The International Seismological Summary.

1931 October, November, December.

FORMERLY THE BULLETIN OF THE BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

There are 133 epicentres in this quarter, 45 being new and 88 old epicentres. The classification of the material is as follows :—

N.1= 8	R.1= 6	X.=54
N.2=15	R.2=12	
N.3=22	R.3=16	

The cases of abnormal focal depth are :—

	d.	h.	m.	s.	Epicentre. °	°	Focal Depth (Below Normal).
Oct.	5	22	31	29	37·0N.	71·0E.	+0·020
Oct.	17	15	33	55	25·0N.	141·5E.	+0·030
Oct.	18	4	30	30	25·2S.	179·5W.	+0·060
Oct.	29	8	39	18	16·8N.	147·3E.	+0·070
Nov.	1	18	53	21	32·4N.	132·1E.	+0·010
Nov.	2	10	3	9	32·4N.	132·1E.	+0·010
Nov.	3	15	24	12	32·4N.	132·1E.	+0·010
Dec.	20	14	59	55	11·0N.	84·2W.	+0·055

UNIVERSITY OBSERVATORY,
OXFORD.

1936, September 28.

1931 OCTOBER, NOVEMBER, DECEMBER.

Oct. 1d. 11h. 45m. 41s. Epicentre 29°·8N. 115°·2W. (as given by St. Louis). N.2.

A = −·369, B = −·785, C = +·497; D = −·905, E = +·426; G = −·212, H = −·450, K = −·868.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Jolla	E.	3·5	331	e 0 54	+ 4	i 1 53	S_g	—	—
Tucson		4·4	55	i 0 51	−12	i 1 44	− 9	—	—
Riverside		4·6	337	e 1 8	+ 2	i 2 19	S*	—	—
Mount Wilson	E.	5·0	332	e 1 12	+ 1	i 2 34	S*	—	—
Pasadena	N.	5·1	332	e 1 3	−10	i 2 31	S*	—	—
Haiwee	N.	6·8	341	e 1 24	−13	i 3 14	S*	—	—
Tinemaha	E.	7·7	342	e 2 0	+11	e 3 49	S*	—	—
Lick		9·3	327	e 2 16	+ 5	e 4 14	+18	e 5·6	—
Berkeley		10·0	326	i 2 26	+ 5	e 4 48	S*	e 5·3	—
Ukiah		11·4	327	—	—	e 5 19?	+31	—	—
Denver	E.	12·9	38	—	—	e 5 44	+19	—	9·8
Bozeman		16·2	10	3 40	− 4	6 56	+13	e 7·9	—
Seattle		18·7	345	—	—	e 8 1	+21	e 10·0	—
Victoria	E.	19·6	344	5 6	+41	8 15	+17	9·2	12·8
	N.	19·6	344	5 1	+36	8 11	+13	9·9	12·2
St. Louis		22·3	60	e 4 50	− 4	i 8 47	− 5	i 11·1	12·6
Chicago		25·2	54	5 20	− 2	i 9 42	− 2	i 12·8	—
Ann Arbor		28·1	55	—	—	e 10 49	+15	i 14·1	15·6
Columbia		29·1	73	—	—	e 10 51	+ 1	e 14·2	—
Pittsburgh		30·5	60	—	—	e 10 48	−24	i 15·1	—
Charlottesville		31·3	65	—	—	e 11 19?	− 5	e 15·0	—
Toronto	E.	31·5	54	e 7 8	+50	12 46	+78	15·0	16·6
	N.	31·5	54	e 7 0	+42	12 38	+70	—	—
Buffalo		31·8	56	e 6 19	− 2	e 12 3	+31	i 16·4	—
Ottawa		34·5	51	e 6 43	− 2	e 12 9	− 5	e 16·3	—
Fordham		35·1	60	e 6 54	+ 4	e 12 21	− 2	e 16·3	—
Honolulu T.H.		39·2	269	e 6 59	−26	e 13 49	+25	16·6	—
Port au Prince		40·4	97	e 7 48	+13	e 12 25	?	14·8	—
San Juan		45·9	92	e 8 19	− 1	e 15 3	0	e 21·6	—
La Paz		64·8	130	e 10 38	+ 1	19 4	−13	31·8	35·6
Bidston		78·2	35	—	—	e 33 49	?	e 39·3	46·3
Stonyhurst		78·3	35	—	—	e 26 59	SS	39·6	46·1
Oxford		80·0	36	e 12 3	− 5	e 20 6	?	e 40·3	47·4
Upsala		82·3	22	—	—	e 22 44	+ 4	e 44·3	—
De Bilt		82·9	31	12 27	+ 4	e 22 49	+ 3	e 39·3	52·2
Ucole		83·4	34	e 11 29	−56	e 22 52	+ 1	e 40·3	—
Copenhagen		83·5	26	—	—	22 49	− 3	38·3	—
Paris		83·8	36	e 12 29	+ 2	—	—	38·3	46·3
Helsingfors		84·2	19	e 16 12	?	e 23 1	+ 1	e 41·8	—
Toledo		85·5	46	e 12 28	− 8	e 23 7	− 6	e 40·8	48·6
Göttingen		85·5	30	—	—	e 23 15	+ 2	e 44·3	51·4
Feldberg		85·7	31	—	—	e 23 14	− 1	e 38·8	50·4
Pulkovo		86·0	17	e 12 51	+13	e 23 9	[+ 3]	42·3	50·3
Strasbourg		86·5	34	—	—	(e 22 19?)	?	e 22·3	47·3
Stuttgart		87·0	32	e 12 59	+16	e 23 19	[+ 6]	e 43·3	52·3
Malaga		87·0	49	e 13 59	+76	24 50	PS	—	—
Granada		87·3	48	12 45	0	i 23 34	+ 4	43·4	52·3
Almeria		88·3	48	e 12 53	+ 4	i 23 47	+ 7	44·3	—
Alicante		88·6	45	e 10 37	?	—	—	e 43·9	—
Piacenza		89·9	35	—	—	e 24 19	+24	—	52·0
Kucino		91·4	15	—	—	e 23 42	[+ 1]	e 44·4	54·6
Florence		91·6	36	23 34	SKS	(23 34)	[− 8]	43·3	48·3
Baku		108·4	13	—	—	e 29 30	?	59·3	66·2
Tashkent		108·8	357	e 19 43	?	e 24 37	[−31]	e 51·3	59·5
Manila		110·0	302	—	—	e 24 58	[−15]	—	56·3
Bombay		130·7	350	e 22 51	PKS	—	—	—	—

For Notes see next page.

NOTES TO OCT. 1d. 11h. 45m. 41s.

Additional readings :—
La Jolla iE = +1m.4s. =P*.
Tucson iP* = +1m.13s., eS* = +1m.54s.
Riverside iEN = +1m.19s.
Pasadena ePENZ = +1m.12s., iEN = +1m.34s., iE = +1m.36s., and +2m.29s., iZ = +2m.36s.
Haiwee eN = +1m.24s.
Tinemaha iE = +2m.23s. and +4m.0s.
Lick eN = +4m.49s.
Berkeley ePE = +2m.30s., eN = +3m.16s., eZ = +3m.40s., eE = +4m.16s., iE = +4m.49s., iN = +4m.54s., iZ = +5m.14s.
Denver iE = +6m.18s.
Ann Arbor eE = +9m.37s., eN = +10m.19s.
Pittsburgh e = +12m.13s.
Toronto eE = +8m.53s., iE = +11m.22s. ; T_0 =11h.45m.28s.
Buffalo e = +8m.55s. and +10m.51s.
Ottawa eSSN? = +14m.28s. ; T_0 =11h.45m.32s.
Fordham eSS = +14m.29s.
San Juan eSS = +18m.39s.
Helsingfors ePSN = +24m.3s., ePSE = +24m.13s.
Kucino e = +30m.16s. and +30m.19s.
Florence S = +28m.19s.
Baku e = +36m.3s., +46m.45s., and +52m.51s.
Tashkent e = +36m.55s.
Long waves were also recorded at Sitka, Hong Kong, New Plymouth, Tananarive, Ekaterinburg, Ivigtut, Scoresby Sund, and other European stations.

Oct. 1d. Readings also at 2h. (Lick), 4h. (near Sumoto), 5h. (Helwan), 6h. (Nagoya and near Tyosi), 9h. (Batavia), 10h. (Algiers and near Hastings), 11h. (Ksara and near La Paz), 12h. (near Tananarive), 14h. (Granada), 16h. (Messina and Tucson), 22h. (Ekaterinburg and Tashkent), 23h. (Tyosi).

Oct. 2d. 14h. 18m. 28s. Epicentre 28°·3N. 98°·0E. (as on 1931 Aug. 4d.). X.

A = −·123, B = +·872, C = +·474 ; D = +·990, E = +·139 ;
G = −·066, H = +·470, K = −·881.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta		10·5	239	1 10	−78	4 20	− 6	5·5	—
Phu-Lien		10·8	132	e 4 2	+90	4 47	+14	5·0	—
Hong Kong		15·8	108	—	—	7 16	+42	7·6	8·1
Zi-ka-wei	Z.	20·5	76	e 4 38	+ 3	8 38	SS	i 12·4	15·2
Hyderabad		21·0	243	4 34	− 6	8 20	− 6	10·4	13·9
Andijan		24·4	308	e 5 51	PP	—	—	e 10·5	—
Bombay		24·9	253	5 21	+ 2	9 51	+12	13·0	—
Manila		25·3	118	5 14	− 9	9 44	− 2	12·6	—

Long waves were also recorded at Medan, Copenhagen, Paris, and Strasbourg.

Oct. 2d. 17h. 36m. 49s. Epicentre 36°·0N. 139°·3E. R.2.
(given by Tokyo and as on Sept. 28d.).

A = −·613, B = +·528, C = +·588 ; D = +·652, E = +·758 ;
G = −·446, H = +·383, K = −·809.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kumagaya	0·2	24	0 0	− 3	0 3	− 2	—	—
Tokyo	0·5	134	i 0 5	− 2	i 0 14	+ 1	—	0·8
Yokohama	0·6	155	0 9	0	0 21	S_g	—	—
Oiwake	0·7	297	0 7	− 3	0 16	− 2	—	—
Tukubasan	0·7	74	0 8	− 2	0 16	− 2	—	—
Utunomiya	0·7	41	0 9	− 1	0 18	0	—	—
Kakioka	0·8	74	0 8	− 3	0 18	− 3	—	—
Misima	0·9	197	0 11	− 2	0 24	+ 1	—	—
Numadu	1·0	201	0 14	0	0 26	0	—	—
Ito	1·1	189	0 21	P*	0 36	S_g	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mito		1·1	69	0 12	− 4	0 26	− 2	—	—
Nagano		1·1	307	0 14	− 2	0 29	+ 1	—	—
Mera		1·2	159	0 19	+ 2	0 34	+ 3	—	—
Takaka		1·4	323	0 24	+ 4	0 42	S*	—	—
Tyosi		1·4	104	0 17	− 3	0 35	− 1	—	0·6
Hamamatu		1·8	224	0 30	+ 4	0 55	S*	—	—
Niigata		1·9	354	0 32	+ 4	0 57	S*	—	—
Hukusima		2·0	28	0 28	− 1	0 55	+ 4	—	—
Nagoya		2·0	245	i 0 34	P*	1 3	S*	—	1·1
Gihu		2·1	253	0 33	+ 3	1 1	S*	—	—
Wazima		2·3	305	0 37	+ 4	1 3	S*	—	—
Kameyama		2·6	243	0 40	+ 3	1 17	S*	—	—
Hikone		2·6	257	0 38	+ 1	1 16	S*	—	—
Sendai		2·6	30	0 37	0	1 12	+ 5	—	—
Hatidyozima		2·9	172	0 45	+ 4	1 21	S*	—	—
Kyoto		3·0	251	0 47	+ 4	1 28	S*	—	—
Osaka		3·3	248	0 50	+ 3	(1 41)	S*	1·7	2·1
Mizusawa		3·4	24	0 52	+ 3	1 33	+ 6	—	2·0
Toyooka	E.	3·6	265	e 0 58	+ 7	i 1 46	S*	—	1·9
	N.	3·6	265	i 0 57	+ 6	i 1 50	S*	—	2·0
	Z.	3·6	265	i 0 54	+ 3	i 1 51	S*	—	1·9
Kobe		3·6	250	0 55	+ 4	1 41	S*	—	1·9
Akita		3·8	9	1 5	P*	1 51	S*	—	—
Wakayama		3·8	244	0 57	+ 3	1 55	S*	—	—
Sumoto		3·9	246	0 56	0	i 1 58	S*	—	2·0
Morioka		4·0	21	0 58	+ 1	1 46	+ 4	—	—
Aomori		5·0	13	1 14	+ 3	2 32	S*	—	—
Koti		5·3	245	e 1 26	+11	e 2 23	+ 8	e 4·1	—
Miyazaki		7·6	240	2 0	+12	3 36	+22	—	—

Additional readings :—
Tyosi SN = +32s.
Osaka i = +54s. +56s. and +1m.0s.
Toyooka iS_gE = +1m.54s.
Kobe iP_g = +1m.3s., iE = +1m.26s., S_gNZ = +1m.48s.
Sumoto PZ = +1m.1s.
Koti eP_gE = +1m.34s., eS_gN = +2m.48s.
Long waves were recorded at Nagasaki, Ekaterinburg, and Tashkent.

Oct. 2d. Readings also at 3h. (De Bilt, Paris, Strasbourg, Stuttgart, and Granada), 4h. (Ekaterinburg and Tashkent), 6h. (Tucson (2)), 13h. (Nagoya and Tyosi), 15h. (near Medan and near Tananarive), 16h. (Sucre and near La Paz), 18h. (Ekaterinburg, Kucino, Tashkent, and Nagoya).

Oct. 3d. 10h. 35m. 10s. Epicentre 29°·8N. 67°·3E. (as on 1931 Sept. 8d.). X.

A = +·335, B = +·801, C = +·497 ; D = +·923, E = −·386 ;
G = +·192, H = +·458, K = −·868.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Dehra Dun	9·3	84	3 10	+59	4 10	+14	5·3	6·8
Samarkand	9·9	359	i 2 19	0	e 5 29	+78	14·8	—
Tashkent	11·6	8	e 2 37	− 6	e 5 12	+19	e 5·8	8·5
Bombay	12·0	154	—	—	6 18	+75	12·0	—
Hyderabad	16·0	138	2 54	−47	(6 40)	+ 2	9·5	10·8
Calcutta	20·2	106	(4 39)	+ 7	(6 54)	?	(7·8)	(10·3)
Colombo	25·8	150	5 27	0	—	—	—	16·8
Ksara	26·9	287	e 5 54	+17	—	—	18·9	—
Ekaterinburg	27·4	352	i 5 41	− 1	i 10 31	+ 9	13·8	18·2
Pulkovo	38·9	330	e 7 18	− 5	—	—	22·8	—
Manila	51·5	95	13 27	?	18 15	?	—	—

Additional readings and notes :—
Bombay eP = 10h.35m.4s.
Hyderabad S = +8m.39s. ; true S is given as another P.
Calcutta readings have been *diminished* by 3m.
Long waves were also recorded at Kodaikanal, Andijan, Kucino, and Helsingfors.

Oct. 3d. 19h. 13m. 19s. Epicentre 10°·6S. 161°·7E. N.1.

Probable error of epicentre ± 0°·27.

Epicentre given by Gutenberg and Richter in "Gerl. Beit. Zure Geoph.," Vol. 43, p.56-133.

A = −·933, B = +·309, C = −·184; D = +·314, E = +·949; G = +·175, H = −·058, K = −·983.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		17·8	117	i 3 41	−23	—	—	9·5	18·7
Riverview		25·2	201	i 5 18	− 4	i 10 4	+20	—	—
Sydney		25·2	201	(i 5 23)	+ 1	(9 35)	− 9	14·2	16·2
Apia	E.	26·1	100	5 41	+11	10 8	+ 8	—	12·7
	N.	26·1	100	5 48	+18	10 42	SS	—	12·7
	Z.	26·1	100	5 43	+13	10 18	+18	—	14·7
Arapuni		30·2	158	6 29	+22	11 21	+14	13·7	—
New Plymouth		30·6	161	6 34	+24	11 49	+35	16·7	—
Melbourne		31·1	206	6 11	− 4	11 40	+19	13·2?	—
Adelaide		32·2	218	i 6 32	+ 8	i 11 48	+10	i 14·4	17·2
Wellington		32·8	163	e 6 28	− 2	i 11 51	+ 3	i 14·6	24·7
Amboina		33·9	279	i 6 38	− 1	12 9	+ 5	—	—
Christchurch		34·3	166	i 6 39	− 4	i 12 6	− 5	16·7	24·1
Perth		47·3	235	i 8 41	+10	i 15 33	+10	i 26·3	—
Manila		47·6	301	8 30	− 3	15 16	−11	21·7	—
Nake		49·8	322	8 50	0	16 3	+ 5	—	—
Tyosi		50·3	338	e 8 53	− 1	16 16	+11	22·3	24·5
Tokyo		50·7	337	8 59	+ 2	16 19	+ 8	—	—
Honolulu T.H.		51·0	50	e 9 8	+ 9	i 16 27	+12	20·7	—
Nagoya		51·4	335	e 9 2	0	16 22	+ 2	22·8	28·7
Miyazaki		51·4	327	9 0	− 2	16 25	+ 5	—	—
Osaka		51·6	332	9 2	− 1	16 45	+22	22·9	28·3
Sumoto		51·6	331	e 9 0	− 3	16 32	+ 9	22·5	23·7
Koti		51·7	330	e 9 1	− 3	16 37	+13	e 21·7	30·7
Kobe		51·8	332	e 9 1	− 4	i 16 41	+16	e 22·3	29·0
Matuyama		52·3	330	e 11 16	+127	i 18 56	+143	25·0	29·2
Toyooka	E.	52·7	333	e 9 13	+ 1	i 16 48	+10	22·8	27·2
	N.	52·7	333	e 9 15	+ 3	i 16 47	+ 9	22·9	31·4
	Z.	52·7	333	e 9 10	− 2	i 16 52	+14	e 24·8	28·7
Taihoku		52·9	314	i 9 30	+17	16 22	−19	20·9	30·1
Nagasaki		52·9	327	e 9 11	− 2	12 40	−241	e 20·9	32·0
Hukuoka		53·2	328	9 14	− 1	16 53	+ 8	22·7	27·3
Mizusawa	E.	53·2	340	9 18	+ 3	17 10	+25	23·1	—
	N.	53·2	340	9 23	+ 8	16 49	+ 4	23·2	—
Morioka		53·8	340	9 20	0	17 1	+ 8	—	—
Batavia		54·4	271	e 9 35	+11	14 17	?	29·7	—
Nemuro		55·9	346	9 37	+ 2	17 27	+ 6	—	—
Zi-ka-wei		56·9	320	i 9 41	− 1	17 37	+ 2	27·1	35·4
Hong Kong		57·0	306	9 55	+12	17 47	+11	31·7	—
Zinsen		58·2	327	9 51	− 1	17 51	− 1	—	—
Dairen		62·0	326	10 18	0	18 47	+ 5	—	—
Phu-Lien		62·6	300	e 10 32	+10	18 56	+ 6	27·7	38·2
Medan		64·3	280	—	—	i 26 35	?	—	—
Chiufeng		65·9	324	e 10 41	− 4	e 19 29	− 2	27·0	41·4
Calcutta		79·0	296	12 21	+18	21 43	−22	36·9	37·0
Irkutsk		79·7	329	12 4	− 2	21 48	−24	34·7	—
Colombo		83·2	278	12 31	+ 7	23 1	+12	40·8	55·2
Sitka		84·9	29	—	—	23 6	− 1	34·7	—
Berkeley	E.	85·7	50	e 12 38	+ 1	23 22	+ 7	e 39·0	—
Lick	E.	86·1	50	e 12 41	+ 2	e 23 33	+15	e 39·5	—
Kodaikanal		86·3	281	e 13 23	+43	(i 23 53)	PS	i 23·9	63·6
Hyderabad		86·8	289	12 47	+ 5	23 36	+11	48·4	60·0
Santa Barbara		86·8	55	e 12 40	− 2	—	—	—	—
Mount Wilson	N.	88·0	55	e 12 50	+ 2	e 23 37	0	—	—
Pasadena		88·0	55	i 12 46	− 2	e 23 40	+ 3	—	—
Victoria	E.	88·2	40	12 54	+ 5	23 52	+13	36·4	46·8
	N.	88·2	40	12 59	+10	23 42	+ 3	36·3	36·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Jolla		88·4	56	e 12 50	0	e 24 54	PS	—	—
Riverside		88·5	55	e 12 49	− 1	e 23 34	− 8	—	—
Haiwee	N.	88·6	52	e 12 51	0	e 23 37	− 6	—	—
Tinemaha		88·6	51	e 12 53	+ 2	e 23 42	− 1	—	—
Seattle		88·6	40	e 12 41	−10	i 23 50	+ 7	36·8	—
Agra		89·2	299	e 13 10	+16	e 23 22	[− 6]	—	—
Dehra Dun		89·9	301	15 1	?	25 51	PS	38·5	52·7
Bombay		92·3	290	13 22	+14	24 24	+ 7	47·0	60·0
Tucson		93·5	57	e 13 27	+13	e 23 41?	[−12]	38·4	—
Bozeman		95·7	44	e 13 37	+13	24 51	+ 3	e 39·0	—
Andijan		96·4	311	e 13 30	+ 3	—	—	35·7	—
Denver		99·3	50	—	—	e 24 42	{− 6}	42·2	—
Saskatoon		99·4	38	18 11	PP	24 59	{+10}	45·7	—
Samarkand		100·3	310	e 13 10	−35	—	—	e 31·7	—
Ekaterinburg		104·9	326	i 14 38	+32	i 24 52	[+ 3]	—	—
Tananarive		108·7	246	14 57	+32	25 31	[+24]	51·9	58·2
St. Louis		110·7	51	e 18 12	[− 8]	e 25 35	[+19]	e 45·8	52·0
Chicago		112·5	48	e 18 35	[+10]	25 39	[+15]	46·6	—
Santiago		113·5	133	16 44	?	29 37	PS	46·7	—
Ann Arbor		115·2	47	e 19 47	PP	i 29 47	PS	e 47·6	68·3
Kucino		117·3	328	21 22	?	e 29 9	PS	49·4	61·0
Toronto		118·1	45	e 15 38	+28	30 21	PS	56·2	—
Pittsburgh		118·4	48	e 17 59	[−43]	26 51	{−15}	—	—
Columbia		118·5	56	e 19 35	PP	28 11	?	48·2	—
Buffalo		118·7	46	e 15 23	?	i 35 59	SS	—	60·7
Pulkovo		119·1	335	20 32	PP	25 53	[+ 6]	56·7	63·0
Balboa Heights		119·7	85	e 20 41?	PP	—	—	—	—
Charlottesville		119·9	51	e 19 37	PP	—	—	—	—
Scoresby Sund		120·1	2	20 47	PP	—	—	—	—
Ottawa		120·2	42	e 15 46	+24	e 26 7	[+16]	e 49·7	—
Georgetown		120·8	50	e 15 53	+30	28 41	?	50·1	57·1
La Plata		121·1	142	20 9	PP	—	—	48·7	—
Johannesburg		121·8	230	20 41	PP	28 41	?	50·7	—
Fordham		122·8	47	i 20 41	PP	i 26 7	[+ 8]	e 57·7	—
Theodosia		122·8	317	e 19 19	+27	—	—	e 55·7	—
Cape Town		123·4	217	i 20 44	PP	e 28 3	{+24}	51·5	72·7
Yalta		123·7	317	e 19 8	[−14]	—	—	e 66·8	—
Simferopol		123·7	317	e 19 17	[+23]	—	—	e 56·7	—
La Paz		123·8	119	i 19 4	[+ 9]	i 30 57	PS	51·7	59·4
Upsala		124·0	339	e 20 50	PP	e 26 2	[0]	e 54·7	64·0
Sebastopol		124·2	317	e 19 5	[+10]	—	—	e 71·2	—
Harvard		124·3	44	20 56	PP	e 30 45	PS	e 61·7	—
Ivigtut		124·9	16	20 47	PP	e 31 6	PS	—	—
Sucre		125·1	123	19 3	[+ 6]	—	—	—	—
Ksara		125·4	305	e 19 8	[+10]	26 28	[+22]	38·2	75·3
Königsberg		126·3	334	i 20 52	PP	—	—	e 56·7	72·7
Reykjavik		126·4	3	—	—	38 47	SS	59·7	—
Bergen		127·2	346	19 7	[+ 6]	—	—	64·7	67·7
Port au Prince		127·3	75	e 19 57	[+55]	i 29 28	?	e 39·3	—
Lemberg	E.	127·5	325	e 21 51	PP	e 34 29	?	e 54·9	71·3
	N.	127·5	325	e 21 41	PP	e 33 57	?	e 53·6	67·8
Entebbe		128·4	262	16 21	?	21 21	PP	—	74·0
Halifax		128·4	39	21 41	PP	39 23	SS	52·7	—
Lund		128·6	339	21 41	PP	27 5	[+50]	52·7	—
Copenhagen		128·9	339	19 35	[+30]	26 41	[+25]	52·7	—
Helwan		130·0	300	21 31	PP	—	—	—	—
Potsdam		131·2	335	19 41?	[+32]	i 27 18	[+55]	e 52·7	67·1
Hamburg	Z.	131·4	338	e 19 16	[+ 7]	—	—	61·7	71·5
Budapest		131·6	326	e 19 33	[+23]	i 21 58	PP	e 39·2	72·7
Prague		132·2	332	e 18 58	[−12]	—	—	e 53·7	68·7
Belgrade		132·3	322	e 19 11	[0]	e 32 30	PS	e 55·9	67·6
Vienna		132·5	330	19 14	[+ 3]	31 31	SKSP	i 40·7	76·7
Jena		132·9	335	e 19 11	[− 1]	e 26 56	[+29]	e 44·7	75·7
Göttingen		133·0	336	e 19 14	[+ 2]	—	—	i 63·3	72·8
Cheb		133·1	333	e 21 51	PP	e 39 53	SS	e 61·7	76·7
San Juan		133·2	74	e 19 32	[+20]	—	—	e 55·2	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Edinburgh		133·2	348	i 23 1	PKS	i 31 50	PS	41·7	73·0
Graz		133·7	329	e 18 54	[−19]	—	—	59·7	83·3
Durham		133·9	346	19 49	[+36]	27 28	[+58]	—	72·7
Zagreb		134·3	326	e 19 20	[+ 6]	i 26 2	[−29]	—	76·0
De Bilt		134·4	340	e 19 28	[+14]	e 22 21	PP	e 54·7	69·8
Feldberg	E.	134·7	337	e 22 26	PP	e 32 43	PS	—	69·4
Stonyhurst		134·9	346	e 20 23	?	—	—	54·7	67·1
Laibach		134·9	329	e 21 12	PP	e 33 51	?	e 56·9	77·2
Bidston		135·5	346	21 26	PP	34 31	?	40·6	81·2
Karlsruhe		135·6	335	19 24	[+ 8]	34 34	?	e 66·7	—
Stuttgart		135·6	335	e 19 21	[+ 5]	e 26 14	SKS	e 58·7	73·6
Triest		135·6	329	e 18 52	[−24]	24 50	PPP	e 62·9	74·7
Innsbruck		135·6	332	e 19 47	[+31]	e 34 53	?	41·1	77·4
Uccle		135·7	340	e 19 18	[+ 2]	—	—	59·7	75·2
Strasbourg		136·2	336	e 19 12	[− 4]	—	—	e 42·7	85·3
Venice		136·4	330	e 19 44	[+27]	i 33 31	?	85·7	93·4
Treviso		136·4	330	i 19 21	[+ 4]	36 41	?	64·7	77·7
Oxford		136·6	345	e 19 34	[+17]	i 40 41	SS	e 53·7	75·7
Kew		136·6	344	i 19 33	[+16]	e 29 10	{+ 7}	51·7	69·8
Taranto		136·7	320	i 19 58	[+41]	i 23 1	PKS	53·0	83·1
Padova		136·7	330	e 19 44	[+27]	—	—	e 57·7	—
Zurich		136·8	333	e 19 19	[+ 1]	e 30 42	?	—	—
Collurania		137·5	324	19 40	[+22]	—	—	—	—
Neuchatel		137·8	335	e 19 33	[+14]	—	—	—	—
Besançon		138·0	335	e 19 55	[+36]	—	—	40·7	—
Paris		138·0	340	e 19 35	[+16]	—	—	40·7	69·7
Piacenza		138·0	330	18 41	[−38]	26 51	?	—	86·9
Florence		138·1	328	19 11	[− 8]	—	—	—	—
Prato		138·1	328	e 19 41	[+22]	26 41	?	57·7	68·7
Pavia		138·2	330	19 31	[+12]	—	—	—	—
Naples	E.	138·3	321	e 20 7	[+48]	e 30 57	?	63·7	71·7
Livorno		138·8	328	19 10	[−10]	30 31	?	—	—
Messina		139·0	317	19 27	[+ 7]	32 57	PS	—	—
Catania		139·7	316	e 19 44	[+23]	—	—	e 61·4	81·0
Marseilles		141·4	333	21 1	?	e 42 29	?	46·7	—
Carloforte		142·9	325	e 20 5	[+38]	e 24 5	?	—	—
Bagnères		143·7	337	i 19 50	[+20]	(40 41?)	SS	40·7	—
Barcelona		144·3	333	19 42	[+10]	—	—	e 46·9	82·5
Tortosa		145·5	336	i 19 36	[+ 1]	—	—	61·8	83·2
Algiers		147·5	327	e 19 35	[− 3]	e 29 55	{−13}	42·4	87·7
Alicante		148·0	334	e 19 41	[+ 2]	e 35 45	?	e 47·6	88·0
Toledo		148·1	339	e 19 40	[+ 1]	35 51	?	68·9	—
Serra do Pilar		148·3	345	19 36	[− 3]	—	—	—	—
Almeria		150·0	334	e 19 42	[0]	—	—	71·5	82·2
Granada		150·3	336	i 19 50	[+ 8]	—	—	e 64·2	83·1
Malaga		151·0	336	19 29	[−14]	33 56	SKSP	47·7	90·2
San Fernando	N.	151·9	339	19 55	[+11]	30 41	[+ 8]	61·7	116·7
Dakar		175·9	348	e 20 32	[+26]	—	—	—	102·7

Additional readings and note :—
Riverview iP = +5m.21s.
Sydney gives P as iS and S as L.
Adelaide iPP = +7m.24s., iPPP = +7m.55s., i = +12m.6s., iSSS = +13m.48s.
Wellington iP = +6m.41s., PP = +7m.51s., SS = +13m.51s., SSS = +14m.26s.
Amboina iP = +6m.48s., i = +21m.41s.?
Christchurch iNZ = +6m.54s., iZ = +12m.22s., iN = +12m.25s.
Perth ePP = +10m.26s., iPPP = +10m.32s., iPPPP = +11m.21s., i = +13m.31s., SS = +17m.11s., and +17m.31s.
Manila PPN = +10m.24s., SSSSE = +20m.35s.
Tyosi S = +16m.32s.
Osaka i = +9m.14s.
Sumoto iN = +9m.4s., iEZ = +9m.14s., SE = +16m.37s., SZ = +16m.43s.
Koti i = +9m.14s., eN = +16m.26s., iE = +16m.43s., ePS?E = +16m.47s., eZ = +25m.11s.
Kobe iPZ = +9m.5s., iEN = +9m.14s., and +10m.17s. = P_cP −6s., iN = +11m.25s., iE = +13m.10s., iN = +13m.19s.
Toyooka iP = +9m.22s.

Continued on next page.

Batavia P = +9m.39s., iP = +9m.46s.
Zi-ka-wei iE = +10m.36s. = P_cP − 5s., PSN = +17m.57s., SSE = +22m.13s., SSSE = +24m.11s., SSSSE = +24m.33s.
Hong Kong PP = +11m.56s., ? = +24m.5s.
Medan i = +17m.35s. and +17m.53s.
Chiufeng PS = +19m.45s., iE = +22m.5s.
Sitka PP = +16m.38s., PS = +24m.17s., eSS = +29m.11s.
Berkeley iE = +12m.44s., eSE = +23m.25s.
Santa Barbara eE = +12m.44s., eN = +35m.44s.
Mount Wilson eN = +36m.12s.
Pasadena iP = +12m.50s., ePPEZ = +16m.20s., eN = +16m.32s., eEN = +18m.38s., iE = +25m.20s., eE = +30m.4s., iN = +36m.11s., eE = +40m.9s.
La Jolla iE = +12m.54s., iN = +25m.18s., eN = +36m.6s.
Riverside eEN = +12m.52s., eN = +36m.30s.
Haiwee eN = +36m.31s.
Tinemaha iEN = +12m.57s., eN = +36m.31s.
Seattle PP = +16m.11s., iPPP = +18m.58s.
Tucson SS = +31m.9s.
Bozeman ePP = +17m.17s., eSKS = +24m.4s., ePS = +26m.23s., eSS = +31m.35s.
Denver ePPE = +17m.57s., iPE = +26m.34s., eE = +35m.22s.
Saskatoon PS = +27m.23s., SSS = +37m.35s.
Ekaterinburg iPKP = +18m.24s., iPS = +27m.43s.
Tananarive PPE = +18m.49s., PPN = +19m.22s., PPPE = +22m.10s., SKKSN = +26m.37s., PS = +28m.43s., PSE = +29m.46s., EN = +31m.37s., N = +33m.16s., E = +33m.19s., SSN = +34m.16s., SSE = +34m.31s., E = +38m.7s., SSSE = +40m.19s., SSSN = +40m.25s., N = +44m.32s., E = +45m.14s., N = +47m.12s., and +49m.49s.
St. Louis eN = +18m.56s., ePPE = +19m.9s., iN = +27m.8s., iPSE = +28m.33s. eSSN = +34m.39s., iPPSSE = +35m.34s., eE = +39m.9s., iSSSS = +42m.39s.
Chicago PP = +19m.26s., iS = +27m.14s., PS = +29m.3s., iSS = +35m.18s.
Ann Arbor ePPN = +20m.11s., eN = +27m.53s., iE = +31m.23s., iSSN = +35m.59s., eSSE = +36m.17s., eSSSE = +40m.53s.
Kucino PS = +31m.5s., SS = +37m.29s.
Toronto ePE = +15m.34s., ePKP = +19m.11s., iPP = +20m.53s., iPPP = +23m.27s., iPSE = +30m.4s., iPPS = +31m.23s., i = +36m.33s., SS = +36m.53s., i = +49m.4s.
Pittsburgh PP = +19m.59s.
Columbia PP = +20m.11s., PS = +30m.9s., SS = +37m.0s.
Buffalo iPP = +20m.1s., iPP = +23m.21s.
Pulkovo PPP = +22m.53s., PS = +29m.45s., SS = +37m.53s., eSSS = +41m.5s.
Charlottesville PP = +20m.14s.
Scoresby Sund +26m.39s.
Ottawa eZ = +18m.48s., ePP = +20m.44s., ePPPN = +23m.35s., e = +30m.19s. = PS + 15s., ePPSE = +32m.1s., e = +34m.16s., ePPP'E = +36m.14s., eSKKS = +36m.51s., iSSE = +37m.15s., e = +40m.19s., eSSS = +42m.26s.
Georgetown iPKP'N = +19m.53s., iPPE? = +20m.41s.; T_o = 19h.13m.0s.
Fordham iPS = +30m.53s., iSS = +38m.9s.
La Paz PPN? = +21m.41s., PPE = +23m.23s., SKSN = +29m.27s., PSN = +32m.14s., SSN = +39m.5s.
Upsala ePPPE = +23m.41s., iN = +26m.35s., iSKKSN = +27m.32s., ePS = +31m.7s., iPPS = +32m.33s., SS = +37m.49s., SSS = +42m.59s.
Harvard iSS = +38m.43s., eE = +41m.26s. = SSS − 26s., i = +52m.6s.
Ivigtut e = +33m.29s., +37m.59s. = SS + 23s. and +38m.29s.
Ksara +19m.24s., +20m.4s., and +21m.17s.
Königsberg eN = +24m.41s.? and +38m.41s.?
Bergen PP = +21m.44s., SS? = +38m.57s.
Port au Prince i = +22m.1s. = PP + 2s., +23m.55s., and +33m.46s.
Lund NE = +22m.56s., NW = +23m.41s. = PPP − 6s., NE = +24m.23s., NW = +25m.39s., NE = +31m.44s., NW = +32m.44s., +33m.47s., and +41m.29s.
Copenhagen +21m.48s., eZ = +22m.20s., eEZ = +23m.17s., eN = +23m.30s., +24m.26s., +25m.17s., +28m.35s., +29m.22s., +34m.41s., and +38m.53s.
Potsdam iE = +21m.50s., iPPEN = +22m.0s., iN = +22m.40s. = PKS + 1s. and +27m.30s., iPSEN = +32m.1s., iE = +32m.37s., iN = +33m.40s., +39m.37s., +40m.35s., and +43m.26s., iSSE = +46m.5s., iN = +46m.16s., and +46m.31s.
Hamburg iZ = +21m.52s., eZ = +44m.59s.
Prague eSS = +39m.41s., eSSS = +44m.41s.?
Belgrade eSKP = +19m.49s., e = +20m.30s., +21m.55s., +22m.29s., and +23m.0s., ePP = +23m.43s.
Vienna PKP = +21m.32s., PP = +24m.43s., PPP = +28m.26s.
Jena eZ = +19m.22s., eN = +19m.41s., eE = +20m.41s., eEZ = +21m.48s., eN = +22m.53s., eEN = +22m.41s., and +39m.41s.
Göttingen eZ = +19m.26s. and +19m.35s., ePP = +21m.59s., iPPPEN = +24m.41s., eN = +35m.41s.?, eEN = +39m.59s. and +45m.35s.

Continued on next page.

Cheb e = +23m.1s. =PKS +14s. and +28m.0s.
San Juan ePP = +21m.41s., SS = +39m.32s.
Edinburgh i = +26m.36s. and +40m.8s.
Graz iPP = +24m.46s., iPPP = +29m.42s., iPS = +36m.48s., SS = +44m.57s.
Durham +22m.4s. =PP +15s., +22m.23s., +35m.24s., and +40m.40s.
Zagreb ePKP = +22m.3s., i = +22m.51s., +24m.1s., and +24m.50s., e = +28m.15s., eNW = +29m.33s., i = +31m.47s. =SKSP +2s. and +32m.28s. =PS +17s., eNW = +35m.22s., i = +37m.10s., and +38m.10s., eNW = +39m.25s. =SS −8s., eNE = +40m.1s., e = +40m.59s., and +45m.1s. =SSS −19s., eNE = +47m.8s., and +52m.57s., eNW = +55m.1s., e = +56m.25s., eNW = +58m.41s.?, e = +61m.10s. and +64m.13s.
Feldberg eE = +22m.57s. =PKS +4s., +24m.39s., and +41m.23s.
Stonyhurst PP? = +23m.21s., i = +40m.1s.
Laibach e = +22m.57s. =PKS +4s. and +25m.7s.
Stuttgart ePPE = +21m.52s., ePKSN = +23m.30s., ePPPE = +24m.56s., eSKSPE = +32m.47s., ePSN = +33m.11s., eSSEN = +40m.23s., eN = +50m.35s.
Triest PP = +24m.10s., PS = +35m.19s., PPP = +35m.52s., SS = +42m.33s. SSS = +49m.7s.
Innsbruck e = +22m.53s. =PKS −3s.
Uccle i = +19m.28s. and +20m.22s., iPP = +22m.16s., i = +35m.49s., iSS = +39m.52s., i = +40m.34s., iSSS = +45m.43s.
Strasbourg i = +19m.31s., iPP = +22m.4s., iSKP = +23m.11s., ePPP = +25m.4s., ePPPP = +29m.6s. =SKKS +5s., ePS = +33m.49s.
Oxford e = +22m.30s. =PP +30s.
Kew iZ = +20m.25s., iPPZ = +22m.5s., ePPEN = +22m.23s., iN = +22m.32s., iEN = +23m.24s., iN = +25m.6s., iE = +32m.48s., iZ = +34m.40s., i = 35m.54s., and +38m.18s., iEZ = +39m.56s. =SS −5s., iN = +40m.40s., iE = +40m.52s.
Zurich ePKP = +22m.45s. =PKS −15s.
Paris ePP? = +22m.41s.
Marseilles PP? = +24m.5s., e = +25m.49s. =PP +20s.
Algiers PP = +20m.45s., PPP = +21m.51s., PPPP = +25m.21s., SS = +31m.41s.?, SSS = +33m.41s.?, SSSS = +35m.41s.?
Toledo PP = +23m.2s.
Almeria iPKP = +20m.5s., PP = +24m.25s., SS = +39m.32s.
Granada i = +20m.13s. =PKP_2 +13s. and +21m.14s., PP = +23m.21s., PPP = +32m.59s., SS = +43m.6s., SSS = +48m.2s.
Malaga P = +20m.2s. =PKP_2 −4s.
San Fernando PE = +20m.1s. =PKP_2 −6s. and +20m.11s., SN = +31m.21s., SE = +32m.5s.
Dakar ePKP = +19m.7s., ePP = +26m.20s.

Oct. 3d. 21h. 18m. 25s. Epicentre 11°·0S. 162°·3E. (as on 1930 Oct. 31d.). R.2.

A = −·935, B = +·298, C = −·191; D = +·304, E = +·953; G = +·182, H = −·058, K = −·982.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		25·0	202	i 5 1	−19	i 10 0	+19	—	—
Arapuni		29·8	159	e 1 35?	?	—	—	—	16·6
Adelaide		32·2	219	8 8?	?	i 13 13	SS	14·9	18·5
Christchurch		33·7	167	e 6 25	−13	11 53	− 8	15·4	—
Amboina		34·6	279	i 6 46	0	—	—	16·6	—
Misima		51·1	336	9 2	+ 2	15 53	−23	—	—
Nagoya		52·1	335	e 9 9	+ 2	—	—	—	—
Miyazaki		52·1	327	e 9 10	+ 3	16 27	− 3	—	—
Osaka		52·3	332	9 5	− 4	16 34	+ 1	23·2	28·2
Koti		52·3	330	e 9 9	0	e 16 25	− 8	—	—
Sumoto		52·3	332	(e 9 5)	− 4	e 9 5	P	e 23·7	29·2
Kobe		52·4	332	e 9 6	− 3	e 17 23	+49	—	29·4
Mizusawa	E.	53·8	340	9 22	+ 2	16 57	+ 4	23·2	—
Batavia		55·0	271	i 10 17	(−17)	—	—	e 35·0	—
Pasadena		87·7	55	e 12 46	0	—	—	—	—
Mount Wilson	N.	87·8	55	e 12 47	0	—	—	—	—
La Jolla		88·1	56	e 12 46	− 2	—	—	—	—
Riverside		88·2	55	e 12 45	− 4	—	—	—	—
Haiwee	N.	88·3	52	e 12 51	+ 2	—	—	—	—
Tinemaha	E.	88·3	51	e 12 50	+ 1	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan		97·2	312	e 14 12	+41	—	—	—	—
Samarkand		101·0	310	e 14 25	+37	—	—	—	—
La Paz	Z.	123·0	117	e 17 14	[−99]	—	—	—	—
Almeria		150·7	335	i 19 41	[− 2]	e 25 21	?	—	—
Granada		150·9	336	i 20 29	[+46]	—	—	—	—

Additional readings :—
Kobe ePZ = +9m.11s.
Granada i = +23m.41s. =PP +15.
Long waves were also recorded at Ivigtut.

Oct. 3d. 21h. 55m. 20s. Epicentre 12°·0S. 162°·5E. (as on 1930 Jan. 28d.). R.3.

A = −·933, B = +·294, C = −·208; D = +·301, E = +·954;
G = +·198, H = −·061, K = −·978.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		24·2	202	e 5 8	− 4	—	—	—	12·8
Sydney		24·2	202	—	—	i 9 16	−11	14·2	15·2
Arapuni		28·6	158	—	—	e 8 40?	?	—	17·7
Adelaide		31·6	220	e 6 43?	+24	i 12 10	+41	15·2	19·7
Christchurch		32·7	166	e 6 36?	+ 7	—	—	—	—
Amboina		35·0	279	i 6 45	− 4	i 12 37	+16	—	—
Manila		49·0	302	8 47	+ 3	—	—	—	—
Misima		52·1	336	9 9	+ 2	16 19	−11	—	—
Miyazaki		53·0	327	9 12	− 2	16 32	−10	—	—
Nagoya		53·0	335	e 9 13	− 1	—	—	—	—
Osaka		53·2	332	8 42	−33	16 31	−14	22·6	28·6
Sumoto		53·2	331	e 9 25	+10	16 32	−13	23·4	29·0
Koti		53·3	330	e 9 16	0	e 17 3	+17	e 23·5	—
Kobe		53·4	332	e 9 48	+31	17 1	+14	e 23·4	29·2
Matuyama		53·9	330	e 10 3	+42	e 17 56	+62	e 25·8	—
Toyooka		54·2	333	e 9 18	− 5	—	—	e 26·1	29·4
Nagasaki		54·6	327	19 57	?	27 21	?	—	—
Mizusawa	E.	54·9	340	9 52	+24	17 24	+16	23·8	—
Batavia		55·1	272	i 10 20	(−15)	i 16 46	−25	—	—
Zinsen		59·9	327	10 36	+32	18 32	+17	—	—
Phu-Lien		64·0	300	—	—	(18 40?)	−27	18·7	—
Medan		65·3	280	18 4	S	(18 4)	−84	—	—
Berkeley		86·0	50	e 12 42	+ 4	—	—	—	—
Lick	N.	86·4	50	e 12 44	+ 4	—	—	—	—
Tinemaha	E.	88·0	51	e 12 43	− 5	—	—	—	—
Pasadena		88·1	55	e 12 35	−13	—	—	—	—
Mount Wilson	N.	88·2	55	e 12 39	−10	—	—	—	—
Riverside	N.	88·7	55	e 12 48	− 3	—	—	—	—
La Paz		122·4	119	e 18 39	[−12]	—	—	—	—
Vienna		134·1	330	e 22 30	PKS	—	—	e 67·7	—
Stonyhurst		136·4	346	. —	—	i 39 25	SS	—	—
Triest		137·2	329	e 19 51	[+33]	—	—	—	—
Neuchatel		139·4	335	e 19 31	[+11]	—	—	—	—
Florence		139·7	327	19 40	[+19]	—	—	—	—
Granada		151·9	336	i 20 26	{+19}	—	—	—	—

Additional readings :—
Amboina i = +7m.20s.
Koti i = +9m.49s.
Toyooka ePN = +9m.25s.
Batavia i = +17m.56s.
Medan S = +27m.4s.
Lick eE = +12m.47s.
Stonyhurst i = +40m.32s. and +42m.37s.
Triest PP = +24m.9s.
Granada PP = +24m.25s.
Long waves were also recorded at La Plata, Melbourne, Kodaikanal, Ksara, Ivigtut, and other European stations.

Oct. 3d. 22h. 47m. 45s. Epicentre 10°·9S. 161°·6E. N.1.

Probable error of epicentre ±0°·26.

A = −·932, B = +·310, C = −·189; D = +·316, E = +·949; G = +·179, H = −·060, K = −·982.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		17·8	116	2 45	−79	6 45	−35	7·7	12·3
Riverview		24·8	201	i 5 15	− 3	i 9 42	+ 5	—	13·7
Sydney		24·8	201	(i 6 9)	+51	(9 54)	+17	12·2	16·6
Arapuni		30·0	157	—	—	11 15	+11	13·7	16·3
Melbourne		30·8	206	6 15	+ 3	11 15	− 2	13·0	16·7
Adelaide		31·9	218	i 6 23	+ 1	i 11 31	− 3	14·3	17·3
Wellington		32·6	163	i 6 28	0	i 11 42	− 3	16·4	21·3
Amboina		33·9	279	i 6 44	+ 5	i 12 1	− 3	—	—
Christchurch		34·0	166	6 40	0	11 52	−14	—	—
Titizima		42·4	333	7 47	− 5	14 32	+21	—	—
Perth		47·1	235	8 38	+ 9	15 26	+ 6	23·9	—
Manila		47·7	301	8 34	0	—	—	—	19·7
Nake		50·0	322	8 53	+ 2	16 3	+ 2	—	—
Tokyo		50·9	337	9 2	+ 4	16 15	+ 2	—	—
Honolulu T.H.		51·2	50	9 5	+ 5	i 16 24	+ 6	23·3	—
Nagoya		51·6	335	e 9 4	+ 1	16 25	+ 2	23·2	—
Sumoto		51·8	331	9 4	− 1	16 22	− 3	22·5	28·4
Osaka		51·8	332	9 3	− 2	16 27	+ 2	22·4	28·8
Koti		51·9	330	e 9 4	− 2	i 16 24	− 3	e 22·3	23·6
Kobe		52·0	332	e 9 4	− 2	—	—	e 22·9	28·2
Matuyama		52·5	330	e 9 29	+19	i 17 22	+47	e 24·5	25·3
Hukusima		52·5	338	9 8	− 2	16 34	− 1	—	—
Toyooka	E.	52·9	333	i 9 12	− 1	i 16 38	− 3	23·3	25·9
	N.	52·9	333	i 9 13	0	i 16 44	+ 3	23·4	30·0
Taihoku		53·0	314	9 20	+ 6	16 34	− 8	—	—
Nagasaki		53·1	327	9 15	0	16 40	− 3	—	—
Mizusawa	E.	53·5	340	9 29	+11	18 12	?	24·5	—
	N.	53·5	340	9 22	+ 4	17 3	PS	22·4	—
Hukuoka		53·5	328	e 9 20	+ 2	e 16 17	−32	e 22·8	28·7
Batavia		54·3	271	i 9 41	+18	i 17 8	+ 9	27·9	—
Akita		54·4	340	9 30	+ 6	17 11	+10	—	—
Hong Kong		57·1	306	10 26	(−16)	17 36	− 2	—	27·1
Zinsen		58·4	327	9 53	0	17 53	− 2	—	—
Phu-Lien		62·7	300	e 18 45	S	(e 18 45)	− 6	—	—
Medan		64·3	280	(10 21)	−13	(19 9)	− 2	—	—
Chiufeng		66·1	324	e 10 50	+ 4	—	—	—	—
Irkutsk		79·9	329	e 12 4	− 3	21 15	−60	35·3	39·0
Sitka		85·2	29	e 12 43	+ 9	23 5	− 5	e 34·9	—
Ukiah		85·7	49	—	—	i 23 13	− 2	35·5	—
Berkeley		86·0	50	e 12 36	− 2	e 23 14	− 4	39·0	—
Lick		86·4	50	e 12 42	+ 2	23 19	− 2	e 39·4	—
Hyderabad		86·9	289	14 21	?	23 8	[− 5]	37·7	59·1
Pasadena		88·2	55	e 12 48	− 1	e 23 1	[−20]	e 39·7	—
Mount Wilson	N.	88·3	55	e 12 50	+ 1	—	—	—	—
Riverside		88·8	55	e 12 44	− 8	—	—	—	—
Haiwee	N.	88·8	52	e 12 53	+ 1	—	—	e 40·3	—
Tinemaha		88·8	51	e 12 53	+ 1	e 23 43	− 2	—	—
Seattle		88·9	40	—	—	e 23 21	[− 5]	e 41·9	—
Tucson		93·8	57	—	—	e 23 33	[−21]	e 40·3	—
Bozeman		95·9	45	—	—	i 25 6	+16	e 43·3	—
St. Louis	E.	110·9	51	e 18 35	PP	i 25 1	[−16]	e 51·5	—
Chicago		112·7	48	—	—	e 28 50	PS	e 52·3	—
Toronto	E.	118·4	45	—	—	e 25 34	[−11]	55·5	—
Buffalo		118·9	46	—	—	e 26 2	[+15]	—	59·3
Ottawa		120·4	42	—	—	e 37 5	S	e 56·3	—
La Paz		123·7	118	e 19 6	[+12]	e 30 45	PS	51·8	71·8
Sucre		125·0	123	e 19 4	[+ 7]	—	—	—	—
Ksara	E.	125·5	305	e 20 58	PP	—	—	—	—
Port au Prince		127·5	75	e 19 46	[+44]	(24 5)	?	24·1	—
Prague		132·4	332	e 24 15?	?	—	—	e 57·7	88·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Belgrade		132·5	322	e 22 46	PKS	e 29 43	?	61·9	—
Vienna		132·7	330	e 22 28	PKS	—	—	—	80·3
Jena		133·1	335	e 19 9	[− 3]	e 28 15	{−27}	e 54·3	71·8
Cheb		133·3	333	e 18 45	[−27]	—	—	e 59·2	70·7
San Juan		133·3	74	—	—	i 40 15	?	63·1	—
Edinburgh		133·5	348	e 18 15?	[−58]	—	—	—	—
Stonyhurst		135·2	346	e 18 35	[−40]	—	—	67·3	81·3
Triest		135·8	329	e 18 41	[−35]	—	—	e 66·6	78·0
Karlsruhe		135·8	335	e 22 15?	PP	—	—	—	—
Innsbruck		135·8	332	e 22 51	PKS	—	—	—	74·2
Uccle		135·9	340	e 19 18	[+ 2]	—	—	e 59·3	—
Strasbourg		136·5	336	e 19 15	[− 2]	—	—	42·3	—
Kew		136·8	344	—	—	i 42 18	?	e 66·3	76·8
Taranto		136·8	320	17 37	?	—	—	70·1	98·6
Zurich		137·0	333	e 19 16	[− 2]	—	—	—	—
Neuchatel		138·0	335	e 19 17	[− 2]	—	—	—	—
Besançon		138·3	335	e 23 15?	PKS	—	—	70·3	—
Florence		138·3	328	19 15	[− 4]	—	—	—	—
Naples	E.	138·5	321	e 18 1	[−79]	e 23 31	PKS	51·3	—
Catania		139·8	316	e 23 49	PKS	—	—	e 76·0	86·1
Bagnères		144·0	337	e 19 15?	[−16]	(32 15?)	SKSP	32·3	—
Barcelona		144·5	333	e 19 35	[+ 2]	(e 41 28)	SS	e 41·5	—
Tortosa	N.	145·7	336	19 34	[− 1]	—	—	e 58·3	88·9
Algiers		147·7	327	e 19 54	[+16]	e 31 4	{+55}	53·3	102·3
Alicante		148·2	334	e 19 35	[− 4]	e 34 39	SKSP	e 93·2	—
Toledo		148·4	339	19 40	[+ 1]	—	—	e 69·7	—
Almeria		150·3	333	i 19 46	[+ 4]	e 29 40	{−44}	e 75·6	90·9
Granada		150·5	335	i 19 49	[+ 7]	27 1	SKS	e 76·0	87·9
Malaga		151·3	336	e 19 46	[+ 3]	e 33 52	SKSP	42·0	—
San Fernando		152·2	339	19 57	[+13]	32 15	?	75·8	103·2
Dakar		176·1	346	e 16 19	?	—	—	65·3	—

Additional readings and notes :—
Riverview iZ = +5m.22s., iSE = +9m.50s., iZ = +9m.56s.
Sydney gives P as S and S as L.
Adelaide iSS = +13m.0s., i = +13m.40s.
Wellington PP = +7m.44s., SS = +13m.48s.
Amboina i = +8m.1s.
Christchurch iN = +12m.12s.
Perth SS = +18m.52s.
Manila iEN = +13m.31s. and +17m.21s.
Kobe PZ = +9m.8s., iZ = +10m.27s. = P_cP +3s.
Toyooka iPZ = +9m.11s.
Batavia i = +17m.26s.
Medan P and S have been *diminished* by 7m.
Sitka eSS = +28m.45s., eSSS = +32m.9s.
Ukiah ePS = +24m.15s.
Pasadena eN = +24m.35s. = PS +5s.
Seattle eSS = +30m.9s., e = +32m.21s.
Tucson e = +22m.27s. and +28m.57s., eSSS = +38m.15s.?
Bozeman iPS = +26m.5s., ePPS = +26m.57s.
St. Louis eE = +28m.33s. = PS − 3s. and +29m.55s., iE = +34m.59s. = SS +28s. and +38m.52s. = SSS +19s.
Chicago e = +30m.9s. and +32m.45s., eSS = +34m.45s.
Toronto iE = +29m.45s. = SKSP +3s. and +36m.53s.
Buffalo e = +22m.9s. and +34m.9s.
La Paz SKSN = +29m.0s.
Prague eSS? = +21m.15s.? = PP − 18s.
Belgrade e = +36m.28s.
Vienna i = +23m.24s.
Jena eEN = +13m.15s., eE = +19m.15s., eEN = +23m.15s., eN = +25m.15s., and 28m.15s.
San Juan eSSS = +44m.23s.
Triest PP = +22m.58s. = PKS +2s.
Uccle i = +22m.5s. = PP +9s. and +25m.14s.
Kew i = +45m.0s., eEN = +45m.26s., eE = +53m.56s., eEN = +56m.52s., eZ = +62m.8s.
Tortosa PE = +19m.39s.
Toledo PKP_a = +20m.27s.
Granada i = +20m.12s. = PKP_a +11s., PP = +24m.2s., PS = +26m.7s., SPPS = +30m.35s., SSS = +49m.49s.
San Fernando SN = +32m.45s.
Long waves were also recorded at Kodaikanal, Cape Town, Columbia, Denver, Ann Arbor, La Plata, Ivigtut, and other European stations.

Oct. 3d. Readings also at 0h. (Haiwee, Tinemaha, Pasadena, Mount Wilson, and La Jolla), 2h. (La Paz), 3h. (near Christchurch and Wellington), 4h. (Ekaterinburg, Pulkovo, Tashkent, Helsingfors, Andijan, and Kucino), 5h. (Andijan, and near Tyosi (3)), 6h. (La Paz), 14h. (Tananarive (2)), 17h. (Bombay), 18h. (near Amboina), 19h. (Arapuni, La Paz, Mount Wilson (3), Pasadena (3), Riverside (2), La Jolla, and Tinemaha), 20h. (Tananarive, Mount Wilson (3), Pasadena (3), and Tinemaha (2)), 21h. (Mount Wilson (2), Pasadena (2), Tinemaha (2), and near Santiago), 23h. (La Paz, Haiwee, Mount Wilson, and Pasadena).

Oct. 4d. Readings at 0h. (Adelaide, Batavia, Manila, and near Osaka), 1h. (Melbourne, Riverview, Wellington, Mount Wilson, and Pasadena), 3h. (Andijan), 6h. (Adelaide (2), Riverview, Melbourne, Wellington (2), Perth, Manila, Christchurch, New Plymouth, and near Hastings), 7h. (Perth, Uccle, Victoria, and near Amboina (3)), 8h. (Adelaide, Wellington, Manila, and Granada), 9h. (Adelaide and Wellington), 11h. (Agra, Bombay, Calcutta, Hyderabad, Hong Kong, Ekaterinburg, Tashkent, Kucino, Perth (2), Adelaide, Wellington, and Andijan (2)), 13h. (Adelaide, Riverview, Wellington, and Perth), 16h. (Bombay), 17h. (Tyosi and near Mizusawa), 18h. (Andijan), 21h. (Baku, Victoria, Nagoya, and near Tyosi), 22h. (Adelaide, Perth, Hong Kong, Phu-Lien, Bombay, Andijan, Irkutsk, Ekaterinburg (2), and Tashkent), 23h. (Bergen and Kucino).

Oct. 5d. 4h. 48m. 58s. Epicentre 5°·1S. 102°·7E. (as on 1931 Sept. 28d.). X.

A = −·219, B = +·972, C = −·089; D = +·976, E = +·220; G = +·020, H = −·087, K = −·996.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia		4·3	104	i 1 8	+ 7	i 2 5	S*	—	—
Malabar		5·3	114	1 22	+ 7	2 21	+ 6	—	—
Medan		9·6	336	e 4 26	S	(e 4 26)	+23	—	—
Amboina		25·5	88	e 5 11	−14	6 39	?	—	—
Colombo		25·8	297	5 33	+ 6	9 56	+ 1	12·0	15·4
Phu-Lien		26·2	8	—	—	9 2?	−60	—	—
Manila		26·8	42	5 40	+ 4	10 11	− 1	15·0	—
Hong Kong		29·7	22	7 12	+70	10 53	− 6	—	19·0
Bombay		38·0	311	7 12	− 3	—	—	—	—
Adelaide		44·6	137	—	—	e 18 28	(+18)	—	27·5
Andijan		53·6	331	e 9 11	− 7	e 16 42	− 8	—	—
Irkutsk		57·4	0	e 9 41	− 5	—	—	—	—
Baku		66·4	320	e 10 7	−41	19 0	−37	33·0	42·8
Ekaterinburg		70·7	338	i 11 11	− 4	e 20 22	− 8	30·0	—
Ksara	E.	74·0	309	e 11 30	− 5	—	—	—	—
La Paz		156·6	202	e 20 35	[+45]	—	—	78·4	88·2

Additional readings :—
Medan S = +11m.38s.
Long waves were also recorded at Suva, Kucino, De Bilt, and Uccle.

Oct. 5d. 12h. 53m. 42s. Epicentre 29°·6N. 128°·6E. N.3.

A = −·542, B = +·680, C = +·494; D = +·782, E = +·624; G = −·308, H = +·386, K = −·869.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki		3·3	19	(0 56)	+ 9	(i 1 43)	S*	—	—
Koti		5·8	46	e 1 22	0	2 40	S*	—	—
Zi-ka-wei	Z.	6·4	286	1 32	+ 1	2 48	+ 5	—	—
Sumoto		7·2	47	1 40	− 2	3 1	− 3	—	3·1
Kobe		7·5	46	e 1 50	+ 4	3 14	+ 3	—	5·0
Osaka		7·8	48	1 51	0	i 3 15	− 4	3·9	4·2
Nagoya		9·0	50	e 2 7	0	—	—	—	—

Additional readings and note :—
Nagasaki readings have been *increased* by 10m.
Koti e? = +2m.30s. −S +2s.

Oct. 5d. 22h. 31m. 29s. Epicentre **37°·0N. 71°·0E.** N.1.

A = +·260, B = +·755, C = +·602; D = +·946, E = −·326; G = +·196, H = +·569, K = −·799.

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.
Andijan		+0·1	3·9	17	i 1 5	+ 8	—	—	i 1·9	2·4
Dehra Dun		−0·2	8·9	137	1 21	−42	2 11	−90	2·9	3·5
Agra	N.	−0·2	11·5	146	2 23	−16	4 23	−22	e 5·0	—
Baku		−0·6	16·8	288	i 3 46	+ 2	6 25	−18	6·8	9·0
Bombay		−0·7	18·2	174	3 55	− 5	7 8	− 5	8·4	10·7
Hyderabad		−0·8	20·6	159	4 17	−10	7 59	− 3	10·2	14·8
Calcutta		−0·9	20·9	129	4 23	− 7	8 0	− 6	10·0	11·1
Ekaterinburg		−0·9	21·0	344	i 4 34	+ 3	i 8 18	+10	11·5	12·9
Irkutsk		−1·2	27·8	46	e 5 35	0	e 9 51	−18	13·5	—
Theodosia		−1·2	27·8	298	e 5 31	− 4	e 11 5	SS	e 17·5	—
Ksara		−1·2	28·6	274	5 43	+ 1	i 10 16	− 6	13·8	—
Yalta		−1·2	28·6	297	e 5 40	− 2	e 11 20	SS	—	—
Simferopol		−1·2	28·7	298	e 5 36	− 7	—	—	e 17·0	—
Kucino		−1·3	29·1	321	5 46	+ 1	10 26	− 2	11·5	12·7
Sebastopol		−1·3	29·1	297	e 5 23	−22	—	—	—	—
Colombo		−1·4	31·2	163	5 56	− 7	10 41	−20	—	17·9
Helwan		−1·5	33·6	270	6 17	− 7	12 29	+52	—	23·0
Pulkovo		−1·5	34·4	325	i 6 29	− 2	11 45	− 4	17·2	18·1
Phu-Lien		−1·6	34·8	109	e 6 30	− 4	e 11 42	−12	13·5	—
Chiufeng		−1·6	35·1	71	e 6 37	+ 1	—	—	—	—
Lemberg		−1·6	35·7	307	e 7 30	PP	—	—	—	16·4
Helsingfors	E.	−1·6	37·0	323	7 1	+ 8	i 12 23	− 4	e 17·0	—
	Z.	−1·6	37·0	323	6 52	− 1	i 12 25	− 2	e 17·0	—
Königsberg		−1·6	38·3	315	i 7 2	− 2	e 12 43	− 4	e 15·7	—
Belgrade		−1·6	38·4	298	7 3	− 2	12 44	− 4	16·2	—
Hong Kong		−1·7	39·9	100	7 11	− 6	13 2	− 7	—	—
Upsala		−1·7	40·6	322	i 7 21	− 2	i 13 17	− 3	—	23·5
Vienna		−1·7	40·8	307	i 7 23	− 1	16 45	?	—	—
Zagreb		−1·7	41·3	300	e 7 25	− 4	e 13 20	−10	—	—
Graz		−1·7	41·5	304	e 7 26	− 4	i 13 28	− 5	—	17·7
Zi-ka-wei	Z.	−1·7	41·7	84	i 7 29	− 3	13 27	− 9	—	15·2
Medan		−1·7	42·0	137	13 57	S	(13 57)	+16	—	—
Trenta		−1·8	42·4	290	e 8 6	+29	—	—	—	—
Lund		−1·8	42·5	316	i 7 39	+ 1	i 13 48	+ 1	—	—
Potsdam		−1·8	42·6	311	i 7 39	0	—	—	—	—
Triest		−1·8	42·9	300	7 40	− 1	i 13 48	− 5	—	—
Copenhagen		−1·8	43·0	316	7 41	− 1	i 13 53	− 1	—	—
Cheb		−1·8	43·2	308	e 7 43	− 1	—	—	e 15·5	17·5
Messina		−1·8	43·2	289	7 17	−27	13 57	0	—	—
Naples		−1·8	43·5	293	e 7 48	+ 2	—	—	—	—
Jena		−1·8	43·6	309	i 7 46	− 1	e 14 0	− 3	e 15·5	21·5
Catania		−1·8	43·8	288	7 20	−29	—	—	—	13·9
Innsbruck		−1·8	43·8	305	e 7 49	0	17 43	(−22)	—	—
Venice		−1·8	43·9	300	i 7 41	− 8	i 13 30	−38	—	—
Treviso		−1·8	44·0	300	i 7 48	− 2	14 10	+ 1	—	—
Padova		−1·8	44·3	300	e 7 44	− 9	i 14 5	− 8	—	—
Hamburg		−1·8	44·4	313	e 7 52	− 1	i 14 16	+ 1	—	23·7
Göttingen	E.	−1·8	44·6	310	i 7 54	− 1	i 14 17	− 1	—	—
Florence		−1·9	45·0	297	i 8 0	+ 2	14 16	− 6	27·5	—
Prato		−1·9	45·1	297	e 7 54	− 4	10 47	?	—	15·9

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	−1·9	45·5	307	8 1	− 1	i 14 29	− 1	—	35·0
Chur	−1·9	45·6	304	e 8 1	− 1	—	—	—	—
Feldberg	−1·9	45·7	310	i 8 1	− 2	e 14 27	− 6	—	22·5
Piacenza	−1·9	45·8	300	8 7	+ 3	14 36	+ 2	—	19·6
Karlsruhe	−1·9	45·9	307	8 7	+ 2	12 1	?	e 14·5	16·1
Zurich	−1·9	46·1	304	e 8 5	− 1	e 14 33	− 6	—	—
Pavia	−1·9	46·2	300	e 8 22	+15	—	—	—	—
Strasbourg	−1·9	46·5	307	i 8 6	− 4	i 14 42	− 2	28·5	—
Bergen	−1·9	46·7	323	8 54	+43	—	—	—	—
Neuchatel	−2·0	47·2	304	e 8 12	− 2	e 14 48	− 6	—	—
De Bilt	−2·0	47·5	312	e 8 16	− 1	14 58	+ 1	e 18·9	19·9
Hukuoka	−2·0	47·8	76	8 17	− 2	15 6	+ 4	—	—
Besançon	−2·0	47·9	304	8 19	− 1	15 2	− 1	—	—
Uccle	−2·0	48·2	310	i 8 22	0	i 15 8	+ 1	e 23·5	—
Miyazaki	−2·0	49·3	78	8 29	− 2	15 24	+ 1	—	—
Manila	−2·0	49·6	104	8 31	− 2	13 20	?	16·6	19·3
Paris	−2·0	49·8	308	i 8 33	− 2	e 15 26	− 4	18·5	19·5
Kew	−2·1	50·9	312	i 8 43	+ 1	i 15 46	+ 2	20·5	20·7
Kobe	−2·1	51·0	74	e 8 41	− 2	17 12	?	—	—
Durham	−2·1	51·0	315	—	—	15 32	−13	—	—
Sumoto	−2·1	51·0	74	8 44	+ 1	15 48	+ 3	—	—
Osaka	−2·1	51·3	74	e 8 50	+ 5	17 20	?	—	—
Oxford	−2·1	51·5	312	i 8 46	− 1	i 15 50	− 2	e 19·6	—
Edinburgh	−2·1	51·6	318	e 9 37	(−45)	15 57	+ 3	30·5	—
Stonyhurst	−2·1	51·6	314	i 8 53	+ 6	i 15 50	− 4	—	—
Barcelona	−2·1	52·1	299	9 37	+46	(15 56)	− 5	15·9	—
Bidston	−2·1	52·1	314	e 10 41	PP	e 17 11	+70	19·3	21·3
Tortosa	−2·2	53·5	299	9 1	0	16 14	− 5	—	—
Mizusawa	−2·2	53·8	65	8 57	− 6	9 52	?	—	—
Sendai	−2·2	54·0	66	9 4	− 1	16 24	− 1	—	—
Alicante	−2·3	55·1	296	e 9 14	+ 2	e 16 38	− 1	e 22·8	—
Scoresby Sund	−2·3	56·4	337	—	—	17 7	+10	—	—
Almeria	−2·3	57·0	295	i 9 25	− 1	i 17 3	− 2	24·4	—
Toledo	−2·3	57·0	299	i 9 24	− 2	i 17 5	0	e 24·4	—
Granada	−2·3	57·8	296	i 10 29	+57	18 19	+63	e 24·1	32·6
Malaga	−2·3	58·6	296	9 38	0	17 22	− 5	21·5	—
San Fernando	−2·4	60·0	296	10 1	+14	17 46	+ 2	25·5	30·0
Tananarive	−2·4	60·1	206	9 39	− 9	17 34	−12	—	—
Ivigtut	−2·6	70·1	334	—	—	19 53	+ 2	—	—
Cape Town	−2·7	86·2	221	—	—	(22 31)	−21	—	22·5
Ottawa	−2·8	92·3	338	e 13 41	+46	22 58	[−48]	33·5	—
Harvard	−2·8	93·4	334	—	—	i 23 5	[−47]	—	—
Victoria E.	—	93·6	9	13 10	− 4	23 12	[−41]	37·6	60·3
N.	—	93·6	9	13 0	−14	23 10	[−43]	39·7	58·5
Toronto	—	95·0	340	—	—	e 23 6	[−55]	49·0	—
Fordham	—	95·7	335	e 11 56	?	e 25 31?	PS	—	—
Bozeman	—	97·3	3	—	—	e 23 31?	[−42]	—	—
Pittsburgh	—	98·1	340	—	—	e 24 13	{−26}	e 36·2	
Chicago	—	99·1	346	—	—	24 34	−45	—	—
Berkeley	—	104·1	12	—	—	e 25 13	−49	—	—
Tinemaha E.	—	105·4	7	e 13 54	−15	—	—	—	—
Mount Wilson N.	—	108·3	7	e 15 27	?	—	—	—	—
Pasadena	—	108·3	7	e 15 25	?	—	—	—	—
Riverside E.	—	108·6	6	e 15 28	?	—	—	—	—
San Juan	—	111·4	316	—	—	e 25 32	{−45}	e 50·5	—
Sucre	—	137·8	284	e 18 59	[−20]	—	—	—	—
La Paz Z.	—	138·6	290	19 2	[−18]	—	—	—	—

For Notes see next page.

NOTES TO OCT. 5d. 22h. 31m. 29s.

Additional readings :—

Irkutsk e = +6m.54s.
Ksara iEN = +6m.27s. =PP +5s., eN = +6m.50s.
Helsingfors eEZ = +7m.37s., eZ = +8m.0s., ePPN = +8m.15s., iPPEZ = +8m.21s., eE = +8m.37s. and +9m.7s., eZ = +9m.10s. =P_cP −17s., eEZ = +9m.46s., eE = +10m.26s. and +11m.48s., eEZ = +13m.25s., eSSN = +14m.22s., eSSE = +14m.52s., eSSZ = +15m.2s., eE = +15m.40s.
Königsberg iEZ = +7m.48s., PPZ = +8m.4s., PPPEZ = +8m.37s., eN = +8m.40s., eE = +8m.42s., e = +9m.4s. and +9m.49s.
Belgrade e = +7m.51s., iPPPP = +8m.40s., i = +9m.42s.
Hong Kong ? = +8m.11s., PP = +8m.21s., PPZ = +9m.51s., ? = +14m.42s. and +16m.34s.
Upsala iPPE = +9m.3s., iE = +10m.2s., iPSE = +13m.25s., iE = +16m.37s.
Vienna P_cP = +8m.11s., PP = +9m.10s., PPP = +12m.6s., S_cS = +17m.47s., PSS? = +22m.31s.
Zagreb e = +8m.4s., +8m.54s., iNE = +9m.52s., eNW = +10m.7s., i = +10m.39s., eNW = +10m.51s., iNE = +12m.0s., eNW = +14m.41s., e = +16m.49s.
Graz iPPP = +8m.59s.
Zi-ka-wei iPZ = +8m.43s., iZ = +10m.25s., i = +17m.8s. =S_cS −34s.
Medan iS = +17m.11s. =S_cS −43s.
Lund i = +8m.51s. =PP −16s., +10m.20s., e = +14m.49s., +15m.9s., and +17m.7s.
Potsdam iEN = +8m.49s. =PP −19s., iE = +9m.25s. =P_cP −25s. and +10m.3s., iN = +10m.8s., iEN = +10m.29s., +11m.7s. and +12m.17s., iN = +15m.4s., iEN = +15m.44s.
Triest i = +10m.29s., +13m.6s. and +17m.22s. =S_cS −37s., e = +23m.47s.
Copenhagen eEZ = +8m.26s., eZ = +8m.54s., i = +10m.31s., eEN = +15m.7s., and +17m.7s.
Cheb e = +8m.30s. and +10m.41s.
Jena i = +8m.31s., eE = +8m.53s., eZ = +8m.56s., iE = +9m.39s. =P_cP −15s. and +10m.39s., iE = +11m.31s.
Innsbruck e = +10m.31s.
Hamburg eEZ = +10m.39s., eE = +17m.37s. =S_cS −31s.
Göttingen iE = +8m.40s., eE = +10m.44s., iE = +15m.39s.
Florence PPP = +8m.46s., i = +9m.48s. =PP +16s. and +11m.1s., SS = +15m.51s., i = +18m.51s. and +19m.46s.
Stuttgart iEZ = +8m.47s., iE = +9m.0s., e = +15m.46s. and +18m.1s., eEZ = +18m.38s., e = +19m.1s.
Feldberg i = +8m.29s., e = +8m.48s., i = +9m.39s., e = +15m.37s.
Strasbourg iP_s? = +8m.55s., iPP = +10m.3s., iS_s? = +16m.3s., iSSS = +18m.31s., iSSSS = +19m.29s.
Bergen PP = +10m.54s., SS = +19m.21s.
De Bilt iPPZ = +9m.3s., eSS = +16m.5s.
Uccle e = +9m.8s., i = +9m.11s., +10m.17s. and +11m.1s., +11m.22s., i = +11m.40s., +16m.31s., +19m.7s., and +19m.56s.
Paris iPP = +11m.11s.
Kew i = +9m.30s., eEZ = +11m.24s., eZ = +16m.53s., eE = +17m.18s., iZ = +17m.22s.
Kobe PN = +9m.6s.
Osaka i = +12m.12s.
Oxford e = +11m.43s., iSS = +17m.11s.
Edinburgh i = +12m.23s., +13m.17s., +17m.21s., and +20m.56s.
Stonyhurst ipP? = +9m.35s., i = +11m.39s., i_gS? = +17m.4s., i = +20m.53s., +21m.8s., +21m.24s., and +21m.36s.
Bidston i = +13m.13s.
Almeria +10m.14s. =P_cP −28s.
Toledo i = +10m.14s. =P_cP −28s.
Granada +10m.35s. =P_cP −10s., i = +11m.24s., +13m.16s. and +18m.24s.
Tananarive P_cP = +10m.51s., PPN = +11m.45s., eN = +14m.15s., SKS = +18m.58s., EN = +20m.46s., SSN = +21m.44s., N = +25m.10s., E = +25m18s.
Ottawa eN = +30m.6s.
Harvard i = +25m.0s. and +26m.29s.
Toronto i = +26m.47s.
Fordham eN = +20m.12s.
Pittsburgh ePP = +17m.43s., e = +23m.13s., eSKS = +23m.25s., ePS = +26m.1s., e = +27m.26s.
Chicago e = +22m.44s., SKS = +23m.35s., eSS = +31m.41s.
Tinemaha eE = +15m.22s.
San Juan ePP = +18m.50s., e = +19m.55s., and +27m.55s.
Long waves were also recorded at Charlottesville and Tashkent.

Oct. 5d. Readings also at 1h. (Adelaide), 2h. (Perth), 3h. (Suva and near Apia), 4h. (Apia), 6h. (Ottawa), 7h. (Granada, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Perth, Adelaide, Melbourne, Riverview, Wellington (2), near Hastings and New Plymouth, Baku (2), Ekaterinburg, La Paz, Nagoya, Kobe, near Osaka, Sumoto, and near Manila), 8h. (Kucino), 10h. (Naples and near Tyosi), 11h. (Wellington, Strasbourg, near Padova and Triest), 12h. (Amboina), 13h. (near Amboina), 18h. (Tucson), 19h. (Granada, near Batavia (3), and near Ksara), 20h. (Charlottesville, Tyosi, near Mizusawa, Sucre, and near La Paz), 22h. (Ottawa and Toronto).

Oct. 6d. 18h. 13m. 45s. Epicentre 10°·6S. 161°·7E. (as on 3d. 19h.). X.

$A = -\cdot933$, $B = +\cdot309$, $C = -\cdot184$; $D = +\cdot314$, $E = +\cdot949$; $G = +\cdot175$, $H = -\cdot058$, $K = -\cdot983$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		25·2	201	e 5 20	− 2	i 9 56	+12	—	—
Sydney		25·2	201	i 9 57	S	(i 9 57)	+13	14·8	15·6
Melbourne		31·1	206	—	—	i 11 13	− 8	15·5	20·0
Adelaide		32·2	218	—	—	e 11 15	−23	16·2	21·8
Wellington		32·8	163	i 7 43	PP	—	—	17·2	—
Christchurch		34·3	166	6 39	− 4	12 3	− 8	16·2	—
Perth		47·3	235	14 45	S	(14 45)	−38	—	27·2
Manila		47·6	301	8 53	+20	13 3	?	15·6	17·9
Zi-ka-wei	Z.	56·9	320	e 9 45	+ 3	e 17 21	−14	29·6	32·5
Sitka		84·9	29	—	—	e 23 3	− 4	e 38·4	—
Pasadena	Z.	88·0	55	e 12 49	+ 1	—	—	—	—
Haiwee	N.	88·6	52	e 13 10	+19	—	—	—	—
Tinemaha	N.	88·6	51	e 12 56	+ 5	—	—	—	—
Ottawa		120·2	42	—	—	e 31 45	?	e 56·2	—
San Juan		133·2	74	—	—	i 24 7	?	—	—
Stuttgart		135·6	335	e 22 57	PKS	—	—	e 80·2	—

Additional readings :—
Adelaide i = +14m.1s. and +15m.3s.
Pasadena eZ = +12m.57s.
Ottawa eN = +36m.39s. = SS +4s., and +40m.43s. = SSS −8s.
Long waves were also recorded at Honolulu T.H., Hong Kong, Victoria, Pittsburgh, and the European and Russian stations.

Oct. 6d. Readings also at 6h. (Branner and near Lick), 9h. (Algiers), 11h. (Tucson, near Takaka and Wellington), 12h. (Tucson, Ottawa, Pittsburgh, Berkeley, and Algiers), 14h. (Honolulu T.H., Berkeley, Lick, Mount Wilson, Riverside, Tinemaha, Haiwee, Pasadena, Sitka, Victoria, Seattle, Bozeman, Ottawa, Pittsburgh, Ann Arbor, and La Paz), 15h. (Baku, Ekaterinburg, and De Bilt), 17h. (Adelaide, Melbourne, Riverview, Perth, Christchurch, Wellington, Hong Kong, Zi-ka-wei, Bombay, Kucino, Baku, Ekaterinburg, Honolulu T.H., Pasadena, Berkeley, Riverside, Haiwee, Tinemaha, Mount Wilson, Victoria, Florence, Granada, and near Prato), 18h. (Ksara, Pulkovo, Copenhagen, Kucino, De Bilt, Uccle, Feldberg, Paris, Stuttgart, Strasbourg, Florence, Ottawa, Pittsburgh, and near Prato), 20h. (Suva), 21h. (Bombay, Tashkent, Medan, Hong Kong, Baku, Ekaterinburg, near Batavia, and near Neuchatel), 22h. (Kodaikanal).

Oct. 7d. Readings at 0h. (near Andijan), 2h. (Granada), 3h. (Baku), 4h. (Ksara), 7h. (near Berkeley, near Branner, and Lick), 8h. (near Manila and near Wellington), 9h. (Columbia, Ottawa, Pittsburgh, St. Louis, Tucson, Victoria, and San Juan), 10h. (Andijan, Tashkent (2), Ekaterinburg (2), Granada, and Scoresby Sund), 11h. (Baku, Pulkovo, Tashkent, Copenhagen, Feldberg, Stuttgart, Strasbourg, Paris, and Messina), 12h. (Adelaide, Perth, and Wellington), 14h. (Port au Prince), 15h. (Adelaide, Riverview, and Messina), 16h. (Perth, Suva, Wellington, Victoria, Ottawa, Baku, Ekaterinburg, Irkutsk, and near Matuyama), 20h. (near Andijan and Samarkand), 22h. (near Samarkand, near Matuyama, and Sumoto).

Oct. 8d. 23h. 22m. 42s. Epicentre 10°·6S. 161°·7E. (as on 6d.). X.

A = −·933, B = +·309, C = −·184; D = +·314, E = +·949; G = +·175, H = −·058, K = −·983.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		25·2	201	e 5 26	+ 4	9 56	+12	12·8	—
Melbourne		31·1	206	—	—	10 23	−58	13·5?	17·6
Adelaide		32·2	218	e 6 13?	−11	—	—	i 13·4	19·6
Mount Wilson	N.	88·0	55	e 12 51	+ 3	—	—	—	—
Pasadena	Z.	88·0	55	i 12 47	− 1	—	—	—	—
Victoria	E.	88·2	40	23 38	S	(23 38)	− 1	42·0	47·2
Haiwee	N.	88·6	52	e 12 47	− 4	—	—	—	—
Tinemaha	E.	88·6	51	e 13 1	+10	—	—	—	—
Ekaterinburg		104·9	326	e 18 32	[+31]	e 27 54	PS	49·3	—
Granada		150·3	336	i 19 30	[−12]	—	—	e 85·1	96·6

Additional readings:—
Adelaide e = +10m.21s., i? = +12m.42s.
Pasadena e = +12m.57s.
Long waves were also recorded at Christchurch, Perth, Hong Kong, Irkutsk, Tashkent, Kucino, Uccle, Ottawa, and Pittsburgh.

Oct. 8d. Readings also at 1h. (La Plata, near Santiago, Andijan, Samarkand, and near Hokoto), 2h. (Hong Kong, Adelaide, Riverview, Melbourne, Wellington, Perth, Honolulu T.H., Haiwee, Tinemaha, Mount Wilson, Pasadena, Victoria, Ottawa, Pittsburgh, Baku, Ekaterinburg, Irkutsk, Pulkovo, Kucino, Granada, near Andijan, Samarkand, and near Apia), 3h. (Copenhagen, Florence, and Ksara), 4h. (Perth, and near Tyosi), 5h. (near Amboina and near Tyosi), 8h. (Trenta and near Taranto), 10h. (La Paz), 11h. (Branner and near Lick), 14h. (Hong Kong, and near Manila), 16h. (Adelaide, Riverview, Perth, Wellington, Ekaterinburg, and Tashkent), 17h. (Adelaide, Riverview, Wellington, Ottawa, Strasbourg, and Stuttgart), 18h. (Andijan and Samarkand), 20h. (near Wellington), 22h. (near Hastings).

Oct. 9d. 2h. 45m. 36s. Epicentre 10°·6S. 161°·7E. (as on 8d.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		25·2	201	i 5 23	+ 1	9 44	0	—	14·4
Melbourne		31·1	206	6 24?	+ 9	11 20	− 1	13·6	17·6
Adelaide		32·2	218	e 6 58?	+34	i 11 29	− 9	14·4	18·8
Nagoya		51·4	335	e 9 56	+54	—	—	—	—
Medan		64·3	280	e 17 17	?	i 18 33	−38	—	—
Irkutsk		79·7	329	e 12 16	+10	e 22 24?	+12	—	—
Mount Wilson	N.	88·0	55	e 12 44	− 4	—	—	—	—
Pasadena		88·0	55	i 12 42	− 6	—	—	—	—
Victoria	E.	88·2	40	24 2	S	(24 2)	+23	41·9	53·8
Riverside	E.	88·5	55	e 12 44	− 6	—	—	—	—
Haiwee	N.	88·6	52	e 12 40	−11	—	—	—	—
Tinemaha	E.	88·6	51	e 12 46	− 5	—	—	—	—
Tashkent		98·7	311	—	—	e 28 42	?	—	53·7
Ekaterinburg		104·9	326	e 17 36	?	e 24 50	[+ 1]	41·4	53·7
Scoresby Sund		120·1	2	—	—	36 54	SS	62·4	—
Granada		150·3	336	i 19 47	[+ 5]	—	—	e 85·2	90·9

Additional readings:—
Medan S = +20m.8s., i = +21m.0s.
Ekaterinburg e = +18m.28s. =PP +9s. and +25m.5s.
Long waves were also recorded at Christchurch, Hong Kong, Ottawa, Pittsburgh, Kucino, and other European stations.

Oct. 9d. Readings also at 0h. (Branner (2), and Laibach), 1h. (Trenta), 2h. (Perth), 4h. (Wellington), 5h. (Casamari and Wellington), 6h. (Agra, Bombay, Colombo, Kodaikanal, Hyderabad, Hong Kong, Phu-Lien, Almata, Andijan, Tashkent, Ekaterinburg, Kucino, Pulkovo, Helsingfors, Copenhagen, De Bilt, Uccle, Granada, and La Paz), 7h. (Feldberg and Scoresby Sund), 9h. (Alicante and La Paz), 10h. (Tyosi and near Mizusawa), 11h. and 12h. (near Tyosi), 15h. (Andijan, Tashkent, Chiufeng, Irkutsk, Phu-Lien, Hong Kong, Bombay, Calcutta, and Hyderabad), 16h. (Almata, Tashkent, Pulkovo, Samarkand, Nagasaki, Copenhagen, Feldberg, and De Bilt), 17h. (Tashkent, Irkutsk, Hong Kong, Pulkovo, Ekaterinburg, Feldberg, Stuttgart, De Bilt, and Uccle), 23h. (Branner, Berkeley, Lick, Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson (2), Victoria, Ukiah, Buffalo, Ottawa, and Harvard).

Oct. 10d. 0h. 19m. 59s. Epicentre 9°·9S. 161°·4E. N.1.

Probable error of epicentre ±0°·25.

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

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		18·4	118	e 4 13	+ 2	8 1	+28	10·0	12·0
Riverview		25·7	200	i 5 28	+ 2	i 10 17	+24	—	13·5
Sydney		25·7	200	i 5 37	+11	i 10 37	SS	14·3	16·2
Apia		26·5	101	5 41	+ 7	e 9 44	−23	e 11·4	13·0
Arapuni		30·9	158	e 7 1	PP	12 31	SS	16·5	17·0
New Plymouth		31·3	161	10 1?	?	—	—	20·0	—
Melbourne		31·6	206	6 20	+ 1	11 49	+20	14·9	15·5
Adelaide		32·6	218	i 6 29	+ 1	i 11 45	0	i 14·6	20·5
Amboina		33·5	279	6 32	− 4	10 53	−65	17·0	—
Wellington		33·6	163	i 6 33	− 4	i 14 31	?	i 16·8	25·0
Christchurch		35·0	166	6 48	− 1	i 12 25	+ 4	18·0	—
Titizima		41·4	333	7 43	− 1	14 14	+17	—	—
Manila		47·0	301	8 27	− 2	15 33	+14	22·6	25·2
Perth		47·5	235	i 8 31	− 1	i 15 32	+ 6	—	25·0
Tyosi		49·6	338	e 8 56	+ 8	e 18 36	(− 6)	21·3	22·4
Siomisaki		49·7	332	8 48	− 1	15 51	− 6	—	—
Tokyo		50·0	337	8 56	+ 5	15 59	− 2	—	—
Kakioka		50·3	337	8 52	− 2	15 59	− 6	—	—
Nagoya		50·6	335	e 8 57	+ 1	16 2	− 7	22·0	26·7
Miyazaki		50·7	327	8 57	0	16 9	− 2	—	—
Honolulu T.H.		50·8	50	i 9 1	+ 4	i 16 14	+ 2	23·0	—
Osaka		50·9	332	8 56	− 2	16 9	− 4	22·1	28·0
Sumoto	E.	50·9	331	8 56	− 2	16 6	− 7	21·7	25·7
	N.	50·9	331	8 55	− 3	16 4	− 9	21·3	23·2
Koti		50·9	330	i 8 57	− 1	i 16 7	− 6	e 21·4	23·0
Kobe		51·1	332	e 8 58	− 2	e 16 11	− 5	e 21·4	28·0
Hukusima		51·5	339	9 2	− 1	16 16	− 6	—	—
Matuyama		51·6	330	i 8 59	− 4	i 16 17	− 6	22·1	23·3
Toyooka		52·0	333	i 9 7	+ 1	i 16 22	− 6	21·8	25·4
Nagasaki		52·2	327	9 6	− 2	16 26	− 5	22·0	31·0
Taihoku		52·2	314	i 9 24	+16	16 33	+ 2	21·1	—
Hukuoka		52·5	328	9 17	+ 7	16 29	− 6	22·1	26·0
Mizusawa	E.	52·5	340	8 43	−27	16 32	− 3	20·8	—
	N.	52·5	340	9 5	− 5	16 29	− 6	20·6	—
Morioka		53·1	341	9 12	− 3	16 35	− 8	—	—
Malabar		53·3	269	i 9 17	+ 1	i 16 43	− 3	24·0	—
Batavia		54·1	271	9 23	+ 1	15 41	?	26·8	—
Sapporo		56·1	343	9 43	+ 6	17 18	− 6	—	—
Zi-ka-wei		56·2	320	i 9 37	0	17 18	− 7	26·6	30·6
Hong Kong		56·4	306	9 38	− 1	17 24	− 4	27·5	30·2
Zinsen		57·5	327	9 45	− 2	17 40	− 3	—	—
Ootomari		59·0	346	10 13	+16	18 16	+13	—	—
Dairen		61·3	326	10 22	+ 8	18 32	− 1	—	—
Phu-Lien		62·0	300	e 10 17	− 1	18 42	0	27·0	33·4
Medan		63·9	280	i 15 40	?	—	—	34·0	—
Chiufeng		65·2	324	e 10 59	+19	e 19 26	+ 4	e 27·5	33·6
Calcutta		78·5	296	11 45	−15	20 35	?	36·7	37·8
Irkutsk		79·0	329	11 59	− 4	21 37	−28	35·0	—
Colombo		83·0	278	—	—	22 22	−25	34·7	43·8
Sitka		84·4	29	12 31	+ 1	i 22 51	[− 4]	e 36·6	—
Ukiah		85·2	48	12 32	− 2	23 4	− 6	e 35·3	—
Branner		85·5	50	e 11 38	−58	e 23 20	+ 7	—	—
Berkeley	E.	85·5	50	e 12 40	+ 4	i 23 6	[+ 3]	e 40·4	42·7
	N.	85·5	50	i 12 36	0	i 23 4	[+ 1]	e 41·7	—
Lick		85·9	50	e 12 39	+ 1	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Kodaikanal		86·0	281	e 12 49	+11	(i 23 19)	+ 1	i 23·3	59·5
Hyderabad		86·4	289	12 42	+ 2	23 8	[− 1]	41·4	61·4
Santa Barbara		86·6	55	e 12 44	+ 3	e 23 27	+ 4	—	—
Victoria	E.	87·8	40	12 47	0	23 6	[−13]	39·7	48·2
	N.	87·8	40	12 45	− 2	23 16	[− 3]	37·8	53·7
Pasadena		87·8	55	i 12 46	− 1	e 23 24	[+ 5]	e 41·8	—
Mount Wilson	N.	87·9	55	e 12 50	+ 3	—	—	—	—
Seattle		88·2	40	e 12 49	0	e 23 31	− 8	e 42·0	—
Tinemaha	E.	88·4	51	e 12 52	+ 2	e 24 38	PS	e 41·7	—
Riverside		88·4	55	e 12 50	0	e 23 35	− 6	—	—
Haiwee	N.	88·4	52	e 12 51	+ 1	—	—	—	—
Dehra Dun		89·4	301	12 51	− 4	23 41	− 9	36·2	50·0
Agra		91·3	299	e 12 30	−33	—	—	e 40·4	49·5
Bombay		91·9	290	14 5	+59	24 38	+24	46·0	49·8
Almata		92·8	314	e 13 6	− 4	—	—	—	—
Tucson		93·4	57	e 13 13	0	i 24 11	{+ 9}	e 38·2	—
Bozeman		95·4	44	e 13 24	+ 2	e 24 1	[− 2]	e 46·0	—
Andijan		95·7	311	e 13 41	+17	e 24 39	− 9	45·7	—
Tashkent		98·1	311	e 13 30	− 5	e 24 49	{+10}	—	—
Denver	E.	99·0	50	—	—	e 24 34	{−12}	47·2	50·3
Samarkand		99·6	310	e 13 38	− 4	e 24 28	[+ 5]	32·0	—
Ekaterinburg		104·1	326	i 14 5	+ 3	i 25 53	− 9	43·0	—
Tananarive		108·8	246	18 58	PP	24 58	[−10]	45·0	57·0
St. Louis	E.	110·5	51	e 19 35	PP	e 25 15	[− 1]	e 48·8	54·4
Madison		110·7	46	i 17 17	[−63]	i 25 39	[+23]	—	57·3
Chicago		112·2	48	e 14 45	+ 4	e 25 26	[+ 3]	51·9	—
Santiago		114·2	133	e 17 1	[−90]	29 41	PS	—	—
Ann Arbor		115·0	47	e 19 55	PP	i 25 43	[+ 9]	45·4	70·8
Kucino		116·6	328	19 14	PP	26 43	{−10}	37·8	60·9
Toronto	E.	117·8	45	e 15 16	+ 8	25 53	[+10]	56·0	64·5
Pittsburgh		118·1	48	—	—	e 25 55	[+11]	e 53·5	—
Pulkovo		118·3	335	15 3	− 8	25 36	[− 9]	52·0	58·5
Columbia		118·3	56	—	—	26 1	[+16]	59·0	—
Buffalo		118·4	46	e 15 11	0	—	—	63·0	—
Scoresby Sund		119·3	2	20 10	PP	25 47	[− 1]	e 50·1	—
Charlottesville		119·6	51	—	—	e 26 8	[+19]	e 47·9	—
Ottawa		119·8	42	e 15 18	0	e 25 56	[+ 6]	e 56·0	—
Helsingfors	E.	120·3	336	e 18 31	[−16]	e 25 42	[− 9]	e 45·0	—
Georgetown		120·6	50	e 15 18	− 5	30 23	PS	61·0	—
La Plata		121·8	142	20 29	PP	—	—	59·2	—
Johannesburg		122·1	230	—	—	30 1?	PS	62·0	69·0
Theodosia		122·1	317	e 18 54	[+ 4]	—	—	44·0	—
Fordham		122·5	47	e 15 28	− 4	26 1	[+ 3]	57·0	—
Simferopol		123·0	317	e 19 3	[+10]	—	—	e 46·4	—
Yalta		123·0	317	e 19 17	[+24]	—	—	e 46·6	—
Upsala		123·2	339	e 19 6	[+13]	25 56	[− 4]	e 54·0	77·3
Sebastopol		123·5	317	e 18 51	[− 3]	—	—	51·0	—
Harvard		123·9	44	e 15 46	+ 7	e 25 50	[−12]	e 57·0	—
Ivigtut		124·3	16	18 55	[− 1]	30 41	PS	—	—
La Paz		124·3	119	18 58	[+ 2]	29 53	PS	59·2	94·7
Ksara		124·8	305	e 19 8	[+11]	e 29 38	PS	58·1	76·7
Königsberg		125·5	334	i 19 58	[+60]	e 26 44	[+37]	e 56·0	75·0
Sucre		125·6	123	e 19 5	[+ 7]	—	—	—	—
Bergen		126·4	346	20 46	PP	—	—	64·0	82·0
Lemberg	E.	126·8	325	20 30	PP	—	—	54·9	75·5
	N.	126·8	325	19 52	[+51]	—	—	56·9	73·3
Port au Prince		127·4	75	e 19 11	[+ 9]	e 29 55	?	e 62·4	—
Lund		127·9	339	19 1?	[− 2]	28 25	{+17}	—	—
Copenhagen		128·2	339	19 2	[− 1]	26 1	[−13]	46·0	—
Helwan		129·5	300	e 19 13	[+ 7]	31 16	PS	—	86·5
Potsdam		130·4	335	i 19 27	[+19]	i 32 40	PS	e 53·0	72·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hamburg		130·7	338	19 7	[− 1]	—	—	e 53·7	75·7
Budapest		130·8	327	19 11	[+ 2]	—	—	55·0	76·0
Prague		131·5	332	e 18 42	[−27]	e 22 39	PKS	e 54·0	75·0
Belgrade		131·6	322	19 10	[0]	—	—	e 54·8	79·0
Vienna		131·7	330	e 19 18	[+ 8]	—	—	e 44·5	74·5
Jena	z.	132·1	335	e 19 9	[− 1]	—	—	e 65·0	73·0
Göttingen		132·3	336	e 19 13	[+ 2]	—	—	e 66·0	79·5
Edinburgh		132·4	348	i 22 41	PKS	—	—	55·0	74·9
Cheb		132·4	333	e 19 23	[+12]	—	—	e 54·0	78·1
Graz		133·0	329	e 19 32	[+20]	—	—	61·0	79·6
Durham		133·1	346	20 0	[+48]	—	—	—	79·2
San Juan		133·2	74	i 19 21	[+ 9]	—	—	62·0	—
Zagreb		133·5	326	e 19 13	[0]	(e 26 50)	[+21]	61·0	71·4
De Bilt		133·6	340	e 19 11	[− 2]	—	—	e 58·0	69·5
Feldberg		133·9	337	e 19 14	[+ 1]	—	—	e 54·7	75·5
Laibach		134·1	329	—	—	e 22 32	PKS	e 56·3	67·2
Stonyhurst		134·1	346	i 21 48	PP	—	—	55·0	81·3
Stuttgart		134·7	335	e 19 17	[+ 3]	i 26 25	[− 8]	e 60·0	73·5
Bidston		134·7	346	e 19 29	[+15]	i 22 51	PKS	e 56·0	81·8
Triest		134·8	329	e 19 17	[+ 2]	25 14	?	e 56·9	77·5
Innsbruck		134·8	332	e 19 19	[+ 4]	e 22 55	PKS	—	79·0
Karlsruhe		134·9	335	19 31	[+16]	i 22 57	PKS	e 67·0	80·0
Uccle		135·0	340	e 19 12	[− 3]	i 22 50	PKS	55·0	75·1
Strasbourg		135·5	336	16 26	− 9	e 26 24	[− 9]	e 60·0	77·3
Treviso		135·6	330	i 19 18	[+ 2]	40 1	SS	65·2	78·3
Venice		135·7	330	e 19 36	[+20]	e 35 21	?	—	—
Oxford		135·8	345	e 19 19	[+ 3]	e 21 49	PP	e 47·5	80·0
Chur		135·9	333	e 19 21	[+ 5]	—	—	—	—
Padova		136·0	330	19 22	[+ 6]	—	—	57·0	—
Taranto		136·0	320	19 43	[+27]	31 23	?	46·5	82·4
Zurich		136·1	333	19 20	[+ 4]	—	—	—	—
Neuchatel		137·1	335	e 19 1?	[−17]	—	—	—	—
Paris		137·2	340	e 19 15	[− 3]	—	—	40·0	63·0
Piacenza		137·3	330	19 27	[+ 9]	36 1	?	56·0	81·6
Besançon		137·3	335	e 19 54	[+36]	e 31 31	SKSP	56·0	82·0
Prato		137·4	328	e 19 40	[+22]	40 1	SS	54·0	71·6
Florence		137·4	328	i 19 36	[+18]	22 49	PKS	—	—
Pavia		137·5	330	e 19 6	[−12]	—	—	—	—
Trenta		137·6	319	e 18 41	[−38]	31 1	?	53·0	70·0
Naples	E.	137·6	321	e 19 44	[+25]	e 33 19	PS	67·0	82·0
Livorno		138·0	328	19 59	[+40]	32 1?	SKSP	—	—
Catania		139·0	316	19 20	[0]	—	—	57·8	82·4
Marseilles		140·6	333	e 20 5	[+43]	—	—	50·0	—
Bagnères		143·0	337	e 19 36	[+ 9]	—	—	60·0	—
Barcelona		143·5	333	e 19 25	[− 4]	e 32 0	?	e 59·4	76·2
Tortosa		144·8	336	i 19 32	[− 1]	—	—	48·8	88·3
Algiers		146·7	327	i 19 38	[+ 1]	e 33 0	?	61·4	89·0
Alicante		147·3	334	i 19 43	[+ 5]	e 35 8	?	e 48·9	88·7
Toledo		147·4	339	e 19 38	[0]	—	—	e 48·1	90·7
Almeria		149·3	334	i 19 39	[− 2]	—	—	61·6	—
Granada		149·6	336	i 19 40	[− 1]	—	—	61·5	86·3
Malaga		150·3	337	19 48	[+ 6]	e 33 51	SKSP	—	89·7
San Fernando		151·2	339	19 52	[+ 9]	33 40	SKSP	—	93·5
Azores		151·4	12	18 13	[−90]	(33 43)	SKSP	—	33·7
Dakar		175·1	347	e 20 31	[+25]	—	—	—	104·0

For Notes see next page.

NOTES TO OCT. 10d. 0h. 19m. 59s.

Additional readings and note :—

Suva iP = +4m.21s., i = +6m.1s.
Sydney eP = +4m.1s.
Arapuni PP = +8m.1s., SS = +14m.28s.
Melbourne PPP = +7m.36s., i = +11m.39s., SS = +13m.39s.
Adelaide iPPP = +7m.41s., i = +7m.51s.
Wellington PP = +8m.10s.
Christchurch P = +6m.55s., iZ = +7m.1s. and +12m.42s.
Manila SSSE = +20m.49s.
Perth iP = +8m.43s., eP = +8m.51s., iS = +16m.1s.
Koti i = +9m.22s.
Kobe iZ = +9m.6s. and +12m.10s.
Zi-ka-wei SSN? = +20m.19s.
Hong Kong PP = +12m.6s., ? = +15m.41s., SS = +21m.58s., SSS = +23m.57s.
Medan i = +16m.8s. and +16m.15s.
Chiufeng iZ = +11m.12s., +11m.28s., and +11m.51s., iN = +12m.9s., PSE = +19m.39s.
Sitka PP = +16m.25s.
Ukiah e = +18m.16s. and +28m.1s. =SS −29s.
Berkeley eE = +22m.42s., eEN = +23m.2s. and +37m.0s.
Hyderabad SKS = +35m.21s.
Pasadena iZ = +17m.31s., eEN = +23m.46s. =S +11s. and +24m.12s. =PS −13s.
Seattle SKS = +23m.15s.
Riverside eE = +23m.17s.
Tucson eSS = +30m.37s.
Bozeman ePP = +17m.25s.
Tashkent i = +13m.48s., e = +18m.37s.
Denver ePSE = +26m.30s.
Ekaterinburg iPKP = +17m.41s. =PP −32s., iSKS = +24m.40s., iPS = +37m.0s. =SSS +10s.
Tananarive E = +20m.55s., PPPE = +21m.53s., PS = +28m.34s., N = +29m.52s. E = +29m.57s., N = +32m.1s.?, E = +32m.22s., SS = +34m.7s.
Madison iSKPS = +24m.13s., iPS = +27m.31s., iSS = +33m.35s., iSSS = +37m.59s. ; T_0 =0h.19m.48s.
Chicago PKP = +18m.27s., e = +19m.12s. =PP −1s. and +21m.46s. = PPP +16s., eS = +26m.55s., PS = +28m.46s., SS = +34m.35s., eSSS = +38m.31s.
Ann Arbor eN = +25m.1s., iPS = +29m.25s., eSSN = +35m.31s., eSSE = +35m.55s., eSSSN = +39m.13s., iSSSE = +40m.1s. ; T_0 =0h.20m.12s.
Kucino PPS = +29m.46s.
Toronto ePPE = +20m.8s., PS = +29m.41s., SSE = +36m.23s., SSSE = +41m.8s. ; T_0 =0h.19m.48s.
Pittsburgh ePP = +20m.1s., PS = +29m.52s., eSS = +36m.19s.
Pulkovo PKP = +18m.37s., PP = +19m.57s., PS = +29m.29s., SS = +35m.19s.
Columbia PP = +20m.1s., PS = +29m.51s., eSS = +36m.25s.
Buffalo ePKP = +18m.53s., e = +20m.57s., +23m.55s., and +32m.37s.
Scoresby Sund PPP = +22m.31s., SKKS = +27m.9s., PS = +29m.55s., e = +32m.43s., and +34m.25s., SS = +36m.43s., SSS = +41m.19s.
Charlottesville ePP = +20m.18s., ePS = +30m.14s., i = +34m.54s., eSS = +36m.35s.
Ottawa ePKPZ = +18m.48s. =PKP +3s., ePP = +20m.8s., eSKKS = +27m.24s., ePS = +29m.49s., ePSKS = +30m.6s., eN = +35m.10s., eSS = +37m.1s., eN = +39m.33s., eE = +39m.48s., eSSSN = +41m.50s., eSSSS = +45m.18s., eN = +48m.25s., e = +49m.41s.
Helsingfors eE = +19m.52s., and +20m.20s. =PP +9s., ePPPE = +22m.44s., eE = +24m.27s., and +27m.20s. =SKKS +2s., ePSE = +29m.42s. =SKSP −15s., eE = +30m.25s., ePPSE = +31m.7s., eE = +33m.6s., eSSE = +36m.3s., eE = +37m.52s., eSSSE = +41m.45s.
Georgetown PKPZ = +18m.50s., PPZ = +20m.15s. ; T_0 =0h.19m.48s.
Fordham ePKPEZ = +19m.0s., ePS = +30m.31s., iSSEN = +37m.1s.
Upsala ePPN = +20m.28s., ePSE = +30m.32s., eSKSP = +31m.3s., eSS = +37m.31s., eSSS = +42m.1s., eE = +52m.1s.
Harvard ePKPE = +19m.15s., iPP = +20m.46s., eSKS = +27m.16s., iPS = +30m.52s., iE = +32m.10s., eSS = +37m.54s., eSSS = +42m.31s., e = +47m.31s.
Ivigtut +20m.59s. =PP +20s., eN = +27m.43s. =SKKS −2s., +37m.37s. = SS +9s.
La Paz iZ = +20m.45s. =PP +6s., PPN = +22m.29s., PPPN = +24m.11s., iSE = +31m.15s., PSE = +32m.25s., SSE = +38m.21s., SSSE = +43m.13s.
Ksara ePKPN = +19m.12s., PPE? = +20m.46s., PPN? = +20m.55s., eN = +33m.19s., eE = +33m.23s., eN = +35m.44s., +37m.49s. =SS −15s. and +39m.56s., SSE? = +42m.52s., SSN? = +42m.55s., eN = +48m.49s., and +55m.0s.
Königsberg e = +20m.52s. =PP +5s., +21m.32s., +21m.51s., +22m.7s., and +23m.1s., PP? = +23m.49s., e = +24m.17s., +24m.56s., +27m.46s. = SKKS +7s., +30m.28s. =SKSP +9s., +31m.36s., and +32m.49s., SS = +37m.8s.

Continued on next page.

Bergen i = +30m.58s. =PS −2s. and +52m.27s.
Port au Prince iNE = +19m.29s., PP = +21m.4s., i = +22m.26s., PPP = +22m.3s., i = +24m.24s., and +25m.30s.
Lund +21m.3s. =PP +0s., +32m.25s., and +36m.35s.
Copenhagen +21m.3s. =PP −2s., +22m.7s., +22m.25s., +28m.1s., and +32m.25s.
Helwan PP = +21m.16s.
Potsdam iN = +21m.27s. =PP +7s., iPPN = +22m.30s., iN = +22m.45s., iSSN = +38m.9s., eSSSN = +45m.1s., iN = +46m.54s.?
Hamburg eZ = +21m.22s., iE = +22m.32s. =PKS −4s., eZ = +45m.13s., iE = +46m.49s., and iZ = +47m.1s.
Prague ePP = +21m.31s., eSS = +39m.55s.
Belgrade e = +21m.36s. =PP +8s., and +22m.42s. =PKS +2s., ePKS = +22m.50s., e = +24m.1s. =PPP −10s.
Vienna PP = +21m.4s., PPP = +22m.41s., P_cS = +23m.22s., SSS? = +35m.19s., i = +36m.59s.
Jena eZ = +19m.18s., eNZ = +21m.31s. =PP +0s., iNZ = +21m.55s., eNZ = +22m.37s., eE = +22m.41s. =PKS −2s., iNZ = +22m.46s., iE = +22m.51s., eN = +40m.1s., and +45m.1s., i = +47m.6s.
Göttingen iZ = +21m.32s. =PP +0s., eZ = +22m.35s., eEN = +22m.46s. = PKS +3s., and +39m.55s., iZ = +43m.39s. and +47m.5s., eL_q = +55·0m.
Edinburgh i = +40m.52s., +44m.31s., and +54m.43s.
Cheb e = +21m.9s., +22m.42s. =PKS −2s., and +39m.37s.
Graz $iPKP_a$ = +22m.55s. =PKS +9s., iPP = +24m.35s. =PPP +13s., iPS = +35m.1s.
Durham +21m.43s. =PP +5s., +22m.46s. =PKS −1s.
San Juan iPP = +22m.37s. =PKS −10s., eSS = +40m.1s.
Zagreb e = +22m.8s., iPKP = +22m.51s. =PKS +3s., i = +23m.19s., iPP = +22m.18s., eSKKS = +31m.25s. =SKSP −14s., ePS = +33m.49s., eSKSP = +34m.13s., ePPSNE = +35m.31s., eSS = +40m.2s., ePP′ = +40m.49s., ePPS = +41m.10s., eSKKS′ = +43m.12s., eSSS = +44m.40s., eSSSS = +49m.26s., e = +56m.24s ; true SKS is given as ePPPNE.
De Bilt iZ = +21m.36s. =PP −5s., eEN = +21m.45s.
Feldberg i = +20m.26s., +21m.42s. =PP −1s., +22m.44s. =PKS −6s., eE = +22m.49s.
Laibach e = +12m.26s. and +13m.7s.
Stonyhurst i? = +23m.43s., i = +25m.18s., SSS? = +44m.1s. ?
Stuttgart ePZ = +16m.21s., iZ = +19m.46s. and +20m.23s., ePP = +21m.41s., iPKS = +22m.52s., e = +47m.14s.
Bidston i = +35m.31s., e = +40m.1s., i = +45m.31s.
Triest PKP = +21m.58s., i = +22m.45s., iPP = +24m.20s., eSS = +41m.38s.
Innsbruck e = +23m.37s. and +31m.13s.
Uccle eP = +16m.27s., i = +19m.26s., iPP = +21m.55s., iPPP = +35m.7s., iSS = +40m.3s., i = +43m.43s. ,and +47m.14s.
Strasbourg iPKP = +19m.18s., ePP = +22m.26s., SKP = +22m.52s., e = +43m.46s., i = +47m.17s.
Zurich e = +22m.0s. =PP +3s. and +23m.0s. =PKS +2s.
Paris e = +19m.30s., PP = +22m.2s.
Marseilles e = +23m.35s.
Bagnères ePP? = +23m.21s. =PKS +5s., +23m.26s., e = +27m.30s.
Algiers PP? = +21m.0s., PS? = +38m.0s., SS = +44m.7s.
Alicante +44m.6s.
Toledo iPKP = +19m.43s., PP = +23m.31s.
Almeria SS = +41m.49s.
Granada i = +19m.47s., PP = +23m.1s., SS = +41m.51s.
Dakar ePP = +25m.50s.
Long waves were also recorded at Cape Town, Entebbe, and Balboa Heights.

Oct. 10d. 0h. 44m. 24s. Epicentre 9°·9S. 161°·4E. (as at 0h. 19m.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Koti		50·9	330	e 9 0	+ 2	e 16 13	0	—	—
Nagasaki		52·2	327	9 4	− 4	16 26	− 5	—	—
Berkeley		85·5	50	e 12 35	− 1	—	—	—	—
Branner		85·5	50	e 12 42	+ 6	—	—	—	—
Lick		85·9	50	e 12 35	− 3	—	—	—	—
Santa Barbara		86·6	55	e 12 48	+ 7	—	—	—	—
Pasadena		87·8	55	e 12 40	− 7	—	—	—	—
Mount Wilson	N.	87·9	55	e 12 47	0	—	—	—	—
La Jolla	E.	88·2	56	e 12 49	0	—	—	—	—
Riverside		88·4	55	e 12 50	0	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tinemaha	E.	88·4	51	e 12 49	− 1	e 24 27	PS	—	—
Haiwee	N.	88·4	52	e 12 54	+ 4	—	—	—	—
La Paz	Z.	124·3	119	19 14	[+18]	—	—	—	—
Bergen		126·4	346	18 46	[−14]	—	—	—	—
Vienna		131·7	330	e 19 15	[+ 5]	—	—	—	—
Triest		134·8	329	e 19 21	[+ 6]	—	—	—	—
Innsbruck		134·8	332	e 22 48	PKS	—	—	—	—
Treviso		135·6	330	i 19 22	[+ 6]	—	—	—	—
Trenta		137·6	319	e 21 26	?	—	—	—	—
Tortosa		144·8	336	19 34	[+ 1]	—	—	—	—
Alicante		147·3	334	19 41	[+ 3]	—	—	—	—
Toledo		147·4	339	e 19 40	[+ 2]	—	—	—	—
Almeria		149·3	334	i 19 48	[+ 7]	—	—	—	—
Granada		149·6	336	e 19 51	[+10]	—	—	—	80·7
Malaga		150·3	337	i 19 50	[+ 8]	—	—	e 86·8	—
San Fernando	E.	151·2	339	19 59	[+16]	—	—	—	—

Additional readings :—
Pasadena eN = +12m.47s.
Tinemaha eE = +12m.56s.
Triest PKP = +22m.1s. =PP +13s.
Almeria PP = +23m.59s.
Granada i = +20m.8s., PP = +24m.2s.

Oct. 10d. 1h. 8m. 25s. Epicentre 9°·9S. 161°·4E. (as at 0h.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		47·0	301	9 1	+32	13 45	?	—	—
Osaka		50·9	332	8 19	−39	15 54	−19	22·6	24·5
Koti		50·9	330	e 8 54	− 4	e 16 21	+ 8	e 22·6	—
Kobe		51·1	332	e 8 56	− 4	—	—	e 22·6	25·9
Nagasaki		52·2	327	9 5	− 3	16 27	− 4	—	—
Berkeley		85·5	50	e 12 33	− 3	—	—	—	—
Branner		85·5	50	e 13 35	+59	—	—	—	—
Lick		85·9	50	e 12 35	− 3	—	—	—	—
Santa Barbara		86·6	55	e 12 46	+ 5	e 23 22	− 1	—	—
Pasadena		87·8	55	e 12 47	0	—	—	—	—
Mount Wilson	N.	87·9	55	e 12 49	+ 2	—	—	—	—
La Jolla	E.	88·2	56	e 12 50	+ 1	—	—	—	—
Riverside		88·4	55	e 12 47	− 3	e 23 29	−12	—	—
Tinemaha		88·4	51	e 12 55	+ 5	e 23 35	− 6	—	—
Haiwee	N.	88·4	52	e 12 49	− 1	—	—	—	—
Tananarive		108·8	246	—	—	24 35?	[−33]	—	53·7
La Paz	Z.	124·3	119	e 19 10	[+15]	—	—	—	—
Port au Prince		127·4	75	e 21 4	PP	—	—	e 57·0	—
Triest		134·8	329	e 19 16	[+ 1]	—	—	e 48·6	78·1
Treviso		135·6	330	i 19 20	[+ 4]	—	—	—	—
Trenta		137·6	319	e 21 35	PP	—	—	—	—
Tortosa		144·8	336	19 32	[− 1]	—	—	—	—
Alicante		147·3	334	19 50	[+12]	—	—	—	—
Toledo		147·4	339	19 37	[− 1]	—	—	—	—
Almeria		149·3	334	i 19 49	[+ 8]	—	—	—	—
Granada		149·6	336	e 19 50	[+ 9]	—	—	—	—
Malaga		150·3	337	e 19 49	[+ 7]	—	—	e 62·8	—
San Fernando	E.	151·2	339	20 15	[+32]	—	—	—	—

Additional readings :—
Kobe ePN = +9m.4s.
Tananarive PSE = +28m.15s., SSE = +34m.11s.
Port au Prince i = +22m.18s., +39m.43s., +43m.24s., and +45m.47s.
Triest PKP = +21m.56s. =PP +8s., iPP = +24m.18s.
Granada i = +21m.17s. and +36m.16s.
Long waves were also recorded at Adelaide and Arapuni.

Oct. 10d. 1h. 30m. 53s. Epicentre 9°·9S. 161°·4E. (as at 1h. 8m.). X.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Adelaide		32·6	218	—	—	i 10 47	−58	i 13·8	18·5
Christchurch		35·0	166	e 6 49	0	—	—	—	—
Manila		47·0	301	8 50	+21	14 40	−39	—	—
Koti		50·9	330	e 8 57	− 1	e 16 19	+ 6	—	—
Kobe		51·1	332	e 8 54	− 6	—	—	e 18·5	25·3
Nagasaki		52·2	327	9 8	0	16 26	− 5	—	—
Berkeley		85·5	50	e 12 34	− 2	—	—	—	—
Branner		85·5	50	e 12 43	+ 7	—	—	—	—
Lick		85·9	50	e 12 37	− 1	—	—	—	—
Pasadena		87·8	55	e 12 44	− 3	—	—	—	—
La Jolla	E.	88·2	56	e 12 50	+ 1	—	—	—	—
Riverside		88·4	55	e 12 51	+ 1	—	—	—	—
Tinemaha	E.	88·4	51	e 12 49	− 1	—	—	—	—
Haiwee	N.	88·4	52	e 12 52	+ 2	—	—	—	—
Tananarive		108·8	246	19 49	?	28 7?	?	—	58·1
Vienna		131·7	330	e 17 53	?	—	—	—	—
Innsbruck		134·8	332	22 31	PKS	—	—	—	—
Triest		134·8	329	e 18 10	[−65]	—	—	e 47·1	76·2
Treviso		135·6	330	e 18 7	[−69]	—	—	—	—
Tortosa	N.	144·8	336	19 24	[− 9]	—	—	—	—
Alicante		147·3	334	20 2	[+24]	—	—	—	—
Toledo		147·4	339	e 19 34	[− 4]	—	—	—	—
Granada		149·6	336	i 19 47	[+ 6]	—	—	—	—

Additional readings :—
Kobe ePN = +8m.57s.
Triest iPP = +23m.6s. = PKS +13s.
Tortosa PE = +19m.38s.
Granada i = +28m.22s.
Long waves were also recorded at Arapuni.

Oct. 10d. 2h. 16m. 52s. Epicentre 9°·9S. 161°·4E. (as at 1h.). X.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		25·7	200	e 5 16	−10	—	—	—	14·9
Adelaide		32·6	218	i 8 18	?	(i 11 24)	−21	i 11·4	19·6
Christchurch	N.	35·0	166	e 6 30	−19	i 11 44	−37	—	—
Koti	Z.	50·9	330	e 9 59	(−20)	(e 16 45)	+32	—	—
Osaka		50·9	332	e 9 10	+12	e 16 38	+25	—	24·3
Nagasaki		52·2	327	9 5	− 3	16 30	− 1	—	—
Lick		85·9	50	e 12 38	0	—	—	—	—
Pasadena		87·8	55	e 12 47	0	—	—	—	—
La Jolla	E.	88·2	56	e 13 4	+15	—	—	—	—
Riverside		88·4	55	e 12 59	+ 9	—	—	—	—
Tinemaha		88·4	51	e 12 52	+ 2	e 23 34	− 7	—	—
Almata		92·8	314	13 44	+34	—	—	—	—
Andijan		95·7	311	14 18	+54	—	—	—	—
Samarkand		99·6	310	12 32	−70	—	—	—	—
La Paz	Z.	124·3	119	e 14 46	?	—	—	—	—
Vienna		131·7	330	e 17 0	?	—	—	—	—
Triest		134·8	329	e 19 6	[− 9]	—	—	—	76·1
Innsbruck		134·8	332	18 8?	[−67]	e 22 56	PKS	—	—
Treviso		135·6	330	14 38	?	—	—	—	—
Trenta		137·6	319	e 22 38	PP	—	—	—	—
Tortosa		144·8	336	19 33	[0]	—	—	—	—
Alicante		147·3	334	19 48	[+10]	—	—	—	—
Almeria		149·3	334	i 19 43	[+ 2]	—	—	—	—
Granada		149·6	336	i 19 49	[+ 8]	—	—	—	—
San Fernando	E.	151·2	339	20 15	[+32]	—	—	—	—

Additional readings and note :—
Riverview iZ = +5m.44s. and +6m.0s.
Koti gives its readings as P's of two separate shocks.
Triest i = +22m.49s. = PKS −4s., PP = +24m.4s.
Long waves were also recorded at Arapuni.

Oct. 10d. 2h. 55m. 51s. Epicentre 9°·9S. 161°·4E. (as at 2h. 16m.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		18·4	118	i 4 9?	− 2	—	—	—	—
Riverview		25·7	200	i 5 47	+21	i 10 17	+24	—	14·2
Sydney		25·7	200	i 4 21	−65	i 9 21	−32	13·4	15·8
Arapuni		30·9	158	—	—	e 9 51	?	—	17·2
Adelaide		32·6	218	6 9?	−19	i 11 46	+ 1	15·3	18·3
Christchurch		35·0	166	i 7 18	+29	i 12 39	+18	—	—
Koti		50·9	330	e 9 57	+59	—	—	—	—
Osaka		50·9	332	e 14 44	?	—	—	e 23·3	26·5
Nagasaki		52·2	327	9 11	+ 3	16 30	− 1	—	—
Pasadena		87·8	55	e 12 48	+ 1	—	—	—	—
Tinemaha	E.	88·4	51	e 12 53	+ 3	e 23 38	− 3	—	—
Almata		92·8	314	15 37	?	—	—	—	—
Andijan		95·7	311	14 37	+73	—	—	—	—
La Paz	Z.	124·3	119	e 19 32	[+36]	—	—	—	—
Vienna		131·7	330	e 20 51	?	—	—	—	—
Triest		134·8	329	e 19 45	[+30]	—	—	e 48·2	80·2
Tortosa		144·8	336	e 19 35	[+ 2]	—	—	—	—
Alicante		147·3	334	20 4	[+26]	—	—	—	—
Almeria		149·3	334	i 19 47	[+ 6]	—	—	—	—
Granada		149·6	336	i 19 59	[+18]	—	—	—	—

Additional readings :—
Triest e = +21m.59s. =PP +11s. PP = +23m.59s.
Long waves were also recorded at Perth.

Oct. 10d. 7h. 9m. 39s. Epicentre 9°·9S. 161°·4E. (as at 2h.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sydney		25·7	200	5 27	+ 1	—	—	14·8	16·4
Adelaide		32·6	218	(7 9?)	+41	—	—	7·2?	19·5
Christchurch		35·0	166	(6 51)	+ 2	—	—	17·8	—
Hong Kong		56·4	306	—	—	20 12	?	—	30·1
Irkutsk		79·0	329	e 12 0	− 3	21 55	−10	36·4	46·8
Pasadena		87·8	55	e 12 47	0	—	—	—	—
Victoria		87·8	40	14 31	+104	23 39	− 6	32·6	45·7
Tinemaha	E.	88·4	51	e 12 52	+ 2	—	—	—	—
Bombay		91·9	290	e 22 21	?	—	—	—	—
Ekaterinburg		104·1	326	e 17 50	?	e 24 45	[0]	40·4	67·0
Tortosa	N.	144·8	336	19 34	[+ 1]	—	—	—	—
Granada		149·6	336	i 19 51	[+10]	—	—	75·4	83·4

Additional readings and note :—
Adelaide e = +1m.39s. and +4m.21s.
Christchurch gives P as LN.
Ekaterinburg i = +18m.23s. =PP +10s.
Long waves were also recorded at Wellington, Melbourne, Scoresby Sund, also at the Russian, European, and American stations.

Oct. 10d. 16h. 37m. 13s. Epicentre 59°·3N. 147°·8E. (as on 1931 July 15d.). R.2.

A = −·432, B = +·272, C = +·860 ; D = +·533, E = +·846 ;
G = −·728, H = +·458, K = −·510.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ootomari		13·0	197	3 13	+11	6 19	+52	—	—
Mizusawa	E.	20·6	195	4 26	−10	8 33	SS	11·2	—
	N.	20·6	195	3 41	−55	8 23	+ 5	10·5	—
Hukusima		22·1	196	4 50	− 2	9 12	SS	—	—
Irkutsk		25·0	273	e 5 18	− 2	9 42	+ 1	12·5	—

Continued on next page.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Nagoya		25·2	201	e 5 37	+15	—	—	—	—
Osaka		25·9	204	5 32	+ 4	(10 4)	+ 7	10·1	14·9
Kobe		26·0	204	e 5 30	+ 1	—	—	e 12·8	16·7
Sumoto		26·4	204	e 7 58	+145	—	—	13·2	17·5
Koti		27·4	206	—	—	e 11 47?	SS	—	—
Chiufeng		27·6	240	e 5 44	0	10 44	+19	e 15·1	—
Zi-ka-wei	Z.	33·2	223	e 8 28	+114	—	—	17·7	21·4
Sitka		38·3	58	—	—	e 15 47	SS	e 20·7	—
Ekaterinburg		42·8	308	e 7 56	+ 1	14 23	+ 5	19·8	24·7
Hong Kong		44·0	228	14 27	S	(14 27)	− 9	21·6	26·5
Andijan		48·8	283	e 8 38	− 4	—	—	e 19·8	26·4
Victoria	E.	49·5	60	10 51	PP	15 47	− 7	19·8	27·8
	N.	49·5	60	10 51	PP	16 7	+13	19·8	29·6
Tashkent		49·9	286	—	—	e 15 56	− 3	25·9	29·9
Pulkovo		51·5	325	8 59	− 4	16 18	− 4	26·3	31·6
Kucino		52·2	319	e 9 11	+ 3	16 29	− 2	24·8	32·7
Samarkand		52·3	285	e 9 9	0	—	—	26·3	—
Helsingfors	E.	52·5	329	—	—	e 16 30	− 5	e 26·8	—
Upsala		54·7	332	—	—	e 20 44	SS	e 28·8	34·9
Calcutta		55·3	257	17 1	S	(17 1)	−12	30·8	—
Agra	N.	56·7	269	e 17 10	S	(e 17 10)	−22	—	—
Berkeley		58·1	69	—	—	e 17 29	−22	—	—
Königsberg		58·3	327	e 9 57	+ 7	—	—	e 31·3	34·8
Lund		59·5	333	—	—	18 11	+ 2	28·8	—
Copenhagen		59·6	333	9 59	− 3	18 14	+ 3	—	—
Tinemaha		60·6	66	e 10 4	− 5	—	—	—	—
Haiwee	N.	61·5	66	e 10 12	− 3	—	—	—	—
Theodosia		61·9	313	e 10 18	0	—	—	e 34·8	—
Hamburg		62·2	333	e 10 22	+ 2	—	—	e 29·3	37·8
Edinburgh		62·5	341	—	—	e 25 47?	SSSS	—	—
Yalta		62·8	313	e 10 22	− 2	—	—	e 32·8	—
Mount Wilson		63·1	69	e 10 24	− 2	—	—	—	—
Pasadena	Z.	63·1	69	e 10 18	− 8	—	—	—	—
Riverside	N.	63·5	68	e 10 39	+10	—	—	—	—
Göttingen		64·1	331	—	—	e 25 47?	SSS	e 32·8	39·3
Stonyhurst		64·3	340	—	—	e 26 19	SSSS	31·8	42·8
De Bilt		64·6	335	—	—	19 16	+ 1	e 32·8	39·4
Hyderabad		64·6	264	23 30	SS	—	—	—	35·5
Cheb		64·8	330	e 25 47?	?	e 29 47	?	e 32·8	38·3
Budapest		65·3	324	—	—	e 26 17	SSS	37·3	40·3
Feldberg		65·6	332	e 14 41	?	i 19 28	+ 1	—	40·1
Uccle		66·0	336	—	—	e 19 31	− 1	e 29·8	40·2
Bombay		66·2	269	20 30	S_eS	(20 30)	(− 7)	—	43·4
Stuttgart		66·8	331	e 10 47	− 4	e 19 36	− 5	e 32·8	44·6
Strasbourg		67·3	332	e 10 47?	− 7	—	—	22·8	—
Zagreb		67·7	325	e 10 59	+ 3	e 15 14	?	—	42·8
Paris		68·2	337	e 10 47?	−12	—	—	33·8	40·8
Zurich		68·2	331	e 10 52	− 7	—	—	—	—
Chur		68·4	331	e 10 59	− 2	—	—	e 34·8	—
Treviso		68·9	328	e 11 5	+ 1	27 47	?	—	41·1
Neuchatel		69·0	333	e 10 57	− 8	—	—	—	—
Ottawa		69·4	30	—	—	e 20 2	−12	e 30·8	—
Piacenza		70·2	330	20 19	S	(20 19)	− 5	38·4	42·4
Buffalo		70·8	34	—	—	e 22 37	?	e 38·8	43·3
Florence		70·9	328	e 15 47	?	20 2	−30	25·8	28·8
Ksara		71·3	306	e 9 43	?	e 20 36	− 1	38·1	—
Colombo		72·9	256	19 6	S	(19 6)	−110	41·4	49·4
Fordham		74·0	31	e 11 31	− 4	e 20 56	−12	e 34·8	—
Toledo		78·1	338	e 11 56	− 2	e 21 54	− 1	e 38·5	48·0
Alicante		78·9	335	e 12 10	+ 8	e 22 6	+ 2	e 40·1	—
Granada		80·7	337	i 12 11	− 1	22 19	− 4	40·3	50·3
Malaga		81·3	338	e 12 3	−12	32 9	?	—	—
San Juan		97·5	31	e 19 47?	PP	e 24 47?	−17	e 49·8	—

For Notes see next page.

NOTES TO OCT. 10d. 16h. 37m. 13s.

Additional readings :—
Hong Kong SS = +17m.57s.
Tashkent e = +7m.45s., ePP = +11m.3s.
Helsingfors eSN = +16m.34s., eSSN = +20m.20s., eSSZ = +20m.26s., eSSSE = +22m.22s., eSSSN = +22m.37s. ; T_0 = 16h.36m.54s.
Calcutta S = +23m.24s.
Königsberg eE = +25m.38s., eN = +27m.13s.
Pasadena eN = +10m.25s.
Feldberg e = +23m.52s. = SS +15s.
Uccle e = +23m.47s.? = SS = +6s.
Stuttgart eZ = +13m.7s. = PP − 3s., eN = +23m.47s.? = SS − 7s., e = +26m.59s.
Strasbourg e = +17m.47s.? and +18m.47s.?
Ottawa eN = +20m.53s. = S_cS − 8s., eE = +27m.52s.
Piacenza S = +28m.26s.
Colombo S = +28m.11s.
Granada iP = +12m.43s., S = +31m.49s. and +33m.55s.
Long waves were also recorded at Toyooka, Nagasaki, Honolulu, T.H., Phu-Lien, Almata, Dehra Dun, Kodaikanal, Entebbe, Capetown, La Paz, Ivigtut, Scoresby Sund, Algiers, and many other European and American stations.

Oct. 10d. Readings also at 0h. (Tucson and Serra do Pilar), 1h. (Pasadena (4), Riverside (3), Branner (2), Berkeley, Lick, Haiwee (2), Tinemaha (3), Mount Wilson, La Jolla (2), La Paz (3), Tortosa (2), Alicante, Malaga, Toledo (2), Osaka, Andijan, and Samarkand (2)), 2h. (Pasadena (3), Riverside, Haiwee, Tinemaha (3), La Jolla, Berkeley, Lick, La Paz, Triest, Nagasaki, Granada (2), Tortosa (3), Alicante, and Toledo), 3h. (Pasadena, Riverside, Tinemaha), 4h. (Triest, Pasadena, Tinemaha, and Granada), 5h. (Tinemaha, Pasadena, Melbourne, Adelaide, Riverview, and Christchurch), 6h. (La Paz), 7h. (Pasadena (2), Tinemaha (2), Melbourne, Riverview, Granada, and Tortosa), 9h. (near Santiago), 12h. (near Algiers and near Santiago), 13h. (Almata, Samarkand, and Andijan), 15h. (near Branner), 16h. (near Santiago and near Messina and Trenta), 17h. (Almata, Samarkand, Andijan, and near Sumoto), 18h. (near Manila), 21h. (Andijan).

Oct. 11d. Readings at 0h. (Tyosi, Irkutsk, Andijan, Tashkent, Samarkand, Bombay, and near Calcutta), 1h. (Andijan), 3h. (Chicago), 7h. (Perth), 8h. (Lick), 9h. (Perth), 10h. (Lick and Pasadena), 12h. (Alicante and Perth), 14h. (Granada), 15h. (near Algiers), 16h. (near Mizusawa), 17h. (Perth, Medan, near Batavia, and Malabar), 19h. (near Sumoto), 21h. (Tucson), 22h. (Nagasaki, Hong Kong, Ekaterinburg, Tashkent, Kucino, Uccle, and Florence).

Oct. 12d. 0h. 38m. 18s. Epicentre 9°·9S. 161°·4E. (as on 10d.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		18·4	118	e 5 6	+55	—	—	—	—
Riverview		25·7	200	5 32	+ 6	10 6	+13	—	—
Melbourne		31·6	206	—	—	e 11 35	+ 6	15·4?	20·0
Adelaide		32·6	218	e 6 4	−24	i 11 53	+ 8	16·2	19·5
Christchurch		35·0	166	e 6 47	− 2	12 13	− 8	—	—
Perth		47·5	235	e 13 42	?	—	—	i 24·2	26·2
Berkeley		85·5	50	—	—	e 26 42?	?	—	—
Victoria	E.	87·8	40	23 22	S	(23 22)	−13	40·0	43·1
	N.	87·8	40	23 27	S	(23 27)	− 8	40·6	—
Pasadena		87·8	55	e 12 43	− 4	—	—	—	—
Tinemaha	E.	88·4	51	e 12 48	− 2	—	—	—	—
Bombay		91·9	290	—	—	e 22 42	−92	—	—
St. Louis	E.	110·5	51	—	—	e 28 35	PS	e 51·9	—
Pittsburgh		118·1	48	—	—	(e 28 42?)	?	e 28·7	—
Ottawa		119·8	42	—	—	e 29 59	PS	57·8	—
San Juan		133·2	74	e 22 41	?	e 28 23	{−19}	—	—
Granada		149·6	336	i 19 59	[+18]	22 16	?	82·8	93·5

Additional readings :—
Melbourne i = +13m.54s. and +14m.58s.
Adelaide e = +7m.57s., i = +14m.7s.
San Juan e = +23m.47s.
Long waves were also recorded at Wellington, Honolulu T.H., Hong Kong, Buffalo, Ekaterinburg, Kucino, and other European stations.

Oct. 12d. 2h. 59m. 52s. Epicentre 9°·9S. 161°·4E. (as at 0h.). R.3.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		18·4	118	i 3 44	−27	—	—	—	—
Riverview		25·7	200	i 5 34	+ 8	i 9 56	+ 3	12·8	—
Sydney		25·7	200	e 9 56	S	(e 9 56)	+ 3	14·4	15·7
Melbourne		31·6	206	—	—	i 11 42	+13	14·6	18·4
Adelaide		32·6	218	e 6 35	+ 7	i 11 37	− 8	14·2	19·6
Wellington		33·6	163	8 8?	?	—	—	—	—
Christchurch		35·0	166	i 6 47	− 2	i 12 9	−12	—	—
Perth		47·5	235	12 38	?	(i 15 23)	− 3	24·6	26·1
Berkeley		85·5	50	e 12 8?	−28	—	—	—	—
Victoria	E.	87·8	40	—	—	23 28	− 7	40·6	43·1
	N.	87·8	40	—	—	23 26	− 9	40·5	41·4
Pasadena		87·8	55	e 12 43	− 4	—	—	e 40·4	—
Mount Wilson	N.	87·9	55	e 12 45	− 2	—	—	—	—
La Jolla	E.	88·2	56	e 12 47	− 2	—	—	—	—
Tinemaha		88·4	51	e 12 48	− 2	—	—	—	—
Riverside		88·4	55	e 12 46	− 4	—	—	—	—
Andijan		95·7	311	e 23 13	SKS	(e 23 13)	[−51]	—	—
Samarkand		99·6	310	e 24 6	SKS	(e 24 6)	[−17]	—	—
Ekaterinburg		104·1	326	e 24 39	SKS	(e 24 39)	[− 6]	42·1	62·0
St. Louis	E.	110·5	51	—	—	e 28 31	PS	e 52·7	—
Buffalo		118·4	46	e 6 58	?	e 29 56	PS	e 58·1	—
Balboa Heights		119·7	85	—	—	e 33 8?	?	i 58·4	—
Ottawa		119·8	42	—	—	e 30 14	PS	e 57·1	—
Granada		149·6	336	i 19 42	[+ 1]	—	—	i 81·0	85·0

Additional readings and note :—
Riverview i = +10m.6s.
Sydney iS = +12m.50s.
Melbourne e = +13m.52s.
Christchurch iZ = +12m.12s.
Perth PP = +13m.48s., PPP = +14m.38s., P_cS = +18m.8s., S = +19m.5s., PS = +19m.18s., SS = +22m.59s., SSS = +23m.38s., SSSS = +24m.3s.; true S is given as PPPP.
Pasadena eZ = +17m.0s. and +24m.58s.
Ekaterinburg S = +33m.27s.
Ottawa eN = +36m.30s. = SS + 1s.
Long waves were also recorded at Arapuni, Hong Kong, Bombay, Tashkent, Pulkovo, Kucino, Ivigtut, and other American and European stations.

Oct. 12d. 3h. 57m. 32s. Epicentre 7°·5N. 82°·3W. N.3.

A = +·133, B = −·983, C = +·131 ; D = −·991, E = −·134 ;
G = +·017, H = −·129, K = −·991.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights		3·1	62	i 0 46	+ 2	i 1 24	+ 4	—	—
San Juan		19·1	54	i 4 20	0	e 8 7	+19	—	—
La Paz		27·8	150	5 38	− 7	i 10 37	+ 9	13·8	18·1
Sucre		31·4	148	e 6 16	− 1	—	—	—	—
St. Louis	N.	31·9	349	i 6 23	+ 1	e 11 33	− 1	—	14·5
Ann Arbor		34·8	358	—	—	e 15 4	?	e 15·9	—
Madison		36·1	351	e 6 57	− 2	i 12 32	− 6	—	16·9
Harvard		36·2	15	e 4 58	?	—	—	e 13·0	—
Tucson		36·3	318	7 1	+ 1	12 45	+ 4	e 17·6	—
Riverside		41·8	316	e 7 46	− 1	—	—	—	—
Mount Wilson	N.	42·4	315	e 7 52	0	—	—	—	—
Pasadena		42·4	316	e 7 52	0	—	—	—	—
Haiwee	N.	43·4	317	7 58	− 2	e 14 35	+ 8	—	—
Tinemaha		44·0	318	e 8 7	+ 2	—	—	—	—
Lick		46·5	317	e 8 23	− 2	—	—	—	—
La Plata		48·3	153	—	—	15 35	− 2	28·1	—
Granada		76·5	53	(i 11 46)	− 3	i 11 46	P	—	—
Paris		81·0	40	(e 14 28?)	PP	—	—	e 14·5	—
Strasbourg		84·4	40	e 12 26	− 4	—	—	e 15·5	—
Stuttgart		85·3	40	e 12 28	− 7	—	—	e 40·0	—

For Notes see next page.

NOTES TO OCT. 12d. 3h. 57m. 32s.

Additional readings :—
Balboa Heights i = +1m.32s. =S*.
La Paz PZ = +5m.43s.
Granada i = +11m.55s.
Stuttgart eN = +14m.58s.
Long waves were also recorded at Chicago, De Bilt, Ekaterinburg, and Tashkent.

Oct. 12d. 10h. 18m. 42s. Epicentre 11°·0S. 162°·3E. (as on 3d.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		17·3	117	e 3 12	−46	—	—	—	—
Riverview		25·0	202	5 26	+ 6	10 10	+29	—	—
Melbourne		31·0	207	—	—	e 11 36	+16	15·3	17·6
Adelaide		32·2	219	—	—	e 11 30?	− 8	16·0	19·1
Perth		47·6	235	18 18	SS	—	—	—	—
Pasadena		87·7	55	e 12 43	− 3	—	—	—	—
Mount Wilson	N.	87·8	55	e 12 46	− 1	—	—	—	—
Riverside		88·2	55	e 12 46	− 3	—	—	—	—
Tinemaha	E.	88·3	51	e 12 47	− 2	—	—	—	—
Granada		150·9	336	i 19 37	[− 6]	—	—	—	—

Additional readings :—
Melbourne i = +14m.46s.
Granada i = +20m.10s. =PKP$_2$, +7s. and +49m.41s.
Long waves were also recorded at Wellington, Tashkent, Ekaterinburg, Uccle, and Alicante.

Oct. 12d. 13h. 23m. 45s. Epicentre 11°·0S. 162°·3E. (as at 10h.). R.3.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		17·3	117	e 2 57	−61	—	—	—	—
Riverview		25·0	202	i 5 23	+ 3	i 9 51	+10	12·6	14·8
Sydney		25·0	202	e 9 21	S	(e 9 21)	−20	12·2	14·8
Melbourne		31·0	207	e 6 33	+19	i 11 18	− 2	14·8	17·6
Adelaide		32·2	219	e 6 40?	+16	i 11 33	− 5	13·8	18·7
Wellington		32·2	162	—	—	e 10 43	−55	16·2	—
Christchurch	Z.	33·7	167	i 6 39	+ 1	i 12 1	0	—	—
Amboina		34·6	279	i 6 45	− 1	—	—	e 20·2	—
Perth		47·6	235	14 45	?	15 25	− 2	19·2	26·8
Batavia		55·0	271	9 28	− 1	—	—	—	—
Hong Kong		57·8	306	18 3	S	(18 3)	+16	—	32·0
Berkeley		85·6	50	—	—	e 22 57	[− 6]	—	—
Pasadena		87·7	55	e 12 44	− 2	—	—	—	—
Victoria	E.	88·1	40	—	—	23 30	− 8	41·2	50·7
	N.	88·1	40	—	—	23 27	[+ 6]	40·7	50·6
La Jolla	E.	88·1	56	e 12 45	− 3	—	—	—	—
Riverside		88·2	55	e 12 46	− 3	—	—	—	—
Tinemaha	E.	88·3	51	e 12 42	− 7	—	—	—	—
Bombay		93·1	289	26 17	?	(26 17)	PS	—	—
Ekaterinburg		105·6	327	i 18 35	PP	i 24 47	[− 6]	33·2	—
St. Louis	E.	110·5	51	—	—	e 28 41	PS	e 52·5	—
Ottawa		119·9	42	—	—	e 30 17	PS	e 56·2	—
De Bilt		135·0	340	i 21 58	PP	—	—	e 65·2	—
Uccle		136·3	340	—	—	e 40 15?	?	e 89·2	—
Strasbourg		136·9	335	(e 21 15?)	PP	—	—	e 21·2	—
Florence		138·8	327	e 12 15	?	—	—	—	71·2
Granada		150·9	336	i 19 53	[+10]	—	—	80·2	92·1

Additional readings :—
Riverview i = +5m.32s.
Melbourne i = +13m.56s.
Perth PS = +15m.45s., SS = +17m.45s., SSS = +18m.45s.
Batavia i = +10m.17s.
Ottawa eN = +36m.35s. =SS +4s. and +40m.34s. =SSS −13s.
Granada i = +20m.6s., +20m.14s., and +23m.47s.
Long waves were also recorded at Honolulu T.H., Sitka, Seattle, Tucson, Pittsburgh, Kodaikanal, Pulkovo, Kucino, Paris, Feldberg, Stuttgart, and Kew.

Oct. 12d. Readings also at 0h. (near Manila), 1h. (near Sumoto), 4h. (Tucson and near Tyosi (2)), 9h. (Pasadena, Tinemaha, and Tucson), 10h. (near Nagoya and Tyosi), 11h. (Andijan, Arapuni, and near Wellington), 13h. (Granada and near Mizusawa), 14h. (near Wellington), 15h. (near Nagoya), 16h. (near Amboina and near Belgrade), 17h. (Alicante and La Paz), 19h. (Almata, Andijan, Samarkand, and Tashkent), 21h. (Takaka (2), Almata, and near Andijan), 23h. (Berkeley, Ukiah, and Florence).

Oct. 13d. 4h. 34m. 41s. Epicentre 9°·0S. 163°·0E. (as on 1923 Dec. 27d.). R.3.

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

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		27·2	202	e 5 42	+ 2	i 10 10	− 8	12·8	—
Sydney		27·2	202	i 9 55	S	(i 9 55)	−23	14·3	15·8
Melbourne		33·1	207	—	—	11 39	−13	14·4	18·1
Wellington		34·0	164	—	—	e 12 4	− 2	17·3	—
Adelaide		34·3	218	—	—	i 11 56	−15	15·1	19·3
Perth		49·3	235	—	—	(15 41)	−10	24·8	—
Hong Kong		57·2	305	—	—	17 29	−10	—	31·8
Pasadena		86·0	54	e 12 37	− 1	—	—	e 41·3	—
Mount Wilson	N.	86·1	54	e 12 40	+ 1	—	—	—	—
Victoria	E.	86·2	40	23 19	S	(23 19)	0	41·6	46·3
Tinemaha	E.	86·6	51	e 12 40	− 1	—	—	—	—
Haiwee	N.	86·6	52	e 12 45	+ 4	—	—	—	—
Tashkent		98·6	311	—	—	e 22 19?	?	42·3	80·9
Ekaterinburg		104·2	327	—	—	e 28 42	?	43·3	51·8
Feldberg		133·7	338	—	—	e 39 43	SS	e 67·4	81·4
Stuttgart		134·6	336	e 21 49	PP	—	—	e 72·3	—
Uccle		134·6	340	e 21 19?	PP	—	—	e 59·3	—
Florence		137·4	330	e 20 19	?	—	—	—	70·3
Granada		149·3	339	i 19 38	[− 3]	—	—	i 58·8	84·3

Additional readings and note:—
Sydney iS = +12m.7s.
Perth PP = +14m.19s., PPP = +15m.29s., S = +19m.9s. = SS + 0s., PS = +19m.19s., SS = +22m.19s., SSS = +22m.59s., SSSS = +23m.19s.; true S is given as PPPP.
Hong Kong SS = +21m.48s.
Tashkent e = +35m.19s.? = SSS − 7s.
Ekaterinburg e = +32m.56s. = SS − 4s.
Feldberg e = +51m.31s.
Granada iP = +19m.44s.
Long waves were also recorded at Christchurch, Bombay, Kucino, Pulkovo, Ivigtut, San Juan, also at other American and European stations.

Oct. 13d. 7h. 36m. 42s. Epicentre 35°·6N. 43°·2E. N.3.

A = +·593, B = +·557, C = +·582; D = +·685, E = −·729; G = +·424, H = +·398, K = −·813.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ksara		6·2	256	e 2 39	S	(e 2 39)	+ 1	5·8	—
Theodosia		11·2	330	e 2 46	+ 9	—	—	—	—
Yalta		11·3	325	2 36	− 3	—	—	—	—
Samarkand		19·2	71	e 5 30	+69	—	—	—	—
Kucino		20·5	352	—	—	e 8 8	− 8	—	—
Tashkent		21·1	66	—	—	e 8 8	−20	—	12·5
Andijan		23·4	68	e 5 2	− 3	e 9 9	− 3	—	—
Ekaterinburg		24·3	24	i 5 10	− 3	e 9 0	P_cP	10·3	15·7
Pulkovo		25·6	345	e 5 27	+ 2	e 9 45	− 6	13·3	15·0
Florence		25·7	298	—	—	e 9 48	− 5	—	29·0
Almata		27·0	63	e 5 48	+10	—	—	—	—
Helsingfors	E.	27·2	340	e 6 18?	+38	e 9 18?	P_cP	e 16·3	—

Additional readings and note:—
Ksara SE = +4m.48s.; T_e = 7h.36m.38s.
Tashkent e = +7h.31m.48s., also +8m.35s. = P_cP − 8s.
Florence S = +18m.3s.; true S is given as e.
Long waves were recorded at De Bilt.

Oct. 13d. Readings also at 1h. (Almata, Andijan, and near Tyosi), 2h. (Apia and Suva), 3h. (La Paz and near Apia), 4h. (near Wellington), 9h. (near Malabar), 10h. (Adelaide, Riverview, Suva, La Paz, Samarkand, Alicante, and near Algiers), 11h. (Adelaide, Wellington, Riverview, Melbourne (2), Perth (2), Honolulu T.H., Bombay, Haiwee, Pasadena, Tinemaha, Victoria, Ekaterinburg, De Bilt, Florence, Stuttgart, and Granada), 12h. (Tashkent, Kucino, Kew, Feldberg, Uccle, Paris, Strasbourg, Ottawa, Berkeley, Nagoya, near Tokyo, Tyosi, and near Lick), 13h. (Mizusawa and Tyosi), 16h. (Lick), 17h. (near Kobe and Sumoto), 19h. (La Paz, Sucre, Tinemaha, Pasadena, and near Andijan), 20h. (Haiwee, Pasadena, Riverside, Mount Wilson, Tinemaha, Victoria, Riverview, Adelaide, Melbourne, Suva, Perth, Wellington, Tashkent, and Granada), 21h. (De Bilt, Uccle, Feldberg, and Paris).

Oct. 14d. Readings at 2h. (Takaka), 6h. (Tyosi (3), Baku, Irkutsk, Zi-ka-wei, Florence), 7h. (Hong Kong, Tashkent, Tientsin, Kucino, Feldberg, De Bilt, Uccle, Paris, Stuttgart, Strasbourg, Kew, Granada, and near Santiago), 9h. (Samarkand and near Andijan), 12h. (Frunse and near Almata), 13h. (Perth), 15h. (Andijan, Almata, and Messina), 16h. (Andijan, Frunse, Tashkent, Samarkand, and Irkutsk), 20h. (Ekaterinburg and Irkutsk), 21h. (Almata, Andijan, Frunse, Tashkent, Hong Kong, Kucino, Bombay, Pulkovo, Helsingfors, Copenhagen, Feldberg, De Bilt, Uccle, Paris, Strasbourg, Stuttgart, Florence, and near La Paz).

Oct. 15d. 0h. 5m. 27s. Epicentre 42°·8N. 68°·3E. N.3.

$A = +\cdot271$, $B = +\cdot682$, $C = +\cdot679$; $D = +\cdot929$, $E = -\cdot370$; $G = +\cdot251$, $H = +\cdot631$, $K = -\cdot734$.

Epicentre given by the Stations.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent	1·6	153	—	—	e 0 45	+ 4	—	2·4
Samarkand	3·3	198	0 43	− 4	—	—	i 1·6	3·2
Andijan	3·6	123	e 0 42	− 9	—	—	i 1·6	2·2
Frunse	4·6	86	e 1 13	+ 7	—	—	e 2·4	2·8
Almata	6·3	83	e 1 32	+ 2	—	—	—	—

Oct. 15d. Readings also at 2h. (La Paz, La Plata, and near Santiago), 3h. (Lick), 5h. (Sumoto and near Santiago), 7h. (near Santiago), 12h. (La Paz and near Santiago), 13h. (Wellington), 14h. (near Almata), 15h. (Andijan and Samarkand), 17h. (near Santiago), 23h. (near Samarkand and near Tananarive).

Oct. 16d. Readings at 0h. (near Sumoto), 6h. (Nagoya, near Osaka, and Tyosi), 10h. (La Paz), 13h. (Baku, Ekaterinburg, Hong Kong, Manila, Phu-Lien, Bombay, Calcutta, and Zi-ka-wei), 15h. (La Paz), 17h. (Frunse, Samarkand, and near Andijan), 19h. (near Manila), 23h. (Wellington and near New Plymouth).

Oct. 17d. 12h. 34m. 55s. Epicentre 63°·2N. 147°·3W. (as on 1929 July 4d.). X.

$A = -\cdot379$, $B = -\cdot244$, $C = +\cdot893$; $D = -\cdot540$, $E = +\cdot842$; $G = -\cdot751$, $H = -\cdot482$, $K = -\cdot451$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka		8·5	131	i 1 59	− 1	i 3 42	+ 6	4·0	—
Tinemaha	E.	31·5	132	e 6 18	0	—	—	—	—
Haiwee		32·4	132	e 6 24	− 2	—	—	—	—
Pasadena		34·2	135	e 6 39	− 3	—	—	—	—
Mount Wilson		34·2	135	e 7 3	+21	—	—	—	—
Riverside	N.	34·6	134	e 6 41	− 5	—	—	—	—
La Jolla	E.	35·7	135	e 7 2	+ 7	—	—	—	—
Scoresby Sund		41·0	26	—	—	14 5?	+14	—	—
St. Louis	N.	41·5	99	e 8 20	+36	—	—	—	—
Ottawa		42·6	79	—	—	15 5?	+50	—	—
Ekaterinburg		58·0	344	i 9 52	+ 2	e 17 48	− 1	29·1	—
Tashkent		71·6	333	e 5 53	?	e 29 29	?	—	—
Granada		75·5	30	i 12 18	+35	i 22 8	+42	—	—

For Notes see next page.

NOTES TO OCT. 17d. 12h. 34m. 55s.

Additional readings and note :—
Sitka iPP = +2m.19s., time uncertain.
Tinemaha eN = +6m.44s.
Haiwee eN = +6m.52s.
Pasadena e = +7m.4s.
Riverside eEN = +7m.7s.
La Jolla eE = +7m.21s.
Ekaterinburg i = +18m.27s.
Granada i = +22m.27s.

Oct. 17d. 15h. 33m. 55s. Epicentre 25°·0N. 141°·5E. (as on 1927 Nov. 14d.). R.2.

A = −·709, B = +·564, C = +·423 ; D = +·622, E = +·783 ;
G = −·331, H = +·263, K = −·906.

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.
Tyosi		−0·5	10·7	357	2 18	− 6	4 9	− 9	—	—
Nagoya		−0·5	10·9	340	e 2 23	− 3	—	—	—	—
Sumoto		−0·5	10·9	329	i 2 25	− 1	6 29	?	10·1	—
Osaka		−0·5	11·0	333	2 19	− 9	—	—	5·4	5·8
Koti		−0·5	11·0	323	i 2 27	− 1	—	—	e 6·6	—
Kobe		−0·5	11·1	332	i 2 25	− 4	—	—	e 9·0	12·8
Toyooka		−0·5	12·0	333	i 2 39	− 3	—	—	e 6·9	—
Nagasaki		−0·6	12·8	310	3 50	+59	6 15	+67	—	—
Mizusawa	E.	−0·7	14·1	359	3 3	− 4	5 49	+12	—	—
	N.	−0·7	14·1	359	3 5	− 2	5 53	+16	—	—
Zi-ka-wei		−1·1	18·7	294	i 4 5	+ 3	7 32	+17	—	—
Manila		−1·3	21·9	246	4 36	0	8 27	+ 9	10·6	—
Tientsin		−1·5	24·8	310	5 25	+21	9 35	+25	—	11·3
Hong Kong		−1·6	25·1	270	5 7	+ 2	9 17	+ 3	—	—
Phu-Lien		−2·1	32·3	271	e 6 11	+ 4	—	—	13·1	—
Irkutsk		−2·5	39·1	325	e 7 5?	+ 2	—	—	15·1	17·0
Batavia		−2·8	45·9	232	i 8 52	+54	—	—	—	—
Almata		−3·4	55·0	309	e 9 5	+ 2	e 16 15	− 8	—	—
Frunse		−3·4	56·8	309	e 9 26	+ 9	17 1	+14	—	—
Andijan		−3·5	58·6	306	e 9 36	+ 6	e 17 31	+20	—	—
Riverview		−3·6	59·6	171	—	—	i 17 36	+13	—	—
Tashkent		−3·6	60·9	307	e 10 59	+74	i 17 15	−25	e 30·6	35·7
Samarkand		−3·7	62·8	305	—	—	e 18 7	+ 3	—	—
Ekaterinburg		−3·7	64·3	325	i 10 15	+ 6	i 18 40	+16	28·1	34·2
Baku		−3·9	75·3	310	e 11 41	+22	i 20 51	+13	34·1	48·9
Kucino		−3·9	76·7	327	—	—	i 20 59	+ 5	e 26·4	40·2
Lick		−4·0	80·2	53	e 11 47	0	—	—	—	—
Tinemaha		−4·0	82·7	52	e 12 1	0	e 22 8	+ 6	—	—
Santa Barbara		−4·0	82·8	56	e 12 3	+ 2	—	—	—	—
Haiwee		−4·0	83·3	53	e 12 3	− 1	e 22 9	+ 1	—	—
Mount Wilson		−4·1	84·1	56	e 12 9	+ 1	—	—	—	—
Pasadena		−4·1	84·1	56	e 12 8	0	—	—	—	—
Riverside	N.	−4·1	84·8	56	e 12 9	− 3	—	—	—	—
Copenhagen		−4·1	88·4	335	—	—	22 5?	?	44·1	—
La Jolla	E.	−4·1	85·4	57	e 12 17	+ 2	—	—	—	—
De Bilt		−4·3	94·0	336	—	—	e 23 13	[−42]	e 46·1	58·9
Feldberg		−4·3	94·1	333	—	—	e 23 17	[−39]	e 46·3	58·4
Stuttgart		−4·3	94·8	332	e 12 59	− 1	e 23 18	[−42]	e 50·1	—
Uccle		−4·3	95·3	336	—	—	i 23 21	[−41]	—	—
Strasbourg		−4·3	95·6	333	—	—	(e 22 5?)	?	e 22·1?	—
Oxford		−4·3	96·5	340	—	—	23 23	[−45]	—	—
Florence		−4·4	97·5	327	—	—	(23 25)	[−49]	23·4	46·1
Paris		−4·4	97·5	336	—	—	e 24 5?	−20	53·1	—
Granada		—	109·7	332	i 18 6	[−11]	i 29 7	?	i 61·4	70·5
La Paz	Z.	—	151·1	79	e 19 27	[+16]	—	—	—	—

For Notes see next page.

NOTES TO OCT. 17d. 15h. 33m. 55s.

Additional readings :—
Sumoto eSN = +7m.31s.
Osaka i = +2m.26s.
Kobe iEN = +2m.35s.
Zi-ka-wei iZ = +4m.44s., +8m.5s., +8m.26s., 10m.8s., and +12m.28s.
Tientsin PP = +5m.59s.
Hong Kong PP = +5m.40s.? = +10m.15s.
Kucino e = +22m.23s.
De Bilt eEN = +23m.49s.
Feldberg e = +30m.4s. =SS −34s.
Stuttgart eEN = +18m.5s.?, EN = +30m.5s.?

Oct. 17d. Readings also at 0h. (Granada), 4h. (near Apia), 5h. (near Christchurch), 6h. (Tananarive (2)), 7h. (Ekaterinburg, Irkutsk, and Tashkent), 8h. (Baku), 9h. (Baku, Ekaterinburg, Irkutsk, Tashkent, and near Tyosi), 16h. (Scoresby Sund and near Santiago), 17h. (Manila), 21h. (near Toyooka).

Oct. 18d. 0h. 38m. 51s. Epicentre 11°·0S. 162°·3E. (as on 12d.). R.2.

A = −·935, B = +·298, C = −·191 ; D = +·304, E = +·953 ;
G = +·182, H = −·058, K = −·982.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		17·3	117	3 59	+ 1	8 54	?	13·2	14·2
Riverview		25·0	202	e 5 25	+ 5	9 41	0	—	—
Apia		25·4	100	i 5 58	+34	e 9 10	−38	e 10·7	—
Arapuni		29·8	159	—	—	e 11 45	+44	15·2	16·2
Melbourne		31·0	207	e 6 39	+25	i 11 29	+ 9	13·4	17·3
Adelaide		32·2	219	e 6 35	+11	i 11 35	− 3	i 14·3	18·2
Wellington		32·2	162	(6 33)	+ 9	11 22	−16	16·2	17·2
Christchurch		33·7	167	i 6 40	+ 2	12 8	+ 7	—	—
Perth		47·6	235	—	—	i 14 39	−48	24·0	28·2
Honolulu T.H.		50·8	50	e 11 19	PP	16 19	+ 7	20·6	—
Tokyo		51·3	337	9 29	+28	—	—	—	—
Miyazaki		52·1	327	9 6	− 1	16 29	− 1	—	—
Koti		52·3	330	e 9 9	0	e 16 30	− 3	e 23·2	—
Sumoto		52·3	331	e 9 7	− 2	—	—	e 24·2	—
Kobe		52·4	332	e 9 8	− 1	e 18 0	(−60)	e 26·6	28·8
Mizusawa		53·8	340	10 3	(−27)	—	—	23·4	—
Batavia		55·0	271	i 9 13	−16	—	—	—	—
Zi-ka-wei	Z.	57·6	320	9 44	− 3	—	—	28·0	33·8
Hong Kong		57·8	306	9 46	− 3	17 49	+ 2	24·4	30·4
Medan		65·0	279	e 15 27	?	i 23 39	SS	40·2	—
Irkutsk		80·4	329	12 6	− 4	22 6	−14	36·2	45·2
Sitka		84·9	29	—	—	i 22 58	− 9	e 44·6	—
Berkeley		85·6	50	—	—	e 23 15	+ 1	e 39·2	—
Kodaikanal		87·0	281	e 23 27	S	(e 23 27)	0	—	—
Pasadena		87·7	55	e 12 44	− 2	—	—	—	—
Mount Wilson		87·8	55	e 12 47	0	—	—	—	—
Victoria	E.	88·1	40	23 17	S	(23 17)	[− 4]	42·1	51·2
	N.	88·1	40	23 27	S	(23 27)	[+ 6]	36·1	40·3
Haiwee		88·3	52	e 12 47	− 2	—	—	—	—
Tinemaha		88·3	51	e 12 50	+ 1	—	—	—	—
Tucson		93·2	57	—	—	e 23 48	[− 3]	e 46·2	—
Tashkent		99·5	311	e 17 45	PP	e 31 39	SS	e 41·2	57·2
Ekaterinburg		105·6	327	e 14 8	− 1	i 24 47	[− 6]	43·2	61·0
St. Louis	N.	110·5	51	—	—	e 26 38	{+28}	e 54·6	55·6
Baku		114·1	310	19 19	PP	29 14	PS	—	—

Continued on next page.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Kucino		118·0	328	—	—	e 27 3	{ 0}	e 51·6	66·5
Buffalo		118·4	45	—	—	e 27 19	{+13}	—	59·2
Pulkovo		119·7	335	—	—	e 43 3	?	60·2	64·4
Ottawa		119·9	42	e 25 44	SKS	(e 25 44)	[− 6]	e 51·2	—
Scoresby Sund		120·5	2	—	—	21 9?	?	39·2	—
Helsingfors	E.	121·7	337	e 21 44	?	e 37 59	?	e 60·2	—
La Paz		123·0	117	e 19 2	[+ 9]	—	—	57·2	63·6
Copenhagen		129·5	338	22 9?	?	—	—	63·2	—
San Juan		132·7	74	e 22 31	PKS	—	—	e 38·6	—
Edinburgh		133·7	348	—	—	e 51 9	?	e 74·2	—
De Bilt		135·0	340	e 19 23	[+ 8]	21 52	PP	e 60·2	72·8
Zagreb		135·0	327	e 18 33	[−42]	e 22 46	PKS	—	75·2
Feldberg		135·3	336	e 22 46	PKS	e 31 55	SKSP	—	78·2
Stonyhurst		135·4	346	—	—	e 30 53	?	67·2	83·2
Stuttgart		136·1	335	e 19 19	[+ 3]	—	—	e 69·2	82·6
Triest		136·2	329	e 19 18	[+ 2]	—	—	—	—
Uccle		136·3	340	e 19 19	[+ 2]	—	—	e 60·2	—
Strasbourg		136·9	335	i 19 22	[+ 4]	—	—	e 49·2	—
Oxford		137·1	346	e 22 6	PP	—	—	e 65·2	79·4
Kew		137·2	345	e 19 21	[+ 3]	—	—	e 64·2	76·0
Paris		138·6	340	e 18 45	[−35]	—	—	72·2	84·2
Piacenza		138·7	330	22 5	PP	—	—	—	83·6
Florence		138·8	327	e 19 59	[+39]	—	—	68·2	71·6
Tortosa		146·1	335	19 39	[+ 3]	(28 45)	{−76}	—	28·7
Algiers		148·2	327	e 19 42	[+ 3]	(e 21 47)	?	e 21·8	—
Alicante		148·7	334	e 19 35	[− 5]	—	—	e 78·1	—
Toledo		148·7	339	19 44	[+ 4]	—	—	—	—
Almeria		150·7	335	i 19 43	[0]	23 27	PP	—	—
Granada		150·9	336	i 19 45	[+ 2]	—	—	74·2	87·7
Malaga		151·6	337	19 39	[− 5]	—	—	—	—
San Fernando		152·6	340	19 54	[+ 9]	33 51	SKSP	—	101·6

Additional readings and note :—
Suva i = +7m.29s., SS = +10m.9s.
Riverview i = +6m.1s., iS = +9m.59s., i = +10m.43s.
Adelaide i = +13m.19s. =SS −7s.
Wellington SS = +14m.4s. ; P is given as PP.
Perth PS = +14m.44s., i = +18m.59s., SS = +19m.39s.
Batavia i = +12m.51s.
Sitka e = +32m.16s. and +36m.27s.
Berkeley eE = +21m.9s.?, EN = +35m.37s.
Victoria SN = +29m.29s. =SS +16s., SE = +29m.57s.
Ekaterinburg iPP = +18m.33s., PS = +27m.48s.
St. Louis eN = +34m.39s.
Kucino e = +23m.27s., +29m.33s. =PS −11s., and +35m.36s.
Buffalo e = +32m.9s.
Ottawa ePPPN = +30m.35s. =PS +34s., eSN = +35m.9s., eE = +36m.35s. = SS +4s., eSSSN = +43m.33s.
Helsingfors eE = +40m.54s. =SSS −15s.
La Paz PPE? = +22m.29s.
San Juan e = +23m.57s.
Feldberg e = +17m.31s., +39m.57s. =SS +12s., and +57m.15s.
Stuttgart eZ = +20m.19s., ePP = +21m.59s., ePKS = +22m.51s., ePPPZ = +24m.52s., e = +32m.9s. =PS −16s. ; T_e =0h.38m.42s.
Triest i = +22m.48s. =PKS −10s.
Uccle i = +21m.59s. =PP +1s.
Strasbourg e = +22m.55s. =PKS −5s.
Kew e = +22m.7s. =PP +3s. and +22m.53s. =PKS −8s.
Paris e = +22m.14s. =PP +1s. and +23m.9s. =PKS +4s.
Granada i = +20m.54s., PP = +21m.40s., SPP = +23m.25s., i = +23m.28s., and +25m.29s., SPSP = +33m.30s., i = +34m.27s.
Long waves were also recorded at Sydney, Lund, Graz, Göttingen, Cheb, and other American stations.

Oct. 18d. 4h. 30m. 30s. Epicentre 25°·2S. 179°·5W. N.1.

$A = -\cdot 905$, $B = -\cdot 008$, $C = -\cdot 426$; $D = -\cdot 009$, $E = +1\cdot 000$; $G = +\cdot 426$, $H = +\cdot 004$, $K = -\cdot 905$.

A depth focal of +0·060 has been assumed.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		−0·1	7·3	346	2 30?	+48	i 3 54	+50	4·6	—
Apia		−1·3	13·5	39	3 9	+18	—	—	e 5·7	6·2
New Plymouth		−1·6	14·9	200	i 4 7	+61	i 6 34	+60	—	—
Wellington		−1·8	16·8	195	i 3 24	− 4	5 59	−16	e 12·5	14·5
Takaka		−1·9	16·9	200	−0 30?	?	—	—	—	—
Christchurch		−2·3	19·4	197	3 48	− 7	6 49	−15	—	—
Riverview		−3·2	26·9	244	i 5 2	− 5	i 8 57	P_0P	—	—
Sydney		−3·2	26·9	244	—	—	7 30	?	13·0	13·5
Melbourne		−4·0	32·6	239	i 5 52	− 1	10 20	−22	—	—
Adelaide		−4·3	37·3	244	e 6 34	+ 2	i 11 33	−18	—	15·1
Honolulu T.H.		−5·5	51·0	25	—	—	e 15 16	+19	—	—
Amboina		−5·8	54·6	284	i 8 6	−36	i 14 42	−62	21·5	—
Perth		−6·0	56·6	248	9 0	+ 4	i 16 1	− 8	—	—
Tyosi		−6·7	71·5	328	e 10 40	+ 3	—	—	—	—
Misima		−6·8	72·0	325	10 42	+ 2	19 25	+ 3	—	—
Batavia		−6·9	72·6	273	i 10 29	−14	i 19 10	−19	—	—
Nagoya		−6·9	73·1	324	e 10 49	+ 2	—	—	—	—
Osaka		−6·9	73·5	322	10 51	+ 2	15 40	?	19·8	20·2
Sumoto		−6·9	73·6	322	10 51	+ 1	19 47	+ 6	—	—
Sendai		−6·9	73·6	329	10 51	+ 1	19 47	+ 6	—	—
Kobe		−6·9	73·7	322	10 51	0	19 48	+ 6	—	—
Koti		−6·9	73·8	320	10 15	−36	—	—	—	—
Miyazaki		−6·9	73·9	318	10 53	+ 1	19 51	+ 6	—	—
Mizusawa	E.	−6·9	74·2	330	10 55	+ 1	20 12	+27	—	—
	N.	−6·9	74·2	330	11 6	+12	19 54	+ 6	—	—
Toyooka		−7·0	74·6	322	i 10 55	− 1	—	—	—	—
Hong Kong		−7·2	80·0	300	11 20	− 8	20 44	−10	—	—
Berkeley		−7·3	82·8	41	e 11 42	− 1	i 21 24	− 2	—	—
Lick		−7·3	82·9	41	e 11 45	+ 1	—	—	—	—
La Jolla	N.	−7·3	83·0	48	e 11 47	+ 3	e 21 30	+ 2	—	—
Ukiah		−7·3	83·0	39	—	—	e 21 33	+ 5	—	—
Pasadena		−7·3	83·1	47	i 11 45	0	i 21 21	− 8	—	—
Mount Wilson		−7·3	83·2	47	e 11 47	+ 2	i 21 28	− 2	—	—
Riverside		−7·3	83·5	47	e 11 47	0	e 21 25	− 9	—	—
Medan		−7·3	84·2	277	i 15 24	?	i 25 0	?	—	—
Haiwee		−7·4	84·5	45	e 11 53	0	e 21 31	−13	—	—
Tinemaha		−7·4	84·8	44	e 11 55	+ 1	e 21 34	−13	—	—
Phu-Lien		−7·4	85·2	296	e 11 53	− 4	14 30?	PP	—	—
Tucson		−7·4	87·1	50	e 12 11	+ 5	e 21 47	−25	—	—
Chiufeng		−7·4	88·6	317	e 12 8	− 6	—	—	—	—
Seattle		−7·5	89·1	34	e 14 30	?	i 22 35	+ 2	—	—
Victoria		−7·5	89·1	32	21 58	?	(22 28)	− 5	22·5	25·8
Bozeman		−7·7	94·1	40	—	—	e 22 30	−51	—	—
La Plata		−7·7	98·3	135	16 59	PP	22 42	?	25·1	—
La Paz		−7·8	101·2	114	e 13 0	−13	i 23 1	[−91]	—	—
Calcutta		−7·8	101·2	290	e 17 27	PP	22 42	?	27·6	—
Irkutsk		−7·8	101·8	323	13 7	− 9	22 53	?	43·5	—
Sucre		−7·8	102·2	118	—	—	i 23 5	[−91]	—	—
Colombo		−7·8	102·5	272	12 50	−29	—	—	—	35·1
St. Louis		−7·9	104·9	53	e 13 59	+29	i 23 49	[−60]	—	—
Kodaikanal		−7·9	106·0	274	e 18 0	?	—	—	—	—
Chicago		−7·9	107·8	50	—	—	i 24 29	[−34]	—	—
Bombay		—	113·4	281	8 1	?	—	—	—	—
Toronto	E.	—	114·1	50	—	—	i 25 7	[−23]	—	—
Buffalo		—	114·4	51	e 19 20	PP	e 27 58	?	—	—

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.
Almata		—	116·5	308	e 19 12	PP	e 24 0	?	—	—
Tananarive		—	116·5	230	—	—	(39 30?)	SSS	39·5	—
Ottawa		—	117·0	48	—	—	i 24 7	?	47·5	—
Fordham		—	117·6	54	e 19 20	PP	e 26 30	{−30}	—	—
Frunse		—	118·2	307	e 18 43	PP	—	—	—	—
San Juan		—	118·3	80	e 19 31	PP	i 25 32	{−93}	e 29·3	—
Andijan		—	119·4	305	e 17 56	[−48]	—	—	—	—
Harvard		—	119·8	52	—	—	i 27 0	{−15}	—	—
Tashkent		—	121·8	305	e 20 22	PP	—	—	—	61·6
Samarkand		—	123·3	303	e 18 9	[−45]	—	—	—	—
Ekaterinburg		—	127·1	323	i 18 19	[−42]	i 27 52	{−11}	—	—
Scoresby Sund		—	132·9	10	22 12	PKS	38 12	SS	—	—
Baku		—	136·4	304	e 18 30	[−47]	i 21 24	PP	e 39·5	62·7
Kucino		—	139·1	330	e 21 29	PP	e 27 45	PPP	e 41·1	—
Pulkovo		—	139·8	337	e 27 6	PPP	—	—	—	—
Upsala		—	143·4	345	—	—	39 30?	SS	—	—
Theodosia		—	145·7	315	e 18 53	[−42]	—	—	—	—
Yalta		—	146·7	315	e 18 54	[−43]	—	—	—	—
Sebastopol		—	147·1	315	e 18 49	[−48]	—	—	—	—
Lund		—	148·1	346	19 0	[−39]	—	—	—	—
Ksara	N.	—	148·2	295	(18 58)	[−41]	18 58	PKP	—	—
Copenhagen		—	148·3	347	18 59	[−40]	—	—	—	—
Edinburgh		—	149·2	4	—	—	e 29 30?	{−48}	—	—
Hamburg	Z.	—	150·8	349	e 18 58	[−45]	—	—	—	—
Stonyhurst		—	151·2	4	e 28 10	?	—	—	—	41·8
Helwan		—	152·4	287	e 19 5	[−40]	22 53	?	—	—
Göttingen	E.	—	152·7	347	—	—	e 41 30	?	—	—
De Bilt		—	152·9	354	e 19 1	[−45]	—	—	—	—
Cheb		—	153·2	343	e 19 30?	[−16]	—	—	—	—
Oxford		—	153·4	3	e 19 27	[−19]	—	—	e 42·0	52·1
Kew		—	153·7	1	i 19 3	[−44]	—	—	—	—
Vienna		—	153·8	336	e 19 3	[−44]	—	—	—	—
Uccle		—	154·2	354	i 19 3	[−44]	—	—	e 41·5	—
Feldberg		—	154·3	348	e 19 22	[−25]	—	—	—	42·2
Graz		—	155·1	335	i 19 37	[−11]	e 29 50	{−61}	—	51·4
Stuttgart		—	155·5	346	19 3	[−46]	e 29 21	{−92}	e 64·0	—
Zagreb		—	155·9	333	e 19 7	[−42]	e 29 9	{−107}	—	—
Strasbourg		—	156·0	348	i 19 5	[−44]	—	—	e 31·5	—
Paris		—	156·3	357	i 19 25	[−24]	—	—	32·5	42·5
Innsbruck		—	156·3	342	19 12	[−37]	—	—	—	—
Zurich		—	156·0	346	e 19 9	[−41]	—	—	—	—
Triest		—	157·0	336	e 19 6	[−44]	—	—	—	—
Chur		—	157·2	344	e 19 12	[−38]	—	—	—	—
Neuchatel		—	157·6	348	e 18 30?	[−81]	—	—	—	—
Piacenza		—	158·8	342	19 47	[− 5]	—	—	—	—
Prato		—	159·4	338	e 23 44	PP	—	—	e 37·5	—
Florence		—	159·4	337	e 18 50	[−63]	23 30	PP	—	79·5
Trenta		—	160·6	321	(19 0)	[−55]	19 0	PKP	—	—
Toledo	Z.	—	164·9	14	19 16	[−43]	—	—	—	—
Alicante		—	166·9	3	25 4	?	—	—	e 50·7	—
San Fernando		—	167·4	26	19 30	[−31]	—	—	—	—
Granada		—	167·5	15	i 19 16	[−45]	—	—	i 76·4	101·6
Malaga		—	167·7	19	e 20 0	[− 2]	—	—	—	—
Almeria		—	168·1	11	i 19 26	[−36]	—	—	—	—
Algiers		—	168·2	350	e 18 7	[−115]	24 30?	PKS	31·5	45·0

Additional readings :—
Suva i = +4m.12s.
Wellington i = +5m.31s., P_g = +5m.46s.
Riverview iE = +7m.25s., iN = +11m.40s., i = +15m.1s.
Melbourne i = +7m.15s., +8m.12s., and +13m.15s.
Honolulu T.H. e = +17m.34s.
Perth PP = +11m.0s., PPP = +11m.50s., PS = +16m.15s., i = +17m.50s., and +19m.50s.
Batavia i = +20m.34s.
Osaka i = +13m.35s.
Koti PP = +10m.53s.

Continued on next page.

Berkeley iZ = +11m.48s. and +13m.46s., iN = +21m.20s., eZ = +21m.38s., eE = +24m.30s. ?
La Jolla eN = +11m.49s. and +13m.35s.
Pasadena iZ = +11m.49s. and +13m.34s., iN = +21m.42s.
Mount Wilson eEN = +13m.39s., iN = +21m.44s.
Riverside eSN = +21m.29s., iN = +21m.40s.
Medan i = +25m.30s.
Haiwee iEN = +21m.49s.
Tinemaha eEN = +21m.54s.
Tucson e = +22m.14s.
Bozeman e = +23m.15s. and +26m.36s.
La Paz iPZ = +13m.13s., PPN = +16m.55s.
St. Louis iN = +24m.45s. = S − 25s.
Chicago i = +23m.29s., +25m.18s., and +27m.6s.
Toronto iE = +23m.45s., +27m.50s., and +31m.0s.
Buffalo e = +31m.10s.
Ottawa iN = +26m.33s., e = +29m.53s., eE = +31m.34s., eN = +34m.59s., eE = +38m.15s.
Fordham ePE = +24m.5s.
San Juan i = +24m.8s., e = +27m.33s., i = +28m.30s.
Harvard i = +35m.45s. and +38m.45s., e = +39m.30s.?
Tashkent e = +21m.11s. and +38m.42s.
Ekaterinburg i = +20m.17s., +20m.48s., +24m.23s., and +24m.54s.
Baku i = +27m.24s.
Kucino e = +22m.20s. and +32m.41s.
Copenhagen +21m.42s.
Edinburgh i = +41m.20s.
Göttingen eE = +44m.30s.
De Bilt iZ = eN = +19m.26s., eNZ = +23m.0s., eE = +41m.58s.
Kew i = +19m.29s., eE = +42m.8s., +43m.17s., +45m.17s., and +48m.15s.
Uccle i = +19m.31s., e = +21m.0s., and +23m.0s.
Feldberg i = +21m.17s. and +22m.52s., e = +28m.50s., +31m.20s., and +35m.0s.
Graz iPP = +23m.11s.
Stuttgart eE = iNZ = +19m.41s., eNZ = +21m.5s., eE = iNZ = +23m.12s., iZ = +23m.40s., e = +33m.42s. and +35m.48s., eZ = +37m.18s., eEN = +38m.18s., eZ = +41m.6s., e = +42m.30s., eE = +45m.30s., eN = +51m.6s., eE = +61m.36s.
Zagreb eNE = +35m.0s., eNW = +42m.30s.?
Strasbourg i = +19m.39s., iPP? = +23m.16s.
Paris i = +19m.46s., e = +21m.8s.
Zurich e = +19m.41s.
Triest i = +19m.44s., e = +21m.16s., PP? = +23m.17s.
Trenta e = +18m.10s.
Granada i = +19m.19s., +20m.32s., +24m.19s., +24m.24s., +24m.54s., +27m.17s., +28m.44s., +30m.15s., +41m.58s., +44m.42s., +48m.40s., and +58m.40s.
Almeria i = +24m.38s. = PP − 19s.
Algiers i = +20m.27s.
Long waves were also recorded at Helsingfors.

Oct. 18d. 7h. 6m. 48s. Epicentre 25°·5N. 98°·5E. (as on 1931 July 25d.). R.3.

A = −·133, B = +·893, C = +·431; D = +·989, E = +·148; G = −·064, H = +·426, K = −·903.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Phu-Lien	8·9	120	e 2 8	+ 2	4 44	+68	5·2	—
Calcutta	9·7	254	e 1 49	−28	3 49	−17	4·7	—
Hong Kong	14·7	99	6 22	S	(6 22)	+14	8·0	8·8
Hyderabad	20·3	251	4 31	− 2	8 13	+ 1	10·5	13·9
Chiufeng	20·7	41	e 8 33	S	(e 8 33)	+13	—	—
Zi-ka-wei	21·0	69	8 28	S	(8 28)	+ 2	(11·2)	12·9
Medan	21·9	179	e 8 28	S	(e 8 28)	−16	—	—
Bombay	24·6	260	5 21	+ 5	9 48	+14	13·1	13·4
Almata	24·9	321	e 5 22	+ 3	e 9 56	+17	—	—
Frunse	26·2	318	e 5 28	− 3	e 10 6	+ 4	—	—
Andijan	26·5	312	e 5 31	− 3	e 10 22	+15	—	—
Irkutsk	27·1	8	e 5 33	− 6	e 10 3	−14	14·1	15·4
Tashkent	28·8	311	e 6 43	PP	e 10 20	−25	e 15·6	16·8
Samarkand	29·8	306	e 5 59	− 4	—	—	—	—
Ekaterinburg	41·4	330	e 7 41	− 3	e 13 53	− 4	20·2	23·3
Florence	70·8	310	e 5 12	?	13 12?	?	33·2	41·2
De Bilt	72·1	320	—	—	20 45	− 1	e 38·2	40·1

For Notes see next page.

NOTES TO OCT. 18d. 7h. 6m. 48s.

Additional readings and notes :—
Hong Kong S = +7m.31s.
Zi-ka-wei gives S as P and L as S.
Medan i = +15m.24s. and +17m.40s.
Tashkent e = +12m.55s., all readings are given without phase.
Ekaterinburg e = +9m.25s. =PP +11s., +16m.53s. =SS +12s. and +19m.37s.
Long waves were also recorded at Baku, Kucino, Pulkovo, Scoresby Sund, and other European stations.

Oct. 18d. Readings also at 0h. (Bombay and near Soengei Langka), 1h. (Kodaikanal and near Santiago), 4h. (Toledo and near Christchurch), 9h. (near Santiago), 17h. (Frunse, near Andijan, and Samarkand), 19h. (Lick and near Berkeley), 20h. (near Christchurch), 21h. (near Zagreb), 22h. (San Juan (2), Hong Kong, Ekaterinburg, Tashkent, and near Manila), 23h. (De Bilt, Uccle, Granada (2), Adelaide, Riverview, Melbourne, Perth, Wellington, and near Apia).

Oct. 19d. Readings at 0h. (near Lick), 5h. (near Manila), 7h. (Pittsburgh), 9h. (Triest, Neuchatel, near Chur, and Zurich), 11h. (near Batavia (2)), 12h. (Tyosi), 13h. (Casamari), 18h. (near Manila), 19h. (Baku and Tashkent), 20h. (near Mizusawa), 23h. (Ekaterinburg).

Oct. 20d. 15h. 58m. 33s. Epicentre 42°·5N. 51°·5E. N.3.
(as given by the Russian stations).

A = +·459, B = +·577, C = +·676 ; D = +·783, E = −·623 ;
G = +·421, H = +·529, K = −·737.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Baku		2·5	210	e 1 35	S	(e 1 35)	+31	—	—
Theodosia		11·9	287	e 5 55	S	(e 5 55)	+55	—	—
Samarkand		12·0	99	e 3 4	+16	e 5 43	+40	6·3	7·7
Yalta		12·7	285	e 2 52	− 6	e 5 0	−20	—	—
Simferopol		12·8	286	(e 2 53)	− 6	(e 4 54)	−28	—	(5·4)
Tashkent		13·3	89	—	—	e 5 57	+23	e 8·2	10·4
Ksara	E.	15·0	240	e 3 18	−10	6 1	−14	6·8	—
Ekaterinburg		15·5	19	i 3 27	− 8	6 17	−10	—	—
Andijan		15·7	89	e 4 2	+24	e 7 13	+42	—	—
Almata		18·5	79	e 4 43	+30	—	—	—	—
Lemberg		20·2	301	e 1 3	?	(7 57)	−13	—	7·9
Helwan		20·5	238	4 19	−16	7 54	−22	—	—
Pulkovo		21·6	330	i 4 50	+ 4	8 44	+ 6	11·4	—
Helsingfors		23·9	327	e 5 14	+ 5	e 9 19	− 2	e 10·4	—
Upsala		26·9	322	e 6 0	+23	i 10 48	+34	—	—
Triest		27·0	290	e 5 51	+13	e 10 33	+18	—	—
Potsdam		27·4	304	e 6 27?	+45	i 10 54	+32	—	14·4
Lund		27·8	312	6 9	PP	—	—	—	—
Copenhagen		28·3	311	6 13	+23	—	—	—	—
Hamburg		29·4	307	e 6 27	+27	—	—	—	17·7
Bombay		29·7	136	6 16	+14	—	—	—	—
Strasbourg		30·8	297	e 6 27?	+15	16 27?	(−22)	—	—
Irkutsk		36·2	56	7 20	+20	e 12 52	+13	16·4	—

Additional readings and notes :—
Baku i = +1m.49s.
Simferopol readings have been *increased* by 2m. ; compare those of Yalta.
Lemberg eN = +1m.39s.
Pulkovo i = +5m.11s. =PP +7s.
Helsingfors iPPE = +5m.38s. ; T_0 =15h.58m.37s.
Upsala i = +6m.3s. =PP −13s.
Triest i = +6m.25s. =PP +8s.
Potsdam iE = +8m.17s.

Oct. 20d. Readings also at 0h. (Kucino, Tashkent, and near Andijan), 1h. (Baku and Ekaterinburg), 14h. (near Nagasaki), 16h. (Granada), 18h. (near Branner (2), Berkeley (2), and Lick (2)).

Oct. 21d. 7h. 35m. 42s. Epicentre 41°·6N. 13°·4E. N.3.

A = +·727, B = +·173, C = +·664 ; D = +·232, E = −·973 ;
G = +·646, H = +·154, K = −·748.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Casamari		0·0	—	−0 8	− 8	—	—	—	—
Monte Cassino		0·4	111	0 18?	S_g	—	—	—	—
Rome		0·7	294	i−0 5	−15	—	—	—	—
Naples	E.	1·0	140	e 0 12	− 2	e 0 35	S_g	—	0·8
Collurania		1·1	12	0 11	− 5	—	—	—	—
Camerino		1·5	351	0 25	+ 4	0 34	− 5	—	—
Florence		2·7	322	e 0 33	− 6	—	—	—	1·5
Prato		2·8	324	e 0 40	0	—	—	—	1·5
Venice		3·9	349	e 1 8	P*	1 48	+ 8	—	3·9
Triest		4·0	4	e 0 57	0	e 1 48	+ 6	1 1·9	2·2
Treviso		4·1	348	e 1 8	+10	e 2 8	S*	—	2·6
Zagreb		4·6	23	1 7	+ 1	e 2 18?	S*	—	2·9
Belgrade		6·0	55	—	—	e 2 51	S*	—	—
Strasbourg		8·0	332	—	—	e 4 1	S*	—	—

Additional readings :—
Triest iP_g = +1m.10s. =P*.
Belgrade e = +3m.6s. and +3m.25s. =S_g.

Oct. 21d. 8h. 42m. 49s. Epicentre 41°·6N. 13°·4E. (as at 7h.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Casamari		0·0	—	−0 5	− 5	—	—	—
Naples	E.	1·0	140	e 0 8	− 6	e 0 28	+ 2	—
Collurania		1·1	12	2 33	?	—	—	—
Camerino		1·5	351	0 33	P_g	—	—	—
Trenta		3·3	135	e 0 51	+ 4	1 31	+ 6	—
Messina		3·8	154	1 32	S	(1 32)	− 5	—
Triest		4·0	4	e 0 58	+ 1	e 1 49	+ 7	2·2
Catania		4·3	161	1 53	S	(1 53)	+ 3	2·5
Zagreb		4·6	23	e 1 14	+ 8	e 2 14	S*	2·9
Belgrade		6·0	55	2 9	P_g	e 2 40	+ 7	—

Additional reading :—
Belgrade e = +3m.28s. =S_g and +4m.2s.

Oct. 21d. Readings also at 0h. (near Nagasaki), 1h. (Ekaterinburg, Tashkent, Irkutsk, Pulkovo, Helsingfors, Uccle, Granada, Scoresby Sund, and Ivigtut), 2h. (Ekaterinburg, Kucino, and Ottawa), 3h. (Andijan and near Almata), 7h. (Kobe, Osaka, Sumoto, Toyooka, Tyosi, and near Nagoya), 9h. (La Paz, Sucre, La Plata, San Juan, Ottawa, Alicante, Nagoya, and near Tyosi), 10h. (Granada), 11h. (near Santiago), 12h. (near Sumoto (2)), 14h. (Granada, Paris, Ottawa, and La Paz), 15h. (De Bilt, Stuttgart, Strasbourg, Sucre, and near La Paz), 18h. and 20h. (La Paz), 22h. (Wellington, near Christchurch, near Sumoto, and Kobe), 23h. (Branner).

Oct. 22d. Readings at 1h. (Adelaide, Riverview, Suva, Wellington, and near Irkutsk), 2h. (Frunse), 5h. (near Wellington), 7h. (Florence, Tyosi, and Wellington), 8h. (Belgrade, Catania, and Zagreb), 9h. (Andijan (2), Samarkand (2), and near Tyosi), 10h. (Yalta), 11h. (near Misusawa), 14h. (Andijan), 15h. (Irkutsk and Tashkent), 19h. (Andijan and Samarkand), 23h. (Irkutsk, Tashkent, and near Granada).

Oct. 23d. 11h. 45m. 27s. Epicentre 20°·1S. 169°·4E. N.2.

A = −·923, B = +·173, C = −·344; D = +·184, E = +·983;
G = +·338, H = −·063, K = −·939.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		8·8	78	1 33	−32	4 6	+22	5·0	5·6
Riverview		21·2	226	i 4 43	+ 1	i 8 36	+ 6	—	—
Sydney		21·2	226	e 4 51	+ 9	(8 33)	+ 3	8·6	9·6
Wellington		21·7	171	i 4 47	− 1	i 8 44	+ 4	11·6	—
Melbourne		27·6	225	i 6 1	+17	i 10 26	+ 1	14·7	—
Adelaide		30·9	235	—	—	i 11 8	−10	16·4	18·0
Perth		49·1	245	i 15 48	S	(i 15 48)	0	—	—
Batavia		62·2	275	i 10 23	+ 3	i 18 22	−23	—	—
Medan		73·3	280	i 13 57	PP	i 23 3	?	—	—
Pasadena		87·7	52	i 12 46	0	—	—	—	—
Mount Wilson		87·8	52	e 12 47	0	—	—	—	—
Haiwee	E.	88·7	50	e 12 51	0	—	—	—	—
Tinemaha		88·9	49	e 12 53	+ 1	—	—	—	—
Irkutsk		91·7	327	e 13 33?	+28	e 23 21	[−22]	e 45·6	—
Bombay		102·3	286	16 17	?	—	—	—	—
Tashkent		110·5	309	e 18 45	PP	—	—	e 52·5	63·4
Ekaterinburg		116·9	325	e 19 54	PP	e 25 30	[−10]	55·6	—
Pulkovo		130·9	335	i 22 27	PKS	—	—	64·6	—
Copenhagen		140·5	340	—	—	(26 33?)	SKS	26·6	—
De Bilt		145·8	343	i 19 38	[+ 2]	—	—	e 70·6	80·8
Zagreb		146·3	325	e 19 41	[+ 5]	—	—	—	—
Stuttgart		147·3	337	e 19 40	[+ 2]	—	—	—	—
Strasbourg		148·0	338	(e 19 33?)	[− 6]	—	—	e 19·6	—
Chur		148·6	334	e 19 45	[+ 5]	—	—	—	—
Zurich		148·6	334	e 19 43	[+ 3]	—	—	—	—
Neuchatel		149·6	337	e 19 42	[+ 1]	—	—	—	—
Granada		161·9	342	i 21 8	{+15}	—	—	i 80·8	91·1

Additional readings:—
Riverview i = +9m.9s. = SS +13s.
Melbourne i = +10m.52s., e = +12m.15s.
Adelaide i = +14m.59s.
Tashkent i = +19m.37s. = PP +36s., e = +22m.4s., i = +23m.3s.
Ekaterinburg i = +26m.48s.
Stuttgart iZ = +20m.3s.
Granada PP = +24m.56s.
Long waves were also recorded at Baku, Helsingfors, Uccle, Paris, Tortosa, and Ottawa.

Oct. 23d. 18h. 46m. 28s. Epicentre 20°·1S. 169°·4E. (as at 11h.). X.

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Riverview		21·2	226	i 4 56	+14	i 8 42	+12
Pasadena		87·7	52	i 12 45	− 1	—	—
Mount Wilson		87·8	52	e 12 45	− 2	—	—
Riverside	N.	88·1	52	e 12 44	− 4	—	—
Haiwee	E.	88·7	50	e 12 52	+ 1	—	—
Tinemaha		88·9	49	e 12 52	0	—	—
Pulkovo		130·9	335	i 22 32	PKS	—	—

Long waves were recorded at Ekaterinburg and Tashkent.

Oct. 23d. 20h. 6m. 41s. Epicentre 9°·0S. 159°·5E. (as on 1930 April 4d.). R.2.

$A = -·925$, $B = +·346$, $C = -·156$; $D = +·350$, $E = +·937$; $G = +·147$, $H = -·055$, $K = -·988$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		20·5	118	i 3 49	−46	—	—	e 9·8	—
Riverview		26·0	196	i 5 29	0	10 6	+ 8	14·1	17·5
Sydney		26·0	196	e 5 25	− 4	i 10 13	+15	14·5	16·1
Melbourne		31·7	202	e 6 27	+ 7	11 52	+21	14·5	16·7
Adelaide		32·2	215	e 6 28	+ 4	i 11 48	+10	15·1?	19·6
Arapuni		32·5	155	e 7 19?	PP	—	—	—	—
Wellington		35·0	160	—	—	e 13 47	+86	19·3	21·3
Christchurch		36·4	165	—	—	e 12 35	− 7	i 18·6	—
Perth		46·4	235	13 40	?	19 19	?	24·4	—
Osaka		49·2	334	9 6	+21	—	—	9·7	11·1
Mizusawa	E.	51·0	343	8 55	− 4	16 37	+22	25·2	—
Zi-ka-wei	Z.	54·2	320	9 31	+ 8	—	—	24·1	32·8
Hong Kong		54·3	307	9 14	− 9	17 28	+29	—	30·8
Irkutsk		77·2	330	12 1	+ 8	21 57	+12	35·3	38·3
Victoria	E.	88·4	40	23 49	S	(23 49)	+ 8	41·2	48·7
Pasadena		88·8	55	i 12 49	− 3	—	—	—	—
Mount Wilson		88·9	55	e 12 51	− 1	—	—	—	—
Haiwee	E.	89·3	53	e 12 55	+ 1	—	—	—	—
La Jolla		89·3	57	i 12 52	− 2	—	—	—	—
Tinemaha		89·3	52	i 12 54	0	—	—	—	—
Riverside		89·4	56	e 12 52	− 3	—	—	—	—
Bombay		89·7	290	11 30	−86	—	—	—	—
Andijan		93·6	311	e 13 43	+29	—	—	—	—
Tashkent		96·1	311	e 12 32	−54	—	—	—	54·7
Ekaterinburg		102·3	326	i 15 4	?	25 43	− 4	44·3	63·0
Tananarive		107·4	248	10 19?	?	19 57	?	—	58·0
Baku		110·7	310	—	—	e 31 21	?	56·3	61·7
St. Louis	E.	111·4	52	—	—	e 28 31	PS	—	55·0
Kucino		114·8	329	—	—	e 26 43	{+ 2}	e 53·2	61·8
Pulkovo		116·7	334	e 20 13	PP	—	—	57·3	70·0
Scoresby Sund		118·5	1	—	—	29 19?	PS	59·3	—
Ottawa		120·4	40	—	—	23 19?	?	—	—
La Paz	Z.	126·4	118	e 19 3	[+ 3]	—	—	—	—
Copenhagen		126·6	336	—	—	e 23 19?	PPP	65·3	—
Vienna		130·0	330	i 22 42	PKS	—	—	—	—
De Bilt		132·1	339	e 19 24	[+14]	—	—	e 60·3	84·4
Stuttgart		133·1	334	e 19 19?	[+ 7]	—	—	e 67·3	83·3
Innsbruck		133·1	331	22 43	PKS	—	—	—	—
Uccle		133·4	339	e 19 19?	[+ 7]	—	—	e 58·3	—
Strasbourg		133·9	335	(e 17 19?)	?	—	—	e 17·3	—
Kew		134·4	341	e 22 2	PP	—	—	e 69·3	—
Piacenza		135·5	330	e 17 19	?	—	—	—	83·0
Florence		135·6	326	18 34	[−42]	23 4	PKS	—	68·3
Paris		135·7	339	(e 19 19?)	[+ 3]	—	—	e 19·3	—
Tortosa	N.	143·1	333	e 19 35	[+ 8]	—	—	e 76·3	—
Alicante		145·6	332	e 19 47	[+12]	—	—	—	—
Toledo		145·8	337	e 19 45	[+ 9]	—	—	—	90·5
Almeria		147·6	332	i 19 43	[+10]	—	—	—	—
Granada		147·9	335	i 19 47	[+ 8]	—	—	i 79·6	84·4
Malaga		148·6	335	e 19 46	[+ 6]	34 20	?	—	—

Additional readings and notes :—
Riverview i = +10m.35s.
Adelaide i = +7m.45s. and +12m.4s.
Wellington e = +17m.19s.?
Christchurch iSSZ = +15m.2s., iSSSZ = +15m.43s.
Perth PP = +15m.9s., PPP = +15m.19s., PPPP = +15m.44s., P_cP = +16m.4s., P_cS = +19m.39s., SS = +22m.19s., SSS = +22m.39s., SSSS = +22m.59s.; there appears to be some fundamental mistake involved in these readings.
Irkutsk e = +13m.5s. and +26m.49s. =SS +18s.

Continued on next page.

Tashkent i = +13m.20s., e = +14m.16s., PS = +24m.43s. =SKKS +20s., SS = +30m.43s.
Ekaterinburg iPP = +18m.9s., eSKS = +24m.46s.
Baku e = +39m.45s. and +47m.21s.
Kucino e = +29m.25s. =PS +11s. and +35m.37s. =SS +14s.
De Bilt eZ = +21m.46s. =PP +15s., eEN = +22m.50s. =PKS +7s.
Stuttgart eZ = +21m.49s. =PP +11s., e = +22m.47s. =PKS +0s.
Granada iP = +19m.50s., PP = +23m.10s., PPP = +26m.57s., SPSP = +33m.24s.
Long waves were also recorded at Honolulu T.H., Entebbe, Ivigtut, San Juan, and other American and European stations.

Oct. 23d. 23h. 28m. 13s. Epicentre 31°·3N. 138°·7E. N.3.

A = −·642, B = +·564, C = +·520 ; D = +·660, E = +·751 ;
G = −·390, H = +·343, K = −·854.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		4·1	340	e 0 59	+ 1	1 48	+ 3	—	—
Osaka		4·3	323	1 0	− 1	(1 44)	− 6	1·7	2·2
Sumoto		4·4	314	i 1 0	− 3	1 51	− 2	—	1·9
Kobe		4·5	319	i 1 2	− 2	1 54	− 1	—	1·9
Tyosi		4·8	22	e 1 10	+ 2	2 1	− 2	—	—
Matuyama		5·6	298	i 1 14	− 6	i 2 17	− 6	—	—
Mizusawa	E.	8·0	14	2 29	P*	3 2	−22	—	—

Kobe gives also iE = +1m.22s. =P*.

Oct. 23d. Readings also at 0h. (Bombay), 3h. (near Bombay, near Osaka, Nagoya, Tyosi, near Almata, Andijan, and near Apia), 5h. (Wellington), 6h. (Adelaide, Perth, Hong Kong, Phu-Lien, and near Medan), 7h. (Baku, Ekaterinburg, Almata, Tashkent, and Frunse), 8h. (La Paz, La Plata, and near Santiago), 9h. (Ekaterinburg, Tashkent, Almata, Andijan, and near Frunse), 11h. (La Plata and near Santiago), 12h. (Melbourne, Wellington, and near Sumoto), 13h. (Adelaide and Perth).

Oct. 24d. 2h. 52m. 46s. Epicentre 44°·0N. 84°·0E. (as on 1930 Aug. 22d.). X.

A = +·075, B = +·715, C = +·695 ; D = +·995, E = −·105 ;
G = +·073, H = +·691, K = −·719.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Almata	5·1	264	e 1 21	+ 8	(2 26)	S*	2·4	2·6
Frunse	6·9	265	e 1 38	0	(1 3 19)	+23	i 3·3	4·0
Tashkent	11·2	261	e 2 21	−16	e 4 30	−13	e 4·7	6·0
Samarkand	13·4	257	e 3 13	+ 6	—	—	e 7·8	8·1
Irkutsk	15·8	52	e 3 40	+ 2	e 6 36	+ 2	8·2	—
Ekaterinburg	19·4	319	e 4 21	− 2	e 7 50	− 4	i 9·9	10·1
Calcutta	21·8	169	(4 43)	− 6	(8 49)	+ 7	(14·0)	—
Baku	25·4	274	—	—	e 8 30	P_cP	e 14·2	16·5
Bombay	26·8	204	e 6 14	+38	—	—	—	—
Pulkovo	35·4	316	—	—	e 14 42	SS	17·7	20·3

Additional reading and note :—
Calcutta readings have been *diminished* by 3m.
Baku e = +10m.57s.
Long waves were also recorded at Andijan and European stations.

Oct. 24d. 12h. 36m. 46s. Epicentre 24°·5N. 123°·0E. N.3.

A = −·496, B = +·763, C = +·415; D = +·839, E = +·545; G = −·226, H = +·348, K = −·910.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku	1·4	292	0 24	+ 4	0 38	+ 2	—	—
Zi-ka-wei	6·8	349	i 1 36	− 1	2 54	+ 1	i 3·3	3·7
Hong Kong	8·4	257	1 55	− 4	3 20	−14	3·7	4·6
Manila	10·1	191	2 19	− 3	4 8	− 8	—	—
Nagasaki	10·2	35	e 2 32	+ 8	—	—	—	—
Sumoto	14·2	44	e 3 27	+ 9	6 59	+63	—	—
Phu-Lien	15·6	259	e 3 31	− 5	e 6 31	+ 2	—	—
Irkutsk	31·2	339	—	—	(11 14?)	− 9	11·2	—
Andijan	44·9	304	e 8 9	− 3	e 17 50	SS	—	—
Samarkand	49·0	302	e 9 27	+43	—	—	—	—
Ekaterinburg	54·7	324	i 9 21	− 5	i 18 56	(−19)	27·7	30·1
Baku	62·0	305	—	—	e 18 38	− 4	23·7	—
Pulkovo	70·4	329	e 3 40	?	—	—	37·2	—
Copenhagen	80·6	328	—	—	19 2	?	41·2	—

Sumoto gives ePEZ = +3m.32s.
Long waves were also recorded at De Bilt.

Oct. 24d. Readings also at 1h. (Entebbe, San Fernando, and near Amboina), 4h. (Ekaterinburg, Tashkent, Hong Kong, Phu-Lien, Bombay, Calcutta, and Tyosi), 5h. (Baku, Ekaterinburg, Tashkent, Copenhagen, De Bilt, and Tyosi), 6h. (La Paz, Manila, and Tashkent), 7h. (Ekaterinburg and Wellington), 9h. (Tucson), 10h. (Alicante), 11h. (Adelaide, Riverview, Sydney, Melbourne, Suva, Christchurch, Wellington, Perth, Baku, Ekaterinburg, Bombay, Calcutta, and De Bilt), 17h. (Baku, Ekaterinburg, Riverview, Christchurch, Wellington, Haiwee, Mount Wilson, Pasadena, Riverside, and Tinemaha), 22h. (near Amboina), 23h. (near Tyosi).

Oct. 25d. Readings at 0h. (Baku), 1h. (Ekaterinburg), 6h. (Baku and Ekaterinburg), 7h. (near Hukuoka and Nagasaki), 9h. (near Kobe and Tyosi), 11h. (Belgrade, Yalta, near Simferopol, and Theodosia), 13h. (Nagoya, near Osaka, Tyosi (2), and Mizusawa), 14h. (Ekaterinburg, Irkutsk, Wellington, and Balboa Heights), 16h. (near Manila), 17h. (Tyosi), 22h. (Andijan).

Oct. 26d. 4h. 25m. 7s. Epicentre 22°·2N. 108°·8W. N.2.

A = −·298, B = −·877, C = +·378; D = −·947, E = +·322; G = −·122, H = −·358, K = −·926.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		10·2	350	e 2 17	− 7	3 56	−22	e 4·3	—
Riverside		14·0	329	e 3 23	+ 8	—	—	—	—
Mount Wilson		14·5	328	e 3 33	+11	—	—	—	—
Pasadena		14·5	328	e 3 22	0	e 6 4	+ 1	—	—
Haiwee	E.	16·1	332	e 3 41	− 2	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tinemaha		17·0	334	e 3 51	− 3	—	—	—	—
Denver		17·8	10	e 4 18	+14	e 7 40	+20	8·8	10·7
Lick		18·8	327	e 4 11	− 5	—	—	—	—
Berkeley		19·5	326	e 4 20	− 4	e 8 0	+ 4	e 8·9	—
Ukiah		20·9	327	—	—	8 47	+23	e 9·9	—
St. Louis		22·8	40	e 4 53	− 6	e 8 55	− 6	—	11·6
Bozeman		23·5	356	e 5 8	+ 3	e 9 11	− 3	e 11·9	—
Chicago		26·4	37	—	—	i 10 1	− 4	13·1	—
Madison		26·4	33	e 4 57	−36	i 8 56	−69	—	—
Columbia		27·0	58	e 5 42	+ 4	10 13	− 2	14·6	—
Seattle		27·7	340	—	—	e 10 35	+ 8	e 14·5	—
Victoria		28·7	340	10 46	S	(10 46)	+ 3	14·4	16·9
Ann Arbor		29·0	40	—	—	e 10 47	− 1	i 14·6	15·5
Charlottesville		30·4	52	—	—	e 10 25	−45	e 13·6	—
Pittsburgh		30·4	46	e 6 23	+14	i 11 3	− 7	e 14·4	—
Georgetown		31·8	52	6 21	0	—	—	16·3	19·4
Buffalo		32·4	44	e 6 19	− 7	e 11 32	− 9	i 16·7	18·9
Fordham		34·8	50	e 6 45	− 2	e 12 11	− 7	e 16·9	—
Ottawa		35·5	42	—	—	e 12 25	− 4	e 17·9	—
Harvard		37·2	48	—	—	i 12 49	− 5	e 17·9	—
Sitka		39·9	339	—	—	e 13 33	− 2	e 16·9	—
San Juan		40·0	87	e 7 33	+ 1	e 13 47	+11	e 18·9	—
La Paz		55·5	130	e 9 32	0	i 17 32	+16	23·9	30·8
Bidston		81·1	36	—	—	e 34 53?	?	—	48·6
Oxford		82·9	37	—	—	e 22 43	− 3	e 38·3	47·4
De Bilt		86·2	34	—	—	e 23 17	− 2	e 35·9	48·4
Uccle		86·4	36	—	—	e 23 17	− 4	e 34·9	—
Copenhagen		87·6	29	—	—	23 32	− 1	40·9	—
Feldberg		88·9	35	—	—	e 23 41	− 5	—	55·9
Helsingfors	E.	89·5	21	—	—	e 23 44	− 7	e 39·9	—
Stuttgart		90·1	35	—	—	e 24 0	+ 3	e 41·9	53·5
Pulkovo		91·4	20	—	—	e 23 36	[− 5]	e 36·9	50·5
Ekaterinburg		100·5	6	—	—	e 26 54	PS	41·9	61·3
Baku		114·3	18	—	—	e 25 5	[−26]	56·9	70·5
Tashkent		116·5	2	—	—	e 26 45	{− 7}	e 55·9	70·1

Additional readings :—
Tucson e = +2m.27s.
Pasadena ePPE = +3m.30s.
Denver ePPE = +4m.32s., eSSE = +7m.33s.
Berkeley eE = +4m.29s. = PP −6s. and +7m.53s.?, iSN = +8m.5s.
St. Louis iSEN = +9m.1s.
Madison i = +8m.25s. ; T_o = 4h.24m.36s.
Ann Arbor eN = +14m.17s.
Charlottesville e = +9m.5s.
Pittsburgh eSS = +12m.0s.
Buffalo ePP = +7m.13s., eSS = +13m.47s.
Fordham ePPE = +7m.49s.
Harvard eSS = +15m.33s.
San Juan ePP = +9m.6s.
La Paz iSSN = +19m.38s.
Uccle e = +28m.41s. = SS −7s.
Copenhagen +29m.11s. = SS +6s.
Feldberg e = +32m.53s.
Helsingfors eSKSN = +23m.54s., eE = +28m.14s., eN = +28m.53s.?
Pulkovo e = +29m.58s. = SS −2s. and +33m.53s.
Ekaterinburg e = +32m.7s. = SS +0s.
Baku e = +40m.7s., +46m.16s., and +52m.43s.
Tashkent e = +29m.31s. = PS +1s. and +48m.17s.
Long waves were also recorded at Branner, Honolulu T.H., Scoresby Sund, Irkutsk, Bombay, and other European stations.

Oct. 26d. 11h. 57m. 34s. Epicentre 7°·5N. 126°·0E. (as on 1930 Jan. 25d.). R.3.

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

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		8·6	326	2 7	+ 5	5 35	?	7·3	—
Hong Kong		18·7	324	4 14	− 1	7 42	+ 2	9·6	13·1
Phu-Lien		23·0	307	e 4 48	−13	e 9 21	+16	11·9	—
Batavia		23·8	236	5 10	+ 2	i 9 57	SS	—	—
Zi-ka-wei	z.	24·1	350	i 5 6	− 5	i 9 24	− 1	—	32·6
Medan		27·5	263	i 4 20	−83	—	—	—	—
Calcutta		39·2	298	6 12	−73	11 47	?	15·6	—
Adelaide		44·1	166	—	—	e 13 55	−42	e 21·9	—
Riverview		47·7	150	—	—	19 6	SS	28·4	—
Irkutsk		48·2	345	8 34	− 4	e 15 27	− 9	28·4	32·3
Melbourne		48·6	160	—	—	e 15 46	+ 5	—	—
Bombay		52·8	290	9 13	+ 1	—	—	—	—
Frunse		57·2	318	e 9 53	+ 8	—	—	—	—
Andijan		57·9	315	e 9 55	+ 5	—	—	—	—
Tashkent		60·3	315	e 10 5	− 2	e 18 18	− 2	—	25·6
Samarkand		61·5	313	e 10 20	+ 5	—	—	—	—
Ekaterinburg		70·4	329	i 11 14	+ 1	i 20 20	− 6	33·4	39·3
Baku		74·6	311	e 11 41	+ 3	e 21 19	+ 4	36·4	54·2
Kucino		82·7	325	e 12 16	− 6	23 8	PS	43·2	44·7
Pulkovo		86·4	330	12 39	− 1	23 11	[+ 2]	44·4	52·5
Helsingfors		88·9	331	e 17 20	PP	e 23 35	[+ 9]	e 48·4	—
Copenhagen		96·6	330	—	—	24 6	[− 3]	50·4	—
De Bilt		102·1	328	—	—	e 24 35	[− 1]	e 53·4	65·4

Additional readings :—
Zi-ka-wei PPZ = +5m.38s., iZ = +9m.56s.
Melbourne e = +19m.21s.
Pulkovo SKS = +23m.3s.
Helsingfors eE = +19m.26s.?, ePSE = +25m.9s., ePPSE = +25m.33s., eSSE = +30m.2s.
Long waves were also recorded at other European stations.

Oct. 26d. 14h. 42m. 14s. Epicentre 13°·2N. 126°·4E. N.3.

A = −·578, B = +·784, C = +·228; D = +·805, E = +·593; G = −·136, H = +·184, K = −·974.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	5·5	286	1 15	− 3	2 15	− 5	—	—
Palau	9·8	125	2 20	+ 2	—	—	—	—
Hong Kong	14·8	310	3 26	0	5 58	−12	—	8·4
Miyazaki	19·3	13	4 12	−10	8 12	SS	—	—
Phu-Lien	20·4	295	e 4 36	+ 2	e 8 10	− 4	9·8	—
Sumoto	22·5	19	e 4 57	+ 1	—	—	—	9·5
Batavia	27·4	226	e 5 27	−15	i 9 54	−28	—	—
Irkutsk	42·9	340	e 7 56	0	e 14 24	+ 5	20·8	23·9
Bombay	51·6	284	9 3	0	—	—	—	—
Ekaterinburg	65·8	326	i 10 46	+ 2	e 19 30	0	30·8	37·7
Baku	71·3	309	e 11 24	+ 5	—	—	35·8	42·5
Pulkovo	81·7	330	12 17	0	e 22 33	− 1	40·8	49·9
Helsingfors	84·2	330	e 14 18	?	e 23 0	0	e 37·8	—

Additional readings and note :—
Batavia readings are given without phase.
Helsingfors eSE = +22m.47s., eN = +30m.38s.
Long waves were also recorded at Kodaikanal, Kucino, and other European stations.

Oct. 26d. Readings also at 0h. (Wellington), 2h. (near Batavia and Malabar), 4h. (Christchurch), 8h. (Andijan, and near Samarkand), 10h. (near Medan), 16h. (near Amboina), 17h. (Nagoya and Tyosi), 18h. (Bombay), 19h. (Bombay and Wellington), 20h. (Baku, Ekaterinburg, Tashkent, and Kucino), 21h. (Ekaterinburg and Tashkent), 23h. (Wellington and near Apia).

Oct. 27d. 1h. 32m. 7s. Epicentre 23°·5N. 123°·0E. N.3.

A = −·499, B = +·769, C = +·399; D = +·839, E = +·545; G = −·217, H = +·334, K = −·917.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku	2·0	319	0 31	+ 2	(0 52)	+ 1	0·9	0·9
Hokoto	3·2	271	0 39	− 7	1 9	−13	—	—
Zi-ka-wei	7·8	350	e 1 47	− 4	(i 3 14)	− 5	4·7	5·1
Hong Kong	8·2	264	2 3	+ 7	3 25	− 4	—	5·6
Phu-Lien	15·4	263	—	—	6 53?	+29	7·9	—
Chiufeng	17·5	342	e 5 54	+114	—	—	—	—
Irkutsk	32·1	339	e 5 53?	−31	e 11 53?	+16	16·9	20·3
Bombay	46·7	275	—	—	e 14 53	−21	—	—
Tashkent	47·8	307	e 8 56	+21	—	—	e 16·9	24·2
Ekaterinburg	55·4	325	i 17 32	S	(i 17 32)	+17	27·9	33·7
Pulkovo	71·2	329	—	—	i 20 23	−12	37·4	44·8
Helsingfors	73·6	329	—	—	e 25 29	SS	e 38·9	—

Additional readings and note:—
Zi-ka-wei gives S as iPZ, iZ = +3m.57s., +4m.5s., +4m.13s., and +4m.16s.
Tashkent e = +12m.11s.
Helsingfors eE = +26m.53s.
Long waves were also recorded at Kucino and other European stations.

Oct. 27d. Readings also at 0h. (La Paz, Tashkent, Haiwee, Pasadena, Tinemaha, and near Apia), 1h. (Ekaterinburg, Irkutsk, Tashkent, Samarkand, Almata, and near Frunse), 3h. (near La Paz), 5h. (near Apia), 8h. (near Reykjavik), 10h. (Frunse and near Almata), 11h. (near Mizusawa), 16h. (Samarkand, near Branner, Berkeley, and Lick), 18h. (Suva, Adelaide, Melbourne, Riverview, Sydney, Christchurch, Wellington, Baku, Ekaterinburg, Tashkent, Pulkovo, Dehra Dun, Frunse, Samarkand, and near Mizusawa), 19h. (Bombay, Calcutta, Hyderabad, Irkutsk, Ottawa, Strasbourg, De Bilt, Uccle, Stuttgart, Paris, and near Reykjavik), 21h. (Bombay, Calcutta, Hyderabad, Irkutsk, and Tashkent), 22h. (Tyosi).

Oct. 28d. 5h. 35m. 10s. Epicentre 17°·6N. 121°·6E. N.2.

A = −·499, B = +·812, C = +·302; D = +·852, E = +·524; G = −·158, H = +·257, K = −·953.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	3·0	191	1 9	P_g	2 4	+47	—	—
Taihoku	7·4	359	i 1 44	− 1	2 51	−18	3·3	—
Hong Kong	8·4	306	1 41	−18	3 7	−27	3·6	5·0
Zi-ka-wei	13·6	359	e 2 54	−16	5 38	− 3	7·5	7·8
Nagasaki	16·9	25	e 3 56	+ 3	e 6 58	− 1	e 9·5	—
Koti	19·3	32	e 4 25	+ 3	e 8 8	SS	—	—
Sumoto	20·5	33	4 38	+ 3	8 23	+ 7	13·4	15·7
Kobe	21·0	32	e 4 36	− 4	e 8 26	0	—	—
Osaka	21·1	34	4 45	+ 4	(8 39)	+11	8·6	9·4
Toyooka	21·5	31	4 49	+ 4	e 8 45	+ 9	—	—
Tientsin	21·9	351	6 1	+71	—	—	—	17·6
Amboina	22·2	162	5 30	+37	9 38	+48	—	—
Nagoya	22·3	35	e 4 56	+ 2	—	—	—	—
Chiufeng	23·0	349	e 4 51	−10	8 52	−13	—	14·2
Medan	26·4	241	12 32	?	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa		27·4	34	5 44	+ 2	10 26	+ 4	14·8	—
Batavia		27·9	213	e 5 34	−12	i 11 49	SS	18·7	—
Calcutta		31·5	285	(6 1)	−17	(11 29)	+ 1	(16·3)	—
Irkutsk		37·3	342	e 7 3	− 6	e 12 39	−17	18·8	23·1
Hyderabad		41·0	277	7 38	− 2	13 47	− 4	19·8	27·5
Colombo		42·0	262	6 49	−60	14 9	+ 3	21·0	25·4
Kodaikanal		43·4	268	e 14 32	S	(e 14 32)	+ 5	e 24·0	27·6
Bombay	N.	46·1	280	8 32	+11	—	—	—	30·0
Frunse		47·0	314	e 8 32	+ 3	—	—	—	—
Perth		49·8	185	16 20	S	(16 20)	+22	—	—
Tashkent		50·4	310	e 6 56	−118	i 13 53	−133	e 24·2	31·3
Samarkand		51·8	309	e 9 3	− 2	—	—	—	—
Ekaterinburg		59·6	326	i 10 0	− 2	i 18 2	− 9	26·6	36·7
Baku		64·9	307	10 40	+ 2	e 19 18	− 1	32·8	45·0
Kucino		72·0	324	e 11 22	− 1	e 20 56	+11	33·7	43·6
Pulkovo		75·5	330	e 11 46	+ 3	e 21 27	+ 1	32·3	45·4
Helsingfors	N.	78·0	330	—	—	e 28 40	?	e 34·8	—
Königsberg	N.	81·9	325	—	—	e 39 50?	?	e 43·8	50·8
Scoresby Sund		88·4	349	—	—	23 50?	+ 9	42·8	—
Stuttgart		90·7	323	e 13 2	+ 1	e 25 20	PS	e 44·8	60·1
De Bilt		91·3	326	e 13 5	+ 2	e 23 35	[− 5]	e 44·8	53·2
Strasbourg		91·7	323	e 12 50?	−15	—	—	e 47·8	55·8
Florence		91·7	317	e 15 35	?	23 40	[− 3]	—	49·8
Piacenza		92·1	318	—	—	e 23 30	[−15]	—	58·4
Uccle		92·3	326	—	—	e 23 42	[− 4]	e 44·8	—
Paris		94·4	325	—	—	e 25 50?	PS	48·8	59·8
La Paz		170·7	85	e 20 14	[+10]	—	—	90·8	103·5

Additional readings and note :—
Sumoto SNZ = +8m.26s.
Kobe eE = +4m.47s. =PP −9s.
Toyooka iSE = +8m.48s.
Medan i = +17m.8s. and +19m.44s.
Mizusawa PN = +4m.56s.
Calcutta readings have been *increased* by 2m.
Tashkent e = +6m.59s. and +18m.50s.
Kucino i = +27m.54s.
Helsingfors eE = +28m.50s. ?
Stuttgart ePPEZ = +16m.34s.
De Bilt ePPZ = +16m.38s.
Long waves were also recorded at Phu-Lien, Ivigtut, Ottawa, and other European stations.

Oct. 28d. Readings also at 0h. (Baku, Ekaterinburg, and Tashkent), 1h. (near Reykjavik), 3h. (Scoresby Sund and near Reykjavik (2)), 4h. (Frunse and near Samarkand), 6h. (near Reykjavik (2), and near Christchurch and Wellington), 7h. (Bergen, Ivigtut, Scoresby Sund, Budapest, De Bilt, and near Reykjavik), 10h. (near Amboina, and near Reykjavik), 12h. (La Paz), 14h. (Nagoya and near Tyosi).

Oct. 29d. 8h. 39m. 18s. Epicentre 16°·8N. 147°·3E. N.2.

A = −·806, B = +·517, C = +·289 ; D = +·540, E = +·842 ;
G = −·243, H = +·156, K = −·957.

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.
Hatidyozima	−2·4	17·6	339	3 36	+ 5	6 26	+ 6	—	—
Siomisaki	−2·7	19·6	330	3 52	− 1	6 56	− 3	—	—
Tyosi	−2·8	19·8	344	3 58	+ 4	7 11	+ 9	—	—
Tokyo	−2·8	20·0	342	4 1	+ 4	7 9	+ 3	—	—
Nagoya	−2·9	20·6	335	e 4 3	0	7 14	− 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.
Osaka		−2·9	20·8	332	3 33	−32	(7 10)	−12	7·2	7·5
Sumoto		−2·9	20·8	330	4 0	− 5	7 25	+ 3	—	7·5
Kobe	E.N.	−2·9	20·9	331	e 3 54	−13	e 7 14	−11	—	7·4
	Z.	−2·9	20·9	331	e 4 0	− 7	e 7 36	+11	—	7·7
Koti		−3·0	21·0	326	e 3 1	−66	i 6 15	−70	—	—
Nagano		−3·0	21·4	340	4 10	− 1	7 30	− 3	—	—
Matuyama		−3·0	21·5	325	e 4 6	− 7	—	—	—	—
Hukusima		−3·0	21·8	345	4 14	− 2	7 52	+10	—	—
Nagasaki		−3·2	22·4	318	4 14	− 7	6 35	−75	—	—
Mizusawa	E.	−3·2	23·0	348	4 42	+15	7 59	− 3	—	—
	N.	−3·2	23·0	348	4 12	−15	7 36	−26	—	—
Hong Kong		−4·5	31·7	285	—	—	9 45	−33	—	12·7
Tientsin		−4·7	34·4	318	8 5	?	(11 13)	+14	11·2	14·7
Chiufeng	E.	−4·8	35·7	318	e 7 43	+90	—	—	—	—
Irkutsk		−6·1	49·8	326	e 9 33	PP	e 14 12	−19	17·7	—
Tashkent		−7·7	70·2	310	e 10 21	− 1	i 18 40	− 8	34·7	40·6
Bombay		−7·7	70·4	284	—	—	e 17 42	−69	—	—
Ekaterinburg		−7·9	74·2	325	i 10 44	− 3	i 19 30	− 6	29·7	—
Lick		−8·2	80·7	52	e 11 28	+ 2	—	—	—	—
Santa Barbara		−8·3	83·0	55	i 11 36	− 3	—	—	—	—
Tinemaha		−8·3	83·4	52	i 11 42	+ 1	—	—	—	—
Haiwee	E.	−8·4	84·0	53	i 11 43	− 1	—	—	—	—
Mount Wilson		−8·4	84·4	55	i 11 46	0	—	—	—	—
Pasadena		−8·4	84·4	55	i 11 45	− 1	i 22 19	+47	—	—
Baku		−8·4	84·7	311	—	—	e 21 9	−26	—	—
Riverside		−8·4	85·0	55	i 11 47	− 2	—	—	—	—
Pulkovo		−8·5	88·3	334	11 51	−16	e 21 32	−42	—	—
Scoresby Sund		−8·6	92·4	356	—	—	23 42?	+47	—	—
La Paz	Z.	—	146·1	96	i 18 46	[−50]	—	—	—	—

Additional readings :—
Sumoto SZ = +7m.15s.
Koti eEN = +5m.19s.
Irkutsk e = +10m.27s.
Tashkent e = +19m.42s.?, i = +22m.1s.

Oct. 29d. 18h. 53m. 17s. Epicentre 36°·3N. 141°·2E. R.2.
(as on 1931 Aug. 2d. and near the position 36°·2N. 141°·2E., determined by Tokyo).

A = −·628, B = +·505, C = +·592 ; D = +·627, E = +·779 ;
G = −·461, H = +·371, K = −·806.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi		0·6	207	0 7	− 2	0 14	− 1	—	0·4
Tokyo		1·3	242	i 0 17	− 1	i 0 33	0	—	0·9
Mizusawa	E.	2·8	359	0 41	+ 1	1 4	P_g	—	—
	N.	2·8	359	0 37	− 3	1 0	P_g	—	—
Nagoya		3·6	253	e 0 52	+ 1	1 33	+ 1	—	2·2
Osaka		4·9	251	1 9	− 1	(2 24)	S*	2·4	2·8
Kobe		5·2	252	1 24	+10	2 35	S*	—	3·0
Toyooka		5·2	263	i 1 12	− 2	i 2 20	+ 7	—	3·0
Sumoto		5·5	250	1 22	+ 4	2 35	+15	—	2·9
Koti		6·8	249	—	—	4 5	S_g	—	4·7
Matuyama		7·3	253	e 1 41	− 3	—	—	—	—
Irkutsk		30·4	313	—	—	e 11 43?	+33	15·7	—
Ekaterinburg		55·4	319	e 9 28	− 4	—	—	26·2	—
La Paz	Z.	147·3	60	e 19 49	[+11]	—	—	—	—

Additional readings :—
Tyosi P_g = +11s.
Toyooka iP = +1m.16s.
Sumoto ePZ = +1m.25s., SE = +2m.43s.
Long waves were also recorded at Baku and Tashkent.

Oct. 29d. Readings also at 0h. (Samarkand, near Apia, near Granada, and Alicante), 1h. (near Apia), 3h. (Baku, Tashkent, and Ksara), 5h. (near Irkutsk), 7h. (Bombay, Calcutta, Hong Kong, Phu-Lien, Ekaterinburg, Irkutsk, and Tashkent), 13h. (Phu-Lien), 17h. (near Tyosi), 20h. (near La Paz), 21h. (near Kobe).

Oct. 30d. 8h. 39m. 15s. Epicentre 13°·7N. 145°·8E. N.3.

A = −·804, B = +·546, C = +·237; D = +·562, E = +·827; G = −·196, H = +·133, K = −·972.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Misima		22·3	345	4 51	− 3	8 56	+ 4	—	—
Miyazaki		22·5	327	4 57	+ 1	9 1	+ 6	—	—
Tyosi		22·5	350	e 5 1	+ 5	e 9 2	+ 7	—	—
Tokyo		22·6	347	5 0	+ 3	9 5	+ 8	—	—
Nagoya		22·9	341	e 5 0	0	—	—	—	—
Osaka		22·9	338	4 54	− 6	(9 10)	+ 7	9·2	—
Sumoto		22·9	336	4 59	− 1	—	—	—	—
Kobe		23·1	337	i 5 0	− 2	—	—	—	—
Oiwake		23·6	345	5 6	0	9 13	− 3	—	—
Manila		24·1	275	6 2	+51	6 53	?	—	—
Hukusima		24·5	350	5 15	0	9 33	+ 1	—	—
Irkutsk		50·8	329	—	—	e 19 45?	SS	24·7	—
Tashkent		71·0	310	e 11 42	+25	—	—	e 32·7	43·2
Ekaterinburg		75·9	326	i 11 43	− 2	21 19	−11	35·7	—
Tinemaha	E.	86·4	52	e 12 42	+ 2	—	—	—	—
Haiwee	E.	86·9	53	e 12 42	− 1	—	—	—	—
Pasadena		87·2	55	e 12 43	− 1	i 23 21	− 8	—	—
La Paz	Z.	147·1	101	e 19 51	[+14]	—	—	—	—

Osaka i = +6m.55s.
Long waves were recorded at Baku and Kucino.

Oct. 30d. Readings also at 0h. (La Paz and near Wellington), 3h. (near La Paz), 10h. (Bombay and Matuyama), 11h. (Neuchatel and near Amboina), 13h. (near Apia), 16h. (Bombay and Tashkent), 17h. (Alicante, Ekaterinburg, near Manila, and near Nagoya), 18h. (Tucson), 20h. (Ekaterinburg, Irkutsk, Tashkent, and near Manila), 21h. (Baku, Ekaterinburg and Irkutsk), 22h. (Tashkent), 23h. (Ekaterinburg and Tashkent).

Oct. 31d. 7h. 2m. 56s. Epicentre 22°·0N. 122°·0E. (as on 1928 Jan. 27d.). X.

A = −·491, B = +·786, C = +·375; D = +·848, E = +·530; G = −·199, H = +·318, K = −·927.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hokoto	2·7	304	0 31	− 8	0 57	−12	—	—
Taihoku	3·0	352	0 40	− 3	1 12	− 5	—	1·3
Hong Kong	7·2	272	2 29	P_g	3 9	+ 5	3·4	4·2
Manila	7·5	188	3 28	S	(3 28)	+17	6·9	8·4
Tientsin	17·6	348	4 30	+28	i 8 24	+69	10·3	11·5
Tashkent	48·0	308	—	—	e 19 34	SS	—	—
Ekaterinburg	56·1	325	i 9 35	− 2	17 21	− 3	27·1	—

Additional readings:—
Manila S = +5m.44s.
Tientsin PP? = +5m.16s., S = +9m.30s.
Long waves were also recorded at Phu-Lien, Baku, Copenhagen, De Bilt, and Stuttgart.

Oct. 31d. 10h. 5m. 10s. Epicentre 5°·0N. 141°·0E. (as on 1928 July 13d.). X.

A = −·774, B = +·627, C = +·087; D = +·629, E = +·777; G = −·068, H = +·055, K = −·996.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hatidyozima	28·1	358	5 32	−16	10 26	− 8	—	—
Sumoto	29·9	350	e 7 36	?	—	—	—	15·3
Osaka	30·1	350	4 42	−84	9 2	P_gP	13·9	—
Kobe	30·1	350	e 6 52	PP	—	—	—	17·9
Misima	30·2	357	6 2	− 5	10 57	−10	—	—
Tokyo	30·7	358	6 15	+ 4	—	—	—	—
Tyosi	30·7	0	e 7 12	PP	—	—	—	—
Hong Kong	31·2	307	14 5	?	18 58	L	(19·0)	—
Oiwake	31·4	356	6 19	+ 2	11 22	− 4	—	—
Tientsin	40·3	332	9 46	(+ 3)	13 36	− 5	—	—
Tashkent	73·0	312	—	—	e 24 50?	?	—	—
Ekaterinburg	80·5	327	—	—	e 22 47	PS	34·8	43·8

Ekaterinburg gives also e = +27m.44s. and +29m.16s.
Long waves were recorded at Baku, Kucino, Copenhagen, Feldberg, Stuttgart, and De Bilt.

Oct. 31d. Readings also at 1h. and 5h. (near Tyosi), 9h. (Almata, Frunse, Samarkand, Tashkent, Baku, and Ekaterinburg), 11h. (near Taihoku), 14h. (Nagoya (2), near Osaka, and Tyosi), 15h. (Vienna and Zagreb), 17h. (Balboa Heights and near Tyosi), 18h. (near Taihoku), 20h. (Hong Kong and Phu-Lien), 22h. (near Apia), 23h. (Sumoto, Simferopol, near Theodosia, and Yalta).

Nov. 1d. 18h. 53m. 21s. Epicentre **32°·4N. 132°·1E.** **N.1.**

Tokyo gives epicentre 32°·4N. 131°·9E., but see Note at the end of Nov. 2d.

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

Depth of focus 0·010 has been assumed.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Miyazaki		+0·3	0·7	230	0 3	−11	0 10	−16	—	—
Simidu		+0·3	0·8	62	0 10	− 6	0 25	− 3	—	—
Ooita		+0·2	0·9	334	0 18	+ 2	0 34	+ 6	—	—
Uwazima		+0·2	0·9	25	0 21	+ 5	0 39	S^e	—	—
Matuyama		+0·2	1·5	21	i 0 24	0	i 0 58	S_g	—	1·1
Kagosima		+0·2	1·5	238	0 21	− 3	0 40	− 4	—	—
Unzendake		+0·2	1·6	282	0 23	− 3	0 52	+ 6	—	—
Keti		+0·2	1·7	46	e 0 26	− 2	i 0 49	0	i 1·0	1·1
Simonoseki		+0·2	1·8	328	0 29	0	1 6	S_g	—	—
Hukuoka		+0·2	1·9	310	i 0 25	− 5	0 57	+ 3	—	1·3
Nagasaki		+0·2	1·9	280	0 24	− 6	0 53	− 1	—	1·1
Mureto		+0·2	1·9	64	0 33	+ 3	1 25	+31	—	—
Hamada		+0·2	2·5	359	0 37	− 2	1 14	+ 5	—	—
Tomie		+0·1	2·9	274	0 35	− 8	1 22	+ 5	—	—
Sumoto		+0·1	3·0	50	0 44	0	1 23	+ 3	—	1·9
Wakayama		+0·1	3·1	54	0 52	+ 6	1 50	S_g	—	—
Simonisaki		+0·1	3·2	71	0 46	− 1	1 21	− 4	—	—
Kobe	E.N.	+0·1	3·4	48	e 0 52	+ 2	e 1 43	S^e	—	2·2
	Z.	+0·1	3·4	48	e 0 56	+ 6	e 2 0	S_g	—	2·3
Osaka		+0·1	3·6	50	0 53	0	i 1 23	−12	1·8	3·0

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.
Toyooka	E.N.	+0·1	3·9	36	e 1 2	+ 5	i 1 55	S*	—	2·2
	Z.	+0·1	3·9	36	i 0 54	− 3	i 1 57	S*	—	2·2
Kyoto		+0·1	4·0	48	1 3	+ 5	2 23	S_g	—	—
Kameyama		0·0	4·4	56	1 3	0	2 34	S_g	—	—
Hikone		0·0	4·4	49	1 5	+ 2	2 15	S*	—	—
Taikyu		0·0	4·5	321	1 3	− 1	2 20	S*	—	—
Nagoya		0·0	4·9	55	e 1 15	+ 5	2 50	S_g	—	3·0
Gihu		0·0	4·9	52	1 13	+ 3	2 7	+ 2	—	—
Hamamatu		0·0	5·2	62	1 21	+ 7	2 24	+11	—	—
Numadu		0·0	6·2	62	1 32	+ 4	3 21	S*	—	—
Misima		0·0	6·3	63	1 26	− 4	3 48	S_g	—	—
Wazima		0·0	6·3	37	1 28	− 2	3 7	S*	—	—
Nagano		0·0	6·5	48	1 39	+ 7	3 25	S*	—	—
Oiwake		0·0	6·6	52	1 30	− 4	3 45	S_g	—	—
Zinsen		0·0	6·7	320	1 40	+ 5	2 59	+ 8	—	—
Kumagaya		0·0	7·0	56	1 45	+ 6	3 17	+18	—	—
Tyosi		−0·1	8·0	63	e 1 59	+ 7	e 4 33	S_g	—	—
Sendai		−0·1	9·2	48	2 7	− 2	4 1	+10	—	—
Zi-ka-wei		−0·1	9·2	265	2 1	− 8	3 53	+ 2	5·2	6·5
Akita		−0·1	9·7	39	2 46	+30	4 58	S*	—	—
Mizusawa		−0·1	9·9	45	2 21	+ 3	5 4	S*	—	—
	N.	−0·1	9·9	45	2 27	+ 9	5 6	S*	—	—
Titizima		−0·1	10·2	119	2 23	+ 1	5 7	S*	—	—
Tientsin		−0·2	13·8	303	i 3 42	+32	6 53	+72	—	—
Chiufeng		−0·2	15·0	305	3 27	+ 1	6 40	+30	8·3	9·8
Hong Kong		−0·4	18·8	242	4 3	− 8	7 51	+18	9·8	12·9
Manila		−0·4	20·5	212	e 4 27	− 4	8 15	+ 7	—	—
Phu-Lien		−0·5	25·5	249	e 5 14	− 6	e 9 39	− 2	12·6	16·8
Calcutta		−0·8	39·7	270	7 47	+24	13 19	− 1	19·3	25·8
Medan		−0·8	42·5	235	—	—	e 12 3	?	e 19·6	25·4
Batavia		−0·9	45·5	219	8 7	− 3	15 7	+23	—	—
Andijan		−0·9	47·7	300	e 8 39	+12	—	—	25·5	—
Tashkent		−1·0	50·0	301	i 8 42	− 2	16 10	+23	27·1	31·9
Ekaterinburg		−1·1	53·4	322	i 9 12	+ 3	16 56	+23	25·6	33·9
Bombay		−1·1	54·4	274	9 20	+ 4	17 18	+32	29·4	34·9
Colombo		−1·1	54·7	258	8 58	−20	—	—	—	34·0
Kodaikanal		−1·1	54·9	263	e 21 45	?	—	—	e 39·3	42·1
Kucino		−1·2	65·9	324	e 10 39	+ 2	e 19 30	+14	e 32·7	43·1
Pulkovo		−1·3	67·9	330	10 49	0	e 19 47	+ 7	28·3	43·9
Riverview		−1·3	68·7	165	—	—	i 19 53	+ 3	—	26·6
Helsingfors		−1·3	70·0	331	—	—	e 20 32	PS	e 33·6	—
Melbourne		−1·3	71·3	170	—	—	i 20 23	+ 2	34·3?	—
Upsala		−1·3	73·3	333	—	—	e 20 7	−38	e 36·6	41·5
Königsberg		−1·3	75·0	328	e 11 22	−11	—	—	e 39·6	47·6
Copenhagen		−1·3	78·0	331	11 52	+ 2	21 46	+ 7	36·6	—
Budapest		−1·3	80·1	323	—	—	e 22 9	+ 6	e 44·2	51·6
Hamburg		−1·3	80·5	331	—	—	e 27 39?	SS	e 40·6	50·6
Göttingen		−1·3	81·9	329	—	—	e 22 41	+19	e 42·6	45·6
Graz		−1·3	82·2	324	e 12 39	+26	e 22 50	+25	43·6	45·8
Zagreb		−1·4	82·8	322	e 12 23	+ 8	e 22 39?	+ 8	e 43·6	48·3
Feldberg		−1·4	83·5	329	—	—	e 22 46	+ 8	—	54·3
De Bilt		−1·4	83·6	331	e 12 20	+ 1	e 22 42	+ 3	e 40·6	51·3
Edinburgh		−1·4	83·8	338	—	—	i 22 57	+16	e 40·6	54·9
Triest		−1·4	84·1	323	e 11 48	−34	e 22 44	0	e 40·6	—
Stuttgart		−1·4	84·2	328	e 12 22	0	e 22 39	− 6	e 42·6	54·4
Tinemaha		−1·4	84·4	49	e 12 30	+ 7	—	—	—	—
Treviso		−1·4	84·9	323	e 44 9	?	e 53 39	?	—	55·3
Uccle		−1·4	84·9	331	12 29	+ 3	e 22 51	− 1	41·6	56·5
Strasbourg		−1·4	85·0	328	e 12 26	0	22 59	+ 6	e 36·6	55·6
Haiwee	E.	−1·4	85·2	50	e 12 36	+ 9	—	—	—	—

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.
Chur	−1·4	85·4	325	e 12 57	+29	22 47	−11	—	—
Zurich	−1·4	85·5	325	e 12 24	− 5	—	—	—	—
Bidston	−1·4	85·8	336	—	—	e 29 39?	?	e 43·6	55·6
Pasadena	−1·4	86·3	52	e 12 31	− 2	i 23 15	+ 8	—	—
Kew	−1·4	86·3	334	e 12 36	+ 3	e 22 57	−10	41·6	56·5
Oxford	−1·4	86·4	335	—	—	e 22 58	−10	e 43·6	52·3
Neuchatel	−1·4	86·5	327	e 12 34	0	—	—	—	—
Florence	−1·4	86·6	323	12 0	−34	23 3	− 7	41·6	46·1
Piacenza	−1·4	86·7	325	22 59	S	(22 59)	−12	—	56·6
Paris	−1·4	87·2	331	e 12 41	+ 4	e 23 32	PS	44·6	56·6
Algiers	−1·4	96·0	323	e 0 24	?	e 12 28	P	e 57·2	62·6
Alicante	−1·4	96·7	326	e 29 38	?	—	—	e 51·8	—
Ottawa	−1·5	98·2	20	—	—	e 37 41	?	e 48·6	—
La Paz	—	155·7	54	20 0	{−25}	—	—	78·6	117·5

Additional readings :—
Koti eEN = +32s., iN = +45s.
Hukuoka P? = +29s.
Sumoto SZ = +1m.31s. =S*.
Kobe i = +1m.7s., iZ = +1m.19s., eS$_E$N = +1m.59s.
Zi-ka-wei iZ = +3m.3s. =P$_E$.
Tientsin i = +4m.6s., +4m.28s., and +6m.0s.
Chiufeng SN? = +6m.56s.
Batavia i = +14m.49s.
Helsingfors ePSN = +21m.12s., eSSEN = +24m.52s.
Königsberg eN = +37m.9s.
Copenhagen +22m.3s. =PS −22s. and +26m.51s. =SS +18s.
Göttingen eE = +31m.57s.
Feldberg e = +32m.20s., i = +37m.54s.
De Bilt e = +23m.0s.
Stuttgart ePPZ = +15m.41s., eSKS = +23m.0s., eSS = +28m.39s., eEN = +33m.9s., eZ = +36m.39s.
Uccle eSS = +28m.39s.
Strasbourg ePS = +22m.55s., SS = +29m.1s.
La Paz ePKPN = +20m.3s.
Long waves were also recorded at Hyderabad, Samarkand, Ivigtut, Scoresby Sund, and other European stations.

Nov. 1d. Readings also at 0h. (Branner), 1h. (near Tyosi), 5h. (Tananarive), 6h. (near Amboina), 7h. (Trenta), 9h. (Ekaterinburg, Tashkent, Manila, Ksara (2) Mineo, and near Santiago), 12h. (La Paz and Tananarive), 13h. (Tortosa, Edinburgh, Kew, Paris, Strasbourg, Stuttgart, De Bilt, Uccle, Copenhagen, Pulkovo, Ekaterinburg, and Tashkent), 14h. (Kobe), 15h. (Manila, Irkutsk, Ekaterinburg, Tashkent, and Kucino), 21h. (Ekaterinburg, Hong Kong, Phu-Lien, Manila, and near Nagasaki), 22h. (Tashkent and near Tyosi), 23h. (near Tananarive and near Tyosi).

Nov. 2d. 0h. 32m. 11s. Epicentre 16°·4N. 97°·0W. R.1.

(as on 1931 May 16d.).

Probable error of epicentre ±0°·27.

A = −·117, B = −·952, C = +·282 ; D = −·992, E = +·122 ;
G = −·034, H = −·280, K = −·959.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights		18·5	112	e 3 49?	−24	—	—	—	—
Little Rock		18·9	12	3 49?	−28	—	—	—	—
Tucson		20·2	324	i 4 34	+ 2	8 24	+14	10·6	—
Columbia		22·7	36	4 54	− 4	i 9 8	+ 9	e 10·8	—
St. Louis		23·0	14	i 5 0	− 1	i 9 6	+ 1	e 11·4	—
Port au Prince		23·6	81	i 5 7	+ 1	e 9 13	− 3	e 11·9	—
Denver	E.	24·3	345	i 5 35	+22	i 10 7	+39	13·4	15·2
Riverside		25·4	318	e 5 26	+ 2	e 9 56	+ 8	—	—
Pasadena		25·9	317	i 5 29	+ 1	e 10 2	+ 5	—	—
Mount Wilson		26·0	317	e 5 30	+ 1	e 10 6	+ 8	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Chicago		26·6	16	i 5 34	− 1	e 10 0	− 9	14·1	—
Charlottesville		27·1	34	5 37	− 2	10 7	−10	e 13·8	—
Santa Barbara	N.	27·2	316	e 5 41	+ 1	—	—	—	—
Haiwee	E.	27·2	321	e 5 45	+ 5	—	—	—	—
Madison		27·5	12	i 5 44	+ 1	i 10 35	+11	—	—
Tinemaha		27·9	322	e 5 50	+ 4	—	—	—	—
Pittsburgh		28·3	28	i 5 47	− 3	e 10 31	− 6	e 13·8	—
Ann Arbor		28·3	21	e 5 55	+ 5	i 10 49	+12	e 13·4	18·0
Georgetown	Z.	28·5	34	i 5 51	− 1	—	—	i 15·0	18·6
San Juan		29·5	82	e 5 53	− 8	i 10 55	− 1	12·1	—
Lick		30·2	320	e 6 7	0	—	—	—	—
Branner		30·6	320	e 6 19	+ 9	—	—	—	—
Buffalo		30·7	26	i 6 12	+ 1	i 11 11	− 5	e 14·8	19·8
Berkeley		30·9	320	i 6 14	+ 1	i 11 24	+ 6	i 14·9	—
Toronto	N.	31·1	25	i 6 13	− 2	i 11 19	− 2	16·4	—
Bozeman		31·5	340	e 6 19	+ 1	11 31	+ 3	e 16·8	—
Fordham		31·6	35	i 6 12	− 7	i 11 23	− 6	i 15·6	—
Ukiah		32·2	320	—	—	i 11 49	+11	14·3	—
Ottawa		34·0	27	i 6 39	− 1	e 12 5	− 1	18·8	—
Harvard		34·1	35	e 6 35	− 6	i 12 5	− 3	e 15·8	—
Seattle		37·6	332	—	—	e 13 16	+16	20·4	—
Victoria	E.	38·6	332	7 21	+ 1	13 30	+15	20·3	25·0
	N.	38·6	332	7 49	+29	13 19	+ 4	19·7	24·9
La Paz		43·5	139	7 58	− 3	e 14 26	− 2	20·9	24·5
Sucre		47·2	139	e 8 29	− 1	—	—	—	—
Sitka		49·8	335	—	—	e 16 1	+ 3	25·5	—
Santiago		55·8	154	(9 31)	− 3	(17 34)	+14	—	—
Ivigtut		56·5	26	9 37	− 2	17 30	0	27·8	—
Honolulu T.H.		57·4	286	—	—	17 49	+ 7	e 23·8	—
La Plata		63·3	144	10 20	− 7	(18 49?)	−10	18·8	—
Scoresby Sund		69·6	20	11 19	+11	20 19	+ 3	33·8	—
Edinburgh		78·6	35	e 12 7	+ 7	21 55	− 5	36·8	50·4
Bidston		79·2	38	e 10 29	?	e 19 49	?	e 33·8	—
Stonyhurst		79·4	38	12 14	+ 9	22 4	− 5	37·8	45·1
Durham		79·8	37	12 29	+22	22 9	− 5	—	43·8
Oxford		80·7	39	e 12 13	+ 1	i 22 17	− 6	e 38·3	43·9
San Fernando		81·0	55	12 24	+11	22 19	− 7	—	44·8
Kew		81·4	39	e 12 22	+ 7	i 22 25	− 6	34·8	43·9
Bergen		81·8	29	11 24	−53	21 24	−71	39·8	—
Toledo		81·8	51	12 16	− 1	22 29	− 6	e 38·7	46·1
Malaga		82·3	53	e 12 27	+ 7	e 22 24	−16	—	—
Granada		82·8	53	i 12 21	− 1	i 22 41	− 4	39·3	42·9
Almeria		83·8	53	i 12 13	−14	i 22 55	0	e 39·2	45·1
Paris		83·8	40	i 12 25	− 2	i 22 47	− 8	39·8	44·8
Uccle		84·3	39	i 12 29	− 1	i 22 50	[− 4]	e 34·8	45·1
De Bilt		84·3	37	12 31	+ 1	e 22 53	[− 1]	35·8	47·2
Alicante		84·8	51	e 12 36	+ 4	e 22 54	[− 4]	e 39·9	48·7
Tortosa	N.	84·9	49	e 12 29	− 4	e 22 56	[− 2]	e 34·9	45·5
Barcelona		85·8	47	—	—	e 22 35	[−30]	e 41·3	50·2
Hamburg		86·5	35	e 12 37	− 4	e 23 8	[− 2]	e 39·8	46·8
Besançon		86·6	41	e 12 50	+ 9	e 23 8	[− 3]	43·8	—
Feldberg		86·9	37	e 13 0	+17	i 23 7	[− 6]	—	55·9
Copenhagen		86·9	31	12 43	0	23 1	[−12]	39·8	—
Strasbourg		87·1	40	e 12 42	− 2	i 23 24	− 4	34·8	—
Neuchatel		87·2	41	e 12 42	− 2	e 23 9	[− 6]	—	—
Göttingen		87·4	36	i 12 48	+ 3	i 23 8	[− 8]	e 42·8	49·8
Lund		87·4	31	16 7	PP	23 7	[− 9]	39·8	—
Upsala		87·5	27	e 12 50	+ 5	i 23 30	− 2	e 44·8	55·1
Stuttgart		87·9	39	e 12 46	− 1	i 23 52	+16	e 41·3	49·5
Algiers		88·0	52	e 11 42	−66	23 29	− 8	45·8	—
Zurich		88·1	42	e 12 49	+ 1	—	—	—	—
Potsdam		88·7	35	—	—	e 22 49?	[−35]	e 41·8	55·8
Chur		88·9	42	e 12 53	+ 1	e 22 58	[−28]	—	—
Cheb		89·3	37	e 16 24	PP	e 23 25	[− 3]	e 41·8	49·8
Piacenza		89·7	42	13 5	+ 9	23 34	[+ 3]	—	49·3

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Helsingfors	90·4	25	e 16 32	PP	e 23 28	[− 7]	e 42·8	—
Treviso	91·0	41	e 12 49	−13	i 23 38	[− 1]	47·8	—
Florence	91·3	44	13 19	+16	23 31	[− 9]	36·3	44·1
Königsberg	91·4	30	e 16 53?	PP	e 23 25	[−16]	e 44·8	52·8
Triest	92·0	41	e 12 54	−13	i 23 40	[− 4]	e 43·8	—
Graz	92·5	39	—	—	e 23 52	{− 3}	44·8	50·0
Vienna	92·5	37	—	—	i 23 38	[− 9]	e 44·8	52·8
Pulkovo	92·8	23	13 16	+ 6	23 41	[− 8]	42·8	48·0
Zagreb	93·4	40	e 13 18	+ 5	e 23 46	[− 6]	e 43·8	47·8
Budapest	94·4	37	e 16 49?	PP	—	—	e 46·3	53·8
Taranto	96·8	45	17 16	PP	—	—	—	—
Kucino	98·5	24	—	—	24 37	{− 5}	e 41·8	52·5
Ekaterinburg	104·4	13	e 14 8	+ 4	24 43	[− 4]	45·3	63·0
Baku	115·3	27	19 47	PP	25 32	[− 3]	48·8	64·1
Riverview	116·9	240	—	—	e 47 43	?	53·8	59·8
Tashkent	120·9	12	e 19 48	PP	26 1	[+ 8]	56·8	71·8
Melbourne	122·0	235	—	—	e 30 39	PS	56·1	—
Adelaide	127·3	239	—	—	e 45 22	?	59·1	65·3
Hong Kong	130·7	321	22 31	PKS	—	—	—	73·1
Phu-Lien	136·2	328	22 49?	PKS	—	—	—	—
Bombay	143·3	15	18 37	[−51]	—	—	—	85·2
Colombo	156·5	8	21 45	?	—	—	—	94·7

Additional readings and note :—

St. Louis iN = +5m.11s. and +5m.33s., iEN = +9m.19s., iN = +9m.34s.
Port au Prince PP = +5m.33s., i = +6m.16s., +6m.45s., and +8m.44s. = P_cP −7s., SS = +10m.2s., SSS = +10m.18s., iNW = +11m.16s.
Denver ePPE = +6m.13s., eSSE = +11m.18s., eSSSE = +11m.48s.
Chicago PP = +6m.10s.
Madison ePP = +6m.26s., iPKP = +8m.49s. ; T_o =0h.31m.51s.
Pittsburgh i = +9m.55s., iSS = +11m.31s.
Ann Arbor ePPN = +6m.49s., i = +11m.25s., epicentre 15°N. 96°W.
San Juan iP = +5m.59s., ePP = +6m.58s., iS = +11m.0s.
Buffalo i = +6m.49s. =PP −17s., iSS = +12m.55s.
Berkeley eE = +6m.25s., iN = +11m.7s. and +11m.27s.
Toronto iN = +14m.38s. ; T_o =0h.31m.42s.
Fordham iPPZ = +7m.12s.
Ukiah iS = +12m.0s.
Ottawa eSSSE? = +15m.7s. ; T_o =0h.31m.58s.
Seattle eSS = +16m.48s.
La Paz PPN = +9m.39s., iPSN = +14m.36s., iSSSN = +18m.9s.
Santiago readings have been *diminished* by 6m.
Ivigtut +22m.49s. ?
Bidston ePP = +13m.19s., i = +20m.9s.
Granada i = +16m.9s.
Almeria e = +15m.39s. =PP +4s.
Paris i = +12m.33s.
Uccle ePPE = +15m.31s.
De Bilt iZ = +12m.38s., PPZ = +15m.43s., eSS = +28m.18s.
Hamburg ePPZ = +16m.1s., iE = +23m.19s., eSSS = +31m.44s.
Feldberg e = +15m.53s. =PP −8s., i = +25m.35s. and +27m.55s. =SS +0s., e = +38m.1s.
Copenhagen +16m.4s. =PP +3s., +23m.24s. =S −2s., and +29m.7s. =SS +12s.
Strasbourg PP = +16m.12s., SKS = +23m.9s.
Neuchatel ePP = +16m.12s.
Göttingen iPPEZ = +16m.5s.
Upsala ePP = +16m.7s., SKS = +23m.8s.
Stuttgart ePN =iPEZ = +12m.54s., PP = +16m.11s., ePPP = +18m.19s., iSKS = +23m.15s., ePS = +24m.31s., eSS = +29m.13s.
Algiers PP? = +14m.7s., PP = +16m.25s., SKS = +23m.10s.
Helsingfors ePPN = +16m.35s., eZ = +21m.9s., ePPSE = +25m.11s., ePPSN = +25m.14s., eSSN = +29m.18s., eSSE = +29m.36s. ; T_o =0h.31m.52s.
Triest PP = +16m.40s.
Pulkovo PP = +16m.49s., PS = +25m.40s., SS = +30m.13s.
Kucino PP = +17m.49s., PPP = +20m.1s., SS = +32m.7s.
Ekaterinburg PP = +18m.19s., PS = +27m.34s.
Baku PS = +29m.26s., SS = +35m.49s.
Tashkent iPP = +20m.16s., PS = +30m.5s., SS = +35m.49s.?
Long waves were also recorded at Sydney, Perth, Wellington, Christchurch, Dakar, Prague, and Hyderabad.

Nov. 2d. 4h. 34m. 15s. Epicentre 3°·5S. 102°·5E. (as on 1928 Feb. 11d.). X

A = −·216, B = +·975, C = −·061; D = +·976, E = +·216; G = +·013, H = −·060, K = −·998.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia	5·1	123	1 8	− 5	2 6	− 4	—	—
Medan	8·0	332	−0 6	−119	—	—	—	—
Phu-Lien	24·6	9	—	—	9 45?	+11	—	—
Manila	25·7	45	5 45	+19	10 15	+22	—	—
Bombay	36·8	308	e 0 45	?	—	—	—	—
Almata	52·1	338	e 9 32	+25	—	—	—	—
Andijan	52·1	332	e 9 5	− 2	—	—	—	—
Tashkent	54·1	329	9 22	0	17 0	+ 3	e 26·2	34·6
Ekaterinburg	69·1	337	i 11 6	+ 1	e 20 13	+ 3	32·8	—
Pulkovo	84·2	332	12 34	+ 5	e 22 58	− 2	51·8	—

Additional readings :—
Medan i = +10s. and +1m.13s.
Long waves were also recorded at Hong Kong and De Bilt.

Nov. 2d. 10h. 3m. 9s. Epicentre 32°·4N. 132°·1E. (as on 1d.). R.1.

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

A depth of focus 0·010 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Miyazaki	+0·3	0·7	230	−0 3	−17	0 6	−20	—	—
Simidu	+0·3	0·8	62	0 9	− 7	0 17	−11	—	—
Ooita	+0·2	0·9	334	0 13	− 3	0 30	+ 2	—	—
Uwazima	+0·2	0·9	25	0 14	− 2	0 26	− 2	—	—
Kumamoto	+0·2	1·3	290	0 15	− 6	0 34	− 5	—	—
Kagosima	+0·2	1·5	238	0 17	− 7	0 40	− 4	—	—
Matuyama	+0·2	1·5	21	0 21	− 3	i 0 53	+ 9	—	1·1
Unzendake	+0·2	1·6	282	0 24	− 2	0 49	+ 3	—	—
Koti	+0·2	1·7	46	e 0 23	− 5	i 1 0	+11	—	1·4
Simonoseki	+0·2	1·8	328	0 23	− 6	0 59	+ 8	—	—
Hukuoka	+0·2	1·9	310	i 0 24	− 6	0 55	+ 1	—	1·2
Muroto	+0·2	1·9	64	0 27	− 3	1 13	+19	—	—
Nagasaki	+0·2	1·9	280	0 22	− 8	0 52	− 2	0·9	1·1
Hirosima	+0·2	2·0	8	0 32	+ 1	1 7	+10	—	—
Tadotu	+0·2	2·3	36	0 32	− 4	1 17	+13	—	—
Hamada	+0·2	2·5	359	0 36	− 3	1 16	+ 7	—	—
Tokusima	+0·1	2·6	51	0 37	− 2	1 30	+21	—	—
Okayama	+0·1	2·7	34	0 42	+ 2	1 29	+17	—	—
Tomie	+0·1	2·9	274	0 35	− 8	1 21	+ 4	—	—
Sumoto	+0·1	3·0	50	0 44	0	1 25	+ 5	—	2·0
Wakayama	+0·1	3·1	54	0 45	− 1	1 31	+ 9	—	—
Siomisaki	+0·1	3·2	71	0 44	− 3	1 22	− 3	—	—
Kobe	+0·1	3·4	48	e 0 48	− 2	e 1 37	+ 7	—	2·3
Osaka	+0·1	3·6	50	0 50	− 3	i 1 24	−11	1·7	4·3
Husan	+0·1	3·7	317	0 52	− 2	1 50	+13	—	—
Yagi	+0·1	3·8	55	0 53	− 3	1 57	+17	—	—
Toyooka	+0·1	3·9	36	i 0 57	0	i 2 6	+24	—	2·4
Kyoto	+0·1	4·0	48	0 57	− 1	2 15	+30	—	—
Hikone	0·0	4·4	49	1 4	+ 1	2 23	+30	—	—
Kameyama	0·0	4·4	56	1 2	− 1	2 26	+33	—	—
Taikyu	0·0	4·5	321	1 4	0	2 16	+21	—	—
Nake	0·0	4·6	209	0 58	− 8	2 4	+ 6	—	—
Gihu	0·0	4·9	52	1 10	0	2 28	+23	—	—
Nagoya	0·0	4·9	55	i 1 11	+ 1	2 12	+ 7	2·8	4·0
Hamamatu	0·0	5·2	62	1 15	+ 1	2 26	+13	—	—

Continued on next page.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Numadu	0·0	6·2	62	1 25	− 3	2 56	+18	—	—
Misima	0·0	6·3	63	1 28	− 2	3 5	+24	—	—
Wazima	0·0	6·3	37	1 33	+ 3	3 20	+39	—	—
Hatidyozima	0·0	6·5	82	1 29	− 3	2 43	− 3	—	—
Nagano	0·0	6·5	48	1 36	+ 4	3 14	+28	—	—
Oiwake	0·0	6·6	52	1 39	+ 5	3 6	+18	—	—
Zinsen	0·0	6·7	320	1 35	0	2 59	+ 8	—	—
Mera	0·0	6·9	67	1 43	+ 5	3 21	+25	—	—
Yokohama	0·0	6·9	62	1 53	+15	3 41	+45	—	—
Kumagaya	0·0	7·0	56	1 42	+ 3	3 13	+14	—	—
Tokyo	0·0	7·1	61	1 43	+ 2	3 32	+31	—	—
Naha	0·0	7·3	213	1 38	− 6	3 13	+ 7	—	—
Kakioka	−0·1	7·6	58	1 47	+ 1	3 27	+16	—	—
Tukubasan	−0·1	7·6	58	1 47	+ 1	3 35	+24	—	—
Mito	−0·1	7·9	58	1 51	0	3 53	+34	—	—
Tyosi	−0·1	8·0	63	1 52	0	3 40	+19	4·6	5·6
Heizo	−0·1	8·4	324	1 59	+ 1	3 43	+12	—	—
Hukusima	−0·1	8·7	50	2 4	+ 2	4 47	+68	—	—
Zi-ka-wei	−0·1	9·2	265	i 2 1	− 8	4 9	+18	4·4	5·9
Sendai	−0·1	9·2	48	2 11	+ 2	4 5	+14	—	—
Akita	−0·1	9·7	39	2 23	+ 7	4 45	+42	—	—
Mizusawa	−0·1	9·9	45	2 23	+ 5	5 4	+56	—	—
Titizima	−0·1	10·2	119	2 15	− 7	4 28	+12	—	—
Morioka	−0·1	10·3	43	2 27	+ 3	4 25	+ 7	—	—
Isigakizima	−0·1	10·7	224	2 29	0	4 58	+30	—	—
Aomori	−0·1	10·9	36	2 40	+ 8	5 22	+49	—	—
Taihoku	−0·1	11·8	234	2 36	− 8	5 30	+35	6·2	8·9
Sapporo	−0·2	12·9	32	3 3	+ 5	5 24	+ 4	—	—
Tientsin	−0·2	13·8	303	i 3 40	+30	—	—	—	—
Chiufeng	−0·2	15·0	305	i 3 26	0	i 6 19	+ 9	8·2	8·6
Nemuro	−0·2	15·2	40	3 37	+ 9	6 47	+32	—	—
Ootomari	−0·2	16·4	27	4 9	+25	7 41	+58	—	—
Hong Kong	−0·4	18·8	242	3 57	−14	7 40	+ 7	9·3	13·3
Manila	−0·4	20·5	212	4 25	− 6	8 6	− 2	10·1	13·4
Palau	−0·5	25·2	173	5 13	− 4	9 33	− 3	—	—
Phu-Lien	−0·5	25·5	249	e 5 14	− 6	9 51	+10	11·9	13·8
Amboina	−0·8	36·3	187	(i 6 55)	+ 2	(i 12 24)	− 5	i 15·9	—
Calcutta	−0·8	39·7	270	7 46	+23	14 1	+41	21·1	27·6
Medan	−0·8	42·5	235	i 4 5	?	—	—	14·9	15·9
Almata	−0·9	44·0	304	8 3	+ 5	—	—	21·0	—
Batavia	−0·9	45·5	219	8 8	− 2	i 15 8	+24	22·8	—
Dehra Dun	−0·9	45·7	285	8 31	+20	15 51	+64	24·2	25·8
Frunse	−0·9	45·8	304	e 6 0	?	—	—	16·1	—
Agra N.	−0·9	46·7	280	7 44	−35	i 14 39	−23	23·4	—
Andijan	−0·9	47·7	300	e 8 40	+13	—	—	21·9	—
Tashkent	−1·0	50·0	301	i 8 45	+ 1	—	—	—	—
Hyderabad	−1·0	50·4	270	8 47	0	15 49	− 3	25·4	33·6
Samarkand	−1·0	52·0	300	e 8 58	− 1	—	—	27·1	—
Ekaterinburg	−1·1	53·4	322	i 9 11	+ 2	i 16 39	+ 6	25·1	—
Bombay	−1·1	54·4	274	9 17	+ 1	16 57	+11	28·8	34·7
Colombo	−1·1	54·7	258	9 18	0	16 59	+ 9	26·8	33·8
Kodaikanal	−1·1	54·9	263	i 13 57	?	(i 16 27)	−26	i 16·5	39·3
Honolulu T.H.	−1·2	62·4	82	i 10 32	+19	i 18 51	+19	25·8	—
Baku	−1·2	64·3	306	i 7 29	?	—	—	—	—
Sitka	−1·2	64·6	38	—	—	i 19 19	+19	26·8	—
Kucino	−1·2	65·9	324	10 47	+10	19 36	+20	31·6	42·1
Perth	−1·2	66·1	197	e 10 31	− 7	19 21	+ 2	—	—
Suva	−1·2	67·2	134	11 12	+27	19 33	+ 1	29·9	—
Adelaide	−1·3	67·6	176	i 10 51	+ 4	i 19 33	− 3	i 30·4	38·5
Pulkovo	−1·3	67·9	330	i 10 50	+ 1	i 19 50	+10	32·9	38·2
Riverview	−1·3	68·7	165	i 11 5	+11	i 19 53	+ 3	34·9	39·6
Sydney	−1·3	68·7	165	e 10 45	− 9	i 19 33	−17	34·9	40·3
Helsingfors	−1·3	70·0	331	i 11 4	+ 1	i 20 19	+14	e 33·9	—
Melbourne	−1·3	71·3	170	e 11 17	+ 6	20 17	− 4	33·2	39·2
Theodosia	−1·3	72·0	315	14 18	+ 3	e 20 54	PS	38·9	49·7

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.
Simferopol		−1·3	72·8	315	11 19	− 1	—	—	e 37·2	—
Yalta		−1·3	73·0	315	11 19	− 2	21 5	+24	—	—
Upsala		−1·3	73·3	333	i 11 22	− 1	i 20 52	+ 7	e 34·9	46·5
Victoria	E.	−1·3	74·9	43	11 34	+ 2	21 2	− 2	—	—
	N.	−1·3	74·9	43	11 39	+ 7	21 8	+ 4	32·2	34·9
Königsberg	E.	−1·3	75·0	328	e 11 39	+ 6	e 21 8	+ 3	34·8	—
	N.	−1·3	75·0	328	e 11 33	0	e 21 28	PS	e 35·8	47·9
Scoresby Sund		−1·3	75·4	353	e 11 38	+ 3	21 22	+12	—	—
Seattle		−1·3	75·8	43	e 11 39	+ 2	i 21 24	+10	—	—
Lemberg	E.	−1·3	76·0	321	e 11 41	+ 2	—	—	e 41·6	49·4
	N.	−1·3	76·0	321	e 11 47	+ 8	—	—	e 40·6	49·6
Ksara	E.	−1·3	77·2	304	11 46	+ 1	21 38	+ 8	31·4	—
Bergen		−1·3	77·5	338	11 45	− 2	20 51?	−43	35·9	49·9
Lund		−1·3	77·7	331	11 48	0	21 41	+ 5	36·9	—
Copenhagen		−1·3	78·0	331	i 11 51	+ 1	21 54	+15	36·9	—
Potsdam		−1·3	80·0	329	i 12 2?	+ 1	i 22 2?	0	e 38·9	44·9
Ukiah		−1·3	80·0	50	—	—	22 14	+12	33·3	—
Budapest		−1·3	80·1	323	12 1	0	22 21	+18	30·9	50·9
Hamburg		−1·3	80·5	331	e 12 3	− 1	i 22 17	+10	e 39·9	41·9
Prague		−1·3	80·8	325	e 12 3	− 2	e 22 24	+14	e 38·3	52·9
Belgrade		−1·3	81·0	320	12 5	− 1	22 15	+ 3	41·8	53·6
Vienna		−1·3	81·0	325	e 12 7	+ 1	i 22 22	+10	i 38·7	52·8
Berkeley		−1·3	81·3	51	i 12 12	+ 4	i 22 26	+10	—	—
Arapuni		−1·3	81·3	147	—	—	22 41	+25	36·9	—
Branner	N.	−1·3	81·6	51	e 11 57	−12	—	—	—	—
Jena		−1·3	81·6	329	i 12 8	− 1	e 22 21	+ 2	e 36·9	52·4
Cheb		−1·3	81·8	327	e 11 36	−34	e 22 30	+ 9	e 38·8	52·9
Göttingen		−1·3	81·9	329	i 12 13	+ 2	e 22 34	+12	i 40·9	53·2
Graz		−1·3	82·2	324	i 12 13	0	i 22 39	+14	39·9	46·4
Helwan		−1·4	82·5	301	12 10	− 4	22 43	+16	—	55·5
Zagreb		−1·4	82·8	322	e 12 14	− 1	e 22 34	+ 3	e 41·3	54·2
Bozeman		−1·4	83·2	40	e 12 15	− 2	22 44	+ 9	e 34·4	—
Laibach		−1·4	83·4	324	e 12 35	+17	e 22 34	− 3	e 34·7	53·9
Feldberg		−1·4	83·5	329	i 12 19	0	e 22 44	+ 6	e 41·4	54·8
Wellington		−1·4	83·5	150	12 26	+ 7	22 30	− 8	39·8	44·8
De Bilt		−1·4	83·6	331	i 12 20	+ 1	e 22 49	+10	e 39·9	51·3
Edinburgh		−1·4	83·8	338	i 12 27	+ 7	i 22 57	+16	28·9	58·6
Triest		−1·4	84·1	323	i 12 22	0	i 22 44	0	e 28·5	50·9
Durham		−1·4	84·2	337	12 27	+ 5	22 47	+ 2	—	—
Innsbruck		−1·4	84·2	326	12 25	+ 3	22 41	− 4	—	54·5
Stuttgart		−1·4	84·2	328	i 12 22	0	e 22 39	− 6	e 40·9	54·9
Karlsruhe		−1·4	84·4	328	12 27	+ 4	22 51?	+ 4	e 42·9	45·3
Tinemaha		−1·4	84·4	49	e 12 27	+ 4	e 22 56	+ 9	—	—
Christchurch		−1·4	84·5	153	i 12 29	+ 5	22 56	+ 8	—	—
Treviso		−1·4	84·9	323	i 12 26	0	22 51	− 1	42·9	55·6
Uccle		−1·4	84·9	331	i 12 26	0	22 48	− 4	39·9	56·3
Venice		−1·4	84·9	323	i 12 31	+ 5	i 22 54	+ 2	46·2	55·1
Santa Barbara		−1·4	85·0	52	e 12 30	+ 4	e 22 59	+ 6	—	—
Strasbourg		−1·4	85·0	328	i 12 26	0	i 23 12	+19	36·9	55·4
Haiwee	E.	−1·4	85·2	50	e 12 34	+ 7	e 23 4	+ 9	—	—
Padova		−1·4	85·2	323	i 12 38	+11	i 22 59	+ 4	e 44·9	55·9
Chur		−1·4	85·4	325	e 12 24	− 4	e 22 54	− 4	—	—
Taranto		−1·4	85·5	318	i 12 18	−11	i 23 12	+13	30·3	55·8
Zurich		−1·4	85·5	325	e 12 29	0	e 22 55	− 4	—	—
Bidston		−1·4	85·8	336	e 12 21	− 9	i 22 59	− 3	e 39·9	55·3
Colluraria		−1·4	86·0	321	12 33	+ 2	—	—	—	—
Camerino		−1·4	86·1	321	12 32	0	22 57	− 8	—	—
Naples	E.	−1·4	86·1	320	e 12 42	+10	e 23 7	+ 2	32·9	57·6
Kew		−1·4	86·3	334	i 12 33	0	i 23 3	− 4	33·9	56·5
Mount Wilson		−1·4	86·3	52	e 12 38	+ 5	e 23 14	+ 7	—	—
Pasadena		−1·4	86·3	52	i 12 35	+ 2	e 23 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.
Ivigtut		−1·4	86·4	0	12 35	+ 2	23 19	+11	—	—
Oxford		−1·4	86·4	335	e 12 27	− 6	i 22 54	−14	e 36·9	60·9
Neuchatel		−1·4	86·5	327	e 12 32	− 2	e 23 4	− 5	—	—
Florence		−1·4	86·6	323	12 41	+ 7	23 16	+ 6	38·9	48·9
Piacenza		−1·4	86·7	325	12 46	+11	23 9	− 2	43·9	56·9
Besançon		−1·4	86·8	328	12 38	+ 3	23 5	− 7	29·9	55·9
Riverside		−1·4	86·8	52	e 12 39	+ 4	e 23 13	+ 1	—	—
Paris		−1·4	87·2	331	e 12 37	0	23 10	− 6	28·9	56·9
Messina		−1·4	88·0	316	12 47	+ 6	23 42	+19	—	—
Catania		−1·4	88·7	316	e 12 52	+ 7	22 46	[−38]	e 45·2	57·9
Tucson		−1·4	92·2	50	13 7	+ 6	23 45	[− 1]	e 37·4	—
Barcelona		−1·4	93·0	326	e 13 59	?	e 23 41	[− 9]	e 44·3	60·8
Tortosa	N.	−1·4	94·2	327	e 13 15	+ 5	e 23 51	[− 5]	45·2	61·6
Tananarive		−1·4	95·6	253	e 13 3	−14	23 39	[−25]	45·9	52·4
Algiers		−1·4	96·0	323	13 11	− 8	23 48	[−18]	e 40·9	61·9
Madison		−1·4	96·2	30	e 13 40	+20	i 24 44	+ 4	—	36·9
Alicante		−1·4	96·7	326	e 13 28	+ 6	e 23 58	[−11]	e 31·7	62·9
Toledo		−1·4	97·1	329	13 22	− 2	24 2	[−10]	e 46·5	51·9
Chicago		−1·4	97·3	30	e 13 46	+21	24 56	+ 6	42·6	—
Ottawa		−1·5	98·2	20	e 13 36	+ 8	e 24 15	[− 2]	e 43·9	—
Ann Arbor		−1·5	98·4	26	—	—	e 25 3	+ 4	e 47·9	64·6
Almeria		−1·5	98·7	326	—	—	i 23 29	[−50]	—	63·9
Toronto	N.	−1·5	98·7	24	e 13 35	+ 4	i 24 14	[− 5]	48·1	—
St. Louis		−1·5	98·8	34	e 13 41	+10	i 24 10	[−10]	e 43·2	—
Granada		−1·5	99·1	327	i 14 19	+47	i 27 33	?	33·1	55·1
Buffalo		−1·5	99·5	25	i 13 39	+ 5	—	—	e 46·9	—
Malaga		−1·5	99·8	327	e 13 16	−20	e 24 6	[−19]	31·9	64·9
Little Rock	N.	−1·5	100·9	38	e 17 51	PP	e 24 21	[− 9]	44·4	—
San Fernando		−1·5	100·9	329	—	—	17 53	PP	—	61·9
Pittsburgh		−1·5	101·4	25	e 13 51	+ 8	i 25 25	− 1	e 48·9	—
Harvard		−1·5	102·2	19	i 13 47	0	i 25 31	− 2	e 44·9	—
Fordham		−1·5	102·9	22	e 13 51	+ 1	e 27 11	PS	e 50·9	—
Georgetown	Z.	−1·5	103·7	24	e 13 58	+ 4	—	—	—	63·5
Charlottesville		−1·5	104·0	25	e 18 3	PP	e 25 51	+ 3	e 48·9	—
Columbia		−1·5	106·7	29	e 18 33	PP	e 33 51	SS	e 49·9	—
Dakar		—	124·7	325	e 20 28	PP	—	—	—	75·7
San Juan		—	126·2	22	e 20 11	PP	—	—	e 52·3	—
La Paz		—	155·7	54	i 19 48	[− 1]	26 51	SKS	72·6	117·0
Sucre		—	159·4	53	e 19 55	[+ 2]	—	—	—	—
La Plata		—	171·3	110	20 1	[− 3]	—	—	70·9	—

Additional readings and note :—
Koti eEN = iZ = +27s., i = +34s. and +43s.
Sumoto SZ = +1m.28s., SN = +1m.31s.
Kobe iP = +51s., i = +1m.3s., eZ = +1m.12s., iEN = +1m.15s., eE = +1m.37s., S_gZ = +1m.56s., iS_gEN = +1m.59s.
Osaka i = +53s., +58s., +1m.0s., +1m.14s., and +2m.6s.
Zi-ka-wei PPPPE? = +2m.9s., iE = +2m.25s. and +3m.9s., iN = +3m.55s.
Mizusawa SE = +5m.21s.
Chiufeng iPZ = +3m.14s., iPPN = +3m.37s., iN = +3m.54s., iE = +4m.0s., iZ = +6m.40s.
Amboina eP = 10h.1m.34s. ; true P is given as iS and iS as iL.
Medan iE = +10m.18s., iN = +10m.37s.
Sitka iSS = +23m.33s., SSS = +26m.44s.
Perth P_cP = +11m.6s., PP = +13m.12s., PPP = +14m.41s., PPPP = +15m.26s., SS = +24m.46s.
Suva SS = +24m.27s.
Adelaide i = +20m.37s. = S_cS −10s., iSS = +24m.1s., iSSS = +26m.26s.
Riverview iPSE = +20m.17s., iS_cS = +21m.0s., iSSSE = +27m.38s.
Helsingfors ePPZ = +13m.32s., ePPEN = +13m.40s., ePPPZ = +15m.25s., ePPPN = +15m.31s., ePPPE = +15m.35s., eSN = +20m.24s., eSZ = +20m.29s., iPSE = +20m.51s.?, ePSZ = +20m.56s., ePSN = +21m.17s., ePPSEZ = +21m.36s., ePPSN = +21m.48s., eSSEN = +24m.58s., eSSSE = +28m.21s., eSSSNZ = +29m.3s. ; T_e = 10h.2m.58s.
Melbourne PP = +14m.3s., SKS = +21m.19s., SS = +25m.3s., SSS = +28m.7s.
Upsala PP = +14m.6s., PPP = +15m.52s., iPSE = +21m.34s., SSN = +25m.21s., SSE = +25m.52s., SSS = +29m.2s.

Continued on next page.

Königsberg iP$_c$PZ = +11m.49s., ePPE = +14m.29s., ePPPE = +16m.19s., ePSN = +21m.53s., eSSEN = +26m.21s., eSSSEN = +29m.51s. ?
Scoresby Sund iEN = +11m.43s., +14m.30s. =PP +16s., eN = +17m.21s., iN = +22m.6s. =PS +16s., also +26m.9s.
Seattle e = +29m.9s. and +32m.39s.
Ksara PPN? = +18m.0s.
Bergen PP = +16m.31s., ? = +17m.43s., PS = +21m.51s.?, SS = +26m.51s.?
Lund +14m.47s. =PP +14s., e = +22m.21s. =PS +7s., PPP = +22m.51s., +26m.44s. =SS +25s., SSS = +30m.45s.
Copenhagen +14m.54s. =PP +18s., eEN = +16m.51s., e = +22m.33s. =PS +10s., +26m.53s. =SS +30s.
Potsdam iPPEN = +15m.11s., iEN = +15m.33s., eSSEN = +27m.3s., eEN = +30m.51s. ?
Ukiah e = +27m.37s.
Budapest i = +18m.19s.
Hamburg iPPZ = +15m.9s., ePPP = +18m.27s., eSSE = +26m.52s., eZ = +27m.51s.?, eSSSE = +31m.33s.
Prague ePP = +15m.26s., ePS = +23m.7s., eSS = +28m.9s.
Belgrade e = +14m.58s. =PP −3s., ePP = +15m.22s., e = +17m.48s., S = +22m.19s., e = +24m.41s., eSS = +27m.56s., eSSS = +31m.57s.
Vienna iP = +12m.11s., PP = +15m.20s., PPP = +17m.5s., i = +18m.48s., PS = +22m.58s., PPS? = +23m.27s., SS = +27m.57s., SSS = +32m.8s., iE = +41m.4s.
Berkeley ePN = +12m.16s., eE = +12m.27s.
Arapuni SS = +30m.51s.?
Jena iZ = +12m.50s., eEN = +15m.17s., eZ = +15m.21s., eN = +18m.21s., eSNZ = +23m.8s., eSE = +23m.12s., eE = +27m.51s., eN = +28m.12s., eZ = +28m.21s., eEN = +31m.51s.
Cheb e = +12m.13s., +18m.41s., +28m.51s.? and +31m.51s.?
Göttingen iP$_c$PZ = +12m.50s., iPPEZ = +15m.21s., ePPP = +18m.51s., eSS = +28m.4s., eSSSEN = +31m.51s., eL$_g$N = +39·8m.
Graz iPS = +23m.32s.
Helwan PP = +19m.1s.
Zagreb iP$_c$PNE = +13m.0s., ePPNE = +15m.29s., ePPP = +17m.29s., ePPPP = +19m.4s., ePS = +23m.38s., e = +26m.58s., eNW = +28m.16s., e = +28m.40s., eSSS = +31m.14s., eSSSSNW = +32m.48s.
Bozeman eSS = +27m.51s.
Laibach e = +14m.28s.
Feldberg eE = +12m.23s., i = +15m.1s. and +15m.17s. =PP −4s., e = +18m.43s., eE = +19m.9s., e = +28m.23s. and +32m.13s.
Wellington SS = +27m.49s., SSS = +31m.46s.
De Bilt PPZ = +15m.33s.
Edinburgh i = +22m.41s. =S +0s.
Triest PP = +15m.53s.
Durham SSS = +32m.21s.
Innsbruck e = +18m.45s., PS = +23m.35s., SS = +28m.39s., SSS = +31m.44s.
Stuttgart +12m.24s., iP$_c$P = +12m.59s., e = +13m.31s., ePP = +15m.21s., e = +16m.56s., ePPP = +17m.36s., e = +18m.56s., ePS = +23m.36s., eZ = +23m.56s., eSS = +28m.21s.
Tinemaha eSN = +23m.0s.
Christchurch iZ = +23m.55s. =PS +10s.
Uccle SS = +27m.47s.
Strasbourg PP = +15m.46s., PPP = +18m.11s., SKS = +22m.56s., PS = +24m.11s., SS = +28m.46s.
Bidston iP = +12m.31s., PP = +15m.58s., PPP = +17m.56s., SS = +28m.51s., SSS = +32m.41s.
Kew i = +12m.38s., PP = +15m.51s., PPP = +17m.54s., eZ = +22m.52s. = SKS −16s., iN = +24m.23s., iE = +24m.37s., SSEN = +28m.37s., eP$_c$PP$_c$PZ = +30m.6s., iEN = +30m.12s., SSSEN = +32m.57s.
Mount Wilson eN = +12m.44s.
Pasadena eN = +12m.38s., eS = +23m.11s., eN = +23m.15s.
Ivigtut PP = +15m.45s., +22m.33s., +24m.18s. =PS +10s., and SS = +28m.51s. ?
Oxford eSS = +28m.33s.
Riverside eE = +23m.21s.
Paris PP = +15m.53s.
Tucson e = +24m.0s. =S −4s., SS = +30m.24s.
Barcelona PP = +16m.52s.
Tananarive PP = +16m.54s., PPPN = +19m.21s., E = +24m.3s., N = +24m.9s., E = +24m.45s., PSN = +25m.30s., PSE = +25m.38s., EN = +26m.13s., SSN = +30m.57s., SSE = +31m.9s., N = +34m.41s., E = +35m.41s., N = +37m.59s., E = +38m.37s.
Algiers PP = +17m.16s., SPS = +26m.12s., SS? = +31m.44s.
Madison ePP = +17m.23s., iSKKS = +23m.58s., iPS = +26m.20s., eSS = +31m.40s. ; T$_0$ =10h.3m.1s.
Toledo PP = +17m.21s., PS = +26m.14s., PPS = +26m.29s., SS = +31m.38s.
Chicago PP = +17m.36s., ePPP = +19m.42s., ePS = +26m.40s., eSS = +31m.41s., eSSS = +35m.18s.

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Ottawa eE = +17m.41s. =PP +23s. and +24m.53s. =S −4s.
Ann Arbor eN = +22m.3s. and +26m.39s. =PS +11s., i = +32m.3s., eE = +39m.15s.
Toronto PPN = +17m.44s., SSN = +32m.6s.; T_0 =10h.2m.44s.
St. Louis ePP = +17m.38s., eN = +20m.8s., eEN = +21m.32s., iN = +24m.31s. = SKKS −13s., iSKKSE = +24m.49s., eSS = +31m.48s., eE = +35m.9s.
Granada i = +18m.46s.
Buffalo iPP = +17m.47s., i = +26m.21s. =PS −19s., e = +30m.25s., i = +33m.27s.
Little Rock eN = +25m.10s. and +25m.39s., eSSN = +32m.18s., eN = +35m.36s.
San Fernando SN = +17m.48s.
Pittsburgh iPP = +17m.57s., ePPP = +21m.51s., iSKS = +24m.43s., ePS = +27m.3s.
Harvard iPP = +18m.8s., ePPP = +22m.1s., eSKS = +23m.8s., ePSN = +27m.8s., iSSN = +33m.0s., eSSSN = +40m.8s.
Fordham ePP = +18m.6s., eSS = +32m.53s.
Georgetown iPPZ = +18m.17s.; T_0 =10h.3m.1s.
Charlottesville e = +23m.51s.
Dakar ePP = +25m.56s. =SKS −8s.
San Juan i = +22m.11s., eSS = +37m.49s., e = +42m.19s.
La Paz iPPE = +23m.31s., iPPZ = +23m.51s., SKKS = +30m.15s., SKSP = +34m.5s., PPSEN = +37m.39s., SSE = +43m.43s., iSSN = +43m.57s., SSSE = +49m.11s., L_0E = +65·9m.
Long waves were also recorded at Denver, Marseilles, Stonyhurst, Bagnères, Serra do Pilar, Cape Town, and Johannesburg.

Nov. 2d. 11h. 0m. 36s. Epicentre 31°·5N. 132°·1E. N.1.

Probable error of epicentre ±0°·19.

A = −·572, B = +·633, C = +·522; D = +·742, E = +·670; G = −·350, H = +·388, K = −·853.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Miyazaki		0·7	306	0 7	− 3	0 17	− 1	—	—
Kagosima		1·3	273	0 1?	−17	0 21?	−12	—	—
Simidu		1·5	30	0 15	− 6	0 24	−15	—	—
Ooita		1·8	347	0 21	− 5	0 35	−11	—	—
Kumamoto		1·8	318	0 23	− 3	0 44	− 2	—	—
Unzendake		2·0	308	0 33	+ 4	0 58	+ 7	—	—
Nagasaki		2·3	303	0 32	− 1	1 2	+ 3	—	1·3
Matuyama		2·4	13	i 0 26	− 8	0 57	− 5	—	2·1
Koti		2·5	30	e 0 30	− 6	i 1 2	− 2	—	1·1
Hukuoka		2·6	326	i 0 34	− 3	1 3	− 4	—	1·4
Simonoseki		2·7	339	0 35	− 4	1 7	− 2	—	—
Kure		2·8	8	0 43	+ 3	1 14	+ 2	—	—
Hirosima		2·9	6	0 40	− 1	1 14	0	—	—
Tomie		3·1	292	0 45	+ 1	1 34	S*	—	—
Tadotu		3·1	27	0 40	− 4	1 15	− 5	—	—
Hamada		3·4	0	0 43	− 6	1 26	− 1	—	—
Sumoto	E.	3·7	39	0 48	− 5	1 37	+ 2	—	2·2
Siomisaki		3·7	57	0 50	− 3	1 38	+ 3	—	—
Wakayama		3·8	42	0 53	− 1	1 39	+ 2	—	—
Nake		3·8	216	1 13	P*	2 20	S_g	—	—
Kobe		4·1	38	1 5	+ 7	1 45	0	—	2·4
Osaka		4·3	41	1 2	+ 1	i 1 53	+ 3	1·9	3·3
Toyooka		4·7	28	i 1 9	+ 2	i 2 10	+10	—	2·3
Kyoto		4·7	40	1 4	− 3	2 16	S*	—	—
Kameyama		5·0	46	1 12	+ 1	2 29	S*	—	—
Hikone		5·1	41	1 11	− 2	2 20	+10	—	—
Taikyu		5·3	328	1 14	− 1	2 17	+ 2	—	—
Gihu		5·5	44	1 19	+ 1	2 37	S*	—	—
Nagoya		5·5	47	e 1 21	+ 3	2 12	− 8	2·8	—
Hamamatu		5·7	54	1 28	+ 7	2 40	S*	—	—
Naha		6·5	218	1 55	P*	4 33	?	—	—
Hatidyozima		6·7	74	1 37	+ 2	3 8	+17	—	—
Numadu		6·7	56	1 39	+ 4	3 34	S*	—	—
Misima		6·8	56	1 32	− 5	3 11	+18	—	—
Wazima		7·1	32	1 42	+ 1	3 4	+ 3	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagano		7·2	42	1 46	+ 4	3 26	+22	—	—
Oiwake		7·3	46	1 41	− 3	3 22	+16	—	—
Zinsen		7·6	325	1 45	− 3	3 12	− 2	—	—
Tokyo		7·6	54	1 42	− 6	3 32	+18	—	—
Kumagaya		7·7	50	1 53	+ 4	3 21	+ 5	—	—
Kakioka		8·2	52	1 55	− 1	4 8	S*	—	—
Tyosi		8·5	57	e 2 8	+ 8	e 4 36	S_g	—	—
Mito		8·5	53	2 8	+ 8	4 0	+24	—	—
Hukusima		9·3	45	2 12	+ 1	5 0	S_g	—	—
Sendai		9·9	44	2 19	0	4 44	S*	—	—
Akita		10·5	36	2 42	+14	5 2	S*	—	—
Mizusawa	N.	10·6	41	2 18	−11	5 6	S*	—	—
Morioka		11·0	39	2 31	− 4	4 33	− 5	—	—
Chiufeng		15·5	308	e 3 34	− 1	6 36	+ 9	—	—
Almata		44·5	302	e 8 17	+ 8	—	—	e 26·4	—
Batavia		44·7	219	8 24	+14	14 57	+11	—	—
Frunse		46·3	302	e 12 3	?	—	—	—	—
Andijan		48·2	298	e 8 52	+14	—	—	26·4	—
Samarkand		52·5	298	9 30	+20	—	—	—	—
Tinemaha		85·1	49	e 12 37	+ 3	—	—	—	—
Haiwee	E.	85·8	49	e 12 43	+ 6	—	—	—	—
Pasadena	Z.	86·9	51	e 12 43	0	—	—	—	—

Additional readings :—
Koti iP_g = +33s. and +46s., iSZ = +1m.4s.
Sumoto SN = +1m.40s.
Kobe iE = +1m.10s., iN = +1m.16s., iE = +1m.23s. = P_g, SZ = +1m.49s., SN = +1m.53s., iS_gEZ = +2m.4s.
Osaka i = +1m.17s. = P* and +2m.1s.
Toyooka iPZ = +1m.3s., ePN = +1m.16s.
Chiufeng SZ? = +6m.41s., SN = +6m.44s., iN = +8m.34s. and +10m.18s.
Pasadena eN = +12m.52s.
Long waves were recorded at Cheb, Göttingen, Jena, and Königsberg.

Nov. 2d. 17h. 3m. 3s. Epicentre 7°·7S. 146°·8E. N.2.

A = −·829, B = +·543, C = −·134 ; D = +·548, E = +·837 ;
G = +·112, H = −·073, K = −·991.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	18·9	281	i 4 5	−12	7 28	−16	9·9	—
Riverview	26·4	172	5 33	0	10 9	+ 4	12·2	17·5
Sydney	26·4	172	e 5 27	− 6	i 10 21	+16	14·4	18·3
Adelaide	28·3	194	i 5 38	−12	i 10 21	−16	i 11·7	19·1
Melbourne	30·1	183	e 6 17	+11	11 7	+ 1	14·7	19·4
Suva	32·4	114	e 8 33	?	—	—	14·9	—
Manila	34·0	311	6 29	−11	11 27	−39	—	17·6
Titizima	35·1	354	6 54	+ 4	12 15	− 8	—	—
Perth	37·6	226	e 7 7	− 5	12 57	− 3	18·9	21·9
Batavia	39·7	270	7 20	− 9	—	—	e 22·9	—
Arapuni	40·0	143	—	—	i 14 27	+51	21·0	23·0
Wellington	41·8	148	e 7 37	−10	i 14 12	+ 9	22·9	31·9
Christchurch	42·4	151	i 8 5	+13	14 20	+ 9	—	—
Koti	43·1	345	e 7 56	− 2	e 14 19	− 3	17·4	—
Nagasaki	43·5	340	e 7 58	− 3	e 14 29	+ 1	—	—
Sumoto	43·5	348	e 7 58	− 3	14 23	− 5	—	—
Osaka	43·7	348	7 52	−10	14 14	−17	17·7	—
Kobe	43·8	348	8 0	− 3	e 14 32	− 1	e 18·8	24·4
Nagoya	43·8	350	e 8 4	+ 1	—	—	—	—
Hong Kong	43·8	315	8 4	+ 1	14 27	− 6	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sendai		46·3	355	8 20	− 3	15 8	− 1	—	—
Akita		47·8	355	8 39	+ 4	15 42	+12	—	—
Phu-Lien		48·7	308	e 8 41	0	e 15 35	− 8	23·9	—
Medan		49·3	282	4 20	?	i 11 13	?	28·0	—
Chiufeng		55·5	332	e 9 45	+13	17 10	− 6	—	—
Honolulu T.H.		61·6	61	e 10 36	+20	19 7	PS	30·9	—
Calcutta		64·6	300	10 49	+13	19 9	− 6	32·6	—
Colombo		68·3	280	11 2	+ 2	19 52	− 9	34·8	45·3
Bombay		77·5	292	11 57	+ 2	21 36	−12	40·2	71·4
Almata		80·9	317	e 12 17	+ 4	—	—	—	—
Frunse		82·5	315	e 12 12	− 9	—	—	—	—
Andijan		83·4	315	e 12 10	−15	—	—	—	—
Tashkent		85·8	315	—	—	i 23 1	[− 4]	e 39·9	57·4
Samarkand		87·2	313	e 12 49	+ 5	—	—	—	—
Ekaterinburg		94·3	327	e 13 16	− 1	24 0	[+ 3]	41·0	57·4
Berkeley	E.	95·4	52	—	—	e 24 8	[+ 5]	—	—
Victoria	E.	95·7	42	24 3	SKS	(24 3)	[− 1]	46·9	49·3
Tananarive	E.	96·1	250	17 30	PP	23 41	[−25]	47·9	50·9
Santa Barbara	N.	97·2	56	e 13 46	+15	—	—	—	—
Pasadena		98·5	56	i 13 40	+ 3	e 24 18	[0]	e 47·1	—
Tinemaha		98·5	53	e 13 44	+ 7	—	—	—	—
Mount Wilson		98·6	56	e 13 42	+ 5	—	—	—	—
Haiwee	E.	98·7	54	e 13 42	+ 4	—	—	—	—
Baku		100·2	311	e 17 39	PP	e 25 17	−11	45·9	66·8
Bozeman		104·0	45	—	—	(e 26 57?)	PS	e 26·9	—
Tucson		104·5	59	—	—	e 25 37	{+10}	43·9	—
Kucino		106·9	326	e 18 39	PP	e 25 9	[+11]	e 44·7	56·4
Pulkovo		109·8	332	e 18 59	PP	e 24 33	[−39]	49·9	60·4
Helsingfors	E.	111·2	333	—	—	e 26 24	{+ 9}	e 48·9	—
Entebbe		114·1	268	—	—	26 57?	{+21}	—	—
Upsala		115·5	335	—	—	e 35 24	SS	e 57·0	59·6
Scoresby Sund		116·8	356	19 57?	PP	—	—	56·9	—
Copenhagen		119·7	333	20 9	PP	29 51	PS	—	—
Lund		119·7	333	—	—	36 39	SS	56·9	—
St. Louis	E.	120·4	50	—	—	e 25 57	[+ 5]	—	61·2
Hamburg		122·4	331	—	—	(e 30 57?)	PS	e 30·9	62·9
Göttingen		123·7	330	e 20 57	PP	e 37 57?	SS	e 56·9	63·7
Ann Arbor	N.	123·8	43	—	—	e 46 33	?	e 64·3	—
Triest		124·7	322	—	—	e 39 55	?	e 63·1	—
Feldberg		125·3	330	e 23 24	PPP	e 28 45	?	—	64·5
De Bilt		125·7	332	e 20 49	PP	e 37 57	SS	e 56·9	65·4
Stuttgart		125·7	328	e 20 52	PP	—	—	e 58·9	—
Toronto	N.	126·1	40	e 20 35	PP	e 28 20	{+23}	56·9	—
Strasbourg		126·6	328	(e 20 57?)	PP	—	—	e 20·9	—
Buffalo		126·8	41	e 21 11	PP	—	—	—	63·9
Uccle		126·9	331	e 20 57?	PP	e 30 57?	PS	e 55·9	—
Florence		127·1	320	17 39	?	(36 57)	?	37·0	77·0
Piacenza		127·4	322	e 22 9	?	—	—	—	78·1
Ottawa		127·5	36	e 21 12	PP	—	—	e 57·0	—
Bidston		128·1	336	—	—	e 26 57?	[+43]	—	—
Kew		128·5	335	e 21 16	PP	e 38 24	SS	52·1	66·6
Oxford		128·7	335	—	—	e 38 41	SS	e 57·4	68·1
Paris		129·1	331	e 21 17	PP	—	—	62·9	66·9
Charlottesville		129·2	45	(e 21 57?)	PP	—	—	e 21·9	—
Fordham	Z.	131·0	41	e 21 32	PP	—	—	e 67·0	—
Algiers		136·0	318	e 22 2	PP	—	—	97·4	—
Alicante		137·5	322	—	—	e 34 50	?	e 82·6	—
La Paz		137·8	125	i 19 35	[+16]	—	—	69·2	96·9
Sucre		138·6	130	e 20 1	[+41]	—	—	—	—
San Fernando		142·2	324	—	—	41 7	SS	61·9	—
San Juan		146·3	67	i 19 41	[+ 5]	e 29 57	{− 4}	e 69·9	—

For Notes see next page.

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

Additional readings and note :—
Riverview iP = +5m.37s., iSN = +10m.29s.
Adelaide i = +6m.45s.
Melbourne SS = +12m.54s.
Perth PP = +8m.37s., SS = +15m.52s.
Batavia eP=+7m.26s., i=+8m.48s.=PP−8s., iE=+16m.33s., and iN=+16m.46s.
Arapuni eSS = +17m.33s. =S_cS −9s.
Wellington SS = +17m.42s. =S_cS −11s., SSS = +19m.42s.
Osaka i = +10m.3s. =P_cP +9s.
Kobe eN = +8m.11s., eE = +9m.56s. =P_cP +2s., eN = +9m.59s., SN =+14m.35s.
Hong Kong SS = +17m.38s.
Medan P and S have been *increased* by 4m.
Tashkent e = +27m.32s. and +35m.39s.
Ekaterinburg SKKS = +24m.21s., PS = +26m.8s., SS = +32m.33s.
Berkeley eE = +26m.20s.
Victoria S = +31m.49s. =SS.
Tananarive PPPE = +19m.23s., PS = +25m.44s., SSE = +30m.57s.
Pasadena eEN = +13m.43s.
Baku e = +28m.44s.
Kucino e = +28m.9s. =PS +12s.
Pulkovo e = +26m.25s., +28m.27s. =PS +1s., and +31m.55s.
Helsingfors eN = +26m.51s. and +34m.49s. =SS +14s., eE = +34m.53s.
Copenhagen e = +36m.33s. =SS +4s.
St. Louis eE = +27m.14s., +30m.10s. =PS +4s., +32m.42s., +36m.12s. = SS −25s., and +41m.12s. =SSS +18s.
Feldberg e = +33m.26s., i = +37m.45s. =SS +6s., and +42m.34s. =SSS +28s.
Buffalo e = +24m.3s., +33m.33s., and +35m.19s.
Uccle e = +37m.57s.?
Ottawa ePPPE = +28m.10s., ePPSE = +38m.30s.
Kew eSSSE = +43m.34s.
Fordham ePP = +22m.31s.
Algiers eL = +38m.57s.
La Paz PPZ = +23m.5s., SSN? = +40m.41s.
San Juan ePS = +54m.57s.
Long waves were recorded at La Plata, Ivigtut, Dakar, and other American and European stations.

Nov. 2d. 19h. 55m. 35s. Epicentre 34°·0N. 140°·2E. (given by Tokyo). N.2.

A = −·637, B = +·531, C = +·559 ; D = +·640, E = +·768 ;
G = −·430, H = +·358, K = −·829.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hatidyosima	0·9	198	0 15	+ 2	0 28	+ 5	—	—
Mera	0·9	342	0 16	+ 3	0 32	S*	—	—
Yokosuka	1·4	341	0 14	− 6	0 32	− 4	—	—
Yokohama	1·5	343	0 25	+ 4	0 46	+ 7	—	—
Misima	1·5	317	0 26	+ 5	0 46	+ 7	—	—
Numadu	1·6	315	0 24	+ 1	0 46	+ 5	—	—
Tokyo	1·7	348	0 27	+ 3	0 51	+ 7	—	0·9
Tyosi	1·8	17	0 26	0	0 48	+ 2	—	1·1
Tukubasan	2·2	358	0 31	0	0 59	+ 2	—	—
Hamamatu	2·2	289	0 32	+ 1	0 58	+ 1	—	—
Kumagaya	2·3	343	0 32	− 1	1 2	+ 3	—	—
Mito	2·4	5	0 30	− 4	1 4	+ 2	—	—
Utunomiya	2·6	354	0 37	0	1 9	+ 2	—	—
Oiwake	2·7	330	0 39	0	1 9	0	—	—
Nagoya	2·9	294	e 0 35	− 6	—	—	—	—
Nagano	3·1	328	0 48	+ 4	1 27	+ 7	—	—
Hikone	3·5	292	0 54	+ 4	1 36	+ 6	—	—
Siomisaki	3·7	262	0 52	− 1	1 35	0	—	—
Osaka	3·9	282	0 57	+ 1	1 31	− 9	1·8	2·1
Kobe	4·2	280	i 1 0	0	e 1 48	0	—	1·8
Wazima	4·3	322	0 54	− 7	2 17	S*	—	—
Sendai	4·3	7	1 4	+ 3	1 47	− 3	—	—
Sumoto	4·4	276	i 1 2	− 1	i 2 2	+ 9	—	2·1
Toyooka	4·7	292	i 1 6	− 1	—	—	—	—
Koti	5·5	267	—	—	e 2 25?	+ 5	—	—
Akita	5·7	359	1 31	+10	2 23	− 2	—	—
Morioka	5·8	7	1 19	− 3	2 22	− 6	—	—
Nagasaki	8·7	265	2 2	− 1	—	—	—	—

Kobe iE = +1m.12s.

Nov. 2d. 22h. 28m. 10s. Epicentre 9°·0S. 163°·0E. (as on 1931 Oct. 13d.). X.

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

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		27·2	202	e 5 42	+ 2	e 10 20	+ 2	14·3	17·5
Melbourne		33·1	207	—	—	i 11 50	− 2	14·2	18·5
Adelaide		34·3	218	—	—	e 11 50	−21	16·0	18·3
Christchurch		35·6	168	e 6 52	− 2	12 24	− 6	18·9	—
Pasadena	Z.	86·0	54	e 13 3	+25	—	—	—	—
Mount Wilson	E.	86·1	54	e 13 5	+26	—	—	—	—
Haiwee	E.	86·6	52	e 13 24	+43	—	—	—	—
Tinemaha		86·6	51	e 13 12	+31	—	—	—	—
Ekaterinburg		104·2	327	e 18 40	PP	e 25 11	{−14}	48·8	—
De Bilt		133·2	340	e 22 17	?	—	—	e 69·8	—

Additional readings :—
Adelaide e = +14m.30s. =SS +20s.
Pasadena eN = +13m.6s.
Ekaterinburg e = +28m.9s.
Long waves were also recorded at Wellington, Perth, Hong Kong, Tashkent, and Ottawa.

Note to the Japanese earthquakes of Nov. 1d. and 2d.

Tokyo gives epicentres as follows :—

Nov. 1d.	18h.	32°·4N.	131°·9E.
2d.	10h.	32°·4N.	132°·1E.
2d.	11h.	32°·3N.	132°·2E.
2d.	19h.	34°·0N.	140°·2E.

The epicentres for 1d. 18h. and 2d. 10h. are not really distinct. Both appear to originate from the same slightly deep focus, for which the Δ corrections have been tabulated. 2d. 11h. does not appear to be associated with this origin and in spite of a lack of European observations, a new determination has been made.

Nov. 2d. Many local shocks, apparently from the neighbourhood of the large Japanese shocks of Nov. 1d. and 2d., were recorded as follows. The times do not fit as after-shocks of either of the epicentres, and are given below as recorded by the stations.

Hukuoka.

	P.		S.			P.		S.	
h.	m.	s.	m.	s.	h.	m.	s.	m.	s.
8	32	40	33	8	12	11	34	12	4
10	32	15	32	46	13	45	40	46	12
11	11	15	11	46	15	15	52	16	23
11	24	13	24	43	15	27	12	27	41
11	24	44	25	14	15	48	43	49	13
11	33	45	34	17	19	34	43	35	13
11	46	4	46	34	20	50	20	50	51
11	47	53	48	24					

Nagasaki.

	P.		S.			P.		S.	
h.	m.	s.	m.	s.	h.	m.	s.	m.	s.
8	32	26	32	56	12	11	33	12	1
10	32	11	32	40	13	45	39	46	8
11	11	13			15	13	49		
11	16	50			15	15	47	16	17
11	24	13	24	41	15	27	11	27	41
11	33	44	34	13	15	48	45	49	15
11	41	51			19	34	40	35	8
11	46	4			20	50	18	50	47
11	47	52	48	22					

Continued on next page.

Koti.

P	11h.11m.18s. S 12m.44s.
e	11h.24m.18s., iEN 24m.43s., iSN 25m.13s.
eP	11h.33m.47s., iSN 34m.14s.
eP	11h.47m.50s., iP_g 47m.57s., eE 48m.13s., iSE 48m.22s.
ePZ	12h.11m.35s., ePEN 11m.38s., iSEN 12m.3s., iSZ 12m.6s.
e	15h.15m.54s., S 17m.22s.
e	15h.27m.37s.
e	15h.48m.56s., S 49m.22s.
e	19h.34m.57s., e 35m.3s., S 35m.13s.

Matuyama.

P.			S.		P.			S.	
h.	m.	s.	m.	s.	h.	m.	s.	m.	s.
10	32	21	32	51	13	45	50		
11	24	12	25	10	15	16	5		
11	33	43			15	27	11		
11	47	46	48	16	15	48	48	49	16
12	11	30	12	0	19	34	4		

Sumoto.

P.			S.		P.			S.	
h.	m.	s.	m.	s.	h.	m.	s.	m.	s.
10	32	38	33	23	13	46	29	47	1
11	25	21	25	57	15	16	34	16	58
11	34	13	34	56	15	49	22	49	52
11	48	9	49	4	19	35	11	35	49
12	12	7	12	42					

Kobe.

S	10h.33m.43s.
eP	11h.25m.19s., eS 26m.13s.
eP	11h.34m.17s., S 35m.13s.
eP	11h.48m.28s., eE 48m.49s., eZ 48m.59s., iSN 49m.5s., SZ 49m.8s., S_g 49m.17s.
eP	12h.12m.19s., S 13m.0s.
eN	13h.47m.3s.
eN	15h.17m.14s., eE 17m.23s.
eP	19h.35m. 4s., S 36m.6s.

Osaka.

P	10h.32m.59s., L 33m.58s.
L	11h.25m.25s., i 26m.22s.
P	11h.34m.23s., i 34m.41s., L 35m.18s., i 35m.26s.
P	11h.48m.19s., i 48m.42s., L 49m.15s.
P	12h.12m.10s., L 13m.7s.
eP	13h.46m.22s., L 47m.20s.
eP	15h.17m. 6s., L 17m.28s.
eP	15h.49m.44s., L 50m.21s.
eP	19h.36m. 0s., L 36m.21s., i 36m.57s.

Toyooka.

i	10h.33m.39s.,
iPE	11h.12m.45s., ePN 12m.51s.
iPZ	11h.25m.25s., ePE 25m.35s., ePN 25m.40s., eSEN 26m.22s., iSZ 26m.25s.
iPEN	11h.34m.34s
iPZ	11h.48m.22s., iPEN 48m.36s., iSE 49m.29s.
iPZ	12h.12m.20s., iPN 12m.29s., iS 13m.12s.
ePEN	13h.47m.59s.
iPN	15h.16m.46s.
eEN	15h.50m. 5s.
iS	19h.36m.19s.

Nagoya.

e	11h.25m.34s.
e	11h.34m. 3s.
eP	11h.48m.40s., S 49m.34s., L 50m.13s.
e	12h.12m.43s.

Nov. 2d. Readings also at 0h. (near Tananarive (2)), 3h. (near Tyosi), 7h. (Arapuni), 8h. (Haiwee, Pasadena, Mount Wilson, La Paz, Mizusawa, and near Tyosi), 10h. (Koti (2)), 11h. (Koti (4), near Tyosi (2), and near Manila), 12h. (Phu-Lien), 13h. (Koti), 14h. (Almeria, Alicante, Tortosa, and near Algiers), 15h. (Barcelona, Granada, Toledo, Paris, Strasbourg, Stuttgart, De Bilt, Uccle, Kew, and near Tashkent), 18h. (Göttingen, St. Louis, and near Tyosi), 19h. (Helsingfors, Scoresby Sund, Ivigtut, Koti, Pittsburgh, and Chicago), 20h. (La Paz), 23h. (near Granada).

Nov. 3d. 2h. 35m. 50s. Epicentre 16°·5N. 147°·0E. N.2.

A = −·804, B = +·522, C = +·284 ; D = +·545, E = +·839 ;
G = −·238, H = +·155, K = −·959.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi		20·0	345	e 4 26	− 4	e 8 6	0	—	—
Kakioka		20·6	344	4 34	− 2	8 13	− 5	—	—
Koti		20·9	327	e 4 42	+ 3	e 8 15	− 9	—	—
Miyazaki		20·9	321	4 42	+ 3	8 23	− 1	—	—
Osaka		20·9	333	4 50	+11	—	—	8·6	11·6
Sumoto		20·9	331	e 4 47	+ 8	8 17	− 7	—	—
Kobe	N.	21·0	331	e 4 59	+19	—	—	—	—
Hukusima		22·0	346	4 51	0	8 42	− 4	—	—
Nagasaki		22·5	320	e 4 45	−11	e 7 35	−80	—	—
Mizusawa	E.	23·2	348	5 3	0	9 8	0	—	—
Manila		25·1	269	5 21	0	9 40	− 3	—	—
Tientsin		34·4	318	7 26	+42	i 12 20	+ 8	—	—
Almata		64·3	311	e 10 44	+10	—	—	—	—
Andijan		67·8	309	e 11 8	+11	e 19 36	−18	—	—
Bombay		70·1	285	e 12 10	+59	—	—	—	—
Tashkent		70·1	310	—	—	e 26 5	?	—	39·7
Samarkand		72·0	309	e 10 58	−25	—	—	—	—
Ekaterinburg		74·2	326	e 11 28	− 8	i 20 48	−23	34·2	—
Branner	E.	80·6	53	e 12 12	+ 1	—	—	—	—
Santa Barbara		83·4	56	e 12 26	+ 1	—	—	—	—
Tinemaha		83·8	52	i 12 43	+16	—	—	—	—
Haiwee	E.	84·3	54	i 12 29	− 1	e 22 42	[−12]	—	—
Pasadena		84·7	56	i 12 31	− 1	e 22 55	[− 2]	—	—
Mount Wilson		84·8	56	e 12 33	+ 1	—	—	—	—
Riverside		85·4	56	e 12 34	− 1	e 22 59	[− 3]	—	—
La Paz		146·3	96	e 19 38	[+ 2]	—	—	—	—

Additional readings :—
Koti ePPEN = +4m.52s., eSSEN = +8m.51s.
Kobe eN = +6m.21s.
Mizusawa SN = +9m.46s. =SS +1s.
Tientsin i = +8m.24s., +13m.8s., +16m.38s., and +18m.38s.
Tashkent i = +27m.5s.
Pasadena eSN = +22m.47s.
La Paz i = +19m.44s.
Long waves were also recorded at Hong Kong and De Bilt.

Nov. 3d. 15h. 24m. 12s. Epicentre 32°·4N. 132°·1E. (as on 2d.). X.

The depth of focus 0·010 has been retained.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Koti		+0·2	1·7	46	e 0 32	+ 4	i 0 59	+10	—	—
Hukuoka		+0·2	1·9	310	0 30	0	1 0	+ 6	—	1·0
Nagasaki		+0·2	1·9	280	0 30	0	0 58	+ 4	—	—
Sumoto		+0·1	3·0	50	e 1 9	P_g	1 44	S_g	—	1·8
Kobe		+0·1	3·4	48	e 1 46	S*	—	—	—	—
Osaka		+0·1	3·6	50	e 1 30	S	(e 1 30)	− 5	1·9	—
Toyooka	E.	+0·1	3·9	36	—	—	2 9	S_g	—	—

Additional readings :—
Koti ePN = +40s. =P*
Long waves were recorded at Matuyama.

Nov. 3d. 16h. 20m. 3s. Epicentre **39°·5N. 141°·7E.** N.1.

Probable error of epicentre ±0°·14 (as given by Tokyo).

A = −·605, B = +·478, C = +·636; D = +·620, E = +·785;
G = −·499, H = +·394, K = −·772.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Miyako		0·3	58	−0 4	− 8	0 0	− 8	—	—
Morioka		0·5	296	0 4	− 3	0 10	− 3	—	—
Mizusawa		0·6	231	0 4	− 5	0 11	− 4	—	—
Isinomaki		1·1	196	0 13	− 3	0 29	+ 1	—	—
Akita		1·3	278	0 16	− 2	0 35	+ 2	—	—
Sendai		1·4	208	0 18	− 2	0 36	0	—	—
Aomori		1·5	325	0 20	− 1	0 41	+ 2	—	—
Yamagata		1·6	220	0 22	− 1	0 42	+ 1	—	—
Hukusima		2·0	209	0 25	− 4	0 55	+ 4	—	—
Hakodate		2·4	342	0 44	P*	1 25	S_g	—	—
Niigata		2·6	233	0 39	+ 2	1 17	S*	—	—
Muroran		2·8	349	0 40	0	1 15	+ 3	—	—
Urakawa		2·8	17	0 39	− 1	1 17	+ 5	—	—
Mito		3·3	197	0 44	− 3	1 22	− 3	—	—
Utunomiya		3·3	206	0 48	+ 1	1 28	+ 3	—	—
Kakioka		3·5	200	1 4	P*	1 58	S_g	—	—
Tukubasan		3·5	202	0 50	0	1 31	+ 1	—	—
Sapporo		3·6	356	0 49	− 2	1 31	− 1	—	—
Kumagaya		3·8	209	0 55	+ 1	1 44	+ 7	—	—
Tyosi		3·8	189	0 52	− 2	1 36	− 1	—	2·1
	N.	3·8	189	1 0	+ 6	1 56	+19	—	2·1
Kusiro		4·0	30	0 54	− 3	1 38	− 4	—	—
Nagano		4·0	224	1 0	+ 3	1 59	S*	—	—
Oiwake		4·0	219	0 59	+ 2	1 53	S*	—	—
Tokyo		4·1	202	0 56	− 2	1 52	+ 7	—	—
Asahigawa		4·3	7	1 0	− 1	1 53	+ 3	—	—
Wazima		4·3	242	1 3	+ 2	2 7	S*	—	—
Yokohama		4·4	202	0 54	− 9	2 5	S*	—	—
Nemuro		4·8	36	1 8	0	2 2	− 1	—	—
Mera		4·9	198	1 9	− 1	2 15	+10	—	—
Misima		4·9	207	1 11	+ 1	2 6	+ 1	—	—
Gihu		5·7	226	1 22	+ 1	2 29	+ 4	—	—
Nagoya		5·8	224	e 1 24	+ 2	2 32	+ 4	3·0	3·2
Hikone		6·1	227	1 33	+ 6	2 32	− 4	—	—
Kameyama		6·3	223	1 31	+ 1	3 9	S*	—	—
Kyoto		6·5	228	1 36	+ 4	3 10	S*	—	—
Toyooka		6·7	236	i 1 36	+ 1	i 2 59	+ 8	—	4·1
Osaka		6·9	227	1 41	+ 3	i 2 44	−12	3·4	4·1
Kobe	E.	7·1	230	1 41	0	3 5	+ 4	3·9	4·1
Wakayama		7·4	227	1 48	+ 3	3 38	S*	—	—
Sumoto		7·5	229	i 1 46	0	4 4	S_g	—	4·1
Hamada		8·9	242	2 7	+ 1	3 53	+ 7	—	—
Koti		8·9	230	e 1 56	−10	e 3 43	− 3	—	—
Taikyu		10·9	255	2 37	+ 4	5 14	S*	—	—
Miyazaki		11·2	231	2 36	− 1	5 20	S*	—	—
Nagasaki		11·7	239	e 2 55	+11	e 5 22	+27	—	—
Tomie		12·5	241	2 58	+ 3	5 46	+31	—	—
Tientsin		18·8	277	4 43	+27	8 13	+31	—	12·1
Chiufeng		19·6	280	e 4 23	− 2	—	—	—	—
Hong Kong		29·0	242	—	—	10 45	− 3	16·8	18·2
Manila		30·8	224	6 19	+ 7	11 13	− 4	14·6	17·3
Almata		47·5	298	e 9 47	+75	—	—	—	—
Calcutta		47·9	269	9 5	+30	15 30	− 1	—	—
Andijan		51·5	297	e 9 0	− 3	e 16 19	− 3	—	—
Ekaterinburg		53·2	319	e 9 15	0	i 16 47	+ 2	22·9	34·6
Tashkent		53·5	299	e 8 32	−46	i 16 4	−45	—	32·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bombay		62·0	275	7 47	?	—	—	—	—
Kucino		65·0	323	—	—	e 17 57?	−83	e 29·9	36·8
Pulkovo		65·9	330	—	—	e 19 27	− 4	32·8	37·7
Helsingfors	N.	67·7	332	—	—	e 19 56	+ 3	e 34·9	—
Tinemaha	E.	74·0	55	e 11 34	− 1	—	—	—	—
Haiwee	E.	74·7	56	e 11 36	− 3	—	—	—	—
Pasadena	Z.	75·8	58	e 11 43	− 2	—	—	—	—
Stuttgart		82·2	331	—	—	e 25 15	?	e 42·4	46·7
Triest		82·8	327	e 15 28	PP	—	—	e 43·9	—
Florence		85·4	327	e 22 57	SKS	(e 22 57)	[− 5]	43·9	47·0
Ann Arbor	N.	88·4	31	e 0 3	?	(e 28 57)	SS	e 28·9	—
La Paz	E.	145·3	58	19 29	[− 6]	—	—	—	—

Additional readings :—
Tyosi SZ = +2m.1s.
Toyooka iPEN = +1m.39s., iSZ = +3m.2s.
Kobe iS = +3m.7s.
Tientsin PP? = +5m.5s.
Pulkovo e = +23m.46s. =SS +6s. and +27m.27s. =SSSS +9s.
Helsingfors eE = +22m.26s.
Florence S = +31m.57s. =SSS −1s.
Long waves were also recorded at Phu-Lien, Ottawa, and other European stations.

Nov. 3d. Readings also at 0h. (Matuyama, Koti, near Hukuoka, and Nagasaki), 1h. (near Nagasaki), 2h. (Almata, Frunse, near Andijan, and Samarkand), 4h. (Nagoya, Kobe, near Osaka, and Sumoto), 10h. (near Trenta), 15h. (Tucson), 16h. (Tyosi and Mizusawa), 17h. (Nagoya, near Mizusawa (3), and Tyosi), 18h. (Mizusawa), 19h. (Mizusawa and near Nagasaki), 20h. (Koti).

Nov. 4d. 15h. 21m. 31s. Epicentre 36°·8N. 69°·5E. (as on 1927 Oct. 7d.). X.

A = +·280, B = +·750, C = +·599 ; D = +·937, E = −·350 ;
G = +·210, H = +·561, K = −·801.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan		4·6	39	1 6	0	(1 1 57)	− 1	1 2·0	2·4
Almata		8·6	39	1 1 56	− 6	(3 55)	+16	3·9	4·6
Dehra Dun		9·6	130	1 49	−27	2 59	P*	3·8	—
Baku		15·7	289	e 4 5	+27	1 6 53	+22	—	—
Bombay		18·1	170	4 11	+ 3	7 7	−20	8·6	—
Ekaterinburg		20·9	346	1 4 36	− 3	1 8 22	− 2	—	—
Hyderabad		20·9	155	4 22	−17	7 52	−32	11·8	13·2
Calcutta		21·6	126	4 53	+ 7	7 16	−82	8·5	—
Theodosia		26·8	299	e 6 17	PP	—	—	—	—
Simferopol		27·7	298	e 5 42	− 2	—	—	—	—
Yalta		27·7	297	e 6 27	PP	—	—	—	—
Irkutsk		28·8	46	6 20	+26	e 10 12	−33	11·5	11·8
Helsingfors	E.	36·5	324	e 8 22	PP	e 12 32	−12	—	—

Additional readings :—
Baku e = +5m.5s.
Helsingfors eN = +13m.46s. and +13m.56s.

Nov. 4d. 17h. 53m. 39s. Epicentre 49°·3N. 155°·6E. N.2.

A = −·594, B = +·269, C = +·758; D = +·413, E = +·911; G = −·690, H = +·313, K = −·652.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa		14·5	231	3 33	+11	4 31	?	—	—
Nagoya		19·7	231	e 4 17	− 9	—	—	—	—
Osaka		20·8	233	4 38	0	i 8 37	+15	—	9·0
Kobe	N.	21·0	233	e 5 3	PP	e 8 38	+12	e 12·0	—
Koti		22·7	234	e 4 59	+ 1	e 9 7	+ 8	—	—
Tientsin		28·9	264	6 25	+30	11 55	+ 8	i 17·0	20·0
Irkutsk		32·0	296	6 22	− 1	e 11 47	+12	16·3	20·8
Hong Kong		42·3	246	7 50	− 1	14 10	0	—	26·6
Manila		44·8	232	7 45	−26	14 43	− 4	22·3	—
Victoria		50·6	59	16 16	S	(16 16)	+ 7	24·7	—
Almata		52·7	296	e 10 31	(+ 5)	—	—	31·3	—
Ekaterinburg		52·9	318	i 9 13	0	i 16 37	− 4	25·3	34·0
Andijan		56·4	297	9 51	+12	19 16	(−11)	29·3	—
Tinemaha		60·5	66	e 10 9	+ 1	—	—	—	—
Haiwee	E.	61·3	66	e 10 15	+ 1	—	—	—	—
Pulkovo		62·3	333	e 10 21	+ 1	e 18 41	− 5	33·3	39·6
Mount Wilson	E.	62·5	69	e 10 21	− 1	—	—	—	—
Pasadena		62·6	69	i 10 21	− 1	—	—	—	—
Helsingfors	E.	63·4	335	e 14 42	PPPP	e 27 16	?	e 35·3	—
Baku		69·1	310	11 3	− 2	e 20 7	− 3	35·3	44·3
Bombay		71·2	278	11 16	− 2	—	—	—	39·4
St. Louis		74·6	47	i 11 36	− 2	i 21 11	− 4	—	39·5
Ottawa		75·3	34	e 16 33	?	—	—	e 33·3	—
Buffalo		76·1	38	i 11 47	0	—	—	—	—
Little Rock	N.	76·6	51	i 11 36	−13	e 21 10	−28	—	—
Pittsburgh		77·8	40	—	—	e 21 46	− 6	—	—
Stuttgart		77·8	339	e 11 54	− 3	—	—	e 40·3	45·9
Zagreb		78·6	333	e 11 56	− 4	—	—	—	44·3
Triest		79·4	334	i 12 1	− 4	e 22 24	PS	e 44·5	—
Piacenza		81·1	336	e 12 17	+ 3	—	—	—	53·6
Florence		81·8	335	e 20 51	?	31 21	?	41·3	46·3

Additional readings:—
Mizusawa PN = +4m.21s.
Tientsin i = +6m.53s.
Victoria SE = +20m.13s.
Helsingfors eE = +14m.55s.
St. Louis eEN = +21m.31s., iE = +21m.33s., iEN = +22m.11s.
Long waves were also recorded at Honolulu T.H., Wellington, Ivigtut, Scoresby Sund, Kucino, and other European stations.

Nov. 4d. Readings also at 1h. (Tyosi), 2h. and 3h. (near Mizusawa), 4h., 6h., and 7h. (near Manila), 9h. (near Mizusawa), 11h. (Tyosi), 12h. (near Manila), 13h. (La Paz), 15h. (near Mizusawa), 17h. (Adelaide, Melbourne, Riverview, Perth, Ekaterinburg, San Juan, Sucre, La Paz, and Manila), 19h. (Casamicciola and Wellington), 22h. (near Manila).

Nov. 5d. 12h. 19m. 38s. Epicentre **46°·9N. 90°·0E.** R.1.
(as on 1931 Aug. 26d.).

Probable error of epicentre ±0°·19.

A = ·000, B = +·683, C = +·730; D = +1·000, E = ·000; G = ·000, H = +·730, K = −·683.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Irkutsk		10·7	55	2 35	+ 4	4 47	+16	—	—
Andijan		14·0	250	e 3 17	+ 2	e 6 14	+23	—	8·8
Dehra Dun		19·0	213	5 2	+43	8 12	+26	11·7	13.4
Chiufeng		20·0	99	4 32	+ 2	10 33	L	(10·6)	—
Ekaterinburg		20·4	310	i 4 30	− 4	i 8 14	0	9·9	12·4
Agra	N.	21·9	209	i 4 25	−25	i 8 26	−18	e 10·8	14·3
Calcutta		24·4	184	4 30	−44	8 52	−38	11·6	—
Zinsen		28·4	96	5 54	+ 3	—	—	—	—
Zi-ka-wei		28·7	112	5 56	+ 3	11 6	+23	—	18·3
Phu-Lien		29·4	147	e 6 1	+ 1	11 22	+27	15·9	17·1
Baku		29·4	272	e 6 1	+ 1	i 10 44	−11	13·9	—
Hyderabad		31·0	203	6 13	− 1	11 2	−18	14·8	20·4
Bombay		31·4	212	6 16	− 1	11 20	− 6	15·6	20·1
Hong Kong		31·4	133	10 41	?	11 41	+15	16·8	19·5
Kucino		32·9	307	6 30	− 1	11 45	− 4	e 13·5	19·3
Hukuoka		33·1	98	e 5 37	−56	—	—	e 17·7	18·9
Nagasaki		33·3	100	e 14 18	?	18 3	?	20·8	21·0
Toyooka		35·1	92	i 6 52	+ 2	—	—	19·0	21·4
Koti		35·4	97	e 6 53	0	—	—	e 18·3	—
Kobe		35·7	94	6 56	+ 1	—	—	e 19·0	20·1
Sumoto		35·8	96	e 12 42	S	(e 12 42)	+ 9	18·8	22·8
Osaka		36·0	94	7 3	+ 5	14 0	?	18·1	23·2
Pulkovo		36·4	313	7 0	− 1	e 12 44	+ 2	21·4	24·4
Theodosia		37·2	290	e 7 8	0	—	—	e 22·4	—
Mizusawa		37·5	82	7 16	+ 5	19 28	L	(19·5)	—
Hukusima		37·7	86	7 17	+ 5	—	—	—	—
Simferopol		38·1	289	e 7 11	− 5	—	—	e 19·8	—
Kodaikanal		38·2	200	e 15 58	SS	—	—	i 21·4	23·7
Yalta		38·2	289	7 16	− 1	e 13 10	+ 1	18·9	—
Helsingfors	E.	39·0	314	e 7 24	0	i 13 19	− 2	e 20·4	—
Colombo		41·0	196	13 46	S	(13 46)	− 5	22·7	26·0
Manila		41·3	131	7 44	+ 1	12 18	−98	15·7	18·2
Ksara	E.	42·3	273	7 54	+ 3	14 15	+ 4	23·2	—
Lemberg		42·4	299	—	—	e 12 22	?	—	25·3
Upsala		42·7	317	e 7 51	− 3	—	—	—	25·9
Medan		44·0	167	e 15 4	S	(e 15 4)	+28	i 31·5	—
Lund		46·3	312	8 22	− 1	—	—	22·4	—
Budapest		46·4	299	8 20	− 4	—	—	22·9	28·9
Copenhagen		46·7	312	8 25	− 1	e 17 58	SS	—	—
Belgrade		46·8	295	8 25	− 2	15 16	0	27·0	31·2
Vienna		47·7	300	e 8 35	+ 1	—	—	i 24·5	26·4
Potsdam		47·7	308	e 10 34	PP	i 15 29	0	—	25·9
Helwan		47·8	272	e 8 32	− 3	15 30	0	—	32·0
Prague		48·0	304	e 8 31	− 5	e 15 51	+18	e 24·4	25·9
Hamburg		48·9	310	e 11 39	?	e 20 22?	?	—	31·4
Zagreb		49·1	298	e 8 46	+ 2	e 15 45	− 3	—	27·6
Jena		49·2	305	e 8 36	− 9	e 15 52	+ 2	e 24·4	30·0
Göttingen		49·8	308	i 8 49	− 1	e 21 22?	?	e 27·4	30·7
Triest		50·5	299	i 8 54	− 1	e 16 7	− 1	—	30·8
Innsbruck		51·1	302	9 0	0	—	—	22·4	27·8
Feldberg		51·3	307	—	—	e 16 22	+ 3	—	31·5
Venice		51·4	299	9 2	0	19 12	(+18)	—	—
Treviso		51·5	300	i 9 0	− 3	e 19 12	(+18)	60·4	—
Stuttgart		51·6	305	e 9 0	− 3	e 20 2	SS	e 25·4	30·8
Padova		51·8	299	9 5	0	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
De Bilt		52·1	309	i 9 7	0	16 31	+ 1	e 25·4	32·8
Camerino		52·3	296	9 8	− 1	—	—	—	—
Chur		52·3	303	e 9 7	− 2	e 16 33	0	—	—
Strasbourg		52·5	305	e 9 6	− 4	—	—	e 27·4	30·5
Zurich		52·7	304	e 9 10	− 2	e 16 37	− 1	—	—
Naples	E.	52·8	292	e 9 9	− 3	e 14 37	?	29·4	44·4
Florence		53·0	297	5 52	?	14 22	?	19·4	25·4
Uccle		53·2	310	9 15	0	e 16 45	0	25·4	29·6
Piacenza		53·3	299	9 17	+ 1	16 42	− 4	25·4	41·8
Neuchatel		53·8	304	e 9 17	− 3	e 16 39	−14	—	—
Catania		54·1	289	e 8 3	−79	17 19	+12	e 29·4	34·6
Besançon		54·2	304	9 33	+10	—	—	28·4	—
Batavia		55·2	160	e 12 4	?	—	—	29·4	—
Paris		55·3	308	i 9 32	+ 1	—	—	28·4	35·4
Bidston		55·6	314	—	—	e 22 22?	?	e 27·4	36·5
Oxford		55·7	312	—	—	e 17 18	− 1	—	33·0
Almeria		65·4	299	—	—	i 29 28	?	e 37·0	45·8
Granada		66·0	300	i 10 38	− 7	—	—	i 36·3	46·8
Ivigtut		66·7	339	—	—	19 40	− 1	28·4	—
San Fernando		67·9	300	19 52	S	(19 52)	− 4	36·4	40·4
Entebbe		68·4	245	—	—	19 52	−16	—	37·9
Tananarive		76·1	221	—	—	25 22?	?	40·4	46·4
Victoria		80·4	22	22 21	SS	(22 21)	+ 1	41·7	46·2
Ottawa		86·9	350	—	—	e 23 22	− 4	e 38·4	—
Toronto	E.	88·9	353	—	—	e 23 37	− 9	40·0	—
Madison		90·0	359	—	—	e 22 46	−70	48·4	—
Fordham		91·1	349	—	—	e 24 0	− 6	e 44·2	—
Tinemaha		92·4	22	e 13 11	+ 2	e 23 46	[− 1]	—	—
Haiwee	E.	93·2	22	e 13 16	+ 4	—	—	—	—
Pasadena		95·2	24	i 13 22	+ 1	—	—	—	—
Columbia		98·7	353	—	—	e 32 22?	SS	—	—
San Juan		111·2	336	(e 22 22)	?	—	—	e 22·4	—
La Paz		144·6	322	e 19 39	[+ 6]	—	—	72·4	90·9

Additional readings :—
Chiufeng SZ? = +10m.37s., iZ = +10m.59s., iEN = +11m.9s., iZ = +11m.19s., iE = +12m.34s., iZ = +12m.41s., and +13m.34s., iN = +21m.15s.
Zi-ka-wei i = +6m.48s. = PP +8s., iZ = +12m.20s. = SS +21s.
Hong Kong +12m.7s., S? = +14m.52s.
Sumoto eZ = +17m.28s., eN = +17m.42s.
Osaka i = +9m.8s. = P_cP −21s. and +19m.42s.
Helsingfors ePPE = +8m.47s., ePSE = +14m.0s., ePSN = +14m.9s., eSSE = +15m.50s., eSSN = +15m.56s.; T_o = 12h.19m.12s.
Colombo S = +17m.54s. = S_cS +6s.
Lemberg eE = +12m.40s.
Upsala eSSN = +17m.31s.
Copenhagen +10m.16s. = PP +8s., i = +19m.54s.
Belgrade e = +10m.35s. = PP +26s. and +21m.32s.
Potsdam iE = +19m.35s.
Zagreb iNE = +8m.52s., e = +22m.10s.
Jena eE = +8m.40s., eN = +8m.43s.
Triest PP = +10m.52s.
Feldberg e = +20m.9s.
Uccle SSE = +20m.16s.
Granada iP = +10m.43s., i = +11m.4s. = P_cP −13s. +31m.0s.
San Fernando S = +29m.5s.
Tananarive E = +32m.22s.? and +37m.22s.?
Victoria SE = +31m.26s.
Fordham e = +37m.10s.
Tinemaha eN = +13m.16s.
La Paz SSN = +23m.15s. = PKS −4s.
Long waves were also recorded at Tyosi, Honolulu T.H., Scoresby Sund, Riverview, Perth, Algiers, and other European and American stations.

Nov. 5d. Reading also at 1h. (Tucson), 2h. (Casamicciola, Ann Arbor, Pittsburgh, Chicago, Madison, Harvard, Ottawa, and Victoria), 5h. (Mizusawa), 6h. (Sydney, Mizusawa, near Nagoya, Tyosi, and near Port au Prince), 7h. (Adelaide, Melbourne, Riverview, Wellington, Perth, Baku, Ekaterinburg, Irkutsk, Tinemaha (2), Haiwee (2), Pasadena (2), Mount Wilson (2), Riverside, Santa Barbara, Harvard, Ottawa, Fordham, Little Rock, San Juan, and near Mizusawa: Many of these readings belong to a shock in the West Indies, but they do not appear to fit any definite determination), 8h. (Harvard, Victoria, and San Juan), 9h. (near Mizusawa), 13h. (near Bergen), 14h. (Camerino), 17h. (La Paz, Tucson, Nagoya, and near Tyosi), 22h. (Baku, Andijan, and near Tyosi), 23h. (Ekaterinburg, Irkutsk, Tashkent, and Andijan).

Nov. 6d. Readings at 0h. (Andijan, Bombay, De Bilt, and Feldberg), 1h. (Chur, near Neuchatel, and Zurich), 4h. (Adelaide, Melbourne, Perth, Baku, Ekaterinburg, Tashkent, and Ottawa), 8h. (Granada, and near Mizusawa), 10h. (Triest), 11h. (near Sumoto), 18h. (near Granada and Malaga), 21h. (Suva, Wellington, Haiwee, Pasadena, and Tinemaha), 22h. (Baku, Ekaterinburg, Paris, and Branner), 23h. (Branner, Berkeley, and Lick).

Nov. 7d. Readings at 0h. (La Paz, near Christchurch, Wellington, and New Plymouth), 2h. (Port au Prince, near Amboina, near Tyosi, and near Santiago), 3h. (La Paz). 4h. (Port au Prince, Batavia, and near Medan), 5h. (Bombay, Hong Kong, and Phu-Lien), 12h. (Tyosi), 14h. (Alicante and near Algiers), 16h. (La Plata and near Santiago), 18h. (near La Paz), 19h. (Tyosi).

Nov. 8d. Readings at 2h. (near Kobe, Osaka, and Sumoto), 5h. (near Malabar), 9h. (Almata, Samarkand, Zagreb, Malabar, and near Batavia), 10h. (Wellington and near Hastings), 15h. (Tortosa), 17h. (near Santiago, near Wellington, and New Plymouth), 18h. (Pasadena, Mount Wilson, and near Malabar), 20h. (near Ksara).

Nov. 9d. Readings at 1h. (Bozeman), 2h. (near Mizusawa), 3h. (near Mizusawa, Tyosi, and near Nagasaki), 5h. (Malabar and near Neuchatel), 6h. (Helsingfors), 7h. (near Batavia and Malabar), 10h. (Christchurch), 12h. (near Tyosi and Tokyo), 17h. (Hohenheim, Ravensburg, near Chur, Neuchatel, and Zurich), 23h. (Suva).

Nov. 10d. Readings at 1h. (Tyosi), 2h. (near Nagasaki), 3h. (near Amboina), 4h. (Wellington), 6h. (Tyosi and Calcutta), 9h. (Branner, Berkeley, and Lick), 10h. (Wellington and near Christchurch), 14h. (near La Paz), 15h. (near Tyosi), 19h. (Kobe and near Nagoya).

Nov. 11d. Readings at 1h. (Wellington), 2h. (near Hastings), 3h. (Wellington and near Suva), 4h. (Adelaide, Riverview, Sydney, Melbourne, Perth, Arapuni, Christchurch, Wellington, Suva (2), Honolulu T.H., Andijan, Irkutsk, Baku, Tashkent, Harvard, Ottawa, and Pittsburgh), 7h. (near Nagasaki), 8h. (Haiwee, Tinemaha, and Tucson), 12h. (La Paz (2)), 13h. (Irkutsk, Honolulu T.H., Victoria, Tucson, Ottawa, and Pittsburgh), 14h. (Baku and Tashkent), 15h. (De Bilt, Paris, Strasbourg, Stuttgart, Granada, Ottawa, and near Manila), 16h. (Perth), 17h. (near Wellington), 19h. (Tyosi, near Mizusawa, and near Amboina), 20h. (Andijan), 21h. and 23h. (Tyosi),

Nov. 12d. 1h. 9m. 33s. Epicentre 44°·5N. 1°·5W. N.3.

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

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tortosa	E.	4·0	156	0 57	0	1 19	P_g	1·4	—
	N.	4·0	156	0 56	− 1	1 21	P_g	1·4	—
	Z.	4·0	156	0 45	− 3	1 20	P_g	—	—
Barcelona		4·1	138	1 58	S*	—	—	—	—
Toledo		5·0	206	e 0 56	−15	1 1 21	P*	—	—
Alicante		6·2	173	1 28	0	—	—	—	—
Granada		7·5	193	i 1 46	0	i 2 31	P_g	—	2·9
Almeria		7·6	185	e 1 59	+11	e 2 46	P_g	—	—
Malaga		8·1	197	1 59	+ 4	—	—	—	3·0

Additional readings:—
Toledo iPS = +1m.17s., i = +1m.35s.
Granada i = +2m.34s., P_gS = +2m.39s., S_gS = +2m.49s.

Nov. 12d. 6h. 8m. 48s. Epicentre 35°·2N. 140°·7E. (as on 1930 Aug. 17d.). X.

Epicentres attributed to the shock are as follows:—
Nagoya: 35°·1N. 140°·7E. Tokyo: 35°·3N. 140°·7E.

A = −·632, B = +·518, C = +·576; D = +·633, E = +·774;
G = −·446, H = +·365, K = −·817.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi		0·6	12	0 6	− 3	0 14	− 1	—	0·3
Tokyo		0·9	302	0 12	− 1	0 25	+ 2	—	0·5
Nagoya		3·0	270	e 0 49	+ 6	1 23	+ 6	—	2·0
Mizusawa	E.	4·0	5	0 54	− 3	1 37	− 5	—	—
	N.	4·0	5	1 9	P*	1 50	+ 8	—	—
Osaka		4·2	264	1 6	+ 6	i 1 56	+ 8	2·1	2·9
Kobe	E.	4·5	265	e 1 16	P*	e 2 16	S*	—	2·6
Sumoto		4·8	261	e 1 12	+ 4	e 2 10	+ 7	—	2·6
Toyooka		4·8	276	i 1 18	+10	i 2 19	+16	—	2·8

Additional readings:—
Tyosi P = +9s. = P*.
Osako i = +1m.17s. = P*.
Sumoto ePEN = +1m.19s.
Toyooka iPEN = +1m.23s.
Long waves were also recorded at Baku and Ekaterinburg.

Nov. 12d. 13h. 11m. 1s. Epicentre 34°·7N. 139°·8E. (given by Tokyo). N.2.

A = −·628, B = +·531, C = +·569; D = +·645, E = +·764;
G = −·435, H = +·367, K = −·822.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mera	0·2	7	0 14	+11	0 27	+22	—	—
Ito	0·7	295	0 12	+ 2	0 26	+ 8	—	—
Yokohama	0·8	350	0 16	+ 5	0 31	+10	—	—
Misima	0·8	301	0 14	+ 3	0 27	+ 6	—	—
Tokyo	1·0	358	0 19	+ 5	0 27	+ 1	—	0·5
Tyosi	1·4	40	0 25	+ 5	0 44	+ 8	—	—
Kumagaya	1·5	347	0 23	+ 2	0 42	+ 3	—	—
Tukubasan	1·6	9	0 24	+ 1	0 45	+ 4	—	—
Kakioka	1·6	12	0 24	+ 1	0 45	+ 4	—	—
Hatidyozima	1·6	179	0 27	+ 4	0 49	+ 8	—	—
Mito	1·8	18	0 27	+ 1	0 49	+ 3	—	—
Maebasi	1·8	341	0 24	− 2	0 54	+ 8	—	—
Utunomiya	1·9	2	0 26	− 2	0 49	0	—	—
Oiwake	1·9	328	0 26	− 2	0 49	0	—	—
Nagoya	2·3	281	e 0 30	− 3	0 57	− 2	1·4	—
Nagano	2·4	326	0 32	− 2	0 59	− 3	—	—
Gihu	2·6	286	0 34	− 3	1 1	− 6	—	—
Kameyama	2·7	273	0 35	− 4	1 32	S*	—	—
Osaka	3·5	271	0 37	−13	(1 25)	− 5	1·4	2·7
Siomisaki	3·5	250	0 46	− 4	1 24	− 6	—	—
Wazima	3·6	319	0 47	− 4	1 28	− 4	—	—
Kobe	3·8	271	i 0 48	− 6	i 1 32	− 5	—	1·6
Sumoto E.	4·0	270	i 0 52	− 5	1 36	− 6	—	1·8
N.	4·0	270	i 0 53	− 4	1 47	+ 5	—	1·9
Mizusawa	4·6	13	1 4	− 2	1 54	− 4	—	—
Akita	5·0	2	1 11	0	2 11	+ 3	—	—
Morioka	5·1	11	1 10	− 3	2 4	− 6	—	—

Additional readings:—
Tyosi P = +33s.
Osaka i = +45s. and +52s.

Nov. 12d. Readings also at 1h. (Hong Kong and near Manila), 2h. (La Paz and Mizusawa), 6h. (Tyosi and near Medan), 8h. (Little Rock, St. Louis, near La Paz, and near Tyosi), 12h. (Nagasaki), 13h. (Baku, Ekaterinburg, Irkutsk, Almata, and near Andijan), 14h. (Riverview, Sydney, and near Tananarive), 16h. (Honolulu T.H., Adelaide, Melbourne, Christchurch, Wellington, Manila, Ekaterinburg, Irkutsk, near Suva, and near La Paz), 17h. (Baku, De Bilt, Paris, Strasbourg, Granada, Ottawa, La Paz, and near Tyosi (2)), 18h. (La Paz), 19h. (near Tyosi).

Nov. 13d. 17h. 55m. 22s. Epicentre 35°·5N. 136°·8E. (as on 1931 Sept. 13d.). X.

A = −·593, B = +·557, C = +·581.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		0·4	156	i 0 8	+ 2	0 15	+ 5	—	0·3
Osaka		1·3	233	0 18	0	(0 32)	− 1	0·5	0·6
Kobe		1·6	240	0 22	− 1	0 38	− 3	—	0·7
Toyooka		1·6	270	i 0 23	0	i 0 41	0	—	0·7
Sumoto		2·0	237	0 29	0	0 49	− 2	—	0·9
Koti	N.	3·3	237	e 0 52	+ 5	—	—	—	—
Tyosi		3·3	86	e 1 54	S_g	—	—	—	—

Additional readings :—
Sumoto SZ = +52s.

Nov. 13d. Readings also at 0h. (Tyosi), 1h. (Baku, Ekaterinburg, Irkutsk, Andijan, Agra, Bombay, and Calcutta), 3h. (Batavia and Soengei Langka), 6h. (near Andijan and Almata), 7h. (La Paz, near Calcutta, and near Tyosi), 9h. (Ottawa and Tucson), 10h. (Tucson), 12h. (Osaka, near Mizusawa, and Tyosi), 13h. (Riverview and Tyosi), 16h. (near Osaka), 17h. (Wellington, near Nagasaki, and near Andijan), 20h. (Andijan), 21h. (near Wellington), 23h. (New Plymouth and Christchurch).

Nov. 14d. 13h. 51m. 33s. Epicentre 18°·7N. 110°·2W. N.3.

A = −·327, B = −·889, C = +·321; D = −·938, E = +·345;
G = −·111, H = −·301, K = −·947.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tucson		13·6	358	3 3	− 7	5 58	+17	e 6·8
Pasadena		17·0	337	e 3 55	+ 1	—	—	—
Mount Wilson		17·0	337	e 3 57	+ 3	—	—	—
Haiwee	E.	18·7	340	e 4 11	− 4	—	—	—
Tinemaha	E.	19·7	341	e 4 29	+ 3	—	—	—
Little Rock		22·5	41	e 5 56	+60	e 12 37	L	(e 12·6)
Ottawa		39·0	39	—	—	e 13 7	−14	e 19·4
La Paz	E.	54·3	128	e 9 24	+ 1	—	—	—

Long waves were also recorded at Honolulu T.H., Ekaterinburg, Tashkent, and other American stations.

Nov. 14d. Readings also at 2h. (La Paz), 3h. (Andijan), 4h. (Andijan, near Koti, Matuyama, and Sumoto), 5h. (La Paz, Wellington, Ottawa, Ekaterinburg, and near Andijan), 6h. (Baku and Tashkent), 7h. (near Sumoto), 9h. (near Andijan), 10h. (near Christchurch), 11h. (Manila), 15h. (Wellington), 18h. (Berkeley and near Lick), 21h. (Wellington), 22h. (near Andijan), 23h. (near Amboina and near Taihoku).

Nov. 15d. 1h. 41m. 52s. Epicentre 35°·0N. 132°·5E. (as on 1930 Dec. 23d.). R.3.

A = −·554, B = +·604, C = +·574.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Matuyama	1·2	173	i 0 18	+ 1	0 32	+ 1	—	0·6
Koti	1·7	150	i 1 24	+60	i 1 43	+57	—	1·8
Toyooka	2·0	74	i 0 28	− 1	i 0 50	− 1	—	0·9
Sumoto	2·1	108	—	—	0 53	− 1	—	0·9
Kobe	2·2	98	e 0 32	+ 1	e 0 56	− 1	—	1·0
Hukuoka	2·2	230	e 0 43	P_g	1 15	S_g	—	1·3
Osaka	2·4	98	0 24	−10	(0 57)	− 5	0·9	1·2
Nagoya	3·6	87	—	—	e 1 40	+ 8	—	—

No additional readings.

Nov. 15d. 14h. 35m. 46s. Epicentre 34°·4N. 134°·8E. (as on 1931 July 4d.). R.3.

A = −·581, B = +·585, C = +·565.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	0·1	128	0 0	− 1	0 4	+ 1	—	0·1
Kobe	0·4	48	i 0 6	0	e 0 13	+ 3	—	0·3
Osaka	0·7	68	0 9	− 1	(0 17)	− 1	0·3	0·4
Koti	1·4	231	i 0 21	+ 1	i 0 37	+ 1	—	—
Matuyama	1·8	252	e 0 46	+20	e 1 10	+24	—	—
Nagoya	1·9	67	e 0 30	+ 2	0 55	+ 6	—	—

Kobe gives also iS = +18s.

Nov. 15d. Readings also at 4h. (Calcutta, Hong Kong, and Phu-Lien), 5h. (Baku, Ekaterinburg, Tashkent, Bombay, La Paz, De Bilt, and Uccle), 6h. (near Manila), 7h. (near Tyosi), 8h. (near Tananarive), 9h. (near New Plymouth), 10h. (Trenta and Belgrade and near Andijan), 11h. (Budapest, Florence, Stuttgart, Zagreb, and near Triest), 12h. (near Alicante), 21h. (near Tyosi).

Nov. 16d. 6h. 15m. 20s. Epicentre 40°·0N. 69°·3E. N.3.

(as given by the Central Asia Stations).

A = +·271, B = +·717, C = +·643; D = +·935, E = −·353;
G = +·227, H = +·601, K = −·766.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent	1·3	0	i 0 18	0	—	—	0·7	1·0
Samarkand	1·8	259	i 0 26	0	—	—	i 0·9	1·7
Andijan	2·5	84	0 32	− 4	—	—	1·2	1·4
Almata	6·6	57	e 1 41	+ 7	e 3 11	S*	—	3·3
Ekaterinburg	17·8	344	e 4 7	+ 3	i 7 29	+ 9	i 10·8	10·9

Additional readings :—
Samarkand P_g = +29s.
Andijan P_g = +38s.
Almata PS = +1m.3s.
Long waves were also given at Pulkovo and Baku.

Nov. 16d. 8h. 25m. 5s. Epicentre 27°·5N. 55°·0E. (as on 1930 Sept. 5d.). R.3.

A = +·509, B = +·727, C = +·462; D = +·819, E = −·574;
G = +·265, H = +·378, K = −·887.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Samarkand	15·7	36	e 3 30	− 8	—	—	—	—
Ksara	17·6	297	3 59	− 3	—	—	11·5	—
Tashkent	18·1	37	i 4 13	+ 5	i 7 45	SS	e 9·1	12·4
Bombay	18·5	114	4 13	0	—	—	—	—
Andijan	19·5	43	e 4 27	+ 3	—	—	e 11·5	—
Helwan	20·9	282	e 4 35	− 4	8 30	+ 6	—	14·7
Almata	23·7	43	e 5 4	− 3	—	—	—	—
Yalta	23·8	321	e 5 12	+ 4	9 23	+ 4	—	—
Simferopol	24·1	322	5 16	+ 5	e 9 28	+ 3	—	—
Ekaterinburg	29·6	6	e 6 5	+ 4	e 11 10	+12	14·9	17·2
Pulkovo	36·4	340	7 2	+ 1	e 12 43	+ 1	17·9	—
Helsingfors	38·5	336	—	—	e 13 19	+ 5	e 17·9	—

Ksara gives also PPE = +7m.19s., PPN = +7m.22s.

Nov. 16d. Readings also at 2h. (Samarkand, Tashkent, Andijan, Ekaterinburg, Pulkovo, Bombay, Phu-Lien, Hong Kong, Manila, Zi-ka-wei, near Hokoto, and Taihoku), 3h. (Helsingfors, Pulkovo, and Riverview), 4h. (Andijan), 6h. (near Branner, Berkeley, and Lick), 7h. (near Matuyama (2) and near Apia), 8h. (Neuchatel), 9h. (Christchurch, Wellington, Riverview, and Suva), 10h. (Ksara, Harvard, and Ottawa), 12h. (near Hukuoka and Nagasaki), 13h. (near Nagasaki), 14h. (Riverview and Tyosi), 18h. (Wellington), 20h. (near Nagasaki), 22h. (Samarkand, near Andijan, and Tashkent), 23h. (La Paz).

Nov. 17d. 9h. 35m. 8s. Epicentre 2°·3N. 127°·2E. (as on 1931 Feb. 27d.). R.3.

A = −·604, B = +·796, C = +·040; D = +·797, E = +·605;
G = −·024, H = +·032, K = −·999.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	6·0	170	1 52	+27	3 3	+30	—	—
Manila	13·8	334	3 11	− 2	5 49	+ 3	7·3	9·5
Batavia	22·0	246	e 4 53	+ 2	i 9 17	SS	—	—
Bombay	55·7	292	17 22	S	(17 22)	+ 3	—	—
Andijan	62·4	316	e 10 19	− 2	e 18 44	− 3	—	—
Tashkent	64·8	316	11 2	(−10)	i 19 10	− 7	32·1	37·5
Samarkand	65·9	315	e 10 48	+ 3	—	—	—	—
Ekaterinburg	75·4	330	i 11 40	− 3	e 21 44	+19	35·9	—
Baku	78·9	312	—	—	e 22 8	+ 4	43·9	50·5

Additional readings:—
Baku e = +39m.8s.

Nov. 17d. Readings also at 0h. (Baku and Ekaterinburg), 1h. (near Amboina), 2h. (La Paz and La Plata), 5h. (near Toyooka and near Tananarive), 16h. (Wellington), 17h. (Sydney and near Taihoku), 18h. (Alicante, Zagreb, and Wellington), 20h. (Riverview (2), Sydney, Baku, Ekaterinburg, Irkutsk, and Tashkent), 21h. (De Bilt, Kucino, Melbourne, and Ottawa).

Nov. 18d. 3h. 32m. 12s. Epicentre 21°·1S. 174°·4W. N.2.

A = −·929, B = −·091, C = −·360; D = −·098, E = +·995; G = +·358, H = +·035, K = −·933.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		7·4	292	0 48	−57	3 30	+21	4·4	6·8
Apia		7·7	19	e 2 34	P_g	(3 38)	+22	3·6	5·3
Arapuni		19·0	205	—	—	e 8 12	+26	(i 9·8)	—
Wellington		22·2	202	e 4 32	−21	i 9 47	+57	10·8	16·8
Christchurch		24·9	203	5 18	− 1	e 8 54	P_cP	—	—
Riverview		33·0	240	—	—	e 13 18	?	—	17·8
Melbourne		38·8	235	i 7 18	− 4	e 13 48	+30	20·8	25·7
Adelaide		43·3	241	e 12 42	?	i 18 0	?	20·4?	23·8
Honolulu T.H.		45·4	21	—	—	e 14 48?	− 8	e 18·8	—
Perth		62·4	244	18 48	S	(18 48)	+ 1	—	—
Manila		72·8	294	11 27	− 1	19 0	?	—	32·2
Pasadena		76·9	44	e 11 50	− 1	—	—	—	—
Riverside	N.	77·3	44	e 11 59	+ 5	—	—	—	—
Batavia		77·4	268	i 11 54	0	i 21 43	− 4	—	—
Haiwee	E.	78·2	42	e 11 59	+ 1	—	—	—	—
Tinemaha	E.	78·6	41	e 11 52	− 8	—	—	—	—
Victoria		83·1	30	22 53	S	(22 53)	+ 5	41·6	43·4
La Paz	E.	98·5	110	e 14 2	+25	i 24 20	[+ 2]	47·3	50·9
St. Louis		98·6	50	e 20 39	?	e 23 37	[−42]	e 50·8	—
Irkutsk		101·4	322	—	—	e 23 48?	[−45]	54·8	58·1
Buffalo		108·2	49	e 18 48	PP	e 29 16	?	—	56·3
Ottawa		110·8	46	—	—	e 26 57	{+44}	e 57·8	—
Fordham		111·4	51	—	—	e 24 58	[−21]	e 58·4	—
Harvard		113·6	50	—	—	e 27 18	{+46}	e 59·3	—
Bombay		117·2	282	18 32	[− 7]	—	—	—	—
Tashkent		123·2	307	e 20 20	PP	i 26 0	[0]	—	91·7
Ekaterinburg		126·4	326	e 19 3	[+ 3]	e 26 10	[+ 1]	54·8	66·6
Pulkovo		137·5	341	e 22 7	PP	e 29 8	{ 0}	e 76·8	81·5
Baku		137·9	308	e 19 32	[+13]	—	—	e 62·8	82·0
Copenhagen		145·0	351	19 33	[− 1]	—	—	81·8	—
Theodosia		145·8	322	e 19 39	[+ 3]	—	—	—	—
Yalta		146·8	322	e 19 39	[+ 2]	—	—	—	—
De Bilt		149·0	1	i 19 46	[+ 6]	e 42 42	SS	e 83·8	91·0
Uccle		150·3	2	e 19 46	[+ 4]	e 42 48?	SS	—	87·8
Stuttgart		152·2	355	e 19 48	[+ 4]	e 38 48	?	e 86·8	89·8
Paris		152·2	4	e 22 48?	?	—	—	75·8	101·8
Strasbourg		152·5	357	e 19 53	[+ 8]	(42 48?)	SS	42·8	—
Zagreb		153·8	343	e 18 48?	?	—	—	—	—
Florence		156·8	350	e 20 4	[+14]	e 35 48	?	—	92·8
Granada		162·0	24	i 20 52	{+ 1}	—	—	88·0	98·3

Additional readings and note :—
Arapuni gives S as e and L as S.
Christchurch iZ = +9m.46s. = S +7s.
Melbourne e = +8m.43s. = PP − 4s., and +17m.10s. = S_cS − 25s.
La Paz PSE = +25m.40s., SSE = +27m.30s.
Irkutsk e = +26m.48s.? = PS − 12s.
Buffalo e = +35m.22s.
Ottawa eE = +28m.36s. = PS +1s., eN = +34m.40s. = SS +11s., eE = +36m.31s., eN = +38m.50s.
Fordham eE = +28m.28s. = PS − 14s., e = +38m.48s.? = SSS +8s.
Harvard eN = +35m.19s. = SS +12s. and +52m.58s.
Tashkent e = +26m.47s., +30m.36s. = PS +5s., +32m.0s. and +37m.0s. = SS − 14s.
Ekaterinburg e = +22m.19s., +27m.42s. = SKKS − 16s., +29m.8s., and +30m.58s. = PS − 2s.
Baku e = +10m.57s., +22m.14s. = PP +6s., and +23m.3s. = PKS +0s.
Stuttgart eE = +48m.48s. = SSS +15s. and +56m.42s.
Granada iP = +20m.58s., i = +24m.58s.
Long waves were also recorded at Hong Kong, Ivigtut, Scoresby Sund, the American and European stations.

Nov. 18d. Readings also at 0h. (Baku and near Sumoto), 2h. (near Apia), 4h. (Hong Kong), 6h. (Nagoya, Tyosi, La Paz, Christchurch, Wellington, and near New Plymouth), 9h. (near Wellington (2), Christchurch, and near New Plymouth), 10h. (near Andijan), 11h. (Suva and Lick), 13h. (near La Paz and near Nagasaki (2)), 15h. and 17h. (near Nagasaki), 18h. (Christchurch and Wellington), 19h. (Riverview), 21h. (near Wellington).

Nov. 19d. Readings at 3h. (Wellington and near Triest), 4h. (Ekaterinburg, Tashkent, Almata, near Andijan, and Samarkand), 13h. (Zagreb), 14h. (Königsberg, near Kobe, Sumoto, and Toyooka), 23h. (La Paz).

Nov. 20d. 14h. 16m. 32s. Epicentre 10°·6S. 161°·7E. R.1.

(as on Oct. 9d.).

Probable error of epicentre ±0°·26.

A = −·933, B = +·309, C = −·184 ; D = +·314, E = +·949 ;
G = +·175, H = −·058, K = −·983.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		17·8	117	i 4 10	+ 6	—	—	—	4·5
Riverview		25·2	201	i 5 19	− 3	i 9 45	+ 1	—	—
Sydney		25·2	201	e 5 22	0	i 10 10	+26	12·2	15·0
Apia		26·1	100	e 5 30	0	e 9 45	−15	e 11·9	13·5
Arapuni		30·2	158	—	—	11 53	+46	14·5	16·5
Melbourne		31·1	206	i 6 17	+ 2	i 11 23	+ 2	13·0	14·6
Adelaide		32·2	218	e 6 23?	− 1	i 11 36	− 2	i 13·9	17·4
Wellington		32·8	163	6 30	0	11 58	+10	15·5	16·5
Amboina		33·9	279	6 45	+ 6	i 13 11	+67	20·0	—
Christchurch	Z.	34·3	166	i 6 42	− 1	e 12 6	− 5	—	—
Perth		47·3	235	e 8 48	+17	i 15 28	+ 5	22·5	26·5
Manila		47·6	301	8 33	0	15 28	+ 1	—	—
Tyosi		50·3	338	9 0	+ 6	16 3	− 2	e 22·3	23·8
Tokyo		50·7	337	9 0	+ 3	16 7	− 4	—	—
Honolulu T.H.		51·0	50	9 16	+17	i 16 17	+ 2	23·5	—
Nagoya		51·4	335	e 9 1	− 1	16 20	0	23·8	—
Sumoto		51·6	331	9 3	0	16 19	− 4	23·2	27·7
Osaka		51·6	332	9 6	+ 3	16 36	+13	23·4	—
Koti		51·7	330	e 10 3	(−19)	16 20	− 4	e 22·6	—
Kobe		51·8	332	9 4	− 1	16 21	− 4	e 23·5	25·8
Hukusima		52·2	339	9 11	+ 3	16 27	− 4	—	—
Toyooka		52·7	333	i 9 12	0	i 16 33	− 5	23·6	26·4
Taihoku		52·9	314	e 8 28	−45	—	—	—	—
Nagasaki		52·9	327	e 9 14	+ 1	16 38	− 3	e 23·2	—
Mizusawa	E.	53·2	340	9 22	+ 7	16 42	− 3	22·9	—
	N.	53·2	340	9 34	+19	16 34	−11	23·8	—
Morioka		53·8	340	9 23	+ 3	16 46	− 7	—	—
Batavia		54·4	271	e 8 56	−28	i 17 1	0	29·3	—
Zi-ka-wei		56·9	320	9 34	− 8	17 32	− 3	28·5	31·6
Hong Kong		57·0	306	9 39	− 4	17 32	− 4	26·4	29·9
Zinsen		58·2	327	9 52	0	17 50	− 2	—	—
Phu-Lien		62·6	300	e 10 21	− 1	18 38	−12	27·5	—
Medan		64·3	280	11 16	(+ 6)	i 19 27	+16	—	—
Chiufeng		65·9	324	10 44	− 1	—	—	—	—
Calcutta		79·0	296	11 56	− 7	20 11	?	31·6	—
Irkutsk		79·7	329	e 12 4	− 2	e 22 2	−10	40·5	49·4
Colombo		83·2	278	12 25	+ 1	22 43	− 6	33·8	49·2
Sitka		84·9	29	e 12 28	− 5	22 56	[− 2]	e 34·6	—
Ukiah		85·4	48	—	—	i 23 6	[+ 4]	37·9	—
Branner	N.	85·7	50	e 12 38	+ 1	—	—	—	—
Berkeley	N.	85·7	50	e 12 36	− 1	i 23 13	− 2	e 39·3	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Lick		86·1	50	e 12 46	+ 7	—	—	—	—
Santa Barbara	N.	86·8	55	e 12 33	− 9	—	—	—	—
Mount Wilson	N.	88·0	55	e 12 49	+ 1	e 23 34	− 3	—	—
Pasadena		88·0	55	i 12 47	− 1	e 23 29	− 8	e 40·0	—
Victoria	E.	88·2	40	13 4	+15	23 16	[− 5]	35·6	45·7
	N.	88·2	40	13 4	+15	23 24	[+ 3]	35·4	40·9
Riverside		88·5	55	i 12 52	+ 2	e 23 22	[− 1]	—	—
Seattle		88·6	40	—	—	i 23 57	+14	42·3	—
Tinemaha		88·6	51	e 12 52	+ 1	e 23 21	[− 3]	—	—
Haiwee		88·6	52	i 12 50	− 1	e 23 34	− 9	—	—
Agra	N.	89·2	299	—	—	e 22 46	[−42]	—	—
Bombay		92·3	290	13 10	+ 2	23 34	[−12]	42·8	50·5
Tucson		93·5	57	—	—	24 31	+ 3	e 42·6	—
Bozeman		95·7	44	—	—	e 23 52	[−12]	e 44·5	—
Andijan		96·4	311	e 14 59	+92	—	—	49·0	—
Tashkent		98·7	311	17 28	PP	i 24 3	[−16]	—	55·8
Ekaterinburg		104·9	326	e 14 17	+11	i 24 41	[− 8]	43·5	60·3
Tananarive	E.	108·7	246	19 9	PP	28 17	PS	—	56·4
St. Louis	E.	110·7	51	e 19 1	PP	e 25 1	[−15]	—	50·5
Ann Arbor	E.	115·2	47	—	—	e 29 34	PS	e 59·7	—
Kucino		117·3	328	e 19 43	PP	29 43	PS	56·5	66·6
Toronto	N.	118·1	45	e 22 49	PPP	e 27 44	{+40}	e 55·5	—
Pittsburgh		118·4	48	—	—	e 25 28?	[−17]	e 58·5	—
Buffalo		118·7	46	e 20 1	PP	i 29 54	PS	—	58·7
Pulkovo		119·1	335	20 2	PP	e 25 36	[−11]	54·5	66·5
Charlottesville		119·9	51	—	—	e 27 59	{+44}	e 57·5	—
Scoresby Sund		120·1	2	19 28?	[+42]	30 22	PS	49·5	—
Ottawa		120·2	42	e 20 8	PP	e 30 11	PS	e 56·5	—
Georgetown	Z.	120·8	50	e 20 17	PP	e 30 25	PS	61·5	—
Helsingfors		121·1	336	e 19 47	PP	e 26 46	{−38}	e 48·5	—
Fordham		122·8	47	—	—	e 25 34	[−25]	e 60·0	—
La Paz		123·8	119	18 59	[+ 4]	30 47	PS	56·5	63·8
Upsala		124·0	339	—	—	e 30 45	PS	e 62·5	70·9
Lund		128·6	339	—	—	37 28?	?	55·5	—
Copenhagen		128·9	339	21 20	PP	—	—	55·5	—
Helwan		130·0	300	21 14	PP	—	—	—	77·3
Potsdam		131·2	335	e 21 34	PP	i 24 3	PPP	e 64·5	75·5
Hamburg		131·4	338	e 21 26?	PP	—	—	e 63·5	73·5
Budapest		131·6	327	e 22 5	PKS	—	—	e 64·0	68·0
Vienna		132·5	330	e 21 46	PP	—	—	e 63·5	79·5
Jena		132·9	335	e 21 28	PP	—	—	e 52·5	77·0
Göttingen	E.	133·0	336	e 21 49	PP	—	—	e 62·5	72·5
Cheb		133·1	333	e 22 40	PKS	e 38 23	?	e 63·5	74·0
Graz		133·7	329	e 21 44	PP	e 34 9	?	65·5	76·5
Zagreb		134·3	326	e 19 28?	[+14]	—	—	e 65·5	68·5
De Bilt		134·4	340	i 21 59	PP	—	—	e 58·5	69·7
Feldberg		134·7	337	e 21 18	PP	—	—	e 66·3	81·8
Stonyhurst		134·9	346	—	—	e 41 28?	?	66·5	—
Bidston		135·5	346	e 21 8	PP	e 43 28	?	e 63·5	79·5
Innsbruck		135·6	332	21 28?	PP	—	—	—	—
Triest		135·6	329	e 18 45	[−31]	24 56	PPP	e 64·7	76·7
Stuttgart		135·6	335	e 19 17	[+ 1]	e 28 40	{−17}	e 63·5	73·0
Uccle		135·7	340	i 21 56	PP	—	—	45·5	74·1
Strasbourg		136·2	336	e 19 20	+ 3	e 26 8	[−27]	e 50·5	—
Treviso		136·4	330	e 22 58	PKS	—	—	63·5	83·5
Oxford		136·6	345	e 21 58	PP	—	—	e 53·5	80·0
Kew		136·6	344	e 22 13	PP	e 32 29	PS	56·5	76·0
Padova		136·7	330	e 18 56	[−21]	—	—	e 66·5	80·5
Chur		136·7	333	e 19 25	[+ 8]	—	—	—	—
Zurich		136·8	333	e 21 57	PP	—	—	—	—
Piacenza		138·0	330	23 6	PKS	—	—	—	82·5

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Paris	138·0	340	e 19 20	[+ 1]	—	—	59·5	72·5
Florence	138·1	328	e 19 28	[+ 9]	e 22 58	PKS	—	—
Tortosa	145·5	336	19 35	[0]	—	—	e 64·5	88·9
Algiers	147·5	327	e 19 42	[+ 4]	e 26 42	PPP	e 43·5	92·0
Alicante	148·0	334	e 20 1	[+22]	e 31 1	{+50}	e 58·5	—
Toledo	148·1	339	e 19 41	[+ 2]	—	—	e 50·2	82·2
Almeria	150·0	334	i 19 49	[+ 7]	—	—	74·2	84·3
Granada	150·3	336	i 19 45	[+ 3]	—	—	70·9	86·8
Malaga	151·0	336	e 20 1	[+18]	e 35 47	?	48·5	—
San Fernando	151·9	339	20 18	{+11}	34 0	?	68·5	106·5

Additional readings :—
Wellington PP = +7m.28s.?
Amboina i = +9m.1s. = P_cP −21s.
Christchurch iZ = +9m.58s. = P_cP +36s.
Perth PP = +10m.33s., PPP = +11m.13s., PPPP = +11m.28s., SS = +18m.48s., SSS = +19m.28s.
Honolulu T.H. e = +9m.53s.
Sumoto PN = +9m.8s.
Kobe iPEN = +9m.13s., SSE = +16m.42s.
Toyooka iPE = +9m.22s.
Zi-ka-wei iZ = +9m.52s., +11m.10s., and +20m.54s.
Hong Kong SS = +21m.57s., ? = +24m.28s.
Chiufeng ePE = +10m.50s.
Irkutsk e = +13m.52s. and +21m.3s.
Berkeley iPN = +12m.39s., eZ = +24m.1s. = PS +1s.
Seattle e = +25m.30s.
Tinemaha iN = +22m.36s.
Haiwee eE = +24m.22s. = PS −13s.
Tucson eSKS = +23m.48s., e = +24m.46s., eSS = +30m.46s.
Ekaterinburg iPP = +18m.37s., iPS = +27m.39s.
Tananarive N = +21m.9s., E = +27m.30s., N = +28m.20s., E = +28m.49s., N = +29m.44s., SS = +34m.16s., E = +38m.10s., N = +41m.9s.
St. Louis eE = +28m.22s., iPSE = +28m.39s., eSSEN = +34m.40s.
Ann Arbor eN = +34m.40s., and +35m.46s.
Kucino eSS = +35m.59s.
Toronto eN = +35m.28s.?
Pittsburgh ePS = +29m.46s., eSS = +36m.28s.
Buffalo ePPP = +22m.51s.
Pulkovo PPP = +22m.24s., PS = +29m.45s., SS = +35m.58s.
Charlottesville eSS = +35m.58s.
Ottawa eE = +31m.38s., +32m.40s., and +37m.16s.
Helsingfors ePSN = +29m.50s.
Fordham eSSE = +37m.14s.
La Paz PPE = +22m.10s., PSE = +32m.15s.
Upsala ePPSN = +31m.51s.
Copenhagen +22m.22s.
Potsdam iE = +21m.55s. = PP +30s., iN = +22m.11s. = PKS −28s., iE = +22m.33s.
Jena e = +22m.28s. = PKS −18s.
Zagreb ePP = +22m.45s.
De Bilt eEN = +22m.54s.
Feldberg i = +22m.52s.
Triest i = +22m.42s. = PKS −14s., PP = +23m.52s., i = +25m.18s., PPS = +35m.35s.
Stuttgart PP = +22m.5s., ePKS = +22m.43s., eZ = +24m.18s., ePPPNZ = +24m.46s., eSKSZ = +26m.36s., e = +27m.40s., eS? = +30m.58s., +31m.33s., e = +32m.3s. = SKSP +8s., ePPS = +33m.46s., e = +34m.52s., eE = +38m.46s., eSS = +39m.40s., eSSSNZ = +45m.28s., eSSSS = +49m.58s., e = +58m.10s.
Uccle e = +22m.52s.
Strasbourg ePP = +22m.2s., ePS = +32m.2s., ePPS = +34m.3s.
Kew ePKS = +23m.0s., ePPS = +34m.6s., eSSE = +40m.0s.
Paris ePP = +22m.14s.
Algiers PP = +21m.50s.
Toledo i = +20m.21s. and +21m.33s.
Almeria i = +21m.37s., e = +70m.17s.
Granada i = +55m.33s.
Long waves were also recorded at Ksara, Ivigtut, Harvard, Columbia, Chicago, and other European stations.

Nov. 20d. Readings also at 4h. (near Tyosi and Mizusawa), 9h. (near Amboina), 10h. (Harvard, Ottawa, Sitka, Hong Kong, Phu-Lien, Bombay, and Ekaterinburg), 11h. (Baku (2), Tashkent (2), and Ottawa), 12h. (Ekaterinburg and near New Plymouth), 14h. (Andijan and near Toyooka), 15h. (La Paz), 16h. (Dakar), 17h. (Almata, Samarkand, and near Andijan), 21h. (Koti), 23h. (Trenta).

Nov. 21d. 12h. 22m. 53s. (I) } Epicentre 21°·5S. 169°·0E. X.
17h. 6m. 52s. (II) } (as on 1929 April 14d.). X.

A = −·913, B = +·178, C = −·367; D = +·191, E = +·982;
G = +·360, H = −·070, K = −·930.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I	Arapuni	17·5	162	—	—	i 8 19	+66	—	—
II		17·5	162	—	—	e 7 8	− 5	(i 8·4)	—
I	Riverview	20·0	228	e 4 37	+ 7	i 8 54	PcP	10·2	12·1
II		20·0	228	e 4 31	+ 1	i 8 58	PcP	10·7	12·1
I	Sydney	20·0	228	e 4 25	− 5	e 9 7	PcP	11·6	13·3
II		20·0	228	e 4 38	+ 8	i 9 2	PcP	11·4	12·8
I	Wellington	20·4	168	4 26	− 8	8 7	− 7	10·1	—
II		20·4	168	4 28	− 6	8 10	− 4	10·1	—
I	Christchurch N.	22·2	173	e 5 0	+ 7	i 9 6	+16	10·8	15·2
II	N.	22·2	173	—	—	i 8 53	+ 3	—	11·8
I	Melbourne	26·3	227	—	—	e 10 31	+28	—	16·8
II		26·3	227	—	—	e 9 57	− 6	14·8	17·0
II	Adelaide	29·8	237	—	—	e 11 41	+40	i 14·5	18·0

Additional readings and note :—
Arapuni II S is given as e and L as S.
Wellington II SE = +8m.4s.
Christchurch II iN = +9m.53s.
Melbourne II i = +10m.32s.
Long waves were also recorded for Shock I at Adelaide and Suva, and for II at Suva, Bombay, Ottawa, Ekaterinburg, Baku, and San Fernando.

Nov. 21d. Readings also at 1h. (near Batavia and Malabar), 3h. (Samarkand and near Andijan), 6h. (Suva, Adelaide, Melbourne, Riverview, Sydney, Arapuni, and Wellington), 7h. (Perth), 8h. (Baku and Ksara), 9h. (Ekaterinburg), 13h. (near La Paz), 15h. (San Juan), 22h. (near Berkeley, Lick, and near Tyosi), 23h. (Adelaide, Riverview, Christchurch, and Wellington).

Nov. 22d. Readings at 10h. (Wellington, Branner, Lick, Berkeley, Ukiah, and near Manila), 12h. (Perth), 13h. (Simferopol and Yalta), 15h. (near La Paz).

Nov. 23d. 13h. 35m. 39s. Epicentre 4°·0S., 107°·0E. N.3.

A = −·292, B = +·954, C = −·070; D = +·956, E = +·292;
G = +·020, H = −·067, K = −·998.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Batavia		2·2	184	i 0 33	+ 2	i 0 51	− 6	—
Malabar		3·3	169	i 0 45	− 2	1 14	−11	—
Medan		11·3	313	i 2 48	+ 9	4 11	−34	—
Bombay		40·7	306	e 3 21	?	—	—	—
Tashkent		56·9	327	e 6 21?	?	—	—	e 12·4
Ekaterinburg		71·5	335	i 11 22	+ 2	i 20 32	− 7	34·4
Pulkovo		86·9	331	12 42	− 1	e 23 9	−17	—
Helsingfors		89·5	331	—	—	e 23 9	−42	e 33·4
Tinemaha	N.	127·0	43	e 22 9	PP	—	—	—
Pasadena		128·4	46	i 22 14	PP	—	—	—

Additional readings :—
Malabar i = +49s.
Medan i = +3m.36s. = P* and +7m.14s.
Pasadena eN = +22m.17s.

Nov. 23d. 23h. 32m. 10s. Epicentre 36°·5N. 21°·5E. N.2.

$A = +·748$, $B = +·295$, $C = +·595$; $D = +·367$, $E = -·930$; $G = +·553$, $H = +·218$, $K = -·804$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Trenta		4·9	306	e 1 5	− 5	1 55	−10	—	—
Messina		5·0	292	1 10	− 1	2 10	+ 2	—	—
Taranto		5·2	321	1 5	− 9	2 0	−13	—	—
Mineo		5·5	280	1 14	− 4	—	—	—	—
Naples	E.	7·2	309	e 1 57	+15	e 4 2	S_g	8·8	—
Belgrade		8·3	355	1 57	− 1	e 3 44	+13	e 5·0	5·6
Camerino		9·3	318	2 6	− 5	3 46	−10	6·4	—
Zagreb		10·2	338	2 35	+11	e 4 13	− 5	16·1	6·4
Florence		10·7	316	e 3 20	P_g	—	—	—	5·8
Triest		10·9	330	e 2 37	+ 4	14 28	− 8	15·7	7·0
Budapest		11·1	351	e 3 50	P_g	—	—	7·3	—
Graz		11·5	339	e 2 55	+13	e 4 44	− 6	e 5·8	7·0
Ksara	E.	12·0	98	2 49	+ 1	5 3	0	—	—
Vienna		12·3	344	—	—	e 5 32	+22	—	8·8
Yalta		12·5	46	e 2 53	− 2	—	—	—	—
Simferopol		12·7	44	e 3 2	+ 4	—	—	—	—
Innsbruck		13·1	328	—	—	5 20	− 9	—	—
Chur		13·7	323	e 3 21	+10	—	—	—	—
Neuchatel		15·0	318	e 3 35	+ 7	—	—	—	—
Stuttgart		15·2	328	e 3 50	+19	—	—	e 9·2	—
Strasbourg		15·7	324	(e 3 50?)	+12	—	—	e 3·8	—
Potsdam		16·9	342	(e 2 56)	−57	—	—	e 2·9	10·8
Helsingfors		23·7	4	5 20	+13	e 9 20	+ 2	e 12·8	—
Pulkovo		23·9	11	5 5	− 4	9 31	+10	11·8	15·3
Ekaterinburg		33·0	40	e 6 30	− 2	—	—	17·8	—

Additional readings :—
Belgrade e = +2m.33s. = P^* and +2m.59s.
Zagreb eE = +3m.40s., iSS = +4m.37s.
Triest PP = +3m.18s., iSS = +4m.31s., SS = +5m.23s.
Long waves were also recorded at Piacenza, Cheb, Göttingen, Feldberg, De Bilt, Uccle, and Copenhagen.

Nov. 23d. Readings also at 6h. (Balboa Heights), 13h. (La Paz), 16h. (Lick), 17h. (Bagnères and Perth), 18h. (near Malabar), 19h. (Simferopol, Yalta, and Balboa Heights), 22h. (Lick).

Nov. 24d. Readings at 8h. (La Plata and near Santiago), 9h. (Nagasaki, Zi-ka-wei, Hong Kong, Chiufeng, Irkutsk, Almata (2), Samarkand (2), Ekaterinburg, Pulkovo, Bombay, Paris, Cheb, De Bilt, Uccle, Kew, Copenhagen, Lund, Strasbourg, Stuttgart, Göttingen, Budapest, Helsingfors, Upsala, Feldberg, Florence, San Fernando, Ottawa, and Pittsburgh), 11h. (Bozeman and La Paz), 16h. (Sumoto (2)), 18h. (Baku), 19h. (Cheb), 23h. (near Granada).

Nov. 25d. Readings at 0h. and 5h. (Wellington), 9h. (near Christchurch, New Plymouth, Takaka, and Wellington), 11h. (Granada and Ottawa), 12h. (near Malabar, near Berkeley, and Lick), 15h. (Baku, Ekaterinburg, Tashkent, Pulkovo, Helsingfors, Copenhagen, and Ottawa), 16h. (Wellington), 19h. (near Berkeley (2) and Lick (2)), 20h. (near Tyosi), 22h. (near Mizusawa).

Nov. 26d. 11h. 54m. 42s. (I) } Epicentre 61°·0S. 148°·0E. X.
12h. 30m. 0s. (II) } (as on 1930 Dec. 13d.). X.

A = −·411, B = +·257, C = −·875; D = +·530, E = +·848;
G = +·742, H = −·463, K = −·485.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Christchurch	22·8	51	e 4 53	− 6	e 8 57	− 4	10·4	11·8
II	22·8	51	e 4 53	− 6	e 8 57	− 4	10·3	12·0
I Melbourne	23·3	354	—	—	i 9 19	+ 9	9·7	—
II	23·3	354	—	—	i 9 18	+ 8	10·2	12·3
I Wellington	25·5	52	—	—	i 9 58	+ 8	12·3	—
II	25·5	52	5 27	+ 2	10 34	SS	11·0	—
I Adelaide	26·7	343	e 5 50	+15	—	—	12·2	15·9
II	26·7	343	e 5 45	+10	i 11 15	SS	14·8?	15·8
I Riverview	27·3	6	—	—	e 10 18	− 2	12·7	17·3
II	27·3	6	e 5 44	+ 3	—	—	12·0	15·0
I Sydney	27·3	6	—	—	(11 6)	+46	11·1	13·5
II	27·3	6	e 6 42	+61	(11 12)	+52	11·2	13·5
I Bombay	99·5	293	—	—	e 23 18	[−65]	—	—

Additional readings :—
Christchurch II iNZ = +9m.15s.
Adelaide II iSS = +13m.18s.
Long waves were also recorded for Shock I at Arapuni, Perth, Baku, and Ekaterinburg, and for Shock II at Arapuni, Perth, Tashkent, Baku, Pittsburgh, De Bilt, Paris, and Granada.

Nov. 26d. Readings also at 3h. (Ksara, near Prato, and near Tyosi), 9h. (Tucson), 11h. (Alicante), 13h. (near Tyosi), 14h. (San Fernando, Nagoya, near Mizusawa, and Tyosi), 17h. (near Tyosi), 18h. (Strasbourg), 19h. (Samarkand), 21h. (Andijan, Zagreb, near Belgrade, and Triest), 22h. (Zagreb).

Nov. 27d. 18h. 30m. 16s. Epicentre 46°·4N. 10°·0E. (as on 1929 Oct. 12d.). X.

A = +·679, B = +·120, C = +·724; D = +·174, E = −·985;
G = +·713, H = +·126, K = −·690.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Innsbruck	1·3	48	e 0 26	P_g	i 0 52	S_g
Ravensburg	1·4	349	e 0 26	P_g	i 0 47	S_g
Zurich	1·4	314	e 0 25	P*	e 0 46	S_g
Neuchatel	2·2	286	e 0 37	P*	e 1 7	S*
Hohenheim	2·4	347	e 0 50	P_g	e 1 14	S*
Stuttgart	2·4	346	e 0 44	P*	1 16	S*

Additional readings and notes :—
Innsbruck readings are given without phase.
Ravensburg phases are given as attributed above.
Zurich eP_g = +27s.; other phases are given as above.
Neuchatel eP_g = +40s., P* as above, and S* is given as S_g.
Hohenheim i = +1m.21s., P_g as above, and S* given as S_g.
Stuttgart eNZ = +1m.24s. = S_g, P*, and S* are given as P_g and S_g.

Nov. 27d. Readings at 1h. (Zagreb), 3h. (Lick), 6h. (Almata, Samarkand, and near Andijan), 8h. (Riverview, Matuyama, Lick, and near Tyosi), 9h. (Little Rock, Tucson, St. Louis, and near Triest), 12h. (near Lick), 15h. (Alicante), 17h. and 22h. (Andijan).

Nov. 28d. 1h. 5m. 58s. Epicentre 46°·4N. 10°·0E. (as on 27d.). R.3.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Innsbruck		1·3	48	e 0 19	+ 1	—	—	i 0·7	0·7
Piacenza		1·4	190	e 0 22	+ 2	—	—	—	1·3
Ravensburg		1·4	349	i 0 21	+ 1	i 0 38	+ 2	—	—
Zurich		1·4	314	e 0 18	− 2	e 0 38	+ 2	—	—
Padova		1·6	128	e 0 24	+ 1	0 40	− 1	—	—
Neuchatel		2·2	286	e 0 30	− 1	e 1 0	+ 3	—	—
Hohenheim		2·4	347	e 0 36	+ 2	e 1 0	− 2	—	—
Stuttgart		2·4	346	e 0 42	P*	1 9	S*	—	—
Prato		2·6	163	e 0 57	P_g	1 20	S*	—	—
Strasbourg		2·7	325	—	—	e 1 3	− 6	—	—
Jena		4·6	13	e 1 20	P*	i 1 49	− 9	e 1·9	2·4
Göttingen	N.	5·1	0	e 1 10	− 3	—	—	—	2·7

Additional readings and notes :—
Ravensburg $iS_g = +40$s., P and S are given as P_g and S*.
Neuchatel $eP_g = +33$s., P and S are given as P* and S_g.
Hohenheim eP*N = +39s., $eP_gE = +43$s., iS*E = +1m.7s., $iS_gE = +1$m.13s., $i = +1$m.21s. $= S_g$.
Stuttgart $iS_g = +1$m.15s., P and S are given as P_g and S*.
Strasbourg e = +1m.17s. =S* and +1m.22s.
Jena i = +1m.30s. $= P_g$.

Nov. 28d. 14h. 12m. 51s. Epicentre 39°·8N. 125°·6W. N.3.

A = −·447, B = −·625, C = +·640 ; D = −·813, E = +·582 ;
G = −·373, H = −·520, K = −·768.

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Ukiah		1·9	110	0 43	S	(0 43)	− 6
Berkeley		3·2	127	e 0 46	0	e 1 22	0
Branner	E.	3·5	131	e 0 48	− 2	—	—
Lick		3·9	127	e 0 58	+ 2	—	—
Tinemaha		6·4	113	e 1 30	− 1	e 2 51	+ 8
Mount Wilson	N.	8·2	131	e 1 57	+ 1	—	—
Pasadena		8·2	131	e 1 56	0	—	—

Branner gives also eN = +54s.

Nov. 28d. Readings also at 0h. (Samarkand and near Andijan), 3h. (La Paz, San Juan, Pasadena, Tinemaha, and Wellington), 7h. (Andijan and near Manila), 9h. (Messina and Manila), 11h. (Budapest, Triest, Zagreb, and near Belgrade), 12h. (Tucson, Messina, Florence, Innsbruck, Stuttgart, De Bilt, near Vienna, and near Tyosi), 16h. (near Christchurch and Wellington), 18h. (near Tokyo and Tyosi), 21h. (near Christchurch), 23h. (Batavia, Medan, Samarkand, near Almata, and near Andijan).

Nov. 29d. Readings at 0h. (Tyosi), 1h. (Alicante), 2h. (near Neuchatel and Zurich), 4h. (Almata, Samarkand, near Andijan, Nagasaki, and near Sumoto), 5h. (Ekaterinburg, Irkutsk, Tashkent, and Hong Hong), 14h. (near Malabar), 18h. (Ekaterinburg), 19h. (Baku, Kucino, Stonyhurst, Tashkent, Bombay, and Calcutta, and near Sumoto), 20h. (Andijan (2), Samarkand, Ekaterinburg, Irkutsk, Hong Kong, Phu-Lien, and near Medan), 21d. (Samarkand and near Andijan).

Nov. 30d. 17h. 1m. 41s. Epicentre 15°·5N. 92°·5E. (as on 1927 April 28d.). X.

A = −·042, B = +·963, C = +·267; D = +·999, E = +·044; G = −·015, H = +·267, K = −·964.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta	8·0	332	1 53	0	2 50	−34	3·1	—
Medan	13·4	152	5 24	S	(5 24)	−13	—	—
Phu-Lien	14·4	66	e 3 32	+11	—	—	7·3	—
Bombay	19·1	283	5 52	+92	9 54	+126	12·0	—
Hong Kong	21·6	68	4 46	0	8 33	− 5	11·0	11·9
Andijan	30·7	329	e 6 10	− 1	11 13	− 3	—	—
Almata	30·8	338	e 5 29	−43	—	—	—	—
Tashkent	32·7	326	e 6 28	− 1	e 11 45	− 1	e 15·4	19·5
Samarkand	32·8	323	e 6 33	+ 3	—	—	—	—
Irkutsk	38·0	11	—	—	e 11 19?	?	e 16·3	—
Ekaterinburg	47·8	336	i 8 35	0	14 41	−49	20·3	—

Additional readings:—
Tashkent e = +8m.28s. and +11m.8s.
Long waves were recorded at De Bilt and Baku.

Nov. 30d. Readings also at 1h. (Andijan), 2h. (La Paz), 4h. (near Berkeley, Lick, and Branner), 5h. (Tyosi), 8h. (near Medan), 10h. (near Mizusawa), 11h. (La Paz), 13h. (Samarkand and near Andijan), 16h. (Simferopol, Yalta, and near Tyosi), 19h. (near Tyosi), 23h. (Almata, Andijan, Samarkand, Tashkent, Ekaterinburg, Irkutsk, Bombay, Batavia, Malabar, and Manila).

Dec. 1d. 3h. 20m. 25s. Epicentre 61°·0S. 148°·0E. (as on Nov. 26d.). X.

A = −·411, B = +·257, C = −·875; D = +·530, E = +·848; G = +·742, H = −·463, K = −·485.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Christchurch	N.	22·8	51	i 4 53	− 6	9 8	+ 7	—	—
Melbourne		23·3	354	e 5 40?	+36	9 42	+32	10·9	12·2
Wellington		25·5	52	5 30	+ 5	10 32	SS	14·6	16·6
Adelaide		26·7	343	e 2 26	?	8 19	?	12·1?	13·9
Riverview		27·3	6	e 7 15	?	—	—	12·3	16·6
Arapuni		28·7	50	—	—	i 11 35	SS	i 13·6	—
Perth		35·8	309	13 35?	S	(13 35?)	+62	—	—
Batavia		62·8	314	i 12 11	PP	i 12 26	?	—	—
Manila		78·6	333	12 37	+37	16 48	PPP	—	22·6
La Paz		97·2	145	e 13 12	−19	23 52	[−20]	44·8	49·7
Bombay		99·5	293	19 45	PPP	—	—	—	—
Tashkent		120·4	302	e 19 29	[+42]	e 24 55	[−57]	—	75·0
Catania		142·6	254	e 18 32	[−54]	—	—	—	87·7
Florence		149·3	256	e 22 5	?	31 5	?	84·6	89·6
Almeria		149·5	231	e 21 9	?	—	—	e 76·2	—
Granada		150·2	230	i 20 40	?	—	—	e 76·5	82·9
Ottawa		150·3	101	—	—	e 42 45	SS	e 62·6	—
Pulkovo		150·4	296	—	—	e 43 48	?	93·6	107·7
Strasbourg		154·5	259	—	—	e 38 35?	?	e 81·6	—
Paris		157·1	254	—	—	e 38 35?	?	80·6	94·6
Uccle		157·6	260	—	—	e 44 35?	SS	e 64·6	—
De Bilt		158·0	263	—	—	e 53 35?	?	e 75·6	94·4
Scoresby Sund		169·7	341	—	—	51 35?	SSS	87·6	—

Additional readings:—
Wellington PP = +6m.47s.
La Paz eSN? = +24m.16s., SSE = +30m.0s., L_qE = +40·9m.
Tashkent e = +30m.57s. and +37m.41s.
Almeria i = +21m.50s. and +26m.11s.
Granada i = +21m.28s. and +26m.55s.
Ottawa e = +48m.35s.
Long waves were also recorded at La Plata, Irkutsk, Kucino, Entebbe, Ivigtut, San Juan, Algiers, Dakar, Florissant, Harvard, Buffalo, and other European stations.

Dec. 1d. 18h. 10m. 12s. Epicentre 61·0S. 148°·0E. (as at 3h.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Christchurch	N.	22·8	51	i 4 59	0	9 12	+11	—	—
Melbourne		23·3	354	e 4 16	−48	i 7 57	−73	9·1	11·3
Wellington		25·5	52	5 26	+ 1	—	—	e 11·8	—
Adelaide		26·7	343	e 4 54	+19	e 11 17	SS	13·5	17·2
Riverview		27·3	6	e 6 38	+57	(e 11 48)	+88	e 11·8	14·8
Perth		35·8	309	10 48?	?	—	—	—	—
La Paz		97·2	145	e 13 54	+23	i 24 19	{−13}	44·9	49·4
Bombay		99·5	293	27 28	?	—	—	—	—
Tashkent		120·4	302	—	—	e 26 24	[+32]	e 58·8	61·4
Ekaterinburg		136·0	309	e 20 19	?	—	—	55·8	56·5
Buffalo		147·0	101	—	—	e 25 24	?	—	—
Almeria		149·5	231	e 20 58	?	—	—	e 79·4	97·1
Granada		150·2	230	i 20 57	?	i 30 25	{+ 1}	i 79·0	80·9
Ottawa		150·3	101	—	—	e 43 20	SS	e 62·8	—
Uccle		157·6	260	—	—	e 44 48?	SS	e 67·8	—
Kew	N.	160·2	256	—	—	e 16 48?	?	77·8	91·8
Scoresby Sund		169·7	341	—	—	47 48?	?	85·8	—

Additional readings:—
Wellington PP = +6m.49s.
Adelaide i = +11m.59s.
La Paz iSE? = +25m.1s. = S −1s., SSN = +29m.28s., L_qE = +40·4m.
Tashkent e = +37m.24s.
Buffalo e = +10m.35s. and +48m.48s.
Granada iP = +21m.3s., i = +23m.12s. = PP −10s. and +24m.55s.
Ottawa e = +48m.16s. = SSS +9s., eN = +57m.28s.
Long waves were also recorded at La Plata, Capetown, Dakar, Ivigtut, Baku, Irkutsk, Algiers, and other European stations.

Dec. 1d. Readings also at 1h. (Toronto, Andijan, and Samarkand), 8h. (Nagoya and near Sumoto), 12h. (Triest and Tyosi), 13h. (Lick (2), Andijan, and Triest), 15h. (Buffalo), 16h. (near Lick), 17h. (Ekaterinburg, Tashkent, Nagoya, and near Tyosi), 19h. (Irkutsk, Pulkovo, and Tashkent), 22h. (near Granada).

Dec. 2d. 12h. 4m. 34s. Epicentre 1°·0S. 130°·5E. (as on 1927 June 11d.). R.3.

A = −·649, B = +·760, C = −·017; D = +·760, E = +·649; G = +·011, H = −·013, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Amboina		3·5	220	i 0 51	+ 1	1 40	+10	—
Riverview		38·1	152	13 8	S	(13 8)	0	17·4
Andijan		67·1	316	e 11 12	(− 9)	e 19 46	0	—
Samarkand		70·6	313	e 11 10	− 4	—	—	—
Ekaterinburg		79·9	329	e 12 8	+ 1	e 22 16	+ 1	—
La Paz	z.	154·6	134	e 19 29	[−19]	—	—	—

No additional readings.

Dec. 2d. Readings also at 1h. (Camerino, Collurania, Taranto, near Naples, and near Tyosi), 4h. (near Nagoya and Tyosi), 7h. (Wellington, near Hastings, near Andijan, and Samarkand), 8h. (Kobe and near Sumoto), 12h. (near Santiago), 14h. (Andijan), 17h. (Ekaterinburg, Irkutsk, Tashkent, and near Mizusawa), 21h. (Bombay, Baku, Ekaterinburg, Tashkent, De Bilt, Uccle, Paris, Kew, Strasbourg, Stuttgart, Florence, San Fernando, Granada, Entebbe, Sucre, La Paz, and near Mizusawa), 22h. (Copenhagen, Pulkovo, Kucino, Irkutsk, and Lick), 23h. (Manila and Sydney),

Dec. 3d. 9h. 32m. 20s. Epicentre 41°·0N. 16°·0E. (as on 1931 July 6d.). X.

A = +·725, B = +·208, C = +·656; D = +·276, E = −·961; G = +·631, H = +·181, K = −·755.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Naples	E.	1·3	263	e 0 22	+ 4	e 0 40	+ 7	1·2
Collurania		2·4	314	0 24	−10	—	—	—
Camerino		3·0	314	0 40	− 3	1 20	+ 3	—
Zagreb		4·8	0	1 7	− 1	e 2 6	+ 3	2·4
Triest		4·9	341	(e 1 15)	+ 5	i 2 1	− 4	—
Belgrade		5·0	39	—	—	e 2 22	+14	—

Additional readings and note :—
Zagreb eNW = +1m.23s. =P*.
Triest eP = +22s., i = +2m.9s.; true P is given as eS.
Belgrade e = +2m.34s. =S* and +2m.45s. =S_g.

Dec. 3d. 21h. 38m. 30s. Epicentre 40°·0N. 24°·0E. (as on 1930 March 31d.). X.

A = +·700, B = +·312, C = +·643; D = +·407, E = −·914; G = +·587, H = +·261, K = −·766.

	Δ	Az.	P.	O−C.	S.	O.−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Taranto	5·2	277	1 45	P_g	—	—	—	—
Trenta	5·9	265	e 1 5	−19	2 30	− 1	—	—
Mineo	7·8	252	1 55	+ 4	—	—	—	—
Zagreb	8·3	318	e 3 38	S	(e 3 38)	+ 7	—	—
Triest	9·4	310	e 2 16	+ 3	i 3 58	− 1	e 4·3	6·1
Chur	12·6	308	e 5 9	S	(e 5 9)	− 8	—	—
Baku	19·7	80	—	—	e 8 25	+25	e 11·0	11·9
Ekaterinburg	29·0	43	(5 30?)	−26	—	—	5·5	—

Additional readings :—
Zagreb eNW = +3m.43s., eNE = +4m.38s., e = +5m.46s.
Triest PP = +2m.51s., i = +4m.4s.

Dec. 3d. Readings also at 0h. (Ekaterinburg and Tashkent), 1h. (near Phu-Lien and near Tyosi (2)), 2h. (Andijan and near Theodosia), 3h. (La Paz, La Plata, and near Santiago), 4h. (Branner, near Berkeley, and Lick), 7h. (near Christchurch), 9h. (near Christchurch and Wellington), 10h. (Ekaterinburg, Tashkent, Buffalo, Toronto, Ottawa, Harvard, Ann Arbor, Chicago, Madison, Florissant, Bozeman, Seattle, near Victoria, and near Sitka), 11h. (Baku and San Fernando), 12h. (Wellington and near Christchurch), 14h. (Almata and Andijan), 15h. (Riverview, Christchurch, and Wellington), 16h. (near Sumoto).

Dec. 4d. Readings at 0h. (Tucson (2) and Ukiah, Branner, near Berkeley, and Lick), 1h. (Berkeley and near Sumoto), 2h. (near Mizusawa), 3h. (near La Paz), 4h. (near Branner, Berkeley, and Lick), 5h. (Pasadena), 7h. (near Samarkand), 8h. (Tyosi), 9h. (near Taihoku), 10h. (Hong Kong, Manila, and Phu-Lien), 19h. (Wellington, near Nagoya, Osaka, Kobe, and Sumoto), 21h. (Mineo and near Trenta).

Dec. 5d. Readings at 0h. (Baku), 3h. (near Wellington), 5h. (Lick and near Tyosi), 6h. (near Tananarive), 7h. (near Medan), 8h. (Nagoya, near Mizusawa, and Tyosi), 11h. (Lick and near Mizusawa), 15h. (Kobe and near Sumoto), 18h. (Nagoya, near Kobe, Sumoto, and Toyooka), 22h. (Almata, Andijan (2), and Samarkand (2)), 23h. (near Mizusawa and Tyosi).

Dec. 6d. 4h. 4m. 55s. Epicentre 13°·0S. 166°·8E. (as on 1922 April 25d.). X.

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

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Suva		12·2	116	3 11?	+20	5 41?	+33	—	—
Riverview		25·2	213	i 5 37	+15	i 9 45	+ 1	10·4	12·1
Arapuni		26·3	164	—	—	i 9 30	−33	12·1	—
Wellington		29·1	167	5 55	− 2	10 37	−13	12·1	—
Christchurch	N.	31·0	170	—	—	e 11 7	−13	—	—
Melbourne		31·5	214	i 1 58	?	—	—	13·9	17·3
Adelaide		33·6	224	e 9 25	(+ 4)	—	—	12·7	17·5
Perth		50·3	239	16 5?	S	(16 5?)	0	—	—
Irkutsk		84·5	327	—	—	(24 5?)	PS	24·1	24·7
Pasadena	Z.	85·3	52	e 13 33	+58	—	—	—	—
Mount Wilson	E.	85·4	52	e 13 39	+64	—	—	—	—
Tinemaha		86·2	49	e 13 41	+62	—	—	—	—
Bombay		97·9	286	—	—	e 25 5	− 3	—	—
Tashkent		104·2	310	—	—	i 26 53	+50	e 45·7	52·3
Ekaterinburg		109·7	326	—	—	e 36 27	?	49·1	—
Neuchatel		142·0	339	e 20 29	[+65]	—	—	—	—

Additional readings :—
Riverview e = +9m.35s.
Christchurch eN = +13m.15s.
Tashkent e = +30m.0s. and +30m.5s.
Long waves were also recorded at Ottawa and La Paz.

Dec. 6d. 9h. 7m. 28s. Epicentre 34°·7N. 134°·5E. (as on 1931 Sept. 18d.). X.

A = −·576, B = +·586, C = +·569.

	Δ	P.	O−C.	S.	O−C.	L.	M.
	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	0·5	0 7	0	0 16	+ 3	—	0·3
Kobe	0·5	0 7	0	0 16	+ 3	—	0·3
Osaka	0·8	0 14	+ 3	—	—	0·5	0·6
Toyooka	0·9	(i 0 11)	− 2	(i 0 20)	− 3	—	(0·4)

Toyooka readings have been *diminished* by 1m.

Dec. 6d. 23h. 1m. 3s. Epicentre 35°·1N. 102°·1E. N.3.

A = −·171, B = +·800, C = +·575; D = +·978, E = +·210; G = −·121, H = +·562, K = −·818.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Chiufeng	12·2	62	e 3 44	+53	6 27	+79	7·6	9·0
Phu-Lien	14·8	163	e 3 17	− 9	6 27	+17	7·0	8·3
Hong Kong	16·6	137	—	—	e 7 0	+ 8	8·8	9·2
Irkutsk	17·2	5	e 4 1	+ 4	7 13	+ 7	9·0	—
Calcutta	17·3	227	3 46	−12	7 6	− 3	9·0	—
Almata	21·0	300	e 4 44	+ 4	—	—	12·0	—
Andijan	24·0	293	e 5 24	+14	—	—	13·4	—
Tashkent	26·3	294	5 34	+ 2	i 10 19	+16	13·6	17·8
Samarkand	28·1	290	e 5 34	−14	—	—	—	—
Bombay	30·5	248	7 56	+107	11 37	+25	13·7	17·2
Ekaterinburg	35·2	322	i 6 47	− 4	12 25	+ 1	17·0	—
Kucino	47·5	317	—	—	15 15	−11	e 25·6	29·0
Pulkovo	51·3	324	7 59	−62	16 23	+ 4	25·4	30·8

Additional readings :—
Chiufeng SZ = +6m.33s., iN = +6m.53s.
Kucino e = +18m.31s. and +18m.59s.
Long waves were also recorded at Koti, Zi-ka-wei, and European stations.

Dec. 6d. Readings also at 2h. (near Nagoya), 3h. (near Christchurch), 4h. (near Malabar), 5h. (La Paz (2)), 6h. (Granada and near La Paz), 9h. (near Ksara), 13h. (Ekaterinburg, Tashkent, Hong Kong, Phu-Lien, near Manila, and near Amboina), 15h. (La Paz and Sucre), 16h. (near Amboina), 19h. (Trenta), 21h. (Helsingfors).

Dec. 7d. 18h. 51m. 50s. Epicentre 61°·0S. 148°·0E. (as on 1d. 18h.). X.

A = −·411, B = +·257, C = −·875.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Christchurch	22·8	51	5 4	+ 5	i 9 7	+ 6	—	—
Melbourne	23·3	354	—	—	i 8 57	−13	10·5	11·7
Wellington	25·5	52	5 26	+ 1	9 46	− 4	12·2	—
Adelaide	26·7	343	e 5 33	− 2	e 9 59	−11	11·3	15·9
Riverview	27·3	6	i 5 36	− 5	i 10 16	− 4	14·2	16·2
Sydney	27·3	6	—	—	e 10 16	− 4	12·6	13·7
Perth	35·8	309	12 40?	S	(12 40?)	+ 7	—	—
La Paz	97·2	145	e 37 8	?	—	—	50·2	55·7
Bombay	99·5	293	—	—	e 33 10	?	—	—
Tashkent	120·4	302	—	—	e 42 10?	?	e 57·2	63·4
Ekaterinburg	136·0	309	—	—	e 40 14	?	61·2	—

Riverview gives also SS = +11m.58s.
Long waves were also recorded at Arapuni, Cape Town, Baku, Irkutsk, De Bilt, Uccle, and Paris.

Dec. 7d. Readings also at 0h. (near Apia), 2h. (Phu-Lien and Samarkand), 5h. (Wellington and near Suva), 6h. (near Sumoto), 10h. (near Mizusawa (2)), 14h. (near La Paz and Sucre), 15h. (Wellington and near Algiers), 16h. (Nagoya), 17h. (La Paz, Ekaterinburg, Irkutsk, and Tashkent), 19h. (near Tyosi), 21h. (La Paz and Nagoya), 22h. (Almata, near Andijan, and Samarkand).

Dec. 8d. 12h. 15m. 19s. Epicentre 41°·7N. 141°·6E. (as on 1930 Dec. 5d.). X.

A = −·585, B = +·464, C = +·665; D = +·621, E = +·784;
G = −·521, H = +·413, K = −·747.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	2·2	188	0 38	+ 7	1 1	+ 4	—	—
Tyosi	6·0	186	e 1 25	0	2 48	+15	—	—
Nagoya	7·4	211	e 1 44	− 1	e 3 18	+ 9	—	—
Osaka	8·4	216	e 2 25	P*	(4 15)	S*	4·2	5·0

Long waves were also recorded at Baku and Ekaterinburg.

Dec. 8d. Readings also at 0h. (near La Paz (2), and Sucre), 1h. (near La Paz, near Almata, Andijan (2), Tashkent, and Samarkand), 4h. (Tyosi), 7h. (near Wellington), 9h. (near Triest and near Santiago), 10h. (near La Paz), 11h. (near Sumoto), 15h. (Andijan (2), and near Samarkand (2)), 20h. (Bombay, Calcutta, and Honolulu T.H.), 22h. (Wellington), 23h. (near Suva).

Dec. 9d. Readings at 0h. (Baku), 1h. (Balboa Heights, and near Amboina), 6h. (Almata and near Andijan), 14h. (near Amboina and near Trenta), 18h. (near Sumoto), 19h. (La Paz and near Santiago), 20h. (Tyosi), 22h. (Baku, Tashkent, Almata, near Andijan, and Samarkand), 23h. (Andijan and Samarkand).

Dec. 10d. Readings at 1h. (Tucson and Kobe), 2h. (La Paz, San Juan, Ottawa, Victoria, Berkeley, Wellington, Andijan, and Samarkand), 7h. (Christchurch), 8h. (Christchurch, Melbourne (2), Riverview, Wellington (3), Mizusawa, Almata, near Andijan, Samarkand, near Little Rock, Florissant, and St. Louis), 11h. (near La Paz), 13h. (near Santiago), 15h. (Phu-Lien, Bombay, Samarkand, Andijan, near Calcutta, near Nagoya, Tyosi, and Tokyo), 17h. (Wellington), 22h. (Samarkand and near Andijan), 23h. (Christchurch and Wellington).

Dec. 11d. 11h. 24m. 40s. Epicentre 46°·1N. 10°·9E. (as on 1931 April 14d.). X.

$A = +\cdot681$, $B = +\cdot131$, $C = +\cdot721$.

	Δ	P.	O−C.	S.	O−C.
	°	m. s.	s.	m. s.	s.
Chur	1·2	i 0 15	− 2	i 0 31	0
Ravensburg	1·9	—	—	e 0 50	+ 1
Zurich	2·0	e 0 28	− 1	e 0 57	+ 6
Neuchatel	2·8	i 0 41	+ 1	e 1 14	+ 2
Hohenheim	2·9	—	—	e 1 32	S*

No additional readings.

Dec. 11d. 20h. 45m. 38s. Epicentre 48°·3N. 9°·0E. (as on 1927 Dec. 16d.). R.3.

$A = +\cdot657$, $B = +\cdot104$, $C = +\cdot747$.

	Δ	P.	O−C.	S.	O−C.
	°	m. s.	s.	m. s.	s.
Stuttgart	0·4	e 0 7	+ 1	i 0 17	S_g
Hohenheim	0·5	e 0 6	− 1	—	—
Ravensburg	0·6	—	—	e 0 15	0
Strasbourg	0·9	e 0 15	+ 2	i 0 27	+ 4
Zurich	1·0	e 0 14	0	e 0 26	0
Chur	1·5	—	—	e 0 43	S*
Neuchatel	1·9	e 0 42	P_g	e 1 2	S_g

Additional readings:—
Stuttgart iE = +13s., eN = +15s., iE = +19s.
Hohenheim e = +12s., iN = +14s.
Ravensburg eN = +19s.

Dec. 11d. Readings also at 0h. (La Paz), 1h. (near Sumoto), 2h. (near Hastings), 4h. (La Paz), 5h. (Baku, Ekaterinburg, Tashkent, Arapuni, Christchurch, Wellington, and Suva), 13h. (Arapuni, Christchurch, and Wellington), 14h. (Baku, Ekaterinburg, Bombay, Colombo, and near Mizusawa), 15h. (Andijan and Samarkand), 22h. (near Wellington), 23h. (near Andijan).

Dec. 12d. 5h. 9m. 45s. Epicentre 33°·7N. 135°·2E. (as on 1931 July 10d.). X.

$A = -\cdot590$, $B = +\cdot586$, $C = +\cdot555$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	0·7	338	0 10	0	0 21	+ 3	—	0·4
Kobe	1·0	359	(i 0 14)	0	(0 25)	− 1	—	(0·4)
Osaka	1·0	12	0 11	− 3	(0 25)	− 1	0·4	0·4
Nagoya	2·0	45	e 0 36	P*	—	—	—	—

Kobe readings have been *increased* by 2m.

Dec. 12d. Readings also at 0h. (Irkutsk, La Paz, and near Trenta), 1h. (Ekaterinburg and Tashkent), 3h. (Branner), 8h. (near Sumoto), 9h. (near La Paz), 10h. (Wellington), 17h. (Christchurch), 22h. (La Paz).

Dec. 13d. Readings at 1h. (near Wellington), 2h. (Andijan and Almata), 5h. (Baku, Ekaterinburg, and Irkutsk), 6h. (Batavia and near Amboina), 9h. (Arapuni), 10h. (Christchurch, Wellington, and near La Paz), 13h. (Almata), 15h. (Perth, Riverview, and Sydney), 16h. (De Bilt, Ucole, Ottawa, and Victoria), 21h. (Wellington, near Almata, and Andijan), 23h. (near Batavia and Malabar).

Dec. 14d. 19h. 17m. 57s. Epicentre 55°·0N. 162°·5E. R.2.
(as on 1924 August 25d.).

A = −·547, B = +·172, C = +·819; D = +·301, E = +·954;
G = −·781, H = +·246, K = −·574.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	E.	21·4	231	4 39	− 5	8 39	+ 5	—	—
Hukusima		22·8	230	4 58	− 1	9 1	0	—	—
Mito		24·0	228	5 4	− 6	9 22	− 1	—	—
Misima		25·7	229	5 28	+ 2	9 50	− 3	—	—
Nagoya		26·5	232	e 5 38	+ 4	—	—	—	—
Osaka		27·6	234	5 48	+ 4	(8 14)	?	8·2	—
Irkutsk		33·6	290	e 7 18	+41	e 12 46	+46	18·8	—
Victoria		44·2	68	14 44	S	(14 44)	+ 5	23·4	25·3
Ekaterinburg		51·6	318	i 9 4	+ 1	e 16 29	+ 6	24·6	33·4
Tashkent		58·9	300	—	—	e 18 3	+ 2	31·0	36·6
Pulkovo		59·1	334	9 11	−47	e 17 21	−43	33·0	—
Florissant		67·5	54	i 8 9	−166	i 19 46	− 5	—	—
St. Louis		67·7	54	i 11 10	+14	i 19 49	− 4	—	—
Ottawa		68·2	40	—	—	e 20 33	(−19)	38·0	—
Little Rock	N.	69·8	57	e 11 8	− 1	e 19 47	−32	—	—
Stuttgart		73·9	343	11 35	+ 1	—	—	e 43·0	—
Strasbourg		74·3	344	i 11 38	+ 2	—	—	42·0	—
Bombay		74·4	280	15 50	?	—	—	—	—
Paris		74·8	347	i 11 40	+ 1	—	—	49·0	—
Zagreb		75·3	337	e 11 41	− 1	—	—	—	—
Neuchatel		75·8	344	e 11 47	+ 2	—	—	—	—

Additional readings:—
Victoria SE = +18m.10s. = S_gS +3s.
Ekaterinburg SS = +20m.35s.
Ottawa eN = +23m.31s.
Long waves were also recorded at Hong Kong, Copenhagen, Baku, Kucino, Scoresby Sund, and De Bilt.

Dec. 14d. Readings also at 2h. (near Granada (2)), 8h. (Baku, Ekaterinburg, Tashkent, and Andijan), 9h. (Bombay), 10h. (Phu-Lien and near Hong Kong), 11h. (near La Paz), 12h. (Hong Kong and Phu-Lien), 13h. (Almata (2) and near Andijan (2)), 14h. (near Manila), 15h. (Göttingen, near Nagoya, and near Soengei Langka), 16h. (Messina (3), Sucre, and near La Paz), 17h. (La Paz, Sucre, La Plata, and near Santiago), 21h. (near Matuyama), 22h. (Lick (2)), 23h. (Lick, Toyooka, Matuyama, and near Sumoto).

Dec. 15d. 2h. 23m. 15s. (I) } Epicentre 43°·5N. 11°·8E. X.
2h. 33m. 49s. (II) } (as on 1931 Sept. 5d.) X.

A = +·710, B = +·148, C = +·688; D = +·204, E = −·979;
G = +·674, H = +·141, K = −·725.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
I	Prato	0·6	307	e 0 8	− 1	i 0 16	+ 1	—
	1 Camerino	1·0	112	0 38	S_g	—	—	—
II		1·0	112	1 0	?	—	—	—
	1 Collurania	1·6	112	1 1	?	—	—	—
	1 Padova	1·9	1	e 0 45	S	(e 0 45)	− 4	—
II		1·9	1	e 0 46	S	(e 0 46)	− 3	—
	1 Venice	2·0	11	(e 0 47)	S	(e 0 47)	− 4	—
I	Piacenza	2·2	315	e 1 1	S	(e 1 1)	+ 4	—
II		2·2	315	—	—	e 0 57	0	—
I	Triest	2·6	33	(e 0 46)	P*	(e 1 19)	+12	—
II		2·6	33	(e 0 49)	P*	(e 1 22)	S*	2·5
I	Zagreb	3·8	51	e 1 15	P_g	e 2 1	S_g	—
II		3·8	51	e 1 15	P_g	—	—	—

Additional readings and notes:—
Venice reading has been *increased* by 1m.
Triest I SS = (+1m.46s.) readings for both shocks have been *increased* by 1m.

Dec. 15d. 3h. 22m. 37s. Epicentre 43°·5N. 11°·8E. (as at 2h.). R.2.

A = +·710, B = +·148, C = +·688; D = +·204, E = −·979; G = +·674, H = +·141, K = −·725.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Prato		0·6	307	i 0 8	− 1	i 0 15	0	—	—
Camerino		1·0	112	0 32	+18	0 50	+24	3·5	—
Livorno		1·0	272	0 3	−11	0 13	−13	—	—
Collurania		1·6	121	0 42	+19	—	—	—	—
Padova		1·9	1	i 0 27	− 1	e 0 46	− 3	—	—
Venice		2·0	11	e 0 27	− 2	0 48	− 3	—	1·9
Treviso		2·2	7	i 0 28	− 3	1 26	+29	—	2·1
Piacenza		2·2	315	e 0 35	+ 4	0 55	− 2	—	2·3
Pavia		2·5	312	0 33	− 3	—	—	—	—
Triest		2·6	33	0 36	− 1	i 1 9	+ 2	—	4·3
Casamicciola		3·1	151	1 54	+70	2 34	+74	3·2	—
Naples	E.	3·2	146	e 2 23	?	e 2 43	?	—	3·8
Laibach		3·2	37	e 0 34	−12	—	—	1·2	—
Innsbruck		3·8	356	0 59	+ 5	2 35	S_g	i 3·5	—
Zagreb		3·8	51	1 5	+11	—	—	i 2·6	3·1
Graz		4·4	35	e 1 3	0	i 2 3	+10	2·4	3·4
Zurich	N.	4·5	331	e 1 14	+10	—	—	—	—
Neuchatel		4·9	317	e 1 4	− 6	e 2 21	S*	—	—
Besançon		5·5	315	e 2 23	S	(e 2 23)	+ 3	—	—
Stuttgart		5·6	342	e 1 13	− 7	e 2 31	+ 8	e 3·6	—
Vienna		5·7	33	e 1 22	+ 1	2 59	S*	i 3·9	4·4
Strasbourg		5·8	333	e 1 35	+13	e 3 13	S_g	—	3·9
Karlsruhe		6·0	339	1 45	P*	3 18	S_g	3·8	4·2
Belgrade		6·4	76	—	—	e 2 55	+12	—	—
Cheb		6·6	4	e 2 23?	?	—	—	—	—
Jena		7·4	351	e 1 53	+ 8	—	—	e 3·9	4·9
Göttingen	N.	8·1	352	e 1 49	− 6	e 2 37	−49	—	5·4
Paris		8·3	313	e 4 19	S*	—	—	5·4	6·4

Additional readings:—
Triest P_g = +41s., PP = +49s., S_g = +1m.12s., SS = +1m.36s.
Laibach e = 3h.21m.56s., 3h.22m.13s., and 3h.22m.51s.
Innsbruck P = +1m.45s., S* = +3m.9s.
Zagreb i = +1m.53s., iNE = +2m.2s., i = +2m.7s., iNW = +2m.12s., iNE = +2m.20s.
Neuchatel e = +1m.53s.
Stuttgart eNZ = +1m.33s., e = +2m.50s., eN = +3m.3s., and +3m.19s.
Vienna P* = +1m.48s., P_g = +2m.19s., PPS = +2m.44s., +3m.22s., S* = +3m.38s.
Belgrade e = +3m.30s., +3m.42s. = S_g and +5m.36s.
Long waves are also recorded at Ekaterinburg, Tashkent, and other European stations.

Dec. 15d. 3h. 31m. 22s. Epicentre 43°·5N. 11°·8E. (as at 3h. 22m.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Camerino		1·0	112	e 0 20	+ 6	0 56	+30	—	—
Livorno		1·0	272	−1 14	−60	—	—	—	—
Padova		1·9	1	e 0 23	− 5	—	—	—	—
Treviso		2·2	7	e 0 27	− 4	0 58	+ 1	—	1·3
Piacenza		2·2	315	e 0 6	−25	—	—	—	1·0
Triest		2·6	33	(e 0 42)	+ 5	(e 1 15)	+ 8	—	(4·7)
Naples	E.	3·2	146	e 1 28	S	(e 1 28)	+ 6	—	2·9
Innsbruck		3·8	356	e 1 2	+ 8	e 1 36	− 1	—	—
Zagreb		3·8	51	0 58	+ 4	(e 1 45)	+ 8	e 1·8	2·5
Graz		4·4	35	e 1 1	− 2	e 1 38	−15	—	2·3

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Zurich	4·5	331	e 1 0	− 4	—	—	—	—
Neuchatel	4·9	317	e 1 5	− 5	e 1 48	−17	—	—
Besançon	5·5	315	e 2 27	S	(e 2 27)	+ 7	—	—
Stuttgart	5·6	342	e 1 38?	P*	e 2 41	S*	e 3·2	—
Vienna	5·7	33	e 1 42	P*	2 46	S*	i 3·2	3·3
Strasbourg	5·8	333	e 2 5	P_g	—	—	—	—
Jena	7·4	351	—	—	e 3 8	− 1	—	—

Additional readings and note :—
Triest SS = (+1m.42s.) readings have been *increased* by 1m.
Laibach (Δ = 3°·2), e = 3h.30m.46s., 3h.30m.59s., and 3h.31m.15s.
Zagreb iNE = +1m.53s., iNW = +2m.0s., iNE = +2m.5s., iNW = +2m.8s.
Vienna +2m.58s., S* = +3m.8s.
Long waves were also recorded at De Bilt.

Dec. 15d. 17h. 14m. 47s. Epicentre 36°·5N. 139°·5E. (as on 1928 Aug. 14d.). X.

A = −·611, B = +·522, C = +·595.

	Δ	P.	O−C.	S.	O−C.	M.
	°	m. s.	s.	m. s.	s.	m.
Tokyo	0·9	0 11	− 2	0 22	− 1	0·5
Tyosi	1·4	0 16	− 4	0 28	− 8	—
Nagoya	2·5	e 0 38	+ 2	1 9	+ 5	—
Mizusawa	2·9	0 44	+ 3	1 19	+ 5	—

Tyosi gives also P = +22s.

Dec. 15d. Readings also at 1h. (Bombay and Andijan), 2h. (near Prato (2)), 3h. (Camerino), 4h. (Camerino, Piacenza, Padova, Triest, Zagreb, and Florence), 5h. (Camerino (2), Florence (2), and Padova), 6h. (near Manila), 7h. (Florence), 10h. (Messina, Christchurch, Takaka, near Wellington (3), near Batavia, and Malabar), 11h. (Christchurch, Wellington, and Riverview), 12h. (Camerino, Florence, near Prato (2), Triest, near Tokyo, and Tyosi), 13h. (Andijan (2) and Samarkand (2)), 14h. (Prato), 16h. (near Berkeley and Lick), 19h. (near Tyosi, near Wellington, and Takaka), 20h. (near Manila), 21h. (Andijan, near Almata, Tashkent, and Samarkand).

Dec. 16d. 19h. 33m. 20s. Epicentre 38°·3N. 72°·8E. N.3.

A = +·232, B = +·750, C = +·620 ; D = +·955, E = −·296 ;
G = +·183, H = +·592, K = −·785.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·5	352	i 0 34	− 2	(i 1 2)	− 2	i 1·0	—
Tashkent	4·0	320	i 0 59	+ 2	(i 1 45)	+ 3	i 1·8	2·4
Samarkand	4·7	289	1 6	− 1	(2 1)	+ 1	2·0	2·6
Almata	5·9	31	—	—	e 2 18	−13	—	3·1
Bombay	19·4	180	e 5 40	+77	—	—	—	—
Ekaterinburg	20·2	340	i 3 21	−71	i 7 8	−62	9·7	—

Long waves were recorded at Baku.

Dec. 16d. Readings at 3h. (Messina, near Prato, and near Santiago), 4h. (Adelaide, Melbourne, Sydney, Perth, and Manila), 10h. (near Manila), 14h. (Riverview), 17h. (Baku, Ekaterinburg, Tashkent, Irkutsk, Hong Kong, Phu-Lien, and near Manila (2)), 19h. (Collurania), 21h. (Ekaterinburg, Irkutsk, and Tashkent), 22h. (La Paz), 23h. (Almata, near Andijan, Samarkand, and Tashkent).

Dec. 17d. 2h. 25m. 20s. Epicentre 35°·7N. 134°·8E. (as on 1930 July 2d.). X.

A = −·572, B = +·576, C = +·584.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Toyooka	0·2	175	i 0 1	− 2	i 0 4	− 1	0·1
Kobe	1·1	163	0 16	0	0 32	+ 4	0·5
Sumoto	1·4	177	—	—	i 0 39	+ 3	0·7
Nagoya	1·8	107	e 0 30	+ 4	—	—	—

Kobe gives eN = +19s.

Dec. 17d. 3h. 35m. 21s. Epicentre 33°·0N. 90°·0W. N.3.

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

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Little Rock	2·6	314	i 0 37	0	i 1 5	− 2
St. Louis	5·6	358	1 21	+ 1	i 2 16	− 7
Florissant	5·8	357	i 1 21	− 1	i 2 18	−10
Pittsburgh	11·0	44	—	—	e 5 2	+24
Georgetown	12·0	57	5 50	S	(5 50)	+47

Additional readings :—
Little Rock iN = +40s. and +43s., eN = +51s., iN = +57s. and +1m.2s.
St. Louis iEN = +1m.8s., iN = +1m.17s., iE = +1m.30s., +1m.57s. = P_g, +2m.10s.
Florissant eEN = +1m.13s. and +1m.17s., iEN = +1m.32s., eEN = +1m.36s., iEN = +2m.2s., and +2m.13s.
Pittsburgh i = +5m.10s.
Georgetown P*Z = +6m.2s.

Dec. 17d. Readings also at 1h. (Barcelona and near Alicante), 4h. (near Toyooka and near Zagreb), 8h. (Lick and near Berkeley), 13h. (near Algiers), 21h. (Bombay, Ekaterinburg, Almata, Tashkent, and near Andijan), 22h. (near Santiago).

Dec. 18d. 9h. 49m. 26s. Epicentre 5°·6S. 102°·0E. (as on 1925 Sept. 25d.). R.2.

A = −·207, B = +·973, C = −·098; D = +·978, E = +·208;
G = +·020, H = −·095, K = −·995.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Soengei Langka	3·2	86	(1 15)	+29	(1 54)	+32	—	—
Batavia	4·8	98	i 1 6	− 2	i 1 34	P_g	—	—
Medan	9·8	340	2 43	+25	4 22	+14	—	—
Colombo	25·4	299	5 23	− 1	10 3	+15	11·8	18·1
Amboina	26·2	87	i 6 5	PP	—	—	—	—
Phu-Lien	26·8	10	e 5 34	− 2	e 10 18	+ 6	13·1	18·9
Manila	27·6	43	5 43	− 1	10 14	−11	13·1	—
Kodaikanal	29·1	303	i 13 10	?	—	—	e 14·2	16·2
Perth	29·3	156	5 54	− 5	(10 34)	−19	10·6	—
Hong Kong	30·4	23	6 16	+ 7	11 11	+ 1	14·9	21·2
Calcutta	30·8	336	6 28	+16	11 43	+26	21·5	—
Hyderabad	32·8	316	6 12	−18	12 25	+37	17·2	24·3
Bombay	37·8	311	7 13	0	13 13	+10	18·6	23·8
Zi-ka-wei E.	41·2	26	e 6 41	−61	—	—	24·0	28·5
Dehra Dun	42·7	330	7 44	−10	14 24	+ 8	25·2	30·6

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Adelaide	44·6	136	e 8 20	+10	e 14 44	0	i 20·2	23·1
Chiufeng	47·5	15	e 8 34	+ 2	—	—	—	—
Koti	49·3	36	—	—	e 16 34	+43	—	—
Melbourne	50·5	136	e 8 46	− 9	16 9	+ 1	25·4	33·8
Riverview	53·5	129	9 13	− 5	16 46	− 3	e 26·9	36·1
Sydney	53·5	129	e 10 52	PP	—	—	30·1	36·6
Andijan	53·7	332	e 9 19	0	e 16 54	+ 2	—	—
Almata	53·9	339	e 8 1	−80	—	—	—	—
Tashkent	55·6	330	i 9 25	− 8	i 17 17	0	—	—
Baku	66·3	320	10 50	+ 3	e 20 12	+36	34·6	48·4
Entebbe	69·7	274	10 54	−15	—	—	—	—
Ekaterinburg	70·9	339	11 13	− 3	i 20 30	− 2	31·6	45·0
Ksara	73·7	309	11 38	+ 5	21 12	+ 7	37·5	—
Helwan	76·3	303	11 46	− 2	e 22 54	+79	—	47·3
Kucino	80·6	330	12 7	− 4	22 18	− 4	40·3	52·5
Pulkovo	85·8	332	12 36	− 1	e 23 4	[− 1]	45·6	57·4
Budapest	89·4	318	e 12 34?	−21	—	—	—	—
Cheb	94·1	321	e 23 51	SKS	(e 23 51)	[− 5]	e 55·6	72·6
Copenhagen	94·4	326	13 19	+ 1	23 52	[− 6]	52·6	—
Piacenza	95·6	316	e 17 34	PP	—	—	—	63·0
Stuttgart	96·1	320	e 13 34	+ 8	—	—	e 53·6	67·8
De Bilt	98·7	322	—	—	e 25 4	−11	e 52·6	63·0
Algiers	100·5	308	e 12 21	−85	—	—	—	—
Paris	100·5	319	—	—	e 29 34?	?	55·6	61·6
Scoresby Sund	106·1	345	—	—	25 34?	{− 5}	58·6	—
Ottawa	140·2	357	e 22 34	PP	e 36 54	?	e 70·6	—
Buffalo	142·7	1	e 19 26	[0]	e 32 46	SKSP	—	79·1
Florissant	145·0	16	e 19 31	[− 3]	—	—	75·8	—
St. Louis	145·2	16	i 19 35	[+ 1]	—	—	e 77·1	—
Little Rock	148·0	22	e 19 44	[+ 5]	—	—	—	—
La Paz	155·8	204	i 19 49	[0]	38 51	PPS	72·1	82·0
San Juan	162·8	319	e 24 28	PP	—	—	e 86·6	—

Additional readings and notes :—
Soengei Langha readings have been *increased* by 3m.
Batavia i = +2m.2s. = S − 1s.
Medan i = +5m.38s. = S_g.
Amboina i = +6m.15s. and +6m.49s.
Baku e = +15m.18s. and +15m.42s.
Copenhagen +25m.16s. = PS − 27s.
Ottawa e = +40m.46s. = SS + 1s.
Buffalo e = +23m.0s. = PKS − 15s. and +26m.44s.
Little Rock i = +19m.54s.
La Paz PPE = +23m.51s., SSE = +44m.37s.
Long waves were also recorded at Ivigtut, Harvard, Pittsburgh, and other European stations.

Dec. 18d. 17h. 14m. 0s. Epicentre 35°·5N. 141°·0E. (as on 1931 Sept. 1d.). X.

A = − ·633, B = + ·512, C = + ·581.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Tyosi		0·2	332	0 2	− 1	0 9	+ 4	0·2
Nagoya		3·4	265	e 0 45	− 4	e 1 9	P_g	—
Mizusawa	E.	3·6	1	0 54	+ 3	1 34	+ 2	—
Osaka		4·6	261	0 15	−51	i 2 5	+ 7	3·3
Kobe		4·9	262	e 1 16	+ 6	e 2 6	+ 1	2·3
Toyooka		5·0	273	e 1 43	P_g	(e 2 14)	+ 6	—
Sumoto		5·2	258	e 1 41	P_g	2 12	− 1	2·4

Additional reading and note :—
Toyooka gives its two readings as PN and PE respectively.
Sumoto SE = +2m.20s.

Dec. 18d. 17h. 45m. 41s. Epicentre 31°·0N. 131°·8E. (as on 1930 June 21d.). R.3.

A = −·571, B = +·639, C = +·515; D = +·745, E = +·667;
G = −·343, H = +·384, K = −·857.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki		2·4	316	0 42	+ 8	1 14	+12	—	1·3
Hukuoka		2·8	334	0 38	− 2	1 8	− 4	—	1·3
Matuyama		2·9	16	e 0 41	0	i 1 17	+ 3	—	1·5
Koti		3·0	30	e 0 47	+ 4	e 1 23	+ 6	—	1·8
Sumoto		4·2	37	1 6	+ 6	1 59	+11	—	2·4
Kobe		4·6	37	1 22	P*	e 2 27	S*	—	2·6
Osaka		4·9	39	1 18	+ 8	—	—	2·4	3·5
Toyooka		5·2	28	i 1 41	P_g	e 2 34	S*	—	2·9
	z.	5·2	28	e 1 36	P*	i 2 30	S*	—	—
Nagoya		6·0	44	e 1 24	− 1	e 2 28	− 5	—	—

Additional readings:—
Matuyama iP = +44s.
Koti eP_g = +54s.
Sumoto SE = +2m.2s.
Kobe P_g = +1m.32s.
Long waves were also recorded at Ekaterinburg, Irkutsk, Pulkovo, and Tashkent.

Dec. 18d. Readings also at 2h. (Ekaterinburg, Irkutsk, Tashkent, Andijan, and Bombay), 3h. (near Kobe and Sumoto), 4h. (near Mizusawa), 5h. (Florissant, St. Louis, Little Rock, and Lick), 9h. (Florence), 10h. (Suva, Arapuni, Christchurch, and Wellington), 13h. (Balboa Heights and Christchurch), 14h. (Wellington), 16h. (Hong Kong), 17h. (Christchurch), 19h. (near Wellington), 20h. (De Bilt and Andijan), 21h. (Strasbourg), 23h. (Andijan, Samarkand, and Prato (3)).

Dec. 19d. 15h. 13m. 46s. (I) } Epicentre 43°·5N. 11°·8E. X.
17h. 56m. 12s. (II) } (as on 15d.). X.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
I	Prato	0·6	307	e 0 9	0	i 0 15	0	—
II		0·6	307	e 0 9	0	i 0 13	− 2	—
I	Camerino	1·0	112	1 3	?	—	—	—
II		1·0	112	0 46	S	(0 46)	+20	—
I	Livorno	1·0	272	0 10	− 4	0 20	− 6	—
II		1·0	272	0 10	− 4	0 20	− 6	—
I	Padova	1·9	1	0 29	+ 1	—	—	—
II		1·9	1	e 0 28	0	0 48?	− 1	—
I	Piacenza	2·2	315	e 0 38	P*	—	—	1·0
II		2·2	315	e 0 44	P_g	—	—	1·2
I	Pavia	2·5	312	e 0 46	P*	—	—	—
II		2·5	312	e 0 47	P*	—	—	—
I	Triest	2·6	33	e 0 16	−21	e 0 46	P*	—
II		2·6	33	e 0 9	−28	0 39	P*	—
I	Chur	3·8	335	e 0 55	+ 1	—	—	—
II		3·8	335	e 0 49	− 5	—	—	—
I	Zagreb	3·8	51	1 21	P_g	—	—	—
II		3·8	51	e 1 7	P*	e 1 55	S*	—
I	Zurich	4·5	331	e 1 7	+ 3	—	—	—
II		4·5	331	e 1 6	+ 2	—	—	—
II	Ravensburg	4·6	341	e 1 36	P_g	—	—	—
II	Neuchatel	4·9	317	e 1 8	− 2	e 1 56	− 9	—
II	Stuttgart	5·6	342	e 1 48	P_g	—	—	—
I	Strasbourg	5·8	333	—	—	e 2 14?	−14	—
II		5·8	333	e 1 48?	P*	—	—	—
II	Jena	7·4	351	e 1 48	+ 3	—	—	—

Additional readings:—
Triest II S_g = +53s.
Chur e = +52s.
Zagreb I eS? = +1m.55s., II i = +2m.13s., $-S_g$.

Dec. 19d. Readings also at 0h. (2) and 1h. (Prato), 2h. (near Medan), 5h. (near Wellington), 7h. (Berkeley, near Lick, and near Amboina), 10h. (near Andijan), 12h. (near Manila), 15h. (La Paz and near Prato), 18h. (Bombay, Andijan, and near Prato), 20h. (near Sumoto), 21h. (La Paz).

Dec. 20d. 14h. 59m. 22s. Epicentre 10°·8N. 84°·9W. N.2.

A = +·087, B = −·978, C = +·187; D = −·996, E = −·089; G = +·017, H = −·187, K = −·982.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights		5·6	109	e 1 38?	P*	—	—	—	—
San Juan		19·7	65	i 4 27	+ 1	i 5 8	?	i 5·5	—
Columbia		23·5	8	e 5 38	+33	e 9 14	0	e 10·3	—
Little Rock		24·9	345	i 5 19	0	i 10 47	+68	—	—
St. Louis	N.	28·2	351	i 5 48	− 1	e 11 38	+63	—	—
Florissant		28·5	351	i 5 49	− 3	i 11 48	+68	—	—
Pittsburgh		30·0	8	—	—	(e 12 8)	+64	e 12·1	—
La Paz		31·9	149	e 6 22	0	e 11 2	−32	13·9	16·0
Madison		32·5	354	i 6 26	− 1	i 11 19	−24	—	—
Toronto		33·2	7	—	—	11 38?	−16	—	—
Ottawa		35·5	11	—	—	11 38?	−51	—	—
Mount Wilson		38·2	313	e 7 16	− 1	—	—	—	—
Pasadena		38·3	313	i 7 16	− 2	—	—	—	—
Haiwee	E.	39·2	317	e 7 27	+ 2	—	—	—	—
Tinemaha		39·9	318	e 7 32	+ 1	—	—	—	—

Additional readings:—
Little Rock eN = +10m.21s.
St. Louis iSN = +12m.8s.
Madison iPP = +7m.14s.

With regard to the above shock Florissant describes its record as of the type of a deep focus earthquake. On these lines the following can be deduced, which has the additional merit of bringing both the P and S phases of two of the stations into line.

Dec. 20d. 14h. 59m. 55s. Epicentre 11°·0N. 84°·2W. N.2.

A = +·099, B = −·977, C = +·191; D = −·995, E = −·101; G = +·019, H = −·190, K = −·982.

A *depth* of focus 0·055 has been assumed.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights		+0·4	5·0	113	e 1 5?	−12	—	—	—	—
San Juan		−2·0	19·0	65	i 3 54	0	i 4 35	?	i 4·9	—
Columbia		−2·6	23·2	7	e 5 5	+29	e 8 41	+23	e 9·8	—
Little Rock		−2·8	24·9	344	i 4 46	− 6	i 10 14	?	—	—
St. Louis	N.	−3·2	28·2	350	i 5 15	− 5	e 11 5	?	—	—
Florissant		−3·2	28·4	350	i 5 16	− 6	i 11 15	?	—	—
Pittsburgh		−3·4	29·7	7	—	—	(e 11 35)	?	e 11·6	—
La Paz		−3·6	31·8	149	e 5 49	0	e 10 29	− 6	13·3	15·4
Madison		−3·7	32·4	353	i 5 53	0	i 10 46	+ 3	—	—
Toronto		−3·8	32·9	6	—	—	11 5?	+15	—	—
Ottawa		−3·9	35·1	10	—	—	11 5?	−18	—	—
Pasadena		−4·2	38·6	312	6 43	− 1	—	—	—	—
Mount Wilson		−4·2	38·6	312	e 6 43	− 1	—	—	—	—
Haiwee	E.	−4·3	39·5	316	e 6 54	+ 3	—	—	—	—
Tinemaha		−4·4	40·2	317	e 6 59	+ 3	—	—	—	—

Dec. 20d. Readings also at 0h. (near Mizusawa (2)), 1h. (Ekaterinburg, Irkutsk, Tashkent, Hong Kong, and Manila), 2h. (near Taihoku), 4h. (Almata and near Tyosi), 5h. (La Paz, Riverview, Christchurch, Wellington (2), and near Mizusawa), 6h. (La Paz), 9h. (Entebbe), 15h. (Manila and Wellington), 16h. and 17h. (Mizusawa), 18h. (Wellington), 20h. (near Mizusawa), 21h. (Messina), 22h. (near Tyosi), 23h. (Baku, Ekaterinburg, Tashkent, Bombay, and Riverview).

Dec. 21d. 5h. 47m. 17s. Epicentre 32·°7N. 130°·3E. (as on 1929 Oct. 24d.). R.1.

Probable error of epicentre ±0°·15.

A = −·544, B = +·642, C = +·540; D = +·763, E = +·647; G = −·349, H = +·412, K = −·842.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Unzendake		0·0	—	0 5	+ 5	0 11	+11	—	—
Kumamoto		0·4	71	0 2	− 4	0 8	− 2	—	—
Nagasaki		0·4	270	e 0 6	0	0 15	+ 5	—	0·6
Saga		0·5	0	0 6	− 1	0 16	+ 3	—	—
Hukuoka		0·9	7	i 0 15	+ 2	0 30	S*	—	0·6
Kagosima		1·1	169	0 11	− 5	0 26	− 2	—	—
Miyazaki		1·3	130	0 12	− 6	0 30	− 3	—	—
Ooita		1·3	64	0 14	− 4	0 32	− 1	—	—
Tomie		1·3	266	0 24	+ 6	0 43	S*	—	—
Simonoseki		1·4	23	0 23	+ 3	0 45	S*	—	—
Ituhara		1·7	330	0 30	+ 6	0 56	S*	—	—
Uwazima		2·0	74	0 38	P*	1 25	S_g	—	—
Simidu		2·3	88	0 31	− 2	1 1	+ 2	—	—
Matuyama		2·4	61	i 0 34	0	1 10	+ 8	—	1·5
Hirosima		2·5	47	0 39	+ 3	1 15	S*	—	—
Husan		2·6	336	0 43	P*	1 28	S_g	—	—
Hamada		2·7	34	0 40	+ 1	1 20	S*	—	—
Koti		2·9	73	e 0 39	− 2	e 1 18	+ 4	i 1·6	1·7
Taikyu		3·5	337	0 56	+ 6	1 52	S*	—	—
Sumoto		4·2	65	0 59	− 1	2 9	S*	—	2·3
Nake		4·4	189	1 0	− 3	2 6	S*	—	—
Wakayama		4·4	67	0 59	− 4	2 16	S*	—	—
Kobe		4·5	62	1 5	+ 1	2 20	S*	—	2·9
Siomisaki		4·7	79	1 1	− 6	2 28	S*	—	—
Toyooka		4·7	51	i 1 20	P*	i 2 23	S*	—	2·8
Osaka		4·8	64	1 7	− 1	—	—	2·3	3·6
Kyoto		5·1	60	1 14	+ 1	2 41	S*	—	—
Hikone		5·5	61	1 17	− 1	2 45	S*	—	—
Kameyama		5·6	66	1 19	− 1	2 55	S*	—	—
Keizyo		5·6	333	1 25	+ 5	2 41	S*	—	—
Zinsen		5·7	330	1 22	+ 1	2 32	+ 7	—	—
Gihu		6·0	61	1 28	+ 3	2 55	S*	—	—
Wazima		7·2	47	1 43	+ 1	3 42	S*	—	—
Nagano		7·6	56	1 45	− 3	4 1	S_g	—	—
Zi-ka-wei	z.	7·6	261	3 36	S	(3 36)	+22	—	5·3
Oiwake		7·8	59	1 50	− 1	4 0	S*	—	—
Hong Kong		17·6	238	4 0	− 2	7 23	+ 8	—	12·8
Irkutsk		27·1	324	e 7 43?	?	—	—	14·7	—

Additional readings:—
Koti iZ = +46s., P = +48s., iS = +1m.23s.
Kobe e = +58s., SZ = +2m.15s.
Osaka i = +2m.28s.
Long waves were also recorded at Baku, Ekaterinburg, Tashkent, De Bilt, Ucele, and Stuttgart.

Dec. 21d. Readings also at 1h. (Andijan), 2h. (Ekaterinburg, Tashkent, near Almata, Andijan, and Frunse), 6h. (near Nagasaki), 7h. (Andijan), 8h. (Wellington), 10h. (Stuttgart, Wellington, Suva, Perth, Christchurch, Riverview, and Nagasaki), 11h. (La Paz, Baku, Tashkent, Ekaterinburg, Helsingfors, De Bilt, Copenhagen, Pulkovo, Göttingen, Nagasaki, Zi-ka-wei, Hong Kong, Phu-Lien, Manila, and near Taihoku), 12h. (Kew and near Nagasaki), 13h. (near Chur, Neuchatel, and Zurich), 15h. (Alicante, De Bilt, Stuttgart, and Andijan), 16h. (Catania, Taranto, Wellington, near Sebastopol, Simferopol, Yalta, Ravensburg, Hohenheim, Stuttgart, near Chur, Neuchatel, Zurich, and near Mizusawa), 17h. (Simferopol, Yalta, near Sebastopol, and near La Paz), 18h. (Bombay and Calcutta), 19h. (Granada), 20h. (near Tyosi).

Dec. 22d. 2h. 48m. 10s. Epicentre 48°·4N. 8°·9E. (as on 1928 Aug. 30d.). R.3.

A = +·656, B = +·103, C = +·748.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Stuttgart	0·4	28	i 0 5	− 1	i 0 10	0
Hohenheim	0·4	42	e 0 4	− 2	i 0 9	− 1
Ravensburg	0·7	142	e 0 19	P_g	e 0 22	+ 4
Zurich	1·1	192	e 0 18	+ 2	e 0 36	+ 8
Neuchatel	2·0	223	e 0 38	P*	i 1 7	S_g

Dec. 22d. 13h. 8m. 0s. Epicentre 32°·7N. 130°·3E. (as on 21d.). R.1.

Probable error of epicentre ±0°·15.

Tokyo gives epicentre as 32°·6N. 130°·5E.

A = −·544, B = +·642, C = +·540; D = +·763, E = +·647;
G = −·349, H = +·412, K = −·842.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Unzendake		0·0	—	0 4	+ 4	0 10	+10	—	—
Nagasaki		0·4	270	0 6	0	0 14	+ 4	—	0·3
Kumamoto		0·4	71	0 2	− 4	0 7	− 3	—	—
Saga		0·5	0	0 7	0	0 16	+ 3	—	—
Hukuoka		0·9	7	i 0 14	+ 1	0 29	S*	—	0·7
Kagosima		1·1	169	0 10	− 6	0 25	− 3	—	—
Miyazaki		1·3	130	0 12	− 6	0 25	P*	—	—
Ooita		1·3	64	0 16	− 2	0 33	0	—	—
Tomie		1·3	266	0 13	− 5	0 32	− 1	—	—
Simonoseki		1·4	23	0 25	+ 5	0 45	S*	—	—
Ituhara		1·7	330	0 32	P*	0 57	S*	—	—
Simidu		2·3	88	0 30	− 3	1 0	+ 1	—	—
Matuyama		2·4	61	e 0 32	− 2	i 1 8	+ 6	—	1·2
Husan		2·6	336	0 20	−17	0 55	−12	—	—
Hamada		2·7	34	0 39	0	1 19	S*	—	—
Niihama		2·8	63	0 42	+ 2	1 17	+ 5	—	—
Koti		2·9	73	e 0 38	− 3	e 1 20	+ 6	e 1·6	1·8
Taikyu		3·5	337	0 54	+ 4	1 46	S*	—	—
Sumoto	E.	4·2	65	0 56	− 4	2 4	S*	e 2·5	2·6
Nake		4·4	189	1 2	− 1	2 5	S*	—	—
Wakayama		4·4	67	1 0	− 3	2 9	S*	—	—
Kobe		4·5	62	1 2	− 2	2 11	S*	—	2·4
Siomisaki		4·7	79	1 4	− 3	2 21	S*	—	—
Toyooka		4·7	51	e 1 10	+ 3	i 2 20	S*	—	3·1
Osaka		4·8	64	1 7	− 1	(2 16)	+13	2·3	3·6
Kyoto		5·1	60	1 11	− 2	2 36	S*	—	—
Hikone		5·5	61	1 17	− 1	2 37	S*	—	—
Kameyama		5·6	66	1 18	− 2	2 49	S*	—	—
Keizyo		5·6	333	1 43	P*	2 45	S*	—	—
Zinsen		5·7	330	1 46	P*	3 2	S_g	—	—
Gihu		6·0	61	1 25	0	2 53	S*	—	—
Nagoya		6·1	64	e 1 24	− 3	e 3 3	S*	—	3·4
Wazima		7·2	47	1 50	+ 8	3 41	S*	—	—
Numadu		7·5	70	1 45	− 1	3 49	S*	—	—
Nagano		7·6	56	1 51	+ 3	4 0	S_g	—	—
Zi-ka-wei	N.	7·6	261	—	—	e 3 30	+16	—	—
Oiwake		7·8	59	1 54	+ 3	4 0	S*	—	—
Kumagaya		8·3	62	2 3	+ 5	4 18	S*	—	—
Hong Kong		17·6	238	4 4	+ 2	7 30	+15	—	11·9
Manila		20·1	207	3 41	−50	8 12	+ 4	11·1	16·0
Calcutta		38·2	266	13 23	S	(13 23)	+14	21·6	—
Ekaterinburg		52·2	320	—	—	16 41	+10	24·0	30·1
Perth		66·0	193	25 0?	?	—	—	—	—

For Notes see next page.

NOTES TO DEC. 22d. 13h. 8m. 0s.

Additional readings :—
Koti iP = +46s.
Sumoto iN = +1m.0s., iZ = +1m.9s. =P*.
Kobe SNZ = +2m.14s. =S*.
Toyooka iPZ = +1m.15s., iPEN = +1m.20s.
Osaka i = +2m.25s. =S*.
Calcutta S = +18m.5s.
Long waves were also recorded at Phu-Lien, Tashkent, Baku, Chiufeng, Pulkovo, Copenhagen, De Bilt, and Stuttgart.

Dec. 22d. Readings also at 1h. (Sebastopol, Simferopol, Yalta, and near Amboina), 3h. (San Juan, La Paz, Nagasaki, Ekaterinburg, Ottawa, Tashkent, Irkutsk, De Bilt, Stuttgart, Nagoya, near Mizusawa, and Tyosi), 4h. (Andijan), 5h. (Florissant, Irkutsk, Ekaterinburg, Tashkent, near Almata (2), and Andijan (2)), 6h. (near Apia), 7h. (near Andijan, near Christchurch, and Wellington), 8h. (Andijan, near Tyosi, and near Nagasaki), 10h. (Tashkent, Ekaterinburg, near Batavia, Malabar, and Soengei Langka), 11h. (Messina), 12h. (Almata, Tashkent, and near Andijan), 14h. (Alicante, near Nagasaki, Hukuoka, and near Lick), 16h. (near Mizusawa), 19h. (Andijan, Batavia, Manila, Hong Kong, and near Amboina), 20h. (Ekaterinburg and Perth), 21h. (Andijan, near Hukuoka and Nagasaki), 22h. (Samarkand and Andijan).

Dec. 23d. 10h. 52m. 8s. Epicentre 33°·9N. 136°·8E. (as on 1931 June 29d.). X.

A = −·605, B = +·568, C = +·558.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	1·3	6	e 1 1	?	—	—	—	—
Osaka	1·3	306	0 25	+ 7	(0 32)	− 1	0·5	1·1
Kobe	1·6	299	0 23	0	0 44	+ 3	—	0·8
Sumoto	1·6	286	i 0 18	− 5	0 32	− 9	—	0·7
Toyooka	2·3	315	e 0 52	P_g	i 1 9	S*	—	1·2
Koti	2·7	263	e 0 41	+ 2	e 0 54	P_g	1·3	—
Matuyama	3·4	270	0 49	0	e 1 30	+ 3	—	—

Additional readings :—
Kobe S = +30s.
Toyooka iPEN = +56s. =S −3s.

Dec. 23d. 12h. 28m. 18s. Epicentre 35°·0N. 137°·2E. (as on 1931 Sept. 7d.). X.

A = −·601, B = +·557, C = +·574.

	Δ	P.	O−C.	S.	O−C.	L.	M.
	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	0·3	e 0 1	− 3	0 9	+ 1	—	0·2
Osaka	1·4	0 21	+ 1	i 0 26	−10	0·7	1·2
Kobe	1·7	e 0 24	0	i 0 46	+ 2	—	1·1
Sumoto	2·0	e 0 35	+ 6	e 0 53	+ 2	—	1·2
Toyooka	2·0	e 0 29	0	i 0 57	+ 6	—	1·1
Tyosi	3·1	e 0 44	0	—	—	—	—

Additional readings :—
Kobe i = +30s. =P*, iEN = +36s. =P_g.
Toyooka iPEN = +34s. =P*.

Dec. 23d. Readings also at 0h. (Entebbe), 1h. (near Mizusawa), 2h. (Trenta, La Paz, and near Nagasaki (2)), 3h. (Dakar), 4h. (Nagasaki and near Wellington), 5h. (Graz and near Triest), 10h. (near Osaka), 13h. (near Apia and near Sumoto), 15h. (La Paz and La Plata), 17h. (near Mizusawa and near Tyosi), 18h. (Kobe and near Sumoto), 19h. (Trenta), 21h. (Christchurch, Wellington, Riverview, Honolulu T.H., Port au Prince, and Andijan), 22h. (near Prato).

Dec. 24d. 3h. 40m. 40s. Epicentre 60°·5N. 154°·0W. N.3.

A = −·443, B = −·216, C = +·870; D = −·438, E = +·899; G = −·782, H = −·382, K = −·492.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka	10·2	102	i 2 18	− 6	(i 4 4)	−14	i 4·1	—
Bozeman	29·0	101	—	—	e 10 32	−16	e 13·3	—
Madison	41·5	84	i 12 34	?S	(i 12 34)	−85	e 27·3	—
Florissant	44·3	89	i 7 51	−16	i 14 28	−12	—	24·9
St. Louis	44·5	89	i 8 1	− 8	i 14 30	−13	—	—
Scoresby Sund	44·8	20	—	—	14 55	+ 8	—	—
Ivigtut	45·7	40	—	—	14 20?	−40	—	—
Ottawa	46·4	71	i 8 43	+19	e 15 4	− 6	e 19·3	—
Little Rock	46·5	94	e 8 16	− 9	—	—	—	—
Pittsburgh	48·1	79	e 8 53	+16	—	—	e 18·3	—
Fordham	50·7	74	i 10 5	(−14)	—	—	25·3	28·2
Georgetown	50·7	78	i 8 52	− 5	e 16 44	+33	e 26·8	—
Harvard	50·8	70	—	—	e 16 47	+35	e 25·8	—
Irkutsk	51·3	310	e 9 1	0	e 16 18	− 1	24·3	—
Ekaterinburg	59·6	340	i 10 1	− 1	18 11	0	27·3	—
Neuchatel	71·4	14	e 11 19	0	—	—	—	—
Tashkent	72·3	327	e 11 50	+25	e 22 15	?	e 30·1	41·9
La Paz	102·3	102	e 17 25	PP	i 24 12	[−25]	66·3	—

Additional readings:—
Sitka i = +2m.40s.
Bozeman e = +12m.38s.
Madison i = +12m.57s., +14m.35s., and +19m.18s.
Florissant iNZ = +8m.23s., iN = +10m.10s., iZ = +18m.35s.
St. Louis iEN = +8m.23s., +10m.12s. = P_cP +15s. and +17m.48s. = SS +7s.
Little Rock iEN = +8m.38s.
Fordham iN = +16m.53s., iEN = +17m.35s.
Georgetown iP = +9m.14s., eSSEZ = +20m.8s.
Harvard e = +20m.20s. ?
Long waves were also recorded at Ann Arbor and Chicago.

Dec. 24d. 23h. 0m. 5s. Epicentre 37°·3N. 44°·8E. (as on 1930 Aug. 3d.). R.3.

A = +·564, B = +·561, C = +·606; D = +·705, E = −·710; G = +·430, H = +·427, K = −·795.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ksara	8·1	247	2 4	+ 9	4 36	+70	5·5	—
Theodosia	10·5	320	e 2 15	−13	—	—	—	—
Yalta	10·8	315	e 2 35	+ 3	—	—	—	—
Simferopol	11·1	317	e 2 45	+ 9	—	—	—	—
Helwan	13·5	240	i 3 22	+13	7 15	?	—	11·2
Samarkand	17·5	75	e 5 30	+90	—	—	—	—
Kucino	19·0	348	4 11	− 8	e 7 43	− 3	10·0	—
Tashkent	19·3	71	i 4 27	+ 5	i 8 9	SS	e 11·0	15·4
Andijan	21·6	72	e 4 53	+ 7	e 9 3	SS	—	—
Ekaterinburg	22·2	24	i 4 48	− 5	8 44	− 6	10·4	13·1
Trenta	22·4	284	e 4 35	−20	—	—	—	—
Graz	23·6	304	(e 5 7)	+ 1	—	—	e 5·1	—
Pulkovo	24·3	342	5 9	− 4	e 9 33	+ 5	11·9	—
Bombay	30·6	118	—	—	e 11 55	+41	—	—
Calcutta	40·1	99	7 53	+20	14 1	+23	19·9	—
Irkutsk	43·4	49	—	—	e 13 55?	−32	22·9	29·4

Long waves were also recorded at Cheb, De Bilt, Hong Kong, and Entebbe.

Dec. 24d. Readings also at 3h. (Andijan, near Ksara, and near Mizusawa), 9h. and 10h. (near Mizusawa), 11h. (Suva), 12h. (near La Paz (2)), 14h. (Nagoya and near Wellington), 22h. (Manila), 23h. (Manila and Andijan).

Dec. 25d. 3h. 4m. 24s. Epicentre 53°·0S. 138°·5E. N.3.

Differs from epicentre 52°·2S. 137°·2E. of 1931 Aug. 10d.

A = −·451, B = +·399, C = −·799; D = +·663, E = +·749; G = +·598, H = −·529, K = −·602.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Melbourne	15·8	19	i 3 36	− 2	i 6 22	−12	6·9	7·7
Adelaide	18·0	0	i 4 11	+ 4	i 7 36	+11	i 8·0	8·9
Riverview	21·2	30	i 4 40	− 2	i 8 32	+ 2	9·8	14·0
Sydney	21·2	30	e 3 36	−66	i 8 24	− 6	9·3	10·6
Christchurch	24·3	81	e 5 11	− 2	e 9 30	+ 2	—	—
Perth	26·7	313	5 36	+ 1	10 26	+16	13·3	14·0
Wellington	26·9	79	5 41	+ 4	10 21	+ 7	11·6	12·6
Batavia	53·5	320	e 9 31	+13	17 4	+15	—	—
Manila	69·3	342	11 10	+ 4	20 4	− 9	31·6	37·8
Colombo	77·6	300	12 19	+24	—	—	—	38·4
Hong Kong	78·3	337	—	—	22 0	+ 3	—	42·1
Calcutta	87·1	315	11 30	−74	(23 19)	− 9	23·3	—
Bombay	91·4	300	e 13 18	+14	—	—	—	—
Entebbe	99·6	257	—	—	25 46	+23	48·9	52·4
Irkutsk	109·1	339	e 19 4	PP	e 28 18	PS	e 53·6	65·1
Tashkent	111·5	311	e 21 31	PPP	e 28 54	PS	56·6	62·4
Ekaterinburg	126·8	318	—	—	e 32 54	?	52·6	—
Neuchatel	148·9	279	e 19 56	[+16]	—	—	—	—

Additional readings:—
Adelaide i = +7m.15s.
Riverview i = +8m.36s.
Christchurch i = +5m.25s., iN = +9m.40s.
Perth SS = +11m.41s., SSS = +11m.53s., SSSS = +12m.7s.
Calcutta S = +17m.26s.
Ekaterinburg e = +38m.42s.
Long waves were also recorded at Arapuni, La Paz, Hyderabad, Kodaikanal, Kucino, Ottawa, Florissant, Ivigtut, and European stations.

Dec. 25d. 11h. 41m. 17s. Epicentre 46°·5N. 13°·0E. (as on 1929 Aug. 19d.). R.2.

A = +·671, B = +·155, C = +·725; D = +·225, E = −·974; G = +·707, H = +·163, K = −·688.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Triest		1·0	148	i 0 9	− 5	i 0 18	− 8	—	—
Treviso		1·0	214	i 0 11	− 3	i 0 25	− 1	—	1·1
Laibach		1·1	113	(0 13)	− 3	(0 26)	− 2	—	(0·5)
Venice		1·1	204	i 0 14	− 2	i 0 30	+ 2	—	2·7
Padova		1·4	216	i 0 17	− 3	i 0 35	− 1	—	—
Innsbruck		1·4	305	i 0 21	+ 1	—	—	0·7	0·8
Graz		1·8	71	i 0 25	− 1	i 0 42	− 4	—	0·8
Zagreb		2·2	108	0 30	− 1	i 1 0	+ 3	—	1·1
Ravensburg		2·7	299	e 0 40	+ 1	i 1 5	− 4	—	—
Piacenza		2·7	238	e 0 43	+ 4	—	—	—	1·7
Vienna		2·9	52	0 45	+ 4	1 21	+ 7	—	1·6
Prato		2·9	207	e 0 40	− 1	1 13	− 1	—	1·5
Florence		3·0	206	0 43	0	—	—	—	1·2
Pavia		3·0	244	e 0 43	0	—	—	—	—
Zurich	N.	3·2	288	e 0 47	+ 1	e 1 29	+ 7	—	—
Camerino		3·3	179	1 1	P*	—	—	—	—
Livorno		3·5	214	(1 3)	P*	(1 43)	S*	—	—
Stuttgart		3·5	312	i 0 51	+ 1	i 1 29	− 1	—	2·4
Cheb		3·6	354	e 0 52	+ 1	i 1 36	+ 4	—	2·5
Prague		3·7	14	e 1 1	+ 8	e 1 35	0	—	1·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Collurania		3·8	173	0 48	− 6	—	—	—	—
Karlsruhe		4·0	311	0 59	+ 2	1 53	+11	2·0	2·3
Strasbourg		4·1	302	1 0	+ 2	1 46	+ 1	—	—
Neuchatel	N.	4·1	278	e 1 0	+ 2	e 1 50	+ 5	—	—
Budapest		4·3	75	1 9	+ 8	(2 1)	+11	2·0	—
Jena	E.	4·5	348	i 1 5	+ 1	i 1 38	−17	e 1·9	2·7
	N.	4·5	348	i 1 7	+ 3	—	—	e 1·9	3·0
	Z.	4·5	348	i 1 4	0	i 1 23	P*	e 2·1	3·2
Feldberg	E.	4·8	322	e 1 15	+ 7	i 2 5	+ 2	—	2·7
	N.	4·8	322	i 1 8	0	i 2 5	+ 2	—	2·6
Besançon		4·9	280	e 1 16	+ 6	e 2 6	+ 1	—	—
Göttingen		5·4	339	i 1 18	+ 1	i 2 53	S*	—	3·9
Belgrade		5·5	106	e 1 34	P*	e 2 22	+ 2	—	—
Naples		5·7	171	e 2 53	S*	i 3 47	?	—	—
Potsdam		5·9	0	e 1 43	P*	i 2 56	S*	—	3·2
Paris		7·4	292	—	—	e 3 3	− 6	3·7	4·7
Hamburg	Z.	7·4	346	—	—	e 3 20	+11	—	4·1
De Bilt		7·6	321	—	—	e 3 43?	S*	—	—

Additional readings and notes :—
Laibach iPP =(+16s.) readings have been *increased* by 1m.
Zagreb eP* = +32s., iP$_g$ = +34s., iNW = +37s., iSSNE = +40s., iPP = +47s., i = +49s., iPPS = +53s., iPPPS = +58s.
Ravensburg eP$_g$ = +48s., iS* = +1m.14s., iS$_g$ = +1m.21s.
Vienna P* = +51s., P$_g$ = +55s., iPP = +57s., +1m.0s., iN = +1m.2s., iE = +1m.6s., +1m.13s., iS* = +1m.26s.
Zurich eP$_g$ = +55s., eS$_g$ = +1m.40s.
Livorno readings have been *diminished* by 3m.
Stuttgart i = +55s., iP$_g$ = +1m.3s., iS* = +1m.42s., iS$_g$ = +1m.49s., i = +1m.53s.
Strasbourg S$_g$ = +2m.12s., SS = +2m.26s.
Neuchatel eP$_g$ = +1m.17s., eS$_g$ = +2m.11s.
Jena iE = +1m.18s.
Feldberg iN = +1m.32s., iE = +1m.35s., +1m.49s., and +2m.9s., iN = +2m.12s. and +2m.19s., i = +2m.34s.
Göttingen iP$_g$ = +1m.40s., iN = +2m.18s., and +2m.43s.
Belgrade e = +1m.47s., +2m.35s., and +2m.45s.
Potsdam iN = +2m.50s., iEN = +3m.1s., and +3m.6s.

Dec. 25d. Readings also at 0h. (near Mizusawa), 2h. (Adelaide, Melbourne, Christchurch, and Wellington), 5h. (near Andijan), 6h. (near Amboina and near Ksara), 7h. (Ksara), 8h. (near Batavia and Soengei Langka), 11h. (near Hukuoka and near Mizusawa), 13h. and 15h. (La Paz), 16h. (near Almata), 17h. (near Tyosi), 18h. (Wellington), 21h. (near Christchurch and Wellington), 23h. (La Paz).

Dec. 26d. 1h. 42m. 58s. Epicentre 32°·7N. 130°·3E. (as on 22d.). R.2.

A = −·544, B = +·642, C = +·540 ; D = +·763, E = +·647 ; G = −·349, H = +·412, K = −·842.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Unzendake	0·0	—	0 3	+ 3	0 9	+ 9	—	—
Nagasaki	0·4	270	0 6	0	0 14	+ 4	—	0·4
Kumamoto	0·4	71	0 2	− 4	0 7	− 3	—	—
Saga	0·5	0	0 9	+ 2	0 19	+ 6	—	—
Hukuoka	0·9	7	i 0 15	+ 2	0 30	+ 7	—	0·7
Kagosima	1·1	169	0 12	− 4	0 26	− 2	—	—
Miyazaki	1·3	130	0 13	− 5	0 25	− 8	—	—
Ooita	1·3	64	0 16	− 2	0 34	+ 1	—	—
Tomie	1·3	266	0 21	+ 3	0 40	+ 7	—	—
Simonoseki	1·4	23	0 22	+ 2	0 41	+ 5	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Simidu	2·3	88	0 29	− 4	1 0	+ 1	—	—
Matuyama	2·4	61	i 0 33	− 1	1 9	S*	—	1·5
Husan	2·6	336	0 22	−15	0 49	−18	—	—
Hamada	2·7	34	0 39	0	1 19	S*	—	—
Koti	2·9	73	0 39	− 2	1 20	+ 6	1·6	1·7
Taikyu	3·5	337	1 4	P*	1 50	S_g	—	—
Sumoto	4·2	65	0 58	− 2	2 3	S*	—	2·2
Nake	4·4	189	0 59	− 4	2 1	+ 8	—	—
Wakayama	4·4	67	1 1	− 2	2 10	S*	—	—
Kobe	4·5	62	1 3	− 1	2 18	S*	—	2·9
Siomisaki	4·7	79	1 3	− 4	2 20	S*	—	—
Toyooka	4·7	51	e 1 7	0	i 2 21	S*	—	3·1
Osaka	4·8	64	1 5	− 3	—	—	2·3	3·6
Kyoto	5·1	60	1 13	0	2 41	S*	—	—
Hikone	5·5	61	1 18	0	2 44	S*	—	—
Kameyama	5·6	66	1 19	− 1	2 50	S*	—	—
Keizyo	5·6	333	1 24	+ 4	2 47	S*	—	—
Zinsen	5·7	330	1 23	+ 2	2 28	+ 3	—	—
Gihu	6·0	61	1 24	− 1	2 50	S*	—	—
Nagoya	6·1	64	e 1 26	− 1	2 58	S*	—	3·5
Hamamatu	6·5	70	1 41	+ 9	3 17	S*	—	—
Wazima	7·2	47	1 37	− 5	3 48	S*	—	—
Numadu	7·5	70	1 45	− 1	3 45	S*	—	—
Misima	7·6	69	1 46	− 2	3 47	S*	—	—
Nagano	7·6	56	1 49	+ 1	3 58	S*	—	—
Zi-ka-wei	7·6	261	e 1 50	+ 2	—	—	—	4·5
Oiwake	7·8	59	1 51	0	3 44	S*	—	—
Kumagaya	8·3	62	1 54	− 4	4 5	S*	—	—
Kakioka	8·9	63	2 4	− 2	4 22	S*	—	—
Mito	9·2	63	2 20	+10	4 44	S*	—	—
Taihoku	10·8	227	i 3 2?	+30	—	—	—	—
Hong Kong	17·6	238	4 6	+ 4	7 27	+12	9·8	11·9
Manila	20·1	207	4 28	− 3	7 57	−11	9·7	10·8
Phu-Lien	24·2	246	e 5 16	+ 4	—	—	—	—

Additional readings :—
Koti $iP_g = +47s.$
Sumoto SNZ = +2m.6s.
Kobe SN = +2m.23s.
Toyooka ePE = +1m.17s. =P*, iP = +1m.23s.
Osaka i = +1m.28s. =P* and +2m.30s. =S*.
Long waves were also recorded by European stations.

Dec. 26d. Readings also at 4h. (Tyosi), 5h. (Nagoya and near Tyosi), 6h. (Nagasaki), 8h. (near Mizusawa), 10h. (near Tyosi), 11h. (La Paz), 12h. (near Prato), 15h. (Wellington), 20h. (near Sumoto).

Dec. 27d. Readings at 0h. (Haiwee, Pasadena, and Tinemaha), 1h. (Baku, Ekaterinburg, and Hong Kong), 2h. (Calcutta). 5h. (near Manila), 6h. (Takaka and near Wellington), 8h. (Tucson), 10h. (La Paz), 12h. (La Paz, Honolulu T.H., Ekaterinburg, Riverview, Sydney, Arapuni, Wellington, Christchurch, near Apia, and Suva), 13h. (Perth, Baku, and Uccle), 18h. (near Almata and Andijan), 19h. (Tyosi), 20h. (near Santiago), 23h. (Almata, near Andijan, and Samarkand).

Dec. 28d. Readings at 0h. (Wellington), 5h. (Andijan, near Almata, and Samarkand), 7h. (Wellington), 8h. (near Tyosi), 9h. (Ksara, Bombay, Batavia, Riverview, near Amboina, and near Manila), 10h. (Almata, Samarkand, and near Andijan), 11h. (St. Louis, Ottawa, Little Rock, and near Santiago), 12h. (Baku, Ekaterinburg, Tashkent, Almata (2), Andijan (2), Frunse (2), and Samarkand), 13h. (near Santiago), 21h. (Baku, Ekaterinburg, Tashkent, Bombay, and Ksara).

Dec. 29d. 2h. 50m. 5s. Epicentre 33°·0N. 129°·8E. (as on 1931 Jan. 15d.). X,
A = −·537, B = +·644, C = +·545.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Nagasaki	0·3	165	e 0 6	+ 2	0 13	+ 5	—
Hukuoka	0·8	42	0 15	+ 4	0 29	S_g	0·5
Matuyama	2·6	71	i 0 34	− 3	e 1 15	S*	—
Koti	3·2	77	e 0 42	− 4	1 17	− 5	—
Sumoto	4·5	71	e 1 38	P_g	2 7	S*	2·3

Dec. 29d. Readings also at 4h. (near Soengei Langka), 6h. (near Prato), 7h. (Lick), 8h. (Andijan), 10h. (Tyosi, Samarkand, Andijan, Tashkent, near Almata, and Frunse), 11h. (La Paz), 12h. (near Mizusawa), 14h. (near Kobe and Sumoto), 16h. (Hong Kong, Phu-Lien, Perth, Ekaterinburg, Tashkent, Bombay, Colombo, Batavia, and Manila), 17h. (Baku, Ekaterinburg, Tyosi, Nagoya, and near Batavia), 18h. (Sumoto), 19h. (near Santiago).

Dec. 30d. 3h. 42m. 20s. Epicentre 31°·6N. 134°·4E. N.2.
A = −·596, B = +·609, C = +·524; D = +·714, E = +·700:
G = −·367, H = +·374, K = −·852.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Koti		2·1	339	i 0 30	0	0 47	− 7	—
Matuyama		2·6	328	i 0 38	+ 1	e 1 49	+42	—
Sumoto		2·8	8	e 0 37	− 3	e 1 7	− 5	1·6
Kobe		3·2	12	e 0 48	+ 2	i 1 35	S*	1·7
Osaka		3·2	18	0 45	− 1	i 1 27	+ 5	2·9
Toyooka	N.	4·0	5	i 1 1	+ 4	—	—	—
Nagoya		4·2	30	e 1 0	0	1 45	− 3	—

Additional readings:—
Kobe iE = +1m.22s., SZ = +2m.38s.
Toyooka ePE = +1m.4s.

Dec. 30d. Readings also at 0h. (Perth), 1h. (Baku, Ekaterinburg, Bombay, Hamburg, Copenhagen, Cheb, Göttingen, Paris, Strasbourg, Tunis, De Bilt, Uccle, Stuttgart, Feldberg, Florence, Catania (2), Messina (2), Piacenza, Trenta, Alicante, Almeria, Toledo, and Granada), 2h. (near Andijan and Frunse), 3h. (Almata and Samarkand), 4h. (Frunse), 5h. (Catania, Messina, Piacenza, Florence, and near Wellington), 6h. (near Koti and Sumoto), 8h. (Baku and Ksara), 9h. (near Manila), 10h. and 12h. (near Tyosi), 13h. (Nagasaki), 15h. (Nagoya, near Osaka, Kobe, and Sumoto), 16h. (Kobe, near Osaka, Sumoto, and near Manila), 17h. (Nagasaki), 20h. and 21h. (near Manila).

Dec. 31d. 0h. 23m. 38s. Epicentre 17°·0S. 63°·8E. N.3.
A = +·422, B = +·858, C = −·292; D = +·897, E = −·442;
G = −·129, H = −·262, K = −·956.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tananarive	15·6	260	e 3 39	+ 3	e 6 48	+19	7·9	8·9
Colombo	28·6	35	5 41	−12	—	—	—	—
Johannesburg	34·4	248	—	—	14 22?	SS	—	—
Entebbe	35·3	297	6 52	0	8 22	PPP	—	19·4
Bombay	37·0	14	7 1	− 5	12 37	−14	17·8	—
Hyderabad	37·3	23	7 9	0	12 45	−11	17·9	21·9
Batavia	43·4	80	e 8 4	+ 4	i 14 54	+27	—	—
Calcutta	46·2	31	8 6	−16	16 6	+59	28·9	—
Helwan	55·8	326	e 9 49	+15	e 17 52	+32	—	37·0
Ksara	57·4	333	e 9 53	+ 7	—	—	24·4	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	58·3	8	e 10 2	+10	—	—	—	—
Tashkent	58·5	6	e 10 46	+52	e 18 50	+54	e 27·4	33·4
Baku	58·8	349	e 10 17	+21	i 18 10	+10	28·4	30·6
Frunse	60·7	10	e 10 7	− 2	—	—	—	—
Almata	61·4	11	e 10 26	+12	—	—	—	—
Hong Kong	63·1	53	—	—	18 32	−24	—	26·1
Ekaterinburg	73·8	358	e 11 28	− 5	e 20 46	−20	29·3	34·3
Kucino	75·9	346	e 11 46	+ 1	(21 44)	+14	33·4	37·8
Florence	77·4	325	—	—	(21 22?)	−25	21·4	36·4
Riverview	78·5	120	—	—	e 25 52	?	—	35·9
Piacenza	79·1	325	12 22	+19	23 10	+64	—	59·4
Chur	80·3	326	e 12 6	− 3	—	—	—	—
Zurich	81·0	326	e 12 21	+ 8	—	—	—	—
Pulkovo	81·4	345	e 12 42	+27	e 22 37	+ 6	36·4	40·1
Stuttgart	81·6	328	e 12 22	+ 6	e 22 32	− 1	e 34·4	—
Strasbourg	82·3	327	e 11 22?	−58	—	—	e 33·4	—
Helsingfors	83·3	342	—	—	e 22 51	+ 1	e 37·4	—
Granada	83·3	313	—	—	i 23 26	PS	e 41·1	50·2
Copenhagen	84·5	335	—	—	23 0	− 3	—	—
San Fernando	84·8	311	14 38	?	24 22	PS	39·9	55·4
Paris	85·2	325	e 13 22?	+48	—	—	45·4	60·4
Uccle	85·4	327	e 12 42	+ 7	e 23 15	+ 3	35·4	—
De Bilt	85·6	330	e 13 5	+29	e 23 22	+ 8	e 35·4	63·3
Kew	88·1	326	—	—	e 23 22?	[+ 1]	—	—
Oxford	88·9	326	—	—	e 23 38	[+12]	e 36·4	40·9
La Paz	122·0	238	e 19 15	[+25]	28 53	{+83}	56·4	64·3
St. Juan	132·4	280	—	—	e 23 6	PKS	e 62·6	—

Additional readings and note :—
Tananarive iPPE = +3m.48s., iPPN = +3m.54s., E = +3m.57s. and +4m.3s., eSE = +6m.51s., SS = +7m.8s., N = +7m.27s.
Tashkent i = +10m.59s. = P_cP +11s., e = +11m.7s.
Kucino e = +12m.19s., eSS = +26m.4s., S is given as PS.
Stuttgart e = +13m.13s., eNZ = +14m.59s.
Copenhagen +23m.10s.
Uccle e = +28m.22s.? = SS −11s.
La Paz SE = +30m.27s. = PS +7s.
San Juan e = +40m.2s. and +44m.32s.
Long waves were also recorded at Cape Town, Dakar, La Plata, and other European and American stations.

Dec. 31d. 11h. 36m. 54s. Epicentre 8°·5N. 126°·0E. (as on 1927 Jan. 2d.). X.

A = −·581, B = +·800, C = +·148.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	7·8	321	1 51	0	3 16	− 3	—	—
Hong Kong	17·9	322	3 59	− 6	7 41	+19	—	10·8
Batavia	24·1	233	e 5 16	+ 5	i 9 31	+ 6	—	—
Tashkent	59·6	315	—	—	e 18 53	+42	e 30·1	37·6
Ekaterinburg	69·5	329	e 10 55	−13	e 19 57	−18	31·1	—

Tashkent gives also e = +26m.12s.
Long waves were also recorded at Baku, Pulkovo, De Bilt, and Uccle.

Dec. 31d. Readings also at 1h. (Hong Kong and near Manila), 2h. (La Paz, Haiwee, Pasadena, and Tinemaha), 4h. (Riverview), 6h. (Tyosi, Almata, near Andijan and Frunse), 10h. (Baku and Tashkent), 15h. (near Tyosi (2), near Seattle and Victoria), 16h. (near Mizusawa and near Manila), 18h. (Ekaterinburg, Tashkent, Kucino, Pulkovo, Copenhagen, and near Amboina), 21h. (near Mizusawa), 23h. (Wellington and near Granada).

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