The International Seismological Summary.

1932 October, November, December.

FORMERLY THE BULLETIN OF THE
BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

The present number of the Summary deals with 143 epicentres, of which 52 are new and 91 are repetitions of old epicentres.

The classification of the determinations on the ground of the quality of the material is as follows :—

N.1 = 14	R.1 = 6	X. = 63
N.2 = 23	R.2 = 13	
N.3 = 15	R.3 = 9	

The earthquakes with abnormal focus are as follows :—

	Date, 1932. d.	h.	m.	s.	Epicentre. °	°	Focal Depth. (Below Normal).
Oct.	1	13	36	22	39·8N.	23·8E.	−0·0075
Oct.	1	15	8	10	28·1N.	139·9E.	+0·070
Oct.	9	6	24	52	39·8N.	23·8E.	−0·0075
Oct.	14	12	36	1	31·6N.	138·8E.	+0·050
Oct.	25	17	2	13	47·2N.	144·0E.	+0·045
Nov.	3	19	42	50	16·1N.	145·9E.	+0·020
Nov.	13	4	47	1	44·0N	136·8E	+0·045
Nov.	18	13	47	12	1·1N.	123·9E.	+0·040
Nov.	22	14	51	29	7·7S.	127·1E.	+0·030
Nov.	29	11	11	7	33·3S.	71·8W.	+0·020
Dec.	5	0	19	25	33·7N.	137·0E.	+0·070
Dec.	8	15	17	0	42·0N.	146·0E.	+0·020
Dec.	26	21	14	44	25·2N.	126·3E.	+0·040
Dec.	26	22	31	6	21·4N.	143·5E.	+0·040

UNIVERSITY OBSERVATORY,
OXFORD.

1937 December 28.

1932 OCTOBER, NOVEMBER, DECEMBER.

Oct. 1d. 6h. 41m. 45s. Epicentre 34°·7N. 134°·5E. (as on 1931 Dec. 6d.). X.

A = −·576, B = +·586, C = +·569.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	0·5	138	i 0 5	− 2	i 0 9	− 4	—	0·2
Kobe	0·5	92	0 9	+ 2	0 16	+ 3	—	0·3
Osaka	0·8	94	0 11	0	(0 19)	− 2	0·3	0·4
Koti	1·4	215	0 20	0	0 46	S_g	—	—
Nagoya	2·0	77	e 0 31	+ 2	0 56	+ 5	—	—

Oct. 1d. 8h. 8m. 0s. Epicentre 38°·0N. 20°·5E. (as on 1932 May 20d.). X.

A = +·738, B = +·276, C = +·616; D = +·350, E = −·937;
G = +·577, H = +·216, K = −·788.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Naples	E.	5·6	303	e 2 34	S	(e 2 34)	+11	—	—
Belgrade		6·8	0	e 1 32	− 5	e 2 43	−10	—	3·0
Zagreb		8·5	338	e 2 0	0	—	—	—	5·2
Florence		9·0	313	e 2 30	+23	5 0	S_g	—	9·0
Triest		9·1	329	e 2 10	+ 1	e 4 13	S*	—	5·1
Budapest		9·5	355	e 3 13	+59	4 28	S*	5·0	—
Vienna		10·6	345	e 2 35	+ 6	—	—	—	6·0
Innsbruck		11·4	327	—	—	4 0?	−48	—	—
Yalta		12·1	54	e 3 32	+42	—	—	—	—
Theodosia		13·1	53	e 2 20	−43	e 4 21	−68	—	—
Stuttgart		13·5	327	—	—	e 6 30	+51	e 7·6	—
Tiflis		18·9	71	e 3 40	−37	—	—	9·4	—
Pulkovo		22·6	13	e 4 56	− 1	—	—	11·0	12·2
Baku		22·8	75	e 4 56	− 3	e 8 46	−15	11·8	—
Ekaterinburg		32·3	41	—	—	e 11 5	−35	15·0	—
Chiufeng		70·3	54	e 10 23	−50	—	—	—	—

Additional readings:—
Naples eS = +4m.29s.
Belgrade e = +2m.7s. = P_g −3s.
Zagreb eZ = +2m.18s., e = +2m.31s., and +4m.9s. = S* −2s.
Triest e = +2m.46s.
Long waves were also recorded at Harvard, Cincinnati, Ottawa, Huancayo, La Paz, and other European stations.

Oct. 1d. 13h. 36m. 22s. Epicentre 39°·8N. 23°·8E. (as on 1932 Sept. 30d.). X.

A = +·703, B = +·310, C = +·640; D = +·404, E = −·915;
G = +·586, H = +·258, K = −·768.

The *high* focus correction 0·0075 assumed previously with this epicentre has been retained.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Belgrade	0·0	5·5	335	e 1 12	− 6	e 2 3	−17	—	2·7
Zagreb	0·0	8·3	319	e 1 45	−13	e 3 11	−20	—	4·5
Budapest	+0·1	8·4	338	2 21	+21	3 14	−22	4·6	—
Sebastopol	+0·1	8·7	53	2 5	0	—	—	—	—
Yalta	+0·1	9·0	55	e 3 48	S	(e 3 48)	− 3	—	—

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.
Simferopol	+0·1	9·2	53	e 2 12	+ 1	—	—	4·5	—
Triest	+0·1	9·4	311	e 1 52	−22	e 3 45	−16	—	4·5
Theodosia	+0·1	10·0	55	e 2 23	+ 1	e 4 16	0	5·3	—
Vienna	+0·1	10·0	330	1 30	−52	—	—	—	4·6
Venice	+0·1	10·1	307	2 19	− 5	—	—	—	—
Florence	+0·1	10·1	298	e 3 8	+44	—	—	—	3·9
Prato	+0·1	10·3	297	e 3 23	+57	e 5 38	S_g	(e 5·6)	8·3
Piacenza	+0·1	11·6	301	—	—	e 4 55	0	(6·1)	8·8
Cheb	+0·1	13·0	326	—	—	e 5 38	+ 9	—	6·9
Stuttgart	+0·1	13·7	315	—	—	e 5 38	− 8	e 7·0	7·4
Jena	+0·1	14·0	327	—	—	e 6 38	+45	—	7·4
Karlsruhe	+0·1	14·3	315	e 3 38?	+17	—	—	—	—
Tiflis	+0·2	16·0	77	e 3 41	− 3	e 6 53	+10	e 9·6	—
Pulkovo	+0·3	20·4	9	e 4 19	−18	—	—	9·6	11·7
Ekaterinburg	+0·5	29·3	42	—	—	e 11 4	+ 3	13·6	—

Additional readings :—
Belgrade e = +1m.17s., eS_g = +2m.18s.
Zagreb eNE = +2m.10s., eNW = +2m.23s., e = +3m.46s., eNW = +3m.51s., i = +3m.55s.
Stuttgart eS? = +6m.23s.
Long waves were also recorded at other European stations.

Oct. 1d. 15h. 8m. 10s. Epicentre 28°·1N. 139°·9E. N.1.

A = −·675, B = +·568, C = +·471 ; D = +·644, E = +·765 ; G = −·360, H = +·303, K = −·882.

A *depth* of focus 0·070 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	+2·1	2·2	117	1 2	+ 1	1 52	+ 2	—	—
Hatidyozima	+0·8	5·0	359	1 16	− 6	2 14	−14	—	—
Siomisaki	+0·2	6·4	327	1 34	0	2 50	+ 2	—	—
Mera	+0·2	6·8	359	1 41	+ 2	2 52	− 7	—	—
Misima	+0·1	7·1	354	1 39	− 3	2 57	− 7	—	—
Numadu	+0·1	7·1	353	1 28	−14	2 57	− 7	—	—
Kameyama	0·0	7·3	337	1 44	0	2 42	−24	—	—
Yokohama	0·0	7·3	358	1 44	0	3 2	− 4	—	—
Wakayama	0·0	7·4	328	1 44	− 1	3 7	− 2	—	—
Nagoya	0·0	7·5	342	i 1 46	0	3 10	− 1	—	3·2
Tokyo	0·0	7·5	359	1 45	− 1	2 46	−25	—	—
Kohu	−0·1	7·6	352	1 44	− 2	3 8	− 3	—	—
Osaka	−0·1	7·6	332	e 1 45	− 1	i 3 7	− 4	3·2	3·6
Sumoto	−0·1	7·6	327	i 1 46	0	i 3 10	− 1	—	3·3
Kobe	−0·1	7·7	329	e 1 46	− 2	i 3 14	0	—	3·3
Koti	−0·1	7·7	317	i 1 50	+ 2	i 3 15	+ 1	—	—
Tyosi	−0·1	7·7	6	e 1 47	− 1	3 11	− 3	—	3·3
Gihu	−0·1	7·8	341	1 45	− 4	3 11	− 5	—	—
Hikone	−0·1	7·8	337	1 52	+ 3	3 21	+ 5	—	—
Kyoto	−0·1	7·8	334	1 49	0	3 16	0	—	—
Kakioka	−0·2	8·1	2	1 48	− 4	3 14	− 7	—	—
Kumagaya	−0·2	8·1	357	1 50	− 2	3 16	− 5	—	—
Tukubasan	−0·2	8·1	1	1 49	− 3	3 17	− 4	—	—
Mito	−0·3	8·3	3	1 53	0	3 22	− 2	—	—
Miyazaki	−0·3	8·3	300	1 56	+ 3	3 25	+ 1	—	—
Oiwake	−0·3	8·3	353	1 52	− 1	3 25	+ 1	—	—
Toyooka	−0·4	8·6	332	i 1 54	− 2	i 3 30	+ 1	—	3·5
Nagano	−0·4	8·7	351	1 57	− 1	3 16	−15	—	—
Kumamoto	−0·6	9·2	303	2 5	+ 3	3 48	+ 9	—	—
Nake	−0·6	9·2	273	2 4	+ 2	3 50	+11	—	—

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.
Hukusima	−0·7	9·6	3	2 8	+ 2	3 48	+ 2	—	—
Hukuoka B.	−0·7	9·8	306	2 9	0	3 57	+ 6	—	—
Nagasaki	−0·7	9·8	301	2 10	+ 1	3 57	+ 6	—	—
Naha	−1·0	11·0	263	2 18	− 3	4 18	+ 5	—	—
Mizusawa E.	−1·0	11·1	5	2 24	+ 2	4 21	+ 5	—	—
N.	−1·0	11·1	5	2 21	− 1	4 23	+ 7	—	—
Akita	−1·1	11·6	1	2 32	+ 4	4 32	+ 6	—	—
Morioka	−1·1	11·6	5	2 28	0	4 32	+ 6	—	—
Taikyu	−1·3	12·3	311	2 36	+ 1	4 46	+ 8	—	—
Isigakizima	−1·8	14·6	259	3 2	+ 3	5 35	+13	—	—
Sapporo	−1·9	15·0	4	3 5	+ 2	5 35	+ 6	—	—
Nanking	−2·5	18·7	287	3 42	− 2	6 46	+ 3	—	—
Manila	−3·2	22·2	237	4 21	+ 2	7 24	−22	7·5	—
Chiufeng	−3·3	22·9	308	e 4 18	− 7	6 30	−88	—	—
Hong Kong	−3·4	23·9	262	6 40	?	8 14	− 2	8·5	—
Andijan	−6·7	55·7	302	e 8 53	+ 9	—	—	—	—
Samarkand	−6·9	60·0	302	9 22	+ 7	—	—	—	—
Ekaterinburg	−7·0	61·1	322	i 9 25	+ 3	e 17 2	+ 5	—	—
Tiflis	−8·0	75·3	310	10 49	− 5	e 19 49	+ 1	—	—
Simferopol	−8·2	80·6	316	e 11 18	− 7	—	—	—	—
Yalta	−8·2	80·8	316	e 11 22	− 4	20 50	− 2	—	—
Sebastopol	−8·2	81·1	316	e 11 23	− 5	—	—	—	—
Tinemaha	−8·3	82·0	52	i 11 31	− 2	e 21 7	+ 2	—	—
Santa Barbara	−8·3	82·2	55	i 11 32	− 2	—	—	—	—
Mount Wilson	−8·3	83·5	54	e 11 39	− 2	—	—	—	—
Pasadena	−8·3	83·5	55	i 11 38	− 3	—	—	—	—
La Paz N.	—	151·7	72	e 19 15	[−29]	—	—	—	—

Additional readings :—
Santa Barbara eN = +13m.17s.
Pasadena eZ = +13m.18s.

Oct. 1d. Readings also at 0h. (Baku, Tiflis, Kucino, Phu-Lien, and La Paz), 1h. (Tinemaha), 3h. (near Nagoya), 4h. (Batavia, near Malabar, and near Alicante), 5h. (Alicante, near Granada, and Malaga), 6h. (Bidston), 7h. (Zagreb), 8h. (Apia, Suva, Wellington, Riverview, Sydney, Tinemaha, Pasadena, and Helsingfors), 9h. (De Bilt, Stuttgart, San Fernando, Zagreb, Copenhagen, Baku, Tiflis, Ekaterinburg, Pulkovo, Andijan, Tchimkent, East Machias, Riverview, Wellington, near Suva, near Nagasaki (2), Hukuoka, and near Almata), 10h. (near Alicante), 11h. (De Bilt, Budapest, Stuttgart, Zagreb, Triest, Florence, Simferopol, Theodosia, and Yalta), 12h. (Triest), 14h. (Zagreb), 15h. (near Apia), 18h. (Wellington), 20h. (Baku, Ekaterinburg, Tchimkent, Andijan, Bombay, and Calcutta), 21h. (De Bilt, Stuttgart, Triest, Zagreb, Ekaterinburg, Pulkovo, Tiflis, Simferopol, Yalta, and near Sumoto), 23h. (near Nagasaki).

Oct. 2d. 2h. 59m. 15s. Epicentre **11°·4N. 86°·4W.** N.1.

Probable error of epicentre ±0°·23.

A = +·062, B = −·978, C = +·198; D = −·998, E = −·063; G = +·012, H = −·197, K = −·980,

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights	7·1	109	e 1 54	P*	e 3 24	S*	4·0	—
Port au Prince	15·3	61	i 3 46	+14	i 6 46	+24	e 8·3	9·7
San Juan	20·7	68	i 4 40	+ 3	i 8 41	SS	9·7	—
Columbia	23·1	11	i 5 5	+ 3	i 9 17	+10	—	—
Huancayo	25·9	154	i 5 32	+ 4	i 10 2	+ 5	e 10·4	—
St. Louis	27·4	353	i 5 41	− 1	e 10 28	+ 6	e 13·5	—
Charlottesville	27·5	14	4 48	−55	e 9 14	−70	e 11·7	—
Florissant	27·6	353	i 5 42	− 2	10 30	+ 5	e 13·6	—
Cincinnati	27·7	3	i 5 44	0	i 10 29	+ 2	e 13·2	15·2
Georgetown	28·7	15	i 5 55	+ 2	i 10 43	0	e 13·7	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Pittsburgh		29·6	10	i 6 6	+ 5	i 11 17	+18	i 12·7	—
Chicago		30·4	358	i 6 4	− 5	11 10	0	i 12·8	—
Tucson		30·7	317	6 11	0	11 40	+24	e 14·0	—
Ann Arbor		31·0	5	e 6 9	− 5	e 11 15	− 5	e 15·6	18·8
Fordham		31·4	19	i 6 19	+ 2	i 11 32	+ 6	e 15·7	—
Madison		31·8	356	i 6 18	− 3	i 11 29	− 3	15·5	—
Buffalo		32·2	11	i 6 25	+ 1	i 11 37	− 1	e 13·7	—
Denver		32·7	333	e 6 27	− 2	e 11 55	+ 9	—	19·5
Toronto		32·8	10	i 6 27	− 3	i 11 8	−40	14·2	17·3
La Paz		33·2	146	i 6 41	+ 7	i 12 1	+ 7	15·7	18·8
Harvard		33·7	20	e 6 39	+ 1	i 12 21	+20	e 14·3	—
Ottawa		35·2	13	e 6 50	− 1	e 12 23	− 1	e 16·7	—
La Jolla		35·5	312	e 6 54	+ 1	e 17 16	(+ 2)	—	—
Pasadena		36·7	313	e 7 2	− 2	e 12 54	+ 7	e 17·5	—
Mount Wilson		36·7	313	e 7 5	+ 1	e 12 53	+ 6	e 17·4	—
Sucre		36·9	145	e 7 6	0	—	—	—	—
East Machias		37·1	23	i 7 9	+ 2	12 57	+ 4	e 18·0	—
Santa Barbara		38·1	313	e 9 39	(+ 3)	17 49	(+19)	—	—
Tinemaha		38·4	318	e 7 21	+ 3	i 17 33	(+ 1)	—	—
Bozeman		40·2	334	e 9 19	PP	e 13 53	+14	e 17·7	—
Lick		40·9	316	e 7 41	+ 1	—	—	—	—
Branner		41·3	315	e 7 45	+ 2	—	—	—	—
Berkeley		41·5	316	e 7 43	− 1	—	—	—	—
Ukiah		42·8	316	7 55	0	e 14 13	− 5	e 21·2	—
Victoria	E.	48·1	328	8 34	− 3	15 53	+19	22·9	31·5
La Plata		53·6	151	9 15	− 3	16 45	− 5	23·9	—
Rio de Janeiro		54·5	129	e 9 25	0	(e 17 5)	+ 3	e 17·1	—
Sitka		58·9	332	e 9 56	− 1	e 18 1	0	e 27·9	—
Honolulu T.H.		68·8	289	e 11 5	+ 2	i 20 7	0	e 28·2	—
San Fernando		75·4	56	—	—	21 39	+14	35·7	50·2
Edinburgh		76·8	35	e 11 49	− 1	e 22 39	PS	36·7	48·0
Malaga		76·8	55	11 52	+ 2	21 54	+13	35·8	40·2
Toledo		76·9	52	e 11 51	0	e 21 33	− 9	e 34·7	43·7
Stonyhurst		77·2	37	11 53	0	21 56	+11	36·9	41·7
Granada		77·4	54	i 11 54	0	e 21 44	− 3	36·4	41·1
Oxford		78·0	39	e 11 56	− 1	22 9	+15	e 35·5	43·2
Almeria		78·4	55	e 12 31	+32	—	—	31·9	48·5
Kew		78·6	39	e 11 57	− 3	e 22 23	PS	32·7	43·8
Alicante		79·7	53	e 10 41	−85	—	—	e 34·0	41·7
Tortosa		80·2	50	e 4 45?	?	(e 21 45?)	−33	e 21·7?	45·0
Paris		80·7	42	e 12 6	− 6	e 22 47	PS	27·7?	43·7
Bergen		80·9	30	18 29	?	28 4	?	40·8	—
Barcelona		81·4	49	e 16 39	PPP	—	—	e 35·0	43·0
Uccle		81·6	40	e 12 13	− 3	e 22 25	− 8	37·7	42·1
De Bilt		82·0	38	12 19	+ 1	e 22 42	+ 5	e 38·7	44·6
Marseilles		83·5	47	—	—	25 12	?	39·7	—
Neuchatel		83·9	43	e 12 38	+10	e 23 11	+15	—	—
Strasbourg		84·2	41	12 37	+ 8	i 23 7	+ 7	36·7	47·8
Hamburg		84·6	36	e 12 33	+ 2	e 23 25	+21	e 38·8	45·8
Karlsruhe		84·8	41	—	—	e 38 45?	?	e 43·7?	—
Zurich		84·9	43	e 12 38	+ 5	—	—	—	—
Stuttgart		85·0	41	e 12 30	− 3	e 22 55	[− 4]	e 37·7	45·7
Copenhagen		85·4	34	12 36	+ 1	23 28	+16	—	—
Göttingen		85·6	38	e 11 57	−39	e 23 57	PS	e 41·4	47·1
Placenza		86·2	45	e 12 57	+18	23 35	+16	39·6	50·6
Potsdam		86·6	37	i 12 38	− 3	e 23 27	+ 4	e 42·7	48·7
Cheb		86·8	40	e 12 45	+ 3	e 23 50	+25	e 41·7	47·3
Upsala		87·0	29	—	—	e 24 22	PS	—	47·2
Prato		87·4	46	e 12 45	0	e 23 45	+14	30·9	—
Florence		87·5	46	12 47	+ 2	23 31	− 1	40·3	43·3

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Triest		88·8	44	e 12 53	+ 1	e 23 35	−10	e 42·7	49·3
Königsberg		90·1	34	e 17 39	?	e 24 15	+18	—	47·7
Zagreb		90·2	43	e 13 45?	+47	e 24 5	+ 7	—	47·6
Helsingfors	E.	90·3	28	—	—	e 23 39	[+ 5]	e 41·7	—
Budapest		91·7	41	—	—	e 23 45?	[+ 2]	—	—
Catania		92·0	51	—	—	23 19	[−25]	46·7	52·6
Taranto		92·7	48	e 25 35	PS	32 35	?	e 45·8	65·8
Pulkovo		92·9	27	13 10	− 1	23 41	[− 8]	47·7	52·6
Wellington		104·2	230	—	—	e 30 45?	?	55·7	—
Ekaterinburg		106·5	17	e 14 10	− 4	—	—	—	—
Helwan		107·2	53	e 18 45	PP	e 34 5	SS	—	61·2
Cape Town		108·6	122	—	—	25 38	{−19}	—	62·2
Tiflis		110·5	37	e 14 39	−14	e 25 18	[+ 2]	53·7	—
Irkutsk		115·7	353	e 19 22	PP	e 26 0	[+24]	65·7	—
Chiufeng		124·4	339	e 18 55	[− 1]	e 27 37	{− 8}	e 59·8	79·4
Nanking		130·3	332	19 8	[0]	22 34	PKS	—	76·2
Agra		138·5	20	19 34	[+14]	e 27 40	?	—	80·4
Hong Kong		140·7	328	22 25	PP	—	—	—	87·2
Manila		142·4	312	19 25	[0]	41 19	SS	67·7	78·7
Bombay		143·4	34	e 18 11	[−78]	—	—	—	—
Calcutta		145·7	8	19 19	[−16]	33 1	SKSP	73·4	—
Hyderabad		147·5	27	19 42	[+ 4]	—	—	66·6	85·4
Kodaikanal		153·0	37	33 45	SKSP	37 39	?	80·4	—
Medan		164·2	341	i 22 1	PKS	i 35 54	SKSP	e 88·7	—
Batavia		165·9	291	e 20 18	[+18]	e 32 23	{+34}	—	—

Additional readings and notes :—
Balboa Heights e = +2m.1s.
Port au Prince PP = +3m.57s., PPP = +4m.7s.
San Juan iPP = +4m.55s., i = +5m.11s., iSS = +9m.3s.
Columbia iPP = +5m.37s.
Huancayo PP = +6m.30s., iS = +10m.9s.
St. Louis iPPN = +6m.32s., ePPPN = +6m.47s., eSSN = +11m.58s., eSSSN = +12m.22s.
Charlottesville iP = +4m.51s., ePP = +5m.39s., i = +9m.51s.
Florissant iPPN = +6m.33s., ePPPN = +6m.48s., eSSEN = +12m.0s., eSSSEN = +12m.24s. ; T_0 = 2h.59m.7s.
Cincinnati iPPE = +6m.16s., iPPPE = +6m.40s., iSE = +10m.34s., iSSE = +11m.36s.
Georgetown i = +11m.6s. ; T_0 = 2h.59m.6s.
Chicago iPP = +7m.3s.
Tucson PP = +7m.11s., e = +10m.58s.
Ann Arbor ePP = +7m.21s., iSN = +11m.51s., iSSE = +13m.34s.
Fordham iPP = +7m.22s., iPPP = +7m.43s., e = +11m.26s., iSE = +11m.47s.
Madison i = +7m.25s. = PP +5s. ; T_0 = 2h.59m.11s.
Toronto iSS = +11m.55s. ; T_0 = 2h.59m.33s.
La Paz PPN = +8m.7s., PPE = +8m.17s., iSS = +13m.46s.
Harvard ePP = +7m.51s., eSN = +11m.35s. ; T_0 = 2h.59m.59s.
Ottawa ePPP = +8m.16s., eE = +12m.46s., eSSE = +14m.22s., eSSSN = +14m.53s. : T_0 = 2h.59m.6s.
Pasadena eP = +7m.5s., iP = +7m.8s., eZ = +9m.27s. = P_cP −4s., iN = +16m.7s. and +17m.22s. = S_cS +0s.
Mount Wilson e = +17m.24s. = S_cS +2s.
East Machias i = +7m.12s., iPP = +8m.39s., i = +8m.43s., e = +15m.25s. = SS +11s., iSS = +15m.41s.
Tinemaha eN = +9m.1s.
Bozeman e = +13m.36s. and +16m.34s. = SS +16s.
Berkeley eN = +7m.48s.
Ukiah eSS = +17m.51s. = S_cS −8s., eSSS = +18m.45s.
Rio de Janeiro eLN = +17m.8s. = S +6s.
Sitka eSS = +22m.34s.
Honolulu T.H. i = +11m.25s. = P_cP −3s., iS = +20m.15s.
Malaga P_cP = +12m.20s., PP = +15m.1s., PPP = +16m.21s., i = +21m.39s., PS = +22m.34s., SS = +27m.11s., SSS = +30m.38s.
Stonyhurst eSS? = +27m.21s.
Granada PP = +14m.51s., PS = +22m.8s., S_cS = +22m.26s.
Kew ePPEZ = +14m.45s. ?, iPSE = +22m.49s., iPPSE = +23m.7s., eSS = +27m.1s., eSSSEN = +30m.41s.
Uccle e = +15m.22s. = PP +5s. and +22m.9s., i = +23m.59s. and +23m.42s., iSS = +28m.17s., iSSS = +31m.30s.

Continued on next page.

De Bilt eSS = +28m.22s.
Marseilles e = +35m.28s.
Strasbourg ePP = +15m.59s., ePPP = +17m.59s., SKKS = +23m.20s., ePS = +24m.8s., SS = +30m.31s., SSS = +32m.1s.
Hamburg eE = +21m.33s. and +25m.45s.?
Stuttgart ePEZ = +12m.35s., ePP = +15m.45s., ePS = +24m.11s., eSSEN = +28m.51s., eSSS = +31m.53s.
Copenhagen +24m.21s., SS = +29m.3s.
Göttingen eP$_c$PZ = +12m.27s., ePPEZ = +15m.57s., eEN = +29m.3s., eZ = +30m.15s.
Potsdam eN = +12m.45s.?, iN = +38m.27s. and +38m.45s.?, iEN = +39m.49s., iE = +40m.35s., iN = +40m.55s. and +41m.34s., iE = +41m.45s.
Cheb e = +29m.27s. =SS +34s.
Upsala SSE = +29m.26s., SSSE = +33m.6s.
Florence PP = +16m.21s., PS = +23m.30s., SS = +29m.45s., SSS = +33m.35s., SSSS = +36m.0s.
Triest e = +23m.27s. =SKS +2s. and +25m.0s.
Königsberg eN = +30m.51s. and +33m.45s.?, eE = +36m.21s., iN = +40m.24s., +40m.44s., +41m.22s., and +42m.9s., iE = +43m.37s.
Zagreb eNW = +25m.15s. =PS +21s. and +37m.12s., e = +43m.18s., eZ = +44m.20s., e = +45m.7s.
Helsingfors eE = +29m.8s. and +33m.45s.?
Pulkovo PP = +16m.43s., S = +24m.16s., PS = +25m.36s.
Ekaterinburg ePP = +18m.31s., e = +21m.10s. and +21m.30s.
Cape Town +27m.16s., +29m.47s., +34m.44s., +38m.9s., +38m.23s., +54m.24s., and +60m.24s.
Tiflis ePP = +19m.7s., PPP = +21m.26s., SKKS = +26m.27s., e = +49m.45s.?
Irkutsk e = +32m.7s.
Chiufeng e ∓ +20m.39s. =PP +0s., +30m.4s. =SKSP −25s., +31m.31s., and +35m.56s.
Hong Kong +23m.8s. =PKS −2s.
Manila PKPEN = +19m.28s., iEN = +60m.56s.
Medan i = +33m.52s. and +34m.53s.
Long waves were also recorded at Angra do Heroismo, Seattle, Suva, Colombo, Melbourne, Algiers, and other European stations.

Oct. 2d. 3h. 22m. 10s. Epicentre 41°·8N. 66°·2E. N.2.

A = +·301, B = +·682, C = +·667; D = +·915, E = −·404; G = +·269, H = +·610, K = −·745.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Samarkand		2·3	164	0 27	− 6	—	—	—	—
Andijan		4·8	101	1 17	P*	—	—	2·5	2·7
Ekaterinburg		15·4	349	i 3 34	0	i 6 11	−13	i 8·2	—
Tiflis		15·9	277	e 3 35	− 5	e 6 34	− 2	—	10·9
Theodosia		22·5	289	e 4 55	− 1	e 9 1	+ 6	13·8	—
Yalta		23·3	288	e 5 3	− 1	9 18	+ 8	18·3	—
Simferopol		23·4	289	e 5 3	− 2	9 15	+ 3	15·8	—
Bombay		23·6	164	e 5 4	− 2	9 19	+ 3	12·4	15·5
Sebastopol		23·8	288	e 5 13	+ 5	e 9 37	+18	—	—
Ksara	N.	25·1	261	5 21	0	i 10 12	−31	—	—
Hyderabad		26·5	153	5 32	− 2	9 59	− 8	13·0	16·4
Irkutsk		27·6	55	5 46	+ 2	e 10 49	+24	14·1	17·3
Pulkovo		28·4	322	5 51	0	10 47	+ 9	16·8	17·5
Königsberg		32·3	310	—	—	e 13 26	SS	—	—
Kodaikanal		33·1	160	10 50	S	(10 50)	−62	16·7	20·2
Budapest		33·5	296	e 6 50?	+14	—	—	e 21·8	30·3
Vienna		35·1	298	e 6 20	−30	—	—	—	27·6
Zagreb		35·8	294	e 6 54	− 2	e 8 12	PP	—	—
Potsdam		36·8	306	i 7 3	− 2	e 12 50?	+ 2	—	—
Colombo		37·0	158	e 14 45	?	—	—	(i 19·6)	—
Copenhagen		37·0	312	7 7	+ 1	12 58	+ 7	19·8	—
Triest		37·4	294	e 6 20	−50	—	—	—	—
Jena		37·8	303	e 7 13	0	—	—	e 19·8	27·3
Innsbruck		38·6	297	8 50?	PP	—	—	25·8	—

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Zurich		40·5	299	e 7 31	− 5	e 18 38	?	—	—
Neuchatel		41·6	299	e 7 42	− 3	—	—	—	—
Nanking		42·5	86	7 50?	− 3	e 22 6	L	28·7	—
Hong Kong		44·4	100	8 5	− 3	14 42	+ 1	—	29·9
Medan		48·0	134	i 10 57	PP	—	—	—	—
Kobe		53·2	74	—	—	e 16 36	− 9	e 31·9	33·2
Sumoto		53·2	74	e 16 48	S	(e 16 48)	+ 3	32·2	—
Osaka		53·5	74	e 9 29	+11	16 52	+ 3	i 32·6	—
Nagoya		54·3	72	e 8 50	−33	e 17 3	+ 4	—	—
Nagano		54·4	70	9 28	+ 4	—	—	—	—
Misima		55·7	71	9 20	−14	—	—	—	—
Tananarive		63·2	201	—	—	28 50?	?	38·8	56·8
Riverview		108·4	120	—	—	e 31 14	?	—	53·3
Suva		118·4	90	—	—	27 50?	{+44}	—	—
La Paz	z.	133·5	288	e 17 30	?	—	—	—	—

Additional readings and note :—
Andijan P_g = +1m.34s.
Ekaterinburg i = +5m.7s.
Kodaikanal S = +14m.44s.
Colombo readings are given as eP and iP.
Jena eE = +8m.34s. =PP −1s
Hong Kong ? = +9m.42s. =PP −3s. and +17m.58s. =SS +19s.
Vienna PPP = +14m.51s., SKS = +16m.15s., i = +17m.49s., SKKS = +18m.46s., i = +20m.40s. and +20m.50s.?, PS = +22m.59s., SKKS [△ >180°] = +25m.12s.
Medan i = +11m.58s.
Kobe eN = +28m.59s., eZ = +29m.4s.
Sumoto eSE = +28m.40s., eSN = +29m.2s.
Riverview e = +35m.50s.
Long waves were also recorded at Phu-Lien and Chiufeng.

Oct. 2d. Readings also at 1h. (Göttingen), 4h. (Triest, Venice, Zagreb, Bombay, La Jolla, Santa Barbara, Mount Wilson, Pasadena, Tinemaha, and La Paz), 5h. (Suva, Wellington, Malaga, near Almeria, and Granada), 7h. (Paris), 9h. (New Plymouth, Wellington, and near Hastings), 10h. (Matuyama and Tiflis), 11h. (near Hukuoka), 13h. (Suva and Zurich), 14h. (near Mizusawa, Nagoya, and Tyosi), 17h. (near Santiago), 18h. (Zagreb), 22h. (Amboina).

Oct. 3d. 4h. 37m. 48s. Epicentre 1°·0S. 91°·1W. N.3.

A = −·019, B = −1·000, C = −·017 ; D = −1·000, E = +·019 ; G = ·000, H = +·017, K = −1·000.

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Huancayo	19·2	126	i 4 20	− 1	i 8 7	+17	e 9·9	—
La Paz	27·4	126	e 5 42	0	i 10 32	+10	14·2	16·7
Sucre	31·1	128	e 6 15	0	—	—	—	—
San Juan	31·3	51	—	—	e 10 57	−27	—	—
Tucson	38·2	334	e 7 16	− 1	e 13 12	+ 3	e 17·6	—
Fordham	44·7	19	e 8 10	0	e 14 47	+ 1	e 20·7	—
Ottawa	48·3	15	—	—	15 12?	−25	—	—
Rio de Janeiro	51·4	119	—	—	16 12?	− 8	—	—

Additional readings :—
Huancayo e = +7m.57s., i = +8m.14s.
La Paz iSN = +10m.57s., iE = +12m.54s., iN = +13m.46s.
San Juan e = +13m.16s. =SS +16s., eSS = +13m.57s.
Tucson ePP = +8m.46s.

Oct. 3d. Readings also at 4h. (Tiflis and near Manila), 5h. (Stuttgart, near Manila, and near Nagoya), 6h. (Vienna), 7h. (Wellington), 8h. (Ekaterinburg and Vienna), 9h. (Ekaterinburg, Pulkovo, Ksara, and near Tiflis), 10h. (La Paz and near Amboina), 11h. (near Amboina), 12h. (Zagreb), 13h. (near Nagoya and near Nanking), 14h. (Camerino and near Nanking), 15h. (Andijan and Tchimkent), 16h. (near Nagoya), 19h. (near Amboina), 20h. (Tiflis, Simferopol, and Yalta), 21h. (De Bilt, Stuttgart, Triest, Zagreb, La Paz, and near Wellington), 23h. (near Nagoya).

Oct. 4d. 20h. 12m. 53s. Epicentre 41°·5S. 171°·9E. (as given by Wellington). N.3.

A = −·741, B = +·106, C = −·663.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Takaka	1·0	46	0 7?	− 7	—	—
Glenmuick	1·7	146	0 7	−17	0 34	−10
Christchurch	2·1	165	0 43	P_g	1 13	S_g
Wellington	2·2	84	0 32	+ 1	0 57	0
New Plymouth	3·0	34	0 42	− 1	1 12	− 5

Oct. 4d. Readings also at 0h. and 1h. (Branner (2)), 3h. (Pasadena, Tinemaha, Tucson, and Zagreb), 4h. (near Tyosi), 8h. (Pasadena, Tinemaha, Tucson, and near Tyosi), 10h. (Edinburgh and Tiflis), 15h. (Stuttgart and near Apia), 18h. (near Nagoya and Tyosi), 21h. (2) and 23h. (Andijan).

Oct. 5d. 2h. 6m. 10s. Epicentre 41°·8S. 172°·2E. (as on 1929 July 15d.). R.3.

Given by Wellington.

A = −·739, B = +·101, C = −·667.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Glenmuick	1·3	148	−0 4?	−22	0 12	−21
Christchurch	1·8	170	0 25	− 1	0 46	0
Wellington	2·0	75	0 27	− 2	0 50	− 1
New Plymouth	3·0	28	0 45	+ 2	1 26	S*

Additional readings :—
Glenmuick P_g = +2s.
Christchurch P_g = +37s.
New Plymouth i = +1m.10s.

Oct. 5d. 3h. 49m. 56s. Epicentre 35°·5N. 143°·5E. (as on 1925 April 11d.). X.

A = −·654, B = +·484, C = +·581.

	Δ	P.	O−C.	S.	O−C.
	°	m. s.	s.	m. s.	s.
Tyosi	2·1	e 0 48	+18	1 25	?
Mizusawa	4·1	1 58	+60	2 41	+56
Nagoya	5·3	e 1 16	+ 1	2 14	− 1
Sumoto	7·1	e 1 40	− 1	2 50	−11

Mizusawa gives also SN = +2m.44s.

Oct. 5d. 14h. 0m. 17s. (I) } Epicentre 35°·5N. 141°·0E. X.
14h. 8m. 28s. (II) } (as on 1932 Aug. 14d.). X.

A = −·633, B = +·512, C = +·581.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I	Tyosi	0·2	332	i 0 3	0	0 11	+ 6	—	0·2
II		0·2	332	0 3	0	0 11	+ 6	—	0·2
I	Nagoya	3·4	265	e 0 48	− 1	1 50	S_g	—	2·6
II		3·4	265	1 8	P_g	2 7	?	—	—
I	Mizusawa	3·6	1	1 2	P*	2 0	S_g	—	—
II		3·6	1	1 8	P_g	1 56	S_g	—	—
I	Osaka	4·6	261	1 18	P*	—	—	2·4	3·0
II		4·6	261	1 43	S	(1 43)	−15	2·8	3·2
I	Kobe	4·9	262	e 1 55	?	i 2 51	?	—	2·9
I	Toyooka E.	5·0	273	e 1 39	P_g	e 2 39	S_g	—	3·1
I	N.	5·0	273	i 1 31	P_g	i 2 47	S_g	—	3·0
I	Z.	5·0	273	e 1 47	?	i 2 43	S_g	—	3·0
I	Sumoto	5·2	258	e 1 59	?	2 50	S_g	—	3·5

Sumoto I gives SN = +2m.54s.

Oct. 5d. Readings also at 0h. (Tinemaha and near Andijan), 3h. (near Sumoto, Hukuoka, Koti, and Matuyama), 4h. (Pasadena, Tinemaha, and near Santiago), 5h. (Stuttgart), 9h. (Edinburgh, near New Plymouth, and Wellington), 10h. (Andijan (2) and Tchimkent), 14h. (Tyosi), 15h. (near Mizusawa and Tyosi (3)), 16h. (Tyosi (2) and near Mizusawa), 17h. (near Amboina), 18h. (Hong Kong, Phu-Lien, Branner, near Medan, and near Victoria), 20h. (La Paz).

Oct. 6d. 5h. 0m. 56s. Epicentre 29°·7N. 137°·8E. N.3.

$A = -\cdot643$, $B = +\cdot583$, $C = +\cdot495$; $D = +\cdot672$, $E = +\cdot741$; $G = -\cdot367$, $H = +\cdot333$, $K = -\cdot869$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	5·3	333	i 1 18	+ 3	2 21	+ 6	—	2·4
Koti	5·3	318	i 1 22	+ 7	e 2 21	+ 6	—	—
Osaka	5·3	340	1 19	+ 4	i 2 18	+ 3	2·3	3·1
Kobe	5·5	337	i 1 20	+ 2	i 2 24	+ 4	—	2·5
Nagoya	5·5	353	e 1 20	+ 2	2 26	+ 6	—	2·5
Matuyama	5·9	316	i 1 25	+ 1	i 2 35	+ 4	—	2·6
Toyooka	6·4	339	i 1 27	− 4	i 2 38	− 5	—	2·7
Tyosi	6·5	23	e 1 32	0	2 40	− 6	—	2·7
Hukuoka	7·4	304	1 39	− 6	i 3 3	− 6	—	—
Nagasaki	7·4	297	1 43	− 2	3 6	− 3	—	—
Mizusawa	9·8	15	3 16	+58	3 41	−27	—	—
Nanking	16·5	283	i 3 21	−27	i 6 4	−46	—	—

Additional readings :—
Koti iS = +2m.26s.
Osaka i = +1m.36s. = P_g −4s.
Kobe says "Record is of deep focus type," which is borne out by Nanking negative residuals.

Oct. 6d. Readings also at 0h. (Berkeley (2), Lick, Ukiah, Pasadena, Branner, and Tinemaha), 1h. (Tiflis), 10h. (Pasadena, Tinemaha, and near Amboina), 13h. (Tyosi), 14h. (Edinburgh), 17h. (near Santiago), 22h. (Hastings, New Plymouth, near Wellington, and near Tyosi).

Oct. 7d. Readings at 0h. (Andijan and Tyosi), 1h. (near Batavia and Malabar), 2h. (Alicante and La Paz), 5h. and 8h. (Tyosi), 11h. (Tyosi, Sucre, La Paz, and near Huancayo), 13h. (Tiflis and near Mizusawa), 19h. (Zagreb), 21h. (Mount Wilson, Pasadena, and Tinemaha).

Oct. 8d. Readings at 0h. (near Tyosi), 1h. (Baku, Ekaterinburg, Kucino (2), Tiflis, Zagreb (2), Triest (2), Florence, and La Paz), 2h. (Ekaterinburg, La Paz, La Plata, near Santiago, and near Amboina), 3h. (La Paz), 7h. (near Tucson), 8h. (Tyosi), 9h. (Ottawa and Tucson), 13h. (Messina), 15h. (Batavia), 19h. (Messina), 21h. (Tucson, near Andijan, and Samarkand), 23h. (Belgrade, Budapest, Triest, and Zagreb).

Oct. 9d. 6h. 24m. 52s. Epicentre 39°·8N. 23°·8E. (as on 1d.). X.

High focus 0·0075, as for other shocks from this epicentre, has been retained here.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Belgrade		0·0	5·5	335	e 1 27	+ 9	i 2 34	+14	—	2·7
Messina		0·0	6·6	257	2 52	S	(2 52)	+ 4	—	—
Naples	E.	0·0	7·4	281	e 2 4	+ 9	—	—	—	—
Zagreb		0·0	8·3	319	e 1 47	−11	e 3 31	0	—	4·7
Budapest		+0·1	8·4	338	2 25	+25	e 3 46	+10	e 5·1	6·6
Sebastopol		+0·1	8·7	53	e 2 38	+33	—	—	—	—
Yalta		+0·1	9·0	55	e 2 47	+38	—	—	—	—
Simferopol		+0·1	9·2	53	e 2 29	+18	—	—	4·9	—
Laibach		+0·1	9·2	315	—	—	e 4 4	+ 8	—	6·7
Triest		+0·1	9·4	311	i 2 18	+ 4	i 3 58	− 3	—	5·2

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.
Theodosia	+0·1	10·0	55	e 2 38	+16	e 4 22	+ 6	4·5	—
Lemberg	+0·1	10·0	1	e 1 51	−31	—	—	—	6·6
Vienna	+0·1	10·0	330	e 2 12	−10	4 41	S*	—	5·5
Venice	+0·1	10·1	307	e 3 47	+83	i 5 29	+71	—	—
Florence	+0·1	10·1	298	e 3 23	+59	5 38	+80	—	6·5
Prato	+0·1	10·3	297	e 4 3	S	(e 4 3)	−20	—	6·4
Treviso	+0·1	10·3	308	e 4 36	S	(e 4 36)	+13	—	5·6
Piacenza	+0·1	11·6	301	e 3 44	?	—	—	—	7·6
Zurich	+0·1	13·4	309	e 3 2	− 7	—	—	—	—
Stuttgart	+0·1	13·7	315	—	—	e 5 44	− 2	e 7·2	—
Neuchatel	+0·1	14·1	306	e 3 20	+ 2	—	—	e 7·5	—
Strasbourg	+0·1	14·4	313	—	—	i 6 43	+40	—	—
Tiflis	+0·2	16·0	77	e 3 50	+ 6	e 6 59	+16	e 9·6	—
Hamburg	+0·2	16·7	331	—	—	e 5 8?	−111	—	10·1
Uccle	+0·2	17·5	315	e 3 59	− 4	—	—	—	—
Pulkovo	+0·3	20·4	9	e 4 34	− 3	e 8 8	−12	10·7	11·9
Edinburgh	+0·4	23·9	321	—	—	e 8 8	−80	—	—
Ekaterinburg	+0·5	29·3	42	e 6 0	− 3	e 11 48	+47	i 15·7	—

Additional readings :—
Belgrade e = +1m.50s. and +2m.16s.
Zagreb eNW = +1m.50s., eZ = +2m.23s., e = +2m.35s., eZ = +3m.51s., eNE = +4m.1s., iNE = +4m.13s.
Laibach e = +4m.51s., +5m.35s., and +5m.42s.
Triest i = +2m.51s., +3m.40s., +4m.22s., and +4m.47s., iPSN = +4m.57s., SS = +5m.4s.
Vienna iZ = +4m.51s., SS = +5m.4s., SSS = +5m.12s.
Prato S = +6m.8s.
Treviso eS = +5m.32s. = S_g − 6s.
Stuttgart eS = +6m.49s.
Strasbourg i = +7m.18s., +7m.26s., +7m.38s., and +8m.13s.
Uccle i = +9m.38s. and +10m.32s.
Pulkovo Lr = +10m.56s.
Ekaterinburg e = +14m.6s. and +14m.53s.
Long waves were also recorded at Kucino and other European stations.

Oct. 9d. 12h. 49m. 49s. Epicentre 24°·2N. 122°·3E. (given by Hukuoka). N.2.

A = −·487, B = +·771, C = +·410 ; D = +·845, E = +·534 ;
G = −·219, H = +·346, K = −·912.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku		1·1	319	0 19	+ 3	0 36	+ 8	—	0·6
Hokoto		2·6	255	0 41	+ 4	1 19	S_g	—	—
Zi-ka-wei	E.	7·0	353	e 1 52	P*	—	—	i 4·1	—
Hong Kong		7·7	258	1 45	− 4	3 31	+15	4·0	5·2
Nanking		8·4	339	e 2 7	+ 8	e 3 39	+ 5	4·8	5·0
Manila		9·7	188	2 11	− 6	4 5	− 1	5·0	8·0
Nagasaki		10·8	36	e 2 39	+ 7	e 4 45	+12	e 6·3	—
Hukuoka		11·8	35	e 2 5	−41	e 5 20	+22	—	—
Koti		13·6	44	—	—	e 6 11?	+30	—	—
Chiufeng		16·7	343	e 3 53	+ 3	e 7 10	+15	8·8	11·4
Calcutta		31·1	274	10 6	S	(10 6)	−75	(15·2)	—
Agra	E.	39·8	284	e 7 32	+ 2	—	—	—	—
Andijan		44·5	305	e 8 7	− 2	—	—	—	—
Bombay		46·1	274	8 23	+ 2	—	—	—	—
Ekaterinburg		54·5	324	i 9 25	0	17 13	+11	25·7	35·0
Tiflis		65·1	306	10 36	− 3	e 19 37	+16	e 37·2	—
Kucino		67·1	323	—	—	e 19 53	+ 7	e 33·4	42·5
Pulkovo		70·2	329	e 11 7	− 5	20 25	+ 1	37·2	44·4
De Bilt		86·1	327	—	—	e 22 41	[−26]	e 41·2	54·9
Florence		87·4	317	—	—	e 22 36	[−40]	48·2	51·2
Ottawa		108·5	14	—	—	e 28 13	PS	e 51·2	—

Additional readings and note :—
Nanking iPN = +2m.12s., e = +4m.18s.
Chiufeng ePP = +4m.8s.
Calcutta gives S as P and L as S.
Tiflis S = +19m.50s. = PS + 18s.
Long waves were also recorded at Sydney, Phu-Lien, and many other European stations.

Oct. 9d. Readings also at 0h. (Pasadena, Tinemaha, Madison, Belgrade, Triest, and Zagreb), 1h. (Berkeley, Tucson, Cincinnati, Ottawa, Harvard, and East Machias), 2h. (Tucson), 3h. (near Nagoya and Toyooka), 4h. (Tucson and Messina), 6h. (Wellington), 9h. (Paris, near Triest, and Zagreb), 10h. (Barcelona), 13h. (East Machias and Tyosi), 14h. (Mount Wilson, Pasadena, Riverside, Tucson, and Rio de Janeiro), 18h. (Bakŭ, Ekaterinburg, Tchimkent, Wellington, and near Andijan), 19h. (Baku, Ekaterinburg, Tchimkent, Pulkovo, Tiflis, Andijan, Chiufeng, and La Paz), 22h. (Belgrade, Budapest, Triest (2), Zagreb (2), Pulkovo, Ekaterinburg, Tiflis, Branner, and Tucson), 23h. (Tucson, Ottawa, Harvard, East Machias, near Apia, and near Sumoto).

Oct. 10d. 9h. 2m. 42s. Epicentre 39°·5N. 141°·7E. (as on 1931 Nov. 3d.). R.1.

Probable error of epicentre ±0°·16.

Tokyo gives epicentre 39°·4N. 141°·8E.

$A = -\cdot605$, $B = +\cdot478$, $C = +\cdot636$; $D = +\cdot620$, $E = +\cdot785$; $G = -\cdot499$, $H = +\cdot394$, $K = -\cdot772$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Miyako	0·3	58	0 11	+ 7	0 17	+ 9	—	—
Morioka	0·5	296	0 8	+ 1	0 17	+ 4	—	—
Mizusawa	0·6	231	0 10	+ 1	0 19	+ 4	—	—
Isinomaki	1·1	196	0 13	− 3	0 28	0	—	—
Akita	1·3	278	0 19	+ 1	0 38	+ 5	—	—
Sendai	1·4	208	0 18	− 2	0 36	0	—	—
Aomori	1·5	325	0 23	+ 2	0 37	− 2	—	—
Hukusima	2·0	209	0 27	− 2	0 41	−10	—	—
Aidu	2·3	213	0 26	− 7	0 52	− 7	—	—
Muroran	2·8	349	0 41	+ 1	1 13	+ 1	—	—
Urakawa	2·8	17	0 26	−14	1 4	− 8	—	—
Mito	3·3	197	0 45	− 2	1 22	− 3	—	—
Utunomiya	3·3	206	0 51	+ 4	1 26	+ 1	—	—
Kakioka	3·5	200	0 48	− 2	1 28	− 2	—	—
Tukubasan	3·5	202	0 48	− 2	1 27	− 3	—	—
Obihiro	3·6	18	0 42	− 9	1 40	+ 8	—	—
Sapporo	3·6	356	0 56	+ 5	1 29	− 3	—	—
Maebasi	3·7	214	0 53	0	1 38	+ 3	—	—
Kumagaya	3·8	209	0 55	+ 1	1 45	+ 8	—	—
Tyosi	3·8	189	0 53	− 1	1 43	+ 6	—	2·0
Nagano	4·0	224	0 59	+ 2	1 46	+ 4	—	—
Kusiro	4·0	30	0 37	−20	1 28	−14	—	—
Tokyo	4·1	202	0 58	0	1 48	+ 3	—	—
Wazima	4·3	242	1 6	+ 5	2 5	P*	—	—
Yokohama	4·4	202	1 1	− 2	1 56	+ 3	—	—
Kohu	4·6	213	1 7	+ 1	2 0	+ 2	—	—
Nemuro	4·8	36	1 0	− 8	1 52	−11	—	—
Mera	4·9	198	1 8	− 2	2 34	S_g	—	—
Misima	4·9	207	1 12	+ 2	2 10	+ 5	—	—
Numadu	4·9	208	1 11	+ 1	2 7	+ 2	—	—
Gihu	5·7	226	1 24	+ 3	2 23	− 2	—	—
Hamamatu	5·7	215	1 29	+ 8	2 30	+ 5	—	—
Nagoya	5·8	224	e 1 23	+ 1	2 30	+ 2	—	—
Kameyama	6·3	223	1 41	+11	2 43	+ 2	—	—
Hatidyozima	6·6	196	1 32	− 2	3 4	+16	—	—
Toyooka	6·7	236	i 1 38	+ 3	i 2 58	+ 7	—	3·0
Osaka	6·9	227	1 39	+ 1	(3 11)	+15	3·2	4·0
Kobe	7·1	230	e 1 50	+ 9	—	—	e 4·5	4·9
Wakayama	7·4	227	1 47	+ 2	3 10	+ 1	—	—
Sumoto	7·5	229	1 49	+ 3	3 17	+ 6	—	3·5
Ekaterinburg	53·2	319	—	—	e 16 39	− 6	26·8	—
Tiflis	69·2	309	—	—	e 22 18	?	—	—
Pasadena z.	75·8	58	e 11 35	−10	—	—	—	—

Additional readings:—
Tyosi P = +1m.1s. = P* − 1s.
Sumoto PEZ = +2m.2s. = P* − 3s.
Long waves were also recorded at Baku.

Oct. 10d. Readings also at 0h. (Wellington), 1h. (Tucson, Budapest, Triest, and Zagreb), 2h. (Andijan), 3h. (near Tyosi), 5h. (near Kobe and Sumoto), 6h. (near Apia), 8h. (Tchimkent and near Andijan), 9h. (near Amboina), 14h. (La Paz, Sucre, La Plata, Rio de Janeiro, Huancayo, Ottawa, St. Louis, Mount Wilson, Pasadena, Tinemaha, and Ekaterinburg), 15h. (Baku, Tiflis, and Kucino), 19h. (Ekaterinburg, Kucino, Tiflis, Triest, Zagreb, and La Paz), 21h. (near Wellington).

Oct. 11d. 19h. 8m. 10s. Epicentre 24°·0N. 110°·2W. N.2.

$A = -\cdot315$, $B = -\cdot857$, $C = +\cdot407$; $D = -\cdot938$, $E = +\cdot345$; $G = -\cdot140$, $H = -\cdot382$, $K = -\cdot914$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		8·3	356	e 1 58	0	e 3 4	−27	i 4·2	—
La Jolla		10·8	327	e 2 32	0	e 5 24	+51	—	—
Riverside	N.	11·8	329	e 2 47	+ 1	—	—	—	—
Pasadena		12·2	327	e 2 50	− 1	(e 5 20)	+12	e 5·3	—
Mount Wilson		12·3	328	e 2 54	+ 2	—	—	—	—
Santa Barbara		13·4	324	e 3 12	+ 5	—	—	—	—
Tinemaha		14·8	334	e 3 23	− 3	—	—	—	—
Denver	E.	16·3	14	e 3 46	+ 1	—	—	—	9·7
Berkeley		17·2	326	—	—	e 7 7	+ 1	—	—
Little Rock		18·8	51	e 4 25	+ 9	i 7 53	+11	i 10·0	13·4
Bozeman		21·6	358	—	—	e 8 35	− 3	12·0	—
St. Louis		22·3	44	e 4 56	+ 2	e 8 52	0	e 11·0	13·4
Florissant		22·3	44	e 4 55	+ 1	i 8 51	− 1	i 11·0	13·3
Cincinnati		26·4	49	e 10 14	S	(e 10 14)	+ 9	e 15·2	17·1
Toronto		31·9	45	—	—	e 11 10	−24	i 16·3	—
Fordham		34·6	53	—	—	e 14 15	SS	e 17·8	18·8
East Machias		40·5	48	—	—	e 17 4	?	19·7	—
Pulkovo		90·2	19	—	—	26 14	?	45·8	53·0
Ekaterinburg		98·8	5	—	—	e 31 53	SS	45·8	—
Tiflis		110·3	20	—	—	e 28 4	PS	e 56·8	—
Bombay		137·0	356	19 42	[+24]	—	—	—	—

Additional readings :—
Tucson i = +2m.15s., e = +3m.12s., i = +3m.28s., +3m.35s., and +3m.53s.
Little Rock iPPE = +5m.45s., iEN = +9m.42s., iE = +9m.48s.; T_0 = 19h.8m.21s.
Cincinnati ePPZ = +10m.51s., eE = +12m.8s., and +12m.26s., eNZ = +12m.57s. iSZ = +14m.45s.; T_0 = 19h.8m.21s.
Fordham e = +16m.10s.
East Machias e = +17m.59s. = S_0S +14s.
Pulkovo e = +31m.22s. and +35m.16s.
Tiflis e = +28m.41s.
Long waves were also recorded at Honolulu T.H., Baku, and many other American and European stations.

Oct. 11d. Readings also at 0h. (Barcelona and near Santiago), 2h. (Andijan), 3h. (near New Plymouth and Wellington), 6h. (near Andijan), 8h. (near Amboina), 9h. (Mizusawa), 11h. (Ekaterinburg and Kucino), 15h. (Berkeley, Lick, Branner, and Ukiah), 19h. (Calcutta and Tyosi), 20h. (Branner), 21h. (Tucson), 22h. (Tyosi), 23h. (near Amboina).

Oct. 12d. 2h. 59m. 16s. Epicentre 38°·5N. 22°·5E. (as on 1928 Jan. 22d.). R.3.

The Russian stations give epicentre 38°·5N. 23°·0E.

$A = +\cdot723$, $B = +\cdot299$, $C = +\cdot623$; $D = +\cdot383$, $E = -\cdot924$; $G = +\cdot575$, $H = +\cdot238$, $K = -\cdot783$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Belgrade	6·4	348	e 1 42	P*	e 2 50	+ 7	—	3·0
Zagreb	8·7	329	e 2 6	+ 3	—	—	e 4·2	4·9
Budapest	9·3	346	e 3 57	S	(e 3 57)	+ 1	e 4·7	—
Triest	9·6	321	e 2 13	− 3	3 50	−13	—	5·3
Prato	10·1	306	e 4 44?	S	(e 4 44?)	+28	(e 6·7)	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Yalta	10·6	52	e 3 55	S	(e 3 55)	−33	—	—
Vienna	10·7	338	e 4 13	S	(e 4 13)	−18	—	5·7
Simferopol	10·8	50	e 3 47	+15	—	—	—	—
Piacenza	11·5	309	—	—	e 3 44	?	—	8·5
Theodosia	11·6	52	e 3 52	+69	e 4 32	−21	4·9	—
Cheb	13·6	332	—	—	e 5 44?	+ 3	—	7·0
Tiflis	17·3	335	3 58	0	7 13	+ 4	9·8	—
Copenhagen	18·4	342	—	—	7 27	− 6	8·7	—
Granada	20·5	271	(e 4 40)	+ 5	—	—	e 4·7	—
Baku	21·2	76	e 4 52	+10	e 8 36	+ 6	12·5	—
Pulkovo	21·8	9	e 4 34	−15	e 8 26	−16	10·7	12·4
Ekaterinburg	30·9	41	—	—	e 11 3	−15	e 18·3	—

Additional readings and note :—
Belgrade e = +2m.29s. and +2m.45s.
Zagreb e = +2m.12s. and +3m.57s.
Triest PP = +2m.55s., SS = +4m.57s., SSS = +5m.7s.
Prato gives S as P and L as S.
Vienna P_g? = +4m.56s., i = +5m.20s. =S* +4s.
Ekaterinburg e = +15m.5s., eL_g = +15·9m.
Long waves were also recorded at other European stations.

Oct. 12d. 19h. 36m. 52s. Epicentre 46°·3N. 153°·0E. (as on 1932 Sept. 29d.). R.2.

A = −·616, B = +·314, C = +·723; D = +·454, E = +·891;
G = −·644, H = +·328, K = −·691.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	11·3	235	2 38	− 1	4 39	− 6	—	—
Nagoya	16·4	233	e 3 24	−22	—	—	—	—
Osaka	17·6	235	4 2	0	(7 17)	+ 2	7·3	—
Nagasaki	22·3	240	e 4 57	+ 3	e 9 13	+21	—	—
Chiufeng	27·3	270	5 43	+ 2	e 10 28	+ 8	e 15·7	17·3
Irkutsk	31·7	300	e 6 21	+ 1	e 11 36	+ 5	16·1	19·3
Hong Kong	39·4	246	17 0	?	—	—	—	25·5
Manila	41·5	231	11 16	?	15 59	?	—	—
Ekaterinburg	53·9	318	i 9 22	+ 1	e 19 9	(+ 5)	26·1	31·7
Pulkovo	64·2	333	10 29	− 5	e 19 2	− 8	31·1	38·8
Baku	69·6	308	11 10	+ 2	20 26	+10	37·1	44·8
Tiflis	71·4	312	11 19	0	e 20 37	− 1	40·5	46·7
Copenhagen	72·8	339	11 26	− 2	20 55	+ 1	35·1	—
Theodosia	73·4	320	e 11 31	0	—	—	—	—
Yalta	74·4	320	e 11 34	− 3	—	—	—	—
Stuttgart	80·0	337	e 12 6	− 2	—	—	e 48·3	—
Strasbourg	80·5	338	e 12 8?	− 2	—	—	49·1	—
Paris	81·5	342	e 12 15	− 1	—	—	47·1	—
Florence	83·8	333	e 25 38	?	34 38	?	45·1	50·1

Additional readings :—
Osaka i = +4m.50s.
Chiufeng i = +6m.25s. =PP +4s.
Ekaterinburg e = +21m.20s.
Tiflis PS = +21m.14s., e = +30m.31s.
Stuttgart e = +46m.14s.
Strasbourg e = +48m.37s.
Long waves were also recorded at Bombay, Ottawa, Kucino, Triest, De Bilt, Kew, and Granada.

Oct. 12d. Readings also at 2h. (Berkeley and Branner), 3h. (near Samarkand), 6h. (Baku, Ekaterinburg, Tiflis, Irkutsk, Mizusawa, and La Paz), 7h. (Copenhagen), 9h. (Ekaterinburg, Irkutsk, Tiflis, and Zagreb), 10h. (Baku, and near Amboina), 11h. (Baku, Tiflis, Ekaterinburg, Pulkovo, Belgrade, Budapest, Florence, Triest, Strasbourg, Stuttgart, Zagreb, and De Bilt), 12h. (near Apia), 16h. (Amboina and Manila), 18h. (Mizusawa), 19h. (Tiflis), 21h. (Andijan and Ksara), 22h. (Branner, Tyosi, and near Mizusawa).

Oct. 13d. 22h. 38m. 26s. Epicentre 42°·3S. 172°·3E. N.3.
(as given by Wellington).

A = −·733, B = +·099, C = −·673.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Glenmuick	0·9	134	0 8	− 5	i 0 34	+11
Christchurch	1·3	169	0 43	+25	0 58	+25
Wellington	2·1	61	0 34	+ 4	0 58	+ 4
New Plymouth	3·5	22	0 51	+ 1	1 31	+ 1

New Plymouth gives also i = +1m.24s.

Oct. 13d. Readings also at 2h. (Florence, Triest, Venice, Zagreb, Ekaterinburg, and Tashkent), 4h. (Sumoto), 10h. (Manila), 11h. (Batavia, Baku, Ekaterinburg, and Tiflis), 13h. (Bombay and near Calcutta), 16h. (Tiflis), 17h. (near Nagoya), 18h. (near Tyosi).

Oct. 14d. 5h. 36m. 2s. Epicentre 36°·1N. 140°·0E. (as on 1932 June 16d.). X.

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

Tokyo gives 36°·0N. 139°·9E.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tokyo		0·5	206	0 8	+ 1	0 15	+ 2	—	0·3
Tyosi		0·8	118	i 0 8	− 3	e 0 22	+ 1	—	0·4
Nagoya		2·7	249	e 0 39	0	1 32	S_g	—	—
Mizusawa	E.	3·0	16	0 46	+ 3	1 26	S*	—	—
Osaka		3·9	250	1 17	P_g	—	—	2·3	2·7

Oct. 14d. 12h. 36m. 1s. Epicentre 31°·6N. 138°·8E. N.1.

As given by Tokyo with deep focus about 300km.

A = −·641, B = +·561, C = +·524; D = +·659, E = +·752;
G = −·394, H = +·345, K = −·852.

Correction for focal *depth* 0·050 has been applied.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Hatidyozima	+1·4	1·7	30	1 23	+39	2 2	+42	—	—
Siomisaki	+0·9	3·1	306	0 55	− 2	1 42	0	—	—
Ito	+0·8	3·4	3	1 1	+ 1	1 53	+ 5	—	—
Mera	+0·8	3·4	15	0 55	− 5	1 48	0	—	—
Misima	+0·8	3·5	2	1 2	+ 1	1 52	+ 2	—	—
Numadu	+0·8	3·5	1	1 2	+ 1	1 52	+ 2	—	—
Kameyama	+0·7	3·8	330	1 4	0	1 56	+ 1	—	—
Yokohama	+0·7	3·9	10	1 9	+ 3	1 57	− 1	—	—
Nagoya	+0·7	3·9	339	e 1 6	0	1 59	+ 1	—	2·0
Wakayama	+0·6	4·1	313	1 4	− 3	1 56	− 4	—	—
Kohu	+0·6	4·1	358	1 7	0	1 59	− 1	—	—
Tokyo	+0·6	4·1	11	1 13	+ 6	2 2	+ 2	—	—
Osaka	+0·6	4·1	320	1 6	− 1	(2 1)	+ 1	2·0	2·4
Gihu	+0·6	4·1	337	1 9	+ 2	1 58	− 2	—	—
Hikone	+0·6	4·2	331	1 9	+ 1	1 59	− 4	—	—
Kobe	+0·5	4·3	317	1 8	0	1 59	− 4	—	2·1
Kyoto	+0·5	4·3	325	1 8	0	2 3	0	—	—
Sumoto	+0·5	4·3	312	1 6	− 2	2 0	− 3	—	2·0
Tyosi	+0·5	4·5	23	1 17	+ 6	2 8	0	—	2·2
Kumagaya	+0·5	4·6	6	1 13	0	2 8	− 2	—	—

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.
Kakioka	+0·4	4·7	14	1 12	− 1	2 12	+ 2	—	—
Maebasi	+0·4	4·8	3	1 16	+ 2	2 13	0	—	—
Oiwake	+0·4	4·8	358	1 14	0	2 14	+ 1	—	—
Koti	+0·4	4·8	296	2 14	+60	3 10	+57	—	—
Mito	+0·3	5·0	16	1 20	+ 5	2 15	0	—	—
Nagano	+0·3	5·1	355	1 17	0	2 19	+ 1	—	—
Toyooka	+0·3	5·2	322	i 1 16	− 2	i 2 19	− 1	—	2·4
Titizima	+0·2	5·4	147	1 21	+ 1	2 27	+ 4	—	—
Matuyama	+0·2	5·6	296	i 1 20	− 2	i 2 25	− 3	—	2·5
Wazima	+0·1	6·0	346	1 30	+ 3	2 39	+ 3	—	—
Miyazaki	+0·1	6·2	275	1 29	− 1	2 38	− 3	—	—
Hukusima	0·0	6·3	13	1 30	0	2 41	0	—	—
Sendai	0·0	6·9	14	1 33	− 5	2 53	− 3	—	—
Kumamoto	−0·1	7·0	282	1 38	0	2 57	+ 1	—	—
Hukuoka B.	−0·1	7·3	288	1 41	− 1	3 4	0	—	—
Nagasaki	−0·2	7·7	281	1 45	− 1	3 11	0	—	—
Mizusawa	−0·2	7·8	13	2 5	+17	3 13	− 1	—	—
Akita	−0·3	8·2	7	1 52	0	3 24	+ 3	—	—
Morioka	−0·3	8·3	13	1 57	+ 4	3 28	+ 4	—	—
Sapporo	−0·8	11·7	9	1 37	−56	3 44	−52	—	—

Additional readings :—
Osaka i = +1m.53s.
Kobe eS = +2m.4s.
Sumoto SZ = +2m.3s.

Oct. 14d. Readings also at 1h. (Bombay), 2h. (Andijan and near Calcutta), 5h. (near Osaka and Sumoto (2)), 6h. (Wellington and near New Plymouth), 7h. (Amboina and near Santiago), 11h. (Alicante, Wellington, near New Plymouth, and Tuai), 12h. (Nagoya and Tyosi), 19h. (Almata and near Andijan).

Oct. 15d. 22h. 19m. 54s. Epicentre 40°·9N. 30°·6E. N.3.
(given by Crimean stations).

A = +·651, B = +·385, C = +·655 ; D = +·509, E = −·861 :
G = +·564, H = +·333, K = −·756.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Yalta		4·5	36	1 3	− 1	—	—	2·2	—
Simferopol		4·8	31	1 4	− 4	—	—	2·3	—
Theodosia		5·4	39	e 1 23	+ 6	e 2 31	S*	2·9	—
Ksara	E.	8·2	147	—	—	3 45	+16	4·9	—
Tiflis		10·7	80	e 2 59	+28	e 5 39	S_g	6·7	—
Zagreb		11·7	300	—	—	e 5 20	+25	—	5·6
Triest		13·1	297	e 3 22	+19	—	—	—	6·2
Florence		14·5	288	5 51	S	(5 51)	−12	—	7·3
Pulkovo		18·9	359	e 3 55	−22	e 7 55	+11	10·1	—

Long waves were also recorded at Kucino and other European stations.

Oct. 15d. Readings also at 5h. (La Paz), 6h. (Alicante), 8h. (near Mizusawa), 10h. (near Apia), 12h. (Almeria and near Nagoya), 13h. (near Amboina), 14h. (Andijan), 15h. (Baku, Irkutsk, Kucino, Pulkovo, Copenhagen), 19h. (Ukiah, Tucson, Tinemaha, Florissant, and St. Louis), 20h. (Seattle and Ottawa), 21h. (near Tyosi), 23h. (near Manila).

Oct. 16d. 0h. 9m. 40s. Epicentre 35°·5N. 141°·0E. (as on 5d.). X.

A = − ·633, B = + ·512, C = + ·581.

		△ °	Az. °	P. m. s.	O − C. s.	S. m. s.	O − C. s.	L. m.	M. m.
Tyosi		0·2	332	0 2	− 1	0 9	+ 4	—	0·2
Nagoya		3·4	265	e 0 48	− 1	1 51	S_g	—	2·1
Mizusawa		3·6	1	0 50	− 1	1 51	S_g	—	—
Osaka		4·6	261	1 14	P*	—	—	2·4	2·9
Kobe		4·9	262	1 33	P_g	e 2 24	S*	—	2·7
Toyooka	E.	5·0	273	e 1 21	P*	e 2 55	S_g	—	3·2
	N.	5·0	273	i 1 33	P_g	i 2 52	S_g	—	2·9
Sumoto		5·2	258	e 2 10	S	(e 2 10)	− 3	—	—

Additional readings :—
Mizusawa SN = +1m.55s.
Osaka i = +1m.33s.
Sumoto PN = +2m.22s.
Long waves were recorded at Tiflis.

Oct. 16d. 2h. 1m. 46s. Epicentre 35°·5N. 141°·0E. (as at 0h.). X.

		△ °	Az. °	P. m. s.	O − C. s.	S. m. s.	O − C. s.	L. m.	M. m.
Tyosi		0·2	332	0 3	0	0 11	+ 6	—	0·2
Nagoya		3·4	265	e 0 54	+ 5	1 58	S_g	—	—
Mizusawa	E.	3·6	1	0 50	− 1	2 2	S_g	—	—
Osaka		4·6	261	1 41	P_g	—	—	2·7	3·0
Kobe		4·9	262	—	—	e 2 36	S_g	—	2·9
Toyooka		5·0	273	e 1 23	P*	i 2 48	S_g	—	—
Sumoto		5·2	258	e 2 12	S	(e 2 12)	− 1	—	—

Additional readings :—
Mizusawa SN = +2m.8s.
Toyooka iSE = +2m.51s.

Oct. 16d. Other repetitions from the epicentre 35°·5N. 141°·0E. were recorded at *Tyosi* as follows : P only is given except where the phase is stated to be S, and in each case S follows P by 7s. or 8s.

h.	m.	s.	h.	m.	s.	h.	m.	s.	
0	18	12	2	32	40	5	39	29	
1	21	39	4	22	32	6	20	4	(No S)
1	51	50	4	26	16 S	9	37	39	S
1	59	33	4	52	34 S	9	47	15	
2	0	7	5	10	31	10	17	2	
2	13	16	5	15	51	15	19	41	
			5	27	32				

Associated with the above *Nagoya* gives :—
eP? = 1h.53m.5s., S? = 53m.48s.
P = 2h.33m.42s., eS = 34m.43s.
P = 5h.17m.10s., eS = 17m.48s.
eP = 10h.18m.27s., S = 19m.4s.
eP = 15h.20m.45s., S = 21m.32s.

Mizusawa S = 10h.18m.19s.

Oct. 16d. 12h. 8m. 8s. Epicentre **55°·0N. 159°·7W.** N.1.

Probable error of epicentre ±0°·23.

A = −·538, B = −·199, C = +·819; D = −·347, E = +·938; G = −·768, H = −·284, K = −·574.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka		13·7	71	e 3 32	+21	i 5 50	+ 6	i 7·1	—
Victoria	E.	23·2	91	5 4	+ 1	(9 17)	+ 9	9·3	12·2
Seattle		24·1	92	e 5 24	+13	9 44	+19	e 11·9	—
Ukiah		29·0	108	e 5 52	− 4	i 10 51	+ 3	—	—
Berkeley		30·4	109	e 6 8	− 1	e 11 11	+ 1	i 14·2	—
Branner		30·8	109	e 6 13	+ 1	—	—	—	—
Lick		31·1	109	e 6 22	+ 7	—	—	—	—
Bozeman		31·7	86	6 29	+ 9	e 11 32	+ 1	14·0	—
Tinemaha		33·2	106	e 6 34	0	e 10 57	−57	—	—
Honolulu T.H.		33·7	177	6 30	− 8	e 12 0	− 1	e 14·4	—
Santa Barbara		34·3	110	e 6 41	− 2	—	—	—	—
Mount Wilson		35·4	108	e 6 51	− 2	e 12 28	+ 1	—	—
Pasadena		35·4	108	e 6 51	− 2	e 12 27	0	e 16·4	—
Riverside		35·9	108	e 6 54	− 3	e 12 34	− 1	—	—
Ootomari		36·2	282	7 7	+ 7	—	—	e 15·8	—
La Jolla		36·9	109	e 7 4	− 2	e 12 50	0	—	—
Denver		38·9	90	e 7 19	− 4	—	—	—	22·0
Tucson		40·8	103	i 7 46	+ 7	13 53	+ 5	19·8	—
Mizusawa		41·9	273	7 46	− 2	13 58	− 7	19·0	—
Kumagaya		44·9	271	8 12	0	14 52	+ 3	—	—
Madison		45·5	74	i 8 15	− 2	i 14 56	− 1	21·6	—
Misima		45·9	270	8 17	− 3	15 2	− 1	—	—
Nagoya		47·0	272	8 24	− 5	e 14 20	−59	—	—
Chicago		47·4	75	e 8 31	− 1	i 15 21	− 3	22·6	—
Florissant		47·8	80	e 8 33	− 2	i 15 29	− 1	e 22·9	25·9
Toyooka	E.	47·9	274	e 8 1	−34	e 14 45	−46	e 22·2	—
St. Louis		48·0	80	e 8 34	− 2	i 15 30	− 3	e 22·9	25·9
Osaka		48·1	273	8 38	+ 1	15 39	+ 5	19·7	—
Kobe		48·4	273	e 8 40	+ 1	15 39	+ 1	e 21·3	28·5
Sumoto		48·8	273	8 39	− 3	15 43	− 1	e 21·1	27·1
Ann Arbor		49·1	71	e 8 58	+14	i 15 58	+10	e 23·6	29·3
Little Rock		49·6	85	e 8 38	−10	e 15 39	−16	i 23·1	27·9
Titizima		50·0	261	8 50	− 1	15 42	−19	—	—
Koti		50·1	273	8 54	+ 2	16 4	+ 2	—	—
Matuyama		50·3	274	i 8 54	0	(16 8)	+ 3	16·1	16·2
Toronto		50·5	68	e 8 55	0	e 16 0	− 8	14·9	—
Cincinnati		50·9	75	i 8 48	−10	i 16 7	− 6	—	29·7
Buffalo		51·3	68	i 9 1	0	i 16 18	− 1	e 25·9	—
Zinsen		51·3	282	9 0	− 1	16 20	+ 1	—	—
Ottawa		51·3	63	e 9 0	− 1	i 16 16	− 3	e 26·9	—
Ivigtut		51·9	35	i 9 7	+ 1	i 16 31	+ 4	21·9	—
Irkutsk		52·3	310	i 9 10	+ 1	16 34	+ 1	30·9	—
Miyazaki		52·5	274	9 10	0	16 40	+ 5	—	—
Pittsburgh		52·5	70	9 14	+ 4	i 16 47	+12	24·9	—
Nagasaki		52·8	276	9 13	+ 1	16 42	+ 3	—	—
Charlottesville		55·0	72	e 9 28	− 1	17 10	+ 1	e 26·2	—
Chiufeng		55·1	292	i 9 30	0	i 17 17	+ 6	e 22·1	33·9
Georgetown		55·1	70	9 30	0	17 11	0	e 26·9	—
Fordham		55·5	66	i 9 25	− 7	i 17 10	− 6	e 25·9	—
Harvard		55·8	63	i 9 32	− 2	i 17 19	− 1	e 21·9	—
East Machias		55·9	59	i 9 33	− 2	i 17 25	+ 4	i 27·0	—
Columbia		56·5	77	—	—	i 17 27	− 3	27·3	—
Zi-ka-wei		58·7	281	9 55	0	18 4	+ 5	—	40·9
Nanking	Z.	59·6	284	i 9 59	− 3	—	—	—	42·2
Ekaterinburg		63·5	337	i 10 32	+ 3	i 18 59	− 2	33·5	43·5

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Bergen	64·0	9	10 29	− 3	19 7	0	25·9	—
Helsingfors	64·8	358	e 10 37	0	19 17	0	e 28·9	—
Pulkovo	65·0	355	10 38	− 1	19 20	0	29·4	38·1
Upsala	65·1	2	i 10 39	0	e 19 21	0	e 28·9	46·6
Edinburgh	67·4	15	e 11 10	+16	i 19 53	+ 3	29·9	44·1
Kucino	68·3	351	i 10 58	− 2	e 19 34	−27	—	—
Durham	68·8	14	11 2	− 1	20 12	+ 5	—	37·9
Copenhagen	69·1	6	i 11 5	0	20 11	+ 1	27·9	—
Stonyhurst	69·5	14	11 11	+ 3	i 20 26	+11	34·1	40·9
Hong Kong	69·7	281	11 4	− 5	20 18	0	31·0	45·4
Bidston	69·9	15	i 11 12	+ 2	e 20 20	0	28·0	41·2
Königsberg	70·2	0	e 9 52?	?	—	—	—	—
Almata	70·6	320	e 11 16	+ 2	—	—	—	—
Hamburg	71·1	8	i 11 18	+ 1	i 20 34	0	e 32·9	39·9
Oxford	71·8	15	i 11 22	0	e 20 40	− 3	36·9	43·7
Manila	72·0	270	11 21	− 2	20 44	− 1	33·9	39·4
De Bilt	72·2	10	i 11 25	+ 1	20 51	+ 4	e 35·9	38·6
Kew	72·2	14	i 11 23	− 1	i 20 50	+ 3	e 34·9	43·1
Potsdam	72·5	6	i 11 24	− 2	i 20 49	− 2	e 34·9	40·9
Göttingen	73·1	8	i 11 28	− 1	i 20 58	0	e 35·9	41·3
Uccle	73·4	12	i 11 30	− 1	i 21 2	+ 1	e 30·9	49·4
Jena	73·9	6	e 11 34	0	e 21 7	0	e 37·9	43·4
Andijan	74·4	322	e 11 38	+ 1	21 15	+ 2	38·5	—
Cheb	74·8	5	e 11 40	+ 1	e 21 13	− 5	e 37·9	47·4
Prague	74·9	4	i 11 39	− 1	i 21 23	+ 4	e 35·9	50·9
Paris	75·1	13	i 11 40	− 1	i 21 22	+ 1	31·9	46·9
Phu-Lien	75·1	285	e 11 39	− 2	e 21 9	−12	30·9	—
Stuttgart	75·8	8	i 11 45	0	e 21 29	0	e 39·9	50·4
Strasbourg	75·9	9	i 11 42	− 3	i 21 40	+10	e 29·9	48·5
Vienna	76·7	3	i 11 48	− 2	21 37	− 2	e 37·9	53·9
San Juan	77·0	76	i 11 50	− 2	i 21 34	− 9	e 34·7	—
Zurich	77·2	10	e 11 52	− 1	e 21 43	− 2	—	—
Innsbruck	77·4	7	e 11 58	+ 4	22 4	+17	35·9	—
Neuchatel	77·4	10	e 11 53	− 1	e 21 45	− 2	—	—
Budapest	77·5	2	i 11 54	− 1	21 49	+ 1	36·9	52·9
Chur	77·7	10	e 12 33	+37	e 22 27	+36	—	—
Puy de Dôme	78·2	13	e 10 58	−60	e 20 54	−62	e 39·9	—
Treviso	79·1	7	i 12 0	− 3	e 22 2	− 4	42·9	52·9
Zagreb	79·1	4	e 12 3	0	e 22 4	− 2	e 39·2	—
Theodosia	79·2	350	e 12 3	− 1	e 22 5	− 2	33·9	—
Triest	79·2	6	i 12 3	− 1	22 4	− 3	e 35·2	50·0
Venice	79·3	7	11 52?	−12	22 6	− 2	—	—
Simferopol	79·4	351	e 12 4	− 1	e 22 6	− 3	31·9	—
Piacenza	79·6	7	i 12 9	+ 3	22 11	0	40·1	59·4
Yalta	79·8	350	12 7	0	22 11	− 3	41·9	—
Belgrade	80·2	0	i 12 9	0	e 22 13	− 5	e 41·3	—
Bagnères	80·5	15	e 11 55	−15	e 22 17	− 4	e 37·9	—
Prato	80·8	7	e 12 7	− 5	e 22 18	− 6	50·3	—
Florence	80·9	7	i 12 17	+ 4	22 29	+ 4	38·2	44·3
Tiflis	81·1	343	i 12 11	− 3	i 22 22	− 5	39·9	50·6
Baku	81·4	338	i 12 16	+ 1	—	—	39·9	56·7
Dehra Dun	81·4	312	32 32?	?	42 22?	L	50·0	51·9
Tortosa	82·7	15	e 12 25	+ 3	e 22 41	− 3	e 39·9	51·8
Amboina	82·9	253	i 11 42	−41	i 22 10	−36	—	—
Toledo	82·9	20	i 12 23	0	i 22 40	− 6	e 38·9	52·0
Calcutta	83·3	300	12 50	+25	23 13	+23	44·4	—
Agra	84·2	311	e 12 30	+ 1	—	—	e 41·6	54·3
Alicante	85·0	17	e 12 35	+ 2	e 22 57	−11	e 39·9	54·2
Granada	85·6	20	i 12 38	+ 2	i 23 12	− 2	41·7	50·0
San Fernando	85·8	22	12 16	−21	23 0	−16	—	—
Malaga	85·9	21	12 37	− 1	i 23 12	− 5	38·1	47·1
Almeria	86·1	18	i 12 46	+ 7	i 22 57	−21	e 43·4	54·2
Messina	86·7	4	e 12 43	+ 1	e 24 19	PS	e 26·9	54·0
Algiers	87·0	14	e 12 36	− 7	e 22 55	[−18]	44·9	55·9
Ksara	90·2	348	12 1	−57	22 25	?	33·4	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Medan		93·6	282	e 13 34	+20	i 22 25	?	e 52·8	64·1
Bombay		93·8	311	13 15	0	23 47	[− 7]	45·8	60·1
Helwan		94·6	351	e 13 20	+ 1	e 23 52	[− 7]	—	58·4
Huancayo		96·7	102	—	—	e 23 54	[−15]	e 40·9	—
Batavia		97·0	269	i 17 13	PP	i 24 14	[+ 3]	e 67·9	—
Riverview		98·2	219	—	—	i 24 59	{+20}	e 46·0	47·5
Sydney		98·2	219	e 24 4	S	(e 24 4)	[−13]	50·4	56·9
Colombo		101·0	300	10 12	?	—	—	—	68·1
Adelaide		104·2	228	—	—	e 27 2	PS	43·2	57·6
Melbourne		104·2	222	—	—	i 25 47	−16	49·5	—
La Paz		104·3	98	e 17 50	PP	i 24 38	[− 8]	54·6	65·7
Tananarive	E.	138·4	320	—	—	e 46 23	SS	e 77·5	80·9

Additional readings and notes :—
Seattle e = +9m.36s.
Ukiah i = +12m.16s. =SS +10s.
Bozeman e = +11m.19s.
Honolulu T.H. iPP = +7m.43s., iSS = +14m.0s.
Pasadena iNZ = +7m.2s.
Tucson iPP = +9m.31s., e = +16m.58s. and +17m.9s.
Mizusawa SN = +14m.4s.
Madison eSS = +18m.5s. ; T_0 =12h.8m.14s.
Chicago ePP = +10m.29s., e = +18m.17s. =SS −18s.
Florissant iPEN = +8m.40s., eSN = +15m.35s., ePSEN = +15m.41s., iEN = +18m.22s. =S_cS −8s. ; T_0 =12h.8m.17s. ; these readings suggest a second shock 6s. later.
Toyooka iP = +8m.36s.
St. Louis iPEN = +8m.41s., eSN = +15m.37s., ePSEN = +15m.42s., iEN = +18m.23s. =S_cS −9s. ; probably two shocks.
Osaka i = +10m.31s. =PP +9s.
Kobe i = +8m.52s., PP = +10m.21s., iZ = +15m.51s.
Sumoto SN = +15m.49s.
Ann Arbor ePPN = +10m.58s., e = +18m.40s. =S_cS +1s., eSSN = +19m.28s., eE = +19m.58s. ; T_0 =12h.8m.6s.
Little Rock iEN = +18m.25s. =S_cS −17s., iSSEN = +18m.42s. ; T_0 =12h.8m.17s.
Toronto PP = +10m.55s., iS = +16m.7s., SS = +19m.56s. ; T_0 =12h.8m.3s.
Cincinnati eE = +9m.2s., iZ = +9m.4s., iPPZ = +10m.29s., eSE = +16m.16s., eSSZ = +19m.10s.
Ottawa ePPN = +11m.10s., eSSN = +19m.58s., eSSSE? = +20m.40s.
Ivigtut +18m.54s. =S_cS −3s.
Pittsburgh i = +16m.33s., +18m.55s. =S_cS −6s., e = +20m.11s. =SS +6s., iSS = +20m.41s.
Charlottesville e = +9m.42s. and +19m.17s. =S_cS +0s.
Chiufeng i = +10m.25s. =P_cP −10s., +12m.14s., and +12m.50s.
Georgetown PP = +12m.6s., PS = +17m.27s. ; T_0 =12h.7m.54s.
East Machias e = +11m.40s. =PP +7s., +17m.14s., i = +17m.19s., iSS = +21m.10s., SSS = +22m.59s.
Columbia e = +19m.25s. =S_cS −2s.
Zi-ka-wei iE = +18m.20s.
Bergen PP = +12m.52s.?
Helsingfors iE = +19m.29s., ePSEN = +20m.6s., eSKSE = +20m.40s., iSKSN = +20m.44s., eSSN = +24m.6s., eSSE = +24m.10s., eSSSE = +26m.46s., eSSSN = +26m.52s.? ; T_0 =12h.8m.8s.
Upsala SS = +23m.55s., SSS = +26m.57s.
Kucino e = +11m.34s. =P_cP +8s. and +13m.24s. =PP +1s., ePPP = +15m.28s., PS = +20m.34s.
Hamburg iSE = +20m.38s., eSSSNZ = +28m.52s.?
Oxford iN = +15m.44s.
Manila PSEN = +21m.10s., PPPSE = +21m.26s.
Kew iE = +21m.4s. =PS −3s. and +21m.44s., eSSN = +24m.52s.?, eSSSEN = +28m.52s.
Potsdam iN = +11m.41s., eE = +16m.10s., eN = +20m.40s., iEN = +21m.1s. and +21m.18s. =PS +7s., eN = +25m.22s. =PS +2s., eNZ = +29m.22s.
Göttingen eN = +26m.28s. and +29m.34s.
Uccle i = +21m.53s., SS = +25m.55s.
Jena eN = +29m.52s.
Paris PP = +14m.32s.
Stuttgart iNZ = +12m.5s., iP_cPZ = +12m.19s., ePPNZ = +14m.40s., e = +17m.52s., eEN = +21m.43s. =PS −12s., eZ = +22m.1s., eSSN = +26m.28s., eSSS = +30m.16s.
Strasbourg ePP = +14m.32s., iSKS? = +21m.25s., iPS = +22m.18s.
Vienna PPS = +22m.25s.
San Juan eSS = +30m.12s.
Zagreb eZ = +12m.16s.
Triest iZ = +12m.16s., i = +13m.2s., iPS = +22m.34s., eSS = +27m.12s.
Belgrade eP = +12m.12s.

Continued on next page.

Florence PP = +15m.22s., PPP = +17m.22s., PS = +23m.15s., SS = +28m.4s., SSS = +32m.7s., SSSS = +33m.52s.
Tiflis ePKS = +12m.48s., PP = +15m.48s., e = +18m.48s. and +22m.19s., eSKS = +22m.31s., SS = +28m.5s., e = +32m.55s.
Baku PPP = +19m.16s., PS = +23m.3s., e = +28m.32s.
Amboina i = +22m.55s.
Toledo i = +12m.34s. and +13m.52s., PP = +15m.34s., SKKS = +22m.58s. = SKS +15s., PS = +23m.16s.
Granada P_cP = +12m.51s.
San Fernando PS = +23m.32s.
Malaga PP = +15m.54s., PPP = +17m.52s., SKS = +22m.53s., S_cS = +23m.43s., PS = +24m.2s., SS = +29m.17s.
Medan i = +21m.34s.
Huancayo eSS = +31m.3s., eSSS = +35m.36s.
Riverview iN = +25m.5s. = S−6s., iE = +26m.17s. = PS−9s., e = +31m.46s. = SS +9s.
Adelaide e = +32m.38s.? = SS −22s.
Melbourne i = +32m.52s. = SS +6s.
La Paz SSN = +29m.8s., SSS = +33m.15s. = SS +14s.
Long waves were also recorded at Perth, Wellington, Feldberg, Besançon, Barcelona, Cape Town, and Dakar.

Oct. 16d. Readings also at 3h. (near Wellington), 4h. (Andijan and La Paz), 6h. (San Juan), 7h. (Nagoya (5)), 8h. (Tiflis and near Andijan), 9h. (near La Paz), 13h. (New Plymouth and near Santiago), 14h. (Florence, Riverview, Lick, Branner, San Francisco, near Berkeley, near New Plymouth, and Wellington), 15h. (Pasadena, Tinemaha, Christchurch, and Riverview), 16h. (Glenmuick and near Wellington), 21h. (Riverview, Melbourne, Wellington, and near Algiers), 23h. (Andijan).

Oct. 17d. 2h. 0m. 45s. Epicentre 34°·9N. 134°·1E. (as on 1930 Sept. 5d.). X.

A = −·571, B = +·589, C = +·572.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kobe	0·9	104	0 12	− 1	0 17	− 9	—	0·3
Sumoto	0·9	130	—	—	0 26	0	—	0·4
Toyooka	0·9	43	i 0 13	0	i 0 19	− 7	—	0·3
Osaka	1·2	102	0 20	+ 3	(0 26)	− 5	0·4	0·4

Oct. 17d. 13h. 25m. 27s. Epicentre 7°·0S. 157°·0E. (as on 1920 Dec. 13d.). X.

A = −·914, B = +·388, C = −·122; D = +·391, E = +·920; G = +·112, H = −·048, K = −·993.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	27·4	191	i 5 42	0	e 10 14	− 8	e 13·2	14·7
Sydney	27·4	191	e 5 15	−27	i 9 57	−25	14·2	15·0
Amboina	28·8	275	e 5 1	−53	e 9 44	−61	18·6	—
Adelaide	32·7	210	i 7 18	PP	i 11 28	−18	15·3	19·2
Melbourne	32·7	198	e 9 24	(+ 6)	i 11 41	− 5	15·4	19·4
Wellington	37·8	159	8 58	+105	15 41	SS	22·3	22·6
Manila	41·8	302	7 43	− 4	14 12	+ 9	20·6	—
Perth	45·7	231	12 33	?	i 14 44	−16	24·4	—
Nagoya	46·2	339	e 8 30	+ 8	—	—	—	—
Batavia	49·8	269	i 8 55	+ 5	i 16 33	+35	e 32·6	—
Hong Kong	51·2	307	9 3	+ 3	16 8	−10	27·0	—
Phu-Lien	56·8	301	9 33?	− 9	—	—	—	—
Chiufeng	60·3	325	i 10 0	− 7	—	—	e 26·6	35·6
Irkutsk	74·3	330	e 11 30	− 6	21 2	−10	e 30·6	—
Bombay	86·8	290	12 37	− 5	—	—	—	—
Pasadena	89·7	56	i 12 58	+ 2	—	—	—	—
Mount Wilson	89·8	56	e 13 0	+ 4	—	—	—	—
Riverside N.	90·3	56	e 13 4	+ 5	—	—	—	—
Andijan	90·7	311	e 13 0	− 1	(e 23 48)	−15	e 23·8	—
Ekaterinburg	99·3	326	i 13 38	− 2	24 13	[− 9]	40·6	—
Baku	107·5	310	e 18 54	PP	e 28 11	PS	—	66·0
Tiflis	111·2	312	e 14 41	+ 5	e 25 11	[− 8]	e 53·6	—
Pulkovo	113·8	334	e 19 23	PP	e 26 15	{−19}	53·6	64·4
Ottawa	120·6	40	—	—	e 26 51	{−29}	e 59·6	—
Copenhagen	123·8	337	—	—	36 33?	SS	58·6	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz	N.	129·5	120	i 19 15	[+ 9]	i 22 32	PKS	—	—
Triest		130·0	327	e 19 4	[− 3]	e 22 43	PKS	e 63·6	78·6
Stuttgart		130·2	332	e 19 4	[− 3]	—	—	e 74·6	—
Strasbourg		131·0	333	e 18 33?	[−36]	e 24 33?	?	e 34·6	—
Florence		132·6	326	e 20 18	?	i 31 33	PS	—	67·6
Paris		132·9	337	e 19 33?	[+21]	(23 33?)	PP	23·6	—
Almeria		144·7	331	e 19 34	[+ 1]	—	—	—	—
Granada		145·0	332	i 19 29	[− 5]	—	—	84·6	—
Malaga		145·8	333	19 35	[− 1]	—	—	84·9	90·0
San Fernando		146·8	335	(19 57)	[+20]	19 57	PKP	—	114·0

Additional readings :—
Riverview iSN = +10m.18s.
Adelaide i = +13m.43s. =SS +10s.
Melbourne SSS = +14m.8s.
Wellington SSS = +20m.19s.
Perth i = +19m.13s.
Ekaterinburg PP = +17m.44s.
Tiflis PP = +19m.3s., SKSP = +26m.46s., e = +28m.13s., ePS = +29m.1s.
Pulkovo eS = +26m.45s., ePS = +28m.59s., SS = +35m.26s.
Ottawa eN = +30m.39s. =PS +31s.
Stuttgart ePP = +21m.20s., ePKS = +22m.23s., ePS = +32m.45s.
Florence i = +22m.33s. =PKS −12s.
Long waves were also recorded at Honolulu T.H., Tananarive, Rio de Janeiro, Ivigtut, and other American and European stations.

Oct. 17d. Readings also at 0h. (Andijan), 1h. (Tyosi and near Sumoto), 2h. (Huancayo), 7h. (near Alicante), 8h. (near Tyosi), 9h. (Pasadena, Mount Wilson, and Tinemaha), 11h. (near Tyosi), 13h. (Nagoya and near Sumoto), 19h. (Riverview, Wellington, Huancayo, and near Kobe), 20h. (Baku, Ekaterinburg, and near Amboina, and near La Paz), 22h. (Tiflis).

Oct. 18d. 4h. 9m. 47s. Epicentre 2°·0N. 122°·0E. N.3.

Batavia gives epicentre 0°·0 124°·5E.

A = −·530, B = +·847, C = +·035 ; D = +·848, E = +·530 ;
G = −·018, H = +·030, K = −·999.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Amboina		8·4	133	i 0 38	−81	i 1 48	?	—
Manila		12·6	356	3 26	+30	6 16	+59	—
Malabar		17·1	237	e 3 57	+ 2	7 8	+ 4	—
Batavia		17·3	241	3 56	− 2	7 6	− 3	(i 9·5)
Hong Kong		21·7	340	5 1	+13	9 21	+41	10·5
Medan		23·4	275	5 12	+ 7	9 17	+ 5	—
Phu-Lien		24·1	323	5 13?	+ 2	—	—	—
Perth		34·4	189	e 7 43	PP	i 11 23	−49	—
Chiufeng		38·4	354	i 7 23	+ 5	—	—	—
Agra	E.	49·0	305	e 8 43	− 1	—	—	—
Bombay		51·1	293	9 1	+ 1	—	—	—
Irkutsk		52·4	347	e 9 13	+ 4	e 17 42	+68	—
Andijan		59·1	318	e 10 4	+ 6	—	—	—
Ekaterinburg		73·0	330	i 11 31	+ 2	—	—	—
Baku		75·2	311	e 11 41	0	e 21 10	−12	—
Tiflis		79·2	312	11 59	− 5	21 54	−13	47·2
Kucino		85·0	325	e 12 26	− 7	e 25 8	?	—
Pulkovo		89·1	330	e 12 47	− 6	e 22 58	−49	—
Copenhagen		99·2	328	—	—	24 1	[−21]	46·2
Stuttgart		103·3	321	e 18 13?	PP	—	—	—
La Paz	N.	162·4	146	e 19 47	[− 9]	—	—	—

Additional readings :—
Malabar i = +4m.5s. =PP +3s.
Hong Kong PP = +5m.23s.
Medan iN = +10m.34s.
Irkutsk ePP = +12m.12s.
Tiflis ePS = +23m.0s.
Long waves were also recorded at Riverview.

Oct. 18d. 4h. 31m. 27s. Epicentre 46°·0N. 89°·0E. (as on 1927 Oct. 16d.). X.

A = +·012, B = +·695, C = +·719; D = +1·000, E = −·017; G = +·013, H = +·718, K = −·695.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Almata	9·0	257	e 2 1	− 6	3 51	+ 2	—	4·8
Irkutsk	11·8	52	e 2 53	+ 7	e 4 35	−23	5·2	6·2
Andijan	13·1	253	e 3 0	− 3	—	—	—	—
Ekaterinburg	20·5	312	i 4 27	− 8	i 8 28	+12	10·6	12·4
Chiufeng	20·6	97	—	—	e 9 4	+46	e 10·9	11·7
Tiflis	31·8	278	—	—	e 13 53	?	e 15·9	—

Chiufeng eS? = +10m.31s.
Long waves were also recorded at Baku, Kucino, Pulkovo, and Copenhagen.

Oct. 18d. Readings also at 2h. (near Simferopol), 3h. (La Paz and near Nagoya), 6h. (Baku, Ekaterinburg, and Irkutsk), 7h. (Tiflis), 10h. (Tyosi), 12h. (Granada, Tiflis, Cape Town, and Tananarive), 16h. (New Plymouth, near Christchurch, and Tuai), 17h. (Zi-ka-wei), 19h. and 21h. (near Tyosi), 23h. (Stonyhurst).

Oct. 19d. Readings at 0h. (near Santiago), 2h. (near Andijan), 4h. (near Nagoya and Tyosi), 5h. and 6h. (near Andijan), 7h. (near Apia), 8h. (Pasadena), 9h. (near Tiflis), 10h. (near Mizusawa, Nagoya, and Tyosi), 11h. (Mount Wilson and Pasadena), 12h. (Adelaide, Perth, and Rio de Janeiro), 14h. (Branner), 15h. (Tyosi), 16h. (Ukiah, near Berkeley, Lick, Branner, San Francisco, and near Hastings), 18h. (Almeria and Tyosi), 19h. (Amboina), 21h. (Tyosi).

Oct. 20d. 17h. 36m. 43s. Epicentre 30°·2S. 179°·0W. (as on 1927 June 6d.). R.3.

A = −·864, B = −·015, C = −·503; D = −·017, E = +1·000; G = +·503, H = +·009, K = −·864.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington		12·2	202	2 57	+ 6	4 56	−12	—	—
Glenmuick		14·2	204	—	—	e 5 57	+ 1	—	—
Riverview		25·5	254	e 5 29	+ 4	e 10 43	SS	e 12·7	14·4
Melbourne		30·6	245	i 7 40	+90	e 11 14	0	15·1	16·3
Adelaide		35·8	252	—	—	e 14 29	SS	—	20·9
Perth		55·0	250	24 17	?	—	—	—	—
La Jolla		86·0	48	e 12 42	+ 4	—	—	—	—
Berkeley		86·2	41	—	—	e 26 17?	?	—	—
Pasadena		86·2	46	e 12 27	−12	—	—	—	—
Mount Wilson	E.	86·3	46	e 12 47	+ 7	—	—	—	—
Riverside	N.	86·6	46	e 12 46	+ 5	—	—	—	—
Tinemaha		88·1	44	e 12 39	− 9	—	—	—	—
La Paz	E.	98·7	116	e 13 36	− 2	i 24 7	[−12]	—	—
Ekaterinburg		131·3	321	i 19 3	[− 6]	—	—	57·3	—
Theodosia		149·3	308	e 19 42	[+ 1]	—	—	—	—
Simferopol		150·2	309	e 19 43	[+ 1]	—	—	—	—
Yalta		150·3	308	e 19 44	[+ 2]	—	—	—	—
Neuchatel		162·6	346	e 19 51	[− 6]	—	—	—	—

Additional readings:—
Wellington S_g? = +5m.58s.
Glenmuick e = +6m.23s. and +6m.27s.
Pasadena iZ = +12m.45s.
Tinemaha eE = +12m.56s.
La Paz ePN = +13m.51s.
Ekaterinburg i = +22m.25s. = PKS −14s. and +22m.51s.
Long waves were also recorded at Sydney, Kodaikanal, Baku, Granada, and San Fernando.

Oct. 20d. Readings also at 2h. (Lick), 6h. (near Amboina), 7h. (near Tiflis), 8h. (near Apia), 9h. (La Paz, La Plata, and near Santiago), 16h. (Huancayo, La Paz, and Sucre), 17h. (Baku and Ekaterinburg), 18h. (Tiflis), 20h. (Berkeley), 21h. (Berkeley, Branner, and near Apia), 23h. (Berkeley and Tyosi).

Oct. 21d. 18h. 43m. 18s. Epicentre 47°·5N. 12°·4E. N.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.
Innsbruck	0·7	251	e 0 10	0	—	—	i 0·4	—
Treviso	1·8	185	e 0 28	+ 2	0 47	+ 1	—	1·1
Ravensburg	1·9	279	e 0 27	− 1	e 0 59	S_g	—	—
Chur	2·0	252	e 0 31	+ 2	e 1 8	S_g	—	—
Triest	2·1	153	i 0 29	− 1	i 0 54	0	—	—
Stuttgart	2·5	301	e 0 36	0	i 1 22	S_g	—	—
Zurich	2·6	267	e 0 38	+ 1	e 1 13	S*	—	—
Vienna	2·8	74	e 0 37	− 3	1 14	+ 2	—	1·6
Zagreb	3·0	124	e 0 48	P*	e 1 21	+ 4	—	1·4
Strasbourg	3·3	289	1 18	P_g	2 14	+49	—	—
Neuchatel	3·7	264	e 0 53	0	e 2 37	+62	—	—
Göttingen	4·3	340	e 0 59	− 2	i 2 19	S_g	—	—
Potsdam	4·9	5	—	—	e 2 30	S_g	—	—

Additional readings:—
Triest i = +56s., iSS = +58s.
Stuttgart eP_g = +44s., e = +1m.19s. = S_g +3s.
Vienna P_g = +42s. and +58s., PS = +1m.6s., S_g? = +1m.16s., PSS = +1m.20s.
Strasbourg PP = +1m.24s., e = +1m.41s., and +1m.50s., PS = +1m.56s.
Neuchatel eP_g = +1m.8s.
Göttingen eP_gEN = +1m.16s., eN = +1m.51s. = S +1s., eEN = +2m.13s. = S_g −3s.

Oct. 21d. Readings also at 2h. (Andijan), 4h. (Hong Kong), 6h. (Amboina, Besançon, Ravensburg, Strasbourg, Stuttgart, and near Neuchatel (2)), 7h. (Tyosi and near Tiflis), 8h. (near Nagoya and Tyosi), 9h. (Tananarive), 10h. (Amboina, near Osaka, Kobe, Sumoto, Nagoya, Florence, near Prato, and near Apia), 11h. (Florence and Perth), 13h. (near Apia), 14h. (Huancayo and Tiflis), 15h. (Andijan), 16h. (Huancayo), 18h. (Amboina (2), Manila, Baku, Ekaterinburg, and Tashkent).

Oct. 22d. Readings at 0h. (Perth), 3h. (Tiflis), 14h. (Belgrade, Florence, Triest, Zagreb, Pulkovo, Batavia, and near La Paz), 15h. (Berkeley, Lick, Branner, Florence (2), Copenhagen, Baku, and Ekaterinburg), 17h., 18h. (2), and 21h. (near Amboina), 22h. (near Apia and near La Paz), 23h. (Kodaikanal and near Tyosi).

Oct. 23d. 0h. 11m. 24s. Epicentre 6°·3S. 122°·5E. (as on 1927 March 3d.). X.

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

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	6·2	65	i 2 36?	P	(i 2 36?)	− 2	—	—
Batavia	15·6	269	4 36?	+60	i 6 18	−11	14·6	—
Manila	21·0	356	4 11	−29	9 23	+57	14·2	—
Medan	25·8	292	e 6 36?	+69	—	—	i 12·8	—
Hong Kong	29·8	344	10 28	S	(10 28)	−33	—	19·2
Adelaide	32·3	154	—	—	e 11 24?	−16	17·6	21·5
Melbourne	37·5	150	—	—	e 13 4	+ 5	20·0	—
Riverview	38·2	141	—	—	e 16 45	?	—	24·6
Bombay	55·0	300	e 15 38	S	(e 15 38)	−91	—	—
Andijan	65·7	321	e 10 51	+ 8	—	—	—	—
Tashkent	68·0	320	e 11 46	+48	i 19 56	− 1	e 38·2	—
Ekaterinburg	80·5	331	e 12 4	− 6	21 56	−25	38·6	—
Tiflis	85·1	315	e 12 31	− 3	e 23 12	+ 3	e 65·6	—

Additional readings:—
Batavia i = +10m.11s.
Hong Kong S? = +12m.44s.
Tashkent e = +24m.12s. = SS +0s., +27m.24s., and +34m.18s.
Long waves were also recorded at Sydney, Calcutta, and Hyderabad.

Oct. 23d. 13h. 36m. 43s. Epicentre 35°·5N. 27°·6E. (as on 1932 June 29d.). R.2.

A = +·722, B = +·377, C = +·581 ; D = +·463, E = −·886 ; G = +·515, H = +·269, K = −·814.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Helwan		6·5	150	1 32	0	i 2 43	− 3	—	—
Ksara		7·0	101	1 42	+ 3	3 2	+ 3	3·6	—
Messina		10·0	289	e 2 15	− 6	e 5 29	S_g	6·3	7·2
Catania		10·2	285	2 48	+24	—	—	—	9·1
Yalta		10·3	27	e 2 24	− 1	—	—	6·6	—
Mineo		10·5	283	3 20	+52	—	—	—	—
Simferopol		10·7	26	e 2 31	0	—	—	—	—
Belgrade		10·8	332	e 2 31	− 1	—	—	e 6·3	7·1
Theodosia		11·2	29	e 2 31	− 6	—	—	6·7	—
Naples	N.	11·8	301	e 2 19	−27	e 5 59	+61	—	9·3
Zagreb		13·5	323	e 3 3	− 6	—	—	e 7·7	11·2
Budapest		13·5	335	3 10	+ 1	—	—	8·3	12·3
Triest		14·6	318	3 17	− 6	e 6 35	+30	—	9·4
Tiflis		14·9	60	3 28	+ 1	6 23	+10	8·1	9·5
Florence		15·0	308	3 32	+ 4	6 47	+32	8·3	10·8
Prato		15·1	309	e 3 45	+15	e 8 27	L	(e 8·4)	9·3
Venice		15·2	315	e 3 26	− 5	e 6 26	+ 6	—	—
Vienna		15·2	330	e 3 29	− 2	8 5	+105	—	11·3
Treviso		15·5	316	i 3 38	+ 3	8 2	+95	9·7	11·4
Piacenza		16·6	310	4 17	+28	7 17	+25	9·6	13·3
Chur		17·7	316	e 4 2	− 1	—	—	—	—
Baku		18·2	68	e 4 11	+ 2	—	—	—	—
Cheb		18·3	328	e 4 11	+ 1	e 7 27	− 4	e 9·3	12·3
Zurich		18·5	316	e 4 9	− 4	—	—	—	—
Stuttgart		18·9	320	e 4 15	− 2	e 7 45	+ 1	e 9·8	12·5
Jena		19·2	328	e 4 17	− 4	—	—	e 10·3	12·7
Neuchatel		19·2	313	e 4 16	− 5	e 7 31	−19	—	—
Strasbourg		19·6	318	4 26	+ 1	e 8 8	+10	e 10·3	13·8
Potsdam		19·8	333	e 4 29	+ 2	—	—	e 11·8	13·3
Algiers		19·8	281	i 4 25	− 2	8 5	+ 3	10·3	—
Besançon		19·9	313	e 4 30	+ 1	—	—	e 12·3	—
Königsberg		19·9	348	i 5 19	+50	i 8 43	+39	e 11·9	14·3
Barcelona		20·7	294	e 4 34	− 3	e 8 19	− 1	e 10·5	15·6
Tortosa	N.	21·8	292	e 4 35	−14	—	—	—	—
Hamburg		21·9	331	e 4 43	− 7	e 11 46	?	—	14·3
Alicante		22·5	285	e 4 57	+ 1	e 9 39	SS	e 13·1	—
Uccle		22·7	320	e 5 0	+ 2	—	—	e 11·3	—
Paris		22·7	314	e 6 17?	?	—	—	14·3	15·3
Copenhagen		22·7	337	—	—	9 0	+ 1	12·3	—
De Bilt		23·0	323	—	—	e 9 17?	+12	e 12·3	14·0
Almeria		24·1	282	e 5 12	+ 1	e 9 45	+20	e 12·8	—
Pulkovo		24·3	3	5 17	+ 4	9 37	+ 9	13·8	14·3
Helsingfors		24·8	357	—	—	e 9 35	− 2	e 13·3	—
Granada		25·1	283	i 5 19	− 2	10 32	SS	e 15·7	19·6
Toledo		25·3	289	5 21	− 2	9 48	+ 2	e 12·7	15·4
Kew		25·5	317	—	—	e 8 17?	−93	e 14·3	—
Malaga		25·8	282	5 27	0	e 10 12	+17	13·0	18·9
San Fernando		27·2	282	6 17	PP	11 5	SS	—	20·3
Ekaterinburg		30·8	36	e 6 16	+ 4	11 14	− 3	i 16·0	—
Andijan		35·3	68	e 6 49	− 3	—	—	—	—
Bombay		43·1	100	e 5 59	−119	—	—	—	—

Additional readings :—
Belgrade eP = +2m.45s., e = +2m.56s., +3m.17s. and +4m.53s.
Zagreb e = +3m.19s., eNE = +6m.30s., eNW = +6m.47s.
Triest i = +8m.10s., iSSS = +8m.35s.
Vienna iPZ = +3m.33s., iEZ = +3m.49s., PPP = +4m.25s., SS = +9m.3s., SSS = +10m.2s.
Stuttgart i = +4m.30s. = PP + 3s.
Jena eZ = +4m.22s.
Potsdam iN = +9m.14s. and +9m.52s.
Copenhagen +9m.34s. = SS + 1s.
Helsingfors eEN = +10m.41s.
Malaga i = +6m.40s., SS = +11m.7s.
Long waves were also recorded at Tashkent and other European stations.

Oct. 23d. 17h. 42m. 47s. Epicentre 35°·5N. 27°·6E. (as at 13h.). X.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ksara	7·0	101	e 1 39	0	2 59	0	3·5	—
Triest	14·6	318	e 3 19	− 4	e 6 33	+28	—	8·6
Tiflis	14·9	60	3 27	0	6 13	0	e 7·9	—
Florence	15·0	308	3 13	−15	—	—	—	8·2
Piacenza	16·6	310	—	—	e 5 33	−79	—	11·6
Pulkovo	24·3	3	e 5 13?	0	—	—	13·2	—

Long waves were also recorded at Ekaterinburg and other European stations.

Oct. 23d. 21h. 27m. 56s. Epicentre 24°·2N. 122°·3E. R.2.

(As on 9d. and as given by Tokyo and the Japanese stations.).

A = −·487, B = +·771, C = +·410; D = +·845, E = +·534;
G = −·219, H = +·346, K = −·912.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Karenko		0·6	251	0 19	+10	0 29	+14	—	—
Taihoku		1·1	319	0 15	− 1	0 33	+ 5	—	—
Taityu	N.	1·4	268	0 30	+10	0 45	+ 9	—	—
Isigakizima		1·7	86	0 22	− 2	0 42	− 2	—	—
Tainan		2·2	238	0 39	+ 8	1 10	S_g	—	—
Takao		2·4	230	0 40	+ 6	1 1	− 1	—	—
Hokoto		2·6	255	0 38	+ 1	1 8	+ 1	—	—
Kosyun		2·6	213	0 37	0	1 7	0	—	—
Naha		5·2	66	1 20	+ 6	2 26	+13	—	—
Nake		7·7	56	1 46	− 3	3 21	+ 5	—	—
Hong Kong		7·7	258	2 14	P*	3 22	+ 6	4·0	5·3
Nanking		8·4	339	i 1 56	− 3	3 29	− 5	4·2	4·7
Manila		9·7	188	2 40	+23	8 0	?	—	—
Tomie		10·1	33	2 20	− 2	5 7	S*	—	—
Nagasaki		10·8	36	i 2 32	0	e 5 38	S_g	(e 5·6)	—
Miyazaki		11·2	44	2 37	0	4 46	+ 3	—	—
Kumamoto		11·3	39	2 40	+ 1	6 50	L	(6·8)	—
Hukuoka		11·8	35	i 2 48	+ 2	e 4 55	− 3	e 6·9	8·8
	B.	11·8	35	2 45	− 1	6 41	−L	(6·7)	—
Matuyama		13·3	41	e 3 8	+ 2	—	—	—	—
Zinsen		13·8	14	3 10	− 3	5 52	+ 6	—	—
Phu-Lien		14·9	260	e 3 23	− 4	e 6 30	+17	7·1	—
Sumoto	E.	14·9	44	3 33	+ 6	e 6 15	+ 2	e 8·6	10·7
	N.	14·9	44	3 36	+ 9	e 6 34	+21	e 8·8	11·1
Kobe		15·2	44	e 3 39	+ 8	e 7 3	+43	—	9·2
Osaka		15·6	45	3 57	+21	7 15	+48	10·2	—
Kameyama		16·3	46	3 2	−43	7 5	+20	—	—
Chiufeng		16·7	343	i 3 48	− 2	i 7 4	+ 9	i 9·3	11·3
Gihu		16·8	45	3 45	− 7	7 34	+37	—	—
Nagoya		16·8	46	e 2 45	−67	3 56	−181	—	—
Titizima		18·1	77	4 5	− 3	7 17	−10	—	—
Mizusawa	E.	21·8	42	(4 40)	− 9	4 40	P	12·2	—
Ootomari		27·8	31	e 12 24	?	—	—	15·7	—
Calcutta		31·1	274	5 26	−49	11 19	− 2	17·3	—
Agra	E.	39·8	284	7 28	− 2	—	—	e 22·6	—
Hyderabad		41·4	270	13 23	S	(13 23)	−34	21·4	25·6
Almata		41·5	310	7 48	+ 4	—	—	—	—
Andijan		44·5	305	e 8 14	+ 5	—	—	—	—
Kodaikanal		44·8	261	8 4	− 7	—	—	—	—
Bombay		46·1	274	8 17	− 4	—	—	—	—
Ekaterinburg		54·5	324	i 9 19	− 6	i 17 8	+ 6	33·1	34·9
Adelaide		61·2	165	—	—	i 18 14	−18	e 28·4	36·8
Tiflis		65·1	308	i 10 33	− 6	e 19 34	+13	39·9	43·5
Melbourne		65·6	161	e 14 49	?	i 19 20	− 7	35·7	—
Kucino		67·1	323	—	—	e 19 49	+ 3	33·4	43·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Pulkovo		70·2	329	11 3	− 9	20 8	−16	38·7	44·4
Helsingfors		72·7	331	e 11 15	−12	e 21 25	PS	e 38·1	—
Ksara		74·0	300	e 11 35	0	e 21 5	− 3	59·1	—
Copenhagen		80·5	329	—	—	22 22	+ 1	40·1	—
Vienna	Z.	82·0	321	i 12 13	− 5	—	—	—	—
Cheb		83·4	323	—	—	e 37 4?	?	51·1	55·1
Triest		84·8	319	—	—	e 24 9	PS	e 50·1	—
Stuttgart		85·9	323	e 12 31	− 7	e 23 16	− 1	e 46·1	55·5
De Bilt		86·1	327	—	—	e 23 16	− 2	e 41·1	56·2
Strasbourg		86·8	323	12 7	−35	—	—	40·1	55·6
Florence		87·4	317	12 19	−26	22 19	−72	35·1	42·1
Piacenza		87·6	320	—	—	e 23 20	−13	43·1	58·1
Paris		89·4	325	e 12 47	− 8	—	—	47·1	56·1
Tinemaha		96·4	45	e 13 25	− 2	—	—	—	—
La Paz	N.	167·6	54	e 20 5	[+ 3]	—	—	—	—

Additional readings :—
Hong Kong S = +3m.35s.
Nanking iZ = +3m.50s.
Hukuoka eS = +5m.50s. = S* +1s.
Osaka i = +4m.16s. and +5m.32s.
Chiufeng iPP = +3m.57s., i = +7m.52s.
Mizusawa SN = +5m.10s.
Hyderabad S = +17m.36s. = S_cS −14s.
Kucino eSS = +27m.33s.
Helsingfors eZ = +11m.19s., eN = +11m.36s.
Ksara eE = +18m.7s.
Triest e = +35m.44s.
Long waves were also recorded at Honolulu T.H., Riverview, Ivigtut, San Juan, Ottawa, and other European stations.

Oct. 23d. Readings also at 0h. (near Amboina), 1h. (Hong Kong, Bombay, and near Amboina), 4h. (near Nagoya, Tokyo, and Tyosi), 5h. (Nagoya), 9h. (Zagreb (2), Zi-ka-wei, near Yalta, and near Manila), 11h. (near Apia), 12h. (Huancayo and near Amboina), 13h. (Ksara), 14h. (Zi-ka-wei and near Amboina), 15h. (near Malabar), 20h. (near Amboina), 21h. (near Samarkand and near Taihoku), 23h. (near Andijan and Samarkand).

Oct. 24d. Readings at 12h. (Almeria, Pasadena, Tinemaha, Madison, Florissant, and St. Louis), 15h. (Branner), 18h. (Baku, Ekaterinburg, Melbourne, Riverview, Perth, La Paz, near Mizusawa, Nagoya, and Tyosi), 19h. (Ekaterinburg, Tiflis, Pasadena, Tinemaha, Riverview, and Wellington).

Oct. 25d. 17h. 2m. 13s. Epicentre 47°·2N. 144°·0E. N.1.

Tokyo gives epicentre 46°·3N. 145°·3E.

A = −·550, B = +·399, C = +·734 ; D = +·588, E = +·809 ;
G = −·594, H = +·431, K = −·679.

A *depth* of focus 0·045 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Ootomari	+1·4	1·0	237	0 51	+17	1 30	+28	—	1·5
Sikka	+1·1	2·1	344	1 43	S	(1 43)	+21	—	2·7
Haboro	+0·8	3·2	210	(0 57)	0	(1 18)	−24	—	—
Asahigawa	+0·6	3·6	199	1 9	+ 9	1 58	+10	—	—
Nemuro	+0·5	4·0	164	1 1	− 3	1 52	− 3	—	—
Kusiro	+0·4	4·2	176	1 7	+ 1	1 59	+ 1	—	—
Obihiro	+0·4	4·3	188	1 21	+14	2 19	+19	—	—
Sapporo	+0·4	4·5	204	1 17	+ 7	2 12	+ 7	—	—
Muroran	+0·1	5·4	204	1 23	+ 5	2 23	+ 3	—	—
Hakodate	+0·1	5·9	205	1 58	+33	3 7	+34	—	—

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.
Aomori		−0·1	6·8	201	1 36	+ 1	2 51	0	—	—
Morioka		−0·2	7·8	197	1 47	− 1	3 9	− 5	—	—
Akita		−0·2	8·0	202	1 51	0	3 17	− 2	—	—
Mizusawa		−0·3	8·3	195	1 54	+ 1	3 24	0	—	—
Sendai		−0·4	9·2	196	2 5	0	3 39	− 5	—	—
Hukusima		−0·5	9·8	197	2 11	0	3 55	− 1	—	—
Niigata		−0·6	10·0	203	2 16	+ 3	3 59	0	—	—
Wazima		−0·7	11·1	211	2 28	+ 2	4 26	+ 3	—	—
Mito		−0·7	11·1	195	2 25	− 1	4 21	− 2	—	—
Tukubasan		−0·7	11·3	196	2 30	+ 1	4 26	− 2	—	—
Maebasi		−0·7	11·4	201	2 31	0	4 31	0	—	—
Nagano		−0·7	11·4	204	2 32	+ 1	4 33	+ 2	—	—
Kumagaya		−0·7	11·6	199	2 33	0	4 35	− 1	—	—
Oiwake		−0·7	11·6	202	2 34	+ 1	4 36	0	—	—
Tyosi		−0·7	11·7	192	i 2 34	− 1	4 34	− 4	—	4·7
Tokyo		−0·8	12·0	197	2 37	0	4 45	+ 2	—	—
Yokohama		−0·8	12·2	197	2 44	+ 4	4 51	+ 3	—	—
Mera		−0·9	12·7	196	2 42	− 4	4 41	−17	—	—
Misima		−0·9	12·7	199	2 44	− 2	4 57	− 1	—	—
Numadu		−0·9	12·7	199	2 46	0	5 11	+13	—	—
Gihu		−0·9	13·0	207	2 48	− 2	5 4	− 1	—	—
Nagoya		−0·9	13·1	206	e 2 51	0	5 12	+ 4	—	5·2
Hikone		−0·9	13·3	209	2 53	− 1	5 8	− 5	—	—
Hamamatu		−0·9	13·4	203	2 57	+ 2	4 50	−25	—	—
Toyooka		−1·0	13·5	213	i 2 54	− 1	i 5 17	+ 2	—	5·4
Kameyama		−1·0	13·6	207	2 57	+ 1	5 20	+ 3	—	—
Kyoto		−1·0	13·7	210	2 55	− 3	5 18	− 2	—	—
Osaka		−1·1	14·1	210	3 1	− 1	(5 27)	0	5·5	5·7
Kobe		−1·1	14·2	211	e 2 59	− 4	5 30	+ 1	—	5·6
Hatidyozima		−1·1	14·5	194	3 7	0	5 37	0	—	—
Sumoto		−1·1	14·6	211	3 5	− 4	5 36	− 3	—	5·7
Wakayama		−1·1	14·6	210	3 6	− 3	5 38	− 1	—	—
Siomisaki		−1·2	15·1	207	3 17	+ 3	5 59	+10	—	—
Koti		−1·2	15·8	214	i 3 23	0	6 5	0	—	—
Matuyama		−1·2	15·8	216	i 3 20	− 3	i 6 8	+ 3	—	6·2
Zinsen		−1·2	16·1	238	3 24	− 3	6 9	− 4	—	—
Taikyu		−1·2	16·1	231	3 26	− 1	6 7	− 6	—	—
Hukuoka		−1·4	17·1	222	3 33	− 5	6 28	− 3	—	—
	B.	−1·4	17·1	222	3 34	− 4	6 27	− 4	—	—
Kumamoto		−1·5	17·6	220	3 39	− 4	6 37	− 4	—	—
Miyazaki		−1·6	18·0	217	3 44	− 2	6 42	− 6	—	—
Nagasaki		−1·6	18·0	225	i 3 45	− 1	e 6 45	− 3	—	—
Tomie		−1·6	18·7	224	3 49	− 6	6 57	− 7	—	—
Titizima		−1·8	20·2	185	4 2	− 9	—	—	—	—
Chiufeng		−1·9	21·3	260	4 18	− 5	e 7 51	− 3	—	—
Nake		−2·0	22·0	216	4 22	− 8	6 27	−99	—	—
Zi-ka-wei	Z.	−2·2	23·6	235	e 4 9	−35	9 9	+35	12·4	14·2
Nanking		−2·3	24·5	241	e 4 50	− 3	8 34	−16	—	—
Naha		−2·3	24·6	218	4 45	− 9	8 36	−16	—	—
Hong Kong		−3·3	34·5	234	11 8	S	(11 8)	−15	(14·0)	16·4
Phu-Lien		−3·7	40·1	241	10 47?	?	—	—	—	—
Ekaterinburg		−4·3	48·9	314	i 8 14	+ 4	i 14 50	+ 6	—	—
Andijan		−4·4	50·1	290	e 8 17	− 1	—	—	—	—
Calcutta		−4·4	50·6	260	12 32	?	15 47	+40	17·8	—
Kucino		−5·0	60·0	321	—	—	e 19 47	(− 5)	e 33·7	—
Pulkovo		−5·1	60·3	327	e 9 27	− 3	e 17 20	+ 8	23·8	—
Hyderabad		−5·1	60·8	263	9 34	0	17 22	+ 3	24·1	37·1
Batavia		−5·1	62·7	222	i 9 42	− 5	i 17 36	− 8	—	—
Bombay		−5·1	63·6	268	17 57	S	(17 57)	+ 1	—	—
Baku		−5·2	64·1	301	10 1	+ 4	e 19 11	PS	31·8	—

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.
Tiflis		−5·2	66·0	306	i	10	10	0	18 30	+ 4	38·8	—
Tinemaha		−5·3	68·3	58	e	10	27	+ 2	—	—	—	—
Theodosia		−5·3	68·6	312	e	10	29	+ 2	—	—	—	—
Simferopol		−5·4	69·2	314	e	10	31	0	—	—	—	—
Yalta		−5·4	69·5	313	e	10	33	0	—	—	—	—
Pasadena		−5·4	70·5	60	e	10	39	0	—	—	—	—
Riverside	N.	−5·4	71·0	60	e	11	54	+72	—	—	—	—
Vienna		−5·5	74·3	326	i	11	1	− 2	—	—	—	—
Chur		−5·6	77·9	330	e	11	22	− 3	—	—	—	—
Neuchatel		−5·6	78·6	330	e	11	25	− 4	—	—	—	—

Additional readings and notes :—
Haboro readings have been *increased* by 2m.
Toyooka i = +2m.56s., iN = +3m.7s.
Kobe iZ = +3m.2s., iN = +4m.37s.
Koti eS$_c$S = +14m.36s.
Nagasaki iS? = +6m.53s.
Chiufeng i = +6m.5s., eSS = +9m.26s., i = +10m.14s.
Hong Kong gives S as P and L as S.
Kucino e = +24m.17s.
Batavia iZ = +11m.7s., eZ = +17m.52s.
Tiflis e = +11m.39s. and +14m.25s., SKS = +19m.29s., e = +25m.11s. and +27m.23s.
Tinemaha eEZ = +11m.56s.
Pasadena eZ = +12m.8s.
Vienna iZ = +12m.29s.
Chur eS = +12m.50s.
Long waves were also recorded at Copenhagen.

Oct. 25d. Readings also at 0h. (near Nanking), 1h. (Hastings, Lick, Branner, Ukiah, and near Berkeley), 2h. (Nagoya, near Tyosi, near Andijan, and near Samarkand), 3h. (Berkeley, Branner, and near Lick), 5h. (Vienna), 8h. (Tiflis), 10h. (Lick, Branner, and Berkeley), 11h. (Almeria and Tyosi), 12h. (Nanking and near Batavia), 15h. (Tashkent), 16h. (near Apia), 18h. (Branner).

Oct. 26d. Readings at 1h. (Hastings, Berkeley, Branner, Ottawa, Pasadena, and Tinemaha), 2h. (Edinburgh), 3h. (Adelaide, Melbourne, Riverview, Mizusawa, Nagoya, Tinemaha, Pasadena, Branner, and Neuchatel), 4h. (Paris and Tyosi (2)), 5h. (Tyosi), 6h. (Mount Wilson, Pasadena, Tinemaha, and near Apia), 8h. (near Medan), 9h. (Mount Wilson, Pasadena, Branner, and Tinemaha), 11h. (Tucson and Wellington), 14h. (near Sumoto), 16h. (Berkeley and Branner), 17h. (Perth and near Amboina), 18h. (Alicante, near Batavia and Malabar), 19h. (Melbourne, Riverview, Perth, and Wellington), 20h. (Baku, Ekaterinburg, Tiflis, and near Sumoto), 23h. (Apia, Wellington, Riverview, Tinemaha, and Huancayo).

Oct. 27d. 11h. Shock in Upper Valley of Toyo River, Aiti prefecture.
The readings are as follows :—
Nagoya eP = 52m.54s., S = 53m.29s., M = 53m.30s.
Osaka P = 53m.3s., L = 53m.34s., i = 53m.37s., M = 53m.53s.
Toyooka iP = 53m.7s., iSEN = 53m.45s., M = 53m.46s.
Tyosi P = 53m.16s., S = 53m.57s.
Kobe eEN = 53m.38s., M = 53m.40s.
Sumoto P = 53m.42s.

Oct. 27d. Readings also at 0h. (Apia and Granada), 1h. (Bombay), 3h. (Suva, Apia, and near Tananarive), 4h. (Wellington), 5h. (Huancayo), 8h. (near Sumoto (2) and Matuyama), 10h. (La Jolla, Mount Wilson, Pasadena, Ottawa, Tinemaha, and Tucson), 13h. (Wellington), 23h. (Bombay and near Calcutta).

Oct. 28d. Readings at 1h. (Lick and near Wellington (2)), 3h. (near Tananarive), 4h. (Tiflis), 5h. (Mizusawa), 7h. (Alicante), 10h. (Ottawa, Tinemaha, Branner, and Ukiah), 11h. (Agra, Baku, Ekaterinburg, Tiflis, Bombay, and Kodaikanal), 13h. (Paris and Strasbourg), 14h. (near Tyosi), 16h. (near Batavia), 18h. (Lick), 19h. (Huancayo and San Juan), 20h. (near Medan).

Oct. 29d. 3h. 36m. 55s. Epicentre 19°·9N. 104°·9W. N.2.

A = −·242, B = −·909, C = +·340; D = −·966, E = +·257; G = −·088, H = −·329, K = −·940.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		13·5	338	i 3 11	+ 2	e 5 54	+15	e 6·9	—
Riverside		17·9	324	e 4 5	0	—	—	—	—
Pasadena		18·4	323	i 4 12	+ 1	i 7 46	+13	e 10·2	—
Mount Wilson		18·5	323	e 4 12	− 1	—	—	—	—
Tinemaha		20·8	329	e 4 38	0	—	—	—	—
St. Louis		22·6	31	e 4 58	+ 1	e 9 16	+19	i 12·2	14·6
Florissant		22·7	30	e 4 59	+ 1	e 9 17	+18	i 12·2	14·6
Berkeley		23·4	323	i 5 4	− 1	e 9 55	+43	—	—
Ukiah		24·9	324	—	—	e 9 48	+ 9	e 14·4	—
Columbia		25·4	51	—	—	e 10 13	+25	16·1	—
Cincinnati		26·1	38	i 4 54	−36	i 9 56	− 4	i 13·8	16·9
Chicago		26·3	30	—	—	e 10 35	+32	i 13·9	—
Madison		26·6	26	—	—	e 10 15	+ 6	—	16·3
Pittsburgh		29·6	40	—	—	e 11 50	+52	i 16·6	—
Toronto		31·9	36	—	—	e 12 13	+39	e 17·3	—
Victoria		32·2	337	11 46	S	(11 46)	+ 8	17·3	21·4
Ottawa		35·0	36	—	—	e 12 33	+12	e 20·1	—
La Paz	N.	51·3	132	e 9 1	0	i 16 23	+ 4	—	—
De Bilt		86·0	35	—	—	e 23 17	− 1	e 52·1	—
Copenhagen		87·9	30	—	—	23 5?	[−14]	53·1	—
Pulkovo		92·4	21	e 18 39	PPP	e 23 39	[− 8]	46·1	55·3
Ekaterinburg		102·3	8	—	—	e 24 32	[− 5]	50·1	—
Tiflis		112·3	24	e 19 5?	PP	e 29 2	PS	e 59·1	—
Baku		115·3	21	—	—	e 30 27	PS	e 58·1	—

Additional readings:—
Tucson e = +3m.17s.
Pasadena iZ = +4m.41s., eE = +7m.10s.
Cincinnati iSSZ = +11m.33s., eN = +13m.35s.
Ottawa e = +17m.5s. = S_gS −7s.
Ekaterinburg e = +27m.16s. = PS +6s.
Long waves were also recorded at Honolulu T.H. and other American and European stations.

Oct. 29d. 9h. 59m. 24s. Epicentre 39°·5N. 72°·0E. X.
(as on 1927 May 16d., but see 11h.).

A = +·234, B = +·734, C = +·636; D = +·951, E = −·309; G = +·197, H = +·605, K = −·772.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	1·3	13	0 19	+ 1	(0 37)	+ 4	0·6	—
Tchimkent	3·5	328	1 0	P*	(i 1 50)	S*	i 1·8	—
Samarkand	4·1	274	(1 6)	P_g	—	—	(e 2·1)	(2·9)
Almata	5·1	43	e 1 14	+ 1	—	—	i 2·5	2·7
Baku	17·2	280	e 3 53	− 4	e 7 48	+42	9·5	—
Ekaterinburg	18·9	340	i 4 15	− 2	e 7 51	+ 7	i 11·4	11·9
Bombay	20·6	178	8 35	S	(8 35)	+17	—	—
Tiflis	20·7	285	4 37	0	8 52	+32	12·6	—

Additional reading and notes:—
Samarkand i = (+1m.15s.) readings have been *diminished* by 6m., see also at 11h.
Long waves were also recorded at Kodaikanal, Pulkovo, Helsingfors, Copenhagen, and De Bilt.

Oct. 29d. 11h. 8m. 55s. Epicentre 39°·5N. 72°·0E. (as at 9h.). R.1.

The Central Asia stations give epicentre 39°32′N. 71°55′E.

Probable error of epicentre ±0°·22.

A = +·234, B = +·734, C = +·636; D = +·951, E = −·309; G = +·197, H = +·605, K = −·772.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan		1·3	13	i 0 21	+ 3	—	—	—	—
Samarkand		4·1	274	(i 1 0)	+ 2	—	—	(e 1·9)	—
Almata		5·1	43	i 1 14	+ 1	—	—	i 2·6	2·6
Dehra Dun		10·3	150	2 25	0	4 25	+ 4	5·9	6·1
Agra	E.	13·3	156	2 59	− 7	—	—	—	—
Baku		17·2	280	e 3 59	+ 2	i 7 15	+ 9	9·0	18·1
Ekaterinburg		18·9	340	i 4 17	0	7 55	+11	i 11·4	13·7
Bombay		20·6	178	4 31	− 5	8 26	+ 8	11·1	12·6
Tiflis		20·7	285	4 41	+ 4	—	—	e 12·5	19·2
Calcutta		21·9	136	4 49	− 1	8 44	0	11·4	—
Hyderabad		22·7	164	4 53	− 5	8 59	0	11·9	13·7
Theodosia		27·6	294	e 5 46	+ 2	e 11 20	SS	13·6	—
Kucino		27·8	318	5 47	+ 2	10 33	+ 5	14·9	17·5
Simferopol		28·5	293	e 5 53	+ 1	e 11 51	SS	—	—
Yalta		28·5	293	e 5 46	− 6	—	—	15·1	—
Sebastopol		28·9	293	e 5 55	0	e 11 57	SS	—	—
Ksara	N.	29·5	270	e 6 26	+25	e 11 3	+ 7	—	—
Kodaikanal		29·7	169	11 5?	S	(11 5?)	+ 6	18·1	22·1
Pulkovo		33·0	323	6 33	+ 1	11 57	+ 6	18·1	20·4
Chiufeng		33·3	73	e 6 33	− 1	e 13 28	SS	e 17·4	21·8
Colombo		33·3	166	11 35	S	(11 35)	−20	(17·2)	21·8
Helwan		34·5	267	e 5 55	−50	e 11 35	−39	—	25·8
Helsingfors		35·7	322	e 6 52	− 3	e 12 35	+ 3	e 19·1	—
Königsberg		37·3	311	e 9 20	(−13)	e 13 42	+46	—	23·1
Belgrade		38·1	294	e 8 41	PP	e 13 13	+ 5	e 28·1	—
Budapest		38·6	300	e 7 23	+ 3	16 11	SSS	22·6	25·1
Upsala		39·2	319	e 7 23	− 2	e 13 25	+ 1	—	25·2
Hong Kong		39·4	103	13 28	S	(13 28)	+ 1	—	24·7
Vienna		40·1	301	e 7 50	+17	—	—	—	—
Zi-ka-wei	Z.	40·4	86	e 16 51	SS	20 45	L	25·3	27·1
Zagreb		40·9	298	e 7 41	+ 1	—	—	e 19·1	—
Lund		41·5	314	7 48	+ 4	14 5	+ 6	—	—
Potsdam		41·8	308	i 7 47	0	e 14 5?	+ 2	e 22·1	26·1
Copenhagen		41·9	314	7 49	+ 1	14 11	+ 6	—	—
Cheb		42·6	305	e 9 42	(− 8)	e 17 46	(−11)	e 24·1	28·1
Triest		42·6	298	i 7 54	+ 1	i 14 22	+ 7	—	25·1
Jena		42·9	305	e 7 57	+ 1	—	—	e 22·1	25·1
Medan		43·1	139	e 9 35	PP	—	—	27·1	—
Innsbruck		43·4	300	8 5?·	+ 5	—	—	—	—
Hamburg		43·5	310	e 8 1	0	e 17 46	SS	e 24·6	27·1
Venice		43·5	298	11 5?	?	—	—	—	—
Göttingen		43·8	308	i 8 4	+ 1	e 17 35	SS	—	28·4
Florence		44·7	295	7 5	−65	14 50	+ 4	20·1	26·1
Stuttgart		44·9	305	e 8 13	+ 1	e 14 48	− 1	e 24·1	29·4
Chur		45·1	301	e 8 13	− 1	—	—	—	—
Bergen		45·4	321	9 40	PP	19 5?	?	—	27·1
Piacenza		45·5	299	e 8 25	+ 8	15 7	+10	—	33·2
Zurich		45·6	301	e 8 16	− 2	—	—	—	—
Strasbourg		45·9	303	e 8 19	− 1	—	—	e 18·1	—
De Bilt		46·5	309	e 8 27	+ 2	e 15 17	+ 5	e 24·1	28·1
Neuchatel		46·7	301	e 8 27	+ 1	—	—	—	—
Uccle		47·4	307	e 8 34	+ 2	e 15 33	+ 9	25·1	—
Paris		49·1	305	—	—	e 16 14	+26	26·1	34·1
Manila		49·4	106	e 15 11	S	(e 15 11)	−41	24·8	—
Kew		50·1	310	e 10 50	PP	e 16 9	+ 7	25·1	32·8

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Edinburgh	50·4	315	—	—	e 16 5?	− 1	30·1	36·0
Stonyhurst	50·6	312	—	—	e 20 5?	SS	—	35·1
Bidston	51·0	312	—	—	e 19 51	SS	e 28·7	—
Alicante	55·0	293	e 10 17	+48	—	—	e 32·6	—
Toledo	56·8	296	e 9 40	− 2	e 19 37	(+ 7)	e 32·1	—
Almeria	56·9	292	i 9 36	− 6	e 18 49	+74	e 38·6	—
Malaga	58·5	293	9 51	− 3	19 40	(− 2)	33·4	35·6
San Fernando	60·0	293	11 17	+73	18 17	+ 1	—	38·6
Ottawa	90·4	338	—	—	e 23 23	[−12]	e 43·1	—
Pasadena	105·7	8	e 18 18	[+14]	—	—	—	—

Additional readings and notes :—
Samarkand readings have been *diminished* by 6m.
Almata i = +1m.28s. = P* +4s.
Kodaikanal S = +16m.5s. ?
Colombo gives S as P and L as S.
Helsingfors iPZ = +6m.57s., eE = +7m.50s., eSE = +12m.39s., eSSEN = +15m.2s., eSSSE = +18m.30s. ; T_o = 11h.8m.25s.
Königsberg eN = +15m.47s., eE = +16m.5s.
Belgrade e = +9m.17s. = P_cP − 19s. and +24m.33s.
Budapest PP = +8m.43s.
Upsala iPPE = +8m.49s., iSSN = +16m.6s.
Vienna P? = +9m.12s. = PP + 12s., iN = +10m.13s., SKP? = +12m.3s., iN = +16m.50s., PPP? = +17m.19s., iN = +18m.4s., iE = +18m.18s., SKKS = [Δ > 180°] = +22m.55s., iE = +23m.16s., +23m.26s., and +26m.9s., eN = +26m.16s., PPS? = +29m.29s.
Zagreb ePP = +9m.29s.
Lund i = +9m.26s. = PP + 11s.
Potsdam eN = +7m.53s., i = +9m.29s. = PP + 11s., iEZ = +9m.54s. = P_cP + 6s., e = +16m.35s. = SS − 14s.
Copenhagen +9m.28s. = PP + 9s.
Triest PP = +9m.41s., PPP = +10m.11s., eSS = +17m.24s.
Jena eN = +8m.35s., eE = +9m.55s. = P_cP + 4s., eZ = +9m.59s.
Hamburg eE = +17m.59s.
Göttingen eEZ = +9m.53s. = P_cP − 1s.
Florence i = +17m.7s. and +19m.35s.
Stuttgart ePP = +10m.5s., eSS = +18m.5s. = S_cS − 6s.
Bergen P = +9m.50s. = P_cP − 10s.
De Bilt eSS = +18m.49s.
Strasbourg e = +10m.7s. = PP + 7s.
Uccle ePP = +10m.24s.
Manila S?EN = +20m.37s. = SSS + 9s.
Kew eSSEN = +19m.49s.
Pasadena eZ = +18m.32s. = PP + 7s.
Long waves were also recorded at Nanking, Phu-Lien, Tortosa, Granada, and Cincinnati.

Oct. 29d. Readings also at 1h. (Tananarive), 2h. (Harvard), 5h. and 6h. (Samarkand), 7h. (Tyosi, near Chur, and Zurich), 9h. (Wellington), 11h. (Nagoya and near Sumoto), 12h. (San Juan and near Balboa Heights), 13h. (near Andijan), 14h. (Pasadena and Tinemaha), 15h. (near Andijan), 16h. (Alicante), 17h. (near Nagoya), 18h. (Huancayo and near La Paz (2)), 19h. (2) and 21h. (Andijan), 22h. (Andijan and Strasbourg), 23h. (Andijan).

Oct. 30d. 1h. 1m. 13s. Epicentre 38°·0N. 135°·5E. N.3.

A = − ·562, B = + ·552, C = + ·616 ; D = + ·701, E = + ·713 ; G = − ·439, H = + ·432, K = − ·788.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Toyooka	2·5	193	i 0 44	P_g	i 1 19	S_g	1·3
Nagoya	3·1	157	0 41	− 3	1 11	− 9	1·2
Osaka	3·3	180	0 48	+ 1	i 1 24	− 1	1·8
Kobe	3·4	184	i 0 47	− 2	1 25	− 2	1·4
Sumoto	3·7	188	0 51	− 2	1 31	− 4	1·6
Mizusawa	4·5	74	1 5	+ 1	2 2	+ 7	—
Tyosi	4·9	116	—	—	1 40	−25	—

No additional readings.

Oct. 30d. 20h. 47m. 2s. Epicentre **55°·0N. 159°·7W.** R.1.
(as on 16d.).

Probable error of epicentre ±0°·21.

A = −·538, B = −·199, C = +·819; D = −·347, E = +·938;
G = −·768, H = −·284, K = −·574.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka		13·7	71	—	—	i 5 50	+ 6	i 6·0	—
Victoria	E.	23·2	91	5 5	+ 2	(9 15)	+ 7	9·2	11·9
Seattle		24·1	92	e 5 28	+17	e 9 45	+20	e 12·2	—
Ukiah		29·0	108	e 6 5	+ 9	i 10 52	+ 4	e 13·6	—
Berkeley		30·4	109	6 10	+ 1	i 11 12	+ 2	e 14·1	—
Lick		31·1	109	e 6 16	+ 1	—	—	—	—
Bozeman		31·7	86	—	—	e 11 30	− 1	e 14·7	—
Tinemaha		33·2	106	e 6 35	+ 1	e 11 58	+ 4	—	—
Honolulu T.H.		33·7	177	e 6 31	− 7	11 58	− 3	15·2	—
Santa Barbara		34·3	110	e 7 5	+22	e 12 3	− 8	—	—
Mount Wilson		35·4	108	e 6 52	− 1	e 12 31	+ 4	—	—
Pasadena	Z.	35·4	108	i 6 52	− 1	i 12 27	0	e 16·5	—
Riverside		35·9	108	e 7 4	+ 7	e 12 38	+ 3	—	—
Tucson		40·8	103	7 48	+ 9	i 13 52	+ 4	17·2	—
Mizusawa		41·9	273	7 46	− 2	17 46	(− 7)	—	—
Maebasi		44·9	273	8 11	− 1	14 54	+ 5	—	—
Madison		45·5	74	i 8 17	0	i 14 55	− 2	21·6	—
Numadu		45·9	271	8 20	0	15 4	+ 1	—	—
Nagoya		47·0	272	e 6 46	?	e 8 57	P	—	—
Chicago		47·4	75	i 8 48	+16	—	—	i 20·7	—
Kameyama		47·5	272	8 34	+ 2	15 30	+ 4	—	—
Florissant	E.	47·8	80	e 8 27	− 8	i 15 29	− 1	i 22·0	27·0
St. Louis		48·0	80	e 8 28	− 8	i 15 30	− 3	e 22·0	27·5
Osaka		48·1	273	8 38	+ 1	15 36	+ 2	18·7	—
Kobe		48·4	273	e 8 39	0	e 15 39	+ 1	—	28·6
Wakayama		48·7	272	8 41	0	15 42	− 1	—	—
Sumoto	E.	48·8	273	8 41	− 1	e 15 43	− 1	—	—
Ann Arbor		49·1	71	—	—	i 15 46	− 2	e 25·4	29·5
Little Rock	E.	49·6	85	e 8 21	−27	i 15 20	−35	—	—
Toronto		50·5	68	e 9 0	+ 5	i 16 5	− 3	24·8	28·4
Buffalo		51·3	68	i 9 2	+ 1	i 16 20	+ 1	e 27·0	—
Ottawa		51·3	63	e 9 1	0	e 16 17	− 2	e 27·0	—
Pittsburgh		52·5	70	—	—	i 16 21	−14	i 25·6	—
Nagasaki		52·8	276	9 12	0	e 16 43	+ 4	—	—
Charlottesville		55·0	72	—	—	i 16 56	−13	e 26·3	—
Georgetown		55·1	70	e 9 8	−22	i 17 7	− 4	e 24·0	—
Chiufeng		55·1	292	e 9 29	− 1	e 17 15	+ 4	e 27·9	35·7
Fordham		55·5	66	e 9 33	+ 1	i 17 18	+ 2	e 28·0	—
Harvard		55·8	63	—	—	e 17 29	+ 9	e 27·0	—
East Machias		55·9	59	—	—	i 17 26	+ 5	e 26·0	—
Columbia		56·5	77	—	—	17 31	+ 1	e 25·0	—
Zi-ka-wei	Z.	58·7	281	e 10 0	+ 5	e 18 6	+ 7	30·4	40·2
Nanking		59·6	284	i 9 59	− 3	—	—	—	42·1
Ekaterinburg		63·5	337	i 9 58	−31	i 18 24	−37	33·0	—
Helsingfors		64·8	358	i 10 37	0	e 19 17	0	e 29·0	—
Pulkovo		65·0	355	10 36	− 3	19 16	− 4	27·0	44·4
Upsala		65·1	2	i 10 39	0	e 19 17	− 4	e 33·0	46·6
Edinburgh		67·4	15	—	—	i 20 8	PS	39·0	44·0
Kucino		68·3	351	e 11 4	+ 4	—	—	31·8	43·7
Copenhagen		69·1	6	11 4	− 1	20 14	+ 4	31·0	—
Lund		69·2	6	11 7	+ 1	20 14	+ 3	37·0	—
Hong Kong		69·7	281	20 21	S	(20 21)	+ 3	—	45·4
Bidston		69·9	15	e 11 23	+13	e 20 58	+38	36·6	—
Königsberg		70·2	0	i 11 51	+39	—	—	e 29·7	47·0
Almata		70·6	320	e 10 44	−30	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hamburg		71·1	8	i 11 18	+ 1	i 20 55	PS	e 35·0	41·0
Manila		72·0	270	11 20	− 3	21 0	+15	35·5	—
De Bilt		72·2	10	i 11 25	+ 1	e 20 54	+ 7	e 36·0	45·5
Kew		72·2	14	i 11 24	0	e 20 50	+ 3	e 35·0	38·6
Potsdam		72·5	6	i 11 24	− 2	i 20 52	+ 1	e 38·0	48·0
Göttingen		73·1	8	i 11 29	0	e 20 58	0	e 37·0	41·0
Uccle		73·4	12	i 11 30	− 1	e 21 8	+ 7	35·0	—
Jena		73·9	6	e 12 58?	+84	—	—	—	—
Andijan		74·4	322	e 11 37	0	—	—	38·0	—
Cheb		74·8	5	—	—	e 20 58?	−20	e 39·0	—
Tashkent		75·1	324	e 11 39	− 2	i 21 21	0	e 37·7	47·0
Paris		75·1	13	i 11 40	− 1	e 21 38	+17	38·0	45·0
Stuttgart		75·8	8	i 11 45	0	e 21 30	+ 1	e 38·0	50·1
Strasbourg		75·9	9	i 11 44	− 1	e 21 41	+11	e 31·0	—
Vienna		76·7	3	e 11 39	−11	—	—	e 42·0	59·0
San Juan		77·0	76	e 11 50	− 2	i 21 39	− 4	e 35·0	—
Zurich		77·2	10	e 11 52	− 1	—	—	—	—
Innsbruck		77·4	7	11 58?	+ 4	—	—	—	—
Neuchatel		77·4	10	e 11 53	− 1	—	—	—	—
Budapest		77·5	2	11 53	− 2	22 27	PS	e 42·0	61·0
Chur		77·7	10	e 11 55	− 1	—	—	—	—
Zagreb		79·1	4	e 12 3	0	e 22 6	0	e 42·0	47·0
Triest		79·2	6	e 12 2	− 2	e 22 1	− 6	e 44·0	56·1
Theodosia		79·2	350	e 12 4	0	e 22 4	− 3	—	—
Simferopol		79·4	351	e 12 5	0	—	—	45·1	—
Piacenza		79·6	7	—	—	e 22 22	+11	—	57·0
Yalta		79·8	350	e 12 7	0	e 22 23	+ 9	45·0	—
Florence		80·9	7	i 12 8	− 5	i 22 13	−12	33·0	37·5
Tiflis		81·1	343	i 12 12	− 2	22 31	+ 4	38·6	52·2
Baku		81·4	338	i 12 18	+ 3	—	—	43·0	51·8
Barcelona		82·3	14	—	—	e 22 43	+ 3	e 43·0	48·4
Tortosa	N.	82·7	15	—	—	22 42	− 2	e 47·0	52·9
Toledo		82·9	20	12 21	− 2	22 39	− 7	e 36·4	51·6
Calcutta		83·3	300	11 7	−78	21 32	−78	42·9	—
Agra	E.	84·2	311	12 30	+ 1	—	—	41·7	—
Alicante		85·0	17	e 12 35	+ 2	e 23 13	+ 5	e 40·4	54·4
Granada		85·6	20	i 12 36	0	e 23 12	− 2	e 41·1	50·4
San Fernando		85·8	22	12 32	− 5	23 8	− 8	—	54·5
Malaga		85·9	21	12 37	− 1	i 23 16	− 1	37·9	46·4
Almeria		86·1	18	e 12 48	+ 9	e 23 42	+24	e 48·0	—
Algiers		87·0	14	e 12 44	+ 1	e 23 18	− 9	43·0	—
Hyderabad		92·5	306	13 7	− 2	23 39	[− 8]	38·9	56·4
Medan		93·6	282	i 12 24	−50	i 22 24	?	53·0	—
Bombay		93·8	311	13 20	+ 5	—	—	—	60·1
Huancayo		96·7	102	—	—	i 23 45	[−24]	e 46·6	—
Batavia		97·0	269	e 17 22	PP	e 23 22	[−49]	—	—
Riverview	E.	98·2	219	—	—	i 25 0	−11	—	—
Kodaikanal		99·2	304	13 36	− 4	24 10	[−12]	49·7	—
Colombo		101·0	300	24 27	SKS	(24 27)	[− 4]	—	68·1
La Paz		104·3	98	e 18 40	PP	i 24 37	[− 9]	52·0	66·6

Additional readings :—
Ukiah ePP = +7m.6s., eSS = +12m.18s.
Bozeman eSS = +14m.1s.
Honolulu T.H. ePP = +7m.44s., iSS = +13m.58s.
Pasadena eZ = +8m.6s. = PP +0s.
Tucson ePP = +9m.16s.
Mizusawa SN = +17m.52s. = S_cS − 1s.
Madison eSS = +18m.9s. = S_cS − 6s.
Chicago iPPP = +11m.49s., e = +16m.18s., +16m.38s., i = +18m.26s.
Florissant eP_cPE = +9m.49s., ePSE = +15m.39s., eSSE = +19m.15s.
St. Louis eP_cPEN = +9m.50s., ePSEN = +15m.40s., eEN = +18m.33s. = S_cS +1s., eSSEN = +19m.15s. ; T_o = 20h.46m.54s.
Kobe i = +8m.50s.
Sumoto iSN = +16m.4s.

Continued on next page.

Ann Arbor e = +21m.34s., eE = +25m.4s.
Little Rock iE = +18m.4s., eE = +22m.31s., iE = +23m.34s.. and +28m.46s.
Ottawa ePPN = +11m.10s., eSS = +20m.22s.; T_0 = 20h.46m.54s.
Pittsburgh i = +18m.55s. = S_eS − 6s.
Charlottesville e = +19m.5s. = S_eS − 12s. and +23m.16s.
Georgetown iP_eP = +9m.41s.. iS_eS = +19m.12s.; T_0 = 20h.47m.18s.
Chiufeng i = +11m.33s. = PP + 7s., PP = +12m.6s.
Fordham iPS = +17m.33s.
East Machias i = +17m.17s. = S − 4s., e = +21m.8s. = SS + 6s.
Columbia e = +15m.12s. and +17m.1s.
Helsingfors eSSN = +23m.58s.?, eSSSE = +26m.58s.?; T_0 = 20h.47m.0s.
Kucino e = +18m.55s. and +24m.38s. = SS + 21s.
Lund +20m.26s. = PS − 1s.
Königsberg iE = +18m.10s., eN = +21m.2s. = S_eS.
Kew ePPP = +16m.2s.
Potsdam iPEN = +11m.27s., eZ = +13m.58s.? = PP − 2s., iZ = +21m.16s. = PS + 5s.
Uccle e = +25m.56s. = SS + 22s.
Stuttgart i = +11m.55s., eEN = +21m.46s. = PS − 9s., ePS = +22m.23s., eSS = +26m.28s., e = +30m.58s., eZ = +32m.26s.
Strasbourg ePP = +14m.22s., e = +17m.58s.?
Vienna iPZ = +11m.49s.
Triest ePP = +15m.28s., i = +22m.31s. = PS − 8s., PS = +23m.40s.
Tiflis P_eP = +12m.22s., PP = +15m.48s., SKKS = +22m.39s. = SKS + 10s., PS = +23m.35s., SS = +27m.58s., e = +33m.37s.
Baku i = +19m.19s., e = +23m.32s. = PS + 25s. and +28m.30s.
Toledo i = +12m.36s., PP = +15m.34s., S = +22m.58s.
Granada P_eP = +12m.51s., PP = +15m.54s., S_eS = +23m.54s. = PS − 5s., PS = +24m.12s., iPPS = +24m.22s.
Malaga PP = +15m.56s., SKS = +22m.55s., PS = +23m.39s., PPS = +24m.20s., SS = +29m.8s.
Hyderabad PP = +16m.50s.
Huancayo iSS = +31m.11s., eSSS = +35m.46s.
Batavia i = +18m.22s.
Riverview iE = +25m.18s.
Long waves were also recorded at Phu-Lien, Bergen, Belgrade, Durham, Rio de Janeiro, and Cape Town.

Oct. 30d. Readings also at 1h. (Andijan, Nagoya, near Mizusawa, and Tyosi), 2h. (near Tyosi), 3h. (Baku, Ekaterinburg, Tashkent, Suva, near Andijan, and near Nagoya), 7h. (near Andijan), 11h. (near Nagoya), 13h. (Taihoku), 15h. (Copenhagen and Göttingen), 19h. (Perth), 20h. (near Andijan), 21h. (near Hastings, New Plymouth, and Wellington), 22h. (Christchurch, Tinemaha, Mount Wilson, and Pasadena), 23h. (Tiflis).

Oct. 31d. Readings at 0h. (Andijan), 2h. (near Nagoya), 3h. and 4h. (2) (Andijan), 5h. (Riverview), 6h. (La Paz), 7h. (Andijan and Riverview), 8h. (near Manila), 9h. (near Andijan), 11h. (Lick), 14h. (Port au Prince, Tyosi, and near Nagoya), 15h. (La Paz, Lick, Ukiah, near Berkeley, Branner, and near Andijan), 23h. (near Amboina).

Nov. 1d. 10h. 39m. 18s. Epicentre 21°·5S. 72°·0W. X.
(as on 1926 April 28d.).

A = +·288, B = −·885, C = −·366; D = −·951, E = −·309;
G = −·113, H = +·348, K = −·930.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz	6·2	37	i 1 32	+ 4	i 3 14	S_g	3·7	4·2
Huancayo	9·9	342	e 2 34	+15	—	—	5·7	—
Santiago	12·0	175	2 39	− 9	4 12	−54	4·8	6·1
La Plata	18·2	140	3 17	−52	6 41	−48	8·0	—
Rio de Janeiro	26·8	99	8 42?	(−18)	—	—	—	—
Riverside	70·3	321	e 11 10	− 3	—	—	—	—
Mount Wilson	70·8	321	e 11 16	0	—	—	—	—
Pasadena	70·8	321	i 11 16	0	—	—	—	—
Tinemaha	73·0	323	i 11 29	0	e 21 24	+27	—	—
Suva	100·6	245	—	—	e 43 42	?	—	60·7
Baku	127·7	54	—	—	e 24 33	?	e 63·7	—
Ekaterinburg	130·6	32	i 18 53	[−15]	—	—	57·7	—
Tchimkent	141·8	48	e 19 17	[− 7]	—	—	—	—
Almata	146·2	42	e 19 20	[−16]	—	—	—	—

For Notes see next page.

NOTES TO Nov. 1d. 10h. 39m. 18s.

Additional readings :—
La Paz iN = +1m.47s. =P* +4s., +2m.18s., and +2m.34s. =S −6s.
Huancayo i = +2m.44s., +3m.14s., and +5m.14s. =S_g −7s.
Pasadena iZ = +11m.41s., +11m.51s., and +12m.21s.
Tinemaha e = +21m.51s.
Baku e = +34m.29s.
Ekaterinburg i = +19m.20s., +22m.7s. =PKS −29s., and +27m.56s. = SKKS −29s., e = +38m.28s. =SS −19s.

Nov. 1d. 16h. 19m. 34s. Epicentre 40°·4N. 23°·3E. (as on 1932 Sept. 29d.). R.2.

A = +·699, B = +·301, C = +·648 ; D = +·396, E = −·918 ;
G = +·595, H = +·256, K = −·762.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bari		4·9	281	1 30	P_g	2 40	S_g	3·5	—
Belgrade		4·9	336	e 1 21	P*	i 2 28	S*	—	3·0
Naples	E.	6·9	277	e 1 45	+ 7	e 3 2	+ 6	—	6·8
Catania		7·0	249	e 2 36	S	(e 2 36)	−23	—	—
Zagreb		7·6	318	e 1 46	− 2	i 3 16	+ 2	—	4·6
Budapest		7·7	338	1 48	− 1	3 55	S_g	4·9	9·4
Camerino		8·1	293	1 56	+ 1	—	—	—	—
Sebastopol		8·6	57	—	—	e 3 43	+·4	5·0	—
Triest		8·7	310	e 2 1	− 2	3 46	+ 5	—	5·7
Yalta		9·0	59	e 2 18	+11	(4 3)	+14	4·0	—
Simferopol		9·1	56	e 2 11	+ 2	e 3 59	+ 8	4·9	—
Vienna		9·2	330	e 2 7	− 3	i 4 24	S*	i 5·3	5·4
Venice		9·4	306	2 14	+ 1	—	—	—	—
Florence		9·5	295	e 2 26	+12	5 14	S_g	—	5·7
Prato		9·6	296	e 2 16	0	e 3 47	−16	—	5·8
Treviso		9·7	306	i 2 15	− 2	5 23	S_g	—	6·4
Theodosia		10·0	58	—	—	e 4 0	−13	—	—
Innsbruck		11·0	313	2 32	− 3	6 0	S_g	—	—
Piacenza		11·0	300	2 37	+ 2	4 56	+18	6·4	8·3
Pavia		11·4	299	2 41	+ 1	—	—	—	—
Chur		11·8	308	e 2 46	0	e 5 45	S*	—	—
Ksara	N.	12·0	119	e 4 26	+98	e 6 26	+83	7·3	—
Cheb		12·3	325	e 2 52	0	e 5 26	+16	e 6·1	7·0
Helwan		12·4	146	e 2 53	− 1	e 5 11	− 2	11·1	—
Zurich		12·6	308	e 2 57	+ 1	—	—	—	—
Stuttgart		13·0	315	i 3 2	0	e 5 55	+28	e 6·8	8·4
Jena		13·3	326	e 3 6	0	e 5 58	+24	e 6·4	8·6
Neuchatel		13·5	305	e 3 7	− 2	e 5 47	+ 8	—	—
Strasbourg		13·7	312	e 3 11	0	e 6 6	+22	e 7·4	7·9
Potsdam		13·8	333	i 2 47	−26	i 5 52	+ 6	e 7·4	8·9
Besançon		14·2	305	e 3 43	+25	8 8	?	—	—
Feldberg	E.	14·3	318	i 3 30	+11	—	—	e 7·7	8·3
Göttingen		14·4	325	i 3 19	− 2	e 6 19	+18	e 7·7	8·2
Königsberg	Z.	14·5	353	e 4 8	+46	—	—	i 8·8	—
Hamburg		15·9	330	e 3 36	− 4	e 6 42	+ 6	e 9·2	9·4
Barcelona		16·0	281	e 2 50	−51	5 14	−84	e 8·9	13·8
Algiers		16·2	264	i 3 45	+ 1	e 5 57	−46	e 8·4	10·9
Tiflis		16·2	78	e 3 42	− 2	6 54	+11	e 8·9	10·7
Lund		16·6	340	3 48	− 1	6 54	+ 2	9·4	—
Copenhagen		16·8	339	3 52	0	7 3	+ 6	8·4	—
Uccle		16·8	314	e 3 53	+ 1	e 7 9	SS	8·2	10·6
De Bilt		17·0	320	4 1	+ 7	7 21	SS	e 8·4	9·9
Alicante		18·5	271	e 4 6	− 7	e 7 56	SS	e 10·7	—
Kew		19·6	312	e 4 32	+ 7	e 8 4	+ 6	10·2	11·4
Helsingfors		19·8	2	e 3 47	−40	e 7 43	−19	e 9·5	11·5
Pulkovo		19·8	10	4 23	− 4	8 1	− 1	10·4	12·1
Upsala		19·8	351	e 4 28	+ 1	e 7 57	− 5	e 10·4	11·6
Baku		20·2	81	i 4 34	+ 2	8 23	+13	11·4	14·7
Oxford		20·3	312	i 4 35	+ 2	i 8 23	+11	—	—
Almeria		20·3	268	e 4 30	− 3	—	—	e 13·8	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Toledo	20·8	278	e 4 38	0	e 8 26	+ 4	e 10·6	12·6
Granada	21·1	270	i 4 42	+ 1	e 8 45	+17	12·1	14·6
Malaga	21·9	269	4 44	− 6	8 39	− 5	10·8	13·5
Stonyhurst	21·9	317	e 5 0	+10	e 8 48	+ 4	e 12·1	—
Bidston	22·0	315	—	—	e 8 46	0	e 12·3	—
Edinburgh	23·2	321	5 3	0	9 15	+ 7	—	14·5
San Fernando	23·3	270	5 33	+29	9 46	+36	—	15·9
Ekaterinburg	29·1	43	e 5 52	− 5	e 10 44	− 6	i 17·9	18·0
Andijan	36·8	73	e 6 54	−11	—	—	—	—

Additional readings: —
Belgrade i = +1m.25s., iP* = +1m.33s., iP_g = +1m.41s., iPPS = +2m.14s.
Zagreb e = +1m.49s. and +2m.25s. = P_g − 1s., iZ = +2m.34s., iNE = +3m.9s., iNW = +3m.34s., eZ = +3m.46s. = S* + 2s., i = +4m.2s. = S_g − 3s., iNW = +4m.12s.
Budapest PP = +2m.21s. = P_g − 7s.
Triest i = +2m.36s., PP = +2m.46s., i = +3m.2s. and +3m.34s., iPPSSZ = +4m.5s., i = +4m.14s., iPSSSS = +4m.38s., iSS = +4m.52s., iSSS = +5m.0s., i = +5m.24s.
Vienna iEN = +3m.7s., SS = +4m.46s.
Stuttgart i = +3m.13s. and +3m.16s., e = +3m.57s. and +4m.48s.
Jena eZ = +3m.22s., eE = +6m.2s.
Potsdam eEN = +3m.2s., iNZ = +3m.21s.?, iN = +6m.40s.
Feldberg eE = +6m.27s. and +7m.9s.
Hamburg iSE = −6m.49s., eE = +7m.58s.
Helsingfors ePPE = +4m.2s., iPPN = +4m.9s., eSZ = +7m.46s., eSSSN = +8m.58s.
Granada PP = +4m.54s., PPP = +5m.4s., SS = +9m.27s.
Malaga PP = +5m.6s., PPP = +5m.15s., SS = +9m.8s.
Long waves were also recorded at Durham and Tortosa.

Nov. 1d. Readings also at 0h. (Granada), 2h. (Tyosi and near Mizusawa (2)), 4h. (near La Paz), 6h. (La Paz and near Andijan), 7h. (near Mizusawa and Tyosi), 8h. (near Manila, near Nagoya, and Tyosi), 9h. (Taihoku), 11h. (Tchimkent), 15h. (near Matuyama), 16h. (near Wellington), 19h. (Tyosi).

Nov. 2d. 11h. 3m. 30s. Epicentre 22°·2S. 112°·2W. N.2.

A = −·350, B = −·857, C = −·378; D = −·926, E = +·378; G = +·143, H = +·350, K = −·926.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Huancayo	36·6	80	i 7 6	+ 3	i 12 54	+ 9	i 15·6	—
La Paz	41·8	90	i 7 44	− 3	i 14 13	+10	19·9	22·5
La Plata	48·8	117	8 37	− 5	15 44	0	21·5	—
Tucson	54·5	2	e 9 28	+ 3	17 18	+16	e 22·6	—
Pasadena	56·6	355	i 9 41	+ 1	i 17 42	+11	i 24·4	—
Mount Wilson	56·7	355	e 9 42	+ 1	e 17 43	+11	—	—
Santa Barbara	57·1	353	e 9 34	−10	—	—	—	—
Tinemaha	59·7	355	e 10 2	0	e 18 20	+ 8	—	—
Little Rock	60·0	20	e 10 2	− 2	e 18 22	+ 6	—	—
Lick	60·2	351	e 10 6	0	—	—	—	—
San Juan	60·7	52	i 10 15	+ 6	i 18 29	+ 4	i 25·7	—
Berkeley	60·8	351	10 11	+ 1	i 18 38	+12	—	—
Honolulu T.H.	62·2	311	e 10 15	− 5	i 18 57	+12	e 26·1	—
Ukiah	62·2	350	e 10 35	+15	i 18 58	+13	26·5	—
Rio de Janeiro	63·1	106	e 10 29	+ 3	e 18 59	+ 3	e 30·1	42·0
Wellington	63·1	233	i 10 18	− 8	(18 50)	− 6	25·5	—
Columbia	63·5	29	e 10 38	+ 9	e 19 9	+ 8	e 26·5	—
St. Louis	64·2	19	e 10 28	− 6	i 19 14	+ 4	e 22·5	35·5
Cincinnati	66·6	24	i 10 45	− 4	e 19 27	−13	—	—
Bozeman	67·8	1	—	—	i 20 2	+ 8	e 27·7	—
Chicago	67·9	19	e 10 56	− 2	i 19 55	− 1	—	—
Charlottesville	68·0	29	—	—	e 19 57	0	—	—
Madison	68·6	18	(e 10 49)	−13	(20 1)	− 3	(33·7)	—
Georgetown	69·4	30	i 11 5	− 2	i 20 18	+ 4	e 33·6	—
Pittsburgh	69·5	26	11 10	+ 2	20 18	+ 3	e 28·3	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ann Arbor		69·7	23	—	—	e 20 24	+ 6	e 41·5	—
Victoria	N.	71·3	353	—	—	20 36	− 1	34·6	35·4
Buffalo		72·0	26	i 11 20	− 3	i 20 25	−20	e 33·5	—
Fordham		72·4	30	e 11 34	+ 9	i 20 58	+ 8	—	—
Toronto		72·4	25	e 11 19	− 6	i 20 49	− 1	35·2	—
Harvard		74·9	30	e 11 23	−17	i 21 23	+ 4	e 31·2	—
Ottawa		75·3	26	e 11 42	0	i 21 27	+ 3	e 35·5	—
East Machias		78·4	31	e 11 38	−21	i 22 1	+ 3	e 32·9	—
Sitka		81·6	348	e 12 12	− 4	i 22 32	− 1	38·6	—
Riverview		83·0	236	14 12	?	e 22 36	−11	e 38·5	48·5
Sydney		83·0	236	e 12 12	−11	(23 12)	+25	23·2	23·8
Melbourne		86·0	230	i 12 35	− 3	23 19	+ 1	39·8	41·1
Adelaide		91·9	230	e 14 12?	+66	i 24 5	− 9	38·7	45·9
Cape Town		106·9	139	18 20	PP	25 7	[+ 8]	45·3	—
Perth		109·0	222	28 16	PS	—	—	—	—
Amboina		115·6	254	e 19 33	PP	e 29 18	PS	—	—
Malaga		116·9	59	14 55	−10	25 40	[0]	56·6	57·9
Granada		117·6	59	19 34	PP	30 10	PS	52·7	69·3
Toledo		117·6	56	e 20 6	PP	29 45	PS	e 41·0	—
Almeria		118·6	60	e 20 23	PP	—	—	e 66·5	—
Edinburgh		118·8	37	—	—	e 25 48	[+ 2]	—	—
Stonyhurst		119·3	39	—	—	e 30 13	PS	57·5	—
Alicante		120·2	57	e 19 15	[+29]	(e 37 15)	SS	e 37·2	—
Kew		120·8	41	—	—	e 30 21	PS	e 50·5	—
Tortosa	N.	121·2	54	e 20 18	PP	29 52	PS	e 63·5	69·6
Algiers		122·8	60	e 13 30	?	e 26 11	[+12]	65·5	—
Uccle		123·7	42	e 18 55	[+ 1]	e 30 36	PS	51·5	—
De Bilt		124·1	40	e 21 1	PP	e 27 43	{− 1}	e 51·5	53·4
Strasbourg		126·1	44	e 18 59	[0]	e 30 55	PS	e 51·5	—
Hamburg		126·7	38	e 19 1	[+ 1]	e 39 30?	?	—	67·5
Stuttgart		127·0	44	e 18 58	[− 3]	e 31 0	PS	e 53·0	—
Copenhagen		127·6	35	22 22	?	26 12	[0]	53·5	—
Piacenza		127·8	50	21 50	PP	—	—	—	76·9
Lund		127·9	35	22 27	?	38 30	SS	56·5	—
Potsdam		128·7	39	e 21 12	PP	e 26 12	[− 4]	e 56·5	—
Upsala		128·7	30	e 22 30?	?	—	—	—	—
Cheb		128·9	43	e 21 30	PP	e 28 14	{ 0}	—	—
Florence		129·1	51	10 30	?	e 22 30	PKS	28·5	39·5
Manila		129·2	271	e 19 10	[+ 5]	31 1	SKSP	62·5	72·6
Triest		130·6	48	i 22 38	PKS	26 20	[− 1]	e 60·5	—
Helsingfors		131·7	26	e 19 5	[− 5]	e 26 14	[−10]	—	—
Vienna	Z.	131·8	44	e 19 8	[− 2]	—	—	—	—
Zagreb		132·1	47	e 19 16	[+ 6]	—	—	—	—
Batavia		132·4	238	i 22 35	PKS	—	—	—	—
Budapest		133·8	44	e 22 0	PP	—	—	—	—
Chiufeng		135·6	306	e 19 13	[− 3]	—	—	—	—
Hong Kong		137·2	279	19 21	[+ 3]	32 50	PS	53·9	70·0
Irkutsk		139·0	326	e 19 16	[− 4]	e 22 30?	PP	—	—
Kucino		139·8	27	e 19 20	[− 1]	e 29 18	{− 5}	e 37·3	46·2
Phu-Lien		144·0	275	18 30?	[−61]	—	—	—	—
Yalta		144·6	43	e 19 31	[−·2]	—	—	—	—
Medan		144·7	242	i 20 30	[+57]	—	—	—	—
Ekaterinburg		145·0	6	i 19 34	[0]	29 46	{− 7}	62·5	82·7
Theodosia		145·1	41	e 19 33	[− 1]	—	—	—	—
Helwan		146·5	69	19 35	[− 1]	—	—	—	86·3
Tiflis		152·6	39	i 19 45	[0]	e 30 35	{− 2}	e 79·5	—
Baku		156·4	36	i 19 54	[+ 5]	—	—	78·4	93·1
Tchimkent		159·8	356	19 53	[− 1]	(20 43)	PKP_2	20·7	—
Andijan		161·0	349	e 19 58	[+ 3]	—	—	—	—
Kodaikanal		164·9	219	19 33	[−26]	—	—	—	—
Hyderabad		168·9	247	—	—	31 17	{−49}	80·1	92·9
Bombay		174·3	236	20 10	[+ 4]	—	—	—	—

For Notes see next page.

NOTES TO Nov. 2d. 11h. 3m. 30s.

Additional readings and notes :—
Huancayo i = +7m.20s., ePP = +8m.45s.
La Paz PPN = +9m.33s., PPPN = +10m.13s., iS?N = +14m.19s., PS = +14m.53s., SSN = +17m.12s., SSE = +17m.19s., SSSN = +18m.1s.
Tucson SS = +21m.7s.
Pasadena ePE = +9m.47s., eE = +19m.34s. = S_cS + 6s.
Little Rock iE = +11m.8s., +11m.15s., and +11m.47s., eE = +18m.25s.
San Juan iP = +10m.22s., i = +12m.1s. = PP − 15s., e = +22m.0s. = SS − 19s.
Ukiah e = +23m.6s.
Wellington S is recorded as SS.
Columbia e = +14m.3s. = PPP − 3s., eSS = +22m.59s.
St. Louis i = +10m.35s. ; T_0 = 11h.3m.23s.
Cincinnati ePPZ = +13m.4s., eN = +19m.46s. = PS − 6s. ; T_0 = 11h.3m.27s.
Bozeman eSS = +24m.30s., e = +27m.0s. = SSS + 8s.
Chicago e = +24m.1s. = SS − 9s. and +27m.53s. = SSSS − 11s.
Charlottesville e = +24m.17s. = SS + 5s.
Madison iSKKS = (+20m.56s.) = S_cS + 1s., iSS = (+24m.45s.), eSSS = (+27m.54s.). All readings have been *diminished* by 5m.
Georgetown iPPZ = +14m.9s., iZ = +19m.46s. ; T_0 = 11h.3m.24s.
Pittsburgh ePP = +13m.53s., eSS = +24m.56s.
Ann Arbor eL?N = +24m.54s. = SS + 16s., eE = +25m.18s.
Buffalo ePP = +13m.38s.
Fordham iPS = +21m.21s., iSS = +25m.47s.
Toronto iPS = +21m.20s. ; T_0 = 11h.3m.26s.
Harvard iPS = +21m.52s., eSS = +26m.10s. ; T_0 = 11h.2m.44s.
Ottawa ePS = +22m.0s., eSS = +26m.24s., eSSS = +29m.48s. ; T_0 = 11h.3m.24s.
East Machias eP = +12m.6s., e = +23m.37s., SS = +27m.19s., e = +30m.42s.
Sitka e = +23m.32s. = PS + 23s., SS = +28m.7s.
Riverview i = +17m.57s., eEN = +23m.28s. = PS + 1s., e = +27m.57s. = SS + 0s.
Melbourne PS = +24m.9s., SS = +28m.43s., SSSS = +35m.0s.
Adelaide iPS = +25m.16s., eSS = +30m.2s.
Cape Town +18m.30s. = PP − 5s., S? = +28m.15s. = PS + 18s., +28m.49s., +33m.4s., and +33m.35s. = SS − 1s.
Malaga PP = +19m.53s., i = +21m.47s., SKKS = +26m.57s., PS = +29m.57s., PPS = +30m.55s.
Granada i = +19m.55s.
Kew eSSEN = +36m.14s.
Algiers e? = +16m.40s., e?E = +30m.0s. = SKSP − 16s., e? = +36m.41s. = SS − 28s., and +41m.4s. = SSS − 27s., i? = +51m.24s.
Uccle ePP = +20m.58s., i = +37m.36s. = SS + 16s. and +38m.1s., e = +41m.30s.? = SSS − 13s.
De Bilt eEZ = +30m.44s., e = +37m.42s. = SS + 17s.
Strasbourg iPP = +21m.11s., eSS = +38m.47s., eSSS = +43m.48s.
Stuttgart ePP = +20m.56s., ePPS = +32m.36s., eEN = +37m.56s. = SS − 8s., eSS = +38m.42s.
Copenhagen e = +43m.12s.
Potsdam iZ = +21m.27s.? = PP + 18s., iEZ = +22m.27s.?
Manila iPEN = +22m.30s.
Triest PPP = +24m.30s., eSS = +38m.41s.
Helsingfors ePPE = +21m.24s., ePPN = +21m.30s., ePKSEN = +22m.32s., ePPPE = +24m.26s., eSKKSE = +27m.50s., iN = +28m.40s. = SKKS + 8s., iE = +29m.20s., eSKSPE = +31m.18s., iPPSEN = +33m.33s., eN = +37m.51s., SSE = +39m.19s., SSSE = +44m.16s. ; T_0 = 11h.3m.15s.
Zagreb e = +22m.36s. = PKS − 7s.
Chiufeng i = +21m.51s. = PP − 3s., ePP? = +24m.20s. = PPP − 23s.
Hong Kong PP = +22m.57s. = PKS − 4s., SS = +40m.40s.
Kucino e = +22m.24s. = PP + 4s. and +34m.59s.
Ekaterinburg iPP = +23m.4s., iSS = +42m.0s., iSSS = +47m.6s.
Tiflis ePP = +20m.47s., eSKKS = +27m.51s., PS = +41m.34s., e = +43m.24s. = SS + 14s., eL = +49·0m.
Baku e + 29m.28s. = SSSS − 9s., +45m.40s., and +51m.25s.
Long waves were also recorded at Tananarive, Barcelona, San Fernando, Bergen, and Göttingen.

Nov. 2d. Readings also at 2h. (near Amboina and near Sumoto), 4h. (Baku, Ekaterinburg, Tiflis, and Alicante), 5h. (near Andijan and near Sumoto), 7h. (Reykjavik), 8h. (Ekaterinburg and near Reykjavik (2)), 9h. (Baku and Reykjavik), 10h. (6) and 11h. (4) (Reykjavik), 12h. (Reykjavik (12) and Lick), 13h. (Lick, Reykjavik (5), and Tchimkent and near Andijan), 14h. (Reykjavik (3) and near Amboina), 15h. (Branner, Camerino, and near Tyosi (2)), 16h. (near Tyosi), 17h. (near Batavia and near Tyosi), 18h. (near Malabar), 19h. (Alicante), 20h. (near Malabar), 21h. (near Ksara and near Tiflis), 22h. (near Nagoya), 23h. (Tiflis and near Mizusawa).

Nov. 3d. 19h. 42m. 50s. Epicentre 16°·1N. 145°·9E. N.2.

A = −·796, B = +·539, C = +·277; D = +·561, E = +·828; G = −·230, H = +·155, K = −·961.

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

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Titizima		−0·2	11·5	343	2 40	+ 1	—	—	—	—
Palau		−0·4	14·2	233	3 14	+ 1	—	—	—	—
Hatidyosima		−0·7	17·9	343	3 54	− 3	7 3	− 3	—	—
Tyosi		−0·8	20·2	348	e 4 23	0	(e 7 52)	− 2	—	—
Tokyo		−0·8	20·4	345	4 22	− 3	7 47	−11	—	—
Nagoya		−0·8	20·7	339	e 4 29	0	5 42	?	—	—
Koti		−0·8	20·8	330	e 4 24	− 6	7 58	− 8	—	—
Osaka		−0·8	20·8	335	4 17	−13	8 26	SS	—	9·0
Sumoto		−0·8	20·8	334	4 27	− 3	7 59	− 7	—	8·9
Kobe		−0·8	21·0	335	e 4 39	+ 7	e 8 56	P_cP	—	11·2
Oiwake		−0·9	21·3	344	4 30	− 4	8 11	− 3	—	—
Nagasaki		−1·0	22·1	322	4 39	− 2	8 30	+ 2	—	—
Hukusima		−1·0	22·2	349	4 38	− 4	8 31	+ 1	—	—
Mizusawa	E.	−1·0	23·4	351	5 0	+ 5	9 0	+ 7	—	—
	N.	−1·0	23·4	351	5 16	PP	9 46	?	—	—
Manila		−1·0	24·1	270	5 3	+ 1	9 13	+ 6	13·7	—
Taihoku		−1·0	24·5	295	e 5 20	+15	—	—	—	—
Amboina		−1·1	26·4	223	e 4 52	−31	e 8 34	P_cP	—	—
Nanking	E.	−1·3	29·3	308	5 47	0	—	—	e 13·4	—
Hong Kong		−1·4	30·5	288	6 0	+ 3	10 43	− 7	14·5	—
Chiufeng		−1·6	35·3	320	e 6 36	− 2	e 11 45	−16	e 14·4	—
Phu-Lien		−1·6	37·5	284	e 7 3	+ 6	—	—	—	—
Irkutsk		−2·0	48·8	328	e 8 10?	−17	—	—	—	11·4
Riverview		−2·1	50·2	175	—	—	e 15 34	0	—	—
Calcutta		−2·3	54·4	287	9 43	+36	14 13	?	17·0	—
Almata		−2·4	63·8	311	e 10 19	+ 5	—	—	—	—
Hyderabad		−2·4	64·3	282	10 27	+ 9	18 45	+ 4	27·2	38·8
Andijan		−2·5	67·2	308	e 10 39	+ 2	—	—	—	—
Bombay		−2·5	69·3	284	10 55	+ 4	19 46	+ 4	—	—
Tchimkent		−2·5	69·3	310	e 11 49	+58	—	—	—	—
Ekaterinburg		−2·6	74·0	326	i 11 19	0	i 20 27	−11	31·2	40·4
Berkeley		−2·7	81·7	53	e 12 4	+ 1	—	—	—	—
Branner		−2·7	81·8	53	e 12 6	+ 3	—	—	—	—
Lick	E.	−2·7	82·3	53	e 12 7	+ 1	—	—	—	—
Baku		−2·7	84·2	311	12 16	0	22 22	−10	39·6	47·8
Santa Barbara		−2·7	84·5	56	e 12 20	+ 3	—	—	—	—
Tinemaha		−2·7	85·0	53	i 12 21	+ 1	e 22 37	− 3	—	—
Mount Wilson		−2·7	85·9	56	e 12 27	+ 3	e 22 43	− 6	—	—
Pasadena		−2·7	85·9	56	i 12 25	+ 1	i 22 30	−19	—	—
Kucino		−2·7	86·5	328	(13 4)	+37	—	—	—	13·1
Riverside		−2·7	86·5	56	e 12 27	0	—	—	—	—
La Jolla		−2·7	86·9	57	e 12 32	+ 3	e 22 52	− 7	—	—
Tiflis		−2·7	87·4	313	12 29	− 3	22 37	−28	44·2	46·7
Pulkovo		−2·7	88·3	333	12 19	−17	22 38	−36	42·2	50·9
Copenhagen		−2·9	98·2	336	18 16	PP	—	—	47·2	—
De Bilt		—	103·8	337	e 18 4	PP	—	—	e 50·2	—
Stuttgart		—	104·6	332	e 18 10	PP	—	—	e 53·2	—
Strasbourg		—	105·4	333	e 16 10?	?	—	—	e 51·2	—
Granada		—	119·4	332	—	—	e 30 45	PS	e 69·3	—
La Paz		—	147·4	95	19 31	[− 7]	i 20 52	?	—	—

For Notes see next page.

NOTES TO NOV. 3d. 19h. 42m. 50s.

Additional readings and note :—
Tyosi gives S as the P of a second shock.
Koti e = +4m.58s. and +8m.54s.
Osaka i = +5m.9s. and +7m.52s.
Sumoto SN = +8m.3s.
Kobe iE = +9m.2s.
Manila PEN = +5m.6s., PPN = +5m.43s., and iE = +5m.56s.
Hong Kong PP = +6m.48s.
Chiufeng iPP? = +7m.31s., i = +7m.59s.
Santa Barbara iEN = +12m.24s.
Pasadena eN = +22m.42s.
Tiflis ePS = +24m.9s.
Pulkovo PPS = +23m.54s., eSSS = +32m.26s.
De Bilt eZ = +18m.59s.
Stuttgart e = +18m.42s., eZ = +21m.10s., e = +28m.10s., +28m.52s., and +36m.57s.
Strasbourg e = +18m.10s.? and +29m.10s.?
Long waves were recorded at Kew and Lund.

Nov. 3d. Readings also at 2h. (Tchimkent), 4h. (Andijan), 5h. (Branner), 6h. (near Tyosi), 7h. (Andijan), 9h. (Tyosi), 13h. (near Amboina (2)), 15h. (Baku, Tiflis, Ekaterinburg, Florence, Piacenza, Chur, near Prato, and near Mizusawa), 16h. (Copenhagen), 18h. (Lick, Branner, near Berkeley, and Ukiah), 19h. (Berkeley, Branner (2), and Lick (2)), 20h. (Nagoya), 21h. (Almata, near Andijan, and near New Plymouth), 23h. (Wellington).

Nov. 4d. Readings at 2h. (Almata, near Andijan, and Tchimkent), 3h. (near Amboina), 6h. (near Apia), 8h. (near Manila), 10h. (near Tananarive), 12h. (near Sumoto), 18h. (Wellington, Besançon, Ravensburg, Stuttgart, Pavia, Piacenza, Strasbourg, near Chur, and Neuchatel), 19h. (Tiflis), 22h. (Tyosi).

Nov. 5d. Readings at 0h. (Stuttgart and near Amboina), 5h. (Almata), 11h. (near Apia), 12h. (Port au Prince), 16h. (Andijan), 17h. (La Paz), 18h. (Riverview, Sydney, and Suva).

Nov. 6d. 1h. 33m. 19s. (I) } Epicentre 33°·7N. 135°·2E. X.
4h. 9m. 46s. (II) } (as on 1932 June 1d.). X.

A = −·590, B = +·586, C = +·555 ; D = +·705, E = +·710 ;
G = −·394, H = +·391, K = −·832.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Sumoto	0·7	338	i 0 10	0	0 17	− 1	—	0·3
II	0·7	338	0 10	0	0 16	− 2	—	0·3
I Kobe	1·0	359	0 15	+ 1	0 25	− 1	—	0·5
II	1·0	359	0 16	+ 2	i 0 25	− 1	—	0·4
I Osaka	1·0	12	0 19	+ 5	(0 30)	+ 4	0·5	0·9
II	1·0	12	0 16	+ 2	(0 27)	+ 1	0·5	0·7
I Koti	1·4	264	e 0 31	+11	0 51	+15	—	—
II	1·4	264	—	—	e 0 49	+13	—	—
I Toyooka	1·9	350	e 0 24	− 4	i 0 52	+ 3	—	—
II	1·9	350	e 0 25	− 3	i 0 51	+ 2	—	0·9
I Nagoya	2·0	45	0 40	+11	1 5	+14	—	—
II	2·0	45	e 0 48	+19	1 2	+11	—	—

No additional readings.

Nov. 6d. 12h. 47m. 52s. Epicentre 51°·3N. 139°·0E. N.3.

A = −·472, B = +·410, C = +·780; D = +·656, E = +·755; G = −·589, H = +·512, K = −·625.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	12·2	172	2 52	+ 1	5 10	+ 2	—	—
Nagoya	16·2	186	e 3 43	− 1	6 34	− 9	—	—
Osaka	16·8	190	3 52	0	7 1	+ 4	—	7·6
Ekaterinburg	43·8	309	i 8 10	+ 7	i 12 33	−120	18·1	—
Andijan	45·8	284	e 9 5	+46	—	—	—	—
Tchimkent	46·5	288	e 7 38	−47	—	—	—	—
Tiflis	61·0	302	10 7	− 4	e 18 24	− 5	e 26·7	—
Neuchatel	73·4	329	i 11 6	−25	—	—	—	—

Tiflis gives also e = +21m.29s.

Nov. 6d. Readings also at 0h. (near Tyosi), 1h. (Tiflis), 3h. (Tyosi and near Nagoya), 4h. (Göttingen), 5h. (New Plymouth and near Andijan), 6h. (Almata, Andijan, Tchimkent, and Bombay), 7h. (Branner, Huancayo, and near La Paz), 9h. (Andijan), 11h. (Alicante, Huancayo, and near La Paz), 16h. (Amboina and near Sumoto), 17h. (Kew), 18h. (Tiflis), 21h. (Nanking and near Manila), 22h. (Hong Kong and La Paz), 23h. (near New Plymouth and near Wellington).

Nov. 7d. Readings at 0h. (near Andijan), 2h. (near Nagoya), 3h. (near La Paz and near Nagoya (2)), 9h. (Alicante), 14h. (Branner), 15h. (Sumoto), 19h. (Ukiah).

Nov. 8d. Readings at 1h. (La Paz (2), Haiwee, Pasadena, Bombay, and near Manila (2)), 2h. (Tiflis and near Andijan), 3h. (Perth), 4h. (La Paz), 5h. (Baku, Ekaterinburg, De Bilt, Tiflis, Haiwee, Pasadena, and Tinemaha), 6h. (Tyosi), 8h. (near Santiago), 9h. (Baku and near Tiflis (2)), 10h. (Ekaterinburg), 12h. (Tyosi and near Nagoya), 13h. (Batavia and Tyosi), 14h. (near Sumoto), 16h. (Riverview), 19h. (near Koti, Matuyama, and Sumoto), 22h. (near Kobe, Osaka, Sumoto, and Nagoya), 23h. (near Nagoya).

Nov. 9d. 18h. 30m. 16s. Epicentre 26°·5N. 92°·0E. (as on 1918 July 8d.). R.2.

A = −·031, B = +·894, C = +·446; D = +·999, E = +·035; G = −·016, H = +·446, K = −·895.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta		5·2	221	1 10	− 4	1 52	−21	2·3	2·8
Agra	E.	12·4	276	2 59	+ 5	—	—	—	—
Phu-Lien		14·6	110	e 3 30	+ 7	—	—	—	—
Hyderabad		15·5	237	3 36	+ 1	6 12	−15	6·9	8·8
Bombay	N.	19·2	251	4 27	+ 6	7 57	+ 7	10·0	10·3
Hong Kong		20·6	97	4 36	0	8 23	+ 5	—	13·5
Almata		20·7	327	e 4 40	+ 3	—	—	—	—
Kodaikanal		21·2	225	i 4 44	+ 2	i 8 29	− 1	10·6	11·2
Andijan		21·6	316	e 4 39	− 7	e 8 36	− 2	—	—
Colombo		22·8	213	4 57	− 2	8 56	− 5	11·9	13·3
Medan		23·8	163	e 5 10	+ 2	i 9 23	+ 4	—	—
Nanking		24·0	70	i 5 11	+ 1	e 9 33	+10	13·2	—
Chiufeng		24·2	50	e 5 12	0	e 9 40	+13	e 13·3	—
Irkutsk		27·4	16	e 5 43	+ 1	10 23	+ 1	14·7	15·4
Ekaterinburg		37·7	333	i 7 13	+ 1	i 13 0	− 2	19·7	24·0

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tiflis	41·4	304	7 39	− 5	e 13 28	−29	26·2	—
Kucino	48·4	322	—	—	e 14 56	−42	e 27·8	30·4
Theodosia	48·5	308	e 8 38	− 2	—	—	—	—
Yalta	49·2	307	e 8 44	− 1	—	—	—	—
Pulkovo	53·2	327	i 9 11	− 4	e 16 37	− 8	26·7	34·1
Stuttgart	65·8	315	e 10 39	− 5	—	—	e 35·7	—
Strasbourg	66·8	315	—	—	(e 19 44?)	+ 2	e 19·7	—

Additional readings :—
Agra ePN = +3m.11s.
Medan iP = +6m.5s., iS = +10m.15s.
Tiflis e = +17m.6s.
Kucino e = +18m.20s.
Stuttgart e = +13m.10s. =PP +9s. and +23m.32s. =SS −6s.
Long waves were also recorded at Baku, Copenhagen, Lund, Edinburgh, De Bilt, Uccle, and Kew.

Nov. 9d. Readings also at 1h. (Tyosi), 3h. (La Paz), 4h. (Huancayo and near La Paz), 8h. (Tyosi, Branner, and near Lick), 12h. (Tyosi), 16h. (Cape Town), 17h. (Nagasaki and Tucson), 18h. (near Amboina), 20h. (Pasadena, Tinemaha, and near Medan), 21h. (near Sumoto), 22h. (Tiflis).

Nov. 10d. 10h. 56m. 34s. Epicentre 31°·5N. 141°·5E. (as on 1926 May 7d.). R.3.

A = −·667, B = +·531, C = +·522; D = +·623, E = +·783 ;
G = −·409, H = +·325, K = −·853.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi	4·3	354	e 0 58	− 3	1 31	P_g	—	2·0
Nagoya	5·3	315	e 1 15	0	2 21	+ 6	—	—
Osaka	6·0	304	1 25	0	(2 31)	− 2	2·5	4·7
Kobe	6·2	303	e 1 29	+ 1	—	—	e 4·2	7·7
Sumoto	6·2	299	1 33	+ 5	4 56	?	—	7·4
Mizusawa	7·7	358	2 16	P*	2 58	−18	—	—
Chiufeng	22·1	300	e 4 49	− 3	—	—	e 13·4	—
Ekaterinburg	59·2	321	—	—	i 18 13	+ 8	29·4	—

Additional readings :—
Osaka i = +3m.24s.
Kobe ePNZ = +1m.34s.
Long waves were also recorded at Hong Kong, Tashkent, Baku, Tiflis, De Bilt, and Stuttgart.

Nov. 10d. 11h. 30m. 28s. Epicentre 34°·0N. 134°·8E. (as on 1932 Jan. 11d.). R.3.

A = −·584, B = +·588, C = +·559.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	0·4	11	0 5	− 1	0 11	+ 1	—	0·2
Kobe	0·7	25	0 11	+ 1	0 19	+ 1	—	0·3
Osaka	0·9	38	0 12	− 1	(0 24)	+ 1	0·4	0·6
Nagoya	2·1	57	—	—	e 0 54	0	—	—

Nov. 10d. Readings also at 2h. (Bombay), 5h. (Nagoya), 6h. (Bombay), 7h. (La Paz), 9h. (Alicante), 13h. (Bombay (2), near Calcutta, La Paz, and near La Plata), 14h. (Branner and near Apia), 17h. (near Tananarive), 19h. (Zagreb).

Nov. 11d. Readings at 0h. (near Balboa Heights and near Tortosa (2)), 1h. (near Calcutta), and near Nagoya), 2h. (Tyosi), 3h. (Tortosa), 4h. (Huancayo), 5h. (Haiwee, Pasadena, Mount Wilson, La Jolla, and Tinemaha), 10h. (near Tyosi), 16h. (Alicante), 17h. (Pasadena, Tinemaha, Huancayo, La Paz, Ekaterinburg, Mizusawa, and Tyosi), 18h. (near Batavia), 19h. (near Nagoya), 20h. (Tchimkent and near Almata).

Nov. **12d.** 13h. 36m. 16s. Epicentre 17°·5N. 94°·5W. (as on 1928 April 17d.). X.

A = −·075, B = −·951, C = +·301; D = −·997, E = +·078;
G = −·024, H = −·300, K = −·954.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tucson		20·9	318	e 4 41	+ 2	e 8 32	+ 8	i 10·8
La Jolla		25·6	311	e 5 16	− 9	e 9 58	+ 7	—
Pasadena		26·8	313	e 5 26	−10	—	—	e 14·4
Haiwee	Z.	27·9	317	e 5 37	− 9	—	—	e 14·9
Tinemaha		28·6	318	e 5 46	− 7	—	—	e 15·0
Lick		31·0	317	e 12 28	S	(e 12 28)	+68	e 13·8
Branner	E.	31·4	317	e 11 44?	S	(e 11 44?)	+18	—
Ottawa		32·0	25	e 6 23	0	e 12 12	+37	23·7
Huancayo		35·1	146	—	—	e 12 12	−11	—
La Paz	N.	42·8	142	e 7 55	0	—	—	—

Additional readings:—
Tucson e = +10m.29s.
Lick iEN = +12m.34s.
Long waves were also recorded at Bozeman, Ukiah, Berkeley, and Seattle.

Nov. 12d. 22h. 50m. 39s. Epicentre 24°·2N. 122°·3E. (as on Oct. 23d.). X.

A = −·487, B = +·771, C = +·410; D = +·845, E = +·534;
G = −·219, H = +·346, K = −·912.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku		1·1	319	i 0 17	+ 1	0 30	+ 2	—	1·0
Hokoto		2·6	255	0 37	0	1 8	+ 1	—	—
Zi-ka-wei		7·0	353	e 1 33	− 6	—	—	i 3·6	—
Hong Kong		7·7	258	1 52	+ 3	3 25	+ 9	4·1	4·9
Nanking	Z.	8·4	339	4 0	S*	—	—	—	—
Nagasaki		10·8	36	2 27	− 5	—	—	—	—
Phu-Lien		14·9	260	e 3 29	+ 2	—	—	7·3	—
Tiflis		65·1	308	—	—	(e 19 3)	−18	e 19·0	—

Zi-ka-wei gives also iE = +3m.37s., taken as L, +3m.47s. = S_E +2s., and +4m.11s.

Nov. 12d. Readings also at 1h. (near Dannevirke, New Plymouth, and Wellington), 2h. (near Sumoto), 5h. (near Tyosi), 6h. (near Nagoya), 7h. (Branner (2) and Lick (2)), 9h. (Haiwee, Mount Wilson, Pasadena, Riverside, and Tinemaha), 11h. (Huancayo), 13h. (Tucson and near Apia), 14h. (Lick), 16h. and 19h. (near Tyosi), 20h. (La Jolla, Mount Wilson, Pasadena, and Tinemaha), 23h. (near Sumoto).

Nov. 13d. 4h. 47m. 1s. Epicentre **44°·0N. 136°·8E.** N1.

Tokyo gives 43°·6N. 137°·3E.

A = −·524, B = +·492, C = +·695; D = +·685, E = +·729;
G = −·506, H = +·476, K = −·719.

A *depth* of focus 0·045 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Sapporo	+0·7	3·4	105	1 4	+ 6	1 51	+ 6	—	—
Haboro	+0·6	3·6	82	1 23	+23	—	—	—	—
Aomori	+0·4	4·3	135	1 10	+ 3	2 2	+ 2	—	—
Akita	+0·3	4·9	150	1 16	+ 2	2 18	+ 5	—	—
Otomari	+0·3	4·9	56	1 19	+ 5	2 21	+ 8	—	2·4

Continued on next page.

		Corr. for Focus	Δ	Az.	P.	O–C.	S.	O–C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Morioka		+0·2	5·4	142	1 20	0	2 27	+ 4	—	—
Mizusawa	E.	+0·2	5·9	145	1 26	− 1	2 34	− 2	—	—
	N.	+0·2	5·9	145	1 25	− 2	2 38	+ 2	—	—
Nemuro		+0·1	6·4	93	1 33	+ 1	2 43	− 3	—	—
Sendai		+0·1	6·5	150	1 33	− 1	2 35	−13	—	—
Wazima		0·0	6·6	179	1 36	+ 2	2 52	+ 4	—	—
Hukusima		0·0	6·9	155	1 37	− 1	2 57	+ 1	—	—
Nagano		−0·3	7·4	171	1 45	+ 4	3 7	+ 6	—	—
Maebasi		−0·3	7·8	166	1 47	+ 1	3 14	+ 3	—	—
Oiwake		−0·3	7·8	169	1 48	+ 2	3 13	+ 2	—	—
Kumagaya		−0·4	8·1	165	1 50	+ 1	3 13	− 3	—	—
Kakioka		−0·4	8·2	160	1 50	− 1	3 18	− 1	—	—
Mito		−0·4	8·2	158	1 47	− 4	3 12	− 7	—	—
Tukubasan		−0·4	8·2	160	1 49	− 2	3 17	− 2	—	—
Sinkyo		−0·4	8·3	274	1 48	− 4	3 10	−11	—	—
Kohu		−0·4	8·5	170	1 55	0	3 29	+ 3	—	—
Toyooka		−0·4	8·6	190	i 1 57	+ 1	i 3 31	+ 2	—	3·7
Gihu		−0·4	8·7	180	1 58	0	3 28	− 3	—	—
Tokyo		−0·4	8·7	164	i 1 55	− 3	3 23	− 8	—	4·2
Hikone		−0·4	8·8	182	2 2	+ 3	3 37	+ 3	—	—
Nagoya		−0·4	8·9	179	i 2 0	0	3 35	− 1	—	4·5
Tyosi		−0·4	8·9	158	i 1 59	− 1	3 38	+ 2	—	3·8
Yokohama		−0·4	8·9	164	1 58	− 2	3 36	0	—	—
Kyoto		−0·4	9·1	185	2 2	− 1	3 42	+ 1	—	—
Misima		−0·4	9·1	168	2 1	− 2	3 37	− 4	—	—
Numadu		−0·4	9·1	169	2 0	− 3	3 33	− 8	—	—
Kameyama		−0·4	9·2	182	2 5	0	3 39	− 5	—	—
Hamamatu		−0·4	9·3	175	2 2	− 4	3 37	− 9	—	—
Kobe		−0·4	9·4	188	2 7	0	i 3 49	0	—	3·9
Osaka		−0·4	9·4	186	2 7	0	i 3 47	− 2	4·1	4·4
Hamada		−0·4	9·8	203	2 14	+ 1	3 33	−26	—	—
Sumoto		−0·4	9·8	189	i 2 11	− 2	i 3 56	− 3	—	4·0
Wakayama		−0·4 •	9·8	188	2 13	0	3 32	−27	—	—
Fengtien		−0·5	10·1	261	2 20	+ 4	3 19	−44	—	—
Zinsen		−0·5	10·2	234	2 17	0	4 10	+ 4	—	—
Taikyu		−0·5	10·3	220	2 20	+ 2	4 10	+ 2	—	—
Siomisaki		−0·6	10·6	184	2 21	0	4 15	+ 2	—	—
Matuyama		−0·6	10·7	198	i 2 22	0	i 4 16	0	—	4·4
Koti		−0·6	10·8	194	i 2 24	0	i 4 20	+ 2	—	—
Hatidyosima		−0·7	11·2	167	2 24	− 4	4 20	− 6	—	—
Hukuoka		−0·7	11·6	207	i 2 35	+ 2	i 4 38	+ 2	—	4·8
	B.	−0·7	11·6	207	2 34	+ 1	4 38	+ 2	—	—
Simidu		−0·7	11·6	196	2 33	0	4 35	− 1	—	—
Kumamoto		−0·8	12·2	205	2 41	+ 1	4 51	+ 3	—	—
Dairen		−0·8	12·5	251	2 44	0	5 4	+ 9	—	—
Nagasaki		−0·8	12·5	208	2 46	+ 2	5 0	+ 5	—	5·2
Miyazaki		−0·8	12·8	201	2 49	+ 1	5 4	+ 1	—	—
Tomie		−0·9	13·0	212	2 54	+ 4	4 52	−13	—	—
Chiufeng		−1·3	15·8	263	i 3 21	− 1	i 6 9	+ 6	—	7·7
Nake		−1·4	16·7	203	3 40	+ 8	7 10	+48	—	—
Titizima		−1·5	17·5	164	3 38	− 3	6 36	− 2	—	—
Zi-ka-wei		−1·5	17·7	229	i 3 30	−14	6 43	0	—	14·8
Nanking		−1·7	18·5	236	i 3 50	− 2	10 29	?	—	—
Naha		−1·7	19·3	206	4 3	+ 1	7 29	+14	—	—
Taihoku		−2·1	22·7	218	4 36	0	i 9 55	+97	—	10·0
Irkutsk		−2·1	23·0	303	i 4 36	− 3	i 8 22	− 2	9·9	—
Hong Kong		−2·7	28·6	228	5 23	− 5	9 49	− 8	11·8	15·6
Manila		−3·1	32·4	210	6 1	+ 2	10 49	− 4	14·2	—
Phu-Lien		−3·2	34·2	237	e 6 13	− 1	e 11 5	−15	14·0	16·1
Almata		−3·8	42·3	292	i 7 27	+ 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.
Calcutta		−4·0	45·0	258	8 15	+35	15 52	+121	—	—
Ekaterinburg		−4·2	47·5	314	i 8 7	+ 8	i 14 32	+ 7	29·0	30·6
Tchimkent		−4·2	47·6	293	e 7 59	− 1	—	—	—	—
Dehra Dun		−4·2	47·7	274	7 59	− 2	14 9	−19	19·6	20·0
Amboina		−4·3	48·3	192	i 8 6	+ 1	i 14 40	+ 4	—	—
Agra		−4·4	49·5	270	8 15	+ 1	i 14 48	− 4	e 23·5	—
Samarkand		−4·4	50·6	291	8 1	−21	14 53	−14	20·7	—
Medan		−4·6	52·6	231	8 36	0	i 15 34	+ 1	—	—
Sitka		−4·7	53·3	43	i 8 38	− 3	i 16 3	+22	21·5	—
Hyderabad		−4·8	55·4	261	8 59	+ 3	16 11	+ 2	26·1	32·9
Batavia		−4·9	57·0	216	i 9 9	+ 2	i 16 33	+ 3	e 35·6	—
Honolulu T.H.		−5·0	57·9	90	i 9 21	+ 8	—	—	i 23·7	—
Bombay		−5·0	58·5	266	9 24	+ 6	17 0	+11	28·2	29·3
Pulkovo		−5·1	60·2	326	i 9 33	+ 3	i 17 21	+10	—	36·9
Kodaikanal		−5·1	61·1	256	i 9 40	+ 4	(i 17 29)	+ 6	i 17·5	17·6
Helsingfors		−5·1	62·0	330	i 9 47	+ 5	i 17 38	+ 3	e 23·9	—
Tiflis		−5·1	63·7	304	i 9 57	+ 2	18 5	+ 8	e 25·0	—
Victoria	E.	−5·1	64·1	47	10 2	+ 5	(18 16)	+13	18·3	18·4
Upsala		−5·2	64·9	331	i 10 4	+ 2	i 18 19	+ 7	—	—
Seattle		−5·2	65·0	47	e 9 59	− 4	18 31	+18	—	—
Theodosia		−5·3	67·0	311	10 20	+ 4	i 18 49	+11	23·0	—
Königsberg		−5·3	67·4	326	i 10 26	+ 7	i 18 51	+ 8	e 29·0	—
Simferopol		−5·3	67·7	313	10 23	+ 2	18 50	+ 3	—	—
Yalta		−5·3	68·0	311	i 10 26	+ 3	18 59	+ 8	27·0	—
Bergen		−5·3	68·4	337	10 31	+ 5	19 4	+ 8	23·0	—
Lemberg		−5·4	69·4	321	e 10 14	−18	(19 29)	+22	—	19·5
Lund		−5·4	69·5	330	i 10 36	+ 3	i 19 14	+ 5	—	—
Copenhagen		−5·4	69·7	331	i 10 38	+ 4	i 19 21	+10	—	—
Ukiah		−5·4	70·0	55	i 10 42	+ 6	i 19 30	+15	27·5	—
Berkeley		−5·4	71·4	55	i 10 48	+ 3	e 19 42	+10	—	—
Branner		−5·4	71·7	56	i 10 50	+ 3	i 19 45	+ 9	—	—
Bozeman		−5·4	72·1	43	i 10 47	− 3	i 19 46	+ 5	—	—
Lick		−5·4	72·1	55	i 10 53	+ 3	e 19 51*	+10	—	—
Potsdam		−5·4	72·2	328	i 10 51	0	i 19 47	+ 5	—	—
Hamburg		−5·4	72·4	331	i 10 54	+ 2	i 19 51	+ 6	e 32·0	—
Suva		−5·4	72·9	139	12 59?	PP	—	—	—	—
Budapest		−5·4	73·4	322	i 10 53	− 5	(19 59?)	+ 2	20·0	47·5
Jena		−5·4	73·9	327	i 11 0	− 1	e 19 59	− 4	e 26·0	46·0
Göttingen		−5·4	74·0	329	i 11 2	0	i 20 5	+ 1	—	46·0
Vienna		−5·4	74·0	323	i 11 1	− 1	i 20 10	+ 6	i 38·8	50·0
Ksara	N.	−5·4	74·1	302	11 3	0	i 20 6	+ 1	—	—
Cheb		−5·4	74·2	327	e 11 2	− 1	i 20 11	+ 4	e 34·0	45·3
Tinemaha		−5·4	74·2	54	i 11 6	+ 3	i 20 16	+ 9	—	—
Edinburgh		−5·4	74·5	338	e 11 5	0	i 20 13	+ 3	41·0	48·9
Belgrade		−5·4	74·7	319	i 11 1	− 5	i 20 16	+ 3	30·8	—
Durham		−5·5	75·1	337	11 8	0	20 20	+ 4	—	—
Haiwee		−5·5	75·1	54	i 11 10	+ 2	e 20 20	+ 4	—	—
De Bilt		−5·5	75·2	332	i 11 10	+ 1	i 20 25	+ 7	—	47·4
Santa Barbara		−5·5	75·2	57	e 11 11	+ 2'	e 20 25	+ 7	—	—
Feldberg		−5·5	75·6	330	i 11 12	+ 1	i 20 26	+ 4	—	—
Zagreb		−5·5	76·0	322	e 11 12	− 2	i 20 29	+ 2	e 45·6	47·5
Stonyhurst		−5·5	76·1	337	e 11 11	− 3	i 20 33	+ 5	—	—
Laibach		−5·5	76·4	323	e 10 23	−53	i 19 34	−58	—	—
Pasadena		−5·5	76·4	56	i 11 18	+ 2	i 20 38	+ 6	e 37·9	—
Stuttgart		−5·5	76·5	328	i 11 17	0	i 20 33	0	e 42·0	46·8
Karlsruhe		−5·5	76·6	329	i 11 19	+ 2	i 20 39	+ 5	—	—
Uccle		−5·5	76·6	332	i 11 17	0	i 20 35	+ 1	31·0	47·8
Innsbruck		−5·5	76·8	326	i 11 20	+ 1	i 20 42	+ 5	—	—
Mount Wilson		−5·5	76·9	56	e 11 16	− 3	i 20 36	− 2	—	—
Riverside		−5·5	76·9	56	i 11 19	0	e 20 36	− 2	—	—

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		−5·5	77·1	323	i 11	19	− 1	i 20	41	+ 1	—	—
Strasbourg		−5·5	77·2	329	i 11	19	− 2	20	41	0	e 33·0	47·5
Kew		−5·5	77·6	334	i 11	23	0	i 20	49	+ 3	—	—
Oxford		−5·5	77·6	335	i 11	10	−13	i 20	35	−11	—	—
Chur		−5·5	77·8	327	i 11	24	− 1	e 20	56	+ 8	—	—
La Jolla		−5·5	77·8	56	i 11	24	− 1	e 20	52	+ 4	—	—
Treviso		−5·5	77·8	324	e 11	22	− 3	i 20	48	0	38·0	—
Venice		−5·5	77·8	324	e 11	22	− 3	20	50	+ 2	—	—
Zurich		−5·5	77·9	327	e 11	23	− 2	e 20	51	+ 1	—	—
Perth		−5·5	78·4	198	—		—	i 20	58	+ 2	—	—
Neuchatel		−5·5	78·8	328	i 11	29	− 2	e 20	56	− 4	—	—
Adelaide		−5·5	79·0	179	i 11	25	− 7	i 20	54	− 9	31·7	42·1
Besançon		−5·5	79·0	328	11	26	− 6	i 21	2	− 1	36·0	—
Riverview		−5·5	79·0	168	i 11	26	− 6	i 20	56	− 7	—	—
Sydney		−5·5	79·0	168	i 20	53	S	(i 20	53)	−10	33·3	34·2
Bari		−5·5	79·2	318	21	9	S	(21	9)	+ 4	—	—
Piacenza		−5·6	79·3	325	11	34	+ 1	i 21	6	+ 1	35·2	44·6
Camerino		−5·6	79·4	322	9	59	−94	19	29	−97	—	—
Pavia		−5·6	79·4	325	e 10	11	−82	20	34	−32	—	—
Prato		−5·6	79·6	324	e 11	31	− 4	i 21	7	− 1	29·8	—
Florence		−5·6	79·7	324	i 11	35	0	21	5	− 5	—	32·0
Helwan		−5·6	79·7	302	i 11	32	− 3	i 21	4	− 6	—	—
Livorno		−5·6	80·2	324	10	31	−67	19	49	−86	—	—
Casamari		−5·6	80·4	320	11	36	− 3	—		—	—	—
Grenoble		−5·6	80·7	328	i 11	56	+15	i 21	36	+15	32·0	—
Naples	N.	−5·6	80·7	320	e 11	37	− 4	e 21	7	−14	51·0	—
Tucson		−5·7	81·9	53	i 11	48	+ 1	i 21	37	+ 3	—	—
Melbourne		−5·7	82·2	174	e 11	44	− 5	21	34	− 3	34·5	39·5
Catania		−5·7	82·9	317	11	54	+ 1	21	11	−34	—	—
Madison		−5·7	83·6	33	i 11	55	− 2	i 21	49	− 4	—	—
Carloforte		−5·8	84·8	323	e 12	10	+ 7	i 21	51	−14	—	—
Barcelona		−5·8	85·3	328	11	56	− 9	21	48	−22	30·0	34·4
Chicago		−5·8	85·4	33	i 11	59	− 7	i 21	53	−18	—	—
Ottawa		−5·8	86·0	23	i 12	6	− 3	i 22	12	− 6	e 39·0	—
Ann Arbor		−5·8	86·3	29	i 12	11	+ 1	i 22	17	− 4	e 33·6	—
Toronto		−5·8	86·5	26	i 12	9	− 3	i 22	21	− 2	38·8	—
Tortosa	E.	−5·8	86·5	328	i 12	10	− 2	23	0	PS	—	—
	N.	−5·8	86·5	328	i 12	8	− 4	i 22	0	−23	29·7	—
Florissant		−5·8	86·8	35	i 12	10	− 3	i 22	23	− 3	39·0	45·0
St. Louis		−5·8	87·0	35	i 12	11	− 3	i 22	24	− 4	—	—
Buffalo		−5·8	87·4	26	e 12	11	− 5	i 22	22	−11	—	—
East Machias		−5·8	88·6	18	e 12	19	− 3	i 22	36	− 9	—	—
Algiers		−5·9	89·0	325	i 12	19	− 5	i 22	42	− 6	42·0	—
Alicante		−5·9	89·0	328	e 12	31	+ 7	i 22	17	−31	e 32·1	—
Toledo		−5·9	89·0	332	i 12	20	− 4	i 22	17	−31	e 38·3	—
Pittsburgh		−5·9	89·2	27	i 12	24	− 1	i 22	45	− 5	—	—
Little Rock		−5·9	89·4	39	i 12	22	− 4	i 22	44	− 8	—	—
Harvard		−5·9	90·0	20	e 12	18	−11	i 22	53	− 6	e 32·2	—
Fordham		−5·9	90·8	23	i 11	19	−74	i 22	57	−10	—	—
Almeria		−5·9	91·1	329	e 12	23	−11	e 22	21	−49	e 35·7	—
Granada		−5·9	91·2	330	i 12	29	− 6	i 22	28	−43	38:7	49·3
Georgetown		−5·9	91·5	26	i 12	32	− 4	i 22	58	−16	—	—
Charlottesville		−5·9	91·9	27	—		—	i 23	8	−10	—	—
Malaga		−5·9	91·9	330	e 12	8	−30	i 23	4	−14	41·8	43·8
Wellington		−5·9	91·9	152	12	29	− 9	23	4	−14	39·0	—
San Fernando		−6·0	92·9	332	12	27	−16	i 22	41	−45	36·0	61·5
Tananarive		—	102·5	256	—		—	e 36	33	SSS	—	—
San Juan		—	114·1	23	i 19	3	PP	i 24	16	[−74]	—	—
Dakar		—	116·8	331	e 19	17	PP	30	7	?	—	—
Cape Town		—	132·2	260	(18	25)	[−45]	(27	27)	{−68}	(49·0)	—
Huancayo		—	137·8	51	i 18	48	[−31]	e 29	18	{+ 7}	e 57·5	—
La Paz		—	145·3	44	i 19	2	[−33]	28	42	{−73}	65·2	—
Rio de Janeiro		—	158·9	358	e 19	17	[−35]	—		—	—	—
La Plata		—	165·5	56	19	24	[−36]	32	24	?	—	—

For Notes see next page.

NOTES TO NOV. 13d. 4h. 47m. 1s.

Additional readings and notes :—
Ootomari P_g = +1m.27s.
Kumagaya +3m.21s.
Toyooka iSN = +3m.34s.
Nagoya P_g = +2m.7s.
Osaka i = +2m.31s.
Koti i = +10m.58s., iS_cS = +14m.33s.
Nagasaki SZ? = +5m.4s.
Chiufeng i = +4m.4s., +4m.44s., and +4m.48s.
Zi-ka-wei iZ = +4m.34s. and +4m.40s., iN = +5m.17s., iZ = +6m.49s. =SS − 3s.
iE = +8m.26s., +8m.43s., and +8m.53s.
Nanking iZ = +4m.50s. and +12m.19s.
Taihoku iP = +5m.41s.
Hong Kong PP = +6m.19s., SS = +11m.8s.
Amboina i = +15m.22s. and +16m.35s.
Medan i = +16m.32s.
Sitka i = +19m.50s.
Batavia i = +10m.17s.
Honolulu T.H. i = +18m.39s. and +19m.7s. =S_cS − 30s.
Kodaikanal iS = +11m.10s.? =PP − 24s.
Helsingfors iP_cPNZ = +10m.57s., iPPN = +12m.7s., ePPPN = +13m.9s., iP_cSN = +15m.6s., iSZ = +17m.42s., iN = +19m.0s. =S_cS − 30s., iSKSN = +19m.51s., eSSN = +21m.49s. ; T_o =4h.46m.49s.
Tiflis pP = +11m.9s., pPP = +14m.2s., SP = +19m.20s.
Upsala i = +11m.18s. and +12m.32s., iPS = +18m.38s., i = +19m.24s.
Theodosia iPP = +11m.32s.
Königsberg iPN = +10m.29s., N = +11m.38s., E = +11m.39s., PPN = +12m.53s., PPE = +13m.0s., PPPE = +14m.33s., PPPN = +14m.40s., iE = +17m.24s., PSE = +19m.11s., N = +19m.47s., E = +19m.49s., S_cSE = +20m.48s., S_cSN = +21m.0s., SSN = +23m.11s.
Yalta iPP = +11m.40s.
Lemberg eE = +10m.19s.
Lund i = +11m.47s., +13m.14s., iS = +19m.18s., +20m.1s., +20m.29s., +21m.28s., +23m.47s., and +25m.23s.
Copenhagen i = +11m.51s., +13m.12s., +14m.59s., +15m.58s., iZ = +19m.42s., +20m.35s. =PS + 1s., +21m.29s., +22m.29s., +23m.41s., +23m.57s., and +26m.2s.
Ukiah e = +14m.59s. and +23m.59s.
Bozeman e = +15m.10s.
Potsdam iE = +11m.50s., iENZ = +11m.59s., iE = +12m.4s.?, ePPEN = +13m.35s., ePPPN = +14m.59s., iZ = +15m.19s., iE = +20m.2s., +20m.33s. +21m.2s., +21m.49s., and +22m.2s.
Hamburg ePPN = +13m.50s., ePPZ = +15m.16s., iEN = +16m.33s., iSSN = +24m.55s.
Budapest i = +12m.5s. and +13m.59s.
Jena i = +12m.12s., eN = +13m.53s., eE = +13m.58s., iS = +20m.8s., iN = +20m.23s., iE = +20m.28s.
Göttingen iP_cPEZ = +12m.16s., iPPEZ = +13m.50s., ePPPEZ = +15m.34s., iSEN = +20m.9s., ePSN = +20m.35s.
Vienna iEZ = +12m.17s., PP = +13m.55s., iN = +17m.57s., iE = +18m.59s., S_cS = +20m.59s., iE = +21m.24s., and +22m.47s., SS = +24m.52s., iN = +26m.48s., SSS =eL = +28m.29s., iE = +34m.1s.
Edinburgh i = +20m.24s. and +21m.41s., SS = +25m.7s., SSS = +27m.54s.
Belgrade iP = +11m.6s., e = +12m.19s., i = +12m.29s., ePP = +14m.3s., e = +16m.47s.
Durham PP = +14m.4s., PS = +20m.44s., ? = +21m.49s.
De Bilt iZ = +12m.23s., iEZ = +14m.4s.
Feldberg eN = +12m.26s., eE = +12m.30s., and +17m.20s.
Zagreb i = +12m.28s. and +14m.10s., eNE = +30m.50s., +33m.5s., and +37m.27s.
Stonyhurst SS = +25m.44s., SSS = +28m.54s.
Laibach ePP = +13m.23s., e = +21m.45s. ; these readings are given for Nov. 12d.14h. at a time when no shock took place.
Pasadena iP_cPZ = +11m.37s., iZ = +14m.3s., and +14m.10s., eZ = +15m.49s., +21m.39s.
Stuttgart ipP = +12m.30s., i = +12m.42s. and +14m.11s., ePPNZ = +14m.42s., epPP = +15m.57s., e = +19m.44s., esS = +22m.34s., eSS = +25m.14s.
Karlsruhe i = +12m.38s.
Uccle i = +12m.31s., +14m.21s., +15m.54s., +16m.17s., +21m.6s., and +22m.6s.
Innsbruck i = +12m.33s., iPP = +14m.20s., e = +22m.14s.
Mount Wilson e = +14m.6s.
Triest i = +12m.32s., iNE = +14m.20s., iPP = +14m.22s., PPP = +16m.0s., iPS = +21m.19s.
Strasbourg i = +11m.40s. and +12m.35s., iPP = +14m.19s., e = +22m.16s. and +23m.3s., eSS = +28m.55s.

Continued on next page.

Kew ipP = +12m.36s., esPNZ = +13m.10s., iPPZ = +14m.27s., iE = +21m.5s., iEZ = +21m.25s., iEN = +22m.20s., eSSN = +25m.49s., eE = +31m.11s., eNZ = +31m.31s., eE = +31m.51s., eN = +35m.35s. and +39m.17s.
Oxford i = +17m.14s. =PP +18s.
Chur ipP = +12m.43s.
La Jolla iEN = +14m.25s. =PP +27s.
Zurich i = +11m.44s.
Adelaide iSS = +22m.25s., i = +23m.9s. and +27m.44s.
Riverview i = +23m.14s.
Sydney iS = +28m.5s. =SSS −31s.
Florence PP = +14m.39s., i = +15m.5s., PPP = +16m.26s., i = +18m.8s. and +19m.18s., PS = +21m.35s., SS = +26m.30s., SSS = +29m.20s., SSSS = +30m.17s.
Grenoble iPP = +13m.14s.
Tucson PP = +14m.59s., SS = +27m.11m.
Melbourne i = +23m.35s., +29m.52s., and +32m.13s.
Madison iPP = +15m.15s.; T_0 =4h.46m.51s.
Barcelona PP = +15m.21s., PS = +22m.2s.
Chicago iPP = +15m.26s., iSKS = +27m.52s., i = +31m.59s.
Ottawa ePPN = +15m.37s., e = +21m.59s., iPSN = +23m.14s., eE = +24m.28s., eSS = +27m.35s., eE = +28m.5s., e = +30m.5s.
Ann Arbor ePP = +15m.41s., ePSE = +22m.59s., ePSN = +23m.23s., eSSE = +28m.5s.; T_0 =4h.46m.30s.
Toronto i = +22m.3s., iSS = +28m.9s.; T_0 =4h.47m.3s.
Florissant ePEN = +12m.14s., pPEN = +13m.30s., ePPEN = +15m.41s., iSKSEN = +22m.5s., eSEN = +22m.28s., iSSEN = +28m.13s., iSSSEN = +31m.59s., iSSSSEN = +33m.43s.
St. Louis iPEN = +12m.15s., ePPEN = +15m.42s., iSKSEN = +22m.5s., iSEN = +22m.28s., iSSEN = +28m.13s.; T_0 =4h.46m.51s.
Buffalo iSKS = +22m.5s.
East Machias iSKS = +22m.16s., i = +23m.43s. and +28m.20s., iSS = +28m.36s., e = +32m.5s.
Algiers iP = +13m.36s., ePP = +15m.55s., ePPP = +17m.59s., iSKS = +22m.15s., PS = +23m.39s., SS = +28m.39s.
Alicante PP = +13m.41s.
Toledo P_cP = +13m.35s., PP = +15m.54s., PPP = +17m.58s., PS = +22m.39s., i = +23m.35s., SSS = +30m.36s.
Pittsburgh iPP = +15m.58s., iSKS = +22m.20s., i = +23m.50s., i = +24m.53s., e = +25m.54s., +28m.4s., +30m.23s., and +34m.5s.
Little Rock iSEN = +22m.19s., iEN = +25m.22s. and +28m.22s.
Harvard eSS = +28m.14s.; T_0 =4h.46m.33s.
Fordham i = +22m.15s. and +22m.43s.
Almeria PP = +13m.37s., PPP = +16m.5s.
Granada i = +13m.47s., PP = +16m.7s., PS = +22m.55s.
Charlottesville eSKS = +22m.36s., e = +24m.22s., +25m.22s., +32m.38s., and +33m.18s.
Malaga P_cP = +12m.31s., iPP = +16m.16s., iSKS = +22m.28s., PPS = +24m.20s., SS = +28m.36s., SSS = +32m.44s.
Wellington PP = +17m.20s.
San Fernando iPP = +16m.27s.
San Juan i = +26m.15s. =SKKS −21s., e = +34m.22s., i = +34m.31s.
Dakar PP = +24m.28s., SKSP = +44m.41s.
Cape Town (+18m.44s.), (+19m.44s.), (+20m.6s.), (+20m.30s.), (+20m.59s.), (+22m.3s.), (+22m.25s.), (+24m.18s.), (+24m.43s.), (+27m.6s.), (+28m.32s.), (+31m.12s.), (+35m.5s.), (+37m.12s.), and (+39m.50s.); readings have been *increased* by 44m.
Huancayo iPP = +21m.30s., iPPP = +24m.47s., e = +29m.18s., ePS = +31m.16s., iSS = +39m.31s., e = +41m.11s., and +48m.47s.
La Paz iN = +19m.10s., ipP = +20m.27s., PPN = +22m.24s., SKS = +25m.41s. SKSP = +31m.24s., PPS = +33m.29s., sSP = +34m.35s., SSE = +40m.15s., PSS = +41m.7s., sSS = +43m.49s., SSS = +45m.35s.
La Plata PKP_3 = +20m.25s., i = +24m.13s., PPP?[△ >180°] = +30m.27s., SS = +44m.23s.

Nov. 13d. Readings also at 0h. (near Amboina), 3h. (near Tananarive), 4h. (Pulkovo, Osaka, and Toyooka), 5h. (Nagoya, Sumoto, and Pasadena), 7h. (La Paz and near Mizusawa), 10h. (Alicante), 15h. (Adelaide, Melbourne, Riverview, Wellington, and Chiufeng), 16h. (La Paz, Harvard, Ottawa, Tucson, Berkeley, Pasadena, Mount Wilson, Haiwee, Bozeman, Perth, Sydney, Suva, Hong Kong, Phu-Lien, Bombay, Tiflis (2), Ekaterinburg, Kucino, Pulkovo, De Bilt, Florence, Strasbourg, Stuttgart, Copenhagen, and Kew), 17h. (Kodaikanal, Edinburgh, and Granada), 20h. (near Balboa Heights), 21h. (near Wellington).

Nov. 14d. Readings at 0h. (Bombay, Hyderabad, Kodaikanal, and Tiflis), 1h. (Hong Kong, near Manila, and near Taihoku), 2h. (Mizusawa), 4h. (near Taihoku), 5h. (Port au Prince), 6h. (Casamari), 7h. (near New Plymouth and Wellington), 11h. (Tiflis), 12h. (Alicante), 14h. (Almata and Tiflis), 15h. (Mizusawa), 16h. (Branner and Lick), 17h. (Berkeley, Branner, and Lick), 19h. (Christchurch and Wellington), 20h. (Stuttgart and Tiflis), 21h. (Ekaterinburg, Tiflis, Bombay, near Almata, Andijan, Samarkand, and near Hastings (2)), 23h. (Bagnères (2)).

Nov. 15d. 10h. 30m. 19s. Epicentre 11°·9N. 99°·5W. N.3.

A = −·162, B = −·965, C = +·206 ; D = −·986, E = +·165 ;
G = −·034, H = −·203, K = −·979.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tucson		22·9	335	e 5 0	0	9 9	+ 6	e 12·3
Little Rock	E.	23·8	14	e 4 8	−60	e 7 30	?	—
La Jolla		26·5	325	e 5 18	−16	—	—	—
Pasadena	Z.	27·9	326	i 5 49	+ 3	—	—	—
Mount Wilson	E.	28·0	326	e 5 49	+ 2	—	—	—
St. Louis		28·0	15	e 5 47	0	e 10 29	− 3	—
Florissant		28·1	15	e 5 48	0	10 30	− 4	—
Haiwee		29·4	329	e 5 59	− 1	—	—	—
Tinemaha		30·3	330	e 6 7	− 1	e 16 33	S	(e 16·6)

Additional readings :—
Tucson e = +8m.32s.
Little Rock +7m.52s.
St. Louis iEN? = +6m.7s. and +6m.18s.

Nov. 15d. 16h. 28m. 4s. Epicentre 47°·5N. 12°·4E. (as on 1932 Oct. 21d.). X.

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

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Innsbruck	0·7	251	e 0 14	+ 4	—	—	—
Triest	2·1	153	e 0 36	P_g	e 1 4	S_g	—
Vienna	2·8	74	0 39	− 1	1 3	− 9	1·2
Zagreb	3·0	124	e 0 39	− 4	i 1 5	−12	—
Göttingen	4·3	340	—	—	e 1 38	−12	3·0

Vienna gives also P_g = +42s., iPP = +43s., iN = +46s. = P* +1s., PP = +48s., iNZ = +51s. = P_g +1s., iZ = +55s., S* = +1m.4s.

Nov. 15d. Readings also at 0h. (Ekaterinburg, Tiflis, Tchimkent, near Andijan, and Samarkand), 6h. (Nagoya), 7h. (near Wellington), 8h. (Christchurch and near Santiago), 10h. (near Tyosi), 11h. (near Tiflis), 13h. (La Paz), 14h. (Tananarive (2)), 15h. (near Tyosi), 16h. (near La Paz, and near Santiago), 20h. (Catania and Tyosi), 21h. (near La Paz).

Nov. 16d. Readings at 4h. (Berkeley, Lick, and near Branner), 6h. (Huancayo, Bombay, near Calcutta, and near Sumoto), 9h. (Suva), 10h. (Berkeley, near Branner, Lick, and San Francisco), 13h. (Edinburgh, Florence, Triest, Venice, and Zagreb).

Nov. 17d. 6h. 3m. 2s. Epicentre 19°·2N. 103°·7W. N.1.

Probable error of epicentre ±0°·20.

A = −·224, B = −·918, C = +·329; D = −·972, E = +·237; G = −·078, H = −·320, K = −·944.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		14·6	335	3 25	+ 2	e 6 8	+ 3	i 7·4	—
La Jolla		18·3	321	e 4 9	− 1	e 7 51	+20	—	—
Little Rock		18·5	31	e 4 18	+ 5	i 8 1	+25	i 10·7	—
Riverside		19·1	323	e 4 20	0	e 8 15	+27	—	—
Mount Wilson		19·7	322	e 4 25	− 1	e 8 21	+21	—	—
Pasadena		19·7	322	i 4 25	− 1	i 8 22	+22	e 11·0	—
Denver		20·5	357	e 4 31	− 4	e 8 29	+13	—	10·5
Santa Barbara		20·9	320	e 4 34	− 5	—	—	—	—
Haiwee		21·1	326	i 4 42	+ 1	—	—	—	—
Tinemaha		22·0	328	e 4 51	0	—	—	—	—
St. Louis		22·7	28	i 4 53	− 5	i 9 26	+27	i 12·4	15·5
Lick	E.	24·0	323	e 5 9	− 1	—	—	—	—
Branner		24·3	322	e 5 16	+ 3	—	—	—	—
Berkeley		24·7	323	5 18	+ 1	—	—	—	—
Columbia		25·0	49	e 5 23	+ 3	e 10 6	+25	—	—
Cincinnati	Z.	25·9	36	i 5 31	+ 3	i 10 26	+29	i 14·6	17·5
Ukiah		26·1	324	e 5 34	+ 4	e 10 10	+10	e 13·2	—
Chicago		26·4	28	e 5 32	− 1	i 10 21	+16	14·2	—
Madison		26·8	24	e 5 37	+ 1	i 10 37	+25	14·0	—
Bozeman		27·2	349	e 5 37	− 3	i 10 55	SS	14·2	—
Ann Arbor	E.	28·6	32	—	—	(e 11 4)	+22	e 17·0	18·6
	N.	28·6	32	—	—	(e 10 52)	+10	e 16·8	18·9
Charlottesville		28·9	44	e 6 38	PP	e 11 1	+14	e 16·4	—
Pittsburgh		29·4	39	e 6 0	0	i 11 12	+17	16·2	—
Georgetown		30·3	44	e 6 10	+ 2	i 11 26	+17	e 16·0	—
Buffalo		31·7	36	e 6 17	− 3	i 11 43	+12	e 17·5	—
Victoria	N.	33·2	336	6 11	−23	12 3	+ 9	19·1	22·1
Fordham		33·4	43	e 6 45	+10	e 12 25	+28	19·0	—
Ottawa		34·9	36	e 8 4	PP	e 12 38	+18	e 20·0	—
San Juan		35·5	85	6 54	+ 1	12 38	+ 9	e 17·0	—
Harvard		36·0	42	e 8 16	PP	e 12 57	+21	e 20·0	—
East Machias		39·5	42	e 7 28	0	e 13 54	+25	—	—
Huancayo		42·0	135	—	—	e 13 58	− 8	—	—
Sitka		44·5	336	—	—	e 14 52	+ 9	e 23·0	—
La Paz		50·0	133	e 8 55	+ 4	i 15 58	− 3	22·8	29·9
Edinburgh		80·0	34	e 12 6	− 2	e 22 22	+ 6	43·0	50·5
Stonyhurst		81·0	36	i 12 12	− 1	—	—	44·2	48·0
Oxford		82·4	38	i 12 19	− 1	i 22 39	− 2	—	49·6
Kew		83·1	38	i 12 23	− 1	e 22 41	− 7	e 42·0	49·9
Toledo		85·0	50	e 12 30	− 3	e 23 10	+ 2	e 42·5	51·9
Malaga		85·8	53	12 35	− 2	23 18	+ 2	43·1	51·2
De Bilt		86·0	35	12 36	− 2	e 23 4	−14	e 43·0	51·7
Uccle		86·0	36	e 12 36	− 2	e 23 8	−10	e 42·0	—
Granada		86·2	52	i 12 38	− 1	e 23 26	+ 7	e 42·3	51·7
Almeria		87·2	53	e 15 49	PP	—	—	—	—
Upsala	N.	87·9	26	—	—	e 23 22	[+ 3]	—	53·4
Alicante		88·0	50	e 16 18	PP	—	—	e 50·3	—
Copenhagen		88·0	30	12 58?	+10	23 22	[+ 2]	45·0	—
Lund		88·3	30	—	—	23 22	[0]	51·0	—
Strasbourg		89·0	38	e 12 49	− 4	—	—	e 37·0	—
Stuttgart		89·7	38	e 12 55	− 1	e 23 28	[− 3]	e 50·0	56·7
Pulkovo		92·6	21	e 16 47	PP	23 39	[− 9]	46·0	54·9
Venice		93·3	39	e 7 58?	?	—	—	—	—
Triest		94·0	39	e 13 8	− 8	—	—	e 56·0	—
Ekaterinburg		102·8	9	e 13 57	+ 1	24 38	[− 1]	49·0	66·2
Tiflis		112·5	26	—	—	e 24 19	?	59·7	69·9
Baku		115·5	23	19 48	PP	31 2	?	e 38·0	42·6
Bombay		141·7	5	e 22 58?	PP	—	—	—	—

For Notes see next page.

NOTES TO Nov. 17d. 6h. 3m. 2s.

Additional readings and note :—
Tucson S = +6m.14s.
St. Louis ePPE = +5m.29s. ; T_0 = 6h.2m.20s.
Cincinnati eE = +6m.4s., iPPZ = +6m.11s., iSSZ = +11m.57s. ; T_0 = 6h.2m.46s.
Ukiah e = +11m.16s.
Chicago ePP = +6m.17s., e = +10m.28s.
Madison iPP = +6m.27s. ; T_0 = 6h.2m.31s.
Bozeman e = +9m.45s. and +10m.30s.
Ann Arbor eE = +12m.46s., eN = +12m.58s., e = +14m.10s., and +15m.46s. ; the S is given as eL of an earlier shock.
Pittsburgh e = +6m.43s. = PP −6s., +10m.23s., and +12m.22s. = SSS −3s.
Georgetown iPP = +6m.58s. : T_0 = 6h.2m.24s.
Buffalo ePP = +7m.16s.
Fordham e = +7m.48s. = PP +8s. and +14m.28s.
East Machias ePP = +8m.58s., e = +16m.38s. = SSS +5s.
Huancayo e = +17m.31s. = SSS −2s.
La Paz PE = +9m.56s., SSN = +18m.39s. = S_0S −6s.
Malaga PP = +16m.3s., PPP = +17m.56s., SKS = +22m.53s., PS = +24m.11s., SS = +29m.53s.
De Bilt ePPZ = +16m.2s.
Granada P_0P = +12m.50s., PP = +16m.12s., PS = +24m.2s., PPS = +24m.38s., SSS = +32m.47s.
Strasbourg ePP = +15m.58s.?, e = +17m.58s.? and +21m.58s.?
Stuttgart ePP = +16m.19s.
Pulkovo PPS = +25m.32s. = PS +10s., e = +29m.6s.
Ekaterinburg PP = +18m.13s., PS = +27m.24s., PPS = +28m.16s.
Tiflis ePPS = +50m.10s.
Long waves were also recorded at Seattle, Honolulu T.H., Chiufeng, Irkutsk, Hyderabad, Riverview, and other European stations.

Nov. 17d. 20h. 11m. 40s. Epicentre 31°·1N. 130°·4E. (as given by Tokyo). N.2.

A = −·555, B = +·652, C = +·517 ; D = +·762, E = +·648 ; G = −·335, H = +·393, K = −·856.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Kagosima		0·5	15	0 20	+13	0 35	+22	—	—
Miyazaki		1·2	47	0 22	+ 5	0 41	+10	—	—
Kumamoto		1·7	8	0 27	+ 3	0 48	+ 4	—	—
Nagasaki		1·7	345	0 27	+ 3	0 49	+ 5	—	0·8
Tomie		2·1	318	0 51	S	(0 51)	− 3	—	—
Ooita		2·4	26	0 42	+ 8	1 1	− 1	—	—
Hukuoka		2·5	0	0 38	+ 2	1 6	+ 2	—	1·1
	B.	2·5	0	0 37	+ 1	1 6	+ 2	—	—
Nake		2·9	196	0 52	+11	1 21	+ 7	—	—
Simonoseki		2·9	9	0 36	− 5	1 7	− 7	—	—
Matuyama		3·4	36	i 0 46	− 3	i 1 23	− 4	—	1·4
Koti		3·6	46	0 49	− 2	1 28	− 4	—	1·5
Sumoto		5·0	49	1 7	− 4	2 0	− 8	2·2	2·3
Siomisaki		5·1	61	1 11	− 2	2 4	− 6	—	—
Wakayama		5·1	50	1 20	+ 7	2 13	+ 3	—	—
Kobe		5·3	47	1 12	− 3	2 7	− 8	—	2·2
Osaka		5·6	49	1 9	−11	2 16	− 7	2·6	3·0
Kameyama		6·3	52	1 27	− 3	2 33	− 8	—	—
Hikone		6·4	48	1 27	− 4	2 35	− 8	—	—
Gihu		6·8	50	1 33	− 4	2 46	− 7	—	—
Nagoya		6·8	52	1 35	− 2	2 47	− 6	—	—
Kohu		8·2	54	1 56	0	3 31	+ 2	—	—
Nagano		8·5	47	2 2	+ 2	3 31	− 5	—	—
Oiwake		8·6	50	2 0	− 2	3 24	−15	—	—

Tomie gives also S = +1m.17s.

Nov. 17d. Readings also at 1h. (La Paz and near Andijan), 3h. (near Amboina), 5h. (Batavia), 7h. (near Triest), 9h. (Tiflis, Perth, Suva, and Wellington), 11h. (Alicante and near Amboina), 14h. (near Andijan), 19h. (Irkutsk), 20h. (Ekaterinburg and Huancayo), 22h. (Tyosi).

Nov. 18d. 0h. 59m. 37s. Epicentre 14°·4N. 95°·4W. N.3.

A = −·091, B = −·964, C = +·249; D = −·996, E = +·094;
G = −·023, H = −·248, K = −·969.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Little Rock		20·5	7	i 4 35	0	i 8 14	− 2	—	—
Tucson		22·5	325	e 4 57	+ 1	e 9 0	+ 5	i 11·2	—
St. Louis		24·6	10	e 5 17	+ 1	e 9 43	+ 9	—	—
Florissant		24·8	9	e 5 17	− 1	i 9 43	+ 6	—	16·7
Cincinnati		26·5	19	i 4 55	−39	i 9 30	−37	—	—
La Jolla		27·1	317	e 5 42	+ 3	—	—	—	—
San Juan		28·3	78	—	—	e 10 15	−22	e 16·3	—
Pasadena		28·4	318	e 5 52	+ 1	—	—	e 15·4	—
Mount Wilson		28·5	318	e 5 52	0	—	—	—	—
Pittsburgh		29·3	24	—	—	e 10 50	− 3	—	—
Tinemaha		30·4	322	e 6 9	0	—	—	—	—
Bozeman		33·9	340	—	—	e 12 8	+ 4	e 15·1	—
Ottawa	E.	35·1	24	—	—	e 12 41	+18	22·4	—
Stuttgart		88·5	40	—	—	e 23 53	+11	e 55·4	—

Additional readings :—
Little Rock eE = +8m.5s., iEN = +8m.23s. = SS − 16s.; T_0 = 0h.59m.37s.
Cincinnati i = +6m.0s. = PP − 10s.
Pittsburgh e = +11m.3s.
Long waves were also recorded at Berkeley, Ukiah, Madison, East Machias, and Strasbourg.

Nov. 18d. 13h. 47m. 12s. Epicentre 1°·1N. 123°·9E. N.2.

A = −·558, B = +·830, C = +·019; D = +·830, E = +·558;
G = −·011, H = +·016, K = −1·000.

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

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		+0·6	6·4	138	i 1 33	− 6	i 2 34	−25	—	—
Palau		−0·7	12·3	59	2 42	− 1	5 3	+10	—	—
Manila		−0·9	13·8	348	i 3 1	0	—	—	—	5·6
Batavia		−1·4	18·5	247	i 3 56	+ 1	i 7 23	+19	—	—
Hong Kong		−1·9	23·3	337	4 38	− 6	8 24	−10	9·9	10·4
Taihoku		−2·0	24·0	355	4 47	− 4	—	—	—	—
Medan		−2·1	25·3	276	i 5 6	+ 3	i 9 8	0	—	—
Phu-Lien		−2·2	26·0	321	e 5 5	− 3	e 9 11	− 8	10·8	—
Zi-ka-wei	z.	−2·6	30·2	356	i 5 38	− 6	—	—	—	6·9
Titizima		−2·7	31·3	33	5 51	− 2	10 32	−10	—	—
Nanking	z.	−2·7	31·4	351	e 4 50	−63	—	—	—	—
Perth		−2·9	33·9	192	6 18	+ 4	11 24	+ 4	13·9	15·7
Siomisaki		−3·0	34·2	18	6 15	− 1	11 18	− 5	—	—
Sumoto		−3·0	34·8	17	5 43	−38	—	—	—	—
Kobe		−3·0	35·2	17	6 23	− 1	—	—	—	—
Osaka		−3·0	35·3	17	e 3 55	?	—	—	7·7	8·9
Hikone		−3·1	36·0	18	6 34	+ 3	11 49	0	—	—
Nagoya		−3·1	36·2	19	e 6 33	0	11 47	− 5	—	—
Adelaide		−3·2	38·6	161	e 6 30	−23	i 12 33	+ 6	—	—
Chiufeng		−3·3	39·6	350	i 6 59	− 1	e 12 19	−22	—	—
Calcutta		−3·3	40·6	304	7 49	+40	12 34	−22	16·1	—
Mizusawa		−3·4	41·2	20	7 17	+ 4	13 3	0	—	—
Riverview		−3·5	43·3	146	—	—	i 13 46	+13	—	22·3
Sydney		−3·5	43·3	146	—	—	e 13 36	+ 3	22·3	23·8
Melbourne		−3·5	43·5	155	—	—	i 13 44	+ 8	i 21·2	—

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.
Hyderabad		−3·8	47·6	293	14 33	S	(14 33)	0	18·2	19·6
Bombay		−4·2	53·2	293	8 45	+ 1	15 45	− 2	24·9	—
Irkutsk		−4·3	53·8	345	e 8 49	+ 2	e 15 57	+ 3	e 27·8	—
Almata		−4·6	59·3	322	e 9 36	+10	—	—	—	—
Andijan		−4·6	61·1	317	e 9 42	+ 3	—	—	—	—
Tchimkent		−4·7	63·6	318	e 9 14	−43	—	—	—	—
Ekaterinburg		−5·0	74·8	329	i 11 10	+ 1	i 20 16	− 3	35·8	—
Baku		−5·0	77·2	311	e 11 23	− 1	i 20 47	0	36·8	—
Tiflis		−5·1	81·2	312	11 42	− 5	21 26	− 7	32·6	—
Kucino		−5·3	86·9	325	e 13 28	+72	e 22 19	−14	47·7	53·6
Pulkovo		−5·4	90·9	329	e 12 41	+ 5	i 22 53	−20	—	—
Copenhagen		−5·6	100·9	328	—	—	23 28	[−62]	—	—
Cape Town		−5·7	103·4	235	—	—	23 45	[−57]	—	—
Stuttgart		−5·7	105·2	322	e 18 2	PP	e 25 3	−19	e 57·8	—
De Bilt		−5·7	106·2	326	e 18 7	PP	e 23 51	[−65]	56·8	59·1
La Paz	N.	—	160·5	143	e 19 31	[−23]	—	—	—	—

Additional readings :—
Zi-ka-wei iZ = +6m.32s. =PP +7s.
Sumoto eZ = +7m.17s. =PP −3s., eN = +7m.38s. =PPP +10s., iE = +7m.48s. = PPPP +16s.
Adelaide ePP = +8m.3s., iSS = +15m.28s.
Chiufeng i = +7m.51s., PP? = +8m.27s.
Riverview iE = +17m.7s., iEN = +17m.15s.
Melbourne i = +17m.1s.
Hyderabad S = +17m.28s. =SS +0s.
Tiflis eSS = +26m.0s., eSSS = +29m.12s.
Kucino e = +14m.45s.
Pulkovo PP = +16m.2s., PS = +24m.8s.
Cape Town +25m.48s.
Stuttgart e = +28m.12s.
De Bilt eEN = +25m.14s. =SKKS −25s., e = +28m.29s.

Nov. 18d. Readings also at 0h. (near Zagreb), 1h. (Little Rock and Tucson), 2h. (near Manila), 3h. (La Paz and near Calcutta), 5h. (Wellington), 6h. (near Amboina), 9h. (Adelaide, Riverview, Sydney, Melbourne, Perth, Suva, Wellington, and near Cape Town), 10h. (Baku and Ekaterinburg), 11h. (Zagreb, Huancayo, and near La Paz), 12h. (Strasbourg and near Sumoto), 13h. (near New Plymouth), 14h. (near Alicante and near New Plymouth), 15h. (Marseilles), 16h. (Tucson), 18h. (near Wellington), 19h. (Tyosi and near Nagoya (2)).

Nov. 19d. 8h. 58m. 51s. Epicentre 18°·3N. 105°·5W. (as on 1932 April 16d.). X.

A = −·254, B = −·915, C = +·314 ; D = −·964, E = +·267 ; G = −·084, H = −·303, K = −·949.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	
		°	°	m. s.	s.	m. s.	s.	m.	
Tucson		14·8	342	e 3 19	− 7	—	—	7·2	
La Jolla		18·0	326	e 4 10	+ 3	—	—	—	
Riverside	N.	18·9	328	e 4 19	+ 2	—	—	—	
Mount Wilson		19·4	327	e 4 27	+ 4	—	—	—	
Pasadena	Z.	19·4	327	i 4 27	+ 4	—	—	—	
Little Rock		20·2	33	e 4 29	− 3	e 8 14	+ 4	—	
Haiwee		21·0	331	e 4 40	0	—	—	—	
Tinemaha	E.	21·9	332	e 4 51	+ 1	—	—	—	
St. Louis		24·3	30	i 5 11	− 2	e 12 25	L	(e 12·4)	

Long waves were recorded at Bozeman, Madison, and Harvard.

Nov. 19d. Readings also at 1h. (near Apia), 9h. (Almata, Andijan, Tchimkent, Ekaterinburg (2), Pulkovo, and near Irkutsk), 14h. (Branner and Wellington), 15h. (Tucson and near Mizusawa), 16h. (Huancayo), 17h. (near Taihoku), 18h. (Alicante and near Mizusawa), 19h. (Pasadena, Huancayo, La Paz, and near Santiago), 21h. (Bombay and Calcutta).

Nov. 20d. 23h. 36m. 59s. Epicentre 51°·7N. 5°·6E. N.2.

A = +·617, B = +·060, C = +·785; D = +·098, E = −·995; G = +·781, H = +·077, K = −·620.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
De Bilt	0·5	328	i 0 5	− 2	i 0 12	− 1	—	0·3
Uccle	1·2	221	i 0 15	− 2	i 0 30	− 1	—	—
Feldberg	2·4	130	e 0 37	+ 3	i 1 5	+ 3	—	—
Göttingen	2·8	93	e 0 40	0	i 1 13	+ 1	—	1·5
Karlsruhe	3·3	146	1 1?	P_g	1 41	S_g	1·8	—
Hamburg	3·3	55	0 46	− 1	e 1 42	S_g	—	2·9
Strasbourg	3·4	156	e 0 46	− 3	1 26	− 1	—	—
Kew	3·6	267	e 0 57	P*	1 58	S_g	—	—
Stuttgart	3·7	140	e 0 52	− 1	e 1 35	0	2·4	—
Jena	3·9	99	i 0 55	− 1	(e 1 31)	− 9	e 1·5	2·4
Oxford	4·2	274	e 1 49	S	(e 1 49)	+ 1	—	—
Besançon	4·5	176	e 1 21	P_g	2 15	S*	—	—
Potsdam	4·7	78	e 1 23	P_g	i 2 1	+ 1	—	—
Ravensburg	4·7	145	e 1 14	P*	e 2 15	S*	2·5	—
Zurich	4·8	155	e 1 5	− 3	e 2 4	+ 1	—	—
Neuchatel	4·8	169	e 1 6	− 2	e 2 8	+ 5	—	—
Durham	5·2	309	1 48	P_g	2 12	− 1	3·0	—
Chur	5·5	151	e 1 17	− 1	—	—	—	—
Copenhagen	5·7	42	—	—	2 1?	−24	—	—
Prague	5·8	103	—	—	e 2 31	+ 3	—	3·3
Lund	6·0	45	—	—	2 1?	−32	—	—
Pavia	7·0	151	—	—	e 3 34	S*	—	—
Piacenza	7·2	156	—	—	e 3 53	S_g	—	—
Vienna	7·8	112	e 1 52	+ 1	3 15	− 4	—	4·2
Triest	8·1	136	e 3 26	S	(e 3 26)	0	—	—
Florence	8·8	152	e 2 17	+12	4 43	S_g	—	4·7
Zagreb	9·0	127	e 3 51?	S	e 4 52	S_g	—	—
Budapest	9·7	110	e 4 54	S*	i 5 9	S_g	6·0	—
Tortosa	11·4	200	e 3 31	+51	6 14	S_g	—	—
Pulkovo	15·9	50	e 3 33	− 7	—	—	e 9·0	—

Additional readings:—
De Bilt iNZ = +10s.
Feldberg i = +55s. and +1m.8s. = S* − 1s., eE = +1m.22s.
Göttingen iP_g = +49s.
Hamburg iZ = +1m.2s. = P_g +2s.
Strasbourg SS = +1m.36s., SSS = +1m.45s. = S* − 3s.
Kew eP* = +1m.13s., eEZ = +1m.45s. = S* +0s., eN = +2m.3s., eS*EN = +2m.15s., eE = +2m.21s., eN = +2m.27s., eEN = +2m.38s.
Stuttgart e = +1m.57s. = S_g +1s.
Jena iPN = +1m.1s. = P* − 3s., eE = +1m.10s. = P_g − 2s., eLN = +1m.17s.
Potsdam eEN = +1m.31s. = P_g +3s., iE = +1m.55s., iE = +2m.6s., iN = +2m.17s. = S* − 1s., iEN = +2m.21s., iN = +2m.25s., iEZ = +2m.30s. = S_g +1s., iN = +2m.32s.
Neuchatel eP_g = +1m.16s. = P* − 3s.
Durham ? = +2m.57s.
Vienna P = +1m.56s., P* = +2m.19s., P_g = +2m.29s., PPS = +3m.8s., PSS = +3m.35s., S* = +3m.45s., S_g = +4m.7s., SS = +4m.11s.
Triest eS = +4m.4s. = S* +5s., SS = +4m.28s. = S_g +6s.
Long waves were also recorded at Cheb, Edinburgh, and Ekaterinburg.

Nov. 20d. Readings also at 9h. (near Medan), 10h. (Florence and near Prato), 11h. (Florence, Granada, and Pasadena), 16h. (Wellington), 19h. (Bombay), 20h. (Göttingen, near De Bilt, and Uccle), 22h. (Tucson).

Nov. 21d. Readings at 0h. (De Bilt, Uccle, Göttingen, and near Neuchatel), 1h. (Florence and near Prato), 2h. (Phu-Lien and near Wellington), 3h. (Manila, De Bilt, and near Uccle), 6h. (La Paz), 8h. (Nagoya and Tyosi), 9h. (Tyosi), 12h. (near Amboina), 14h. (Bombay, Calcutta, and near Tchimkent), 18h. (Baku, Tiflis, Ekaterinburg, and Tashkent), 20h. (near Tyosi), 22h. (Manila).

Nov. 22d. 14h. 51m. 29s. Epicentre 7°·7S. 127°·1E. N.2.

Batavia gives 7°·5S. 128°·0E.

A = −·598, B = +·790, C = −·134; D = +·798, E = +·603; G = +·081, H = −·107, K = −·991.

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

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		+0·1	4·2	16	i 1 13	+12	2 5	+15	—	—
Palau		−0·9	16·7	26	3 39	0	6 41	+ 7	—	—
Malabar		−1·1	19·4	270	e 4 13	+ 3	7 19	−12	—	—
Batavia		−1·2	20·2	273	4 12	− 7	i 7 46	0	—	—
Manila		−1·5	23·1	345	4 45	− 1	8 48	+10	—	—
Perth		−1·7	26·4	202	5 11	− 6	i 9 36	0	—	—
Adelaide		−1·9	29·2	160	i 5 39	− 2	i 10 20	0	—	—
Medan		−2·0	30·5	291	i 5 55	+ 3	—	—	—	—
Hong Kong		−2·1	32·6	337	6 10	+ 1	11 7	− 5	13·6	14·2
Melbourne		−2·2	34·1	154	i 6 25	+ 3	i 11 40	+ 6	15·0	18·3
Riverview	E.	−2·2	34·3	143	i 5 54	−30	11 41	+ 4	—	17·8
Sydney		−2·2	34·3	143	—	—	e 11 37	0	18·4	18·8
Phu-Lien		−2·2	34·9	325	6 31?	+ 2	—	—	—	—
Miyazaki		−2·5	39·9	7	7 9	− 1	12 59	+ 2	—	—
Nagasaki		−2·5	40·5	4	7 16	+ 1	e 13 7	+ 1	—	—
Nanking	Z.	−2·5	40·6	349	i 7 11	− 5	e 14 3	+55	—	—
Osaka		−2·7	43·1	11	e 7 8	−27	—	—	10·7	11·4
Nagoya		−2·7	43·9	13	7 44	+ 2	13 58	+ 4	—	—
Calcutta		−3·0	48·5	311	8 38	+21	12 30	?	14·6	—
Chiufeng		−3·0	48·9	349	i 8 21	+ 1	e 10 12	P_cP	—	—
Wellington		−3·3	53·8	137	—	—	22 31?	?	—	—
Bombay		−3·5	59·8	297	9 42	+ 4	17 35	+ 8	28·9	—
Irkutsk		−3·6	63·1	344	10 3	+ 2	e 18 18	+ 9	e 30·5	—
Ekaterinburg		−4·0	84·0	329	i 13 10	+62	i 22 22	+ 6	31·5	—
Tiflis		−4·1	89·4	312	12 31	− 4	22 43	[−46]	e 44·5	—
Vienna	Z.	—	109·5	319	i 18 42	[+26]	—	—	—	—
Tinemaha	E.	—	114·2	53	e 18 17	[−14]	—	—	—	—
Haiwee		—	114·6	54	i 18 18	[−14]	—	—	—	—
Pasadena	Z.	—	114·8	56	e 18 15	[−17]	—	—	—	—
Huancayo		—	150·2	131	e 20 19	[+37]	—	—	—	—
La Paz	Z.	—	151·5	148	e 19 39	[− 5]	—	—	—	—

Additional readings :—
Malabar i = +4m.19s. = PP + 0s.
Adelaide i = +11m.8s. = SS − 7s.
Hong Kong PP = +6m.37s., SS = +12m.18s.
Melbourne SS = +13m.21s.
Riverview iPZ = +6m.26s.
Nagasaki e = +17m.2s. = S_cS − 28s.
Osaka i = +7m.47s. and +8m.17s.
Irkutsk e = +12m.11s. and +25m.41s.
Tiflis P_cP = +12m.46s., ePP = +16m.16s., PPP = +18m.4s., iSKKS = +23m.7s., PPS = +24m.22s.
Long waves were recorded at Copenhagen.

Nov. 22d. Readings also at 1h. (near Taihoku), 3h. (near Apia), 4h. (Lick), 6h. (Berkeley, Branner, Lick, and San Francisco), 7h. (Little Rock and near St. Louis), 14h. (Tucson), 17h. (Florence and near Prato), 19h. (Lick), 21h. (near Kobe, Osaka, and Sumoto), 23h. (Simferopol).

Nov. 23d. 3h. 8m. 4s. (I) } Epicentre 51°·7N. 5°·6E. X.
4h. 20m. 12s. (II) } (as on 20d.) X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I De Bilt		0·5	328	e 0 8	+ 1	e 0 16	+ 3	—	—
II		0·5	328	e 0 9	+ 2	e 0 16	+ 3	—	—
I Uccle		1·2	221	i 0 17	0	i 0 30	− 1	—	—
II		1·2	221	i 0 18	+ 1	i 0 31	0	—	—
I Feldberg		2·4	130	e 0 44	P_g	i 1 0	− 2	—	—
II	E.	2·4	130	—	—	e 0 54	− 8	—	—
I Göttingen		2·8	93	e 0 45	P*	—	—	—	1·5
II		2·8	93	e 0 39	− 1	—	—	—	1·4
I Strasbourg		3·4	156	—	—	e 1 23	− 4	—	—
II		3·4	156	—	—	e 1 24	− 3	—	—
I Kew		3·6	267	—	—	e 2 2	S_g	—	—
II		3·6	267	—	—	e 2 2	S_g	—	—
I Stuttgart		3·7	140	—	—	e 1 32	− 3	—	—
II		3·7	140	—	—	e 1 48	S*	—	—
I Besançon		4·5	176	—	—	e 2 16	S*	—	—
II		4·5	176	—	—	e 2 18	S_g	—	—
I Ravensburg		4·7	145	—	—	e 2 20	S*	—	—
I Zurich		4·8	155	e 1 8	0	—	—	—	—
II		4·8	155	—	—	e 1 48?	−15	—	—
I Neuchatel		4·8	169	e 1 8	0	(e 2 12)	+ 9	e 2·2	—
II		4·8	169	e 1 9	+ 1	e 2 13	+10	—	—
I Vienna	Z.	7·8	112	e 3 55	S*	—	—	—	—

Additional readings :—
Feldberg I i = +1m.7s. = S* − 2s.
Göttingen I eP_gEN = +51s.
Strasbourg I e = +1m.52s. : II e = +1m.55s.
Stuttgart I e = +2m.8s.

Nov. 23d. 8h. 57m. 44s. Epicentre 36°·2N. 139°·6E. (as on 1932 Aug. 1d.). X.

A = −·615, B = +·523, C = +·591.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tokyo		0·6	166	0 9	0	0 20	+ 5	—	0·4
Tyosi		1·1	115	i 0 14	− 2	0 31	+ 3	—	—
Nagoya		2·4	244	0 33	− 1	1 3	+ 1	—	—
Mizusawa	E.	3·1	23	0 46	+ 2	1 24	+ 4	—	—
Osaka		3·7	245	0 54	+ 1	—	—	1·9	2·2

Nov. 23d. Readings also at 1h. (near Tchimkent), 3h. (Huancayo, near New Plymouth and Wellington), 4h. (near Sumoto), 9h. (Riverview and Wellington), 10h. (Jena), 12h. (near Tchimkent), 15h. (Riverview, Sydney, Suva, Wellington, Ekaterinburg, Simferopol, Theodosia, Yalta, Haiwee, La Jolla, Mount Wilson, and Pasadena), 16h. (Baku), 17h. (Branner), 18h. (La Paz), 21h. (La Paz and near Mizusawa), 22h. (Camerino, La Paz, and Tyosi), 23h. (Tiflis).

Nov. 24d. Readings at 4h. (Feldberg), 9h. (Vienna, Branner, and near Lick), 10h. (Bombay and Tiflis), 12h. (Tyosi, La Paz, near Huancayo, and near Sumoto), 13h. (La Paz, near Nagoya (2), and near Andijan), 14h. (near Nagoya (2) and near Amboina), 16h. (Tiflis), 18h. (near Tyosi), 20h. (Tiflis), 21h. (Göttingen, near De Bilt, and Uccle), 22h. (Zurich), 23h. (Phu-Lien, Zi-ka-wei, Nanking, near Hokoto, and Taihoku).

Nov. 25d. Readings at 1h. (La Paz and near Huancayo), 4h. (Branner and Lick), 11h. (Chiufeng, Irkutsk, Ekaterinburg, Baku, and Tiflis), 13h. (Huancayo and near Andijan), 16h. (La Paz), 20h. (La Paz and near Santiago), 21h. (Tchimkent, Tiflis, and near Andijan (2)), 22h. (Huancayo), 23h. (Tiflis).

Nov. 26d. 4h. 24m. 1s. Epicentre **42°·3N. 142°·4E.** R.1.
(as on 1931 May 7d.).

Probable error of epicentre ±0°·24.

A = −·586, B = +·451, C = +·673; D = +·610, E = +·792;
G = −·533, H = +·410, K = −·740.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Urakawa	0·3	118	0 9	+ 5	—	—	—	—
Obihiro	0·8	44	0 0	−11	—	—	—	—
Muroran	1·1	272	0 19	+ 3	0 34	S*	—	—
Sapporo	1·2	312	0 19	+ 2	0 33	+ 2	—	—
Hakodate	1·4	248	0 33	S	(0 33)	− 3	—	—
Asahigawa	1·5	359	0 22	+ 1	0 42	+ 3	—	—
Kusiro	1·6	65	0 26	+ 3	0 48	+ 7	—	—
Aomori	1·9	219	0 30	+ 2	0 57	+ 8	—	—
Haboro	2·2	346	0 25	− 6	—	—	—	—
Nemuro	2·5	66	0 35	− 1	1 2	− 2	—	—
Miyako	2·7	187	0 30	− 9	1 6	− 3	—	—
Morioka	2·8	202	0 39	− 1	1 12	0	—	—
Akita	3·1	214	0 46	+ 2	1 26	+ 6	—	—
Mizusawa	3·3	198	0 47	0	1 24	− 1	—	—
Sendai	4·2	198	0 59	− 1	1 46	− 2	—	—
Ootomari	4·4	2	1 6	+ 3	2 18	S_g	—	2·9
Hukusima	4·8	199	1 8	0	2 8	+ 5	—	—
Niigata	5·1	212	1 20	P*	2 40	S_g	—	—
Mito	6·1	195	1 24	− 3	2 34	− 2	—	—
Maebasi	6·4	205	1 31	0	2 51	+ 8	—	—
Tukubasan	6·4	197	1 27	− 4	3 0	S*	—	—
Kakioka	6·4	196	1 25	− 6	2 39	− 4	—	—
Nagano	6·5	211	1 34	+ 2	2 46	0	—	—
Wazima	6·5	223	1 36	+ 4	2 46	0	—	—
Tyosi	6·6	191	i 1 32	− 2	2 53	+ 5	—	3·4
Oiwake	6·6	208	1 36	+ 2	2 51	+ 3	—	—
Kumagaya	6·6	202	1 34	0	2 53	+ 5	—	—
Tokyo	6·9	199	1 37	− 1	3 10	+14	—	—
Yokohama	7·2	198	1 41	− 1	3 11	+ 7	—	—
Kohu	7·3	205	1 46	+ 2	3 24	S*	—	—
Numadu	7·7	203	1 51	+ 2	3 21	+ 5	—	—
Misima	7·7	202	1 52	+ 3	3 23	+ 7	—	—
Mera	7·7	196	1 48	− 1	3 34	S*	—	—
Gihu	8·2	214	1 56	0	3 31	+ 2	—	—
Nagoya	8·3	213	e 1 58	0	4 1	S*	—	5·1
Hamamatu	8·4	208	2 0	+ 1	3 47	+13	—	—
Hikone	8·5	216	2 4	+ 4	3 32	− 4	—	—
Kameyama	8·8	214	2 6	+ 1	3 55	+11	—	—
Kyoto	9·0	218	2 7	0	4 3	+14	—	—
Toyooka	9·0	224	i 2 6	− 1	e 3 57	+ 8	—	5·2
Osaka	9·3	218	1 53	−18	i 3 47	− 9	4·3	5·7
Kobe	9·5	219	e 2 15	+ 1	4 3	+ 2	—	4·6
Wakayama	9·8	218	2 19	+ 1	4 22	+14	—	—
Sumoto	9·9	219	2 20	+ 1	4 19	+ 8	—	5·5
Siomisaki	10·3	213	2 27	+ 2	4 37	+16	—	—
Hamada	11·0	231	2 36	+ 1	4 42	+ 4	—	—
Koti	11·2	222	e 2 38	+ 1	e 4 45	+ 2	—	5·3
Matuyama	11·4	225	e 3 41	+61	i 5 59	S_g	—	—
Simidu	12·1	221	2 48	− 2	5 14	+ 9	—	—
Taikyu	12·5	244	2 57	+ 2	5 21	+ 6	—	—
Sinkyo	12·6	284	3 10	+14	6 20	S*	—	—
Hukuoka	12·8	231	3 0	+ 1	5 36	+15	—	5·7
B.	12·8	231	3 1	+ 2	5 31	+10	—	—
Zinsen	13·1	254	3 4	+ 1	5 30	+ 1	—	—
Kumamoto	13·2	228	3 5	0	5 47	+15	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Miyazaki		13·5	224	3 9	0	5 32	− 7	—	—
Nagasaki		13·8	230	3 13	0	5 47	+ 1	—	9·0
Tomie		14·5	233	3 22	0	5 54	− 9	—	—
Titizima		15·2	181	3 23	− 8	6 1	−19	—	—
Chiufeng		19·8	272	4 24	− 3	i 8 2	0	10·4	12·6
Naha		20·1	222	4 30	− 1	8 20	+12	—	—
Zi-ka-wei	Z.	20·1	243	4 25	− 6	8 1	− 7	11·7	14·9
Nanking		21·3	249	i 3 42	−61	i 7 39	−53	10·4	13·0
Taihoku		24·4	232	5 4	−10	9 38	+ 8	—	—
Irkutsk		27·3	305	i 5 31	−10	i 10 17	− 3	13·0	15·5
Hong Kong		30·9	239	6 12	− 1	11 11	− 7	13·9	17·5
Manila		33·3	222	6 35	+ 1	11 47	− 8	15·7	—
Phu-Lien		36·9	245	e 7 4	− 2	12 44	− 6	—	—
Amboina		47·7	200	8 31	− 3	15 19	−10	—	—
Calcutta		48·8	266	7 25	−77	14 18	−86	22·3	—
Andijan		50·9	295	e 8 54	− 4	e 16 8	− 5	26·8	—
Tchimkent		52·1	297	e 8 59	− 8	—	—	—	—
Honolulu T.H.		53·8	94	—	—	i 16 50	− 3	22·0	—
Agra	E.	53·8	278	e 9 17	− 3	—	—	—	—
Medan		54·9	239	e 9 33	+ 5	i 16 41	−27	—	—
Batavia		58·3	225	9 50	− 2	i 17 43	−10	—	—
Hyderabad		59·2	269	9 29	−30	18 0	− 5	30·8	38·3
Victoria	E.	61·9	49	18 44	S	(18 44)	+ 3	29·8	30·8
Bombay		62·4	273	10 23	+ 2	18 43	− 4	31·6	39·2
Pulkovo		63·8	330	10 26	− 5	18 57	− 8	31·5	38·0
Kodaikanal		64·7	263	10 36	− 1	19 10	− 6	—	—
Helsingfors		65·5	331	e 10 54	+12	i 19 15	−11	e 27·1	—
Baku		65·7	305	10 42	− 1	i 19 25	− 4	30·8	42·6
Ukiah		67·6	58	—	—	e 19 39	−13	e 31·5	—
Tiflis		68·0	308	e 10 52	− 6	i 19 51	− 6	33·4	44·4
Upsala		68·3	334	e 11 1	+ 1	e 20 13	+12	e 34·5	40·7
Branner		69·3	59	e 11 1	− 5	—	—	—	—
Lick		69·7	59	e 11 1	− 8	—	—	—	—
Königsberg		71·1	330	i 11 36	+19	i 20 26	− 8	e 34·8	41·0
Bergen		71·5	341	20 9	S	(20 9)	−30	e 40·0	—
Tinemaha	E.	71·9	57	e 11 19	− 3	e 20 38	− 6	—	—
Haiwee	Z.	72·7	56	e 11 22	− 5	—	—	—	—
Santa Barbara		72·7	59	e 11 25	− 2	—	—	—	—
Lund		73·0	334	11 44	+15	20 50	− 7	36·0	—
Copenhagen		73·3	334	11 28	− 3	20 53	− 7	36·0	—
Mount Wilson		73·9	59	e 11 29	− 5	e 20 59	− 8	—	—
Pasadena		73·9	59	i 11 28	− 6	e 20 53	−14	e 33·1	—
Riverside	E.	74·4	59	e 11 34	− 3	e 21 2	−11	—	—
La Jolla		75·3	59	e 11 38	− 4	e 21 12	−12	—	—
Potsdam		75·7	331	i 11 43	− 1	i 21 19	− 9	e 41·0	51·0
Hamburg		75·8	334	e 11 42	− 3	i 21 22	− 7	e 36·0	42·0
Ivigtut		76·1	6	11 47	0	21 25	− 8	36·0	—
Riverview		76·6	173	—	—	e 21 35	− 3	e 38·5	43·2
Budapest		77·2	325	e 11 59?	+ 6	21 39	− 6	36·2	49·0
Adelaide		77·4	184	i 11 46	− 8	e 21 31	−16	—	—
Göttingen		77·5	332	e 11 51	− 4	e 21 47	− 1	e 38·9	40·0
Jena	E.	77·5	331	e 11 59	+ 4	e 21 37	−11	e 36·0	41·5
Edinburgh		77·6	342	—	—	21 59?	+10	—	—
Vienna		77·7	327	e 11 50	− 6	i 21 44	− 7	i 39·1	53·0
Cheb		77·8	330	e 21 46	S	(e 21 46)	− 6	e 38·0	45·0
Perth		78·2	204	21 39	S	(21 39)	−17	—	—
Ksara	N.	78·5	307	11 59	− 1	21 49	−10	—	—
De Bilt		78·6	335	e 12 20	+20	e 22 2	+ 2	e 37·0	43·4
Belgrade		78·7	322	e 12 15	+14	e 21 51	−11	e 35·1	—
Stonyhurst		79·2	341	—	—	i 21 51	−16	41·0	44·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		79·6	56	e 12 10	+ 4	22 2	− 9	—	—
Zagreb		79·8	326	e 12 5	− 2	e 22 4	−10	e 42·0	—
Bidston		79·8	341	e 12 19	+12	e 22 9	− 5	—	—
Uccle		79·9	335	e 12 6	− 1	e 22 4	−11	e 36·0	—
Stuttgart		80·1	331	e 12 6	− 2	e 22 5	−12	e 39·0	—
Melbourne		80·2	179	—	—	i 21 59	−19	—	—
Kew		80·8	339	e 12 36	+24	e 22 12	−12	e 40·0	43·7
Strasbourg		80·8	332	b 12 8	− 4	e 22 29	+ 5	e 36·0	—
Triest		80·9	327	e 12 10	− 3	22 12	−13	e 44·0	51·0
Innsbruck		81·1	329	11 59?	−15	—	—	—	—
Treviso		81·5	328	11 59?	−17	e 22 24	− 8	44·6	54·0
Chur		81·5	332	e 12 13	− 3	e 22 22	−10	—	—
Zurich		81·5	332	e 12 13	− 3	e 22 20	−12	—	—
Venice		81·6	327	e 12 35	+19	e 22 53?	+20	—	—
Neuchatel		82·3	332	e 12 16	− 4	e 22 22	−18	—	—
Madison		82·7	36	e 8 38	?	e 19 3	?	—	34·0
Piacenza		83·0	330	12 27	+ 4	23 9	+22	—	49·8
Prato		83·3	328	e 11 54	−31	i 22 39	−11	e 46·3	—
Florence		83·4	328	i 12 42	+17	i 22 46	− 5	41·0	46·0
Helwan		84·0	307	e 12 29	+ 1	i 22 40	−18	—	—
St. Louis		86·0	40	e 12 33	− 5	e 22 49	[−17]	e 45·0	—
Ottawa		86·0	25	e 12 50	+12	e 22 56	[−10]	e 40·0	—
Buffalo		87·0	30	e 12 53	+10	e 23 9	[− 4]	—	49·0
Little Rock		88·1	43	e 12 46	− 2	i 23 33	− 5	—	—
Pittsburgh		88·8	32	12 55	+ 3	i 23 11	[−14]	e 35·9	—
East Machias		88·9	22	—	—	e 23 56	+10	e 39·0	—
Tortosa	N.	90·0	333	e 13 18	+21	23 18	[−15]	42·4	52·4
Harvard		90·1	25	—	—	i 24 8	+11	e 41·8	—
Fordham		90·6	27	e 12 59	− 1	i 23 47	−15	e 43·0	—
Georgetown		91·2	30	i 13 16	+13	i 23 55	−12	e 39·0	—
Toledo		92·4	336	e 13 6	− 3	24 8	−10	e 42·3	55·1
Algiers		92·6	329	e 13 7	− 2	e 24 3	−17	44·0	—
Alicante		92·7	333	e 13 31	+21	—	—	e 50·4	—
Granada		94·7	335	17 20	PP	24 22	−17	50·0	62·7
Malaga		95·4	335	13 28	+ 6	24 47	+ 1	45·2	51·3
San Fernando		96·2	336	14 50	+84	24 21	[+14]	—	58·5
San Juan		113·8	30	—	—	e 26 9	[+40]	e 48·0	—
Huancayo		135·5	60	e 19 14	[− 1]	—	—	e 62·8	—
La Paz		143·3	55	e 19 31	[+ 3]	26 31	SKS	66·0	86·6
Rio de Janeiro		160·0	15	—	—	25 59?	?	e 76·0	—

Additional readings and notes :—
Ootomari P_g = +1m.46s.
Tyosi PN = +1m.38s., PE = +1m.49s. = P* − 1s., P = +1m.52s.
Toyooka iPEN = +2m.9s., iSNZ = +4m.0s.
Osaka i = +2m.14s. and +4m.46s.
Sumoto EN = +4m.32s.
Chiufeng iPP = +4m.42s., S = +8m.4s., iSS = +8m.42s.
Zi-ka-wei PPZ = +4m.51s., iZ = +5m.21s., +5m.33s., +8m.25s., and +9m.13s.
Nanking SSZ = +8m.39s.
Hong Kong PP? = +6m.29s., ? = +7m.14s. = PP + 5s.
Amboina i = +15m.49s.
Honolulu T.H. 1 = +16m.59s.
Pulkovo L_q = +31m.29s.
Helsingfors eP_gSN = +15m.36s., iSKSE = +20m.55s., iSKSN = +20m.58s., eSSN = +23m.22s.; T_g = 4h.24m.19s.
Ukiah e = +23m.59s. = SS − 7s.
Tiflis P = +10m.55s., e = +11m.6s., PS = +20m.20s., SSS = +28m.21s.
Königsberg eN = +20m.44s., eE = +20m.49s.
Lund +21m.8s. = PS − 10s.
Copenhagen i = +11m.45s., +21m.16s. = PS − 6s., e = +22m.3s.
Potsdam ePEN = +11m.59s.?, iZ = +12m.0s., eE = +14m.35s. = PP + 8s. and +16m.59s.?, iEN = +21m.44s. = PS − 10s.
Göttingen iPZ = +12m.8s.
Jena eZ = +11m.47s., eP = +12m.8s., eSN = +21m.41s., eN = +22m.55s., eE = +22m.59s.
Vienna iZ = +12m.11s., iN = +13m.2s., +20m.27s., and +21m.28s., iEN = +22m.9s. = PS − 11s.

Continued on next page.

Cheb eS = +29m.40s.
De Bilt eN = +22m.17s. =PS −11s.
Stonyhurst i = +22m.28s. =PS −11s.
Tucson e = +12m.17s.
Zagreb eNW = +37m.59s.?
Uccle e = +18m.24s.
Stuttgart i = +12m.25s., iP_cP = +12m.28s., e = +13m.21s., eS_cS = +22m.27s., e = +34m.19s.
Melbourne e = +33m.17s.
Strasbourg iZ = +12m.26s., ePP = +15m.32s., ePPPP = +18m.43s., ePS = +23m.20s.
Triest i = +12m.27s. and +22m.38s., iPS = +22m.59s., i = +23m.56s.
Innsbruck e = +12m.41s.
Florence PS = +23m.23s., i = +25m.5s.
Pittsburgh i = +23m.37s. =S −8s., +23m.54s., and +24m.8s. =PS −29s.
East Machias e = +22m.52s., eSKS = +23m.12s., e = +24m.2s.
Harvard e = +23m.19s. =SKS −24s., i = +25m.7s. ; T_o =4h.24m.3s.
Fordham i = +13m.12s. and +13m.16s., iSKS = +23m.24s.,' iPS = +24m.51s., i = +25m.20s.
Georgetown i?Z = +12m.54s. ; T_o =4h.24m.36s.
Toledo i = +13m.23s., SKS = +23m.32s., PS = +24m.36s.
Algiers eSKS = +23m.31s.
Granada PS = +24m.58s.
Malaga P_cP = +15m.35s., PP = +17m.22s., SKS = +23m.45s., SKKS = +24m.16s., PPS = +26m.15s., SS = +31m.16s.
San Fernando PP = +18m.4s.
San Juan e = +26m.20s., ePS = +29m.28s.
Huancayo iPKP = +19m.35s., e = +22m.11s., +22m.47s. =PKS −8s. and +34m.30s., iSS = +40m.47s., eSSS = +45m.29s.
La Paz ePPN = +23m.11s.
Long waves were also recorded at Ekaterinburg, Almeria, Durham, Bozeman, and Wellington.

Nov. 26d. 12h. 1m. 4s. Epicentre 42°·3N. 142°·4E. (as at 4h.). R.2.

A = −·586, B = +·451, C = +·673 ; D = +·610, E = +·792 ; G = −·533, H = +·410, K = −·740.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Urakawa	0·3	118	0 3	− 1	0 10	+ 2	—
Obihiro	0·8	44	0 22	+11	0 36	+15	—
Muroran	1·1	272	0 14	− 2	0 29	+ 1	—
Hakodate	1·4	248	0 30	+10	0 49	+13	—
Asahigawa	1·5	359	0 22	+ 1	0 41	+ 2	—
Kusiro	1·6	65	0 24	+ 1	0 42	+ 1	—
Aomori	1·9	219	0 28	0	0 50	+ 1	—
Morioka	2·8	202	0 39	− 1	1 12	0	—
Akita	3·1	214	0 46	+ 2	1 22	+ 2	—
Mizusawa	3·3	198	0 48	+ 1	1 24	− 1	—
Sendai	4·2	198	0 57	− 3	1 44	− 4	—
Hukusima	4·8	199	1 5	− 3	2 1	− 2	—
Maebasi	6·4	205	1 35	+ 4	2 50	+ 7	—
Tukubasan	6·4	197	1 24	− 7	2 32	−11	—
Kakioka	6·4	196	1 22	− 9	2 46	+ 3	—
Nagano	6·5	211	1 31	− 1	3 10	S*	—
Wazima	6·5	223	1 34	+ 2	2 51	+ 5	—
Oiwake	6·6	208	1 36	+ 2	3 14	S*	—
Tyosi	6·6	191	e 1 33	− 1	e 2 59	+11	3·3
Kumagaya	6·6	202	1 35	+ 1	2 54	+ 6	—
Tokyo	6·9	199	1 38	0	3 5	+ 9	—
Yokohama	7·2	198	1 40	− 2	2 57	− 7	—
Kohu	7·3	205	1 43	− 1	3 10	+ 4	—
Misima	7·7	202	1 50	+ 1	3 22	+ 6	—
Gihu	8·2	214	1 56	0	3 15	−14	—
Nagoya	8·3	213	e 1 58	0	4 2	S*	—
Hikone	8·5	216	1 59	− 1	3 32	− 4	—

Additional readings :—
Mizusawa SE = +1m.27s.
Tyosi iP = +2m.41s.

Nov. 26d. 17h. 17m. 3s. Epicentre 33°·0S. 11°·0W. (as on 1930 Dec. 25d.). X.

A = +·823, B = −·160, C = −·545 ; D = −·191, E = −·982 ;
G = −·535, H = +·104, K = −·839.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Cape Town	24·5	101	—	—	10 31	+59	—	—
La Plata	38·6	256	7 27	+ 7	12 21	−54	14·6	—
La Paz	53·8	275	e 9 13	− 7	16 57	+ 4	25·4	30·8
Huancayo	62·0	274	—	—	i 18 43	+ 1	e 30·8	—
Tiflis	90·6	38	e 24 42	PS	—	—	e 50·0	—
Baku	92·4	42	e 23 21	S	(e 23 21)	[−33]	45·0	57·0
Kodaikanal	94·2	80	35 24	?	—	—	—	—
Ekaterinburg	108·4	35	—	—	e 36 38	?	53·0	—

Additional readings :—
Huancayo i = +25m.48s. = SSSS + 1s.
Tiflis eS = +33m.24s. = SSS + 2s.
Baku eS = +32m.25s.
Long waves were recorded at Rio de Janeiro, San Fernando, and Riverview.

Nov. 26d. Readings also at 0h. (Tiflis, Zurich, near Zagreb, and near Tyosi), 1h. (Mizusawa and near Tyosi), 2h. (De Bilt and near Uccle), 3h. (Messina, New Plymouth, and near Tyosi), 4h. (near Pulkovo, Amboina, and near Mizusawa), 6h. (Mizusawa and Tyosi), 7h. (near Mizusawa and Tyosi), 8h. (Little Rock, Tyosi, near Mizusawa, and near Sumoto), 10h. (near Mizusawa), 11h. (Bidston), 12h. (Budapest, near Mizusawa, and Tyosi), 13h. (Riverview and Wellington), 14h. (Mizusawa, Suva, near Bunnythorp, Seatoun, New Plymouth, and Wellington), 15h. (Mizusawa), 19h. (Mizusawa, Huancayo, and La Paz), 20h. (Tucson), 21h. (Strasbourg and near Toyooka).

Nov. 27d. 3h. 37m. 35s. Epicentre 29°·4N. 141°·9E. N.2.

A = −·686, B = +·538, C = +·491 ; D = +·617, E = +·787 ;
G = −·386, H = +·303, K = −·871.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi		6·4	353	—	—	2 54	+11	—	4·0
Nagoya		7·1	325	e 1 56	P*	—	—	4·8	—
Sumoto		7·7	312	(e 1 58)	+ 9	e 1 58	P	3·9	5·5
Mizusawa		9·7	356	—	—	4 1	− 5	—	—
Nagasaki		10·9	291	e 2 48	+15	—	—	e 6·7	—
Zi-ka-wei	Z.	17·7	281	4 7	+ 4	7 49	+32	10·2	15·0
Nanking	E.	20·0	283	i 4 29	− 1	e 8 14	+ 8	e 13·1	—
Chiufeng		23·6	304	5 8	+ 2	e 9 34	+18	e 13·0	15·8
Manila		24·3	237	5 12	− 1	9 54	+26	13·1	16·4
Hong Kong		25·9	261	5 30	+ 2	10 16	+19	—	19·0
Irkutsk		35·9	320	e 6 57	0	e 12 41	+ 6	e 19·4	22·6
Ekaterinburg		61·1	322	10 28	+16	18 37	+ 7	30·4	—
Bombay		63·1	277	10 17	− 9	—	—	—	—
Baku		72·9	307	e 11 27	− 1	20 57	+ 1	34·6	51·8
Tiflis		75·8	310	11 42	− 3	21 34	+ 5	e 39·0	48·3
Tinemaha	E.	79·9	53	e 12 7	0	—	—	—	—
Haiwee		80·5	54	e 12 12	+ 2	—	—	—	—
Mount Wilson		81·4	55	e 12 14	− 1	—	—	—	—
Pasadena		81·4	56	i 12 12	− 3	—	—	—	—
La Paz	N.	149·4	72	e 16 49	?	—	—	—	—

Additional readings and notes :—
Sumoto ePE = 3h.35m.19s., ePN = 3h.35m.29s.
Zi-ka-wei iZ = +4m.29s. and +8m.9s.
Long waves were also recorded at Kobe, Koti, Phu-Lien, Strasbourg, and Stuttgart.

Nov. 27d. 14h. 38m. 4s. Epicentre 43°·9N. 18°·4E. (given by Belgrade). N.3.

A = +·684, B = +·227, C = +·693 ; D = +·316, E = −·949 :
G = +·658, H = +·219, K = −·721.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Belgrade		1·8	58	e 0 15	−11	i 0 44	− 2	0·9
Zagreb		2·6	318	e 0 43	P*	i 1 19	S*	—
Triest		3·7	299	e 1 1	P*	e 1 36	+ 1	—
Vienna	z.	4·6	343	e 1 4	− 2	—	—	—

Additional readings :—
Belgrade ePP = +22s.
Triest PP = +1m.13s. = P_g +5s., iSS = +1m.51s. = S* +3s., i = +1m.56s. = S_g +0s., iSSS = +2m.1s.

Nov. 27d. Readings also at 2h. (Perth), 4h. (Sikka), 5h. (Andijan), 7d. (near Manila), 9h. (Baku, Tiflis, Ekaterinburg, Chiufeng, Irkutsk, Andijan, and Bombay), 13h. (Huancayo), 14h. (Phu-Lien), 17h. (Florence and La Paz), 18h. (Wellington and near Amboina), 19h. (Amboina, La Paz, near Santiago, and near Tyosi), 21h. (Tiflis).

Nov. 28d. 3h. 59m. 25s. (I) } Epicentre 51°·7N. 5°·6E. X.
5h. 41m. 39s. (II) } (as on 23d.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I De Bilt		0·5	328	e 0 10	+ 3	—	—	—	—
II		0·5	328	0 7	0	e 0 14	+ 1	—	0·5
I Uccle		1·2	221	e 0 12	− 5	i 0 22	− 9	—	—
II		1·2	221	e 0 15	− 2	i 0 31	0	—	—
I Göttingen	N.	2·8	93	e 0 44	+ 4	e 1 17	+ 5	—	1·6
II		2·8	93	e 0 44	+ 4	e 0 56	P_g	—	1·5
I Strasbourg		3·4	156	—	—	e 1 35?	S*	—	—
II		3·4	156	—	—	e 1 21?	− 6	—	—
II Kew		3·6	267	—	—	e 1 51	S_g	—	—
I Stuttgart		3·7	140	—	—	e 1 35	0	—	—
II		3·7	140	—	—	e 1 33	− 2	—	—
I Besançon		4·5	176	—	—	e 2 26	S_g	—	—
II		4·5	176	—	—	e 2 16	S*	—	—
I Neuchatel		4·8	169	i 1 4	− 4	e 2 25	S*	e 2·6	—
II		4·8	169	i 1 6	− 2	e 2 27	S*	—	—
II Vienna	z.	7·8	112	e 3 47	S	(e 3 47)	S*	—	—

Additional readings :—
Uccle I, i = +33s.
Kew II e = +2m.8s. and +2m.28s.
Neuchatel II eS = +2m.37s. = S_g +5s.
Maximum for both shocks were recorded at Feldberg.

Nov. 28d. Readings also at 0h. (near Medan), 2h. (near Tchimkent), 4h. (Florence and Nagasaki), 5h. (near Granada), 6h. (Alicante), 9h. (near Trenta), 10h. (Haiwee and Pasadena), 11h. (Lick), 13h. (near Nagasaki), 19h. (near Andijan), 21h. (Ekaterinburg, Irkutsk, Chiufeng, Bombay, Pasadena, Tinemaha, and near Wellington), 22h. (Baku and Pulkovo), 23h. (Pasadena, Rio de Janeiro, Huancayo (2), and near La Paz (2)).

Nov. 29d. 1h. 47m. 40s. Epicentre 13°·0S. 166°·8E. (as on 1931 Dec. 6d.). R.2.

A = −·949, B = +·222, C = −·225; D = +·228, E = +·974; G = +·219, H = −·051, K = −·974.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		12·2	116	3 20	+29	5 50	+42	6·3	7·3
Apia		20·8	95	i 4 38	0	i 8 33	+11	—	—
Riverview		25·2	213	e 5 18	− 4	i 9 39	− 5	—	—
Melbourne		31·5	214	e 6 14	− 4	i 11 20?	− 8	15·9	16·7
Adelaide		33·6	224	e 5 54	−43	i 11 51	− 9	14·8	22·1
Amboina		39·3	280	7 26	0	13 23	− 3	—	—
Batavia		59·4	270	i 10 1	+ 1	18 32	+24	—	—
Hong Kong		62·5	304	18 37	S	(18 37)	−11	—	34·8
Medan		69·7	279	i 11 14	+ 5	—	—	—	—
Chiufeng		70·9	321	i 11 14	− 2	—	—	e 34·3	—
Pasadena	Z.	85·3	52	e 12 34	− 1	e 15 54	PP	—	—
Haiwee		86·1	50	e 12 39	0	—	—	—	—
Tinemaha	E.	86·2	49	e 12 40	+ 1	—	—	—	—
Kodaikanal		91·6	280	13 5	0	—	—	—	—
Bombay		97·9	286	e 18 59	?	—	—	—	—
Ekaterinburg		109·7	326	e 18 48	PP	e 28 29	PS	54·3	—
La Paz		118·1	117	(e 14 58)	?	—	—	59·3	—
Baku		118·8	308	e 19 20?	PP	—	—	—	—
Tiflis		122·4	311	e 20 31	PP	—	—	e 64·4	75·7
Stuttgart		139·8	336	e 22 20	PP	—	—	e 77·3	—
Florence		142·8	330	19 58	[+32]	—	—	41·8	75·3

Additional readings and note :—
Riverview iN = +10m.11s.
Hong Kong PP? = +18m.49s., ? = +21m.24s., S? = +24m.27s.
La Paz P has been *increased* by 10m.
Tiflis ePS = +30m.41s., ePPS = +32m.34s., e = +36m.29s.
Long waves were also recorded at Sydney, Wellington, Tananarive, Berkeley, Cincinnati, Ottawa, De Bilt, Kew, and Strasbourg.

Nov. 29d. 8h. 34m. 43s. Epicentre 72°·0N. 8°·5W. (as on 1929 Aug. 6d.). X.

A = +·306, B = −·046, C = +·951; D = −·148, E = −·989; G = +·941, H = −·141, K = −·309.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Uccle		21·8	158	e 4 40	− 9	—	—	e 10·3	—
Stuttgart		24·6	151	e 5 7	− 9	e 9 29	− 5	e 15·3	—
Strasbourg		24·6	154	e 5 32	PP	—	—	e 13·3	—
Florence		29·8	151	e 3 17	?	e 10 0	−61	—	16·8
Tiflis		39·6	112	—	—	(e 13 17?)	−13	e 13·3	—
Tchimkent		46·6	86	e 8 26	+ 1	—	—	—	—
Haiwee		61·4	301	e 10 18	+ 4	—	—	—	—
Pasadena	Z.	63·4	300	e 10 32	+ 4	—	—	—	—

Long waves were also recorded at Ottawa, De Bilt, Kew, Cheb, Copenhagen, Lund, Pulkovo, Baku, and Ekaterinburg.

Nov. 29d. 11h. 11m. 7s. Epicentre 33°·3S. 71°·8W. N2.

A = +·261, B. = −·794, C = −·549; D = −·950, E = −·312; G = −·171, H = +·522, K = −·836.

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

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago		+0·5	0·9	99	0 16	− 4	0 32	− 4	0·5	0·6
La Plata		−0·3	11·6	102	2 38	− 1	4 38	− 7	5·4	—
La Paz	N.	−0·6	17·1	12	i 3 36	−12	i 6 39	−11	8·7	11·9
Huancayo		−0·9	21·5	350	i 4 31	− 5	i 8 17	− 1	e 12·7	—
Rio de Janeiro		−1·2	27·2	75	i 5 28	− 1	i 9 25	−33	i 11·1	—
San Juan		−2·2	51·4	7	i 8 53	+ 8	i 15 48	− 2	e 22·9	—
Port au Prince		−2·2	51·8	0	e 8 35	−13	e 15 41	−14	—	—
Columbia		−2·6	67·8	352	—	—	i 19 23	+ 1	—	—
Dakar		−2·6	70·6	57	—	—	e 19 58	+ 1	—	—
Little Rock	N.	−2·6	70·7	342	i 11 0	+ 1	i 19 57	− 1	—	—
Charlottesville		−2·6	71·6	355	e 11 2	− 3	i 20 7	− 2	e 27·9	—
Cape Town		−2·6	72·4	119	—	—	20 39	+20	39·9	—
Georgetown		−2·6	72·4	357	i 11 9	0	i 20 14	− 5	e 34·6	—
Cincinnati		−2·6	73·3	350	i 12 1	+46	i 21 19	+49	34·2	—
St. Louis	N.	−2·6	73·9	346	e 10 59	−20	e 20 17	−20	—	—
Pittsburgh		−2·6	74·1	354	i 11 22	+ 2	i 20 39	0	e 31·9	—
Fordham		−2·6	74·2	359	i 11 19	− 1	i 20 40	0	e 33·9	—
Tucson		−2·6	75·2	326	11 33	+ 7	i 20 56	+ 4	—	—
Harvard		−2·6	75·6	2	e 11 31	+ 2	i 20 52	− 5	e 32·7	—
Ann Arbor	N.	−2·6	76·4	353	—	—	e 21 59	PS	e 39·9	—
Chicago		−2·6	76·4	348	—	—	i 21 3	− 3	e 36·6	—
Buffalo		−2·6	76·5	356	e 11 32	− 2	e 20 53	−14	—	38·9
Toronto		−2·6	77·2	355	e 11 45?	+ 7	i 21 16?	+ 1	39·4?	—
Madison		−2·7	78·0	348	i 11 46	+ 4	i 21 19	− 5	35·9	—
East Machias		−2·7	78·1	4	e 11 34	− 9	i 21 24	− 1	e 30·9	—
La Jolla		−2·7	78·8	323	e 11 48	+ 1	e 21 35	+ 2	—	—
Ottawa		−2·7	78·8	358	e 11 42	− 5	e 21 27	− 6	e 36·9	—
Riverside	E.	−2·7	79·7	323	e 11 53	+ 1	e 21 46	+ 3	—	—
Mount Wilson		−2·7	80·2	323	e 11 56	+ 1	e 21 52	+ 4	—	—
Pasadena		−2·7	80·2	323	i 11 56	+ 1	i 21 54	+ 6	37·9	—
Santa Barbara		−2·7	81·3	322	e 12 1	+ 1	—	—	—	—
Haiwee		−2·7	81·8	324	i 12 3	0	e 22 8	+ 2	—	—
Tinemaha	E.	−2·7	82·6	324	e 12 9	+ 2	e 22 17	+ 2	—	—
Wellington		−2·7	83·6	224	12 25	+12	22 43	+18	38·9	—
Berkeley		−2·7	85·3	322	—	—	e 22 11	−32	—	—
Bozeman		−2·7	86·6	334	—	—	i 22 54	− 2	e 43·9	—
Ukiah		−2·7	86·7	323	—	—	e 23 3	+ 5	—	—
San Fernando		−2·8	92·8	47	e 10 21	?	23 21	[−28]	—	57·9
Malaga		−2·8	94·0	48	e 13 0	− 3	23 57	−10	43·4	48·6
Granada		−2·8	94·9	48	i 16 51	PP	e 26 8	PS	39·8	52·5
Almeria		−2·8	95·4	49	e 16 54	PP	e 23 40	[−23]	e 50·0	—
Toledo		−2·8	96·3	46	e 13 25	+11	24 14	−14	e 40·1	54·4
Alicante		−2·9	98·2	49	e 13 31	+ 9	e 24 25	−20	e 45·5	—
Algiers		−2·9	98·8	52	—	—	23 52	[−28]	46·9	—
Tortosa	N.	−2·9	99·6	47	—	—	23 28	[−55]	e 42·9	62·8
Melbourne		−2·9	101·1	209	i 18 17	?	i 24 26	[− 5]	47·4	—
Riverview		−2·9	101·6	216	e 17 50	PP	i 24 22	[−11]	e 47·3	52·6
Sydney		−2·9	101·6	216	e 23 59	S	(e 23 59)	[−34]	52·0	53·3
Tananarive		−2·9	102·1	123	17 53?	PP	e 24 27	[− 9]	—	52·9
Sitka		—	105·0	330	—	—	i 25 35	−35	e 48·7	—
Kew		—	105·3	38	—	—	e 24 25	[−26]	46·9	56·1
Stonyhurst		—	105·7	36	—	—	i 24 33	[−20]	51·9	59·7
Adelaide		—	106·0	206	—	—	i 24 44	[−11]	—	—
Edinburgh		—	106·5	34	—	—	e 24 38	[−19]	51·9	57·9
Neuchatel		—	106·9	45	e 14 0	−15	—	—	—	—

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.
Catania		—	107·3	56	—	—	e 24 33	[−28]	e 54·4	66·2
Uccle		—	107·4	40	e 18 23	PP	24 36	[−25]	e 47·9	—
Piacenza		—	107·5	47	—	—	e 24 33	[−29]	—	62·4
Florence		—	107·9	50	14 53	?	—	—	38·9	43·9
Strasbourg		—	108·1	43	e 14 30	?	i 27 43	PS	e 43·9	—
Chur		—	108·3	45	e 17 20	[−52]	—	—	e 54·3	—
De Bilt		—	108·5	39	—	—	e 24 43	[−23]	e 48·9	57·9
Stuttgart		—	109·0	44	e 14 34	?	e 24 43	[−26]	e 50·9	63·9
Triest		—	110·3	49	e 13 23	?	e 24 53	[−22]	e 51·9	59·9
Cheb		—	111·5	44	e 25 0	SKS	(e 25 0)	[−20]	e 52·9	64·9
Hamburg		—	111·8	40	e 18 56	PP	—	—	e 54·9	62·9
Zagreb		—	111·8	49	e 17 53?	[−30]	e 28 23	PS	e 50·9	—
Potsdam		—	112·9	42	e 17 59	[−28]	e 37 23	?	e 54·9	61·9
Vienna		—	113·1	47	e 19 1	PP	28 44	PS	e 54·9	67·9
Copenhagen		—	114·0	38	—	—	25 41	{−54}	54·9	—
Lund		—	114·4	38	—	—	25 47	{−51}	—	—
Perth		—	114·4	187	29 13	PS	—	—	—	—
Helwan		—	115·9	71	e 19 43	PP	29 4	PS	62·0	72·4
Upsala	E.	—	118·0	35	—	—	e 29 53?	PS	e 55·9	—
Ksara	N.	—	121·1	69	e 20 14	PP	—	—	65·9	—
Helsingfors		—	121·7	35	e 20 17	PP	e 25 7	[−49]	e 55·3	—
Pulkovo		—	124·2	37	—	—	25 42	[−21]	60·9	72·4
Tiflis		—	130·1	61	e 18 4	[−63]	26 4	[−15]	e 54·9	77·2
Baku		—	133·6	64	e 19 32	[+19]	e 27 12	{−92}	64·9	78·0
Amboina		—	138·5	212	i 19 17	[− 3]	i 22 6	PP	—	—
Ekaterinburg		—	140·2	40	i 19 30	[+ 9]	28 57	{−28}	59·9	79·8
Batavia		—	140·5	178	e 19 2	[−20]	i 23 4	PKS	—	—
Kodaikanal		—	143·6	122	19 28	[− 1]	30 38	?	67·8	78·4
Bombay		—	145·3	106	19 32	[− 3]	e 29 25	{−30}	48·4	76·0
Tchimkent		—	148·5	62	e 19 39	[− 1]	—	—	—	—
Hyderabad		—	149·0	114	19 59	[+19]	33 31	SKSP	69·2	80·2
Medan		—	149·0	161	19 34	[− 6]	—	—	e 78·9	—
Andijan		—	150·7	65	e 20 23	{+21}	—	—	—	—
Mizusawa	E.	—	153·0	292	(19 47)	[+ 1]	19 47	P	—	—
Agra	E.	—	153·4	95	e 19 55	[+ 9]	33 55	SKSP	72·4	—
Almata		—	153·7	59	e 20 3	{− 2}	—	—	—	—
Nagoya		—	156·2	283	e 20 16	{−11}	—	—	—	—
Hong Kong		—	167·8	207	24 59	PP	35 25	SKSP	—	85·9
Chiufeng		—	170·7	319	19 56	[− 8]	32 2	{−14}	33·5	—
Nanking		—	171·0	264	19 54	[−10]	—	—	e 80·8	—

Additional readings :—
La Paz iN = +3m.45s., =PP −8s., iSE = +6m.42s., =SS −18s., iN = +7m.5s.
Huancayo iPP = +5m.3s., i = +8m.26s.
San Juan i = +16m.25s., SS = +19m,34s.
Port au Prince iP = +8m.48s., PP = +9m.53s., i = +15m.58s., SS = +18m.31s.
Cape Town +20m.47s. and +21m.14s.
Georgetown ePP = +13m.56s. ; T_0 = 11h.11m.6s.
Cincinnati i = +12m.26s., iPPZ = +14m.38s., iSZ = +21m.24s., iSSZ = +25m.50s. ; T_0 = 11h.11m.20s.
Fordham i = +21m.19s. =PS −15s., eSS = +25m.39s.
Harvard ePP = +14m.20s., ePPP = +15m.5s., eSS = +25m.1s., eSSS = +29m.13s. ; T_0 = 11h.11m.15s.
Ann Arbor e?E = +22m.11s., eN = +25m.5s., eE = +25m.59s.
Chicago iS = +21m.10s.
Madison iSS = +26m.5s. : T_0 = 11h.11m.17s.
East Machias i = +12m.31s.
Ottawa ePSN = +22m.11s., eSSN = +26m.41s., eSSSE = +29m.53s.
Pasadena eN = +22m.28s. =PS −23s.
Bozeman eSS = +28m.44s.
Ukiah iSKS = +22m.58s.
Malaga P_cP = +13m.25s., PP = +16m.27s., PPP = +18m.37s., SKS = +23m.24s., PS = +24m.59s., PPS = +25m.24s.
Toledo PP = +16m.59s., SKS = +23m.40s., PS = +25m.29s.
Alicante PP = +16m.35s.
Algiers iPS = +26m.11s.
Melbourne i = +24m.58s. =SKKS −3s. and +26m.1s.

Continued on next page.

Riverview iEN = +24m.27s. and +24m.55s. =SKKS −10s., eEN = +27m.17s.
Tananarive SKKS = +25m.42s., S = +26m.11s.
Sitka eSS = +32m.35s., eSSS = +37m.21s.
Kew eSKKSEN = +24m.59s., eSSEN = +33m.2s., eZ = +35m.45s.
Adelaide i = +32m.11s.
Neuchatel ePP = +17m.18s.
Uccle iPS = +27m.40s.
Florence PPP = +19m.23s., PPPP = +21m.36s., PS = +25m.15s., SS = +28m.58s., SSS = +32m.41s., SSSS = +35m.11s.
Strasbourg ePP = +18m.36s., ePPP = +21m.1s.
De Bilt e = +27m.52s. =PS −21s.
Stuttgart e = +17m.41s. =PKP −24s., ePP = +18m.33s., e = +25m.16s. = SKKS −44s. and +27m.53s. =PS −25s.
Triest e = +17m.52s. =PKP −27s., i = +18m.49s. =PP −11s., PPP = +21m.4s., i = +25m.24s. =SKKS −45s., e = +28m.11s. =PS −19s., and +29m.22s.
Cheb e = +28m.36s. =PS −7s., eS? = +38m.41s. =SSS −1s.
Potsdam iZ = +18m.4s.
Vienna iE = +20m.20s., PP = +22m.10s.
Copenhagen +26m.16s. and +28m.47s. =PS −20s. and +34m.53s.? =SS −19s.
Lund +28m.57s. =PS −13s.
Ksara PPN = +23m.33s.
Helsingfors ePPE = +20m.21s., iPSE = +29m.55s., eN = +35m.15s., iSSE = +36m.41s.
Pulkovo SKKS = +27m.21s., PS = +30m.31s., PPS = +32m.17s., SS = +37m.10s.
Tiflis ePKP = +19m.32s., PP = +21m.3s., e = +22m.40s., PS = +30m.55s., eSS = +38m.21s.
Baku e = +21m.34s. =PP −7s., +30m.9s., +34m.35s., and +43m.45s.
Ekaterinburg iPP = +22m:11s., SS = +40m.57s.
Medan i = +20m.20s.
Mizusawa SN = +19m.53s.
Hong Kong PP = +29m.11s., ? = +39m.3s. and +45m.55s.
Chiufeng PKP? = +22m.55s., iPP = +25m.1s., PPP = +26m.14s., SN = +32m.22s., PS = +33m.0s.
Nanking eZ = +25m.8s. =PP −4s., +31m.58s. =SKKS −19s., and +53m.38s.
Long waves were also recorded at Phu-Lien, Göttingen, Jena, Besançon, and Barcelona.

Nov. 29d. 15h. 26m. 23s. Epicentre 23°·0N. 121°·7E. (as on 1930 June 11d.). X.

A = −·484, B = +·783, C = +·391; D = +·851, E = +·526; G = −·205, H = +·332, K = −·921.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku		1·9	359	0 26	− 2	0 47	− 2	—	0·9
Hong Kong		7·0	266	1 40	+ 1	2 54	− 5	3·4	4·5
Zi-ka-wei	z.	8·2	358	—	—	e 3 25	− 4	1 4·4	5·2
Nanking	z.	9·4	344	4 12	S	(4 12)	+13	—	—

Zi-ka-wei gives also iZ = +3m.37s.
Long waves were also recorded at Phu-Lien, Chiufeng, and De Bilt.

Nov. 29d. 20h. 15m. 0s. Epicentre 32°·6N. 131°·1E. (given by Hukuoka and Nagoya). N.3.

A = −·554, B = +·635, C = +·539; D = +·754, E = +·657; G = −·354, H = +·406, K = −·842.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hukuoka	1·1	330	0 33	S	(0 33)	+ 5	—	1·1
Nagasaki	1·1	277	0 32	S	(0 32)	+ 4	—	—
Matuyama	1·9	48	i 0 29	+ 1	i 0 55	S*	—	1·0
Koti	2·3	65	e 0 34	+ 1	e 0 56	− 3	—	—
Sumoto	3·6	61	e 0 48	− 3	1 40	S*	—	1·9
Kobe	4·0	59	e 0 57	0	1 51	+ 9	—	2·0
Osaka	4·2	60	1 19	P_g	i 2 4	S*	2·3	2·4
Nagoya	5·5	61	e 2 9	?	e 2 47	S*	—	—

Additional readings:—
Hukuoka S = +1m.0s.
Nagasaki S = +57s.
Sumoto ePE = +54s. =P* −4s.

Nov. 29d. Readings also at 0h. (Rio de Janeiro), 1h. (Adelaide, Melbourne, Sydney, and Wellington), 2h. (near Andijan), 5h. (Haiwee, Pasadena, Tinemaha, Neuchatel, La Paz, and near Santiago), 6h. (Pasadena, Rio de Janeiro, La Paz (2), Baku, and Tiflis), 7h. (Bombay, Ekaterinburg, De Bilt, Uccle, Strasbourg, and Kew), 8h. (Tiflis), 9h. (near Manila), 11h. (Phu-Lien), 13h. (near Tyosi), 16h. (Trenta), 21h. (near Theodosia and Yalta).

Nov. 30d. 6h. 51m. 25s. Epicentre 37°·8N. 25°·0E. (as on 1930 Sept. 7d.). X.

$A = +\cdot716$, $B = +\cdot334$, $C = +\cdot613$; $D = +\cdot423$, $E = -\cdot906$; $G = +\cdot555$, $H = +\cdot259$, $K = -\cdot790$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sebastopol		9·3	40	e 2 17	+ 6	—	—	—	—
Yalta		9·6	43	2 12	− 4	(3 23)	−40	3·4	3·5
Ksara	N.	9·6	111	e 2 20	+ 4	4 5	+ 2	4·8	—
Simferopol		9·9	41	e 2 15	− 4	—	—	3·5	3·6
Theodosia		10·6	43	e 2 26	− 3	—	—	—	—
Florence		12·0	304	e 4 5	S	(e 4 5)	−58	(e 7·3)	10·3
Tiflis		15·7	70	e 3 37	− 1	e 5 33	−58	6·2	—

Florence gives S as P and L as S.
Tiflis gives also e = +6m.1s.
Long waves were also recorded at Baku and Ekaterinburg.

Nov. 30d. 10h. 33m. 45s. Epicentre 31°·0S. 68°·0W. (as on 1932 March 9d.). X.

$A = +\cdot321$, $B = -\cdot795$, $C = -\cdot515$; $D = -\cdot927$, $E = -\cdot375$; $G = -\cdot193$, $H = +\cdot478$, $K = -\cdot857$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago	3·3	223	0 47	0	1 25	0	1·6	1·8
La Plata	9·3	117	2 9	− 2	3 51	− 5	4·4	—
La Paz	14·5	359	e 3 34	+12	7 27	+84	9·2	9·5
Huancayo	20·1	339	4 21	−10	e 8 41	+33	e 11·2	—
Rio de Janeiro	23·5	76	—	—	e 9 15?	+ 1	—	—

Huancayo gives also e = +4m.35s.

Nov. 30d. Readings also at 1h. (near Santiago), 2h. (Andijan and Bombay), 3h. (Huancayo, Haiwee, Tinemaha, Pasadena, Chiufeng, Adelaide, Melbourne, Riverview, Sydney, Wellington, Suva, and near Apia), 4h. (Bombay (2), Baku, Ekaterinburg, Tiflis, Hyderabad, Pasadena, Rio de Janeiro, and near Amboina), 5h. (Branner), 6h. (Tyosi), 7h. (Nagasaki), 8h. (Bombay and near Nagoya), 9h. (Branner, Berkeley, Lick, and San Francisco), 10h. (near Mizusawa), 11h. (Wellington), 12h. (Branner, Berkeley, Lick, San Francisco, Tchimkent, and near Andijan), 13h. (Florence and Andijan), 15h. (Bombay), 16h. (Agra, Calcutta, and near Nagoya), 17h. (Bombay, Kodaikanal, Baku, Ekaterinburg, and Tchimkent), 18h. (Hong Kong, Manila, and Wellington), 22h. (Andijan and near Tchimkent).

Dec. 1d. 17h. 41m. 5s. Epicentre 36°·5N. 140°·5E. (as on 1932 Sept. 26d.). R.1.

Tokyo and Nagoya give the epicentre 36°·4N. 140°·5E.

Probable error of epicentre ±0°·08.

A = −·620, B = +·511, C = +·595; D = +·636, E = +·772; G = −·459, H = +·378, K = −·804.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mito		0·1	193	0 2	+ 1	0 8	+ 5	—	—
Kakioka		0·4	223	0 7	+ 1	0 15	+ 5	—	—
Onahama		0·5	36	0 9	+ 2	0 18	+ 5	—	—
Tukubasan		0·5	230	0 6	− 1	0 14	+ 1	—	—
Utunomiya		0·5	278	0 7	0	0 16	+ 3	—	—
Tyosi		0·9	160	i 0 10	− 3	0 19	− 4	—	0·4
Kumagaya		1·0	249	0 14	0	0 28	+ 2	—	—
Tokyo		1·1	216	0 15	− 1	0 29	+ 1	—	0·7
Maebasi		1·2	265	0 18	+ 1	0 31	0	—	—
Hukusima		1·3	359	0 17	− 1	0 32	− 1	—	—
Yokohama		1·3	213	0 19	+ 1	0 35	+ 2	—	—
Oiwake		1·6	264	0 24	+ 1	0 49	+ 8	—	—
Mera		1·7	198	0 22	− 2	0 45	+ 1	—	—
Kohu		1·8	241	0 26	0	0 58	S_g	—	—
Niigata		1·8	321	0 31	+ 5	1 5	+19	—	—
Misima		1·9	222	0 28	0	0 40	− 9	—	—
Nagano		1·9	275	0 29	+ 1	0 56	S_g	—	—
Iida		2·4	245	0 35	+ 1	0 57	− 5	—	—
Mizusawa		2·6	10	0 39	+ 2	1 9	+ 2	—	—
Omaesaki		2·7	224	0 38	− 1	1 19	S*	—	—
Hamamatu		2·9	232	0 44	+ 3	1 15	+ 1	—	—
Wazima		3·0	287	0 43	0	1 22	+ 5	—	—
Gihu		3·2	250	0 46	0	1 28	+ 6	—	—
Morioka		3·2	8	0 44	− 2	1 21	− 1	—	—
Nagoya		3·2	245	0 47	+ 1	1 30	+ 8	—	1·9
Hatidyozima		3·5	190	0 49	− 1	1 27	− 3	—	—
Hikone		3·7	251	0 56	+ 3	1 43	+ 8	—	—
Kameyama		3·7	244	0 55	+ 2	1 35	0	—	—
Aomori		4·3	3	1 3	+ 2	1 59	+ 9	—	—
Osaka		4·5	248	i 1 3	− 1	(2 12)	S*	2·2	2·7
Kobe		4·7	249	e 1 17	P*	2 26	S_g	—	2·6
Toyooka		4·7	260	i 0 55	−12	—	—	—	—
Siomisaki		4·9	233	1 10	0	2 40	S_g	—	—
Wakayama		4·9	245	1 10	0	2 28	S*	—	—
Sumoto		5·1	246	1 12	− 1	2 26	S*	—	2·8
Hakodate		5·2	2	1 39	P_g	2 54	S_g	—	—
Urakawa		5·9	17	1 28	+ 4	2 28	− 3	—	—
Koti		6·4	245	e 1 32	+ 1	(3 1)	S*	3·0	—
Obihiro		6·7	17	1 31	− 4	2 52	+ 1	—	—
Hukuoka	B.	8·8	254	2 7	+ 2	4 11	S*	—	—
Kumamoto		8·9	249	1 57	− 9	4 21	S*	—	—

Additional readings:—
Osaka i = +1m.15s. = P* +1s.
Sumoto PN = +1m.16s., SZ = +2m.31s. = S* +1s.

Dec. 1d. Readings also at 0h. (Haiwee, Tinemaha, Mount Wilson, and Pasadena), 1h. (Andijan and near Mizusawa), 3h. (Huancayo, near Nagoya (2), and Tyosi), 4h. (Nagoya), 6h. (Tiflis and near Malabar), 8h. (Amboina), 11h. (La Paz), 13h. (near Nagoya), 14h. (Tucson), 15h. (near La Paz), 18h. (La Paz, Wellington, and near Triest), 19h. (Ekaterinburg and near Mizusawa), 20h. (Baku and near Mizusawa), 23h. (Baku and Ekaterinburg).

Dec. 2d. Readings at 0h. (Florence), 2h. (Manila and near Amboina), 4h. (near Amboina), 6h. (La Paz), 7h. (Harvard), 9h. (Nagoya), 11h. (near Manila and near Santiago), 13h. (Huancayo and near Amboina), 16h. (near Santiago), 17h. (Almeria), 19h. (Huancayo and Mizusawa), 22h. (near New Plymouth and Wellington).

Dec. 3d. 4h. 56m. 49s. Epicentre 44°·6N. 9°·5E. (as on 1931 Feb. 8d.). 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.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Piacenza		0·5	15	e 0 4	− 3	—	—	0·2
Pavia		0·6	339	i 0 14	+ 5	—	—	—
Prato		1·3	122	e 0 16	− 2	i 0 29	− 4	—
Treviso		2·1	62	e 0 31	+ 1	1 11	S_g	—
Chur		2·2	1	e 0 31	0	e 1 0	+ 3	—
Venice		2·2	68	e 0 49	P_g	—	—	—
Zurich	N.	2·8	347	e 0 41	+ 1	—	—	—
Neuchatel		3·0	324	e 0 42	− 1	e 1 34	S_g	—
Ravensburg		3·2	359	—	—	e 1 29	+ 7	—
Stuttgart		4·2	358	—	—	e 1 59	S*	—

Additional reading:—
Neuchatel eP = +52s. = P_g − 2s., eS* = +1m.28s.

Dec. 3d. 6h. 19m. 52s. Epicentre 15°·0S. 172°·0W. (as on 1931 July 20d.). X.

A = −·956, B = −·134, C = −·259; D = −·139, E = +·990; G = +·256, H = +·036, K = −·966.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Apia		1·2	11	0 23	+ 6	i 0 41	+10	—	1·3
Suva		9·7	250	3 8?	S	(3 8?)	−58	6·1	—
Riverview		38·1	233	—	—	e 13 2	− 6	e 18·4	20·6
Sydney		38·1	233	—	—	e 12 38	−30	18·2	20·2
Honolulu T.H.		38·9	21	—	—	i 15 21	SS	—	—
Melbourne		44·2	231	—	—	i 14 46	+ 7	21·7	26·1
Adelaide		48·4	237	—	—	e 14 20	−78	22·5?	29·8
Pasadena		71·0	45	e 11 18	+ 1	—	—	—	—
Mount Wilson	E.	71·1	45	e 11 21	+ 4	—	—	—	—
Haiwee		72·2	44	e 11 29	+ 5	—	—	—	—
Manila		72·5	291	e 11 20	− 6	21 51	+60	—	—
Tinemaha		72·6	43	e 11 30	+ 4	—	—	—	—
Chiufeng		86·4	313	i 12 37	− 3	15 58	PP	—	—
Huancayo		93·3	103	e 23 44	SKS	e 23 58	[+ 6]	e 43·9	—
La Paz		98·6	109	—	—	24 20	[+ 1]	46·1	67·2
Ottawa		105·0	45	—	—	e 33 56	SS	50·1	—
Ekaterinburg		122·5	329	—	—	e 37 23	SS	51·1	—
Baku		135·7	313	e 22 53	PKS	e 36 7	?	68·1	77·2

Additional readings:—
Suva S = +5m.32s.
Riverview e = +15m.44s. = SS + 6s.
Melbourne i = +18m.3s. = S_cS − 4s.
Adelaide e = +17m.34s.
Manila iN = +25m.59s. = SS + 39s.
Huancayo eSS = +30m.53s.; T_s = 6h.19m.54s.
Long waves were also recorded at Bombay, Perth, Wellington, Tashkent, Tiflis, Ukiah, and East Machias.

Dec. 3d. 17h. 25m. 55s. Epicentre 45°·5S. 80°·5W. (as on 1930 June 22d.). X.

A = +·116, B = −·691, C = −·713; D = −·986, E = −·165;
G = −·118, H = +·703, K = −·701.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
La Plata	20·1	66	4 31	0	8 11	+ 3	9·2	—
La Paz	30·8	24	6 16	+ 4	11 25	+ 8	14·5	18·0
Huancayo	33·7	9	6 34	− 4	e 11 46	−15	15·6	—
Rio de Janeiro	37·7	66	—	—	(e 13 5)	+ 3	e 13·1	—
Ottawa	91·0	4	—	—	23 5?	−60	—	—
Bombay	145·5	132	e 19 49	[+14]	—	—	—	—
Ekaterinburg	153·6	50	—	—	e 43 24	SS	63·1	—

Huancayo gives PP = +7m.41s.
Long waves were also recorded at Wellington, Triest, Baku, Tiflis, and Tashkent.

Dec. 3d. Readings also at 2h. (near Trenta), 4h. (near Wellington), 6h. and 7h. (Mizusawa), 8h. (Haiwee, Tinemaha, Mount Wilson, and Pasadena), 9h. (Baku, Ekaterinburg, Tashkent, Tiflis, Bombay, Ottawa, and near Nagoya), 13h. (Florence), 16h. (La Paz), 18h. (near Reykjavik), 22h. (near Taihoku).

Dec. 4d. 4h. 4m. 7s. Epicentre 35°·4N. 36°·4W. N.2.

A = +·656, B = −·484, C = +·579; D = −·593, E = −·805;
G = +·466, H = −·344, K = −·815.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Angra do Heroismo	8·0	63	2 10	P*	3 46	S*	4·4	4·6
Serra do Pilar	22·5	67	—	—	9 28	SS	—	—
San Fernando	24·4	79	e 5 18	+ 4	i 9 50	+20	—	12·9
East Machias	25·3	301	i 5 36	+13	e 9 56	+10	e 11·2	—
Malaga	25·8	76	i 5 30	+ 3	9 43	−12	11·4	12·9
Toledo	25·9	70	5 25	− 3	e 9 43	−14	i 11·0	12·0
Granada	26·4	76	e 5 35	+ 2	e 10 23	+18	12·0	13·7
Dakar	26·8	136	e 5 59	+23	e 10 51	+39	—	—
Ivigtut	26·8	347	—	—	(9 53?)	−19	9·9	—
Almeria	27·4	77	e 6 5	+23	e 10 43	+21	e 13·3	15·7
Harvard	27·7	295	e 5 46	+ 2	i 10 37	+10	e 12·6	—
Alicante	28·7	73	e 5 53	0	e 10 35	− 8	e 12·1	15·0
Bidston	29·4	42	e 6 18	+18	e 12 8	SS	—	14·8
Tortosa	29·4	68	e 5 47	−13	e 10 52	− 3	12·6	14·7
Liverpool	29·5	42	i 8 17	?	i 11 37	+41	e 13·0	15·7
Oxford	29·8	46	—	—	11 0	− 1	12·6	16·0
Stonyhurst	30·0	41	i 5 28	−37	i 11 11	+ 7	—	14·9
Kew	30·3	46	—	—	e 11 9	0	e 12·9	13·8
Ottawa	31·2	301	—	—	e 11 33	+10	e 13·9	—
San Juan	31·3	245	—	—	i 11 33	+ 9	—	—
Paris	31·4	52	e 5 53?	−24	e 11 28	+ 2	13·9	14·9
Algiers	31·7	76	e 7 1	+41	e 13 16	SS	15·9	—
Georgetown	32·3	288	6 28	+ 3	e 11 35	− 5	e 13·9	—
Uccle	33·0	49	e 6 28	− 4	11 47	− 4	13·9	17·1
De Bilt	33·8	46	—	—	12 4	+ 1	e 13·9	17·7
Neuchatel	34·2	55	e 6 38	− 4	e 12 1	− 8	—	—
Pittsburgh	34·3	292	—	—	e 11 33	−38	e 14·1	—
Strasbourg	34·8	53	e 6 39	− 8	i 12 21	+ 3	e 14·9	19·4
Karlsruhe	35·3	52	(e 6 53?)	+ 1	—	—	e 17·9	—
Zurich	35·3	55	e 6 53	+ 1	—	—	—	—
Feldberg	35·4	51	e 8 13	PPP	e 12 33	+ 6	—	20·3
Stuttgart	35·7	53	e 6 57	+ 2	e 12 31	− 1	e 15·9	18·4
Chur	35·9	55	e 6 57	0	—	—	—	—
Piacenza	36·0	60	7 33	+35	12 9	−27	17·4	20·7
Columbia	36·4	282	—	—	e 12 53	+11	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Göttingen	36·6	48	—	—	e 12 47	+ 2	e 14·9	18·4
Hamburg	36·9	45	e 7 19?	+13	—	—	e 14·9	17·9
Prato	37·0	62	e 6 58	− 8	12 48	− 3	e 15·3	19·4
Florence	37·2	62	7 3	− 5	12 42	−12	17·7	20·8
Innsbruck	37·2	56	6 53?	−15	—	—	—	—
Jena	37·5	50	e 6 53	−18	(e 10 53?)	?	e 15·9	19·9
Treviso	37·7	59	7 15	+ 3	13 9	+ 7	—	—
Cheb	38·0	52	e 7 16	+ 1	e 13 6	0	e 16·9	19·6
Cincinnati	38·0	290	i 7 40	+25	—	—	—	—
Potsdam	38·6	47	—	—	e 13 11	− 4	e 16·9	18·9
Copenhagen	38·7	42	—	—	13 19	+ 2	15·9	—
Triest	38·8	58	e 7 20	− 2	i 13 18	0	e 16·9	21·6
Lund	39·1	42	—	—	13 26	+ 4	15·9	—
Prague	39·2	51	e 8 32	PP	e 13 34	+10	e 17·9	21·9
Zagreb	40·4	58	e 7 33	− 2	e 13 40	− 2	—	19·6
Vienna	40·5	54	e 7 34	− 2	13 29	−15	e 19·9	22·9
Budapest	42·4	55	—	—	e 14 8	− 3	e 19·9	21·9
Florissant	42·5	291	i 7 51	− 2	i 14 21	+ 8	—	—
St. Louis	42·5	291	e 7 48	− 5	e 14 20	+ 7	e 17·6	—
Little Rock	45·2	286	e 8 10	− 4	e 15 6	+12	—	—
Helsingfors	45·9	37	e 15 5	S	(e 15 5)	+ 2	e 25·7	—
Pulkovo	48·5	38	—	—	e 15 44	+ 4	21·9	27·3
Helwan	56·2	76	e 9 38	+ 1	17 34	+ 9	—	36·6
Rio de Janeiro	58·6	187	e 12 53	+178	e 17 53	− 4	e 22·4	—
Huancayo	60·0	225	e 10 5	+ 1	e 18 0	−16	e 24·9	—
La Paz	60·0	216	10 5	+ 1	i 18 19	+ 3	25·0	29·0
Tiflis	61·4	58	10 18	+ 4	e 18 40	+ 6	30·1	—
Tinemaha	63·8	298	e 10 26	− 5	—	—	—	—
Mount Wilson	64·9	295	e 10 36	− 2	—	—	—	—
La Jolla	65·0	294	e 10 36	− 3	—	—	—	—
Pasadena	65·0	295	e 10 38	− 1	—	—	—	—
Baku	65·5	57	10 41	− 1	i 19 29	+ 3	32·4	38·0
Tashkent	77·5	48	—	—	e 23 5	?	e 37·9	40·5
Andijan	79·7	47	e 12 17	+11	—	—	—	—
Bombay	93·8	64	e 13 22	+ 7	—	—	—	—
Kodaikanal	102·8	67	20 18	PPP	—	—	—	—

Additional readings :—
San Fernando PP = +5m.37s.
Malaga PP = +5m.55s., PPP = +6m.14s., i = +8m.54s. = P_cP − 3s. and +10m.7s., SS = +10m.39s.
Toledo iP = +5m.29s.
Granada PP = +6m.5s., P_cP = +8m.49s., SS = +11m.17s.
Harvard ePP = +6m.13s., eSS = +11m.16s. ; T_0 = 4h.3m.52s.
Tortosa ePN = +7m.23s.
Liverpool i = +11m.37s.
San Juan i = +13m.1s. = SS +1s.
Uccle e = +7m.29s. = PP − 7s.
Strasbourg e = +6m.58s.
Stuttgart ePP = +8m.16s., eP_cS = +13m.17s.
Columbia e = +15m.5s. = PP + 7s. and +15m.32s.
Florence PPP = +8m.39s., PPPP = +9m.51s., PS = +13m.3s., SSS = +15m.50s., SSSS = +16m.11s.
Cincinnati iZ = +4m.48s., e = +8m.56s. and +16m.10s.
Potsdam iEZ = +13m.18s.
Triest ePP = +8m.49s., SS = +15m.48s., iSSS = +16m.17s.
Zagreb eNE = +9m.23s. = PPP − 1s.
Vienna SSS = +17m.18s.
Helsingfors iPE = +15m.8s., eP_cPN = +18m.30s. = S_cS +12s., eN = +20m.24s., eE = +23m.36s., iN = +24m.16s.
Pulkovo e = +19m.19s. = SS +24s.
La Paz PPN = +12m.50s., SSN = +22m.16s.
Tiflis iPS = +19m.3s., SSS = +24m.50s.
Tashkent e = +31m.29s.
Long waves were also recorded at Phu-Lien, Hong Kong, Ekaterinburg, Tananarive, Cape Town, Upsala, Durham, Königsburg, Barcelona, Edinburgh, and Tucson.

Dec. 4d. 8h. 11m. 19s. Epicentre **2°·4N. 121°·0E.** N.1.

Probable error of epicentre ±0°·21.

Batavia gives epicentre 2°·1N. 121°·9E.

A = −·515, B = +·856, C = +·042; D = +·857, E = +·515; G = −·022, H = +·036, K = −·999.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		9·4	130	i 2 15	+ 2	3 59	0	—	—
Manila		12·2	0	2 54	+ 3	5 21	+13	6·8	—
Malabar		16·5	234	i 3 53	+ 5	i 7 7	SS	10·7	—
Batavia		16·6	239	i 3 48	− 1	7 13	SS	—	—
Kosyun		19·6	359	4 21	− 4	7 57	− 1	—	—
Hong Kong		21·0	342	4 41	+ 1	8 23	− 3	9·0	9·7
Hokoto		21·2	356	4 43	+ 1	5 13	PP	—	—
Isigakizima		22·1	8	4 57	+ 5	9 11	SS	—	—
Medan		22·3	274	i 5 7	+13	i 9 41	?	—	—
Taihoku		22·6	1	5 0	+ 3	9 30	SS	—	12·9
Phu-Lien		23·2	324	5 1	− 2	9 14	+ 6	10·2	15·4
Naha		24·7	14	5 15	− 2	9 36	0	—	—
Nake		27·2	17	5 40	0	10 34	+16	—	—
Zi-ka-wei	Z.	28·8	1	i 5 56	+ 2	10 46	+ 1	14·8	15·6
Nanking		29·7	356	i 6 2	0	e 11 1	+ 2	16·0	17·7
Nagasaki		31·4	15	e 6 17	0	11 26	0	15·5	17·8
Hukuoka		32·4	16	6 36	+10	11 45	+ 4	16·3	20·3
	B.	32·4	16	6 26	0	11 37	− 4	—	—
Koti		33·3	20	e 6 33	− 1	(e 11 49)	− 6	e 11·8	—
Matuyama		33·3	19	e 6 27	− 7	—	—	16·6	20·4
Sumoto		34·4	22	6 43	− 1	12 12	0	16·9	19·7
Perth		34·7	187	6 47	+ 1	12 16	− 1	14·9	19·8
Kobe		34·8	22	6 47	0	e 12 20	+ 2	e 16·1	20·2
Osaka		35·0	22	6 49	0	13 5	+44	17·4	20·0
Zinsen		35·5	7	6 50	− 3	12 24	− 5	—	—
Toyooka		35·5	20	e 6 53	0	(e 12 33)	+ 4	e 17·0	21·0
Nagoya		35·9	23	6 58	+ 1	—	—	15·9	—
Calcutta		37·5	305	6 30	−41	12 16	−43	18·6	22·1
Tokyo (Univ.)		37·5	26	7 26	+15	13 13	+14	16·0	—
Tokyo (Meteor'cal)		37·5	26	7 19	+ 8	13 13	+14	—	—
Chiufeng		37·9	354	e 7 12	− 2	e 13 5	0	18·7	21·1
Tyosi		38·1	27	e 7 31	+15	—	—	15·9	19·6
Sendai		40·2	25	7 29	− 5	13 34	− 5	—	—
Adelaide		40·8	158	i 7 40	+ 1	i 13 45	− 3	18·9	23·4
Mizusawa	E.	41·0	25	7 38	− 2	13 58	+ 7	20·6	—
	N.	41·0	25	7 44	+ 4	13 56	+ 5	20·3	—
Colombo		41·3	277	7 42	− 1	14 0	+ 4	24·0	26·0
Kodaikanal		43·6	282	i 8 6	+ 4	i 14 7	−23	i 22·0	27·4
Hyderabad		44·4	293	8 29	+21	15 7	+26	22·2	29·0
Sapporo		44·5	21	8 10	+ 1	14 51	+ 8	—	—
Melbourne		45·9	154	8 24	+ 4	15 3	0	21·7	27·2
Riverview		46·1	145	i 8 20	− 1	i 15 5	− 1	21·7	28·5
Sydney		46·1	145	i 8 5	−16	i 14 59	− 7	24·9	29·9
Agra		48·0	305	8 36	0	15 36	+ 3	24·6	30·1
Ootomari		48·1	19	e 8 38	+ 1	(15 26)	− 8	15·4	19·5
Dehra Dun		49·3	309	8 21	−25	17 51	+120	27·7	29·7
Bombay		50·0	293	8 51	0	16 1	0	26·1	31·6
Irkutsk		51·8	347	9 3	− 2	16 28	+ 3	23·7	—
Almata		56·5	323	9 53	+14	—	—	—	—
Andijan		58·2	318	e 9 52	0	17 38	−14	27·5	—
Suva		60·0	113	10 5	+ 1	18 17	+ 1	27·7	—
Tashkent		60·5	318	e 10 41	(−14)	—	—	—	—
Tchimkent		60·7	319	i 9 52	−17	—	—	—	—
Wellington		65·4	138	10 39	− 2	19 31	+ 6	28·7	37·7
Ekaterinburg		72·2	330	i 11 24	0	i 20 42	− 5	31·2	46·6
Baku		74·2	312	i 11 34	− 2	21 13	+ 2	—	61·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tananarive		75·3	250	11 39	− 3	21 17	− 7	35·7	38·2
Tiflis		78·1	312	11 55	− 3	—	—	—	—
Honolulu T.H.		80·9	69	i 12 41	+28	i 22 20	− 5	32·7	—
Kucino		84·2	325	12 28	− 1	22 58	− 2	46·5	53·8
Ksara	N.	84·6	303	i 12 31	0	i 23 5	+ 1	35·7	—
Theodosia		85·2	315	i 12 35	+ 1	e 23 4	− 6	40·7	—
Yalta		86·0	314	12 38	0	23 7	−11	42·2	—
Simferopol		86·1	315	12 38	− 1	23 7	−11	40·7	—
Pulkovo		88·3	330	i 12 47	− 2	i 23 25	−15	39·7	54·9
Helwan		88·6	300	i 12 48	− 3	i 23 38	− 5	56·1	57·8
Helsingfors		90·9	331	i 12 53	− 9	i 24 12	+ 8	e 37·9	—
Königsberg		94·1	325	e 17 14	PP	23 50	[− 6]	e 44·4	46·7
Upsala	E.	94·6	331	e 13 17	− 2	24 37	− 1	e 42·7	63·8
Sitka		95·3	32	—	—	i 25 57	PS	i 45·0	—
Belgrade		95·7	316	e 13 19	− 5	e 25 59	PS	e 48·9	—
Budapest		96·3	318	13 30	+ 4	e 24 41?	−13	e 35·7	48·7
Lund		97·9	328	17 27	PP	24 11	[− 5]	—	—
Vienna		97·9	320	e 13 31	− 3	24 1	[−15]	e 34·7	60·7
Copenhagen		98·3	328	13 30	− 6	24 13	[− 4]	—	—
Prague		98·6	322	e 20 41?	PPPP	—	—	e 42·7	61·7
Zagreb		98·7	317	e 13 35	− 3	e 26 35	PS	e 44·7	—
Potsdam		98·9	325	i 13 34	− 4	—	—	e 36·7	52·7
Trenta		99·7	311	e 13 31	−11	—	—	—	—
Cheb		100·0	322	e 13 48	+ 4	e 17 44	PP	e 43·7	56·7
Bergen		100·2	334	—	—	26 56	PS	e 42·7	61·7
Jena		100·2	323	e 13 41	− 3	e 26 41	PS	e 42·7	57·0
Triest		100·2	318	13 40	− 4	24 24	[− 3]	e 45·2	55·2
Hamburg		100·3	327	e 13 43	− 2	e 23 41?	[−46]	e 47·7	62·7
Göttingen		101·0	324	i 17 56	PP	e 24 28	[− 3]	e 44·7	54·0
Naples	E.	101·0	314	e 16 31	?	e 30 41	SS	—	78·7
Venice		101·2	318	e 13 49	0	e 27 16	PS	—	—
Treviso		101·3	318	13 47	− 3	24 30	[− 2]	48·7	68·7
Innsbruck		101·4	320	13 41?	− 9	e 24 41?	[+ 8]	—	56·7
Cape Town		101·7	236	20 54	?	24 29	[− 5]	48·7	49·9
Feldberg		102·3	323	e 18 5	PP	27 35	PS	—	63·1
Florence		102·4	316	13 51	− 4	—	—	50·2	56·7
Stuttgart		102·4	321	e 13 52	− 3	—	—	e 50·7	65·9
Prato		102·5	316	e 16 41	?	33 41	?	41·2	59·2
Chur		102·7	320	e 13 52	− 4	—	—	e 62·1	—
Karlsruhe		102·7	323	e 16 41?	?	24 55	[+16]	e 52·7	—
Piacenza		103·1	318	18 17	PP	27 31	PS	42·5	78·7
Zurich		103·1	321	e 13 55	− 3	—	—	—	—
Strasbourg		103·3	322	i 14 1	+ 2	e 24 9	[−33]	48·7	61·7
De Bilt		103·5	326	i 14 2	+ 2	e 24 41	[− 2]	e 49·7	57·6
Neuchatel		104·3	321	e 14 0	− 3	—	—	—	—
Uccle		104·5	325	e 14 1	− 3	25 4	[+17]	45·7	64·0
Victoria	E.	104·8	38	18 10	PP	24 44	[− 5]	—	—
	N.	104·8	38	18 52	?	24 53	[+ 4]	33·6	34·3
Besançon		104·9	320	17 41	?	27 37	PS	e 37·7	63·7
Seattle		105·7	39	—	—	e 24 41?	[−12]	—	—
Edinburgh		106·3	331	i 18 45	PP	i 27 54	PS	38·7	61·2
Paris		106·5	323	e 14 9	−23	e 27 41?	PS	41·7	55·7
Kew		106·9	326	e 14 13	− 3	e 26 24	+ 3	45·7	60·1
Stonyhurst		106·9	329	14 21	+ 5	—	—	—	—
Oxford		107·3	326	18 52	PP	e 28 7	PS	e 43·7	67·4
Puy de Dôme		107·3	319	e 18 1	[− 8]	e 28 10	PS	—	—
Liverpool		107·4	329	e 18 41	PP	e 28 45	PS	e 35·7	65·8
Bidston		107·5	329	e 18 53	PP	e 29 6	?	e 38·2	64·8
Ukiah		108·1	47	e 19 1	PP	e 27 59	PS	48·7	—
Berkeley		109·2	48	e 18 57	PP	i 28 12	PS	—	—

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Barcelona		109·5	316	—	—	e 28 34	PS	e 45·8	69·2
Bagnères		110·1	318	—	—	e 23 41?	?	42·7	—
Algiers		110·5	311	e 14 32	− 1	28 42	PS	54·2	70·7
Tortosa	E.	110·9	315	19 7	PP	28 36	PS	—	—
	N.	110·9	315	19 16	PP	28 34	PS	43·8	75·9
Santa Barbara	E.	112·2	51	e 18 28	[+ 3]	e 29 36	PS	—	—
Tinemaha		112·4	48	e 18 33	[+ 8]	e 29 20	PS	—	—
Alicante		112·6	314	e 19 11	PP	e 29 9	PS	e 46·7	73·2
Bozeman		113·5	37	e 19 41?	PP	e 28 58	PS	e 46·2	—
Pasadena		113·5	51	e 14 42	PP	—	—	e 47·2	—
Mount Wilson		113·7	51	e 18 44	[+15]	—	—	—	—
Riverside		114·3	51	e 18 53	[+23]	—	—	—	—
Toledo		114·4	316	19 38	PP	25 59	[+28]	e 45·1	—
Almeria		114·5	312	i 19 25	PP	e 29 14	PS	e 43·4	72·8
La Jolla		114·7	52	e 18 35	[+ 3]	e 29 20	PS	—	—
Granada		115·2	314	e 19 13	PP	29 11	PS	—	74·5
Ivigtut		115·9	355	19 55	PP	29 23	PS	35·7	—
Malaga		116·1	313	i 16 52	?	25 25	[−13]	52·4	54·2
San Fernando		117·5	314	29 46	PS	34 35	?	59·2	64·7
Tucson		119·9	50	e 19 5	[+19]	e 27 8	{− 7}	e 48·3	—
Chicago		128·8	28	e 18 41	[−24]	—	—	e 50·7	—
Florissant		129·6	32	e 16 10	+ 7	—	—	—	64·2
Ottawa		129·9	15	e 19 5	[− 2]	e 28 11	{−10}	e 56·7	—
St. Louis		129·9	32	i 19 6	[− 1]	—	—	e 46·4	51·7
Ann Arbor		130·0	23	i 22 35	PKS	e 31 35	PS	e 59·1	74·2
Toronto		130·4	19	e 19 56	[+48]	—	—	—	—
Buffalo		131·3	19	i 19 9	[0]	—	—	e 69·4	—
Little Rock		131·4	38	i 19 9	[0]	—	—	—	—
East Machias		132·2	8	i 21 43	PP	i 39 15	SS	e 58·1	—
Cincinnati	Z.	132·3	27	i 19 23	[+12]	i 32 53	PS	—	—
Pittsburgh		133·0	21	e 21 1	PP	—	—	53·8	—
Harvard		133·9	12	e 17 36	?	—	—	e 59·7	—
Fordham		134·7	16	i 19 16	[+ 2]	e 28 44	{− 7}	e 66·7	79·9
Georgetown		135·4	19	i 19 18	[+ 3]	28 48	{− 7}	—	—
Dakar		135·5	294	e 21 41?	PP	—	—	—	—
Charlottesville		135·7	22	e 22 3	PP	e 40 5	SS	—	—
Columbia		138·1	27	e 22 14	PP	e 29 5	{− 8}	e 56·7	—
Santiago		147·1	162	20 19	[+42]	—	—	—	—
La Plata		147·5	182	19 40	[+ 2]	—	—	60·7	—
Rio de Janeiro	E.	154·4	216	e 19 53	[+ 6]	e 30 29	{−18}	e 49·0	—
	N.	154·4	216	e 19 55	[+ 8]	e 30 26	{−21}	e 49·0	—
San Juan		158·0	18	19 58	[+ 7]	e 30 11	{−56}	e 66·7	—
Huancayo		161·1	122	20 0	[+ 5]	—	—	—	—
La Paz		163·3	148	20 2	[+ 5]	30 20	{−77}	75·8	95·7

Additional readings and notes :—
Manila PP = +3m.1s.
Batavia P = +3m.53s., iS = +7m.17s.
Hong Kong PP = +4m.53s.
Medan i = +5m.21s. =PP +8s. and +6m.6s.
Taihoku PP = +5m.27s.
Zi-ka-wei iZ = +6m.10s., iN = +6m.22s. and +6m.41s., iZ = +7m.4s., +8m.43s. +8m.47s., +10m.17s., +11m.20s., and +11m.30s.
Nanking PPNZ = +7m.32s., eSN = +11m.5s., iZ = +11m.48s., +13m.23s., and +15m.29s.
Koti e = +7m.41s. =PP +2s.
Sumoto SEN = +12m.16s.
Perth PP = +8m.10s., PPP = +8m.26s., P_cP = +9m.1s., S = +12m.8s., P_cS = +13m.36s., SS = +14m.11s., SSS = +15m.11s.
Kobe iPNZ = +6m.57s., PPNZ = +8m.8s., iNZ = +14m.57s.
Toyooka ePEN = +6m.57s., iP = +7m.8s., i = +8m.17s. =PP +10s., eLN = +12m.44s. =S +15s.; S is given as L.
Chiufeng iPP = +9m.5s., iSS = +15m.44s.
Tyosi PP = +9m.1s.
Adelaide i = +8m.0s., iPP = +9m.14s., i = +9m.32s. =PPP +2s., and +14m.5s., iSS = +16m.47s.
Melbourne SS = +18m.24s. =S_cS +6s.

Continued on next page.

Riverview i = +8m.23s. and +8m.43s., PS = +15m.15s., iSSE = +18m.21s., iSSN = +18m.31s., SSSE = +19m.36s., SSSSE = +19m.41s.
Sydney PPP = +10m.41s., SSS = +18m.41s.
Suva SS = +21m.41s. ?
Wellington SS = +23m.41s., SSS = +25m.11s.
Tananarive iE = +11m.47s., eE = +19m.14s., SKS = +21m.28s., PS = +21m.50s, SSN = +25m.53s., SSE = +26m.0s., SSSE = +29m.11s.
Tifiis iPS = +11m.51s., SSS = +17m.38s.
Honolulu T.H. i = +16m.11s., e = +23m.51s. and +26m.41s.
Kucino PP = +15m.58s.
Pulkovo PP = +16m.20s., PS = +24m.37s., SS = +29m.23s.
Helsingfors iP_cPE = +13m.6s., iPPE = +16m.50s., ePPN = +16m.53s., ePPPN = +19m.5s., ePPPE = +19m.9s., iSKKSEN = +23m.50s., ePSE = +24m.58s., ePPSE = +25m.32s., iN = +26m.30s., eSSEN = +29m.50s., iN = +31m.32s., eE = +32m.52s., SSSE = +33m.44s. ; T_o = 8h.11m.3s.
Königsberg eN = +23m.54s., iSE = +24m.54s.
Upsala PPE = +17m.11s.
Sitka iSS = +30m.41s.
Belgrade e = +17m.14s., ePP = +17m.18s., eSS = +31m.25s.
Budapest PP = +17m.15s.
Vienna iE = +14m.53s., +16m.38s., and +16m.55s., PP = +17m.43s., iN = +18m.3s. and +18m.43s., iE=+19m.10s., PPP?=+21m.8s., iE=+21m.40s., SKKS = +24m.30s., iN = +25m.2s. =S − 6s., PS? = +26m.4s., iE? = +26m.29s., PPS? = +26m.41s., iE = +28m.33s., SS = +31m.55s.
Copenhagen +17m.41s. =PP +11s., +24m.59s. =S − 13s., and +26m.25s. = PS − 2s.
Zagreb ePP = +17m.46s., e = +30m.4s., +32m.41s.?, and +36m.41s.?
Potsdam eE = +14m.11s., iEZ = +17m.41s. =PP + 7s., iE = +17m.49s., and +17m.58s., iN = +18m.9s., eE = +25m.41s.?, iZ = +26m.31s. =PS − 3s.
Cheb eP? = +5m.55s., eSS? = +26m.45s. =PS +0s., e = +36m.15s.
Jena ePP = +17m.41s., eE = +32m.41s., eN = +33m.40s.
Triest e = +17m.38s. =PP − 6s., +17m.51s., and +18m.4s., iPP = +18m.9s., i = +26m.47s. =PS − 1s., ePS = +27m.27s., e = +28m.10s., +32m.24s. = SS + 19s., +32m.53s., and +35m.57s. =SSS + 7s., eSSS = +38m.31s.? = SSSS − 16s.
Hamburg ePPE = +17m.53s., iPPZ = +18m.1s., eSSE = +32m.23s., eSSSE = +36m.11s.
Göttingen eE = +27m.33s., +31m.41s., and +36m.11s.
Innsbruck e = +17m.29s. =PP − 24s.
Cape Town E = +25m.45s. =S + 4s. and +27m.12s. =PS + 9s., +32m.34s. = SS + 9s., E = +39m.49s.
Feldberg i = +18m.24s. =PP + 24s., e = +36m.35s. =SSS + 12s.
Florence PP = +18m.17s., PPP = +22m.19s., PS = +27m.31s., PPS = +28m.41s., i = +29m.59s., SS = +33m.45s., SSS = +38m.41s.
Stuttgart ePEN =iPZ = +13m.59s., e = +14m.46s., iPP = +18m.9s., ePPP = +20m.23s., ePS = +27m.9s., e = +29m.41s., eSS = +32m.35s., eSSS = +37m.11s.
Chur ePKP = +17m.8s., ePP = +18m.3s.
Karlsruhe e = +18m.11s. =PP + 8s.
Zurich ePKP = +17m.8s.
Strasbourg iPP = +18m.14s., iPPP = +20m.30s., i = +21m.27s., ePPPPP = +23m.11s., eSKKS = +25m.49s. =S − 6s., iPS = +27m.19s., ePPS = +28m.15s., iSS = +33m.9s.
De Bilt eE = +27m.43s. =PS + 21s.
Neuchatel ePKP = +17m.2s.
Uccle iZ = +14m.7s., ePKPE = +17m.58s., iPP = +18m.21s., PPPE = +20m.34s., iZ = +21m.37s., eSKKSN = +25m.40s., iPSE = +27m.50s., iPPSN = +28m.58s., iSSE = +33m.30s., PPP'E = +37m.10s., SSSN = +37m.26s.
Seattle ePS = +27m.47s.
Edinburgh i = +29m.5s.
Paris e = +17m.41s.? =PKP − 25s.
Kew ePP = +18m.46s., ePSZ = +27m.27s., iPPSEN = +28m.7s., iZ = +29m.24s. eSS = +33m.25s., eEN = +34m.44s., eSSS = +38m.15s., eEN = +43m.56s.
Stonyhurst iPP = +18m.49s., PS = +27m.58s., SS = +34m.11s.
Bidston ePP = +21m.51s., eSS = +33m.11s.
Ukiah ePS = +27m.56s., eSS = +33m.59s.
Berkeley iE = +25m.7s. =SKS − 3s.
Algiers iPP = +19m.10s., SS = +36m.25s.
Santa Barbara eE = +19m.39s.
Bozeman eSS = +35m.32s.
Pasadena ePZ = +14m.48s., iPKP = +18m.35s., iZ = +18m.58s. and +19m.41s. =PP + 18s., eZ = +22m.11s., iZ = +29m.25s. =PS + 23s.
Toledo S = +26m.38s. =SKKS + 0s., PS = +29m.14s.
Granada iPP = +19m.43s.
Malaga PP = +19m.42s., SKKS = +26m.34s., i = +28m.9s., PS = +29m.32s., PPS = +30m.45s., SS = +34m.49s., SSS = +42m.12s.

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Tucson PS = +30m.3s., eSS = +36m.23s.
Chicago ePP = +21m.19s., eSS = +38m.41s.
Florissant ePKPEZ = +19m.6s., ePPEZ = +21m.2s., iSKPEZ = +22m.28s., iPSEN = +31m.29s., iEN = +33m.11s.
Ottawa ePP = +21m.21s., ePKS = +22m.31s., eSKSPE = +31m.10s., ePPP'N = +43m.35s., eSSE = +38m.41s., eN = +39m.53s., eSSS = +43m.53s.
St. Louis iP_cP = +19m.28s., iPP = +22m.28s., eSSN = +34m.54s.
Ann Arbor e = +34m.47s., eN = +38m.41s. = SS + 1s., eE = +41m.35s., eSSN = +43m.53s., eSSE = +44m.23s., eE = +47m.53s., eN = +48m.11s.
Toronto i = +21m.28s. = PP + 8s., +22m.27s. = PKS − 8s., +33m.7s. and +40m.20s.
Buffalo i = +21m.27s. = PP + 1s., +22m.33s. = PKS − 6s., +33m.29s. and +34m.56s.
Little Rock iEN = +19m.15s. and +19m.21s., iPPEN = +21m.25s., eSKPEN = +22m.34s., eE = +22m.48s. and +25m.5s., eSSSEN = +44m.13s.
East Machias i = +22m.39s. = PKS − 4s., PPP = +24m.27s., e = +34m.27s. and +43m.59s. = SSS + 9s.
Cincinnati iPE = +19m.38s., iPN = +19m.41s., iN = +20m.17s., iE = +21m.37s. = PP + 5s., iZ = +21m.49s., i = +22m.56s. = PKS + 13s., iZ = +24m.30s. = PPP + 13s., eZ = +28m.29s. = SKKS − 7s., iZ = +31m.55s. = SKSP + 25s.
Pittsburgh e = +30m.58s., +31m.59s. = PS + 1s., +37m.41s., and +39m.23s. = SS + 6s.
Harvard e = +19m.36s. = PKP + 23s. and +21m.44s. = PP + 1s., i = +22m.53s. = PKS + 3s., e = +31m.25s. = SKSP − 17s., +34m.59s., and +39m.29s. = SS + 1s., eSS = +44m.29s. = SSS + 15s.
Fordham e = +21m.50s. = PP + 2s. and +21m.55s., i = +22m.51s. = PKS − 1s., e = +45m.41s.?
Georgetown iPP = +21m.57s., iSKP = +22m.50s.; T_0 = 8h.10m.54s.
Charlottesville eSSS = +44m.59s.
Columbia e = +29m.10s. and +32m.20s. = SKSP + 6s., SS = +40m.24s.
Rio de Janeiro PPE = +23m.38s., PPN = +23m.41s.
San Juan ePPS = +37m.29s., eSS = +43m.41s., iSSS = +50m.31s.
Huancayo e = +23m.26s. = PKS − 11s. and +23m.52s., ePP = +24m.25s., PPP = +28m.7s.
La Paz iPKP = +20m.7s., $iPKP_2N$ = +21m.2s., $iPKP_2E$ = +21m.18s., PPN = +23m.42s., PPE? = +24m.30s., iSKS = +27m.1s., iPPPN = +27m.22s., SKKSE = +30m.12s., iE = +32m.8s., SKSP = +33m.50s., iN = +35m.46s., PPS = +38m.4s., PSS = +45m.10s., iPSS = +45m.14s., iN = +46m.24s., SSS = +49m.15s., SSSS = +52m.30s.
Long waves were also recorded at Durham and Laibach.

Dec. 4d. 10h. 33m. 5s. Epicentre 2°·4N. 121°·0E. (as at 8h.). R.1.

Probable error of epicentre ±0°·33.

Batavia gives epicentre 2°·9N. 121°·8E.

A = −·515, B = +·858, C = +·042; D = +·857, E = +·515; G = −·022, H = +·036, K = −·999.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		9·4	130	i 2 9	− 4	3 54	− 5	—	—
Manila		12·2	0	2 51	0	5 31	+23	—	—
Malabar		16·5	234	3 53	+ 5	i 7 7	+17	—	—
Batavia		16·6	239	e 3 45	− 4	11 18	?	—	—
Hong Kong		21·0	342	4 14	−26	8 6	−20	8·9	10·8
Isigakizima		22·1	8	4 59	+ 7	8 54	+ 6	—	—
Medan		22·3	274	i 5 4	+10	9 42	+50	—	—
Phu-Lien		23·2	324	e 5 1	− 2	e 9 8	0	—	—
Naha		24·7	14	5 15	− 2	9 37	+ 1	—	—
Zi-ka-wei	z.	28·8	1	5 52	− 2	10 44	− 1	—	16·4
Nanking		29·7	356	e 6 0	− 2	10 58	− 1	—	17·7
Tomie		31·1	13	6 24	+ 9	11 17	− 4	—	—
Nagasaki		31·4	15	e 7 17	+60	—	—	e 16·8	—
Sumoto		34·4	22	6 50	+ 6	12 6	− 6	—	19·9
Perth		34·7	187	6 55	+ 9	e 12 5	−12	14·9	16·2

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Kobe		34·8	22	e 6 58	+11	e 12 32	+14	—	18·8
Osaka		35·0	22	7 0	+11	12 43	+22	—	—
Nagoya		35·9	23	e 6 56	− 1	8 17	PP	—	—
Chiufeng		37·9	354	e 7 10	− 4	e 12 54	−11	e 15·4	—
Adelaide		40·8	158	i 7 34	− 5	i 13 40	− 8	18·1?	24·9
Mizusawa	E.	41·0	25	7 49	+ 9	13 43	− 8	—	—
Colombo		41·3	277	7 39	− 4	13 52	− 4	20·5	25·8
Hyderabad		44·4	293	8 29	+21	14 59	+18	20·4	28·0
Melbourne		45·9	154	8 20	0	15 3	0	22·4	—
Riverview		46·1	145	e 8 19	− 2	i 15 3	− 3	e 22·4	28·5
Sydney		46·1	145	e 8 25	+ 4	i 15 25	+19	28·4	29·4
Bombay		50·0	293	8 49	− 2	15 54	− 7	25·9	31·7
Irkutsk		51·8	347	e 9 7	+ 2	e 16 18	− 7	25·9	—
Andijan		58·2	318	e 9 48	− 4	—	—	—	—
Tashkent		60·5	318	i 10 31	+23	18 27	+ 4	27·9	36·4
Tchimkent		60·7	319	e 9 44	−25	—	—	—	—
Wellington		65·4	138	—	—	i 18 55?	−30	—	—
Ekaterinburg		72·2	330	i 11 22	− 2	i 20 40	− 7	36·9	43·5
Baku		74·2	312	i 11 31	− 5	21 30	PS	38·9	52·1
Tiflis		78·1	312	13 0	+62	21 2	−53	—	—
Ksara	N.	84·6	303	i 12 29	− 2	i 23 4	0	—	—
Theodosia		85·2	315	i 12 32	− 2	e 22 58	[− 3]	—	—
Yalta		86·0	314	12 35	− 3	23 4	[− 2]	—	—
Simferopol		86·1	315	12 35	− 4	23 5	[− 2]	—	—
Pulkovo		88·3	330	12 44	− 5	i 23 25	[+ 3]	44·9	54·6
Helwan		88·6	300	i 12 46	− 5	i 23 30	[+ 6]	—	56·8
Helsingfors		90·9	331	i 19 39	PPPP	e 30 8	SS	e 46·2	—
Vienna	Z.	97·9	320	i 13 29	− 5	—	—	—	—
Copenhagen		98·3	328	—	—	24 7	[−10]	50·9	—
Cheb		100·0	322	—	—	e 23 59	[−27]	e 58·9	62·9
Triest		100·2	318	e 13 29	−15	—	—	—	56·9
Stuttgart		102·4	321	e 18 6	PP	e 27 2	PS	e 56·9	—
Tinemaha	Z.	112·4	48	e 19 27	PP	—	—	—	—
Pasadena	Z.	113·5	51	i 18 34	[+ 6]	—	—	—	—
Ottawa		129·9	15	e 22 24	PKS	—	—	e 59·9	—
Toronto		130·4	19	i 22 27	PKS	—	—	—	—
East Machias		132·2	8	i 22 32	PKS	e 45 55?	?	—	—
Fordham		134·7	16	e 19 15	[+ 1]	—	—	e 66·9	—
Georgetown		135·4	19	i 19 15	[0]	i 22 41	PKS	—	—
La Plata		147·5	182	19 36	[− 2]	—	—	—	—
Huancayo		161·1	122	20 0	[+ 5]	—	—	—	—
La Paz		163·3	148	i 20 2	[+ 5]	27 15	?	80·9	90·4

Additional readings :—
Batavia iP = +3m.49s.
Zi-ka-wei iZ = +6m.55s. and +11m.8s.
Nanking ePZ = +6m.4s.
Osaka i = +8m.17s. =PP +16s.
Chiufeng PP = +8m.43s., eS = +12m.42s.
Adelaide i = +7m.49s., +9m.21s. =PP +13s., +13m.46s., and +14m.4s., iSS = +16m.44s.
Melbourne SS = +18m.43s.
Riverview i = +15m.27s., iSSE = +18m.33s., SSSN = +19m.50s.
Sydney SS = +18m.43s.
Pulkovo iPS = +24m.25s.
Helsingfors ePE = +19m.47s., ePPE = +23m.47s., ePPN = +23m.52s.
Copenhagen +25m.32s. =S +20s.
Cheb e = +32m.6s. =SS +4s. and +36m.31s.
Triest e = +13m.39s., ePP = +17m.48s., e = +22m.22s., and +32m.9s. =SS +4s.
Pasadena iZ = +18m.53s.
Fordham e = +22m.41s. =PKS −12s., i = +22m.44s. and +23m.0s., e = +39m.52s. =SS +14s.
La Paz PPN = +24m.46s., SKSP = +35m.10s., SS = +45m.8s.
Long waves were also recorded at Ivigtut, Harvard, and at other European stations.

Dec. 4d. 22h. 41m. 33s. Epicentre 34°·9N. 139°·2E. (as on 1930 May 16d.). X.

Nagoya gives epicentre 34°·9N. 139°·0E.

A = −·621, B = +·536, C = +·572.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi	1·6	58	e 0 24	+ 1	0 45	+ 4	—	1·0
Nagoya	1·9	278	0 26	− 2	0 52	+ 3	—	0·8
Osaka	3·0	265	0 48	P*	(1 31)	S*	1·5	1·9
Kobe	3·3	267	e 0 37	−10	e 1 26	+ 1	—	1·7
Sumoto	3·6	262	e 2 8	?	2 31	?	—	2·9
Toyooka	3·6	282	i 0 58	P*	e 1 46	S*	—	1·8
Mizusawa	4·5	19	1 57	S	(1 57)	+ 2	—	—
Koti	4·9	256	e 1 27?	P_g	—	—	—	—

Additional reading :—
Mizusawa PN = +2m.15s. =S* +3s.

Dec. 4d. Readings also at 4h. (Tiflis), 5h. (Manila and near Taihoku), 6h. (Ksara), 8h. (Cape Town and near Tyosi), 10h. (Tananarive), 11h. (Pasadena and Tinemaha), 20h. (Nagoya), 21h. (near Tyosi).

Dec. 5d. 0h. 19m. 25s. Epicentre 33°·7N. 137°·0E. N.1.

A = −·608, B = +·567, C = +·555 ; D = +·682, E = +·731 ;
G = −·406, H = +·378, K = −·832.

Depth of focus 0·070 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Siomisaki	+2·6	1·1	256	0 49	− 4	1 31	− 4	—	—
Hamamatu	+2·6	1·2	31	0 54	0	1 39	+ 2	—	—
Kameyama	+2·6	1·2	339	0 55	+ 1	1 41	+ 4	—	—
Omaesaki	+2·6	1·3	48	0 56	0	1 40	0	—	—
Nagoya	+2·5	1·5	359	0 56	− 1	1 44	+ 2	—	1·7
Osaka	+2·5	1·5	308	0 55	− 2	(1 43)	+ 1	1·7	2·1
Wakayama	+2·4	1·6	289	0 55	− 2	1 40	− 2	—	—
Hikone	+2·4	1·6	339	0 59	+ 2	1 45	+ 3	—	—
Gihu	+2·3	1·7	354	0 59	+ 2	1 46	+ 4	—	—
Kyoto	+2·3	1·7	321	0 58	+ 1	1 45	+ 3	—	—
Sumoto	+2·3	1·8	290	i 0 56	− 2	i 1 42	− 3	—	1·7
Kobe	+2·3	1·8	303	i 0 57	− 1	i 1 43	− 2	—	1·8
Iida	+2·2	1·9	21	1 1	+ 3	1 50	+ 5	—	—
Misima	+2·2	2·1	49	0 59	− 2	1 48	− 2	—	—
Kohu	+2·1	2·3	34	1 0	− 3	1 50	− 3	—	—
Hatidyozima	+2·0	2·5	104	0 54	−10	1 46	− 9	—	—
Toyooka	+2·0	2·5	315	i 1 3	− 1	e 1 55	0	—	2·0
Mera	+1·9	2·6	62	0 59	− 5	1 49	− 6	—	—
Yokohama	+1·8	2·8	52	1 2	− 4	1 53	− 5	—	—
Oiwake	+1·8	2·9	26	1 7	0	2 1	+ 1	—	—
Koti	+1·8	2·9	267	i 1 2	− 5	i 1 53	− 7	—	—
Tokyo	+1·8	3·0	49	1 5	− 3	1 57	− 6	—	—
Nagano	+1·7	3·1	18	1 10	+ 2	2 6	+ 3	—	—
Maebasi	+1·7	3·1	32	1 7	− 1	2 2	− 1	—	—
Kumagaya	+1·7	3·1	38	1 9	+ 1	2 1	− 2	—	—
Matuyama	+1·5	3·5	274	i 1 2	− 9	—	—	—	2·0
Simidu	+1·5	3·5	255	1 5	− 6	1 54	−14	—	—
Tukubasan	+1·5	3·6	44	1 11	− 2	2 4	− 6	—	—
Kakioka	+1·5	3·6	45	1 10	− 3	2 5	− 5	—	—
Wazima	+1·4	3·7	359	1 17	+ 4	2 17	+ 7	—	—

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.
Utunomiya		+1·4	3·7	38	1 11	− 2	2 7	− 3	—	—
Tyosi		+1·4	3·8	57	i 1 10	− 4	2 8	− 5	—	—
Mito		+1·3	3·9	46	1 10	− 4	2 7	− 6	—	—
Hukusima		+0·8	4·9	34	1 24	+ 3	2 32	+ 7	—	—
Miyazaki		+0·8	5·0	251	1 24	+ 2	2 25	− 3	—	—
Kumamoto		+0·7	5·3	262	1 25	0	2 35	+ 2	—	—
Hukuoka		+0·6	5·5	271	e 1 27	0	i 2 39	+ 3	—	—
	B.	+0·6	5·5	271	1 27	0	2 40	+ 4	—	—
Nagasaki		+0·4	6·1	263	1 32	0	2 48	+ 2	—	—
Mizusawa		+0·3	6·3	30	1 41	+ 7	3 3	+15	—	—
Akita		+0·3	6·4	21	1 43	+ 8	3 7	+16	—	—
Morioka		+0·1	6·9	27	1 48	+ 9	3 16	+17	—	—
Titizima		−0·2	8·0	145	1 43	− 8	2 58	−21	—	—
Zinsen		−0·6	9·3	297	2 14	+11	4 6	+25	—	—
Naha		−1·0	11·0	230	2 23	+ 2	4 24	+11	—	—
Chiufeng		−2·4	17·8	297	3 43	+ 9	i 6 57	+33	—	—
Tinemaha		−8·2	81·0	51	i 11 32	+ 4	—	—	—	—
Pasadena		−8·3	82·2	54	i 11 38	+ 4	—	—	—	—
La Jolla	E.	−8·3	83·6	55	e 11 42	0	—	—	—	—

Mizusawa gives also SE = +3m.6s.

Dec. 5d. Readings also at 1h. (near Nagoya and Osaka), 2h. (Madison), 3h. (La Paz), 5h. (near Tananarive), 6h. (Madison and Tananarive), 9h. (near Santiago), 10h. (near Tananarive), 12h. (Lick), 14h. (Christchurch, New Plymouth, and near Wellington), 15h. (Adelaide, Riverview, and Perth), 20h. (Florence, near Nagoya (2), and Sumoto), 21h. (Ann Arbor, Ekaterinburg; and near Medan), 22h. (Tiflis (2)), 23h. (Baku, Tashkent, Pulkovo, Chiufeng, Copenhagen, Mizusawa, and near Sumoto).

Dec. 6d. Readings at 3h. (Huancayo, Pasadena, and Tinemaha), 11h. (Tucson, Haiwee, Pasadena, Tinemaha, La Jolla, Mizusawa, near Tyosi, and Nagoya), 12h. (Perth, Riverview, Melbourne, and Wellington), 13h. (Baku, Ekaterinburg, Berkeley, Branner, and near Lick), 21h. (near Santiago), 22h. (Andijan, Tchimkent, Haiwee, Mount Wilson, Pasadena, and Tinemaha), 23h. (near Medan).

Dec. 7d. 7h. 55m. 46s. Epicentre 36°·8N. 27°·5E. N.2.

A = +·710, B = +·370, C = +·599 ; D = +·462, E = −·887 ;
G = +·531, H = +·277, K = −·801.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ksara	N.	7·4	111	e 2 46	+61	i 4 5	+56	—	—
Helwan		7·6	155	e 1 49	+ 1	i 3 1	−13	—	3·2
Trenta		9·1	289	i 2 4	− 5	i 3 49	− 2	—	—
Vienna	Z.	14·0	328	i 3 16	+ 1	—	—	—	—
Innsbruck		15·9	316	3 38	− 2	—	—	—	—
Chur		16·7	313	e 3 52	+ 2	—	—	—	—
Zurich		17·5	313	e 3 59	− 1	—	—	—	—
Baku		17·8	71	4 4	0	e 7 24	+ 4	8·0	—
Stuttgart		17·9	318	e 4 34	+29	—	—	—	—
Neuchatel		18·3	310	e 4 7	− 3	—	—	—	—
Lund		21·2	337	—	—	8 29	− 1	—	—
Copenhagen		21·5	337	4 43	− 2	i 8 33	− 3	—	—
Pulkovo		23·0	4	5 0	− 1	i 8 56	− 9	—	—
Ekaterinburg		29·7	37	—	—	(10 14?)	−45	10·2	—
Tchimkent		32·5	67	e 6 45	+18	—	—	—	—
Andijan		34·8	69	e 6 47	0	—	—	—	—

Ksara gives also eN = +3m.40s.

Dec. 7d. 8h. 57m. 41s. Epicentre 35°·0N. 135°·5E. (as on 1931 July 15d.). R.3.

A = − ·584, B = + ·574, C = + ·574.

	△	Az.	P.	O − C.	S.	O − C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Osaka	0·4	173	0 7	+ 1	(0 15)	+ 5	0·2	0·3
Kobe	0·5	219	0 5	− 2	0 15	+ 2	—	0·3
Toyooka	0·8	314	i 0 8	− 3	i 0 18	− 3	—	0·4
Sumoto	0·9	212	0 20	+ 7	0 28	+ 5	—	0·5
Nagoya	1·2	82	0 18	+ 1	0 34	+ 3	—	—

Dec. 7d. 16h. 22m. 16s. Epicentre 18°·9N. 104°·1W. N.1.

Probable error of epicentre ±0°·18.

A = − ·230, B = − ·918, C = + ·324 ; D = − ·970, E = + ·244 ;
G = − ·079, H = − ·314, K = − ·946.

		△	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		14·7	337	i 3 26	+ 1	i 6 18	+10	i 7·5	—
La Jolla		18·3	323	i 4 11	+ 1	e 7 41	+10	e 8·0	—
Little Rock		18·9	31	i 4 17	0	i 7 58	+14	—	—
Riverside		19·2	325	e 4 21	0	e 8 13	+23	—	—
Mount Wilson		19·7	324	e 4 27	+ 1	e 8 22	+22	—	—
Pasadena		19·7	324	i 4 26	0	i 8 20	+20	i 9·4	—
Denver		20·8	358	i 4 42	+ 4	i 8 39	+17	—	10·9
Santa Barbara		20·9	322	e 4 38	− 1	e 8 43	+19	—	—
Haiwee	E.	21·2	328	e 4 38	− 4	e 8 47	+17	—	—
Tinemaha		22·0	329	i 4 51	0	i 9 1	+15	—	—
St. Louis		23·1	29	i 5 0	− 2	i 9 22	+15	—	—
Florissant		23·2	28	i 5 2	− 1	i 9 22	+14	—	—
Lick		24·0	324	i 5 11	+ 1	e 9 47	+24	—	—
Branner		24·4	323	e 5 44?	+30	—	—	—	—
Berkeley		24·8	324	i 5 19	+ 1	i 10 3	+26	—	—
Columbia		25·4	49	5 25	+ 1	9 52	+ 4	e 14·9	—
Ukiah		26·1	325	i 5 32	+ 2	i 10 12	+ 2	11·6	—
Cincinnati		26·4	36	i 5 32	− 1	i 10 16	+11	e 13·6	—
Chicago		26·8	28	i 5 37	+ 1	i 10 27	+15	i 11·8	—
Madison		27·2	24	e 5 39	− 1	e 10 27	+ 9	14·4	—
Ann Arbor		29·1	32	e 5 56	− 1	e 10 56	+ 6	i 16·1	18·8
Charlottesville		29·3	44	e 5 59	0	e 10 52	− 1	15·7	—
Georgetown		30·7	44	i 6 11	0	11 29	+13	e 15·7	—
Buffalo		32·1	36	i 6 23	− 1	i 11 49	+12	e 17·4	—
Toronto		32·3	34	i 6 28?	+ 3	i 11 57?	+17	17·2?	19·4?
Seattle		32·4	337	e 6 20	− 6	e 11 50	+ 9	e 16·0	—
Saskatoon		33·3	356	6 44	+10	12 26	+31	—	—
Victoria	E.	33·4	337	5 52	−43	11 27	−30	16·8	22·1
	N.	33·4	337	7 7	+32	12 27	+30	17·6	—
Fordham		33·9	43	e 6 42	+ 3	i 12 24	+20	19·1	22·7
Ottawa		35·4	35	e 6 50	− 3	12 41	+14	e 17·1	—
San Juan		35·9	84	i 6 56	− 1	12 22	−13	15·2	—
Harvard		36·4	43	e 7 34	+33	e 13 0	+18	e 16·2	—
East Machias		39·9	42	i 7 33	+ 2	13 23	−12	16·8	—
Huancayo		42·0	135	7 48	− 1	i 14 5	− 1	17·6	—
Sitka		44·6	337	i 8 10	0	14 50	+ 6	20·7	—
La Paz		50·0	132	i 8 51	0	i 16 2	+ 1	23·3	32·9
Honolulu T.H.		50·3	283	—	—	i 16 11	+ 6	i 23·4	—
Ivigtut		57·3	29	13 20	?	24 20	?	27·7	—
La Plata		69·4	140	11 6	− 1	20 9	− 5	30·7	—
Rio de Janeiro	N.	72·7	123	—	—	e 20 54	+ 1	—	—
Bidston		81·2	37	e 12 16	+ 2	e 22 52	+24	—	48·4
Durham		81·6	35	—	—	22 35	+ 2	—	48·7
Dakar		82·2	77	i 12 25	+ 6	e 22 24	−15	—	—
Bergen		82·8	28	12 24	+ 2	22 44	− 1	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Kew		83·5	38	i 12 27	+ 1	i 22 56	+ 4	39·7	49·9
Suva		84·7	249	13 24	+52	24 9	+64	41·7	49·7
San Fernando		85·0	54	12 48	+15	i 23 16	+ 8	43·7	54·2
Toledo		85·4	50	i 12 34	− 1	i 23 18	+ 6	e 41·5	51·9
Malaga		86·2	52	i 12 40	+ 1	i 23 25	+ 6	41·5	53·2
Paris		86·3	40	e 13 28	+48	e 24 4	+44	41·7	—
De Bilt		86·4	35	i 12 40	0	e 23 14	− 7	e 41·7	51·2
Uccle		86·5	37	e 12 39	− 2	23 15	− 7	40·7	52·0
Granada		86·6	52	i 12 43	+ 2	i 23 19	− 4	41·1	47·7
Almeria		87·7	52	i 12 41	− 5	e 23 33	− 1	e 40·2	57·2
Tortosa	N.	88·2	47	e 12 23	−26	23 38	− 1	e 40·7	67·5
Hamburg		88·2	33	i 12 48	− 1	e 23 14	[− 7]	e 43·7	46·7
Copenhagen		88·3	30	12 49	0	23 27	[+ 5]	—	—
Upsala		88·3	26	e 12 45	− 4	i 23 17	[− 5]	—	53·6
Alicante		88·4	50	e 12 54	+ 4	e 23 44	+ 3	e 49·1	54·7
Lund		88·7	30	16 21	PP	23 20	[− 4]	40·7	—
Feldberg		89·0	36	—	—	e 42 14	?	e 52·7	60·2
Göttingen		89·3	35	—	—	e 23 32	[+ 4]	e 44·7	53·7
Strasbourg		89·5	38	e 12 55	0	e 23 31	[+ 1]	e 27·7	54·1
Neuchatel		89·7	39	e 12 56	0	—	—	—	—
Stuttgart		90·1	37	e 12 57	− 1	e 23 38	[+ 5]	e 44·7	57·2
Jena		90·4	35	e 12 58	− 1	—	—	e 43·7	54·2
Zurich		90·4	39	e 12 58	− 1	—	—	—	—
Potsdam		90·5	33	i 13 8	+ 8	e 33 44?	SSS	e 46·7	55·7
Helsingfors		90·8	23	e 13 0	− 1	i 23 32	[− 5]	e 39·3	—
Cheb		91·3	35	—	—	e 23 44	[+ 4]	e 52·7	55·7
Chur		91·3	39	e 13 1	− 2	—	—	—	—
Algiers		91·6	50	e 12 55	−10	23 31	[−11]	47·7	59·7
Piacenza		92·3	40	—	—	e 23 56	{+ 3}	—	57·7
Prague		92·3	34	e 16 32	PP	—	—	e 20·7	25·7
Pulkovo		93·1	21	13 9	− 3	23 44	[− 7]	49·7	56·7
Treviso		93·5	39	i 13 16	+ 2	i 24 3	{ 0}	53·7	56·7
Florence		93·8	41	i 12 0	−75	23 24	[−30]	42·7	48·7
Triest		94·4	39	i 13 18	0	i 23 56	[− 2]	e 51·7	57·7
Vienna		94·5	35	e 13 16	− 2	23 54	[− 4]	e 47·7	56·7
Zagreb		95·4	38	e 13 22	0	e 24 1	[− 2]	e 51·4	—
Wellington		96·0	228	—	—	i 24 1	[− 5]	47·7	—
Budapest		96·3	35	—	—	e 24 14	[+ 6]	e 44·7	58·7
Kucino		98·7	22	17 39	PP	24 17	[− 2]	39·8	54·4
Ekaterinburg		103·2	9	i 13 58	0	i 24 38	[− 3]	49·7	66·1
Irkutsk		104·6	343	e 18 25	PP	e 24 39	[− 9]	51·7	63·7
Yalta		106·0	30	14 11	0	24 47	[− 8]	59·7	—
Theodosia		106·2	28	—	—	24 53	[− 3]	54·7	—
Chiufeng		110·1	329	14 26	− 5	28 1	PS	e 56·6	73·3
Riverview		112·3	240	—	—	e 26 14	{− 9}	e 51·7	60·0
Sydney		112·3	240	e 16 8	?	28 44	PS	53·1	61·9
Tiflis		112·9	25	e 18 21	[− 6]	25 21	[− 5]	—	71·3
Ksara	N.	114·9	37	e 19 37	PP	—	—	i 55·7	—
Helwan		115·0	43	e 19 26	PP	e 29 22	PS	—	77·0
Baku		115·9	23	19 42	PP	i 29 44	PS	43·7	—
Melbourne		117·8	287	—	—	i 29 39	PS	53·7	—
Tchimkent		117·8	5	e 18 6	[−34]	—	—	—	—
Tashkent		119·5	5	i 19 48	PP	25 36	[−13]	—	74·9
Andijan		120·3	3	e 19 59	PP	—	—	64·1	—
Hong Kong		124·3	316	20 35	PP	30 41	PS	53·7	85·2
Calcutta		136·8	343	19 37	[+19]	22 1	PP	23·2	—
Perth		141·9	243	26 34	?	—	—	74·7	—
Bombay		142·1	5	19 28	[+ 4]	—	—	—	92·0
Batavia		147·3	290	19 39	[+ 1]	21 55	?	—	—
Medan		148·2	314	i 20 0	[+21]	—	—	—	—
Kodaikanal		150·8	357	19 44	[+ 1]	42 10	SS	73·9	90·3
Colombo		153·9	351	19 47	[0]	—	—	—	98·1

For Notes see next page.

NOTES TO DEC. 7d. 16h. 22m. 16s.

Additional readings :—
Riverside eE = +8m.9s.
Pasadena iN = +4m.31s., iSNZ = +8m.26s.
Denver iN = +4m.59s.
Tinemaha iN = +9m.8s.
St. Louis iPPN = +5m.37s., iPPPN = +5m.47s., eP_cPEN = +8m.42s., eSSE = +10m.29s.; T_0 = 16h.21m.58s.
Florissant i = +5m.8s., iEN = +5m.37s. = PP +11s., iZ = +5m.47s.
Columbia e = +10m.3s.
Ukiah i = +10m.40s.
Cincinnati i = +6m.6s., iPP = +6m.21s., iPPPZ = +6m.36s., iSSZ = +11m.41s.
Chicago iPP = +6m.27s., i = +10m.36s. and +10m.46s.
Madison ePP = +6m.19s.; T_0 = 16h.22m.3s.
Ann Arbor iPP = +6m.44s., iS = +11m.26s., i = +15m.38s.; T_0 = 16h.21m.48s.
Charlottesville iPP = +6m.43s., i = +11m.7s.
Buffalo iPP = +7m.21s.
Toronto PP = +7m.19s.?
Fordham iPP = +7m.44s., e = +7m.50s., i = +7m.54s., +8m.9s., +8m.43s., and +12m.6s.
Ottawa iPP = +8m.7s., eSS = +15m.17s. ; T_0 = 16h.21m.42s.
San Juan iPP = +8m.15s., i = +12m.38s. and +13m.12s.
Harvard ePP = +8m.19s., eSS = +14m.44s.; T_0 = 16h.23m.5s.
East Machias iPP = +9m.7s., e = +12m.34s.
Huancayo i = +14m.11s.
Sitka iPP = +9m.59s., ePPP = +10m.50s., iSS = +18m.19s. = S_cS +9s.
La Paz iE = +9m.43s., PPN = +10m.51s., sSN = +16m.49s., iS_cS = +18m.43s., iSSN = +20m.8s.
Honolulu T.H. e = +18m.32s. = S_cS −14s., iSS = +20m.12s., i = +21m.7s. = SSSS +1s.
Kew eSSEN = +29m.12s., eSSSEN = +32m.0s.
Suva SS = +29m.44s.
Toledo SKS = +23m.9s., PS = +24m.9s.
Malaga PP = +15m.59s., SKS = +23m.4s., PS = +24m.18s., PPS = +24m.37s., SS = +29m.34s.
Uccle ePPN = +16m.9s., SSE = +29m.22s., SSSE = +33m.7s.
Granada P_cP = +12m.58s.
Copenhagen +16m.11s. = PP − 1s. and +24m.42s. = PS +11s.
Upsala PPE = +16m.13s.
Göttingen eEN = +32m.44s.? and +39m.32s.
Strasbourg ePP = +16m.18s.
Stuttgart ePP = +16m.38s., ePS = +25m.4s., eSSS = +34m.2s.
Helsingfors ePPE = +19m.5s., eSKSZ = +23m.43s., ePSE = +25m.15s., iPSN = +25m.19s., ePKKPE = +29m.55s. = SS +3s., ePKKPN = +30m.21s., and eSSSEN = +35m.9s.; T_0 = 16h.22m.6s.
Algiers PP = +16m.48s., S = +23m.50s. = SKKS +2s., ePS = +24m.13s. = S +2s.
Pulkovo PP = +16m.53s., SS = +30m.20s.
Florence PPP = +17m.44s., PPPP = +20m.14s., PS = +24m.10s., i = +25m.44s., SS = +32m.50s.
Triest ePP = +16m.53s., e = +17m.9s., iPS = +24m.43s. = S +6s.
Vienna PP? = +15m.56s., PPS? = +25m.5s.
Zagreb ePEN = +13m.29s., e = +26m.7s. = PS +12s., eNW = +38m.2s., e = +42m.44s.?
Ekaterinburg iPP = +18m.9s., eS = +25m.44s., iPS = +27m.21s.
Irkutsk e = +27m.43s. = PS +9s.
Chiufeng PKP = +17m.49s., iPP = +19m.2s., PS = +28m.58s., i = +35m.48s.
Riverview e = +28m.56s. = PS +6s.
Tiflis PP = +19m.18s., iPS = +29m.1s., PKKP = +29m.22s., PPS = +30m.13s., SS = +35m.32s., eSSS = +39m.51s.
Melbourne i = +36m.32s. = SS +29s.
Tashkent SSS = +41m.26s.
Hong Kong SS = +37m.39s.
Batavia i = +20m.11s.
Medan i = +20m.23s.
Long waves were also recorded at Cape Town, Tananarive, Adelaide, Hyderabad, Phu-Lien, Simferopol, and several European stations.

Dec. 7d. Readings also at 0h. (La Paz), 4h. (near Santiago), 6h. (near Sumoto), 8h. (near Amboina), 9h. (La Jolla, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, Madison, and Ottawa), 11h. (near Tananarive), 13h. (near Santiago), 15h. (Alicante and Wellington), 16h. (near Amboina), 17h. (Dehra Dun, Prato, and Zi-ka-wei), 21h. (Lick and near Apia), 22h. (Suva), 23h. (near Amboina and near Manila).

Dec. 8d. 15h. 17m. 0s. Epicentre 42°·0N. 146°·0E. (as on 1927 Aug. 3d.). R.2.

A = −·616, B = +·416, C = +·669 ; D = +·559, E = +·829 ;
G = −·555, H = +·374, K = −·743.

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

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	E.	0·0	4·7	234	1 12	+ 5	2 30	+30	—	—
	N.	0·0	4·7	234	1 30	+23	2 42	+42	—	—
Sikka		−0·1	7·5	345	1 43	− 2	3 3	− 6	5·0	5·8
Chiufeng		−1·0	22·5	275	e 4 43	− 2	i 8 37	+ 1	e 11·9	13·9
Nanking		−1·0	23·7	254	e 5 7	+ 9	—	—	14·2	17·4
Irkutsk		−1·4	29·7	305	—	—	e 10 22	−15	15·0	17·7
Hong Kong		−1·5	33·0	243	11 18	S	(11 18)	−10	(15·5)	20·1
Calcutta		−2·1	51·4	266	7 15	?	16 31	+40	32·1	—
Andijan		−2·2	53·4	295	e 9 8	+ 8	—	—	31·2	—
Ekaterinburg		−2·2	53·6	318	e 8 59	− 3	16 7	−13	27·7	33·0
Tashkent		−2·3	55·3	297	—	—	e 16 0	−42	—	31·0
Bombay		−2·5	65·1	273	e 10 34	+12	19 5	+15	e 34·7	41·3
Pulkovo		−2·5	65·4	330	—	—	e 18 38	−16	32·0	41·4
Tinemaha	Z.	−2·6	69·9	58	e 10 57	+ 3	—	—	—	—
Tiflis		−2·6	70·3	309	e 10 21	−35	e 19 45	− 8	39·0	—
Pasadena	Z.	−2·6	71·8	60	e 11 5	− 1	—	—	—	—
Florence		−2·7	85·1	328	21 16	?	34 30	SSSS	—	47·0

Additional readings and note :—
Hong Kong gives S as P and L as S.
Tiflis PS = +20m.49s., e = +36m.13s.
Long waves were also recorded at Phu-Lien and other Russian and European stations.

Dec. 8d. Readings also at 1h. (Tiflis), 2h. (Andijan), 4h. (Tiflis), 5h. (Yalta), 6h. (near Santiago), 8h. (near Trenta), 12h. (Pasadena, Tinemaha, Manila, near La Plata, and Santiago), 14h. (near Nagoya), 15h. (near Malaga and near Ootomari), 16h. (near Malaga), 18h. (Andijan, Ekaterinburg, Tashkent, and Tchimkent), 19h. (near La Paz), 23h. (Branner and Lick).

Dec. 9d. 4h. 19m. 20s. Epicentre 35°·6N. 134°·9E. N.2.

Tokyo gives epicentre 35°35′N. 134°56′E.

A = −·574, B = +·576, C = +·582 ; D = +·708, E = +·706 ;
G = −·411, H = +·412, K = −·813.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Toyooka	0·1	225	i−0 3	− 4	i−0 1	− 4	—	0·0
Miyadu	0·3	105	−0 5	− 9	−0 2	−10	—	—
Kobe	0·9	166	0 11	− 2	0 22	− 1	—	0·4
Kyoto	0·9	131	0 9	− 4	0 21	− 2	—	—
Sakai	1·0	268	0 20	+ 6	0 39	+13	—	—
Osaka	1·1	151	0 14	− 2	(0 30)	+ 2	0·5	0·5
Hikone	1·2	107	0 17	0	0 32	+ 1	—	—
Okayama	1·2	220	0 18	+ 1	0 33	+ 2	—	—
Sumoto	1·3	181	i 0 16	− 2	i 0 33	0	—	0·6
Yagi	1·3	146	0 18	0	0 35	+ 2	—	—
Wakayama	1·3	171	0 18	0	0 35	+ 2	—	—
Kameyama	1·4	120	0 11	− 9	0 39	+ 3	—	—
Tu	1·5	123	0 21	0	0 41	+ 2	—	—
Gihu	1·6	98	0 21	− 2	0 39	− 2	—	—
Tadotu	1·6	215	0 37	+14	0 59	+18	—	—
Kanazawa	1·7	57	0 29	+ 5	0 44	0	—	—
Nagoya	1·7	104	0 24	0	0 45	+ 1	—	0·8
Takayama	2·0	74	0 32	+ 3	0 54	+ 3	—	—
Siomisaki	2·3	162	0 33	0	1 5	+ 6	—	—
Koti	2·3	209	e 0 36	+ 3	i 1 3	+ 4	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hamada	2·4	253	0 56	S	(0 56)	− 6	—	—
Iida	2·4	92	0 41	+ 7	1 6	+ 4	—	—
Hamamatu	2·4	111	0 38	+ 4	1 5	+ 3	—	—
Matuyama	2·5	225	e 0 35	− 1	i 1 15	S_g	—	1·3
Omaesaki	2·9	110	0 47	P*	1 25	S*	—	—
Nagano	2·9	68	0 47	P*	1 24	S*	—	—
Kohu	3·0	89	0 45	P*	1 22	+ 5	—	—
Oiwake	3·1	76	0 51	P*	1 33	S*	—	—
Simidu	3·2	210	0 56	P_g	1 59	S_g	—	—
Misima	3·4	98	0 50	+ 1	1 31	+ 4	—	—
Hukuoka	4·2	243	e 1 55	+55	2 13	S_g	—	2·2

Additional readings :—
Koti iS_gE = +1m.7s. =S* +0s.
Hamada S = +2m.10s.
Long waves were recorded at Tiflis.

Dec. 9d. 4h. 56m. 11s. Epicentre 33°·3N. 133°·1E. (as on 1931 Sept. 6d.). X.

A = − ·571, B = + ·610, C = + ·549.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Koti	0·4	56	e 0 5	− 1	i 0 11	+ 1	—
Matuyama	0·6	331	i 0 9	0	i 0 19	+ 4	0·4
Sumoto	1·8	55	0 34	P_g	0 51	S*	1·0

Long waves were recorded at Kobe.

Dec. 9d. 8h. 35m. 0s. Epicentre 13°·7S. 73°·4W. N.2.

A = + ·278, B = − ·931, C = − ·237 ; D = − ·958, E = − ·286 ;
G = − ·068, H = + ·227, K = − ·972.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Huancayo		2·5	312	i 0 50	P_g	—	—	—	—
La Paz		5·8	119	i 1 37	P*	i 2 51	S*	3·4	4·6
Santiago		19·9	173	4 8	−21	8 25	SS	—	—
La Plata		25·3	149	5 14	− 9	9 42	− 4	13·0	—
Rio de Janeiro		30·1	112	—	—	e 11 4	− 2	e 16·4	—
San Juan		32·9	13	i 6 38	+ 7	i 12 0	+11	e 14·0	—
Little Rock	N.	51·8	340	i 9 4	− 1	e 16 20	− 5	—	—
Georgetown		52·7	358	i 8 45	−27	i 16 17	−21	e 25·0	—
Cincinnati		53·9	350	e 9 19	− 2	i 16 45	− 9	e 27·1	—
St. Louis		54·5	346	i 9 23	− 2	i 17 2	0	—	—
Fordham		54·6	0	e 9 29	+ 3	e 17 9	+ 5	e 27·5	—
Harvard		56·1	3	—	—	i 17 32	+ 8	e 30·0	—
Buffalo		56·9	356	i 9 46	+ 4	i 17 44	+ 9	—	30·0
Toronto		57·6	355	i 13 33	PPPP	i 17 48	+ 4	30·2	—
East Machias		58·7	6	—	—	18 7	+ 8	e 29·5	—
Ottawa	N.	59·1	358	e 13 44	PPPP	e 18 11	+ 7	e 31·0	—
La Jolla		62·7	319	e 10 36	+13	—	—	—	—
Pasadena		64·0	320	i 10 33	+ 1	i 19 1	− 6	—	—
Tinemaha		66·0	322	e 10 39	− 6	—	—	—	—
Ivigtut		77·5	12	—	—	21 42	− 6	—	—
Sitka		87·2	331	—	—	e 23 0	[−15]	e 55·6	—
Uccle		93·0	38	—	—	e 23 44	[− 6]	e 46·0	—
De Bilt		93·9	37	—	—	e 23 54	[− 1]	e 46·0	51·4
Stuttgart		95·4	41	—	—	e 23 57	[− 6]	e 53·0	—
Florence		95·6	46	e 13 2	−21	e 24 2	[− 2]	44·0	50·0
Triest		97·8	45	e 12 58	−35	e 24 6	[− 9]	e 51·0	—
Helsingfors	N.	106·0	30	e 15 40	?	e 17 18	?	—	—
Pulkovo		108·7	31	—	—	e 24 55	[−12]	54·0	58·2
Kucino		113·2	35	—	—	e 29 24	PS	e 54·3	61·6
Ekaterinburg		124·6	28	e 18 56	[0]	e 25 55	[− 9]	59·0	62·9
Tashkent		137·4	42	e 22 40	PP	—	—	e 65·0	71·3
Bombay		147·2	76	19 41	[+ 4]	—	—	—	—

For Notes see next page.

NOTES TO DEC. 9d. 8h. 35m. 0s.

Additional readings :—
La Paz sP = +2m.37s.
San Juan e = +8m.37s.
Cincinnati i? = +11m.6s. =PP −9s.
Fordham iS = +17m.14s., e = +19m.6s. =S_eS −8s.
Harvard i = +19m.21s. =S_eS −4s.
Buffalo i = +10m.6s. and +13m.30s.
Pasadena iZ = +10m.43s., iEN = +19m.37s. =PS +20s., e = +20m.11s. = S_eS −10s.
Sitka iS = +23m.17s.
Stuttgart e = +24m.45s. =S −1s. and +26m.12s. =PS +17s.
Pulkovo e = +28m.26s. =PS +11s. and +34m.18s. =SS +17s.
Kucino e = +35m.24s. =SS +22s.
Ekaterinburg i = +20m.49s. =PP +8s., e = +27m.42s. =SKKS −5s., +31m.0s. = PS +16s., and +33m.25s.
Tashkent e = +23m.0s. =PKS −2s.
Long waves were also recorded at Berkeley, Ukiah, Seattle, Tiflis, and at other European stations.

Dec. 9d. Readings also at 3h. (Andijan), 5h. (near Toyooka), 9h. (Pasadena, Tinemaha, and Tiflis), 10h. (near Tiflis), 11h. (Huancayo and La Paz), 13h. (Alicante and Tiflis), 15h. (Ekaterinburg, Tashkent, Huancayo, Rio de Janeiro, and La Paz), 16h. (Copenhagen, De Bilt, and Stuttgart), 17h. (near Sitka), 19h. (Hong Kong, Ekaterinburg, Tchimkent, Tashkent, and near Andijan), 21h. (Florence, near Trenta, Triest, Zagreb, and near Santiago).

Dec. 10d. 3h. 59m. 38s. Epicentre 21°·5S. 169°·0E. (as on 1931 Nov. 21d.). X.

A = −·913, B = +·178, C = −·367 ; D = +·191, E = +·982 ; G = +·362, H = −·070, K = −·930.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	9·5	71	2 10	− 4	3 52	− 9	—	—
Riverview	20·0	228	i 4 39	+ 9	i 8 15	+ 9	—	—
Sydney	20·0	228	—	—	e 3 16	?	10·0	11·6
Wellington	20·4	168	4 34	0	10 22	L	(10·4)	—
Melbourne	26·3	227	e 4 57?	−35	e 10 15?	+12	12·7	—
Adelaide	29·8	237	e 5 0	−63	i 10 32	−29	i 14·8	18·8
Perth	48·1	246	—	—	e 15 42	+ 8	e 24·0	26·9
Batavia	61·5	275	e 8 16	?	i 18 1	−35	—	—
Nagoya	64·3	332	e 8 48	?	11 41	?	—	—
Medan	73·1	281	e 17 22?	?	e 27 46	?	—	—
Chiufeng	78·8	322	e 10 17	?	—	—	—	—
Huancayo	108·5	112	—	—	e 27 40	PS	—	—
Tashkent	111·1	307	—	—	e 33 4	?	—	51·7
Ekaterinburg	117·8	324	e 23 54	PPPP	e 28 7	?	48·4	—
Baku	125·6	305	—	—	(29 22?)	?	29·4	—
Tiflis	129·4	307	e 20 30	PP	29 59	?	e 58·4	62·0
Chur	149·8	331	e 18 19	?	—	—	—	—
Neuchatel	150·7	335	e 18 23	?	—	—	—	—

Additional readings :—
Riverview SS = +8m.56s.
Adelaide e = +6m.49s. =PP −5s., i = +13m.32s.
Perth eSS = +19m.27s.
Batavia i = +17m.3s.
Chiufeng i = +10m.50s.
Huancayo e = +28m.2s.
Ekaterinburg e = +34m.3s.
Long waves were also recorded at Copenhagen, De Bilt, and Triest.

Dec. 10d. Readings also at 0h. (near Batavia and Malabar), 3h. (Kodaikanal), 4h. (Riverview), 5h. (Bombay, Nagoya, near Mizusawa, Tyosi, near New Plymouth, and Wellington), 7h. (Tchimkent), 10h. (Huancayo, Berkeley, Adelaide, Melbourne, Sydney, Chiufeng, Wellington, and Bombay), 11h. (Tiflis, Copenhagen, De Bilt, Strasbourg, Ottawa, Cincinnati, and East Machias), 12h. (San Fernando), 14h. (Christchurch, Tuai, Hastings, near New Plymouth, Wellington, and Dannevirke), 17h. and 19h. (La Paz), 20h. (near Andijan), 22h. (near Tyosi).

Dec. 11d. 4h. 26m. 1s. Epicentre 8°·8N. 93°·9E. N.2.

A = −·067, B = +·986, C = +·153; D = +·998, E = +·068;
G = −·010, H = +·153, K = −·988.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Medan		7·1	136	i 1 11	−30	—	—	—	—
Colombo		14·0	263	3 16	+ 1	—	—	—	—
Calcutta		14·7	340	3 23	− 2	6 15	+ 7	7·5	—
Kodaikanal		16·3	277	i 3 45	0	i 6 59?	+14	8·2	10·7
Phu-Lien		17·1	44	e 3 55	0	e 7 16	+12	8·0	11·3
Hyderabad		17·3	301	3 58	0	7 18	+ 9	9·7	14·7
Batavia		19·8	139	e 2 32	?	—	—	i 11·7	—
Bombay		22·8	298	5 3	+ 4	9 18	+17	11·9	17·5
Agra	E.	23·7	323	5 9	+ 2	—	—	—	—
Hong Kong		23·7	53	5 8	+ 1	9 26	+ 8	11·3	15·2
Manila		27·1	75	7 7	+88	11 37	+80	—	17·9
Nanking		32·7	41	e 6 30	+ 1	e 14 12	SSSS	—	—
Zi-ka-wei	Z.	34·0	45	6 40	0	12 3	− 3	i 20·1	23·4
Andijan		37·2	333	e 7 10	+ 2	e 12 50	− 4	—	—
Almata		37·5	341	e 7 17	+ 6	—	—	—	—
Tashkent		39·1	330	e 7 17	− 7	13 7	−15	e 21·0	26·6
Tchimkent		39·7	332	e 7 24	− 5	—	—	—	—
Irkutsk		44·3	9	e 8 5	− 2	e 14 19	−21	24·0	30·3
Nagoya		47·3	50	e 8 31	0	—	—	—	—
Baku		50·2	317	8 56	+ 3	i 16 3	− 1	24·5	33·6
Mizusawa	E.	51·9	47	8 53	−13	9 23	?	—	—
Ekaterinburg		54·5	339	e 9 23	− 2	e 16 56	− 6	19·0	34·1
Theodosia		61·7	317	e 10 25	+ 9	—	—	—	—
Yalta		62·4	316	e 10 21	0	—	—	—	—
Pulkovo		69·3	332	—	—	e 20 1	−12	41·0	44·9
Chur		79·8	316	e 12 5	− 2	—	—	—	—
Neuchatel		81·5	316	e 12 12	− 4	—	—	—	—
Pasadena		127·4	34	i 18 9	[−53]	—	—	—	—
La Paz		160·9	245	e 20 20	[+25]	—	—	81·5	85·6

Additional readings:—
Medan i = +2m.10s. = P_g − 6s. and +4m.26s.
Irkutsk eSS = +18m.5s. = S_cS − 3s.
La Paz PPE? = +24m.48s., SKSP = +35m.6s.
Long waves were also recorded at Riverview, De Bilt, Copenhagen, and Huancayo.

Dec. 11d. 21h. 46m. 9s. Epicentre 42°·5N. 19°·0E. (as on 1930 March 5d.). R.2.

A = +·697, B = +·240, C = +·676; D = +·326, E = −·946;
G = +·639, H = +·220, K = −·737.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mostar		1·2	314	i 0 3	−14	i 0 24	− 7	—	0·6
Bari		2·1	229	0 28	− 2	0 44	−10	1·4	—
Taranto		2·4	213	0 21	−13	—	—	—	—
Belgrade		2·5	24	e 0 31	− 5	i 1 13	S*	—	1·3
Trenta		3·8	212	e 0 51	− 3	1 6	P*	—	—
Benevento		3·9	250	e 3 33	?	4 15	?	—	5·0
Naples	E.	3·9	246	(e 1 30)	+34	(e 2 23)	+43	—	(3·3)
Zagreb		3·9	328	e 0 57	+ 1	i 2 11	S_g	—	2·7
Casamicciolo		4·2	247	1 30	+30	2 18	S_g	3·1	—
Casamari		4·3	260	0 58	− 3	—	—	—	—
Laibach		4·8	319	1 18	P*	i 2 41	S_g	—	2·9
Triest		4·9	312	i 1 9	− 1	i 2 8	+ 3	—	—
Budapest		5·0	1	e 1 25	P*	2 9	+ 1	2·8	3·4
Venice		5·6	303	e 1 25	+ 5	i 3 6	S_g	—	—
Florence		5·8	285	e 0 58	−24	—	—	—	3·7

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Treviso	5·8	305	e 1 25	+ 3	i 3 12	S_g	—	—
Prato	5·9	286	e 1 24	0	2 27	− 4	2·8	3·6
Vienna	6·0	344	e 1 27	+ 2	2 40	+ 7	i 3·3	3·6
Innsbruck	7·2	314	e 1 39	− 3	e 3 6	+ 2	i 3·8	4·0
Piacenza	7·2	294	e 1 47	+ 5	2 5	P*	—	4·3
Pavia	7·6	294	0 5	−103	—	—	—	—
Chur	8·0	305	e 1 52	− 1	—	—	—	—
Ravensburg	8·5	312	e 2 1	+ 1	—	—	—	—
Zurich	8·8	307	e 2 3	− 2	—	—	—	—
Stuttgart	9·3	316	e 2 9	− 2	e 4 39	S*	i 5·1	—
Neuchatel	9·6	302	e 2 14	− 2	—	—	—	—
Jena	9·8	332	3 21	+63	—	—	e 4·4	5·7
Karlsruhe	9·8	315	4 4	S	(4 4)	− 4	5·8	—
Strasbourg	9·9	311	e 2 45	+26	e 4 43	S*	—	—
Besançon	10·3	302	—	—	e 4 15	− 6	—	—
Potsdam	10·6	340	e 3 51?	?	e 6 51?	?	—	—
Göttingen	10·9	329	e 2 35	+ 2	—	—	e 5·4	6·4
Hamburg	12·6	335	—	—	e 5 51?	+34	—	—
Uccle	13·0	315	—	—	e 5 46	+19	e 6·9	—
Pulkovo	18·6	18	e 4 1	−13	—	—	9·8	—
Tiflis	19·1	84	e 4 21	+ 1	7 46	− 2	e 11·4	—

Additional readings and notes :—
Mostar i = +8s.
Belgrade e = +39s. = P* − 1s., i = +48s. = P_g +4s., iPPS = +1m.2s. and +1m.10s.
Naples readings have been *increased* by 3m.
Zagreb iP_g = +1m.11s., iSS = +2m.28s.
Laibach e = +1m.26s. = P_g − 4s. and +2m.16s. = S* − 5s.
Triest i = +1m.13s., iP = +1m.26s. = P* +6s., iZ = +2m.13s., i = +2m.19s. = S* − 5s., iSS = +2m.39s. = S_g +3s., iSSS = +2m.44s. and +2m.51s.
Vienna iN = +1m.38s. = P* − 1s., P* = +1m.46s., iEN = +1m.52s., P_g = +1m.57s., iN = +2m.13s., iZ = +2m.16s., iE = +2m.22s. and +2m.46s., S* = +3m.6s., iE = +3m.16s., S_g = +3m.24s., SS = +3m.29s.
Chur i = +1m.55s.
Stuttgart e = +2m.22s., eP_g = +2m.52s., e = +4m.10s.
Jena e = 21h.40m.33s.
Strasbourg PP = +3m.9s., e = +5m.1s., SSS = +5m.43s., e = +6m.1s., and +6m.21s.
Long waves were also recorded at Ekaterinburg, Tashkent, Copenhagen, Lund, De Bilt, and Granada.

Dec. 11d. Readings also at 3h. (Perth), 4h. (Suva), 5h. (Ottawa), 6h. (Suva), 7h. (Bombay, Kodaikanal, Medan, and Phu-Lien), 8h. (Baku, Ekaterinburg, Manila, and Tucson), 10h. (Nagoya and Suva), 12h. (New Plymouth, near Suva, and near Wellington), 13h. (Baku, Tashkent, and Tiflis), 21h. (near Tyosi), 22h. (near Sumoto).

Dec. 12d. 21h. 42m. 55s. Epicentre 34°·8N. 128°·8E. (as on 1932 Jan. 21d.). R.3.

A = −·514, B = +·640, C = +·571 ; D = +·779, E = +·627 ;
G = −·358, H = +·445, K = −·821.

	△	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Hukuoka	1·8	132	e 0 26	0	0 48	+ 2	—
Nagasaki	2·3	157	e 0 35	+ 2	0 58	− 1	—
Koti	4·1	106	e 0 57	− 1	e 1 43	− 2	—
Sumoto	5·1	94	(1 17)	+ 4	1 17	P	1·4
Nagoya	6·7	87	e 1 45	P*	e 2 18	P_g	—

Dec. 12d. Readings also at 0h. (Berkeley, Branner (2), and near Lick (2)), 1h. (Andijan, Ekaterinburg, and Tashkent), 5h. (Sumoto), 10h. (Messina), 13h. (near Apia), 19h. (near Sumoto), 20h. (near Batavia, Malabar, and Soengei Langka), 21h. (Huancayo, near Nagoya, and Sumoto).

Dec. 13d. Readings at 0h. (Andijan), 2h. (near Santiago), 6h. (Tyosi (2)), 12h. (Alicante), 14h. (Bombay), 16h. (La Paz, La Plata, and Santiago), 18h. (Huancayo, La Paz, Wellington, and near Santiago), 23h. (Tiflis).

Dec. 14d. Readings at 0h. (Bombay and near Taihoku), 3h. (Balboa Heights, Huancayo, and La Paz), 4h. (Berkeley, Branner, and near Lick), 5h. (Trenta), 6h. (Ekaterinburg, Mount Wilson, Pasadena, and Tinemaha), 7h. (Baku, Tashkent, and Tiflis), 9h. (near La Paz), 10h. and 12h. (Tiflis), 13h. (near Malabar), 16h. (near Kobe and Sumoto), 17h. (Phu-Lien and near Tananarive), 18h. (Tiflis, Berkeley, Branner, and Lick), 21h. (Phu-Lien), 23h. (Reykjavik).

Dec. 15d. 19h. 33m. 44s. Epicentre 21°·0N. 121°·1E. N.2.

A = −·482, B = +·799, C = +·358; D = +·856, E = +·517; G = −·185, H = +·307, K = −·934.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hokoto		2·9	330	1 12	S	1 46	S_g	—	—
Taihoku		4·0	6	(1 34)	+37	(i 2 21)	?	—	(2·6)
Manila		6·4	181	1 31	0	2 45	+ 2	—	4·4
Hong Kong		6·5	283	1 30	− 2	2 53	+ 7	3·4	4·8
Zi-ka-wei		10·2	1	e 2 38	+14	4 32	SS	6·5	9·8
Nanking		11·3	350	e 4 47	S	(e 4 47)	+ 2	—	6·2
Phu-Lien		13·5	271	3 6	− 3	—	—	8·3	9·4
Nagasaki		14·1	32	e 3 19	+ 2	4 43	−70	8·3	—
Sumoto		18·0	40	4 8	+ 1	7 44	+19	10·7	14·9
Kobe		18·4	39	e 4 13	+ 2	e 7 44	+11	—	14·6
Osaka		18·7	40	4 12	− 3	7 47	+ 7	—	—
Chiufeng		19·5	348	e 4 21	− 3	e 7 52	− 4	—	—
Nagoya		19·9	41	4 29	0	8 37	SS	—	—
Mizusawa	E.	25·0	39	5 20	0	9 57	+16	—	—
	N.	25·0	39	5 16	− 4	10 4	+23	—	—
Amboina		25·6	163	i 5 32	+ 7	—	—	—	—
Medan		27·9	235	i 4 52	−54	i 8 10	−140	13·3	—
Calcutta		30·3	279	4 44	−84	9 59	−70	14·5	—
Batavia		30·6	209	i 7 28	+78	i 11 8	− 6	—	—
Irkutsk		33·9	342	e 6 38	− 1	e 12 1	− 3	17·3	23·8
Agra	E.	39·6	288	e 7 30	+ 1	—	—	25·0	27·9
Hyderabad		40·3	273	7 34	− 1	·13 40	− 1	19·5	30·7
Kodaikanal		43·2	264	6 16?	−102	—	—	—	—
Bombay		45·3	277	8 19	+ 4	14 54	− 1	22·2	34·2
Andijan		45·5	307	e 8 20	+ 3	e 15 5	+ 8	—	—
Tchimkent		47·9	309	e 8 37	+ 2	—	—	—	—
Tashkent		47·9	308	e 8 36	+ 1	15 18	−13	e 24·3	33·0
Ekaterinburg		56·5	327	i 9 16	−23	i 17 8	−22	24·3	—
Baku		62·5	307	e 10 38	+16	18 55	+ 7	31·3	36·9
Kucino		69·0	323	—	—	e 20 7	− 2	e 37·2	44·5
Pulkovo		72·4	329	e 11 3	−22	e 20 42	− 8	39·3	46·4
Helsingfors	E.	74·9	331	—	—	e 21 10	− 9	e 41·0	—
Vienna	Z.	83·7	320	e 12 25	·−·2	—	—	—	—
Florence		88·9	317	e 12 16	−36	e 23 34	−12	46·3	52·3
Pasadena	Z.	101·3	46	e 17 10	PP	—	—	—	—
Huancayo		161·9	63	e 20 16?	[+20]	—	—	—	—
La Paz	N.	170·2	64	20 5	[+ 1]	—	—	—	—

Additional readings:—
Taihoku readings have been *increased* by 2m.
Manila S_gEN = +3m.3s. = S* − 6s.
Zi-ka-wei iZ = +4m.44s. = S* − 17s. and +5m.44s. = S_g +13s.
Sumoto SN = +7m.47s.
Amboina i = +8m.2s. and +16m.26s. = S_cS +6s.
Irkutsk ePP = +7m.55s., SS = +14m.34s.
Tashkent e = +9m.32s., +10m.16s. = PP − 6s. and +19m.28s.
Kucino e = +27m.59s.
Helsingfors eSN = +21m.15s., ePSN = +21m.57s., ePSE = +22m.0s.
La Paz iN = +25m.13s. = PP +6s., eE = +29m.16s. = PPP +13s., and +43m.16s.
Long waves were also recorded at Ottawa and other European stations.

Dec. 15d. Readings also at 1h. (Tchimkent), 4h. (near Tyosi), 7h. (Cheb), 8h. (Jena), 14h. (near Tyosi), 19h. (near Malabar), 20h. (near Nagoya and Tyosi), 21h. (Branner and Huancayo), 22h. (Bombay, Ekaterinburg, Pulkovo, near Almata, Andijan, and Tchimkent), 23h. (near Amboina and near La Paz).

Dec. 16d. 7h. 14m. 24s. Epicentre 7°·5N. 126°·0E. (as on 1931 Oct. 26d.). R.2.

$A = -\cdot583$, $B = +\cdot802$, $C = +\cdot131$; $D = +\cdot809$, $E = +\cdot588$; $G = -\cdot077$, $H = +\cdot106$, $K = -\cdot991$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		8·6	326	2 25	+23	4 34	S_g	—	—
Hong Kong		18·7	324	4 25	+10	(7 48)	+ 8	7·8	—
Phu-Lien		23·0	307	4 36?	−25	—	—	—	—
Batavia		23·8	236	i 5 6	− 2	i 9 14	− 5	—	—
Nanking		25·5	346	e 5 29	+ 4	—	—	e 14·6	—
Medan		27·5	263	i 6 22	PP	—	—	—	—
Sumoto		28·0	16	5 48	+ 1	e 10 49	+17	e 13·0	—
Kobe		28·4	16	5 52	+ 1	—	—	—	—
Osaka		28·5	17	5 53	+ 1	9 6	P_cP	—	—
Nagoya		29·4	18	i 6 2	+ 2	7 17	?	—	—
Chiufeng		33·7	346	e 6 32	− 6	—	—	—	—
Perth		40·6	193	13 36	S	(13 36)	− 9	—	—
Bombay		52·8	290	e 9 16	+ 4	—	—	—	—
Andijan		57·9	315	e 9 56	+ 6	—	—	—	—
Baku		74·6	311	i 11 39	+ 1	e 21 8	− 7	37·6	46·0
Theodosia		85·1	316	e 12 34	0	—	—	—	—
Simferopol		86·0	316	e 12 38	0	—	—	—	—
Yalta		86·0	316	e 12 38	0	—	—	—	—
Pulkovo		86·4	330	12 37	− 3	e 23 12	− 9	43·6	48·6
Tinemaha	z.	105·3	48	e 29 51	?	—	—	—	—
Pasadena	z.	106·5	51	e 29 51	?	—	—	—	—
La Paz	E.	163·5	124	e 19 57	[0]	—	—	—	—

Additional readings:—
Batavia $iZ = +5$m.22s. $= PP - 12$s.
Osaka $i = +7$m.0s.
Long waves were also recorded at Tashkent.

Dec. 16d. 17h. 8m. 18s. Epicentre 39°·5S. 177°·5E. (given by Wellington). N.3.

$A = -\cdot771$, $B = +\cdot034$, $C = -\cdot636$; $D = +\cdot044$, $E = +\cdot999$; $G = +\cdot635$, $H = -\cdot028$, $K = -\cdot772$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Hastings	0·5	254	1 42	?	1 52	?
Tuai	0·7	338	−0 18	?	−0 9	?
New Plymouth	2·7	279	0 36	− 3	1 6	− 3
Wellington	2·8	230	0 45	P*	1 13	+ 1
Glenmuick	4·7	222	0 59?	− 8	1 59	− 1
Christchurch	5·4	220	2 9	S	(2 9)	− 9

Additional readings:—
Hastings $i = +2$m.4s. and $+2$m.7s.
New Plymouth $P_g = +50$s., $S_g = +1$m.18s. $= S^* - 1$s.
Wellington $S_g = +1$m.36s., $i = +1$m.54s.
Glenmuick $P_g? = +1$m.42s., $e = +2$m.4s., $S_g? = +2$m.9s.
Christchurch $S? = +3$m.14s.

Dec. 16d. Readings also at 4h. (near Nagoya and Tyosi), 8h. (near Santiago), 9h. (Tiflis), 11h. (Pasadena), 13h. (Huancayo and La Paz (2)), 15h. (near Nagoya), 16h. (Tucson), 18h. (Lick), 22h. (near Andijan and Tchimkent).

Dec. 17d. 5h. 8m. 5s. Epicentre 42°·0N. 142°·6E. N.2.

Tokyo gives 41°58′N. 142°37′E.

$A = -\cdot590$, $B = +\cdot451$, $C = +\cdot669$; $D = +\cdot607$, $E = +\cdot794$; $G = -\cdot532$, $H = +\cdot406$, $K = -\cdot743$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Urakawa	0·2	42	0 4	+ 1	0 12	+ 7	—	—
Muroran	1·3	285	0 15	− 3	0 31	− 2	—	—
Hakodate	1·4	260	0 30	+10	0 48	S*	—	—
Sapporo	1·4	319	0 16	− 4	0 32	− 4	—	—
Kusiro	1·6	54	0 19	− 4	0 36	− 5	—	—
Asahigawa	1·8	355	0 20	− 6	0 41	− 5	—	—
Aomori	1·8	229	0 26	0	0 50	+ 4	—	—
Nemuro	2·5	59	0 30	− 6	1 1	− 3	—	—
Miyako	2·5	191	0 37	+ 1	1 2	− 2	—	—
Morioka	2·6	205	0 37	0	1 8	+ 1	—	—
Akita	3·0	219	0 46	+ 3	1 22	+ 5	—	—
Mizusawa	3·1	201	0 51	P*	1 28	S*	—	—
Hukusima	4·6	202	1 5	− 1	2 2	+ 4	—	—
Mito	5·9	197	1 19	− 5	2 30	− 1	—	—
Tukubasan	6·1	200	1 26	− 1	2 35	− 1	—	—
Maebasi	6·2	207	1 28	0	2 58	S*	—	—
Nagano	6·4	214	1 32	+ 1	3 14	S*	—	—
Kumagaya	6·4	205	1 34	+ 3	3 1	S*	—	—
Oiwake	6·4	210	1 35	+ 4	2 55	+12	—	—
Tyosi	6·4	192	e 1 41	+10	3 15	S*	—	3·3
Misima	7·4	204	1 29	−16	—	—	—	—
Nagoya	8·1	214	e 2 10	+15	e 3 45	+19	—	—
Osaka	9·2	219	1 58	−12	i 4 19	S*	4·5	5·2

Tyosi gives also PP = +2m.41s. =S − 2s.

Dec. 17d. Readings also at 1h. (Branner, near Berkeley, Lick, and near Santiago), 5h. (Tyosi), 7h. (Berkeley), 8h. (Andijan, Kodaikanal, Tyosi, near Nagoya, Osaka, and near Zagreb), 9h. (Bombay), 14h. (Osaka, near Tyosi, Nagoya, and Mizusawa), 15h. (Mizusawa), 20h. (Perth), 23h. (near Batavia and Malabar).

Dec. 18d. Readings at 2h. (near Apia), 3h. (near Amboina), 4h. (Algiers (2)), 6h. (Haiwee, Mount Wilson, Pasadena, La Jolla, Tinemaha, Tucson, Madison, and Ottawa), 7h. (Pasadena (2), Tinemaha (2), La Paz, New Plymouth, Bombay, and near Mizusawa), 8h. (Pasadena, Tinemaha, near Kobe, and Sumoto), 11h. (near Apia (2)), 12h. (Tchimkent), 17h. (near Nagoya).

Dec. 19d. 6h. 28m. 52s. Epicentre 14°·0N. 92°·5W. N.2.

A = −·042, B = −·969, C = +·242 ; D = −·999, E = +·044 ; G = −·011, H = −·242, K = −·970.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
St. Louis		24·7	4	e 5 13	− 4	e 9 41	+ 5	e 15·1	18·0
Tucson		24·8	321	i 5 18	0	i 9 51	+14	12·9	—
Florissant		24·9	4	i 5 14	− 5	i 9 53	+14	e 15·1	—
San Juan		25·6	77	e 5 27	+ 2	10 24	SS	e 13·5	—
Cincinnati		26·0	14	i 5 50	+21	e 10 37	SS	e 15·8	18·2
Charlottesville		27·0	25	e 6 23	PP	e 10 33	+18	—	—
Chicago		28·2	8	—	—	e 10 46	+11	e 17·8	—
Georgetown		28·4	26	e 6 20	PP	e 10 56	+18	e 15·1	—
Pittsburgh		28·6	20	—	—	e 9 14	P_cP	—	—
Madison		29·2	5	e 6 18	+20	e 10 59	+ 8	—	20·4
Ann Arbor		29·3	13	e 6 56	PP	e 10 50	− 3	e 18·3	—
La Jolla		29·4	314	e 6 0	0	—	—	—	—
Riverside	N.	30·1	316	e 6 0	− 6	—	—	—	—
Mount Wilson		30·7	316	e 6 11	0	—	—	—	—
Pasadena		30·7	316	i 6 11	0	—	—	i 16·4	—
Huancayo		31·1	146	e 6 12	− 3	i 11 27	+ 6	e 13·5	—
Buffalo		31·2	20	e 7 33	PP	e 11 48	+25	—	18·9
Toronto	E.	31·7	18	i 6 40	+20	11 45	+14	15·5	18·1
Haiwee		31·8	320	e 6 21	0	—	—	—	—
Tinemaha		32·5	320	i 6 27	0	—	—	—	—
Harvard		33·8	30	—	—	e 11 8?	−55	e 16·9	—
Ottawa		34·4	21	—	—	e 12 20	+ 8	e 19·1	—
Bozeman		35·4	338	—	—	e 12 26	− 1	e 19·1	—
Berkeley		35·5	318	e 6 55	+ 2	—	—	—	—
East Machias		37·4	31	—	—	e 15 59	SSS	e 20·6	—
La Paz	E.	38·8	140	e 7 25	+ 3	13 24	+ 6	19·1	22·8
Rio de Janeiro		60·8	127	—	—	18 8?	−18	—	—
Stuttgart		86·9	40	e 12 48	+ 5	—	—	e 47·1	—
Baku		115·4	31	—	—	e 30 45	?	55·1	—

Additional readings and notes :—

St. Louis iPEN = +5m.35s., iSEN = +10m.3s. ; T_0 = 6h.28m.39s. These readings are given as a second shock, 22s. later.
Florissant iN = +5m.28s. and +5m.35s., iE = +11m.8s.
San Juan e = +5m.58s. = PP +0s., ePP = +6m.28s.; e = +9m.52s. = S +1s., iSS = +11m.31s.
Cincinnati iPPN = +6m.31s., iPPZ = +6m.34s., iZ = +6m.40s. and +6m.55s., iSZ = +10m.44s., iSSZ = +13m.13s.
Georgetown iPP = +6m.51s., i = +7m.19s., iP_cS = +12m.50s. ; T_0 = 6h.28m.42s.
Madison eS = +11m.31s. ; T_0 = 6h.28m.58s.
Ann Arbor e?E = +11m.50s., eE = +12m.44s., eN = +14m.14s.
Pasadena iP_cPZ = +9m.9s.
Huancayo P = +6m.19s.
Toronto iE? = +5m.32s., ePPE = +7m.31s., eN = +7m.46s., SN = +11m.48s.
Harvard e = +14m.8s.? = SS +9s.
Ottawa eN = +15m.56s.
La Paz iE = +7m.35s., SN = +13m.30s.

Long waves were also recorded at Victoria, Seattle, Ukiah, Granada, Paris, De Bilt, Kew, Strasbourg, Ekaterinburg, Tiflis, and Bombay.

Dec. 19d. Readings also at 4h. (Lick (2), Tiflis, and near Baku), 5h. (Huancayo), 6h. (near Mizusawa), 9h. (Ksara and Tiflis), 13h. (Huancayo and La Paz), 14h. (near Andijan), 15h. (Helwan, Ksara, and Tiflis), 17h. (Huancayo and La Paz (2)), 19h. (near Mizusawa), 21h. (near Santiago and near Apia).

Dec. 20d. 2h. 39m. 16s. Epicentre 18°·3N. 105°·5W. (as on 1932 Nov. 19d.). R.3.

A = −·254, B = −·915, C = +·314; D = −·964, E = +·267; G = −·084, H = −·303, K = −·949.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tucson		14·8	342	i 3 20	− 6	e 5 48	−22	i 7·1
La Jolla	N.	18·0	326	e 4 5	− 2	—	—	—
Riverside	N.	18·9	328	e 4 18	+ 1	—	—	—
Mount Wilson		19·4	327	e 4 24	+ 1	—	—	—
Pasadena		19·4	327	i 4 24	+ 1	i 8 11	+17	e 11·4
Little Rock		20·2	33	e 4 34	+ 2	i 11 37	L	(i 11·6)
Haiwee		21·0	331	e 4 40	0	—	—	—
Tinemaha		21·9	332	e 4 48	− 2	—	—	—
St. Louis		24·3	30	e 4 22	−51	e 11 20	?	—
Florissant		24·4	30	e 5 10	− 4	i 12 14	L	(i 12·2)

Long waves were also recorded at Bozeman, Chicago, Madison, Ann Arbor, Ottawa, Harvard, and Tiflis.

Dec. 20d. 12h. 32m. 13s. Epicentre 41°·6N. 144°·3E. (as given by Tokyo). N.2.

A = −·607, B = +·436, C = +·664; D = +·584, E = +·812; G = −·539, H = +·387, K = −·748.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Urakawa	1·3	296	0 16	− 2	—	—	—	—
Kusiro	1·4	3	0 24	+ 4	0 38	+ 2	—	—
Obihiro	1·6	328	0 23	0	0 45	+ 4	—	—
Nemuro	1·9	29	0 28	0	0 56	+ 7	—	—
Sapporo	2·6	304	0 36	− 1	0 58	− 9	—	—
Muroran	2·6	286	0 49	P_g	0 57	−10	—	—
Asahigawa	2·6	327	0 39	+ 2	1 1	− 6	—	—
Hakodate	2·7	274	0 51	P_g	1 25	S_g	—	—
Aomori	2·8	254	0 37	− 3	1 18	+ 6	—	—
Mizusawa	3·5	226	0 50	0	1 27	− 3	—	—
Akita	3·7	241	0 55	+ 2	1 28	− 7	—	—
Hukusima	4·9	218	1 10	0	1 43	P_g	—	—
Ootomari	5·2	349	1 29	P*	2 31	S*	—	—
Mito	6·0	211	1 25	0	2 26	− 7	—	—
Tukubasan	6·3	213	1 34	+ 4	2 37	− 4	—	—
Tyosi	6·4	206	1 40	P*	3 12	S*	—	3·6
Maebasi	6·6	219	1 40	+ 6	3 16	S*	—	—
Kumagaya	6·7	216	1 41	+ 6	3 10	S*	—	—
Oiwake	6·9	222	1 37	− 1	3 30	S*	—	—
Nagano	6·9	226	1 39	+ 1	3 13	S*	—	—
Kohu	7·5	219	1 51	+ 5	3 28	+17	—	—
Misima	7·7	214	1 52	+ 3	3 12	− 4	—	—
Nagoya	8·6	224	2 33	+31	3 58	+19	—	—
Chiufeng	21·3	276	i 4 34	− 9	e 8 57	SS	e 11·3	13·2
Ekaterinburg	53·0	317	e 8 11	−63	—	—	25·8	60·2
Bombay	63·9	273	e 19 10	S	(e 19 10)	+ 4	—	—

Additional readings:—
Tyosi PP = +2m.39s. = S − 4s.
Long waves were also recorded at Hong Kong, Tashkent, and Kucino.

Dec. 20d. Readings also at 0h. (near Apia), 3h. (Mizusawa), 4h. (near New Plymouth and Wellington), 5h. (near Mizusawa), 6h. (Tucson and Angra do Heroismo), 7h. (Manila and Wellington), 11h. (Berkeley, Branner, Lick, and Huancayo), 14h. (Branner), 15h. (Amboina, Batavia, Manila, Hong Kong, and Medan), 18h. (Andijan and near Medan), 22h. (Bombay).

Dec. 21d. 6h. 10m. 12s. Epicentre 38°·7N. 117°·9W. N.1.

Probable error of epicentre ±0°·28.

The following determinations of the epicentre have been published :—
Russia 37°·5N. 117°·5W.
St. Louis 38°·1N. 118°·5W.
Fordham 38°·7N. 117°·8W.
H. Jeffreys 38°·72N. 117°·96W. ; probable error ±0°·02.
Balboa Heights 38°44′N. 117°49′W.
Pasadena 38°53′ 117°50′W.

A = −·365, B = −·690, C = +·625 ; D = −·884, E = +·468 ;
G = −·293, H = −·553, K = −·780.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tinemaha		1·6	190	i 0 23	0	—	—	—	—
Haiwee		2·6	181	i 0 36	− 1	—	—	—	—
Lick		3·2	245	e 0 44	− 2	—	—	—	—
Branner		3·6	249	e 0 50	− 1	—	—	—	—
Berkeley		3·6	257	e 0 47	− 4	i 1 42	S*	—	—
San Francisco		3·7	255	e 0 48?	− 5	—	—	—	—
Ukiah		4·2	277	e 0 55	− 5	—	—	—	—
Mount Wilson		4·5	182	i 1 3	− 1	—	—	—	—
Santa Barbara		4·5	200	i 1 3	− 1	—	—	—	—
Pasadena		4·6	183	i 1 4	− 2	—	—	—	—
Riverside	N.	4·7	174	i 1 6	− 1	—	—	—	—
La Jolla		5·8	174	i 1 22	0	—	—	—	—
Tucson		8·6	136	2 2	0	—	—	—	—
Bozeman		8·6	34	e 1 59	− 3	i 4 15	S*	—	—
Seattle		9·5	342	i 2 16	+ 2	e 4 5	+ 4	4·6	—
Denver		10·0	81	i 1 25	−56	i 3 18	−55	—	4·1
Victoria		10·5	340	2 31	+ 3	—	—	4·8	9·8
Saskatoon		15·5	27	3 35	0	6 45	+18	—	—
St. Louis		21·5	82	i 4 46	+ 1	i 8 45	+ 9	e 10·2	11·4
Sitka		21·7	334	i 4 51	+ 3	i 8 53	+13	i 10·0	—
Madison		21·9	69	e 4 50	0	i 8 53	+ 9	10·8	—
Chicago		23·2	73	i 5 2	− 1	e 9 9	+ 1	i 11·7	—
Ann Arbor		26·1	71	i 5 36	+ 6	i 10 6	+ 6	i 12·4	16·2
Pittsburgh		29·1	74	6 2	+ 5	—	—	11·8	—
Toronto		29·1	68	e 5 59	+ 2	e 10 44	− 6	i 14·2	15·8
Columbia		29·8	87	e 6 8	+ 5	e 10 51	−10	e 14·7	—
Charlottesville		30·6	79	6 14	+ 4	11 18	+ 4	e 14·6	—
Georgetown		31·5	76	i 6 17	− 1	11 26	− 2	—	—
Ottawa		31·6	63	e 6 21	+ 2	i 11 32	+ 3	e 15·8	—
Fordham		33·5	72	e 6 37	+ 1	i 12 2	+ 4	16·8	—
Harvard		35·3	68	e 6 59	+ 7	i 12 16	−10	i 18·6	—
East Machias		37·6	64	i 7 14	+ 2	i 13 7	+ 7	i 16·4	—
Honolulu T.H.		38·3	255	e 7 25	+ 7	i 13 26	+15	16·6	—
Halifax		40·2	63	7 30	− 4	13 28	−11	—	—
Port au Prince		44·2	104	e 8 6	0	e 14 15	−24	e 20·4	24·6
Balboa Heights		45·4	120	—	—	e 14 48?	− 8	—	—
Ivigtut		47·3	38	i 8 29	− 2	15 30	+ 7	18·8	—
San Juan		49·0	99	i 8 47	+ 3	i 15 20	−27	23·8	—
Huancayo		64·4	133	10 34	− 1	19 14	+ 2	30·0	—
Angra do Heroismo		67·4	58	31 24	?	33 59	?	35·7	36·2
Edinburgh		70·5	33	11 29	+15	20 43	+16	31·8	42·4
Bergen		70·6	26	12 13	+59	—	—	39·8	—
Durham		71·9	33	—	—	20 45	+ 1	—	42·8
Stonyhurst		72·1	34	12 15	+52	i 21 30	+44	34·6	41·2
Bidston		72·1	35	e 11 8	−15	i 20 28	−18	e 31·7	41·4
Liverpool		72·2	35	—	—	i 20 35	−12	29·8	40·9
La Paz		72·2	130	i 11 28	+ 4	i 20 43	− 4	34·0	45·1
Mizusawa	N.	73·8	308	10 30	−63	21 6	0	32·0	—
Oxford		74·1	35	—	—	i 20 56	−14	29·7	42·2
Kew		74·7	35	i 11 38	− 1	i 21 25	+ 8	30·8	38·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Upsala		74·9	22	e 11 57	+17	i 21 25	+ 6	e 34·8	46·7
Hukusima		75·2	307	11 45	+ 4	—	—	—	—
De Bilt		76·6	32	11 49	0	21 42	+ 4	e 36·8	42·4
Helsingfors		76·6	18	—	—	i 21 36	− 2	e 31·9	—
Copenhagen		76·6	27	11 50	+ 1	21 42	+ 4	31·8	—
Lund		76·9	27	11 57	+ 6	21 44	+ 2	31·8	—
Uccle		77·2	34	e 11 52	− 1	e 21 46	+ 1	31·8	44·7
Nagano		77·2	307	11 59	+ 6	—	—	—	—
Hamburg		77·4	29	i 11 59	+ 5	i 21 50	+ 3	e 36·3	40·8
Paris		77·9	36	e 12 1	+ 4	21 51	− 2	30·8	42·8
Pulkovo		78·1	16	12 3	+ 5	21 53	− 2	38·8	43·5
Nagoya		78·9	307	e 11 48	−14	—	—	—	—
Göttingen		79·0	31	i 12 7	+ 4	e 22 5	0	e 36·8	42·4
Feldberg	N.	79·4	32	—	—	e 22 21	+12	e 28·0	46·1
Potsdam		79·5	28	e 11 48?	−17	e 22 0	−10	e 36·8	41·8
Königsberg		80·0	23	—	—	i 22 23	+ 7	e 36·8	47·8
Jena		80·1	30	e 12 4	− 4	e 22 18	+ 1	e 32·8	43·1
Karlsruhe		80·3	33	12 14	+ 5	22 20	+ 1	39·8	—
Puy de Dôme		80·3	38	—	—	e 22 22	+ 3	e 33·8	—
Kobe		80·3	307	12 16	+ 7	i 22 16	− 3	e 31·6	37·8
Strasbourg		80·4	33	e 12 13	+ 3	i 22 24	+ 4	37·8	47·8
Besançon		80·6	34	—	—	e 22 18	− 4	34·8	—
Hof		80·6	30	—	—	(e 27 48)	SS	e 27·8	42·8
Sumoto		80·7	307	12 10	− 2	—	—	e 35·2	36·2
Stuttgart		80·8	33	e 12 14	+ 2	e 22 41	PS	e 38·8	—
Toledo		80·9	46	12 6	− 7	i 22 33	+ 8	e 37·2	42·0
Bagnères		81·0	41	e 13 48?	?	—	—	35·8	—
Cheb		81·1	30	e 10 36	?	e 22 28	+ 1	e 40·8	43·8
Neuchatel		81·2	34	e 12 9	− 5	e 22 23	− 5	—	—
Zurich		81·6	34	e 12 11	− 5	e 23 6	PS	—	—
Prague		81·9	29	e 12 27	+ 9	e 22 43	+ 7	e 34·8	43·8
Irkutsk		81·9	336	e 12 20	+ 2	22 34	− 2	35·8	—
San Fernando		82·0	50	12 4	−14	22 36	− 1	37·8	43·8
Koti		82·0	307	e 11 24	−54	—	—	—	35·9
Suva		82·3	239	e 12 48?	?	i 23 30	PS	33·8	42·8
Chur		82·4	33	e 12 26	+ 6	e 22 42	+ 1	—	—
Tortosa	N.	82·7	42	12 26	+ 4	22 46	+ 2	e 33·8	45·9
Malaga		82·8	48	12 34	+12	22 54	+ 9	34·0	38·4
Innsbruck		82·9	32	e 12 24	+ 1	17 48?	?	38·8	42·9
Barcelona		83·0	41	e 12 21	− 2	e 22 58	+11	e 36·0	42·4
Granada		83·0	48	i 12 27	+ 4	e 22 32	−15	37·5	43·7
Kucino		83·3	15	—	—	e 24 26	?	36·6	44·3
Alicante		83·9	45	e 12 29	+ 1	i 22 57	+ 1	e 35·0	43·7
Almeria		83·9	47	i 12 29	+ 1	e 23 14	+18	e 39·7	45·6
Piacenza		84·0	35	12 56	+28	23 16	+18	34·8	54·8
Vienna		84·1	29	e 12 20	− 9	22 58	− 1	e 39·8	53·8
Miyazaki		84·4	307	12 28	− 2	22 52	[− 3]	—	—
Santiago		84·4	142	12 29	− 1	22 35	[−20]	42·8	44·3
Ekaterinburg		84·5	1	i 12 30	− 1	i 22 55	[0]	41·2	49·8
Treviso		84·5	33	i 12 28	− 3	i 23 2	− 1	41·8	47·8
Venice		84·5	33	e 12 34	+ 3	i 23 4	+ 1	47·5	56·6
Triest		85·2	32	e 12 33	− 1	i 23 18	+ 8	e 38·1	47·4
Prato		85·4	35	e 12 36	+ 1	23 48	PS	29·8	42·8
Florence		85·6	35	12 27	− 9	23 14	0	34·8	41·8
Budapest		85·7	27	12 44	+ 7	22 16	−59	28·8	46·3
Zagreb		85·9	30	e 12 37	− 1	e 23 7	[+ 1]	e 41·3	46·8
Chiufeng		87·0	322	e 12 40	− 3	23 16	[+ 3]	39·1	50·5
Belgrade		88·5	28	e 12 58	+ 8	e 23 21	[− 2]	e 42·2	—
Dakar		88·8	73	—	—	(e 23 40)	− 5	—	44·1
Naples	E.	89·2	34	e 16 23	PP	e 24 23	PS	37·8	47·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Zi-ka-wei	Z.	91·0	313	13 4	+ 2	16 48	PP	46·1	59·2
Nanking		91·8	315	e 13 11	+ 5	23 43	[0]	—	44·5
La Plata		92·2	135	13 0	− 8	—	—	39·8	—
Catania		92·4	35	e 18 43	PPP	24 4	−14	43·2	57·9
Rio de Janeiro		93·1	117	e 12 48	−24	i 23 48	[− 3]	i 43·6	53·5
Tchimkent		98·7	353	e 13 18	−20	—	—	50·3	—
Andijan		100·0	352	e 14 2	+18	e 25 17	− 9	49·9	—
Baku		100·2	9	e 13 51	+ 7	24 41	[+14]	43·8	57·9
Wellington		100·8	225	—	—	24 41	[+11]	48·2	62·8
Hong Kong		101·9	311	24 38	SKS	(24 38)	[+ 3]	44·3	59·6
Christchurch		103·5	224	—	—	(26 48?)	PS	26·8	—
Manila		103·5	301	18 14	PP	27 19	PS	—	—
Ksara	N.	103·5	23	18 41	PP	(24 41)	[− 2]	49·9	55·6
Phu-Lien		107·4	316	e 18 50	PP	—	—	33·8	—
Dehra Dun		109·4	345	41 38?	?	48 58?	?	59·5	68·8
Riverview		111·0	243	—	—	e 25 33	[+15]	e 46·4	54·8
Sydney		111·0	243	e 13 18	?	32 18	?	54·1	61·2
Agra	E.	112·4	344	19 42	PP	e 31 4	?	e 55·2	—
Calcutta		114·0	333	20 9	?	29 57	PS	44·8	66·9
Melbourne		117·4	242	—	—	e 25 48?	[+ 6]	56·5	—
Adelaide		120·5	248	i 13 5	?	e 28 9	?	47·0	68·8
Bombay		121·5	348	20 17	PP	31 54	?	55·6	64·3
Hyderabad		121·8	341	—	—	28 35	?	48·8	67·3
Medan		125·9	313	e 21 46	?	—	—	e 63·8	—
Batavia		128·2	297	e 19 49	[+46]	—	—	e 58·8	—
Kodaikanal		129·0	341	17 48?	?	32 48?	?	52·8	70·8
Colombo		131·5	336	22 37	PKS	—	—	60·6	71·5
Perth		136·3	262	e 40 28	SS	—	—	56·3	—
Cape Town		144·8	96	19 40	[+ 7]	30 1	{+ 9}	—	80·5
Tananarive		156·5	37	24 18	PP	33 14	?	73·8	84·4

Additional readings and notes :—
Lick iE = +48s., iEN = +53s. = P* +1s.
Berkeley iEN = +52s., iE = +58s. = P* +0s., iEN = +1m.1s., iN = +1m.8s. = P_g +2s.
Bozeman iP = +2m.5s., iP_g = +2m.44s.
Denver iE = +1m.29s., +1m.32s., +1m.37s., and +1m.51s., iEN = +2m.6s., iN = +2m.17s. and +3m.31s., iEN = +3m.47s.
Victoria PE = +2m.36s. ; T_0 = 6h.10m.7s.
St. Louis iPEN = +4m.49s., iPE = +4m.54s., iPPEN = +5m.23s., iSEN = +8m.49s., iSN = +8m.53s., iSSEN = +9m.53s. ; T_0 = 6h.10m.7s.
Madison i = +10m.26s. ; T_0 = 6h.10m.3s.
Chicago ePP = +5m.25s., iS = +9m.15s., i = +10m.21s. and +10m.39s.
Ann Arbor iPPE = +6m.18s., eSE = +10m.24s., iSN = +10m.36s., iSE = +10m.48s., iSS = +11m.42s. ; T_0 = 6h.9m.48s.
Pittsburgh e = +10m.0s. and +11m.30s.
Toronto iPE = +6m.4s., e = +6m.22s., ePPP = +7m.14s., i = +9m.17s. = P_cP +10s., iE = +10m.21s., iS = +10m.51s., iSE = +10m.57s., iSSS = +11m.42s. ; T_0 = 6h.9m.56s.
Columbia eS = +11m.8s., eSS = +12m.48s.?
Ottawa ePPN = +7m.8s., eP_cPE = +8m.59s., eN = +10m.3s. ; T_0 = 6h.10m.0s.
Fordham e = +6m.44s., eSS = +14m.0s.
Harvard iP = +7m.3s., ePP = +8m.2s., iPPP = +8m.30s., iSS = +15m.26s.
East Machias e = +8m.1s., i = +8m.32s. = PP − 1s., i = +15m.22s.
Honolulu T.H. PP = +8m.58s., iS = +13m.31s.
Port au Prince i = +8m.15s., PP = +9m.46s., PPP = +10m.11s., SS = +17m.12s., SSS = +18m.11s.
Ivigtut +12m.31s.
San Juan iPP = +10m.51s., e = +11m.4s. = PPP − 13s., +13m.20s., and +19m.24s., iSS = +19m.32s.
Huancayo e = +10m.42s., eSS = +23m.44s.
Edinburgh SS = +25m.43s., SSS = +28m.33s.
Bergen e = +19m.14s.
Stonyhurst PP = +14m.25s., SS = +25m.35s., SSS = +29m.21s.
Bidston ePP = +14m.28s., PPPP = +16m.14s., SS = +25m.23s., SSS = +27m.58s., SSSS = +29m.19s. ; T_0 = 6h.9m.59s.
La Paz iPPE = +14m.10s., iPPN = +14m.40s., PPPN = +16m.17s., PPPE = +16m.26s., iSEN = +20m.54s., PSEN = +21m.19s., SSN = +25m.40s., SSE = +27m.40s., SSSN = +27m.55s.

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Mizusawa PE = +10m.36s.
Oxford SS = +26m.25s.
Kew iZ = +12m.31s., SS = +26m.19s., SSS = +29m.2s.
Upsala SSN = +26m.29s., SSSN = +29m.42s.
De Bilt ePPZ = +14m.59s., eSS = +27m.0s.
Helsingfors ePPSEN = +22m.30s., iSSN = +27m.1s., iSSE = +27m.5s., iSSS = +30m.28s.; T_0 = 6h.9m.24s.
Copenhagen +22m.54s. and +27m.22s.
Lund +26m.48s.?
Uccle iSS = +27m.12s., iSSS = +30m.39s.
Hamburg iPPN = +15m.15s., ePPPN = +17m.21s., SS = +26m.48s., SSS = +30m.48s.?
Göttingen eEN = +27m.36s. = SS +38s. and +30m.48s.
Feldberg eN = +25m.13s.
Potsdam iN = +22m.10s., eE = +22m.18s. and +27m.48s. ?
Königsberg iN = +22m.29s.?, eN = +23m.31s., +24m.30s., and +31m.54s., eE = +34m.0s.
Jena eZ = +12m.7s., eE = +12m.12s., eZ = +15m.35s. = PP +30s., eEN = +27m.48s. = SS +34s.
Strasbourg PP = +15m.21s., PPP = +18m.0s., PS = +23m.20s., SS = +27m.48s., SSS = +31m.38s.
Sumoto PNZ = +12m.18s.
Stuttgart e = +13m.31s., ePP = +15m.18s., eSS = +28m.0s., eSSS = +31m.18s.
Toledo P_cP = +12m.18s., SKS = +22m.21s., SKKS = +22m.48s., PS = +23m.14s.
Cheb e = +13m.23s.
Malaga P_cP = +12m.47s., PP = +17m.55s. = PPP +44s., SKS = +22m.41s., PS = +23m.45s., SS = +28m.31s.
Granada P_cP = +12m.51s., PP = +15m.43s., S_cS = +22m.53s., PS = +23m.5s.
Kucino e = +28m.35s. = SS +33s.
Vienna iN = +12m.59s. and +13m.57s., iEN = +14m.57s., PP = +15m.53s., PPP = +18m.54s., iN = +23m.11s., PS = +23m.59s., iEN = +24m.54s., and +26m.5s., SS = +29m.3s., SSS = +32m.54s.
Ekaterinburg iPP = +15m.49s., iPS = +24m.2s., SS = +29m.0s.
Triest iZ = +12m.40s., i = +13m.47s. and +14m.45s., ePP = +16m.11s., iSKS = +23m.2s., iPS = +24m.8s., iNW = +25m.18s., eSS = +29m.20s.
Florence PS = +24m.14s., SS = +29m.20s.
Zagreb eZ = +23m.30s. = S +13s., e = +24m.7s. = PS +5s., eSS = +29m.27s., eSSS = +32m.48s.?, eSSSS = +36m.5s., e = +38m.3s. and +40m.12s.
Chiufeng iP = +12m.50s., PKP = +16m.14s., PP = +17m.10s., i = +23m.51s. = S +24s., SKKS = +24m.13s. = PS −3s., SN? = +24m.55s., PS = +25m.24s., i = +26m.42s., and +28m.22s. = SS −35s., SS? = +31m.52s.
Belgrade e = +37m.13s.
Dakar gives S as PP; also eSKS = +30m.38s.
Zi-ka-wei iZ = +13m.13s. and +30m.8s. = SS +13s.
Nanking PP = +16m.48s., PPP = +19m.5s.
La Plata PP = +16m.54s., PS = +24m.15s. = S −2s., SSS = +34m.6s.
Baku ePP = +18m.7s.
Wellington PS = +27m.3s., SS = +32m.44s., SSSS = +40m.54s.
Hong Kong PP = +27m.8s. = PS +2s., S = +32m.51s. = SS +23s., SS = +36m.52s. = SSS +36s.
Ksara PPN = +23m.6s., eN = +27m.34s., +37m.34s., and +41m.59s.; S is given as PPPN.
Riverview i = +35m.40s.
Sydney P = +20m.6s.
Agra eN = +28m.44s.
Melbourne i = +30m.1s., +32m.8s., +36m.51s., and +48m.53s.
Adelaide i = +21m.8s. and +36m.56s. = SS +17s.
Batavia i = +21m.20s. = PP +15s. and +23m.31s. = PPP −13s.
Cape Town P?E = +22m.58s. = PP +7s., PP = +23m.54s., PPP = +25m.59s., SKKS = +31m.20s., also +34m.40s.; the SKKS entered in the column is given as SKS.
Tananarive P = +27m.24s. = PPP +1s., SKKSN = +36m.18s., PSN = +40m.43s., eE = +46m.9s., eN = +50m.54s., SSS = +53m.48s.?, SSSS = +57m.48s.?
Long waves were also recorded at Arapuni, Serra do Pilar, Reykjavik, Sebastopol, Theodosia, Helwan, and Johannesburg.

The principle after shocks from the above epicentre are as follows :—

Dec. 21d. 7h. 9m. 23s. (I) X.
7h. 14m. 50s. (II) X.
7h. 41m. 2s. (III) } (Epicentre 38°·7N. 117°·9W. (as at 6h.). X.
8h. 48m. 41s. (IV) X.
9h. 33m. 36s. (V) X.
11h. 33m. 34s. (VI) X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I	Lick	3·2	245	e 0 45	− 1	—	—	—	—
II		3·2	245	e 0 41	− 5	—	—	—	—
III		3·2	245	e 0 46	0	—	—	—	—
IV		3·2	245	e 0 45	− 1	—	—	—	—
V		3·2	245	e 0 47	+ 1	—	—	—	—
VI		3·2	245	e 0 46	0	—	—	—	—
I	Branner	3·6	249	e 0 29	−22	—	—	—	—
III		3·6	249	e 0 57	+ 6	—	—	—	—
IV		3·6	249	e 0 51	0	—	—	—	—
V		3·6	249	e 0 56	+ 5	—	—	—	—
VI		3·6	249	e 0 57	+ 6	—	—	—	—
I	Berkeley	3·6	257	e 0 52	+ 1	—	—	—	—
II		3·6	257	e 0 55	+ 4	—	—	—	—
III		3·6	257	e 0 52	+ 1	i 1 42	S*	—	—
IV	N.	3·6	257	e 0 54	+ 3	e 1 33	+ 1	—	—
V		3·6	257	e 0 49	− 2	—	—	—	—
VI		3·6	257	e 0 51	0	e 1 38	+ 6	—	—
III	San Francisco	3·7	255	e 0 58?	+ 5	—	—	—	—
IV		3·7	255	e 0 55?	+ 2	—	—	—	—
VI		3·7	255	e 0 56	+ 3	—	—	—	—
VI	Ukiah	4·2	277	e 1 16	P_g	1 56	+ 8	—	—
III	Tucson	8·6	136	e 2 32	+30	—	—	—	—
IV		8·6	136	—	—	e 4 13	S*	5·7	—
V		8·6	136	—	—	e 4 24	S_g	—	—
VI		8·6	136	2 38	+36	4 26	S_g	4·5	—
VI	Bozeman	8·6	34	e 4 24	S*	—	—	5·4	—
III	Madison	21·9	69	e 3 54	−56	—	—	—	11·0

Additional readings :—
Berkeley III iNZ = +58s. = P* +0s., iN = +1m.1s. = P_g −5s., VI eN = +57s. = P_g −1s.
Tucson III e = +2m.50s. and +3m.27s.
Long waves were also recorded at Madison VI, Charlottesville III, VI, Ottawa III, VI, and Ann Arbor III, VI.

Dec. 21d. 12h. 39m. 14s. (VII) X.
14h. 5m. 2s. (VIII) X.
14h. 39m. 17s. (IX) } Epicentre 38°·7N. 117°·9W. (as above) X.
16h. 26m. 14s. (X) X.
21h. 32m. 44s. (XI) X.
21h. 55m. 40s. (XII) X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
VII	Lick	3·2	245	e 0 47	+ 1	—	—	—
VIII		3·2	245	e 0 47	+ 1	—	—	—
IX		3·2	245	e 0 47	+ 1	—	—	—
X		3·2	245	e 0 46	0	—	—	—
XI		3·2	245	e 0 46	0	—	—	—
XII		3·2	245	e 0 47	+ 1	—	—	—
VII	Branner	3·6	249	e 0 56	+ 5	—	—	—
VIII		3·6	249	e 0 55	+ 4	—	—	—
IX		3·6	249	e 0 54	+ 3	—	—	—
X		3·6	249	e 0 52	+ 1	—	—	—
VII	Berkeley	3·6	257	e 0 51	0	—	—	—
VIII		3·6	257	e 0 50	− 1	e 1 37	+ 5	—
IX		3·6	257	e 0 50	− 1	e 1 36	+ 4	—
XI		3·6	257	e 1 10	P_g	—	—	—
XII		3·6	257	e 0 51	0	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
IX San Francisco	3·7	255	e 0 55	+ 2	—	—	—
VII Ukiah	4·2	277	1 54	S	(1 54)	+ 6	—
IX	4·2	277	1 51	S	(1 51)	+ 3	—
VII Tucson	8·6	136	—	—	e 4 4	S*	4·6
VIII	8·6	136	—	—	e 4 10	S*	4·6
IX	8·6	136	e 2 53	+51	—	—	i 4·6
X	8·6	136	—	—	e 4 30	S_g	e 5·1

Dec. 21d. 21h. 58m. 8s. (XIII)
22h. 21m. 26s. (XIV)
22h. 23m. 24s. (XV)
22h. 31m. 44s. (XVI)
22h. 46m. 40s. (XVII)
22h. 50m. 50s. (XVIII)
} Epicentre 38°·7N. 117°·9W. (as above). X. X. X. X. X. X.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
XIII Lick	3·2	245	e 0 46	0	—	—
XIV	3·2	245	e 0 46	0	—	—
XV	3·2	245	e 0 42	− 4	—	—
XVI	3·2	245	e 0 46	0	—	—
XVII	3·2	245	e 0 46	0	—	—
XVIII	3·2	245	e 0 52	P*	—	—
XIII Berkeley	3·6	257	—	—	e 1 22	P_g
XIV	3·6	257	e 0 52	+ 1	—	—
XV	3·6	257	e 0 54	+ 3	—	—
XVI	3·6	257	—	—	e 1 16	P_g
XVII	3·6	257	e 0 50	− 1	—	—
XVIII	3·6	257	e 0 46	− 5	—	—

Dec. 21d. Readings also at 3h. (Triest, Vienna, Zagreb, and near Belgrade), 4h. (Bombay and Calcutta), 5h. (La Paz, La Plata, near Hukuoka, and Nagasaki), 6h. (Rio de Janeiro), 7h. (Tyosi), 8h. (New Plymouth, Tuai, and Edinburgh), 9h. (Christchurch), 10h. (Tucson, Takaka, near Wellington, and near Andijan), 11h. (Ottawa, Tucson, Pittsburgh, Tchimkent, Ekaterinburg, and near Andijan), 12h. (near Baku), 13h. (Andijan, Wellington, and near Mizusawa), 14h. (Tchimkent and near Andijan), 16h. (Berkeley (2)), 17h. (Berkeley (2) and Branner), 19h. (Berkeley (5), Branner, San Francisco, and Tucson (2)), 20h. (Berkeley (2)), 22h. (Berkeley (2), Tucson, Andijan, and near Trenta).

Dec. 22d.

Repetitions from the earthquake of Dec. 21d. were recorded by the Californian stations at the following times. Only one phase is recorded by the stations in each case and is given as either eP or e. In the former case the letter P is printed after the figures for the seconds.

Lick.

h.	m.	s.		h.	m.	s.		h.	m.	s.	
0	1	0		5	18	48		11	2	30	
0	17	11	P	5	31	54		11	30	54	
0	29	12		6	43	30	P	11	41	42	
0	35	32	P	7	49	36		12	58	12	P
0	41	30	P	8	12	30		15	0	30	
0	48	30	P	8	41	12		15	15	48	
1	13	30		8	42	36		15	48	54	
1	20	22	P	8	46	54		15	57	0	P
4	3	36		9	32	30		16	9	0	
4	30	10	P	9	42	30		17	54	12	
4	54	58	P	9	51	47	P	20	17	40	P
4	57	18	P	10	35	30		21	19	24	
								23	53	43	P

Continued on next page.

Branner.

h.	m.	s.	h.	m.	s.	h.	m.	s.
4	30	18	10	35	54	15	0	42
4	57	30	10	42	0	20	17	48 P
7	50	18	12	58	24	23	53	48 P

Berkeley.

h.	m.	s.	h.	m.	s.	h.	m.	s.
0	17	12	7	20	45	16	9	12
0	48	54	7	49	54	17	54	54
1	20	33 P	9	51	54	19	25	54
4	3	54	10	35	42	20	17	36
4	30	14 P	11	41	54	20	30	54
4	54	54	12	58	24	21	19	54
4	57	12	15	0	24	22	56	24
5	18	54	15	15	54	23	53	47 P
6	43	54	15	48	54			

San Francisco.

h.	m.	s.
10	36	56 P

Tucson.

h.	m.	s.	h.	m.	s.	h.	m.	s.	h.	m.	s.
4	33	46	5	1	0	10	39	8	23	57	14

Dec. 22d. Readings also at 0h. (near Andijan), 1h. (Tyosi and near Mizusawa), 3h. (Bombay), 7h. (near Amboina), 8h. (near Andijan), 9h. (Andijan and Tchimkent), 12h. (Denver and near Baku), 14h. (Bagnères), 17h. (Tananarive), 20h. (Nagoya, Tyosi, and near Mizusawa).

Dec. 23d.

Repetitions from the earthquakes of Dec. 21 were recorded as follows :—

Lick.

h.	m.	s.	h.	m.	s.	h.	m.	s.
1	59	42	4	43	6	14	10	54 P
2	10	18	5	43	6 P	17	25	36
2	16	45 P	6	28	3 P	17	53	36
2	55	48	6	41	30	18	9	4 P
4	9	30	8	59	36	18	17	6 P
4	12	24	12	29	22 P	20	5	47 P

Branner.

h.	m.	s.
6	28	30 P

Berkeley.

h.	m.	s.	h.	m.	s.	h.	m.	s.
2	17	0	6	28	12	14	11	0
2	56	30	9	0	0	17	53	54
5	43	18	12	29	30	18	9	0
						20	6	0

Dec. 23d. Readings also at 1h. (near Medan), 3h. (near Wellington), 5h. (near Medan), 6h. (near Apia), 7h. (Mizusawa, Nagoya, Osaka, and near Tyosi), 12h. (Andijan and near Mizusawa), 14h. (Cape Town, Melbourne, and Tananarive), 15h. (Alicante and Tiflis), 16h. (Tiflis), 18h. (Bombay, Manila, Perth, Riverview, Wellington, and Suva), 19h. (Ottawa), 21h. (Apia).

Dec. 24d. 4h. 17m. 15s. Epicentre 42°·0N. 79°·5E. (as on 1915 Dec. 17d.). R.3.

A = +·135, B = +·731, C = +·669 ; D = +·983, E = −·182 ;
G = +·122, H = +·658, K = −·743.

		Δ	Az.	P.	O−C.	S.	P−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Almata		2·3	304	e 0 22	−11	—	—	0·6	—
Andijan		5·5	259	e 1 28	+10	(2 32)	+12	2·5	2·8
Tchimkent		7·4	276	e 1 51	+ 6	(i 3 24)	S*	i 3·4	3·8
Agra	E.	14·9	185	6 1	S	(6 1)	−12	8·2	—
Ekaterinburg		19·1	327	e 4 17	− 3	7 43	− 5	i 10·2	10·8
Calcutta		20·8	156	5 36	+58	9 36	+74	12·7	—
Baku		22·3	276	—	—	e 8 55	+ 3	11·8	—
Bombay		23·8	196	e 9 29	S	(e 9 29)	+10	—	15·8
Pulkovo		34·7	318	e 6 44	− 2	e 14 5	SS	17·8	19·6
Helsingfors	N.	37·4	319	e 7 52	+42	—	—	e 19·1	—

Additional readings :—
Tchimkent i = +2m.6s. =P* +3s.
Ekaterinburg i = +4m.2ls. and +9m.7s.
Baku e = +11m.5s.
Long waves were also recorded at Hong Kong, Phu-Lien, Hyderabad, Lund, and Copenhagen.

Dec. 24d. 5h. 12m. 29s. Epicentre 42°·0N. 79°·5E. (as at 4h.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Almata		2·3	304	0 27	− 6	—	—	—	—
Andijan		5·5	259	e 1 25	P*	i 2 5	−15	2·4	2·8
Tchimkent		7·4	276	e 1 54	P*	(i 3 28)	S*	i 3·5	3·8
Agra	E.	14·9	185	e 3 28	+ 1	e 6 25	+12	8·1	—
Ekaterinburg		19·1	327	e 4 13	− 7	e 7 44	− 4	i 10·8	11·1
Calcutta		20·8	156	5 52	?	10 2	L	(10·0)	—
Baku		22·3	276	—	—	e 9 0	+ 8	12·0	—
Bombay		23·8	196	e 8 47	(− 4)	—	—	—	—
Pulkovo		34·7	318	e 6 41	− 5	—	—	17·5	—

Additional readings :—
Tchimkent i = +2m.9s.
Baku e = +11m.3s.
Long waves were also recorded at Hong Kong, Hyderabad, Kodaikanal, and Copenhagen.

Dec. 24d. 6h. 30m. 39s. Epicentre 3°·3S. 145°·8E. N.1.

Probable error of epicentre ± 0°·15.

A = −·826, B = +·561, C = −·058 ; D = +·562, E = +·827 ;
G = +·047, H = −·032, K = −·998.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Palau	15·6	313	3 39	+ 3	6 55	+26	—	—
Amboina	17·6	269	4 3	+ 1	i 7 32	+17	—	—
Manila	30·5	307	6 11	+ 2	11 16	+ 4	14·8	—
Titizima	30·6	354	6 11	+ 1	10 25	−49	—	—
Riverview	30·9	171	i 6 34	+21	i 11 47	+29	15·4	20·3
Sydney	30·9	171	e 10 21	S	(e 10 21)	−57	16·4	18·4
Adelaide	32·3	191	i 6 41	+16	i 11 47	+ 7	14·7?	21·8
Melbourne	34·5	181	—	—	12 13	− 1	15·2	21·0
Suva	35·1	117	5 39	−71	11 21	−62	15·4	20·4
Nake	35·4	335	6 52	− 1	12 34	+ 7	—	—
Taihoku	36·9	322	(6 48)	−18	(12 39)	−11	(17·2)	(20·4)
Miyazaki	37·8	339	7 13	0	13 9	+ 6	—	—
Koti	38·7	343	e 7 20	− 1	e 13 15	− 2	—	—
Sumoto	39·0	347	7 23	− 1	e 13 24	+·3	e 16·2	22·3
Batavia	39·0	264	i 7 35	+11	—	—	i 16·4	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki		39·1	339	e 8 38	PP	—	—	e 14·8	23·2
Osaka		39·2	347	6 59	−26	13 5	−19	20·8	—
Kobe		39·3	347	e 7 25	− 1	e 13 29	+ 3	e 16·4	17·8
Nagoya		39·4	350	7 30	+ 3	—	—	16·4	—
Perth		40·1	221	e 7 46	+13	—	—	21·4	21·8
Hong Kong		40·2	311	7 31	− 3	13 44	+ 5	16·8	18·7
Oiwake		40·3	351	7 33	− 2	13 48	+ 7	—	—
Zi-ka-wei	Z.	41·6	329	7 46	+ 1	13 35	−25	17·6	22·8
Mizusawa		42·7	355	7 54	0	14 16	0	17·6	—
Akita		43·4	354	8 1	+ 1	14 33	+ 6	—	—
Nanking		43·7	325	8 3	+ 1	14 29	− 2	e 17·9	20·8
Arapuni		44·2	145	—	—	15 1	+22	19·4	—
Phu-Lien		45·4	304	e 8 17	+ 1	e 15 5	+ 9	20·4	—
Wellington		46·0	149	8 20	− 1	14 59	− 5	21·4	22·4
Medan		47·6	277	8 47	+14	—	—	37·4	—
Chiufeng		51·2	331	e 9 0	0	i 16 19	+ 1	24·0	26·5
Honolulu T.H.		60·4	63	—	—	e 18 9	−12	e 25·0	—
Calcutta		61·7	297	11 7	+51	17 46	−52	26·4	—
Kodaikanal		69·4	282	(i 11 8)	+ 1	(i 20 16)	+ 2	(36·9)	—
Hyderabad		69·6	289	11 3	− 5	20 13	− 3	33·6	50·2
Agra	E.	72·0	299	11 4	−19	—	—	—	—
Bombay		75·1	290	11 39	− 2	21 19	− 2	37·6	49·6
Andijan		79·8	312	e 12 40	+33	—	—	—	—
Tchimkent		82·1	313	e 12 29	+10	—	—	—	—
Sitka		86·8	32	—	—	e 23 27	+ 2	e 39·4	—
Ekaterinburg		90·2	326	e 12 59	+ 1	23 27	[− 7]	47·6	53·2
Victoria	E.	93·0	41	25 36	S	(25 36)	PS	42·5	55·2
Baku		96·6	310	e 16 0	?	e 19 58	?	47·4	57·8
Kucino		102·7	326	27 39	PS	33 33	SS	52·8	57·4
Pulkovo		105·5	332	18 48	PP	25 24	{−10}	47·4	56·2
Helsingfors	N.	107·7	334	—	—	e 25 51	{ 0}	e 48·0	—
Lund		115·4	333	—	—	29 33	PS	53·4	—
Copenhagen		115·7	333	—	—	29 30	PS	53·4	—
Madison		117·1	42	—	—	e 35 53	SS	51·4	61·4
Vienna		117·7	324	e 20 0	PP	—	—	—	73·4
Hamburg		118·1	332	—	—	e 28 49	?	e 57·4	66·4
Zagreb		119·1	322	e 19 51	PP	—	—	e 61·4	—
De Bilt		121·3	333	—	—	e 30 21?	PS	e 54·4	68·6
Stuttgart		121·5	328	—	—	e 29 21?	?	e 60·4	—
Strasbourg		122·3	329	e 20 21?	PP	—	—	e 59·4	—
Uccle		122·6	333	—	—	e 29 21?	?	54·4	—
Kew		124·2	335	—	—	e 38 21?	?	e 56·4	59·4
Ottawa		124·5	3	—	—	e 29 21?	?	e 54·4	—
Pittsburgh		124·6	41	—	—	e 36 57	SS	e 54·2	—
Columbia		126·7	48	—	—	e 26 21	[+11]	e 56·0	—
Toledo		134·4	327	—	—	e 38 57	SS	e 67·7	81·8
Huancayo		136·0	111	e 22 30	PP	e 26 33	[− 2]	e 56·0	—
La Paz		141·0	121	e 19 37	[+14]	26 52	SKS	67·4	103·4
San Juan		145·3	61	e 20 21	[+46]	e 31 21	?	e 60·4	—
Rio de Janeiro		152·4	162	e 24 21	PP	—	—	—	—

Additional readings and notes :—
Amboina iP = +4m.14s.
Sydney iS = +14m.57s.
Adelaide iSS = +13m.21s.?
Taihoku readings have been *increased* by 4m.
Batavia iNE = +9m.3s.
Perth P_cP = +8m.41s., PP = +9m.11s., PPP = +9m.36s. = P_cP − 6s., SS = +16m.1s., SSS = +16m.56s., SSSS = +19m.6s.
Hong Kong PP? = +7m.45s., ? = +8m.43s. = PP − 18s.
Zi-ka-wei iZ = +7m.53s., +8m.35s., +9m.49s. = P_cP + 2s., +10m.59s., and +12m.19s.
Arapuni i = +18m.21s.? = S_cS + 14s.
Wellington PP = +10m.21s., i = +19m.31s.
Medan i = +9m.22s., +16m.32s., and +17m.14s.

Continued on next page.

Chiufeng i = +9m.33s., PP = +11m.1s., SS? = +20m.54s.
Kodaikanal readings have been *diminished* by 6m.
Ekaterinburg PS = +24m.46s., eSS = +30m.1s., eL_g = +37·0m.
Baku e = +26m.14s. = PS +6s.
Copenhagen +35m.51s. = SS +16s.
Uccle e = +37m.21s.? = SS +15s.
Ottawa eE = +37m.57s., eN = +43m.3s.
Huancayo e = +40m.42s.
La Paz PPN = +23m.10s. = PKS −1s.
Long waves were also recorded at Hukuoka, Cape Town, Tiflis, Ivigtut, and other American and European stations.

Dec. 24d.
List of repetitions from the Californian shock of 21d.

Lick.

h.	m.	s.		h.	m.	s.		h.	m.	s.
3	2	53	P	14	48	24		21	51	12
3	31	24		16	54	24	P	22	21	24
12	41	18	P	17	48	36		23	34	36
13	58	36	P	20	47	36				

Branner.

h.	m.	s.		h.	m.	s.
12	41	26	P	22	35	0

Berkeley.

h.	m.	s.	h.	m.	s.	h.	m.	s.
3	3	0	13	59	0	17	14	0
12	41	18	16	54	30	21	51	30
						22	34	54

Tucson.

h.	m.	s.
12	43	10

Dec. 24d. Readings also at 0h. (near Santiago), 2h. (Almeria), 4h. (near Andijan and near Chiufeng), 5h. (Almata, Chiufeng, Ekaterinburg, Tchimkent, and near Andijan), 6h. (Christchurch and Hastings), 9h. (Andijan), 10h. (Neuchatel and near Mizusawa), 11h. (Columbia, Madison, Ottawa, and Tucson), 12h. (La Paz, Huancayo, and Pittsburgh), 13h. (Sumoto), 14h. (near Apia), 15h. (La Paz), 16h. (Kobe, Sumoto, near Koti, and Matuyama), 18h. (near Andijan (3) and Tchimkent (2)), 22h. (near Kobe, Nagoya, and Sumoto), 23h. (Pasadena, Tinemaha, Florissant, Perth, Bombay, Ekaterinburg, Tashkent, and Tiflis).

Dec. 25d. 2h. 4m. 31s. Epicentre **39°·2N. 96°·4E.** **N.1.**

Probable error of epicentre ±0°·26.

A = −·086, B = +·770, C = +·632 ; D = +·994, E = +·111 ;
G = −·070, H = +·628, K = −·775.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Almata		15·1	292	e 3 36	+ 6	6 25	+ 8	7·1	—
Chiufeng		15·2	80	i 3 27	− 4	i 6 28	+ 8	i 7·9	—
Dehra Dun		17·4	245	(4 9)	+10	(7 9)	− 2	(9·8)	(10·5)
Calcutta		18·0	205	5 21	+74	8 50	+85	10·8	—
Andijan		18·4	283	e 4 17	+ 6	e 8 37	+64	10·1	10·6
Agra	N.	19·4	237	i 4 6	−17	i 7 53	− 1	10·3	—
Nanking		19·5	105	i 4 24	0	i 8 14	+18	10·1	—
Phu-Lien		20·4	151	i 4 38	+ 4	i 8 29	+15	—	—
Zi-ka-wei		21·9	104	i 4 52	+ 2	9 3	+19	11·2	—
Hong Kong		22·7	133	5 0	+ 2	9 3	+ 4	11·5	15·2
Zinsen		23·6	86	5 8	+ 2	9 27	+11	—	—
Hokoto		25·1	122	5 11	−10	9 40	− 3	—	—
Taihoku		25·5	116	4 31	−54	i 9 19	−31	12·8	13·1
Hyderabad		26·7	221	5 41	+ 6	10 33	+23	—	24·5
Kosyun		27·0	122	5 54	+16	10 54	+39	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki		27·7	93	e 5 46	+ 2	10 31	+ 4	14·9	19·5
Hukuoka		27·8	91	5 45	0	10 32	+ 4	12·6	16·0
	B.	27·8	91	5 45	0	10 30	+ 2	—	—
Kumamoto		28·3	91	5 52	+ 2	10 52	+15	—	—
Hamada		28·6	87	5 52	− 1	10 47	+ 5	—	—
Bombay		28·8	232	5 52	− 2	10 46	+ 1	14·5	19·5
Ekaterinburg		29·1	319	i 6 1	+ 4	i 10 38	−12	—	—
Matuyama		29·5	89	e 6 0	− 1	i 10 52	− 4	15·2	17·5
Koti		30·2	89	e 6 5	− 2	11 3	− 4	13·1	17·7
Toyooka	E.	30·5	84	i 6 9	0	i 11 16	+ 4	15·2	17·3
	N.	30·5	84	i 6 14	+ 5	i 11 13	+ 1	14·0	17·9
Sumoto		31·0	86	i 6 12	− 2	i 11 21	+ 1	15·2	18·5
Kobe		31·1	87	6 13	− 2	11 24	+ 3	16·6	19·4
Osaka		31·4	87	6 18	+ 1	11 31	+ 5	14·2	17·7
Nagoya		32·3	83	6 29	+ 4	11 54	+14	e 15·4	17·6
Manila		32·7	130	i 6 33	+ 4	11 48	+ 2	15·8	19·0
Nagano		32·8	81	6 29	− 1	11 54	+ 6	—	—
Akita		33·4	76	6 39	+ 4	12 7	+10	—	—
Hukusima		34·2	78	6 41	− 1	12 16	+ 7	—	—
Ootomari		34·2	63	6 55	+13	12 21	+12	18·5	20·5
Mizusawa	E.	34·3	76	6 46	+ 3	12 23	+12	14·6	—
	N.	34·3	76	6 57	+14	12 23	+12	14·5	—
Sikka		34·3	57	4 53	?	6 8	?	9·6	—
Tokyo		34·3	82	6 47	+ 4	12 13	+ 2	14·8	17·7
Tyosi		35·2	82	i 6 48	− 3	12 7	−17	16·4	21·9
Baku		35·3	288	i 6 54	+ 2	—	—	—	—
Hatidyozima		35·3	85	6 56	+ 4	12 33	+ 7	—	—
Medan		35·7	175	6 4	−51	i 11 52	−40	—	—
Tiflis		38·7	291	i 7 24	+ 3	13 19	+ 2	—	—
Titizima		39·7	93	7 29	0	13 25	− 7	—	—
Kucino		41·4	313	i 7 52	+ 8	e 13 51	− 6	e 20·5	—
Theodosia		44·5	299	e 8 15	+ 6	14 50	+ 7	24·4	33·6
Pulkovo		45·2	320	i 8 14	0	i 15 7	+13	20·5	30·0
Simferopol		45·4	299	8 16	0	14 58	+ 2	24·6	—
Yalta		45·5	298	8 19	+ 2	15 15	+18	25·5	—
Batavia		46·4	165	i 8 24	0	e 14 56	−14	22·6	24·9
Palau		46·7	123	8 27	+ 1	15 18	+ 4	—	—
Malabar		47·6	165	8 39	+ 6	—	—	22·7	—
Helsingfors		47·8	322	i 8 34	− 1	i 15 33	+ 3	20·2	—
Ksara	N.	48·0	283	i 8 40	+ 4	i 15 54	+21	25·5	—
Lemberg		50·7	308	e 8 29	−28	e 16 5	− 6	e 24·5	30·7
Königsberg		51·3	315	e 9 2	+ 1	e 16 22	+ 3	e 24·8	33·5
Upsala		51·5	322	i 9 3	0	i 16 24	+ 2	—	29·1
Amboina		51·9	138	9 9	+ 3	16 24	− 3	25·5	—
Helwan		53·3	281	i 9 16	0	i 16 52	+ 6	—	36·2
Budapest		54·5	306	i 10 5	+40	17 46	+44	22·5	34·5
Belgrade		54·6	302	e 9 27	+ 1	i 17 9	+ 5	e 23·0	34·4
Lund		55·0	318	i 9 30	+ 1	17 13	+ 4	—	—
Copenhagen		55·3	318	9 32	+ 1	17 23	+10	—	—
Vienna		55·9	308	9 36	+ 1	17 35	+14	i 28·3	35·5
Prague		56·0	311	9 46	+10	17 43	+20	e 22·0	40·5
Potsdam		56·2	314	e 9 39	+ 2	i 17 43	+18	e 24·0	30·5
Bergen		57·1	325	9 26	−18	17 51	+13	26·5	36·5
Zagreb		57·1	305	e 9 46	+ 2	i 17 50	+12	i 29·6	32·9
Cheb		57·5	311	e 9 48	+ 1	e 17 52	+ 9	e 29·5	36·5
Hamburg		57·5	316	i 9 49	+ 2	18 29	+46	29·5	35·5
Jena		57·6	312	e 9 48	+ 1	i 17 52	+ 8	e 25·5	36·0
Hof		57·8	311	e 9 59	+10	e 17 54	+ 7	e 28·5	37·0
Laibach		57·9	306	e 9 48	− 2	17 56	+ 8	—	36·5
Göttingen		58·3	314	i 9 53	+ 1	i 17 54	+ 1	e 26·5	36·6
Bari		58·5	300	9 53	− 1	18 3	+ 7	29·4	—
Triest		58·6	306	i 9 55	0	i 18 1	+ 4	30·5	36·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Innsbruck		59·3	308	e 10 3	+ 3	18 28	+21	29·6	33·8
Venice		59·5	306	10 2	+ 1	18 29	+20	36·6	44·0
Treviso		59·6	307	i 10 3	+ 1	i 18 31	+20	31·5	37·3
Trenta		59·7	298	i 9 59	− 3	e 18 14	+ 2	32·5	48·5
Feldberg		59·8	313	e 10 4	+ 1	—	—	—	32·2
Stuttgart		60·0	311	i 10 5	+ 1	i 18 21	+ 5	e 33·5	37·2
Camerino		60·1	304	10 15	+10	—	—	—	—
Benevento		60·3	301	e 8 39	−88	17 59	−21	—	47·5
Karlsruhe		60·3	312	10 8	+ 1	18 37	+17	31·8	35·7
Naples	E.	60·4	301	e 9 9	−58	e 17 1	−80	36·5	41·5
Chur		60·6	310	e 10 8	− 1	e 18 23	− 1	—	—
Florence		60·6	305	i 10 16	+ 7	18 29	+ 5	28·5	33·5
Casamicciola		60·7	301	9 31	−38	17 55	−30	26·4	—
Messina		60·8	297	10 14	+ 4	18 29	+ 3	—	—
Strasbourg		60·9	311	i 10 11	0	18 33	+ 5	e 32·5	38·2
Prato		61·0	305	i 10 16	+ 5	18 29	0	—	33·1
Zurich		61·0	310	e 10 11	0	e 18 31	+ 2	—	—
De Bilt		61·1	316	i 10 11	− 1	18 32	+ 2	e 30·5	34·9
Catania		61·2	297	10 15	+ 2	18 22	−10	e 37·3	44·5
Piacenza		61·4	308	i 10 11	− 3	i 18 47	+13	25·5	38·5
Pavia		61·6	308	e 10 24	+ 8	—	—	—	—
Uccle		61·8	315	i 10 16	− 1	18 45	+ 6	30·5	38·8
Neuchatel		62·1	311	e 10 19	0	e 18 30	−13	—	—
Besançon		62·5	311	10 23	+ 1	e 18 56	+ 8	31·5	—
Durham		63·0	320	10 27	+ 2	19 3	+ 8	—	37·5
Edinburgh		63·2	322	i 10 25	− 2	i 19 10	+13	29·5	40·5
Stonyhurst		63·5	320	i 10 31	+ 2	19 8	+ 7	32·5	42·2
Paris		63·8	313	i 10 30	− 1	19 6	+ 1	33·5	39·5
Kew		64·0	316	i 10 33	+ 1	i 19 18	+11	e 29·5	39·5
Bidston		64·4	320	i 10 34	− 1	i 19 24	+12	27·2	35·5
Oxford		64·4	317	i 10 33	− 2	i 19 15	+ 3	—	43·5
Puy de Dôme		65·1	309	i 10 43	+ 4	i 19 2	−19	32·5	—
Reykjavik		65·9	336	10 48	+ 3	19 39	+ 8	32·3	—
Barcelona		67·9	307	11 1	+ 3	20 16	PS	27·9	42·4
Bagnères		68·2	309	e 10 59	0	20 5	+ 6	34·5	—
Tortosa		69·3	306	i 11 5	− 1	20 28	PS	30·8	43·5
Algiers		70·0	301	i 11 11	0	i 20 35	PS	36·5	44·5
Alicante		71·4	305	e 11 19	0	i 20 55	PS	e 33·4	44·7
Toledo		72·7	308	i 11 27	0	20 47	− 6	i 30·9	36·8
Almeria		73·4	304	e 11 27	− 4	i 21 14	+13	e 37·1	46·6
Perth		73·4	162	—	—	21 8	+ 7	32·3	36·5
Tananarive		73·9	228	e 11 35	+ 1	e 21 7	0	35·9	40·7
Granada		74·0	306	i 11 37	+ 2	i 21 10	+ 2	38·1	46·7
Sitka		74·4	26	i 11 35	− 2	e 20 50	−23	i 35·5	—
Serra do Pilar		74·7	311	11 44	+ 5	—	—	—	—
Malaga		74·8	305	i 11 30	− 9	i 21 19	+ 1	37·8	47·5
Ivigtut		75·5	343	11 40	− 3	21 27	+ 1	30·5	—
San Fernando		76·1	306	11 46	− 1	21 20	−13	—	48·0
Adelaide		83·8	146	i 12 30	+ 3	i 22 56	+ 1	36·4	50·8
Victoria		85·6	25	12 32	− 4	23 12	− 2	46·3	52·7
Angra do Heroismo		86·5	319	e 16 28	PP	24 42	PS	47·6	54·2
Saskatoon		86·5	14	12 34	− 7	23 8	−14	—	—
Seattle		86·5	25	e 12 47	+ 6	23 32	+10	e 39·5	—
Honolulu T.H.		88·1	64	e 12 43	− 5	i 23 29	[+ 8]	—	—
Riverview		88·9	137	i 12 56	+ 4	i 23 44	− 2	39·5	55·5
Sydney		88·9	137	i 12 59	+ 7	i 23 53	+ 7	50·2	58·5
Melbourne		89·0	143	12 54	+ 1	23 27	[+ 1]	38·7	47·7
Johannesburg		91·3	237	23 41	S	(23 41)	[+ 1]	46·5	—
Bozeman		91·6	19	13 3	− 2	24 5	− 6	e 46·9	—
Ukiah		93·7	30	i 13 13	− 1	i 24 24	{+19}	40·4	—

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
East Machias	94·8	349	13 24	+ 4	24 38	− 2	e 40·5	—
Berkeley	95·1	30	e 13 20	− 1	—	—	—	—
Ottawa	95·1	354	e 13 22	+ 1	i 24 39	− 4	e 40·5	—
Suva	95·4	109	13 41	+19	24 53	+ 7	43·5	54·5
Branner	95·5	30	e 13 17	− 6	—	—	—	—
Lick	95·8	30	e 13 5	−19	—	—	—	—
Toronto	97·1	357	i 13 29	− 1	i 24 36	{+ 5}	44·4	51·4
Tinemaha	97·4	27	e 13 31	− 1	—	—	—	—
Harvard	97·6	351	i 13 56	+24	i 24 50	−15	e 39·8	—
Madison	97·6	4	i 13 36	+ 4	e 24 45	{+10}	40·5	—
Dakar	98·2	296	e 13 43	+ 8	e 24 20	[+ 3]	—	—
Haiwee	98·3	27	e 13 36	0	—	—	—	—
Ann Arbor	98·5	0	e 13 35	− 2	i 24 17	[− 1]	e 42·0	60·8
Denver	98·7	16	e 17 56	PP	i 24 46	{+ 2}	e 46·5	51·5
Chicago	99·0	3	i 13 45	+ 6	i 25 12	− 6	i 39·3	—
Fordham	99·5	353	e 13 41	0	i 24 29	[+ 6]	46·5	58·5
Pasadena	100·0	28	i 13 42	− 2	i 26 57	PS	i 48·9	—
Pittsburgh	100·3	357	e 12 43	−62	i 23 26	[−61]	40·5	—
Riverside	100·5	28	e 13 52	+ 6	e 25 34	+ 3	—	—
Georgetown	101·6	355	e 13 50	− 1	e 26 59	PS	—	—
Florissant	101·7	6	i 13 49	− 2	i 25 45	+ 4	—	58·5
St. Louis	102·0	6	i 13 50	− 3	24 37	[+ 2]	e 41·7	58·7
Cape Town	102·6	236	14 3	+ 8	24 52	[+14]	45·3	61·2
Charlottesville	102·6	356	—	—	i 24 48	[+10]	e 48·5	—
Tucson	104·5	24	e 14 3	− 1	i 24 53	[+ 6]	41·4	—
Arapuni	106·0	127	18 29	PP	26 23	S	45·1	50·5
Columbia	106·8	358	e 14 11	− 4	i 25 6	[+ 8]	e 45·5	—
Glenmuick	107·5	132	—	—	e 45 29?	?	48·5	—
Wellington	107·5	130	14 19	0	26 4	{+15}	46·5	49·5
San Juan	120·1	340	e 19 13	[+27]	i 30 3	PS	50·9	—
Port au Prince	121·9	347	e 19 45	[+55]	—	—	e 63·9	—
Rio de Janeiro	142·1	283	i 19 29	[+ 5]	e 31 39	?	e 56·3	—
Huancayo	151·9	343	e 19 46	[+ 2]	—	—	—	—
La Paz	153·6	325	19 50	[+ 3]	31 2	{+19}	77·5	98·8
La Plata	159·1	274	19 58	[+ 6]	—	—	59·5	—
Santiago	168·1	295	e 21 16	{− 5}	—	—	—	—

Additional readings and note :—
Chiufeng i = +3m.38s., iPP = +3m.48s., iPPN = +3m.56s., iSSE = +6m.44s., iSSN = +6m.48s.
Dehra Dun readings have been *increased* by 2m.
Agra iPE = +4m.10s.
Zi-ka-wei iN = +5m.5s. = PP −4s., +5m.19s., +5m.31s., +5m.52s., +6m.2s., +6m.12s., +6m.29s., +6m.37s., +7m.22s., +7m.40s., +7m.56s., +8m.35s. and +9m.18s., SSN = +9m.49s., SSSN = +9m.58s., SSSSN = +10m.9s., iN = +10m.35s.
Hong Kong PP = +5m.16s.
Ekaterinburg i = +10m.26s.
Toyooka iSZ = +11m.27s.
Sumoto iSEN = +11m.24s. ; epicentre 44°N. 96°E.
Kobe PPE = +7m.47s., PPPE = +8m.12s., SZ = +11m.45s.
Nagoya PP = +7m.43s., SS = +14m.7s. ; epicentre 44°N. 96°E.
Tyosi PP = +8m.16s.
Medan iP = +6m.12s., i = +7m.45s.
Tiflis i = +13m.40s.
Kucino PP = +9m.21s., SS = +16m.56s.
Batavia iP = +8m.32s., i = +10m.59s., and +20m.19s.
Malabar i = +9m.14s. and +11m.8s.
Helsingfors iPPEN = +10m.21s., iPPZ = +10m.27s., iPPPN = +11m.13s., PPPEZ = +11m.21s., iP_cSN = +13m.38s., iP_cSE = +13m.47s., iEZ = +14m.48s., iN = +14m.51s., iS_cSN = +17m.58s., eS_cSZ = +18m.16s., iS_cSE = +18m.24s., iSSEZ = +19m.2s., iSSN = +19m.8s. ; T_o = 2h.4m.10s.
Königsberg iE = +9m.9s., P_cPE = +10m.56s., PPE = +11m.7s., eE = +12m.58s. iS = +16m.30s., PS = +16m.47s., S_cS? = +19m.29s., iSS = +20m.5s., i = +20m.57s.
Upsala iPPE = +11m.1s., iSSE = +20m.20s.
Amboina iP = +9m.16s., iSNW = +16m.37s.
Belgrade i = +11m.33s. = PP +11s., +11m.42s., and +15m.49s., iS = +17m.21s., i = +20m.55s. = SS +14s.

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Lund PP = +11m.42s., PPP = +12m.39s., P_cS = +14m.29s., eNW = +17m.22s., eNE = +17m.34s., S_cS = +19m.28s., SS = +21m.17s.
Copenhagen +11m.46s. =PP +18s., PPP = +12m.50s., eE = +16m.41s., eN = +16m.59s. and +19m.48s., +21m.17s. =SS +22s.
Vienna iPZ = +9m.38s., iPEN = +9m.41s., P_cP = +10m.40s., PP = +11m.50s., iZ = +12m.41s., iN = +14m.1s., P_cS = +14m.31s., iEN = +15m.38s., PS = +18m.1s., iN = +18m.38s., S_cS = +19m.24s., iN = +20m.3s., iE = +21m.22s. =SS +20s., SS = +21m.58s., iN = +23m.10s. =SSSS −12s., SSS = +23m.53s., iEN = +24m.37s. and +26m.35s.
Potsdam iPEN = +9m.44s., iEN = +9m.55s., iN = +10m.3s., iPPEN = +11m.52s., iN = +12m.2s., iPPPE = +13m.7s., iE = +13m.20s., +14m.38s., and +14m.58s., iEN = +17m.33s. =PS +4s., iZ = +17m.49s., iEN = +18m.1s., iPSEN = +18m.9s., iEN = +19m.33s. =S_cS +8s., +20m.5s., +20m.27s., and +21m.31s. =SS +24s., iSSEN = +21m.58s., iE = +23m.14s. =SSS +11s., iSSSEN = +24m.8s.
Bergen PP = +11m.59s., PPP = +13m.29s.?, SS = +21m.29s.?
Zagreb i = +9m.50s. and +10m.9s., eP_cP = +10m.54s., iPP = +11m.56s., iS_cSNW = +19m.53s., iSS = +22m.1s., iSSSS = +25m.17s., iNW = +27m.9s., iNE, NW = +28m.6s., e = +29m.18s.
Cheb iP = +9m.53s., e = +14m.49s., eSS = +22m.4s., e = +26m.49s.
Hamburg ePPPE = +13m.20s., eSSZ = +22m.35s.
Jena ePZ = +9m.45s., iPZ = +9m.49s., iPEN = +9m.52s., ePPEN = +10m.47s., ePPPN = +12m.58s., ePPPEZ = +13m.11s., eSNZ = +17m.45s., eSE = +17m.48s., eEN = +21m.53s. =SS +23s., eZ = +21m.59s.
Hof eSNE = +18m.9s., eNW = +22m.7s., eNE = +22m.11s.
Laibach e = +11m.57s. =PP +6s., +22m.42s., and +24m.51s.
Göttingen ePPEN = +12m.5s., iPPP = +13m.22s., eSSEN = +22m.5s.
Triest iPP = +12m.15s., iPS = +18m.17s., iSS = +22m.12s.
Innsbruck iP = +10m.6s., PP = +12m.19s., PPP = +13m.35s., SS = +22m.28s., SSS = +25m.20s., i = +26m.11s.
Venice P = +10m.5s.
Feldberg iE = +10m.8s. and +12m.17s. =PP +9s., eE = +12m.41s. and +17m.28s., iE = +22m.36s., eE = +25m.11s., and +27m.51s.
Stuttgart i = +10m.10s., iPP = +12m.19s., iPPP = +13m.41s., iSS = +22m.49s.
Florence PP = +12m.46s., PPP = +14m.10s., PS = +19m.0s., SS = +22m.51s.
Strasbourg PP = +12m.37s., PPP = +13m.57s., SS = +22m.59s.
Uccle PPZ = +12m.39s., iPPPEN = +14m.2s. =PPPP −15s., iSN = +18m.50s. = PS +3s., SS = +22m.53s.
Durham PPP = +14m.27s. =PPPP −6s.
Edinburgh SS = +23m.35s., i = +26m.6s. =SSSS −9s.
Stonyhurst PP = +12m.48s., PPP = +14m.18s., PS = +19m.43s., SS = +23m.33s., SSS = +26m.8s. =SSSS −14s.
Kew i = +10m.38s. and +10m.43s., iP_cPNZ = +11m.22s., iE = +11m.31s., iPP = +12m.57s., iPPP = +14m.23s., iZ = +19m.27s. =PS +10s., iEN = +20m.14s., +20m.21s., and +22m.21s., iSSEN = +23m.43s., iE = +25m.53s., iN = +26m.0s., iZ = +26m.8s.
Bidston PP = +13m.29s., PPP = +14m.53s. =PPPP +0s., PPPP = +15m.11s., SS = +23m.53s., SSS = +26m.5s., SSSS = +26m.36s.; T_o = 2h.4m.18s.
Puy de Dôme iPP = +13m.13s., PS = +19m.37s., eSS = +23m.49s.
Reykjavik i = +10m.56s. and +11m.2s. =P_cP −15s., PP = +13m.23s., PPP = +14m.52s., PS = +19m.54s., SS = +23m.54s., i = +24m.54s., SSS = +26m.33s.
Bagnères PP = +13m.50s., SS = +24m.54s.
Algiers PP = +14m.30s., PPP = +16m.4s., SS = +25m.57s., SSS = +28m.56s. = SSSS +3s.
Alicante iP = +11m.24s., PPP = +15m.45s., PS = +21m.31s., SS = +25m.27s.
Toledo i = +11m.31s., P_cP = +12m.23s., PP = +14m.5s., PPP = +15m.50s., PS = +21m.6s., SS = +25m.41s., SSS = +29m.5s.
Almeria iP = +11m.40s., PP = +14m.14s., PPP = +15m.20s., PS = +22m.4s., SSS = +27m.52s.
Perth PP = +14m.34s., PPP = +16m.34s., S = +20m.19s., SS = +25m.54s., L = +26m.34s.
Tananarive iEN = +11m.38s., PPN = +14m.31s., iE = +21m.21s., SKS = +21m.35s. =PS +5s., SS = +25m.43s.
Granada P_cP = +12m.7s., PP = +14m.53s., SS = +26m.34s., SSS = +30m.38s.
Sitka iPP = +14m.18s., i = +14m.26s., ePPP = +15m.53s., iS = +21m.19s., i = +25m.9s., iSS = +26m.15s.
Malaga PP = +14m.39s., PPP = +16m.10s., PS = +21m.48s., SS = +25m.38s., SSS = +29m.44s.
Ivigtut +14m.34s. =PP +8s. and +25m.41s. =SS −24s.
Adelaide i = +12m.44s. and +13m.57s., iPP = +15m.53s., i = +23m.13s. = PS −16s. and +24m.32s., iSS = +28m.28s., i = +33m.9s. =SSSS −21s.
Seattle SKS = +23m.17s.
Honolulu T.H. i = +12m.49s., +12m.56s., +24m.39s. =PS +10s., iSS = +29m.29s.

Continued on next page.

Riverview i = +13m.8s., PP = +16m.34s., iSKS = +23m.29s., iSN = +23m.48s., S_cS = +24m.10s. = PS − 29s.
Sydney SS = +29m.23s., SSS = +33m.53s., SSSS = +39m.59s., SSSSS = +45m.29s.
Melbourne PP = +16m.39s., PPP = +19m.6s., SS = +29m.51s., SSS = +33m.54s.
Johannesburg S = +34m.17s., SS = +38m.47s.
Bozeman PP = +16m.47s., SKS = +23m.49s.
Ukiah i = +16m.29s. = PP − 26s., SKS = +23m.43s., e = +24m.32s. = S + 2s., iSS = +30m.19s.
Berkeley i = +13m.26s., eEN = +13m.35s.
Ottawa eE = +13m.39s., eN = +16m.9s., ePP = +17m.2s., eE = +17m.43s., ePPPN = +19m.14s., ePPPP = +21m.1s., iSKKSN = +24m.6s., iPPSN = +25m.58s., eE = +26m.40s., eSS = +30m.59s., eSSSN = +35m.5s.
Suva PP = +17m.53s., i = +28m.17s., SS = +31m.5s., SSS = +35m.59s.
Toronto iPP = +17m.10s., ePPP = +19m.28s., iPPPP = +21m.10s., iSKS = +24m.16s., iPS = +26m.3s., SS = +30m.40s., SSS = +35m.50s.
Harvard iPP = +17m.46s., iPPP = +20m.5s., e = +22m.5s., iSKS = +24m.27s., iSS = +30m.24s., iSSS = +34m.46s. ; T_0 = 2h.5m.21s.
Madison iPP = +17m.31s., e = +19m.33s. = PPP + 11s., eSKKS = +24m.14s., iPS = +26m.21s., iSS = +31m.59s., eSSS = +35m.30s. ; T_0 = 2h.4m.48s.
Ann Arbor ePP = +17m.23s., iPP = +17m.41s., e = +21m.29s., iPS = +26m.23s., iSS = +32m.5s., iSSS = +36m.35s., iN = +39m.11s. ; T_0 = 2h.3m.54s.
Denver iN = +18m.27s., eN = +26m.44s. = PS + 13s., +32m.16s., and +36m.29s.
Chicago ePP = +17m.29s., i = +19m.49s. = PPP + 14s., iSKS = +24m.7s., i = +24m.28s. = SKKS − 18s., iPS = +26m.33s., i = +31m.53s. = SS + 5s. and +32m.17s., iSSS = +35m.39s.
Fordham e = +16m.53s., i = +17m.10s. = PP − 29s., +17m.47s., +19m.30s. = PPP − 9s., +19m.42s., +20m.25s., +23m.48s., and +26m.25s. = PS − 15s., e = +27m.18s., eSS = +32m.29s.?
Pasadena iPP = +17m.48s., iZ = +17m.52s., iNZ = +27m.48s., iSSN = +32m.43s.
Pittsburgh i = +16m.3s., iPP = +17m.0s., i = +23m.32s., iPS = +25m.45s., iSS = +31m.2s., i = +34m.44s.
Georgetown i = +13m.55s., iPP = +17m.58s. ; T_0 = 2h.4m.6s.
Florissant iPPNZ = +17m.57s., iN = +19m.55s. = PPP − 3s. and +23m.46s., iSKSN = +24m.37s., eN = +27m.1s. = PS − 2s., iSSN = +33m.4s., iN = +36m.5s. = SSS − 8s. and +40m.29s.
St. Louis iPEN = +13m.53s. and +14m.0s., iPPN = +17m.58s., iPPPEN = +19m.53s., iSKSEN = +24m.41s., iPSEN = +27m.4s., iSSEN = +32m.44s.
Cape Town PP = +18m.10s., PPP = +19m.43s., +20m.36s., +27m.29s. = PS + 16s. and +33m.0s.
Charlottesville S = +25m.42s., PS = +27m.17s., eSS = +33m.1s.
Tucson iPP = +18m.19s., PPP = +20m.37s., iSS = +33m.34s.
Arapuni PS = +28m.11s., SSS = +35m.34s.
Columbia iPP = +18m.36s., e = +24m.56s. = SKKS + 12s., iPS = +27m.56s. eSS = +33m.34s., eSSS = +38m.43s.
Wellington PP = +18m.53s., PS = +28m.19s., PPS = +29m.37s., SSS = +37m.53s.
San Juan e = +19m.52s. = PP − 18s., iSS = +36m.54s., i = +41m.27s.
Port au Prince eNW = +20m.59s., e = +22m.13s. and +23m.58s.
Huancayo iPKP = +19m.50s.
La Paz iPKPEN = +19m.54s., iPPN = +23m.42s., SKSN? = +26m.42s. and +27m.8s. = PPP + 6s., SKSP = +34m.32s., PPS = +38m.46s., SSN = +44m.28s., PSSN = +45m.16s., SSSN = +48m.42s., SSSSN = +51m.43s. and +51m.50s.
La Plata PP? = +24m.23s.

Dec. 25d. 12h. 26m. 12s. Epicentre 38°·4N. 96°·5E. N.3.

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

		Δ	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Chiufeng		15·2	77	3 26	− 5	i 6 18	− 2	i 7·6	9·2
Calcutta		17·3	206	0 49	?	6 10	−59	11·1	—
Andijan		18·6	285	e 4 14	0	—	—	e 11·0	—
Agra	E.	18·9	239	e 4 16	− 1	—	—	—	—
Nanking		19·2	102	e 4 22	+ 1	—	—	—	—
Phu-Lien		19·6	151	3 48?	−37	—	—	—	—
Hong Kong		22·0	132	8 58	S	(8 58)	+12	(11·9)	13·9
Bombay		28·3	233	5 53	+ 3	—	—	—	18·6
Ekaterinburg		29·8	320	e 6 7	+ 4	—	—	15·8	—

Hong Kong gives S as P and L as S.
Long waves were also recorded at Tchimkent, Baku, Pulkovo, and De Bilt.

Dec. 25d. Readings also at 0h. (Lick (3) and Ottawa), 1h. (Balboa Heights), 2h. (Christchurch), 3h. (Chiufeng, Nanking, Berkeley, Lick, Branner, San Francisco, and Ukiah), 6h. (Andijan, Agra, Bombay, Calcutta, Hong Kong, Phu-Lien, Nanking, Chiufeng, Ekaterinburg, Pulkovo, Tashkent, Copenhagen and De Bilt), 7h. (Andijan, Bombay, Berkeley, Branner, Lick, and near Chiufeng), 8h. (Berkeley, Branner, Lick, De Bilt, Copenhagen, Pulkovo, Ekaterinburg, Baku, Almata, Tchimkent, Agra, Kodaikanal, Chiufeng, Phu-Lien, and Nanking), 10h. (Berkeley and Lick (2)), 11h. (Baku, Ekaterinburg, Pulkovo, Tashkent, Chiufeng (2), Hong Kong, Phu-Lien, Nanking, Bombay, Copenhagen, and Lick), 12h. (Branner, Lick, near Baku, near Chiufeng, Copenhagen, and near La Paz), 13h. (Andijan, Branner, Lick, La Paz (2), and near Tyosi), 14h. (Andijan, Baku, Ekaterinburg, Hong Kong, Tashkent, near Apia, near Chiufeng (2), and near La Paz), 15h. (Lick (2) and near La Paz), 17h. (Berkeley, Lick, Branner, Nanking, Hong Kong, and near Taihoku), 18h. (Berkeley, Branner, Lick, and Apia), 19h. (Wellington, near New Plymouth, and near La Paz), 20h. (Nanking), 21h. (near Tananarive), 22h. (Berkeley, Branner, and Lick), 23h. (Bombay and near Chiufeng).

Dec. 26d. 5h. 2m. 51s. Epicentre 38°·7N. 117°·9W. (as on 21d.). X.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Lick	3·2	245	e 0 32	−14	—	—	—	—
Branner	3·6	249	e 0 53	+ 2	—	—	—	—
Berkeley	3·6	257	e 0 51	0	i 1 41	S*	—	—
San Francisco	3·7	255	e 0 57	+ 4	—	—	—	—
Ukiah	4·2	277	i 1 17	P_g	—	—	i 2·1	—
Tucson	8·6	136	e 1 57	− 5	i 3 43	+ 4	i 4·2	—
Bozeman	8·6	34	e 2 45	+23	—	—	e 4·4	—
Victoria	10·5	340	4 12	S	(4 12)	−14	5·9	6·5
Florissant	21·4	82	i 4 44	0	e 8 41	+ 7	—	11·4
Madison	21·9	69	e 4 51	+ 1	e 8 55	+11	11·2	—
Chicago	23·2	73	—	—	e 9 30	+22	e 11·8	—

Additional readings :—
Berkeley iZ = +54s.
Tucson i = +2m.45s. and +3m.0s.
Florissant iSN = +8m.46s.
Long waves were also recorded at Seattle, Denver, San Juan, Ann Arbor, Columbia, Pittsburgh, Charlottesville, Ottawa, Harvard, East Machias, Baku, and Ekaterinburg.

Dec. 26d. 19h. 3m. 0s. Epicentre 37°·0N. 35°·5E. (as on 1915 Dec. 25d.). R.2.

A = +·650, B = +·464, C = +·602 ; D = +·581, E = −·814 ;
G = +·490, H = +·349, K = −·799.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ksara	N.	3·2	174	0 50	+ 4	1 32	S*	2·5	—
Helwan		7·9	207	e 1 58	+ 6	i 2 56	−25	—	3·2
Tiflis		8·5	55	3 27	S	(3 27)	− 9	7·9	—
Baku		11·7	69	e 4 35	S	(e 4 35)	−20	e 7·2	11·6
Trenta		15·2	285	e 3 20	−11	—	—	—	—
Budapest		16·0	316	e 4 0?	+19	—	—	e 9·0	11·0
Zagreb		17·0	307	e 4 0	+ 6	e 8 20	L	(e 8·3)	8·7
Vienna		17·9	315	4 7	+ 2	—	—	e 9·7	11·0
Triest		18·4	305	—	—	e 7 30	− 3	—	9·6
Cheb		21·1	316	e 3 0?	−101	e 9 0?	+32	—	11·5
Chur		21·6	306	e 4 44	− 2	—	—	—	—
Zurich		22·3	306	e 4 52	− 2	—	—	—	—
Stuttgart		22·4	310	e 4 56	+ 1	e 8 52	− 1	e 11·6	13·9
Pulkovo		23·0	353	5 34	PP	—	—	13·0	15·8
Strasbourg		23·3	309	i 4 0?	−64	e 9 0?	−10	e 13·0	—
Neuchatel		23·3	305	e 5 2	− 2	—	—	—	—
Ekaterinburg		25·9	32	e 6 25	+57	—	—	8·0	—
Algiers		25·9	280	e 5 25	− 3	e 9 36	−21	—	—
Uccle		26·1	312	e 5 47	+17	e 9 55	− 5	e 12·0	—
Bombay		37·2	109	e 15 0?	SS	—	—	—	—

Additional readings :—
Tiflis eS = +6m.27s.
Stuttgart e = +5m.11s. = PP −4s.
Long waves were also recorded at Kucino, Copenhagen, Lund, Edinburgh, Kew, De Bilt, and Paris.

Dec. 26d. 21h. 14m. 44s. Epicentre 25°·2N. 126·3E. N.2.
as given by Tokyo and Japanese stations.

A = −·536, B = +·729, C = +·426; D = +·806, E = +·592;
G = −·252, H = +·343, K = −·905.

Depth of focus 0·040 is assumed.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Naha		+1·0	1·6	51	0 39	+ 2	1 9	+ 2	—	—
Isigakizima		+0·9	2·1	246	0 39	− 4	1 10	− 7	—	—
Nake		+0·3	4·2	43	0 49	−15	1 37	−18	—	—
Taihoku		+0·3	4·3	269	i 0 58	− 8	1 45	−13	—	1·8
Karenko		+0·3	4·4	256	(1 13)	+ 6	(1 56)	− 4	—	—
Taityu		+0·1	5·2	259	0 59	−16	2 16	+ 1	—	—
Taito		+0·1	5·3	244	1 24	+ 7	2 17	− 1	—	—
Kosyun		0·0	6·0	239	1 22	− 3	2 27	− 6	—	—
Hokoto		0·0	6·4	257	1 15	−16	2 25	−18	—	—
Zi-ka-wei	z.	−0·2	7·4	326	i 1 18	−24	—	—	—	7·1
Nagasaki		−0·2	8·1	22	1 46	− 6	3 11	−10	—	—
Miyazaki		−0·2	8·1	33	1 48	− 4	3 59	+38	—	—
Kumamoto		−0·3	8·5	26	1 54	− 2	4 21	+52	—	—
Hukuoka		−0·4	9·1	22	e 2 1	− 2	e 3 33	− 8	—	—
	B.	−0·4	9·1	22	2 4	+ 1	3 39	− 2	—	—
Nanking		−0·4	9·5	318	i 1 51	−18	i 3 21	−30	—	—
Taikyu		−0·6	10·8	10	2 20	− 4	4 12	− 6	—	—
Hamada		−0·6	10·9	26	2 13	−12	3 12	−69	—	—
Hong Kong		−0·6	11·5	258	2 28	− 5	4 21	−15	5·4	7·2
Manila		−0·7	11·8	206	2 52	+16	5 25	+44	—	—
Sumoto		−0·7	11·8	37	2 59	+23	e 8 47	?	—	—
Kobe		−0·7	12·1	37	3 4	+24	e 4 48	0	—	5·3
Zinsen		−0·7	12·3	2	2 35	− 8	4 40	−13	—	—
Osaka		−0·7	12·4	38	3 6	+22	(5 17)	+22	5·3	6·5
Kameyama		−0·8	13·0	40	3 8	+17	5 30	+22	—	—
Nagoya		−0·8	13·5	40	3 27	+29	5 42	+22	—	—
Hatidyozima		−0·9	14·2	53	3 21	+15	6 2	+28	—	—
Misima		−1·0	14·7	45	3 22	+11	7 7	?	—	—
Kohu		−1·0	14·8	42	3 26	+13	6 9	+23	—	—
Oiwake		−1·0	15·3	41	3 26	+ 7	6 19	+21	—	—
Maebasi		−1·1	15·6	41	3 30	+ 8	6 20	+17	—	—
Tyosi		−1·1	16·4	46	e 3 40	+ 8	6 36	+14	—	6·7
Mito		−1·2	16·5	44	3 37	+ 5	6 37	+15	—	—
Chiufeng		−1·3	17·2	333	i 3 30	−10	i 6 26	−10	—	—
Phu-Lien		−1·4	18·6	261	e 3 59	+ 2	7 16?	+10	—	—
Mizusawa		−1·4	18·7	38	4 8	+10	7 25	+16	—	—
Morioka		−1·5	19·1	37	4 9	+ 7	7 26	+11	—	—
Irkutsk		−2·7	31·8	334	5 53	− 4	—	—	42·3	45·3
Medan		−2·9	34·2	235	5 40	−37	i 10 50	−34	—	—
Calcutta		−3·0	34·7	274	(5 14)	−66	5 14	P	7·4	—
Batavia		−3·1	36·7	213	i 6 54	+17	12 26	+26	—	—
Agra	E.	−3·5	43·2	283	e 7 11	−18	—	—	—	—
Hyderabad		−3·6	45·1	270	7 51	+ 7	14 11	+12	19·1	27·4
Andijan		−3·8	47·0	303	e 8 5	+ 7	e 15 53	+89	—	—
Kodaikanal		−3·9	48·6	262	8 16	+ 6	(15 3)	+17	15·0	—
Tchimkent		−4·0	49·2	305	e 8 19	+ 5	—	—	—	—
Bombay		−4·0	49·7	274	8 31	+13	15 15	+15	24·6	—
Ekaterinburg		−4·4	55·9	323	i 9 9	+ 6	i 16 33	+11	23·3	33·4
Baku		−4·7	64·1	305	i 10 3	+ 3	i 19 36	PS	e 37·3	—
Tiflis		−4·8	67·5	307	10 27	+ 4	e 18 54	+ 3	e 36·3	—
Pulkovo		−4·9	71·3	328	10 50	+ 2	e 19 42	+ 5	—	—
Copenhagen		−5·2	81·7	329	11 50	+ 1	23 7	PS	—	—
Cheb		−5·3	84·8	324	—	—	e 21 16?	−54	—	—
Zagreb		−5·3	85·0	319	e 11 58	− 8	—	—	—	—
De Bilt		−5·3	87·2	328	i 12 19	+ 1	e 24 5	PS	e 48·3	52·0

Continued on next page.

		Corr. for Focus	Δ	Az.	P.	O–C.	S.	O–C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Stuttgart		−5·3	87·2	324	e 12 18	0	—	—	e 35·3	—
Strasbourg		−5·4	88·2	324	i 12 24	+ 2	22 40	− 5	e 42·3	—
Chur		−5·4	88·2	323	e 12 23	+ 1	—	—	—	—
Uccle		−5·4	88·4	328	12 23	0	e 22 12	−35	e 42·3	—
Zurich		−5·4	88·4	323	e 12 24	+ 1	—	—	—	—
Florence		−5·4	89·0	319	e 11 16?	−70	(20 16?)	?	20·3	—
Neuchatel		−5·4	89·4	323	e 12 28	0	—	—	—	—
Kew		−5·4	90·2	330	—	—	e 24 31	PS	—	—
Tinemaha		−5·5	93·0	47	i 12 56	+11	i 16 39	PP	—	—
Pasadena		−5·5	94·8	48	i 13 2	+ 8	e 16 46	PP	—	—
Ottawa		—	106·6	16	—	—	25 16?	{−26}	—	—
Huancayo		—	155·7	61	'e 19 34	[−15]	—	—	—	—
La Paz	N.	—	163·9	60	19 44	[−14]	—	—	—	—

Additional readings and note :—
Karenko readings have been *increased* by 1m.
Zi-ka-wei iZ = +1m.22s., iE = +1m.28s., iZ = +1m.33s., +1m.44s., +1m.54s., and +2m.0s.
Hong Kong ? = +3m.15s. and +4m.50s.
Chiufeng iPP = +3m.55s.
Mizusawa SE = +7m.28s.
Irkutsk e = +6m.57s. =PP +12s. and +10m.7s.
Calcutta P = +1m.12s.
Batavia i = +12m.32s.
Ekaterinburg iP = +9m.55s., iS = +17m.51s. =PS +26s.
Tiflis eSKS = +20m.5s. =PS +0s., e = +28m.30s.
Stuttgart e = +13m.8s., eZ = +15m.41s., e = +23m.56s. =SKS +41s. and +24m.46s. =PS +28s.
Strasbourg e = +13m.13s., eSKKS = +23m.47s. =SKS +26s., PS = +24m.16s.
Uccle iN = +24m.16s. =PS −17s.
La Paz eN = +28m.8s. =PPP −10s. and +44m.16s. =SS −57s.

Dec. 26d. 22h. 31m. 6s. Epicentre 21°·4N. 143°·5E. (as on 1928 Dec. 19d.). R.2.

A = −·748, B = +·554, C = +·365 ; D = +·595, E = +·804 :
G = −·293, H = +·217, K = −·931.

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

	Corr. for Focus	Δ	Az.	P.	O–C.	S.	O–C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi	−1·0	14·5	352	i 3 11	+ 2	5 39	0	—	5·8
Nagoya	−1·0	14·9	339	3 16	+ 2	5 48	− 1	—	—
Osaka	−1·0	15·0	334	3 16	+ 1	(5 52)	+ 1	5·9	6·5
Sumoto	−1·0	15·0	332	3 17	+ 2	5 52	+ 1	—	6·0
Koti	−1·0	15·0	327	i 3 27	+12	i 5 57	+ 6	—	—
Kobe	−1·0	15·1	333	e 3 16	− 1	i 5 56	+ 3	—	6·0
Toyooka	−1·1	16·0	334	i 3 27	0	i 6 12	− 1	—	6·3
Nagasaki	−1·2	16·6	316	e 3 31	− 3	6 26	+ 2	—	—
Hukuoka	−1·2	16·9	320	e 3 34	− 4	i 6 28	− 3	—	6·5
Mizusawa	−1·3	17·8	354	3 47	− 1	6 54	+ 4	—	—
Zi-ka-wei	−1·8	22·0	301	i 4 20	−12	i 7 52	−18	—	—
Manila	−1·9	22·4	256	4 39	+ 4	7 34	−42	9·1	10·9
Nanking	−2·1	24·4	301	i 4 49	− 5	—	—	—	—
Hong Kong	−2·3	27·2	278	—	—	(11 44)	?	—	11·7
Chiufeng	−2·6	29·8	315	i 5 35	− 5	10 4	−14	—	—
Irkutsk	−3·5	43·1	326	e 7 29	0	(13 30)	0	13·5	—
Batavia	−3·6	45·3	237	i 7 48	+ 2	i 14 3	+ 1	—	—
Medan	−3·8	46·9	254	i 7 13	−45	—	—	—	—
Andijan	−4·6	62·2	305	e 9 50	+ 3	e 17 50	+ 6	—	—
Tchimkent	−4·7	64·1	308	e 10 10	+10	—	—	—	—

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.
Bombay	−4·7	65·8	282	e 10 15	+ 3	—	—	—	—
Ekaterinburg	−4·8	68·3	325	i 10 32	+ 3	19 4	+ 3	29·9	—
Tiflis	−5·2	82·1	312	11 47	− 4	e 21 30	−12	e 43·9	—
Tinemaha	−5·2	83·5	53	i 11 59	0	—	—	—	—
Pasadena	−5·3	84·7	56	i 12 3	− 2	—	—	—	—
Mount Wilson	−5·3	84·7	56	e 12 4	− 1	—	—	—	—
Chur	−5·6	100·1	330	e 18 19	?	—	—	—	—
La Paz N.	—	149·7	86	e 19 17	[−24]	—	—	—	—

Additional readings :—
Osaka i = +3m.31s.
Kobe ePEN = +3m.20s.
Toyooka iPNZ = +3m.30s.
Mizusawa PE = +3m.50s.
Zi-ka-wei iZ = +5m.48s., +8m.6s., and +11m.2s.
Long waves were also recorded at Baku.

Repetitions from the shock of Dec. 21d. and Dec. 26d. 5h. were recorded as follows. The times for 5h. shock are not included.

Lick.

h.	m.	s.		h.	m.	s.		h.	m.	s.	
1	9	20	P	5	41	0	P	8	54	0	
4	5	42	P	5	48	12		12	9	36	
5	27	12	P	8	24	12		12	53	52	P
								20	18	42	

Branner.

h.	m.	s.	h.	m.	s.	h.	m.	s.	
1	9	18	4	27	18	12	53	54	P
4	15	30	5	41	0	22	42	48	

Berkeley.

h.	m.	s.	h.	m.	s.	h.	m.	s.	
1	9	12	5	41	0	12	54	1	P
4	6	0	8	24	30	17	12	0	
4	15	36	8	54	0	20	18	42	
5	27	0	12	9	48	20	38	18	
						21	42	42	

San Francisco.

h.	m.	s.	
12	53	58	P

Dec. 26d. Readings also at 2h. (Andijan), 4h. (near Toyooka), 6h. (near Mizusawa, Nagoya, and Tyosi), 7h. (Alicante, Andijan, Tchimkent, Bombay, Chiufeng, and Hong Kong), 8h. (Agra, Bombay, La Paz, and near Calcutta), 9h. (Baku, Ekaterinburg, Agra, Bombay, near Andijan, and near Wellington), 16h. (Adelaide, Melbourne, Riverview, Sydney, Perth, Wellington, Nanking, Manila, and near Taihoku (2)), 17h. (Almata, Andijan, and Chiufeng), 18h. (Florence), 19h. (Almata, Andijan, Tchimkent, Bombay, Calcutta, Chiufeng, Hong Kong, and Phu-Lien), 20h. (Tiflis), 21h. (Agra, Koti, Paris, Ekaterinburg, and Chur), 22h. (Huancayo, La Paz, La Plata, near Santiago, near Granada, and Malaga), 23h. (La Paz).

Dec. 27d. Readings at 1h. (La Paz), 2h. (near Amboina), 4h. (Berkeley and Lick), 8h. (near Manila), 9h. (Huancayo), 10h. (near Manila), 11h. (Berkeley (2), Branner, and Lick (2)), 14h. (Suva), 16h. (Andijan), 19h. (near La Paz), 20h. (Suva and near Apia), 21h. (near Andijan), 23h. (Andijan, Ekaterinburg, Irkutsk, Tchimkent, Bombay, and Phu-Lien).

Dec. 28d. 8h. 25m. 25s. Epicentre 40°·3N. 97°·4E. N.3.

A = −·098, B = +·756, C = +·647; D = +·992, E = +·129;
G = −·083, H = +·641, K = −·763.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Irkutsk	12·9	19	e 3 11	+10	e 5 53	+28	6·8	—
Chiufeng	14·3	84	e 3 6	−13	e 6 19	+21	7·6	9·2
Nanking	19·1	109	e 4 21	+ 1	—	—	e 10·2	—
Calcutta	19·3	206	3 59	−23	8 7	+15	10·7	—
Phu-Lien	21·1	154	4 35?	− 6	—	—	—	—
Hong Kong	22·9	136	9 5	S	(9 5)	+ 2	12·7	14·2
Ekaterinburg	28·8	317	e 5 55	+ 1	11 15	+30	15·1	—
Bombay	30·0	232	11 18	S	(11 18)	+14	—	—
Kodaikanal	34·8	216	12 3	S	(12 3)	−15	—	—

Additional readings:—
Chiufeng P = +3m.24s.
Long waves were also recorded at Tiflis, Baku, De Bilt, and Strasbourg.

Dec. 28d. Readings also at 0h. (Andijan, Bombay, Tchimkent, and Chiufeng), 1h. (La Paz and near Santiago), 2h. (Berkeley, Branner, Lick, near La Paz (3), near Nagoya, Tyosi, and near Andijan), 3h. (Berkeley, Branner, Lick, and La Paz (2)), 5h. (La Paz), 6h. (Huancayo and Tucson (3)), 7h. (Almata (2), Andijan, and Tchimkent), 10h. (Berkeley, Lick, and Bombay), 11h. (near La Paz and near Manila), 12h. (Berkeley, Lick, and near Nagoya), 13h. (Almata and Andijan), 15h. (Lick), 16h. (Lick, Berkeley, Bombay, Tyosi, and near Tananarive), 17h. (near Mizusawa), 18h. (Hong Kong and Manila), 20h. (East Machias, Ottawa, Tucson, Huancayo, Baku, Ekaterinburg, Tiflis, and near Sumoto), 21h. (La Paz), 23h. (Berkeley and Lick).

Dec. 29d. 6h. 20m. 44s. (I)
6h. 38m. 16s. (II) } Epicentre 38°·7N. 117°·9W. (as on 26d.). **X.**
6h. 45m. 22s. (III) **X.**
X.

A = −·365, B = −·690, C = +·625; D = −·884, E = +·468;
G = −·293, H = −·553, K = −·780.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
I Lick	3·2	245	e 0 52	P*	—	—	—
II	3·2	245	e 0 44	− 2	—	—	—
III	3·2	245	e 0 46	0	—	—	—
I Branner	3·6	249	e 0 56	+ 5	—	—	—
II	3·6	249	e 0 56	+ 5	—	—	—
III	3·6	249	e 0 51	0	—	—	—
I Berkeley	3·6	257	e 0 51	0	—	—	—
II	3·6	257	e 0 50	− 1	—	—	—
III	3·6	257	e 0 50	− 1	—	—	—
I San Francisco	3·7	255	e 0 52	− 1	—	—	—
II	3·7	255	e 0 55	+ 2	—	—	—
III	3·7	255	e 1 2	P*	—	—	—
I Ukiah	4·2	277	1 58	+58	e 2 22	+34	—
II	4·2	277	1 56	+56	—	—	—
III	4·2	277	1 53	+53	e 2 23	+35	—
II Bozeman	8·6	34	—	—	e 4 20	S*	—
III	8·6	34	—	—	e 4 14	S*	—
I Little Rock	20·7	93	e 4 33	− 4	e 11 8	L	(e 11·1)
I St. Louis	21·5	82	e 3 16?	−89	e 10 16?	L	(e 10·3)

Long waves were also recorded as follows:—
Little Rock III, Madison I, II, and III, Ottawa I and III, East Machias I and II.
St. Louis II and III.

Dec. 29d. 9h. 25m. 20s. Epicentre 42°·3N. 142°·4E. (as on Nov. 26d.). R.2.

Tokyo gives epicentre 42°·3N. 142°·3E.

A = −·586, B = +·451, C = +·673; D = +·610, E = +·792; G = −·533, H = +·410, K = −·740.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Urakawa	0·3	118	0 4	0	0 13	+ 5
Obihiro	0·8	44	0 13	+ 2	0 28	+ 7
Sapporo	1·2	312	0 18	+ 1	0 36	+ 5
Hakodate	1·4	248	0 29	+ 9	0 48	+12
Asahigawa	1·5	359	0 15	− 6	0 38	− 1
Kusiro	1·6	65	0 48	+25	1 5	+24
Aomori	1·9	219	0 27	− 1	0 51	+ 2
Haboro	2·2	346	0 25	− 6	—	—
Nemuro	2·5	66	0 30	− 6	0 57	− 7
Morioka	2·8	202	0 36	− 4	1 7	− 5
Akita	3·1	214	0 45	+ 1	1 23	+ 3
Mizusawa	3·3	198	0 50	+ 3	1 27	+ 2
Hukusima	4·8	199	1 4	− 4	2 2	− 1
Kakioka	6·4	196	1 23	− 8	2 36	− 7
Maebasi	6·4	205	1 38	+ 7	2 51	+ 8
Nagano	6·5	211	1 34	+ 2	2 54	+ 8
Kumagaya	6·6	202	1 35	+ 1	2 58	+10
Tyosi	6·6	191	e 2 38	+64	3 3	+15
Nagoya	8·3	213	e 1 56	− 2	3 57	+26

No additional readings.

Dec. 29d. Readings also at 3h. (Almata, Andijan, near Mizusawa, Nagoya, and Tyosi), 5h. (Berkeley and Nagasaki), 6h. (Berkeley (2) and Lick), 10h. (Chiufeng, Tchimkent, Phu-Lien, Hong Kong, Irkutsk, Almata, and Andijan), 11h. (Lick and near Sumoto), 15h. (Lick and Zagreb), 16h. (near Almata, Andijan, and Tchimkent), 17h. (near Almata), 19h. (Andijan), 20h. (Nagoya, near Hukuoka, Koti, and Sumoto), 21h. (Adelaide, Riverview, Perth, Wellington, Tchimkent, near Almata, and Andijan).

Dec. 30d. 21h. 20m. 5s. Epicentre 43°·5N. 79°·0E. (as on 1930 Jan. 6d.). X.

A = +·138, B = +·712, C = +·688; D = +·982, E = −·191; G = +·131, H = +·676, K = −·725.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Almata	1·5	261	i 0 15	− 6	(i 0 29)	−10	i 0·5	0·6
Andijan	5·6	243	e 1 19	− 1	(2 24)	+ 1	2·4	2·6
Tchimkent	7·0	263	e 1 47	+ 8	—	—	i 3·3	3·9
Tashkent	7·5	255	3 57	S$_E$	7 15	?	—	—
Ekaterinburg	17·7	326	i 4 11	+ 8	7 32	+15	10·6	10·7
Calcutta	22·4	157	10 2	?	14 24	?	16·9	—
Bombay	25·1	194	9 30	S	(9 30)	−13	—	—
Tiflis	25·1	278	e 5 13	− 8	e 9 49	+ 6	e 12·6	—
Kucino	28·8	310	e 6 55?	+61	—	—	—	—

Additional readings:—
Tchimkent i = +1m.58s. = P* − 1s.
Tashkent i = +4m.3s. = S$_E$ + 1s.
Ekaterinburg e = +8m.53s., L$_Q$ = +9m.25s.
Tiflis e = +10m.53s.
Long waves were also recorded at Hyderabad, Pulkovo, Copenhagen, and De Bilt.

Dec. 30d. Readings also at 0h. (Almata, Andijan, Bombay, Berkeley, Lick, Nagoya, near Tyosi, and near Chiufeng), 4h. (Berkeley, Branner, Lick, San Francisco, and Tucson), 5h. (Tucson, near Sumoto, and near Nagasaki), 6h. (Berkeley and San Francisco), 16h. (Berkeley, Branner, and Lick), 17h. (near La Paz), 18h. (Pasadena, Tinemaha, Florissant, Little Rock, San Juan, and Huancayo), 19h. (Ottawa, Chiufeng, and near Nagoya), 20h. (Andijan, Ekaterinburg, Tiflis, Manila, Batavia, and near Malabar), 21h. (Baku, Mizusawa, and near Chiufeng).

Dec. 31d. 6h. 31m. 0s. Epicentre 28°·5S. 32°·8E. N.1.

A = +·739, B = +·476, C = −·477 ; D = +·542, E = −·841 ;
G = −·401, H = −·258, K = −·879.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tananarive		16·5	58	e 3 48	0	e 6 52	+ 2	8·1	12·5
Colombo		57·5	59	9 50	+ 3	17 43	0	24·1	33·5
Kodaikanal		57·9	54	9 0?	−50	18 0?	+12	27·9	36·4
Helwan		58·4	358	e 9 50	− 3	i 18 1	+ 6	—	32·1
Bombay		61·1	44	10 13	+ 1	18 30	0	30·8	36·4
Ksara		62·4	3	10 31	+10	18 53	+ 6	32·0	37·0
Hyderabad		63·7	50	10 32	+ 2	19 2	− 2	27·3	34·3
Rio de Janeiro		67·5	255	—	—	e 19 48	− 3	e 26·3	30·5
Catania		68·0	345	e 19 59	S	(e 19 59)	+ 2	e 36·0	40·3
Trenta		69·5	346	i 11 0	− 8	e 20 0	−15	—	—
Perth		70·0	116	20 30	S	(20 30)	+ 9	—	44·0
Agra	E.	70·6	42	11 6	− 8	19 56	−32	e 35·2	—
Baku		70·7	13	11 14	− 1	i 20 29	− 1	33·5	39·6
Medan		70·8	74	11 12	− 4	20 16	−15	34·4	—
Algiers		71·0	335	11 15	− 2	20 31	− 2	i 34·8	39·0
Tiflis		71·0	8	—	—	20 31	− 2	e 31·0	39·0
Naples		71·4	346	e 11 27	+ 8	e 20 47	+ 9	41·0	45·0
Batavia		73·0	88	11 26	− 3	20 58	+ 1	—	—
Almeria		73·2	330	e 11 39	+ 9	e 21 1	+ 2	e 35·4	41·0
Alicante		73·7	333	e 11 47	+14	e 21 25	+20	e 36·4	41·6
Calcutta		74·0	53	12 1	+26	21 23	+15	38·6	—
Granada		74·0	330	i 11 38	+ 3	i 21 15	+ 7	36·4	45·7
Malaga		74·0	329	11 38	+ 3	21 8	0	34·4	39·5
Belgrade		74·2	351	e 13 2	?	—	—	e 42·0	—
San Fernando		74·6	328	—	—	21 11	− 4	36·0	41·5
La Plata		74·7	238	11 31	− 8	21 12	− 5	33·0	—
Florence		74·9	344	11 35	− 5	21 23	+ 4	35·0	41·9
Tortosa	N.	75·5	335	11 21	−22	—	—	—	—
Zagreb		75·8	348	e 11 45	0	—	—	e 38·0	41·5
Triest		76·1	347	e 11 45	− 2	i 21 32	− 1	e 39·0	43·9
Venice		76·2	346	e 11 45	− 2	21 36	+ 2	—	—
Toledo		76·4	331	11 46	− 2	e 21 25	−11	e 34·3	47·5
Treviso		76·5	345	i 11 46	− 3	21 48	+11	42·5	—
Budapest		76·9	351	e 12 0?	+ 9	—	—	e 41·0	50·0
Bagnères		77·5	336	e 14 5	PP	—	—	36·0	—
Tashkent		77·5	27	12 0	+ 5	i 21 45	− 3	—	44·6
Vienna		78·1	349	i 11 56	− 2	—	—	e 43·0	47·0
Chur		78·2	344	e 11 55	− 3	(e 22 13)	+17	e 22·2	—
Innsbruck		78·2	345	12 0?	+ 2	—	—	—	—
Andijan		78·4	29	e 11 59	0	—	—	—	—
Tchimkent		78·5	27	e 12 2	+ 2	—	—	—	—
Zurich		78·9	343	e 11 58	− 4	—	—	—	—
Neuchatel		79·0	342	e 12 0	− 3	—	—	—	—
Stuttgart		80·1	344	e 12 6	− 2	e 22 30	+13	e 36·0	46·5
Strasbourg		80·2	343	i 12 8	− 1	e 22 15	− 3	31·0	—
Cheb		80·6	347	—	—	e 34 0?	?	e 44·0	46·0
Jena		81·5	346	e 12 19	+ 3	—	—	e 44·0	50·5
Paris		81·9	340	e 12 0?	−18	—	—	42·0	45·0
Almata		82·4	31	e 12 20	0	—	—	—	—
Potsdam		82·7	348	i 12 27	+ 5	—	—	e 44·0	—
Uccle		83·2	342	e 12 6	−18	22 48	− 1	36·0	46·0
Königsberg		83·9	353	i 12 37	+ 9	e 23 6	+10	e 44·5	49·5
De Bilt		84·1	343	—	—	e 22 54	− 5	e 38·0	46·4
Hamburg		84·4	346	e 12 29	− 1	—	—	e 43·0	47·0
Kew		85·1	340	—	—	e 23 13	+ 4	e 38·0	49·5

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Adelaide	85·6	127	—	—	e 29 5	SS	39·0	42·6
Copenhagen	86·0	349	12 42	+ 4	23 5	[− 1]	—	—
Melbourne	88·3	132	—	—	i 23 23	[+ 1]	41·1	—
Pulkovo	88·3	359	12 47	− 2	23 30	[+ 8]	43·0	55·9
Ekaterinburg	88·5	15	e 12 49	− 1	23 34	− 8	41·5	49·2
Helsingfors	88·9	356	i 12 53	+ 1	e 22 37	−69	e 33·5	—
La Paz	91·4	250	e 13 2	− 2	i 23 42	[+ 1]	40·9	43·9
Hong Kong	93·4	67	23 51	SKS	(23 51)	[− 1]	—	50·0
Huancayo	99·6	251	—	—	e 24 22	[− 1]	32·5	—
Irkutsk	101·9	36	e 13 57	+ 5	—	—	50·0	59·2
San Juan	106·3	283	e 18 40	PP	i 24 55	[− 1]	e 45·3	—
East Machias	116·5	309	—	—	e 29 42	PS	e 48·3	—
Florissant	132·3	298	e 19 22	[+11]	i 22 40	PKS	—	65·0
Little Rock	133·5	292	e 19 19	[+ 6]	e 22 43	PKS	—	—
Tucson	148·6	286	e 19 46	[+ 6]	—	—	e 76·2	—
Riverside	154·0	290	e 19 52	[+ 5]	—	—	—	—
Tinemaha	154·4	297	i 19 57	[+10]	—	—	—	—
Pasadena	154·6	290	e 19 55	[+ 7]	—	—	e 77·0	—

Additional readings :—
Tananarive iP* = +3m.57s., i = +4m.1s., +4m.29s., and +7m.3s., iS* = +7m.11s., i = +7m.25s., +7m.28s., and +7m.52s.
Tiflis e = +29m.8s.
Batavia PNW = +11m.30s., i = +12m.19s. and +21m.46s.
Granada P_cP = +12m.14s.
Malaga P_cP = +12m.12s., PP = +14m.28s., PS = +21m.38s.
Belgrade e = +14m.36s. =PP +21s., +19m.20s., and +22m.39s.
Florence PPP = +16m.30s., PS = +21m.57s., i = +22m.29s., SSS = +30m.14s., SSSS = +31m.49s.
Zagreb eP_cP = +11m.50s., eNE = +13m.44s. and +17m.23s. =PPPP +10s.
Stuttgart eN = +31m.0s.
Königsberg iP_cPZ = +12m.46s., iPPZ = +15m.52s., eN = +23m.24s. =PS −14s., +25m.30s., and +33m.12s.
Pulkovo SS = +29m.30s.
Ekaterinburg i = +12m.57s., eSKS = +23m.14s., SS = +30m.0s.
Helsingfors ePE = +12m.57s., iPSN = +23m.36s. =S −10s., iPSE = +23m.51s., eN = +30m.24s.
La Paz iPEN = +13m.8s., iPPN = +16m.26s., PPN = +17m.0s., PS = +24m.26s. =S +17s.
Hong Kong S? = +31m.3s.
Irkutsk ePP = +18m.0s.?, e = +20m.0s. =PPP +0s., PS = +27m.10s., e = +36m.0s.? =SSS −16s.
San Juan e = +26m.12s.
East Machias e = +34m.42s.
Long waves were also recorded at Cape Town, Dakar, Sydney, Wellington, Phu-Lien, Chiufeng, Ivigtut, and at other American and European stations.

Dec. 31d. Readings also at 1h. (Berkeley (2), Almata, Andijan, Tashkent, Chiufeng, Irkutsk, Ekaterinburg, and Bombay), 2h. (Reykjavik), 3h. (Almeria, Reykjavik, Nagoya, and near Tyosi), 4h. (Amboina), 9h. (East Machias and Tiflis), 14h. (Tyosi, Bagnères, Branner, Berkeley, and Lick), 16h. (Bagnères), 17h. (Almata, Andijan, Chiufeng, Nagasaki, Berkeley (2), Branner, Lick (2), and Tucson), 18h. (Bagnères and near Mizusawa), 19h. (Berkeley and Lick), 22h. (Catania, Messina, and near Trenta).