The International Seismological Summary.

1934 July, August, September.

FORMERLY THE BULLETIN OF THE
BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

There are 183 epicentres in this quarter of the Summary, 56 being new and 127 are repetitions of old ones. The quality of the Material is as follows :—

N.1=8	R.1=17	X=83
N.2=12	R.2=9	
N.3=36	R.3=18	

The cases of abnormal focus are as follows :—

	Date. d. h. m. s.	Epicentre. ° °	Focal Depth. (Below Normal)
July	22 19 57 0	36·5N. 70·5E.	+0·025
Aug.	30 16 25 57	19·3N. 145·7E.	+0·025

UNIVERSITY OBSERVATORY,
OXFORD.

1941, September 17.

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1934 JULY, AUGUST, SEPTEMBER.

July 1d. 18h. 17m. 47s. Epicentre 48°·8N. 8°·2E. (as on 1933 Feb. 8d.). R.3.

$A = +\cdot652$, $B = +\cdot094$, $C = +\cdot752$; $D = +\cdot143$, $E = -\cdot990$; $G = +\cdot745$, $H = +\cdot107$, $K = -\cdot659$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Karlsruhe	0·3	33	0 2	− 2	—	—	—	—
Strasbourg	0·4	233	e 0 3	− 3	i 0 9	− 1	—	—
Stuttgart	0·6	93	e 0 8	− 1	i 0 20	+ 5	—	—
Ebingen	0·8	135	e 0 10	− 1	i 0 23	+ 2	—	—
Ravensburg	1·3	137	—	—	i 0 42	S*	—	—
Basle	1·3	198	e 0 22	+ 4	e 0 40	S*	—	—
Zurich	1·4	170	e 0 25	+ 5	e 0 43	S*	—	—
Neuchatel	2·0	205	e 0 33	+ 4	e 1 0	S_g	—	—
Chur	2·1	155	e 0 39	P_g	e 0 58	+ 4	—	—
Göttingen	3·0	22	e 0 52	P_g	i 1 29	S*	—	—
Jena	3·1	46	e 0 55	P_g	—	—	e 1·5	1·6

Additional readings :—
Stuttgart $eN_q = +16s.$, $i = +18s.$ and $+22s.$
Ebingen $e_q = +21s.$
Ravensburg $i_q = +43s.$
Jena $eE = +1m.10s.$, $iE = +1m.22s.$

July 1d. 19h. Shock for which no determination is possible.

La Plata iPNZ = 19h.56m.47s.a, PE = 56m.49s., PPP = 57m.13s., N = 57m.28s., E = 57m.47s., N = 58m.24s., E = 58m.35s., iSE = 20h.0m.23s., SN = 0m.34s., LE? = 1m.42s., M = 2m.10s., LE = 3m.24s., and 7m.46s.
La Paz P = 19h.59m.43s., PP = 20h.1m.37s., PPP = 2m.29s., S?E = 6m.19s., L = 12m.30s., M = 15m.21s.
Sucre P = 20h.0m.21s., L = 10m.0s.
Huancayo e = 20h.7m.22s., 11m.15s., 12m.57s., and 15m.3s., eL = 18m.20s.
Tashkent e = 20h.10m.27s., 11m.43s., and 13m.51s., i = 14m.52s., e = 18m.29s., 19m.48s., 21m.56s., 22m.16s., and 33m.30s., M = 21h.12m.42s.
Frunse, e = 20h.11m.14s.?
Sverdlovsk P = 20h.11m.54s., i = 12m.1s., e = 33m.25s., L = 57m.
Baku e = 20h.13m.6s. and 25m.0s., L = 51m., M = 21h.10m.12s.
Tiflis eZ = 20h.14m.42s. and 23m.18s., eL = 54m.30s., MN = 21h.11m.18s.
Samarkand eP = 20h.14m.43s., eL = 50m.28s.
Pulkovo e = 20h.14m.55s., L = 48m., M = 21h.7m.48s.
Scoresby Sund 20h.19m., L = 54m.
Paris eZ = 20h.21m., L = 51m.
De Bilt e = 20h.22m.0s., eL = 48m., M = 58m.18s.
Stuttgart e = 20h.22m.0s., eL = 47m., M = 21h.1m.
Long waves were also recorded at Edinburgh, Irkutsk, San Juan, and other European stations.

July 1d. Readings also at 0h. (La Plata), 2h. (Nanking), 4h. (near Granada), 5h. (Tuai and Trenta), 9h. (Christchurch (2), Greymouth, near Takaka, New Plymouth (2), Wellington (2), Glenmuick, and near Apia), 11h. (Piatigorsk, near Granada, and near Strasbourg), 13h. (Trenta, Catania, and near Tyosi), 14h. (near New Plymouth and Wellington), 15h. (Strasbourg), 16h. (near Strasbourg (2), and near Amboina), 17h. (Trenta), 22h. (near Amboina), 23h. (near Mizusawa, Nagoya, and Tyosi).

July 2d. Readings at 0h. (near Lick (2)), 2h. (Lick, Nagoya, and near Tyosi), 4h. (near Lick), 5h. (2) and 8h. (near Amboina), 10h. (Stuttgart, near Ravensburg, and Zurich), 12h. (Amboina), 13h. (Piatigorsk and near Amboina (4)), 14h. (Amboina and Trenta), 15h. (near Amboina (3), and near Tyosi), 16h. (near Sumoto), 17h. (Sverdlovsk, Tiflis, Vladivostok, and near Amboina), 18h. (San Juan and near La Paz), 19h. (Scoresby Sund (2)), 20h. (near Tyosi), 21h. (Batavia, near Nagoya), 23h. (Berkeley and Scoresby Sund).

July 3d. No determination has been made for the following readings, the earthquake was reported to have been felt at Potensa.

Benevento eP =16h.11m.5s., M =11m.25s.
Trenta iP =16h.11m.20s., iS =11m.38s.
Florence e =16h.11m.30s., M =13m.30s.
Catania P =16h.11m.49s., MN =13m.22s.
Messina P =16h.12m.0s.
Piacenza e =16h.12m.30s., ME =18m.4s.
Prato eP =16h.12m.36s., S =14m.0s., M =14m.22s.
Zagreb ePN =16h.12m.50s., eS_g =13m.33s., e =13m.47s., e =13m.55s., e = 14m.12s., e =14m.45s.
Siena P =16h.13m.25s.
Triest ePP =16h.13m.32s., iZ =13m.34s., i =14m.24s., S_g =14m.39s., iSS = 14m.45s.
Bari P =16h.14m.52s., S =15m.0s.
Neuchatel e =16h.15m.47s.
Stuttgart e =16h.16m., eL =17m.30s.
Hamburg e =16h.18m.
De Bilt e =16h.19m.
Pulkovo e =16h.19m.54s.
Long waves were also recorded at Strasbourg, Paris, and Sverdlovsk

July 3d. Readings at 2h. (Kobe and near Sumoto), 3h. (Chiufeng, Irkutsk, Manila, Nanking, Nagoya, Hong Kong, Vladivostok, Pasadena, Tinemaha, near Florissant, and St. Louis), 4h. (Scoresby Sund, Edinburgh, Kew, Copenhagen, De Bilt, Paris, Strasbourg, Stuttgart, Uccle, Pulkovo, Sverdlovsk, Baku, and Tiflis), 6h. (Medan), 7h. (Scoresby Sund), 8h. (Agra, Dehra Dun, and Frunse), 9h. (Almata, Samarkand, Scoresby Sund, Bombay, and Batavia), 11h. (near Zagreb), 12h. (near Amboina), 13h. (Almata, Samarkand, near Frunse, and near Mizusawa), 15h. (Edinburgh), 17h. (near Manila), 20h. (Ithaca and Mizusawa), 21h. (Lick and near Santiago).

July 4d. 1h. 42m. 34s. Epicentre 55°·0S. 38°·5W. N.3.

A = +·449, B = −·357, C = −·819; D = −·623, E = −·783; G = −·641, H = +·510, K = −·574.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Plata		24·2	318	i 5 14a	+ 2	9 31	+ 4	10·9	16·8
Santiago		31·1	300	6 10	− 5	17 0	L	(17·0)	—
Sucre		41·3	320	7 44	+ 1	14 2	+ 6	20·4	—
La Paz		44·7	318	i 8 7k	− 3	i 14 53	+ 7	24·4	26·3
Huancayo		51·7	312	i 9 6	+ 2	i 16 11	−13	e 28·3	—
San Juan		77·1	333	e 11 56	+ 3	—	—	e 37·4	—
Christchurch		78·0	204	e 11 57	0	i 21 51	− 3	37·4	—
Wellington		79·6	205	—	—	21 34	−37	e 32·4	—
Melbourne		87·2	183	—	—	i 23 8	[− 7]	—	44·5
Adelaide		90·0	177	—	—	e 23 6	[−27]	e 42·1	55·7
San Fernando	E.	95·5	26	17 31	PP	32 14	?	52·4	—
	N.	95·5	26	17 37	PP	32 8	?	52·9	—
Almeria		96·7	28	e 17 42	PP	—	—	e 51·5	—
Granada		96·9	28	e 18 2	?	—	—	e 48·5	—
Toledo		99·3	26	e 18 17	?	—	—	—	—
Georgetown		99·5	331	e 17 40	PP	24 30	[+ 7]	e 48·4	—
Oak Ridge	N.W.	101·5	336	—	—	e 32 26	SS	e 48·4	—
Toronto		104·6	330	e 18 32	PP	27 51	PS	41·4	—
Ottawa		105·2	333	e 18 34	PP	e 24 48	[− 3]	e 48·4	—
Tucson		106·9	302	e 18 26	PP	e 29 11	?	e 56·4	—
Florence		107·4	35	19 24	?	30 21	?	—	57·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Piacenza		108·0	33	e 19 56	PP	30 26	?	—	72·1
Ksara		109·1	58	e 21 23	PPP	e 26 33	{+33}	55·9	—
Paris		109·4	27	e 19 26?	PP	—	—	51·4	62·4
Triest		109·9	37	e 19 42	PP	—	—	—	52·8
Strasbourg		110·6	30	e 19 36	PP	e 30 36	?	e 55·4	—
Stuttgart		111·1	32	e 19 50	PP	e 27 44	PS	e 55·4	64·4
Kew		111·1	24	e 18 28	[+ 7]	—	—	e 47·4	—
Uccle		111·7	27	e 19 32	PP	e 27 26?	PS	e 48·4	—
Bidston		112·3	22	e 21 36	PPP	—	—	—	—
De Bilt		113·0	27	e 20 2	PP	e 36 14	?	e 49·4	62·2
Edinburgh		114·6	21	—	—	e 27 26?	?	—	—
Hamburg		115·7	30	—	—	e 28 26?	?	e 70·4	—
Ivigtut		116·4	355	—	—	30 2	PS	59·4	—
Copenhagen		118·2	30	21 26?	?	—	—	53·4	—
Tiflis		119·6	59	e 20 52	PP	e 28 8	{+54}	e 59·4	77·0
Baku		121·2	61	e 18 6	[−42]	29 29	SKSP	57·4	72·1
Scoresby Sund		126·1	7	19 38	[+39]	—	—	53·4	—
Pulkovo		127·1	35	i 19 18	[+17]	—	—	67·4	71·3
Tashkent		132·2	75	19 25	[+14]	—	—	e 66·4	81·1
Manila		136·6	150	22 17	PP	i 26 7	SKS	—	—
Sverdlovsk		137·3	51	19 33	[+15]	—	—	76·4	83·7
Chiufeng	z.	157·5	121	e 19 55	[+ 4]	—	—	—	—
Irkutsk		158·0	82	20 58	{+23}	30 50	{−17}	e 80·4	100·1
Vladivostok		166·6	148	20 11	[+10]	—	—	—	—

Additional readings :—
La Plata iN = +5m.32s., PPEN = +5m.38s., PPPE = +5m.50s., EN = +6m.48s., N = +7m.38s., SS?N = +10m.20s., E = +11m.38s.
La Paz PP = +10m.2s. = P_cP + 5s., SSE = +18m.6s. = S_cS − 4s., SSS = +20m.2s.
Huancayo eSS = +20m.26s.
San Juan e = +30m.26s.
Christchurch L_qN = +32·2m., L_qE = +32·3m.
Georgetown PS = +26m.40s. ; T_o = 1h.42m.35s.
Oak Ridge eSS = +32m.33s.
Toronto iN = +24m.54s. = SKS + 6s.
Ottawa e = +27m.26s. = PS − 14s.
Tucson PS = +30m.0s.
Triest i = +27m.33s., +31m.11s., e = +35m.32s., eSS = +39m.32s., e = +46m.9s., and +47m.39s.
Stuttgart eE = +29m.20s.
Uccle e = +35m.26s.?
Tiflis ePPPN = +24m.34s., ePSSE = +37m.50s.
Baku PP = +22m.36s. = PPP − 10s.
Pulkovo e = +21m.9s. = PP + 11s., +22m.54s., +24m.46s., +25m.36s., +28m.54s., +35m.42s., +37m.19s., and +38m.55s.
Tashkent PP = +24m.3s. = PPP − 13s., PS = +33m.44s., SKSP = +34m.39s., SS = +40m.26s., SSS = +44m.56s.
Sverdlovsk PKP = +22m.58s. = PKS − 3s., PP = +24m.25s., SS = +41m.44s., SSS = +47m.2s., L_q = +58·4m.
Irkutsk SKKS = +33m.0s., SS = +45m.8s., SSS = +52m.44s.
Long waves were also recorded at Perth, Riverview, Alicante, Helsingfors, Chicago, Sitka, and Bombay.

July 4d. Readings also at 10h. (La Plata), 13h. (Adelaide, Melbourne, Riverview, Sydney, Manila, and Sverdlovsk), 16h. (Suva, Strasbourg, and Stuttgart), 19h. (Piacenza, San Juan, and near Amboina), 23h. (Amboina and near Mizusawa).

July 5d. 7h. 30m. 40s. Epicentre 37°·7N. 69°·8E. (as on 1934 June 19d.). X.

The Russian stations give epicentre 37° 42′N. 69° 57′E.

A = +·273, B = +·742, C = +·612; D = +·938, E = −·345;
G = +·211, H = +·574, K = −·791.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Samarkand	2·9	312	e 0 41	0	e 1 30	S_g	—	1·9
Tashkent	3·6	354	0 54	+ 3	e 1 35	+ 3	e 1·8	2·0
Tchimkent	4·6	359	—	—	i 2 18	S*	—	—
Frunse	6·3	33	e 1 19	−11	i 2 41	0	—	3·5
Almata	7·8	42	1 39	−12	e 3 11	− 8	—	3·7
Agra	12·6	144	e 3 21	+25	—	—	—	—
Baku	15·6	286	e 5 31	?	—	—	—	—
Tiflis	19·6	289	e 4 41	+16	e 7 52	− 6	—	—
Sverdlovsk	20·0	345	4 16	−14	8 2	− 4	—	—
Scoresby Sund	55·3	336	—	—	24 20?	?	29·3	—

Tashkent gives also i = +58s. = P* +0s. and +1m.9s. = P_g +3s.

July 5d. Readings also at 1h., 2h., and 4h. (Riverview), 5h. (Wellington), 6h. (Almata), 8h. (Trenta), 9h. (Simferopol and Yalta), 10h. (Almata and Frunse), 11h. (Mizusawa and near Malaga), 12h. (Taihoku and Taikyu), 15h. (Mizusawa), 17h. (Frunse and near Almata), 19h. (near Oak Ridge).

July 6d. 2h. 48m. 8s. Epicentre 44°·6N. 9°·5E. (as on 1933 April 2d.). X.

A = +·702, B = +·118, C = +·702; D = +·165, E = −·986;
G = +·692, H = +·116, K = −·712.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Prato	1·3	122	i 0 21	+ 3	i 0 44	S_g	—	0·8
Florence	1·5	123	—	—	0 37	− 2	—	—
Siena	1·8	136	0 12	−14	(0 47)	+ 1	—	0·8
Treviso	2·1	62	i 0 28	− 1	e 1 35	P_g	—	—
Venice	2·2	68	e 0 30	− 1	i 0 49	− 8	—	—
Triest	3·1	69	e 0 44	0	i 1 20	0	—	—
Ravensburg	3·2	359	—	—	e 2 22	?	—	—
Stuttgart	4·2	358	—	—	e 2 52?	?	—	—
Strasbourg	4·2	344	—	—	e 4 5	?	—	—
Zagreb	4·7	73	e 1 7	0	e 2 4	+ 4	e 3·0	—
Casamicciolo	5·0	139	(1 11)	0	(2 1)	− 7	2·0	—
Vienna	6·0	50	e 2 45	S	(e 2 45)	+12	—	—

Additional readings and note:—
Triest +1m.31s. = S* +0s.
Stuttgart e = +4m.30s.
Zagreb e = +1m.41s.
Casamicciolo P = +0m.18s., P and S are given as S and L.
Vienna iN = +3m.22s. = S_g +10s., eE = +4m.0s. and eN = +4m.17s.

July 6d. 18h. 39m. 16s. Epicentre 41°·0N. 143°·1E. (as on 1932 Sept. 5d.). X.

A = −·604, B = +·453, C = +·656; D = +·600, E = +·800;
G = −·524, H = +·394, K = −·755.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	2·5	219	i 0 33	− 3	i 1 2	− 2	—	—
Tyosi	5·6	199	e 1 23	+ 3	2 39	S*	—	2·9
Nagoya	7·6	222	1 51	+ 3	3 23	+ 9	—	—
Vladivostok	8·5	287	e 2 15	P*	e 4 21	S*	4·8	5·6
Osaka	8·7	226	2 18	P*	4 15	S*	—	4·9
Kobe	8·9	228	e 2 2	− 4	e 4 5	+19	—	5·1
Nanking	21·4	253	e 4 45	+ 1	e 8 55	SS	e 12·6	—
Sverdlovsk	52·9	319	i 9 31	+18	—	—	27·7	35·3

For Notes see next page,

NOTES TO JULY 6d. 18h. 39m. 16s.

Additional readings :—
Mizusawa eSN = +1m.0s.
Kobe ePN = +2m.11s.
Long waves were also recorded at De Bilt, Paris, Stuttgart, Tashkent, Irkutsk, and Copenhagen.

July 6d. 22h. 48m. 59s. Epicentre 41°·2N. 125°·8W. N.1.
See Byerly Bull. Seis. Soc. Amer., Vol. 27, No. 2, p.73, 1937.
See Byerly Bull. Seis. Soc. Amer., Vol. 28, No. 1, p.1, 1938.

A = −·440, B = −·610, C = +·659 ; D = −·811, E = +·585 ;
G = −·385, H = −·534, K = −·753.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ferndale		1·3	116	i 0 17	− 1	i 0 34	+ 1	—	—
Ukiah		2·9	136	e 0 39	− 2	—	—	—	—
San Francisco		4·3	142	e 1 0	− 1	i 1 48	− 2	—	—
Berkeley		4·4	139	i 0 59	− 4	i 1 47	− 6	i 3·6	—
Branner		4·7	142	e 1 5	− 2	i 1 58	− 2	—	—
Lick		5·0	139	e 1 9	− 2	i 2 8	0	—	—
Tinemaha		7·1	123	i 1 42	+ 1	—	—	—	—
Haiwee		7·9	128	e 1 53	+ 1	—	—	—	—
Santa Barbara		8·3	143	i 1 53	− 5	—	—	—	—
Pasadena		8·9	136	i 2 8	+ 2	—	—	i 4·1	—
Mount Wilson		9·3	136	i 2 7	− 4	—	—	—	—
Riverside		9·8	135	i 2 15	− 3	—	—	—	—
La Jolla		10·8	138	i 2 37	+ 5	—	—	—	—
Bozeman		11·4	63	i 2 38	− 2	—	—	i 4·9	—
Tucson		14·9	122	i 3 28	+ 1	i 6 17	+ 4	i 7·5	—
Denver		15·9	91	e 3 34	− 6	—	—	i 7·6	8·7
Saskatoon		17·0	43	e 3 44	−10	e 6 38	−24	—	—
Sitka		17·0	342	i 3 54	0	i 7 12	+10	i 8·4	—
Florissant		27·1	83	e 5 37	− 2	i 10 15	− 2	—	—
Ann Arbor		31·1	74	i 6 19	+ 4	i 11 19	− 2	i 17·0	19·5
Honolulu		33·6	244	e 7 1	+24	i 12 13	+13	14·2	—
Toronto		33·9	70	i 6 35	− 4	i 11 57	− 7	15·8	—
Pittsburgh		34·3	76	—	—	i 12 4	− 7	i 16·5	—
Ottawa		36·1	65	i 7 1	+ 2	i 12 35	− 3	i 17·4	—
Ithaca		36·2	71	i 6 41	−19	i 12 19	−20	—	—
Georgetown		36·9	77	i 7 6	0	i 12 54	+ 4	—	—
Fordham		38·6	74	e 8 17	+57	e 14 15	+60	19·0	22·0
Oak Ridge		39·7	69	e 7 28	− 1	i 13 36	+ 4	e 18·0	—
Halifax		44·5	64	e 8 11	+ 2	e 14 47	+ 4	—	—
Ivigtut		49·1	39	i 8 43	− 1	i 15 51	+ 3	22·0	—
San Juan		55·4	96	i 9 36	+ 4	i 17 17	+ 2	27·0	—
Scoresby Sund		55·9	23	i 9 34a	− 1	i 17 26	+ 5	—	—
Reykjavik		59·0	30	—	—	e 29 31	L	(e 29·5)	—
Maebasi		70·3	302	11 10	− 3	—	—	—	—
Vladivostok		70·5	311	11 16	+ 2	20 40	PS	30·0	34·5
Nagano		70·7	303	11 14	− 1	—	—	—	—
Bergen		70·8	23	e 11 7	− 9	20 33	+ 2	33·4	41·0
Edinburgh		71·4	30	e 11 21	+ 2	i 20 41	+ 3	32·0	40·4
Durham		72·9	30	11 26	− 2	20 51	− 5	—	40·5
Bidston		73·3	32	e 11 46	+15	e 21 1	+ 1	e 33·0	40·7
Osaka		73·6	302	12 22	+50	22 0	+56	—	—
Kobe		73·9	303	e 11 59	+25	e 20 50	−17	—	43·6
Sumoto	N.	74·3	304	e 20 56	?	e 30 14	?	e 31·9	—
Upsala		74·5	18	e 11 37	0	i 21 12	− 2	e 32·0	45·3
Koti		75·6	302	—	—	e 21 1?	−26	—	33·0

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Helsingfors	75·8	15	e 11 32	−13	e 21 17	−12	e 34·0	—
Kew	75·9	31	e 11 45	0	e 21 25	− 5	37·0	46·1
Copenhagen	76·8	23	11 52	+ 2	21 41	0	36·0	—
Irkutsk	76·9	332	e 11 53	+ 2	21 43	+ 1	37·0	41·2
Pulkovo	77·1	12	11 51	− 2	21 42	− 2	36·0	45·2
Zinsen	77·2	309	e 15 38	?	—	—	—	—
Husan	77·4	306	e 12 1	+ 7	e 20 51	−56	e 30·8	—
De Bilt	77·5	31	11 54k	− 1	21 49	+ 1	e 34·0	38·5
Uccle	78·2	29	e 11 58	0	21 56	0	33·0	47·9
La Paz	78·5	124	i 12 1a	+ 1	i 22 1	+ 2	39·0	43·7
Nagasaki	78·5	304	12 5	+ 5	(e 21 20)	−39	e 21·3	—
Suva	78·6	233	e 12 1	+ 1	e 25 13	?	—	—
Paris	79·1	32	e 12 3	0	e 22 9	+ 3	33·0	44·0
Göttingen	79·6	26	—	—	e 22 10	− 1	—	50·0
Königsberg	79·8	20	e 12 26	+19	e 22 10	− 4	e 37·0	41·0
Serra do Pilar	79·9	43	12 11	+ 4	22 14	− 1	—	—
Leipzig	80·6	25	—	—	e 22 25	+ 3	e 37·0	46·0
Jena	80·7	26	e 12 31	+19	e 22 20	− 3	e 38·0	45·0
Chiufeng	81·2	317	12 16k	+ 2	22 24	− 4	37·0	44·5
Karlsruhe	81·2	28	12 23	+ 9	22 31	+ 3	e 42·7	—
Strasbourg	81·3	31	e 12 16	+ 1	22 28	− 2	e 41·0	49·2
Cheb	81·6	26	e 12 20	+ 4	e 22 37	+ 4	e 34·0	47·0
Stuttgart	81·7	31	e 12 15	− 2	e 22 31	− 3	e 37·0	49·3
Sverdlovsk	81·8	356	i 12 20	+ 3	i 22 34	− 1	43·4	54·4
Basle	82·1	30	e 12 19	0	e 22 35	− 3	—	—
Sucre	82·2	123	12 25	+ 6	i 23 10	PS	38·0	—
Neuchatel	82·3	30	e 12 24	+ 4	e 22 43	+ 3	—	—
Prague	82·3	25	e 12 42	+22	e 22 43	+ 3	e 32·5	47·0
Zurich	82·6	29	e 12 22	+ 1	e 22 41	− 2	—	—
Toledo	83·2	41	12 25	+ 1	i 22 46	− 3	e 36·2	47·2
Grenoble	83·3	32	e 10 6	?	e 21 33	?	27·0	—
Chur	83·4	29	e 12 27	+ 2	—	—	—	—
Vienna	84·5	24	e 12 32	+ 1	e 23 6	+ 3	e 41·0	50·0
Tortosa	84·6	38	e 12 8?	−23	22 37?	[−19]	34·7	46·9
San Fernando	84·7	45	12 36	+ 4	22 59	[+ 2]	37·5	45·0
Zi-ka-wei	84·7	307	e 12 33	+ 1	i 23 7	+ 2	47·0	60·1
Barcelona	84·9	37	e 12 48	+15	e 23 7	0	e 33·0	43·5
Piacenza	85·0	30	12 39	+ 6	23 1	[− 1]	36·5	47·7
Treviso	85·4	28	i 12 40	+ 5	i 23 20	+ 8	45·0	50·0
Granada	85·4	42	12 42	+ 7	i 23 10	− 2	41·6	46·1
Malaga	85·4	44	e 12 39	+ 4	23 36	PS	42·0	47·1
Nanking	85·6	310	e 12 41a	+ 5	i 22 15	−59	40·6	46·8
Venice	85·6	28	e 12 36	0	i 23 27	+13	44·5	52·1
Triest	85·9	27	12 36k	− 2	e 23 9	[+ 3]	37·1	48·4
Budapest	86·0	24	e 12 35	− 3	i 23 21	+ 3	e 35·0	48·0
Alicante	86·1	40	e 12 48	+ 9	e 23 20	+ 2	e 42·2	—
Almeria	86·3	42	e 12 56	+16	i 23 22	+ 2	e 41·5	—
Prato	86·5	30	e 12 44	+ 3	i 23 23	+ 1	e 36·0	48·5
Zagreb	86·5	26	e 12 41	0	e 23 10	[0]	—	81·0
Siena	87·0	30	12 51	+ 8	23 31	+ 4	49·0	—
Belgrade	88·8	24	e 14 0	?	23 47	+ 2	e 43·4	49·3
Algiers	89·0	39	e 12 42	−11	23 10	[−16]	40·0	47·0
Theodosia	92·1	13	e 13 12	+ 5	e 24 15	− 2	e 45·0	—
Yalta	92·4	14	e 13 10	+ 1	e 24 11	− 7	e 40·0	—
Trenta	92·4	28	—	—	e 25 21	PS	48·0	61·8
Grozny	95·1	6	e 13 31	+10	—	—	—	—
Hong Kong	95·6	306	—	—	24 43	− 5	40·4	52·5
Tashkent	96·4	349	e 13 26	− 1	26 0	PS	e 45·0	62·0
Tiflis	96·7	6	13 31	+ 3	e 24 11	[+ 2]	e 47·3	62·0
Manila	97·0	297	13 31	+ 1	24 11	[0]	45·0	52·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Baku		98·3	4	e 14 1	+25	i 25 9	− 3	44·0	63·9
La Plata	N.	98·3	130	—	—	30 19	?	41·3	43·3
Wellington		98·5	221	—	—	i 37 15	?	47·0	—
Christchurch		101·2	222	—	—	25 24	−13	50·3	—
Ksara		103·1	16	e 18 11	PP	e 27 24	PS	53·0	60·0
Dehra Dun		105·1	339	25 11	SKS	(25 11)	[+21]	51·0	67·0
Riverview		106·9	239	—	—	e 25 37	{− 7}	e 44·6	51·7
Agra		108·1	338	—	—	e 28 5	PS	—	—
Calcutta		108·8	327	—	—	e 28 40	PS	—	—
Melbourne		113·3	239	—	—	e 26 26	{− 4}	50·5	62·9
Adelaide		116·0	245	—	—	e 27 33	{+44}	e 48·1	63·2
Bombay		117·5	340	20 2	PP	26 57	{− 2}	e 25·0	62·0
Kodaikanal		124·3	332	—	—	e 37 34	SS	—	—
Entebbe		134·3	32	e 21 47	PP	29 17	{+28}	74·0	130·6
Tananarive		157·0	16	—	—	31 31	SKSP	82·5	91·5

Additional readings :—
Ukiah iP = +42s.
San Francisco iPE = +1m.7s.
Berkeley iPE = +1m.0s., iE = +1m.3s., iSN = +1m.49s., iE = +2m.9s. =S* +0s.
Branner iN = +1m.13s. =P* −4s., iEN = +1m.16s. and +2m.3s.
Lick eN = +1m.20s. =P* − 2s., iN = +1m.24s., iE = +5m.3s.
Bozeman e = +3m.41s.
Tucson i = +3m.33s. =PP +3s. and +6m.39s.
Denver ePN = +3m.36s., iPEN = +3m.38s., iPP = +3m.46s., iSS = +7m.8s.
Florissant iPP = +6m.8s., iSS = +11m.11s.
Ann Arbor eSS = +13m.7s. ; T_0 =22h.48m.42s.
Toronto iPPE = +7m.26s. ; T_0 =22h.49m.0s.
Ottawa PPE = +8m.17s., eN = +15m.1s. =SSS − 9s. ; T_0 =22h.49m.12s.
Ithaca iPP = +7m.59s. ; T_0 =22h.48m.40s.
Fordham iPP = +8m.41s., eP_cP? = +9m.44s., e = +10m.33s., +11m.2s., +13m.11s., +13m.40s., +15m.19s., and +15m.33s., eSS = +17m.26s.
Oak Ridge iZ = +7m.30s., iNW = +7m.32s., iNE = +7m.34s. ; T_0 =22h.49m.0s.
Ivigtut +10m.37s. =PP +6s., +19m.23s.
San Juan iPP = +11m.56s.
Scoresby Sund PPE = +12m.7s., PPPE = +12m.52s., SE = +17m.29s., PSE = +17m.37s., eN = +21m.1s. =SS − 1s., SSE = +21m.19s., SSN = +21m.37s.
Edinburgh i = +20m.55s. =PS − 2s., +25m.16s. =SS +12s. and +28m.56s.
Durham ? = +25m.34s. =SS +8s. and +28m.56s.
Bidston iSS = +25m.39s.
Osaka PP = +15m.32s. =PPP − 14s., PPP = +16m.56s. =PPPP +10s., SS = +27m.22s., SSS = +29m.54s.
Sumoto eE = +20m.50s., eSE = +29m.49s., eZ = +37m.54s.
Upsala SS = +26m.1s.
Helsingfors eP_cPNZ = +11m.46s., ePPN = +14m.24s., ePPPEN = +16m.0s., ePSEN = +21m.57s., ePPSEN = +22m.9s., eSS?E = +24m.39s., eSSN = +26m.4s., eSSS?E = +28m.57s., eSSSN = +29m.34s. ; T_0 =22h.48m.49s.
Kew ePP = +15m.3s., iSKS = +21m.33s., eSS = +26m.23s.
Copenhagen +21m.46s. and +26m.37s. =SS +12s.
De Bilt ePPPZ = +14m.43s. =PP +0s., eSS = +26m.51s.
Uccle ePP = +14m.42s., SSE = +26m.46s.
La Paz iPP = +15m.11s., SSE = +26m.27s., SSN = +27m.7s., iE = +33m.23s., L_qE = +35m.39s.
Göttingen e = +31m.37s.
Königsberg ePPPN = +16m.50s., e?N = +35m.37s.
Leipzig e = +32m.1s.
Jena eSE = +22m.22s. and +22m.25s., eE = +27m.1s. =SS − 22s., e = +31m.48s.
Strasbourg PP = +15m.23s., PS = +23m.14s., SS = +27m.54s., SSS = +31m.16s.
Stuttgart e = +12m.29s., +14m.37s. and +18m.41s., ePPS = +23m.34s., eSS = +27m.31s., e = +34m.1s. ; T_0 =22h.49m.10s.
Sverdlovsk iPP = +15m.24s., iPPP = +17m.21s., iPS = +23m.29s., iSS = +27m.55s., L_q = +38m.19s.
Prague ePS = +23m.18s., eSS = +27m.51s.
Toledo iP = +12m.28s., SSS = +31m.40s.
Vienna ePPP = +18m.17s.
San Fernando SE = +23m.7s.
Malaga i = +12m.42s., e = +16m.42s., +24m.23s., and +32m.22s.
Triest e = +16m.16s., iS = +23m.13s., iPS = +24m.2s., SS = +28m.46s., SL = +29m.11s., i = +35m.19s. and +35m.47s.
Zagreb eP = +12m.47s., e = +33m.1s.?, +41m.1s.?, +45m.25s., and +49m.14s.
Belgrade e = +16m.26s. =PP +10s.

Continued on next page.

Algiers PS = +23m.41s.
Hong Kong SS = +31m.19s.
Tashkent PP = +17m.28s., SS = +32m.1s.
Tiflis PPE = +17m.33s., eE = +18m.13s., PPSE = +26m.17s., SSE = +30m.54s., eE = +38m.37s.
Manila PP = +17m.28s., PS = +26m.19s.
Baku PP = +17m.34s., PPS = +27m.16s.
La Plata SSSN = +35m.49s.
Wellington e = +39m.1s.?
Christchurch SKSE? = +24m.8s., PSN = +26m.55s., PPS = +27m.33s., SS = +32m.34s., eSSSE = +36m.34s., L_qN = +42·2m., LRE = +47·7m.
Dehra Dun +36m.1s.
Riverview eNE = +34m.1s.
Melbourne i = +29m.36s., SS = +35m.24s.
Bombay PS = +29m.39s., SS = +36m.2s., SSS = +40m.22s.
Entebbe e = +33m.42s., iSS = +39m.27s.
Long waves were also recorded at Amboina, Sebastopol, Simferopol, Tyosi, Phu-Lien, Laibach, and Hyderabad.

July 6d. Readings also at 0h. (Branner), 2h. (Berkeley), 3h. (Oak Ridge), 4h. (Wellington), 6h. (Prato and Upsala), 7h. (Frunse and Samarkand), 8h. (Edinburgh, Sverdlovsk, Samarkand, Irkutsk, Frunse, Tashkent, and Tchimkent), 9h. (Samarkand and Frunse), 11h. (Kodaikanal, Tucson, Chiufeng, and Nanking), 16h. (Pavia and Prato), 18h. (Branner and Tyosi), 19h. (Tiflis), 20h. (Tiflis, Riverside, Pasadena, Tinemaha, and Osaka), 21h. (Sverdlovsk, Tashkent, and Mizusawa), 23h. (Berkeley, Pasadena, and Mizusawa).

July 7d. Readings at 2h. (near Mizusawa), 5h. (near Tucson), 10h. (Nanking), 11h. (Tyosi and Trenta), 12h. (near Santiago), 14h. (De Bilt, Paris, Stuttgart, and La Paz), 15h. (Bombay, Tashkent, Tiflis, Sverdlovsk, Pulkovo, Strasbourg, Scoresby Sund, and near Oak Ridge), 18h. (Tashkent and Tiflis), 19h. (Columbia and near Oak Ridge), 20h. (Florence and near Prato), 22h. (Barcelona and near Balboa Heights), 23h. (Arapuni, Wellington, Samarkand, Nagoya, and near Tyosi).

July 8d. 6h. 43m. 19s. Epicentre 34°·4N. 134°·8E. (as on 1934 Feb. 8d.). X.

A = −·581, B = +·585, C = +·565; D = +·710, E = +·705; G = −·398, H = +·401, K = −·825.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Sumoto	0·1	128	i 0 1	0	i 0 5	+ 2	0·1
Kobe	0·4	48	i 0 4	− 2	e 0 12	+ 2	0·3
Osaka	0·7	68	0 6	− 4	0 14	− 4	0·3
Toyooka	1·2	1	e 0 21	+ 4	0 39	+ 8	0·7
Koti	1·4	231	0 21	+ 1	i 0 40	+ 4	0·8
Nagoya	1·9	67	0 29	+ 1	0 51	+ 2	0·9
Nagasaki	4·5	249	e 1 22	P_g	2 23	S_g	—

Additional reading:—
Kobe iZ = +7s.

July 8d. 14h. 7m. 36s. Epicentre 42°·1N. 143°·0E. R.2.
(as on 1933 April 22d. and near the position 41°·9N. 142°·8E., attributed by the Japanese stations).

A = −·593, B = +·447, C = +·670; D = +·602, E = +·799; G = −·535, H = +·403, K = −·742.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Urakawa		0·2	287	0 7	+ 4	0 14	+ 9	—	—
Obihiro		0·8	10	0 22	+11	0 35	+14	—	—
Kusiro		1·4	49	0 16	− 4	0 34	− 2	—	—
Muroran		1·6	279	0 25	+ 2	0 43	+ 2	—	—
Sapporo		1·6	308	0 23	0	0 42	+ 1	—	—
Hakodate		1·7	259	0 22	− 2	0 48	+ 4	—	—
Asahigawa		1·8	345	0 30	+ 4	0 52	+ 6	—	—
Aomori		2·1	232	0 29	− 1	0 52	− 2	—	—
Nemuro		2·3	57	0 20	−13	0 44	−15	—	—
Miyako		2·5	197	0 40	+ 4	1 10	+ 6	—	—
Morioka		2·7	210	0 41	+ 2	1 12	+ 3	—	—
Akita		3·2	222	0 48	+ 2	1 21	− 1	—	—
Mizusawa		3·3	206	e 0 47	0	e 1 19	− 6	—	—
Sendai		4·1	204	0 56	− 2	1 46	+ 1	—	—
Hukusima		4·7	205	1 3	− 4	1 57	− 3	—	—
Mito		6·0	200	1 21	− 4	2 25	− 8	—	—
Kakioka		6·2	201	1 25	− 3	2 33	− 5	—	—
Tukubasan		6·2	202	1 27	− 1	2 32	− 6	—	—
Maebasi		6·4	207	1 34	+ 3	2 53	+10	—	—
Kumagaya		6·5	206	1 35	+ 3	2 43	− 3	—	—
Nagano		6·5	216	1 35	+ 3	2 45	− 1	—	—
Tyosi		6·5	195	e 1 34	+ 2	2 39	− 7	—	3·5
Wazima		6·6	227	1 34	0	2 49	+ 1	—	—
Tokyo		6·9	203	1 38	0	2 49	− 7	—	—
Toyama		7·0	222	1 38	− 1	3 2	+ 3	—	—
Yokohama		7·1	203	1 55	P*	2 55	− 6	—	—
Hunatu		7·3	208	1 45	+ 1	3 2	− 4	—	—
Kohu		7·3	208	1 49	+ 5	3 18	+12	—	—
Mera		7·6	200	1 48	0	3 42	S*	—	—
Vladivostok		8·2	281	e 1 56	0	3 35	+ 6	4·3	—
Gihu		8·2	218	1 52	− 4	4 47	?	—	—
Nagoya		8·3	216	1 58	0	4 22	S_g	—	—
Ibukisan		8·4	220	1 56	− 3	3 5	−29	—	—
Osaka		9·4	221	1 38	−35	3 39	−20	—	6·0
Chiufeng		20·3	275	e 4 26	− 7	e 8 8	− 4	e 9·9	12·0
Nanking		21·7	250	4 42	− 6	e 8 28	−12	11·5	—
Irkutsk		27·8	305	e 5 44	− 1	e 10 22	− 6	15·4	—
Sverdlovsk		52·1	317	i 9 6	− 1	e 16 26	− 4	24·4	—
Tinemaha		71·7	56	e 11 19	− 2	—	—	—	—
Haiwee		72·5	57	e 11 24	− 2	—	—	—	—
Pasadena	z.	73·7	58	e 11 29	− 4	—	—	—	—

Long waves were also recorded at Tiflis, Copenhagen, De Bilt, Paris, and Stuttgart.

July 8d. Readings also at 0h. (near Manila), 2h. (Samarkand), 14h. (near Manila), 15h. (Alicante), 16h. (Scoresby Sund and near Manila), 18h. (Almata, Frunse, Samarkand, and Tashkent), 19h Sverdlovsk and near Amboina), 20h. (Tucson), 22h. (near Tiflis).

July 9d. 2h. 0m. 50s. (I) / 3h. 34m. 37s. (II) } Epicentre 48°·4N. 7°·2E. N.3. R.3.

A = +·659, B = +·083, C = +·748 ; D = +·125, E = −·992 ;
G = +·742, H = +·095, K = −·664 ;

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
I	Strasbourg	0·4	64	e 0 7	+ 1	i 0 14	+ 4
II		0·4	64	e 0 6	0	i 0 11	+ 1
I	Basle	0·9	164	e 0 11	− 2	e 0 20	− 3
II		0·9	164	e 0 11	− 2	e 0 20	− 3
I	Karlsruhe	1·0	52	i 0 32	S	(i 0 32)	S*
II		1·0	52	i 0 31	S	(i 0 31)	S*
I	Ebingen	1·2	101	e 0 14	− 3	e 0 22	− 9
II		1·2	101	e 0 14	− 3	e 0 23	− 8
I	Stuttgart	1·3	74	e 0 19	+ 1	e 0 35	+ 2
II		1·3	74	e 0 21	+ 3	i 0 36	+ 3
I	Neuchatel	1·4	187	e 0 24	+ 4	e 0 51?	S_g
II		1·4	187	e 0 23	+ 3	e 0 40	+ 4
I	Zurich	1·4	137	e 0 18	− 2	e 0 31	− 5
II		1·4	137	e 0 17	− 3	e 0 30	− 6
I	Chur	2·2	135	e 0 33	+ 2	e 0 58	+ 1
II		2·2	135	e 0 32	+ 1	e 0 55	− 2
I	Jena E.	3·8	47	—	—	e 1 52	S*
II		3·8	47	—	—	e 1 47	S*

Additional readings :—
Strasbourg I PP = +22s., SS = +31s. ; II iPP = +16s. and +23s., i = +32s.
Ebingen I eS_g = +24s., e = +25s. ; II e_q = +22s., e = +24s.
Stuttgart I ePg = +22s., iS_g = +36s. ; II e_q = +35s.

July 9d. Readings also at 0h. (near Tananarive), 1h. (Sverdlovsk, Tashkent, Nagoya, and near Mizusawa), 3h. (near Tananarive), 4h. (Frunse, Samarkand, and near Tashkent), 12h. (La Paz and Sucre), 14h. (near Prato), 16h. (near Tyosi), 17h. (Andijan, Tashkent, Sverdlovsk, La Paz, and Sucre), 18h. (near Branner), 21h. (Ferndale).

July 10d. 1h. 2m. 7s. Epicentre 18°·5N. 80°·5W. N.3.

A = +·157, B = −·935, C = +·317 ; D = −·986, E = −·165 ;
G = +·052, H = −·313, K = −·948.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Port au Prince		7·7	89	e 1 56	+ 7	i 3 31	S*	i 4·5	5·7
San Juan		13·6	89	i 3 7	− 3	e 5 27	−14	e 6·2	—
Columbia		15·5	358	—	—	e 6 37	+10	(e 8·8)	—
Charlottesville		19·6	5	e 4 19	− 6	e 7 37	−21	e 8·7	—
Georgetown		20·6	7	e 4 33	− 3	8 18	0	e 10·9	—
St. Louis		21·8	339	e 4 48	− 1	e 8 37	− 5	e 10·7	11·8
Philadelphia		21·9	11	i 4 49	− 1	8 48	+ 4	e 10·8	—
Florissant		22·1	339	e 4 51	− 1	i 8 50	+ 2	e 10·9	—
Fordham		23·1	13	e 5 2	0	i 9 13	+ 6	10·9	13·3
Ann Arbor		24·0	354	—	—	e 9 29	+ 6	e 12·5	—
Chicago		24·2	346	—	—	e 9 14	−13	e 12·4	—
Ithaca		24·2	8	—	—	e 9 11	−16	e 12·7	—
Toronto	N.	25·1	2	e 5 9	−12	i 9 25	−18	11·9	—
Oak Ridge		25·2	15	e 5 21	− 1	e 9 43	− 1	—	—
Ottawa		27·2	7	e 5 47	+ 7	e 10 11	− 7	e 12·9	—
Tucson		30·6	303	—	—	11 17	+ 3	13·1	—
Huancayo		31·0	170	—	—	e 11 33	+13	—	—
Riverside	E.	36·3	302	e 7 1	+ 1	—	—	—	—
Pasadena	Z.	36·9	303	e 7 5	− 1	—	—	e 25·9	—
La Paz		37·0	159	e 7 33	+27	12 55	+ 4	17·9	22·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bozeman		37·2	324	—	—	e 13 3	+ 9	e 21·0	—
Tinemaha		37·9	307	i 7 15k	+ 1	—	—	—	—
Sucre		40·4	156	8 30	+55	—	—	24·0	—
Berkeley	E.	41·1	307	—	—	e 14 4	+11	i 24·3	—
Ukiah		42·3	308	—	—	e 14 23	+13	—	—
Victoria		45·7	321	18 6	SS	—	—	25·6	—
Sitka		55·8	328	—	—	26 29	?	e 31·4	—
Scoresby Sund		62·3	19	10 29	+ 9	18 47	+ 1	27·9	—
Edinburgh		67·7	36	e 10 53?	− 3	—	—	e 31·9	42·9
Toledo		68·0	53	e 5 5	?	—	—	e 29·5	—
Granada		68·7	57	e 11 21	+18	—	—	e 28·9	—
Paris		71·6	43	e 11 27	+ 7	—	—	29·9	37·9
Uccle		72·5	41	e 11 35	+ 9	—	—	e 29·9	—
De Bilt		73·1	39	11 33	+ 4	20 56	− 2	e 31·9	44·0
Strasbourg		75·1	43	e 11 38	− 3	e 20 53?	−28	e 31·9	—
Stuttgart		76·0	42	e 11 45	− 1	e 21 27	− 5	e 33·9	34·9
Copenhagen		76·4	35	11 53	+ 5	21 33	− 3	33·9	—
Triest		79·7	45	e 12 12	+ 6	e 22 6	− 6	e 32·9	38·9
Pulkovo		83·9	28	e 12 31	+ 3	e 22 49	− 7	e 36·9	—
Sverdlovsk		98·0	20	—	—	e 24 18	[+ 2]	45·9	55·3
Irkutsk		109·1	356	—	—	e 32 53?	?	e 48·9	—
Tashkent		114·0	24	e 20 53	?	e 29 8	PS	e 53·3	65·7

Additional readings :—
Port au Prince i = +3m.16s. =S +0s.
Florissant iPP = +6m.16s.
Fordham ePP = +5m.41s., e = +7m.3s., +8m.1s., and +8m.21s., eSS = +9m.47s.
Ann Arbor eN = +9m.59s.
Chicago eS = +11m.6s.
Oak Ridge iPZ = +5m.23s., eP = +5m.27s., eSEN = +9m.49s.
La Paz PPE = +9m.3s.
Berkeley iE = +17m.12s.
Sitka e = +29m.28s.
Granada i = +12m.9s.
Strasbourg ePPZ = +13m.53s.?
Triest e = +22m.33s. =PS −12s.
Long waves were also recorded at Denver, San Fernando, Cheb, Helsingfors, Ivigtut, Baku, Chiufeng, and Hong Kong.

July 10d. 21h. Readings at :—
Suva e =21h.18m.0s., i =21m.0s.
Adelaide e =21h.19m.58s., 24m.6s. and 28m.31s., M =32m.
Sydney e =21h.21m.15s., L =25m.12s., M =27m.5s.
Manila P =21h.21m.17s., S =28m.37s.
Arapuni 21h.23m.
Chiufeng eP =21h.23m.6s., eS =32m.24s.
Christchurch 21h.28m.22s.
Strasbourg ePZ =21h.30m., ePPZ =33m., eLZ =35m.
Paris e =21h.31m., L =22h.31m.
Stuttgart ePKPZ =21h.31m.6s., ePPZ =34m.6s., eL =22h.33m.
De Bilt eZ =21h.31m.12s. and 34m.6s., eL =22h.30m.
Copenhagen 21h.34m.36s., L =22h.24m.
Perth P =21h.39m.0s.
Sverdlovsk e =21h.40m.21s., L =22h.4m.
Scoresby Sund 21h.42m., L =22h.12s.
Andijan P =21h.49m.36s., e =50m.27s., M =50·7m.
Tashkent iP =21h.49m.53s., iL =50m.42s., M =51m.24s.
Frunse eP =21h.50m.16s.
Long waves were also recorded at Oak Ridge, Wellington, Ukiah, Pulkovo, and Helsingfors.

July 10d. Readings also at 3h. (Berkeley, Mount Wilson, Pasadena, Santa Barbara, Tinemaha, Tucson, San Juan, Huancayo, Scoresby Sund, and Paris), 4h. (Stuttgart), 6h. (near Hukuoka B and Nagasaki), 10h. (Hukuoka B, Hong Kong, Phu-Lien, Tashkent, and Sverdlovsk), 11h. (Alicante, Malaga, Chiufeng, Hong Kong, and Phu-Lien), 12h. (Malaga, Nagoya, and near Tananarive), 13h. and 14h. (near Nagoya), 19h. (near Mizusawa, Nagoya (2), and Tyosi), 21h. (Berkeley and near Branner).

July 11d. 3h. 59m. 42s. Epicentre 23°·0N. 118°·7E. N.3.

A = −·442, B = +·807, C = +·391; D = +·877, E = +·480; G = −·188, H = +·343, K = −·920.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Tainan	1·4	90	e 0 24	+ 4	0 51	S_g	—
Takao	1·5	105	0 27	+ 6	0 47	+ 8	—
Arisan	2·0	75	e 0 32	+ 3	e 0 45	− 6	—
Taito	2·3	96	e 0 32	− 1	e 0 45	P_g	—
Karenko	2·8	70	i 0 38	− 2	1 10	− 2	—
Taihoku	3·3	52	e 0 47	0	e 1 36	S*	—
Manila	8·7	165	1 44	−19	3 10	−31	—
Nanking	9·0	0	—	—	e 5 26	S_g	6·2
Nagoya	20·0	49	e 4 27	− 3	—	—	—

No additional readings.

July 11d. Readings also at 1h. (Wellington, near Hastings, and near Tiflis), 5h. (near Mizusawa), 7h. (Scoresby Sund and Soengei Langka), 9h. (Wellington and near Mizusawa), 11h. (Calcutta), 12h. (Wellington), 13h. (near Nagoya), 14h. (Christchurch), 15h. (Wellington, Paris, Neuchatel, and near Prato), 19h. (near Nagoya (2)), 22h. (Columbia), 23h. (near Medan).

July 12d. 9h. 51m. 50s. Epicentre 38°·8N. 143°·8E. (as on 1933 Sept. 24d.). R.1.

A = −·629, B = +·460, C = +·627; D = +·591, E = +·807; G = −·506, H = +·370, K = −·779.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Miyako	1·6	306	0 26	+ 3	0 51	+10	—	—
Mizusawa	2·1	279	i 0 34	+ 4	i 1 8	S*	—	—
Morioka	2·3	298	0 36	+ 3	1 9	S*	—	—
Sendai	2·4	254	0 36	+ 2	1 7	+ 5	—	—
Yamagata	2·8	259	0 40	0	1 18	S*	—	—
Hukusima	2·8	248	0 41	+ 1	1 17	+ 5	—	—
Onahama	3·0	231	0 34	− 9	1 6	−11	—	—
Akita	3·0	291	0 47	+ 4	1 33	S_g	—	—
Aomori	3·1	316	0 49	+ 5	1 29	S*	—	—
Urakawa	3·4	348	0 50	+ 1	1 34	+ 7	—	—
Mito	3·5	226	0 51	+ 1	1 30	0	—	—
Hakodate	3·8	322	1 1	P*	1 50	S*	—	—
Tukubasan	3·9	231	0 54	− 2	1 37	− 3	—	—
Niigata	3·9	257	1 2	P*	1 59	S*	—	—
Kakioka	3·9	230	0 53	− 3	1 36	− 4	—	—
Tyosi	3·9	217	0 52	− 4	1 34	− 6	—	2·3
Muroran	4·1	329	0 40	−18	1 26	−19	—	—
Obihiro	4·1	354	1 4	P*	1 56	S*	—	—
Kusiro	4·2	6	0 54	− 6	1 43	− 5	—	—
Kumagaya	4·4	234	1 2	− 1	1 51	− 2	—	—
Maebasi	4·5	238	1 4	0	1 55	0	—	—
Tokyo	4·5	226	1 5	+ 1	1 53	− 2	—	—
Takada	4·7	250	1 13	+ 6	2 25	S_g	—	—
Nemuro	4·7	16	1 44	+37	2 36	S_g	—	—
Oiwake	4·8	241	1 10	+ 2	2 11	+ 8	—	—
Yokosuka	4·8	224	1 10	+ 2	2 2	− 1	—	—
Yokohama	4·8	225	1 10	+ 2	2 0	− 3	—	—
Nagano	5·0	245	1 33	P_g	2 13	+ 5	—	—
Mera	5·1	220	1 13	0	2 6	− 4	—	—
Hunatu	5·2	232	1 14	0	2 14	+ 1	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kohu	5·3	234	1 16	+ 1	2 18	+ 3	—	—
Matumoto	5·3	243	1 21	+ 6	2 23	+ 8	—	—
Numadu	5·4	228	1 28	P*	2 14	− 4	—	—
Misima	5·4	225	1 11	− 6	2 10	− 8	—	—
Wazima	5·6	257	1 23	+ 3	2 29	+ 6	—	—
Toyama	5·7	250	1 22	+ 1	3 5	S_g	—	—
Omaesaki	6·2	228	1 13	−15	2 27	−11	—	—
Hamamatu	6·3	231	0 46	−44	1 32	P	—	—
Gihu	6·5	241	1 33	+ 1	—	—	—	—
Nagoya	6·6	238	1 34	0	2 46	− 2	—	4·3
Hikone	7·0	242	1 45	+ 6	2 55	− 4	—	—
Kameyama	7·1	238	1 41	0	3 2	+ 1	—	—
Osaka	7·8	241	1 45	− 6	3 35	+16	—	4·9
Toyooka	7·9	248	1 54	+ 2	3 41	S*	4·7	—
Kobe	8·1	242	e 1 51	− 4	e 4 15	S_g	—	6·6
Wakayama	8·3	239	1 57	− 1	3 33	+ 2	—	—
Sumoto	8·4	240	e 1 58	− 1	e 3 50	+16	e 5·2	6·9
Koti	9·8	241	e 2 17	− 1	4 9	+ 1	—	—
Vladivostok	9·9	300	i 2 27	+ 8	e 4 22	+11	4·9	7·1
Husan	12·4	257	i 2 55	+ 1	6 57	S_g	—	—
Nagasaki	12·8	246	e 2 57	− 2	e 5 17	− 5	—	—
Keizyo	13·3	270	3 7	+ 1	—	—	—	—
Zinsen	13·6	269	i 3 11	+ 1	e 5 52	+11	—	—
Zi-ka-wei	19·8	254	e 4 31	+ 4	8 10	+ 8	11·7	14·1
Chiufeng	21·3	282	i 4 42a	− 1	i 8 40	+ 8	12·4	14·5
Nanking	21·4	259	4 45	+ 1	8 52	+18	13·2	13·9
Hong Kong	30·2	245	6 14	+ 7	11 12	+ 5	14·2	17·2
Irkutsk	30·3	310	e 5 17	−51	11 14	+ 5	16·2	20·8
Manila	31·5	225	6 24	+ 6	11 43	+15	—	18·8
Phu-Lien	36·6	256	11 10?	?	—	—	—	—
Honolulu	52·5	90	—	—	e 23 10	?	—	—
Sverdlovsk	54·9	318	i 9 29	+ 1	i 17 12	+ 4	34·8	37·4
Pulkovo	67·4	330	10 52	− 2	19 50	0	e 31·7	39·8
Ukiah	68·7	56	—	—	e 29 10	?	—	—
Helsingfors	69·1	332	e 10 52	−13	e 19 58	−12	e 36·2	—
Scoresby Sund	70·2	355	11 10	− 2	20 24	0	38·2	—
Tiflis	71·1	309	e 11 10	− 7	e 20 34	0	e 36·2	52·2
Tinemaha	73·0	56	i 11 23k	− 6	—	—	—	—
Haiwee	73·7	55	i 11 26	− 7	—	—	—	—
Pasadena	74·8	58	i 11 32k	− 7	—	—	—	—
Riverside	75·4	58	e 11 37	− 6	—	—	—	—
La Jolla	76·2	59	i 11 40k	− 7	—	—	—	—
Copenhagen	76·8	335	14 49	PP	21 40	− 1	38·2	—
Ksara	81·4	306	—	—	e 22 15	−16	—	—
Cheb	81·4	330	—	—	e 36 10?	?	—	—
De Bilt	82·2	336	e 12 18	− 1	e 22 48	+ 9	e 39·2	48·6
Bidston	83·4	340	—	—	e 22 50	− 1	—	—
Uccle	83·6	336	e 12 24	− 2	—	—	40·2	—
Stuttgart	83·7	332	e 12 24	− 3	e 22 47	[− 2]	44·2	55·7
Kew	84·4	337	—	—	e 38 10?	?	e 44·2	—
Paris	86·0	336	e 12 35	− 3	—	—	47·2	55·2
Oak Ridge	92·5	25	i 13 7	− 2	—	—	—	—
La Paz	144·3	60	e 19 33	[+ 1]	—	—	—	—

Additional readings :—
Osaka i = +2m.4s. =P* −6s. and +3m.3s.
Kobe eZ = +2m.1s., PN = +2m.7s., eEN = +3m.38s., eE = +3m.57s., eSN = +7m.10s.
Sumoto ePN = +1m.55s.
Sverdlovsk L_q = +27·4m.
Helsingfors ePPN = +12m.58s., eSSEN = +24m.22s. ; T_g = 9h.51m.36s.
Tiflis eNEZ = +11m.24s., ePPPE = +16m.8s., eSSN = +26m.10s.
Stuttgart e = +23m.36s. =PS +1s.
Oak Ridge iZ = +13m.12s. and +13m.20s.
Long waves were also recorded at Edinburgh, Piacenza, Ivigtut, and Bombay.

July 12d. 14h. 24m. 19s. Epicentre 15°·9S. 112°·0E. N.2.

A = −·360, B = +·892, C = −·274; D = +·927, E = +·375; G = +·103, H = −·254, K = −·962.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Malabar	9·7	333	i 2 13	− 4	i 3 49	S*	—	—
Batavia	10·9	332	i 2 34	+ 1	i 4 23	−13	—	—
Amboina	20·1	54	4 31	0	8 11	+ 3	—	—
Medan	23·5	325	i 5 7	+ 2	9 20	+ 6	—	—
Adelaide	30·8	133	e 7 26	+74	e 12 27	+70	e 15·2	17·4
Manila	31·8	19	6 21a	0	12 30	+58	—	—
Melbourne	36·3	132	—	—	e 12 54	+13	23·6	24·3
Phu-Lien	37·1	354	6 41?	−26	—	—	—	—
Hong Kong	38·3	5	7 17	− 1	13 16	+ 5	—	23·0
Riverview	39·5	124	—	—	e 17 41	(+ 2)	—	—
Kodaikanal	43·1	306	e 9 48	(− 4)	14 23	+ 1	e 20·4	23·4
Hyderabad	46·9	315	—	—	15 15	− 2	18·8	24·8
Nanking	48·4	8	i 8 35	− 4	e 15 14	−24	e 24·8	—
Bombay	52·0	311	e 11 38	?	i 16 23	− 5	—	26·2
Agra	54·2	324	i 16 49	S	(i 16 49)	− 9	—	—
Chiufeng	56·1	4	e 9 34	− 3	—	—	—	35·3
Christchurch	58·0	132	e 9 54	+ 4	18 1	PS	e 28·2R	—
Tananarive	61·3	257	17 54	S	(17 54)	−39	—	—
Vladivostok	61·8	18	i 10 17	0	—	—	—	—
Andijan	67·5	328	e 10 56	+ 1	—	—	—	—
Tchimkent	70·0	328	e 10 6	−65	—	—	—	—
Tiflis	84·5	316	12 31	0	23 0	− 3	—	—
Ksara	87·8	306	e 12 53	+ 6	e 23 33	− 2	—	—
Theodosia	92·1	316	e 13 13	+ 6	24 8	− 8	—	—
Yalta	92·7	316	e 16 51	PP	—	—	—	—
Pulkovo	99·6	329	e 13 41	− 1	e 24 25	[+ 2]	e 47·2	59·9
Copenhagen	108·4	326	18 41	PP	—	—	59·7	—
Stuttgart	110·3	317	e 18 59	PP	e 34 17	SS	e 60·7	—
De Bilt	112·8	322	e 19 20	PP	—	—	e 59·7	—
Scoresby Sund	118·8	345	20 7	PP	—	—	59·7	—
Tinemaha	131·0	54	i 19 15	[+ 6]	—	—	—	—
Haiwee	131·4	55	i 19 15	[+ 6]	—	—	—	—
Pasadena	131·6	58	i 19 15	[+ 5]	—	—	—	—
La Jolla	132·5	60	i 19 17	[+ 6]	—	—	—	—
La Paz	147·6	180	e 20 1	[+23]	—	—	—	—

Additional readings :—
Medan i = +5m.53s., +6m.52s., and +7m.51s.
Adelaide i = +13m.3s. and +13m.59s.
Melbourne i = +19m.46s., +20m.29s., and +20m.51s.
Hong Kong PP = +8m.46s.
Riverview eN = +17m.17s., iN = +18m.23s., S?N = +21m.31s.
Nanking e = +10m.28s. = PP − 3s.
Chiufeng iEN = +12m.56s. = PPP + 4s.
Christchurch eSSN = +21m.57s., L_qN = +25·0m.
Tananarive S? = +28m.29s., PS? = +29m.24s., e = +30m.34s.
Pulkovo e = +17m.9s., +17m.43s. = PP + 3s., +18m.27s., +23m.17s., +23m.37s. and +32m.45s.
Pasadena i = +22m.36s. = PKS − 4s.
Long waves were also recorded at Kew, Sverdlovsk, and Wellington.

July 12d. Readings also at 1h. (Tyosi, Nagoya, Mizusawa, Copenhagen, and La Paz), 2h. (La Paz), 4h. (Perth), 5h. (Malabar and Batavia), 7h. (Triest), 8h. (Manila), 9h. (Zagreb and Triest), 11h. (Pasadena, Oak Ridge, Tinemaha (2), Haiwee (2), De Bilt, Stuttgart, and Scoresby Sund), 13h. (Theodosia, Yalta, Pulkovo, Tiflis, and Copenhagen), 14h. (Simferopol, Sverdlovsk, La Jolla, Tinemaha, Haiwee, and Pasadena), 15h. (Paris, Uccle, and La Paz), 16h. (Apia and Wellington), 18h. (Amboina), 19h. (Amboina (3), Batavia, Manila, and Hong Kong), 20h. (Amboina (2), Andijan, and Frunse), 21h. (Manila (2), Mizusawa, Tyosi, Nagoya, and Zagreb), 22h. (Amboina).

July 13d. Readings at 10h. :—

La Paz eP =9m.1s., iS =15m.29s., LE =22m.0s.
Pasadena iPz =10m.28s.
Haiwee iPz =10m.42s.
Tinemaha iPz =10m.50s.
Huancayo eP =14m.0s., eS =17m.3s., e =18m.55s., eL =20m.0s.
Ukiah e =27m.0s.
Honolulu eL =33m.0s.

Also at 10h. :—

La Paz ePN =23m.48s., SE =28m.2s., M =32m.4s.
Pasadena ePz =24m.13s.
Haiwee ePZ =24m.26s.
Tinemaha ePZ =24m.32s.
Huancayo eL =31m.54s.
Sverdlovsk e =34m.13s., L =62m.0s.
Honolulu e =43m.0s.
Scoresby Sund 47m.48s., L =54m.
Paris 58m.
Kew e =64m.
De Bilt eL =72m.
Pulkovo eL =75m.30s.

July 13d. 11h. 29m. 36s. Epicentre 7°·4N. 83°·1W. (as on 1933 Dec. 2d.). X.

A = +·119, B = −·984, C = +·129; D = −·993, E = −·120; G = +·015, H = −·128, K = −·992.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights	3·8	64	e 0 55	+ 1	i 1 36	− 1	—	1·9
San Juan	19·8	55	e 4 29	+ 2	i 7 58	− 4	e 9·4	—
Tinemaha	43·6	318	e 7 57	− 5	—	—	—	—
Scoresby Sund	73·7	18	—	—	19 24?	?	36·4	—

Long waves were recorded at Huancayo.

July 13d. Readings also at 1h. (Irkutsk, Sverdlovsk, Andijan, and Mizusawa), 4h. (Algiers), 8h. (Andijan, Frunse, Almata, and Tiflis), 9h. (Algiers), 10h. (Nagoya, Tyosi, La Paz, Algiers, Granada), 11h. (Stuttgart, Amboina, and Copenhagen), 12h. (Ukiah, Huancayo, Honolulu, Malabar, and La Paz), 13h. (Kew, De Bilt, Stuttgart, Scoresby Sund, La Paz, Berkeley, Branner, and Lick), 14h. (Oak Ridge), 15h. (Oak Ridge (2)), 16h. (Scoresby Sund), 18h. (Lick and Amboina), 19h. (Algiers), 20h. (Amboina), 21h. (Tiflis, Ksara, and Algiers), 23h. (La Paz).

July 14d. 5h. 40m. 48s. Epicentre 39°·5N. 26°·0E. (as on 1931 July 12d.). X.

A = +·694, B = +·338, C = +·636; D = +·438, E = −·899; G = +·572, H = +·279, K = −·772.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Sebastopol	7·6	45	e 3 10	S	(e 3 10)	− 4	—
Yalta	7·9	48	e 3 25	S	(e 3 25)	+ 4	—
Simferopol	8·1	45	e 1 52	− 3	e 3 30	+ 4	—
Theodosia	8·9	49	2 7	+ 1	—	—	—
Copenhagen	18·5	335	—	—	7 36	0	10·2
Pulkovo	20·5	6	—	—	e 8 18	+ 2	e 11·5

Pulkovo gives also e = +10m.35s.
Long waves were also recorded at De Bilt, Sverdlovsk, and Stuttgart.

July 14d. 10h. 36m. 30s. Epicentre 34°·0N. 134°·8E. (as on 1934 June 21d.). X.

A = −·584, B = +·588, C = +·559.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Sumoto	0·4	11	e 0 8	+ 2	0 10	0	0·2
Kobe	0·7	25	e 0 11	+ 1	0 16	− 2	0·3
Osaka	0·9	38	0 8	− 5	0 16	− 7	0·4
Nagoya	2·1	57	e 0 39	P_g	0 52	− 2	—

Kobe ePEN = +13s., eE = iSEN = +18s.

July 14d. 23h. 27m. 55s. Epicentre 24°·2N. 121°·8E. (as on 1933 May 3d.). X.

A = −·481, B = +·775, C = +·410.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Karenko	0·3	218	e 0 2	− 2	0 8	0
Taihoku	0·9	343	0 12	− 1	0 21	− 2
Arisan	1·2	230	0 20	+ 3	0 33	+ 2

July 14d. Readings also at 0h. (La Paz and Algiers), 4h. (Amboina), 5h. (Amboina (2)), 7h. (Amboina), 11h. (Phu-Lien and Tashkent), 14h. (Sumoto), 20h. (Amboina), 21h. (Triest, Medan, and Amboina).

July 15d. 2h. Readings for which no determination has been made :—

Stuttgart eL = 4m.
Calcutta P = 7m.11s., S = 7m.59s., L = 8m.17s.
Sverdlovsk L = 9m.
Tashkent e = 11m.7s., e = 15m.12s., eL = 18m.42s., M = 22m.0s.
Hyderabad P = 11m.42s., S = 13m.12s., L = 13m.24s., M = 13m.36s.
Agra e = 11m.49s.?
Bombay eS = 13m.35s., iL = 15m.3s.
Scoresby Sund 14m.

July 15d. 20h. 6m. 49s. Epicentre 36°·0N. 139°·3E. (as on 1931 Oct. 2d.). X.

A = −·613, B = +·528, C = +·588.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Tokyo	0·5	134	0 7	0	0 12	− 1	0·2
Tyosi	1·4	104	e 0 21	+ 1	0 35	− 1	—
Nagoya	2·0	245	e 0 47	S	1 7	S_g	—

No additional readings.

July 15d. Readings also at 1h. (Sumoto and Apia), 3h. (Mizusawa, Nagoya, Tyosi, and Amboina), 5h. (Amboina), 7h. (Sverdlovsk), 8h. (Tashkent, Grozny, Tiflis, Ksara, Baku, Yalta, Pulkovo, and Copenhagen), 9h. (Apia), 10h. (La Paz), 12h. (Calcutta), 19h. (Tiflis and Wellington), 23h. (Malabar).

July 16d. 8h. 19m. 12s. Epicentre 17°·0N. 99°·0W. (as on 1921 Nov. 2d.). R.2.

A = −·150, B = −·945, C = +·292 ; D = −·988, E = +·156 ;
G = −·046, H = −·289, K = −·956.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	18·7	327	e 4 14	− 1	e 7 42	+ 2	e 9·8	—
La Jolla	22·9	318	i 5 0	0	e 9 24	SS	—	—
St. Louis	23·0	18	e 5 0	− 1	e 9 16	+11	—	—
Riverside	23·7	319	e 5 9	+ 2	e 9 34	+16	—	—
Pasadena	24·2	319	e 5 15a	+ 3	e 9 45	+18	e 11·9	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Haiwee	25·5	322	e 5 25	0	—	—	—	—
Tinemaha	26·3	324	i 5 32	0	—	—	—	—
Chicago	26·7	19	e 5 40	+ 5	—	—	e 12·7	—
Ann Arbor	28·5	24	e 5 54	+ 2	e 12 6	SS	e 24·7	—
Pittsburgh	28·7	31	e 5 50	− 3	e 10 45	+ 2	e 18·3	—
Georgetown	29·1	37	i 5 59	+ 2	i 11 3	+13	e 16·8	—
Berkeley	29·2	320	e 5 57	− 1	e 10 52	+ 1	—	—
Bozeman	30·4	343	e 6 3	− 6	e 11 12	+ 2	e 16·2	—
Ukiah	30·6	321	—	—	e 11 23	+ 9	—	—
San Juan	31·3	82	e 6 19	+ 2	—	—	e 17·8	—
Toronto	31·4	28	e 5 15	−62	e 10 44	−42	18·9	—
Fordham	32·3	37	e 6 27	+ 2	e 11 30	−10	—	26·8
Ottawa	34·4	30	e 6 48	+ 4	e 12 18	+ 6	e 17·3	—
Oak Ridge	34·6	37	e 6 44	− 2	e 12 12	− 3	23·8	—
Victoria	37·2	333	13 4	S	(13 4)	+10	19·1	21·1
Scoresby Sund	69·8	20	11 8	− 1	20 30	PS	34·8	—
Kew	82·1	39	e 12 18	− 1	—	—	e 44·8	—
Uccle	85·0	39	12 35	+ 2	e 23 12	+ 4	—	—
De Bilt	85·1	37	12 34	0	e 23 15	+ 6	e 38·8	—
Copenhagen	87·6	31	16 10	PP	23 18	[+ 1]	40·8	—
Strasbourg	88·0	40	e 12 48	0	—	—	e 44·8	—
Stuttgart	88·8	39	e 12 52	0	—	—	e 46·8	—
Pulkovo	93·0	23	e 16 54	PP	e 23 45	[− 5]	e 43·8	56·5
Wellington	98·3	229	15 48?	?	—	—	—	—
Sverdlovsk	104·2	12	i 18 21	PP	e 24 41	[− 5]	46·8	—

Additional readings :—
Tucson eSS = +8m.13s.
St. Louis iE = +9m.26s.
Ann Arbor eE = +13m.36s., eN = +16m.42s. = S_cS +7s., eE = +22m.30s., eN = +23m.6s.
Pittsburgh iSS = +12m.2s.
Berkeley iSE = +11m.7s.
Ukiah e = +14m.48s.
Fordham e = +21m.2s.
Ottawa SSSE = +16m.18s.
De Bilt PPZ = +15m.52s.
Strasbourg ePP = +16m.18s.
Stuttgart ePPEZ = +16m.18s.
Pulkovo e = +22m.31s.
Sverdlovsk e = +27m.48s. = PS +18s.
Long waves were also recorded at Chiufeng, La Paz, Huancayo, Sitka, Ivigtut, Hamburg, and Paris.

July 16d. 17h. 46m. 57s. Epicentre 23°·0S. 175°·0E. N.3.

A = −·917, B = +·080, C = −·391 ; D = +·087, E = +·996 ;
G = +·389; H = −·034, K = −·921.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington	18·3	181	3 17	−53	5 53	?	—	—
Glenmuick	20·0	184	—	—	8 3?	− 3	—	—
Nagoya	68·4	327	e 11 5	+ 4	—	—	—	—
Vladivostok	77·0	329	11 52	0	e 21 44	+ 1	—	—
Chiufeng	83·6	319	e 12 25	− 1	i 22 22	[−26]	—	—
Tashkent	116·5	306	e 18 41	[+ 4]	—	—	—	22·8
Sverdlovsk	122·3	324	e 20 38	PP	e 26 59	[+62]	52·0	—
Scoresby Sund	131·5	7	21 15	PP	—	—	—	—
Pulkovo	135·7	335	e 18 43	[−33]	—	—	—	—
Copenhagen	144·9	343	19 9	[−24]	—	—	—	—
De Bilt	149·9	348	e 19 37	[− 5]	e 29 35	PPPP	—	—
Stuttgart	152·0	340	e 19 15	[−29]	—	—	e 43·1	—

Additional readings :—
Tashkent e = +19m.54s. = PP +10s.
Sverdlovsk e = +21m.18s., +21m.48s., +23m.36s., and +25m.6s.
Pulkovo e = +21m.45s. = PP −9s.
De Bilt eZ = +23m.12s. = PKS −21s.
Stuttgart e = +23m.26s. = PP.−6s.

July 16d. 22h. 19m. 32s. Epicentre 1°·5S. 133°·0E. (given by Baku). N.

A = −·682, B = +·731, C = −·026; D = +·731, E = +·682; G = +·018, H = −·019, K = −1·000.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M
	°	°	m. s.	s.	m. s.	s.	m.	m
Amboina	5·2	245	i 0 21	−53	—	—	—	—
Batavia	26·5	259	5 37	+ 3	9 34	−33	14·5	—
Adelaide	33·9	172	—	—	e 12 7	+ 3	—	24·
Perth	34·5	206	13 28	S	(13 28)	+74	—	—
Riverview	36·5	154	—	—	e 20 16	?	—	25·
Chiufeng	44·4	342	e 8 13	+ 5	—	—	—	—
Vladivostok	44·6	359	e 9 5	+55	(15 16)	+32	15·3	—
Andijan	69·3	315	11 16	+10	—	—	—	—
Tashkent	71·6	315	i 11 11	− 9	i 20 17	−23	—	46·(
Tchimkent	71·8	316	e 13 18	PP	—	—	—	—
Sverdlovsk	81·7	328	12 16	− 1	e 22 15	−19	38·5	—
Baku	85·8	311	e 13 56	+79	e 22 46	[−19]	50·5	—
Tiflis	89·7	312	e 12 51	− 5	e 23 28	[− 3]	—	—
Scoresby Sund	109·1	352	22 28?	PPPP	—	—	—	—
Stuttgart	112·7	324	e 20 28?	?	—	—	—	—
De Bilt	113·4	328	e 19 52	PP	e 28 52	PS	e 61·5	—

Additional readings:—
Adelaide e = +16m.40s. and +19m.8s.
Tiflis P_cPNEZ = +13m.10s., eSSN = +29m.40s.

July 16d. Readings also at 0h. (La Paz), 2h. (Tyosi, Mizusawa, and Nagoya), 4h. (Almata, Frunse, Sverdlovsk, Tchimkent, Andijan, and Tashkent), 5h. (Andijan), 6h. (San Juan), 7h. (Mizusawa), 8h. (Edinburgh), 9h. (La Paz), 10h. (Grozny, Erevan, and Tiflis), 14h. (Ksara and Zagreb), 16h. (Mizusawa, Santiago, and La Plata), 17h. (La Paz), 18h. (Mizusawa), 20h. (Apia), 21h. (Tiflis), 22h. (Amboina), 23h. (Amboina).

July 17d. Readings at 2h. (Wellington (2)), 3h. (Lick), 4h. (Tyosi and Trenta), 13h. (Scoresby Sund), 18h. (Baku, Tiflis, Oak Ridge, Tashkent, Sverdlovsk, Pulkovo, Scoresby Sund, Tinemaha, and Riverside), 19h. (Sotchi and Oak Ridge), 20h. (Wellington, Nagoya, and Montezuma).

July 18d. 1h. 36m. 29s. Epicentre 8°·2N. 82°·6W. N.1.

A = +·128, B = −·982, C = +·143; D = −·992, E = −·129; G = +·018, H = −·142, K = −·990.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights	3·1	75	−0 13	?	—	—	—	—
Port au Prince	14·4	43	i 3 27	+ 6	i 6 10	+ 9	i 6·8	12·2
San Juan	18·9	56	i 4 21	+ 4	—	—	—	—
Huancayo	21·5	160	i 4 42	− 3	i 8 37	+ 1	—	—
Columbia	25·8	3	i 5 31	+ 4	i 10 11	+16	—	—
La Paz	28·6	149	i 5 50a	− 3	i 10 39	− 3	14·7	17·5
Charlottesville	30·0	7	i 6 16	+11	e 11 11	+ 7	13·9	—
Georgetown	31·1	8	i 6 15	0	11 28	+ 7	—	—
St. Louis	31·2	350	i 6 16	0	i 11 19	− 4	—	—
Sucre	32·2	148	i 6 20	− 4	i 11 38	0	16·5	—
Pittsburgh	32·3	4	i 6 27	+ 2	—	—	—	—
Philadelphia	32·4	11	i 6 25	− 1	11 38	− 3	i 14·7	—
Fordham	33·6	11	i 6 38	+ 1	i 12 7	+ 7	18·6	—
Montezuma	33·7	157	e 6 35	− 3	12 1	0	e 16·5	—
Chicago	34·0	353	i 6 40	0	i 11 50	−16	i 15·0	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ann Arbor		34·1	358	i 6 37	− 4	i 11 55	−13	i 16·4	18·1
Toronto		35·5	3	e 6 40	−13	i 11 56	−33	15·9	18·3
Tucson		35·6	317	i 6 56	+ 2	i 12 38	+ 8	—	—
Weston		35·6	15	i 7 5	+11	i 12 49	+19	—	—
Oak Ridge		35·7	14	i 6 54	− 1	e 12 35	+ 3	—	—
Denver		37·3	331	e 7 28	+19	e 13 23	+27	e 16·8	—
Ottawa		37·6	8	i 7 11	+ 1	i 13 7	+ 7	17·9	—
Halifax		40·0	21	e 7 34	+ 2	i 13 51	+15	—	—
La Jolla		40·5	313	e 7 37	+ 1	e 14 3	+19	—	—
Riverside		41·1	313	i 7 42	+ 1	i 13 55	+ 2	—	—
Mount Wilson		41·7	314	i 7 47	+ 1	—	—	—	—
Pasadena		41·7	314	i 7 47a	+ 1	i 14 13	+11	e 17·7	—
Haiwee		42·7	317	e 7 55	+ 1	e 14 20	+ 4	—	—
Santiago		43·2	165	8 4	+ 6	14 19	− 5	—	—
Tinemaha		43·3	317	i 8 1	+ 2	i 14 42	+17	—	—
Santa Barbara		43·5	313	e 8 0	− 1	i 14 30	+ 2	—	—
Bozeman		44·8	332	i 8 11	0	i 14 51	+ 4	e 22·0	—
Lick		45·8	315	e 8 22	+ 3	—	—	—	—
Branner		46·2	315	e 8 27	+ 5	—	—	e 22·0	—
Berkeley		46·4	316	e 8 25	+ 1	e 15 20	+10	e 21·9	—
Ukiah		47·7	317	e 8 33	− 1	i 15 41	+12	e 26·1	—
Saskatoon		48·1	340	e 9 1	+24	e 16 8	+34	—	—
La Plata		49·0	153	8 45k	+ 1	15 44	− 3	24·5	29·9
Victoria	E.	52·8	327	9 16	+ 4	16 52	+13	24·4	—
	N.	52·8	327	9 13	+ 1	16 47	+ 8	22·6	—
Ivigtut		58·8	19	9 53	− 3	18 9	+ 9	—	—
Sitka		63·6	331	i 10 23	− 6	i 19 10	+ 8	i 38·2	—
Dakar		64·0	78	10 36	+ 4	19 13	+ 6	30·4	31·4
Reykjavik		70·1	24	e 11 7	− 4	e 20 25	+ 3	e 32·6	—
Serra do Pilar		72·6	49	i 11 26	0	i 21 4	PS	37·0	—
Scoresby Sund		72·8	18	i 11 25k	− 3	e 20 43	−11	—	—
Honolulu		73·3	290	i 11 36	+ 5	i 21 6	+ 6	32·6	—
San Fernando		74·2	55	11 36	0	21 18	+ 7	36·5	38·0
Malaga		75·6	54	i 11 45	+ 1	21 39	+12	—	—
Toledo		76·0	51	i 11 44	− 2	i 21 40	+ 8	e 34·8	39·4
Granada		76·3	53	i 11 48	0	i 21 44	+ 9	37·6	39·9
Bidston		77·2	36	i 11 57	+ 4	i 22 31	PS	—	54·2
Almeria		77·3	54	i 11 49	− 5	i 21 51	+ 5	e 35·6	39·8
Edinburgh		77·3	34	i 11 52	− 2	i 21 51	+ 5	31·5	45·4
Stonyhurst		77·6	36	i 11 55	0	i 22 0	+11	e 35·5	36·4
Oxford		78·2	38	i 11 55a	− 3	i 21 56	0	e 34·5	50·9
Alicante		78·7	52	i 12 3	+ 2	i 22 13	+11	e 37·4	27·8
Durham		79·1	36	e 12 3	0	22 0	− 6	—	—
Kew		79·1	39	i 12 0	− 3	i 22 22	PS	e 36·5	36·7
Bagnères		79·2	47	12 5	+ 1	22 31?	PS	34·5	—
Tortosa		79·5	50	i 11 4	−61	21 18	−52	35·9	44·1
Barcelona		80·6	47	e 12 9	− 2	22 29	+ 7	34·8	42·1
Paris		80·6	41	i 12 8a	− 3	22 25	+ 3	27·5	37·5
Algiers		81·6	54	e 12 12	− 4	22 38	+ 5	i 38·3	47·5
Uccle		81·7	39	i 12 15a	− 2	i 22 40	+ 6	37·5	44·2
Bergen		81·9	30	e 12 16	− 2	22 40	+ 4	39·3	45·5
De Bilt		82·2	38	i 12 18a	− 1	e 22 37	− 2	e 37·5	44·1
Marseilles		82·9	47	12 25	+ 2	22 10	−35	40·5	—
Grenoble		83·0	45	i 12 0	−23	22 32	−15	33·5	—
Neuchatel		83·7	44	e 12 26	− 1	e 22 54	0	—	—
Basle		84·1	43	e 12 28	− 1	e 22 59	0	—	—
Strasbourg		84·1	41	i 12 24a	− 5	i 22 54	− 5	e 41·5	43·5
Karlsruhe		84·5	41	12 32	+ 1	23 11	+ 8	e 39·5	44·3
Zurich		84·8	43	e 12 31	− 1	e 23 11	+ 5	—	—
Hamburg		84·9	36	12 32	− 1	i 22 57	[− 1]	—	39·5

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M
	°	°	m. s.	s.	m. s.	s.	m.	m
Stuttgart	84·9	41	i 12 33	0	i 23 9	+ 2	e 39·7	53
Göttingen	85·2	39	e 12 32	− 2	i 23 25	+15	—	40
Chur	85·4	43	e 12 35	0	e 23 1	[− 1]	—	-
Pavia	85·4	45	e 12 38	+ 3	—	—	—	-
Piacenza	85·8	45	e 12 39a	+ 2	i 23 4	[− 1]	i 40·1	41
Copenhagen	86·1	33	i 12 38a	− 1	23 12	[+ 5]	—	24
Jena	86·3	39	e 12 38	− 2	i 23 10	[+ 2]	e 43·5	48
Hof	86·5	40	e 12 31	−10	e 23 13	[+ 3]	e 43·5	45
Livorno	86·5	46	12 11	−30	22 39	?	—	-
Leipzig	86·7	41	e 12 40	− 2	i 23 19	− 5	—	52
Cheb	86·9	40	e 12 42	− 1	e 23 31	+ 5	e 43·5	47
Prato	87·0	46	i 12 40	− 3	i 23 15	[+ 2]	e 31·5	48
Treviso	87·0	44	i 12 42	− 1	i 23 19	[+ 6]	—	-
Florence	87·1	46	i 12 41a	− 3	22 51	[−23]	—	-
Siena	87·2	47	12 51	+ 7	23 11	[− 4]	44·5	-
Padova	87·3	45	e 12 44	− 1	23 25	− 5	e 40·5	-
Tunis	87·3	53	12 43	− 2	i 23 37	+ 7	40·5	-
Venice	87·6	44	e 12 50	+ 4	i 23 22	[+ 5]	29·5	46
Upsala	88·0	30	12 45	− 3	i 23 17	[− 3]	e 40·5	53
Prague	88·2	40	e 12 49	0	i 23 28	[+ 7]	32·5	45
Laibach	89·0	44	e 3 58	?	i 23 34	[+ 8]	i 24·8	-
Triest	89·2	44	12 49a	− 5	i 23 29	[+ 1]	41·7	56
Graz	89·4	42	i 12 54	− 1	i 23 35	[+ 6]	e 38·5	50
Benevento	89·7	48	e 13 56	+60	23 51	− 2	—	32
Zagreb	90·1	44	e 12 57a	− 1	e 23 39	[+ 6]	e 41·9	-
Vienna	90·1	41	e 11 56	−52	i 23 38	[+ 5]	e 43·0	85
Königsberg	90·7	34	e 13 0	− 1	e 22 59	[−38]	e 42·5	48
Catania	91·0	52	e 13 5	+ 3	24 1	− 4	e 40·3	61
Helsingfors	91·4	28	e 13 1	− 3	i 22 55	[−46]	e 37·5	—
Trenta	91·6	50	e 13 8	+ 3	e 23 30	[−12]	42·4	65
Budapest	91·7	41	13 13	+ 8	23 1	[−42]	—	26
Apia	91·8	256	i 13 10	+ 4	i 24 3	−10	45·5	46
Belgrade	93·2	43	13 12	0	e 23 51	[0]	—	44
Pulkovo	94·0	27	i 13 12	− 4	23 54	[− 1]	44·5	55
Lemberg	94·2	38	e 13 29	+12	(e 23 37)	[−19]	e 23·6	26
Chatham Ils.	98·5	225	17 40	PP	24 7	[−11]	46·1	—
Suva	101·0	253	14 1	+13	24 37	[+ 6]	49·5	—
Sebastopol	102·1	41	e 13 52	− 1	24 30	[− 6]	e 33·2	—
Simferopol	102·3	40	e 13 57	+ 3	24 39	[+ 2]	e 27·0	—
Yalta	102·6	41	e 13 57	+ 2	24 40	[+ 2]	e 31·2	—
Theodosia	103·1	40	e 13 59	+ 1	24 44	[+ 3]	e 33·5	—
Cape Town	103·7	123	13 57	− 4	25 50	− 9	50·5	60
Arapuni	104·3	233	18 25	PP	24 49	[+ 3]	49·5	51
Wellington	104·9	229	14 6	0	27 45	PS	48·4	49
Helwan	106·0	55	14 11	0	25 1	[+ 6]	50·6	63
Ksara	108·2	50	e 14 26	+ 4	i 25 9	[+ 4]	—	—
Sverdlovsk	108·3	18	i 14 17	− 6	i 24 55	[−10]	51·0	58
Grozny	110·6	38	e 18 51	PP	e 25 19	[+ 3]	—	—
Tiflis	110·7	39	e 14 32	− 2	25 21	[+ 5]	—	—
Erevan	111·3	41	e 19 19	PP	—	—	—	—
Johannesburg	112·1	115	3 1	?	27 13	?	58·4	66
Baku	114·6	37	e 14 46	− 7	—	—	29·5	36
Sapporo	115·0	326	19 49	PP	—	—	—	—
Mizusawa	117·7	321	e 19 29	PP	27 24	{+23}	—	—
Hukusima	118·9	322	19 10	[+27]	—	—	—	—
Vladivostok	119·8	330	—	—	e 41 18	SSS	53·0	78
Oiwake	121·0	322	19 8	[+20]	—	—	—	—
Gihu	122·7	322	19 1	[+ 9]	—	—	—	—
Nagoya	122·8	322	e 19 2	[+10]	(e 30 40)	PS	e 30·7	—
Osaka	124·0	320	19 10	[+15]	31 6	PS	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent	124·1	22	15 32	P	26 7	[+ 5]	e 59·5	72·1
Kobe	124·2	323	e 18 56	[+ 1]	e 31 28	PS	63·8	70·2
Riverview	124·4	233	i 20 45	PP	e 27 41	{− 5}	e 58·4	65·7
Sydney	124·4	233	e 19 21	[+25]	i 30 56	PS	61·8	67·0
Sumoto	124·6	323	e 18 51	[− 5]	e 26 9	[+ 5]	—	80·2
Frunse	124·8	20	e 18 58	[+ 2]	—	—	59·0	—
Andijan	125·8	23	e 19 0	[+ 1]	30 57	PS	57·9	—
Heizyo	125·9	333	11 27	?	21 1	PP	—	—
Koti	125·9	321	e 19 1	[+ 2]	—	—	e 53·4	63·5
Zinsen	126·7	331	e 18 50	[−10]	—	—	e 97·8	—
Taikyu	127·0	328	e 21 8	PP	—	—	e 65·0	—
Husan	127·4	327	21 28	PP	e 28 38	{+33}	38·9	—
Hukuoka	127·8	325	e 21 15	PP	—	—	—	—
Hukuoka B	127·8	325	e 21 6	PP	38 35	SS	e 58·6	85·1
Melbourne	128·0	227	15 56	P	26 12	[− 2]	58·5	63·6
Chiufeng	128·7	340	e 15 54	P	28 17	{+ 4}	55·6	71·6
Nagasaki	128·7	323	i 21 19	PP	(e 38 24)	SS	e 38·4	—
Tananarive	130·5	107	21 22	PP	29 52	?	60·0	73·0
Adelaide	133·8	228	i 21 49	PP	i 40 19	?	60·7	73·5
Zi-ka-wei	134·4	329	e 19 9	[− 5]	—	—	76·2	86·5
Nanking	134·8	334	19 22	[+ 7]	e 31 59	PS	66·9	77·3
Dehra Dun	137·1	25	16 31	P	—	—	60·2	72·5
Agra	139·9	27	e 19 26	[+ 5]	26 19	SKS	71·9	—
Bombay	143·6	42	19 28	[− 2]	29 38	{− 7}	—	86·5
Hong Kong	145·3	332	19 36	[+ 2]	33 14	SKSP	—	95·5
Manila	147·4	315	19 42a	[+ 4]	—	—	73·5	—
Calcutta	148·0	16	19 56	[+17]	26 52	SKS	e 72·8	83·3
Hyderabad	148·2	36	19 45	[+ 6]	33 30	SKSP	62·5	89·0
Amboina	149·1	277	i 19 38	[− 2]	—	—	e 66·5	—
Phu-Lien	149·6	343	e 19 51	[+10]	38 31?	?	60·5	87·5
Perth	150·7	213	i 19 43	[0]	30 21	{− 5}	67·2	—
Kodaikanal	152·8	47	19 46	[+ 1]	30 40	{+ 2}	—	104·0
Colombo	156·9	49	19 58	[+ 8]	34 20	SKSP	82·8	108·6
Medan	168·1	354	20 9	[+ 7]	32 37	{+35}	74·5	—
Malabar	169·9	275	e 20 15	[+11]	—	—	e 43·5	—
Batavia	170·5	282	i 20 7	[+ 3]	i 32 20	{+ 5}	71·5	—

Additional readings :—

Port au Prince PP = +3m.34s., PPP = +3m.37s., SS = +6m.22s.
La Paz iSN = +10m.41s., iN = +11m.50s. = SS − 6s. and +13m.10s.
Charlottesville ePP = +7m.12s., iS = +11m.23s.
St. Louis ipPN = +6m.31s., iPPNE = +7m.20s., isSEN = +11m.47s., iSSN = +14m.1s. ; T_o = 1h.36m.29s.
Philadelphia iPP = +7m.23s., iSS = +14m.18s.
Montezuma e = +7m.42s. = PP − 2s. and +13m.12s.
Chicago ePP = +7m.45s., iSS = +13m.45s.
Ann Arbor ePPN = +7m.49s., iSS = +14m.13s. ; T_o = 1h.36m.0s.
Toronto iPN = +6m.42s., iPPPN = +7m.58s. = PP − 9s. ; T_o = 1h.36m.43s.
Weston iPP = +8m.25s. = PPP + 5s.
Oak Ridge iP = +6m.56s., eSNE = +12m.20s., eSNW = +12m.22s.
Denver iEN = +7m.36s., ePP = +8m.55s., eSN = +13m.27s., eSS = +15m.51s.
Ottawa ePPP = +8m.47s., iE = +13m.47s., SSS = +15m.55s. ; T_o = 1h.36m.30s.
Halifax PP = +9m.7s. ; T_o = 1h.36m.24s.
Bozeman ePP = +10m.6s., e = +13m.53s., iSS = +18m.16s. = S_cS + 5s.
Lick iN = +8m.30s.
Branner iE = +8m.31s., iN = +8m.37s., iE = +8m.40s. and +8m.45s., iN = +8m.49s. and +8m.53s., iE = +8m.57s., +9m.28s. and +9m.39s.
Berkeley eSE = +15m.28s., eSSE = +18m.43s.
Ukiah i = +8m.41s. and +12m.1s., iSS = +18m.31s., i = +21m.31s.
La Plata PPN = +10m.33s., PPEZ = +10m.37s., P_cSN? = +14m.2s., N = +15m.24s., SZ = +15m.37s., SN = +15m.47s., N = +16m.43s. and +17m.31s., E = +18m.1s., S_cSN = +18m.7s., S_cSE = +18m.31s., SSZ = +19m.7s., SSN = +19m.25s., SSE = +19m.31s., SSSN = +21m.13s., E = +22m.43s.
Ivigtut PP = +12m.1s., PPP = +13m.19s., S_cS = +19m.49s., SS = +22m.13s., SSS = +24m.19s.
Sitka iPP = +12m.50s., eSS = +23m.18s., eSSS = +26m.56s.
Reykjavik PP = +13m.55s., PPP = +15m.19s., PS = +21m.1s.

Continued on next page.

Scoresby Sund iPP = +14m.16s., PPP = +16m.7s., iSN = +20m.57s., iE = +21m.40s.
Honolulu e = +25m.55s. and +29m.55s.
San Fernando SE = +21m.24s.
Malaga i = +12m.31s., PP = +14m.45s., e = +15m.54s. and +23m.43s., SS = +26m.51s., e = +34m.41s.
Toledo PP = +14m.43s., PS = +21m.58s.
Granada i = +11m.58s., P_cP = +12m.12s., PP = +15m.9s., PPP = +16m.53s., SS = +26m.20s., SSS = +30m.31s.
Bidston iPP = +15m.7s., i = +25m.56s. and +29m.31s.
Almeria PPP = +17m.3s., SS = +26m.55s.
Edinburgh i = +11m.57s., +12m.1s., and +12m.53s., PP = +14m.54s., i = +16m.28s., +22m.20s., +22m.34s., +25m.59s., +27m.4s., and +27m.27s.
Stonyhurst iPP = +14m.53s., i = +27m.13s. and +30m.28s.
Oxford iPP = +14m.55s.
Alicante PP = +15m.33s., SS = +27m.21s.
Kew iPP = +14m.59s., iSKS = +22m.12s., iN = +29m.10s.
Bagnères PP = +15m.8s., SS = +27m.37s.
Tortosa iPN = +11m.8s.
Paris SS = +26m.41s.
Algiers PP = +15m.22s., PPP = +17m.24s., PS = +23m.24s., SS = +28m.34s., ? = +33m.50s.
Uccle iPPE = +15m.23s., iPP = +15m.29s., iE = +21m.49s., iPS = +23m.33s., iSSE = +28m.9s.
Bergen PP = +15m.19s.
De Bilt iPPZ = +15m.31s.
Marseilles PP = +15m.7s., PS = +22m.51s., SS = +28m.15s.
Grenoble PP = +15m.9s., PS = +23m.40s., SS = +28m.7s.
Strasbourg PP = +14m.49s., PS = +23m.51s., SS = +28m.49s., SSS = +32m.10s.
Zurich ePP = +16m.1s.
Hamburg ePP = +15m.48s., eE = +21m.57s., eZ = +23m.2s., iPSE = +23m.55s., iE = +25m.38s., eN = +28m.14s., iE = +28m.23s. = SS − 2s., iSSE = +28m.59s., e = +39m.31s.
Stuttgart i = +12m.38s. and +13m.51s., iSKSZ = +22m.52s., eSS = +28m.36s., eSSS = +36m.31s.
Göttingen ePP = +15m.55s., iPS = +24m.10s., eSS = +28m.55s., eSSS = +32m.37s.
Piacenza iP = +12m.46s., ePP = +15m.15s. and +19m.17s., PS = +23m.31s., SS = +29m.31s.
Copenhagen eN = +13m.43s., PP = +16m.1s., PPPZ = +17m.55s., E = +22m.19s., eN = +22m.49s. and +23m.22s., SS = +28m.55s.
Jena ePZ = +12m.37s., iP = +12m.42s., ePPE = +15m.37s., ePPZ = +16m.1s., eE = +22m.16s. and +22m.51s., eSZ = +23m.11s., iSE = +23m.14s., iPSE = +24m.14s., iPSZ = +24m.31s., eE = +25m.13s., e = +28m.31s., and +28m.37s., iSSZ = +29m.10s., eSSE = +29m.19s., iSSE = +29m.22s., e = +32m.31s., +38m.31s., eZ = +40m.1s., and +40m.7s.
Hof e = +24m.11s. = PS + 1s., eSE = +29m.31s., eNW = +29m.43s., eSE = +40m.1s., eNW = +40m.7s.
Leipzig eP = +12m.47s., e = +16m.1s. = PP + 2s., eE = +22m.19s., iPS = +24m.23s., eE = +25m.19s., iSS = +29m.23s., eE = +32m.55s., eN = +33m.13s., e = +38m.13s. and +40m.19s.
Treviso PP = +13m.2s., SS = +25m.40s.
Tunis ePP = +15m.52s., SKS = +23m.7s., iPS = +24m.19s., PPS = +24m.37s., SS = +29m.37s.
Venice S = +23m.19s.
Upsala PPE = +16m.22s., iPS = +24m.35s., iSSE = +29m.27s.
Prague iP = +12m.57s., ePP = +16m.42s., ePPP = +19m.44s., ePS = +24m.49s., eSS = +29m.44s.
Triest iZ = +13m.7s. and +13m.28s., PP = +16m.30s., PPP = +18m.31s., e = +22m.26s. and +23m.23s., iPPS = +24m.52s., SS = +29m.45s.
Graz iP_cP = +13m.1s., iPS = +24m.56s., iPPS = +25m.16s., iSS = +30m.16s.
Zagreb e = +13m.9s., +16m.7s., +17m.1s., +25m.1s., +26m.15s., and +30m.13s., eE = +32m.30s.
Vienna iP_cP = +12m.0s., iPP = +16m.31s., iPPP = +18m.40s., PPS = +24m.57s., e = +30m.3s., iSSS = +33m.26s.
Königsberg iPPN = +16m.40s., e?EZ = +16m.56s., iPPSEN = +24m.18s.
Helsingfors iPPNEZ = +16m.46s., ePPPZ = +18m.45s., iSKKSEN = +23m.41s., iPSNEZ = +25m.17s., iPPSNE = +25m.57s., ePKKPNE = +29m.21s., iSSNE = +30m.23s., iSSSNE = +33m.20s.; T_o = 1h.36m.27s.
Budapest PP = +16m.41s.
Apia ePP = +17m.8s., ePPP = +19m.49s., eSP = +25m.19s., eSS = +30m.25s., SSS = +34m.1s., eL_q = +36m.51s.
Belgrade ePKP = +17m.1s., iPSNW = +25m.46s.
Pulkovo PP = +17m.12s., PPS = +26m.7s., SS = +30m.43s.
Chatham Ils. PS = +26m.4s., PPS = +26m.49s., SS = +32m.7s., SSS = +35m.49s.

Continued on next page.

Suva PKP = +17m.58s., PP = +18m.43s., PS = +27m.49s., SS = +33m.1s. SSS = +37m.31s.?
Cape Town PPE = +18m.11s., PPN = +18m.18s., PPPN = +20m.52s., PPPE = +20m.58s., SKSE = +24m.44s., SKSN = +24m.53s., SN = +25m.46s., PSE = +27m.26s., PPSE = +28m.1s., PPSN = +28m.4s., SSE = +33m.4s., SSN = +33m.7s., SSSE = +36m.48s.
Arapuni PS = +27m.31s., SS = +33m.31s.
Wellington PP? = +18m.27s., PPP? = +24m.45s., PPS = +28m.28s., SS = +33m.31s.
Helwan PP = +18m.34s., SS = +27m.56s.
Ksara PP = +18m.50s., PS = +28m.11s., SS = +34m.42s.
Sverdlovsk iPP = +18m.43s., iPPP = +21m.0s., iPS = +28m.14s., iPPS = +29m.17s.
Tiflis iPZ = +14m.37s., eZ = +17m.43s., iPPEZ = +19m.11s., SKKSN = +26m.19s., ePS = +28m.31s.
Johannesburg +29m.19s., +34m.55s., +37m.7s., and +39m.19s., SS = +42m.31s., +43m.37s., +45m.31s., +52m.19s., and +55m.49s.
Baku i = +19m.55s., iPPP = +22m.7s.
Osaka PP = +20m.48s., PPP = +23m.12s., PS = +30m.19s., PPP = +37m.10s., SS = +37m.34s., SSS = +42m.10s.
Tashkent PKP = +18m.59s., PP = +20m.42s., PKPS = +22m.7s., PS = +30m.42s., SS = +38m.25s.
Kobe PKPZ = +18m.59s., eZ = +20m.43s., iZ = +20m.46s., iEN = +20m.59s., iE = +22m.42s., eE = +32m.32s., iE = +37m.44s., eE = +53m.5s., eN = +53m.27s.
Riverview eE = +26m.6s., iE = +30m.53s. and +30m.59s., iN = +31m.2s., ePPSE = +32m.57s., iE = +37m.42s., iSSE = +38m.8s., eE = +40m.42s., SSS?E = +42m.44s.
Sydney iP = +20m.49s., PPP = +27m.51s.
Sumoto PE = +19m.0s., ePZ = +19m.4s., eE = +25m.54s., eN = +29m.5s., eE = +30m.58s.
Frunse PP = +20m.48s.
Koti PPZ = +20m.59s., eSS = +38m.1s.
Melbourne PKP = +19m.11s., PP = +21m.9s., SPP = +22m.31s., SKKS = +28m.1s., S = +29m.24s., PPS = +31m.3s., SS = +38m.42s., SSS = +34m.19s.
Chiufeng PKP = +19m.4s., PP = +21m.16s., SKP = +22m.29s., PPPNZ = +24m.3s., SKS = +25m.47s., SKKSN = +27m.4s., SKSPEN = +31m.15s., PSEZ = +32m.43s., PPSZ = +34m.13s., SSEZ = +38m.24s., SSS?Z = +43m.14s.
Tananarive SKPEN = +22m.39s., PSE = +31m.49s., PPSE = +33m.25s., SSEN = +38m.40s., SSSE = +44m.10s.
Adelaide i = +22m.51s., +23m.42s., +28m.39s., and +35m.21s.
Zi-ka-wei iZ = +19m.21s., +22m.1s., and +23m.7s.
Nanking iPPZ = +21m.53s., SKP = +22m.49s., SKS = +26m.53s., SKKS = +29m.19s., PSE = +33m.44s., PPS = +35m.13s., SS = +40m.1s., i = +41m.44s., SSSZ = +44m.55s., SSSN = +45m.29s.
Agra PKPE = +19m.31s., eSKP? = +22m.53s., PP = +23m.9s., PPP = +26m.39s., SKKS = +29m.45s., PSKS = +33m.32s., PPS = +36m.26s., SS = +42m.38s., SSS = +48m.25s.
Bombay PP = +22m.51s., PPP = +25m.59s., PSKS = +33m.6s., PPS = +35m.43s., SS = +42m.3s. and +47m.33s.
Hong Kong PP = +23m.1s., ? = +29m.51s., and +38m.21s., SS = +41m.59s.
Calcutta SS = +43m.19s., SSS = +49m.8s.
Perth P_3 = +20m.11s., P_3 = +20m.21s., PP = +24m.26s., PPP = +27m.1s., PPPP = +29m.6s., PS = +33m.51s., PPS? = +34m.11s., SS = +38m.51s., SSS = +43m.6s.
Kodaikanal PP = +23m.31s., PPP = +27m.1s., PSKS = +33m.51s., PPS = +36m.50s., SS = +42m.55s., SSS = +49m.11s.
Medan i = +27m.14s.
Batavia iN = +29m.10s.
Long waves were also recorded at Tyosi and Soengei Langka.

July 18d. 4h. 0m. 43s. Epicentre 8°·0N. 83°·0W. (as on 1933 Nov. 23d.). R.1.

A = +·121, B = −·983, C = +·139; D = −·993, E = −·122; G = +·017, H = −·138, K = −·990.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights		3·5	74	0 49	− 1	—	—	—	—
Port au Prince		14·8	44	i 3 26	0	i 6 9	− 1	i 6·8	9·6
San Juan		19·4	56	i 4 19	− 4	—	—	—	—
Columbia		26·1	4	e 5 35	+ 5	e 10 5	+ 5	—	—
La Paz		28·5	149	i 5 49	− 3	i 10 41	+ 1	—	20·4
Charlottesville		30·3	7	e 6 15	+ 7	11 17	+ 8	14·1	—
St. Louis		31·3	349	i 6 14	− 3	i 11 19	− 5	—	—
Sucre		32·1	147	e 6 5	−19	i 11 39	+ 2	15·5	—
Philadelphia		32·7	11	i 6 17	−12	i 11 32	−14	—	—
Fordham		33·8	12	i 6 39	0	i 12 10	+ 7	—	19·4
Chicago		34·2	353	e 7 24	PP	i 12 2	− 7	e 14·9	—
Ann Arbor		34·3	0	e 11 35	?	e 14 35	?	e 15·8	18·8
Tucson		35·5	318	6 55	+ 2	12 32	+ 3	—	—
Toronto		35·8	4	i 6 40	−16	i 11 39	−54	14·8	—
Oak Ridge		36·0	15	i 6 53	− 5	i 12 37	+ 1	—	—
Ottawa		37·9	9	i 7 11	− 3	i 13 1	− 4	e 18·7	—
La Jolla		40·3	313	e 7 34	− 1	—	—	—	—
Riverside		41·0	314	i 7 40	0	—	—	—	—
Mount Wilson		41·5	314	i 7 45	+ 1	—	—	—	—
Pasadena		41·6	314	i 7 45	0	e 14 3	+ 3	—	—
Haiwee		42·5	317	e 7 52	− 1	—	—	—	—
Santa Barbara		42·9	313	e 8 1	+ 5	—	—	—	—
Santiago		43·0	163	e 7 54	− 3	14 24	+ 3	—	—
Tinemaha		43·2	318	i 8 1	+ 3	—	—	—	—
Lick		45·7	317	e 8 21	+ 3	—	—	—	—
Branner		46·1	316	e 8 25	+ 4	i 8 41	?	—	—
La Plata		49·0	152	8 40	− 4	15 42	− 5	26·5	27·8
Ivigtut		59·1	19	9 53	− 5	—	—	—	—
Serra do Pilar		73·0	49	11 30	+ 1	20 57	0	—	—
Scoresby Sund		73·1	18	11 23	− 6	20 54	− 4	29·3	—
San Fernando	E.	74·7	54	11 35	− 4	21 11	− 6	35·3	—
	N.	74·7	54	11 53	+14	21 18	+ 1	—	—
Malaga		76·1	54	e 11 45	− 2	21 30	− 3	36·3	—
Toledo		76·4	52	e 11 42	− 6	i 21 30	− 6	e 35·4	—
Granada		76·7	54	i 11 54	+ 4	21 30	− 9	37·1	39·3
Almeria		77·4	55	e 11 56	+ 2	i 21 44	− 3	e 33·6	—
Bidston		77·6	37	—	—	e 22 10	PS	—	—
Edinburgh		77·7	35	e 11 57	+ 1	i 21 44	− 7	—	45·5
Stonyhurst		78·0	37	i 11 59	+ 2	—	—	e 36·3	46·4
Alicante		79·2	53	e 12 7	+ 3	i 22 3	− 4	e 36·8	—
Kew		79·2	39	i 12 3	− 1	e 21 57	−10	e 36·3	53·8
Tortosa		79·9	50	e 11 10	−57	e 21 10	−65	—	—
Paris		81·0	42	12 14	+ 1	22 14	−12	37·3	43·3
Barcelona		81·1	49	e 12 12	− 2	(e 21 45)	−42	e 21·8	—
Algiers		82·1	54	12 20	+ 1	22 29	− 9	—	—
Uccle		82·1	40	i 12 20	+ 1	e 22 30	− 8	36·3	—
Bergen		82·3	30	e 12 14	− 6	e 22 34	− 6	—	—
De Bilt		82·5	38	e 12 22	+ 1	—	—	—	—
Neuchatel		84·5	43	e 12 26	− 5	e 22 51	[− 4]	—	—
Basle		84·5	43	e 12 29	− 2	e 23 8	+ 5	—	—
Strasbourg		84·5	41	i 12 29k	− 2	22 47	[− 8]	e 39·3	—
Zurich		85·2	42	e 12 31	− 3	e 22 56	[− 5]	—	—
Hamburg		85·3	36	e 12 30	− 5	e 23 1	[0]	e 37·3	51·3
Stuttgart		85·4	41	i 12 37	+ 2	i 22 54	[− 8]	e 35·3	—
Karlsruhe		85·5	41	e 18 36	PPPP	—	—	e 39·3	—

Continued on page next.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Göttingen	85·6	39	e 12 36	0	—	—	—	49·5
Pavia	85·8	45	e 12 47	+10	—	—	—	—
Chur	85·8	44	e 12 34	− 3	e 23 9	[+ 4]	—	—
Piacenza	86·2	45	12 46	+ 7	23 15	− 4	46·3	—
Copenhagen	86·4	34	12 39	− 1	23 11	[+ 2]	—	—
Jena	86·7	39	e 12 42	0	e 23 9	[− 2]	e 35·3	46·8
Leipzig	87·1	39	12 47	+ 3	e 23 17	[+ 3]	—	50·3
Cheb	87·3	40	—	—	e 23 17?	[+ 2]	—	—
Prato	87·4	46	e 12 49	+ 4	i 23 21	[+ 5]	e 37·7	51·3
Florence	87·5	46	i 12 48a	+ 3	23 15	[− 2]	40·3	—
Padova	87·6	44	12 51	+ 5	—	—	—	—
Treviso	87·8	44	e 12 45	− 2	i 23 31	− 4	51·3	—
Upsala	88·3	30	e 12 49	0	e 23 26	[+ 4]	e 41·3	—
Triest	88·9	44	12 55k	+ 3	23 37	− 9	e 44·3	52·1
Graz	89·8	42	i 13 0	+ 4	e 23 44	−10	—	52·3
Vienna	90·2	43	i 13 1	+ 3	i 23 50	− 8	—	47·1
Zagreb	90·4	44	e 13 2	+ 3	e 23 31	[− 4]	—	—
Königsberg	91·1	34	e 13 29	+26	i 23 30	[− 9]	e 49·2	54·3
Catania	91·5	49	13 7	+ 3	—	—	—	—
Helsingfors	91·8	28	e 12 47	−19	e 23 18	[−25]	e 37·3	—
Pulkovo	94·4	28	e 15 48	?	e 23 44	[−14]	40·3	48·5
Sebastopol	102·6	41	e 18 12	PP	—	—	—	—
Simferopol	102·8	41	e 18 17	PP	—	—	—	—
Yalta	103·0	41	e 18 12	PP	—	—	—	—
Theodosia	103·6	41	e 18 16	PP	—	—	—	—
Cape Town	103·9	123	14 27	+26	24 57	[+12]	51·6	58·8
Ksara	108·6	50	18 36	PP	28 1	PS	—	—
Tchimkent	123·8	24	e 21 37	?	—	—	—	—
Tashkent	124·5	25	e 20 40	PP	—	—	59·2	62·9
Frunse	125·1	20	e 20 27	PP	—	—	—	—
Andijan	126·2	23	e 19 0	[+ 1]	—	—	—	—
Amboina	148·7	276	19 45	[+ 5]	—	—	—	—

Additional readings :—
Port au Prince PP = +3m.33s., PPP = +3m.41s., SS = +6m.31s.
St. Louis ipPE = +6m.27s., esSN = +11m.47s., eSSN = +13m.2s., eSSSN = +13m.41s. ; T_0 = 4h.0m.41s.
Philadelphia iSS = +14m.3s., i = +14m.24s.
Fordham iPP = +7m.42s., iPPP = +8m.0s., i = +11m.50s., iSS = +13m.59s., i = +14m.42s.
Chicago iPP = +7m.54s.
Ann Arbor e = +12m.5s. = S − 7s.
Toronto iPPN = +7m.26s., iPPP = +7m.50s.
Ottawa PPE = +8m.25s., PPP = +8m.39s., SSS = +16m.1s. ; T_0 = 4h.0m.48s.
Lick iEN = +8m.34s., iN = +8m.43s.
Branner iE = +8m.34s., iN = +8m.36s., iE = +8m.47s.
La Plata SSE = +19m.29s., SSSE = +20m.59s., SSSN = +22m.35s.
Malaga i = +11m.51s., PS = +22m.11s., e = +24m.59s., i = +25m.2s.
Granada P_gP = +12m.21s., PPP = +16m.39s., S_gS = +22m.24s.
Stuttgart iPP = +15m.36s.
Jena ePE = +12m.47s., eSE = +23m.5s., e = +23m.17s. = S − 7s. and +29m.17s.
Upsala PPE = +16m.21s.
Triest PP = +16m.23s., SKS = +23m.14s., PS = +24m.42s.
Graz ePS = +25m.0s.
Vienna iPP = +16m.43s., iPPP = +18m.45s., iSS = +29m.34s.
Königsberg ePSN = +23m.56s. = S − 6s., e?EN = +25m.36s.
Helsingfors ePPNE = +16m.40s., eSKKSN = +23m.59s., ePSNE = +25m.10s., eSSNE = +30m.17s. ; T_0 = 4h.0m.35s.
Pulkovo e = +17m.4s. = PP + 4s. and +25m.40s. = PS − 3s.
Cape Town PP = +18m.49s., PPP = +20m.42s., PPS = +28m.49s., SS = +33m.12s., SSS = +37m.4s.
Tashkent e = +21m.12s.
Long waves were also recorded at Wellington, Sydney, Perth, Honolulu, and Sitka.

July 18d. 4h. 7m. 17s. (I)
4h. 14m. 1s. (II)
4h. 47m. 6s. (III)
Epicentre 8°·0N. 83°·0W. (as at 4h.). X. X. X.

		Δ	Az.	P.	O−C.
		°	°	m. s.	s.
I	La Jolla	40·3	313	i 7 35	0
II		40·3	313	i 7 33	− 2
I	Riverside	41·0	314	i 7 41	+ 1
II		41·0	314	i 7 40	0
III		41·0	314	i 7 47	+ 7
I	Mount Wilson	41·5	314	i 7 42	− 2
II		41·5	314	i 7 44	0
I	Pasadena	41·6	314	i 7 46	+ 1
II		41·6	314	i 7 45	0
III		41·6	314	i 7 44	− 1
I	Haiwee	42·5	317	i 7 54	+ 1
II		42·5	317	i 7 54	+ 1
III		42·5	317	i 7 52	− 1
II	Santa Barbara	42·9	313	i 7 57	+ 1
I	Tinemaha	43·2	318	i 8 0	+ 2
II		43·2	318	e 7 58	0
III		43·2	318	e 7 54	− 4

No additional readings.

July 18d. 6h. 35m. 38s. Epicentre 8°·2N. 82°·6W. (as at 1h.). X.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
San Juan	18·9	56	i 4 20	+ 3	i 8 5	?	—	—
Huancayo	21·5	160	e 4 47	+ 2	(e 8 37)	+ 1	e 8·6	—
Columbia	25·8	3	—	—	e 10 22	+27	e 14·4	—
La Paz	28·6	149	e 6 22	+29	i 11 4	+22	12·9	18·2
St. Louis	31·2	350	e 6 15	− 1	e 11 9	−14	—	—
Sucre	32·2	148	6 50	+26	—	—	17·5	—
Pittsburgh	32·3	4	e 7 26	PP	e 11 57	+17	e 17·0	—
Philadelphia	32·4	11	e 6 6	−20	e 11 32	− 9	e 17·0	—
Fordham	33·6	11	e 6 36	− 1	e 12 5	+ 5	—	19·6
Chicago	34·0	353	e 6 40	0	—	—	—	—
Tucson	35·6	317	e 7 2	+ 8	—	—	e 17·4	—
Oak Ridge	35·7	14	e 6 54	− 1	e 12 44	+12	e 21·4	—
Ottawa	37·6	8	e 7 11	− 1	e 13 22	+22	19·4	—
Riverside	41·1	313	e 7 43	+ 2	—	—	—	—
Mount Wilson	41·7	314	i 7 50	+ 4	—	—	—	—
Pasadena	41·7	314	e 7 46	0	—	—	—	—
Haiwee	42·7	317	e 7 56	+ 2	—	—	—	—
Tinemaha	43·3	317	e 8 0	+ 1	—	—	—	—
Scoresby Sund	72·8	18	11 24	− 4	—	—	36·4	—
Malaga	75·6	54	e 11 44	0	—	—	—	—
Granada	76·3	53	e 11 46	− 2	e 21 35	0	—	—
De Bilt	82·2	38	e 12 17	− 2	—	—	—	—
Stuttgart	84·9	41	e 12 32	− 1	—	—	e 50·4	—
Copenhagen	86·1	33	12 37	− 2	—	—	—	—
Amboina	149·1	277	e 19 40	[0]	—	—	—	—

Additional readings and notes :—
Huancayo eS = +7m.27s. ; S is given as L.
Philadelphia eSS = +13m.39s.
Pittsburgh eSS = +14m.24s.
Fordham e = +7m.51s. = PPP − 2s.
Chicago readings have been *increased* by 2m.
Ottawa PP = +8m.40s. ; T_g = 6h.35m.18s.
Long waves were also recorded at Christchurch, Ivigtut, Strasbourg, and Tiflis.

July 18d. 13h. 3m. 43s. Epicentre 11°·0S. 165°·0E. (as on 1934 June 28d.). X.

A = −·948, B = +·254, C = −·191; D = +·259, E = +·966; G = +·184, H = −·049, K = −·982.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	26·1	207	e 5 29	− 1	i 10 13	+13	—	39·6
Wellington	31·5	166	—	—	e 14 17?	?	—	—
Melbourne	32·3	210	e 6 9	−16	i 11 40	0	—	—
Christchurch	33·2	172	—	—	17 17?	(+15)	—	—
Adelaide	33·9	221	—	—	e 11 39	−25	e 18·6	22·0
Vladivostok	61·9	334	10 24	+ 6	—	—	29·8	—
Chiufeng	68·2	322	e 11 1	+ 2	e 20 5	+ 6	e 28·2	37·3
Sverdlovsk	107·0	326	—	—	e 28 8	PS	50·3	—
Baku	116·2	312	—	—	e 35 35	SS	e 40·8	—
Tiflis	119·7	312	e 20 14	PP	—	—	e 65·3	85·8
Pulkovo	120·9	335	e 20 17	PP	e 27 17	{− 5}	e 45·3	—
Copenhagen	130·4	340	22 33	PKS	—	—	62·3	—
De Bilt	135·8	342	e 19 16	[0]	—	—	e 74·3	—
Stuttgart	137·2	336	e 19 18	[0]	—	—	e 76·3	—
Strasbourg	137·9	337	e 22 13	PP	—	—	e 80·3	—
Paris	139·5	342	e 19 17	[− 4]	—	—	75·3	—

Additional readings and note:—
Riverview eNE = +9m.49s. and +17m.29s.
Melbourne i = +14m.30s. and +16m.39s.
Copenhagen +52m.17s.?
De Bilt eZ = +21m.59s. = PP +4s.
Stuttgart e = +22m.5s. = PP +1s., eP = +48m.51s. = SSS +9s., e = +51m.37s.; readings given as for two quakes.
Long waves were also recorded at Edinburgh, Honolulu, Tucson, Scoresby Sund, and Uccle.

July 18d. 16h. 9m. 55s. Epicentre 8°·0N. 82°·0W. N.2.

A = +·138, B = −·981, C = +·139; D = −·990, E = −·139; G = +·019, H = −·138, K = −·990.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights	2·6	67	i 0 46	P_g	i 1 26	S_g	—	—
San Juan	18·6	54	i 4 20	+ 6	i 8 0	+22	e 12·5	—
Huancayo	21·1	162	i 4 43	+ 2	i 8 50	+22	—	—
Columbia	26·0	2	—	—	e 10 5	+ 7	—	—
La Paz	28·1	150	5 51	+ 3	11 3	+29	—	21·5
Georgetown	31·7	7	6 16	− 4	11 21	−10	e 15·1	—
Pittsburgh	32·5	3	e 6 31	+ 4	e 11 57	+14	e 15·1	—
Philadelphia	32·5	10	e 6 33	+ 6	13 5	SS	e 16·4	—
Fordham	33·7	12	e 6 39	+ 1	e 12 8	+ 7	—	19·1
Ann Arbor	34·4	358	—	—	e 12 11	− 1	e 18·5	—
Tucson	36·2	317	e 6 57	− 3	e 12 37	− 2	e 18·1	—
Ottawa	37·8	7	e 7 17	+ 4	e 13 5	+ 2	e 19·1	—
Riverside	41·7	314	e 7 46	0	—	—	—	—
Mount Wilson	42·3	314	i 7 51	0	—	—	—	—
Pasadena	42·3	313	e 7 49	− 2	—	—	—	—
Haiwee	43·2	316	e 7 59	+ 1	—	—	—	—
Tinemaha	43·9	317	e 8 1	− 3	—	—	—	—
Scoresby Sund	72·8	18	11 25	− 3	20 47	− 7	32·1	—
Malaga	75·3	54	e 11 42	0	—	—	—	—
Toledo	75·7	51	e 11 25	−19	e 21 27	− 1	—	—
Granada	76·0	53	e 11 48	+ 2	e 21 33	+ 1	36·6	—
Edinburgh	77·1	34	e 3 5?	?	—	—	—	23·1
Uccle	81·6	40	e 12 16	0	—	—	e 38·1	—
De Bilt	82·1	38	12 18	− 1	e 22 36	− 2	e 36·1	43·0
Basle	83·9	43	e 12 28	0	—	—	—	—

Continued on next page.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Strasbourg	83·9	41	e 12 25	− 3	e 23 33	PS	e 39·1	—
Zurich	84·5	43	e 12 32	+ 1	—	—	—	—
Stuttgart	84·7	41	e 12 32	0	e 23 5	0	e 37·1	—
Copenhagen	86·0	34	12 39	+ 1	23 17	− 1	38·1	—
Pulkovo	93·9	28	e 16 59	PP	e 23 47	[− 8]	—	—
Helwan	105·7	56	27 52	PS	39 43	?	—	—
Ksara	107·9	50	—	—	e 27 21	PS	—	—
Sverdlovsk	108·3	20	—	—	e 24 55	[−10]	54·1	—
Tiflis	110·5	40	—	—	e 27 1	{+53}	e 38·3	—
Tashkent	124·1	26	—	—	i 26 55	[+53]	e 60·0	67·7
Agra	139·9	28	e 27 17	PPPP	—	—	—	—
Dehra Dun	137·2	25	33 45	PS	—	—	—	36·1

Additional readings :—
Huancayo iPP = +5m.16s., e = +7m.10s.
La Paz iE = +12m.44s., SS = +13m.59s.
Fordham e = +7m.52s. =PPP − 2s. and +9m.31s. =P_cP +10s.
Ann Arbor eE = +16m.5s.
Ottawa e = +8m.41s. =PP +6s.
Stuttgart ePP = +15m.48s.
Pulkovo i = +31m.41s.
Ksara e = +31m.52s. and +37m.25s. =SSS − 22s.
Sverdlovsk e = +34m.10s. =SS +15s. and +38m.34s.
Tiflis eE = +30m.58s., eZ = +33m.55s.
Tashkent e = +30m.20s. =SKSP − 6s. and +34m.30s.
Long waves were also recorded at Chiufeng, Honolulu, Ivigtut, Calcutta, Bombay, Kew, and Vladivostok.

July 18d. 16h. 59m. 45s. Epicentre 8°·0N. 82°·0W. (as at 16h. 9m.). R.1.

A = +·138, B = −·981, C = +·139 ; D = −·990, E = −·139 ;
G = +·019, H = −·138, K = −·990.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Balboa Heights	2·6	67	0 44	+ 7	—	—	—	—
Port au Prince	14·1	41	i 3 26	+ 9	i 6 12	SS	i 7·1	7·6
San Juan	18·6	54	i 4 19	+ 5	i 7 40	+ 2	—	—
Huancayo	21·1	162	i 4 40	− 1	i 8 45	SS	—	—
Columbia	26·0	2	—	—	10 9	+11	—	—
La Paz	28·1	150	5 50	+ 2	i 10 44	+10	14·9	16·1
Charlottesville	30·2	6	i 6 7	0	i 11 15	+ 8	i 13·4	—
St. Louis	31·5	348	i 6 19	+ 1	e 11 19	− 9	—	—
Georgetown	31·7	7	i 6 19	− 1	i 11 43	+12	—	—
Sucre	31·7	149	e 6 16	− 4	i 11 39	+ 8	15·9	—
Florissant	31·8	348	i 6 20	− 1	i 11 21	−11	—	—
Philadelphia	32·5	10	i 6 33	+ 6	i 11 58	+15	—	—
Pittsburgh	32·5	3	—	—	e 12 2	+19	—	—
Fordham	33·7	12	i 6 41	+ 3	i 12 3	+ 2	14·4	17·2
Chicago	34·3	352	e 6 43	0	i 12 25	+14	e 20·1	—
Ann Arbor	34·4	358	e 6 39	− 5	i 12 33	+21	i 18·2	19·2
Oak Ridge	35·7	13	i 6 56	+ 1	i 12 43	+11	—	—
Toronto	35·7	4	i 6 52	− 3	12 4	−28	15·8	—
Tucson	36·2	317	i 7 0	0	i 12 39	0	e 16·9	—
Ottawa	37·8	7	i 7 13	0	i 13 20	+17	18·9	—
Halifax	40·0	20	e 7 43	+11	i 14 15	?	—	—
La Jolla	41·0	312	e 7 40	0	—	—	—	—
Riverside	41·7	314	i 7 46	0	—	—	—	—
Mount Wilson	42·3	314	i 7 51	0	—	—	—	—
Pasadena	42·3	313	i 7 51a	0	i 14 7	− 3	i 19·0	—
Santiago	42·8	166	7 51	− 4	14 55	+37	—	—
Halwee	43·2	316	e 7 58	0	—	—	—	—
Santa Barbara	43·6	312	i 8 1	− 1	—	—	—	—
Tinemaha	43·9	317	i 8 5	+ 1	—	—	—	—
Bozeman	45·2	331	e 8 17	+ 3	e 15 4	+10	e 22·4	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Lick	46·3	316	e 8 24	+ 1	—	—	—	—
Branner	46·8	315	e 8 19	− 8	—	—	—	—
Berkeley	47·0	316	e 8 27	− 2	e 15 29	+10	—	—
Ukiah	48·3	317	i 8 39	+ 1	e 15 29	− 8	e 22·0	—
La Plata	48·5	153	i 8 41k	+ 1	15 37	− 3	24·9	28·5
Seattle	52·3	327	e 9 12	+ 3	e 15 40	−53	e 24·3	—
Victoria	53·3	327	9 10	− 6	16 55	+ 9	32·2	—
Ivigtut	58·8	18	i 9 55	− 1	18 3	+ 3	24·2	—
Dakar	63·5	78	10 5	−24	18 54	− 7	—	—
Sitka	64·0	331	e 10 15	−17	e 19 18	+11	e 35·8	—
Serra do Pilar	72·3	49	11 32	+ 7	21 1	PS	37·2	—
Scoresby Sund	72·8	18	i 11 26k	− 2	e 20 39	−15	—	—
San Fernando E.	73·9	54	11 32	− 2	21 16	+ 9	35·2	46·2
Honolulu	74·0	290	e 11 45	+10	e 21 21	+13	e 34·4	—
Malaga	75·3	54	i 11 45	+ 3	21 34	+10	35·4	—
Toledo	75·7	51	11 45	+ 1	i 21 33	+ 5	e 35·6	—
Granada	76·0	53	i 11 47	+ 1	i 21 39	+ 7	36·0	41·0
Almeria	76·9	54	i 11 50	− 1	i 21 48	+ 6	e 32·4	—
Bidston	77·1	37	i 11 45	− 8	i 21 47	+ 3	35·2	—
Stonyhurst	77·4	37	i 11 52	− 2	i 21 47	0	36·2	46·8
Durham	78·0	36	e 12 1	+ 4	21 55	+ 1	—	—
Oxford	78·0	39	i 11 56a	− 1	i 21 55	+ 1	e 34·7	50·2
Alicante	78·4	53	e 12 6	+ 7	i 22 6	+ 8	e 33·6	—
Kew	78·6	39	i 12 0	0	i 22 14	+14	35·2	42·3
Tortosa	79·2	50	12 7	+ 3	22 8	+ 1	27·0	27·1
Barcelona	80·4	49	e 12 3	− 7	22 33	+13	e 33·4	43·6
Paris	80·4	42	i 12 17	+ 7	22 21	+ 1	33·2	38·2
Algiers	81·3	54	i 12 15	0	22 37	+ 7	35·5	41·2
Uccle	81·6	40	i 12 16a	0	i 22 33	0	34·2	—
Bergen	81·8	30	e 12 14	− 3	22 33	− 2	38·2	47·2
De Bilt	82·1	38	i 12 18k	− 1	e 22 34	− 4	e 38·2	48·2
Marseilles	82·7	46	e 12 19	− 3	22 2	−42	33·2	—
Neuchatel	83·5	43	e 12 26	0	e 22 52	0	—	—
Basle	83·9	43	e 12 28	0	e 22 57	+ 1	—	—
Strasbourg	83·9	41	i 12 27a	− 1	i 22 45	−11	34·2	45·7
Karlsruhe	84·3	41	12 31	+ 1	23 7	+ 6	e 40·2	—
Zurich	84·5	43	e 12 32	+ 1	e 23 9	+ 6	—	—
Stuttgart	84·7	41	i 12 34	+ 2	i 23 3	− 2	e 40·2	49·2
Hamburg	84·8	36	i 12 32	0	i 23 11	+ 5	e 38·2	39·2
Göttingen	85·0	39	e 12 34	+ 1	i 23 20	+12	e 40·2	46·2
Pavia	85·1	45	e 12 45	+11	—	—	—	—
Chur	85·2	43	e 12 36	+ 2	e 22 50	−20	—	—
Piacenza	85·5	45	12 37	+ 1	i 23 15	+ 2	39·2	51·6
Copenhagen	86·0	34	i 12 39a	+ 1	23 17	− 1	—	—
Jena	86·1	39	e 12 39	0	e 23 15	− 3	e 39·2	47·7
Hof	86·3	40	e 12 38	− 2	e 23 6	[− 2]	—	—
Leipzig	86·5	39	e 12 42	+ 1	e 23 10?	[0]	e 38·2	54·2
Cheb	86·7	40	e 12 47	+ 5	e 23 13	[+ 2]	e 39·2	44·2
Prato	86·7	46	i 12 41	− 1	i 23 24	0	32·2	—
Florence	86·8	46	i 12 42a	0	23 45	+20	—	—
Siena	86·9	47	12 42	− 1	—	—	—	—
Padova	87·0	44	e 12 42	− 1	23 6	[− 7]	—	—
Treviso	87·2	44	i 12 48	+ 4	i 23 29	0	—	—
Venice	87·3	44	e 12 42	− 3	e 23 19	[+ 4]	—	—
Upsala	87·9	30	e 12 46	− 1	i 23 33	− 3	e 41·2	53·9
Prague	88·0	40	e 12 52	+ 4	e 23 30	− 7	e 38·7	44·7
Triest	88·3	44	12 51a	+ 2	23 47	+ 7	—	49·2
Vienna	89·6	41	e 12 57	+ 1	e 23 33	[+ 3]	e 36·5	85·4
Zagreb	89·8	43	e 12 56	0	e 23 33	[+ 2]	e 42·2	—
Königsberg	90·6	34	i 12 50	−10	e 23 17	[−19]	e 37·4	40·2

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Catania	90·7	52	e 12 59	− 2	—	—	—	—
Helsingfors	91·3	28	e 13 4	+ 1	i 23 46	[+ 6]	e 39·2	—
Trenta	91·3	50	13 5	+ 2	e 23 27	[−13]	44·5	60·2
Budapest	91·5	42	e 13 15?	+11	23 49	[+ 8]	e 30·2	56·7
Belgrade	93·1	44	13 12	0	e 23 58	[+ 7]	e 51·3	—
Pulkovo	93·9	28	13 15	0	23 48	[− 7]	40·2	54·0
Sebastopol	101·9	41	e 17 11	PP	e 24 35	[0]	—	—
Simferopol	102·1	41	e 17 18	PP	e 24 36	[0]	e 27·4	—
Yalta	102·4	41	e 17 19	PP	e 25 40	− 8	—	—
Theodosia	102·9	40	e 17 22	PP	e 27 17	PS	—	—
Cape Town	103·1	123	14 3	+ 5	24 42	[+ 1]	48·5	56·7
Arapuni	104·6	233	—	—	27 15?	PS	—	—
Wellington	105·2	229	18 26	PP	24 55	[+ 4]	48·2	—
Helwan	105·7	56	i 18 43	PP	i 24 53	[0]	50·6	74·9
Christchurch	106·6	227	i 18 40	PP	26 40	?	51·9	—
Ksara	107·9	50	e 18 50	PP	28 35	PS	—	—
Sverdlovsk	108·3	20	i 14 20	− 3	i 25 5	[0]	47·2	61·6
Tiflis	110·5	40	e 14 41	+ 8	e 25 10	[− 6]	—	—
Vladivostok	120·3	332	e 18 50	[+ 4]	e 20 22	PP	52·7	84·3
Tchimkent	123·4	25	e 19 43	[+50]	—	—	58·2	—
Tashkent	124·1	26	18 56	[+ 1]	30 46	PS	e 57·1	81·8
Samarkand	124·6	28	19 15	[+19]	—	—	62·2	—
Kobe	124·7	323	e 19 12	[+16]	—	—	—	—
Sydney	124·7	234	e 14 27	?	—	—	64·2	70·6
Riverview	124·8	234	e 20 27	PP	e 30 51	PS	e 58·8	62·7
Almata	125·3	19	e 18 45	[−13]	—	—	—	—
Frunse	125·4	20	e 18 47	[−11]	—	—	60·2	—
Andijan	125·8	24	e 19 5	[+ 6]	31 3	PS	58·2	—
Zinsen	127·2	331	e 21 25	PP	—	—	—	—
Melbourne	128·3	229	e 21 17	PP	26 14	[0]	59·2	66·2
Chiufeng	129·1	342	19 6a	[+ 1]	i 38 33	SS	59·6	77·3
Tananarive	129·9	108	21 57	PP	29 58	?	57·2	71·1
Adelaide	134·1	229	—	—	i 22 51	PKS	44·7	75·2
Zi-ka-wei	134·8	332	e 19 20	[+ 5]	—	—	77·7	87·1
Nanking	135·3	335	e 22 48	PKS	e 29 28	{+33}	e 72·4	86·2
Dehra Dun	137·2	25	22 15	PP	—	—	—	80·2
Agra	139·9	28	e 19 27	[+ 6]	30 38	?	50·4	—
Bombay	143·0	42	19 31	[+ 4]	33 12	SKSP	—	93·6
Hong Kong	145·8	333	19 45	[+10]	33 59	?	—	79·2
Hyderabad	148·0	37	19 40	[+ 1]	33 38	SKSP	76·1	88·1
Calcutta	148·1	17	19 49	[+10]	—	—	e 69·8	80·8
Amboina	149·7	276	19 40	[− 1]	—	—	e 51·2	—
Phu-Lien	150·0	344	e 19 56	[+14]	—	—	52·2	—
Perth	150·9	212	e 20 0	[+17]	30 15	{−13}	—	—
Kodaikanal	152·6	49	20 50	?	—	—	—	96·2
Colombo	156·6	51	19 40	[−10]	34 25	SKSP	73·6	100·0
Medan	168·4	357	20 29	[+27]	—	—	e 95·2	—
Batavia	171·1	280	20 3	[− 1]	—	—	102·2	—

Additional readings :—
Port au Prince PP = +3m.35s., PPP = +3m.38s., SS = +6m.33s.
Columbia eSS = +10m.57s.
La Paz iSN = +10m.59s., iE = +12m.29s.
Charlottesville e = +10m.3s.
St. Louis ipPN = +6m.35s., iPPN = +7m.21s., iPPPN = +7m.42s., iN = +8m.41s., isSEN = +11m.47s., eSSN = +12m.45s. ; T_o = 16h.59m.49s.
Georgetown i = +11m.31s.
Florissant ipP = +6m.36s., iPP = +7m.24s., isS = +11m.49s. ; T_o = 16h.59m.49s.
Fordham iS? = +12m.19s. and +13m.5s.
Chicago ePP = +8m.5s., eSS = +14m.20s.
Ann Arbor iPP = +8m.9s., iSS = +14m.39s. ; T_o = 16h.58m.54s.
Oak Ridge iPZ = +6m.59s., iPPPEN = +8m.22s.
Toronto iPPPN = +8m.3s. = PP − 6s., iN = +12m.44s.
Tucson eSS = +15m.35s.
Ottawa PPP = +8m.45s., SS = +15m.49s., SSSE = +16m.15s., i = +17m.17s.

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Halifax SS = +17m.15s. ; T_0 = 16h.59m.30s.
Pasadena iSN = +14m.36s.
Bozeman ePP = +10m.37s., eSS = +18m.11s.
Lick iN = +8m.36s. and +8m.43s.
Branner iN = +8m.40s., iE = +8m.43s., iN = +8m.47s., iE = +8m.49s.
Berkeley eE = +29m.6s.
Ukiah ePP = +10m.44s., eSS = +18m.45s.
La Plata PPN = +10m.39s., PPS?N = +15m.49s., N = +16m.51s., S_cSE = +18m.33s., SSN = +19m.21s., SSE = +19m.45s., SSSE = +21m.39s., SSSN = +21m.45s.
Seattle e = +13m.8s., eSS = +19m.4s. = S_cS + 5s.
Victoria SN = +17m.0s. ; T_0 = 16h.59m.29s.
Ivigtut +10m.5s.
Scoresby Sund iPZ = +11m.36s., iPE = +11m.42s., iPP = +13m.46s., PPP = +15m.57s., eN = +20m.57s. and +21m.5s. = PS − 10s., eE = +21m.39s.
San Fernando PN = +11m.37s., PE = +11m.40s., PSN = +21m.48s.
Malaga e = +12m.6s. and +14m.24s., PP = +14m.29s., e = +21m.10s., SS = +26m.39s., SSS = +29m.27s.
Toledo PS = +22m.3s.
Granada P_cP = +12m.5s., PP = +15m.17s., S_cS = +22m.17s. = PS + 19s., SS = +26m.55s., SSS = +30m.0s.
Bidston i? = +23m.22s.
Stonyhurst iSS = +27m.10s.
Kew i = +12m.14s. and +22m.1s., iPS = +23m.43s., iSS = +27m.38s.
Tortosa SN = +22m.12s.
Algiers PP = +15m.10s.
Uccle PPE = +15m.36s.
Bergen PP = +15m.32s.
Marseilles PP = +15m.1s., PS = +22m.55s., SS = +28m.28s.
Strasbourg PP = +15m.18s., PS = +23m.33s.
Stuttgart i = +12m.58s., e = +15m.2s. and +16m.44s.
Hamburg iPS = +24m.11s., iSSE = +29m.1s.
Göttingen eSKS = +22m.58s., iPS = +24m.15s., eSS = +28m.57s.
Piacenza PP = +15m.39s., SS = +24m.51s.
Copenhagen +12m.49s., PP = +16m.9s., eE = +23m.37s., eN = +23m.57s., = PS − 7s., eE = +24m.27s., and +25m.57s., SS = +28m.57s.
Jena e = +12m.45s., +24m.24s., and +29m.15s.
Hof i = +15m.24s.
Leipzig eE = +15m.15s. and +18m.23s., e = +24m.27s. = PS + 17s. and +29m.39s.
Cheb e = +29m.23s.
Venice P = +12m.44s., S = +23m.28s.
Upsala SSE = +29m.33s.
Prague iP = +12m.59s., ePS = +24m.49s., eSS = +29m.46s.
Triest PP = +16m.22s., PPP = +18m.27s., eSKS = +23m.7s., PS = +24m.44s., SS = +29m.46s.
Vienna P_cP = +13m.5s., PP = +16m.43s., PPP = +18m.37s., PS = +24m.23s., iE = +25m.8s., SS = +29m.21s.
Zagreb e = +25m.15s.? and +30m.15s.?
Königsberg eP_cPZ = +13m.9s., eSKKSE = +23m.27s., e?E = +25m.21s.
Helsingfors PPNEZ = +16m.46s., SKKSE = +24m.18s. = S + 10s., iPSNE = +25m.30s., PPSE = +25m.59s., iSSNE = +30m.37s., eSSSE = +34m.30s.
Belgrade e = +16m.18s.
Pulkovo iPP = +17m.4s., iPS = +25m.58s., iSS = +31m.27s.
Cape Town PPN = +18m.7s., PPE = +18m.16s., SKKSN = +25m.20s., SKKSE = +25m.23s., S?E = +26m.37s., PSE = +27m.28s., PSN = +27m.35s., E = +28m.29s., SSN = +32m.42s., SSE = +33m.0s., SSSN = +36m.51s., SSSE = +37m.16s., N = +38m.15s. and +42m. 9s.
Wellington PS = +27m.50s., PPS = +29m.11s., SS = +33m.33s.
Helwan i = +28m.5s.
Christchurch iSKSE = +25m.2s., iSKKSE = +25m.45s., iPSE = +28m.1s., iPPSE = +28m.54s., SSNE = +33m.55s., L_qE = +44·0m.
Sverdlovsk iPP = +18m.54s., PS = +28m.9s., iSS = +34m.3s.
Tiflis ePKPZ = +18m.33s., PPNEZ = +19m.4s., PSZ = +28m.47s., PPSZ = +30m.7s., eSSE = +34m.35s., PSSE = +35m.3s., eSSSE = +39m.45s.
Tashkent iPP = +20m.42s.
Kobe eZ = +20m.52s. = PP + 10s., eN = +22m.13s.
Riverview eE = +33m.27s., +37m.39s. = SS + 5s., and +41m.51s. = SSS − 9s.
Melbourne i = +22m.27s., SKKS = +28m.14s., PS = +31m.15s., PPS = +32m.47s., SS = +38m.55s., SSS = +43m.15s.
Chiufeng i = +21m.15s. = PP + 4s.
Tananarive SKP = +23m.4s., PSE = +31m.57s., SSE = +33m.22s., SSS = +39m.4s.
Adelaide i = +34m.14s., e = +37m.40s.
Zi-ka-wei iZ = +22m.6s.
Nanking e = +33m.48s.

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Agra eN = +19m.33s., PP = +23m.6s. =PKS −3s., PPP = +25m.6s., SKS = +29m.40s., PS? = +31m.51s., SS = +37m.13s., SSS = +40m.52s. =SS +11s.
Bombay PP = +22m.59s., PPP = +26m.29s., SS = +41m.43s., SSS = +47m.21s.
Hong Kong PP = +23m.22s. =PKS +1s., ? = +29m.50s. =SKKS −8s., SS = +42m.18s.
Calcutta PP = +23m.14s., SS = +42m.16s.
Perth PP = +24m.15s., PPP = +27m.10s., PPPPP = +32m.10s., PPS = +36m.55s., SS = +43m.10s., SSS = +49m.20s.
Batavia ePN = +20m.48s.
Long waves were also recorded at Graz, Tunis, Johannesburg, Chatham Islands, and Koti.

July 18d. 19h. 40m. 22s. Epicentre 11°·6S. 166°·8E. N.1.

A = −·954, B = +·223, C = −·201; D = +·228, E = +·974; G = +·196, H = −·046, K = −·980.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	13·0	121	4 38	?	7 38	?	—	—
Apia	21·0	99	i 4 52	PP	e 8 27	+ 1	9·9	—
Sydney	26·4	210	i 5 33	0	10 8	+ 3	13·1	13·9
Riverview	26·5	210	e 5 28	− 6	i 10 23	+16	11·8	13·9
Arapuni	27·6	165	5 44	0	10 20	− 5	12·7	14·6
Wellington	30·5	168	6 5	− 4	11 1	−11	14·5	18·6
Glenmuick	31·8	171	7 18	PP	13 2	SS	16·5	—
Christchurch	32·3	172	i 6 22	− 3	i 11 38	− 2	—	—
Melbourne	32·7	213	e 6 21	− 8	11 41	− 5	14·6	17·1
Adelaide	34·7	223	i 6 48	+ 2	i 12 8	− 9	i 15·7	22·3
Chatham Ils.	35·4	159	5 20	?	10 26	?	14·2	15·6
Amboina	39·1	279	7 24	0	—	—	23·1	25·6
Titizima	45·5	329	8 23	+ 6	—	—	—	—
Honolulu	47·8	46	i 8 42	+ 7	i 15 50	+20	21·6	—
Perth	51·0	240	i 9 3	+ 4	16 18	+ 3	—	27·6
Hatidyozima	51·6	331	9 4	+ 1	16 42	+19	—	—
Manila	52·5	300	9 11	+ 1	16 47	+12	24·6	27·6
Tyosi	53·3	334	i 9 22	+ 6	16 56	+10	24·3	29·3
Yokohama	53·6	333	9 20	+ 2	16 58	+ 8	—	—
Misima	53·6	332	9 21	+ 3	16 53	+ 3	—	—
Tokyo	53·8	333	9 16	− 4	16 44	− 9	—	—
Tokyo (Imp. Univ.)	53·8	333	9 1	−19	16 40	−13	21·9	24·9
Siomisaki	53·9	328	9 21	0	16 54	0	—	—
Kakioka	54·0	333	9 21	0	16 54	− 2	—	—
Hunatu	54·1	332	9 19	− 3	17 8	−11	—	—
Tukubasan	54·1	333	9 21	− 1	16 56	− 1	—	—
Maebasi	54·6	333	9 30	+ 4	17 14	+10	—	—
Nagoya	54·6	332	9 31	+ 5	16 58	− 6	22·9	27·5
Wakayama	54·8	338	9 25	− 2	17 8	+ 2	—	—
Gihu	54·9	330	9 25	− 3	17 7	− 1	—	—
Sumoto	55·0	328	9 26	− 3	17 8	− 1	23·3	26·9
Osaka	55·0	330	9 29	0	17 14	+ 5	—	28·7
Ibukisan	55·1	330	9 26	− 4	17 10	− 1	—	—
Hukusima	55·2	335	9 33	+ 3	17 16	+ 4	—	—
Kobe	55·2	330	e 9 28	− 2	e 17 8	− 4	e 25·6	29·1
Koti	55·2	326	9 26	− 4	17 13	+ 1	22·6	27·0
Kyoto	55·2	329	9 36	+ 6	17 36	+24	—	—
Miyazaki	55·2	323	9 29	− 1	17 12	0	—	—
Nagano	55·3	332	9 28	− 3	17 15	+ 2	—	—
Okayama	55·8	327	9 41	+ 7	17 38	+18	—	—
Matuyama	55·8	326	9 41	+ 7	17 27	+ 7	—	—
Miyadu	55·8	329	9 31	− 3	17 17	− 3	—	—
Toyooka	56·0	329	9 42	+ 6	17 24	+ 1	e 23·2	28·5
Mizusawa	56·1	338	e 9 35	− 2	e 17 22	− 2	23·2	—
Hirosima	56·4	326	9 35	− 4	17 22	− 6	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Karenko	56·7	309	e 9 55	+14	—	—	—	—
Nagasaki	56·7	325	9 37	− 4	17 30	− 2	e 21·5	28·5
Hamada	57·0	326	9 47	+ 4	17 41	+ 5	—	—
Hukuoka	57·0	324	9 44	+ 1	17 44	+ 8	27·7	30·6
Hukuoka B	57·0	324	9 44	+ 1	17 40	+ 4	24·4	28·7
Arisan	57·1	308	9 49	+ 5	17 41	+ 3	—	—
Taihoku	57·4	310	9 51	+ 5	17 50	+ 8	—	—
Malabar	58·5	269	i 9 59	+ 5	18 5	+ 9	e 25·6	—
Husan	58·9	324	10 9	+12	18 6	+ 5	26·7	31·5
Sapporo	59·5	339	10 10	+ 9	18 8	− 1	—	—
Batavia	59·5	270	i 10 3k	+ 2	i 18 8	+ 1	28·6	—
Taikyu	59·7	325	e 10 6	+ 4	18 5	− 7	25·0	41·8
Zi-ka-wei	61·1	317	e 10 15	+ 3	—	—	29·3	31·5
Soengei Langka	61·2	270	—	—	e 17 38?	−54	e 25·6	—
Keizyo	61·7	325	10 20	+ 4	18 39	+ 1	25·5	31·9
Hong Kong	61·8	305	10 15	− 2	18 40	+ 1	—	32·1
Zinsen	61·9	325	e 10 15	− 3	e 18 56	+15	e 25·7	32·0
Ootomari	62·4	342	10 31	+10	—	—	—	—
Vladivostok	63·3	332	i 10 29	+ 2	18 58	− 1	—	39·8
Heizyo	63·3	325	10 33	+ 6	19 10	+11	28·5	32·0
Nanking	63·4	315	10 24	− 4	i 18 53	− 7	27·4	32·6
Dairen	65·8	323	10 49	+ 5	19 25	− 5	—	—
Yingkow	66·5	324	10 54	+ 5	19 36	− 3	—	—
Phu-Lien	67·5	298	e 10 49	− 6	19 19	−32	29·6	38·9
Medan	69·4	279	i 11 6	− 1	i 21 25	(+24)	31·6	—
Chiufeng	69·8	321	e 11 6a	− 3	20 19	0	28·0	37·1
Ukiah	82·3	47	e 12 18	− 2	e 23 6	PS	e 37·6	—
Branner	82·4	49	e 12 28	+ 8	—	—	e 40·2	—
Berkeley	82·6	49	i 12 23	+ 2	e 22 52	+ 9	e 38·4	—
Lick	82·9	49	e 12 30	+ 7	—	—	—	—
Santa Barbara	83·3	53	e 12 27	+ 2	—	—	—	—
Sitka	83·4	28	i 12 27	+ 2	i 23 20	PS	e 37·6	—
Calcutta	84·0	296	12 23	− 5	22 57	− 1	40·9	47·4
Pasadena	84·4	54	i 12 32a	+ 2	i 24 11	PS	e 34·6	—
Mount Wilson	84·5	54	i 12 36	+ 5	—	—	—	—
La Jolla	84·8	55	e 12 37	+ 5	e 23 1	− 5	—	—
Riverside	85·0	54	e 12 35	+ 2	i 24 45	?	—	—
Haiwee	85·2	52	e 12 39	+ 5	e 23 43	PS	—	—
Tinemaha	85·3	51	i 12 40	+ 5	—	—	—	—
Victoria	85·8	40	12 32	− 5	23 11	− 5	39·5	—
Seattle	86·1	40	e 12 39	0	e 23 11	− 7	e 39·4	—
Colombo	87·9	277	12 46	− 1	23 28	− 8	45·6	52·7
Tucson	89·6	57	e 12 58	+ 2	e 23 22	[− 8]	e 37·1	—
Hyderabad	92·6	288	13 8	− 1	23 58	{+ 2}	39·0	53·3
Bozeman	92·8	44	e 13 13	+ 3	e 23 46	[− 3]	e 43·2	—
Agra	94·4	297	13 28	+10	23 58	[0]	49·7	—
Dehra Dun	94·8	300	12 48	−32	24 18	{+ 5}	34·8	55·6
Bombay	97·8	289	i 13 36	+ 3	24 40	{+ 4}	e 47·6	61·0
Almata	97·9	313	e 13 44	+10	—	—	39·6	—
Frunse	99·5	312	e 13 34	− 7	—	—	40·6	—
Andijan	100·9	310	e 13 55	+ 7	25 43	+ 9	49·8	—
Tashkent	103·2	311	13 59	+ 1	25 3	{−14}	52·5	61·1
Samarkand	104·9	308	e 14 16	+10	—	—	e 44·6	—
Florissant	107·2	53	e 14 22	+ 5	i 28 10	PS	—	—
St. Louis	107·3	53	e 14 17	− 1	i 24 48	[−13]	—	51·4
Sverdlovsk	108·5	328	i 14 20	− 4	i 26 10	{+14}	—	—
Chicago	109·2	50	e 19 3	PP	e 25 13	[+ 3]	e 45·0	—
Ann Arbor	112·1	50	e 19 8	PP	e 25 14	[− 9]	i 53·6	66·4
Tananarive	112·9	243	19 18	PP	25 45	[+19]	54·1	63·6
Huancayo	113·9	109	i 19 34	PP	i 28 43	PS	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Pittsburgh		115·1	50	e 19 34	PP	e 28 36	PS	—	—
Toronto		115·1	47	e 14 49	− 7	i 29 19	PS	i 55·4	—
Charlottesville		116·4	53	e 21 49	?	i 26 10	?	e 49·0	—
La Plata		117·1	140	21 14	?	29 47	PS	55·2	73·4
Ottawa		117·4	45	e 19 38?	PP	i 29 54	PS	i 57·1	—
Georgetown		117·5	52	e 15 4	− 3	29 43	PS	e 55·6	—
La Paz		118·8	116	e 19 27	PP	26 41	{−27}	56·1	64·0
Fordham		119·6	51	e 18 38	[− 6]	25 44	[− 5]	28·7	30·6
Sucre		120·2	120	i 19 36	PP	30 12	PS	50·8	—
Scoresby Sund		120·8	4	15 19	− 3	26 8	[+15]	49·6	—
Oak Ridge		120·9	47	i 18 54	[+ 6]	e 30 15	PS	e 50·9	—
Tiflis		121·5	313	e 15 22	P	30 17	PS	e 55·6	—
Pulkovo		122·1	336	15 24	P	30 8	SKSP	49·1	74·4
Helsingfors		123·9	338	18 57	[+ 3]	e 26 31	[+29]	e 50·6	—
Ivigtut		124·2	20	18 56	[+ 1]	30 35	PS	51·6	—
Johannesburg		124·9	226	20 56	PP	30 50	PS	60·4	62·2
Cape Town		125·4	213	20 40	PP	26 47	[+41]	60·1	122·6
Upsala		126·6	341	e 20 17	?	i 42 34	SSS	e 54·6	67·6
Theodosia		126·9	318	e 19 4	[+ 3]	—	—	e 53·6	—
Reykjavik		127·1	5	e 21 26	PP	—	—	e 55·7	—
Simferopol		127·7	319	e 19 2	[0]	—	—	e 43·9	—
San Juan		127·8	75	e 19 8	[+ 5]	e 35 19	?	—	—
Yalta		127·9	318	e 19 2	[− 1]	—	—	e 42·7	—
Sebastopol		129·3	318	e 18 58	[− 7]	(e 30 14)	?	e 30·2	—
Bergen		129·3	348	e 19 37	[+32]	e 33 38	?	65·6	74·6
Königsberg		129·4	337	e 19 5	[− 1]	—	—	—	73·7
Ksara		130·2	306	e 19 11	[+ 4]	22 33	PKS	—	73·0
Lemberg	E.	131·1	329	e 19 15	[+ 6]	e 34 55	?	e 52·8	77·9
Copenhagen		131·6	342	19 31	[+21]	—	—	45·6	—
Hamburg		134·1	342	e 19 7	[− 7]	—	—	—	75·6
Helwan		134·9	302	e 19 19	[+ 4]	i 21 40	PP	—	—
Edinburgh		135·0	352	e 19 42	[+27]	i 26 8	SKS	e 62·6	77·6
Leipzig		135·1	338	e 19 38?	[+23]	e 31 38	SKSP	e 54·6	67·6
Budapest		135·1	330	19 20	[+ 5]	i 22 1	PP	e 40·6	78·1
Prague		135·3	335	e 19 13	[− 2]	e 25 0	?	e 57·6	74·1
Jena		135·8	338	e 19 28	[+12]	—	—	e 54·6	78·8
Vienna		135·8	332	i 19 22	[+ 6]	i 30 5	?	e 42·8	77·4
Göttingen		135·9	341	e 19 16	[0]	—	—	e 53·6	76·1
Durham		135·9	350	19 13	[− 3]	—	—	—	75·6
Belgrade		136·1	325	i 19 20	[+ 4]	—	—	67·7	82·0
Cheb		136·1	336	e 18 38?	?	—	—	e 65·6	80·1
Hof		136·2	337	e 19 38	[+21]	e 24 56	PPP	e 55·6	80·6
De Bilt		136·9	344	e 19 9	[− 9]	—	—	e 65·6	71·4
Stonyhurst		136·9	352	e 19 20	[+ 2]	i 26 42	SKS	56·6	80·5
Graz		137·1	332	e 19 27	[+ 9]	i 30 37	?	e 42·6	77·5
Bidston		137·4	351	e 19 10	[− 8]	—	—	—	—
Zagreb		137·8	332	e 19 18	[− 1]	e 32 24	PS	—	78·0
Uccle		138·3	344	e 19 14	[− 5]	—	—	64·6	79·1
Karlsruhe		138·5	339	19 26	[+ 6]	e 35 6	?	e 55·6	73·8
Stuttgart		138·6	338	e 19 13	[− 7]	e 32 23	SKSP	e 56·6	71·6
Laibach		138·6	331	e 19 47	[+27]	—	—	e 63·8	74·6
Oxford		138·7	349	e 19 22	[+ 2]	—	—	e 57·0	78·6
Kew		138·8	348	i 19 14k	[− 6]	—	—	e 66·6	75·6
Triest		139·0	331	e 19 27	[+ 7]	e 26 8	SKS	e 46·0	53·1
Strasbourg		139·1	339	19 18k	[− 2]	—	—	e 36·6	83·6
Treviso		139·7	332	i 19 39	[+18]	—	—	70·9	82·0
Venice		139·8	332	e 19 44	[+23]	e 29 56	{+34}	68·6	71·6
Chur		139·9	336	e 19 21	[0]	—	—	—	—
Basle		140·0	338	e 19 21	[0]	—	—	—	—
Padova		140·0	333	e 19 36	[+15]	—	—	e 58·6	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Zurich	140·3	337	e 19 23	[+ 1]	—	—	—	—
Paris	140·6	345	e 19 24	[+ 2]	—	—	44·6	78·6
Neuchatel	140·7	340	e 19 22	[0]	—	—	—	—
Piacenza	141·2	334	19 28	[+ 5]	—	—	69·6	81·9
Pavia	141·4	334	e 19 9	[−14]	—	—	—	—
Prato	141·5	332	i 19 26	[+ 3]	i 30 18	?	e 47·6	70·3
Florence	141·5	331	i 19 28	[+ 5]	29 57	{+24}	—	—
Siena	141·8	331	19 25	[+ 2]	—	—	66·6	—
Benevento	141·9	326	e 20 28	[+65]	32 58	SKSP	41·4	49·6
Trenta	141·9	322	e 19 31	[+ 8]	32 28	SKSP	69·6	90·6
Livorno	142·1	332	19 30	[+ 6]	29 58	{+22}	—	—
Grenoble	142·7	338	19 23	[− 3]	(41 38?)	SS	41·6	—
Messina	143·1	321	19 38	[+10]	—	—	—	—
Catania	143·8	321	e 19 35	[+ 4]	—	—	72·7	79·4
Mineo	144·2	320	19 46	[+14]	—	—	—	—
Marseilles	144·5	336	19 38	[+ 5]	—	—	47·6	—
Bagnères	146·5	342	i 19 41	[+ 5]	—	—	40·6	—
Tunis	147·2	324	e 19 40	[+ 2]	e 42 48	SS	59·6	—
Barcelona	147·3	339	e 19 42	[+ 4]	—	—	48·6	71·1
Tortosa	148·4	340	19 44	[+ 4]	—	—	38·6	84·9
Serra do Pilar	150·2	353	i 19 47	[+ 5]	i 29 24	?	45·9	—
Toledo	150·6	346	e 19 45	[+ 2]	—	—	e 70·6	82·8
Algiers	150·9	333	e 19 50	[+ 7]	30 39	{+11}	49·6	82·2
Alicante	150·9	339	e 19 48	[+ 5]	e 31 36	?	e 49·4	75·8
Almeria	153·0	341	i 19 57	[+11]	e 31 57	?	e 44·6	82·6
Granada	153·0	342	e 19 44	[− 2]	31 6	{+26}	70·9	82·4
Malaga	153·7	344	e 19 49	[+ 3]	26 58	PPP	—	78·7
San Fernando	154·4	347	19 50	[+ 3]	30 29	{−18}	49·6	85·6

Additional readings :—
Suva PP = +5m.5s.
Apia ePPN = +5m.21s., SSE = +9m.27s.
Sydney e = +5m.16s., PS = +11m.18s.
Riverview eP = +5m.31s., iP = +5m.35s., iZ = +6m.22s., iNE = +6m.34s., iE = +10m.6s., iN = +10m.14s., +10m.34s., +11m.18s., and +11m.49s.
Arapuni SS = +11m.50s.
Wellington PP? = +7m.29s., i = +7m.53s., +8m.19s. and +11m.38s., SS? = +12m.20s., SSS = +13m.0s.
Christchurch ePE = +6m.26s., iE = +11m.45s.
Melbourne iP = +6m.28s., SS = +13m.36s.
Adelaide i = +9m.11s., +10m.6s., and +11m.25s., iSS = +14m.9s., iSSS = +14m.48s.
Honolulu iSS = +18m.41s., iSSS = +19m.46s.
Perth P_cP = +10m.8s., PP = +10m.58s., PPP = +11m.28s., PPPP = +11m.58s., P_cS = +14m.18s., PS = +16m.28s., SS = +20m.10s.
Tokyo (Imp. Univ.) SE = +16m.49s.
Nagoya PP? = +10m.24s. = P_cP − 9s.
Sumoto eSZ = +17m.16s.
Osaka i = +10m.21s. = P_cP − 13s., +13m.25s., +15m.16s., +23m.12s., and +27m.14s.
Kobe ePEN = +9m.31s., iPEN = +9m.36s., iZ = +10m.25s. = P_cP − 10s., iE = +10m.45s., eE = +11m.26s. = PP − 1s., eZ = +13m.25s., eE = +13m.46s., SZ = +17m.34s., SME = +18m.0s., SMN = +18m.2s., eZ = +17m.49s., iN = +19m.3s. = S_cS − 16s., iE = +21m.25s., iN = +22m.49s. = SSS + 8s., L_gN = +23·7m., eLRN = +27·1m., eZ = +40m.27s.
Koti P = +9m.30s., eZ = +9m.35s., i = +10m.23s. = P_cP − 12s.
Toyooka iEN = +10m.31s. = P_cP − 7s.
Nagasaki iP = +9m.45s., PP = +10m.36s. = P_cP − 5s., PPP = +11m.20s.
Hukuoka i = +24m.1s.
Taikyu PP = +10m.56s. = P_cP + 4s.
Batavia iPEN = +10m.6s., iSE = +19m.2s.
Hong Kong PP = +12m.55s., ? = +16m.8s., SS = +22m.42s.
Zinsen iPZ = +10m.23s., iPP = +11m.11s. = P_cP +10s.
Nanking iP = +10m.31s., iSS = +22m.57s.
Medan iN = +13m.45s. = PP + 12s.
Chiufeng iP = +11m.8s.
Ukiah ePP = +16m.38s., eSS = +29m.53s., e = +33m.41s.
Branner iN = +12m.46s., iE = +13m.28s. and +13m.57s., eN = +39m.24s.
Berkeley ePEN = +12m.27s., eSE = +23m.10s. = PS − 12s., eN = +35m.8s.

Continued on next page.

Lick eEN = +12m.47s.
Sitka ePS = +24m.12s., eSS = +27m.38s., eSSS = +34m.28s.
Calcutta PS = +23m.47s., SS = +28m.33s.
Pasadena iPZ = +12m.35s.k.
Seattle e = +12m.47s., ePP = +16m.21s., e = +21m.35s., ePS = +24m.11s., e = +35m.31s.
Tucson ePP = +17m.2s., eSKS = +22m.42s., eSS = +29m.30s., eSSS = +33m.56s.
Bozeman e = +13m.58s., ePS = +28m.18s., eSS = +31m.1s., eSSS = +34m.26s.
Agra ePN = +13m.32s., PP = +16m.56s., PS = +25m.26s., SS = +30m.24s., SSS = +34m.49s.
Bombay e?E = +16m.46s., PKP? = +17m.16s. = PP − 10s., PPP = +19m.44s., PS = +26m.16s., PPS = +26m.58s., SS = +31m.51s., SSS = +35m.47s.
Tashkent PP = +17m.55s., i = +23m.13s. and +27m.29s. = PS + 6s.
Florissant PP = +18m.40s.; T_0 = 19h.40m.5s.
St. Louis iPPE = +18m.41s., iSKKSE = +25m.42s., iSE = +26m.34s., iPSE = +28m.9s., iPPSE = +28m.37s., iSSE = +34m.18s., iSSSE = +38m.7s.
Sverdlovsk iPP = +18m.50s., SKS = +25m.11s., PS = +28m.18s., iSS = +34m.2s.
Chicago iPP = +19m.38s., iPS = +28m.28s., iSS = +33m.50s., e = +36m.58s.
Ann Arbor iPP = +19m.44s., iPS = +29m.8s., iSS = +35m.8s., eSSSE = +39m.8s.; T_0 = 19h.40m.18s.
Tananarive PPE = +22m.16s., PSEN = +28m.11s., PPSEN = +29m.31s., SSN = +35m.5s., SSE = +35m.17s.
Pittsburgh iPP = +19m.42s., iSS = +35m.52s.
Toronto iPPE = +19m.36s., PPPE = +21m.59s., iSSE = +35m.44s.
Charlottesville iPS = +29m.38s.
La Plata PSE = +28m.56s., PPSE = +31m.20s., SSN = +36m.14s., SKKSE = +36m.56s., SSSN = +39m.44s., SSSE = +39m.50s., N = +44m.2s., E = +49m.14s.
Ottawa i = +36m.56s., iE = +39m.52s., iN = +48m.8s., i = +54m.46s.
Georgetown iPKP = +18m.45s.
La Paz PN = +19m.43s., eN = +29m.57s. = PS + 6s., SSN = +37m.57s., L_q = +50·4m.
Fordham p? = +20m.6s. = PP + 0s., S? = +27m.26s. = SKKS + 12s.
Scoresby Sund PKP = +18m.53s., PP = +20m.22s., +28m.8s., PS = +30m.14s., PPS = +31m.20s., SS = +37m.20s., SSS = +42m.8s.
Oak Ridge ePPZ = +19m.55s., ePPNW = +20m.7s., ePPNE = +20m.13s., ePPPZ = +23m.3s., ePSNW = +29m.57s., ePSNE = +29m.59s., eSSNW = +36m.31s., eSSNE = +36m.53s.
Tiflis eN = +16m.54s., PKPN = +19m.0s., iPPN = +20m.42s., PKKSNE = +28m.30s., PPPE = +35m.18s.
Pulkovo PKP = +18m.48s., PP = +20m.30s., PPS = +31m.29s., SS = +37m.14s
Helsingfors iPPNE = +20m.41s., PKS = +22m.9s., PPPNE = +23m.51s., eSKKSNE = +28m.37s., SKSPNE = +30m.21s., iPSNE = +31m.9s., PPSNE = +33m.9s., ePPP?NE = +34m.15s., eSSNE = +38m.13s., e?E = +40m.7s. and +41m.37s. = SSS − 9s., eSSSNE = +42m.36s., e?N = +44m.29s. and +46m.15s.; T_0 = 19h.40m.6s.
Ivigtut PP = +20m.41s., eN = +22m.13s., e = +31m.8s., PPS = +32m.6s., eSS = +36m.38s.?, SS = +37m.50s.
Johannesburg +37m.38s. = SS + 2s., +40m.38s. and +52m.14s.
Cape Town PPE = +20m.44s. and +21m.12s., PPPN = +22m.38s., PPPE = +22m.45s., N = +23m.49s., E = +24m.12s., N = +25m.5s., E = +25m.22s., N = +28m.3s., PSE = +29m.15s., PSN = +29m.41s., E = +29m.57s., N = +30m.3s., PPSN = +31m.9s., PPSE = +31m.34s., N = +32m.40s., E = +32m.48s., SSN = +37m.41s., SSE = +38m.11s., E = +41m.23s., +45m.46s., and +51m.32s.
Upsala PPE = +20m.56s.
Bergen P = +22m.25s. = PKS, SKP = +25m.31s.
Königsberg e?Z = +20m.25s., e?E = +21m.12s. = PP − 1s., e?Z = +21m.49s., iPKPN = +22m.29s. = PKS, eZ = +22m.52s., eSKP = +24m.54s., iSEN = +31m.55s., ePSN = +33m.35s., eE = +37m.46s., eSSN = +38m.59s.
Ksara PP = +21m.32s.
Lemberg ePN = +19m.27s., eSN = +34m.51s., eLN = +55·1m.
Copenhagen P = +16m.8s., PP = +21m.34s., +22m.8s., PKS = +22m.40s., +23m.2s., e = +23m.56s., PPS = +34m.32s., SS = +39m.38s., eE = +40m.38s., SSS = +44m.38s.
Hamburg eE = +21m.52s. = PP + 8s., iE = +22m.47s. = PKS − 3s., iN = +22m.49s. = PKS − 1s., eZ = +35m.8s., eN = +44m.56s., iN = +45m.28s., iN = +51m.5s., eEN = +54m.38s.?, e = +64m.38s.?
Edinburgh i = +22m.58s. = PKS + 4s., +27m.43s., +40m.21s., +46m.8s., +56m.10s., and +63m.41s.
Leipzig e = +21m.56s. = PP + 5s., eN = +22m.46s., iE = +22m.54s. = PKS + 0s., eN = +23m.0s., i = +24m.44s. = PPP + 5s., iE = +25m.18s., i = +25m.44s., e = +33m.20s., eN = +35m.10s., eE = +42m.44s., e = +45m.8s.
Prague ePP = +22m.2s., eSKP = +23m.4s., ePS = +32m.22s., eSS = +38m.55s.

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Jena e = +21m.56s. =PP +1s., eE = +22m.56s. =PKS +0s., eN = +23m.8s., eE = +35m.56s., e = +44m.56s.
Vienna iEN = +19m.24s., iP_cP = +19m.30s., iNEZ = +22m.1s. =PP +6s., PP = +23m.0s. =PKS +4s., PPP = +25m.8s., PS = +30m.45s., iNEZ = +32m.3s. =SKSP +6s., iNE = +32m.39s. =PS +16s., SS = +35m.47s., PKKP = +37m.13s., SSS = +39m.56s. =SS +5s.
Göttingen ePP = +22m.0s., e = +22m.59s. =PKS +2s., +35m.8s., +40m.50s., and +45m.20s.
Durham ? = +20m.1s., PP = +22m.2s.
Belgrade e = +22m.1s. =PP +4s., iPP = +24m.37s., iPS = +34m.10s., iPPP = +40m.33s.
Hof eSW = +21m.56s. =PP −2s., +22m.50s. =PKS −8s. and +45m.38s.
De Bilt iZ = +22m.8s. =PP +6s.
Stonyhurst ePP = +22m.57s. =PKS −3s., i = +36m.0s. and +40m.58s.
Graz iPP = +23m.3s. =PKS +2s., i = +23m.11s., iPS = +31m.33s., i = +35m.27s.
Bidston i = +21m.58s. =PP −7s., +41m.13s., and +45m.58s.
Zagreb eP = +19m.24s., e = +22m.16s. =PP +8s., ePP = +22m.55s. =PKS −8s., e = +23m.50s., eNW = +40m.14s. =SS −2s., eNE = +40m.58s., e = +46m.8s., +50m.38s., +56m.38s., +61m.38s., +67m.49s., and +70m.26s.
Uccle iN = +22m.16s. =PP +5s., i = +22m.51s. =PKS −13s.
Stuttgart ePP = +22m.9s., eSS = +40m.8s., eSSS = +46m.38s.
Laibach e = +22m.57s. =PKS −8s., +25m.43s. and +27m.43s.
Kew iPP = +22m.24s., iPKS = +23m.16s., iPPP = +25m.23s., i = +36m.13s., iSS = +41m.4s., iPSS = +42m.4s., iSSS = +46m.26s., iZ = +57m.16s.
Triest iPNW = +19m.33s., i = +22m.22s. =PP +7s., +22m.50s., +23m.50s., e = +25m.13s. and +42m.6s.
Strasbourg iPP = +22m.18s.
Treviso PPS = +23m.2s.
Venice P = +19m.58s.
Basle e = +23m.33s.
Zurich ePP = +22m.28s., e = +23m.49s.
Paris PP = +23m.16s. =PKS +6s.
Piacenza PP = +23m.2s.
Grenoble PKP = +22m.52s.
Marseilles PKP = +22m.58s. =PP +9s.
Tortosa PE = +19m.49s.
Toledo PKP_3 = +20m.21s., SS = +43m.6s., SSS = +48m.39s.
Algiers i? = +22m.0s., PP = +22m.56s., SKS? = +29m.39s., PS = +31m.4s., SS = +36m.2s., SSS = +39m.23s.
Alicante PPP = +24m.34s., SS = +38m.36s.
Almeria PP = +22m.31s.
Granada i = +20m.18s. =PKP_3 +6s.
Malaga i = +20m.46s., +21m.8s., +22m.2s., +22m.15s., and +25m.14s.
San Fernando PN = +19m.53s., PE = +19m.58s. and +20m.8s.
Long waves were also recorded at Takaka.

July 18d. 21h. 29m. 44s. Epicentre 11°·6S. 166°·8E. (as at 19h.). X.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Adelaide	34·7	223	—	—	i 12 4	−13	15·7	18·2
Amboina	39·1	279	7 6	−18	—	—	—	—
Nagoya	54·6	332	e 9 28	+ 2	—	—	—	—
Osaka	55·0	330	9 31	+ 2	17 38	PS	—	—
Kobe	55·2	330	i 9 30	0	e 18 21	?	—	—
Koti	55·2	326	9 30	0	—	—	—	—
Mizusawa	56·1	338	(e 9 42)	+ 5	e 9 42	P	—	—
Pasadena	84·4	54	e 12 29	− 1	—	—	—	—
Riverside	85·0	54	e 12 34	+ 1	—	—	—	—
Tinemaha	85·3	51	e 12 37	+ 2	—	—	—	—
Tiflis	121·5	313	e 15 46	P	—	—	—	—
Vienna	135·8	332	i 21 58	PP	—	—	—	—
Catania	143·8	321	e 19 31	[0]	—	—	—	—
Mineo	144·2	320	18 56	[−36]	—	—	—	—

Additional readings :—
Osaka i = +12m.20s., +14m.49s., +21m.52s., +25m.42s.
Kobe eN = +9m.39s., eE = +10m.32s. =P_cP −3s. and +37m.11s.
Vienna eNZ = +23m.11s. =PKS +16s.
Long waves were also recorded at Suva and Wellington.

July 18d. Readings also at 0h. (Mizusawa (2)), 3h. (Glenmuick and Grozny), 5h. (Granada (2), Helsingfors, and Amboina), 6h. (Granada and Tyosi), 8h. (La Plata, San Juan, Pittsburgh, Philadelphia, Tashkent, Sverdlovsk, and Bombay), 9h. (Perth Helsingfors, Stuttgart, and Reykjavik), 10h. (Reykjavik (4)), 11h. (Reykjavik (4), Copenhagen, Scoresby Sund (3), Trenta, San Juan, Tiflis, Pittsburgh, and Philadelphia), 12h. (Reykjavik (3), Ivigtut, Paris, Stuttgart, De Bilt, Edinburgh, Scoresby Sund, Nagasaki, and Hukuoka B), 13h. (Mizusawa and Scoresby Sund), 14h. (Andijan, Ivigtut, Tchimkent, Philadelphia, and Honolulu, Pulkovo, and Tashkent), 16h. (Zurich), 18h. (Pasadena, Haiwee, La Jolla, Riverside, Mount Wilson, and Tinemaha), 20h. (Arapuni), 21h. (Santiago, Catania (2), and Mineo (2), 22h. (Adelaide), 23h. (San Juan, Balboa Heights, Stuttgart).

July 19d. 0h. 6m. 50s. Epicentre 12°·3S. 166°·0E. N.1.

$A = -\cdot948$, $B = +\cdot236$, $C = -\cdot213$; $D = +\cdot242$, $E = +\cdot970$; $G = +\cdot207$, $H = -\cdot052$, $K = -\cdot977$.

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Suva	13·3	117	(2 49)	−17	(5 37)	+ 3	(7·2)	—
Riverview	25·4	210	i 5 23	− 1	10 3	+15	—	14·4
Sydney	25·4	210	i 5 10	−14	9 50	+ 2	13·7	14·5
Arapuni	27·2	163	—	—	10 10?	− 8	—	—
Wellington	30·0	167	6 5	0	11 14	+10	—	19·2
Melbourne	31·7	211	e 6 18	− 2	11 29	− 2	15·8	17·9
Adelaide	33·6	222	i 6 37	0	i 11 59	− 1	i 14·6	20·5
Amboina	38·3	280	7 13	− 5	—	—	—	—
Honolulu	48·9	45	e 8 46	+ 3	e 16 22	+37	e 21·2	—
Perth	49·9	238	14 35	?	20 50	?	26·8	—
Manila	52·1	299	9 11	+ 4	16 37	+ 7	—	—
Tokyo	54·0	334	9 16	− 5	—	—	—	—
Siomisaki	54·3	329	9 18	− 5	17 4	+ 5	—	—
Kameyama	54·8	330	9 19	− 8	17 2	− 4	—	—
Nagoya	54·8	329	e 9 18	− 9	—	—	—	—
Wakayama	55·1	329	9 28	− 2	17 9	− 2	—	—
Osaka	55·2	328	9 21	− 9	17 34	+22	—	—
Osaka B	55·2	328	9 33	+ 3	17 18	+ 6	—	—
Sumoto	55·2	329	9 30	0	17 21	+ 9	—	—
Koti	55·3	327	9 31	0	—	—	—	—
Kobe	55·4	326	e 9 26	− 6	i 17 23	+ 8	—	27·4
Nagasaki	56·8	324	9 42	0	e 17 34	0	—	—
Batavia	58·7	269	i 9 53	− 2	—	—	—	—
Zi-ka-wei	61·0	315	11 10	(+13)	—	—	—	36·5
Hong Kong	61·5	304	10 15	0	18 40	+ 4	—	31·8
Keizyo	61·8	326	10 19	+ 2	—	—	—	—
Zinsen	62·0	325	e 10 18	0	e 18 41	− 1	—	—
Nanking	63·3	316	e 10 25	− 2	i 19 7	PS	23·2	—
Vladivostok	63·5	332	10 31	+ 2	19 7	+ 6	e 27·2	36·8
Phu-Lien	67·2	299	10 10?	−43	—	—	—	—
Chiufeng	69·8	321	11 8k	− 1	i 20 19	0	25·9	—
Calcutta	83·5	293	e 12 49	+23	—	—	—	—
Sitka	84·4	26	e 12 31	+ 1	e 22 57	[+ 2]	e 35·2	—
Santa Barbara	84·4	53	e 12 32	+ 2	—	—	—	—
Pasadena	85·6	54	i 12 34	− 2	—	—	—	—
Mount Wilson	85·6	54	i 12 38	+ 2	—	—	—	—
La Jolla	85·8	55	e 12 40	+ 3	—	—	—	—
Riverside	86·1	54	i 12 41	+ 2	—	—	—	—
Tinemaha	86·3	51	e 12 39	− 1	—	—	—	—
Haiwee	86·5	52	e 12 35	− 6	—	—	—	—
Victoria	86·8	38	12 44	+ 2	23 22	− 3	39·6	—
Colombo	87·7	278	7 45	?	(23 45)	+11	—	23·8
Tucson	90·8	56	e 12 48	−13	e 23 24	[−13]	e 42·3	—
Hyderabad	91·4	286	13 23	+19	24 2	− 7	43·5	60·9
Bozeman	93·9	44	—	—	e 23 55	[0]	e 40·7	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Bombay	96·9	286	e 13 31	+ 2	i 24 12	[+ 2]	—	50·7
Almata	97·7	313	e 13 46	+13	—	—	—	—
Frunse	99·4	312	e 14 0	+19	—	—	—	—
Andijan	100·8	310	e 14 19	+32	—	—	—	—
Tashkent	103·1	311	13 55	− 3	24 39	[− 2]	—	65·0
St. Louis	108·3	53	e 18 38	PP	e 25 0	[− 5]	e 49·5	63·0
Sverdlovsk	108·7	327	14 19	− 6	28 16	PS	48·2	68·0
Chicago	110·3	49	—	—	e 34 58	SS	e 51·5	—
Pittsburgh	116·1	51	e 19 42	PP	e 26 24	{−26}	e 54·9	—
Ottawa	118·4	44	e 21 40	?	e 29 46	PS	e 53·2	—
Tiflis	121·3	312	18 52	[+ 4]	e 30 13	PS	—	—
Scoresby Sund	121·6	3	18 54	[+ 5]	—	—	—	—
Oak Ridge	122·0	46	i 18 55	[+ 5]	e 37 45	?	61·4	—
Pulkovo	122·1	336	18 52	[+ 1]	26 0	[+ 3]	e 57·0	69·3
Helsingfors	124·2	339	e 18 34	[−21]	e 26 45	[+42]	e 53·2	—
Cape Town	124·4	214	20 34	PP	25 24	[−39]	57·2	68·7
Ivigtut	125·2	19	i 18 57	[0]	—	—	59·2	—
Theodosia	126·9	318	e 19 6	[+ 5]	e 30 59	PS	—	—
Upsala	127·0	341	e 22 10	?	—	—	—	—
Simferopol	127·8	318	e 19 6	[+ 3]	—	—	—	—
Yalta	127·9	318	e 19 6	[+ 3]	e 33 0	?	—	—
Sebastopol	128·3	318	e 19 4	[0]	—	—	—	—
San Juan	129·5	76	e 22 31	PKS	—	—	—	—
Ksara	129·9	308	e 19 14	[+ 8]	—	—	—	—
Copenhagen	132·0	342	19 14	[+ 4]	—	—	—	—
Hamburg	134·5	342	e 19 15	[+ 1]	—	—	64·2	—
Helwan	134·6	303	e 21 45	PP	—	—	—	—
Budapest	135·1	330	e 20 10?	?	—	—	—	—
Edinburgh	135·6	353	e 19 30	[+14]	i 28 11	?	—	—
Prague	135·6	334	e 22 2	PP	e 28 46	{−11}	—	37·2
Vienna	136·1	331	e 19 20	[+ 4]	—	—	—	—
Göttingen	136·2	340	e 19 21	[+ 4]	e 22 2	PP	—	—
Durham	136·5	350	22 56	PKS	—	—	—	—
Cheb	136·5	335	e 22 6	PP	e 27 19	?	—	35·2
De Bilt	137·3	345	e 19 25	[+ 7]	e 25 10	?	e 71·2	79·7
Stonyhurst	137·4	352	i 22 57	PKS	—	—	—	—
Bidston	138·0	352	e 22 15	PP	i 40 30	SS	69·0	—
Zagreb	138·0	331	e 19 24	[+ 5]	—	—	—	—
Uccle	138·7	344	i 19 27a	[+ 7]	—	—	—	—
Karlsruhe	138·9	338	e 19 22	[+ 2]	—	—	—	—
Stuttgart	138·9	339	e 19 18	[− 2]	e 32 25	SKSP	e 63·2	—
Triest	139·2	333	19 27	[+ 7]	e 29 34	{+15}	—	74·2
Kew	139·3	348	i 19 28	[+ 7]	—	—	—	—
Strasbourg	139·5	339	i 19 24a	[+ 3]	(e 39 10?)	?	e 39·2	—
Zurich	140·2	338	e 19 22	[0]	—	—	—	—
Chur	140·2	335	e 19 22	[0]	—	—	—	—
Basle	140·4	337	e 19 21	[− 1]	—	—	—	—
Paris	141·0	344	e 22 32	PP	—	—	39·2	45·2
Neuchatel	141·1	337	e 19 22	[− 1]	—	—	—	—
Piacenza	141·5	333	19 34	[+11]	—	—	—	73·7
Florence	141·7	332	i 19 25a	[+ 2]	29 40	{+ 6}	—	—
Prato	141·8	330	e 19 30	[+ 7]	i 29 38	{+ 4}	—	—
Trenta	142·0	321	e 19 28	[+ 4]	—	—	—	—
Siena	142·1	329	19 40	[+16]	—	—	—	—
Catania	143·8	319	19 33	[+ 2]	—	—	—	—
Mineo	144·2	319	19 32	[0]	—	—	—	—
Marseilles	145·2	337	i 19 30	[− 4]	—	—	37·2	—
Tunis	147·3	323	e 19 45	[+ 7]	—	—	—	—
Barcelona	147·6	338	19 46	[+ 8]	—	—	—	—
Tortosa	148·8	340	19 51	[+11]	—	—	e 48·2	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Algiers	150·7	331	i 19 49	[+ 6]	30 4	{−22}	41·2	—
Toledo	151·1	344	e 19 45	[+ 2]	—	—	—	—
Alicante	151·3	338	e 19 50	[+ 7]	—	—	—	—
Almeria	152·5	340	e 19 49	[+ 4]	—	—	—	—
Granada	153·4	341	e 19 50	[+ 4]	26 44	SKS	76·8	—
Malaga	154·1	342	e 19 50	[+ 3]	e 30 50	{+ 4}	—	—
San Fernando	154·9	345	19 53	[+ 5]	34 15	SKSP	—	—

Additional readings and notes :—
Suva readings have been *diminished* by 2m.
Riverview iZ = +5m.25s.
Sydney eP = −8s., P and S are recorded as S and L.
Wellington PP = +6m.59s., SS = +12m.40s.
Melbourne i = +6m.33s. and +14m.10s.
Adelaide i = +7m.18s., +9m.20s. = P_cP − 1s. and +12m.22s.
Perth PP = +16m.5s., PPP = +16m.40s., PPPP = +17m.5s., P_cS = +20m.5s., PS = +21m.0s., i = +22m.40s., SS = +24m.0s., SSS = +25m.10s., SSSS = +25m.35m.
Osaka i = +10m.17s., +11m.56s., +12m.29s., +15m.3s., and +22m.31s.
Sumoto PN = +9m.33s., SN = +17m.25s.
Kobe PEN = +9m.29s., eE = +11m.36s., eZ = +11m.42s., eS?N = +17m.18s., eZ = +17m.25s.
Batavia iPE = +10m.1s.
Hong Kong PP = +13m.6s., SS = +22m.54s., SSS = +26m.12s.
Tucson ePS = +25m.13s., eSS = +30m.24s.
Tashkent i = +14m.25s. and +19m.10s., PS = +27m.4s.
St. Louis eSKKSE = +25m.50s., iPSE = +28m.18s., eSSE = +33m.58s.
Sverdlovsk PP = +18m.30s.
Pittsburgh ePPP = +23m.19s., PS = +29m.28s., SS = +35m.48s.
Ottawa e = +23m.30s., eE = +36m.58s.
Tiflis ePSSE = +37m.35s.
Scoresby Sund i = +20m.24s. = PP +4s.
Pulkovo PP = +20m.25s., PKS = +22m.2s., PS = +30m.14s., SS = +37m.40s.
Helsingfors ePPNEZ = +20m.43s., ePKSNE = +21m.43s., eSKKSN = +28m.13s., eSKSP = +30m.36s., ePSNE = +31m.43s., eSSNE = +37m.46s.
Cape Town PPN = +20m.38s., SKSE = +25m.30s., SKKSN = +27m.28s., SKKSE = +27m.34s., SE = +28m.38s., SN = +28m.41s., PSE = +30m.34s., SSE = +38m.4s., SSN = +38m.11s., SSSE = +41m.49s.
Ivigtut +20m.49s. = PS +0s.
Ksara ePP = +21m.36s.
Copenhagen PP = +21m.36s., PKS = +22m.42s.
Hamburg i = +21m.52s. = PP +5s.
Vienna iNEZ = +19m.23s., iNE = +22m.2s. = PP +5s. and +23m.6s. = PKS +8s.
De Bilt iZ = +22m.9s. = PP +5s.
Bidston i = +22m.58s. = PKS − 5s. and +48m.55s.
Zagreb e = +22m.4s. = PP − 5s. and +23m.0s. = PKS − 3s.
Uccle iPP = +22m.18s.
Karlsruhe e = +22m.18s. = PP +3s.
Stuttgart ePP = +22m.19s.
Triest i = +23m.1s. = PKS − 6s.
Kew ePP = +22m.15s., iPKS = +23m.4s.
Strasbourg ePP = +22m.19s., ePPPPP = +29m.33s. = SKKS +12s.
Zurich e = +22m.24s. = PP +1s.
Prato iS? = +23m.10s. = PKS − 3s.
Chur e = +22m.15s. = PP − 8s.
Granada i = +20m.35s., e = +23m.2s., PKS = +23m.20s., SKSP = +34m.2s.
Malaga e = +21m.48s., +22m.48s., and +23m.52s., PSKS? = +37m.10s.
San Fernando PN = +19m.57s., PE = +19m.59s., SSN = +34m.18s.
Long waves were also recorded at Tananarive, La Paz, Charlottesville, Königsberg, Ann Arbor, Ukiah, Huancayo, Columbia, and Grozny.

July 19d. 1h. 27m. 33s. Epicentre 0°·5S. 133°·5E. N.1.

A = −·688, B = +·725, C = −·009 ; D = +·725, E = +·688 ;
G = +·006, H = −·006, K = −1·000.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		6·1	238	i 1 24	− 3	i 2 29	− 7	—	—
Manila		19·5	321	i 4 24	0	i 8 9	SS	—	—
Malabar		26·7	255	5 37	+ 2	10 9	− 1	13·8	—
Batavia		27·2	257	5 40	0	i 10 36	+18	17·5	—
Taihoku		28·0	336	6 13	+26	10 39	+ 7	—	—
Soengei Langka		28·7	260	e 6 27?	PP	—	—	e 13·5	—
Titizima		28·8	16	6 14	+30	10 43	− 2	—	—
Hong Kong		29·6	322	5 58	− 3	10 47	−11	—	—
Miyazaki		32·5	357	6 22	− 5	11 50	+ 7	—	—
Nagasaki		33·4	356	e 6 35	0	11 53	− 4	14·1	15·3
Zi-ka-wei		33·7	341	i 6 36a	− 2	—	—	—	—
Phu-Lien		33·8	311	e 6 38	− 1	e 11 59	− 4	14·5	19·1
Koti		34·1	0	6 43	+ 2	e 12 1	− 7	e 14·0	20·7
Hukuoka		34·2	355	e 6 47	+ 5	e 12 8	− 1	14·4	16·1
Hukuoka B		34·2	355	6 37	− 5	7 54	PP	14·5	—
Adelaide		34·6	170	i 6 44	− 2	i 12 39	+24	i 16·6	22·5
Sumoto	E.	34·9	7	e 6 57	+ 9	12 17	− 3	—	19·6
	N.	34·9	7	6 50	+ 2	12 21	+ 1	16·0	22·5
Medan		35·0	277	6 52	+ 3	i 12 18	− 3	—	—
Kobe	N.	35·2	3	e 6 50	− 1	12 25	+ 1	e 16·5	17·7
Osaka		35·2	2	6 48	− 3	12 46	+22	—	—
Nanking		35·4	338	i 6 51	− 2	i 12 31	+ 4	i 15·6	20·0
Hamamatu		35·5	6	7 7	+14	12 47	+18	—	—
Perth		35·6	206	6 46	− 8	14 7	?	22·5	—
Husan		35·8	354	6 57	+ 1	15 4	?	—	—
Nagoya		35·8	5	6 56	0	—	—	15·2	20·6
Gihu		36·0	5	6 59	+ 1	12 40	+ 4	—	—
Toyooka	E.	36·0	2	e 7 6	+ 8	15 7	SSS	—	—
	N.	36·0	2	6 55	− 3	e 12 46	+10	16·9	19·2
Tokyo		36·6	8	7 5	+ 2	12 44	− 1	—	—
Taikyu		36·8	353	7 9	+ 4	12 47	− 1	39·7	—
Tyosi		36·9	10	e 7 7	+ 1	12 49	− 1	18·9	—
Kakioka		37·2	9	7 2	− 6	12 42	−12	—	—
Riverview		37·2	154	e 7 7	− 1	i 12 49	− 5	e 16·0	22·2
Sydney		37·2	154	i 12 45	S	(i 12 45)	− 9	19·5	22·8
Tukubasan		37·7	9	7 7	− 5	12 55	− 7	—	—
Wazima		38·0	5	7 16	+ 1	13 1	− 5	—	—
Zinsen		38·5	351	e 7 19	0	e 13 15	+ 1	e 15·9	—
Keizyo		38·6	352	e 7 17	− 3	13 17	+ 2	16·0	19·2
Melbourne		38·7	165	e 7 38	+17	13 10	− 7	17·3	24·5
Hukusima		38·8	9	7 22	0	13 24	+ 6	—	—
Heizyo		40·2	351	7 40	+ 6	13 35	− 4	—	—
Mizusawa	E.	40·2	9	7 40	+ 6	13 40	+ 1	19·7	—
	N.	40·2	9	7 38	+ 4	13 36	− 3	19·3	—
Dairen		40·9	346	7 44	+ 4	14 6	+16	—	—
Chiufeng		43·6	342	i 8 0a	− 2	14 25	− 5	17·9	—
Vladivostok		43·6	0	8 2	0	i 14 40	+10	21·0	24·1
Sapporo		44·2	9	8 5	− 1	14 32	− 7	—	—
Calcutta		49·7	301	e 8 46	− 3	16 8	+11	26·1	30·2
Arapuni		53·9	139	—	—	i 17 3	+ 9	—	31·5
Colombo		54·0	279	9 23	+ 2	17 5	+ 9	28·8	34·5
Wellington		55·2	142	e 8 1	?	i 17 2	−10	23·2	34·5
Hyderabad		57·0	290	9 42	− 1	17 29	− 7	26·6	40·3
Agra		60·0	302	10 1	− 3	17 58	−18	e 27·9	—
Dehra Dun		61·0	305	9 57	−14	18 27	− 2	25·3	25·5

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Chatham Ils.	62·0	141	e 10 27?	+ 9	—	—	35·5	—
Bombay	62·2	292	10 25	+ 5	i 18 43	− 2	29·5	43·0
Almata	66·7	318	e 10 52	+ 2	—	—	—	—
Frunse	68·2	317	e 10 55	− 4	e 19 54	− 5	34·5	—
Andijan	68·9	315	11 5	+ 1	—	—	38·0	—
Honolulu	70·4	67	e 11 17	+ 4	i 20 47	PS	e 34·0	—
Tashkent	71·3	313	i 11 18	− 1	i 20 32	− 5	—	51·1
Tchimkent	71·4	315	e 11 15	− 4	—	—	35·0	—
Sverdlovsk	80·2	328	i 12 9	0	i 22 16	− 2	37·0	38·4
Tananarive	86·0	251	12 39	+ 1	23 9	[+ 3]	35·0	44·0
Tiflis	89·4	312	12 59	+ 4	23 52	+ 2	e 41·5	—
Sitka	91·1	33	e 13 7	+ 4	e 23 32	[− 7]	e 41·5	—
Theodosia	96·1	315	e 13 21	− 5	e 23 58	[− 8]	e 36·5	—
Ksara	96·6	304	e 13 31	+ 3	24 3	[− 6]	47·1	—
Simferopol	97·0	316	e 13 10	−20	e 24 3	[− 8]	e 26·0	—
Yalta	97·0	315	e 13 10	−20	e 24 4	[− 7]	e 28·5	—
Pulkovo	97·1	331	e 13 25	− 5	—	—	e 40·5	58·3
Sebastopol	97·5	315	e 12 21	−71	e 23 57	[−17]	e 24·0	—
Helsingfors	99·6	331	e 13 46	+ 4	25 20	− 3	e 39·5	—
Helwan	100·1	301	—	—	i 25 27	0	—	63·3
Ukiah	100·6	50	—	—	e 26 57	PS	—	—
Upsala	103·1	333	e 17 56	PP	—	—	e 44·5	52·6
Königsberg	103·5	328	e 18 26	PP	e 27 25	PS	e 47·8	57·2
Tinemaha	104·8	52	e 14 20	+14	—	—	—	—
Pasadena	105·4	54	e 14 8	− 1	—	—	—	—
Mount Wilson	105·5	54	i 14 9	0	—	—	—	—
Riverside	106·1	55	i 14 8	− 4	—	—	—	—
Belgrade	106·5	317	18 27	PP	e 24 48	[− 9]	e 73·9	—
Budapest	106·6	321	18 50	PP	27 50	PS	e 41·5	61·0
Copenhagen	107·3	331	17 27	?	18 45	PP	50·5	—
Bozeman	107·9	42	—	—	e 24 59	[− 5]	e 44·4	—
Vienna	108·1	321	i 18 43	PP	—	—	e 52·3	—
Scoresby Sund	108·2	352	i 14 21	− 1	28 15	PS	—	—
Prague	108·6	324	e 19 0	PP	e 25 5	[− 2]	e 54·4	57·5
Zagreb	109·2	320	e 16 49	?	e 28 9	PS	e 44·5	—
Leipzig	109·3	325	e 17 57	[−18]	e 34 57	SS	e 50·5	60·5
Hamburg	109·6	329	e 17 52	[−24]	e 34 33	SS	e 49·5	67·5
Cheb	109·8	324	e 18 48	PP	e 28 33	PS	e 52·5	59·7
Jena	109·9	326	e 18 57	PP	—	—	e 55·5	60·0
Cape Town	110·2	233	16 41	?	28 25	PS	48·5	58·5
Göttingen	110·5	324	e 18 59	PP	e 28 27	PS	—	64·5
Triest	110·8	320	e 18 32	[+12]	e 22 33	PPPP	50·6	58·6
Trenta	111·1	312	e 18 27	[+ 6]	e 29 42	PS	56·5	—
Tucson	111·8	55	e 18 57	[+34]	e 28 37	PS	e 43·5	—
Padova	112·1	320	e 19 13	PP	30 6	?	—	—
Stuttgart	112·4	325	e 19 17	PP	e 28 32	PS	e 57·5	—
Karlsruhe	112·6	324	e 19 11	PP	e 28 27	PS	e 55·5	62·3
De Bilt	112·8	329	i 19 28	PP	e 28 52	PS	e 51·5	67·4
Chur	112·9	322	e 18 38	[+12]	—	—	—	—
Florence	113·1	318	i 19 25a	PP	29 22	PS	—	—
Prato	113·1	318	e 18 27	[0]	i 29 27	PS	e 46·5	62·2
Strasbourg	113·2	325	i 19 20	PP	i 28 55	PS	e 40·5	63·6
Zurich	113·2	323	e 19 13	PP	—	—	—	—
Piacenza	113·6	320	19 32	PP	29 33	PS	—	76·0
Basle	113·8	324	e 19 24	PP	—	—	—	—
Uccle	114·0	327	19 32	PP	i 29 5	PS	47·5	—
Neuchatel	114·4	323	e 19 17	PP	—	—	—	—
Durham	114·6	334	19 42	PP	—	—	—	65·5
Edinburgh	114·6	335	i 19 44	PP	—	—	e 50·5	60·2
Stonyhurst	115·5	333	e 19 49	PP	—	—	50·5	60·3

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Grenoble	116·0	38	e 19 41	PP	—	—	36·5	—
Kew	116·0	331	i 19 45	PP	i 29 21	PS	e 47·5	58·3
Paris	116·0	327	19 48	PP	—	—	58·5	59·5
Oxford	116·3	331	e 19 47	PP	e 29 27	PS	e 52·4	58·5
Marseilles	117·1	320	i 19 47	PP	—	—	39·5	—
Ivigtut	119·4	1	18 57	[+13]	29 59	PS	50·5	—
Tortosa	121·4	321	—	—	e 20 32	PP	e 48·5	70·6
Algiers	121·7	315	e 20 23	PP	e 30 23	PS	36·9	—
Alicante	123·4	317	e 20 46	PP	e 30 34	PS	e 51·5	—
Toledo	124·7	321	e 20 47	PP	—	—	—	—
Almeria	125·5	317	e 20 59	PP	—	—	e 47·9	85·8
Granada	126·1	319	e 19 1	[+ 2]	26 19	[+11]	61·5	68·8
Ann Arbor	126·5	34	e 21 3	PP	e 31 3	PS	e 53·9	—
Malaga	126·9	318	i 21 0	PP	25 59	[−11]	—	—
Toronto	127·9	30	i 22 15	?	i 30 52	SKSP	63·5	—
Ottawa	128·3	27	e 19 3	[− 1]	e 31 11	PS	e 55·4	—
San Fernando	128·3	318	19 29	[+25]	—	—	—	72·5
Pittsburgh	129·9	33	e 19 7	[+ 1]	i 31 19	PS	e 53·5	—
Oak Ridge	132·4	25	i 19 16	[+ 5]	—	—	e 61·7	—
Charlottesville	132·4	34	—	—	e 32 40	?	e 63·9	—
Georgetown	132·5	33	i 19 13	[+ 2]	i 31 53	PS	e 53·5	—
Fordham	132·7	28	e 19 5	[− 6]	31 41	PS	72·5	—
La Plata	143·1	164	e 19 39	[+11]	33 9	SKSP	62·3	82·4
Huancayo	148·8	115	i 19 57	[+17]	e 33 47	SKSP	—	—
La Paz	152·7	129	i 19 54a	[+ 9]	26 33	SKS	76·9	85·2
Sucre	153·2	138	i 20 6	[+20]	26 48	SKS	76·5	—
San Juan	153·7	46	e 19 57	[+11]	—	—	—	—

Additional readings and note :—
Batavia iE = +5m.58s., iN = +8m.15s.
Hong Kong PP = +6m.55s., SS = +12m.16s., SSS? = +13m.59s.
Koti e = +7m.51s. = PP + 2s.
Adelaide i = +7m.20s. = PP − 16s., +12m.8s., and +14m.36s. = SSS + 0s., iSS = +15m.10s., i = +15m.57s.
Medan iE = +9m.48s. = P_cP + 22s., iSE? = +12m.28s., iE = +16m.56s., iN = +20m.8s.
Kobe PN = +6m.53s., iPZ = +6m.56s., iE = +7m.2s., PPZ = +8m.9s., iE = PPN = +8m.13s., PPPN = +8m.32s., eE = +14m.50s. = SSS + 4s., iE = +15m.15s.
Osaka i = +8m.54s. and +17m.8s. = S_cS − 5s.
Nanking iPPZ = +8m.14s.
Perth P_cP = +7m.48s., PP = +8m.47s., PPP = +9m.27s. = P_cP + 0s., PPPP = +9m.58s., P_cS = +12m.22s. = S − 7s., PS = +14m.17s., SS = +17m.48s., SSS = +19m.7s., SSSS = +19m.37s.
Toyooka iN = +8m.20s. = PP + 7s.
Taikyu PP = +8m.30s.
Tyosi SS = +15m.31s.
Riverview iNE = +8m.51s. and +15m.29s.
Sydney iS = +17m.27s. = S_cS + 2s. ; true S is given as P.
Zinsen iPPN = +8m.50s.
Calcutta PPP = +11m.32s.
Arapuni i = +19m.9s. = S_cS − 1s., +24m.57s. and +30m.57s.
Wellington i = +12m.50s. = PPPP + 0s.
Agra PP = +12m.14s., PPP = +13m.16s., PS = +18m.35s., SS = +22m.2s., SSS = +23m.51s.
Bombay PP = +12m.46s., PPP = +13m.49s., PS = +19m.14s., SS = +22m.49s.
Honolulu e = +29m.27s.
Tananarive SS = +29m.6s.
Sitka ePP = +16m.32s., eSS = +30m.27s.
Pulkovo PP = +17m.27s., PPP = +19m.35s., SSS = +35m.9s.
Helsingfors ePKPNEZ = +17m.3s., PPNEZ = +17m.53s., eSKSE = +24m.4s., iSKKSNE = +24m.58s., PSE = +26m.50s., SSN = +32m.15s., eSSSNE = +36m.1s. ; T_e = 1h.26m.59s.
Tinemaha eZ = +14m.26s.
Belgrade e = +33m.56s. = SS + 25s.
Bozeman ePS = +28m.14s., eSS = +34m.17s. ; T_e = 1h.27m.28s.
Königsberg eE = +17m.0s., e = +36m.24s.
Vienna iNZ = +20m.50s. = PPP − 4s., iE = +23m.52s.
Scoresby Sund i = +18m.58s. = PP + 14s., SS = +34m.9s.

Continued on next page.

Prague e = +21m.16s. =PPP +17s., +27m.39s., and +32m.15s.
Zagreb e = +18m.59s. =PP +8s.
Cape Town E = +18m.16s. =PKP −2s., PPN = +20m.21s., PPE = +20m.36s., PPP?N = +23m.41s., E = +24m.51s., N = +25m.6s. =SKS −8s., E = +25m.21s., SKS?E = +26m.11s. =SKKS −7s., N = +26m.46s., E = +29m.11s., PSE = +29m.51s., N = +31m.21s., E = +31m.26s., N = +32m.31s., E = +33m.21s., N = +33m.56s., SSE = +36m.21s.
Triest P = +19m.3s. =PP +0s., ePP = +22m.27s., eSKKS = +23m.3s., eSS = +35m.18s.
Tucson ePP = +19m.21s., eSS = +34m.0s.
Stuttgart e = +45m.45s.
Strasbourg ePPP = +22m.5s., ePPPP = +24m.43s., iSS = +35m.22s.
Uccle PP = +22m.1s. =PPP +16s.
Kew iSS = +36m.1s.
Ivigtut +19m.57s. =PP −8s., SS = +36m.45s.
Granada PP = +20m.58s., PPP = +24m.1s.
Malaga e = +23m.35s. =PPP +2s., +29m.27s., +30m.34s., +33m.33s., and +39m.36s.
Toronto iN = +38m.15s. =SS +1s.
Ottawa e = +21m.7s. =PP +1s. and +38m.51s.
San Fernando PE = +21m.10s. =PP +4s. and +21m.16s., PPN = +21m.36s.
Pittsburgh iPP = +21m.16s., i = +22m.29s. =PKS −3s., eSS = +38m.39s.
Oak Ridge iPP = +21m.44s., eSKP = +22m.38s., iSKPEN = +22m.52s., eSSNE = +39m.35s.
Charlottesville e = +49m.27s.
Fordham iPP = +21m.36s., ePPP = +22m.32s. =PKS −13s., PPP = +23m.20s.
La Plata PPE = +22m.33s., PKPE = +22m.51s., PKSN = +23m.27s., PPP?E = +25m.9s., E = +27m.39s. =PPPP +4s., SKSP = +32m.9s., SSE = +41m.15s.
Huancayo ePP = +22m.23s., eSS = +40m.19s.
La Paz iPKP$_2$ = +20m.14s., ipP = +21m.10s., PPZ = +23m.32s., SKSZ = +26m.34s., iSKSP = +33m.58s., SSN = +43m.15s., SSSN = +48m.57s.
San Juan ePP = +23m.48s.
Long waves were also recorded at Grozny.

July 19d. 2h. 21m. 6s. (I)
3h. 25m. 39s. (II)
8h. 17m. 19s. (III)
19h. 54m. 41s. (IV)

Epicentre 7°·4N. 83°·1W. (as on July 13d.). R.2 X. X. X.

A = +·119, B = −·984, C = +·129; D = −·993, E = −·120; G = +·015, H = −·128, K = −·992.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
I Balboa Heights	3·8	64	i 0 54	0	i 1 34	− 3	1·9
I San Juan	19·8	55	i 4 27	0	i 8 2	0	e 9·9
I Huancayo	20·9	158	i 4 49	+10	e 8 54	SS	e 18·9
I Oak Ridge	36·5	14	i 7 2	0	—	—	—
I La Jolla	40·6	314	e 7 38	+ 1	—	—	—
I Riverside	41·3	314	i 7 44	+ 1	—	—	—
II	41·3	314	e 7 43	0	—	—	—
III	41·3	314	i 7 44	+ 1	—	—	—
I Pasadena	41·9	314	i 7 48a	0	—	—	—
III	41·9	314	i 7 50	+ 2	—	—	—
IV	41·9	314	i 7 48	0	—	—	—
I Mount Wilson	41·9	314	i 7 48	0	—	—	—
II	41·9	314	7 48	0	—	—	—
I Haiwee	42·9	317	e 7 55	− 1	—	—	—
III	42·9	317	e 7 56	0	—	—	—
IV	42·9	317	e 7 56	0	—	—	—
I Santa Barbara	43·2	313	e 8 4	+ 6	—	—	—
II	43·2	313	i 7 59	+ 1	—	—	—
I Tinemaha	43·6	318	i 8 1	− 1	—	—	—
II	43·6	318	e 8 1	− 1	—	—	—
III	43·6	318	i 8 2	0	—	—	—
IV	43·6	318	i 8 1	− 1	—	—	—
I Malaga	76·5	52	e 11 48	− 1	—	—	—

Oak Ridge gives also iPPZ = +7m.59

July 19d. Readings for which no determination has been made :—

Suva e = 5h.0m.
Riverview e = 5h.1m.42s., eL = 5m.12s.
Chiufeng eP = 5h.5m.48s., eS = 14m.54s.
Melbourne i = 5h.6m.36s., i = 9h.10m., L = 12m.50s., M = 20m.12s.
Adelaide i = 5h.6m.58s., L = 13m.53s., M = 17m.42s.
Wellington e = 5m.9s., M = 16m.
De Bilt eZ = 5h.14m.10s., eZ = 16m.54s.
Vladivostok eL = 5h.16m.
Sverdlovsk e = 5h.30m.59s., L = 44m., M = 48m.36s.
Pasadena eLZ = 5h.37m.
Tucson e = 5h.37m.30s.
Scoresby Sund L = 5h.48m.
Tashkent e = 5h.56m.54s.

July 19d. 5h. 45m. 24s. Epicentre 12°·8S. 166°·5E. N.2.

A = − ·948, B = + ·228, C = − ·222 ; D = + ·233, E = + ·972 ;
G = + ·215, H = − ·052, K = − ·975.

	Δ	Az.	P.	O − C.	S.	O − C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	12·7	117	2 39?	−19	5 36	+16	6·4	—
Riverview	25·2	211	e 5 11	−11	i 9 48	+ 4	—	14·6
Sydney	25·2	211	e 4 56	−26	i 10 0	+16	13·4	15·3
Arapuni	26·5	164	—	—	11 36?	SS	—	—
Wellington	29·4	167	6 4	+ 4	10 56	+ 1	13·6	16·6
Christchurch	30·6	172	i 6 8	− 2	i 11 10	− 4	15·0	—
Melbourne	31·5	211	6 19	+ 1	11 36	+ 8	14·2	18·5
Adelaide	33·5	221	i 6 46	+10	i 11 47	−11	14·9	21·2
Amboina	38·9	280	e 6 57	−26	—	—	22·6	—
Honolulu	48·8	44	—	—	e 17 12	?	—	—
Perth	50·0	238	(9 36)	+45	(16 18)	+17	(21·3)	(21·9)
Manila	52·8	299	9 19	+ 7	17 29	+50	—	—
Osaka	55·8	327	9 35	+ 1	16 30	−50	—	—
Kobe	56·0	324	e 9 37	+ 1	e 19 35	(+11)	—	38·3
Batavia	59·1	268	i 10 0	+ 2	18 2	− 2	—	—
Hong Kong	62·2	304	10 16	− 4	18 44	− 1	—	—
Nanking	64·0	316	e 10 41	+ 9	—	—	—	—
Vladivostok	64·2	332	10 35	+ 1	19 9	− 1	26·1	31·5
Chiufeng	70·6	321	i 11 10a	− 4	i 20 26	− 2	28·4	39·7
Ukiah	83·4	47	—	—	e 23 24	PS	e 37·6	—
Calcutta	84·2	295	e 12 15	−14	—	—	—	—
Sitka	84·6	27	—	—	e 22 51	[− 5]	e 32·6	—
Pasadena	85·4	54	e 12 33	− 2	—	—	—	—
Tinemaha	86·3	51	e 12 41	+ 1	—	—	—	—
Colombo	88·2	277	23 13	SKS	(23 13)	[− 8]	—	57·7
Tucson	90·8	56	—	—	24 4	0	41·6	—
Kodaikanal	91·3	279	—	—	e 23 36	[− 4]	—	—
Hyderabad	92·0	285	10 19	?	23 34	[−10]	55·0	68·6
Agra	94·4	297	e 16 49	PP	e 24 42	+ 5	—	—
Bombay	97·5	286	—	—	i 24 57	− 7	—	64·1
Frunse	100·1	312	e 25 8	SKKS	(e 25 8)	{+14}	—	—
Andijan	101·4	310	e 27 27	PS	—	—	—	—
Tchimkent	103·7	311	e 24 36	SKS	(e 24 36)	[− 8]	—	—
Tashkent	103·8	312	e 17 56	PP	e 27 41	PS	e 64·1	65·6
Sverdlovsk	109·3	328	e 18 55	PP	i 29 26	?	46·6	64·6
Chicago	110·3	50	—	—	e 34 54	SS	e 52·9	—
Pittsburgh	116·2	51	—	—	e 48 36	?	e 57·9	—
Ottawa	118·5	46	—	—	e 25 48	[+ 2]	e 51·6	—
Tiflis	122·0	310	e 18 30	[−20]	e 30 8	SKSP	e 57·6	88·4
Scoresby Sund	122·1	5	19 0	[+ 9]	—	—	50·6	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Pulkovo	123·1	338	e 20 24	PP	e 28 6	{+29}	e 58·6	73·9
Cape Town	124·2	215	—	—	27 0	{−44}	57·6	66·1
Helsingfors	124·9	341	e 18 36?	[−20]	—	—	e 59·6	—
Ksara	130·2	304	e 21 7	PP	—	—	—	—
Copenhagen	132·6	343	19 12	[+ 1]	—	—	—	—
Hamburg	135·2	342	e 19 12	[− 3]	—	—	e 64·6	—
Edinburgh	136·2	352	e 20 36?	?	—	—	—	—
Vienna	136·8	331	e 22 3	PP	—	—	—	—
De Bilt	138·0	345	i 19 22	[+ 3]	—	—	e 64·6	78·8
Stonyhurst	138·0	7	e 25 28	?	—	—	69·6	—
Uccle	139·3	346	e 19 24	[+ 3]	—	—	—	—
Karlsruhe	139·5	338	e 22 24	PP	—	—	—	—
Stuttgart	139·5	340	e 19 19	[− 2]	—	—	e 63·6	—
Kew	139·9	350	e 19 15	[− 6]	—	—	e 36·6	—
Strasbourg	140·1	340	e 19 20	[− 2]	(e 41 36?)	SS	e 41·6	—
Paris	141·6	346	e 22 14	PP	—	—	60·6	87·6
Piacenza	142·2	338	e 19 36	[+12]	—	—	—	87·1
Florence	142·4	330	19 22	[− 3]	—	—	—	—
Prato	142·4	330	e 19 25	[0]	30 8	{+30}	—	—
Toledo	151·7	345	e 19 53	[+ 9]	—	—	—	—
Granada	154·0	342	e 20 7	{−10}	23 46	PP	76·3	—
Malaga	154·7	343	e 20 2	{−18}	—	—	—	—
San Fernando	155·5	347	19 45	[− 4]	—	—	—	—

Additional readings and notes :—
Wellington PP = +6m.46s.
Christchurch iZ = +6m.26s., iEN = +11m.46s., L_qEN = +12·9m., iZ = +14m.50s., iS_eSNZ = +16m.36s.
Melbourne i = +11m.23s.
Adelaide eP = +7m.36s. = PP − 6s., i = +8m.42s. and +14m.20s.
Perth PP = (+11m.16s.), PPP = (+11m.46s.), SS = (+17m.46s.); all readings have been *diminished* by 6m.
Osaka i = +11m.6s., +13m.9s., and +19m.57s.
Kobe eE = +10m.57s.
Batavia SE = +18m.6s.
Hong Kong SS = +23m.6s., SSS = +27m.48s.
Ukiah e = +33m.24s. = SSSS − 10s.
Agra iE = +23m.46s. = SKS − 12s.
Tashkent e = +19m.5s.
Sverdlovsk e = +34m.28s. = SS + 19s. and +37m.13s.
Ottawa e = +29m.42s. = PS − 6s. and +36m.48s.
Tiflis eZ = +20m.18s. = PP − 5s. and +22m.48s. = PPP − 5s., eN = +28m.14s.
Scoresby Sund +20m.29s. = PP + 5s.
Pulkovo e = +23m.10s. = PPP + 8s., +30m.40s. = PS + 10s. +35m.36s., and +41m.6s. = SSS − 29s.
Cape Town N = +35m.21s. and +40m.23s., E = +40m.29s.
Helsingfors ePPNE = +21m.36s.?
Ksara e = +22m.36s. = PKS + 2s., PP = +23m.58s. = PPP − 2s.
Copenhagen +21m.42s. = PP + 7s., e = +22m.36s. = PKS − 9s.
Vienna iN = +22m.51s. = PKS − 9s.
De Bilt eZ = +22m.10s. = PP + 1s.
Uccle PP = +22m.18s.
Stuttgart ePP = +22m.11s.
Kew ePP = +22m.18s.
Strasbourg ePP = +22m.24s.
Prato S? = +23m.14s. = PKS + 0s.
Malaga e = +20m.38s. = PKP_e + 18s., +24m.8s., and +25m.32s.
San Fernando PN = +19m.58s.
Long waves were also recorded at La Paz, La Plata, Tananarive, Huancayo, Sucre, Kotl, Uccle, Ivigtut, and the American stations.

July 19d. 7h. 37m. 1s. Epicentre 12°·8S. 166°·5E. (as at 5h.). R.1.

A = −·948, B = +·228, C = −·222; D = +·233, E = +·972; G = +·215, H = −·052, K = −·975.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		12·7	117	3 2	+ 4	5 41	+21	6·3	—
Riverview		25·2	211	e 5 17	− 5	i 9 58	+14	—	20·5
Sydney		25·2	211	e 5 4	−18	i 9 27	−17	14·3	17·8
Arapuni		26·5	164	—	—	10 5	− 2	14·5	15·0
Wellington		29·4	167	6 1	+ 1	11 5	+10	14·5	19·0
Christchurch		30·6	172	i 6 8	− 2	i 11 12	− 2	13·3	—
Melbourne		31·5	211	6 15	− 3	11 29	+ 1	13·0	21·5
Adelaide		33·5	221	i 6 35	− 1	i 11 54	− 4	i 15·1	20·0
Chatham Ils.		34·4	158	(e 7 59)	PP	(11 2)	−70	11·0	—
Amboina		38·9	280	7 18	− 5	—	—	e 23·0	—
Honolulu		48·8	44	e 9 19	+37	i 15 59	+15	25·0	—
Perth		50·0	238	8 54	+ 3	16 54	+53	84·7	90·7
Hatidyozima		52·5	332	9 8	− 2	16 40	+ 5	—	—
Manila		52·8	299	9 12	0	16 48	+ 9	25·8	31·3
Tyosi		54·2	334	e 9 39	+16	17 5	+ 7	24·5	—
Yokohama		54·6	333	9 24	− 2	17 5	+ 1	—	—
Tokyo		54·7	333	9 22	− 4	—	—	—	—
Hamamatu		54·8	331	9 20	− 7	17 8	+ 2	—	—
Kohu		55·2	332	9 29	− 1	17 13	+ 1	—	—
Kameyama		55·5	330	9 21	−11	17 7	− 9	—	—
Maebasi		55·6	333	9 39	+ 6	17 38	+21	—	—
Nagoya		55·6	331	9 29	− 4	(17 16)	− 1	17·3	—
Wakayama		55·7	329	9 31	− 3	17 17	− 2	—	—
Gihu		55·8	331	9 34	0	17 24	+ 4	—	—
Osaka		55·8	327	9 34	0	17 48	+28	—	—
Miyazaki		55·9	324	9 32	− 3	17 16	− 5	—	—
Sumoto		55·9	329	e 9 33	− 2	17 23	+ 2	—	37·0
Kobe	E.	56·0	324	e 9 44	+ 8	17 29	+ 6	e 24·0	29·4
	N.	56·0	324	9 42	+ 6	e 17 24	+ 1	—	28·7
	Z.	56·0	324	9 35	− 1	e 18 16	+53	—	39·9
Koti		56·1	327	e 9 36	− 1	e 17 24	0	—	—
Toyama		56·7	332	9 41	0	17 35	+ 3	—	—
Toyooka		56·9	329	9 45	+ 3	17 40	+ 5	—	—
Mizusawa	N.	57·1	336	e 9 46	+ 2	17 37	− 1	25·1	—
Nagasaki		57·5	323	e 9 40	− 7	e 17 40	− 3	—	—
Batavia		59·1	268	i 9 58	0	i 19 58	(+12)	51·0	—
Husan		59·6	325	9 46	−16	18 9	− 2	—	—
Taikyu		60·4	325	e 9 32	−35	e 18 21	0	e 25·2	—
Sapporo		60·5	339	10 4	− 4	18 31	+ 8	—	—
Zi-ka-wei		61·7	316	10 15	− 1	—	—	—	39·2
Hong Kong		62·2	304	10 16	− 4	18 48	+ 3	31·5	38·0
Keizyo		62·5	326	10 8	−14	18 55	+ 7	22·9	—
Zinsen		62·7	325	e 10 20	− 3	e 18 49	− 2	—	—
Nanking		64·0	316	10 34k	+ 2	e 19 5	− 2	e 26·3	39·4
Vladivostok		64·2	332	10 34	0	19 9	− 1	26·5	33·6
Heizyo		64·3	326	e 10 36	+ 2	19 14	+ 3	—	—
Medan		69·3	278	11 0	− 6	—	—	44·0	—
Chiufeng		70·6	321	i 11 9a	− 5	i 20 26	− 2	26·3	43·7
Ukiah		83·4	47	—	—	e 22 59	+ 8	—	—
Calcutta		84·2	295	e 13 38	?	—	—	—	—
Sitka		84·6	27	e 12 29	− 2	e 22 59	− 5	e 31·3	—
Pasadena		85·4	54	i 12 37	+ 2	—	—	—	—
Mount Wilson		85·6	53	i 12 38	+ 2	—	—	—	—
Riverside		86·0	54	i 12 39	+ 1	—	—	—	—
Haiwee		86·2	51	e 12 42	+ 3	—	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tinemaha	86·3	51	e 12 42	+ 2	—	—	—	—
Victoria	87·0	38	12 42	− 1	23 27	0	40·0	—
Seattle	87·2	40	e 12 17	−27	e 23 23	− 6	e 40·6	—
Colombo	88·2	277	12 38	−11	23 18	[− 3]	50·8	60·9
Tucson	90·8	56	e 13 31	+30	e 23 35	[− 2]	e 41·2	—
Kodaikanal	91·3	279	13 6	+ 3	23 32	[− 8]	—	59·9
Hyderabad	92·0	285	11 44	−93	24 4	−11	44·6	64·8
Bozeman	94·0	44	—	—	e 23 56	[+ 1]	e 45·2	—
Agra	94·4	297	13 14	− 4	23 42	[−16]	—	—
Dehra Dun	95·1	300	—	—	24 9	[+ 7]	—	71·0
Bombay	97·5	286	13 42	+10	24 12	[− 2]	e 49·0	69·6
Frunse	100·1	312	e 14 19	+35	—	—	—	—
Andijan	101·4	310	e 14 29	+39	—	—	—	—
Tchimkent	103·7	311	e 18 17	PP	—	—	—	—
Tashkent	103·8	312	14 1	0	—	—	e 49·8	76·2
St. Louis	108·3	55	—	—	e 25 0	[− 5]	e 50·2	54·5
Sverdlovsk	109·3	328	14 23	− 5	26 32	{+30}	67·0	68·3
Chicago	110·3	50	—	—	e 25 14	[− 1]	e 52·0	—
Tananarive	112·0	247	—	—	25 53	[+31]	54·5	61·1
Huancayo	113·9	110	—	—	e 26 29	{− 5}	e 54·4	—
Pittsburgh	116·2	51	e 20 21	PP	25 31	[− 7]	e 54·9	—
Charlottesville	117·5	55	—	—	e 29 48	PS	e 58·0	—
Baku	118·4	312	19 0	[+18]	35 24	SS	61·0	83·2
Georgetown	118·5	54	e 18 55	[+13]	e 36 2	SS	e 53·0	—
Ottawa	118·5	46	e 20 17	PP	e 25 43	[− 3]	e 49·0	—
La Paz	118·6	118	e 19 27	PP	e 30 1	PS	57·0	65·4
Sucre	119·9	121	e 19 6	[+21]	25 52	[+ 2]	60·2	—
Fordham	120·7	51	18 59	[+12]	—	—	—	67·0
Oak Ridge	122·0	48	e 20 31	PP	—	—	e 56·5	—
Tiflis	122·0	310	18 51	[+ 1]	31 22	?	e 59·0	79·2
Scoresby Sund	122·1	5	18 53	[+ 2]	30 17	PS	—	—
Pulkovo	123·1	338	18 52	[− 1]	29 48	?	e 60·0	79·9
Cape Town	124·2	215	—	—	41 21	SSS	63·0	70·7
Helsingfors	124·9	341	e 18 22	[−34]	e 25 7	[−58]	e 58·0	—
Ivigtut	125·5	20	16 59	[−119]	—	—	59·0	—
Theodosia	127·6	318	e 21 9	PP	—	—	65·0	—
Upsala	127·7	341	e 20 59?	PP	—	—	e 59·0	80·1
Sebastopol	128·1	318	e 19 9	[+ 6]	—	—	—	—
Simferopol	128·4	318	e 19 9	[+ 5]	—	—	e 76·7	—
Yalta	128·6	318	e 20 9	[+65]	—	—	—	—
San Juan	129·2	77	e 19 11	[+ 6]	—	—	—	—
Ksara	130·2	304	e 19 22	[+15]	—	—	—	80·0
Königsberg	130·3	337	e 20 58	PP	—	—	e 62·9	82·1
Bergen	130·4	350	i 18 59	[− 8]	—	—	—	—
Copenhagen	132·6	343	19 11	[0]	—	—	—	—
Hamburg	135·2	342	e 19 14	[− 1]	e 27 59	{−55}	e 63·0	83·0
Edinburgh	136·2	352	i 22 19	PP	i 29 19	{+18}	—	92·0
Leipzig	136·2	337	e 20 29	?	e 34 5	?	e 67·0	86·0
Prague	136 3	334	e 20 59	?	—	—	e 61·0	69·0
Jena	136·8	338	e 19 17	[0]	—	—	e 69·0	88·5
Vienna	136·8	331	i 19 19	[+ 2]	e 32 33	PS	e 69·0	94·0
Göttingen	136·9	341	e 19 17	[− 1]	—	—	e 62·0	83·7
Durham	137·0	350	19 24	[+ 6]	—	—	—	90·0
Cheb	137·1	336	e 22 59	PKS	e 32 36	SKSP	e 69·0	86·0
De Bilt	138·0	345	e 19 21	[+ 2]	e 40 24	SS	e 65·0	83·1
Bidston	138·5	353	i 19 24	[+ 4]	—	—	53·0	86·0
Zagreb	138·6	333	e 19 23	[+ 3]	—	—	e 82·0	86·0
Uccle	139·3	346	e 19 25	[+ 4]	—	—	54·0	91·0
Karlsruhe	139·5	338	e 19 22	[+ 1]	—	—	e 63·6	92·5
Stuttgart	139·5	340	e 19 17	[− 4]	—	—	e 63·0	85·0

Continued on next page.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Oxford	139·8	351	e 19 30	[+ 9]	—	—	—	—
Kew	139·9	350	i 19 26	[+ 5]	e 40 34	SS	e 67·0	86·5
Triest	139·9	330	e 19 30	[+ 9]	e 40 40	SS	e 62·0	67·6
Strasbourg	140·1	340	e 19 25	[+ 3]	e 28 24	?	e 61·0	90·9
Treviso	140·6	331	e 19 39	[+17]	22 59	PKS	—	—
Chur	140·8	335	e 22 29	PP	—	—	—	—
Basle	141·1	337	e 19 21	[− 2]	—	—	—	—
Padova	141·4	331	19 40	[+17]	—	—	—	—
Paris	141·6	346	e 19 34	[+11]	—	—	66·0	90·0
Florence	142·4	330	i 19 24a	[− 1]	—	—	—	—
Prato	142·4	330	i 19 31	[+ 6]	i 30 43	?	e 41·4	77·0
Grenoble	143·7	337	e 19 26	[− 4]	—	—	70·0	—
Catania	144·5	319	19 29	[− 4]	—	—	—	—
Mineo	144·9	319	19 2	[−31]	—	—	—	—
Barcelona	148·3	337	e 19 43	[+ 4]	—	—	e 75·7	92·5
Tortosa	149·4	339	19 51	[+10]	—	—	—	—
Toledo	151·7	345	e 19 42	[− 2]	—	—	—	—
Algiers	151·8	331	e 19 29	[−15]	e 26 59	SKS	73·0	85·0
Alicante	152·0	338	e 19 50	[+ 6]	—	—	81·9	—
Almeria	154·0	339	e 19 58	[+11]	—	—	e 77·9	—
Granada	154·0	342	e 20 3	[+16]	23 39	PP	84·1	101·1
Malaga	154·7	343	e 19 55	[+ 7]	30 39	{−10}	—	91·0
San Fernando	155·5	347	19 49	[0]	29 15	PPPP	—	93·0

Additional readings and note :—
Riverview ePZ = +5m.22s.
Wellington PP = +7m.5s., i = +7m.33s. and +8m.15s., SS = +12m.44s.
Christchurch iNZ = +6m.26s., P_cSNZ = +9m.7s. = P_cP − 5s., iE = +11m.52s., iP_cSE = +13m.2s., iNZ = +15m.14s., iS_cS = +16m.29s.
Adelaide i = +7m.51s. = PP +9s., iP_cP = +9m.23s., i = +11m.30s., +12m.55s., +14m.5s. = SSS − 1s., and +14m.39s.
Chatham Ils. i = +27m.59s.?, PP is given as eS? and L? is probably S.
Perth P_cP = +9m.4s., PP = +11m.24s. = PPP − 6s., P_cS = +14m.9s., PS = +17m.4s., SS = +20m.24s., SSS = +20m.54s.
Osaka i = +12m.2s., +22m.11s., and +30m.27s.
Sumoto ePN = +9m.35s.
Kobe eZ = +10m.56s. = P_cP +18s.
Koti S = +17m.29s.
Mizusawa eE = +9m.43s.
Hong Kong PP = +13m.10s., SS = +22m.49s.
Nanking SSZ = +22m.38s.
Victoria SE = +23m.7s. = SKS − 6s. ; T_o = 7h.37m.16s.
Tucson eSS = +30m.12s.
Kodaikanal PP = +16m.42s., PS = +25m.20s.
Agra eN = +16m.29s., ePKPE = +16m.34s., ePP = +17m.8s., PPP = +19m.22s., PS = +25m.28s., SS = +30m.54s., SSS = +35m.10s.
Bombay SKKS = +24m.53s., PS = +26m.35s., SS = +32m.12s.
Tashkent PP = +18m.16s.
St. Louis ePSE = +28m.9s., ePPSE = +28m.44s., eSSE = +34m.4s.
Sverdlovsk PP = +18m.58s., SKS = +25m.0s., PS = +28m.19s., PPS = +29m.33s., SS = +34m.23s., SSS = +38m.59s.
Chicago eSS = +34m.44s.
Baku PP = +20m.6s., SS = +37m.47s.
Tananarive PS = +28m.41s., PPSN = +30m.6s., SSE = +35m.22s.
Huancayo eSS = +34m.59s.
Pittsburgh ePS = +29m.23s., eSSS = +39m.57s.
Charlottesville eSSS = +42m.23s.
Georgetown iP = +25m.35s. = SKS − 10s., ePP = +29m.39s. = PS − 9s.
Ottawa eE = +29m.29s. = PS − 19s.
La Paz iN = +40m.5s. = SSS − 23s.
Oak Ridge eSS = +37m.29s.
Tiflis PPEZ = +20m.12s.
Scoresby Sund +20m.25s. = PP +1s., e = +33m.23s., SS = +37m.11s.
Pulkovo PP = +20m.29s., SS = +37m.17s.
Cape Town PPN = +34m.22s., PPP? = +36m.59s., PSN = +42m.32s., PSE = +42m.36s., PPSN = +43m.7s., PPSE = +43m.10s., SSN = +47m.22s., SSE = +47m.29s., SSSE = +50m.59s., SSSN = +51m.17s., and +53m.22s.
Helsingfors ePKP?N = +18m.39s., ePPNE = +20m.34s., ePSNE = +30m.41s., ePPSNE = +32m.35s., eSSNE = +37m.42s. ; T_o = 7h.36m.27s.
San Juan ePP = +22m.27s. = PKS.

Continued on next page.

Ksara PP = +22m.35s. =PKS +1s.
Königsberg e = +21m.21s. =PP +2s., e = +22m.30s. =PKS −5s.
Bergen e = +22m.36s. =PKS +1s.
Copenhagen +21m.43s. =PP +8s., e = +22m.42s. =PKS −3s. and +23m.10s.
Hamburg eZ = +22m.51s. =PKS −3s., e = +39m.57s. =SS +13s., eN = +45m.59s.
Edinburgh i = +40m.11s. =SS +15s.
Leipzig eN = +27m.35s. and +36m.59s., e = +41m.59s.?, eN = +55m.29s.
Prague e = +23m.18s. =PKS +20s.
Jena e = +21m.59s. =PP −2s.
Vienna iENZ = +22m.7s. =PP +6s., iNE = +23m.2s. =PKS +2s. and +24m.57s. =PPP +4s.
Durham ? = +23m.20s. =PKS +20s.
De Bilt eZ = +22m.11s. =PP +2s.
Bidston e = +22m.19s. =PP +7s.
Zagreb ePP = +22m.15s., e = +23m.4s. =PKS −1s.
Uccle PP = +22m.20s.
Stuttgart e = +19m.23s., ePKP$_3$ = +19m.49s., ePP = +22m.20s., e = +22m.48s. and +23m.41s., eSS = +40m.39s.
Kew ePP = +22m.53s.
Triest e = +22m.25s. =PP +4s., i = +23m.8s. =PKS −1s., e = +42m.0s.
Strasbourg ePP = +22m.21s., SKP = +22m.59s., ePPPP = +25m.57s.
Basle ePKP = +22m.35s. =PP +7s.
Algiers ePP = +21m.57s., e = +30m.39s. =SKKS +6s.
Granada i = +24m.54s., SKKS = +30m.18s.
Malaga e = +21m.33s., +24m.1s. =PP +14s. and +25m.10s., PPP = +27m.3s., e = +47m.59s.
San Fernando PPN = +20m.11s., PE = +20m.26s. =PKP$_2$ +2s., SS = +31m.14s. =SKKS +21s.
Long waves were also recorded at La Plata, Phu-Lien, Grozny, Ann Arbor, Lick, and Belgrade.

July 19d. 12h. Readings without determination :—

Suva 6m.
Christchurch ePN? =8m.22s., eS =13m.31s., L_q =15m.10s., eLRZ =17m.20s., MZ =20m.0s.
Riverview e =9m.42s., eL =13m.54s., M =18m.36s.
Melbourne i =11m.3s. and 16m.42s., L =18m.0s., M =19m.36s.
Adelaide e =12m.24s., 16m.0s., eL =19m.2s., M =21m.36s.
Wellington e =15m., L =17m.
Strasbourg e(P) =19m., ePP =22m., eL =30m.
Florence e =19m.55s.
De Bilt eZ =21m.29s., eL =68m.
Stuttgart e =21m.30s., e =22m.24s., eL =80m.
Paris e =22m., L =84m.
Copenhagen =22m.6s., L =78m.
Sverdlovsk e =24m.26s., L =44m.
Scoresby Sund 25m.18s., L =66m.
Perth P =25m.30s.
Tucson eL =47m.30s.
Balboa Heights P =50m.0s.
Pulkovo e =54m.44s.

July 19d. 22h. 57m. 44s. Epicentre 12°·8S. 166°·5E. (as at 7h.). X.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	12·7	117	(2 46)	−12	(5 10)	−10	(6·6)	—
Riverview	25·2	211	e 5 22	0	9 42	− 2	—	13·2
Wellington	29·4	167	7 4	+64	11 56	+61	15·3	18·3
Melbourne	31·5	211	e 6 20	+ 2	i 11 23	− 5	14·1	18·1
Adelaide	33·5	221	e 12 43	S	(e 12 43)	+45	17·0	21·0
Honolulu	48·8	44	—	—	e 23 16	L	(e 23·3)	—
Perth	50·0	238	—	—	i 22 34	?	26·6	30·1
Vladivostok	64·2	332	e 10 39	+ 5	19 23	PS	30·3	—
Chiufeng	70·6	321	e 11 15	+ 1	e 20 29	+ 1	—	—
Ukiah	83·4	47	—	—	e 37 46	PS	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Bombay	97·5	286	—	—	i 24 13	[− 1]	—	—
Tashkent	103·8	312	(14 17)	+16	(e 24 43)	[− 1]	(56·2)	(87·5)
Sverdlovsk	109·3	328	e 18 14	[− 1]	e 26 38	{+36}	47·3	—
Baku	118·4	312	e 20 34	PP	e 30 5	PS	e 60·3	—
Tiflis	122·0	310	e 20 16	PP	e 30 22	PS	e 63·3	—
Scoresby Sund	122·1	5	20 16?	PP	—	—	62·3?	—
Pulkovo	123·1	338	e 20 32	PP	e 26 2	[+ 2]	—	—
San Juan	129·2	77	e 22 30	PKS	—	—	—	—
Copenhagen	132·6	343	e 22 16?	PP	—	—	—	—
Edinburgh	136·2	352	e 19 16?	[− 1]	—	—	—	—
De Bilt	138·0	345	e 19 31	[+12]	e 40 37	SS	e 71·3	—
Uccle	139·3	346	e 19 28	[+ 7]	—	—	—	—
Stuttgart	139·5	340	e 19 28	[+ 7]	—	—	e 82·3	—
Kew	139·9	350	e 19 28	[+ 7]	—	—	—	—
Strasbourg	140·1	340	e 19 24	[+ 2]	—	—	—	—
Paris	141·6	346	19 16?	[− 7]	—	—	80·3	—
Florence	142·4	330	e 19 46	[+21]	—	—	—	—

Additional readings and notes :—
Suva readings have been *diminished* by 2m.
Adelaide e = +13m.56s. =SS +4s., i = +15m.18s., iS = +15m.57s.
Perth i = +24m.16s.
Chiufeng iE = +21m.24s. =PS +38s.
Tashkent e =(+18m.21s.) =PP +10s. and (+26m.53s.) =PS −32s. all readings have been *increased* by 3m.
Sverdlovsk e = +34m.7s. =SS −2s.
Pulkovo e = +30m.30s. =PS +0s.
De Bilt eZ = +22m.16s. =PP +7s.
Uccle e = +22m.22s. =PP +5s.
Stuttgart e = +22m.28s. =PP +9s.
Strasbourg e = +22m.32s. =PP +0s.
Long waves were also recorded at Tucson, Pittsburgh, Charlottesville, Oak Ridge, and Ivigtut.

July 19d. Readings also at 1h. (Amboina, Suva, Tiflis, Padova, Trenta, and Grozny), 2h. (Andijan and Tchimkent), 3h. (Wellington (2), Suva, Perth, Barcelona, Tiflis, and Chiufeng), 5h. (De Bilt, Ann Arbor, La Paz, Tortosa, Oak Ridge), 6h. (Siena, Ivigtut), 8h. (Berkeley), 9h. (Riverview, Adelaide, and Suva), 10h. (Arapuni, Wellington (2), and Florence), 11h. (Hamburg), 12h. (Oak Ridge), 13h. (Wellington (2), Tyosi, and Malabar), 14h. (Riverview, Suva, Wellington, Perth, and Christchurch), 15h. (San Juan, Oak Ridge, Balboa Heights, Tucson, Huancayo, Scoresby Sund, Copenhagen, Paris, Stuttgart, and Tiflis), 16h. (Toledo, San Juan, and Balboa Heights), 17h. (Wellington and Suva), 18h. (Arapuni (2)), 19h. (Columbia, San Juan, Oak Ridge, and Balboa Heights), 20h. (Mizusawa and Mount Wilson), 22h. (Amboina and Wellington), 23h. (Mizusawa).

July 20d. 2h. 10m. 50s. Epicentre 51°·8N. 173°·0W. (as on 1933 May 1d.). R.3.

A = −·614, B = −·075, C = +·786; D = −·122, E = +·993; G = −·780, H = −·096, K = −·618.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka	22·2	62	e 4 59	+ 6	e 9 5	SS	e 11·3	—
Mizusawa	33·9	267	—	—	e 13 18	+74	—	—
Ukiah	36·3	90	—	—	e 12 50	+ 9	—	—
Vladivostok	37·3	279	7 10	+ 1	e 12 58	+ 2	16·7	22·0
Nagoya	39·0	265	e 7 16	− 8	e 8 31	PP	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tinemaha	40·6	89	i 7 38	+ 1	—	—	—	—
Haiwee	41·4	87	e 7 47	+ 3	—	—	—	—
Pasadena	42·6	92	i 7 55	+ 2	—	—	e 23·2	—
Mount Wilson	42·6	92	i 7 56	+ 3	—	—	—	—
Riverside	43·2	92	i 8 0	+ 2	—	—	—	—
La Jolla	44·0	93	i 8 6	+ 1	—	—	—	—
Chiufeng	48·6	286	8 39a	− 2	e 15 42	+ 1	e 22·2	28·4
Chicago	55·9	62	—	—	e 17 17	− 4	e 27·9	—
Scoresby Sund	56·0	10	9 38	+ 2	—	—	—	—
St. Louis	56·6	68	5 4	?	e 17 32	+ 1	—	—
Toronto	59·0	57	—	—	e 18 0	− 3	31·7	—
Ottawa	59·7	54	e 6 10	?	e 18 16	+ 4	e 29·2	—
Pittsburgh	61·0	59	e 10 10	− 1	i 18 30	+ 1	e 32·1	—
Sverdlovsk	62·8	330	i 10 22	− 2	i 18 52	0	35·6	42·7
Charlottesville	63·5	61	—	—	e 19 7	+ 6	e 33·3	—
Georgetown	63·7	59	7 32	?	i 19 6	+ 2	e 31·2	—
Oak Ridge	63·9	51	i 10 33	+ 2	i 19 7	+ 1	e 31·7	—
Pulkovo	66·9	347	10 48	− 3	e 19 40	− 3	e 29·2	46·3
Helsingfors	67·1	351	e 12 8	+76	e 20 13	+27	e 34·2	—
Edinburgh	71·9	6	—	—	e 21 10?	+16	—	—
Tashkent	72·4	315	(11 24)	− 1	(e 21 2)	PS	(e 37·1)	(47·8)
Copenhagen	72·4	357	11 25	0	21 10	PS	37·2	—
De Bilt	76·1	1	11 47	0	e 21 36	+ 3	e 36·2	50·0
Kew	76·6	4	e 11 48	− 1	—	—	e 42·2	—
Uccle	77·4	3	e 11 54	0	(e 27 10?)	SS	e 27·2	—
Paris	79·3	4	e 12 10?	+ 6	—	—	59·2?	60·2
Stuttgart	79·4	358	e 12 4	− 1	—	—	e 39·2	—
Strasbourg	79·6	359	e 12 6	0	—	—	e 39·2	—
Baku	80·6	328	i 12 11	0	e 23 9	PS	40·7	55·3
Tiflis	80·9	332	12 14	+ 1	e 22 30	+ 5	44·2	56·9
Yalta	80·9	340	e 12 5	− 8	e 25 55	?	—	—
Florence	84·3	357	i 12 30	0	—	—	52·2	—
San Juan	85·5	66	e 13 12	+36	e 22 57	[− 6]	—	—

Additional readings :—
Sitka iPP = +5m.15s.
Ukiah eSS = +15m.40s.
St. Louis eEN = +9m.41s., esSEN = +17m.50s.
Toronto eN = +24m.44s. =SSSS +8s.
Pittsburgh i = +20m.2s. =S_cS +3s.
Georgetown e = +8m.11s., i = +8m.34s. and +10m.32s. =P +2s.
Oak Ridge eNW = +11m.11s. =P_cP +2s., iSNW = +19m.10s. =PS −5s., eNE = +20m.27s. =S_cS +7s.
Helsingfors eP_cPN = +12m.33s., ePPN = +15m.24s. ; T_o =2h.12m.52s.
Tashkent readings have been *increased* by 3m.
Long waves were also recorded at Agra, Columbia, Bombay, Honolulu, Tucson, Hong Kong, and other European stations.

July 20d. 3h. 52m. 29s. Epicentre 12°·8S. 166°·5E. (as at 19d. 22h.). X.

A = −·948, B = +·228, C = −·222 ; D = +·233, E = +·972 ; G = +·215, H = −·052, K = −·975.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	12·7	117	2 55	− 3	5 19	− 1	6·5	—
Riverview	25·2	211	e 5 14	− 8	e 9 41	− 3	e 12·6	15·8
Sydney	25·2	211	e 4 31	−51	—	—	10·3	11·5
Wellington	29·4	167	—	—	i 11 46	SS	16·5	17·5
Melbourne	31·5	211	i 6 20	+ 2	e 11 22	− 6	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Adelaide	33·5	221	e 11 7	?	i 13 8	?	16·0	21·1
Batavia	59·1	268	e 9 58	0	—	—	—	—
Vladivostok	64·2	332	(10 35)	+ 1	(19 19)	+ 9	—	—
Chiufeng	70·6	321	e 11 19	+ 5	20 27	− 1	—	—
Tashkent	103·8	312	e 15 25	+84	—	—	48·4	63·1
Sverdlovsk	109·3	328	e 19 10	PP	e 26 32	{+30}	47·5	—
Scoresby Sund	122·1	5	20 25	PP	—	—	55·5	—
San Juan	129·2	77	e 22 25	PKS	e 26 9	[− 8]	—	—
Copenhagen	132·6	343	19 31	[+20]	—	—	—	—
Vienna	136·8	331	e 22 23	PP	—	—	—	—
De Bilt	138·0	345	e 19 18	[− 1]	e 40 33	SS	e 74·5	—
Uccle	139·3	346	e 19 38	[+17]	—	—	—	—
Stuttgart	139·5	340	e 19 25	[+ 4]	—	—	e 92·5	—
Strasbourg	140·1	340	e 19 20	[− 2]	—	—	—	—
Paris	141·6	346	19 31?	[+ 8]	—	—	91·5	—
Florence	142·4	330	e 19 18	[− 7]	—	—	—	—

Additional readings and note :—
Riverview eSN = +9m.45s.
Melbourne e = +13m.55s.
Adelaide e = +14m.36s.
Vladivostok readings have been *increased* by 10m.
Sverdlovsk e = +28m.33s. =PS +12s.
De Bilt eZ = +22m.11s. =PP +2s.
Uccle PP = +22m.20s.
Stuttgart ePP = +22m.19s.
Strasbourg iPP? = +22m.22s.
Paris PP = +22m.31s.
Long waves were also recorded at Oak Ridge, Perth, Tucson, Charlottesville, and Pittsburgh.

July 20d. 8h. Readings without determination :—
Suva 0m.
Christchurch ePNZ = 1m.27s., S = 6m.29s., LqE = 8m.54s., eLR = 11m.23s.
Riverview e = 5m.24s., M = 13m.48s.
Wellington e = 10m.
Melbourne e = 10m.45s.
Adelaide e = 15m.2s., M = 17m.42s.
Sverdlovsk e = 21m.30s., e = 23m.19s., L = 41m.
Perth P = 22m.0s.
Tashkent eL = 46m.54s., M = 50m.48s.
Oak Ridge e = 59m.

July 20d. 13h. Readings without determination :—
Christchurch PNZ = 11m.31s., S = 16m.44s., LqE = 18m.53s., eLR = 20m.18s.
Riverview eSNE = 13m.44s., ME = 18m.26s.
Chiufeng e = 15m.0s., eS = 24m.8s.
Wellington e = 15m.20s., L = 19m.
Sverdlovsk e = 22m.53s., e = 30m.16s., e = 32m.5s., e = 38m.3s., L = 49m.
Stuttgart e = 26m.0s., eL = 89m.
De Bilt eZ = 26m.6s., e = 44m.18s., eL = 77m.
Florence P = 26m.21s.
Strasbourg i = 26m.26s.
Perth P = 30m.0s.
Vladivostok e = 31m.34s.
Copenhagen 40m.0s., L = 78m.
Tucson L = 47m.0s.
Columbia e = 60m.
Scoresby Sund L = 60m.

July 20d. 13h. 39m. 11s. Epicentre 35°·6N. 140°·8E. R.3.
(as on 1933 Nov. 1d.).

A = −·630, B = +·514, C = +·582; D = +·632, E = +·775;
G = −·451, H = +·368, K = −·813.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Tyosi	0·2	17	i 0 4	+ 1	0 9	+ 4	0·1
Tokyo	0·9	276	0 11	− 2	0 21	− 2	0·4
Nagoya	3·2	262	0 48	+ 2	e 1 31	S*	1·9
Mizusawa	3·5	4	e 0 52	+ 2	e 1 26	− 4	—
Osaka	4·4	259	1 12	P*	2 18	S_g	2·2
Kobe	4·7	260	—	—	i 2 10	S*	—
Toyooka	4·8	271	1 19	P*	2 25	S_g	2·5
Sumoto	5·0	257	e 1 29	P_g	2 39	S_g	2·7
Koti	6·3	256	—	—	e 3 1	S*	—
Pulkovo	69·0	330	e 11 29	(0)	—	—	e 26·8
Pittsburgh	95·2	30	—	—	e 23 49	[−13]	—

Additional readings:—
Kobe eZ = +2m.12s., iZ = +2m.27s., iN = +2m.31s. = S_g +2s., iE = +3m.32s.
Toyooka ePN = +1m.22s.
Sumoto ePZ = +1m.31s., SN = +2m.34s., eSZ = +2m.36s.
Long waves were also recorded at Baku.

July 20d. 16h. 48m. 23s. Epicentre 13°·0S. 165°·5E. (as on 1932 Feb. 14d.). R.3.

A = −·943, B = +·244, C = −·225; D = +·250, E = +·968;
G = +·218, H = −·056, K = −·974.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	13·5	114	3 49	+40	6 37	L	(6·6)	—
Riverview	24·6	210•	e 5 22	+ 6	i 9 53	+19	e 12·8	14·6
Sydney	24·6	210	—	—	(10 2)	+28	10·0	14·2
Wellington	29·4	166	—	—	e 11 41	+46	17·6	—
Melbourne	30·8	214	—	—	i 11 29	+12	15·9	18·8
Christchurch	31·1	171	6 20	+ 5	11 39	+18	15·8R	—
Adelaide	32·7	223	i 11 50	S	(i 11 50)	+ 4	e 18·0	19·8
Amboina	38·0	281	e 6 38	−37	—	—	—	—
Manila	52·0	300	9 8	+ 2	16 38	+10	—	—
Batavia	58·1	272	e 9 51	0	—	—	—	—
Vladivostok	63·9	332	(10 33)	+ 2	(e 19 15)	+ 9	(e 26·1)	—
Chiufeng	70·4	322	11 8k	− 5	e 20 19	− 7	—	—
Pasadena	86·2	54	i 12 38	− 1	—	—	—	—
Mount Wilson	86·4	54	i 12 38	− 2	—	—	—	—
Riverside	86·9	54	e 12 41	− 2	—	—	—	—
Tashkent	103·2	311	e 17 43	PP	e 24 39	[− 2]	70·7	—
Sverdlovsk	109·0	325	e 14 23	− 3	e 26 28	{+28}	45·6	—
Baku	117·8	309	e 19 26	PP	e 29 52	PS	e 59·6	—
Tiflis	121·4	313	e 20 26	PP	e 25 29	[−26]	—	—
Scoresby Sund	122·3	3	20 25	PP	—	—	59·6	—
Pulkovo	122·9	335	e 18 53	[+ 1]	—	—	—	—
Helsingfors	124·7	337	e 22 37?	?	e 26 37?	[+33]	—	—
San Juan	130·2	77	e 22 27	PKS	—	—	e 73·6	—
Copenhagen	132·5	340	19 13	[+ 2]	—	—	—	—
Hamburg	135·0	340	e 19 16	[+ 1]	—	—	—	—
De Bilt	137·9	340	i 19 24	[+ 5]	e 40 22	SS	—	—
Uccle	139·2	341	i 19 28	[+ 8]	—	—	—	—
Stuttgart	139·4	336	e 19 25	[+ 4]	—	—	—	—
Strasbourg	140·0	337	i 19 18a	[− 3]	—	—	e 41·6	—
Piacenza	141·9	332	e 19 1	[−22]	—	—	—	—

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Florence	142·1	327	e 19 24 a	[0]	—	—	—	—
Toledo	151·6	343	e 19 43	[− 1]	—	—	—	—
Alicante	151·8	336	e 19 53	[+ 9]	—	—	—	—
Granada	154·0	340	e 19 40	[− 7]	—	—	—	—
Malaga	154·6	341	e 19 39	[− 9]	—	—	—	—
San Fernando	155·4	344	19 53	[+ 5]	28 51	?	—	—

Additional readings and notes :—
Riverview iSN = +9m.59s.
Melbourne i = +14m.2s.
Christchurch L_q = +14·0m.
Adelaide iS = +15m.37s., i = +17m.13s. = S_cS +14s.
Vladivostok readings have been *increased* by 10m.
Tashkent e = +21m.1s., +23m.27s., and +27m.31s. = PS +12s.
Sverdlovsk e = +19m.4s. = PP +14s. and +28m.20s. = PS +2s.
Baku e = +38m.48s.
Pulkovo e = +20m.27s. = PP − 2s. and +23m.11s.
Helsingfors e?E = +41m.37s.?
Copenhagen +21m.37s. = PP +3s., e = +22m.42s. = PKS − 2s.
Hamburg e = +21m.50s. = PP +0s.
De Bilt iZ = +22m.11s. = PP +3s.
Uccle i = +22m.18s. = PP +2s.
Stuttgart ePP = +22m.17s.
Strasbourg iPP = +22m.15s.
Granada i = +20m.10s. = PKP_2 − 7s.
Long waves were also recorded at Perth and Oak Ridge.

July 20d. 18h. 6m. 7s. Epicentre 11°·0S. 165°·0E. (as at 18d. 13h.). R.3.

A = −·948, B = +·254, C = −·191 ; D = +·259, E = +·966 ;
G = +·184, H = −·049, K = −·982.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	37·2	278	—	—	e 12 56	+ 2	—	—
Hong Kong	59·9	305	18 23	S	(18 23)	+ 8	—	—
Mount Wilson	85·6	54	i 12 36	0	—	—	—	—
Pasadena	85·6	54	i 12 35	− 1	—	—	—	—
Riverside	86·1	54	e 12 39	0	—	—	—	—
Tinemaha	86·3	52	e 12 41	+ 1	—	—	—	—
Sverdlovsk	107·0	326	—	—	e 28 19	PS	53·9	69·1
Huancayo	115·8	110		—	e 35 53?	SS	—	—
San Juan	130·1	77	e 22 32	PKS	—	—	—	—
De Bilt	135·8	342	—	—	e 26 22	SKS	—	—
Stuttgart	137·2	336	e 21 5	?	e 26 29	SKS	e 48·9	—
Strasbourg	137·9	337	e 19 21	[+ 2]	e 26 19	SKS	—	—

Long waves were also recorded at Seattle, Ukiah, Ivigtut, and Manila.

July 20d. 18h. 10m. 28s. Epicentre 11°·0S. 165°·0E. (as on 18h. 6m.). X.

A = −·948, B = +·254, C = −·191 ; D = +·259, E = +·966 ;
G = +·184, H = −·049, K = −·982.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	14·8	120	2 26	−60	5 20	−50	6·5	—
Riverview	26·1	207	e 5 31	+ 1	e 9 53	− 7	—	15·7
Sydney	26·1	207	e 5 14	−16	e 10 22	+22	14·9	17·9
Wellington	31·5	166	6 11	− 7	11 32	+ 4	15·0	18·5
Melbourne	32·3	210	e 7 55	PP	i 11 43	+ 3	17·6	24·0
Christchurch	33·2	172	i 6 37	+ 3	i 11 49	− 5	15·1R	—
Adelaide	33·9	221	e 12 7	S	(e 12 7)	+ 3	e 18·7	24·1
Honolulu	48·7	48	e 15 52	S	(e 15 52)	+ 9	—	—
Perth	49·8	237	—	—	19 53	SS	27·5	—
Manila	50·6	300	9 0	+ 4	15 33?	?	—	—

Continued on page next.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	53·6	329	—	—	e 16 40	−10	26·2	—
Hong Kong	59·9	305	—	—	18 21	+ 6	—	32·3
Vladivostok	61·9	334	(e 10 16)	− 2	(e 18 50)	+ 9	—	—
Chiufeng	68·2	322	e 10 57	− 2	i 19 59	0	e 27·6	—
Sitka	83·7	29	—	—	e 31 32?	SSS	—	—
Victoria	86·5	39	12 37	− 4	23 2	[− 8]	38·6	—
Agra	92·4	296	—	—	i 23 47	[0]	—	—
Sverdlovsk	107·0	326	—	—	e 26 15	{+30}	—	—
Pittsburgh	116·1	51	—	—	e 27 51	?	e 57·5	—
Ottawa	118·1	44	—	—	e 29 20	PS	57·5	—
Tiflis	119·7	312	e 20 3	PP	e 30 14	PS	—	—
Scoresby Sund	120·4	3	19 32?	PP	—	—	—	—
La Paz	120·7	117	—	—	e 30 20	PS	59·0	63·0
Pulkovo	120·9	335	e 20 20	PP	e 30 16	PS	e 63·5	70·3
Oak Ridge	121·9	48	—	—	e 30 12	PS	65·0	—
Helsingfors	122·7	338	—	—	e 27 32?	{− 2}	—	—
San Juan	130·1	77	—	—	e 22 27	PKS	—	—
Copenhagen	130·4	340	21 26	PP	—	—	—	—
Edinburgh	135·6	8	—	—	e 39 32?	SS	e 81·5	—
De Bilt	135·8	342	e 19 20	[+ 4]	e 40 0	SS	—	—
Stuttgart	137·2	356	e 19 21	[+ 3]	—	—	—	—
Uccle	137·2	342	e 22 8	PP	—	—	—	—
Kew	137·8	346	e 19 32?	[+13]	—	—	e 62·5	106·9
Paris	139·5	342	e 19 32?	[+11]	(26 32?)	SKS	26·5	—
Florence	140·1	333	e 24 22	?	—	—	—	—

Additional readings and note :—
Wellington SS = +13m.32s.?
Melbourne i = +14m.45s.
Christchurch L_q = +13·6m.
Adelaide i = +13m.45s. and +15m.41s., iS = +16m.36s. and +18m.2s.
Perth SS = +22m.32s., i = +25m.32s.
Sumoto eN = +17m.1s.
Vladivostok readings have been *increased* by 10m.
Sverdlovsk e = +28m.11s. =PS +13s.
Pittsburgh e = +29m.15s. =PS −11s. and +36m.0s. =SS +20s.
Ottawa eE = +24m.56s. and +36m.26s. =SS +19s.
Pulkovo e = +28m.14s.
Oak Ridge eNW = +30m.19s. =PS +0s., eNE = +36m.44s. =SS −13s., eNW = +36m.46s.
Helsingfors e?NE = +30m.32s. =PS +5s., e?N = +38m.32s.
Copenhagen +22m.32s. =PKS −3s.
Edinburgh e = +61m.32s.
Long waves were also recorded at Seattle, Tucson, Chicago, Columbia, Bozeman, Huancayo, Batavia, Zi-ka-wei, Taikyu, Kobe, Kotl, Baku, and Ivigtut.

July 20d. 18h. 48m. 50s. Epicentre 11°·0S. 165°·0E. (as at 18h.10m.). **X.**

A = −·948, B = +·254, C = −·191 ; D = +·259, E = +·966 ; G = +·184, H = −·049, K = −·982.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	14·8	120	5 10	?	7 34	?	8·7	—
Riverview	26·1	207	e 5 40	+10	e 10 9	+ 9	—	16·0
Wellington	31·5	166	5 40	−38	i 11 37	+ 9	14·0	19·2
Melbourne	32·3	210	—	—	i 11 49	+ 9	—	19·0
Christchurch	33·2	172	i 6 49	+15	i 11 57	+ 3	15·8R	—
Adelaide	33·9	221	i 12 12	S	(i 12 12)	+ 8	e 18·7	20·9
Amboina	37·2	278	6 16	−52	—	—	e 20·7	—
Honolulu	48·7	48	—	—	i 15 56	+13	20·2	—
Perth	49·8	237	—	—	e 16 15	+17	25·0	28·2
Manila	50·6	300	7 22	−94	15 36	−33	26·2	30·2

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Osaka	53·6	330	8 59	−19	17 2	+12	—	—
Sumoto	53·6	329	e 9 18	0	16 59	+ 9	e 23·8	—
Koti	53·7	327	—	—	16 52	0	—	26·9
Mizusawa	54·8	337	—	—	20 58	SS	—	—
Husan	57·3	325	—	→	e 17 50	+10	—	—
Batavia	57·6	270	e 9 43	− 4	e 18 9	+25	—	—
Hong Kong	59·9	305	11 49	PP	18 24	+ 9	25·1	34·8
Nanking	61·7	316	e 10 35	+19	—	—	26·2	31·1
Vladivostok	61·9	334	(e 10 24)	+ 6	(18 54)	+13	(25·7)	(32·4)
Chiufeng	68·2	322	10 58k	− 1	i 20 8	+ 9	e 26·9	34·8
Mount Wilson	85·6	54	i 12 32	− 4	—	—	—	—
Pasadena	85·6	54	i 12 29	− 7	—	—	—	—
Riverside	86·1	54	e 12 32	− 7	—	—	—	—
Tinemaha	86·3	52	e 12 34	− 6	—	—	—	—
Haiwee	86·3	53	e 12 41	+ 1	—	—	—	—
Colombo	86·6	277	13 12	+31	23 30	+ 7	—	63·0
Seattle	86·8	41	e 16 3	PP	—	—	e 38·6	—
Hyderabad	90·1	287	11 12	?	24 2	+ 5	46·7	66·7
Tucson	91·0	57	e 16 36	PP	—	—	e 41·8	—
Bombay	95·5	288	—	—	i 24 11	{− 7}	—	59·7
Tashkent	101·5	311	e 13 10?	−40	i 25 33	− 7	—	56·8
Sverdlovsk	107·0	326	i 33 30	SS	—	—	48·9	61·4
Chicago	110·2	51	—	—	e 34 46	SS	e 51·5	—
Huancayo	115·8	110	—	—	e 29 35	PS	e 54·2	—
Tiflis	119·7	312	e 20 17	PP	e 29 22	PS	e 55·2	68·1
Philadelphia	119·8	51	i 19 43	PP	—	—	e 57·4	—
Scoresby Sund	120·4	3	20 22	PP	—	—	—	—
La Paz	120·7	117	41 15	SSS	—	—	59·2	65·1
Pulkovo	120·9	335	e 20 24	PP	—	—	e 54·2	70·4
Sucre	122·1	122	40 41	SSS	—	—	62·4	—
Helsingfors	122·7	338	e 18 27	[−25]	e 23 5	PPP	e 56·2	—
Cape Town	124·9	215	22 40	?	—	—	—	—
Upsala	125·5	342	—	—	e 45 10?	SSSS	—	—
Bergen	128·4	349	—	—	41 10?	?	—	—
Ksara	128·4	306	e 19 10?	[+ 6]	e 21 36	PP	76·2	—
San Juan	130·1	77	e 22 25	PKS	e 25 10	[−69]	—	—
Copenhagen	130·4	340	19 16	[+ 9]	22 34	PKS	—	—
Hamburg	133·0	342	e 21 40	PP	—	—	e 64·2	72·2
Göttingen	134·7	340	—	—	e 34 10?	?	—	74·2
Cheb	134·9	339	—	—	e 31 10?	SKSP	—	—
Graz	135·7	332	—	—	e 26 46	SKS	e 66·2	77·4
De Bilt	135·8	342	e 19 22	[+ 6]	—	—	e 64·2	80·4
Stonyhurst	136·0	349	—	—	e 25 12	SKS	—	68·7
Zagreb	136·4	333	e 22 56	PKS	—	—	e 69·2	—
Stuttgart	137·2	336	e 19 28	[+10]	—	—	e 56·2	—
Uccle	137·2	342	e 19 22	[+ 4]	—	—	—	—
Oxford	137·7	349	e 23 0	PKS	—	—	e 68·2	92·8
Strasbourg	137·9	337	e 19 23	[+ 4]	—	—	e 38·2	—
Paris	139·5	342	e 19 25	[+ 4]	—	—	38·2	89·2
Piacenza	139·9	333	22 10	PP	—	—	—	86·2
Florence	140·1	333	e 22 55	PKS	—	—	—	—
Tortosa	147·6	340	e 20 4	[+26]	—	—	e 41·2	91·7
Toledo	149·6	345	e 19 40	[− 1]	—	—	e 42·8	—
Alicante	149·7	337	e 19 14	[−27]	—	—	e 87·1	—
Granada	151·9	340	e 19 35	[− 9]	—	—	—	—
San Fernando	153·4	344	19 51	[+ 5]	—	—	—	89·2

Additional readings and notes :—
Melbourne i = +14m.28s. and +16m.50s. = S_cS − 7s.
Christchurch L_q = +13·8m.
Adelaide e = +13m.57s. = SS − 4s., i = +14m.36s., iS = +16m.41s.
Perth PPPP = +12m.5s., P_cS = +12m.55s., SS = +20m.10s., SSS = +22m.32s., SSSS = +23m.0s.
Osaka i = +11m.49s. and +21m.17s.

Continued on next page.

Sumoto eZ = +10m.2s. = P_cP − 26s., SN = +16m.56s.
Vladivostok readings have been *increased* by 10m.
Huancayo e = +36m.38s.
Philadelphia i = +42m.26s., e = +47m.22s. and +52m.34s.
Helsingfors ePPPN = +21m.14s., ePSN = +28m.35s., e?N = +33m.14s., eSSN = +35m.23s., eSSSN = +40m.21s. ; T_0 = 18h.46m.17s.
San Juan e = +39m.22s.
De Bilt eZ = +22m.0s. = PP + 5s.
Stuttgart ePP = +22m.10s., e = +23m.34s., eSS = +40m.10s.
Uccle e = +22m.10s. = PP + 6s.
Strasbourg e = +22m.14s. = PP + 6s.
Paris e = +23m.10s.? = PKS + 2s.
Granada i = +23m.23s. = PKS − 6s.
San Fernando PE = +19m.57s., PN = +20m.15s. = PKP_2 + 1s.
Long waves were also recorded at Leipzig, Phu-Lien, Baku, La Plata, Ann Arbor, Ivigtut, Kobe, Sydney, and Almeria.

July 20d. Readings also at 0h. (Suva, Amboina, Edinburgh, Kew, and San Juan), 1h. (Melbourne, Wellington, Riverview, Sitka, and Perth), 2h. (Ivigtut, San Juan, Oak Ridge, and Mizusawa), 3h. (Amboina and Piacenza), 5h. (Ivigtut and Kew), 8h. (Mizusawa (2)), 10h. (Suva and Riverview), 11h. (Perth and Wellington), 13h. (Vladivostok), 14h. (Ivigtut, Kew, Oak Ridge, and Strasbourg), 15h. (Toledo and Malabar), 16h. (Scoresby Sund, Tiflis (2), Dannevirke, Hastings, and Wellington (2)), 17h. (Ivigtut), 18h. (San Juan, Malaga, and Batavia), 19h. (Husan, Amboina, Granada, Tiflis, and Riverview), 21h. (Tiflis).

July 21d. 4h. 37m. 34s. Epicentre 16°·3N. 120°·6E. (as on 1932 Aug. 24d.). R.2.

A = −·489, B = +·826, C = +·281 ; D = +·861, E = +·509 ;
G = −·143, H = +·242, K = −·960.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	1·8	168	i 0 31a	P_g	1 2	S_g	—	—
Hong Kong	8·5	316	−2 4	?	2 34	P_g	—	6·9
Phu-Lien	14·0	291	e 3 19	+ 4	—	—	6·4	—
Nanking	15·8	355	e 4 42	+63	e 6 49	+15	9·9	—
Koti	20·8	32	4 35	− 3	8 35	+13	—	—
Amboina	21·3	159	i 4 26	−17	i 8 37	+ 5	—	—
Sumoto	22·1	33	e 4 51	− 1	—	—	—	—
Kobe	22·5	33	e 4 58	+ 2	—	—	—	—
Osaka	22·7	33	4 47	−11	9 9	+10	—	—
Nagoya	23·8	35	e 5 7	− 1	—	—	—	—
Chiufeng	24·0	352	e 5 11	+ 1	9 30	+ 7	12·4	14·5
Batavia	26·3	212	e 4 36	−56	—	—	—	—
Vladivostok	28·5	18	e 5 56	+ 4	e 10 34	− 6	11·5	—
Tashkent	50·5	312	8 55	0	15 57	−11	e 27·3	30·5
Sverdlovsk	60·1	327	e 10 4	− 1	e 18 16	− 1	28·4	33·8
Pulkovo	76·1	330	11 42	− 5	21 22	−11	e 38·4	44·0
Helsingfors	78·7	330	e 11 44	−17	e 21 44	−18	e 37·4	—
Scoresby Sund	89·4	349	—	—	23 26	[− 3]	34·4	—
Edinburgh	93·8	333	—	—	e 33 26?	?	e 50·4	—

Additional readings :—
Nanking eS = +8m.35s.
Amboina iS = +4m.45s. = P + 2s.
Sumoto ePE = +4m.53s., ePZ = +4m.55s.
Kobe eE = +5m.8s., eN = +5m.20s., eZ = +5m.23s., eNZ = +6m.51s.
Osaka i = +5m.26s. and +12m.0s.
Tashkent e = +25m.32s.
Helsingfors eSSN = +27m.26s.?, eSSSN = +32m.26s.? ; T_0 = 4h.37m.24s.
Long waves were also recorded at Kew and other European stations.

July 21d. 6h. 18m. 24s. Epicentre 11°·0S. 165°·0E. (as on 20d. 18h.). R.1.

$A = -\cdot948$, $B = +\cdot254$, $C = -\cdot191$; $D = +\cdot259$, $E = +\cdot966$; $G = +\cdot184$, $H = -\cdot049$, $K = -\cdot982$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		14·8	120	4 0	+34	7 0	+50	7·6	—
Riverview		26·1	207	i 5 30	0	i 10 25	+25	—	17·4
Sydney		26·1	207	e 5 13	−17	(10 21)	+21	13·1	13·6
Arapuni		28·7	162	6 12	+19	11 6	+23	14·6	15·6
Wellington		31·5	166	6 31	+13	11 42	+14	14·6	15·6
Melbourne		32·3	210	6 25	0	11 58	+18	14·7	20·3
Glenmuick		32·7	169	6 0	−29	11 18	−28	15·0	18·7
Christchurch		33·2	172	i 6 41	+ 7	i 12 5	+11	—	—
Adelaide		33·9	221	i 6 41	+ 2	i 12 19	+15	i 16·7	22·7
Palau		35·5	300	6 57	+ 4	13 1	+32	—	—
Chatham Ils.		36·6	157	7 54	+51	13 33	+48	18·4	24·6
Amboina		37·2	278	i 7 3	− 5	—	—	15·7	—
Titizima		44·1	330	8 22	+16	14 45	+ 8	—	—
Honolulu		48·7	48	e 8 36	− 5	i 16 16	+33	i 22·0	—
Perth		49·8	237	8 56	+ 6	16 16	+18	—	26·1
Manila		50·6	300	i 8 55k	− 1	15 56	−13	23·6	—
Tyosi		52·0	335	e 9 17	+11	17 2	+34	11·7	26·1
Tokyo		52·4	335	9 12	+ 3	16 47	+13	—	—
Tokyo Univ.		52·4	335	7 33	?	17 4	+30	22·0	28·5
Siomisaki		52·4	329	9 10	+ 1	16 37	+ 3	—	—
Hunatu		52·7	333	9 12	0	16 48	+10	—	—
Kohu		52·9	333	9 12	− 1	16 37	− 4	—	—
Kumagaya		53·0	334	9 12	− 2	16 42	0	—	—
Tu		53·1	331	9 19	+ 4	16 54	+11	—	—
Kameyama		53·2	331	9 16	+ 1	16 48	+ 3	—	—
Nagoya		53·2	332	8 8	−67	—	—	16·3	26·1
Maebasi		53·3	334	9 22	+ 6	17 5	+19	—	—
Wakeyama		53·4	329	9 16	− 1	16 45	− 2	—	—
Gihu		53·5	331	9 17	− 1	16 50	+ 1	—	—
Miyazaki		53·6	324	9 19	+ 1	16 49	− 1	—	—
Osaka		53·6	330	9 15	− 3	16 52	+ 2	—	27·7
Sumoto		53·6	329	i 9 17	− 1	17 17	+27	—	24·6
Hikone		53·7	331	9 17	− 2	16 45	− 7	—	—
Kobe		53·7	330	e 9 20	+ 1	i 17 25	+33	22·9	27·9
Koti		53·7	327	9 18	− 1	e 16 48	− 4	e 22·6	24·4
Kyoto		53·7	332	9 18	− 1	16 57	+ 5	—	—
Nagano		53·9	332	9 20	− 1	17 4	+10	—	—
Toyooka	E.	54·6	332	9 25	− 1	17 30	+26	23·6	27·3
Mizusawa	N.	54·8	337	e 9 29	+ 2	e 17 16	+10	22·6	—
Nagasaki		55·1	324	9 30	0	17 35	+24	e 23·8	30·2
Takao		55·2	308	e 10 13	+43	18 26	+74	—	—
Arisan		55·3	309	e 9 37	+ 6	e 18 0	+47	—	—
Hukuoka		55·4	325	9 47	+15	17 47	+32	24·2	24·5
Hukuoka B		55·4	325	9 44	+12	17 49	+34	24·1	24·4
Morioka		55·4	338	9 34	+ 2	17 34	+19	—	—
Taihoku		55·9	311	10 10	+35	17 56	+35	—	—
Malabar		56·7	269	9 47	+ 6	17 50	+18	e 21·6	—
Husan		57·3	325	e 9 26	−19	e 17 58	+18	e 21·9	24·9
Batavia		57·6	270	9 49	+ 2	—	—	28·1	—
Taikyu		58·1	326	10 9	+18	17 49	− 2	24·8	—
Sapporo		58·2	340	10 1	+ 9	18 1	+ 9	—	—
Zi-ka-wei		59·4	317	e 10 13	+13	18 22	+14	27·4	30·9
Hong Kong		59·9	305	10 6	+ 2	18 57	+42	34·8	—
Keizyo		60·2	326	e 10 5	− 1	17 51	−28	25·0	25·9
Zinsen		60·4	325	i 10 7	0	e 18 21	0	i 25·3	32·8

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ootomari	61·0	344	10 15	+ 4	—	—	—	—
Nanking	61·7	316	i 10 15k	− 1	i 19 20	+42	28·7	30·9
Heizyo	61·9	326	10 14	− 4	18 2	−39	23·2	31·8
Vladivostok	61·9	334	10 18	0	e 18 20	−21	26·1	31·8
Dairen	64·2	323	10 33	− 1	19 9	− 1	—	—
Yingkow	65·0	326	10 36	− 3	19 19	− 1	—	—
Phu-Lien	65·6	299	e 10 43	+ 1	19 39	+12	30·6	42·3
Medan	67·6	278	11 0	+ 4	i 20 2	PS	38·6	—
Chiufeng	68·2	322	i 10 57k	− 2	19 59	0	—	44·9
Calcutta	82·1	295	12 12	− 7	23 27	PS	e 40·0	47·4
Ukiah	83·2	49	e 12 24	0	e 22 36	−13	e 39·3	—
San Francisco	83·3	50	e 12 36	+11	e 23 17	PS	—	—
Branner	83·4	50	e 12 22	− 3	—	—	e 41·8	—
Berkeley	83·5	49	i 12 21	− 5	e 22 54	+ 2	e 40·4	—
Lick	83·7	50	e 12 25	− 2	—	—	—	—
Sitka	83·7	29	e 12 26	− 1	e 23 0	+ 6	e 34·9	—
Santa Barbara	84·4	54	i 12 26	− 4	—	—	—	—
Mount Wilson	85·6	54	i 12 33	− 3	—	—	—	—
Pasadena	85·6	54	i 12 33a	− 3	i 23 47	PS	e 36·3	—
La Jolla	85·9	55	e 12 34	− 4	—	—	—	—
Riverside	86·1	54	i 12 35	− 4	—	—	—	—
Haiwee	86·3	53	e 12 38	− 2	—	—	—	—
Tinemaha	86·3	52	i 12 37	− 3	—	—	—	—
Victoria	86·5	39	12 44	+ 3	23 45	PS	39·4	—
Colombo	86·6	277	12 43	+ 2	23 34	+11	50·9	61·8
Seattle	86·8	41	e 13 4	+22	e 23 5	[− 7]	e 36·4	—
Kodaikanal	89·6	280	13 19	+23	23 48	− 4	—	56·7
Hyderabad	90·1	287	11 25	−93	24 0	+ 3	48·2	66·8
Tucson	91·0	57	e 12 58	− 4	e 24 24	+19	e 41·6	—
Agra	92·4	296	13 32	+23	—	—	—	—
Dehra Dun	93·0	299	—	—	24 46	+22	30·9	38·6
Bozeman	93·7	44	e 13 21	+ 7	e 24 21	− 9	e 42·8	—
Bombay	95·5	288	e 14 2	+39	24 36	−11	e 49·6	71·8
Denver	97·8	52	e 17 36	PP	i 25 17	+10	43·8	48·6
Andijan	99·2	309	e 14 5	+25	—	—	48·2	—
Tashkent	101·5	311	i 13 49	− 1	—	—	41·6	64·6
Sverdlovsk	107·0	326	14 19	+ 3	26 43	?	—	—
Florissant	108·3	54	e 14 22	− 1	i 26 52	?	—	—
St. Louis	108·4	54	e 14 42	+19	e 26 52	?	—	—
Chicago	110·2	51	e 19 7	PP	e 25 52	{−16}	e 49·1	—
Tananarive	111·5	247	19 44	PP	25 45	[+25]	e 48·1	58·6
Ann Arbor	113·1	50	e 19 12	PP	e 29 24	PS	e 52·8	58·0
Huancayo	115·8	110	i 17 44	[−51]	i 29 56	PS	e 47·0	—
Columbia	115·9	58	e 20 8	PP	e 26 14	[+37]	e 53·6	—
Toronto	115·9	46	e 15 1	+ 1	i 27 50	?	56·0	—
Pittsburgh	116·1	51	e 19 44	PP	i 25 23	[−15]	e 52·8	—
Baku	116·2	312	e 15 32	+31	e 28 47	PS	—	—
Charlottesville	117·6	54	e 20 7	PP	e 27 0	{ 0}	e 51·6	—
Ottawa	118·1	44	e 19 48	PP	i 30 14	PS	e 53·6	—
Georgetown	118·5	51	e 15 12	0	30 11	PS	e 54·6	—
La Plata E.	118·7	141	19 42	PP	25 42	[− 4]	49·6	67·9
N.	118·7	141	20 30	PP	25 48	[+ 2]	49·3	80·6
Tiflis	119·7	312	15 44	+26	e 25 43	[− 6]	55·6	—
Philadelphia	119·8	51	e 19 13	[+28]	e 28 22	?	i 56·1	—
Scoresby Sund	120·4	3	15 30	P	e 28 53	?	—	—
La Paz	120·7	117	e 19 1	[+14]	26 1	[+ 9]	51·6	62·1
Pulkovo	120·9	335	15 46	P	30 16	PS	63·6	78·4
Oak Ridge	121·9	48	e 18 56	[+ 6]	e 30 31	PS	56·9	—
Sucre	122·1	122	e 17 48	[−63]	27 56	{+26}	58·9	—
Helsingfors	122·7	338	e 20 41	PP	e 26 42	{−52}	53·7	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ivigtut		124·3	20	19 12	[+17]	30 54	PS	49·6	—
Cape Town	E.	124·9	215	21 11	PP	29 32	?	58·6	68·6
	N.	124·9	215	21 19	PP	29 30	?	58·6	68·6
Theodosia		125·3	319	e 19 24	[+26]	—	—	—	—
Upsala		125·5	342	e 20 54	PP	—	—	e 54·6	63·3
Simferopol		126·1	320	e 19 21	[+22]	—	—	—	—
Yalta		126·3	319	e 19 21	[+21]	—	—	—	—
Sebastopol		126·7	320	e 19 20	[+20]	e 28 44	?	—	—
Königsberg		128·1	336	i 22 11?	?	e 31 32	PS	e 43·6	57·6
Bergen		128·4	349	e 19 36	[+32]	33 48	?	63·7	—
Ksara		128·4	306	e 18 54	[−10]	30 52	SKSP	—	—
Lemberg		129·6	328	e 21 58	PP	—	—	e 55·2	66·2
San Juan		130·1	77	e 19 16	[+ 9]	e 26 54	[+35]	e 54·8	—
Copenhagen		130·4	340	19 6	[− 1]	27 36	?	—	—
Hamburg		133·0	342	e 19 11	[− 1]	e 32 42	PS	e 54·6	60·6
Budapest		133·7	330	e 19 36?	[+23]	—	—	e 40·1	71·1
Leipzig		133·9	338	e 22 13	PP	e 28 6	{−40}	e 51·6	63·6
Prague		134·1	336	e 22 7	PP	e 30 17	?	e 49·6	63·6
Jena		134·5	338	e 19 12	[− 2]	e 29 18	{+28}	e 51·6	61·1
Vienna		134·5	331	e 19 16	[+ 2]	31 35	SKSP	e 55·6	66·6
Belgrade		134·6	326	e 22 21	PKS	e 26 20	[−12]	e 67·7	—
Göttingen		134·7	340	i 19 36	[+22]	—	—	—	89·8
Cheb		134·9	339	e 20 36	?	e 32 40	PS	e 55·6	74·8
Durham		135·0	350	22 53	PKS	—	—	—	80·6
Edinburgh		135·6	8	e 19 46	[+30]	i 28 38	{−18}	54·6	68·2
Graz		135·7	332	e 19 48	[+32]	—	—	e 58·6?	70·0
De Bilt		135·8	342	e 17 54	?	e 40 12	SS	e 63·6	66·1
Stonyhurst		136·0	349	e 20 53	?	—	—	56·6	69·1
Zagreb		136·4	333	e 19 20	[+ 3]	e 32 22	PS	e 60·1	75·0
Laibach		136·9	333	e 22 55	PKS	e 30 8	?	e 56·0	—
Stuttgart		137·2	336	e 16 56	P	e 29 49	{+42}	e 55·6	85·6
Uccle		137·2	342	e 19 22	[+ 4]	i 31 14	?	55·6	68·6
Karlsruhe		137·3	339	19 46	[+28]	—	—	e 56·1	63·8
Triest		137·6	334	e 19 23	[+ 5]	i 40 51	SS	e 59·0	63·7
Oxford		137·7	349	e 19 15	[− 4]	i 31 4	?	—	—
Kew		137·8	346	e 19 22	[+ 3]	i 40 32	SS	52·6	69·1
Strasbourg		137·9	337	e 16 51	P	32 13	SKSP	e 63·6	93·3
Treviso		138·3	335	e 19 16	[− 3]	23 26	PKS	63·6	83·6
Venice		138·4	333	19 20	[+ 1]	e 21 41	?	63·6	67·6
Chur		138·6	335	e 19 27?	[+ 7]	—	—	—	—
Zurich		138·6	339	e 19 10	[−10]	—	—	—	—
Basle		138·8	339	e 19 37?	[+17]	—	—	—	—
Neuchatel		139·5	339	e 19 17	[− 4]	—	—	—	—
Paris		139·5	342	e 19 21	[0]	—	—	41·6	69·6
Piacenza		139·9	333	19 58	[+37]	30 42	?	i 40·6	80·9
Florence		140·1	333	i 19 36	[+14]	i 29 46	{+22}	—	—
Prato		140·2	335	i 19 32	[+10]	i 31 13	?	e 41·5	65·5
Siena		140·5	333	19 36?	[+14]	32 6	SKSP	64·6	—
Livorno		140·8	335	22 26	PP	32 56	PS	—	—
Catania		142·2	323	e 19 43	[+19]	23 10	PKS	—	23·8
Marseilles		143·2	337	e 20 0	[+32]	e 31 59	?	57·6	—
Tunis		145·7	328	e 19 37	[+ 2]	—	—	41·6	—
Barcelona		146·0	337	e 19 40	[+ 4]	—	—	e 59·7	66·4
Tortosa		147·6	340	19 51	[+13]	—	—	e 44·6	76·2
Serra do Pilar		149·4	352	19 40	[− 1]	—	—	—	—
Algiers		149·5	331	e 19 38	[− 3]	26 34	PPP	61·6	75·6
Toledo		149·6	345	e 19 55	[+14]	—	—	e 60·3	87·5
Alicante		149·7	337	e 19 51	[+10]	—	—	e 48·5	88·9
Almeria		151·8	338	e 20 10	{+ 3}	—	—	e 44·7	105·4
Granada		151·9	340	e 19 11	[−33]	26 26	PPP	74·1	77·9
Malaga		152·5	341	19 46	[+ 1]	e 31 16	{+40}	—	—
San Fernando		153·4	344	19 58	[+12]	29 42	PPPP	47·6	94·1
Dakar		175·6	33	26 14	PP	32 15	PPPP	—	61·6

For Notes see next page.

NOTES TO JULY 21d. 6h. 18m. 24s.

Additional readings and note :—

Suva i = +4m.36s.
Riverview iN = +10m.53s. = SS − 3s., iE = +10m.57s., iN = +11m.26s., iE = +11m.47s. and +14m.7s., iN = +14m.25s., iE = +15m.42s.
Sydney iS = +8m.48s. = P_cP − 10s. ; S is recorded as L.
Wellington PP = +7m.38s., i = +12m.36s., SS = +13m.51s.
Glenmuick e = +6m.36s., +8m.12s., +9m.48s., and +13m.36s. = SS + 3s.
Adelaide iPP = +8m.10s., i = +9m.12s. = P_cP − 10s., +12m.27s. and +16m.16s
Chatham Ils PP = +9m.0s., SS = +15m.36s.
Amboina i = +9m.8s.
Honolulu i = +9m.26s., iSS = +18m.58s., iSSS = +20m.16s.
Perth P_cP = +9m.36s., PP = +10m.46s., PPP = +11m.36s., PPPP = +12m.16s., P_cS = +13m.36s.
Manila PNE = +8m.57s.
Tokyo Univ. SN = +16m.6s.
Osaka i = +11m.47s., +12m.46s., +20m.23s. = SS − 1s. and +25m.51s.
Sumoto iPEN = +9m.20s., eE = +14m.40s., eN = +14m.44s., SZ = +17m.15s., SN = +17m.22s.
Kobe eZ = +9m.37s., iPN = +9m.40s., PMZ = +9m.54s., eZ = +10m.38s. = P_cP + 8s., iE = +11m.7s. = PP − 7s., eEN = +17m.3s., eSZ = +17m.58s.
Koti eZ = +9m.35s., e = +9m.52s., iSN = +17m.26s.
Toyooka SN = +17m.35s.
Mizusawa eSE = +17m.19s.
Zi-ka-wei SSE = +22m.26s., iE = +25m.34s.
Hong Kong PP = +12m.50s., ? = +18m.29s. = S + 14s., SS = +22m.46s., SSS = +25m.26s.
Zinsen iN = +22m.52s.
Nanking i = +11m.12s. = P_cP + 12s. and +24m.31s.
Ukiah ePP = +17m.46s., ePS = +23m.24s., eSS = +37m.51s.
Branner iN = +13m.3s., +13m.20s., and +14m.46s.
Berkeley ePN = +12m.28s., ePE = +12m.30s., iZ = +20m.41s., eE = +23m.32s. = PS − 1s., +23m.48s., and +25m.11s., eN = +34m.38s. and +38m.54s., eZ = +39m.48s.
Lick iN = +12m.54s. and +13m.0s.
Sitka eSS = +28m.6s., eSSS = +31m.26s.
Pasadena iZ = +20m.52s.
Mount Wilson iZ = +20m.53s.
Riverside iZ = +20m.53s.
Tinemaha iZ = +20m.56s.
Seattle ePS = +23m.54s., eSS = +28m.26s.
Kodaikanal P = +17m.2s., PPP = +18m.55s., PS = +25m.28s., SS = +30m.50s.
Tucson eSKS = +23m.56s., eSS = +29m.38s.
Bozeman e = +13m.54s., eSKS = +23m.44s., ePS = +26m.9s., eSS = +30m.21s., eSSS = +34m.40s., e = +38m.36s. and +39m.48s. ; T_e = 6h.18m.19s.
Bombay iPP = +17m.49s., SKKS = +25m.13s., SS = +32m.41s., SSS = +36m.36s.
Denver ePPP = +20m.0s., eSKS = +24m.1s., eSKKS = +24m.38s., eN = +26m.3s., ePS = +26m.33s., eN = +33m.36s. and +34m.56s., eSSS = +36m.48s.
Tashkent e = +14m.17s., i = +18m.18s., e = +22m.6s.
Sverdlovsk PP = +18m.20s., PPS = +28m.29s.
Florissant ePKP = +18m.10s., ePP = +18m.44s., eSKS = +24m.56s., eSKKS = +25m.36s., iPS = +28m.41s., iPPS = +29m.52s., iSS = +34m.41s., iSSS = +38m.46s. ; T_e = 6h.17m.59s.
St. Louis ePKPE = +18m.6s., eSKS = +24m.56s., eSKKSE = +25m.36s., iPS = +28m.41s., iPPS = +29m.57s., iSS = +34m.42s., iSSS = +38m.50s.
Chicago iPP = +19m.43s., ePS = +28m.57s., iSS = +35m.2s.
Tananarive iPS = +29m.15s., EN = +29m.49s. and +30m.42s., SS = +35m.27s.
Ann Arbor iPP = +20m.6s., i = +22m.6s., ePPP = +22m.48s., eSS = +35m.42s., eSSS? = +39m.36s. ; T_e = 6h.18m.12s.
Huancayo eSS = +36m.36s.?
Columbia ePPP = +22m.36s., ePS = +29m.58s., eSS = +36m.36s.
Toronto iPPNE = +19m.51s., iSKPN = +21m.21s., iPSEN = +29m.40s., iPPSE = +30m.58s., iSSE = +35m.43s., iSSSE = +40m.52s.
Pittsburgh iPS = +29m.47s., eSS = +36m.13s.
Baku e = +20m.25s.
Charlottesville eSKS = +25m.43s., ePS = +29m.30s., eSS = +35m.18s., e = +39m.42s.
Ottawa eN = +36m.20s. = SS + 13s., iE = +36m.47s., e = +48m.36s.
Georgetown iPP = +20m.27s.
La Plata E = +21m.0s. and +23m.47s., N = +23m.54s., PSN = +30m.36s., PPSE = +30m.40s., E = +33m.14s., N = +33m.18s., SKKSE = +36m.30s. = SS + 15s., SSSE = +39m.36s., SSSN = +39m.54s.
Tiflis PKPNZ = +19m.4s., PPEZ = +20m.22s., eN = +23m.10s., eZ = +29m.21s. eE = +33m.24s., SSZ = +37m.55s.

Continued on next page.

Philadelphia ePP = +20m.50s., iPPP = +23m.16s., e = +24m.7s., PS = +30m.5s., eSS = +36m.12s., e = +44m.52s.
Scoresby Sund PKPZ = +19m.24s., PP = +20m.44s., PSN = +30m.35s., PPS = +31m.54s., SS = +37m.18s., SSS = +41m.54s.
La Paz eP?N = +19m.4s., PN = +19m.13s., iPPE = +20m.57s., PPPN = +23m.53s., SKKSN = +28m.4s., SKSPN = +31m.0s., PPSN = +32m.24s., SSN = +38m.17s., SSSN = +42m.43s., LRZ = +57·5m.
Pulkovo PKP = +18m.48s., PP = +20m.22s., PPS = +31m.22s., SS = +36m.42s. SSS = +42m.6s.
Oak Ridge ePP = +20m.27s., eNE = +30m.37s., eSSNW = +37m.9s., eSSNE = +37m.19s.
Helsingfors ePKSN = +22m.2s., ePPPNE = +23m.41s., eSKKSNE = +28m.36s., ePSNE = +30m.53s., ePPSNE = +33m.20s., e?E = +35m.39s., eSSNE = +38m.3s., e?NE = +40m.57s., eSSSNE = +42m.12s., e?NE = +45m.36s. and +49m.36s. ; T_0 = 6h.17m.33s.
Ivigtut PP = +21m.9s., PPP = +24m.0s., eE = +29m.12s., e = +33m.25s., SS = +37m.54s., SSS = +42m.6s.
Cape Town SKPE = +22m.41s., SKPN = +22m.50s., SKS = +26m.44s., PSE = +31m.26s., PSN = +31m.32s., N = +32m.24s., E = +32m.30s., N = +33m.15s., E = +33m.17s., SSN = +38m.4s., SSE = +38m.11s., E = +40m.56s., N = +41m.4s.
Upsala SS = +38m.23s.
Sebastopol e = +38m.36s.
Königsberg eP_cP = +22m.56s., e?E = +24m.3s., i?N = +33m.33s., eSSSN = +39m.6s.
Bergen e = +26m.52s.
Ksara PP = +20m.36s., SKP = +21m.58s.
San Juan e = +22m.27s. = PKS − 7s., iPP = +22m.51s., ePPP = +24m.36s., eSS = +39m.6s.
Copenhagen PP = +21m.54s., PKS = +23m.0s., e = +24m.12s., +33m.36s., +34m.48s., SS = +39m.12s., +39m.36s.
Hamburg eZ = +21m.44s. = PP + 7s., iZ = +22m.11s., iEN = +23m.17s., iE = +35m.59s., eEN = +39m.36s. = SS + 19s., eE = +44m.43s. = SSS + 40s.
Budapest i = +22m.59s. = PKS + 10s.
Leipzig eN = +22m.49s. = PKS − 1s., e = +23m.17s. and +24m.23s. = PPP − 6s., eN = +31m.36s.? = SKSP − 6s., +32m.14s., +34m.12s., and +38m.54s., e = +40m.6s. and +44m.57s.?
Prague ePP = +24m.25s. = PPP − 5s., ePPP = +25m.26s.
Jena e = +18m.6s., eE = +22m.6s., eN = +22m.16s., +23m.24s., +24m.24s. = PPP − 10s., +24m.36s., e = +39m.20s. = SS − 16s., eE = +39m.36s. and +44m.36s. = SSS + 13s., eN = +45m.8s.
Vienna PKP = +22m.24s., eNE = +23m.23s., iPP = +24m.23s. = PPP − 5s., SKP = +25m.38s., iPPP = +27m.43s., iE = +33m.50s., iNE = +40m.16s., eNE = +44m.50s. and +50m.18s.
Belgrade e = +23m.26s. and +31m.58s. = SKSP + 10s.
Göttingen ePP = +22m.16s.
Cheb e = +22m.18s. and +40m.4s.
Edinburgh i = +22m.30s., +23m.22s., +30m.48s., +32m.9s. = SKSP + 14s., +41m.11s., +42m.25s., and +45m.18s.
Graz i = +22m.24s. = PKS − 32s., eSKP = +23m.50s., iPPP = +29m.42s., iPPS = +40m.42s., iSS = +47m.20s.
De Bilt eZ = +19m.26s. = PKP + 10s., iZ = +22m.31s. = PKS − 26s.
Stonyhurst PP = +24m.23s., ePPS = +36m.13s., i = +40m.41s. and +45m.26s.
Zagreb e = +19m.27s., ePKP = +22m.30s. = PKS − 28s., e = +23m.20s. and +24m.28s., eE = +25m.30s., e = +28m.10s., +40m.30s., eE = +43m.19s., e = +45m.36s.? and +55m.36s.?
Stuttgart ePKP = +19m.21s. = PKP + 3s., e = +22m.4s. = PP + 0s., ePP = +22m.40s., e = +23m.36s., eSS = +40m.36s.
Uccle iPP = +22m.39s., iE = +23m.33s. = PKS + 32s., SS = +40m.55s., SSS = +42m.44s.
Triest i = +22m.39s. and +23m.28s. = PKS + 26s., e = +24m.25s. and +31m.7s.
Oxford e = +23m.16s. = PKS + 14s.
Kew i = +23m.22s. = PKS + 19s., +31m.13s., +41m.59s., iE = +42m.55s., iN = +45m.50s., iE = +46m.2s.
Strasbourg eP = +19m.21s. = PKP + 2s., ePP = +22m.14s., SKS = +23m.6s., PPP = +25m.23s., SS = +40m.48s., SSS = +45m.57s.
Venice S = +22m.46s.
Zurich e = +22m.13s. = PP + 0s.
Piacenza PP = +23m.36s.?
Marseilles e = +24m.12s., SS = +42m.28s., SSS = +47m.36s.
Algiers PP = +22m.1s., PPS = +34m.2s.
Granada $ePKP_2$ = +19m.53s. = PKP + 9s., SKP = +22m.56s.
Malaga PP? = +23m.7s., e = +24m.7s. and +27m.28s., i = +29m.36s., e = +32m.34s. and +38m.12s., SS = +43m.20s.
San Fernando PN = +20m.5s., PE = +20m.29s., PSN = +29m.16s., PSE = +29m.25s.
Dakar SS = +36m.35s. = SKSP + 23s.
Long waves were also recorded at Helwan, Takaka, Soengei Langka, and Johannesburg.

July 21d. 7h. 22m. 41s. Epicentre 11°·0S. 165°·0E. (as at 6h.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		14·8	120	6 46	?	8 49	?	—	—
Arapuni		28·7	162	—	—	i 10 43	0	—	—
Wellington		31·5	166	—	—	i 11 19?	− 9	13·3	13·3
Christchurch		33·2	172	e 7 48	PP	13 7	SS	—	—
Adelaide		33·9	221	i 7 30	PP	i 12 51	+47	i 16·4	18·3
Amboina		37·2	278	6 37	−31	—	—	—	—
Manila		50·6	300	9 7	+11	16 47	+38	—	—
Nagoya		53·2	332	9 19	+ 4	(e 17 14)	PS	e 17·2	—
Osaka		53·6	330	9 6	−12	16 54	+ 4	28·8	—
Koti		53·7	327	i 9 21	+ 2	16 54	+ 2	—	—
Kobe		53·7	330	e 9 20	+ 1	e 16 50	− 2	—	27·4
Toyooka		54·6	332	9 28	+ 2	—	—	—	—
Mizusawa	E.	54·8	337	e 9 40	+13	e 16 31	−35	22·4	—
	N.	54·8	337	e 9 17	−10	15 47	?	20·7	—
Berkeley		83·5	49	i 12 25	− 1	—	—	—	—
Lick		83·7	50	e 12 29	+ 2	—	—	—	—
Santa Barbara		84·4	54	i 12 30	0	—	—	—	—
Pasadena		85·6	54	i 12 31	− 5	—	—	—	—
Mount Wilson		85·6	54	i 12 35	− 1	—	—	—	—
Riverside		86·1	54	i 12 38	− 1	—	—	—	—
Tinemaha		86·3	52	e 12 34	− 6	—	—	—	—
Haiwee		86·3	53	e 12 38	− 2	—	—	—	—
Vienna		134·5	331	i 23 15	PKS	—	—	—	—

Additional readings :—
Suva i = +8m.19s.
Osaka i = +11m.38s.
Kobe eZ = +17m.36s., eNZ = +17m.46s.
Toyooka PE = +9m.33s.
Berkeley iPZ = +12m.28s., ePN = +12m.31s.

July 21d. Readings from American stations for undetermined shocks :—

Pasadena.
ePZ = 8h.15m.23s., iPZ = 9h.15m.54s., iP = 10h.56m.3s., iP = 21h.4m.42s.

Mount Wilson.
iPZ = 9h.15m.55s., iP = 10h.56m.3s.

Riverside.
iPZ = 9h.15m.57s., eP = 10h.55m.58s., iP = 21h.4m.46s.

Tinemaha.
ePZ = 8h.15m.29s., eP = 9h.15m.59s., iP = 10h.56m.18s., iP = 21h.4m.47s.

Haiwee.
eP = 9h.16m.1s.

July 21d. 10h. 39m. 13s. Epicentre 8°·2N. 82°·6W. (as on 18d. 6h.). R.1.

A = +·128, B = −·982, C = +·143 ; D = −·992, E = −·129 ;
G = +·018, H = −·142, K = −·990.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights	3·1	75	i 0 53	P_g	—	—	—	—
Port au Prince	14·3	43	i 3 28	+ 9	i 6 38	+40	i 7·2	8·0
San Juan	18·9	56	i 4 19	+ 2	i 7 53	+ 9	—	—
Huancayo	21·5	160	i 3 37	−68	(i 8 45)	+ 9	i 8·7	—
Columbia	25·8	3	e 5 11	−16	e 10 1	+ 6	e 11·7	—
La Paz	28·6	149	i 5 50	− 3	i 10 44	+ 2	e 14·8	17·5
Charlottesville	30·0	7	e 6 3	− 2	i 11 6	+ 2	17·7	—
Georgetown	31·1	8	i 6 15	0	i 11 33	+12	e 14·8	—
St. Louis	31·2	350	i 6 16	0	i 11 21	− 2	—	—
Florissant	31·6	348	i 6 17	− 2	i 11 23	− 6	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sucre		32·2	148	i 6 26	+ 2	i 11 53	+15	16·0	—
Pittsburgh		32·3	4	i 6 21	− 4	i 11 44	+ 4	—	—
Philadelphia		32·4	11	i 6 25	− 1	i 11 43	+ 2	19·0	—
Chicago		34·0	353	i 6 38	+ 2	e 11 43	−23	i 15·2	—
Ann Arbor		34·1	358	i 6 41	0	i 12 11	+ 3	i 15·5	20·5
Toronto	N.	35·5	3	i 6 30	−23	i 11 34	−55	15·3	—
Weston		35·6	15	i 6 56	+ 2	i 12 50	+20	—	—
Tucson		35·6	317	e 6 55	+ 1	e 12 33	+ 3	e 15·0	—
Oak Ridge		35·7	14	e 6 56	+ 1	e 12 33	+ 1	—	—
Denver		37·3	331	i 6 28	−41	i 11 23	−93	e 19·8	—
Ottawa		37·6	8	i 7 11	− 1	i 13 3	+ 3	i 18·2	—
Halifax		40·0	21	e 7 37	+ 5	13 57	+21	—	—
La Jolla		40·5	313	e 7 34	− 2	—	—	—	—
Riverside		41·1	313	e 7 41	0	—	—	—	—
Mount Wilson		41·7	314	i 7 47	+ 1	—	—	—	—
Pasadena		41·7	314	i 7 46a	0	—	—	—	—
Haiwee		42·7	317	i 7 54	0	i 14 21	+ 5	—	—
Santiago		43·2	165	8 4	+ 6	14 24	0	—	—
Tinemaha		43·3	317	i 8 0	+ 1	i 14 31	+ 6	—	—
Santa Barbara		43·5	313	i 7 57	− 4	—	—	—	—
Bozeman		44·8	332	i 8 10	− 1	e 14 51	+ 4	e 21·8	—
Lick		45·8	315	e 8 20	+ 1	—	—	—	—
Branner		46·2	315	e 8 24	+ 2	—	—	—	—
Berkeley		46·4	316	e 8 23	− 1	e 15 23	+13	e 27·0	—
San Francisco		46·5	314	e 8 30	+ 5	e 15 18	+ 6	e 26·4	—
Ukiah		47·7	317	e 8 36	+ 2	e 15 37	+ 8	e 22·1	—
Saskatoon		48·1	340	i 8 47	+10	e 16 3	+29	—	—
La Plata	E.	49·0	153	e 8 47	+ 3	15 41	− 6	25·8	27·9
	N.	49·0	153	8 45	+ 1	15 48	+ 1	26·1	34·4
Seattle		52·1	327	i 9 7	0	e 18 59	(+ 1)	e 24·7	—
Victoria		52·8	327	9 14	+ 2	16 38	− 1	27·7	—
Ivigtut		58·8	19	9 51	− 5	e 18 35	+35	—	—
Sitka		63·6	331	e 10 22	− 7	e 18 47	−15	e 30·2	—
Honolulu		73·3	290	e 11 33	+ 2	e 21 3	+ 3	e 31·3	—
San Fernando	E.	74·2	55	11 39	+ 3	21 7	− 4	34·8	—
	N.	74·2	55	11 42	+ 6	21 13	+ 2	—	—
Malaga		75·6	54	i 11 44	0	e 21 29	+ 2	34·8	—
Toledo		76·0	51	i 11 45	− 1	i 21 35	+ 3	e 33·8	38·3
Granada		76·3	53	i 11 45	− 3	e 21 37	+ 2	35·8	42·0
Bidston		77·2	36	i 11 52	− 1	e 21 47	+ 2	e 35·8	—
Almeria		77·3	54	i 11 46	− 8	i 21 42	− 4	e 78·1	—
Edinburgh		77·3	34	11 50	− 4	i 21 49	+ 3	e 35·8	47·9
Stonyhurst		77·6	36	i 11 54	− 1	i 21 54	+ 5	36·2	46·5
Oxford		78·2	38	e 11 57	− 1	—	—	—	40·8
Alicante		78·7	52	i 12 6	+ 5	i 22 0	− 2	e 39·7	—
Kew		79·1	39	i 11 50	−13	e 21 56	−10	e 35·8	40·8
Durham		79·1	36	12 23	+20	22 0	− 6	—	—
Tortosa		79·5	50	12 11	+ 6	22 12	+ 2	e 33·8	—
Barcelona		80·6	47	e 12 15	+ 4	e 22 18	− 4	33·5	42·7
Paris		80·6	41	i 12 10	− 1	22 16	− 6	30·8	41·8
Algiers		81·6	54	11 49	−27	22 22	−11	e 43·8	50·8
Uccle		81·7	39	i 12 15a	− 2	22 35	+ 1	37·8	42·6
Bergen		81·9	30	12 15	− 3	i 22 33	− 3	38·8	—
De Bilt		82·2	38	i 12 19a	0	e 22 40	+ 1	e 37·8	45·7
Marseilles		82·9	47	12 47	+24	23 15	+29	e 37·8	—
Neuchatel		83·7	44	e 12 26	− 1	e 23 3	+ 9	—	—
Basle		84·1	43	e 12 28	− 1	e 22 39	−20	—	—
Strasbourg		84·1	41	i 12 28a	− 1	e 22 58	− 1	e 40·8	44·3
Karlsruhe		84·5	41	12 30	− 1	22 47	[− 8]	—	54·5
Zurich		84·8	43	, 12 31	− 1	e 23 1	− 5	—	—
Stuttgart		84·9	41	i 12 33	0	i 22 55	−12	e 40·1	53·8

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hamburg	84·9	36	i 12 33k	0	e 22 52	[− 6]	e 39·6	47·8
Göttingen	85·2	39	i 12 31	− 3	i 23 3	[+ 2]	e 39·8	45·8
Piacenza	85·8	45	12 47	+10	i 22 25	[−40]	—	35·0
Copenhagen	86·1	33	i 12 37a	− 2	e 23 11	[+ 4]	—	—
Leipzig	86·7	41	e 12 35	− 7	i 23 33	+ 9	e 32·8	45·8
Cheb	86·9	40	e 12 43	0	e 23 13	[0]	e 40·8	45·8
Prato	87·0	46	i 12 42	− 1	i 23 23	− 4	e 30·8	46·3
Siena	87·2	47	12 47	+ 3	25 47	?	—	—
Venice	87·6	44	e 12 37	− 9	i 23 27	− 6	—	24·8
Upsala	88·0	30	12 43	− 5	23 15	[− 5]	e 38·8	56·6
Prague	88·2	40	e 12 51	+ 2	e 23 22	[+ 1]	e 32·8	46·3
Triest	89·2	44	12 50a	− 4	i 23 45	− 3	41·5	49·3
Vienna	90·1	41	e 12 56	− 2	25 4	PS	e 42·1	46·6
Zagreb	90·1	44	e 12 59	+ 1	e 23 6	[−27]	e 49·8	—
Königsberg	90·7	34	e 13 5	+ 4	e 24 3	0	e 34·0	—
Catania	91·0	52	e 13 5	+ 3	—	—	—	—
Helsingfors	91·4	28	e 13 13	+ 9	i 23 36	[− 5]	e 41·8	—
Budapest	91·7	41	e 13 17	+12	—	—	—	37·8
Pulkovo	94·0	27	13 13	− 3	23 51	[− 4]	39·8	53·1
Sebastopol	102·1	41	e 17 47	PP	—	—	—	—
Simferopol	102·3	40	e 17 47	PP	(e 32 47)	SS	e 32·8	—
Yalta	102·6	41	e 18 6	PP	(e 32 11)	SS	e 32·2	—
Theodosia	103·1	40	—	—	(e 30 47)	?	e 30·8	—
Cape Town	103·7	123	18 18	PP	24 47	[+ 3]	48·3	60·8
Wellington	104·9	229	18 31	PP	28 27	?	48·8	—
Helwan	106·0	55	14 10	− 1	27 40	PS	—	63·6
Christchurch	106·3	225	i 14 27	+14	26 32	S	i 49·7R	—
Ksara	108·2	50	e 17 16	[−56]	25 8	[+ 3]	—	—
Sverdlovsk	108·3	18	i 14 19	− 4	29 20	?	57·8	59·6
Tiflis	110·7	39	e 14 33	− 1	27 16	?	e 50·8	60·3
Baku	114·6	37	19 48	PP	29 25	PS	—	—
Vladivostok	119·8	330	20 17	PP	30 15	PS	52·3	79·8
Tashkent	124·1	22	i 19 6	[+11]	31 51	?	e 57·8	79·8
Riverview	124·4	233	e 21 58	?	e 30 57	PS	e 58·8	65·6
Sydney	124·4	233	i 30 47	PS	i 41 22	SSS	61·5	67·8
Sumoto	124·6	323	e 18 31	[−25]	i 37 9	SS	—	—
Keizyo	125·9	333	e 20 57	PP	e 52 32	?	—	—
Zinsen	126·7	331	—	—	e 36 47?	?	—	—
Melbourne	128·0	227	i 22 28	?	e 31 10	PS	60·4	61·8
Chiufeng	128·7	340	e 19 5	[+ 1]	i 29 31	?	58·3	71·7
Adelaide	133·8	228	i 22 57	PKS	i 35 32	?	e 64·3	71·9
Zi-ka-wei	134·4	329	e 19 14	[0]	i 35 27	?	72·0	89·7
Nanking	134·8	334	e 18 47?	[−28]	e 36 35	?	71·9	75·2
Dehra Dun	137·1	25	22 7	PP	—	—	—	83·8
Agra	139·9	27	e 22 12	PP	—	—	—	—
Bombay	143·6	42	19 30	[0]	23 0	PKS	e 68·8	113·9
Hong Kong	145·3	332	19 38	[+ 4]	33 14	SKSP	62·9	93·3
Manila	147·4	315	i 19 41a	[+ 3]	—	—	—	—
Calcutta	148·0	16	19 40	[+ 1]	35 20	?	e 79·7	93·6
Hyderabad	148·2	36	19 44	[+ 5]	33 30	SKSP	62·1	87·5
Amboina	149·1	277	19 45	[+ 5]	—	—	e 70·8	—
Perth	150·7	213	44 17	?	61 37	?	92·2	—
Kodaikanal	152·8	47	e 19 52	[+ 7]	—	—	—	85·2
Colombo	156·9	49	19 44	[− 6]	—	—	—	93·1
Medan	168·1	354	e 19 48	[−14]	—	—	e 93·8	—
Batavia	170·5	282	19 38	[−26]	—	—	e 82·8	—

Additional readings :—
Port au Prince PP = +3m.37s., PPP = +3m.42s.
Huancayo iP = +3m.41s., i = +3m.47s. and +4m.45s. = P +0s.
La Paz iN = +16m.7s.
Charlottesville iP = +6m.20s., eSS = +13m.6s., e = +14m.2s.
St. Louis ipPN = +6m.31s., iPPN = +7m.19s., isSEN = +11m.49s., iSSEN = +13m.16s., iSSSN = +13m.54s. ; T_e = 10h.39m.13s.

Continued on next page.

Florissant ipP = +6m.32s., iPP = +7m.20s., isS = +11m.50s., iSS = +13m.57s.
Pittsburgh iPP = +7m.21s., i = +10m.46s. and +11m.5s.
Philadelphia i = +6m.46s., iPP = +7m.34s., i = +10m.1s., iSS = +13m.46s., i = +14m.25s. and +16m.3s.
Chicago iPP = +7m.43s.
Ann Arbor iPP = +7m.59s., eE = +11m.29s., iSS = +14m.35s. ; T_0 = 10h.38m.42s.
Toronto iPPPN = +7m.41s., iSSE = +13m.0s.
Tucson ePP = +8m.19s.
Oak Ridge iPPPNE = +8m.19s., iPPPNW = +8m.21s., iSNW = +12m.43s., iSSNW = +15m.5s.
Denver iPP = +8m.7s., iSS = +15m.5s., iSSSE = +15m.27s., iSSSN = +15m.31s., i = +15m.57s., +16m.47s., and +17m.47s.
Ottawa PPP = +8m.47s., SSE = +15m.13s., SSS = +15m.59s. ; T_0 = 10h.39m.18s.
Halifax PP = +9m.10s. ; T_0 = 10h.39m.6s.
Bozeman ePP = +9m.55s., e = +13m.14s., eSS = +17m.47s., e = +20m.53s.
Lick iN = +8m.33s., iE = +8m.36s. and +8m.42s., iN = +8m.44s. and +8m.53s.
Branner iE = +8m.35s., iEN = +8m.49s., iE = +8m.56s. and +9m.9s.
Berkeley iPEZ = +8m.25s., eN = +15m.17s., eZ = +17m.32s.
Ukiah ePP = +10m.37s., eSS = +19m.16s.
Saskatoon PP = +10m.47s. ; T_0 = 10h.39m.6s.
La Plata N = +9m.59s., PPN = +10m.41s., N = +11m.59s., SSE = +18m.5s., SS?N = +19m.23s., SSS?E = +19m.47s., SSS?N = +21m.41s., E = +21m.47s.
Seattle ePP = +11m.19s., e = +18m.15s.
Ivigtut +11m.57s. = PP − 2s., +13m.27s. = PPP +11s., eN = +17m.53s. = S − 7s.
Sitka ePP = +12m.47s., ePPP = +14m.27s., eSS = +23m.27s.
Honolulu ePP = +14m.25s., eSS = +26m.17s.
Malaga i = +11m.55s. and +11m.59s., PP = +14m.39s., PPP = +17m.17s., iPS? = +21m.42s., SS = +26m.35s., SSS = +29m.45s.
Almeria SS = +27m.0s.
Bidston ePP = +15m.17s., e = +26m.47s. = SS +16s.
Edinburgh i = +13m.52s., +22m.19s. = PS +5s. and +27m.23s.
Stonyhurst PP = +14m.39s., PS = +22m.29s., SS = +27m.14s.
Oxford e = +19m.2s. and +21m.23s.
Alicante PS = +22m.54s.
Kew eN = +15m.41s., iPSE = +22m.30s., iEZ = +22m.53s., iE = +23m.30s., eSS = +26m.57s.
Tortosa PE = +12m.4s.
Barcelona PS = +23m.20s.
Paris PS = +23m.14s., SS = +27m.48s.
Uccle PPE = +15m.23s., SE = +22m.42s., PSE = +23m.21s., SSE = +28m.6s., SSS = +31m.29s.
De Bilt PPZ = +15m.26s.
Marseilles PS = +24m.11s., SS = +28m.47s.
Strasbourg PP = +15m.40s., PPP = +17m.33s., PS = +23m.44s., SS = +28m.41s., SSS = +32m.11s.
Stuttgart iP_cP = +12m.51s., iPP = +15m.50s., e = +19m.17s., iSKS = +22m.47s., eSS = +28m.47s., eSSS = +32m.47s.
Hamburg iPPN = +16m.15s., eSSE = +28m.54s., eSSSE = +32m.57s.
Göttingen ePP = +15m.47s., eSS = +29m.1s.
Piacenza SS = +24m.53s., SSS = +26m.5s.
Copenhagen PP = +15m.59s., eE = +23m.23s. = S +5s., e = +24m.17s. = PS +12s., SS = +29m.11s.
Leipzig eE = +16m.3s. = PP +4s., +18m.7s., +20m.17s., and +29m.15s.
Cheb ePP = +16m.7s., eSS = +29m.33s.
Prague ePP = +16m.51s., ePS = +24m.50s., eSS = +29m.47s.
Triest PP = +16m.33s., PPP = +18m.34s., e = +23m.20s. = SKS − 8s., iSKKS = +23m.37s., PS = +24m.46s., SS = +29m.32s.
Vienna iNE = +13m.12s., PKP = +15m.42s., PP = +18m.34s., SKKS (Δ > 180°) = +30m.10s.
Zagreb e = +29m.53s. = SS +11s., +36m.47s.? and +42m.47s.?
Königsberg ePPE = +16m.54s., ePS = +25m.9s.
Helsingfors P_cPZ = +13m.31s., iPPNEZ = +16m.48s., ePPPN = +18m.9s., iSKKSNE = +24m.9s. = S +0s., iPSNEZ = +25m.16s., SSNE = +30m.21s.
Pulkovo PP = +16m.46s., PPP = +19m.25s., PS = +25m.35s., SS = +31m.5s., SSS = +34m.41s.
Cape Town SKKSN = +25m.44s., PSE = +27m.24s., SSN = +33m.0s., SSE = +33m.16s., SSSE = +36m.58s., SSSN = +37m.6s., N = +42m.9s., E = +43m.24s.
Wellington PPP = +24m.44s. = SKS − 5s., SS = +33m.34s.
Helwan PP = +18m.33s., PPP = +24m.57s. = SKS +2s.
Christchurch PPE = +18m.47s., SKSE = +25m.1s., iPS = +28m.1s., iPPS = +28m.49s., L_g = +45·1m.
Ksara PP = +18m.56s., PS = +28m.16s.
Sverdlovsk PP = +18m.43s., i = +20m.58s. and +23m.55s., SS = +34m.11s.
Tiflis PPEZ = +19m.6s., SKSE = +25m.22s., PSSE = +35m.12s., eE = +39m.16s.

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Baku SS = +35m.50s.
Tashkent PP = +20m.43s., PPP = +23m.25s., e = +35m.53s., SSS = +42m.47s.
Riverview eSS = +27m.55s., SSS?E = +42m.55s.
Melbourne i = +38m.54s., e = +39m.56s., i = +41m.22s. and +43m.21s.
Chiufeng i = +21m.9s. = PP +0s., iEZ = +22m.23s., iN = +22m.26s. and +34m.9s., iE = +37m.50s.
Adelaide i = +25m.28s., e = +40m.8s.
Zi-ka-wei iZ = +22m.0s.
Nanking e = +22m.48s. = PKS −5s.
Agra eN = +22m.17s. = PP −4s.
Bombay PP = +22m.30s., SKKS = +29m.45s., PSKS = +33m.7s., PPS = +35m.47s., SS = +41m.22s., SSS = +47m.43s.
Hong Kong PP = +22m.58s., ? = +29m.52s. = SKKS −3s., SS = +42m.55s.
Manila iEN = +19m.47s.
Perth P = +44m.22s., SS = +67m.47s., SSS = +72m.37s., SSSS = +79m.47s.
Long waves were also recorded at Tananarive, Phu-Lien, Kobe, and Koti.

July 21d. 13h. 19m. 26s. Epicentre 8°·0N. 83°·0W. (as at 18d. 4h.). R.2.

A = +·121, B = −·983, C = +·139; D = −·993, E = −·122; G = +·017, H = −·138, K = −·990.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights	3·5	74	i 0 52	+ 2	i 1 42	S*	2·3	—
San Juan	19·4	56	i 4 20	− 3	i 7 59	+ 5	e 9·6	—
Huancayo	21·4	159	i 5 45	+ 1	i 9 49	L	(i 9·8)	—
Columbia	26·1	4	—	—	e 10 10	+10	—	—
La Paz	28·5	149	e 6 5	+13	i 11 3	+23	15·2	18·3
St. Louis	31·3	349	e 6 15	− 2	e 11 22	− 2	—	—
Sucre	32·1	147	e 6 21	− 3	11 46	+ 9	16·8	—
Pittsburgh	32·6	5	e 7 9	PP	i 11 39	− 6	e 16·6	—
Philadelphia	32·7	11	e 6 39	+10	e 11 33	−13	e 16·9	—
Ann Arbor	34·3	0	e 11 58	S	(e 11 58)	−13	e 18·0	—
Tucson	35·5	318	—	—	e 12 34	+ 5	e 15·6	—
Ottawa	37·9	9	4 34?	?	e 8 34?	PP	e 15·6	—
La Jolla	40·3	313	e 7 38	+ 3	—	—	—	—
Riverside	41·0	314	i 7 38	− 2	—	—	—	—
Mount Wilson	41·5	314	i 7 46	+ 2	—	—	—	—
Pasadena	41·6	314	i 7 44	− 1	—	—	—	—
Haiwee	42·5	317	e 7 54	+ 1	—	—	—	—
Tinemaha	43·2	318	e 7 56	− 2	—	—	—	—
Copenhagen	86·4	34	12 34?	− 6	23 16	− 5	—	—
Helsingfors	91·8	28	e 17 4	PP	e 22 39	[−64]	—	—
Wellington	104·5	231	e 19 34	?	—	—	—	—

Additional readings:—
Pittsburgh e = +15m.1s.
Philadelphia eSS = +13m.48s.; T_0 = 13h.19m.19s.
Ann Arbor eE = +14m.46s., eN = +17m.16s. = S_cS +7s.
Helsingfors ePSN = +24m.33s.
Long waves were also recorded at Ivigtut and Scoresby Sund.

July 21d. 20h. 11m. 28s. Epicentre 11°·0S. 166°·0E. N.3.

A = −·952, B = +·237, C = −·191; D = +·242, E = +·970; G = +·185, H = −·046, K = −·982.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	26·6	209	e 8 56	(− 4)	—	—	—	20·4
Melbourne	32·8	212	—	—	e 11 50	+ 2	i 16·5	23·6
Christchurch	33·0	169	i 6 40	+ 8	12 5	+14	e 16·2	—
Adelaide	34·5	220	e 9 2	(−22)	—	—	e 17·1	24·2
Honolulu	48·0	48	—	—	e 15 38	+ 5	—	—
Perth	50·6	237	23 12	?	—	—	—	—
Manila	51·5	299	9 3	0	16 32	+10	—	29·9
Vladivostok	62·4	332	e 10 20	− 1	e 18 49	+ 2	e 26·0	33·3
Chiufeng	68·8	321	e 11 13	+10	e 20 1	− 6	—	—
Pasadena	84·7	54	i 12 31	− 1	—	—	e 57·3	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverside	85·3	54	i 12 34	− 1	—	—	—	—
Tinemaha	85·5	51	i 12 35	− 1	—	—	—	—
Tashkent	102·3	311	e 17 40	PP	e 24 26	[−11]	e 52·1	56·8
Sverdlovsk	107·6	327	—	—	e 24 53	[−10]	48·5	—
Scoresby Sund	120·3	2	—	—	25 26	[−25]	60·5	—
Tiflis	120·5	312	e 21 2	PP	e 30 2	PS	—	—
San Juan	129·2	75	e 22 24	PKS	—	—	—	—
Copenhagen	130·8	342	21 32?	PP	—	—	66·5	—
De Bilt	136·1	343	e 20 2	[+46]	e 39 56	SS	e 69·5	—
Stuttgart	137·7	338	e 19 20	[+ 1]	—	—	—	—

Additional readings :—
Melbourne i = +17m.32s. = S_cS +32s.
Manila PEN = +9m.8s.
Tashkent e = +27m.22s. = PS +12s.
Sverdlovsk e = +26m.14s. = SKKS +25s.
Long waves were also recorded at Wellington and Pulkovo.

July 21d. Readings also at 0h. (La Paz and San Juan (2)), 1h. (De Bilt, Scoresby Sund, and Stuttgart), 6h. (Branner), 9h. (Andijan), 10h. (La Paz, Sucre, La Plata, and Mizusawa), 11h. (Helsingfors and La Paz), 13h. (Prague), 14h. (Lick), 16h. (Vladivostok and Wellington), 17h. (Balboa Heights, Pittsburgh, and Sverdlovsk), 18h. (Copenhagen, Riverview, Adelaide, and Wellington), 19h. (Tucson, Philadelphia, De Bilt, Scoresby Sund, Baku, Florence, and Sverdlovsk), 21h. (Ivigtut and Andijan), 22h. (Mizusawa), 23h. (Andijan and La Paz).

July 22d. 2h. 57m. 56s. Epicentre 11°·0S. 165°·0E. (as on 21d. 7h.). R.3

A = −·948, B = +·254, C = −·191 ; D = +·259, E = +·966;
G = +·184, H = −·049, K = −·982.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	14·8	120	3 28	+ 2	6 4	− 6	7·1	—
Riverview	26·1	207	e 5 25	− 5	i 10 11	+11	13·4	15·8
Sydney	26·1	207	e 4 58	−32	i 10 9	+ 9	14·1	16·6
Arapuni	28·7	162	—	—	e 10 46	+ 3	—	—
Wellington	31·5	166	i 5 23	−55	i 11 24	− 4	18·1	—
Melbourne	32·3	210	e 6 27	+ 2	11 46	+ 6	13·9	18·6
Christchurch	33·2	172	6 23	−11	12 1	+ 7	16·2R	—
Adelaide	33·9	221	e 6 52	+13	i 12 4	0	e 15·4	20·4
Honolulu	48·7	48	—	—	e 15 42	− 1	e 20·1	—
Perth	49·8	237	13 4	?	i 19 34	SS	—	28·4
Manila	50·6	300	9 0	+ 4	16 59	+50	23·6	—
Mizusawa	54·8	337	(e 9 35)	+ 8	e 9 35	P	—	—
Batavia	57·6	270	9 47	0	—	—	—	—
Hong Kong	59·9	305	10 10	+ 6	18 15	0	—	25·6
Vladivostok	61·9	334	10 18	0	e 18 50	+ 9	29·6	—
Ukiah	83·2	49	—	—	e 22 4	−45	—	—
Berkeley	83·5	49	e 12 23	− 3	e 22 46	− 6	e 38·0	—
Sitka	83·7	29	e 12 23	− 4	e 22 53	− 1	e 36·2	—
Santa Barbara	84·4	54	e 12 35	+ 5	—	—	—	—
Mount Wilson	85·6	54	i 12 37	+ 1	—	—	—	—
Pasadena	85·6	54	i 12 34	− 2	e 22 58	[− 5]	e 38·9	—
La Jolla	85·9	55	e 12 36	− 2	—	—	—	—
Riverside	86·1	54	i 12 37	− 2	e 23 4	[− 3]	—	—
Tinemaha	86·3	52	i 12 39	− 1	e 23 9	[+ 1]	—	—
Haiwee	86·3	53	e 12 41	+ 1	—	—	—	—
Victoria	86·5	39	13 2	+21	23 7	[− 3]	39·5	—
Tucson	91·0	57	e 12 52	−10	e 24 6	+ 1	e 41·6	—
Bozeman	93·7	44	—	—	e 24 22	− 8	e 43·7	—
Andijan	99·2	309	e 16 46	PP	—	—	—	—
Tashkent	101·5	311	i 13 47	− 3	24 31	[− 2]	e 59·3	60·2

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sverdlovsk	107·0	326	14 13	− 3	24 54	[− 5]	33·1	—
St. Louis	108·4	54	—	—	e 24 59	[− 7]	e 50·0	—
Huancayo	115·8	110	e 29 34	PS	—	—	e 54·3	—
Pittsburgh	116·1	51	e 19 38	PP	e 25 30	[− 8]	e 54·5	—
Tiflis	119·7	312	e 18 50	[+ 5]	e 30 4	PS	e 62·1	—
Philadelphia	119·8	51	—	—	e 39 53	?	e 49·1	—
Scoresby Sund	120·4	3	20 21	PP	25 52	[0]	56·1	—
La Paz	120·7	117	e 18 55	[+ 8]	26 1	[+ 9]	59·5	66·4
Pulkovo	120·9	335	18 46	[− 2]	25 46	[− 7]	e 54·1	70·3
Oak Ridge	121·9	48	i 18 51	[+ 1]	e 25 53	[− 3]	e 61·1	—
Sucre	122·1	122	e 18 29	[−22]	—	—	63·3	—
Helsingfors	122·7	338	e 14 4?	?	—	—	e 57·1	—
Ivigtut	124·3	20	—	—	32 4?	?	56·1	—
Cape Town	124·9	215	—	—	27 4?	[+59]	—	—
San Juan	130·1	77	e 22 36	PKS	—	—	—	—
Copenhagen	130·4	340	19 9	[+ 2]	—	—	62·1	—
Hamburg	133·0	342	e 19 14	[+ 2]	—	—	e 68·1	—
De Bilt	135·8	342	e 19 25	[+ 9]	—	—	e 65·1	75·8
Bidston	136·5	350	e 22 57	PKS	—	—	—	—
Uccle	137·2	342	i 19 27	[+ 9]	—	—	69·1	—
Stuttgart	137·2	336	e 19 21	[+ 3]	—	—	e 67·1	—
Kew	137·8	346	e 19 18	[− 1]	—	—	e 65·1	131·0
Strasbourg	137·9	337	e 19 29	[+10]	—	—	e 75·1	—
Paris	139·5	342	e 19 28	[+ 7]	—	—	79·1	86·1
Piacenza	139·9	333	e 19 32	[+11]	—	—	—	89·3
Florence	140·1	333	e 18 48	[−34]	—	—	—	—
Algiers	149·5	331	e 19 39	[− 2]	—	—	—	—

Additional readings :—
Wellington i = +13m.34s. and +15m.33s.
Melbourne i = +12m.2s.
Christchurch L_qE = +14·3m.
Adelaide e = +8m.38s., i = +13m.12s.
Hong Kong ? = +11m.13s.
Vladivostok e = +10m.46s. = P_cP − 15s.
Berkeley iE = +22m.52s.
Pasadena eZ = +15m.57s. = PP − 5s.
Tucson eSKS = +23m.39s., ePS = +25m.6s.
Bozeman eSKS = +23m.48s. ; T_o = 2h.57·7m.
Tashkent PKP = +17m.23s., PP = +18m.4s., PS = +27m.16s., SS = +32m.40s.
Sverdlovsk PP = +18m.59s., PS = +27m.59s.
St. Louis eSKKSE = +25m.49s., ePSE = +28m.13s., eSSE = +34m.29s.
Tiflis eE = +20m.28s. = PP + 21s. and +44m.10s.
Philadelphia e = +43m.46s.
La Paz SKKS = +27m.25s., PSE = +30m.19s.
Pulkovo PP = +20m.23s., PPS = +31m.42s.
Oak Ridge iZ = +19m.8s. and +19m.16s, e = +30m.13s. = PS − 6s., eNW = +33m.27s. and +37m.29s., eNE = +37m.37s.
Copenhagen +21m.32s. = PP + 12s., e = +22m.38s. = PKS + 3s.
Hamburg eEN = +22m.51s. = PKS + 5s.
De Bilt eZ = +21m.57s. = PP + 2s.
Uccle i = +22m.15s = PP + 11s.
Stuttgart ePP = +22m.12s.
Kew ePKS = +22m.58s.
Strasbourg ePP = +22m.9s.
Paris e = +23m.4s.? = PP − 13s.
Algiers i = +20m.42s.
Long waves were also recorded at San Fernando, Chicago, Charlottesville, and Columbia.

July 22d. No determinations have been made for the following shocks :—
13h.
Tiflis ePN = 22m.48s., eN = 24m.39s., eN = 30m.0s.
Andijan e = 24m.31s.
Sverdlovsk e = 25m.6s., e = 25m.10s., L_q = 31m.6s., LR = 32m.42s., M = 35m.0s.
Tashkent e = 25m.9s., e = 26m.23s., e = 27m.47s., M = 29m.0s.
Long waves at Pulkovo and Copenhagen.

14h.
Sverdlovsk e =20m.10s., L =36m.
Tinemaha iPZ =20m.27s., iZ =20m.40s.
Haiwee eE =20m.34s.
Pasadena iPENZ =20m.42s., iZ =20m.55s.
Mount Wilson iPZ =20m.55s.
Tiflis eN =22m.16s., eLZ =56m.0s.
Long waves at Tashkent, Scoresby Sund, Copenhagen, Pulkovo, and Vladivostok,

18h.
Zi-ka-wei eZ =44m.32s., MZ =48m.4s.
Nanking e =44m.(56s.), eE =45m.23s., eS =47m.0s., iN =47m.19s., L =48m.24s.
Nagasaki eP =45m.16s.
Chiufeng eP =46m.20s., eS =49m.25s., eL =51m.42s., M =55m.24s.
Vladivostok P =46m.35s., S =49m.52s., L =51m., M =55m.0s.
Manila P? =47m.8s., S =50m.46s., L =52m.40s.
Keizyo eP =48m.14s.
Sverdlovsk P =52m.6s., e =64m.6s., L =69m.
Wellington 59m.
Perth P =63m.0s.
Tashkent i =65m.54s., eL =70m.30s., M =77m.12s.
Long waves at Phu-Lien, Hong Kong, Scoresby Sund, Copenhagen, and Pulkovo.

July 22d. 19h. 57m. 0s. Epicentre 36°·5N. 70°·5E. (as on 1934 Jan. 16d.). R.1.

$A = +\cdot268$, $B = +\cdot758$, $C = +\cdot595$; $D = +\cdot943$, $E = -\cdot334$; $G = +\cdot199$, $H = +\cdot561$, $K = -\cdot804$.

A *depth* of focus 0·025 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	0·0	4·5	21	i 1 17	+13	2 12	L	(2·2)	2·4
Tashkent	0·0	4·9	350	i 1 17	+ 7	—	—	2·3	6·0
Dehra Dun	−0·2	8·8	133	1 30	−32	—	—	3·2	3·0
Agra	−0·4	11·3	143	i 2 29	− 4	4 22	−14	—	—
Baku	−0·8	16·6	290	i 3 44	+ 5	e 6 53	+19	7·3	—
Bombay	−0·8	17·7	173	3 50	− 3	6 53	− 6	8·4	—
Hyderabad	−1·0	20·3	157	4 20	− 2	7 37	−15	9·4	12·2
Tiflis	−1·0	20·5	293	4 22	− 2	—	—	—	—
Calcutta	−1·1	20·8	127	4 30	+ 4	8 12	+12	e 9·8	—
Sverdlovsk	−1·1	21·4	345	i 4 29	− 4	8 12	0	—	12·6
Kodaikanal	−1·5	27·0	165	5 47	PP	i 9 34	−16	—	13·9
Theodosia	−1·5	27·7	299	e 6 24	+53	—	—	—	—
Ksara	−1·6	28·3	275	e 5 37	+ 2	10 13	+ 3	—	—
Yalta	−1·6	28·5	298	e 5 19	−18	—	—	—	—
Simferopol	−1·6	28·6	298	e 5 38	0	—	—	—	—
Sebastopol	−1·6	29·0	298	e 6 39	PP	—	—	—	—
Colombo	−1·7	30·8	164	5 49	− 8	11 39	+49	20·8	22·4
Helwan	−1·8	33·2	270	i 6 17	0	i 11 26	0	—	14·2
Pulkovo	−1·9	34·6	327	6 26	− 3	e 11 40	− 6	13·9	15·2
Phu-Lien	−2·0	35·1	110	e 6 26	− 7	7 44	PP	—	—
Chiufeng	−2·0	35·5	70	6 32k	− 4	11 49	− 9	14·2	19·5
Lemberg	−2·0	35·7	308	e 6 48	+10	—	—	—	—
Helsingfors	−2·0	37·2	324	6 50	− 1	i 12 22	− 2	e 14·0	—
Königsberg	−2·0	38·4	316	e 7 2	+ 1	—	—	e 15·5	18·2
Budapest	−2·1	39·0	305	6 49	−17	8 53	?	13·0	—
Nanking	−2·1	39·7	83	7 6	− 6	12 46	−14	—	21·1
Hong Kong	−2·1	40·2	100	8 27	PP	12 52	−16	—	—
Upsala	−2·1	40·7	323	7 18	− 2	i 13 14	− 1	e 20·0	25·4
Vienna	−2·1	40·8	307	i 7 21	0	i 13 20	+ 3	—	—
Zagreb	−2·2	41·3	301	e 7 25	+ 1	e 16 47	?	—	—
Graz	−2·2	41·5	305	e 6 50	−36	i 8 21	PP	8·9	10·5
Medan	−2·2	41·8	136	7 41	+12	—	—	—	—
Prague	−2·2	41·9	308	7 35	+ 6	—	—	e 15·0	27·5
Zi-ka-wei	−2·2	42·1	84	e 7 28	− 3	i 13 32	− 3	—	27·7
Trenta	−2·2	42·2	290	e 7 24	− 8	—	—	—	—

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.
Triest	−2·2	42·8	302	e 7 37	0	e 15 14	L	(e 15·2)	—
Copenhagen	−2·2	43·1	316	i 7 39a	− 1	i 13 52	+ 2	—	—
Cheb	−2·2	43·2	307	e 7 44	+ 4	e 13 54	+ 3	—	28·5
Leipzig	−2·2	43·2	309	8 21	+41	—	—	—	—
Catania	−2·2	43·6	288	e 8 9	+25	(10 5)	?	—	10·1
Jena	−2·2	43·7	310	e 7 41	− 3	—	—	—	—
Venice	−2·2	43·8	301	e 7 52	+ 7	e 14 41	+41	—	—
Treviso	−2·3	43·9	299	e 7 46	+ 1	e 14 8	+ 8	—	—
Keizyo	−2·3	44·4	72	e 9 0	PP	—	—	—	—
Hamburg	−2·3	44·5	315	e 7 49k	− 1	i 13 22	−47	—	—
Göttingen	−2·3	44·6	311	i 7 49	− 2	—	—	—	11·3
Florence	−2·3	44·9	299	i 7 53a	0	14 18	+ 3	19·0	23·0
Siena	−2·3	44·9	298	7 50	− 3	15 0?	+45	—	—
Prato	−2·3	45·0	299	e 8 0	+ 6	9 30	PP	—	11·0
Stuttgart	−2·4	45·5	309	i 7 58	0	e 14 24	+ 2	—	—
Piacenza	−2·4	45·7	302	7 0	−59	15 0	+35	—	—
Karlsruhe	−2·4	45·9	308	8 0	− 1	—	—	—	11·7
Zurich	−2·5	46·1	305	e 8 9	+ 7	—	—	—	—
Strasbourg	−2·5	46·5	309	8 5a	0	i 14 41	+ 5	e 28·0	—
Vladivostok	−2·5	46·6	62	8 2	− 4	14 30	− 7	18·1	25·1
Basle	−2·5	46·7	303	e 8 7	+ 1	—	—	—	—
Bergen	−2·5	46·9	325	e 8 6	− 2	e 18 43	L	(18·7)	—
Neuchatel	−2·5	47·3	305	e 8 11	0	—	—	—	—
De Bilt	−2·5	47·6	312	8 15a	+ 1	14 56	+ 4	e 19·0	19·6
Uccle	−2·5	48·2	310	e 8 19	+ 1	i 15 5	+ 5	—	—
Manila	−2·6	49·8	103	8 20	−10	i 15 16	− 5	22·9	—
Paris	−2·6	49·8	309	e 8 32	+ 2	e 17 3	?	19·0	20·0
Kew	−2·6	51·0	312	i 8 39a	0	i 15 41	+ 3	e 25·0	30·8
Durham	−2·6	51·1	316	9 35	+55	15 45	+ 5	—	—
Kobe	−2·7	51·5	74	i 9 36	+54	e 17 6	?	—	—
Oxford	−2·7	51·5	313	8 40	− 2	i 15 45	+ 1	—	—
Sumoto	−2·7	51·5	73	9 35	+53	17 14	?	—	—
Stonyhurst	−2·7	51·7	315	i 9 40	+56	i 17 28	?	20·0	21·8
Osaka	−2·7	51·8	74	9 37	+53	17 21	?	—	—
Bidston	−2·7	52·2	315	i 10 7	PP	i 17 26	?	—	—
Toyama	−2·7	52·3	68	9 48	+60	17 24	?	—	—
Nagoya	−2·7	52·7	70	e 8 50	− 1	—	—	—	—
Nagano	−2·7	53·1	68	9 46	+52	—	—	—	—
Tortosa	−2·8	53·4	299	e 9 7	+11	e 16 28	+19	21·7	—
Kohu	−2·8	53·8	69	9 17	+18	16 43	+28	—	—
Mizusawa	−2·8	54·4	66	e 9 1	− 2	e 17 36	+73	—	—
Batavia	−2·8	54·6	135	e 9 35	+30	i 16 54	+29	—	—
Alicante	−2·8	55·0	296	e 9 53	+45	—	—	—	—
Scoresby Sund	−2·9	56·7	338	9 23	+ 3	i 17 1	+ 8	—	—
Almeria	−2·9	56·9	296	e 9 57	+36	i 18 39	?	—	—
Toledo	−2·9	57·0	299	e 9 21	− 1	i 18 33	?	—	—
Granada	−3·0	57·6	295	e 10 0	+34	i 14 36	?	18·2	—
Malaga	−3·0	58·5	296	e 9 27	− 5	e 14 32	?	—	—
San Fernando	−3·0	59·9	296	9 44	+ 2	17 42	+ 7	33·5	—
Ivigtut	−3·2	70·1	333	10 44	− 7	19 45	+ 2	—	—
Sitka	−3·4	83·9	14	e 13 8	+58	e 22 4	[−47]	e 34·0	—
Cape Town	−3·4	85·5	221	22 12	S	(22 12)	[−51]	38·7	—
Ottawa	−3·6	92·7	338	e 13 50	+57	e 22 50	[−58]	43·0	—
Oak Ridge	−3·6	93·8	331	i 12 55	− 3	e 23 3	[−51]	—	—
Tinemaha	—	106·0	8	e 18 17	PP	—	—	—	—
Pasadena	—	108·9	8	e 17 53	[−21]	—	—	—	—
Tucson	—	111·2	1	19 50	PP	29 9	PS	—	—
San Juan	—	111·5	316	e 19 0?	PP	e 29 48	?	—	—
La Paz	—	138·4	290	e 19 0	[−19]	—	—	35·3	—
Huancayo	—	140·9	300	e 21 0?	—	—	—	—	—

For Notes see next page.

NOTES TO JULY 22d. 19h. 57m. 0s.

Additional readings :—
Andijan P* = +1m.22s.
Tashkent e = +1m.33s.
Dehra Dun +2m.30s.
Bombay PP = +4m.1s., P* = +4m.45s., P_g? = +5m.38s., SS = +7m.27s., i = +7m.53s.
Tiflis iPZ = +4m.24s., iZ = +4m.59s., eNEZ = +5m.10s., eE = +5m.27s., iNZ = +5m.37s., iN = +8m.11s. =SS −3s.
Theodosia e = +7m.32s.
Ksara sP = +6m.50s., SS = +11m.41s.
Yalta i = +6m.33s.
Simferopol i = +6m.40s.
Helwan iPP = +7m.35s.
Chiufeng PP = +7m.23s., i = +7m.52s., iN = +13m.19s. and +13m.55s. = SS +3s.
Lemberg eN = +7m.48s. =PP +4s.
Helsingfors PPNZ = +7m.45s., iP_cPN = +8m.31s., SSN = +13m.50s.
Königsberg eEZ = +7m.54s., eZ = +8m.23s. =PP +9s., eEZ = +8m.44s., eZ = +9m.36s.
Budapest i = +8m.0s. ?
Nanking iPP = +8m.22s.
Hong Kong ? = +10m.0s.
Upsala eE = +8m.12s., iE = +9m.8s., +10m.3s., +10m.13s. and +16m.37s.
Vienna iEZ = +8m.45s. =PP −1s. and +10m.11s., iNEZ = +10m.18s., iEZ = +12m.0s.
Zagreb e = +8m.20s., eE = +9m.46s., e = +10m.22s., eE = +19m.16s.
Prague i = +8m.28s. and +10m.22s.
Zi-ka-wei iZ = +8m.23s., +8m.48s. =PP −10s., +15m.12s., +16m.56s., and +21m.38s.
Triest e = +10m.11s., i = +10m.37s. and +10m.45s., e = +12m.3s.
Copenhagen i = +8m.35s. and +9m.0s. =PP −8s., +9m.30s., e = +10m.33s., +10m.42s., eN = +10m.54s., +15m.18s., e = +17m.12s. ≙SSS −14s.
Cheb e = +9m.35s. =PPP +1s.
Leipzig e = +9m.1s. =PP −9s. and +10m.24s., eE = +10m.44s.
Jena eE = +8m.3s., iZ = +8m.38s., iE = +8m.41s., i = +9m.8s. =PP −6s., e = +10m.36s.
Venice P = +8m.20s.
Treviso P = +8m.42s., SS = +15m.40s.
Hamburg eZ = +9m.10s. =PP −12s., eE = +10m.17s., iE = +10m.55s., eE = +15m.36s., iE = +17m.28s., eE = +17m.42s. =SSS +4s.
Göttingen i = +8m.44s. and +9m.11s.
Stuttgart iEZ = +8m.2s. and +8m.54s., ipPEZ = +9m.19s., e = +10m.25s. and +11m.0s., eN = +13m.0s., e = +15m.50s., +17m.54s. and +18m.6s.
Piacenza PP = +8m.26s., iPPP = +13m.32s., SS = +15m.56s., SSS = +18m.34s.
Zurich e = +11m.45s.
Strasbourg pP = +9m.1s., sP = +9m.27s., PP = +9m.50s., e = +10m.36s., pPP = +11m.17s., isS = +16m.15s., eSS = +18m.37s., esSS = +19m.22s.
Bergen i = +22m.55s.
De Bilt iZ = +8m.17s., +9m.10s., +9m.35s., and +11m.21s., eE = +16m.13s., eN = +16m.30s.
Uccle i = +9m.16s., +9m.43s., iE = +11m.23s., i = +11m.28s., iE = +16m.31s.
Manila iNE = +9m.51s., iE = +15m.33s., iN = +19m.44s.
Paris e = +11m.31s.
Kew i = +9m.36s., +10m.2s., +17m.15s., and +17m.28s.
Durham ? = +17m.13s.
Kobe eZ = +10m.36s., eN = +10m.41s., eE = +10m.57s. and +11m.53s., iSN = +17m.16s., iE = +17m.32s., eE = +18m.47s.
Oxford e = +9m.37s., i = +11m.50s. and +17m.20s.
Sumoto eSZ = +17m.33s.
Stonyhurst i = +15m.36s. =S −11s.
Osaka i = +11m.58s. and +20m.43s.
Bidston i = +15m.43s.
Mizusawa ePN = +8m.0s., eSN = +17m.38s.
Scoresby Sund i = +10m.19s., e = +12m.48s., eE = +13m.55s., +18m.36s. and +22m.30s.
Toledo i = +10m.13s., +10m.46s., +14m.15s., and +17m.0s.
Granada PP = +10m.50s.
Malaga e = +10m.25s., iPP = +10m.30s., iPPP = +10m.52s., e = +19m.31s.
San Fernando PE = +9m.47s.
Ivigtut i = +11m.48s., e = +12m.17s., +21m.23s. and +24m.24s.
Cape Town PPE = +24m.2s., PPN = +24m.6s., PPPE = +24m.59s., PPPN = +25m.2s.
Ottawa eE = +25m.16s.
Oak Ridge iPP? = +13m.58s., eNE = +25m.3s. and +26m.25s.
Pasadena eZ = +19m.27s.
Tucson e = +25m.24s.
La Paz PPN = +22m.36s.

July 22d. Readings also at 0h. (Kobe and Tyosi), 1h. (Wellington, Columbia, Balboa Heights, and Andijan), 3h. (Ottawa and Batavia), 4h. (Bombay and Stonyhurst), 5h. (Pittsburgh, Philadelphia, Columbia, and Tucson), 6h. (San Juan and Balboa Heights), 7h. (Nagoya and Philadelphia), 8h. (Philadelphia, Pasadena, Tinemaha, San Juan, and Balboa Heights), 9h. (Tyosi, Mizusawa (2), and Malabar), 10h. (Manila and Perth), 15h. (Nagoya), 19h. (Andijan), 20h. (Algiers, Strasbourg, and Amboina), 21h. (Dannevirke).

July 23d. Readings at 13h.

Vladivostok e = 3m.14s., e = 10m.28s., e = 19m.0s.
Riverview e = 9m.12s., eL = 17m.36s., MN = 19m.22s.
Melbourne e = 9m.42s., i = 14m.47s., M = 21m.36s.
Wellington e = 12m.
Perth P = 20m.0s.
Sverdlovsk e = 34m., L = 42m.

July 23d. 14h. 1m. 39s. Epicentre 8°·0N. 81°·5W. (as on 1927 Aug. 10d.). X.

A = + ·146, B = − ·979, C = + ·139 ; D = − ·989, E = − ·148 ;
G = + ·021, H = − ·138, K = − ·990.

	Δ	Az.	P.	O − C.	S.	O − C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Balboa Heights	2·2	63	i 0 45	P_g	i 1 25	S_g	1·5
San Juan	18·2	54	e 4 13	+ 4	e 7 50	SS	—
Huancayo	21·0	163	e 4 39	− 1	(e 8 36)	+10	e 8·6
Pasadena	42·3	314	i 7 52	+ 1	—	—	—
Tinemaha	44·2	317	i 7 59	− 7	—	—	—

Long waves were also recorded at Scoresby Sund, Zagreb, Sverdlovsk, and Pulkovo,

July 23d. 18h. 21m. 33s. Epicentre 7°·4N. 35°·2W. (as on 1918 May 20d.). R.3.

A = + ·810, B = − ·572, C = + ·129 ; D = − ·576, E = − ·817 ;
G = + ·105, H = − ·074, K = − ·992.

		Δ	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
San Juan		32·0	293	e 6 29	+ 6	e 11 41	+ 6	—	—
San Fernando	E.	39·3	37	7 53	+27	13 31	+ 5	18·4	—
	N.	39·3	37	7 50	+24	13 27	+ 1	—	—
Sucre		39·7	228	e 6 41	−48	12 53	−39	19·4	—
La Paz		40·4	233	i 7 41a	+ 6	i 14 2	+20	20·4	23·9
Malaga		40·5	36	e 7 37	+ 1	e 13 45	+ 1	—	—
Granada		41·4	39	e 7 43	− 1	i 14 1	+ 4	20·2	—
Almeria		41·9	40	e 7 49	+ 1	—	—	e 20·4	—
Toledo		42·8	34	e 7 57	+ 2	14 13	− 5	e 20·1	—
Alicante		44·0	40	—	—	e 14 25	−11	—	—
Huancayo		44·6	244	e 9 59	PP	e 14 51	+ 7	e 22·5	—
La Plata		47·4	206	—	—	15 39	+15	23·9	24·8
Oak Ridge		47·5	324	i 8 36	+ 4	e 15 35	+ 9	e 21·4	—
Georgetown		49·0	318	e 8 52	+ 8	i 15 52	+ 5	e 21·4	—
Ottawa		51·6	326	—	—	e 16 33	+10	e 22·4	—
Pittsburgh		51·7	317	—	—	i 16 31	+ 7	e 24·6	—
Paris		52·2	31	e 9 9	+ 1	e 16 32	+ 1	22·4	30·4
Oxford		52·4	24	—	—	16 34	0	e 22·0	26·3
Kew		52·6	27	e 9 10	− 1	e 16 37	0	e 22·4	24·5
Bidston		52·8	24	e 9 12	0	e 16 42	+ 3	e 22·4	—
Stonyhurst		53·1	24	—	—	e 16 48	+ 5	e 23·4	30·4
Piacenza		54·0	38	16 27	S	(16 27)	−29	—	34·5
Uccle		54·3	30	e 9 24	+ 1	17 1	+ 2	24·4	—
Florence		54·4	38	9 23	− 1	16 54	− 7	—	—
Ivigtut		54·6	352	—	—	17 9	+ 5	22·4	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Edinburgh	54·7	21	e 9 27?	+ 1	i 17 7	+ 2	—	27·4
Strasbourg	54·8	32	i 9 28k	+ 1	e 17 0	− 6	e 24·4	—
De Bilt	55·5	30	9 34	+ 2	17 17	+ 1	e 24·4	30·4
Stuttgart	55·6	33	e 9 32	− 1	e 17 12	− 5	e 24·9	—
Hamburg	58·8	28	e 9 54	− 2	—	—	e 26·4	31·4
Copenhagen	61·1	27	10 12	0	18 30	0	27·4	—
Scoresby Sund	63·6	4	10 33	+ 4	19 9	+ 7	26·4	—
Helsingfors	69·3	26	—	—	e 19 57	−16	e 32·4	—
Ksara	70·2	56	e 11 35	P_cP	e 20 12	−12	—	—
Yalta	70·2	45	e 11 12	0	—	—	—	—
Pulkovo	71·4	28	e 11 10	− 9	e 20 33	− 5	32·4	37·0
Tiflis	77·6	49	e 11 59	+ 4	e 21 49	0	—	—
Riverside	79·3	303	i 12 6	+ 2	—	—	—	—
Pasadena	80·0	304	i 12 13	+ 5	—	—	—	—
Sverdlovsk	87·0	33	12 33	−10	23 14	[+ 1]	37·4	—
Tashkent	95·8	46	e 6 6	?	—	—	e 37·3	53·6

Additional readings :—
San Juan eS = +13m.39s. = SSS + 9s.
La Paz iPP = +9m.20s., PSN = +14m.46s., SS = +16m.57s.
Malaga PP = +8m.57s., e = +9m.42s. = P_cP − 1s. and +15m.37s., SS? = +16m.27s., e = +17m.29s.
Huancayo eSS = +18m.7s. = S_cS − 3s. ; T_o = 18h.21m.29s.
Georgetown ePP = +10m.44s.
Strasbourg PP = +11m.27s., PPP = +12m.34s., SSS = +21m.50s.
Stuttgart e = +11m.27s. = PP − 4s., ePPP = +12m.48s., e = +20m.27s.
Copenhagen +20m.9s. = S_cS + 9s.
Tashkent e = +10m.5s. and +18m.21s.
Long waves were also recorded at Cape Town, Chiufeng, Tucson, Zagreb, Baku, and Tortosa.

July 23d. Readings also at 1h. (San Juan and Sebastopol), 3h. (Ivigtut and Sumoto), 4h. (Andijan and Trenta), 5h. (Scoresby Sund), 7h. (Baku, Tashkent, Sverdlovsk, and Malabar), 8h. (Algiers and Trenta), 9h. (Mizusawa), 10h. (La Paz, Vladivostok and Nanking), 11h. (Sverdlovsk), 16h. (Paris and Mizusawa), 17h. (Amboina (2) and Tyosi), 18h. (Granada), 19h. (Tyosi), 22h. (Tiflis). 23h. (Sotchi, Branner, and Trenta).

July 24d. 2h. 47m. 24s. Epicentre 8°·2N. 87°·0W. N.3.

A = +·052, B = −·988, C = +·143 ; D = −·999, E = −·052 ; G = +·007, H = −·142, K = −·990.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Balboa Heights	7·4	83	0 18	?	—	—	—
San Juan	22·6	63	e 4 42	−15	e 8 31	−26	e 10·6
Huancayo	23·4	150	e 5 26	PP	e 9 25	+13	—
Columbia	26·3	11	—	—	e 10 6	+ 3	—
Georgetown	32·0	15	e 6 24	+ 1	e 11 14	−21	e 16·6
Pittsburgh	32·8	9	—	—	e 14 17	?	e 19·2
Oak Ridge	36·9	19	e 7 2	− 4	(12 36?)	−14	12·6
Ottawa	38·4	13	e 8 54	PP	(e 13 36?)	+24	e 13·6
Scoresby Sund	74·1	19	11 36	+ 1	21 12	+ 2	30·6
Paris	83·2	42	e 12 26	+ 2	—	—	40·6
De Bilt	84·9	38	12 33	0	e 23 2	− 5	e 38·6
Stuttgart	87·8	41	e 12 48	+ 1	e 23 24	[+ 5]	e 41·6
Copenhagen	88·4	33	—	—	23 24	[+ 1]	48·6
Pulkovo	96·0	27	e 17 16	PP	—	—	44·6
Sverdlovsk	109·8	18	—	—	e 25 15	[+ 3]	51·6

Additional readings :—
Pittsburgh e = +7m.21s. = PP − 12s., e = +16m.2s.
Oak Ridge eEN = +7m.58s.
Long waves were also recorded at Edinburgh, Kew, Tashkent, Tucson, Chicago, and La Paz.

July 24d. Readings also at 2h. (Sumoto), 10h. (Nagoya, Mizusawa, Tyosi, and Nagasaki), 14h. (Huancayo, Balboa Heights, Pasadena, and Alicante), 15h. (Edinburgh, Sverdlovsk, Copenhagen, De Bilt, Scoresby Sund, Tashkent, Stuttgart, and La Paz), 17h. (Mizusawa), 19h. (Perth and Nagasaki), 20h. (Tashkent, Stuttgart, Sverdlovsk, and Pulkovo).

July 25d. 11h. 37m. 5s. Epicentre 46°·1N. 90°·4E. (as on 1933 Feb. 13d.). X.

A = −·005, B = +·693, C = +·721.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	14·1	254	e 3 13	− 2	—	—	—	—
Tchimkent	15·4	263	e 3 34	0	—	—	—	5·2
Tashkent	15·9	257	i 3 41	0	i 6 39	+ 1	i 7·8	9·1
Chiufeng	19·6	99	e 8 2	S	(e 8 2)	+ 4	i 10·6	—
Sverdlovsk	21·1	312	—	—	e 8 3	− 25	—	—
Vladivostok	29·4	83	—	—	e 15 15	?	15·8	17·2

Additional readings :—
Tchimkent e = +4m.54s.
Chiufeng eS? = +10m.17s.
Sverdlovsk e = +10m.30s.
Long waves were also recorded at Copenhagen, Paris, De Bilt, Tiflis, Pulkovo, and Hamburg.

July 25d. 15h. Readings without determination :—
Riverview e = 36m.30s., MN = 45m.12s.
Vladivostok P = 37m.40s.
Wellington 37m.
Stuttgart eZ = 46m.29s., e = 49m.22s., eL = 105m.
Tashkent e = 46m.42s., e = 55m.30s., eL = 82m.18s., M = 88m.30s.
Strasbourg e = 49m.
De Bilt eZ = 49m., eL = 110m.
Perth i = 52m.20s., e = 53m.50s., e = 55m.50s., M = 57m.0s.
Adelaide i = 54m.11s., M = 58m.54s.
Sverdlovsk e = 55m.30s., L = 78m.
Copenhagen L = 102m.
Baku eL = 93m.
Scoresby Sund L = 90m.

July 25d. 18h. Readings without determination :—
Malabar iP = 3m.55s., iS = 4m.7s.
Batavia P = 3m.58s., iS = 4m.16s.
Pasadena iPZ = 6m.59s.
Riverside ePZ = 7m.0s.
Tinemaha iPZ = 7m.4s.

July 25d. Readings also at 1h. (Adelaide, Wellington, Copenhagen, Stuttgart, and Belgrade), 2h. (Perth, Mizusawa, Tashkent, and Sverdlovsk), 6h. (Nagoya), 8h. (Florence and Andijan), 10h. (Suva, Christchurch, Wellington, Arapuni, Stuttgart, and Strasbourg), 11h. (Tashkent, Pulkovo, Sverdlovsk, Scoresby Sund, and Sitka), 14h. (Nanking and Alicante), 20h. (Andijan and Manila).

July 26d. 1h. Readings without determination :—
Suva 27m.
Mount Wilson iPZ = 37m.23s.
Pasadena iPENZ = 37m.27s.k
Riverside iPZ = 37m.30s.
Tinemaha iPENZ = 37m.37s.
Haiwee iPENZ = 37m.37s.
Tyosi P = 37m.39s., S = 37m.48s.
Tashkent e = 44m.29s., e = 47m.38s., e = 48m.28s.
Sverdlovsk e = 51m.35s., L = 73m.

July 26d. 11h. 6m. 26s. Epicentre 37°·1N. 141°·3E. (as on 1934 Jan. 24d.) X.
(given by Nagoya).

A = −·622, B = +·499, C = +·603.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Tyosi	1·4	194	e 0 18	− 2	0 32	− 4	0·6
Mizusawa	2·0	356	e 0 28	− 1	i 0 53	+ 2	—
Nagoya	4·0	242	0 59	+ 2	1 52	S*	2·2
Sumoto	5·8	244	—	—	e 2 32	+ 4	3·3

Sumoto gives also SN = +2m.53s. =S* +5s., SE = +2m.59s.

July 26d. Readings also at 0h. (Koti), 1h. (Tiflis and Erevan), 3h. (Tyosi, Balboa Heights, and San Juan), 4h. (Scoresby Sund), 5h. (Almata and Andijan), 7h. (San Fernando and Santiago), 9h. (Sumoto, Pasadena, San Juan, and Balboa Heights), 10h. (La Paz), 13h. (Wellington), 14h. (Amboina and Scoresby Sund), 15h. (Scoresby Sund, Tyosi, Nagoya, and Mizusawa), 16h. (La Paz, Sucre, Tashkent, Sverdlovsk, Tinemaha, and Pasadena), 17h. (Baku, Christchurch, and Wellington), 21h. (Santiago), 22h. (Tiflis, Nagasaki (2), and Mizusawa).

July 27d. 2h. 25m. 46s. Epicentre 14°·5N. 91°·0W. (as on 1929 March 21d.). R.3.

A = −·017, B = −·968, C = +·250; D = −1·000, E = +·017;
G = −·004, H = −·250, K = −·968.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Columbia	21·5	23	e 4 48	+ 3	e 8 47	+11	—	—
San Juan	24·2	77	e 5 21	+ 9	e 9 49	+22	e 10·5	—
St. Louis	24·2	4	i 5 13	+ 1	i 9 27	0	—	—
Florissant	24·4	2	i 5 7	− 7	i 9 18	−12	—	—
Tucson	25·4	318	e 5 22	− 2	e 9 50	+ 2	e 13·4	—
Charlottesville	26·0	23	e 5 53	PP	e 10 1	+ 3	—	—
Georgetown	27·3	24	i 5 44	+ 3	i 10 21	+ 1	e 14·2	—
Philadelphia	29·0	25	i 5 59	+ 3	i 10 40	− 8	e 15·2	—
Huancayo	30·8	149	—	—	e 11 26	+ 9	—	—
Toronto	30·8	17	e 6 1	−11	i 10 58	−19	14·1	16·6
Pasadena	31·4	314	i 6 17a	0	i 16 43	(− 9)	—	—
Mount Wilson	31·4	314	i 6 17	0	—	—	—	—
Haiwee	32·4	317	i 6 29	+ 3	—	—	—	—
Oak Ridge	32·7	27	i 6 31	+ 2	i 11 42	− 4	e 15·2	—
Tinemaha	33·1	318	i 6 34	+ 1	i 16 54	(− 7)	—	—
Ottawa	33·5	20	e 6 38	+ 2	11 50	− 8	18·2	—
Berkeley	36·2	316	e 6 44	−16	i 12 31	− 8	—	—
La Paz	38·3	143	7 33	+15	e 13 9	− 2	i 16·3	—
Ivigtut	55·8	23	9 31	− 3	17 14	− 6	28·2	—
Scoresby Sund	69·4	20	11 6	− 1	20 8	− 6	34·2	—
Kew	79·2	39	—	—	e 26 14?	SS	—	—
Paris	81·4	42	e 12 14?	− 1	—	—	38·2	—
De Bilt	82·3	38	—	—	e 23 41	PS	e 39·2	—
Copenhagen	85·3	34	—	—	23 3	[+ 2]	40·2	—
Stuttgart	85·7	41	e 12 32	− 5	e 23 8	[+ 4]	e 41·2	—
Pulkovo	92·1	26	e 13 31	+24	e 23 28	[−17]	43·2	—
Sverdlovsk	104·9	14	—	—	e 24 34	[−15]	48·2	—
Tiflis	110·6	34	e 19 6	PP	—	—	e 54·6	—
Tashkent	121·3	15	e 20 22	PP	e 31 2	PS	e 58·0	72·1

Additional readings:—
San Juan ePP = +5m.54s., e = +6m.36s.
St. Louis ipPEN = +5m.33s., iEN = +5m.44s. and +9m.50s., isSE = +10m.6s., iEN = +10m.18s., iSSEN = +10m.41s.; T_o = 2h.25m.47s.
Florissant ipP = +5m.28s., isS = +9m.58s.
Tucson eSS = +10m.38s.
Charlottesville e = +9m.46s.; T_o = 2h.25m.43s.

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Philadelphia PP = +6m.50s., i = +11m.54s. =SS −10s.
Toronto iSSN = +12m.20s.
Pasadena iZ = +9m.10s. =P_cP −4s., +9m.34s. and +12m.46s.
Haiwee iZ = +9m.17s. =P_cP +0s.
Tinemaha iZ = +9m.15s. =P_cP −5s., eZ = +9m.40s., iZ = +12m.52s.
Ottawa PPP = +8m.0s. ; T_o =2h.26m.6s.
Berkeley iZ = +6m.51s.
Scoresby Sund +15m.26s. and +20m.38s. =PS +8s.
Copenhagen +23m.39s. =PS −3s.
Stuttgart ePS = +24m.20s.
Sverdlovsk e = +27m.41s. =PS +4s. and +33m.15s. =SS +6s.
Tashkent e = +50m.32s.
Long waves were recorded at Strasbourg and Andijan.

July 27d. 12h. 25m. 43s. Epicentre 12°·2S. 165°·8E. N.3.
A = −·948, B = +·240, C = −·211 ; D = +·245, E = +·969 ;
G = +·205, H = −·052, K = −·977.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	13·4	118	2 53	−14	5 35	− 2	6·3	—
Sydney	25·4	209	e 9 23	?	e 12 17	?	14·0	15·6
Riverview	25·5	209	e 5 29	+ 4	e 9 52	+ 2	e 12·0	14·5
Arapuni	27·4	163	—	—	e 10 47	+25	—	—
Wellington	30·2	167	—	—	e 11 17?	+10	14·3	19·3
Melbourne	31·7	213	e 6 22	+ 2	i 11 34	+ 3	14·8	18·8
Christchurch	31·9	171	e 6 46	+24	e 12 8	+34	e 16·2R	—
Adelaide	33·6	223	—	—	e 11 29	−31	e 15·8	20·8
Honolulu	49·0	47	—	—	e 16 16	?	e 22·3	—
Perth	49·8	239	15 57	S	(15 57)	− 1	26·3	—
Manila	51·9	300	9 9	+ 3	16 36	+ 9	—	—
Zi-ka-wei	60·8	318	e 10 11	+ 1	—	—	—	38·6
Hong Kong	61·2	305	10 27	+14	18 41	+ 9	—	36·3
Nanking	63·1	316	e 10 25	− 1	e 18 53	− 3	26·3	—
Vladivostok	63·4	335	e 10 31	+ 3	19 9	+ 9	26·3	—
Chiufeng	69·6	321	e 11 7	− 1	20 18	+ 2	e 28·4	—
Pasadena	85·6	54	e 12 36	0	—	—	e 50·5	—
Sverdlovsk	108·5	325	18 13	[0]	24 59	[− 7]	49·3	69·5
Baku	117·5	310	e 23 48	PPPP	e 30 7	PS	59·3	83·6
Tiflis	121·1	312	e 20 26	PP	e 28 23	?	e 60·3	93·3
Pulkovo	122·2	335	20 27	PP	32 1	?	65·3	78·2
Helsingfors	124·1	338	e 19 17?	[+22]	—	—	e 67·3	—
Ksara	129·3	304	e 18 44	[−21]	e 32 23	?	—	—
San Juan	129·3	75	e 22 21	PP	—	—	—	—
De Bilt	137·1	341	e 22 9	PP	—	—	e 81·3	—
Uccle	138·5	342	i 22 16	PP	—	—	78·3	—
Stuttgart	138·6	336	e 19 20	[0]	—	—	e 74·3	89·3
Kew	139·1	345	e 19 17?	[− 3]	—	—	—	—
Strasbourg	139·3	337	i 19 23	[+ 2]	—	—	e 82·3	—
Paris	140·8	341	e 22 26	PP	—	—	86·3	89·3
Florence	141·5	330	e 19 17	[− 6]	—	—	59·3	—

Additional readings :—
Adelaide e = +13m.1s., i = +14m.53s.
Perth PP = +16m.37s., PPPP = +16m.57s., S = +21m.27s., PS = +21m.37s., SSS = +24m.27s.
Chiufeng SE = +20m.26s.
Sverdlovsk PP = +18m.44s., SS = +34m.11s.
Baku SS = +33m.35s.
Tiflis eNZ = +33m.47s.
Stuttgart ePP = +22m.15s.
Strasbourg iPP = +22m.15s.
Long waves were also recorded at Cape Town, Copenhagen, Scoresby Sund, Ivigtut, Tucson, Sitka, and Oak Ridge.

July 27d. Readings also at 2h. (Nagasaki, Sumoto, and Hukuoka B), 3h. (Kobe), 4h. (Sotchi and Mizusawa), 6h. (Lick), 8h. (Tyosi (2) and Mizusawa), 12h. (La Plata), 14h. (Andijan), 16h. (Oak Ridge and San Juan), 18h. (Sumoto and Mizusawa), 19h. (Baku, Tashkent (2), and Andijan), 23h. (Adelaide, Wellington, Riverview, and Perth).

July 28d. 2h. 6m. 32s. Epicentre 41°·0N. 77°·5E. (as on 1927 Sept. 15d.). R.2.

A = +·163, B = +·737, C = +·656 ; D = +·976, E = −·216 ;
G = +·142, H = +·640, K = −·755.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Almata	2·3	349	—	—	e 6 28	?	—	—
Andijan	3·9	269	0 54	− 2	i 1 57	S*	—	2·4
Tashkent	6·2	276	i 1 26	− 2	e 1 54	P_g	2·7	3·7
Dehra Dun	10·7	178	2 38	+ 7	4 38	+ 7	6·1	6·5
Agra	13·8	178	3 0	−13	5 18	−28	—	9·0
Sverdlovsk	19·2	331	i 5 21	+60	i 8 6	+16	10·1	11·7
Calcutta	20·6	151	4 32	− 4	9 27	+69	12·4	15·3
Baku	20·9	278	e 4 39	0	i 8 46	+22	11·5	14·8
Bombay	22·5	192	4 54	− 2	8 48	− 7	i 11·1	14·3
Tiflis	24·4	283	5 14	0	9 51	+21	e 13·4	25·9
Chiufeng	29·1	79	e 5 55	− 2	e 10 51	+ 1	e 14·8	19·1
Theodosia	30·7	292	e 6 16	+ 5	—	—	e 22·3	—
Kodaikanal	30·8	181	—	—	e 13 5	?	—	—
Simferopol	31·6	292	e 6 17	− 2	—	—	—	—
Yalta	31·6	291	e 6 19	0	—	—	—	—
Phu-Lien	31·8	117	—	—	11 28?	− 4	—	—
Ksara	33·5	271	e 6 41	+ 5	e 14 20	?	—	—
Nanking	34·0	92	e 12 0	S	(e 12 0)	− 6	e 21·6	24·1
Pulkovo	34·4	320	i 6 42	− 2	12 13	+ 1	17·0	17·8
Hong Kong	36·0	106	—	—	12 32	− 4	20·0	23·3
Zi-ka-wei	36·4	87	—	—	e 12 42	0	—	25·0
Helsingfors	37·6	319	e 7 9	− 3	e 12 57	− 3	e 18·0	—
Upsala	40·8	320	—	—	e 13 28?	−20	—	25·3
Budapest	41·4	300	e 7 58	+14	—	—	26·5	—
Copenhagen	43·8	312	8 4	+ 1	14 44	+11	23·5	—
Prague	43·8	304	—	—	e 17 43	SS	e 26·5	28·0
Zagreb	43·8	299	e 8 4	+ 1	—	—	e 25·5	—
Cheb	45·0	335	−0 25	?	e 5 17	?	—	24·9
Hamburg	45·7	310	e 8 23	+ 5	e 21 28?	?	25·5	—
Manila	45·9	108	i 8 19	− 1	i 15 2	− 1	22·0	—
Stuttgart	47·4	302	e 8 31	− 1	e 15 34	+10	e 26·2	30·0
Florence	47·7	295	8 28	− 6	e 15 34	+ 5	—	29·5
Piacenza	48·3	299	e 8 24	−14	—	—	—	30·6
Strasbourg	48·4	305	e 8 41	+ 2	e 16 13	+35	e 31·0	—
De Bilt	48·9	309	e 10 42	PP	e 15 55	+10	e 25·5	27·4
Uccle	49·7	307	—	—	e 16 7	+10	e 25·5	—
Paris	51·5	306	—	—	e 20 28?	SS	30·5	36·2
Kew	52·2	310	—	—	e 20 51	?	e 28·5	33·2
Edinburgh	52·3	314	—	—	e 24 28?	?	—	34·9
Bidston	53·1	312	—	—	e 21 1	SS	e 33·6	—
Scoresby Sund	54·8	335	9 28	+ 1	17 22	+16	—	—
Ivigtut	68·7	335	11 0	− 3	—	—	39·5	—
Ottawa	90·4	341	—	—	e 23 28?	[− 7]	e 46·5	—

Additional readings and note :—
Tashkent e = +1m.29s.
Agra SS = +5m.38s.
Bombay SS = +9m.46s.
Tiflis iE = +5m.28s., eZ = +9m.40s.
Nanking eS = +18m.36s.
Hong Kong S? = +17m.4s. $=S_cS-14s.$
Helsingfors ePPE = +8m.32s., eSSN = +15m.39s., eSSSN = +16m.35s.
Copenhagen +9m.52s. $=P_cP-2s.$
Prague e = +22m.28s.?
Zagreb e = +9m.49s. $=P_cP-5s.$
Stuttgart ePP = +10m.24s., eSS = +19m.5s., e = +20m.40s.
Strasbourg ePP = +10m.34s., eSS = +19m.28s., e = +26m.4s., +26m.28s.
De Bilt e = +19m.38s.
Uccle eE = +19m.28s.?
Bidston e = +28m.33s.
Long waves were also recorded at Durham, Königsberg, Bergen, San Fernando, Sitka, Oak Ridge, and Karlsruhe.

July 28d. 12h. 13m. 9s. Epicentre 37°·2N. 140°·8E. (as on 1931 July 19d.). R.1.

A = −·617, B = +·503, C = +·605; D = +·632, E = +·775; G = −·469, H = +·382, K = −·797.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Hukusima	0·6	334	0 4	− 5	0 13	− 2	—
Mito	0·9	197	0 14	+ 1	0 35	+12	—
Utunomiya	1·0	235	0 17	+ 3	0 40	+14	—
Sendai	1·1	4	(0 14)	− 2	0 14	P	—
Tukubasan	1·2	209	0 18	+ 1	0 43	+12	—
Kakioka	1·3	207	0 17	− 1	0 41	+ 8	—
Tyosi	1·5	178	0 20	− 1	0 45	S_g	1·1
Maebasi	1·6	240	0 26	+ 3	0 56	S_g	—
Kumagaya	1·6	227	0 25	+ 2	0 53	S_g	—
Tokyo	1·8	209	0 27	+ 1	0 58	S_g	1·0
Mizusawa	1·9	7	(i 0 25)	− 3	i 0 25	P	—
Yokohama	2·0	208	0 32	+ 3	1 4	S_g	—
Nagano	2·2	256	0 34	+ 3	1 7	S_g	—
Hunatu	2·4	223	0 36	+ 2	1 14	S_g	—
Kohu	2·4	232	0 37	+ 3	1 14	S_g	—
Morioka	2·5	6	(0 40)	+ 4	0 40	P	—
Akita	2·5	348	0 49	P_g	1 15	S_g	—
Miyako	2·6	21	(0 33)	− 4	0 33	P	—
Misima	2·6	216	0 40	+ 3	1 17	S*	—
Toyama	3·0	261	0 42	− 1	1 26	S*	—
Wazima	3·2	275	0 44	− 2	1 26	+ 4	—
Omaesaki	3·4	218	1 5	P_g	1 46	S_g	—
Hamamatu	3·5	227	0 56	P*	1 33	+ 3	—
Aomori	3·6	0	0 32	−19	1 7	P_g	—
Nagoya	3·7	238	e 0 54	+ 1	e 1 37	+ 2	2·3
Gihu	3·7	242	0 54	+ 1	1 46	S*	—
Kameyama	4·2	237	1 7	P*	2 9	S*	—
Hatidyozima	4·2	192	0 53	− 7	1 49	+ 1	—
Hikone	4·2	244	0 56	− 4	1 54	+ 6	—
Osaka	5·0	243	1 11	0	2 35	S_g	3·3
Kobe	5·2	243	e 1 42	P_g	e 2 46	S_g	3·2
Sumoto	5·6	241	e 2 13	S	3 6	S_g	3·7

Additional readings:—
Sendai P = +2s.
Tyosi P = +27s.
Mizusawa P = +8s.
Morioka P = +17s.
Miyako P = +11s.
Kobe iZ = +2m.9s. = S − 4s., eE = +2m.38s. = S* + 5s., eZ = +3m.4s. and +4m.58s.
Sumoto eN = +2m.15s., eZ = +3m.0s., SN = +3m.8s.

July 28d. 16h. Reading for which no determination has been made:—
Paris e = 7m.26s., e = 9m.33s., L = 16m., M = 19s.
San Fernando SN = 8m.30s., SE = 8m.36s.
Stuttgart e = 10m., eL = 17m.
Kew e = 10m.
Sverdlovsk eP = 14m.1s., e = 22m.2s., L = 28m.
Ottawa eE = 12m., eE = 16m.28s., eL = 21m.
Tashkent e = 15m.30s., e = 15m.42s., eL = 39m.54s., M = 46m.36s.
Strasbourg eL = 16m.
Edinburgh e = 16m.15s.
Scoresby Sund L = 18m.
De Bilt eL = 18m., M = 19m.2s.
Pulkovo e = 18m.15s., L = 25m.
Oak Ridge eLEN = 19m.
Copenhagen L = 20m.
Piacenza ME = 24m.20s.

July 28d. 17h. Readings for which no determination has been made :—

Santiago P = 26m.6s., S = 26m.59s., M = 27m.27s.
La Plata PEN = 28m.30s., eP?Z = 28m.42s., SN = 31m.0s., SE = 31m.4s., L = 31·8m., M = 32·6m.
Sucre P = 29m.5s., iSN = 31m.57s., L = 33m.32s.
La Paz iP = 29m.14s.a, iS = 32m.26s., L = 34m.28s., M = 36m.0s.
Huancayo iP = 30m.9s., eS = 33m.42s., eL = 34m.25s.
Oak Ridge iZ = 37m.6s., iZ = 37m.10s., iZ = 37m.18s.
Riverside iPZ = 37m.28s.
Pasadena iPZ = 37m.31s.k.
Mount Wilson iPZ = 37m.32s.
Haiwee iPNEZ = 37m.40s.
Tinemaha iPNEZ = 37m.44s.k.
Sverdlovsk e = 44m.55s., e = 47m.45s., e = 66m.13s., L = 90m.
Tashkent eL = 45m.12s., M = 45m.18s.
Andijan eL = 45m.24s.

July 28d. 21h. 37m. 4s. Epicentre 55°·6N. 156°·8W. (given by Bozeman). N.1.

A = −·519, B = −·223, C = +·825 ; D = −·394, E = +·919 ;
G = −·758, H = −·325, K = −·565.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka	11·9	74	i 2 47	0	e 4 56	− 4	e 5·9	—
Victoria	21·6	95	4 46	0	(8 46)	+ 8	8·8	—
Seattle	22·5	96	e 5 4	+ 8	9 16	SS	e 10·9	—
Ukiah	27·6	113	e 5 42	− 2	i 10 33	+ 8	e 12·5	—
Berkeley	29·1	113	i 5 57	0	i 10 54	+ 4	—	—
Saskatoon	29·1	76	6 18	+21	11 11	+21	—	—
Branner	29·4	114	e 6 3	+ 3	—	—	—	—
Lick	29·8	113	e 6 7	+ 4	—	—	—	—
Bozeman	30·0	90	e 6 7	+ 2	e 11 0	− 4	e 15·2	—
Tinemaha	31·8	109	i 6 23	+ 2	—	—	—	—
Haiwee	32·6	110	i 6 28	0	—	—	—	—
Santa Barbara	33·0	114	i 6 45	+13	—	—	—	—
Mount Wilson	34·1	112	i 6 42	+ 1	—	—	—	—
Pasadena	34·1	113	i 6 41k	0	i 12 9	+ 1	i 16·3	—
Honolulu	34·3	182	i 6 31	−12	i 11 56	−15	15·3	—
Riverside	34·6	112	i 6 46	0	—	—	—	—
Tucson	39·4	105	7 28	+ 1	13 31	+ 4	17·6	—
Sapporo	40·7	278	7 39	+ 1	13 48	+ 1	—	—
Mizusawa N.	43·5	275	7 59	− 2	14 31	+ 3	—	—
Chicago	45·5	77	e 8 24	+ 7	i 15 59	+62	e 21·6	—
Vladivostok	45·9	284	i 8 22	+ 2	i 15 4	+ 1	20·9	27·0
Florissant	46·1	82	e 8 21	0	i 15 4	− 2	—	—
Kakioka	46·1	272	8 19	− 2	14 57	− 9	—	—
Tukubasan	46·1	273	8 22	+ 1	15 3	− 3	—	—
St. Louis	46·3	82	e 8 22	− 1	i 15 6	− 3	i 22·5	25·0
Maebasi	46·5	274	8 34	+ 9	15 18	+ 6	—	—
Oiwake	46·9	274	8 29	+ 1	15 20	+ 3	—	—
Kohu	47·4	273	8 37	+ 5	15 25	+ 1	—	—
Toyama	47·4	275	8 32	0	15 26	+ 2	—	—
Ann Arbor	47·4	73	e 8 26	− 6	i 15 20	− 4	e 19·2	28·8
Hamamatu	48·5	273	8 48	+ 8	15 48	+ 8	—	—
Nagoya	48·6	274	e 8 45	+ 4	—	—	—	—
Toronto	48·8	68	i 9 9	+27	i 16 9	+25	i 24·0	27·4
Ottawa	49·5	66	e 8 47	0	i 15 53	− 1	i 26·4	—
Scoresby Sund	49·5	17	i 8 51	+ 4	i 16 2	+ 8	22·9	—
Osaka	49·8	275	8 46	− 4	15 56	− 2	—	—
Osaka B	49·8	275	8 53	+ 3	16 2	+ 4	—	—
Kobe	50·0	275	e 8 51	0	16 3	+ 2	e 22·9$_3$	34·4
Sumoto	50·4	275	8 57	+ 3	16 10	+ 4	20·3	26·1
Siomisaki	50·5	274	8 54	− 1	16 8	0	—	—

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ivigtut	50·5	36	i 8 55	0	16 9	+ 1	22·9	—
Koti	51·7	275	9 6	+ 2	16 25	+ 1	e 23·3	34·7
Matuyama	52·0	276	9 8	+ 2	16 30	+ 2	—	—
Heizyo	52·1	286	9 8	+ 1	16 30	0	25·5	34·0
Keizyo	52·4	284	9 10	+ 1	16 40	+ 6	24·8	—
Zinsen	52·7	284	e 9 0	−12	e 16 41	+ 3	—	—
Taikyu	52·8	281	e 9 14	+ 2	e 16 45	+ 6	e 27·1	—
Charlottesville	53·2	74	e 9 13	− 2	e 16 39	− 6	28·6	—
Georgetown	53·3	70	i 9 14	− 2	i 16 43	− 3	e 24·9	—
Husan	53·5	280	9 16	− 2	16 49	0	—	—
Hukuoka B	53·5	278	9 19	+ 1	16 53	+ 4	34·7	—
Philadelphia	53·6	70	i 9 14	− 4	i 16 47	− 3	e 24·2	—
Oak Ridge	53·6	66	i 9 18	0	i 16 53	+ 3	21·9	—
Miyazaki	54·1	278	9 22	0	17 2	+ 5	—	—
Nagasaki	54·4	278	9 26	+ 2	17 4	+ 3	—	—
Columbia	54·7	80	e 9 26	0	e 18 4	+59	e 26·3	—
Chiufeng	56·4	293	i 9 39a	0	i 17 30	+ 2	23·2	35·7
Zi-ka-wei	60·3	283	i 10 4a	− 3	18 21	+ 1	31·6	42·9
Naha	60·6	274	10 10	+ 1	—	—	—	—
Nanking	61·1	285	i 10 5	− 7	18 28	− 2	33·7	42·4
Bergen	63·1	10	10 22	− 4	e 18 50	− 6	—	—
Sverdlovsk	63·6	337	i 10 25	− 4	i 19 2	0	32·8q	41·4
Helsingfors	64·2	359	i 10 32	− 2	i 19 11	+ 1	e 27·9	—
Upsala	64·5	3	i 10 32	− 3	i 19 12	− 2	e 28·9	39·0
Pulkovo	64·5	355	i 10 33	− 2	19 13	− 1	28·9	34·4
Edinburgh	67·4	14	e 10 54	0	i 19 42	− 8	31·9	44·7
Durham	67·8	15	10 56	− 1	19 58	+ 4	—	41·9
Copenhagen	68·4	6	10 58a	− 3	20 4	+ 2	28·9	—
Stonyhurst	68·5	15	i 11 6	+ 5	i 20 6	+ 3	32·9	55·1
Bidston	68·8	16	i 11 2	− 1	i 20 11	+ 4	e 34·9	43·8
Königsberg	69·6	1	i 11 10	+ 2	e 20 17	+ 1	e 37·1	42·1
De Bilt	69·9	10	i 11 18a	+ 8	i 20 43	PS	e 34·9	38·6
Hamburg	70·3	8	i 11 11k	− 2	i 20 29	+ 4	e 33·9	38·9
Oxford	70·7	15	i 11 17	+ 2	i 20 34	+ 4	e 29·9	45·4
Hong Kong	71·2	282	11 15	− 3	20 37	+ 2	36·1	48·5
Kew	71·2	14	i 11 17	− 1	i 20 37	+ 2	36·9	45·1
Almata	71·2	322	e 11 20	+ 2	—	—	—	—
Göttingen	72·4	9	e 11 24	− 1	i 20 49	− 1	—	47·4
Uccle	72·5	12	i 11 24a	− 2	20 50	− 1	e 34·9	—
Leipzig	72·7	7	e 11 26	− 1	e 20 52	− 1	e 34·4	41·4
Jena	73·0	7	e 11 26	− 3	e 20 56	− 1	e 34·9	55·9
Manila	73·6	271	i 11 30a	− 2	i 21 3	− 1	35·4	41·3
Cheb	74·0	7	e 11 34	− 1	e 21 9	+ 1	e 40·9	50·2
Prague	74·1	6	i 11 33	− 2	i 21 11	+ 1	e 34·9	49·9
Paris	74·2	13	e 11 25a	−11	i 21 9	− 2	25·9	46·9
Karlsruhe	74·7	11	11 34	− 5	i 21 16	− 1	e 33·9	—
Andijan	75·0	325	e 11 40	0	21 22	+ 2	38·3	—
Stuttgart	75·0	8	i 11 40	0	i 21 19	− 1	e 35·9	49·4
Strasbourg	75·0	10	e 11 38a	− 2	e 21 19	− 1	e 34·9	46·9
San Juan	75·2	78	e 11 38	− 3	i 21 17	− 5	e 29·9	—
Tashkent	75·8	326	i 11 40	− 5	i 21 23	− 6	38·1	49·4
Basle	76·0	11	e 11 46	0	e 21 31	− 1	—	—
Vienna	76·0	5	e 11 44	− 2	e 21 30	− 2	e 43·8	50·3
Zurich	76·3	10	e 11 46	− 2	e 21 32	− 3	—	—
Neuchatel	76·5	11	e 11 47	− 2	e 21 36	− 1	—	—
Phu-Lien	76·6	287	e 11 48	− 1	21 33	− 5	34·9	—
Chur	76·8	10	e 11 51	+ 1	e 21 36	− 5	—	—
Budapest	76·9	2	11 51	0	21 42	0	38·4	54·4
Graz	77·1	5	e 11 50	− 3	i 21 48	+ 4	e 43·9	56·3
Treviso	78·3	8	i 12 1	+ 2	i 21 59	+ 2	59·9	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Zagreb		78·4	6	e 11 56	− 3	e 21 55	− 3	43·3	—
Triest		78·4	7	11 56a	− 3	21 54	− 4	e 37·6	44·1
Padova		78·5	8	e 11 56	− 4	e 21 59	0	—	—
Venice		78·6	8	e 12 5	+ 5	e 22 2	+ 2	53·7	—
Piacenza		78·7	10	11 56	− 5	21 56	− 6	—	52·8
Theodosia		78·8	350	e 12 2	+ 1	e 22 0	− 3	—	—
Simferopol		79·0	352	e 12 3	0	e 22 3	− 2	e 31·4	—
Bagnères		79·5	17	e 11 58	− 7	e 22 13	+ 3	e 32·9	—
Belgrade		79·5	1	e 12 8	+ 3	e 23 5	PS	—	—
Yalta		79·5	352	e 12 5	0	e 22 6	− 4	e 37·4	—
Serra do Pilar		79·6	24	12 13	+ 7	—	—	—	—
Florence		80·1	9	i 12 7a	− 1	22 10	− 7	—	—
Tiflis		81·0	344	12 13	0	22 28	+ 2	e 39·9	53·3
Barcelona		81·3	15	e 12 16	+ 1	e 22 26	− 4	e 33·8	43·9
Baku		81·4	339	i 12 15	0	i 22 49	+18	40·9	53·1
Tortosa	E.	81·7	16	e 12 9	− 8	e 22 24	−10	e 33·9	54·7
	N.	81·7	16	12 16	− 1	21 29	?	e 33·9	51·4
Toledo		81·8	20	i 12 16	− 1	i 22 31	− 4	e 39·9	48·1
Dehra Dun		82·2	314	8 56	?	21 46	?	42·1	51·9
Alicante		83·3	18	e 12 32	+ 7	e 23 4	+14	e 40·4	—
Granada		84·4	21	e 12 36	+ 6	e 23 3	+ 1	40·9	—
San Fernando		84·6	23	12 30	− 1	23 9	+ 5	39·9	50·9
Malaga		84·7	21	e 12 31	− 1	i 23 3	− 2	38·2	45·9
Almeria		85·0	20	e 12 37	+ 4	i 23 0	[+ 1]	e 39·2	—
Trenta		85·0	5	e 12 23	−10	e 22 47	[−12]	47·9	67·9
Algiers		86·1	16	e 12 56	+17	23 11	[+ 4]	—	43·9
Tunis		87·0	10	—	—	e 23 26	− 1	47·9	—
Ksara		89·9	349	e 13 7	+10	23 57	+ 2	42·4	—
Hyderabad		93·4	309	13 12	− 1	23 44	[− 8]	38·3	59·3
Helwan		94·2	353	e 12 59	−18	24 41	+ 6	—	67·4
Bombay		94·5	314	13 21	+ 3	23 50	[− 8]	e 46·4	59·4
Medan		95·1	284	e 15 30	?	—	—	e 50·9	—
Huancayo		95·2	104	—	—	e 23 48	[−14]	e 41·7	—
Batavia		98·7	273	e 11 56?	?	—	—	e 59·9	—
Riverview		99·8	223	—	—	e 25 14	−11	e 43·4	53·1
Wellington		100·2	203	—	—	i 24 9	[−18]	46·9	—
Kodaikanal		100·2	307	i 17 59	PP	—	—	—	60·5
Colombo		102·1	302	24 23	SKS	(24 23)	[−13]	—	65·0
La Paz		102·8	100	e 18 26	PP	i 24 33	[− 6]	53·9	65·7
Melbourne		105·7	226	—	—	i 26 3	S	50·5	52·5
Tananarive		139·0	324	71 55	?	74 44	?	e 81·1	88·4
Cape Town	E.	158·1	10	24 21	PP	34 32	SKSP	75·1	89·9
	N.	158·1	10	24 6	PP	34 39	SKSP	75·4	89·5

Additional readings :—
Sitka e = +2m.55s., eSS = +5m.21s.
Seattle iPP = +5m.15s., e = +5m.20s., i = +5m.56s.
Berkeley iE = +13m.40s.
Bozeman iS = +11m.4s., eSS = +13m.31s. ; T_0 = 21h.36m.59s.
Honolulu iPP = +7m.40s., eSS = +14m.2s.
Tucson SS = +16m.36s.
Mizusawa PE = +8m.3s.
Chicago eSS = +18m.10s.
Florissant ipP = +8m.30s., isS = +15m.21s. ; T_0 = 1h.37m.12s.
St. Louis epPEN = +8m.31s., eN = +10m.20s., isSEN = +15m.21s., iSSEN = +18m.12s., isSSE = +18m.28s. ; T_0 = 21h.37m.12s.
Ann Arbor ePP = +10m.20s., iSS = +18m.20s. ; T_0 = 21h.36m.42s.
Toronto iPPN = +10m.58s., iSSN = +18m.57s.
Ottawa i = +18m.34s., SSSN = +22m.34s. ; T_0 = 21h.37m.12s.
Scoresby Sund i = +10m.50s., +18m.44s. = S_0S +3s.
Osaka i = +11m.11s., +19m.53s. and +21m.2s.
Kobe iPZ = +8m.53s., eN = +9m.50s., eE = +10m.33s., eN = +16m.17s., eZ = +17m.13s.
Ivigtut +10m.48s. = PP +4s., S_0S = +18m.41s., +19m.50s.
Charlottesville iS = +16m.46s., iS_0S = +19m.2s., eSS = +20m.27s., e = +24m.56s.

Continued on next page.

Philadelphia ePP = +16m.28s., iS_cS = +19m.0s., eSS = +20m.12s.
Oak Ridge iEN = +19m.4s. = S_cS − 4s., eSSNW = +20m.30s.
Columbia eS_cS = +18m.55s., eSS = +20m.50s., eSSS = +22m.56s.
Chiufeng iEZ = +11m.36s. = PP − 2s., iE = +19m.26s. = S_cS − 1s. and +22m.30s.
Zi-ka-wei iZ = +23m.52s.
Nanking i = +30m.15s.
Helsingfors ePPN = +12m.56s., iPSE = +19m.26s., iS_cSEN = +20m.29s., SSEN = +23m.55s., SSSEN = +25m.36s. ; T_o = 21h.36m.58s.
Edinburgh i = +19m.55s., +20m.58s., and +23m.58s. = SS − 5s.
Copenhagen iP = +11m.0s., e = +11m.14s., PP = +13m.37s., PPP = +15m.32s., PS = +20m.19s., eS_cS = +21m.8s.
Stonyhurst i = +21m.6s. = S_cS + 12s., SS = +24m.33s., eSSS = +28m.4s., eSSSS = +29m.8s.
Bidston iPP = +13m.36s., iSS = +25m.56s.
Königsberg ePPE = +14m.1s., ePPPZ = +15m.6s., eE = +21m.20s. and +31m.50s.
Hong Kong PP = +14m.0s., ? = +21m.16s.
Kew iPP = +14m.2s.
Göttingen ePPP = +15m.44s.
Uccle iPP = +14m.9s., PPP = +15m.57s., PS = +21m.36s., SS = +25m.32s.
Leipzig eN = +15m.40s. = PPP + 2s., e = +21m.32s. = PS + 18s.
Manila PPE = +14m.34s.
Prague ePP = +14m.18s.
Paris PP = +14m.20s.
Stuttgart iP_cP = +12m.0s., e = +13m.9s., iPP = +14m.28s., e = +22m.25s., eSS = +25m.56s., eSSS = +30m.8s., e = +32m.56s.
Strasbourg PP = +14m.22s., PPP = +15m.54s., PS = +21m.55s., SSs = +26m.24s., SSS = +29m.32s.
San Juan e = +12m.24s., eSS = +26m.1s.
Vienna P_cP = +12m.8s., iEN = +12m.12s. and +13m.25s., PP = +15m.6s., PPP = +16m.46s., PS(S_cS) = +22m.10s., eEN = +25m.36s., SS = +26m.37s.
Graz iP_cP = +12m.4s.
Zagreb eP = +11m.59s., eE = +34m.56s.?
Triest PP = +13m.57s., PS = +22m.36s., SS = +27m.10s.
Venice S = +22m.29s. = PS − 2s.
Piacenza PS = +22m.16s.
Bagnères ePP = +15m.5s.
Belgrade e = +15m.10s.
Tiflis eE = +14m.18s., PPE = +15m.46s., eZ = +18m.38s., eN = +30m.56s., eE = +32m.19s.
Baku i = +19m.16s., e = +29m.11s. and +32m.2s.
Toledo PP = +15m.18s., PPP = +17m.26s., SS = +27m.44s., SSS = +30m.54s.
Granada PP = +16m.6s.
San Fernando PE = +12m.38s., +12m.43s., and +13m.2s.
Malaga i = +12m.34s., e = +13m.1s., i = +13m.22s., ePP = +15m.49s., i = +15m.53s., e = +16m.38s., PPP = +17m.34s., PPPP = +19m.8s., e = +22m.19s., i = +23m.22s. and +23m.27s., e = +24m.2s., SS = +28m.31s., SSS = +31m.26s.
Almeria PP = +16m.1s.
Algiers e = +25m.57s.
Helwan PP = +17m.18s.
Bombay PP = +17m.4s., PPP = +19m.21s., PS = +25m.54s., SS = +31m.26s.
Huancayo eSS = +30m.56s.
Riverview eN = +32m.56s.
Melbourne i = +33m.26s. = SS + 6s., +38m.9s. and +43m.56s.
Tananarive SS = +78m.29s.
Cape Town PPS = +38m.17s., SSE = +44m.9s., SSN = +44m.37s., SSSN = +52m.13s.
Long waves were also recorded at Perth, Adelaide, La Plata, Sydney, and San Francisco.

July 28d. Readings also at 1h. (Sitka), 2h. (Pulkovo, Vladivostok, and Hyderabad), 5h. (Nagoya and Mizusawa), 6h. (Tiflis and Mizusawa), 9h. (La Paz), 12h. (Sotchi), 16h. (Edinburgh and Stuttgart), 17h. (Sverdlovsk and Tashkent), 18h. (Copenhagen, Stuttgart, and La Paz), 21h. (Pulkovo), 22h. (Andijan), 23h. (Branner and Adelaide).

July 29d. 17h. 4m. 54s. Epicentre 35°·7N. 2°·3W. (as on 1931 July 10d.). X.

A = +·809, B = −·033, C = +·586; D = −·040, E = −·999; G = +·586, H = −·024, K = −·810.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Almeria	1·0	352	i 0 14	0	i 0 22	− 4	0·5
Granada	1·6	321	e 0 20	− 3	i 0 28	P*	—
Malaga	1·9	296	0 26	− 2	0 41	− 8	—
San Fernando	3·2	281	1 51	+65	2 19	+63	—
Toledo	4·2	342	e 1 5	+ 5	i 1 49	− 1	—

Additional readings :—
Almeria iSS = +35s., sSS = +49s.
Granada iPP = +26s. = P_g +0s., iPS = +36s., iSS = +40s. = S −1s., iPPS = +44s. = S* −2s., sPS = +49s. = S_g +2s.
Malaga iPP = +28s., iPPP = +43s., iSS = +44s., iSSS = +1m.11s.
Long waves were recorded at Alicante.

July 29d. Readings also at 0h. (Amboina, Cheb, and Edinburgh), 3h. (Nanking and Andijan), 5h. (Manila (2)), 9h. (Tyosi and Montezuma), 13h. (Husan and Sumoto), 14h. (Toledo, Husan, and Mizusawa), 15h. (Ukiah), 19h. (Mizusawa), 21h. (Tortosa), 22h. (Göttingen and Jena).

July 30d. The following readings were recorded as for separate shocks, but no determination could be found :—

1h.
Suva e = 44m.18s.
Wellington i = 50m.20s.
Adelaide e = 52m.52s., e = 56m.47s., eL = 58m.59s., M = 63m.18s.
Christchurch S? = 56m.22s., e = 57m.33s., eLR? = 59m.37s.
Tashkent e = 56m.44s., e = 86m.48s., eL = 94m.12s., M = 97m.0s.

2h.
Perth P = 4m.0s.
Andijan eP = 5m.28s.
Sverdlovsk e = 6m.53s., e = 12m.57s., L = 27m.
Ukiah e = 16m.0s.
Columbia e = 17m.54s.
Ivigtut e = 18m.
Scoresby Sund = 18m.50s., L = 22m.
Edinburgh e = 23m.
Long waves were also recorded at Oak Ridge, Paris, De Bilt (2), Strasbourg, Pulkovo, Stuttgart, Copenhagen, Kew, and Stonyhurst.

3h.
Paris e = 0m., L = 16m.
Scoresby Sund 7m.55s., L = 12m.
Edinburgh e = 8m.0s.
Stonyhurst eL = 13m.
Uccle eL = 15m.
De Bilt e = 15m.
Strasbourg e = 17m.
Stuttgart eL = 17m.
Phu-Lien 31m.
Almata eP = 31m.12s.
Nanking eE? = 31m.46s., eN = 35m.10s., eN = 36m.10s., iL = 37m.30s.
Andijan eP = 31m.49s., S = 38m.23s.
Hong Kong P? = 32m.3s., S? = 36m.4s., L? = 38m.34s., M = 39m.46s.
Tashkent iP = 32m.9s., iS = 36m.15s., eL = 39m.48s., M = 44m.12s.
Sverdlovsk e = 33m.39s., e = 38m.47s., e = 43m.18s., e = 43m.42s., e = 43m.58s., L = 78m.
Agra e = 34m.51s.
Suva e = 37m.0s.
Bombay i = 38m., M = 44m.25s.
Manila P = 41m.7s., S = 45m.18s., L = 47m.30s.
Adelaide eP = 41m.43s., e = 44m.16s., iS = 47m.21s., eL = 50m.8s., M = 54m.54s.
Wellington e = 42m., L = 47m.

Continued on next page.

Christchurch eEZ =43m.11s., e =46m.36s., iN =50m.24s., iN =52m.10s., iNZ = 52m.34s., iE =54m.24s.
Tinemaha iPZ =44m.9s.
Arapuni e =44m.
Pulkovo e =49m.18s., L =55m.
Stuttgart eZ =54m.0s., e =61m.0s., e =63m.0s., eL =104m.
Strasbourg e =54m.0s., eL =66m.
Helsingfors e?N =54m.18s., e?N =56m.12s., e?N =62m.
Hamburg e =(56m.).
Long waves were also recorded at Kew, Stonyhurst, Ivigtut, Vladivostok, Ucclc, Copenhagen (2), Scoresby Sund, De Bilt, Baku, Melbourne, and Oak Ridge.

July 30d. Readings also at 4h. (Kew (2), Edinburgh, Ivigtut, Perth, Ukiah, Philadelphia, Tucson, Uccle, De Bilt, and Paris), 6h. (Sumoto (2), Kobe, Osaka, and Nagoya), 7h. (Denver, Tyosi, and St. Louis), 8h. (Edinburgh), 9h. (Tiflis), 10h. (Sverdlovsk, Almata, and Andijan), 11h. (Tiflis and Malabar), 14h. (Manila, Sucre, La Paz, and Montezuma), 16h. (Tyosi and Lick), 19h. (New Plymouth and Wellington), 21h. (Nagoya, Osaka, and Sumoto), 22h. (Andijan).

July 31d. 5h. 58m. 40s. Epicentre 15°·0N. 119°·7E. (as on 1927 Jan. 12d.). R.1.

A = −·478, B = +·839, C = +·259; D = +·869, E = +·495; G = −·128, H = +·225, K = −·966.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	1·3	107	i 0 26k	P_g	0 44	S_g	—	—
Takao	7·7	4	1 56	+ 7	—	—	—	—
Arisan	8·6	7	2 9	+ 7	3 48	+ 9	—	—
Taihoku	10·2	10	2 35	+11	—	—	—	—
Phu-Lien	13·7	297	3 18	+ 7	e 6 19	+35	6·8	—
Nake	16·2	33	3 43	− 1	6 50	+ 7	—	—
Zi-ka-wei	16·3	6	e 3 45	0	6 46	+ 1	—	10·1
Nanking	17·1	357	3 57k	+ 2	7 15	SS	e 8·8	11·2
Nagasaki	20·0	26	4 29	− 1	8 4	− 2	—	—
Miyazaki	20·1	30	4 35	+ 4	8 12	+ 4	—	—
Amboina	20·5	155	i 4 29	− 6	8 11	− 5	—	—
Husan	21·8	21	4 47	− 2	e 8 44	+ 2	—	—
Koti	22·4	32	e 4 59	+ 4	8 56	+ 3	—	—
Zinsen	23·3	14	i 5 4	0	9 11	+ 1	—	—
Medan	23·6	243	i 5 14	+ 8	i 10 32	+16	—	—
Sumoto	23·7	33	e 5 7	0	e 9 16	− 2	—	—
Kobe	24·1	33	i 5 13	+ 2	e 9 50	+25	—	—
Osaka	24·3	33	5 15	+ 2	9 28	0	—	—
Batavia	24·7	212	i 5 18	+ 1	9 38	+ 2	—	—
Nagoya	25·3	35	e 5 21	− 2	—	—	—	—
Chiufeng	25·3	354	i 5 23a	0	9 46	0	14·3	16·5
Oiwake	27·2	35	5 35	− 5	10 12	− 6	—	—
Vladivostok	30·0	18	6 6	+ 1	i 11 0	− 4	13·8	—
Calcutta	30·5	289	e 5 59	−10	—	—	—	—
Mizusawa	30·6	34	(e 6 10)	0	e 6 10	P	—	—
Sapporo	33·7	29	6 44	+ 6	—	—	—	—
Agra	40·5	294	—	—	e 13 37	− 7	—	—
Bombay	44·8	283	—	—	i 14 48	+ 1	—	—
Andijan	48·3	312	e 8 42	+ 4	—	—	—	—
Tashkent	50·7	312	i 8 56	− 1	i 16 11	0	e 23·5	32·9
Sverdlovsk	60·7	329	i 10 8	− 1	i 18 22	− 3	28·3	37·5
Baku	65·0	310	i 10 22	−17	i 19 25	+ 5	32·3	41·8
Theodosia	75·4	313	e 11 41	− 2	—	—	—	—
Yalta	76·2	313	e 11 48	+ 1	—	—	—	—
Simferopol	76·4	314	e 11 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	76·8	330	11 48	− 2	e 21 30	−11	44·3R	47·8
Helsingfors	79·3	330	e 12 2	− 2	e 21 58	−10	e 41·3	—
Copenhagen	87·0	327	12 43	0	23 8	[− 5]	43·3	—
Hamburg	89·1	326	e 12 53	0	e 23 20	[− 7]	e 52·3	—
Scoresby Sund	90·5	347	—	—	23 32	[− 4]	49·3	—
Stuttgart	91·6	321	13 5	0	e 23 26	[−16]	e 49·3	56·3
Chur	92·2	319	13 8	0	25 8	PS	—	—
De Bilt	92·4	326	i 13 8	− 1	e 23 44	[− 3]	e 47·3	57·7
Strasbourg	92·6	323	i 13 7a	− 2	e 25 20?	PS	e 46·3	—
San Juan	146·1	8	e 19 36	[0]	—	—	—	—
La Paz	172·4	102	i 20 8a	[+ 3]	i 25 23	PP	—	—

Additional readings :—
Zi-ka-wei iZ = +4m.2s.
Amboina i = +5m.1s.
Sumoto eSN = +9m.19s.
Kobe eEN = +5m.31s. =PP −7s.
Osaka i = +6m.15s.
Baku e = +26m.57s.
Pulkovo L_q = +38·3m.
Helsingfors ePPNE = +15m.12s., eSSN = +25m.52s. ; T_0 =5h.58m.50s.
Stuttgart ePP = +16m.40s., ePS = +25m.5s.
Long waves were also recorded at Kew, Uccle, Paris, Ivigtut, Hong Kong, and Christchurch.

July 31d. 10h. 58m. 52s. Epicentre 4°·2N. 96°·0E. N.2.

A = −·104, B = +·992, C = +·073 ; D = +·995, E = +·105
G = −·008, H = +·073, K = −·997.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Medan	2·8	102	i 0 43	+ 3	i 1 13	+ 1	—	—
Phu-Lien	19·5	31	4 8	−16	—	—	—	—
Manila	26·7	65	6 29	+54	10 46	+36	—	—
Bombay	27·0	305	—	—	i 10 25	+10	—	16·6
Agra	28·7	325	5 56	+ 3	10 44	+ 1	—	—
Nanking	35·1	35	—	—	e 12 19	− 4	e 17·1	—
Chiufeng	40·2	24	e 7 35	+ 1	e 13 42	+ 3	—	—
Andijan	42·3	333	e 5 50	?	—	—	—	—
Tashkent	44·0	332	e 8 21	+16	e 14 23	−13	—	28·4
Sverdlovsk	59·6	340	i 10 0	− 2	18 7	− 4	28·1	—
Theodosia	66·5	318	e 10 49	0	—	—	—	—
Yalta	67·2	317	e 10 52	− 1	—	—	—	—
Simferopol	67·4	318	e 10 55	+ 1	—	—	—	—
Pulkovo	74·4	332	11 33	− 4	21 6	− 7	—	—
Vienna	80·0	318	i 12 9	+ 1	i 22 9	− 7	—	—
Copenhagen	82·9	327	12 38	+15	22 44	− 2	—	—
Chur	84·5	318	e 12 32	+ 1	e 22 54	[− 1]	—	—
Stuttgart	84·7	315	e 12 31	− 1	e 22 56	[− 1]	e 36·1	—
Zurich	85·2	318	e 12 34	0	e 22 58	[− 3]	—	—
Neuchatel	86·2	318	e 12 40	+ 1	—	—	—	—
Tinemaha	127·8	35	i 19 3	[0]	—	—	—	—
Haiwee	128·7	35	i 19 4	[0]	—	—	—	—
Mount Wilson	130·0	35	i 19 7	[0]	—	—	—	—
Pasadena	130·0	37	i 19 4	[− 3]	—	—	—	—
Riverside	130·5	36	i 19 9	[+ 1]	—	—	—	—
La Jolla	131·4	38	e 19 11	[+ 2]	—	—	—	—

Additional readings :—
Tashkent e = +15m.22s. and +22m.20s.
Copenhagen +23m.8s. =PS −17s.
Long waves were also recorded at Hong Kong and Batavia.

July 31d. 11h. 49m. 24s. Epicentre 4°·2N. 96°·0E. (as at 10h.). R.1.

A = −·104, B = +·992, C = +·073; D = +·995, E = +·105; G = −·008, H = +·073, K = −·997.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Medan	2·8	102	i 0 41	+ 1	—	—	—	—
Batavia	15·0	134	e 3 20	− 8	6 34	?	e 7·6	—
Colombo	16·3	280	3 54	PP	—	—	—	10·6
Kodaikanal	19·4	289	i 4 29	+ 6	i 8 4	+10	i 9·7	11·2
Phu-Lien	19·5	31	e 4 29	+ 5	e 8 11	SS	9·6	—
Calcutta	19·8	339	5 58	?	—	—	—	—
Hyderabad	21·7	309	5 6	PP	9 6	SS	12·1	14·6
Hong Kong	25·3	43	5 27	+ 4	9 44	− 2	12·4	16·3
Manila	26·7	65	i 5 37	+ 2	10 57	SS	15·6	18·6
Bombay	27·0	305	5 43	+ 5	10 23	+ 7	e 13·6	17·1
Agra	28·7	325	5 58	+ 5	10 44	+ 1	—	—
Amboina	33·1	103	6 22	−11	11 33	?	—	—
Nanking	35·1	35	6 43	− 7	12 19	− 4	e 17·0	23·5
Zi-ka-wei	36·2	38	7 0	0	—	—	22·0	24·4
Chiufeng	40·2	24	i 7 35a	+ 1	e 13 22	−17	—	—
Perth	40·8	153	16 36	SS	—	—	—	—
Andijan	42·3	333	e 7 52	+ 1	14 12	+ 2	—	—
Nagasaki	42·6	43	7 52	− 1	e 17 49	(− 8)	—	—
Almata	43·0	339	e 7 36	−21	—	—	—	—
Zinsen	43·5	36	—	—	e 14 36?	+ 8	—	—
Tashkent	44·0	332	i 7 49	−16	i 15 41	+65	e 28·6	35·5
Sumoto	47·1	45	e 8 18	−11	—	—	—	—
Vladivostok	50·3	34	8 54	0	16 4	− 1	25·1	33·3
Baku	55·0	319	e 9 36	+ 7	i 17 12	+ 3	27·1	37·7
Sverdlovsk	59·6	339	e 10 1	− 1	i 18 6	− 5	28·1	31·0
Theodosia	66·5	318	e 10 49	0	e 19 35	− 4	e 33·6	—
Yalta	67·2	317	e 10 51	− 2	e 19 42	− 5	—	—
Simferopol	67·4	318	e 10 53	− 1	e 19 44	− 6	—	—
Pulkovo	74·4	332	11 35	− 2	21 4	− 9	37·6	48·2
Helsingfors	77·1	333	e 11 40	−13	e 22 4	PS	e 32·6	—
Vienna	80·0	318	i 12 8	0	22 10	− 6	—	—
Zagreb	80·0	317	e 12 9	+ 1	e 22 7	− 9	—	—
Copenhagen	82·9	327	12 23	0	22 38	− 8	40·6	—
Florence	83·3	314	e 13 1	+26	22 38	−12	—	—
Hamburg	84·3	324	e 12 46	+16	—	—	—	—
Piacenza	84·4	317	e 12 52	+22	i 22 56	[+ 1]	—	—
Chur	84·5	318	(e 12 31)	0	(e 22 54)	[− 1]	—	—
Stuttgart	84·7	315	e 12 32	0	i 23 27	+22	e 48·6	—
Zurich	85·2	318	(e 12 34)	0	(e 22 53)	[− 8]	—	—
Strasbourg	85·7	319	e 12 36?	− 1	e 23 10	[+ 6]	e 30·6	—
Neuchatel	86·2	318	—	—	e 23 11	[+ 3]	—	—
De Bilt	87·2	323	—	—	e 23 22	− 7	e 49·6	—
Uccle	87·8	321	—	—	i 23 25	[+ 6]	e 40·6	—
Algiers	89·8	307	i 11 27	−89	i 2; 49	− 5	—	—
Kew	90·6	322	—	—	e 2. 53	{+13}	—	—
Edinburgh	91·6	326	e 18 36?	PPP	e 23 36?	[− 6]	—	—
Scoresby Sund	95·0	343	—	—	24 0	[− 1]	52·6	—
Tinemaha	127·8	35	i 19 3	[0]	—	—	—	—
Haiwee	128·7	35	i 19 5	[+ 1]	—	—	—	—
Ottawa	129·9	352	e 22 24	PKS	e 28 36	{+15}	e 56·6	—
Pasadena	130·0	37	i 19 6	[− 1]	—	—	—	—
Riverside	130·5	36	i 19 8	[0]	—	—	—	—
La Jolla	131·4	38	e 19 1	[− 8]	—	—	—	—
Oak Ridge	131·9	348	i 19 11	[+ 1]	—	—	e 73·6	—
Sucre	156·4	230	19 35	[−15]	—	—	—	—
La Paz	160·1	231	e 20 17	[+23]	—	—	76·6	86·7

For Notes see next page.

NOTES TO JULY 31d. 11h. 49m. 24s.

Additional readings and notes :—
Bombay PP = +6m.20s., PPP = +6m.40s., SS = +11m.37s.
Tashkent i = +8m.7s.
Sumoto eE = +8m.23s., eZ = +8m.27s.
Helsingfors iSKSEN = +21m.31s. =S −13s., eSSEN = +26m.31s.
Vienna P_cP = +12m.29s., PP = +15m.23s., S_cS = +22m.32s.
Chur readings have been *diminished* by 10m.
Stuttgart SKS = +22m.54s.
Zurich readings have been *diminished* by 10m.
De Bilt eN = +23m.50s.
Pasadena iZ = +19m.23s. and +22m.23s. =PKS −10s.
Riverside iZ = +19m.23s. and +22m.26s. =PKS −10s.
Oak Ridge iPPZ = +22m.32s. =PKS −10s.
Long waves were also recorded at Ivigtut, Granada, Christchurch, and Wellington.

July 31d. Readings for which no determination has been made :—

15h.
Scoresby Sund 29m.
Helsingfors eS?NE =31m.50s., e?N =33m.20s.
Tinemaha eP =31m.52s.
Ivigtut L =32m.
Mount Wilson iP =32m.12s.
Pasadena iPZ =32m.12s.
La Jolla ePZ =32m.19s.
Copenhagen =33m.

20h.
La Jolla ePZ =34m.38s.
Pasadena iPZ =34m.38s.
Riverside iPZ =34m.40s.
Haiwee iPZ =34m.46s.
Tinemaha iPZ =34m.47s.

July 31d. Readings also at 0h. (Berkeley), 1h. (Riverview and Adelaide), 2h. (Sverdlovsk, Tashkent, Mizusawa, Tyosi, Christchurch, and Wellington), 3h. (Lick), 4h. (Tyosi), 5h. (Tinemaha and Pasadena), 7h. (La Paz), 8h. (Christchurch), 10h. (Nanking (2), Stuttgart, Tashkent, and Sverdlovsk), 12h. (Tananarive), 13h. (Huancayo and Stuttgart), 15h. (Ivigtut), 19h. (Nanking and Mizusawa), 20h. (La Paz), 21h. (Andijan).

Aug. 1d. Readings at 0h. (Tashkent, Adelaide, Perth, and Wellington), 1h. (Sverdlovsk), 3h. (Sumoto, Taihoku, Arisan, and Karenko), 4h. (Batavia), 5h. (Wellington), 7h. (Mizusawa), 11h. (Tashkent, Pasadena, Riverside, Tinemaha, Haiwee, Berkeley, and Wellington), 12h. (Malabar, Batavia, Pulkovo, Alicante, and Copenhagen), 14h. (Mizusawa), 16h. (Batavia, Malabar, and Wellington), 23h. (Andijan, Tashkent, Sverdlovsk, Copenhagen, Tucson, and Christchurch).

Aug. 2d. Readings from which no determination is made :—

Amboina P =2h.54m.22s., S? =57m.53s.
Batavia P =2h.56m.43s.
Riverview eN =3h.8m.30s., eLN =12m.24s., MN =14m.8s.
Sydney e =3h.8m.33s., L =12m.45s., M =14m.0s.
Adelaide e =3h.8m.48s., eL =9m.54s., M =12m.12s.
Sverdlovsk e =3h.15m.4s., L =42m.
Tashkent e =3h.31m.40s., e =4h.12m.38s., e =13m.42s., eL =32·2m., M =41·2m.
Long waves were recorded at Medan.

Aug. 2d. 6h. 54m. 50s. Epicentre 4°·0S. 139°·8E. N.3.

The readings are confused with the following 'quake.

A = −·762, B = +·644, C = −·070; D = +·646, E = +·764; G = +·053, H = −·045, K = −·998.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	11·6	272	e 2 45	+ 2	i 5 18	+25	—	—
Manila	26·4	315	i 5 52k	+19	11 14	SS	—	—
Adelaide	31·0	182	i 12 50	SS	i 16 10	?	18·8	20·1
Riverview	31·7	162	15 10	?	i 17 10	(+17)	18·3	—
Sydney	31·7	162	—	—	e 14 13	?	17·6	18·3
Batavia	32·9	265	e 7 47	PPP	—	—	—	—
Melbourne	34·2	173	—	—	i 12 28	+19	—	19·9
Perth	35·8	216	13 10	?	i 15 52	?	—	20·2
Nagasaki	38·0	346	e 7 12	− 3	—	—	—	—
Zi-ka-wei	39·3	335	e 7 23	− 3	—	—	—	—
Nanking	41·2	333	e 7 42	0	—	—	—	—
Medan	41·8	280	7 57	+10	i 14 23	+20	—	—
Vladivostok	47·6	352	8 35	+ 2	e 15 39	+12	23·7	—
Christchurch	49·0	148	e 8 35	− 9	16 1	+14	e 24·9	—
Chiufeng	49·2	336	i 8 45k	0	e 15 42	− 8	—	—
Andijan	75·9	314	10 37	−68	—	—	—	—
Tashkent	78·3	315	i 12 0	+ 1	e 21 43	−14	e 52·4	67·5
Sverdlovsk	87·5	327	i 12 46	+ 1	e 23 21	[+ 4]	—	—
Florissant	122·8	45	e 20 29	PP	—	—	—	—
La Paz	145·6	127	i 19 48a	[+13]	—	—	67·2	73·6

Additional readings:—
Amboina e = +8m.24s.
Manila PN = +5m.55s.
Adelaide i = +13m.59s. and +15m.31s.
Riverview eN = +16m.28s.
Melbourne i = +14m.24s. = SSS +0s., +14m.57s., +15m.55s., +17m.0s. = S_cS −8s., +18m.33s., and +19m.45s.
Nagasaki P = +17m.8s.
Christchurch P = +8m.53s., SSN = +19m.19s., L_qN = +20·5m.
Long waves were recorded at Wellington.

Aug. 2d. 7h. 13m. 15s. Epicentre 61°·9N. 148°·0W. N.2.

A = −·399, B = −·250, C = +·882; D = −·530, E = +·848; G = −·748, H = −·467, K = −·471.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka	8·0	122	e 1 48	− 5	e 3 37	?	e 4·0	—
Victoria	19·3	123	4 24	+ 2	8 4	SS	9·8	11·0
Seattle	20·3	123	e 4 43	+10	e 8 31	+19	e 11·6	—
Bozeman	26·6	110	—	—	e 10 5	− 4	—	—
Ukiah	27·3	135	e 5 45	+ 4	e 10 20	0	—	—
Berkeley	28·8	135	e 5 51	− 3	—	—	—	—
Tinemaha	30·9	130	i 6 11	− 2	—	—	—	—
Haiwee	31·8	129	i 6 18	− 3	—	—	—	—
Santa Barbara	32·7	134	i 6 27	− 2	—	—	—	—
Mount Wilson	33·5	132	i 6 34	− 2	—	—	—	—
Pasadena	33·6	132	i 6 33	− 4	—	—	e 16·7	—
Riverside	33·9	131	i 6 33	− 6	—	—	—	—
La Jolla	35·0	132	i 6 49	0	—	—	—	—
Tucson	37·9	124	e 7 15	+ 1	e 12 53	−12	e 20·0	—
Chicago	40·3	91	e 9 20	PPP	e 13 45	+ 4	e 20·6	—
Florissant	41·4	95	i 7 37	− 7	i 13 54	− 3	20·7	—
St. Louis	41·6	95	e 7 42	− 3	i 13 58	− 2	e 20·1	22·3
Ann Arbor	41·8	87	—	—	e 14 9	+ 6	19·9	22·3
Scoresby Sund	42·4	24	7 58	+ 6	14 18	+ 7	19·7	—
Ivigtut	42·7	44	—	—	14 21	+ 5	21·7	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Toronto	42·8	82	8 0	+ 5	14 16	− 2	20·1	—
Ottawa	43·2	78	e 7 59	+ 1	14 23	− 1	e 19·7	—
Oak Ridge	47·3	77	i 8 30	− 1	e 15 23	0	i 24·7	—
Georgetown	47·6	84	e 8 32	− 1	i 15 28	+ 1	e 20·7	—
Vladivostok	48·6	286	—	—	e 15 46	+ 5	23·2	32·0
Columbia	49·7	91	—	—	e 15 57	0	e 26·0	—
Helsingfors	57·8	4	e 9 46	− 3	e 17 47	0	e 28·7	—
Upsala	57·8	9	e 9 50	+ 1	e 17 46	− 1	e 28·7	—
Chiufeng	57·9	296	e 9 52	+ 2	17 50	+ 2	—	38·1
Nagasaki	57·9	281	9 57	+ 7	e 17 52	+ 4	—	—
Pulkovo	58·3	1	9 54	+ 2	e 17 54	+ 1	26·7	36·5
Sverdlovsk	59·1	342	e 9 59	+ 1	e 18 8	+ 4	26·3	42·9
Copenhagen	61·4	12	10 15	+ 1	18 40	PS	28·7	—
Hamburg	63·2	14	e 10 28	+ 1	19 4	PS	e 38·7	—
Nanking	63·5	289	10 28	− 1	e 19 1	0	—	—
Kew	63·7	23	e 10 41	+11	—	—	e 36·7	—
De Bilt	64·1	19	10 33	0	—	—	e 32·7	—
Uccle	65·1	21	e 10 40	+ 1	e 19 31	PS	34·7	—
Stuttgart	67·8	17	e 10 56	− 1	e 20 2	+ 8	e 38·7	—
Strasbourg	67·8	17	e 10 57	0	e 19 57	+ 3	e 36·8	—
San Juan	70·0	88	e 11 23	(−10)	e 20 11	−10	e 34·7	—
Florence	73·0	15	11 28	− 1	20 58	+ 1	—	50·3
Theodosia	73·0	358	e 11 35	+ 6	—	—	—	—
Simferopol	73·1	358	e 11 31	+ 2	21 4	+ 6	—	—
Yalta	73·6	357	e 11 31	− 1	e 21 6	+ 2	—	—
Tiflis	75·9	351	11 47	+ 2	21 28	− 2	e 35·7	47·9
Baku	76·7	348	11 54	+ 4	21 39	0	37·7	54·2
Agra	83·6	320	—	—	i 22 48?	[0]	—	—
Huancayo	92·7	111	—	—	e 23 45	[− 3]	e 41·3	—

Additional readings :—
Sitka i = +1m.59s.
Bozeman e = +13m.5s., +14m.20s., and +16m.26s.; T_0 = 7h.13m.14s.
Ukiah ePP = +7m.15s., eSS = +13m.0s.
Tucson ePP = +8m.51s.
Chicago eSS = +16m.20s.
Florissant e = +9m.25s., i = +16m.54s.
Ann Arbor e = +17m.27s.
Scoresby Sund i = +9m.40s. = P_cP − 10s.
Ivigtut +17m.57s. = SSS +7s.
Ottawa PPP = +9m.51s., SSS = +17m.45s.; T_0 = 7h.13m.24s.
Oak Ridge eSSS = +18m.19s.
Chiufeng SEZ = +17m.54s., iN = +31m.52s., iZ = +32m.3s.
Pulkovo LR = +35·7m.
Copenhagen +20m.4s.
De Bilt eZ = +10m.49s.
Stuttgart eZ = +11m.14s. = P_cP − 11s., eSS = +24m.27s.
Strasbourg e = +11m.2s.
Tiflis PPZ = +14m.50s.
Huancayo ePS = +25m.55s., eSS = +31m.22s.
Long waves were also recorded at Phu-Lien, Zi-ka-wei, Hong Kong, Honolulu, Bombay, and Paris.

Aug. 2d. Readings from which no determination is made :—
Apia eP = 10h.53m.24s., eS = 10h.53m.55s., eL = 10h.54m.2s., MN = 45m.
Christchurch eP = 10h.59m.48s., eS = 11h.4m.10s., eL_qE = 4·5m., eLRZ = 6·9m.
Pasadena ePZ = 11h.4m.8s. and 4m.11s.
Halwee iPNZ = 11h.4m.16s.
Tinemaha ePEZ = 11h.4m.20s.
Chiufeng e = 11h.5m.30s., eEN = 15m.58s.
Riverview e = 11h.9m.36s., eL = 11m.30s., MN = 14m.20s.
Honolulu e = 11h.10m.0s.
Stuttgart eNZ = 11h.12m.16s.
Strasbourg e = 11h.12m.
Sverdlovsk e = 11h.13m.20s., e = 18m.46s., e = 30m.5s., L = 43m.
Tashkent eP = 11h.20m.42s., e = 21m.16s., eS = 30m.54s., e = 31m.48s., M = 55·4m.
Berkeley eE = 11h.22m.53s.
Long waves were recorded at Wellington.

Aug. 2d. Readings also at 0h. (Santiago and Taihoku), 4h. (Tyosi), 7h. (San Juan), 8h. (Tyosi (2), Tokyo (2), and Nagoya (2)), 13h. (Hamburg), 14h. (Berkeley and Tiflis), 15h. (Almeria and Toledo), 18h. (Tiflis), 19h. (Oak Ridge), 20h. (Granada), 23h. (Christchurch and Glenmuick).

Aug. 3d. 9h. 36m. 10s. Epicentre 40°·2N. 142°·4E. (as on 1932 July 29d.). R.1.

A = −·605, B = +·466, C = +·645; D = +·610, E = +·792; G = −·511, H = +·394, K = −·764.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Miyako	0·6	209	0 17	S*	0 26	?	—	—
Morioka	1·1	242	0 16	0	0 29	+ 1	—	—
Aomori	1·4	297	0 22	+ 2	0 40	+ 4	—	—
Mizusawa	1·4	223	i 0 21	+ 1	i 0 39	+ 3	—	—
Akita	1·9	254	0 24	− 4	0 48	− 1	—	—
Isinomaki	1·9	205	0 25	− 3	0 51	+ 2	—	—
Hakodate	2·0	321	0 31	+ 2	1 0	S_g	—	—
Urakawa	2·0	8	0 31	+ 2	0 59	S*	—	—
Sendai	2·3	211	0 33	0	1 1	+ 2	—	—
Muroran	2·4	333	0 38	P*	1 6	+ 4	—	—
Obihiro	2·8	12	0 47	P*	1 44	?	—	—
Hukusima	2·9	212	0 41	0	1 15	+ 1	—	—
Sapporo	3·0	345	0 44	+ 1	1 25	S*	—	—
Aidu	3·1	216	0 33	−11	0 51	P_g	—	—
Kusiro	3·2	28	0 35	−11	1 7	P_g	—	—
Niigata	3·4	228	0 57	P*	1 42	S*	—	—
Nemuro	3·9	36	0 53	− 3	1 47	+ 7	—	—
Mito	4·1	202	0 59	+ 1	2 0	S*	—	—
Kakioka	4·3	204	1 0	− 1	2 2	S*	—	—
Tukubasan	4·4	205	1 1	− 2	2 10	S*	—	—
Maebasi	4·6	216	1 4	− 2	2 3	+ 5	—	—
Tyosi	4·6	196	e 1 4	− 2	2 16	S*	—	2·8
Kumagaya	4·7	212	1 6	− 1	2 5	+ 5	—	—
Nagano	4·8	225	1 11	+ 3	2 20	S*	—	—
Tokyo	5·0	206	1 10	− 1	2 16	+ 8	—	—
Wazima	5·1	238	1 16	+ 3	2 16	+ 6	—	—
Yokohama	5·2	206	1 17	+ 3	2 30	S*	—	—
Kohu	5·4	215	1 20	+ 3	2 20	+ 2	—	—
Toyama	5·4	231	1 18	+ 1	2 54	S_g	—	—
Hunatu	5·5	213	1 18	0	2 24	+ 4	—	—
Mera	5·6	202	1 47	P_g	3 8	S_g	—	—
Misima	5·7	210	1 21	0	2 36	+11	—	—
Gihu	6·5	224	1 33	+ 1	2 59	+13	—	—
Omaesaki	6·5	212	1 34	+ 2	3 19	S*	—	—
Hamamatu	6·6	216	1 53	P*	2 56	+ 8	—	—
Nagoya	6·6	222	1 37	+ 3	2 49	+ 1	—	3·9
Hikone	6·9	226	1 41	+ 3	3 2	+ 6	—	—
Kameyama	7·1	223	1 45	+ 4	3 9	+ 8	—	—
Hatidyozima	7·4	197	1 45	0	3 9	0	—	—
Osaka	7·7	227	1 49	0	3 42	S*	—	4·7
Osaka B	7·7	227	2 10	P*	4 3	S_g	—	—
Kobe	8·0	229	e 1 56	+ 3	e 3 35	+11	—	4·3
Vladivostok	8·3	294	2 3	+ 5	3 43	+12	4·3	4·6
Wakayama	8·3	227	1 57	− 1	3 46	+15	—	—
Sumoto	8·4	228	e 2 10	+11	3 41	+ 7	—	4·5
Miyazaki	12·1	230	2 57	+ 7	5 48	S*	—	—
Nagasaki	12·5	237	e 3 6	+11	e 5 35	+20	—	—
Chifeng	20·0	278	3 6	−84	—	—	—	10·8
Sverdlovsk	53·1	317	i 9 14	− 1	e 16 40	− 3	31·7	34·3
Tashkent	53·7	297	e 9 49	+30	e 17 10	+18	e 25·7	33·0

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Pulkovo	65·6	329	e 10 38	− 4	e 19 35	+ 8	37·8	41·3
Scoresby Sund	68·7	355	—	—	17 50?	?	35·8	—
Tiflis	69·3	308	11 2	− 4	—	—	e 37·8	—
Tinemaha	73·2	55	i 11 26	− 4	—	—	—	—
Mount Wilson	75·0	57	i 11 39	− 1	—	—	—	—
Pasadena	75·0	58	e 11 38	− 2	—	—	—	—

Additional readings :—
Sumoto ePN = +2m.13s.
Osaka i = +2m.11s. and +4m.18s.
Kobe eE = +2m.9s., eZ = +2m.15s., eSE = +3m.40s.
Sverdlovsk L_0 = +26·4m.
Long waves also at Baku, De Bilt, Copenhagen, Paris, Strasbourg, Stuttgart, Sucre, and Uccle.

Aug. 3d. 12h. 24m. 21s. Epicentre 36°·0N. 139°·0E. (as on 1930 May 15d.). X.

A = −·611, B = +·531, C = +·588 ; D = +·656, E = +·755 ; G = −·444, H = +·386, K = −·809.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tokyo	0·8	118	i 0 12	+ 1	0 22	+ 1	—	0·4
Tyosi	1·6	120	i 0 13	−10	0 26	P_g	—	0·5
Nagoya	1·9	243	i 0 41	S	1 25	?	—	2·0
Osaka	3·2	248	0 46	0	1 45	S_g	—	2·9
Kobe	3·4	248	i 1 1	P_g	e 1 26	− 1	—	2·6
Toyooka	3·4	264	1 2	P_g	e 2 16	?	—	2·5
Mizusawa	3·5	28	i 0 49	− 1	i 1 25	− 5	—	—
Sumoto	3·7	244	1 5	P_g	2 12	S_g	—	2·7
Koti	5·1	242	1 25	P*	e 2 42	S_g	—	—
Nagasaki	8·2	250	2 7	+11	e 4 9	S*	—	—
Vladivostok	9·0	325	2 18	+11	e 4 16	S*	4·8	—
Tashkent	53·3	299	e 9 15	− 1	e 16 48	+ 2	—	33·3
Sverdlovsk	54·5	319	9 24	− 1	—	—	—	—

Additional readings :—
Osaka i = +1m.0s. = P_g +2s. and +1m.7s.
Kobe iE = eN = +1m.12s. = P_g +10s., eZ = +1m.21s., iN = +2m.26s.
Toyooka iE = +1m.23s., SN = eSZ = +2m.13s.
Sumoto SZ = +2m.21s., SE = +5m.15s.
Koti iS_g = +3m.8s.

Aug. 3d. 19h. 29m. 30s. Epicentre 5°·7N. 82°·7W. (as on 1933 May 6d.). X.

A = +·126, B = −·987, C = +·099 ; D = −·992, E = −·127 ; G = +·013, H = −·099, K = −·995.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights	4·6	42	i 1 5	− 1	i 1 47	−11	—	2·3
Huancayo	19·2	157	e 4 56	?	e 9 2	L	(e 9·0)	—
San Juan	20·6	51	i 4 42	+ 6	i 8 19	+ 1	e 10·5	—
La Paz	26·5	147	e 6 24	PP	12 54	?	15·5	18·7
Ottawa	40·2	7	e 9 0	PP	e 13 30?	− 9	e 16·5	—
Pasadena	43·4	316	e 8 1	+ 1	—	—	—	—
Haiwee	44·4	318	e 8 10	+ 2	—	—	—	—
Tinemaha	45·1	319	e 8 13	− 1	—	—	—	—
De Bilt	84·3	37	—	—	e 23 0	− 1	e 34·5	—
Copenhagen	88·3	34	—	—	23 36	− 4	42·5	—

Long waves were also recorded at Sucre and other American and European stations.

Aug. 3d. Readings also at 1h. (Tyosi), 2h. (Phu-Lien, Agra, Andijan, Tashkent, and Sverdlovsk), 3h. (Tucson, Berkeley, and Ukiah), 5h. (Wellington), 6h. (Andijan, Glenmuick, and Christchurch), 8h. (Yalta), 9h. (Nagoya), 10h. (Santiago, La Plata, La Paz, and Mizusawa), 16h. (Sumoto and Hukuoka B), 17h. (Frunse, Tucson, and Andijan), 18h. (Mizusawa), 21h. (Pasadena, Tinemaha, and Riverside), 23h. (Sumoto).

Aug. 4d. 13h. 8m. 14s. Epicentre 2°·2S. 146°·7E. N.3.

$A = -\cdot 835$, $B = +\cdot 549$, $C = -\cdot 038$; $D = +\cdot 549$, $E = +\cdot 836$; $G = +\cdot 032$, $H = -\cdot 021$, $K = -\cdot 999$.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Palau	15·5	308	3 39	+ 4	6 48	+21	—	—
Amboina	18·5	265	i 3 50	−23	i 7 51	+15	17·8	—
Manila	30·5	303	i 6 10	+ 1	11 21	+ 9	13·8	—
Riverview	31·9	173	e 6 10	−12	e 11 46	+12	e 16·3	21·0
Sydney	32·0	173	e 9 52	?	e 14 26	?	16·5	20·3
Adelaide	33·6	193	i 6 35	− 2	i 11 35	−25	16·8	22·1
Melbourne	35·7	183	—	—	12 10	−22	16·7	22·1
Koti	37·8	342	e 6 46	−27	—	—	—	—
Sumoto	38·1	344	e 7 20	+ 4	e 13 18	+10	—	—
Osaka	38·3	345	7 15	− 3	13 0	−11	—	—
Kobe	38·4	342	e 7 22	+ 4	e 13 51	+39	—	—
Nagasaki	38·4	337	e 7 19	+ 1	—	—	—	—
Nagoya	38·4	347	e 7 30	+12	—	—	—	—
Tokyo	38·4	351	6 55	−23	—	—	—	—
Toyama	39·8	348	7 31	+ 1	—	—	—	—
Batavia	39·9	263	8 36	?	—	—	—	—
Hong Kong	40·0	310	7 28	− 4	13 40	+ 4	—	20·3
Husan	40·8	338	(7 41)	+ 2	—	—	—	—
Zi-ka-wei	41·1	325	7 44	+ 3	—	—	20·2	22·6
Perth	41·6	221	7 11	−34	13 38	−22	20·4	21·8
Keizyo	43·7	337	8 8	+ 6	14 38	+ 7	—	—
Zinsen	43·8	336	e 7 52	−11	e 14 22	−11	—	—
Phu-Lien	45·5	302	e 8 14	− 3	e 14 55	− 2	—	—
Wellington	46·6	149	—	—	i 14 56	−17	24·8	—
Vladivostok	47·2	345	8 39	+ 9	i 15 40	+19	21·3	27·3
Christchurch	47·4	153	i 8 24	− 8	15 4	−20	22·3	—
Medan	48·3	277	8 40	+ 2	—	—	—	—
Chiufeng	50·7	330	8 55a	− 2	e 15 54	−17	e 24·3	28·1
Agra	72·2	299	—	—	i 20 42	− 5	—	—
Bombay	75·5	289	i 11 40	− 3	i 21 16	−10	—	—
Andijan	79·7	312	e 12 12	+ 6	e 22 18	+ 6	—	—
Tashkent	82·0	311	e 12 7	−11	i 22 37	0	e 38·9	46·6
Sitka	85·3	32	e 12 42	+ 7	e 23 14	+ 3	e 35·8	—
Sverdlovsk	89·6	327	e 12 54	− 2	i 23 55	+ 3	46·9	53·1
Victoria	91·6	42	23 51	S	(23 51)	[+ 9]	43·1	49·5
Berkeley	92·2	53	—	—	e 23 48	[+ 2]	e 42·0	—
Baku	96·6	310	17 27	PP	26 13	PS	43·8	63·4
Pulkovo	104·9	333	18 30	PP	27 32	PS	49·8	60·3
Helsingfors	107·1	334	e 17 51	[−18]	e 27 55	PS	e 47·8	—
Scoresby Sund	111·3	355	19 11	PP	—	—	51·8	—
Copenhagen	115·1	334	19 42	PP	—	—	51·8	—
Ivigtut	119·9	9	—	—	23 10	?	51·8	—
De Bilt	120·7	334	e 20 20	PP	e 29 52	SKSP	e 57·8	68·5
Stuttgart	121·0	329	e 20 24	PP	e 30 6	SKSP	e 58·8	74·8
Edinburgh	121·1	341	—	—	e 38 46?	?	e 65·8	—
Strasbourg	121·8	330	e 20 29	PP	e 22 46?	PPP	e 61·8	—
Uccle	122·0	333	e 18 9	[−41]	e 30 23	PS	e 57·8	—
Ottawa	123·0	34	—	—	e 32 22	?	e 54·8	
Kew	123·5	336	e 21 46?	?	—	—	e 56·8	
San Juan	144·0	61	e 19 36	[+ 5]	—	—	—	—

For Notes see next page.

NOTES TO AUG. 4d. 13h. 8m. 14s.

Additional readings and note :—
Riverview eN = +7m.46s.
Adelaide i = +7m.36s. = PP − 7s.
Sumoto eSE = +13m.28s.
Osaka i = +9m.13s. and +15m.44s. = SS +4s.
Kobe ePN = +7m.27s., ePE = +7m.33s., eE = +9m.49s. = P_cP +12s.
Hong Kong PP = +9m.6s., SS = +16m.37s.
Husan S? = +7m.0s. ; P has been *increased* by 10m.
Zi-ka-wei iZ = +7m.48s.
Perth P_cP = +8m.51s., PP = +9m.1s., P_cS = +13m.21s., PS = +13m.49s., i = +15m.11s. and +15m.26s., SS = +16m.51s., SSS = +17m.48s., SSSS = +18m.46s.
Christchurch SSE = +18m.7s., SSSN = +18m.58s., eL_qE = +19·3m.
Chiufeng eSE = +15m.57s., iE = +20m.29s.
Agra i = +21m.20s. = PS +13s.
Bombay i = +15m.54s. = PPP − 8s.
Sverdlovsk iPP = +16m.32s., SKS = +23m.24s., iPS = +24m.53s.
Berkeley eE = +30m.52s.
Baku e = +28m.20s.
Helsingfors eSSN = +32m.46s.?, eSSSE = +38m.46s.? ; T_e = 13h.7·6m.
De Bilt eZ = +22m.59s.
Stuttgart ePPS = +32m.7s.
Uccle e = +20m.15s. = PP − 8s.
Ottawa e = +37m.46s.
Long waves were also recorded at Honolulu, Arapuni, Cape Town, and other American and European stations.

Aug. 4d. Readings also at 0h. (Christchurch and Branner), 5h. (Wellington and Berkeley), 6h. (Scoresby Sund), 9h. (Soengei Langka), 10h. (Mizusawa), 23h. (Stuttgart).

Aug. 5d. Readings from which no determination is made :—
Balboa Heights 21h.15m.31s.
San Juan eP = 21h.19m.8s., eS = 23m.0s.
La Jolla iPZ = 21h.22m.23s.
Riverside iPNE = 21h.22m.29s.
Pasadena iPNEZ = 21h.22m.34s.
Mount Wilson iPZ = 21h.22m.34s.
Haiwee ePNEZ = 21h.22m.36s.
Tinemaha ePNEZ = 21h.22m.45s.
Long waves were recorded at Stuttgart and Scoresby Sund.

Aug. 5d. Readings also at 3h. (Mizusawa, Nagoya, and Tyosi), 4h. (Wellington), 8h. (Tyosi and Nagoya), 9h. (Mizusawa), 11h. (Tashkent), 12h. (Amboina, Florissant, and Sumoto), 13h. (Wellington), 18h. (Wellington), 21h. (Stuttgart), 22h. (Tyosi), 23h. (Hastings).

Aug. 6d. 10h. Readings from some American stations :—
La Jolla iPZ = 27m.21s.
Pasadena iPZ = 27m.31s.a
Mount Wilson iPZ = 27m.32s.
Haiwee ePZ = 27m.37s.
Tinemaha ePZ = 27m.44s.

Aug. 6d. 12h. 7m. 13s. Epicentre 3°·4N. 77°·8W. N.3.

A = +·211, B = −·976, C = +·059 ; D = −·977, E = −·211 ;
G = +·013, H = −·058, K = −·998.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Huancayo	15·6	172	i 3 35	− 1	i 6 50	+21	—	—
San Juan	18·8	37	e 4 18	+ 2	i 7 59	+17	e 9·6	—
La Paz	22·1	155	i 4 50k	− 2	i 8 56	+ 8	11·3	15·7
Sucre	25·6	152	i 5 22	− 3	i 10 1	+10	13·4	—
Columbia	30·8	355	—	—	e 10 47	−30	—	—

Continued on next page.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Georgetown		35·5	2	i 6 59	+ 6	i 12 30	+ 1	e 16·8	—
Philadelphia		36·6	3	e 7 0	− 3	e 12 37	− 8	e 18·8	—
St. Louis		37·0	343	e 7 4	− 2	e 12 46	− 5	—	—
Pittsburgh		37·1	357	e 7 46	+39	i 12 55	+ 2	—	—
Chicago		39·5	348	—	—	e 13 17	−12	e 16·8	—
Oak Ridge		39·5	7	i 7 28	0	e 13 30	+ 1	—	—
Toronto		40·3	358	e 8 32	+57	i 14 40	+59	—	—
Ottawa		42·0	2	e 7 53	+ 4	i 14 7	+ 1	e 20·8	—
Tucson		42·4	317	7 58	+ 6	14 9	− 2	17·0	—
La Plata	E.	42·6	156	i 7 51k	− 2	14 17	+ 2	21·9	24·7
	N.	42·6	156	i 7 50	− 3	14 12	− 3	22·0	33·0
La Jolla		47·2	313	e 8 29	− 1	—	—	—	—
Riverside		48·5	315	i 8 46	+ 6	—	—	—	—
Mount Wilson		48·5	315	i 8 40	0	—	—	—	—
Pasadena		48·5	314	i 8 38	− 2	—	—	—	—
Haiwee		49·4	317	e 8 44	− 3	—	—	—	—
Tinemaha		50·1	318	i 8 49	− 3	—	—	—	—
Berkeley		53·2	316	—	—	i 16 47	+ 2	—	—
Sitka		70·1	331	—	—	e 20 17	− 5	—	—
Scoresby Sund		76·0	17	11 43	− 3	21 26	− 8	34·8	—
Kew		79·6	39	e 12 3	− 3	—	—	e 38·8	—
De Bilt		83·0	39	12 21	− 2	e 22 42	[− 2]	e 40·8	—
Stuttgart		85·4	42	e 12 34	− 1	e 23 3	[+ 1]	e 40·8	—
Hamburg		86·0	37	e 12 36	− 2	e 23 5	[− 1]	51·8	—
Prato		86·9	46	i 11 43	−60	i 11 47	?	—	—
Copenhagen		87·3	35	12 46	+ 1	23 27	− 3	46·8	—
Baku		115·2	42	—	—	e 39 34	SSS	e 63·8	—
Tashkent		126·2	30	e 22 23	?	e 46 23	?	e 57·8	73·0

Additional readings :—
La Paz iSE = +9m.2s.
Philadelphia ePP = +8m.31s. ; T_0 = 12h.7m.17s.
St. Louis eN = +8m.39s. = PPP +0s.
Pittsburgh eSS = +15m.25s.
Oak Ridge iZ = +7m.33s., ePPP = +9m.9s., eSNW = +13m.34s., eNE = +14m.8s.
Ottawa eSSSE = +17m.23s. ; T_0 = 12h.7m.30s.
Stuttgart ePP = +15m.53s. ; T_0 = 12h.7m.10s.
Copenhagen +23m.14s. = SKS −1s.
Tashkent e = +49m.23s.
Long waves were recorded at Honolulu.

Aug. 6d. 15h. Readings from which no determination is made :—
Tinemaha ePZ = 48m.17s.
Haiwee ePZ = 48m.23s.
Pasadena eZ = 48m.31s.
Mount Wilson iZ = 48m.32s.
Vladivostok L = 51m.30s., M = 55m.30s.
Tashkent eL = 70m., 76m.9s.
Sverdlovsk eS = 70m.2s., L_q = 72·9m., LR = 74·7m., M = 75·6m.

Aug. 6d. 17h. Readings from which no determination is made :—
Andijan eP = 5m.1s., eL = 7m.35s.
Tashkent e = 6m.6s., e = 7m.7s., eL = 8m.36s., iL = 8m.54s., M = 10m.24s.
Tiflis eLN = 11m.0s., MN = 17m.24s.
Alicante e = 11m.42s.
Toledo e = 11m.57s., e = 18m.29s., e = 27m.24s.
Baku e = 13m.7s., eL = 19m.
Pulkovo e = 19m.15s., L = 24m.30s.
Vladivostok L = 19m., M = 21m.6s.
Helsingfors e?N = 22m., e?N = 25m.
Copenhagen 25m.
Stuttgart e = 28m.24s., eL = 32m.
Hamburg e = 28m.
De Bilt e = 28m., eL = 32m., M = 36m.25s.
Uccle e = 30m.
Strasbourg eL = 30m.
Kew e = 34m.
Paris 37m.
Edinburgh e = 39m.

Aug. 6d. Readings also at 0h. (Wellington), 2h. (Wellington and Baku), 4h. (Florence), 7h. (Sumoto), 9h. (La Paz), 10h. (Nagoya), 11h. (La Paz), 16h. (Copenhagen and Scoresby Sund), 17h. (Santiago), 18h. (Tyosi), 21h. (Tashkent, Tchimkent, Sverdlovsk, and Baku).

Aug. 7d. 3h. 40m. 11s. Epicentre 12°·8S. 166°·5E. (as on July 20d. 3h.). R.1.

A = −·948, B = +·228, C = −·222; D = +·233, E = +·972; G = +·215, H = −·052, K = −·975.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Riverview		25·2	211	i 5 22	0	i 9 46	+ 2	12·8	14·9
Sydney		25·2	211	i 5 24	+ 2	i 9 25	−19	11·6	15·8
Arapuni		26·5	164	—	—	9 55	−12	14·2	—
New Plymouth		27·1	167	5 49?	+10	—	—	—	—
Wellington		29·4	167	6 1	+ 1	9 59	−56	13·8	17·8
Christchurch		30·6	172	i 6 11	+ 1	i 11 47	+33	e 14·7	18·6
Melbourne		31·5	211	6 21	+ 3	11 32	+ 4	15·5	18·6
Adelaide		33·5	221	i 6 41	+ 5	i 11 54	− 4	i 14·5	18·3
Palau		37·7	301	7 21	+ 9	—	—	—	—
Amboina		38·9	280	i 7 24	+ 1	i 13 13	− 7	20·4	—
Honolulu		48·8	44	e 8 39	− 3	e 15 52	+ 8	e 22·8	—
Perth		50·0	238	9 8	+17	16 9	+ 8	23·8	25·8
Manila		52·8	299	9 12a	0	16 37	− 2	24·0	28·8
Yokohama		54·6	333	9 25	− 1	17 0	− 4	—	—
Siomisaki		54·7	328	9 28	+ 2	17 9	+ 4	—	—
Tukubasan		55·0	334	9 27	− 2	17 5	− 4	—	—
Nagoya		55·6	331	9 33	0	(e 17 14)	− 3	e 17·2	—
Maebasi		55·6	333	9 35	+ 2	17 29	+12	—	—
Gihu		55·8	331	9 34	0	17 20	0	—	—
Sumoto		55·9	329	9 33	− 2	17 18	− 3	e 25·8	30·7
Kobe		56·0	324	9 35	− 1	e 17 17	− 6	e 24·4	29·3
Koti		56·1	327	e 9 34	− 3	e 17 23	− 1	e 27·8	30·7
Sendai		56·4	336	9 37	− 2	17 26	− 2	—	—
Toyooka		56·9	329	9 45	+ 3	—	—	24·7	—
Mizusawa	E.	57·1	336	9 49	+ 5	16 23	−75	—	—
	N.	57·1	336	9 37	− 7	16 28	−70	23·7	—
Nagasaki		57·5	323	9 38	− 9	e 17 42	− 1	e 24·1	29·5
Hukuoka B		57·7	325	9 49	+ 1	24 29	L	(24·5)	31·5
Hamada		57·8	327	9 51	+ 2	17 47	0	—	—
Taihoku		57·9	312	10 1	+11	17 47	− 1	—	—
Malabar		58·2	270	9 55	+ 3	17 55	+ 3	e 34·8	—
Batavia		59·1	268	9 59	+ 1	18 4	0	34·6	—
Husan		59·6	325	10 3	+ 1	18 3	− 8	—	—
Taikyu		60·4	325	—	—	(e 25 25)	SSSS	e 25·4	—
Zi-ka-wei		61·7	316	i 10 14a	− 2	14 15	PPPP	—	36·0
Hong Kong		62·2	304	10 17	− 3	18 47	+ 2	31·5	35·3
Keizyo		62·5	326	10 21	− 1	—	—	—	—
Zinsen		62·7	325	i 10 22	− 1	e 18 48	− 3	e 22·6	—
Nanking		64·0	316	i 10 19a	−12	e 18 49	−18	—	33·8
Vladivostok		64·2	332	i 10 31	− 3	19 13	+ 3	30·3	36·6
Phu-Lien		67·8	299	e 10 56	− 1	19 49?	− 5	30·8	—
Medan		69·3	278	11 22	(− 8)	20 33	PS	e 39·8	—
Chiufeng		70·6	321	i 11 14a	0	i 20 25	− 3	33·0	37·8
Ukiah		83·4	47	e 12 25	0	e 22 49	− 2	e 37·6	—
Berkeley		83·6	50	i 12 24	− 2	i 22 43	[− 5]	i 38·1	—
Calcutta		84·2	295	12 27	− 2	22 55	[+ 2]	39·5	49·3
Sitka		84·6	27	e 12 29	− 2	i 22 49	[− 7]	e 34·7	—
Pasadena		85·4	54	i 12 32a	− 3	i 23 0	[− 2]	e 37·8	—
Mount Wilson		85·6	53	i 12 34a	− 2	—	—	—	—
La Jolla		85·8	55	i 12 34	− 3	—	—	—	—
Riverside		86·0	54	i 12 35	− 3	—	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Haiwee	86·2	51	e 12 40	+ 1	—	—	—	—
Tinemaha	86·3	51	i 12 38	− 2	—	—	—	—
Victoria	87·0	38	12 39	− 4	23 17	[+ 4]	35·7	43·3
Seattle	87·2	40	e 13 8	+24	e 23 27	− 2	e 36·4	—
Colombo	88·2	277	12 50	+ 1	23 33	− 6	—	51·1
Tucson	90·8	56	e 12 59	− 2	e 23 51	{+10}	e 37·3	—
Kodaikanal	91·3	279	13 3	0	23 32	[− 8]	e 49·8	57·5
Hyderabad	92·0	285	12 14	−53	23 40	[− 4]	43·4	60·1
Bozeman	94·0	44	e 13 15	− 1	e 23 47	[− 8]	e 45·6	—
Agra	94·4	297	e 13 13	− 5	24 33	− 4	45·9	52·6
Bombay	97·5	286	i 13 32	0	24 8	[− 6]	—	68·9
Tashkent	103·8	312	i 14 0	− 1	24 36	[− 8]	e 47·8	63·1
Florissant	108·2	55	e 17 24	[−48]	e 23 51	?	—	—
St. Louis	108·3	55	e 17 25	[−47]	e 23 51	?	—	52·6
Sverdlovsk	109·3	328	i 14 22	− 6	28 21	PS	50·8	66·1
Chicago	110·3	50	e 19 28	PP	e 25 23	[+ 8]	e 45·8	—
Tananarive	112·0	247	19 12	PP	e 29 6	PS	—	57·1
Ann Arbor	113·2	50	e 29 19	PS	e 35 13	SS	e 48·4	59·5
Huancayo	113·9	110	e 19 26	PP	e 29 0	PS	e 46·7	—
Columbia	115·7	58	—	—	e 29 19	PS	e 55·2	—
Toronto	116·2	48	19 24	PP	25 23	[−15]	56·0	—
Baku	118·4	312	e 15 19	+ 8	—	—	46·8	83·8
Georgetown	118·5	54	e 20 2	PP	i 30 12	PS	e 55·8	—
Ottawa	118·5	46	19 53	PP	25 29	[−17]	e 49·8	—
La Paz	118·6	118	19 30	PP	29 54	PS	57·0	73·5
Philadelphia	119·8	51	e 19 2	[+17]	e 28 41	?	49·3	—
Sucre	119·9	121	19 15	[+30]	30 29	PS	55·8	—
Oak Ridge	122·0	48	e 20 21	PP	e 30 17	PS	e 52·3	—
Tiflis	122·0	310	e 15 41	+12	e 25 37	[−19]	e 49·3	77·6
Scoresby Sund	122·1	5	15 19	−10	e 30 25	PS	49·8	—
Pulkovo	123·1	338	e 15 23	−11	e 27 50	{+13}	49·8	65·1
Cape Town	124·2	215	31 9	PS	—	—	61·8	70·5
Helsingfors	124·9	341	e 19 5	[+ 9]	e 30 42	PS	e 58·8	—
Ivigtut	125·5	20	20 31	PP	30 19	SKSP	55·8	—
Theodosia	127·6	318	e 19 10	[+ 8]	e 30 47	SKSP	30·5	—
Upsala	127·7	341	e 20 49?	PP	—	—	e 60·8	71·2
Simferopol	128·4	318	19 19	[+15]	(47 55)	?	47·9	—
Yalta	128·6	318	19 14	[+10]	—	—	37·6	—
San Juan	129·2	77	e 19 11	[+ 6]	e 26 38	[+21]	e 52·8	—
Ksara	130·2	304	e 19 12	[+ 5]	e 33 48	?	64·8	—
Königsberg	130·3	337	e 22 32	PKS	—	—	64·8	81·9
Copenhagen	132·6	343	19 11	[0]	34 37	?	61·8	—
Hamburg	135·2	342	e 19 17a	[+ 2]	—	—	e 57·8	78·8
Helwan	135·2	301	e 19 19	[+ 4]	21 52	PP	—	87·1
Budapest	136·0	329	e 19 49?	[+33]	—	—	e 61·8	76·8
Edinburgh	136·2	352	e 19 49?	[+32]	—	—	e 60·8	85·1
Leipzig	136·2	337	e 21 49	PP	—	—	e 60·8	72·3
Prague	136·3	334	e 19 49?	[+32]	—	—	e 49·8	72·3
Jena	136·8	338	e 22 1	PP	—	—	e 59·8	72·8
Vienna	136·8	331	e 19 22	[+ 5]	i 25 28	?	e 68·1	77·8
Durham	137·0	350	19 20	[+ 2]	22 51	PKS	—	79·8
Cheb	137·1	336	e 21 49?	PP	e 32 19	PS	e 61·8	78·8
De Bilt	138·0	345	e 19 10	[− 9]	e 35 39	?	e 65·8	75·7
Graz	138·0	331	e 20 26	?	e 36 10	?	e 67·8	78·9
Stonyhurst	138·0	7	e 22 14	PP	e 26 19	SKS	64·8	80·2
Zagreb	138·6	333	e 19 22	[+ 2]	e 35 49?	?	—	—
Uccle	139·3	346	e 19 15	[− 6]	32 39	SKSP	59·8	76·9
Karlsruhe	139·5	338	e 19 29	[+ 8]	—	—	—	76·2
Stuttgart	139·5	340	e 19 10	[−11]	e 34 25	?	e 69·8	84·8
Oxford	139·8	351	e 19 17	[− 4]	—	—	e 65·3	82·1

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kew	139·9	350	e 19 14	[− 7]	e 38 27	?	e 62·8	81·5
Trieste	139·9	330	e 19 44	[+23]	—	—	—	—
Strasbourg	140·1	340	i 19 20k	[− 2]	29 19	{− 5}	e 49·8	72·7
Venice	140·7	331	e 19 31	[+ 9]	e 33 8	PS	73·5	166·0
Zurich	140·8	338	e 19 27	[+ 5]	e 22 19	PP	—	—
Basle	141·1	337	e 19 23	[0]	—	—	—	—
Paris	141·6	346	e 19 49?	[+26]	—	—	74·8	84·8
Neuchatel	141·8	337	e 19 25	[+ 2]	—	—	—	—
Piacenza	142·2	338	19 25	[+ 1]	32 49	SKSP	60·8	88·3
Florence	142·4	330	i 19 21a	[− 4]	32 49	SKSP	—	—
Prato	142·4	330	e 19 29	[+ 4]	32 24	SKSP	e 42·8	73·2
Trenta	142·7	321	e 19 19	[− 7]	—	—	—	—
Catania	144·5	319	19 35	[+ 2]	—	—	—	—
Mineo	144·9	319	18 40	?	—	—	—	—
Tunis	148·0	323	e 22 54	PP	—	—	—	—
Barcelona	148·3	337	e 19 32	[− 7]	—	—	e 71·8	84·1
Tortosa	149·4	339	19 46	[+ 5]	—	—	e 71·8	82·5
Serra do Pilar	151·4	352	20 1	{− 4}	—	—	—	—
Toledo	151·7	345	e 19 44	[0]	—	—	—	88·4
Algiers	151·8	331	e 19 33	[−11]	e 29 16	PPPP	42·8	—
Alicante	152·0	338	e 19 21	[−23]	31 11	{+37}	e 66·1	—
Almeria	154·0	339	e 19 52	[+ 5]	—	—	e 52·9	87·5
Granada	154·0	342	e 21 58	?	29 2	PPPP	e 76·8	—
Malaga	154·7	343	e 19 47	[− 1]	30 11	{−38}	—	—
San Fernando	155·5	347	19 49	[+ 1]	—	—	77·8	—
Dakar	175·8	63	—	—	e 33 33	{+51}	—	—

Additional readings and note :—
Riverview iSSE = +10m.18s.
Arapuni SS = +11m.49s.
Wellington PP = +7m.14s., SS = +12m.5s.
Christchurch eEZ = +6m.59s. = PP − 6s., iEZ = +7m.9s., iNZ = +7m.39s., iN = +10m.52s., and +11m.14s., eL_cE = +13m.34s., iSS = +13m.44s.
Melbourne i = +7m.36s.
Adelaide iPP = +7m.53s., P_cP = +9m.35s., i = +10m.19s. and +12m.32s., iSS = +13m.31s., iS_cS = +17m.11s.
Honolulu iP = +8m.44s., eSS = +19m.49s.
Perth i = +11m.14s. and +11m.29s. = PPP − 1s., SP = +16m.24s., SSS = +21m.29s., SSSS = +21m.54s.
Kobe eZ = +9m.49s. and +23m.57s.
Batavia SN = +18m.21s., S = +18m.40s., i = +20m.33s.
Zi-ka-wei PPZ = +10m.39s., PPPZ = +10m.47s., iZ = +28m.3s., and +29m.39s.
Hong Kong PN = +10m.22s., SS = +23m.4s., SSS = +26m.43s.
Chiufeng iEN = +13m.43s. = PP + 0s., iE = +15m.41s., SS? = +25m.5s., SSS? = +28m.31s.
Ukiah eSS = +28m.47s., e = +33m.59s.
Berkeley iZ = +12m.31s., eN = +12m.34s., iPPE = +15m.59s.
Calcutta SS = +28m.42s.
Sitka e = +22m.39s., ePS = +23m.54s.
Pasadena eZ = +15m.49s. = PP + 1s., +20m.22s., +32m.14s., and +35m.24s.
Seattle ePS = +24m.39s.
Tucson eSKS = +22m.58s., eSS = +30m.9s.
Kodaikanal PKP = +16m.43s. = PP + 7s., SKKS = +24m.37s.
Bozeman e = +25m.49s. = PS + 11s., eSS = +30m.4s., eSSS = +34m.29s., e = +38m.22s. and +43m.27s. ; T_0 = 3h.40m.10s.
Agra eN = +13m.21s., PP = +16m.59s., PPP? = +19m.18s., SKS = +23m.41s., SKKS = +24m.7s., PS = +25m.41s., PPS? = +26m.25s., SS = +31m.14s., SSS = +35m.4s.
Bombay e = +16m.27s., PPP = +19m.35s., PS = +26m.12s., PPS = +26m.48s., SS = +31m.38s., SSS = +35m.38s.
Tashkent iPP = +18m.12s., iPPP = +20m.50s., PS = +27m.24s.
Florissant eSKKS = +24m.52s., iPPS = +28m.12s. ; T_0 = 3h.39m.8s.
St. Louis ePPE = +17m.53s., iPSE = +27m.13s., eE = +28m.53s., eSSE = +32m.53s., eSSSE = +36m.53s.
Sverdlovsk i = +14m.48s., PKP = +18m.17s., SS = +34m.19s.
Chicago ePS = +28m.58s., eSS = +35m.18s.
Tananarive E = +30m.31s., SSE = +35m.10s.
Ann Arbor eN = +40m.43s.
Huancayo eSS = +35m.36s.
Toronto PPN = +19m.28s., PPPE = +22m.8s., ePSE = +29m.15s., SSE = +36m.11s.

Continued on next page.

Baku iPP = +19m.58s.
Ottawa PS = +30m.9s., SS = +36m.53s.
La Paz SKSN = +30m.15s., iE = +36m.19s. =SS +6s., SS = +44m.28s.
Philadelphia eSS = +35m.37s.
Oak Ridge ePPEN = +20m.24s., ePSNW = +29m.41s., ePSNE = +30m.5s. = SKSP −5s., eNW = +32m.49s., eZ = +33m.9s., eNW = +35m.55s., eSSNE = +37m.5s., eSSSNE = +41m.29s.
Tiflis ePKPN = +18m.58s., ePPE = +20m.28s., eE = +27m.45s., eSKKSNE = +27m.49s., ePSE = +30m.19s., eN = +33m.25s., eSSSNE = +42m.13s.
Scoresby Sund +18m.52s. =PKP +1s., +20m.25s. =PP +1s., +37m.19s. = SS +20s.
Pulkovo PKP = +18m.52s., PP = +20m.18s., SKS = +26m.8s., SS = +37m.7s.
Cape Town N = +37m.57s. and +43m.46s., E = +46m.16s. and +51m.57s.
Helsingfors ePPNE = +20m.43s., ePKSNE = +22m.14s., ePSNE = +31m.37s., ePPSNE = +33m.21s., eSSE = +40m.17s., e?N = +42m.26s., eSSSN = +44m.19s.; T_0 = 3h.39m.52s.
Ivigtut e = +37m.13s.
San Juan ePP = +22m.18s., e = +22m.24s. and +32m.58s.
Ksara ePP = +21m.34s., ePKS = +22m.36s.
Königsberg eN = +24m.33s., eE = +25m.5s.
Copenhagen PP = +21m.39s., PKS = +22m.43s., SS = +39m.43s., SSS = +44m.19s.
Hamburg e = +20m.34s. and +21m.55s. =PP +4s., iE = +22m.49s. =PKS −5s., eN = +35m.13s., +39m.49s. =SS +5s., and +44m.55s.
Budapest P = +22m.1s. =PP +5s.
Edinburgh e = +22m.50s. =PKS −8s.
Prague ePP? = +22m.52s. =PKS −6s.
Vienna iPKP = +22m.3s. =PP +2s., PP = +24m.22s.
De Bilt e = +22m.10s. =PP +1s. and +23m.2s. =PKS −1s.
Graz ip = +22m.36s.
Stonyhurst e = +32m.9s. =SKSP −4s. and +41m.59s.
Zagreb eE = +21m.34s., e = +22m.12s. =PP −1s. and +23m.24s. =PKS +19s., eE = +50m.49s.?, e = +63m.49s.? and +74m.49s.?
Uccle PP = +22m.15s., iSKPN = +23m.2s. =PKS −5s.
Karlsruhe i = +22m.42s.
Stuttgart PKP = +19m.18s., iZ =eEN = +19m.24s., $iPKP_2$ = +20m.3s., e = +22m.13s. =PP −6s., ePKS = +22m.44s., e = +23m.13s. =PKS +5s., +25m.4s. =PPP −11s., +25m.39s., and +32m.29s. =SKSP +4s., ePS = +36m.12s., eSS = +43m.49s.
Oxford e = +22m.19s. =PP −1s., i = +23m.0s. =PKS −8s.
Kew ePP = +22m.24s., eSS = +41m.7s., eSSS = +46m.12s.
Triest e = +22m.12s. =PP −9s., +22m.52s. =PKS −17s. and +25m.52s.
Strasbourg PP = +22m.23s., SKP = +22m.50s., PPP = +25m.29s., PSKS = +32m.27s., PPS = +35m.3s.
Piacenza PP = +23m.13s. =PKS −1s., PPP = +24m.49s.
Florence i = +22m.36s. =PP +0s.
Barcelona ME = +26·4m. =PPP −17s., PN = +28m.0s. =PPPP −28s.; L and M are given for a separate shock.
Tortosa ePE = +20m.7s. =PKP_2 +1s.
Algiers P? = +20m.21s. =PKP_2 +14s., ePP = +22m.16s.
Alicante PP = +23m.46s., PSKS = +37m.17s., SSS = +50m.16s.
Almeria PP = +24m.4s.
Granada SKP = +25m.19s., PP = +26m.9s.
Malaga e = +21m.23s., PP? = +23m.21s., e = +25m.5s. and +28m.1s., SS? = +42m.41s., e = +63m.41s.
San Fernando PN = +19m.54s., SS = +49m.52s.
Dakar e = +41m.16s.
Long waves were recorded at Belgrade.

Aug. 7d. 5h. 45m. 3s. Epicentre 23°·2N. 121°·5E. N.3

A = −·480, B = +·784, C = +·394; D = +·853, E = +·523; G = −·206, H = +·336, K = −·919.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Taito	0·5	215	e 0 12	+ 5	0 22	?
Arisan	0·7	300	0 9	− 1	i 0 16	− 2
Karenko	0·8	10	e 0 4	− 7	e 0 14	− 7
Tainan	1·2	259	e 0 16	− 1	0 34	+ 3
Takao	1·3	245	0 20	+ 2	0 34	+ 1
Taihoku	1·8	2	e 0 26	0	e 0 46	0

Aug. 7d. 11h. 50m. 8s. Epicentre 43°·8N. 87°·5E. N.3.

A = +·032, B = +·721, C = +·692; D = +·999, E = −·044; G = +·030, H = +·691, K = −·722.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Frunse	9·4	268	e 2 10	− 3	i 4 32	S*	—	6·2
Andijan	11·6	260	e 2 51	+ 8	—	—	6·2	—
Tchimkent	13·1	270	e 3 26	+23	e 7 2	S_g	—	8·4
Tashkent	13·6	266	e 3 9	− 1	e 5 43	+ 2	7·2	10·9
Dehra Dun	15·4	212	3 42	+ 8	6 52	+28	9·9	10·9
Agra	18·3	208	e 3 55	−15	7 36	+ 5	9·3	12·6
Chiufeng	21·3	90	e 4 43	0	8 40	+ 8	i 10·9	—
Calcutta	21·3	178	5 7	+24	e 9 41	+69	12·3	13·4
Sverdlovsk	21·3	317	e 4 39	− 4	i 8 34	+ 2	i 11·2	14·2
Hyderabad	27·4	199	5 51	+ 9	10 39	+17	13·3	18·8
Bombay	27·8	211	—	—	e 10 41	+13	e 15·4	18·4
Baku	27·8	275	e 5 54	+ 9	e 10 46	+18	15·4	21·0
Phu-Lien	28·0	139	—	—	9 52?	−40	—	—
Hong Kong	30·8	126	11 22	S	(11 22)	+ 5	16·0	17·2
Tiflis	31·0	282	6 16	+ 2	e 11 24	+ 4	17·8	25·0
Simferopol	37·4	291	e 7 10	0	e 12 58	+ 1	24·3	—
Colombo	37·5	193	−3 27	?	—	—	—	24·0
Yalta	37·5	290	e 7 12	+ 1	13 1	+ 2	—	—
Helsingfors	40·0	319	e 13 35	S	(e 13 35)	− 1	22·1	—
Manila	40·8	124	9 23	PP	16 34	SS	23·5	27·2
Ksara	40·8	274	e 7 34	− 5	e 13 52	+ 4	24·9	—
Königsberg	43·3	310	—	—	e 14 26	+ 1	e 26·4	64·0
Upsala	43·7	317	—	—	e 14 28	− 3	—	26·2
Budapest	46·4	300	—	—	e 18 52?	SS	25·9	29·9
Copenhagen	47·4	313	8 31	− 1	15 26	+ 2	21·9	—
Vienna	47·8	302	i 8 35	0	—	—	—	26·9
Prague	48·3	305	—	—	e 19 2	SS	e 25·6	30·4
Graz	48·8	301	e 10 9	(− 3)	e 23 3	?	e 26·9	32·7
Zagreb	49·0	300	e 8 43	− 1	e 15 52	+ 5	e 23·9	26·9
Leipzig	49·0	307	—	—	e 20 10	SSS	e 27·4	31·4
Hamburg	49·4	311	e 10 52?	PP	e 15 58	+ 6	—	33·9
Jena	49·6	307	e 9 47	+59	—	—	28·4	31·2
Göttingen	50·3	308	—	—	e 20 52?	SSS	—	29·3
Triest	50·5	300	e 16 10	S	(e 16 10)	+ 2	—	32·2
Venice	51·5	300	e 9 16	+13	—	—	—	35·9
Stuttgart	51·9	304	e 9 3	− 3	e 16 27	0	e 26·9	32·8
Karlsruhe	52·2	306	—	—	e 20 13	SS	—	28·7
Prato	52·9	299	e 9 14	+ 1	16 44	+ 3	—	32·0
Florence	52·9	299	9 13	0	16 43	+ 2	—	—
Strasbourg	52·9	305	e 9 15	+ 2	e 16 38	− 3	e 27·9	33·5
Zurich	52·9	304	e 9 19	+ 6	—	—	—	—
Piacenza	53·3	301	e 8 52	−24	—	—	26·9	34·5
Basle	53·4	304	e 9 15	− 2	—	—	—	—
Uccle	53·8	309	e 9 19	− 1	e 17 4	+ 9	26·9	34·1
Neuchatel	54·0	304	e 9 21	0	—	—	—	—
Durham	55·1	315	—	—	17 9	− 2	—	36·4
Scoresby Sund	55·1	337	9 33	+ 3	17 13	+ 2	27·9	—
Edinburgh	55·3	317	e 9 42	+11	e 17 22	− 9	—	37·7
Paris	55·8	308	—	—	e 22 52?	SSS	e 27·9	36·9
Kew	56·0	311	e 9 39	+ 3	—	—	e 26·9	35·0
Stonyhurst	56·0	315	e 9 22	−14	—	—	e 25·9	37·0
Ivigtut	69·1	339	—	—	20 6	− 4	39·9	—
Victoria	84·0	20	31 43	SSS	—	—	53·4	—

Additional readings and note :—
Agra eN = +4m.7s., PP? = +4m.12s., PPP = +4m.21s., SS = +8m.27s.
Bombay i = +13m.46s.
Hong Kong +14m.2s., S? = +14m.34s.

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Tiflis eN = +12m.28s., eE = +13m.4s. =SSS − 1s. and +14m.43s.
Helsingfors eP_cP?N = +16m.21s. =SS +7s., eS?NE = +19m.35s., iSSN = +21m.7s.; T_o = 11h.55·9m.?
Manila iN = +25m.31s.
Königsberg eE = +22m.12s., eN = +22m.38s. and +23m.10s., eE = +24m.48s.
Copenhagen +10m.22s. =PP +7s. and +18m.52s. =SS +17s.
Vienna iN = +23m.18s., iE = +24m.34s.
Prague e = +20m.22s. =SSSS +4s. and +23m.5s.
Leipzig e = +26m.10s.
Hamburg e = +19m.58s., eN = +25m.52s.?
Jena eN = +25m.52s., eEZ = +26m.22s.
Triest e = +28m.4s., +29m.16s. and +30m.15s.
Stuttgart e = +9m.10s., ePP = +11m.8s., eS_cS = +18m.52s., eSS = +20m.22s.
Strasbourg eN = +19m.7s. = S_cS +3s., e = +21m.22s., eE = +25m.12s.
Uccle e = +20m.36s.
Edinburgh P and S have been *diminished* by 5m.
Stonyhurst e = +16m.52s. and +22m.2s.
Long waves were also recorded at Sitka, Oak Ridge, and other European stations.

Aug. 7d. Readings also at 1h. (Mizusawa and Tyosi), 2h. (Tyosi), 3h. (Scoresby Sund), 5h. (Haiwee, Tinemaha, Pasadena, Mount Wilson, and Riverside), 6h. (Honolulu and Malabar), 7h. (Tashkent), 9h. (Manila), 10h. (Scoresby Sund), 12h. (Toledo, Alicante, Almeria, Malaga, Branner, San Francisco, and Berkeley), 13h. (Santiago, La Paz, and La Plata), 15h. (Alicante), 20h. (Mizusawa), 21h. (Andijan), 23h. (Berkeley).

Aug. 8d. Readings from the New Zealand stations, 40°·0S. 176°·7E. is given as the epicentre :—

Dannevirke P_g = 0h.4m.36s., S_g = 4m.43s.
New Plymouth P = 0h.4m.38s., S = 5m.2s.
Wellington P = 0h.5m.48s., i = 5m.58s., S = 6m.8s.

For the following 40°·6S. 175°·8E. is given as the epicentre.

Dannevirke P_g = 20h.26m.39s., S_g = 26m.43s., i = 26m.49s.
Bunnythorp P_g = 20h.30m.0s., S_g = 30m.8s.
New Plymouth P = 20h.30m.5s., S = 30m.29s.
Wellington P_g = 20h.30m.29s., S_g = 30m.40s.

Aug. 8d. The following readings are given without determination :—

Sumoto iP = 21h.51m.21s., iSEN = 51m.25s., M = 51m.26s.
Kobe PEN = 21h.51m.27s., iSEN = 51m.34s., MEN = 51m.40s.
Osaka P = 21h.51m.27s., S = 51m.36s., M = 51m.36s.
Nagoya P = 21h.51m.49s., S = 52m.13s.
Sverdlovsk iP = 21h.54m.3s., eS = 63m.20s., L = 74m.
Tashkent eP = 21h.55m.44s., eS = 66m.6s., eL = 72m., M = 79m.36s.; epicentre 49°N. 140°W.

Aug. 8d. Readings also at 0h. (Branner), 4h. (Taihoku, Arisan, and Karenko), 5h. (Nagoya), 6h. (Tinemaha, Mount Wilson, and Pasadena), 8h. (New Plymouth), 13h. (Sumoto), 15h. (Basle), 16h. (Amboina), 17h. (Karenko), 21h. (Manila), 22h. (De Bilt, Soengei Langka, Copenhagen, Uccle, and Stuttgart).

Aug. 9d. Readings from which no determination is made :—

Sitka eP = 6h.0m.51s., eS = 5m.0s., eL = 9m.0s.
Tinemaha ePZ = 6h.3m.33s., iZ = 3m.49s.
Pasadena ePZ = 6h.3m.49s.
Mount Wilson iPZ = 6h.3m.49s.
Riverside eZ = 6h.3m.57s.
Tashkent e = 6h.4m.5s., e = 5m.7s., e = 6m.6s., e = 11m.42s., e = 21m.42s., e = 25m.6s. e = 30m.42s., eL = 34m., M = 40m.12s.
Sverdlovsk P = 6h.6m.13s., L = 10m.
Oak Ridge iZ = 6h.6m.22s.
De Bilt eZ = 6h.7m.30s., eL = 45m.
Vladivostok e = 6h.8m.30s., L = 15m.
Ukiah e = 6h.12m.
Scoresby Sund eL = 6h.18m.
Chiufeng eL? = 6h.21m.31s., M = 25m.6s.
Ivigtut L = 6h.30m.
Copenhagen L = 6h.36m.

Aug. 9d. Readings from which no determination is made :—

Amboina P = 13h.19m.16s., eS? = 22m.31s., eL = 29m.
Manila P = 13h.20m.12s., S = 26m.24s., L = 32m.30s., M = 36m.
Riverview eN = 13h.21m.6s., eN = 24m.0s., eL = (27)m.12s., MN = 39m.30s.
Chiufeng eP = 13h.22m.46s., eS = 30m.36s.
Sydney e = 13h.24m.18s., L = 30m.0s., M = 31m.0s.
Tashkent e = 13h.26m., eS = 36m.17s., eL = 59m.6s., M = 70m.0s.
Pasadena iPZ = 13h.26m.23s.
Tinemaha ePZ = 13h.26m.24s.
Mount Wilson iPZ = 13h.26m.24s.
Riverside ePZ = 13h.26m.24s.
Melbourne e = 13h.27m.,2s. L = 30m.12s., M = 36m.48s.
Adelaide e = 13h.27m.39s., i = 31m.38s., eL = 35m.40s., M = 40m.12s.
Hong Kong S? = 13h.28m.17s., M = 39m.35s.
Vladivostok eL = 13h.29m.30s.
Perth eP = 13h.30m.10s., L = 35m.0s., i = 45m.0s.
Sverdlovsk e = 13h.30m.33s., L = 57m.
Christchurch eZ = 13h.34m.16s., e = 39m.20s.
Wellington L = 13h.35m.

Aug. 9d. 19h. 34m. 1s. Epicentre 4°·5S. 152°·0E. (as on 1932 April 12d.). X.

A = −·880, B = +·468, C = −·079; D = +·470, E = +·883;
G = +·069, H = −·037, K = −·997.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	23·7	271	e 5 24	PP	10 10	SSS	e 15·0	—
Riverview	29·2	182	e 7 29	?	e 14 54	?	e 16·1	26·1
Sydney	29·2	182	—	—	e 10 34	−17	14·3	17·5
Adelaide	32·8	200	—	—	i 11 19	−29	18·0	25·2
Melbourne	33·9	190	—	—	e 11 42	−22	18·2	23·6
Manila	36·2	302	7 1	+ 1	12 39	0	17·0	21·0
Wellington	42·1	154	i 9 25	PP	—	—	22·0	—
Christchurch	43·1	158	—	—	i 14 46	+24	e 21·8	—
Perth	43·5	227	e 7 59	− 2	e 16 59	SS	—	—
Hong Kong	45·7	308	8 31	+13	15 1	+ 1	—	28·0
Vladivostok	51·0	341	e 9 3	+ 4	e 16 29	+14	28·5	—
Chiufeng	55·4	327	e 9 34	+ 2	e 17 20	+ 5	—	—
Honolulu	55·5	60	—	—	e 17 38	+22	e 27·4	—
Bombay	81·3	290	—	—	i 22 23	− 7	—	—
Sitka	84·5	31	—	—	e 23 0	[+ 5]	e 40·5	—
Andijan	85·2	313	e 12 33	− 1	e 22 56	[− 5]	—	—
Tashkent	87·6	312	12 42	− 4	i 23 7	[−10]	—	—
Pasadena	92·5	56	i 13 11	+ 2	—	—	—	—
Tinemaha	92·5	53	i 13 13	+ 4	—	—	—	—
Riverside	93·1	57	e 13 12	0	—	—	—	—
Sverdlovsk	94·5	327	17 12	PP	23 46	[−12]	63·0	77·5
Tiflis	105·8	312	e 19 21	?	e 24 47	[− 7]	e 50·5	67·4
Pulkovo	109·4	333	18 57	PP	25 2	[− 9]	58·0	71·5
De Bilt	125·1	336	—	—	e 38 35	?	e 66·0	—
Stuttgart	125·7	331	e 18 55	[− 3]	—	—	e 76·0	—
Oak Ridge	125·9	39	—	—	e 26 2	[− 6]	e 66·5	—
San Juan	140·3	65	e 19 59	[+37]	—	—	—	—

Additional readings :—
Adelaide e = +14m.59s.
Melbourne i = +13m.6s.
Chiufeng eZ = +30m.21s.
Sverdlovsk PS = +25m.44s., SS = +30m.59s.
Tiflis eE = +27m.54s. = PS + 8s., eZ = +34m.9s.
Pulkovo PS = +28m.14s., SS = +34m.23s.
Stuttgart ePP = +21m.5s., ePPS = +32m.29s., eSS = +39m.23s.
Oak Ridge eNW = +27m.40s. = SKKS − 15s., eNE = +38m.0s. = SS + 12s., +55m.28s., +58m.44s.
Long waves were also recorded at Kew, Ivigtut, and other European and American stations.

Aug. 9d. 22h. 56m. 37s. Epicentre 48°·4N. 7°·2E. (as on July 9d.). X.

A = +·659, B = +·083, C = +·748.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Strasbourg	0·4	64	0 8	+ 2	0 11	+ 1
Basle	0·9	164	e 0 13	0	e 0 23	0
Ebingen	1·2	101	e 0 15	− 2	i 0 28	− 3
Stuttgart	1·3	74	e 0 34	S	e 0 37	S*
Zurich	1·4	137	e 0 20	0	e 0 34	− 2
Ravensburg	1·7	110	—	—	e 0 45	+ 1

Aug. 9d. Readings also at 1h. (Berkeley), 7h. (Nagoya), 11h. (Wellington), 14h. (Mount Wilson, Tinemaha, Pasadena, Riverview, and Copenhagen), 18h. (Oak Ridge), 19h. (Amboina, Oak Ridge), 20h. (Riverview, Manila, Adelaide, Tinemaha (3), Pasadena (3), Andijan, Hong Kong, Tashkent, Sverdlovsk, Nanking, and Branner), 21h. (Tyosi), 22h. (Heizyo).

Aug. 10d. 22h. 39m. 50s. (I) } Epicentre 24°·5N. 122°·0E. X.
22h. 44m. 12s. (II) } (as on 1922 Dec. 13d.). X.

A = −·482, B = +·772, C = +·415; D = +·848, E = +·530;
G = −·220, H = +·352, K = −·910.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Taihoku	0·6	321	i 0 7	− 2	i 0 14	− 1	—	—
II	0·6	321	i 0 8	− 1	0 15	0	—	—
I Karenko	0·6	212	0 8	− 1	0 17	+ 2	—	—
II	0·6	212	0 9	0	0 21	+ 6	—	—
I Tainan	2·2	225	e 0 40	P_g	1 8	S_g	—	—
II	2·2	225	e 0 37	P*	1 7	S_g	—	—
I Takao	2·4	223	e 0 37	P*	1 13	S_g	—	—
II	2·4	223	e 0 35	+ 1	1 12	S_g	—	—
I Zi-ka-wei	6·7	356	—	—	e 3 20	S*	—	—
II	6·7	356	—	—	i 3 40	S_g	—	—
I Hong Kong	7·5	255	—	—	3 52	S*	—	—
II	7·5	255	1 54	+ 8	(3 13)	+ 2	3·2	5·1
I Nanking	8·0	340	e 3 10?	S	(e 3 10?)	−14	—	—
II	8·0	340	e 4 27	S_g	—	—	—	—
I Manila	10·0	186	3 58	S	(3 58)	−15	—	—
II	10·0	186	—	—	4 53	S*	8·8	—
II Nagasaki	10·7	38	e 2 35	+ 4	e 6 38	?	—	—
II Husan	12·2	28	—	—	6 54	S_g	—	—
II Phu-Lien	14·7	258	e 3 20	− 5	—	—	7·8	—
II Chiufeng	16·3	344	e 3 24	−21	—	—	e 7·9	—
II Tashkent	46·4	305	—	—	e 14 12	−58	e 21·9	29·3
II Sverdlovsk	54·1	324	—	—	e 21 25	SS	57·8	—

Additional readings:—
Zi-ka-wei II 1E = +3m.52s., +4m.20s. and +4m.33s.
Nanking II S = +5m.22s.
Tashkent II e = +19m.12s. = SSS − 6s.
Long waves were also recorded at Vladivostok, Edinburgh, Kew, and other European stations.

Aug. 10d. Readings also at 2h. (Tananarive), 3h. (Sverdlovsk, Tashkent, and Copenhagen), 9h. (Andijan), 10h. (Almeria), 11h. (Santiago and La Plata) 12h. (Mizusawa), 15h. (Wellington), 16h. (Tiflis), 17h. (Berkeley), 19h. (Branner), 20h. (Berkeley), 22h. (Kobe), 23h. (Sumoto).

Aug. 11d. 8h. 18m. 25s. Epicentre 24°·2N. 121°·8E. (as on July 14d.). R.2.

A = −·481, B = +·775, C = +·410; D = +·850, E = +·527; G = −·216, H = +·348, K = −·912.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Karenko	0·3	218	i 0 7	+ 3	0 18	+10	—	—
Taihoku	0·9	343	i 0 4	− 9	0 11	−12	—	—
Taityu	1·0	268	0 6	− 8	0 26	0	—	—
Arisan	1·2	230	i 0 25	+ 8	0 47	+16	—	—
Taito	1·6	201	0 23	0	0 51	S_g	—	—
Tainan	1·9	232	i 0 26	− 2	0 58	S_g	—	—
Isigakizima	2·1	86	−0 25	−55	0 2	−52	—	—
Takao	2·1	222	0 43	P_g	1 21	?	—	—
Hokoto	2·2	252	e 0 52	S	1 31	?	—	—
Kosyun	2·4	203	e 2 51	?	3 24	?	—	—
Naha	5·6	67	1 21	+ 1	2 25	+ 2	—	—
Zi-ka-wei	7·0	357	e 1 31	− 8	3 13	+14	—	—
Hong Kong	7·3	257	1 43	− 1	3 5	− 1	3·9	4·8
Nake	8·0	57	1 52	− 1	4 42	?	—	—
Nanking	8·3	342	i 1 38?	−20	i 3 5	−26	i 3·9	6·6
Manila	9·6	184	2 24k	+ 8	4 52	S*	6·6	8·6
Tomie	10·4	34	2 31	+ 5	5 37	S_g	—	—
Kagosima	10·7	45	2 34	+ 3	5 56	S_g	—	—
Nagasaki	11·1	38	2 37	+ 1	6 25	S_g	11·2	—
Unzendake	11·3	39	2 44	+ 5	6 1	S_g	—	—
Miyazaki	11·5	45	2 40	− 2	5 3	+13	—	—
Kumamoto	11·6	40	2 46	+ 3	6 58	L	(7·0)	—
Hukuoka	12·0	37	2 50	+ 2	—	—	7·1	7·9
Hukuoka B	12·0	37	2 50	+ 2	6 53	?	—	7·7
Husan	12·5	28	2 57	+ 2	6 55	?	—	—
Simidu	13·0	46	2 51	−11	9 19	?	—	—
Taikyu	13·1	25	3 1	− 2	7 0	?	—	—
Hirosima	13·8	40	3 4	− 9	8 16	?	—	—
Zinsen	13·9	16	3 19	+ 5	i 6 5	+16	i 7·2	8·1
Koti	13·9	45	e 3 6	− 8	—	—	e 8·0	9·5
Keizyo	14·1	17	3 13	− 4	6 7	+14	7·3	9·9
Phu-Lien	14·4	259	e 3 25	+ 4	6 35?	+34	7·1	9·5
Sumoto	15·2	45	3 27	− 4	7 32	?	9·9	11·9
Heizyo	15·2	12	3 39	+ 8	—	—	7·8	8·6
Wakayama	15·3	46	3 24	− 8	—	—	8·8	—
Kobe	15·6	45	e 3 35	− 1	e 7 19	+50	e 9·0	11·4
Toyooka	15·9	42	3 33	− 7	8 49	?	9·6	12·3
Osaka	15·9	46	3 6	−34	6 47	+11	10·3	14·3
Osaka B	15·9	46	2 56	−44	5 59	−37	—	—
Chiufeng	16·6	245	e 3 45	− 4	6 44	− 8	—	—
Nagoya	17·1	47	3 53	− 2	(11 23)	?	11·4	—
Hatidyozima	18·1	57	4 15	+ 7	7 37	+10	—	—
Kohu	18·1	47	4 14	+ 6	10 54	?	—	—
Misima	18·4	50	4 11	0	7 48	SS	—	—
Hunatu	18·5	48	4 12	− 1	7 37	+ 1	—	—
Titizima	18·5	77	4 19	+ 6	7 42	+ 6	—	—
Yokohama	19·0	50	4 21	+ 2	8 16	SS	—	—
Tokyo	19·2	49	4 22	+ 1	7 52	+ 2	—	—
Kumagaya	19·2	47	4 22	+ 1	8 51	+61	—	—
Maebasi	19·2	47	4 28	+ 7	11 16	L	(11·3)	—
Tukubasan	19·8	48	4 15	−12	8 34	+32	—	—
Tyosi	20·1	51	e 4 35	+ 4	e 9 18	?	13·2	—
Vladivostok	20·6	21	i 4 35	− 1	i 8 25	+ 7	i 10·3	13·1
Palau	20·8	142	4 51	PP	8 46	SS	—	—
Sendai	21·4	45	4 58	PP	10 16	?	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	22·1	43	e 4 56	+ 4	9 3	+15	13·0	—
Amboina	28·6	167	6 1	+ 8	10 9	−33	—	—
Medan	30·4	231	6 29	+20	i 21 7	?	—	—
Calcutta	30·7	274	5 11	−60	11 0	−16	e 15·9	18·9
Batavia	33·7	209	i 6 47	+ 9	—	—	25·6	—
Dehra Dun	39·2	289	14 15	?	—	—	22·1	22·6
Agra	39·4	284	e 7 16	−11	13 32	+ 5	18·7	22·1
Hyderabad	40·9	269	13 18	?	17 14	?	18·8	25·2
Almata	41·3	309	e 7 35	− 8	—	—	27·6	—
Frunse	42·9	308	e 8 5	+ 9	—	—	28·6	—
Colombo	43·7	254	8 44	+42	—	—	—	28·0
Andijan	44·2	304	8 6	0	—	—	29·6	—
Kodaikanal	44·4	262	8 13	+ 5	e 14 53	+12	21·8	29·0
Bombay	45·6	275	8 18	0	15 5	+ 6	—	26·8
Tashkent	46·6	304	i 8 25	0	i 15 15	+ 2	e 22·2	29·6
Sverdlovsk	54·3	324	i 9 21	− 2	i 16 58	− 1	27·5	32·6
Sydney	64·4	153	—	—	e 19 5	− 7	37·4	40·6
Tiflis	64·8	307	e 10 35	− 2	e 19 20	+ 3	38·0	47·4
Melbourne	65·7	159	—	—	i 19 35	PS	—	34·2
Pulkovo	70·0	328	i 11 5	− 6	20 16	− 5	37·6R	42·6
Helsingfors	72·5	298	e 11 21	− 5	20 39	−12	e 34·6	—
Ksara	73·6	300	e 12 1	+31	e 21 2	− 2	—	42·6
Upsala	76·0	330	—	—	e 21 35?	+ 3	e 37·6	46·1
Sitka	76·5	27	—	—	e 21 35	− 2	e 44·3	—
Königsberg	76·6	325	e 39 12	?	e 43 46	?	e 47·5	52·2
Copenhagen	80·4	328	—	—	22 17	− 3	41·6	—
Vienna	81·7	320	i 12 16	− 1	e 22 31	− 3	e 43·3	56·6
Hamburg	83·0	327	e 12 17	− 6	—	—	e 38·6	49·6
Zagreb	83·1	318	e 12 19	− 5	e 22 43	− 5	e 42·1	—
Triest	84·6	318	e 22 59	S	(e 22 59)	− 5	—	—
Venice	85·5	318	e 11 53	−43	23 9	− 4	—	49·2
Stuttgart	85·6	323	e 12 35	− 1	e 23 2	[− 1]	e 46·6	55·9
De Bilt	85·8	326	e 12 38	+ 1	e 23 14	− 2	e 40·6	49·5
Strasbourg	86·6	322	e 12 35	− 6	e 22 35?	?	e 31·6	47·6
Uccle	87·0	326	e 12 41	− 2	—	—	41·6	50·0
Florence	87·0	317	12 35	− 8	23 26	− 1	42·6	—
Basle	87·2	322	e 12 35	− 9	—	—	—	—
Piacenza	87·2	319	e 14 35	?	—	—	43·6	59·0
Edinburgh	87·4	332	(e 12 35?)	−10	(e 23 35?)	+ 4	e 43·6	55·6
Stonyhurst	88·4	331	—	—	e 23 35	− 6	e 43·6	49·9
Kew	88·9	328	e 12 53	+ 1	—	—	e 39·6	55·4
Oxford	89·2	328	—	—	i 23 31	[+ 3]	e 42·6	55·5
Paris	89·2	324	—	—	e 37 9	?	51·6	57·6
Tinemaha	96·6	44	i 13 28	0	—	—	—	—
Haiwee	97·4	45	i 13 31	− 1	—	—	—	—
Pasadena	98·5	46	e 13 37	0	—	—	e 47·1	—
Ottawa	108·6	13	—	—	e 24 35?	[−32]	e 48·6	—
Oak Ridge	112·1	11	—	—	e 29 43	PS	e 50·2	—

Additional readings and note :—
Zi-ka-wei iN = +3m.53s. = S_g +8s., +3m.58s., +4m.51s., and +5m.20s., iEN = +6m.19s. and +6m.35s., iE = +7m.5s.
Hong Kong SE = +3m.16s.
Nagasaki iP = +2m.41s., SM = +8m.54s.
Zinsen eSZ = +6m.8s.
Sumoto SE? = +7m.40s.
Kobe eZ = +7m.4s., iS_cS? = +12m.56s.
Osaka i = +3m.32s., +4m.4s., +7m.27s., and +13m.6s.
Chiufeng P = +3m.49s., iEN = +5m.14s.
Mizusawa ePN = +5m.19s. = PP +8s.
Amboina S? = +11m.15s.
Medan iNS = +22m.30s.
Calcutta SS = +13m.8s.
Agra eN = +7m.14s., PPP = +9m.2s., SSS = +16m.47s.
Kodaikanal PP = +9m.57s. = P_cP +1s., SS = +17m.54s., SSS = +18m.56s.

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Bombay SSS = +19m.1s.
Melbourne i = +26m.48s.
Sverdlovsk L_q = +32m.11s.
Tiflis ePPN = +13m.21s., eSSE = +23m.51s.
Pulkovo L_q = +34m.35s.?
Helsingfors ePSN = +21m.14s.; T_o = 8h.18m.40s.
Königsberg ePPPEN = +40m.14s., eP_cPN = +42m.12s., eSSN = +45m.27s.
Triest eP = +44m.51s., e = +47m.6s., +49m.51s., +54m.46s., +61m.51s., and +62m.13s.
Stuttgart ePP = +15m.57s., e = +19m.23s., eSKKS = +23m.45s., =PS −14s., eSS = +28m.35s., eSSS = +32m.53s., e = +45m.49s.
De Bilt ePPZ = +16m.4s.
Edinburgh P and S have been *increased* by 9m.
Ottawa eE = +34m.35s. =SS +36s.
Oak Ridge eNW = +33m.21s.
Long waves were also recorded at Cape Town, Wellington, Ivigtut, Durham, and other European and American stations.

Aug. 11d. 11h. 57m. 46s. Epicentre 5°·6S. 151°·5E. (as on 1934 Feb. 3d.). R.3.

A = −·875, B = +·475, C = −·098; D = +·477, E = +·879; G = +·086, H = −·047, K = −·995.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Palau	21·4	307	5 10	PP	8 54	SS	—	—
Amboina	23·3	274	5 4	0	9 22	+12	15·2	—
Riverview	28·1	181	e 5 49	+ 1	i 10 44	+10	15·4	28·2
Sydney	28·1	181	e 9 4	(0)	i 12 44	?	14·3	15·2
Adelaide	31·6	200	e 6 14	− 5	i 11 20	− 9	13·9	22·8
Melbourne	32·7	189	6 57	+28	11 36	−10	16·2	18·5
Manila	36·4	305	i 7 2k	+ 1	13 3	+21	16·6	20·2
Wellington	41·2	153	i 9 26	PP	—	—	20·2	23·2
Miyazaki	42·1	334	7 52	+ 3	13 53	−15	—	—
Christchurch	42·1	157	i 7 48	− 1	13 58	−10	19·6	—
Perth	42·4	228	12 9	?	17 9	SS	22·3	22·3
Koti	42·7	339	e 8 14?	+20	—	—	—	—
Sumoto	42·9	340	e 7 59	+ 3	14 44	+25	17·5	18·0
Kobe	43·1	340	e 9 12	?	e 17 57	SSS	—	24:4
Tokyo	43·3	345	9 9	?	—	—	—	—
Nagasaki	43·5	334	e 8 11	+10	14 20	− 8	—	—
Batavia	44·3	268	7 45	−22	—	—	—	—
Husan	45·9	334	8 29	+ 9	15 0	− 3	—	—
Hong Kong	46·0	309	8 18	− 3	15 4	0	20·8	26·4
Zi-ka-wei	46·7	324	e 8 22	− 4	i 15 18	+ 4	23·6	24·9
Nanking	48·9	322	e 8 28	−15	e 15 24	−21	21·2	27·9
Phu-Lien	51·4	304	—	—	16 14?	− 6	—	—
Vladivostok	51·8	341	e 9 8	+ 3	16 28	+ 3	25·2	30·7
Medan	53·5	278	—	—	e 16 52	+ 3	—	—
Chiufeng	56·1	328	9 35a	− 2	i 17 24	0	i 26·8	34·6
Honolulu	56·5	59	e 9 44	+ 5	i 17 39	+ 9	e 23·7	—
Calcutta	67·8	297	e 11 23	(− 1)	—	—	—	—
Kodaikanal	75·4	282	—	—	i 21 21	− 4	—	—
Agra	78·0	300	e 11 51	− 6	i 21 42	−12	—	—
Bombay	81·2	290	e 12 14?	0	i 22 25	− 3	—	50·7
Almata	82·8	315	e 12 41	+19	—	—	—	—
Andijan	85·6	311	e 12 41	+ 5	e 22 58	[− 5]	—	—
Sitka	85·7	31	e 12 37	0	e 23 2	[− 2]	e 39·8	—
Tashkent	87·9	314	12 49	+ 2	i 23 10	[− 9]	e 40·6	54·5
Ukiah	89·9	51	—	—	e 23 51	− 4	e 41·2	—
Berkeley	90·5	52	i 13 12	+12	i 23 34	[− 2]	—	—
Seattle	91·6	42	—	—	e 24 22	+11	e 44·0	—
Pasadena	93·4	56	i 13 13	0	e 24 43	+15	e 48·6	—
Mount Wilson	93·5	56	i 13 10	− 4	—	—	—	—
Tinemaha	93·6	53	i 13 14	0	—	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Haiwee	93·7	54	e 13 15	+ 1	—	—	—	—
Riverside	94·1	56	i 13 20	+ 4	—	—	—	—
La Jolla	94·1	57	i 13 27	+11	—	—	—	—
Sverdlovsk	95·2	327	e 13 20	− 1	i 24 15	{− 1}	47·2	55·6
Bozeman	99·2	44	—	—	e 25 14	− 5	e 45·7	—
Tucson	99·5	58	e 17 44	PP	e 24 27	[+ 4]	42·2	—
Tiflis	106·2	312	e 18 35	PP	i 24 47	[− 9]	61·2	67·3
Pulkovo	110·2	333	18 58	PP	25 3	[−11]	56·2	65·5
Helsingfors	112·3	335	—	—	e 24 14?	?	e 52·2	—
St. Louis	115·4	49	e 19 39	PP	e 26 41	{− 4}	—	62·5
Copenhagen	120·3	335	—	—	25 43	[− 8]	62·2	—
Pittsburgh	122·4	45	—	—	e 37 8	SS	e 64·3	—
Hamburg	122·7	333	—	—	e 25 14?	[−44]	—	40·2
Vienna	122·9	326	e 30 0	PS	—	—	—	—
Prague	122·9	328	—	—	e 32 14?	?	—	64·2
Ottawa	123·0	37	e 20 44	PP	e 28 41	{+65}	e 41·2	—
Edinburgh	125·9	341	—	—	e 27 14?	{−41}	—	—
De Bilt	125·9	335	e 20 58	PP	e 32 25	?	e 67·2	74·5
Stuttgart	126·4	330	e 18 58	[− 2]	e 32 24	?	e 67·2	—
Venice	126·7	326	e 22 49	?	34 46	?	—	—
Oak Ridge	127·0	39	21 1	PP	e 27 22	?	51·7	—
Uccle	127·2	335	e 21 2	PP	i 28 13	{− 9}	—	—
Strasbourg	127·2	330	20 58	PP	e 32 42	?	—	—
Zurich	127·6	327	e 18 35	[−27]	—	—	—	—
Basle	128·0	329	e 18 34	[−29]	—	—	—	—
Florence	128·3	324	e 22 5	?	—	—	—	—
Kew	128·5	337	i 22 23	?	e 27 33	{−39}	e 32·2	—
Piacenza	128·5	325	22 14	?	—	—	—	86·4
Oxford	128·7	338	e 22 19	?	e 31 12	PS	—	—
Neuchatel	128·7	329	e 18 27	[−37]	—	—	—	—
Paris	129·4	333	e 21 18	PP	—	—	29·2	34·2
Alicante	138·6	326	e 22 59	PKS	e 27 37	PPPP	e 32·1	—
Toledo	139·3	330	22 59	PKS	26 53	PPPP	—	—
Almeria	140·7	326	e 23 2	PKS	—	—	—	—
Granada	141·1	328	e 26 54	PPPP	e 28 43	?	—	—
San Juan	141·2	67	e 19 34	[+11]	—	—	—	—
Malaga	141·9	329	—	—	i 23 7	PKS	—	—
San Fernando	143·1	330	19 33	[+ 5]	27 27	?	33·2	—

Additional readings :—
Adelaide i = +11m.38s. and +12m.29s.
Melbourne SS = +13m.50s., SSS = +14m.30s.
Christchurch PKSNZ = +13m.38s., iSS = +16m.24s., L_q = +16m.54s., iS_cS = +17m.28s.
Perth P_cP = +14m.9s. = S − 2s., P_cS = +17m.14s., SS = +19m.57s., SSS = +20m.44s.
Sumoto SN = +14m.47s.
Kobe eZ = +9m.34s. = PP + 2s., eN = +10m.43s., eE = +10m.48s.
Hong Kong PP = +10m.4s., SS = +19m.34s.
Zi-ka-wei iZ = +13m.54s. and +19m.18s.
Chiufeng PS = +17m.54s., SSE = +20m.53s.
Agra eN = +12m.21s. = PS − 2s.
Tashkent iPS = +24m.18s.
Berkeley iE = +15m.24s. and +23m.38s., iN = +24m.3s. = S + 1s., iZ = +25m.3s. = PS + 6s.
Seattle eSKS = +24m.1s.
Sverdlovsk ePP = +17m.13s., iSKS = +23m.49s., iSS = +31m.2s.
Bozeman eSKS = +24m.19s., e = +41m.29s. ; T_o = 11h.57m.45s.
Tiflis PPSE = +27m.55s., eZ = +34m.14s.
Pulkovo SKKS = +26m.0s., PS = +28m.20s., SS = +34m.26s.
Helsingfors e?E = +26m.14s. = SKKS − 9s., e?N = +29m.14s.? = PS + 24s., and +33m.14s.?
St. Louis eSSE = +35m.39s.
Copenhagen +30m.8s. = PS + 3s.
Pittsburgh e = +39m.58s. and +44m.42s. = SSSS − 12s.
Ottawa e = +37m.19s. = SS + 8s.
Edinburgh i = +33m.20s.

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Stuttgart ePP = +20m.48s., ePKS = +22m.14s., e = +36m.14s.
Oak Ridge eNE = +29m.12s., iNE = +38m.0s. = SS − 2s., eNW = +39m.8s.
Uccle i = +22m.18s.
Strasbourg iPPP = +22m.13s., e = +33m.27s.
Paris e = +22m.24s.
Granada i = +27m.54s.
Malaga e = +27m.40s., +31m.9s., and +40m.35s.
San Fernando SN = +27m.30s.
Long waves were also recorded at Hyderabad, Cape Town, and Durham.

Aug. 11d. Readings from which no determination is made. They may belong to more than one shock :—

Paris e = 13h.1m.4s., L = 10m., M = 10m.
Malaga e = 13h.3m.17s., e = 3m.37s., e = 5m.25s.
Toledo P = 13h.3m.18s., S? = 9m.0s.
Strasbourg eP = 13h.3m.25s., e = 10m.33s., eL = 14m.
Kew eP = 13h.3m.36s., eL = 7m., M = 15m.29s.
Granada eP = 13h.3m.42s., e = 4m.42s., eS = 9m.46s.
Tortosa ePE = 13h.3m.51s., eLE = 9m., eLN = 10m., ME = 20m.14s.
Alicante eP = 13h.3m.53s., eS = 8m.39s., eL = 12m.1s.
Almeria e = 13h.3m.59s.
Uccle eP = 13h.4m.7s., eL = 15m.
Edinburgh i = 13h.9m.20s., L = 14m.
Pasadena ePZ = 13h.14m.17s.
Mount Wilson iPZ = 13h.14m.18s.
Adelaide i = 13h.21m.11s., e = 33m.8s., M = 49m.30s.
Riverview eN = 13h.27m.18s., MN = 50m.11s.
Long waves were recorded at Hamburg, Durham, San Fernando, Ivigtut, and Columbia.

Aug. 11d. Readings also at 0h. (Manila), 2h. (Taihoku), 4h. (Christchurch, Adelaide, and Wellington), 5h. (Oak Ridge and Tucson), 6h. (Yalta), 7h. (Phu-Lien), 8h. (Amboina), 9h. (Taihoku (3), Karenko, Arisan, Tainan, and Nanking), 10h. (La Paz), 12h. (Tinemaha, Haiwee, Riverside, Mount Wilson, and Pasadena), 13h. (Pasadena), 14h. (Christchurch, Wellington, Glenmuick, and New Plymouth), 15h. (Oak Ridge, Toledo, Alicante, Stuttgart, Edinburgh, Paris, Tashkent, San Juan, Ivigtut, Uccle, Strasbourg, Kew, De Bilt, Pulkovo, Copenhagen, Sverdlovsk), 16h. (Taihoku, Karenko, Arisan, Tainan, Nanking, Hong Kong, Lick, and Balboa Heights), 17h. (San Juan, Mount Wilson, Pasadena, Riverside, La Paz, and Sumoto), 20h. (Algiers). 21h. (Osaka, Sumoto, and Nagoya), 22h. (Taihoku)

Aug. 12d. Readings from which no determination is made :—

Christchurch eP = 7h.10m.3s., SN = 16m.22s., eL$_Q$N = 19m.2s., eLREZ = 21m.30s.
Sydney e = 7h.12m.27s., L = 16m.54s., M = 17m.40s.
Adelaide e = 7h.13m.27s., eL = 19m.9s., M = 24m.48s.
Pasadena eZ = 7h.14m.18s.
Mount Wilson iZ = 7h.14m.20s.
Tinemaha iPZ = 7h.14m.20s.
Melbourne e = 7h.15m.13s., L = 18m.50s., M = 20m.6s.
Riverview e = 7h.15m.36s., eL = 18m.36s., MN = 27m.0s.
Tashkent e = 7h.28m., eL = 42m., M = 56m.0s.
Sverdlovsk L = 7h.41m.

Aug. 12d. Readings from which no determination is made, apparently for several shocks :—

Manila P = 13h.49m.33s.a, S = 55m.13s., L = 59m., M = 14h.3m.
Chiufeng e = 13h.52m.0s., iEN = 14h.5m.7s.
Taihoku iP = 13h.53m.35s., iS = 53m.42s.
Karenko eP = 13h.53m.41s., S = 53m.47s.
Tainan eP = 13h.54m.13s., S = 54m.42s.
Taityu P = 13h.54m.16s., S = 54m.32s.
Arisan P = 13h.54m.20s., S = 54m.49s.
Taihoku iP = 13h.54m.23s., S = 54m.29s.
Karenko eP = 13h.54m.35s.
Nanking eP = 13h.54m.42s., eS = 56m.8s., eL? = 57m.
Vladivostok L = 13h.58m.30s.
Sverdlovsk e = 13h.59m.47s., e = 14h.6m.5s., e = 13m.28s., i = 22m.29s., L = 27m.

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Christchurch iPZ =13h.50m.16s., eZ =53m.55s., SZ =57m.2s., LRZ =64m.25s.
Sydney e =13h.53m.0s., L =58m.24s., M =60m.30s.
Riverview e =13h.53m.18s., eL =58m.48s., MN =67m.7s.
Adelaide e =13h.53m.34s., e =59m.30s., eL =63m.39s., M =67m.42s.
Melbourne e =13h.54m.6s., L =61m.0s., M =71m.30s.
Riverside ePZ =13h.55m.35s.
Tinemaha ePZ =13h.55m.41s.
Pasadena ePZ =13h.55m.41s.
Mount Wilson ePZ =13h.55m.41s.
Perth P =13h.56m.40s., PP =59m.20s., PPP =61m.20s., PPPP =63m.10s., S = 66m.45s., PS =67m.10s., SSSS =78m.0s., L =83m.35s.
Wellington 14h.0m.
Phu-Lien 14h.1m.
Stuttgart ePKPZ =14h.1m.30s., ePKS =4m.40s., ePPP =17m.18s., eSS = 21m.18s., eL =15h.5m.
Pulkovo e =14h.2m.11s., e =7m.31s., e =10m.53s., L =47m.
Sitka e =14h.5m.30s.
Tashkent i =14h.5m.35s., e =22m., i =23m.30s., e =35m.30s., M =54m.6s.
Tinemaha ePZ =14h.13m.41s.
Pasadena iPZ =14h.13m.48s.
Haiwee iPZ =14h.13m.49s.
Mount Wilson iPZ =14h.13m.50s.
Riverside eZ =14h.14m.1s.
La Jolla iPZ =14h.14m.2s.
Adelaide e =14h.15m.8s., eL =19m.37s., M =25m.36s.
Riverview eL =14h.17m.54s., MN =26m.44s.
Copenhagen 14h.21m.
Strasbourg eL =14h.30m.
Oak Ridge eNW =14h.54m., NE =14h.58m.
De Bilt eL =14h.55m.
Kew e =14h.57m.
Paris =15h.20m.

Aug. 12d. 23h. 49m. 25s. Epicentre 8°·3N. 126°·9E. (as on 1929 Sept. 2d.). R.1.

A = −·594, B = +·791, C = +·144; D = +·800, E = +·600; G = −·087, H = +·115, K = −·990.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Palau	7·6	97	1 47	− 1	3 12	− 2	—	—
Manila	8·6	318	i 2 3	+ 1	i 3 43	+ 4	—	—
Amboina	12·0	174	e 2 50	+ 2	e 4 52	−11	6·8	—
Taito	15·5	340	e 4 13	+38	6 35	+ 8	—	—
Takao	15·8	337	e 3 50	+11	6 43	+ 9	—	—
Tainan	16·1	337	e 3 51	+ 8	6 57	SS	—	—
Arisan	16·3	340	3 46	+ 1	7 18	L	(17·3)	—
Karenko	16·5	343	e 3 53	+ 5	e 6 55	+ 5	—	—
Taihoku	17·5	344	4 3	+ 3	7 17	+ 4	—	—
Naha	18·0	2	4 10	+ 3	7 39	+14	—	—
Hong Kong	18·6	320	4 11	− 3	7 38	0	8·8	10·7
Nake	20·2	7	4 29	− 3	8 26	SS	—	—
Phu-Lien	23·2	305	e 4 56	− 7	9 4	− 4	10·6	14·3
Zi-ka-wei	23·5	348	i 5 0a	− 5	i 9 15	+ 1	11·6	14·2
Titizima	23·7	36	5 12	+ 5	9 22	+ 4	—	—
Miyazaki	24·0	9	5 8	− 2	9 30	+ 7	—	—
Nagasaki	24·6	6	5 14	− 2	9 37	+ 3	e 15·5	—
Unzendake	24·7	7	5 31	+14	10 1	+25	—	—
Batavia	24·7	235	5 16	− 1	i 9 40	+ 4	14·1	—
Malabar	24·7	232	—	—	10 20	SS	14·8	—
Nanking	24·9	344	5 0a	−19	i 9 27	−12	12·8	15·6
Hukuoka B	25·4	7	5 24	0	9 53	+ 5	—	16·4
Hukuoka	25·5	7	5 25	0	9 49	− 1	—	—
Koti	26·0	13	e 5 27	− 2	9 57	− 1	12·1	16·4
Hirosima	26·6	10	5 35	0	10 6	− 3	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Husan	26·9	4	e 5 37	0	10 18	+ 4	—	—
Hamada	27·0	10	5 40	+ 2	10 14	− 1	—	—
Sumoto	27·1	15	5 36	− 3	6 33	?	e 13·7	17·7
Kobe	27·4	15	5 42	0	10 44	+22	e 12·6	17·8
Taikyu	27·6	3	5 44	0	8 54	PcP	13·0	—
Osaka	27·6	16	5 44	0	10 49	+24	17·4	—
Toyooka	28·2	14	e 5 48	− 1	10 53	+18	13·4	17·4
Omaesaki	28·3	20	5 51	+ 1	10 29	− 8	—	—
Nagoya	28·4	18	5 51	0	7 45	?	—	8·0
Medan	28·4	262	5 53	+ 2	i 10 47	+ 9	—	—
Zinsen	29·2	359	5 58	0	e 10 49	− 2	e 13·3	—
Keizyo	29·3	0	e 5 58	− 1	e 10 38	−15	e 15·4	20·1
Tokyo	29·8	21	5 58	− 5	10 48	−13	—	—
Nagano	30·2	18	6 9	+ 2	11 7	0	—	—
Tyosi	30·3	23	e 6 17	+ 9	11 6	− 3	14·4	—
Mito	30·7	22	6 15	+ 4	11 14	− 2	—	—
Heizyo	30·8	358	e 6 11	− 1	e 9 59	?	13·7	—
Hukusima	31·9	20	6 19	− 3	11 31	− 3	—	—
Sendai	32·5	21	6 23	− 4	11 45	+ 2	—	—
Yingkow	32·6	354	6 21	− 7	11 26	−19	—	—
Chiufeng	33·2	345	6 28	− 6	i 11 43	−11	14·9	—
Mizusawa	33·4	22	e 6 34	− 1	e 11 57	0	—	—
Vladivostok	35·1	9	6 49	− 1	12 25	+ 2	16·6	23·5
Sapporo	37·0	19	7 14	+ 8	12 49	− 2	—	—
Calcutta	39·6	296	7 36	+ 7	—	—	e 20·4	26·8
Perth	41·6	194	7 50	+ 5	13 51	− 9	19·9	19·9
Adelaide	44·6	166	i 8 21	+11	i 14 37	− 7	22·3	31·5
Colombo	46·6	272	8 20	− 5	15 9	− 4	21·6	26·4
Riverview	48·0	152	e 10 47	?	e 15 35	+ 2	—	19·8
Hyderabad	48·0	287	14 8	?	21 4	?	28·4	48·4
Kodaikanal	48·8	276	e 8 39	− 3	i 15 44	0	24·7	29·3
Melbourne	49·1	161	e 10 9	(− 4)	15 54	+ 6	22·6	28·6
Agra	49·8	300	8 50	0	15 56	− 2	23·4	31·7
Dehra Dun	50·6	305	8 45	−11	15 35	−34	20·3	31·6
Bombay	53·4	288	i 9 12	− 5	16 43	− 4	26·0	35·8
Almata	55·7	318	e 9 38	+ 4	e 17 18	− 1	29·1	—
Frunse	57·3	316	e 9 45	0	e 17 41	+ 1	27·6	—
Andijan	57·9	314	e 9 49	− 1	e 17 49	+ 1	28·6	—
Tashkent	60·5	314	10 3	− 5	i 18 0	−23	e 22·6	38·3
Tchimkent	60·5	314	e 10 5	− 3	—	—	30·6	—
Wellington	66·2	142	—	—	i 19 30	− 5	e 26·6	—
Christchurch	66·3	148	10 35	−12	19 47	+11	e 35·6	—
Sverdlovsk	70·2	329	i 11 6	− 6	20 13	−11	30·0	42·4
Honolulu	73·4	70	e 11 23	− 8	e 20 57	− 4	34·1	—
Tiflis	78·6	311	—	—	e 21 47	−13	e 35·6	—
Tananarive	82·8	250	12 19	− 3	22 35	−10	39·9	44·9
Theodosia	85·2	316	e 12 35	+ 1	e 22 51	[−10]	36·6	—
Pulkovo	86·1	330	12 34	− 5	23 8	[+ 1]	45·6	51·8
Yalta	86·1	315	e 12 39	0	e 22 56	[−11]	45·0	—
Simferopol	86·1	315	e 12 36	− 3	—	—	42·2	—
Ksara	86·2	304	12 43	+ 4	23 13	[+ 6]	41·3	48·3
Sitka	87·2	33	i 12 47	+ 3	i 23 35	+ 6	e 35·6	—
Helwan	90·7	300	e 12 58	− 3	23 50	−13	—	55·0
Upsala	92·3	332	e 13 0	− 8	e 24 0	[+14]	e 44·6	57·4
Königsberg	92·5	326	e 15 39	?	i 23 40	[− 7]	e 46·7	55·4
Budapest	95·6	318	13 27	+ 4	24 27	{+ 8}	e 40·6	60·6
Copenhagen	96·5	330	13 27	0	24 17	{− 9}	—	—
Victoria	96·6	39	13 48	+20	24 5	[− 4]	44·7	45·7
Vienna	97·1	322	e 13 31	+ 1	24 10	[− 2]	e 47·2	52·8
Seattle	97·5	39	—	—	e 25 35	+31	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Prague	97·6	323	e 14 0	+28	e 24 55	−10	e 45·6	59·6
Graz	98·1	321	e 14 1	+26	e 27 5	PS	50·6	64·7
Zagreb	98·2	319	e 13 40	+ 5	e 24 7	[−10]	e 46·1	—
Leipzig	98·3	325	—	—	e 25 35?	+23	e 40·6	53·6
Cheb	98·8	324	e 19 33	PPP	—	—	e 46·6	52·6
Jena	98·9	325	e 13 53	+15	e 25 53	+36	e 40·6	61·1
Göttingen	99·5	326	e 13 43	+ 2	e 24 42	{− 7}	e 41·6	54·3
Triest	99·8	319	e 13 45	+ 2	e 24 24	[− 1]	e 46·8	54·5
Ukiah	99·8	48	—	—	e 24 52	{ 0}	e 45·6	—
Venice	100·7	319	14 10	−37	21 10	?	—	—
Berkeley	100·9	49	e 38 14	SSSS	—	—	—	—
Stuttgart	101·2	324	e 13 43	− 6	e 24 41	[+ 9]	e 46·6	55·1
Karlsruhe	101·6	325	—	—	e 24 35?	[+ 2]	e 41·6	63·1
De Bilt	101·9	328	13 59	+ 7	i 24 59	{− 9}	e 48·6	55·2
Florence	102·1	319	i 13 54	+ 1	e 21 35	PPPP	53·6	61·2
Prato	102·2	318	e 17 35	?	i 28 14	?	e 43·6	55·1
Zurich	102·2	322	e 14 5	+11	e 24 34	[− 2]	—	—
Strasbourg	102·2	325	e 13 52	− 2	e 25 56	+10	e 50·6	55·6
Piacenza	102·6	320	14 11	+16	24 35	[− 3]	45·6	65·3
Basle	102·7	323	e 13 51	− 5	—	—	—	—
Uccle	103·0	327	14 2	+ 5	27 14	PS	47·6	64·4
Neuchatel	103·5	324	e 14 0	0	e 24 34	[− 9]	—	—
Durham	103·7	332	24 55	SKS	(24 55)	[+11]	—	58·6
Edinburgh	103·8	334	e 18 17	PP	i 25 36	{+14}	e 44·6	65·5
Tinemaha	104·1	48	e 14 11	+ 9	—	—	—	—
Stonyhurst	104·7	332	e 16 21	?	i 25 11	{−17}	48·6	58·9
Haiwee	104·8	49	e 14 14	+ 8	—	—	—	—
Paris	105·0	325	e 14 7	+ 1	—	—	54·6	63·6
Kew	105·1	330	e 14 11	+ 4	e 27 23	PS	e 49·6	63·8
Bozeman	105·3	38	e 18 35	PP	e 24 50	[− 1]	—	—
Oxford	105·4	330	i 18 30	PP	e 25 43	{+ 9}	e 43·0	59·2
Pasadena	105·4	51	e 18 15	PP	i 27 49	PS	—	—
Cape Town	109·9	236	19 5	PP	25 10	[− 3]	47·2	54·4
Ivigtut	110·4	358	18 59	PP	26 5	{− 4}	46·6	—
Tortosa	110·5	320	e 18 10	[− 9]	e 27 35	PS	e 46·6	65·8
Algiers	110·8	314	e 14 3	−31	e 25 50	{−22}	51·6	69·6
Tucson	111·7	50	19 47	PP	28 41	PS	51·8	—
Alicante	112·5	318	e 19 25	PP	e 30 25	PS	e 50·3	—
Toledo	113·9	320	19 34	PP	26 29	{− 5}	e 49·6	65·7
Almeria	114·5	317	e 19 40	PP	e 30 36	PS	e 53·0	—
Granada	115·2	318	e 19 43	PP	—	—	57·1	—
Malaga	116·0	318	e 19 35	PP	25 39	[+ 2]	54·6	66·6
San Fernando	117·3	319	19 54	PP	27 47	{+49}	57·6	—
Chicago	120·8	30	e 20 22	PP	e 30 7	PS	e 50·1	—
Florissant	121·6	34	e 20 27	PP	e 30 30	PS	—	—
St. Louis	121·6	34	e 20 21	PP	e 27 19	{− 8}	e 59·6	—
Ann Arbor	122·2	25	e 20 35	PP	e 36 41	SS	55·1	81·3
Ottawa	122·6	17	e 20 39	PP	e 30 35	PS	e 50·6	—
Toronto	122·9	21	i 18 48	[− 4]	i 28 44	?	61·6	71·1
Pittsburgh	125·3	25	e 20 43	PP	e 31 1	PS	e 53·4	—
Oak Ridge	126·5	17	e 18 58	[− 2]	e 30 48	SKSP	e 59·1	—
Georgetown	127·8	23	e 19 13	[+10]	i 31 17	PS	e 62·6	—
Charlottesville	128·0	25	e 21 7	PP	e 38 19	SS	e 51·6	—
San Juan	150·4	26	e 19 55	[+13]	—	—	e 56·6	—
La Plata	153·0	171	20 3	{− 9}	—	—	115·6	121·3
Huancayo	157·8	102	—	—	e 44 35	SS	e 61·1	—
La Paz	163·2	121	i 20 3k	[+ 6]	26 53	?	139·6	155·1
Sucre	164·1	133	i 20 11	[+13]	—	—	94·4	—

Additional readings :—
Hong Kong PPP = +4m.50s.
Zi-ka-wei iZ = +5m.9s., PP? = +5m.35s., PPP? = +5m.43s., iZ = +6m.22s., PSN = +9m.20s., SS? = +10m.24s., SSS = +10m.38s., SSSS = +10m.50s.

Continued on next page.

Nagasaki P = +5m.26s.
Nanking iZ = +5m.16s.
Koti SN = +10m.14s., e = +10m.41s.
Husan iP = +5m.40s.
Kobe iPEN = +5m.50s., iN = +6m.37s., eZ = +6m.46s.
Osaka i = +7m.3s., +7m.37s., +13m.11s., and +14m.25s.
Toyooka PN = +5m.51s., ePE = +5m.54s.
Nagoya PP? = +7m.12s.
Medan iEN = +12m.11s., iNS = +12m.48s., iN = +13m.12s.
Zinsen iN = +7m.1s., iE = +12m.40s.
Chiufeng iN = +10m.1s.
Mizusawa ePE = +6m.34s.
Calcutta PP = +9m.8s., SS = +17m.0s. = S_cS − 39s.
Perth PP = +9m.5s., PPP = +9m.37s., PS = +14m.10s., SS = +17m.4s., SSS = +17m.40s., SSSS = +18m.25s.
Adelaide i = +9m.32s. = PP − 15s. and +15m.38s.
Kodaikanal PP = +10m.16s. = P_cP + 4s., PPP = +10m.46s., SP = +16m.31s., SS = +19m.35s., SSS = +21m.0s.
Agra PP = +10m.36s., PPP = +11m.27s., PS = +16m.27s., SS = +19m.17s., SSS = +20m.41s.
Bombay PP = +11m.16s., PPP = +12m.15s., SN = +16m.47s., PS = +17m.19s., SS = +20m.19s., SSS = +21m.49s.
Christchurch LRZ = +32m.38s.
Honolulu e = +28m.15s. = SSS − 19s.
Tiflis eN = +22m.36s. = PS + 4s.
Tananarive PSE = +23m.54s., SSE = +28m.41s., N = +34m.5s.
Pulkovo PP = +15m.58s., SKS = +22m.56s., SS = +28m.23s., L_q = +38m.35s.
Ksara PS = +24m.7s.
Sitka ePP = +16m.17s., ePPP = +18m.19s., iSKS = +23m.24s., ePS = +24m.21s.
Upsala PPE = +16m.47s., eE = +23m.32s., i = +24m.57s.
Königsberg ePPPN = +18m.27s., e?N = +20m.56s., ePSE = +24m.58s.
Copenhagen PP = +17m.24s., PPP = +19m.29s., PS = +26m.20s., SS = +30m.35s.?
Vienna iPP = +17m.34s., SKKS = +24m.30s., PS = +26m.9s.
Seattle eSKS = +24m.25s., e = +25m.55s., eSSS = +45m.25s.
Prague ePPP = +19m.35s., eSS = +30m.35s.
Zagreb e = +17m.41s. = PP + 12s., +52m.35s.?, +58m.12s., and +61m.56s.
Jena e = +14m.11s.
Triest ePP = +17m.43s., PP = +17m.50s., ePPP = +20m.12s., SKS = +24m.20s., e = +25m.10s. = S − 15s.
Stuttgart ePP = +17m.49s., ePSE = +27m.5s., eN = +30m.41s.
De Bilt PP = +18m.6s., PPP = +20m.16s., e = +27m.21s. = PS + 15s.
Florence i = +18m.2s. = PP + 3s.
Zurich ePP = +17m.52s.
Strasbourg PP = +18m.6s., SKKS = +24m.55s., iPS = +27m.14s.
Uccle PP = +18m.18s., e = +23m.35s.?, SSE = +34m.16s., SSS = +39m.4s.
Tinemaha iZ = +18m.24s. = PP + 11s.
Stonyhurst e = +18m.33s.
Haiwee iZ = +18m.24s. = PP + 5s.
Paris e = +18m.25s. = PP + 5s.
Kew ePP = +18m.21s.
Bozeman ePS = +27m.52s., eSS = +33m.17s.; T_0 = 23h.49m.15s.
Oxford e = +18m.32s. = PP + 9s. and +27m.44s. = PS + 3s.
Cape Town N = +26m.37s. = SKKS + 31s., E = +28m.25s. = PS − 2s., +34m.4s. = SS − 13s., N = +34m.30s., E = +37m.37s., N = +37m.48s.
Ivigtut PS = +28m.35s.
Algiers PP = +18m.0s. = PKP − 20s., PPP = +20m.9s.
Tucson SS = +33m.43s.
Alicante SKS = +29m.11s. = PS + 19s.
Toledo PP = +19m.35s., PS = +29m.5s., SS = +35m.14s., SSS = +39m.44s.
Almeria SKS = +29m.14s.
Granada PPP = +22m.41s.
Malaga e = +26m.43s. = SKKS − 6s., ePS = +29m.41s., e = +30m.27s., eSS = +35m.51s., e = +40m.27s., and +43m.31s.
San Fernando PS = +29m.51s.
St. Louis ePSE = +30m.22s., eSSE = +36m.53s.
Ann Arbor e = +25m.23s.
Ottawa e = +37m.12s. = SS + 6s.
Toronto PPN = +20m.58s.
Pittsburgh eSS = +36m.44s., e = +50m.23s.
Oak Ridge ePP = +20m.55s., ePSNE = +30m.52s., eSSNE = +37m.58s.
Georgetown iPP = +21m.4s.
San Juan e = +20m.45s., ePP = +23m.56s., e = +26m.58s., ePPP = +27m.47s.
La Plata PKPZ = +20m.6s., PKPN = +20m.13s., eE = +21m.39s.
Huancayo eSSS = +50m.25s.
La Paz iZ = +20m.11s., iPPZ = +24m.47s., SKKS = +31m.23s., SKSP = +35m.39s., SSE = +46m.28s., SSSE = +51m.53s.
Long waves were also recorded at Belgrade, Barcelona, and Arapuni.

Aug. 12d. Readings also at 0h. (Pasadena and Mount Wilson), 1h. (Sumoto, Nagoya, Chiufeng, Tashkent, and Sverdlovsk), 2h. (Nagoya), 3h. (La Paz), 4h. (Calcutta), 8h. (Lick and San Juan), 9h. (Nagoya, Mizusawa, Kobe, and Tyosi), 13h. (Apia), 14h. (Pasadena and Tinemaha), 16h. (Balboa Heights, Amboina, and San Juan), 17h. (Mount Wilson, Tinemaha, Pasadena, and La Jolla), 18h. (Mount Wilson and Tinemaha), 21h. (Andijan), 22h. (Pasadena, Tinemaha, Mount Wilson, Haiwee, and Malabar), 23h. (La Paz (2)).

Aug. 13d. 0h. 15m. 51s. Epicentre 19°·0N. 146°·0E. (given by Tokyo). N.3.

A = −·784, B = +·529, C = +·326; D = +·559, E = +·829; G = −·270, H = +·182, K = −·946.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Titizima		8·8	337	2 5	0	3 49	+ 5	—	—
Hatidyozima		15·1	340	3 33	+ 3	6 48	+31	—	—
Misima		17·2	340	3 56	− 1	7 31	+25	—	—
Tyosi		17·3	346	e 3 59	+ 1	7 41	+32	12·0	—
Hunatu		17·7	340	4 1	− 2	7 34	+17	—	—
Kohu		17·9	340	4 8	+ 3	7 54	+32	—	—
Wakayama		17·9	330	4 5	0	7 45	+23	—	—
Nagoya		18·1	335	4 7	− 1	7 53	+26	11·2	—
Osaka		18·2	332	4 9	0	7 20	− 9	9·8	11·1
Sumoto		18·2	330	4 7	− 2	e 7 50	+21	—	—
Kobe		18·4	331	e 4 12	+ 1	—	—	—	12·7
Miyazaki		18·4	317	4 12	+ 1	7 56	+23	—	—
Nagano		18·9	340	4 14	− 3	7 59	+15	—	—
Kumamoto		19·5	318	4 22	− 2	8 10	+14	—	—
Sendai		19·7	349	4 26	0	8 21	+21	—	—
Nagasaki		19·9	316	4 31	+ 2	e 8 25	+21	—	—
Wazima		20·0	338	4 28	− 2	8 20	+14	—	—
Mizusawa	E.	20·5	349	e 4 37	+ 2	e 8 36	SS	—	—
	N.	20·5	349	e 4 41	+ 6	e 8 33	SS	—	—
Berkeley		79·8	54	e 11 48	−19	—	—	—	—
Tinemaha		83·1	53	i 12 9	−15	—	—	—	—
Haiwee		83·6	54	e 12 12	−14	—	—	—	—
Pasadena		84·1	56	i 12 12	−17	—	—	—	—
La Paz		147·5	90	19 38	[0]	—	—	—	—

Additional readings and note :—
Osaka i = +4m.38s.
Sumoto iN = +4m.17s. =PP +0s., eN = +7m.56s.
Nagasaki eS = +5m.16s.; S is given as P for another shock, the eS being +12m.52s.

Aug. 13d. 10h. 39m. 44s. Epicentre 5°·7S. 151°·8E. (as on 1933 Nov. 22d.). X.

A = −·877, B = +·470, C = −·099; D = +·473, E = +·881; G = +·088, H = −·047, K = −·995.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	23·6	274	e 5 6	0	e 8 58	PcP	—	—
Riverview	28·2	181	e 7 40	?	e 10 58	+23	e 16·1	26·3
Sydney	28·2	181	—	—	e 11 13	+38	16·6	17·6
Melbourne	32·7	189	—	—	i 11 39	− 7	18·2	23·6
Manila	36·7	305	i 7 0	− 4	12 41	− 6	17·3	21·3
Christchurch	42·1	157	i 11 25	?	—	—	e 22·9	—
Perth	42·6	228	17 16	SS	—	—	—	—
Chiufeng	56·3	328	e 9 38	0	i 17 23	− 4	—	—
Agra	78·4	300	—	—	e 21 44	−14	—	—
Sitka	85·6	31	—	—	e 23 1	[− 2]	e 38·5	—

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent	88·2	314	e 14 55	?	23 8	[−13]	—	54·6
Pasadena	93·2	56	e 13 12	0	—	—	—	—
Mount Wilson	93·3	56	i 13 23	+10	—	—	—	—
Tinemaha	93·4	53	i 13 23	+10	—	—	—	—
Haiwee	93·5	54	i 13 23	+ 9	—	—	—	—
Sverdlovsk	95·4	327	e 17 12	PP	23 52	[−11]	50·3	—
Tiflis	106·5	313	—	—	e 24 47	[−10]	62·3	—
Pulkovo	110·3	333	—	—	e 25 3	[−12]	62·3	—
Copenhagen	120·5	335	—	—	25 46	[− 6]	68·3	—
Stuttgart	126·6	330	e 20 52	PP	—	—	e 79·3	—

Additional readings :—
Riverview eN = +15m.4s.
Sydney eP = +13m.34s.
Melbourne S = +13m.51s. =SSS +4s.
Tashkent e = +16m.25s. =PP +14s. and +24m.39s. =PS +9s.
Pasadena iZ = +13m.22s.
Tiflis eE = +27m.56s. =PS +3s. and +32m.28s.
Long waves were also recorded at Hong Kong, Wellington, and other European stations.

Aug. 13d. Readings from which no determination is made :—
Karenko eP =14h.28m.42s., S =28m.46s.
Huancayo eP =14h.37m.2s., iP =37m.4s., i =37m.9s., eS =41m.14s., iS = 41m.19s., eL =43m.5s.
La Paz ePN =14h.37m.18s., SN =41m.46s., LN =46m.18s.
Riverside iPEZ =14h.43m.4s.
Pasadena iPZ =14h.43m.6s.k.
Mount Wilson ePNE =14h.43m.7s.
Haiwee iPZ =14h.43m.14s.
Tinemaha iPEZ =14h.43m.18s.k
Berkeley eP =14h.43m.24s.
Sverdlovsk iP =14h.51m.37s.

Aug. 13d. 20h. Readings from which no determination is made :—
Karenko eP =38m.24s.
Taito P =38m.36s., eS =38m.45s.
Arisan iP =38m.39s., S =39m.27s.
Taihoku P =38m.40s., iS =38m.59s.
Tainan eP =39m.0s., S =39m.29s.

Aug. 13d. Readings also at 0h. (Riverview), 1h. (Mizusawa), 2h. (Sotchi), 4h. (Sucre and La Paz), 5h. (Mizusawa), 7h. (Malabar), 8h. (Andijan, Almata, Arapuni, and Frunse), 9h. (Mizusawa), 10h. (Chiufeng, Adelaide, Baku, Sverdlovsk, Vladivostok, Pasadena, Haiwee, and Tinemaha), 11h. (Oak Ridge (2)), 12h. (Oak Ridge (3)), 16h. (Karenko, Manila, and San Juan), 17h. (La Paz), 22h. (La Paz), 23h. (Tashkent, Manila, and Sverdlovsk).

Aug. 14d. 8h. 49m. 17s. Epicentre 19°·0S. 175°·5E. (given by Honolulu). N.2.

A = −·943, B = +·074, C = −·326 ; D = +·079, E = +·997 ;
G = +·325, H = −·026, K = −·946.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Apia	13·3	69	i 2 59	− 7	e 5 38	+ 4	7·7	8·1
New Plymouth	20·1	183	2 43	?	—	—	—	—
Wellington	22·3	181	5 1	+ 7	9 11	SS	—	—
Christchurch	24·7	185	i 5 17	0	i 9 35	− 1	—	—
Chatham Ils.	25·8	167	—	—	i 10 13	+18	—	—
Riverview	26·3	231	e 6 43	+71	e 10 25	+22	e 12·6	17·1
Melbourne	32·6	230	i 6 35	+ 7	11 57	+12	—	18·2
Adelaide	36·3	235	i 7 52	+52	e 17 5	(−15)	20·2	22·2
Honolulu	48·0	34	e 8 33	− 3	e 15 51	+18	e 24·4	—
Amboina	48·7	282	8 32	− 9	e 14 59	?	e 29·7	—

Continued on next page,

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	63·4	298	i 10 30	+ 2	18 57	− 3	30·0	35·0
Nagoya	65·4	327	e 10 40	− 1	—	—	—	—
Osaka	65·8	324	e 10 43	− 1	i 19 37	+ 7	—	—
Kobe	66·0	324	e 11 49	+64	—	—	—	—
Batavia	67·9	272	11 2	+ 4	20 7	PS	—	—
Zi-ka-wei	72·2	315	e 11 25	+ 1	—	—	35·0	39·4
Hong Kong	72·8	302	11 31	+ 3	20 20	−34	—	35·7
Vladivostok	73·9	328	11 36	+ 2	e 21 14	+ 7	e 30·2	—
Nanking	74·6	313	11 23	−15	21 3	−12	—	—
Berkeley	81·6	46	e 12 14	− 2	—	—	—	—
Chiufeng	81·7	318	e 12 11	− 6	e 22 15	−19	—	—
Pasadena	82·5	50	e 12 16k	− 5	—	—	—	—
Mount Wilson	82·7	50	i 12 17	− 5	—	—	—	—
Riverside	83·0	50	i 12 21	− 2	—	—	—	—
Haiwee	83·6	48	i 12 21	− 5	—	—	—	—
Tinemaha	83·9	47	i 12 27	− 1	—	—	—	—
Sitka	86·4	24	e 12 38	− 2	e 23 32	+11	—	—
Huancayo	103·6	108	e 27 20	PS	—	—	e 48·2	—
Agra	104·9	294	e 17 59	PP	—	—	—	—
Tashkent	114·4	308	e 14 45	− 7	i 29 10	PS	42·7	63·1
Ottawa	116·6	47	e 19 43	PP	e 29 25	PS	—	—
Sverdlovsk	119·3	326	e 18 49	[+ 5]	e 30 8	PS	51·7	69·3
San Juan	121·9	80	e 20 26	PP	—	—	e 55·7	—
Pulkovo	132·3	337	i 19 12	[+ 1]	—	—	58·7	92·8
Tiflis	132·6	310	19 15	[+ 4]	—	—	e 62·7	74·5
Helsingfors	133·8	342	e 19 14	[+ 1]	e 26 52	[+22]	e 57·7	—
Theodosia	138·0	318	e 22 50	PKS	—	—	—	—
Simferopol	138·8	317	e 19 24	[+ 4]	—	—	—	—
Yalta	139·0	317	e 23 1	PKS	—	—	—	—
Copenhagen	141·1	345	22 31	PP	—	—	64·7	—
Edinburgh	143·1	359	e 20 43?	?	—	—	—	—
Hamburg	143·7	347	e 19 29	[− 1]	—	—	—	—
Göttingen	145·5	345	i 19 35	[+ 1]	—	—	—	—
Jena	145·6	342	e 19 34	[− 1]	—	—	—	—
De Bilt	146·1	349	e 19 36	[0]	—	—	e 68·7	84·6
Vienna	146·2	335	i 19 37	[+ 1]	—	—	—	—
Uccle	147·4	350	e 19 41	[+ 3]	—	—	e 68·7	—
Kew	147·4	355	i 19 44	[+ 6]	—	—	e 71·7	—
Zagreb	148·3	334	e 19 42	[+ 3]	—	—	—	—
Stuttgart	148·4	344	e 19 41	[+ 1]	—	—	e 71·7	—
Strasbourg	148·8	345	e 19 42	[+ 2]	—	—	e 75·7	—
Zurich	149·7	342	e 19 43	[+ 2]	—	—	—	—
Basle	149·8	344	e 19 42	[+ 1]	—	—	—	—
Venice	150·2	336	20 36	{+36}	22 22	?	—	—
Neuchatel	150·5	344	e 19 49	[+ 7]	—	—	—	—
Piacenza	151·4	339	19 58	[+14]	(33 55)	SKSP	—	33·9
Prato	151·9	336	e 19 52	[+ 8]	—	—	—	—
Toledo	159·2	359	e 19 55	[+ 2]	—	—	—	—
Alicante	160·3	350	e 20 6	[+12]	—	—	—	—
Granada	161·8	357	e 19 47	[− 8]	—	—	—	—
Almeria	162·0	354	e 20 6	[+10]	—	—	—	—
San Fernando	162·5	5	(20 5)	[+ 9]	20 5	PKP	—	—

Additional readings :—
Wellington P_cP? = +9m.22s., P_cS? = +10m.33s., S_cS = +14m.23s.
Christchurch iZ = +5m.58s., iEZ = +10m.55s., iE = +12m.37s., iNZ = +14m.24s., iZ = +16m.15s.
Melbourne i = +7m.30s. = PP +0s. and +7m.49s.
Adelaide i = +12m.1s.
Osaka i = +13m.31s. and +14m.40s.
Kobe eN = +11m.55s., eE = +12m.0s., eN = +12m.9s., eE = +12m.31s.
Hong Kong PP? = +14m.14s., ? = +20m.59s., SS = +25m.42s.
Chiufeng P = +12m.15s.
Pasadena eZ = +15m.21s. = PP −4s.

Continued on next page.

Huancayo e = +32m.30s., eSS = +33m.6s. ; T_0 = 8h.49m.14s.
Tashkent i = +19m.33s. = PP + 4s. and +20m.48s., e = +35m.25s. = SS + 7s.
Sverdlovsk i = +20m.10s. = PP + 6s. and +23m.42s., e = +36m.35s. = SS + 12s. and +41m.0s.
Pulkovo i = +22m.35s. = PKS − 8s.
Tiflis iNE = +22m.46s. = PKS + 1s., eN = +43m.43s.
Helsingfors ePPNE = +22m.56s. = PKS + 7s., eSKKSN = +30m.19s., ePPSN = +34m.35s. ; T_0 = 8h.49·8m.
Simferopol e = +23m.1s. = PKS − 5s.
Copenhagen +23m.7s. = PKS − 4s.
Jena eEN = +19m.37s., e = +19m.39s.
De Bilt iZ = +19m.41s.
Vienna iEZ = +19m.44s., iNE = +20m.1s.
Uccle i = +19m.46s.
Stuttgart e = +19m.45s. and +20m.57s., ePPZ = +23m.1s.
Strasbourg ePPE = +23m.17s.
Granada e = +20m.47s. = PKP_2 − 5s.
San Fernando SN = +20m.32s.
Long waves were also recorded at Perth, Phu-Lien, and Paris.

Aug. 14d. Readings also at 2h. (Berkeley), 5h. (Tiflis), 7h. (Taihoku), 8h. (Prague), 10h. (Ivigtut and Paris), 11h. (Berkeley), 13h. (Berkeley and Lick), 14h. (Amboina), 17h. (Kobe, Koti, and Sumoto), 23h. (Oak Ridge (2)).

Aug. 15d. 11h. 4m. 14s. Epicentre 12°·0N. 89°·0W. (as on 1926 Feb. 8d.). X.
Given by Columbia.

A = +·017, B = −·978, C = +·208 ; D = −1·000, E = −·017 ;
G = +·004, H = −·208, K = −·978.

	△	Az.	P.	O − C.	S.	O − C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
San Juan	22·9	71	e 5 1	+ 1	e 9 8	+ 5	e 12·1	—
Columbia	23·1	17	e 5 4	+ 2	e 9 16	+ 9	—	—
St. Louis	26·6	358	e 5 38	+ 3	e 10 6	− 3	—	—
Florissant	26·9	358	e 5 47	+10	i 10 10	− 4	—	—
Tucson	28·5	319	e 5 52	0	—	—	e 13·9	—
Georgetown	28·9	19	e 5 56	+ 1	i 10 48	+ 1	e 13·8	—
Ann Arbor	30·6	8	e 9 28	(+16)	e 11 10	− 4	e 18·1	—
Toronto	32·7	13	5 51	−38	10 38	−68	e 13·4	—
Riverside	33·9	315	i 6 38	− 1	—	—	—	—
Oak Ridge	34·1	23	i 6 42	+ 1	e 11 49	−19	e 16·4	—
Mount Wilson	34·5	315	i 6 45	0	—	—	—	—
Pasadena	34·5	315	i 6 44k	− 1	—	—	—	—
Ottawa	35·2	16	e 6 54	+ 3	e 12 24	0	e 17·8	—
Haiwee	35·6	318	i 6 52	− 2	—	—	—	—
Tinemaha	36·3	320	i 7 0	0	—	—	—	—
Ukiah	40·6	318	—	—	e 13 52	+ 7	—	—
Victoria	46·2	330	8 16	− 6	15 8	+ 1	—	—
Ivigtut	57·4	22	—	—	19 37	(+ 3)	25·8	—
Uccle	82·8	40	e 12 24	+ 2	e 22 45	0	e 38·8	—
De Bilt	83·1	38	12 26	+ 2	e 22 42	[− 3]	e 38·8	—
Strasbourg	85·4	42	e 12 34	− 1	—	—	e 35·8	—
Stuttgart	86·2	41	e 12 32	− 7	e 23 2	[− 6]	e 37·8	—
Copenhagen	86·4	33	12 40	0	23 7	[− 2]	43·8	—
Pulkovo	93·5	26	e 13 16	+ 2	e 23 48	[− 5]	49·8	57·4
Sverdlovsk	106·7	17	e 19 39	?	e 24 54	[− 4]	49·8	—
Tashkent	123·0	19	e 20 31	PP	e 27 1	{−35}	—	—

Additional readings :—
San Juan e = +5m.35s. and +10m.21s. ; T_0 = 11h.4m.6s.
St. Louis epPN? = +6m.2s., ePPN = +6m.11s., iN = +10m.19s., esSN? = +10m.56s., eSSE = +11m.4s. ; T_0 = 11h.4m.18s.
Tucson e = +8m.38s., eSS = +12m.39s.
Georgetown i = +6m.34s.
Oak Ridge ePPNE = +7m.48s.
Pasadena iZ = +9m.18s. = P_cP − 6s.
Tinemaha iZ = +9m.24s. = P_cP − 6s.
De Bilt eN = +22m.50s.
Copenhagen +24m.28s.
Sverdlovsk e = +26m.15s. and +28m.4s.
Tashkent e = +22m.22s. and +46m.52s.
Long waves were also recorded at Kew, Edinburgh, Seattle, Sitka, Tiflis, and other European stations.

Aug. 15d. Readings also at 0h. (Amboina), 5h. (Edinburgh, Ivigtut, De Bilt, Uccle, Copenhagen, Paris, Medan, Stuttgart, and Strasbourg), 7h. (Santiago and Berkeley), 11h. (Andijan, Frunse, Tashkent, Tchimkent, and Almata), 12h. (Algiers, Andijan, Frunse, Tashkent, Sverdlovsk, Hastings, and Mizusawa), 15h. (Sverdlovsk, Tashkent, Pulkovo, Hong Kong, Manila, and Hukuoka), 16h. (Wellington and Glenmuick), 17h. (Tiflis and Berkeley), 19h. (Jena, La Paz, Pasadena, San Juan, Riverside, and Mount Wilson), 21h. (Mizusawa).

Aug. 16d. Readings from which no determination is made :—

Balboa Heights 14h.41m.49s.
Ottawa eN =14h.43m.30s., e =46m.0s., eN =49m.48s., eL =58m.
Huancayo e =14h.45m.8s., e =46m.2s., e =48m.50s., e =49m.22s., eL =52m.23s.
Oak Ridge eNE =14h.48m.42s., eNW =48m.48s., eLNE =57m.36s.
San Juan e =14h.45m.24s.
Strasbourg eLN =14h.50m.
De Bilt eZ =14h.53m.18s., eL =15h.20m.
Stuttgart eZ =14h.53m.30s., eL =15h.22m.
Copenhagen 14h.54m., 15h.4m.
La Paz L =14h.56m.0s., M =59m.0s.
Pulkovo e =14h.58m.10s., e =15h.6m.44s., L =24m., M =30m.30s.
Ann Arbor eL?N =15h.0m.12s., eLN =1m.42s., eL?E =3m.48s.
Paris 15h.21m.
Sverdlovsk e =15h.9m., L =33m.
Cape Town 15h.36m.
Tashkent M =15h.48m.24s.

Aug. 16d. Readings also at 2h. (Durban, Edinburgh, Kew, Stonyhurst, and Basle), 3h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Haiwee, San Juan, La Plata, La Paz, and Sucre), 4h. (Wellington and Christchurch), 7h. (Sitka and Berkely), 10h. (Yalta, Simferopol, and Theodosia), 14h. (Oak Ridge), 15h. (Tyosi), 17h. (Manila and Malabar), 22h. and 23h. (Mizusawa).

Aug. 17d. Readings from which no determination is made :—

La Paz ePN =0h.19m.15s., LN =30m.24s., M =33m.57s.
Pasadena ePZ =0h.20m.11s., iZ =20m.15s.
Riverside eZ =0h.20m.14s.
Mount Wilson eZ =0h.20m.15s.
Haiwee eE =0h.20m.34s.
Tinemaha eZ =0h.20m.37s.
Huancayo e =0h.23m.21s., e =24m.2s., e =26m.55s., e =27m.32s., eL =28m 2s.
Sverdlovsk e =0h.30m.11s., L =71m.
Tashkent e =0h.56m.2s., e =63m.2s., e =81m.2s., e =91m.0s., M =112m.42s.

Aug. 17d. Readings from which no determination is made :—

Frunse eP =12h.34m.57s.?, e =34m.45s.?, M =34m.51s.?
Almata eP =12h.35m.2s., i =35m.44s.
Tashkent iP =12h.36m.0s., e =36m.43s., eL =37m.3s.
Andijan e =12h.36m.0s., M =36m.12s.
Tchimkent e =12h.37m.18s.
Sverdlovsk e =12h.43m.48s., e =45m.52s.

Aug. 17d. Readings also at 0h. (Tyosi (2)), 1h. (Manila), 3h. (Medan), 4h. (Tananarive), 5h. (Tananarive), 6h. (Andijan), 16h. (Lick and Berkeley), 17h. (Oak Ridge), 18h. (Lick and Branner), 19h. (La Jolla, Riverside, Pasadena, Mount Wilson, Haiwee, Tinemaha, and Mizusawa), 20h. (Tiflis, Grozny, and Oak Ridge), 21h. (Oak Ridge).

Aug. 18d. 2h. 38m. 43s. Epicentre 35°·7N. 137°·0E. N.1.

Tokyo gives 35°·72N. 137°·03E., 10-15km. deep.

A = −·594, B = +·554, C = +·584; D = +·682, E = +·731; G = −·427, H = +·398, K = −·812.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Gihu	0·4	230	0 1	− 5	0 5	− 5	—	—
Takayama	0·5	20	0 5	− 2	0 13	0	—	—
Nagoya	0·5	188	0 3	− 4	0 10	− 3	—	0·2
Ibukisan	0·6	238	0 7	− 2	0 13	− 2	—	—
Iida	0·7	107	0 4	− 6	0 15	− 3	—	—
Hikone	0·8	235	0 8	− 3	0 19	− 2	—	—
Matumoto	1·0	57	0 12	− 2	0 27	+ 1	—	—
Kameyama	1·0	207	0 11	− 3	0 25	− 1	—	—
Hamamatu	1·1	147	0 15	− 1	0 30	+ 2	—	—
Husiki	1·1	2	0 17	+ 1	0 34	S_g	—	—
Tu	1·1	203	0 15	− 1	0 31	S*	—	—
Kyoto	1·2	233	0 17	0	0 33	S*	—	—
Kohu	1·3	93	0 17	− 1	0 34	+ 1	—	—
Nagano	1·3	45	0 21	P_g	0 40	S_g	—	—
Hunatu	1·4	98	0 20	0	0 35	− 1	—	—
Oiwake	1·4	64	0 20	0	0 41	S*	—	—
Omaesaki	1·5	138	0 21	0	0 40	+ 1	—	—
Yagi	1·5	219	0 20	− 1	0 42	S*	—	—
Miyadu	1·5	263	0 20	− 1	0 39	0	—	—
Numadu	1·6	112	0 22	− 1	0 46	S_g	—	—
Osaka	1·6	231	0 23	0	0 45	S*	—	1·2
Osaka B	1·6	231	0 23	0	0 46	S*	—	—
Misima	1·7	112	0 23	− 1	0 45	+ 1	—	—
Takada	1·7	35	0 30	P_g	0 52	S_g	—	—
Wazima	1·7	356	0 25	+ 1	0 50	S_g	—	—
Maebasi	1·8	67	0 26	0	0 52	S_g	—	—
Toyooka	1·8	264	0 25	− 1	0 49	S*	—	1·0
Kobe	1·8	235	e 0 26	0	i 0 50	S*	—	0·9
Ito	1·9	114	0 28	0	0 53	S*	—	—
Kumagaya	2·0	76	0 30	+ 1	0 58	S_g	—	—
Sumoto	2·2	231	0 31	0	0 58	+ 1	—	1·1
Yokohama	2·2	96	0 34	P_g	1 5	S_g	—	—
Tokyo	2·2	91	0 35	P_g	1 4	S_g	—	1·2
Wakayama	2·2	229	0 29	− 2	0 56	− 1	—	—
Mera	2·5	109	0 38	P*	1 14	S*	—	—
Tukubasan	2·5	77	0 36	0	1 14	S*	—	—
Siomisaki	2·5	204	0 33	− 3	1 7	+ 3	—	—
Kakioka	2·6	77	0 35	− 2	1 16	S*	—	—
Mito	2·9	76	0 42	+ 1	1 19	+ 5	—	—
Tyosi	3·2	89	e 0 46	0	1 35	S*	—	1·8
Hukusima	3·5	54	0 51	+ 1	1 43	S*	—	—
Hatidyozima	3·5	138	0 51	+ 1	1 31	+ 1	—	—
Koti	3·6	234	0 50	− 1	i 1 35	+ 3	—	1·9
Sendai	3·8	47	1 3	P*	2 9	?	—	—
Matuyama	4·0	244	0 56	− 1	2 26	?	—	—
Hamada	4·1	260	0 59	+ 1	1 46	+ 1	—	—
Simidu	4·4	230	0 58	− 5	2 13	S_g	—	—
Akita	4·7	30	1 14	P*	2 40	?	—	—
Mizusawa	4·8	42	i 1 15	P*	2 10	+ 7	—	—
Morioka	5·2	37	1 16	+ 2	1 2 20	+ 7	—	—
Hukuoka	5·9	251	e 1 27	+ 3	i 2 57	S*	—	3·1
Hukuoka B	5·9	251	1 27	+ 3	2 57	S*	—	3·2
Miyazaki	5·9	232	1 25	+ 1	2 33	+ 2	—	—
Kumamoto	5·9	243	1 25	+ 1	2 5	?	—	—
Unzendake	6·3	244	1 18	−12	3 15	S*	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Husan	6·5	267	i 1 43	P*	3 21	S*	—	—
Nagasaki	6·6	246	1 36	+ 2	e 2 57	+ 9	i 3·4	3·9
Kagosima	6·7	234	1 35	0	2 57	+ 6	—	—
Taikyu	6·7	274	1 36	+ 1	3 16	S*	—	—
Tomie	7·5	248	1 44	− 2	3 29	+18	—	—
Keizyo	8·2	286	e 2 4	+ 8	3 41	+12	4·6	—
Vladivostok	8·3	333	e 2 4	+ 6	3 42	+11	—	5·4
Zinsen	8·5	285	e 2 6	+ 6	e 3 53	+17	e 4·6	—
Heizyo	9·5	294	2 21	+ 7	4 29	?	6·0	7·0
Titizima	9·7	152	5 17	S_g	—	—	—	—
Nake	9·7	222	2 13	− 4	5 36	?	—	—
Naha	12·8	221	2 41	−18	5 16	− 6	—	—
Zi-ka-wei	13·8	255	e 3 17	+ 4	6 4	+18	8·4	9·4
Nanking	15·6	262	3 42	+ 6	e 7 55	?	10·4	—
Taihoku	17·0	235	9 14	?	—	—	—	—
Chiufeng	17·0	291	3 54k	0	7 18	SS	8·6	9·6
Hong Kong	24·2	242	—	—	9 31	+ 4	11·3	13·4
Manila	25·5	218	5 37	+12	9 59	+ 9	—	—
Medan	47·7	237	e 11 42	?	—	—	e 27·9	—
Agra	50·3	278	—	—	e 16 22	+17	—	—
Tashkent	52·0	298	i 9 17	+11	16 27	− 1	e 24·7	30·1
Sverdlovsk	53·6	319	e 9 24	+ 6	e 16 51	+ 1	28·6	30·3
Pulkovo	67·3	329	—	—	e 19 57	+ 9	34·3	39·9
Tiflis	68·6	307	—	—	e 20 23	+19	e 34·3	42·0
Copenhagen	77·2	331	—	—	21 47	+ 2	39·3	—
Prague	80·5	327	—	—	e 38 0	?	e 39·3	45·3
Edinburgh	82·5	339	—	—	e 22 17?	−25	e 45·3	—
De Bilt	82·7	332	—	—	e 34 47	?	e 39·3	46·7
Stuttgart	83·7	328	e 12 17	−10	e 22 47	[− 2]	e 39·3	47·9
Triest	83·9	324	—	—	e 22 38	[−13]	e 40·3	46·3
Strasbourg	84·2	329	—	—	e 23 3	+ 3	e 40·3	—

Additional readings :—
Osaka i = +26s. = P_g +0s.
Kobe iENZ = +31s. = P_g +1s.
Mizusawa iSN = +2m.15s.
Nanking eSNZ = +8m.10s.
Pulkovo e = +27m.52s. = SSSS − 1s.
Tiflis eE = +30m.28s.
Triest e = +33m.17s.
Long waves were also recorded at Kew, Bidston, Stonyhurst, Bombay, Phu-Lien, and other European stations.

Aug. 18d. 3h. 47m. 2s. (I) } Epicentre 35°·7N. 137°·0E. X.
5h. 6m. 36s. (II) } (as at 2h.). X.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
I Nagoya	0·5	188	i 0 4	− 3	0 12	− 1	0·2
II	0·5	188	i 0 3	− 4	0 9	− 4	0·2
I Osaka	1·6	231	0 24	+ 1	0 46	S*	1·0
II	1·6	231	0 23	0	0 45	S*	1·1
I Toyooka	1·8	264	0 28	+ 2	0 51	S*	0·9
II	1·8	264	0 27	+ 1	0 50	S*	0·9
I Kobe	1·8	235	0 34	P_g	i 0 52	S*	0·9
I Sumoto	2·2	231	e 0 35	P*	1 2	S*	1·1
II	2·2	231	0 35	P*	1 1	S*	1·1

Additional readings :—
I Osaka i = +27s. = P_g +1s., II i = +35s.

Aug. 18d. 10h. 21m. 3s. Epicentre 37°·5N. 136°·0E. (as on 1933 Aug. 30d.). X.

A = −·571, B = +·551, C = +·609.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Nagoya	2·5	161	i 0 35	− 1	i 1 6	+ 2	1·1
Osaka	2·9	188	0 43	+ 2	1 22	S*	1·7
Kobe	2·9	194	0 46	P*	1 25	S*	1·4
Sumoto	3·3	196	i 0 47	0	i 1 27	+ 2	1·4
Mizusawa	4·3	67	1 17	P_g	i 2 21	S_g	—
Tyosi	4·3	112	e 0 49	−12	1 21	P_g	—
Koti	4·4	206	i 1 1	− 2	i 1 52	− 1	—
Nagasaki	6·9	227	1 39	+ 1	e 3 2	+ 6	—

Aug. 18d. Readings also at 1h. (Basle), 2h. (Andijan, La Paz, Sitka, and Tashkent), 3h. (Nagoya), 5h. (Kobe, La Jolla, Pasadena, and Riverside), 7h. (Haiwee, La Jolla, Mount Wilson, Nagoya, Pasadena, Riverside, and Tinemaha), 9h. (Andijan, Almata, Frunse, Nagoya, and Tashkent), 10h. (Pulkovo, Sverdlovsk, and Tashkent), 11h. (Kobe), 13h. (Batavia and Medan), 14h. (Mizusawa), 15h. (Andijan, Almata, Frunse, Glenmuick, Stuttgart, Tashkent, and Wellington), 16h. (De Bilt and Tucson), 19h. (Mizusawa, Oak Ridge, and Wellington), 22h. (Nagoya), 23h. (Nagoya, Sverdlovsk, Tiflis, and Tashkent).

Aug. 19d. Readings from which no determination is made, but probably near to 70°·0N. 19°·0W. (as on 1931 Sept. 19d.).

Helsingfors e?N = 23h.31m.0s., eL = 42m.
Pulkovo e = 23h.39m.21s., e = 42m.49s., L = 44m.18s., M = 45m.6s.
Stuttgart ePZ = 23h.39m.54s., eS = 44m.25s., eL = 50m., M = 51m.36s.
Sverdlovsk e = 23h.40m.58s., e = 46m.19s., e = 47m.28s., L = 49m.30s.
Copenhagen S = 23h.42m., L = 45m.
Triest e = 23h.42m.42s., M = 51m.29s.
Ivigtut L = 23h.43m.
Stonyhurst eL = 23h.44m.0s.
Kew eL = 23h.44m.
Uccle eL = 23h.45m.
De Bilt eL = 23h.45m., M = 45m.48s.
Strasbourg eN = 23h.45m.
Durham M? = 23h.45m.
Florence e = 23h.45m.0s., M = 50m.0s.
Paris 23h.48m.
Oak Ridge eP? = 23h.48m.21s., eS?NE = 51m.41s., eS?NW = 51m.43s., eNW = 53m.5s., eLNW = 54·5m., eLNE = 55·5m.
Tashkent e = 23h.50m.15s., e = 53m.36s., eL = 58m., M = 24h.3m.24s.
San Fernando LE = 23h.52m.30s.
Alicante eL = 23h.55m.15s.
Sitka eL = 23h.58m.0s.

Aug. 19d. Readings also at 2h. (Frunse and Andijan), 3h. (Nagoya, Mizusawa, and Tyosi), 5h. (Tyosi), 8h. (Frunse, Andijan, and Almata), 11h. (Sumoto, Tyosi, and Mizusawa), 12h. (Wellington), 14h. (Malabar and Batavia), 15h. (Mizusawa), 18h. (Nagoya), 19h. (Apia), 21h. (Andijan, Almata, and Frunse), 22h. (Tiflis and Triest).

Aug. 20d. 0h. 47m. 29s. Epicentre 37°·0N. 89°·2W. N.3.
Given by Bradford and Dahn, see Bull. Seis. Soc., Amer., Vol. 25, No. 2.

A = +·011, B = −·799, C = +·602; D = −1·000, E = −·014.
G = +·008, H = −·602, K = −·799.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
St. Louis	1·8	334	e 0 29	+ 3	e 0 53	S*	—
Ann Arbor	6·8	37	—	—	i 3 25	S*	—
Georgetown	9·8	74	—	—	e 4 46	S*	—
Toronto	10·0	45	—	—	i 5 1	S*	—
Ottawa	13·2	46	—	—	e 6 0	?	e 6·7
Oak Ridge	14·6	62	i 3 21	− 2	e 6 13	+ 8	i 7·5
Tucson	18·4	261	e 9 44	L	—	—	(e 9·7)

Additional readings:—
St. Louis iP*EN = +32s. = P_g +2s., iS*E = +55s. = P_g +2s. T_0 = 0h.47m.27s.
Georgetown i = +4m.55s. and +5m.49s.
Toronto eN = +5m.55s.
Ottawa eE = +6m.22s. = S*.

Aug. 20d. Readings from which no determination is made:—
Tinemaha iPENZ = 7h.59m.4s.
Mount Wilson iPZ = 7h.59m.19s.
Pasadena iPEZ = 7h.59m.19s. a.
Riverside iPZ = 7h.59m.22s.
La Jolla iPEZ = 7h.59m.30s.

Aug. 20d. 9h. 34m. 56s. Epicentre 35°·7N. 134°·8E. (as on 1933 May 20d.). X.

A = −·572, B = +·576, C = +·584; D = +·710, E = +·705;
G = −·411, H = +·414, K = −·812.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Toyooka	0·2	175	0 2	− 1	0 6	+ 1	0·1
Kobe	1·1	163	0 17	+ 1	i 0 29	+ 1	0·5
Osaka	1·2	154	0 21	+ 4	0 36	S*	0·6
Sumoto	1·4	177	e 0 17	− 3	0 39	S*	0·7
Nagoya	1·8	107	0 34	P_g	0 51	S*	0·9

Sumoto ePE = +20s., ePZ = +22s.

Aug. 20d. Readings also at 0h. (Tashkent), 1h. (Mizusawa), 3h. (Nagoya and St. Louis), 4h. (Grozny), 6h. (La Paz and Sucre), 8h. (Koti, Sumoto, La Paz, and Wellington), 11h. (Nagoya), 12h. (Mount Wilson and Pasadena), 13h. (Mizusawa), 14h. (Nagoya), 16h. (Tucson), 17h. (Koti), 18h. (Ferndale).

Aug. 21d. 2h. Readings from which no determination is made:—
Osaka P = 2h.55m.15s., S = 55m.55s., MN = 56m.16s.
Sumoto ePN = 2h.55m.15s., ePE = 55m.18s., ePZ = 55m.21s., S = 56m.3s., MEN = 56m.5s.
Tyosi P = 2h.55m.45s.
Kobe PEN = 2h.55m.57s., i = 55m.59s., eSEN = 56m.47s., eZ = 56m.58s., M = 57m.8s.
Mizusawa iS = 2h.56m.49s.

Aug. 21d. 6h.
Batavia P = 6h.36m.40s., iS = 37m.32s.
Soengei Langka eP = 6h.36m.46s.
Malabar P = 6h. 36m.57s., iS = 37m.55s.
Medan P = 6h.40m.27s.
Tashkent eL = 6h.56m.6s., M = 7h.0m.48s.
San Juan eL = 6h.58m.0s.
Tucson eL = 7h.0m.0s.
Oak Ridge L = 7h.8m.
Sverdlovsk L = 7h.13m.

Aug. 21d. 9h. Readings from which no determination is made :—
Christchurch eP? =9h.45m.40s., ePcP =47m.17s., S? =52m.4s., ScS =54m.56s., LR =58m.20s.
Riverview e? =9h.47m.18s., e =48m.36s., eL =53m.42s., MN =58m.4s.
Chiufeng e =9h.48m.59s. and =58m.19s.
Wellington iL =9h.49m.
Melbourne e =9h.52m.24s., i =53m.48s., L =57m.15s., M =57m.42s.
Adelaide e =9h.57m.0s., M =10h.1m.42s.
San Juan e =10h.0m.35s.
Perth P =10h.2m.0s.
Sitka e =10h.28m.0s.
Oak Ridge L =10h.45·5m.
Tucson eL =11h.22m.

Aug. 21d. 17h.
Tucson e =17h.51m.45s., eL =55m.0s.
La Jolla ePNZ =17h.52m.26s.
Riverside ePZ =17h.52m.33s.
Pasadena ePZ =17h.52m.37s., eLZ =59m.39s.
Mount Wilson iPZ =17h.52m.39s.
Haiwee ePN =17h.52m.46s.
Tinemaha iPENZ =17h.53m.3s.
St. Louis ePEN =17h.53m.25s., eSEN =18h.0m.54s.
Pittsburgh e =18h.1m.12s., e =5m.4s., e =7m.57s., e =9m.29s.
Bozeman e =18h.4m.0s.
Oak Ridge L =18h.8·5m. and 11·5m.
Sitka e =18h.13m.0s.

Aug. 21d. 19h. 26m. 21s. Epicentre 0°·4N. 98°·0E. N.2.

A = −·139, B = +·990, C = +·007 ; D = +·990, E = +·139 ; G = −·001, H = +·007, K = −1·000.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Medan	3·3	13	i 0 54	P*	i 1 38	S*	—	—
Soengei Langka	9·2	129	2 29	+19	4 19	?	—	—
Batavia	11·0	127	i 2 21	−14	i 5 1	+23	—	—
Malabar	12·2	129	i 2 40	−11	i 4 44	−23	—	—
Colombo	19·2	290	4 32	PP	8 12	SS	10·3	11·6
Phu-Lien	22·1	22	e 4 57	+ 5	8 59	+11	10·7	—
Calcutta	24·0	338	4 45	−25	—	—	e 16·6	20·0
Manila	26·8	57	5 37a	+ 1	10 37	+25	14·2	17·3
Hong Kong	27·0	35	5 40	+ 2	10 9	− 6	12·8	18·7
Bombay	30·8	308	e 6 33	+21	11 19	+ 2	—	19·0
Agra	32·9	326	e 6 43	+12	11 45	− 4	18·1	—
Taihoku	33·5	41	6 39	+ 3	—	—	—	—
Dehra Dun	35·4	329	12 59	S	(12 59)	+32	21·0	22·7
Perth	36·5	156	11 39	?	18 29	?	25·3	—
Nanking	37·2	30	7 6	− 2	i 17 17	(− 8)	e 22·0	24·9
Zi-ka-wei	38·0	34	7 16	+ 1	—	—	21·8	25·4
Chiufeng	43·0	20	e 7 55	− 2	14 19	− 3	e 20·3	28·3
Nagasaki	44·1	40	8 50	?	e 17 49	SS	—	—
Husan	45·1	36	e 8 15	+ 1	e 15 1	+ 9	—	—
Zinsen	45·5	32	—	—	e 17 25	SS	e 25·1	—
Tashkent	45·6	331	i 8 40	+22	i 15 41	+42	e 22·5	32·9
Keizyo	45·8	32	15 5	S	(15 5)	+ 3	e 23·1	—
Andijan	46·6	333	7 52	−33	14 39	−34	27·7	—
Almata	46·8	339	e 8 41	+14	—	—	—	—
Koti	47·0	42	8 27	− 2	15 19	0	30·7	—
Frunse	47·4	337	8 32	0	15 30	+ 6	29·7	—
Sumoto	48·4	41	8 35	− 4	15 38	0	e 25·7	32·5
Kobe	48·7	42	8 37	− 4	e 15 39	− 4	—	21·7
Osaka	49·0	42	8 45	+ 1	15 48	+ 1	—	—
Kameyama	49·7	42	8 49	0	15 57	0	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hunatu	51·6	43	9 2	− 1	—	—	—	—
Vladivostok	52·4	32	i 9 11	+ 2	i 16 35	+ 1	24·2	34·7
Tananarive	53·1	246	9 13	− 2	16 51	+ 8	e 24·5	28·2
Mizusawa	55·2	41	e 8 58	?	e 9 43	P	—	—
Melbourne	57·6	137	—	—	17 33	−11	28·7	35·0
Riverview	60·4	130	—	—	e 18 11	−10	e 32·7	36·7
Sydney	60·4	130	e 33 39	?	—	—	39·6	40·9
Tiflis	63·1	318	10 26	0	18 55	− 1	36·2	43·7
Grozny	63·3	320	e 10 29	+ 2	e 19 25	PS	—	—
Sverdlovsk	63·8	340	i 10 30	− 1	i 19 4	− 1	38·7	39·9
Ksara	66·9	306	e 10 56	+ 5	e 19 48	+ 5	32·0	37·1
Helwan	69·7	301	e 11 16	+ 7	e 20 20	+ 2	—	42·3
Theodosia	70·7	318	e 11 13	− 2	e 20 27	− 3	36·7	—
Yalta	71·3	317	e 11 17	− 2	20 35	− 2	—	—
Sebastopol	71·8	317	e 11 21	− 1	e 20 40	− 3	—	—
Simferopol	72·2	318	e 11 20	− 4	20 38	− 9	—	—
Pulkovo	78·6	333	12 4	+ 4	21 50	−10	39·7	49·8
Helsingfors	81·3	331	—	—	e 22 20	−10	e 39·7	—
Cape Town	81·6	237	13 40	?	22 34	+ 1	37·7	44·7
Vienna	84·1	318	i 12 29	0	e 22 55	− 4	—	22·8
Prague	85·6	320	e 21 6	?	e 28 52	SS	e 47·7	57·7
Triest	85·7	316	e 12 57	+20	i 23 0	[− 4]	—	49·7
Copenhagen	87·1	327	12 54	+10	23 24	− 4	45·6	—
Florence	87·3	314	12 43	− 2	i 23 18	[+ 3]	35·7	41·7
Prato	87·4	314	e 12 46	+ 1	i 23 25	− 6	—	—
Hamburg	88·5	324	e 12 39?	−11	e 23 21	[− 2]	e 45·7	57·7
Piacenza	88·5	315	23 39	S	(23 39)	− 3	—	—
Stuttgart	88·8	319	e 12 52	0	e 23 56	+11	e 49·7	60·3
Strasbourg	89·9	319	—	—	e 23 39?	[+ 7]	e 54·7	—
De Bilt	91·4	323	e 13 16	+12	e 24 4	− 5	e 49·7	56·4
Uccle	92·0	321	—	—	e 23 38	[− 6]	e 41·7	—
Oxford	95·4	322	—	—	e 24 39	− 7	e 53·7	65·2
Edinburgh	95·9	327	—	—	e 57 39?	?	e 64·7	—
Sitka	108·6	27	—	—	e 25 3	[− 4]	—	—
Tinemaha	129·7	38	i 19 8	[+ 2]	—	—	—	—
Haiwee	130·5	39	e 19 7	[− 1]	—	—	—	—
Pasadena	131·6	41	i 19 9	[− 1]	—	—	—	—
Mount Wilson	131·7	41	i 19 10	[0]	—	—	—	—
Riverside	132·2	40	i 19 10	[− 1]	—	—	—	—
La Jolla	133·0	42	e 12 36	PKS	—	—	—	—
Ottawa	133·9	354	—	—	e 28 39?	{− 7}	e 62·7	—
Oak Ridge	136·1	350	i 19 16	[0]	—	—	e 69·1	—
Sucre	155·2	220	e 19 57	[+ 9]	—	—	57·7	—
La Paz	158·9	220	i 19 58$_a$	[+ 6]	—	—	77·1	82·0

Additional readings :—
Medan +1m.54s. and +1m.59s. =S* −1s.
Batavia iE = +3m.58s., iN = +4m.11s., iE = +5m.19s. and +6m.13s.
Calcutta PP = +6m.8s., SS = +13m.25s.
Hong Kong ? = +6m.19s. =PP +2s., SS = +10m.56s., ? = +12m.9s.
Bombay SSS = +13m.40s.
Agra SSS? = +14m.29s.
Dehra Dun S = +15m.59s.
Perth P_cP = +13m.9s., PP = +13m.39s., PPP = +14m.4s., P_cS = +17m.9s., PS = +18m.44s., SS = +22m.4s.
Nanking eSS = +19m.15s.
Sumoto PEN = +8m.38s.
Kobe iPN = +8m.42s., iPE = +8m.44s., eSE = +15m.45s.
Osaka i = +11m.4s., +11m.42s., +19m.20s., and +20m.49s.
Tananarive (PPP)E = +12m.22s., E = +17m.7s.
Riverview e = +28m.33s.
Tiflis ePP = +12m.57s.
Sverdlovsk L_q = +23m.15s.
Helsingfors eSSNE = +28m.59s.
Cape Town N = +22m.30s., E = +27m.49s., N = +33m.38s.
Prague ePPP? = +23m.4s. =SKS +1s. and +24m.16s., ePS? = +29m.12s.

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Triest PS = +23m.39s.
Copenhagen +24m.9s. =PS −8s.
Stuttgart ePcPE = +13m.3s., eSKSN = +23m.34s., eSSSSN = +36m.39s.
Uccle iE = +24m.8s. =S −7s.
Tinemaha eNE = +22m.24s. =PKS.
Pasadena iZ = +22m.30s. =PKS −10s.
Mount Wilson iZ = +22m.33s. =PKS −8s.
Riverside eZ = +22m.32s. =PKS −11s.
Ottawa e = +39m.39s.? =SS +11s.
Oak Ridge iZ = +19m.25s.
La Paz PP = +24m.11s.
Long waves were also recorded at Ivigtut, Kew, Stonyhurst, Bidston, Cheb, Paris, Graz, Chicago, Huancayo, San Juan, Sitka, La Plata, and Wellington.

Aug. 21d. Readings also at 0h. (Tucson), 1h. (Sitka), 2h. (Tyosi and Wellington), 3h. (Lick), 6h. (Wellington), 7h. (Mizusawa), 11h. (La Paz and Sucre), 12h. (Tyosi), 13h. (De Bilt and Paris), 18h. (Tashkent, Sverdlovsk, and Tiflis). 19h. (Malabar), 20h. (Wellington and Sitka), 21h. (Christchurch and Theodosia), 22h. (Piatigorsk).

Aug. 22d. 6h. Readings from which no determination is made :—
Tashkent e =6h.44m.41s., e =49m.2s., iS =50m.44s., eL =7h.2m.42s., M =7m.24s.
Hong Kong P? =6h.48m.23s., M =54m.15s.
Nanking P =6h.49m.30s., eS =53m.12s., eL =55m.10s., M =56m.6s.
Chiufeng eP? =6h.49m.32s., eL(S) =52m.17s., M =53m.31s.
Calcutta e =6h.52m.9s.
Phu-Lien 6h.52m.
Sverdlovsk i =6h.53m.50s., e =59m.43s., L =7h.6m.30s.
Agra e =6h.55m.36s.
Vladivostok i =6h.56m.30s.
Long waves at Copenhagen, Pulkovo, and Stuttgart.

7h.
Algiers iP_g =7h.54m.7s., iS_g =54m.29s.
Granada eP_g =7h.54m.58s., e =55m.20s., iS_g =55m.46s., i =56m.55s.
Alicante P_g =7h.55m.2s., S_g =55m.42s.
Almeria ePN =7h.55m.18s., eS_g =56m.10s.
Toledo PZ =7h.56m.14s., S_g =56m.57s.
San Fernando PN =7h.56m.25s., PE =56m.31s., SE =57m.16s., SN =57m.18s., SE =57m.26s.
Barcelona e =7h.57m.23s., M =59m.39s.
Long waves at Bidston, Kew, Uccle, Paris, Prague, De Bilt, Hamburg, Strasbourg, Stuttgart Copenhagen, and Piacenza.

8h.
Algiers iP_g =8h.28m.57s., iS_g =29m.18s.
Alicante P_g =8h.30m.2s., S_g =30m.42s.
Almeria eP_g =8h.30m.8s.
Long waves at De Bilt, Stuttgart, Copenhagen, and Piacenza.

10h.
La Paz eP =10h.7m.46s., SE =11m.4s., S?N =11m.37s., LN =12m.40s., M =14m.36s.
Agra e =10h.30m.21s.
Calcutta e =10h.35m.9s.
Nanking P =10h.35m.18s., eE =39m.38s., eL =42m.0s.
Chiufeng eEN =10h.35m.39s., eSEN =39m.34s., eLEN =41m.48s., iEN =42m.12s.
Phu-Lien 10h.35m.
Sverdlovsk P =10h.38m.44s., e =44m.58s., e =48m.1s., L =52m.
Hong Kong M =10h.40m.5s.
Bombay e =10h.41m.
Husan e =10h.41m.28s., e =52m.47s.
Tashkent e =10h.41m., M =56m.0s.
Vladivostok L =10h.48m.30s., M =49m.48s.
Pulkovo eL =10h.52m.
Copenhagen L =11h.6m.
De Bilt eL =11h.10m.

Aug. 22d. 18h. Readings from which no determination is made :—
Manila P =18h.42m.42s., S =47m.16s., L =50m.15s., M =52m.42s.
Hong Kong P? =18h.44m.53s., S? =49m.11s.
Batavia P =18h.46m.17s., SN =48m.57s , iE =50m.22s.
Chiufeng eEN =18h.46m.44s., eS?E =51m.51s.
Sverdlovsk e =18h.51m.12s., e =19h.0m.55s., L =14m.30s.
Vladivostok eL =18h.52m.30s.
Pulkovo e =18h.54m.48s., eL =19h.28m.
Tashkent e =18h.58m.52s., eL =19h.14m.6s., M =20m.12s.
Copenhagen L =19h.36m.
De Bilt eL =19h.38m.

Aug. 22d. Readings also at 0h. (Tashkent (2), Tyosi, Berkeley (2), Sverdlovsk, Chiufeng, and Melbourne), 1h. (Sverdlovsk), 2h. (Tiflis), 4h. (Taito, Tainan, Taihoku, and Husan), 5h. (Medan), 11h. (La Paz and Medan), 12h. (Nagasaki), 13h. (Sumoto and Nagoya), 16h. (Oak Ridge), 22h. (Tortosa).

Aug. 23d. 22h. 34m. 1s. Epicentre 35°·5N. 143°·5E. (as on 1932 Oct. 5d.). X.

A = −·654, B = +·484, C = +·581 ; D = +·595, E = +·804 ;
G = −·467, H = +·345, K = −·814.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi	2·1	277	i 0 41	P_g	1 5	S_g	—	1·3
Mizusawa	4·1	333	e 1 0	+2	i 1 32	−13	—	—
Nagoya	5·3	268	e 1 26	P*	2 49	S_g	—	3·0
Osaka	6·6	265	1 34	0	2 51	−3	—	4·5
Kobe	6·8	265	2 5	P_g	e 3 29	S*	—	4·1
Toyooka	7·0	272	1 57	P*	3 17	+18	—	3·8
Sumoto	7·1	263	e 1 52	P*	e 3 42	S_g	—	—
Koti	8·4	259	2 11	+12	—	—	—	—
Nagasaki	11·6	262	e 1 0	?	6 29	S_g	—	—
Husan	11·8	268	e 2 34	−8	e 6 0	?	—	—
Keizyo	13·4	284	e 2 47	−20	—	—	7·0	—
Zi-ka-wei	18·9	263	e 4 25	+8	—	—	—	12·6
Nanking	20·8	267	e 4 36	−2	—	—	—	—
Chiufeng	22·0	290	e 4 52	+1	e 9 2	SS	e 12·1	14·5
Manila	29·1	230	5 48	−9	13 25	?	22·8	27·8
Tashkent	56·8	300	e 9 47	+5	e 17 37	+3	—	—
Sverdlovsk	57·2	320	9 52	+7	17 42	+3	26·5	36·4
Tiflis	73·0	310	—	—	e 21 5	−8	e 39·0	46·6

Additional readings :—
Mizusawa eSN = +1m.36s.
Osaka i = +3m.17s. =S* +2s.
Kobe eZ = +3m.22s.
Sumoto eE = +3m.47s., eZ = +3m.59s., eEN = +5m.46s.
Long waves were also recorded at Baku, Pulkovo, Copenhagen, Helsingfors, Hong Kong, Kew, Prague, Stuttgart, Uccle, and De Bilt.

Aug. 23d. 23h. 30m. 24s. Epicentre 14°·0S. 166°·5E. (as on 1934 April 26d.). X.

A = −·943, B = +·227, C = −·242 ; D = +·233, E = +·972 ;
G = +·235, H = −·056, K = −·970.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	24·2	212	5 20	+8	9 32	+5	e 12·6	14·4
Sydney	24·2	212	e 7 1	?	i 10 54	?	14·4	16·1
Arapuni	25·4	163	—	—	e 10 12	+24	—	—
Wellington	28·2	167	—	—	e 10 36?	+1	16·6	—
Christchurch	30·0	171	6 31	+26	i 11 42	+38	15·3	—

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Melbourne	30·5	215	e 4 45	?	i 11 10	− 2	15·4	17·0
Adelaide	32·7	226	—	—	e 11 39	− 7	—	17·5
Manila	53·3	300	9 20	+ 4	16 57	+11	—	—
Zi-ka-wei	62·5	319	e 10 19	− 3	—	—	—	—
Chiufeng	71·5	322	e 11 19	− 1	e 20 34	− 5	—	—
Pasadena	86·2	54	e 12 42	+ 3	—	—	—	—
Riverside	86·7	54	e 12 42	0	—	—	—	—
Tinemaha	87·1	51	e 12 44	0	—	—	—	—
Colombo	88·3	277	12 56	+ 7	—	—	—	52·5
Agra	95·0	297	—	—	e 23 53	[− 8]	—	—
Bombay	97·8	287	—	—	i 24 15	[0]	—	—
Tashkent	104·5	310	—	—	e 25 52	−14	65·6	—
Sverdlovsk	110·3	326	e 18 30	[+11]	26 45	{+36}	33·6	—
Baku	119·2	310	e 20 30	PP	e 30 10	PS	56·6	89·8
Ottawa	119·3	44	—	—	e 25 36?	[−12]	56·6	—
Tiflis	122·8	311	e 20 18	PP	—	—	e 58·6	—
Pulkovo	124·2	335	e 20 39	PP	e 30 34	PS	65·6	87·8
San Juan	129·5	78	e 22 21	PKS	e 30 47	{−22}	—	—
Copenhagen	133·8	340	19 18	[+ 5]	—	—	—	—
De Bilt	139·1	342	e 19 25	[+ 5]	—	—	—	—
Stuttgart	140·5	337	e 19 22	[0]	—	—	—	—
Uccle	140·5	342	e 22 24	PP	—	—	—	—
Strasbourg	141·2	336	i 22 24	PP	—	—	—	—
Florence	143·5	329	19 27	[− 2]	i 27 53	?	86·6	99·6

Additional readings :—
Christchurch L_q = +12·6m.
Melbourne i = +13m.18s.
Chiufeng SN = +20m.38s.
Tashkent e = +33m.8s. =SS +4s.
Copenhagen e = +21m.54s. =PP +12s., +22m.42s. =PKS −7s.
De Bilt eZ = +22m.18s. =PP +2s.
Stuttgart ePP = +22m.25s.
Strasbourg e = +21m.55s.
Long waves were also recorded at Ivigtut, Paris, Honolulu, Hong Kong, and Helsingfors.

Aug. 23d. 23h. 48m. 48s. Epicentre 14°·0S. 166°·5E. (as at 23h.30m.). R.3

A = −·943, B = +·227, C = −·242 ; D = +·233, E = +·972 ;
G = +·235, H = −·056, K = −·970.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	24·2	212	e 5 21	+ 9	i 9 32	+ 5	e 11·2	13·3
Melbourne	30·5	215	i 4 48	?	i 11 12	0	15·3	16·7
Adelaide	32·7	226	—	—	i 11 52	+ 6	—	17·6
Perth	49·4	240	(8 42)	− 5	8 42	P	24·7	27·7
Manila	53·3	300	i 9 20	+ 4	i 16 53	+ 7	25·5	30·2
Kohu	56·3	333	9 39	+ 1	—	—	—	—
Nagoya	56·6	331	e 9 42	+ 2	—	—	—	—
Wakayama	56·7	330	9 40	− 1	17 30	− 2	—	—
Osaka	56·9	330	9 31	−11	17 39	+ 4	—	—
Miyazaki	56·9	325	9 45	+ 3	17 38	+ 3	—	—
Sumoto	56·9	329	e 9 24	−18	17 34	− 1	—	—
Kobe	57·0	330	e 9 6	−37	—	—	—	—
Koti	57·0	327	9 45	+ 2	17 37	+ 1	—	—
Mizusawa	58·2	339	(e 9 54)	+ 2	e 9 54	P	—	—
Nagasaki	58·4	325	9 51	− 2	17 52	− 3	—	—
Batavia	59·0	271	i 10 0	+ 3	i 19 7	+64	—	—
Zi-ka-wei	62·5	319	i 10 22	0	—	—	—	37·2
Hong Kong	62·8	307	14 3	PPP	18 54	+ 2	—	35·2
Nanking	64·8	316	e 10 33	− 4	e 19 15	− 2	—	—
Chiufeng	71·5	322	11 20	0	20 33	− 6	—	41·6

Continued on next page.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Ukiah	84·2	48	—	—	e 20 12	?	—	—
Sitka	85·7	28	—	—	e 23 12	− 3	e 40·2	—
Pasadena	86·2	54	e 12 36	− 3	—	—	—	—
Riverside	86·7	54	e 12 41	− 1	—	—	—	—
Tinemaha	87·1	51	i 12 41	− 3	—	—	—	—
Bozeman	94·9	44	—	—	e 25 47	PS	—	68·5
Bombay	97·8	287	—	—	i 24 11	[− 4]	—	68·4
Tashkent	104·5	310	e 18 6	PP	i 25 51	−15	—	64·3
Florissant	108·9	53	—	—	e 28 6	PS	—	—
St. Louis	109·0	53	e 18 49	PP	e 24 49	[−20]	—	56·6
Chicago	111·1	50	—	—	e 28 34	PS	e 55·4	—
Tananarive	111·5	243	—	—	34 46	SS	—	57·7
Huancayo	113·5	110	—	—	e 29 12	PS	—	—
Ann Arbor	114·0	49	—	—	e 43 24	?	e 57·5	—
Pittsburgh	116·9	51	—	—	e 25 24	[−16]	e 42·6	—
La Paz	118·0	119	—	—	i 29 37	PS	59·2	68·6
Charlottesville	118·2	54	—	—	e 40 12	SSS	e 61·2	—
Ottawa	119·3	44	e 18 42	[− 2]	e 29 12?	?	—	—
Oak Ridge	122·8	48	e 18 59	[+ 7]	—	—	e 42·9	—
Tiflis	122·8	311	e 20 21	PP	e 30 20	PS	e 56·2	75·9
Cape Town	123·2	212	—	—	46 28	?	—	74·6
Pulkovo	124·2	335	i 20 38	PP	e 30 30	PS	—	—
Helsingfors	126·0	337	—	—	e 28 3	{+ 7}	e 53·2	—
Theodosia	128·4	317	e 19 10	[+ 6]	e 22 23	?	—	—
Simferopol	129·3	318	e 19 9	[+ 4]	e 22 20	PKS	—	—
Yalta	129·4	317	e 18 55	[−11]	e 22 15	PKS	—	—
San Juan	129·5	78	—	—	e 22 23	PKS	e 59·2	—
Sebastopol	129·8	318	e 22 33	PKS	—	—	—	—
Ksara	131·2	302	e 19 23	[+14]	—	—	—	—
Copenhagen	133·8	340	19 14	[+ 1]	—	—	—	—
Hamburg	136·3	340	e 19 18	[+ 1]	—	—	e 60·2	77·2
Edinburgh	137·4	351	e 19 12	[− 6]	e 40 24	SS	e 89·2	—
Prague	137·4	334	e 22 2	PP	e 29 54	{+46}	62·2	76·7
De Bilt	139·1	342	e 19 22	[+ 2]	e 40 36	SS	e 60·2	79·1
Zagreb	139·7	327	e 22 21	PP	—	—	e 77·2	—
Uccle	140·5	342	e 19 17	[− 5]	e 40 52	SS	e 56·2	—
Stuttgart	140·5	337	e 19 17	[− 5]	e 32 42	SKSP	e 55·2	—
Triest	140·9	330	19 26	[+ 4]	—	—	e 55·2	63·6
Kew	141·1	347	e 19 19	[− 4]	—	—	e 67·2	84·1
Strasbourg	141·2	336	e 19 20	[− 3]	e 32 49	SKSP	e 64·2	—
Venice	141·7	330	e 19 42	[+19]	23 3	PKS	—	—
Basle	142·1	337	e 12 27	?	—	—	—	—
Paris	142·8	343	e 19 53	[+26]	(26 12?)	SKS	26·2	81·2
Piacenza	143·2	332	19 28	[0]	—	—	—	31·7
Prato	143·4	329	i 19 32	[+ 3]	29 12	{−32}	—	—
Florence	143·5	329	i 19 29	[0]	—	—	—	81·2
Trenta	143·6	320	e 18 47	?	—	—	—	—
Catania	145·4	318	19 34	[0]	—	—	—	19·7
Toledo	152·8	344	e 19 12	[−33]	—	—	—	—
San Fernando	156·6	345	20 52	{+23}	34 22	SKSP	90·2	—

Additional readings :—
Riverview iEN = +5m.25s., iN = +9m.42s., iE = +9m.46s.
Melbourne SS = +13m.34s.
Perth PS = +9m.37s., SS = +14m.27s., SSS = +18m.12s., SSSS = +19m.42s., i = +26m.12s.
Osaka i = +12m.11s., +13m.2s., +21m.48s., and +23m.26s.
Sumoto ePN = +9m.36s., PZ = +9m.43s.
Kobe eE = +9m.41s., eN = iZ = +9m.44s.
Nanking e = +23m.36s. = SS +13s.
Chiufeng iE = +28m.43s., iN = +28m.49s.
Pasadena eZ = +15m.56s. = PP +1s.
Tashkent e = +18m.18s., i = +33m.13s. = SS +9s.
St. Louis ePSE = +28m.13s., eSSE = +34m.16s.
Chicago e = +34m.4s. = SS −29s.

Continued on next page.

Tananarive e = +39m.52s., +44m.55s., and +48m.28s.
Huancayo e = +54m.5s., +57m.20s., and +58m.2s.
Ann Arbor e?N = +51m.30s.
Pittsburgh e = +29m.28s. = PS − 6s., +34m.42s., +36m.6s., and +38m.54s.
Charlottesville e = +57m.12s.
Oak Ridge eEN = +32m.1s., eNW = +37m.21s., eEN = +37m.59s.
Cape Town E = +49m.8s., N = +52m.18s., and +55m.38s., E = +60m.8s., N = +65m.8s., E = +70m.8s., N = +70m.28s.
Helsingfors ePPN = +21m.47s., ePSN = +32m.44s., eSSN = +37m.55s., eSSSN = +43m.42s.
Ksara ePP = +21m.51s., PKS = +22m.47s.
Copenhagen e = +21m.48s. = PP + 6s., +22m.45s. = PKS − 4s.
Edinburgh e = +22m.15s. = PP + 10s.
De Bilt eZ = +21m.14s.
Uccle i = +22m.26s. = PP + 2s., iN = +23m.2s. = PKS − 8s.
Stuttgart ePP = +22m.22s., ePPSZ = +34m.24s.
Triest i = +22m.27s. = PP + 0s., iPKP = +23m.1s. = PKS − 10s., eSS = +40m.36s.
Kew e = +22m.19s. = PP − 9s.
Strasbourg ePPN = +22m.28s., eSSN = +40m.58s.
Paris e = +22m.37s. = PP − 1s.
Toledo e = +23m.21s. = PP − 15s.
San Fernando PN = +19m.55s.
Long waves were also recorded at Stonyhurst, Arapuni, Columbia, Ivigtut, Göttingen, and Honolulu.

Aug. 23d. 23h. Readings for which no determination is made :—
Triest e = 23h.4m.0s., eM = 20m.30s.
Copenhagen L = 23h.18m.
Strasbourg eN = 23h.26m., e = 29m.44s.
Florence e = 23h.27m.0s., M = 31m.0s.
Paris eLN = 23h.27m.
Riverview PNE = 23h.35m.44s., SN = 39m.56s., eLN = 43m.0s., MN = 44m.46s.

Aug. 23d. Readings also at 0h. (Tiflis and Berkeley), 3h. (Sumoto), 7h. (Koti, Sumoto, Nagoya, Kobe, and Mizusawa), 12h. (Wellington and Tyosi), 15h. (Mizusawa), 16h. (Algiers).

Aug. 24d. Readings from which no determination is made :—
Ksara eP_g = 9h.23m.17s., iS_g = 23m.47s.
Tiflis LEN = 9h.27m.30s., MEN = 28m.12s.
Algiers iP_g = 9h.34m.51s., iS_g = 35m.10s.
Granada P = 9h.35m.23s., PP = 35m.39s., i = 35m.51s., S = 36m.15s., SS = 36m.39s.
Alicante e = 9h.35m.43s.
Copenhagen L = 9h.42m.
Stuttgart eL = 9h.42m.
Paris 9h.42m.
De Bilt eL = 9h.43m.

Aug. 24d. Readings from which no determination is made :—
Mizusawa eS = 23h.24m.15s.
Chiufeng e = 23h.26m.3s.
Sverdlovsk P = 23h.30m.37s., L = 57m.
Tinemaha ePEN = 23h.31m.30s.
Pasadena eZ = 23h.31m.33s.
Riverside eZ = 23h.31m.40s.
La Paz ePN = 23h.38m.47s.
Tashkent e = 23h.40m.6s., L = 57m.30s., M = 24h.3m.6s.
Baku L = 24h.4m.30s.
Tiflis eLEN = 24h.6m.54s., ME = 14m.48s.
Triest eL = 24h.12m., M = 20m.20s.
Paris 24h.25m.
Uccle eL = 24h.13m.
De Bilt eL = 24h.15m.

Aug. 24d. Readings also at 2h. (Sumoto), 5h. (Mizusawa), 7h. (Calcutta), 8h. (Tyosi), 9h. (Nagasaki), 13h. (Tyosi), 14h. (Tyosi, Mizusawa, and Medan). 16h. (Triest).

Aug. 25d. 19h. 42m. 50s. Epicentre 44°·6N. 10°·6E. (as on 1932 April 19d.). X

A = +·700, B = +·131, C = +·702; D = +·184, E = −·983; G = +·690, H = +·129, K = −·712.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Piacenza	0·8	304	0 10	− 1	i 0 22	+ 1	i 0·4	0·6
Prato	0·8	152	i 0 10	− 1	i 0 21	0	—	—
Florence	0·9	150	i 0 14	+ 1	0 33	+10	—	—
Livorno	1·1	189	0 12	− 4	0 14	P*	—	—
Padova	1·2	48	i 0 26	S	i 0 55	?	—	—
Pavia	1·2	297	i 0 20	+ 3	—	—	—	—
Venice	1·5	55	0 34	S	0 55	?	—	—
Treviso	1·5	46	e 0 29	P_g	e 1 46	S*	—	—
Triest	2·5	65	e 0 39	+ 3	i 1 14	S*	—	—
Zurich	3·1	334	e 0 45	+ 1	e 1 23	+ 3	—	—
Ravensburg	3·3	348	e 1 4	P_g	e 1 49	S_g	—	—
Basle	3·4	326	e 0 51	+ 2	e 1 39	S*	—	—
Neuchatel	3·5	314	e 0 49	− 1	e 1 35	+ 5	—	—
Zagreb	4·0	70	e 1 19	P_g	—	—	—	2·4
Stuttgart	4·3	348	e 1 19	P_g	i 2 22	S_g	—	3·4
Strasbourg	4·4	335	e 1 1	− 2	—	—	—	—
Karlsruhe	4·7	342	—	—	e 2 1	+ 1	—	—
Vienna	5·4	45	e 2 6	S	2 51	S_g	3·4	—
Cheb	5·6	12	—	—	e 3 10?	S_g	—	4·7
Prague	6·0	25	e 2 39	S	e 4 9	?	e 4·5	5·0
Paris	7·0	310	—	—	e 3 10?	+11	—	—
Uccle	7·5	328	—	—	e 4 5	S_g	—	—
De Bilt	8·3	336	—	—	e 4 40	S_g	—	—
Hamburg	9·0	358	—	—	e 4 40	S_g	—	6·9

Additional readings :—
Venice P = +46s. =S* +3s., +51s.
Treviso PS = +1m.6s.
Triest i = +41s. =P* +1s., iP_g = +45s., i = +53s., iS_g = +1m.24s.
Ravensburg eN = +1m.28s. =S +3s., iE = +2m.5s.
Zagreb e = +1m.27s. and +1m.59s. =S* +2s.
Stuttgart e = +1m.53s. =S +3s. and +2m.8s. =S* +2s.
Strasbourg SS = +2m.22s. =S_g +3s., +2m.25s., +2m.30s., and +2m.35s.
Karlsruhe i = +2m.27s. =S_g −2s.
Long waves were also at Copenhagen.

Aug. 25d. Readings also at 2h. (Lick), 5h. (Copenhagen, Stuttgart, Strasbourg, Uccle, and De Bilt), 10h. (Cape Town), 11h. (Sumoto, Sverdlovsk, and Tashkent), 13h. (Lick, San Francisco, Berkeley, and Branner), 15h. (Mizusawa and Huancayo), 19h. (Batavia and Soengei Langka), 20h. (Malabar and Medan (2)), 21h. (Wellington), 22h. (Nagoya and Sumoto).

Aug. 26d. 1h. 31m. 27s. Epicentre 22°·1N. 108°·2W. N.2.

A = −·289, B = −·880, C = +·376; D = −·950, E = +·312; G = −·118, H = −·357, K = −·927.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	10·5	347	2 25	− 3	4 5	−21	5·1	—
La Jolla	12·8	324	i 3 5	+ 6	—	—	—	—
Riverside	14·4	328	e 3 22	+ 1	—	—	—	—
Mount Wilson	14·9	327	i 3 29	+ 2	—	—	—	—
Pasadena	14·9	326	i 3 26	− 1	—	—	i 6·6	—
Santa Barbara	16·0	323	e 3 43	+ 2	—	—	—	—
Haiwee	16·4	331	e 3 46	0	—	—	—	—
Tinemaha	17·3	332	i 3 57	− 1	—	—	—	—
Denver	17·8	8	e 4 0	− 4	e 7 24	+ 4	i 8·8	10·4
Lick	19·2	326	e 4 20	− 1	—	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Branner	19·5	325	e 4 5	−19	—	—	—	—
Berkeley	19·9	325	e 4 31	+ 2	i 8 15	+11	—	—
Ukiah	21·3	326	—	—	e 8 48	+16	e 13·2	—
St. Louis	22·6	39	e 4 55	− 2	i 9 3	+ 6	e 10·9	i 11·9
Florissant	22·6	38	e 4 57	0	i 9 1	+ 4	e 11·1	—
Bozeman	23·7	355	e 5 10	+ 3	e 9 16	− 2	e 12·4	—
Chicago	26·2	36	—	—	e 10 0	− 2	i 13·7	—
Columbia	26·6	58	—	—	e 10 13	+ 4	e 14·5	—
Seattle	28·0	339	—	—	e 10 56	+24	14·5	—
Ann Arbor	28·7	40	—	—	e 10 57	+14	e 15·2	15·9
Victoria	29·0	339	7 4	?	10 54	+ 6	14·6	18·9
Charlottesville	30·0	51	—	—	e 10 33	−31	16·1	—
Pittsburgh	30·1	46	—	—	e 10 56	−10	e 15·6	—
Georgetown	31·4	50	e 6 1	−16	i 11 24	− 2	e 14·5	—
Toronto	32·0	41	i 6 41	+18	i 11 33?	− 2	14·5	16·9
Ottawa	35·2	41	e 7 8	+17	e 12 23	− 1	e 15·5	—
Oak Ridge	36·7	47	i 7 5	+ 1	e 12 41	− 6	e 19·0	—
San Juan	39·5	87	e 7 35	+ 7	e 13 38	+ 9	—	—
Sitka	40·2	337	—	—	e 12 33	−66	e 21·5	—
Edinburgh	79·8	34	—	—	e 24 3	?	e 40·5	—
De Bilt	85·9	34	—	—	e 23 19	+ 2	e 35·5	48·6
Uccle	86·1	37	—	—	e 23 19	+ 1	e 34·5	—
Copenhagen	87·4	29	—	—	23 35	+ 4	42·5	—
Strasbourg	89·2	36	—	—	e 23 48	0	e 41·5	—
Stuttgart	89·8	36	e 17 33?	?	e 23 59	+ 5	e 41·5	—
Pulkovo	91·4	20	—	—	e 24 7	− 2	42·5	53·7
Florence	93·9	39	—	—	e 29 33	?	—	44·5
Triest	94·2	36	—	—	e 23 57	[+ 1]	e 40·5	48·5
Sverdlovsk	100·1	5	—	—	e 32 18	SS	43·5	51·6
Tashkent	116·6	2	—	—	e 52 4	?	e 57·5	73·4

Additional readings :—
Tucson e = +4m.38s.
Ukiah e = +10m.13s.
St. Louis eE = +8m.53s.
Chicago e = +13m.20s.
Ann Arbor e = +12m.15s. and +14m.27s., eE = +14m.57s.
Charlottesville eSS = +12m.33s., e = +15m.13s. ; T_0 = 1h.31m.16s.
Pittsburgh e = +10m.12s. and +11m.54s., eSS = +12m.44s.
Georgetown Z = +6m.20s.
Toronto SSN = +12m.56s.
Oak Ridge iZ = +7m.11s., eS = +12m.46s.
San Juan ePP = +9m.4s., eSS = +16m.33s.
Edinburgh e = +36m.33s. ?
Pulkovo e = +29m.56s. = SS − 4s.
Triest e = +30m.40s. = SS + 1s.
Long waves were also recorded at Honolulu, Ivigtut, Tiflis, Kew, Bidston, Stonyhurst, and other European stations.

Aug. 26d. 8h. Readings from which no determination is made :—

Nagoya e = 8h.22m.51s.
Chiufeng eEN = 8h.25m.47s.
Tashkent iP = 8h.30m.22s., eS = 38m.53s., eL = 52m.36s., M = 60m.30s.
Sverdlovsk iP = 8h.30m.44s., S = 39m.29s., L = 53m.
Tinemaha iP = 8h.32m.18s.
Haiwee ePN = 8h.32m.22s.
Pasadena iPZ = 8h.32m.24s.
Mount Wilson iPZ = 8h.32m.26s.
Riverside iPZ = 8h.32m.26s.
La Jolla iPZ = 8h.32m.27s.
Baku e = 8h.41m.40s., L = 9h.27m.
Tiflis eL = 9h.7m.0s., M = 12m.18s.
Stuttgart eZ = 9h.20m., eZ = 26m., eL = 10h,6m,
De Bilt eL = 9h.21m,
Paris 9h,24m,

Aug. 26d. 9h. 19m. 29s. Epicentre 40°·0N. 142°·5E. (as on 1930 March 9d.). **X.**

A = −·608, B = +·466, C = +·643; D = +·609, E = +·793;
G = −·510, H = +·391, K = −·766.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa		1·4	231	i 0 20	0	i 0 48	S*	—	—
Tyosi		4·5	197	e 0 48	−16	2 8	S*	—	2·5
Nagoya		6·6	224	e 1 35	+ 1	e 3 7	S*	—	**4·1**
Osaka		7·8	229	1 59	+ 8	3 41	S*	—	5·5
Kobe	E.	7·9	230	e 1 38	−14	e 3 53	S*	—	4·6
	N.	7·9	230	e 1 45	− 7	e 3 55	S*	—	4·6
	Z.	7·9	230	e 1 39	−13	e 3 59	S*	—	4·8
Sumoto	E.	8·3	229	e 2 5	+ 7	4 4	S*	—	4·7
	N.	8·3	229	e 2 15	P*	4 11	S*	—	4·7
	Z.	8·3	229	2 14	P*	—	—	—	4·7
Husan		11·8	250	2 45	− 1	e 4 19	−39	—	—
Nagasaki		12·5	238	e 2 54	− 1	—	—	—	—
Chiufeng		20·1	279	e 4 13	−18	e 8 23	SS	—	13·1
Sverdlovsk		53·3	319	i 9 16	0	16 58	+12	27·5	35·4
Tashkent		53·9	299	i 9 20	− 1	i 17 54	+60	—	34·5

Additional readings:—
Mizusawa eSN = +54s.
Osaka i = +2m.13s. = P* +3s.
Kobe iZ = +1m.50s., iE = +1m.59s.
Sverdlovsk LR = +34m.19s.
Long waves were also recorded at Tiflis, Hong Kong, and other European stations.

Aug. 26d. 22h. Readings from which no determination is made:—
Santa Barbara iPZ = 22h.4m.38s.
La Jolla iPZ = 22h.4m.42s.
Pasadena iPENZ = 22h.4m.42s.a
Mount Wilson iPZ = 22h.4m.44s.a
Riverside iPENZ = 22h.4m.45s.a
Haiwee iPN = 22h.4m.52s.
Tinemaha iPENZ = 22h.4m.53s.a
De Bilt iZ = 22h.12m.46s.
Stuttgart ePZ = 22h.12m.47s.
Strasbourg e = 22h.12m.54s., e = 13m.21s.

Aug. 26d. Readings also at 0h. (La Paz, Medan, and Grozny), 1h. (La Paz), 2h. (Berkeley (2) and Lick), 3h. (Berkeley, Lick, Branner, and Prague), 4h. (Grozny and Tiflis), 9h. (Frunse, Andijan, and Tiflis), 11h. (Nagoya, Sumoto, Osaka, Kobe, Oak Ridge, and La Paz), 17h. (Bombay, Kodaikanal, Colombo, Tashkent, and Sverdlovsk), 20h. (Uccle), 21h. (Nagasaki, Mizusawa, and Nagoya).

Aug. 27d. Readings from which no determination is made:—
New Plymouth P = 5h.50m.21s., S = 50m.45s.
Glenmuick P_g = 5h.50m.48s., i = 50m.55s., S_g = 51m.3s.
Wellington P = 5h.51m.18s., S = 51m.37s.
Christchurch P = 5h.51m.20s., S = 51m.41s.

Aug. 27d. Readings also at 2h. (La Paz), 3h. (Sumoto), 8h. (Nagoya), 14h. (Wellington), 15h. (La Paz), 16h. (Sumoto, Batavia, and Malabar), 17h. (Medan), 19h. (Wellington), 23h. (Mizusawa).

Aug. 28d. 11h. 23m. 6s. Epicentre 17°·0N. 105°·5W. N.3.

A = −·256, B = −·922, C = +·292; D = −·964, E = +·267; G = −·078, H = −·282, K = −·956.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	16·1	344	3 38	− 5	5 7	?	6·6	—
La Jolla	19·1	328	i 4 17	− 3	—	—	—	—
Riverside	20·0	330	e 4 31	+ 1	—	—	—	—
Pasadena	20·5	329	i 4 37k	+ 2	e 8 30	SS	e 8·9	—
Mount Wilson	20·6	330	i 4 36	0	—	—	—	—
Santa Barbara	21·6	327	i 4 48	+ 2	—	—	—	—
Haiwee	22·1	332	e 4 53	+ 1	—	—	—	—
Tinemaha	23·0	333	i 5 3	+ 2	—	—	—	—
Berkeley	25·5	328	e 5 28	+ 3	—	—	—	—
St. Louis	25·5	29	e 5 24	− 1	e 9 45	− 5	e 13·0	—
Florissant	25·6	28	e 5 25	0	e 9 51	0	e 12·9	—
Ukiah	27·0	329	—	—	e 10 18	+ 3	—	—
Chicago	29·3	28	—	—	e 10 45	− 8	e 15·1	—
Pittsburgh	32·3	38	—	—	e 13 14	SS	17·6	—
Georgetown	33·1	42	e 6 34	+ 1	e 11 34	−18	e 18·9	—
Ottawa	37·7	35	e 7 4	− 8	e 12 54	− 8	19·9	—
Oak Ridge	38·6	41	i 7 21	+ 1	e 13 4	−11	e 20·9	—
Florence	96·2	41	—	—	e 27 54	?	49·9	54·9

Additional readings :—
Berkeley iZ = +5m.34s.
Pittsburgh e = +17m.2s. = S_cS +5s.
Long waves were also recorded at Kew, Ivigtut, and other European and American stations.

Aug. 28d. 13h. Readings from which no determination is made :—
Tashkent i = 13h.19m.10s., i = 50m.36s., M = 14h.9m.0s.
Nagoya e = 13h.34m.1s.
Mizusawa ePN = 13h.34m.20s., ePE = 34m.26s., iS = 38m.6s.
Sverdlovsk e = 13h.41m.48s., S = 49m.3s., L = 14h.0m.
Tinemaha ePEN = 13h.42m.3s., eN = 42m.51s.
Mount Wilson iPZ = 13h.42m.8s.
Pasadena iPZ = 13h.42m.8s., iZ = 42m.55s.
Riverside iPZ = 13h.42m.10s., iZ = 13h.43m.1s.
La Jolla iZ = 13h.42m.59s.

Aug. 28d. 18h. Readings from which no determination is made :—
Zi-ka-wei eZ? = 18h.27m.2s., MZ = 31m.44s.
Manila P = 18h.27m.5s., S? = 30m.46s., M = 41m.14s.
Nanking eP = 18h.28m.14s.?, e = 31m.17s., e = 32m.15s., eL = 34m.13s.
Chiufeng eP = 18h.29m.7s., M = 38m.30s.
Hong Kong M = 18h.33m.25s.
Florence iP = 18h.33m.39s., M = 33m.43s.
Prato iP = 18h.33m.45s., iS = 33m.52s.
Sverdlovsk iP = 18h.34m.34s., L = 54m.
Vladivostok eL = 18h.36m.36s.
Tashkent e = 18h.45m.30s., eL = 52m., M = 57m.42s.
Baku e = 19h.7m.22s.
Pulkovo eL = 19h.10m.
Stuttgart e = 19h.21m.
De Bilt eL = 19h.22m.

Aug. 28d. Readings also at 1h. (Tunis), 6h. (La Plata), 10h. (Sumoto), 16h. (Berkeley), 17h. (Mizusawa), 19h. (Tyosi), 20h. (Nagoya and La Paz), 22h. (Hukuoka and Hukuoka B),

Aug. 29d. 3h. Readings from which no determination is made :—

Calcutta P = 3h.43m.54s., S = 44m.28s., L = 44m.42s.
Agra eP = 3h.44m.18s., eP* = 44m.40s., P_g = 44m.55s., S = 45m.32s., S_g = 46m.22s.
Frunse eP = 3h.46m.25s.?, eS = 49m.50s. ?
Andijan eP = 3h.46m.51s., eS = 50m.5s.
Tashkent iP = 3h.47m.6s., S = 50m.24s., eL = 56m.36s., M = 58m.36s.
Hyderabad P = 3h.48m.3s., S = 48m.24s., L = 48m.36s., M = 49m.0s.
Bombay i = 3h.48m.13s., M = 50m.14s.
Sverdlovsk P = 3h.49m.25s.
Tiflis eE = 3h.55m.20s., LE = 4h.35m.12s., M = 36m.18s.
Baku e = 3h.56m.52s., eL = 4h.4m.
Pasadena ePZ = 3h.58m.48s.
Mount Wilson iPZ = 3h.58m.52s.
Tinemaha ePZ = 3h.59m.1s.
De Bilt eL = 4h.18m.
Copenhagen L = 4h.18m.

Aug. 29d. Readings also at 0h. (Santiago), 4h. (Ksara and La Paz), 5h. (Santiago), 6h. (Riverside, Pasadena, and Tinemaha), 12h. (Piatigorsk and Lick), 13h. (Lick), 15h. (Melbourne, Wellington, Christchurch, Riverside, Pasadena, and Tashkent), 16h. (Tashkent and Sverdlovsk).

Aug. 30d. 16h. 25m. 57s. Epicentre 19°·3N. 145°·7E. (as on 1931 Sept. 9d.). X.

A = −·780, B = +·532, C = +·331 ; D = +·564, E = +·826 ;
G = −·273, H = +·186, K = −·944.

A *depth* of focus 0·025 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	−0·2	8·4	338	1 58	+ 2	3 26	− 3	—	—
Misima	−0·7	16·9	341	3 45	+ 1	6 45	+ 2	—	—
Hunatu	−0·8	17·3	341	3 49	+ 1	6 46	− 4	—	—
Nagoya	−0·8	17·6	336	e 3 59	PP	—	—	—	—
Maebasi	−0·8	18·0	343	3 58	+ 1	7 15	SS	—	—
Nagano	−0·9	18·5	341	3 59	− 3	7 27	SS	—	—
Hukusima	−0·9	19·0	348	4 6	− 2	7 37	SS	—	—
Mizusawa	−1·0	20·2	350	e 4 24	+ 3	e 8 4	SS	—	—
Manila	−1·2	24·1	263	5 25	PP	9 23	+20	11·6	13·6
Tashkent	−3·1	67·4	309	—	—	e 19 0	−11	—	—
Sverdlovsk	−3·2	71·2	325	—	—	e 22 39	?	36·1	—
Santa Barbara	−3·3	82·8	55	i 12 5	0	—	—	—	—
Tinemaha	−3·3	83·1	53	i 12 6	− 1	—	—	—	—
Haiwee	−3·3	83·6	53	i 12 9	0	—	—	—	—
Mount Wilson	−3·3	84·2	56	i 12 11	− 2	—	—	—	—
Pasadena	−3·3	84·2	56	i 12 10	− 3	—	—	—	—
La Jolla	−3·4	85·3	57	i 12 19	+ 1	—	—	—	—

Additional readings :—
Mizusawa ePN = +4m.29s.
Tashkent e = +20m.15s. and +27m.13s.
Long waves were also recorded at Vladivostok.

Aug. 30d. 22h. Readings from which no determination is made :—

Riverview e? = 22h.7m.30s., e = 14m.42s., eL = 21m.6s., MN = 22m.54s.
New Plymouth 22h.8m.
Christchurch eP? = 22h.8m.41s., eS? = 12m.14s., L_q = 12m.45s., LRZ = 14m.22s.
Arapuni e = 22h.10m.36s.
Wellington i = 22h.10m.49s., S? = 11m.55s., L? = 12m.6s.
Melbourne e = 22h.14m.31s., M = 25m.36s.
Sydney e = 22h.16m.35s., L = 21m.18s., M = 22m.45s.
Mount Wilson eZ = 22h.20m.6s.

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Adelaide e = 22h.22m.9s., eL = 26m.30s., M = 29m.42s.
Grozny e = 22h.26m.2s.
Pulkovo i = 22h.26m.17s.
Sverdlovsk e = 22h.28m.32s., e = 32m.1s., L = 23h.13m.
Copenhagen L = 22h.42m.
Huancayo e = 22h.53m.5s.
De Bilt eL = 23h.39m.
Stuttgart eL = 23h.43m

Aug. 30d. Readings also at 0h. (Tyosi, Mizusawa, and Nagoya), 1h. (Sverdlovsk, Tashkent, and Tyosi), 3h. (Nagoya), 5h. (Medan), 7h. (Tyosi, Nagoya, Triest, and Granada), 12h. (Andijan, Frunse, Tashkent, and Manila), 15h. (Yalta, Theodosia, Simferopol, and Sebastopol), 19h. (New Plymouth and Wellington), 20h. (Tyosi and Hastings).

Aug. 31d. 0h. 40m. 2s. Epicentre 27°·5N. 53°·3E. N.3.

A = +·530, B = +·711, C = +·462; D = +·802, E = −·598;
G = +·276, H = +·370, K = −·887.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tiflis	15·8	336	e 3 39	0	e 6 28	− 6	e 8·2	14·6
Ksara	16·2	298	e 4 1	+17	9 0	L	(9·0)	14·3
Samarkand	16·6	40	e 4 51	+62	e 7 51	+59	—	—
Grozny	16·9	341	e 4 4	PP	e 7 7	+ 8	—	—
Tashkent	19·0	40	i 4 31	PP	e 7 59	+13	—	12·4
Helwan	19·4	282	e 4 24	+ 1	7 56	+ 2	—	—
Theodosia	22·6	326	4 55	− 2	8 55	− 2	—	—
Yalta	22·8	323	4 59	0	9 3	+ 2	—	—
Frunse	23·1	42	e 5 32	PP	—	—	—	—
Simferopol	23·2	324	5 3	0	9 8	0	—	—
Sebastopol	23·3	322	e 5 10	+ 6	9 16	+ 6	—	—
Sverdlovsk	29·8	8	e 8 12	?	—	—	13·0	—
Triest	36·1	311	—	—	e 13 14	+36	—	—

Additional readings:—
Tashkent SS = +8m.58s.
Triest e = +21m.41s. and +29m.29s.
Long waves were also recorded at other European stations.

Aug. 31d. 5h. 2m. 52s. Epicentre 73°·3N. 70°·7W. (as on 1934 Feb. 24d.). R.1.

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

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ivigtut	14·7	134	3 12	−13	e 6 0	− 8	—	—
Reykjavik	19·1	91	4 22	+ 2	7 53	+ 5	—	—
Saskatoon	26·0	235	e 5 56	+27	e 10 32	+34	—	—
Ottawa	28·0	187	i 5 43	− 4	e 10 22	−10	i 12·6	—
Halifax	28·8	170	e 5 55	+ 1	e 10 46	+ 1	—	—
Sitka	29·5	272	i 6 6	+ 5	i 11 2	+ 6	e 14·1	—
Bergen	29·8	74	e 5 59	− 4	11 9	+ 8	e 14·7	—
Toronto	30·0	193	i 5 59	− 6	i 10 54	−10	14·0	—
Oak Ridge	30·8	180	i 6 9	− 3	i 11 12	− 5	e 14·5	—
Edinburgh	31·3	86	e 6 24	+ 7	i 11 22	− 2	—	17·9
Ann Arbor	31·6	198	e 6 14	− 5	e 11 26	− 3	14·9	19·9
Chicago	32·4	204	e 6 22	− 4	11 34	− 7	e 15·7	—
Durham	32·7	86	6 34	+ 5	11 44	− 2	—	22·1
Pittsburgh	33·1	192	i 6 28	− 5	i 11 44	− 8	16·6	—
Bozeman	33·1	236	i 6 30	− 3	e 11 49	− 5	e 15·9	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Stonyhurst		33·2	87	i 6 36	+ 2	i 11 55	+ 1	16·1	20·3
Bidston		33·4	88	i 6 36	+ 1	i 12 1	+ 4	16·1	22·8
Upsala		33·6	65	6 37	0	i 11 55	− 5	e 15·1	19·2
Victoria		33·7	252	6 34	− 4	12 3	+ 2	16·5	20·9
Georgetown		34·6	187	i 6 43	− 3	i 12 6	− 9	e 16·1	—
Helsingfors		35·2	58	6 54	+ 3	12 23	− 1	e 15·6	—
Oxford		35·4	88	e 6 54	+ 1	i 12 26	− 1	e 17·1	21·6
Charlottesville		35·5	190	i 6 52	− 1	12 24	− 5	17·1	—
Copenhagen		35·8	73	6 58k	+ 2	12 35	+ 2	—	—
Florissant		35·8	207	i 6 53	− 3	i 12 28	− 5	—	—
Kew		36·0	87	6 58k	0	i 12 34	− 2	17·1	17·9
St. Louis		36·0	207	i 6 53	− 5	e 12 30	− 6	—	18·5
Pulkovo		36·8	55	i 7 5	0	e 12 48	0	16·9	20·4
De Bilt		37·0	81	7 7k	+ 1	12 51	0	e 16·6	20·2
Hamburg		37·0	76	e 7 8	+ 2	i 12 53	+ 2	e 17·1	25·1
Denver	E.	37·4	225	e 7 14	+ 4	e 12 54	− 3	e 17·4	20·2
	N.	37·4	225	e 7 6	− 4	e 13 4	+ 7	e 17·2	20·2
Uccle		37·8	84	7 13k	0	i 13 4	+ 1	16·1	21·2
Königsberg		38·8	66	i 7 22	0	13 16	− 2	—	22·2
Göttingen		38·8	78	i 7 24	+ 2	i 13 19	+ 1	—	19·3
Paris		39·1	86	7 24	0	i 13 20	− 2	18·1	26·1
Columbia		39·7	193	e 7 28	− 1	e 13 26	− 6	e 18·0	—
Leipzig		39·7	76	e 7 31	+ 2	e 13 31	− 1	e 19·1	20·1
Jena		39·9	76	e 7 30	− 1	e 13 33	− 2	e 18·1	20·1
Karlsruhe		40·6	81	7 40	+ 3	i 13 48	+ 3	e 21·3	23·1
Cheb		40·8	76	e 7 16	−23	e 13 44	− 4	e 19·4	29·2
Strasbourg		40·8	81	i 7 40k	+ 1	i 13 51	+ 3	e 20·1	24·8
Stuttgart		41·1	80	e 7 42	+ 1	i 13 54	+ 1	e 18·6	24·6
Prague		41·4	75	i 7 43	− 1	i 13 56	− 1	e 20·0	30·1
Basle		41·7	83	e 7 45	− 1	e 14 5	+ 3	—	—
Neuchatel		42·1	83	e 7 47	− 2	e 14 5	− 3	—	—
Zurich		42·2	82	e 7 49	− 1	e 17 40	(−15)	—	—
Ukiah		42·3	246	e 7 50	− 1	e 14 13	− 3	e 20·5	—
Tinemaha		42·9	239	i 7 55	− 1	—	—	—	—
Berkeley		43·2	244	i 7 59	+ 1	e 14 25	+ 1	e 26·4	—
Grenoble		43·4	86	e 7 33	−27	(e 17 8?)	SS	e 17·1	—
Lick		43·5	244	e 8 1	0	e 14 34	+ 6	e 26·6	—
Branner		43·6	244	i 8 4	+ 2	—	—	e 26·9	—
Vienna		43·6	74	i 8 3	+ 1	i 14 31	+ 1	e 22·0	31·5
Haiwee		43·8	238	i 7 53	−10	—	—	—	—
Graz		44·4	76	i 8 40	+32	i 15 15	+34	e 26·1	30·8
Pavia		44·4	82	e 8 6	− 2	—	—	—	—
Piacenza		44·6	82	8 20	+10	14 52	+ 8	22·1	32·7
Treviso		44·8	80	i 8 11	0	i 14 48	+ 1	24·6	29·8
Padova		44·9	80	e 8 8	− 4	15 8?	+19	—	—
Budapest		45·0	72	i 8 14	+ 1	i 14 57	+ 7	23·1	26·1
Venice		45·0	80	e 8 10	− 3	i 14 48	− 2	—	34·6
Laibach		45·1	77	e 8 16	+ 2	e 14 50	− 2	e 30·7	—
Triest		45·2	78	i 8 16k	+ 2	i 14 54	0	22·4	26·7
Toledo		45·5	98	i 8 14	− 3	14 55	− 2	e 21·4	32·2
Mount Wilson		45·6	237	i 8 17	− 1	—	—	—	—
Sverdlovsk		45·7	33	i 8 19	+ 1	i 15 5	+ 5	24·4R	28·3
Zagreb		45·7	76	e 8 17	− 1	e 15 1	+ 1	e 22·6	24·9
Pasadena		45·7	237	i 8 17	− 1	i 14 59	− 1	e 21·2	—
Riverside		45·7	237	i 8 17	− 1	—	—	—	—
Tucson		45·8	230	8 20	+ 1	15 5	+ 3	24·0	—
Santa Barbara		45·8	239	i 8 18	− 1	—	—	—	—
Barcelona		45·8	91	8 18	− 1	15 3	+ 1	20·3	23·4
Tortosa		45·8	93	8 19	0	15 2	0	e 20·1	29·7
Prato		46·1	81	i 8 21	0	i 15 4	− 2	e 23·1	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Jolla		46·7	236	i 8 23	− 3	—	—	—	—
Belgrade		47·8	72	e 8 36	+ 1	e 15 37	+ 7	e 27·1	—
Alicante		47·9	96	e 8 37	+ 2	e 15 33	+ 2	e 22·8	28·9
San Fernando		48·0	102	8 37	+ 1	15 35	+ 2	22·1	23·6
Granada		48·1	99	e 8 41	+ 4	i 15 39	+ 5	22·6	26·7
Rome		48·3	82	8 42	+ 4	—	—	—	—
Almeria		48·7	99	e 8 40	− 1	e 15 32	−11	e 22·6	34·5
Capodimonte		49·7	82	e 8 57	+ 8	e 16 57	+60	27·1	30·1
Naples		49·8	80	e 8 57	+ 7	e 16 57	+59	27·1	30·1
Simferopol		51·3	61	e 9 2	+ 1	i 16 23	+ 4	24·4	—
Sebastopol		51·5	62	—	—	16 26	+ 4	—	—
Theodosia		51·6	60	9 5	+ 2	16 27	+ 4	27·1	—
Trenta		51·8	79	e 9 30	+25	16 58	+33	30·6	—
Yalta		51·8	61	9 8	+ 3	16 36	+11	26·8	—
San Juan		54·9	176	i 9 23	− 5	i 17 9	+ 1	i 26·4	—
Grozny		55·7	52	e 9 40	+ 6	e 16 44	−35	—	—
Tiflis		57·0	53	—	—	17 43	+ 7	27·8	37·2
Baku		59·4	49	i 10 4	+ 4	i 18 17	+ 9	—	—
Frunse		61·3	29	—	—	18 44	+11	34·1	—
Tashkent		62·2	33	i 10 22	+ 2	i 18 47	+ 2	32·1	38·2
Ksara		62·3	64	e 10 22	+ 2	i 18 52	PS	26·6	—
Vladivostok		62·6	341	i 10 23	+ 1	i 18 53	+ 3	33·2	40·4
Andijan		63·1	31	10 30	+ 4	19 8	PS	35·1	—
Helwan		64·8	69	10 34	− 3	19 21	+ 4	—	—
Mizusawa	N.	65·5	333	e 10 44	+ 2	18 54	−32	—	—
Chiufeng		66·5	354	i 10 50a	+ 1	i 19 46	+ 7	31·8	44·6
Keizyo		68·4	345	—	—	e 20 4	+ 2	33·7	—
Oiwake		68·5	336	11 5	+ 4	20 12	PS	—	—
Zinsen		68·5	346	e 11 1	0	e 20 7	+ 4	—	—
Honolulu		68·8	273	e 11 6	+ 3	e 20 10	+ 3	e 32·4	—
Tokyo		69·1	334	11 9	+ 4	20 16	+ 6	—	—
Nagoya		69·9	336	e 11 8	− 2	—	—	—	—
Kameyama		70·3	339	11 14	+ 1	20 29	+ 4	—	—
Osaka		70·5	338	11 9	− 5	20 22	− 5	41·1	—
Kobe		70·6	338	e 11 15	+ 1	e 20 33	+ 5	e 42·6	43·9
Husan		70·8	343	11 18	+ 2	20 30	− 1	—	—
Sumoto		71·0	338	11 16	− 1	e 20 36	+ 3	42·2	47·1
Koti		71·8	339	11 24	+ 2	20 47	+ 4	—	47·5
Simonoseki		71·8	342	11 23	+ 1	20 45	+ 2	—	—
Hukuoka B		72·1	342	20 52	S	(20 52)	+ 6	41·3	—
Nagasaki		73·0	342	11 31	+ 2	e 21 4	+ 7	e 29·8	—
Miyazaki		73·7	341	11 34	+ 1	21 8	+ 3	—	—
Nanking		74·4	352	11 38k	+ 1	21 18	+ 5	44·0	46·4
Zi-ka-wei		75·2	349	i 11 32a	− 9	i 21 20	− 2	46·0	50·0
Agra		77·4	28	11 51	− 3	21 33	−14	36·3	41·2
Taihoku		81·3	348	12 21	+ 6	—	—	—	—
Calcutta		83·2	19	12 15	− 9	22 29	−20	41·4	48·9
Hong Kong		84·3	356	12 32	+ 2	23 0	− 1	40·3	53·6
Bombay		84·7	35	12 37	+ 5	22 52	[− 5]	e 40·1	47·6
Huancayo		85·4	185	i 12 33	− 2	23 6	[+ 4]	e 42·2	—
Hyderabad		87·0	29	12 42	− 1	23 8	[− 5]	38·5	54·6
La Paz		89·8	177	i 12 50	− 6	i 23 44	−10	46·7	56·0
Manila		91·8	348	13 8a	+ 2	24 13	0	43·6	51·1
Sucre		92·4	174	13 5	− 4	23 37	[−10]	50·1	—
Kodaikanal		94·0	32	e 13 19	+ 3	e 24 50	+17	—	54·9
Colombo		97·7	29	6 11	?	—	—	—	54·5
Medan		102·8	11	e 14 14	+18	—	—	e 60·1	—
Batavia		112·9	2	18 44	[+18]	—	—	e 69·1	—
Cape Town		122·1	102	—	—	30 31	PS	60·1	65·3

Additional readings :—
Ivigtut +3m.28s. =PP +0s. and +5m.44s.
Reykjavik PP = +4m.33s., PPP = +4m.44s., SS? = +8m.30s.

Continued on next page.

Ottawa PP = +6m.22s., SS = +11m.38s. ; T_0 = 5h.2m.54s.
Sitka eSS = +12m.28s.
Toronto iPPN = +6m.38s., SSN = +12m.14s.
Oak Ridge eSS = +12m.36s., e = +13m.34s.
Edinburgh i = +10m.44s., +11m.32s., +11m.51s., and +15m.51s.
Ann Arbor ePPN = +7m.14s., eSS = +13m.8s. ; T_0 = 5h.2m.24s.
Chicago iP = +6m.26s., iSS = +14m.34s.
Pittsburgh ePP = +7m.24s., i = +10m.54s., +11m.22s., and +12m.42s., iSS = +13m.50s., i = +14m.52s. and +15m.55s.
Bozeman eSS = +13m.33s. ; T_0 = 5h.2m.45s.
Bidston ePP = +7m.48s., ePPP = +8m.18s.
Upsala iPPN = +7m.35s., iSE = +11m.58s.
Victoria SN = +12m.21s. ; T_0 = 5h.2m.43s.
Helsingfors ePPE = +8m.22s., P_cSE = +12m.32s., eSSE = +14m.40s.
Oxford i = +15m.6s. = SSSS + 6s.
Charlottesville e = +7m.24s., ePP = +8m.8s., e = +15m.48s.
Copenhagen PP = +8m.14s., e = +9m.36s. = P_cP + 8s., eE = +13m.2s., SS = +15m.8s. = SSS + 5s.
Florissant ipP = +6m.58s., iPP = +8m.5s., isS = +12m.37s., iSS = +13m.53s.
Kew iP = +7m.6s., ePP = +8m.35s.
St. Louis iEN = +7m.4s., iPPPN = +8m.15s., iE = +14m.4s. ; T_0 = 5h.2m.54s.
De Bilt iZ = +7m.8s., iPPZ = +8m.47s.
Denver ePPE = +8m.41s. = PPP − 2s., iSSS = +15m.24s. = SS + 3s.
Uccle PPN = +8m.32s.
Königsberg ePPE = +8m.33s., eP_cPZ = +9m.4s., eSSE = +16m.17s., eN = +16m.22s.
Paris PP = +8m.58s.
Columbia ePP = +9m.4s., eSS = +16m.12s.
Leipzig ePP = +8m.59s., eN = +11m.26s., e = +12m.5s., eN = +17m.20s.
Jena eZ = +7m.38s., eN = +7m.41s., ePPE = +9m.0s., ePPZ = +9m.8s.
Cheb e = +7m.39s. and +9m.13s. = PP + 5s.
Strasbourg iPP = +9m.20s.
Stuttgart i = +7m.50s., iPP = +9m.20s., i = +9m.37s.
Prague ePP = +9m.27s., ePPP = +9m.55s.
Basle e = +7m.45s. and +17m.23s. = SSS − 3s.
Ukiah ePP = +9m.33s., eSS = +17m.26s.
Berkeley iZ = +9m.45s., eE = +20m.48s. and +21m.41s., eZ = +22m.49s., eE = +22m.57s. and +26m.5s.
Lick iN = +8m.4s., iE = +8m.13s., eN = +22m.50s.
Branner iE = +8m.8s. and +8m.15s., iN = +8m.17s., iE = +8m.20s., iN = +8m.23s., eN = +23m.58s.
Vienna iN = +8m.13s., iENZ = +10m.40s., iN = +16m.46s.
Graz iSS = +18m.45s.
Piacenza PPE = +9m.8s.
Laibach e = +13m.2s.
Triest iPPP? = +10m.14s., i = +15m.8s. and +15m.54s., iSSS? = +18m.34s.
Toledo SSS = +18m.24s.
Sverdlovsk L_q + 22m.14s.
Zagreb e = +18m.17s. = S_cS + 0s.
Pasadena iN = +18m.28s. = S_cS + 11s.
Tucson PP = +10m.16s., SS = +18m.40s.
Belgrade e = +10m.24s. = PP + 5s.
Alicante iP = +8m.46s., SSS = +19m.21s.
San Fernando PN = +8m.39s., SE = +15m.38s.
Almeria SSS = +19m.31s.
San Juan ePP = +11m.38s.
Tiflis eE = +22m.38s.
Mizusawa ePE = +10m.49s.
Chiufeng SS? = +24m.5s.
Osaka i = +14m.11s. and +15m.33s.
Kobe iN = +12m.19s., iZ = +12m.21s.
Nanking eN = +12m.3s. and +14m.28s. = PP + 12s.
Zi-ka-wei iZ = +11m.44s., +14m.36s. = PP + 13s., and +43m.35s.
Agra PS = +22m.15s., SS = +26m.35s., SSS = +29m.29s.
Hong Kong PP = +15m.49s., SS = +28m.47s.
Bombay PP = +15m.59s., PPP = +17m.54s., S_g = +23m.16s. = S + 11s., PPS = +24m.36s., SS = +29m.12s.
Huancayo e = +37m.8s.
La Paz pP = +14m.3s., sP = +14m.25s., iPP = +16m.22s., PS = +24m.43s., sS = +25m.43s., SS = +29m.37s.
Manila PP = +16m.49s., PSN = +25m.16s., SSN = +30m.33s.
Kodaikanal PP = +17m.15s., SKS = +23m.55s., SKKS = +24m.26s., SS = +31m.43s.
Cape Town E = +36m.56s., N = +41m.17s. = SSS − 3s., E = +42m.24s., N = +49m.17s., E = +52m.28s.
Long waves were also recorded at Tunis, Wellington, and Christchurch.

Aug. 31d. 14h. 57m. 51s. Epicentre 38°·7N. 70°·5E. (as on 1929 March 6d.). R.1.

U.R.S.S. gives 39°·0N. 70°·5E.

A = +·261, B = +·736, C = +·625; D = +·943, E = −·334; G = +·209, H = +·589, K = −·780.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·5	35	i 0 31	− 5	1 2	− 2	—	—
Frunse	5·2	36	i 1 9	− 5	—	—	—	—
Almata	6·7	46	i 1 34	− 1	—	—	—	—
Dehra Dun	10·4	143	2 9	−17	4 19	− 4	5·3	6·1
Agra	13·1	149	i 2 56	− 7	i 5 16	−13	6·0	7·4
Baku	15·9	283	i 3 43	+ 3	i 6 51	+15	8·1	—
Grozny	19·2	292	e 4 27	+ 6	i 8 3	+13	—	—
Sverdlovsk	19·3	344	i 4 16	− 6	—	—	—	—
Tiflis	19·8	287	4 28	+ 1	e 8 16	+14	i 11·9	21·7
Bombay	19·9	173	i 4 30	+ 1	8 18	+14	10·0	12·8
Erevan	20·1	282	e 4 39	+ 8	e 8 33	SS	—	—
Calcutta	22·2	132	4 7	−46	8 12	−38	11·1	13·1
Hyderabad	22·3	159	e 4 58	+ 4	e 8 58	+ 6	10·9	13·9
Sotchi	23·5	292	e 4 13	−52	e 8 47	−27	—	—
Theodosia	26·7	295	e 5 35	0	10 26	+16	15·1	—
Yalta	27·5	294	5 44	+ 1	10 41	+17	—	—
Simferopol	27·6	295	5 39	− 5	10 32	+ 7	—	—
Ksara	28·1	272	e 6 7	+19	11 1	+27	—	—
Kodaikanal	29·1	166	e 6 2	+ 5	i 10 59	+ 9	14·1	16·3
Pulkovo	32·8	324	e 6 28	− 2	i 11 45	− 3	16·1	18·4
Colombo	32·9	163	6 35	+ 4	12 55	SS	21·7	22·0
Helwan	33·3	266	6 31	− 3	12 2	+ 7	—	24·4
Lemberg	34·4	304	e 7 8	+24	e 14 8	SS	—	22·2
Chiufeng	34·9	73	e 6 42	− 6	12 16	− 4	—	23·1
Helsingfors	35·5	324	e 6 58	+ 5	12 35	+ 6	e 14·4	—
Königsberg	36·9	314	i 7 5	− 1	e 13 14	+24	e 20·3	22·1
Belgrade	37·2	296	e 7 10	+ 2	e 16 50	?	e 22·5	—
Budapest	37·8	300	7 17	+ 4	16 2	?	22·1	26·6
Upsala	39·0	321	e 7 9	−15	13 25	+ 4	e 20·4	21·8
Nanking	39·5	84	7 23	− 5	e 13 27	− 2	24·1	26·1
Vienna	39·5	302	e 7 31	+ 3	17 41	(+ 2)	—	23·8
Zagreb	40·2	298	e 7 34	0	e 16 39	SS	e 23·6	24·4
Graz	40·3	300	i 6 45	−50	e 14 21	+40	23·1	26·1
Hong Kong	40·6	100	7 28	− 9	13 41	− 4	19·3	24·1
Prague	40·6	305	e 7 40	+ 3	e 16 20	SS	e 20·1	23·6
Laibach	41·1	299	e 9 28	PP	e 14 12	+19	e 28·6	—
Copenhagen	41·4	314	7 47	+ 3	14 0	+ 1	—	—
Trenta	41·4	289	e 7 46	+ 2	e 14 6	+ 7	—	—
Triest	41·7	298	e 7 45k	− 1	i 14 8	+ 6	—	23·6
Leipzig	41·8	307	e 7 52?	+ 5	e 14 9	+ 6	e 21·1	29·1
Cheb	41·9	305	e 10 10	(+22)	e 17 11	SS	e 21·1	25·1
Zi-ka-wei	41·9	83	e 7 33	−15	i 13 57	− 8	25·3	27·4
Jena	42·3	307	e 7 50	− 1	e 16 58	SS	e 21·1	29·9
Capodimonte	42·5	292	e 8 9	+16	e 15 9	+56	—	—
Naples	42·5	293	e 8 9	+16	e 15 9	+56	—	—
Venice	42·7	298	e 7 50	− 4	i 18 1	(+ 3)	—	27·7
Treviso	42·8	299	e 7 53	− 2	i 14 30	+12	—	—
Hamburg	43·0	311	e 7 57	0	e 17 9	SS	—	24·1
Padova	43·1	298	8 5	+ 7	14 43	+21	—	—
Göttingen	43·3	308	i 7 58	− 1	—	—	—	24·3
Medan	43·4	136	10 25	(+32)	i 17 26	SS	—	—
Zinsen	43·5	73	e 7 52	− 9	e 17 33	SS	e 23·1	—
Keizyo	43·7	73	e 14 44	S	(e 14 44)	+13	23·5	—
Prato	43·9	297	e 8 9	+ 5	i 14 52	+18	—	i 26·9
Stuttgart	44·2	304	e 8 6	0	e 14 47	+ 8	e 23·1	27·6

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Karlsruhe	44·6	304	8 9	− 1	e 18 20	(+10)	i 25·4	27·3
Piacenza	44·6	298	8 26	+16	14 54	+10	23·1	32·6
Zurich	44·9	303	e 8 16	+ 4	—	—	—	—
Bergen	45·2	322	e 16 37	?	19 1	?	—	23·1
Strasbourg	45·2	305	e 8 16	+ 2	i 15 1	+ 7	e 22·1	28·6
Basle	45·5	302	e 8 17	0	—	—	e 26·1	—
Vladivostok	45·6	63	e 8 10	− 8	e 14 58	− 1	23·2	29·1
Neuchatel	46·0	302	e 8 19	− 2	e 18 27	(+ 9)	—	—
De Bilt	46·1	309	e 8 24	+ 3	e 15 18	+12	e 22·1	26·7
Husan	46·2	75	e 15 31	S	(e 15 31)	+24	e 23·1	—
Uccle	46·8	308	8 31	+ 4	i 15 21	+ 5	22·1	—
Grenoble	47·3	296	e 8 9?	−22	e 15 9?	−14	e 26·1	—
Hukuoka B	47·8	76	e 19 20	?	27 1	?	—	—
Paris	48·5	306	e 9 9?	+29	e 18 50	SS	24·1	31·1
Miyazaki	49·3	78	8 33	−13	15 47	− 4	—	—
Durham	49·5	314	15 57	S	(15 57)	+ 3	—	31·1
Kew	49·5	308	e 8 51	+ 4	—	—	e 23·1	29·1
Oxford	50·1	309	—	—	i 16 5	+ 3	e 23·4	30·1
Edinburgh	50·2	316	—	—	e 16 9?	+ 5	27·1	34·9
Stonyhurst	50·2	312	—	—	e 14 30	?	28·1	33·2
Koti	50·2	76	—	—	e 16 0	− 4	e 28·5	—
Manila	50·4	104	i 8 50	− 4	i 16 9	+ 3	24·4	28·9
Bidston	50·7	312	—	—	e 16 9	− 2	e 24·1	32·1
Kobe	50·9	73	8 49	− 9	16 12	− 1	27·9	29·0
Sumoto	50·9	74	8 53	− 5	16 10	− 3	e 27·1	34·6
Barcelona	51·0	296	e 16 27	S	(e 16 27)	+12	e 28·8	33·7
Osaka	51·2	74	8 29	−31	16 42	+24	30·5	—
Nagoya	52·1	71	e 9 3	− 4	—	—	—	—
Oiwake	52·8	70	9 16	+ 4	16 46	+ 7	—	—
Hukusima	53·6	68	9 14	− 4	16 38	−12	—	—
Alicante	54·0	294	e 9 25	+ 4	e 17 16	+20	e 26·2	—
Toledo	55·9	297	9 36	+ 1	17 26	+ 5	e 26·9	34·0
Almeria	56·1	293	e 9 34	− 3	e 17 28	+ 4	e 33·8	—
Batavia	56·1	135	11 31	PP	17 9	−15	e 32·1	—
Granada	56·7	294	9 22	−19	16 48	?	18·8	—
San Fernando	59·0	294	10 46	(− 4)	18 9	+ 6	33·1	35·6
Tananarive	61·5	205	—	—	25 43	?	e 33·8	37·6
Ivigtut	68·4	333	10 59	− 2	20 1	− 1	27·1	—
Cape Town	87·2	221	—	—	23 29	0	41·7	56·1
Ottawa	90·6	338	—	—	e 23 27	[− 9]	e 39·1	—
Oak Ridge	91·8	334	—	—	e 25 20	PS	39·1	—
Victoria	92·0	10	23 50	S	(23 50)	[+ 6]	49·3	54·9
Pittsburgh	96·4	338	—	—	e 24 19	[+11]	e 45·4	—
Tinemaha	103·8	7	e 18 21	PP	—	—	—	—
Pasadena	106·8	8	e 18 25	PP	—	—	—	—
San Juan	109·9	316	—	—	e 25 30	[+17]	e 49·1	—
Sucre	137·0	284	e 19 29	[+11]	—	—	74·1	—
La Paz	137·7	290	e 19 44	[+25]	—	—	73·1	77·4

Additional readings :—
Andijan iP_g = +35s.
Grozny i = +4m.31s. and +8m.51s.
Sverdlovsk i = +4m.20s. and +4m.39s.
Tiflis eN = +4m.41s. = PP + 2s., iSEZ = +8m.19s.
Bombay PP = +4m.49s., SS = +9m.3s.
Kodaikanal SS = +12m.11s.
Chiufeng S = +12m.20s.
Helsingfors ePPENZ = +8m.15s., ePPPEZ = +8m.55s., SSNE = +13m.53s., SSSEN = +14m.13s. ; T_o = 14h.57m.29s.
Königsberg ePPEZ = +8m.27s., ePSN = +14m.13s., e?Z = +14m.47s., eSSNZ = +16m.10s.
Belgrade e = +9m.0s. and +13m.6s. = S + 12s.
Nanking eN = +16m.29s., iZ = +21m.49s.
Vienna PP = +10m.53s., PPP = +12m.54s., SS = +22m.49s., PKKP = +26m.9s., SSS = +26m.31s.

Continued on next page.

Zagreb eE = +9m.22s. =PPP +0s. and +9m.55s. =P_cP +12s., e = +10m.17s., +19m.2s., eE = +20m.9s.?
Graz iPP = +8m.10s., iPPP = +9m.53s., iS_cS = +16m.45s.
Hong Kong SS = +16m.42s.
Prague e = +9m.16s. =PP +10s.
Laibach e = +17m.17s., +21m.14s.
Copenhagen +9m.27s., eE = +14m.33s., +16m.39s. =SS −2s.
Triest iP = +7m.50s., iPP = +9m.14s., iP_cP = +9m.30s., iPPP = +9m.36s., i = +10m.31s. and +14m.19s., SS = +16m.51s., e = +17m.22s. =SSS −4s., SSS = +17m.32s. =S_cS −20s.
Leipzig e = +9m.41s. and +16m.45s. =SS −4s.
Zi-ka-wei iZ = +17m.17s. and +20m.13s.
Jena ePP = +9m.34s., eE = +14m.9s., eN = +14m.15s. =S +5s.
Treviso S = +17m.49s. =S_cS −10s.
Medan iNS = +19m.57s. and +20m.53s.
Prato iS? = +18m.9s. =S_cS +4s.
Stuttgart e = +8m.46s., +15m.14s., and +17m.44s. =SS +9s., SS = +18m.15s. = S_cS +7s., SSS = +19m.9s.
Piacenza SS = +18m.29s.
Zurich e = +10m.4s. =P_cP +6s.
Strasbourg iSS = +18m.20s. =S_cS +7s.
Basle e = +10m.5s. =P_cP +5s.
De Bilt iSS = +18m.43s.
Uccle SSN = +18m.31s.
Durham S? = +19m.45s.
Kew eSS = +19m.37s.
Oxford i = +19m.40s. =SS +16s.
Stonyhurst i = +20m.20s.
Edinburgh i = +20m.21s.
Koti +26m.39s.
Bidston e = +20m.1s.
Kobe ePE = +8m.57s., eN = +10m.16s. =P_cP −3s.
Barcelona eS = +22m.23s.
Osaka i = +9m.33s., +10m.48s. =PP −3s., +11m.46s. =PPP +2s., and +28m.3s.
Granada P_cP = +10m.20s., PP = +11m.28s.
Tananarive eN = +31m.40s.
Pittsburgh eSKS = +23m.31s., ePS = +26m.13s., eSS = +31m.33s., e = +39m.21s.
Long waves were also recorded at Tortosa, Heizyo, Nagasaki, Melbourne, and other American stations.

Aug. 31d. Readings from which no determination is made :—
Samarkand eP =17h.13m.42s., e =14m.20s., M =14m.23s.
Frunse eP =17h.14m.16s., e =15m.4s.
Tashkent e =17h.20m.53s., iS =23m.13s.
Andijan e =17h.35m.54s.

Andijan iP =17h.43m.40s., M =43m.48s.
Samarkand e =17h.43m.52s.
Frunse P =17h.44m.24s., P* =44m.35s., iP_g =44m.41s., iS* =45m.28s., S_g = 45m.44s., M =45m.48s.
Sverdlovsk P =17h.47m.32s., e =51m.18s., L =52m.48s., LR =54m.42s., M = 54m.48s.
Erevan eP =17h.48m.2s., e =51m.24s.
Baku eP =17h.49m.20s., eS =52m.22s., L =53m.
Agra e =17h.50m.15s.
Tiflis eZ =17h.52m.24s.
Tashkent iP =17h.51m.23s.
Piatigorsk iP =17h.54m.39s., iS_g =58m.36s., eL =18h.4m.5s.
Bombay eN =17h.54m., eE =55m.
Alicante P_g =17h.58m.53s.
Pulkovo eL =18h.0m.
Frunse e =18h.4m.40s.
Copenhagen L =18h.6m.
De Bilt eL =18h.11m.
Tashkent P =18h.13m.10s., iL =13m.49s., M =14m.18s.; epicentre 38° 35′N. 69° 43′E.
Samarkand iP =18h.13m.49s., e =14m.11s., S_g =14m.20s., M =14m.25s.

Andijan eS_g =18h.32m.18s.
Tashkent e =18h.41m.50s.
Sverdlovsk L =18h.45m.
Prato iP =18h.50m.36s., iS =50m.41s.

Aug. 31d. 23h. 5m. 36s. Epicentre 33°·2N. 131°·0E. (as on 1930 April 25d.). X.

A = −·549, B = +·632, C = +·548; D = +·755, E = +·656; G = −·359, H = +·413, K = −·837.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Hukuoka	0·6	308	0 9	0	0 20	+ 5	0·3
Hukuoka B	0·6	308	i 0 10	+ 1	0 20	+ 5	0·3
Nagasaki	1·1	243	i 0 26	S	0 47	?	—
Koti	2·2	79	(0 33)	+ 2	(0 55)	− 2	—
Husan	2·5	320	0 32	− 4	0 50	P_g	1·1
Sumoto	3·4	69	0 46	− 3	1 27	0	1·6
Kobe	3·8	66	e 0 52	− 2	e 1 39	+ 2	1·9
Toyooka	3·9	50	0 58	+ 2	1 44	+ 4	1·8
Osaka	4·0	66	0 59	+ 2	1 50	S*	3·0
Nagoya	5·3	66	1 16	+ 1	2 28	?	—

Koti readings have been *diminished* by 10m.

Aug. 31d. Readings from which no determination is made:—
Zagreb eP_g = 23h.29m.47s., eZ = 29m.52s., iS_g = 30m.3s., iL = 30m.6s., eM = 30m.15s.
Budapest P = 23h.29m.54s., L = 30m.20s.
Vienna iPN = 23h.29m.55s., P_g = 29m.58s., S* = 30m.16s., S = iL = 30m.20s., S_gS = 30m.35s., M = 30m.15s.
Triest eP_g = 23h.30m.12s., iS_g = 30m.45s., i = 31m.8s.
Venice P = 23h.30m.33s.
Zurich iP = 23h.30m.50s., e = 31m.55s.
Ravensburg e = 23h.31m.0s., e = 32m.0s.
Basle eP = 23h.31m.2s.
Neuchatel eP = 23h.31m.5s., i = 32m.20s.
Prague e = 23h.31m.19s., M = 32m.
Stuttgart e = 23h.31m.30s., e = 32m.30s.

Aug. 31d. Readings also at 0h. (Oak Ridge (2)), 2h. (Tiflis), 8h. (Piatigorsk), 11h. (Samarkand, Sumoto, Osaka, and Nagoya), 12h. (Andijan), 13h. (Apia, Samarkand, Mount Wilson, Pasadena, and Tinemaha), 14h. (Melbourne, Christ Church, Wellington, New Plymouth, Riverside, Mount Wilson, and Pasadena), 15h. (Andijan (4)), 16h. (Andijan (3), Tashkent, and Frunse (2)), 17h. (Toyooka and Tashkent), 18h. (Oak Ridge and Taikyu), 19h. (Tashkent, Samarkand (3), Baku, Frunse, and Andijan (3)), 20h. (Andijan (3), Tashkent (2), Samarkand (3), Frunse (3), and Berkeley), 21h. (Andijan (2), Samarkand (2), and Frunse (2)), 22h. (Andijan and Malabar), 23h. (Frunse, Andijan, Samarkand, and Tashkent).

Sept. 1d. 2h. 44m. 48s. Epicentre 31°·0N. 130°·6E. (as on 1933 June 2d.). X.

A = −·558, B = +·651, C = +·515; D = +·759, E = +·651; G = −·335, H = +·391, K = −·857.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Nagasaki	1·9	343	0 34	P_g	1 1	S_g	—
Hukuoka	2·6	357	0 39	+ 2	1 6	− 1	1·2
Hukuoka B	2·6	357	0 37	0	1 6	− 1	—
Koti	3·6	43	0 50	− 1	1 11	P_g	—
Husan	4·3	342	e 1 14	P*	2 6	S*	—
Osaka	5·6	47	1 20	0	2 20	− 3	3·4
Nagoya	6·7	50	e 1 58	P*	—	—	—

Osaka gives also i = +1m.30s. = P* − 3s.

Sept. 1d. 6h. 50m. 40s. Epicentre 38°·6N. 71°·9E. (as on 1934 June 4d.). X.

A = +·243, B = +·743, C = +·624.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·2	9	0 32	+ 1	1 2	S*	—	1·1
Tashkent	3·4	325	(e 0 49)	0	(e 1 11)	P_g	—	—
Samarkand	3·9	287	1 14	P_g	2 2	S_g	—	2·6
Frunse	4·8	25	e 1 10	+ 2	i 2 13	S*	—	2·7
Almata	6·0	38	e 1 34	P*	—	—	—	3·5
Baku	17·1	284	—	—	e 8 10	L	(e 8·2)	—
Sverdlovsk	19·7	344	e 4 50	?	—	—	9·8	—

Additional readings and note :—
Andijan P_g = +36s.
Tashkent readings have been *increased* by 8m.

Sept. 1d. 6h. 55m. 19s. Epicentre 45°·1N. 137°·0E. N.3.

A = −·516, B = +·481, C = +·708 ; D = +·682, E = +·731 ;
G = −·518, H = +·483, K = −·706

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Vladivostok	4·2	243	i 0 26	?	(i 1 12)	P*	i 1·2	—
Mizusawa	6·7	152	e 1 47	P*	i 2 8	P_g	—	—
Tyosi	9·8	161	—	—	3 49	−19	—	—
Nagoya	9·9	181	2 21	+ 2	e 4 1	−10	—	—
Osaka	10·5	187	1 38	?	4 45	+19	—	4·8
Kobe	10·5	187	—	—	i 4 3	−23	—	4·1
Keizyo	10·6	229	2 31	+ 2	4 13	−15	—	—
Koti	11·8	194	2 41	− 5	4 32	−26	—	—
Chiufeng	16·1	259	e 3 43	0	e 6 28	−13	—	—
Nanking	19·2	234	e 3 58	−23	e 7 6	−44	—	—
Sverdlovsk	46·8	313	i 8 30	+ 3	e 15 2	−14	—	—
Pulkovo	59·4	326	—	—	e 17 51	−17	—	—
Baku	61·0	299	e 10 20	+ 9	e 18 28	− 1	—	—
Tiflis	63·2	303	—	—	e 18 32	−25	—	—
Copenhagen	68·9	330	19 52	S	(19 52)	−16	—	—
Tinemaha	73·5	54	i 11 32	0	—	—	—	—
Ksara	73·6	302	e 11 41	+ 9	—	—	—	—
Haiwee	74·3	54	i 11 36	0	—	—	—	—
Pasadena	75·6	56	i 11 44a	0	—	—	—	—
Mount Wilson	75·6	56	i 11 44	0	—	—	—	—
Riverside	76·1	55	i 11 46	− 1	—	—	—	—
St. Louis	86·1	35	—	—	e 23 42	+24	—	—
Christchurch	94·2	155	—	—	e 26 13	PS	—	—

Additional readings :—
Sverdlovsk e = +8m.52s., +10m.25s., +17m.5s., and +20m.13s.
Christchurch eEN = +31m.21s.
Tiflis eZ = +22m.45s. =SS −13s.

Sept. 1d. 6h. 57m. 32s. Epicentre 36°·3S. 104°·5W. N.3.

A = −·202, B = −·780, C = −·592 ; D = −·968, E = +·250 ;
G = +·148, H = +·573, K = −·806.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Huancayo	35·7	55	e 6 56	+ 1	i 12 28	− 4	e 19·9	—
La Plata	37·5	102	e 7 15	+ 4	13 2	+ 3	18·8	19·4
La Paz	37·8	68	7 12a	− 1	i 13 3	0	16·5	19·8
Sucre	38·5	74	i 7 19	0	i 13 19	+ 5	16·8	—
Christchurch	61·3	236	—	—	e 18 56	PS	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
San Juan	65·6	40	e 10 36	− 6	e 19 22	− 5	—	—
Tinemaha	74·4	349	e 11 42	+ 5	—	—	—	—
Florissant	76·3	11	e 11 53	+ 5	e 21 19	−16	—	—
Oak Ridge	84·4	24	i 12 30	0	e 22 55	[0]	37·5	—
Ottawa	85·8	20	—	—	e 23 10	[+ 5]	e 35·5	—
De Bilt	129·4	47	e 22 41	PKS	—	—	e 60·5	—
Stuttgart	131·2	53	e 22 42	PKS	—	—	e 63·5	—
Triest	133·6	58	—	—	i 13 58	?	e 56·5	66·2
Copenhagen	134·1	44	22 56	PKS	e 44 28	SSS	62·5	—
Nanking	144·2	277	e 19 35	[+ 3]	—	—	—	—
Ksara	147·7	84	(e 19 53)	[+15]	e 19 53	PKP	—	—
Simferopol	147·8	61	e 19 53	[+14]	—	—	—	—
Yalta	147·9	62	e 19 48	[+ 9]	—	—	—	—
Theodosia	148·7	61	e 19 48	[+ 8]	—	—	—	—
Tiflis	155·7	68	e 23 54	PP	—	—	e 38·5	49·9
Sverdlovsk	157·2	20	e 10 4	?	e 29 33	PPPP	56·5	—
Baku	159·6	71	—	—	e 30 38	{−38}	e 44·5	84·4
Tashkent	173·1	43	e 21 54	{+10}	—	—	e 84·5	112·1

Additional readings :—
La Plata +8m.39s. =PP+7s., eSN = +12m.52s.
La Paz PP = +8m.51s., SS = +15m.45s.
Florissant ePN = +7m.54s.
Oak Ridge 1Z = +12m.33s., eNW = +22m.49s., eNE = +28m.27s., eNW = +34m.58s.
Ottawa eN = +28m.38s.
Triest e = +44m.22s. =SSS+11s.
Sverdlovsk e = +26m.39s.
Tashkent i = +14m.41s. and +23m.59s. =PKS+16s., e = +25m.40s., +27m.28s., +33m.28s., +41m.21s., +55m.28s., and +69m.29s.
Long waves were also recorded at Kew, Stonyhurst, Wellington, Honolulu, Tucson, Paris, Uccle, Piacenza, Strasbourg, and Pulkovo.

Sept. 1d. 7h. 40m. 58s. Epicentre 24°·8N. 122°·2E. N.3.

A = −·484, B = +·768, C = +·420 ; D = +·846, E = +·533 ;
G = −·224, H = +·355, K = −·908.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Taihoku	0·6	295	0 10	+ 1	0 16	+ 1
Karenko	1·0	210	e 0 14	0	0 22	− 4
Arisan	1·8	220	e 0 26	0	0 36	P_g

Sept. 1d. 8h. 12m. 20s. Epicentre 1°·8N. 129°·3E. (as on 1932 Jan. 5d.). X.

A = −·633, B = +·774, C = +·031.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	15·2	328	i 3 32k	+ 1	i 6 28	SS	8·3	—
Batavia	23·8	250	i 5 3	− 5	i 9 16	− 3	—	—
Hong Kong	25·3	326	5 28	+ 5	9 49	+ 3	—	13·2
Bombay	57·8	292	e 8 40?	−69	—	—	—	—

Bombay gives also eE = +11m.40s.?
Long waves were recorded at De Bilt.

Sept. 1d. 9h. 2m. 51s. Epicentre 37°·6N. 72°·6E. (as on 1933 June 19d.). X.

A = +·237, B = +·756, C = +·610 ; D = +·954, E = −·299 ;
G = +·182, H = +·582, K = −·792.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	3·2	357	0 44	− 2	i 1 14	− 8	—	1·3
Tashkent	4·5	326	—	—	e 9 50	?	i 10·5	11·1
Samarkand	4·8	297	1 6	− 2	i 1 51	−12	—	2·1
Frunse	5·5	15	e 1 20	+ 2	e 2 36	S*	—	2·9
Almata	6·6	29	e 1 46	P*	e 3 9	S*	—	3·7
Baku	17·8	286	—	—	e 7 51	L	(e 7·9)	—
Sverdlovsk	20·8	341	e 4 30	− 8	—	—	10·1	—
Grozny	21·1	294	4 43	+ 2	e 8 35	+ 7	—	—

Additional readings :—
Andijan P_g = +48s.
Tashkent e = +10m.8s. and +10m.33s.
Samarkand P_g = +1m.17s. = P* −2s.
Baku e = +9m.12s. and +17m.5s.
Grozny e = +8m.59s. = SS +5s.
Long waves were also recorded at Copenhagen and Pulkovo.

Sept. 1d. 11h. 17m. 37s. Epicentre 36°·1N. 140°·0E. (as on 1933 Sept. 16d.). R.3.

A = −·619, B = +·519, C = +·589 ; D = +·643, E = +·766 ;
G = −·451, H = +·379, K = −·808.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Tokyo		0·5	206	i 0 6	− 1	0 15	+ 2	0·4
Tyosi		0·8	118	i 0 8	− 3	0 19	− 2	0·4
Nagoya		2·7	249	0 37	− 2	1 17	S*	1·9
Mizusawa		3·0	16	e 0 46	+ 3	i 1 19	+ 2	—
Osaka		3·9	250	0 57	+ 1	1 59	S*	2·4
Toyooka		4·2	264	e 1 8	P*	2 7	S*	2·3
Kobe		4·3	251	e 1 12	P*	e 1 55	+ 5	2·4
Sumoto	E.	4·5	248	1 4	0	2 12	S*	2·5
	N.	4·5	248	1 6	+ 2	2 10	S*	2·4
	Z.	4·5	248	e 1 10	P*	2 13	S*	2·4
Koti		5·9	247	e 1 23?	− 1	—	—	—
Nagasaki		9·0	251	e 3 4	?	—	—	—

Additional readings :—
Tyosi P = +16s.
Nagoya P = +50s. = P_g +2s.
Osaka i = +1m.8s. = P* +4s.
Toyooka ePE = +1m.10s.

Sept. 1d. 11h. 39m. 26s. Epicentre 0°·5S. 25°·0W. N.2.

A = +·906, B = −·423, C = −·009 ; D = −·423, E = −·906 ;
G = −·008, H = +·004, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sucre		43·6	242	8 19	+17	(17 34)	SS	17·6	—
San Juan		44·6	297	e 8 6	− 4	e 14 34	−10	—	—
Toledo		44·7	23	—	—	e 16 22	?	—	—
La Paz	N.	45·4	247	e 8 19	+ 3	i 15 1	+ 5	22·6	24·9
Huancayo		51·2	255	e 12 19	?	e 15 49	−29	e 25·2	—
Paris		54·8	20	e 9 27	0	e 17 9	+ 3	25·6	30·6
Piacenza		55·0	29	—	—	16 46	−23	—	35·2
Oxford		56·0	18	e 9 9	−27	e 17 24	+ 1	26·9	31·3
Kew		56·0	18	—	—	e 17 20	− 3	e 25·6	—
Strasbourg		56·7	25	e 9 44	+ 3	e 17 27	− 5	e 24·6	—

Continued on next page,

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Bidston	56·9	14	—	—	e 17 34	− 1	e 24·6	—
Uccle	57·1	22	e 13 3	?	17 32	− 6	e 23·6	—
Stuttgart	57·4	26	e 9 43	− 3	e 17 34	− 8	25·6	—
Triest	57·4	31	i 9 47	+ 1	e 17 40	− 2	—	30·6
Stonyhurst	57·5	15	—	—	e 17 34?	− 9	e 23·6	—
De Bilt	58·4	20	9 53	0	17 54	− 1	e 24·6	30·8
Edinburgh	59·1	14	e 13 34?	PPP	—	—	e 27·6	—
Oak Ridge	59·9	322	i 9 54	−10	e 17 58	−17	e 24·1	—
Copenhagen	63·9	23	10 10	−21	—	—	26·6	—
Ottawa	64·0	323	—	—	e 18 4	−63	e 25·6	—
Ksara	66·5	52	e 10 54	+ 5	e 20 7	PS	36·1	—
Helsingfors	71·8	24	—	—	e 20 34?	− 9	e 32·6	—
Pulkovo	73·8	26	e 11 34	+ 1	e 20 58	− 8	32·6	38·5
Tiflis	75·4	47	—	—	e 21 16	− 9	e 38·6	46·2
Grozny	76·5	45	e 11 46	− 3	—	—	—	—
Baku	79·0	49	e 11 33	−30	e 22 12	+ 7	37·6	46·4
Sverdlovsk	88·1	33	e 12 51	+ 3	23 23	[+ 2]	40·6	—
Malabar	132·1	100	19 2	[− 8]	—	—	—	—

Additional readings :—
San Juan e = +13m.24s.
La Paz SS = +18m.33s.
Huancayo e = +20m.9s.
Strasbourg e = +11m.34s.?
Stuttgart e = +12m.52s.
Oak Ridge iZ = +9m.59s. and +10m.10s.
Pulkovo e = +15m.56s. and +25m.46s. =SS+6s.
Sverdlovsk PKP = +16m.22s. =PP+12s., PP = +16m.46s.
Long waves were also recorded at Cape Town, Ivigtut, Algiers, Durham, and other European stations.

Sept. 1d. 12h. 31m. 21s. Epicentre 38°·7N. 70°·5E. (as on Aug. 31d.). X.

Pulkovo gives 38° 46′N. 70°25′E.

A = +·261, B = +·736, C = +·625 ; D = +·943, E = −·334 ;
G = +·209, H = +·589, K = −·780.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·5	35	i 0 38	+ 2	1 8	+ 4	—	1·3
Tashkent	2·8	342	i 0 43	+ 3	—	—	i 1·4	2·0
Samarkand	2·9	289	e 0 59	P_g	i 1 47	?	—	2·1
Frunse	5·2	36	e 1 12	− 2	2 16	+ 3	—	2·6
Almata	6·7	46	e 1 31	− 4	e 2 47	− 4	—	3·5
Agra	13·1	149	—	—	e 5 23	− 6	—	—
Baku	15·9	283	—	—	e 7 11	+35	10·6	—
Grozny	19·2	292	e 4 31	+10	e 8 12	+22	—	—
Sverdlovsk	19·3	344	i 4 20	− 2	7 51	− 1	11·4R	11·5
Tiflis	19·8	287	e 4 29	+ 2	e 9 13	?	e 15·7	—
Bombay	19·9	173	—	—	e 8 39?	+35	—	13·1
Calcutta	22·2	132	8 59	S	(8 59)	+ 9	13·8	—
Kodaikanal	29·1	166	—	—	e 12 7	SS	—	—
Pulkovo	32·8	324	—	—	i 13 9	SS	18·6	—

Additional readings :—
Andijan P_g = +42s., i = +54s.
Samarkand P* = +1m.4s.
Frunse S_g = +2m.34s. =S* +1s., i = +2m.37s.
Almata e = +2m.19s. =P_g +11s. and +3m.13s. =S* −4s.
Agra i = +7m.10s. =S_g.
Baku i = +8m.56s.
Sverdlovsk L_q = +9·7m.
Bombay iE = +10m.51s.
Calcutta S = +12m.24s.
Long waves were also recorded at Chiufeng, De Bilt, Copenhagen, and Hamburg.

Sept 1d. 13h. 0m. 39s. Epicentre 38°·8N. 71°·2E. (as on 1934 April 18d.). 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.
Andijan	2·1	25	e 0 33	+ 3	1 3	S_g	—	1·1
Tashkent	2·9	330	(0 39)	− 2	—	—	(i 1·3)	(1·8)
Samarkand	3·4	285	e 0 48	− 1	1 33	+ 6	—	—
Frunse	4·8	31	e 1 8	0	2 24	S*	—	—
Almata	6·2	42	—	—	e 2 21	−17	—	—
Sverdlovsk	19·3	342	—	—	e 7 45	− 7	11·9	—
Grozny	19·6	291	e 4 23	− 2	—	—	—	—

Additional readings and note :—
Andijan P_g = +37s.
Tashkent readings have been *diminished* by 9m.
Samarkand P_g = +1m.7s.
Frunse P_g = +1m.24s., S* = +2m.10s.
Sverdlovsk e = +10m.1s.
Long waves were recorded at Kodaikanal.

Sept. 1d. Readings for two shocks for which no determinations have been made :—
Baku e = 16h.9m.43s., i = 10m.4s., e = 20m.34s., L = 17h.15m.
Grozny e = 16h.10m.20s.
Andijan eP = 16h.10m.52s., eS_g = 11m.22s., M = 11m.40s.
Tashkent P = 16h.10m.57s., iS = 11m.34s., iL = 11m.40s., M = 12m.6s.
Frunse e = 16h.11m.44s.

Berkeley iPZ = 16h.15m.6s.
Branner ePEN = 16h.15m.9s., iSEN = 15m.15s., iEN = 15m.18s.
San Francisco iPEN = 16h.15m.
Lick ePEN = 16h.15m.16s., iSEN = 15m.27s.

Sept. 1d. Readings also at 0h. (Berkeley), 1h. (Andijan, Samarkand (2), Tashkent, and Lick), 2h. (Andijan, Sverdlovsk, Tashkent, and Mizusawa), 3h. (Sverdlovsk, Samarkand (5), and Tashkent (2)), 4h. (Tashkent (3), Samarkand (2), and Almata), 5h. (Samarkand and Andijan), 6h. (Yalta and Samarkand), 7h. (Tashkent and Nanking), 9h. (Sverdlovsk and Tashkent), 11h. (Mount Wilson, Pasadena, Tinemaha, Riverside, La Jolla, and Haiwee), 13h. (Mount Wilson, Pasadena, and Tinemaha), 15h. (Andijan, Frunse, Tashkent, and Piatigorsk), 16h. (Tashkent), 17h. (Tashkent, Samarkand (3), Andijan, and Sverdlovsk (2)), 18h. (Tiflis, Grozny, Erevan, Andijan (2), Samarkand, Tashkent, Frunse, and Sverdlovsk), 19h. (Andijan, Tashkent, and Frunse), 20h. (Andijan, Tashkent, Frunse, Baku, and Tiflis), 21h. (Tashkent, Sverdlovsk, and Piatigorsk), 22h. (La Paz), 23h. (Graz, Samarkand, and Berkeley).

Sept. 2d. Readings for two shocks for which no determinations have been made :—
Sverdlovsk e = 9h.1m.11s., e = 11m.16s., e = 37m.9s., L = 52m.
Huancayo eP = 9h.4m.24s., e = 5m.0s., eS = 9m.14s., eL = 13m.42s.
La Paz PZ = 9h.5m.27s.
La Jolla ePZ = 9h.5m.43s.
Pasadena ePNZ = 9h.5m.53s.
Riverside ePENZ = 9h.5m.54s.
Mount Wilson iPZ = 9h.5m.56s.
Tinemaha ePZ = 9h.6m.18s.
San Juan e = 9h.13m.45s.
Florissant ePP = 9h.13m.53s., eL = 22m.0s.
Tucson e = 9h.14m.30s.
Oak Ridge e = 9h.16m.7s., e = 20m.21s., eL = 28m.30s.
Ottawa e = 9h.16m.27s., eL = 27m.
Tashkent e = 9h.17m.34s., e = 17m.53s., e = 20m.20s., e = 21m.2s., eL = 10h.10m.0s., M = 23m.12s.
Ukiah e = 9h.19m.24s.
Honolulu e = 9h.24m.0s.
Victoria PEN = 9h.26m.29s., LE = 29m.38s.
Sitka e = 9h.28m.7s.
Pittsburgh e = 9h.28m.46s., e = 35m.28s., eL = 44m.36s.
Tinemaha iPEZ = 9h.29m.10s.

Continued on next page.

Seattle eL = 9h.29m.12s.
Haiwee iPENZ = 9h.29m.21s.
Pasadena iPEZ = 9h.29m.38s.
Mount Wilson iPZ = 9h.29m.39s.
Riverside ePENZ = 9h.29m.45s.
La Jolla ePZ = 9h.29m.54s.

Chicago e = 9h.42m.0s.
Oak Ridge eL = 9h.45m.30s.
Strasbourg eL = 9h.50m.
Paris 9h.51m.
De Bilt eL = 9h.54m.
Edinburgh e = 9h.58m.
Pulkovo eL = 9h.58m.
Stuttgart eL = 9h.59m.
Chiufeng eL? = 9h.59m.12s.
Copenhagen L = 10h.0m.
Baku L = 10h.2m.

Sept. 2d. 10h. 46m. 19s. Epicentre 39°·1N. 72°·4E. (as on 1934 Feb. 20d.). X.

A = + ·235, B = + ·740, C = + ·631.

	Δ	Az.	P.	O − C.	S.	O − C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent	3·2	313	i 0 44	− 2	i 1 21	− 1	1·4	1·9
Frunse	4·2	23	e 1 11	P*	2 15	S_g	—	2·6
Sverdlovsk	19·3	340	e 4 24	+ 2	—	—	8·7	—
Grozny	20·4	291	—	—	e 8 13	− 1	—	—

Sept. 2d. Readings for which no determination has been made :—

Sitka i = 11h.28m.15s., i = 31m.58s.
Berkeley iPZ = 11h.30m.42s.
Tinemaha iP = 11h.31m.7s.
Santa Barbara iPZ = 11h.31m.13s.
Haiwee iP = 11h.31m.13s.
Pasadena iP = 11h.31m.22s.k, iZ = 31m.39s., eLN? = 42m.
Mount Wilson iPZ = 11h.31m.22s.
Riverside iP = 11h.31m.27s.?k.
La Jolla iP = 11h.31m.33s.
Chiufeng eP = 11h.32m.52s., eS = 40m.6s.
Oak Ridge iZ = 11h.34m.2s., eNE = 42m.9s., eNW = 42m.15s.
Sverdlovsk iP = 11h.34m.19s., S = 42m.53s., L = 54m.
Pulkovo eP = 11h.34m.38s., eS = 43m.59s., L = 12h.0m.
Manila P? = 11h.35m.9s., S = 43m.34s.
De Bilt iP = 11h.35m.31s., eL = 12h.5m.
Uccle eP = 11h.35m.37s.
Strasbourg eP = 11h.35m.48s., eL = 12h.2m.
Paris e = 11h.35m.49s., L = 12h.13m.
Stuttgart ePZ = 11h.35m.50s., eL = 12h.5m.
Basle eP = 11h.35m.53s.
Grozny iP = 11h.35m.57s.
Neuchatel eP = 11h.35m.59s.
Ukiah e = 11h.36m.
Yalta e = 11h.36m.1s.
Simferopol e = 11h.36m.2s.
Honolulu e = 11h.37m.0s.
Helsingfors e?N = 11h.38m.24s., eL = 57m.
Andijan eP = 11h.38m.46s., S_g = 39m.16s., M = 39m.19s.
Tashkent e = 11h.38m.52s., iS = 39m.33s., M = 40m.18s.; epicentre 8°S. 65°E.
Frunse e = 11h.40m.18s., M = 40m.44s.
Florissant i = 11h.40m.32s., e = 40m.57s., eL = 49m.0s.
St. Louis iE = 11h.40m.36s.
Ottawa e = 11h.41m.22s., e = 50m.
San Juan e = 11h.46m.23s.

Sept. 2d. Readings also at 1h. (Tashkent and Andijan), 2h. (Sverdlovsk, Frunse, Tashkent, and Andijan), 4h. (Tiflis, Baku, and Tashkent), 6h. (Frunse), 7h. (Tashkent), 8h. (Balboa Heights), 10h. (Catania), 11h. (Huancayo, Mizusawa, and Edinburgh), 12h. (Balboa Heights, Medan, and Copenhagen), 13h. (Andijan), 14h. (Andijan, Frunse, Tashkent, Samarkand (2), and Balboa Heights), 16h. (Tananarive), 19h. (Andijan and Samarkand), 21h. (Adelaide and Wellington), 22h. (Paris), 23h. (Stuttgart, Samarkand, and Andijan).

Sept. 3d. 2h. 49m. 5s. Epicentre 38°·7N. 70°·5E. (as on 1d. 12h.). X.

A = +·261, B = +·736, C = +·625.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·5	35	0 36	0	1 6	+ 2	—	1·2
Tashkent	2·8	342	i 0 41	+ 1	(i 1 20)	S*	i 1·3	1·6
Frunse	5·2	36	e 1 10	− 4	e 2 13	0	—	2·5
Sverdlovsk	19·3	344	4 23	+ 1	8 3	SS	9·7	—

Andijan gives also i = +46s. = P_g +2s.

Sept. 3d. 10h. 19m. 22s. Epicentre 39°·1N. 71°·6E. (as on 1930 Jan. 7d.). X.

Pulkovo gives 38°·6N. 70°·0E.

A = +·245, B = +·736, C = +·631; D = +·949, E = −·316;
G = +·199, H = +·598, K = −·776.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	1·8	20	i 0 32	P_g	i 1 4	S_g	—	1·2
Tashkent	2·8	322	i 0 40	0	(i 1 20)	S*	i 1·3	1·9
Tchimkent	3·5	336	e 1 9	P_g	i 1 48	S*	—	2·7
Frunse	4·4	30	1 6	+ 3	i 2 10	S*	—	2·6
Baku	16·7	281	e 4 5	?	e 7 54	?	e 9·3	—
Bombay	20·3	176	e 4 34	+ 1	i 8 18	+ 6	—	14·6
Tiflis	20·5	286	e 4 26	− 9	e 8 19	+ 3	13·6	—
Ksara	29·0	271	e 5 27	−29	e 10 3	−45	—	—
Kodaikanal	29·4	168	—	—	e 10 56	+ 1	—	—
Pulkovo	33·0	322	—	—	e 13 12	?	18·6	20·1

Additional readings :—
Frunse iP^* = +1m.18s., iP_g = +1m.23s., S_g = +2m.26s.
Tiflis eEZ = +10m.38s.
Long waves were also recorded at Hyderabad, Ivigtut, Copenhagen, and other European stations.

Sept. 3d. Readings also at 1h. (Samarkand, Tashkent, and Andijan), 3h. (Copenhagen), 4h. (Oak Ridge and La Paz), 6h. (Nanking, Samarkand (2), Andijan (2), Tashkent, Frunse, Tiflis, and Basle), 9h. (Samarkand, Andijan, Frunse, Tashkent, and Calcutta), 10h. (Ottawa, Riverside, Tinemaha, Mount Wilson, Pasadena, Tucson, San Juan, Pittsburgh, Haiwee, Florissant, and Chiufeng), 11h. (Lick and De Bilt), 12h. (Grozny), 14h. (Nagoya, Tashkent, Andijan, and Frunse), 15h. (Sverdlovsk), 16h. (Hukuoka B), 18h. (Mizusawa, Tiflis, Tashkent (3), Andijan (2), Baku, Sverdlovsk (2), Tortosa, and Vladivostok), 19h. (Mizusawa, Grozny, Baku, Tiflis, Tashkent, and Sverdlovsk (2)), 20h. (Tashkent), 21h. (Tashkent, Andijan, and Samarkand), 22h. (Tashkent and Tyosi).

Sept. 4d. 1h. 20m. 30s. Epicentre 38°·8N. 71°·2E. (as at 1d. 13h.). X.

A = +·251, B = +·738, C = +·627.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·1	25	e 0 36	P_g	1 6	S_g	—	1·2
Tashkent	2·9	330	e 0 40	− 1	i 1 23	S*	e 1·5	1·8
Samarkand	3·4	285	e 1 3	P_g	1 52	S_g	—	2·0
Frunse	4·8	31	—	—	e 2 22	S*	—	—

Tashkent gives also e = +47s. = P^* +1s.

Sept. 4d. 1h. 26m. 1s. Epicentre 47°·5N. 12°·4E. (as on 1932 Nov. 15d.). R.2.

A = +·660, B = +·145, C = +·737 ; D = +·215, E = −·977 ;
G = +·720, H = +·158, K = −·676.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Treviso	1·8	185	i 0 32	P_g	i 0 59	S_g	—	1·2
Ravensburg	1·9	279	e 0 24	− 4	i 0 50	+ 1	—	—
Venice	2·0	181	i 0 36	P_g	i 1 5	S_g	—	1·5
Padova	2·1	192	e 0 38	P_g	1 3	S_g	—	—
Triest	2·1	153	i 0 35k	P*	i 1 6	S_g	—	—
Graz	2·2	100	i 0 43	P_g	i 1 17	?	—	1·4
Ebingen	2·4	288	e 0 35	+ 1	e 1 1	− 1	—	—
Stuttgart	2·5	301	e 0 38	+ 2	i 1 6	+ 2	e 1·4	—
Zurich	2·6	267	e 0 37	0	e 1 6	− 1	—	—
Cheb	2·6	1	e 0 49	P_g	e 1 27	S_g	—	1·5
Vienna	2·8	74	i 0 56	P_g	1 31	S_g	—	1·8
Prague	2·9	28	e 1 8	S	(e 1 8)	− 6	—	—
Piacenza	3·0	220	e 1 16	S	(e 1 16)	− 1	—	2·2
Zagreb	3·0	124	e 0 53	P_g	e 1 30	S*	—	—
Karlsruhe	3·1	302	i 0 52	P*	1 28	+ 8	1·8	—
Pavia	3·2	225	e 0 46	0	—	—	—	—
Basle	3·3	274	e 0 46	− 1	e 1 32	S*	—	—
Strasbourg	3·3	289	e 0 47	0	i 1 23	− 2	—	—
Jena	3·5	352	e 0 56	P*	e 1 45	S*	i 1·9	1·9
Neuchatel	3·7	264	e 0 52	− 1	i 1 41	+ 6	—	—
Prato	3·7	194	e 0 57	+ 4	i 1 40	+ 5	—	2·2
Leipzig	3·9	0	e 1 9	P_g	—	—	—	2·2
Göttingen	4·3	340	i 1 5	+ 4	i 2 19	S_g	—	2·5
Uccle	6·2	306	e 1 59	P_g	—	—	—	—
Hamburg	6·3	347	—	—	e 2 59?	S*	—	3·6
De Bilt	6·5	317	—	—	e 3 29	S_g	—	—
Copenhagen	8·2	0	—	—	4 40	?	6·0	—
Sverdlovsk	30·0	54	e 6 3	− 2	—	—	16·0	—

Additional readings :—
Ravensburg $iP^* = +29s.$, $iP_g = +31s.$, $e = +48s.$
Triest $iP_g = +39s.a$, $iPP = +40s.$, $i = 41s.$, $+42s.$, and $+46s.$, $iPPs = +48s.$, $i = +1m.7s.$, $+1m.11s.$, and $+1m.14s.$, $SS = +1m.17s.$
Ebingen $eP_g = +41s.$, $i = +43s.$, $e = +57s.$, $iS_g = +1m.7s.$, $i = +1m.9s.$
Stuttgart $eP^* + 42s.$, $iP_g = +44s.$, $i = +48s.$, $eE = +54s.$, $e = +1m.4s.$, $eN = +1m.10s. = S^* - 3s.$, $iS_g = +1m.12s.$
Zurich $eS_g = +1m.11s.$
Vienna $P_g = +1m.5s.$, $iPP = +1m.8s.$, $PPs = +1m.11s. = S - 1s.$, $iPPS = +1m.35s.$, $S^* = +1m.39s.$, $S = iL = +1m.46s.$, $S_g = +1m.49s.$
Prague $iS = +1m.39s. = S_g + 9s.$
Piacenza $P = +1m.33s. = S_g + 0s.$
Zagreb $e = +1m.39s. = S_g + 6s.$
Strasbourg $eP_g = +52s. = P^* - 1s.$, $iS_g = +1m.36s. = S^* - 1s.$
Jena $e = +59s.$, $eP_g = +1m.8s.$, $e = +1m.11s.$, $eE = +1m.24s.$
Neuchatel $i = +56s.$ and $+1m.31s.$
Göttingen $iP_g = +1m.22s.$
Pulkovo records L waves.

Sept. 4d. 8h. 59m. 10s. Epicentre 38°·8N. 71°·2E. (as at 1h. 20m.). X.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·1	25	0 30	0	i 1 0	S*	—	1·1
Tashkent	2·9	330	e 0 40	− 1	1 17	+ 3	e 1·5	1·1
Samarkand	3·4	285	e 1 2	P_g	1 50	L	(1·8)	—
Frunse	4·8	31	—	—	e 1 56	− 7	—	—

Sept. 4d. 9h. 33m. 45s. Epicentre 38°·8N. 71°·2E. (as at 8h. 59m.). X.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·1	25	0 34	P*	1 4	S_g	—	1·1
Tashkent	2·9	330	i 0 41	0	i 1 19	+ 5	i 1·4	1·9
Samarkand	3·4	285	e 1 4	P_g	1 52	L	(1·9)	3·1
Frunse	4·8	31	1 5	− 3	2 9	+ 6	—	2·5
Sverdlovsk	19·3	342	e 4 22	0	e 7 55	+ 3	10·3	—

Additional readings :—
Samarkand P_g = +1m.26s. =S − 1s.
Frunse P_g = +1m.17s. =P* − 2s.

Sept. 4d. 16h. 34m. 31s. Epicentre 22°·7S. 171°·8E. (as on 1934 April 27d.). R.1.

A = − ·913, B = + ·132, C = − ·386 ; D = + ·143, E = + ·990 ;
G = + ·382, H = − ·055, K = − ·923.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Arapuni	15·7	169	—	—	6 44	SS	—	—
Wellington	18·8	173	4 18	+ 2	7 54	SS	10·0	11·5
Christchurch	20·8	178	i 4 39	+ 1	i 8 40	SS	10·4	—
Riverview	21·2	234	i 4 46	+ 4	e 8 33	+ 3	10·4	12·2
Sydney	21·2	234	e 4 27	−15	i 8 34	+ 4	11·5	12·7
Chatham Ils.	23·3	158	5 2	− 2	9 29	+19	12·5	—
Melbourne	27·5	231	i 5 41	− 2	i 10 17	− 7	13·0	16·9
Adelaide	31·3	239	e 5 54	−23	e 11 26	+ 2	12·6	17·8
Perth	50·0	246	—	—	(18 29)	(−16)	18·5	23·5
Honolulu	53·0	36	—	—	e 17 5	+23	—	—
Manila	62·2	302	10 26	+ 6	18 49	+ 4	—	—
Batavia	64·5	274	10 26	− 9	i 19 14	0	34·5	—
Hong Kong	71·9	305	11 20	− 2	20 39	− 5	—	42·0
Zi-ka-wei	72·3	316	e 11 24	− 1	—	—	—	42·5
Vladivostok	75·3	331	i 11 42	0	21 23	− 1	36·3	—
Chiufeng	81·4	321	12 17k	+ 2	22 23	− 8	—	44·4
Ukiah	86·6	45	—	—	e 24 29	PS	e 36·5	—
Pasadena	87·5	51	e 12 50	+ 5	—	—	e 41·5	—
Mount Wilson	87·6	51	e 12 45	− 1	—	—	—	—
Riverside	88·0	51	e 12 48	0	—	—	—	—
Haiwee	88·6	49	e 12 56	+ 5	—	—	—	—
Tinemaha	88·9	49	i 12 53	+ 1	—	—	—	—
Victoria	91·6	37	12 45	−20	23 27	[−15]	42·5	—
Calcutta	92·8	293	e 4 8	?	—	—	—	—
Kodaikanal	97·9	278	e 16 41	?	—	—	—	—
Hyderabad	99·6	285	—	—	32 31	SS	—	58·8
Bombay	105·2	284	e 14 43	+35	—	—	—	64·5
Huancayo	105·7	111	—	—	e 29 53	?	e 66·0	—
Samarkand	115·3	305	e 8 55	?	—	—	—	—
Sverdlovsk	120·3	324	e 15 17	P	25 50	[− 1]	47·5	76·6
Ottawa	121·5	49	—	—	e 28 29?	?	e 50·5	—
San Juan	126·0	83	e 20 59	PP	—	—	—	—
Tiflis	132·1	306	e 19 12	[+ 2]	—	—	e 62·5	76·6
Ivigtut	132·7	25	22 43	PKS	—	—	61·5	—
Pulkov	134·2	334	19 16	[+ 2]	28 29	{−19}	64·5	73·4
Helsingfors	136·0	338	e 22 43	PKS	e 30 5	?	e 69·5	—
Copenhagen	143·6	340	19 36	[+ 6]	—	—	67·5	—
Hamburg	146·2	340	i 19 35k	[− 1]	—	—	e 70·5	87·5
Edinburgh	146·6	355	—	—	e 61 29?	?	e 93·5	—
Prague	147·4	333	e 19 46	[+ 8]	—	—	—	80·5

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
De Bilt	148·9	343	e 19 46	[+ 6]	—	—	e 69·5	80·5
Bidston	149·0	354	e 19 54	[+14]	—	—	—	—
Zagreb	149·7	325	e 19 46	[+ 5]	—	—	e 86·5	—
Stuttgart	150·5	335	e 19 45	[+ 3]	—	—	e 73·5	—
Kew	150·6	350	e 20 3	{+ 2}	—	—	e 75·5	—
Triest	150·9	327	19 48k	[+ 5]	—	—	e 67·2	81·8
Strasbourg	151·2	338	i 19 47	[+ 4]	—	—	e 55·5	—
Paris	152·6	345	e 19 52	[+ 7]	—	—	78·5	84·5
Piacenza	153·3	331	20 47	?	—	—	—	106·5

Additional readings :—
Christchurch $eP_cP = +8m.29s.$ $=S+7s.$, $L_q = +9m.12s.$
Riverview $iP = +4m.48s.$, $iSN = +8m.36s.$
Melbourne $i = +10m.45s.$
Honolulu $eSS = +20m.5s.$
Bombay $i = +18m.25s.$ $=PP+3s.$
Sverdlovsk $PKP = +18m.53s.$, $PP = +20m.14s.$, $eS = +28m.11s.$, $PS = +30m.2s.$, $SS = +36m.53s.$
Tiflis $eEZ = +22m.39s.$ $=PKS-4s.$
Pulkovo $PP = +21m.47s.$, $PKS = +22m.45s.$, $PS = +31m.59s.$, $SS = +39m.23s.$
Helsingfors $ePPPN = +26m.38s.$, $eSSN = +41m.29s.?$
Copenhagen $+23m.23s.$ $=PKS+6s.$
De Bilt $eZ = +19m.49s.$ and $+23m.18s.$ $=PKS-7s.$
Stuttgart $ePP = +23m.29s.$
Triest $ePP = +22m.59s.$, $e = +24m.32s.$ and $+34m.42s.$, $eSS? = +44m.1s.$, $e = +49m.49s.$
Strasbourg $ePPN = +30m.29s.?$ $=SKKS+0s.$
Long waves were also recorded at Stonyhurst, Cape Town, New Plymouth, and other American stations.

Sept. 4d. Readings also at 0h. (Sverdlovsk and Tashkent), 5h. (New Plymouth), 6h. (New Plymouth and Andijan), 8h. (New Plymouth), 9h. (Frunse, Andijan, and Samarkand), 10h. (Baku), 11h. (Berkeley), 15h. (Tyosi and Tananarive), 17h. (La Paz (2)), 18h. (Mizusawa and San Fernando), 20h. (Medan), 21h. (Samarkand), 22h. (Andijan, Frunse, and Samarkand), 23h. (Berkeley).

Sept. 5d. 2h. 21m. 3s. Epicentre 14°·0N. 49°·0E. (given by Pulkovo). N.3.

$A = +·637$, $B = +·732$, $C = +·242$; $D = +·755$, $E = -·656$;
$G = +·159$, $H = +·183$, $K = -·970$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ksara	23·1	331	e 5 2	0	e 9 36	SS	—	13·1
Bombay	23·4	75	i 8 42	(− 8)	—	—	—	18·2
Baku	26·4	2	e 5 34	+ 1	10 9	+ 4	13·9	19·2
Agra	30·1	60	—	—	e 10 32	−34	—	—
Sverdlovsk	43·7	9	e 7 54	− 8	e 14 25	− 6	20·9	29·2
Pulkovo	47·8	347	e 10 42	?	e 15 25	− 5	25·9	31·9
Copenhagen	50·3	334	—	—	16 15	+10	26·9	—

Pulkovo gives also $e = +19m.12s.$
Long waves were also recorded at Stuttgart, Strasbourg, and De Bilt.

Sept. 5d. 10h. 19m. 50s. Epicentre 38°·7N. 70°·5E. (as on 3d. 2h.). X.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·5	35	e 0 35	+ 1	i 1 5	+ 1	—	1·2
Tashkent	2·8	342	0 42	+ 2	i 1 19	S*	1·4	1·7
Samarkand	2·9	289	(0 56?)	P_g	(1 42)	L	(1·7)	—
Frunse	5·2	36	e 1 10	− 4	2 14	+ 1	—	2·5
Grozny	19·2	292	—	—	e 8 11	SS	—	—
Pulkovo	32·8	324	—	—	e 12 19	+31	17·7	—

Samarkand gives also $P_g = (+1m.2s.?)$; all readings have been *increased* by 1m.
Long waves were also recorded at Baku, Sverdlovsk, Copenhagen, and Agra.

Sept. 5d. Readings also at 0h. (Mizusawa and Manila), 3h. (Zagreb, Triest, and Trenta), 4h. (Baku, Trenta, Ksara, and Mizusawa), 5h. (Pasadena, Mount Wilson, Riverside, Tinemaha, and Haiwee), 7h. (Sebastopol, Frunse, Samarkand, Andijan, San Juan, and Oak Ridge), 8h. (Sverdlovsk), 9h. (Andijan (2), Frunse, Sebastopol, and Baku), 10h. (Andijan and Wellington), 11h. (Tyosi, Berkeley, Andijan, Frunse, Samarkand, and Sebastopol), 12h. (Sebastopol, Samarkand (2), Andijan (2), Tashkent, and Agra), 13h. (Sverdlovsk, Perth, and La Paz (2)), 14h. (Sebastopol, Tashkent, and Christchurch), 15h. (Christchurch, Melbourne, Riverview (2), Wellington (2), Adelaide, Mizusawa, Baku, and Andijan), 16h. (Tashkent, Paris, Samarkand, and Andijan (2)), 18h. (Frunse, Samarkand, Andijan, and Tashkent), 19h. (Frunse, Samarkand, Andijan, and Tashkent), 20h. (Tashkent), 21h. (Tashkent and Sumoto), 22h. (Berkeley and Tyosi), 23h. (Nagasaki).

Sept. 6d. 0h. Readings for which no determination has been made, apparently there are two shocks :—

Wellington P =38m.5s., S =41m.44s., L =44m. **M =47m.**
Christchurch P =38m.26s., iEZ =38m.33s., SNZ =42m.30s., **LRNZ =44m.23s.**
Arapuni =41m.
Riverview iN =42m.23s., eLN =44m.30s., **MN =46m.1s.**
Melbourne i =43m.0s., iS =44m.27s., L =49m.30s., **M =54m.12s.**
Adelaide e =47m.15s., M =51m.24s.
Perth P =60m.0s.

Sverdlovsk iP =37m.54s., iS =46m.58s., **L =1h.2m.**
Strasbourg eP =53m., e =58m., eL =1h.5m.
Stuttgart eP =53m.30s., eL =2h.10m.
De Bilt eZ =53m.31s., eL =1h.53m.
Uccle eP =53m.34s.
Paris eP =53m.35s.
Tiflis eLEZ =56m.23s.
Pulkovo e =56m.28s.
Copenhagen =57m.
Tashkent e =58m.0s., e =1h.0m.20s., **e =0m.42s., e =12m.36s.**

Sept. 6d. 2h. 16m. 40s. Epicentre 7°·5N. 126°·0E. **(as on 1932 Dec. 16d.).** **R.2.**

A = −·583, B = +·802, C = +·131 ; **D = +·809, E = +·588 ;** G = −·077, H = +·106, K = −·991.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Palau	8·4	91	1 58	−1	3 20	−14	—	—
Manila	8·6	326	2 28	P*	4 25	S*	—	—
Hong Kong	18·7	324	3 50	−25	8 15	?	—	8·8
Phu-Lien	23·0	307	e 5 5	+4	e 9 15	+10	10·3	—
Malabar	23·6	232	e 5 7	+1	—	—	—	—
Batavia	23·8	236	i 5 8	0	i 9 11	−8	—	—
Nanking	25·5	346	e 4 33	?	e 9 41	−9	—	—
Medan	27·5	263	i 5 50	+7	i 10 16	−8	—	—
Nagoya	29·4	18	e 6 4	+4	—	—	—	—
Oiwake	31·0	20	6 16	+2	11 13	−7	—	—
Nagano	31·2	19	6 19	+3	—	—	—	—
Hukusima	32·9	21	6 32	+1	11 25	−24	—	—
Chiufeng	33·7	346	i 6 43a	+5	i 12 0	−1	—	—
Perth	40·6	193	13 20	S	(13 20)	−25	—	—
Agra	49·4	300	i 8 51	+4	—	—	—	—
Bombay	52·8	290	—	—	i 16 35	−4	—	—
Frunse	57·2	318	e 9 32	−13	—	—	—	—
Andijan	57·9	315	e 9 50	0	—	—	—	—
Tashkent	60·3	315	i 10 7	0	i 18 13	−7	—	35·9
Samarkand	61·5	315	e 10 17	+2	—	—	—	—
Baku	74·6	311	e 11 42	+4	i 21 8	−7	37·3	44·6
Tiflis	78·5	311	11 56	−4	21 44	−15	e 32·7	—
Theodosia	85·1	316	e 12 33	−1	e 22 50	[−10]	—	—
Ksara	86·0	305	e 12 39	+1	23 3	[−3]	—	—
Yalta	86·0	316	e 12 34	−4	—	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Simferopol	86·0	316	e 12 37	− 1	23 0	[− 6]	—	—
Pulkovo	86·4	330	i 12 34	− 6	i 22 59	[−10]	42·3	43·1
Helsingfors	88·9	331	—	—	e 24 26	PS	e 47·3	—
Copenhagen	96·6	330	13 20	− 8	—	—	—	—
Triest	99·7	319	i 17 50	PP	e 26 13	PS	—	60·3
Stuttgart	101·3	322	e 13 43	− 7	e 27 56	?	e 58·3	—
De Bilt	102·1	328	13 53	0	e 25 23	{+14}	e 55·3	—
Strasbourg	102·3	324	e 13 20?	−34	e 25 20?	{+ 9}	e 33·3?	—
Uccle	103·1	326	e 13 56	− 2	e 25 37	{+20}	e 33·3	—
Edinburgh	104·0	334	—	—	e 24 20?	[−25]	—	—
Paris	105·1	325	e 36 23	?	—	—	62·3	—
Kew	105·2	330	—	—	e 24 20?	[−31]	e 55·3	—

Additional readings :—
Batavia iN = +6m.51s.
Nanking e = +5m.7s.
Medan iNS = +14m.46s.
Bombay i = +18m.47s.
Tiflis eE = +23m.2s. and +28m.30s.
Pulkovo PP = +16m.5s., PPP = +17m.53s.
Copenhagen +17m.26s. =PP+9s.
Triest i = +23m.59s., +27m.38s., and +28m.22s.
Stuttgart ePPZ = +18m.1s.
De Bilt PPZ = +18m.11s., eE = +24m.15s. =SKS−21s.
Strasbourg ePP? = +17m.20s.?
Uccle e = +18m.14s. =PP+8s.

Sept. 6d. Readings also at 1h. (Uccle and Triest), 4h. (Trenta), 5h. (Apia, Wellington, Frunse, Samarkand, and Andijan), 6h. (Mizusawa, Balboa Heights, Branner, Berkeley, and Lick), 7h. (Manila), 9h. (Mizusawa, Pittsburgh, Tucson, and Ukiah), 10h. (Tucson, Ukiah, Pasadena, Mount Wilson, La Jolla, Tinemaha, and Haiwee), 11h. (Tucson, Pittsburgh, Florissant, and Seattle), 12h. (Tyosi), 13h. (Trenta), 15h. (Nagasaki, Sumoto, Tashkent, and Sverdlovsk), 17h. (Mizusawa), 19h. (Algiers, Almeria, Alicante, Granada, De Bilt, Copenhagen, Paris, Samarkand, Stuttgart, Strasbourg, and Uccle), 20h. (Algiers and Berkeley).

Sept. 7d. 3h. 39m. 20s. Epicentre 36°·0N. 1°·1E. N.2.

Stations give Carnol. Prov. Oran, Algeria.

A = +·809, B = +·016, C = +·588 ; D = +·019, E = −1·000 ;
G = +·588, H = +·011, K = −·809.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Algiers		1·7	61	i 0 19	− 5	i 0 36	− 8	—	—
Alicante		2·7	332	i 0 41	+ 2	i 2 5	?	—	2·2
Almeria		3·0	287	e 0 42	− 1	e 1 34	S_g	—	3·0
Granada		4·0	288	e 1 4	P*	i 1 55	S*	—	6·0
Toledo		5·6	316	e 1 22	+ 2	2 28	+ 5	—	—
San Fernando	E.	5·9	277	1 33	P*	3 52	S*	—	6·2
	N.	5·9	277	1 36	P*	4 2	?	—	7·2
Tunis		7·3	81	e 3 50	S_g	—	—	—	—
Serra do Pilar		9·2	307	2 15	+ 5	—	—	4·9	—
Prato		11·0	41	e 2 40	+ 5	4 26	−12	—	5·1
Piacenza		11·1	34	e 2 40	+ 4	4 52	+11	—	9·2
Neuchatel		11·8	20	e 2 40	− 6	—	—	—	—
Basle		12·5	21	e 2 50	− 5	—	—	—	—
Venice		12·6	39	e 3 0	+ 4	e 5 54	?	11·5	—
Zurich		12·6	24	e 2 55	− 1	—	—	—	—
Treviso		12·7	38	e 3 0	+ 2	—	—	—	9·3
Paris		12·9	4	(e 3 1)	0	—	—	(5·7)	(8·7)
Strasbourg		13·4	19	e 3 7	0	e 5 54	+17	e 6·7	—
Triest		13·5	41	e 3 2	− 7	e 5 36	− 3	e 6·2	7·5
Stuttgart		14·2	22	e 3 15	− 3	e 5 50	− 6	e 6·7	9·2

Continued on next page.

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Uccle	15·0	8	3 28	0	—	—	6·8	7·2
Kew	15·5	357	i 3 42	PP	e 6 46	SS	e 7·7	8·3
Oxford	15·9	355	—	—	6 48	SS	e 8·0	9·4
De Bilt	16·3	9	3 46	+ 1	—	—	e 6·7	9·2
Cheb	16·3	27	−11 20?	?	—	—	e 8·7	9·7
Vienna	16·6	39	i 3 48	− 1	—	—	—	—
Prague	17·0	31	e 2 7?	?	e 7 6	+ 4	e 8·1	10·7
Bidston	17·7	352	e 4 3	0	e 7 15	− 2	e 9·7	—
Stonyhurst	18·1	353	—	—	i 9 16	?	9·9	10·3
Hamburg	18·6	17	e 4 12	− 2	e 7 46	+ 8	e 9·7	11·7
Durham	18·8	355	4 15	− 1	—	—	—	11·7
Copenhagen	21·1	18	4 46	+ 5	8 34	+ 6	10·7	—
Helsingfors	28·6	25	e 6 16	+23	e 9 34	?	e 13·7	—
Pulkovo	30·3	29	—	—	e 11 0	− 9	15·2	17·5
Sverdlovsk	44·2	43	i 7 7	−59	14 29	−10	—	—
Tashkent	52·1	62	—	—	e 18 56	(− 2)	e 28·7	32·4

Additional readings and notes :—
Alicante iPPS = +1m.40s.
Almeria iPPS = +1m.20s.
Granada P* = +1m.13s. = P_g −1s., iP_g = +1m.17s., PP = +1m.21s., iPSS = +1m.46s., S_g = +2m.13s., SS = +2m.19s.
Toledo PPsP = +1m.49s. = P_g +3s., PSsP = +2m.57s. = S_g −2s., SSsS = +3m.36s.
Tunis SS = +6m.39s., SSS = +6m.50s.
Treviso PS = +6m.31s., SS = +13m.9s.
Paris readings have been *increased* by 1m.
Stuttgart eSSE = +6m.9s.
Vienna eE = +10m.51s., eEN = +13m.4s.
Long waves were also recorded by Baku, Edinburgh, Karlsruhe, and Leipzig.

Sept. 7d. 20h. 24m. 37s. Epicentre 36°·0N. 1°·1E. (as at 3h.). X.

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Algiers	1·7	61	e 0 18	− 6	i 0 35	P_g	—	—
Alicante	2·7	332	e 0 41	+ 2	i 2 2	?	—	—
Almeria	3·0	287	e 0 54	P_g	e 1 46	?	—	—
Granada	4·0	288	e 1 5	P*	i 1 56	S*	—	2·6
Barcelona	5·5	8	e 0 58	−20	—	—	e 2·6	—
Toledo	5·6	316	1 23	+ 3	2 31	+ 8	—	—
Serra do Pilar	9·2	307	—	—	e 4 41	S*	—	—
Piacenza	11·1	34	e 2 23	−13	—	—	—	9·1
Triest	13·5	41	e 2 56	−13	e 5 33	− 6	e 6·5	7·9
Uccle	15·0	8	3 26	− 2	—	—	e 6·4	—
Kew	15·5	357	—	—	e 6 23?	− 4	—	—
Copenhagen	21·1	18	—	—	8 41	?	10·4	—
Pulkovo	30·3	29	—	—	e 10 5	−64	14·4	—
Sverdlovsk	44·2	43	8 5	− 1	—	—	20·4	—

Additional readings :—
Alicante iPP = +1m.10s. = S +1s., iSS = +1m.39s.
Almeria iPPS = +1m.23s.
Granada i = +1m.45s.
Toledo PPsP = +1m.49s., PPsS = +2m.53s., SSsS = +3m.25s.
Long waves were also recorded at Edinburgh, De Bilt, Helsingfors, Hamburg, Paris, Stuttgart, Strasbourg, and Prague.

Sept. 7d. Readings also at 0h. (Erevan, Grozny, Ksara, Pulkovo, Tashkent, Tiflis, and Sverdlovsk), 2h. (Neuchatel), 4h. (Algiers), 5h. (Andijan, Almeria, Algiers, Granada, and Samarkand), 6h. (Lick (2)), 7h. (Algiers, Barcelona, Tortosa, and Wellington), 8h. (Baku, Sverdlovsk, and Tashkent), 13h. (Wellington), 14h. (Tiflis and Grozny), 15h. (Nagoya), 19h. (Wellington), 20h. (Tashkent, Samarkand, Andijan, and Frunse), 21h. (Algiers, Berkeley, and Wellington), 22h. (Balboa Heights), 23h. (Copenhagen, Stuttgart, Strasbourg, De Bilt, Triest, Pulkovo, Tiflis, and Sverdlovsk).

Sept. 8d. 0h. 16m. 44s. Epicentre 33°·7N. 135°·2E. (as on 1933 May 11d.). X.

A = −·590, B = +·586, C = +·555.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Sumoto	0·7	338	i 0 11	+ 1	i 0 20	+ 2	0·3
Kobe	1·0	359	0 14	0	i 0 25	− 1	0·4
Osaka	1·0	12	0 15	+ 1	0 24	− 2	0·4
Toyooka	1·9	350	0 37	P_g	0 46	− 3	0·8
Nagoya	2·0	45	0 30	+ 1	0 51	0	0·9

Kobe gives also iZ = +1m.32s.

Sept. 8d. 6h. 45m. 5s. Epicentre 38°·5N. 71°·0E. (as on 1927 April 18d.). R.3.

A = +·255, B = +·740, C = +·623; D = +·946, E = −·326;
G = +·203, H = +·589, K = −·783.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·5	26	i 0 31	− 5	1 3	− 1	—	1·3
Tashkent	3·1	337	i 0 44	0	—	—	1·4	1·9
Frunse	5·2	31	1 14	0	2 32	S*	—	2·5
Agra	12·8	150	2 56	− 3	5 18	− 4	6·1	8·5
Baku	16·4	283	e 4 4	?	e 7 32	?	9·6	11·8
Sverdlovsk	19·5	343	i 4 26	+ 2	i 8 3	+ 7	11·6R	11·8
Bombay	19·7	175	e 4 31	+ 5	8 18	SS	e 10·4	13·4
Tiflis	20·2	288	4 33	+ 1	e 8 19	+ 9	12·7	22·4
Calcutta	21·8	132	4 44	− 5	8 46	+ 4	10·5	—
Hyderabad	22·1	160	4 54	+ 2	9 15	SS	12·1	17·5
Ksara	28·5	272	e 6 15	+23	e 10 52	+12	—	—
Kodaikanal	28·8	167	—	—	e 10 57	+12	—	16·1
Colombo	32·6	164	12 23	?	—	—	—	19·8
Pulkovo	33·2	325	e 7 31	PP	e 11 47	− 7	16·4	19·6
Chiufeng	34·6	73	—	—	e 14 40	?	—	—
Helsingfors	35·8	322	e 6 31	−25	e 12 37	+ 4	e 18·4	—
Königsberg	37·3	313	e 15 54?	?	e 21 2	?	—	23·4
Upsala	39·4	322	—	—	e 15 55	SS	e 21·4	22·3
Copenhagen	41·9	314	9 31	(−17)	17 25	(−28)	20·9	—
Cheb	42·3	306	—	—	e 21 55	?	e 27·4	27·9
Hamburg	43·5	312	—	—	e 17 55?	(− 8)	—	—
Stuttgart	44·6	304	e 7 55	−15	e 14 55	+11	—	—
Piacenza	45·1	298	e 4 55	?	—	—	—	31·2
De Bilt	46·5	310	—	—	e 18 55?	(+33)	e 24·9?	26·8
Uccle	47·3	308	—	—	e 18 55?	SS	e 23·9	—
Kew	49·9	310	—	—	e 22 55?	?	e 25·9	—
Edinburgh	50·6	316	—	—	e 16 55?	?	e 32·9	—
Stonyhurst	50·7	312	—	—	31 25	L	(31·4)	—

Additional readings :—
Frunse i = +0m.51s., +1m.7s. and = +1m.25s., P_g = +1m.30s., iS* = +2m.17s.
Sverdlovsk L_g = +10·5m.
Tiflis eE = +8m.35s. and +11m.27s.
Calcutta PP = +5m.7s., SS = +9m.32s.
Pulkovo e = +13m.13s.
Helsingfors ePPEN = +7m.7s., eP_cPEN = +8m.43s., eSSN = +14m.19s.
Königsberg ePPPN = +16m.19s.
Stuttgart eEN = +17m.19s., e = +27m.21s.
Long waves were also recorded at Bidston, Prague, Paris, Triest, Strasbourg, and Vladivostok.

Sept. 8d. Readings for which no determination has been made :—
Apia eP = 11h.15m.16s., S = 17m.19s., M = 23m.24s.
Christchurch iPN? = 11h.19m.14s., eENZ = 20m.55s., SE = 24m.37s., L_qE = 25m.45s., LR = 27m.17s.
Wellington e = 11h.21m., i = 26m., i = 29m.34s., i = 32m.43s.
Riverview e?N = 11h.21m.18s., eLN = 29m.18s., MN = 32m.16s.
Arapuni i = 11h.24m.
Sydney eP = 11h.26m.0s., eS = 31m.0s., SS = 32m.28s., L = 34m.18s., M = 35m.10s.

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Chiufeng eP = 11h.27m.1s., S = 37m.36s.
Strasbourg e = 11h.28m. and 34m., eL = 36m.
Stuttgart eZ = 11h.28m.12s. and 34m.0s., eL = 12h.35m.
Melbourne e = 11h.31m.27s., i = 33m.7s., L = 37m.7s., M = 40m.54s.
Honolulu e = 11h.32m.
Adelaide e = 11h.32m.30s., i = 36m.20s., M = 39m.12s.
Pulkovo e = 11h.33m.30s., 36m.2s., 38m.7s., 46m.32s., and 48m.13s., L = 12h.24m., M = 32m.48s.
Uccle e = 11h.33m.47s., eL = 12h.27s.
Theodosia e = 11h.33m.48s.
Yalta e = 11h.33m.49s.
Simferopol e = 11h.33m.53s.
De Bilt eZ = 11h.33m.55s., iZ = 34m.5s., eE = 56m.31s., eL = 12h.33m.
Kew e = 11h.33m.56s., i = 34m.24s., eL = 12h.34m.
Tashkent e = 11h.33m.59s., e = 40m.13s., e = 45m.2s., e = 51m.32s. and 53m.48s., L = 12h.19m.30s., M = 33m.36s.
Copenhagen 11h.34m., L = 12h.30m.
Paris 11h.34m.24s., L = 12h.33m., M = 41m.
Sverdlovsk e = 11h.35m.0s., 40m.23s., 42m.6s. and 45m.6s., L = 12h.9m., M = 26m.6s.
Vladivostok e = 11h.36m.35s., L = 52m.36s.
Helsingfors eL = 11h.37m.
Tiflis eN = 11h.37m.31s. and 54m.33s., eLEN = 12h.30m.0s., MEN = 41m.48s.
Batavia i = 11h.38m.10s.
Edinburgh e = 11h.38m.
Ukiah e = 11h.39m.0s.
Perth P = 11h.45m.0s.
Tucson L = 11h.53m.
La Paz L = 12h.2m.0s., M = 4m.42s.
Oak Ridge eL = 12h.12m.
Baku L = 12h.16m.

Sept. 8d. Readings for which no determination has been made :—
Andijan P = 14h.7m.4s., eP_g = 7m.8s., i = 7m.26s., S_g = 7m.36s., M = 7m.39s.
Tashkent P = 14h.7m.30s., i = 7m.39s., i = 8m.1s., iL = 8m.17s., M = 8m.30s.
Frunse S_g = 14h.8m.10s., M = 8m.43s.
Sverdlovsk iP = 14h.10m.52s., e = 11m.33s. and 14m.36s., L = 16m.
Agra e = 14h.11m.0s.
Tiflis eE = 14h.12m.10s., eE = 15m.10s.
Pulkovo e = 14h.12n.57s. and 19m.10s.
Bombay M = 14h.18m.

Sept. 8d. 18h. 3m. 26s. Epicentre 45°·3N. 11°·1E. (as on 1932 Feb. 20d.). X.

A = +·690, B = +·135, C = +·711 ; D = +·193, E = −·981 ;
G = +·698, H = +·137, K = −·703.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Padova	0·6	84	e 0 14	S	(e 0 14)	− 1	—	—
Treviso	0·8	67	i 0 12	+ 1	i 0 20	− 1	—	0·4
Venice	0·9	81	e 0 12	− 1	i 0 33	?	—	—
Piacenza	1·0	255	1 10	?	—	—	—	—
Prato	1·4	182	e 0 56	?	i 1 25	?	—	—
Triest	1·9	79	i 0 15a	−13	i 0 33	−16	—	—
Ravensburg	2·7	338	e 0 39	0	e 1 12	+ 3	—	—
Zurich	2·7	320	e 0 42	P*	e 1 28	S_g	—	—
Neuchatel	3·3	300	e 0 56	P*	e 1 42	S_g	—	—
Basle	3·3	313	e 0 48	PP	e 1 53	?	—	—
Stuttgart	3·7	340	e 0 47	− 6	e 1 44	S*	—	—
Strasbourg	4·0	326	e 0 59	+ 2	e 1 54	S*	—	—
Vienna	4·7	50	i 1 38	P_g	2 7	+ 7	—	—
Jena	5·6	3	e 1 28	+ 8	e 2 0	?	e 2·4	2·4
Göttingen	6·2	353	e 1 17	−11	e 2 49	+11	—	—

Additional readings :—
Padova S = +29s.
Triest i = +18s.
Ravensburg i = +1m.13s. and +1m.15s.
Neuchatel eP_g = +1m.4s.
Stuttgart iP_g = +59s. = P* − 1s., i = +1m.2s.
Strasbourg e = +1m.59s. = S* + 2s. and +2m.4s. = S_g − 2s.
Vienna P_g = +1m.42s., iPP = +1m.44s., sPP = +1m.49s.

Sept. 8d. 18h. 36m. 5s. Epicentre 24°·0N. 121°·5E. N.3.

A = −·477, B = +·779, C = +·407 ; D = +·853, E = +·523 ;
G = −·213, H = +·347, K = −·914.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Karenko	0·1	74	e 0 0	− 1	0 6	+ 3
Arisan	0·8	238	e 0 11	0	0 23	+ 2
Taihoku	1·0	3	0 13	− 1	0 25	− 1
Tainan	1·5	231	0 25	P_g	0 46	S*

Sept. 8d. 19h. 57m. 45s. Epicentre 37°·9N. 71°·9E. N.3.

A = +·245, B = +·750, C = +·614 ; D = +·951, E = −·311 ;
G = +·191, H = +·584, K = −·789.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·9	7	0 55	P_g	1 27	S*	—	1·8
Samarkand	4·2	296	0 59	− 1	1 47	− 1	—	2·7
Frunse	5·4	22	e 1 16	− 1	2 18	0	—	—
Baku	17·2	285	—	—	e 8 50	?	9·8	17·2
Sverdlovsk	20·7	341	e 4 40	+ 3	e 8 31	+11	9·2	—

Additional readings :—
Andijan eP_g = +59s.
Samarkand eP_g = +1m.7s. = P* − 2s.
Frunse i = +1m.37s., i = +2m.25s., S_g = +2m.36s.

Sept. 8d. Readings also at 4h. (Pasadena, Mount Wilson, Riverside, Tinemaha, and Haiwee), 5h. (Tortosa, Malabar, and Apia), 6h. (Triest), 7h. (Apia), 9h. (Algiers), 10h. (Piacenza and San Juan), 12h. (Piacenza, Triest, Edinburgh, Balboa Heights, Huancayo, and Cape Town), 13h. (Tinemaha, Riverside, and Mount Wilson), 16h. (Tunis), 17h. (Nagoya and Branner), 20h. (Copenhagen, De Bilt, Frunse, Tiflis, Tashkent, Tortosa, and San Fernando), 23h. (Perth).

Sept. 9d. Readings for which no determination has been made :—
La Paz P = 3h.53m.52s., iP = 53m.54s., iS = 54m.17s., iN = 54m.22s., M = 55m.6s.
Sucre iP = 3h.54m.7s., iS = 54m.55s., L = 55m.10s.
La Plata eP? = 3h.57m.6s., SN = 4h.0m.48s., SE = 0m.53s., LN = 3m.

Sept. 9d. Readings for which Baku gives the epicentre as 31°·5N. 76°·5E :—
Agra eN = 5h.0m.41s., SN = 1m.55s., SE = 1m.59s., S_gN = 2m.40s.
Samarkand eP = 5h.1m.25s.
Andijan eP = 5h.1m.30s.
Frunse e = 5h.2m.16s.
Baku eP = 5h.3m.20s., eS = 7m.25s., L = 12m.18s.
Bombay e = 5h.4m.
Tiflis ePN = 5h.4m.12s., eSE = 8m.35s., eZ = 11m.2s., LEN = 15m.30s., MEN = 20m.24s.
Hyderabad P = 5h.4m.25s., S = 6m.21s., L = 7m.0s., M = 9m.0s.
Sverdlovsk eP = 5h.4m.41s., S = 9m.23s., L = 13m., M = 16m.12s.
Calcutta P = 5h.6m.17s., S = 7m.48s., eL = 8m.26s.
Kodaikanal eE = 5h.7m.46s.
Pulkovo eL = 5h.21m., M = 27m.18s.
Helsingfors eL = 5h.23m.
Copenhagen L = 5h.24m.
De Bilt eL = 5h.32m.
Stuttgart eL = 5h.32m.
Edinburgh e = 5h.35m.

Sept. 9d. Readings also at 1h. (Erevan (2) and Tiflis (2)), 3h. (Huancayo), 4h. (San Juan, Haiwee, Tinemaha, Riverside, Mount Wilson, Pasadena, Frunse, Andijan, and Samarkand), 11h. (Toyooka and Wellington), 14h. (Frunse, Andijan, and Alicante), 15h. (Balboa Heights), 16h. (Balboa Heights, Mizusawa, and Malabar), 18h. (Branner and Lick), 23h. (Andijan).

Sept. 10d. Readings at 0h. (Tashkent, Andijan, and Nagasaki), 1h. (Hamburg and Nagasaki), 3h. (Nagasaki), 4h. (Yalta, Santiago (2), and Nagasaki), 5h. (Samarkand), 6h. (Algiers and Apia), 8h. (San Juan), 9h. (Santiago (2) and Samarkand), 10h. (Andijan), 11h. (Almata), 14h. (Mizusawa), 16h. (Nagasaki and Hukuoka B), 17h. (Mizusawa), 20h. (Wellington), 21h. (Wellington).

Sept. 11d. 1h. 19m. 58s. Epicentre 37°·5N. 13°·5E. (as on 1933 Feb. 26d.). X.

A = +·771, B = +·185, C = +·609; D = +·233, E = −·972; G = +·592, H = +·145, K = −·793.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Minco	1·0	102	−0 52	−66	—	—	—	—
Catania	1·3	90	0 18	0	0 29	− 4	0·7	1·0
Messina	1·8	67	0 22	− 4	—	—	—	—
Trenta	2·8	51	i 0 40	0	1 19	S*	—	—
Tunis	2·8	255	—	—	e 1 28	S_g	—	—
Naples	3·4	9	e 1 3	P_g	e 1 28	+ 1	—	3·4
Capodimonte	3·4	10	e 1 7	P_g	e 1 28	+ 1	—	3·4
Prato	6·6	345	e 1 42	+ 6	i 3 12	S*	—	4·3
Piacenza	8·0	339	e 2 10	P*	—	—	—	7·0
Triest	8·1	1	e 2 11	P*	e 3 11	−16	—	5·0
Stuttgart	11·7	346	e 2 2?	−42	—	—	e 6·8	—
Strasbourg	11·8	341	e 2 2?	−44	—	—	e 6·0	—
Uccle	14·8	337	e 3 32	+ 6	—	—	e 7·0	—
Copenhagen	18·2	358	4 14	+ 5	—	—	10·0	—
Helsingfors	23·8	14	e 5 8	0	e 9 6	−13	e 13·0	—
Pulkovo	24·7	20	e 5 33	PP	e 9 36	0	12·5	15·5
Sverdlovsk	36·4	43	—	—	e 12 40	− 2	17·0	—
Tashkent	42·5	67	—	—	e 14 2	?	—	31·6

Long waves were also recorded at Kew, Paris, and De Bilt.

Sept. 11d. Readings for which Pulkovo gives the epicentre as 38°·4N. 70°·5E.:—

Tashkent iP = 6h.40m.34s., iL = 41m.17s., M = 41m.36s.
Sverdlovsk iP = 6h.44m.24s., eS = 47m.58s., L_q = 50m.18s., LR = 51m.36s., M = 51m.42s.
Grozny eP = 6h.44m.26s., eS_g = 47m.58s.
Agra e = 6h.45m.9s.
Baku eL = 6h.48m.
Pulkovo e = 6h.55m.54s., L = 58m., M = 58m.0s.
Andijan P = 6h.56m.26s., S* = 56m.54s., S_g = 56m.56s.
Copenhagen L = 7h.3m.

Sept. 11d. Readings for which no determination has been made, apparently two shocks:—

Samarkand eP = 7h.1m.59s., e = 2m.44s.
Tashkent iP = 7h.2m.32s., e = 3m.6s., e = 3m.14s., iL = 3m.18s., M = 3m.36s.
Frunse e = 7h.3m.15s., e = 4m.54s.
Almata e = 7h.5m.14s.
Tchimkent e = 7h.5m.40s.

Samarkand eP = 7h.27m.48s.
Andijan eP = 7h.27m.48s., iS_g = 28m.18s., M = 28m.33s.
Tashkent e = 7h.27m.53s., eS = 28m.32s., iL = 28m.36s., M = 29m.18s.
Frunse e = 7h.29m.22s.
Almata e = 7h.30m.30s.

Sept. 11d. 8h. 13m. 41s. Epicentre 0°·0 123°·0E. N.3.

A = −·545, B = +·839, C = ·000 ; D = +·839, E = +·545; G = ·000, H = ·000, K = −1·000.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	14·7	352	i 3 30k	+ 5	6 25	+17	7·8	—
Malabar	17·0	245	4 7	PP	i 6 32	?	—	—
Batavia	17·3	249	i 3 54	− 4	i 7 7	− 2	—	—
Hong Kong	23·9	340	5 4	− 5	9 28	+ 7	—	11·8
Medan	24·8	279	i 5 22	+ 4	—	—	—	—
Phu-Lien	26·3	324	5 19?	−13	—	—	—	—
Kobe	36·5	15	e 7 5	+ 3	—	—	—	10·2
Nagoya	37·5	19	e 7 6	− 5	—	—	—	—
Calcutta	40·5	307	—	—	e 13 58	+14	—	—
Chiufeng	40·6	352	e 7 30	− 7	e 13 33	−12	—	—
Riverview	42·9	144	e 7 51	− 5	i 14 11	− 8	—	17·5
Melbourne	42·9	151	—	—	i 14 7	−12	—	—
Kodaikanal	46·5	285	—	—	e 15 2	−10	—	—
Agra	51·0	306	e 6 36	?	—	—	—	—
Bombay	52·7	294	—	—	i 17 19?	+41	—	—
Almata	59·6	322	e 10 11	+ 9	—	—	—	—
Frunse	61·0	321	e 10 21	+10	—	—	—	—
Andijan	61·3	318	e 10 33	+19	—	—	—	—
Christchurch	62·0	141	e 10 1	−17	e 18 53	+11	34·2	—
Tashkent	63·6	318	10 19	−10	i 18 45	−17	e 34·3	41·3
Tchimkent	63·9	319	e 12 43	PP	—	—	—	—
Samarkand	64·5	315	10 58	+23	—	—	—	—
Sverdlovsk	75·3	331	i 11 38	− 4	21 9	−15	35·3	—
Tiflis	81·2	312	e 12 7	− 7	—	—	—	—
Pulkovo	91·4	330	e 12 56	− 8	23 17	[−24]	51·3	56·8
De Bilt	106·6	326	—	—	e 29 11	?	e 54·3	65·1
Tinemaha	112·5	49	e 18 26	[+ 1]	—	—	—	—
Haiwee	113·0	50	i 18 28	[+ 1]	—	—	—	—
Pasadena	113·5	52	i 18 27	[− 1]	—	—	—	—
Mount Wilson	113·6	52	i 18 28	[0]	—	—	—	—

Additional readings :—
Malabar i = +4m.26s.
Hong Kong PP = +5m.28s., SS = +10m.29s.
Kobe eZ = +7m.16s., eN = +8m.30s.
Chiufeng iE = +16m.42s.
Riverview eN = +9m.19s. =PP −11s. and +14m.40s.
Melbourne i = +14m.33s.
Christchurch SSSN = +25m.11s., L_qN = +26m.53s., eLRZ = +32m.23s.
Pulkovo PS = +24m.52s., SS = +30m.1s.
Pasadena iZ = +18m.53s.
Long waves were also recorded at Stuttgart, Helsingfors, Paris, Strasbourg, and Copenhagen.

Sept. 11d. 14h. 7m. 0s. Epicentre 38°·7N. 70°·5E. (as on 5d. 10h.). X.

A = +·261, B = +·736, C = +·625 ; D = +·943, E = −·334 ; G = +·209, H = +·589, K = −·780.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·5	35	0 36	0	1 5	+ 1	—	1·9
Tashkent	2·8	342	i 0 40	0	—	—	i 1·3	2·9
Samarkand	2·9	289	0 14?	−27	—	—	—	—
Frunse	5·2	36	1 11	− 3	2 26	S*	—	—
Almata	6·7	46	e 1 38	+ 3	e 3 18	S*	—	3·4
Agra	13·1	149	e 5 5	?	6 55	?	—	—
Baku	15·9	283	—	—	e 8 7	?	e 9·6	—
Sverdlovsk	19·3	344	i 4 30	PP	8 5	SS	11·7R	11·7

For Notes see next page.

NOTES TO SEPT. 11d. 14h. 7m. 0s.

Additional readings :—
Andijan $P_g = +39s. = P^* - 1s.$, $i = +46s. = P_g - 2s.$ and $+58s.$
Frunse $P_g = +1m.27s. = P^* + 1s.$, $i = +29s.$, $+44s.$, and $+2m.0s.$, $S^* = +2m.10s.$
Almata $i = +2m.38s.$, $iS_g = +3m.23s.$
Agra $P_g = +6m.7s.$, $S_g = +8m.5s.$
Sverdlovsk $L_q = +11m.4s.$
Long waves were also recorded at Bombay, Calcutta, Copenhagen, Pulkovo, Paris, and De Bilt.

Sept. 11d. Readings for which no determinations have been made, probably different localities :—

Samarkand eP =17h.2m.42s.?, S* =3m.26s., S_g =4m.8s.
Tashkent iP =17h.3m.28s., i =3m.30s., iL =4m.7s., M =4m.30s.
Frunse e =17h.4m.14s., e =4m.56s., M =3m.41s.
Almata e =17h.6m.45s.

Samarkand eP =17h.58m.44s., S* =59m.29s., M =59m.38s.
Andijan eP =17h.59m.20s., P_g =59m.23s., S_g =59m.52s., i =59m.49s., M = 18h.0m.4s.
Tashkent P =17h.59m.30s., iL =18h.0m.7s., M =0m.30s.
Frunse i =17h.59m.58s., e =18h.0m.10s., S_g =1m.20s.
Almata e =18h.0m.40s., M =2m.13s.
Tchimkent e =18h.1m.16s., e =1m.50s.
Sverdlovsk L =18h.9m.

Samarkand eP =18h.32m.49s., e =33m.39s.
Andijan eP =18h.33m.27s., S_g =33m.57s.
Tashkent iP =18h.33m.40s., iL =34m.22s., M =35m.18s.
Frunse e =18h.34m.38s., S_g =35m.22s.
Almata eP =18h.34m.47s., e =35m.6s., eS_g =36m.15s., M =36m.25s.

Sept. 11d. 23h. 33m. 12s. Epicentre 32°·4N. 138°·0E. (as on 1933 May 28d.). X.

A = −·627, B = +·565, C = +·536 ; D = +·669, E = +·743 ;
G = −·398, H = +·359, K = −·844.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Nagoya	2·9	343	0 50	P_g	1 36	S_g	—
Osaka	3·0	318	0 44	+ 1	1 43	S_g	2·1
Sumoto	3·2	307	0 55	P*	1 46	S_g	1·8
Kobe	3·3	315	—	—	i 1 48	S_g	2·1
Tyosi	4·1	35	e 0 59	+ 1	1 45	0	1·7
Nagasaki	6·8	275	e 1 36	− 1	e 2 40	−13	—
Mizusawa	7·2	21	e 1 36	− 6	i 2 50	−14	—

Kobe gives also eN = +1m.17s., iENZ = +2m.1s., iE = +3m.0s.

Sept. 11d. Readings also at 3h. (Lick), 4h. (Medan), 8h. (Tashkent, Samarkand, Frunse, Almata, Andijan, and Nagasaki), 9h. (Nagasaki (2), Hukuoka B and Mineo), 10h. (Nagasaki, Sumoto, Tchimkent, Samarkand, Frunse, Almata, and Andijan), 11h. (Nagasaki, Hukuoka B, Tyosi, and Grozny), 12h. (Nagasaki), 13h. (Nagasaki, Hukuoka B, Samarkand, Frunse, Almata, and Andijan), 14h. (Lick), 15h. (Nagasaki and Simferopol), 16h. (Nagasaki (3)), 17h. (Santiago and Tyosi), 18h. (Sverdlovsk, Tashkent, and Balboa Heights), 21h. (Wellington).

Sept. 12d. 14h. 20m. 18s. (I)
14h. 22m. 8s. (II)
14h. 24m. 23s. (III)
14h. 27m. 6s. (IV)
} Epicentre 30°·7N. 130°·2E. N.3. X. X. X.

A = −·555, B = +·657, C = +·510; D = +·764, E = +·646; G = −·330, H = +·390, K = −·860.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Nagasaki	2·1	354	e 0 29	− 1	e 0 56	+ 2	—	—
II	2·1	354	e 0 29	− 1	e 1 4	S_g	—	—
III	2·1	354	0 19	−11	e 0 33	P*	—	—
IV	2·1	354	0 29	− 1	e 1 7	S_g	—	1·2
I Hukuoka	2·9	3	—	—	e 1 14	0	—	—
III	2·9	3	0 36	?	e 1 16	+ 2	—	—
IV	2·9	3	0 43	+ 2	1 26	S*	—	1·9
I Hukuoka B	2·9	3	e 1 14	S	(e 1 14)	0	—	—
III	2·9	3	0 38	− 3	1 21	S*	—	1·6
IV	2·9	3	0 44	P*	1 14	0	—	1·6
I Koti	4·1	44	e 2 18	S_g	—	—	—	—
III	4·1	44	—	—	1 57	S*	—	—
IV	4·1	44	—	—	1 58	S*	—	—
I Husan	4·5	347	e 2 26	S_g	—	—	—	—
II	4·5	347	—	—	1 39	−16	—	—
IV	4·5	347	1 16	P*	2 17	S*	—	3·1
III Taikyu	5·3	346	e 2 43	S_g	—	—	—	—
IV	5·3	346	—	—	2 30	S*	—	—
II Sumoto	5·4	46	1 17	0	e 2 39	S*	—	—
III	5·4	46	—	—	e 2 41	S*	—	—
II Kobe	5·8	45	e 1 29	+ 7	e 2 37	+ 9	—	—
III	5·8	45	e 1 21	− 1	e 2 33	+ 5	—	3·5
IV	5·8	45	e 1 49	P_g	e 2 42	S*	3·4	3·6
I Osaka	6·0	47	2 56	S*	—	—	—	—
II	6·0	47	—	—	2 33	0	—	4·0
III	6·0	47	2 55	S*	—	—	—	—
IV	6·0	47	—	—	1 39	P*	—	5·3
II Toyooka	6·2	38	e 1 41	P*	—	—	—	—
IV	6·2	38	—	—	3 0	S*	—	4·2
II Nagoya	7·3	50	e 2 31	P_g	—	—	—	—
III	7·3	50	e 3 56	S_g	—	—	—	—
IV	7·3	50	e 1 46	+ 2	3 45	S*	—	—
II Keizyo	7·4	340	2 35	?	—	—	—	—
III	7·4	340	—	—	3 57	S_g	—	—
II Zinsen	7·4	337	e 2 17	P_g	—	—	—	—
III	7·4	337	e 3 40	S*	—	—	—	—
IV	7·4	337	—	—	3 34	S*	—	4·3
II Zi-ka-wei	7·6	276	e 2 3	P*	—	—	—	—
III	7·6	276	1 47	− 1	—	—	—	—
IV	7·6	276	i 2 11	P*	i 3 9	− 5	5·0	6·0
III Heizyo	9·1	338	4 23	S*	—	—	—	—
IV	9·1	338	—	—	4 37	?	—	—
III Nanking	9·8	281	e 2 37?	?	—	—	—	—
IV	9·8	281	e 3 33	?	—	—	i 5·2	8·2
IV Tyosi	10·3	58	e 2 34	+ 9	—	—	6·8	—
III Mizusawa	12·3	44	—	—	5 31	+21	—	—
III Vladivostok	12·5	7	e 2 46	− 9	—	—	e 7·3	10·3
IV	12·5	7	i 2 54	− 1	—	—	—	—
I Chiufeng	14·8	313	—	—	e 6 48?	?	e 13·2	16·3
III	14·8	313	e 3 16	−10	6 18	− 8	—	—
IV Hong Kong	16·5	243	3 57	+ 9	7 4	SS	9·4	12·3
IV Manila	18·2	210	4 11	+ 2	i 7 38	+ 9	9·4	11·3
IV Calcutta	38·0	267	e 8 33	PP	—	—	—	—
IV Tashkent	48·7	301	e 8 33	− 8	17 4	?	27·7	33·1
IV Sverdlovsk	53·7	321	i 9 23	+ 4	17 4	+12	29·9	34·3
IV Baku	64·6	303	e 9 20	−76	e 19 14	− 1	34·9	40·3

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
IV Tiflis	67·0	306	e 10 46	− 6	19 47	+ 2	e 38·2	41·7
IV Pulkovo	68·5	328	—	—	e 18 59	−64	38·4R	44·0
IV Ksara	76·7	302	e 11 38	−12	e 21 40	+ 1	—	—
III Copenhagen	78·7	330	—	—	26 54	SS	39·9	—
IV De Bilt	84·0	330	e 11 47	−41	—	—	e 43·9	49·5
IV Triest	84·4	321	—	—	e 24 54	?	e 36·9	45·3

Additional readings :—
I Hukuoka B S = +1m.57s.
III Sumoto eZ = +2m.34s.
III Kobe eP?EN = +1m.28s., eSE = +2m.46s.
IV Toyooka SE = +2m.54s., SN = +3m.9s.
IV Hong Kong P? = +2m.58s.
IV Tashkent e = +10m.44s. and +20m.54s.
IV Tiflis eSKSNZ = +20m.36s. = S_eS +7s., eSSN = +24m.51s., eSSSN = +27m.42s.
IV Pulkovo e = +27m.45s., L_q = +35·9m.
Long waves were also recorded at III Husan, IV Sumoto, Medan, Keizyo, Mizusawa, Phu-Lien, Kodaikanal, Bombay, Bidston, Kew, Edinburgh, Durham, and other European stations.

Sept. 12d. 15h. Readings for which no determination has been made :—
Stuttgart eZ = 6m.0s., e = 11m.48s., eL = 14m.0s., M = 21m.0s.
Königsberg e?N = 6m.31s., eL = 9m.26s., M = 15m.4s.
Upsala e = 9m.
Budapest e = 11m., eL = 14m., M = 18m.
Leipzig e = 12m.30s., M = 20m.30s.
Vienna eEN = 13m.
Stonyhurst e = 15m., i = 19m.21s., L = 23m.
Tashkent e = 19m.30s., e = 20m.9s., iS = 20m.13s., M = 20m.36s.
Mineo P = 20m.26s.
Frunse e = 20m.53s.
Samarkand eP = 21m.44s.?, e = 22m.34s., M = 22m.45s.?
Almata e = 22m.12s.
Almeria e = 24m.32s.
Toledo e = 24m.51s.
Long waves at Durham, San Fernando, Piacenza, and Alicante.

Sept. 12d. 15h. 35m. 54s. Epicentre 30°·3N. 130°·0E. N.3.

A = −·555, B = +·661, C = +·505 ; D = +·766, E = +·643 ;
G = −·324, H = +·387, K = −·863.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki	2·4	357	0 33	− 1	1 15	S_g	—	—
Hukuoka B	3·2	6	0 53	P*	1 31	S*	—	—
Hukuoka	3·3	6	0 54	P*	e 1 34	S*	—	—
Koti	4·4	42	1 14	P*	3 14	?	—	—
Husan	4·8	350	1 20	P*	2 25	S*	—	3·1
Sumoto	5·8	44	1 42	P_g	e 2 46	S*	—	4·2
Kobe	6·1	44	e 1 56	P_g	3 3	S*	—	4·1
Osaka	6·4	46	1 45	P*	3 14	S*	—	4·9
Toyooka	6·6	37	—	—	e 2 59	+11	—	—
Nagoya	7·6	48	e 1 47	− 1	—	—	—	—
Zinsen	7·7	339	—	—	e 3 49	S*	—	—
Keizyo	7·7	342	e 2 43	?	—	—	—	—
Nanking	9·8	283	e 3 36	?	e 7 12	?	e 8·5	11·2
Chiufeng	14·9	314	e 3 35	+ 8	—	—	—	10·8

Additional readings :—
Sumoto eN = +2m.44s., eSE = +3m.0s. = S_g −6s.
Kobe eN = +2m.45s., eSZ = +3m.0s.
Toyooka eSN = +3m.9s.
Long waves were also recorded at Hong Kong.

Sept. 12d. 17h. 42m. 40s. Epicentre 30°·0N. 132°·5E. N.3.

Given by Pulkovo.

$A = -\cdot585$, $B = +\cdot638$, $C = +\cdot500$; $D = +\cdot737$, $E = +\cdot676$; $G = -\cdot338$, $H = +\cdot369$, $K = -\cdot866$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki		3·6	321	0 40	−11	1 41	S*	—	—
Koti		3·7	14	e 1 4	P*	i 2 19	?	—	—
Hukuoka		4·0	334	0 57	0	1 39	− 3	—	—
Hukuoka B		4·0	334	0 58	+ 1	1 40	− 2	—	2·3
Sumoto		4·8	24	e 1 26	P_g	e 2 56	?	3·5	4·1
Kobe		5·2	24	1 32	P_g	2 56	?	—	3·8
Osaka		5·3	28	1 26	P*	2 56	?	—	4·4
Toyooka	z.	5·8	18	1 41	P*	3 25	?	—	4·3
Husan		5·9	331	e 1 20	− 4	2 28	− 3	—	3·3
Nagoya		6·3	38	1 53	P*	e 4 12	?	—	4·6
Taikyu		6·7	332	e 1 44	+ 9	3 0	+ 9	—	—
Keizyo		8·9	331	e 2 3	− 3	4 11	S*	—	—
Zinsen		9·0	329	e 2 19	+12	e 4 0	+11	—	5·1
Zi-ka-wei		9·6	279	e 1 53	−23	—	—	5·3	6·4
Heizyo		10·6	330	e 4 48	S	(e 4 48)	+20	—	—
Nanking		11·9	283	e 2 4	−43	e 5 1	+ 1	i 6·8	—
Vladivostok		13·1	358	3 10	+ 7	—	—	6·0	10·1
Chiufeng		16·7	312	e 3 39	−11	e 6 54	− 1	e 8·5	11·0
Hong Kong		18·1	249	3 22	?	7 30	+ 3	9·5	11·3
Manila		18·7	217	4 29	PP	7 55	+15	—	—
Calcutta		40·0	270	—	—	e 15 59	?	—	—
Agra		47·5	281	—	—	e 18 36	(+ 8)	—	—
Tashkent		51·5	301	8 57	− 6	i 16 17	− 5	e 29·2	33·7
Sverdlovsk		55·5	321	e 9 39	+ 7	e 17 22	+ 6	28·3	35·3
Baku		65·9	304	—	—	e 19 26	− 5	39·1	—

Additional readings :—
Nagasaki S = +1m.14s. = P_g +8s.
Koti P = +1m.16s. = P_g +8s.
Kobe iZ = +2m.5s. = S − 8s. and +3m.3s., eSZ = +3m.9s., S_gE = +3m.14s.
Toyooka PE = +1m.54s. = P_g +4s., PN = +1m.57s., SE = +3m.7s. = S_g +1s., SN = +3m.22s.
Baku e = +27m.21s. = SSSS +3s.
Long waves were also recorded at Edinburgh, Stonyhurst, Phu-Lien, Copenhagen, and other European stations.

Sept. 12d. Readings also at 1h. (Algiers and Nagasaki), 2h. (Christchurch, Sumoto, and Wellington), 3h. (Algiers and Nagasaki), 5h. (Batavia, Medan, and Messina), 6h. (Adelaide, Christchurch, and Wellington), 7h. (Basle, Neuchatel, and Zurich), 9h. (Manila, Mizusawa (2), Mount Wilson, Pasadena, Riverside, Santiago, Sumoto, and Tinemaha), 10h. (Frunse), 11h. (Almata, Frunse, Samarkand, and Tashkent), 13h. (Mizusawa), 14h. (Nagasaki (2), Hukuoka, Taihoku, Sumoto, and Agra), 15h. (Cape Town, La Paz, Nagasaki, Jena, Cheb, Vladivostok, and Sverdlovsk), 16h. (Copenhagen, De Bilt, Kew, Nagasaki, Pulkovo, Strasbourg, Stuttgart, and Tashkent), 17h. (Baku, Ksara, Medan, Nagasaki (3), Tashkent, and Tiflis), 18h. (Nagasaki and Königsberg), 19h. (Bombay, Hukuoka B, Koti, Nagasaki (4), Osaka, and Oak Ridge), 20h. (Basle, Ebingen, Nagasaki (4), Neuchatel, La Paz, Ravensburg, Strasbourg, Stuttgart, Sucre, and Zurich), 21h. (Branner, Haiwee, Hukuoka B, Lick, Mount Wilson, Nagasaki (4), Pasadena, Osaka, Riverside, Sverdlovsk, Vladivostok, and Tinemaha), 22h. (Chiufeng, Hong Kong, Husan, Hukuoka B, Kobe, Nagasaki (2), Osaka, and Sumoto (2)), 23h. (Berkeley, De Bilt, Husan (2), Nagasaki (2), Paris, Stuttgart, Strasbourg, and Vladivostok), 24h. (Pulkovo, Tashkent, and Sverdlovsk).

Sept. 13d. 3h. 4m. 58s. Epicentre 30°·5N. 131°·6E. N.3.

A = − ·572, B = + ·644, C = + ·508 ; D = + ·748, E = + ·664 ;
G = − ·337, H = + ·380, K = − ·862.

	△	Az.	P.	O − C.	S.	O − C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki	2·7	327	0 32	− 7	1 2	− 7	—	1·6
Hukuoka	3·2	342	0 48	+ 2	e 1 22	0	—	—
Hukuoka B	3·2	342	0 47	+ 1	1 24	+ 2	—	—
Koti	3·5	28	e 1 6	P_g	3 2	?	—	—
Sumoto	4·7	36	e 1 27	P_g	e 2 57	?	—	3·9
Husan	5·1	335	1 25	P*	2 31	S*	—	—
Kobe	5·1	36	e 1 24	P*	e 2 25	S*	—	4·1
Osaka	5·3	37	e 1 18	+ 3	2 40	S*	—	6·2
Toyooka	5·7	27	—	—	e 2 21	− 4	—	—
Zi-ka-wei	8·8	277	—	—	e 3 41	− 3	—	6·1
Nanking	11·1	282	e 3 52	?	e 7 38	?	—	—
Chiufeng	15·8	312	e 3 29	−10	e 6 39	+ 5	e 9·0	10·6
Hong Kong	17·6	247	—	—	7 12	− 3	9·2	11·0
Agra	46·6	280	—	—	e 18 10	SS	—	—
Tashkent	50·5	301	e 10 55	PP	i 15 59	− 9	28·3	30·1
Sverdlovsk	54·6	321	e 9 26	0	e 17 10	+ 6	31·0	35·1
Tiflis	68·1	307	e 24 54	?	—	—	e 42·1	45·0

Additional readings :—
Sumoto eZ = + 1m.37s.
Kobe ePZ = + 1m.55s., eSE = + 2m.57s., eSN = + 3m.2s.
Toyooka SE = + 3m.18s.
Tashkent e = + 7m.3s. and + 25m.51s.
Long waves were also recorded at Edinburgh, Kew, and other European stations.

Sept. 13d. 3h. 16m. 11s. Epicentre 23°·3N. 119°·8E. N.3.

A = − ·456, B = + ·797, C = + ·396 ; D = + ·868, E = + ·497 :
G = − ·197, H = + ·343, K = − ·918.

	△	Az.	P.	O − C.	S.	O − C.
	°	°	m. s.	s.	m. s.	s.
Tainan	0·5	135	i 0 7	0	0 10	− 3
Takao	0·8	148	i 0 8	− 3	0 19	− 2
Arisan	1·0	77	0 16	+ 2	0 26	0
Taityu	1·2	47	e 0 18	+ 1	0 30	− 1
Taito	1·4	114	e 0 24	+ 4	0 37	+ 1
Taihoku	2·3	44	e 0 49	P_g	1 17	S_g

Sept. 13d. 10h. 16m. 29s. Epicentre 30°·5N. 131°·0E. (as on 1933 Dec. 1d.). X.

A = − ·565, B = + ·650, C = + ·508.

	△	Az.	P.	O − C.	S.	O − C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Nagasaki	2·4	337	0 35	+ 1	1 4	+ 2	—
Hukuoka B	3·1	351	0 54	P*	1 32	S*	—
Koti	3·7	34	1 12	P_g	—	—	—
Sumoto	5·0	40	—	—	e 2 19	+11	—
Kobe	5·4	39	—	—	e 3 7	S_g	3·8
Osaka	5·6	41	1 20	0	2 52	S_g	5·8
Chiufeng	15·6	312	e 3 27	− 9	—	—	10·7

Additional readings :—
Sumoto eE = + 2m.28s. = S* + 1s., eN = + 2m.44s. = S_g + 5s., SN = + 2m.50s.,
SE = + 3m.2s.
Long waves were also recorded at Vladivostok and Hong Kong.

Sept. 13d. 14h. 18m. 11s. Epicentre 30°·7N. 130°·2E. (as on 12d. 14h.). R.3.

A = −·555, B = +·657, C = +·510; D = +·764, E = +·646; G = −·330, H = +·390, K = −·860.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki	2·1	354	0 32	+ 2	e 1 5	S*	—	1·4
Hukuoka	2·9	3	0 49	P*	1 25	S*	—	—
Hukuoka B	2·9	3	0 51	P_g	1 27	S*	—	—
Koti	4·1	44	—	—	2 6	S_g	—	—
Taikyu	5·3	346	e 2 40	S*	—	—	—	—
Sumoto	5·4	46	—	—	e 2 35	S*	—	—
Kobe	5·8	45	e 1 49	P_g	e 3 4	S_g	—	4·1
Osaka	6·0	47	1 56	P_g	3 24	?	—	—
Toyooka	6·2	38	e 1 47	P*	—	—	—	—
Nagoya	7·3	50	i 3 42	S*	3 49	S_g	—	3·8
Zi-ka-wei	7·6	276	—	—	e 3 43	S*	5·2	6·1
Nanking	9·8	281	e 4 2	S	(e 4 2)	− 6	i 8·3	—
Tyosi	10·3	58	e 5 12	S*	—	—	—	—
Vladivostok	12·5	7	3 0	+ 5	—	—	6·2	9·3
Chiufeng	14·8	313	e 3 33	+ 6	e 6 45	S*	e 8·3	10·9
Hong Kong	16·5	243	3 59	PP	7 19	SS	—	11·2
Manila	18·2	210	4 30	+21	7 49	SS	—	—
Agra	45·4	280	—	—	e 18 35	(+20)	—	—
Tashkent	48·7	301	—	—	e 16 2	+19	e 29·2	34·0
Sverdlovsk	53·7	321	e 9 38	+19	i 17 12	+20	26·8	35·2
Triest	84·4	321	—	—	e 21 55	?	e 42·4	48·3
Balboa Heights	131·2	41	23 24	?	—	—	—	—

Additional readings :—
Sumoto eN = +2m.48s. = S_g +4s., eE = +2m.52s., SN = +3m.21s., SE = +3m.31s., eE = +4m.28s. and +4m.38s.
Kobe eP?N = +2m.4s.
Osaka i = +5m.24s. and +8m.36s.
Toyooka ePN = +1m.50s.
Nanking e = +6m.46s.
Tashkent e = +19m.49s. and +25m.49s.
Long waves were also recorded at Edinburgh, Kew, Bombay, Calcutta, Phu-Lien, and other European stations.

Sept. 13d. 14h. 21m. 46s. Epicentre 35°·7N. 137°·3E. (as on 1933 Nov. 8d.). X

A = −·597, B = +·551, C = +·584.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Osaka	1·8	234	0 25	− 1	0 47	+ 1	0·8
Toyooka	2·0	265	0 29	0	0 52	+ 1	0·9
Kobe	2·0	240	0 30	+ 1	i 0 52	+ 1	0·9
Sumoto	2·4	236	—	—	1 3	+ 1	—

Sumoto eE = +53s.

Sept. 13d. Readings also at 0h. (Nagasaki (2)), 1h. (Husan and Nagasaki (2)), 2h. (Nagasaki), 3h. (Nagasaki), 4h. (Nagasaki and Triest), 5h. (Hukuoka B (2) and Nagasaki (4)), 6h. (Nagasaki), 7h. (Nagasaki and San Juan), 8h. (Apia), 9h. (Nagasaki), 10h. (Nagasaki, Sverdlovsk (2), Pulkovo, and Tashkent), 11h. (Copenhagen, De Bilt, Lick, Nagasaki (3), Strasbourg, Stuttgart, Tiflis, and Uccle), 12h. (Andijan, Frunse, and Samarkand (2)), 13h. (Nagasaki), 14h. (Andijan, Almata, Frunse, and Samarkand), 15h. (Balboa Heights), 16h. (Andijan, Almata, Frunse, Nagasaki, Triest, Tashkent, and Zagreb), 17h. (Sverdlovsk and Tyosi), 18h. (Almata (2), Andijan (2), Branner (2), Berkeley, Frunse (2), Lick, Nagasaki (2), and Tashkent (2)), 19h. (Erevan, Sotchi, Grozny, Nagasaki, and Tiflis), 20h. (Sverdlovsk and Tashkent), 21h. (Nagasaki), 22h. (Berkeley, Chiufeng, Hukuoka B, and Nagasaki), 23h. (Copenhagen, De Bilt, Hong Kong, Paris, Strasbourg, Stuttgart, Sverdlovsk, Tashkent, Uccle, and Vladivostok)

Sept. 14d. 9h. Readings for which no determination has been made :—

Andijan eP =50m.14s., S_g =50m.46s., M =50m.51s.
Tashkent iP =50m.30s., iS =51m.7s., L =51m.7s., M =51m.24.
Frunse e =51m.22s., e =51m.54s., S_g =52m.16s., M =52m.23s.
Almata eS =53m.4s., M =53m.13s.
Long waves at Copenhagen, Stuttgart, and Strasbourg.

15h.
Husan e =11m.1s., e =20m.46s.
Nagasaki P =11m.53s., S =12m.25s.
Hukuoka B P =12m.13s., S =12m.48s.
Sumoto eN =12m.50s., eSN =14m.12s., MN =14m.24s.
Koti e =13m.
Chiufeng e =14m.55s., L =19m.40s., M =21m.54s.
Long waves at Hong Kong and Kobe.

17h.
Tucson e =14m.12s., e =17m.47s., eL =19m.12s.
Riverside eP =15m.11s.
Mount Wilson iP =15m.18s.a
Pasadena iP =15m.18s.a
Haiwee ePEN =15m.33s.
Tinemaha iP =15m.37s.
Santa Barbara ePZ =15m.37s.
Oak Ridge iP =16m.54s., i =17m.1s., eL =17m.32s.
Ottawa e =21m.36s., eL =30m.
San Juan e =23m.0s.
Bozeman e =26m.36s.
Victoria LEN =29m.43s., ME =30m.51s.

Sept. 14d. Readings also at 0h. (New Plymouth (2), Sebastopol, and Nagasaki (3)), 2h. (Nagasaki, Tashkent, Andijan, Frunse, and Almata), 4h. (Hong Kong, Chiufeng, Nagasaki, Copenhagen, Vladivostok, Tashkent, De Bilt, Pulkovo, and Sverdlovsk), 5h. (Nagasaki (2), Strasbourg, Stuttgart, and Uccle), 6h. (Christchurch, Wellington, Riverview, and Arapuni), 7h. (Sverdlovsk and Tashkent), 8h. (Tyosi), 9h. (Kobe, Sumoto, Chiufeng, Nagasaki, Husan, Vladivostok, Sverdlovsk, Tashkent, and Berkeley), 10h. (Andijan, near Sebastopol, Almata, Frunse, Uccle, Stuttgart, De Bilt, Pulkovo, and Edinburgh), 11h. (St. Louis and Sebastopol), 12h. (Hukuoka B, Chiufeng, and Nagasaki (2)), 13h. (De Bilt), 14h. (Nagasaki), 15h. (Andijan, Frunse, Vladivostok, Tashkent, Pulkovo, Copenhagen, Strasbourg, De Bilt, and Stuttgart), 16h. (Apia, Uccle, and Paris), 17h. (Tashkent), 18h. (Tashkent, Paris, Stuttgart, De Bilt, Strasbourg, Sverdlovsk, Branner, and Nagasaki), 19h. (San Juan and Nagasaki), 20h. (Columbia and Nagasaki), 22h. (Hukuoka B, Nagasaki, and Tiflis), 23h. (Strasbourg, Lick, and Branner).

Sept. 15d. 0h. Readings for which no determination has been made :—

Riverview ePN =1m.18s., ePE =1m.20s., iSNE =5m.49s., eL =8m.30s., MN =12m.20s.
Arapuni i =1m.57s.
Christchurch ePZ =1m.58s., iS =7m.8s., eLRZ =10m.54s.
Wellington i =2m.50s., e =7m., L =12m.12s.
Chiufeng eP =7m.28s., iN =16m.54s., iE =17m.40s.
Melbourne e =8m.8s., L =11m.30s., M =13m.54s.
Vladivostok P =8m.43s.
Adelaide iS =9m.0s., iL =11m.32s., M =15m.30s.
Stuttgart ePKP =15m.40s., ePP =18m.25s., eL =18m.
Strasbourg e =15m. and 19m., eL =1h.0m.
Triest e =16m.3s., e =19m.14s., i =25m.36s., i =37m.17s., M =1h.4m.
Paris e =16m., L =1h.17m.
De Bilt eZ =18m.33s., e =37m.0s., eL =1h.10m.
San Juan e =18m.37s.
Uccle e =18m., eL =1h.1m.
Copenhagen 19m.12s., L =1h.6m.
Sverdlovsk e =23m.4s., L =46m.
Ukiah e =39m.0s.
Long waves at Baku, Tiflis, Pulkovo, and Oak Ridge.

Sept. 15d. 6h. 56m. 53s. Epicentre 19°·9N. 104°·9W. (as on 1932 Oct. 29d.). R.1.

A = −·242, B = −·909, C = +·340; D = −·966, E = +·257; G = −·088, H = −·329, K = −·940.

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Tucson	13·5	338	i 3 7	− 2	e 6 50	S*	e 7·1	—
La Jolla	17·0	322	e 4 1	+ 7	e 7 19	+17	—	—
Riverside	17·9	324	i 4 6	+ 1	—	—	—	—
Pasadena	18·4	323	i 4 13	+ 2	i 7 46	SS	i 9·3	—
Mount Wilson	18·5	323	i 4 13	0	—	—	—	—
Santa Barbara	19·6	321	e 4 26	+ 1	—	—	—	—
Denver	19·8	0	e 4 25	− 2	e 8 2	0	—	11·9
Haiwee	19·9	327	e 4 28	− 1	—	—	—	—
Tinemaha	20·8	329	i 4 38	0	—	—	—	—
St. Louis	22·6	31	i 4 57	0	i 9 3	+ 6	e 11·5	12·5
Florissant	22·7	30	i 4 57	− 1	e 9 0	+ 1	i 11·6	—
Branner	23·1	323	e 5 5	+ 3	—	—	—	—
San Francisco	23·5	323	e 5 15	+10	—	—	—	—
Ukiah	24·9	324	i 5 32	+13	e 9 42	+ 3	e 11·7	—
Columbia	25·4	51	e 5 25	+ 1	e 9 53	+ 5	e 16·1	—
Bozeman	26·3	350	e 5 27	− 5	e 9 59	− 4	e 14·5	—
Chicago	26·3	30	i 5 24	− 8	e 9 59	− 4	e 13·1	—
Ann Arbor	28·7	34	i 6 1	+ 8	e 11 19	+36	i 15·3	15·4
Charlottesville	29·2	46	e 6 2	+ 4	e 10 51	0	e 15·6	—
Pittsburgh	29·6	40	i 6 1	0	i 11 19	+21	i 15·9	—
Georgetown	30·6	46	i 6 11	+ 1	e 10 54	−20	—	16·9
Seattle	31·3	337	—	—	e 11 35	+11	18·0	—
Toronto	31·9	36	i 6 22	0	i 11 35	+ 1	i 15·4	17·0
Victoria	32·2	337	6 24	0	11 41	+ 3	18·7	—
Philadelphia	32·4	45	e 6 28	+ 2	e 11 36	− 5	e 16·5	—
Ottawa	35·0	36	e 6 48	− 1	e 12 21	0	e 17·1	—
Oak Ridge	36·0	43	i 6 58	0	e 12 18	−18	e 19·1	—
San Juan	36·6	86	e 7 5	+ 2	e 12 57	+12	e 15·5	—
Huancayo	43·2	136	e 8 17	+19	e 14 40	+16	e 21·3	—
Sitka	43·4	336	—	—	e 14 27	0	e 22·3	—
La Paz	51·3	132	9 12	+11	16 30	+11	26·4	28·4
Sucre	54·9	131	i 9 21	− 7	i 17 20	+12	29·6	—
Ivigtut	56·9	29	i 9 41	− 1	17 33	− 2	28·1	—
La Plata	70·6	141	11 28	+14	20 49	PS	37·1	52·0
Edinburgh	80·0	33	e 12 13	+ 5	e 22 7?	− 9	e 43·1?	51·3
Bidston	81·0	36	e 12 34	+21	e 22 49	+23	e 35·1	47·4
Stonyhurst	81·1	35	e 12 16	+ 2	e 21 1	?	42·1	48·1
Oxford	82·6	37	e 12 22	+ 1	e 22 34	− 9	e 40·1	48·3
Kew	83·2	37	e 12 33	+ 9	e 22 47	− 2	e 37·1?	48·5
San Fernando	85·0	53	12 36	+ 3	23 16	+ 8	44·6	—
Toledo	85·3	49	e 12 34	0	e 23 4	[+ 3]	—	—
De Bilt	86·0	35	12 40	+ 2	e 23 18	0	e 39·1	42·5
Paris	86·0	39	e 12 40	+ 2	e 23 4	[− 2]	44·1	50·1
Uccle	86·1	36	e 12 38	− 1	e 23 3	[− 4]	38·1	50·3
Granada	86·7	51	e 12 35	− 7	e 23 10	[− 1]	42·1	—
Hamburg	87·8	32	e 16 11	PP	—	—	e 39·1	53·1
Copenhagen	87·9	30	12 55	+ 8	23 13	[− 6]	39·1	—
Alicante	88·4	49	—	—	e 23 43	+ 2	e 51·8	—
Strasbourg	89·2	37	e 12 54	0	(e 29 7?)	SSS	e 29·1	52·6
Stuttgart	89·8	36	e 12 57	+ 1	e 23 25	[− 6]	e 40·1	50·1
Helsingfors	90·2	22	—	—	e 25 0	PS	e 42·1	—
Zurich	90·2	38	e 13 6	+ 8	—	—	—	—
Piacenza	92·0	40	16 51	PP	—	—	45·1	57·6
Prague	92·1	34	—	—	e 31 7?	?	e 41·4	56·1
Pulkovo	92·4	21	13 11	+ 2	23 37	[−10]	42·1?	49·5
Triest	94·1	38	e 13 15a	− 1	e 23 50	[− 6]	e 42·1?	52·0
Graz	94·2	36	e 13 18	+ 1	—	—	—	56·3
Zagreb	95·3	37	e 13 27	+ 5	e 24 8	[+ 6]	e 47·5	53·1
Christchurch	98·3	227	—	—	e 24 21	[+ 4]	45·1	—
Sverdlovsk	102·3	8	14 14	+20	24 42	[+ 5]	44·1?	65·0

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Simferopol	105·2	29	e 18 39	PP	e 28 22	PS	60·1	—
Yalta	105·6	29	e 18 17	PP	—	—	56·1	—
Chiufeng	108·9	328	e 18 53	PP	—	—	—	72·4
Tiflis	112·3	24	19 20	PP	28 56	PS	e 50·4	66·4
Ksara	114·5	36	—	—	e 29 21	PS	—	—
Baku	115·3	21	—	—	29 32	PS	48·1	69·0
Frunse	117·2	1	e 19 28	PP	—	—	e 69·3	—
Tashkent	118·6	5	—	—	29 43	PS	64·1	76·6
Andijan	119·3	2	e 19 3	[+19]	—	—	e 70·2	—
Manila	123·2	304	e 19 20	[+27]	—	—	57·1	—
Batavia	146·3	290	19 37	[+ 1]	e 21 44	?	—	—

Additional readings :—
Denver epP = +4m.37s., esP = +4m.44s. ; T_0 = 6h.56m.50s.
St. Louis ipPEN = +5m.7s., iPPE = +5m.23s., isSE = +9m.22s.
Florissant ipP = +5m.9s., isS = +9m.21s. ; T_0 = 6h.56m.50s.
Branner iPN = +5m.13s., iPE = +5m.16s.
Bozeman e = +12m.38s. ; T_0 = 6h.56m.50s.
Ann Arbor eN = +13m.25s., eE = +14m.19s., eN = +14m.37s.
Charlottesville e = +8m.7s., eSS = +13m.1s.
Pittsburgh iSS = +12m.19s., iSSS = +14m.46s.
Georgetown e = +10m.4s., +10m.37s., and +13m.9s. ; T_0 = 6h.56m.50s.
Seattle ePP = +7m.25s., eSS = +13m.33s., e = +16m.21s.
Philadelphia iP = +6m.36s., ePP = +7m.46s., eSS = +13m.46s.
Ottawa PPP = +8m.13s., SS = +14m.19s.; T_0 = 6h.56m.54s.
Oak Ridge iZ = +7m.0s., ipP = +7m.5s., eSNW = +12m.29s.
Huancayo ePP = +10m.17s., eSS = +18m.14s.
La Paz iPZ = +9m.17s., PPN = +11m.31s., PPP = +12m.33s., SZ = +16m.35s., PSE = +17m.2s., iSSN = +21m.0s.
Ivigtut i = +9m.49s., +10m.59s.
San Fernando PE = +12m.46s.
De Bilt iZ = +12m.48s., iPPZ = +16m.7s.
Uccle ePPE = +15m.59s., eSS = +28m.55s.
Granada i = +12m.47s.
Copenhagen +16m.13s. = PP + 5s.
Stuttgart ePP = +16m.28s., ePS = +24m.55s.
Helsingfors ePPEN = +16m.36s., eSSN = +30m.14s. ; T_0 = 6h.56m.54s.
Zurich e = +16m.16s. = PP − 11s.
Pulkovo PP = +16m.54s., PPP = +18m.46s., PS = +25m.14s., SS = +30m.13s.
Triest iP_gP = +13m.24s., e = +24m.27s. = S − 7s. and +24m.32s.
Graz e = +20m.26s.
Christchurch eE = +26m.43s. = PS + 16s.
Sverdlovsk PP = +18m.15s., SS = +32m.43s.
Ksara ePP = +19m.31s., eSKP = +21m.3s.
Baku PP = +19m.51s.
Tashkent PP = +19m.55s., SS = +41m.7s.
Long waves were also recorded at Honolulu, Wellington, Cheb, Upsala, Vladivostok, Almata, and Durham.

Sept. 15d. 13h. 8m. 29s. Epicentre 30°·6N. 132°·1E. N.3.

A = −·577, B = +·639, C = +·509 ; D = +·742, E = +·670 ;
G = −·341, H = +·378, K = −·861.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Nagasaki	2·9	321	0 41	0	1 13	− 1	—
Koti	3·2	24	—	—	e 1 31?	S*	—
Hukuoka	3·3	335	0 55	P*	e 1 43	S_g	—
Hukuoka B	3·3	335	e 1 0	P_g	1 38	S*	—
Sumoto	4·4	33	e 2 44	?	e 3 31	?	3·7
Kobe	4·8	33	—	—	e 2 52	?	4·6
Osaka	5·0	32	1 51	?	3 21	?	5·9
Nagoya	6·1	42	—	—	e 3 35	?	—
Chiufeng	16·1	311	e 3 40	− 3	—	—	10·9

Additional readings :—
Sumoto eZ = +3m.4s., eSN = +3m.40s.
Kobe eZ = +3m.4s., eSN = +3m.10s., eE = +4m.11s.
Long waves were also recorded at Vladivostok, Nanking, and other European stations.

Sept. 15d. 20h. Readings for a shock in the vicinity of Guelma :—
Algiers ePg = 0m.49s., iSg = 1m.36s.
Granada eP = 1m.14s., iS = 2m.20s.
Toledo e = 1m.16s., e = 2m.9s., e = 2m.40s.
Almeria ePN = 1m.26s., eSg = 2m.39s.
Alicante e = 1m.28s.
San Fernando P = 2m.59s.
Stuttgart eL = 9m.30s.
De Bilt eL = 9m.

Sept. 15d. Readings also at 0h. (Sumoto, Tyosi, and Tiflis), 1h. (Nagasaki), 2h. (Nagasaki, Hukuoka B, and Chiufeng), 3h. (Nagasaki, Tashkent, Sverdlovsk, Strasbourg, De Bilt, Uccle, Stuttgart, and Wellington), 5h. (Husan, Nagasaki, Hukuoka B, and Balboa Heights), 6h. (Tashkent, Stuttgart, and Sverdlovsk), 7h. (Nagasaki), 8h. (Hong Kong, Cape Town, Kodaikanal, Calcutta, Grozny, Jena, and Berkeley), 9h. (Tyosi), 11h. (Mizusawa), 12h. (Kodaikanal), 13h. (Zagreb and Cape Town), 14h. (Lick, Branner, Mizusawa, Uccle, and Stuttgart), 16h. (Tashkent, Almata, Frunse, Andijan, Osaka, and Nagasaki), 17h. (Manila, Sverdlovsk, Nagasaki, Osaka, Husan, and Hukuoka B), 18h. (Mizusawa, Tyosi, and Algiers), 19h. (Berkeley, Frunse, Andijan, and Tchimkent), 20h. (Osaka, Nagasaki, Hong Kong, and Algiers), 21h. (Lick and Mizusawa), 23h. (Hukuoka B, Nagasaki, Chiufeng, Tashkent, and Sverdlovsk).

cpt. 16d. 13h. 15m. 5s. Epicentre 29°·0N. 130°·0E. (as on 1929 Feb. 3d.). R.3.

A = −·562, B = +·670, C = +·485 ; D = +·766, E = +·643 ;
G = −·312, H = +·371, K = −·875.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki		3·7	358	0 47	− 6	e 1 19	−16	—	1·7
Hukuoka		4·6	4	1 3	− 3	e 1 47	−11	—	2·1
Hukuoka B	E.	4·6	4	1 7	+ 1	1 44	−14	—	2·0
Koti		5·5	33	1 15	− 3	2 13	− 7	—	—
Husan		6·1	352	e 1 27	0	e 2 33	− 3	—	3·5
Sumoto		6·7	36	1 36	+ 1	3 3	+12	—	3·8
Taikyu		6·9	351	1 51	P*	3 14	S*	—	—
Kobe		7·2	36	e 1 40	− 2	i 3 6	+ 2	—	4·5
Osaka		7·3	38	1 42	− 2	3 12	+ 6	—	5·1
Toyooka		7·7	30	2 3	P*	3 16	0	—	4·5
Zi-ka-wei		7·7	289	e 2 17	P*	—	—	5·4	6·4
Nagoya		8·5	42	2 2	+ 2	4 30	S_g	—	—
Taihoku		8·5	244	3 37	S	(3 37)	+ 1	—	—
Keizyo		8·9	344	e 2 6	0	4 0	+14	—	—
Zinsen		8·9	343	—	—	e 3 54	+ 8	—	4·7
Nanking		10·1	291	e 2 29	+ 7	—	—	e 6·8	—
Heizyo		10·6	342	e 3 7	?	5 1	S*	—	—
Vladivostok		14·2	6	3 18	0	e 5 50	− 6	6·3	9·4
Hong Kong		15·7	249	4 16	+38	7 30	+59	9·8	12·4
Chiufeng		15·9	318	3 49a	+ 9	e 6 43	+ 7	8·5	10·9
Manila		16·7	212	4 35k	+45	8 3	?	12·4	—
Sverdlovsk		54·9	322	i 9 55	+27	i 17 33	+25	27·9	35·4
Triest		85·6	321	e 33 19	?	e 37 24	?	e 43·6	48·6
Stuttgart		86·2	325	—	—	e 30 7	?	e 46·9	48·4

Additional readings :—
Hukuoka P_g? = +1m.10s.
Hukuoka B PN = +1m.2s.
Koti P* = +1m.29s.
Kobe ePZ = +1m.44s., iN = +2m.8s. = P* + 8s., iE = +2m.11s., eEZ = +2m.52s., SZ = +3m.16s., iS?E = eN = +3m.19s.
Toyooka eE = +2m.11s. = P* + 2s., eSZ = +3m.25s.
Taihoku S = +3m.58s.
Hong Kong PP = +4m.30s., SS? = +7m.49s.
Stuttgart e = +42m.55s.?
Long waves were also recorded at Edinburgh, Bidston, Kew, and many other European stations.

Sept. 16d. 13h. 19m. 4s. Epicentre 23°·3N. 119°·8E. (as on 13d. 3h.). X.

A = −·456, B = +·797, C = +·396 ; D = +·868, E = +·497 ;
G = −·197, H = +·343, K = −·918.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Tainan	0·5	135	i 0 6	− 1	0 13	0	—
Takao	0·8	148	0 13	+ 2	0 24	S*	—
Arisan	1·0	77	0 17	+ 3	0 23	− 3	—
Taityu	1·2	47	0 28	S	0 39	S*	—
Karenko	1·8	68	0 23	− 3	0 42	− 4	—
Taihoku	2·3	44	0 43	P_g	e 1 10	S*	—
Nanking	8·8	355	—	—	i 4 40	S_g	e 8·5

Nanking gives also e = +7m.56s.

Sept. 16d. 15h. 9m. 12s. Epicentre 29°·6N. 128°·6E. (as on 1933 July 18d.). X.

A = −·542, B = +·680, C = +·494.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Nagasaki	3·3	19	0 45	− 2	1 16	− 9	—
Hukuoka B	4·3	21	e 1 12	P*	e 1 46	− 4	—
Husan	5·5	4	—	—	e 2 42	S*	—
Osaka	7·8	48	1 52	+ 1	3 25	+ 6	3·6

Husan gives also e = +8m.42s.

Sept. 16d. 19h. 11m. 13s. Epicentre 29°·6N. 128°·6E. (as at 15h. 9m.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Nagasaki		3·3	19	0 48	+ 1	1 19	− 6	—
Hukuoka B		4·3	21	e 1 12	P*	1 45	− 5	—
Koti		5·8	46	e 1 47?	P_g	—	—	—
Sumoto	E.	7·2	47	e 2 24	P_g	e 3 18	+14	4·2
	N.	7·2	47	e 2 18	P_g	e 3 14	+10	3·4
Kobe		7·5	46	—	—	e 3 19	+ 8	4·4
Osaka		7·8	48	2 4	P*	3 35	S*	5·4
Chiufeng		14·6	319	e 3 56	+33	—	—	10·8

Sumoto eZ = +3m.13s.
Long waves were recorded at Hong Kong, Vladivostok, and some European stations.

Sept. 16d. Readings also at 0h. (Nagasaki, Mizusawa, Tashkent, Strasbourg, Stuttgart, Sverdlovsk, and De Bilt), 1h. (Nagasaki, Hukuoka, and Hukuoka B), 2h. (Sumoto, Nagasaki, Santiago, Frunse, Andijan, and Tucson), 4h. (Nagasaki), 5h. (La Paz, Mizusawa, and Sucre), 6h. (Bombay and Kodaikanal), 7h. (Santiago and La Plata), 9h. (Nagasaki), 10h. (Nagasaki and Erevan), 13h. (Bombay), 16h. (Strasbourg, Stuttgart, and Malabar), 19h. (Strasbourg), 20h. (Stuttgart, De Bilt, Uccle, and Paris), 21h. (Nagasaki and Osaka), 22h. (Glenmuick, Nagasaki, Hukuoka B, and Osaka), 23h. (Glenmuick, Christchurch, and Wellington).

Sept. 17d. 0h. 30m. 25s. Epicentre 36°·1N. 140°·0E. (as at 1d. 11h.). R.3.

A = −·619, B = +·519, C = +·589.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Tokyo	0·5	206	i 0 6	− 1	0 13	0	0·2
Tyosi	0·8	118	0 11	0	0 21	0	0·4
Nagoya	2·7	249	0 41	P*	1 26	S_g	1·4
Mizusawa	3·0	16	e 0 51	P*	i 1 31	S*	—
Osaka	3·9	250	1 10	P_g	2 10	S_g	2·3
Toyooka	4·2	264	1 15	P_g	2 11	S_g	2·2
Kobe	4·3	251	1 17	P_g	e 2 3	S*	2·2
Sumoto	4·5	248	e 1 24	P_g	2 18	S_g	2·6

Additional readings :—
Mizusawa eSN = +1m.34s. = S_g +1s.
Toyooka PN = +1m.20s.
Sumoto eZ = +1m.45s.

Sept. 17d. 1h. 28m. 11s. Epicentre 35°·7N. 134°·8E. (as on Aug. 20d. 9h.). X.

A = −·572, B = +·576, C = +·584.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Toyooka	0·2	175	0 1	− 2	0 4	− 1	0·1
Kobe	1·1	163	0 17	+ 1	0 29	+ 1	0·5
Osaka	1·2	154	0 18	+ 1	0 36	S*	0·6
Sumoto	1·4	177	0 24	P_g	0 39	S*	0·7
Nagoya	1·8	107	0 29	P*	0 53	S*	—

Osaka i = +21s. = P_g +1s.

Sept. 17d. 13h. 39m. 58s. Epicentre 30°·5N. 131°·0E. (as at 13d. 10h.). X.

A = −·565, B = +·650, C = +·508.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Nagasaki	2·4	337	0 34	0	1 6	+ 4	—
Hukuoka B	3·1	351	e 0 59	P_g	e 1 31	S*	—
Koti	3·7	34	e 1 2?	P*	—	—	—
Husan	4·9	341	e 1 26	P*	e 2 28	S*	—
Sumoto	5·0	40	e 1 10	− 1	2 46	S_g	3·6
Osaka	5·6	41	1 35	P*	3 3	S_g	5·9

Sumoto SE = +2m.52s.

Sept. 17d. Readings also at 1h. (Tyosi, Nagoya, Nagasaki, Osaka, and Chiufeng), 2h. (Nagoya, Tashkent, Strasbourg, Stuttgart, and Sverdlovsk), 6h. (Nagasaki, Manila, and Sebastopol), 7h. (Sebastopol), 8h. (Tyosi), 9h. (Nagasaki and Mizusawa), 12h. (Nagoya), 13h. (Nagasaki, Hong Kong, and Chiufeng), 14h. (Algiers, Copenhagen, Pulkovo, De Bilt, Stuttgart, Strasbourg, Sverdlovsk, and Nagasaki), 15h. (Nagasaki), 17h. (Nagasaki, Calcutta, Bombay, Tashkent, and Sverdlovsk), 18h. (Osaka, Hukuoka B, Nagasaki, Hong Kong, Bombay, Calcutta, and Tashkent), 19h. (Pulkovo, Sverdlovsk, Strasbourg, De Bilt, and Copenhagen), 20h. (Nagasaki, Hukuoka B, Osaka, Prato, Andijan, and Samarkand), 21h. (Nagasaki), 22h. (Nagasaki, Osaka, Hukuoka B, Tananarive, and Balboa Heights).

Sept. 18d. 7h. 7m. 43s. Epicentre 37°·5N. 70°·5E. (as on 1934 April 30d.). X.

A = +·265, B = +·748, C = +·609; D = +·943, E = −·334; G = +·203, H = +·574, K = −·793.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Samarkand	3·4	310	e 1 13	?	i 1 20	− 7	—	2·5
Andijan	3·6	24	0 51	0	1 23	− 9	—	1·5
Tashkent	3·9	347	i 0 59	+ 3	i 1 21	P_g	i 1·6	2·0
Tchimkent	4·9	352	−0 6?	?	e 2 0	− 5	—	—
Frunse	6·2	29	e 1 26	− 2	2 44	+ 6	—	2·8
Almata	7·6	39	—	—	e 3 26	+12	—	3·6
Agra	12·1	146	—	—	e 6 41	S_g	—	—
Sverdlovsk	20·4	345	4 50	PP	8 30	SS	12·0	12·1

Frunse gives S* = +2m.31s.
Long waves were also recorded at Baku, Copenhagen, Tiflis, and Pulkovo.

Sept. 18d. 9h. 37m. 10s. Epicentre 44°·5N. 11°·0E. (as on 1934 March 28d.). R.3.

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 6	− 3	i 0 16	+ 1	0·3
Florence	0·7	166	—	—	0 29	?	—
Piacenza	1·1	300	—	—	e 0 24	− 4	0·6
Padova	1·1	35	e 0 17	+ 1	0 40	?	—
Siena	1·2	168	0 20	P_g	0 30	− 1	—
Pavia	1·5	298	i 0 54	S_g	—	—	—
Triest	2·2	59	0 33	+ 2	i 1 2	S*	—
Zurich	3·3	330	e 0 49	+ 2	e 1 53	S_g	—
Ravensburg	3·4	344	e 1 10	P_g	—	—	—
Zagreb	3·8	68	e 1 14	P_g	e 2 0	S_g	e 2·1
Basle	3·9	324	e 1 16	P_g	e 2 15	?	—
Stuttgart	4·4	345	—	—	e 1 40	?	—
Vienna	5·2	44	—	—	e 2 54	S_g	—

Additional readings:—
Triest i = +37s. = P* +2s., iPPs = +40s. = P_g +2s., iS_g = +1m.5s., iSSs = +1m.14s.
Ravensburg e = +2m.2s.
Vienna eZ = +2m.57s., iEN = +3m.14s.

Sept. 18d. 10h. **Readings for which no determination has been made:—**

Florissant eP = 11m.16s., eS = 15m.36s., eL = 21m.
San Juan e = 11m.20s., e = 20m.0s.
Riverside eZ = 12m.9s.
Mount Wilson eZ = 12m.13s.
Pasadena eZ = 12m.21s.
Tinemaha eE = 12m.29s.
Columbia e = 14m.54s.
Huancayo e = 16m.36s.
Pittsburgh e = 16m.50s., e = 18m.32s., e = 20m.46s., e = 21m.8s., eL = 23m.12s.
Ottawa e = 17m.42s., L = 27m.
Oak Ridge eEN = 18m.30s., eLZ = 26m.30s.
Tucson e = 20m.0s.
Long waves at De Bilt, Paris, Stuttgart, and La Paz.

Sept. 18d. Readings also at 2h. (Nagasaki), 3h. (Nagasaki, Strasbourg, and Stuttgart), 4h. (Nagasaki and De Bilt), 6h. (Nagasaki, Algiers, and La Paz), 7h. (Tashkent, Andijan, and Frunse), 8h. (Nagasaki and Samarkand), 9h. (Nagasaki), 11h. (Nagasaki, Chiufeng, and Hong Kong), 12h. (Strasbourg and Stuttgart), 13h. (Husan, Basle, Neuchatel, and Zurich), 15h. (Andijan and Frunse), 17h. (Pasadena, Riverside, Mount Wilson, and Tinemaha), 18h. (Santiago, Nagasaki, Chiufeng, Hong Kong, Tashkent, and Sverdlovsk), 19h. (Mizusawa (2), Huancayo, Tinemaha, Mount Wilson, Pasadena, Pulkovo, Baku, Tiflis, Uccle, Paris, De Bilt, Stuttgart, Strasbourg, and Copenhagen), 21h. (Mizusawa, Tashkent, Samarkand, and Andijan), 22h. (Nagasaki, New Plymouth, Sverdlovsk, and Tashkent), 23h. (Branner, Andijan, and Samarkand (2)).

Sept. 19d. 1h. 36m. 19s. Epicentre 36°·9N. 122°·0W. N.3.

A = −·424, B = −·678, C = +·600 ; D = −·848, E = +·530 ;
G = −·318, H = −·509, K = −·800.

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Branner		0·6	349	e 0 8	− 1	i 0 15	0
Lick		0·6	32	e 0 8	− 1	e 0 14	− 1
Berkeley	z.	1·0	345	e 0 16	+ 2	i 0 28	+ 2

Branner ePE = +10s., iN = +21s.

Sept. 19d. Readings also at 1h. (Nagasaki), 2h. (Nagasaki), 3h. (Nagasaki, Nagoya, Tyosi, and Oak Ridge), 4h. (Santiago and Soengei Langka), 5h. (La Paz, Nagasaki, Tashkent, Almata, Andijan, Frunse, and Samarkand), 6h. (Nagasaki, Tiflis, Grozny, and Erevan), 7h. (Haiwee, Tinemaha, La Jolla, Riverside, Mount Wilson, Pasadena, and Nagasaki), 9h. (Nagasaki), 10h. (Nagasaki), 11h. (New Plymouth), 13h. (Malabar), 15h. (Mizusawa and Tyosi), 17h. (Nagasaki, Hukuoka B, and Berkeley), 18h. (Wellington and Nagasaki), 19h. (Mizusawa and Sverdlovsk), 20h. (Baku), 21h. (Balboa Heights), 22h. (Berkeley and Nagasaki), 23h. (Branner, De Bilt, Stuttgart, Tashkent, and Sverdlovsk).

Sept. 20d. 19h. Readings for which no determination has been made :—

Tashkent P = 43m.31s., iL = 44m.10s., M = 44m.42s.
Andijan P = 43m.36s., P_g = 43m.40s., i = 43m.46s., i = 43m.56s., i = 44m.4s., S_g = 44m.8s., M = 44m.20s.
Samarkand e = 43m.50s., M = 44m.53s.
Frunse eP = 44m.2s., i = 44m.18s., i = 44m.28s., i = 44m.55s., i = 45m.5s., S_g = 45m.20s., M = 45m.27s.
Almata e = 44m.22s., M = 44m.17s., e = 46m.1s. ; epicentre 38°·7N. 72°·6E.
Grozny e = 47m.19s.
Agra e = 48m.37s.
Baku e = 48m.45s., e = 51m.53s., L = 53m.30s.
Long waves at Copenhagen and Pulkovo.

Sept. 20d. Readings also at 1h. (Nagasaki, Tiflis, Erevan, and Grozny), 2h. (Tashkent and Sverdlovsk), 3h. (Balboa Heights), 4h. (Siena and Mizusawa), 6h. (Siena and Prato), 7h. (Siena and Sebastopol), 8h. (Sebastopol and Lick), 9h. (Tyosi and Nagoya), 10h. (Balboa Heights and Tananarive), 14h. (Toyooka, Tchimkent, Andijan, Sverdlovsk, Samarkand, Tashkent (2), and Frunse), 18h. (Tyosi), 20h. (De Bilt), 21h. (Nagasaki and Oak Ridge), 22h. (Mizusawa), 23h. (Tashkent, Andijan, and Tchimkent).

Sept. 21d. 12h. 38m. 49s. Epicentre 0°·8N. 98°·3E. N.1.

A = −·144, B = +·989, C = +·014; D = +·990, E = +·144; G = −·002, H = +·014, K = −1·000.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Medan	2·8	10	i 0 44	+ 4	—	—	—	—
Soengei Langka	9·3	132	e 2 9	− 2	4 24	S*	—	—
Batavia	11·0	130	i 2 40a	+ 5	e 4 24	−14	—	—
Malabar	12·3	131	2 58	PP	e 5 3	− 7	—	—
Colombo	19·4	289	4 30	PP	8 18	SS	9·5	14·3
Phu-Lien	21·6	22	e 4 43	− 3	8 26	−12	10·2	—
Kodaikanal	22·8	295	e 5 7	+ 8	i 9 23	SS	11·3	—
Calcutta	23·8	337	4 45	−23	9 33	+14	12·5	—
Hyderabad	25·6	312	5 30	+ 5	9 56	+ 5	10·9	11·4
Manila	26·3	57	i 5 29a	− 3	10 34	+31	14·4	18·2
Hong Kong	26·5	35	5 31	− 3	9 51	−16	12·2	13·3
Bombay	30·8	308	e 6 20	+ 8	i 11 33	+16	—	—
Agra	32·7	325	6 30	+ 1	i 11 40	− 6	12·9	15·0
Perth	36·7	155	7 11	+ 7	12 51	+ 4	18·1	—
Nanking	36·8	30	e 12 40	S	(e 12 40)	− 8	21·1	—
Chiufeng	42·5	20	7 48	− 5	13 54	−19	—	—
Nagasaki	43·6	40	e 8 2	0	—	—	—	—
Andijan	46·3	333	e 8 22	− 1	—	—	—	—
Frunse	47·2	336	8 29	− 1	i 15 13	− 8	—	—
Samarkand	48·2	328	e 7 56	−42	—	—	—	—
Tashkent	48·2	331	i 8 38	0	i 15 26	−10	e 23·3	27·7
Tchimkent	48·8	332	e 7 7	−95	—	—	—	—
Vladivostok	51·9	30	e 8 59	− 7	i 16 14	−13	25·2	34·8
Erevan	62·6	316	e 10 24	+ 2	—	—	—	—
Tiflis	63·0	318	i 10 23	− 2	18 45	−10	e 33·7	43·2
Sverdlovsk	63·5	339	i 10 47	+18	i 19 9	+ 8	33·2	—
Ksara	66·9	307	i 10 52	+ 1	19 43	0	—	—
Helwan	69·7	302	i 11 9	0	i 20 4	−14	—	44·6
Yalta	71·2	317	11 17	− 1	20 21	−14	—	—
Simferopol	71·5	318	11 19	− 1	20 25	−14	—	—
Pulkovo	78·4	332	i 11 56	− 3	21 39	−19	44·2	50·7
Helsingfors	81·1	331	e 12 11	− 3	e 22 7	−20	e 41·2	—
Budapest	82·1	319	12 11?	− 8	—	—	—	—
Königsberg	82·3	326	—	—	22 4	[−34]	e 22·9	27·1
Vienna	84·0	318	e 12 26	− 2	i 22 44	[− 8]	—	—
Zagreb	84·0	316	e 11 29	−59	e 22 39	[−13]	—	—
Prague	85·4	320	—	—	e 22 53	[− 9]	—	23·7
Triest	85·6	316	i 12 35k	− 1	i 22 49	[−14]	—	—
Graz	85·7	317	i 12 31	− 6	i 22 50	[−14]	—	—
Venice	86·6	316	i 12 45	+ 4	i 23 11	[0]	—	28·0
Padova	86·8	316	i 12 45	+ 3	23 48	+23	—	—
Copenhagen	87·0	326	i 12 44k	+ 1	e 23 13	[0]	—	—
Siena	87·2	313	12 41	− 3	22 11	[−64]	—	—
Prato	87·4	314	i 12 44	− 1	i 23 14	[− 2]	—	—
Hamburg	88·3	324	i 12 48k	− 1	e 23 11	[−11]	63·2	—
Piacenza	88·4	315	12 53	+ 3	i 23 11	[−12]	—	—
Stuttgart	88·7	320	i 12 52	+ 1	e 23 8	[−16]	e 51·2	—
Zurich	89·2	317	e 12 54	0	23 14	[−14]	—	—
Basle	89·8	318	e 12 57	+ 1	—	—	—	—
Strasbourg	89·8	319	i 12 56k	0	e 23 16	[−15]	e 46·2	—
Neuchatel	90·3	317	e 12 59	0	23 20	[−14]	—	—
De Bilt	91·3	322	—	—	i 23 26	[−14]	e 45·2	—
Uccle	91·8	321	i 13 5	− 1	i 23 57	{+ 8}	e 41·2	—
Paris	93·2	319	i 13 13	+ 1	e 23 35	[−16]	54·2	—
Kew	94·6	322	—	—	e 24 25	−13	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Stonyhurst	95·6	325	i 17 50	PP	i 23 45	[−19]	—	—
Edinburgh	95·8	327	—	—	e 23 11?	[−54]	—	—
Bidston	96·0	325	—	—	e 23 41	[−25]	—	—
Ivigtut	113·0	343	19 17	PP	—	—	—	—
Tinemaha	129·2	38	e 19 6	[+ 1]	—	—	—	—
Haiwee	130·0	39	e 19 4	[− 3]	—	—	—	—
Mount Wilson	131·2	41	e 19 9	[0]	—	—	—	—
Pasadena	131·2	41	i 19 10k	[+ 1]	—	—	—	—
Riverside	131·8	40	i 19 10	[0]	—	—	—	—
La Jolla	132·5	42	e 19 12	[+ 1]	—	—	—	—
Ottawa	133·5	354	—	—	e 37 41	?	e 55·2	—
Oak Ridge	135·7	349	e 19 11	[− 5]	—	—	—	—
Pittsburgh	138·7	358	—	—	e 40 16	SS	—	—
La Paz	159·6	220	i 20 1	[+ 8]	—	—	77·2	—

Additional readings and note :—
Batavia i = +2m.58s., eSN = +4m.55s., iSE = +5m.11s.
Kodaikanal iPP = +5m.37s., iSS = +10m.17s.
Hyderabad S = +6m.9s., L = +6m.23s., M = +6m.47s. ; S = +10m.26s., this and the S, L, M in the table are given as for a separate shock.
Hong Kong ? = +5m.51s., SS = +10m.43s.
Bombay e = +9m.52s., SS? = +13m.29s.
Agra i = +6m.56s.
Perth PP = +8m.11s., PPP = +8m.36s., P_cS = +12m.56s., SS = +15m.32s., SSS = +16m.1s., SSSS = +16m.26s.
Nanking iS = +17m.8s. = S_cS − 15s.
Chiufeng iSE = +13m.59s.
Tiflis PPPN = +14m.29s., eNZ = +19m.23s., SKKSEN = +20m.49s., eSSN = +23m.27s., eSSSN = +26m.11s.
Ksara PP = +13m.19s., PS = +20m.16s.
Helsingfors $eP_cP?E$ = +12m.44s., ePPE = +16m.59s. = PPP + 4s., eSKKSN = +22m.47s., eSSN = +31m.11s.
Vienna iPN = +12m.29s., iZ = +13m.1s., PS = +23m.24s.
Zagreb e = +11m.59s., eE = +23m.21s.
Triest $iP_cP?$ = +13m.10s., i = +22m.57s., iPS = +23m.30s.
Graz iPS = +23m.28s.
Copenhagen i = +13m.16s., iSKS = +23m.1s., eN = +23m.51s.
Stuttgart eP_cPEZ = +13m.14s., ePPEZ = +16m.21s., e = +16m.51s., eN = +24m.8s.
Strasbourg i = +13m.27s., ePP? = +16m.58s.
De Bilt i = +23m.53s. and +24m.33s. ; T_o = 12h.38m.50s.
Uccle i = +13m.38s. and +16m.48s. = PP + 8s., iN = +24m.37s.
Paris PKP = +13m.44s.
Kew eSKS = +23m.45s., ePS = +25m.3s.
Stonyhurst i = +24m.30s.
Bidston e = +25m.11s. and +26m.21s.
Tinemaha iN = +22m.14s., iEZ = +22m.17s.
Haiwee iENZ = +22m.21s. = PKS − 12s.
Mount Wilson iENZ = +22m.24s. = PKS − 15s.
Pasadena iZ = +19m.33s. and +22m.23s. = PKS − 16s., iEN = +22m.26s., iZ = +23m.4s.
Riverside iZ = +19m.35s., iENZ = +22m.25s. = PKS − 16s., iZ = +23m.6s.
La Jolla iZ = +19m.36s., iENZ = +22m.27s. = PKS − 17s., iZ = +23m.8s.
Oak Ridge iZ = +19m.18s., eZ = +21m.54s. = PP + 0s., +22m.3s., and +22m.22s., iZ = +22m.41s., and +22m.46s. = PKS − 10s.
La Paz iPPZ? = +24m.21s.

Sept. 21d. Readings also at 0h. (Tashkent, Pulkovo, Frunse (3), Samarkand (3), Almata (3), and Andijan (2)), 1h. (Nagasaki), 3h. (Nagoya and Tyosi), 4h. (Trenta, Catania, Mineo, Basle, and Prato), 5h. (Tashkent and Perth), 6h. (Riverview, Sydney, Melbourne, Adelaide, Paris, Strasbourg, Stuttgart, De Bilt, and Sverdlovsk), 9h. (Yalta and Simferopol), 10h. (La Paz), 13h. (Erevan and Budapest), 14h. (La Paz), 16h. (Grozny and Montezuma), 18h. (Erevan, De Bilt, Sverdlovsk, Tashkent, Hong Kong, Chiufeng, Nanking, Phu-Lien, Baku, Copenhagen, Ksara, and Tucson), 19h. (Strasbourg and Tyosi), 21h. (La Paz, Sumoto, Montezuma, Sucre, and Malabar).

Sept. 22d. 11h. Readings for which no determination has been made, apparently two shocks :—

Tchimkent e = 28m.50s.?
Samarkand e = 29m.3s., i = 29m.45s.
Andijan P = 29m.11s., S_g = 29m.37s., M = 29m.54s.
Tashkent P = 29m.13s., L = 29m.55s., M = 30m.12s.
Frunse e = 29m.56s., S_g = 31m.0s., M = 31m.16s.
Almata e = 30m.48s., e = 31m.48s.
Nagoya eP? = 35m.53s., eS = 36m.41s.
Tashkent e = 42m.59s., e = 43m.6s., e = 51m.40s., iL = 66m.48s., M = 75m.36s.
Sverdlovsk iP = 43m.15s., L = 69m.
Pasadena iPZ = 43m.47s., iZ = 44m.2s.
Tinemaha iPEZ = 44m.44s.
Haiwee ePEN = 44m.46s.
Mount Wilson iPZ = 44m.48s.
La Jolla iPZ = 44m.53s.
Riverside eZ = 44m.54s.
Vladivostok L = 49m.48s.
La Paz ePN = 51m.4s.
Triest i = 54m.8s., i = 56m.15s., M = 56m.50s.
Theodosia e = 56m.21s.
Simferopol e = 56m.55s.
Yalta e = 57m.52s.
De Bilt eL = 61m.

Sept. 22d. 23h. 12m. 13s. Epicentre 36°·9N. 122°·0W. (as on 19d. 1h.). **X.**

A = −·424, B = −·678, C = +·600.

		Δ	Az.	P.	O − C.	S.	O − C.
		°	°	m. s.	s.	m. s.	s.
Branner		0·6	349	e 0 9	0	i 0 14	− 1
Lick		0·6	32	e 0 8	− 1	i 0 12	− 3
Berkeley	z.	1·0	345	i 0 15	+ 1	i 0 26	0

Branner iE = +11s.
Berkeley iZ = +28s.

Sept. 22d. 23h. Readings for which no determination has been made :—

Adelaide e = 12m.48s., i = 15m.47s., iS = 16m.50s., L = 18m.5s., M = 19m.6s.
Christchurch P = 12m.56s., S = 16m.58s., L_q = 17m.24s., LRZ = 19m.0s., i = 20m.47s., eEZ = 24m.20s.
Riverview ePN = 13m.3s., eSN = 17m.9s., eL = 18m.42s., MN = 20m.11s.
Melbourne S = 15m.12s., L = 16m.5s., M = 18m.30s.
Wellington e = 19m.

Sept. 22d. Readings also at 0h. (Perth), 1h. (Pulkovo), 3h. (Wellington, Christchurch, Huancayo, and La Paz), 4h. (De Bilt, Tashkent, Baku, Sverdlovsk, Uccle, and Stuttgart), 5h. (Karenko and San Juan), 6h. (Almata, Frunse, and Andijan), 7h. (Copenhagen, Triest, De Bilt, and Stuttgart), 8h. (Tashkent, Edinburgh, and Strasbourg), 9h. (Baku, Ksara, and Tiflis), 10h. (La Paz), 12h. (Stuttgart, Tiflis, Copenhagen, and Strasbourg), 13h. (San Juan, Tinemaha, Pasadena, Mount Wilson, and Tiflis), 18h. (Tananarive and Nagasaki), 23h. (Tyosi and Wellington).

Sept. 23d. 1h. 24m. 33s. Epicentre 39°·3N. 73°·3E. N.3.

Given by the Central Asia Stations.

A = +·222, B = +·741, C = +·633; D = +·958, E = −·287;
G = +·182, H = +·606, K = −·774.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	1·6	333	0 25	+ 2	0 47	S*	—	0·9
Frunse	3·7	14	e 1 3	P*	1 54	S_g	—	2·3
Tashkent	3·7	305	i 0 50	− 3	—	—	i 1·5	2·3
Tchimkent	4·1	317	−0 29	?	—	—	—	—
Almata	4·8	33	e 1 25	P_g	e 2 35	S_g	—	—
Samarkand	4·9	276	e 0 8	−62	i 0 48	−77	—	—
Agra	12·8	161	5 22	S	(5 22)	0	—	—
Baku	18·0	281	e 4 17	+10	i 7 17	− 8	e 8·9	11·5
Bombay	20·4	182	—	—	e 8 27	+13	—	—
Calcutta	21·1	138	e 5 6	PP	—	—	—	—
Tiflis	21·7	285	e 4 39	− 9	e 8 37	− 3	13·0	18·6
Kodaikanal	29·3	171	e 6 17	+18	—	—	—	—
Triest	43·4	299	—	—	i 14 22	− 5	—	—
Hamburg	44·3	311	—	—	e 14 27	−13	—	—
Stuttgart	45·8	304	—	—	e 14 27?	−35	e 29·5	—

Additional readings:—
Andijan iP_g = +27s., i = +31s.
Frunse S_g = +2m.4s.
Almata iP_g = +1m.43s., iS_g = +2m.49s.
Agra P*E = +5m.50s., PE = +6m.18s. = S* −1s., SE = +7m.2s., S*E = +7m.32s., S_gE = +8m.24s.
Tiflis eN = +4m.45s., eE = +9m.59s.
Triest e = +17m.22s. = SS +2s. and +26m.37s.
Stuttgart e = +18m.27s.? = S_eS +10s.
Long waves were also recorded at Kew, Vladivostok, and other European stations.

Sept. 23d. 7h. 58m. 58s. Epicentre 30°·0S. 177°·0W. N.2.

A = −·865, B = −·045, C = −·500; D = −·052, E = +·999;
G = +·499, H = +·026, K = −·866.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Arapuni	10·1	215	—	—	i 4 32	+16	—	—
New Plymouth	11·7	216	1 2?	?	—	—	—	—
Wellington	13·1	208	3 2	− 1	5 6	−23	—	—
Glenmuick	15·1	209	—	—	5 44	−33	—	—
Christchurch	15·8	208	3 51	PP	i 7 7	SS	—	—
Sydney	27·1	254	e 5 37	− 2	e 10 20	+ 3	13·7	15·5
Riverview	27·2	254	i 5 40	0	e 10 33	+15	e 12·8	14·8
Melbourne	32·3	246	e 6 19	− 6	e 11 17	−23	14·3	17·1
Adelaide	37·5	251	e 8 47	PPP	i 15 32	SS	—	21·0
Santa Barbara	84·1	44	e 12 33	+ 4	—	—	—	—
La Jolla	84·6	43	e 12 29	− 2	—	—	—	—
Pasadena	84·8	45	i 12 35	+ 3	—	—	—	—
Mount Wilson	85·0	45	i 12 36	+ 3	—	—	—	—
Riverside	85·2	46	e 12 37	+ 3	—	—	—	—
Haiwee	86·3	44	e 12 42	+ 2	—	—	—	—
Tinemaha	86·8	43	e 12 44	+ 2	—	—	—	—
Vladivostok	86·8	326	i 12 22	−20	e 23 30	+ 5	—	—
Huancayo	93·8	106	—	—	e 23 59	{− 6}	e 43·0	—
La Paz	97·3	114	e 13 56	+25	i 24 14	[+ 1]	44·0	47·2
Kodaikanal	108·4	273	—	—	e 28 2	PS	—	—
Pittsburgh	114·0	56	—	—	e 26 49	{+14}	e 55·7	—
Agra	115·2	288	—	—	e 24 31	[−63]	—	—
San Juan	116·8	83	e 20 2	PP	e 25 32	[− 8]	e 55·7	—
Ottawa	118·3	51	—	—	e 29 44	PS	e 51·0	—
Oak Ridge	120·5	56	—	—	e 30 2	PS	e 66·0	—

Continued on next page.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Tashkent	126·2	301	e 14 2	?	e 30 44	PS	i 60·0	73·4
Sverdlovsk	132·2	323	e 19 34	[+23]	e 32 10	PS	69·0	77·7
Baku	140·7	300	e 19 11	[−11]	e 40 58	SS	62·0	86·2
Grozny	143·7	304	e 19 44	[+14]	—	—	—	—
Pulkovo	145·0	337	e 19 32	[− 2]	e 35 54	?	70·0	81·2
Theodosia	150·5	310	e 19 57	[+15]	—	—	—	—
Simferopol	151·4	310	e 19 51	[+ 7]	—	—	—	—
Yalta	151·5	309	e 19 52	[+ 8]	—	—	—	—
Ksara	151·9	287	e 19 55	[+11]	—	—	—	—
Copenhagen	153·5	348	19 50	[+ 4]	—	—	79·0	—
De Bilt	157·8	356	e 20 2?	[+11]	—	—	e 85·0	95·5
Kew	158·4	6	e 19 56	[+ 4]	e 30 11	{−69}	e 84·0	—
Uccle	159·1	358	e 19 51	[− 2]	—	—	—	86·0
Stuttgart	160·7	347	e 19 54	[0]	—	—	e 78·0	—
Strasbourg	161·0	350	e 19 56	[+ 1]	(31 2?)	{−22}	e 31·0	—
Triest	162·2	335	e 20 28	[+32]	e 31 59	{+29}	—	89·5
San Fernando	170·0	47	26 45	?	32 18	{+ 6}	86·0	—
Granada	170·9	35	19 58	[− 6]	31 40	{−37}	75·9	80·3

Additional readings :—
Wellington $P_cP = +6m.47s.$, $P_cS = +11m.44s.$
Christchurch eE = +5m.59s., e = +6m.8s., iE = eZ = +7m.29s.
Riverview eN = +10m.49s.
Melbourne iPP = +7m.41s., i = +11m.43s.
Adelaide e = +11m.11s.
Pasadena iZ = +12m.53s., eZ = +16m.1s.
Vladivostok e = +22m.40s., i = +24m.22s. = PS + 9s.
Huancayo ePS = +25m.42s., eSS = +31m.4s. ; T_o = 7h.58m.34s.
La Paz iSZ = +24m.28s. = SKKS − 5s.
Pittsburgh eSKS = +25m.17s., ePS = +29m.23s., e = +32m.40s.
San Juan ePS = +29m.32s.
Ottawa e = +36m.2s. = SS − 7s., eE = +40m.38s. = SSS + 15s.
Oak Ridge e = +37m.10s.
Tashkent e = +22m.2s., +31m.38s., +33m.32s., +37m.25s., +42m.38s., +47m.44s., and +52m.38s.
Sverdlovsk i = +22m.58s., e = +23m.20s.
Baku e = +23m.3s. = PKS − 7s., +30m.35s., and +34m.50s.
Ksara PPS = +36m.53s.
Stuttgart ePP = +24m.16s., ePPS = +37m.20s.
Strasbourg eN = +21m.2s., ePP = +24m.19s.
Triest e = +27m.2s.
Granada PKP_2 = +21m.28s., PP = +25m.11s., PPP = +29m.16s., i = +31m.13s.
Long waves were also recorded at Bombay, Helsingfors, Paris, and Ukiah.

Sept. 23d. 21h. 41m. 9s. Epicentre 41°·0N. 139°·2E. N.3.

A = −·571, B = +·493, C = +·656 ; D = +·653, E = +·757 ;
G = −·497, H = +·429, K = −·755.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Mizusawa		2·4	142	i 0 13	−21	i 0 30	−32	—	—
Tyosi		5·5	166	e 1 7	−11	1 59	?	—	2·5
Vladivostok		5·8	294	e 1 51	P_g	3 31	?	3·9	4·6
Nagoya		6·1	198	1 28	+ 1	2 53	S*	—	—
Osaka		7·0	206	1 41	+ 2	3 25	S*	—	4·9
Kobe		7·1	208	1 39	− 2	e 4 6	?	—	5·4
	z.	7·1	208	1 46	+ 5	e 4 0	?	—	5·4
Sumoto		7·5	208	e 1 49	+ 3	3 43	S*	—	—
Sverdlovsk		50·8	316	i 9 27	+30	—	—	30·8	34·6
Tashkent		51·1	295	—	—	e 27 13	?	e 28·8	32·8
Samarkand		53·4	294	e 8 36	−41	—	—	—	—
Grozny		65·4	307	e 10 41	0	—	—	—	—
Theodosia		70·3	313	e 11 12	− 1	—	—	—	—
Simferopol		71·1	314	e 11 20	+ 3	—	—	—	—
Paris		82·4	333	e 10 51?	−89	—	—	48·8	—

Additional readings :—
Kobe eE = +3m.14s., eZ = +3m.22s., eN = +3m.45s. = S_g − 3s.
Long waves were also recorded at other European stations.

Sept. 23d. Readings also at 0h. (La Paz, Sucre, and Granada), 1h. (Hyderabad and Tashkent), 2h. (Granada and Samarkand), 3h. (Almata, Andijan, Frunse, La Paz, Samarkand, and Sucre), 4h. (Balboa Heights, Granada, and Medan), 8h. (Calcutta), 9h. (Grozny and Perth), 10h. (Batavia, Malabar, and Mizusawa), 11h. (La Paz and Oak Ridge), 14h. (Christchurch and Wellington), 15h. (La Paz), 16h. (Manila), 20h. (Mizusawa (2)), 21h. (Andijan, Baku, De Bilt, Frunse, Pulkovo, Samarkand, Stuttgart, Sverdlovsk, Tashkent (2), and Vladivostok), 22h. (Hastings, New Plymouth, Christchurch, Wellington, and Mizusawa (2).

Sept. 24d. 4h. 53m. 49s. Epicentre 35°·5N. 138°·8E. (as on 1931 Sept. 16d.). R.3.

Given by Nagoya.

$A = -\cdot 613$, $B = +\cdot 536$, $C = +\cdot 581$; $D = +\cdot 659$, $E = +\cdot 752$; $G = -\cdot 437$, $H = +\cdot 383$, $K = -\cdot 814$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tokyo	0·8	77	0 10	− 1	0 21	0	—	0·8
Nagoya	1·6	257	i 0 23	0	0 45	S*	—	0·8
Tyosi	1·7	82	i 0 24	0	0 45	+ 1	—	1·0
Osaka	2·8	252	0 35	− 5	1 15	+ 3	i 1·4	1·6
Kobe	3·1	255	0 45	+ 1	1 21	+ 1	—	1·6
Toyooka	3·2	271	0 55		P_g 1 39	S_g	—	1·9
Sumoto	3·4	251	e 0 53		P* 1 29	+ 2	—	—
Mizusawa	4·0	27	e 1 2		P* e 1 53	S*	—	—
Koti	4·8	248	1 54		S 2 26	S*	—	—
Nagasaki	7·9	252	e 3 58		S* —	—	—	—

Sept. 24d. 10h. Readings for which no determination has been made :—

Christchurch iP = 33m.46s., iS = 37m.17s., L_q = 37m.42s., LR = 39m.5s.
Apia e = 35m.7s., L = 36m.18s.
Wellington e = 36m.20s., i = 36m.30s., L = 38m.19s.
Melbourne e = 37m.47s., e = 42m.5s., L = 46m.16s., M = 46m.54s.
Riverview e = 40m.0s., eL = 43m.54s., ME = 50m.20s.
Pasadena iPEZ = 41m.45s.
Mount Wilson iPZ = 41m.46s.
Riverside iPZ = 41m.49s.
Tinemaha iPEZ = 41m.56s.
Haiwee iPENZ = 41m.56s.
Chiufeng eEZ = 42m.40s., M = 54m.5s.
La Paz eN = 43m.8s., iE = 53m.42s., LE = 76m.0s.
Adelaide e = 46m.19s., e = 49m.10s., M = 54m.54s.
Tashkent e = 48m.26s., e = 50m.35s., e = 51m.44s., e = 60m.23s., e = 64m.42s., e = 67m.35s., M = 88m.36s.
Triest e = 48m.54s., M = 61m.44s.
Pulkovo e = 48m.59s.
Sverdlovsk e = 49m.5s., e = 51m.22s., e = 52m.36s., L = 100m.
Grozny e = 49m.7s.
Copenhagen 49m.23s.
Simferopol e = 49m.23s.
Theodosia e = 49m.23s.
Ksara e = 49m.37s., e = 53m.7s.
De Bilt eZ = 49m.36s., eL = 120m.
Stuttgart ePZ = 49m.24s., e = 57m.24s., eL = 116m.
Yalta e = 49m.32s.
Paris e = 49m.48s., e = 53m.40s., L = 111m.
Huancayo e = 53m.23s., e = 60m.7s., e = 68m.30s., e = 72m.16s.
Ottawa eE = 54m., eE = 65m.18s., eL = 79m.
Oak Ridge e = 59m.5s., e = 65m.43s., eL = 82m.30s.
Pittsburgh e = 80m.9s., eL = 82m.48s.
Long waves at Bombay, Baku, Helsingfors, and Strasbourg.

Sept. 24d. 14h. Readings for which no determination has been made :—

Samarkand e = 56m.10s., M = 57m.25s.
Tashkent eP = 56m.35s., L = 57m.25s., M = 57m.36s.
Andijan eP = 56m.47s., iS_g = 57m.13s., M = 57m.24s.
Tchimkent e = 57m.18s.
Frunse e = 58m.12s.
Almata e = 59m.45s.

Sept. 24d. 17h. 15m. 38s. Epicentre 34°·2N. 135°·2E. (as on 1934 May 12d.). X.

A = −·587, B = +·583, C = +·562.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Sumoto	0·3	300	i 0 2	− 2	0 8	0	0·1
Kobe	0·5	358	0 8	+ 1	0 18	+ 5	0·4
Osaka	0·6	32	0 8	− 1	0 20	+ 5	0·6
Toyooka	1·4	347	0 23	+ 3	0 45	S*	0·8
Koti	1·5	245	0 19	− 2	0 38	− 1	—
Nagoya	1·7	56	0 31	P_g	0 57	S_g	—

Sept. 24d. 18h. 14m. 45s. Epicentre 47°·0N. 7°·0E. (as on 1932 July 1d.). X.

A = +·677, B = +·083, C = +·731.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Neuchatel	0·0	—	e 0 4	+ 4	i 0 7	+ 7
Basle	0·7	35	e 0 8	− 2	i 0 16	− 2
Zurich	1·1	71	e 0 16	0	i 0 29	+ 1
Ebingen	1·8	50	—	—	e 0 42	− 4
Stuttgart	2·3	40	—	—	e 1 7	S*

Sept. 24d. 19h. Readings for which no determination has been made :—
Capodimonte eP = 27m.44s., eS = 28m.0s.
Naples eP = 27m.44s., eS = 28m.0s.
Casamicciola P = 28m.6s., S = 28m.37s., M = 28m.38s.
Prato eP = 28m.14s., iS = 28m.52s., M = 29m.11s.
Siena P = 28m.45s.
Triest e = 29m.7s., e = 29m.29s., i = 29m.54s.

Sept. 24d. Readings also at 3h. (Branner, Berkeley, and Lick), 5h. (Samarkand), 10h. (Balboa Heights), 11h. (Batavia, Tananarive), 12h. (Nagasaki), 15h. (Manila), 16h. (Algiers), 22h. (Frunse, Andijan, and Samarkand), 23h, (Santiago).

Sept. 25d. 1h. 54m. 3s. Epicentre 33°·6N. 134°·5E. (as on 1932 July 12d.). X.

A = −·584, B = +·594, C = +·553.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Sumoto	0·8	23	0 11	0	0 20	− 1	—
Kobe	1·2	28	—	—	0 33	+ 2	0·7
Osaka	1·4	40	0 22	P_g	0 36	0	0·6
Nagoya	2·6	52	e 0 50	P_g	1 12	+ 5	—

Sept. 25d. 19h. 14m. 27s. Epicentre 4°·2S. 152°·2E. N.3.

A = −·882, B = +·465, C = −·073 ; D = +·466, E = +·885 ;
G = +·065, H = −·034, K = −·997.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	29·7	182	e 6 36	PP	e 10 38	−21	e 15·2	17·9
Sydney	29·7	182	e 10 8	?	e 13 21	?	15·3	15·7
Adelaide	33·2	201	e 6 59	+25	i 11 36	−18	13·4	17·9
Melbourne	34·3	190	—	—	i 11 47	−24	15·9	18·1
Manila	36·2	301	i 7 2a	+ 2	11 37	−62	—	—
Siomisaki	40·7	339	7 35	− 3	—	—	—	—
Nagoya	41·9	341	e 7 55	+ 7	—	—	—	—
Kobe	42·1	339	e 7 45	− 4	—	—	—	—
Osaka	42·1	339	7 1	−48	11 29	?	15·6	18·8
Wellington	42·2	154	—	—	i 13 49	−20	19·5	—

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki	42·6	332	i 7 53	0	e 14 41	+26	—	—
Christchurch	43·4	158	i 7 49	−11	i 14 8	−19	e 20·2	—
Perth	43·4	227	—	—	i 17 48	SS	—	—
Sendai	43·7	347	8 4	+ 2	—	—	—	—
Husan	44·9	333	e 8 14	+ 2	e 15 9	+20	—	—
Hong Kong	45·7	307	8 20	+ 2	15 41	+41	—	24·1
Zi-ka-wei	45·9	322	i 8 21a	+ 1	i 15 52	+49	—	—
Keizyo	47·9	333	8 36	+ 1	16 8	+37	—	—
Zinsen	48·0	333	i 8 37	+ 1	i 16 13	+40	—	—
Nanking	48·2	321	9 24	+46	i 17 9	?	—	—
Chiufeng	55·1	328	i 9 32a	+ 2	17 11	0	e 22·5	—
Honolulu	55·2	60	—	—	e 17 15	+ 3	—	—
Kodaikanal	75·8	282	i 11 43	− 2	i 21 55	PS	37·4	—
Agra	77·9	299	e 11 51	− 6	—	—	—	—
Bombay	81·3	290	i 12 11	− 4	(22 56)	PS	—	22·9
Andijan	85·1	311	e 12 32	− 2	e 23 34	PS	—	—
Tchimkent	87·4	313	e 12 13	−32	e 22 47	−44	—	—
Tashkent	87·5	311	i 12 45	0	23 4	[−13]	e 41·5	51·5
Samarkand	89·0	310	e 12 39	−14	e 23 33	[+ 7]	—	—
Victoria	89·5	41	23 18	SKS	(23 18)	[−12]	52·5	57·3
Santa Barbara	90·4	56	e 13 3	+ 4	—	—	—	—
Mount Wilson	91·5	56	i 13 5	+ 1	—	—	—	—
Pasadena	92·1	56	i 13 5	− 2	—	—	e 42·5	—
Tinemaha	92·2	53	e 13 8	0	—	—	—	—
Haiwee	92·3	54	i 13 7	− 1	—	—	—	—
La Jolla	92·7	57	e 13 10	0	—	—	—	—
Riverside	92·7	56	i 13 7	− 3	—	—	—	—
Sverdlovsk	94·4	326	i 13 40	+22	—	—	46·5	58·5
Baku	102·1	309	18 21	PP	27 15	PS	48·5	—
Grozny	104·8	314	e 15 38	?	—	—	—	—
Tiflis	105·7	312	e 17 33	[−31]	e 27 45	PS	e 44·0	—
Pulkovo	109·2	331	e 18 42	PP	e 25 30	[+20]	50·5	61·1
Ksara	114·1	304	e 19 30	PP	e 29 44	PS	—	—
Copenhagen	119·3	334	20 3	PP	—	—	57·5	—
Ottawa	121·5	37	—	—	e 27 9	{−17}	e 48·5	—
Triest	125·0	326	e 18 55	[− 2]	i 25 50	[−15]	—	63·5
Oak Ridge	125·5	36	i 18 56	[− 2]	e 37 33?	SS	e 69·5	—
Stuttgart	125·6	331	e 18 55	[− 3]	e 26 30	[+23]	e 60·5	—
Uccle	126·1	334	e 18 52	[− 7]	e 40 33?	?	e 56·5	—
Strasbourg	126·3	330	e 20 33?	PP	e 25 33?	[−36]	e 37·5	—
De Bilt	126·4	335	i 20 46	PP	—	—	e 56·5	65·0
Paris	128·4	333	e 20 33?	PP	—	—	66·5	—
Huancayo	130·1	110	e 22 27	PKS	e 28 8	{−14}	—	—
La Plata	131·8	147	23 3	PKS	—	—	—	—
La Paz	135·1	116	i 19 17k	[+ 2]	—	—	—	—
Granada	140·5	328	e 19 17	[− 5]	—	—	e 54·4	—

Additional readings :—
Riverview iE = +13m.19s.
Melbourne i = +15m.29s.
Kobe eE = +9m.30s., eN = +9m.34s., eE = +10m.57s., eN = +11m.20s., eN = +20m.33s.?
Osaka i = +7m.59s. and +12m.33s.
Christchurch eL$_g$E = +16m.51s., S$_c$S = +17m.25s. = SS + 5s.
Perth i = +18m.3s. = S$_c$S + 1s.
Hong Kong PP = +10m.5s., ? = +10m.37s., SS = +18m.3s.
Zi-ka-wei iZ = +8m.44s., +8m.56s., and +10m.42s.
Nanking i = +9m.54s. and +12m.41s.
Chiufeng pP = +9m.54s., i = +13m.21s., iEN = +17m.41s., sS = +17m.55s.
Kodaikanal ePP = +14m.38s., iPS = +22m.35s., SS = +27m.3s.
Pasadena iZ = +17m.7s.
Sverdlovsk i = +14m.3s., PP = +17m.6s., i = +18m.4s., e = +21m.51s.
Baku PPS = +28m.10s.
Tiflis eN = +18m.51s. = PP + 24s. and +33m.15s. = SS − 5s.
Pulkovo PS = +28m.14s., SS = +34m.27s.

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Copenhagen +21m.51s.
Ottawa e = +36m.51s.
Triest i = +26m.31s., e = +30m.23s. =SKSP −10s.
Stuttgart ePP = +20m.46s., eSSSEN = +42m.57s.
Huancayo e = +22m.56s., ePS = +31m.29s.; T_0 =19h.14m.32s.
La Paz iPP = +22m.40s., iZ = +23m.29s.
Granada PPP = +22m.27s. =PP +3s., SS = +34m.39s.
Long waves were also recorded at San Juan.

Sept. 25d. 23h. Readings for which no determination has been made :—

Frunse eP =26m.48s.
Tchimkent eP =27m.40s.?
Andijan eP =27m.50s., e =30m.23s.
Tashkent eP =28m.8s., iS =30m.13s., M =31m.48s.
Agra eE =28m.55s.
Sverdlovsk iP =31m.26s., S =36m.3s., L_q =39m.36s., LR =40m.6s.
Bombay e =32m., M =36m.30s.
Kodaikanal e =35m.11s.
Baku e =35m.33s., L =44m.
Pulkovo e =42m.16s., L_q =48m.0s., LR =52m.12s.
Tashkent e =43m.4s., eL =45m.12s., M =45m.54s.
Long waves at Copenhagen, De Bilt, and Hyderabad.

Sept. 25d. Readings also at 0h. (Tashkent, Baku, and Mizusawa), 1h. (Wellington), 2h. (Wellington, Santiago, and Vienna), 3h. (Hong Kong), 5h. (Lick (2), Berkeley, and Tyosi), 7h. (Tucson, Branner, Berkeley, and Lick), 11h. (Wellington and Batavia), 12h. (Huancayo and La Paz), 18h. (Osaka), 20h. (Oak Ridge (2)), 21h. (Granada), 22h. (Santiago).

Sept. 26d. 1h. 7m. 2s. Epicentre 36°·5N. 70°·5E. (as on 1934 July 22d.). 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.
Samarkand	4·2	320	e 1 2	+ 2	i 1 42	− 6	—	—
Andijan	4·5	21	e 1 8	+ 4	i 1 54	− 1	—	2·6
Tashkent	4·9	350	i 1 20	P*	—	—	i 2·3	3·3
Tchimkent	5·8	353	e 1 3	−19	i 2 13	−15	—	2·6
Frunse	7·1	25	e 1 46	+ 5	3 6	+ 5	—	3·2
Baku	16·6	290	3 59	+10	7 13	?	e 8·8	12·6
Bombay	17·7	173	e 3 58?	− 5	—	—	—	—
Hyderabad	20·3	157	3 21	−12	7 3	?	9·1	12·9
Tiflis	20·5	293	4 3	−32	e 7 54	−22	—	—
Calcutta	20·8	127	e 4 37	− 1	—	—	—	—
Erevan	20·9	289	e 4 45	+ 6	e 9 0	?	—	—
Sverdlovsk	21·4	345	i 5 13	PP	i 9 9	SS	10·5	12·4
Kodaikanal	27·0	165	—	—	e 9 57	−18	—	16·6
Theodosia	27·7	299	e 6 23	PP	—	—	—	—
Ksara	28·3	275	e 4 34	−76	—	—	—	—
Yalta	28·5	298	e 6 33	PP	—	—	—	—
Simferopol	28·6	298	e 5 54	+ 1	—	—	—	—
Pulkovo	34·6	327	i 6 47	+ 1	e 12 15	0	16·0	18·9
Chiufeng	35·5	70	e 6 50	− 3	—	—	—	—
Triest	42·8	302	i 9 47	(− 4)	i 14 17	− 1	—	—
Copenhagen	43·1	316	7 58?	0	—	—	17·0	—
Stuttgart	45·5	309	e 7 58?	−19	—	—	e 19·0	—

Additional readings and note :—
Tashkent and Sverdlovsk readings are given for 0h.
Samarkand iP_g = +1m.16s., i = +1m.28s.
Andijan eP_g = +1m.24s., S_g = +2m.0s., eS* = +2m.6s.
Tiflis eN = +5m.19s., eZ = +8m.19s.
Ksara e = +6m.38s. =PP +4s.
Triest i = +17m.51s. =S_eS −8s.
Long waves were also recorded at De Bilt and Paris.

Sept. 26d. 7h. 27m. 35s. Epicentre 5°·3N. 32°·9W. N.2.

A = +·836, B = −·541, C = +·092 ; D = −·543, E = −·840 ;
G = +·078, H = −·050, K = −·996.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
San Juan	35·0	295	e 6 50	+ 1	e 12 25	+ 4	—	—
San Fernando	39·6	35	7 33	+ 4	16 30	SS	23·9	—
Sucre	40·1	232	e 7 34	+ 1	i 13 43	+ 5	21·9	—
La Paz	41·1	237	i 7 41	0	i 13 58	+ 5	21·4	25·1
Granada	41·6	34	i 7 31	−14	13 30	−30	18·7	22·8
Almeria	42·2	37	e 8 49	+59	—	—	e 23·2	—
Toledo	43·3	32	e 7 57	− 2	e 14 26	+ 1	—	—
Alicante	44·2	37	e 8 14	+ 8	—	—	e 32·0	—
Algiers	45·5	41	e 8 53	+36	e 15 55	+58	23·9	—
Huancayo	45·6	247	e 8 15	− 3	e 14 59	0	e 18·6	—
La Plata	46·6	209	8 19	− 6	—	—	23·3	—
Oak Ridge	50·6	323	e 8 57	+ 1	e 16 21	+12	21·4	—
Philadelphia	51·4	318	8 53	− 9	e 16 15	− 5	e 21·1	—
Paris	52·9	28	e 9 13	0	—	—	25·4	29·4
Oxford	53·4	23	—	—	e 16 50	+ 3	e 23·8	33·7
Kew	53·4	25	e 9 35	+18	e 16 58	+11	e 25·4	—
Bidston	53·9	19	e−10 15	?	e 17 5	+11	e 23·4	—
Piacenza	54·4	36	9 37	+13	17 7	+ 6	29·0	39·6
Prato	54·6	38	e 7 39?	?	17 7	+ 3	—	—
Stonyhurst	54·6	20	e 14 25?	?	e 22 55	?	—	—
Ottawa	54·7	324	—	—	e 17 19	+14	e 23·4	—
Pittsburgh	54·8	318	e 9 20	− 7	e 17 21	+15	e 23·2	—
Uccle	55·1	26	9 30	0	17 22	+11	e 25·4	—
Strasbourg	55·3	31	i 9 31a	0	e 17 10	− 3	e 24·4	—
Venice	56·1	41	e 9 36	− 1	i 17 53	+29	—	19·8
Stuttgart	56·2	33	e 9 39	+ 2	e 17 33	+ 8	e 27·4	30·4
De Bilt	56·4	26	—	—	17 40	+12	e 26·4	31·7
Triest	57·1	37	i 9 42	− 2	i 17 46	+ 8	e 27·3	33·3
Hamburg	59·5	27	e 9 52	− 9	—	—	31·4	—
Copenhagen	61·9	26	10 18	0	18 51	PS	28·4	—
Helwan	65·1	59	10 36	− 3	19 30	PS	—	40·3
Ksara	69·5	56	e 11 16	+ 8	e 20 24	PS	—	—
Helsingfors	69·9	27	e 11 7	− 3	e 20 49	PS	e 32·4	—
Yalta	70·1	44	(e 11 9)	− 2	e 11 9	P	—	—
Simferopol	70·2	44	(e 11 13)	+ 1	e 11 13	P	—	—
Theodosia	71·0	44	e 11 16	− 1	—	—	—	—
Pulkovo	72·2	27	e 11 22	− 2	e 20 58	PS	37·9R	40·2
Tiflis	77·3	48	11 53	− 1	21 53	+ 7	e 40·9	47·6
Grozny	78·1	47	e 12 6	+ 8	—	—	—	—
Baku	81·1	49	e 12 19	+ 5	e 22 36	+ 9	36·4	49·8
Haiwee	82·9	306	e 12 25	+ 2	—	—	—	—
Mount Wilson	83·0	304	e 12 13	−10	—	—	—	—
Tinemaha	83·1	307	e 12 25	+ 1	—	—	—	—
Pasadena	83·1	304	e 12 17	− 7	—	—	e 43·4	—
Sverdlovsk	87·6	32	e 11 26	−80	—	—	43·4	49·3
Tashkent	95·6	47	e 15 31	?	e 30 50	SS	e 45·4	62·2
Kodaikanal	108·9	78	e 21 25	?	—	—	—	—
Chiufeng	126·4	29	e 20 53	PP	—	—	e 67·6	—
Manila	147·4	52	i 19 55	[+17]	21 9	?	—	—

Additional readings and note :—
San Juan ePP = +8m.10s., e = +16m.35s.
La Paz P = +5m.55s., iPP = +8m.16s., iPPP = +9m.59s., SS? = +16m.44s., SSE = +17m.12s. =SSS +0s.
Granada PPP = +9m.23s.
Huancayo ePP = +10m.25s. ; T_0 = 7h.27m.28s.
La Plata N = +12m.49s.
Oak Ridge ePZ = +9m.0s.
Philadelphia eS = +15m.47s.
Paris e = +12m.59s.

Continued on next page.

Kew eSS = +20m.7s.
Pittsburgh ePP = +10m.55s., ePPP = +12m.25s., iS = +17m.25s.
Uccle PP = +11m.44s.
Strasbourg e = +10m.25s.? = P_cP −11s.
Stuttgart e = +13m.43s., eSS = +21m.25s., eSSSN = +23m.43s.
Triest iPP = +11m.51s.
Copenhagen +19m.53s. = S_cS −12s.
Yalta eP = +9m.25s. ; P is given as eS.
Pulkovo e = +12m.53s. and +16m.9s., L_q = +35m.25s.
Tiflis eP_cPN = +12m.4s., SSE = +26m.56s., SSSE = +30m.13s.
Baku e = +19m.27s.
Sverdlovsk i = +13m.13s., e = +16m.36s.
Tashkent i = +20m.26s.
Long waves were also recorded at Chicago, Edinburgh, and Prague.

Sept. 26d. Readings also at 1h. (Sumoto, Taihoku, La Plata, Santiago, Huancayo, and La Paz), 2h. (Graz), 3h. (Apia, Pasadena, Tinemaha, Mount Wilson, and Haiwee), 6h. (Andijan, Frunse, and Tashkent), 7h. (Christchurch (2)), 8h. (Bombay), 9h. (Christchurch), 10h. (Nagasaki), 11h. (Riverside, Mount Wilson, Tinemaha, and Pasadena), 13h. (Oak Ridge and Kodaikanal), 14h. (Samarkand, Tashkent, Frunse, and Andijan), 16h. (Sverdlovsk, Tashkent, Kodaikanal, Agra, and Algiers), 19h. (Tiflis), 22h. (Tashkent and Samarkand), 23h. (Tiflis).

Sept. 27d. 22h. 51m. 19s. Epicentre 41°·9N. 75°·9E. N.3.

Given by Tchimkent.

A = +·181, B = +·722, C = +·668 ; D = +·970, E = −·244 ;
G = +·163, H = +·648, K = −·744.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Frunse	1·4	317	i 0 19	− 1	0 35	− 1	—	0·8
Almata	1·6	29	i 0 27	P_g	—	—	—	—
Andijan	2·9	247	i 0 52	P_g	i 1 34	S_g	—	—
Tchimkent	4·7	277	e 1 45	S	(e 1 45)	−15	—	2·9
Tashkent	5·0	266	i 1 19	P*	e 2 12	+ 4	2·6	3·3
Samarkand	7·1	254	e 0 54	−47	e 2 45	−16	—	—
Agra	14·8	170	—	—	e 6 20	+10	—	—
Sverdlovsk	17·8	332	e 4 32	?	i 7 49	+29	10·7	10·7
Baku	19·6	274	e 4 34	PP	e 8 20	SS	11·0	13·4
Calcutta	22·0	148	e 8 59	S	(e 8 59)	+13	14·7	—
Grozny	22·1	284	e 4 58	+ 6	e 10 10	L	(e 10·2)	—
Tiflis	23·1	280	e 5 3	+ 1	e 9 19	+12	—	11·2
Bombay	23·2	187	e 8 41?	(− 8)	—	—	—	—
Chiufeng	30·1	80	—	—	e 12 58	SS	—	—
Ksara	32·3	269	e 8 28	?	e 15 7	L	(e 15·1)	—
Pulkovo	33·0	319	—	—	e 11 45	− 6	16·7	18·2

Additional readings :—
Andijan P_g = +59s., iS* = +1m.26s.
Tashkent i = +1m.21s., +1m.31s. = P_g −3s. and +1m.52s.
Calcutta S = +12m.39s.
Tiflis eSSE = +10m.32s.
Chiufeng iNZ = +16m.15s.
Pulkovo e = +14m.55s.
Long waves were recorded at Kew and other European stations.

Sept. 27d. Readings also at 0h. (Nagoya), 3h. (Kodaikanal), 4h. (Andijan, Algiers, Frunse, Tchimkent, Samarkand, and Tashkent), 7h. (Wellington, Branner, Berkeley, and Lick), 9h. (Berkeley, Branner, and Lick), 10h. (La Paz), 11h. (Tiflis), 13h. (San Juan), 14h. (Almata, Samarkand, Frunse, and Andijan), 15h. (Andijan and Frunse), 20h. (Cheb), 21h. (Yalta, Simferopol, Sebastopol, Theodosia, and Tiflis), 23h. (Frunse, Andijan, Samarkand, Almata, Tashkent, and Cheb).

Sept. 28d. Readings at 0h. (New Plymouth and Wellington), 1h. (Wellington and Algiers), 7h. (Tinemaha, Riverside, Mount Wilson, Pasadena, Sebastopol, Simferopol, and Mizusawa), 8h. (Baku and Tashkent), 9h. (Simferopol, Theodosia, and Yalta), 10h. (Mizusawa, La Paz, Sucre, and Balboa Heights), 15h. (Tyosi), 23h. (Branner, Berkeley, and Lick).

Sept. 29d. Readings at 0h. (Nagoya), 1h. (Yalta, Sebastopol, and Theodosia), 7h. (Tyosi, Nagoya, and Mizusawa), 13h. (Balboa Heights), 15h. (Medan and Alicante), 16h. (Tashkent, Sverdlovsk, and Nagasaki), 20h. (Branner), 22h. (Wellington).

Sept. 30d. 6h. 12m. 9s. Epicentre 24°·5N. 122°·2E. (as on 1934 March 5d.). X.

A = −·485, B = +·770, C = +·415.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Karenko	0·7	227	e 0 10	0	0 28	+10
Taihoku	0·8	311	0 12	+ 1	0 26	+ 5
Arisan	1·6	233	0 21	− 2	0 49	S_g

Sept. 30d. 19h. 13m. 42s. Epicentre 23°·5N. 120°·9E. (as on 1930 Dec. 21d.). X.

A = −·471, B = +·787, C = +·399.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Arisan	0·1	325	i 0 1	0	0 5	+ 2
Taityu	0·7	343	e−0 11	?	—	—
Karenko	0·8	47	e 0 9	− 2	0 18	− 3
Taihoku	1·6	20	0 26	+ 3	0 42	+ 1

Sept. 30d. 21h. 42m. 13s. Epicentre 36°·4N. 121°·3W. (as on 1933 Feb. 26d.). X.

A = −·418, B = −·688, C = +·593.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Lick	1·0	343	e 0 14	0	i 0 20	− 6
Branner	1·3	325	e 0 20	+ 2	i 0 30	− 3
Berkeley	1·7	332	e 0 23	− 1	i 0 41	− 3

Branner iN = +28s., iSN = +32s.
Berkeley iE = +39s.

Sept. 30d. Readings also at 1h. (Wellington), 3h. (Wellington), 4h. (Nagasaki and Phu-Lien), 8h. (Tashkent, Samarkand, and Wellington), 9h. (Balboa Heights), 10h. (Tashkent), 12h. (La Paz), 16h. (Andijan, Tashkent, Frunse, Tchimkent, and Almata), 21h. (Hastings and Santiago).