 11h. (La Paz and near Tyosi), 12h. (near Batavia and Malabar), 13h. (Adelaide and Riverview), 18h. (Tchimkent), 20h. (Ksara), 21h. (Frunse), 22h. (Almata, Tchimkent, and near Tananarive), 23h. (Tyosi and near Mizusawa).

Feb. 6d. Readings at 1h. (La Paz (2)), 3h. (near Lick), 6h. (near Santiago), 9h. (Malabar, near Batavia, and Soengei Langka), 11h. (Berkeley), 13h. (near Apia and near Tyosi), 17h. (La Paz and near Mizusawa), 20h. (Manila).

Feb. 7d.16h. Readings for undetermined shock:—
Tiflis ePN = 16h.12m.23s., SE = 14m.15s., eLE = 15m.26s.
Grozny eP = 16h.12m.35s., e = 15m.32s.
Ksara ePE = 16h.12m.49s., S = 16m.54s., SS = 17m.44s., L = 19m.50s.
Sotchi eP = 16h.12m.56s.
Tashkent e = 16h.13m.14s., eL = 18m.12s., M = 21m.24s.
Baku e = 16h.14m.3s. and 14m.50s., eL = 15m.18s.
Agra e = 16h.14m.17s., S = 18m.30s., M = 25m.29s.
Sverdlovsk e = 16h.19m.49s., L = 25m.
Long waves were recorded at Vladivostok.

Feb. 7d. 22h. 29m. 2s. Epicentre 29°·5N. 129°·0E. (as on 1931 April 19d.). R.3.

$A = -\cdot548$, $B = +\cdot676$, $C = +\cdot492$; $D = +\cdot777$, $E = +\cdot629$; $G = -\cdot310$, $H = +\cdot383$, $K = -\cdot870$.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Nagasaki	3·3	13	0 50	+ 3	1 20	− 5	—
Hukuoka	4·3	16	1 4	+ 3	1 41	− 9	—
Hukuoka B	4·3	16	1 4	+ 3	1 42	− 8	1·8
Koti	5·6	43	1 15	− 5	2 11	−12	—
Sumoto	6·9	45	1 36	− 2	2 38	−18	2·8
Kobe	7·3	44	—	—	i 2 54	−12	4·8
Osaka	7·6	45	1 36	−12	3 14	0	4·2
Nagoya	8·8	48	e 2 4	− 1	3 32	−12	—
Nanking	9·2	289	i 2 20	+10	e 4 4	+10	—
Chiufeng	15·0	318	3 29	+ 1	6 17	+ 2	—

Additional readings:—
Hukuoka B SE? = +1m.48s.
Sumoto SEN = +2m.42s.
Kobe eEZ = +3m.7s.
Nagoya eP = +3m.1s.
Nanking e = +4m.55s. = S_g −3s.

Feb. 7d. Further shocks from the epicentre 38°·0N. 118°·5W. were recorded as follows:—

Lick.

h.	m.	s.	h.	m.	s.	h.	m.	s.
4	36	10	9	9	55	23	7	18

Berkeley.

h.	m.	s.	h.	m.	s.	h.	m.	s.
4	36	21	10	40	36	23	7	18

Branner.

h.	m.	s.	h.	m.	s.
4	36	16	23	7	41

Feb. 7d. Readings also at 0h. (near Nagoya), 1h. (Adelaide, Melbourne, Riverview, and Wellington), 2h. (Perth), 7h. (near Santiago), 9h. (near Manila), 10h. (near Malabar), 11h. (Erevan), 12h. (near Tiflis), 15h. (near Medan), 17h. (Alicante), 23h. (Sverdlovsk, Nanking, Vladivostok, Hong Kong, and near Phu-Lien).

Feb. 8d. 6h. 2m. 8s. Epicentre 34°·4N. 134°·8E. (as on 1931 July 4d.). R.3.

$A = -\cdot581$, $B = +\cdot585$, $C = +\cdot565$.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Sumoto	0·1	128	i 0 0	− 1	i 0 5	+ 2	0·1
Kobe	0·4	48	0 6	0	0 16	+ 6	0·3
Osaka	0·7	68	0 8	− 2	0 17	− 1	0·3
Koti	1·4	231	0 20	0	0 39	+ 3	—
Nagoya	1·9	67	e 0 30	+ 2	0 54	+ 5	—

Feb. 8d. Readings also at 5h. (near Lick), 7h. (Christchurch and La Paz (2)), 9h. (Huancayo, La Paz (2), and San Juan), 10h. and 11h. (La Paz), 12h. (Tiflis), 13h. (Tashkent), 14h. (near Agra and Calcutta), 15h. (near Mizusawa), 16h. (Balboa Heights), 18h. (near Amboina), 19h. (near Nagoya and Tyosi), 20h. (Tyosi), 21h. (La Paz), 22h. (near Amboina and near Balboa Heights), 23h. (near Tyosi).

Feb. 9d. 9h. 20m. 45s. Epicentre 38°·0N. 118°·5W. (as on 1d.). X.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Lick		2·6	255	e 0 37	0	i 1 17	S*	—
Berkeley		2·9	267	e 0 40	− 1	i 1 24	S*	—
Branner		3·0	259	e 0 44	+ 1	i 1 25	S*	—
San Francisco		3·1	266	i 0 42	− 2	i 1 29	S*	—
Ukiah		3·8	289	i 0 58	+ 4	i 1 55	S*	2·2
Seattle		10·0	345	—	—	e 4 15	+ 2	e 5·4
Florissant		22·0	79	e 4 0	−51	e 8 40	− 6	e 10·2
St. Louis		22·1	79	e 3 52	−60	—	—	e 10·5
Toronto	E.	29·9	66	—	—	e 13 53	?	i 17·8

Additional readings :—
Lick iEN = +40s. =P* −1s., and +44s. =P_g −2s., iN = +58s., and +1m.4s. = S −3s., iE = +1m.56s.
Berkeley iN = +47s. =P* +1s. and +1m.43s.
Branner iPE = +47s. =P* −1s., iN = +51s., iEN = +55s. =P_g +1s., iN = +1m.4s., iEN = +1m.14s. =S −3s.
San Francisco iP_gEN = +47s. =P* −3s.
Long waves were also recorded at other American stations.

Feb. 9d. 9h. 28m. 51s. Epicentre 4°·3S. 153°·0E. (as on 1933 Dec. 12d.). R.2.

A = −·889, B = +·453, C = −·075 ; D = +·454, E = +·891 ;
G = +·067, H = −·034, K = −·997.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		24·6	271	e 4 58	−18	8 48	−46	—	—
Riverview		29·5	183	e 6 6	+ 5	e 10 43	−13	14·8	16·8
Adelaide		33·4	201	e 6 35	0	i 11 24	−33	15·4	19·0
Melbourne		34·3	192	e 7 23	+40	12 0	−11	14·0	19·4
Manila		36·9	301	i 6 0	−66	10 39?	?	—	—
Arapuni		39·5	151	—	—	13 42	+13	19·6	—
Miyazaki		41·6	332	7 35	−10	13 36	−24	—	—
Wellington		41·8	155	8 1	+14	13 58	− 5	20·2	—
Sumoto		42·2	338	e 8 9?	+19	e 14 31	+22	20·2	—
Christchurch		42·9	159	8 21	+25	14 18	− 1	e 19·0	—
Nagasaki		43·0	331	e 8 17	+20	e 14 27	+ 6	—	—
Nagano		43·2	343	8 2	+ 4	—	—	—	—
Perth		44·4	227	—	—	e 14 39?	− 2	22·0	—
Mizusawa		44·7	347	e 7 41	−29	e 8 25	P	—	—
Batavia		45·9	266	e 8 59	+39	—	—	e 24·0	—
Hong Kong		46·3	307	8 18	− 5	15 28	+19	—	22·2
Zi-ka-wei	Z.	46·5	322	e 8 22	− 3	15 13	+ 1	22·6	23·6
Zinsen		48·4	331	e 8 36	− 3	e 15 46	+ 8	e 19·3	—
Nanking		48·7	320	8 59?a	+18	e 16 14	+31	22·2	25·6
Phu-Lien		51·9	301	e 9 1	− 5	(16 9?)	−18	16·2	—
Chiufeng		55·8	326	9 34a	0	e 17 10	−10	23·6	30·9
Hyderabad		76·6	289	18 31	?	—	—	—	40·0
Kodaikanal		76·6	282	16 42	?	—	—	—	—
Agra	E.	78·7	299	e 11 54	− 7	21 35	−27	e 36·1	—
Bombay		82·1	290	e 12 15	− 4	22 15	−23	—	42·5
Sitka		83·8	31	—	—	i 23 1	+ 6	e 35·2	—
Tashkent		88·2	312	e 12 39	−10	e 23 27	−12	e 39·2	46·6
Victoria	E.	88·9	41	i 24 14	S	(i 24 14)	+28	41·8	44·5
Santa Barbara	Z.	90·2	56	i 13 5	+ 7	—	—	—	—
Pasadena		91·4	56	i 13 10	+ 6	—	—	e 44·2	—
Mount Wilson	Z.	91·5	56	e 13 10	+ 6	—	—	—	—
Tinemaha	Z.	91·6	53	i 13 11	+ 6	—	—	—	—
La Jolla		92·1	57	e 13 14	+ 7	—	—	—	—
Riverside	Z.	92·1	56	i 13 13	+ 6	—	—	—	—
Sverdlovsk		94·9	327	e 13 17	− 3	23 45	[−15]	40·2	54·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bozeman		97·2	45	—	—	e 24 47	{+15}	e 46·4	—
Baku		102·8	311	e 18 17	PP	e 24 53	[+14]	42·6	59·2
Tananarive		103·2	250	—	—	27 9?	PS	49·1	—
Tiflis	E.	106·4	313	18 35	PP	e 34 30	?	e 37·0	67·6
Kucino		107·5	328	e 18 52	PP	e 24 57	[− 5]	45·4	62·0
Pulkovo		109·7	333	19 6	PP	25 25	[+13]	46·2	60·6
Helsingfors		111·7	336	—	—	e 38 33	?	e 54·2	—
Chicago		114·4	46	—	—	e 41 9	?	e 56·2	—
Ksara		114·8	305	e 19 30?	PP	e 29 15	PS	—	—
Copenhagen		119·7	336	—	—	30 9?	PS	61·2	—
Ottawa		121·0	38	—	—	e 26 9?	[+16]	e 51·2	—
Cape Town		122·6	225	—	—	37 9?	SS	—	—
Cheb		123·5	330	—	—	e 30 9?	PS	e 61·2	70·2
Oak Ridge		125·1	39	i 19 1	[+ 4]	e 37 47	SS	e 53·2	—
De Bilt		125·3	337	—	—	e 31 9?	PS	e 58·2	73·8
Triest		125·6	326	—	—	e 41 19	?	e 68·2	—
Stuttgart		126·0	331	e 18 57	[− 2]	e 33 9?	?	e 61·2	74·2
Strasbourg		126·8	332	(e 18 9?)	[−52]	—	—	e 18·2	—
Piacenza		128·2	328	—	—	e 34 9?	?	—	75·6
Paris		128·9	336	e 21 9?	PP	—	—	65·2	78·2
Huancayo		129·3	110	i 22 39	?	e 31 37	PS	e 61·2	—
La Paz		134·4	119	e 19 23	[+ 9]	26 20	[−12]	64·6	67·4
San Fernando		142·6	333	21 39	?	42 19	?	76·2	100·2

Additional readings :—
Riverview PP? = +6m.58s.
Adelaide ePP = +7m.36s., i = +11m.43s., and +14m.16s.
Arapuni SS = +16m.51s.
Wellington PP = +9m.44s. = P_cP − 4s., SS = +17m.23s. = SSS − 5s.
Christchurch ePP = +9m.49s. = P_cP − 2s., L_qE = +16m.53s., eZ = +17m.38s.
Perth e = +14m.9s., iS = +17m.16s., P_cS = +17m.33s. = SS − 6s.
Hong Kong ? = +15m.1s. = S − 8s., SS = +18m.39s.
Zi-ka-wei iZ = +8m.44s., PPZ = +10m.29s., iZ = +15m.44s., SSZ = +18m.45s., SSZ = +20m.15s.
Chiufeng i = +9m.56s., iS = +17m.46s.
Agra PPE = +14m.39s., PPPE = +16m.9s., PSE = +22m.14s., SSE = +26m.38s.
Tashkent iPP = +13m.23s., eSS = +29m.9s., eSSS = +32m.39s.
Sverdlovsk ePP = +16m.59s., eS = +24m.8s. = SKKS − 6s., ePPS = +25m.54s. = PS + 5s., eSS = +30m.57s.
Baku ePS = +27m.20s.
Kucino ePS = +27m.40s., eSS = +34m.9s., eSSS = +37m.27s.
Pulkovo PS = +28m.21s., SS = +34m.21s.
Ottawa e = +37m.9s.? = SS + 24s.
Oak Ridge eNE = +38m.5s. = SS + 27s.
Triest e = +52m.55s.
Huancayo e = +39m.17s. and +54m.21s.
La Paz iPPE = +22m.51s. = PKS − 1s.
San Fernando SSN = +42m.29s.
Long waves were also recorded at Seattle, Ukiah, Scoresby Sund, Algiers, and at other European stations.

Feb. 9d. 11h. Readings for a shock in South Atlantic. The P observations are confined to South American stations approximately West of the epicentre area.

Huancayo e = 11h.17m.0s. (probably erroneous), 30m.12s., 38m.40s., eL = 48m.0s.
La Plata PEN = 11h.27m.42s., 31m.18s., SE? = 33m.36s., SN = 33m.48s., SSS?N = 37m.0s., S_cSE = 37m.54s., L = 40m.18s., M = 41m.20s.
Sucre P = 11h.29m.7s., eS = 36m.14s., L = 45m.
La Paz iP = 11h.29m.22s., iSE = 36m.38s., iSN = 36m.42s., iPSN = 37m.12s., iLE = 45m.36s., M = 50m.28s.
Ksara eE = 11h.38m.33s., and 48m.6s., LE = 12h.14m.
Riverside iPZ = 11h.38m.57s.
Pasadena iPZ = 11h.38m.59s., iZ = 39m.14s.
Mount Wilson ePZ = 11h.38m.59s.
Tinemaha iPZ = 11h.39m.4s.
Bombay e = 11h.39m.16s., M = 12h.17m.16s.
Sverdlovsk iP = 11h.39m.22s., e = 42m.54s., and 59m.33s., L = 12h.24m.
Zi-ka-wei PZ = 11h.39m.42s., iZ = 39m.46s., and 39m.55s., LZ = 12h.32m.3s., MZ = 40m.41s.

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Chiufeng P?NZ =11h.39m.51s., iP? =39m.57s.
Tananarive E =11h.39m.54s., and 47m.12s., LN =51m.44s., M =55m.18s.
Agra eE =11h.39m.55s.
Tashkent e =11h.40m.0s., M =12h.2m.0s.
Baku e =11h.40m.1s. and 48m.54s., L =12h.19m., M =28m.48s.
Nanking e =11h.40m.3s.
Vladivostok e =11h.44m.28s., eL =12h.42m.
Oak Ridge eNW =11h.48m.0s., eNE =54m.0s., eLNW =12h.15m.
Adelaide e? =11h.49m.9s., eL =12h.2m.29s., M =9m.30s.
Triest e =11h.54m.7s. and 12h.3m.55s., eL =12h.15m.
Long waves were also recorded at Christchurch, Wellington, Riverview, Perth, Hong Kong, Pulkovo, Algiers, and other European stations.

Feb. 9d. 22h. 32m. 17s. Epicentre 21°·0S. 176°·5W. N.3.

A = −·932, B = −·057, C = −·358; D = −·061, E = +·998; G = +·358, H = +·022, K = −·934.

A *depth* of focus 0°·040 has been assumed.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Apia		−0·3	8·6	34	e 1 48	−10	i 3 10	−21	—	—
New Plymouth		−1·6	19·9	202	4 12	+ 2	7 46	+15	—	—
Wellington		−1·7	21·6	198	4 28	− 1	8 12	+ 8	—	—
Christchurch		−2·0	24·3	199	4 43?	−11	—	—	—	—
Riverview		−2·7	31·3	239	i 6 0	+ 7	i 10 49	+ 7	e 14·9	—
Adelaide		−3·4	41·6	241	—	—	i 13 23	+14	18·7	20·9
Sumoto		−4·9	72·1	321	e 10 25	−28	—	—	—	—
Santa Barbara		−5·0	77·4	46	i 11 25	0	—	—	—	—
La Jolla	z.	−5·1	78·1	48	i 11 24	− 5	—	—	—	—
Pasadena		−5·1	78·2	47	i 11 28k	− 1	—	—	—	—
Mount Wilson		−5·1	78·3	47	i 11 30k	0	—	—	—	—
Riverside		−5·1	78·7	47	i 11 32	0	—	—	—	—
Vladivostok		−5·1	79·7	325	11 37	− 1	e 21 18	+ 3	27·7	—
Tinemaha		−5·1	79·8	45	i 11 39k	0	—	—	—	—
Nanking		−5·2	81·5	309	i 10 36	−72	—	—	—	—
Chiufeng		−5·3	87·2	316	12 17k	− 1	—	—	—	—
Huancayo		−5·5	95·9	106	—	—	i 23 18	[−47]	—	—
La Paz		—	100·4	113	e 17 46	PP	24 50	{− 6}	—	—
Agra	E.	—	112·6	292	e 16 36	?	—	—	—	—
Bombay		—	115·4	282	e 18 43?	[+ 9]	—	—	—	—
Tashkent		—	121·6	307	18 21	[−28]	—	—	e 53·7	59·4
Baku		—	136·3	307	e 18 52	[−25]	—	—	66·7	—
Tiflis		—	139·6	311	18 57	[−24]	—	—	e 31·2	—
Theodosia		—	144·4	320	19 6	[−26]	—	—	—	—
Simferopol		—	145·3	321	e 19 5	[−30]	—	—	—	—
Yalta		—	145·5	320	e 19 3	[−32]	—	—	—	—
Sebastopol		—	145·7	321	e 19 11	[−24]	—	—	—	—
Ksara		—	148·6	300	e 19 14	[−26]	—	—	—	—
De Bilt	z.	—	148·9	358	i 19 18	[−22]	—	—	—	—
Göttingen		—	149·1	353	e 19 14	[−26]	—	—	—	—
Uccle	z.	—	150·1	359	19 16	[−26]	—	—	—	—
Vienna		—	150·8	342	i 19 15k	[−28]	—	—	—	—
Stuttgart	z.	—	151·9	352	e 19 16k	[−28]	—	—	—	—
Paris		—	152·2	2	e 19 18	[−26]	—	—	—	—
Strasbourg		—	152·2	354	e 19 18	[−26]	—	—	—	—
Zagreb		—	153·1	340	e 19 19	[−27]	—	—	—	—
Basle		—	153·2	354	e 18 53	[−53]	—	—	—	—
Zurich		—	153·3	354	e 19 27	[−19]	—	—	—	—
Chur		—	153·6	351	e 19 20	[−27]	—	—	—	—
Neuchatel		—	153·8	355	e 19 21	[−26]	—	—	—	—
Trieat		—	153·9	344	i 19 21	[−26]	—	—	—	—
Prato		—	156·2	346	e 19 25	[−24]	19 57	?	—	—

For Notes see next page.

NOTES TO FEB. 9d. 22h. 32m. 17s.

Additional readings :—
Wellington S_cS = +15m.54s.
Adelaide i = +16m.49s.
Sumoto S = +10m.54s.
Santa Barbara iZ = +12m.19s.
Pasadena iZ = +11m.43s. and +12m.23s.
Vladivostok i = +12m.32s. and +13m.0s.
Tinemaha iZ = +12m.5s., +12m.37s., and +13m.16s.
Chiufeng iZ = +13m.35s.
Huancayo e = +30m.48s.
La Paz iE = +23m.39s.
Bombay eN = +23m.43s?.
Tashkent i = +19m.59s., e = +20m.50s., +30m.43s., +36m.13s., and +37m.19s.
Baku ePKP = +21m.29s. =PP −29s., ePS = +35m.34s.
Tiflis eEN = +22m.11s. =PP −8s. and +22m.35s. =PKS −33s.
Ksara e = +20m.24s.
De Bilt iZ = +20m.15s.
Göttingen iP = +19m.17s.
Uccle iZ = +19m.20s., eZ = +20m.17s. =PKP_2 +18s.
Vienna = +19m.35s., +20m.16s. =PKP_2 +14s.
Stuttgart iPZ = +19m.24s.
Paris e = +19m.27s.
Strasbourg iPKP_2? = +19m.25s., i = +19m.34s.
Zagreb eZ = +19m.27s.
Chur e = +19m.28s., i = +19m.41s.
Triest i = +19m.38s.
Long waves were also recorded at Perth.

Feb. 9d. Further shocks from the epicentre 38°·0N. 118°·5W.

Lick

h.	m.	s.	h.	m.	s.
2	4	35	22	27	43
11	9	36	23	5	23

Berkeley

h.	m.	s.
11	9	39

Branner

h.	m.	s.
11	9	50

Feb. 9d. Readings also at 0h. (Tyosi and near Mizusawa), 2h. (near Tyosi), 6h. (Agra, Bombay, and La Paz), 8h. (Little Rock), 10h. (Sydney), 11h. (Cape Town), 14h. (Grozny), 15h. (Balboa Heights), 16h. (Bombay, Tashkent, and Vladivostok), 18h. (Sebastopol and Yalta), 19h. (Apia, Tashkent, and Vladivostok), 20h. (Oak Ridge, Port au Prince, San Juan, Baku, near Tiflis, Grozny (2), Erevan, and near Sumoto).

Feb. 10d. 22h. 1m. 51s. Epicentre 37°·2N. 142°·8E. N.1.
Probable error of epicentre ±0°·12
The Japanese stations give 37°·4N. 142°·0E.

A = −·634, B = +·482, C = +·605 ; D = +·605, E = +·797 ;
G = −·482, H = +·366, K = −·797.

	Δ	Az.	P.	O—C.	S.	O—C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Onahama	1·5	260	0 26a	+ 5	0 40	+ 1	—	—
Sendai	1·8	305	0 26k	0	0 42	− 4	—	—
Hukusima	1·9	287	0 24k	− 4	0 43	− 6	—	—
Mito	2·0	246	0 28	− 1	0 46	− 5	—	—
Aidu	2·1	280	0 30a	0	0 50	− 4	—	—
Yamagata	2·1	299	0 34k	+ 4	0 58	+ 4	—	—
Tyosi	2·1	226	i 0 30k	0	0 57	+ 3	—	1·0
Mizusawa	2·3	326	i 0 34	+ 1	i 1 2	+ 3	—	—
Kakioka	2·3	245	0 30	− 3	0 54	− 5	—	—
Tukubasan	2·4	248	0 31	− 3	0 55	− 7	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Utunomiya		2·4	255	0 25	− 9	0 50	P_g	—	—
Miyako		2·5	345	0 39a	+ 3	1 5	+ 1	—	—
Morioka		2·8	333	0 41a	+ 1	1 13	+ 1	—	—
Kumagaya		2·9	249	0 39a	− 2	1 10	− 4	—	—
Tokyo		2·9	238	0 40	− 1	e 1 12	− 2	—	1·3
Maebasi		3·1	255	0 42a	− 2	1 15	− 5	—	—
Yokohama		3·1	235	0 44	0	1 17	− 3	—	—
Akita		3·3	320	0 47	0	1 28	+ 3	—	—
Mera		3·3	226	0 54	P*	1 34	S*	—	—
Hunatu		3·7	245	0 51a	− 2	1 30	− 5	—	—
Kohu		3·7	247	0 51	− 2	1 32	− 3	—	—
Misima		3·7	237	0 53	0	1 46	S*	—	—
Nagano		3·7	263	0 53	0	1 43	+ 8	—	—
Numadu		3·8	238	0 54	0	1 44	+ 7	—	—
Aomori		3·9	337	0 59	+ 3	1 45	+ 5	—	—
Susaki		4·0	232	0 56	− 1	1 52	S*	—	—
Omaesaki		4·5	236	1 5	+ 1	1 53	− 2	—	—
Toyama		4·5	265	1 4	0	1 56	+ 1	—	—
Wazima		4·7	274	1 8	+ 1	2 8	+ 8	—	—
Hamamatu		4·8	242	1 5	− 3	2 5	+ 2	—	—
Hatidyozima		4·8	211	1 12	+ 4	2 4	+ 1	—	—
Nagoya		5·1	248	1 13	0	2 12	+ 2	—	2·4
Gihu		5·2	252	1 13a	− 1	2 3	−10	—	—
Hikone		5·6	252	1 21	+ 1	2 29	+ 6	—	—
Kameyama		5·6	247	1 24	+ 4	2 24	+ 1	—	—
Sapporo		6·0	350	1 53	P_g	2 54	S*	—	—
Kyoto		6·1	252	1 25	− 2	2 46	+10	—	—
Osaka		6·4	249	1 30	− 1	2 38	− 5	—	3·6
Nemuro		6·5	19	1 28	− 4	2 42	− 4	—	—
Kobe		6·6	250	e 1 34	0	e 2 57	+ 9	—	3·6
Toyooka		6·6	258	1 33	− 1	2 44	− 4	—	3·4
Siomisaki		6·8	239	1 36	− 1	3 16	S*	—	—
Wakayama		6·8	245	1 35k	− 2	3 5	+12	—	—
Sumoto	E.	7·0	249	1 38	− 1	3 16	S*	—	3·7
	N.	7·0	249	1 41	+ 2	3 17	S*	—	3·6
Koti		8·4	247	1 57	− 2	3 42	+ 8	—	4·3
Matuyama		8·8	251	2 3	− 2	4 49	S_g	—	—
Vladivostok		10·1	309	i 2 24	+ 2	4 24	+ 8	4·6	5·8
Hukuoka B		10·7	254	e 4 27	S	(e 4 27)	− 4	—	—
Kumamoto		10·8	250	2 6	−26	5 2	S*	—	—
Taikyu		11·4	268	e 2 36	− 4	—	—	—	—
Nagasaki		11·5	251	e 2 39	− 3	e 5 12	+22	—	—
Zi-ki-wei	Z.	18·6	258	4 9	− 5	—	—	10·8	12·3
Chiufeng		20·9	286	e 4 33	− 6	—	—	—	12·5
Agra	E.	54·6	280	—	—	e 17 8	+ 4	—	35·2
Tashkent		55·3	299	—	—	e 19 9	(−10)	e 23·6	31·2
Sverdlovsk		55·5	319	e 10 33	+61	—	—	31·2	35·4
La Paz	N.	145·8	61	i 19 42	[+ 6]	—	—	—	—

Additional readings :—
Hatidyozima S = +2m.30s. = S_g − 2s.
Osaka i = +1m.46s. = P* + 0s. +2m.15s. = P_g +13s. and +2m.44s.
Kobe iZ = +1m.50s. = P* + 0s., eEN = +2m.48s. = S + 0s., S = +3m.10s. = S* − 5s.
Toyooka eSEN = +2m.53s.
Long waves were also recorded at Phu-Lien, Hong Kong, Pulkovo, Baku, De Bilt, and San Fernando.

Feb. 10d. Further repetitions from the epicentre 38°·0N. 118°·5W.

Lick

h.	m.	s.
18	18	48

Berkeley

h.	m.	s.	h.	m.	s.	h.	m.	s.
12	37	6	13	13	40	18	18	59

Branner

h.	m.	s.	h.	m.	s.	h.	m.	s.
12	37	12	13	13	46	18	18	54

San Francisco

h.	m.	s.	h.	m.	s.
12	37	10	13	13	43

Feb. 10d. Readings also at 1h. (near Grozny and near Susaki), 2h. (Vladivostok), 3h. (Amboina, Tashkent, and Kodaikanal), 4h. (Agra, Bombay, Calcutta, and Hyderabad), 5h. (near La Paz and near Mizusawa), 7h. (Apia), 8h. (Sverdlovsk, Tashkent, and Ksara), 9h. (Tiflis), 11h. (Simferopol, Theodosia, and Yalta), 14h. (La Paz (2)), 15h. (Mizusawa (2), Nagoya, and Tyosi), 22h. (near Agra), 23h. (Jena).

Feb. 11d. 8h. 59m. 31s. Epicentre 6°·2S. 155°·0E. (as on 1932 March 30d). R.2.

A = −·901, B = +·420, C = −·108; D = +·423, E = +·906; G = +·098, H = −·046, K = −·994.

		△	Az.	P.	O—C.	S.	O—C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		26·8	274	5 28	− 8	10 40	+28	—	—
Riverview		27·9	187	i 5 49	+ 3	e 10 28	− 2	e 13·8	—
Adelaide		32·5	206	e 6 34	+ 7	i 11 34	− 9	16·2	18·6
Melbourne		32·9	195	—	—	i 11 45	− 4	16·1?	17·7
Arapuni		37·0	151	—	—	15 29?	SS	—	—
Wellington		39·3	156	7 25	− 1	13 19	− 7	19·5	—
Manila		39·6	302	i 7 30$_a$	+ 1	13 32	+ 2	16·8	—
Christchurch		40·6	160	i 7 33	− 4	13 35	−10	19·2	—
Perth		44·7	230	7 20	−50	14 43	− 3	21·8	26·2
Batavia		47·9	269	e 8 35	0	15 25	− 6	—	—
Hong Kong		49·1	308	8 47	+ 3	15 47	− 1	—	26·6
Zi-ka-wei	Z.	49·3	322	8 44	− 2	—	—	24·2	27·9
Vladivostok		53·5	339	9 19	+ 1	e 16 45	− 4	23·5	—
Phu-Lien		54·7	301	—	—	(16 29?)	−36	16·5	—
Chiufeng		58·5	326	e 9 51	− 3	e 17 48	− 8	e 28·0	—
Agra	E.	81·4	300	12 5	−10	22 17	−14	e 38·4	—
Bombay		84·7	290	e 12 31	− 1	(22 50)	−15	—	22·8
Victoria	E.	89·2	41	e 23 45	S	(e23 45)	− 3	e 42·0	45·7
Santa Barbara	Z.	89·6	56	i 12 59	+ 3	—	—	—	—
Pasadena		90·9	56	i 13 4	+ 2	—	—	—	—
Mount Wilson		91·0	56	i 13 4	+ 2	—	—	—	—
Tinemaha		91·2	52	i 13 5	+ 2	—	—	—	—
La Jolla		91·5	57	i 13 7	+ 3	—	—	—	—
Riverside		91·5	56	i 13 4	0	—	—	—	—
Sverdlovsk		97·6	327	—	—	e 29 3	?	44·5	52·5
Tiflis		109·2	312	e 17 7	?	e 28 0	PS	e 61·5	70·1
Oak Ridge		125·2	40	i 18 58	[+ 1]	—	—	e 56·3	—
Stuttgart		128·5	332	e 49 41	?	e 56 35	?	e 79·5	—
La Paz		131·7	119	e 19 13	[+ 3]	—	—	64·5	—
San Juan		138·1	69	e 22 59	PKS	—	—	e 65·5	—

Additional readings:—
Amboina i = +5m.55s.
Adelaide i = +14m.40s.
Melbourne i = +14m.5s.

Continued on next page.

Wellington SS = +16m.31s.
Christchurch L_gE = +15·5m.
Perth PP = +9m.25s., PPP = +10m.4s., PPPP = +10m.34s., P_gS = +12m.51s., SS = +17m.54s., SSS = +18m.54s., SSSS = +19m.24s.
Chiufeng eN = +17m.53s.
Agra eN = +12m.35s., SSE = +27m.36s., SSSE = +30m.59s.
Pasadena iZ = +13m.20s.
Tiflis eN = +21m.30s.
La Paz iPP = +22m.40s. = PKS − 1s.
Long waves were also recorded at Baku, Kucino, Tashkent, Scoresby Sund, De Bilt, Strasbourg, Paris, Uccle, Bozeman, Pittsburgh, and Huancayo.

Feb. 11d. Readings also at 1h. (Sotchi, near Erevan, and Tiflis), 4h. (Agra), 7h. (La Paz), 8h. (Tucson), 13h. (Baku, Sverdlovsk, Ksara, near Erevan, Grozny, and Tiflis), 14h. (Bombay, Calcutta, and Agra), 16h. (near Mizusawa and Tyosi), 18h. (Tucson, Andijan, and Samarkand), 21h. (near Berkeley, Branner, Lick, and La Paz), 22h. (Zi-ka-wei and near Lick), 23h. (Apia and near Tiflis).

Feb. 12d. 6h. 43m. 17s. Epicentre 9°·5N. 84°·0W. (as on 1927 Aug. 22d.). R.3.

A = +·103, B = −·981, C = +·165; D = −·995, E = −·105; G = +·017, H = −·164, K = −·986.

		△	Az.	P.	O—C.	S.	O—C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights		4·4	96	e 1 5	+ 2	i 1 38	−15	2·2	—
Port au Prince		14·5	50	e 3 13	− 9	—	—	i 8·2	—
San Juan		19·5	61	i 4 17	− 7	i 7 50	− 6	e 9·9	—
Huancayo		23·2	158	i 5 3	0	i 9 7	− 1	i 9·2	—
Columbia		24·6	6	e 5 21	+ 5	(e 9 40)	+ 6	e 9·7	—
Georgetown		30·0	11	e 6 5	0	i 11 4	0	—	17·2
La Paz	N.	30·4	149	6 10	+ 1	12 12	+62	16·7	20·6
Pittsburgh		31·2	6	e 6 19	+ 3	e 12 14	+51	e 15·8	—
Tucson		33·7	316	—	—	e 14 56	?	e 21·4	—
Sucre		34·0	148	e 6 27	−13	—	—	—	—
Toronto	N.	34·4	6	—	—	e 12 3	− 9	16·7	—
Oak Ridge		34·8	17	i 6 49	+ 2	e 12 15	− 3	e 15·5	—
Ottawa		36·6	10	e 8 54	PP	i 12 44	− 1	e 18·7	—
La Jolla		38·5	313	i 7 35	+16	—	—	—	—
Riverside	Z.	39·2	314	e 7 39	+14	—	—	—	—
Pasadena	Z.	39·8	314	e 7 36	+ 6	—	—	—	—
Tinemaha		41·4	317	e 7 51	+ 7	—	—	—	—
La Plata		50·8	153	8 51	− 6	15 43?	−29	26·1	29·4
Uccle		81·6	40	—	—	e 22 19	−14	e 44·7	—
De Bilt		82·0	38	—	—	e 23 13	PS	e 39·7	—
Baku		114·5	36	—	—	e 29 25	PS	54·7	—
Tashkent		123·6	24	e 23 43	?	e 37 13	SS	e 55·7	80·2

Additional readings:—
Georgetown iZ = +6m.11s., iN = +12m.50s.; T_0 = 6h.43m.0s.
La Paz iSE = +12m.31s. = SS − 8s., iE = +12m.55s. = SSS + 5s.
Tucson e = +15m.3s.
Ottawa eE = +15m.19s. = SSS − 3s.
La Plata SSE = +19m.43s.?
Tashkent e = +45m.19s. = SSSS + 6s.
Long waves were also recorded at Charlottesville, Scoresby Sund, Paris, Strasbourg, Stuttgart, Copenhagen, and Sverdlovsk.

Feb. 12d. 11h. 30m. 58s. Epicentre 20°·0N. 101°·5E. (as on 1930 May 16d.). R.2.

A = −·187, B = +·921, C = +·342; D = +·980, E = +·199; G = −·068, H = +·335, K = −·940.

		Δ	Az.	P.	O—C.	S.	O—C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Phu-Lien		4·8	82	e 1 9	+ 1	2 17	S*	2·4	3·2
Hong Kong		12·1	77	2 52	+ 2	5 15	+10	6·2	7·0
Calcutta		12·5	284	4 41	S	8 11	?	10·4	14·7
Medan		16·6	190	i 3 47	− 2	i 6 53	+ 1	(i 8·6)	—
Takao		17·7	78	7 17	S	(7 17)	0	(8·9)	—
Taito		18·5	78	e 7 45	S	(e 7 45)	+ 9	(10·6)	—
Karenko		19·1	74	8 49	S	(8 49)	+61	(10·9)	—
Manila		19·4	103	i 4 26a	+ 3	8 16	SS	10·3	12·4
Zi-ka-wei		21·1	54	4 45	+ 4	i 8 59	SSS	i 10·8	13·1
Hyderabad		21·9	267	4 43	− 7	8 56	SS	11·4	17·0
Agra	E.	22·6	293	i 4 52	− 5	9 3?	+ 6	—	—
	N.	22·6	293	e 4 56	− 1	9 7	+10	—	—
Dehra Dun		23·5	301	9 22	S	(9 22)	+ 8	13·2	15·0
Chiufeng		23·7	29	5 9k	+ 2	i 9 31	+13	i 12·7	13·3
Colombo		24·7	241	5 18	+ 1	9 34	− 2	—	16·1
Kodaikanal		25·1	251	5 21	0	9 53	+10	15·6	24·5
Batavia		26·7	168	i 5 39	+ 4	i 10 24	+14	i 14·4	—
Bombay		27·0	273	e 5 16	−22	10 16	+ 1	13·9	18·4
Zinsen		28·0	46	e 10 38	S	(e 10 38)	+ 6	(e 15·4)	16·2
Keizyo		28·3	46	e 10 52	S	(e 10 52)	+15	(15·9)	—
Nagasaki		28·3	57	—	—	e 12 53	?	e 14·7	16·6
Taikyu		28·6	50	e 10 56	S	(e 10 56)	+14	(15·0)	—
Hukuoka		29·0	55	e 7 15	?	e 11 56	SS	e 15·0	18·8
Miyazaki		29·4	60	12 35	S	(12 35)	SS	—	—
Frunse		32·2	322	6 28	+ 4	e 11 44	+ 6	19·5	—
Andijan		32·3	317	6 28	+ 3	e 13 34	SSS	—	—
Sumoto	N.	32·8	57	—	—	e 12 35	?	15·8	18·7
Osaka		33·4	57	9 41	?	15 5	?	18·8	—
Vladivostok		34·4	40	i 6 47	+ 3	e 12 11	− 1	15·0	21·8
Tashkent		34·6	317	6 27	−19	i 11 58	−17	17·5	21·8
Samarkand		35·4	312	e 6 54	+ 1	—	—	—	—
Maebasi		36·7	57	13 28	S	(13 28)	+41	(19·1)	—
Mizusawa	E.	39·0	53	(e 7 55)	+31	e 7 55	P	—	—
Sverdlovsk		47·5	332	i 8 29	− 3	i 15 32	+ 6	24·6	27·5
Baku		48·2	309	e 8 38	0	i 15 37	+ 1	26·0	34·0
Grozny		51·7	311	e 9 22	+18	e 16 37	+13	e 23·0	—
Tiflis		52·2	309	9 7	− 1	16 37	+ 6	e 28·5	39·1
Perth		53·7	165	21 2	?	—	—	—	—
Sotchi		56·1	311	e 9 37	0	—	—	41·0	—
Kucino		58·8	325	—	—	i 18 15	+15	e 29·7	34·0
Ksara		59·1	299	e 9 58	0	18 12	+ 8	—	—
Theodosia		59·3	313	e 10 0	0	e 18 8	+ 1	33·0	—
Yalta		60·1	312	e 10 3	− 2	e 18 19	+ 2	—	—
Simferopol		60·2	313	e 10 18	+12	—	—	—	—
Pulkovo		63·4	330	e 10 36	+ 8	19 11	+11	33·5	38·0
Helsingfors		66·1	330	—	—	e 14 38	PPP	e 27·0?	—
Riverview		71·7	140	—	—	e 27 26	?	e 36·2	44·0
Vienna		72·0	318	e 11 32	+ 9	—	—	e 39·0	43·0
Zagreb		72·7	315	e 11 2?	−25	e 20 2?	−51	—	41·0
Copenhagen		73·0	325	—	—	21 2	+ 5	38·0	—
Cheb		74·2	320	—	—	e 29 2?	?	e 39·0	43·4
Triest		74·3	315	e 11 33	− 3	i 21 10	− 2	e 35·0	42·2
Prato		76·5	313	e 11 51	+ 2	22 12	PS	44·0	—
Florence		76·5	314	e 11 42	− 7	22 2	PS	—	44·0
Stuttgart		76·6	319	e 11 47	− 2	e 21 36	− 2	e 41·0	—
Piacenza		77·2	316	21 34	S	(21 34)	−11	—	47·4
Strasbourg		77·6	319	—	—	(e 24 2?)	?	e 24·0	—
De Bilt		78·1	323	—	—	22 2	+ 7	e 41·0	43·8
Uccle		79·0	321	—	—	e 22 2?	− 3	e 41·0	—
Paris		80·8	320	—	—	e 31 2?	?	44·0	48·0

For Notes see next page.

NOTES TO FEB. 12d. 11h. 30m. 58s.

Additional readings and notes :—
Medan i = +7m.7s. =SS +5s. and +7m.27s. L is given as iS.
Takao, Taito, and Karenko record S as P and L as S.
Zi-ka-wei iZ = +4m.50s. =PP −7s., SE = +8m.51s. =SS −3s., SSZ = +10m.11s.
Chiufeng iP = +5m.13s., iSZ = +9m.37s.
Zinsen, Keizyo, and Taikyu record S as P and L as S.
Frunse e = +13m.22s. =SS +0s.
Sumoto eE = +12m.43s.
Vladivostok iPP = +8m.11s.
Maebasi records S as P and L as S.
Mizusawa PN = 11h.26m.30s.?, PE = +27m.25s.?
Tiflis SSE = +20m.28s., eSSSE = +21m.54s.
Kucino e = +22m.16s. =SS +27s. and +24m.46s. =SSSS +15s.
Ksara PS = +18m.44s.
Pulkovo L_q = +32·0m.
Helsingfors eS_cSN = +16m.48s., eSKSN = +17m.10s., eSSN = +19m.20s. = S −14s., e?N = +20m.42s. =S_cS +6s., eSSSN = +21m.49s.
Triest SS = +25m.59s.
Stuttgart eSS = +26m.22s., e = +30m.14s. ; T_0 = 11h.30m.55s.
Long waves were also recorded at Sydney, Oak Ridge, Pittsburgh, Bozeman, Ottawa, St. Louis, Huancayo, Tananarive, and other European and Japanese stations.

Feb. 12d. 21h. 44m. 16s. Epicentre 33°·1N. 141°·2E. (as on 1933 Sept. 15d.). X.

A = −·653, B = +·525, C = +·546 ; D = +·627, E = +·779 ;
G = −·426, H = +·342, K = −·838.

		△	Az.	P.	O −C.	S.	O −C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Susaki		2·4	311	0 40	+ 6	1 1	− 1	—
Tyosi		2·7	354	e 0 44	+ 5	1 11	+ 2	1·7
Nagoya		4·1	302	0 57	− 1	e 2 4	S_g	—
Osaka		5·0	291	1 8	− 3	1 45	P_g	2·3
Kobe		5·2	290	i 1 12	− 2	2 2	−11	2·1
Sumoto		5·4	285	1 14k	− 3	2 6	−12	2·1
Mizusawa		6·0	359	e 1 27	+ 2	i 2 31	− 2	—
Tinemaha		78·1	54	i 12 0	+ 2	—	—	—
Haiwee		78·8	54	i 12 3	+ 2	—	—	—
Mount Wilson	z.	79·8	56	i 12 8	+ 1	—	—	—
Pasadena	z.	79·8	56	i 12 7	0	—	—	—
Riverside	z.	80·3	56	i 12 18	+ 9	—	—	—

Additional readings :—
Tyosi iP = +49s. =P_g +1s.
Osaka i = +1m.14s. and +1m.33s. =P_g −1s.
Kobe iE = +1m.22s. =P* −4s.

Feb. 12d. Further shocks from the epicentre 38°·0N. 118°·5E.

Lick.

h.	m.	s.	h.	m.	s.	h.	m.	s.
6	1	40	13	36	41	16	21	6

Berkeley.

h.	m.	s.	h.	m.	s.	h.	m.	s.
6	1	44	12	41	39	13	36	52
6	21	46						

Branner.

h.	m.	s.	h.	m.	s.	h.	m.	s.
6	1	50	11	14	34	13	36	48
6	21	57	12	41	48	16	21	13
10	54	36						

San Francisco.

h.	m.	s.	h.	m.	s.
5	46	54	13	36	54

Ferndale.

h.	m.	s.
12	41	3

Tucson.

h.	m.	s.
6	5	25

Feb. 12d. Readings also at 0h. (Haiwee, La Jolla, Riverside, Mount Wilson, Pasadena, and Tinemaha), 1h. (Tiflis), 3h. (Huancayo, La Paz (2), San Juan, Port au Prince, Oak Ridge, Tinemaha, Mount Wilson, Haiwee, Pasadena, Riverside, La Jolla, Andijan, near Samarkand, near Tyosi, near Agra, and Calcutta), 4h. (De Bilt, Andijan, Samarkand, Bombay, La Paz, and near Santiago), 5h. (near Mizusawa and near Nagasaki), 6h. (Little Rock), 7h. (Tyosi, near Mizusawa, near Prato, and near Sitka), 8h. (Triest and Zagreb), 9h. (Basle and near Tananarive), 11h. (Wellington), 12h. (Hong Kong, Phu-Lien, and La Paz), 13h. (Phu-Lien), 14h. (near Mizusawa), 15h. (Nagoya, near Susaki, and Tyosi), 17h. (Tiflis), 18h. (Apia).

Feb. 13d. 9h. 51m. 53s. Epicentre 70°·5N. 14°·5W. N.2.

A = +·323, B = −·084, C = +·943; D = −·250, E = −·968; G = +·912, H = −·236, K = −·334.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Scoresby Sund		2·5	270	0 30	− 6	i 0 57	− 7	—	—
Bidston		17·9	157	e 3 22	−43	—	—	9·1	10·9
Copenhagen		18·8	128	i 4 18	+ 2	7 57	+15	9·1	—
Helsingfors		19·0	104	4 18	− 1	8 7	+21	e 10·1	—
Oxford		19·7	155	—	—	i 8 23	+23	—	—
Kew		20·2	154	e 4 31	− 1	—	—	e 9·1	10·8
Hamburg		20·2	135	e 4 32a	0	—	—	11·7	12·1
De Bilt		20·5	144	4 35	0	8 33	+17	e 9·6	12·2
Pulkovo		21·0	98	i 4 40	0	e 8 35	+ 9	10·8	11·8
Uccle		21·6	146	e 4 46	0	e 8 53	+15	—	—
Königsberg	z.	21·9	118	e 4 35	−15	—	—	—	—
Paris		23·1	151	e 5 2	0	—	—	13·1	13·1
Cheb		24·0	134	—	—	e 9 38	+15	e 13·3	—
Strasbourg		24·0	143	i 5 15k	+ 5	e 9 42	+19	e 12·1	—
Stuttgart		24·5	140	i 5 14	− 1	e 9 42	+10	e 12·1	—
Zurich		25·7	142	e 5 32	+ 6	—	—	—	—
Neuchatel		25·7	145	e 5 25	− 1	e 10 12	+19	—	—
Kucino		26·7	97	5 35	0	e 10 19	+ 9	e 12·5	16·2
Triest		28·4	136	(e 5 53)	+ 2	e 5 53	P	e 13·4	16·1
Sverdlovsk		33·3	75	i 6 34	0	e 12 1	+ 6	18·7	19·3
Ottawa		38·4	263	—	—	e 13 25	+13	e 20·1	—
Tiflis		41·1	103	7 42	+ 1	14 5	+12	e 20·1	24·7
Fordham		41·8	258	e 7 48	+ 1	e 14 13	+10	e 23·1	—
Baku		44·0	99	e 8 6	+ 1	14 48	+12	22·2	29·9
Tashkent		49·6	80	i 8 50	+ 2	e 15 54	− 1	e 19·5	29·9
Tinemaha	z.	59·7	296	e 10 1	− 1	—	—	—	—
Haiwee		60·4	295	i 10 9	+ 2	—	—	—	—
Mount Wilson	z.	62·3	296	e 10 19	− 1	—	—	—	—
Pasadena	z.	62·4	296	e 10 19	− 2	—	—	—	—
Chiufeng		63·9	41	e 10 46	+15	—	—	e 32·5	—
Agra		65·4	79	e 10 37	− 4	—	—	—	—
Bombay		71·4	86	e 11 7?	−12	—	—	e 37·1	—
Phu-Lien		80·0	55	12 7?	− 1	—	—	—	—

Additional readings:—
Scoresby Sund eN = +34s., eEZ = +42s., iEZ = eN = +3m.14s.
Helsingfors ePPEN = +4m.36s., eSSE = +8m.57s.
Königsberg eZ = +5m.4s. = PP − 5s.
Triest eP = 9h.50m.51s.
Ottawa e = +17m.7s.?
Tiflis SSE = +17m.23s.
Fordham eN = +9m.22s. = PP + 4s.
Long waves were also recorded at Edinburgh, Upsala, San Fernando, Piacenza, Oak Ridge, Pittsburgh, Andijan, and Samarkand.

Feb. 13d. Readings also at 0h. (Balboa Heights), 2h. (Nagoya), 5h. (Kobe, near Sumoto, and Koti), 6h. (Kobe, near Sumoto, and Koti), 10h. (near Tiflis), 12h. (Jena, Berkeley, Branner, Lick, San Francisco, and near Wellington), 13h. (near Amboina), 14h. (Hukuoka, and near Nagasaki), 16h. (near Apia (3)), 20h. (Baku, Sverdlovsk, Tiflis, Grozny, Andijan, Frunse, Samarkand, Tashkent, Agra, and Bombay (2)).

Feb. 14d. 1h. 21m. 13s. Epicentre 6°·3S. 122°·5E. (as on 1932 Oct. 23d.). R.3.

A = −·534, B = +·838, C = −·110; D = +·843, E = +·537; G = +·059, H = −·093, K = −·994.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		6·2	65	1 31	+ 3	i 3 2	S*	—	—
Batavia		15·6	269	i 3 41k	+ 5	—	—	—	—
Manila		21·0	356	i 4 54	+14	9 6	SS	—	—
Perth		26·4	193	(i 5 39)	+ 6	i 5 39	P	i 10·6	10·6
Hong Kong		29·8	344	6 10	+ 7	10 51	−10	—	14·1
Adelaide		32·3	154	i 6 31	+ 6	i 11 50	+10	—	14·4
Melbourne		37·5	150	i 6 49	−22	i 12 7	−52	15·9?	17·4
Riverview		38·2	141	—	—	e 12 17	−52	—	20·5
Chiufeng	N.Z.	46·8	353	e 8 30	+ 3	e 11 18	?	—	—
Agra	E.	54·5	310	i 9 23	− 2	16 55	− 7	e 25·6	—
Bombay		55·0	300	e 9 24	− 5	—	—	—	18·1
Frunse		65·6	324	e 10 34	− 8	e 19 17	−10	—	—
Andijan		65·7	321	e 10 40	− 3	e 19 26	− 3	—	—
Samarkand		68·7	317	e 11 1	− 2	e 20 1	− 4	—	—
Sverdlovsk		80·5	331	i 12 6	− 4	e 22 0	−21	39·8	—
Baku		81·1	314	e 12 41	+27	e 22 18	− 9	36·8	—
Grozny		84·8	315	e 12 33	+ 1	—	—	—	—
Tiflis		85·1	315	12 30	− 4	e 22 42	[−18]	—	—
Tinemaha	Z.	117·0	52	e 18 29	[− 9]	—	—	—	—
Haiwee	Z.	117·4	52	i 18 31	[− 8]	—	—	—	—
Pasadena	Z.	117·7	55	i 18 35	[− 5]	—	—	—	—
Mount Wilson	Z.	117·8	55	e 18 31	[− 9]	—	—	—	—
Riverside	Z.	118·4	55	i 18 32	[−10]	—	—	—	—
La Paz	N.	154·9	155	e 18 53	[−55]	—	—	—	—

Additional readings:—
Batavia i = +5m.39s.
Perth P_cP = +2m.27s.
Hong Kong ? = +7m.0s.
Agra PPPE = +12m.12s., SSE = +20m.29s., SSSE = +22m.2s.
Tiflis eE = +22m.53s. =S−16s. and +24m.8s.
Pasadena iZ = +19m.17s. and +21m.48s.
Mount Wilson eZ = +21m.50s.
Long waves were also recorded at Oak Ridge.

Feb. 14d. 3h. 59m. 41s. Epicentre 17°·4N. 119°·0E. N.1.

Probable error of epicentre ±0°·19.

Epicentres suggested are: De Bilt 17°·3N. 119°·3E.; Manila 17°·3N. 119°·3E.; Hokoto 17°·5N. 119°·4E.; Zinsen 17°·5N. 119°E.; Bombay 17°·3N. 119°·3E.; Honolulu 17°·5N. 119°·4E.; St. Louis 18°·5N. 119°·5E.

A = −·463, B = +·835, C = +·299; D = +·875, E = +·485; G = −·145, H = +·262, K = −·954.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	3·4	146	i 0 51k	+ 2	—	—	—	—
Kosyun	4·9	20	e 1 33	P_g	2 3	− 2	—	—
Takao	5·4	13	1 13	− 4	2 6	−12	—	—
Taito	5·7	23	e 1 22	+ 1	4 39	?	—	—
Tainan	5·8	11	1 18	− 4	2 16	−12	—	—
Hokoto	6·2	5	0 11	−77	1 24	−74	—	—
Arisan	6·3	13	1 30a	0	2 34	− 7	—	—
Hong Kong	6·7	319	1 30	− 5	3 1	+10	—	4·3
Taityu	6·9	13	0 36	−62	3 7	+11	—	—
Karenko	7·1	20	1 48	+ 7	3 2	+ 1	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku	8·0	17	e 1 57	+ 4	3 16	− 8	—	—
Isigakizima	8·5	34	1 58	− 2	3 24	−12	—	—
Phu-Lien	11·8	288	i 2 52	+ 6	i 5 15	+17	—	14·2
Zi-ka-wei	14·0	9	e 3 14	− 1	5 48	− 3	8·3	12·4
Nake	14·6	40	3 20	− 3	6 21	+16	—	—
Nanking	14·7	359	i 3 19?	− 6	—	—	—	—
Kagosima	17·7	35	3 50	−13	7 17	0	—	—
Palau	18·1	122	4 6	− 2	7 27	0	—	—
Nagasaki	18·2	31	i 4 9k	0	i 7 27	− 2	e 8·8	12·9
Miyazaki	18·4	36	4 7	− 4	7 27	− 6	—	—
Kumamoto	18·7	32	4 15	0	7 42	+ 2	—	—
Saga	18·8	31	4 17	+ 1	7 43	+ 1	—	—
Hukuoka	19·2	30	4 21	0	7 51	+ 1	—	13·5
Hukuoka B	19·2	30	4 20	− 1	7 52	+ 2	—	13·9
Ituhara	19·2	26	4 20	− 1	7 51	+ 1	—	—
Simidu	19·9	37	4 27	− 2	8 4	0	—	—
Taikyu	20·4	23	4 33	− 1	8 16	+ 2	11·5	—
Koti	20·8	36	e 4 32	− 6	i 8 31	+ 9	9·1	10·6
Muroto	20·9	38	4 33	− 6	8 24	0	—	—
Niihama	20·9	35	4 38	− 1	8 31	+ 7	—	—
Zinsen	21·2	17	i 4 40a	− 2	i 8 32	+ 2	e 11·0	14·1
Keizyo	21·4	18	4 43	− 1	8 38	+ 4	—	—
Tadotu	21·4	35	4 46	+ 2	8 41	+ 7	—	—
Dairen	21·6	6	4 52	+ 6	8 54	+16	—	—
Siomisaki	22·0	40	4 51	0	8 51	+ 5	—	—
Sumoto	22·1	37	4 51a	− 1	8 49	+ 1	—	16·5
Wakayama	22·1	38	4 53	+ 1	8 54	+ 6	—	—
Kobe	22·5	37	4 54	− 2	9 1	+ 6	—	9·1
Heizyo	22·5	14	i 4 58	+ 2	i 9 2	+ 7	—	17·0
Osaka	22·7	37	5 0	+ 2	9 9	+10	—	—
Chiufeng	22·7	355	i 5 0	+ 2	i 9 8	+ 9	11·3	16·0
Kyoto	22·9	38	5 3	+ 3	9 10	+ 7	—	—
Amboina	22·9	156	i 4 58	− 2	i 8 52	−11	—	—
Toyooka	23·0	37	4 59k	− 2	9 6	+ 1	10·7	17·9
Miyadu	23·2	35	5 1	− 2	9 6	− 2	—	—
Hikone	23·5	37	5 7	+ 2	9 20	+ 6	—	—
Titizima	23·5	62	5 4	− 1	9 8	− 6	—	—
Ibukisan	23·7	37	5 9	+ 2	9 24	+ 6	—	—
Gihu	23·9	38	5 11	+ 2	9 26	+ 5	—	—
Nagoya	23·9	39	i 5 12k	+ 3	9 27	+ 6	—	10·0
Medan	24·1	237	i 5 16	+ 5	—	—	—	—
Omaesaki	24·1	42	5 12	+ 1	9 40	+15	—	—
Susaki	24·7	42	5 28?	+11	9 42	+ 6	10·8	—
Misima	25·0	42	5 24	+ 4	9 47	+ 6	—	—
Toyama	25·1	36	5 23	+ 2	9 47	+ 4	—	—
Oiwake	25·6	39	5 27	+ 2	9 56	+ 5	—	—
Kumagaya	25·9	40	5 31	+ 3	10 23	+26	—	—
Tokyo Univ.	25·9	41	5 22	− 6	10 10	+13	13·5	—
Tokyo Met.	25·9	41	5 30	+ 2	10 13	+16	—	—
Maebasi	26·0	39	5 29	0	10 9	+11	—	—
Takada	26·0	37	5 33	+ 4	10 3	+ 5	—	—
Batavia	26·4	208	i 5 35a	+ 2	10 19	+14	16·0	—
Tukubasan	26·4	41	5 32	− 1	10 3	− 2	—	—
Kakioka	26·6	41	5 33	− 2	10 4	− 5	—	—
Tyosi	26·7	42	5 37	+ 2	10 2	− 8	e 16·0	19·4
Mito	26·9	41	5 41	+ 4	10 15	+ 1	—	—
Malabar	27·0	205	i 5 52	+14	i 10 37	+22	16·3	—
Hukusima	27·7	38	5 44	0	10 27	0	—	—
Vladivostok	27·9	21	i 5 49	+ 3	i 10 30	0	—	21·3
Sendai	28·3	38	5 50	0	10 28	− 9	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Akita		28·8	35	5 58	+ 4	10 40	− 5	—	—
Mizusawa	E.	29·0	37	i 5 57	+ 1	e 10 30	−18	14·1	—
	N.	29·0	37	e 5 57	+ 1	e 10 33	−15	13·9	—
Calcutta		29·2	285	6 15	+17	10 15	−36	15·1	25·9
Morioka		29·3	36	6 2	+ 3	10 49	− 4	—	—
Sapporo		31·9	31	6 22	0	11 23	−11	—	—
Asahigawa		32·9	31	6 36	+ 5	11 51	+ 2	—	—
Nemuro		34·3	35	6 33	−10	11 51	−20	—	—
Hyderabad		38·6	276	7 23	+ 3	13 19	+ 4	17·0	23·9
Agra	N.	38·9	292	e 7 26	+ 3	13 30	+10	19·0	—
Colombo		39·6	259	7 28	− 1	13 30	0	19·5	27·2
Kodaikanal		40·8	266	i 7 41	+ 2	i 13 28	−20	i 18·7	—
Bombay		43·8	279	i 8 8	+ 5	i 14 36	+ 3	20·8	30·9
Almata		43·9	315	i 6 55	−69	e 13 37	−57	e 16·3	—
Frunse		45·3	313	i 8 9	− 6	e 14 53	− 2	e 18·3	—
Andijan		46·2	310	8 25	+ 3	15 17	+10	e 19·3	—
Tashkent		48·6	310	8 44	+ 3	i 15 54	+13	—	40·1
Perth		49·4	183	i 8 45	− 2	15 47	− 5	22·5	30·1
Samarkand		50·0	307	i 8 54	+ 3	e 16 7	+ 6	19·3	—
Adelaide		55·5	161	i 9 31	− 1	i 17 10	− 6	i 25·9	30·8
Sverdlovsk		58·4	327	—	—	i 21 52	SS	i 32·4	33·8
Riverview		59·6	149	i 10 2	0	i 18 9	− 2	e 27·8	—
Sydney		59·6	149	e 9 49	−13	i 18 19	+ 8	32·9	38·0
Melbourne		60·3	156	10 5	− 2	18 15	− 5	—	36·3
Grozny		66·1	310	i 10 39	− 7	i 19 39	+ 5	i 26·3	—
Tiflis		66·9	308	i 10 51	0	19 45	+ 2	e 31·0	—
Erevan		67·2	307	e 11 39	(+17)	e 20 31	(−13)	e 28·3	—
Suva		68·4	118	11 43	(+15)	20 49	(− 4)	33·8	—
Sotchi		70·4	311	e 13 9	PP	e 22 31	?	e 27·0	—
Kucino		70·7	323	11 13	− 2	e 20 3	−27	31·3	—
Theodosia		73·4	313	i 11 31	0	e 20 59	− 2	30·3	—
Yalta		74·3	312	11 36	0	21 9	− 3	29·3	—
Pulkovo		74·4	329	i 11 36	− 1	e 21 6	− 7	36·3	44·4
Sebastopol		74·7	313	11 40	+ 1	21 14	− 3	29·4	—
Ksara		74·8	300	i 11 42	+ 3	21 23	+ 5	35·8	43·8
Apia		75·1	110	e 11 42	+ 1	i 21 27	+ 6	35·4	—
Arapuni		76·8	137	12 19	+29	21 43	+ 2	39·3	—
Helsingfors		76·9	330	i 11 50	− 1	i 21 48	+ 6	e 36·3	—
Honolulu		77·6	71	i 11 58	+ 3	i 21 48	− 1	e 31·7	—
Wellington		78·1	140	11 56	− 2	21 43	−12	37·3	—
Christchurch		78·2	143	i 11 55	− 3	i 21 49	− 7	38·2	—
Tananarive		79·0	246	i 12 3	0	e 22 0	− 5	e 36·7	45·3
Helwan		79·5	298	i 12 5	0	i 22 7	− 3	—	—
Lemberg		79·9	319	e 12 12	+ 5	e 22 12	− 3	e 31·1	53·4
Upsala		80·6	330	i 12 13	+ 2	i 22 13	− 9	e 40·3	45·5
Königsberg		80·6	325	e 11 56	−15	e 22 37	+15	41·2	50·8
Sitka		83·6	31	i 12 27	+ 1	i 22 42	−11	e 34·6	—
Belgrade		83·7	314	e 12 24	− 3	e 22 46	− 8	e 45·7	55·2
Budapest		83·7	318	i 12 26	− 1	e 22 39	−15	31·3	49·3
Copenhagen		84·6	327	i 12 31	0	23 4	0	—	—
Vienna		85·2	319	e 12 33a	− 1	23 1	[0]	e 33·3	49·3
Prague		85·7	322	e 12 35	− 2	e 23 4	[0]	e 43·8	53·8
Bergen		85·9	333	12 41	+ 3	23 2	[− 4]	40·7	53·3
Zagreb		86·3	317	i 12 40	0	e 23 6	[− 2]	e 43·0	57·1
Leipzig		86·4	323	i 12 41	+ 1	e 23 11	[+ 2]	e 40·3	51·3
Hamburg		86·8	326	i 12 42a	0	e 23 9	[− 3]	e 42·4	54·3
Cheb		86·9	322	e 12 43	0	e 23 27	+ 1	e 45·3	50·1
Jena		87·0	323	i 12 42	− 1	i 23 19	[+ 6]	e 40·3	55·1
Hof	N.E.	87·1	322	i 12 42	− 2	e 23 19	− 9	e 43·3	50·8
	N.W.	87·1	322	i 12 55	+11	e 23 37	+ 9	e 46·3	50·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Laibach		87·2	318	e 12 46	+ 2	e 22 20	[−55]	e 36·6	—
Göttingen		87·7	324	i 12 46	0	i 23 30	− 4	e 40·3	49·4
Triest		87·8	318	i 12 46a	− 1	i 23 40	+ 5	39·3	55·5
Scoresby Sund		88·0	348	12 48	0	23 34	− 3	48·3	—
Venice		88·8	318	i 12 54a	+ 2	i 23 24	[− 1]	50·8	56·8
Naples	E.	89·3	313	e 13 1	+ 7	e 23 51	+ 2	48·3	53·3
Stuttgart		89·4	322	i 12 55a	0	i 23 59	+ 9	e 44·3	48·7
Karlsruhe		89·7	322	12 56	0	23 29	[− 2]	e 48·3	52·8
De Bilt		90·0	326	i 12 57a	0	e 23 40	[+ 7]	45·3	48·8
Chur		90·0	321	i 12 58	+ 1	e 23 1	−55	—	—
Florence		90·2	317	i 12 56a	− 2	i 23 29	[− 5]	—	—
Prato		90·2	317	i 12 58	0	i 23 31	[− 3]	e 32·3	49·1
Zurich		90·3	321	e 12 58	− 1	e 23 28	[− 6]	—	—
Strasbourg		90·3	322	i 12 57a	− 2	i 23 51	− 8	42·3	48·7
Piacenza		90·6	319	i 12 59	− 1	i 23 43	[+ 7]	33·7	50·2
Basle		90·8	321	e 13 2	+ 1	e 23 34	[− 3]	—	—
Uccle		91·1	325	i 13 2a	− 1	i 24 3	− 3	40·3	50·3
Neuchatel		91·5	321	e 13 3	− 1	e 23 35	[− 6]	—	—
Durham		92·1	330	13 19	+12	23 53	{+ 1}	—	51·5
Edinburgh		92·2	331	i 13 5	− 3	i 24 26	+ 9	39·3	58·3
Grenoble		93·1	319	i 12 57	−15	24 2	{+ 2}	35·3	—
Paris		93·2	324	i 13 13a	+ 1	23 46	[− 5]	38·3	53·3
Kew		93·3	327	i 13 13a	0	i 24 16	−11	e 38·3	51·6
Bidston		93·6	330	i 13 11	− 3	i 24 4	{ 0}	e 37·3	51·8
Oxford		93·6	327	e 13 8	− 6	i 23 25	[−28]	e 45·3	59·8
Tunis		93·9	310	e 13 24	+ 9	e 23 54	[− 1]	40·3	—
Victoria	E.	94·1	36	i 13 10	− 6	i 23 42	[−14]	e 56·3	62·1
	N.	94·1	36	i 13 12	− 4	i 23 49	[− 7]	—	—
Marseilles	E.	94·2	317	e 13 19	+ 2	24 15	{+ 6}	30·3	—
Seattle		95·0	36	e 13 37	+17	e 23 47	[−14]	e 54·1	—
Barcelona		97·2	317	e 13 28	− 3	—	—	e 48·8	53·0
Bagnères		97·6	319	e 13 34	+ 2	e 24 57	− 8	35·3	—
Johannesburg		98·4	245	—	—	31 19?	SS	—	59·5
Tortosa	N.	98·6	317	13 35	− 2	—	—	e 43·3	53·9
Algiers		98·9	312	i 13 40	+ 2	24 9	[−11]	47·7	e 51·6
Ukiah		99·0	44	e 13 41	+ 2	i 24 16	[− 5]	46·6	—
Berkeley		100·3	45	e 13 37	− 8	e 25 22	− 7	—	—
Branner		100·6	45	e 13 50	+ 4	—	—	—	—
Alicante		100·6	315	e 13 51	+ 5	24 44	[+15]	e 50·2	64·4
Toledo		102·0	318	i 13 52	− 1	24 31	[− 4]	e 49·5	66·7
Bozeman		102·4	34	e 13 55	0	e 25 19	{+ 8}	e 49·8	—
Almeria		102·7	314	e 13 58	+ 2	24 34	[− 5]	e 48·6	65·6
Granada		103·3	315	e 13 47	−12	24 33	[− 9]	49·1	56·5
Tinemaha		103·4	45	e 14 8	+ 9	i 24 37	[− 5]	—	—
Santa Barbara	Z.	103·8	47	e 14 7	+ 6	—	—	—	—
Serra do Pilar		104·0	320	18 16	PP	30 37	?	56·7	—
Haiwee		104·1	45	e 14 2	0	—	—	—	—
Malaga		104·1	315	14 8	+ 6	26 1	− 1	48·3	65·8
Pasadena		105·1	47	i 14 5a	− 2	i 25 57	−13	e 43·4	—
Mount Wilson		105·2	47	e 14 5	− 3	—	—	—	—
San Fernando	E.	105·4	316	18 29	PP	28 4	PS	45·3	76·3
	N.	105·4	316	18 25	PP	28 1	PS	48·3	65·3
Riverside		105·7	47	i 14 3a	− 7	—	—	—	—
La Jolla		106·4	48	e 14 11	− 2	e 24 54	[− 2]	—	—
Cape Town		108·2	238	18 43	PP	28 55	PS	52·8	64·8
Tucson		111·1	45	19 1	PP	e 25 19	[+ 1]	45·6	—
Chicago		115·8	23	i 19 32	PP	e 26 51	{+ 3}	e 45·8	—
Ottawa		115·8	11	i 19 39	PP	i 29 16	PS	e 50·3	—
Toronto		116·7	15	e 14 59	+ 5	i 29 25	PS	55·2	63·7
Ann Arbor		116·7	19	e 19 43	PP	e 29 37	PS	57·9	84·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Florissant		117·4	26	i 14 57	−10	i 25 30	[−12]	—	—
St. Louis		117·7	26	e 18 45	[+ 5]	e 27 33	?	50·7	—
Oak Ridge		119·3	8	i 18 46	[+ 2]	e 27 6	{− 6}	e 55·7	—
Pittsburgh		119·5	17	e 20 11	PP	e 27 54	{+41}	e 47·8	—
Little Rock	N.	120·0	31	e 18 51	[+ 5]	—	—	—	—
Fordham	N.	120·5	11	i 20 13	PP	i 24 43	[−69]	e 53·3	—
Georgetown		121·7	15	e 18 54	[+ 5]	i 30 16	PS	e 54·3	—
Charlottesville		122·2	17	e 20 21	PP	e 30 15	PS	e 50·4	—
Columbia		125·2	21	e 20 49	PPP	30 28	PS	e 57·0	—
Port au Prince		142·4	19	i 19 37	[+12]	23 9	PKS	—	—
San Juan		143·9	9	i 19 31	[0]	e 29 19	{−28}	e 57·9	—
La Plata	E.	162·3	188	20 19	[+23]	—	—	63·7	113·9
	N.	162·3	188	20 15	[+19]	26 50	?	79·2	98·0
	Z.	162·3	188	20 1	[+ 5]	—	—	87·1	—
Huancayo		165·2	71	i 20 2	[+ 3]	i 35 31	SKSP	e 67·3	—
La Paz	E.	173·1	83	i 20 10	[+ 5]	i 26 41	?	77·3	100·1
	N.	173·1	83	i 20 28	[+23]	i 26 50	?	83·3	100·6
Sucre		175·6	112	i 20 8	[+ 1]	26 58	?	80·3	—

Additional readings and notes :—

Hong Kong PPP = +1m.51s. = P* +0s.
Zi-ka-wei PPN = +3m.19s., PPPN = +3m.26s., PPPPN = +3m.33s., SSE = +6m.3s., iE = +7m.31s. and +7m.39s.
Nagasaki iN = +4m.16s. = PP − 1s. and +4m.19s., iPP?Z = +4m.33s., iNZ = +4m.36s., iPPPEN = +4m.45s., iSZ = +7m.32s., i = +7m.44s.
Taikyu P_g = +5m.7s., PP = +5m.34s.
Koti i = +4m.41s. and +4m.45s.
Zinsen iSEN = +8m.37s.
Sumoto SZ = +8m.59s.
Kobe i = +4m.59s., eEN = +5m.33s.
Osaka i = +7m.7s., +8m.19s., and +15m.35s.
Chiufeng SZ = +9m.14s.
Toyooka P = +5m.3s., iEN = +5m.8s., iZ = +5m.24s. and +5m.37s., SZ = +9m.15s.
Medan i = +7m.1s.
Batavia i = +7m.23s.
Tyosi e = +6m.26s.
Malabar i = +6m.31s.
Agra iPE = +7m.29s., SSSN = +15m.21s.
Colombo PP = +9m.0s.
Bombay ePPN = +9m.38s., PPPE = +10m.9s., iPSN = +14m.51s., iSS = +17m.26s., iSSS = +18m.16s.
Perth PP = +10m.42s., PPP = +11m.8s., P_cP = +14m.31s., PS = +15m.59s., SS = +18m.45s. = S_cS +4s., SSS = +19m.29s. = SS +18s., SSSS = +19m.49s., SSSSS = +20m.14s. = SSS −14s.
Adelaide i = +9m.40s. and +17m.19s., iSS = +21m.17s., iSSS = +23m.28s.
Sverdlovsk iL_q = +27·2m.
Riverview +18m.23s.
Sydney PS = +19m.55s. = S_cS +6s., SSS = +27m.19s.
Melbourne PS = +18m.30s., SKKS = +20m.3s., i = +26m.42s. and +27m.31s.
Grozny e = +15m.19s.
Tiflis ePPE = +14m.9s., eE = +14m.50s., PPPN = +15m.2s., PSN = +20m.2s., SSSN = +27m.27s.
Erevan e = +14m.10s.
Suva SS = +25m.31s.
Kucino e = +15m.36s. and +25m.19s.
Ksara PP = +14m.38s., SS = +26m.22s.
Helsingfors $ePcPE$ = +12m.4s., ePPEZ = +14m.48s., ePPPEZ = +16m.42s., eSKSEN = +22m.19s., ePSE = +23m.5s., ePPSEN = +23m.22s., eSSEN = +26m.39s., eSSSE = +30m.36s. ; T_0 = 3h.59m.37s.
Honolulu eSS = +26m.9s.
Wellington i = +12m.33s., SS = +27m.3s.
Christchurch iP_cP = +12m.23s., SSE = +26m.59s., SSSE = +31m.11s., L_q = +33·1m.
Tananarive PP = +15m.2s., SN = +22m.5s., PSN = +22m.45s., SS = +27m.13s., SSS = +30m.54s.
Königsberg iP_cPEZ = +12m.11s., ePPEZ = +15m.18s.
Sitka i = +14m.52s., ePP = +17m.13s. = PPP − 5s., iSS = +27m.29s., e = +30m.59s., eSSS = +31m.40s.
Belgrade i = +12m.41s.

Continued on next page.

Copenhagen eZ = +15m.19s., PP = +15m.46s., SKSN = +22m.57s., PS = +23m.59s., SS = +28m.46s., eE = +33m.13s., eN = +34m.13s., eE = +35m.1s.
Vienna PP = +15m.55s., PPP? = +17m.15s., iE = +22m.16s., PS = +24m.19s., SS? = +29m.5s., PKKP = +30m.18s.
Prague ePP = +15m.58s.
Bergen e = +15m.38s. = PP − 15s.
Zagreb i = +12m.53s., ePP = +16m.3s., e = +20m.55s., eNE = +23m.36s. and +24m.18s.?, eNW = +28m.12s., e = +32m.50s., eNW = +35m.8s., eZ = +37m.2s.
Leipzig iE = +16m.4s. = PP + 7s., eE = +18m.9s., iS = +23m.19s. = S − 2s., iPS = +24m.21s., eSS = +28m.37s., eE = +32m.55s., e = +36m.1s.
Hamburg eSKSN = +23m.13s., iSKKSE = +23m.23s., eSS = +28m.44s., iSSSN = +33m.13s.
Cheb ePP = +16m.18s., ePPP = +18m.11s.
Jena eZ = iE = +16m.7s. = PP + 6s., iN = +16m.11s., eE = +23m.10s. = SKS − 3s., iPS = +24m.19s., eSSN = +28m.45s., eSSE = +28m.49s., eE = +33m.49s., eN = +34m.19s., eZ = +35m.19s.
Hof iNE = +16m.11s. = PP + 9s., ePSNE = +24m.23s.
Laibach e = +24m.26s. = PS + 8s.
Göttingen ePPE = +16m.13s., ePPPE = +18m.13s., iSE = +23m.14s. = SKS − 4s., iEN = +23m.47s., iE = +24m.36s. = PS + 12s., eSSEN = +29m.13s., eSSSN = +34m.19s.?
Triest iPP = +16m.15s., iS = +23m.24s. = SKS + 5s., iPS = +24m.25s., iSL = +29m.59s. = SS + 51s.
Scoresby Sund PP = +16m.17s., eSKSN = +23m.15s., PS = +24m.46s., SS = +29m.22s., SSS = +33m.36s., e = +36m.19s.
Venice S = +23m.31s.
Stuttgart iP_cP = +13m.9s., ePP = +16m.29s., ePPP = +18m.22s., e = +20m.21s., iSKS = +23m.38s., iPS = +24m.39s., i = +26m.50s., e = +28m.19s. = SS − 13s., eSS = +29m.54s.; T_o = 3h.59m.37s.
De Bilt iZ = +13m.11s., iPPZ = +16m.32s.
Chur iPP = +16m.34s.
Zurich ePP = +16m.30s.
Strasbourg ipP? = +13m.11s., iPP = +16m.32s., ipPP? = +16m.52s., ePPP = +18m.45s., ePPPP = +20m.21s., SKS = +23m.27s., iPS = +24m.57s., sS? = +26m.1s., iSS = +30m.7s., SSSS = +36m.34s.
Piacenza PP = +16m.39s.
Basle ePP = +16m.41s.
Uccle iPPZ = +16m.36s., PPPE = +18m.48s., SKSN = +23m.38s., iSKKSE = +23m.50s., iPSN = +25m.18s., SSN = +30m.27s., SSSN = +34m.35s., SSSSN = +36m.37s.
Neuchatel ePP = +16m.45s.
Durham SKS = +23m.41s.
Edinburgh i = +13m.9s., +16m.51s. = PP + 8s., +17m.3s., +18m.49s. = PPP + 14s., +25m.23s. = PS + 6s., +25m.36s., +26m.28s., +29m.31s., and +37m.26s.
Grenoble PP = +16m.43s.
Paris PP = +16m.59s., PS = +23m.59s. = SKKS − 2s.
Kew iP_cP = +13m.26s., iPP = +16m.57s., eSKSEN = +23m.47s., iSKKS = +24m.3s., iPSEN = +25m.26s., iPPSEN = +26m.16s., eSSE = +29m.37s.
Bidston i = +13m.52s., iPP = +16m.51s., iPS = +25m.34s.; T_o = 3h.59m.56s.
Oxford PP = +17m.1s.
Tunis iPP = +17m.22s., eS = +25m.4s., ePS = +25m.49s.
Marseilles ePN = +13m.24s., PPE = +17m.13s., PPPN = +19m.49s., SKS?E = +23m.54s., e = +26m.4s.
Seattle eSS = +30m.38s., eSSS? = +35m.0s.
Barcelona PP = +17m.29s.
Bagnères ePP = +17m.34s.
Algiers PP = +17m.37s., PPP = +19m.47s., PS = +26m.39s., SS = +32m.1s., SSS = +35m.43s.
Ukiah ePP = +17m.11s., e = +26m.26s. = PS − 9s., SS = +31m.32s., e = +40m.37s.
Berkeley iPZ = +10m.44s., eZ = +13m.43s., eE = +13m.46s., iZ = +13m.48s., eN = +13m.51s., iZ = +13m.57s. and +14m.54s., eZ = +17m.3s., eE = +17m.33s., eZ = +17m.54s. = PP + 9s., iZ = +18m.1s., eE = iPS = +24m.20s. = SKS − 7s.
Alicante PP = +17m.54s., eS? = +26m.8s., PS = +27m.4s., SSS = +36m.2s.
Toledo PP = +18m.5s., PS = +27m.19s., SSS = +37m.21s.
Bozeman ePP = +17m.33s., eSKS = +24m.30s., PS = +27m.11s., eSS = +32m.44s., SSS = +36m.21s.
Almeria PP = +18m.6s., PS = +27m.22s.
Granada PP = +18m.4s., PPP = +20m.58s., SSS = +36m.47s.
Malaga PP = +18m.13s., i = +18m.22s., PPP = +19m.19s., SKS = +24m.41s., PS = +27m.31s., SS = +33m.7s.

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Pasadena iZ = +17m.26s., iPPZ = +18m.23s., iSKSEN = +24m.35s., iPSE = +27m.28s., iPKKPZ = +28m.55s., eSSN = +32m.49s.
Cape Town +27m.7s.
Tucson PS = +28m.34s., SS = +33m.49s.
Chicago iPS = +29m.14s., e = +34m.51s., eSS = +35m.31s., eSSS = +40m.19s.
Ottawa eE = +27m.31s., e = +35m.49s. = SS + 13s., eE = +46m.49s.
Toronto PKP = +18m.40s., iPP = +19m.40s., iSS = +35m.46s.
Ann Arbor eN = +40m.13s. and +45m.49s.
Florissant iPP = +19m.57s., iPKS = +21m.30s., iPPP = +22m.31s., iSKKS = +26m.52s., eS = +27m.40s., iPKKP = +29m.25s. = SKSP − 9s., iPS = +29m.43s., SS = +36m.6s.; T_0 = 3h.59m.45s.
St. Louis iPPEN = +19m.56s., eSKSEN = +25m.28s., eSKKSN = +26m.46s., iPSN = +29m.37s., iSSN = +36m.4s., iSSE = +36m.10s., eN = +37m.27s., eSSSN = +39m.27s., eE = +40m.42s. and +47m.24s., eN = +49m.42s.
Oak Ridge iPP = +20m.8s., eNW = +20m.10s., ePPPNE = +22m.50s., S?NE = +27m.50s., ePSNW = +29m.42s., ePSNE = +29m.58s., eSSNE = +36m.33s., eSSSNE = +41m.6s., eNW = +45m.12s.; T_0 = 3h.59m.38s.
Pittsburgh ePS = +30m.12s., eSS = +36m.31s., eSSS = +39m.51s.
Little Rock ePPN = +20m.12s.; T_0 = 3h.59m.43s.
Fordham iPSN = +29m.45s., iN = +31m.34s., iSSN = +36m.58s., iN = +42m.21s.
Georgetown iPP = +20m.23s.; T_0 = 4h.0m.0s.
Charlottesville eSS = +37m.19s.
Columbia eSS = +37m.29s., eSSS = +43m.3s.
Port au Prince PP = +22m.24s.
San Juan ePPP = +25m.37s., PS = +32m.49s., = SKSP − 7s., eSS = +41m.24s., eSSS = +46m.19s.
La Plata Z = +20m.49s. = P_2' − 6s., N = +20m.54s., SKPN = +23m.51s., PP?Z = +24m.29s., PPE = +24m.38s., PPN = +24m.52s., SSE = +44m.57s. SSSE = +50m.14s., E = +58m.19s.
Huancayo iPP = +24m.47s., iPPP = +27m.49s., eSS = +44m.9s., e = +58m.27s.
La Paz iPKP_2 = +21m.38s., ipP = +22m.26s., PP = +25m.35s., iN = +27m.53s., iPPP = +28m.58s., iSKKSN = +30m.35s., iSKKSE = +31m.30s., iN = +32m.19s. = SKKS − 9s., iE = +32m.29s., SS = +46m.44s., SSS = +54m.22s.
Sucre PP = +25m.45s.
Long waves were also recorded at Reykjavik.

Feb. 14d. 17h. 14m. 45s. Epicentre 17°·4N. 119°·0E. (as at 3h.). R.3.

		△	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		3·4	146	0 57 a	+ 8	1 39	+12	—	—
Hong Kong		6·7	319	1 26	− 9	2 58	+ 7	3·3	4·2
Phu-Lien		11·8	288	e 2 53	+ 7	—	—	5·2	—
Zi-ka-wei	Z.	14·0	9	e 3 3	−12	5 58	+ 7	8·0	8·6
Nanking		14·7	359	i 3 24	− 1	e 6 24	+16	9·7	13·4
Nagasaki		18·2	31	—	—	e 6 36	−53	—	—
Chiufeng		22·7	355	i 4 57 a	− 1	9 5	+ 6	13·8	15·8
Amboina		22·9	156	4 53	− 7	9 0	− 3	—	—
Nagoya		23·9	39	e 5 10	+ 1	—	—	—	—
Medan		24·1	237	6 59	+108	—	—	—	—
Batavia		26·4	208	e 6 50	+77	11 52	+107	—	—
Vladivostok		27·9	21	e 5 47	+ 1	i 10 31	+ 1	13·2	18·4
Agra	E.	38·9	292	7 28	+ 5	13 21	+ 1	18·4	26·3
Bombay		43·8	279	e 8 12	+ 9	e 14 37	+ 4	e 21·8	27·9
Andijan		46·2	310	e 8 34	+12	—	—	—	—
Tashkent		48·6	310	i 8 43	+ 2	i 15 54	+13	e 26·8	32·0
Samarkand		50·0	307	e 8 49	− 2	e 15 59	− 2	—	—
Tiflis	E.	66·9	308	e 10 30	−21	19 42	− 1	e 34·0	—
Kucino		70·7	323	—	—	e 20 28	− 2	e 39·4	40·8
Triest		87·8	318	e 14 6	+79	i 23 5	[−14]	—	49·2
La Paz	N.	173·1	83	e 20 56	[+51]	—	—	—	—

Additional readings :—
Hong Kong PP = +1m.46s. = P* − 5s.
Nanking i = +6m.52s.
Amboina i = +5m.6s.
Agra PPPE = +9m.6s., SSSE = +16m.16s.
Kucino eSS = +26m.2s., e = +28m.18s.
Triest i = +23m.23s. = S − 12s.
Long waves were also recorded at Hyderabad, Pulkovo, and other European stations.

Feb. 14d. 22h. 18m. 33s. Epicentre 19°·2N. 104°·2W. (as on 1933 Dec. 13d.). R.2.

A = −·232, B = −·915, C = +·329; D = −·969, E = +·245; G = −·081, H = −·319, K = −·944.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		14·4	336	3 21	0	e 6 9	+ 8	e 7·0	—
La Jolla		18·0	322	i 4 7	0	—	—	—	—
Little Rock		18·7	32	i 4 23	+ 8	e 8 15	+35	—	—
Riverside		18·8	324	i 4 17	+ 1	—	—	—	—
Mount Wilson		19·4	323	i 4 23	0	—	—	—	—
Pasadena		19·4	323	e 4 23	0	i 8 16	+22	e 14·7	—
Santa Barbara	z.	20·5	321	e 4 35	0	—	—	—	—
Haiwee		20·8	327	i 4 38	0	—	—	—	—
Tinemaha		21·7	328	i 4 43	− 5	—	—	—	—
St. Louis		22·9	29	e 5 3	+ 3	e 9 33	SS	i 12·5	14·6
Florissant		23·0	28	i 5 5	+ 4	i 9 33	SS	e 12·0	14·5
Berkeley		24·4	324	i 5 15	+ 1	i 9 52	+22	—	—
Columbia		25·3	50	—	—	e 10 14	+28	e 17·0	—
Ukiah		25·8	324	—	—	e 10 9	+14	—	—
Chicago		26·6	28	—	—	i 10 47	+38	i 16·7	—
Bozeman		27·0	349	—	—	e 10 39	+24	e 15·1	—
Pittsburgh		29·7	39	e 8 0	PPP	e 11 39	+40	e 19·5	—
Toronto		32·1	35	—	—	e 11 40	+ 3	i 18·0	—
Ottawa		35·2	35	—	—	e 12 51	+27	22·5	—
San Juan		36·0	85	e 7 0	+ 2	e 12 32	− 4	e 17·2	—
Huancayo		42·3	135	—	—	e 14 20	+10	e 22·3	—
La Paz	N.	50·3	133	e 9 5	+11	e 16 7	+ 2	27·5	31·3
De Bilt		86·2	35	i 12 50	+11	e 23 27	+ 8	e 49·5	51·7
Uccle		86·2	37	e 22 27?	?	—	—	e 42·4	—
Sverdlovsk		102·9	8	—	—	e 24 37	[− 3]	39·5	—

Additional readings and note :—
Tucson eS = +6m.31s.
Little Rock eSSE = +9m.2s., eN = +9m.23s.; T_0 = 22h.18m.13s.
Columbia e = +15m.27s.
Chicago iSSS = +14m.32s.
Pittsburgh eSS = +13m.32s., eSSS = +16m.39s. = S_0S − 3s., e = +17m.30s.
Toronto eN = +16m.4s., iN = +16m.47s. = S_0S − 9s.
Ottawa e = +16m.15s., i = +18m.53s.
Huancayo eSSS = +17m.45s. = S_0S − 11s.
La Paz SL and M are given as PL and M of a separate shock.
Sverdlovsk e = +27m.21s. = PS + 5s. and +33m.19s.
Long waves were also recorded at Ann Arbor, Seattle, Sitka, Charlottesville, Georgetown, Oak Ridge, Agra, Vladivostok, Scoresby Sund, Tashkent, Kucino, Pulkovo, and other European stations.

Feb. 14d. Readings also at 0h. (Baku and Tashkent), 1h. (Pasadena, Riverside, Adelaide, Riverview, Sydney, Tiflis, Arapuni, Christchurch, Wellington, Suva, and near Apia), 2h. (Perth, Sverdlovsk, Tashkent, and Haiwee), 3h. (near Apia), 4h. (Tiflis), 5h. (Sumoto), 7h. (Kobe, Nagoya, Chiufeng (2), Hong Kong, Nanking, Phu-Lien, Vladivostok, Andijan, Samarkand, Sverdlovsk, and Paris), 8h. (De Bilt, Strasbourg, Tashkent, Sverdlovsk, Hong Kong, Chiufeng, near Andijan, and Samarkand), 9h. (Melbourne and Riverview), 10h. (Andijan and Samarkand), 11h. (Agra, Hong Kong, Chiufeng, and Phu-Lien), 12h. (Andijan and near Samarkand), 17h. (La Paz), 18h. (Berkeley, Branner, Lick, and San Francisco), 19h. (Hong Kong (2), Phu-Lien, Chiufeng, Zi-ka-wei, Sverdlovsk, Agra, Bombay, Tashkent, Vladivostok, Pulkovo, Cheb, De Bilt, and Uccle), 20h. (La Paz, Stuttgart, and Tiflis), 21h. (Apia and near Wellington),, 22h. (Adelaide, Riverview, Perth, Amboina, Nanking, Andijan, Samarkand, Seattle, near Berkeley, Branner, Lick, and San Francisco).

Feb. 15d. Readings at 1h. (Hong Kong), 2h. (Bombay), 3h. (Nanking, Hong Kong, Phu-Lien, Agra, Tashkent, Sverdlovsk, Vladivostok, and near Manila), 4h. (Paris), 5h. (Grozny), 6h. (Sverdlovsk), 8h. (Sverdlovsk and Grozny), 11h. (Chiufeng, Phu-Lien, and Hong Kong), 12h. (Chiufeng, Phu-Lien, and Hong Kong), 13h. and 14h. (Hong Kong), 18h. (San Juan and near Wellington), 20h. (near Tananarive), 23h. (Mizusawa, Tyosi, and near Nagoya).

Feb. 16d. 6h. Shock in China for which no determination has been made:—
Hong Kong P? =6h.17m.40s., S? =20m.5s., L =21m.5s., M =28m.50s.
Zi-ka-wei eZ =6h.21m.17s., LZ =47m.39s., MZ =53m.16s.
Chiufeng eP =6h.23m.0s., PP?E =27m.18s.
Medan e =6h.27m.48s.
Nanking eZ =6h.28m., MZ =49m.51s.
Vladivostok e =6h.28m.30s., L =45m.30s., M =7h.5m.18s.
Calcutta P =6h.29m.15s., S =39m.35s., L =59m.55s., M =7h.6m.49s.
Bombay eP =6h.36m.0s., S =47m.8s., MN =7h.14m.25s.
Tashkent e =6h.37m.30s., 49m.12s., 54m.8s., 59m.6s., eL =7h.5m.24s., M =19m.24s.
Long waves were also recorded at Phu-Lien and Strasbourg.

Feb. 16d. 6h. Another shock for which no determination can be made, overlaps the above, and the readings of the two shocks are not easily distinguished.
Hong Kong P? =6h.37m.29s., S? =39m.43s., L? =41m.8s., M =51m.40s.
Manila P =6h.38m.34s., S =40m.38s.
Kobe e?Z =6h.41m.49s., eZ =44m.32s. and 45m.45s., eSN =47m.59s., eSZ =48m.6s., MN =49m.22s.
Zinsen eP? =6h.42m.3s., eS? =47m.38s.
Osaka P =6h.43m.58s., S =46m.56s., ME =49m.36s.
Sumoto eEN =6h.44m.
Chiufeng ePZ =6h.44m.56s., iNZ =47m.55s., iE =48m.6s., M =7h.2m.48s.
Keizyo e =6h.46m.21s.
Batavia e =6h.46m.25s., i =49m.19s.
Nagasaki eS =6h.46m.33s.
Kodaikanal P =6h.46m.37s.
Koti eE =6h.47m.35s.
Medan i =6h.48m.33s.
Baku eP =6h.49m.45s., eS =58m.7s., eL =7h.12m.
Tiflis ePE =6h.50m.2s., eE =55m.14s., eSE =58m.47s., eLE =7h.19m.30s.
Perth P =6h.54m.0s.
Piacenza e? =7h.3m.0s., M =41m.36s.
Stuttgart e =7h.4m.18s. and 12m.30s., eL =28m.
De Bilt e =7h.9m., eL =28m., M =36m.23s.
Paris e =7h.16m., eL =36m., M =47m.
Long waves were also recorded at Nagoya, Andijan, Bombay, Hyderabad, Kucino, Pulkovo, and other European stations.

Feb. 16d. 7h. 59m. 53s. Epicentre 26°·0N. 54°·8E. (as on 1931 May 7d.). X.

A = +·518, B = +·734, C = +·438; D = +·817, E = −·576; G = +·253, H = +·358, K = −·899.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Baku	14·9	345	e 3 7	−20	e 5 39	−34	e 7·0	12·3
Erevan	16·6	331	e 4 7	+18	e 7 20	+28	—	—
Samarkand	17·0	34	e 3 48	− 6	—	—	—	—
Tiflis	17·7	335	3 10	−53	6 48	−29	e 7·3	8·7
Ksara	18·1	300	e 4 14?	+ 6	e 7 28	+ 1	—	—
Tashkent	19·4	34	e 4 22	− 1	i 7 50	− 4	9·5	12·7
Andijan	20·8	40	e 4 40	+ 2	—	—	—	—
Frunse	23·4	39	e 4 59	− 6	—	—	—	—

Additional readings:—
Tiflis SE = +5m.37s.
Ksara iSS = +7m.54s.
Long waves were also recorded at Uccle.

Feb. 16d. Readings also at 0h. (Phu-Lien), 1h. (Andijan, Samarkand, Lick, Berkeley, Branner, Ukiah, and Tucson), 2h. (near Tyosi), 5h. (Andijan, Samarkand, Erevan, and Tiflis), 7h. (La Paz, Sucre, and near Montezuma), 8h. (Neuchatel and Triest), 9h. (near Berkeley), 12h. (Sverdlovsk, Hong Kong, and La Paz (2)), 13h. (near Yalta), 14h. (Berkeley, Branner, and San Francisco), 15h. (Berkeley (2) and Branner (2)), 19h. (Apia), 22h. (Hong Kong).

Feb. 17d. 3h. 10m. 9s. Epicentre 35°·5N. 142°·5E. (as on 1933 March 13d.). X.

A = −·646, B = +·496, C = +·581; D = +·609, E = +·793; G = −·461, H = +·354, K = −·814.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Tyosi		1·3	280	i 0 12k	− 6	0 19	−14	0·3
Susaki		3·0	255	0 50?	+ 7	1 19	+ 2	—
Mizusawa		3·8	338	e 0 51	− 3	i 1 27	−10	—
Nagoya		4·5	267	e 1 4	0	1 56	+ 1	2·2
Osaka		5·8	263	1 22	0	2 33	+ 5	3·3
Kobe	N.	6·1	264	e 1 30	+ 3	2 38	+ 2	3·1
	Z.	6·1	264	e 1 36	+ 9	2 43	+ 7	3·0
Sumoto	E.	6·3	261	e 1 41	P*	2 44	+ 3	3·2
	N.	6·3	261	e 1 48	P*	2 45	+ 4	3·2
Koti		7·6	258	—	—	3 46	S*	—

Additional readings:—
Osaka i = +1m.43s. = P* +7s. and +2m.10s.
Kobe ePE = +1m.41s. = P* +0s., ePN = +1m.45s.
Sumoto eZ = +2m.1s. = P_g +1s.

Feb. 17d. 9h. 16m. 13s. Epicentre 35°·5N. 142°·5E. (as at 3h.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Tyosi		1·3	280	i 0 12a	− 6	0 19	−14	0·4
Tokyo		2·2	274	0 25	− 6	—	—	0·9
Susaki		3·0	255	0 52?	P_g	1 20	+ 3	—
Mizusawa		3·8	338	i 0 54	0	e 1 31	− 6	—
Nagoya		4·5	267	e 1 4	0	e 1 58	+ 3	2·2
Osaka		5·8	263	1 24	+ 2	2 34	+ 6	3·2
Kobe		6·1	264	e 1 24	− 3	e 2 30	− 6	3·0
Toyooka	N.	6·2	271	e 1 42	P*	2 48	+10	3·1
	Z.	6·2	271	e 1 37	P*	2 50	+12	3·0
Sumoto	E.	6·3	261	e 1 44	P*	2 43	+ 2	3·3
	N.	6·3	261	e 1 49	P*	2 55	+14	3·1

Additional readings:—
Mizusawa iSE = +1m.35s. = S_g +2s.
Osaka i = +1m.38s. and +2m.39s.
Kobe ePE = +1m.33s., iNZ = +1m.41s. = P* +0s., SZ = +2m.44s.
Sumoto eZ = +1m.58s. = P_g −2s.
Long waves were recorded at Baku and Sverdlovsk.

Feb. 17d. 12h. 6m. 20s. Epicentre 35°·5N. 142°·5E. (as at 9h.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Tyosi		1·3	280	i 0 7a	−11	0 14	−19	0·3
Mizusawa		3·8	338	e 0 49	− 5	i 1 24	−13	—
Osaka		5·8	263	1 25	+ 3	2 30	+ 2	3·1
Kobe		6·1	264	e 1 29	+ 2	2 37	+ 1	3·0
Sumoto	N.	6·3	261	—	—	e 2 53	+12	4·1

Sumoto gives also eE = +3m.6s. = S* +0s. eN = +3m.53s., eE = +3m.56s.

Feb. 17d. 21h. 2m. 8s. Epicentre 2°·0S. 131°·0E. (as on 1933 May 21d.). X.

A = −·656, B = +·754, C = −·035; D = +·755, E = +·656; G = +·023, H = −·026, K = −·999.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	3·3	238	i 0 23	−24	1 18	− 7	—	—
Manila	19·4	329	4 26k	+ 3	8 10	+16	—	—
Batavia	24·5	259	e 5 37	+22	i 10 31	+59	14·9	—
Hong Kong	29·4	327	8 31	?	10 54	− 1	—	14·2
Phu-Lien	33·0	315	5 52?	−40	—	—	—	—

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		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Perth		33·2	205	6 32	− 2	10 27	−87	18·9	—
Adelaide		33·7	169	e 6 28	−10	i 11 41	−20	—	23·0
Riverview		37·0	151	—	—	e 15 34	SSS	e 22·1	24·0
Sydney		37·0	151	e 12 28	S	(e 12 28)	−23	(i 19·5)	28·9
Melbourne		38·0	162	—	—	e 12 55	−11	20·8	23·0
Chiufeng		44·2	344	e 8 8	+ 2	e 14 42	+ 3	—	—
Vladivostok		45·1	1	e 8 29	+15	e 15 9	+17	20·9	—
Agra	E.	58·7	304	e 9 49	− 6	—	—	—	—
Bombay		60·9	293	e 10 7	− 4	e 18 18	−10	—	38·1
Frunse		67·6	318	e 10 22	−34	—	—	—	—
Tashkent		70·6	315	11 6	− 8	20 10	−18	e 33·0	44·5
Samarkand		71·7	313	e 11 23	+ 2	—	—	—	—
Sverdlovsk		81·1	329	i 12 11	− 3	i 22 19	− 8	37·9	—
Baku		84·6	311	12 32	+ 1	23 1	− 3	41·4	48·2
Grozny		88·0	314	e 13 1	+13	—	—	—	—
Tiflis		88·5	312	12 49	− 1	23 34	− 8	e 54·9	—
Erevan		88·6	310	e 13 40	+49	—	—	—	—
Tinemaha	Z.	107·6	52	i 18 48	[+38]	—	—	—	—
Mount Wilson	Z.	108·3	55	e 18 50	[+38]	—	—	—	—
Riverside	Z.	109·0	55	e 18 56	[+41]	—	—	—	—
La Paz	N.	153·5	135	e 19 54	[+ 7]	—	—	—	—

Additional readings and note :—
Perth PS = +10m.52s., SS = +14m.2s., SSS = +15m.12s., SSSS = +16m.2s.
Adelaide i = +14m.22s. and +15m.22s.
Sydney gives S as P and L as S.
La Paz ePN = +20m.9s.
Long waves were also recorded at Wellington, Kucino, and European stations.

Feb. 17d. Readings also at 0h. (near Tyosi), 2h. (Agra, Bombay, Calcutta, Hyderabad, and Samarkand), 6h. (Tyosi, Nagoya, Mizusawa, and Osaka), 7h. (near Mizusawa), 9h. (Samarkand), 11h. (Christchurch), 12h. (Huancayo and La Paz (2)), 14h. (near Nagoya), 15h. (Sucre and near La Paz), 17h. (Mizusawa and Tucson), 18h. (Ferndale), 19h. (Andijan (2) and Samarkand (2)), 20h. 21h., and 23h. (near Amboina).

Feb. 18d. Readings at 3h. (Berkeley and Branner), 6h. (Wellington), 8h. (Erevan and Tiflis), 11h. (Berkeley, Branner, Lick, San Francisco, Perth, and near Amboina), 12h. (Melbourne, Samarkand, and near Koti), 13h. (Wellington, Bombay, Agra, near Calcutta, and near Santiago), 15h. (near Mizusawa), 16h. (Baku, Sverdlovsk, Samarkand, Tiflis, De Bilt, and Triest). 19h. (Tiflis, Erevan, near Grozny, and Sotchi), 20h. (near Manila and near Medan), 22h. (near Piatigorsk).

Feb. 19d. 10h. 24m. 53s. Epicentre 3°·0S. 100°·9E. (as on 1926 July 1d.). R.2.

A = −·189, B = +·981, C = −·052 ; D = +·982, E = +·189 ;
G = +·010, H = −·051, K = −·999.

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Batavia	6·7	119	1 34a	− 1	i 2 45	− 6	—	—
Medan	6·9	342	i 1 42	+ 4	i 3 38	S_g	—	—
Malabar	7·9	123	1 54	+ 2	—	—	—	—
Colombo	23·3	295	4 45	−19	9 17	+ 7	13·6	18·7
Phu-Lien	24·4	13	5 18	+ 4	e 9 48	+18	12·1	18·2
Manila	26·5	48	i 5 35	+ 1	11 20	SS	16·2	—
Kodaikanal	26·9	300	i 5 34	− 3	i 10 10	− 4	i 12·7	19·4
Calcutta	28·3	335	e 6 12	+22	11 57	SS	18·2	—
Hong Kong	28·4	27	5 50	− 1	10 49	+11	15·6	23·6
Hyderabad	30·1	314	5 41	−25	11 1	− 5	14·3	24·5

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Perth		32·2	155	e 11 2	?	i 11 47	+ 9	14·1	16·1
Bombay		35·2	310	e 6 49	− 2	i 12 20	− 4	17·3	24·7
Agra	E.	37·3	325	6 58	−11	12 42	−14	—	26·6
Zi-ka-wei	Z.	39·4	28	i 7 28a	+ 1	i 13 49	+22	24·6	28·1
Dehra Dun		39·8	329	7 37	+ 7	13 47	+14	23·9	29·1
Chiufeng		45·3	16	i 8 15a	0	i 15 2	+ 7	23·9	32·1
Zinsen		47·0	28	e 15 7	S	(e 15 7)	−12	e 28·1	—
Adelaide		47·4	138	e 11 2	?	i 15 5	−19	26·7	33·3
Sumoto		49·1	38	—	—	e 29 7?	?	33·7	—
Almata		51·0	338	—	—	e 16 18	+ 3	—	—
Frunse		51·7	335	e 8 9	−55	e 15 28	−56	—	—
Tashkent		52·8	330	i 9 17	+ 5	i 16 36	− 3	31·1	40·1
Samarkand		52·8	327	e 9 10	− 2	e 16 23	−16	—	—
Melbourne		53·2	138	e 9 23	+ 8	i 15 49	−56	—	37·1
Vladivostok		53·9	28	—	—	i 17 8	+14	25·1	37·4
Tananarive		54·5	249	e 9 14	−11	16 48	−14	26·1	28·1
Riverview		56·0	130	e 14 7	?	e 17 19	− 4	e 23·7	27·6
Sydney		56·0	130	—	—	i 16 32	−51	38·4	40·1
Baku		63·6	320	e 10 25	− 4	i 19 4	+ 2	32·1	46·7
Erevan		67·2	316	e 15 30	PPPP	—	—	—	—
Tiflis		67·6	317	10 38	−18	e 19 21	−31	e 36·2	—
Grozny		67·7	319	e 11 0	+ 4	e 19 49	− 4	—	—
Sverdlovsk		68·1	338	11 1	+ 2	i 19 51	− 7	34·1	46·4
Ksara		71·3	306	e 11 20	+ 1	20 34	− 3	33·1	38·1
Sotchi		71·8	318	e 11 55	+33	e 21 1	+18	—	—
Christchurch		74·8	136	e 11 19	−20	i 20 12	−66	e 35·2	—
Theodosia		75·2	318	e 21 10	S	(e 21 10)	−12	—	—
Yalta		75·8	317	e 21 29	S	(e 21 29)	0	—	—
Wellington		76·0	133	—	—	i 21 21	−11	—	—
Simferopol		76·0	318	e 21 25	S	(e 21 25)	− 7	—	—
Pulkovo		83·0	332	—	—	e 28 4	SS	44·1	—
Zagreb		88·6	316	e 9 50	?	e 23 28	[+ 4]	—	—
Triest		90·2	316	e 13 13	+15	i 23 56	− 2	—	—
Stuttgart		93·4	319	—	—	(e 29 7?)	?	e 29·1	—
Strasbourg		94·4	319	(e 18 7?)	?	—	—	e 18·1	—
De Bilt		95·9	322	—	—	e 24 43	− 7	e 56·1	70·2
Tinemaha	Z.	130·5	42	e 19 16	[+ 8]	—	—	—	—
Haiwee	Z.	131·2	42	e 19 8	[− 1]	—	—	—	—
Pasadena	Z.	132·2	44	e 19 12	[+ 2]	—	—	—	—
Mount Wilson	Z.	132·2	44	e 19 7	[− 3]	—	—	—	—
Riverside	Z.	132·8	44	i 19 9	[− 3]	—	—	—	—
Ottawa		137·5	356	e 22 7	PP	e 29 7	{− 1}	e 69·1	—
Oak Ridge		139·9	350	e 19 9	[−12]	—	—	e 72·5	—
Pittsburgh		142·5	1	e 22 34	PP	e 41 21	SS	e 76·6	—
Georgetown		144·0	356	i 19 30k	[− 1]	—	—	—	—
Little Rock		146·0	20	16 29	?	—	—	—	—
La Paz		157·6	209	e 20 15	[+24]	24 47	?	78·1	85·9
San Juan		160·1	322	e 18 39	?	—	—	e 43·1	—
Huancayo		164·5	194	e 24 19	PP	—	—	e 90·1	—

Additional readings :—.
Batavia i = +4m.50s.
Medan i = +2m.55s. =S −1s.
Malabar i = +6m.11s. and +6m.22s.
Hong Kong PP = +6m.37s., SS = +12m.37s.
Perth i = +11m.17s., +11m.32s., e = +12m.47s.
Agra PPPE = +8m.30s., SSSE = +15m.10s.
Zi-ka-wei iZ = +9m.8s. =PPP −3s., +21m.14s., and +23m.26s.
Chiufeng iPP = +10m.6s.
Adelaide iS = +21m.55s.
Tiflis P_cPE = +11m.30s., PSE = +19m.46s., SKSE = +20m.18s. =PS +12s., SKKSE = +21m.3s. =S_cS −44s.
Christchurch L_q = +31·2m.
Triest i = +20m.18s.
Tinemaha iNZ = +22m.29s. =PKS −7s.

Continued on next page.

Haiwee eZ = +22m.33s. =PKS −6s.
Pasadena iZ = +22m.37s. =PKS −6s.
Mount Wilson iZ = +22m.36s. =PKS −7s.
Riverside iZ = +22m.34s. =PKS −11s.
Ottawa e = +40m.7s. =SS −5s., eE = +62m.7s.?
Oak Ridge e = +22m.7s. =PP −14s., eNE = +34m.47s., eNW = +40m.35s. =SS −6s., +42m.53s., +44m.23s., +45m.55s. =SSS +15s., and +47m.47s.
Pittsburgh e = +45m.45s.
Georgetown i = +22m.48s. =PP +2s.
La Paz ePE? = +18m.7s.
San Juan e = +20m.54s. =PKP_2 +9s. and +24m.46s. =PP +30s.
Huancayo e = +24m.31s. =PP −8s. and +45m.7s. =SS −12s.
Long waves were also recorded at Scoresby Sund, Kucino, and other Japanese and European stations.

Feb. 19d. Readings also at 2h. (near Nagoya), 4h. (Berkeley), 5h. (San Francisco and Granada), 6h. (New Plymouth), 10h. (Toyooka), 11h. (La Paz and near Santiago), 17h. (Samarkand, near Andijan, and Frunse), 18h. (near Malabar), 20h. (La Paz), 21h. (near Samarkand).

Feb. 20d. 3h. 19m. 3s. Epicentre 3°·5S. 104°·5W. (as on 1931 April 24d.). X.

A = −·250, B = −·966, C = −·061; D = −·968, E = +·250; G = +·015, H = +·059, K = −·998.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Huancayo		30·1	108	e 6 6	0	i 11 7	+ 1	i 14·1	—
Tucson		36·3	351	e 6 57	− 3	—	—	e 17·6	—
La Paz		38·0	112	i 7 12	− 3	i 13 21	+15	17·6	22·6
Riverside	Z.	39·4	342	i 7 26	− 1	—	—	—	—
Mount Wilson	Z.	39·8	343	e 7 30	0	—	—	—	—
Pasadena		39·8	343	e 7 31	+ 1	e 13 46	+13	e 18·9	—
Santa Barbara	Z.	40·6	341	e 7 47	+10	—	—	—	—
Sucre		41·4	115	e 7 32	−12	i 13 44	−13	17·2	—
Haiwee	Z.	41·6	343	e 7 53	+ 8	—	—	—	—
Tinemaha		42·5	343	i 7 57	+ 4	e 14 2	−11	—	—
Columbia		43·5	29	—	—	e 14 38	+10	e 22·2	—
San Juan		43·7	58	—	—	e 14 37	+ 6	e 21·8	—
St. Louis		44·1	16	e 8 9	+ 3	e 14 49	+12	e 18·3	—
Ukiah		46·0	340	—	—	e 15 20	+16	e 21·2	—
La Plata	E.	53·3	131	e 9 25	+ 9	e 16 50	+ 4	26·4	28·1
	N.	53·3	131	9 50	+34	e 16 45	− 1	e 25·8	27·8
Victoria	N.	54·4	345	e 16 5	S	(e 16 5)	−56	e 26·4	26·9
Oak Ridge		54·8	30	—	—	e 17 16	+10	e 26·6	—
Ottawa		55·2	25	—	—	e 17 25	+13	e 31·0	—
Sverdlovsk		125·4	9	—	—	e 38 7	?	58·0	—
Tashkent		141·8	6	e 22 23	PP	—	—	e 69·0	85·2

Additional readings:—
Huancayo ePP = +6m.44s., iSS = +12m.47s.
La Paz PE = +7m.18s., iSS = +16m.1s.
San Juan iS = +14m.46s., i = +15m.19s. and +15m.55s., eSS = +18m.14s.
Oak Ridge eNE = +21m.0s.
Ottawa eN = +21m.21s.
Tashkent e = +24m.35s. and +58m.3s.
Long waves were also recorded at Wellington, Riverview, Seattle, Scoresby Sund, Vladivostok, Chiufeng, Agra, Bombay, Baku, Tiflis, and at other European stations.

Feb. 20d. 20h. 6m. 32s. Epicentre 39°·1N. 72°·4E. N.3.
(as given by the Central European stations).

$A = +·235$, $B = +·740$, $C = +·631$; $D = +·953$, $E = -·302$; $G = +·186$, $H = +·601$, $K = -·776$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan		1·7	359	0 40	S	(0 40)	− 4	i 1·1	1·2
Tashkent		3·2	313	0 44	− 2	i 1 28	+ 6	1·6	2·1
Frunse		4·2	23	0 8	−52	—	—	i 1·1	1·4
Samarkand		4·2	280	1 1	+ 1	1 49	+ 1	2·0	2·5
Agra	E.	12·9	156	—	—	e 5 2	−23	—	—
Baku		17·3	282	—	—	e 8 13	+64	e 9·8	—
Sverdlovsk		19·3	340	4 28	+ 6	e 7 26	−26	i 11·6	—
Bombay		20·2	179	e 4 28?	− 4	e 8 28?	+18	—	—
Grozny		20·4	291	e 4 28	− 6	—	—	—	—
Tiflis		21·1	286	4 45	+ 4	e 8 34	+ 6	e 13·6	—

Additional readings:—
Samarkand i = +1m.9s. = P* +0s. and +1m.13s. = P_g −5s.
Sverdlovsk e = +10m.19s., iL_q = +10·7m.
Long waves were also recorded at Kucino.

Feb. 20d. Readings also at 3h. (Erevan, Grozny, and Tiflis (2)), 4h. (near Manila), 5h. (Berkeley, Branner, Lick, Tucson, Erevan, Grozny, and Tiflis), 7h. (Berkeley), 12h. (near Tiflis), 13h. (Paris, Strasbourg, Stuttgart, San Fernando, Huancayo, and La Paz), 15h. (near Manila), 16h. (near Dannevirke and Wellington), 17h. (near Amboina), 19h. (La Paz, Frunse, Samarkand, near Andijan, and Tashkent), 20h. (Andijan (4), Samarkand (4), Frunse (3), and Tashkent), 21h. (near Tiflis and Grozny), 22h. (Andijan (2), Frunse, and Samarkand (2)), 23h. (near Amboina).

Feb. 21d. 0h. 40m. 15s. Epicentre 34°·2N. 22°·4E. (as on 1933 Feb. 25d.). R.3.

$A = +·765$, $B = +·315$, $C = +·562$; $D = +·381$, $E = -·925$; $G = +·520$, $H = +·214$, $K = -·827$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ksara		11·2	88	e 4 47	S	(e 4 47)	+ 4	(6·4)	9·2
Zagreb		12·6	339	e 3 5	+ 9	e 5 19	+ 2	e 7·0	7·7
Prato		13·0	312	e 3 3	+ 1	7 45	L	(7·8)	9·4
Triest		13·2	333	3 0	− 5	i 5 33	+ 1	—	8·1
Budapest		13·5	351	—	—	e 7 15	S_g	8·8	9·2
Piacenza		14·6	322	e 3 59	+36	7 57	+112	10·8	12·8
Chur		16·0	327	e 3 42	+ 1	—	—	—	—
Zurich		16·8	326	e 3 49	− 3	—	—	—	—
Basle		17·4	325	e 3 57	− 2	—	—	—	—
Cheb		17·5	340	e 5 45?	+105	—	—	—	11·8
Neuchatel		17·5	323	e 3 55	− 5	—	—	—	—
Stuttgart		17·6	330	e 4 0	− 2	e 7 17	+ 2	e 10·2	11·6
Strasbourg		18·0	327	i 4 6a	− 1	—	—	e 14·8	—
Erevan		18·5	65	e 4 50	+37	8 33	+57	—	—
Tiflis		19·1	60	e 4 17	− 3	e 7 55	+ 7	11·0	12·4
Grozny		20·3	57	e 4 33	0	e 8 21	+ 9	—	—
Granada		21·2	285	e 4 45	+ 3	i 8 45	+15	10·6	—
Uccle		21·2	327	e 4 45	+ 3	—	—	e 10·8	—
Hamburg		21·3	340	e 4 45?	+ 2	—	—	e 11·8	—
De Bilt		21·7	331	—	—	e 9 0	+20	e 12·4	—
Baku		22·7	66	e 5 9	+11	e 9 10	+11	12·4	14·4
San Fernando	N.	23·4	284	5 8	+ 3	—	—	—	12·2
Kew		23·8	323	—	—	e 9 35	+16	13·8	15·3
Kucino		24·1	22	—	—	e 9 20	− 5	10·8	13·4
Pulkovo		26·1	9	e 5 35	+ 5	e 10 3	+ 3	13·8	14·0
Sverdlovsk		34·4	37	e 6 30	−14	e 12 3	− 9	15·4	—
Samarkand		35·7	67	e 6 58	+ 3	—	—	—	—
Tashkent		37·3	64	i 7 8	− 1	i 13 49	+53	23·6	26·4
Andijan		39·6	65	e 7 25	− 4	—	—	—	—

For Notes see next page.

NOTES TO FEB. 21d. 0h. 40m. 15s.

Additional readings and notes :—
Ksara gives S as P and L as S.
Zagreb eNE = +5m.32s.
Triest i = +5m.41s. and +5m.51s., SS = +7m.36s., i = +7m.49s.
Strasbourg eSS?NZ = +7m.37s.
Tiflis eE = +4m.22s., SSEN = +8m.39s.
Granada PP = +5m.7s., PPP = +5m.19s.
Long waves were also recorded at Helsingfors, Copenhagen, and Paris.

Feb. 21d. 6h. 47m. 30s. Epicentre 35°·2N. 141°·7E. (as on 1933 Feb. 21d.). X.

A = −·641, B = +·506, C = +·576.

		△	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Tyosi		0·8	308	0 8	− 3	0 21	0	0·6
Susaki		2·3	257	0 36	+ 3	1 0	+ 1	—
Nagoya		3·9	270	0 57	+ 1	1 43	+ 3	—
Mizusawa	E.	4·0	354	—	—	e 1 41	− 1	—

Feb. 21d. 11h. 37m. 20s. Epicentre 34°·2N. 22°·4E. (as at 0h.). R.2.

A = +·765, B = +·315, C = +·562 ; D = +·381, E = −·925 ;
G = +·520, H = +·214, K = −·827.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Helwan		8·7	117	i 1 58	− 5	i 3 36	− 5	—	8·4
Naples	E.	9·3	318	(e 2 19)	+ 8	(e 6 44)	?	—	—
Belgrade		10·7	353	e 3 33	+62	e 4 6	−25	e 6·5	6·6
Ksara		11·2	88	e 2 43	+ 6	e 4 27	−16	—	—
Zagreb		12·6	339	e 2 52	− 4	e 5 22	+ 5	e 7·4	9·0
Prato		13·0	321	e 2 10	−52	7 10	L	(7·2)	10·5
Triest		13·2	333	2 58	− 7	i 5 32	0	—	8·0
Laibach		13·3	336	—	—	e 5 41	+ 7	e 8·0	—
Budapest		13·5	351	e 2 40?	−29	—	—	7·7	8·7
Sebastopol		13·5	36	e 3 40	+31	—	—	—	—
Venice		13·6	328	e 2 52	−18	i 8 4	—	—	—
Yalta		13·7	38	e 2 55	−16	—	—	—	—
Graz		13·9	340	e 3 14	0	e 7 38	+49	e 7·7	9·6
Simferopol		14·0	36	e 3 35	+20	—	—	—	—
Piacenza		14·6	322	e 3 40	+17	7 40	?	—	12·7
Theodosia		14·7	39	e 3 35	+10	—	—	—	—
Vienna		14·7	344	3 22	− 3	i 6 17	+ 9	—	9·7
Algiers		15·9	285	i 3 46	+ 6	e 6 52	+16	11·7	—
Chur		16·0	327	e 3 40	− 1	e 6 42	+ 4	—	—
Zurich		16·8	326	e 3 49	− 3	—	—	—	—
Basle		17·4	325	e 3 56	− 3	—	—	—	—
Cheb		17·5	340	e 3 59	− 1	e 7 16	+ 3	e 10·4	11·7
Neuchatel		17·5	323	e 3 54	− 6	—	—	—	—
Stuttgart		17·6	330	e 3 59	− 3	e 7 17	+ 2	e 10·0	12·7
Strasbourg		18·0	327	i 4 5k	− 2	e 7 33	+ 8	e 10·7	—
Jena		18·4	338	e 4 10	− 1	e 7 58	+25	e 10·2	12·0
Erevan		18·5	65	e 4 46	+33	e 8 20	+44	e 12·1	—
Tortosa	N.	18·5	298	e 4 16	+ 3	—	—	—	—
Leipzig		18·6	340	e 4 15	+ 1	—	—	e 10·5	12·3
Alicante		18·9	289	i 4 19	+ 2	e 8 45	+61	—	—
Tiflis		19·1	60	4 18	− 2	e 7 49	+ 1	10·9	12·3
Göttingen		19·5	336	i 4 24	0	e 8 14	+18	—	13·4
Almeria		20·3	285	e 4 34	+ 1	e 8 28	+16	e 13·8	—
Grozny		20·3	57	e 4 38	+ 5	e 8 20	+ 8	—	—
Paris		20·8	321	i 4 36	− 2	e 8 40?	+18	12·7	14·7

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Uccle	21·2	327	e 4 41	− 1	e 8 48	+18	e 11·7	—
Granada	21·2	285	i 4 44	+ 2	i 8 50	+20	—	—
Hamburg	21·3	340	e 4 40	− 3	—	—	e 12·7	14·7
De Bilt	21·7	331	e 4 50	+ 2	e 8 54	+14	e 12·4	15·3
Toledo	21·8	293	e 4 46	− 3	e 8 53	+11	—	—
Malaga	21·9	284	4 53	+ 3	9 1	+17	11·6	—
Copenhagen	22·5	346	4 53	− 3	9 4	+ 9	12·7	—
Baku	22·7	66	e 4 59	+ 1	i 9 10	+11	11·9	15·3
San Fernando	23·4	284	5 7	+ 2	9 20	+ 8	—	20·2
Kew	23·8	323	e 5 6	− 2	e 9 32	+13	13·7	15·2
Kucino	24·1	22	—	—	e 8 24	−61	e 10·6	12·4
Oxford	24·5	323	—	—	e 9 42	+10	—	15·7
Pulkovo	26·1	9	e 5 25	− 5	9 59	− 1	13·5	16·4
Bidston	26·3	325	—	—	e 10 20	+17	—	—
Edinburgh	27·9	329	i 1 44	?	—	—	—	—
Sverdlovsk	34·4	37	e 6 39	− 5	e 12 1	−11	28·2	—
Samarkand	35·7	67	e 6 55	0	—	—	—	—
Tashkent	37·3	64	i 7 17	+ 8	i 13 1	+ 5	e 19·0	27·1
Andijan	39·6	65	e 7 38	+ 9	—	—	—	—
Agra E.	47·8	82	e 8 14	−21	—	—	—	—

Additional readings and note :—
Naples readings have been *increased* by 9m.
Zagreb eNE = +4m.9s. and +5m.39s., e = +6m.42s. = S_g − 8s.
Triest i = +5m.41s., +6m.7s., and +7m.22s., SS = +7m.34s., i = +7m.48s.
Venice eP = +3m.22s.
Vienna PPP = +4m.30s., P_cP = +6m.29s., iZ = +6m.32s., iE = +6m.58s., iN = +7m.38s., S = +8m.17s., iE = +8m.45s., SS = +9m.12s.
Jena eEN = +4m.14s.
Tiflis eE = +8m.25s.
Uccle iZ = +5m.49s.
Granada PP = +4m.56s.
Toledo PP = +5m.22s.
Malaga PP? = +5m.25s., P_cP = +8m.45s., SS = +9m.39s. ; T_0 = 11h.37m.10s.
Long waves were also recorded at Frunse, Vladivostok, Helsingfors, Upsala, and Scoresby Sund.

Feb. 21d. Readings also at 0h. (Basle, Sotchi, and near Piatigorsk), 1h. (Ferndale, Andijan, near Samarkand, near Malabar, and near Reykjavik), 3h. (Wellington, Piatigorsk, and Manila), 4h. (near Reykjavik), 6h. (Andijan, Frunse, and Samarkand), 8h. (Leipzig), 9h. (Samarkand), 10h. (Andijan and Samarkand), 12h. (Andijan, Samarkand, near Bunnythorp, Dannevirke, and Wellington), 14h. (near Prato), 18h. (near Manila), 19h. (Erevan and near Tiflis), 23h. (La Paz).

Feb. 22d. 1h. 49m. 56s. Epicentre 36°·3N. 141°·2E. (as on 1933 Nov. 27d.). X.

A = −·628, B = +·505, C = +·592.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Tyosi	0·6	207	i 0 11k	+ 2	0 21	+ 6	0·4
Susaki	2·4	228	0 33	− 1	0 58	− 4	—
Mizusawa	2·8	359	e 0 44	+ 4	i 1 16	+ 4	—
Nagoya	3·6	253	e 0 49	− 2	1 33	+ 1	1·8
Osaka	4·9	251	1 10	0	2 22	S*	2·5
Sumoto	5·5	250	e 1 54	P_g	2 31	+11	2·7

Osaka gives also i = +1m.42s.
Sumoto SN = +2m.34s. = S* − 8s.

Feb. 22d. 8h. 7m. 20s. Epicentre 37°·9N. 45°·1E. (as on 1930 Oct. 25d.). R.2.

A = +·557, B = +·559, C = +·614; D = +·708, E = −·706; G = +·434, H = +·435, K = −·789.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Erevan		2·4	348	i 0 21	−13	—	—	—	—
Tiflis	E.	3·8	356	0 53	− 1	i 1 29	− 8	i 1·6	—
Baku		4·5	55	i 1 5	+ 1	—	—	2·3	5·6
Grozny		5·4	5	i 1 19	+ 2	2 17	− 1	—	—
Sotchi		7·0	326	e 1 40	+ 1	—	—	—	—
Ksara		8·5	244	e 2 9	+ 9	4 20	S*	—	—
Theodosia		10·2	317	e 2 24	0	e 4 21	+ 3	6·4	—
Yalta		10·5	312	e 2 23	− 5	e 4 18	− 8	—	—
Simferopol		10·8	314	2 34	+ 2	e 4 34	+ 1	5·7	—
Sebastopol		11·0	311	2 40	+ 5	—	—	—	—
Helwan		14·0	239	i 3 17	+ 2	6 1	+10	—	—
Samarkand		17·1	77	3 55	0	—	—	—	—
Tashkent		18·9	72	i 4 23	+ 6	i 7 57	+13	e 12·0	15·8
Budapest		21·2	305	4 41	− 1	8 41	+11	12·7	14·7
Andijan		21·5	74	4 42	− 3	e 8 42	+ 6	—	—
Sverdlovsk		21·6	24	i 4 41	− 5	e 8 26	−12	i 13·3	15·2
Frunse		22·9	68	e 3 42	?	e 8 1	−62	—	—
Zagreb		22·9	299	e 4 59	− 1	e 9 8	+ 5	e 13·1	14·6
Vienna		23·2	306	i 5 0k	− 3	8 57	−11	—	15·7
Graz		23·5	302	i 5 6	+ 1	e 9 29	+15	e 13·7	17·0
Königsberg		23·7	323	i 5 11	+ 4	e 9 19	+ 1	e 17·2	—
Pulkovo		23·8	342	i 5 8	0	9 14	− 5	12·4	14·4
Triest		24·5	299	5 11a	− 4	e 9 29	− 3	e 13·7	15·3
Almata		24·6	67	5 19	+ 3	10 0	+26	—	—
Prague		25·0	309	e 5 18	− 2	e 10 2	+21	e 15·7	17·7
Helsingfors		25·6	337	5 30	+ 5	9 51	0	e 12·7	—
Cheb		26·2	308	e 5 22	− 9	e 9 57	− 5	e 14·7	16·5
Prato		26·2	294	e 5 28	− 3	10 15	+13	13·7	—
Leipzig		26·6	311	—	—	e 10 10	+ 1	e 16·2	16·7
Jena		26·9	310	e 6 4	+27	—	—	e 15·7	19·1
Piacenza		27·3	297	e 5 40	− 1	10 55	+35	16·1	18·3
Chur		27·5	300	e 5 35	− 8	—	—	—	—
Stuttgart		28·0	305	e 5 43	− 4	e 10 24	− 8	e 14·7	18·7
Upsala		28·0	330	e 6 15	+28	e 10 34	+ 2	e 14·7	—
Dehra Dun		28·1	96	10 50	S	(10 50)	+16	15·5	23·7
Copenhagen		28·2	320	5 46	− 3	i 10 26	− 9	—	—
Zurich		28·2	302	e 5 45	− 4	—	—	—	—
Hamburg		28·7	315	e 5 52	− 1	e 11 16	+33	—	19·7
Basle		28·9	302	e 5 51	− 4	—	—	—	—
Strasbourg		28·9	304	e 5 58	+ 3	e 11 16	+29	e 15·7	—
Neuchatel		29·3	300	e 5 54	− 5	—	—	—	—
Agra	E.	29·6	101	e 4 53?	?	10 59?	+ 1	16·8?	—
Bombay		30·7	120	e 6 33	+22	11 38	+22	15·7	19·5
De Bilt		31·1	311	i 6 12	− 3	e 11 45	+24	—	22·4
Uccle		31·4	309	e 6 15	− 2	e 11 46	+20	13·7	—
Paris		32·3	305	e 6 40?	+15	(11 40?)	0	11·7	19·7
Kew		34·3	310	e 6 40?	− 3	(e 12 40?)	+29	e 12·7	24·3
Hyderabad		35·6	116	6 54	0	12 37	+ 7	20·3	24·4
Edinburgh		36·6	316	—	—	i 12 51	+ 6	e 21·7	—
Toledo		37·8	288	e 7 8	− 5	—	—	e 18·4	—
Calcutta		40·0	100	e 7 12	−20	13 9	−27	18·7	25·9
Kodaikanal		40·1	124	—	—	13 40	+ 2	—	25·6
San Fernando		40·4	284	—	—	13 46	+ 4	19·7	28·2
Colombo		44·1	126	9 17	PP	—	—	—	28·6
Chiufeng		53·7	64	e 9 17	− 2	e 17 2	+10	e 27·1	35·2
Tananarive		56·8	177	—	—	17 12	−22	27·5	31·7
Hong Kong		60·4	84	18 27	S	(18 27)	+ 6	—	37·2
Manila		70·0	86	5 18	?	20 23	+ 2	—	—
Ottawa		81·2	323	—	—	e 22 16	−12	e 41·7	—
New Plymouth		140·6	108	19 40?	[+18]	—	—	—	—

For Notes see next page.

NOTES TO FEB. 22d. 8h. 7m. 20s.

Additional readings :—
Erevan P* = +1m.31s.
Grozny P_g = +1m.41s., S* = +2m.25s.
Ksara iSS = +4m.44s.
Sverdlovsk iL_q = +10·5m.
Frunse PP = +4m.11s.
Zagreb e = +5m.16s. = PP − 6s. and +5m.38s.
Vienna PPP = +5m.46s., iEN = +6m.43s., iN = +8m.25s., iE = +9m.46s. = SS +1s. and +11m.4s.
Königsberg eE = +9m.25s., eSNZ = +9m..55s. = SS − 3s.
Helsingfors ePPEN = +5m.50s., eSSEN = +12m.0s.; T_0 = 8h.7m.14s.
Leipzig eN = +11m.52s.
Jena eN = +6m.16s. = PP +0s.
Stuttgart e = +5m.53s., +9m.8s. = P_cP +4s. and +11m..7s.
Strasbourg eNZ = +12m.42s.
Agra SSE = +13m.38s.?, SSSE = +14m.24s. ?
Kodaikanal SSS = +16m.40s.
Hong Kong S? = +25m.20s.
Manila iEN = +9m.14s.
Ottawa eN = +31m.40s.?
Long waves were also recorded at Bidston, Durham, Algiers, Scoresby Sund, Oak Ridge, Phu-Lien, and Vladivostok.

Feb. 22d. Readings also at 5h. (Branner and near Tyosi), 7h. and 8h. (La Paz), 11h, (Piatigorsk), 13h. (Erevan and near Triest), 14h. and 17h. (near Triest), 18h. (Andijan and near Samarkand), 21h. (Huancayo and San Juan).

Feb. 23d. 13h. 42m. 55s. Epicentre 42°·3S. 172°·3E. (as on 1932 Oct. 13d.). X.

Wellington gives epicentre 42°·2S. 172°·6E.

A = −·733, B = +·099, C = −·673.

	△	Az.	P.	O − C.	S.	O − C.
	°	°	m. s.	s.	m. s.,	s.
Glenmuick	0·9	134	−0 30	?	−0 21	?
Christchurch	1·3	169	0 18	0	0 34	+ 1
Wellington	2·1	61	0 30	0	0 52	− 2
New Plymouth	3·5	22	1 5?	P_g	—	—

Feb. 23d. Readings at 0h. (Erevan, Theodosia, and near Zagreb), 2h. (Andijan (2), Samarkand (2), Erevan, and Tiflis), 3h. (Sydney (2), Frunse, near Andijan, Tashkent, and Samarkand), 4h. (Theodosia, near Mizusawa, and Tyosi), 5h. (Triest, Chur, Zurich, Neuchatel, Vienna, Basle, Andijan, Samarkand, near Arisan, and Karenko), 6h. (Samarkand and near Andijan), 7h. (Hong Kong), 8h. (near Santiago), 9h. (near Zagreb), 11h. (Alicante), 12h. (near Malabar and near Amboina), 13h. (Stuttgart), 18h. (near La Paz and Sucre), 20h. (near La Paz and Sucre), 21h. (near Prato).

Feb. 24d. 0h. 49m. 10s. Epicentre 73°·3N. 70°·7W. (as on 1933 Nov. 20d.). X.

A = +·095, B = −·271, C = +·958 ; D = −·944, E = −·331 ;
G = +·317, H = −·904, K = −·287.

		△	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ottawa		28·0	187	e 6 10	+23	e 10 26	− 6	e 14·1	—
Toronto	N.	30·0	193	—	—	e 10 52	−12	i 15·3	—
Ann Arbor		31·6	198	—	—	e 14 2	?	e 18·5	—
Pittsburgh		33·1	192	—	—	e 13 18	SS	i 16·6	—
Georgetown		34·6	187	e 15 34	?	18 1	?	i 19·4	20·4
Florissant		35·8	207	e 6 55	− 1	—	—	20·8	—
St. Louis		36·0	207	—	—	e 14 33	SS	—	18·2
Kew		36·0	87	—	—	e 12 50?	+14	—	—
Pulkovo		36·8	55	—	—	e 12 51	+ 3	19·8	23·6
De Bilt		37·0	81	—	—	e 12 50?	− 1	e 16·8	23·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Uccle		37·8	84	e 7 14	+ 1	e 12 50?	−13	e 16·8	—
Columbia		39·7	193	—	—	e 18 3	?	e 23·2	—
Little Rock		40·1	208	e 7 31	− 2	—	—	e 20·4	—
Strasbourg		40·8	81	—	—	(e 12 50?)	−58	e 12·8	—
Tinemaha		42·9	239	i 7 57	+ 1	—	—	e 22·6	—
Haiwee		43·8	238	i 8 4	+ 1	—	—	i 23·5	—
Triest		45·2	78	e 8 14	0	—	—	e 24·5	28·5
Mount Wilson	Z.	45·6	237	i 8 19	+ 1	—	—	—	—
Pasadena		45·7	237	i 8 18	0	—	—	i 24·2	—
Riverside		45·7	237	i 8 19	+ 1	—	—	—	—
Sverdlovsk		45·7	35	e 8 33	+15	15 6	+ 6	21·8	30·5
Tashkent		62·2	33	i 10 34	+14	i 18 55	+10	e 35·1	40·3
La Paz	N.	89·8	177	e 12 58	+ 2	—	—	—	—

Additional readings :—
Ottawa eE = +11m.14s. and +13m.14s.
Ann Arbor eE = +15m.44s., e = +16m.2s.
Georgetown i = +17m.19s. =S_cS +9s.
Columbia e = +20m.8s.
Tinemaha iZ = +9m.46s. =P_cP − 5s.
Haiwee eZ = +9m.50s. =P_cP − 4s.
Pasadena iSSNZ? = +27m.49s.
Sverdlovsk e = +10m.8s. =P_cP +7s.
Long waves were also recorded at Scoresby Sund, Kucino, Baku, Vladivostok, and other American and European stations.

Feb. 24d. 5h. 33m. 30s. Epicentre 12°·7N. 86°·7W. (as on 1930 July 29d.). R.2.

A = +·056, B = −·974, C = +·220 ; D = −·998, E = −·058 ;
G = +·013, H = −·219, K = −·976.

A *depth* of focus 0·020 has been assumed.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Port au Prince		−0·5	15·0	65	i 3 30	+ 8	i 4 9	?	—	—
San Juan		−0·8	20·7	72	i 4 28	− 1	—	—	—	—
Columbia		−0·9	21·9	13	e 4 40	0	e 8 30	+ 4	e 9·4	—
Little Rock		−1·0	22·6	348	e 4 46	0	—	—	—	—
St. Louis	N.	−1·2	26·1	354	i 5 16	− 3	e 9 29	−10	—	—
Huancayo		−1·2	27·2	155	e 5 30	+ 1	i 9 57	− 1	i 11·5	—
Georgetown		−1·3	27·6	16	i 5 30a	− 2	i 10 1	− 2	e 13·5	—
Pittsburgh		−1·3	28·4	11	—	—	e 10 9	− 8	e 14·3	—
Toronto	N.	−1·5	31·6	10	i 6 0	− 6	i 10 52	−14	—	—
Oak Ridge	Z.	−1·5	32·6	22	i 6 15	0	—	—	—	—
La Paz	N.	−1·6	34·5	147	e 6 32	+ 1	i 11 52	+ 3	15·5	17·6
Riverside	Z.	−1·6	35·0	313	i 6 35	0	—	—	—	—
Mount Wilson	Z.	−1·6	35·6	313	e 6 41	+ 1	—	—	—	—
Pasadena	Z.	−1·6	35·7	313	i 6 42k	+ 1	—	—	—	—
Haiwee	Z.	−1·6	36·6	316	e 6 48	− 1	—	—	—	—
Tinemaha		−1·6	37·3	317	i 7 5	+10	—	—	—	—
La Plata		−2·3	54·9	150	—	—	16 42	+ 5	—	—
Cheb		−2·7	86·0	40	—	—	e 21 30?	?	—	—
Triest		−2·8	88·1	44	e 11 19	?	—	—	—	—
Sverdlovsk		−3·0	105·4	18	—	—	e 24 13	[−39]	—	—
Tashkent		—	121·6	21	e 20 14	PP	—	—	—	—

Additional readings :—
Port au Prince i = +3m.35s. and +4m.42s.
San Juan e = +5m.19s. and +9m.3s.
St. Louis ipPN = +5m.56s., esSN = +10m.42s.
Huancayo e = +6m.1s. =PP − 3s.
La Plata eE = +17m.54s.
Triest e = +19m.19s., iE = +24m.4s., iN = +24m.18s. =PS − 11s.
Sverdlovsk e = +27m.37s. =PS − 5s., +28m.37s., and +34m.0s.
Tashkent e = +21m.10s. and +29m.21s., i = +30m.59s., +31m.13s., and +32m.30s.

Feb. 24d. 5h. 36m. 13s. Epicentre 45°·6N. 10°·2E. (as on 1926 Sept. 9d.). X.

A = +·689, B = +·124, C = +·715.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Chur	1·3	340	e 0 14	− 4	e 0 27	− 6
Zurich	2·1	327	e 0 30	0	e 0 53	− 1
Ravensburg	2·3	350	—	—	e 0 59	0
Neuchatel	2·6	302	e 0 39	+ 2	e 1 10	+ 3
Basle	2·7	317	e 0 39	0	e 1 10	+ 1

Feb. 24d. 6h. 23m. 47s. Epicentre 22°·8N. 143°·9E. N.1.

Probable error of epicentre ±0°·20.

A = −·745, B = +·543, C = +·388; D = +·589, E = +·808;
G = −·313, H = +·228, K = −·922.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Titizima	4·5	340	1 5a	+ 1	1 53	− 2	—	—
Hatidyozima	10·9	341	2 33	0	5 9	S*	—	—
Susaki	12·6	341	2 56	0	5 52	S*	—	—
Mera	12·6	345	2 59	+ 3	5 59	S*	—	—
Omaesaki	12·8	338	2 58	− 1	6 1	S*	—	—
Siomisaki	12·8	328	2 58a	− 1	—	—	—	—
Misima	13·0	342	3 3k	+ 1	—	—	—	—
Numadu	13·0	341	3 1	− 1	5 20	− 7	—	—
Hamamatu	13·1	337	3 5	+ 2	6 15	S*	—	—
Tyosi	13·2	349	e 3 3	− 2	6 21	+49	e 10·3	11·3
Yokohama	13·2	344	3 2k	− 3	6 4	+32	—	—
Tokyo Meteor.	13·3	345	3 8	+ 2	6 1	+27	—	—
Hunatu	13·5	342	3 7	− 2	5 25	−14	—	—
Kohu	13·6	341	3 13	+ 3	5 25	−16	—	—
Kameyama	13·6	333	3 14	+ 4	6 12	+31	—	—
Nagoya	13·8	335	3 11	− 2	6 26	+40	—	11·8
Kakioka	13·8	347	3 11	− 2	5 31	−15	—	—
Tukubasan	13·8	347	3 8	− 5	5 29	−17	—	—
Wakayama	13·8	328	3 11a	− 2	6 8	+22	—	—
Mito	13·9	348	3 13	− 1	5 32	−17	—	—
Simidu	13·9	319	3 43a	+29	6 56	+67	—	—
Osaka	13·9	330	3 5	− 9	5 27	−22	7·6	20·9
Osaka B	13·9	330	3 15	+ 1	—	—	—	—
Kumagaya	13·9	344	3 19	+ 5	5 47	− 2	—	—
Gihu	14·0	335	3 12	− 3	5 37	−14	—	—
Sumoto	14·0	328	i 3 13a	− 2	e 5 51	0	7·4	7·8
Koti	14·1	322	i 3 17a	0	5 54	+ 1	6·0	7·2
Hikone	14·1	333	3 23	+ 6	6 37	+44	—	—
Nake	14·1	296	3 21a	+ 4	7 14	L	(7·2)	—
Kyoto	14·1	332	3 14	− 3	6 24	+31	—	—
Kobe	14·1	329	3 15	− 2	5 53	0	5·9	8·2
Maebasi	14·2	344	3 19	+ 1	6 11	+15	—	—
Miyazaki	14·3	313	3 22a	+ 3	5 57	− 1	—	—
Matuyama	14·7	321	3 24a	− 1	7 8	+60	—	—
Kagosima	14·7	310	3 29	+ 4	7 21	+73	—	—
Nagano	14·7	342	3 25	0	6 19	+11	—	—
Toyooka	15·0	331	3 26	− 2	—	—	6·5	9·1
Toyama	15·0	339	3 31	+ 3	6 14	− 1	—	—
Hukusima	15·2	350	3 28a	− 3	6 6	−14	—	—
Kumamoto	15·3	314	3 35a	+ 3	6 26	+ 4	—	—
Sendai	15·7	351	3 33	− 5	6 25	− 6	—	—
Wazima	15·8	339	3 34	− 5	6 19	−15	—	—
Nagasaki	15·9	312	3 41a	+ 1	—	—	7·0	8·3
Hamada	15·9	322	3 41a	+ 1	6 40	+ 4	—	—
Hukuoka	16·0	315	3 42	+ 1	6 50	+12	8·2	10·0

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hukuoka B		16·0	315	3 42a	+ 1	6 52	+14	e 8·7	9·9
Mizusawa	E.	16·5	352	i 3 54	+ 6	i 6 50	0	7·5	—
	N.	16·5	352	e 3 46	− 2	e 6 53	+ 3	7·6	—
Tomie		16·6	310	3 41a	− 8	7 22	+30	—	—
Morioka		17·0	354	3 53k	− 1	6 51	−11	—	—
Akita		17·2	350	4 5	+ 8	7 14	+ 8	—	—
Isigakizima		18·1	279	4 13a	+ 5	7 37	+10	—	—
Taikyu		18·6	318	4 14a	0	7 41	+ 3	13·9	—
Sapporo		20·4	355	4 33a	− 1	8 4	−10	—	—
Karenko		20·5	278	i 4 38k	+ 3	8 38	+22	—	—
Taihoku		20·5	280	4 38a	+ 3	8 39	+23	—	—
Nemuro		20·5	3	4 28	− 7	8 17	+ 1	—	—
Zinsen		20·9	319	i 4 36a	− 3	i 8 29	+ 5	e 10·6	12·1
Taito		21·0	275	4 33	− 7	—	—	—	—
Arisan		21·2	277	i 4 44a	+ 2	8 44	+14	—	—
Zi-ka-wei		21·7	298	i 4 45a	− 3	8 42	+ 2	10·8	15·2
Takao		21·8	274	5 2	+13	9 3	SS	—	—
Heizyo		22·4	321	i 5 0	+ 5	i 9 6	+13	12·5	13·7
Manila		23·1	253	i 5 6a	+ 4	i 9 22	+15	12·0	14·2
Nanking		24·1	298	i 5 11	0	i 9 26	+ 1	12·4	14·4
Dairen		24·9	315	5 19	0	9 46	+ 7	—	—
Hsinking		26·0	328	6 12	PP	10 32	+34	—	—
Hong Kong		27·4	275	5 43	+ 1	9 18	−64	10·8	15·9
Chiufeng		29·1	313	? 5 57a	0	i 10 33	−17	—	16·8
Amboina		30·6	212	i 6 4	− 6	i 11 11	− 3	14·6	—
Phu-Lien		34·6	274	i 6 48	+ 2	e 12 21	+ 6	15·2	21·4
Batavia		46·4	236	i 8 22a	− 2	i 15 6	− 4	21·2	—
Malabar		46·6	234	8 26	+ 1	e 15 5	− 8	19·1	—
Medan		47·7	254	e 7 35	−59	i 14 37	−52	—	—
Calcutta		50·9	282	8 58	0	16 33	+20	e 27·2	35·5
Suva		53·0	138	8 13?	−61	16 25	−17	24·2	—
Honolulu		53·7	80	i 9 22	+ 3	i 16 56	+ 4	i 23·1	—
Riverview		57·0	173	i 9 40	− 3	i 17 32	− 4	i 24·0	30·8
Sydney		57·0	173	—	—	i 17 38	+ 2	26·6	33·9
Adelaide		58·0	186	i 9 48	− 2	i 17 55	+ 6	27·8	34·6
Dehra Dun		58·6	293	9 23	−32	17 53	− 4	—	—
Frunse		59·8	308	8 27	−96	i 16 37	−96	29·2	—
Melbourne		60·6	180	10 38	+29	18 16	− 8	27·6	30·3
Perth		61·0	208	i 10 13	+ 2	18 33	+ 4	29·7	37·2
Hyderabad		61·2	278	10 12	− 1	18 22	−10	29·4	36·7
Andijan		61·7	305	10 15	− 1	i 18 38	0	34·2	—
Colombo		63·5	266	10 29	0	18 58	− 3	27·5	41·7
Tashkent		63·9	307	i 10 35	+ 4	i 19 19	+13	33·2	38·8
Kodaikanal		64·4	271	i 10 35	0	i 19 8	− 4	i 32·5	37·5
Bombay		65·9	281	i 10 48	+ 3	i 19 36	+ 5	31·9	39·5
Samarkand		65·9	305	e 10 48	+ 3	i 19 27	− 4	37·2	—
Sitka		66·0	37	e 10 48	+ 3	i 19 32	0	26·8	—
Sverdlovsk		67·4	325	i 10 53	− 1	i 19 45	− 5	39·2	41·2
Arapuni		67·8	154	—	—	20 1	+ 7	34·7	—
New Plymouth		68·1	155	(11 13?)	+14	—	—	11·2	—
Wellington		70·2	157	11 3	− 9	20 7	−17	33·2	37·2
Christchurch		71·4	158	11 15	− 4	i 20 32	− 6	33·8	—
Victoria		74·9	44	i 11 38	− 2	i 21 13	− 6	i 34·5	40·2
Seattle		75·8	45	e 11 55	+10	e 21 21	− 8	e 34·9	—
Ukiah		77·9	53	e 12 3	+ 6	i 21 48	− 5	35·8	—
Baku		78·3	310	i 12 0	+ 1	—	—	—	—
San Francisco		79·0	55	e 11 13?	−50	20 13?	?	—	—
Berkeley		79·1	55	e 12 2	− 1	i 21 59	− 7	e 36·8	—
Branner		79·3	55	e 12 9	+ 5	—	—	—	—
Kucino		79·7	327	12 13	+ 7	e 22 5	− 7	35·4	48·0

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Pulkovo	81·4	333	12 7	− 8	22 19	−12	37·2	45·2
Tiflis	81·4	312	12 16	+ 1	21 57	−34	40·9	—
Santa Barbara	82·2	57	e 12 20	+ 1	i 22 33	− 6	—	—
Erevan	82·3	311	e 12 44	+24	e 22 57	+17	41·2	—
Tinemaha	82·3	54	i 12 21	+ 1	i 22 35	− 5	—	—
Haiwee	82·9	54	i 12 24	+ 1	e 22 38	− 8	—	—
Helsingfors	83·4	336	e 12 23	− 2	i 22 39	−12	e 33·2	—
Pasadena	83·5	56	i 12 26	0	i 22 45	− 7	i 37·9	—
Mount Wilson	83·6	56	e 12 27	+ 1	i 22 45	− 8	—	—
Bozeman	83·7	43	e 12 30	+ 3	i 22 45	− 9	e 38·2	—
Sotchi	84·0	316	e 13 1	+33	—	—	e 41·2	—
Riverside	84·2	56	i 12 28	− 1	i 22 48	−12	—	—
La Jolla	84·7	57	i 12 33	+ 1	i 22 52	−13	—	—
Theodosia	86·1	318	e 12 41	+ 2	23 8	[+ 1]	43·7	—
Scoresby Sund	86·2	356	12 42	+ 3	e 23 3	[− 5]	—	—
Upsala	86·5	337	12 37	− 4	i 22 58	[−12]	e 42·2	48·6
Simferopol	86·9	319	e 12 43	0	23 13	[0]	36·2	—
Yalta	87·1	318	e 12 45	+ 1	23 15	[+ 1]	36·2	—
Sebastopol	87·5	319	e 12 46	+ 1	23 20	[+ 3]	47·2	—
Königsberg	88·6	332	i 16 10	PP	i 23 14	[−10]	e 43·7	58·7
Tucson	89·9	55	13 1	+ 4	i 23 29	[− 3]	e 40·8	—
Lemberg	90·0	326	e 16 2	PP	e 23 46	−11	e 46·4	56·5
Bergen	90·2	342	23 44	SKS	(23 44)	[+10]	34·5	46·2
Ksara	91·2	307	e 13 5	+ 2	24 12	+ 5	44·7	51·2
Copenhagen	91·4	336	i 13 2	− 2	i 24 1	− 8	—	—
Hamburg	93·9	335	e 13 21	+ 6	i 23 50	[− 5]	e 44·6	52·2
Budapest	94·0	327	e 13 23	+ 7	23 36	[−19]	45·2	59·2
Prague	94·5	331	e 13 16	− 2	—	—	e 43·2	52·7
Leipzig	94·5	332	e 13 13	− 5	e 23 49	[− 9]	e 43·7	59·2
Vienna	94·8	328	13 17k	− 3	23 53	[− 7]	e 47·2	60·2
Jena	95·2	332	e 13 13	− 8	(e 17 5)	PP	e 17·1	59·6
Cheb	95·4	331	e 13 18	− 4	e 24 40	− 6	e 45·2	53·2
Göttingen	95·4	334	e 13 21	− 1	e 24 19	{+ 1}	e 41·2	58·5
Graz	96·1	328	i 17 35	PP	i 26 18	PS	e 47·2	52·2
Edinburgh	96·5	342	i 13 17	−10	i 24 46	−10	44·2	58·8
Helwan	96·5	306	—	—	i 23 58	[−10]	—	64·4
Zagreb	96·7	326	e 13 25	− 3	e 24 50	− 7	e 47·2	61·5
De Bilt	96·9	336	13 27a	− 2	e 24 29	{ 0}	e 46·2	56·2
Stuttgart	97·8	332	i 13 33a	0	e 24 25	[+10]	e 49·2	61·2
Triest	97·9	327	13 31a	− 3	i 24 5	[−11]	e 46·2	62·2
Karlsruhe	98·0	333	e 13 25	− 9	e 24 43	{+ 5}	43·2	62·2
Uccle	98·2	336	i 13 33a	− 2	i 24 13	[− 4]	45·2	56·0
Strasbourg	98·6	333	i 13 34a	− 3	i 24 54	−20	46·2	63·1
Bidston	98·6	341	e 13 38	+ 1	i 25 5	− 9	45·2	69·0
Venice	98·8	328	e 14 21	+43	24 21	[+ 1]	—	—
Chur	99·1	332	e 16 43	?	e 24 2	[−19]	—	—
Zurich	99·1	332	e 13 33	− 6	—	—	—	—
Kew	99·3	338	i 13 39a	− 1	i 25 10	−10	45·2	50·1
Oxford	99·4	339	17 47	PP	26 27	PS	e 43·4	63·2
Basle	99·4	332	e 13 40	− 1	—	—	—	—
Chicago	99·6	37	—	—	i 24 15	[− 8]	e 42·6	—
Florissant	100·1	40	i 13 51	+ 7	i 25 38	+11	—	—
Neuchatel	100·1	332	e 13 42	− 2	—	—	—	—
Piacenza	100·3	329	e 14 14	+29	25 6	−23	50·0	63·6
St. Louis	100·4	40	e 17 41	PP	i 24 19	[− 9]	e 47·0	—
Prato	100·5	327	e 13 52	+ 6	i 24 16	[−12]	e 36·2	54·8
Florence	100·5	327	i 13 43	− 3	24 13	[−15]	—	—
Paris	100·5	336	e 13 45	− 1	24 20	[− 8]	36·2	50·2
Ann Arbor	101·4	34	—	—	i 24 25	[− 8]	e 47·7	61·2
Little Rock	101·5	45	e 16 47	?	i 24 29	[− 4]	e 46·9	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Grenoble		102·0	332	e 16 3	?	—	—	36·2	—
Toronto		102·6	31	e 13 53	− 2	i 24 28	[−10]	49·3	—
Puy de Dôme		102·8	333	e 18 7	PP	—	—	54·2	—
Ottawa		102·9	27	18 25	PP	i 24 29	[−11]	e 51·2	—
Tananarive	E.	102·9	255	e 18 5	PP	24 31	[− 9]	49·9	53·2
Pittsburgh		104·7	33	—	—	e 24 38	[−10]	e 43·3	—
Bagnères		106·2	333	e 18 38	PP	e 24 50	[− 6]	36·2	—
Tunis		106·2	323	e 18 53	PP	—	—	56·2	—
Oak Ridge	N.E.	106·9	26	e 19 3	PP	26 11	−10	e 43·8	—
	N.W.	106·9	26	e 19 9	PP	26 39	+18	e 47·7	—
Weston		107·1	26	—	—	i 24 37	[−23]	—	—
Fordham		107·3	29	e 19 15	PP	i 24 51	[−10]	49·2	64·2
Georgetown		107·3	32	e 14 20	+ 2	i 28 0	PS	e 46·2	—
Charlottesville		107·3	34	—	—	e 24 57	[− 4]	e 48·7	—
Tortosa	N.	107·8	331	17 58	PP	—	—	50·6	67·8
Columbia		108·9	38	—	—	e 25 1	[− 7]	e 50·4	—
Algiers		109·9	327	e 18 42	PP	e 28 37	PS	44·2	—
Alicante		110·3	331	e 19 5	PP	—	—	e 55·8	—
Toledo		110·6	335	19 7	PP	27 31	?	e 52·0	64·1
Serra do Pilar		111·2	338	18 40	+19	30 5	?	52·2	—
Almeria		112·4	331	e 19 11	PP	—	—	e 47·7	71·7
Granada		112·6	333	e 14 56	+13	—	—	54·4	63·7
Malaga		113·4	333	19 29	P	26 18	{−13}	54·0	—
San Fernando		114·4	334	19 24	PP	29 13	PS	55·7	67·2
San Juan		129·4	38	i 19 19	[+13]	e 28 9	{− 9}	e 57·3	—
Huancayo		141·2	81	e 19 13	[−10]	—	—	e 57·8	—
La Paz		149·2	84	i 19 49a	[+ 9]	26 28	SKS	71·7	76·5
Sucre		152·6	88	19 50	[+ 5]	26 40	PPP	71·7	—
La Plata	E.	157·5	127	20 29	{− 4}	31 11	{+ 6}	75·6	90·0
	N.	157·5	127	20 29	{− 4}	30 53	{−12}	66·8	91·9
	Z.	157·5	127	20 25	{− 8}	—	—	78·7	—

Additional readings :—
Titizima +1m.37s.
Tyosi eN = +5m.18s., eE = +5m.22s., SN = +6m.5s.
Osaka i = +3m.22s.
Koti P* = +4m.0s., i = +4m.6s.
Kobe eN = +5m.22s.
Toyooka PE = +3m.35s.
Nagasaki iPP = +3m.55s., iPPPZ = +4m.3s.
Zi-ka-wei PPE = +5m.6s., PPPE = +5m.15s., iE = +5m.29s., +6m.6s., +8m.47s. = P_cP +2s., and +9m.8s., iN = +9m.16s., SSN = +9m.47s., SSSN = +10m.1s., iN = +10m.16s.
Nanking iSSZ = +10m.13s.
Hong Kong PP = +5m.54s.
Chiufeng SEN = +10m.20s.
Suva PP = +9m.52s., SS = +19m.13s. = S_cS +9s., SSS = +20m.46s.
Honolulu e = +13m.19s., i = +15m.48s., eSS = +21m.43s.
Riverview iEN = +19m.30s. = S_cS −1s.
Sydney SSS = +24m.7s.
Melbourne i = +18m.36s., SS = +22m.30s., i = +25m.13s.
Perth P_cP = +10m.53s., PP = +12m.53s., PPP = +14m.13s., PPPP = +15m.8s., SP = +19m.3s., SS = +23m.25s., SSS = +25m.13s., SSSS = +27m.8s.
Sitka i = +20m.41s. = S_cS +6s.
Arapuni SS = +29m.13s.
Wellington SS = +24m.13s.?
Christchurch P_cPNZ = +11m.50s., iNZ = +12m.26s., iSNZ = +20m.27s., i = +21m.31s., iSSE = +25m.6s., iSSN = +25m.22s., SSSE = +27m.36s., L_qE = +30·6m.
Seattle eSS = +26m.7s., eSSS = +31m.37s.
Ukiah e = +25m.43s., eSS = +26m.28s.
Berkeley i = +12m.5s., eN = +22m.6s., eZ = +35m.55s., eN = +36m.32s.
Branner iEN = +12m.26s., eE = +36m.47s., eN = +37m.1s.
Kucino e = +15m.14s. = PP +13s. and +26m.49s. = SS +41s., eSSS = +31m.37s.
Tiflis PPE = +15m.15s., PSE = +23m.25s.
Helsingfors ePPE = +15m.23s., ePPPN = +17m.0s., ePSEN = +23m.43s., eSSEN = +28m.14s., eSSSE = +32m.7s. ; T_0 = 6h.23m.57s.
Pasadena ePPN = +16m.1s.

Continued on next page.

Bozeman ePP = +16m.48s., eSS = +27m.13s., i = +27m.36s., e = +31m.45s. = SSS +12s.
Scoresby Sund +23m.13s. =S −6s. and +24m.18s. =PS +12s., e = +28m.13s. ?
Upsala i = +28m.54s. =SS +5s.
Königsberg eEN = +17m.7s., eSSEN = +29m.36s.
Tucson SS = +29m.53s.
Bergen S? = +29m.45s. =SS +2s.
Ksara PP = +16m.45s., SKS = +23m.32s., PS = +25m.21s., PPS = +25m.53s. SS = +30m.29s.
Copenhagen eZ = +13m.43s., i = +16m.41s. =PP +4s., +17m.26s., e = +23m.33s. =SKS −8s., +25m.9s. =PS +1s., eE = +27m.37s., +30m.2s. = SS +2s., +32m.1s., and +33m.43s. =SSS +9s.
Hamburg iPPZ = +17m.1s., eSSE = +30m.28s.
Prague iPP = +17m.6s.
Leipzig e = +17m.3s. and +25m.49s., eE = +26m.31s. and +30m.45s., eN = +30m.52s., e = +37m.43s. and +42m.43s.
Vienna iEN = +14m.14s., iN = +15m.10s., PP = +17m.12s., iE = +18m.24s., PPP = +19m.1s., iE = +20m.14s., PS = +24m.38s., iE = +26m.16s., iN = +26m.29s. and +27m.27s., PKKP = +31m.12s.
Cheb iPP = +17m.15s., iSS = +31m.8s.
Göttingen iPP = +17m.13s., eEN = +30m.49s. =SS −8s.
Graz e = +31m.14s. =SS +7s.
Edinburgh i = +17m.34s. =PP +18s., +25m.3s., +32m.22s., and +38m.48s.
Zagreb ePP = +17m.18s., e = +18m.0s., ePPP = +19m.20s., ePPPP = +20m.58s., eSKS = +23m.58s., ePS = +25m.46s., e = +27m.55s. and +29m.13s.?, eSSS = +35m.48s.
De Bilt iPPZ = +17m.25s., eEN = +31m.25s. =SS +7s.
Stuttgart i = +13m.43s., eZ = +14m.11s., iPP = +17m.33s., i = +18m.8s., iPSZ = +26m.38s., iSSE = +31m.34s.; T_0 = 6h.23m.20s.
Triest PP = +17m.28s., iNW = +17m.33s., iZ = +17m.38s., PPP = +19m.39s., i = +24m.20s. =SKKS −7s. and +24m.32s., iSKKS = +24m.39s., iS = +24m.52s., iSS = +31m.32s., SSS = +35m.25s., i = +40m.34s.
Uccle eZ = +14m.20s., iPPZ = +17m.35s., eZ = +18m.13s., iSSN = +31m.32s.
Strasbourg ipP = +14m.21s., iPP = +17m.35s., pPP = +18m.28s., PPPP = +21m.28s., SKS = +23m.33s., SKKS = +24m.30s., PS = +26m.33s., iSS = +31m.43s.
Bidston iPP = +17m.43s., iPS = +26m.27s., iSS = +31m.48s.; T_0 = 6h.23m.52s.
Chur ePP = +17m.38s.
Zurich ePP = +17m.43s.
Kew iPP = +17m.42s., eSKSEN = +24m.3s., eSE = +25m.6s., iSSEN = +32m.1s., eSSSE = +35m.37s., iPPP?EN(△ >180°) = +38m.57s.
Oxford i = +31m.29s. =SS −25s.
Basle ePP = +17m.48s.
Chicago ePS = +26m.28s., eSS = +31m.46s., eSSS = +36m.48s.
Florissant iPPZ = +17m.41s., ePPPZ = +20m.0s., iSKSEN = +24m.19s., iSKKSEN = +25m.8s., PSEN = +26m.35s., ePPSEN = +27m.23s. eSSEN = +32m.25s., iSSSEN = +36m.31s.; T_0 = 6h.23m.35s.
Neuchatel ePP = +17m.50s.
Piacenza P = +18m.18s.
St. Louis ePPEN = +18m.1s., eSKKSE = +25m.13s., ePSE = +26m.47s., iPPSE = +27m.13s., iSSEN = +32m.11s., eSSSN = +36m.43s.
Prato i = +17m.55s. =PP +9s.
Florence PP = +17m.56s., PPP = +21m.50s., PS = +26m.43s., SS = +32m.13s.
Paris PP = +17m.53s.
Ann Arbor e = +27m.1s. =PS +1s. and +33m.1s., eN = +36m.55s.
Little Rock ePP = +18m.6s., eSKPS = +25m.19s.; T_0 = 6h.23m.35s.
Toronto ePP = +17m.55s., PS = +27m.10s., SS = +32m.43s., SSS = +37m.9s.
Ottawa PS = +27m.13s., SS = +32m.53s., SSSS = +41m.37s., e = +44m.33s.
Tananarive E = +18m.15s., PPP = +20m.35s., PS = +27m.28s., PPSE = +28m.11s., SS = +32m.56s.
Pittsburgh eS = +25m.50s., eSS = +33m.17s., eSSS = +37m.3s.
Oak Ridge e = +24m.48s., eNW = +27m.47s., ePSNW = +28m.59s., ePSNE = +29m.11s., eSSNE = +33m.51s., eSSNW = +33m.59s., eSSSNW = +38m.7s., eSSSNE = +38m.19s., eNW = +41m.7s.; T_0 = 6h.23m.35s.
Weston SS = +34m.47s., SSS = +39m.2s.
Fordham SKKSN = +25m.39s., iPSN = +28m.19s., iPPSN = +29m.4s., iSSN = +34m.15s., iSSSN = +38m.13s.
Georgetown ePP = +18m.43s.; T_0 = 6h.23m.40s.
Charlottesville eSS = +33m.33s.
Columbia PS = +28m.13s., eSS = +33m.45s., e = +45m.17s.
Algiers SS = +33m.50s.
Toledo PS = +28m.32s.
Granada ePKP = +18m.32s., iPP = +19m.26s., PPP = +22m.18s.
Malaga PPP = +21m.50s., PS = +28m.58s., SS = +35m.9s., SSS = +39m.48s.
San Juan e = +22m.3s., iPP = +22m.23s., ePPP = +24m.23s., ePS = +31m.23s., SS = +39m.26s.

Continued on next page.

Huancayo iPP = +22m.57s., ePPP = +26m.33s., iPS = +33m.24s., eSS = +40m.47s., eSSS = +46m.23s.
La Paz iPKP$_a$ = +20m.3s., iN = +20m.13s., pPE = +21m.20s. iPPN = +23m.24s., ipPP = +25m.21s., SKKS = +30m.8s., SKSP = +33m.48s., eSSN = +42m.15s., SSSN = +46m.59s.
Sucre PKP$_a$ = +20m.7s., pPKP = +21m.25s.
La Plata PPSN = +37m.25s., PPSE = +37m.31s., SSN = +43m.37s., SSE = +44m.10s., N = +54m.19s.
Long waves were also recorded at Cape Town, Johannesburg, Lick, Grozny, Barcelona, Laibach, and Durham.

Feb. 24d. Readings also at 4h. (Phu-Lien, San Francisco, near Berkeley, Branner, and Lick), 5h. (near Nagoya), 7h. (Tananarive), 10h. (Vienna, Andijan, Frunse, Samarkand, Piatigorsk, near Medan, and near Tiflis), 12h. (Samarkand, Frunse, and Andijan), 14h. (Erevan, Scoresby Sund, and Tucson), 15h. (Bombay and Calcutta), 17h. (La Paz), 18h. (near Algiers and near Tananarive), 23h. (Samarkand, Grozny, Frunse, near Tiflis, Erevan, and Andijan).

Feb. 25d. 16h. 23m. 2s. Epicentre 17°·4N. 119°·0E. (as on 14d.). X.

A = −·463, B = +·835, C = +·299; D = +·875, E = +·485; G = −·145, H = +·262, K = −·954.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		3·4	146	i 0 50$_a$	+ 1	i 1 37	S*	—	—
Taito		5·7	23	1 52	P$_g$	—	—	—	—
Hong Kong		6·7	319	1 32	− 3	3 52	S$_g$	5·3	5·7
Zi-ka-wei	Z.	14·0	9	e 3 12	− 3	6 11	+20	9·0	13·8
Nanking	N.	14·7	359	e 3 1?	−24	—	—	9·4	13·2
Nagasaki		18·2	31	e 4 6	− 3	e 7 40	+11	—	—
Koti		20·8	36	i 4 40	+ 2	8 34	+12	—	—
Sumoto		22·1	37	e 4 51	− 1	e 8 55	+ 7	—	—
Kobe		22·5	37	e 4 55	− 1	e 9 2	+ 7	—	20·1
Osaka		22·7	37	4 50	− 8	8 28	−31	—	9·9
Chiufeng		22·7	355	i 5 0$_a$	+ 2	i 9 12	+13	13·2	17·1
Kameyama		23·4	38	5 4	− 1	—	—	—	—
Nagoya		23·9	39	(5 9)	0	5 9	P	—	—
Maebasi		26·0	39	5 30	+ 1	—	—	—	—
Calcutta		29·2	285	e 9 11	?	15 18	?	21·8	28·1
Andijan		46·2	310	e 7 51	−31	—	—	—	—
Tashkent		48·6	310	e 8 40	− 1	e 15 47	+ 6	e 26·6	34·1
Sverdlovsk		58·4	327	i 10 3	+10	—	—	29·0	33·7
Kucino		70·7	323	e 11 24	+ 9	e 20 30	0	e 35·1	44·0
Pulkovo		74·4	329	e 11 34	− 3	—	—	—	—

Additional readings:—
Hong Kong PP? = +1m.49s. = P* − 2s., ? = +3m.21s. = S* +4s., SS = +4m.19s.
Zi-ka-wei iZ = +8m.13s.
Sumoto eSN = +8m.58s.
Osaka i = +9m.14s. = SS − 19s.
Tashkent e = +11m.5s. = PPP − 6s., +12m.28s., +19m.37s., and +22m.40s.
Sverdlovsk e = +12m.8s. = PP +12s., SS = +21m.58s.
Long waves were also recorded at Phu-Lien, Baku, and other European stations.

Feb. 25d. 16h. 26m. 28s. Epicentre 40°·0N. 37°·0E. (as on 1924 July 31d.). X.

$A = +·612$, $B = +·461$, $C = +·643$; $D = +·602$, $E = -·799$; $G = +·513$, $H = +·387$, $K = -·766$.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Yalta	4·9	336	e 1 9	− 1	(e 2 9)	+ 4	e 2·2	—
Theodosia	5·2	347	1 11	− 3	2 13	0	2·3	—
Simferopol	5·4	338	e 1 12	− 5	(2 21)	+ 3	2·4	—
Erevan	5·7	86	e 1 30	+ 9	—	—	—	—
Tiflis	6·1	72	e 0 59	−28	(i 2 13)	−23	i 2·2	—
Ksara	6·2	188	e 1 34	+ 6	3 9	S*	—	4·0
Grozny	7·3	60	e 1 46	+ 2	e 3 12	+ 6	—	—
Pulkovo	20·2	350	e 4 8	−24	—	—	—	—
Sverdlovsk	22·8	35	e 5 12	+13	—	—	—	—
Samarkand	22·9	82	e 4 20	−40	—	—	—	—
Tashkent	24·4	76	e 4 50	−24	—	—	—	—

Tiflis eEN = +1m.6s., eN = +1m.14s.; this station gives its readings for 17h.
Long waves were also recorded at Baku.

Feb. 25d. Readings also at 0h. (La Plata), 5h. (Erevan and Wellington), 8h. (Frunse and Tashkent), 15h. (Vladivostok), 16h. (Bombay and near Sotchi), 19h. (Piatigorsk and near Manila).

Feb. 26d. 14h. 47m. 19s. Epicentre 27°·5N. 57°·5E. (as on 1933 Feb. 26d.). X.

$A = +·477$, $B = +·748$, $C = +·462$; $D = +·843$, $E = -·537$; $G = +·248$, $H = +·389$, $K = -·887$.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Baku		14·3	336	e 3 23	+ 4	e 6 14	+16	9·7
Bombay	E.	16·5	118	e 3 41?	− 7	—	—	—
Erevan		16·6	323	e 4 22	+33	—	—	—
Tiflis		17·6	327	3 54	− 8	7 48	+33	9·9
Andijan		18·0	39	e 4 7	0	—	—	—
Agra	E.	18·2	86	e 4 2	− 7	—	—	—
Grozny		18·4	332	e 4 20	+ 9	e 8 11	+38	—
Ksara		19·6	294	e 4 29	+ 4	8 5	+ 7	—
Frunse		20·7	37	e 2 51	?	—	—	—
Theodosia		24·8	321	e 5 16	− 2	e 9 41	+ 4	—
Yalta		25·2	318	—	—	e 9 37	− 7	—
Simferopol		25·5	319	e 5 27	+ 2	e 9 49	− 1	—

Additional readings:—
Bombay eN = 14h.48m.
Tiflis eE = +8m.20s.
Long waves were also recorded at Sverdlovsk.

Feb. 26d. Readings also at 4h. (La Paz), 7h. (Andijan), 9h. (La Jolla, Mount Wilson, and Riverside), 15h. (near Malabar), 17h. (Wellington), 19h. (near Ksara), 20h. (near Medan), 21h. (Haiwee, Pasadena, Tinemaha, Mount Wilson, and Riverside), 22h. (Haiwee, Mount Wilson, La Jolla, Pasadena, Riverside, Tinemaha, and Tucson), 23h. (near Granada and Malaga).

Feb. 27d. 21h. 29m. 25s. Epicentre 5°·5S. 153°·5E. (as on 1928 Nov. 9d.). R.3.

$A = -\cdot891$, $B = +\cdot444$, $C = -\cdot096$; $D = +\cdot446$, $E = +\cdot895$; $G = +\cdot086$, $H = -\cdot043$, $K = -\cdot995$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		25·3	273	5 22	− 1	i 9 39	− 7	—	—
Riverview		28·4	184	i 6 47	PP	i 10 21	−17	i 14·4	16·0
Sydney		28·4	184	e 10 5	S	(e 10 5)	−33	14·2	15·1
Adelaide		32·5	203	i 6 28	+ 1	i 11 29	−14	13·3	26·1
Melbourne		33·2	192	—	—	i 11 42	−12	15·5	17·5
Manila		38·0	304	i 7 22a	+ 7	13 5	− 1	—	21·2
Christchurch		41·6	160	e 7 30	−15	13 32	−28	16·4	—
Perth		44·0	229	11 40	?	17 25	SS	21·6	22·4
Mizusawa	E.	46·1	349	e 8 46	+25	e 9 35	?	—	—
Hong Kong		47·5	308	11 15	?	15 24	− 2	—	18·2
Vladivostok		52·4	340	e 9 10	+ 1	e 16 22	−12	26·6	—
Phu-Lien		53·0	301	8 35?	−39	—	—	—	—
Chiufeng		57·1	327	e 9 43	− 1	e 17 21	−17	e 27·3	34·1
Calcutta		69·6	296	13 51	PP	20 21	+ 5	28·0	31·3
Hyderabad		77·5	·290	21 33	S	(21 33)	−15	30·2	37·7
Agra		79·8	299	e 12 8	+ 1	i 21 54	−20	—	—
Bombay		83·0	290	e 13 29	+66	i 22 52	+ 5	—	—
Frunse		85·8	314	e 10 49	−108	e 20 43	−153	—	—
Andijan		86·9	311	e 12 57	+14	e 23 12	[− 1]	—	—
Tashkent		89·3	313	13 26	+32	i 23 26	[− 2]	e 34·6	41·4
Pasadena		91·7	56	i 13 1a	− 4	—	—	—	—
Mount Wilson	Z.	91·8	56	i 13 0a	− 6	—	—	—	—
Haiwee	Z.	92·1	54	e 13 49	+42	—	—	—	—
Riverside		92·3	56	i 13 1	− 7	—	—	—	—
La Jolla	Z.	92·4	58	i 13 6	− 3	—	—	—	—
Sverdlovsk		96·2	327	e 14 16	+50	e 24 24	{ 0}	—	—
Baku		103·9	311	e 19 18	?	e 27 35	PS	e 41·1	—
Kucino		108·7	328	—	—	e 30 35?	?	e 52·6	—
Pulkovo		111·0	333	—	—	e 23 33	PPPP	51·6	—
Triest		126·9	326	—	—	e 28 40	{+39}	e 53·6	60·6

Additional readings:—
Amboina i = +10m.17s. = SS + 5s.
Riverview iE = +12m.0s.
Sydney eS = +13m.0s.
Adelaide i = +7m.32s. = PP + 3s., +7m.41s., and +9m.58s.
Melbourne i = +13m.59s. = SSS + 0s.
Perth PP = +12m.25s., P_cS = +17m.35s. = SS + 3s.
Chiufeng eE = +13m.7s.
Hyderabad S = +26m.48s. = SS + 13s.
Bombay iE = +24m.10s., iN = +24m.13s., iE = +32m.53s.
Pasadena iZ = +13m.45s.
Mount Wilson eZ = +13m.44s., iZ = +13m.49s.
Riverside eZ = +13m.46s., iZ = +13m.50s., eE = +29m.50s.
Long waves were also recorded at Medan, Wellington, Copenhagen, De Bilt, and Uccle.

Feb. 27d. Readings also at 0h. (near Santiago), 1h. (near Triest), 2h. (La Paz and near Tyosi), 10h. (Tyosi and near Nagoya), 11h. (Nanking, near Karenko, Taihoku, Arisan, and Tainan), 14h. (Alicante), 15h. (Sverdlovsk, Frunse (2), Tashkent, near Andijan (2), and Samarkand), 17h. (Frunse, Samarkand, and near Andijan), 18h. (Port au Prince and near Tananarive), 19h. (Frunse and near Andijan), 21h. (Hong Kong, Phu-Lien, and Sverdlovsk), 22h. (Sotchi and Vladivostok), 23h. (Berkeley).

Feb. 28d. 7h. 48m. 12s. Epicentre 34°·2N. 135°·0E. (as on 1934 Jan. 23d.). X.

$A = -\cdot585$, $B = +\cdot585$, $C = +\cdot562$; $D = +\cdot707$, $E = +\cdot707$; $G = -\cdot397$, $H = +\cdot397$, $K = -\cdot827$.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Sumoto	0·2	327	i 0 3	0	0 7	+ 2	0·2
Kobe	0·5	17	0 7	0	i 0 15	+ 2	0·3
Osaka	0·7	44	0 8	− 2	0 18	0	0·3
Koti	1·4	242	0 26	+ 6	0 44	+ 8	—
Nagoya	1·9	59	e 0 29	+ 1	0 54	+ 5	—

Feb. 28d. 14h. 21m. 50s. Epicentre 5°·5S. 150°·0E. (as on 1930 June 11d.). R.2.

A = −·862, B = +·498, C = −·096; D = +·500, E = +·866;
G = +·083, H = −·048, K = −·995.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Palau		20·1	310	4 33	+ 2	8 42	+34	—	—
Amboina		21·8	274	4 33	−16	i 8 42	0	13·2	—
Riverview		28·4	178	e 5 54	+ 3	i 10 59	+21	13·7	20·2
Sydney		28·4	178	e 6 8	+17	i 10 40	+ 2	14·9	16·9
Suva		30·5	116	6 4	− 5	11 4	− 8	14·2	—
Adelaide		31·3	198	e 5 25?	−52	i 11 35	+11	16·4	22·8
Melbourne		32·6	187	e 6 46	+18	11 48	+ 3	15·7?	22·1
Titizima		33·5	347	6 47	+11	12 32	+34	—	—
Manila		35·1	306	6 47	− 3	12 27	+ 4	17·2	21·2
Naha		38·4	326	7 10	− 8	13 20	+ 8	—	—
Arapuni		40·1	148	8 10?	+37	13 58	+20	21·2	—
Taihoku		41·2	320	e 7 52	+10	14 30	+36	—	—
Perth		41·4	226	8 0	+16	14 5	+ 8	19·8	21·2
Hamamatu		41·9	345	7 47	− 1	14 33	+28	—	—
Nagoya		41·9	345	7 52	+ 4	—	—	19·6	—
Tyosi		42·1	350	e 7 21	−28	14 6	− 2	20·0	22·8
Koti		42·1	340	i 7 49	0	14 34	+26	19·2	22·7
Wellington		42·1	151	7 55	+ 6	14 30	+22	20·2	22·2
Wakayama		42·2	341	7 51	+ 1	14 28	+19	—	—
Malabar		42·2	267	7 53	+ 3	14 16	+ 7	20·2	—
Tokyo		42·3	347	7 55	+ 4	15 0	+50	—	—
Sumoto		42·3	341	7 51	0	14 35	+25	20·3	24·6
Osaka		42·4	341	7 46	− 6	14 36	+25	20·1	23·5
Kumamoto		42·5	336	7 54	+ 1	14 41	+28	—	—
Kobe		42·6	341	e 7 52a	− 1	e 14 47	+32	e 20·1	23·8
Kakioka		42·7	349	7 52	− 2	14 37	+21	—	—
Nagasaki		42·8	334	7 54a	− 1	e 14 42	+24	—	22·1
Hikone		42·8	344	7 55	0	14 48	+30	—	—
Batavia		42·9	269	7 52	− 4	—	—	23·4	26·2
Christchurch		43·0	155	i 8 5	+ 8	i 15 11	+50	22·2	—
Oiwake		43·2	347	8 0	+ 2	14 58	+34	—	—
Hukuoka		43·3	336	e 7 39	−20	—	—	—	—
Hukuoka B		43·3	336	e 7 59	0	e 14 41	+16	e 19·4	—
Toyooka		43·4	343	7 59	− 1	15 0	+33	21·1	26·0
Nagano		43·6	347	8 2	0	15 2	+32	—	—
Hong Kong		44·7	310	8 9	− 1	15 4	+18	22·7	28·7
Mizusawa	E.	45·4	351	e 8 15	− 1	e 15 14	+18	22·8	—
	N.	45·4	351	e 8 12	− 4	e 15 18	+22	23·5	—
Zi-ka-wei	Z.	45·7	325	i 8 16a	− 2	16 3	+63	19·2	25·0
Morioka		46·0	351	8 18	− 3	15 29	+25	—	—
Taikyu		46·0	336	e 8 40	+19	(15 40)	+36	15·7	—
Nanking		47·9	323	i 8 37a	+ 2	i 15 53	+22	i 19·8	26·2
Keizyo		48·1	335	8 33	− 4	16 3	+29	20·1	27·1
Zinsen		48·2	334	e 8 34	− 4	e 16 40	+64	—	—
Sapporo		49·2	352	8 33	−12	15 53	+ 3	—	—
Heizyo		49·9	335	e 8 39	−12	e 16 54	+55	e 25·2	28·9
Phu-Lien		50·1	304	e 9 10?	+18	16 10?	+ 8	21·2	—
Vladivostok		51·3	345	i 9 5	+ 4	16 25	+ 6	—	—
Medan		52·0	279	9 16	+10	16 43	+15	30·2	—
Sikka		55·1	354	10 8	+38	—	—	—	—
Chiufeng		55·2	328	i 9 29	− 1	i 17 29	+17	24·1	30·4
Honolulu		58·7	60	—	—	e 18 34	+35	e 25·2	—
Calcutta		66·4	297	11 50	+62	20 54	+77	33·2	49·6
Colombo		71·1	278	11 18	+ 1	20 45	+11	38·1	42·2
Kodaikanal		74·0	283	11 27	− 8	i 21 16	+ 8	27·4	44·5

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		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hyderabad		74·2	290	11 59	+23	21 24	+13	34·4	45·1
Agra	E.	76·7	300	e 11 30	−20	i 21 53	+14	38·4	53·4
Dehra Dun		77·4	303	12 20	+26	21 50	+ 3	32·8	57·2
Bombay		79·7	290	e 12 7	+ 1	22 28	+16	—	48·2
Frunse		83·2	314	e 10 22	−122	—	—	35·7	—
Andijan		84·3	312	e 12 41	+11	e 23 25	+24	e 42·2	—
Sitka		86·4	31	—	—	e 23 47	+26	e 39·9	—
Tashkent		86·7	312	i 12 38	− 4	i 23 11	[0]	e 34·2	55·4
Samarkand		88·2	310	—	—	23 35	− 4	—	—
Ukiah		91·0	51	—	—	e 24 30	+25	e 42·4	—
Victoria	E.	92·0	41	—	—	e 24 14	− 1	e 42·5	44·9
Pasadena		94·6	56	e 13 16	− 3	i 24 29	{+17}	e 40·0	—
Mount Wilson		94·7	56	e 13 23	+ 4	e 24 15	{+ 2}	—	—
Haiwee	Z.	94·9	54	e 13 43	+23	—	—	—	—
La Jolla		95·2	57	i 13 49	+28	i 24 34	−10	—	—
Riverside		95·3	56	i 13 47	+25	e 24 16	{− 1}	—	—
Tananarive		99·9	250	21 10?	PPP	24 45	{− 7}	47·2	52·2
Bozeman		100·2	44	e 25 3	SKKS	(e 25 3)	{+ 9}	e 46·6	—
Tucson		100·7	57	—	—	e 25 5	{+ 7}	e 42·8	—
Baku		101·2	311	e 14 13	+24	e 24 45	[+13]	47·7	60·9
Grozny		104·1	313	e 14 13?	+11	e 19 25	?	—	—
Tiflis	E.	105·0	311	e 14 14	+ 8	e 25 10	[+20]	53·9	66·6
Kucino		106·8	326	e 18 12	[+ 5]	e 24 40	[−18]	e 44·2	61·7
Sotchi		108·4	314	e 19 10	PP	—	—	e 45·2	—
Pulkovo		109·3	333	i 19 22	PP	i 28 48	PS	55·2	66·3
Theodosia		111·2	316	e 19 28	PP	e 29 4	PS	46·2	—
Helsingfors		111·6	334	e 13 59	−39	e 28 39	PS	e 46·2	—
Simferopol		112·1	316	e 19 24	PP	—	—	39·2	—
Yalta		112·1	316	e 20 0	?	—	—	56·2	—
Sebastopol		112·5	316	—	—	e 29 9	PS	59·2	—
Ksara		113·0	305	e 19 20?	PP	e 29 10?	PS	—	—
Upsala		114·8	336	—	—	e 31 19	?	e 50·2	71·3
Johannesburg		115·5	237	—	—	48 10	?	59·9	63·2
Königsberg		116·3	330	e 20 41	?	e 25 36	[− 2]	—	—
Helwan		117·5	301	e 20 17	PP	30 12	PS	—	75·2
Chicago		117·5	45	—	—	e 37 24	?	e 49·3	—
Bergen		118·9	340	e 18 8	[−35]	—	—	e 39·6	—
Cape Town		119·5	226	18 42	[− 2]	29 8	SKSP	49·2	66·2
Copenhagen		119·6	334	19 59	PP	26 10	[+21]	56·2	—
Budapest		120·7	323	e 21 35	?	e 30 10?	PS	54·2	64·2
Vienna		121·9	326	19 39	?	28 37	?	e 52·2	71·2
Hamburg	E.	122·0	333	e 19 10	[+20]	e 28 34	?	e 56·2	73·2
Prague		122·0	328	e 20 38	PP	—	—	e 50·2	61·2
Leipzig		122·3	329	—	—	e 30 58	PS	e 51·2	72·7
Jena		122·9	331	—	—	e 30 58	PS	e 52·2	62·7
Cheb		123·0	330	e 20 30	PP	e 30 52	PS	e 53·2	72·2
Graz		123·0	325	e 18 7	[−46]	e 30 53	PS	e 37·2	71·5
Göttingen		123·3	332	e 19 28	[+34]	—	—	e 53·2	74·1
Zagreb		123·4	323	e 19 10?	[+16]	e 30 40	PS	e 57·2	64·2
Ottawa		123·8	36	e 22 22	?	e 32 40	?	e 52·2	—
Triest		124·8	324	e 19 23	?	e 30 37	SKSP	e 53·5	58·4
Feldberg	E.	124·9	332	—	—	e 24 10?	?	e 62·2	77·2
De Bilt		125·2	334	e 21 26	?	e 32 48	?	e 59·2	70·9
Edinburgh		125·3	341	e 31 10?	PS	e 39 18	?	e 55·2	67·4
Stuttgart		125·5	330	e 19 20	[+22]	e 28 58	?	e 54·2	74·2
Karlsruhe		125·7	330	e 19 10?	[+12]	—	—	—	74·2
Durham		125·7	340	21 35	?	—	—	—	70·2
Georgetown		126·0	44	e 18 57	[− 2]	i 29 26	?	e 54·2	—
Strasbourg		126·3	330	e 20 40	PP	28 1	{+ 3}	e 38·2	74·2
Uccle		126·4	334	e 20 47	PP	—	—	e 55·2	76·2

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Chur		126·5	328	e 19 18	[+18]	—	—	—	—
Zurich		126·7	328	e 19 17	[+17]	—	—	—	—
Basle		127·1	328	e 19 10?	[+ 9]	—	—	—	—
Florence		127·3	323	19 10	[+ 8]	i 28 10	{+ 6}	37·2	68·2
Bidston		127·3	340	i 22 50	?	i 32 5	?	e 43·2	72·7
Fordham		127·3	41	e 22 37	?	e 23 57	PPP	e 54·2	—
Prato		127·4	323	e 19 10	[+ 8]	30 34	SKSP	42·4	65·2
Piacenza		127·5	326	e 20 10	?	31 42	PS	60·2	75·3
Neuchatel		127·8	328	e 19 13	[+10]	—	—	—	—
Kew		127·9	337	e 19 34	[+31]	—	—	e 43·2	68·8
Oxford		128·0	338	—	—	e 32 40	?	e 43·2	80·0
Oak Ridge		128·2	37	e 19 27	[+24]	—	—	e 52·7	—
Paris		128·6	334	e 19 10?	[+ 6]	e 33 28	?	e 39·2	66·2
Huancayo		131·7	111	e 19 18	[+ 8]	e 33 46	?	e 54·9	—
La Plata		131·8	149	19 4	[− 6]	—	—	63·7	82·2
La Paz	E.	136·3	120	i 19 52a	[+35]	i 26 12	SKS	74·2	94·3
	N.	136·3	120	i 19 23a	[+ 6]	i 25 51	SKS	77·8	102·2
Toledo		138·4	330	e 22 48	PP	e 32 46	PS	e 64·5	89·1
Almeria		139·7	326	—	—	e 44 26	?	e 67·6	—
Malaga		141·0	327	—	—	42 54	?	68·1	—
San Fernando	N.	142·2	329	23 38	PKS	40 58	SS	—	110·2
San Juan		142·5	66	e 19 25	[0]	—	—	68·7	—
Dakar		164·6	308	18 12	[−107]	—	—	91·4	112·3

Additional readings :—
Perth PP = +9m.30s. = PPP − 8s., PPP = +10m.5s., PPPP = +10m.33s., P_cS = +13m.53s., PS = +14m.25s., SS = +17m.0s., SSS = +17m.45s., SSSS = +18m.35s.
Wellington PP = +9m.52s. = PPP − 1s., P_cS = +13m.54s., SS = +17m.39s. = SSS + 3s., SSS = +18m.26s.
Malabar i = +9m.21s. = PP − 2s. and +18m.19s.
Kobe eN = +8m.34s. and +9m.51s. = P_cP + 1s., PPPN = +9m.57s.
Batavia i = +9m.47s. = P_cP − 4s., +15m.41s., and +16m.58s. = SS − 12s.
Christchurch iP_cP = +9m.32s. = PP + 1s., P_cS = +13m.43s., iS_cS = +17m.37s. = SS + 25s., eZ = +20m.38s.
Hong Kong PP = +10m.0s. = P_cP + 3s., ? = +14m.14s., SS = +18m.36s., ? = +19m.35s.
Zi-ka-wei iZ = +8m.55s., +9m.37s., +11m.55s., and +15m.37s.
Taikyu eS = +11m.20s.
Medan i = +10m.5s. = P_cP − 19s., and +17m.13s.
Chiufeng iSN = +17m.35s.
Calcutta PS = +21m.25s.
Agra PPE = +14m.40s., PPPE = +16m.25s., PSE = +22m.32s., SSE = +27m.16s., SSSE = +30m.37s.
Bombay PPE = +15m.26s., PPPE = +17m.17s., PS = +23m.22s.
Sitka e = +36m.12s.
Tashkent ePS = +24m.9s., eSSS = +29m.52s.
Pasadena eN = +14m.4s., eE = +24m.58s. = S + 20s. and +25m.28s. = PS − 17s.
Mount Wilson iZ = +13m.46s.
Riverside iZ = +14m.4s.
Tananarive E = +27m.54s., SKS = +31m.49s. = SS − 11s., EN = +32m.15s., PS = +34m.53s., SS = +41m.24s.
Bozeman eSS = +42m.36s.
Tucson e = +26m.15s., eS = +33m.0s.
Baku ePP = +18m.27s.
Tiflis eE = +18m.30s. = PP + 10s., ePSE = +28m.1s., eSSE = +34m.12s.
Kucino PPS = +28m.6s., eSSS = +38m.22s.
Pulkovo eSS = +34m.58s., SSS = +39m.58s., L_q = +47·2m.
Helsingfors ePPEZ = +19m.3s., ePPSEN = +30m.28s., eSSEN = +34m.46s., eSSSEN = +40m.17s., e?E = +43m.30s. ; T_0 = 14h.21m.28s.
Ksara SKP = +20m.56s.
Chicago e = +40m.52s. and +41m.26s.
Cape Town PP = +22m.43s., PPP = +25m.6s., SKKS = +29m.58s. = PS + 0s., S = +30m.28s., PS = +31m.40s., PPS = +32m.30s., SS = +36m.42s., SSS = +41m.34s.
Copenhagen eE = +20m.31s., PS = +30m.20s., PPS = +31m.52s., SS = +37m.22s., SSS = +41m.40s.
Vienna PP? = +21m.27s., iN = +26m.28s. = SKS + 32s., SS = +33m.0s., SSS = +37m.17s.
Hamburg eE = +38m.10s. ?

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Leipzig e = +38m.10s.?
Jena eEN = +38m.10s.
Cheb e = +38m.32s.
Göttingen eEN = +30m.58s. and +32m.46s., eN = +37m.52s., and +42m.52s., eEN = +47m.10s., eN = +51m.34s., eE = +52m.22s.
Zagreb e = +38m.28s. and +43m.10s.?, eNW = +51m.10s.?
Ottawa e = +38m.10s.
Triest ePP = +23m.7s. = PPP − 9s., i = +26m.25s. = SKS + 20s. and +31m.2s. = PS + 17s., iPS = +31m.47s., i = +38m.12s. and +38m.18s., iSL = +38m.48s.
Feldberg eN = +25m.10s.?, eE = +31m.10s.? = PS + 24s., eN = +32m.10s.?, eEN = +39m.10s.?, eE = +43m.10s.?
De Bilt eEN = +38m.58s.
Stuttgart e = +21m.13s. = PP + 26s., iPPZ = +21m.28s., ePKS = +22m.0s., ePPP = +24m.10s., eS? = +31m.10s. = PS + 18s., ePPS = +33m.10s., eSSS = +43m.10s., e = +51m.10s.; T_0 = 14h.21m.35s.
Georgetown ePKP = +22m.24s., ePP = +23m.17s. = PPP − 9s., eSZ = +32m.22s., iPS = +33m.12s., iSSE = +39m.22s.
Strasbourg ePS? = +31m.18s.
Uccle eE = +31m.10s.? = PS + 10s., i = +39m.56s.
Bidston e = +39m.25s.
Piacenza P = +22m.40s.
Kew eZ = +21m.39s., eEN = +31m.21s. = PS + 8s., +37m.18s., and +39m.28s.
Oak Ridge eZ = +22m.18s., eNW = +22m.42s. and +34m.10s., eNE = +38m.38s. = SS + 21s., eNW = +39m.40s., eNE = +42m.4s.
Paris e = +21m.52s.
Huancayo iPKP$_2$ = +22m.35s. = PKS + 6s., iPP = +24m.0s. = PPP − 12s., eSS = +39m.40s.
La Plata PKPN = +19m.10s.?, N = +22m.4s., SKP = +22m.34s., E = +22m.58s.
La Paz iN = +20m.14s., iSKP = +22m.53s., iPP = +23m.18s., ipPP = +24m.24s. iN = +27m.8s., iSKKS = +29m.13s., SSN = +43m.6s., SSE = +44m.12s.
Toledo PS = +34m.38s.
Malaga SSS? = +47m.44s., e = +57m.12s., +59m.26s., and +61m.4s.
San Fernando SSN = +41m.10s.
San Juan ePP = +23m.50s., eSS = +41m.40s., e = +60m.40s. and +64m.10s.
Dakar PP = +19m.45s. = PKP − 14s., SKSP = +30m.22s., PPS = +31m.48s. = SKKS + 5s., SS = +38m.9s.
Long waves were also recorded at Algiers, other American and European stations.

Feb. 28d. Readings also at 0h. (near Apia), 2h. (near La Paz), 3h. (Sverdlovsk, Tashkent, Kucino, near Mizusawa (2), Nagoya (2), and Tyosi (4)), 4h. (near Baku, near La Paz, and near Sumoto), 7h. (near Nagoya, Mizusawa, and Tyosi (2)), 8h. (Erevan and near Manila), 9h. (Riverview, Grozny, Batavia, Sverdlovsk, Tashkent, near Amboina, and near Manila), 12h. (Berkeley), 14h. (La Paz and near Tyosi), 15h. (Phu-Lien), 16h. (Bozeman, Ukiah, and Victoria), 18h. (near Amboina), 21h. (near Port au Prince), 22h. (Agra, Bombay, Hyderabad, Kodaikanal, Tashkent, and Sverdlovsk).

March 1d. 3h. A shock for which no determination is made was recorded as follows:
Manila P = 3h.55m.11s., S?E = 4h.1m.0s., LEN = 5m.50s., ME = 9m.
Christchurch P = 3h.55m.38s., S = 4h.1m.30s., L_q = 4m.12s., L_r = 6m.42s.
Tashkent eP = 3h.55m.38s., i = 56m.16s., e = 59m.21s., 4h.9m.53s., 10m.48s., 16m.42s., eL = 18m.12s., M = 31m.48s.
Vladivostok P = 3h.55m.53s., S = 4h.3m.33s., L = 12m.
Chiufeng e = 3h.56m.13s., M = 4h.21m.24s.
Riverview eN = 3h.57m.24s., eLE = 4h.1m.0s., ME = 7m.
Perth eP = 3h.58m.0s., L? = 4h.8m.0s.
Melbourne e = 3h.58m.16s., i = 4h.1m.54s., L = 4m.15s., M = 8m.6s.
Sydney iS = 4h.1m.18s., L = 3m.0s., M = 4m.0s.
Hong Kong P? = 4h.1m.45s., S? = 5m.6s., M = 13m.30s.
Wellington e = 4h.8m.
Sverdlovsk e = 4h.12m.35s. and 18m.4s., L = 29m., M = 42m.12s.
Pulkovo e = 4h.15m.7s., L = 43m., M = 52m.24s.
Long waves were also recorded at Baku, Kucino, and several European stations.

March 1d. 19h. 41m. 15s. Epicentre 7°·0S. 148°·0E. (as on 1925 Sept. 10d.). R.2.

A = −·842, B = +·526, C = −·122; D = +·530, E = +·848; G = +·103, H = −·065, K = −·992.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Palau		19·7	316	4 31	+ 5	8 35	+35	—	—
Amboina		20·0	278	4 31	+ 1	i 8 20	+14	—	—
Riverview		27·0	174	e 5 43	+ 5	e 10 25	+10	e 13·6	18·4
Sydney		27·0	174	e 10 57	S	(e 10 57)	+42	16·1	17·8
Adelaide		29·3	196	e 5 10	−49	i 11 3	+10	e 14·6	22·4
Melbourne		30·9	185	—	—	11 32	+14	16·9	20·2
Manila		34·4	309	6 48	+ 4	12 27	+15	17·2	20·2
Titizima		34·5	351	6 53	+ 8	12 4	−10	—	—
Perth		39·0	226	e 7 50	+26	i 13 45	+24	20·6	22·8
Batavia		40·9	269	7 43a	+ 3	i 14 23	+33	—	—
Wellington		41·8	149	10 14	(+26)	17 15	(+38)	21·8	—
Miyazaki		42·0	339	7 10	−39	13 30	−36	—	—
Christchurch		42·4	153	e 7 45	− 7	14 10	− 1	20·2	—
Koti		42·8	342	—	—	e 13 45?	−33	e 22·8	—
Sumoto	N.	43·2	345	e 7 49	− 9	14 36	+12	23·5	—
Nagoya		43·5	348	e 8 2	+ 1	—	—	—	—
Hukuoka B		43·9	339	—	—	(e 14 23)	−11	e 14·4	—
Hong Kong		44·3	312	8 11	+ 4	14 58	+18	—	26·1
Nagano		44·6	349	8 12	+ 2	—	—	—	—
Zi-ka-wei	Z.	45·9	328	8 17	− 3	15 11	+ 8	22·6	24·4
Mizusawa	E.	46·6	353	(e 8 40)	+15	e 8 40	P	—	—
Nanking		48·0	325	8 48	+12	e 15 47	+14	—	25·8
Vladivostok		52·2	345	9 8	0	16 43	+12	23·8	26·8
Chiufeng		55·5	331	e 9 29	− 3	e 17 18	+ 2	25·0	30·0
Hyderabad		72·9	290	13 33	PP	23 21	?	39·6	54·2
Bombay		78·5	291	i 12 4	+ 4	e 22 4	+ 5	—	—
Andijan		83·9	312	e 13 16	+48	e 22 56	0	—	—
Tashkent		86·3	312	e 12 41	+ 1	23 39	+19	38·8	53·2
Ukiah		93·4	51	—	—	e 43 45	?	e 46·2	—
Berkeley	Z.	94·1	53	—	—	e 43 1	?	—	—
Sverdlovsk		94·4	327	e 13 15	− 3	—	—	50·4	54·8
Pasadena		97·0	56	e 13 27	− 3	—	—	e 44·8	—
Mount Wilson	Z.	97·2	56	e 13 29	− 2	—	—	—	—
Riverside	Z.	97·8	56	e 13 30	− 3	—	—	—	—
Baku		100·7	310	e 18 5	PP	e 27 11	PS	e 50·8	62·0
Tiflis		104·5	311	17 46	PKP	24 59	[+12]	e 57·6	69·0
Kucino		107·0	326	—	—	e 24 39	[−20]	46·4	56·8
Pulkovo		109·8	332	18 54	PP	28 26	PS	55·8	63·4
Copenhagen		120·0	333	23 15	?	30 14	PS	—	—
Cheb		123·3	327	—	—	e 30 36	PS	e 57·8	62·8
Triest		124·8	322	—	—	e 33 26	?	e 55·8	64·4
De Bilt		125·6	331	—	—	e 31 9	PS	e 60·8	76·4
Stuttgart		125·7	328	—	—	e 32 45?	?	e 68·8	—
Ottawa		126·1	37	—	—	e 33 15	?	e 60·8	—
Strasbourg		126·6	328	—	—	(e 38 45?)	SS	e 38·8	—
Uccle		126·8	330	—	—	e 38 45?	SS	e 62·8	—
Kew		128·4	335	—	—	e 54 45?	?	e 63·8	73·2
Paris		129·0	330	—	—	e 39 45?	?	70·8	76·8
Oak Ridge		130·3	38	i 22 29	PKS	—	—	e 67·0	—
La Paz	N.	137·2	124	e 19 31	[+13]	—	—	—	—

Additional readings:—
Sydney e = +9m.15s. = P_cP +14s., iS = +14m.30s.
Adelaide i = +11m.42s.
Melbourne i = +15m.15s.
Perth SS = +16m.35s., SSS = +17m.5s.
Batavia +7m.46s., i = +15m.29s.
Christchurch L_q = +17·5m.
Sumoto ePE = +7m.57s.
Hong Kong SS = +18m.15s. = S_cS +7s.

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Chiufeng P = +9m.32s., S = +17m.28s.
Bombay eN = +14m.45s.? =PP −6s., eE = +22m.15s. =PS −15s.
Tashkent PPP = +18m.51s. =PPPP −14s., SKS = +23m.8s., SS = +30m.21s.
Sverdlovsk ePP = +17m.7s., ePPS = +26m.46s., eSS = +31m.3s., eSSS = +34m.51s., L_q = +41·8m.
Tiflis PPE = +18m.29s., PSE = +27m.46s.
Kucino e = +27m.58s. =PS +0s., +30m.34s. and +34m.20s.
Pulkovo SS = +34m.51s.
Copenhagen e = +37m.3s.
Cheb e = +38m.10s. and +42m.15s.
Ottawa eN = +53m.15s.
Oak Ridge eLNE = +52m.57s.
Long waves were also recorded at Phu-Lien, Kobe, Toyooka, Sitka, Bozeman, Chicago, Tananarive, and other European stations.

March 1d. 21h. 45m. 31s. Epicentre 40°·0S. 72°·8W. N.2.

A = +·227, B = −·732, C = −·643; D = −·955, E = −·296;
G = −·190, H = +·614, K = −·766.

A *depth* of focus 0·015 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago	−0·1	6·8	15	1 39	+ 4	3 2	+11	—	4·0
La Plata	−0·3	12·8	71	i 2 54a	− 1	5 10	− 5	7·2	7·3
z.	−0·3	12·8	71	i 2 54a	− 1	5 20	+ 5	6·4	7·3
Montezuma	−0·5	17·7	12	e 3 19	−38	i 7 21	+15	—	—
Sucre	−0·7	22·0	19	i 4 36	− 7	i 8 26	− 6	10·3	—
La Paz	−0·8	23·9	11	i 5 7	+ 5	i 9 16	+ 9	—	11·7
Huancayo	−0·9	28·0	355	i 5 46	+ 7	i 10 24	+ 7	—	—
Port au Prince	−1·8	58·5	0	e 9 40	− 1	i 17 34	+ 2	—	—
San Juan	−1·8	58·7	8	i 9 44	+ 2	i 17 34	− 1	e 23·8	—
Cape Town	−2·0	69·8	118	10 57	0	19 57	+ 3	—	—
Columbia	−2·0	74·4	353	e 11 27	+ 2	i 20 48	− 2	—	—
Little Rock	−2·1	76·9	343	e 11 49	+10	e 21 23	+ 5	—	—
Christchurch	−2·1	77·8	222	i 11 45	+ 1	i 21 29	+ 1	35·9	—
Charlottesville	−2·1	78·2	356	e 14 44	PP	21 29	− 4	—	—
Georgetown	−2·1	79·0	357	i 11 50	− 1	i 21 42	0	—	—
Arapuni	−2·1	79·9	228	—	—	i 22 2	+10	—	—
St. Louis	−2·1	80·2	346	i 11 56	− 2	i 21 51	− 4	—	—
Florissant	−2·1	80·4	346	i 11 55	− 4	i 21 49	− 8	—	—
Tucson	−2·1	80·4	328	11 59	0	i 22 1	+ 4	—	—
Pittsburgh	−2·1	80·7	354	e 12 1	+ 1	i 21 55	− 5	e 29·9	—
Fordham	−2·1	80·9	359	e 12 0	− 1	i 22 0	− 3	—	—
Johannesburg	−2·1	81·1	117	11 59	− 4	21 53	−12	34·9	—
Oak Ridge	−2·1	82·5	1	i 12 6	− 4	i 22 16	− 4	—	—
Ann Arbor	−2·1	82·9	352	—	—	i 22 23	− 1	e 34·6	—
Chicago	−2·1	83·0	348	e 12 11	− 2	i 22 14	−11	e 34·6	—
La Jolla	−2·1	83·7	324	i 12 16	0	e 22 30	− 3	—	—
Toronto	−2·1	83·9	355	e 12 11	− 6	i 22 20	−15	39·1	—
Riverside	−2·1	84·7	324	i 12 21	0	i 22 50	+ 7	—	—
Mount Wilson	−2·1	85·0	324	i 12 23	0	i 22 51	+ 5	—	—
Pasadena	−2·1	85·1	324	i 12 23k	0	i 22 55	+ 8	—	—
Santa Barbara	−2·1	86·1	323	i 12 30	+ 2	i 22 58	0	—	—
Ottawa	−2·1	86·3	358	e 12 24	− 5	i 22 45	−15	e 39·5	—
Haiwee	−2·1	86·8	325	i 12 32	0	i 23 5	0	—	—
Tinemaha	−2·1	87·6	325	e 12 35	− 1	i 23 16	+ 3	—	—
Branner	−2·1	89·7	323	i 12 48	+ 2	—	—	—	—
Berkeley	−2·1	90·1	323	e 12 47	− 1	i 22 56	[−37]	—	—
Ukiah	−2·1	91·6	323	e 12 53	− 2	i 23 18	[−24]	e 43·8	—
Suva	−2·1	92·0	244	14 29?	+92	—	—	—	—
Bozeman	−2·1	92·3	334	e 16 46	PP	e 23 23	[−23]	—	—
Melbourne	−2·2	94·9	210	e 13 7	− 3	i 24 8	−13	—	—

Continued on next page.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		−2·2	95·8	216	e 16 41	PP	e 23 39	[−26]	e 26·0	31·0
San Fernando		−2·2	97·9	48	13 29	+ 5	23 52	[−24]	—	64·0
Malaga		−2·2	99·1	48	13 38	+ 9	23 54	[−27]	43·5	—
Tananarive		−2·2	99·1	124	16 29?	?	24 49	−10	46·5	49·7
Victoria		−2·2	99·1	328	—	—	23 54	[−27]	40·0	49·6
Adelaide		−2·2	99·6	206	i 16 13	?	i 23 55	[−28]	—	27·2
Granada		−2·2	99·9	49	13 37	+ 4	—	—	46·0	51·5
Almeria		−2·2	100·3	50	17 41	PP	31 57	SS	e 39·6	—
Toledo		−2·2	101·5	47	e 13 35	− 5	e 25 1	−19	—	—
Alicante		−2·2	102·5	50	—	—	e 24 12	[−26]	e 36·0	—
Algiers		−2·2	103·6	53	e 13 48	− 2	24 17	[−26]	47·5	55·2
Perth		—	107·6	188	18 29	PP	—	—	—	63·5
Sitka		—	110·3	329	—	—	e 25 13	[− 2]	—	—
Paris		—	110·9	43	i 18 57	PP	e 24 45	[−32]	45·5	56·5
Kew		—	111·0	40	e 18 52	PP	e 25 41	{−33}	e 44·5	—
Bidston		—	111·0	37	e 18 49	PP	i 24 59	[−19]	—	—
Neuchatel		—	112·2	47	e 18 19	[− 6]	—	—	—	—
Florence		—	112·8	52	i 19 12	PP	25 9	[−16]	28·5	54·0
Prato		—	112·8	52	e 19 6	PP	26 14	{−13}	29·5	34·5
Uccle		—	113·0	41	e 18 24	[− 3]	i 24 58	[−28]	46·5	—
Zurich		—	113·3	47	e 18 25	[− 3]	—	—	—	—
Basle		—	113·4	47	e 19 12	PP	—	—	—	—
Chur		—	113·5	47	e 17 57	[−31]	—	—	—	—
Strasbourg		—	113·5	46	e 19 9	PP	25 1	[−27]	e 44·5	—
De Bilt		—	114·2	41	e 19 13	PP	e 25 6	[−25]	e 51·5	55·9
Stuttgart		—	114·4	46	e 18 49	[+18]	e 25 5	[−26]	e 46·5	—
Triest		—	115·3	50	i 19 28	PP	—	—	e 48·2	63·5
Göttingen		—	116·3	43	i 19 30	PP	e 24 13	[−85]	—	—
Scoresby Sund		—	116·4	17	—	—	35 40	SS	—	—
Zagreb		—	116·7	51	—	—	e 29 5	PS	e 55·5	—
Cheb		—	116·9	46	e 19 47	PP	i 25 15	[−25]	e 53·5	59·0
Jena	N.	—	116·9	45	—	—	e 44 29?	?	—	—
Graz		—	117·0	50	—	—	e 29 18	PS	—	56·6
Hamburg		—	117·4	41	e 18 29?	[−10]	i 25 16	[−26]	e 55·5	—
Leipzig		—	117·5	45	—	—	e 27 17	{+17}	—	—
Prague		—	118·0	47	e 22 29?	PPP	e 27 19	{+16}	e 38·5	42·5
Vienna	Z.	—	118·2	50	e 19 35a	PP	—	—	—	—
Helwan		—	118·8	74	e 19 49	PP	25 19	[−27]	56·6	—
Budapest		—	119·4	51	e 19 29?	PP	—	—	—	36·5
Copenhagen		—	119·7	40	20 9	PP	e 25 21	[−28]	—	—
Königsberg		—	123·4	44	e 23 6	PPP	e 27 12	{−27}	e 53·5	—
Ksara		—	124·2	73	e 18 51	[− 4]	27 21	{−23}	58·8	—
Sebastopol		—	127·2	59	18 49	[−12]	—	—	—	—
Helsingfors		—	127·5	38	e 18 52	[−10]	e 25 52	[−20]	e 54·5	—
Yalta		—	127·6	60	18 49	[−13]	—	—	—	—
Simferopol		—	127·7	59	18 49	[−13]	—	—	—	—
Theodosia		—	128·6	59	18 52	[−12]	—	—	—	—
Pulkovo		—	130·0	40	i 18 53	[−14]	25 48	[−31]	53·5	67·3
Amboina		—	132·3	209	e 18 41	[−30]	—	—	38·7	—
Erevan		—	133·0	69	e 19 38	[+26]	e 22 35	PKS	—	—
Kucino		—	133·2	47	i 21 18	PP	i 28 1	{−41}	e 39·7	66·0
Tiflis	E.	—	133·8	67	e 16 50	?	e 28 10	{−36}	56·5	—
Batavia		—	133·9	180	e 20 25	?	i 22 24	PKS	—	—
Grozny		—	135·0	65	e 18 57	[−18]	i 23 21	?	—	—
Baku		—	137·1	70	i 19 4	[−14]	31 52	SKSP	65·5	88·9
Medan		—	142·9	166	e 19 8	[−19]	i 23 32	PKS	—	—
Bombay		—	143·8	115	i 19 17	[−13]	29 13	{−34}	—	77·1
Sverdlovsk		—	145·7	45	i 19 21	[−14]	i 29 25	{−33}	69·5	71·5
Hyderabad		—	146·5	124	21 23	?	31 23	?	46·4	66·3
Samarkand		—	149·4	78	e 19 37	[− 4]	—	—	—	—

Continued on next page.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent		—	151·5	75	19 32	[−11]	—	—	e 71·6	86·1
Manila		—	152·0	209	i 19 33k	[−11]	—	—	59·5	—
Andijan		—	153·7	77	e 19 35	[−12]	—	—	—	—
Dehra Dun		—	154·4	103	19 59	{−20}	24 9	?	29·6	43·5
Frunse		—	155·6	72	e 17 3	?	—	—	—	—
Nagoya		—	156·1	268	e 20 18	{− 8}	—	—	—	—
Calcutta		—	156·3	132	20 4	{−23}	30 34	{−24}	—	—
Sumoto	N.	—	157·4	264	e 19 23	[−27]	—	—	—	—
Hukuoka B		—	160·4	259	—	—	(30 34)	{−47}	30·6	—
Phu-Lien		—	160·8	178	e 20 22	{−26}	23 29?	PKS	—	—
Vladivostok		—	161·3	288	i 19 45	[−10]	—	—	27·8	46·3
Hong Kong		—	161·4	201	20 32	{−18}	27 40	PPP	44·2	44·4
Zinsen		—	164·8	267	—	—	e 27 54	PPP	—	—
Zi-ka-wei	Z.	—	165·5	237	19 43	[−16]	i 31 31	{−17}	84·5	98·7
Nanking		—	167·8	233	20 53	{−27}	e 35 50	?	e 44·5	—
Chiufeng		—	173·2	274	19 51	[−14]	i 31 49	{−40}	e 79·7	—

Additional readings and notes :—

La Plata SSS?E = +5m.33s., SSS?Z = +5m.41s.
La Paz iN = +5m.14s. =PP −10s., iE = +10m.12s. and +11m.3s.
Huancayo iPP = +6m.38s., i = +11m.2s. =SS −18s., iSS = +12m.18s.
Port au Prince PP = +11m.50s., PPP = +12m.55s., PS = +18m.8s., iNE = +18m.23s., iNW = +19m.20s.
San Juan ePP = +11m.54s., eSS = +22m.15s.
Cape Town pP? = +11m.28s., PP? = +14m.7s., PPP = +16m.19s., pPPP = +16m.49s., SKKS? = +20m.39s., S = +21m.40s., SS? = +28m.49s., SSS = +31m.32s.
Columbia ePS = +21m.41s., esS = +22m.11s., eSS = +25m.37s.
Little Rock epP = +12m.20s., esS = +22m.23s. ; T_0 = 21h.45m.34s.
Christchurch pPZ = +12m.16s., isSN = +22m.23s., L_qEN = +32·9m., iEN = +34·9m.
Charlottesville eSS = +26m.7s. =SS −7s., eSSS = +32m.4s.
St. Louis ipPN = +12m.29s., iPPN = +14m.40s., iN = +22m.33s. =PS −18s., isSE = +22m.43s., iSSEN = +26m.53s. ; T_0 = 21h.45m.37s.
Florissant ipPZ = +12m.27s., iPPZ = +14m.55s., ePPPZ = +16m.41s., iSPEN = +21m.59s., ipSEN = +22m.29s., isS = +22m.45s. ; T_0 = 21h.45m.34s.
Tucson e = +22m.33s. =PS −21s., epS = +22m.46s., ePS = +23m.1s., e = +25m.35s., eSS = +27m.21s., e = +27m.49s. and +30m.45s.
Pittsburgh i = +22m.44s. =PS −14s., eSS = +27m.9s.
Fordham iN = +12m.29s., iE = +22m.16s., iN = +22m.35s. =PS −25s., iE = +22m.52s.
Johannesburg +22m.41s. =PS −22s., +22m.53s., and +23m.29s.
Oak Ridge iPZ = +12m.9s., ePNE = +12m.17s., epPZ = +12m.29s. and +12m.35s., iPS = +23m.8s., eSSNW = +27m.33s. ; T_0 = 21h.45m.24s.
Ann Arbor = +23m.11s. =PS −14s., eE = +27m.53s., eN = +28m.59s.
Chicago iPS = +23m.10s., e = +26m.29s., eSS = +27m.34s.
Toronto iPS = +23m.6s. ; T_0 = 21h.45m.32s.
Riverside eSKSN = +22m.33s., e$(PKP)_2$Z = +59m.1s.
Mount Wilson e$(PKP)_2$Z = +59m.4s.
Pasadena ipPZ = +12m.57s., isPZ = +13m.10s., iPPZ = +15m.43s., eSKSEN = +22m.38s., e$(PKP)_2$Z = +39m.21s., e$(PKP)_3$Z = +59m.4s., eZ = +59m.36s.
Ottawa PPN = +15m.47s., iN = +22m.36s. =SKS −32s., PSE = +23m.37s., SS = +27m.59s., SSSE = +34m.59s. ; T_0 = 21h.45m.30s.
Branner iE = +12m.53s., iEN = +12m.58s., iN = +13m.3s. and +13m.10s., iE = +13m.20s., iN = +13m.25s. and +13m.34s.
Berkeley iZ = +13m.21s., iSZ = +23m.7s.
Ukiah e = +23m.59s. =S +8s., eSS = +30m.29s.
Bozeman eSS = +30m.11s., eSSS = +33m.43s.
Melbourne i = +25m.9s., +30m.32s. =SS +13s. and +40m.31s.
Riverview eE = +24m.17s. =S −12s.
Malaga PP = +17m.38s., pPP = +18m.16s., PPP = +19m.38s., e = +25m.30s. and +26m.25s. =PS −11s., SS = +31m.38s., e = +36m.54s.
Tananarive SKS = +23m.51s., PPS = +26m.53s., N = +39m.29s.?
Adelaide i = +17m.35s. =PP +13s.
Granada PP = +17m.39s.
Toledo PP = +17m.44s., SKS = +24m.6s., PS = +26m.29s.
Algiers PP = +18m.3s., i? = +32m.29s. =SS +8s.
Sitka ePS = +28m.29s., eSS = +34m.29s.
Paris e = +28m.10s. =PS −26s.
Kew iE = +25m.49s., iSPZ = +28m.15s., eSSEN = +33m.29s., eSSSEN = +38m.29s.?
Bidston i = +33m.54s.

Continued on next page.

Uccle ePPEZ = +19m.7s., iZ = +19m.12s., iSKKSE = +26m.5s., iS = +26m.49s., iPPSE = +29m.43s., iSS = +34m.57s.. SSSE = +38m.46s.
Zurich e = +19m.2s. =PP −17s.
Chur e = +18m.25s.
Strasbourg SKKS = +25m.58s., iS = +26m.57s., ePS = +28m.50s., ePPS = +29m.38s., eSS = +34m.49s., eSSS = +38m.43s.
De Bilt eN = +26m.53s., eE = +28m.50s., eZ = +28m.59s.
Stuttgart ePP = +19m.14s., eSEN = +26m.57s., ePS = +28m.50s.
Triest ePPP = +21m.50s., iPS = +28m.57s., iPPS = +29m.55s., iSS = +35m.11s., i = +39m.3s. =SSS +35s. and +46m.19s.
Göttingen eEN = +29m.11s. =PS −17s.
Zagreb e = +35m.29s.? =SS −19s., +39m.11s., and +43m.29s.?
Cheb e = +36m.18s.
Prague e = +31m.29s.
Vienna i = +19m.49s., +21m.26s., +22m.18s., and +29m.37s. =PS −9s.
Helwan i = +26m.42s. =SKKS −26s., +27m.33s., and +29m.32s. =PS −19s.
Copenhagen eEZ = +22m.29s. =PPP −4s., eE = +26m.18s., iEN = +26m.52s. = SKKS −22s., eEN = +27m.44s., eN = +28m.41s., eEN = +29m.47s. = SKSP −5s., SS = +36m.3s.
Königsberg eE = +30m.23s. =PS −10s. and +31m.54s.
Ksara PP = +20m.31s., PPP = +23m.19s., PPS = +31m.53s., SS = +37m.25s.
Helsingfors iPPEZ = +20m.53s., ePKSZ = +21m.56s., eSKKSE = +27m.41s., ePPSE = +32m.39s., e?E = +34m.6s., eSSEN = +37m.38s., e?EN = +40m.6s., eSSSE = +43m.29s. : T_0 =21h.45m.38s.
Pulkovo iPP = +21m.1s., PKS = +22m.2s., SKKS = +27m.51s., SKSP = +31m.22s. =PS −10s., eSS = +38m.17s.
Amboina i = +21m.11s. =PP −21s. and +22m.16s. =PKS −27s.
Kucino iPKS = +22m.12s., ePPP = +24m.19s., ePS = +31m.15s. =SKSP −22s.
Tiflis eE = +18m.49s. =PKP −24s., +21m.27s. =PP −15s., +21m.58s., +33m.21s., and +39m.5s. =SS −22s.
Baku PP = +21m.49s.
Bombay PPE = +22m.34s., PPSE = +35m.4s., SS = +41m.4s.
Sverdlovsk iPP = +22m.43s., iPKS = +23m.15s., iPPP = +26m.1s., iPS = +33m.37s., iPPS = +35m.27s., iSS = +41m.11s., SSS = +46m.53s.
Samarkand i = +20m.29s.
Tashkent ePP = +23m.5s., iSS = +42m.5s.
Manila iN = +20m.34s., iEZ = +42m.39s. =SS −23s., iN = +43m.38s.
Calcutta SS = +44m.1s.
Vladivostok e = +20m.11s., +20m.36s. =PKP_2 −24s., +23m.7s. =PKS −30s., +24m.15s. =PP −8s., and +24m.59s.
Hong Kong PP = +23m.59s., ? = +29m.35s.
Zi-ka-wei iZ = +20m.55s. =PKP_2 −14s., +21m.23s., +24m.43s., +29m.18s., +44m.5s., and +51m.29s. =SSS −6s.
Nanking iPPZ = +24m.45s.
Chiufeng i = +20m.20s., SKS? = +25m.17s. =PP −5s., i = +29m.37s., iZ = +31m.54s., iEZ = +35m.37s. =SKSP −22s.
Long waves were also recorded at Honolulu and Piacenza.

March 1d. Readings also at 0h. (Tiflis), 1h. (La Paz, Piatigorsk, and near Grozny), 3h. (Adelaide and Tiflis), 4h. (Riverview, Vladivostok, and near Mizusawa), 5h. (Sverdlovsk and Uccle), 6h. and 7h. (near Mizusawa), 9h. (Tiflis), 10h. (Baku and Sverdlovsk), 14h. (near Sumoto), 15h. (Grozny), 18h. (Tiflis, Tyosi, near Mizusawa, also near Amboina), 20h. (Nagoya), 21h. (near Batavia and Malabar), 22h. (near Mizusawa).

March 2d. Readings at 0h. (near Sumoto), 2h. (Grozny and near Tyosi), 3h. (Wellington), 5h. (near Amboina, near Nagoya, and Tyosi), 6h. (Mizusawa), 9h. (La Plata), 10h. (near Kobe and Sumoto), 12h. (Mizusawa, Nagoya, Kobe, Osaka, Sumoto, and near Tyosi), 13h. (Adelaide, Melbourne, Riverview, Sydney, Arapuni, Christchurch, and Wellington), 14h. (near Messina), 17h. (Christchurch and Wellington), 18h. (Sverdlovsk), 19h. (Adelaide, Melbourne, Riverview, Sydney, Manila, Vladivostok, Bombay, Tiflis, Tashkent, and Ksara), 20h. (Christchurch, Wellington, Perth, Sverdlovsk, Paris, and Strasbourg), 21h. (De Bilt and Tucson), 23h. (Vladivostok, Tashkent, and near Santiago).

March 3d. 0h. 34m. 5s. Epicentre 25°·0N. 102°·0E. (as on 1929 March 22d.). X.

A = −·188, B = +·887, C = +·423; D = +·978, E = +·208;
G = −·088, H = +·413, K = −·906.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Phu-Lien		6·0	134	e 1 18	− 7	e 2 5	−28	2·3	2·5
Hong Kong		11·5	101	4 57	S	(4 57)	+ 7	5·8	6·0
Nanking		16·4	60	—	—	e 7 8	+20	i 9·0	—
Zi-ka-wei	z.	18·2	66	—	—	e 8 49	+80	i 9·8	11·9
Chiufeng		19·2	35	e 4 25	+ 4	e 8 10	+20	e 10·3	12·7
Manila		20·6	117	4 37	+ 1	8 9	− 9	10·0	10·9
Medan		21·6	189	4 44	− 2	11 11	L	(11·2)	—
Bombay		27·6	263	—	—	e 10 55?	+30	—	—

Additional readings :—
Hong Kong S = +5m.41s. =S* +1s.
Nanking iS = +8m.43s.
Medan i = +11m.54s.
Long waves were also recorded at Koti, Baku, and Sverdlovsk.

March 3d. 16h. Asiatic shock for which no epicentre is available. The readings are :—
Colombo P =16h.5m.56s., M =14m.20s.
Bombay iP =16h.10m.43s., iS =14m.33s., eL =17m.
Hyderabad P =16h.10m.52s., S =15m.6s., L =17m.48s., M =20m.24s.
Frunse e =16h.11m.30s.
Calcutta P =16h.11m.31s.
Andijan eP =16h.13m.57s.
Agra eE =16h.15m.45s.
Manila e =16h.16m.5s., iE =27m.42s. and 28m.0s.
Baku e =16h.20m.53s. and 26m.35s., L =29m.
Mount Wilson ePZ =16h.25m.50s.
Pasadena iPZ =16h.25m.50s.
Riverside iPZ =16h.25m.50s.
La Jolla iPZ =16h.25m.53s.
Long waves were also recorded at Vladivostok.

March 3d. Readings also at 1h. (Calcutta and Tunis), 2h. (near Santiago (2)), 4h. (Erevan), 5h. (near La Paz), 6h. (Tiflis), 7h. (near Tyosi), 8h. (Andijan, Baku, and Tashkent), 10h. (Paris), 12h. (near Tananarive), 13h. (Adelaide, Christchurch, Wellington, Huancayo, La Paz, Sverdlovsk), 14h. (Mizusawa and Tashkent), 15h. (Baku, Sverdlovsk, Tashkent, and Tiflis), 17h. (near Apia), 18h. (near Manila), 21h. (Mizusawa, Nagoya, and near Tyosi).

March 4d. 5h. 55m. 7s. Epicentre 16°·7S. 167°·8E. (as on 1933 Nov. 19d.). R.2.

A = −·936, B = +·202, C = −·287; D = +·211, E = +·977;
G = +·281, H = −·061, K = −·958.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	10·2	100	2 29?	+ 5	5 23	Sg	—	—
Arapuni	22·5	164	—	—	i 9 17	SS	—	—
Sydney	22·7	218	i 5 18	PP	i 9 13	+14	11·5	13·3
Riverview	22·8	218	i 4 59k	0	i 9 4	+ 3	12·4	—
New Plymouth	23·1	167	4 53?	− 9	—	—	—	—
Wellington	25·3	168	5 23	0	9 57	+11	12·9	—
Christchurch	27·2	172	i 5 41	+ 1	i 10 23	+ 5	13·4	—
Melbourne	29·1	219	e 6 8	+11	10 48	− 2	14·3	15·9
Adelaide	31·8	228	e 6 35	+14	i 11 29	− 3	i 13·1	19·2
Palau	40·8	304	7 42	+ 3	—	—	—	—
Amboina	41·0	285	i 7 32	− 8	i 13 31	−20	e 22·9	—
Perth	49·3	242	16 8	S	20 23	?	25·3	27·9
Manila	55·8	302	9 37a	+ 3	17 15	− 5	26·5	—
Hukusima	60·2	336	10 6	0	—	—	—	—
Batavia	60·5	272	i 10 7a	− 1	i 18 20	− 3	e 34·0	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagano		60·5	334	10 6	− 2	—	—	—	—
Karenko		60·7	311	10 12	+ 3	—	—	—	—
Nagasaki		61·3	325	10 9	− 5	18 33	0	—	—
Hong Kong		65·4	305	10 43	+ 2	19 23	− 2	—	32·9
Nanking		67·7	317	e 10 56	0	—	—	—	—
Vladivostok		68·2	333	i 11 0	+ 1	i 20 0	+ 1	27·9	—
Medan		71·2	280	11 17	− 1	i 21 6	PS	—	—
Chiufeng		74·4	322	i 11 36a	− 1	21 8	− 5	e 35·8	—
Ukiah		85·1	47	—	—	e 23 20	+11	e 38·9	—
Berkeley	E.	85·2	48	—	—	e 22 47	[−14]	e 38·4	—
Santa Barbara	Z.	85·6	53	i 12 25	−11	—	—	—	—
Pasadena		86·7	53	i 12 41a	− 1	—	—	e 39·6	—
Mount Wilson		86·8	53	i 12 43	+ 1	—	—	—	—
La Jolla		86·9	55	i 12 42	− 1	—	—	—	—
Riverside	E.	87·2	53	i 12 45	+ 1	—	—	—	—
Haiwee	Z.	87·6	52	e 12 47	+ 1	—	—	—	—
Tinemaha		87·8	50	i 12 47	0	—	—	—	—
Victoria	E.	89·1	38	24 47	PS	—	—	41·4	44·4
Colombo		90·0	277	12 58	+ 1	23 28	[− 5]	—	53·5
Tucson		91·8	57	e 12 59	− 7	e 23 37	[− 6]	e 42·8	—
Kodaikanal	E.	93·3	280	23 48	SKS	(23 48)	[− 4]	—	—
Bozeman		95·9	45	—	—	e 29 53	?	44·9	—
Agra	E.	97·3	296	e 17 12	PP	i 23 40	[−33]	—	—
Bombay		99·9	287	e 16 53?	?	e 24 17	[− 8]	—	—
Frunse		103·6	311	e 15 31	?	—	—	—	—
Andijan		104·8	308	e 17 21	?	—	—	—	—
Tashkent		107·2	309	i 18 39	PP	26 26	{+39}	e 46·8	63·6
Huancayo		111·3	111	e 19 19	PP	e 28 33	PS	e 52·7	—
Tananarive	E.	111·4	241	—	—	e 42 12	SSSS	—	60·0
Chicago		111·8	50	—	—	e 28 51	PS	e 52·0	—
Sverdlovsk		113·3	325	i 18 45	[+17]	26 22	{− 8}	63·2	66·2
La Paz		115·6	119	e 19 0	[+26]	25 46	[+10]	56·9	63·5
Columbia		116·5	59	—	—	e 29 39	PS	e 60·2	—
Georgetown		119·7	54	20 11	PP	30 1	PS	e 54·9	—
Ottawa		120·3	46	—	—	e 27 23	{+ 5}	e 50·9	—
Baku		121·8	307	18 55	[+ 5]	—	—	57·9	76·3
Oak Ridge		123·6	49	—	—	e 30 26	PS	e 58·2	—
Tiflis		125·5	310	19 3	[+ 5]	27 46	{− 6}	61·6	83·1
Erevan		126·0	308	e 19 9	[+10]	—	—	—	—
Pulkovo		127·2	335	e 18 1	[−60]	—	—	66·9	73·2
San Juan		128·7	79	i 23 27	PPP	e 31 36	PS	e 60·9	—
Helsingfors		129·0	338	e 19 53?	[+48]	—	—	—	—
Theodosia		131·3	316	e 19 9	[0]	e 22 36	PKS	—	—
Simferopol		132·2	316	e 19 11	[+ 1]	—	—	—	—
Yalta		132·3	315	e 19 10	[− 1]	22 38	PKS	—	—
Sebastopol		132·7	316	(e 19 13)	[+ 2]	e 19 13	PKP	—	—
Ksara		133·8	300	e 19 15	[+ 2]	—	—	—	—
Hamburg		139·3	340	i 19 26k	[+ 6]	—	—	e 76·9	—
Vienna		140·8	329	e 19 21k	[− 2]	—	—	—	—
Uccle		143·4	343	i 19 31	[+ 2]	—	—	e 70·9	—
Stuttgart		143·5	336	i 19 30a	[+ 1]	—	—	74·9	—
Triest		143·9	329	i 19 30a	[− 1]	—	—	e 64·9	74·9
Strasbourg		144·2	337	i 19 33a	[+ 1]	—	—	e 64·9	—
Venice		144·6	330	i 19 37	[+ 4]	e 29 46	{− 5}	—	—
Zurich		144·8	335	i 19 35	[+ 2]	—	—	—	—
Chur		144·9	335	i 19 35	[+ 1]	—	—	—	—
Paris		145·8	342	i 19 37a	[+ 1]	—	—	77·9	85·9
Neuchatel		145·8	336	i 19 36	[0]	—	—	—	—
Piacenza		146·2	332	19 45	[+ 9]	—	—	—	89·9
Florence		146·4	328	e 19 15	[−21]	—	—	—	—
Prato		146·4	329	e 19 14	[−22]	—	—	—	—
Toledo		155·8	345	e 19 50	[+ 1]	—	—	—	—
Granada		158·2	341	e 20 25	{−11}	—	—	e 83·3	—
San Fernando		159·6	346	20 25	{−17}	—	—	86·9	98·9

For Notes see next page.

NOTES TO MARCH 4d. 5h. 55m. 7s.

Additional readings :—
Riverview eZ = +5m.10s. =PP −10s., iEN = +9m.9s.
Christchurch iNZ = +5m.53s., isSN = +10m.48s., L_qE = +11·7m.
Melbourne i = +6m.14s., SS = +12m.41s.
Perth P_cP = +17m.53s., P_cS = +21m.53s., SS = +23m.13s., SSS = +23m.33s.
Batavia P = +10m.9s.
Hong Kong ? = +16m.37s.
Pasadena iZ = +16m.5m. =PP +6s.
Tashkent ePPP = +19m.19s., PS = +28m.8s., eSS = +33m.35s., eSSS = +37m.59s.
Huancayo eSS = +34m.53s.
Sverdlovsk iPP = +19m.20s., PS = +28m.58s., eSS = +35m.5s., L_q = +46·5m.
La Paz PSE = +29m.46s., SSE = +36m.12s.
Georgetown eSSNZ = +36m.5s. ; T_o =5h.55m.15s.
Ottawa e = +30m.11s. =PS +6s., eE = +37m.17s.
Baku ePP = +20m.28s.
Oak Ridge iZ = +33m.54s., eNW = +37m.41s. =SS +22s. and +52m.49s.
Tiflis eE = +20m.53s. =PP +6s., PSE = +30m.48s.
Pulkovo e = +22m.16s.
Helsingfors ePPEN = +22m.53s.?
Ksara ePP = +22m.24s., SKP = +22m.47s.
Vienna iPZ = +19m.28s., i = +20m.49s., PP = +22m.30s.
Stuttgart iZ = +19m.43s., e = +21m.15s., ePP = +22m.40s.
Triest PP = +21m.56s., SKP = +22m.54s.
Strasbourg iZ = +19m.58s., iPPZ = +22m.50s.
Long waves were also recorded at Pittsburgh, Scoresby Sund, Kucino, and other European stations.

March 4d. 11h. 17m. 38s. Epicentre 55°·2N. 165°·0E. (as on 1930 April 5d.). R.2.

A = −·551, B = +·148, C = +·821 ; D = +·259, E = +·966 ; G = −·793, H = +·213, K = −·571.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sikka		14·6	255	1 30	?	—	—	—	—
Sapporo		19·5	242	4 35	+11	—	—	—	—
Mizusawa		22·6	235	e 4 59	+ 2	e 9 3	+ 6	10·6	—
Sendai		23·4	234	5 6	+ 1	9 19	+ 7	—	—
Hukusima		24·0	234	5 11	+ 1	9 19	− 4	—	—
Vladivostok		24·4	254	5 11	− 3	10 5	SS	12·6	14·7
Mito		25·1	232	5 26	+ 5	9 48	+ 5	—	—
Tyosi		25·5	230	5 30	+ 5	—	—	—	—
Oiwake		26·0	235	5 31	+ 2	10 2	+ 4	—	—
Nagoya		27·8	236	e 5 45	0	—	—	—	—
Sumoto		29·4	237	e 7 3	?	e 14 10	?	16·8	20·4
Keizyo		31·0	252	e 12 15	S	(e 12 15)	+55	e 19·6	22·1
Zinsen		31·3	253	e 11 19	S	(e 11 19)	− 5	17·3	—
Hukuoka		32·2	243	—	—	e 14 16	+54	e 16·5	—
Chiufeng		35·3	267	e 6 42	−10	i 12 19	− 7	16·7	24·3
Zi-ka-wei	Z.	38·8	250	e 7 14	− 8	i 16 54	?	22·6	27·7
Nanking		39·6	255	e 7 32	+ 3	—	—	e 20·4	27·2
Hong Kong		49·8	250	15 52	S	(15 52)	− 6	27·7	31·5
Berkeley	E.	50·3	80	—	—	i 16 29	+24	—	—
Bozeman		51·0	64	—	—	e 23 22	?	—	—
Sverdlovsk		52·4	320	i 9 0	− 9	i 16 19	−15	i 27·9	32·4
Manila		52·8	238	i 9 12a	0	16 41	+ 2	24·4	29·4
Tinemaha		53·2	77	i 9 17	+ 2	—	—	—	—
Scoresby Sund		54·2	4	9 34	+11	16 53	− 5	22·4	—
Mount Wilson		55·4	79	i 9 31	− 1	—	—	—	—
Pasadena		55·4	79	e 9 28	− 4	—	—	—	—
Frunse		56·2	299	(e 9 55)	+18	(e 17 13)	−12	(e 27·7)	—
La Jolla	Z.	56·8	80	i 10 9	+27	—	—	—	—
Andijan		58·9	298	e 9 53	− 4	17 48	−13	29·7	—
Pulkovo		59·5	336	e 9 40	−21	i 17 55	−14	28·4	34·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent		60·0	301	i 10 18	+14	—	—	—	—
Calcutta		64·1	274	e 10 20	−13	18 21	−48	31·1	37·8
Agra		66·3	285	—	—	i 19 17	−19	—	37·6
Copenhagen		66·8	345	—	—	19 33	− 9	29·4	—
Ottawa		67·1	43	—	—	e 19 22?	−24	e 29·4	—
Grozny		68·9	319	e 10 59	− 5	e 19 48	−20	e 28·4	—
Hamburg		69·3	346	e 11 10	+ 4	—	—	e 33·4	39·4
Pittsburgh		69·6	48	—	—	e 28 12	?	e 33·4	—
Baku		69·7	315	e 10 59	−10	i 20 6	−12	32·4	45·3
Sotchi		70·8	323	e 10 57	−19	e 20 35	+ 4	e 39·4	—
Oak Ridge		71·1	41	—	—	e 21 15	PS	e 31·1	—
De Bilt		71·4	348	—	—	e 20 22	−16	e 31·4	43·7
Prague		71·9	342	—	—	e 31 22?	?	e 39·4	45·9
Erevan		72·0	318	e 11 22	− 1	e 20 41	− 4	e 40·4	—
Cheb		72·2	343	—	—	e 25 33	SS	e 32·4	43·4
Uccle		72·7	349	—	—	e 20 22?	−31	e 31·4	—
Vienna		73·3	340	e 11 29	− 2	—	—	e 38·4	52·4
Medan		73·7	253	e 12 19	+46	e 20 42	−23	e 39·4	—
Hyderabad		73·8	278	21 42	S	(21 42)	+36	36·2	42·2
Stuttgart		74·1	345	e 11 34	− 1	e 21 22	+12	e 37·4	46·4
Strasbourg		74·5	346	e 11 52?	+15	e 25 22?	SS	e 34·4	—
Paris		75·0	350	—	—	e 25 22?	SS	38·4	47·4
Bombay	E.	75·7	283	e 11 45	+ 1	i 21 15	−13	—	46·0
Neuchatel		76·1	346	e 11 36	−11	—	—	—	—
Triest		76·2	341	i 11 12	−35	i 21 6	−28	e 33·4	42·9
Batavia		77·8	240	e 20 2	?	21 38	−14	—	—
Kodaikanal	E.	80·2	275	21 22	S	(21 22)	−56	—	—
Colombo		81·5	271	13 24	+68	22 17	−15	41·9	48·2
Melbourne		94·6	196	33 55	?	38 17	?	40·4	—

Additional readings and note :—
Sumoto eZ = +7m.13s.
Chiufeng iEZ = +8m.8s. =PP +4s.
Hong Kong S = +22m.30s., SS = +25m.20s.
Sverdlovsk iL_g = +24·0m.
Frunse readings have been *increased* by 3m.
Tinemaha iN = +13m.3s.
Pulkovo SS = +22m.10s.
Tashkent i = +10m.51s. = P_cP −2s.
Ottawa e = +24m.22s.? and +27m..22s.?
Oak Ridge eNW = +24m.55s. =SS −4s. and +28m.17s. =SSS −24s.
Uccle e = +25m.22s.? =SS −1s.
Vienna i = +13m.43s. =PP −24s.
Triest e = +31m.4s.
Long waves were also recorded at Columbia, San Juan, Phu-Lien, Riverview, Christchurch, Wellington, Perth, Tiflis, Ksara, and at other Japanese, Crimean, and European stations.

March 4d. Readings also at 0h. (Apia (2)), 2h. (near Nagoya), 6h. (Mizusawa and Vladivostok), 7h. (Andijan), 10h. (Kucino and Tashkent), 12h. (Batavia, near Malabar, near Andijan, and Frunse), 16h. (Erevan), 17h. (near Tyosi), 19h. (near Mizusawa), 22h. and 23h. (4) (near Reykjavik).

March 5d. 5h. 52m. 53s. Epicentre 24°·5N. 122°·2E. (as on 1933 Feb. 19d.)- R.3.
Close to the position 24°·5N. 122°·1E. given by the Formosa stations.
An epicentre one degree further N. would, however, fit the more distant stations better.

A = −·485, B = +·770, C = +·415; D = +·846, E = +·533;
G = −·221, H = +·351, K = −·910.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Karenko		0·7	227	i 0 16a	+ 6	0 25	+ 7	—	—
Taihoku		0·8	311	i 0 11a	0	0 22	+ 1	—	—
Taityu		1·4	256	e 0 38a	S	0 59	+23	—	—
Arisan		1·6	233	i 0 24a	P*	0 46	S*	—	—
Taito		2·0	209	0 33	Pg	1 2	Sg	—	—
Tainan		2·4	230	e 0 37	P*	1 3	+ 1	—	—
Takao		2·6	223	e 0 47	Pg	1 24	Sg	—	—
Hokoto		2·7	248	e 0 21	−18	0 58	−11	—	—
Zi-ka-wei	N.	6·7	354	e 1 29	− 6	—	—	—	—
Hong Kong		7·7	255	1 40	− 9	3 20	+ 4	3·7	5·6
Nanking		8·2	340	1 45	−11	i 3 9	−20	e 4·0	4·3
Chiufeng		16·4	343	e 3 33	−13	e 6 32	−16	—	—
Vladivostok		20·2	21	4 21	−11	e 8 13	+ 3	9·6	—
Tashkent		46·7	308	—	—	i 17 12	?	e 22·5	24·0
Sverdlovsk		54·2	325	i 9 7	−16	16 33	−25	26·1	—

Additional readings:—
Tashkent e = +20m.13s.
Long waves were also recorded at Phu-Lien.

March 5d. 11h. 46m. 19s. Epicentre 40°·4S. 175°·6E. N.1.
See Bullen 1936 " on near Earthquakes in the vicinity of New Zealand," N.Z.J. Sci. and Tech. xviii, p. 493, and Hayes 1935, " The Pahiatua Earthquake," N.Z.J. Sci. and Tech. xix, p. 382.
The results of these papers were modified in the final paper by Bullen " On the epicentre of the 1934 Pahiatua Earthquake," N.Z.J., Sci. and Tech. xx, No. 2B, p. 61B.
The adopted Epicentre is the position C. of this last paper and the T_0 is derived from the corresponding △s.

Probable error of epicentre ±0°·25.

A = −·759, B = +·058, C = −·648; D = +·077, E = +·997;
G = +·646, H = −·050, K = −·762.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Bunnythorp	0·1	0	0 41?	?	0 54	?	—	—
Dannevirke	0·4	25	−0 13?	?	—	—	—	—
Wellington	1·1	216	0 19	+ 3	0 34	+ 6	—	—
Hastings	1·2	52	1 41?	?	2 5	?	—	—
New Plymouth	1·8	318	0 55?	Sg	—	—	—	—
Tuai	2·0	37	−0 19	−48	0 17	−34	—	—
Takaka	2·2	258	0 16?	−15	0 49	− 8	—	—
Arapuni	2·3	1	0 41	+ 8	1 11	S*	—	—
Glenmuick	3·1	216	0 15	−29	—	—	—	1·8
Christchurch	3·8	213	0 54	0	1 38	+ 1	—	—
Greymouth	3·9	237	−0 19?	?	0 22	?	—	—
Riverview	20·5	281	i 4 40a	+ 5	i 8 46	SS	9·8	11·2
Sydney	20·5	281	i 4 31	− 4	i 8 36	+20	10·1	10·7
Suva	22·4	7	5 17?	+22	8 59	+ 6	10·7	—
Adelaide	29·6	269	i 6 16	+15	i 11 46?	+48	i 14·5	16·0
Perth	48·1	261	8 41	+ 4	16 1	+27	23·3	25·7
Amboina	56·3	298	i 9 35	− 3	—	—	e 22·7	28·8
Palau	60·9	311	10 12	+ 1	—	—	—	—
Honolulu	66·5	27	e 11 23	(+ 4)	i 19 35	− 4	i 31·4	—
Malabar	68·6	279	11 5	+ 3	20 6	+ 2	e 32·9	38·1

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia		69·9	279	11 8	− 2	20 36	+16	34·4	36·7
Manila		74·8	305	i 11 37a	− 2	21 9	− 9	35·2	40·4
Isigakizima		80·5	314	11 53	−17	22 14	− 7	—	—
Medan		82·5	281	i 11 23	−58	i 22 35	− 7	40·7	47·7
Taihoku		82·5	312	e 12 30	+ 9	22 32	−10	—	—
Tyosi		82·6	332	—	—	e 28 6	SS	e 41·5	44·3
Misima		82·7	331	12 22	0	22 48	+ 4	—	—
Yokohama		82·8	331	12 22	0	22 35	−10	—	—
Tokyo		82·9	332	12 22	− 1	—	—	—	—
Miyazaki		83·1	324	12 22	− 2	22 28	−20	—	—
Kohu		83·4	331	12 24	− 1	22 43	− 8	—	—
Wakayama		83·5	328	12 24	− 2	22 37	−15	—	—
Koti		83·6	326	12 26	0	22 43	−10	—	44·8
Nagoya		83·6	330	12 26	0	22 45	− 8	28·5	—
Sumoto		83·6	328	e 12 21	− 5	e 22 46	− 7	—	45·0
Osaka		83·7	328	12 17	−10	22 29	−25	32·2	46·7
Kobe		83·8	328	12 25a	− 2	e 22 47	− 8	e 36·0	47·9
Maebasi		83·8	332	12 31	+ 4	22 43	−12	—	—
Oiwake		84·0	331	12 26	− 2	22 46	−12	—	—
Santiago		84·2	129	13 26	+57	22 46	[− 7]	—	—
Nagano		84·4	331	12 32	+ 2	22 51	[− 4]	—	—
Nagasaki		84·5	323	e 22 49	S	(e 22 49)	[− 6]	e 42·1	—
Toyooka		84·7	328	e 20 57	?	22 56	[− 1]	36·9	46·2
Hong Kong		84·8	305	12 31	− 1	22 51	[− 7]	40·9	56·9
Sendai		84·8	334	12 32	0	22 56	[− 2]	—	—
Hukuoka		84·9	324	—	—	e 23 14	+ 7	—	53·2
Hukuoka B		84·9	324	e 22 43	SKS	(e 22 43)	[−15]	—	—
Mizusawa		85·5	334	e 12 21	−15	e 22 50	[−13]	—	—
Morioka		86·1	334	12 39	0	22 50	[−17]	—	—
Zi-ka-wei	Z.	87·4	316	i 12 41a	− 4	23 30	− 1	41·0	50·0
Taikyu		87·6	324	e 12 42	− 4	e 23 14	[− 3]	40·2	—
Phu-Lien		88·6	299	e 12 50	− 1	e 23 16	[− 8]	38·7	63·3
Sapporo		89·1	336	13 1	+ 8	23 35	[+ 8]	—	—
Nanking		89·5	314	i 12 59a	+ 4	i 24 49	PS	42·9	49·4
Keizyo		89·8	323	e 12 54	− 2	e 23 18	[−13]	e 34·1	47·9
Zinsen		90·0	323	e 12 55	− 2	e 23 3	[−30]	—	—
La Plata	E.	90·0	138	13 17	+20	23 25	[− 8]	40·3	67·0
	N.	90·0	138	13 11	+14	23 27	[− 6]	40·6	66·4
	Z.	90·0	138	13 5	+ 8	—	—	41·5	58·2
Heizyo		91·6	323	e 37 45	?	—	—	—	—
Vladivostok		92·3	329	i 13 6	− 2	24 1	−16	38·7	54·7
Huancayo		96·2	112	i 13 35	+ 9	i 24 4	[− 3]	44·0	—
Pasadena		96·3	50	e 13 28	+ 2	i 24 51	− 3	e 40·3	—
Mount Wilson		96·4	50	e 13 28	+ 1	e 24 49	− 6	—	—
San Francisco	E.	96·5	46	—	—	e 23 41?	[−27]	e 43·7	—
Riverside	N.	96·6	50	—	—	e 24 54	− 2	—	—
Berkeley	E.	96·7	46	e 13 31	+ 3	e 24 58	+ 1	e 44·1	—
Chiufeng		97·0	318	e 13 28	− 2	i 23 52	[−19]	30·7	50·5
Ukiah		97·1	43	e 13 35	+ 5	i 24 58	− 3	38·6	—
La Paz		98·0	120	i 13 40	+ 6	i 25 12	+ 3	46·2	52·1
Sucre		98·0	124	13 40	+ 6	24 8	[− 8]	46·2	—
Tinemaha		98·3	48	—	—	i 25 8	− 4	e 31·5	—
Colombo		98·9	271	e 13 14	−24	24 14	[− 6]	46·8	58·1
Tucson		99·4	55	e 17 51	PP	i 24 17	[− 6]	e 45·3	—
Calcutta		102·4	288	e 16 13	?	26 47	PS	e 53·9	63·1
Cape Town		102·7	200	14 47	+51	24 50	[+11]	48·7	55·2
Tananarive		103·6	230	18 23	PP	25 53	− 5	43·8	61·9
Seattle		103·8	38	e 18 43	PP	e 24 42	[− 2]	e 47·2	—
Victoria		103·9	37	14 23	+22	24 33	[−12]	43·0	53·1
Sitka		105·8	25	e 18 2	[− 2]	26 4	−12	43·3	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hyderabad		106·6	279	14 2	−12	26 13	−10	46·4	64·1
Johannesburg		106·9	211	18 41	PP	28 11	PS	52·7	54·7
Bozeman		108·1	45	18 51	PP	e 24 56	[− 8]	e 50·7	—
Bombay		111·7	276	14 30	− 9	e 27 12	?	e 54·7	63·4
Agra		112·7	287	e 14 22	−22	24 42	[−43]	51·9	66·3?
Little Rock	E.	113·0	63	e 18 25	[− 2]	—	—	e 51·8	—
Dehra Dun		114·5	290	26 1	SKKS	(26 1)	{−38}	56·8	65·7
Florissant		116·6	60	e 14 39	−24	i 26 49	{− 4}	—	—
St. Louis		116·6	60	e 19 35	PP	i 25 27	[−12]	e 55·2	58·7
Chicago		120·0	58	e 20 6	PP	e 25 11	[−39]	55·8	—
Columbia		120·5	69	e 20 26	PP	e 25 42	[−10]	e 61·1	—
Ann Arbor		122·7	60	—	—	e 26 5	[+ 7]	e 55·2	66·1
San Juan		123·1	94	e 20 41	PP	i 25 52	[− 8]	—	—
Frunse		123·3	301	e 15 55	+20	e 27 23	{−16}	e 55·7	—
Andijan		123·7	297	18 57	[+ 3]	e 30 37	PS	e 55·7	—
Pittsburgh		124·4	63	e 20 47	PP	i 27 31	{−14}	e 58·2	—
Georgetown	N.	125·7	66	i 20 56	PP	—	—	—	—
Tashkent		126·1	297	e 18 5	[−54]	i 30 39	PS	e 56·7	79·3
Toronto		126·1	60	e 15 53	+ 4	28 53	{+56}	60·4	—
Samarkand		126·9	293	e 19 4	[+ 3]	—	—	e 67·8	—
Fordham		128·7	65	e 21 14	PP	e 27 59	{−14}	e 58·7	—
Ottawa		129·2	59	21 15	PP	28 5	{−11}	e 53·7	—
Oak Ridge		131·0	64	e 19 7	[− 2]	e 28 6	{−22}	e 62·7	—
Sverdlovsk		135·9	315	i 19 17	[+ 1]	i 28 39	{−21}	77·2	79·3
Baku		139·4	289	19 16	[− 4]	—	—	63·7	84·3
Grozny		143·1	291	e 19 17	[−10]	(e 33 44)	SKSP	e 33·7	—
Erevan		143·2	286	e 19 59	[+31]	—	—	e 47·7	—
Tiflis		143·4	289	i 19 29	[0]	e 26 53	SKS	—	85·7
Sotchi		147·4	290	—	—	e 31 41	?	e 60·8	—
Ksara		147·5	270	e 19 44	[+ 6]	30 2	{− 6}	—	77·7
Kucino		148·5	312	19 39	[0]	e 26 45	SKS	44·5	86·5
Scoresby Sund		148·6	11	19 42	[+ 2]	42 23	SS	—	—
Helwan		149·2	261	19 46	[+ 4]	i 33 33	SKSP	43·9	88·0
Theodosia		150·6	292	e 19 54	[+11]	—	—	87·7	—
Pulkovo		151·1	324	i 19 40	[− 3]	27 1	PPP	—	—
Yalta		151·5	291	e 19 47	[+ 3]	e 30 14	{−17}	80·7	—
Dakar		151·8	153	19 41	[− 3]	—	—	78·7	86·0
Helsingfors		153·2	328	e 23 38	PP	e 30 15	{−25}	e 63·7	—
Upsala		156·2	332	—	—	e 34 5	SKSP	e 67·7	99·6
Königsberg		158·1	319	e 19 30	[−21]	—	—	e 81·9	94·4
Bergen		159·1	346	29 18	PPP	e 45 18	SS	76·7	93·7
Copenhagen		161·1	330	19 55	[0]	31 0	{−24}	—	—
Belgrade		161·3	292	e 20 9a	[+14]	—	—	e 83·6	—
Budapest		161·8	301	20 23	[+27]	(e 38 41?)	?	e 38·7	94·7
Vienna		163·3	305	i 19 58k	[+ 1]	31 37	{+ 1}	e 49·7	102·7
Hamburg		163·7	329	e 19 57	[− 1]	i 36 17	?	e 78·7	95·7
Prague		163·7	313	e 18 47	[−71]	e 24 41	PP	e 67·7	86·7
Leipzig		164·1	319	e 24 41	PP	e 34 59	SKSP	e 69·7	101·2
Graz		164·2	302	e 20 17	[+19]	28 27	PPP	e 50·7	89·4
Zagreb		164·2	297	e 19 58	[0]	e 32 4	{+23}	e 73·7	98·0
Edinburgh		164·5	357	—	—	i 35 41	SKSP	e 79·7	101·7
Jena		164·7	319	e 20 1	[+ 2]	e 34 41	SKSP	e 74·7	96·2
Cheb		164·8	315	e 24 49	PP	e 35 8	SKSP	e 83·7	100·7
Göttingen		165·1	323	i 19 58	[− 1]	e 31 41?	{− 5}	e 72·9	99·6
Durham		165·5	354	31 26	SKKS	(31 26)	{−22}	—	103·7
Triest		165·8	298	20 2k	[+ 2]	i 35 26	SKSP	70·7	83·7
De Bilt		166·6	334	i 20 1a	[0]	e 28 49	PPP	e 87·7	94·6
Feldberg	E.	166·7	321	—	—	e 32 29	[+35]	e 73·4	97·7
Venice		166·8	298	19 41?	[−20]	i 35 23	SKSP	90·7	—
Bidston		167·0	356	e 20 1	[0]	i 31 51	{− 4}	e 81·7	108·2

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Stuttgart	167·3	316	e 19 59a	[− 2]	e 31 16	PPPP	e 78·7	99·7
Karlsruhe	167·5	318	e 16 41?	?	—	—	e 81·7	102·2
Florence	167·9	292	19 59	[− 3]	38 41	?	76·7	87·7
Prato	168·0	292	e 20 5	[+ 3]	38 41	?	—	87·3
Uccle	168·0	333	i 20 1	[− 1]	—	—	78·7	95·6
Chur	168·1	308	e 20 16	[+14]	—	—	—	—
Strasbourg	168·2	318	i 20 2a	[0]	e 26 41	?	e 73·7	98·2
Oxford	168·4	351	e 25 9	PP	—	—	e 74·4	112·7
Zurich	168·4	312	e 20 16	[+14]	—	—	—	—
Kew	168·6	347	i 20 1a	[− 2]	i 33 17	?	70·7	102·2
Piacenza	168·7	299	e 20 11	[+ 8]	35 29	SKSP	58·2	97·5
Basle	168·8	314	e 19 57	[− 6]	—	—	—	—
Neuchatel	169·5	312	e 20 2	[− 1]	—	—	—	—
Paris	170·3	332	e 20 2	[− 2]	—	—	45·7	100·7
Puy de Dôme	172·4	319	e 27 38	?	e 47 45	?	e 88·7	—
Algiers	173·2	241	20 9	[+ 4]	32 14	{−15}	73·7	85·4
Barcelona	175·0	285	—	—	e 30 59	?	e 56·6	101·3
Bagnères	175·7	310	e 20 41?	[+34]	e 26 17	?	46·7	—
San Fernando	175·8	159	20 23	[+16]	36 58	?	82·2	—
Almeria	176·1	204	e 20 6	[− 1]	31 38	{−65}	e 56·4	100·6
Malaga	176·3	180	21 42	{−16}	32 22	{−23}	85·7	—
Tortosa	176·3	279	e 24 41?	?	—	—	e 84·7	100·9
Alicante	176·4	238	e 20 14	[+ 7]	32 30	{−15}	e 83·1	92·1
Serra do Pilar	176·7	75	21 55	{− 5}	—	—	106·9	—
Granada	176·8	191	19 56	[−11]	32 38	{− 9}	78·7	92·5
Toledo	179·4	209	(21 56)	{−16}	21 56	PKP_2	56·7	105·3

Additional readings and notes :—
Wellington P* = +22s., S* = +41s.
New Plymouth i = +59s. = S_g +6s.
Tuai P_g = −2s., i = +32s. = P* +1s.
Takaka i = +28s. and +37s. = P_g −1s., S_g = +57s.
Arapuni P* = +50s.
Glenmuick P* = +25s.
Christchurch iZ = +1m.14s. and +1m.27s.
Riverview i = +4m.45s.
Suva i = +6m.23s.
Adelaide i = +7m.15s. and +13m.11s.?
Perth P_cP = +9m.51s., PP = +10m.51s., PPP = +11m.41s., PPPP = +12m.12s., SP = +16m.16s., SS = +20m.1s., SSS = +21m.3s., SSSS = +21m.41s., SSSSS = +22m.10s.
Honolulu e = +20m.50s. = S_cS +11s. and +27m.17s. = SSS −15s.
Batavia i = +21m.34s. = S_cS +30s.
Medan i = +22m.43s.
Koti eN = +23m.35s. = PS +1s., eE = +36m.11s.
Sumoto PZ = +12m.23s., ePE = +12m.25s.
Osaka i = +15m.50s. = PP +15s.
Kobe P_cPE = +12m.59s., eE = +14m.46s., iE = +15m.27s. = PP −8s., eE = +23m.47s. = PS +11s.
Nagasaki eS? = +32m.49s.
Hong Kong PP = +15m.49s., SS = +29m.11s.
Hukuoka e = +35m.51s.
Hukuoka B S? = +32m.52s.
Mizusawa eSN = +22m.55s.
Zi-ka-wei PP = +16m.14s., iZ = +19m.2s., PSZ = +24m.32s., SSZ = +28m.14s., SSSZ = +33m.24s., iZ = +34m.52s. and +37m.52s.
Nanking PP = +15m.32s., SKS = +23m.36s., iSS = +33m.48s., iSSSZ = +36m.58s., iZ = +39m.13s.
La Plata PSE = +24m.59s., PPSN = +25m.17s., SSE = +29m.41s., SSN = +29m.53s., SSSE = +34m.41s., PPPEN (△ >180°) = +38m.48s.
Vladivostok ePP = +16m.41s., SKS = +23m.31s.
Huancayo e = +15m.49s., iPP = +17m.24s., ePS = +25m.48s.
Pasadena ePPZ = +17m.20s., eSKSZ = +23m.54s., iPSN = +25m.22s., eSSN = +31m.29s.
Mount Wilson ePPZ = +17m.22s.
Berkeley iZ = +13m.34s., eZ = +17m.21s., iN = +17m.49s. and +23m.54s. = SKS −15s., iE = +24m.2s., eE = +31m.28s. = SS +7s.
Chiufeng PPN = +16m.38s.
Ukiah ePP = +17m.31s., SKS = +24m.1s., PS = +26m.21s., SS = +31m.35s., eSSS = +35m.9s.

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La Paz iZ = +13m.47s., PPZ = +17m.44s., iPPP = +18m.47s., iSKS = +24m.13s., iPSE = +26m.28s., PPSN = +27m.11s., iSSN = +32m.6s., iSSE = +32m.14s., SSSN = +35m.20s.
Colombo iP = +17m.40s. = PP + 6s.
Tucson eS = +25m.17s., ePS = +26m.35s., eSS = +32m.11s.
Calcutta PP = +24m.5s. = SKS + 28s., SS = +35m.12s.
Cape Town PP = +18m.13s., PPP = +20m.27s., SKKS = +25m.40s., PS = +27m.3s., SS = +32m.54s., SSS? = +37m.59s.
Tananarive SKS = +24m.46s., PS = +27m.21s., SS = +32m.59., EN = +38m.12s.; T_0 = 11h.46m.18s.
Seattle eSS = +32m.31s.
Sitka eSKS = +24m.31s., eSS = +33m.5s., eSSS = +37m.11s.
Hyderabad SKS = +24m.47s.
Johannesburg PPP = +25m.17s. = SKS + 18s.
Bozeman eS = +26m.35s., ePS = +28m.5s., eSS = +33m.41s., eSSS = +37m.53s., eSSS = +37m.57s.
Bombay ePKPN = +18m.12s., ePKPE = +18m.20s., PP = +19m.20s., PPP = +21m.57s., SKS = +25m.13s., PS = +28m.49s., SS = +35m.31s., SSS = +39m.57s.
Agra PPPE = +21m.8s., eN = +24m.55s., SKKSE = +25m.38s., SN = +26m.22s., PSN = +27m.58s., iPPSN = +28m.58s., SSN = +34m.14s.
Little Rock ePPE = +19m.27s.; T_0 = 11h.46m.4s.
Florissant ePKPZ = +18m.34s., iPPZ = +19m.53s., ePPPZ = +22m.29s., SKSEN = +25m.29s., iSEN = +27m.29s., iSP = +29m.35s.; T_0 = 11h.46m.4s.
St. Louis ePP = +19m.53s., iSKKSE = +26m.41s., iPSE = +29m.59s., iPPSE? = +31m.33s., iE = +33m.56s., eSS = +36m.26s.; T_0 = 11h.46m.4s.
Chicago ePS = +30m.11s., eSS = +35m.47s.
Columbia ePS = +30m.41s., eSS = +37m.31s.
Ann Arbor eN = +35m.11s., e = +37m.59s., eE = +42m.11s., e = +46m.35s.
San Juan ePS = +30m.11s., eSS = +35m.41s.
Pittsburgh e = +22m.6s., iSKS = +25m.51s., ePS = +30m.11s., iSS = +37m.57s.
Tashkent iPP = +20m.42s., ePKS = +21m.47s., eSSS = +43m.23s.
Toronto ePKPE = +19m.1s., iPPEN = +20m.53s., iSKPE = +22m.7s., SKS = +25m.53s., SSE = +38m.3s.; T_0 = 11h.46m.19s.
Fordham ePPN = +22m.30s., ePPSN = +33m.28s.
Ottawa PP = +22m.35s., PPPE = +25m.47s. = PPPP + 6s., eE = +31m.29s. = PS + 4s., PPSN = +33m.59s., SS = +38m.41s., SSS = +43m.23s.
Oak Ridge ePPNE = +21m.23s., ePPZ = +22m.13s. = PKS − 25s., eSKPNE = +22m.17s., ePPSNE = +33m.11s., eNW = +38m.21s., eSSNE = +39m.17s.
Sverdlovsk iPP = +21m.55s., iPKS = +22m.48s., iPS = +31m.50s. = SKSP − 7s., SS = +40m.17s.
Baku iPP = +22m.23s., iPPP = +25m.28s.
Tiflis PKSE = +22m.51s., SKSPE = +33m.5s., eE = +38m.11s., ePSSE = +42m.22s., eE = +47m.58s. and +51m.20s.
Ksara PS = +23m.27s. = PKS + 3s., SS = +43m.3s.
Kucino ePP = +23m.16s., eSKKS = +29m.58s., SKSP = +33m.30s., PPS = +36m.0s.
Helwan iPP = +30m.7s. = SKKS − 11s.
Pulkovo PKS = +23m.23s. = PP − 4s., PPS = +36m.18s., SS = +42m.29s.
Dakar P = +18m.31s.
Helsingfors eSKSE = +25m.38s., eSKSPE = +33m.46s., ePSE = +36m.11s., ePPSE = +37m.1s., eSKSPE = +38m.46s., e?E = +40m.13s., eSSE = +42m.53s., eSSSE = +49m.26s., e?E = +55m.41s.; T_0 = 11h.45m.58s.
Königsberg e = +20m.22s., eN = +66m.35s., eE = +78m.18s., eZ = +80m.22s.
Copenhagen PKP_2 = +20m.41s., PP = +24m.12s., e = +27m.29s., +28m.53s., SKSP = +34m.47s., e = +35m.32s., PPSE = +37m.47s., SS = +44m.29s.
Vienna iZ = +20m.12s., iNZ = +20m.49s. = PKP_2 − 10s., PKP = +21m.53s., iN = +22m.47s., iE = +23m.9s., SKP = +25m.4s., iN = +26m.6s. and +27m.50s., SKS = +29m.8s., iE = +31m.9s., SKKS = +32m.8s., PPP (△ >180°) = +35m.2s., SKSP = +35m.36s., PPS = +40m.55s.
Hamburg eZ = +40m.53s., eN = +50m.41s.?, eZ = +52m.23s.
Prague = +36m.41s.?
Leipzig e = +45m.23s. = SS + 8s., eE = +51m.11s. = SSS − 5s., eN = +51m.47s., eE = +58m.11s.
Graz SKP = +24m.47s. = PP + 10s., SKKS = +35m.21s. = SKSP + 12s., SKSP = +38m.43s., SS = +45m.37s.
Zagreb ePKP = +20m.11s., eSKP = +21m.22s., eSKKS = +24m.41s.?, ePPPP (△ >180°) = +35m.6s. = SKSP − 3s., ePPPPP(△ >180°) = +37m.41s.?, eSSS = +44m.41s.?, e = +45m.41s.?, +50m.41s.?, +51m.41s.?, +56m.41s.?
Edinburgh i = +37m.53s. and +45m.11s. = SS − 8s.
Jena e = +24m.41s. = PP + 1s., eN = +46m.11s.
Cheb e = +35m.41s. and +52m.56s.
Göttingen iEZ = +20m.58s., eZ = +24m.41s. = PP − 1s. and +27m.59s., eEN = +45m.29s. = SS + 4s.
Triest PKP_2? = +20m.39s., PPZ = +24m.50s., iZ = +25m.3s. and +25m.18s., i = +50m.23s., +53m.8s., and +57m.19s.

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De Bilt eZ = +21m.5s. = PKP_2 − 9s., ePPZ = +24m.53s.
Venice P = +22m.19s.
Bidston e = +21m.11s. = PKP_2 − 5s., i = +24m.58s. = PP + 6s., +37m.41s., +38m.41s., +42m.6s., and +45m.41s. = SS − 4s.
Stuttgart iPKP_2 = +21m.9s., iPP = +24m.56s., ePPP = +29m.1s., e$SKKS_2$ = +33m.29s., eSKSP = +35m.17s., e = +37m.29s., ePPS = +38m.54s., eSS = +45m.35s., eSSS = +51m.41s.
Florence i = +25m.6s. = PP + 10s. and +34m.36s.
Uccle iZ = +20m.30s., iPKP_2Z = +21m.11s., PP = +25m.0s., SSSN = +49m.20s.
Strasbourg PKP_2 = +21m.10s., eSKP = +23m.17s., iPP = +24m.54s., ePPP = +29m.41s., ePPPP = +31m.44s., ePPPPP = +33m.31s., SS = +45m.41s.
Kew iZ = +20m.15s., ePKP_2Z = +21m.19s., iPP = +24m.59s., iPPP = +29m.22s., eSKSPN = +35m.33s., ePSN = +38m.45s., iSPZ = +38m.54s., iSSEN = +45m.53s., ePSSEN = +47m.17s., eN = +51m.3s., iSSSN = +57m.43s.
Piacenza P = +20m.21s.
Paris PPZ = +25m.16s.
Algiers PKP_2 = +21m.56s., PP = +25m.29s., PPPE = +29m.33s., PSKS = +35m.56s., SS = +46m.13s.
San Fernando PN = +20m.28s., PPN = +31m.41s.
Almeria PPP = +25m.54s. = PP + 18s., PSKS? = +36m.32s.
Malaga PP? = +25m.40s., e = +29m.22s. = PPP − 25s. and +39m.17s., SS = +46m.52s., e = +53m.22s. and +74m.41s.?
Alicante PPP = +25m.44s. = PP + 6s., PSKS? = +36m.58s., SSS = +47m.6s. = SS − 12s.
Granada SSS = +47m.8s. = SS − 13s.
Toledo PP = +20m.5s. = PKP − 2s. and +22m.48s., SKKS = +25m.41s. = PP − 11s., PSKS = +32m.41s. = SKKS − 19s., SS = +36m.53s. = SKSP + 22s., SSS = +47m.44s. = SS − 2s., PKP_2 is given as SKP.
Long waves were also recorded at Tunis, Laibach, Simferopol, Sebastopol, and Ithaca.

March 5d. Readings also at 0h. (La Paz, Hong Kong, and near Manila), 1h. (Berkeley, Pasadena, Tucson, St. Louis, Little Rock, Chicago, Columbia, Pittsburgh, Oak Ridge, Ottawa, San Juan, Huancayo, Sverdlovsk, Uccle, De Bilt, and Baku), 2h. (Pulkovo, Copenhagen, Stuttgart, Scoresby Sund, and La Paz), 4h. (Adelaide, Riverview, Wellington, near Mizusawa, near Arisan, Karenko, and Taihoku), 10h. (near Amboina (2)), 11h. (Christchurch, Wellington (2), Takaka, Tuai, Bunnythorp, and Hastings), 12h. (Glenmuick (2), Bunnythorp (2), Hastings, New Plymouth, Wellington (5), Osaka, and near Arisan and Karenko), 13h. (Bunnythorp (3), New Plymouth, and Wellington (7)), 14h. (New Plymouth and Wellington (3)), 15h. (Bunnythorp (3), New Plymouth (2), Wellington (3), Oak Ridge, Andijan, Frunse, and near Tyosi), 16h. (Bunnythorp (2) and Wellington (3)), 17h. (Bunnythorp, Hastings, New Plymouth, and Wellington (2)), 18h. (Baku and Tashkent), 19h. (Bunnythorp and Wellington (3)), 20h. (Bunnythorp), 21h. (Bunnythorp, Christchurch, New Plymouth, and Wellington (3)), 23h. (Wellington).

March 6d. 12h. 52m. 46s. Epicentre 40°·6S. 176°·6E. (given by Wellington). N.3.

A = −·758, B = +·045, C = −·651; D = +·059, E = +·998;
G = +·650, H = −·039, K = −·759.

	Δ	Az.	P.	O − C.	S.	O − C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Dannevirke	0·5	316	(0 14?)	+ 7	(0 19)	+ 6	—	—
Bunnythorp	0·9	292	0 14?	+ 1	0 24	+ 1	—	—
Hastings	1·0	13	0 14?	0	0 26	0	—	—
Wellington	1·6	244	0 20	− 3	1 38	+57	—	—
Arapuni	2·6	344	0 38	+ 1	1 14	+ 7	—	—
Takaka	2·9	265	0 18	−23	i 1 19	+ 5	—	—
Glenmuick	3·5	227	0 20?	−30	e 1 26	− 4	—	1·7
Christchurch	4·2	224	e 0 43	−17	i 1 50	+ 2	—	2·8
Riverview	21·3	281	e 4 26	−17	—	—	e 10·8	12·2
Sydney	21·3	281	—	—	e 7 32	−60	11·6	12·6
Melbourne	24·5	266	—	—	i 9 27	− 5	13·0	16·4

Additional readings and notes:—
Dannevirke readings have been *increased* by 2m.
Hastings i = +20s. and +37s.
Arapuni S_g? = +1m.26s.
Takaka i = +37s., S? = +51s. = P_g − 1s., i = +59s.
Glenmuick e = +41s. and +50s., S? = +53s., e = +1m.18s. and +1m.35s.
Christchurch iZ = +1m.9s. = P* + 0s., iEN = +1m.17s. = P_g − 1s., i = +1m.27s., iEZ = +1m.32s., eEZ = +2m.3s. = S* + 0s., iEZ = +2m.16s. = S_g + 3s., iN = +2m.19s.

March 6d. 14h. Shock for which no determination has been made. The epicentre is probably in the Bering Sea.
Mizusawa ePE = 14h.47m.47s., eSE = 48m.36s.
Sitka eP = 14h.49m.30s., iPP = 50m.42s., eS = 55m.0s., eL = 15h.0m.42s.
Paris e = 14h.51m.3s., L = 15m.30s.
Chiufeng ePN = 14h.51m.21s., eN = 56m.3s., eLN = 59m.54s., MN = 15h.4m.4s.
Sverdlovsk eP = 14h.52m.9s., iS = 59m.33s., L_Q = 15h.8m., L_T = 11m.54s., M = 12m.36s.
Tinemaha iE = 14h.52m.26s.
Haiwee ePEZ = 14h.52m.31s.
Vladivostok e = 14h.52m.35s., 55m.31s., L = 56m.24s., M = 58m.30s.
Pasadena ePNZ = 14h.52m.39s.
Mount Wilson iPEN = 14h.52m.41s.
La Jolla eZ = 14h.52m.56s.
Tashkent P = 14h.53m.31s., eL = 15h.10m.36s., M = 19m.24s.
Samarkand eP = 14h.53m.32s.
Almata e = 15h.1m.0s.
Agra iE = 15h.2m.33s.
Ottawa eE = 15h.2m.48s., e = 7m.0s., eL = 10m.
Baku eS = 15h.3m.22s., L = 15m.30s.
Tiflis eE = 15h.3m.27s., LE = 17m.45s., ME = 24m.54s.
Bombay eN = iE = 15h.4m.25s., M = 25m.2s.
Pulkovo eSS = 15h.5m.12s., L = 13m., M = 17m.18s.
Hong Kong S? = 15h.7m.18s., M = 14m.40s.
Pittsburgh e = 15h.11m.24s., eL = 17m.24s.
Long waves were also recorded at Phu-Lien, Hyderabad, Andijan, Grozny, San Juan, Kucino, Scoresby Sund, and several European stations.

March 6d. Readings also at 1h. (Wellington), 2h. (Andijan, Frunse, and Samarkand), 3h. (near Apia), 4h. (Bunnythorp, near Wellington, and Manila), 5h. (Bunnythorp, Wellington (3), and near San Juan), 6h. (Hastings, Christchurch, and near Wellington (2)), 7h. (La Paz and near Wellington), 9h. (La Paz and near Dannevirke), 11h. (Wellington), 12h. (Andijan), 14h. (Erevan), 15h. (Tiflis), 18h. and 21h. (Wellington).

March 7d. 22h. 41m. 55s. Epicentre 13°·3N. 87°·7W. N.2.

A = + ·039, B = − ·972, C = + ·230 ; D = − ·999, E = − ·040 ;
G = + ·009, H = − ·230, K = − ·973.

		Δ	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights		9·1	118	e 2 5?	− 4	—	—	—	—
San Juan		21·3	73	e 4 45	+ 2	i 8 45	+13	i 10·7	—
Columbia		21·5	15	e 4 46	+ 1	i 8 54	+18	e 11·2	—
Little Rock	E.	21·9	350	e 5 0	+10	—	—	—	—
St. Louis		25·4	355	e 5 21	− 3	e 9 49	+ 1	e 12·1	13·8
Florissant		25·6	355	i 5 24	− 1	i 9 49	− 2	—	—
Charlottesville		26·0	17	e 5 29	0	e 10 5	+ 7	e 13·4	—
Georgetown		27·3	18	i 5 41	0	i 10 22	+ 2	e 13·1	—
Pittsburgh		28·0	13	e 6 35	PP	e 10 25	− 7	14·4	—
Huancayo		28·2	154	e 5 49	0	i 10 37	+ 2	i 12·0	—
Tucson		28·4	316	e 5 53	+ 2	e 10 45	+ 7	15·3	—
Chicago		28·6	1	e 6 22	+29	i 11 21	+39	e 13·7	—
Ann Arbor		29·2	6	e 10 35	?	i 10 53	+ 2	e 15·8	16·2
Fordham		30·1	22	e 6 3	− 3	e 11 3	− 3	e 14·1	—
Toronto		31·2	11	e 5 28	−48	e 10 35	−48	14·1	16·7
Oak Ridge		32·6	22	i 6 29	+ 1	i 11 43	− 2	e 14·1	—
Ottawa		33·6	15	e 6 37	0	e 12 1	+ 1	e 16·1	—
Riverside	N.	33·9	313	e 6 39	0	—	—	—	—
Mount Wilson		34·5	313	i 6 45	0	—	—	—	—
Pasadena		34·6	313	e 6 44a	− 2	—	—	e 16·8	—
La Paz		35·5	145	e 6 58	+ 5	12 58	+29	18·1	23·0
Tinemaha		36·2	316	i 6 55	− 5	—	—	e 19·9	—
Bozeman		37·9	334	e 7 14	0	e 13 11	+ 6	e 20·4	—
Sucre		39·2	144	e 7 24	− 1	—	—	21·5	—
Berkeley	E.	39·3	315	—	—	i 13 35	+ 9	i 19·7	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Seattle		44·8	327	—	—	e 17 32	SS	e 24·8	—
Victoria		45·8	327	15 5	S	(15 5)	+ 3	24·9	—
Sitka		56·6	332	—	—	e 21 5	SS	e 29·1	—
Scoresby Sund		69·5	19	—	—	20 18	+ 3	32·1	—
Edinburgh		76·0	35	—	—	e 34 35	?	—	—
Granada		77·4	54	—	—	e 21 56	+ 9	36·9	—
Kew		78·0	40	—	—	e 21 5?	−49	e 30·1	40·7
Paris		80·2	43	—	—	e 22 5?	−13	38·1	42·1
De Bilt		81·3	38	—	—	e 23 5?	+35	e 32·1	43·6
Strasbourg		83·6	41	e 12 5?	−21	e 21 5?	−108	e 33·1	—
Stuttgart		84·5	41	e 12 5?	−26	—	—	e 34·1	55·1
Copenhagen		84·6	34	—	—	22 56	− 8	36·1	—
Cheb		86·2	39	—	—	e 23 17	− 2	e 41·1	48·1
Triest		88·3	43	e 13 57	+68	i 23 37	− 3	e 35·1	48·4
Kucino		97·4	28	—	—	e 25 56	+52	e 46·4	52·3
Sverdlovsk		105·1	17	e 18 27	PP	e 25 54	{+23}	52·6	57·3
Tiflis	E.	109·8	37	e 25 54	SKKS	(e 25 54)	{−12}	e 50·1	63·7
Baku		113·5	35	—	—	e 33 40	?	51·1	68·5
Tashkent		121·4	20	e 21 15	?	e 30 5	PS	e 52·1	73·5
Chiufeng		122·2	339	—	—	e 30 26	PS	e 59·8	—
Andijan		122·9	18	e 20 21	PP	—	—	—	—

Additional readings :—
San Juan iP = +4m.55s. = PP − 5s., i = +6m.43s., eSS = +9m.45s., eSSS = +9m.55s.
Little Rock ePPE = +5m.32s., ePPPE = +5m.45s., iSSE = +9m.3s.
St. Louis ipPN = +5m.43s., iN = +10m.7s., isSE = +10m.12s.; T_0 = 22h.41m.35s.
Florissant ipPZ = +5m.47s., isSE = +10m.29s.; T_0 = 22h.42m.0s.
Georgetown iE = +10m.38s.; T_0 = 22h.41m.30s.
Pittsburgh iSS = +11m.50s.
Huancayo i = +10m.57s.
Tucson e = +5m.59s., +11m.3s., and +12m.48s.
Chicago e = +9m.42s. and +10m.44s.
Ann Arbor i = +11m.53s., e = +12m.35s., eE = +13m.59s.
Fordham ePPN = +6m.7s., i = +12m.27s. = SS − 5s.
Toronto iSS = +11m.27s.
Ottawa SSE = +14m.5s.?; T_0 = 22h.41m.54s.
La Paz PP = +8m.44s., SS = +15m.35s., SSS = +16m.10s.
Victoria SE = +18m.33s., SN = +18m.40s.
Granada e = +23m.7s.
Triest i = +24m.57s. = PS + 26s.
Kucino e = +26m.16s. = PS − 1s., +31m.39s. = SS + 14s., +34m.43s. = SSS − 24s. and +36m.24s.
Sverdlovsk e = +26m.54s., +28m.17s., +29m.2s., and +33m.37s. = SS + 26s., L = +45·2m.
Tiflis eSE = +34m.36s. = SS + 20s.
Tashkent e = +22m.21s. = PPP − 27s., +24m.23s. = PPPP − 9s., +30m.47s., +31m.41s., and +34m.11s.
Long waves were also recorded at La Plata, Cape Town, Wellington, Agra, Hong Kong, Phu-Lien, and other European stations.

March 7d. Readings also at 0h. (Andijan, Almata, Frunse, La Plata, and near Santiago), 1h. (Sverdlovsk and Tashkent), 2h. (Andijan), 3h. (Apia), 7h. (near Berkeley), 9h. (near Sumoto), 11h. (Wellington), 13h. (Suva (2)), 14h. (Huancayo, La Paz, Wellington (2), Amboina, Andijan, near Malabar, near Nagoya, and Tyosi (2)), 16h. (Chiufeng, Hong Kong, Phu-Lien, Bombay, Calcutta, Sverdlovsk, and Tashkent), 20h. (near Bunnythorp and Wellington), 21h. (near Arisan (3), Karenko (3), and Taihoku (2)), 22h. (near Arisan, Karenko, and Taihoku).

March 8d. 2h. 56m. 53s. Epicentre 33°·0N. 25°·4E. N.2.

A = +·758, B = +·360, C = +·545 ; D = +·429, E = −·903 ;
G = +·492, H = +·234, K = −·839.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ksara		8·8	81	e 1 51	−14	e 3 21	−23	—	—
Sebastopol		13·2	26	e 3 4	− 1	—	—	—	—
Yalta		13·4	28	3 6	− 1	—	—	—	—
Simferopol		13·7	27	e 3 11	0	—	—	—	—
Theodosia		14·3	30	e 3 10	− 9	—	—	—	—
Zagreb		14·7	333	e 3 32	+ 7	e 7 1	+53	e 9·5	—
Triest		15·5	328	3 37a	+ 2	i 6 30	+ 3	—	—
Vienna	z.	16·7	339	e 3 45	− 5	—	—	—	—
Piacenza		17·1	319	—	—	e 6 39	−25	—	13·4
Chur		18·4	324	e 4 13	+ 2	e 7 33	0	—	—
Grozny		18·9	51	e 4 22	+ 5	e 7 25	−19	—	—
Zurich		19·2	323	e 4 22	+ 1	e 8 1	+11	—	—
Basle		19·8	322	e 4 29	+ 2	e 8 7	+ 5	—	—
Neuchatel		19·8	320	e 4 29	+ 2	e 8 1	− 1	—	—
Stuttgart		19·9	327	e 4 27	− 2	e 8 14	+10	e 11·6	13·6
Strasbourg		20·4	325	i 4 24a	−10	e 8 4	−10	e 11·1	—
Baku		20·9	62	e 4 50	+11	e 8 14	−10	11·1	14·7
Göttingen		21·7	333	i 4 47	− 1	i 8 39	− 1	—	—
Paris	z.	23·3	320	—	—	(e 8 7?)	−63	e 8·1	—
Uccle		23·6	325	5 8	+ 2	e 9 14	− 2	e 13·1	—
De Bilt		24·0	329	—	—	e 9 25	+ 2	e 13·1	—
Kucino		24·4	17	—	—	i 9 29	− 1	e 12·3	—
Copenhagen		24·5	342	—	—	9 7?	−25	15·1	—
Kew		26·2	323	—	—	e 10 7?	+ 5	—	—
Pulkovo		27·0	6	i 5 37	− 1	e 9 57	−18	15·1	—
Helsingfors		27·2	359	e 5 38	− 2	i 10 12	− 6	e 12·1	—
Sverdlovsk		33·9	34	e 6 35	− 4	i 11 54	−10	18·1	—
Tashkent		35·6	64	—	—	e 14 41	SS	e 17·1	28·9
Andijan		37·9	64	e 7 28	+14	—	—	—	—

Additional readings :—
Yalta e = +9m.36s.
Triest i = +6m.34s. =SS − 1s., iSS = +8m.20s., i = +8m.40s., and +10m.22s.
Vienna iZ = +4m.55s.
Kucino e = +10m.36s.
Helsingfors ePPEZ = +6m.8s., ePPPEN = +6m.55s. ; T_0 = 2h.56m.40s.
Long waves were also recorded at Cheb and Cape Town.

March 8d. 23h. A shock from an epicentre in the Indian Ocean for which the readings are :—
Tananarive PE = 23h.6m.59s., EN = 10m.51s., L = 11m.17s., M = 12m.26s.
Bombay e = 23h.11m.
Tashkent eP = 23h.13m.20s., eS = 22m.22s., eL = 35m., M = 40m.24s.
Baku eP = 23h.13m.37s., S = 22m.44s., L = 36m.12s., M = 39m.0s.
Grozny eP = 23h.13m.52s.
Sverdlovsk iP = 23h.15m.0s., S = 25m.22s., ePS = 26m.13s., eSS = 30m.48s., L = 42m.
Chur e = 23h.15m.28s.
Vienna ePZ? = 23h.15m.55s.
Tiflis eSE = 23h.23m.12s., eLE = 37m.48s.
Long waves recorded at San Fernando.

March 8d. Readings also at 0h. (Wellington, Bombay, and near Algiers), 1h. (Karenko, Taihoku, and near Arisan), 3h. (Almata and Wellington), 5h. (near Wellington), 7h. (near Toyooka), 8h. (Wellington), 9h. (Zurich, near Prato, near Arisan (2), Karenko (2), and Taihoku), 11h. (near Sumoto), 14h. (La Jolla, Mount Wilson, Pasadena, and Tinemaha), 15h. (Mizusawa, near Nagoya, and Tyosi), 16h. (near Wellington).

March 9d. 11h. 50m. 55s. Epicentre 24°·2N. 121°·5E. N.3.
(given by the stations).

A = −·477, B = +·778, C = +·410 ; D = +·853, E = +·522 ;
G = −·214, H = +·350, K = −·912.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Karenko	0·7	157	e 0 3a	0	0 8	+ 3	—	—
Taihoku	0·8	1	i 0 10k	− 1	0 22	+ 1	—	—
Taityu	0·8	266	(0 10)	− 1	0 10	P	—	—
Arisan	0·9	223	e 0 15a	+ 2	0 30	+ 7	—	—
Tainan	1·7	225	e 0 35	+11	0 58	S_g	—	—
Nanking	8·2	344	e 1 47	− 9	i 3 15	−14	i 4·1	4·5

Taityu iP = 11h.50m.53s.
Long waves were also recorded at Hong Kong and Phu-Lien.

March 9d. 14h. 2m. 30s. Epicentre 63°·0N. 173°·0E. N.3.

A = −·451, B = +·055, C = +·891 ; D = +·122, E = +·993 ;
G = −·884, H = +·109, K = −·454.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Vladivostok		30·8	250	e 9 53	?	i 10 35	−42	12·6	14·7
Chiufeng		40·2	264	e 7 33	− 1	—	—	e 16·1	25·0
Haiwee	z.	48·0	89	e 8 54	+18	—	—	—	—
Tinemaha	z.	48·0	89	i 8 35	− 1	—	—	—	—
Sverdlovsk		49·4	319	e 8 32	−15	15 47	− 5	27·9	28·9
Santa Barbara	z.	49·5	92	e 8 53	+ 6	—	—	—	—
Mount Wilson	z.	50·5	91	e 8 53	− 2	—	—	—	—
Pasadena		50·6	91	e 8 52	− 3	—	—	—	—
Riverside	z.	51·0	91	i 9 5	+ 6	—	—	—	—
Pulkovo		54·0	338	e 9 27	+ 6	17 19	+23	29·5	33·8
Almata		54·9	299	e 12 14	PPP	—	—	—	—
Frunse		56·1	300	e 7 46	?	—	—	e 25·7	—
Tashkent		59·6	303	—	—	e 23 59	?	e 26·5	34·5
Samarkand		61·9	304	e 10 44	+26	—	—	—	—
Baku		67·2	317	e 10 35	−18	i 19 14	−33	31·5	37·4
Tiflis		67·5	321	e 10 55	0	e 19 40	−11	e 33·5	41·1
Agra	E.	68·2	287	—	—	i 18 37	?	—	—
Triest		70·1	345	e 11 19	+ 8	e 21 6	(+ 1)	e 34·5	42·5
Hyderabad		76·6	282	20 30	?	—	—	—	41·3
Bombay		77·8	288	—	—	e 20 35	?	—	41·5

Additional readings :—
Vladivostok e = +12m.3s. = SS − 46s.
Tinemaha iZ = +8m.46s.
Sverdlovsk L_q = +24·3m.
Pasadena iZ = +9m.3s.
Pulkovo e = +21m.24s.
Tashkent e = +27m.39s.
Tiflis eE = +23m.48s. = SS − 16s.
Long waves were also recorded at Hong Kong, Nanking, Phu-Lien, Andijan, Pittsburgh, Oak Ridge, Scoresby Sund, San Juan, and other Crimean and European stations.

March 9d. 14h. 53m. 54s. Epicentre 22°·8N. 121°·3E. N.3.
(given by the stations).

A = −·479, B = +·788, C = +·388.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Taito	0·1	249	i 0 1	0	0 5	+ 2
Arisan	0·8	327	i 0 15a	+ 4	0 26	+ 5
Tainan	1·0	281	e 0 28	S	0 43	?
Takao	1·0	259	0 41	?	0 49	?
Karenko	1·2	13	0 22	+ 5	0 40	S_g

March 9d. Readings also at 0h. (near Apia), 1h. (Perth), 3h. (Huancayo, La Paz, San Juan, Tucson, Pasadena, and Pittsburgh), 5h. (Sydney, Wellington, and near Lick), 7h. (Bunnythorp, near Hastings, Wellington (2), and near Apia), 8h. (Apia), 9h. (near Osaka, Kobe, and Toyooka), 10h. (near Wellington), 13h. (Wellington), 14h. (Almata, near Andijan, and near Santiago), 16h. (Tiflis and near Almeria), 17h. (Christchurch and Wellington), 18h. (Wellington (2)), 20h. (Tyosi), 21h. (Haiwee, Mount Wilson, Riverside, Santa Barbara, Tinemaha, Pasadena, Tiflis, Riverview, Neuchatel, and near Suva), 22h. (Sverdlovsk and Tashkent), 23h. (near Mizusawa).

March 10d. 2h. 3m. 18s. Epicentre 26°·5N. 52°·5E. N.3.

A = +·545, B = +·710, C = +·446; D = +·793, E = −·609; G = +·272, H = +·354, K = −·895.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Baku	14·0	353	—	—	e 5 43	− 8	8·2	—
Erevan	15·2	336	e 3 55	+24	—	—	—	—
Ksara	16·1	301	e 3 57	+14	e 6 59	+18	—	9·2
Tiflis	16·5	339	3 41	− 7	6 45	− 5	9·0	—
Grozny	17·7	344	e 3 59	− 4	e 7 18	+ 1	—	—
Samarkand	17·9	39	e 3 3	−62	—	—	—	—
Sotchi	20·0	332	e 4 36	+ 6	e 8 10	+ 4	—	—
Bombay	20·2	108	—	—	i 8 42	+32	—	—
Tashkent	20·3	39	i 4 28	− 5	e 8 0	−12	e 11·4	13·4
Andijan	21·7	44	e 4 55	+ 7	e 8 47	+ 7	—	—
Theodosia	23·0	328	e 4 59	− 2	9 1	− 4	—	—
Yalta	23·3	326	e 5 0	− 4	e 9 7	− 3	—	—
Simferopol	23·6	326	5 3	− 3	e 9 13	− 3	—	—
Sebastopol	23·7	325	—	—	e 9 15	− 3	—	—
Frunse	24·3	42	e 1 18	?	—	—	—	—
Almata	26·0	43	e 5 45	+16	—	—	—	—
Sverdlovsk	30·9	9	e 7 16	PP	e 11 14	− 4	16·7	—

Tiflis gives also eE = +8m.14s.

March 10d. 7h. 57m. 25s. Epicentre 40°·9S. 176°·0E. (given by Wellington). N.3.

A = −·754, B = +·053, C = −·655; D = +·070, E = +·998; G = +·653, H = −·046, K = −·756.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bunnythorp		0·7	334	−0 25?	?	—	—	—	—
Dannevirke		0·7	7	−0 10?	?	—	—	—	—
Wellington		1·0	248	0 15	+ 1	0 27	+ 1	—	—
Hastings		1·4	28	−0 25	?	—	—	—	—
New Plymouth		2·3	321	−0 25?	?	—	—	—	—
Tuai		2·3	23	−0 25?	?	i 0 11	−48	—	—
Takaka		2·4	271	0 24?	−10	0 57	− 5	—	—
Arapuni		2·8	355	0 41	+ 1	1 14	+ 2	—	—
Christchurch		3·6	222	0 53	+ 2	1 32	0	—	—
Sydney		20·8	282	e 4 30	− 8	i 8 30	+ 8	11·5	12·9
Riverview		20·9	282	e 4 33	− 6	e 8 36	+12	e 10·6	11·5
Melbourne		24·1	266	5 8	− 3	9 38	+13	12·6	15·4
Adelaide		29·8	268	e 5 23	−40	i 9 41	−80	e 12·9	19·3
La Paz	E.	97·5	120	e 8 39	?	—	—	47·6	54·9
Tashkent		126·5	296	e 20 40	PP	e 33 35	?	e 66·6	83·6
Sverdlovsk		136·5	314	e 22 36	PKS	e 34 3	?	70·6	—
Kucino		149·0	312	—	—	e 37 11	?	e 74·0	84·1

For Notes see next page.

NOTES TO MARCH 10d. 7h. 57m. 25s.

Additional readings :—
Bunnythorp $P_g = -14s.$
Dannevirke $P_g = +1s.$
Wellington $P^* = +22s.$, $i = +30s.$, $S^* = +33s.$
Hastings $P_g = -11s.$
Takaka $S_g? = +1m.10s.$
Arapuni $P_g = +1m.2s.$
Christchurch eP = +1m.5s. $= P_g - 1s.$, i = +1m.37s. and +1m.59s. $= S_g + 6s.$, iEN = +2m.15s., iZ = +2m.23s.
Kucino e = +42m.29s. = SSS +3s. and +52m.29s.
Long waves were also recorded at Perth, Huancayo, Baku, and a few European stations.

March 10d. Readings also at 0h. (Tashkent, Tiflis, Sverdlovsk, Vladivostok, and Wellington), 5h. (Mount Wilson, Pasadena, Tinemaha, and near Apia), 7h. (Dannevirke and near Wellington), 8h. (Christchurch, Wellington (2), Arapuni, Dannevirke (2), Bunnythorp (2), Hastings (2), New Plymouth, Tuai, and Takaka epicentre according to Wellington 40°·6S. 176°·9E.), 9h. (La Paz), 10h. (Wellington, Tananarive, Vienna, near Arisan, and Karenko), 11h. (Wellington, La Paz, La Plata, near Santiago, near Arisan (2), Karenko (2), and Taihoku (2)), 12h. (Tiflis, Ksara, near Arisan (3), Karenko (3), Tainan (2), and Taihoku (2)), 13h. (Wellington and La Paz), 14h. (La Paz, near Karenko, and Taihoku), 15h. (Copenhagen, Pulkovo, Tashkent, Kucino, Tiflis, Chiufeng, Hong Kong, Kobe, La Paz, Riverside, Mount Wilson, Pasadena, and Tinemaha), 19h. (Oak Ridge), 21h. (Triest), 22h. (San Juan and near Lick), 23h. (Hong Kong).

March 11d. 10h. Epicentre S.E. Island of Guam, according to Manila.
Koti P = 10h.44m.31s.
Sumoto S = 10h.44m.34s., M = 44m.36s.
Osaka P = 10h.44m.35s., i = 45m.3s., S = 45m.19s., M = 45m.31s.
Manila eP = 10h.44m.36s., iSEN = 49m.15s., iE = 50m.13s., LE = 52m.24s.
Nagoya e = 10h.44m.36s.
Kobe P = 10h.44m.37s., eZ = 45m.8s. and 45m.13s., eN = 45m.39s., MN = 46m.14s.
Tyosi S = 10h.44m.41s.
Mizusawa ePE = 10h.44m.46s., eSE = 45m.23s., eSN = 45m.29s.
Chiufeng P = 10h.46m.36s. a
Almata e = 10h.50m.10s.
Andijan e = 10h.50m.25s.
Sverdlovsk iP = 10h.51m.19s., e = 11h.1m.22s., L = 16m.
Santa Barbara iPEZ = 10h.52m.20s. a
Tinemaha iP = 10h.52m.22s. a
Haiwee iPEZ = 10h.52m.25s. a
Pasadena iP = 10h.52m.26s. a
Mount Wilson iP = 10h.52m.27s. a, iZ = 52m.47s.
Riverside iPEN = 10h.52m.29s.
La Jolla iP = 10h.52m.31s. a
La Paz ePN = 10h.59m.16s.
Long waves were also recorded at Hong Kong.

March 11d. 19h. 9m. 55s. Epicentre 38°·4N. 96°·5E. (as on 1932 Dec. 25d.). R.3.

A = −·089, B = +·779, C = +·621 ; D = +·994, E = +·113 ;
G = −·070, H = +·617, K = −·784.

		△	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Chiufeng		15·2	77	3 30k	− 1	e 6 16	− 4	8·0	10·1
Almata		15·5	294	3 28	− 7	e 6 26	− 1	e 7·9	—
Frunse		17·2	292	(e 3 49)	− 8	(e 7 21)	+15	(i 9·9)	—
Dehra Dun		17·2	248	7 5	S	(7 5)	− 1	—	10·1
Calcutta		17·3	206	5 21	?	8 39	+90	10·7	12·9
Andijan		18·6	285	e 4 17	+ 3	e 7 48	+10	e 9·8	—
Agra	E.	18·9	239	e 4 12	− 5	i 7 47	+ 3	—	—
Tashkent		21·0	287	i 4 37	− 3	i 8 20	− 6	e 10·3	14·4
Hong Kong		22·0	132	8 55	S	(8 55)	+ 9	12·2	12·3
Samarkand		22·9	283	e 5 1	+ 1	—	—	e 17·4	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hyderabad	26·2	222	10 4	S	(10 4)	+ 2	14·6	18·6
Bombay	28·3	233	—	—	i 10 55	+18	—	19·0
Sverdlovsk	29·8	320	i 6 4	+ 1	i 11 1	0	i 16·0	—
Manila	32·1	130	10 23	?	14 42	?	17·8	—
Baku	35·7	289	—	—	e 12 51	+19	20·6	—
Tiflis	39·2	292	7 37	+12	e 13 22	− 2	26·7	—
Kucino	42·0	314	—	—	e 19 38	?	e 24·7	25·6
Pulkovo	45·9	320	—	—	e 14 59	− 4	24·1	25·7
Ksara	48·3	284	e 8 39	+ 1	e 15 39	+ 2	—	—

Additional readings and notes :—
Almata i = +7m.13s.
Frunse readings have been *increased* by 4m.
Hong Kong S = +11m.35s.
Hyderabad S = +13m.35s.
Baku e = +16m.5s.
Tiflis eE = +17m.18s. and +19m.25s.
Kucino e = +20m.30s. and +22m.54s.
Pulkovo eSS = +18m.33s.
Long waves were also recorded at Koti and Copenhagen.

March 11d. Readings also at 0h. (Baku, Sverdlovsk, Tashkent, Kucino, Chiufeng, Scoresby Sund, and Hong Kong), 2h. and 3h. (Apia), 5h. (Belgrade, Budapest, Triest, Vienna, Cheb, Zagreb, Zurich, Simferopol, Theodosia, and Yalta), 9h. (Andijan), 10h. (Andijan, Vienna, Zagreb, and near Triest), 12h. (Almata and Sydney), 15h. (near Tyosi), 16h. (Wellington), 18h. (Tananarive and Wellington), 23h. (Huancayo and San Juan).

March 12d. 15h. 5m. 45s. Epicentre 41°·8N. 113°·0W. N.1.

Probable error of epicentre ±0°·21.

A = −·291, B = −·686, C = +·667 ; D = −·921, E = +·391 ;
G = −·260, H = −·614, K = −·745.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Bozeman	4·1	20	e 1 5	P*	i 2 3	S*	—	—
Tinemaha	6·3	222	i 1 28	− 2	i 3 10	S*	—	—
Denver	6·4	106	e 1 27	− 4	i 2 33	−10	i 4·3	—
Haiwee	6·8	216	i 1 37	0	i 3 31	−22	—	—
Lick	8·0	239	e 1 55	+ 2	i 4 9	S*	—	—
Berkeley	8·1	244	i 1 55	0	i 4 10	S*	—	—
Ukiah	8·3	253	i 2 2	+ 4	i 3 44	+13	—	—
Branner	8·3	241	e 2 0	+ 2	i 3 16	−15	—	—
San Francisco	8·3	244	e 1 53	− 5	i 4 20	S_g	—	—
Mount Wilson	8·6	209	i 2 1	− 1	i 4 22	S*	—	—
Riverside	8·6	205	e 2 0	− 2	i 4 20	S*	—	—
Pasadena	8·7	209	2 2k	− 1	e 3 30	−11	—	—
Seattle	8·8	314	e 1 57	− 8	i 3 53	+ 9	i 4·7	—
Santa Barbara	9·1	217	i 2 0	− 9	i 4 40	S*	—	—
La Jolla	9·6	202	e 2 14	− 2	i 4 52	S*	—	—
Tucson	9·7	169	i 2 19	+ 2	i 4 17	+11	—	—
Victoria	9·8	316	2 17	− 1	—	—	5·2	6·2
Florissant	17·4	92	i 3 54	− 5	i 7 9	− 2	—	—
Little Rock	17·6	107	e 3 56	− 6	i 7 18	+ 3	i 8·4	—
St. Louis	17·6	93	i 3 56	− 6	i 7 10	− 5	i 8·4	9·0
Chicago	18·8	82	i 4 19	+ 3	7 40	− 2	i 9·2	—
Sitka	20·9	325	i 4 43	+ 4	e 8 18	− 6	i 10·6	—
Ann Arbor	21·6	79	i 4 57	+11	i 8 57	+19	i 10·8	13·8
Toronto	24·6	74	5 15	− 1	i 9 28	− 6	12·2	—
Pittsburgh	24·8	82	i 5 16	− 2	i 9 21	−16	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Columbia		26·2	97	i 5 35	+ 4	i 10 1	− 1	i 13·6	—
Ottawa		26·9	70	i 5 40	+ 3	i 10 13	− 1	e 13·2	—
Georgetown		27·3	84	i 5 39a	− 2	i 10 23	+ 3	e 13·5	i 14·2
Fordham		29·2	79	e 5 58	0	i 10 51	0	i 13·2	—
Oak Ridge		30·4	75	i 6 12	+ 3	i 11 12	+ 2	e 14·6	—
Weston		30·6	75	e 6 21	+11	e 11 25	+11	—	—
Honolulu		42·7	255	e 7 36	−18	e 13 55	−21	i 17·7	—
San Juan		46·0	105	i 8 24	+ 3	e 15 6	+ 2	i 23·4	—
Scoresby Sund		51·4	25	9 5	+ 3	16 31	+11	25·2	—
Huancayo		64·1	138	i 10 29	− 4	i 19 4	− 5	e 31·2	—
Edinburgh		65·8	35	—	—	i 19 39	+ 9	i 35·5	40·6
Bergen		66·1	28	12 10	?	21 42	?	31·6	34·2
Kew		70·0	37	e 9 15?	?	—	—	e 27·2	37·9
Upsala		70·5	24	i 11 14	0	e 20 29	+ 2	e 36·2	42·7
La Paz		71·5	133	i 11 17a	− 3	i 20 35	− 4	35·2	40·4
De Bilt		72·0	34	e 11 26	+ 3	e 20 51	+ 6	e 35·2	40·5
Copenhagen		72·1	29	11 23	0	20 53	+ 7	30·2	—
Helsingfors		72·3	20	11 23	− 2	20 57	+ 9	e 35·2	—
Uccle		72·5	36	i 11 28	+ 2	20 55	+ 4	30·2	—
Hamburg		72·8	31	e 11 24	− 4	e 20 51	− 3	e 35·2	38·2
Pulkovo		74·0	18	i 11 42	+ 7	21 8	0	35·2	43·4
Göttingen		74·3	33	i 11 37	+ 1	—	—	e 37·2	39·2
Jena		75·5	32	i 11 42	− 1	e 21 31	+ 5	e 35·2	44·2
Strasbourg		75·6	35	i 11 46a	+ 2	—	—	e 29·2	45·8
Toledo		76·0	48	e 11 40	− 6	21 41	+ 9	—	—
Stuttgart		76·1	34	i 11 49a	+ 2	e 21 39	+ 6	e 34·2	—
Basle		76·3	36	e 11 47	− 1	—	—	—	—
Cheb		76·4	32	—	—	e 21 40	+ 4	e 33·2	41·2
Neuchatel		76·5	36	e 11 45	− 4	—	—	—	—
Zurich		76·9	36	e 11 48	− 3	—	—	—	—
Vladivostok		77·0	317	i 11 54	+ 2	i 21 51	+ 8	36·4	46·8
San Fernando		77·1	52	—	—	21 45	+ 1	35·2	42·7
Apia		77·5	237	—	—	e 32 16	SSSS	—	—
Tortosa	N.	77·8	45	e 11 35	−22	e 21 55	+ 3	e 39·2	—
Kucino		79·3	17	—	—	i 23 8	PS	e 36·5	40·3
Vienna		79·5	31	e 11 59k	− 6	22 15	+ 5	e 40·2	51·2
Graz		80·1	33	i 12 10	+ 2	i 22 18	+ 1	e 40·2	49·0
Triest		80·5	35	i 12 9a	− 1	i 22 22	+ 1	e 35·5	42·6
Zagreb		80·9	33	e 12 13	0	e 22 30	+ 5	e 40·8	48·8
Budapest		81·1	30	e 12 15?	+ 1	22 37	+10	39·2	51·2
Algiers		82·1	46	e 12 16	− 3	i 22 38	0	38·2	43·2
Dakar		84·3	75	12 31	+ 1	—	—	38·2	47·4
Chiufeng		86·8	325	i 12 37k	− 5	i 23 17	− 8	39·2	48·2
Suva		87·1	242	12 15?	−29	—	—	—	—
Simferopol		88·4	23	e 12 49	− 1	e 23 23	[0]	49·2	—
Yalta		88·8	23	e 12 51	− 1	e 23 27	[+ 2]	43·2	—
Sotchi		91·2	19	e 13 4	+ 1	—	—	—	—
Grozny		92·7	15	e 13 20	+10	e 23 41	[− 7]	e 41·7	—
Tiflis		94·1	17	13 18	+ 2	23 59	[+ 3]	e 42·2	50·5
Almata		94·4	352	e 13 33	+15	—	—	e 51·5	—
Frunse		95·0	354	e 9 17	?	—	—	e 51·5	—
Baku		96·4	13	e 13 32	+ 5	24 16	[+ 8]	42·2	61·2
Tashkent		96·9	358	e 12 59	−30	e 24 9	[− 1]	e 45·2	55·3
Andijan		97·3	356	e 13 35	+ 4	e 24 25	[+12]	e 49·2	—
Ksara		99·1	26	e 17 49	PP	24 24	[+ 3]	—	—
Hong Kong		102·4	316	24 50	S	(24 50)	[+13]	46·0	57·0
Manila		104·9	305	e 14 15	+ 9	27 45	PS	49·2	58·2
Wellington		105·7	229	—	—	e 43 15?	?	59·2	—
Christchurch	Z.	108·3	228	18 49	PP	29 11	?	e 58·7	—
Agra	E.	110·3	349	—	—	i 26 42	{+33}	—	62·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta		112·7	338	e 25 19	SKS	(e 25 19)	[− 6]	62·5	72·3
Bombay	N.	119·0	354	e 20 9	PP	—	—	—	77·6
Melbourne		122·1	246	e 20 27	PP	i 30 30	PS	—	—
Medan		126·2	319	e 18 15	[−44]	e 26 3	[− 5]	e 69·7	—
Kodaikanal	E.	127·1	347	e 21 2	PP	i 38 15	SS	61·2	69·7
Colombo		129·9	343	22 33	PKS	—	—	—	71·4
Batavia		129·9	304	e 22 30	PKS	—	—	—	—
Cape Town		141·5	94	23 40	?	—	—	69·7	—

Additional readings :—
Bozeman i = +1m.11s. = P_g − 5s., +2m.16s. = S_g + 7s. and +2m.39s.
Tinemaha iZ = +1m.52s. = P_g − 8s.
Haiwee iEZ = +2m.5s.
Lick iN = +2m.1s. and +2m.37s. = P_g + 3s.
Berkeley eE = iPZ = +1m.58s., iN = +3m.53s., iZ = +3m.57s., iE = +4m.17s. = S_g − 5s.
Ukiah i = +2m.45s. = P_g + 5s., +4m.14s., and +4m.21s. = S_g − 7s.
Branner iPN = +2m.31s. = P_g, iPE = +2m.51s., iE = +3m.30s., +3m.54s., and +5m.0s.
San Francisco eE = +2m.8s.
Pasadena eE = +2m.39s., iNZ = +2m.42s., iSN = +3m.57s., iSZ = +4m.22s.
Seattle e = +4m.9s., i = +4m.26s.
Tucson i = +2m.59s. and +4m.38s. = S_g − 3s.
Florissant iPP = +4m.11s.
Little Rock iPP = +4m.8s., iPPP = +4m.17s., iSS = +7m.40s. ; T_0 = 15h.5m.39s.
St. Louis iEN = +4m.2s., iPPEN = +4m.10s. ; T_0 = 15h.5m.42s.
Chicago i = +7m.55s. = SS − 2s.
Sitka iS = +8m.48s. = SS − 1s.
Ann Arbor iSS = +9m.45s. ; T_0 = 15h.5m.36s.
Toronto PN = +5m.20s., iSN = +9m.50s., iSSN = +10m.34s. ; T_0 = 15h.5m.49s.
Ottawa PPPE = +6m.19s. = PP + 3s., SS = +11m.13s. = SSS − 11s., SSS = +11m.40s. ; T_0 = 15h.5m.54s.
Georgetown i = +5m.43s. and +10m.42s. ; T_0 = 15h.5m.15s.
Fordham iPPZ = +6m.40s., iN = +10m.56s., +11m.5s., +11m.34s., and +12m.31s.
Oak Ridge iZ = +6m.34s. and +6m.40s., eSSNE = +12m.25s. ; T_0 = 15h.5m.42s.
Honolulu eP = +7m.47s.
San Juan iPP = +10m.15s., iPPP = +11m.10s.
Scoresby Sund +19m.1s. = S_cS + 6s. and +20m.27s.
Huancayo eSS = +23m.50s., e = +24m.53s.
Upsala PSN = +21m.19s.
La Paz PPZ = +13m.25s., PPE = +13m.57s., iSZ = +20m.45s., iS_cS = +21m.9s., SSN = +24m.55s., SSE = +25m.9s., SSS = +28m.5s.
Copenhagen +21m.34s. and +25m.21s. = SS + 6s.
Helsingfors P_cPEZ = +11m.58s., PPN = +15m.16s., SSSE = +29m.20s.
Hamburg iZ = +11m.29s.
Vienna iPZ = +12m.8s., iN = +13m.24s., iE = +19m.45s., PS? = +23m.29s., PKKP = +30m.26s.
Triest iPSN = +23m.7s., iE = +23m.20s.
Chiufeng PP = +16m.1s., SEN = +23m.5s. = SKS − 7s., SS?E = +28m.40s.
Tiflis PKPE = +17m.8s. = PP + 10s., PPE = +17m.23s., SKKSE = +24m.32s. = S − 2s., PSE = +26m.30s., eE = +30m.50s. = SS + 12s., SSSE = +36m.57s. = SSSS + 0s.
Baku e = +17m.23s. = PP + 8s.
Tashkent iSS = +30m.39s.
Ksara ePS = +26m.48s.
Hong Kong ? = +25m.46s. = S − 2s., PP = +26m.59s. = PS − 12s., S = +33m.24s., SS = +36m.55s.
Manila PPZ = +18m.25s., PPSS? = +63m.15s.
Calcutta eS = +36m.51s.
Bombay eE = +20m.21s. = PP + 19s.
Cape Town PPS = +40m.45s. = SS − 15s., SS = +46m.21s. = SSS + 18s.
Long waves were also recorded at La Plata, Perth, Nanking, Theodosia, and other European stations.

March 12d. 18h. 20m. 18s. Epicentre 41°·8N. 113°·0W. (as at 15h.). R.2.

A = −·291, B = −·686, C = +·667 ; D = −·921, E = +·391 ;
G = −·260, H = −·614, K = −·745.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bozeman		4·1	20	1 8	P*	i 2 9	S_g	—	—
Tinemaha	z.	6·3	222	i 1 32	+ 2	—	—	—	—
Lick		8·0	239	e 1 52	− 1	i 4 9	S_g	—	—
Berkeley		8·1	244	e 1 42	−13	i 4 12	S_g	—	—
Ukiah		8·3	253	e 2 2	+ 4	e 3 48	+17	4·2	—
Branner		8·3	241	e 1 44	−14	—	—	—	—
San Francisco	N.	8·3	244	—	—	e 3 57	S*	—	—
Pasadena		8·7	209	i 2 6k	+ 3	—	—	—	—
Seattle		8·8	314	e 2 17	+12	e 4 17	S*	4·9	—
Tucson		9·7	169	i 2 56	+39	i 4 37	S*	i 4·8	—
St. Louis		17·6	93	i 3 59	− 3	i 7 15	0	e 8·2	8·9
Chicago		18·8	82	e 2 6	?	i 7 36	− 6	i 9·5	—
Sitka		20·9	325	i 3 46	+ 7	i 8 48	SS	i 11·2	—
Ann Arbor		21·6	79	e 4 54	+ 8	i 9 0	SS	i 10·8	11·3
Toronto		24·6	74	5 13	− 3	i 9 50	+16	i 12·5	—
Pittsburgh		24·8	82	i 5 9	− 9	i 9 37	0	i 12·2	—
Columbia		26·2	97	e 5 31	0	e 10 0	− 2	i 13·8	—
Ithaca		26·8	77	e 6 0	PP	e 10 18	+ 6	—	—
Ottawa		26·9	70	i 5 42	+ 5	i 10 16	+ 2	e 13·3	—
Georgetown		27·3	84	i 5 42a	+ 1	e 10 28	+ 8	—	14·1
Fordham		29·2	79	e 5 58	0	e 10 52	+ 1	i 13·7	—
Oak Ridge		30·4	75	i 6 9	0	i 11 10	0	e 13·7	—
Honolulu		42·7	255	—	—	e 19 6	?	—	—
San Juan		46·0	105	e 8 20	− 1	e 15 1	− 3	e 22·9	—
Scoresby Sund		51·4	25	9 4	+ 2	—	—	27·7	—
Huancayo		64·1	138	e 10 34	+ 1	e 19 5	− 4	23·9	—
Upsala		70·5	24	i 11 13	− 1	e 20 26	− 1	—	—
La Paz		71·5	133	11 16	− 4	i 21 20	PS	36·5	44·8
Copenhagen		72·1	29	i 11 24	+ 1	—	—	33·7	—
Helsingfors		72·3	20	i 11 24	− 1	e 21 2	PS	—	—
Pulkovo		74·0	18	i 11 34	− 1	e 21 39	PS	36·7	44·9
Vienna	z.	79·5	31	e 12 5	0	—	—	—	—
Triest		80·5	35	—	—	e 22 40	PS	—	42·0
Sverdlovsk		81·2	4	e 12 19	+ 5	e 23 30	PS	38·7	43·9
Yalta		88·8	23	12 55	+ 3	23 29	[+ 4]	—	—
Tiflis		94·1	17	e 14 15	+59	e 23 55	[− 1]	49·0	57·8
Tashkent		96·9	358	13 42	+13	i 25 21	+22	e 47·7	60·6
Ksara		99·1	26	—	—	e 24 15	[− 6]	—	—

Additional readings and note :—
Bozeman i = +1m.12s. = P_g −4s., +2m.3s. = S* +3s., iS* = +2m.34s.
Lick iEN = +2m.31s., iE = +4m.14s., iN = +4m.17s.
Berkeley iEN = +1m.56s., iZ = +2m.0s. and +2m.5s., i = +4m.16s. = S_g −6s.
Branner iN = +3m.6s., iEN = +4m.18s., +4m.21s., and +4m.29s. = S_g +1s.
San Francisco iN = +4m.21s. = S_g −7s.
St. Louis iE = +4m.3s., iPPE = +4m.13s., iSSN = +7m.40s., iSSS = +7m.45s.
Sitka iPP = +4m.42s., iSS = +10m.28s.
Ann Arbor ePP = +5m.24s., iSS = +9m.54s. ; T_0 = 18h.20m.0s.
Toronto PP = +5m.46s., iSS = +11m.4s. ; T_0 = 18h.19m.54s.
Pittsburgh iSS = +10m.25s. ; readings have been *increased* by 20m.
Columbia eSS = +13m.22s.
Ithaca eSS = +11m.24s.
Ottawa PPP = +6m.20s., i = +6m.48s., SSE = +11m.18s., SSSN = +11m.34s.
Fordham eN = +7m.42s., +8m.10s., and +11m.12s., iN = +11m.55s.
Oak Ridge iZ = +6m.37s., eNW = +8m.8s., eNE = +8m.11s., e = +10m.31s., iSNW = +11m.13s. ; T_0 = 18h.20m.21s.
San Juan ePP = +10m.0s.
Helsingfors $ePcPNZ$ = +12m.12s., ePPE = +14m.10s. ; T_0 = 18h.20m.10s.
Triest i = +28m.31s.
Sverdlovsk e = +28m.8s.
Tiflis ePPN = +17m.13s.
Ksara e = +26m.45s. = PS +9s.
Long waves were also recorded at Hong Kong, Chiufeng, Agra, Bombay, Baku, Vladivostok, Kucino, and at other European stations.

March 12d. Readings also at 0h. (Sverdlovsk and Tashkent), 2h. (near Tananarive), 3h. (Almata, Andijan, Frunse, Tashkent, and Sverdlovsk), 4h. (Almeria and Grozny), 7h. (La Paz, Sucre, Neuchatel, Ravensburg, and near Zurich), 8h. (Baku and Sverdlovsk), 9h. (near Arisan and Karenko), 12h. (Wellington, Grozny, Erevan (2), near Tiflis, and near Sumoto), 13h. (Frunse and near Tiflis, and near Almata), 14h. (Frunse, near Almata, and Andijan), 15h. (Wellington), 16h. (Sumoto), 17h. (Little Rock, Seattle, Tucson, and near Tananarive), 18h. (Berkeley, Branner, Lick, Ukiah, Bozeman, Victoria, Seattle, Tucson, St. Louis, Almata, Andijan, Frunse, Piatigorsk, Tiflis (2), Nagoya, Tyosi, and near Mizusawa), 19h. (Lick), 20h. (Tananarive), 21h. (Ksara), 22h. (Stuttgart, Zurich, and near Ebingen (2)).

March 13d. 13h. 11m. 59s. Epicentre 11°·0S. 164°·0E. N.1.

Probable error of epicentre ±0°·33.

A = −·944, B = +·271, C = −·191 ; D = +·276, E = +·961 ;
G = +·183, H = −·053, K = −·982.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		15·7	119	4 7	+29	7 1	+30	8·0	—
Apia		23·8	99	e 5 8	0	e 10 24	SS	—	13·3
Riverview		25·5	205	e 5 21	− 4	e 9 18	−32	—	12·3
Sydney		25·5	205	e 5 11	−14	i 9 56	+ 6	14·3	15·7
Arapuni		29·4	160	i 8 1?	?	11 1	+ 6	13·8	—
Melbourne		31·7	209	e 6 18	− 2	i 11 33	+ 2	14·5	18·2
Wellington		31·7	164	6 21	+ 1	11 35	+ 4	15·0	—
Adelaide		33·2	219	e 6 31	− 3	i 11 59	+ 5	i 15·1	18·3
Christchurch		33·3	168	i 6 37	+ 3	i 12 14	+19	16·3	—
Palau		34·6	300	6 52	+ 6	—	—	—	—
Amboina		36·2	279	e 6 54	− 6	—	—	25·0	—
Chatham Ils.		36·9	157	8 43	PP	14 31	SS	21·0	26·0
Titizima		43·6	332	8 11	+ 9	—	—	—	—
Perth		48·9	237	11 21	PPP	19 41	?	24·7	27·0
Honolulu		49·5	50	(e 8 41)	− 6	i 16 5	+11	i 19·0	—
Manila		49·7	300	i 8 49a	0	17 25	?	29·0	—
Nagoya		52·8	333	e 9 17	+ 5	16 38	− 1	23·4	—
Sumoto		53·0	331	e 9 16	+ 2	e 15 25	−77	—	—
Osaka		53·0	331	9 6	− 8	16 30	−12	22·8	27·6
Miyazaki		53·0	325	8 57	−17	16 20	−22	—	—
Koti		53·1	328	e 5 13	?	16 43	0	22·1	—
Kobe		53·2	331	i 9 25a	+10	e 16 39	− 6	e 22·7	27·9
Toyooka	E.	54·1	331	9 30	+ 8	17 0	+ 3	23·4	24·7
	N.	54·1	331	9 32	+10	16 57	0	22·8	24·5
	Z.	54·1	331	9 17	− 5	—	—	—	—
Mizusawa	E.	54·4	338	e 9 33	+ 9	16 54	− 7	22·3	—
	N.	54·4	338	e 9 24	0	16 45	−16	22·2	—
Nagasaki		54·5	325	9 22	− 3	16 47	−15	—	—
Hukuoka B		54·8	326	i 9 30	+ 3	e 17 7	+ 1	e 22·9	—
Batavia		56·6	270	i 10 21	+41	—	—	e 12·5	—
Taikyu		57·5	326	e 8 45	−62	—	—	23·7	—
Zi-ka-wei	Z.	58·7	317	9 56	+ 1	17 34	−25	27·5	30·6
Hong Kong		59·1	304	10 3	+ 5	18 8	+ 4	25·0	31·2
Keizyo		59·6	327	e 11 16	(+14)	e 18 9	− 2	e 24·7	—
Zinsen		59·9	326	e 9 32	−32	e 18 0	−15	—	—
Nanking		61·0	316	e 10 13	+ 2	e 18 43	+14	29·0	32·8
Vladivostok		61·5	334	10 16	+ 1	18 36	0	25·5	30·2
Phu-Lien		64·7	299	e 10 17	−20	(21 1?)	?	21·0	—
Medan		66·5	279	10 53	+ 4	—	—	—	—
Chiufeng		67·6	322	e 10 47a	− 9	19 47	− 5	28·9	—
Calcutta		81·2	295	13 26	+72	24 42	PS	48·8	57·1
Ukiah		84·0	48	e 12 41	+13	e 22 59	+ 1	34·4	—
San Francisco		84·1	50	e 12 59	+30	e 23 26	PS	—	—
Sitka		84·2	28	c 12 27	− 2	e 22 56	[+ 3]	e 35·3	—
Branner		84·2	50	e 12 29	0	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Berkeley	N.	84·3	50	e 11 48	−42	—	—	—	—
Santa Barbara		85·2	54	e 12 31	− 3	—	—	—	—
Colombo		85·6	277	13 7	+31	23 21	+ 7	53·2	64·0
Pasadena		86·3	54	i 12 36	− 4	e 23 8	[0]	e 35·3	—
Mount Wilson	Z.	86·4	54	e 12 35	− 5	—	—	—	—
La Jolla		86·8	56	12 37	− 5	—	—	—	—
Riverside		86·9	54	e 12 38	− 5	e 23 13	[0]	—	—
Haiwee	Z.	87·0	52	e 12 42	− 1	—	—	—	—
Tinemaha		87·1	52	e 12 39	− 5	e 23 21	− 7	—	—
Victoria		87·1	39	12 52	+ 8	23 17	[+ 3]	39·2	45·4
Seattle		87·5	41	e 13 17	+32	e 23 45	+13	e 36·4	—
Kodaikanal	E.	88·6	281	i 12 55	+ 4	i 23 16	[− 8]	—	57·4
Hyderabad		89·1	288	12 59	+ 6	23 29	[+ 2]	41·4	59·4
Agra	E.	91·4	297	e 13 4	0	24 20	+11	—	—
Tucson		91·8	58	e 13 9	+ 3	e 24 14	+ 1	e 37·0	—
Bozeman		94·4	44	e 13 25	+ 7	e 23 53	[− 5]	e 40·5	—
Bombay	N.	94·7	288	e 13 9	−10	—	—	—	70·9
Almata		95·4	313	e 13 15	− 7	—	—	—	—
Frunse		97·1	312	e 10 8	?	—	—	e 48·0	—
Andijan		98·4	310	e 14 9	+33	—	—	e 51·0	—
Tashkent		100·8	311	e 18 12	?	—	—	—	59·2
Samarkand		102·4	308	e 18 16	PP	—	—	—	—
Sverdlovsk		106·5	326	e 18 16	[+ 9]	26 10	−12	55·6	67·2
Little Rock		107·4	57	—	—	25 45	{− 3}	—	—
Florissant		109·0	53	e 14 52	+26	e 26 7	{+ 7}	e 48·0	57·0
St. Louis		109·1	53	15 18	+51	25 3	[− 6]	e 50·8	57·8
Tananarive		110·6	245	—	—	39 16	?	58·3	62·8
Chicago		111·0	49	e 19 11	PP	—	—	46·7	—
Ann Arbor		113·8	48	—	—	e 29 13	PS	e 48·0	—
Baku		115·4	310	e 16 47	?	27 47	{+62}	49·0	59·3
Toronto		116·7	46	19 53	PP	27 41	{+47}	53·2	—
Columbia		116·8	57	e 19 11	[+34]	e 29 23	SKSP	e 55·0	—
Huancayo		116·8	110	e 19 58	PS	i 29 41	PS	e 54·6	—
Pittsburgh		116·9	50	e 19 42	PP	i 29 25	SKSP	e 48·3	—
Grozny		118·0	313	e 18 43	[+ 2]	—	—	e 40·0	—
Charlottesville		118·4	53	—	—	e 29 47	SKSP	e 49·2	—
Kucino		118·9	329	e 19 27	[+44]	e 27 15	{+ 6}	—	—
Ottawa		118·9	44	e 20 1?	PP	e 27 1?	{− 8}	e 48·0	—
Tiflis		119·0	312	20 6	PP	e 25 0	[−47]	e 53·2	61·1
Ithaca		119·1	47	—	—	e 36 1	SS	—	64·0
Georgetown	Z.	119·3	51	e 19 22	[+38]	e 29 59	PS	e 56·0	—
La Plata		119·4	141	—	—	30 25	PS	62·6	65·0
Scoresby Sund		120·4	3	20 0	PP	30 7	PS	48·0	—
Pulkovo		120·5	335	20 0	PP	30 2	PS	51·0	69·2
Fordham		121·3	48	e 20 17	PP	e 25 16	[−38]	e 57·0	—
La Paz		121·6	117	e 19 13	[+24]	i 30 25	PS	57·5	64·2
Helsingfors		122·3	338	e 21 47	?	e 23 59	?	e 53·0	—
Oak Ridge		122·6	46	e 21 21	?	e 30 7	SKSP	e 50·3	—
Cape Town		124·4	215	21 4	PP	28 42	{+57}	64·0	—
Upsala		125·2	340	—	—	e 34 1?	?	e 55·0	—
Simferopol		125·5	318	21 2	PP	—	—	47·0	—
Yalta		125·6	317	e 20 54	PP	—	—	e 43·0	—
Ksara		127·6	304	e 21 9	PP	32 54	?	62·0	—
Bergen		128·2	347	22 21	?	—	—	—	58·0
Copenhagen		130·1	340	21 23	PP	e 29 14	?	54·0	—
San Juan		131·2	75	e 19 13	[+ 4]	e 33 31	?	e 54·2	—
Hamburg		132·7	340	e 21 45	PP	i 27 50	?	e 58·0	60·0
Budapest		133·2	328	e 21 1?	PP	—	—	54·0	65·5
Vienna		134·0	330	e 19 20	[+ 7]	i 25 48	?	e 69·0	84·0
Göttingen		134·3	338	e 23 1	PKS	—	—	e 54·3	61·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Cheb		134·5	335	e 21 33	PP	—	—	e 52·0	65·0
Graz		135·2	329	e 22 8	PP	—	—	e 70·0	84·7
De Bilt		135·5	341	e 22 1?	PP	e 40 9	SS	64·0	86·2
Zagreb		135·8	327	22 1?	PP	e 40 1?	SS	e 77·0	—
Bidston		136·4	350	—	—	e 37 21	?	e 64·7	—
Stuttgart		136·9	335	e 22 5	PP	e 28 55	{− 9}	e 63·0	—
Uccle		136·9	342	e 17 1?	?	e 40 1?	SS	e 55·0	—
Triest		137·1	329	e 19 20	[+ 2]	26 11	SKS	e 59·0	68·8
Kew		137·6	345	—	—	e 40 22	SS	e 65·0	75·1
Strasbourg		137·6	337	e 18 1?	?	23 1?	PKS	e 48·0	86·3
Zurich		138·2	335	e 22 17	PP	—	—	—	—
Neuchatel		139·1	336	e 19 25	[+ 5]	—	—	—	—
Paris		139·2	341	e 20 1?	[+41]	—	—	56·0	87·0
Piacenza		139·5	332	20 57	[+96]	—	—	—	79·7
Prato		139·6	329	e 19 12	[− 9]	29 1	{−21}	59·0	73·6
Tortosa	N.	146·9	336	e 20 22	[+45]	—	—	e 63·0	97·4
Algiers		149·1	329	e 20 27	[+47]	—	—	52·0	—
Toledo		149·3	341	e 19 46	[+ 5]	—	—	e 61·0	—
Alicante		149·4	336	e 20 34	[+53]	—	—	e 81·6	—
Almeria		151·4	337	e 21 0	{+55}	—	—	e 133·6	—

Additional readings and notes :—
Riverview iEN = +5m.29s.
Sydney SSS = +11m.37s.
Wellington PP = +7m.17s., i = +9m.23s. = P_cP +8s., SS = +13m.6s.
Christchurch iZ = +7m.45s. = PPP −4s., iEN = +7m.50s. = PPPP −2s., P_cS = +13m.0s., SSZ = +14m.31s., L_q? = +14·8m.
Amboina i = +8m.14s. = PP −2s.
Perth PS = +20m.1s. = SSS −15s.
Honolulu e = +13m.45s. ; P is given as eS.
Sumoto eSN = +16m.41s.
Osaka i = +10m.29s. = P_cP +2s.
Kobe PPNZ = +10m.31s. = P_cP +3s.
Batavia i = +11m.31s. = PP −9s.
Zi-ka-wei iZ = +11m.17s., PPZ? = +12m.14s., iZ = +20m.12s. and +22m.12s. = SS +24s.
Hong Kong PP = +12m.45s., ? = +19m.39s. = S_cS −7s., SS = +22m.19s.
Medan i = +15m.25s. = PPPP +8s.
Chiufeng iP = +11m.2s., i = +12m.9s.
Ukiah e = +28m.1s. = SS −11s.
San Francisco eN = +34m.18s.
Sitka ePS = +23m.41s., e = +27m.41s.
Berkeley eE = +12m.27s., iZ = +12m.29s.
Pasadena eZ = +17m.8s., +24m.20s. = PS +13s. and +27m.31s.
Agra PPE = +16m.46s., PPPE = +19m.8s., eSKSE = +23m.22s., SKKSE = +23m.58s., PSE = +25m.18s., PPSE = +25m.56s., SSSE = +34m.36s.
Tucson e = +23m.51s. = SKS +8s. and +30m.13s. = SS +7s.
Bozeman ePS = +25m.41s., eSS = +29m.49s.
Bombay eE = +13m.12s.
Tashkent ePP = +18m.30s., e = +23m.19s. and +42m.1s.
Sverdlovsk iSKS = +25m.11s., SS = +33m.55s., SSS = +37m.55s., iL_q = +44·7m.
Florissant iPP = +18m.53s., eSKS = +24m.57s., iPS = +28m.14s., iPPS = +28m.59s.
St. Louis ePPE = +18m.59s., eSKKSE = +26m.4s., iPSEN = +28m.23s., iSSN = +34m.15s., iSSE = +34m.27s., iSSSN = +38m.26s., iSSSE = +38m.50s.
Tananarive E = +49m.34s., e = +53m.22s., +56m.45s., and +58m.1s.
Chicago e = +34m.37s. = SS +5s., i = +34m.47s., eSSS = +41m.27s. = SSSS −24s.
Ann Arbor eE = +29m.31s. = PS +26s., eN = +35m.19s. = SS +9s.
Baku PP = +19m.47s., iPS = +29m.36s.
Toronto ePS = +29m.26s., SS = +35m.41s. ; T_o = 13h.12m.28s.
Columbia iPP = +19m.35s., eSS = +36m.1s.
Huancayo e = +27m.59s., iPS = +31m.8s., eSS = +36m.13s., e = +40m.1s. = SSS +0s. and +47m.39s.
Pittsburgh eSS = +35m.32s.
Grozny e = +21m.25s. and +26m.23s.
Charlottesville eSS = +36m.21s.
Kucino e = +21m.7s., +28m.11s., and +36m.24s. = SS +7s.
Ottawa e = +30m.1s.? = PS +9s.
Tiflis ePPPE = +23m.28s., ePKKPN = +28m.3s., PSE = +30m.5s., ePPSN = +31m.21s., eSSSE = +41m.36s.

Continued on next page.

Georgetown PPZ = +20m.4s., eSSZ = +36m.14s. ; T_0 = 13h.12m.0s.
La Plata +32m.42s.
Scoresby Sund +37m.1s.
Pulkovo SS = +36m.33s.
Fordham ePSE = +30m.16s., eSSN = +36m.55s.
La Paz PPE = +20m.35s., iE = +32m.53s., SSN = +36m.43s., iEN = +37m.21s., SSS = +40m.31s.
Helsingfors eSKKSE = +26m.42s., e?EN = +28m.12s., ePSE = +30m.17s., ePPSEN = +31m.24s., e?EN = +33m.47s., eSSEN = +38m.1s., eSSSEN = +43m.31s.
Oak Ridge eSS?NE = +37m.9s., eSS?NW = +37m.41s.
Cape Town PP = +23m.20s. = PPP + 8s., SKP = +24m.57s., S = +31m.20s., PS = +33m.30s., SS = +40m.47s., SSS = +44m.54s.
Ksara SS = +38m.40s.
Copenhagen +22m.34s.
San Juan e = +21m.26s. = PP + 1s., iPP = +22m.29s. = PKS − 10s., eSS = +45m.33s.
Hamburg iNZ = +22m.45s. = PKS + 0s., eE = +39m.1s. = SS − 12s.
Vienna i = +21m.53s. = PP + 9s., PKP? = +23m.0s. = PKS + 10s., iPP? = +23m.53s.
De Bilt eN = +40m.18s., eE = +44m.59s., eEN = +55m.22s.
Zagreb eNE = +23m.1s.? = PKS + 5s. and +34m.21s., eNW = +55m.1s.? and +66m.1s.?, eNE = +69m.1s.? and +73m.1s.?
Stuttgart eSS = +40m.13s.
Uccle e = +23m.1s.? = PKS + 1s. and +45m.1s.? = SSS + 4s.
Triest eZ = +20m.22s., i = +22m.56s. = PKS − 5s., eZ = +23m.8s., iPPP = +23m.56s., iE = +24m.25s., iN = +24m.52s. = PPP − 3s., i = +25m.26s. and +27m.49s., SKKS? = +28m.12s., i = +40m.21s. = SS + 14s., iE = +45m.26s. = SSS + 26s., iN = +45m.31s., iE = +55m.34s., i = +57m.28s.
Long waves were also recorded at Theodosia and other European stations.

March 13d. 23h. 33m. 38s. Epicentre 30°·5N. 51°·7E. (as on Feb. 4d.). X.

A = +·534, B = +·676, C = +·508 ; D = +·785, E = −·620 ;
G = +·315, H = +·398, K = −·862.

	△	Az.	P.	O − C.	S.	O − C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Baku	10·0	352	e 2 51	+30	e 4 50	S*	6·4	11·6
Erevan	11·3	331	e 4 7	?	e 6 42	L	(e 6·7)	—
Tiflis	12·5	336	2 53	− 2	5 21	+ 6	6·5	7·6
Grozny	13·6	342	e 3 0	−10	—	—	e 6·9	—
Ksara	13·8	288	e 3 31?	+18	6 15	+29	i 7·7	—
Samarkand	15·5	50	e 3 22	−13	—	—	—	—
Tashkent	17·8	48	i 4 4	0	e 7 23	+ 3	e 9·1	13·3
Yalta	19·6	320	e 4 25	0	e 8 12	+14	—	—
Andijan	19·6	53	e 4 27	+ 2	—	—	e 12·2	—
Simferopol	20·0	321	4 28	− 2	e 8 18	+12	—	—
Frunse	22·0	49	e 0 34	?	(e 8 10)	−36	e 8·2	—
Almata	23·8	50	e 5 12	+ 4	—	—	—	—
Sverdlovsk	27·0	11	i 5 43	+ 5	e 10 16	+ 1	14·4	16·0
Pulkovo	32·6	341	e 7 16	PP	—	—	18·4	—
Chur	36·2	310	e 6 55	− 5	—	—	—	—

Long waves were also recorded at Kucino and Triest.

March 13d. Readings also at 0h. (Kobe, near Sumoto, and Koti), 1h. (near Wellington and near Sumoto), 2h. and 3h. (Tucson), 4h. (Sumoto), 5h. (near Medan), 7h. (near Nanking, Almata, Frunse, Samarkand, and near Andijan), 9h. (near Amboina), 10h. (Little Rock, Yalta, and Wellington), 11h. (near Tyosi), 12h. (Little Rock), 15h. (Tananarive), 16h. (near Amboina, Berkeley (2), Branner, Lick, near Nagoya, Osaka, Sumoto (2), and Kobe), 17h. (Piatigorsk), 21h. (Baku, Sverdlovsk, and Tashkent), 22h. (near Lick), 23h. (Erevan, near Arisan, Karenko, and Taihoku).

March 14d. Readings at 1h. (near Berkeley, Branner, and Lick), 2h. (Sverdlovsk, Perth, Tashkent, Vladivostok, and Wellington), 4h. (Huancayo, La Paz, and San Juan), 5h. (Andijan, Sverdlovsk, De Bilt, Paris, Strasbourg, Stuttgart, Kucino, and near Nanking), 6h. (Christchurch, Wellington (2), Medan, Malabar, near Batavia, and near Tyosi), 9h. (Riverview, Christchurch, and near Wellington (2)), 10h. (Bombay and Kodaikanal), 11h. (Baku, Sverdlovsk, Tashkent, and Mizusawa), 20h. (Hong Kong).

March 15d. 10h. 46m. 38s. Epicentre 39°·5S. 177°·6E. (as on 1933 May 15d.). R.2.

A = −·771, B = +·032, C = −·636; D = +·042, E = +·999; G = +·635, H = −·027, K = −·772.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hastings		0·6	256	−0 8	−17	0 3	−12	—	—
Tuai		0·8	333	0 22?	+11	0 33	+12	—	—
Bunnythorp		1·8	243	0 22?	− 4	0 43	− 3	—	—
Arapuni		2·1	313	0 34	+ 4	1 0	+ 6	—	—
New Plymouth		2·8	279	0 22?	−18	1 2	−10	—	—
Wellington		2·8	230	0 40	0	1 10	− 2	—	—
Takaka		3·9	248	1 9	P_g	1 55	S*	—	—
Glenmuick		4·8	223	0 53?	−15	1 36	P_g	—	—
Christchurch		5·5	221	1 20	+ 2	2 19	− 1	—	—
Chatham Ils.		6·2	137	2 19	+51	3 37	S_g	4·6	6·9
Suva		21·4	2	4 52	+ 8	8 55	SS	10·4	—
Riverview	E.	21·9	277	e 4 48	− 2	i 8 52	+ 8	e 10·6	13·6
Sydney		21·9	277	i 4 54	+ 4	i 8 37	− 7	10·9	13·6
Melbourne		25·4	263	5 20	− 4	9 50	+ 2	11·7	14·8
Adelaide		31·2	266	—	—	e 12 5	+42	—	20·4
Perth		49·8	259	18 47	S_cS	23 17	?	26·8	28·4
Amboina		57·2	296	9 30	−15	—	—	e 32·4	—
Batavia		71·3	278	e 11 35	+16	—	—	e 40·4	—
Manila		75·5	304	i 11 39a	− 4	i 21 13	−13	34·5	40·4
Medan		83·8	280	e 12 50	+23	i 22 58	+ 3	e 43·5	48·5
Hong Kong		85·6	304	12 43	+ 7	22 52	−22	37·5	48·2
La Plata	E.	89·7	137	—	—	35 28	SSSS	44·0	49·3
Vladivostok		92·3	329	e 13 17	+ 9	e 25 8	PS	44·9	47·8
La Jolla	Z.	94·2	50	e 13 1	−16	—	—	—	—
Pasadena		94·5	51	e 13 21	+ 3	i 24 40	+ 2	e 46·4	—
Mount Wilson	Z.	94·6	51	e 13 22	+ 3	—	—	—	—
Riverside	E.	94·9	51	—	—	23 58	[− 2]	—	—
Huancayo		95·1	111	—	—	e 24 16	{ 0}	e 44·8	—
Tinemaha	Z.	96·6	47	i 13 31	+ 3	—	—	—	—
La Paz		97·1	119	14 6	+36	i 25 38	+37	46·4	48·7
Chiufeng		97·3	317	—	—	i 23 59	[−14]	—	57·4
Kodaikanal	E.	104·3	272	18 29	PP	—	—	—	—
Bombay		113·1	276	e 19 11	PP	i 29 18	PS	—	64·0
Agra	E.	113·8	287	—	—	e 29 7	PS	—	—
Almata		122·6	302	—	—	e 30 22	PS	—	—
Frunse		124·1	301	—	—	e 27 40	{− 4}	—	—
Andijan		124·7	297	—	—	e 32 45	?	—	—
Tashkent		127·0	297	e 18 23	[−38]	e 30 24	PS	e 51·4	78·3
Oak Ridge	N.E.	129·2	63	e 22 28	?	e 39 32	?	e 61·4	—
Sverdlovsk		136·4	316	i 22 10	PP	e 33 0	PS	66·4	79·1
Baku		140·5	289	e 22 34	PP	e 36 22	?	72·4	85·2
Grozny		144·2	293	e 19 30	[− 2]	—	—	—	—
Kucino		149·0	315	e 20 0	[+20]	e 33 41	SKSP	e 67·8	84·6
Ksara		149·0	271	e 19 56	[+16]	—	—	76·9	—
Pulkovo		151·2	325	e 19 49	[+ 6]	e 43 40	SS	74·4	92·1

Additional readings :—
Bunnythorp i = +40s. and +48s.
New Plymouth i = +54s. = P_g +4s. and +1m.12s.
Wellington P = +44s. = P* −1s., i = +49s. = P_g −1s., P* = +52s., i = +54s., P_g = +1m.0s.
Takaka i = +1m.17s., S_g? = +2m.5s.
Glenmuick P* = +1m.10s., S_g = +2m.22s. = S* +1s.
Christchurch iZ = +1m.48s. = P_g +4s., i = +1m.59s., iEZ = +2m.7s., S = +2m.15s., i = +2m.32s.
Riverview ePZ = +4m.50s., eN = +9m.5s.
Perth P_cP = +21m.22s., SS = +24m.57s., SSS = +25m.12s.
Amboina i = +12m.52s. = PPP −7s.
Vladivostok PP = +16m.39s., eSS = +30m.10s.
Pasadena eZ = +16m.42s. = PP −19s.

Continued on next page.

Riverside eE = +24m.43s. =S +2s.
Huancayo e = +31m.22s.
La Paz iPPZ = +17m.34s., SKS = +24m.34s.
Chiufeng eZ = +24m.1s., iEZ = +25m.57s.
Bombay eN = +19m.41s. =PP +21s.
Tashkent i = +19m.56s. and +22m.6s., e = +22m.24s., +32m.52s., and +34m.22s.
Sverdlovsk e = +22m.52s. =PKS −6s. and +35m.27s.
Kucino e = +43m.39s. and +50m.39s.
Ksara SKP = +23m.28s.
Pulkovo e = +23m.32s. =PKS +4s. and +48m.42s.
Long waves were also recorded at Tananarive, Cape Town, Phu-Lien, Hyderabad, Tiflis, San Juan, and other European and American stations.

March 15d. Readings also at 2h. (near Almata and Andijan), 10h. (Hastings, Wellington, Little Rock, Tananarive, Baku, Sverdlovsk, Pulkovo, Ksara, Simferopol, Yalta, Theodosia, Budapest, and Triest), 11h. (Huancayo, Hastings (2), and Wellington (2)), 12h. (Berkeley, Lick, Seattle, Sitka, Bozeman, Pasadena, Tinemaha, Tucson, St. Louis, and Little Rock (2)), 13h. (Berkeley, Lick (2), Seattle, St. Louis, Tucson, Bozeman (2), Pasadena (2), Tinemaha (2), Little Rock, Tuai, near Tyosi, and near Tananarive (2)), 14h. (Seattle, Tucson, Oak Ridge (2), St. Louis, Little Rock, Almata, Tuai, and near Wellington), 15h. (Almata, Frunse, Samarkand, and near Sumoto), 16h. (near Tyosi), 17h. (Tuai, Mizusawa, and near Tyosi), 18h. (near Tyosi), 19h. (Tuai), 20h. (Hastings).

March 16d. 14h. 13m. 42s. Epicentre 5°·1S. 145°·4E. N.2.

A = −·820, B = +·566, C = −·089; D = +·568, E = +·823; G = +·073, H = −·050, K = −·996.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Palau	16·5	319	4 3	+15	—	—	—	—
Amboina	17·2	274	i 3 55	− 2	i 7 16	+10	—	—
Riverview	29·3	170	e 6 6	+ 7	10 18	−35	14·2	16·3
Sydney	29·3	170	e 8 13	?	i 11 8	+15	13·9	14·7
Adelaide	30·5	191	i 6 16	+ 7	i 10 44	−28	i 12·4	19·6
Manila	31·2	309	i 6 20	+ 4	11 24	+ 1	—	—
Melbourne	32·7	181	—	—	i 11 13	−33	16·0	20·4
Suva	34·8	114	5 18?	?	—	—	—	—
Taihoku	38·0	324	6 25	−50	—	—	—	—
Batavia	38·4	267	7 17	− 1	—	—	—	—
Perth	38·5	222	—	—	i 12 58	−16	—	20·8
Miyazaki	39·4	341	7 28	+ 1	13 29	+ 2	—	—
Siomisaki	39·6	347	7 29	0	13 30	0	—	—
Koti	40·3	344	i 7 36	+ 1	i 13 39	− 2	—	—
Nagasaki	40·6	340	e 7 38	+ 1	e 9 48	PcP	—	—
Misima	40·7	352	7 37	− 1	13 39	− 8	—	—
Sumoto	40·7	347	e 7 37k	− 1	13 41	− 6	—	—
Kobe	40·9	347	i 7 40k	0	e 13 49	− 1	—	—
Nagoya	41·1	350	e 7 40	− 1	—	—	—	—
Tyosi	41·1	355	e 13 42	S	(e 13 42)	−11	—	—
Hong Kong	41·1	312	7 44	+ 3	13 58	+ 5	—	—
Kohu	41·3	352	7 42	− 1	13 54	− 2	—	—
Mito	41·7	355	7 48	+ 2	13 57	− 5	—	—
Maebasi	42·0	353	7 50	+ 1	13 58	− 8	—	—
Oiwake	42·0	352	7 47	− 2	14 3	− 3	—	—
Nagano	42·3	352	7 51	0	14 14	+ 4	—	—
Sendai	43·6	356	8 0	− 2	14 23	− 7	—	—
Mizusawa	44·4	356	e 8 1	− 7	e 14 38	− 3	—	—
Wellington	44·7	148	8 15	+ 5	14 6	−40	18·1	—
Nanking	45·0	327	i 8 15k	+ 2	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Christchurch		45·3	152	i 8 13	− 2	i 14 18	−37	—	—
Phu-Lien		46·0	305	e 8 26	+ 5	e 15 11	+ 7	—	—
Medan		47·5	280	8 41	+ 9	i 15 50	+24	—	—
Vladivostok		49·7	347	i 8 16	−33	i 15 46	−11	—	—
Chatham Ils.		51·3	145	—	—	16 18?	− 1	—	—
Chiufeng		52·6	332	i 9 14	+ 3	i 16 36	− 1	—	—
Calcutta		62·2	299	8 22	−118	(17 37)	−68	17·6	—
Agra	E.	72·5	300	i 11 20	− 6	—	—	—	—
Bombay		75·4	291	i 11 39	− 4	i 21 13	−12	—	—
Almata		78·1	316	e 12 0	+ 2	—	—	—	—
Frunse		79·7	315	e 7 8	?	—	—	—	—
Andijan		80·7	312	e 12 8	− 4	—	—	—	—
Tashkent		83·1	312	i 12 21	− 3	e 22 34	−14	—	49·1
Samarkand		84·4	310	e 12 38	+ 8	—	—	—	—
Baku		97·4	310	e 17 34	PP	26 37	PS	e 42·8	—
Tinemaha	z.	98·1	54	e 13 23	−12	—	—	—	—
Mount Wilson	z.	98·2	56	e 13 25	−10	—	—	—	—
Pasadena		98·2	56	i 13 22	−13	—	—	—	—
Grozny		100·5	313	e 13 29	−17	e 17 48	PP	—	—
Pulkovo		106·8	331	—	—	i 27 58	PS	51·3	—
Ksara		109·0	303	e 18 59	PP	e 28 53	PS	—	—
Copenhagen		117·1	332	—	—	28 18?	?	—	—
La Paz		140·4	124	e 19 18	[− 4]	i 22 38	PP	—	—

Additional readings and note :—
Melbourne e = +12m.31s., i = +15m.11s.
Koti ipP = +8m.4s.
Sumoto SN = +13m.43s., SE = +13m.45s.
Kobe eZ = +9m.56s. = P_cP +11s., eN = +14m.40s.
Hong Kong ? = +8m.26s., PPP = +10m.16s., ? = +14m.40s., SS = +17m.57s. = S_cS +9s.
Christchurch iN = +8m.54s. and +15m.1s. = S + 6s., iEZ = +15m.12s.
Medan i = +9m.28s. and +17m.0s.
Vladivostok gives two other shocks at this time : iP = +7m.47s., iS = +14m.56s., and P = +10m.20s., S = +17m.28s.
Chiufeng pPEZ = +9m.40s., isS?EN = +17m.30s.
Calcutta S = +13m.25s.
Bombay iPN = +11m.43s., PSE = +22m.9s., PSN = +22m.13s.
Tashkent ePP = +15m.38s., eSS = +28m.42s.
Pasadena iZ = +13m.55s.
Pulkovo iPPS = +28m.39s., eSS = +33m.42s.
Long waves were also recorded at Oak Ridge and Cape Town.

March 16d. 16h. 59m. 52s. Epicentre 50°·5N. 170°·2W. (as on 1930 June 13d.). R.3.

A = −·627, B = −·108, C = +·772 ; D = −·170, E = +·985 ; G = −·760, H = −·131, K = −·636.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka		21·3	59	e 4 42	− 1	e 8 46	+14	—	—
Ukiah		34·6	91	—	—	e 12 32	+17	—	—
Berkeley	E.	35·9	92	—	—	i 12 53	+18	—	—
Vladivostok		39·2	284	6 22	−63	e 12 28	−56	16·8	27·6
Mount Wilson	z.	40·9	93	e 7 49	+ 9	—	—	—	—
Pasadena		40·9	93	i 7 46	+ 6	—	—	e 18·2	—
Riverside	z.	41·4	93	i 7 52	+ 8	—	—	—	—
La Jolla		42·2	94	e 7 57	+ 7	—	—	—	—
Chiufeng		50·7	289	16 7	S	(16 7)	− 4	e 23·7	31·3
Toronto		58·3	59	e 9 41	−11	18 6	+13	29·1	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ottawa		59·1	55	—	—	e 18 8?	+ 4	e 29·1	—
Georgetown	Z.	62·8	61	e 10 28	+ 4	e 19 26	+34	e 32·1	—
Oak Ridge	N.E.	63·2	55	—	—	e 18 58	+ 1	e 31·2	—
Hong Kong		64·0	275	19 14	S	(19 14)	+ 7	—	42·1
Pulkovo		68·5	350	—	—	e 20 48	(− 6)	36·1	44·7
Almata		69·5	315	e 11 4	− 4	—	—	—	—
Frunse		70·9	315	e 6 22	?	—	—	—	—
Andijan		73·6	316	e 11 22	−10	—	—	—	—
Tashkent		74·6	320	i 12 3	+25	i 20 58	−17	e 37·0	48·4
Samarkand		76·9	320	e 11 30	−21	—	—	—	—
Theodosia		81·9	343	e 12 21	+ 3	—	—	—	—
Simferopol		82·2	343	e 12 17	− 2	—	—	—	—
Baku		82·6	331	e 12 17	− 4	22 39	− 4	44·1	61·2
Yalta		82·7	343	e 12 19	− 3	—	—	—	—
Tiflis		82·9	335	12 20	− 3	e 22 39	− 7	45·9	59·7
Bombay		91·3	303	—	—	e 23 53	−15	—	50·2

Additional readings :—
Toronto PP = +12m.41s. ; T_0 = 16h.59m.24s.
Oak Ridge eNE = +26m.8s. = SSSS − 5s.
Baku SS = +28m.14s., SSS = +32m.26s.
Long waves were also recorded at Honolulu, Christchurch, Chicago, Charlottesville, Columbia, San Juan, Scoresby Sund, Copenhagen, Cheb, Helsingfors, Kucino, San Fernando, and Hyderabad.

March 16d. Readings also at 0h. and 1h. (Grozny), 3h. (near La Paz), 5h. (Berkeley and Lick), 7h. (San Juan and near Hastings), 8h. (near Manila), 9h. (Oak Ridge and Scoresby Sund), 10h. (Baku, Pulkovo, Tashkent, Copenhagen, De Bilt, Triest, and San Fernando), 11h. (Apia), 12h. (Theodosia), 14h. (Tyosi), 16h. (Almata, Andijan, Frunse, and near Tashkent), 17h. (near Tiflis), 18h. (Tyosi, near Mizusawa, and near Sumoto), 21h. (near Mizusawa), 23h. (Tiflis).

March 17d. 18h. 37m. 4s. Epicentre 35°·7N. 140°·4E. (as on 1932 Sept. 19d.). X.

A = − ·626, B = + ·518, C = + ·584.

	△	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Tyosi	0·4	85	i 0 4a	− 2	0 8	− 2	0·2
Susaki	1·6	228	0 25	+ 2	0 46	+ 5	—
Nagoya	2·9	259	0 43	+ 2	1 36	S_g	1·7
Mizusawa	3·5	9	e 0 49	− 1	i 1 28	− 2	—
Osaka	4·1	261	1 22	P_g	2 25	S_g	2·9
Kobe	4·4	258	0 26	?	—	—	2·4

March 17d. Readings also at 0h. (near Hastings), 1h. (near Wellington), 2h. (Ravensburg, near Ebingen, Stuttgart, near Basle, and Zurich), 4h. (near Sumoto), 8h. (Kobe and near Osaka), 11h. (Wellington), 20h. (near Nanking (2)), 22h. (Bozeman and Tucson).

March 18d. 0h. 19m. 13s. Epicentre 28°·0N. 118°·5E. N.3.

A = −·421, B = +·776, C = +·469; D = +·879, E = +·477; G = −·224, H = +·413, K = −·883.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Taihoku		4·0	136	e 0 45	−12	1 28	−14	—	—
Nanking		4·1	3	(i 0 59)	+ 1	(1 34)	−11	—	—
Arisan		4·9	154	1 9	− 1	2 1	− 4	—	—
Karenko		4·9	144	e 1 12	+ 2	2 12	+ 7	—	—
Isigakizima		6·2	124	1 30	+ 2	—	—	—	—
Hong Kong		6·8	215	1 36	− 1	2 15	P_g	2·4	2·5
Zinsen		11·7	34	e 2 45	+ 1	—	—	—	—
Phu-Lien		13·0	239	e 3 17	+15	e 4 38	−49	4·8	5·0
Manila		13·6	170	e 5 31	S	(e 5 31)	−10	7·4	8·8
Vladivostok		18·6	32	e 6 15	?	—	—	—	7·4
Tashkent		42·0	302	—	—	(e 17 35)	(−19)	e 17·6	20·7
Tiflis	E.	60·2	304	—	—	e 26 29	?	30·6	—
Pulkovo		65·2	326	—	—	e 17 8	?	29·8	—

Additional readings and notes:—
Nanking iP = (+1m.3s.) = P* −4s.; readings have been *increased* by 2m.
Manila SEN = +6m.32s.
Vladivostok i = +6m.34s. and +6m.39s.
Long waves were also recorded at Baku and Sverdlovsk.

March 18d. 4h. 33m. 13s. Epicentre 50°·1N. 156°·7E. N.1.

Probable error of epicentre ±0°·20.

A = −·589, B = +·254, C = +·767; D = +·396, E = +·918; G = −·705, H = +·303, K = −·641.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Mizusawa		15·5	231	e 3 22	−13	i 6 36	+ 9	8·6	—
Vladivostok		18·3	257	i 4 9	− 1	7 25	− 6	i 7·8	8·2
Tyosi		18·4	224	i 4 12k	+ 1	7 22	−11	—	—
Susaki		20·1	227	(4 30)	− 1	4 30	P	—	—
Nagoya		20·7	231	i 4 34	− 3	—	—	—	—
Toyooka	Z.	21·5	236	e 4 44	− 1	—	—	—	—
Osaka		21·8	233	4 48	− 1	7 49	−53	—	10·4
Kobe		22·0	234	i 4 49a	− 2	i 8 50	+ 4	—	12·7
Sumoto		22·4	233	4 53	− 2	e 9 27	SS	—	—
Koti		23·7	235	i 5 8	+ 1	i 9 21	+ 3	—	—
Heizyo		24·4	255	i 5 17	+ 3	—	—	—	—
Keizyo		24·6	251	4 18	−58	—	—	—	—
Taikyu		24·7	246	i 5 19	+ 2	7 1	?	—	—
Zinsen		24·9	251	i 5 19	0	(e 9 58)	+19	e 10·0	—
Hukuoka		25·4	239	i 5 24	0	—	—	—	—
Hukuoka B		25·4	239	i 5 24	0	e 10 19	+31	—	—
Nagasaki		26·3	239	e 5 32	0	e 10 0	− 3	—	—
Chiufeng		29·9	266	i 6 5a	+ 1	10 39	−24	15·8	—
Zi-ka-wei	Z.	32·3	247	i 6 25a	0	—	—	—	—
Nanking		33·3	252	i 7 33a	+59	e 12 45	+50	e 15·8	—
Hong Kong		43·2	245	7 56	− 2	14 9	−15	20·9	28·0
Manila		45·8	232	i 8 17	− 2	14 57	− 5	—	—
Honolulu		45·8	111	e 8 17	− 2	e 15 21	+19	e 19·3	—
Victoria	E.	49·6	59	8 48	0	16 4	+ 9	24·0	25·0
Almata		52·5	295	e 9 13	+ 3	i 19 4	(+ 3)	28·3	—
Sverdlovsk		52·7	317	—	—	i 18 59	(+ 7)	31·2	36·0
Frunse		54·1	296	(e 9 20)	− 2	(e 16 47)	−10	(e 27·3)	—
Ukiah		55·3	69	e 9 32	+ 1	e 17 19	+ 6	—	—
Berkeley		56·7	69	e 9 43	+ 2	i 17 38	+ 6	—	—
Andijan		56·7	295	e 9 49	+ 8	e 17 30	− 2	e 29·2	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bozeman		58·0	55	e 9 53	+ 3	e 17 51	+ 2	—	—
Tashkent		58·1	298	i 9 51	0	e 17 41	−10	e 26·7	36·5
Calcutta		59·1	269	9 18	−40	17 29	−35	e 30·6	—
Scoresby Sund		59·4	359	—	—	18 11	+ 3	—	—
Tinemaha		59·6	68	i 10 5k	+ 3	i 18 16	+ 5	—	—
Haiwee	z.	60·4	68	i 10 7k	0	—	—	—	—
Santa Barbara		60·4	70	i 10 11k	+ 4	—	—	—	—
Samarkand		60·5	295	e 10 12	+ 4	e 18 14	− 9	—	—
Pasadena		61·6	69	i 10 18k	+ 2	i 18 40	+ 3	—	—
Mount Wilson	z.	61·7	69	i 10 18	+ 2	—	—	—	—
Pulkovo		61·9	333	e 14 29	?	i 18 31	−10	32·8	36·2
Riverside		62·2	69	i 10 21k	+ 1	—	—	—	—
Kucino		62·6	327	e 10 21	− 1	20 6	(− 5)	30·7	36·9
La Jolla		63·0	70	i 10 37k	+12	—	—	—	—
Helsingfors		63·0	336	e 10 23	− 2	e 18 48	− 7	e 33·8	—
Medan		67·2	247	i 10 56	+ 3	i 20 42	(− 2)	—	—
Tucson		67·3	66	10 56	+ 2	e 19 52	+ 4	—	—
Grozny		68·9	313	e 10 59	− 5	e 20 2	− 6	e 28·3	—
Hyderabad		69·2	272	11 12	+ 6	20 45	(−14)	32·4	49·2
Copenhagen		70·1	340	—	—	20 17	− 5	34·8	—
Tiflis		70·6	312	11 14	0	20 21	− 7	29·1	33·1
Batavia		70·8	233	e 11 3	−13	i 20 19	−12	—	—
Bombay		71·7	278	i 11 39	+18	e 20 56	PS	e 35·8	46·2
Erevan		72·0	311	e 11 37	+14	e 21 38	PS	—	—
Theodosia		72·1	320	e 11 23	0	21 21	PS	37·8	—
Simferopol		72·7	322	e 11 26	− 1	21 25	PS	38·3	—
Yalta		73·0	321	e 11 28	− 1	21 28	PS	—	—
Florissant		73·4	48	i 11 29	− 2	i 20 55	− 6	—	—
Ann Arbor		73·6	42	—	—	i 20 59	− 5	e 28·2	—
St. Louis		73·7	48	i 11 32	− 1	i 20 59	− 6	—	—
Ottawa		74·3	35	i 11 36	0	21 4	− 8	e 36·8	—
Toronto		74·3	38	e 11 35	− 1	i 21 7	− 5	—	—
De Bilt		75·0	342	—	—	e 21 20	0	e 37·8	—
Cheb		75·3	338	—	—	e 30 47?	?	e 40·8	44·8
Kodaikanal	E.	75·3	268	i 11 40	− 2	i 21 11	−13	—	—
Little Rock		75·6	53	i 11 34	−10	i 21 13	−14	—	—
Vienna	z.	75·9	334	e 11 45k	0	—	—	—	—
Pittsburgh		76·8	41	e 11 45	− 5	i 21 30	−11	e 30·3	—
Stuttgart		77·3	339	e 11 59	+ 5	e 33 5	?	—	—
Zagreb		78·2	333	e 11 59	+ 1	—	—	—	—
Oak Ridge		78·2	33	i 12 0	+ 2	i 21 48	− 8	—	—
Zurich		78·7	339	e 12 2	+ 1	—	—	—	—
Basle		78·8	340	e 12 2	+ 1	—	—	—	—
Fordham		78·8	36	i 12 3	+ 2	i 21 55	− 8	—	—
Chur		79·0	339	e 12 3	0	—	—	—	—
Triest		79·0	335	12 2a	− 1	i 21 51	−14	e 37·8	—
Georgetown		79·2	39	i 12 5k	+ 1	i 22 0	− 7	—	—
Neuchatel		79·5	340	e 12 6	+ 1	—	—	—	—
Ksara		81·1	313	12 16	+ 2	22 20	− 7	—	—
Columbia		81·7	45	—	—	22 26	− 8	e 39·8	—
Melbourne		89·2	189	—	—	i 23 27	−21	—	—
Perth		89·6	213	20 47	?	—	—	—	—
San Juan		101·8	41	i 18 1	PP	e 27 14	PS	e 51·8	—
Huancayo		123·1	67	—	—	e 25 52	[− 8]	e 58·3	—
La Paz		130·9	63	i 19 10k	[+ 1]	26 17	[− 5]	75·3	—
Sucre		134·4	62	e 20 19	[+65]	—	—	—	—

Additional readings and note :—
Osaka i = +6m.31s. and +8m.24s.
Kobe iN = +6m.13s., eP$_c$P?EZ = +9m.23s., S$_c$SEN = +16m.2s.
Sumoto PE = +4m.56s., eSN = +9m.31s.
Koti iS$_c$SE = +16m.9s.
Chiufeng iEN = +7m.4s., iZ = +7m.11s., S?NZ = +11m.49s.
Zi-ka-wei iZ = +6m.47s., +7m.35s. =PP +8s.

Continued on next page.

Nanking iN = +8m.3s.
Hong Kong PP = +9m.38s., SS = +17m.51s.
Sverdlovsk e = +20m.42s., L_q = +25·9m.
Frunse readings have been *increased* by 5m.
Berkeley eZ = +10m.43s. = P_cP +2s.
Haiwee iZ = +11m.15s. and +12m.22s. = PP +9s.
Santa Barbara i = +11m.37s.
Pasadena iZ = +10m.44s., eZ = +11m.54s., eN = +19m.22s., iN = +20m.2s. = S_cS −1s., ePKP, PKPZ = +39m.21s.
Pulkovo i = +19m.58s. = S_cS −7s., e = +25m.53s. = SSSS +9s.
Helsingfors ePSN = +20m.4s. = S_cS −10s., eSSSEN = +26m.33s.
Medan i = +11m.25s. = P_cP +3s. and +21m.41s.
Copenhagen +28m.59s. = SSSS +4s.
Tiflis iN = +11m.19s., PPN = +15m.53s., SKSN = +21m.11s., eSSN = +25m.53s., SSSN = +28m.21s.
Bombay iPS = +21m.37s.
Florissant ipP = +12m.5s., i = +21m.31s. = PS +8s., isS = +22m.12s.
Ann Arbor iN = +21m.35s. = PS +9s.
St. Louis epPN = +11m.51s., isS = +21m.35s., iSS = +25m.53s.; T_0 = 4h.33m.20s.
Ottawa PPPE = +16m.17s., PSE = +21m.41s., SSS = +29m.53s.
Pittsburgh i = +21m.57s. = PS −11s.
Oak Ridge iZ = +12m.12s. and +12m.22s., iSNE = +21m.52s. ; T_0 = 4h.33m.28s.
Fordham iPP = +15m.4s.
Georgetown iPP = +15m.8s. ; T_0 = 4h.33m.20s.
Columbia eS = +23m.6s. = PS −4s., SS = +27m.53s.
San Juan ePPP = +24m.21s. = SKS −13s., e = +25m.25s. = S −17s., e = +32m.37s. = SS +10s.
Huancayo e = +30m.17s. = PS −13s. and +37m.17s. = SS +5s.
La Paz isPKP = +21m.29s., iPPZ = +22m.29s., iPPEN = +22m.38s., iZ = +23m.9s., iSSE = +39m.7s.
Sucre PP = +22m.39s. = PKS −13s.
Long waves were also recorded at Wellington, Upsala, Uccle, Strasbourg, and San Fernando.

March 18d. 7h. 13m. 3s. Epicentre 10°·7N. 124°·7E. (as on 1928 March 12d.). X.

A = −·559, B = +·808, C = +·186 ; D = +·822, E = +·569 ; G = −·106, H = +·153, K = −·983.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	5·3	317	1 27	P*	2 29	S*	—	—
Hong Kong	15·3	320	3 30	− 2	6 33	SS	—	9·2
Nanking	22·0	347	e 6 9	+78	e 10 15	+89	—	—
Batavia	24·5	227	e 5 17	+ 2	9 42	+10	—	—
Medan	26·7	257	e 5 31	− 4	e 9 47	−23	—	—
Tashkent	57·2	315	e 9 46	+ 1	i 17 37	− 2	e 26·6	35·0

Long waves were also recorded at Bombay and Sverdlovsk.

March 18d. 22h. 19m. 33s. (I) } Epicentre 26°·5N. 52°·5E. X.
22h. 44m. 37s. (II) } (as on March 10d.). X.

A = +·545, B = +·710, C = +·446 ; D = +·793, E = −·609 ; G = +·272, H = +·354, K = −·895.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Baku	14·0	353	—	—	e 5 38	−13	e 8·2	—
II	14·0	353	e 3 20	+ 5	e 5 42	− 9	8·4	9·3
II Erevan	15·2	336	e 3 58	+27	—	—	e 9·0	—
I Ksara	16·1	301	e 4 42	+59	e 7 45	+64	—	10·0
I	16·1	301	e 3 58	+15	e 6 58	+17	—	9·2
I Grozny	17·7	344	e 4 3	0	e 7 7	−10	—	—
II	17·7	344	e 4 13	+10	e 7 21	+ 4	—	—
I Samarkand	17·9	39	e 4 4	− 1	—	—	—	—
II	17·9	39	e 3 56	− 9	e 7 20	− 2	—	—
I Bombay	20·2	108	e 4 27?	− 5	e 8 19	+ 9	—	—
II	20·2	108	e 4 20	−12	i 8 18	+ 8	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Tashkent	20·3	39	3 26	−67	i 7 15	−57	10·2	12·6
II	20·3	39	i 3 29	−64	i 7 3	−69	i 10·3	12·4
I Andijan	21·7	44	i 4 55	+ 7	—	—	—	—
II	21·7	44	e 4 34	−14	e 7 30	−70	e 8·8	—
I Theodosia	23·0	328	5 0	− 1	8 59	− 6	—	—
II	23·0	328	5 1	0	9 3	− 2	—	—
I Yalta	23·3	326	e 5 4	0	9 8	− 2	—	—
II	23·3	326	e 5 2	− 2	e 9 8	− 2	—	—
I Simferopol	23·6	326	e 5 7	+ 1	e 9 16	0	—	—
II	23·6	326	e 5 6	0	e 9 17	+ 1	15·4	—
II Frunse	24·3	42	(e 4 59)	−14	—	—	(e 9·5)	—
II Almata	26·0	43	e 5 38	+ 9	—	—	—	—
I Sverdlovsk	30·9	9	—	—	e 11 15	− 3	16·4	—
II	30·9	9	e 6 15	+ 2	e 11 15	− 3	19·6	—
II Pulkovo	36·6	342	—	—	e 12 29	−16	18·4	—

Additional readings and notes :—
Frunse readings have been *increased* by 5m.
Sverdlovsk II $L_Q = +15·4$m.
Long waves for Shock I were also recorded at Erevan.

March 18d. Readings were also recorded at 0h. (near Chiufeng and near Mizusawa), 1h. (Zi-ka-wei, near Taihoku, Karenko, and Arisan), 3h. (Tyosi), 4h. (Almata, Andijan, Samarkand, Tashkent, and Hastings), 5h. (Tiflis), 7h. (Piatigorsk), 9h. (La Paz), 12h. (Batavia, Bombay, Hong Kong, and Manila), 13h. (Apia), 16h. (La Paz), 17h. (Apia, Wellington, and near Suva), 19h. (Suva).

March 19d. 3h. 28m. 28s. Epicentre 27°·0N. 52°·5E. N.3.

A = +·542, B = +·707, C = +·454 ; D = +·793, E = −·609 ;
G = +·276, H = +·360, K = −·891.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Baku		13·5	353	e 3 19	+10	5 42	+ 3	8·0	9·3
Ksara		15·9	300	e 3 55	+15	e 6 55	+19	—	9·9
Grozny		17·2	343	e 4 0	+ 3	e 7 18	+12	—	—
Samarkand		17·4	40	e 3 57	− 2	e 7 19	+ 8	—	—
Sotchi		19·5	331	e 4 15	− 9	e 7 56	0	—	—
Tashkent		19·8	40	i 3 24	−63	(7 26)	−36	7·4	12·4
Bombay		20·3	109	i 4 38	+ 5	i 8 31	+19	—	—
Andijan		21·3	45	e 4 41	− 2	(e 8 26)	− 6	e 8·4	—
Theodosia		22·6	327	e 4 57	0	9 2	+ 5	—	—
Yalta		22·8	325	5 0	+ 1	9 10	+ 9	—	—
Simferopol		23·2	326	5 3	0	9 16	+ 8	—	—
Frunse		23·9	43	(e 4 56)	−13	(e 9 14)	− 7	—	—
Almata		25·6	44	e 5 27	+ 2	—	—	—	—
Kodaikanal	E.	28·9	120	5 56	+ 1	—	—	—	—
Sverdlovsk		30·4	9	6 13	+ 4	i 11 10	0	19·7	—
Kucino		30·6	342	—	—	e 11 22	+ 8	e 15·9	21·2
Calcutta		32·8	90	11 38	S	(11 38)	−10	18·1	—
Pulkovo		36·1	341	e 6 55	− 4	e 12 32	− 6	19·5	22·0
Chiufeng	E.	53·5	58	—	—	e 16 44	− 5	—	—

Additional readings and note :—
Andijan eS = +7m.29s.
Frunse readings have been *increased* by 5m.
Sverdlovsk $L_Q = +14·5$m.
Calcutta S = +15m.38s.
Long waves were also recorded at Copenhagen and La Paz.

March 19d. Readings also at 0h. (Tiflis (2)), 2h. (Wellington), 3h. (Hyderabad), 4h. (Andijan, Haiwee, La Jolla, Mount Wilson, Pasadena, and Tinemaha), 5h. (Baku, Tashkent, Grozny, and Ksara), 6h. (Piatigorsk, Nanking (2), Vladivostok, near Arisan (2), Tainan (2), Takao (2), and near Karenko), 9h. (Grozny, near Almata, Andijan, Tashkent, Frunse, and Samarkand), 10h. (Berkeley, Branner, Lick, and near San Francisco), 11h. (Sverdlovsk, Tashkent, Chiufeng, Hong Kong, Vladivostok, Nagoya, near Mizusawa, Tyosi, and near Granada), 12h. (Baku and Kucino), 15h. (Tucson), 17h. (near Tyosi), 22h. (Tiflis (2)).

March 20d. 2h. 38m. 26s. Epicentre 5°·5S. 148°·7E. N.2.

$A = -\cdot 851$, $B = +\cdot 517$, $C = -\cdot 096$; $D = +\cdot 520$, $E = +\cdot 854$; $G = +\cdot 082$, $H = -\cdot 050$, $K = -\cdot 995$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Palau		19·2	312	4 21	0	8 9	+19	—	—
Amboina		20·6	274	4 32	− 4	8 31	+13	—	—
Riverview		28·4	176	e 6 40	PP	e 11 16	+38	e 12·9	18·0
Sydney		28·4	176	e 8 29	?	i 12 58	?	16·7	18·0
Adelaide		30·9	196	e 6 0	−13	i 11 26	+ 8	14·4	20·7
Suva		31·6	116	e 7 34	PP	—	—	—	21·6
Melbourne		32·5	185	—	—	11 50	+ 7	14·4	18·8
Manila		34·1	307	6 55	+14	i 12 19	+11	16·9	20·2
Taihoku		40·4	321	7 40	+ 5	13 51	+ 9	—	—
Perth		40·5	226	11 59	?	17 34	(−11)	21·1	25·4
Arapuni		40·7	147	—	—	15 34	?	20·6	—
Miyazaki		40·9	338	7 43	+ 3	13 50	0	—	—
Koti		41·6	341	e 7 43	− 2	e 13 58	− 2	—	—
Batavia		41·7	268	e 8 23	+37	—	—	e 23·8	—
Wakayama		41·8	344	7 45	− 2	13 52	−11	—	—
Sumoto		41·9	344	e 7 47	− 1	14 1	− 4	—	—
Osaka		42·1	344	7 38	−11	14 2	− 6	17·9	23·0
Nagoya		42·2	347	7 49	− 1	(e 14 2)	− 7	e 14·0	—
Kobe		42·2	344	7 51	+ 1	14 9	0	18·4	—
Kohu		42·3	349	8 6	+15	—	—	—	—
Nagasaki		42·3	337	e 7 55	+ 4	e 14 5	− 5	—	—
Wellington		42·7	151	8 4	+10	14 40	+24	21·6	—
Hukuoka		42·8	338	e 7 44	−11	14 11	− 7	—	—
Toyooka	N.	43·1	345	e 11 57	?	(e 18 8)	(+ 7)	e 18·1	—
Christchurch		43·5	155	8 6	+ 5	14 42	+14	21·2	—
Hong Kong		43·8	311	8 5	+ 2	14 42	+ 9	—	22·9
Mizusawa		45·2	353	(e 9 6)	+52	e 9 6	P	—	—
Taikyu		45·5	338	—	—	(e 14 53)	− 4	e 14·9	—
Nanking		47·2	325	e 8 30	0	e 15 29	+ 8	—	24·9
Keizyo		47·6	337	—	—	e 15 26	− 1	e 15·1	—
Zinsen		47·7	336	e 8 24	−10	e 15 29	0	—	—
Phu-Lien		49·0	304	e 8 51	+ 7	e 15 51	+ 4	20·6	—
Chatham Ils.		49·1	147	i 10 34?	PP	—	—	24·6	—
Medan		50·8	280	e 9 6	+ 9	i 16 23	+11	—	—
Vladivostok		50·9	345	9 0	+ 2	i 16 18	+ 5	22·6	26·7
Chiufeng		54·6	330	e 9 24	− 2	17 0	− 4	25·1	29·3
Honolulu		58·9	61	—	—	e 17 58	− 3	e 27·6	—
Calcutta		65·3	298	12 57	PP	19 27	+ 3	27·0	—
Hyderabad		73·1	290	11 30	+ 1	21 0	+ 2	34·0	50·1
Bombay		78·6	291	12 5	+ 5	e 21 56	− 4	—	49 0
Almata		80·7	316	e 12 20	+ 8	—	—	—	—
Frunse		82·4	315	e 7 3	?	—	—	—	—
Andijan		83·4	312	e 12 34	+ 9	e 22 55	+ 4	—	—
Tashkent		85·8	312	e 12 39	+ 2	e 23 16	0	e 39·6	51·4
Samarkand		87·2	310	e 12 51	+ 7	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ukiah		92·0	50	—	—	e 25 16	PS	e 41·7	—
Berkeley		92·7	52	e 20 10	PPPP	—	—	—	—
Seattle		93·4	42	—	—	e 24 16	−12	e 47·0	—
Sverdlovsk		93·5	326	i 11 34?	?	e 23 34?	[−19]	i 46·1	—
Pasadena		95·6	56	e 13 23	0	—	—	e 44·3	—
Mount Wilson		95·7	56	e 13 41	+17	—	—	—	—
Tinemaha	z.	95·7	53	e 13 26	+ 2	—	—	—	—
Tananarive		98·7	250	17 7	PP	27 5	PS	48·6	55·6
Bozeman		101·1	44	—	—	e 25 40	+ 4	e 46·6	—
Grozny		103·2	313	e 19 6	?	—	—	—	—
Tiflis		104·0	311	e 14 12	+10	e 28 55	PPS	50·9	66·2
Kucino		106·1	326	e 16 22	?	e 26 23	{+44}	e 47·1	61·0
Pulkovo		108·8	331	e 18 18	[+ 4]	25 3	[− 5]	48·6	64·8
Helsingfors		111·0	334	—	—	e 34 34?	SS	e 60·6	—
Ksara		112·0	303	e 19 28	PP	e 28 59	PS	—	—
Scoresby Sund		114·7	356	—	—	28 34?	PS	57·6	—
Copenhagen		118·9	333	—	—	29 34?	PS	57·6	—
Vienna	z.	121·2	324	e 20 30	PP	—	—	—	—
Cheb		122·4	327	e 33 34	?	e 41 59	SSS	e 57·6	72·6
Triest		124·1	322	e 17 34	[−81]	e 27 52	{+ 8}	e 55·6	63·2
Ottawa		124·5	36	—	—	e 37 52	SS	e 49·6	—
De Bilt		124·6	333	—	—	e 37 34?	SS	e 62·6	73·2
Stuttgart		124·8	328	—	—	e 42 34?	SSS	e 63·6	74·4
Strasbourg		125·7	328	—	—	e 36 34?	?	e 59·6	—
Kew		127·3	335	—	—	e 38 26	SS	e 62·6	77·2
Oak Ridge		128·6	37	—	—	e 38 49	SS	e 52·6	—
Huancayo		132·8	112	e 22 52	PKS	e 39 34	SS	e 62·6	—
La Paz		137·4	121	19 40	[+22]	26 40	SKS	67·6	105·1
San Juan		143·6	66	e 22 9	PP	e 36 24	?	e 66·6	—

Additional readings :—
Perth PP = +13m.39s. = S − 5s., PPP = +13m.59s., PPPP = +14m.4s., P_cP = +15m.39s., SS = +19m.4s., SSS = +19m.9s., SSSS = +19m.34s.
Kobe eEN = +11m.4s.
Wellington SS = +17m.52s. = S_cS − 6s.
Christchurch L_q = +18m.1s. = S_cS − 2s.
Hong Kong PP = +10m.20s. = PPPP + 5s., SS = +18m.49s.
Medan e = +10m.29s. = P_cP + 10s.
Honolulu e = +19m.44s. = S_cS + 0s.
Bombay PPE = +15m.4s., PSN = +22m.30s., SS = +27m.5s.
Ukiah e = +38m.22s.
Sverdlovsk e = +30m.34s.? = SS + 5s. and +34m.4s. = SSS − 3s.
Pasadena iZ = +13m.36s.
Tananarive e = +35m.34s.? = SSS + 7s.
Tiflis PKPN = +18m.0s. = PP − 13s., eSSE = +33m.52s.
Kucino PP = +18m.22s., PPP = +20m.50s., PS = +27m.48s., eSS = +33m.46s.
Pulkovo SS = +34m.16s.
Helsingfors ePPSE = +35m.34s.?, eSSE = +42m.34s.?, eSSSE = +46m.34s.?
Scoresby Sund +35m.22s. = SS + 0s.
Copenhagen +40m.52s.
Strasbourg e = +42m.34s.? = SSS + 21s.
Oak Ridge eNE = +48m.34s.
La Paz PPE = +23m.28s. = PKS + 26s., SKS? = +26m.4s.
San Juan ePPP = +25m.21s.
Long waves were also recorded at other American, Crimean, and European stations.

March 20d. Readings also at 0h. (Tinemaha, Samarkand, and near Andijan), 1h. (near Tyosi), 2h. (near Amboina, near Kobe, Osaka, Sumoto, and Nagoya), 3h. (Almata, Andijan, Frunse, Erevan, Grozny, Samarkand, Pasadena, Tinemaha, and Suva), 6h. (Hong Kong), 7h. (La Paz), 10h. (Grozny and Tiflis), 11h. (La Paz, near Berkeley, Branner, Lick, and San Francisco), 12h. (Andijan and near Tyosi), 13h. (La Paz, near Tiflis, near Zagreb, near Mizusawa, and Tyosi), 16h. (near Branner), 17h. (Tyosi and near Sumoto (2)), 19h. (near Tyosi), 20h. (Vladivostok, Chiufeng, Christchurch, Glenmuick, and near Wellington, Baku (2), Tiflis, Kucino, Tashkent (2), Bombay, and near Manila), 21h. (Vladivostok), 22h. (Baku, Kucino, Tiflis, Pulkovo, and Tashkent), 23h. (Triest).

March 21d. 0h. 54m. 14s. Epicentre 39°·4N. 143°·2E. (as on 1933 Sept. 21d.). X.

A = −·619, B = +·463, C = +·635 ; D = +·599, E = +·801 ;
G = −·508, H = +·380, K = −·773.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	1·6	261	i 0 25	+ 2	i 1 11	+30	—	—
Tyosi	4·1	207	e 0 59	+ 1	2 21	S_g	—	2·4
Nagoya	6·5	232	1 47	+15	3 18	S*	—	3·8
Vladivostok	9·3	298	i 2 12	+ 1	4 6	+10	4·7	6·2
Chiufeng	20·7	281	e 4 34	− 3	e 8 31	+11	e 11·4	13·0
Hong Kong	29·9	244	—	—	11 19	+16	17·6	20·4
Almata	48·6	298	e 8 44	+ 3	—	—	—	—
Andijan	52·7	295	e 9 13	+ 1	—	—	—	—
Sverdlovsk	54·1	318	i 9 27	+ 5	e 17 6	+ 9	34·8	35·6
Tashkent	54·6	299	i 9 24	− 2	—	—	e 29·2	29·6
Samarkand	56·9	297	e 9 47	+ 5	—	—	—	—
Kucino	65·8	323	—	—	e 19 35	+ 5	e 32·6	39·9
Pulkovo	66·6	330	e 10 35	−14	e 19 34	− 6	34·8	40·4
Baku	67·8	305	—	—	e 21 4	?	36·0	46·3
Grozny	68·8	309	e 9 55	?	—	—	e 43·9	—
Tiflis	70·3	308	11 8	− 5	—	—	e 38·8	50·8
Triest	83·6	327	—	—	i 22 31	[−17]	—	46·4

Additional readings :—
Sverdlovsk L_q = +28·6m.
Tashkent SS = +21m.4s., SSS = +23m.4s.
Kucino e = +23m.49s. =SS +11s.
Tiflis eN = +16m.12s. =PPPP +7s.
Long waves were also recorded at Hukuoka B, Koti, Nagasaki, Toyooka, Phu-Lien, and other European stations.

March 21d. 3h. 39m. 48s. Epicentre 34°·0N. 139°·5E. (as on 1931 Feb. 9d.). R.3.

A = −·630, B = +·538, C = +·559 ; D = +·649, E = +·760 ;
G = −·425, H = +·363, K = −·829.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Susaki		0·8	327	0 7	− 4	0 10	−11	—	—
Tyosi		2·1	33	e 0 34	+ 4	0 57	+ 3	—	1·4
Nagoya		2·4	299	i 0 34$_a$	0	i 0 55	− 7	—	1·4
Osaka		3·4	278	0 49	0	1 32	+ 5	—	2·4
Kobe		3·7	282	e 0 52	− 1	e 1 36	+ 1	—	2·0
Sumoto		3·8	276	e 0 54	0	e 1 58	S_g	—	2·1
Toyooka		4·1	291	0 58	0	1 45	0	—	2·1
Koti		5·0	266	e 1 34	P_g	2 32	S_g	—	—
Mizusawa		5·3	14	e 1 12	− 3	e 2 13	− 2	—	—
Nagasaki	N.	8·2	264	e 2 53	+57	—	—	—	—
Vladivostok		10·8	329	e 2 34	+ 2	e 4 36	+ 3	6·0	6·4
Chiufeng		19·5	295	e 4 26	+ 2	e 7 59	+ 3	—	10·7
Tashkent		54·6	299	e 2 27	?	e 17 6	+ 2	e 26·1	31·8
Sverdlovsk		56·2	320	e 9 46	+ 9	—	—	—	—
Tiflis		71·2	308	11 28	+10	—	—	37·9	39·9
Triest		86·4	326	e 13 25	+45	e 24 52	+91	—	47·2

Additional readings :—
Kobe S?E = +1m.41s. =S* −7s.
Toyooka i = +1m.6s. =P* −1s., iSNZ = +1m.51s.
Mizusawa ePE = +1m.18s.
Triest e = +29m.54s.
Long waves were also recorded at Hong Kong, Phu-Lien, Baku, Kucino, Pulkovo, and other European stations.

March 21d. 5h. 38m. 37s. Epicentre 39°·4N. 143°·2E. (as on 0h.). X.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	1·6	261	i 0 24	+ 1	i 0 55	+14	—	—
Tyosi	4·1	207	e 1 7	P*	2 20	S_g	—	2·5
Nagoya	6·5	232	2 13	P_g	3 6	S*	—	—
Vladivostok	9·3	298	2 11	0	e 4 5	+ 9	4·6	5·7
Chiufeng	20·7	281	e 4 32	− 5	e 8 26	+ 6	—	13·0
Sverdlovsk	54·1	318	i 9 26	+ 4	e 17 34	PS	34·9	35·4
Tashkent	54·6	299	9 21	− 5	e 17 9	+ 5	e 28·2	34·2
Baku	67·8	305	—	—	e 29 32	?	36·2	43·4
Grozny	68·8	309	e 11 3	0	—	—	e 34·7	—

Sverdlovsk gives $L_q = +28·5$m.
Long waves were also recorded at Toyooka, Hong Kong, Pulkovo, Kucino, Tiflis, and some European stations.

March 21d. Readings also at 1h. (near Tyosi), 3h. (Hukuoka B and Susaki), 4h. (Tucson), 5h. (near Mizusawa (3)), 6h. (Wellington), 9h. (Christchurch, near Takaka, Glenmuick, Wellington, New Plymouth, near Manila, and near Susaki), 10h. (Mizusawa and near Grozny), 12h. (Wellington), 15h. (near Nagoya and Susaki (2)), 17h. (Andijan), 20h. (Haiwee, Pasadena, Riverside, and Tinemaha).

March 22d. Readings at 0h. (near Mizusawa), 1h. (Jena), 5h. (Tashkent and Samarkand), 6h. (Sverdlovsk), 12h. (near Santiago), 14h. (Riverside and Pasadena), 15h. (Balboa Heights), 18h. (near Tananarive), 20h. (Vladivostok, Chiufeng, Tashkent, Baku, Tiflis, Kucino, Pulkovo, Copenhagen, Cheb, De Bilt, Uccle, Strasbourg, Triest, Scoresby Sund, Pasadena, and Tinemaha), 21h. (Bombay, Hyderabad, Grozny, and Stuttgart), 22h. (Pasadena, Riverside, Tinemaha, Pittsburgh, Columbia, San Juan, Huancayo, La Paz, Tucson, Triest, and near Tyosi), 23h. (Berkeley, Ukiah, Bozeman, Scoresby Sund, Kucino, and Tashkent).

March 23d. 1h. 46m. 50s. Epicentre 46°·1N. 10°·0E. N.3.

A = +·683, B = +·120, C = +·721; D = +·174, E = −·985;
G = +·710, H = +·123, K = −·693.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Chur	0·8	336	i 0 11	0	i 0 24	+ 3	—	—
Piacenza	1·1	193	e 0 6	−10	(0 20)	− 8	0·3	0·8
Zurich	1·6	323	e 0 23	0	e 0 51	S_g	—	—
Ravensburg	1·7	351	e 0 29	+ 5	i 0 56	S_g	—	—
Basle	2·2	311	e 0 30	− 1	e 1 9	S_g	—	—
Neuchatel	2·2	293	e 0 30	− 1	e 1 9	S_g	—	—
Prato	2·4	161	e 0 30	− 4	i 0 59	− 3	—	1·0
Stuttgart	2·7	349	e 0 49	P_g	e 1 13	+ 4	—	—
Triest	2·7	100	0 39	0	i 1 11	+ 2	—	—
Vienna	4·9	62	e 2 29	S*	—	—	—	—

Additional readings :—
Zurich $eP_g = +26$s.
Ravensburg iS* = +52s.
Neuchatel $eP_g = +37$s.
Stuttgart e = +54s., $eS_g = +1$m.27s., i = +1m.32s. and +1m.40s.
Triest i = +48s. = P_g +0s. and +1m.10s., iSS = +1m.14s. and +1m.18s. = S* −1s., iN = +1m.26s. = S_g +3s., iE = +1m.31s.
Vienna +3m.16s.

March 23d. Readings also at 0h. (La Paz), 1h. (Grozny, near Tiflis (2), and near Tyosi), 2h. (Almata, Frunse, Samarkand, and near Andijan), 3h. (Tiflis, Neuchatel, Zurich, and near Chur), 5h. (Branner and near Wellington), 7h. (Tiflis (3) and Grozny), 8h. (Bombay, Chiufeng, Erevan, Grozny, Tiflis (2), Sotchi, Baku, Tashkent, Vladivostok, Sverdlovsk, Kucino, Pulkovo, Scoresby Sund, Pasadena, and Riverside), 10h. (Wellington), 11h. (near Piatigorsk), 12h. (near Sumoto), 17h. (Samarkand and near Andijan), 19h. (near Tananarive), 22h. (Lick).

March 24d. 2h. 47m. 56s. Epicentre 48°·3N. 9°·0E. (as on Jan. 1d.). R.3.

A = +·657, B = +·104, C = +·747.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Ebingen	0·1	190	i 0 0a	− 1	i 0 3	0
Stuttgart	0·4	16	e 0 5	− 1	i 0 13	+ 3
Ravensburg	0·6	141	—	—	e 0 14	− 1
Zurich	1·0	197	e 0 16	+ 2	e 0 30	+ 4
Basle	1·2	232	e 0 23	+ 6	e 0 41	+10
Neuchatel	1·9	227	e 0 35	P_g	e 1 1	S_g

Stuttgart gives also i = +18s.

March 24d. 12h. 4m. 34s. Epicentre 9°·9S. 161°·4E. (as on 1931 Oct. 12d.). R.1.

Probable error of epicentre ±0°·28.

A = −·934, B = +·314, C = −·172; D = +·319, E = +·948;
G = +·163, H = −·055, K = −·985.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	18·4	118	4 56?	+45	8 26	+53	—	—
Riverview	25·7	200	e 5 21	− 5	i 9 56	+ 3	e 11·2	15·3
Sydney	25·7	200	i 5 26	0	i 9 58	+ 5	12·1	15·6
Apia	26·5	101	i 5 41	+ 7	e 10 20	+13	e 12·9	—
Arapuni	30·9	158	6 26	+13	11 23	+ 5	15·4	—
Melbourne	31·6	206	6 17	− 2	11 24	− 5	13·4	14·7
Palau	31·9	301	6 31	+ 9	—	—	—	—
Adelaide	32·6	218	e 6 25	− 3	i 11 32	−13	14·7	17·7
Amboina	33·5	279	e 6 20	−16	—	—	18·4	—
Wellington	33·6	163	6 34	− 3	11 48	−12	15·8	16·4
Christchurch	35·0	166	e 6 45	− 4	i 12 19	− 2	16·7	—
Chatham Ils.	39·0	155	7 38	+14	e 12 26?	−55	18·4	—
Titizima	41·4	333	7 45	+ 1	13 48	− 9	—	—
Manila	47·0	301	8 24	− 5	15 22	+ 3	23·1	—
Perth	47·5	235	e 8 36	+ 4	—	—	22·4	27·9
Hatidyozima	47·7	335	8 37	+ 3	15 30	+ 1	—	—
Susaki	49·4	335	(8 52)	+ 5	(15 46)	− 6	—	—
Ito	49·6	335	8 48	0	15 48	− 7	—	—
Tyosi	49·6	338	e 8 53	+ 5	15 58	+ 3	21·8	22·8
Omaesaki	49·6	335	8 46	− 2	15 55	0	—	—
Misima	49·8	335	8 45	− 5	15 53	− 5	—	—
Tokyo	50·0	337	8 51	0	15 55	− 6	—	—
Tukubasan	50·3	337	8 51	− 3	16 2	− 3	—	—
Kakioka	50·3	337	8 57	+ 3	15 49	−16	—	—
Kumagaya	50·5	336	8 59	+ 4	16 3	− 5	—	—
Simidu	50·6	329	8 45	−11	15 57	−12	—	—
Kameyama	50·6	334	9 1	+ 5	16 5	− 4	—	—
Nagoya	50·6	335	8 59	+ 3	16 9	0	—	16·3
Wakayama	50·7	332	8 52	− 5	15 59	−12	—	—
Maebasi	50·8	336	8 56	− 1	16 11	− 1	—	—
Honolulu	50·8	50	i 9 5	+ 8	i 16 26	+14	23·3	—
Gihu	50·9	335	8 54	− 4	16 8	− 5	—	—
Osaka	50·9	332	8 56	− 2	16 6	− 7	22·5	—
Sumoto	50·9	331	8 54k	− 4	e 16 4	− 9	22·6	27·7
Koti	50·9	330	8 54	− 4	17 7	+54	e 22·9	30·2
Oiwake	51·0	336	9 0	+ 1	16 10	− 5	—	—
Hikone	51·0	333	8 58	− 1	16 10	− 5	—	—
Kobe	51·1	332	e 8 55	− 5	16 8	− 8	e 22·6	24·4
Nagano	51·4	337	9 2	0	16 21	+ 1	—	—
Hukusima	51·5	339	8 56	− 7	16 20	− 2	—	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Karenko		51·6	312	i 9 10	+ 7	16 33	+10	—	—
Matuyama		51·6	330	9 1	− 2	16 15	− 8	—	—
Kumamoto		51·8	327	9 7	+ 2	16 22	− 3	—	—
Takao		51·8	309	9 20	+15	16 17	− 8	—	—
Arisan		51·9	310	e 9 10	+ 4	16 26	− 1	—	—
Toyooka		52·0	333	9 2	− 4	16 28	0	e 23·0	28·4
Hirosima		52·1	330	9 8	+ 1	16 30	0	—	—
Nagasaki		52·2	327	9 10a	+ 2	16 23	− 8	e 24·5	16·6
Taihoku		52·2	314	e 9 15	+ 7	16 37	+ 6	—	—
Mizusawa	E.	52·5	340	e 9 12	+ 2	e 16 35	0	22·5	—
	N.	52·5	340	e 9 2	− 8	e 16 32	− 3	22·3	—
Hukuoka		52·5	328	9 14	+ 4	16 28	− 7	24·4	—
Hukuoka B		52·5	328	9 13	+ 3	16 31	− 4	e 25·7	—
Wazima		52·6	336	9 15	+ 4	16 34	− 3	—	—
Batavia		54·1	271	9 18k	− 4	i 16 41	−16	e 34·8	—
Taikyu		55·2	327	9 28	− 2	16 38	−34	e 20·9	—
Zi-ka-wei	Z.	56·2	320	9 34	− 3	17 14	−11	26·4	30·6
Hong Kong		56·4	306	9 34	− 5	17 25	− 3	—	30·7
Keizyo		57·4	328	e 9 43	− 3	e 17 34	− 8	e 26·7	27·9
Zinsen		57·5	327	i 10 6	+19	i 17 38	− 5	e 26·2	—
Nanking		58·5	317	10 50	+56	i 18 52	+56	29·4	37·9
Heizyo		59·1	328	9 58	0	18 6	+ 2	27·4	—
Vladivostok		59·4	335	i 9 58	− 2	e 17 54	−14	25·9	28·6
Phu-Lien		62·0	300	e 10 13	− 5	e 17 10	?	22·4	—
Medan		63·9	280	e 10 33	+ 2	i 19 58	+52	42·3	—
Chiufeng		65·2	324	10 34	− 6	19 9	−13	26·8	34·0
Calcutta		78·5	296	(11 46)	−14	(21 46)	−13	(e 37·4)	(42·9)
Colombo		83·0	278	e 12 12	−11	22 31	−16	45·4	49·9
Sitka		84·4	29	e 12 21	− 9	i 22 48	[− 7]	—	—
Ukiah		85·2	48	e 12 36	+ 2	i 23 5	− 5	38·4	—
San Francisco	N.	85·3	50	e 12 37	+ 2	e 23 1	[0]	e 41·0	—
Berkeley		85·5	50	e 12 34	− 2	23 2	[− 1]	i 39·1	—
Branner		85·5	50	e 12 39	+ 3	—	—	—	—
Lick		85·9	50	e 12 38	0	e 23 7	[+ 1]	—	—
Kodaikanal	E.	86·0	281	i 12 35	− 3	i 22 58	[− 8]	i 52·1	57·5
Hyderabad		86·4	289	12 41	+ 1	23 7	[− 2]	36·4	56·4
Santa Barbara		86·6	55	i 12 40	− 1	—	—	—	—
Pasadena		87·8	55	i 12 46a	− 1	i 23 33	− 2	i 36·2	—
Victoria		87·8	40	12 46	− 1	23 18	[− 1]	36·6	—
Mount Wilson		87·9	55	i 12 48	+ 1	—	—	—	—
La Jolla	Z.	88·2	56	e 12 47	− 2	—	—	—	—
Seattle		88·2	40	e 13 6	+17	i 24 30	PS	e 40·5	—
Riverside		88·4	55	i 12 49a	− 1	—	—	—	—
Haiwee		88·4	52	i 12 50	0	—	—	—	—
Tinemaha		88·4	51	i 12 50	0	—	—	—	—
Dehra Dun		89·4	301	23 36	SKS	36 46	?	49·8	75·4
Agra	E.	91·3	299	e 12 43	−20	23 57	−11	e 44·6	53·8
Bombay		91·9	290	13 3	− 3	i 24 24	+10	e 43·4	66·0
Almata		92·8	314	e 13 20	+10	—	—	—	—
Tucson		93·4	57	e 13 2	−11	e 24 22	− 6	e 37·7	—
Frunse		94·5	312	(e 13 16)	− 2	(e 25 44)	PS	(e 41·9)	—
Bozeman		95·4	44	e 13 26	+ 4	24 40	− 6	e 34·4	—
Andijan		95·7	311	13 28	+ 4	—	—	e 50·7	—
Tashkent		98·1	311	i 13 30	− 5	25 0	−10	e 40·8	67·5
Denver		99·0	50	e 14 2	+23	e 27 42	?	35·2	50·4
Samarkand		99·6	310	e 13 47	+ 5	e 24 18	[− 5]	—	—
Sverdlovsk		104·1	326	e 14 3	+ 1	i 24 39	[− 6]	56·6	64·0
Tananarive		108·8	246	19 11	PP	26 32	{+33}	50·5	57·4
Little Rock		108·9	57	i 18 51	PP	e 26 0	{+ 1}	e 51·0	—
Florissant		110·4	51	i 14 31	− 2	i 26 56	{+46}	e 51·3	—
St. Louis		110·5	51	e 19 2	PP	i 25 14	[− 2]	e 45·9	53·7

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Chicago		112·2	48	e 19 15	PP	e 26 3	{−19}	e 46·1	—
Baku		112·8	310	e 18 37	[+11]	29 2	PS	52·4	88·6
Ann Arbor		115·0	47	e 19 32	PP	e 25 26	[− 8]	e 52·5	62·2
Grozny		115·4	313	e 18 43	[+ 9]	—	—	e 47·9	—
Tiflis	N.	116·4	312	e 15 0	− 2	25 42	[+ 3]	58·0	61·7
Kucino		116·6	328	e 20 16	PP	26 47	{− 6}	e 51·3	65·0
Erevan		116·9	310	e 19 22	PP	e 26 43	{−12}	—	—
Toronto		117·8	45	e 14 56	−12	i 29 47	PS	58·1	—
Pittsburgh		118·1	48	e 17 42	[−59]	i 27 34	{+30}	e 48·1	—
Columbia		118·3	56	e 19 54	PP	e 25 42	[− 3]	e 53·4	—
Pulkovo		118·3	335	e 15 16	+ 5	25 42	[− 3]	52·4	68·2
Scoresby Sund		119·3	2	e 20 6	PP	e 25 46	[− 2]	50·4	—
Huancayo		119·5	110	i 20 6	PP	e 30 6	PS	i 56·0	—
Charlottesville		119·6	51	—	—	e 25 49	[0]	e 50·5	—
Sotchi		119·6	315	e 18 52	[+ 8]	—	—	—	—
Ottawa		119·8	42	e 20 11	PP	e 25 39	[−11]	e 50·4	—
Ithaca		120·1	46	—	—	e 26 26	[+35]	—	64·4
Helsingfors		120·3	336	18 52	[+ 5]	e 25 44	[− 7]	e 55·4	—
Georgetown	Z.	120·6	50	e 18 52	[+ 5]	—	—	e 56·4	—
La Plata	E.	121·8	142	20 32	PP	30 9	SKSP	50·2	64·6
	N.	121·8	142	—	—	30 24	PS	50·9	69·4
Fordham		122·5	47	e 18 52	[0]	e 25 54	[− 4]	e 50·4	—
Yalta		123·0	317	e 18 46	[− 7]	—	—	57·4	—
Upsala	N.	123·2	339	e 20 30	PP	—	—	e 50·4	64·6
Oak Ridge		123·6	44	i 18 55	[+ 1]	e 37 26	SS	e 57·4	—
Cape Town		123·8	217	20 45	PP	31 11	PS	58·4	59·4
La Paz		124·3	119	19 1a	[+ 6]	25 48	[−15]	56·4	67·7
Ksara		124·8	305	e 19 0	[+ 3]	33 0	PPS	60·9	69·9
Königsberg		125·5	334	i 19 5	[+ 7]	—	—	e 56·9	70·7
Sucre		125·6	123	19 3	[+ 5]	26 3	[− 4]	60·2	—
Bergen		126·4	346	32 40	?	56 19	L	(56·3)	62·4
Copenhagen		128·2	339	19 8	[+ 5]	28 6	{− 4}	—	—
Hamburg		130·7	338	e 19 7	[− 1]	i 26 10	[−11]	e 58·4	70·4
Budapest		130·8	327	19 13	[+ 4]	—	—	e 40·4	76·9
Prague		131·5	332	e 19 20	[+10]	—	—	e 53·4	64·4
Leipzig		131·5	333	e 21 20	PP	e 38 38	SS	e 57·4	71·4
Vienna		131·7	330	e 19 8	[− 2]	29 24	?	61·4	76·4
Jena		132·1	335	19 9	[− 1]	—	—	e 54·4	72·4
Göttingen		132·3	336	e 19 14	[+ 3]	—	—	e 58·4	77·3
Cheb		132·4	333	e 21 27	PP	e 33 31	?	e 54·4	72·9
Edinburgh		132·4	348	e 22 54	PKS	e 36 14	?	56·4	95·8
Graz		133·0	329	i 19 15	[+ 3]	i 25 1	?	e 65·4	75·4
Durham		133·1	346	21 59	PP	33 41	?	—	80·4
San Juan		133·2	74	i 19 23	[+11]	i 33 36	?	e 57·4	—
Zagreb		133·5	326	e 19 10	[− 2]	—	—	e 62·4	68·1
De Bilt		133·6	340	i 19 18	[+ 5]	i 33 33	?	e 58·4	69·8
Stuttgart		134·7	335	e 19 13a	[− 1]	—	—	e 57·4	103·8
Bidston		134·7	346	e 19 26	[+12]	—	—	—	69·3
Triest		134·8	329	19 16a	[+ 1]	—	—	e 59·4	78·1
Karlsruhe		134·9	335	e 19 26?	[+11]	—	—	e 68·4	79·9
Uccle		135·0	340	e 19 14	[− 1]	i 22 54	PKS	59·4	75·4
Strasbourg		135·5	336	e 19 17	[+ 1]	26 25	[− 8]	67·4	79·9
Venice		135·7	330	19 30	[+14]	35 26	?	74·7	80·4
		135·7	330	19 26	[+10]	30 37	?	—	—
Oxford		135·8	345	e 18 34	[−42]	—	—	55·4	68·6
Kew		135·8	343	e 19 15	[− 1]	e 31 56	PS	e 52·4	69·4
Chur		135·9	333	e 19 17	[+ 1]	—	—	—	—
Zurich		136·1	333	e 19 15	[− 1]	—	—	—	—
Basle		136·4	334	e 19 13	[− 4]	—	—	—	—
Neuchatel		137·1	335	e 20 11	[+53]	—	—	—	—
Paris		137·2	340	e 19 16	[− 2]	—	—	60·4	74·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Piacenza		137·3	330	19 33	[+15]	30 26	?	64·1	81·4
Florence		137·4	328	e 19 26	[+ 8]	32 11	SKSP	49·4	66·4
Prato		137·4	328	e 19 26	[+ 8]	32 1	SKSP	e 49·8	79·1
Bagnères		143·0	337	e 19 14	[−13]	—	—	65·4	—
Tortosa	N.	144·8	336	19 26	[− 7]	—	—	62·4	85·6
Algiers		146·7	327	19 46	[+ 9]	24 50	?	74·4	85·4
Alicante		147·3	334	e 19 44	[+ 6]	42 7	SS	e 65·4	88·0
Toledo		147·4	339	e 19 39	[+ 1]	26 44	SKS	e 69·4	93·6
Serra do Pilar		147·6	346	19 40	[+ 2]	—	—	77·0	88·3
Almeria		149·3	334	e 19 45	[+ 4]	—	—	e 58·0	83·0
Granada		149·6	336	e 19 49	[+ 8]	30 31	{+11}	68·8	79·5
Malaga		150·3	337	19 45	[+ 3]	33 39	SKSP	72·4	—
San Fernando		151·2	339	19 54	[+11]	33 9	SKSP	71·4	94·9

Additional readings and notes :—
Suva i = +11m.26s.
Riverview iP = +5m.24s.k, SSE = +10m.53s.
Sydney e = +4m.54s.
Arapuni SS = +13m.26s.
Melbourne iP = +6m.22s.
Adelaide i = +6m.48s., +8m.6s., +13m.47s. =SSS +3s. and +14m.26s.
Amboina iP = +6m.27s., i = +8m.40s.
Wellington PP = +7m.41s., SS = +13m.47s.
Christchurch iP = +6m.47s., iZ = +8m.13s. and +14m.55s.
Chatham Ils. PP = +9m.2s., SS = +16m.31s.
Perth P_cS = +13m.56s., SS = +19m.6s., SSS = +19m.26s., SSSS = +20m.31s.
Susaki readings have been *increased* by 5m.
Honolulu e = +20m.40s.
Sumoto eSEZ = +16m.11s.
Koti i = +9m.3s., iS = +17m.15s.
Kobe P = +9m.2s., i = +9m.8s., iZ = +9m.26s., iN = +10m.24s. =P_cP +4s., eSZ = +16m.11s., S?Z = +16m.19s.
Toyooka PN = +9m.4s., PE = +9m.11s.
Batavia iPE = +9m.24s., i = +11m.14s. =PP − 3s. and +18m.54s. =S_cS − 17s.
Zi-ka-wei iZ = +10m.2s., PPZ = +11m.54s., PPPZ = +12m.50s., iZ = +14m.28s., SE = +17m.18s., PSZ? = +17m.36s., SSZ = +22m.2s., SSSZ = +23m.18s., SSSSZ = +24m.19s., iZ = +24m.54s.
Hong Kong PP = +11m.56s., SS = +21m.37s.
Nanking iP = +10m.57s. =P_cP +9s., iZ = +11m.17s., iN = +19m.22s. = S_cS − 20s., SS = +23m.5s.
Vladivostok e = +10m.44s. =P_cS − 7s., PP = +12m.20s.
Medan iP = +10m.39s., i = +11m.12s. =P_cP + 3s.
Chiufeng iEZ = +11m.1s. =P_cP − 13s., PPEZ = +12m.53s.
Calcutta readings have been *increased* by 2m.
Colombo iP = +12m.31s.
Sitka e = +28m.26s. =SS + 6s. and +33m.50s. =SSSS − 4s.
Ukiah e = +36m.4s.
Berkeley e = +12m.36s., eZ = +12m.39s., iE = +12m.41s., eE = +23m.25s. = S +12s., iZ = +24m.7s. =PS +7s., eE = +39m.5s. and +39m.32s., eN = +40m.16s.
Branner i = +12m.45s., iE = +12m.59s., iN = +13m.11s., iE = +13m.15s., iN = +13m.21s., iE = +13m.32s.
Lick iN = +12m.44s.
Pasadena iSKS = +23m.17s., iPSEZ = +24m.34s., eSSN = +29m.19s.
Seattle eSS = +29m.16s., eSSS = +36m.34s.
Agra PPE = +16m.33s., ePPPE = +19m.37s., iSKSE = +23m.7s., SKKSE = +23m.37s., PSE = +25m.1s., ePPSE = +25m.47s., SSE = +30m.17s., SSSE = +34m.15s.
Bombay PPE = +16m.42s., PPPE = +18m.45s., SKS = +23m.27s., iPS = +25m.24s., PPS = +26m.1s., SS = +30m.16s., SSS = +34m.9s.
Tucson ePP = +16m.47s., iSKS = +23m.52s., ePS = +25m.8s., e = +30m.2s., eSS = +30m.42s., SS = +34m.26s.
Frunse readings have been *increased* by 6m.
Bozeman iSKS = +24m.2s., eSS = +31m.26s.
Tashkent ePP = +16m.34s., ePPP = +19m.20s., SKKS = +24m.40s., PS = +26m.34s.
Denver ePP = +18m.29s., ePPP = +20m.31s., e = +26m.32s. =PS − 3s. and +31m.54s., eSS = +33m.33s.
Sverdlovsk iPP = +18m.23s., iPPP = +20m.40s., iPS = +27m.38s., iPPS = +28m.24s., iSS = +33m.14s., iSSS = +40m.20s., L_q = +44·0m.
Tananarive SKSE = +24m.59s., PS = +28m.11s., SS = +34m.26s., SSS = +38m.2s.

Continued on next page.

Little Rock eE = +28m.22s. =PS +5s., ePSE = +29m.11s., ePPSE = +29m.54s., iSSE = +34m.42s. ; T_0 =12h.4m.34s.
Florissant iPP = +19m.1s., iSKS = +25m.15s., iSKKS = +26m.11s., iPS = +28m.26s., iPPS = +29m.20s., eSS = +34m.20s., eSSS = +38m.20s.
St. Louis ePPE = +19m.2s., iSKKSE = +26m.12s., iSN = +26m.57s., ePSE = +28m.30s., ePPSE = +29m.23s., eSSE = +34m.27s., eSSSE = +38m.17s.
Chicago e = +27m.1s., i = +28m.52s. =PS +3s., ePS = +30m.4s., c = +33m.35s.
Baku iPP = +19m.25s., SSS = +40m.14s.
Ann Arbor e = +29m.26s. =PS +10s., eN = +35m.32s. =SS +6s., eE = +36m.20s.
Tiflis PKPN = +18m.49s., eN = +20m.1s. =PP +17s., PPN = +20m.13s., PPPN = +23m.20s., ePSN = +29m.35s., eSSN = +35m.48s., SSSN = +41m.1s., eN = +55m.26s.
Kucino ePS = +29m.27s., eSS = +35m.42s.
Toronto ePKPE = +18m.33s., iPPEN = +19m.53s., iSS = +36m.6s.
Pittsburgh iSKS = +24m.52s., i = +34m.24s., eSS = +37m.16s., eSSS = +42m.24s.
Columbia ePS = +29m.57s., eSS = +36m.24s., eSSS = +40m.26s.
Pulkovo PKP = +18m.45s., PP = +20m.1s., SKKS = +26m.59s., PS = +29m.48s., SS = +36m.26s.
Scoresby Sund e = +20m.27s. =PP +23s., eN = +24m.44s., eE = +28m.2s., +29m.50s. =PS −6s., +31m.2s., SS = +36m.32s.
Huancayo e = +23m.56s. and +35m.58s., SS = +36m.41s., eSSS = +40m.22s., i = +44m.46s. and +50m.46s.
Charlottesville PS = +29m.47s., SS = +36m.40s., SSS = +40m.40s.
Ottawa e = +29m.42s. =PS −18s., i = +30m.2s. =PS +2s., c = +36m.36s. = SS +7s., iE = +37m.26s., e = +48m.38s.
Ithaca e = +29m.56s. =PS −7s.
Helsingfors PPEZ = +20m.22s., eSKKSE = +26m.26s., ePSE = +30m.26m.?, ePPSEZ = +32m.26s.?, eSSE = +37m.26s., eSSSE = +41m.36s.
Georgetown PPZ = +20m.3s., iSS = +37m.7s. ; T_0 =12h.4m.20s.
La Plata SSN = +36m.56s., SS?E = +37m.32s.
Fordham eEN = +27m.30s. =SKKS −2s., eN = +30m.28s. =PS +3s., eSSE = +37m.22s.
Oak Ridge iZ = +18m.58s. and +19m.46s., ePP = +20m.36s., iSKPZ = +21m.46s., eNW = +38m.22s., iNE = +38m.24s., eSSSNE = +42m.26s., iNE = +51m.44s. ; T_0 =12h.4m.34s.
Cape Town PP = +24m.56s., PPP = +27m.30s. =SKKS −12s., SKKS = +31m.34s., S? = +32m.53s., PS? = +33m.45s., PPS = +34m.47s., +37m.30s. =SS +9s., SS = +40m.35s., SSS = +44m.45s.
La Paz PPE = +20m.49s., SKPN = +22m.11s., PPPN = +24m.42s., SKKSE = +27m.47s., iPSE = +30m.55s., iPPSE = +32m.7s., SSN = +37m.37s., iSSE = +38m.15s., iSSSE = +41m.35s.
Ksara PP = +20m.54s., SS = +38m.0s.
Königsberg eZ = +20m.59s. =PP +12s., eN = +21m.16s.
Bergen eP = +53m.9s.
Copenhagen iPPZ = +21m.13s., iPPEN = +21m.32s., PKS = +22m.29s., eN = +27m.44s. =SKKS −27s., PPS = +32m.44s., SS = +38m.26s.
Hamburg i = +22m.31s. =PKS −5s., eEN = +22m.57s., eE = +38m.52s. = SS +3s.
Prague ePP = +21m.30s., ePPP = +24m.56s., ePPS = +33m.26s., eSS = +38m.20s.
Leipzig eN = +22m.26s.? =PKS −14s.
Vienna iZ = +19m.44s., iN = +20m.40s. and +21m.27s. =PP −2s., iEZ = +21m.41s. and +22m.0s., PKP = +22m.40s. =PKS −1s., PP = +24m.43s., SKP = +25m.38s., PKKP = +31m.56s., SKKS = +40m.5s.
Jena PNZ = +19m.13s., i = +21m.26s. =PP −5s., iEZ = +22m.40s., iE = +22m.44s., eN = +22m.46s. =PKS +3s., eEN = +33m.26s., eN = +38m.56s. =SS −10s.
Göttingen eEN = +22m.38s. =PKS −5s., eN = +45m.56s. and +49m.2s.
Cheb i = +22m.52s. =PKS +8s., e = +39m.13s. =SS +4s.
Edinburgh i = +39m.51s.
Graz i = +22m.49s. =PKS +3s.
Durham P = +22m.41s. =PKS −6s., SKS = +33m.14s.
San Juan i = +21m.46s. =PP +8s., iPP = +22m.39s. =PKS −8s., eSS = +39m.29s., iSSS = +44m.33s., e = +54m.40s.
Zagreb eP = +19m.14s., $ePcP$ = +19m.18s., ePKP = +22m.7s., e = +22m.43s. = PKS −5s., ePP = +24m.15s., eSKSP = +35m.0s., eSKKS ($\Delta > 180°$) = +38m.59s., eSSS = +47m.26s.?, eSSSS = +53m.26s.?
De Bilt eEN =iZ = +21m.42s. =PP +1s., i = +22m.47s. =PKS −2s., eEN = +45m.32s.
Stuttgart eNZ = +20m.46s., ePP = +21m.57s., ePKS = +22m.32s., ePPP = +24m.56s., $ePPP_2$ = +34m.54s., eSS = +39m.26s. ; T_0 =12h.4m.15s.
Bidston e = +21m.51s. =PP +3s.
Triest iZ = +21m.55s. =PP +7s. and +22m.16s., iE = +22m.27s., SKP = +22m.42s., iEZ = +22m.49s., i = +23m.28s., +23m.47s., +24m.11s., +24m.21s. and +24m.56s., iPPS? = +33m.32s., i = +35m.0s., iSS = +39m.38s., iE = +41m.11s., SSS = +44m.32s., iN = +45m.8s.

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Uccle ePP = +21m.51s., PPSE = +33m.53s., iN = +35m.12s. and +46m.9s.
Strasbourg PP = +22m.1s., SKP = +22m.57s., i = +23m.51s., SKKS = +28m.49s., PPS = +33m.52s., SS = +39m.49s.
Oxford eN = +21m.54s. = PP + 0s., eE = +21m.58s., iN = +22m.53s. = PKS − 3s.
Kew iPP = +22m.23s., iPKS = +22m.52s., ePSEN = +32m.36s., eZ = +36m.31s. iEN = +38m.0s., iSSE = +40m.2s.
Chur ePP? = +22m.52s.
Zurich ePP = +22m.2s.
Basle ePP = +22m.5s.
Neuchatel ePP = +22m.2s.
Paris iPP = +22m.14s., e = +24m.11s.
Piacenza PP = +22m.59s.
Florence i = +22m.56s. = PKS − 8s. and +41m.26s.
Prato PP = +22m.35s.
Algiers PKP_2N = +20m.7s., PP = +23m.44s.
Almeria i = +19m.58s.
Granada PKP_2 = +19m.56s., PP = +23m.26s.
Malaga PP = +23m.15s., e = +26m.3s., SS? = +42m.39s.
Long waves were also recorded at Johannesburg, Simferopol, Theodosia, Belgrade, Tunis, and Barcelona.

March 24d. 22h. 52m. 39s. Epicentre 23°·5S. 66°·5W. (as on 1933 Oct. 25d.). X.

A = +·366, B = −·841, C = −·399; D = −·917, E = −·399; G = −·159, H = +·366, K = −·917.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Montezuma		2·3	292	i 0 54	S	i 1 15	S_g	—	—
Sucre		4·6	15	i 1 10	+ 4	i 1 58	0	—	—
La Paz		7·2	347	1 45	+ 3	i 2 47	−17	i 3·1	4·2
La Plata	E.	13·6	149	3 9a	− 1	5 39	− 2	6·8	8·4
	N.	13·6	149	i 3 10a	0	5 35	− 6	6·6	8·4
	Z.	13·6	149	3 11a	+ 1	5 39	− 2	6·8	7·1
Huancayo		14·2	322	i 3 18	0	i 5 48	− 8	—	—
San Juan		41·9	0	—	—	e 16 40	SS	—	—
Oak Ridge		66·2	357	i 10 26	−21	—	—	e 33·4	—
La Jolla		74·3	317	e 11 17k	−19	—	—	—	—
Riverside	Z.	75·1	318	i 11 22k	−19	—	—	—	—
Pasadena		75·7	318	i 11 25k	−19	—	—	—	—
Mount Wilson		75·7	318	i 11 26	−18	—	—	—	—
Santa Barbara	Z.	76·9	317	i 11 31k	−20	—	—	—	—
Haiwee		77·0	320	i 11 33k	−19	—	—	—	—
Tinemaha		77·7	320	i 11 37k	−19	—	—	—	—
Seattle		87·0	326	—	—	e 18 21	?	—	—
Sverdlovsk		129·6	34	i 21 56	PP	e 38 7	SS	56·4	—

Additional readings:—
La Plata SSSE? = +6m.7s.
Tinemaha iZ = +12m.46s.

March 24d. Readings also at 7h. (Sverdlovsk), 8h. (Tashkent), 11h. (La Paz and Sucre), 13h. (Helwan, La Jolla, Pasadena, Riverside, and Tinemaha), 14h. (Tananarive and near Mizusawa), 15h. (Paris), 16h. (Suva), 17h. (near Arisan, Karenko, and Taihoku), 18h. (Zagreb and near Triest), 20h. (La Paz), 21h. (Mizusawa), 22h. (near La Paz), 23h. (Pasadena, Riverside, and Tinemaha).

March 25d. 12h. Two shocks from an origin in Central Asia.

Frunse (I) eP = 12h.36m.6s., eL = 37m.21s.; (II) eP = 12h.37m.4s., eL = 38m.18s., M = 38m.50s.
Samarkand (I) P = 12h.41m.4s., L = 41m.57s. (II) i = 12h.41m.16s.
Andijan (I) eP = 12h.41m.36s., L = 42m.37s.; (II) eP = 12h.42m.6s., L = 43m.7s., M = 43m.23s.
Tashkent e = 12h.41m.55s., i = 42m.7s. and 42m.17s., e = 42m.41s., L = 42m.48s., M = 43m.54s.
Grozny eP = 12h.44m.39s., eS = 48m.37s., eL = 53m.30s.
Tiflis PN = 12h.44m.48s., P_gSN = 48m.12s., eSN = 51m.42s., LE = 13h.1m.30s.
Sverdlovsk iP = 12h.45m.3s., S = 48m.57s., L_q = 51m.24s., L_r = 53m.30s., M = 53m.48s.
Agra eE = 12h.45m.15s., iE = 46m.46s.
Calcutta P = 12h.47m.10s., S = 49m.40s., L = 50m.48s.
Baku e = 12h.48m.23s., L = 50m.
Bombay eE = 12h.48m., eN = 50m.
Kodaikanal PE = 12h.53m.32s.
Kucino e = 12h.55m.42s.
De Bilt e = 13h.1m., eL = 5m.
Paris 13h.9m.
Long waves were also recorded at Copenhagen, Pulkovo, and Vladivostok.

March 25d. Readings also at 0h. (Sverdlovsk, Tashkent, Tiflis, Pulkovo, Riverside, Pasadena, and Tinemaha), 1h. (Ravensburg, near Basle, Chur, and Zurich), 2h. (Kobe), 3h. (Wellington, near Sumoto, and near Nanking), 4h. (Wellington), 9h. (Tiflis, and near Tyosi), 20h. (near Branner (2)), 22h. (near Mizusawa).

March 26d. Readings at 3h. (Bombay and Calcutta), 8h. (Phu-Lien), 12h. (near Triest), 14h. (near Amboina), 18h. (near Berkeley, Branner, Lick, and near Malaga), 19h. (Nagoya and near Tyosi), 20h. (Kobe and near Osaka), 22h. (Hastings).

March 27d. A Pacific shock for which no determination is made. The Crimean records, perhaps, should not be included.

Suva P? = 3h.27m.36s.?, S? = 31m.24s.
Arapuni iS = 3h.28m.6s.
Wellington P = 3h.28m.31s., S? = 29m.57s., L = 31m.55s.
Christchurch eP? = 3h.28m.43s., SE = 30m.7s., eL = 31m.15s.
Chatham Islands i = 3h.30m.25s., 34m.33s., L = 40m.
Riverview e = 3h.31m.18s., M = 39m.0s.
Melbourne e = 3h.31m.20s., i = 35m.50s., L? = 41m.0s., M = 42m.18s.
Sydney e = 3h.31m.20s., L = 40m.6s., M = 41m.24s.
Apia 3h.33m.
Adelaide e = 3h.33m.56s. and 39m.11s., M = 44m.24s.
Pasadena iPZ = 3h.36m.54s.
Mount Wilson iPZ = 3h.36m.55s.
Riverside iPZ = 3h.36m.56s.
Haiwee ePZ = 3h.37m.5s.
Grozny eP = 3h.43m.40s.
Tiflis eNZ = 3h.43m.52s., eN = 45m.20s.
Sotchi eP = 3h.43m.58s.
Sebastopol eP = 3h.44m.5s.
Simferopol eP = 3h.44m.6s.
Theodosia eP = 3h.44m.11s.
Yalta eP = 3h.44m.13s., eL = 45m.3s.
Chiufeng iEN = 3h.48m.6s., iN = 48m.48s.
Perth P = 3h.55m.0s.
Huancayo e = 4h.10m.36s.
Long waves were also recorded at Oak Ridge and San Fernando.

March 27d. Readings also at 1h. (near Berkeley, Branner, Lick, and near Triest) 2h. (Baku and Sverdlovsk), 4h. (near Amboina), 5h. (Tiflis), 10h. (Agra and Tiflis), 14h. (Ksara, Grozny, near Erevan, and Tiflis), 15h. (near Branner), 16h. (Almeria and near Alicante), 19h. (Andijan, Frunse, and Samarkand), 20h. (near Mizusawa).

March 28d. 12h. 48m. 54s. Epicentre 44°·5N. 11°·0E. (as on 1931 June 10d.). X.

A = +·700, B = +·136, C = +·701 ; D = +·191, E = −·982 ;
G = +·688, H = +·134, K = −·713.

	△	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Prato	0·6	173	e 0 13	+ 4	i 0 24	+ 9	0·5
Triest	2·2	59	e 0 28	− 3	i 1 13	S_g	—
Zurich	3·3	330	e 0 49	+ 2	e 1 23	− 2	—
Ravensburg	3·4	344	e 0 56	P*	e 1 31	+ 4	—
Neuchatel	3·7	313	e 0 51	− 2	e 1 28	− 7	—
Basle	3·9	324	—	—	e 1 33	− 7	—
Stuttgart	4·4	345	e 1 5	+ 2	e 1 51	− 2	—

Triest gives also P_g = +41s.

March 28d. Readings also at 1h. (near Wellington), 3h. (Baku and Tashkent), 4h. (Tiflis and near La Paz), 6h. (near Balboa Heights), 8h. (Mizusawa), 9h. (Mizusawa, Berkeley, Lick, and Tucson), 13h. (near Tyosi), 14h. (Frunse, near Almata, Andijan, Samarkand, and Tashkent), 19h. (Hong Kong, Nanking, near Arisan, Karenko, and Taihoku), 20h. (Bunnythorp, New Plymouth, and near Wellington).

March 29d. 20h. 6m. 48s. Epicentre 45°·8N. 26°·5E. N.1.

Probable error of epicentre ±0°·13.

A = +·624, B = +·311, C = +·717 ; D = +·446, E = −·895 ;
G = +·642, H = +·320, K = −·697.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Lemberg		4·3	339	e 1 14	P*	e 1 54	+ 4	—	2·1
Belgrade		4·4	259	i 1 5a	+ 2	i 1 51	− 2	—	5·8
Sebastopol		5·1	102	i 1 15	+ 2	(i 2 9)	− 1	i 2·1	—
Budapest		5·3	291	i 1 19	+ 4	(2 21)	+ 6	2·3	3·2
Simferopol		5·4	96	i 1 20	+ 3	(i 2 17)	− 1	i 2·3	2·7
Yalta		5·6	101	i 1 20	0	(i 2 22)	− 1	i 2·4	3·0
Theodosia		6·3	94	i 1 31	+ 1	(i 2 42)	+ 1	i 2·8	3·1
Vienna		7·3	293	e 1 46k	+ 2	4 9	S_g	—	5·1
Zagreb		7·3	274	e 1 47	+ 3	e 3 12?	+ 6	—	5·6
Graz		7·6	283	i 1 49	+ 1	i 3 25	+11	i 4·3	4·9
Laibach		8·3	276	i 0 30k	−88	i 2 9	−82	—	—
Triest		8·9	274	i 2 7k	+ 1	i 3 50	+ 4	—	—
Prague		9·1	302	i 2 12	+ 3	i 4 2	+11	—	5·7
Sotchi		9·7	99	4 16	S	5 51	?	—	—
Königsberg		9·8	339	i 2 22	+ 4	i 4 39	+31	e 8·2	9·9
Venice		9·9	273	e 2 26	+ 7	4 18	+ 7	—	8·7
Naples	N.	10·2	245	e 2 57	+33	e 4 27	+ 9	—	6·9
Cheb		10·3	300	e 2 29	+ 4	e 4 18	− 3	e 5·2	6·8
Leipzig		10·8	306	i 2 33	+ 1	e 4 12	−21	e 5·2	7·4
Prato		11·0	265	e 2 33	− 2	i 4 47	+ 9	—	5·6
Jena		11·1	302	e 2 38	+ 2	e 4 55	+14	e 5·2	6·9
Ravensburg		11·7	286	e 2 46k	+ 2	—	—	5·7	—
Piacenza		11·8	272	2 44	− 2	3 56	−62	5·2	10·0
Chur		11·8	281	e 2 46	0	—	—	—	—
Stuttgart		12·1	290	i 2 51k	+ 1	e 4 54	−11	—	—
Kucino		12·3	32	2 56	+ 4	5 0	−10	—	7·7
Göttingen		12·3	305	2 51	− 1	e 5 34	+24	—	7·3
Zurich		12·4	284	e 2 54	0	e 5 33	+20	—	—
Karlsruhe		12·6	291	i 2 57	+ 1	5 29	+12	e 6·7	8·7
Basle		13·0	285	e 3 2	0	e 5 49	+22	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Strasbourg		13·0	289	i 3 4k	+ 2	i 5 37	+10	—	10·0
Copenhagen		13·2	323	i 3 3	− 2	e 5 30	− 2	6·2	—
Hamburg		13·2	312	i 3 3k	− 2	i 5 48	+16	e 6·7	9·9
Neuchatel		13·5	282	e 3 9	0	—	—	—	—
Tiflis		13·8	101	3 13	0	5 49	+ 3	8·1	—
Grozny		13·9	94	3 17	+ 3	5 58	+ 9	—	—
Pulkovo		14·0	8	i 3 14	− 1	i 5 38	−13	6·8	7·3
Ksara		14·0	146	e 3 12	− 3	5 52	+ 1	—	—
Erevan		14·3	107	3 23	+ 4	6 17	+19	—	—
Helsingfors		14·4	357	i 3 18	− 3	i 5 48	−13	i 6·5	—
Grenoble		14·5	275	3 16	− 6	6 1	− 2	—	—
Upsala		15·0	343	i 3 26	− 2	i 6 23	+ 8	—	8·3
De Bilt		15·2	301	i 3 33k	+ 2	6 34	+14	e 7·7	10·6
Uccle		15·5	297	i 3 36k	+ 1	i 6 40	+13	e 8·2	—
Helwan		16·4	164	i 3 44	− 2	i 6 38	−10	—	—
Paris		16·5	289	i 3 47	− 1	e 6 58	+ 8	8·2	10·2
Baku		17·9	99	i 4 5	0	i 7 26	+ 4	—	7·9
Barcelona		18·1	265	e 4 5	− 3	e 7 20	− 7	e 9·2	13·8
Kew		18·4	297	e 4 11	0	e 7 37	+ 4	8·5	—
Oxford		19·1	298	i 4 17k	− 3	i 7 52	+ 4	—	—
Bergen		19·2	327	4 21	0	7 58	+ 8	—	—
Tortosa		19·4	265	4 21	− 2	7 56	+ 2	—	—
Algiers		19·7	251	e 4 3	−23	i 7 58	− 2	—	—
Durham		19·7	307	4 26	0	8 7	+ 7	—	—
Bidston		20·4	303	i 4 32	− 2	i 8 15	+ 1	8·9	—
Edinburgh		21·0	309	i 4 40	0	i 8 28	+ 2	—	—
Alicante		21·2	259	e 4 44	+ 2	e 8 33	+ 3	—	—
Toledo		23·0	266	i 4 56	− 5	i 9 5	0	e 10·7	—
Almeria		23·3	258	e 5 5	+ 1	i 9 7	− 3	—	—
Sverdlovsk		23·7	50	i 5 5	− 2	i 9 12	− 6	i 13·0	—
Granada		24·0	260	e 5 7	− 3	i 9 12	−11	11·2	—
Malaga		24·8	259	5 38	PP	9 35	− 2	—	—
San Fernando		26·1	261	4 44	−46	10 2	+ 2	12·2	18·2
Samarkand		30·1	87	5 29	−37	e 10 29	−37	e 13·6	—
Tashkent		31·0	82	i 6 12	− 2	i 11 11	− 9	i 11·4	14·1
Andijan		33·3	82	e 6 32	− 2	e 12 13	+18	—	—
Scoresby Sund		33·9	333	7 5	+26	11 59	− 5	—	—
Almata		35·5	74	6 55	+ 2	e 15 21	SSSS	—	—
Ivigtut		44·2	318	—	—	17 54	(−13)	—	—
Bombay		46·5	109	i 8 21	− 4	i 15 5	− 7	—	—
Chiufeng		62·3	59	i 10 13a	− 7	e 18 33	−13	—	—
Oak Ridge		65·6	306	i 10 37	− 5	i 19 17	−10	e 30·2	—
Ottawa		66·0	311	—	—	e 19 24	− 8	23·2	—
Vladivostok		69·3	49	i 10 59	− 7	20 1	−12	e 40·2	—
Georgetown		71·1	307	i 11 39k	+22	i 20 21	−13	e 31·2	—
Mizusawa	E.	76·9	46	(e 12 4)	+13	e 12 4	P	—	—

Additional readings :—
Belgrade eP* = +1m.10s., ePg = +1m.15s., i = +1m.24s. =Pg +2s., +1m.32s., and +1m.38s.
Vienna P = +1m.49s., iN = +1m.56s. and +2m.17s. =Pg −3s., iE = +2m.23s., Pg = +2m.27s., iE = +2m.31s. and +2m.46s., S = +3m.19s., PS = +3m.32s. =S* −3s., iE = +3m.43s., SS = +4m.15s.
Zagreb i = +1m.55s. and +2m.5s. =P* +3s., e = +2m.32s. =Pg +12s. and +2m.51s., eZ = +3m.1s., i = +3m.50s. =Sg −5s. and +4m.35s., iNE = +4m.52s.
Graz iP* = +1m.52s.
Laibach e = +1m.16s. and +2m.44s.
Triest iE = +2m.15s., i = +2m.17s., iE = +2m.21s. and +2m.31s., iPg = +2m.51s., i = +4m.8s. and +7m.7s.
Königsberg iPPZ = +3m.32s., e = +4m.8s.
Venice +6m.42s.
Leipzig iE = +2m.54s. and +3m.3s., i = +5m.5s.
Jena i = +2m.41s.
Stuttgart e = +3m.16s. and +5m.48s. =S* −10s., iE = +6m.23s., iEZ = +7m.43s., iZ = +8m.42s., iEZ = +9m.33s.

Continued on next page.

Göttingen eS = +6m.18s.
Strasbourg i = +3m.34s., PPP = +4m.16s., i = +6m.39s. = S* +14s., SSS = +7m.29s.
Copenhagen +5m.50s.
Tiflis PPE = +3m.20s., eE = +3m.51s., eN = +4m.25s., iE = +6m.4s.
Grozny e = +3m.34s.
Helsingfors i?NZ = +3m.26s. and +3m.35s., iPPNZ = +3m.59s., i? = +6m.10s. and +6m.25s.; T_0 = 20h.6m.53s.
Upsala i = +6m.8s.
Uccle iE = +4m.30s., eE = +6m.34s. = SS − 1s.
Kew iPEZ = +4m.14s., iPPEZ = +4m.47s., iSE = +7m.39s., iEZ = +7m.57s., i = +8m.22s.
Oxford i = +8m.26s.
Tortosa PN = +4m.26s.
Algiers iPP = +4m.25s., eSS = +8m.40s.
Bidston PP = +4m.52s.
Edinburgh i = +4m.44s., +4m.48s., +5m.18s., and +8m.38s.
Alicante PP = +5m.23s.
Toledo PP = +5m.23s., PPP = +5m.30s.
Sverdlovsk iL_q = +12·1m.
Granada PP = +5m.26s., PPP = +5m.41s., SS = +10m.8s.
Malaga e = +8m.16s., P_cS? = +12m.26s., e = +16m.58s.
Scoresby Sund +7m.44s. = PP − 3s., +14m.12s. = SSS − 4s., e = +14m.34s. = SSSS + 12s.
Bombay iN = +10m.24s.
Oak Ridge iP_cPZ = +11m.4s.

March 29d. Readings also at 0h. (Chiufeng, Baku, Sverdlovsk, Tashkent, and Tiflis), 1h. (near Tiflis), 5h. (near Mizusawa), 6h. (Apia and La Paz), 7h. (Vladivostok and near Mizusawa), 8h. (near Dannevirke), 11h. (near Mizusawa and Tyosi), 12h. (Erevan, Grozny, and Sotchi), 23h. (near Sumoto, near Arisan, Karenko, and Taihoku).

March 30d. 14h. 54m. 7s. Epicentre 32°·4N. 132°·1E. (as on 1932 March 17d.). X.

A = − ·566, B = + ·626, C = + ·536; D = + ·742, E = + ·670;
G = − ·359, H = + ·398, K = − ·844.

	△	Az.	P.	O − C.	S.	O − C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Koti	1·7	46	e 0 21	− 3	e 0 47	+ 3	1·0
Hukuoka	1·9	310	0 29	+ 1	0 58	S_g	1·0
Hukuoka B	1·9	310	0 30	+ 2	1 3	S_g	—
Nagasaki	1·9	280	e 0 26	− 2	0 59	S_g	—
Sumoto	3·0	50	e 0 57	P_g	1 36	S_g	1·8
Kobe	3·4	48	—	—	e 1 55	S_g	2·0
Osaka	3·6	50	1 9	P_g	2 7	S_g	3·2
Toyooka	3·9	36	1 24	P_g	2 5	S_g	2·3
Nagoya	4·9	55	e 1 45	P_g	2 57	S_g	—
Chiufeng	15·0	305	—	—	e 7 17	+62	11·3

Additional readings:—
Koti e = +38s.
Sumoto eZ = +1m.11s. = S − 6s., SZ = +1m.40s.
Osaka i = +1m.53s.
Toyooka SZ = +2m.10s.
Long waves were also recorded at Vladivostok, Tashkent, and Baku.

March 30d. Readings also at 4h. (Oak Ridge, Ottawa, Haiwee, La Jolla, Mount Wilson, Pasadena, Bozeman, Victoria, Sitka, Baku, Sverdlovsk, Tashkent, Scoresby Sund, Chiufeng, near Nagoya, and Tyosi), 6h. (De Bilt, San Juan, Kucino, Sverdlovsk, Oak Ridge, and Ottawa), 13h. (near Tyosi), 16h. (Berkeley, Branner, Lick, and Tucson), 18h. (near Ksara), 20h. (Paris), 21h. (Kucino, Pulkovo, Tashkent, Scoresby Sund, and near Reykjavik), 23h. (near Batavia, and Malabar).

March 31d. 3h. 12m. 58s. Epicentre 28°·5S. 73°·0W. (as on 1928 April 12d.). X.

$A = +\cdot257$, $B = -\cdot840$, $C = -\cdot477$; $D = -\cdot956$, $E = -\cdot292$; $G = -\cdot140$, $H = +\cdot456$, $K = -\cdot879$.

		△	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago		5·3	155	1 22	+ 7	2 16	+ 1	—	3·7
Sucre		11·8	39	2 51	+ 5	5 4	+ 6	5·7	—
La Paz	N.	12·8	22	e 2 53	− 6	i 5 37	+15	6·5	7·5
La Plata	E.	14·3	120	3 9	−10	5 28	−30	6·2	7·3
	N.	14·3	120	3 7	−12	5 24	−34	5·9	7·4
Mount Wilson	Z.	75·8	323	e 11 47	+ 2	—	—	—	—
Pasadena	Z.	75·8	323	i 11 46	+ 1	—	—	—	—
Haiwee	Z.	77·3	325	e 11 55	+ 1	—	—	—	—

Additional readings :—
La Plata SZ = +5m.30s.
Pasadena iZ = +12m.0s.

March 31d. Readings also at 0h. (Branner, Lick, near Mizusawa, and Tyosi), 1h. (near Batavia and Malabar), 3h. (near Oak Ridge), 15h. (La Paz and near Huancayo), 18h. (Almata, Andijan, Frunse, Tashkent, Pulkovo, Bombay, Chiufeng, Vladivostok, and near Malabar), 19h. (near Apia), 22h. (near Berkeley (2), Branner (3), and Lick (2)), 23h. (Tiflis).

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