

Original bulletins of the International Seismological Summary (ISS) have been obtained thanks to funding provided by the US National Science Foundation through grant EAR-9725140 (Villaseñor et al., 1997) and have been scanned and collected by SGA Storia Geofisica Ambiente (Bologna) thanks to funding provided by the Istituto Nazionale di Geofisica e Vulcanologia (Rome), in the frame of the EUROSEISMOS project.

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The International Seismological Summary. 1932 April, May, June.

FORMERLY THE BULLETIN OF THE
BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

The present number of the Summary deals with 176 epicentres, 79 of which are new and 97 repetitions from former epicentres.

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

N1=26	R1=5	X=62
N2=22	R2=12	
N3=31	R3=18	

The cases of abnormal focus are as follows:—

	Date, 1932. d. h. m. s.	Epicentre.	Focal Depth. (Below Normal).
April	4 19 16 41	30·6N. 139·5E.	+0·065
	28 3 43 8	34·0N. 136·9E.	+0·055
May	5 4 11 3	34·6N. 135·3E.	+0·060
	10 14 23 3	7·6S. 128·8E.	+0·020
	21 10 10 19	13·1N. 8	0·015
	26 16 9 19	24·0S. 17	0·050
	26 16 9 29	24·0S. 17	0·050
	26 22 21 43	24·8S. 18	0·065
June	27 1 29 36	24·8S. 18	0·065
	27 5 55 12	24·8S. 180	0·065
	6 6 26 21	3·5N. 122·5	-0·030
	20 9 1 55	12·5N. 89·2W.	+0·010
	24 9 43 40	12·5N. 89·2W.	+0·010

Readings from late stations and some revised epicentres will be found after page 251.

UNIVERSITY OBSERVATORY,
OXFORD

1937 April 21d.

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1932 APRIL, MAY, JUNE.

April 1d. Readings at 0h. (La Paz and Sucre), 2h. (near Wellington), 3h. (La Paz and Sucre), 4h. (Ekaterinburg), 5h. (Baku), 7h. (near Batavia and Malabar), 8h. (Manila (2)), 9h. (Baku, Ekaterinburg, Tiflis, Irkutsk, La Paz, and Manila), 10h. (near Tyosi), 11h. (Baku, Ekaterinburg, and near Apia), 13h. (Tiflis and near Malabar), 18h. (La Paz), 22h. (near Santiago (2)).

April 2d. Readings at 0h. (Wellington), 1h. (Tiflis and Neuchatel), 3h. (Andijan), 6h. (near Malabar and near Tyosi), 7h. (near Apia, near Mizusawa, and Nagoya), 8h. (La Paz), 9h. (Bombay, Ekaterinburg, and Irkutsk), 13h. (Perth, Andijan, Samarkand, Frunse, and near Almata), 20h. (Branner), 21h. (Tyosi), 22h. (Almata, Andijan, and Frunse).

April 3d. 5h. 33m. 9s. Epicentre 47°·7N. 7°·6E. (as on 1930 Oct. 15d.). X.

A = +·667, B = +·089, C = +·740.

	Δ	Az.	P.	O-C.	S.	O-C.
	°	°	m. s.	s.	m. s.	s.
Zurich	0·7	117	e 0 8	- 2	e 0 15	- 3
Neuchatel	0·8	213	e 0 12	+ 1	e 0 23	+ 2
Ravensburg	1·4	86	—	—	e 0 35	- 1
Hohenheim	1·5	47	—	—	e 0 42	+ 3
Chur	1·5	123	—	—	0 40	+ 1

April 3d. 20h. 39m. 0s. Epicentre 30°·7S. 177°·6W. N.2.

A = -·859, B = -·036, C = -·511; D = -·042, E = +·999;
G = +·510, H = +·021, K = -·860.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
New Plymouth	10·8	217	2 32	0	4 32	- 1	—	—
Wellington	12·2	208	2 50	- 1	4 56	- 12	6·6	8·0
Suva	13·1	343	4 0	+57	6 55	+86	—	—
Christchurch	15·0	208	3 40	+12	6 2	-13	—	—
Riverview	26·5	255	1 5 36	+ 2	e 10 7	0	e 12·3	15·6
Sydney	26·5	255	e 5 18	-16	e 9 54	-13	13·7	15·5
Melbourne	31·5	245	1 6 20	+ 2	11 40	+12	15·5	17·2
Adelaide	36·5	253	e 6 55	- 9	1 12 40	- 7	16·4?	25·2
Perth	55·9	250	e 17 10	S	(e 17 10)	-11	29·3	—
Manila	74·4	298	11 34	- 3	21 24	+11	36·5	—
Hong Kong	84·2	300	12 30	+ 1	22 46	[- 7]	—	44·0
Zi-ka-wei	84·8	312	(1 12 20)	-12	—	—	41·4	43·9
Pasadena	85·7	45	1 12 39	+ 2	—	—	—	—
Mount Wilson	85·8	45	e 12 39	+ 2	—	—	—	—
Berkeley	85·9	40	1 12 41	+ 3	e 23 4	[- 2]	—	—
Ukiah	86·2	39	—	—	e 23 0	[- 8]	e 39·0	—
Halwee	87·1	44	e 12 41	- 3	—	—	—	—
Tinemaha	87·6	43	e 12 50	+ 4	—	—	—	—
Tucson	89·2	50	e 13 0	+ 6	23 50	+ 2	e 40·6	—
La Plata	93·3	135	—	—	(25 36)	PS	25·6	—
Bozeman	97·3	40	—	—	e 27 24	?	e 44·7	—
La Paz	97·4	113	e 13 52	+20	1 24 18	[+ 5]	45·8	55·0
Colombo	104·3	268	33 20	SS	—	—	—	57·5
Calcutta	104·6	286	17 27	?	27 50	PS	49·2	—
Florissant	106·7	52	e 18 30	PP	e 24 48	[-10]	—	53·0

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
St. Louis	106.8	52	e 18 56	PP	i 25 40	{- 4}	e 51.0	61.5
Kodaikanal	108.0	270	18 51	PP	28 15	PS	e 54.4	—
Rio de Janeiro	110.8	134	—	—	e 28 50	PS	e 51.0	—
Pittsburgh	114.8	56	—	—	25 25	{- 8}	e 55.0	—
Agra	E. 115.0	287	e 19 32	PP	—	—	—	—
Bombay	116.0	277	18 34	[- 1]	29 25	PS	51.9	67.2
Toronto	N. 116.2	53	—	—	e 25 31	{- 7}	e 49.6	—
Ottawa	119.2	52	—	—	e 25 37	{- 11}	e 51.0	—
Andijan	123.8	300	e 18 56	[+ 1]	—	—	—	—
Tashkent	126.2	300	e 19 42	[+ 43]	e 27 56	{- 1}	e 52.0	78.1
Ekaterinburg	132.4	320	i 19 11	[0]	e 33 54	PPS	65.0	71.7
Scoresby Sund	138.0	10	23 2	PKS	—	—	69.0	—
Baku	140.6	297	e 19 22	[0]	35 4	PPS	—	81.6
Tiflis	144.5	300	e 19 22	[- 11]	e 28 29	PPP	e 69.0	79.4
Kucino	144.7	325	e 19 32	[- 1]	e 33 2	SKSP	62.4	69.6
Pulkovo	145.5	335	i 19 35	[+ 1]	—	—	71.0	81.6
Ksara	151.6	285	19 57	[+ 13]	—	—	83.0	—
Lund	153.9	346	20 0?	[+ 13]	—	—	81.0	—
Copenhagen	154.0	347	i 19 50	[+ 3]	23 42	PP	75.0	—
Potsdam	157.0	343	i 19 57	[+ 7]	e 24 30	PP	e 75.0	81.0
De Bilt	E. 158.5	355	e 20 1	[+ 9]	e 34 48	SKSP	75.0	88.1
Kew	159.2	5	—	—	e 44 0?	SS	e 84.0	92.7
Uccle	159.9	356	—	—	e 42 0?	?	e 66.0	—
Stuttgart	161.2	346	e 20 0	[+ 5]	e 31 6	{- 19}	e 80.0	—
Strasbourg	161.7	349	19 58	[+ 2]	—	—	e 81.0	—
Paris	161.9	0	e 20 2	[+ 6]	e 32 16	?	81.0	90.0
Florence	165.2	334	20 0	[+ 1]	24 45	PP	44.0	72.0
San Fernando	170.8	49	—	—	30 12	?	—	106.5
Granada	171.8	36	19 20	[- 45]	31 15	{- 66}	e 83.0	100.7

Additional readings and note:—

Riverview $i = +5m.40s.$ and $+6m.35s. = PP + 25s., eSS = +11m.39s.$
 Melbourne PPP = $+7m.42s., i = +12m.0s.$
 Adelaide $e = +8m.50s.$
 Perth IPP = $+19m.45s. = P_cP + 22s., S = +24m.0s., SS = +27m.20s., SSS = +27m.50s.$
 Manila PSEN = $+22m.0s.$
 Hong Kong PP = $+15m.48s., ? = +23m.56s. = PS + 15s., SS = +28m.0s.$
 Zi-ka-wei $iZ = (+12m.56s.), iPz$ and iZ have been increased by 10m.
 Tucson $e = +23m.24s. = SKS - 4s.$
 Bozeman $eSS = +32m.42s.$
 La Paz $iZ = +26m.30s. = PS + 13s., SSN = +27m.10s.$
 Florissant $ePPPZ = +19m.0s., iPSE = +25m.42s. = SKKS - 1s., i = +28m.0s. = PS + 5s., eSSN = +31m.15s., eP_cSS_cPE = +31m.55s., eSSSE = +35m.45s., eSSSE = +37m.55s.$
 St. Louis $eE = +24m.48s. = SKS - 10s.$ and $+33m.35s. = SS + 0s.$
 Pittsburgh $ePS = +29m.30s.$
 Toronto $eN = +27m.37s.$
 Ottawa $eN = +28m.5s., eE = +30m.4s. = PS + 9s., e = +36m.18s. = PS - 3s., eN = +41m.18s.$
 Tashkent $e = +20m.30s. = SS - 22s., i = +20m.43s.$
 Ekaterinburg IPP = $+21m.34s., iPKS = +22m.36s.$
 Baku PP = $+22m.35s., PKS = +23m.12s., SS = +41m.42s., SSS = +46m.36s.$
 Tiflis $ePKS = +23m.9s.$
 Kucino $ePP = +22m.50s., PPS = +35m.13s., eSS = +41m.12s., SSS = +46m.30s.$
 Pulkovo $ePP = +23m.16s., eSS = +41m.48s., eSSS = +47m.18s.$
 Stuttgart $ePP = +24m.23s., eSKSPN = +34m.48s.$
 Strasbourg PP = $+24m.22s., PPS = +38m.1s.$
 Granada P (1) = $+18m.42s., SKP = +22m.42s., PP (1) = +24m.31s., PP (2) = +25m.19s., SKS = +26m.17s., PPP (1) = +28m.34s., PPP (2) = +29m.40s.$
 Long waves were also recorded at Charlottesville, Chicago, San Juan, Ivigtut, and other European stations.

April 3d. Readings also at 0h. (near Taihoku), 4h. (Samarkand), 5h. (near La Paz and near Zurich), 13h. (near Mizusawa), 15h. (New Plymouth and near Wellington), 19h. (Almata, Frunse, and near Andijan), 23h. (La Paz).

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April 4d. 19h. 16m. 41s. Epicentre 30°6N. 139°5E. N.1.

A = -0.654, B = +0.559, C = +0.509; D = +0.649, E = +0.760;
G = -0.387, H = +0.331, K = -0.861.

A depth of focus 0.065 has been assumed.

	Corr. for Focus	Δ	Az.	P.		O-C.	S.		O-C.	L.	M.
				m.	s.		m.	s.			
Hatidyozima	+1.8	2.5	6	1	0	-1	1	49	-1	—	—
Titizima	+1.0	4.2	147	1	13	-1	2	13	-0	—	—
Mera	+1.0	4.3	3	1	16	+1	2	15	0	—	—
Hamarnatu	+0.9	4.4	340	1	17	+2	2	17	+2	—	—
Ito	+0.9	4.4	355	1	14	-1	2	14	-1	—	—
Misima	+0.8	4.5	354	1	18	+3	2	20	+5	—	—
Numadu	+0.8	4.5	353	1	17	+2	2	19	+4	—	—
Yokohama	+0.7	4.8	1	1	21	+3	2	25	+5	—	—
Kameyama	+0.7	4.9	330	1	24	+4	2	24	+1	—	—
Nagoya	+0.7	5.0	335	i	23	+2	2	28	+3	—	2.5
Yagi	+0.7	5.0	323	1	21	0	2	25	0	—	—
Tokyo	+0.6	5.1	2	1	23	+2	2	23	-2	—	—
Muroto	+0.6	5.2	302	1	20	-2	2	20	-8	—	4.9
Osaka	+0.6	5.2	321	1	23	+1	(2	27)	-1	2.5	3.3
Tyosi	+0.6	5.2	12	1	25	+3	2	29	+1	—	2.6
Wakayama	+0.6	5.2	316	1	20	-2	2	24	-4	—	—
Gihu	+0.6	5.3	335	1	25	+1	2	26	-5	—	—
Hikone	+0.6	5.3	332	1	22	-2	2	26	-5	—	—
Sumoto	+0.6	5.3	315	i	22	-2	i	2	26	—	2.6
Kobe	+0.5	5.4	320	i	23	-1	i	2	31	0	3.0
Kyoto	+0.5	5.4	325	1	27	+3	2	35	+4	—	—
Kakioka	+0.5	5.6	5	1	28	+1	2	36	0	—	—
Kumagaya	+0.5	5.6	359	1	27	0	2	36	0	—	—
Tulukaban	+0.5	5.6	5	1	28	+1	2	32	-4	—	—
Koti	+0.4	5.8	303	i	27	-1	e	2	36	-2	2.7
Mito	+0.4	5.8	8	1	30	+2	2	41	+3	—	—
Oiwake	+0.4	5.8	353	1	29	+1	2	40	+2	—	—
Utsunomiya	+0.4	6.0	3	1	31	0	2	41	-2	—	—
Nagano	+0.4	6.1	350	1	34	+2	2	40	+4	—	—
Toyouka	+0.3	6.2	322	e	33	+1	i	2	59	+3	2.8
Matuyama	+0.2	6.5	302	i	31	-4	i	2	47	-4	2.9
Miyazaki	+0.1	7.0	283	1	38	-3	2	56	-5	—	—
Wazima	+0.1	7.1	342	1	43	+1	3	5	+1	—	—
Hukusima	+0.1	7.2	6	1	47	+3	3	11	+5	—	—
Niigata	0.0	7.3	357	1	49	+5	3	11	+5	—	—
Hamada	-0.1	7.5	307	1	44	-1	3	9	0	—	—
Sendai	-0.2	7.7	8	1	53	+7	3	22	+11	—	—
Kumamoto	-0.2	7.8	289	1	46	-2	3	14	0	—	—
Fukuoka	-0.2	8.2	293	1	50	-3	3	12	-12	—	3.5
Nagasaki	-0.3	8.5	287	1	53	-3	3	24	-5	—	3.6
Mizusawa	-0.4	8.6	8	2	4	+8	3	40	+11	—	—
Nabe	-0.5	9.0	258	1	57	-3	3	34	-2	—	—
Akita	-0.5	9.1	3	2	8	+6	3	49	+10	—	—
Morioka	-0.5	9.2	8	2	8	+5	3	53	+12	—	—
Aomori	-0.8	10.3	5	2	21	+7	4	17	+16	—	—
Okinawa	—	—	—	2	26	—	4	25	—	—	—
Urakawa	-1.1	11.8	12	2	40	+9	4	51	+20	—	—
Keizyo	-1.2	12.4	308	2	37	0	4	47	+4	—	—
Sapporo	-1.3	12.6	6	2	45	+6	5	1	+16	—	—
Zinsen	-1.3	12.7	307	2	39	-1	4	49	+1	—	—
Nemuro	-1.5	13.6	19	2	54	+4	5	30	+25	—	—
Feizyo	-1.5	14.0	311	2	55	0	5	25	+10	—	—
Isigakizima	-1.6	14.9	249	3	2	-4	5	32	-2	—	—
Zi-ka-wei	-1.8	15.5	277	i	3	5	i	5	32	-12	7.1
Taihoku	-2.1	16.8	255	3	22	-3	(6	10)	+2	6.2	7.9

Continued on next page.

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	Corr. for Focus	Δ	Az.	P.		O-C.	S.		O-C.	L.	M.
				m.	s.		m.	s.			
Sikka	-2.4	18.8	7	(3	41)	-5	(6	52)	+4	6.9	7.0
Chiufeng	-2.8	21.2	303	4	6	-5	6	0	?	7.6	—
Manila	-3.1	23.3	231	4	25	-7	7	46?	-24	—	—
Palau	-3.2	23.7	193	4	33	-2	8	12	-4	—	—
Hong Kong	-3.3	24.0	257	4	31	-6	8	12	-8	—	13.8
Phu-Lien	-4.1	31.1	259	5	35	-3	9	59	-16	12.3	—
Irkutsk	-4.4	33.6	320	i 5	56	-2	i 10	50	-1	13.3	13.8
Amboina	-4.6	35.9	198	i 6	12	-5	i 11	12	-12	—	—
Calcutta	-5.6	46.0	271	5	6	?	10	40	?	15.8	—
Medan	-5.7	47.0	242	8	51	+68	15	3	+67	—	—
Batavia	-5.7	48.3	224	7	54	+1	i 14	15	0	—	—
Almata	-5.9	50.4	302	e 8	15	+6	—	—	—	—	—
Frunse	-6.0	52.1	301	e 8	19	-2	—	—	—	—	—
Agra	-6.2	53.3	281	i 8	27	-2	e 17	28	?	30.3	33.4
Andijan	-6.2	54.1	299	e 8	40	+5	—	—	—	—	—
Tashkent	-6.4	56.3	300	i 8	57	+6	i 16	9	+10	—	44.5
Honolulu T.H.	-6.4	56.4	83	e 8	49	-2	e 16	19	+18	—	—
Hyderabad	-6.4	56.6	271	8	58	+5	i 11	12	+9	25.7	32.4
Ekaterinburg	-6.5	58.8	321	i 9	13	+4	i 16	43	+10	25.3	39.0
Bombay	-6.6	60.8	273	9	23	0	19	51	(-7)	42.2	—
Kodaikanal	-6.6	60.8	264	8	17	-66	—	—	—	—	—
Riverview	-6.9	65.4	169	i 11	23	(+ 8)	i 18	4	+8	—	—
Adelaide	-6.9	65.6	180	—	—	—	i 18	7	+8	—	—
Perth	-7.0	66.4	201	e 16	49	?	i 20	49	(+11)	—	—
Melbourne	-7.1	68.6	174	—	—	—	i 18	44	+8	—	—
Baku	-7.3	70.5	306	i 10	28	+1	i 19	5	+8	33.8	45.8
Kucino	-7.3	71.1	324	i 11	13	+42	i 19	43	+38	36.4	42.9
Pulkovo	-7.4	72.7	330	i 10	42	+1	i 19	31	+7	39.3	44.8
Seattle	-7.4	72.9	43	—	—	—	e 19	41	+15	—	—
Tiflis	-7.4	73.3	309	e 10	43	-2	e 19	39	+8	—	—
Helsingfors	-7.5	74.7	332	i 10	53	0	i 19	55	+8	e 36.3	—
Ukiah	-7.5	76.3	52	—	—	—	e 20	25	+18	—	—
Berkeley	-7.6	77.5	52	e 11	16	+6	—	—	—	—	—
Theodosia	-7.6	77.7	315	e 11	10	-1	e 20	26	+4	—	—
Branner	-7.6	77.8	53	e 11	17	+5	—	—	—	—	—
Upsala	-7.6	77.8	334	e 11	10	-2	i 20	23	-1	—	42.8
Scoresby Sund	-7.6	78.0	354	i 11	16	+3	i 20	38	+12	—	—
Simferopol	-7.6	78.6	315	i 11	15	-2	20	31	-2	—	—
Yalta	-7.6	78.8	315	i 11	18	0	20	36	+1	—	—
Sebastopol	-7.7	79.1	315	i 11	24	+5	—	—	—	—	—
Königsberg	-7.7	79.8	328	e 11	22	-1	i 20	47	+1	44.8	49.3
Bozeman	-7.7	80.5	41	—	—	—	i 20	57	+3	—	—
Tinemaha	-7.7	80.7	52	i 11	36	+7	i 21	10	+13	—	—
Santa Barbara	-7.7	81.0	55	i 11	39	+8	e 21	13	+13	—	—
Haiwee	-7.8	81.4	52	i 11	36	+4	e 21	10	+6	—	—
Lund	-7.8	82.3	333	i 11	35	-2	i 21	14	0	—	—
Pasadena	-7.8	82.3	54	e 11	39	+2	e 21	24	+10	—	—
Mount Wilson	-7.8	82.4	54	e 11	41	+3	e 21	23	+8	—	—
Copenhagen	-7.8	82.6	333	i 11	36	-3	e 21	16	-2	—	—
Riverside	-7.8	82.9	54	i 11	43	+2	e 21	26	+5	—	—
Ksara	-7.8	83.3	304	i 11	40	-3	21	21	-5	24.1	—
La Jolla	-7.8	83.6	55	e 11	46	+1	e 21	29	0	—	—
Potsdam	-7.8	84.8	330	e 11	48	-4	e 21	36	-7	46.3	53.3
Hamburg	-7.8	85.2	332	e 11	48	-6	e 21	32	-15	47.7	53.3
Budapest	-7.8	85.3	324	i 11	38	-17	21	38	-10	e 45.3	—
Vienna	-7.9	86.1	325	i 11	52	-6	21	39	-17	—	55.3
Cheb	-7.9	86.7	328	—	—	—	e 21	19?	-44	—	49.3
Göttingen	-7.9	86.7	331	e 15	19?	?	e 21	55	-8	—	51.8
Edinburgh	-8.0	87.8	339	i 22	13	S	(i 22	13)	-1	e 50.3	—
Ivigtut	-8.0	87.9	3	12	4	-3	i 22	11	-4	—	—

Continued on next page,

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	Corr. for Focus	Δ	Az.	P.	O-C.	S.		O-C.	L.	M.	
						m. s.	s.				
De Bilt	-8.0	88.1	333	i 12	4	-4	e 22	8	-9	e 46.3	50.7
Durham	-8.0	88.3	338	—	—	—	22	14	-5	—	—
Tucson	-8.0	88.4	52	e 12	13	+3	i 22	4	-16	—	—
Helwan	-8.0	88.8	303	i 12	4	-8	i 21	51	-33	—	—
Stuttgart	-8.0	89.1	329	i 12	8	-6	e 21	54	-33	e 48.3	—
Innsbruck	-8.0	89.2	327	15	19?	PP	—	—	—	—	—
Stonyhurst	-8.0	89.3	338	—	—	—	i 22	30	0	—	—
Uccle	-8.0	89.4	333	i 12	9	-6	i 22	18	-13	—	—
Straasbourg	-8.0	89.8	330	i 13	14	+57	i 22	33	-2	43.3	—
Bidston	-8.0	89.9	339	—	—	—	i 22	34	-2	—	—
Zurich	-8.1	90.4	329	e 12	13	-7	—	—	—	—	—
Kew	-8.1	90.6	336	—	—	—	i 22	31	-11	e 44.3	—
Oxford	-8.1	90.7	337	e 13	59	?	i 22	30	-13	e 47.3	—
Neuchatel	-8.1	91.4	329	e 12	17	-8	e 22	9	-41	—	—
Paris	-8.1	91.8	333	e 12	20	-7	e 22	12	-42	49.3	58.3
Florence	-8.1	91.9	325	e 13	50	+83	i 22	5	-50	—	36.3
Florissant	-8.2	96.5	36	e 16	41	PP	i 22	40	-60	—	—
St. Louis	-8.2	96.8	36	e 16	48	PP	i 22	41	-62	—	48.8
Ottawa	-8.2	97.6	23	e 16	54	PP	i 23	34	[-40]	e 28.3	—
Toronto	n. -8.3	97.7	27	e 16	56	PP	(28 49)	SS	SS	28.8	—
Little Rock	-8.3	98.4	41	e 17	12	PP	i 22	51	-66	—	—
Buffalo	-8.3	98.5	27	i 17	13	PP	e 22	59	-59	—	—
Pittsburgh	-8.3	100.1	29	—	—	—	i 23	59	{-55}	—	—
Alicante	-8.3	101.6	329	e 22	49	?	e 30	53	?	—	—
Toledo	-8.3	101.8	332	—	—	—	e 23	6	-82	—	—
Fordham	-8.3	102.2	25	e 17	29	?	e 25	31	?	—	—
Georgetown	-8.3	102.6	27	i 17	31	?	24	19?	{-54}	—	—
San Juan	—	125.1	29	e 20	20	?	e 26	20	{-90}	e 61.3	—
La Paz	—	151.1	67	19	2	[-41]	26	21	[-33]	—	—

Additional readings and notes:—

Osaka $i = +2m.45s.$
 Tyosí SS = +1m.32s.
 Toyooka $iP = +1m.36s.$
 Okinawa position unknown.
 Sikka readings have been increased by 6m.
 Hong Kong $i = +5m.39s., +6m.28s.,$ and $+10m.32s.$
 Honolulu T.H. $e = +16m.37s., = P8 - 55s.$ and $+18m.55s. = S_0S - 22s.$
 Riverview $iE = +19m.12s.$ and $+20m.44s.$
 Adelaide $i = +20m.43s.$
 Melbourne $i = +19m.42s., +21m.19s. = S_0S - 24s.$ and $+25m.36s.$
 Helsingfors $ePN = +10m.56s., ePPN = +13m.43s., ePPE = +13m.47s., iPS = +20m.21s., SS = +24m.53s.; T_0 = 19h.16m.36s.$
 Upsala $iSS = +25m.32s.$
 Scoresby Sund = +23m.17s.
 Königsberg $iN = +23m.32s., iSSN = +26m.4s., eE = +27m.38s.$
 Halwee $iSN = +21m.17s.$
 Lund +13m.17s. and +23m.59s.
 Pasadena $iZ = +11m.49s.$
 Mount Wilson $eE = +13m.16s., iE = +21m.25s.$
 Copenhagen +13m.16s. and +24m.1s.
 La Jolla $eE = +13m.24s., iSN = +21m.32s., iE = +21m.35s.$
 Potsdam $eE = +12m.49s., iZ = +13m.28s., +14m.1s.$ and $+15m.4s., iN = +21m.29s., iZ = +21m.59s., iN = +24m.20s., iEN = +24m.27s., iZ = +24m.50s., iEN = +27m.20s.$
 Hamburg $iSN = +21m.38s., iE = +22m.19s.$
 Vienna $PS = +22m.16s., i = +24m.38s., SS? = +27m.59s.$
 Cheb $e = +24m.44s.$ and $+34m.19s. ?$
 Edinburgh $i = +24m.59s.$
 Ivigtut +24m.59s. and +28m.7s.
 De Bilt $iZ = +13m.42s.$ and $+14m.18s., eZ = +15m.37s., eN = +24m.52s., eE = +25m.1s., e = +28m.13s.$
 Durham +25m.7s.
 Tucson $ePP = +15m.47s., e = +16m.49s., +22m.23s.$ and $+23m.43s.$
 Stuttgart $iPZ = +13m.49s., eSP = +14m.21s., ePP = +15m.46s., eEN = +22m.13s., esSEN = +25m.10s., esSEN = +28m.19s., esSS = +30m.31s., eE = +35m.7s.$
 Stonyhurst $i = +28m.27s.$
 Uccle $i = +15m.48s., e = +21m.58s., i = +24m.59s.$ and $+28m.31s.$

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Strasbourg e = +14m.57s. and +15m.26s., iPP = +16m.53s., SKS = +23m.29s.,
 iPS = +25m.18s., i = +28m.31s.
 Bidston e = +22m.7s., i = +25m.19s. and +28m.45s.
 Kew eZ = +17m.19s., eEN = +22m.5s., eN = +25m.5s., eE = +25m.22s.
 Oxford eN = +18m.12s., i = +22m.4s., iN = +25m.21s., and +28m.47s., iE =
 +28m.51s.
 Neuchatel ePP = +16m.1s.
 Paris ePP = +16m.6s., e = +29m.3s.
 Florence i = +25m.4s. and +28m.59s.
 Florissant iP = +16m.48s., iPPNZ = +18m.1s., ePPZ = +18m.22s., iPcPZ =
 +19m.9s., iPcSEN = +23m.11s., iSEN = +23m.34s., iSSEN = +24m.57s.,
 iSSSEN = +25m.37s., iSSSEN = +25m.54s., iScSEN = +26m.19s.
 St. Louis iN = +23m.11s., iE = +23m.30s., iN = +24m.59s., eEN = +25m.38s.
 Ottawa i = +22m.44s., eE = +30m.43s.
 Toronto iN = +22m.41s.
 Little Rock iEN = +23m.43s., +26m.8s., and +27m.14s.
 Buffalo e = +25m.7s.
 Fordham eN = +23m.8s.
 Georgetown pPP = +23m.10s.
 La Paz iN = +19m.20s. and +21m.17s., PPN = +22m.29s., iN = +29m.1s.,
 SKKS = +29m.49s., PPS = +37m.23s.
 Long waves were recorded at Granada.

April 4d. 19h. A second shock from the same neighbourhood as that of 19h.16m.41s.,
 but not from the same epicentre or focus, was recorded at the following stations:
 Ekaterinburg iP = 19h.28m.5s., S = 35m.55s.
 Baku P = 19h.29m.23s., S = 38m.28s.
 Pulkovo P = 19h.29m.38s., S = 38m.48s.
 Helsingfors ePN = 19h.29m.42s., ePE = 30m.0s., eSN = 39m.12s., eSE =
 39m.22s., eSSN = 44m.37s., eSSE = 44m.46s.; T₀ = 19h.18m.37s.
 Additional readings to the tabulated shock may in some cases belong here.

April 4d. Readings also at 6h. (Andijan), 15h. (Andijan, Pulkovo, Ekaterinburg,
 Copenhagen, De Bilt, Uccle, Paris, Strasbourg, Florence, Granada, Ottawa,
 La Plata, La Paz, Sucre, Rio de Janeiro, and San Juan), 16h. (Baku, Tash-
 kent, Pulkovo, and Stuttgart), 19h. (Neuchatel and Wellington), 22h. (near
 Amboina and near Sumoto).

April 5d. Readings at 0h. (Ekaterinburg, Tashkent, Almata, near Andijan, and
 Frunse), 2h. (Little Rock, St. Louis, and San Juan), 5h. (Adelaide, Melbourne,
 Riverview, Sydney, Perth, Manila, Irkutsk, Baku, and Ekaterinburg), 9h.
 (Cheb), 12h. (Nagasaki and Tucson), 14h. (Chur, Neuchatel, and near
 Zurich), 17h. (Medan), 19h. (near Santiago), 21h. (La Paz, Seattle, St. Louis,
 and Honolulu T.H.), 22h. (Baku, Ekaterinburg, Irkutsk, Kucino, Tiflis (3),
 Tashkent, Pulkovo, and Pittsburgh).

April 6d. 0h. 14m. 0s. Epicentre 42°0N. 42°0E. (as on 1930 Nov. 7d.). X.
 A = +.552, B = +.497, C = +.669; D = +.669, E = -.743;
 G = +.497, H = +.448, K = -.743.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tiflis	2.1	98	0 29?	- 1	—	—	i 0.8	—
Theodosia	5.6	304	e 4 25	- ?	(2 27)	- 9	2.4	—
Baku	6.1	103	1 20	- ?	—	—	—	—
Simferopol	6.4	300	e 4 36	S _r	—	—	—	—
Sebastopol	6.8	295	e 3 46	—	—	—	—	—
Samarkand	19.0	88	e 7 54	S	(e 7 54)	+ 8	—	—
Pulkovo	19.2	342	4 24	+ 3	7 54	+ 4	11.5	12.6
Tashkent	20.3	83	—	—	e 7 34	-38	e 10.0	10.7
Andijan	22.7	83	e 4 46	-12	—	—	—	—
Frunse	23.9	77	e 10 0	S	(e 10 0)	+39	—	—

Additional readings:—

Tiflis i = +32s. ? = P_r, e = +53s. ?

Baku e = +1m.37s.

Long waves were also recorded at Ekaterinburg, Kucino, and Copenhagen.

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April 6d. 9h. 11m. 22s. Epicentre 31°·5N. 115°·0E. N.2.

A = -·360, B = +·773, C = +·522; D = +·906, E = +·423;
G = -·221, H = +·474, K = -·853.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Zi-ka-wei	5·5	91	i 1 14	- 4	2 17	- 3	—	3·3
Taihoku	8·7	137	e 3 29	S	(e 3 29)	-12	(4·4)	4·8
Chiufeng	8·7	6	e 2 3	0	e 3 52	+11	e 5·0	—
Hong Kong	9·2	185	2 7	- 3	3 54	0	4·6	5·0
Zinsen	11·3	54	3 0	+21	5 47	+62	—	—
Nagasaki	12·6	80	2 59	+ 3	6 46	L	(6·8)	—
Phu-Lien	13·0	217	2 58	- 4	—	—	6·6	7·1
Hukuoka	13·2	77	e 3 6	+ 1	—	—	e 7·1	7·3
Miyazaki	14·0	84	4 9	+54	7 27	+96	(7·4)	—
Koti	15·8	77	3 38?	- 1	—	—	—	—
Sumoto	16·9	75	3 52	- 1	—	—	9·1	10·6
Kobe	17·2	74	e 3 55	- 2	e 7 22	+16	9·6	9·9
Osaka	17·5	74	3 26	-34	7 6	- 7	9·8	11·3
Manila	17·7	161	4 3	0	7 38	+21	9·4	11·3
Nagoya	18·7	73	e 4 0	-15	9 56	L	(9·9)	—
Oiwake	20·1	69	4 28	- 3	8 20	+12	—	—
Kumagaya	20·7	70	5 4	+27	9 13	+53	—	—
Irkutsk	22·2	342	4 53	0	9 1	+11	11·6	—
Almata	32·1	304	e 6 38	+14	—	—	—	—
Agra	E. 32·4	272	6 24	- 2	11 34	- 7	—	—
Andijan	35·2	296	e 6 57	+ 6	—	—	—	—
Tashkent	37·6	298	e 7 20	+ 8	i 13 3	+ 3	e 19·6	21·1
Samarkand	39·4	295	e 7 33	+ 6	—	—	—	—
Bombay	39·9	262	7 34	+ 3	13 42	+ 7	19·8	—
Ekaterinburg	44·8	321	i 8 38	+27	i 15 14	+27	20·6	—
Baku	52·3	300	e 9 11	+ 2	i 16 41	+ 8	27·1	34·7
Kucino	57·4	319	—	—	e 17 42	0	e 30·8	33·8
Pulkovo	60·6	325	e 10 4	- 5	e 18 25	+ 1	26·6	36·5
Königsberg	67·1	321	e 14 32	PPP	—	—	e 39·6	—

Additional readings and note:—

Zi-ka-wei iZ = +1m.24s., +1m.40s., and +1m.53s.

Taihoku gives S as P and L as S.

Sumoto PN = +4m.8s.

Kucino e = +20m.14s., +22m.33s., and +27m.47s.

Königsberg eE = +22m.20s., +31m.38s., and +33m.48s., eN = +34m.38s. ?

Long waves were also recorded at Sikka, Wellington, Scoresby Sund, and European stations.

April 6d. Readings also at 0h. (Tiflis (2), Hong Kong, Manila, near Hokoto, and Taihoku), 1h. (Baku, Ekaterinburg, Irkutsk, Pulkovo, and near Manila), 2h. (Baku, Ekaterinburg, and Tashkent), 6h. (Andijan), 8h. (near Manila), 9h. (near Hokoto (2)), 10h. (Algiers and Tiflis), 13h. (Tinemaha, Haiwee, Mount Wilson, Pasadena, Melbourne, Riverview, Wellington, Baku, and Ekaterinburg), 14h. (Baku, Ekaterinburg, Irkutsk, Tashkent, Bozeman, and Wellington), 15h. (Lick), 22h. (near Mizusawa).

April 7d. Readings at 1h. (Wellington), 2h. (Tiflis), 7h. (Branner and near Lick (2)), 8h. (near Frunse), 9h. (Tiflis), 10h. (Takaka, Wellington, and near New Plymouth), 11h. (Takaka, near Wellington, and New Plymouth), 13h. (Samarkand and near Andijan), 15h. (near New Plymouth, Seatown, and Wellington), 18h. (Tiflis and near Apia), 20h. (near Reykjavik), 21h. (Manila and New Plymouth), 23h. (Christchurch).

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April 8d. 11h. Shock in South Pacific not affording a determination :—

Suva P = 11h.55m.0s., S? = 57m.36s., M = 12h.1m.
 Melbourne e = 11h.56m.25s., S = 12h.0m.12s., e = 4m.40s., L = 8m.10s., M = 13m.30s.
 Sydney eP = 11h.57m.24s., eS = 12h.3m.12s. L = 6m.48s., M = 8m.42s.
 Arapuni e = 11h.57m.40s., M = 12h.0m.
 Riverview eE = 11h.58m.9s., 59m.0s., and 12h.3m.9s., eL = 5m.36s., M = 9m.40s.
 Wellington i = 11h.28m.26s. (presumably 58m.26s.) and 12h.0m., L = 1m., M = 2m.
 Manila P = 12h.3m.36s., S? = 8m.43s.
 Pasadena eP = 12h.4m.37s., eLE = 37m.
 Haiwee eE = 12h.4m.47s.
 Tinemaha eEN = + 12h.4m.53s.
 Adelaide e = 12h.9m.54s., M = 17m.18s.
 Ekaterinburg i = 12h.11m.32s. and 14m.47s., L = 51m., M = 13h.6m.42s.
 Tiflis e = 12h.12m.2s., e = 15m.16s., e = 25m.5s., L = 13h.8m., M = 19-5m.
 Honolulu T.H. e = 12h.13m.0s. and 15m.33s.
 Bombay eP = 12h.14m.27s.
 Toronto eE = 12h.21m.0s. ? LE = 50m.0s.
 Ottawa eN = 12h.21m.0s., eE = 22m.6s., and 28m.24s., eL = 52m.0s.
 Tashkent e = 12h.24m. and 53m., M = 13h.3m.36s.
 Long waves were also recorded at Perth, Kodaikanal, Ivigtut, San Juan, Baku, Pulkovo, and other American and European stations.

April 8d. Readings also at 0h. (Glenmuick), 4h. (Alicante), 8h. (Ekaterinburg, Tashkent, near Almata, and Andijan), 10h. (near Sumoto), 11h. (Andijan and Irkutsk), 12h. (La Paz), 19h. (Tiflis), 22h. (Ekaterinburg, St. Louis, and Pittsburgh), 23h. (Fordham, Madison, Irkutsk, and near Mizusawa).

April 9d. Readings at 1h. (near Sumoto and Tyosi), 6h. (Tiflis), 7h. (Lick), 9h. (near La Paz), 13h. (near Tyosi), 14h. (near Tyosi and near Manila), 17h. (Algiers).

April 10d. Readings at 1h. (near Hastings), 2h. (Andijan and Samarkand), 3h. (Tiflis), 4h. (near Trieste), 5h. (Andijan and Samarkand), 6h. (Pasadena), 7h. (Baku, Ekaterinburg, Samarkand, Sebastopol, Simferopol, Theodosia, Tiflis, Yalta, and Ksara), 8h. (Almata, Andijan, Tashkent, Ekaterinburg, and Irkutsk), 9h. (near Amboina and near Malabar), 11h. (near Hastings), 14h. (Suva), 15h. (near Wellington), 16h. (Bombay and near Calcutta), 18h. (Andijan), 20h. (Tiflis), 21h. (Andijan, Tashkent, and near Samarkand), 22h. (Wellington).

April 11d. 9h. 23m. 26s. Epicentre 37°-5S. 72°-0W. N.3.

A = +.245, B = -.755, C = -.609; D = -.951, E = -.309;
 G = -.188, H = +.579, K = -.793.

Very uncertain determination.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago	4.2	15	0 59	- 1	1 29	P _g	1.6	1.7
La Plata	11.6	81	2 47	+ 4	4 58	+ 5	5.4	—
Sucre	19.4	20	4 19	- 4	—	—	—	—
La Paz	21.3	10	1 4 44	+ 1	1 8 32	0	11-0	12.5
Rio de Janeiro	28.7	67	—	—	9 9 59	-44	e 14.3	—

Rio de Janeiro gives also eSN = +10m.4s.

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April 11d. 18h. 13m. 0s. Epicentre 34°·0N. 140°·2E. (as on 1931 Nov. 2d.). R.3.

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.
Tokyo	1·7	348	0 21	- 3	0 31	-13	—	—
Tyosi	1·8	17	0 24	- 2	0 41	- 5	—	0·8
Nagoya	2·9	294	0 41	0	1 20	+ 6	1·5	—
Osaka	3·9	282	0 57	+ 1	(1 50)	+10	1·8	2·7
Kobe	4·2	280	e 1 2	+ 2	e 2 31	S _r	—	2·6
Sumoto	4·4	276	e 1 3	0	2 14	S*	—	2·8
Toyouka	4·7	292	e 1 2	- 5	i 2 13	S*	—	2·3
Mizusawa	5·2	8	0 53	-21	1 37	P*	—	—

Additional readings :—

Tyosi SE = +44s.

Sumoto SN = +2m.24s.

Toyouka ePE = +1m.11s., ePN = +1m.16s.

Mizusawa PE = +56s.

April 1d. Further shocks, presumably from the epicentre of 9h., were recorded at Santiago. The S-P interval is almost constant at 28s. to 30s., and L and M follow S and L respectively by 0·1m. in each case.

The times for P are as follows :—

h.	m.	s.	h.	m.	s.	h.	m.	s.
1	55	46	6	20	38	9	24	25
4	15	42	6	38	26	10	15	25
4	29	8	6	43	57	12	29	4
5	9	30	7	29	40	15	25	21
5	30	57	7	34	44	17	11	9

April 11d. Readings also at 0h. (Wellington), 1h. (near Manila), 4h. (La Paz, La Plata, and Sucre), 5h. (La Plata), 6h. (Baku, Ekaterinburg, Irkutsk, and Tashkent), 11h. (near Kotl), 13h. (4) and 14h. (4) (Belgrade), 15h. (Baku, La Paz, La Plata, Sucre, and Belgrade (2)), 16h. (Belgrade (3)), 17h. (La Paz and La Plata), 18h. (Algiers), 23h. (Samarkand).

April 12d. 7h. 0m. 40s. Epicentre 42°·0N. 42°·0E. (as on 6d.).

X.

A = +·552, B = +·497, C = +·669 ; D = +·669, E = -·743 ;
G = +·497, H = +·448, K = -·743.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°		m. s.	s.	m. s.	s.	m.	m.
Tifis	2·1	98	i 0 18	-12	—	—	10·5	—
Theodosia	5·6	304	2 8	S	(2 8)	-15	—	—
Baku	6·1	103	1 27	P*	(2 38)	+ 2	2·6	5·2
Yalta	6·2	297	1 58	—	—	—	—	—
Simferopol	6·4	300	1 39	+ 8	—	—	—	—
Ksara	9·5	212	2 10	- 4	5 20	L	(5·3)	—
Samarkand	19·0	88	e 4 18	- 1	—	—	—	—
Ekaterinburg	19·0	33	i 4 21	+ 2	8 0	+14	10·3	—
Pulkovo	19·2	342	i 4 44	+23	8 32	+42	11·0	11·3
Tashkent	20·3	83	e 4 14	-19	i 8 1	-11	e 8·7	12·4
Andijan	22·7	83	e 4 59	+ 1	e 9 2	+ 3	—	—

Additional readings :—

Tifis i = +21s., +30s., and +48s.

Baku e = +1m.48s. = P* and +2m.19s.

Long waves were also recorded at Kucino and Copenhagen.

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April 12d. 23h. 52m. 40s. Epicentre 4°5S. 152°0E. (as on 1931 June 1d.). R.2.

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

	Δ	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Palau	21.1	304	4 45	+ 4	8 46	+18	—	—
Amboina	23.7	271	15 5	- 2	—	—	i 10.9	—
Riverview	29.2	182	e 6 12	+14	i 10 38	-13	15.2	17.3
Sydney	29.2	182	e 4 20	-98	e 10 8	-43	16.0	16.9
Adelaide	32.8	200	e 7 26	PP	i 11 35	-13	e 12.8	21.8
Melbourne	33.9	190	e 5 54	-45	11 55	- 9	18.3	21.0
Manila	36.2	302	i 7 0	0	12 39	0	17.3	—
Isigakizima	39.6	319	7 29	0	13 22	- 8	—	—
Arapuni	39.9	150	2 20?	?	—	—	—	—
Miyazaki	41.4	332	7 41	- 3	13 56	- 1	—	—
Wellington	42.1	154	7 37	-12	13 45	-23	17.3	23.3
Sumoto	42.1	340	e 7 34	-15	17 6	SS	—	17.8
	42.1	340	e 7 50	+ 1	17 4	SS	—	—
Kobe	42.3	340	e 8 16	+25	—	—	—	21.0
Nagasaki	42.8	333	7 50	- 5	14 12	- 6	—	—
Perth	43.5	227	8 20	+19	14 20	- 8	24.7	26.3
Batavia	44.9	266	i 8 12	0	15 8	+19	—	—
Hong Kong	45.7	308	8 19	+ 1	15 0	0	21.4	24.2
Zinsen	48.2	332	8 34	- 4	15 31	- 5	—	—
Sapporo	48.6	350	8 39	- 2	15 31	-10	—	—
Phu-Lien	51.2	302	9 1	+ 1	—	—	24.3	—
Medan	53.9	278	i 11 18	PP	17 8	- 8	e 25.3	—
Honolulu T.H.	55.5	60	e 12 20?	PPP	17 8	?	25.0	—
Calcutta	67.7	297	10 59	+ 3	17 44	—	33.3	34.9
Irkutsk	69.6	331	11 2	- 6	20 5	-11	—	—
Hyderabad	75.8	289	11 40	- 5	21 19	-10	39.6	50.4
Bombay	81.3	290	12 9	- 6	22 18	-12	42.2	—
Frunse	84.4	314	e 10 5	?	e 20 28	?	—	—
Sitka	84.5	31	—	—	e 22 45	[-10]	e 34.0	—
Andijan	85.2	313	e 11 34	-60	e 22 26	-44	—	—
Tashkent	87.6	312	i 12 40	- 6	23 0	[-17]	e 39.3	55.5
Berkeley	89.4	52	—	—	e 23 19	[-10]	e 43.3	—
Victoria	89.9	41	23 15	S	(23 15)	[-17]	41.5	44.8
Seattle	90.4	43	—	—	e 22 30	[-65]	e 42.3	—
Mount Wilson	92.5	56	e 13 0	- 9	—	—	—	—
Pasadena	92.5	56	e 13 0	- 9	e 23 30	[-17]	e 41.3	—
Tinemaha	92.5	53	e 13 7	- 2	i 23 32	[-15]	—	—
Haiwee	92.7	54	e 13 13	+ 3	i 23 32	[-16]	—	—
Riverside	93.1	57	e 13 7	- 5	e 23 33	[-18]	—	—
Ekaterinburg	94.5	327	13 11	- 7	i 24 6	[+ 8]	39.3	53.0
Bozeman	98.1	45	—	—	24 2	[-14]	e 43.3	—
Tucson	98.5	58	e 17 34	PP	e 24 5	[-13]	e 44.3	—
Baku	101.8	311	e 18 8	PP	24 26	[-12]	46.3	58.9
Tiflis	105.8	312	18 25	PP	24 42	[-12]	51.3	73.2
Kucino	107.1	327	18 37	PP	27 51	PS	47.3	62.0
Pulkovo	109.4	333	i 18 52	PP	i 24 52	[-19]	51.3	68.4
Theodosia	111.8	317	e 18 32	[+ 9]	—	—	—	—
Simferopol	112.7	317	e 18 20	[- 6]	—	—	—	—
Little Rock	113.5	54	e 13 18	-90	i 25 3	[-25]	—	—
Scoresby Sund	113.9	358	19 20?	PP	25 14	[-16]	55.3	—
Florissant	114.2	50	e 12 25	?	i 25 12	[-19]	54.3	61.3
St. Louis	114.4	50	e 12 20	?	i 25 11	[-20]	—	58.3
Chicago	115.4	45	e 17 20	?	e 25 8	[-27]	—	—
Copenhagen	119.5	335	19 20?	?	e 25 44	[- 5]	55.3	—
Potsdam	121.4	332	i 18 46	[- 3]	e 25 20?	[-35]	59.3	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ottawa	121.8	38	—	—	e 25 38	[-18]	e 51.3	—
Cheb	123.2	330	—	—	e 27 26	{-12}	e 59.3	75.3
Göttingen	z. 123.4	333	e 18 48	[- 6]	—	—	e 75.3	—
Edinburgh	125.0	342	—	—	e 38 20?	?	—	—
De Bilt	125.1	336	e 20 44	PP	—	—	e 56.3	70.4
Stuttgart	125.7	331	e 18 52	[- 6]	—	—	e 62.3	—
Uccle	126.4	335	18 56	[- 4]	e 27 20?	{-38}	56.3	—
Strasbourg	126.5	331	e 18 55	[- 5]	e 30 30	PS	e 57.3	—
Chur	126.7	329	e 18 56	[- 4]	—	—	—	—
Florence	127.7	324	20 52	PP	31 5	PS	40.3	53.3
Kew	127.7	339	e 22 13	?	—	—	64.3	69.5
Oxford	N. 127.8	339	—	—	i 25 50	[-23]	e 64.3	72.1
Paris	128.7	335	i 18 59	[- 5]	—	—	64.3	80.3
La Plata	131.6	147	22 28	PKS	—	—	—	—
La Paz	135.1	119	e 19 13	[- 2]	26 23	[-10]	72.3	—
Alicante	138.0	327	e 22 51	PKS	—	—	e 68.1	—
Toledo	z. 138.6	331	e 19 12	[- 8]	—	—	—	—
Almeria	140.0	327	e 19 19	[- 2]	—	—	—	—
San Juan	140.3	65	i 19 29	[+ 7]	i 29 1	{-25}	e 65.3	—
Granada	140.5	330	i 19 22	[0]	—	—	e 72.1	92.4
Malaga	141.2	328	e 19 21	[- 2]	—	—	—	—
San Fernando	142.4	331	19 53	[+28]	—	—	80.3	93.8
Río de Janeiro	148.8	152	19 20?	[-20]	—	—	e 57.3	—

Additional readings:—

Melbourne e = +8m.10s., i = +14m.7s. and +16m.38s.
 Sumoto ePZ = +7m.44s.
 Perth PP = +10m.15s., PPP = +10m.25s., PS = +14m.25s., SS = +17m.30s.
 Hong Kong PP = +10m.1s., SS = +18m.30s.
 Sitka e = +30m.38s.
 Berkeley eE = +23m.23s.
 Ekaterinburg IPP = +17m.3s., iSKS = +23m.40s., iPPS = +25m.45s., SS = +30m.44s.
 Bozeman e = +28m.44s.
 Baku ePS = +26m.15s., SS = +31m.50s., SSS = +36m.32s.
 Tiflis PPP = +20m.51s., ePPS = +28m.13s.
 Kucino SS = +33m.44s.
 Pulkovo ePS = +28m.14s., ePPS = +29m.8s., SS = +34m.8s.
 Scoresby Sund +26m.20s. = SKKS -14s. and +29m.2s. = PS -4s.
 Florissant ePPZ = +19m.20s., i?EN = +27m.10s., iPSEN = +29m.13s., eSSE = +34m.43s.
 St. Louis iE = +26m.20s. = SKKS -18s.
 Chicago ePS = +29m.8s., e = +42m.20s.?
 Potsdam iZ = +20m.21s. = PP +2s., eNZ = +31m.20s., eZ = +35m.50s., eN = +37m.20s.?
 Ottawa e = +27m.8s. = SKKS -20s., eN = +36m.50s.
 Göttingen eZ = +20m.35s. = PP +2s.
 Stuttgart ePP = +20m.44s., ePPSZ = +32m.20s.
 Uccle e = +20m.54s. = PP +1s., +22m.12s. and +38m.20s.? = SS +15s.
 Strasbourg ePP = +20m.55s.
 Paris iPP = +22m.17s.
 La Paz IPP = +22m.43s.
 San Juan IPP = +22m.51s.
 Granada PKP = +19m.25s.
 Malaga i = +21m.37s., e = +31m.27s.
 Long waves were also recorded at Lund, Upsala, Ivigtut, and the American stations.

April 12d. Readings also at 0h. (Andijan), 3h., 4h., and 5h. (La Paz), 7h. (Sucre and near La Paz), 9h. (near Wellington), 12h. (near Manila), 13h. (near Batavia and Malabar), 14h. (near La Paz), 17h. (near Tyost), 19h. (Lick).

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April 13d. 3h. 59m. 6s. Epicentre 4°8S. 128°4E. (given by Batavia). N.3.

A = -0.619, B = +0.781, C = -0.084; D = +0.784, E = +0.621;
G = +0.052, H = -0.066, K = -0.996.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	1.2	348	i 0 5	-12	—	—	—	—
Manila	20.8	339	i 4 34	-4	8 16	-6	10.2	—
Malabar	20.8	262	4 40	+2	8 31	+9	—	—
Batavia	21.5	265	4 48	+3	9 4	SS	—	—
Perth	29.6	202	e 8 29	+148	—	—	—	—
Hong Kong	30.5	334	—	—	10 58	-14	—	15.6
Adelaide	31.6	164	—	—	e 11 39	+10	17.7	20.3
Riverview	35.9	146	—	—	i 12 44	+9	—	20.5
Sydney	35.9	146	e 4 12	?	—	—	19.1	21.4
Melbourne	36.3	157	e 7 26	+26	12 49	+8	19.8	—
Apia	59.6	103	i 10 9	+7	—	—	—	—
Bombay	59.6	295	e 5 38	?	—	—	—	—
Irkutsk	60.7	344	e 10 0	9	—	—	17.9	—
Tashkent	70.8	317	e 11 24	+8	e 20 36	+5	—	42.1
Ekaterinburg	82.2	329	—	—	(22 54?)	+15	22.9	—
Baku	84.5	312	e 12 32	+1	e 22 52	-11	39.9	—
La Paz	z. 153.1	143	e 19 56	[+10]	—	—	—	—

Additional readings:—

Perth e = +12m.29s., SS+9s., i = +19m.14s.

Adelaide i = +14m.54s.

Apia e = +8m.12s., i = +9m.11s.

Tashkent e = +21m.21s.

Long waves were also recorded at Wellington and De Bilt.

April 13d. Readings also at 0h. (near Amboina), 1h. (Cheb), 4h. (3) and 5h. (near Amboina), 7h. and 8h. (near Sumoto), 9h. (near Amboina), 11h. (New Plymouth and near Christchurch), 12h. (Branner and near Toyooka), 13h. (Andijan), 15h. and 17h. (Wellington), 18h. (near Apia), 19h. (La Plata), 22h. (Tyosi and near Mizusawa).

April 14d. 1h. 38m. 30s. Epicentre 57°9N. 31°5W. N.1.

Probable error of epicentre $\pm 0^{\circ}.21$.

A = +0.453, B = -0.278, C = +0.847; D = -0.522, E = -0.853;
G = +0.722, H = -0.443, K = -0.531.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Reykjavik	7.8	32	1 53	+2	3 39	+20	4.3	—
Ivigtut	9.0	298	2 8	+1	—	—	4.5	—
Scoresby Sund	13.2	14	3 3	-2	5 48	+16	6.5	—
Edinburgh	15.5	85	—	—	16 54	+27	8.0	10.9
Dyce	15.7	80	—	—	16 19	-12	—	—
Bidston	16.5	94	e 4 5	+17	17 20	+30	e 9.3	11.0
Stonyhurst	16.7	91	13 52	+2	17 24	+29	8.3	10.2
Durham	16.8	88	—	—	7 11	+14	—	9.7
Oxford	18.3	97	e 4 11	+1	17 46	+15	9.5	13.8
Bergen	18.8	67	4 14	-2	7 54	+12	—	12.5
Kew	19.0	96	e 4 19	0	18 3	+17	9.5	9.9
De Bilt	21.6	90	4 46	0	8 49	+11	e 10.5	12.3
Uccle	21.8	96	4 49	0	8 55	+13	10.0	12.0
Paris	22.0	100	1 4 49	-2	e 8 58	+12	10.5	11.5
Hamburg	23.4	83	e 5 5	0	19 38	+26	e 12.6	13.5

Continued on next page.

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	Δ	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Copenhagen	23.7	76	i 5 8	+ 1	9 31	+13	—	—
Lund	24.2	76	5 12	0	i 9 41	+14	—	—
Göttingen	z. 24.4	86	i 5 12	- 2	—	—	—	16.5
Besançon	24.8	99	e 5 18	0	—	—	e 12.5	—
Strasbourg	24.9	95	e 5 20	+ 1	e 10 2	+23	e 12.5	—
Upsala	24.9	65	e 5 18	- 1	9 50	+11	e 12.5	14.2
Toledo	25.2	124	e 5 25	+ 3	10 11	+27	e 13.0	—
Neuchâtel	25.4	99	e 5 24	0	e 10 8	+20	—	—
Stuttgart	25.5	93	e 5 28	+ 3	e 10 1	+11	e 13.1	17.2
Jena	25.6	87	e 5 24	- 1	e 10 18	+27	e 16.5	17.5
Potsdam	25.6	83	e 5 42	+17	e 9 54	+ 3	e 13.0	15.5
Zurich	26.0	96	e 5 30	+ 1	—	—	—	—
Tortosa	N. 26.9	116	e 5 41	+ 7	10 24	+17	e 13.1	18.1
Chur	26.8	96	e 5 30	- 6	—	—	—	—
Granada	27.6	126	i 5 50	+ 6	e 10 35	+10	13.3	15.6
Malaga	27.6	128	5 48	+ 4	10 42	+17	—	16.9
Alicante	28.0	121	e 4 31	-76	e 10 57	+25	e 13.2	—
Königsberg	28.3	74	—	—	e 10 55	+18	e 16.2	19.5
Almeria	28.4	125	e 4 54	-57	e 10 56	+18	e 14.9	—
Ottawa	29.5	264	—	—	e 10 56	0	e 16.5	—
Vienna	29.7	88	e 6 0	- 2	—	—	—	20.5
Triest	29.9	94	i 6 6	+ 2	e 10 57	- 6	—	—
Florence	29.9	99	7 0	PP	11 5	+ 2	—	12.5
Pulkovo	30.9	60	i 6 12	- 1	e 11 16	- 2	13.0	15.1
Algiers	31.0	115	e 6 4	-10	9 52	?	12.9	—
Zagreb	31.0	89	e 6 18	+ 4	—	—	e 15.5	e 18.0
Budapest	31.6	87	—	—	e 11 30?	+ 1	e 18.0	19.5
Toronto	32.6	267	—	—	e 11 6	-39	15.7	—
Georgetown	34.7	257	—	—	i 11 48	-29	—	16.6
Charlottesville	36.1	258	e 8 42	PP	e 12 24	-14	e 16.0	—
Theodosia	41.7	76	e 7 36	-10	—	—	—	—
Florissant	41.8	270	—	—	e 17 0	(-53)	—	24.0
St. Louis	41.9	270	e 7 45	- 3	e 17 10	(-43)	—	22.5
Ekaterinburg	45.7	48	e 8 16	- 2	e 14 9	-51	20.5	23.5
Baku	52.5	71	—	—	e 17 37	+62	e 32.9	36.4
Tashkent	61.1	58	e 10 8	- 4	e 18 0	-30	—	28.9
Andijan	62.9	54	e 9 57	-28	—	—	—	—
La Paz	z. 80.3	215	e 12 17	+ 8	—	—	—	—

Additional readings :-

Kew IEZ = +4m.23s., SZ = +8m.12s.

Paris PS = +9m.15s.

Upsala SSN = +10m.59s.

Toledo iP = +5m.28s.

Stuttgart e = +5m.33s. = PP - 24s.

Potsdam eNZ = +6m.6s. = PP + 8s., eE = +7m.30s.?, iN = +9m.30s.?

Triest e = +7m.16s., ePPP = +7m.28s.

Zagreb e = +13m.49s.

Georgetown i = +12m.20s.

Florissant iEN = +17m.12s., +20m.43s., and +21m.30s.

St. Louis eEN = +9m.30s.

Ekaterinburg SS = +18m.25s.

Tashkent e = +11m.48s., +15m.12s., and +21m.12s.

Long waves were also recorded at Irkutsk, Kucino, American, and other Euro-

pean stations.

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April 14d. 16h. 58m. 48s. Epicentre 1°1S. 134°2E. N.3.

A = -.697, B = +.717, C = -.019; D = +.717, E = +.697;
G = +.013, H = -.014, K = -1.000.

	Δ °	Az. °	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Amboina	6.5	247	i 1 32	0	1 36	?	—	—
Manila	20.4	321	4 32	- 2	8 16	+ 2	10.2	12.3
Adelaide	34.1	175	—	—	e 13 48	SS	e 17.2	20.2
Riverview	36.4	157	—	—	e 14 30	SS	—	24.2
Tyosi	37.3	9	e 5 33	?	—	—	—	—
Melbourne	38.0	167	—	—	e 13 26	+20	20.4	—
Irkutsk	59.0	339	e 9 57	0	—	—	e 31.2	—
Frunse	69.1	317	e 8 31	?	—	—	—	—
Andijan	69.8	315	e 11 14	+ 5	—	—	—	—
Ekaterinburg	82.0	328	i 12 18	0	e 22 30	- 7	36.2	—
Baku	86.4	311	—	—	e 23 27	+ 6	40.7	—

Long waves were also recorded at Sydney.

April 14d. Readings also at 1h. (La Plata), 3h. (near Osaka, Tokyo, and Tyosi), 6h. (Adelaide, Melbourne, Riverview, Sydney, Arapuni, Suva, and Wellington), 7h. (Baku, Ekaterinburg, Perth, and near Mizusawa), 8h. (Wellington), 9h. (Almata), 10h. (near Santiago), 11h. (Amboina, Batavia, Manila, La Plata, Baku, Ekaterinburg, near Christchurch, and near Santiago), 12h. (Baku and near Batavia), 14h. (Wellington), 17h. (near Mizusawa), 19h. (Tiflis).

April 15d. Readings at 1h. (Nagoya, Tucson, and near Tananarive), 2h. (Andijan), 3h. and 4h. (near Manila), 5h. (Port au Prince), 7h. (Ekaterinburg and near Mizusawa), 8h. (Baku, Irkutsk, Tiflis, and Tashkent), 9h. (Tiflis and Nagoya), 12h. (Baku, Ekaterinburg, Tiflis, and near Andijan (2)), 13h. (Granada, near Almeria, and near Tananarive (2)), 14h. (Tyosi), 16h. (Lick), 17h. (Irkutsk), 18h. (Baku, Tiflis, Ekaterinburg, and Mizusawa), 19h. (Tyosi and near Nagoya), 22h. (near Almata).

April 16d. 2h. 56m. 20s. Epicentre 18°3N. 105°5W. N.3.

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

	Δ °	Az. °	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Tucson	14.8	342	e 3 21	- 5	—	—	e 7.3	—
Riverside	18.9	328	e 4 19	+ 2	—	—	—	—
Mount Wilson	N. 19.4	327	e 4 40	+17	—	—	—	—
Pasadena	19.4	327	e 4 33	+10	—	—	e 12.3	—
Little Rock	20.2	33	i 4 15	-17	1 8 14	+ 4	—	—
Haiwee	N. 21.0	331	e 4 38	- 2	—	—	—	—
Tinemaha	21.9	332	e 4 48	- 2	—	—	—	—
St. Louis	24.3	30	e 4 56	-17	e 9 16	-12	—	14.4
Florissant	24.4	30	—	—	1 9 19	-11	—	16.2
Columbia	26.9	50	e 8 58	(- 3)	e 10 4	-10	e 14.7	—
Bozeman	27.8	352	—	—	e 10 16	-12	e 14.7	—
Chicago	28.0	29	e 5 46	- 1	e 10 10	-22	e 14.7	—
Madison	28.3	25	—	—	e 10 44	+ 7	e 14.6	16.5
Charlottesville	30.7	45	—	—	e 11 40	+24	—	18.0
Pittsburgh	31.2	39	e 3 43	?	e 10 57	-26	e 17.4	—
Georgetown	32.1	44	—	—	e 14 38	?	—	20.7
Toronto	33.5	34	e 10 1	(+40)	e 15 21	?	18.8	—
Ottawa	36.7	35	—	—	e 14 50	SS	19.7	—
Harvard	37.8	43	—	—	e 14 39	+96	e 21.2	—
La Paz	z. 50.6	131	e 8 56	0	—	—	—	—

Additional readings:—

Little Rock iEN = +4m.41s. = PP-4s., iE = +9m.29s. and +10m.19s., iEN = +10m.36s.

Florissant iEN = +10m.10s., +12m.19s., +13m.3s., +13m.43s., and +14m.57s.

Charlottesville e = +13m.16s.

Pittsburgh e = +14m.16s. and +14m.22s.

Long waves were also recorded at Ann Arbor, Buffalo, Sitka, Scoresby Sund, Helsingfors, Florence, Baku, Ekaterinburg, Irkutsk, and Pulkovo.

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April 16d. 18h. 48m. 10s. (I) }
 18h. 55m. 4s. (II) } Epicentre 37°·2N. 120°·8W. N.3.
 18h. 57m. 0s. (III) } X.
 X.

$$A = -\cdot408, B = -\cdot684, C = +\cdot605.$$

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Lick	0·7	281	i 0 9	- 1	—	—	—	—
II	0·7	281	e 0 9	- 1	i 0 17	- 1	—	0·3
III	0·7	281	e 0 9	- 1	e 0 16	- 2	e 0·3	—
I Branner	N.	1·1	281	i 0 17	+ 1	—	—	—
II	N.	1·1	281	e 0 17	+ 1	e 0 30	+ 2	—
III	N.	1·1	281	—	—	e 0 25	- 3	—
I Berkeley	1·4	300	i 0 22	+ 2	i 0 37	+ 1	—	—
II	1·4	300	e 0 23	+ 3	—	—	—	—
I San Francisco E.	1·5	293	e 0 21	0	i 0 40	+ 1	—	—

Additional readings and note :—

Lick II iN = +13s.

Berkeley I iPE = +25s. = P*, iS = +42s. = S*; S is given as i.

April 16d. Readings also at 4h. (Tifis and Berkeley), 5h. (Seatoun, near Christchurch, New Plymouth, and Wellington; Wellington gives epicentre 41°·4S. 172°·5E.), 9h. (Frunse and near Andijan), 10h. (La Plata, Sucre, and near La Paz), 11h. (Baku, Ekaterinburg, Tifis, Edinburgh, Florence, Ottawa, and San Juan), 12h. (Rio de Janeiro), 15h. (near Taihoku), 16h. (near New Plymouth and Wellington; Wellington gives epicentre 40°·7S. 171°·7E.), 17h. (Alicante), 19h. (Mizusawa and Tyosi), 22h. (Ekaterinburg, Tifis, and Irkutsk).

April 17d. 9h. 44m. 14s. Epicentre 41°·8S. 171°·9E. (given by Wellington) N.3.

$$A = -\cdot738, B = +\cdot105, C = -\cdot667.$$

	Δ	Az.	P.	O-C.	S.	O-C.
	°	°	m. s.	s.	m. s.	s.
Takaka	1·2	36	0 44	P _s	0 56	P _s
Glennmuick	1·4	140	0 46	P _s	1 2	P _s
Christchurch	1·8	163	0 26	0	0 47	+ 1
Wellington	2·2	77	0 29	- 2	0 55	- 2
Seatoun	2·2	77	0 46	P _s	1 6	P*
New Plymouth	3·2	31	0 46	0	1 23	+ 1

Additional readings :—

Seatoun e = +55s. = S - 2s.

New Plymouth P* = +57s., S* = +1m.33s., S_s = +1m.44s.

April 17d. Local shocks were recorded at Reykjavik with S-P interval of 5 secs. The following are the times of the first phase of each shock which, except when otherwise indicated, is always P. :—

h.	m.	s.	h.	m.	s.	h.	m.	s.
7	46	26	13	54	54S.	14	48	24S.
10	14	16	13	55	41	15	5	45S.
11	50	51	14	3	58	15	33	41
12	16	34S.	14	23	26	15	45	35
13	34	34	14	29	36	16	8	26S.
13	41	10	14	33	55	16	12	16
13	53	27S.	14	38	57			

All the shocks for which P is recorded record also S at exactly 5 secs. interval.

April 17d. Readings also at 0h. (Andijan (2)), 1h. (Hong Kong, Manila, Batavia, and Medan), 2h. (Berkeley), 3h. (Tifis, La Paz, Tyosi, and near Mizusawa), 7h. (Scoresby Sund), 10h. (near Amboina), 12h. (Tifis), 13h. (Scoresby Sund, and near New Plymouth), 14h. (Alicante), 15h. (Honolulu T.H. and near Tyosi), 19h. (Suva), 22h. (Naples (2)).

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April 18d. 4h. 50m. 6s. Epicentre 4° 8S. 128° 4E. X.

(as on 13d. and as given by Batavia).

A = -·619, B = +·781, C = -·084.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	s	m. s.	s.	m. s.	s.	m.	m.
Amboina	1·2	348	i 0 6	-11	i 0 8	-23	—	—
Manila	20·8	339	4 36	- 2	8 25	+ 3	—	—
Batavia	21·5	265	4 50	+ 5	10 9	L	(10·2)	—
Perth	29·6	202	e 6 59	PP	e 11 9	+11	—	—
Hong Kong	30·5	334	6 4	- 5	(11 1)	-11	11·0	13·0
Adelaide	31·6	164	—	—	i 12 32	+63	e 15·5	17·9
Riverview	35·9	146	—	—	e 14 36	SS	—	20·4
Melbourne	36·3	157	—	—	i 12 47	+ 6	e 20·0	—
Irkutsk	60·7	344	e 10 5	- 4	e 18 18	- 7	e 29·9	—
Andijan	68·4	317	e 9 49	-72	—	—	—	—
Tashkent	70·8	317	e 12 2	+46	e 20 20	-11	—	43·7
Ekaterinburg	82·2	329	i 12 17	- 2	22 25	-14	36·9	—
Baku	84·5	312	e 12 31	0	22 55	- 8	e 42·9	—
Tiflis	88·5	312	12 49	- 1	e 23 35	- 7	e 49·9	—

Additional readings:—

Hong Kong S? = +8m.42s.

Melbourne 1 = +16m.54s. = S_cS - 26s.

Tiflis eP_cP = +13m.4s., ePPP = +18m.31s., eSKS = +23m.16s., ePPS = +24m.37s.

April 18d. 11h. 23m. 27s. Epicentre 24° 5N. 63° 4E. N.2.

A = +·407, B = +·814, C = +·415; D = +·894, E = -·448;

G = +·186, H = +·371, K = -·910.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	s	m. s.	s.	m. s.	s.	m.	m.
Bombay	10·3	121	(2 29)	+ 4	(4 50)	+29	4·8	11·7
Agra	13·4	75	e 3 0	- 7	—	—	—	—
Dehra Dun	14·2	62	2 53	-25	5 53	- 3	9·0	9·6
Hyderabad	15·7	114	3 38	0	6 53	+22	8·0	12·4
Tashkent	17·5	51	i 3 51	- 9	—	—	—	—
Andijan	17·9	23	e 2 48	-77	e 7 21	- 1	10·7	—
Baku	19·5	328	4 23	- 1	i 8 5	+ 9	11·6	16·1
Frunse	20·6	24	e 5 10	+34	—	—	9·8	—
Almata	21·8	27	e 4 49	0	—	—	—	—
Calcutta	22·9	90	5 16	+16	8 57	- 6	11·5	12·5
Tiflis	23·1	322	5 2	0	e 9 12	+ 5	12·6	21·8
Colombo	23·6	136	5 12	+ 6	—	—	—	17·1
Ksars	25·7	298	5 35	+ 9	10 6	+13	13·4	15·6
Helwan	29·0	288	e 6 1	+ 5	11 13	+25	—	20·5
Ekaterinburg	32·4	357	i 6 25	- 1	i 11 36	- 5	17·6	20·9
Kucino	36·4	335	e 6 33	-28	i 12 9	-33	16·6	25·6
Irkutsk	41·5	36	7 42	- 2	e 13 57	- 2	24·6	27·6
Pulkovo	42·1	337	7 45	- 4	e 13 56	-12	22·6	28·6
Helsingfors	E. 44·4	334	e 8 3	- 5	e 14 23	-18	e 28·6	—
Z. 44·4	334	e 8 6	- 2	e 14 3	-38	—	—	—
Hong Kong	46·4	82	—	—	15 3	- 7	—	30·0
Upsala	E. 47·4	330	e 10 21	PP	—	—	—	33·8
Lund	47·9	324	—	—	15 33	+ 2	30·6	—
Oslo	48·0	312	e 8 33	- 3	e 15 29	- 4	—	—
Copenhagen	Z. 48·3	324	8 35	- 3	16 33	—	—	—
Zurich	48·4	312	e 8 40	+ 1	i 15 40	+ 2	—	—
Stuttgart	48·5	314	e 8 38	- 2	e 15 33	- 7	e 28·1	37·2
Strasbourg	49·5	314	e 8 47	0	e 15 33?	-21	e 18·6?	—
Neuchatel	49·7	312	e 8 50	+ 1	i 15 55	- 2	—	—
Zi-ka-wei	Z. 51·1	68	e 8 57	- 3	—	—	—	34·2

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
De Bilt	51.6	319	9 4	+ 1	16 24	+ 1	e 29.6	39.2
Uccle	51.9	316	e 9 6	0	e 16 27	0	e 25.6	—
Paris	52.9	313	e 9 12	- 1	e 16 58	+ 17	28.6	37.6
Manila	54.8	89	9.27	0	17 10	+ 4	26.6	31.0
Oxford	55.5	318	9 35	+ 3	17 7	- 9	e 31.6	42.0
Edinburgh	56.9	322	—	—	e 17 33?	- 2	—	—
Granada	57.8	300	e 12 29	?	e 14 17	?	e 36.1	45.9
Scoresby Sund	65.5	338	10 42	0	19 27	+ 1	30.6	—

Additional readings and note :-

Bombay P = 11h.22m.15s. ; true P and S are given as S and L.

Helsingfors ePPZ = +9m.35s., ePPE = +9m.39s., ePPP = +9m.59s. = P_cP + 3s.,

ePSE = +14m.53s., eSSE = +17m.53s., eSSSE = +19m.33s.

Hong Kong S_cS = +13m.21s.

Stuttgart eEZ = +10m.37s. -PP + 11s., e = +19m.39s.

Strasbourg ePP = +10m.48s.

Zi-ka-wei eZ = +10m.57s. -PP + 7s.

Long waves were also recorded at Tananarive, Hamburg, Cheb, Stonyhurst, Kew, Bergen, and Ivigtut.

April 18d. Readings also at 4h. (near Algiers and near Amboina (2)), 8h. (Frunse and near Andijan), 9h. (near Alicante), 11h. (near Amboina), 12h. (near Santiago and near Suva), 17h. (Ksara, Sucre, and near La Paz), 20h. (near Santiago), 21h. (near Almata, Andijan, and Frunse), 22h. (Pittsburgh).

April 19d. 0h. 17m. 49s. Epicentre 44°·6N. 10°·6E. (as on 1931 July 21d.). X.

A = +·700, B = +·131, C = +·702.

	Δ	Az.	P.	O-C.	S.	O-C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Venice	1.5	55	e 0 19	- 2	i 0 45	S*	—
Chur	2.3	342	e 0 29	- 4	i 0 59	0	—
Triest	2.5	65	e 0 46	P*	e 1 7	+ 3	—
Zurich	3.1	334	e 0 38	- 6	e 0 47	P	—
Ravensburg	3.3	348	e 0 59	P*	e 1 19	- 6	—
Neuchatel	3.5	314	e 0 42	- 8	1 23	- 7	—
Zagreb	4.0	70	e 1 17	P _g	e 1 59	S*	—
Stuttgart	4.3	348	e 1 11	+ 10	—	—	—
Strasbourg	4.4	335	e 1 11?	+ 8	—	—	—
Vienna	5.4	45	e 1 59	P _g	—	—	3.1

Additional readings :-

Chur iP_g = +34s.

Triest e = +54s. = P_g

Neuchatel e = +1m.0s.

April 19d. Readings also at 1h. (Samarkand), 2h. (De Bilt, Paris, Strasbourg, Stuttgart, Ravensburg, Venice, Vienna, Triest, Budapest, Zagreb, and near Belgrade), 3h. (near Nagoya), 11h. (Andijan and Samarkand), 12h. (Frunse), 13h. (Lick), 14h. (Andijan, Frunse, and Lick), 15h. (near Manila), 17h. (Frunse, Samarkand, and near Andijan), 18h. (near Apia), 20h. (Sydney).

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April 20d. 7h. 6m. 33s. (I) }
 9h. 32m. 11s. (II) } Epicentre 41°-8S. 171°-9E.
 11h. 44m. 52s. (III) } (as on 17d.)
 14h. 39m. 7s. (IV) } X.
 X.
 X.
 X.

$$A = -738, B = +105, C = -667.$$

	Δ	Az.	P.	O-C.	S.	O-C.
	°	°	m. s.	s.	m. s.	s.
II Takaka	1.2	36	-0 11	-28	0 11	-20
IV	1.2	36	0 33	+16	0 55	+24
II Glenmuick	1.4	140	-0 11	-31	-0 2	-38
III	1.4	140	1 8?	?	—	—
IV	1.4	140	-0 7	-27	0 2	-34
II Christchurch	1.8	163	0 22	-4	0 47	+1
I	1.8	163	0 26	0	0 44	-2
III	1.8	163	0 26	0	0 47	+1
IV	1.8	163	0 24	-2	0 45	-1
I Wellington	2.2	77	0 35	+4	0 55	-2
II	2.2	77	0 32	+1	0 55	-2
IV	2.2	77	0 33	+2	0 59	+2
II Seatoun	2.2	77	-0 11	-42	—	—
IV	2.2	77	0 53	+22	1 11	+14

Additional readings :-

Takaka IV $S_g = +1m.28s.$

Christchurch I $P_g = +37s., II i = +33s. = P^*, sP = +40s. = P_g, S^* = +51s., S_g = +1m.0s., IV P_g = +36s., S^* = +59s., S_g = +1m.8s.$

Wellington II $P^* = +41s., P_g = +48s., S^* = +1m.3s., S_g = +1m.11s., IV P^* = +41s., P_g = +49s., sP = +55s., S^* = +1m.6s., S_g = +1m.14s.$

April 20d. 20h. 5m. 49s. Epicentre 40°-9N. 75°-0E. N.2.

(as given by the stations of Central Asia).

$$A = +196, B = +730, C = +655; D = +966, E = -259;$$

$$G = +169, H = +632, K = -756.$$

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	1.9	252	i 0 28	0	—	—	i 0.9	1.2
Frunse	2.0	351	0 23	-6	(0 51)	0	0.8	1.0
Almata	2.8	32	i 0 47	+7	—	—	i 1.4	1.5
Tashkent	4.3	277	e 1 1	0	—	—	—	—
Agra	E. 14.0	168	—	—	e 5 39	-12	—	—
Ekaterinburg	18.4	335	e 4 15	+4	e 7 43	+10	10.2	11.0
Baku	19.0	277	e 4 19	0	e 8 10	+24	11.1	—
Tifis	22.6	282	e 4 51	-6	e 9 17	+20	e 13.2	—

Additional readings :-

Tashkent e = +1m.17s. = P*, i = +1m.26s. = P_g.

Tifis eSSS = +10m.49s.

Long waves were also recorded at Irkutsk, Kucino, Pulkovo, and Copenhagen.

April 20d. Readings also at 0h. (Tifis and near Trieste), 1h. (near Koti), 4h. (Adelaide, Riverview, Sydney, Perth, and Wellington), 6h. (Andijan), 8h. (near Medan), 11h. (La Paz), 13h. (Hastings), 14h. (La Paz and Sucre), 17h. (Algiers), 19h. (near Baku), 20h. (Tifis (2)), 22h. (Tifis and near La Paz).

April 21d. Readings at 1h. (Tifis), 4h. (near Suva), 5h. (Cheb), 8h. (near Apia), 9h. (near Amboina), 11h. (Sumoto), 12h. (Sitka), 13h. (near Manila), 15h. (Wellington), 16h. (Algiers, Sucre, and near La Paz), 18h. (Ekaterinburg, near Irkutsk, and near Santiago), 19h. (Andijan, Frunse, Tashkent, and San Juan), 21h. (San Juan and La Paz).

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April 22d. 4h. 58m. 10s. Epicentre 4°4S. 103°1E. N.I.
(Batavia gives Epicentre 6°5S. 104°5E.).

Probable error of epicentre $\pm 0^{\circ}.18$.

A = -0.226, B = +0.971, C = -0.077; D = +0.974, E = +0.227;
G = +0.017, H = -0.075, K = -0.997.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o.	o.	m. s.	s.	m. s.	s.	m.	m.
Batavia	4.1	116	i 0 57	- 1	i 1 49	+ 4	—	—
Malabar	5.3	122	i 1 12	- 3	i 2 10	- 5	—	—
Medan	9.2	332	3 15	+65	5 28	?	—	—
Phu-Lien	25.4	8	e 5 28	+ 4	—	—	16.8	—
Colombo	25.8	296	5 28	+ 1	10 0	+ 5	13.8	19.3
Manila	26.0	43	5 30	+ 1	10 23	+25	12.8	—
Hong Kong	28.9	22	5 18	-37	10 30	-17	14.5	19.7
Kodalkanal	29.5	300	i 6 1	0	i 10 58	+ 2	16.6	18.8
Perth	30.0	158	10 35?	S	(10 35?)	-29	—	—
Calcutta	30.5	334	7 4	PP	11 19	+ 7	14.8	—
Hyderabad	32.7	313	6 28	- 1	11 43	- 3	15.6	21.2
Isigakizima	35.3	34	6 50?	- 2	—	—	—	—
Bombay	37.9	309	7 19	+ 5	13 11	+ 6	19.9	—
Zi-ka-wei	Z. 39.7	24	7 40	+11	13 54	+22	23.4	28.9
Agra	E. 39.8	325	7 28	- 2	—	—	—	—
Adelaide	44.8	138	—	—	i 14 30	-17	22.6	27.3
Sumoto	49.0	35	8 43	- 1	—	—	—	—
Kobe	49.1	35	e 8 45	+ 1	—	—	—	—
Osaka	49.6	35	8 48	0	(16 33)	+38	16.5	—
Melbourne	50.6	137	e 9 11	+15	i 15 57	-12	26.0	32.6
Nagano	52.5	35	9 10	0	—	—	—	—
Andijan	53.2	332	e 8 57	-18	e 16 44	- 1	—	—
Almata	53.2	338	e 9 45	+30	—	—	—	—
Riverview	53.4	130	—	—	i 17 3	+16	e 27.7	31.5
Frunse	53.9	335	e 8 45	-36	—	—	—	—
Tashkent	55.2	330	i 9 29	- 1	i 17 5	- 7	e 26.8	34.6
Samarkand	55.2	326	e 9 38	+ 8	—	—	—	—
Irkutsk	56.7	2	9 40	- 1	17 29	- 3	29.8	37.5
Baku	66.1	318	i 10 46	0	19 33	- 1	31.8	39.4
Tiflis	70.1	318	11 7	- 4	20 15	- 7	34.8	46.1
Ekaterinburg	70.2	337	i 11 10	- 2	i 20 18	- 6	31.8	43.1
Pulkovo	85.3	331	—	—	i 22 59	[- 2]	44.8	54.9
Helsingfors	E. 88.0	331	e 12 46	- 2	i 23 37	0	e 50.8	—
	N. 88.0	331	e 12 43	- 5	e 23 44	+ 7	e 44.8	—
Budapest	89.2	318	13 20	+26	(23 50?)	+ 2	23.8	—
Vienna	91.1	319	e 13 1	- 2	(23 50?)	[+11]	—	23.8
Zagreb	91.2	314	e 13 3	0	e 24 59	PS	—	—
Potsdam	93.5	323	e 13 14	0	e 23 20	[-33]	e 46.8	—
Copenhagen	94.1	326	12 14	-62	24 26	- 8	49.8	—
Hamburg	95.4	324	—	—	e 23 50?	[-13]	e 52.8	63.8
Stuttgart	95.9	319	e 13 24	- 1	e 26 20	PS	e 53.8	—
Strasbourg	96.8	319	e 14 25	+56	e 27 25	PS	e 41.8	—
De Bilt	98.3	322	—	—	e 26 38	PS	e 49.8	58.6
Uccle	99.0	321	—	—	e 26 32	PS	e 51.8	—
Scoresby Sund	105.3	344	18 50?	PP	—	—	55.8	—
Tinemaha	E. 130.0	44	e 19 8	[+ 1]	—	—	—	—
Haiwee	E. 130.7	45	e 19 6	[- 2]	—	—	—	—
Mount Wilson	N. 131.6	47	e 22 35	PKS	—	—	—	—
Pasadena	Z. 131.6	47	i 19 12	[+ 2]	e 27 26	[+62]	—	—
Riverside	E. 132.2	47	e 22 24	PKS	—	—	—	—
Ottawa	139.0	359	e 22 57	PKS	—	—	40.8	—
Harvard	141.7	353	e 22 32	PP	—	—	e 71.3	—
Fordham	143.5	355	e 19 30	[+ 1]	—	—	e 73.8	—
Florissant	Z. 143.5	18	i 19 25	[- 4]	i 34 30	?	—	81.8
St. Louis	143.7	18	e 19 27	[- 3]	—	—	—	84.8
Georgetown	145.5	0	i 19 33	[- 2]	—	—	67.0	83.5
Little Rock	146.5	23	i 19 43	[+ 7]	—	—	—	—
Sucre	153.9	206	20 6	[-10]	—	—	—	—
La Paz	157.4	202	i 19 50	[+ 0]	—	—	75.8	82.9
San Juan	162.5	324	e 20 2	[+ 6]	—	—	e 82.8	—

For Notes see next page.

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NOTES TO APRIL 22d. 4h. 58m. 10s.

Additional readings :-

Batavia i = +1m.12s. = P*, iSs = +1m.42s.
 Malabar i = +1m.23s. = P*.
 Medan i = +3m.49s., iE = +6m.39s.
 Hong Kong PPP? = +6m.57s., SS? = +11m.50s.
 Adelaide i = +18m.18s. = S_cS + 7s. and +20m.50s.
 Sumoto eE = +9m.15s.
 Kobe ePZ = +8m.48s., eE = +10m.50s.
 Tiflis P_cP = +11m.31s., PS = +20m.36s.
 Pulkovo i = +22m.23s. and +23m.8s., SS = +28m.32s.
 Helsingfors eP_cPE = +13m.0s., ePPN = +16m.25s., ePPE = +16m.46s.,
 eSKSN = +23m.25s., iSKSE = +23m.28s., ePSE = +24m.38s., eSSE =
 +30m.33s.; T₀ = 4h.57m.59s.
 Vienna S = +18m.6s. = PPP - 19s., S_cS = +23m.1s.
 Potsdam eEZ = +16m.32s. = PP - 21s.
 Copenhagen +24m.5s. = SKKS - 3s.
 Stuttgart eZ = +17m.13s. = PP + 2s.
 Strasbourg ePP = +18m.22s.
 Tinemaha eN = +19m.30s., eE = +22m.18s. = PKS - 15s., eN = +22m.29s.
 Haiwee eEN = +22m.23s. = PKS - 13s.
 Mount Wilson eE = +22m.42s. = PKS + 2s.
 Pasadena e = +22m.28s. = PKS - 12s., i = +22m.52s.
 Fordham eNZ = +22m.42s. = PP - 1s.
 St. Louis iEN = +20m.0s.
 Little Rock eEN = +20m.26s.
 La Paz PPE = +23m.24s. = PKS - 10s.
 San Juan e = +20m.20s. and +24m.25s. = PP - 4s.
 Long waves were also recorded at Sydney, Rio de Janeiro, Ivigtut, and other European stations.

April 22d. Readings also at 0h. (near Berkeley, Branner, and Lick), 4h. (near Malabar), 6h. (Ottawa), 7h. (La Paz, Tucson, and near Manila), 8h. (Harvard), 10h. (Tiflis), 14h. (Andijan), 15h. (near Osaka and Sumoto), 16h. (near Mizusawa, Nagoya, Osaka, and Tyosi), 21h. (Branner).

April 23d. 9h. 57m. 36s. Epicentre 35°-0N. 22°-5E. (as on 1923 May 9d.). R.3.

A = +.757, B = +.313, C = +.574; D = +.383, E = -.924;
 G = +.530, H = +.220, K = -.819.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mostar	9.0	338	2 10	+ 3	2 58	P*	—	3.5
Belgrade	9.9	352	0 2 15	- 4	e 3 9	P*	—	3.7
Zagreb	11.9	337	2 45	- 2	e 4 54	- 6	—	5.3
Triest	12.5	331	0 2 55	0	e 5 14	- 1	1 5.4	5.8
Budapest	12.7	350	4 17	+79	4 54	-26	5.9	—
Venice	12.9	326	0 2 24?	-37	e 4 24?	-61	—	8.4
Yalta	13.0	40	0 4 24	+82	—	—	—	—
Graz	13.1	339	0 2 57	- 6	e 5 12	-17	—	5.8
Theodosia	14.0	40	0 5 6	S	(e 5 6)	-45	—	—
Vienna	14.0	343	0 3 26	+11	4 42	-69	1 5.4	6.3
Innsbruck	14.8	329	2 18	-68	—	—	—	—
Chur	15.3	325	0 3 42	+10	e 6 47	+25	—	—
Zurich	16.1	324	0 3 35	- 8	—	—	—	—
Neuchatel	16.6	320	1 4 2	+13	e 8 20	L	(e 8.3)	—
Cheb	16.7	337	—	—	e 7 10	+15	—	8.8
Stuttgart	16.9	329	0 0 24?	?	e 7 6	+ 7	0 7.6	8.4
Strasbourg	17.4	326	0 2 24?	?	e 6 24?	-47	—	8.4
Uccle	20.5	326	0 4 51	PP	—	—	0 9.4	—
Hamburg	20.5	339	—	—	e 7 24?	-52	—	11.0
Upsala	N. 25.0	354	0 5 14	- 6	—	—	—	14.7
Helsingfors	E. 25.2	3	—	—	e 11 1	?	e 18.4	—
Pulkovo	25.3	9	0 5 17	- 6	—	—	12.4	13.0
Ekaterinburg	33.7	38	0 7 8	+30	e 10 58	?	18.4	—

Additional readings :-

Belgrade P₂ = +2m.28s., e = +2m.33s., eSS = +3m.22s.
 Zagreb eNW = +3m.9s.
 Helsingfors eE = +12m.53s.
 Pulkovo e = 9h.54m.58s., e = +6m.45s.
 Long waves were also recorded at Baku, Irkutsk, Kucino, Copenhagen, De Bilt, Paris, and Edinburgh,

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April 23d. Readings also at 2h. (Tucson), 4h. (near Manila), 8h. (near Wellington), 9h. (Branner, Lick, and Zagreb), 10h. (Tyosi (3) and Nagoya), 11h. (Nagoya, near Mizusawa, and Tyosi), 12h. (Mizusawa, near Nagoya, and Tyosi, Sebastopol, near Theodosia, and Yalta, near Tananarive), 14h. (Sumoto, near Osaka, Kobe, and near Tyosi), 16h. (near Santiago), 20h. (Frunse and near Andijan).

April 24d. 6h. 10m. 54s. Epicentre 24° 6N. 111° 8W. N.2.

A = -338, B = -844, C = +416; D = -928, E = +371;
G = -155, H = -387, K = -909.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
			m. s.		m. s.	s.	m.	m.
Tucson	7.7	6	e 1 24	-25	e 3 13	-3	—	—
La Jolla	9.6	331	e 2 14	-2	e 4 18	+15	—	—
Riverside	10.6	337	e 2 32	+3	—	—	e 4.8	—
Pasadena	11.0	331	i 2 33	-2	i 4 29	-9	e 5.1	—
Mount Wilson	11.0	332	e 2 39	+4	(e 4 53)	+15	e 4.9	—
Santa Barbara	E. 12.0	327	e 2 44	-4	—	—	—	—
Halwee	12.7	336	e 2 57	-1	—	—	e 6.2	—
Tinemaha	13.6	338	i 3 8	-2	—	—	e 6.7	—
Lick	15.3	329	e 3 30	-2	—	—	—	—
Branner	15.6	329	e 3 42	+6	—	—	—	—
Berkeley	16.0	329	i 3 39	-2	i 6 37	-1	i 7.2	9.3
Ukiah	17.4	329	—	—	e 7 8	-3	e 7.9	—
Little Rock	19.7	54	i 4 22	-4	i 7 11	-49	—	i 11.7
Bozeman	21.1	1	e 4 39	-2	8 24	-4	e 10.4	—
St. Louis	23.0	47	e 5 0	-1	i 8 58	-7	e 11.3	12.2
Florissant	23.0	47	i 5 2	+1	i 9 0	-5	11.3	13.6
Seattle	24.5	343	—	—	e 9 30	-2	e 12.6	—
Victoria	E. 25.5	342	9 50	S	(9 50)	0	13.0	15.5
Madison	26.1	39	e 5 38	+8	e 10 1	+1	e 12.8	14.1
Chicago	26.4	43	—	—	9 59	-6	e 12.4	—
Columbia	28.3	63	—	—	e 10 36	-1	e 12.3	—
Pittsburgh	31.0	51	—	—	i 11 21	+1	e 15.1	—
Charlottesville	31.3	57	—	—	e 10 6	-78	e 12.6	—
Georgetown	32.3	55	—	—	11 41	+1	15.3	16.8
Toronto	N. 32.6	46	e 6 11?	-17	11 28?	-17	15.7?	—
Buffalo	32.7	48	e 6 30	+1	—	—	e 17.0	17.4
Fordham	N. 35.5	54	—	—	e 12 24	-5	e 16.8	20.8
Ottawa	35.7	45	—	—	e 12 25	-7	e 16.1	—
Harvard	37.8	52	—	—	e 13 7	+4	e 18.1	—
San Juan	42.8	89	e 8 19	+24	e 14 30	+12	—	—
Scoresby Sund	66.9	22	—	—	19 44	+1	31.1	—
De Bilt	85.8	33	—	—	e 23 23	+7	e 38.1	43.0
Uccle	86.0	35	—	—	e 23 23	+5	e 39.1	—
Copenhagen	86.8	28	—	—	23 30	+5	43.1	—
Granada	88.6	49	—	—	(22 29)	[-55]	22.5	53.1
Strasbourg	89.1	35	—	—	e 23 56	+9	e 39.1	—
Pulkovo	90.1	18	—	—	e 23 47	-10	44.1	62.6
Ekaterinburg	98.3	4	e 20 58	?	e 24 29	[+12]	45.1	—
Tashkent	114.1	359	—	—	e 25 36	[+6]	e 55.1	70.2

Additional readings:—

Tucson e = +1m.42s., +1m.57s., and +2m.52s.
 Berkeley eEN = +3m.47s. = PP + 0s., 1Z = +6m.47s. = SS + 0s.
 Florissant iSSE = +9m.51s., eSSSE = +10m.7s.
 Toronto eN = +8m.27s.?, iN = +9m.43s.?
 Buffalo e = +9m.43s. and +10m.45s.
 Fordham eN = +14m.29s. = SS - 9s.
 Harvard eSS = +15m.48s.
 Ekaterinburg e = +26m.37s. = PS + 10s.
 Tashkent e = +43m.6s.?

Long waves were also recorded at Honolulu T.H., Ann Arbor, Denver, Ivigtut, Baku, and other European stations.

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April 24d. Readings also at 0h. (Christchurch), 6h. (near Amboina), 8h. (Frunse, near Andijan, and near Mizusawa), 13h. (near Mizusawa), 16h. (Christchurch and Tucson), 19h. (Mizusawa).

April 25d. Readings at 1h. (near Tyosi), 4h. (Vienna and Wellington), 6h. (La Paz, near Tananarive, and near Taihoku), 7h. (Adelaide, Melbourne, Riverview, Sydney, Suva, Wellington, Perth, Honolulu T.H., Baku, Tifis, Ekaterinburg, and near Ksara), 8h. (De Bilt, Paris, Stuttgart, Granada, Irkutsk, and Harvard), 9h. (Kobe and Suva), 16h. (Nagoya), 17h. (Adelaide, Riverview, Manila, Mount Wilson, Pasadena, and Riverside), 18h. (Ekaterinburg, Irkutsk, Tifis, and Manila), 21h. (near Manila).

April 26d. 3h. 41m. 35s. Epicentre 35°·5N. 140°·0E. (as on 1930 Dec. 29d.). X.

Tokyo gives epicentre 35°·6N. 140°·1E.

$$A = -.624, B = +.523, C = +.581.$$

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tokyo	0·3	312	0 3	- 1	0 12	+ 4	—	—
Tyosi	0·7	72	0 7	- 3	0 16	- 2	—	0·3
Nagoya	2·5	262	e 0 39	+ 3	1 17	S*	—	—
Mizusawa	3·7	14	—	—	2 13	S*	—	—
Osaka	3·8	259	0 56	+ 2	1 22	P*	1·9	2·3
Kobe	4·1	266	e 1 20	P*	2 4	S*	—	2·2
Toyooka	4·2	273	1 25	P*	12 5	S*	—	2·3
Sumoto	4·4	256	e 1 40	S	(e 1 40)	-13	—	—

Toyooka gives also ePN = +1m.29s.

April 26d. 7h. 54m. 49s. Epicentre 25°·2S. 69°·6W. N.2.

$$A = +.314, B = -.848, C = -.426; D = -.937, E = -.349;$$

$$G = -.148, H = +.399, K = -.905.$$

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sucre	7·4	34	i 1 53	+ 8	—	—	—	—
Santiago	8·2	186	1 58	+ 2	3 27	- 2	—	5·0
La Paz	8·9	9	i 2 12	+ 6	i 4 2	+16	i 4·4	5·1
La Plata	14·0	137	3 18	+ 3	5 47	- 4	6·2	—
Rio de Janeiro	24·3	90	i 5 11	- 2	19 31	+ 3	i 12·3	—
San Juan	43·8	6	7 47	-16	e 14 14	-19	i 17·8	—
Columbia	60·2	350	—	—	e 18 11	- 8	—	—
Little Rock	63·7	339	i 10 25	- 5	i 18 51	-13	—	—
Georgetown	64·5	355	i 10 32	- 3	i 19 7	- 7	26·2	34·1
Fordham	66·2	357	e 10 43	- 4	e 19 29	- 6	e 31·6	—
Pittsburgh	66·4	352	—	—	e 19 29	- 8	27·2	—
St. Louis	66·6	343	e 10 44	- 5	i 19 30	-10	—	—
Florissant	66·9	343	i 10 44	- 7	i 19 31	-12	—	—
Harvard	67·6	359	—	—	i 19 42	-10	e 27·4	—
Buffalo	68·7	354	i 10 59	- 4	e 18 29	?	—	41·2
Chicago	69·0	348	—	—	e 19 35	-34	e 31·2	—
Tucson	69·6	324	e 11 12	+ 4	e 20 7	- 9	e 28·2	—
Ottawa	70·8	357	e 11 12	- 4	e 20 21	-10	e 33·2	—
La Jolla	73·7	320	e 11 29	- 4	—	—	—	—
Riverside	74·5	320	e 11 33	- 4	—	—	—	—
Mount Wilson	75·0	320	e 11 37	- 3	—	—	—	—
Pasadena	75·0	320	i 11 37	- 3	e 21 13	- 7	—	—
Haiwee	76·4	322	e 11 45	- 3	e 21 27	- 9	—	—
Harvard	77·3	322	e 11 50	- 4	e 21 37	- 9	—	—
Ukiah	81·5	321	—	—	e 22 17	-15	e 39·2	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
San Fernando	85.8	46	12 37	0	23 41	PS	—	54.2
Seattle	88.8	328	—	—	e 23 11?	[- 1]	—	—
Malaga	87.2	47	12 43	- 1	23 25	- 4	e 40.4	44.7
Granada	88.0	47	12 47	- 1	23 28	- 9	—	—
Toledo	89.2	44	e 12 55	+ 1	23 45	- 3	e 39.3	—
Alicante	90.7	47	e 12 46	- 15	—	—	e 50.8	—
Honolulu T.H.	97.3	292	—	—	e 23 23	[- 50]	e 44.5	—
Paris	98.0	40	e 17 47	PP	e 34 6	?	48.2	51.2
Neuchatel	N. 99.8	42	e 17 20	PP	—	—	—	—
Uccle	100.0	38	e 17 11?	PP	e 24 11?	[- 15]	e 45.2	—
Strasbourg *	100.9	41	e 17 11?	PP	(e 26 11?)	PS	e 26.2	—
De Bilt	101.0	37	—	—	e 24 11?	[- 20]	e 46.2	52.3
Scoresby Sund	101.4	15	—	—	25 11?	{+ 8}	53.2	—
Stuttgart	101.9	42	e 18 0	PP	e 24 51	{+ 16}	e 50.2	—
Hamburg	104.3	38	—	—	i 27 51	PS	e 53.2	59.2
Vienna	z. 106.1	45	e 18 22	PP	—	—	—	—
Copenhagen	106.4	37	—	—	25 11	[- 15]	53.2	—
Helwan	111.2	67	e 19 16	PP	e 28 51	PS	—	69.9
Pulkovo	116.6	35	—	—	e 25 19	[- 20]	55.2	61.4
Baku	128.0	58	e 21 10	?	e 31 19	PS	55.2	78.6
Ekaterinburg	132.6	35	i 19 15	[+ 4]	—	—	57.2	67.3
Tashkent	142.6	56	e 21 35	?	e 54 41	?	e 64.6	71.6
Bombay	144.8	93	19 38	[+ 5]	—	—	—	—
Andijan	145.0	56	e 19 32	[- 2]	—	—	—	—
Frunse	145.9	52	e 19 11	[- 25]	—	—	—	—
Irkutsk	152.6	8	e 19 46	[+ 1]	e 33 11?	?	e 78.2	—
Manila	165.4	225	20 15	[+ 16]	31 34	{- 13}	—	—
Hong Kong	175.4	231	25 37	PP	32 18	{- 22}	—	47.7

Additional readings:—

La Paz iPN = +2m.28s., PP +2m.56s., iE = +3m.40s., PS = +4m.10s., iSEZ = +4m.17s.
 San Juan PP = +9m.43s., PPP = +10m.20s., e = +11m.59s., iS = +14m.22s., i = +14m.50s., iSS = +17m.45s.
 Pittsburgh iS = +19m.33s.
 St. Louis eE = +19m.26s., iE = +19m.53s. and +20m.19s. = S_cS - 21s., eEN = +20m.38s. and +23m.33s.
 Florissant ePPZ = +11m.41s., ePPZ? = +11m.55s., ePPZ = +13m.41s., ePSN = +20m.14s., iSSEN = +20m.41s. = S_cS - 1s., iSSE = +23m.50s., eSS = +25m.23s.
 Buffalo i = +11m.15s.
 Chicago e = +23m.23s.
 La Jolla eEN = +11m.42s.
 Pasadena iZ = +11m.52s.
 Halwee iN = +11m.49s.
 Granada PP = +14m.23s., PS = +24m.10s., PPS = +24m.35s.
 Stuttgart ePS = +27m.11s.
 Copenhagen +27m.59s. = PS + 7s.
 Pulkovo e = +27m.58s., i = +29m.35s. = PS + 4s.
 Ekaterinburg i = +19m.29s., +21m.34s., +22m.40s., and +23m.1s.
 Irkutsk e = +23m.37s. = PP + 2s. and +33m.11s.?
 Hong Kong SS = +36m.16s.
 Long waves were also recorded at Tiflis and at other European stations.

April 26d. 12h. 36m. 48s. Epicentre 34°·7N. 139°·8E. (as on 1931 Nov. 12d.). X.

Tokyo gives epicentre 34°·5N. 139°·8E.

A = -·628, B = +·531, C = +·569.

	Δ	Az.	P.	O-C.	S.	O-C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Tokyo	1.0	358	0 11	- 3	0 28	+ 2	—
Tyosi	1.4	40	e 0 21	+ 1	e 0 41	S*	—
Nagoya	2.3	281	—	—	e 0 37	P*	—
Osaka	3.5	271	0 50	0	—	—	1.9

No additional readings.

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April 26d. 13h. 31m. 32s. Epicentre 41°3N. 157°6E. N.3.

A = -·695, B = +·286, C = +·660; D = +·381, E = +·925;
G = -·610, H = +·252, K = -·751.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nemuro	9.1	286	2 45	+36	4 0	+ 9	—	—
Morioka	12.6	267	2 46	-10	4 53	-24	—	—
Mizusawa	E. 12.8	265	—	—	5 10	-12	—	—
Mito	14.2	255	3 29	+11	6 10	+14	—	—
Oiwake	15.6	258	3 40	+ 4	6 40	+11	—	—
Nagoya	17.3	256	e 4 1	+ 3	7 19	+10	—	—
Kameyama	17.8	255	4 14	+10	7 29	+ 9	—	—
Osaka	18.6	256	3 12	-62	7 32	- 6	—	8.9
Kobe	18.8	257	e 4 11	- 5	7 41	- 1	—	9.4
Sumoto	19.2	256	—	—	e 7 37	-13	—	—
Nagasaki	23.7	258	4 58	- 9	9 7	-11	—	—
Manila	41.5	241	11 47	?	14 2	+ 3	—	—
Frunse	59.0	301	e 9 20	-37	—	—	—	—
Andijan	61.4	300	e 8 24	-110	e 16 46	-108	—	—
Tashkent	63.2	302	e 9 52	-35	i 18 58	+ 1	—	37.8
Baku	75.4	311	—	—	e 20 34	-51	e 37.5	—
Tiflis	77.2	315	—	—	e 20 42	-63	38.5	—

Additional readings:—

Kobe eE = +4m.15s.

Sumoto eN = +7m.40s.

Tashkent e = +26m.52s.

Baku e = +27m.47s.

Tiflis e = +28m.27s.

Long waves were also recorded at Irkutsk.

April 26d. Readings also at 0h. (near Nagoya, Mizusawa, and near Tyosi (2)), 2h. (near Amboina), 3h. (near Tyosi), 4h. (near Nagoya), 7h. (La Paz), 9h. (Hong Kong), 10h. (near Manila), 11h. (Batavia, Medan, and near Taihoku), 12h. (Manila, near Nagasaki, near Sumoto (2), and Tyosi), 14h. (Tyosi and near Tashkent), 17h. (near Tyosi), 18h. (near Almata), 20h. (Tucson), 21h. (Tyosi (2)).

April 27d. 1h. 47m. 51s. Epicentre 34°1N. 23°3E. N.3.

A = +·761, B = +·328, C = +·561; D = +·396, E = -·918;
G = +·515, H = +·222, K = -·828.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Zagreb	13.0	337	e 5 12	S	(e 5 12)	-15	—	—
Florence	13.5	320	e 3 44	+35	1 6 29	+50	(7.6)	10.2
Triest	13.7	330	e 3 16	+ 5	e 5 47	+ 3	(e 7.3)	—
Chur	16.5	325	e 3 48	0	e 6 56	+ 6	—	—
Neuchatel	17.8	321	e 4 3	- 1	—	—	—	—
Stuttgart	18.0	329	e 4 9	+ 2	e 7 15	-10	e 11.6	—
Strasbourg	18.5	326	e 4 9†	- 4	e 8 9†	+33	e 12.2	—
Tiflis	18.5	60	4 16	+ 3	7 53	+17	10.4	13.3
Baku	22.0	66	—	—	e 9 13	SS	e 12.2	14.6
Pulkovo	26.1	8	1 5 29	- 1	e 9 58	- 2	15.6	16.4
Ekaterinburg	34.0	36	e 6 42	+ 2	—	—	16.6	—

Additional reading and notes:—

Zagreb eNE = +6m.37s.

Florence gives S as i and L as S.

Triest gives S as e and L as eS.

Long waves were also recorded at other European stations.

April 27d. Readings also at 0h. and 1h. (2) (Reykjavik), 3h. (Tiflis), 4h. (Tiflis), 9h. (Baku), 11h. (near Andijan), 12h. (near Amboina), 14h. (near Manila and near Andijan), 16h. (near Sumoto), 17h. (near Batavia and near Manila), 18h. (Algiers and Nagoya), 20h. (Tyosi), 23h. (Lick, Tucson, Baku, Ekaterinburg, Tiflis, Andijan, and Ksara).

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April 28d. 3h. 43m. 8s. Epicentre 34°·0N. 136°·9E. N.I.

(given by Tokyo).

A = -·605, B = +·566, C = +·559; D = +·683, E = +730;
G = -·408, H = +·382, K = -829.

A depth of focus 0·055 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o	o	o	m. s.	s.	m. s.	s.	m.	m.
Tsu	+2·0	0·8	337	0 40	0	1 20	+ 8	—	—
Kaneyama	+1·9	0·9	338	0 25	-15	1 1	-11	—	—
Hamamatu	+1·9	1·0	43	0 47	+6	1 23	+9	—	—
Yagi	+1·9	1·0	299	0 46	+5	1 21	+7	—	—
Siomisaki	+1·9	1·1	240	0 50	+7	1 21	+4	—	—
Nagoya	+1·8	1·2	3	0 45	+2	1 22	+5	—	—
Osaka	+1·8	1·3	300	0 42	-2	(1 24)	+4	1·4	1·4
Hikone	+1·8	1·3	337	0 47	+3	1 24	+4	—	—
Kyoto	+1·7	1·4	316	0 50	+6	1 26	+6	—	—
Gihu	+1·7	1·4	356	0 46	+2	1 24	+4	—	—
Wakayama	+1·7	1·5	279	0 47	+1	1 24	+2	—	—
Kobe	+1·7	1·6	296	i 0 47	0	i 1 25	0	—	1·4
Sumoto	+1·6	1·7	282	0 47	0	i 1 25	0	—	1·5
Iida	+1·6	1·7	27	0 49	+2	1 25	0	—	—
Misima	+1·5	2·0	56	0 51	+1	1 32	+2	—	—
Numadu	+1·5	2·0	55	0 50	0	1 31	+1	—	—
Toyooka	+1·4	2·3	312	i 0 51	-2	i 1 33	-2	—	1·6
Muroto	+1·3	2·4	252	0 54	+1	i 1 36	+1	—	—
Mera	+1·3	2·6	69	0 54	-2	1 40	0	—	—
Hatidoyzima	+1·3	2·6	110	0 56	0	1 43	+3	—	—
Oiwake	+1·2	2·7	30	0 55	-1	1 40	0	—	—
Yokohama	+1·2	2·7	58	0 55	-1	1 40	0	—	—
Husiki	+1·2	2·8	2	0 55	-2	1 41	-1	—	—
Nagano	+1·2	2·8	22	0 56	-1	1 43	+1	—	—
Koti	+1·2	2·8	261	i 0 57	0	e 1 43	+1	—	—
Tokyo	+1·1	2·9	54	0 54	-3	1 39	-3	—	—
Kumagaya	+1·1	2·9	43	0 57	-3	1 41	-1	—	—
Maebasi	+1·0	3·0	36	0 55	-3	1 37	-8	—	—
Takada	+1·0	3·3	20	1 2	+1	1 49	-1	—	—
Tukubasan	+1·0	3·4	48	0 54	-9	1 41	-12	—	—
Matuyama	+1·0	3·4	269	e 1 2	-1	i 1 53	0	—	1·9
Wazima	+1·0	3·4	359	1 1	-2	1 50	-3	—	—
Utunomiya	+0·9	3·5	42	1 3	0	1 51	-2	—	—
Kakioka	+0·9	3·5	49	1 0	-3	1 50	-3	—	—
Tyosi	+0·9	3·7	61	1 4	-2	1 54	-4	—	1·9
Mito	+0·9	3·8	50	1 0	-7	1 43	-17	—	—
Hamada	+0·8	4·1	284	1 7	-3	2 2	-3	—	—
Onahama	+0·6	4·4	46	1 9	-2	2 2	-6	—	—
Hukusima	+0·5	4·7	36	1 12	-2	2 10	-3	—	—
Miyazaki	+0·4	5·0	248	1 21	+4	2 26	+8	—	—
Sendai	+0·3	5·3	36	1 20	0	2 22	-1	—	—
Kumamoto	+0·3	5·3	259	1 22	+2	2 30	+7	—	—
Hakuoka	+0·3	5·4	267	1 23	+2	2 31	+6	—	—
Nagasaki	+0·2	6·0	260	1 30	+2	3 45	+67	—	—
Mizusawa	+0·2	6·1	32	1 31	+1	2 38	-3	—	—
Akita	+0·2	6·2	23	1 31	0	2 43	0	—	—
Morioka	+0·1	6·6	29	1 33	-2	2 48	-3	—	—
Urakawa	-0·5	9·4	28	2 17	+11	3 49	+3	—	—
Sapporo	-0·5	9·7	20	2 7	-3	3 36	-18	—	—

Osaka gives also $i = +48s.$

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April 28d. Readings also at 3h. (Christchurch and near Wellington), 4h. (La Plata, La Paz, Sucre, and Florence), 5h. (Granada, De Bilt, Paris, Stuttgart, Copenhagen, Ekaterinburg, Pulkovo, Baku, and Irkutsk), 9h. (Lick and near Taihoku), 14h. (Andijan), 16h. (Ekaterinburg, Pulkovo, De Bilt, and Stuttgart), 18h. (near Malabar), 20h. (Almata), 22h. (Baku and Tyosi).

April 29d. 8h. 1m. 43s. Epicentre 28°·0N. 139°·5E. (as on 1929 Mar. 14d.). X.

A = -·671, B = +·573, C = +·469; D = +·649, E = +·760;
G = -·357, H = +·305, K = -·883.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	7·4	329	—	—	e 3 25	+16	—	—
Nagoya	7·5	343	1 49	+ 3	3 18	+ 7	—	—
Osaka	7·5	334	1 43	- 3	(3 14)	+ 3	3·2	3·7
Kobe	7·6	332	1 49	+ 1	e 3 21	+ 7	—	—
Tyosi	7·8	9	e 1 52	+ 1	3 23	+ 4	—	—
Mizusawa	E. 11·2	6	2 28	- 9	4 29	-14	—	—

Mizusawa gives SN = +4m.35s.

April 29d. 17h. 30m. 45s. Epicentre 6°·3N. 123°·2E. (as on 1925 Feb. 3d.). R.2.

A = -·544, B = +·832, C = +·110; D = +·837, E = +·548;
G = -·060, H = +·092, K = -·994.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	8·6	346	2 11	+ 9	3 53	+14	—	—
Palau	11·3	84	1 47	-52	3 9	-96	—	—
Hong Kong	18·4	332	4 18	+ 7	6 35	-58	—	—
Phu-Lien	21·6	314	e 5 1	PP	(9 15?)	SS	9·2	—
Medan	24·5	265	5 49	PP	—	—	—	—
Zi-ka-wei	Z. 25·0	356	e 3 7	?	9 23	-18	—	—
Miyazaki	26·8	16	5 32	- 4	9 29	-43	—	—
Nagasaki	27·2	12	5 39	- 1	10 21	+ 3	—	—
Sumoto	30·0	21	4 47	?	e 8 53	?	—	—
Kobe	30·5	21	e 6 4	- 5	e 11 33	+21	—	—
Osaka	30·6	21	5 40	-30	9 59	-75	13·5	—
Nagoya	31·4	22	e 5 53	-24	10 37	-49	—	—
Gihu	31·7	22	6 16	- 4	10 39	-52	—	—
Hyderabad	45·0	288	9 48	PP	16 3	?	—	29·8
Kodaikanal	45·5	278	7 36	-41	—	—	—	—
Agra	E. 47·6	301	8 47	+14	e 15 41	+14	—	—
Irkutsk	48·5	345	9 15?	+35	—	—	29·2	—
Melbourne	48·5	157	—	—	1 15 27	-13	—	—
Bombay	50·1	290	e 9 12	+20	—	—	—	—
Almata	54·8	320	e 12 15	?	—	—	—	—
Andijan	56·8	315	e 9 48	+ 6	—	—	—	—
Tashkent	59·2	315	e 10 2	+ 3	1 18 8	+ 3	e 28·2	—
Ekaterinburg	69·9	329	i 11 6	- 4	i 20 11	- 9	32·2	—
Baku	73·2	310	i 11 35	+ 5	e 21 4	+ 5	37·2	—
Tiflis	77·2	313	i 11 54	+ 1	e 21 40	- 5	38·2	—
Ksara	N. 84·3	303	—	—	e 23 15	+14	—	—
Pulkovo	86·6	329	12 31	-10	22 57	[-14]	45·2	45·4
Helsingfors	88·6	331	—	—	e 23 40	- 3	—	—
Copenhagen	96·2	328	—	—	23 15?	?	47·2	—
La Paz	N. 165·0	134	19 56	[- 3]	—	—	—	—

Additional readings :-

Hong Kong PP = +4m.32s., ? = +4m.45s., SS? = +8m.37s.

Medan i = +6m.52s.

Zi-ka-wei SE? = +9m.59s.

Osaka i = +6m.8s. = P - 2s. and +7m.8s. = PP + 3s.

Melbourne i = +18m.56s. = SS + 1s.

Tiflis eSS = +27m.14s.

Long waves were also recorded at Batavia, Christchurch, and De Bilt.

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April 29d. 18h. 18m. 30s. Epicentre 51°-4N. 178°-0W.

N.I.

Probable error of epicentre $\pm 0^{\circ}.22$.

A = -.623, B = -.022, C = +.782; D = -.035, E = +.999;
G = -.781, H = -.027, K = -.624.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	m. s.		m. s.	s.	m. s.	s.	m.	m.
Nagano	34.2	263	6 44	+ 2	—	—	—	—
Victoria	34.5	74	6 47	+ 2	12 19	+ 5	15.8	16.0
Seattle	35.4	74	—	—	12 31	+ 4	e 15.5	—
Osaka	37.1	262	6 45	-22	10 34	?	13.0	—
Ukiah	39.4	86	—	—	13 31	+ 4	e 16.5	—
Berkeley	40.8	87	i 13 50	S	(i 13 50)	+ 2	—	—
Kumamoto	41.3	264	6 56	-37	—	—	—	—
Bozeman	43.1	70	e 7 57	- 1	14 22	0	e 21.5	—
Tinemaha	44.2	85	e 8 6	0	i 14 38	- 1	—	—
Irkutsk	45.6	304	8 30	+12	15 12	+13	23.5	33.5
Mount Wilson	45.7	88	e 8 20	+ 2	e 15 2	+ 2	—	—
Pasadena	45.7	88	e 8 18	0	—	—	—	—
Riverside	46.3	88	e 8 38	+15	—	—	—	—
La Jolla	47.1	89	e 8 24	- 5	e 15 23	+ 3	—	—
Zi-ka-wei	z. 48.2	271	i 8 38	0	—	—	23.6	28.0
Tucson	51.5	84	e 9 4	+ 1	16 25	+ 3	e 22.5	—
Scoresby Sund	56.9	10	9 42	0	17 30?	- 5	29.5	—
Chicago	58.8	61	—	—	17 55	- 5	e 27.1	—
Hong Kong	59.0	268	9 54	- 3	18 0	- 3	—	33.5
Florissant	59.3	65	(i 9 59)	- 1	(i 18 4)	- 3	—	—
St. Louis	59.5	65	i 9 59	- 2	i 18 6	- 3	—	33.6
Ekaterinburg	61.5	328	i 10 16	+ 1	i 18 38	+ 2	30.5	39.2
Toronto	61.8	54	e 11 7	+50	e 18 47	+ 8	26.7	—
Ottawa	62.4	51	—	—	e 18 42	- 5	e 28.5	—
Buffalo	62.6	54	i 10 25	+ 3	e 18 42	- 8	—	34.5
Pittsburgh	63.8	57	—	—	20 23	(+ 3)	e 29.5	—
Georgetown	66.5	56	i 10 48	- 1	19 37	- 2	31.8	36.1
Pulkovo	66.5	346	10 45	- 4	i 19 31	- 8	32.5	44.2
Fordham	66.6	53	i 10 48	- 1	e 19 30	-10	e 32.1	—
Helsingfors	66.9	349	e 11 6	+15	e 20 7	PS	e 30.5	—
Columbia	68.0	62	e 11 30?	(+ 5)	—	—	23.5	—
Upsala	68.0	353	—	—	e 19 30?	-27	e 38.5	45.0
Kucino	68.8	340	e 11 0	- 3	e 19 54	(- 2)	33.0	43.6
Andijan	69.4	310	e 11 12	+ 5	—	—	36.3	—
Tashkent	70.5	313	i 11 9	- 5	e 20 18	- 9	e 36.5	42.8
Copenhagen	72.5	355	11 25	- 1	20 48	- 3	35.5	—
Hamburg	74.8	356	e 11 39	0	i 21 16	- 2	e 37.5	44.5
Potsdam	75.8	354	e 16 30?	?	e 21 30?	+ 1	e 38.5	—
De Bilt	76.4	358	11 48	0	e 21 48	+12	e 36.5	46.9
Agra	E. 77.1	298	11 54	+ 1	21 37	- 7	—	—
Uccle	77.7	359	i 11 54	- 2	e 21 46	- 5	32.5	—
Cheb	78.4	353	—	—	e 21 30?	-28	e 43.5	49.5
Baku	79.2	325	i 12 6	+ 2	e 22 14	+ 7	40.5	50.8
Stuttgart	79.6	355	e 12 5	- 1	e 22 0	-11	e 39.5	—
Paris	79.8	0	i 12 5	- 2	—	—	37.5	52.5
Tiflis	79.8	329	12 6	- 1	22 7	- 7	40.2	48.8
Strasbourg	79.9	356	e 12 6	- 1	e 23 0	PS	e 31.5	—
Zurich	z. 81.0	356	e 11 53	-20	—	—	—	—
Florence	84.5	354	e 12 30	- 1	22 55	[0]	28.5	42.5
Hyderabad	84.6	292	12 28	- 3	22 51	[- 5]	44.3	53.4
Bombay	86.6	297	12 46	+ 5	—	—	—	—
San Juan	88.5	62	e 12 49	- 1	1 23 32	[+ 9]	e 42.5	—
Kodaikanal	90.9	288	11 53	-69	—	—	—	—
Algiers	91.8	359	e 9 5	?	e 28 46	?	e 54.5	—
La Paz	115.1	85	25 43	SKS	(25 43)	[+ 9]	67.6	77.8

For Notes see next page.

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NOTES TO APRIL 29d. 18h. 18m. 30s.

Additional readings and note :—

- Berkeley ePE = +13m.6s., iN = +17m.10s.
 - Bozeman e = +17m.42s. = S_cS - 19s.
 - La Jolla eE = +8m.30s.
 - Scoresby Sund +13m.30s. and +21m.30s.? = SS + 11s.
 - Florissant eP_cPN = (+10m.52s.), epPZ = (+11m.8s.), ePPZ = (+12m.50s.), isSE = (+18m.46s.), iss = (+22m.40s.); all readings have been *increased* by 15m.
 - St. Louis iEN = +19m.45s. = S_cS - 4s.
 - Toronto iE = +14m.36s., eN = +14m.38s., iN = +16m.7s.
 - Buffalo e = +20m.16s. = S_cS + 5s. and +23m.52s.
 - Helsingfors eSE = +19m.30s.? eE + 23m.30s.?
 - Potsdam eEN = +26m.0s. = SS - 10s.
 - Uccle e = +15m.18s.
 - Stuttgart ePPNZ = +15m.22s., ePS = +22m.54s.
 - Tiflis e = +27m.52s.
 - Strasbourg ePP = +15m.19s.
 - San Juan SKS = +23m.13s., i = +23m.39s., iPS = +24m.37s.
 - Algiers e? = +11m.10s.
- Long waves were also recorded at Honolulu T.H., Wellington, Adelaide, Harvard, Ivigtut, and other European stations.

April 29d. Readings also at 0h. (Baku), 2h. (Baku, Ekaterinburg, Tiflis, and near Andijan), 3h. (Tucson), 4h. (Baku, Ksara, Tiflis, near Kobe, Osaka, and Sumoto), 6h. (Wellington), 7h. (Theodosia, Yalta, and Sebastopol), 9h. (Alicante, Ekaterinburg, Irkutsk, and Hong Kong), 12h. (near Tokyo), 13h. (Suva and Wellington), 14h. (Baku, Ekaterinburg, Tashkent, Hong Kong, and Zi-ka-wei), 15h. (Stuttgart), 16h. (Madison, Tucson, and near Andijan), 19h. (Tiflis and near Santiago), 20h. (near Wellington), 21h. (Hong Kong, near Manila, and near La Paz), 23h. (Adelaide, Riverview, and Seattle).

April 30d. 1h. 6m. 27s. Epicentre 5°-08. 11°-3W. N.2.

A = +.977, B = -.195, C = -.087; D = -.196, E = -.981;
G = -.085, H = +.017, K = -.996.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Rio de Janeiro	35.6	238	—	—	(e 12 13)	-17	e 12.2	—
San Fernando	41.7	6	e 7 52	+ 6	14 12	+10	22.6	—
Malaga	42.2	8	i 7 54	+ 4	e 15 1	+52	—	25.3
Granada	42.8	8	e 7 52	- 3	15 4	+46	24.3	26.7
Algiers	43.9	18	i 8 8	+ 4	—	—	i 17.8	24.0
Alicante	44.5	12	e 7 21	-48	—	—	e 25.0	—
Toledo	45.3	8	e 8 20	+ 5	e 15 7	+12	e 23.3	—
Florence	52.8	21	9 20.	+ 8	16 44	+ 5	21.6	27.6
Helwan	53.7	48	e 9 18	- 1	e 16 55	+ 3	—	37.4
Neuchatel	54.4	15	e 8 43	-41	—	—	e 31.6	—
Sucre	54.4	250	9 27	+ 3	—	—	—	—
Paris	55.2	11	e 9 28	- 2	—	—	28.6	32.6
Innsbruck	56.0	19	e 9 33?	- 3	—	—	—	—
Strasbourg	56.1	15	e 9 37	0	e 17 33?	+ 9	e 27.6	—
Stuttgart	56.6	17	e 9 43	+ 3	e 17 33	+ 2	e 29.8	34.6
La Paz	56.8	254	19 36	- 6	i 17 32	- 2	27.8	32.6
Kew	57.2	8	e 9 43	- 2	—	—	e 24.6	—
Uccle	57.4	11	e 9 43	- 3	e 17 44	+ 2	e 23.6	—
Vienna	N. 58.5	22	9 51	- 3	—	—	—	—
Cheb	58.8	18	—	—	e 21 45	SS	e 29.6	33.4
De Bilt	58.8	12	9 55	- 1	18 4	+ 4	e 29.6	36.9
San Juan	58.9	295	e 9 33?	-24	e 18 1	0	e 24.6	—
Göttingen	Z. 59.4	16	19 59	- 1	—	—	—	—
Edinburgh	61.2	6	—	—	e 26 33?	?	—	—
Hamburg	61.3	14	e 10 11	- 3	—	—	e 32.6	33.6

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Copenhagen	63.8	15	10 28	- 3	19 6	+ 1	29.6	—
Tiflis	69.0	42	11 4	- 1	20 14	+ 5	35.5	41.9
Baku	72.0	45	i 11 23	0	i 20 52	+ 7	38.6	—
Pulkovo	72.5	21	11 21	- 5	20 48	- 3	38.6	47.2
Kucino	72.9	27	e 11 34	+ 6	21 0	+ 4	e 36.2	45.4
Fordham	73.1	316	e 11 29	0	e 21 0	+ 2	e 35.2	—
Scoresby Sund	75.8	356	11 45	0	22 13	+44	41.6	—
Ottawa	76.1	319	—	—	e 21 40	+ 7	e 34.6	—
Bombay	86.1	17	12 39	0	—	—	—	—
Tashkent	86.2	48	e 12 39	0	i 23 18	- 1	i 42.6	53.0
Andijan	88.5	49	e 12 53	+ 3	—	—	—	—
Kodaikanal	89.7	80	11 57	-59	22.33	-80	42.8	—
Irkutsk	109.4	36	e 17 33?	[-43]	—	—	60.6	—

Additional readings:—

Malaga PP = +9m.39s.

Granada P_CP = +9m.22s.

Algiers i? = +9m.53s. = P_CP -2s.

Strasbourg ePP = +11m.53s.

La Paz PPE = +12m.1s., PPN = +12m.6s., iSSE = +21m.58s.

Long waves were also recorded at Seattle, Chicago, Harvard, Potsdam, and Tortosa.

April 30d. 10h. 52m. 35s. Epicentre 36°·5N. 70°·5E. (as on 1932 Feb. 9d.). R.3.

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

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	4.5	21	1 13	+ 9	(2 5)	+10	2.1	2.1
Tashkent	4.9	350	i 1 16	+ 6	(i 2 12)	+ 7	i 2.2	2.7
Almata	8.4	34	i 2 6	+ 7	3 36	+ 2	—	4.2
Agra	E. 11.3	143	3 45	+66	—	—	—	—
Baku	16.6	290	e 3 52	+ 3	i 6 57	+ 5	e 8.4	—
Bombay	17.7	173	4 3	0	7 12	- 5	8.7	—
Hyderabad	20.3	157	4 24	- 9	8 3	- 9	10.1	13.6
Tiflis	20.5	293	4 30	- 5	8 14	- 2	e 10.2	—
Calcutta	20.8	127	4 34	- 4	8 16	- 6	10.5	—
Ekaterinburg	21.4	345	i 5 39	+55	i 9 25	+50	—	—
Kodaikanal	27.0	165	10 48	S	(10 48)	+33	—	—
Irkutsk	28.4	46	e 5 28	-23	(e 10 25?)	-13	e 10.4	—
Kucino	29.2	322	7 12	?	—	—	20.3	—
Pulkovo	34.6	327	i 6 37	- 9	i 11 50	-25	14.4	—
Helsingfors	E. 37.2	324	i 7 16	+ 8	i 12 48	- 6	—	—
Copenhagen	43.1	316	7 47	-11	14 0	-22	—	—

Additional readings:—

Tiflis e = +5m.32s.

Kucino iPPP = +8m.8s., e = +9m.50s., SS = +11m.25s.

Copenhagen +10m.34s. and +17m.25s. = SS + 11s.

April 30d. Readings also at 1h. (Tiflis), 2h. (Ksara, Tiflis, Theodosia, and Yalta), 3h. (Zagreb), 5h. (near Christchurch, Wellington, and New Plymouth), 6h. (Baku, Tiflis, Kodaikanal, and Sumoto), 7h. (Tyosi (?) and near Mizusawa), 8h. (Zagreb and near Trieste), 9h. (Almata, Kodaikanal, and near Andijan), 11h. (near Reykjavik), 14h. (Baku, Irkutsk, Pulkovo, Kucino, Tashkent, Tiflis, Almata, Andijan, and Copenhagen), 17h. (Hong Kong, Taihoku, Irkutsk, Tashkent, and near Zi-ka-wei), 18h. (Ksara), 19h. and 22h. (near Sumoto), 23h. (Andijan).

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May 1d. 2h. 42m. 28s. Epicentre 42°5N. 6°0E. N.3.

A = +.733, B = +.077, C = +.676; D = +.105, E = -.995;
G = +.672, H = +.071, K = -.737.

	Δ	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Marseilles	0.9	332	-0 3	-16	0 8	-15	—	—
Grenoble	2.7	355	e 0 48	P _g	i 1 21	S _g	—	—
Barcelona	3.1	249	i 0 43	- 1	i 1 10	-10	1.2	—
Florence	4.0	65	1 19	P _g	2 19	S _g	—	3.1
Tortosa	4.4	249	1 2	- 1	1 43	-10	—	—
Neuchatel	4.5	8	i 1 20	P _g	—	—	i 2.7	—
Besancon	4.7	1	e 1 18	P _g *	2 14	S _g *	—	—
Chur	5.0	29	e 1 33	P _g	e 2 32	S _g	—	—
Zurich	5.2	20	e 1 31	P _g	e 2 30	S _g *	—	—
Venice	5.4	56	e 1 30	P _g	e 4 12	?	—	—
Ravensburg	5.8	25	e 2 1	P _g	e 2 54	S _g *	e 3.4	—
Innsbruck	6.1	37	e 1 50	P _g	e 3 18	S _g	—	—
Strasbourg	6.1	11	e 1 43	P _g *	2 54	S _g *	—	—
Algiers	6.2	202	i 1 53	P _g	e 2 53	S _g *	—	—
Triest	6.3	58	e 1 30	0	—	—	—	—
Alicante	6.5	232	e 0 42	-50	e 2 40	- 6	e 3.8	—
Stuttgart	6.6	19	e 1 47	P _g *	e 3 5	+17	e 3.9	4.9
Karlsruhe	6.7	14	3 6	S	(3 6)	+15	—	—
Paris	6.7	340	e 1 49	P _g *	e 3 28	S _g *	4.5	4.5
Toledo	8.0	254	1 52	- 1	3 51	S _g *	e 4.8	—
Uccle	8.4	353	e 2 10	+11	—	—	—	—
Granada	9.1	237	—	—	e 5 1	S _g	—	—
Jena	9.2	23	—	—	e 4 10	+16	e 5.3	5.5
Vienna	9.2	48	e 4 35	S _g *	i 5 45	?	—	6.5
Göttingen	9.4	16	—	—	e 5 20	?	—	—
De Bilt	9.6	357	i 2 28	+12	e 4 50	S _g *	e 5.1	7.1
Kew	9.9	337	—	—	e 5 17	S _g	—	—
Oxford	10.5	335	—	—	e 5 40	S _g	—	—
Potsdam	10.9	24	—	—	e 5 44	S _g	—	—
Pulkovo	22.7	33	e 5 18	+20	9 38	+39	13.5	14.5

Additional readings:—

Grenoble ISS = +1m.48s.

Neuchatel eP* = +1m.32s., eP_g = +1m.40s.

Ravensburg e = +2m.48s.

Strasbourg PP = +2m.19s., SS = +3m.3s., SSS = +3m.12s.

Triest i = +1m.54s., PP = +2m.4s.

Stuttgart eZ = +3m.1s., eS* = +3m.35s.

Uccle e = +3m.39s., +4m.7s. = S* - 1s., and +4m.26s. = S_g - 5s.

Granada i = +6m.36s.

Oxford iE = +5m.52s.

Potsdam iEN = +6m.4s. and +6m.26s., iZ = +6m.34s.

Long waves were also recorded at Hamburg, Edinburgh, Bidston, Stonyhurst, Copenhagen, Kucino, Scoresby Sund, and Columbia.

May 1d. 4h. 14m. 45s. Epicentre 20°5S. 170°0E. (as on 1931 July 21d.). X.

A = -.923, B = +.163, C = -.350; D = +.174, E = +.985;
G = +.345, H = -.061, K = -.937.

	Δ	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Suva	8.3	75	—	—	e 3 15	-16	—	8.2
Wellington	21.2	170	i 4 40	- 2	—	—	8.2	10.2
Riverview	21.4	227	e 4 51	+ 7	i 8 51	+17	10.8	12.2
Sydney	21.4	227	e 4 39	- 5	e 8 27	- 7	10.4	13.0
Melbourne	27.8	226	e 7 41	+116	e 10 34	+ 6	14.8	16.8
Adelaide	31.1	235	—	—	e 11 33	+12	i 14.5	17.8
Florissant	110.0	54	—	—	e 29 25	?	—	60.2
Tashkent	111.2	308	—	—	e 25 33	[+14]	55.2	72.6
Columbia	116.6	61	e 17 15	?	e 29 9	PS	—	—
Ekaterinburg	117.5	324	e 20 22	PP	—	—	45.2	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tifis	129.5	308	e 21 37	PP	—	—	89.2	—
Scoresby Sund	129.5	5	22 51	?	—	—	63.2	—
Pulkovo	131.4	335	e 19 28	[+19]	e 22 52	PKS	69.2	83.2
Copenhagen	141.0	340	21 15?	?	—	—	75.2	—
Potsdam	143.4	336	i 19 43	[+14]	—	—	e 75.2	—
De Bilt	146.3	341	e 19 56	[+20]	—	—	e 73.2	—
Strasbourg	148.5	339	e 20 15?	[+36]	—	—	—	—
Paris	149.9	344	e 20 0	[+18]	—	—	81.2	—

Additional readings:—

Melbourne i = +11m.1s.

Florissant eE = +32m.15s., and +36m.4s.

Tashkent e = +27m.22s. and +29m.9s.

Columbia e = +36m.15s. = SS +28s.

Tifis e = +23m.0s. and +23m.42s.

Long waves were also recorded at Perth, Bombay, Berkeley, Ottawa, Pittsburgh, Irkutsk, Baku, Stuttgart, Uccle, Granada, and San Fernando.

May 1d. 19h. 8m. 56s. Epicentre 17°·1N. 104°·3W. N.3.

A = -·236, B = -·926, C = +·294; D = -·969, E = +·247;

G = -·073, H = -·285, K = -·956.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	16.3	340	e 3 17	-28	—	—	i 6.0	—
La Jolla	N. 19.6	326	e 4 16	-9	e 7 45	-13	—	—
Riverside	20.6	328	e 4 1	-35	i 8 8	-10	—	—
Little Rock	20.6	29	e 5 22	+46	i 8 14	-4	9.2	i 10.5
Pasadena	21.0	327	e 4 40	0	e 8 28	+2	e 9.8	—
Mount Wilson	21.1	327	e 4 43	+2	i 8 23	-5	—	—
Haiwee	22.6	330	e 4 57	0	e 8 56	-1	—	—
Denver	N. 22.6	359	e 5 44	+47	—	—	—	—
Tinamah	23.4	331	i 5 4	-1	e 9 15	+3	—	—
St. Louis	24.8	27	i 5 17	-1	e 8 28	-69	—	i 9.9
Florissant	24.9	27	i 5 16	-3	e 8 28	-71	10.1	11.6
Lick	E. 25.4	327	e 5 40	+16	—	—	—	—
Berkeley	26.0	326	e 5 46	+17	e 10 54	SS	—	—
Columbia	26.8	47	—	—	e 12 4	?	—	—
Chicago	28.5	27	—	—	e 9 41	-59	11.7	—
Madison	28.9	23	i 6 0	+5	i 9 49	-58	11.5	—
Bozeman	29.1	350	—	—	(e 11 4)	+14	e 11.1	—
Ann Arbor	30.7	32	—	—	e 12 40	SS	—	—
Pittsburgh	31.4	37	i 6 50	+33	i 11 14	-12	e 13.9	—
Toronto	N. 33.9	33	e 8 13	?	(i 11 24)	-40	i 11.4	—
Victoria	E. 34.9	339	14 58	SSS	—	—	17.4	17.6
Fordham	N. 34.9	339	11 26	S	(11 26)	-54	15.3	—
Scoresby Sund	35.3	42	—	—	e 12 37	+11	—	—
Kucino	71.4	20	—	—	21 40	+62	—	—
	100.5	21	—	—	e 27 22	PS	e 66.4	84.1

Additional readings:—

Tucson e = +3m.44s. = P - 1s., +4m.10s., +4m.35s., and +5m.3s.

La Jolla iN = +8m.3s.

Little Rock iPEN = +5m.34s.

Pasadena eEN = +4m.48s., e = +8m.10s., iZ = +8m.38s.

St. Louis eE = +8m.16s.

Florissant iE = +8m.51s. = P_CP - 4s. and +9m.44s., iP_CP = +9m.56s.

Berkeley iZ = +12m.38s.

Columbia e = +15m.14s.

Fordham eNZ = +15m.25s., iN = +16m.30s., iZ = +16m.40s.

Long waves were also recorded at Harvard., Ukiah, European and Russian stations.

May 1d. Readings also at 1h. (Tucson), 9h. (La Paz), 15h. (Manila), 16h. (Cape Town, Stuttgart, Chur, Neuchatel, and Zurich), 17h. (Tifis and San Juan), 18h. (Sitka and near Santiago).

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May 2d. 23h. 29m. 19s. Epicentre 31°4N. 131°1E. (as given by Tokyo). N.I.

Probable error of epicentre $\pm 0^{\circ}.18$.

A = -561, B = +643, C = +521; D = +754, E = +657;
G = -342, H = +393, K = -854.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kagosima	0.5	290	0 20	+13	0 30	+17	—	—
Miyazaki	0.6	29	0 12	+ 3	0 23	S _r	—	—
Unzendake	1.5	332	0 28	P _r	1 0	S _r	—	—
Kumamoto	1.5	347	0 26	P*	0 51	S _r	—	—
Nagasaki	1.7	322	i 0 31	+ 7	i 1 8	S _r	—	1.3
Ooita	1.9	13	0 36	P _r	1 4	S _r	—	—
Uwazima	2.2	34	0 51	+20	1 24	+27	—	—
Tomie	2.3	302	0 38	+ 5	1 22	+23	—	—
Hukuoka	2.3	345	0 36	+ 3	1 9	S _r	—	1.3
Simonoseki	2.6	357	0 48	P _r	1 19	S _r	—	—
Matuyama	2.8	30	e 0 39	- 1	i 1 31	S _r	—	1.7
Koti	3.0	44	e 0 42	- 1	1 39	+2	—	1.8
Niijima	3.1	36	0 54	P _r	1 38	S _r	—	—
Hirosima	3.2	21	0 50	+ 4	1 45	S _r	—	—
Ituhara	3.2	331	0 53	P*	1 48	S _r	—	—
Tadotu	3.6	37	0 55	+ 4	1 55	S _r	—	—
Hamada	3.6	14	0 53	+ 2	1 34	+ 2	—	—
Sumoto	4.3	46	1 0	- 1	2 20	S _r	—	2.6
Wakayama	4.4	49	1 8	+ 5	2 27	S _r	—	—
Siomisaki	4.4	61	0 58	- 5	1 42	-11	—	—
Kobe	4.7	45	1 5	- 2	12 35	S _r	—	2.9
Osaka	5.0	48	1 8	- 3	12 10	+ 2	2.4	2.8
Toyooka	5.2	36	e 1 17	+ 3	12 40	S _r	—	3.0
Kyoto	5.3	45	1 15	0	3 8	+43	—	—
Kameyama	5.6	51	1 20	0	3 10	S _r	—	—
Hikone	5.7	47	1 18	- 3	2 57	S _r	—	—
Nagoya	6.2	51	1 28	0	2 32	- 6	3.5	—
Gihu	6.2	48	1 29	+ 1	2 35	- 3	—	—
Hamamatu	6.4	58	1 40	+ 9	3 32	S _r	—	—
Zinsen	7.2	330	1 45	+ 3	3 20	+16	—	—
Numadu	7.4	58	1 49	+ 4	4 30	+83	—	—
Misima	7.5	59	1 43	- 3	3 0	-11	—	—
Oiwake	7.9	49	1 53	+ 1	4 22	S _r	—	—
Nagano	7.9	46	1 55	+ 3	4 24	S _r	—	—
Zi-ka-wei	z. 8.3	271	e 2 1	+ 3	3 55	S _r *	5.3	5.9
Tokyo	8.4	57	2 5	+ 6	4 50	S _r *	—	—
Kumagaya	8.4	53	1 48	-11	4 20	S _r	—	—
Mito	9.2	55	2 5	- 5	5 13	S _r	—	—
Hong Kong	17.6	243	4 1	- 1	7 39	S _r	9.0	12.5
Manila	19.2	211	4 20	- 1	8 15	SS	11.3	13.7
Phu-Lien	24.4	250	—	—	9 41?	+11	—	—
Irkutsk	28.6	325	e 5 53	0	(10 41?)	- 1	10.7	13.1
Andijan	47.5	298	e 8 30	- 2	—	—	—	—
Tashkent	49.7	300	8 48	- 1	e 16 18	+21	e 28.6	32.5
Bombay	53.6	271	9 21	+ 3	—	—	—	—
Ekaterinburg	53.7	320	i 9 19	0	—	—	22.7	34.5
Kodalkanal	53.8	259	12 41	?	—	—	—	—
Baku	64.1	303	e 10 32	- 1	e 20 13	(- 9)	e 34.9	43.5
Kucino	66.2	322	—	—	e 23 29	SS	e 34.8	41.4
Tiflis	67.2	306	10 50	- 3	19 47	0	38.7	44.8
Pulkovo	68.3	328	i 10 56	- 4	e 20 31	+30	34.7	44.8
Scoresby Sund	76.3	351	—	—	21 41?	+ 6	42.7	—
De Bilt	84.1	330	—	—	e 23 5	+ 6	42.7	54.4
Edinburgh	84.4	336	—	—	e 35 41?	?	—	—
Stuttgart	84.6	325	e 12 29	- 2	—	—	e 44.7	55.4
Strasbourg	85.4	326	—	—	e 22 41?	(-21)	e 43.7	—
Kew	86.7	332	—	—	e 38 41?	?	e 51.7	—
Florence	86.9	321	—	—	e 39 13	?	46.2	48.7
Paris	87.6	328	e 12 41	- 5	—	—	51.7	52.7

For Notes see next page.

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NOTES TO MAY 2d. 23h. 29m. 19s.

Additional readings :—

Koti iP = +1m.13s.
 Sumoto SEZ = +2m.23s.
 Kobe iN = +1m.34s., iE = +2m.3s., iN = +2m.15s., iSZ = +2m.38s.
 Osaka i = +1m.38s. and +1m.58s.
 Toyooka iPEN = +1m.23s.
 Nagoya P_g = +1m.36s.
 Tiflis ePPP = +15m.5s., ePS = +20m.18s., e = +31m.48s.
 Long waves were also recorded at other European stations.

May 2d. Readings also at 1h. (near La Paz), 6h. (Tashkent), 7h. (Lick (4)), 8h. (near Amboina and near Manila), 16h. (Pasadena, Riverside, Tinemaha, Haiwee, and near Almeria), 19h. (near Toledo), 21h. (near Amboina), 22h. (Tiflis), 23h. (Andijan).

May 3d. 10h. Small shock recorded in Europe.

The readings are as follows :—

Almeria e = +10h.36m.37s. (probably in error).
 Barcelona iP = 10h.38m.4s., S = 38m.44s., L = 38m.53s., M = 39m.55s.
 Tortosa PN = 10h.38m.18s., SN = 39m.19s.
 Neuchatel ePN = 10h.39m.7s., P_g = 39m.16s.
 Toledo iP_g = 10h.39m.19s., i = 39m.56s. and 40m.42s., eL = 41m.19s.
 Alicante P = 10h.39m.31s., S_g = 40m.51s.
 Florence e = 10h.40m.20s. and 54m.0s.
 Malaga e = 10h.40m.22s., M = 43m.31s.
 Stuttgart e = 10h.42m.30s.
 Pulkovo e = 10h.43m.20s., M = 52m.
 Long waves were also recorded at Ekaterinburg and other European stations.

May 3d. Readings also at 5h. (Berkeley, Branner, and near Lick), 11h. (Almeria and near Toledo), 12h. (near Nagasaki), 14h. (Tiflis), 16h. (near Reykjavik (2)), 17h. (near Toledo), 18h. (near Alicante), 19h. (Riverview, Wellington, and Suva), 20h. (Baku, Ekaterinburg, and Scoresby Sund), 21h. (Andijan), 22h. (La Paz).

May 4d. 5h. 5m. 5s. Epicentre 0°5S. 122°4E. (as given by Batavia). N.3.

A = -536, B = +844, C = -009; D = +844, E = +536;
 G = +005, H = -007, K = -1000.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	6.6	119	1 29	-5	1 2 38	-10	—	—
Manila	15.2	354	1 3 21	-10	6 14	-6	—	—
Batavia	16.6	249	1 3 52	+3	1 6 59	+7	—	—
Medan	24.1	280	e 5 38	+27	1 9 16	-9	—	—
Osaka	37.3	17	e 7 25	+16	—	—	11.6	11.9
Andijan	61.3	318	e 9 50	-24	—	—	—	—
Tashkent	63.3	318	—	—	1 18 30	-29	31.9	—
Ekaterinburg	75.4	330	i 11 22	-21	e 19 52	?	29.9	—
Baku	77.2	312	—	—	e 21 9	-36	e 30.9	—
Tiflis	81.1	312	11 51	-23	21 48	-39	e 30.9	—
La Paz	N. 160.1	149	e 19 41	[-13]	—	—	—	—

Additional readings :—

Tashkent e = +19m.42s. and +22m.7s.
 Ekaterinburg i = +12m.1s.
 Long waves were also recorded at Hong Kong.

May 4d. Readings also at 0h. (Andijan, Ekaterinburg, Tiflis, Scoresby Sund, Sucre, La Plata, La Paz, Hastings, New Plymouth, and Wellington), 1h. (Bombay, Baku, Tashkent, Pulkovo, Copenhagen, Strasbourg, Stuttgart, Paris, De Bilt, Uccle, Florence, and Granada), 3h. (Hong Kong), 4h. (Sucre and near La Paz), 5h. (Tiflis), 6h. (Perth, Sitka, and Ekaterinburg), 7h. (Harvard, Florissant, Pittsburgh, Ottawa, Madison, Baku, Irkutsk, Tashkent, Sucre, and near La Paz), 8h. (Kodaikanal), 9h. (Santiago), 10h. (Tashkent, Almata, near Andijan, and Frunse), 11h. (Ekaterinburg, Pulkovo, Tiflis, Bombay, Almata, near Andijan, Frunse, and Tashkent), 13h. (Triest), 14h. (Baku), 15h. (near New Plymouth), 16h. (Sucre and near La Paz), 21h. (near Osaka), 22h. (Andijan, Ekaterinburg, Tashkent, and Bombay), 23h. (near La Paz).

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May 5d. 4h. 11m. 3s. Epicentre 34°·6N. 135°·3E. (given by Tokyo). N.1.

A = -·585, B = +·579, C = +·568 ; D = +·703, E = +·711 ;
G = -·404, H = +·399, K = -·823.

A depth of focus 0·060 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O-C.		S.	O-C.		L.	M.
					m.	s.		m.	s.		
Kobe	+2·6	0·1	311	0 45	+ 6	1 22	+13	—	—	—	1·4
Osaka	+2·5	0·2	75	0 44	+ 5	—	—	—	—	1·4	1·4
Yagi	+2·4	0·4	101	0 46	+ 6	1 22	+10	—	—	—	—
Sumoto	+2·4	0·4	234	0 46	+ 6	1 23	+11	—	—	1·4	—
Wakayama	+2·4	0·4	197	0 47	+ 7	1 24	+12	—	—	—	—
Kyoto	+2·4	0·5	40	0 45	+ 4	1 24	+10	—	—	—	—
Miyadu	+2·2	0·9	355	0 47	+ 3	1 24	+ 4	—	—	—	—
Hikone	+2·2	1·0	50	0 50	+ 4	1 26	+ 4	—	—	—	—
Toyouka	+2·2	1·0	337	0 46	0	1 23	+ 1	—	—	—	1·5
Kameyama	+2·2	1·0	76	0 47	+ 1	1 24	+ 2	—	—	—	—
Okayama	+2·2	1·1	273	0 51	+ 4	1 30	+ 5	—	—	—	—
Siomisaki	+2·2	1·2	162	0 49	0	1 26	- 1	—	—	—	—
Tadotu	+2·1	1·3	256	0 51	+ 2	1 27	0	—	—	—	—
Gihu	+2·0	1·5	56	0 48	- 2	1 26	- 4	—	—	—	—
Nagoya	+2·0	1·5	67	0 49	- 1	1 30	0	—	—	—	1·5
Muroto	+1·9	1·7	215	0 53	+ 2	1 35	+ 3	—	—	—	—
Koti	+1·9	1·8	234	0 54	+ 1	1 35	0	—	—	—	—
Hamamatu	+1·8	2·0	86	0 53	- 1	1 36	- 1	—	—	—	—
Matuyama	+1·7	2·2	250	0 56	0	1 40	0	—	—	—	1·7
Iida	+1·7	2·3	66	0 51	- 6	1 34	- 8	—	—	—	—
Hirosima	+1·6	2·4	265	0 56	- 1	1 42	0	—	—	—	—
Hamada	+1·6	2·4	276	0 57	0	1 44	+ 2	—	—	—	—
Matumoto	+1·5	2·7	53	0 55	- 5	1 42	- 6	—	—	—	—
Misima	+1·3	3·0	80	0 59	- 2	1 44	- 6	—	—	—	—
Numadu	+1·3	3·0	80	0 58	- 3	1 35	-15	—	—	—	—
Ito	+1·3	3·1	83	0 56	- 7	1 48	- 5	—	—	—	—
Nagano	+1·3	3·1	49	1 0	- 3	1 53	0	—	—	—	—
Oiwake	+1·2	3·2	56	0 59	- 4	1 52	- 1	—	—	—	—
Ooita	+1·2	3·3	246	1 9	+ 5	2 4	+ 9	—	—	—	—
Takada	+1·1	3·5	42	1 2	- 4	1 50	- 8	—	—	—	—
Yokohama	+1·1	3·6	75	1 4	- 3	2 8	+ 8	—	—	—	—
Maebasi	+1·1	3·6	60	0 59	- 8	—	—	—	—	—	—
Mera	+1·0	3·7	85	1 4	- 3	2 39	+39	—	—	—	—
Kumagaya	+1·0	3·7	64	1 3	- 4	1 52	- 8	—	—	—	—
Tokyo	+1·0	3·8	73	1 7	- 1	2 0	- 3	—	—	—	—
Hatidyozima	+0·9	4·1	110	1 10	- 1	2 7	- 1	—	—	—	—
Kumamoto	+0·8	4·2	246	1 14	+ 3	2 15	+ 7	—	—	—	—
Hukuoka	+0·8	4·2	257	1 13	+ 2	2 12	+ 4	—	—	—	2·3
Miyazaki	+0·8	4·2	232	1 14	+ 3	2 16	+ 8	—	—	—	—
Utsunomiya	+0·8	4·2	60	1 10	- 1	1 54	-14	—	—	—	—
Tulubasan	+0·8	4·2	66	1 8	- 3	2 2	- 6	—	—	—	—
Kakioka	+0·8	4·3	66	1 8	- 5	2 3	- 7	—	—	—	—
Niigata	+0·7	4·5	41	1 3	-11	1 45	-28	—	—	—	—
Mito	+0·7	4·6	66	1 12	- 3	2 10	- 5	—	—	—	—
Tyosai	+0·6	4·7	74	1 14	- 1	2 13	- 2	—	—	—	2·3
Nagasaki	+0·5	4·9	249	1 20	+ 3	2 28	+10	—	—	—	—
Hulustima	+0·4	5·2	52	1 13	- 7	2 16	- 7	—	—	—	—
Sendai	+0·3	5·8	49	1 24	- 3	2 32	- 4	—	—	—	—
Tomie	+0·3	5·8	252	1 29	+ 2	2 46	+10	—	—	—	—
Akita	+0·1	6·3	35	1 27	- 4	2 37	- 6	—	—	—	—
Mizusawa	+0·1	6·5	44	1 34	0	2 42	- 6	—	—	—	—
Morioka	0·0	6·9	40	1 37	- 1	2 53	- 3	—	—	—	—
Keizyo	-0·1	7·3	297	1 46	+ 4	3 14	+10	—	—	—	—
Azumi	-0·2	7·6	33	1 46	+ 1	3 6	- 3	—	—	—	—
Zinsen	-0·2	7·7	295	1 49	+ 3	3 50	+39	—	—	—	—

Continued on next page.

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	Corr. for Focus	Δ	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Nake	-0.3	7.9	220	1 59	+11	3 32	+18	—	—
Urakawa	-0.6	9.6	35	2 10	+3	3 46	-3	—	—
Sapporo	-0.6	9.7	27	2 7	-2	3 49	-2	—	—
Zi-ka-wei	-1.0	12.1	258	i 2 41	+5	5 1	+20	—	7.5
Hong Kong	-2.7	22.2	242	4 26	+2	8 5	+9	10.0	12.9
Manila	-2.9	23.8	217	4 43	+4	8 30	+6	10.6	—
Irkutsk	-3.5	28.3	318	4 57?	-21	9 57?	+20	18.9	—
Almata	-5.1	45.2	299	e 13 57	S	(e 13 57)	+19	—	—
Tashkent	-5.6	51.2	298	e 8 48	+30	i 15 12	+13	—	32.4
Ekaterinburg	-5.8	53.5	319	—	—	e 17 57?	?	—	—
Bombay	-6.0	57.1	271	9 10	+10	—	—	—	—
Baku	-6.5	65.3	303	—	—	e 18 23	+23	—	—
Kucino	-6.5	65.8	322	—	—	i 18 13	+6	e 33.6	36.1
Pulkovo	-6.6	67.5	328	e 10 13	+2	18 39	+11	—	—
Tiflis	-6.7	68.3	306	e 10 32	+16	e 18 50	+13	e 36.0	40.4
Scoresby Sund	-6.9	73.6	353	10 55	+5	19 55	+14	—	—
Lund	-7.1	77.2	331	—	—	20 29	+7	—	—
Copenhagen	-7.1	77.4	331	—	—	20 32	+7	—	—
Tinianaha	-7.2	81.0	51	i 11 35	+2	—	—	—	—
Santa Barbara	-7.3	81.6	53	e 11 37	+1	—	—	—	—
Haiwee	-7.3	81.7	52	e 11 37	0	—	—	—	—
Edinburgh	-7.3	82.8	338	—	—	20 57?	-29	—	—
Mount Wilson	-7.3	82.9	52	e 11 42	-2	—	—	—	—
Pasadena	-7.3	82.9	52	i 11 45	-1	e 14 57	PP	—	—
De Bilt	-7.3	83.0	331	—	—	e 21 30	+2	—	—
Stuttgart	-7.4	83.9	327	e 11 48	-1	e 21 37	0	e 36.9	—
La Jolla	-7.4	84.2	53	i 11 50	0	—	—	—	—
Uccle	-7.4	84.3	331	—	—	e 21 41	-1	e 36.9	—
Strasbourg	-7.4	84.6	328	e 13 57	?	i 21 48	+3	e 49.9	—
Florence	-7.4	86.5	323	11 12	-51	22 8	+2	e 38.9	46.9
St. Louis	-7.7	95.5	34	e 12 49	+2	e 22 39	-56	—	—

Additional readings:—

Osaka i = +48s.

Zi-ka-wei iZ = +4m.15s.

Irkutsk e = +7m.57s.?

Tashkent e = +16m.32s., +18m.19s., +19m.12s. and +20m.51s.

Kucino e = +19m.14s., +20m.46s., +21m.49s., and +25m.56s.

Pulkovo SKKS = +19m.31s., PS = +22m.17s., PPS = +23m.9s.

Tiflis e = +27m.3s.

Stuttgart eEN = +24m.9s.

Long waves were recorded at Paris.

May 5d. 8h. 24m. 2s. Epicentre 39° 5S. 177° 6E. (given by Wellington). N.3.

A = -.771, B = +.032, C = -.636; D = +.042, E = +.999;

G = +.635, H = -.027, K = -.772.

	Δ	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Hastings	0.6	256	0 28	+19	—	—	—	—
Arapuni	2.1	313	0 32	+2	0 58	+4	—	—
Wellington	2.8	230	0 39	-1	1 11	-1	—	—
Seatoun	2.8	230	-0 2?	-42	0 27	?	—	—
New Plymouth	2.8	279	-0 2?	-42	0 32	?	—	—
Takaka	3.9	248	0 52	-4	1 34	-6	—	2.1
Glenmuick	4.8	223	1 58?	+50	2 50	+47	—	—
Christchurch	5.5	221	1 18	0	2 12	-8	—	4.0
Suva	21.4	2	5 58?	+74	—	—	—	—
Riverview	21.9	277	e 4 52	+2	8 48	+4	e 10.7	13.0
Sydney	21.9	277	15 10	+20	i 9 10	+26	11.0	13.7
Melbourne	25.4	263	5 32	+8	9 48	0	13.0	14.6
Adelaide	31.2	266	—	—	e 10 21	-62	13.2?	16.9
Manila	75.5	304	11 54	+11	21 19	-7	35.0	40.0
La Paz	97.1	119	—	—	i 24 35	{+4}	46.5	55.4

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent	127.0	297	—	—	e 23 37	PPP	e 66.9	77.7
Ekaterinburg	136.4	316	e 19 29	[+12]	e 22 7	PP	e 57.0	82.8
Tiflis	144.6	288	19 41	[+ 8]	—	—	e 74.0	83.5
Ivigtut	144.7	37	19 22	[-11]	—	—	—	—
Scoresby Sund	147.4	13	19 46	[+ 8]	—	—	72.0	—
Pulkovo	151.2	325	i 19 52	[+ 9]	—	—	e 76.0	94.7
Edinburgh	163.6	2	—	—	e 28 58?	?	—	—
Stuttgart	167.6	322	e 19 58	[- 4]	e 25 4	PP	e 88.0	—
Strasbourg	168.4	325	e 19 58?	[- 4]	e 24 58?	PP	e 88.0	—
Florence	169.0	298	e 17 42	?	46 28	SS	87.0	100.0
Paris	170.0	341	e 20 20	[+16]	e 31 27	{-45}	91.0	104.0
Granada	177.5	158	i 20 19	[+12]	32 39	{-12}	—	99.3

Additional readings :-

Arapuni $P^* = +41s.$, $S_g = +1m.15s.$
 Wellington $P^* = +49s.$, $P_g = +57s.$, $sP = +1m.4s.$, $S^* = +1m.21s.$, $S_g = +1m.36s.$
 New Plymouth $P_g = +18s.$, $S_g = +49s.$
 Takaka $P^* = +1m.5s.$, $P_g = +1m.19s.$, $i = +1m.43s.$, $S_g = +2m.4s.$
 Glenmuick $S_g = +2m.58s.$
 Christchurch $P_g = +1m.47s.$, $PS = +2m.1s.$, $i = +2m.23s.$, $S^*? = +2m.32s.$,
 $S_g? = +2m.56s.$
 Melbourne $i = +6m.11s.$
 Tashkent $e = +31m.4s.$ = $PS - 1s.$ and $+33m.14s.$
 Tiflis $PPP = +22m.58s.$ = $PP + 9s.$
 Stuttgart $eZ = +21m.16s.$ = $PKP_z - 2s.$, $e = +34m.58s.$ = $SKSP - 30s.$
 Strasbourg $e = +28m.58s.$? = $PPP - 7s.$ and $+38m.58s.$?
 Florence $P = +37m.46s.$
 Granada $PP = +25m.55s.$ and $+26m.19s.$, $PPP = +30m.19s.$, $SKSP = +36m.22s.$
 Long waves were also recorded at Perth, Bombay, Hyderabad, Irkutsk, Rio de Janeiro, De Bilt, Uccle, San Fernando, Ottawa, and Harvard.

May 5d. 8h. 29m. 33s. (I) } Epicentre 39°·5S. 177°·6E. (as at 8h.). $\frac{IX}{X}$
 9h. 34m. 53s. (II) } $\frac{X}{X}$
 11h. 31m. 1s. (III) } $\frac{X}{X}$

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
II Hastings	0.6	256	0.7	-2	0 10	-5	—	—
I Wellington	2.8	230	0.40	0	1 13	+1	—	—
II	2.8	230	0.7?	-33	—	—	—	—
III	2.8	230	0.40	0	1 11	-1	1.7	—
I New Plymouth	2.8	279	0.33	-7	1 2	-10	—	—
II	2.8	279	0.40	0	1 11	-1	—	—
III	2.8	279	0.50	P_g	1 21	S^*	1.5	—

Additional readings :-

Wellington III $S_g = +1m.39s.$
 New Plymouth III $P^* = +57s.$, $P_g = +1m.6s.$, $i = +1m.14s.$, and $+1m.25s.$, $S_g = +1m.39s.$
 Christchurch and Seatoun mention shock III at 11h.34m. and 11h.33m. respectively.

May 5d. Readings also at 1h. (near Tyosi), 3h. (Kodaikanal), 4h. (Florence), 6h. (Hastings), 8h. (near New Plymouth and near Mizusawa), 9h. (Wellington), 10h. (Berkeley and Lick), 11h. (near Hastings (2) and New Plymouth), 13h. (near Taihoku), 16h. (Hastings and New Plymouth), 18h. (near Alicante), 23h. (Wellington and near Hastings).

May 6d. 5h. 35m. 8s. Epicentre 0°·5S. 122°·4E. (as on 4d.). X.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	6.6	119	1 19	-15	2 24	-24	—	—
Manila	15.2	354	3 27	-4	6 26	+6	8.1	—
Almata	59.7	324	e 9 52	-10	—	—	—	—
Andijan	61.3	318	e 10 19	+5	—	—	—	—
Tashkent	63.3	318	e 10 36	+9	e 18 5	-54	—	38.6
Ekaterinburg	75.4	330	i 11 42	-1	21 13	-12	45.9	—
Baku	77.2	312	e 12 1	+8	21 59	+14	e 38.9	—
Tiflis	81.1	312	12 16	+2	e 22 28	+1	—	—
Pulkovo	91.5	330	—	—	1 23 55	-15	—	—

Tashkent gives also $e = +20m.23s.$ = $S_gS + 7s.$

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May 6d. Readings also at 0h. (Hong Kong, Ekaterinburg, Tiflis, Tashkent, Almata, Andijan, Pulkovo, Copenhagen, De Bilt, Strasbourg, Stuttgart, and near Santiago), 1h. (La Paz and Paris), 4h. (Berkeley, Ukiah, St. Louis, Chicago, Harvard, Honolulu T.H., Baku, Ekaterinburg, Tiflis, Tashkent, Pulkovo, and Scoresby Sund), 5h. (Irkutsk, Kucino, Copenhagen, Edinburgh, Uccle, De Bilt, Paris, Strasbourg, Stuttgart, and San Fernando), 9h. (Kodaikanal), 10h. (Edinburgh), 11h. (near Samarkand), 14h. (Tyosil and near Mizusawa), 15h. (Lick), 16h. (Alicante), 18h. (near Hastings), 22h. (Ponta Delgada).

May 7d. 14h. 54m. 15s. Epicentre 36°·3N. 44°·9E. N.3.

A = +·571, B = +·569, C = +·591; D = +·706, E = -·708;
G = +·419, H = +·418, K = -·806.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o	o	m. s.	s.	m. s.	s.	m.	m.
Tiflis	5·4	359	1 22	+ 5	2 49	S _g	—	5·1
Baku	5·7	42	i 1 52	P _g	i 3 12	S _g	3·6	—
Ksara	7·8	255	1 47	- 4	4 0	S _g	—	—
Helwan	13·0	244	3 5	+ 3	6 53	S _g	—	10·4
Kucino	20·1	349	4 31	0	8 16	+ 8	10·2	12·4
Andijan	21·9	70	e 4 50	0	—	—	—	—
Ekaterinburg	23·1	22	e 5 2	0	i 9 15	+ 8	12·2	—
Pulkovo	25·3	343	5 21	- 2	9 55	+ 9	13·2	15·8

Tiflis gives also e = +1m.38s. = P_g + 4s. and +2m.30s. = S* - 9s.

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

May 7d. Readings also at 1h. (La Plata, Sucre, La Paz, near Santiago, and near Andijan), 2h. (Tiflis and near La Paz), 3h. (near Mizusawa), 11h. (Tucson), 12h. (Alicante and Toledo), 17h. (Hastings and near Trieste), 26h. (La Paz and Sucre), 21h. (La Paz), 22h. (De Bilt, Uccle, and Stuttgart), 23h. (Pasadena).

May 8d. 19h. 21m. 17s. Epicentre 32°·5S. 69°·5W. (as on 1931 Aug. 17d.). R.3.

A = +·295, B = -·790, C = -·537; D = -·937, E = -·350;
G = -·188, H = +·503, K = -·843.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o	o	m. s.	s.	m. s.	s.	m.	m.
Santiago	1·4	315	1 0	+40	1 29	+53	1·5	1·7
La Plata	10·0	108	2 27	+ 6	4 26	+13	4·9	—
La Paz	16·0	5	3 39	- 2	i 6 24	-14	7·2	8·2
La Jolla	79·3	321	e 12 4	0	—	—	—	—
Riverside	80·2	321	e 12 8	- 1	—	—	—	—
Pasadena	80·7	321	i 12 12	0	—	—	—	—
Mount Wilson	80·8	321	e 12 12	0	—	—	—	—
Santa Barbara	81·9	320	e 12 14	- 4	—	—	—	—
Halwee	82·2	322	e 12 20	+ 1	—	—	—	—
Tinemaha	83·1	323	e 12 24	0	—	—	—	—
Andijan	148·6	64	e 19 44	[+ 4]	—	—	—	—
Frunse	150·0	59	e 19 52	[+10]	—	—	—	—

Additional readings:—

Pasadena eZ = +12m.50s.

Santa Barbara iE = +12m.27s.

May 8d. Readings also at 1h. (Hastings), 3h. (Andijan), 8h. (La Paz, Tiflis, Andijan, near Batavia, and Malabar), 9h. (Baku, Ekaterinburg, and Irkutsk), 11h. (near Sumoto (2)), 13h. (Branner and near Lick), 14h. (Andijan and Frunse), 15h. (Andijan and near Wellington), 17h. (Belgrade), 19h. (Frunse and near Andijan).

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May 9d. Readings at 0h. (Ekaterinburg, Tifis, Manila, and near Amboina (2)), 3h. (Kobe and near Sumoto), 5h. (near Alicante), 14h. (La Paz and Manila), 16h. (Cheb), 19h. (Rio de Janeiro and La Paz), 20h. (near Algiers), 22h. (La Paz and near Hastings), 23h. (Cheb).

May 10d. 11h. 52m. 54s. Epicentre 33°·5S, 70°·5W. N.3.

A = +·278, B = -·786, C = -·552; D = -·943, E = -·334;
G = -·184, H = +·520, K = -·834.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago	0·2	287	0 28	+25	0 42	+37	0·7	0·7
La Plata	10·5	101	2 30	+ 2	—	—	5·3	—
Sucre	15·2	19	e 2 33	+ 2	—	—	—	—
La Paz	17·1	8	i 3 58	+ 3	7 9	+ 5	—	9·1
Rio de Janeiro	N. 26·2	73	—	—	e 10 51	SS	e 13·7	—
La Jolla	79·6	322	e 12 5	- 1	—	—	—	—
Riverside	80·5	322	e 12 9	- 1	—	—	—	—
Mount Wilson	81·0	322	e 12 14	+ 1	—	—	—	—
Pasadena	81·0	322	i 12 13	- 0	—	—	—	—
Tinemaha	83·4	324	i 12 24	- 1	—	—	—	—
Baku	132·8	64	e 22 44	PKS	—	—	—	—
Andijan	149·8	65	e 19 47	[+ 5]	—	—	—	—

Additional readings :-

La Paz iN = +4m.32s., e = +6m.20s.
Pasadena eZ = +12m.52s.
Baku e = +23m.17s.

May 10d. 14h. 23m. 3s. Epicentre 7°·6S, 128°·3E. (as on 1930 April 27d.) R.3.

A = -·614, B = +·778, C = -·132; D = +·785, E = +·620;
G = +·082, H = -·104, K = -·991.

The depth of focus 0·020 has been retained.

	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.	
Amboina	+0·1	3·9	359	i 1 14	+17	2 40	+58	—	—
Batavia	-0·9	21·3	272	e 4 37	+ 3	8 3	-11	—	—
Manila	-1·0	23·3	342	i 4 52	- 2	8 48	- 4	—	—
Perth	-1·2	27·0	204	5 27	0	10 27	+32	—	11·7
Adelaide	-1·3	29·0	162	—	—	i 10 19	- 8	i 17·3	18·4
Medan	-1·4	31·6	290	e 5 10	-57	i 10 9	-58	—	—
Riverview	-1·5	33·7	143	14 7	?	—	—	—	17·6
Sydney	-1·5	33·7	143	—	—	e 11 33	- 5	18·8	19·0
Melbourne	-1·5	33·8	154	—	—	i 11 35	- 5	20·6?	—
Bombay	-2·4	60·7	299	e 4 17	?	—	—	—	—
Irkutsk	-2·5	63·3	344	e 10 6	- 4	18 25	- 1	e 30·0	—
Andijan	-2·6	70·4	319	e 10 57	0	e 19 58	+ 4	—	—
Tashkent	-2·6	72·8	319	e 10 5	-67	i 19 20	-64	—	—
Baku	-2·7	86·2	312	e 12 29	+ 3	22 39	-13	e 38·0	—
Tifis	-2·8	90·2	312	e 13 4	+19	e 23 1	[-33]	e 51·9	—
Pulkovo	-2·9	100·6	330	—	—	i 23 50	[-39]	—	—
La Paz	N. —	150·9	146	19 29	[-14]	—	—	—	—

Additional readings :-

Manila iEN = +9m.45s.
Adelaide i = +14m.2s. and +16m.51s. = S₀S + 20s.
Melbourne i = +15m.4s.
Tifis eSKS = +23m.26s. = S - 5s., e = +38m.39s.
La Paz iN = +19m.50s. = PKP₁ - 13s.

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May 10d. Readings also at 1h. (Tiflis), 3h. (near Tananarive), 6h. (Hastings), 7d. (Hamburg), 10h. (near Hastings), 14h. (near Sumoto), 20h. (Mizusawa and near Andijan), 21h. (Branner).

May 11d. 6h. 53m. 42s. Epicentre $34^{\circ}8'N$. $142^{\circ}5'E$. N.2.

A = -0.651, B = +0.500, C = +0.571; D = +0.609, E = +0.793;
G = -0.453, H = +0.347, K = -0.821.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o.	o.	m. s.	s.	m. s.	s.	m.	m.
Tyosi	1.6	305	e 0 37	-14	1 4	+23	1.8	3.6
Mizusawa	4.4	346	1 30	+27	2 35	+42	—	—
Nagoya	4.5	276	1 6	+2	1 40	-15	—	—
Osaka	5.7	271	0 53	-28	i 2 50	+25	7.8	—
Kobe	6.0	271	e 1 16	-9	3 35	+62	e 4.3	5.8
Sumoto	6.2	268	1 19	-9	3 40	+62	e 5.2	8.6
Toyooka	6.2	280	e 1 34	+6	—	—	i 2.2	—
Koti	7.5	263	e 1 18?	-28	—	—	3.3	—
Hong Kong	27.7	251	2 59	?	10 27	0	—	19.5
Manila	28.0	229	6 6	+19	11 38	SS	15.3	—
Irkutsk	32.2	315	e 6 27	+3	e 11 46	+8	17.3	21.6
Phu-Lien	34.5	255	7 18?	+33	—	—	19.3	—
Almata	50.4	301	e 6 18	?	—	—	—	—
Andijan	54.2	298	e 9 18	-5	—	—	—	—
Agra	E. 54.8	280	9 20	-7	16 56	-10	—	—
Tashkent	56.3	300	i 9 31	-7	17 29	+2	—	38.6
Ekaterinburg	57.2	320	i 9 44	-1	i 17 42	+3	27.3	37.5
Bombay	63.0	275	10 15	-10	—	—	—	—
Baku	70.1	306	e 11 7	-4	e 20 26	+4	39.3	47.7
Pulkovo	70.3	330	e 11 7	-6	20 27	+2	37.8	47.8
Tiflis	72.6	309	11 22	-4	20 53	+1	39.8	47.2
Scoresby Sund	74.1	355	—	—	21 24	+14	42.3	—
Tinemaha	E. 76.2	54	e 11 49	+2	—	—	—	—
Mount Wilson	E. 77.9	56	e 11 59	+2	—	—	—	—
Pasadena	Z. 77.9	56	e 11 54	-3	—	—	—	—
Lund	79.7	334	—	—	22 14	+2	42.3	—
Copenhagen	80.0	334	—	—	22 18	+2	42.3	—

Additional readings:—

Osaka $i = +1m.17s.$

Kobe $ePN = +1m.22s., PZ = +1m.25s., SE = +3m.39s., eSN = +3m.45s.$

Sumoto $SEZ = +3m.47s.$

Toyooka $ePN = +1m.48s.$

Tiflis $ePPP = +15m.51s.$

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

May 11d. Readings also at 0h. (Hastings), 2h. (near Andijan and Tashkent), 3h. (near Andijan and Tashkent), 4h. (Florence), 6h. (near Manila), 7h. (Sucre and near La Paz), 9h. (near Manila), 10h. (Berkeley, Branner, and Lick), 12h. (Granada, Kobe, and near Sumoto), 15h. (near Apia), 23h. (Samar-kand),

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May 12d. 6h. 7m. 50s. Epicentre 0°·7N. 127°·0E. N.2.

A = -·602, B = +·799, C = +·012; D = +·799, E = +·602;
G = -·007, H = +·010. K = -1·000.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	4·5	165	1 10	+ 6	i 2 12	+17	—	—
Manila	15·1	337	i 3 33	+ 3	6 41	+24	8·4	—
Malabar	20·9	247	e 4 41	+ 2	—	—	—	—
Batavia	21·3	251	4 42	- 1	i 8 39	+ 7	—	—
Hong Kong	25·0	331	5 20	0	9 28	-13	—	—
Phu-Lien	28·3	317	e 5 50	0	10 25	-12	12·2	—
Medan	28·4	276	i 5 50	- 1	—	—	—	—
Zi-ka-wei	z. 31·0	351	e 6 18	+ 4	11 10	-10	—	15·8
Perth	34·3	197	—	—	i 12 10	- 1	—	18·3
Osaka	34·9	12	7 3	+15	(12 32)	+12	12·5	12·7
Nagoya	35·7	12	e 7 2	+ 7	—	—	—	—
Adelaide	37·3	165	—	—	i 12 55	- 1	—	—
Mizusawa	40·6	17	7 10	-27	—	—	—	—
Riverview	41·3	150	—	—	e 13 56	0	—	—
Melbourne	41·9	159	—	—	i 14 5	0	—	—
Kodaikanal	50·2	284	9 49	+56	—	—	—	—
Irkutsk	55·0	342	e 9 30	+ 1	e 16 57	-12	26·2	—
Bombay	56·2	292	e 9 29	- 8	—	—	—	—
Andijan	63·5	316	e 10 27	- 2	e 18 48	-13	—	—
Tashkent	65·9	316	i 11 24	+39	i 20 10	+39	e 31·2	41·5
Samarkand	66·9	313	e 10 30	-21	—	—	—	—
Ekaterinburg	76·7	329	i 11 48	- 2	i 21 23	-16	30·2	—
Baku	79·8	311	i 12 8	+ 1	i 22 2	-12	e 38·2	43·6
Tiflis	83·8	312	i 12 26	- 1	22 39	-16	e 42·8	50·3
Pulkovo	92·8	330	e 13 20	+10	24 7	-15	48·2	—
Copenhagen	103·0	328	—	—	32 46	SS	52·2	—
Stuttgart	107·4	322	e 18 46	PP	—	—	e 66·2	—
De Bilt	108·3	327	—	—	e 27 10?	PS	e 54·2	—
La Paz	z. 158·3	137	e 20 14	[+23]	—	—	—	—

Additional readings and note :—

Batavia i = +7m.51s.

Osaka i = +8m.8s. and +10m.11s.

Mizusawa S = +7m.52s. : readings given as for a local shock.

Riverview i = +17m.14s.

Melbourne i = +17m.28s.

Tiflis SKS = +23m.0s.

Pulkovo eSKS = +23m.40s., PS = +25m.12s.

May 12d. Readings also at 0h. (near Kobe, Sumoto, Osaka, also near Nagoya), 2h. (Almata and near Sumoto), 3h. (La Paz), 6h. (Tiflis), 11h. (near Kobe, Osaka, and Sumoto), 12h. (Phu-Lien, Malabar, and near Batavia), 13h. (Medan, near Amboina, and near Tananarive), 14h. (Toyooka, Koti, and near Matuyama), 15h. (Tananarive), 20h. (Agra, Baku, Ekaterinburg, and Tashkent).

May 13d. Readings at 0h. (Tiflis, Christchurch, near Wellington, Glenmuick, and New Plymouth), 3h. (Graz and Tiflis (2)), 4h. (near Amboina), 5h. (Sydney, Zurich, Liek, and near La Paz), 6h. (near Tananarive), 13h. (near Christchurch, Wellington, Glenmuick, New Plymouth, and Takaka), 20h. (near Neuchâtel and Zurich), 21h. (near Mizusawa).

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May 14d. 3h. 45m. 0s. Epicentre 35°·9N. 28°·5E. N.2.

A = +·712, B = +·387, C = +·586; D = +·477, E = -·879;
G = +·515, H = +·280, K = -·810.

		Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
		o	c	m. s.	s.	m. s.	s.	m.	m.
Ksara	N.	6·4	107	i 1 33	+ 2	i 2 42	- 1	3·4	—
Helwan		6·4	157	e 1 30	- 1	i 2 45	+ 2	—	8·2
Yalta		9·6	25	e 2 16	0	—	—	—	—
Sebastopol		9·6	22	e 3 16	+60	—	—	—	—
Simferopol		10·0	23	e 2 20	- 1	(e 4 24)	+11	e 4·4	—
Theodosia		10·5	28	e 2 29	+ 1	—	—	—	—
Belgrade		10·8	328	e 3 25	+53	e 4 19	-14	e 5·7	6·6
Budapest		13·6	332	3 20	+10	—	—	8·0	9·0
Zagreb		13·7	320	e 3 18	+ 7	e 5 52	+ 8	—	8·0
Tiflis		13·9	61	3 18	+ 4	5 54	+ 5	8·0	9·3
Triest		14·8	316	i 3 30	+ 4	i 6 26	+16	e 8·5	—
Vienna		15·3	328	e 3 35	+ 3	(6 35)	+13	—	10·0
Florence		15·4	306	3 37	+ 3	5 35	-49	8·0	9·5
Innsbruck		17·1	317	e 3 42	-13	—	—	—	—
Baku		17·4	69	e 4 5	+ 6	e 7 54	+43	10·0	11·4
Zurich		18·7	314	e 4 16	+ 1	—	—	—	—
Stuttgart		19·2	318	e 4 22	+ 1	e 7 42	- 8	e 10·0	—
Neuchatel		19·5	311	e 4 24	0	e 7 58	+ 2	e 10·9	—
Königsberg		19·7	346	e 4 57	+31	i 8 1	+ 1	—	11·0
Strasbourg		19·8	316	e 4 29	+ 2	e 8 5	+ 3	e 11·0	—
Potsdam		19·8	331	e 4 24	- 3	8 12	+10	—	11·0
Besançon		20·2	311	e 3 33	-59	—	—	—	—
Göttingen		20·5	326	e 4 47	+12	e 8 20	+ 4	e 11·0	11·9
Algiers		20·5	280	i 4 36	+ 1	8 28	+12	10·0	—
Kucino		20·9	15	e 5 13	+34	9 0	+36	10·7	13·5
Hamburg		21·9	330	e 4 48	- 2	e 9 0?	+16	—	—
Lund		22·4	337	5 12	PP	8 53	0	11·0	—
Copenhagen		22·7	336	5 13	+15	8 59	0	11·0	—
Ucle		22·9	319	e 5 16	+16	e 9 8	+ 5	e 11·0	—
De Bilt		23·1	322	—	—	e 9 0?	- 7	e 11·0	13·4
Pulkovo		23·9	2	i 5 11	+ 2	e 9 25	+ 4	12·0	13·5
Helsingfors	N.	24·4	356	e 5 15	+ 1	e 9 32	+ 2	e 15·0	—
Oxford	N.	26·5	316	—	—	e 11 0	SS	—	—
Ekaterinburg		30·0	36	i 6 1	- 4	e 10 56	- 8	13·5	—
Tashkent		32·0	68	e 7 54	PP	i 11 15	-20	e 17·0	21·6

Additional readings and note :—

Zagreb e = +3m.45s.

Tiflis PPP = +3m.28s., SS = +6m.20s.

Vienna PPP = +4m.32s., i = +5m.31s., S = +8m.16s., SS = +9m.13s.; true S is given as P_cP.

Innsbruck e = +4m.1s. = PP - 1s.

Stuttgart iPPEN = +4m.42s., e = +5m.8s.

Königsberg iN = +8m.13s. = SS - 6s., eE = +11m.3s.

Helsingfors eN = +7m.6s., eE = +7m.11s., eSN = +9m.48s., eSS = +11m.35s.,

eS_cSN = +16m.2s., eS_cSE = +16m.5s.

Tashkent i = +10m.50s.

Long waves were also recorded at Kew, Upsala, Granada, Adelaide, Suva, and Wellington.

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May 14d. 13h. 11m. 6s. Epicentre 0°·5N. 126°·0E. N.I.

Probable error of epicentre $\pm 0^{\circ}\cdot 24$.

Epicentre given by Batavia.

A = -·588, B = +·809, C = +·009; D = +·809, E = +·588;
G = -·005, H = +·007, K = -1·000.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	14·9	341	i 3 35	+ 8	6 32	+19	—	—
Malabar	19·9	247	i 4 36	+ 7	i 8 14	+10	—	—
Batavia	20·3	250	i 4 32	- 1	9 0	+48	—	—
Soengei Langka	21·6	254	4 56	+10	8 45	+ 7	—	—
Isigakizima	23·9	356	5 9	0	9 25	+ 4	—	—
Hong Kong	24·7	333	5 14	- 3	9 9	-27	—	13·9
Taihoku	24·9	350	5 19	0	(9 30)	- 9	9·5	—
Naha	25·8	3	5 33	+ 6	10 7	+12	—	—
Medan	27·5	277	4 47	-56	—	—	—	—
Phu-Lien	27·8	319	e 5 44	- 1	i 10 15	-13	12·4	16·2
Nake	28·0	7	5 50	+ 3	10 39	+ 7	—	—
Titizima	30·8	29	6 11	- 1	11 17	0	—	—
Zi-ka-wei	31·0	352	i 6 15	- 1	11 16	- 4	15·4	15·7
Miyazaki	31·8	8	6 22	+ 1	11 29	- 3	—	—
Nagasaki	32·4	7	6 27	+ 1	11 41	0	—	—
Kumamoto	32·6	7	6 28	0	11 48	+ 3	—	—
Hukuoka	33·3	7	6 35	+ 1	i 11 53	+15	12·3	12·5
Matuyama	33·7	10	i 6 40	+ 2	(12 16)	- 3	e 15·8	15·9
Koti	33·8	11	e 6 39	0	e 12 0	PP	i 8·6	12·5
Perth	33·8	195	i 6 43	+ 4	i 7 59	—	—	—
Hamada	34·8	10	6 47	0	12 14	- 4	—	—
Sumoto	34·8	13	i 6 48	+ 1	12 20	+ 2	14·5	15·2
Hatidyozima	35·1	20	6 50	0	12 28	+ 5	—	—
Kobe	35·2	13	i 6 51	0	12 23	- 1	—	15·3
Osaka	35·3	13	6 51	- 1	(12 23)	- 3	12·4	16·4
Taikyu	35·4	4	6 54	+ 1	12 28	+ 1	—	—
Kyoto	35·7	13	6 57	+ 2	12 35	- 3	—	—
Toyooka	36·0	12	e 7 1	+ 3	i 12 19	-17	e 17·3	20·8
Nagoya	36·0	12	e 6 57	- 1	i 12 37	+ 1	i 17·7	22·1
	36·1	16	i 7 1	+ 2	12 45	+ 7	—	13·5
Zinsen	37·0	1	7 6	0	12 48	- 3	—	—
Adelaide	37·4	164	i 7 5	- 5	i 12 54	- 3	16·4	25·4
Tokyo	37·4	19	7 6	- 4	12 55	- 2	15·7	—
Tyosi	37·8	20	7 18	+ 5	12 59	- 4	15·0	16·6
Kakioka	38·0	19	7 13	- 2	12 56	-10	—	—
Dairen	38·6	354	7 21	+ 1	13 12	- 3	—	—
Sendai	40·1	19	7 33	0	13 36	- 2	—	—
Chiufeng	40·6	348	e 7 36	- 1	i 13 46	+ 1	16·7	—
Mizusawa	41·0	18	7 42	+ 2	13 50	- 1	19·7	—
	41·0	18	7 39	- 1	13 52	+ 1	19·9	—
Morioka	41·6	18	7 45	0	14 3	+ 3	—	—
Riverview	41·7	148	i 7 44	- 2	i 14 3	+ 1	18·6	29·6
Sydney	41·7	148	i 7 42	- 4	i 14 0	- 2	20·5	24·4
Melbourne	42·1	157	i 7 49	0	13 58	-10	19·6	25·4
Calcutta	42·7	304	8 5	+11	13 45	-31	16·1	17·7
	42·7	304	7 55	+ 1	13 40	-36	18·1	19·6
Hsinking	43·4	359	8 21	+21	14 31	+ 4	—	—
Colombo	46·5	279	8 25	0	14 38	-34	23·2	24·4
Ootomari	48·4	16	8 46	+ 7	(15 37)	- 1	15·6	20·6
Kodalkana	49·3	284	8 32	-14	15 34	-17	—	30·4
Hyderabad	49·7	293	8 45	- 4	15 39	-18	24·7	30·7

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°		m. s.	s.	m. s.	s.	m.	m.
Sikka	51.9	15	10 20	(- 3)	—	—	—	—
Agra	53.1	305	i 9 12	- 3	i 16 35	- 8	—	—
Dehra Dun	54.4	309	9 34	+10	17 14	+13	28.6	34.9
Suva	54.8	113	11 19	PP	18 4	+58	23.9	—
Irkutsk	54.9	345	i 9 27	- 1	16 50	-18	23.9	—
Bombay	55.3	293	9 31	0	16 53	-20	25.0	27.8
New Plymouth	59.2	138	10 4	+ 5	18 2	- 3	28.4	—
Arapuni	59.7	136	9 54	- 8	18 4	- 8	31.9	33.9
Christchurch	60.6	143	10 7	- 2	18 9	-15	28.9	—
Wellington	60.7	140	e 10 9	0	18 14	-11	27.9	28.9
Almata	61.1	322	10 14	+ 2	18 25	- 5	—	—
Andijan	62.9	316	e 10 25	0	18 52	- 2	23.9	—
Apia	63.2	106	i 10 23	- 4	i 18 48	- 9	e 29.9	—
Tashkent	65.3	316	i 11 35	(+21)	—	—	—	—
Samarkand	66.3	313	e 10 34	-13	19 16	-20	25.9	—
Ekaterinburg	76.4	330	i 11 46	- 2	i 21 14	-22	—	47.6
Honolulu T.H.	77.0	68	i 11 53	+ 1	i 21 44	+ 1	32.7	—
Baku	79.1	312	i 12 4	+ 1	—	—	—	—
Tananarive	E. 79.3	251	e 12 2	- 2	i 21 54	-14	38.1	43.7
	N. 79.3	251	e 12 4	0	i 22 0	- 8	36.2	—
Tiflis	83.1	312	i 12 23	- 1	i 22 32	-16	e 40.9	—
Kucino	88.5	326	i 12 46	- 4	23 10	[-13]	42.9	—
Ksara	89.8	303	i 12 59	+ 3	i 23 36	[+ 5]	—	—
Theodosia	90.1	315	i 12 58	0	i 22 26	[-67]	43.9	56.1
Simferopol	91.0	315	12 59	- 3	i 23 34	[- 5]	37.8	—
Yalta	91.0	314	12 59	- 3	i 23 35	[- 4]	37.9	—
Sebastopol	91.3	315	13 2	- 1	i 23 38	[- 2]	44.9	—
Fulkovo	92.4	330	e 13 5	- 4	23 52	[+ 5]	41.9	51.3
Helwan	93.8	300	i 13 11	- 4	i 23 26	[-39]	—	30.9
Sitka	94.2	33	i 13 27	+10	i 24 26	- 9	i 37.9	—
Helsingfors	E. 95.0	331	i 13 19	- 1	i 24 19	(+ 4)	e 39.9	—
	N. 95.0	331	e 13 23	+ 3	i 24 38	- 4	e 38.9	—
	Z. 95.0	331	i 13 17	- 3	i 24 33	- 9	e 38.9	—
Lemberg	E. 97.3	321	e 13 32	+ 1	e 21 52	?	e 28.4	25.1
	N. 97.3	321	e 13 39	+ 8	e 22 20	?	e 28.0	24.9
Johannesburg	97.4	243	13 36	+ 4	(24 12)	[- 1]	24.2	—
Königsberg	98.5	326	i 13 35	- 2	i 25 3	-10	e 40.9	50.9
Upsala	98.6	331	e 13 32	- 5	i 24 5	[-14]	e 45.9	50.2
Belgrade	100.6	315	e 13 46	0	i 24 23	[- 6]	e 47.9	53.9
Budapest	101.0	319	13 40	- 8	(23 54)	[-37]	23.9	53.4
Lund	102.1	328	13 52	- 1	24 31	[- 5]	—	—
Vienna	102.5	320	13 53	- 2	i 22 48	?	—	63.9
Copenhagen	102.6	328	13 52	- 3	24 30	[- 8]	—	—
Victoria	E. 103.1	39	14 2	+ 4	(24 34)	[- 7]	24.6	49.1
	N. 103.1	39	14 1	+ 3	(25 2)	[-15]	25.0	—
Prague	103.2	322	i 14 8	+10	24 25	[-16]	e 42.9	52.9
Graz	103.4	318	e 13 55	- 4	i 24 45	[+ 3]	e 46.9	—
Potsdam	103.4	325	e 13 57	- 2	i 25 45	- 8	e 46.9	54.9
Zagreb	103.4	317	e 13 57	- 2	i 24 39	[- 3]	e 51.4	57.4
Seattle	104.0	40	14 20	+18	—	—	—	—
Bergen	104.1	334	13 52	-10	24 33	[-12]	—	—
Cheb	104.4	322	e 13 52	-12	e 24 38	[- 9]	e 50.9	64.6
Hamburg	104.6	326	e 14 2	- 3	i 24 36	[-12]	e 44.9	55.9
Jena	104.7	323	i 13 54	-11	i 24 36	[-12]	e 46.9	53.9
Cape Town	104.7	235	14 58	+53	26 20	+12	48.9	52.9
Triest	105.0	318	i 14 4	- 2	i 25 54	{+23}	e 36.6	—
Göttingen	105.4	325	i 14 7	- 2	i 24 45	[- 7]	e 48.9	52.4
Ukiah	105.6	48	e 14 13	+ 4	i 25 49	{+14}	e 48.9	—
Scoresby Sund	105.9	349	e 17 43	[-22]	e 24 54	[0]	50.9	—
Naples	E. 105.9	312	e 14 15	+ 4	i 24 50	[- 4]	56.9	61.9

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o.	m. s.	m. s.	s.	m. s.	s.	m.	m.
Venice	106.0	318	14 8	- 3	i 24 51	[- 4]	57.1	—
Berkeley	106.6	50	e 14 13	- 1	e 24 52	[- 5]	—	—
Branner	106.8	50	e 14 14	- 1	—	—	—	—
Stuttgart	106.9	322	i 14 14	- 2	i 24 57	[- 1]	e 51.9	—
Florence	107.2	316	i 14 9	- 8	27 59	PS	45.9	54.9
Karlsruhe	107.3	322	14 21	+ 3	27 0	?	e 56.9	66.6
Lick	107.3	50	e 14 18	0	—	—	—	—
Zurich	107.8	321	e 14 17	- 3	e 24 53	[-10]	—	—
Strasbourg	107.8	322	i 14 14	- 6	i 24 57	[- 6]	48.9	66.7
De Bilt	107.9	326	i 14 19	- 2	i 24 53	[-11]	e 50.9	55.4
Neuchatel	108.9	321	e 14 20	- 6	e 24 58	[-10]	—	—
Uccle	108.9	325	14 21	- 5	i 24 59	[- 9]	51.9	58.8
Dyce	109.1	333	14 27	0	i 28 5	PS	—	—
Besançon	109.4	321	e 14 31	+ 3	i 25 9	[- 2]	38.9	—
Tinemaha	109.9	50	e 14 28	- 3	—	—	—	—
Edinburgh	110.3	332	e 14 28	- 4	i 25 13	[- 2]	48.9	56.4
Haiwee	110.4	51	e 14 33	0	—	—	—	—
Grenoble	110.4	319	i 14 35	+ 2	24 59	[-16]	41.9	—
Paris	110.9	323	e 14 31	- 4	25 26	[+ 9]	28.9	62.9
Pasadena	110.9	53	e 14 30	- 5	e 25 1	[-16]	i 52.1	—
Mount Wilson	E. 110.9	53	e 14 36	+ 1	—	—	—	—
Stonyhurst	111.0	330	i 14 42	+ 7	25 0	[-18]	52.9	60.1
Kew	111.2	327	e 14 32	- 4	i 25 0	[-19]	54.9	56.3
Reykjavik	111.2	346	e 18 54	PP	e 26 24	[+ 9]	48.9	—
Marseilles	111.4	317	e 14 46	+ 9	28 39	PS	48.9	—
Riverside	111.5	53	e 14 39	+ 1	—	—	—	—
Oxford	111.5	328	e 14 31	- 7	i 24 28	[-52]	53.7	59.9
Bidston	111.6	330	i 14 44	+ 6	25 9	[-11]	54.2	63.6
La Jolla	111.9	54	e 14 48	+ 8	—	—	—	—
Bozeman	111.9	39	e 14 48	+ 8	i 25 54	[+32]	e 45.9	—
Barcelona	114.3	317	e 14 51	- 1	25 33	[+ 2]	e 37.4	61.0
Bagnères	114.8	319	e 15 0	+ 6	25 26	[- 7]	43.9	—
Algiers	115.5	311	i 14 56	- 2	i 25 28	[- 7]	56.9	69.9
Tortosa	E. 115.7	316	e 14 57	- 2	29 13	PS	50.0	61.6
Tucson	N. 115.7	316	14 55	- 4	29 19	PS	e 55.9	60.0
	117.2	53	15 10	+ 4	e 27 44	?	49.7	—
Alicante	117.5	314	e 15 11	+ 4	e 26 59	{ 0 }	e 36.2	68.9
Denver	118.6	44	e 18 39	[- 3]	i 27 36	{ +29 }	e 49.9	—
Toledo	119.2	317	e 15 11	- 4	i 27 2	{ - 9 }	e 56.5	—
Almeria	119.9	313	e 18 44	[- 2]	29 46	PS	e 53.9	69.9
Granada	120.1	314	e 15 12	- 7	25 36	[-15]	59.8	74.2
Malaga	121.0	314	e 15 13	- 11	25 59	[+ 6]	56.0	65.3
Serra do Pilar	121.5	320	i 18 59	[+10]	—	—	—	—
San Fernando	122.4	314	e 15 18	+ 13	i 27 20	{ -13 }	—	—
Chicago	128.0	32	e 18 56	[- 7]	i 29 0	{ +51 }	53.8	—
Florissant	128.4	37	i 16 2	+ 2	i 25 54	[-21]	—	—
St. Louis	N. 128.7	37	e 16 2	+ 1	i 25 54	[-22]	—	—
Ann Arbor	129.5	28	e 19 12	[+ 6]	i 22 42	PKS	i 52.6	63.5
Little Rock	129.7	42	e 19 5	[- 1]	22 27	PKS	—	—
Ottawa	130.2	19	e 19 7	[0]	e 26 34	[+14]	e 54.9	—
Toronto	130.3	23	i 16 8	+ 1	—	—	—	—
Buffalo	131.2	24	i 16 12	- 2	i 22 42	PKS	e 38.9	—
Harvard	E. 134.4	17	i 19 28	[+14]	—	—	—	—
Fordham	135.2	20	e 16 31	- 3	—	—	—	—
Georgetown	135.2	24	e 16 32	- 2	23 12	PKS	—	—
Charlottesville	135.3	27	e 19 18	[+ 3]	i 31 46	SKSP	e 51.5	—
Columbia	137.2	33	i 19 22	[+ 4]	e 32 4	SKSP	e 55.9	—
Santiago	143.5	156	i 19 30	[+ 1]	—	—	—	—
La Plata	145.4	175	i 19 33	[- 2]	—	—	61.6	—
Port au Prince	153.8	43	i 19 54	[+ 7]	27 1	?	47.9	—
Rio de Janeiro	E. 155.3	204	i 19 46	[- 2]	i 30 29	{ -23 }	i 46.9	—
San Juan	157.6	32	i 19 57	[+ 6]	—	—	52.6	—
Sucre	158.4	150	i 19 55	[+ 4]	27 4	PPP	—	—
La Paz	158.8	139	i 19 55	[+ 3]	i 27 7	PPP	75.7	112.6

For Notes see next page.

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NOTES TO MAY 14d. 13h. 11m. 6s.

Additional readings:—

Malabar iPP = +4m.55s.
 Batavia iPPZ = +5m.18s., iPPN = +5m.22s.
 Medan i = +4m.54s., iPP = +5m.42s.
 Zi-ka-wei iN = +6m.34s., PPN = +6m.56s., iN = +8m.20s. and +10m.40s.,
 PSN = +11m.26s., iN = +12m.2s.
 Soengei Langka PP = +5m.39s.
 Koti iZ = +6m.45s. and +7m.1s., eSN = +12m.6s., iSE = +12m.9s., c =
 +14m.42s. =SS-17s.
 Sumoto iPZ = +6m.54s., SE = +12m.24s.
 Kobe iPP = +7m.13s., eSZ = +12m.25s., SSN = +14m.28s., PPPP'Z =
 +39m.20s., PPPP'E = +40m.21s., iE = +41m.24s.
 Osaka i = +14m.57s.
 Toyooka iP = +7m.2s., iPPE = +8m.0s., iPPN = +8m.26s., iPPP = +9m.4s.,
 ISSN = +15m.22s., eSSE = +15m.24s., iSSZ = +15m.27s.
 Nagoya P_r = +7m.19s.
 Adelaide i = +7m.27s., iPPP = +8m.38s., iSS = +15m.4s.
 Chiufeng iN = +8m.22s. and +8m.35s., PPN = +8m.54s., iZ = +9m.53s.,
 PPPPE = +10m.31s., iZ = +11m.24s., iPSN = +13m.37s., iSN = +13m.51s.,
 i = +14m.33s., iN = +14m.49s., iE = +15m.43s., SS'N = +16m.13s.,
 SSE = +16m.19s.
 Riverview iPZ = +7m.47s., iEN = +7m.55s., and +8m.0s., iZ = +8m.19s.
 and +8m.23s., iEN = +8m.25s. and +8m.44s., iZ = +9m.27s., iEN =
 +9m.43s. =P_cP-4s., iZ = +9m.45s. and +10m.3s., iEN = +10m.6s.,
 iSN = +14m.8s., iN = +17m.4s., iEZ = +17m.10s., iN = +17m.29s.
 Sydney PP = +8m.42s., PPP = +9m.36s., SS = +16m.24s., SSS = +17m.24s.
 Melbourne PPP = +9m.27s. =PP+5s.
 Ootomari P = +9m.54s.
 Agra PN = +9m.16s.
 Suva PP = +13m.14s.
 Arapuni PP = +12m.29s., PPP = +13m.34s., SS = +25m.14s.
 Wellington iP = +10m.14s., PP = +13m.9s., SKS = +17m.19s., SS = +22m.42s.,
 SSS = +24m.24s.
 Apia PP = +13m.4s., PPP = +14m.14s., PS = +19m.11s.
 Honolulu T.H. i = +21m.26s.
 Tananarive iEN = +12m.9s., PPN = +15m.21s., N = +21m.48s., iPS =
 +22m.20s., SSE = +27m.15s. =SS-20s.
 Pulkovo iPP = +16m.45s., i = +23m.7s.
 Sitka ePP = +16m.56s., eSS = +30m.2s., iSSS = +34m.10s.
 Helsingfors iZ = +14m.27s., iE = +15m.25s., ePPN = +16m.26s., iPPZ =
 +16m.45s., ePPE = +17m.1s., PPP = +19m.47s., iZ = +21m.24s.,
 eSKSZ = +23m.49s., iSKSN = +23m.52s., iSKSE = +23m.55s., iPSE =
 +24m.54s., iPSZ = +25m.13s., iPSN = +25m.38s., iPPSZ = +25m.42s.,
 iPPSE = +25m.49s., eN = +26m.54s.?, iSSE = +30m.52s., iSSN = +31m.1s.,
 iSSSN = +34m.29s., eSSSE = +34m.49s., eSSSZ = +34m.51s.
 Johannesburg S = +17m.30s. =PP+7s.
 Königsberg iZ = +13m.39s., iN = +13m.44s. and +13m.47s., iZ = +13m.51s.,
 iN = +13m.57s., iE = +14m.8s. and +14m.16s., iZ = +16m.49s., iN =
 +16m.51s., iPPE = +17m.41s., iN = +17m.51s., iPPPN = +19m.42s.,
 iN = +20m.49s., iSKS = +24m.3s., iE = +24m.11s., iN = +24m.17s.,
 iSKKS = +24m.35s., iN = +25m.7s., iPSZ = +26m.26s., iPPSN =
 +26m.49s., iE = +31m.2s. and +33m.46s., eSSSN = +35m.30s., iE =
 +35m.54s.
 Upsala iPE = +13m.40s., PPE = +17m.40s., PPPE = +20m.3s., iPS =
 +26m.27s., iPPS = +27m.15s., SS = +31m.51s.
 Belgrade e = +14m.29s., +17m.30s. =PP-17s. and +19m.49s. =PPP+0s.,
 i = +26m.46s. =PS-6s.
 Budapest i = +13m.46s., S = +17m.41s. =PP-9s.
 Lund +13m.58s. and +17m.18s., PP = +18m.12s., +18m.21s., PPP =
 +20m.57s., +24m.42s., e = +25m.24s. =SKKS+15s., iPS = +27m.2s.,
 SS = +32m.42s., SSS = +36m.42s.
 Vienna iP = +14m.0s., P' = +15m.23s., iN = +16m.32s., iZ = +16m.50s., iN =
 +17m.9s., iE = +17m.35s., iZ = +18m.17s. =PP+15s., iE = +18m.26s.,
 PKS = +18m.42s., iZ = +20m.38s., iPPP' = +24m.18s., iNZ = +24m.29s. =
 SKS-9s., iE = +24m.39s., iN = +25m.43s. =S-6s., SKKS = +26m.16s.,
 PPP' = +27m.34s., SKKS' = +29m.36s., PS = +33m.10s., iE = +35m.36s.
 and +37m.45s., PSS = +41m.54s.?
 Copenhagen +13m.58s., eZ = +17m.18s. and +17m.48s., PP = +18m.18s.,
 PPPE = +21m.0s., eE = +22m.53s., eN = +23m.48s. and +24m.24s.,
 SKKS = +25m.36s., PS = +27m.6s., SS = +31m.54s.† SSS = +36m.48s.
 Victoria SE = +17m.23s., SN = +18m.26s. =PP+20s.
 Prague ePP = +18m.9s., ePS = +27m.0s., eSS = +32m.30s., eSSS = +36m.54s.
 Graz iP = +14m.2s., iPP = +18m.25s. =PP+17s., ePPP = +20m.21s. =
 PPP+8s., SS = +33m.17s.

Continued on next page.

Potsdam eEN = +13m.48s., eZ = +13m.54s., i = +14m.2s., iPP = +18m.24s., iEN = +18m.47s., iPPPE = +21m.2s., iSKSEN = +24m.37s., iSKKSEN = +25m.14s., iPSEN = +27m.17s., iPPSE = +28m.2s., iSSE = +32m.34s., iSSN = +32m.49s.

Zagreb iPCP = +14m.4s., ePKP = +17m.29s., iPP = +18m.25s., iPCSNW = +19m.28s., ePPP = +20m.48s., ePPPP = +22m.12s., iPPPPP = +23m.4s., eSKS = +23m.44s., eSKKS = +24m.31s., iCS = +24m.51s., iPS = +25m.18s., iPPS = +25m.47s., i = +27m.16s. = PS - 6s. and +27m.28s., iNW = +28m.23s., +29m.40s. and +31m.22s., i = +33m.24s., e = +34m.38s., i = +35m.23s., iNE = +38m.6s., iNW = +38m.17s., iNE = +40m.38s. and +41m.19s., eNW = +41m.22s., +42m.36s., +43m.22s., +44m.42s., +45m.28s., and +46m.13s., eNE = +47m.49s.

Bergen P = +14m.4s., PP = +14m.40s., SS = +27m.17s. = PS - 12s.

Cheb e? = +14m.1s., eP = +14m.6s., ePP? = +18m.32s., ePPP = +20m.41s., e = +27m.26s. = PS - 6s., eSS = +33m.0s., e = +38m.14s. and +41m.8s.

Hamburg iPEZ = +18m.25s., iZ = +24m.45s., iPSZ = +27m.19s., iPPSZ = +28m.16s., eSSZ = +33m.27s., eSSSZ = +37m.54s.?

Jena iPE = +14m.4s., iPNZ = +14m.8s., iZ = +14m.21s., ePPEN = +18m.13s., iPNZ = +18m.29s., iPPE = +18m.32s., iEN = +24m.39s., eE = +25m.16s. = SKKS - 12s. and +25m.24s., eN = +25m.42s., eZ = +25m.54s. = S - 14s., eN = +26m.54s., eE = +27m.5s. = PS - 30s., i = +27m.23s. and +27m.54s., eE = +32m.18s., eN = +32m.24s., eZ = +33m.18s. = SS + 12s., i = +38m.6s., iE = +38m.20s., i = +40m.54s., iZ = +41m.24s., iE = +41m.29s.

Cape Town PP = +18m.58s., +25m.50s., +30m.13s., +34m.35s., and +38m.24s.

Triest PP = +18m.34s., i = +19m.42s., iSKS = +24m.42s., iPS = +27m.37s., iSS = +33m.34s.

Göttingen ePP = +18m.24s., ePPPE = +20m.42s., ePPPNZ = +21m.0s., iSKSN = +24m.51s., eEN = +25m.54s. = SKKS = +20s., iPS = +27m.25s., ePS = +28m.38s., iEN = +32m.6s., iSSEN = +33m.12s., iSSS = +37m.18s., e = +41m.0s., eEN = +43m.30s.

Ukiah ePKP = +17m.59s., PP = +18m.38s., i = +24m.47s. = SKS - 6s. and +24m.58s., ePS = +27m.38s., SS = +33m.27s.

Scoresby Sund PPZ = +18m.42s., eE = +18m.58s., +21m.35s., and +24m.1s., PSZ = +27m.45s.

Berkeley ePEN = +14m.18s., iZ = +14m.24s., iS = +18m.45s., iSZ = +18m.47s., eEZ = +27m.54s. = PS + 0s.

Branner eE = +18m.23s. = PP - 11s. and +19m.22s.

Stuttgart i = +14m.32s., iPP = +18m.44s., iS? = +26m.11s., ePS = +27m.24s., eSS = +33m.54s., eSSS = +37m.54s.

Florence iP = +18m.8s. = PKP - 1s., PP = +18m.57s., PPP = +21m.34s., SS = +33m.39s.

Karlsruhe PP = +18m.54s.?, PPP = +21m.54s.?, PS = +28m.1s., SS = +33m.59s., SSS = +39m.9s.

Zurich ePP = +19m.3s., PS = +28m.8s.

Strasbourg iPP = +18m.53s., PPP = +21m.42s., PPPP = +23m.36s., SKKS = +25m.50s., i = +26m.20s., iPS = +27m.54s., PPS = +29m.14s., SS = +33m.24s., SSS = +38m.30s., SSSS = +42m.18s.

De Bilt ePP = +18m.56s.

Neuchâtel ePKP = +17m.56s., ePP = +18m.57s., PS = +28m.8s.

Uccle iPP = +19m.5s., iPPP = +21m.29s., iSKKS = +25m.58s., iS = +26m.36s., iPS = +28m.13s., iPPS = +28m.58s., SS = +34m.19s., SSS = +38m.20s.

Tinemaha iEN = +18m.32s.

Edinburgh iP = +14m.38s., i = +19m.12s. = PP + 28s., +25m.20s., +26m.44s., +28m.22s. = PS + 12s., +28m.34s., and +34m.29s.

Haiwee iEN = +18m.33s.

Grenoble iPP = +19m.3s., iPPP = +21m.27s. = PPP + 13s., PS = +28m.12s., SS = +33m.54s.

Paris PP = +19m.8s., PS = +28m.21s.

Pasadena iZ = +14m.42s., iNZ = +18m.30s., i = +18m.40s., iPPZ = +19m.11s., iPPE = +19m.18s., iN = +19m.24s., iPPPP = +21m.57s., iE = +27m.8s., iPSZ = +28m.41s., iEZ = +28m.57s., iZ = +29m.43s., eE = +33m.12s. and +33m.59s., eSSE = +34m.52s., iSSN = +35m.6s., iN = +45m.30s. and +46m.11s.

Mount Wilson eE = +18m.33s. = PKP + 13s. and +19m.18s. = PP + 14s.

Stonyhurst PP = +19m.26s., PPP = +21m.42s., SKKS = +26m.7s., PS? = +28m.22s., PPS? = +29m.37s., SS? = +34m.47s., SSS? = +35m.22s., SSSS? = +39m.22s.

Kew iPPZ = +19m.10s., iPPPPZ = +21m.47s., iSKSN = +25m.8s., iSE = +26m.46s., iSN = +26m.52s., iPSEN = +28m.28s., iPSZ = +28m.34s., iEN = +30m.16s., iE = +33m.40s., iSS = +34m.59s., iSSS = +40m.11s., iEN = +42m.31s., iZ = +42m.39s.; L_q = +46.9m.

Reykjavik e = +19m.21s. = PP + 15s., +24m.38s., +28m.10s., +28m.23s. = PS - 17s. and +29m.10s.

Marselles e = +17m.51s., PP = +19m.16s., SS = +34m.46s., SSS = +39m.58s.

Riverside eE = +18m.42s. = PKP + 20s.

Oxford iP = +14m.41s., PP = +19m.9s.
Bidston PP = +19m.24s., iS = +23m.43s. = PS + 0s., SS = +35m.4s.
La Jolla iEN = +18m.42s. and +19m.34s.
Bozeman iPP = +19m.25s., iPS = +23m.58s., eSS = +34m.48s.
Barcelona PP = +19m.54s., PS = +26m.31s., SSS = +35m.46s.
Bagnères ePKP = +18m.50s., PP = +19m.44s., iPS = +29m.8s., SS = +35m.11s.
Algiers PKP? = +18m.46s. = PKP + 12s., iPP = +19m.41s., PPP = +22m.10s.,
i? = +26m.41s., iSKS? = +27m.24s., iS? = +29m.11s. = PS - 10s., SS =
+36m.59s., SSS = +42m.19s.
Tucson eP = +18m.46s., PP = +19m.55s., eSKKS = +26m.36s., PS = +29m.28s.,
SS = +35m.59s.
Alicante iP = +18m.49s. = PKP + 10s., PS = +21m.15s., PP = +22m.51s.
Denver iPPN = +20m.8s., iN = +22m.54s., iPSEN = +29m.54s.
Toledo iP = +15m.14s., iPKP = +17m.49s., PP = +20m.13s., PPP = +23m.13s.,
PPPP = +25m.51s. = SKS + 3s., PS = +29m.43s., PPS = +31m.22s., i =
+32m.10s., iSKS = +32m.43s., SS = +35m.22s., SSS = +39m.37s., SSSS =
+42m.40s.
Almeria PP = +20m.12s., PPP = +23m.8s., PS = +32m.16s.
Granada PKP = +18m.50s., PP = +20m.36s., PPS = +34m.0s., SSS = +43m.41s.
Malaga PKP = +18m.49s., iPP = +20m.14s., PPP = +22m.55s., SKKS =
+27m.3s., PS = +30m.5s., PPS = +31m.38s., SS = +37m.1s., SSS =
+41m.42s.
San Fernando iPP = +20m.30s., iPPP = +24m.16s.
Chicago iPKP' = +19m.8s., PP = +21m.4s., i = +22m.26s., e = +27m.6s.,
iPS = +31m.14s., eSS = +38m.6s.
Florissant iPKP = +19m.4s. = PKP + 0s., iPPNZ = +21m.13s., iEN = +22m.29s.,
iPPS = +32m.54s., iSSEN = +37m.54s.?, i = +39m.34s., iSSS = +43m.54s.?
St. Louis iPEN = +19m.3s. = PKP - 1s., iPPEN = +21m.14s., iN = +22m.28s.,
+32m.54s., +37m.14s., and +38m.24s. = SS + 0s.
Ann Arbor ePP = +21m.18s., iPS = +31m.36s., i = +33m.48s., eSSE? =
+38m.48s.; T₀ = 13h.10m.54s.
Little Rock iPKPEN = +19m.21s., iPE = +21m.26s., SSE = +38m.29s.
Ottawa ePP = +21m.21s., iPKS = +22m.34s., eSKKS = +28m.12s., eSKSPE =
+31m.30s., ePPSN = +33m.0s., ePPP' = +34m.36s., eSS = +39m.12s.,
ePSSE = +39m.54s., eSSSN = +48m.24s.; T₀ = 13h.10m.42s.
Toronto iPKPE = +19m.10s., iPKPN = +19m.14s., iPP = +21m.30s., iE =
+22m.28s., iN = +22m.35s.; T₀ = 13h.10m.54s.
Buffalo iPKP = +19m.8s., iPP = +21m.30s.
Azores PPS? = +65m.6s., +77m.54s., and +97m.12s.
Fordham ePKP = +19m.11s., iPP = +21m.55s.
Georgetown iPKP = +19m.13s., PP = +21m.59s.; T₀ = 13h.11m.18s.
Charlottesville iPP = +22m.2s., i = +32m.9s. = PS - 9s., iSS = +39m.25s.
Columbia i = +22m.1s. = PP - 3s. and +22m.14s., ePPP = +26m.2s., iSS =
+40m.14s.
Port au Prince PP = +23m.14s., PKS = +23m.41s., i = +24m.29s., PPP =
+27m.19s.
Rio de Janeiro iPE = +19m.49s.
San Juan iPP = +24m.3s., SS = +44m.10s.
La Paz iPKPEN = +20m.2s., PPN = +23m.34s., SKKS = +31m.6s., SKSP =
+34m.57s., iPPS = +39m.21s., iSS = +45m.7s., iPPSS = +46m.6s., SSS =
+51m.9s., i = +52m.36s., SSSS = +55m.41s., i = +58m.1s., L_q = +67.9m.

May 14d. Readings also at 2h. (Almata, Andijan, Samarkand, Tashkent, Ekaterinburg, Irkutsk, and Pulkovo), 3h. (Copenhagen, Tiflis, near Almata, Andijan, and Samarkand), 5h. (Kodaikanal), 6h. (Baku, Ekaterinburg, Tyosi, and near Hokoto), 7h. (La Paz and Tucson), 8h. (Adelaide, Apia, Suva, Wellington, Riverview, Honolulu T.H., Baku, Tiflis, and Tashkent), 9h. (Christchurch, La Paz, Ukiah, Irkutsk, Ekaterinburg, De Bilt, Uccle, and Paris), 10h. (Stuttgart, near Wellington, Christchurch, near Andijan and Tashkent), 13h. (Tiflis, Amboina, and Osaka), 15h. (Tiflis), 16h. (Ksara), 19h. (near Sumoto), 22h. (Riverview).

May 15d. Readings at 0h. (La Paz), 3h. (Andijan), 7h. (Hastings, Toyooka, near Kobe, and Osaka (2)), 8h. (Adelaide, Melbourne, Wellington, Perth, Manila, Sucre, and near La Paz), 10h. (Tiflis and Scoresby Sund), 11h. (La Paz), 16h. (New Plymouth and Wellington), 18h. (near Sumoto), 19h. (Strasbourg and near Zurich).

May 16d. Readings at 5h. (Baku, Ekaterinburg, Tashkent, near Almata, and Andijan), 6h. (Nagoya, Tyosi, Mizusawa, and near Osaka), 15h. (near Nagoya), 16h. (Baku, Ekaterinburg, Tashkent, Andijan, Tiflis, and Mizusawa), 17h. (Mizusawa), 22h. (near Manila).

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May 17d. 12h. 56m. 30s. Epicentre 7°·7S. 115°·5E. (given by Batavia). N.3.

A = -·427, B = +·895, C = -·134; D = +·903, E = +·431;
G = +·058, H = -·121, K = -·991.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Malabar	7·9	273	i 1 59	+ 7	i 3 28	+ 7	—	—
Batavia	8·7	280	1 50	-13	4 46	S ₂	—	—
Medan	20·2	304	3 33	-59	i 8 26	+16	—	—
Manila	22·9	14	i 5 9	+ 9	10 26	+83	14·5	—
Perth	24·2	179	5 30	+18	—	—	—	—
Melbourne	40·2	143	—	—	e 12 53	-46	21·5	—
Riverview	42·0	135	—	—	e 16 24	SS	24·5	—
Osaka	46·4	25	7 55	-29	—	—	—	—
Bombay	49·8	303	e 8 42	- 8	—	—	—	—
Agra	E. 50·3	316	e 7 5	?	—	—	—	—
Irkutsk	60·8	353	e 10 10	0	18 34	+ 8	e 32·5	—
Almata	61·8	329	e 10 30	+13	—	—	—	—
Andijan	62·6	325	e 10 24	+ 2	e 18 52	+ 2	—	—
Tashkent	64·8	324	i 10 35	- 2	i 19 15	- 2	e 26·5	43·0
Ekaterinburg	78·5	333	i 11 57	- 3	i 21 54	- 5	37·0	—
Tifis	81·1	315	12 11	- 3	e 22 17	-10	—	—
Tinemaha	E. 123·2	50	e 20 33	PP	—	—	—	—
Haiwee	123·7	51	e 18 50	[- 4]	—	—	—	—
Pasadena	124·2	53	i 18 50	[- 5]	—	—	—	—
La Paz	E. 135·5	171	19 55	[+ 6]	—	—	—	—

Additional readings:—

Manila ePEN = +5m.12s.

Osaka i = +9m.7s., L = +10m.21s.

Haiwee eE = +20m.35s. = PP +0s.

Pasadena eZ = +19m.11s.

Long waves were also recorded at Sydney, Baku, and Copenhagen.

May 17d. 17h. 30m. 33s. Epicentre 0°·5N. 126°·0E. (as on 14d.). R.3.

A = -·588, B = +·809, C = +·009; D = +·809, E = +·588;
G = -·005, H = +·007, K = -1·000.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	4·7	153	e 1 2	- 5	e 1 58	- 2	—	—
Manila	14·9	341	e 3 38	+11	7 17	+64	9·0	—
Batavia	20·3	350	e 4 40	+ 7	—	—	—	—
Hong Kong	24·7	333	9 30	S	(9 30)	- 6	—	15·6
Osaka	35·3	13	e 7 0	+ 8	—	—	e 7·8	—
Sydney	41·7	148	—	—	e 17 27	(-25)	28·4	29·4
Irkutsk	54·9	345	e 9 12	-16	e 16 49	-19	e 25·4	—
Tashkent	65·3	316	e 14 2	?	—	—	i 26·4	40·0
Ekaterinburg	76·4	330	i 11 43	- 5	e 21 21	-15	34·4	—
Baku	79·1	312	e 12 2	- 1	e 21 57	- 9	38·0	48·2
Tifis	83·1	312	12 21	- 3	—	—	—	—
Scoresby Sund	105·9	349	—	—	25 27?	[+33]	—	—

Long waves were also recorded at Paris and Stuttgart.

May 17d. Readings also at 1h. (Tifis), 2h. (Christchurch), 3h. (Andijan (2) and Samarkand), 4h. (near Tortosa), 5h. (near Amboina), 7h. (Christchurch and near Apia), 9h. (Stuttgart), 11h. (Baku, Ekaterinburg, De Bilt, Paris, Stuttgart, and Granada), 13h. (Ekaterinburg, Tashkent, near Bombay, near Calcutta, near Mizusawa, and near Toyooka), 14h. (Irkutsk and Tyos), 16h. (Branner and Lick), 17h. (Amboina), 19h. (near Manila), 21h. (Scoresby Sund, Almata, and near Andijan), 22h. (Paris, Tifis, Ekaterinburg, Manila, and near Amboina).

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May 18d. 18h. 45m. 52s. Epicentre 46°0S. 102°0E. N.3.

A = -·144, B = +·679, C = -·719; D = +·978, E = +·208;
G = +·150, H = -·703, K = -·695.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Perth	17·7	42	e 4 8	+ 5	i 7 48	+31	15·3	17·6
Adelaide	29·7	81	—	—	e 10 23	-36	14·3	23·5
Melbourne	32·6	91	—	—	11 38	- 7	15·9	—
Riverview	39·0	90	—	—	i 13 22	+ 1	c 19·3	21·1
Sydney	39·0	90	e 13 20	S	(e 13 20)	- 1	20·7	29·8
Batavia	40·0	8	—	—	i 13 46	+10	i 21·5	—
Medan	49·7	355	—	—	e 15 8?	-49	i 23·7	—
Wellington	51·0	112	—	—	21 8?	SSS	—	—
Tananarive	52·0	283	—	—	e 22 58	?	—	—
Kodaikanal	60·4	332	18 13	S	(18 13)	- 8	—	—
Cape Town	62·2	248	—	—	19 8?	+23	—	—
Manila	63·0	20	e 10 25	0	18 54	- 1	29·1	—
Hyderabad	66·9	335	19 33	S	(19 33)	-10	39·2	46·7
Hong Kong	69·2	12	—	—	27 57	?	36·0	47·6
Calcutta	N. 69·6	346	23 23	?	—	—	43·0	—
Bombay	E. 70·1	330	e 19 51	S	(e 19 51)	-31	—	44·8
Agra	76·4	338	e 19 27	?	c 28 57	?	—	56·4
Andijan	90·7	337	e 13 29	+28	—	—	—	—
Tashkent	92·0	335	e 15 20	?	i 23 52	[+ 8]	c 43·1	61·1
Baku	98·1	322	e 19 2	PPP	—	—	46·1	56·6
Irkutsk	98·3	1	e 17 13	PP	—	—	e 53·1	65·1
Tiflis	101·4	319	e 20 22	?	24 8	[-23]	e 49·1	54·5
Ekaterinburg	108·5	337	e 18 28	[+15]	—	—	54·1	70·6
Florence	120·3	303	22 37	PPP	36 22	SS	—	72·1
Stuttgart	124·3	307	—	—	e 42 8	SSS	e 65·1	—
Strasbourg	125·0	307	(e 20 8?)	PP	—	—	e 20·1	—
Granada	125·7	289	—	—	e 28 30	{+36}	e 63·7	77·6
Copenhagen	126·3	315	—	—	32 8?	?	68·1	—
Paris	128·0	304	—	—	e 47 45	?	70·1	—
De Bilt	128·2	309	—	—	e 29 2	?	c 69·1	86·4
Scoresby Sund	143·9	332	—	—	26 8?	SKS	74·1	—
Pasadena	Z. 147·5	97	—	—	e 27 8	SKS	—	—
Mount Wilson	E. 147·6	97	—	—	e 27 17	SKS	—	—
Haiwee	E. 148·7	93	—	—	e 27 21	SKS	—	—
Tinemaha	E. 149·0	92	—	—	e 27 21	SKS	—	—
Ottawa	178·3	249	—	—	e 32 24	{-30}	e 87·1	—

Additional readings:—

Perth S = +11m.58s., SS = +13m.3s., SSS = +13m.18s.

Sydney S = +18m.8s.

Batavia i = +14m.45s.

Tananarive E = +23m.37s., N = +23m.53s., E = +23m.58s. and +27m.31s.,

N = +29m.1s., EN = +31m.19s., E = +31m.43s.

Hyderabad S = +27m.21s.

Calcutta SN = +31m.13s.

Tashkent e = +16m.23s., +17m.3s., and +30m.2s.

Baku e = +26m.38s. and +41m.14s.

Irkutsk ePPP = +23m.51s., ePPS = +31m.17s., eSSS = +40m.8s.?

Tiflis e = +25m.3s. = SKKS -1s., +32m.5s. = SS -16s., and +39m.45s.

Ekaterinburg e = +27m.50s., +34m.5s., and +41m.44s.

Mount Wilson eN = +27m.27s.

Haiwee eN = +27m.36s.

Tinemaha eN = +27m.32s.

Ottawa eN = +40m.20s., eE = +41m.13s., L? = +56m.8s.?

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

May 18d. Readings also at 7h. (Wellington and near Kobe), 8h. (Cape Town), 10h. (Ekaterinburg and near Tyosi), 12h. (Ekaterinburg, Irkutsk, and Tashkent), 13h. (La Paz), 17h. (Besançon, Hohenheim, near Neuchâtel, Tiflis, and Zurich), 18h. (La Paz and Tucson), 19h. (Riverview and Melbourne), 21h. (La Paz, Amboina, Tashkent, and near Andijan), 23h. (near Medan).

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May 19d. Readings at 1h. (near Amboina), 2h. (Manila, Irkutsk, Ekaterinburg, and Tashkent), 3h. (near Tyosi (2)), 4h. (Tyosi and near Mizusawa), 5h. (near Apia), 6h. (near Mizusawa), 12h. (Ekaterinburg, Tashkent, Almata, and Andijan (2)), 13h. (La Paz, Stuttgart, Zagreb, Florence, and near Naples), 16h. (Alicante), 20h. (near Apia), 22h. (near Amboina (2)).

May 20d. 4h. 17m. 17s. Epicentre 38°·0N. 20°·5E. (as on 1932 March 9d.). X.

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

	Δ	Az.	P.	O-C.	S.	O-C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Belgrade	6·8	0	e 1 36	- 1	e 2 59	+ 6	—
Zagreb	8·5	338	2 4	+ 4	e 3 32	- 4	4·8
Florence	9·0	313	e 1 12	-55	—	—	4·7
Triest	9·1	329	e 2 4	- 5	e 3 21	-30	—
Vienna	z. 10·6	345	e 4 19	S	(e 4 19)	- 9	—
Innsbruck	11·4	327	—	—	4 7	-41	—
Chur	12·0	321	e 2 48	0	e 4 39	-24	—
Zurich	12·8	321	e 3 2	+ 3	—	—	—
Stuttgart	13·5	327	—	—	e 5 43	+ 4	—
Strasbourg	14·0	323	e 0 43?	?	e 6 43?	+52	—

Additional readings:—

Belgrade e = +2m.2s., +2m.37s., and +3m.30s. = S_g - 9s.

Triest e = +3m.0s., S_g = +4m.11s.

Vienna iZ = +5m.5s., iN = +5m.17s. = S* + 4s.

Long waves were recorded at De Bilt and Copenhagen.

May 20d. 11h. 54m. 27s. Epicentre 36°·3N. 139°·2E. N.2.

Tokyo gives epicentre 36°·2N. 139°·6E.

A = -·610, B = +·527, C = +·592 ; D = +·653, E = +·757 ;
G = -·448, H = +·387, K = -·806.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tokyo	0·8	144	0 11	0	0 22	+ 1	—	—
Tyosi	1·5	113	0 19	- 2	0 34	- 5	—	—
Nagoya	2·1	238	e 0 31	+ 1	0 57	+ 3	—	—
Mizusawa	3·2	28	0 45	- 1	1 27	+ 5	—	—
Osaka	3·4	242	0 51	+ 2	—	—	1·7	2·4
Toyooka	3·6	259	e 0 52	+ 1	e 2 2	S _g	—	—
Kobe	3·7	245	e 0 51	- 2	e 1 59	S _g	—	2·1
Sumoto	4·0	242	e 0 57	0	1 57	S _g *	—	2·4

Additional readings:—

Mizusawa PE = +51s. = P* - 1s.

Osaka i = +1m.19s.

Sumoto PEN = +1m.7s. = P* + 2s., SE = +2m.2s. = S* + 5s.

May 20d. 19h. 16m. 18s. Epicentre 36°·3N. 53°·5E. N.2.

A = +·479, B = +·648, C = +·592 ; D = +·804, E = -·595 ;
G = +·352, H = +·476, K = -·806.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Baku	5·0	327	i 1 14	+ 3	(i 2 14)	+ 6	i 2·2	5·2
Tiflis	8·7	311	2 4	+ 1	e 3 52	+11	e 5·6	6·5
Ksara	14·6	266	i 3 31	+ 8	7 52	?	9·9	—
Andijan	15·4	67	e 3 42	+ 8	—	—	—	—
Yalta	16·8	305	3 52	0	7 15	+18	—	—

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Simferopol	17.0	306	3 52	- 2	e 7 18	+16	—	—
Sebastopol	17.3	305	3 52	- 6	e 7 16	+ 7	—	—
Helwan	19.6	257	1 4 23	- 2	1 8 14	SS	—	13.4
Ekaterinburg	21.1	11	e 4 37	- 4	i 8 35	+ 7	10.7	13.4
Bombay	24.3	130	e 4 22	-51	—	—	—	14.8
Budapest	27.7	305	e 5 42?	- 2	(10 42?)	+15	10.7	—
Pulkovo	27.8	335	e 5 50	+ 5	e 10 33	+ 5	16.7	20.4
Hyderabad	29.0	124	12 33	?	14 50	?	16.4	19.3
Königsberg	29.1	320	e 8 56	(-11)	e 10 30	-20	e 20.7	—
Cheb	32.5	308	—	—	e 12 42?	+59	e 23.7	24.7
Florence	32.8	296	e 8 37	?	e 14 42	?	—	16.7
Upsala	N. 32.9	326	—	—	e 12 42?	+53	—	—
Calcutta	33.1	104	13 53	SS	18 0	?	20.5	—
Lund	33.3	319	6 42	+ 8	—	—	21.7	—
Copenhagen	33.8	319	6 41	+ 2	12 8	+ 5	20.7	—
Chur	34.1	302	e 6 39	- 2	—	—	—	—
Stuttgart	34.4	305	e 8 12	PPP	e 12 18	+ 6	e 16.7	—
Hamburg	N. 34.6	314	—	—	e 12 19	+ 4	—	24.7
Zurich	34.7	302	e 6 45	- 1	—	—	—	—
Strasbourg	35.4	305	8 42?	?	e 14 42?	SS	e 21.7	—
De Bilt	37.2	311	7 10	+ 2	13 5	+11	e 21.7	—
Irkutsk	38.7	49	e 7 17	- 4	e 13 12	- 5	22.7	23.8
Paris	38.8	305	e 8 42?	PP	—	—	18.7	—
Oxford	41.2	310	—	—	14 1	+ 7	—	—
Scoresby Sund	51.3	335	10 54	PP	16 31	+12	31.7	—

Additional readings:—

Tiflis e = +4m.24s.

Königsberg eN = +11m.18s., eE = +11m.30s.

Oxford SSS = +17m.0s.

Scoresby Sund = +20m.12s.

Long waves were also recorded at Tashkent, Hong Kong, Edinburgh, Uccle, and Cape Town.

May 20d. Readings also at 1h. (Tyosi, near Sumoto, and Toyooka), 2h. (Florence, Triest, near Zagreb, and near Amboina), 3h. (Mizusawa, near Tyosi, Sucre, and near La Paz), 5h. (Ekaterinburg, Pulkovo, and Scoresby Sund), 7h. (Scoresby Sund, Ekaterinburg, Irkutsk, Pulkovo, near Amboina, and near Manila (2)), 8h. (Scoresby Sund and Copenhagen), 9h. (Ekaterinburg, Tiflis, Pulkovo, Haiwee, Tinemaha, Mount Wilson, Pasadena, Riverside, Suva, and near Apia), 10h. (Scoresby Sund), 12h. (near Amboina), 15h. (Balboa Heights), 18h. (Kodaikanal), 19h. (near Apia), 20h. (Tucson), 21h. (near Sumoto), 23h. (La Paz and near Sumoto).

May 21d. 10h. 10m. 19s. Epicentre 13° 1N. 87° 3W. N.1.

A = +.046, B = -.973, C = +.227; D = -.999, E = -.047;

G = +.011, H = -.226, K = -.974.

A depth of focus 0-015 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	s.	m. s.	s.	m.	m.
Balboa Heights	-0.1	8.6	117	i 2 5	+ 5	i 4 7	+31	e 4.7	—
Port au Prince	-0.5	15.4	68	i 3 38	+11	i 6 54	+41	i 8.2	9.5
San Juan	-0.6	21.0	73	i 4 40	+ 6	i 8 47	+33	i 10.7	—
Columbia	-0.6	21.6	14	i 4 44	+ 4	i 8 44	+18	10.6	—
Little Rock	E. -0.6	22.1	349	i 5 9	PP	i 9 6	SS	—	—
St. Louis	N. -0.8	25.6	355	i 5 16	- 2	i 9 37	0	e 12.7	—
Florissant	-0.8	25.8	355	i 5 17	- 3	9 39	- 2	12.3	15.3
Charlottesville	-0.8	26.1	16	i 5 23	0	i 9 53	+ 7	12.8	—
Georgetown	-0.9	27.3	17	i 5 36	+ 3	e 10 12	+ 7	—	—
Pittsburgh	-0.9	28.1	12	i 5 43	+ 3	i 10 25	+ 7	i 14.3	—

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	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.		
			m. s.	m. s.	s.	m. s.	s.	m. m.	m. m.		
Chicago	-0.9	28.7	0	i 5	41	- 4	i 10	7	-21	12.3	—
Tucson	-0.9	28.8	316	i 5	45	- 1	i 10	7	-23	e 13.1	—
Ann Arbor	-1.0	29.3	5	i 5	53	+ 3	i 10	41	+ 4	e 13.7	16.6
Madison	-1.0	30.0	357	i 5	54	- 2	i 10	46	- 2	e 14.0	—
Fordham	-1.0	30.1	20	i 6	5	+ 8	i 11	6	+16	e 14.7	—
Buffalo	-1.0	30.7	13	i 6	3	+ 1	i 11	3	+ 4	—	—
Denver	-1.0	30.8	333	i 5	52	-11	i 10	50	-11	—	13.7
Toronto	-1.0	31.3	11	i 6	9	+ 1	i 11	8	- 1	e 14.0	—
Harvard	-1.1	32.4	23	i 6	22	+ 5	i 11	31	+ 7	e 12.7	—
Ottawa	-1.1	33.7	15	i 6	30	+ 2	i 11	53	+ 8	e 16.7	—
La Jolla	-1.1	33.7	311	i 6	24	- 4	i 16	43	(-22)	—	—
Riverside	-1.1	34.3	313	e 6	28	- 6	i 16	48	(-20)	—	—
Mount Wilson	-1.2	34.9	313	i 6	34	- 4	e 11	57	- 4	—	—
Pasadena	-1.2	35.0	313	e 6	32	- 7	e 11	57	- 6	i 16.7	—
La Paz	-1.2	35.2	146	i 6	43	+ 3	i 12	13	+ 7	e 16.1	22.7
Haiwee	N. -1.2	35.9	316	e 6	48	+ 2	e 17	0	(-17)	—	—
Santa Barbara	-1.2	36.3	313	e 6	45	- 5	i 16	57	(-23)	—	—
Tinemaha	-1.2	36.3	317	e 6	58	+ 8	i 17	0	(-20)	—	—
Bozeman	-1.2	38.2	333	i 7	4	- 2	i 12	52	+ 1	e 19.7	—
Sucre	-1.2	38.8	145	i 7	12	0	—	—	—	—	—
Lick	-1.2	39.0	315	e 7	9	- 4	—	—	—	—	—
Branner	-1.2	39.5	315	e 7	15	- 3	e 13	5	- 6	—	—
Berkeley	-1.2	39.7	315	e 7	10	- 9	i 13	8	- 6	e 19.1	25.6
Ukiah	-1.3	41.0	316	e 7	38	+ 9	i 13	30	- 2	e 19.8	—
Seattle	-1.4	45.2	327	e 8	19	+16	e 14	52	+19	e 18.4	—
Victoria	E. -1.4	46.2	328	8	10	- 1	17	53	SS	28.1	29.8
	N. -1.4	46.2	328	8	8	- 3	17	42	SS	26.1	—
Santiago	-1.4	49.2	162	8	37	+ 2	15	37	+ 7	—	—
La Plata	-1.7	55.5	151	9	20	0	17	0	+ 7	e 27.9	—
Rio de Janeiro	-1.7	56.3	129	i 9	20	- 6	i 17	6	+ 2	i 26.8	—
Sitka	-1.7	57.0	332	e 9	31	0	i 17	18	+ 5	i 23.4	—
Honolulu T.H.	-1.9	67.4	288	i 10	40	- 2	i 19	18	- 8	e 30.5	—
Reykjavik	-1.9	67.6	25	e 10	46	+ 3	i 19	43	+14	—	—
Scoresby Sund	-1.9	69.6	19	i 10	55	- 1	i 19	59	+ 6	—	—
San Fernando	-2.0	75.2	56	i 11	38	+ 8	i 21	11	+12	34.7	38.7
Edinburgh	-2.0	75.9	36	i 11	35	+ 1	i 21	10	+ 3	34.7	37.3
Bidston	-2.0	76.1	38	e 11	38	+ 3	i 21	46	PS	32.7	36.9
Dyce	-2.0	76.4	34	e 11	38	+ 1	—	—	—	—	—
Stonyhurst	-2.0	76.4	38	e 11	36	- 1	i 21	11	- 2	35.9	38.9
Toledo	-2.0	76.5	52	e 11	35	- 2	i 21	23	+ 9	e 33.0	37.7
Malaga	-2.0	76.6	56	i 11	37	- 1	i 21	21	+ 6	35.2	37.0
Granada	-2.0	77.2	55	e 11	37	- 4	i 21	22	0	36.2	37.8
Oxford	-2.0	77.3	40	i 11	47	+ 5	i 21	10	-14	—	—
Kew	-2.0	77.9	40	i 11	44	- 1	i 21	30	0	32.7	39.2
Almeria	-2.0	78.2	55	i 11	45	- 2	e 21	36	+ 2	e 34.6	38.0
Alicante	-2.0	79.4	53	i 11	58	+ 4	i 21	56	+ 9	e 37.4	40.3
Bergen	-2.1	79.9	30	i 11	56?	- 1	21	56?	+ 4	e 36.7	—
Tortosa	-2.1	79.9	51	i 11	56	- 1	21	57	+ 5	35.1	40.9
Paris	-2.1	80.1	43	i 11	55	- 2	e 21	53	- 1	e 36.7	41.7
Barcelona	-2.1	80.9	49	i 12	3	+ 2	22	6	+ 3	e 37.3	42.6
Uccle	-2.1	80.9	40	i 11	59	- 2	i 22	3	0	37.7	40.6
Puy de Dôme	-2.1	80.9	45	e 12	0	- 1	22	7	+ 4	34.4	—
De Bilt	-2.1	81.2	38	i 12	2	- 1	22	8	+ 2	38.2	39.1
Algiers	-2.1	82.4	54	i 12	11	+ 2	i 22	22	+ 3	e 39.1	41.7
Besançon	-2.1	82.6	44	e 12	3	- 7	—	—	—	39.7	—
Neuchatel	-2.1	83.3	43	e 12	11	- 3	e 22	19	- 9	—	—
Straasbourg	-2.1	83.5	42	i 12	13	- 2	e 22	28	- 3	e 33.7	42.7
Feldberg	-2.1	83.6	40	e 12	11	- 5	e 22	59	PS	—	41.4
Hamburg	-2.1	83.7	36	i 12	14	- 2	i 22	31	- 2	e 38.7	41.7
Göttingen	-2.1	84.2	38	e 12	17	- 2	e 22	46	+ 8	e 39.3	42.3

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	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o			m. s.	s.	m. s.	s.	m.	m.
Zurich	-2.1	84.3	43	e 12 18	- 1	22 33	- 6	—	—
Stuttgart	-2.1	84.4	41	i 12 18	- 2	i 22 36	- 4	e 36.7	43.7
Copenhagen	-2.1	84.6	34	i 12 19	- 2	22 36	- 6	37.7	—
Chur	-2.1	85.0	43	e 12 22	- 1	e 22 38	- 8	—	—
Jena	-2.1	85.4	39	e 12 23	- 2	i 22 41	- 9	e 37.7	41.7
Potsdam	-2.1	85.8	37	i 12 25	- 2	i 22 41	- 13	e 37.7	44.7
Upsala	-2.1	86.0	30	e 12 25	- 3	i 22 54	- 2	e 40.7	43.1
Cheb	-2.1	86.1	39	e 12 25	- 3	i 22 46	- 12	e 39.7	43.9
Innsbruck	-2.1	86.2	43	i 12 23	- 6	—	—	—	44.4
Florence	-2.1	87.0	46	i 12 33	0	22 3	- 64	29.7	36.7
Venice	-2.1	87.2	44	—	—	23 6	- 3	41.8	44.0
Prague	-2.1	87.4	39	e 12 35	0	e 22 58	[-18]	36.7	42.7
Apia	-2.1	87.9	255	12 27	- 10	i 22 57	[-22]	39.7	40.7
Triest	-2.1	88.2	44	12 40	+ 1	e 22 56	[-25]	—	43.7
Vienna	-2.1	89.1	41	e 12 37	- 6	i 23 6	[-21]	e 40.7	46.7
Königsberg	-2.1	89.2	34	e 12 44	0	e 23 25	- 3	—	43.7
Helsingfors	E. -2.1	89.2	27	e 12 37	- 7	e 23 5	[-23]	e 41.7	—
	N. -2.1	89.2	27	e 12 40	- 4	e 23 2	[-26]	e 38.7	—
Zagreb	-2.1	89.6	43	e 12 41?	- 4	e 23 10	[-20]	e 42.7	46.2
Naples	E. -2.1	89.9	47	e 12 49	+ 2	e 23 14	[-18]	39.7	46.7
Budapest	-2.1	91.1	41	e 12 56	+ 3	23 13	[-26]	41.7	47.7
Pulkovo	-2.1	91.8	27	i 12 52	- 4	23 18	[-25]	40.7	44.0
Belgrade	-2.1	92.9	43	13 1	0	i 23 28	[-21]	e 44.8	47.9
Lemberg	E. -2.1	93.2	37	e 15 33	?	e 25 25	PS	e 45.3	55.7
	N. -2.1	93.2	37	e 15 22	?	e 25 28	PS	e 45.3	55.0
Suva	-2.2	98.1	253	15 6	?	25 11	PS	44.7	—
Simferopol	—	101.5	39	e 16 21	?	—	—	44.7	—
Yalta	—	101.7	39	e 15 55	?	—	—	46.7	—
Theodosia	—	102.2	38	e 16 28	?	—	—	45.7	—
Wellington	—	104.5	230	e 14 17	+ 13	24 21	[-26]	48.3	49.7
Ekaterinburg	—	105.2	17	i 13 53	- 15	25 8	[-24]	46.7	57.1
Helwan	—	106.9	53	e 14 4	- 12	i 24 37	[-21]	54.7	64.6
Ksara	—	108.4	48	17 54	—	28 17	PS	52.7	—
Tiflis	—	109.7	36	e 14 15	- 15	24 48	[-24]	e 48.9	58.5
Cape Town	—	110.2	121	19 47	PP	29 24	PS	54.0	64.7
Baku	—	113.4	34	e 14 34	- 13	i 25 11	[-17]	65.3	72.7
Irkutsk	—	113.9	352	e 14 32	- 18	28 36	PS	54.7	66.0
Tashkent	—	121.3	20	—	—	e 25 41?	[-13]	—	64.4
Chiufeng	—	122.5	339	18 36	[-15]	29 20	PS	58.8	69.3
Andijan	—	122.9	18	e 19 7	?	—	—	e 60.7	—
Riverview	—	123.3	238	e 19 17	?	i 27 17	[-21]	55.8	67.7
Sydney	—	123.3	238	—	—	i 25 41	[-19]	65.8	67.1
Zi-hs-wei	—	127.8	328	18 51	[-12]	28 53	?	63.5	77.4
Adelaide	—	133.2	233	e 16 14	- 9	i 25 50	[-39]	56.2?	64.2
Dehra Dun	—	134.3	17	18 41	[-33]	33 11	?	64.9	69.7
Tananarive	—	136.3	104	19 11	[- 6]	27 13	?	65.4	76.8
Agra	N. —	137.3	18	e 20 26	?	34 17	?	—	—
Hong Kong	—	138.8	328	19 3	[-17]	31 49	?	65.7	82.6
Manila	—	140.6	313	19 10	[-12]	—	?	65.7	75.7
Bombay	—	142.4	32	19 14	[-11]	32 49	SKSP	68.8	80.2
Phu-Lien	—	143.4	336	e 19 17	[-12]	—	—	63.7	—
Ambon	—	143.7	281	i 19 11	[-19]	—	—	—	—
Calcutta	—	144.1	6	15 34	?	28 54	?	65.4	80.1
Hyderabad	—	146.3	25	19 27	[- 9]	33 0	SKSP	.69.7	84.6
Perth	—	151.6	225	e 19 41	[- 3]	—	—	—	70.7
Kodaitanal	—	152.1	34	19 50	[+ 6]	29 24	?	71.4	87.9
Colombo	—	156.3	33	19 36	[-13]	—	—	74.4	93.1
Medan	—	162.2	340	i 19 55	[- 1]	—	—	78.7	85.4
Batavia	—	164.4	295	i 19 47	[-11]	i 28 48	PPP	84.2	102.0

For Notes see next page.

NOTES TO MAY 21d. 10h. 10m. 19s.

Additional readings and note :-

- Port au Prince PP = +3m.56s., PPP = +4m.1s., SS = +7m.8s., SSS = +7m.15s.
- San Juan i = +6m.21s.
- Columbia i = +5m.49s.
- St. Louis iN = +5m.43s. = PP - 4s., iPPN = +5m.47s., iSSE = +10m.29s.
- Florissant iPPEN = +5m.48s., iPPN = +5m.58s., iPcPE = +8m.58s., iSSE = +10m.24s., iSSSE = +10m.28s.; T₀ = 10h.10m.17s.
- Georgetown iS = +10m.16s.; T₀ = 10h.10m.11s.
- Pittsburgh iSS = +12m.19s.
- Chicago iPP = +6m.26s.
- Tucson iPP = +6m.27s., SS = +11m.31s.
- Ann Arbor iPP = +6m.35s., iSSE = +12m.23s., iN = +13m.23s.
- Fordham iPP = +6m.59s., iSS = +12m.53s.
- Denver iEN = +7m.56s., eSEN = +10m.43s., iEN = +11m.22s.
- Toronto iPPEN = +7m.1s., iPPN = +7m.16s.; T₀ = 10h.9m.55s.
- Harvard iPP = +7m.23s., i = +8m.57s., e = +9m.27s., iSS = +12m.14s.
- Ottawa iPPP = +7m.47s., eSSE = +13m.35s.; T₀ = 10h.10m.2s.
- Pasadena iP = +6m.35s., ePPN = +7m.53s., iPcPZ = +9m.8s., eE = +11m.35s., iScPZ = +12m.48s., eN = +14m.43s., iScS = +16m.50s.
- La Paz iPP = +7m.42s., iPPP = +8m.8s., i = +8m.32s., iSZ = +12m.22s., iPSN = +12m.44s., i = +13m.20s. and +13m.50s., SS = +14m.2s., iSSS = +14m.50s.
- Bozeman iPP = +8m.41s., eSS = +15m.27s., i = +15m.49s.
- Branner e = +9m.32s., i = +17m.18s.
- Berkeley eP = +7m.14s., iZ = +7m.20s., eZ = +7m.36s.
- Ukiah SS = +16m.36s.
- Seattle e = +15m.31s.
- Rio de Janeiro iSN = +17m.9s.
- Sitka i = +12m.56s.
- Honolulu T.H. ePP = +13m.37s., i = +19m.30s., e = +26m.41s.
- Reykjavik ePP? = +13m.3s., ePPP = +14m.58s., ePS = +20m.25s.
- Scoresby Sund PP = +13m.39s., PPP = +15m.16s., eN = +16m.47s., and +21m.53s., SS = +24m.11s.
- Edinburgh i = +14m.25s. = PP +13s., +14m.47s. and +22m.9s., i = +35m.58s.
- Bidston i = +15m.46s. = PPP - 5s.
- Stonyhurst PP = +14m.33s., iPS = +21m.47s., SS = +25m.44s.
- Toledo PP = +14m.23s., PPP = +16m.32s., PPPP = +17m.34s., PS = +21m.56s., SS = +26m.47s.
- Malaga PP = +14m.48s., SS = +26m.42s., SSS = +30m.3s.
- Granada PP = +14m.45s., PPP = +16m.38s.
- Oxford PP = +14m.50s.
- Kew iPcPEZ = +12m.7s., ePPEZ = +14m.44s., eSSE = +27m.1s., eSSSE = +30m.8s.
- Almeria PP = +13m.48s.
- Uccle iPP = +15m.11s., iPS = +22m.53s., SS = +27m.30s.
- De Bilt PPZ = +15m.12s.
- Algiers iPP = +15m.45s., iPS = +23m.55s., SS = +28m.14s., SSS = +32m.11s.
- Neuchatel ePP = +15m.31s.
- Strasbourg iPP = +15m.39s., iPS = +23m.18s., SS = +28m.11s.
- Feldberg i = +15m.35s. = PP +18s.
- Hamburg iE = +12m.17s., iPPN = +16m.49s. = PPP - 11s., iPPSEN = +23m.47s., eSSN = +27m.50s.
- Stuttgart ePcPZ = +12m.39s., eNZ = +13m.59s., eZ = +14m.51s., iPPPEZ = +15m.33s., ePPP = +17m.35s., eN = +21m.57s., e = +23m.13s., ePS = +23m.41s., eSS = +28m.41s., eSSS = +32m.11s.
- Copenhagen +15m.40s. = PP +15, PS = +24m.3s., e = +24m.41s., SS = +28m.23s.
- Jena ePE = +13m.11s., eZ = +15m.47s., eE = +15m.53s., eN = +17m.29s. = PPP +14s. and +19m.6s., eE = +23m.41s. and +24m.5s., eN = +24m.8s.
- Potsdam e = +15m.11s. = PP - 24s., +17m.35s. = PPP +16s. and +19m.5s., eN = +22m.17s., eSZ = +22m.35s., iE = +23m.23s., e = +23m.41s., iEN = +24m.6s., iZ = +24m.19s., eNZ = +28m.41s.?
- Upsala iPP = +15m.48s., iPS = +24m.11s., iSSE = +28m.31s.
- Cheb ePP = +15m.54s., eSS = +28m.30s.
- Prague eSS = +28m.59s.
- Triest ePcP = +12m.57s., PP = +16m.4s., iS = +23m.1s., i = +23m.26s., iPS = +23m.41s.
- Vienna i = +14m.15s., PP = +16m.11s., PS = +24m.4s., PPS = +24m.46s., i = +29m.0s. = SS +3s.
- Königsberg eE = +13m.5s., eN = +13m.7s. and +14m.23s., iPPEN = +16m.17s., iEN = +16m.37s., eE = +19m.50s., eSKSEN = +23m.2s., iPSE = +24m.5s., ePPSN = +24m.53s., eE = +25m.17s., eN = +28m.49s., iSSEN = +29m.33s., eE = +30m.5s., eN = +30m.17s.

Continued on next page.

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Helsingfors eE = +12m.24s., eN = +15m.36s., ePPE = +16m.9s., ePPZ = +16m.13s., ePPN = +16m.16s., ePPPE = +17m.57s., ePPPN = +18m.19s., eSKSE = +22m.50s., eS_cSZ = +23m.24s., eS_cSZ = +23m.33s., PPSSEN = +24m.50s., ePPSZ = +24m.57s., eSSZ = +29m.3s., eSSEN = +29m.23s., ePKKPE = +30m.8s., eSSSE = +33m.5s., eSSSZ = +33m.10s., eZ = +38m.22s.; T₀ = 10h.10m.3s.

Zagreb eNW = +15m.24s., ePP = +16m.18s., e = +23m.31s., +24m.10s., and +24m.55s., eNE = +25m.18s., +31m.22s. and +34m.10s., e = +40m.0s.

Pulkovo iPP = +16m.33s., PPS = +25m.19s., SS = +30m.5s.

Belgrade e = +15m.18s., +16m.45s., +16m.48s., and +25m.24s.

Suva PP = +18m.41s.

Wellington PP? = +17m.56s.

Ekaterinburg iPP = +18m.13s., iSKS = +24m.26s., SS = +32m.41s.

Helwan iPP = +18m.33s., SS = +27m.53s.

Ksara PP = +23m.47s.

Tiflis iPP = +18m.50s., PS = +28m.5s., PPS = +29m.19s., SS = +34m.13s., e = +35m.32s.

Cape Town +20m.35s., +22m.13s., PPPE = +23m.35s., +26m.57s., +30m.4s., PS? = +31m.36s., SS = +35m.33s., SSS = +39m.43s.

Baku iPP = +19m.19s., i = +28m.59s. = PS - 2s. and +35m.50s.

Irkutsk iPP = +19m.16s.

Tashkent i = +27m.2s.

Chiufeng iPP = +20m.24s., PKP = +22m.38s., PP? = +23m.40s., PPP = +26m.34s., PPPP? = +28m.14s., PPPPP = +29m.44s., SKKS = +30m.10s. = PS - 15s., PKKP = +32m.51s., PS = +33m.13s., SKSP = +33m.53s., PPS = +34m.28s., PPPS = +35m.10s., SS = +39m.42s., SPS = +39m.52s., PPSS = +40m.8s., SKKS' = +41m.30s. = SSS + 4s., PPP' = +41m.54s., PSSS = +44m.28s., SSS = +44m.56s., PPPP' = +45m.8s., PPPPP' = +47m.42s., SSSS = +48m.36s.

Riverview iPPPP = +25m.39s., i = +27m.56s. = SKKS + 18s., iPS? = +30m.42s., i = +40m.25s. and +41m.5s.

Sydney L = +30m.35s. = PS + 3s., iS = +56m.41s.; these readings are given as for two quakes.

Zi-ka-wei iZ = +20m.57s. = PP + 14s., PKP = +22m.5s., PPZ = +24m.33s., SKP = +25m.17s., PPPZ = +27m.29s., PPPPZ = +30m.13s., SKKS = +30m.53s., PPPPPZ = +32m.7s., PSKS = +34m.5s., PSZ = +34m.41s., PPS = +36m.11s., PPPS = +37m.17s., PPP' = +37m.51s., SKKS' = +38m.3s., PPPP' = +41m.5s., SSZ = +41m.51s., SPS = +42m.13s., PPSS = +42m.27s., PPPPP' = +43m.51s., PSSS = +44m.13s., SSS = +46m.59s., SSSS = +48m.17s., PPPS' = +57m.15s.

Adelaide e = +19m.16s. = PKP + 4s., i = +22m.26s. = PKS - 21s., iPS = +31m.20s., eSS = +39m.8s.

Tananarive PP = +22m.43s. = PKS - 15s., SKP = +23m.4s., PPPP = +28m.40s. = SKKS - 21s., PPS = +35m.10s., SS = +41m.31s., SSS = +45m.34s., SSSS = +49m.49s.

Hong Kong PP = +22m.46s., SS = +40m.15s.

Manila PKPEN? = +22m.0s. = PP - 25s.

Amboina i = +22m.23s. = PP - 21s.

Batavia i = +19m.50s., +20m.33s., +21m.10s. = P₂' + 6s. and +31m.49s. = SKKS + 7s.

Long waves were also recorded at Sebastopol.

May 21d. 15h. 43m. 37s. Epicentre 1°0S. 21°5W. (as on 1925 Sept. 12d.). R.2.

A = +.930, B = -.366, C = -.017; D = -.367, E = -.930;
G = -.017, H = +.006, K = -1.000.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Malaga	40.9	22	e 9 8	PP	—	—	e 22.0	25.0
Granada	41.6	21	e 9 6	PP	e 17 3	SS	e 20.8	—
Alicante	43.8	24	—	—	e 14 50	+17	—	—
Toledo	43.8	20	e 9 44	PP	—	—	—	—
Algiers	44.1	30	—	—	i 18 19	(+12)	i 23.0	27.9
La Paz	N. 48.5	249	e 8 42	+ 2	i 14 40	-60	18.7	24.4
Florence	53.5	30	e 9 16	- 2	16 23	-26	26.4	29.9
Paris	53.9	20	e 10 23?	(- 7)	—	—	25.4	30.4
Oxford	55.4	16	—	—	17 12	- 3	e 23.6	40.3
Kew	55.4	17	—	—	e 19 23?	(+ 3)	—	—
Strasbourg	55.6	23	e 9 23?	-10	e 17 23?	+ 6	e 24.4	—
Uccle	56.2	20	—	—	(e 16 23?)	-62	e 16.4	—
Stuttgart	56.3	25	e 11 53	PP	e 17 23	- 4	e 24.4	—
De Bilt	57.6	20	e 9 49	+ 2	e 17 44	0	e 24.4	26.2
Helwan	58.6	54	e 17 58	S	(e 17 58)	+ 1	34.4	37.6

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°		m. s.	s.	m. s.	s.	m.	m.
Edinburgh	58.8	12	—	—	e 17 53	- 7	—	—
Hamburg	60.5	21	—	—	e 23 23?	?	e 31.4	39.4
Potsdam	60.7	24	e 16 23?	?	—	—	34.4	—
Copenhagen	63.0	21	10 23?	- 2	18 53	- 2	—	—
Scoresby Sund	71.5	0	11 23?	+ 3	21 17	PS	28.4	—
Pulkovo	72.7	25	e 11 18	- 9	—	—	32.4	—
Tiflis	73.2	45	e 12 11	+41	e 21 39	+40	e 40.0	46.2
Baku	76.6	48	—	—	e 21 56	+18	38.4	—
Ekaterinburg	86.5	33	e 12 42	+ 1	e 23 11	-11	35.4	—
Tashkent	91.2	49	—	—	e 24 17	+10	e 46.4	54.5

Additional readings :—

Stuttgart e = +13m.3s.

Helwan eS = +25m.23s.

Baku e = +27m.1s.

Ekaterinburg e = +24m.15s. = PS + 5s. and +28m.55s. = SS + 6s.

Tashkent e = +25m.8s. = PS + 1s. and +33m.35s. = SS + 4s.

Long waves were also recorded at Rio de Janeiro, Irkutsk, and European stations.

May 21d. 21h. 39m. 20s. Epicentre 6°.1S. 105°.6E.

N.3.

This epicentre is given by Batavia, and although it does not bring the readings into line with one another, it seems clear that no other position would show much improvement. The determination made at a station in the vicinity carries considerable weight over that made by arbitrarily selecting or rejecting readings which are mutually incompatible.

A = -.267, B = +.958, C = -.106; D = +.963, E = +.269;
G = +.029, H = -.102, K = -.994.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°		m. s.	s.	m. s.	s.	m.	m.
Batavia	1.2	94	0 29	+12	10 49	+18	—	—
Malabar	2.3	119	10 43	+10	11 10	+11	—	—
Medan	11.9	325	11 55	-52	—	—	—	—
Manila	25.7	36	5 52	PP	10 52	SS	—	—
Perth	27.6	161	e 3 40	?	—	—	—	—
Bombay	40.8	308	e 9 48	(+ 4)	—	—	—	—
Andijan	55.9	330	e 10 1	+26	—	—	—	—
Tashkent	57.9	329	—	—	114 59	?	28.1	36.7
Irkutsk	58.3	359	—	—	e 17 40?	-13	e 35.7	—
Baku	69.0	318	e 11 5	0	120 0	- 9	33.2	—
Ekaterinburg	72.7	337	11 24	- 3	120 36	-17	34.7	—
Tiflis	73.0	317	e 11 27	- 2	120 42	-15	—	—
Simferopol	81.5	317	e 12 46	+30	—	—	—	—
Kucino	82.8	328	—	—	22 26	[-16]	e 39.4	—
Pulkovo	88.0	331	e 12 43	- 5	e 23 16	[- 4]	—	—
Copenhagen	96.8	326	—	—	23 46	[-24]	—	—
Scoresby Sund	107.6	344	—	—	24 46	[-16]	—	—

Tiflis gives also $P_0P = +11m.56s.$, $PS = +21m.28s.$, $e = +25m.17s.$ = SS - 11s.
Long waves were also recorded at Hong Kong.

May 21d. Readings also at 5h. (Andijan and Balboa Heights), 7h. (Andijan, Nagoya, Tyost, and near Mizusawa), 14h. (near Andijan, near Apla, and near La Paz), 15h. (Ekaterinburg, Tashkent, near Andijan, and near Kobe).

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May 22d. 1h. Shock in North Atlantic Ocean recorded in Europe and Asia. No determination can be made, but the readings are as follows:—

Paris eP = 1h.46m.2s., L = +52m., M = 53m.
 Granada e = 1h.46m.51s. and 50m.33s.
 Strasbourg eP = 1h.47m., eL = 53m., M = 53.3m.
 Florence e = 1h.47m.31s., eS = 52m.51s., M = 56m.
 Scoresby Sund 1h.47m.42s., L = 52m.
 Toledo e = 1h.48m.13s.
 Oxford S = 1h.50m.6s., M = 53.4m.
 Edinburgh e = 1h.50m.10s.
 De Bilt eSN = 1h.51m.23s., eL = 53m., M = 54.6m.
 Ekaterinburg eP = 1h.51m.32s., L = 69.5m.
 Stuttgart e = 1h.52m.10s., eL = 54.4m.
 Alicante e = 1h.52m.53s.
 Long waves were also recorded at European and Russian stations.

May 22d. 11h. 29m. 23s. Epicentre 20°·2S. 174°·2W. N.I.

Probable error of epicentre $\pm 0^{\circ} \cdot 25$.

A = -·934, B = -·095, C = -·345; D = -·101, E = +·995;
 G = +·344, H = +·035, K = -·938.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Apia	6·7	21	1 35	0	2 47	- 4	—	3·6
Suva	7·3	285	3 32	+108	5 11	+125	—	—
Arapuni	20·0	204	—	—	10 11	? 2	12·6	—
Wellington	23·1	201	4 55	- 7	9 9	+ 2	11·0	13·0
Riverview	33·6	239	1 7 53	PPP	i 12 23	+23	e 17·2	19·2
Sydney	33·6	239	e 6 19	-18	i 12 13	+13	16·6	19·7
Melbourne	39·3	235	i 7 26	0	i 13 30	+ 4	22·1	23·5
Adelaide	43·9	240	—	—	e 12 57?	-97	18·6	24·6
Honolulu T.H.	44·5	22	—	—	e 14 44	+ 1	20·8	—
Perth	62·9	244	i 19 2	S	(i 19 2)	+ 8	—	35·1
Manila	72·6	293	11 23	- 3	20 54	+ 2	35·0	40·6
Berkeley	75·8	40	i 11 44	- 1	i 21 29	0	—	—
La Jolla	76·0	47	e 11 41	- 5	—	—	—	—
Pasadena	76·1	45	e 11 46	- 1	—	—	e 42·8	—
Mount Wilson	76·2	45	e 11 47	0	—	—	—	—
Riverside	76·5	45	e 11 48	- 1	e 21 33	- 4	—	—
Haiwee	77·4	43	e 11 54	0	—	—	—	—
Batavia	77·6	268	11 58	+ 3	i 21 43	- 6	—	—
Tinemaha	77·8	43	i 11 58	+ 1	e 21 47	- 5	—	—
Tucson	80·1	50	12 11	+ 3	22 15	- 2	38·8	—
Zi-ka-wei	z. 80·3	309	i 12 9	0	—	—	47·6	58·6
Hong Kong	81·8	297	12 16	- 1	22 39	+ 4	—	45·4
Victoria	e. 82·2	32	22 41	S	(22 41)	+ 2	40·8	42·5
Sitka	83·7	20	—	—	e 22 21	[- 28]	e 34·8	—
Bozeman	87·2	39	—	—	e 23 17	[- 2]	e 39·8	—
Florissant	97·9	52	i 13 35	+ 1	i 25 5	- 3	—	—
St. Louis	98·0	52	e 13 37	+ 3	e 24 1	[- 15]	—	49·6
La Paz	98·6	111	e 13 46	+ 9	24 19	[- 0]	47·6	55·5
Madison	100·0	47	—	—	e 24 22	[- 4]	47·6	—
Irkutsk	100·8	322	e 13 46	- 1	—	—	51·6	56·4
Columbia	103·6	58	—	—	e 33 1	SS	e 51·6	—
Pittsburgh	106·1	52	e 18 48	PP	i 24 52	[- 3]	e 52·5	—
Toronto	107·2	49	—	—	i 26 20	{+33}	49·6	—
Georgetown	107·9	54	e 15 2	?	—	—	—	—
Ottawa	110·0	48	e 18 49	[+31]	e 26 45	{+38}	e 57·6	—
Kodaikanal	110·6	274	25 14	SKS	(25 14)	[- 2]	—	—
San Juan	112·6	78	e 19 20	PP	e 25 17	[- 8]	e 57·4	—
Harvard	112·9	51	—	—	e 25 21	[- 5]	e 52·6	—
Rio de Janeiro	115·7	130	—	—	e 26 37	[- 10]	—	—
Bombay	117·3	281	25 22	SKS	(25 22)	[- 20]	—	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent	122.9	307	—	—	e 26 31	[+32]	—	61.5
Ekaterinburg	125.7	327	i 19 0	[+ 2]	26 0	[- 7]	52.6	73.6
Scoresby Sund	127.0	12	21 9	PP	—	—	—	—
Pulkovo	136.7	342	e 19 18	[+ 1]	28 54	{- 9}	69.6	83.1
Baku	137.5	308	e 19 29	[+10]	—	—	—	90.0
Helsingfors	137.7	347	e 22 51	PKS	—	—	e 67.6	—
Upsala	139.4	351	e 22 52	PKS	—	—	—	—
Tiflis	140.8	312	e 19 13	[-10]	32 53	PS	70.6	89.2
Edinburgh	143.7	8	e 19 37?	[+ 7]	e 41 37?	SS	—	—
Copenhagen	144.1	353	19 33	[+ 2]	—	—	72.6	—
Lund	144.1	353	19 37	[+ 6]	—	—	78.6	—
Theodosia	145.2	322	e 19 42	[+ 8]	—	—	—	—
Simferopol	146.0	323	e 19 38	[+ 2]	—	—	—	—
Yalta	146.2	322	e 19 41	[+ 5]	—	—	—	—
Hamburg	146.4	356	19 37	[+ 1]	—	—	e 79.6	86.6
Potsdam	147.3	352	e 19 43	[+ 5]	—	—	e 80.6	—
Oxford	147.9	8	19 46?	[+ 7]	42 16	SS	e 79.6	85.9
De Bilt	148.1	0	e 19 46	[+ 7]	e 42 31	SS	e 83.6	92.4
Kew	148.4	6	e 19 46	[+ 7]	—	—	81.6	—
Göttingen	148.5	356	i 19 45	[+ 5]	—	—	e 89.6	97.2
Uccle	149.3	3	19 44	[+ 3]	—	—	e 80.6	—
Cheb	149.6	351	—	—	e 40 37?	?	—	95.1
Ksara	N. 150.1	303	e 19 49	[+ 7]	e 24 8	?	—	—
Paris	151.2	5	e 19 45	[+ 2]	—	—	80.6	100.6
Stuttgart	151.3	355	e 19 45	[+ 2]	—	—	e 80.6	—
Strasbourg	151.6	357	19 46	[+ 2]	—	—	60.6	—
Zurich	152.7	356	e 20 1	[+16]	—	—	—	—
Neuchatel	153.2	358	e 19 40	[- 6]	—	—	—	—
Florence	156.0	350	e 20 38	[+49]	—	—	78.6	92.6
Toledo	158.6	21	e 20 0	[+ 8]	—	—	—	—
San Fernando	160.6	31	20 47	[+52]	—	—	89.6	98.6
Granada	161.1	24	i 19 58	[+ 3]	—	—	e 80.5	114.9
Malaga	161.2	26	e 19 58	[+ 3]	—	—	—	96.4
Almeria	161.8	21	e 19 58	[+ 2]	—	—	e 97.8	—
Algiers	163.2	8	e 19 53	[- 4]	e 25 2	PP	94.6	—

Additional readings :-

Riverview e = +15m.11s.
 Melbourne i = +12m.6s., iSSS = +16m.37s.
 Adelaide i = +18m.2s. = S₀S - 3s.
 Honolulu T.H. e = +18m.3s. = S₀S - 6s.
 Berkeley eE = +22m.7s. = PS - 8s.
 Batavia i = +20m.50s.
 Zi-ka-wei i = +12m.49s.
 Hong Kong SS = +28m.17s.
 Bozeman i = +23m.25s. = S - 4s.
 Florissant iN = +27m.37s., i = +30m.38s.
 La Paz iSE = +25m.20s. = S + 6s.
 Madison e = +25m.20s. = S - 6s.
 Irkutsk ePP = +17m.58s., PS = +27m.12s., SS = +32m.43s.
 Columbia eSSS = +38m.1s.
 Pittsburgh ePS = +27m.35s.
 Georgetown ePP = +18m.48s., ePS = +28m.15s.; T₀ = 11h.29m.35s.
 Ottawa eE = +29m.31s., eN = +34m.16s. = SS - 3s.
 San Juan ePS = +28m.50s.
 Tashkent e = +27m.31s. = SKKS - 6s. and +38m.37s.
 Ekaterinburg iPP = +21m.25s., SKKS = +27m.53s., SS = +42m.55s.
 Pulkovo PP = +22m.0s., PKS = +22m.50s., PS = +32m.2s., PPS = +34m.30s., SS = +40m.13s.
 Baku PP = +22m.11s., PS = +33m.25s.
 Helsingfors eE = +40m.27s. = SS + 12s., eN = +40m.30s., eE = +47m.15s.
 Tiflis e = +23m.11s. = PKS + 0s.
 Potsdam iZ = +20m.15s., eEN = +47m.37s. ? = SSS + 12s., eZ = +49m.37s. ?
 Kew ePKP₂Z = +20m.12s.
 Cheb e = +48m.37s. ?
 Stuttgart e = +20m.6s. = PKP₁ + 1s., eZ = +24m.58s., eN = +33m.49s. = SKSP + 2s., eSS = +42m.43s.
 Strasbourg ePP = +23m.40s., ePPS = +36m.30s., eSS = +43m.7s.
 Granada iPKP = +21m.7s. = PKP₁ + 18s., SKP = +24m.42s. = PP + 21s., PP = +25m.43s., PPP = +30m.4s., SS = +46m.16s.
 Malaga i = +20m.48s. = PKP₁ - 2s., e = +23m.44s. = PKS + 7s.
 Long waves were also recorded at Tananarive, Ukliah, La Plata, Graz, and Stonyhurst.

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May 22d. 17h. 1m. 58s. Epicentre 38°-5N. 15°-0E. (as on 1926 Aug. 17d.). R.1.

Probable error of epicentre $\pm 0^{\circ}.23$.

A = +.756, B = +.203, C = +.623 ; D = +.259, E = -.966 ;
G = +.601, H = +.161, K = -.783.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Naples	E. 2.4	346	e 0 47	P _g	e 1 22	S _g	—	3.6
Florence	6.0	333	0 35	-50	2 58	S _g *	—	3.0
Triest	7.2	353	e 1 44	+ 2	e 3 15	+11	4.3	—
Venice	7.2	345	e 1 50	+ 8	i 5 19	S _g ?	—	5.9
Zagreb	7.3	5	e 1 46	+ 2	e 3 23	S _g *	—	5.1
Belgrade	7.5	31	1 41	- 5	e 3 23	+12	—	5.9
Graz	8.6	2	i 2 1	- 1	e 4 49	S _g *	—	6.6
Innsbruck	9.2	345	1 56	-14	—	—	—	—
Chur	9.3	347	e 2 10	- 1	—	—	—	—
Budapest	9.4	17	4 28	S _g *	—	—	6.5	7.0
Vienna	9.8	5	e 2 26	+ 8	i 4 31	S _g *	—	7.0
Zurich	10.0	335	e 2 26	+ 5	—	—	—	—
Neuchatel	10.3	328	e 2 28	+ 3	—	—	—	—
Stuttgart	11.1	340	e 2 40	+ 4	e 5 0	+19	e 6.0	8.6
Strasbourg	11.3	335	e 1 2?	-97	(e 5 2?)	+17	e 5.0	—
Cheb	11.7	352	—	—	e 5 25	+30	e 6.7	7.1
Alicante	12.2	274	e 3 53	+62	e 6 33	+85	e 7.0	—
Göttingen	13.5	347	i 3 8	- 1	—	—	e 7.6	9.1
Paris	13.7	323	e 3 22	+11	—	—	7.0	10.0
Almeria	13.8	269	e 4 9	+56	—	—	—	—
Potsdam	13.9	355	e 3 14	0	e 6 8	+19	e 8.0	9.0
Uccle	14.4	332	e 3 24	+ 3	e 6 2?	+ 1	—	—
Granada	14.7	271	e 3 30	+ 5	e 6 36	+28	7.1	15.8
Toledo	14.8	282	e 3 22	- 4	e 6 28	+18	e 8.3	—
De Bilt	15.2	336	e 3 40	+ 9	e 6 51	+31	e 8.0	11.2
Yalta	15.5	61	e 3 27	- 8	—	—	—	—
Hamburg	15.5	349	e 3 32	- 3	e 6 41	+14	e 8.9	11.0
Malaga	15.5	270	e 3 35	0	e 6 46	+19	8.8	10.1
Simferopol	15.6	60	e 3 32	- 4	—	—	—	—
Theodosia	16.4	60	e 3 43	- 3	—	—	—	—
Kew	16.8	325	—	—	e 7 26	+29	e 10.0	—
Lund	17.2	357	3 56	- 1	7 26	+20	10.0	—
Copenhagen	17.3	355	3 57	- 1	7 24	+15	9.0	—
Oxford	17.5	325	—	—	e 7 35	+22	10.4	14.8
Upsala	21.4	4	e 4 49	+ 5	e 8 49	+15	e 12.0	15.3
Helsingfors	22.6	13	e 9 3	S	(e 9 3)	+ 6	e 14.0	—
Tiflis	22.9	72	4 50	-10	9 3	0	e 13.6	15.6
Kucino	23.0	34	e 4 56	- 5	9 8	+ 3	e 11.0	16.0
Pulkovo	23.3	20	4 55	- 9	9 10	0	12.0	14.2
Baku	26.8	75	e 5 30	- 6	e 11 13.	SS	e 16.5	19.8
Ekaterinburg	34.9	43	i 6 51	+ 3	12 4	-16	15.5	—
Scoresby Sund	37.3	340	8 44	PP	—	—	22.0	—
Tashkent	41.0	69	e 11 56	?	—	—	e 21.0	29.7
Andijan	43.4	69	e 7 56	- 4	—	—	—	—
Almata	46.0	63	e 8 4	-17	—	—	—	—

Additional readings:—

Venice eP = +2m.5s.

Belgrade e = +2m.14s. = P*, ePPS = +3m.11s.

Oxford i = +7m.44s.

Helsingfors ePE = +9m.22s., eSN = +12m.46s., eSE = +13m.4s., eSSE =

+13m.56s.

Tiflis SS = +10m.10s.

Long waves were also recorded at Irkutsk.

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May 22d. 17h. 30m. 26s. Epicentre 35°·7N. 140°·4E. (as on 1932 Feb. 26d.). X.

A = -·636, B = +·518, C = +·584.

	△	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi	0·4	85	0 7	+ 1	0 17	S*	—	—
Tokyo	0·5	268	0 5	- 2	0 14	+ 1	—	0·2
Nagoya	2·9	259	e 0 42	+ 1	1 3	-11	—	—
Osaka	4·1	261	1 24	P _g	—	—	2·4	—

No further readings.

May 22d. 22h. 40m. 7s. Epicentre 14°·7N. 89°·8W. N.2.

A = +·003, B = -·967, C = +·254; D = -1·000, E = -·003;
G = +·001, H = -·254, K = -·967.

	△	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights	11·6	119	e 2 31	-12	—	—	—	—
Little Rock	E. 20·2	354	e 6 5	?	i 10 2	L	(10·0)	—
Columbia	20·8	21	e 4 41	+ 3	i 8 45	+23	e 12·1	—
San Juan	23·0	78	e 4 58	- 3	e 8 44	PcP	10·1	—
St. Louis	N. 23·9	359	i 5 10	+ 1	i 9 29	+ 8	e 14·5	—
Florissant	24·1	359	i 5 11	0	i 9 32	+ 7	12·9	—
Charlottesville	25·4	21	—	—	i 9 53	+ 5	—	—
Tucson	26·0	316	6 3	PP	—	—	13·9	—
Georgetown	26·7	22	e 5 36	+ 1	i 10 16	+ 6	—	15·0
Chicago	27·1	4	e 5 38	- 1	e 10 20	+ 3	12·1	—
Pittsburgh	27·2	17	e 6 0	+20	e 9 52	-26	e 11·7	—
Ann Arbor	28·1	10	—	—	e 10 35	+ 1	e 18·1	—
Madison	28·4	1	e 5 51	0	e 9 42	-56	—	—
Fordham	29·6	25	e 6 19	+18	e 10 39	-19	e 12·9	—
Toronto	30·3	15	e 6 10	+ 2	i 11 11	+ 2	14·6	17·4
Harvard	32·0	26	e 6 14	- 9	e 11 38	+ 3	e 16·4	—
Mount Wilson	32·0	312	e 6 23	0	—	—	—	—
Pasadena	32·0	312	e 6 21	- 2	—	—	—	—
Ottawa	32·9	18	e 6 29	- 2	e 11 53	+ 4	e 17·9	—
Haiwee	E. 33·0	316	e 6 30	- 2	—	—	—	—
Tinemaha	33·7	316	e 6 37	- 1	—	—	e 16·9	—
La Paz	37·8	144	e 7 12	- 1	12 42	-21	16·9	20·6
Scoresby Sund	68·8	19	10 59	- 4	20 5	- 2	37·9	—
Edinburgh	76·0	35	—	—	e 21 53?	PS	e 37·9	—
Toledo	77·5	52	—	—	e 30 36	?	e 37·2	—
Granada	78·2	54	e 11 55	- 3	—	—	e 32·4	—
Paris	80·5	42	—	—	e 26 53?	SS	37·9	—
Copenhagen	84·6	33	—	—	22 53	[- 3]	37·9	—
Florence	87·6	45	e 11 24	-82	16 39	PP	—	66·9
Pulkovo	91·4	25	13 0	- 4	23 54	{+ 8}	42·9	55·1
Kucino	97·1	27	—	—	e 23 54	[-18]	e 45·9	51·6
Ekaterinburg	104·4	16	—	—	e 24 31	[-16]	42·9	—
Tiflis	109·8	34	e 23 8	?	e 36 42	?	e 54·9	64·7
Tashkent	120·7	18	e 12 28	?	e 39 36	?	—	50·6

Additional readings:—

San Juan ePP = +5m.30s.

St. Louis iPN = +5m.26s. = PP-9s., iN = +5m.47s., iSN = +9m.47s. = SS-16s.

Florissant ipPZ = +5m.30s. = PP-8s., isPZ = +5m.52s., iS = +9m.36s.

Ann Arbor eN = +12m.53s., eE = +13m.5s.

Fordham eN = +7m.21s.

Harvard ePP = +7m.18s.; T₀ = 22h.39m.39s.

Ottawa eE = +6m.49s., e = +14m.20s.

Pulkovo PP = +16m.56s., SS = +30m.5s.

Kucino e = +26m.9s.

Ekaterinburg e = +27m.42s. and +33m.12s.

Long waves were also recorded at Ukiah, Sitka, Riverside, Irkutsk, Ksara, and other European stations.

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May 22d. Readings also at 0h. (Andijan, Tyosi, and near Mizusawa), 1h. (near Christchurch, New Plymouth, and Wellington), 3h. (San Fernando), 7h. (Almata and near Andijan), 8h. (Tucson, Lick, Berkeley, and near Branner), 10h. (near Riverview), 12h. (Bombay, near Almata, and Andijan), 13h. (Karlsruhe), 16h. (Baku and Ekaterinburg), 19h. (Alicante, Granada, and La Paz), 20h. (Almata and near Andijan), 21h. (Helsingfors and Zurich), 23h. (La Paz).

May 23d. 20h. 17m. 59s. Epicentre 33°·6N. 134°·5E. (as on 1931 July 30d.). R.3.

$$A = -.584, B = +.594, C = +.553.$$

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	0·8	23	i 0 13	+ 2	i 0 21	0	—	0·4
Kobe	1·2	28	i 0 18	+ 1	i 0 29	- 2	—	0·5
Osaka	1·4	40	o 20	0	(0 33)	- 3	0·5	1·0
Matuyama	1·5	279	e 0 36	S	(e 0 36)	- 3	—	—
Toyooka	2·0	8	o 29	0	i 0 50	- 1	—	0·9
Nagoya	2·6	52	e 0 37	0	1 2	- 5	1·1	—

No additional readings.

May 23d. Readings also at 6h. (Baku, Ekaterinburg, Tifis, Pulkovo, Copenhagen, Hamburg, Vienna, Zurich, De Bilt, Uccle, Paris, Strasbourg, Stuttgart, Zagreb, Florence, Trieste, and La Paz), 10h. (San Juan), 12h. (Alicante), 14h. (near Nagasaki), 17h. (Baku, Kucino, near Ksara, and near Apia), 18h. (Ekaterinburg, Tifis, Irkutsk, Tashkent (2), and near Medan), 19h. (near Hukuoka), 22h. (Scoresby Sund).

May 24d. 2h. 24m. 45s. Epicentre 34°·0N. 135°·5E. (as on 1931 April 30d.). X.

$$A = -.591, B = +.581, C = +.559.$$

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	0·6	304	o 10	+ 1	o 20	+ 5	—	0·3
Kobe	0·7	339	o 22	S	(0 22)	+ 4	—	0·6
Osaka	0·7	355	o 10	0	(0 22)	+ 4	0·4	0·7
Nagoya	1·7	45	e 0 23	- 1	o 36	- 8	—	—

Kobe gives also eE = +34s., eSN = +37s.

May 24d. 23h. 29m. 26s. (I) { Epicentre 37°·8N. 48°·2E. N.3.
24d. 23h. 31m. 51s. (II) } X.

$$A = +.527, B = +.589, C = +.613; D = +.745, E = -.667; \\ G = +.409, H = +.457, K = -.790.$$

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Baku	2·9	29	i 0 42	+ 1	(i 1 23)	+ 9	11·4	4·2
I Tifis	4·7	329	e 1 6	- 1	2 6	+ 6	e 2·7	—
II	4·7	329	—	—	i 2 0	0	i 2·4	3·0
I Theodosia	12·0	310	e 2 51	+ 3	e 5 14	+ 11	9·6	—
I Yalta	12·4	303	e 2 54	0	e 5 21	+ 8	—	—
I Simferopol	12·7	308	e 2 57	- 1	5 29	+ 9	—	—
I Tashkent	16·6	71	e 4 10	+ 21	e 6 31	- 21	e 8·8	15·8
I Andijan	18·9	73	e 4 19	+ 2	—	—	—	—
II Kucino	19·2	342	e 4 16	- 5	e 7 46	- 4	8·4	11·8
I Ekaterinburg	20·8	20	i 4 33	- 5	i 8 22	0	12·6	—
II	20·8	20	4 32	- 6	8 16	- 6	—	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Almata	22.4	67	e 5 2	+ 7	—	—	—	—
I Pulkovo	24.7	338	15 14	- 3	e 9 38	+ 2	15.6	17.2
II	24.7	338	15 16	- 1	9 34	- 2	—	—
I Helsingfors	E. 26.8	334	(e 8 34?)	PcP	—	—	8.6	—
II	N. 26.8	334	—	—	e 10 3	- 9	e 12.1	—
II Lund	29.4	319	6 9	+ 9	—	—	—	—
II Copenhagen	29.8	318	6 5	+ 2	11 4	+ 3	16.1	—
II Hamburg	30.5	314	e 11 3	S	(e 11 3)	- 9	e 17.1	22.1
II Irkutsk	41.0	51	—	—	e 14 9?	+18	24.1	—
II Scoresby Sund	48.2	335	—	—	15 19?	-27	28.1	—

Tiflis gives also IP = +1m.10s., e = +1m.21s.

Long waves were also recorded at other European stations.

May 24d. Readings also at 11h. and 17h. (near Manila), 22h. (Simferopol), 23h. (Ksara).

May 25d. Readings at 0h. (La Paz), 2h. (Sydney), 3h. (near Sumoto), 4h. (near Mizusawa), 5h. (Potsdam, Uccle, and near Almata), 6h. (Tashkent and Tiflis), 7h. (Baku and Andijan), 10h. (Baku and Tashkent), 12h. (Hastings), 13h. (Tashkent and Irkutsk), 14h. (Tiflis), 17h. (Simferopol), 19h. (Simferopol and Balboa Heights (2)), 22h. (Stonyhurst).

May 26d. 5h. 12m. 26s. Epicentre 25°4N. 96°8E. (as on 1932 Feb. 5d.). X.

A = - .107, B = + .897, C = + .429; D = + .993, E = + .118;
G = - .051, H = + .426, K = - .903.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta	8.2	251	2 22	+26	3 52	S*	4.6	7.3
Hong Kong	16.2	97	5 54	+130	8 5	+82	8.7	9.1
Hyderabad	18.8	249	4 14	- 2	7 50	+ 8	10.1	13.1
Chiufeng	21.8	43	e 8 43	S	(e 8 43)	+ 1	e 11.4	—
Medan	21.9	175	e 5 33	PPP	—	—	i 11.3	—
Zi-ka-wei	22.4	69	8 56	S	(8 56)	+ 3	(11.6)	13.4
Bombay	23.1	258	5 7	+ 5	9 13	+ 6	12.1	12.9
Manila	25.1	111	7 46	?	10 52	SS	12.4	—
Andijan	25.4	313	e 5 32	+ 8	e 9 58	+10	—	—
Irkutsk	27.4	10	e 5 40	- 2	e 10 24	+ 2	14.1	14.7
Tashkent	27.8	312	e 8 10	?	e 11 4	SS	e 15.6	17.4
Batavia	33.1	163	e 7 34	PP	—	—	i 17.5	—
Ekaterinburg	40.7	330	e 7 30	- 8	13 40	- 7	20.1	23.9
Baku	41.6	304	e 7 51	+ 6	e 14 1	+ 1	22.1	25.5
Tiflis	45.6	305	e 8 9	- 9	—	—	23.6	27.7
Pulkovo	56.5	327	9 40	+ 1	e 17 22	- 8	32.6	34.5
Lund	65.7	322	—	—	19 22	- 7	35.6	—
Copenhagen	66.1	322	—	—	19 28	- 6	35.6	—
Florence	69.7	310	e 5 34	?	(27 34)	SSS	—	27.6
Stuttgart	69.7	317	e 11 6	- 3	e 20 4	-14	e 36.6	40.1
De Bilt	70.3	320	—	—	e 20 37	+12	e 35.6	39.5

Additional readings and notes :-

Hong Kong ? = +8m.18s.

Chiufeng and Zi-ka-wei give S as P and L as S.

Tiflis e = +8m.39s.

Pulkovo L₀ = +30.1m.

Long waves were also recorded at Phu-Lien, Scoresby Sund, Pittsburgh, and other European stations.

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May 26d. 16h. 9m. 19s. Epicentre 24° 0S. 179° 2E.

N.1.

A = -0.13, B = +0.13, C = -0.407; D = +0.14, E = +1.000;
G = +0.407, H = -0.006, K = -0.914.

A depth of focus 0.050 has been assumed.

	Corr. for Focus	Δ	Az.	P.		O-C.	S.		O-C.	L.	M.
				m.	s.		m.	s.			
New Plymouth	-1.4	15.7	195	3	26	+7	5	51	-7	—	—
Takaka	-1.6	17.6	196	3	50	+9	6	41	+3	—	—
Wellington	-1.6	17.6	191	3	39	-2	6	1	-37	6.6	6.8
Seatoun	-1.6	17.7	195	2	41	-62	—	—	—	—	—
Glenmuick	-1.9	19.5	193	2	41?	-81	5	28	-107	—	—
Christchurch	-2.0	20.2	194	4	3	-6	6	21	-68	—	—
Riverview	-2.6	26.3	242	e 5	5	-2	i 9	10	-8	—	—
Melbourne	-3.3	32.2	237	5	57	+2	—	—	—	—	—
Adelaide	-3.7	36.7	243	—	—	—	i 11	32	-19	—	—
Honolulu T.H.	-4.8	50.5	28	e 8	34	+16	—	—	—	—	—
Amboina	-5.1	53.1	284	i 8	40	+4	—	—	—	—	—
Perth	-5.2	55.7	246	e 9	11	+16	i 16	7	-1	—	—
Tyosi	-5.8	69.8	328	10	39	+7	—	—	—	—	—
Malabar	-5.9	70.3	271	10	39	+4	19	5	-7	—	—
Batavia	-5.9	71.4	272	e 10	38	-4	i 19	20	-6	—	—
Osaka	-5.9	71.8	323	10	44	-1	—	—	—	—	—
Kobe	-5.9	72.0	323	i 10	51	+5	19	40	+6	—	—
Koti	-5.9	72.1	321	10	52	+5	e 19	34	-1	—	—
Nagasaki	-5.9	73.7	319	11	1	+4	e 19	55	+1	—	—
Hukuoka	-5.9	73.9	320	11	2	+4	19	58	+1	e 31.6	—
Zi-ka-wei	-6.1	78.1	313	i 11	23	0	20	43	-2	—	—
Hong Kong	-6.1	78.3	301	11	24	0	20	43	-4	—	—
Santa Barbara	-6.3	82.3	47	i 11	51	+5	—	—	—	—	—
Branner	-6.3	82.5	44	e 11	49	+2	—	—	—	—	—
Berkeley	-6.3	82.8	43	11	49	0	e 22	41	+64	—	—
Lick	-6.3	82.8	43	e 11	50	+1	—	—	—	—	—
Medan	-6.3	82.8	277	i 11	45	-4	i 21	20	-17	—	—
Ukiah	-6.3	82.9	41	i 11	54	+5	i 21	23	-15	—	—
Pasadena	-6.3	83.2	48	i 11	49	-2	i 21	41	-1	—	—
Mount Wilson	-6.3	83.3	48	e 11	50	-2	—	—	—	—	—
Riverside	-6.3	83.6	48	e 11	51	-3	i 21	40	-6	—	—
Haiwee	-6.3	84.4	46	e 12	1	+3	e 21	45	-10	—	—
Tinemaha	-6.3	84.8	46	i 12	0	0	e 21	33	-26	—	—
Chiufeng	-6.4	86.9	317	e 12	9	-1	i 22	20	-1	—	—
Tucson	-6.4	87.3	53	12	13	0	i 21	51	-34	—	—
Colombo	-6.7	101.3	272	e 13	11	-8	—	—	—	—	—
La Paz	-6.7	102.8	115	e 13	10	-16	i 24	53	+1	—	—
Florissant	-6.8	105.1	54	e 13	33	-3	23	21	[-89]	—	—
St. Louis	-6.8	105.2	54	e 13	31	-5	i 23	26	[-85]	—	—
Hyderabad	-6.8	106.5	282	13	10	-32	21	8	?	34.7	42.9
Dehra Dun	—	110.5	295	14	11	-22	21	21	?	27.3	37.7
Pittsburgh	—	113.3	54	14	14	-23	i 25	9	[-181]	—	—
Charlottesville	—	113.9	57	e 19	10	PP	i 28	14	PS	—	—
Ekaterinburg	—	125.4	324	18	19	[-39]	—	—	—	—	—
Scoresby Sund	—	131.9	9	e 18	35	[-35]	—	—	—	—	—
Baku	—	134.8	304	18	36	[-39]	—	—	—	—	—
Kucino	—	137.5	328	18	33	[-45]	—	—	—	—	—
Pulkovo	—	138.2	337	18	36	[-43]	—	—	—	—	—
Tiflis	—	138.4	307	18	28	[-51]	—	—	—	—	—
Helingsfors	x.	139.7	341	e 18	36	[-45]	—	—	—	—	—
Upsala	—	141.9	345	i 18	46	[-38]	—	—	—	—	—
Bergen	—	143.4	355	19	1	[-28]	—	—	—	—	—
Königsberg	—	145.4	338	i 18	56	[-39]	—	—	—	—	—
Kaara	n.	146.6	294	19	1	[-36]	—	—	—	—	—
Lund	—	146.7	346	19	0	[-37]	—	—	—	—	—

Continued on next page.

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	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Copenhagen	z.	146.9	347	e 18 56	[-41]				
Lemberg	E.	147.7	329	e 18 28	[-70]	e 37 26	?	e 48.0	
	N.	147.7	329	e 19 2	[-36]	e 37 30	?	e 48.0	
Edinburgh		148.1	3	e 19 15	[-24]				
Hamburg		149.3	348	e 19 2	[-39]				
Potsdam		149.8	343	e 19 5	[-37]				
Bidston		150.6	3	e 19 6	[-37]				
Göttingen	z.	151.3	346	e 19 5	[-38]				
Jena		151.4	344	i 19 9	[-35]	e 33 23	SKSP		
De Bilt	z.	151.6	353	i 19 5	[-39]				
Budapest		151.7	331	19 8	[-36]				
Vienna		152.2	335	i 19 5	[-39]				
Kew		152.6	0	e 19 7	[-38]	i 33 6	SKSP		
Uccle		152.9	353	19 7	[-39]				
Belgrade		153.0	326	i 19 6	[-40]				
Stuttgart		154.1	345	i 19 8	[-39]				
Zagreb		154.3	332	e 19 6	[-41]				
Strasbourg		154.6	347	e 19 8	[-40]				
Innsbruck		154.8	340	e 19 9	[-39]				
Laibach		154.8	334	e 19 14	[-34]				
Paris		155.1	355	e 19 11	[-37]				
Triest		155.4	335	e 19 11	[-37]				
Zurich		155.5	345	e 19 9	[-40]				
Chur		155.7	343	e 19 10	[-39]				
Neuchatel		156.2	347	e 18 59	[-50]				
Florence		157.9	336	19 9	[-42]				
Toledo		163.9	9	e 19 22	[-36]				
Malaga		166.9	13	e 19 21	[-40]				
Almeria		167.1	6	e 19 18	[-43]				

Additional readings :—

- Wellington PP = +3m.55s.
- Seatoun i = +2m.46s.
- Batavia iPZ = +10m.41s., +10m.44s., and +10m.53s.
- Lick iE = +11m.53s.
- Pasadena iZ = +11m.52s., eZ = +15m.0s., isSE = +25m.51s.
- Riverside e = +26m.6s. = SS - 26s.
- Charlottesville ePPP = +21m.47s., i = +31m.34s.
- Helsingfors eN = +18m.39s., eZ = +18m.43s.
- Copenhagen e = +19m.1s.
- De Bilt ePZ = +17m.25s.
- Stuttgart eEN = +iZ = +19m.12s.
- Potsdam i = +19m.12s.
- Jena iPEZ = +19m.14s.
- Kew iPPN = +23m.31s., eSS = +40m.55s.
- Zurich e = +23m.31s. = PP - 20s.
- Neuchatel pP = +21m.13s., ePP = +23m.38s.

May 26d. 16h. 9m. 29s. Epicentre 24°0S. 179°2E. R.1.

(as at 9m. 19s.).

A = -0.913, B = +0.013, C = -0.407; D = +0.014, E = +1.000;
G = +0.407, H = -0.006, K = -0.914.

A depth of focus 0.050 has been retained.

	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	0.0	5.9	353	4 1?	?				
Apia	-1.1	13.3	42	i 3 5	+14	5 41	+33		
Arapuni	-1.1	14.4	191	3 16	+10	5 34	0	5.8	6.0
New Plymouth	-1.4	15.7	195	i 3 24	+5	5 59	+1		6.2
Hastings	-1.4	15.7	187	4 31?	+72	6 41	+43	6.8	

Continued on next page.

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	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	m. s.	s.	m. s.	s.	m.	m.
Takaka	-1-6	17-6	196	(3 55)	PP	i 6 56	+18	—	—
Wellington	-1-6	17-6	191	3 37	-4	6 15	-23	7-2	7-5
Seaton	-1-6	17-7	195	2 40	-63	—	—	5-2	5-4
Glenmuick	-1-9	19-5	193	3 42	-58	5 47	-88	—	6-1
Christchurch	-2-0	20-2	194	4 3	-6	6 33	-56	7-2	7-8
Riverview	-2-6	26-3	242	i 5 11	+4	i 9 3	-15	—	15-1
Sydney	-2-6	26-3	242	i 4 49	-18	i 9 1	-17	11-8	12-5
Malbourne	-3-3	32-2	237	i 5 56	+1	10 31	-16	11-8 ²	14-9
Adelaide	-3-7	36-7	243	i 6 31	-1	i 11 34	-17	13-3	19-0
Honolulu T.H.	-4-8	50-5	28	i 8 40	+22	i 15 19	+19	e 21-5	—
Amboina	-5-1	53-1	284	i 8 41	+5	i 15 25	-8	—	—
Perth	-5-2	55-7	246	9 11	+16	e 16 16	+8	—	28-3
Titizima	-5-6	62-3	323	9 40	-1	17 40	+8	—	—
Hatdyozima	-5-8	68-3	326	10 27	+5	18 46	-2	—	—
Manila	-5-8	68-7	299	i 10 19	-6	18 44	-10	29-5	—
Tyosi	-5-8	69-8	328	10 40	+8	19 4	-3	—	—
Malabar	-5-9	70-3	271	i 10 40	+5	19 0	-12	—	—
Tokyo	-5-9	70-4	327	10 31	-4	18 35	-39	23-3	—
Kakioka	-5-9	70-6	328	10 32	-5	19 10	-6	—	—
Nake	-5-9	70-9	315	10 34	-5	19 17	-3	—	—
Nagoya	-5-9	71-4	325	10 39	-3	(19 26)	0	19-4	20-4
Kanemayama	-5-9	71-4	325	10 39	-3	19 27	+1	—	—
Batavia	-5-9	71-4	272	i 10 45	+3	—	—	27-4	—
Hukusima	-5-9	71-7	328	10 40	-4	19 29	-1	—	—
Osaka	-5-9	71-8	323	i 10 54	+9	(19 28)	-3	19-5	20-9
Sumoto	-5-9	71-9	322	i 10 41	-4	19 24	-8	—	—
Kobe	-5-9	72-0	323	i 10 51	+5	19 34	0	—	24-7
Koti	-5-9	72-1	321	i 10 54	+7	—	—	—	—
Mizusawa	-5-9	72-5	330	10 44	-5	19 31	-9	—	—
Matuyama	-5-9	72-8	321	i 10 49	-2	(19 26)	-17	19-4	19-8
Toyooka	-5-9	72-9	324	i 10 45	-7	i 19 42	-3	i 24-0	—
Morioka	-5-9	73-0	331	10 47	-5	19 37	-9	—	—
Nagasaki	-5-9	73-7	319	i 11 2	+5	19 59	+5	—	—
Hakusaka	-5-9	73-9	320	10 51	-7	19 54	-3	—	—
Taihoku	-5-9	74-3	307	10 52	-9	20 44	+42	32-1	—
Sapporo	-6-0	75-6	333	11 2	-6	20 6	-10	—	—
Taikyu	-6-0	76-6	319	11 8	-6	20 17	-11	—	—
Otomari	-6-1	78-0	335	11 17	-5	(20 35)	-9	20-6	20-9
Zi-ka-wei	-6-1	78-1	313	i 11 27	+4	i 20 53	+8	—	37-6
Hong Kong	-6-1	78-3	301	11 25	+1	20 48	+1	—	—
Zinsen	-6-1	79-0	320	11 19	-9	20 44	-12	—	—
Sitka	-6-2	80-6	337	(11 25)	-12	(21 24)	+11	—	(21-4)
Santa Barbara	-6-3	82-3	47	i 11 55	+9	i 21 22	-10	—	—
Branner	-6-3	82-5	44	i 11 48	+1	—	—	—	—
Berkeley	-6-3	82-8	43	i 11 47	-2	i 22 37	+60	—	—
Lick	-6-3	82-8	43	i 11 51	+2	—	—	—	—
Medan	-6-3	82-8	277	i 11 45	-4	—	—	—	—
Ukiah	-6-3	82-9	41	i 11 58	+9	i 22 42	+64	e 33-5	—
Pasadena	-6-3	83-2	48	i 11 55	+4	e 21 39	-3	—	—
Mount Wilson	-6-3	83-3	48	i 11 57	+5	i 21 43	0	—	—
Riverside	-6-3	83-6	48	e 11 51	-3	i 21 45	-1	—	—
Phu-Lien	-6-3	83-6	296	e 11 43	-11	21 16	-30	—	—
Hsinking	-6-3	84-0	324	e 12 3	+7	23 2	+71	—	—
Haiwee	-6-3	84-4	46	i 12 0	+2	e 22 25	+30	—	—
Tinnehaha	-6-3	84-8	46	—	—	i 22 0	+1	—	—
Chinfeng	-6-4	86-9	317	i 12 10	0	i 22 19	-2	—	—
Tucson	-6-4	87-3	53	i 12 20	+7	—	—	e 31-5	—
Victoria	-6-4	88-8	34	12 11	-9	(22 1)	-40	22-0	28-2
Seattle	-6-4	88-8	34	12 18	-2	(22 5)	-36	22-1	29-1
Seattle	-6-4	88-8	35	12 24	+4	i 22 36	-5	—	—
Sitka	-6-4	89-6	23	i 12 24	0	i 22 5	[-85]	—	—
Santiago	-6-5	92-2	128	12 19	-18	21 43	?	—	—
Bozeman	-6-5	94-1	41	e 12 49	+3	i 23 14	[-42]	e 46-5	—
Denver	-6-6	95-0	49	e 12 43	-7	i 22 29	[-92]	—	—
Calcutta	-6-7	99-7	290	13 20	+9	(23 20)	[-64]	23-3	23-8

Continued on next page.

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	Corr. for Focus	Δ	Az.	P.		O-C.	S.		O-C.	L.	M.
				m.	s.		m.	s.			
La Plata	-6.7	100.0	136	15	1	?	22	43	[-103]	37.4	—
Irkutsk	-6.7	100.2	323	e 12	58	-16	22	34	[-53]	42.5	—
Colombo	-6.7	101.3	272	—	—	—	22	59	[-93]	38.0	53.6
La Paz	-6.7	102.8	115	e 13	23	-3	23	9	[-90]	39.0	55.5
Balboa Heights	-6.7	103.8	86	e 16	31	PP	i 23	3	[-101]	—	—
Sucre	-6.7	103.9	118	e 13	31	0	i 23	10	[-95]	—	—
Kodaikanal	-6.7	104.8	275	13	31	-4	15	31	?	17.8	23.5
Florissant	-6.8	105.1	54	i 13	39	+3	i 24	51	-21	—	—
St. Louis	-6.8	105.2	54	i 13	38	+2	i 24	49	-23	—	—
Chicago	-6.8	108.0	51	i 13	48	-1	i 25	13	-24	—	—
Agra	N.	110.0	292	—	—	—	e 23	32	[-111]	—	—
Columbia	—	110.9	60	e 19	43	PP	e 23	44	[-93]	—	—
Ann Arbor	—	111.0	52	e 17	55	[-26]	i 23	43	?	e 45.7	—
Bombay	—	112.1	281	14	7	?	20	55	?	29.9	31.1
Pittsburgh	—	113.3	54	e 18	9	[-19]	i 25	58	[-32]	—	—
Port au Prince	—	113.9	79	19	1	PP	25	29	[-65]	—	—
Toronto	—	114.3	51	14	18	-34	i 27	52	PS	54.3	—
Buffalo	—	114.6	52	i 17	56	[-36]	i 26	10	[-29]	—	—
Almata	—	114.8	309	e 17	54	[-38]	—	—	—	—	—
Georgetown	z.	115.2	56	e 14	24	-32	28	19	PS	—	—
Tananarive	—	116.3	232	19	14	PP	26	0	[-51]	—	61.5
Ottawa	—	117.2	49	e 14	34	-32	e 26	34	[-23]	e 44.5	—
Rio de Janeiro	—	117.6	135	e 16	31	?	(e 27	52)	?	e 27.8	—
Fordham	—	117.9	55	14	35	-34	i 25	34	[-88]	—	—
Andijan	—	117.8	304	e 17	53	[-47]	—	—	—	—	—
Cape Town	—	119.2	198	15	53?	+38	25	27	[-104]	72.5	—
San Juan	—	119.4	81	e 14	31	-45	i 29	29	PS	—	—
Harvard	—	120.1	53	e 17	35	[-71]	e 26	34	[-43]	—	—
Tashkent	—	121.2	304	e 18	31	[-17]	—	—	—	—	—
Johannesburg	—	122.6	211	19	55	PP	24	19	[-99]	25.9	—
Ekaterinburg	—	125.4	324	e 14	59	-46	24	31	[-95]	—	53.3
Scoresby Sund	—	131.9	9	e 15	43	-35	i 25	7	[-78]	—	—
Baku	—	134.8	304	i 18	40	[-35]	—	—	—	—	—
Reykjavik	—	137.5	14	e 18	44	[-34]	e 32	26	SKSP	—	—
Kucino	—	137.5	328	21	38	PKS	i 29	6	?	—	48.8
Pulkovo	—	138.2	337	e 16	2	-47	25	16	?	—	48.7
Tiflis	—	138.4	307	e 18	27	[-52]	—	—	—	70.5	—
Helsingfors	—	139.7	341	i 18	41	[-40]	e 25	39	SKS	e 48.5	—
Uppsala	—	141.9	345	i 18	48	[-36]	—	—	—	e 52.5	65.0
Bergen	—	143.4	355	18	56	[-33]	—	—	—	60.5	—
Theodosia	—	144.0	315	i 18	44	[-47]	32	32	?	—	52.5
Simferopol	—	144.9	315	18	43	[-51]	—	—	—	49.7	—
Yalta	—	145.0	314	18	44	[-50]	32	39	SKSP	—	—
Königsberg	—	145.4	338	i 18	56	[-39]	—	—	—	—	—
Kaara	N.	146.6	294	i 19	4	[-33]	—	—	—	53.6	61.7
Lund	—	146.7	346	i 19	1	[-36]	i 32	23	PSKS	—	—
Dyce	—	146.8	1	i 18	58	[-39]	—	—	—	—	—
Copenhagen	—	146.9	347	i 19	0	[-37]	—	—	—	—	—
Edinburgh	—	148.1	3	i 19	11	[-28]	—	—	—	42.5	61.1
Hamburg	—	149.3	348	i 18	58	[-43]	e 29	42	[-36]	—	68.5
Potsdam	—	149.8	343	i 19	6	[-36]	—	—	—	e 45.5	—
Stonyhurst	—	150.1	2	e 19	5	[-37]	—	—	—	—	61.8
Bidston	—	150.6	3	i 19	6	[-37]	32	46	SKSP	46.2	62.2
Helwan	—	150.9	289	e 18	59	[-44]	25	21	?	—	36.4
Göttingen	—	151.3	346	i 19	4	[-39]	e 32	43	SKSP	e 44.5	—
Prague	—	151.4	339	e 19	3	[-40]	—	—	—	e 52.5	75.5
Jena	—	151.4	344	i 19	11	[-32]	e 33	25	SKSP	e 38.5	53.5
Budapest	—	151.7	331	i 19	7	[-37]	29	0	?	51.5	63.0
Cheb	—	152.0	343	e 19	4	[-40]	e 27	34	?	e 45.5	54.5
Vienna	—	152.2	335	i 19	4	[-40]	30	1	[-34]	i 46.1	74.5

Continued on next page.

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	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	°	m.	s.	m.	s.	m.	m.
Oxford	—	152-3	1	i 19	11	—	—	—	—
Kew	—	152-6	0	i 19	6	e 29	16	{-81}	41-5
Uccle	—	152-9	353	i 19	12	—	—	—	e 46-5
Belgrade	—	153-0	326	e 19	6	—	—	—	e 47-3
Karlsruhe	—	154-0	346	i 19	9	—	—	—	—
Stuttgart	—	154-1	345	19	7	—	—	—	e 55-5
Zagreb	—	154-3	332	i 19	11	e 33	10	SKSP	e 62-0
Strasbourg	—	154-6	347	i 19	0	—	—	?	e 50-5
Innsbruck	—	154-8	340	19	42	—	—	PP	—
Laibach	—	154-8	334	e 19	30	e 31	10	?	e 51-6
Paris	—	155-1	355	i 19	43	—	—	—	35-5
Triest	—	155-4	335	i 19	12	—	—	—	—
Venice	—	156-1	337	i 19	10	i 30	22	{-35}	—
Besançon	—	156-2	349	e 19	12	—	—	—	—
Florence	—	157-9	336	i 19	16	34	1	SKSP	48-5
Puy de Dôme	—	158-0	353	19	13	—	—	—	e 36-5
Grenoble	—	158-2	348	e 19	21	—	—	—	40-5
Naples	N.	158-9	327	e 19	25	e 27	0	?	51-5
Bagnères	—	160-9	358	e 20	19	—	—	—	54-9
Serra do Pilar	—	161-7	19	19	23	—	—	—	—
Barcelona	—	162-4	353	e 19	12	—	—	—	e 37-0
Tortosa	N.	163-2	357	19	21	—	31	26	?
Toledo	—	163-9	9	i 19	19	i 34	0	SKSP	e 54-6
Alicante	—	165-7	359	i 19	21	e 31	47	?	e 37-8
Granada	—	166-6	10	19	11	38	2	?	78-2
San Fernando	—	166-7	19	19	20	33	41	?	55-5
Algiers	—	166-8	347	i 19	20	i 30	59	{-55}	50-5
Malagar	—	166-9	13	19	17	34	50	SKSP	58-8
Almeria	—	167-1	6	i 19	22	31	2	{-54}	e 51-6

Additional readings and note:—

New Plymouth i = +4m.3s., +4m.37s., and +5m.0s.
 Takaka i = +4m.25s., +5m.10s., +5m.59s., and +8m.31s.
 Wellington i = +3m.45s., +4m.29s., +4m.38s., and +8m.12s.
 Seatoun i = +4m.12s., e = +4m.49s.
 Christchurch i = +5m.26s., +5m.53s., +8m.27s., and +9m.30s.
 Riverview iZ = +5m.14s., iEZ = +6m.34s., and +7m.42s., iN = +7m.47s., iE = +8m.35s., and +8m.52s., iN = +11m.47s., iE = +12m.16s., iN = +12m.27s.
 Sydney PP = +5m.7s., PS = +7m.19s.
 Melbourne i = +7m.22s., +8m.21s., and 9m.5s.
 Adelaide i = +8m.56s. and +10m.23s., iSS = +12m.33s., i = +14m.54s. and +15m.51s.
 Nagoya P = +10m.51s.
 Batavia iN = +11m.29s.
 Osaka i = +13m.28s.
 Kobe iPPPE = +11m.55s., ePPN = +13m.55s., iE = +20m.24s., eN = +23m.11s., SS = +22s., eZ = +23m.25s.
 Toyooka iPP = +10m.57s., eSZ = +19m.38s., iSSE = +20m.20s.
 Taihoku PP = +14m.16s., SS = +24m.52s., SSS = +28m.46s.
 Ootomari S = +15m.41s.
 Zi-ka-wel iZ = +13m.39s. = PP - 17s. and +14m.29s., iE = +14m.33s., iZ = +24m.17s., +27m.31s., and +32m.55s.
 Hong Kong PP = +13m.40s., ? = +17m.9s., SS = +25m.11s., SSS = +29m.4s.
 Sikka readings have been diminished by 2m.
 Branner eEN = +16m.44s.
 Berkeley iZ = +11m.55s., eZ = +12m.28s., +13m.57s., and +14m.48s., eSN = +15m.21s., iN = +16m.55s., eLN = +21m.19s., iE = +21m.22s., and +25m.48s.
 Lick iE = +11m.59s., eN = +13m.59s. = PP - 35s., iEN = +15m.47s.
 Ukiah i = +13m.10s., +14m.50s., and +25m.49s.
 Pasadena iZ = +11m.57s., iNE = +11m.58s., iZ = +12m.1s., ipPZ = +14m.2s. = PP - 36s., ePPE = +15m.23s., isPZ = +15m.0s., iZ = +15m.14s., and +16m.47s., eE = +21m.11s., eE = +21m.26s., iZ = +21m.48s., eN = +22m.3s., ePSZ = +22m.34s., ePSN = +22m.38s., iE = +25m.9s., iSSE = +27m.44s.
 Riverside iEN = +21m.17s., eEN = +22m.40s.
 Chiufeng i = +14m.11s., iPP = +15m.16s., PPPE? = +16m.17s., PS = +21m.34s., PS? = +21m.46s., iS? = +22m.19s.
 Tucson ePP = +15m.13s.
 Victoria S = +15m.22s.

Continued on next page.

Seattle eSKS = +21m.57s., ePS = +24m.26s.
Sitka e = +14m.13s.
Bozeman ePP = +16m.45s., eSKS = +22m.25s., i = +24m.38s., and +28m.1s.
Denver eN = +14m.26s., ePPN = +14m.42s., iPPN = +16m.35s., iN = +18m.17s., +19m.55s., +21m.24s., and +21m.49s., eN = +23m.21s., iEN = +24m.44s.
Calcutta S = +18m.40s.
Irkutsk i = +15m.12s., ePP = +16m.10s.
Colombo iP = +17m.25s.
La Paz iPPZ = +15m.27s., iPPE = +17m.53s., iPP = +19m.23s., isPP = +20m.29s., i = +26m.3s., iPS = +26m.59s., isS = +28m.19s., i = +29m.39s. and +30m.27s., SS = +32m.1s., iSS = +32m.7s., iSSS = +35m.4s.
Florissant iPPZ = +15m.37s., isPZ = +16m.34s., iPKP₂ = +17m.1s., iPPZ = +17m.51s., iPPZ = +19m.49s., isPPZ = +20m.21s., iPPZ₂ = +20m.49s., iPPZ₂ = +22m.33s., iSKKS = +24m.11s., iSPEN = +26m.32s., iPSEN = +27m.6s., iPSEN = +27m.36s., isSEN = +28m.31s., iP_cS₀PZ? = +29m.11s., iPKKPZ? = +30m.11s., iZ = +30m.21s., iSEN = +31m.31s., iPSSE = +33m.43s., iSSE = +35m.1s., iSSSEN = +36m.26s.
St. Louis iPP = +15m.37s., iPPE = +18m.4s., iPP = +19m.44s., isPPE = +20m.20s., iEN = +23m.58s., iSKKSEN = +24m.11s., isPEN = +26m.34s., iPSEN = +27m.11s., iPSE = +27m.37s., isSEN = +28m.34s., iE = +29m.43s.
Chicago e = +15m.47s., PP = +18m.21s., e = +20m.5s., iPPP = +21m.8s., iSKS = +24m.26s., iPS = +27m.5s., i = +28m.54s., and +30m.24s.
Columbia e = +20m.31s. and +24m.49s., ePS = +27m.31s., e = +29m.21s. and +30m.39s.
Ann Arbor iPP = +18m.49s., iSKS = +21m.37s., iPS = +24m.55s., iPSN = +25m.37s., i = +27m.43s., iN = +29m.25s., iSS = +30m.55s., iSSSE = +36m.55s.
Pittsburgh e = +16m.1s. and +17m.5s., PP = +18m.54s., e = +23m.46s., iPS = +28m.40s., i = +29m.38s. and +31m.6s.
Port au Prince PP = +19m.35s., PPP = +22m.53s., i = +25m.9s. and +27m.58s., PS = +29m.1s., PPS = +29m.59s., i = +30m.19s., SS = +34m.59s.
Toronto PKPEN = +17m.15s., iPPEN = +18m.9s., iPPPE = +21m.53s., iSSSEN = +34m.31s. ? ; T₀ = 16h.8m.45s.
Buffalo iPP = +16m.18s., isP = +17m.10s., iPP = +18m.19s., iSKKS = +25m.11s., isS = +29m.46s.
Georgetown ePP = +16m.22s., iPP = +19m.17s., ePPP = +21m.5s., PPP = +22m.1s., SS = +34m.43s., sSS = +37m.55s.
Tananarive PP = +20m.54s., iEN = +21m.58s., iE = +24m.3s., iN = +24m.6s., PS = +30m.22s., i = +31m.4s., iSS = +35m.57s., iEN = +44m.1s., N = +48m.31s. ?
Ottawa eN = +18m.11s. = PKP - 27s., eE = +18m.51s., +22m.15s., and +28m.19s., eN = +30m.16s., i = +31m.48s., eN = +35m.1s., eE = +35m.31s., e = +38m.19s.
Fordham iPKP = +18m.8s., iPP = +19m.34s., iPPS = +30m.23s., eSS = +35m.11s.
Cape Town PP? = +22m.11s., PPP = +23m.51s.; (no phase), +28m.14s., +28m.34s., +29m.15s., and +29m.55s., PS? = +31m.9s.; +34m.52s., SS = +38m.4s., SSS = +42m.54s.; +49m.34s.
San Juan e = +18m.4s. = PKP - 40s., ePP = +19m.43s.
Harvard ePP = +19m.49s., eS = +28m.31s., ePS = +29m.46s., iE = +31m.1s., and +32m.16s., iSS = +38m.31s.
Tashkent e = +13m.39s. and +16m.7s., i = +16m.53s.
Ekaterinburg i = +19m.58s., PPP = +21m.25s., PS = +28m.48s., SKSP = +29m.24s., SS = +35m.31s.
Scoresby Sund i = +18m.35s., eEZ = +20m.43s., iZ = +21m.2s., i = +21m.8s., iEN = +22m.8s., eEN = +22m.55s.
Baku i = +21m.26s.
Reykjavik e = +18m.52s., +18m.56s., e = +21m.8s., +21m.28s., +22m.28s., +25m.38s. and +43m.36s.
Kucino i = +24m.27s. and +34m.1s., SS = +38m.55s.
Pulkovo PP = +20m.51s., i = +21m.31s., PKS = +21m.44s., PS = +31m.21s.
Tiflis e = +18m.38s. and +21m.32s., i = +22m.24s., +24m.32s. and +27m.42s., e = +39m.21s. and +44m.14s.
Helsingfors iE = +19m.35s., iZ = +20m.58s., iE = +21m.14s., iPPZ = +21m.31s., ePPEN = +21m.40s., eE = +22m.2s., iPKSEN = +22m.22s., iPPPEN = +24m.31s., iSKSN = +26m.5s., eSKKSEN = +27m.41s., ePKSE = +29m.37s., iPKSN = +29m.41s., eE = +31m.3s., eSKSPN = +32m.1s., ePPP(Δ > 180°) = +34m.28s., ePPP = +34m.41s., eE = +36m.53s., eN = +37m.19s., eE = +38m.41s., eSSE = +39m.36s., eSSN = +39m.41s., eSKSPEN (Δ > 180°) = +40m.41s., eE = +42m.22s. and +42m.45s., eSSE = +45m.4s.
Uppsala i = +22m.6s., PPP = +24m.37s., SSSE = +43m.56s.
Königsberg +19m.1s., iZ = +19m.49s., +21m.6s., +22m.26s. = PP - 26s., +25m.24s. = PPP - 32s. and +26m.2s.
Lund i = +19m.5s., +19m.16s., and +21m.12s., e = +24m.49s., +28m.13s., +35m.25s.

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Copenhagen $i = +21m.11s.$, $e = +25m.43s.$ and $+35m.37s.$
 Edinburgh $i = +21m.28s.$, $+25m.19s.$, $+41m.14s.$ and $+41m.22s.$
 Hamburg $iZ = +21m.18s.$ and $+22m.59s.$ = PKS -27s., $iZ = +32m.18s.$, $iE = +37m.26s.$ and $+41m.12s.$, $iZ = +41m.16s.$
 Potsdam $iEN = +19m.13s.$, $+21m.21s.$, and $+22m.50s.$, $iE = +24m.45s.$, $+25m.7s.$, and $+41m.22s.$
 Stonyhurst $iSS? = +41m.32s.$, $iSSS? = +47m.22s.$
 Göttingen $iZ = +21m.15s.$, $iEZ = +22m.58s.$, $eEN = +36m.19s.$ and $+41m.43s.$
 Prague $ePP = +23m.19s.$
 Jena $iE = +21m.8s.$, $iNZ = +21m.15s.$, $iE = +21m.23s.$, $iZ = +22m.7s.$, $iN = +22m.13s.$, $eZ = +22m.35s.$, $eZ = +22m.58s.$, $iE = +23m.18s.$, $eN = +27m.25s.$ and $+28m.53s.$, $eZ = +29m.15s.$, $iN = +30m.0s.$, $e = +32m.43s.$, $eN = +35m.57s.$, $eE = +36m.2s.$
 Cheb $e = +19m.31s.$, $ePP = +21m.22s.$, $ePPP = +23m.3s.$, $ePS? = +29m.7s.$, $eSS = +32m.57s.$, $e = +36m.12s.$ and $+40m.16s.$
 Vienna $iEN = +21m.13s.$ and $+21m.59s.$, $PP = +23m.5s.$, $iPPP = +26m.5s.$, $iE = +26m.41s.$, $SKS = +29m.19s.$, $iN = +30m.43s.$ and $+31m.1s.$, $PS = +32m.3s.$, $PPS = +32m.59s.$, $SS = +37m.10s.$, $iE = +39m.14s.$, $PPP (\Delta > 130^\circ) = SSS = +42m.3s.$
 Kew $iPNZ = +21m.21s.$, $iSKSEN = +25m.58s.$, $iSPN = +36m.3s.$
 Uccle $iPKP = +21m.22s.$, $i = +23m.11s.$, $+26m.2s.$, $+26m.29s.$, $+27m.6s.$, and $+27m.34s.$, $iSS = +42m.8s.$
 Belgrade $i = +19m.9s.$, $+19m.34s.$, $+19m.41s.$ and $+21m.19s.$, $e = +22m.29s.$, and $+23m.8s.$, $i = +23m.17s.$, $ePP = +25m.57s.$, $e = +26m.46s.$, $+34m.25s.$, and $+36m.14s.$
 Karlsruhe $i = +23m.20s.$
 Stuttgart $i = +19m.27s.$ and $+19m.52s.$, $ePP = +21m.11s.$, $ePP = +23m.15s.$, $e = +29m.16s.$, $ePS = +36m.28s.$, $e = +47m.25s.$
 Zagreb $i = +23m.21s.$, $e = +26m.22s.$, $+27m.54s.$, $+29m.16s.$, $+36m.22s.$, $+40m.22s.$, $+46m.1s.$, and $+54m.13s.$
 Strasbourg $iPKP = +19m.34s.$, $i = +21m.31s.$, $SKP = +23m.19s.$, $iPP = +23m.40s.$, $i = +24m.31s.$, $PSKS = +34m.0s.$, $e = +39m.1s.$, $iSS = +42m.1s.$
 Innsbruck $i = +21m.19s.$
 Laiback $e = +22m.50s.$ and $+26m.12s.$
 Paris $PP = +22m.38s.$
 Trieste $i = +19m.55s.$ and $+25m.6s.$
 Venice $IP = +19m.13s.$
 Florence $i = +21m.1s.$, $iPP = +23m.31s.$, $PPP = +29m.1s.$
 Grenoble $iPP = +20m.3s.$, $i = +21m.21s.$, $ePPP? = +22m.57s.$, $iPPPPP? = +26m.21s.$, $e = +32m.40s.$, $iSS? = +34m.6s.$, $e = +36m.52s.$
 Bagnères $e = +21m.18s.$, $+24m.57s.$, and $+34m.1s.$
 Barcelona $PS = +28m.30s.$, $SSS = +34m.3s.$
 Toledo $i = +19m.38s.$ and $+20m.22s.$, $PP = +20m.34s.$, $PPP = +24m.6s.$, $i = +24m.11s.$, $SKS = +27m.4s.$, $PS = +31m.26s.$
 Granada $iPKP = +20m.28s.$, $i = +24m.29s.$, $PP = +26m.17s.$, $PPP = +30m.35s.$
 San Fernando $PP = +27m.19s.$, $PS = +35m.31s.$
 Algiers $i? = +20m.31s.$ and $+22m.59s.$, $PP? = +24m.15s.$, $PSS? = +34m.5s.$, $SS = +38m.6s.$, $SSS = +45m.20s.$
 Malaga $PKP = +20m.31s.$, $SKP = +24m.27s.$, $PKS = +27m.54s.$, $SKKS = +31m.46s.$, $i = +33m.20s.$, $SS = +44m.29s.$, $i = +47m.50s.$, $SSS = +51m.48s.$

May 26d. 22h. 21m. 43s. Epicentre $24^\circ 8'S. 180^\circ$ N.1.

A = - .908, B = .000, C = - .419; D = .000, E = +1.000;
 G = + .419, H = .000, K = - .908.

A depth of focus 0.065 has been assumed.

	Corr. for Focus	Δ	Az.	P.		O-C.		S.	O-C.		L.	M.
				m.	s.	m.	s.		m.	s.		
Suva	-0.3	6.8	347	1	17?	-15	-	-	-	-	-	-
Apia	-1.4	13.4	37	e 3	10	+22	i 5	42	+39	-	-	-
New Plymouth	-1.8	15.2	198	3	15	+8	5	50	+13	-	-	-
Wellington	-2.1	17.1	194	3	27	-1	6	11	-4	-	-	-
Christchurch	-2.6	19.7	196	3	52	-3	7	0	-4	-	-	-
Riverview	-3.5	26.6	243	i 4	56	-6	i 8	44	-23	-	-	-
Adelaide	-4.7	37.0	243	e 6	28	+3	i 11	23	-17	-	-	15.0
Amboina	-6.2	54.0	284	8	25	-10	15	15	-15	-	-	-
Manila	-7.2	69.7	299	10	19	-3	18	43	-5	-	-	-
Batavia	-7.4	72.2	272	e 10	36	-1	i 19	5	-12	-	-	-

Continued on next page.

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	Corr. for Focus	Δ	Az.	P.		O-C.	S.		O-C.	L.	M.
				m.	s.		m.	s.			
Oiwake	-7.4	72.5	326	10	40	+ 1	19	19	- 2	—	—
Gihu	-7.4	72.7	325	10	41	0	19	24	0	—	—
Osaka	-7.4	72.9	323	10	10	-32	(19	7)	-19	19.1	20.5
Nagano	-7.4	73.0	326	10	42	0	19	28	+ 1	—	—
Sumoto	-7.4	73.0	322	e 12	35	PP	e 19	24	- 3	—	—
Kobe	-7.4	73.1	323	10	41	- 2	19	25	- 4	—	—
Santa Barbara	-7.8	82.3	47	e 11	40	+ 3	e 21	19	+ 5	—	—
Berkeley	-7.8	82.8	43	e 11	39	- 1	—	—	—	—	—
Lick	-7.8	82.9	43	e 11	40	- 1	—	—	—	—	—
Pasadena	-7.8	83.1	48	i 11	41	- 1	e 21	25	+ 1	—	—
Mount Wilson	-7.8	83.2	48	e 11	42	- 1	e 21	27	+ 2	—	—
Riverside	-7.8	83.5	48	e 11	43	- 1	e 21	17	-11	—	—
Medan	-7.8	83.6	277	e 12	9	+14	i 21	8	-21	—	—
Haiwee	N. -7.9	84.4	46	e 11	50	+ 1	e 21	25	-12	—	—
Phu-Lien	-7.9	84.6	296	—	—	—	20	17?	-82	—	—
Tinemaha	-7.9	84.8	46	e 11	50	- 1	e 21	24	-18	—	—
Tucson	-8.0	87.1	52	12	4	+ 1	22	8	+ 2	—	—
Irkutak	—	101.2	323	e 15	17?	?	e 22	46	?	—	—
St. Louis	—	105.0	54	—	—	—	i 23	59	[-51]	—	—
Bombay	—	112.9	281	e 20	1	PP	—	—	—	—	—
Pittsburgh	—	113.1	54	e 18	26	[- 1]	e 30	37	?	—	—
Ottawa	E. -	117.1	49	e 22	1	?	e 25	18	[-23]	—	—
San Juan	—	118.7	81	—	—	—	i 23	59	?	e 35.3	—
Andijan	—	118.8	304	e 9	28	?	—	—	—	—	—
Ekaterinburg	—	126.4	324	i 18	6	[-54]	i 24	26	?	48.3	—
Scoresby Sund	—	132.5	9	18	21	[-50]	21	51	PPP	—	—
Baku	—	135.8	304	e 18	28	[-48]	—	—	—	e 53.8	—
Kucino	—	138.5	328	e 21	17	PP	—	—	—	e 51.3	65.7
Pulkovo	—	139.2	337	i 18	35	[-45]	i 22	8	PPP	—	—
Tiflis	—	139.5	307	e 22	7	PKS	e 31	23	PS	—	—
Helsingfors	—	140.6	341	e 19	36	[+14]	—	—	—	—	—
Theodosia	—	145.1	315	18	44	[-50]	—	—	—	—	—
Simferopol	—	145.9	315	18	44	[-52]	—	—	—	—	—
Yalta	—	146.0	314	e 18	45	[-51]	—	—	—	—	—
Ksara	E. -	147.6	294	e 18	52	[-46]	e 20	59	?	—	—
Lund	—	147.6	346	18	52	[-46]	21	1	?	—	—
Copenhagen	—	147.8	347	18	47	[-52]	20	57	?	—	—
Edinburgh	—	148.8	3	22	17?	PP	—	—	—	—	—
Hamburg	z. -	150.2	348	e 18	51	[-51]	e 20	59	?	—	—
Potsdam	—	150.7	344	e 18	53	[-50]	e 21	0	?	—	—
De Bilt	z. -	152.4	353	e 18	54	[-51]	e 21	4	?	—	—
Vienna	—	153.2	335	i 18	55	[-51]	28	56	?	—	64.3
Kew	—	153.3	0	e 18	56	[-50]	—	—	—	—	—
Uccle	—	153.7	354	i 18	57	[-50]	i 21	3	?	—	—
Stuttgart	—	155.0	346	18	58	[-50]	e 29	2	?	—	—
Strasbourg	—	155.4	348	i 18	59	[-49]	—	—	—	e 38.3	—
Paris	—	155.9	356	i 18	58	[-51]	—	—	—	38.3	—
Zurich	—	156.4	345	e 19	0	[-49]	—	—	—	—	—
Chur	—	156.6	343	e 18	51	[-59]	—	—	—	—	—
Neuchatel	—	157.1	348	e 18	57	[-53]	—	—	—	—	—
Florence	—	158.9	337	i 19	5	[-47]	21	17	?	—	50.7
Toledo	—	164.5	12	19	8	[-51]	e 21	21	?	—	—
Granada	—	167.2	13	i 19	11	[-50]	26	6	?	—	—
Malaga	—	167.5	17	e 19	6	[-56]	e 20	46	?	—	84.8

Additional readings:—

Riverview iE = +7m.25s., iN = +11m.40s., iE = +11m.44s., iEN = +14m.48s.

Amboina i = +15m.26s.

Kobe eE = +20m.57s.

Medan i = +21m.51s.

Irkutak e = +26m.17s. ? = PS - 39s.

St. Louis iE = +28m.20s., eE = +32m.13s. = SS - 58s.

Pittsburgh e = +23m.14s. and +27m.29s.

Ottawa eN = +26m.26s., eE = +31m.40s., eN = +34m.53s.

Continued on next page.

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San Juan $e = +25m.24s. = SKS - 22s.$ and $+31m.55s.$
 Ekaterinburg $eP = +9m.44s., e = +13m.31s., i = +21m.27s.,$ and $+26m.12s.,$
 $e = +36m.27s.$
 Scoresby Sund $e = +23m.55s.$
 Baku $e = +21m.11s. = PP - 44s.$ and $+38m.6s.$
 Kucino $e = +12m.57s., +16m.17s., +22m.5s., +25m.9s., +27m.26s.,$
 $+27m.53s.$ and $+38m.59s.$
 Pulkovo $e = +10m.32s.$ and $+14m.48s., i = +21m.35s. = PP - 41s., +24m.12s.,$
 and $+27m.31s.$
 Tiflis $e = +12m.44s., +24m.26s.,$ and $+25m.29s.$
 Helsingfors $eZ = +19m.50s., eE = +22m.29s.$ and $+24m.17s., eNZ = +24m.21s.,$
 $eZ = +27m.21s.$ and $+27m.38s., eEN = +27m.41s., eEZ = +29m.30s.$
 Hamburg $+22m.59s. = PP - 23s.$
 Potsdam $iE = +21m.15s., eN = +28m.17s.?, iN = +28m.39s.$
 De Bilt $eZ = +22m.32s. = PP - 42s.$
 Vienna $i = +21m.17s., PP = +23m.1s.$
 Uccle $i = +19m.24s.$
 Stuttgart $iZ = eEN = +19m.28s., epPZ = +21m.5s., eNZ = +21m.28s., ePP =$
 $+23m.3s.$
 Strasbourg $i = +19m.29s., +21m.47s.,$ and $+23m.16s. = PP - 35s.$
 Paris $i = +19m.30s., PP = +21m.7s.$
 Florence $i = +19m.48s.$
 Toledo $i = +20m.10s.$ and $+23m.59s. = PP - 40s.$
 Granada $iPP = +24m.13s.$
 Long waves were also recorded at Hong Kong.

May 26d. Readings also at 0h. (near Batavia and Malabar), 6h. (Almata), 9h. (near Manila), 11h. (Brønner), 13h. (Paris, Stuttgart, Sumoto, and near Nagoya), 16h. (Kobe, Osaka, Batavia, Pasadena (2), Mount Wilson (2), Riverside (2), Haiwee (2), Tinemaha (2), Wellington (2), and near Tyosi), 17h. (Tinemaha, Haiwee, Pasadena, and La Paz), 18h. (Tinemaha, Haiwee, Riverside, Pasadena, and Wellington), 19h. (Hastings and near Sumoto), 20h. (Simferopol, Ekaterinburg, Tiflis, Irkutsk, Kobe, near Sumoto, also Manila, and near Ambolna), 21h. (Simferopol, New Plymouth, and near Wellington), 22h. (Baku, Tiflis, and Ksarā: Levant shock earlier than the Pacific earthquake tabulated above. A number of readings which have been included with those of the greater shock may belong here, and in particular times given in the additional readings for Ekaterinburg, Kucino, Pulkovo, and Vienna definitely do. Except, however, for those which are obviously too early, it is not possible to separate the phases).

May 27d. 1h. 29m. 36s. Epicentre $24^{\circ}8'S. 180^{\circ}$ (as on 26d.).

R.3.

The depth of focus 0.065 is retained.

	Corr. for Focus	Δ	Az.	P.		O-C.	S.	O-C.	L.	M.
				m.	s.					
Apia	-1.4	13.4	37	e 3	25	+37	5 57	+54	—	—
New Plymouth	-1.8	15.2	198	2	24?	?	—	—	—	—
Wellington	-2.1	17.1	194	3	28	0	6 2	-13	—	—
Christchurch	-2.6	19.7	196	3	52	-3	6 43	-21	—	—
Riverview	-3.5	26.6	243	i 4	54	-8	i 8 32	-35	e 12.5	—
Sydney	-3.5	26.6	243	e 3	6	?	—	—	8.4	9.2
Melbourne	-4.2	32.4	237	i 5	40	-9	i 10 1	-34	—	—
Adelaide	-4.7	37.0	243	e 6	18?	-7	i 11 8	-32	—	—
Manila	-7.2	69.7	299	10	19	-3	19 24	+36	—	—
Berkeley	-7.8	82.8	43	e 11	42	+2	—	—	—	—
Pasadena	-7.8	83.1	48	i 11	45	+3	—	—	—	—
Mount Wilson	-7.8	83.2	48	e 11	45	+2	—	—	—	—
Riverside	-7.8	83.5	48	e 11	46	+2	e 21 31	+3	—	—
Median	-7.8	83.6	277	e 11	47	+2	i 21 40	+11	—	—
Haiwee	n. -7.9	84.4	46	e 11	52	+3	e 21 43	+6	—	—
Tinemaha	-7.9	84.8	46	e 11	53	+2	e 21 43	+1	—	—
Irkutsk	—	101.2	323	e 17	24?	PP	—	—	e 34.4	—
St. Louis	—	105.0	54	—	—	—	e 23 47	[-63]	—	—
Almata	—	115.9	309	e 22	24	?	—	—	—	—
Andijan	—	118.8	304	e 19	20	PP	—	—	—	—

Continued on next page.

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	Corr. for Focus	Δ	Az.	P.		O-C.	S.		O-C.	L.	M.
				m.	s.		m.	s.			
Ekaterinburg	°	126.4	324	18	6	[-54]	e 24	12	[-117]	41.4	—
Scoresby Sund	—	132.5	9	20	50	PP	—	—	—	—	—
Baku	—	135.8	304	e 20	57	PP	e 24	15	?	—	—
Kucino	—	138.5	328	e 21	6	PP	e 27	16	{-119}	e 48.0	—
Pulkovo	—	139.2	337	i 21	7	PP	i 27	18	{-121}	—	—
Tifis	—	139.5	307	e 20	14	?	—	—	—	—	—
Theodosia	—	145.1	315	e 18	43	[-51]	—	—	—	—	—
Simferopol	—	145.9	315	e 18	44	[-52]	—	—	—	—	—
Yalta	—	146.0	314	e 18	47	[-49]	—	—	—	—	—
Ksara	N.	147.6	294	e 18	51	[-47]	—	—	—	—	—
Lund	—	147.6	346	18	54	[-44]	—	—	—	—	—
Copenhagen	—	147.8	347	18	48	[-51]	21	19	PP	—	—
De Bilt	Z.	152.4	353	e 22	56	PP	—	—	—	—	—
Stuttgart	Z.	155.0	346	e 18	58	[-50]	—	—	—	—	—
Paris	—	155.9	356	23	24?	PP	—	—	—	—	—

Additional readings :-

- Melbourne i = +13m.17s.
 - Riverside eEN = +21m.10s.
 - Medan i = +20m.52s.
 - Haiwee eN = +21m.18s.
 - St. Louis eEN = +27m.42s.
 - Ekaterinburg e = +20m.3s. and +21m.25s., i = +25m.59s. = SKKS -119s. and +27m.16s.
 - Kucino e = +38m.38s.
 - Pulkovo e = +39m.7s.
 - Tifis e = +21m.7s. and +21m.57s.
 - Stuttgart eZ = +19m.30s.
- Long waves were also recorded at Suva and Uccle.

May 27d. 5h. 55m. 12s. Epicentre 24°-8S. 180° (as at 1h.). X.

The depth of focus 0.065 is retained.

	Corr. for Focus	Δ	Az.	P.		O-C.	S.		O-C.
				m.	s.		m.	s.	
Apia	-1.4	13.4	37	e 2	56	+ 8	—	—	—
New Plymouth	-1.8	15.2	198	2	48?	-19	—	—	—
Wellington	-2.1	17.1	194	3	41	+34	6	30	+53
Pasadena	-7.8	83.1	48	i 11	37	- 5	—	—	—
Mount Wilson E.	-7.8	83.2	48	e 11	38	- 5	—	—	—
Riverside	-7.8	83.5	48	e 11	40	- 4	—	—	—
Haiwee	N. -7.9	84.4	46	e 11	48	- 1	—	—	—
Timemaha	-7.9	84.8	46	e 11	46	- 5	—	—	—

Long waves were recorded at Suva.

May 27d. 9h. 5m. 2s. Epicentre 30°-5S. 70°-0W. (as on 1926 Oct. 11d.). X.

A = +.295, B = -.810, C = -.508.

	Δ	Az.	P.		O-C.	S.		O-C.	L.	M.
			m.	s.		m.	s.			
Santiago	3.0	191	0	43	0	1	28	S*	1.5	1.8
La Plata	11.1	117	2	39	+ 3	4	46	+ 5	6.0	—
Sucre	12.3	22	2	54	+ 2	—	—	—	—	—
La Paz	14.1	7	e 3	11	- 6	5	42	-11	6.5	6.7

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May 27d. 10h. 42m. 15s. Epicentre 45°·2N. 25°·5E. N.3.

A = +·636, B = +·303, C = +·710; D = +·431, E = -·903;
G = +·640, H = +·305, K = -·705.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	m. s.	m. s.	s.	m. s.	s.	m.	m.
Belgrade	3·6	266	e 1 15	P _g	e 1 35	+ 3	—	4·9
Lemberg	4·7	349	e 1 36	P _g	e 2 57	?	—	4·4
Budapest	4·9	300	e 1 39	P _g	—	—	3·2	5·7
Simferopol	6·1	90	1 24	- 3	—	—	—	—
Yalta	6·2	93	1 22	- 6	3 11	S _g	7·8	—
Zagreb	6·6	279	(1 36)	+ 2	(2 56)	+ 8	—	—
Vienna	6·9	300	e 2 21	P _g	6 41	?	—	8·8
Theodosia	7·0	88	e 1 20	- 19	3 3	+ 4	7·2	—
Triest	8·2	277	e 3 54	S	e 5 3	?	—	—
Prague	8·9	307	e 3 39	S	(e 3 39)	- 7	—	5·8
Cheb	10·0	304	—	—	e 4 45?	+ 32	5·8	6·8
Florence	10·2	267	e 2 15	- 9	—	—	—	5·0
Stuttgart	11·6	294	—	—	e 5 45?	+ 52	e 6·9	10·2
Zurich	11·9	287	e 2 35	- 12	—	—	—	—
Strasbourg	12·6	292	—	—	e 4 45?	- 32	—	9·8
Neuchatel	12·9	285	e 3 17	+ 16	—	—	—	—
Kucino	13·1	33	—	—	e 5 3	- 26	e 7·1	9·1
Tiflis	14·4	97	e 4 56	?	e 6 22	+ 21	11·3	13·7
Pulkovo	14·8	9	3 25	- 1	e 6 1	- 9	7·8	8·4
De Bilt	15·0	305	e 3 45?	+ 17	e 6 48	+ 33	e 8·2	9·1
Helsingfors	15·0	359	—	—	e 6 30	+ 15	e 35·8	—
Upsala	15·4	345	—	—	e 6 27	+ 3	—	10·8
Baku	18·5	96	—	—	e 8 28	+ 52	e 11·8	—
Oxford	18·8	300	—	—	e 8 9	+ 27	—	—
Ekaterinburg	24·6	49	e 5 16	0	e 9 42	+ 8	12·8	15·4

Additional readings and note:—

Belgrade e = +1m.18s., ePPS = +2m.0s., e = +2m.4s.

Zagreb e = (+2m.24s.); all readings have been diminished by 1m.

Vienna PPP = +3m.20s. = S* - 3s., I = +3m.43s., +3m.59s., and +4m.37s.,

PcP = +6m.7s., SS = +7m.10s., SSS? = +7m.32s.

Cheb e = +5m.45s.? and +8m.3s.

Kucino e = +6m.49s.

Tiflis e = +6m.56s.

Helsingfors eN = +6m.33s., eEN = +7m.47s., eN = +8m.23s., eEN = +9m.41s.,

eE = +11m.49s. and +13m.58s., eN = +25m.48s.

Long waves were also recorded at Irkutsk, Scoresby Sund, and other European stations.

May 27d. Readings also at 0h. (Amboina), 1h. (Strasbourg), 2h. (Zurich), 3h. (Kobe), 6h. (Tiflis), 8h. (Apia), 10h. (Sucre and near La Paz), 11h. (Rio de Janeiro and San Juan), 12h. (Baku, Ekaterinburg, Bombay, Batavia, and Manila), 13h. (Tiflis and near Tananarive), 14h. (Tiflis), 16h. (near Matuyama), 22h. (near La Paz), 23h. (Wellington).

May 28d. 2h. 21m. 25s. Epicentre 29°·2N. 131°·3E. N.1.

Probable error of epicentre $\pm 0^{\circ}·27$ (given by Tokyo).

A = -·576, B = +·656, C = +·488; D = +·751, E = +·660;
G = -·322, H = +·367, K = -·873.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	m. s.	m. s.	s.	m. s.	s.	m.	m.
Nako	1·8	243	0 26	0	0 51	+ 5	—	—
Miyazaki	2·7	2	0 47	P _g	1 26	S _g	—	—
Unzendake	3·6	346	1 3	P _g	1 56	S _g	—	—
Kumamoto	3·7	351	1 0	P _g *	1 52	S _g *	—	—
Nagasaki	3·7	341	1 2	P _g *	1 51	S _g *	—	2·2

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Simidu	3-9	21	0 58	+ 2	1 48	+ 8	—	—
Ooita	4-0	4	1 5	+ 8	1 58	S*	—	—
Tomie	4-1	327	1 6	+ 8	3 1	?	—	—
Naha	4-4	228	0 53	-10	1 39	-14	—	—
Hukuoka	4-4	350	1 11	+ 8	2 11	S*	—	3-7
Koti	4-8	23	1 10	+ 2	2 11?	+ 8	4-1	4-8
Hanada	5-7	7	1 28	+ 7	2 38	+13	—	—
Sumoto	6-0	30	1 1 29	+ 4	3 49	?	5-2	5-6
Kobe	6-4	29	1 34	+ 3	e 4 11	L	(4-2)	5-6
Osaka	6-6	32	1 36	+ 2	1 2 40	- 8	3-2	4-9
Kyoto	6-9	32	1 43	+ 5	—	—	—	—
Toyoaka	7-0	25	1 42	+ 3	e 4 35	?	5-7	6-7
Kameyama	7-2	36	1 44	+ 2	4 51	?	—	—
Nagoya	7-6	37	1 1 52	+ 4	2 38	P*	6-1	—
Gihu	7-7	35	1 53	+ 4	3 27	+11	—	—
Isigakizima	8-0	234	1 45	- 8	5 8	?	—	—
Hatidiyozima	8-3	60	1 58	0	3 49	+18	—	—
Misima	8-8	46	2 3	- 2	4 2	+18	—	—
Zi-ka-wei	8-8	285	1 2 7	+ 2	3 59	+15	5-3	7-6
Keizyo	9-1	338	2 19	+10	4 39	S*	—	—
Zinsen	9-2	335	2 18	+ 8	4 9	+15	—	—
Yokohama	9-4	46	2 17	+ 4	—	—	—	—
Oiwake	9-4	39	2 15	+ 2	5 38	?	—	—
Tokyo	9-6	45	2 17	+ 1	—	—	—	—
Titizima	9-8	99	2 5	-13	3 46	-22	—	—
Kakioka	10-2	44	2 25	+ 1	5 41	?	—	—
Tyosi	10-4	48	(2 29)	+ 3	2 29	P	—	—
Mizusawa	12-8	36	3 2	+ 3	6 18	?	7-5	—
Chiufeng	16-5	315	e 3 7	-41	e 7 14	+24	8-7	10-7
Hong Kong	16-8	250	3 41	-11	(7 7)	+10	7-1	12-1
Manila	17-5	215	3 49	-11	7 11	- 2	8-9	—
Otomari	19-6	24	4 27	+ 2	8 16	+18	11-5	13-7
Phu-Lien	23-8	255	e 5 4	- 4	e 9 17	- 2	12-1	—
Irkutsk	30-5	327	6 14	+ 5	e 10 56	-16	14-6	20-2
Calcutta	39-0	270	6 50	-34	13 20	- 1	19-7	24-6
Medan	40-1	237	e 7 31	- 2	—	—	—	—
Batavia	42-5	218	e 7 45	- 8	—	—	—	—
Dehra Dun	45-8	286	8 15	- 4	15 25	+23	24-6	26-6
Andijan	48-7	300	e 8 43	+ 2	e 15 54	+11	26-5	—
Hyderabad	49-5	269	8 46	- 1	15 46	- 8	23-5	30-5
Tashkent	51-0	302	e 9 1	+ 2	i 16 19	+ 4	—	—
Colombo	53-2	256	13 3	?	16 53	+ 8	20-8	27-1
Kodaikanal	53-6	262	9 20	+ 2	16 52	+ 2	28-8	33-4
Bombay	53-8	273	9 22	+ 2	16 57	+ 4	27-8	33-1
Ekaterinburg	55-5	322	i 9 34	+ 2	i 17 24	+ 8	24-6	36-2
Adelaide	64-6	173	—	—	e 18 15	-60	33-6	39-1
Baku	65-5	304	e 10 43	+ 1	i 19 35	+ 9	33-1	44-1
Riverview	65-8	162	—	—	e 20 41	(+ 8)	e 32-7	38-6
Kucino	68-0	323	10 56	- 2	i 19 58	+ 1	31-4	43-9
Melbourne	68-2	168	—	—	e 19 38	-21	33-3?	—
Tiflis	68-7	307	11 4	+ 1	20 10	+ 5	36-1	43-3
Pulkovo	70-3	329	i 11 11	- 2	i 20 25	0	32-6	44-2
Heisingtors	72-5	331	i 11 19	- 7	20 48	- 3	e 36-6	—
Theodosia	73-6	312	e 11 32	0	e 21 4	0	36-6	—
Simferopol	74-5	312	11 35	- 2	—	—	38-9	—
Yalta	74-6	312	11 38	0	21 18	+ 3	38-6	—
Upsala	75-8	332	e 11 43	- 2	e 21 29	0	e 39-6	50-4
Königsberg	77-2	326	e 21 44	S	(e 21 44)	- 1	e 43-6	50-8
Ksara	78-2	302	e 12 3	+ 4	21 57	0	41-6	—
Scoresby Sund	78-5	351	11 59	- 1	22 3	+ 4	38-6	—
Bergen	80-2	336	—	—	23 19	PS	43-6	—
Lund	80-2	330	—	—	22 15	- 3	38-6	—
Copenhagen	80-4	330	i 12 9	- 1	22 20	0	38-6	—
Budapest	82-2	320	12 15	- 4	22 30	- 9	41-6	45-6
Potsdam	82-3	328	i 12 23	+ 3	i 22 41	+ 1	e 45-6	47-6

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ukiah	82-7	49	—	—	e 22 42	- 2	—	—
Hamburg	82-9	329	e 12 26	+ 3	e 22 41	- 5	e 44-2	47-3
Prague	83-1	325	e 11 28	-56	e 21 46	-62	e 39-6	45-6
Vienna	83-2	322	e 12 22	—	22 53	+ 4	e 42-6	54-6
Jena	83-9	326	i 12 26	- 2	e 22 54	- 2	e 46-6	54-6
Cheb	84-1	325	e 12 30	+ 1	e 23 0	+ 1	e 40-6	48-6
Göttingen	84-3	328	i 12 27	- 3	e 22 58	- 3	e 44-6	51-2
Zagreb	84-8	320	e 12 33	+ 1	e 23 20	PS	e 40-1	45-1
De Bilt	86-1	330	12 37	- 2	e 23 15	- 3	e 40-6	48-1
Triest	86-2	322	e 12 34	- 5	e 23 18	- 1	—	44-6
Edinburgh	86-5	326	e 12 45	+ 4	i 23 17	- 5	40-6	49-6
Stuttgart	86-6	326	12 39	- 2	e 23 13	[+ 2]	e 42-6	50-3
Tinemaha	87-1	48	e 12 41	- 3	e 23 8	[+ 6]	—	—
Uccle	87-3	330	i 12 43	- 2	e 23 18	[+ 3]	e 40-6	52-5
Strasbourg	87-4	326	i 12 43	- 2	23 28	[+12]	e 38-6	56-6
Stonyhurst	87-8	325	—	—	e 23 32	- 3	41-6	48-1
Zurich	87-8	325	e 12 31	-16	e 23 25	[+ 6]	—	—
Haiwee	87-8	49	e 12 46	- 1	—	—	—	—
Oxford	88-3	333	e 16 34	PP	e 23 35	- 5	e 44-3	53-3
Florence	88-6	321	12 50	- 1	23 40	- 3	49-6	55-6
Neuchatel	88-8	325	e 12 49	- 3	—	—	—	—
Kew	88-8	332	e 12 49	- 3	e 23 13	[-12]	41-6	51-7
Pasadena	88-9	51	e 12 47	- 5	e 23 35	[+ 9]	—	—
Mount Wilson	88-9	51	e 12 48	- 4	—	—	—	—
Besançon	89-2	326	e 16 35	PP	—	—	50-6	—
Riverside	89-4	51	e 12 57	+ 2	—	—	—	—
Paris	89-6	329	e 12 55	- 1	23 58	+ 6	47-6	58-6
Alicante	98-9	324	e 18 2	PP	—	—	e 53-3	—
Toledo	99-4	326	e 17 52	PP	—	—	e 47-6	—
Almeria	100-9	325	e 18 20	PP	—	—	e 55-1	—
Granada	101-2	325	i 18 2	PP	—	—	52-6	67-0
Ottawa	101-4	19	—	—	e 24 20	[-13]	e 51-6	—
Florissant	101-6	32	e 17 57	PP	i 24 27	[- 6]	—	—
St. Louis	101-9	32	e 18 3	PP	i 24 26	[- 9]	—	60-6
San Fernando	103-2	326	18 41	PP	—	—	55-6	71-1
Pittsburgh	104-5	24	—	—	e 25 32	{+ 5}	e 53-9	—
Harvard	105-4	17	e 19 1	PP	e 24 39	[-13]	e 53-6	—
Georgetown	107-0	22	18 37	PP	24 51	[- 8]	—	58-6
San Juan	129-5	21	e 22 27	?	e 26 59	[+41]	e 64-7	—
La Paz	z. 158-2	59	i 20 9	[+18]	—	—	—	—

Additional readings:—

Sumoto SN = +3m.55s., SE = +3m.59s.
 Kobe iEN = +2m.51s. = S + 8s., eSN = +3m.45s.
 Zi-ka-wei iZ = +2m.19s., +2m.49s., +3m.19s., and +3m.35s.
 Chiufeng PP? = +3m.49s., iP = +3m.57s. = PP + 4s., i = +6m.23s., iS = +7m.15s. = SS + 15s.
 Hong Kong S = +5m.12s., SS = +5m.58s.
 Irkutsk ePP = +7m.10s., SS = +12m.5s.
 Adelaide e = +24m.11s.
 Riverview e = +30m.41s.
 Melbourne e = +27m.5s.
 Tiflis P = +11m.9s. = P₂P - 19s., e = +12m.34s., ePPP = +15m.28s., eSKS = +20m.53s.
 Helsingfors ePZ = +11m.22s., ePE = +11m.25s., ePPE = +14m.13s., ePPZ = +14m.24s., ePPPE = +16m.1s., eZ = +16m.30s. and +17m.46s., eSE = +20m.53s., ePSE = +21m.19s., ePSN = +21m.39s., eSSN = +25m.27s., eSSE = +26m.8s., eSSSN = +29m.37s., eSSSE = +29m.48s.; T₀ = 2h.2m.28s.
 Königsberg eE = +21m.49s. and +22m.1s., ePPE = +26m.19s. = SS - 12s., eSE = +30m.59s.
 Scoresby Sund +15m.10s. and +18m.11s.
 Lund +22m.29s.
 Copenhagen +15m.23s. = PP + 16s. and +22m.30s.
 Potsdam ePN = +11m.40s., ePPEN = +15m.35s.?
 Ukiah e = +34m.26s., +36m.22s., and +37m.33s.
 Prague ePP = +14m.43s.
 Vienna P₂P = +12m.51s., PP = +15m.48s., iE = +24m.59s., iN = +26m.54s., PKKP +30m.15s.
 Jena eSE = +26m.53s.

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Cheb eSS = +28m.45s., e = +35m.0s.
 Göttingen ePPZ = +15m.48s.
 Zagreb e = +22m.55s. = SKS - 3s.
 De Bilt ePPZ = +16m.8s.
 Edinburgh e = +16m.11s.
 Stuttgart iZ = eE = +12m.48s., eZ = +13m.22s., i = +16m.11s., ePSZ = +24m.16s., eE = +27m.35s., and +29m.5s.
 Uccle iPP = +16m.14s., eSS = +29m.22s.
 Strasbourg iPP = +16m.19s., SKKS = +23m.40s. = S + 9s., PS = +24m.21s., eSS = +29m.17s.
 Stonyhurst e = +29m.25s. = SS + 17s.
 Zurich e = +16m.24s. = PP + 16s.
 Haiwee eN = +16m.10s. = PP + 2s.
 Florence PP = +16m.30s.
 Neuchatel ePP = +16m.29s.
 Kew ePP = +16m.24s.
 Pasadena e = +16m.18s. = PP + 1s.
 Paris PP = +16m.29s.
 Ottawa eE = +25m.39s. = S + 0s.
 Florissant iE = +25m.37s. = S + 22s.
 Pittsburgh e = +32m.23s. and +46m.23s.
 Harvard eN = +21m.25s., e = +26m.10s., and +27m.39s. = PS - 3s.
 Georgetown PS = +27m.36s.; T₀ = 2h.21m.36s.
 San Juan e = +43m.35s.
 Long waves were also recorded at Bidston, Honolulu T.H., Algiers, Barcelona, Tortosa, Malaga, and Belgrade.

May 28d. 5h. 2m. 45s. Epicentre 28°·9N. 131°·5E. N.2.

(Tokyo gives epicentre 29°·5N. 130°·8E.).

A = -·580, B = +·656, C = +·483; D = +·749, E = +·663;
 G = -·320, H = +·362, K = -·875.

	Δ	Az.	P.	O - C.	S.	O - C.	L.	M.
	°		m. s.	s.	m. s.	s.	m.	m.
Nake	1·8	254	0 24	- 2	0 46	0	—	—
Kagosima	2·8	343	0 44	+ 4	—	—	—	—
Miyazaki	3·0	359	0 46	+ 3	1 25	S*	—	—
Kumamoto	4·0	350	1 0	+ 3	1 50	+ 8	—	—
Nagasaki	4·1	341	1 1	+ 3	1 52	+ 7	—	—
Naha	4·3	232	0 53	- 8	1 42	- 8	—	—
Ooita	4·4	2	1 11	+ 8	2 0	+ 7	—	—
Koti	5·0	20	1 11	0	2 7	- 1	3·4	—
Matuyama	5·1	12	e 1 9	- 4	—	—	—	—
Tadotu	5·7	20	1 21	0	2 29	+ 4	—	—
Sumoto	6·2	27	1 27	- 1	—	—	e 5·0	6·6
Kobe	6·6	27	1 40	+ 6	e 2 52	+ 4	e 6·4	6·7
Osaka	6·7	30	1 36	+ 1	—	—	3·2	—
Kameyama	7·3	34	1 44	0	3 15	+ 9	—	—
Taikyu	7·4	342	1 9	-36	—	—	—	—
Hikone	7·5	31	1 51	+ 5	—	—	—	—
Nagoya	7·8	35	e 1 51	0	—	—	—	—
Gihu	7·9	33	1 53	+ 1	3 23	+ 2	—	—
Numadu	8·8	43	1 53	-12	—	—	—	—
Misima	8·9	44	2 2	- 4	3 48	+ 2	—	—
Zi-ka-wei	z.	9·0	287	2 15	+ 8	3 59	+10	—
Manila	17·3	216	4 0	+ 2	7 10	+ 1	8·8	10·5
Phu-Lien	23·9	256	—	—	9 15?	- 6	—	—
Andijan	49·0	301	e 8 45	+ 1	—	—	—	—
Tashkent	51·3	302	e 7 57	?	—	—	e26·2	36·6
Ekaterinburg	55·8	322	i 9 33	- 1	i 17 23	+ 3	24·8	36·6
Baku	65·8	304	e 10 43	- 1	e 19 38	+ 8	e 32·8	41·2
Tiflis	69·0	307	e 11 0	- 5	e 20 10	+ 1	43·3	45·6
Pulkovo	70·6	329	—	—	e 20 40	+12	36·2	44·6
Stuttgart	86·9	326	—	—	e 23 27	+ 1	e 49·2	—
Strasbourg	87·7	326	e 16 15?	?	—	—	e 47·2	—

Additional readings:—

Sumoto, eSN = +4m.7s., eSE = +4m.30s.,

Osaka i = +4m.10s.

Tashkent i = +12m.21s., e = +21m.23s. and +25m.15s.

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

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May 28d. Readings also at 1h. (Mizusawa), 2h. (Nagoya and near Mizusawa), 3h. (Berkeley), 5h. (Tifis), 6h. (near Andijan), 7h. (Wellington), 10h. (Ekaterinburg, Pulkovo, Tashkent, Manila, and Taihoku), 13h. (near Wellington), 15h. (Ekaterinburg, Tashkent, and near Andijan), 17h. (La Paz), 18h. (Tifis), 23h. (near Tananarive).

May 29d. Readings at 0h. (Andijan and San Juan), 1h. (De Bilt Uccle, Paris, Strasbourg, Stuttgart, Edinburgh, Copenhagen, Pulkovo, Scoresby Sund, Granada, and La Paz), 2h. (Ekaterinburg and Kucino), 5h. (Hong Kong and near Andijan (2)) 10h. (Florence and near Santiago), 13h. (Andijan and near Balboa Heights), 16h. (Tucson and near La Paz), 18h. (near Batavia), 20h. (Matuyama, Berkeley, Lick, and near Branner).

May 30d. 0h. 2m. 18s. Epicentre 34°·7N. 135°·2E. (Kobe). N.3.

A = -·583, B = +·580, C = +·569.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kobe	0·0	—	0 0	0	i 0 2	+ 2	—	0·1
Osaka	0·3	101	0 4	0	(0 9)	+ 1	0·2	0·2
Sumoto	0·4	217	e 0 8	+ 2	0 13	+ 3	—	0·3
Toyooka	0·9	339	i 0 13	0	i 0 19	- 4	—	0·3

No additional readings.

May 30d. 0h. 22m. 29s. Epicentre 20°·0S. 70°·8W. N.2.

A = +·309, B = -·887, C = -·342; D = -·944, E = -·329;
G = -·112, H = +·323, K = -·940.

	Δ	Az.	P.	P-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz	4·3	36	i 1 1	0	i 1 33	-17	—	2·7
Sucre	5·3	80	i 1 6	- 9	—	—	—	—
La Plata	18·7	145	4 15	0	(7 31)	- 9	7·5	—
Florissant	61·6	343	i 10 11	- 5	i 18 22	-15	—	—
Madison	65·4	346	i 10 38	- 3	i 19 9	-16	—	—
Riverside	69·8	320	e 11 12	+ 3	—	—	—	—
Mount Wilson	70·4	320	e 11 16	+ 3	—	—	—	—
Pasadena	70·4	320	i 11 15	+ 2	—	—	—	—
Tinemaha	72·5	322	e 11 27	+ 1	e 21 35	PS	—	—
Scoresby Sund	96·7	14	—	—	23 31?	[-38]	—	—
De Bilt	97·5	37	—	—	e 23 51	[-23]	—	—
Kucino	116·9	37	—	—	e 25 13	[-27]	—	35·5
Tifis	122·1	52	e 20 57	PP	e 27 22	{- 9}	—	—
Irkutsk	147·5	5	e 20 40	[+62]	—	—	—	—

Additional readings :-

La Paz iP_e = +1m.4s.

Florissant iPP = +10m.53s., sSE = +19m.9s., i = +20m.44s.

Madison iPKP = +11m.7s., iSP = +19m.57s.

Pasadena eZ = +11m.55s.

Kucino e = +30m.1s.

Long waves were recorded at Santiago.

May 30d. 15h. 22m. 19s. Epicentre 43°·7N. 12°·2E. N.3.

A = +·707, B = +·153, C = +·691; D = +·211, E = -·977;
G = +·675, H = +·146, K = -·723

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Florence	0·7	277	e 0 30	+20	—	—	—	0·9
Triest	2·2	30	e 0 30	- 1	e 0 54	- 3	—	—
Zagreb	3·4	50	e 0 48	- 1	i 1 33	+ 6	—	—
Neuchatel	N.	4·9	314	e 1 21	P*	e 2 5	0	—
Stuttgart		5·5	339	—	e 2 21	+ 1	e 4·2	—

Neuchatel gives i = +2m.19s. = S* + 5s.

Long waves were recorded at De Bilt.

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May 30d. Readings also at 1h. (near Nagasaki), 2h. (Andijan), 4h. (Neuchatel), 5h. (Hastings and Wellington), 6h. (near New Plymouth), 8h. (near Tyosil), 9h. (Ann Arbor), 15h. (Zagreb), 16h. (near Apia), 18h. (Tashkent), 19h. (Baku), 21h. (Wellington).

May 31d. 8h. 37m. 24s. Epicentre 8°·0.N. 37°·5W. R.2.
(as on 1928 August 31d.).

A = +·786, B = -·603, C = +·139; D = -·609, E = -·793;
G = +·111, H = -·085, K = -·990.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
San Juan	29·7	293	e 7 11	+69	e 11 6	+ 7	e 13·2	—
Rio de Janeiro	31·4	190	—	—	e 11 8	-18	e 15·1	—
Sucre	38·5	225	e 7 19	0	—	—	—	—
La Paz	39·0	231	e 7 12	-12	i 13 32	+11	19·0	22·0
Toledo	43·7	38	—	—	e 14 23	- 8	e 18·5	—
Harvard	45·4	326	—	—	e 14 53	- 3	e 18·6	—
Algiers	46·7	47	—	—	e 15 14	0	22·6	—
Georgetown	47·1	318	—	—	i 15 29	+ 9	—	21·9
Ottawa	49·8	325	—	—	i 16 0	+ 2	21·6	—
Oxford	52·9	28	—	—	i 16 33	- 8	e 23·0	26·1
Kew	53·1	28	—	—	e 16 36?	- 7	e 22·6	—
Stonyhurst	53·9	24	—	—	e 20 8	SS	—	—
Edinburgh	55·0	23	e 12 36	?	—	—	—	25·6
Florence	55·4	42	e 9 23	- 9	i 17 3	-12	—	27·1
Strasbourg	55·6	36	e 8 36?	-57	e 17 16	- 1	22·6	—
De Bilt	56·1	31	e 9 40	+ 3	17 22	- 2	e 24·6	33·2
Stuttgart	56·5	36	e 9 36	- 3	e 17 24	- 6	e 25·1	—
Hamburg	59·4	30	—	—	e 17 36?	-32	—	29·6
Scoresby Sund	63·3	6	e 11 48	+81	18 2	-57	25·6	—
Pulkovo	72·0	29	e 11 23	0	e 20 40	- 5	32·6	39·5
Kucino	75·3	35	—	—	e 21 8	-16	e 31·8	39·3
Baku	82·9	50	e 13 18	+55	e 22 43	- 3	37·1	47·8
Ekaterinburg	87·7	33	e 12 48	+ 2	e 23 33	- 1	39·6	—
Tashkent	97·0	46	e 12 30	-60	e 23 36	?	e 50·6	64·8

Additional readings:—

La Paz IPP = +8m.57s., iSS = +16m.30s.

Stuttgart e = +12m.50s.

Tashkent i = +18m.3s., e = +21m.59s. +35m.36s. and +44m.24s.

Long waves were also recorded at La Plata, Irkutsk, Tiflis, and other European stations.

May 31d. 13h. 30m. 12s. Epicentre 26°·5S. 66°·4W. N.3.

A = +·358, B = -·820, C = -·446; D = -·916, E = -·400;
G = -·179, H = +·409, K = -·895.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sucre	7·5	8	e 1 52	+ 6	—	—	—	—
Santiago	7·8	207	e 1 46	- 5	3 11	- 8	3·6	4·2
La Paz	10·1	350	e 2 21	- 1	i 4 58	S*	1 5·6	7·8
La Plata	11·1	141	e 2 36	0	—	—	5·8	—
Rio de Janeiro	21·4	85	—	—	e 8 48	+14	e 12·1	—

Additional reading.

La Paz iSE = +5m.5s.

Long waves were also recorded at Scoresby Sund, De Bilt, Paris and Copenhagen.

May 31d. Readings also at 3h. (Scoresby Sund, La Paz, and near Nagasaki), 4h. (near Manila), 5h. (Scoresby Sund, Tashkent, near Mizusawa, and near Santiago), 6h. (La Paz and San Juan), 8h. (Copenhagen, Sucre, and near La Paz), 9h. (near Amboina (2)), 10h. (Manila, La Paz (2), and Rio de Janeiro), 11h. (Baku, Ekaterinburg, Tiflis, Pulkovo, Irkutsk, De Bilt, Strasbourg, Stuttgart, Copenhagen, and Scoresby Sund), 12h. (Tashkent and near Medan), 13h. (Manila) 14h. (La Paz, De Bilt, Stuttgart, Tiflis, Ekaterinburg, Pulkovo and Irkutsk, Hong Kong, and Wellington), 15h. (Baku, Ekaterinburg, Tiflis, Irkutsk, Pulkovo, Copenhagen, and Bombay), 17h. (Balboa Heights and near Sumoto), 18h. (Balboa Heights and La Paz), 20h. (near Santiago), 22h. (Andijan).

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June 1d. 17h. 32m. 27s. I () Epicentre 33°7N. 135°2E. R.3.
 19h. 33m. 27s. II () (as on 1931 December 12d.). R.3.

A = -590, B = +586, C = +555.

	Δ	P.	O-C.	S.	O-C.	L.	M.
	o	m. s.	s.	m. s.	s.	m.	m.
I Sumoto	0.7	0 10	0	0 16	- 2	—	0.3
II	0.7	i 0 8	- 2	i 0 13	- 5	—	0.2
I Kobe	1.0	e 0 14	0	i 0 21	- 5	—	0.4
II	1.0	i 0 13	- 1	i 0 23	- 3	—	0.4
I Osaka	1.0	0 13	- 1	(0 22)	- 4	0.4	0.5
II	1.0	0 13	- 1	(0 22)	- 4	0.4	0.9
II Koti	1.4	0 22	+ 2	0 42	S*	—	0.8
II Toyooka	1.9	i 0 27	- 1	i 0 48	- 1	—	0.8
I Nagoya	2.0	e 0 53	S	(e 0 53)	+ 2	—	—
II	2.0	e 0 35	P _g	1 3	S _g	—	1.1
II Matuyama	2.0	i 0 34	P _g	i 1 0	S*	—	—

Additional readings:—

Sumoto II iPZ = +16s. = S_g - 1s.

Kobe I i = +25s. = S_g - 2s., II iN = +16s. = P_g + 2s.

Osaka II i = +16s. = P_g + 2s.

Koti II S_g = +45s.

June 1d. Readings also at 0h. (near Manila), 1h. (2) and 2h. (Tyosi), 5h. (La Paz), 10h. (near Samarkand), 11h. (Ekaterinburg, Irkutsk, Tiflis, Tashkent, Baku, and Ksara), 15h. (Andijan), 16h. (Ekaterinburg and Tashkent), 21h. (Nagoya and near Kobe), 22h. (near Osaka).

June 2d. 19h. 44m. 56s. Epicentre 47°7N. 102°4E. N.2.
 (given by the Russian stations).

A = -145, B = +657, C = +740 : D = +977, E = +215 :
 G = -159, H = +722, K = -673.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o	o	m. s.	s.	m. s.	s.	m.	m.
Irkutsk	4.7	14	1 8	+ 1	—	—	e 2.4	—
Chiufeng	12.4	123	e 5 29	S	(e 5 29)	+16	—	—
Almata	18.4	265	e 4 10	- 1	8 33	+60	9.7	—
Zi-ka-wei	21.9	132	—	—	e 8 40	- 4	(11.8)	13.3
Andijan	22.5	263	e 5 2	+ 6	—	—	11.9	—
Tashkent	24.3	266	e 5 3	-10	i 9 35	+ 7	i 12.9	13.7
Ekaterinburg	26.6	306	e 5 36	+ 1	10 23	+14	14.9	17.1
Hong Kong	27.1	155	10 9	S	(10 9)	- 8	14.1	15.1
Manila	36.5	149	14 17	?	18 7	?	20.2	22.1
Baku	37.7	279	—	—	e 13 30	+28	e 20.6	—
Tiflis	40.5	284	—	—	e 15 19	?	24.1	27.0
Pulkovo	42.0	314	7 50*	+ 1	e 17 26	(-28)	23.1	26.7
Scoresby Sund	55.2	341	13 4?	?	—	—	27.1	—

Additional readings and note:—

Chiufeng P = +5m.52s.

Zi-ka-wei gives S as e and L as S.

Tashkent e = +5m.10s. and +10m.22s. = SS + 10s.

Ekaterinburg i = +5m.40s.

Hong Kong S? = +13m.14s.

Baku e = +18m.11s.

Tiflis e = +21m.26s.

Long waves were also recorded at Branner, Lick, Phu-Lien, Sikka, Kucino, and European stations.

June 2d. Readings also at 0h. (near Almata), 1h. (Andijan, Ekaterinburg, and Tashkent), 3h. (Alicante), 6h. (near San Juan), 12h. (Hastings), 13h. (Pasadena, Tinemaha, near Apia, and near Samarkand), 14h. (Scoresby Sund (2)), 15h. (La Paz (2) and near Amboina), 18h. (Baku, Bombay, Perth, Manila, Ekaterinburg, and near Amboina), 19h. (near Irkutsk), 22h. (Ekaterinburg, Tashkent, near Andijan, and Samarkand).

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June 3d. 0h. 19m. 1s. Epicentre 38°·2N. 141°·7E. (as given by Tokyo) N.1.

Probable error of epicentre $\pm 0^{\circ}\cdot 27$.

A = -·617, B = +·487, C = +·618; D = +·620, E = +·785;
G = -·485, H = +·383, K = -·786.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Isinomaki	0·4	308	0 5	- 1	0 14	+ 4	—	—
Sendai	0·6	276	0 12	+ 3	0 21	+ 6	—	—
Hokusima	1·1	245	0 15	- 1	0 29	+ 1	—	—
Mizusawa	1·1	335	0 15	- 1	0 27	- 1	—	—
Yamagata	1·1	273	0 17	+ 1	0 33	+ 5	—	—
Onahama	1·4	207	0 15	- 5	0 33	- 3	—	—
Miyako	1·5	9	0 17	- 4	0 31	- 8	—	—
Morioka	1·6	344	0 22	- 1	0 40	- 1	—	—
Akita	2·0	320	0 29	0	0 56	+ 5	—	—
Mito	2·0	208	0 30	+ 1	0 56	+ 5	—	—
Niigata	2·1	263	0 35	+ 5	1 9	S _g	—	—
Utsunomiya	2·2	222	0 31	0	1 2	+ 5	—	—
Kakioka	2·3	212	0 34	+ 1	1 5	+ 6	—	—
Tyosi	2·5	195	0 40	+ 4	1 9	+ 5	1·6	1·8
Kumagaya	2·8	222	0 46	+ 6	1 18	+ 6	—	—
Tokyo	3·0	212	0 47	+ 4	1 21	+ 4	—	3·0
Oiwake	3·1	233	0 47	+ 3	1 27	+ 7	—	—
Yokohama	3·2	212	0 50	+ 4	1 28	+ 6	—	—
Kohu	3·6	225	0 52	+ 1	1 36	+ 4	—	—
Mera	3·6	204	0 53	+ 2	1 30	- 2	—	—
Misima	3·8	216	0 57	+ 3	1 40	+ 3	—	—
Numadu	3·8	217	1 0	+ 6	1 46	+ 9	—	—
Wazima	3·9	259	0 58	+ 2	1 47	+ 7	—	—
Gihu	4·8	236	1 13	+ 5	2 13	+10	—	—
Nagoya	4·9	233	e 1 13	+ 3	2 10	+ 5	2·2	2·8
Sapporo	4·9	357	1 19	+ 9	2 5	0	—	—
Hatidyojima	5·3	197	1 19	+ 4	2 16	+ 1	—	—
Hikone	5·3	238	1 22	+ 7	2 24	+ 9	—	—
Kameyama	5·4	233	1 21	+ 4	2 27	+ 9	—	—
Kyoto	5·7	238	1 24	+ 3	2 36	+11	—	—
Toyooka	6·1	247	i 1 28	+ 1	i 2 42	+ 6	—	4·5
Osaka	6·1	236	1 30	+ 3	—	—	3·0	3·7
Kobe	6·3	239	1 32	+ 2	2 52	+11	—	3·7
Wakayama	6·6	235	1 38	+ 4	3 14	S*	—	—
Sumoto	6·7	237	1 37	+ 2	2 53	+ 2	—	3·8
Koti	z. 8·0	238	e 1 59	+ 6	—	—	—	—
Hamada	8·4	250	2 0	+ 1	3 49	+15	—	—
Kumamoto	10·4	242	2 20	- 6	—	—	—	—
Miyazaki	10·4	236	2 31	+ 5	4 37	+14	—	—
Nagasaki	11·1	244	e 2 56	+20	—	—	—	—
Tashkent	54·1	298	e 9 16	- 6	e 16 48	- 9	e 29·0	34·0
Ekaterinburg	54·2	318	i 9 21	- 2	i 16 57	- 1	26·0	34·9
Bombay	62·0	273	—	—	e 18 59?	+17	—	—
Kucino	66·1	323	—	—	e 18 59?	-35	e 34·6	42·3
Pulkovo	67·1	330	e 10 44	- 8	e 19 34	-12	34·0	42·1
Tiflis	70·1	307	e 11 56	PcP	—	—	—	—
Scoresby Sund	70·7	355	11 10	- 5	20 24	- 6	35·0	—
Copenhagen	76·7	334	11 47	- 3	21 47	+ 8	41·0	—
Edinburgh	81·3	341	—	—	e 22 39	+ 9	—	—
De Bilt	82·1	335	12 14	- 5	e 22 54	+16	e 40·0	52·2
Stuttgart	83·4	331	e 12 20	- 5	e 22 38	[- 9]	e 44·0	52·8
Uccle	83·5	335	e 12 20	- 6	—	—	e 41·0	—
Strasbourg	84·1	332	e 11 59?	-30	e 15 59?	PP	e 41·0	—
Kew	84·4	338	e 12 25	- 5	—	—	e 48·0	—
Paris	85·8	335	e 12 34	- 3	—	—	49·0	—
Florence	86·6	328	12 36	- 5	23 19	- 4	43·5	48·0
La Paz	z. 146·0	59	e 19 46	[+10]	—	—	—	—

For Notes see next page.

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NOTES TO JUNE 3d. 0h. 19m. 1s.

Additional readings :-

Tyosil S = +1m.23s.
 Toyooka eSN = +2m.48s.
 Osaka I = +1m.56s. = P₂ + 0s. and +2m.9s.
 Kobe eEZ = +1m.46s. = P* + 1s., iN = +2m.9s.
 Sumoto SE = +2m.58s.
 Tashkent e = +20m.47s. = SS + 15s. and +25m.58s.
 Kucino e = +23m.53s. = SS + 10s. and +27m.5s.
 Stuttgart eNZ = +12m.37s., e = +22m.59s. = S + 8s.
 Long waves were also recorded at Hong Kong, Lund, and the Spanish stations.

June 3d. 10h. 36m. 53s. Epicentre 19°2N. 104°2W. N.1.

Probable error of epicentre ±0°.19.

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

	Δ	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Tucson	14.4	336	e 3 21	0	—	—	—	—
La Jolla	18.0	322	i 4 7	0	—	—	—	—
Riverside	18.8	324	e 4 16	0	—	—	—	—
Mount Wilson	19.4	323	e 4 23	0	—	—	—	—
Pasadena	19.4	323	i 4 22	-1	e 8 33	+39	e 10.5	13.6
Santa Barbara	20.5	321	e 4 40	+5	—	—	—	—
Denver	20.5	358	e 4 13	-22	i 8 25	+9	—	10.7
Tinemaha	21.7	328	i 4 48	0	i 9 6	SS	—	—
St. Louis	22.9	29	i 5 0	0	i 9 33	SS	12.1	13.7
Florissant	23.0	28	i 5 0	-1	—	—	—	—
Lick	23.7	324	e 5 7?	0	—	—	—	—
Brenner	24.0	323	e 5 12	+2	—	—	e 10.4	—
Berkeley	24.4	324	e 5 14	0	i 10 10	SS	e 11.7	18.1
Columbia	25.3	50	e 5 34	+11	i 10 8	+22	13.2	—
Ukiah	25.8	324	e 5 28	+1	i 10 56	SS	—	—
Balboa Heights	26.0	110	i 5 38	+9	e 9 48	-10	—	—
Chicago	26.6	28	i 5 37	+2	i 10 23	+14	i 12.9	—
Madison	27.0	24	e 5 55	+17	i 11 17	SS	14.1	—
Bozeman	27.0	349	e 5 37	-1	i 10 47	+32	i 12.8	—
Ann Arbor	28.9	32	e 6 1	+6	i 11 1	+14	i 15.2	—
Charlottesville	29.2	44	i 6 19	+21	i 10 59	+8	14.1	—
Pittsburgh	29.7	39	e 6 2	0	i 11 2	+3	i 14.1	—
Port au Prince	30.2	86	e 6 29	+22	i 11 59	+52	e 15.7	22.8
Georgetown	30.6	44	e 6 10	0	e 11 42	+28	—	19.3
Buffalo	31.9	36	i 6 13	-9	i 11 39	+5	—	—
Seattle	32.0	337	e 6 58	+35	—	—	—	—
Toronto	32.1	35	e 6 22	-2	i 11 46	+9	16.6	—
Saskatoon	32.9	357	e 6 44	+13	12 44	+55	18.1	—
Victoria	33.0	337	e 6 31	-1	12 41	+50	24.2	29.5
Fordham	33.7	44	e 6 47	+9	i 12 40	+39	—	—
Ottawa	35.2	35	e 6 50	-1	e 13 4	+40	e 19.1	—
San Juan	36.0	85	i 6 55	-3	—	—	—	—
Harvard	36.3	43	e 6 59	-1	i 13 20	+39	e 16.1	—
Halifax	42.1	44	e 8 0	+11	15 7	+59	22.1	—
Sitka	44.3	337	i 8 26	+19	i 15 9	+29	i 19.4	—
Honolulu T.H.	50.1	283	e 9 9	+17	i 15 57	-5	21.1	—
La Paz	50.3	133	i 8 59	+5	i 16 24	+19	i 25.2	29.7
Sucre	54.1	133	e 9 23	+1	—	—	—	—
Santiago	61.6	148	10 17	+1	18 45	+8	—	38.8
Reykjavik	69.4	27	11 23	+16	20 38	+24	—	—
Scoresby Sund	69.4	20	11 4	-3	21 41	+87	33.1	—
La Plata	69.7	141	11 11	+2	20 29	+11	34.2	—
Rio de Janeiro	73.0	122	i 11 26	+3	i 21 16	+19	i 35.9	44.5
Apla	74.2	248	12 1	+25	21 5	-6	34.4	47.6
Dyce	80.2	33	i 12 33	+24	21 33	-45	—	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o		m. s.	s.	m. s.	s.	m.	m.
Edinburgh	80-2	34	e 12 14	+ 5	i 22 30	+12	—	—
Bidston	81-0	37	e 12 21	+ 8	23 42	+ 76	36-1	49-1
Stonyhurst	81-2	36	—	—	i 23 22	+ 76	44-3	49-1
Serra do Pilar	81-6	49	12 30	+14	—	—	—	—
Dakar	82-3	77	e 12 29	+ 9	23 1	+21	—	44-6
Bergen	82-5	28	11 24	-57	22 7	-35	43-8	50-1
Oxford	82-7	37	e 12 22	0	—	—	—	—
Kew	83-3	37	e 12 24	- 1	i 23 10	+20	34-1	55-1
Suva	84-6	249	14 7?	?	24 37	?	40-1	44-1
San Fernando	84-9	53	12 40	+ 7	23 37	PS	49-1	56-1
Toledo	85-2	50	e 12 33	- 1	i 23 27	+17	e 41-0	58-0
Malaga	86-1	52	e 12 39	0	23 6	[- 1]	e 41-9	82-0
Paris	86-1	40	e 12 38	- 1	e 23 40	+22	38-1	51-1
De Bilt	86-2	35	12 39	- 0	e 23 31	+12	e 39-1	52-3
Uccle	86-2	37	12 38	- 1	23 7?	[- 1]	39-1	52-3
Granada	86-5	52	i 12 42	+ 1	i 23 47	+25	43-3	53-0
Almeria	87-5	52	e 12 51	+ 6	i 24 5	+33	e 43-6	57-0
Puy de Dôme	87-6	42	e 12 46	0	23 49	+16	e 34-4	53-6
Upsala	88-0	26	e 13 0	+12	i 23 44	+ 7	e 40-8	57-6
Copenhagen	88-0	30	12 54	+ 6	23 31	- 6	35-1	—
Hamburg	88-0	33	i 12 54	+ 6	i 23 55	+18	e 38-1	55-1
Tortosa	88-1	47	13 5	+17	23 48	+10	—	55-4
	88-1	47	12 57	+ 9	23 32	- 6	38-0	65-6
Alicante	88-3	49	e 12 59	+10	i 23 51	+11	e 42-2	54-1
Lund	88-5	30	13 7	+17	23 51	+ 9	—	—
Feldberg	88-8	36	e 12 7?	-45	e 24 28	PS	e 40-2	54-6
Besançon	88-9	39	13 12	+20	28 58	SS	44-1	52-1
Barcelona	88-9	46	e 13 5	+13	e 23 24	[- 2]	e 26-4	53-7
Götting	89-0	34	e 12 52	- 1	i 24 7	+21	e 42-1	54-3
Strasbourg	89-2	38	e 12 58	+ 4	i 24 12	+24	e 41-1	53-1
Karlsruhe	89-4	37	13 21	+26	24 17	+27	e 52-1	54-6
Grenoble	89-6	42	e 12 37	-19	22 57	[-33]	33-1	—
Neuchatel	89-6	39	e 12 53	- 3	23 7	[-23]	—	—
Stuttgart	90-0	37	e 12 56	- 1	i 23 56	0	e 40-1	46-6
Potsdam	90-2	33	e 13 1	+ 3	i 23 38	[+ 4]	e 40-1	47-1
Jena	90-3	35	e 13 0	+ 1	e 23 43	[+ 9]	e 38-1	52-6
Marseilles	90-3	43	e 13 14	+15	i 24 9	+10	41-1	—
Zurich	90-3	39	e 12 58	- 1	e 23 52	- 7	—	—
Helsingfors	90-6	22	e 13 1	+ 1	23 52	-10	e 39-1	—
Ootomari	90-9	321	e 13 25	+23	(24 22)	+18	24-4	—
Chur	91-1	39	e 13 3	0	—	—	—	—
Cheb	91-1	35	e 13 19	+16	e 24 5	- 1	e 41-1	56-1
Algiers	91-6	50	e 12 59	- 6	i 24 6	- 5	45-1	55-6
Pavia	91-8	40	13 10	+ 4	—	—	—	—
Innsbruck	92-0	38	e 13 19	+12	e 24 1	-14	37-3	48-3
Piacenza	92-1	40	13 25	+18	24 27	+11	37-1	57-8
Prague	92-2	34	13 34	+26	24 10	- 7	e 41-1	46-6
Königsberg	92-4	28	i 13 21	+12	i 24 14	- 4	e 46-1	—
Pulkovo	92-8	21	e 13 15	+ 5	24 1	{+ 4}	34-1	47-9
Padova	93-3	39	i 13 38	+25	e 23 7	[-45]	—	—
Livorno	93-3	41	13 32	+19	25 47	PS	—	—
Treviso	93-4	39	i 13 12	- 1	24 15	-13	41-3	57-4
Venice	93-5	39	e 13 30	+16	e 23 16	[-37]	51-0	55-9
Sapporo	93-5	318	13 22	+ 8	24 36	+ 8	—	—
Prato	93-7	41	e 13 35	+21	24 37	+ 7	33-1	55-6
Florence	93-8	41	e 13 10	- 5	24 37	+ 6	40-1	48-1
Carloforte	94-2	46	e 13 36	+19	e 24 0	[+ 4]	—	—
Triest	94-3	38	e 13 16	- 1	e 23 51	[- 6]	—	45-1
Vienna	94-3	35	i 13 16	- 1	23 51	[- 6]	140-8	57-1
Arapuni	94-4	231	—	—	24 43	+ 6	44-1	46-1
Graz	94-5	37	e 13 22	+ 4	i 24 24	-14	47-1	58-1
Camerino	95-2	40	14 59	+98	—	—	—	—
Morioka	95-2	315	13 43	+22	24 53	+ 9	—	—
Zagreb	N.E. 95-5	37	e 12 42?	-41	i 24 24	{+ 6}	e 41-8	59-3
	N.W. 95-5	37	e 13 24	+ 1	e 24 15	{- 3}	—	61-9

Continued on next page.

Original bulletins of the International Seismological Summary (ISS) have been obtained thanks to funding provided by the US National Science Foundation through grant EAR-9725140 (Villaseñor et al., 1997) and have been scanned and collected by SGA Storia Geofisica Ambiente (Bologna) thanks to funding provided by the Istituto Nazionale di Geofisica e Vulcanologia (Rome), in the frame of the EUROSEISMOS project.

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		Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	E.	95.6	315	13 31	+ 8	24 38	-10	—	—
	N.	95.6	315	13 49	+26	24 51	+ 3	35.1	—
Laibach		95.7	37	e 13 30	+ 6	e 24 19	[+15]	e 45.2	58.0
Akita		96.0	315	13 42	+17	25 6	+15	—	—
Wellington		96.1	229	i 13 35	+ 9	24 17	[+11]	45.4	49.1
Budapest		96.2	35	13 22	- 4	—	—	34.1	56.1
Naples	E.	97.2	42	e 17 44	PP	e 25 9	+ 7	48.1	63.1
Lemberg	E.	97.3	31	e 13 29	- 2	e 25 16	+13	e 37.9	62.1
	N.	97.3	31	e 13 32	+ 1	e 25 14	+11	e 37.3	63.3
Tyosi		97.5	312	e 13 57	+25	e 25 49	+45	e 40.1	42.6
Tokyo		98.3	312	13 42	+ 6	—	—	40.8	46.2
Christchurch		98.3	227	—	—	23 7?	?	—	—
Kucino		98.4	21	13 48	+12	24 31	[+13]	—	64.1
Belgrade		98.6	36	e 13 36	- 1	i 24 28	[+ 9]	e 49.4	60.3
Bari		98.7	41	6 22	?	24 34	[+15]	58.9	—
Taranto		99.4	40	11 55	?	16 11	?	—	60.2
Trenta		99.4	42	e 14 37	+56	24 7	[-16]	—	45.1
Catania		99.6	44	13 58	+16	—	—	42.2	64.4
Nagoya		100.5	313	e 14 42	+56	—	—	69.8	—
Titizima		100.8	303	14 24	+37	—	—	—	—
Toyouka	N.	101.7	314	e 15 12	?	e 33 36	?	e 43.8	—
Osaka		101.8	313	13 49	- 3	25 23	{+17}	43.8	79.9
Kobe		102.1	313	e 14 16	+23	e 26 34	+49	e 43.0	80.4
Sumoto	E.	102.4	313	14 18	+23	27 25	PS	—	64.2
	N.	102.4	313	14 14	+19	26 40	?	—	45.0
Ekaterinburg		102.9	8	14 5	+ 8	i 24 24	[-16]	—	—
Koti		103.7	313	e 11 7?	?	—	—	—	—
Matuyama		104.1	313	e 12 21	?	—	—	—	—
Irkutsk		104.3	343	e 14 2	- 1	24 29	[-17]	52.1	—
Simferopol		105.5	29	14 28	+21	25 51	[+16]	49.4	—
Yalta		105.9	29	14 7	- 4	25 29	{- 8}	38.1	—
Hukuoka		105.9	315	e 15 7?	+56	27 37	PS	51.0	73.2
Theodosia		106.0	28	e 13 56	-15	e 25 24	[-14]	48.1	—
Miyazaki		106.1	313	15 34	+82	26 42	?	—	—
Nagasaki		106.8	315	13 43	-32	22 58	?	e 28.8	—
Chufeng		109.8	328	e 14 53	+23	e 26 19	{+13}	e 46.1	72.3
Riverview		112.4	240	e 18 56	[+31]	—	—	e 51.8	60.6
Sydney	E.	112.4	240	i 19 31	[+66]	i 29 19	PS	53.4	60.9
Tiflis		112.7	26	15 4	+20	25 38	[+13]	51.1	68.9
Zi-ka-wei		113.2	318	e 15 2	+16	25 22	[- 5]	60.5	74.1
Ksara		114.7	36	15 13	+19	—	—	53.1	—
Helwan		114.9	43	i 15 9	+14	29 32	PS	—	73.9
Baku		115.7	22	e 15 17	+18	20 7	?	—	—
Taihoku		117.3	313	e 20 14	PP	29 40	PS	—	—
Almata		117.6	358	19 7	[+27]	—	—	—	—
Melbourne		117.8	236	e 15 19	+11	25 54	[+11]	54.3	57.6
Tashkent		119.2	5	15 25	+10	—	—	—	—
Adelaide		122.8	240	e 20 37	PP	i 26 12	[+13]	—	75.5
Hong Kong		124.0	316	15 57	+18	29 18	?	53.0	84.4
Manila		124.1	303	e 15 37	- 2	—	—	58.1	—
Amboina		126.6	280	e 17 54	?	i 20 30	PP	76.7	121.4
Phu-Lien		129.9	321	e 19 31	[+24]	e 38 52	SS	66.1	85.3
Dehra Dun		130.4	357	18 17	?	34 17?	?	56.4	83.1
Agra	N.	133.6	356	e 19 25	[+12]	e 32 33	PS	64.4	—
Johannesburg		135.7	109	22 7	PP	40 25	SS	57.5	—
Calcutta		136.5	343	18 43	[-34]	32 43	PS	79.2	89.7
Bombay		141.8	5	19 41	[+17]	32 13	SKSP	59.8	89.3
Perth		141.9	242	e 19 48	[+24]	36 57	?	68.1	76.1
Hyderabad		143.2	355	20 8	[+40]	33 23	SKSP	67.0	76.5
Malabar		146.9	287	e 19 56	[+19]	—	—	e 75.1	—
Batavia		147.1	288	19 42	[+ 5]	—	—	68.7	72.9
Medan		147.9	313	20 3	[+24]	—	—	72.5	90.6
Kodaikanal		150.5	357	19 52	[+ 9]	34 45	?	70.8	93.4
Tananarive		153.3	94	20 13	[+27]	27 10	PPP	73.4	99.6
Colombo		153.6	351	20 2	[+15]	—	—	72.4	96.0

For Notes see next page.

NOTES TO JUNE 3d. 10h. 36m. 53s.

Additional readings :-

Tucson iP = +3m.26s.
Pasadena iNZ = +4m.43s., iZ = +4m.51s., iE = +8m.53s.
Denver iN = +4m.26s., +4m.51s., +5m.31s., and +5m.37s., iSE = +8m.39s., iSEN = +8m.50s. and +8m.53s.
St. Louis iPEN = +5m.6s., +5m.12s., and +5m.23s., iPPN = +5m.53s., iPEN = +6m.17s., iEN = +6m.35s., iS = +9m.38s., iSE = +9m.45s., iSEN = +9m.55s. and +10m.50s.
Branner e = +5m.31s. = PP - 6s.
Berkeley eE = +5m.32s., iZ = +5m.37s. = PP - 5s., iNZ = +10m.29s., eE = +10m.38s.
Columbia iP = +5m.48s. = PP - 6s., i = +6m.46s.
Ukiah iP = +5m.48s. = PP - 9s.
Balboa Heights i = +8m.39s. and +8m.54s. = P_cP - 4s., e = +10m.29s.
Chicago i = +5m.54s., +8m.35s., and +10m.55s.
Madison iP = +6m.15s. = PP - 2s.
Bozeman e = +5m.55s., iPP = +7m.4s.
Ann Arbor iP = +6m.19s., iPP = +6m.55s.; T₀ = 10h.36m.12s.
Charlottesville iPP = +7m.1s., iS = +11m.11s.
Pittsburgh iP = +6m.18s., i = +7m.1s. = PPP + 2s.
Port au Prince i = +7m.12s., PP = +7m.35s., PPP = +7m.59s., i = +8m.51s., SS = +13m.34s., SSS = +13m.49s.
Georgetown iP = +6m.32s., iS = +12m.0s.; T₀ = 10h.36m.36s.
Buffalo iPP = +7m.17s.
Seattle e = +8m.14s. and +13m.17s. = SS + 0s.
Toronto iPN = +6m.43s., iPPN = +7m.23s., iN = +12m.9s.; T₀ = 10h.36m.11s.
Saskatoon PPP = +8m.20s.
Fordham iP = +7m.5s., iPPP = +8m.40s.
Ottawa iPPPP = +8m.35s.
Harvard ePN = +7m.2s., iP = +7m.22s.; T₀ = 10h.36m.0s.
Halifax PP = +10m.6s.
Honolulu T.H. iP = +9m.18s.
La Paz PP = +11m.1s., PPP = +11m.31s., PS = +16m.59s., i = +18m.9s., iSS = +19m.49s., iSSS = +20m.49s., iL_q = +23-5m.
Reykjavik i = +11m.35s. = P_cP + 4s., e = +12m.59s. and +13m.49s. = PP + 16s., PP = +14m.28s., PPP = +15m.50s., PS = +21m.15s., e = +22m.15s., and +22m.51s., SS = +25m.26s., e = +25m.45s.
Scoresby Sund eEZ = +11m.10s., iEZ = +11m.25s., iN = +11m.28s. = P_cP - 3s., eN = +13m.1s., eNZ = +15m.25s., eZ = +21m.58s. and +26m.37s.
Dyce +20m.33s.
Edinburgh iP = +12m.28s., i = +23m.6s., = PS + 15s., +23m.24s., and +29m.21s.
Bidston iP = +12m.37s., SS = +29m.37s.
Stonyhurst SS = +29m.47s.
Dakar PPP = +18m.11s.
Bergen P = +11m.43s., PP = +14m.19s., SS = +26m.41s.
Oxford iP = +12m.40s.
Kew, iPEZ = +12m.31s., iP_cP = +12m.48s., iPP_e = +16m.11s., iE = +21m.52s., iZ = +29m.38s.
Suva SS = +30m.27s., SSS = +33m.7s.
San Fernando, P = +12m.57s.
Toledo iP = +12m.51s., PP = +16m.3s., PPP = +18m.19s., PPPP = +19m.52s., SKS = +22m.52s., S = +23m.37s., PS = +24m.34s., SS = +28m.37s., SSS = +33m.31s., SSSS = +36m.1s.
Malaga, P_cP = +13m.3s., PP = +16m.47s., SKKS = +23m.33s., iS = +23m.46s., PS = +24m.44s., SS = +29m.43s.
Paris i = +13m.3s., iPS = +24m.23s., SS = +30m.57s.
Uccle iP_cP = +12m.59s., i = +14m.20s., iPP = +16m.24s., iPS = +24m.30s., iPPS = +25m.6s., i = +25m.21s., and +26m.11s., iSS = +30m.53s., i = +33m.41s., iSSS = +34m.43s.
Granada PP = +16m.27s., PPP = +18m.48s.
Almeria iP = +13m.7s.
Puy de Dôme i = +13m.7s.
Upsala PP = +16m.32s., iSN = +23m.48s., i = +24m.58s., +25m.59s., and +31m.11s.
Copenhagen iP = +13m.9s., PP = +16m.35s., e = +17m.13s., eN = +21m.43s., PS = +25m.1s., SS = +30m.7s.?
Hamburg eN = +25m.12s., iN = +25m.39s.
Alicante iP = +13m.13s., PP = +16m.49s.
Lund PP = +16m.25s., 17m.19s., PPP = +19m.7s., PS = +24m.55s., e = +27m.49s., SS = +29m.55s.
Feldberg, e = +34m.19s.
Göttingen eP = +13m.12s., iPPEN = +16m.47s., iPPSEN = +25m.57s., eEN = +27m.37s., eSSEN = +30m.19s., eSSSEN = +34m.49s.
Strasbourg i = +13m.11s., iPP = +16m.48s., i = +18m.9s., = PPP + 1s., iPPP = +19m.12s., iPS = +25m.23s., iSS = +30m.48s., iSSS = +35m.0s.

Continued on next page,

Neuchatel ePP = +16m.32s.
Stuttgart iP = +13m.18s., i = +13m.58s., e = +14m.36s., ePP = +16m.51s.,
iS = +24m.27s., iPS = +25m.37s., iPPS = +26m.22s., eSS = +31m.19s.,
eSSS = +35m.31s.
Potsdam eN = +13m.13s., iP = +13m.18s., iN = +14m.0s., iE = +14m.8s., and
+14m.38s., iPEZ = +16m.51s., iPPN = +17m.1s., iZ = +17m.31s., iN =
+17m.47s., i = +18m.11s., =PP - 6s., iEN = +20m.10s., iE = +20m.43s.,
iEZ = +22m.3s., iSE = +23m.55s., iN = +24m.27s., iE = +24m.36s., and
+25m.10s., iEN = +25m.23s., and +26m.10s., iE = +26m.38s., iEN =
+26m.54s., iSSN = +30m.27s., iSSE = +30m.33s., iEN = +31m.36s., iN =
+33m.7s., iSSSE = +33m.37s., iN = +34m.8s., eE = +35m.7s.?
Jena ePEN = +13m.7s., ePZ = +13m.16s., eEZ = +16m.44s., eE = +16m.54s.,
eN = +16m.57s., eE = +25m.31s., eZ = +25m.39s., and +26m.21s.,
eE = +26m.30s., +30m.50s., and +31m.7s., eN = +31m.47s., eZ = +32m.7s.,
eE = +36m.7s.
Marseilles iPP = +16m.51s., eSS = +31m.39s., eSSS = +35m.5s.
Zurich ePP = +16m.52s.
Helsingfors eEZ = +12m.47s., eN = +12m.52s., eE = +13m.15s., iZ = +13m.20s.,
eN = +13m.23s., eZ = +13m.51s., iE = +14m.13s., iN = +14m.39s., iZ =
+15m.5s., iE = +15m.10s., ePPN = +16m.47s., ePEZ = +16m.55s., iE =
+17m.37s., eN = +17m.40s., eE = +20m.43s., and +21m.40s., ePSN =
+25m.21s., iPPSN = +26m.21s., iPKKPN = +30m.10s., eSSN = +31m.51s.,
eSSE = +32m.3s., eE = +34m.13s., eN = +36m.30s.; $T_0 = 10h.36m.28s.$
Ootomari S = +18m.40s.
Cheb ePP = +16m.57s., ePS? = +25m.19s., eSS = +31m.10s., e = +36m.1s.
Algiers, PP = +16m.55s., PPP = +19m.15s., PS = +25m.31s., SS = +30m.22s.
Innsbruck i = +14m.51s., ePP = +16m.49s., e = +18m.1s., ePPP? = +19m.1s.,
ePPS? = +26m.1s., PS = +30m.1s.
Prague ePP = +17m.11s., eS = +25m.24s.
Königsberg, ePE = +13m.24s., iN = +14m.44s., iPPN = +16m.44s., iE =
+17m.13s., eN = +17m.52s., ePPPN = +18m.44s., iN = +21m.52s.,
+24m.32s., +25m.16s., =PS - 4s., +25m.44s., and +27m.0s., eSSN =
+30m.40s.
Pulkovo iP = +13m.31s., PP = +17m.15s., iSS = +31m.43s.
Florence iP = +13m.20s.
Triest i = +13m.42s., and +25m.37s.
Vienna iP = +13m.40s., iN = +16m.38s., iPP = +17m.26s., PPP = +19m.37s.,
SKKS = +24m.29s., S? = +24m.58s., iPPS = +26m.23s., PKKP? =
+29m.43s., SS = +31m.19s., iE = +32m.45s., iN = +32m.55s., SSS =
+35m.38s.
Arapuni SS = +30m.7s.?
Graz iP = +13m.38s., iPP = +17m.26s., iPPP = +19m.16s., iSS = +33m.32s.
Zagreb ePNW = +13m.30s., e = +13m.46s., and +13m.53s., iNW = +14m.3s.,
and +14m.25s., e = +14m.49s., eNW = +17m.31s., =PP + 9s., and
+18m.20s., e = +19m.19s., =PPP + 15s., eNE = +20m.44s., =PPPP + 7s.,
eNW = +20m.57s., e = +22m.51s., i = +24m.57s., =S + 10s., iNW =
+25m.43s., =PS - 13s., and +26m.35s., eNE = +26m.55s., i = +27m.37s.,
eNW = +28m.39s., i = +29m.10s., e = +30m.46s., =SS - 12s., +32m.39s.,
+35m.58s., and +37m.39s., =SSSS - 16s., eNE = +39m.37s., e = +40m.28s.
Laibach e = +17m.23s., =PP + 13s., and +27m.19s.
Wellington PP = +18m.17s., PS = +26m.32s., SS = +32m.7s.
Budapest i = +13m.40s., and +17m.32s., =PP - 18s.
Tokyo PS = +26m.30s., SS = +32m.43s.
Kucino PP = +17m.54s., SS = +32m.37s.
Belgrade eP = +13m.43s., e = +17m.21s., =PP - 11s., ePP = +18m.0s., e =
+19m.35s., =PPP + 4s., i = +24m.28s., e = +25m.34s., i = +27m.49s.,
eSS = +32m.11s., eL = +35m.3s., =SSS - 23s.
Osaka i = +15m.2s., +17m.59s., =PP + 3s., and +33m.11s.
Kobe eZ = +19m.8s., eSZ = +27m.8s., SE? = +28m.28s.
Sumoto iN = +18m.28s., iE = +18m.53s.
Ekaterinburg PP = +17m.49s.
Irkutsk PP = +18m.28s., iPS = +27m.21s., SS = +33m.37s.
Hukuoka ePP = +19m.7s., eSS = +34m.37s.
Chifufeng eE = +19m.3s., =PP + 7s., ePP?E = +19m.28s., iE = +29m.27s.,
i = +29m.30s., iE = +35m.28s., iN = +35m.37s.
Riverview PE = +19m.37s., eZ = +19m.42s., iE = +29m.18s., +30m.48s.,
+35m.54s., and +36m.34s.
Sydney PPP = +25m.37s., =SKS + 13s., PS = +27m.13s., SS = +36m.13s.
Tiflis PP = +19m.42s., SKKS = +26m.29s.
Zi-ka-wei PKP = +18m.22s., iZ = +19m.46s., PPZ = +20m.28s., iZ = +21m.12s.,
PPP? = +23m.18s., PPPPZ = +25m.54s., iZ = +26m.30s., SKKS =
+26m.56s., PPPPPZ = +27m.2s., PS = +30m.26s., PSKS = +30m.44s.,
PPS = +31m.46s., PPPS = +32m.38s., PP($\Delta > 180^\circ$) = +35m.42s., SKKS =
+35m.42s., SSZ = +37m.12s., SPS = +37m.30s., PPS = +37m.46s.,
PPPP($\Delta > 180^\circ$) = +39m.40s., PSSS = +42m.18s., SSSZ = +42m.32s.,
SSSSZ = +46m.36s., PPS($\Delta > 180^\circ$) = +58m.44s.

Continued on next page.

Original bulletins of the International Seismological Summary (ISS) have been obtained thanks to funding provided by the US National Science Foundation through grant EAR-9725140 (Villaseñor et al., 1997) and have been scanned and collected by SGA Storia Geofisica Ambiente (Bologna) thanks to funding provided by the Istituto Nazionale di Geofisica e Vulcanologia (Rome), in the frame of the EUROSEISMOS project.

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Ksara PP = +19m.59s., PPPN = +23m.10s., PPPPN = +25m.15s., =SKS-18s.,
 PPPPPN = +26m.4s., PSN = +29m.42s., PSE = +29m.49s., PPSE =
 +31m.10s., SS = +35m.56s., SSSN = +41m.12s., SSSE = +41m.23s.
 Helwan PP = +19m.47s.
 Melbourne PP = +20m.20s., S = +27m.9s. =SKKS + 8s., PS = +30m.2s., SS =
 +37m.36s.
 Tashkent iPKP = +19m.4s., i = +19m.26s.
 Adelaide e = +23m.17s., iPS = +30m.43s., i = +38m.26s.
 Hong Kong PP = +20m.47s., SS = +38m.10s.
 Manila PKP = +19m.22s.
 Perth P = +22m.17s., =PP-16s., ePP = +26m.7s., PPP = +29m.7s., PPPP =
 +31m.37s., PPPPP = +33m.17s., ? = +37m.52s., PPS = +38m.52s., i =
 +41m.12s., =SS + 7s., +42m.7s., and +42m.42s., SS = +44m.7s.
 Malabar i = +20m.13s.
 Batavia P = +19m.45s., iPZ = +20m.2s., iP = +20m.10s.
 Medan iP = +20m.12s.
 Tananarive PKPN = +20m.16s., =PKP + 2s., iPKPE = +20m.34s., PPE =
 +24m.13s., PPSE = +37m.46s., SSE = +44m.28s., iE = +46m.58s.
 Long waves were also recorded at Andijan and Capetown.

June 3d. 13h. 42m. 39s. Epicentre 40°2 N. 142°4 E.

R.1.

(as on 1931 Sept. 1d.).

Probable error of epicentre ±0°15. Tokyo gives epicentre 39°8 N. 142°2 E. for this shock.

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

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
			m. s.	s.	m. s.	s.	m.	m.
Miyako	0.6	209	0 6	- 3	0 14	- 1	—	—
Morioka	1.1	242	0 15	- 1	0 26	- 2	—	—
Mizusawa	1.4	223	0 20	0	0 34	- 2	—	—
Aomori	1.4	297	0 19	- 1	0 34	- 2	—	—
Isinomaki	1.9	205	0 22	- 6	0 41	- 8	—	—
Akita	1.9	254	0 24	- 4	0 44	- 5	—	—
Hakodate	2.0	321	0 35	+ 6	0 58	+ 7	—	—
Urakawa	2.0	8	0 24	- 5	0 50	- 1	—	—
Muroran	2.4	333	0 38	+ 4	1 4	+ 2	—	—
Yamagata	2.5	219	0 36	0	1 3	- 1	—	—
Hukusima	2.9	212	0 39	- 2	1 9	- 5	—	—
Sapporo	3.0	345	0 43	0	1 25	+ 8	—	—
Kusiro	3.2	28	0 42	- 4	1 19	- 3	—	—
Nemuro	3.9	36	0 57	+ 1	1 41	+ 1	—	—
Mito	4.1	202	0 55	- 3	1 40	- 5	—	—
Utunomiya	4.1	211	0 52	- 6	1 47	+ 2	—	—
Kakioka	4.3	204	0 58	- 3	1 49	- 1	—	—
Tyos	4.6	196	e 1 3	- 3	e 2 10	S*	—	—
Maebasi	4.6	216	0 53	-13	1 25	P*	—	—
Kumagaya	4.7	212	1 7	0	2 5	+ 5	—	—
Nagano	4.8	225	1 9	+ 1	2 19	S*	—	—
Oiwake	4.9	219	1 11	+ 1	2 16	+11	—	—
Tokyo	5.0	206	1 10	- 1	2 11	+ 3	—	—
Wazima	5.1	238	1 11	- 2	2 6	- 4	—	—
Yokohama	5.2	206	1 24	P*	2 21	+ 8	—	—
Numadu	5.8	210	1 30	+ 8	2 40	+12	—	—
Nagoya	6.6	222	e 1 38	+ 4	3 3	+15	—	—
Hikone	6.9	226	1 40	+ 2	3 13	S*	—	—
Kameyama	7.1	223	1 45	+ 4	3 24	S*	—	—
Hatidoyzima	7.4	197	1 47	+ 2	3 2	- 7	—	—
Osaka	7.7	227	1 48	- 1	—	—	3.9	4.5
Sikka	9.0	3	4 24	S*	—	—	—	—

Osaka gives also i = +2m.18s.

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June 3d.	14h.	56m.	17s.	(I)	Epicentre 19°·2N. 104°·2W. (as at 10h.)	O-C.	S.	O-C.	L.	M.	X.
	16h.	28m.	7s.	(III)							X.
	16h.	52m.	52s.	(IV)							X.
		△	Az.	P.	O-C.	S.	O-C.	L.	M.		
		°	°	m. s.	s.	m. s.	s.	m.	m.		
II	Tucson	14·4	336	e 3 23	+ 2	—	—	6·6	—		
III		14·4	336	e 3 24	+ 3	e 6 47	+46'	e 7·4	—		
IV		14·4	336	e 3 20	- 1	—	—	8·8	—		
II	La Jolla	N.	18·0	e 4 12	+ 5	—	—	—	—		
III			18·0	i 4 7	0	—	—	—	—		
II	Riverside	N.	18·8	e 4 8	- 8	—	—	—	—		
III		N.	18·8	e 4 17	+ 1	—	—	—	—		
II	Mount Wilson	N.	19·4	e 4 24	+ 1	—	—	—	—		
III		N.	19·4	e 4 23	0	—	—	—	—		
I	Pasadena	z.	19·4	e 4 23	0	—	—	—	—		
II		z.	19·4	e 4 23	- 0	—	—	—	—		
III			19·4	e 4 22	- 1	—	—	e 14·9	—		
III	Santa Barbara	N.	20·5	e 4 40	+ 5	—	—	—	—		
I	Tinemaha		21·7	e 4 48	0	—	—	—	—		
II			21·7	e 4 42	- 6	—	—	—	—		
III			21·7	i 4 48	0	—	—	—	—		
I	St. Louis		22·9	e 5 0	0	e 9 29	SS	—	14·5		
II			22·9	e 5 2	+ 2	e 9 15	+12	—	13·4		
III			22·9	i 5 0	0	e 9 10	+ 7	—	12·5		
IV			22·9	e 5 1	+ 1	e 9 16	+13	e 12·5	14·1		
I	Florissant		23·0	i 5 0	- 1	i 9 29	SS	—	14·5		
II			23·0	i 5 1	0	i 9 15	+10	—	13·4		
IV			23·0	e 5 1	0	i 9 16	+11	—	12·5		
I	Chicago		26·6	28	—	e 10 1	- 8	14·4	—		
III	Toronto	N.	32·1	35	e 5 7	-77	i 10 21	-76	—	17·5	
III	Paris		86·1	40	e 15 53?	PP	—	—	50·9	—	

Additional readings :—

Riverside III IN = +4m.20s. = PP - 5s.

Chicago I eS = +10m.33s.

Long waves were also recorded for shock I at Tucson, Ann Arbor, Bozeman, and Pittsburgh, for shock II at Ann Arbor, for shock III at Ukiah, Chicago, Ann Arbor, Pittsburgh, Harvard, Georgetown, Scoresby Sund, Stuttgart, De Bilt, Kew, Copenhagen, and Ekaterinburg, and for shock IV at Ann Arbor.

June 3d. 17h. 40m. 9s. Epicentre 19°·2N. 104°·2W. (as at 16h.). R.2.

A = -·232, B = -·915, C = +·329; D = -·969, E = +·245;

G = -·081, H = -·319, K = -·944.

	△	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	14·4	336	i 3 19	- 2	i 6 29	+28	e 7·2	—
La Jolla	18·0	322	e 4 4	- 3	—	—	—	—
Mount Wilson	19·4	323	e 4 22	- 1	e 8 12	SS	—	—
Pasadena	19·4	323	e 4 21	- 2	i 8 12	SS	e 11·4	—
Tinemaha	N.	21·7	e 4 46	- 2	—	—	—	—
St. Louis	22·9	29	e 4 58	- 2	i 9 19	+16	—	14·9
Florissant	23·0	28	i 4 58	- 3	i 9 19	+14	—	14·9
Berkeley	24·4	324	e 5 9	- 5	e 9 32	+ 2	—	—
Columbia	25·3	50	e 5 27	+ 4	e 10 3	+17	e 16·4	—
Ukiah	25·8	324	e 5 31	+ 4	e 9 59	+ 4	—	—
Chicago	26·6	28	—	—	e 10 40	+31	i 14·4	—
Bozeman	27·0	349	—	—	e 10 26	+11	e 14·4	—
Ann Arbor	28·9	32	e 6 51	PP	e 13 15	?	e 15·6	—
Charlottesville	29·2	44	—	—	e 11 3	+12	e 15·6	—
Pittsburgh	29·7	39	e 6 46	PP	e 11 4	+ 5	17·1	—
Georgetown	30·6	44	e 6 12	+ 2	—	—	—	—
Toronto	N.	32·1	35	e 7 5	+41	e 11 57	+20	15·5
Victoria	33·0	337	e 6 25	- 7	i 11 55	+ 4	19·4	18·2
Fordham	33·7	44	e 6 40	+ 2	e 12 35	+34	—	—
San Juan	36·0	85	e 6 51	- 7	e 12 42	+ 6	—	—

Continued on next page.

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	Δ °	Az. °	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
La Paz	50.3	133	e 9 3	+ 9	i 16 1	- 4	—	29.2
Sucre	54.1	133	9 28	+ 6	—	—	—	—
Scoresby Sund	69.4	20	e 10 51?	-16	e 20 17	+ 3	37.8	—
Edinburgh	80.2	34	—	—	e 22 21	+ 3	—	—
Oxford	82.7	37	—	—	e 22 39	- 5	—	—
Kew	83.3	37	e 12 19	- 6	e 22 46	- 4	e 45.8	—
Paris	86.1	40	e 12 39	0	e 23 19	+ 1	27.8	30.8
Uccle	86.2	37	e 12 39	0	e 22 51?	-28	—	—
De Bilt	86.2	35	12 38	- 1	e 23 22	+ 3	e 46.8	—
Hamburg	88.0	33	e 17 51?	PPP	—	—	55.8	—
Stuttgart	90.0	37	e 12 57	0	—	—	—	—
Helsingfors	90.6	22	e 15 51?	?	—	—	—	—
Cheb	91.1	35	e 19 51?	?	—	—	—	54.8
Kucino	98.4	21	—	—	e 24 11	[- 7]	e 58.6	60.4

Additional readings:—

Berkeley iZ = +5m.13s., eE = +9m.38s. = S + 8s.

Victoria PE? = +6m.30s.; T₀ = 17h.40m.1s.

Fordham eN = +10m.27s.

La Paz iSE = +16m.9s.

Uccle e = +26m.33s.

Long waves were also recorded at Honolulu T.H., Sitka, Harvard, Scoresby Sund, San Fernando, Copenhagen, Lund, Baku, Ekaterinburg, and Irkutsk.

June 3d. 19h. 59m. 58s. (I)		20h. 12m. 2s. (II)		Epicentre 19°2N, 104°2W. (as at 17h.)				X.	X.
	Δ °	Az. °	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.	
I Tucson	14.4	336	(3 12)	- 9	—	—	6.9	—	
II La Jolla	18.0	322	e 4 11	+ 4	—	—	—	—	
II Riverside	18.8	324	e 4 16	0	—	—	—	—	
II Mount Wilson	19.4	323	e 4 21	- 2	—	—	—	—	
I Pasadena	19.4	323	e 4 13	- 10	—	—	—	—	
II	19.4	323	e 4 21	- 2	—	—	—	—	
II Santa Barbara N.	20.5	321	e 4 40	+ 5	—	—	—	—	
I Tinemaha	21.7	328	e 4 44	- 4	—	—	—	—	
II	21.7	328	e 4 48	0	—	—	—	—	
I St. Louis	22.9	29	i 5 14	PP	i 9 28	SS	12.7	—	
II	22.9	29	e 4 57	- 3	e 9 10	+ 7	—	14.2	
I Florissant	23.0	28	e 5 10	+ 9	e 9 25	+ 20	12.7	—	
II	23.0	28	e 4 57	- 4	e 9 10	+ 5	—	14.0	
II Columbia	25.3	50	e 4 30	-53	—	—	e 18.3	—	
I Ann Arbor	28.9	32	—	—	e 9 8	PcP	e 16.3	—	
II Pittsburgh	29.7	39	e 4 46	?	e 6 46	PP	19.4	—	
II Paris	86.1	40	e 17 58?	PPP	—	—	49.0	—	

Tucson readings are given as separate L's.

Long waves were also recorded for one or other of these shocks at Honolulu T.H. and other American, European, and Russian stations.

June 3d. Ottawa records after-shocks from the epicentre of 10h. at the following times:—

h.	m.	h.	m.	h.	m.	h.	m.
15	15	17	12	20	17	22	6
15	28	17	45	20	30	22	32
16	35	19	17	21	37	—	—

June 3d. Readings also at 0h. (Ekaterinburg), 1h. (near La Paz), 5h. (near Manila), 6h. (La Paz, Simferopol, near Sebastopol, Theodosia, and Yalta), 8h. (Sitka), 11h. (La Paz), 13h. (Pasadena, Tinemaha, and La Paz), 14h. (Hong Kong and near Manila), 16h. (Tashkent), 17h. (Baku, Tiflis, Ekaterinburg, Irkutsk, Andijan, Samarkand, Chiufeng, Tashkent, Pulkovo, Almata, Bombay, Hong Kong, Copenhagen, Lund, Vienna, Piacenza, and Florence), 19h. (Tucson (2) and near Mizusawa), 21h. (Andijan, Samarkand, and Tyos), 22h. (Andijan, Samarkand, Tashkent, Ekaterinburg, Irkutsk, and near Manila).

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June 4d. 2h. 0m. 48s. Epicentre 41°-0N. 143°-6E.

N.1.

Probable error of epicentre $\pm 0^{\circ}.16$.

Epicentre given by Tokyo.

A = - .607, B = + .448, C = + .656 ; D = + .593, E = + .805 ;
G = - .528, H = + .389, K = - .755.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Urakawa	1-3	328	0 19	+ 1	0 37	+ 4	—	—
Obihiro	1-9	351	0 45	+17	1 28	+39	—	—
Aomori	2-1	265	0 28	- 2	0 50	- 4	—	—
Kusiro	2-1	17	0 36	+ 6	0 59	+ 5	—	—
Morioka	2-3	235	0 32	- 1	0 56	- 3	—	—
Hakodate	2-3	290	0 25	- 8	0 48	-11	—	—
Muroran	2-4	304	0 34	0	0 55	- 7	—	—
Sapporo	2-7	321	0 38	- 1	1 1	- 8	—	—
Mizusawa	2-7	225	0 39	0	1 7	- 2	—	—
Nemuro	2-8	32	0 44	+ 4	1 14	+ 2	—	—
Asahigawa	2-9	342	0 45	+ 4	1 18	+ 4	—	—
Akita	3-0	244	0 43	0	1 14	- 3	—	—
Hokusima	4-0	218	0 58	+ 1	1 45	+ 3	—	—
Niigata	4-6	230	1 19	P*	2 20	S*	—	—
Kakioka	5-5	211	1 17	- 1	2 15	- 5	—	—
Tyosi	5-7	203	1 20	- 1	2 19	- 6	2-9	—
Takada	5-7	229	1 36	P*	3 6	S*	—	—
Maebasi	5-8	219	1 21	- 1	2 26	- 2	—	—
Kumagaya	5-8	216	1 24	+ 2	2 40	+12	—	—
Nagano	6-1	226	1 25	- 2	3 8	S*	—	—
Tokyo	6-1	211	1 30	+ 3	2 36	0	—	—
Oiwake	6-1	222	1 31	+ 4	2 47	+11	—	—
Wazima	6-3	238	1 30	0	2 40	- 1	—	—
Yokohama	6-4	211	1 31	0	2 38	- 5	—	—
Matumoto	6-4	225	1 36	+ 5	2 49	+ 6	—	—
Husiki	6-6	233	1 33	- 1	3 12	S*	—	—
Misima	6-9	214	1 41	+ 3	3 5	+ 9	—	—
Numadu	7-0	214	1 33	P*	3 17	S*	—	—
Nagoya	7-8	224	1 57	+ 6	—	—	3-8	—
Hikone	8-2	228	1 57	+ 1	3 39	+10	—	—
Kameyama	8-4	225	2 2	+ 3	3 41	+ 7	—	—
Osaka	9-0	228	1 55	-12	—	—	4-1	5-0
Kobe	9-2	229	e 2 5	- 5	e 4 5	+11	—	5-2
Sumoto	Z.	9-2	e 2 8	- 2	e 3 59	+ 5	—	5-2
	E.	9-6	e 2 24	+ 8	e 4 9	+ 6	—	5-3
	N.	9-6	e 2 18	+ 2	e 4 4	+ 1	—	5-3
Koti	10-9	230	—	—	e 4 42	+ 6	—	—
Irkutsk	28-8	307	e 6 6	+12	e 10 39	- 6	16-2	—
Andijan	52-2	294	e 9 12	+ 4	e 16 19	-12	—	—
Ekaterinburg	53-1	317	1 9 15	0	i 16 42	- 1	24-2	34-8
Pulkovo	65-4	329	10 38	- 3	19 18	- 7	34-2	41-4
Kucino	66-0	323	—	—	e 19 9	-23	e 33-6	37-2
Helsingfors	67-1	332	e 11 38	(+17)	—	—	e 41-2	—
Tiflis	69-5	308	11 7	- 1	20 25	+10	e 36-2	38-9
Tinemaha	71-9	56	e 11 26	+ 4	—	—	—	—
Pasadena	73-8	58	1 11 35	+ 2	—	—	—	—
Mount Wilson	73-9	58	e 11 34	0	—	—	—	—
Riverside	N.	74-4	e 11 38	+ 1	—	—	—	—
Stuttgart	81-7	331	e 12 15	- 2	—	—	e 46-2	—
Zurich	83-0	331	e 12 50	+27	—	—	—	—
Neuchatel	83-9	332	e 12 27	- 1	—	—	—	—
Florence	85-0	327	e 13 32	+59	23 2	- 6	—	44-2

Additional readings:—

Osaka I = +2m.16s. and +3m.3s.

Kucino e = +23m.9s.

Helsingfors eE = +11m.46s.

Tiflis e = +11m.21s. = P₀P - 10s.

Stuttgart eZ = +12m.30s.

Long waves were recorded at Hong Kong and at other European stations.

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June 4d.		2h. 32m. 10s. (I)	3h. 51m. 24s. (II)	5h. 15m. 24s. (III)	10h. 39m. 45s. (IV)	16h. 0m. 15s. (V)	Epicentre 19°-2N.104°-2W. (as on 3d.)					X.
		Δ	Az.	P.	O-C.	S.	O-C.	L.	M.			
		°	°	m. s.	s.	m. s.	s.	m.	m.			
I	Tucson	14.4	336	e 3 17	- 4	—	—	e 7.5	—		—	
V		14.4	336	e 3 1	-20	—	—	—	—		—	
IV	Pasadena	N.	323	e 4 9	—	—	—	—	—		—	
IV	Tinemaha	21.7	328	e 4 38	-10	—	—	—	—		—	
I	St. Louis	22.9	29	e 5 3	+ 3	e 9 19	+16	e 12.4	—		14.4	
II		22.9	29	e 5 1	+ 1	e 9 18	+15	—	—		12.8	
III		N.	22.9	29 15 2	+ 2	—	—	—	—		17.8	
IV		22.9	29	e 5 2	+ 2	7 23	?	—	—		12.4	
V		22.9	29	e 5 0	0	—	—	—	—		12.2	
I	Florissant	E.	23.0	28 e 5 3	+ 2	e 9 19	+14	—	—		14.4	
II		23.0	28	e 5 1	0	e 9 15	+10	—	—		12.8	
III		N.	23.0	28 e 4 59	- 2	19 56	SS	—	—		17.8	
IV		23.0	28	e 4 58	- 3	e 9 20	+15	—	—		12.4	
V		23.0	28	e 5 0	- 1	e 8 30	-35	—	—		12.4	

Long waves were also recorded for these shocks at various American stations.

June 4d. 14h. 11m. 12s. Epicentre 34°-5N. 135°-0E. (as on 1931 July 10d.). X.

A = -.583, B = +.583, C = +.566.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sumoto	0.2	214	1 0 0	- 3	10 6	+ 1	—	0.1
Kobe	0.2	39	0 2	- 1	10 5	- 2	—	0.2
Osaka	0.4	67	0 5	- 1	10 8	—	0.2	0.3
Toyooka	1.1	352	1 0 19	+ 3	10 38	S*	—	0.7
Koti	1.5	232	e 0 21	0	e 0 39	0	—	—
Nagoya	1.7	67	e 0 26	+ 2	0 49	S*	—	—
Matuyama	2.0	250	1 0 32	+ 3	1 0 59	S*	—	1.0

Additional reading:—

Kobe SEZ = +12s.

Long waves were recorded at Ekaterinburg.

June 4d. 19h. 1m. 32s. Epicentre 19°-2N. 104°-2W. (as at 2h.). X.

	Δ	Az.	P.	O-C.	S.	O-C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Tucson	14.4	336	e 3 22	+ 1	—	—	e 7.3
La Jolla	18.0	322	e 4 3	- 4	—	—	—
Riverside	18.8	324	e 4 16	0	—	—	—
Mount Wilson	19.4	323	e 4 21	- 2	—	—	—
Pasadena	19.4	323	e 4 21	- 2	—	—	—
Santa Barbara	20.5	321	e 4 34	- 1	—	—	—
Tinemaha	21.7	328	e 4 48	0	—	—	—
St. Louis	22.9	29	e 5 4	+ 4	e 9 17	+14	e 13.1
Pittsburgh	29.7	39	—	—	e 13 1	?	e 16.5

Additional reading:—

Tucson e = +3m.46s.

Long waves were also recorded at Columbia, Harvard, Scoresby Sund, Kew, De Bilt, Copenhagen, Tiflis, Ekaterinburg, and Baku.

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June 4d. 21h. 39m. 32s. Epicentre 19°·2N. 104°·2W. (as at 19h.).

X.

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

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	14·4	336	i 3 15	- 6	e 5 58	- 3	7·1	—
La Jolla	18·0	322	e 3 54	-13	—	—	—	—
Riverside	18·8	324	e 4 10	- 6	—	—	—	—
Mount Wilson	19·4	323	e 4 16	- 7	—	—	—	—
Pasadena	19·4	323	i 4 17	- 6	—	—	e 11·0	—
Denver	20·5	358	—	—	e 7 28	-48	—	10·0
Santa Barbara	20·5	321	4 53	PP	—	—	—	—
Tinemaha	21·7	328	e 4 43	- 5	—	—	—	—
St. Louis	22·9	29	i 5 3	+ 3	e 9 18	+15	—	12·4
Berkeley	24·4	324	—	—	e 9 41	+11	—	—
Columbia	25·3	50	e 6 0	+37	e 10 12	+26	e 16·7	—
Ukiah	25·8	324	—	—	e 10 3	+ 8	e 14·0	—
Chicago	26·6	28	—	—	e 10 19	+10	14·6	—
Madison	27·0	24	e 6 11	PP	e 10 36	+21	13·3	—
Ann Arbor	28·9	32	—	—	e 13 4	?	e 18·2	—
Pittsburgh	29·7	39	e 6 58	PP	e 11 18	+19	16·6	—
Georgetown	30·6	44	e 6 16	+ 6	—	—	i 17·5	—
Victoria	33·0	337	9 44	?	(11 45)	- 6	19·1	19·9
San Juan	36·0	85	—	—	e 12 57	+21	e 17·5	—
Harvard	36·3	43	—	—	e 12 43	+ 2	e 20·5	—
La Paz	N. 50·3	133	e 9 5	+11	—	—	59·5	66·3
Apia	74·2	248	—	—	e 16 11	?	—	—
Oxford	82·7	37	—	—	e 22 45	+ 1	—	—
Paris	86·1	40	e 12 28?	-11	—	—	47·5	—
De Bilt	86·2	35	—	—	e 23 30	+11	e 43·5	—
Uccle	86·2	37	—	—	e 22 28?	[-40]	e 45·5	—
Copenhagen	88·0	30	—	—	23 22	[+ 2]	50·5	—
Stuttgart	90·0	37	e 12 58	+ 1	e 23 33	[- 0]	e 49·5	—
Pulkovo	92·8	21	e 16 51	PP	e 23 45	[- 4]	43·5	55·7
Ekaterinburg	102·9	8	e 18 11	PP	e 24 39	[- 1]	47·5	—
Tiflis	112·7	26	—	—	e 29 13	PS	e 62·5	—

Additional readings and note:—

Tucson e = +6m.20s.

St. Louis iSE = +9m.26s.

Ann Arbor eE = +14m.46s., e = +15m.40s.

Pittsburgh eSS = +12m.48s.

Victoria gives its two readings as PN? and PE?

Stuttgart ePSE = +25m.13s.

Pulkovo e = +25m.34s. = PS +10s.

Ekaterinburg e = +27m.24s. = PS +8s.

Long waves were also recorded at Honolulu T.H., Sitka, Seattle, Bozeman, Buffalo, Granada, Kew, Edinburgh, Helsingfors, Kucino, Baku, and Irkutsk.

June 4d. Continuation of the list of after-shocks recorded by Ottawa from the epicentre of 3d. 10h.

h. m.	h. m.	h. m.	h. m.
0 24	5 33	14 9	19 20
2 50	10 58	16 19	21 , 47
4 11			

June 4d. Readings also at 0h. (Harvard (3), Pittsburgh, Riverside, Tucson, Tinemaha, and Pasadena), 1h. (Ekaterinburg, Tashkent, near Andijan, and Samarkand), 2h. (Pittsburgh), 7h. (Andijan (2), near Samarkand, and near Apia), 10h. (Vienna and near La Paz), 11h. (near Apia), 13h. (Tiflis, Pasadena, Tinemaha, Riverside, Santa Barbara, and Tucson), 14h. (Harvard, Pittsburgh, and Tashkent), 16h. (near Apia), 17h. (Sucre and near La Paz), 20h, and 21h. (Apia), 22h. (Tyosi).

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June 5d. 9h. 4m. 44s. Epicentre 19°·1N. 105°·0W. N.2.

A = -·245, B = -·913, C = +·327; D = -·966, E = +·259;
G = -·085, H = -·316, K = -·945.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	14·2	339	i 3 16	- 2	e 6 12	+16	6·8	—
La Jolla	17·6	324	e 3 58	- 4	e 7 35	+20	—	—
Riverside	18·5	326	e 4 15	+ 2	e 7 50	SS	—	—
Mount Wilson	19·0	325	e 4 19	0	—	—	—	—
Pasadena	19·0	325	e 4 18	- 1	e 8 7	SS	e 9·8	—
Santa Barbara	20·2	323	e 4 33	+ 1	—	—	—	—
Denver	20·6	2	—	—	e 7 58	-20	e 10·7	—
Tinemaha	21·4	330	e 4 42	- 2	—	—	—	—
Lick	23·3	325	e 5 12	+ 8	—	—	—	—
St. Louis	23·4	30	e 5 0	- 5	i 9 14	+ 2	—	13·8
Berkeley	24·0	325	i 5 13	+ 3	e 9 34	+11	—	—
Ukiah	25·5	326	e 5 28	+ 3	e 9 59	+ 9	16·9	—
Columbia	26·0	50	e 5 34	+ 5	e 9 56	- 2	e 17·0	—
Bozeman	27·0	351	—	—	e 10 16	+ 1	e 13·4	—
Chicago	27·1	29	—	—	e 10 17	0	e 12·2	—
Ann Arbor	29·4	33	e 6 58	+58	e 11 34	+39	i 18·4	—
Pittsburgh	30·3	39	e 6 51	PP	e 11 6	- 3	e 13·1	—
Georgetown	31·2	44	e 6 14	- 2	e 11 40	+17	—	19·2
Buffalo	32·5	36	e 6 16	-11	—	—	i 20·3	—
Toronto	N. 32·6	35	e 6 35	+ 7	e 11 41	- 4	19·3	—
Victoria	E. 32·8	337	6 41	+11	11 57	+ 9	16·8	22·8
	N. 32·8	337	6 32	+ 2	11 53	+ 5	—	—
Fordham	N. 34·4	44	e 6 30	-14	e 12 18	+ 6	i 18·3	—
Ottawa	35·7	35	e 6 53	- 2	e 12 36	+ 4	e 19·3	—
San Juan	36·8	85	e 7 6	+ 1	e 12 36	-12	e 15·7	—
Harvard	36·9	43	e 6 39	-27	e 12 51	+ 1	e 18·3	—
Sitka	44·1	337	—	—	e 14 44	+ 7	e 23·8	—
La Paz	50·8	133	8 58	+ 1	i 16 15	+ 3	23·3	35·3
Sucre	54·6	133	e 9 24	- 2	—	—	—	—
Scoresby Sund	69·8	20	10 58	-11	—	—	31·3	—
Edinburgh	80·5	34	e 12 16?	+ 6	e 22 28	+ 7	e 43·3	—
Bidston	81·6	37	12 21	+ 5	22 33	0	—	—
Stonyhurst	81·8	36	e 12 36	+19	—	—	45·8	—
Oxford	83·2	37	—	—	i 22 52	+ 3	e 42·9	56·6
Kew	83·9	37	e 12 27	- 1	e 22 54	[+ 3]	e 45·3	—
San Fernando	85·6	53	—	—	23 16	+ 2	—	54·8
Paris	86·6	40	12 40	- 1	e 23 22	- 1	43·3	53·3
De Bilt	86·7	35	e 12 42	0	e 23 30	+ 6	e 42·3	50·5
Uccle	86·8	37	e 12 52	+10	e 23 10	[- 2]	e 46·3	—
Granada	87·2	52	i 12 48	+ 4	e 22 57	[-18]	e 51·2	—
Almeria	88·2	52	e 13 7	+18	—	—	—	—
Hamburg	88·5	33	e 20 16?	?	—	—	e 55·3	57·3
Copenhagen	88·6	30	—	—	23 24	[0]	49·3	—
Lund	89·0	30	—	—	23 26	[0]	55·3	—
Stuttgart	90·6	37	e 13 1	+ 1	e 23 32	[- 4]	e 44·3	—
Potsdam	90·7	33	e 19 16?	PP	—	—	49·3	—
Cheb	91·6	35	—	—	e 23 39	[- 3]	e 47·3	57·3
Algiers	92·2	50	(e 15 16?)	?	—	—	e 15·3	—
Piacenza	92·7	40	e 13 16	+ 6	23 52	[+ 4]	—	64·8
Pulkovo	93·2	21	e 16 53	PP	e 23 45	[- 6]	47·3	55·8
Florence	94·4	41	e 19 32	?	—	—	—	45·3
Triest	94·8	38	e 13 2	-18	e 23 37	[-23]	e 53·3	—
Kucino	98·8	21	e 22 34	?	e 24 17	[- 3]	e 47·4	58·9
Ekaterinburg	103·1	8	e 13 16?	PP	e 24 36	[- 5]	46·3	63·0
Irkutsk	104·2	343	e 14 3	0	e 25 16?	[- 9]	e 54·3	63·4
Baku	116·1	22	e 20 2	PP	e 29 35	PS	56·7	71·7

For Notes see next page.

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NOTES TO JUNE 5d. 9h. 4m. 44s.

Additional readings :-

Berkeley ePZ = +4m.49s., iPE = +5m.16s., eE = +5m.31s. = PP - 6s., iN = +9m.39s., iEZ = +9m.45s.
 Ukiah SS = +16m.9s. = S_cS - 10s.
 Bozeman e = +9m.53s.
 Chicago e = +10m.30s. and +11m.40s.
 Ann Arbor e = +13m.46s. and +16m.16s.
 Toronto i = +15m.57s.
 Fordham eN = +14m.30s. = SS + 17s.
 Harvard ePP = +8m.32s.
 La Paz iPEZ = +9m.6s., PPE = +11m.17s., PPP = +11m.59s., PSE = +16m.47s., SSE = +19m.39s.
 De Bilt eE = +23m.9s. = S_cS - 2s.
 Stuttgart ePP = +16m.30s.
 Pulkovo e = +22m.24s., +25m.40s. = PS + 11s. and +30m.36s. = SS + 11s.
 Ekaterinburg e = +26m.22s. = S + 28s.
 Irkutsk e = +18m.15s. = PP + 1s. and +38m.16s.?
 Baku e = +40m.31s.
 Long waves were also recorded at Honolulu T.H., Apia, Bombay, Hong Kong, and other American and European stations.

June 5d. Readings also at 1h. (Medan and near Sumoto (2)), 2h. (La Paz), 3h. (Tucson), 4h. (Ottawa and near Santiago), 5h. (La Paz, Stonyhurst, and Wellington), 6h. (Almata, near Andijan, and Samarkand), 7h. (near Wellington), 8h. (Lick), 9h. (Tyosi and near Mizusawa), 11b. (Rio de Janeiro and Vienna), 12h. (Agra, Amboina, Apia, and Wellington), 13h. (Adelaide, Melbourne, Riverview, Sydney, Perth, Manila, Hong Kong, Irkutsk, Ekaterinburg, Tashkent, Bombay, Kucino, Pulkovo, Copenhagen, De Bilt, Stuttgart, and La Paz), 14h. (Ottawa, Scoresby Sund, Edinburgh, Kew, Paris, and Cheb), 15h. (Malaga), 18h. (Ottawa, Tucson, Pittsburgh, Pasadena, and Tinemaha), 19h. (Scoresby Sund), 20h. (Berkeley, Lick, Branner, and Columbia), 21h. (near Mizusawa), 22h. (Mizusawa and Tyosi).

June 6d. 6h. 26m. 21s. Epicentre 3°·5N. 122°·5E. X.

(as on 1930 Nov. 8d., but with the great depth of focus 0·075 assumed for that day reduced to 0·030).

A = -·536, B = +·842, C = +·061 ; D = +·843, E = +·537 ;
 G = -·033, H = +·051, K = -·998.

	Corr. for Focus	Δ	Az.	P.		O-C.	S.		O-C.	L.
				m.	s.		m.	s.		
Amboina	-0·1	9·2	142	e 2	3	- 6	3	36	-15	-
Manila	-0·5	11·2	352	e 6	55	?	9	41	?	-
Malabar	-1·1	18·3	234	3	47	-10	i 6	5	-61	-
Batavia	-1·1	18·4	238	i 3	56	- 2	i 6	14	-55	-
Bombay	-3·1	50·8	292	14	55	S	(14	55)	-34	-
Andijan	-3·5	58·3	318	e 9	40	+13	-	-	-	-
Tashkent	-3·6	60·7	318	-	-	-	i 17	59	+21	-
Baku	-3·9	74·5	311	11	14	0	20	28	0	e 34·2
Tiflis	-3·9	78·5	312	11	31	- 7	21	6	- 9	e 72·1
Pulkovo	-4·2	88·1	330	12	26	- 2	22	29	-27	-
Pasadena	-	111·8	51	i 17	45	[-38]	-	-	-	-
Mount Wilson	-	111·8	51	e 17	47	[-36]	-	-	-	-

Additional readings :-

Malabar iP = +3m.52s., i = +6m.1s.
 Tashkent i = +18m.2s. = PS - 30s.

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June 6d. 8h. 44m. 28s. Epicentre 40°·75N. 124°·5W. N.I.

Probable error of epicentre $\pm 0^{\circ}\cdot 19$.

The determination is adopted from the paper by N. R. Sparks "The Eureka Earthquake," Bull. Seis. Soc. America, XXVI, No. 1.

A = -·429, B = -·624, C = +·653; D = -·824, E = +·566;
G = -·370, H = -·538, K = -·758.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ukiah	1·9	149	i 0 25	- 3	—	—	—	—
Berkeley	3·4	148	e 0 46	- 3	i 1 26	- 1	—	—
San Francisco	3·4	153	e 0 44	- 5	i 1 26	- 1	—	—
Branner	3·8	151	e 0 51	- 3	i 1 34	- 3	—	—
Lick	N. 4·1	146	e 0 32?	- 26	—	—	—	—
Tinemaha	6·1	125	e 1 30	+ 3	i 2 53	+ 17	—	—
Seattle	7·1	11	i 1 52	+ 11	S* 3 44	—	—	—
Santa Barbara	7·4	148	e 1 46	+ 1	i 3 10	+ 1	—	—
Victoria	E. 7·7	6	1 50	+ 1	—	—	3·4	4·8
	N. 7·7	6	1 44	- 5	—	—	3·6	5·0
Mount Wilson	8·3	140	e 1 53	- 5	e 3 33	+ 2	e 4·0	—
Pasadena	8·4	141	i 1 54	- 5	i 3 33	- 1	e 3·9	—
Riverside	8·8	138	e 2 3	- 2	e 3 49	+ 5	e 4·3	—
La Jolla	9·8	141	e 2 20	+ 2	—	—	—	—
Bozeman	10·9	59	e 2 32	- 1	e 4 30	- 6	i 5·8	—
Tucson	13·9	123	i 3 14	0	e 5 48	- 1	e 6·2	—
Denver	14·9	88	e 3 25	- 2	e 6 17	+ 4	—	8·3
Sitka	17·7	340	i 4 6	+ 3	i 7 32	SS	i 11·0	—
Florrisant	26·1	83	e 5 28	- 2	i 10 0	0	—	14·5
St. Louis	26·3	83	e 5 29	- 3	e 10 1	- 2	—	14·0
Chicago	27·5	76	i 5 44	+ 1	e 10 10	- 14	13·0	—
Ann Arbor	30·3	73	e 6 26	+ 18	e 11 8	- 1	i 14·0	16·6
Toronto	E. 33·1	69	i 6 53	+ 20	i 11 58	+ 6	16·5	—
	N. 33·1	69	e 6 50	+ 17	i 11 50	- 2	15·5	—
Pittsburgh	33·5	75	e 6 42	+ 6	e 11 59	+ 1	e 15·0	—
Buffalo	33·7	71	e 6 40	+ 2	e 12 0	- 1	e 16·5	—
Honolulu T.H.	34·2	246	e 6 52	+ 10	i 12 15	+ 6	—	—
Columbia	34·8	87	e 6 53	+ 6	e 12 17	- 1	17·5	—
Ottawa	35·4	65	e 6 56	+ 3	e 12 28	+ 1	e 16·5	—
Georgetown	36·0	76	e 7 1	+ 3	12 32	- 4	—	18·5
Fordham	37·8	73	i 7 12	- 1	i 13 0	- 3	i 17·5	—
Harvard	39·3	69	e 7 31	+ 5	i 13 29	+ 3	e 17·5	—
San Juan	54·3	95	i 9 25	+ 2	e 16 52	- 7	e 23·3	—
Scoresby Sund	55·9	23	9 36	+ 1	17 28	+ 7	27·5	—
Sikka	61·7	312	13 54	PPP	—	—	—	—
Edinburgh	71·3	30	e 11 32?	+ 13	i 20 56	+ 19	34·5	42·6
Bidston	73·2?	32	i 20 52	S	(i 20 52)	- 7	—	—
Upsala	74·7	18	e 11 31	- 8	e 21 11	- 6	e 36·5	44·0
Osaka	74·7	303	i 11 47	+ 8	21 42	PS	—	—
Oxford	75·2	33	e 11 42	+ 1	i 21 19	- 3	e 34·5	43·9
Kew	75·8	32	e 11 40	- 5	e 21 28	- 1	e 33·5	44·4
Helsingfors	76·0	15	e 11 46	0	e 21 30	- 2	e 36·0	—
Copenhagen	76·8	23	i 11 50	0	21 38	- 3	37·5	—
Lund	77·1	23	i 11 50	- 3	21 38	- 6	37·5	—
Pulkovo	77·3	12	i 11 52	- 2	i 21 45	- 1	35·5	44·3
De Bilt	77·4	28	i 11 53	- 1	21 47	0	e 38·5	42·3
La Paz	77·5	124	e 11 47	- 8	e 21 40	- 8	37·9	47·5
Irkutsk	77·8	332	e 11 57	0	e 21 55	+ 3	39·5	46·7
Hamburg	77·9	26	e 11 56	- 1	e 21 56	+ 3	e 38·5	46·5
Uccle	78·1	30	e 11 57	- 1	e 21 56	+ 1	—	43·4
Paris	79·0	32	e 12 3	0	22 5	0	37·5	39·5
Göttingen	79·6	27	i 12 16	+ 10	—	—	e 39·5	48·5
Potsdam	79·9	24	e 12 2	- 5	e 22 14	- 1	e 31·5	—
Sucre	81·2	124	i 11 20	- 54	—	—	—	—
Strasbourg	81·2	29	e 12 26	+ 12	e 22 44	+ 16	e 40·5	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Stuttgart	81-6	28	e 12 16	0	e 22 34	+ 1	e 40-5	—
Cheb	81-6	26	—	—	e 23 32?	+59	e 39-5	44-5
Neuchatel	82-2	31	e 12 21	+ 2	—	—	e 45-5	—
Kucino	82-3	10	i 12 19	- 1	22 35	[- 3]	35-7	47-1
Ekaterinburg	82-3	357	i 12 22	+ 2	e 22 38	[0]	33-9	51-3
Zurich	82-5	30	e 12 22	+ 1	e 22 39	[- 1]	—	—
Toledo	82-6	42	e 12 22	+ 1	e 22 43	0	e 38-1	44-4
Chur	83-3	30	e 12 18	- 7	e 23 5	+15	—	—
Innsbruck	83-6	28	i 12 50	+24	—	—	—	—
San Fernando	84-4	45	—	—	i 23 8	+ 6	38-5	48-5
Tortosa	N. 84-4	38	e 12 42	+12	—	—	e 41-5	46-6
Vienna	84-5	25	e 12 31	0	22 57	- 6	e 43-5	53-5
Piacenza	84-8	30	i 12 44	+12	23 4	- 2	—	54-1
Malaga	85-0	44	—	—	i 23 0	- 8	38-7	44-3
Granada	85-1	43	i 12 36	+ 2	i 23 12	+ 3	42-6	48-3
Graz	85-2	26	e 12 43	+ 9	e 23 21	+11	e 43-5	54-2
Zi-ka-wei	Z. 85-8	308	i 12 44	+ 7	i 23 16	0	—	58-0
Alicante	85-8	40	—	—	e 22 54	[-11]	e 44-0	—
Almeria	86-0	43	e 12 46	+ 8	e 22 34	[-32]	e 43-1	—
Budapest	86-0	24	i 12 30	- 8	23 15	- 3	e 39-5	49-0
Prato	86-4	30	i 12 46	+ 6	23 32	+11	—	—
Zagreb	86-5	26	e 12 42	+ 1	e 23 40	+18	e 40-5	46-0
Triest	86-5	27	e 12 38	- 3	e 22 53	[-17]	e 42-5	—
Florence	86-6	30	i 12 41	0	23 17	- 6	37-5	44-5
Algiers	88-8	39	e 12 51	- 1	23 22	[- 3]	45-5	—
Simferopol	92-2	15	13 8	0	e 25 36	PS	45-9	—
Yalta	92-6	15	13 3	- 6	—	—	45-5	—
Hong Kong	96-7	307	17 42	PP	24 16	[+ 7]	39-3	59-2
Tiflis	96-9	8	—	—	24 10	[0]	e 46-0	60-7
Andijan	97-0	347	e 13 45	+15	—	—	—	—
Tashkent	97-0	349	e 14 11	+41	i 24 6	[- 5]	e 45-5	65-0
Manila	98-0	297	e 14 4	+30	26 26	PS	45-5	—
Baku	98-7	4	17 35	PP	24 22	[+ 3]	—	—
Ksara	E. 103-2	17	e 18 26	PP	—	—	e 48-5	61-5
Sydney	107-5	240	e 45 55	?	—	—	57-8	59-9
Bombay	N. 118-2	342	27 22	SKKS	(27 22)	{+18}	—	—

Additional readings :-

Berkeley iE = +50s. and +1m.9s., iZ = +1m.12s., iE = +1m.35s., iZ = +1m.46s.
 Branner eE = +54s., iE = +1m.14s., iN = +2m.16s.
 Tinemaha iN = +1m.40s. = P* - 1s.
 Seattle e = +2m.20s. = P₁ + 4s. and +3m.26s. = S* - 3s.
 Santa Barbara iEN = +3m.15s.
 Mount Wilson iEN = +1m.59s.
 Pasadena i = +1m.56s., iNZ = +1m.59s.
 Riverside iEN = +2m.7s.
 Bozeman i = +5m.0s.
 Denver iPE = +3m.31s. = PP + 0s., iSN = +6m.22s. = SS + 2s.
 Sitka i = +5m.45s.
 Florissant iPZ = +5m.32s., iPPZ = +5m.54s., iPPZ = +8m.12s., P_cPZ = +9m.2s., iSSEN = +10m.54s., P_cS = +13m.43s.
 St. Louis iPEN = +5m.35s., iEN = +5m.48s., iE = +6m.4s. = PP - 4s., iN = +9m.39s., eSE = +10m.4s.
 Chicago iS = +10m.20s. = S - 4s.
 Ann Arbor eN = +10m.32s., eSSE = +12m.50s., eSSN = +13m.14s.
 Toronto SSSN = +14m.2s.; T₀ = 8h.44m.40s.
 Buffalo iPP = +7m.56s., iS = +12m.27s.
 Honolulu T.H. e = +14m.0s. = SS - 8s.
 Columbia eSS = +14m.25s.
 Ottawa eP = +7m.8s., eSE = +12m.49s., eSSS = +14m.45s.; T₀ = 8h.44m.24s.
 Fordham iPN = +7m.16s., iZ = +7m.26s. and +7m.43s., iPS = +13m.6s., eSS = +15m.30s.
 Harvard eN = +16m.12s. = SS + 12s.; T₀ = 8h.44m.33s.
 Scoresby Sund +17m.48s. and +21m.16s. = SS + 14s.
 Bidston i = +25m.32s. = SS + 1s., iS = +29m.32s., i = +32m.12s.
 Helsingfors ePE = +12m.1s.?, eSKS = +21m.47s. = PS - 9s., eN = +22m.14s., eE = +22m.20s., eSSE = +26m.25s., eSSSE = +29m.2s.; T₀ = 8h.44m.40s.
 Copenhagen +12m.3s. and +22m.0s. = PS - 8s.

Continued on next page.

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Lund +12m.3s. and +22m.2s. = PS - 10s.
 De Bilt PPZ = +14m.48s.
 La Paz PE = +11m.52s., sP = +12m.59s., PP = +15m.4s., PPP = +16m.40s.,
 iSN = +21m.43s., PSE = +22m.35s., i = +24m.54s., iSS? = +26m.16s.,
 SSN = +26m.50s., L₀ = +35.5m.
 Hamburg iE = +22m.13s. = PS - 9s.
 Stuttgart ePcPZ = +12m.50s., ePP = +15m.22s., ePS = +23m.32s.
 Kucino SS = +28m.2s.
 Ekaterinburg PP = +15m.32s., PS = +23m.28s., iSS = +28m.8s.
 Toledo iP = +12m.35s.
 Vienna i = +14m.14s. and +14m.57s., PPS? = +26m.10s.
 Malaga PS = +23m.38s.
 Granada PcP = +12m.47s., PP = +16m.8s., PPP = +18m.15s., SS = +29m.5s.,
 SSS = +32m.55s.
 Zi-ka-wei iZ = +12m.58s., +16m.8s. = SS + 16s. and +26m.20s.
 Zagreb ePcP = +12m.59s.
 Trieste ePP = +16m.12s., ePS = +23m.42s.
 Tiflis PS = +26m.26s.
 Tashkent PP = +17m.21s., PS = +26m.19s., SS = +32m.14s.
 Baku SS = +32m.50s., SSS = +36m.50s.
 Bombay PE = +27m.34s.
 Long waves were also recorded at Balboa Heights, Rio de Janeiro, Charlottes-
 ville, Barcelona, Besançon, Bergen, Belgrade, Capetown, Riverview,
 Wellington, Hyderabad, and Kodaikanal.

June 6d. 9h. 12m. 45s. Epicentre 19°·6N. 76°·5W. (see 11h.). X.

A = +·220, B = -·916, C = +·335; D = -·972, E = -·233;
 G = +·078, H = -·326, K = -·942.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Port au Prince	4·1	104	e 0 55	- 3	(i 1 40)	- 5	i 1·7	1·9
St. Louis	22·4	331	e 4 53	- 2	e 9 3	+ 10	—	11·7
Florissant	22·7	331	i 4 48	- 10	i 9 3	+ 4	—	11·4
La Paz	z.	37·0	e 7 6	0	—	—	—	—
Pasadena	z.	39·5	e 7 32	+ 4	—	—	—	—
Tinemaha	N.	40·3	e 7 45	+ 10	—	—	—	—
Granada		65·0	i 10 37	- 2	-21 13	?	—	—

Granada gives also PP = +14m.9s. = PPP - 13s., PPP = +16m.13s.

June 6d. 9h. 28m. 25s. Epicentre 40°·5N. 120°·5W. N.3.

Very doubtful.

A = -·386, B = -·655, C = +·649; D = -·862, E = +·508;
 G = -·330, H = -·560, K = -·760.

	Δ	Az.	P.	O-C.	S.	O-C.
	°	°	m. s.	s.	m. s.	s.
Ukiah	2·5	237	0 38	+ 2	—	—
Berkeley	3·0	207	e 0 47	+ 4	i 1 24	S*
San Francisco	3·1	209	e 0 41	- 3	e 1 23	+ 3
Lick	N.	3·2	e 0 35?	- 11	—	—
Branner		3·3	e 0 51	+ 4	1 33	S*
Tinemaha	N.	3·8	151	—	e 1 35	- 2
Mount Wilson		6·5	e 1 57	P*	—	—
Pasadena		6·6	e 1 56	P*	—	—
Riverside		7·0	e 2 5	P*	—	—

Additional readings:—
 Branner iEN = +2m.17s.
 Tinemaha iN = +3m.23s.

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June 6d. 11h. 50m. 0s. Epicentre 19°·6N. 76°·5W. N.2.

(as at 9h.12m., which is assumed to be a preliminary shock from this origin).

A = +·220, B = -·916, C = +·335; D = -·972, E = -·233;
G = +·078, H = -·326, K = -·942.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
San Juan	9·9	95	0 2 23	+ 4	e 4 15	+ 4	5·5	—
Balboa Heights	11·0	196	0 2 38	+ 3	—	—	—	—
Columbia	15·0	345	—	—	e 6 26	+11	—	—
Georgetown	19·3	359	1 4 22	0	1 7 59	+ 7	—	11·7
Pittsburgh	21·1	353	e 4 46	+ 5	i 8 39	+11	i 11·1	—
Fordham	21·4	5	e 4 44	0	e 8 44	+10	e 11·0	—
St. Louis	22·4	331	e 4 56	+ 1	e 9 1	+ 8	—	11·6
Florissant	22·7	331	e 4 50	- 8	e 9 3	+ 4	—	11·6
Harvard	23·2	10	e 5 3	0	e 9 16	+ 8	e 13·0	—
Buffalo	23·4	356	e 5 8	+ 3	e 9 26	+14	e 14·0	—
Ann Arbor	23·5	346	e 5 12	+ 7	e 9 30	+16	e 13·4	—
Chicago	24·1	339	—	—	1 9 38	+13	12·5	—
Toronto	24·1	355	e 5 18	+ 7	1 9 33	+ 8	e 12·5	15·0
Ottawa	25·8	1	e 5 27	0	e 9 55	0	e 12·0	—
Tucson	33·2	300	—	—	e 12 3	+ 9	e 20·6	—
La Paz	37·0	167	e 7 7	+ 1	13 2	+11	20·0	25·5
Pasadena	z. 39·5	301	e 7 32	+ 4	—	—	—	—
Sucre	40·1	163	e 7 8	-25	—	—	—	—
Tinmahua	n. 40·3	305	e 7 40	+ 5	—	—	—	—
Granada	65·0	58	i 10 39	0	—	—	e 35·9	—
Paris	68·3	44	e 10 55	- 5	—	—	—	37·0
De Bilt	69·7	40	e 11 6	- 3	—	—	e 37·0	—
Stuttgart	72·6	43	e 11 22	- 4	—	—	e 32·0	—
Copenhagen	73·3	36	e 11 29	- 2	21 2	+ 2	34·0	—
Pulkovo	81·2	29	e 12 13	- 1	e 22 23	- 5	38·0	—
Ekaterinburg	95·6	22	—	—	e 24 6	[+ 2]	44·0	—

Additional readings:—

Ann Arbor eN = 11h.48m.42s., eE = +6m.6s., iE = +12m.30s.

La Paz PP = +8m.53s., i = +12m.47s., SSE = +16m.11s.

Granada P₀P = +11m.3s.

Long waves were also recorded at Port au Prince, Ukiah, Victoria, Sitka, Scoresby Sund, Kew, Helsingfors, Tiflis, Tashkent, and Irkutsk.

June 6d. Readings also at 0h. (Tiflis), 1h. (near Calcutta), 2h. (Andijan and La Paz), 5h. (Port au Prince), 8h. (Riverview and Wellington), 9h. (Tinmahua), 10h. (Tiflis), 11h. (Tyosi), 12h. (Port au Prince), 13h. (Helsingfors), 14h. (Ottawa and Port au Prince), 16h. (Helsingfors), 20h. (Port au Prince), 22h. (Matuyama), 23h. (Port au Prince, Sucre, and La Paz).

June 7d. 21h. 22m. 22s. Epicentre 38°·2S. 177°·8E. (given by Wellington). N.3.

A = -·785, B = +·030, C = -·618; D = +·038, E = +·999;
G = +·618, H = -·024, K = -·786.

	Δ	Az.	P.	O-C.	S.	O-C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Hastings	1·6	207	0 38 [†]	+15	1 5	+24	—
Arapuni	1·7	274	0 23	- 1	0 38	- 6	—
New Plymouth	3·1	253	0 44	0	1 19	- 1	1·4
Wellington	3·9	216	0 56	0	1 41	+ 1	1·8
Takaka	4·7	235	1 38 [†]	P _g	—	—	—
Glenmuick	5·9	215	1 38	P*	2 48	S*	—
Christchurch	6·6	215	1 28	- 6	2 41	- 7	—

Additional readings:—

Hastings S_g = +1m.28s.

Glenmuick S_g = +2m.59s.

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June 7d. Readings also at 1h. (Ottawa), 5h. (Scoresby Sund), 9h. (Riverview), 11h. (Sydney and Ottawa), 15h. (Ekaterinburg, Tashkent, near Andijan, and Samarkand), 16h. (Helsingfors and near Santiago), 22h. (Baku, Ekaterinburg, Tashkent, Tiflis, Helwan, and Ksara), 23h. (Ottawa).

June 8d. 4h. 53m. 5s. Epicentre 62°5N. 153°3W. (as on 1932 March 25d.). R.2.

A = -·413, B = -·207, C = +·887; D = -·449, E = +·893;
G = -·792, H = -·399, K = -·462.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka	10·5	113	—	—	e 4 17	- 9	16·1	—
Tinemaha	33·3	124	e 6 35	+ 1	e 11 56	+ 1	—	—
Pasadena	35·9	127	e 6 55	- 2	—	—	—	—
Mount Wilson	35·9	127	e 7 1	+ 4	—	—	—	—
Riverside	36·3	126	e 6 58	- 2	—	—	—	—
La Jolla	37·4	127	e 6 58	- 12	—	—	—	—
Madison	41·1	88	—	—	e 16 20	SS	e 21·3	25·2
Scoresby Sund	42·8	23	9 47	(- 4)	—	—	24·1	—
Florissant	44·0	91	e 7 49	- 16	e 14 38	+ 2	—	23·4
St. Louis	44·2	91	e 8 4	- 2	—	—	—	24·0
Toronto	N. 45·2	79	—	—	e 14 54	0	e 23·4	—
Ottawa	45·5	75	e 12 30	?	e 18 17	SS	e 23·2	—
Georgetown	50·0	80	—	—	e 16 6	+ 5	25·9	30·6
Irkutsk	50·1	310	e 8 55	+ 3	—	—	—	28·1
Ekaterinburg	57·8	340	i 9 52	+ 3	e 17 55	+ 8	26·1	—
Kucino	61·4	354	—	—	e 18 24	- 10	e 37·4	—
Neuchatel	69·4	15	e 11 6	- 1	—	—	—	—
Tiflis	74·8	346	e 11 51	+ 12	—	—	e 33·6	—
Baku	75·5	342	11 43	0	e 21 33	+ 7	40·6	—

Additional readings:—

Toronto eN = +18m.25s. = S_cS + 12s.

Irkutsk e = +10m.15s. = P_cP - 1s., + 15m.9s.?, and + 20m.9s.?

Kucino e = +32m.46s.

Long waves were also recorded at Columbia, Bozeman, Ann Arbor, Harvard, Chicago, San Juan, Tashkent, Copenhagen, and De Bilt.

June 8d. 6h. 14m. 5s. (I) | Epicentre 31°8N. 131°8E. | X.
10h. 54m. 7s. (II) | (as on 1932 Jan. 27d.) | X.

A = -·566, B = +·634, C = +·527; D = +·745, E = +·667;
G = -·351, H = +·393, K = -·850.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Nagasaki	1·9	300	0 28	0	0 57	S _c *	—	1·1
II	1·9	300	0 27	- 1	0 55	S _c *	—	1·1
I Hukuoka	2·1	327	i 0 31	+ 1	1 1	S _c *	—	1·2
II	2·1	327	i 0 29	- 1	0 58	+ 4	—	1·2
I Matuyama	2·2	21	e 0 30	- 1	i 1 2	+ 5	—	1·1
II	2·2	21	e 0 32	+ 1	i 1 5	S _c *	—	1·2
I Koti	2·3	40	e 0 31	- 2	e 1 8	S*	—	1·6
II	2·3	40	e 0 31	- 2	—	—	—	—
I Sumoto	3·7	44	0 52	- 1	1 40	+ 5	—	2·3
II	3·7	44	0 49	- 4	1 36	+ 1	—	2·4
I Kobe	4·0	43	e 0 56	- 1	2 0	—	—	2·3
II	4·0	43	e 1 2	+ 5	2 2	S _c *	—	2·1
I Osaka	4·2	46	1 13	+ 13	—	—	2·2	2·9
II	4·2	46	1 22	P _c *	—	—	2·3	3·3
I Toyooka	4·5	33	e 1 10	+ 6	i 2 13	S _c *	—	2·6
II	4·5	33	e 1 23	P*	i 2 12	S _c *	—	2·6
I Nagoya	5·5	50	e 1 18	0	2 16	- 4	—	—
II	5·5	50	e 1 16	- 2	2 16	- 4	3·4	—

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		Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I Zi-ka-wei	Z.	8.8	269	e 2 7	+ 2	4 3	+19	5.6	6.0
II	Z.	8.8	269	e 2 5	0	4 1	+17	5.2	6.0
I Chiufeng		15.1	308	3 30	0	6 42	+25	7.9	10.3
II		15.1	308	3 32	+ 2	e 6 36	+19	e 8.6	10.3
II Manila		19.8	212	4 14	-13	8 14	+12	—	—
I Irkutsk		28.6	324	e 6 55?	+62	e 11 37	+55	15.9	18.7
II		28.6	324	e 6 24	+31	e 11 26	+44	16.9	18.7
II Scoresby Sund		76.0	353	(17 53?)	?	—	—	17.9	—
I Tinemaha	N.	85.1	49	e 12 44	+10	—	—	—	—
I Pasadena	Z.	86.9	51	e 12 51	+ 8	—	—	—	—

Additional readings:—

Koti I e = +41s. and +48s., iScN = +1m.16s., II eZ = +37s. = P* + 1s. and +49s.

Sumoto I SNZ = +1m.44s. = S* - 4s., II PN = +54s., SNZ = +1m.41s.

Kobe I i = +1m.21s., II eZ = +1m.19s. = P* + 5s.

Osaka I i = +1m.33s.

Toyooka I P = +1m.18s. = P* + 4s., II iP = +1m.29s. = P* + 5s.

Irkutsk I e = +13m.55s.?

Long waves were also recorded as follows: For shock I at Hong Kong, Scoresby Sund, and the Russian and European stations, for shock II at Phu-Lien and the Russian and European stations.

June 8d. 7h. 52m. 47s. Epicentre 62°5N. 153°3W. (as at 4h.).

R.1.

Probable error of epicentre $\pm 0^{\circ}20$.

A = -413, B = -207, C = +887; D = -449, E = +893;

G = -792, H = -399, K = -462.

		Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka		10.5	113	e 2 13	-15	e 4 32	+ 6	e 5.4	—
Victoria		21.8	116	4 53	+ 4	8 52	+10	12.4	13.3
Seattle		22.8	116	—	—	e 9 13?	+12	—	—
Bozeman		29.2	105	—	—	e 10 53	+ 2	e 15.8	—
Ukiah		29.6	128	—	—	e 11 1	+ 3	e 12.4	—
Berkeley		31.0	129	e 6 13?	- 1	—	—	—	—
Tinemaha		33.3	124	i 6 35	+ 1	i 11 59	+ 4	—	—
Santa Barbara		35.0	128	e 6 52	+ 3	—	—	—	—
Mount Wilson		35.9	127	e 6 57	0	—	—	—	—
Pasadena		35.9	127	i 6 56	- 1	—	—	—	—
Riverside		36.3	126	e 6 59	- 1	e 12 41	0	—	—
La Jolla		37.4	127	e 7 14	+ 4	—	—	—	—
Tucson		40.4	119	e 7 38	+ 3	e 13 48	+ 6	e 21.8	—
Madison		41.1	88	i 9 18	PP	e 13 52	- 1	19.2	—
Scoresby Sund		42.8	23	7 54	- 1	13 19	-59	—	—
Chicago		42.9	87	—	—	e 15 26	+67	20.5	—
Florissant		44.0	91	i 8 5	0	i 14 37	+ 1	—	23.9
St. Louis		44.2	91	i 8 5	- 1	i 14 37	- 2	—	23.9
Toronto	N.	45.2	79	—	—	e 15 1	+ 7	e 23.1	—
Ottawa		45.5	75	e 10 27	(+27)	e 14 56	- 1	e 23.2	—
Pittsburgh		47.5	82	—	—	e 19 11	SS	25.0	—
Fordham		49.9	77	e 10 53	+122	e 16 13	+14	e 25.2	—
Harvard		49.9	74	e 16 58	S	(e 16 58)	+59	e 25.2	—
Georgetown		50.0	80	e 8 52	+ 1	—	—	—	30.5
Irkutsk		50.1	310	i 8 55	+ 3	e 15 40	-22	28.2	31.1
Nagoya		50.1	273	e 8 59	+ 7	—	—	—	—
Osaka		51.1	274	8 59	- 1	(14 57)	-79	15.0	—
Columbia		52.3	87	—	—	e 25 51	?	27.9	—
Chiufeng		55.4	292	9 33	+ 1	—	—	e 30.3	34.3
Pulkovo		57.7	358	i 9 48	0	e 17 51	+ 5	32.2	40.2

Continued on next page.

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	Δ °	Az. °	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Ekaterinburg	57.8	340	i 9 53	+ 4	i 17 56	+ 9	27.2	—
Edinburgh	59.4	20	—	—	e 22 13?	SS	—	—
Copenhagen	61.3	10	10 14	0	—	—	—	—
Kucino	61.4	354	—	—	18 21	-13	e 31.9	43.6
Kew	64.1	19	e 10 13?	-20	—	—	e 37.2	—
De Bilt	64.2	14	e 10 34	0	—	—	e 33.2	—
Uccle	65.4	15	e 10 40	- 1	—	—	e 34.2	—
Almata	66.8	324	e 12 13	+82	—	—	—	—
Paris	67.1	18	e 10 52	0	—	—	39.2	—
Stuttgart	67.9	13	e 10 56	- 2	—	—	e 45.2	—
Strasbourg	68.0	14	i 10 56	- 2	e 20 13?	+16	e 37.2	—
Andijan	70.4	325	e 11 7	- 6	—	—	—	—
Tashkent	70.8	328	i 16 38	?	i 21 32	+61	e 39.4	56.1
Theodosia	72.2	355	e 11 13	-11	—	—	—	—
Simferopol	72.4	355	e 11 23	- 2	—	—	—	—
San Juan	72.5	84	—	—	e 20 43	- 8	e 36.5	—
Yalta	72.8	355	(11 29)	+ 1	—	—	11.5	—
Manila	75.1	275	11 41	0	14 9	PP	—	—
Baku	75.5	342	e 11 45	+ 2	e 21 30	+ 4	e 39.7	49.5
Algiers	79.0	19	i 10 44	-79	21 43	-22	41.2	—
La Paz	z. 102.4	100	e 26 11	S	(e 26 11)	+23	—	—

Additional readings:—

Tucson eP = +7m.52s.

Madison e = +16m.47s. = SS +12s.

Scoresby Sund +9m.37s. = P_cP -14s.

Chicago e = +19m.16s.

Toronto eN = +18m.3s. = SS +9s.

Ottawa e = +18m.18s. = SS +18s.

Fordham e = +19m.52s.

Harvard eS = +20m.34s.

Irkutsk e = +10m.40s. = PP -1s. and +19m.21s. = SS -3s.

Osaka i = +10m.9s. = P_cP -11s.

San Juan e = +25m.28s. = SS +8s., +28m.53s. and +29m.25s.

Long waves were also recorded at Honolulu T.H., Ann Arbor, Hong Kong,

Tiflis, and Granada.

June 8d. 10h. 37m. 1s. Epicentre 19°2N. 104°2W. (as on 4d.).

R.3.

A = -.232, B = -.915, C = +.329; D = -.969, E = +.245;

G = -.081, H = -.319, K = -.944.

	Δ °	Az. °	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Riverside	18.8	324	e 4 15	- 1	—	—	—	—
Pasadena	19.4	323	e 4 21	- 2	—	—	12.9	—
Mount Wilson	19.4	323	e 4 24	+ 1	—	—	—	—
Tinemaha	N. 21.7	328	e 4 47	- 1	—	—	e 11.8	—
St. Louis	22.9	29	e 4 59	- 1	e 9 18	+15	—	14.4
Florissant	23.0	28	e 5 3	+ 2	i 9 30	SS	—	14.6
Columbia	25.3	50	—	—	e 10 11	+25	18.2	—
Madison	27.0	24	e 6 28	+50	i 10 40	+25	e 14.1	17.0
Ottawa	35.2	35	e 8 11	PP	e 12 45	+21	e 19.0	—
Paris	86.1	40	e 12 38	- 1	—	—	50.0	—
De Bilt	86.2	35	e 12 41	+ 2	—	—	e 50.0	—
Stuttgart	90.0	37	e 12 59	+ 2	—	—	e 53.0	71.5
Tiflis	112.7	26	—	—	e 26 13	{-13}	58.5	61.8
Manila	124.1	303	21 20	PP	25 20	[-42]	—	—

Tiflis gives also e = +32m.38s., +38m.14s., +49m.18s., and +51m.42s.

Long waves were also recorded at Ann Arbor, Bozeman, Tucson, Scoresby Sund, Phu-Lien, and the European stations. The waves are easily confused with those of the shock occurring in Japan 17m. later, see page 203,

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June 8d. 14h. 54m. 37s. Epicentre 8°·5N. 126°·0E. (as 1931 Dec. 31d.). R.3.

A = -·581, B = +·800, C = +·148; D = +·809, E = +·588;
G = -·087, H = +·120. K = -·989.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	7·8	321	e 4 52	+ 1	3 22	+ 3	—	—
Palau	8·5	98	1 58	- 2	2 44	- 52	—	—
Hong Kong	17·9	322	4 1	- 4	7 18	- 4	—	—
Nake	20·1	9	4 34	+ 3	8 13	+ 5	—	—
Phu-Lien	22·4	305	e 4 51	- 4	8 48	- 5	12·4	—
Zi-ka-wei	z. 23·1	350	e 4 59	- 3	i 9 7	0	—	—
Miyazaki	24·0	12	5 12	+ 2	9 16	- 7	—	—
Batavia	24·1	233	i 6 7	+ 56	i 10 20	+ 55	—	—
Nagasaki	24·5	8	e 5 18	+ 3	e 9 33	+ 1	—	—
Sumoto	e. 27·1	16	e 5 33	- 6	e 10 32	+ 15	—	10·8
	N. 27·1	16	e 5 41	+ 2	e 10 22	+ 5	—	11·0
Kobe	e. 27·5	16	5 55	+ 12	—	—	—	—
Osaka	27·6	17	5 49	+ 5	(10 18)	- 7	10·3	—
Medan	27·6	262	i 5 39	- 2	—	—	—	—
Nagoya	28·5	19	e 5 54	+ 5	—	—	—	—
Chiufeng	32·8	346	e 6 39	+ 9	e 11 50	+ 2	—	—
Irkutsk	47·2	343	—	—	e 14 23?	- 58	27·4	—
Bombay	52·5	287	8 37	- 33	16 30	- 5	32·4	—
Andijan	57·2	313	e 9 24	- 21	—	—	—	—
Tashkent	59·6	315	e 9 47	- 15	i 18 5	- 6	e 28·4	32·6
Baku	73·9	310	i 11 30	- 4	e 21 26	+ 19	—	—
Tiflis	77·8	311	11 51	- 6	21 39	- 13	e 38·4	50·2
Kucino	81·9	325	e 11 48	- 30	e 21 54	- 42	e 43·3	49·5
Pulkovo	85·5	330	e 12 29	- 7	e 22 47	[- 16]	41·4	48·5
Copenhagen	95·8	329	—	—	23 53	[- 12]	53·4	—
Potsdam	96·8	326	—	—	e 23 23?	[- 47]	e 35·4	—
Zagreb	97·5	319	e 14 0	+ 28	e 23 59	[- 15]	—	—
Hamburg	98·0	328	—	—	e 24 3	[- 13]	60·4	—
Scoresby Sund	98·1	350	17 23?	PP	23 33	[- 43]	47·4	—
Stuttgart	100·6	323	e 17 37	PP	e 24 11	[- 18]	e 52·4	—
De Bilt	101·2	328	e 14 16	+ 27	e 24 19	[- 13]	e 49·4	55·0
Strasbourg	101·5	324	—	—	e 24 23?	[- 10]	e 49·4	—
Neuchatel	102·6	322	e 18 3	PP	—	—	—	—
Edinburgh	103·2	333	—	—	e 24 23?	[- 18]	53·4	—
Paris	105·7	325	—	—	e 28 23?	PS	56·4	—
La Paz	164·1	121	e 20 14	[+ 16]	e 27 32	?	—	—

Additional readings:—

Manila iEN = +1m.57s.

Hong Kong PP = +4m.16s.

Zi-ka-wei iZ = +5m.19s. = PP - 5s. and +5m.33s.

Kobe eN = +6m.42s., eE = +8m.25s.

Osaka i = +6m.16s. = PP - 9s.

Medan i = +5m.44s.

Chiufeng i = +7m.22s. = PP - 11s.

Irkutsk e = +17m.23s.? and +21m.23s.?

Tashkent e = +11m.17s. and +24m.47s.

Tiflis F₀P = +12m.4s., SKS = +22m.14s., SS = +27m.4s.

Zagreb e = +16m.58s. = PP - 20s.

Stuttgart eZ = +26m.59s. = PS + 7s.

Strasbourg e = +27m.23s.? = PS + 22s. and +28m.23s.?

Long waves were also recorded at Lund, Kew, Uccle, and Granada.

June 8d. Readings also at 0h. (Columbia and Pittsburgh), 1h. (Ottawa), 2h. (Theodosia, Simferopol, Yalta, Tiflis, Ekaterinburg, Scoresby Sund, Copenhagen, Uccle, De Bilt, Strasbourg, Stuttgart, Paris, Granada, Mount Wilson, Tinemaha, Pasadena, Riverside, Sydney, and Wellington), 3h. (Tiflis, Ottawa, La Paz, and near Apia), 4h. (Granada, near Chur, and Zurich), 7h. (Ottawa, Tinemaha, Tucson, Helsingfors, and Kodaikanal), 8h. (Almata, and near Andijan), 10h. (Ottawa, Melbourne (2), Riverview (2), Sydney, and Wellington), 11h. (Granada, Toledo, and near Andijan), 12h. (Florence and near Sumoto), 16h. (Florence and Lick), 17h. (Helsingfors and Tiflis), 18h. (Simferopol, Theodosia, Yalta, Pasadena, Tinemaha, Riverside, and Suva), 19h. (De Bilt, Irkutsk, and Wellington), 20h. (Baku), 21h. (Tinemaha).

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June 9d. 4h. 35m. 44s. Epicentre 19°-1N. 105°-0W. (as on 5d.) R2.

A = -·245, B = -·913, C = +·327; D = -·966, E = +·259;
G = -·085, H = -·316, K = -·945.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	14·2	339	e 3 16	- 2	—	—	e 6·4	—
La Jolla	17·6	324	e 4 2	0	—	—	—	—
Riverside	N. 18·5	326	e 4 10	- 3	—	—	—	—
Pasadena	19·0	325	e 4 15	- 4	e 7 55	+ 9	e 11·3	—
Mount Wilson	E. 19·0	325	e 4 19	0	e 7 57	+11	—	—
Santa Barbara	20·2	323	e 4 43	+11	—	—	—	—
Tinemaha	N. 21·4	330	e 4 44	0	—	—	—	—
St. Louis	23·4	30	i 4 56	- 9	e 9 12	0	e 11·5	—
Florissant	23·5	30	i 5 4	- 1	e 9 11	- 3	e 11·5	—
Berkeley	24·0	325	i 5 11	+ 1	i 9 42	+19	—	—
Ukiah	25·5	326	—	—	e 9 58	+ 8	e 12·3	—
Columbia	26·0	50	e 5 30	+ 1	e 10 7	+ 9	e 18·3	—
Bozeman	27·0	351	—	—	e 10 25	+10	e 14·3	—
Chicago	27·1	29	—	—	e 10 31	+14	—	—
Madison	27·4	25	6 24	PP	e 10 34	+12	13·3	17·3
Pittsburgh	30·3	39	e 6 53	PP	e 11 44	+35	e 17·0	—
Georgetown	31·2	44	e 7 1	PP	e 11 35	+12	17·9	19·7
Toronto	N. 32·6	35	e 6 38	+10	e 11 47	+ 2	17·9	—
Fordham	34·4	44	e 7 50	PP	e 14 50	?	e 17·3	—
Ottawa	35·7	35	e 7 56	PP	e 12 36	+ 4	e 18·3	—
San Juan	36·8	85	e 7 5	0	e 12 52	+ 4	e 17·2	—
La Paz	50·8	133	e 8 51	- 6	16 19	+ 7	27·3	—
Scoresby Sund	69·8	20	11 6	- 3	20 10	- 9	36·3	—
Edinburgh	80·5	34	—	—	e 22 16?	- 5	—	—
Oxford	83·2	37	—	—	e 22 48	- 1	e 48·3	—
Kew	83·9	37	e 12 27	- 1	e 22 43	[- 8]	e 44·3	—
Paris	86·6	40	e 12 36	- 5	—	—	48·3	53·3
De Bilt	86·7	35	e 12 40	- 2	e 23 11	[0]	e 44·3	—
Uccle	86·8	37	—	—	e 23 8	[- 4]	—	—
Granada	87·2	52	e 12 46	+ 2	—	—	e 51·5	—
Copenhagen	88·6	30	—	—	23 22	[- 2]	48·3	—
Strasbourg	89·8	38	e 12 16	-40	e 23 16?	[-15]	33·3	—
Stuttgart	90·6	37	e 12 56	- 4	e 23 32	[- 4]	e 49·3	—
Pulkovo	93·2	21	e 13 27	+15	e 23 43	[- 8]	47·3	56·0
Ekaterinburg	103·1	8	—	—	e 24 37	[- 4]	48·3	—
Irkutsk	104·2	343	—	—	e 45 15	?	e 45·6	—

Additional readings:—

Pasadena e = +4m.19s. = PP - 9s.

Pittsburgh eSS = +13m.20s.

San Juan e = +12m.22s.

Copenhagen +24m.46s. = PS + 11s.

Strasbourg ePS? = +25m.16s.?

Stuttgart ePP = +16m.26s.

Ekaterinburg e = +27m.24s. = PS + 6s.

Long waves were also recorded at Ann Arbor, Seattle, Sitka, Honolulu T.H.,

Baku, and Kucino.

June 9d. 6h. 30m. 40s. Epicentre 27°-7S. 71°-5W. (as on 1931 May 20d.) R2.

A = +·281, B = -·840, C = -·465; D = -·948, E = -·317;
G = -·147, H = +·441, K = -·885.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago	5·8	173	1 30	+ 8	2 36	+ 8	2·9	5·9
Sucre	10·4	35	e 2 26	0	—	—	—	—
La Paz	11·6	16	e 2 39	- 4	1 5 16	+23	6·2	6·8
La Plata	13·6	125	3 8	- 2	5 38	- 3	6·3	—
San Juan	46·4	8	e 10 7	PP	e 14 50	-20	—	—

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ottawa	73.2	357	—	—	e 20 46	-13	42.3	—
Riverside	75.5	323	e 11 43	0	—	—	—	—
Pasadena	76.0	323	e 11 44	-2	—	—	—	—
Mount Wilson	E. 76.0	322	e 11 46	0	—	—	—	—
Tinemaha	N. 78.3	324	e 11 58	-1	—	—	—	—
Paris	100.9	40	—	—	e 32 20?	SS	52.3	59.3
De Bilt	104.0	38	—	—	e 27 20?	PS	e 51.3	—
Baku	130.7	59	—	—	e 22 51	PKS	38.8	—
Ekaterinburg	135.6	36	e 19 20	[+ 4]	e 22 49	PKS	54.3	—

Additional readings :-

La Paz ISZ = +5m.22s.

San Juan e = +18m.10s. = S_cS - 7s.

Ekaterinburg e = +38m.45s.

Long waves were also recorded at Rio de Janeiro, Scoresby Sund, Pulkovo, Kucino, Irkutsk, and European stations.

June 9d. Readings also at 3h. (Mount Wilson, Riverside, Tinemaha, Tucson, Ottawa, Denver, Bozeman, Madison, and Pittsburgh), 4h. (Scoresby Sund, Baku, Ekaterinburg, Irkutsk, and near Taihoku), 7h. (near Apia), 8h. (Helsingfors), 10h. (near Sumoto), 11h. (Helsingfors, Vienna, and near La Paz), 12h. (Balboa Heights), 14h. (Honolulu T.H., Mount Wilson, Pasadena, La Jolla, Riverside, Tinemaha, La Paz, Collurania, Stuttgart, Pulkovo, Tiflis, Theodosia, near Sebastopol and Yalta), 15h. (Scoresby Sund, Ottawa, Kucino, and Tashkent), 17h. (Helsingfors, Baku, and Tashkent), 19h. (Tiflis and near Tyosi), 20h. (Scoresby Sund), 21h. (Pasadena, Riverside, Tinemaha, and Tucson), 22h. (Scoresby Sund, Ekaterinburg, Madison, and Ottawa), 23h. (Baku and Tashkent).

June 10d. 20h. 21m. 17s. Epicentre 5°.1 N. 127°.3 E. (given by Batavia) N.1.

Probable error of the epicentre $\pm 0^{\circ}.24$.

A = -.604, B = +.792, C = +.089; D = +.795, E = +.606;

G = -.054, H = +.071, K = -.996.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Palau	7.4	72	1 51	+ 6	3 13	+ 4	—	—
Ambonia	8.8	174	2 10	+ 5	3 52	+ 8	—	—
Manila	11.4	327	i 2 42	+ 2	4 53	+ 5	6.1	—
Hokoto	19.9	339	4 37	+ 8	8 13	+ 9	—	—
Taihoku	20.7	345	4 39	+ 2	8 15	- 5	—	—
Hong Kong	21.4	325	4 43	- 1	8 32	- 2	—	—
Batavia	23.4	241	6 4	+59	10 15	+63	—	—
Phu-Lien	25.5	310	e 5 24	- 1	9 42	- 8	11.2	—
Zi-ka-wei	26.7	349	1 5 33	- 2	10 3	- 7	—	—
Miyazaki	27.1	8	5 38	- 1	10 11	- 6	—	—
Nagasaki	27.7	5	5 43	- 1	—	—	—	—
Medan	28.6	268	1 5 49	- 4	i 10 33	- 9	—	—
Sumoto	30.0	13	e 5 53	-12	e 11 19	+15	e 14.5	—
Kobe	30.4	13	7 9	PP	—	—	—	18.8
Osaka	30.5	13	5 54	-15	—	—	—	—
Nagoyo	31.4	15	e 6 19	+ 2	7 20	PP	—	—
Tokyo	32.6	19	6 29	+ 1	—	—	—	—
Mizusawa	E. 36.2	18	6 43	-17	7 19	?	—	—
Chufeng	36.4	345	1 6 59	- 2	i 12 39	- 3	e 17.2	—
Calcutta	41.4	298	6 51	-53	10 51	?	13.1	—
Riverview	45.0	152	e 7 55	- 18	—	—	e 25.2	28.2
Melbourne	45.9	161	—	—	i 15 5	+ 2	i 21.9	—
Colombo	47.2	275	8 58	+28	15 5	-16	23.4	24.8
Hyderabad	49.3	288	11 2	?	15 43	- 8	18.6	26.0
Kodaikanal	49.7	280	8 43	- 6	(15 39)	-18	15.6	15.9
Irkutsk	50.9	342	i 8 57	- 1	e 16 1	-12	e 24.7	—
Bombay	54.8	289	9 57	+30	17 6	0	26.9	—
Almata	58.4	319	e 9 43	-10	—	—	—	—
Andijan	60.6	314	e 9 58	-11	—	—	—	—
Tashkent	63.0	314	1 9 54	-31	—	—	e 29.7	37.3

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	e	o	m. s.	s.	m. s.	s.	m.	m.
Ekaterinburg	73-1	328	i 11 29	0	i 20 47	-11	33.4	38.5
Baku	77-1	310	i 11 52	-1	i 21 36	-8	37.7	43.7
Tiflis	81-0	311	i 12 12	-1	e 22 13	-13	e 40.2	54.4
Kucino	85-5	324	e 12 35	-1	e 22 59	-14	e 42.5	47.7
Simferopol	88-7	315	12 34	-17	—	—	—	—
Yalta	88-9	314	12 51	-1	—	—	—	—
Pulkovo	89-1	330	i 11 50	-63	i 22 29	[-58]	41.7	49.5
Helsingfors	91-6	331	e 12 59	-6	e 23 52	{+4}	e 46.7	—
Helwan	92-7	300	e 13 12	+2	e 23 36	{-21}	—	—
Upsala	95-2	331	e 14 14	+53	i 24 26	{+9}	—	—
Königsberg	95-4	326	e 17 13	PP	e 23 51	[-12]	—	—
Budapest	98-4	319	e 12 43	-53	—	—	—	—
Lund	99-0	329	13 38	-1	24 7	[-14]	50.7	—
Copenhagen	99-4	329	13 38	-3	24 14	[-9]	50.7	—
Vienna	99-8	320	i 13 40	-3	24 13	[-12]	—	54.7
Potsdam	100-3	325	e 13 43?	-2	e 25 7	-22	54.7	—
Zagreb	100-9	319	e 13 47	-1	e 24 18	[-12]	—	—
Hamburg	101-5	328	e 13 48	-2	e 24 23	[-10]	e 52.7	57.7
Cheb	101-6	324	e 24 24	SKS	(e 24 24)	[-9]	e 53.7	61.7
Scoresby Sund	101-6	351	13 50	-1	24 24	[-9]	50.7	—
Triest	102-6	318	e 13 51	-4	i 24 24	[-14]	—	—
Stuttgart	104-1	323	e 13 59	-3	e 24 31	[-14]	e 50.7	—
Chur	104-6	322	e 14 1	-4	e 24 33	[-15]	—	—
Florence	104-7	318	e 18 23	PP	25 48	{+19}	45.7	52.7
De Bilt	104-8	327	e 14 3	-3	e 24 36	[-13]	e 49.7	55.3
Zurich	105-0	322	e 14 5	-1	e 24 35	[-15]	—	—
Strasbourg	105-0	323	e 14 4	-2	e 24 16	[-34]	38.7	—
Piacenza	105-2	319	e 13 43	-25	24 43	[-8]	—	60.5
Uccle	105-9	326	e 14 8	-2	e 24 37	[-17]	e 53.7	—
Edinburgh	106-8	333	—	—	e 26 13	{+29}	e 51.7	—
Paris	107-9	325	e 14 17	-4	i 26 19	{+27}	54.7	—
Kew	108-0	328	e 17 43	[-28]	e 28 8	PS	e 58.7	—
Oxford	108-3	329	—	—	e 26 17	{+22}	—	—
Granada	117-7	317	e 19 59	PP	e 30 5	PS	e 64.3	—
Georgetown	130-5	24	i 19 9	[+1]	i 22 27	PKS	—	—
Port au Prince	149-4	38	e 19 25	[-16]	—	—	—	—
Balboa Heights	149-7	61	e 20 49	[+68]	—	—	—	—
San Juan	153-0	29	e 19 51	[+5]	—	—	e 65.7	—
La Paz	161-0	128	20 3	[+8]	—	—	78.7	—

Additional readings :-

Hong Kong PP = +5m.12s., SS = +9m.29s.
 Zi-ka-wei IZ = +5m.57s., +7m.3s., +10m.43s., and +15m.13s.
 Medan i = +7m.6s., +12m.46s., and +17m.2s.
 Sumoto PZ = +6m.4s., iN = +6m.33s., iE = +6m.36s.
 Kobe iE = +8m.3s.
 Chiufeng iSS = +14m.59s.
 Riverview eN = +8m.37s., eL = +8m.49s., iEN = +18m.19s. = S_eS + 7s.
 Melbourne i = +18m.30s. = S_eS + 12s.
 Kodaikanal S = +11m.6s. = SSS - 20s.
 Tashkent e = +11m.18s. = P_eP + 13s., i = +17m.42s., e = +26m.38s.
 Tiflis SKKS = +22m.44s., eSS = +27m.33s.
 Helsingfors iPZ = +13m.1s., ePN = +13m.3s., ePPE = +16m.56s., ePPN = +17m.1s., iSZ = eSEN = +23m.56s.; T_e = 20h.21m.16s.
 Königsberg iN = +24m.27s. = SKKS + 9s.
 Lund +16m.55s., +24m.55s. = SKKS + 9s. and +26m.22s. = PS - 13s.
 Copenhagen +17m.37s. = PP - 1s., +25m.5s. = S - 16s. and +26m.28s. = PS - 11s.
 Vienna i = +14m.41s., PP = +18m.0s., PKKP = +25m.12s. = S - 13s., PS = +29m.27s.
 Potsdam eKN = +17m.43s.? = PP - 2s., i = +17m.52s., iEN = +25m.16s. = S - 13s., iE = +25m.19s.
 Zagreb e = +25m.17s. = S - 17s.
 Hamburg eN = +36m.20s. = SSS + 10s.
 Scoresby Sund +18m.4s. = PP + 9s., and +25m.2s. = SKKS - 3s.
 Trieste ePP = +18m.1s., e = +24m.50s. = SKKS - 23s., eS = +25m.24s.
 Stuttgart ePPEZ = +18m.19s., iSKKSN = eSKKSZ = +25m.45s., eSN = +26m.18s., ePSE = +27m.17s., ePPSZ = +28m.28s., eSSN = +32m.55s., eSSSN = +37m.7s.
 Strasbourg ePKP = +17m.34s., eSKKS = +25m.56s.
 Uccle e = +18m.19s. = PP - 8s.
 Long waves were also recorded at San Fernando and the American stations.

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June 10d. 22h. 54m. 54s. Epicentre 50°·5N. 178°·3W. (as on 1929 July 9d.). R.3.

A = -·636, B = -·019, C = +·772; D = -·030, E = +1·000;
G = -·771, H = -·023, K = -·636.

		Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tinemaha	N.	44·1	85	e 8 13	+ 7	—	—	—	—
Mount Wilson	E.	46·0	87	e 8 32	+11	—	—	—	—
Pasadena		46·0	87	e 8 30	+·9	—	—	—	—
Irkutsk		46·0	306	e 8 22	+ 1	—	e 22·1	—	27·5
Florissant		59·9	66	i 10 4	0	18 10	- 5	—	—
St. Louis		60·1	66	i 10 6	+ 1	i 18 13	- 4	—	—
Ekaterinburg		62·2	330	i 10 23	+ 3	e 18 46	+ 1	30·1	39·0
Pulkovo		67·4	347	e 9 51	-63	e 19 36	-14	32·1	43·3
Copenhagen		73·4	355	11 30	- 1	—	—	35·1	—
De Bilt		77·4	358	e 11 53	- 1	—	—	e 37·1	—
Baku		79·8	325	e 12 8	+ 1	e 22 29	+15	e 41·1	50·8
Tiflis		80·4	329	e 12 13	+ 3	e 22 14	- 6	e 42·1	48·9

Additional reading and notes:—

The Californian stations give readings without phase.

Ekaterinburg ePP = +14m.25s.

Long waves were also recorded at Honolulu T.H., Ottawa, Scoresby Sund, and Kucino.

June 10d. Readings also at 0h. (La Paz), 3h. (Mount Wilson, Pasadena, La Jolla, Tinemaha, Riverside, Tucson (2), Madison, Ottawa, Florissant, St. Louis, and Scoresby Sund), 4h. (Baku, Tiflis, Kew, and Tashkent), 6h. (Copenhagen, Stuttgart, Zagreb, and La Paz), 10h. (Tiflis), 11h. (Hastings), 12h. (Mount Wilson, Pasadena, Riverside, La Jolla, Tinemaha, Tucson, Ottawa, and Madison), 13h. (Scoresby Sund, Tiflis, and near New Plymouth), 18h. (near Mizusawa, Nagoya, Osaka, and Tyos), 19h. (Tucson), 20h. (Ottawa, Osaka, and La Paz), 21h. (Ukiah, Florissant, St. Louis, Ann Arbor, Ottawa, Madison, and near Sumoto), 22h. (Ekaterinburg, Irkutsk, Tashkent, Pulkovo, Copenhagen, De Bilt, Kew, and Scoresby Sund).

June 11d. 0h. 37m. 53s. Epicentre 40°·9S. 172°·5E. (given by Wellington). N.3.

A = -·749, B = +·099, C = -·655.

		Δ	Az.	P.	O-C.	S.	O-C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Takaka		0·3	78	0 7	+ 3	0 8	0	—
Wellington		1·7	103	0 22	- 2	0 43	- 1	0·8
New Plymouth		2·2	34	0 32	+ 1	0 58	+ 1	1·0
Christchurch		2·6	178	1 5	S	(1 5)	- 2	—

Additional readings:—

New Plymouth sP = +52s.

Christchurch S = +1m.31s. = S_z + 11s.

June 11d. 8h. 32m. 58s. Epicentre 14°·2N. 53°·8E. (as on 1929 March 16d.). R.2.

A = +·573, B = +·782, C = +·245; D = +·807, E = -·591;
G = +·145, H = +·198, K = -·969.

		Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bombay		18·9	73	4 23	+ 6	7 56	+12	10·2	14·3
Kodalkanal		23·5	97	6 10	+65	10 25	+71	12·4	13·7
Hyderabad		24·0	79	5 22	+12	9 38	+15	12·4	14·3
Ksara	E.	25·5	324	5 25	0	13 3	?	14·2	—
Helwan		26·0	311	e 5 31	+ 2	i 10 21	+23	—	15·7
Baku		26·4	353	e 5 33	0	10 10	+ 5	13·5	19·1
Colombo		26·6	103	10 47	SS	—	—	—	19·7
Tiflis		28·6	346	e 5 54	+ 1	10 45	+ 3	16·2	—
Tashkent		30·3	24	6 5	- 3	i 11 0	- 9	e 14·5	19·7
Ekaterinburg		43·0	5	e 7 58	+ 1	14 18	- 3	20·3	—

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kucino	43.3	347	e 8 54	+55	e 15 25	+60	e 21.6	26.9
Zagreb	44.8	323	e 8 11	0	—	—	e 26.8	—
Florence	46.7	318	e 10 2	PP	—	—	—	—
Pulkovo	48.7	346	8 39	- 2	e 15 36	- 7	28.0	32.0
Potsdam	N. 50.0	329	—	—	e 16 2?	+ 1	—	—
Stuttgart	50.3	324	e 8 51	- 3	e 16 2	- 3	e 28.0	—
Algiers	50.4	306	e 10 46	PP	—	—	27.0	—
Strasbourg	51.0	323	e 9 2?	+ 3	e 16 2?	-13	e 20.0	—
Lund	51.9	333	9 2	- 4	16 25	- 2	33.0	—
Copenhagen	52.2	333	9 8	0	16 30	- 1	—	—
Hamburg	52.2	329	—	—	e 16 2?	-29	e 31.0	—
Uccle	53.9	323	e 9 20	- 1	e 16 56	+ 2	e 26.0	—
De Bilt	54.1	326	e 9 17	- 5	e 16 57	0	e 26.0	—
Paris	54.3	321	e 8 21	-62	e 17 6	+ 7	28.0	35.0
Irkutsk	55.2	35	e 9 33	+ 3	e 16 50?	-22	31.0	34.6
Granada	55.6	306	e 9 33	0	e 17 27	+10	e 29.4	—
Kew	56.9	323	e 9 45	+ 3	—	—	e 28.0	—
Oxford	57.6	323	—	—	e 17 42	- 2	—	—
Edinburgh	60.0	327	—	—	e 14 2?	?	—	—
Scoresby Sund	71.9	340	17 14	?	20 44	0	39.0	—

Additional readings :-

Pulkovo $L_q = +25.0m.$

Stuttgart $eEZ = +10m.49s. = PP + 6s., e = +19m.50s. = SS + 23s.$

Strasbourg $e = +12m.2s.?$

Long waves were also recorded at Calcutta, Hong Kong, Helsingfors, Upsala, Alicante, Malaga, Toledo, and San Fernando.

June 11d. 13h. 11m. 32s. Epicentre $35^{\circ}38', 71^{\circ}0'W.$ N.3.

$A = +.266, B = -.772, C = -.578; D = -.946, E = -.326;$
 $G = -.188, H = +.546, K = -.816.$

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago	1.9	8	0 31	+ 3	0 54	+ 5	0.9	0.9
La Plata	10.7	92	2 32	+ 1	4 28	- 3	5.6	—
Sucre	17.1	19	e 3 57	+ 2	—	—	—	—
La Paz	19.0	9	4 21	+ 2	1 7 49	+ 3	9.5	10.9
La Jolla	80.9	323	e 12 11	- 2	—	—	—	—
Riverside	81.8	323	e 12 15	- 2	—	—	—	—
Mount Wilson	E. 82.0	323	e 12 18	0	—	—	—	—
Pasadena	82.2	323	1 12 17	- 2	—	—	—	—
Tinemaha	84.7	324	e 12 30	- 2	e 22 52	[- 5]	—	—

La Paz gives also $PP = +4m.55s., iSE = +7m.56s., i = +8m.25s.$

June 11d. 17h. 0m. 0s. Epicentre $14^{\circ}0'N, 146^{\circ}0'E.$ N.2.

$A = -.804, B = +.543, C = +.242; D = +.559, E = +.829;$
 $G = -.201, H = +.135, K = -.970.$

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hatidyozima	19.9	345	4 38	+ 9	8 15	+11	—	—
Siomisaki	21.5	336	4 47	+ 2	8 45	+ 9	—	—
Misima	22.0	344	4 52	+ 1	8 55	+ 9	—	—
Koti	22.6	332	e 4 58	+ 1	e 8 59	+ 2	—	—
Nagoya	22.6	340	e 5 0	+ 3	—	—	—	—
Osaka	22.7	337	4 48	-10	8 21	-38	12.0	—
Sumoto	22.7	336	1 4 57	- 1	9 0	+ 1	—	—
Kobe	22.9	337	4 59	- 1	e 9 4	+ 1	—	15.7
Mito	22.9	349	5 0	0	9 7	+ 4	—	—
Nagano	23.7	344	5 8	+ 1	9 23	+ 5	—	—

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki	23.8	324	5 7	- 1	10 5	SS	—	—
Toyooka	23.8	337	5 7	- 1	—	—	—	—
Manila	24.2	274	5 5	- 7	9 24	- 3	12.0	—
Sendai	24.7	350	5 19	+ 2	9 39	+ 3	—	—
Mizusawa	25.5	351	5 24	- 1	9 54	+ 4	14.0	—
Akita	26.2	350	6 17	+46	11 5	+63	—	—
Zi-ka-wei	Z. 28.3	311	5 46	- 4	—	—	—	14.7
Hong Kong	31.2	290	6 10	- 6	11 21	- 2	—	17.2
Chiufeng	36.9	321	e 7 3	- 3	i 12 43	- 7	e 18.1	—
Irkutsk	50.6	328	8 54	- 2	e 15 14	-55	20.0	31.2
Andijan	68.5	309	e 10 52	- 9	—	—	—	—
Bombay	69.8	285	e 10 52	-17	—	—	—	—
Tashkent	70.9	310	e 11 30	+14	i 20 19	-13	e 33.4	41.2
Berkeley	82.8	52	i 22 42	S	(i 22 42)	- 3	—	—
Branner	83.0	53	—	—	e 22 0?	-47	—	—
Baku	85.5	311	12 33	- 3	22 54	[- 9]	e 42.0	52.4
Santa Barbara	85.6	56	e 12 38	+ 2	—	—	—	—
Pasadena	86.9	56	e 12 41	- 2	e 23 17	- 9	—	—
Mount Wilson	E. 87.0	56	e 12 44	+ 1	—	—	—	—
Riverside	87.6	56	e 12 45	- 1	e 23 26	- 7	—	—
La Jolla	88.0	57	e 12 45	- 3	—	—	—	—
Tiflis	88.8	313	e 12 49	- 3	e 23 14	[-11]	46.5	59.0
Pulkovo	90.2	333	12 54	- 4	23 17	[-17]	40.0	56.1
Scoresby Sund	95.1	356	—	—	23 50	[-12]	48.0	—
Upsala	95.3	337	—	—	e 23 45	[-17]	—	—
Lund	99.8	336	—	—	24 14	[-11]	54.0	—
Copenhagen	100.2	336	—	—	24 16	[-11]	48.0	—
Potsdam	102.2	338	—	—	i 24 25	[-11]	e 54.0	—
Hamburg	E. 102.7	335	—	—	e 24 24	[-15]	62.0	—
Edinburgh	105.5	343	—	—	e 29 0?	?	—	—
De Bilt	105.7	336	e 18 29	[+25]	e 24 42	[-11]	e 49.0	—
Stuttgart	106.5	322	e 18 35	PP	e 24 44	[-13]	e 55.0	65.0
Uccle	107.0	336	e 18 38	PP	e 24 47	[-12]	e 50.0	—
Strasbourg	107.3	333	e 18 0?	[- 9]	e 25 0?	[- 1]	e 40.0	—
Kew	108.3	339	e 18 0?	[-12]	—	—	e 54.0	—
Paris	109.3	336	e 18 55	PP	—	—	61.0	—
Ottawa	109.7	29	—	—	e 26 6	{+ 1}	e 48.0	—
Granada	121.3	332	i 20 21	PP	—	—	e 65.2	—
La Paz	147.0	99	e 19 38	[+ 1]	—	—	73.6	—

Additional readings :—

Osaka i = +5m.0s. = PP - 19s. and +5m.50s.

Toyooka eN = +6m.15s.

Mizusawa PN = +5m.42s. = PP - 15s.

Zi-ka-wei iZ = +6m.46s. and +7m.2s.

Hong Kong PP = +7m.11s.

Chiufeng PP = +8m.29s.

Irkutsk PP = +10m.51s.

Potsdam eZ = +27m.0s. = PS - 9s.

De Bilt eZ = +27m.39s. = PS - 6s.

Stuttgart e = +27m.46s. = PS - 7s., eEN = +42m.0s.

Strasbourg e = +28m.0s. = SS - 1s.

Ottawa e = +34m.20s. = SS + 6s.

La Paz iPKP₁ = +20m.28s., PPSE = +38m.38s., L₀ = +69.0m.

Long waves were also recorded at Wellington, Helsingfors, Graz, Cheb, San

Fernando, Algiers, Ekaterinburg, and Kucino.

June 11d. Readings also at 3h. (Andijan and Yalta), 4h. (near Amboina (?)), 9h. (Andijan), 10h. (Baku, Irkutsk, Tiflis, Tashkent, Tortosa, Chiufeng, and near Mizusawa), 11h. (Andijan, Pulkovo, Kucino, Ekaterinburg, Helsingfors, Copenhagen, Stuttgart, Strasbourg, and De Bilt), 12h. (Baku, Irkutsk, Ekaterinburg, and Mizusawa (?)), 13h. (Tiflis), 15h. (Hastings and La Paz), 16h. (near Kobe and Osaka), 18h. (near Mizusawa), 19h. (near Sumoto), 20h. (La Paz), 21h. (Tyosi), 23h. (Casamicciolo).

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June 12d. 23h. 23m. 54s. Epicentre 34°·5N. 26°·4E. (as on 1931 April 26d.). R.3.

A = +·738, B = +·366, C = +·566; D = +·445, E = -·896;
G = +·507, H = +·252, K = -·824.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Triest	14·7	323	e 3 22	- 3	—	—	i 8·2	i 9·2
Florence	14·9	313	e 3 51	+24	6 31	+18	—	7·8
Tiflis	16·1	58	e 4 9	+26	e 7 18	+37	e 10·5	—
Chur	17·7	319	e 4 4	+ 1	e 7 13	- 4	—	—
Zurich	18·5	319	e 4 13	0	e 7 47	+11	—	—
Algiers	19·1	284	e 4 27	+ 7	—	—	9·1	—
Stuttgart	19·1	323	e 4 19	- 1	e 7 54	+ 6	e 10·7	13·1
Neuchatel	19·2	316	e 4 20	- 1	—	—	—	—
Baku	19·6	66	e 4 41	+16	—	—	11·6	13·0
Strasbourg	19·7	321	e 4 6?	-20	e 8 6?	+ 6	e 11·1	—
Uccle	22·8	322	e 5 0	+ 1	—	—	e 12·1	—
De Bilt	23·2	326	e 5 6	+ 3	9 13	+ 5	e 12·6	—
Copenhagen	23·3	340	—	—	9 18	+ 8	13·1	—
Granada	24·3	285	e 5 14	+ 1	e 9 33	+ 5	e 13·9	—
Pulkovo	25·4	5	i 5 28	+ 4	10 7	+19	14·1	16·1
Kew	25·6	320	—	—	e 10 6?	+15	—	—
Oxford	26·3	319	—	—	e 10 21	+18	—	—
Scoresby Sund	44·2	339	11 6?	?	15 0	+21	26·1	—

Additional reading:—

Granada PP = +5m.32s.

Long waves were also recorded at Cheb, Vienna, Budapest, Lund, Edinburgh, and Irkutsk.

June 12d. Readings also at 0h. (near Santiago), 1h. (near Ksara), 3h. (Florence and Wellington), 5h. (near Hastings and Wellington), 6h. (Berkeley and Ukiah), 8h. (near Ksara and near Santiago), 9h. (Tyosi), 10h. (near Sumoto), 14h. (Andijan), 16h. (Alicante), 17h. (Andijan), 20h. (near Sumoto), 21h. (Andijan), 22h. (Ekaterinburg, Tiflis, and Tananarive), 23h. (Baku, Irkutsk, and Tashkent).

June 13d. 20h. 57m. 39s. Epicentre 18°·5N. 119°·5E.

N.1.

Probable error of epicentre ±0°·21.

A = -·467, B = +·825, C = +·317; D = +·870, E = +·492;
G = -·156, H = +·276, K = -·948.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	4·1	160	i 0 58	0	1 44	- 1	—	—
Tainan	4·6	8	1 44	S	(1 44)	-14	—	—
Hong Kong	6·3	309	1 25	-5	3 1	S*	3·5	4·3
Taihoku	6·8	16	1 48	P*	—	—	5·0	—
Phu-Lien	12·4	233	e 2 52	- 2	—	—	5·8	6·8
Zi-ka-wei	12·8	7	2 59	0	5 55	+33	6·5	8·2
Nagasaki	17·0	31	3 56	+ 2	e 7 20	SS	—	—
Zinsen	20·0	16	4 31	+ 1	8 30	SS	—	—
Sumoto	20·9	38	1 4 40	+ 1	8 39	+15	—	—
Kobe	21·3	38	1 4 46	+ 3	(e 8 49)	+17	e 8·8	13·5
Osaka	21·6	38	4 24	-22	(8 44)	+ 6	8·7	10·2
Chufeng	N. 21·8	353	e 4 51	+ 2	e 8 59	+17	—	—
Gihu	22·8	39	4 59	0	9 14	+13	—	—
Nagoya	22·8	40	e 5 0	+ 1	(9 16)	+15	9·3	—
Amboina	23·8	158	3 39	?	7 57	?	—	—
Misima	23·9	42	5 6	- 3	9 30	+ 9	—	—
Nagano	24·5	38	5 16	+ 1	9 43	+11	—	—
Medan	25·2	236	5 18	- 4	11 33	?	—	—
Batavia	27·7	208	e 6 37	PPP	12 41	?	—	—
Mizusawa	27·8	38	(5 50)	+ 5	5 50	P	—	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Irkutsk	35.8	344	6 57	+ 1	e 11 52	-41	19.0	25.0
Agra	39.0	291	—	—	e 12 9	-72	—	—
Hyderabad	39.0	275	7 20	- 4	13 34	+13	21.0	25.8
Colombo	40.3	258	9 18	PPP	—	—	—	25.5
Almata	43.4	315	e 7 38	-22	—	—	—	—
Bombay	44.1	278	8 2	- 4	14 47	+10	23.5	30.5
Andijan	45.9	309	e 8 22	+ 2	—	—	24.4	—
Tashkent	48.3	309	e 9 38	+60	i 16 38	+61	e 27.6	32.2
Ekaterinburg	57.7	326	9 49	+ 1	17 51	+ 5	e 27.4	42.4
Baku	62.8	307	10 27	+ 3	18 58	+ 6	32.4	40.4
Tiflis	66.6	309	e 10 47	- 2	e 19 28	-12	e 35.7	45.9
Kucino	70.1	323	11 8	- 3	20 26	+ 4	36.2	44.0
Pulkovo	73.7	328	i 11 32	- 1	e 21 1	- 4	39.4	44.4
Helwan	79.4	298	e 12 1	- 4	22 10	+ 1	—	52.0
Upsala	E. 79.9	330	—	—	e 22 21?	+ 6	—	50.2
Lund	83.5	327	12 27	+ 1	—	—	44.4	—
Copenhagen	84.0	327	12 30	+ 2	22 55	- 3	44.4	—
Vienna	84.6	319	12 30	- 1	23 7	+ 3	e 45.4	53.4
Potsdam	85.0	324	e 12 21?	-12	e 22 51	[- 8]	e 46.4	—
Hamburg	86.2	326	e 12 40	+ 1	e 23 9	[+ 1]	e 45.4	56.6
Cheb	86.3	321	—	—	e 23 21?	+ 1	e 46.4	54.4
Jena	86.4	322	e 14 21?	?	—	—	—	—
Scoresby Sund	87.1	348	12 44	0	23 23	- 5	44.4	—
Triest	87.3	317	i 12 44	- 1	e 23 4	[- 11]	e 47.4	—
Stuttgart	88.7	322	e 12 51	0	e 23 21	[- 3]	e 46.4	48.9
Chur	89.4	321	e 12 53	- 2	e 23 19	[- 10]	—	—
De Bilt	89.4	326	12 57	+ 2	e 23 27	[- 2]	e 44.4	54.3
Strasbourg	89.7	322	i 12 58	+ 2	23 51	- 2	47.4	—
Florence	89.7	316	13 12	+16	23 52	- 1	33.2	54.4
Zurich	89.8	321	e 13 1	+ 5	—	—	—	—
Piacenza	90.1	318	13 7	+ 9	23 31	[- 2]	—	56.4
Uccle	90.5	325	13 0	0	e 23 33	[- 3]	e 45.4	—
Edinburgh	91.4	331	e 13 41	+37	e 23 46	[+ 5]	e 46.4	65.4
Kew	92.6	327	e 13 21?	+12	—	—	e 46.4	59.8
Paris	92.6	324	e 13 10	+ 1	e 16 56	PP	e 48.4	50.4
Oxford	92.9	328	—	—	e 23 55	[+ 6]	—	—
Granada	102.8	317	e 18 14	PP	—	—	e 54.5	66.5
Ottawa	E. 114.6	12	—	—	e 35 39	SS	e 51.4	—
La Paz	Z. 172.4	76	e 20 8	[+ 3]	—	—	—	—

Additional readings :-

Tainan S = +3m.9s.
 Osaka i = +4m.51s. and +5m.12s.
 Chiufeng ePE = +4m.54s.
 Medan iS = +20m.39s.
 Irkutsk PP = +8m.28s., e = +9m.23s., +13m.30s., and +16m.43s.
 Tashkent i = +11m.6s., e = +20m.39s.
 Tiflis ePP = +13m.21s., ePS = +19m.52s.
 Pulkovo L₀ = +35.4m.
 Cheb e = +29m.21s. ? and +34m.21s. ?
 Scoresby Sund +16m.9s. = PP +7s., and SS = +29m.21s.
 Triest e = +16m.11s. = PP +7s., and +23m.24s. = S - 6s.
 Stuttgart eP₀P = +13m.6s., ePP = +16m.21s., e = +16m.40s., ePS = +24m.45s.,
 eSS = +29m.45s., eSSS = +33m.51s.
 Strasbourg PP = +16m.33s., SKS = +23m.26s.
 Zurich ePP = +16m.34s.
 Uccle ePP = +16m.39s.
 Ottawa eE = +39m.51s.
 La Paz ePKP = +20m.21s.

Long waves were also recorded at Calcutta and several other European stations.

June 13d. Readings also at 0h. (Florence, near Mizusawa, Nagoya, Osaka, and Tyos), 3h., 6h., and 7h. (Andijan), 15h. (Almata, near Andijan, and Tashkent), 16h. (near Andijan, and near Amboina), 19h. (Tashkent), 20h. (near Wellington), 22h. (Ekaterinburg, Tashkent, Tiflis, near Almata, and Andijan), 23h. (Ekaterinburg and Tiflis).

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June 14d. 5h. 59m. 38s. Epicentre 18°7N. 120°3E. N.I.

Probable error of epicentre $\pm 0^{\circ}24$.

A = -478, B = +818, C = +321; D = +863, E = +505;
G = -162, H = +277, K = -947.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
			m. s.	s.	m. s.	s.	m.	m.
Manila	4.2	171	i 1 2	+ 2	1 54	+ 6	—	—
Hong Kong	6.8	303	i 1 43	+ 6	2 56	+ 3	3.5	4.4
Zi-ka-wei	12.5	4	e 2 58	+ 3	5 20	+ 5	—	7.4
Phu-Lien	13.1	281	e 3 16	+13	5 57	+28	6.9	—
Nagasaki	16.4	30	3 47	+ 1	6 49	+ 1	—	7.0
Hukuoka	17.4	29	3 59	0	7 18	+ 7	—	—
Koti	19.0	36	e 4 13	- 6	—	—	—	—
Sumoto	20.3	37	i 4 31	- 2	8 15	+ 3	—	—
Kobe	20.7	36	i 4 37	0	8 13	- 7	—	—
Osaka	20.9	37	4 21	-18	7 38	-46	—	—
Toyooka	21.2	34	i 4 40	- 2	i 8 33	+ 3	—	—
Chiufeng	21.7	351	i 4 50	+ 2	8 50	+10	—	—
Nagoya	22.1	39	e 4 49	- 3	(8 48)	0	8.8	—
Amboina	23.7	160	4 56	-11	—	—	—	—
Tyosi	24.9	43	e 5 19	0	—	—	—	—
Medan	26.0	237	i 5 33	+ 4	—	—	—	—
Mizusawa	27.2	37	e 5 36	- 4	5 57	?	—	—
Batavia	28.2	209	6 49	+60	i 12 43	+128	—	—
Calcutta	30.0	283	5 45	-20	10 48	-16	15.1	—
Sikka	35.6	26	9 56	(+29)	—	—	—	—
Irkutsk	35.8	343	i 6 59	+ 3	e 12 21	-12	19.0	—
Almata	43.8	315	e 8 8	+ 5	—	—	—	—
Bombay	44.8	278	e 8 16	+ 5	—	—	—	—
Andijan	46.3	309	e 8 29	+ 6	—	—	—	—
Tashkent	48.8	309	i 8 47	+ 5	i 15 43	- 1	e 24.4	29.1
Perth	50.8	186	e 15 57	S	(e 15 57)	-15	—	—
Ekaterinburg	58.0	326	i 9 53	+ 3	i 17 51	+ 2	27.7	35.1
Baku	63.3	307	e 10 33	+ 6	19 4	+ 5	33.4	40.5
Tiflis	67.1	309	10 54	+ 2	19 47	+ 1	e 36.9	42.2
Kucino	70.3	323	—	- 2	e 19 23	-62	e 36.8	45.4
Pulkovo	74.0	328	i 11 32	- 3	i 20 59	- 9	40.4	46.5
Simferopol	74.2	314	e 11 38	+ 2	e 21 6	- 5	—	—
Yalta	74.3	313	e 11 37	+ 1	—	—	—	—
Ksara	75.3	301	i 11 44	+ 2	21 23	- 1	—	—
Honolulu T.H.	76.1	72	e 11 40	- 7	i 21 20	-13	—	—
Helsingfors	76.5	330	11 44	- 5	e 21 42	+ 5	e 42.4	—
Helwan	80.0	298	12 8	0	22 14	- 2	—	—
Upsala	80.1	330	12 6	- 2	22 6	-11	—	51.0
Königsberg	80.3	325	i 12 8	- 1	e 22 9	-10	e 41.4	52.2
Lund	83.8	327	12 27	0	22 42	[- 8]	—	—
Copenhagen	84.2	327	12 27	- 2	22 46	[- 7]	42.4	—
Vienna	85.0	319	12 32	- 1	22 51	[- 8]	e 42.4	50.4
Potsdam	85.3	324	i 12 35	0	i 22 51	[- 10]	e 42.4	—
Prague	85.5	321	(e 12 47)	+11	(e 23 2)	[- 11]	(e 38.4)	—
Zagreb	86.2	318	e 12 31	- 8	e 22 41	[- 27]	—	—
Hamburg	86.4	326	i 12 40	0	e 22 59	[- 10]	e 51.4	54.4
Cheb	86.6	321	e 22 59	S	(e 22 59)	[- 12]	e 48.4	51.4
Scoresby Sund	87.0	348	12 42	- 1	23 4	[- 9]	42.4	—
Göttingen	87.3	325	i 12 43	- 2	e 23 10	[- 5]	—	—
Triest	87.7	317	i 12 47	+ 1	23 6	[- 12]	—	52.4
Stuttgart	89.1	322	i 12 53	0	e 23 38	[+ 11]	e 50.4	—
De Bilt	89.6	326	12 56	0	e 23 21	[- 9]	e 44.4	52.6
Strasbourg	90.0	322	i 12 56	- 1	i 23 50	- 6	e 45.4	—
Florence	90.1	316	e 13 8	+10	i 23 54	- 3	45.4	54.4
Prato	90.1	317	e 12 58	0	23 48	- 9	—	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Dyce	90.2	333	—	—	i 23 24	[-10]	—	—
Piacenza	90.5	319	13 6	+ 6	23 28	[- 8]	—	58.9
Uccle	90.8	325	i 13 1	- 0	e 23 10	[-27]	e 44.4	—
Edinburgh	91.6	331	e 13 2	- 3	e 23 32	[-10]	e 49.4	—
Kew	92.8	327	i 13 10	0	i 23 38	[-11]	45.4	57.9
Paris	92.9	324	i 13 9	- 2	i 23 36	[-13]	46.4	57.4
Oxford	93.1	328	e 16 50	PP	i 23 36	[-15]	e 50.4	57.9
Tinemaha	N. 101.5	44	e 13 49	- 1	i 24 22	[-11]	—	—
Santa Barbara	102.0	47	—	—	e 24 25	[-10]	—	—
Granada	103.1	317	e 14 0	+ 2	—	—	55.8	65.8
Mount Wilson	103.3	47	—	—	e 24 31	[-11]	—	—
Pasadena	103.3	47	e 18 6	PP	i 24 31	[-11]	—	—
Riverside	103.9	47	—	—	e 24 32	[-13]	—	—
La Jolla	104.6	47	e 18 10	[+10]	i 24 32	[-16]	—	—
Tucson	109.3	44	—	—	e 24 58	[-12]	—	—
Ottawa	114.2	12	e 19 25	PP	e 25 48	[+17]	e 55.4	—
Florisant	E. 115.7	26	i 19 40	PP	i 25 20	[-16]	—	—
St. Louis	115.9	26	i 19 40	PP	e 25 20	[-17]	—	—
Harvard	118.0	9	e 19 2	[+21]	e 23 24	?	—	—
Fordham	119.0	12	e 19 51	PP	e 25 22	[-25]	e 61.4	—
San Juan	142.3	9	e 19 22	[- 3]	—	—	—	—
Balboa Heights	146.1	36	e 19 22	[-14]	—	—	—	—
La Paz	171.6	76	i 20 6	[+ 1]	—	—	91.4	103.7

Additional readings and note :-

Sumoto SZ = +8m.27s. =SS-7s.

Kobe iEN = +4m.56s.

Toyooka iEZ = +4m.57s. =PP-2s.

Chiufeng iZ = +5m.10s. =PP+4s. and +5m.29s. eSZ = +8m.53s.

Medan i = +5m.59s. =PP-5s.

Mizusawa PN = +5m.40s.

Batavia i = +7m.10s.

Irkutsk PPP = +8m.23s., e = +15m.20s.

Tashkent e = +9m.22s. and +16m.10s., i = +18m.27s. =S_cS-10s.

Tiflis ePPP = +15m.19s., PS = +20m.20s., SKS = +20m.45s., SKKS = +21m.21s.,

e = +27m.55s.

Kucino ePPP = +14m.38s., PS = +19m.52s.

Pulkovo L_g = +37.4m.

Honolulu T.H. ePP = +16m.10s. =PPP+0s.

Helsingfors ePPZ = +14m.38s., ePPN = +14m.41s., eSKSN = +22m.3s. =PS-1s.,

iN = +30m.53s., T₀ = 5h.59m.28s.

Königsberg eN = +17m.34s.

Lund +23m.17s. =PS-19s.

Vienna PP = +15m.56s., PPP = +18m.54s., i = +25m.4s., and +26m.45s.,

SSS? = +34m.1s.

Potsdam iN = +17m.16s., =PPP-17s., eN = +21m.4s., and +22m.34s.,

iZ = +22m.54s., iN = +23m.2s., iE = +23m.18s. =S+7s., iEN = +23m.31s.,

iN = +23m.41s. =PS-14s.

Prague readings have been increased by 2m.

Zagreb ePPNE = +15m.34s.

Scoresby Sund PP = +16m.8s., +23m.41s. =S+14s., SS = +29m.22s.†

Triest PP = +16m.16s., PPP = +18m.5s., iPS = +23m.45s., PPS = +24m.2s.

Stuttgart eP_cPZ = +13m.7s., ePP = +16m.25s., e = +16m.47s., eSKSE =

+23m.14s., eSSN = +29m.58s.

Strasbourg ePP = +16m.35s., iSKS = +23m.22s.

Florence iSKS = +23m.23s.

Uccle iPP = +16m.40s.

Kew iP.PZ = +13m.40s., iPPZ = +16m.56s., iSEN = +24m.17s.

Paris iPP = +16m.7s., PS = +24m.12s. =S-11s.

Oxford i = +24m.7s. =S-18s.

Tinemaha eN = +17m.41s. =PP-13s.

Granada PP = +18m.17s., PPP = +20m.30s., e = +37m.6s.

Ottawa e = +28m.58s. =PS-10s.

St. Louis iEN = +25m.57s.

Fordham e = +26m.2s.

San Juan e = +19m.34s., +22m.33s. =PP-2s., +23m.13s. =PKS-1s., and

+23m.22s.†

La Paz iE = +25m.24s. =PP+10s., +31m.54s., and +46m.20s. =SS-11s.

Long waves were also recorded at Bidston, San Fernando, and Tortosa.

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June 14d. 9h. A series of shocks recorded at Lick from the epicentre 37°15'N. 122°30'W.:-

	h.	m.	s.	h.	m.	s.	h.	m.	s.
	9	44	19	9	51	31	10	46	57
	9	47	31	9	54	43	10	48	13
	9	48	30	10	7	23	10	49	59
	9	49	51	10	10	46	11	38	59
	9	50	47	10	38	53	11	54	32
							19	30	8

Additional readings for some of these shocks were made at other stations :-

Berkeley iP = 9h.44m.30s., iS = 9h.44m.39s., eP = 9h.48m.43s., iS = 9h.48m.52s., eEN = 11h.54m.46s.
 Branner IPN = 9h.44m., eE = 9h.48m., eE = 11h.54m.
 San Francisco PEN = 9h.44m.30s.
 Ukiah e = 9h.45m.17s.
 Tucson eL = 9h.49m.51s.

June 14d. 11h. 20m. 16s. Epicentre 17°·3N. 120°·5E. (as on 1924 May 24d.) R.2.

A = -·485, B = +·823, C = +·297; D = +·862, E = +·508;
 G = -·151, H = +·256, K = -·955.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	m.	m. s.	s.	m. s.	s.	m.	m.
Manila	2·8	170	e 0 33?	?	1 3	- 9	—	—
Hong Kong	7·8	312	e 1 34	-17	3 26	+ 7	4·5	7·2
Taihoku	7·8	7	e 2 14	P*	—	—	—	—
Phu-Lien	13·6	287	e 2 58	-12	—	—	6·7	—
Zi-ka-wei	z. 14·0	3	e 3 16	+ 1	8 14	L	10·4	14·6
Sumoto	N. 21·4	34	e 4 49	+ 5	8 43	+ 9	—	—
Kobe	21·8	34	e 4 52	+ 3	e 8 52	+10	—	—
Osaka	21·9	35	e 4 55	+ 5	(8 40)	- 4	8·7	9·5
Ambaina	22·3	159	i 5 3	+ 9	i 9 23	SS	—	—
Chiufeng	23·1	351	e 4 56	- 6	e 9 7	0	13·4	14·6
Nagoya	23·1	36	e 5 7	+ 5	(9 20)	+13	9·3	—
Gihu	23·2	36	e 5 8	+ 5	9 18	+10	—	—
Nagano	24·9	35	e 5 29	+10	10 10	SS	—	—
Mizusawa	28·3	36	e 5 32	-18	6 8	PP	—	—
Irkutsk	37·3	344	e 7 3	- 6	e 12 42	-14	18·9	—
Hyderabad	40·1	277	13 39	S	(13 39)	+ 1	—	33·7
Agra	E. 40·3	292	9 5	PP	16 54	SSS	29·6	32·6
Almata	45·0	316	8 11	- 2	—	—	—	—
Bombay	N. 45·3	280	e 6 24	?	—	—	—	—
Tashkent	49·8	310	e 8 39	-11	e 15 8	-50	e 26·6	35·9
Ekaterinburg	59·3	327	i 9 56	- 4	17 58	- 9	29·4	32·1
Baku	64·3	308	e 9 6	-88	—	—	e 34·7	—
Tiflis	68·1	309	e 11 1	+ 2	e 19 52	- 6	e 36·2	42·2
Kucino	71·7	324	e 18 35	?	—	—	e 37·0	40·1
Pulkovo	75·3	330	11 35	- 7	e 21 11	-13	37·7	44·9
Upsala	N. 81·4	331	—	—	e 21 44?	-47	e 43·7	—
Copenhagen	85·5	328	—	—	22 56	[- 7]	45·7	—
Potsdam	86·6	325	—	—	e 21 44?	?	e 45·7	—
Hamburg	87·7	327	—	—	e 22 44?	[-34]	e 50·7	—
Scoresby Sund	88·5	349	—	—	23 26	[+ 3]	51·7	—
Triest	88·9	319	e 11 31	-81	e 23 16	[-10]	e 50·7	—
Stuttgart	90·4	322	e 12 57	- 2	e 23 24	[-11]	e 46·7	—
De Bilt	91·0	326	e 13 14	+12	e 23 41	[+ 2]	e 47·7	57·1
Florence	91·3	317	—	—	e 24 44	+36	—	50·7
Strasbourg	91·3	322	e 12 44?	-19	e 22 44?	?	e 39·7	—
Piacenza	91·7	319	e 11 44	?	e 23 44	[+ 1]	—	65·9
Edinburgh	92·9	332	e 15 44?	?	e 23 44?	[- 5]	e 51·7	—
Paris	94·2	325	e 12 27	-50	—	—	e 50·7	—
Oxford	94·6	328	—	—	e 23 57	[- 2]	e 51·7	—

For Notes see next page.

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NOTES TO JUNE 14d. 11h. 20m. 16s.

Additional readings :-

Hong Kong $\dot{?}$ = +2m.51s.
 Zi-ka-wei $\dot{?}$ = +7m.12s.
 Kobe $\dot{?}$ = +5m.1s. = PP - 6s.
 Osaka $\dot{?}$ = +5m.12s. = PP - 3s.
 Bombay $\dot{?}$ = +6m.50s.
 Tashkent $\dot{?}$ = +10m.2s. = P_0P - 13s. and +20m.14s. = SSS - 23s.
 Scoresby Sund +29m.38s. = SS + 20s.
 Trieste $\dot{?}$ = +12m.50s., $\dot{?}$ = +23m.38s. = S - 8s.
 Stuttgart $\dot{?}$ = +16m.29s. = PP + 0s.
 De Bilt $\dot{?}$ = +16m.34s. = PP + 1s.
 Strasbourg $\dot{?}$ = +16m.44s. $\dot{?}$ = PP + 8s.
 Long waves were also recorded at other European stations.

June 14d. Readings also at 0h. (La Paz and near Sumoto), 6h. (Ekaterinburg), 7h. (Balboa Heights), 9h. (La Paz), 10h. (Andijan Medan and La Paz), 11h. (La Paz (2)), 12h. (near Manila), 13h. (Almata), 15h. (Honolulu T.H.), 20h. (La Paz, La Plaza, and near Santiago), 21h. (Budapest), 22h. (Balboa Heights and La Paz).

June 15d. Readings at 7h. (near Malabar), 11h. (Baku), 12h. (Balboa Heights and Ekaterinburg), 13h. (near Christchurch, Wellington, and New Plymouth), 14h. and 18h. (near Tyosi), 23h. (Hastings and Lick).

June 16d. 1h. 18m. 50s. Epicentre 4° 6N. 97° 5E. N.1.

Probable error of epicentre \pm 0° 27.

A = -.130, B = +.988, C = +.080 ; D = +.991, E = +.131 ;
 G = -.010, H = +.080, K = -.997.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Medan	1.5	131	i 0 23	+ 2	—	—	—	—
Batavia	14.3	139	2 57	-22	7 16	L	(7.3)	—
Colombo	17.7	275	4 0	- 3	9 2	+105	15.0	18.3
Phu-Lien	18.5	28	i 4 24	+11	e 8 6	+30	10.2	—
Calcutta	20.0	334	9 37	?	12 1	?	13.6	—
Kodaikanal	20.7	287	4 40	+ 3	(8 38)	+18	8.6	8.8
Hyderabad	22.6	306	5 2	+ 5	9 16	+19	12.1	17.3
Hong Kong	24.0	40	5 14	+ 4	9 42	+19	13.0	18.3
Manila	25.2	65	5 21	- 1	9 22	-22	11.5	13.2
Bombay	28.0	303	5 52	+ 5	10 37	+ 5	14.1	14.7
Agra	E. 29.2	323	6 5	+ 7	i 10 58	+ 7	—	—
	N. 29.2	323	6 8	+10	i 11 6	+15	—	—
Amboina	31.8	104	e 6 14	- 7	i 11 6	-26	i 16.6	—
Isigakizima	32.4	48	6 28	+ 2	—	—	—	—
Zi-ka-wei	Z. 34.8	36	i 6 51	+ 4	15 29	?	18.6	23.4
Chinfeng	N. 39.3	21	i 7 32	+ 6	e 12 41	-45	—	—
Perth	40.5	156	e 3 15	?	i 13 5	-39	—	—
Miyazaki	41.9	45	7 49	+ 1	14 0	- 5	—	—
Andijan	42.6	331	8 6	+13	i 14 32	+17	—	—
Almata	42.7	338	i 8 3	+ 9	—	—	—	—
Koti	44.3	44	e 8 10	+ 3	14 43	+ 3	—	30.7
Tashkent	44.5	329	i 8 13	+ 4	i 14 29	-14	—	—
Sumoto	45.6	44	8 18	0	e 15 5	+ 6	—	—
Kobe	46.0	44	i 8 20	- 1	e 15 10	+ 6	e 24.2	27.2
Osaka	46.3	44	8 22	- 1	15 1	- 8	—	16.3
Nagoya	47.2	44	e 8 25	- 5	—	—	—	—
Irkutsk	48.0	5	i 8 43	+ 7	e 15 49	+16	24.2	31.4
Mizusawa	52.4	42	(9 12)	+ 3	9 12	P	—	—
Tananaeve	54.5	243	9 11	-14	16 41	-21	24.7	—
Adelaide	55.3	140	e 8 40	-51	i 16 34	-39	—	27.8

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	$^{\circ}$	$^{\circ}$	m. s.	s.	m. s.	s.	m.	m.
Baku	55.7	317	i 9 38	+ 4	e 17 46	+27	e 31.2	42.0
Sikka	58.9	33	12 44	?	—	—	e 21.1	21.1
Tiflis	59.7	316	i 10 4	+ 2	18 16	+ 4	e 30.7	39.0
Ekaterinburg	59.8	337	i 10 7	+ 4	i 18 22	+ 9	29.1	36.4
Melbourne	61.1	138	—	—	i 17 58	-32	31.7	—
Riverview	63.5	131	—	—	i 18 25	-36	—	33.2
Ksara	64.0	305	e 10 31	- 1	i 19 12	+ 5	34.2	39.2
Helwan	67.1	300	10 47	- 5	19 47	+ 1	—	40.8
Theodosia	67.3	317	10 54	0	19 49	+ 1	—	—
Yalta	67.9	316	10 57	- 1	19 55	- 1	—	—
Simferopol	68.1	316	10 57	- 2	19 56	- 2	—	—
Sebastopol	68.4	316	11 0	- 1	20 4	+ 2	—	—
Kucino	69.5	328	e 11 8	0	20 15	0	35.4	47.0
Pulkovo	74.7	331	i 11 38	- 1	i 21 14	- 3	37.7	47.7
Helsingfors	77.4	331	e 11 55	+ 1	i 21 41	- 6	e 40.2	—
Budapest	78.8	317	11 43	-18	21 53	-10	—	—
Taranto	79.5	310	11 55	-10	21 55	-15	—	—
Vienna	80.6	318	i 12 8	- 3	22 17	- 5	—	—
Zagreb	80.8	316	e 12 10	- 2	e 22 18	- 6	—	—
Upsala	81.0	329	12 30	+17	i 22 20	- 6	e 44.2	—
Catania	81.6	307	11 30	-46	22 0	-33	—	—
Triest	82.4	315	e 12 17	- 3	i 22 32	- 9	—	—
Camerino	82.8	313	12 21	—	—	—	—	—
Lund	83.0	325	12 24	+ 1	22 40	- 7	—	—
Potsdam	83.0	322	i 12 21	- 2	i 22 37	-10	—	—
Venice	83.3	315	e 12 50	+25	i 22 49	- 1	—	—
Cheb	83.3	320	e 12 28	+ 3	e 22 40	-10	e 47.2	56.2
Copenhagen	83.4	325	i 12 25	0	22 46	- 5	41.2	—
Capetown	83.5	235	16 9	?	—	—	42.2	—
Wellington	83.5	132	—	—	i 22 10	[-38]	—	—
Florence	84.1	313	12 33	+ 4	i 22 20	[-32]	35.7	45.2
Prato	84.2	314	e 12 26	- 3	22 50	[- 3]	—	—
Innsbruck	84.2	317	12 34	+ 5	—	—	—	—
Göttingen	84.8	322	e 12 18	-14	e 22 59	[+ 1]	—	—
Hamburg	84.8	324	i 12 31	- 1	i 23 1	[+ 3]	e 46.2	—
Chur	85.2	317	i 12 32	- 2	e 22 49	[-12]	—	—
Stuttgart	85.5	318	e 12 33	- 3	i 23 4	[+ 1]	e 48.2	—
Piacenza	85.7	315	12 46	+ 9	22 52	[-12]	—	64.3
Zurich	85.9	317	e 12 36	- 2	e 22 49	[+17]	—	—
Strasbourg	86.4	318	i 12 38	- 2	i 23 20	- 1	e 36.2	—
Neuchatel	87.0	317	i 12 41	- 2	e 23 0	[-13]	—	—
Besançon	87.7	317	13 3	+17	—	—	—	—
De Bilt	87.8	322	e 12 48	+ 1	e 23 9	[-10]	e 45.2	54.0
Uccle	88.4	321	12 48	- 2	i 23 36	- 5	e 46.2	—
Paris	89.8	319	i 12 54	- 2	—	—	51.2	—
Algiers	90.8	307	i 12 57	- 4	i 23 53	[+16]	e 38.2	—
Kew	91.2	322	i 13 2	- 1	e 23 50	[+10]	50.2	—
Dyce	91.3	328	—	—	124 1	- 7	—	—
Oxford	91.8	322	e 13 23	+17	e 24 0	-13	e 44.7	—
Edinburgh	92.1	326	—	—	e 23 10	[-35]	e 57.2	—
Tortosa	92.3	311	13 8	0	24 6	-11	—	—
Bidston	92.6	324	—	—	i 23 38	{-18}	—	—
Scoresby Sund	95.1	343	13 34	+13	24 40	- 3	50.2	—
Granada	96.0	308	e 13 27	+ 2	i 23 58	[-10]	e 50.7	—
Malaga	96.8	308	—	—	i 23 50	[-20]	—	59.7
San Fernando	98.2	307	10 51	?	24 45	{+ 5}	50.7	61.2
Berkeley	123.8	37	e 21 53	?	—	—	—	—
Tinemaha	N. 126.7	35	e 19 3	[+ 3]	—	—	—	—
Mount Wilson	128.7	37	e 19 0	[- 4]	e 22 13	?	—	—
Pasadena	128.8	37	e 18 56	[- 9]	—	—	—	—

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o	o	m. s.	s.	m. s.	s.	m.	m.
Riverside	N. 129.3	37	e 19 1	[- 5]	e 22 16	?	—	—
Ottawa	129.7	355	e 12 20	PP	e 28 10	{-10}	e 60.2	—
La Jolla	130.1	38	e 19 23	[+16]	i 22 50	PKS	—	—
Toronto	N. 131.7	357	e 21 38	PP	e 28 19	{-13}	—	—
Madison	131.9	7	—	—	e 26 32	{+ 7}	—	—
Buffalo	132.4	356	i 19 24	[+13]	e 21 10	PP	e 66.2	—
Fordham	133.9	351	e 19 28	[+15]	e 23 35	{-11}	e 69.2	—
Tucson	134.3	34	e 19 28	[+14]	e 21 34	PP	—	—
Pittsburgh	134.9	357	i 23 6	PKS	e 23 42	{-10}	—	—
Florissant	136.0	8	e 19 14	[- 2]	i 39 53	SS	—	—
St. Louis	136.2	8	e 19 14	[- 2]	e 28 39	{-21}	—	76.7
San Juan	151.9	326	e 20 2	[+18]	e 42 53	SS	e 74.2	—
Sucre	157.8	228	e 20 1	[+10]	—	—	—	—
La Paz	161.6	229	e 19 47	[- 9]	30 54	{-33}	75.2	84.6

Additional readings :—

Batavia PZ = +4m.6s., i = +7m.28s.
 Kodaikanal S = +5m.23s.
 Hong Kong PP = +5m.38s., ? = +10m.20s.,
 Zi-ka-wei iZ = +8m.21s.
 Sumoto eSN = +15m.9s.
 Kobe iPN = +8m.23s., iE = +15m.50s.,
 Osaka i = +11m.10s.
 Irkutsk PP = +10m.41s., SS = +19m.40s.
 Tananarive PP = +12m.29s., PS = +17m.5s.
 Baku i = +9m.56s.
 Tiflis SKS = +19m.49s.
 Helsingfors eNZ = +12m.0s., eN = +26m.15s.? = SS - 19s., and +36m.46s.
 Budapest i = +12m.14s.
 Vienna P_cP = +12m.27s., iN = +13m.29s. and +14m.33s., PPP? = +16m.46s.,
 PS = +22m.59s., SS = +26m.48s.
 Upsala iE = +22m.53s., iPS = +23m.1s.
 Trieste PPP = +17m.27s., SKKS = +22m.59s., ePS = +23m.42s., eSS = +28m.18s.
 Lund +12m.42s.
 Potsdam iPEZ = +12m.41s., iPN = +12m.46s., iZ = +12m.50s., iN = +13m.8s.,
 eZ = +15m.10s. = PP - 19s., iEN = +16m.5s., eZ = iSN = +22m.40s.,
 iEN = +22m.55s., iEN = eZ = +23m.10s. = PS - 17s., e = +25m.34s.,
 eN = +28m.10s.? = SS + 13s.
 Copenhagen i = +12m.44s.
 Capetown +26m.57s., +29m.7s., +29m.32s., and +32m.42s.
 Florence e = +11m.55s.
 Göttingen ePE = +12m.26s., iPEZ = +12m.49s., iZ = +12m.54s., iE = +12m.58s.
 Hamburg eE = +22m.45s., and +23m.31s., iN = +24m.44s.
 Stuttgart iP_cPZ = eP_cPEN = +12m.54s., e = +14m.58s., eSKSEN = +22m.52s.,
 iSKKSN = +23m.31s., eSSEN = +28m.53s., eSSSN = +32m.16s., eN = +35m.40s., eNZ = +38m.28s.
 Strasbourg i = +12m.56s., ePP = +16m.26s., eSKS = +22m.52s., ePS = +23m.53s., eSS = +29m.18s.
 De Bilt iZ = +13m.5s., iN = +23m.30s. = S - 5s.
 Uccle iP_cP = +13m.8s., PP = +16m.10s.?
 Paris i = +13m.15s.
 Kew iP_cPZ = +13m.21s., iSKSE = +23m.28s.
 Oxford eE = +23m.31s. = SKS - 12s.
 Bidston i = +24m.21s., = S + 1s.
 Scoresby Sund PP = +17m.18s., +23m.52s. = SKS - 10s., SS = +31m.22s.
 Granada i = +24m.39s. = S - 12s.
 Pasadena iZ = +19m.18s. and +21m.6s. = PP - 3s., iNZ = +22m.14s.
 Ottawa e = +22m.20s., eE = +38m.40s. = SS + 4s.
 Toronto eN = +22m.25s. = PKS - 16s.
 Madison i = +27m.52s. and +33m.20s., e = +42m.30s.
 Fordham e = +21m.49s. = PP + 6s.
 Tucson e = +22m.33s. = PKP - 18s.
 Pittsburgh ePPP = +25m.53s., eSS = +39m.58s.,
 Florissant iZ = +19m.33s., +22m.0s. = PP + 10s., +22m.40s. = PKS - 14s.,
 and +23m.17s., iN = +28m.48s. = SKKS - 5s.
 St. Louis iE = +19m.27s., iN = +22m.1s. = PP + 3s., iEN = +22m.52s. = PKS - 6s., iN = +23m.8s., iSN = +28m.46s. = SKKS - 15s.
 San Juan e = +20m.10s.
 Sucre PP = +23m.49s.
 La Paz iPKPE = +19m.53s., iE = +19m.57s., PPE = +23m.49s., iE = +24m.47s. = PP + 21s., iSKSP = +34m.39s., SSE = +45m.5s., iE = +48m.25s.

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June 16d. 8h. 32m. 30s. Epicentre 36°1N. 140°0E. (as on 1931 Sept. 27d.). X.

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

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tokyo	0·5	206	0 9	+ 2	0 18	+ 5	—	0·3
Tyosi	0·8	118	0 10	- 1	0 24	+ 3	—	0·4
Nagoya	2·7	249	i 0 39	0	1 17	S*	—	1·8
Mizusawa	3·0	16	0 47	+ 4	1 25	S*	—	—
Osaka	3·9	250	0 51	- 5	i 1 17	P _r	1·9	2·8
Toyooka	4·2	264	1 0	0	i 2 8	S*	2·5	—
Kobe	4·3	251	0 58	- 3	1 59	+ 9	2·4	2·5
Sumoto	4·5	248	1 10	+ 6	2 10	S*	—	2·8
Koti	5·9	247	e 0 30?	?	—	—	—	—
Ekaterinburg	54·9	319	e 9 24	- 4	e 16 56	-12	27·5	—

Additional readings:—

Nagoya P_r = +47s.
Osaka i = +2m.18s.
Toyooka iSZ = +2m.20s.
Kobe iP_rE = +1m.22s., S_rN? = +2m.10s.
Sumoto PN = +1m.13s. = P* +3s.
Long waves were also recorded at Baku.

June 16d. 12h. 9m. 31s. Epicentre 38°7N. 46°1E. (as on 1931 Aug. 27d.). X.

A = +·541, B = +·562, C = +·625; D = +·721, E = -·693;
G = +·434, H = +·451, K = -·780.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tifis	3·2	341	e 0 50?	+ 4	e 1 31?	S*	1·9	—
Baku	3·4	59	i 0 50	+ 1	—	—	2·1	4·5
Ksara	9·5	243	e 3 4	P _r	i 5 11	?	6·0	—
Simferopol	10·9	308	e 2 44	+11	—	—	—	—
Kucino	17·9	345	e 4 1	- 4	e 7 24	+ 2	e 8·1	8·1
Andijan	20·3	75	e 4 40	+ 7	—	—	—	—
Ekaterinburg	20·5	23	4 31	- 4	i 8 14	- 2	9·5	—
Pulkovo	23·2	340	5 1	- 2	9 7	- 1	12·0	—
Almata	23·6	69	e 5 10	+ 4	—	—	—	—
Helsingfors	25·2	335	—	—	e 9 45	+ 1	e 15·8	—
Copenhagen	28·1	318	—	—	10 29?	- 5	—	—
Scoresby Sund	46·6	334	10 53	PPP	—	—	26·5	—

Tifis gives also iP = +53s. = P* +1s.

Long waves were also recorded at Irkutsk, De Bilt, and Stuttgart.

June 16d. 20h. 17m. 8s. Epicentre 36°7N. 141°7E. (as on 1931 Sept. 8d.). X.

A = -·629, B = +·497, C = +·598.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi	1·2	215	0 13	- 4	0 29	- 2	—	0·8
Mizusawa	2·4	349	0 34	0	1 2	0	—	—
Nagoya	4·1	250	1 3	+ 5	1 54	+ 9	2·0	—
Osaka	5·4	250	1 23	+ 6	—	—	2·7	3·3
Kobe	5·7	251	e 1 23	+ 2	2 52	S*	—	3·2
Sumoto	E. 6·0	249	e 2 25	P _r	3 10	S*	—	3·3
	N. 6·0	249	e 2 18	P _r	3 13	S*	—	3·2
Ekaterinburg	55·3	320	e 9 25	- 6	—	—	27·9	—

Additional readings:—

Mizusawa SN = +1m.5s.
Kobe ePEZ = +1m.25s., eSZ = +3m.1s. = S_r - 1s,
Long waves were recorded at Baku,

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June 16d. 23h. 13m. 47s. Epicentre 13°-0S. 167°-0W. N.3.

A = -·949, B = -·219, C = -·225 ; D = -·225, 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.
Apia	4·7	259	e 0 58	- 8	(2 12)	+12	2·2	—
Suva	14·9	248	i 3 33	+ 6	—	—	—	8·2
Riverview	N. 43·3	234	e 10 14	(+21)	—	—	—	—
Pasadena	66·1	43	e 10 46	0	—	—	—	—
Mount Wilson	E. 66·2	43	e 10 48	+ 1	—	—	—	—
Riverside	66·6	43	e 10 47	- 2	—	—	—	—
Tinemaha	N. 67·8	41	e 10 57	0	—	—	—	—
Irkutsk	99·4	322	(e 17 13?)	PP	—	—	e 17·2	—
Scoresby Sund	118·6	12	—	—	26 13?	[+27]	—	—
Andijan	121·5	310	e 19 13	[+24]	e 24 29	?	—	—
Ekaterinburg	123·2	331	e 19 36	[+43]	i 23 38	?	e 32·2	—
Pulkovo	131·5	348	i 21 25	PP	i 27 24	[+61]	—	—
Kucino	133·1	341	e 20 30	[+78]	e 26 30	[+ 2]	e 31·7	37·4
Baku	137·7	317	e 21 28	?	—	—	—	—
Tifis	140·2	322	e 21 33	PP	e 32 16	PS	e 80·2	—
De Bilt	z. 140·4	7	e 18 41	[-41]	—	—	—	—
Simferopol	143·4	335	e 18 27	[-61]	—	—	—	—
Stuttgart	z. 144·1	4	e 18 44	[-47]	—	—	—	—

Additional readings: —

Riverview eN = +12m.48s., 1E = +15m.34s.

Pasadena eZ = +11m.36s. = PKP + 19s.

Riverside eEN = +11m.42s.

Tinemaha eN = +12m.1s.

Ekaterinburg i = +26m.17s. = SKS + 17s.

De Bilt eZ = +19m.34s. = PKP + 12s.

Stuttgart eZ = +19m.36s. = PKP + 4s.

June 16d. Readings also at 0h. (near Glenmuick), 1h. (Tifis), 2h. (near Sumoto), 3h. and 5h. (2) (Lick), 6h. (near Mizusawa), 10h. (Phu-Lien), 12h. (Florence and Tashkent), 14h. (Hastings), 15h. (Manila), 17h. (Tifis and Phu-Lien), 22h. (Honolulu T.H., Suva, near Apia, and near Santiago), 23h. (Tifis and Wellington).

June 17d. Readings at 1h. (Andijan, Tortosa, Port au Prince, Rio de Janeiro, and San Juan), 5h. (near Mizusawa, Nagoya, and Tyosi), 6h. (near Glenmuick), 13h. (near Andijan), 14h. (Riverview, near Arapuni, Christchurch, New Plymouth and Wellington), 19h. (near Mizusawa), 23h. (Apia).

June 18d. 0h. 13m. 34s. Epicentre 20°-5S. 72°-0W. (as on 1928 June 25d.). R.3.

A = +·289, B = -·891, C = -·350 ; D = -·951, E = -·309 ;
G = -·108, H = +·333, K = -·937.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz	N. 5·4	44	i 1 10	- 7	i 2 0	-18	—	2·4
Sucre	6·6	78	1 30	- 4	—	—	—	—
La Plata	19·0	142	4 25	+ 6	8 13	+27	10·0	—
San Juan	39·3	8	e 7 24	- 2	i 13 2	-24	e 18·8	—
Ottawa	66·0	358	e 12 49	PP	e 19 19	-13	e 30·4	—
Riverside	N. 69·5	321	e 11 9	+ 1	—	—	—	—
Pasadena	70·0	321	e 11 13	+ 2	—	—	—	—
Mount Wilson	E. 70·1	321	e 11 13	+ 2	—	—	—	—
Tinemaha	N. 72·2	323	e 11 30	+ 6	—	—	—	—
Scoresby Sund	97·4	15	—	—	e 24 26?	[+13]	46·4	—
Stuttgart	99·7	42	e 17 56	PP	—	—	e 50·4	—
Copenhagen	103·8	36	—	—	e 24 26?	[-18]	52·4	—
Pulkovo	113·8	32	—	—	e 28 58	PS	56·4	—
Kucino	118·0	37	—	—	e 24 58	[-46]	e 56·2	62·3
Tifis	123·3	52	—	—	e 41 26?	SSS	68·4	—
Ekaterinburg	129·8	30	e 19 11	[+ 4]	—	—	51·4	—
Irkutsk	148·1	4	e 19 26?	[-13]	—	—	—	—

For Notes see next page.

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NOTES TO JUNE 18d. 0h. 13m. 34s.

Additional readings and notes :—

La Paz $iP_s = +1m.17s.$, $iN = +1m.38s.$ = $P_s - 4s.$

San Juan $e = +16m.17s.$ = $SS + 17s.$

Ottawa $eN = +19m.43s.$ = $PS - 1s.$

Kucino $e = +28m.45s.$

Ekaterinburg $e = +21m.11s.$ = $PP - 5s.$ and $+31m.20s.$ = $PS - 10s.$

Long waves were recorded at Santiago and at other European stations.

June 18d. 1h. 31m. 33s. Epicentre $32^{\circ}.6N. 132^{\circ}.1E.$ (as given by Tokyo). N.1.

Probable error of epicentre $\pm 0^{\circ}.18.$

A = - .565, B = + .625, C = + .539 ; D = + .742, E = + .670 ;
G = - .361, H = + .400, K = - .842.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o	o	m. s.	s.	m. s.	s.	m.	m.
Uwazima	0.7	31	0 0	-10	0 9	- 9	—	—
Simidu	0.8	76	0 7	- 4	0 18	- 3	—	—
Miyazaki	0.9	220	0 11	- 2	0 23	0	—	—
Kumamoto	1.2	280	0 15	- 2	0 34	+ 3	—	—
Matuyama	1.3	24	i 0 17	- 1	i 0 39	S_s	—	0.8
Koti	1.5	51	e 0 19	- 2	i 0 45	+ 6	—	0.8
Simonoseki	1.7	324	0 17	- 7	0 46	+ 2	—	—
Hukuoka	1.7	305	i 0 22	- 2	0 49	+ 5	—	0.9
Kagosima	1.7	232	0 23	- 1	0 46	+ 2	—	—
Nagasaki	1.9	274	0 25	- 3	0 57	S_s	—	1.0
Hamada	2.3	359	0 32	- 1	0 59	0	—	—
Ituhara	2.8	304	0 41	+ 1	1 27	S_s	—	—
Tomie	2.8	270	1 36	+56	2 21	+69	—	—
Sumoto	2.9	53	0 44	+ 3	1 21	+ 7	—	1.6
Wakayama	z. 2.9	53	0 47	+ 6	1 25	S_s	—	1.6
	3.0	58	0 46	+ 3	1 24	+ 7	—	—
Siomisaki	3.2	75	0 40	- 6	1 42	S_s	—	—
Kobe	3.3	50	e 0 51	+ 4	1 42	S_s	—	1.8
Osaka	3.5	53	0 55	+ 5	i 1 26	- 4	1.8	2.9
Toyooka	3.7	38	i 1 1	+ 8	i 1 52	S_s	—	2.1
Kyoto	3.9	50	0 54	- 2	2 3	S_s	—	—
Hikone	4.3	52	1 4	+ 3	2 8	S_s	—	—
Kameyama	4.3	58	1 4	+ 3	2 14	S_s	—	—
Taiyu	4.3	320	1 0	- 1	1 48	- 2	—	—
Nake	4.8	208	1 3	- 5	1 56	- 7	—	—
Gihu	4.8	54	1 8	0	2 1	- 2	—	—
Nagoya	4.8	57	e 1 4	- 4	2 11	+ 8	2.5	—
Wazima	6.2	38	1 31	+ 3	3 8	S_s	—	—
Numadu	6.2	65	1 37	+ 9	3 35	S_s	—	—
Misima	6.2	65	1 23	- 5	3 15	S_s	—	—
Nagano	6.4	49	1 38	+ 7	3 21	S_s	—	—
Oiwake	6.5	53	1 34	+ 2	3 25	S_s	—	—
Zinsen	6.7	319	2 41	S	(2 41)	-10	—	—
Kumagaya	7.0	57	1 46	+ 7	3 41	S_s	—	—
Hukusima	8.5	51	2 5	+ 5	4 38	S_s	—	—
Zi-ka-wei	z. 9.2	264	e 2 8	- 2	4 2	+ 8	—	6.1
Akita	9.6	40	2 34	+18	4 42	S_s	—	—
Mizusawa	E. 9.8	46	—	—	4 45	S_s	—	—
Chufeng	N. 14.8	304	e 3 26	0	e 8 9	?	—	—
Irkutsk	28.1	323	—	—	e 11 53	SS	14.4	18.0
Ekaterinburg	53.4	322	—	—	e 21 57	SSS	20.2	—
Kucino	65.8	324	—	—	e 31 20	?	e 37.2	41.8
Tiflis	68.1	308	—	—	e 20 29	+31	e 44.7	—
Florence	86.5	323	e 23 7	S	(e 23 7)	-15	—	47.4

Additional readings :—

Koti $iP_s = +24s.$, $iS_s = +49s.$

Kobe $i = +57s.$ = $P_s - 3s.$, $iEN = +1m.6s.$

Osaka $i = +1m.3s.$ = $P_s - 1s.$

Zinsen $S = +4m.6s.$

Ekaterinburg $L_s = +26.4m.$

Tiflis $eS = +32m.34s.$

Florence $e = +34m.27s.$

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

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June 18d. 10h. 12m. 15s. Epicentre 19°·2N. 104°·2W. R.1.

(as on 8d.).

Probable error of epicentre ±0°·45.

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

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	14·4	336	3 22	+ 1	—	—	—	—
La Jolla	18·0	322	i 4 9	+ 2	—	—	—	—
Riverside	18·8	324	e 4 17	+ 1	—	—	—	—
Pasadena	19·4	323	i 4 22	- 1	—	—	e 9·9	—
Mount Wilson	19·4	323	e 4 23	0	—	—	—	—
Denver	20·5	358	e 4 54	+19	i 9 32	+76	—	11·6
Santa Barbara	20·5	321	e 4 37	+ 2	—	—	—	—
Tinemaha	21·7	328	i 4 50	+ 2	—	—	—	—
St. Louis	22·9	29	e 4 54	- 6	i 9 19	+16	i 13·2	i 14·9
Florissant	23·0	28	4 56	- 5	—	—	—	—
Lick	23·7	324	e 5 7	0	—	—	—	—
Branner	24·0	323	e 4 45?	-25	—	—	—	—
Berkeley	24·4	324	e 5 13	- 1	i 10 23	SS	e 12·5	—
Columbia	25·3	50	e 5 19	- 4	i 10 3	+17	i 14·7	—
Ukiah	25·8	324	e 5 29	+ 2	10 26	+31	e 11·9	—
Chicago	26·6	28	e 5 34	- 1	e 10 26	+17	i 14·7	—
Bozeman	27·0	349	e 5 52	+14	e 10 44	+29	i 15·2	—
Madison	27·0	24	e 5 31	- 7	i 11 0	SS	14·0	—
Ann Arbor	28·9	32	i 6 21	+26	i 11 15	+28	15·5	19·2
Charlottesville	29·2	44	e 6 17	+19	i 11 9	+18	i 17·2	—
Port au Prince	30·2	86	e 6 12	+ 5	i 11 25	+18	e 15·9	20·9
Georgetown	30·6	44	e 6 9	- 1	10 59	-15	—	16·4
Buffalo	31·9	36	i 7 45	+83	i 12 13	+39	—	17·7
Seattle	32·0	337	e 7 3	PP	—	—	e 17·7	—
Toronto	32·1	35	e 6 22	- 2	i 11 54	+17	i 16·1	—
Victoria	33·0	337	6 26	- 6	12 19	+28	—	20·1
Fordham	33·7	44	e 6 19	-19	i 12 0	- 1	—	—
Ottawa	35·2	35	i 7 10	+19	i 12 38	+14	e 17·7	—
San Juan	36·0	85	e 6 50	- 8	—	—	i 20·7	—
Harvard	36·3	43	e 6 47	-13	e 12 25	-16	e 14·7	—
Sitka	44·3	337	i 8 29	+22	15 14	+34	e 23·2	—
Honolulu T.H.	50·1	283	e 9 10	+18	i 16 33	+31	i 23·4	—
La Paz	50·3	133	8 50	- 4	i 16 17	+12	25·0	27·8
Sucre	54·1	133	e 9 21	- 1	—	—	—	—
Santiago	61·6	148	10 38	+22	18 46	+ 9	29·6	41·1
Angra do Heroismo	68·2	55	11 24	+25	20 54	+55	37·3	41·1
Reykjavik	69·4	27	e 11 25	+18	20 47	PS	36·4	44·4
Scoresby Sund	69·4	20	e 11 0	- 7	e 20 15	+ 1	—	—
La Plata	69·7	141	11 22	+13	20 30	+12	33·4	—
Rio de Janeiro	73·0	122	i 11 38	+ 9	i 20 55	- 2	i 34·9	43·6
Apia	74·2	248	11 59	+23	21 25	+14	—	35·6
Edinburgh	80·2	34	e 12 3	- 6	i 22 31	+13	35·7	51·2
Dyce	80·2	33	i 12 30	+21	i 23 5	PS	35·2	49·6
Bidston	81·0	37	i 12 33	+20	23 3	PS	35·7	49·1
Stonyhurst	81·2	36	19 9	?	22 44	+16	44·0	50·2
Serra do Pilar	81·6	49	11 29	-47	—	—	—	—
Dakar	82·3	77	e 12 36	+16	e 22 56	+16	—	42·8
Bergen	82·5	28	19 42?	?	30 9	?	56·7?	—
Oxford	82·7	37	e 12 24	+ 2	i 23 10	PS	e 28·9	49·7
Kew	83·3	37	e 12 19	- 6	i 23 10	PS	36·7	49·2
Suva	84·6	249	(12 35)	+ 4	(23 21)	+17	(39·2)	(43·7)
San Fernando	84·9	53	e 12 36	+ 3	23 52	PS	45·7	54·2
Toledo	85·2	50	e 12 30	- 4	23 54	PS	46·0	52·4
Malaga	86·1	52	i 12 34	- 5	23 35	+17	44·5	57·0
Paris	86·1	40	e 12 34	- 5	i 23 34	+16	29·7	51·7

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	e	e	m. s.	s.	m. s.	s.	m.	m.
De Bilt	86.2	35	12 36	- 3	i 23 35	+16	e 37.7	52.1
Uccle	86.2	37	e 12 35	- 4	i 22 57	[-11]	e 36.7	52.3
Granada	86.5	52	i 12 45	+ 4	i 23 41	+19	46.9	52.2
Bagnères	87.0	45	e 12 45	+ 2	i 23 45	+18	37.7	—
Almería	87.5	52	e 12 33	-12	e 24 7	PS	e 42.5	53.6
Puy de Dôme	87.6	42	e 12 52	+ 6	23 45?	+12	e 42.7	—
Upsala	88.0	26	13 5	+17	i 23 44	+ 7	e 42.7	54.4
Hamburg	88.0	33	e 12 45	- 3	e 22 52	[-28]	e 40.2	54.7
Copenhagen	88.0	30	12 44	- 4	24 4	PS	38.7	—
Tortosa	88.1	47	13 2	+14	23 36	- 2	e 36.7	57.4
Alicante	88.3	49	i 13 11	+22	i 24 3	PS	e 47.2	53.9
Lund	88.5	30	12 45	- 5	24 6	PS	39.7	—
Feldberg	N. 88.8	36	e 13 16	+24	e 22 45	-60	e 40.4	54.9
Barcelona	88.9	46	e 13 11	+19	24 4	PS	e 37.0	54.7
Ströttingen	89.0	34	e 12 47	- 6	e 23 45	- 1	42.6	55.0
Strasbourg	89.2	38	e 12 49	- 5	e 24 10	+22	41.7	54.2
Sikka	89.3	323	e 15 4	?	—	—	—	—
Karlsruhe	89.4	37	13 17	+22	23 25	[- 4]	e 48.7	56.2
Neuchâtel	89.6	39	e 12 49	- 7	23 37	[+ 7]	—	—
Stuttgart	90.0	37	e 12 51	- 6	e 24 30	PS	e 39.7	46.2
Potsdam	90.2	33	e 12 45	-13	i 24 8	+10	e 40.7	54.7
Jena	90.3	35	e 12 58	- 1	e 23 45	[+11]	e 37.7	54.7
Zurich	90.3	39	e 13 15	+16	e 24 23	+24	—	—
Marseilles	90.3	43	e 14 3	+64	—	—	47.7	—
Helsingfors	90.6	22	12 50	-10	i 24 15	+13	e 43.7	—
Ootomari	90.9	321	e 13 26	+24	(e 24 0)	- 4	e 24.0	42.5
Chur	91.1	39	e 13 12	+ 9	e 24 22	+16	—	—
Cheb	91.1	35	e 13 18	+15	e 23 37	[- 2]	e 44.7	54.9
Algiers	91.6	50	e 13 9	+ 4	i 24 19	+ 8	45.2	56.7
Pavia	91.8	40	e 13 36	+30	—	—	—	—
Innsbruck	92.0	38	13 9	+ 2	—	—	35.1	56.2
Piacenza	92.1	40	13 29	+22	24 20	+ 4	42.8	56.6
Prague	92.2	34	e 13 29	+21	i 24 31	+14	e 39.7	55.4
Königsberg	92.4	28	e 13 27	+18	i 24 28	+10	e 41.7	57.7
Pulkovo	92.8	21	i 13 30	+20	i 24 31	+ 9	43.7	55.2
Padova	93.3	39	i 13 33	+20	i 24 33	+ 6	e 46.7	57.7
Livorno	93.3	41	13 50	+37	26 25	?	—	—
Treviso	93.4	39	i 13 33	+20	24 38	+10	—	57.1
Sapporo	93.5	318	13 30	+16	24 13	-15	—	—
Venice	93.6	38	e 13 28	+14	i 24 52	+23	54.2	55.9
Prato	93.7	41	e 13 15	+ 1	24 45	+15	34.6	55.7
Florence	93.8	41	e 13 11	- 4	i 24 52	+21	41.2	52.7
Carloforte	94.2	46	e 13 28	+11	26 28	?	—	—
Vienna	94.3	35	e 13 12	- 5	24 40	+ 4	—	57.7
Triest	94.3	38	e 13 16	- 1	i 24 38	+ 2	e 31.2	51.8
Arapuni	94.4	231	—	—	24 45	+ 8	44.2	45.8
Graz	94.5	37	e 13 34	+16	i 24 38	0	e 47.7	59.2
Morioka	95.2	315	13 49	+28	25 0	+16	—	—
Camerino	95.2	40	13 51	+30	—	—	—	—
Zagreb	95.5	37	e 13 21	- 2	e 24 38	- 9	—	58.5
Mizusawa	E. 95.6	315	13 51	+28	24 21	[+17]	—	—
	N. 95.6	315	13 54	+31	25 9	+21	—	—
Laibach	95.7	37	e 13 25	+ 1	e 24 23	{+ 2}	e 53.0	57.8
Wellington	98.1	229	13 53	+27	24 21	{- 3}	44.1	53.8
Budapest	98.2	35	13 46	+20	23 57	[-10]	31.8	60.8
Sendai	96.3	313	13 51	+25	25 11	+17	—	—
Naples	E. 97.2	42	e 12 53	-38	e 24 58	- 4	37.7	62.7
Lemberg	E. 97.2	31	e 13 48	+17	e 27 4	?	e 45.7	63.9
	N. 97.3	31	e 13 23	- 8	e 27 11	?	e 45.4	62.1
Tyos	97.5	312	e 24 31	S	(e 24 31)	{- 3}	e 49.1	68.7

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	o.	o.	m. s.	s.	m. s.	s.	m.	m.
Tokyo	98.3	312	14 2	+26				
Kudno	98.4	21	13 55	+19	24 31	[+13]	31.7	32.4
Belgrade	98.6	36	e 13 33	- 4	i 24 44	{+ 1}	e 33.3	61.0
Bari	98.7	41			25 3	-12	60.5	
Taranto	99.4	40	13 56	+15	23 42	[-41]		60.7
Trenta	99.4	42	13 45	+ 4	26 45	PS		52.7
Messina	99.6	44	e 14 8	+26	25 53	+30		
Catania	99.6	44	e 13 56	+14	e 25 53	+30	e 57.9	63.7
Nagoya	100.5	313	e 13 45?	- 1			50.8	
Gihu	100.6	312	14 29	+43				
Toyooka	101.7	314	i 18 24	PP	e 52 32	?		77.2
Osaka	101.8	313	14 23	+31	25 57	+15	51.9	75.9
Kobe	102.1	313	e 13 54	+ 1	e 25 59	+14	e 54.4	75.8
Sumoto	102.4	313	i 18 17	PP	28 8	?		81.6
Koti	103.7	313	e 13 45?	-16	e 18 21	PP	51.8	65.7
Matuyama	104.1	313	e 18 17	PP			e 66.4	69.6
Irkutsk	104.3	343	e 14 22	+19	26 29	+25	53.7	69.2
Simferopol	105.5	29	e 14 24	+15			45.7	
Yalta	105.9	29	14 33	+22			48.8	
Hukuoka	105.9	315	e 12 57	?	e 24 56	[+ 2]		89.3
Theodosia	106.0	28	e 14 31	+20			49.7	
Nagasaki	106.8	315	e 17 47	[-20]	e 34 23	?	e 58.4	77.8
Chinfeng	109.8	328	14 48	+13	e 25 14	[+ 2]	47.4	61.8
Riverview	112.4	240	e 19 41	PP	i 28 41	{+17}	e 51.7	59.7
Sydney	112.4	240	e 18 33	[+ 8]	i 29 9	PS	53.5	63.6
Tifis	112.7	26	e 15 2	+18	26 4	{-22}	e 51.8	70.2
Zi-ka-wei	113.2	318	15 1	+15	25 5	[-22]	58.5	80.6
Ksara	114.7	36	e 19 17	PP			51.7	
Helwan	114.9	43	e 15 13	+18	25 45	[+12]	63.6	73.7
Baku	115.7	22	e 15 16	+17	i 30 12	?		
Almata	117.6	358	e 15 32	+24				
Melbourne	117.8	236	20 20	PP	25 57	[+14]	54.2	57.4
Adelaide	122.8	240	e 20 52	PP	i 26 9	[+10]	57.2?	77.8
Hong Kong	124.0	316	15 56	+17	29 10	?	58.3	86.0
Manila	124.1	303	15 54	+35	i 30 55	PS	66.8	
Amboina	126.6	280	19 19	[+19]			e 57.8	
Cape Town	127.4	118	15 30?	-26	26 15	[+ 3]	59.2	70.7
Phu-Lien	129.9	321	19 23	[+16]			58.8	83.6
Dehra Dun	130.4	357	19 35	[+27]			80.2	82.7
Agra	133.6	356	19 39	[+26]	e 32 21	PS		85.0
Johannesburg	135.7	109	21 51	PP			56.4	67.8
Calcutta	136.5	343	20 21	[+64]	34 25	?	80.2	85.9
Bombay	141.8	5	19 18	[- 6]	33 5	SKSP	68.8	91.4
Perth	141.9	242	19 0	[-24]				
Hyderabad	143.2	355	19 59	[+31]	33 17	SKSP	66.9	90.7
Malabar	146.9	287	i 20 6	[+29]			e 102.0	
Batavia	147.1	288	i 20 3	[+26]	i 25 57	?	72.2	112.4
Medan	147.9	313	20 7	[+28]			64.7	87.6
Kodaikanal	150.5	357	21 8	?	43 25	?	82.7	94.7
Tananarive	153.3	94	20 18	{+ 5}	26 55	PPP		84.7
Colombo	153.6	351	20 11	{- 4}			83.6	98.4

Additional readings and note:—

Tucson i = +3m.49s.

Pasadena iNZ = +4m.57s., iE = +8m.42s., iN = +9m.9s.

Denver iPN = +5m.18s., iEN = +5m.31s., and +5m.37s., iE = +9m.10s., and +9m.49s.

St. Louis iPEN = +5m.1s., and +5m.19s. = PP-3s., iSEN = +9m.26s., iN = +9m.34s., iSE = +9m.42s.

Branner iEN = +5m.45s.?

Berkeley iZ = +5m.39s., iZ = +10m.45s.

Columbia i = +5m.44s. = PP-10s., and +10m.35s. = SS-2s.

Ukiah i = +5m.53s. = PP-7s.

Continued on next page.

Chicago iP = +5m.51s., i = +10m.53s.
Bozeman iP = +6m.2s., iPP = +6m.44s., e = +10m.22s., i = +11m.21s., =SS + 3s.
Madison iP = +5m.53s., i = +12m.22s.; T₀ = 10h.12m.36s.
Ann Arbor iPP = +7m.9s.; T₀ = 10h.12m.6s.
Charlottesville iPP = +7m.0s.
Port an Prince i = +6m.28s., PP = +7m.26s., PP = +7m.53s., iSNW = +11m.31s., SS = +13m.3s., SSS = +13m.29s., i = +15m.30s.
Georgetown iP = +6m.28s.; T₀ = 10h.12m.30s.
Toronto ePE = +6m.17s., iPEN = +6m.43s., iPPN = +7m.23s., iPPP = +7m.50s., iN = +12m.15s.; T₀ = 10h.12m.12s.
Fordham iPE = +6m.41s., iE = +8m.6s., iZ = +12m.4s.
Ottawa iPPP = +8m.31s., eN = +10m.23s., eSSSE = +15m.0s., eN = +15m.23s.
San Juan i = +7m.13s.
Harvard iP = +7m.21s., iPP = +8m.47s.; T₀ = 10h.12m.1s.
Sitka ePP = +10m.31s., e = +14m.57s., i = +19m.1s.
Honolulu T.H. iP = +9m.16s., ePP = +11m.15s., ePPP = +12m.15s., i = +19m.8s. = SS = 16s.
La Paz i = +9m.9s., iE = +9m.11s., iPP = +11m.22s., iPPP = +11m.32s., iSE = +16m.21s., PSE = +16m.57s., iN = +18m.22s., and +19m.17s., =SS = 10s., iSSSE = +20m.34s. = SSS = 15s., iL_q = +23.2m.
Reykjavik PS = +21m.12s. = S_CS + 11s., SS = +25m.19s., SSS = +28m.54s., e = +41m.57s.
Scoresby Sund i = +11m.8s., i = +11m.25s. = P_CP - 6s., eE = +13m.0s., eN = +13m.9s. = PP - 24s., eEZ = +14m.10s., eE = +16m.9s., and +20m.48s. = PS + 18s., eN = +20m.54s., iE = +21m.41s., eEN = +25m.9s.
Edinburgh i = +12m.27s., +12m.47s., +16m.35s., +23m.5s., +23m.43s., +28m.51s., and +32m.52s.
Bidston i = +12m.55s., +20m.23s., SS = +28m.20s., SSS = +32m.35s., SSSS = +34m.55s.
Stonyhurst PS = +23m.44s., SS = +28m.25s., SSS = +32m.41s., SSSS = +34m.46s.
Dakar PS = +23m.48s.
Oxford iP = +12m.40s.
Kew iP_CP = +12m.46s., iNZ = +13m.40s., iPP = +16m.6s., iPSNZ = +23m.40s., iE = +28m.10s. = SS + 8s., iSSSE = +29m.34s., iSSSE = +32m.38s.
Suva PP = (+16m.21s), SS = (+29m.5s.), all readings have been *diminished* by 2m.
Toledo iP = +12m.54s., PP = +15m.51s., PPP = +17m.45s., SKS = +23m.15s., PS = +25m.0s., i = +29m.18s., and +36m.9s.
Malaga P_CP = +12m.58s., PP = +16m.5s., PPP = +18m.25s., SKS = +22m.57s., PPS = +24m.56s., SS = +29m.29s.
Paris i = +12m.57s.
De Bilt i = +13m.0s., iN = +23m.53s.
Uccle iP_CP = +12m.59s., PP = +16m.24s., i = +23m.40s., and +23m.52s., iPPS = +25m.32s., iSS = +30m.19s.
Granada P_CP = +12m.53s., SS = +31m.41s.
Bagnères i? = +13m.0s., +13m.3s., PP = +15m.57s.
Almeria iP = +13m.5s.
Puy de Dôme i = +13m.6s.
Upsala PP = +16m.31s., iS = +23m.58s., iPS = +24m.44s., SS = +29m.47s.
Hamburg iP = +13m.7s., ePPEZ = +16m.32s., ePPN = +16m.37s., iSKKSE = +23m.51s., iPPSE = +25m.35s., eSSZ = +30m.3s., eSSE = +30m.12s., eSSSZ = +34m.45s.
Copenhagen iP = +13m.8s., PP = +16m.37s., SKS = +23m.9s., PS = +25m.5s., SS = +29m.45s.?
Tortosa iPE = +13m.8s.
Alicante PP = +16m.41s., SS = +30m.11s.
Lund i = +13m.11s., PP = +16m.37s., SKS = +23m.3s., PS = +25m.13s., SS = +29m.39s.
Feldberg eN = +15m.54s.
Göttingen iPZ = +13m.12s., ePP = +16m.45s., eSS = +30m.3s., eSSSEN = +34m.3s., eL_q = +38.6m.
Strasbourg i = +13m.13s., ePP = +16m.55s., PPP = +18m.45s., PPP = +20m.40s., eSKS = +23m.31s., PS = +25m.23s., iPPS = +25m.54s., SS = +29m.39s., SSS = +35m.1s.
Neuchatel PS = +24m.11s.
Stuttgart iP = +13m.17s., iPP = +16m.50s., ePPP = +18m.57s., iSKS = +24m.10s., ePS = +25m.15s., ePPS = +25m.55s., eSS = +30m.33s., eSSS = +34m.45s.
Potsdam eEN = +12m.57s., i = +13m.17s., iE = +13m.20s., +13m.43s. and +15m.33s., iPPZ = +16m.46s., iPE = +16m.54s., iPPN = +17m.0s., iPPP = +18m.36s., iPPPZ = +18m.53s., iE = +20m.52s., iZ = +22m.14s., iE = +22m.18s., +22m.46s. and +23m.39s. = SKS + 5s., iSE = +24m.13s., eE = +25m.3s. = PS + 9s., iN = +25m.9s., iZ = +25m.22s., eSSSE = +30m.45s. ? eSSSE = +34m.39s.
Jena iP = +13m.14s., iPE = +13m.20s., ePP = +16m.38s., eEN = +30m.45s., eZ = +31m.45s.

Helsingfors eEZ = +12m.59s., P = +13m.20s., eE = +14m.9s., eN = +15m.16s., eE = +16m.21s., ePP = +17m.9s., iN = +18m.13s., ePPPE = +19m.9s., eSKS = +23m.48s., eSE = +24m.18s., iPSEN = +25m.39s., ePSZ = +25m.44s., ePPSE = +25m.50s., iPPSN = +25m.53s., ePPSZ = +26m.19s., iN = +28m.15s., iE = +28m.32s., eZ = +30m.9s., eE = +30m.15s., iN = +30m.31s., eE = +30m.39s., iN = +30m.59s., eSSSZ = +34m.9s., eSSSN = +34m.27s., eSSSE = +34m.39s.; $T_0 = 10h.12m.8s.$

Ootomari eS = +19m.15s.

Chur e = +13m.24s. and +13m.35s.

Cheb ePP = +16m.55s.

Algiers iP = +13m.20s., iPP = +17m.11s., iPS = +25m.2s., SS = +30m.58s., SSS = +33m.34s.

Prague ePP = +17m.2s., ePS = +25m.51s.

Königsberg iEN = +13m.30s., iZ = +13m.34s., iN = +13m.40s. and +15m.3s., iPPN = +17m.23s., eEN = +29m.3s.; $T_0 = 10h.12m.30s.$

Pulkovo iPP = +17m.13s.

Venice eP = +13m.33s.

Florence iP = +13m.25s., PP = +17m.10s., PPP = +19m.20s., SS = +29m.45s.

Vienna iP = +13m.37s., iN = +14m.35s., PP = +17m.26s., PPP = +19m.32s., iE = +22m.2s., SKS = +23m.46s., PS = +25m.40s., PPS = +26m.40s., iE = +28m.8s., SS = +31m.13s., iE = +32m.11s., SSS = +35m.31s.

Triest iP = +13m.36s., iPP = +17m.24s., i = +25m.20s., PPS = +26m.45s. ?

Arapuni SS = +31m.18s.

Graz iPP = +17m.40s., iPPP = +21m.56s., iPS = +26m.16s.

Zagreb e = +13m.28s., iPcP = +13m.47s., e = +17m.35s. = PP + 27s., +21m.31s., +23m.38s. ?, +24m.20s. = SKS + 17s., +25m.10s., +26m.34s., +32m.26s., and +36m.2s., eNW = +39m.14s., eE = +41m.16s., and +47m.4s.

Laibach ePKP = +17m.16s. = PP + 6s.

Budapest PP = +17m.35s.

Kucino PP = +17m.45s., PS = +26m.57s.

Belgrade i = +13m.59s., e = +17m.1s. and +21m.38s., ePS = +26m.56s.

Toyooka iPPZ = +18m.24s., iPPE = +18m.28s., iPPN = +18m.31s., eSN = +48m.34s., eSZ = +51m.52s.

Osaka i = +18m.16s.

Kobe PZ = +14m.11s., eE = +18m.30s., eN = +27m.38s. = PS + 30s., eZ = +27m.58s.

Sumoto iZ = +18m.31s., SN = +28m.12s.

Irkutsk PP = +18m.43s., SKS = +25m.3s., SS = +33m.27s.

Chiufeng i = +17m.56s., PKP = +18m.24s., iPP = +19m.25s., PPN = +19m.29s., i = +19m.45s., +22m.2s., and +27m.29s., iPS = +28m.38s., eSN = +28m.54s., SS? = +31m.32s., iN = +35m.24s., iE = +35m.35s., PPP? = +37m.36s.

Riverview ePPPPPE = +25m.49s. = SKS + 25s., iPSE = +29m.18s., PPSE = +30m.11s., PPPSE = +30m.47s., PKKPE = +31m.38s., eSSE = +35m.14s., eSSSE = +39m.40s., ePPPPPN ($\Delta > 180^\circ$) = +47m.20s.

Sydney iP = +19m.17s. = PP + 2s., PPP = +25m.45s. = SKS + 21s., SS = +35m.39s.

Tifis ePKP = +18m.46s., PP = +19m.29s., ePPP = +22m.29s., PS = +29m.20s., eSS = +35m.42s., eSSS = +40m.24s.

Zi-ka-wel iZ = +15m.20s., PKP = +17m.57s., iPZ = +19m.47s., PPZ = +20m.53s., SKP = +21m.30s., PPPZ = +23m.57s., PPPPZ = +26m.45s., SKKS = +27m.15s., PPPPZ = +28m.11s., PSKS = +31m.15s., PS = +31m.35s., PPS = +33m.3s., PPP($\Delta > 180^\circ$) = +33m.43s., SKKS = +34m.1s., PPS = +34m.13s., PPPP($\Delta > 180^\circ$) = +37m.21s., SSZ = +38m.53s., SPS = +39m.19s., PPSS = +39m.37s., PPPPP($\Delta > 180^\circ$) = +40m.1s., PSSS = +44m.17s., SSSZ = +44m.27s., SSSSZ = +48m.45s., PPS($\Delta > 180^\circ$) = +55m.47s.

Keara PPE? = +20m.6s., PPSE? = +30m.3s.; $T_0 = 10h.12m.29s.$

Helwan PP = +19m.45s., SS = +29m.37s. = PS + 22s.

Baku iPP = +20m.1s.

Melbourne PS = +30m.8s., SS = +36m.58s., SSS = +40m.33s.

Adelaide i = +33m.7s., +36m.54s. = SS - 15s., +37m.56s., and +51m.30s.

Hong Kong PP = +20m.56s., SS = +38m.18s.

Manila PKP = +19m.16s., PP = +20m.55s., iEN = +32m.55s.

Amboina i = +21m.26s. and +22m.37s.

Cape Town PP = +21m.13s., +22m.48s., PPP = +25m.34s., +28m.48s., +30m.55s., and +33m.2s., SSS = +43m.48s.

Johannesburg +23m.3s. = PKS + 7s., SS? = +40m.9s., SSS? = +45m.3s.

Perth P = +21m.26s., PP = +24m.25s., PPP = +27m.5s., PPPP = +30m.10s., SS = +41m.56s., SSS = +47m.50s., SSSS = +51m.55s.

Malabar i = +20m.16s.

Tananarive PKPEN = +20m.28s., EN = +23m.24s., iPP = +24m.0s., E = +34m.20s. = SKSP + 19s. and +35m.23s., PPS = +39m.29s., SSN = +43m.45s. ?

Long waves were also recorded at Andijan and Besançon.

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June 18d. 21h. 59m. 24s. Epicentre 19°·2N. 104°·2W. (as at 10h.). X.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		14·4	336	e 3 25	+ 4	e 6 12	+11	e 7·6
La Jolla	E.	18·0	322	e 4 21	+14	—	—	—
Riverside		18·8	324	e 4 25	+ 9	e 8 12	+30	—
Pasadena		19·4	323	e 4 25	+ 2	e 8 33	+39	e 10·9
Santa Barbara	N.	20·5	321	e 4 49	PP	—	—	—
Tinemaha	N.	21·7	328	e 4 47	- 1	—	—	e 11·8
St. Louis		22·0	29	i 4 55	- 5	e 9 7	+ 4	e 12·1
Florissant		23·0	28	i 4 54	- 7	i 9 7	+ 2	i 14·4
Berkeley		24·4	324	e 7 50	?	—	—	—
Chicago		26·6	28	—	—	e 10 34	+25	14·6
Madison		27·0	24	—	—	e 10 50	+35	—
Harvard		36·3	43	—	—	e 15 8	SS	e 19·4

Additional readings:—

Tucson i = +3m.51s.

St. Louis iPEN = +5m.2s., iSEN = +9m.19s.

Long waves were also recorded at San Juan, Bozeman, Ottawa, Scoresby Sund, and De Bilt.

June 18d. Readings also at 2h. (La Paz), 5h. (near Batavia and Malabar), 6h. (Baku, Copenhagen, De Bilt, Stuttgart, Tifis, and Pulkovo), 8h. and 9h. (near Santiago), 10h. (near Wellington), 11h. (Taihoku and Tashkent), 12h. (Pasadena, Tinemaha, Madison, and Zagreb), 13h. (near Santiago), 14h. (Ivigtut), 15h. (Ekaterinburg, Tashkent, and near Amboina), 17h. (Baku, Pulkovo, Tifis (2), Irkutsk, Tashkent, Bombay, Colombo, Kodaikanal, Hong Kong, Batavia, Manila, Phu-Lien, and near Medan), 18h. (Baku, Ekaterinburg, Scoresby Sund, Kucino, Copenhagen, and De Bilt), 19h. (near Wellington), 21h. (Granada, Strasbourg, Stuttgart, Piacenza, Paris, Tifis, Ekaterinburg, Kucino, Copenhagen, Pulkovo, Pasadena, Kodaikanal, and near Tananarive (2)), 22h. (Irkutsk, Helsingfors, Edinburgh, Kew, De Bilt, Uccle, Florence, Alicante, Almeria, San Fernando, Toledo, and Tortosa), 23h. (Tifis).

June 19d. 8h. 41m. 42s. Epicentre 19°·2N. 104°·2W. (as on 18d.). X.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
La Jolla	N.	18·0	322	e 3 59	- 8	—	—	—
Riverside	N.	18·8	324	e 4 20	+ 4	—	—	—
Mount Wilson		19·4	323	e 4 26	+ 3	—	—	—
Pasadena		19·4	323	e 4 22	- 1	—	e 12·6	—
Tinemaha	N.	21·7	328	i 4 51	+ 3	—	e 13·8	—
St. Louis	N.	22·9	29	e 5 0	0	e 9 16	+13	—
Florissant	N.	23·0	28	e 4 58	- 3	e 9 14	+ 9	i 13·0

Long waves were also recorded at Rio de Janeiro, Scoresby Sund, and other American stations.

June 19d. 15h. 17m. 52s. Epicentre 31°·0N. 140°·0E. (as on 1927 April 21d.). X.

A = -·657, B = +·551, C = +·515.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi		4·8	9	e 1 18	P*	e 2 21	S*	—
Nagoya		4·9	329	e 1 13	+ 3	2 15	+10	—
Osaka		5·3	315	1 13	- 2	2 16	+ 1	2·2
Mizusawa	E.	8·2	7	1 56	0	3 29	0	—

Mizusawa gives also SN = +3m.34s.

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June 19d. Readings also at 2h. (Lick), 4h. (Rio de Janeiro), 7h. (near Tyrosi), 6h. (Lick), 7h. (near Tyrosi), 9h. (Harvard and near Mizusawa), 10h. (near Wellington), 12h. (Lick), 14h. (Ekaterinburg, Rio de Janeiro, Sucre, and near La Paz), 18h. (Baku, Tiflis, and Ekaterinburg), 19h. and 21h. (La Paz), 22h. (Columbia and Pittsburgh), 23h. (Balboa Heights).

June 20d. 3h. A shock in S.E. Pacific with readings as follows :-

Apia eP = 3h.50m.44s., S = 52m.14s., M = 57m.18s.
 Wellington e = 3h.57m., L = 4h.0m.
 Riverview e = 3h.58m.6s., eL = 4h.4m.18s., M = 7m.12s.
 Manila P = 3h.59m.20s., SEN = 4h.2m.24s.
 Adelaide e = 3h.59m.44s., L = 4h.9m.38s., M = 13m.12s.
 Honolulu T.H. e = 4h.2m.48s. and 7m.0s.
 Perth eP = 4h.17m.25s., e = 20m.50s.
 Berkeley ePZ = 3h.59m.36s., eE = 4h.19m.23s.
 Pasadena eZ = 3h.59m.38s., eN = 59m.44s. and 4h.9m.26s.
 Riverside eEN = 3h.59m.46s.
 Tinemaha eN = 4h.0m.4s.
 Tiflis e = 4h.3m.48s., e = 7m.29s., e = 11m.0s., e = 17m.21s., e = 28m.0s., eL = 5h.2m.30s., M = 12m.48s.
 Ukiah e = 4h.9m.28s., eL = 21m.
 Scoresby Sund 4h.10m., L = 57m.
 Ottawa eE = 4h.16m.20s., eN = 39m.40s., L = 45m.0s.
 Pittsburgh e = 4h.39m.16s., eL = 42m.25s.
 Baku e = 4h.7m.20s., 10m.5s., and 17m.49s., L = 43m.30s.
 Copenhagen 4h.7m.26s., L = 5h.6m.
 Potsdam eEN = 4h.7m., iZ = 7m.33s., eLNZ = 54m., MNZ = 5h.24m.
 De Bilt eZ = 4h.7m.34s., eL = 5h.10m.
 Kew eZ = 4h.7m.36s., eL = 5h.3m.
 Stuttgart eZ = 4h.7m.38s., eL = 5h.11m.
 Uccle e = 4h.7m.38s., M = 5h.15m.
 Granada e = 4h.7m.43s., eL = 5h.11m.1s.
 Paris e = 4h.8m., L = 5h.12m.
 Strasbourg e = 4h.8m., eL = 30m.
 Florence e = 4h.8m.2s., S = 19m., M = 50m.
 Pulkovo e = 4h.10m.9s. and 22m.6s., L = 58m., M = 5h.7m.6s.
 Tashkent e = 4h.11m.13s., 15m.49s., and 27m.18s., M = 5h.8m.42s.
 Edinburgh e = 4h.29m. and 5h.8m.
 Long waves also at Irkutsk, La Paz, Balboa Heights, Cheb, and San Fernando.

June 20d. 9h. 1m. 55s. Epicentre 12°·5N. 89°·2W. N.2.

A = +·014, B = -·976, C = +·216 ; D = -1·000, E = -·014 ;
 G = +·003, H = -·216, K = -·976.

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.
Belboa Heights	-0·1	10·1	109	e 2 52	-16	—	—	—	—
Columbia	-0·5	22·7	18	i 4 56	+ 3	e 9 5	+15	11·2	—
San Juan	-0·5	23·0	72	i 4 56	0	i 9 7	+12	11·4	—
St. Louis	-0·5	26·2	358	i 5 22	- 4	i 9 49	- 4	14·5	—
Florissant	-0·5	26·4	358	i 5 25	- 3	e 9 48	- 9	—	—
Tucson	-0·6	28·0	318	5 41	- 1	—	—	—	—
Georgetown	-0·6	28·5	20	5 45	- 1	—	—	14·1	19·2
Pittsburgh	-0·7	29·1	15	e 5 28	-23	e 9 48	-50	e 13·8	—
Chicago	-0·7	29·3	2	e 5 50	- 3	e 10 59	+17	13·2	—
Ann Arbor	-0·7	30·2	9	—	—	e 10 47	- 9	e 17·9	—

Continued on next page.

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	Corr. for Focus	Δ	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Madison	-0.7	30.6	0	i 6 2	- 2	i 10 58	- 5	—	—
Fordham	-0.7	31.4	24	e 6 15	+ 4	e 11 15	- 1	e 21.1	—
Buffalo	-0.7	31.7	16	i 6 7	- 7	i 11 20	0	e 16.1	—
Toronto	N. -0.7	32.3	13	e 6 21	+ 2	e 11 28	- 1	e 15.7	—
La Jolla	-0.8	32.8	314	i 6 24	+ 1	—	—	—	—
Riverside	-0.8	33.4	315	e 6 27	- 1	—	—	—	—
Harvard	-0.8	33.8	24	e 6 22	-10	(e 12 0)	+ 9	e 12.0	—
Mount Wilson	-0.8	34.0	315	i 6 33	- 1	—	—	—	—
Pasadena	-0.8	34.0	315	i 6 33	- 1	i 9 10	?	e 19.8	—
Ottawa	-0.8	34.8	17	e 6 39	- 1	e 12 18	+12	e 18.1	—
Santa Barbara	-0.8	35.4	314	e 6 50	+ 4	—	—	—	—
La Paz	-0.8	35.7	144	i 6 49	+ 1	i 13 10	+50	i 18.1	22.1
Tinemaha	N. -0.8	35.8	319	e 6 48	- 1	e 13 7	+46	e 17.2	—
Lick	-0.8	38.2	317	e 7 6	- 4	—	—	—	—
Berkeley	-0.8	38.9	317	i 7 15	- 1	—	—	—	—
Sucre	-0.8	39.4	143	e 7 21	+ 1	—	—	—	—
Ukiah	-0.8	40.2	318	e 7 25	- 2	—	—	e 19.1	—
Scoresby Sund	-1.3	70.7	19	11 6	- 1	—	—	34.1	—
Edinburgh	-1.3	77.4	36	—	—	e 22 5?	PS	—	—
Granada	-1.3	79.0	54	e 11 58	+ 2	e 21 46	- 5	37.8	—
Paris	-1.3	81.8	42	e 12 8	- 2	—	—	37.1	75.1
De Bilt	-1.4	82.8	38	e 12 18	+ 3	—	—	e 39.1	—
Strasbourg	-1.4	85.2	41	—	—	e 25 5?	?	—	—
Hamburg	-1.4	85.3	36	—	—	e 22 5?	-51	e 46.1	70.1
Stuttgart	-1.4	86.0	41	e 12 31	0	e 23 11	+ 7	—	—
Copenhagen	-1.4	86.1	33	—	—	23 5?	0	—	—
Piacenza	-1.4	87.3	44	e 12 5	-33	23 5	-12	—	75.9
Florence	-1.4	88.7	45	e 12 50	+ 5	23 15	-15	55.1	65.1
Pulkovo	-1.4	93.2	26	e 13 5	- 1	23 38	[-13]	—	—
Ekaterinburg	—	106.3	17	e 18 27	PP	e 24 47	[- 9]	—	—
Tashkent	—	122.7	19	e 20 45	PP	—	—	—	—

Additional readings:—

Tucson PP = +6m.31s.

Ann Arbor eE = +13m.53s., eN = +14m.23s.

Toronto PPPP = +7m.46s.; T₀ = 9h.1m.32s.

Harvard e = +7m.41s. = PP + 5s.

Ottawa e = +8m.19s.

La Paz PN = +6m.52s., SSE = +15m.30s.

Berkeley eZ = +7m.25s.

Pulkovo PP = +16m.53s.

Ekaterinburg e = +27m.53s. = PS + 2s. and +33m.37s. = SS + 9s.

Long waves were also recorded at Honolulu T.H., Tifis, and Uccle.

June 20d. 9h. 26m. 40s. Epicentre 43°·8N. 126°·8W. N.2.

A = -·432, B = -·578, C = +·692; D = -·801, E = +·599;
G = -·415, H = -·554, K = -·722.

	Δ	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Seattle	5.0	37	e 1 20	+ 9	e 3 8	+60	—	—
Victoria	E. 5.2	27	i 1 21	+ 7	(2 17)	+ 4	2.3	5.1
	N. 5.2	27	0 51	-23	—	—	2.5	6.0
Ukiah	5.4	149	i 1 10	- 7	e 2 36	S*	—	—
Berkeley	6.8	148	e 1 30	- 7	i 3 1	+ 8	—	—
Branner	7.2	149	e 1 50	+ 8	—	—	—	—
Lick	7.5	147	e 1 40	- 6	e 4 11	S*	—	—
Tinemaha	N. 9.3	133	e 2 12	+ 1	e 5 22	S*	—	—
Santa Barbara	N. 10.8	147	e 2 32	0	—	—	—	—
Bozeman	11.3	75	e 3 41	+62	e 6 20	S*	—	—

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mount Wilson	11.7	142	e 2 40	- 4	—	—	—	—
Pasadena	11.8	142	i 2 40	- 6	i 5 16	+18	—	—
Riverside	12.2	140	i 2 47	- 4	—	—	—	—
La Jolla	13.2	142	e 3 43	- 2	—	—	—	—
Sitka	14.3	341	i 3 16	- 3	6 16	+18	7.2	—
Denver	16.7	96	e 3 48	- 2	—	—	e 10.3	—
Tucson	17.0	127	3 57	+ 3	7 24	+22	e 8.3	—
Madison	26.9	78	e 6 33	+56	e 10 35	+21	13.2	—
Florissant	27.6	88	i 5 35	- 9	i 10 53	+28	—	—
St. Louis	27.7	88	i 5 46	+ 2	e 10 53	+26	e 13.6	—
Ann Arbor	31.1	78	—	—	e 11 20	- 1	e 17.6	—
Toronto	33.7	74	e 7 58	PP	—	—	e 18.3	—
Pittsburgh	34.4	80	e 7 34	+50	i 11 53	-19	18.9	—
Ottawa	35.8	69	i 8 20	PP	e 12 40	+ 7	e 18.3	—
Georgetown	37.0	80	i 7 9	+ 3	i 13 2	+11	—	20.5
Fordham	38.5	76	e 8 20?	+61	e 13 20?	+ 6	e 20.3	—
Kew	74.1	32	e 11 36	+ 1	—	—	e 38.3	—
Irkutsk	74.3	331	e 11 31	- 5	e 21 11	- 1	34.3	44.7
Pulkovo	74.8	12	e 11 37	- 2	e 21 16	- 2	35.3	42.4
De Bilt	75.6	88	e 11 43	- 1	e 21 30	+ 3	e 32.3	43.8
Ekaterinburg	79.2	356	e 12 2	- 2	22 3	- 4	24.3	37.4
Strasbourg	79.4	29	e 12 3	- 2	e 22 14	+ 5	e 33.3	—
Stuttgart	79.7	28	e 12 10	+ 4	e 21 50	-22	e 32.3	—
La Paz	80.6	124	e 12 3	- 8	—	—	—	—
Tashkent	93.7	348	—	—	i 23 45	[- 9]	—	57.3

Additional readings:—

Berkeley iPEZ = +1m.33s.

Florissant iN = +10m.33s., iZ = +13m.34s.

St. Louis eEN = +10m.33s., iSE = +10m.56s.

Ann Arbor eN = +13m.32s. and +16m.32s. = S_cS-18s.

Pittsburgh e = +15m.4s.

Irkutsk e = +14m.1s. = PP-14s. and +16m.55s.

Pulkovo e = +20m.18s.

Tashkent e = +31m.14s.

Long waves were also recorded at Honolulu T.H., Chicago, Columbia, Ivigtut, Scoresby Sund, Granada, San Fernando, Bidston, Cheb, Lund, and Baku.

June 20d. 15h. 39m. 22s. Epicentre 74°2N. 4°0E. (as on 1929 March 26d.). X.

A = +.272, B = +.019, C = +.962; D = +.070, E = -.998;

G = +.960, H = +.067, K = -.272.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Pulkovo	17.1	133	i 3 51	- 4	e 7 6	+ 2	8.6	10.9
Copenhagen	18.8	165	4 38?	+22	—	—	10.6	—
Kucino	22.7	124	4 59	+ 1	e 8 56	- 3	e 9.4	13.3
Stuttgart	25.5	172	e 5 25	0	e 9 51	+ 1	e 14.6	—
Ekaterinburg	27.5	98	e 5 45	+ 2	e 10 35	+11	12.6	—

Long waves were also recorded at Scoresby Sund, De Bilt, Baku, Tashkent, and Tiflis.

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June 20d. 19h. 9m. 5s. Epicentre 2°-5S. 138°-0E. (as on 1930 Nov. 10d.). R.3.

A = -0.742, B = +0.668, C = -0.044; D = +0.669, E = +0.743;
G = +0.032, H = -0.029, K = -0.999.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	9.8	263	12 24	+ 6	19 43	?	—	—
Manila	24.0	316	15 15	+ 5	9 33	+10	—	—
Batavia	31.3	262	e 6 22	+ 5	e 12 41	SS	—	—
Adelaide	32.5	179	—	—	e 11 44	+ 1	19.3	20.2
Riverview	E. 33.7	160	—	—	e 14 50	?	i 17.8	20.9
Melbourne	35.9	171	—	—	e 12 33	- 2	19.7	20.6
Perth	36.1	213	e 12 50	S	(e 12 50)	+12	—	18.9
Medan	39.8	279	17 24	- 6	1 13 49	+16	—	—
Irkutsk	61.8	337	10 15	- 2	e 18 45	+ 6	e 30.9	36.3
Tashkent	75.9	314	i 11 44	- 1	i 21 31	+ 1	—	46.5
Ekaterinburg	85.2	328	e 12 32	- 2	23 0	-10	—	—
Baku	90.2	311	e 13 27	+29	e 24 5	+ 7	42.9	62.1
Tiflis	94.1	312	e 17 8	PP	e 23 54	[- 2]	e 56.4	58.9
Pulkovo	101.0	331	e 13 45	- 3	—	—	50.9	58.9
Scoresby Sund	110.8	353	—	—	28 37	PS	—	—
Copenhagen	111.4	331	19 14	PP	28 43	PS	56.9	—
Stuttgart	116.5	326	e 19 48	PP	—	—	e 61.9	71.4
De Bilt	116.9	330	e 19 54	PP	—	—	e 60.9	—
Strasbourg	117.4	326	e 19 55?	PP	e 21 55?	PPP	e 61.9	—
Uccle	118.0	330	e 19 55?	PP	—	—	e 63.9	—
Paris	120.1	328	e 20 18	PP	—	—	66.9	—

Additional readings :-

Adelaide iS = +13m.49s., iSS = +16m.44s. = ScS - 14s., i = +18m.55s.

Melbourne e = +15m.52s.

Medan i = +7m.38s.

Baku ePP = +16m.42s.

Pulkovo e = +15m.55s., PS = +26m.46s., SS = +32m.49s.

Long waves were also recorded at Wellington, Hong Kong, Andijan, and other European stations.

June 20d. Readings also at 5h. (Tiflis, Adelaide, Melbourne, Riverview, Perth, and Wellington), 6h. (Bombay, Ekaterinburg, Irkutsk, Pulkovo, Copenhagen, Edinburgh, Kew, De Bilt, Stuttgart, Granada, San Fernando, Scoresby Sund, Ottawa, and La Paz), 8h. (near Almata), 9h. (Pittsburgh and Lick), 11h. (Andijan and near Taihoku), 12h. (near Tyosi), 13h. (near Andijan), 14h. (Hong Kong, Manila, Chiufeng, Irkutsk, Tiflis, Ekaterinburg, Tashkent, Pulkovo, Kucino, and Scoresby Sund), 15h. (Copenhagen, Edinburgh, De Bilt, Paris, Stuttgart, Strasbourg, Hong Kong, and near Mizusawa), 18h. (near Amboina and near Santiago), 19h. (Andijan), 20h. (near Almeria), 21h. (Lick, Balboa Heights, Batavia, and near Malabar).

June 21d. 4h. 19m. 18s. Epicentre 16°-0N. 96°-0W. (as on 1928 March 22d.). X.

A = -0.100, B = -0.956, C = +0.276; D = -0.995, E = +0.105;
G = -0.029, H = -0.274, K = -0.961.

	Δ	Az.	P.	O-C.	S.	O-C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Tucson	21.0	323	4 41	+ 1	8 38	+12	10.9
Columbia	22.4	34	—	—	e 9 11	+18	—
St. Louis	23.2	12	15 3	0	19 19	+11	—
La Jolla	25.8	315	15 26	- 1	—	—	—
Riverside	26.3	317	e 5 31	- 1	—	—	—
Chicago	26.7	14	—	—	e 10 19	+ 9	—
Mount Wilson	E. 26.9	317	e 5 36	- 1	—	—	—
Pasadena	26.9	316	e 5 36	- 1	—	—	e 15.2
Madison	27.6	11	15 43	- 1	i 10 34	+ 9	—
San Juan	28.6	81	—	—	e 10 48	+ 6	e 16.7

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		Δ	Az.	P.	O-C.	S.	O-C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tinemaha	N.	28.8	321	e 5 55	+ 1	—	—	e 15.0
Toronto	N.	31.0	24	—	—	e 12 20	+60	—
Ottawa		33.9	26	—	—	e 12 14	+10	—
La Paz	Z.	42.6	138	e 7 53	0	—	—	—
Rio de Janeiro		64.6	127	e 10 42?	+ 6	—	—	—

Additional readings :—

St. Louis iEN = +5m.5s.

San Juan eSS = +11m.57s.

Long waves were also recorded at Berkeley, Ukiah, and Bozeman.

June 21d. 4h. 33m. 52s. Epicentre 16°·0N. 96°·0W. (as at 4h.19m.). R.2.

A = -·100, B = -·956, C = +·276 ; D = -·995, E = +·105 ;

G = -·029, H = -·274, K = -·961.

		Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		21.0	323	e 4 40	0	8 37	+11	i 10.9	—
Columbia		22.4	34	—	—	i 9 8	+15	e 13.1	—
St. Louis		23.2	12	i 5 2	- 1	e 9 8	0	—	15.8
La Jolla		25.8	315	e 5 25	- 2	e 10 1	+ 6	—	—
Riverside		26.3	317	e 5 30	- 2	e 10 14	+11	e 14.5	—
Chicago		26.7	14	—	—	e 10 8	- 2	e 16.6	—
Mount Wilson	E.	26.9	317	e 5 36	- 1	—	—	e 14.6	—
Pasadena		26.9	316	e 5 35	- 2	e 10 23	+ 9	e 14.9	—
Madison		27.6	11	i 5 43	- 1	e 10 28	+ 3	—	—
Pittsburgh		28.1	27	e 6 54	+66	i 10 38	+ 4	e 17.0	—
Santa Barbara	E.	28.2	315	e 5 56	+ 7	—	—	—	—
San Juan		28.6	81	—	—	e 10 43	+ 1	e 16.4	—
Tinemaha	N.	28.8	321	e 5 57	+ 3	—	—	e 15.0	—
Toronto	N.	31.0	24	—	—	i 11 19	- 1	e 20.6	—
Berkeley		31.8	318	e 4 20	-121	—	—	—	—
Bozeman		32.2	340	—	—	e 11 48	+10	e 17.5	—
Ukiah		33.2	320	e 6 46	+12	e 12 2	+ 8	e 14.8	—
Harvard		33.9	34	e 6 37	- 2	—	—	e 21.6	—
Ottawa		33.9	26	—	—	e 12 9	+ 5	e 15.7	—
La Paz		42.6	138	e 7 54	+ 1	e 14 18	+ 3	20.4	23.4
Sucre		46.3	138	8 24	+ 1	—	—	—	—
Rio de Janeiro		64.6	127	—	—	26 8?	SSS	—	—
Scoresby Sund		69.6	21	—	—	20 18	+ 2	35.1	—
Edinburgh		78.4	35	—	—	e 22 8?	+10	—	—
Kew		81.0	39	—	—	e 23 8?	PS	e 46.1	—
Granada		82.2	55	i 12 19	0	e 22 41	+ 2	41.4	—
Paris		83.5	41	e 12 24	- 2	—	—	43.1	—
De Bilt		84.0	37	12 30	+ 2	e 22 59	+ 1	e 41.1	—
Uccle		84.0	40	—	—	e 22 53	- 5	e 43.1	—
Copenhagen		86.7	33	—	—	23 8?	-16	44.1	—
Stuttgart		87.6	40	e 12 44	- 2	e 23 33	0	e 46.1	53.1
Pulkovo		92.8	24	e 16 44	PP	e 23 45	[- 4]	46.1	57.0
Ekaterinburg		104.6	12	—	—	e 27 31	PS	49.1	—
Tiflis		111.9	31	—	—	e 27 23	{+63}	e 57.1	—
Tashkent		121.1	11	—	—	e 22 26	PPP	61.1	77.7

Additional readings :—

St. Louis iSEN = +9m.16s., iEN = +9m.22s.

San Juan e = +11m.32s.

La Paz ePN = +7m.57s.

Stuttgart e = +36m.38s.

Pulkovo e = +24m.44s. and +30m.36s. = SS + 16s.

Long waves were also recorded at Seattle, San Fernando, Strasbourg, Baku, and Irkutsk.

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June 21d. 7h. 4m. 27s. Epicentre 29°·5S. 71°·0W. (as on 1931 June 29d.). X.

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

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Santiago	4·0	176	0 57	0	1 41	- 1	1·8	2·0
Sucre	11·7	28	e 3 33	+49	—	—	—	—
La Plata	12·3	119	e 2 51	- 1	5 9	- 1	5·8	—
La Paz	13·3	12	e 3 17	+11	i 5 50	+16	8·1	10·0
Rio de Janeiro	25·8	82	e 5 52	PP	e 9 53	- 2	12·7	—
San Juan	48·1	6	—	—	e 15 27	- 7	e 27·2	—
St. Louis	70·4	346	e 11 21	+ 8	e 20 11	-15	—	—
Pasadena	77·6	322	e 11 51	- 4	—	—	—	—
Tinemaha	N. 79·9	323	e 12 4	- 3	—	—	—	—
Pulkovo	120·7	35	—	—	e 36 45	SS	59·6	—
Baku	131·3	60	e 22 41	PKS	e 32 51	PS	48·0	54·4
Ekaterinburg	136·8	37	e 22 2	PP	—	—	37·6	—
Tashkent	145·9	58	i 19 53	[+17]	—	—	e 39·4	47·4
Irkutsk	156·9	8	e 19 48	[- 2]	e 24 2	PP	—	—

Additional readings:—

La Paz ISN = +6m.57s.

San Juan e = +19m.58. = SS + 17s.

St. Louis eRN = +20m.18s.

Irkutsk L = +26m.33s.?

Long waves were also recorded at Tiflis, Scoresby Sund, and European stations.

June 21d. 22h. 59m. 17s. Epicentre 16°·7N. 111°·8E. N.3.

A = -·356, B = +·889, C = +·287; D = +·928, E = +·371;
G = -·107, H = +·267, K = -·958.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hong Kong	6·0	21	1 26	+ 1	2 42	+ 9	3·1	4·0
Phu-Lien	6·4	310	1 43?	P*	(2 43?)	0	2·7	—
Manila	9·0	102	e 2 7	0	3 51	+ 2	—	—
Calcutta	22·8	289	9 5	S	(9 5)	+ 4	13·2	—
Chiufeng	23·7	8	i 5 40	PP	e 9 29	+11	e 12·4	14·6
Agra	E. 32·9	295	—	—	e 11 50	+ 1	—	—
Irkutsk	36·1	352	e 6 57	- 2	e 12 21	-17	17·7	22·8
Bombay	37·2	279	e 12 41	S	(e 12 41)	-13	—	—
Tashkent	44·0	313	e 9 5	+60	e 14 38	+ 2	—	32·5
Ekaterinburg	55·3	329	i 9 30	- 1	e 17 12	- 1	27·7	—
Tiflis	62·0	309	e 9 51?	-27	e 19 32?	+50	38·5	44·6
Pulkovo	71·4	328	—	—	e 17 31	?	32·7	39·4
Florence	85·9	315	15 21	PP	e 24 28	PS	—	48·7

Additional readings:—

Calcutta S = +11m.45s.

Tashkent e = +18m.50s. and +19m.37s.

Long waves were also recorded at Kodaikanal, Ottawa, Scoresby Sund, and other European stations.

June 21d. Readings also at 1h. (near Wellington), 9h. (Baku, Ekaterinburg, Irkutsk, Tashkent, Tiflis, Copenhagen, Scoresby Sund, Charlottesville, and near Mizusawa), 11h. (Baku, Ekaterinburg, Tiflis, Irkutsk, and Tashkent), 12h. (near Mizusawa), 16h. (Almata near Andijan, near Glenmick and Wellington), 17h. (near Tyosi), 20h. (Tashkent near Almata, Andijan, and near Nagasaki), 21h. (Median and Wellington), 23h. (near Mizusawa).

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June 22d. 0h. 36m. 5s. Epicentre 35°·9N. 141°·1E. N.1.

Probable error of epicentre $\pm 0^{\circ} \cdot 25$ (given by Tokyo)

A = -·630, B = +·509, C = +·586; D = +·628, E = +·778;
G = -·456, H = +·368, K = -·810.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	m.	s.	m.	s.	m.	s.	m.	m.
Tyosi	0·2	219	0 2	- 1	0 6	+ 1	—	0·1
Mito	0·7	313	0 11	+ 1	0 19	+ 1	—	—
Kakioka	0·8	294	0 10	- 1	0 23	+ 2	—	—
Tukubasan	0·9	292	0 12	- 1	0 22	- 1	—	—
Onahama	1·1	351	0 13	- 3	0 28	0	—	—
Tokyo	1·1	259	0 15	- 1	—	—	—	0·7
Utunomiya	1·2	304	0 17	0	0 32	+ 1	—	—
Yokohama	1·3	249	0 20	+ 2	0 37	+ 4	—	—
Yokosuka	1·3	244	0 18	0	0 38	+ 5	—	—
Mera	1·4	226	0 17	- 3	0 34	- 2	—	—
Kumagaya	1·4	280	0 21	+ 1	0 42	S*	—	—
Maebasi	1·7	287	0 28	+ 4	0 51	S*	—	—
Ito	1·9	241	0 37	P _r	1 5	S*	—	—
Hukushima	1·9	345	0 29	+ 1	0 54	S*	—	—
Misima	1·9	246	0 28	0	0 49	0	—	—
Numadu	2·0	246	0 28	- 1	0 56	+ 5	—	—
Kohu	2·1	263	0 33	+ 3	1 6	S*	—	—
Oiwake	2·1	282	0 30	0	1 4	S*	—	—
Nagano	2·4	288	0 36	+ 2	1 27	S*	—	—
Sendai	2·4	356	0 35	+ 1	1 3	+ 1	—	—
Hida	2·6	262	0 39	+ 2	1 22	S*	—	—
Isinomaki	2·6	4	0 40	+ 3	1 9	+ 2	—	—
Niigata	2·6	321	0 41	+ 4	1 33	S*	—	—
Takada	2·6	298	0 38	+ 1	1 19	S*	—	—
Hatidyozima	3·0	201	0 41	- 2	1 10	- 7	—	—
Takayama	3·1	275	0 48	+ 4	1 43	S*	—	—
Mizusawa	3·2	1	0 48	+ 2	1 24	+ 2	—	—
Nagoya	3·4	258	0 50	+ 1	1 50	S*	—	2·1
Gihu	3·5	262	0 51	+ 1	1 42	S*	—	—
Wazima	3·7	295	0 54	+ 1	1 52	S*	—	—
Morioka	3·8	1	0 54	0	1 47	S*	—	—
Akita	3·9	349	0 57	+ 1	1 56	S*	—	—
Hikone	4·0	262	1 1	+ 1	2 9	S*	—	—
Kyoto	4·5	260	1 3	- 1	2 17	S*	—	—
Osaka	4·7	256	1 6	- 1	—	—	2·3	2·5
Aomori	4·9	357	1 12	+ 2	2 25	S*	—	—
Kobe	5·0	258	1 10	- 1	2 26	S*	—	2·7
Toyooka	5·0	268	1 11	0	2 35	S*	—	2·8
Wakayama	5·1	253	1 12	- 1	2 30	S*	—	—
Sumoto	E. 5·3	255	1 14	- 1	2 27	S*	—	3·1
Koti	6·6	252	e 1 34	0	e 3 26	S*	—	3·8
Matuyama	7·1	256	i 1 42	+ 1	i 3 57	S*	—	4·6
Sapporo	7·2	1	1 47	+ 5	3 59	S*	—	—
Miyazaki	8·9	246	2 6	0	4 4	+18	—	—
Titizima	8·9	174	1 57	- 9	—	—	—	—
Hukuoka	9·0	258	2 7	0	3 57	+ 8	4·6	5·0
Kumamoto	9·1	253	2 8	- 1	4 30	S*	—	—
Nagasaki	9·8	255	2 17	- 1	4 16	+ 8	—	5·4
Isigakizima	18·6	236	4 8	- 6	7 32	- 6	—	—
Chufuzing	20·0	290	4 29	- 1	18 11	+ 5	e 10·6	—
Hong Kong	27·0	247	9 1	(0)	—	—	—	17·2
Manila	27·9	225	6 28	PP	11 51	SS	—	—
Irkutsk	30·6	314	6 8	- 2	—	—	15·9	9·1
Calcutta	47·3	268	15 30	S	(15 30)	+ 7	27·7	—
Almata	48·7	300	e 8 41	0	—	—	—	—
Andijan	52·7	297	e 10 3	+51	e 17 45	+67	—	—
Tashkent	54·8	299	i 10 18	+51	i 18 3	+57	e 27·8	34·8
Ekaterinburg	55·6	319	i 9 30	- 3	i 17 14	- 3	24·9	35·5
Bombay	61·7	274	e 10 12	- 4	—	—	—	—
Kucino	67·6	324	e 10 37	-19	—	—	—	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Baku	68.4	305	i 10 58	- 3	e 20 17	+15	36.5	43.8
Pulkovo	68.8	330	i 10 58	- 5	e 19 59	- 8	35.9	43.1
Helsingfors	E. 70.6	332	—	—	e 20 16	-12	e 36.7	—
Tiflis	71.1	308	10 45?	-32	20 3?	-31	e 36.4	44.6
Scoresby Sund	72.9	355	11 25	- 3	20 22	-34	35.9	—
Upsala	73.6	334	—	—	e 20 55?	- 9	e 43.9	—
Tinemaha	N. 76.5	54	e 11 56	+ 7	—	—	—	—
Santa Barbara	N. 77.0	57	e 11 58	+ 6	—	—	—	—
Lund	78.2	333	11 58	0	21 47	- 9	41.9?	—
Mount Wilson	N. 78.3	56	e 12 11	+12	—	—	—	—
Pasadena	Z. 78.3	56	e 12 5	+ 6	—	—	—	—
Copenhagen	78.5	333	11 58	- 2	21 50	- 9	41.9?	—
Riverside	N. 78.8	56	e 12 11	+10	—	—	—	—
La Jolla	79.6	57	e 12 19	+13	—	—	—	—
Potsdam	80.8	331	i 12 7	- 5	—	—	e 43.9	—
Hamburg	81.1	333	e 12 9	- 5	e 20 55?	?	e 42.9	50.9
Vienna	82.5	326	i 12 17	- 4	—	—	e 44.9	50.9
Edinburgh	83.3	341	—	—	e 22 55?	+ 5	—	—
De Bilt	84.0	334	12 25	- 3	e 22 47	[- 5]	e 41.9	52.6
Stuttgart	85.2	330	e 12 31	- 3	e 22 55	[- 6]	e 44.9	—
Uccle	85.3	334	12 31	- 4	e 22 57	[- 4]	41.9	—
Triest	85.6	326	e 23 5	S	(e 23 5)	[+ 2]	e 49.9	—
Strasbourg	85.9	331	i 12 33	- 5	e 23 2	[- 4]	e 43.9	—
Kew	86.3	337	e 12 36	- 4	—	—	e 43.9	—
Paris	87.6	334	i 12 41	- 5	—	—	48.9	54.9
Piacenza	87.9	328	23 7	S	(23 7)	[-12]	—	56.9
Florence	88.2	326	16 10	PP	23 5	[-16]	42.9	50.9
Ottawa	92.2	25	—	—	e 24 3	-14	e 48.9	—
Granada	99.9	332	e 17 38	PP	—	—	e 55.5	—
La Paz	N. 147.6	60	e 19 39	[+ 1]	—	—	—	—

Additional readings :-

Osaka i = +1m.8s., +1m.17s., and +1m.30s.

Kobe iZ = +1m.28s.

Toyooka iEZ = +1m.30s., iN = +2m.20s., iSEN = +2m.38s.

Sumoto SZ = +2m.34s.

Koti eSZ = +3m.5s.

Irkutsk ePPP = +7m.14s., e = +8m.49s., eSS = +12m.46s., e = +14m.40s.

Calcutta S = +21m.18s.

Kucino e = +8m.13s.

Helsingfors eE = +24m.29s. = SS - 22s. and +35m.25s.

Tiflis PS = +20m.33s.?

Potsdam iZ = +15m.13s. = PP + 2s.

Stuttgart ePPE = +15m.55s.

Strasbourg ePP = +15m.55s.?

Long waves were also recorded at Phu-Lien, Kodalkanal, San Fernando, Toledo, and Malaga.

June 22d. 12h. 59m. 32s. Epicentre 19°-1N. 104°-5W. N.1.

Probable error of epicentre ± 0.25 .

A = -237, B = -915, C = +327; D = -968, E = +250;
G = -082, H = -317, K = -945.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	14.4	338	3 25	+ 4	e 6 16	+15	e 6.5	—
La Jolla	17.9	323	e 5 5	+60	—	—	—	—
Riverside	18.8	325	e 4 18	+ 2	e 8 5	+23	—	—
Mount Wilson	19.3	324	e 4 22	0	—	—	—	—
Pasadena	19.3	324	e 4 21	- 1	—	—	e 9.5	—
Santa Barbara	20.5	322	e 4 50	+15	—	—	—	—
Denver	20.8	359	e 4 40	+ 2	e 8 28	+ 6	e 11.1	11.5
Tinemaha	N. 21.6	329	e 4 48	+ 2	e 9 13	SS	—	—
Florissant	23.2	29	i 4 58	- 5	19 31	+23	—	—
St. Louis	23.2	29	i 4 58	- 5	19 10	+ 2	11.2	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	$^{\circ}$	$^{\circ}$	m. s.	s.	m. s.	s.	m.	m.
Lick	23.6	324	e 5 11	+ 5	e 9 46	SS	—	—
Branner	24.0	323	e 5 14	+ 4	—	—	—	—
Berkeley	24.3	324	e 5 10	- 3	i 9 57	SS	e 12.0	—
Columbia	25.6	50	e 5 29	+ 4	e 9 37	-14	e 16.5	—
Balboa Heights	26.2	109	e 5 37	+ 6	—	—	—	—
Cincinnati	26.5	36	e 5 47	+13	e 10 45	SS	e 13.5	18.5
Chicago	26.8	29	e 5 39	+ 3	i 10 35	+23	i 14.7	—
Bozeman	27.1	350	e 5 47	+ 8	e 10 23	+ 6	i 14.6	—
Ann Arbor	29.1	33	e 6 16	+19	i 11 28	+38	i 15.7	20.3
Charlottesville	29.5	45	i 7 7	PP	e 11 43	+47	e 14.7	—
Port au Prince	30.4	86	e 6 17	+ 8	e 11 37	+27	e 13.4	—
Georgetown	30.9	44	e 6 12	- 1	i 11 37	+19	—	17.7
Seattle	32.0	338	e 6 46	+23	e 12 10	+35	e 16.7	—
Buffalo	32.2	37	e 6 24	0	e 12 40	+62	—	21.5
Toronto	32.3	35	e 6 25	0	i 11 45	+ 5	16.5	19.5
Victoria	E. 33.0	337	6 33	+ 1	12 0	+ 9	17.2	21.5
	N. 33.0	337	6 30	- 2	11 55	+ 4	17.2	21.3
Fordham	34.0	44	e 6 45	+ 5	e 12 43	+37	i 17.5	—
Ottawa	35.5	35	e 6 52	- 1	e 12 48	+19	e 18.5	—
San Juan	36.5	84	e 6 59	- 3	e 12 35	- 9	i 17.8	—
Harvard	36.6	43	e 7 1	- 2	e 12 54	+ 9	e 17.5	—
Sitka	44.3	337	i 8 4	- 3	i 15 11	+31	e 21.8	—
Honolulu T.H.	49.8	282	e 9 8	+18	i 15 58	0	22.0	—
La Paz	50.5	132	8 53	- 2	e 16 10	+ 2	25.3	25.6
Sucre	54.2	133	9 23	0	—	—	—	—
Santiago	61.6	148	10 12	- 4	19 8	+31	—	35.5
Scoresby Sund	69.6	21	11 3	- 5	20 37	+21	—	—
Reykjavik	69.7	28	e 11 21	+12	—	—	e 38.4	47.6
Rio de Janeiro	73.1	122	e 11 36	+ 7	e 20 48	-10	e 34.3	—
Apia	73.9	248	e 21 18	S	(e 21 18)	+11	e 33.5	—
Edinburgh	80.4	34	e 12 12	+ 2	e 22 26	+ 6	42.5	55.5
Dyce	80.5	33	e 12 8	- 2	i 22 23	+ 2	—	—
Stonston	81.4	36	e 12 15	0	e 22 48	+17	34.3	49.3
Stonyhurst	81.5	36	e 12 13	- 3	e 22 40	+ 8	42.5	50.1
Bergen	82.8	28	12 28	+ 6	23 4	+19	—	40.5
Oxford	83.0	37	e 12 21	- 2	e 22 19	-28	e 39.0	55.2
Kew	83.6	37	e 12 24	- 2	i 22 56	+ 3	37.5	43.8
Suva	84.3	249	(12 58)	+28	(23 13)	+12	(40.0)	(42.5)
San Fernando	85.2	54	12 52	+18	23 19	+ 9	45.0	55.5
Toledo	85.6	49	e 12 32	- 4	i 23 33	+19	e 40.7	65.5
Malaga	86.4	52	e 12 37	- 3	i 23 39	+18	41.7	51.1
Paris	86.4	39	12 38	- 2	e 23 38	+17	34.5	49.5
De Bilt	86.5	35	12 40	- 1	e 23 33	+11	e 39.5	45.8
Uccle	86.6	37	12 41	0	e 23 43	+20	42.5	44.8
Granada	86.8	52	e 12 44	+ 2	i 22 35	-50	43.9	67.2
Almeria	87.9	51	e 12 55	+ 8	e 23 41	+ 5	e 44.1	68.4
Puy de Dôme	88.0	42	e 12 47	- 1	e 23 32	- 5	e 51.5	—
Uppsala	88.3	25	e 13 2	+13	i 23 52	+12	e 46.5	55.1
Hamburg	88.3	33	e 12 48	- 1	i 23 35	- 5	e 41.5	58.5
Copenhagen	88.4	30	12 51	+ 1	i 23 28	[+ 5]	42.5	—
Alicante	88.6	49	e 13 6	+15	i 23 38	- 5	e 47.5	67.8
Lund	88.8	30	12 58	+ 6	e 23 38	- 7	42.5	—
Feldberg	E. 89.1	36	—	—	e 23 38	- 9	e 44.9	63.2
Barcelona	89.2	46	e 13 20	+26	e 24 24	PS	e 39.2	63.2
Göttingen	89.3	34	e 12 46	- 8	e 23 28	[0]	e 42.5	46.5
Strasbourg	89.5	38	e 12 55	0	i 23 59	+ 8	42.5	55.5
Neuchatel	89.8	39	e 12 58	+ 2	e 23 43	-11	—	—
Stuttgart	90.3	37	e 12 58	- 1	e 23 28	[- 6]	e 44.5	63.7
Potsdam	90.5	33	e 12 58	- 2	i 23 42	[+ 6]	e 44.5	55.5
Zurich	90.6	39	e 13 19	+19	e 23 39	[+ 3]	—	—
Jena	90.6	35	e 13 6	+ 6	e 23 46	{+ 6}	44.5	51.5
Ootomari	90.7	321	e 32 53	?	—	—	—	—
Helsingfors	90.9	23	e 13 32	+30	e 25 54	PS	e 44.5	—
Chur	91.4	39	e 13 17	+13	e 23 59	-10	—	—
Cheb	91.4	35	e 13 24	+20	e 23 32	[- 9]	e 43.5	61.7

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°		m. s.	s.	m. s.	s.	m.	m.
Algiers	91.8	51	e 12 43	-23	i 23 52	[+ 9]	44.5	57.0
Piacenza	92.4	40	e 13 28	+19	24 8	-10	45.5	58.2
Prague	92.4	34	e 17 34	?	e 28 4	?	e 45.5	55.0
Pulkovo	93.1	21	e 13 14	+ 2	24 2	{+ 2}	e 42.5	54.3
Treviso	93.6	39	e 13 23	+ 9	e 24 13	-16	54.5	71.5
Venice	93.8	39	e 13 28?	+13	i 24 18	-13	57.6	—
Prato	93.9	40	e 13 28	+13	25 1	PS	—	—
Florence	94.0	41	13 16	0	23 59	[+ 4]	46.5	55.5
Triest	94.5	38	13 32	+14	i 24 33	- 5	e 47.0	52.5
Vienna	94.6	35	13 48	+29	24 16	{+ 4}	e 45.5	56.5
Graz	94.7	37	e 13 55	+36	e 24 18	{+ 5}	47.5	61.3
Mizusawa	95.5	315	34 46	SSS	—	—	—	—
Zagreb	95.7	37	e 13 28?	+ 4	e 23 57	[- 7]	e 47.5	—
Wellington	95.8	228	19 18	PPP	23 58	[- 7]	e 43.2	55.5
Budapest	96.4	35	e 13 38	+11	e 24 26	{ 0}	40.5	62.0
Kucino	98.6	21	e 14 4	+27	e 24 40	{- 3}	e 46.0	59.6
Belgrade	98.8	36	e 14 45	+67	e 24 19	[- 1]	e 50.5	—
Taranto	99.6	41	13 58	+16	25 58	+35	—	—
Catania	99.9	45	e 15 45	+122	—	—	e 60.7	65.6
Irkutsk	104.4	342	e 14 4	0	e 24 34	[-13]	51.5	62.5
Simferopol	105.8	29	e 17 40	[-24]	(31 28)	?	31.5	—
Yalta	106.1	29	18 2	[- 3]	—	—	40.5	—
Theodosia	106.3	28	e 17 48	[-18]	e 25 14	[+18]	37.5	—
Chiufeng	109.8	328	e 14 31	0	i 28 23	PS	e 55.2	64.4
Riverview	112.1	240	—	—	e 26 52	{+30}	e 51.4	58.5
Sydney	112.1	240	e 24 58	SKS	(e 24 58)	[-25]	58.6	62.3
Tiflis	112.9	26	e 15 3	+18	25 34	[+ 8]	e 46.5	65.9
Zi-ka-wei	113.1	317	14 46	0	25 15	[-12]	60.7	71.0
Ksara	N. 115.0	36	19 37	PP	29 27	PS	56.5	—
Helwan	115.2	42	e 19 36	PP	i 19 30	PS	—	69.8
Baku	116.0	21	e 15 14	+14	e 29 52	PS	63.5	73.9
Melbourne	117.5	236	20 1	PP	25 34	[- 8]	54.0	57.8
Almata	117.6	358	e 18 28	[-12]	—	—	—	—
Tashkent	119.3	4	e 15 44	+28	26 4	[+16]	57.5	69.0
Andijan	120.1	2	e 20 9	PP	—	—	62.6	—
Adelaide	122.5	240	—	—	e 31 43	?	57.2	72.9
Hong Kong	123.9	315	e 17 49	[-66]	27 9	{-33}	52.8	75.3
Manila	124.0	303	e 17 36	[-79]	—	—	59.0	—
Cape Town	127.5	118	21 23	PP	31 23	PS	63.5	70.5
Phu-Lien	129.8	320	e 21 39	PP	—	—	54.5	—
Agra	133.7	356	19 57	[+44]	e 35 0	?	62.9	—
Calcutta	136.5	342	21 16	PP	33 51	?	65.8	—
Bombay	141.9	4	19 46	[+22]	32 57	SKSP	67.5	85.1
Hyderabad	143.3	354	21 5	?	34 25	?	67.9	78.1
Batavia	146.9	289	e 20 11	[+34]	—	—	e 74.3	—
Medan	147.8	313	i 20 14	[+35]	i 35 24	?	e 77.5	87.5
Kodaikanal	150.6	356	20 23	[+26]	34 58	?	78.5	85.9
Colombo	153.7	350	20 18	[+31]	—	—	65.8	84.3

Additional readings and note:—

Pasadena eE = +8m.11s. =SS +2s. and +8m.47s.
 Denver iEN = +5m.29s. and +8m.53s. =SS +7s., iE = +9m.41s.
 Florissant iN = +5m.8s. and +5m.19s.
 St. Louis iPEN = +5m.6s., +5m.19s., and +5m.23s. =PP -3s., iEN = +5m.42s.,
 iPPEN = +5m.49s., iSEN = +9m.23s., iEN = +9m.25s., iSEN = +9m.35s.
 =SS -10s.
 Berkeley PEZ = +5m.14s., iSE = +10m.4s. =SS -8s., eZ = +10m.9s.
 Columbia ePP = +6m.27s., e = +10m.5s.
 Cincinnati eSS = +11m.55s.
 Chicago i = +5m.54s.
 Bozeman e = +6m.3s. =PP -16s., i = +10m.51s.
 Ann Arbor ePP = +7m.16s., iSS = +13m.16s.; T₂ = 12h.59m.0s.
 Charlottesville e = +12m.24s. =SS +6s.
 Port au Prince PP = +7m.12s., PPP = +7m.39s., SS = +13m.12s.
 Buffalo ePP = +7m.52s.
 Toronto PPN = +7m.22s., iSSSN = +15m.0s.; T₂ = 12h.58m.59s.
 Fordham e = +7m.1s. and +7m.31s., i = +13m.18s.

Continued on next page,

Ottawa eSSS = +15m.14s. ; $T_0 = 12h.58m.54s.$
San Juan iP = +7m.14s., PP = +8m.4s., e = +9m.38s. = P_cP + 8s., is = +13m.9s., e = +15m.4s. = SS + 4s.
Harvard ePP = +8m.36s. ; $T_0 = 12h.59m.13s.$
Sitka ePP = +10m.0s. = P_cP + 4s., i = +18m.28s. = S_cS + 28s.
Honolulu T.H. iP = +9m.37s., is = +16m.28s., e = +18m.53s.
La Paz iPZ = +9m.2s., isPZ = +9m.28s., PPN = +10m.56s., is = +16m.30s., SSN = +19m.54s., SSSN = +21m.51s., $L_0 = +23.0m.$
Scoresby Sund iP_cPZ = +11m.41s., PPE = +13m.59s., +20m.25s. = PS - 8s., SE = +20m.43s., eN = +21m.6s. = S_cS + 4s., eE = +21m.28s. and +25m.10s.
Reykjavik e = +11m.44s. = P_cP + 12s.
Edinburgh iP = +12m.29s., i = +22m.42s., +22m.56s., and +33m.5s.
Bidston PP = +15m.3s., SS = +28m.53s.
Stonyhurst PP = +15m.19s.
Bergen P = +12m.55s.
Oxford P = +12m.40s., i = +23m.13s. = PS - 14s.
Kew iZ = +12m.59s., +13m.15s., and +14m.10s., SSE = +29m.22s., iSSSE = +33m.21s.
Suva SS = (+28m.28s.) ; all readings have been *diminished* by 3m.
Toledo iPZ = +13m.4s., PP = +15m.46s., PPP = +18m.13s., SKS = +23m.16s., PS = +24m.2s.
Malaga P_cP = +12m.49s., PP = +16m.33s., PPP = +18m.33s., PKS = +23m.10s., SS = +29m.37s.
De Bilt eN = +23m.36s., eZ = +23m.45s.
Uccle i = +13m.0s. and +14m.23s., PP = +16m.37s., SS = +30m.13s.
Granada P_cP = +12m.59s., PS = +24m.21s., PPS = +24m.57s., SS = +29m.35s.
Puy de Dôme e = +13m.7s.
Upsala PP = +16m.30s., ISKS = +23m.35s., IPS = +24m.20s.
Hamburg iPPE = +16m.37s.
Copenhagen +13m.4s., PP = +17m.22s., S = +24m.27s., +25m.3s.
Lund +16m.28s. = PP + 12s.
Göttingen ePE = +13m.16s., ePPEZ = +16m.40s., eSSEN = +30m.4s.
Strasbourg ePP = +16m.28s., ePPP = +19m.4s., iSKS = +23m.40s., PS = +25m.16s., SS = +30m.23s.
Neuchatel ePP = +16m.29s.
Stuttgart i = +13m.19s., e = +14m.42s., and +15m.34s., ePP = +16m.51s., ePPP = +19m.22s., eZ = +23m.4s., ePS = +24m.58s., eSSEN = +30m.28s., eSSS = +35m.13s.
Potsdam eEN = +13m.28s.?, eZ = +17m.16s. and +18m.22s. = PPP + 3s., eEN = +19m.46s. = PPPP - 1s., eN = +22m.58s., iN = +23m.46s., iE = +24m.40s., iEN = +25m.21s. = PS + 24s., iN = +29m.35s. = SS - 12s. and +39m.50s.
Jena eNZ = +16m.58s. = PP + 28s., e = +25m.28s. = PS + 29s.
Helsingfors ePPZ = +17m.30s., ePPN = +17m.41s. ; $T_0 = 12h.59m.36s.$
Cheb ePP = +17m.1s., ePS? = +25m.22s., eSS = +31m.28s.
Algiers ePP = +16m.38s.
Piacenza P = +17m.23s.
Pulkovo PP = +17m.10s., SKS = +23m.40s., SS = +30m.58s.
Triest iP = +13m.51s., iPP = +17m.39s. = PP + 38s. and +24m.53s.
Vienna PP = +16m.56s., PPP = +18m.12s., SKKS = +25m.0s., PS = +26m.18s., PPS = +26m.52s., SSS = +35m.56s.
Zagreb ePPNW = +17m.49s.?, e = +32m.2s.
Kucino e = +22m.52s.
Belgrade e = +18m.14s. and +26m.48s. = PS + 16s.
Irkutsk PP = +18m.36s., PS = +26m.59s., SS = +33m.22s.
Chiufeng PP = +19m.11s.
Riverview ePSE = +34m.57s. = SS + 10s.
Zi-ka-wei PKP = +18m.11s., PPZ = +20m.35s., PPPZ = +23m.29s., PPPPZ = +26m.9s., SKKS = +27m.1s., PPPPZ = +27m.23s., PS = +30m.49s., PSKS = +30m.53s., PPS = +32m.9s., PPS = +33m.9s., PPP($\Delta > 180^\circ$) = +35m.0s., SKKS($\Delta > 180^\circ$) = +35m.5s., SSZ = +37m.45s., SPS = +38m.5s., PPS = +38m.21s., PPPP($\Delta > 180^\circ$) = +38m.51s., PPPP($\Delta > 180^\circ$) = +41m.29s., PSSS = +42m.57s., SSSZ = +43m.10s., SSSSZ = +47m.17s., PPS($\Delta > 180^\circ$) = +57m.45s.
Tiflis ePP = +19m.29s., PP = +19m.45s., e = +28m.12s., PS = +29m.20s., PPS = +30m.23s., e = +34m.30s., eSSS = +40m.6s.
Helwan PP = +25m.43s.
Baku PP = +19m.46s.
Melbourne PS = +29m.40s., SS = +36m.39s., SSS = +40m.53s.
Tashkent PP = +20m.18s., IPS = +30m.12s.
Adelaide eSS = +36m.58s., i = +51m.3s.
Hong Kong ? = +20m.51s. = PP + 15s., SS = +37m.19s.
Manila iEN = +19m.59s. and +21m.37s.
Cape Town +22m.58s., PPP = +24m.31s., +26m.28s., +35m.11s., +36m.11s., and +38m.58s.
Agra eN = +21m.54s.
Batavia i = +21m.39s.
Long waves were also recorded at La Plata, Perth, Taihoku, and other Japanese stations,

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June 22d. 16h. 48m. 14s. Epicentre 17° 1'N. 104° 3'W. (as on May 1d.). R.3.

	Δ	Az.	P.	O-C.	S.	O-C.	L.
	\circ	\circ	m. s.	s.	m. s.	s.	m.
Riverside	N. 20.6	328	e 4 33	- 3	—	—	—
Pasadena	21.0	327	e 4 36	- 4	—	—	—
Mount Wilson	E. 21.1	327	e 4 53	+12	—	—	—
Tinemaha	N. 23.4	331	e 5 5	0	—	—	—
St. Louis	24.8	27	i 5 16	- 2	e 9 28	- 9	i 12.3
Florissant	24.9	27	i 5 31	+12	e 9 30	- 9	i 13.4
Pittsburgh	31.4	37	—	—	e 13 32	?	e 17.2

Long waves were also recorded at Tucson, Bozeman, Ottawa, Harvard, Ivigtut, Scoresby Sund, Copenhagen, Pulkovo, and Tashkent.

June 22d. Readings also at 1h. (Andijan), 2h. (Apia and near Tyosi), 3h. (near Mizusawa, Naroya, Tyosi, and near Wellington), 4h. (near Andijan, near Manila, and near Tyosi), 5h. (La Paz, La Plata near Santiago and near Algiers), 6h. (Tiflis), 9h. (Almata, Andijan (2) and Tashkent), 10h. (Irkutsk and Hong Kong), 11h. (Nagoya and Tyosi), 13h. (Helsingfors), 14h. (Trenta and near Tyosi), 15h. (Tinemaha), 16h. (Almata), 18h. (Nagoya and near Tyosi (2)), 19h. (Ottawa and Tucson), 20h. (Lick and Suva), 22h. (Tiflis (2)), 23h. (Andijan).

June 23d. 2h. 10m. 20s. Epicentre 11° 0'S. 165° 0'E. (as on 1918 Dec. 19d.) X.

A = -0.948, B = +0.254, C = -0.191; D = +0.259, E = +0.966;
G = +0.184, H = -0.049, K = -0.982.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	\circ	\circ	m. s.	s.	m. s.	s.	m.	m.
Riverview	26.1	207	e 5 30	0	e 9 48	-12	e 14.2	17.2
Sydney	26.1	207	e 4 58	-32	i 9 34	-26	14.1	14.7
Wellington	31.5	166	e 6 15	- 3	—	—	16.7	18.7
Melbourne	32.3	210	—	—	i 11 20	-20	16.9	19.3
Adelaide	33.9	221	e 9 55	(+33)	—	—	i 16.1	20.4
Manila	50.6	300	e 8 55	- 1	15 25	-44	22.2	25.7
Nagoya	53.2	332	e 9 3	-12	—	—	—	—
Osaka	53.6	330	9 3	-15	(16 21)	-29	16.4	—
Mount Wilson	85.6	54	e 12 39	+ 3	—	—	—	—
Pasadena	85.6	54	e 12 38	+ 2	—	—	e 51.7	—
La Jolla	N. 85.9	55	e 12 44	+ 6	—	—	—	—
Riverside	86.1	54	e 12 40	+ 1	—	—	—	—
Ekaterinburg	107.0	326	e 19 22	PP	e 25 41	{ - 4 }	75.7	—
Tiflis	119.7	312	e 20 36	PP	25 48	[- 1]	e 89.1	93.1
Scoresby Sund	120.4	3	19 40	PP	—	—	61.7	—
Pulkovo	120.9	335	e 19 58	PP	e 31 33	?	59.7	72.0
Copenhagen	130.4	340	22 22	?	—	—	67.7	—
Potsdam	132.9	337	e 21 22	PP	—	—	e 53.0	—
De Bilt	135.8	342	e 21 46	PP	e 39 46	SS	e 66.7	—
Stuttgart	137.2	336	e 19 12	[- 6]	e 21 46	PP	e 72.7	—
Kew	137.8	346	e 22 0	PP	—	—	—	—
Straasbourg	137.9	337	e 18 40	[- 39]	—	—	e 52.7	—
Granada	151.9	341	e 19 44	[0]	—	—	e 91.9	—

Additional readings:—

Riverview iN = +9m.52s., iE = +9m.58s.

Melbourne i = +13m.33s., =SS +9s.

Ekaterinburg e = +28m.47s.

Tiflis e = +29m.35s., ? = PS -24s.

Long waves were also recorded at Perth, Honolulu T.H., Baku, Tashkent, and other American and European Stations.

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June 23d. 9h. 59m. 30s. Epicentre 2°·6S. 127°·9E. (as given by Batavia). N.3.

A = -·614, B = +·788, C = -·045.

	Δ °	P. m. s.	O-C. s.	S. m. s.	O-C. s.
Amboina	1·1	1 0 9	- 7	—	—
Manila	18·5	4 12	- 1	7 58	SS
Batavia	21·3	4 50	+ 7	8 50	PcP

June 23d. 22h. 50m. 58s. Epicentre 72°·0N. 2°·8W. (as on 1927 July 4d.). X.

A = +·309, B = -·015, C = +·951; D = -·049, E = -·999;
G = +·950, H = -·046, K = -·309.

	Δ °	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Pulkovo	17·8	118	3 58	- 6	7 22	+ 2	8·8	9·8
De Bilt	20·2	166	e 4 34	+ 2	e 8 14	+ 4	e 13·0	—
Kucino	23·4	116	—	—	8 12	-60	e 11·9	—
Stuttgart	23·9	160	5 8	- 1	9 24	+ 3	e 15·0	—
Tiflis	38·0	120	e 9 26	(- 9)	—	—	e 20·4	23·5

Long waves were also recorded at Scoresby Sund, Copenhagen, Ekaterinburg, and Baku.

June 23d. Readings also at 0h. (Simferopol and Theodosia), 2h. (near Tyosi), 3h. (Mizusawa, Nagoya, Osaka, near Tyosi (3), and near Amboina), 5h. (Tan-anarive), 7h. (Trenta, Ekaterinburg, Pulkovo, and Copenhagen), 9h. (near Amboina (2)), 10h. (Tiflis, Cape Town, and Scoresby Sund), 11h. (Zagreb, near Trieste, and near Tyosi), 13h. (Andijan and Ekaterinburg), 14h. (Tashkent and near Amboina), 15h. (near Amboina), 19h. (Scoresby Sund and Wellington (2)), 20h. (Ottawa), 21h. (Tiflis and near Tyosi (3)), 22h. (Ottawa, Tucson, Tinemaha, Scoresby Sund, and Tyosi (4)), 23h. (Tyosi).

June 24d. 9h. 43m. 40s. Epicentre 12°·5N. 89°·2W. (as on 20d.). X.

A = +·014, B = -·976, C = +·216; D = -1·000, E = -·014;
G = +·003, H = -·216, K = -·976.

The focal depth 0·010 used with the 20d. shock is retained.

	Corr. for Focus	Δ °	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.
San Juan	-0·5	23·0	72	e 4 50	- 6	—	—	e 15·2
St. Louis	N. -0·5	26·2	358	i 5 29	+ 3	e 9 54	+ 1	—
Florisant	-0·5	26·4	358	i 5 36	- 2	e 10 7	+10	—
Pittsburgh	-0·7	29·1	15	—	—	e 11 12	+34	—
Pasadena	-0·8	34·0	315	e 6 39	+ 5	—	—	—
Tinemaha	N. -0·8	35·8	319	e 6 54	+ 5	—	—	—

Long waves were also recorded at Tucson, Ottawa, Scoresby Sund, De Bilt, Stuttgart, and Ekaterinburg.

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June 24d. 15h. 55m. 37s. Epicentre 35°·5N. 142°·5E. (as on 1922 April 23d.). X.

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

The epicentre adopted is only very approximate. The observations suggest a possibility of shallow focus.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tyosi	1·3	280	0 11	- 7	0 21	P _r	—	0·4
Mizusawa	3·8	338	0 54	0	1 32	- 5	—	—
Nagoya	4·5	267	e 1 9	+ 5	2 11	S*	—	—
Osaka	5·8	263	1 34	P*	(2 44)	S*	2·7	3·3
Kobe	6·1	264	—	—	e 2 54	S*	—	4·1
Sumoto	6·3	261	e 2 21	S	(e 2 21)	-20	—	3·5
Ekaterinburg	56·7	320	e 10 44	(+ 3)	—	—	29·4	—

Additional readings:—

Osaka i = +2m.57s.

Kobe eE = +3m.9s.

Sumoto ePE = +2m.26s., SEN = +3m.7s. = S*.

Long waves were also recorded at Tiflis, Irkutsk, and Baku.

June 24d. Readings also at 0h. (near Apia), 1h. (Tyosi), 2h. (Irkutsk (2), near Tyosi, and near Wellington), 4h. (Simferopol), 7h. (Balboa Heights, Ottawa, and Tucson), 9h. (Tyosi), 10h. (Irkutsk), 11h. (near Hastings), (12h. (near Amboina and near Sumoto), 15h. (San Juan), 18h. (near Apia (2) and near Amboina), 19h. (Stuttgart and Ottawa), 21h. (La Paz), 23h. (near Tyosi and near Amboina).

June 25d. 2h. 31m. 41s. Epicentre 6°·5S. 81°·5W. (as on 1927 March 13d.) X.

A = +·147, B = -·983, C = -·113; D = -·989, E = -·148;
G = -·017, H = +·112, K = -·994.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz	16·4	128	e 3 41	- 5	1 6 47	- 1	7·6	9·4
Sucre	20·2	130	e 4 36	+ 4	—	—	—	—
San Juan	29·1	31	e 5 59	+ 2	e 10 28	-22	e 13·5	—
Ottawa	52·1	5	—	—	e 16 40	+10	23·3	—
Scoresby Sund	86·5	17	—	—	23 19	- 3	40·3	—

Additional reading:—

La Paz IPE = +3m.47s., iSN = +6m.50s.

Long waves were also recorded at Rio de Janeiro, Edinburgh, Kew, De Blit, Stuttgart, Ekaterinburg, and Baku.

June 25d. 13h. 32m. 51s. Epicentre 35°·7N. 134°·8E. (as on 1931 Dec. 17d.) X.

A = -·572, B = +·576, C = +·584.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Toyooka	0·2	175	1 0 0	- 3	1 0 3	- 2	—	0·1
Kobe	1·1	163	0 15	- 1	0 30	+ 2	—	0·5
Osaka	1·2	154	0 18	+ 1	(0 35)	+ 4	0·6	0·6
Sumoto	1·4	177	e 0 31	P _r	0 39	+ 3	—	0·7
Nagoya	1·8	107	e 0 27	+ 1	0 48	+ 2	—	—

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June 25d. 20h. 54m. 7s. Epicentre 17°·1N. 104°·3W. (as on 22d.) R.3.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
La Jolla	19·6	326	e 4 26	+ 1	—	—	—	—
Riverside	20·6	328	e 4 35	- 1	—	—	—	—
Pasadena	N. 21·0	327	e 4 41	+ 1	—	—	—	—
Mount Wilson	21·1	327	e 4 42	+ 1	—	—	—	—
Tinemaha	N. 23·4	331	e 5 6	+ 1	—	—	e 12·1	—
St. Louis	24·8	27	e 5 15	- 3	e 9 30	- 7	—	—
Madison	28·9	23	e 9 3	(- 4)	—	—	e 14·5	20·6

Long waves were recorded at Tucson, Ottawa, Scoresby Sund, Ekaterinburg, and Tashkent.

June 25d. Readings also at 0h. (Tiflis, Yalta near Simferopol, Sebastopol, and Theodosia (2)), 1h. (Ekaterinburg, Pulkovo, Tiflis, Copenhagen, Stuttgart, Wellington, Yalta, Sebastopol, near Theodosia and Simferopol (2)), 3h. (Tiflis) 8h. (Almata, Andijan, Tashkent, Baku, Ekaterinburg, and Pulkovo), 9h. (Copenhagen and Irkutsk), 11h. (San Juan), 12h. (Ottawa, Scoresby Sund, Kew, De Bilt, Paris, Strasbourg, Stuttgart, and Tananarive), 13h. (Sucre and near La Paz), 17h. (near Sumoto and near Batavia), 23h. (La Paz).

June 26d. 19h. 19m. 17s. Epicentre 46°·8.N. 151°·2.E. N.1.

Probable error of epicentre $\pm 0^{\circ}\cdot 20$.

A = -·600, B = +·330, C = +·729; D = +·482, E = +·876;
G = -·639, H = +·351, K = -·685.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sikka	5·9	298	2 17	S	(2 17)	-14	—	9·3
Mizusawa	10·6	297	2 13	-16	4 19	- 9	—	—
Nagoya	15·8	297	e 3 45	+ 6	—	—	—	—
Osaka	16·9	290	3 39	-14	—	—	7·6	—
Kobe	E. 17·1	231	e 3 59	+ 4	e 7 22	+18	e 9·8	11·2
Sumoto	17·5	231	4 5	+ 5	7 30	+17	10·1	12·7
Koti	E. 18·8	232	e 4 17	+ 1	e 8 0	+18	—	—
Nagasaki	21·5	237	e 4 51	+ 6	8 59	+23	—	—
Chiufeng	N. 26·1	268	e 1 47	?	—	—	—	—
Irkutsk	30·4	298	e 6 13	+ 4	11 39	+29	16·3	20·1
Hong Kong	38·5	244	7 16	- 3	13 33	+19	20·8	23·7
Manila	40·9	298	7 42	+ 2	13 48	- 2	19·5	—
Honolulu T.H.	48·3	103	—	—	e 15 16	-21	e 21·2	—
Ekaterinburg	52·7	316	i 9 15	+ 3	16 43	+ 5	33·2	35·1
Andijan	54·8	294	e 3 21	?	—	—	—	—
Calcutta	55·4	267	8 41	-51	17 18	+ 3	32·6	—
Tashkent	56·4	297	e 8 50	-49	—	—	e 26·7	34·1
Aggra	E. 59·4	278	10 8	+ 8	e 18 22	+14	e 31·8	—
Scoresby Sund	62·6	358	10 22	0	18 55	+ 5	28·7	—
Pulkovo	63·1	331	10 27	+ 1	e 18 58	+ 2	31·7	38·0
Kucino	63·3	325	10 31	+ 4	e 19 12	+13	e 33·7	41·4
Tinemaha	N. 64·3	62	e 10 34	0	—	—	—	—
Pasadena	N. 66·3	65	e 10 47	0	—	—	—	—
Mount Wilson	66·3	65	e 10 49	+ 2	—	—	—	—
Riverside	N. 66·8	65	e 10 44?	- 7	—	—	—	—
Baku	68·3	307	11 3	+ 3	20 16	PS	34·7	44·9
Bombay	68·5	275	11 2	+ 1	20 8	+ 5	36·0	43·6
Tiflis	70·1	310	11 16	+ 5	e 20 39	PS	e 37·7	47·7
Königsberg	70·2	352	i 11 12	0	—	—	e 39·2	44·7
Iyigtut	70·9	10	—	—	20 37	+ 5	34·7	—
Lund	71·7	337	11 21	0	—	—	34·7	—
Copenhagen	71·9	337	11 23	+ 1	20 49	+ 5	35·7	—
Dyce	73·6	346	—	—	e 20 55	- 9	—	—
Hamburg	74·3	358	e 11 38	+ 2	—	—	e 38·7	42·7
Potsdam	74·6	335	11 36	- 2	e 21 19	+ 4	e 40·7	—

Continued on next page.

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Edinburgh	75.1	346	—	—	e 21 23	+ 2	e 41.7	—
Madison	75.4	41	—	—	e 23 9	?	38.7	56.7
Göttingen	n. 76.2	337	e 17 43?	?	—	—	—	—
De Bilt	76.9	339	11 52	+ 1	21 45	+ 3	e 40.7	45.3
Stonyhurst	76.9	345	—	—	e 21 55	+13	46.7	—
Vienna	77.2	331	e 12 1	+ 8	23 14	?	43.7	54.7
Uccle	78.3	340	e 11 58	- 1	e 22 1	+ 4	e 35.7	—
St Louis	78.5	45	e 11 54	- 6	i 21 43	-16	—	—
Kew	78.7	342	e 12 1	0	e 21 55	- 7	e 39.7	—
Oxford	78.7	343	11 59	- 2	22 6	+ 4	e 40.7	52.7
Stuttgart	78.9	335	e 12 2	6	e 22 3	- 1	e 38.7	49.7
Ottawa	79.0	32	—	—	e 21 49	-16	42.7	—
Zagreb	79.4	330	e 12 7	+ 2	—	—	—	44.7
Strasbourg	79.5	337	i 12 5	0	e 22 21	+11	e 30.7	—
Triest	80.3	331	e 12 8	- 1	e 22 9	-10	e 42.7	50.7
Zurich	80.4	336	e 12 9	- 1	e 22 21	+ 1	—	—
Ksara	80.6	310	e 10 43?	?	—	—	e 52.7	—
Paris	80.6	340	i 12 10	- 1	e 22 25	+ 3	43.7	53.7
Neuchatel	81.1	336	e 12 14	0	e 21 46	-41	—	—
Piacenza	82.1	334	12 25	+ 6	22 49	+11	—	54.7
Florence	82.8	332	e 12 23	+ 1	22 43	- 2	30.7	44.7
Fordham	83.6	33	e 11 56	-30	e 22 18	-35	e 40.7	—
Algiers	91.7	335	e 12 36	-29	—	—	—	—
Granada	93.0	340	e 13 20	+ 9	—	—	e 54.2	62.1

Additional readings:—

Mizusawa SE = +4m.27s.

Sumoto PE = +4m.9s.

Hong Kong SS = +16m.50s.

Manila iN = +11m.0s.

Ekaterinburg iL₂ = +26.2m.

Tashkent e = +1m.53s., +7m.32s., and +7m.43s., i = +15m.48s., e =

+19m.37s. ScS +10s.

Scoresby Sund +20m.20s. = ScS +9s.

Tiflis PS = +21m.10s.

Potsdam eN = +30m.13s.

Uccle eSS = +27m.46s.

Ottawa eE = +31m.13s., eN = +33m.31s.

Strasbourg ePS = +23m.17s.

Triest e = +18m.7s.

Fordham e = +21m.18s.

Long waves were also recorded at Tyosi, Kodaikanal, Wellington, and at other

European stations.

June 26d. Readings also at 1h. (Perth), 4h. (near Amboina), 5h. (Branner), 8h. (Edinburgh, Lick, and near Andijan), 9h. (Theodosia, Yalta, and near Almata), 10h. (Pittsburgh, Scoresby Sund, and Wellington), 14h. (near Sumoto), 18h. (Algiers and near Manila), 20h. (near Neuchatel and Zurich), 21h. (Wellington, near Port au Prince, near Neuchatel and Zurich).

June 27d. 3h. 12m. 7s. Epicentre 41°.5N. 43°.5E. N.3.

Tiflis gives Akhalkalaki as the position.

A = +.543, B = +.516, C = +.663; D = +.688, E = -.725;

G = +.481, H = +.456, K = -.749.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tiflis	1.0	77	0 13	- 1	(10 25)	- 1	i 0.4	—
Baku	4.9	101	e 1 28	P*	e 2 42	S*	e 3.6	—
Yalta	7.4	297	e 3 6	S	(e 3 6)	- 3	—	—
Simferopol	7.7	297	e 3 24	S	(e 3 24)	+ 8	—	—
Ekaterinburg	18.9	30	i 5 18	+61	—	—	11.9	—
Pulkovo	20.0	340	4 38	+ 8	e 8 33	SS	10.9	12.7
Andijan	21.7	82	2 39	-129	—	—	—	—

Long waves were also recorded at Kucino, Copenhagen, Vienna, De Bilt, and Scoresby Sund.

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June 27d. Readings also at 0h. (Scoresby Sund and near Sumoto), 1h. (Hastings, Riverview, Melbourne, La Paz, and Ekaterinburg), 2h. (Tashkent), 3h. (Tifis (3) and Tashkent), 4h. (near Tyosi and Tifis), 5h. (La Paz, La Plata, Sucre, near Santiago, near Berkeley, Lick, and San Francisco, Baku, Ekaterinburg, Pulkovo, Andijan, Tashkent, Kucino, Copenhagen, De Bilt, Scoresby Sund, near Tifis (4) and near Sumoto), 6h. (Scoresby Sund and Manila), 7h. and 8h. (near Wellington), 9h. (Scoresby Sund, Ottawa, Tucson, and Tinemaha), 10h. (La Plata, Ottawa, Ukiah, and near Tucson), 12h. (near Algiers), 13h. (Tifis (2)), 14h. (Alicante, near Medan, and near Santiago), 15h. (Tifis), 16h. (Camerino and La Paz), 20h. (Port au Prince), 22h. (near Hastings, New Plymouth, and near Wellington).

June 28d. Readings at 0h. (Wellington and near Tyosi), 1h. (Tifis), 3h. (Tifis), 5h. (near Andijan and near Tyosi), 8h. (Tinemaha, near Apia, and near Malabar), 9h. (near Wellington), 10h. (Adelaide, Melbourne, Riverview, Perth, Wellington, Mount Wilson, Pasadena, Riverside, and Tinemaha), 12h. (near Andijan, near Nagoya, and Osaka), 14h. (near Nagoya, Osaka, and Sumoto), 15h. (near La Paz), 16h. (Branner), 17h. (San Juan, Scoresby Sund, Ottawa, De Bilt, Stuttgart, Neuchatel, Florence, Pulkovo, Tifis, Andijan (2), and La Paz), 18h. (Ekaterinburg and Tashkent), 20h. (Tifis, Tortosa, and near Matuyama), 21h. (Casamicciolo and Medan).

June 29d. 2h. 30m. 6s. Epicentre 35°-5N. 27°-6E.

N.2.

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

		Δ	Az.	P. m. s.	O-C. s.	S. m. s.	O-C. s.	L. m.	M. m.
Ksara	E.	7.0	101	e 1 40	+ 1	3 18	S*	—	—
Taranto		9.5	305	2 4	-10	—	—	—	—
Trenta		9.7	296	e 1 39	-38	3 24	-42	—	—
Yalta		10.3	27	e 5 0	S	(e 5 0)	S*	—	—
Belgrade		10.8	332	—	—	e 4 35	+ 2	—	6.7
Theodosia		11.2	29	e 5 5	S	(e 5 5)	+22	—	—
Naples	E.	11.8	301	e 2 47	+ 1	e 5 54?	S*	—	7.9
Budapest		13.5	335	e 3 24	+15	—	—	7.9	8.4
Zagreb		13.5	323	e 3 8	- 1	e 5 38	- 1	e 7.6	8.7
Triest		14.6	318	e 3 18	- 5	e 5 58	- 7	1 7.2	8.1
Graz		14.7	326	e 4 19	+54	—	—	—	10.7
Tifis		14.9	60	e 3 36	+ 9	7 18	+65	e 8.4	10.0
Florence		15.0	308	(3 23)	- 5	(6 29)	+14	6.5	8.6
Prato		15.1	309	e 4 24	+54	7 54	L	(7.9)	—
Venice		15.2	315	e 2 54?	-37	—	—	—	—
Vienna		15.2	330	e 3 35	+ 4	8 28	+128	—	10.4
Piacenza		16.6	310	4 2	+13	6 54	+ 2	—	13.9
Chur		17.7	316	e 4 6	+ 3	—	—	—	—
Cheb		18.3	328	e 4 8	- 2	e 7 26	- 5	e 9.6	11.9
Zurich		18.5	316	e 4 11	- 2	—	—	—	—
Stuttgart		18.9	320	1 4 17	0	e 7 36	- 8	e 9.8	12.1
Neuchatel		19.2	313	e 4 18	- 3	e 7 48	- 2	—	—
Strasbourg		19.6	318	1 4 24	- 1	e 7 54	- 4	e 10.9	—
Potsdam		19.8	333	1 4 25	- 2	1 7 3	-59	e 10.9	11.9
Besançon		19.9	313	4 33	+ 4	8 25	+21	—	—
Königsberg		19.9	348	e 4 30	+ 1	e 8 24	+20	e 11.1	12.9
Göttingen		20.4	327	e 6 54?	?	e 7 54?	-20	—	12.9
Kucno		21.5	16	e 4 48	+ 3	8 47	+11	11.2	14.6
Hamburg		21.9	331	e 4 46	- 4	e 8 42	- 2	e 12.0	14.7
Lund		22.4	338	4 54	- 1	8 56	+ 3	11.9	—
Alicante		22.5	285	—	—	e 9 3	+ 8	—	—
Copenhagen		22.7	337	4 55	- 3	8 58	- 1	11.9	—
Paris		22.7	314	e 4 57	- 1	e 9 4	+ 5	12.9	12.9
Uccle		22.7	320	4 57	- 1	e 9 4	+ 5	11.4	—
De Bilt		23.0	323	5 0	- 1	9 6	+ 1	e 10.9	13.5

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Pulkovo	24.3	3	i 5 13	0	e 9 40	+12	12.9	14.8
Granada	25.1	283	e 5 25	+ 4	e 9 24	-19	e 15.3	—
Toledo	25.3	289	e 5 24	+ 1	e 9 45	- 1	e 11.9	—
Kew	25.5	317	e 2 54?	?	e 9 53	+ 3	e 11.9	14.3
Malaga	25.8	282	e 5 29	+ 2	e 9 53	- 2	—	17.1
Oxford	26.2	317	—	—	e 10 6	+ 4	i 14.6	—
Stonyhurst	27.8	321	—	—	e 10 44	+16	—	—
Edinburgh	29.2	324	—	—	e 10 54?	+ 3	—	—
Ekaterinburg	30.8	36	e 7 15	PP	e 12 30	SS	16.9	—
Tashkent	32.9	67	e 6 48	+17	e 11 48	- 1	—	19.9
Scoresby Sund	43.6	338	9 44	PP	—	—	17.9	—

Additional readings and note:—

Belgrade e = +4m.57s. and +5m.41s. = S_g - 10s.

Triest i = +3m.32s.

Tiflis eP = +3m.58s.

Florence e = 2h.25m.29s., P = 2h.29m.24s.; true P is given as S and S as L.

Vienna P_CP = +5m.51s., i = +7m.44s.

Kew eZ = +10m.6s.

Ekaterinburg e = +14m.49s.

Tashkent e = +9m.48s.

Long waves were recorded at Upsala, Phu-Lien, and San Fernando.

June 29d. 9h. 46m. 5s. (I) } Epicentre 35°·5N. 27°·6E. (as at 2h.). X.
 15h. 13m. 33s. (II) } X.
 16h. 20m. 10s. (III) } X.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Ksara	7.0	101	e 3 17	S	(e 3 17)	+18	—	—
I Trieste	14.6	318	e 3 20	- 3	e 6 0	- 5	—	8.1
II	14.6	318	e 3 22	- 1	e 6 1	- 4	—	8.2
III	14.6	318	e 3 24	+ 1	e 6 3	- 2	—	8.2
I Florence	15.0	308	—	—	e 6 24	+ 9	—	—
II	15.0	308	e 4 40	+72	—	—	—	8.3
I Piacenza	16.6	310	—	—	e 7 10	+18	—	13.4
III	16.6	310	—	—	e 5 4	+ 2	—	13.6
I Chur	17.7	316	e 4 3	0	—	—	—	—
I Stuttgart	18.9	320	e 4 18	+ 1	—	—	e 10.4	—
II	18.9	320	e 4 19	+ 2	e 7 57	+13	e 10.4	—
III	18.9	320	—	—	e 7 50	+ 6	—	—
I Strasbourg	19.6	318	e 3 55?	-30	—	—	e 10.9	—
II	19.6	318	—	—	(e 7 27?)	-31	e 7.5	—
III Paris	22.7	314	6 50?	?	—	—	—	—
II Pulkovo	24.3	3	e 4 26	-47	—	—	e 12.4	—

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

June 29d. 18h. 15m. 43s. Epicentre 40°·5N. 143°·3E. (given by Tokyo). N.1.

Probable error epicentre $\pm 0^{\circ}19$.

A = -·610, B = +·454, C = +·649; D = +·598, E = +·802;

G = -·521, H = +·388, K = -·760.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Miyako	1.3	229	0 20	+ 2	0 38	+ 5	—	—
Morioka	1.9	244	0 26	- 2	0 50	+ 1	—	—
Aomori	2.0	279	0 30	+ 1	1 7	S _g	—	—
Mizusawa	2.2	231	0 30	- 1	1 6	+ 9	—	—
Hakodate	2.4	303	0 33	- 1	1 21	S _g	—	—
Akita	2.6	252	0 38	+ 1	1 12	+ 5	—	—
Muroran	2.6	316	0 38	+ 1	1 21	S _g	—	—
Sapporo	3.0	331	0 45	+ 2	1 27	S*	—	—
Nemuro	3.3	31	0 43	- 4	1 20	- 5	—	—
Hukusima	3.5	218	0 48	- 2	1 39	S*	—	—

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	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Niigata	4.2	233	1 10	+10	1 49	+ 1	—	—
Utunomiya	4.8	215	1 17	+ 9	2 19	S*	—	—
Kakioka	4.9	210	1 6	- 4	2 12	+ 7	—	—
Tukubasan	5.0	211.	1 7	- 4	2 4	- 4	—	—
Tyosi	5.1	202	e 1 11	- 2	2 27	S*	—	3.2
Maebasi	5.3	220	1 18	+ 3	2 49	S _g	—	—
Kumagaya	5.3	217	1 14	- 1	2 26	+11	—	—
Nagano	5.5	228	1 19	+ 1	2 42	S*	—	—
Tokyo	5.6	211	1 16	- 4	—	—	—	—
Oiwake	5.6	223	1 19	- 1	3 2	S _g	—	—
Wazima	5.9	240	1 23	- 1	2 40	+ 9	—	—
Otomari	6.2	357	e 2 15	P _g	—	—	—	—
Misima	6.4	214	1 32	+ 1	3 7	S*	—	—
Gihu	7.2	227	1 44	+ 2	3 22	+18	—	—
Nagoya	7.3	225	e 1 43	- 1	3 23	+17.	—	3.8
Hikone	7.7	229	1 52	+ 3	3 27	+11	—	—
Hatidyozima	7.9	201	1 49	- 3	4 7	S _g	—	—
Toyooka	8.3	236	i 1 56	- 2	e 3 45	+14	e 5.0	—
Osaka	8.5	229	2 0	0	—	—	4.1	4.8
Kobe	8.7	230	e 2 7	+ 4	4 2	+21	e 4.5	5.2
Wakayama	9.0	228	2 4	- 3	4 22	S*	—	—
Sumoto	9.1	230	2 16	+ 7	4 6	+15	e 9.3	9.6
Siomisaki	9.3	223	2 25	+14	4 20	+24	—	—
Kotl	10.4	231	e 2 22	- 6	—	—	5.5	—
Matuyama	10.7	235	e 2 25	- 6	—	—	—	—
Taikyu	12.4	253	3 2	+ 8	7 30	?	—	—
Kumamoto	12.7	237	3 4	+ 6	6 33	L	(6.5)	—
Zi-ka-wei	z. 20.0	249	e 4 26	- 4	—	—	—	14.5
Irkutsk	29.0	307	e 5 58	+ 2	10 48	0	16.3	19.0
Hong Kong	30.6	242	7 21	PP	11 12	- 2	—	21.0
Manila	32.4	223	6 34	+ 8	11 48	+ 7	15.8	—
Phu-Lien	36.8	249	—	—	12 17?	?	20.3	—
Almata	43.1	297	e 8 55	+18	—	—	—	21.6
Andijan	52.3	295	e 9 28	+19	—	—	—	—
Ekaterinburg	53.4	317	i 9 18	+ 1	i 16 49	+ 2	29.7	35.1
Tashkent	54.2	297	i 8 33	-50	—	—	e 21.7	26.2
Bombay	63.3	272	e 15 25	?	—	—	—	—
Fulkovo	65.7	329	10 45	+ 2	19 29	0	35.3	39.6
Scoresby Sund	68.5	355	—	—	20 4	+ 1	32.3	—
Tiflis	69.7	308	e 11 23	+14	e 20 33	+15	e 39.7	44.1
Copenhagen	75.2	334	—	—	21 15	- 7	38.3	—
Potsdam	77.6	332	—	—	e 21 47	- 2	e 44.3	—
Hamburg	E. 77.7	334	—	—	e 31 37	?	e 43.3	48.3
Edinburgh	79.5	341	—	—	e 22 17	+ 7	e 46.3	—
Cheb	79.8	330	—	—	e 28 30	?	e 45.3	47.8
Ksara	N. 80.0	306	—	—	i 21 8	?	—	—
De Bilt	80.5	335	—	—	e 22 21	0	e 41.3	47.2
Chur	83.4	331	e 12 21	- 4	—	—	—	—
Florence	85.3	327	e 12 17	-18	—	—	—	43.3
Ottawa	87.3	26	—	—	e 23 20	-10	e 43.3	—
Tananarive	E. 106.4	258	—	—	e 34 55	?	—	—

Additional readings :-

Toyooka iPEN = +2m.2s., eSN = +4m.3s.

Osaka i = +2m.7s., +2m.14s., +2m.38s., and +3m.23s.

Kobe ePE = +2m.13s.

Ekaterinburg L_g = +26.4m.

Tashkent e = +53s., +11m.35s. = PP+17s., +12m.47s., and +19m.35s. =

S_cS +23s.

Potsdam iE = +30m.13s.

Hamburg iN = +32m.18s.?

Tananarive iN = +36m.4s., iE = +36m.7s.

Long waves were also recorded at Honolulu T.H., Baku, Kucino, Pittsburgh, Ivigtut, and at other European stations.

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June 29d. 18h. 33m. 31s. Epicentre 35°·5N. 27°·6E. (as at 9h.).										R.2.	
	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.			
	°	°	m. s.	s.	m. s.	s.	m.	m.			
Ksara	7·0	101	e 1 59	P*	3 20	S*	3·4	—			
Trenta	9·7	296	i 1 59	-18	—	—	—	—			
Belgrade	10·8	332	—	—	e 4 36	+ 3	—	—	6·7		
Budapest	13·5	335	e 3 59	+50	—	—	7·5	—	8·0		
Zagreb	13·5	323	e 3 17	+ 8	—	—	—	—	8·7		
Triest	14·6	318	e 3 18	- 5	e 5 53	-12	e 7·2	—	8·0		
Tiñis	14·9	60	e 3 38	+11	e 6 38	+25	e 8·9	—	9·9		
Florence	15·0	308	(3 29?)	+ 1	3 29?	P	—	—	—		
Prato	15·1	319	e 6 55	S	(e 6 55)	+38	(9·5)	—	—		
Piacenza	16·6	310	3 45	- 4	—	—	—	—	13·8		
Chur	17·7	316	e 4 2	- 1	—	—	—	—	—		
Baku	18·2	68	e 4 23	+14	e 7 6	-23	10·0	—	12·2		
Cheb	18·3	328	—	—	e 7 24	- 7	—	—	—		
Zurich	18·5	316	e 4 11	- 2	—	—	—	—	—		
Stuttgart	18·9	320	i 4 17	0	e 7 39	- 5	e 9·6	—	12·1		
Neuchatel	19·2	313	e 4 17	- 4	e 7 41	- 9	—	—	—		
Strasbourg	19·6	318	i 4 25	0	i 7 57	- 1	10·5	—	—		
Potsdam	19·8	333	i 4 24	- 3	i 8 1	- 1	e 10·5	—	—		
Algiers	19·8	281	e 4 20	- 7	e 7 55	- 7	—	—	—		
Königsberg	19·9	348	e 4 31	+ 2	e 8 11	+ 7	e 11·1	—	11·5		
Göttingen	20·4	327	—	—	e 7 29?	-45	—	—	12·5		
Hamburg	21·9	331	e 4 46	- 4	—	—	—	—	—		
Lund	22·4	338	4 59	+ 4	8 47	- 6	11·5	—	—		
Alicante	22·5	285	—	—	e 8 14	-41	—	—	—		
Copenhagen	22·7	337	—	—	8 59	0	11·5	—	—		
Paris	22·7	314	e 4 55	- 3	e 8 57	- 2	—	—	—		
Uccle	22·7	320	e 4 45	-13	9 3	+ 4	e 11·5	—	—		
De Bilt	23·0	323	—	—	9 5	0	e 11·0	—	13·7		
Almeria	24·1	282	e 4 7	-64	e 9 54	+29	—	—	—		
Pulkovo	24·3	3	i 5 14	+ 1	9 43	+15	12·5	—	14·4		
Granada	25·1	283	e 5 23	+ 2	e 9 51	+ 8	e 15·4	—	—		
Toledo	25·3	289	e 2 35	?	9 45	- 1	—	—	—		
Kew	25·5	317	—	—	e 9 58	+ 8	e 13·4	—	—		
Oxford	26·2	317	—	—	e 10 11	+ 9	i 14·5	—	—		
Stonyhurst	27·8	321	e 4 39	-66	i 10 44	+16	—	—	—		
Bidston	27·9	319	—	—	i 10 39	+ 9	e 15·6	—	—		
Tananarive	E. 57·6	158	—	—	e 17 7	-37	—	—	—		

Additional readings:—

Belgrade e = +5m.41s. = S_g - 10s. and +6m.3s.

Stuttgart ePP = +4m.44s.

Potsdam eEN = +3m.59s.

Königsberg eN = +10m.17s.

Uccle i = +4m.55s.

Tananarive iN = +18m.16s., iE = +18m.19s.

Long waves were also recorded at Helsingfors.

June 29d. 22h. 20m. 19s. Epicentre 6°·9N. 77°·5W. N.3.

A = +·215, B = -·969, C = +·120; D = -·976 E = -·216;

G = +·026, H = -·117, K = -·993.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights	2·9	316	10 40	- 1	11 20	+ 6	—	—
Port au Prince	12·7	23	12 57	- 1	15 13	- 7	—	—
San Juan	16·0	43	13 41	0	16 56	+18	8·2	—
La Paz	25·1	158	e 5 21	0	11 24	?	i 15·5	18·2
Pittsburgh	33·6	357	—	—	e 13 47	SS	—	—
St. Louis	N. 33·7	342	i 6 38	0	e 12 16	+15	—	—
Pasadena	46·7	312	e 8 24	- 2	—	—	—	—

Balboa Heights gives i = +1m.29s. = S_g - 1s.

Long waves were also recorded at Rio de Janeiro, Ottawa, Scoresby Sund, Stuttgart, De Bilt, Uccle, Ekaterinburg, and Tashkent.

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June 29d. Readings also at 1h. (Helsingfors and near Nagoya (2)), 2h. (Pittsburgh, Ottawa, Tinemaha, Tucson, and Trieste), 3h. (near Nagoya and Tyrosi), 5h. (near Taihoku), 8h. (Edinburgh and near Ksara), 9h. (Almata, Ekaterinburg and Tashkent), 10h. (Algiers, De Bilt, Zagreb, Copenhagen, Pulkovo, Ksara, Ekaterinburg, Tashkent, and Almata), 11h. (Scoresby Sund), 12h. (near Santiago (2)), 13h. (Pittsburgh and Port an Prince), 15h. (Baku, Tashkent, Tiflis, and near Andijan (2)), 16h. (Baku, Tiflis, and Copenhagen), 17h. (near Tashkent, Almata, Andijan, and near La Paz (2)), 18h. (near Mizusawa), 19h. (De Bilt, Trieste, and near Mizusawa), 21h. (near Andijan), 22h. (Wellington).

June 30d. Readings at 0h. (Ekaterinburg, Tashkent, Riverview, Mount Wilson, Pasadena, Riverside, San Francisco, Branner, near Berkeley, and Lick), 1h. (Andijan), 2h. (De Bilt and Stuttgart), 4h. (near Apia), 6h. (Triest, Pulkovo, Tiflis, De Bilt, Stuttgart, Florence, Piacenza, Copenhagen, Stonyhurst, Vienna, Zagreb, Scoresby Sund, and Ekaterinburg), 8h. (Manila), 9h. (near Mizusawa), 11h. (La Paz, Pasadena, Tinemaha, and Tashkent), 12h. (Granada and Ekaterinburg), 14h. (Andijan), 15h. (Tiflis), 16h. (Lick and near Sumoto), 17h. (Madison, Ottawa, Tucson, and Scoresby Sund), 19h. (Lick), 21h. (near Glenmuick), 22h. (Ekaterinburg, Irkutsk, Neuchatel, and Scoresby Sund).

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Readings for 1932 January to May, which were received too late to classify; continued from page 104.

January 1d. Readings at 11h. (Messina and Trenta), 16h. (Benevento, Catania, Messina, and Taranto (3)).

Jan. 2d.		23h. 33m. 48s. I		23h. 36m. 51s. II		Epicentre 39°-0N. 17°-5E.		X. R.3.	
	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.	
	°	°	m. s.	s.	m. s.	s.	m.	m.	
I Trenta	0.9	287	i 0 17	+ 4	0 27	+ 4	—	—	
II	0.9	287	i 0 19	+ 6	0 29	+ 6	—	—	
I Taranto	1.5	353	0 32	+11	—	—	—	—	
II	1.5	353	1 9	?	—	—	—	—	
I Messina	1.7	242	0 20	- 4	0 52	S _g	(1.4)	—	
II	1.7	242	1 26	L	—	—	—	—	
II Catania	2.4	232	0 48	P _g	—	—	1.6	2.2	
I Mineo	2.8	231	(0 57)	P _g	(1 4)	- 8	—	—	
I Benevento	3.2	313	(i 0 12)	-34	—	—	—	3.3	
I Casamicciolo	3.3	305	0 55	P*	2 59	?	5.0	—	
II	3.3	305	0 59	P _g	1 39	S*	—	2.1	
I Collurania	4.7	324	1 24	P _g	—	—	—	—	
II Camerino	5.3	323	1 50	P _g	3 4	S _g	—	7.7	
II Prato	6.8	317	—	—	e 2 39	-14	—	3.9	
I Livorno	7.1	312	3 2	S	(3 2)	+ 1	—	—	
II	7.1	312	(1 26)	-15	1 26	P	—	—	
II Padova	7.7	329	e 1 24	-25	i 4 44	?	—	—	
II Treviso	7.7	331	i 2 8	P*	4 15	S _g	—	6.4	
II Piacenza	8.4	319	e 1 23	-36	2 57	-37	4.6	6.7	
II Pavia	8.8	318	e 1 0	-65	—	—	—	—	

Mineo readings have been *increased* by 4m.
 Benevento readings have been *increased* by 1m.
 Catania also records L for the first shock.

Jan. 2d. Readings also at 0h. (Taranto and Trenta), 7h. (Taranto).

Jan. 7d. Readings at 16h. (Mineo, Taranto, and Trenta).

Jan. 8d. Readings at 18h. (Prato (2) and Taranto).

Jan. 9d. 10h. 21m. 51s. Epicentre 6°-0S. 155°-3E. N.1.
 Focal depth 0°-060.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Treviso	129.1	327	i 18 20	[-45]	i 21 41	PP	51.2	—
Padova	129.5	327	e 18 19	[-47]	e 21 19	PP	—	—
Camerino	130.2	324	18 32	[-35]	20 32	PP	—	—
Prato	130.8	325	e 18 22	[-47]	e 21 9	PP	—	—
Pavia	131.1	329	e 18 24	[-45]	—	—	—	—
Piacenza	131.2	329	18 25	[-44]	i 21 49	PKS	—	68.7
Catania	132.0	317	18 21	[-49]	21 19	PP	—	—

Jan. 9d. Readings at 0h. (Taranto), 18h. (near Trenta).

Jan. 11d. Readings at 21h. (Camerino, Padova, and Prato).

Jan. 13d. Reading at 16h. (Florence).

Jan. 15d. Reading at 21h. (Treviso).

Jan. 18d. Readings at 8h., 9h., and 10h. (Casamicciolo).

Jan. 20d. Readings at 5h. (Piacenza and Pavia), 15h. and 16h. (Messina).

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Jan. 21d. Readings at 8h. and 13h. (Messina).

Jan. 22h. Readings at 7h. and 14h. (Messina).

Jan. 24d. 3h. 44m. 24s. Epicentre 16°-9S. 168°-3E. N.1.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Treviso	144.9	330	i 19 36	[+ 2]	—	—	85.6	—
Padova	145.4	330	e 19 30	[- 5]	—	—	—	—
Collurania	146.4	325	e 19 50	[+14]	—	—	—	—
Piacenza	146.6	339	19 42	[+ 5]	—	—	—	85.3
Prato	146.9	329	e 19 43	[+ 6]	20 1	?	—	—
Catania	148.7	317	e 19 40	[0]	—	—	—	—
Mineo	149.1	317	19 3	[-37]	—	—	—	—

Jan. 26d. Readings at 3h. (Collurania), 13h. and 15h. (Messina).

Jan. 27d. 19h. 41m. 1s. Epicentre 51°-5N. 29°-5W. N.1.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Piacenza	26.6	88	5 39	+ 4	10 11	+ 2	—	15.8
Treviso	27.8	85	e 3 59?	-106	i 14 39	L	(i 14.6)	16.0

Jan. 29d. 13h. 41m. 18s. Epicentre 6°-2S. 155°-0E. N.1.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Treviso	129.1	326	i 19 3	[- 2]	22 37	PKS	65.7	—
Padova	129.5	326	e 19 13	[+ 7]	—	—	—	—
Prato	130.8	325	e 19 11	[+ 2]	—	—	40.7	73.7
Piacenza	130.9	327	e 18 52	[-17]	—	—	65.4	76.7
Livorno	131.5	325	19 42?	[+32]	30 2	?	—	—
Catania	132.0	315	e 18 55	[-15]	—	—	e 74.1	127.1

Additional readings :—
 Prato S? = +21m.34s. =PP-14s.
 Piacenza iP = +22m.40s. =PKS+3s.
 Catania i = +22m.44s. =PKS+2s.

Jan. 29d. Readings also at 14h. (Triest), 15h. (Messina).

Feb. 3d. 6h. 16m. 3s. Epicentre 19°-7N. 75°-5W. N.1.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Piacenza	72.9	47	11 27	- 1	21 5	+ 9	30.4	45.9
Livorno	73.6	50	e 15 7	?	e 25 17	SS	—	—
Prato	74.1	48	e 11 40	+ 5	e 20 33	-37	e 26.9	43.9
Padova	74.2	46	e 11 38	+ 2	e 21 11	0	41.9	—
Treviso	74.5	46	e 10 57?	-40	i 21 23	+ 9	48.9	—
Casamicciolo	76.8	51	11 53	+ 3	—	—	—	—
Catania	78.6	55	e 12 6	+ 6	21 59	- 1	e 37.3	—

Feb. 4d. Readings at 14h. (Messina).

Feb. 5d. Readings at 6h., 8h. (2), 9h., 11h., 12h. (Messina), 14h. (Messina and Trenta).

Feb. 7d. Readings at 13h. (Casamicciolo).

Feb. 8d. Readings at 20h. (Padova).

Feb. 9d. Readings at 6h. (Casamicciolo).

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Feb. 12d. 0h. 58m. 17s. Epicentre 11°·0N. 57°·0E. R.2.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Piacenza	52·7	320	e 8 43	-29	16 45	+ 7	—	38·8

Feb. 12d. Readings at 21h. (Casamicciolo).

Feb. 16d. 13h. 48m. 55s. Epicentre 15°·3S. 179°·5W. N.2.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Padova	148·4	344	e 20 33	[+54]	e 31 45	{+92}	52·1	89·1
Piacenza	149·3	349	e 20 5	[+24]	—	—	—	86·4

Feb. 19d. 12h. 57m. 11s. (I))
 19h. 2m. 2s. (II)) Epicentre 45°·3N. 11°·1E. N.3.
 20h. 15m. 5s. (III)) X.
 20h. 31m. 33s. (IV)) X.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Padova	0·5	79	i 0 16	+ 9	i 0 28	+15	—	—
III	0·5	79	-0 3	-10	i 0 14	+ 1	—	—
I Treviso	0·8	64	i 0 25	+14	i 0 37	+16	—	0·7
III	0·8	64	i 0 15	+ 4	i 0 33	+12	—	0·9
I Piacenza	1·0	256	0 23	+ 9	(0 39)	+13	0·6	1·3
III	1·0	256	e 0 13	- 1	(0 29)	+ 3	—	2·3
I Pavia	1·4	265	0 34	S	(0 34)	- 2	—	—
I Prato	1·4	180	e 0 29	+ 9	i 0 56	+20	—	1·1
I Camerino	2·6	147	1 30	S _r	—	—	—	—

Feb. 19d. Readings at 20h. (Treviso).

Feb. 20d. 5h. 3m. 9s. Epicentre 45°·3N. 11°·1E. X.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Padova	0·5	79	i 0 18	+11	i 0 30	+17	—	—
Treviso	0·8	64	i 0 21	+10	i 0 39	+18	—	0·7
Piacenza	1·0	256	e 0 17	+ 3	0 33	+ 7	—	2·3
Prato	1·4	180	e 0 35	+15	e 0 59	+23	—	1·0

Feb. 21d. Readings at 3h. (Messina), 21h. (Prato).

Feb. 23d. 0h. 13m. 54s. Epicentre 60°·3S. 12°·5W. N.2.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Catania	100·3	23	e 17 29	PP	e 24 7	[-20]	e 46·3	59·5
Piacenza	106·9	16	e 18 6	[- 2]	25 56	{+12}	43·1	63·4

Feb. 24d. Readings at 22h. (Trenta).

Feb. 27d. Readings at 19h. (Trenta).

March 3d. Readings at 2h. (Messina), 8h. (Trenta), 9h. and 19h. (Taranto).

March 4d. 23h. 20m. 55s. Epicentre 33°·5N. 81°·0E. N.2.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Trenta	51·3	295	i 8 55	- 6	—	—	—	—
Piacenza	54·6	305	e 9 29	+ 3	17 9	+ 5	—	39·4

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March 5d. 2h. 10m. 35s. Epicentre 37°·6N. 2°·8W. N.2.									
	△	Az.	P.	O-C.	S.	O-C.	L.	M.	
	°	°	m. s.	s.	m. s.	s.	m.	m.	
Piacenza	12·0	48	—	—	e 5 25	+22	—	9·4	
March 5d. Readings at 3h. (Florence).									
March 8d. 4h. 29m. 37s. Epicentre 51°·7N. 178°·0W. N.1.									
	△	Az.	P.	O-C.	S.	O-C.	L.	M.	
	°	°	m. s.	s.	m. s.	s.	m.	m.	
Piacenza	83·0	356	e 15 23	PP	—	—	—	58·4	
March 8d. Readings at 12h. (Casamicciolo).									
March 9d. 10h. 16m. 55s. Epicentre 38°·0N. 20°·5E. R.1.									
	△	Az.	P.	O-C.	S.	O-C.	L.	M.	
	°	°	m. s.	s.	m. s.	s.	m.	m.	
Trenta	3·5	293	e 0 55	+ 5	1 25	- 5	—	—	
Taranto	3·5	316	0 50	0	1 34	+ 4	—	—	
Messina	3·9	273	0 55	- 1	1 37	- 3	1·7	1·8	
Bari	4·2	320	1 10	P*	2 22	S _g	2·8	—	
Catania	4·3	265	e 1 42	S	3 18	?	—	5·6	
Casamicciolo	5·8	301	1 10	-12	2 58	S*	4·0	—	
Casamari	6·5	306	1 38	+ 6	—	—	—	—	
Collurania	7·0	314	1 41	+ 2	—	—	—	—	
Camerino	7·5	315	1 42	- 4	2 51	-20	—	4·6	
Prato	9·2	312	e 2 25	+15	e 4 31	S*	4·9	5·4	
Treviso	9·8	323	2 5?	-13	5 45	S _g	—	—	
Padova	9·8	322	e 2 23	+ 5	e 5 26	S _g	—	—	
Piacenza	10·7	314	2 35	+ 4	5 35	S _g	—	11·1	
Pavia	11·1	315	1 44	-52	—	—	—	—	
March 9d. Readings at 13h. (Casamicciolo).									
March 11d. Readings at 9h. (Messina (2)).									
March 12d. Readings at 14h. (Casamicciolo).									
March 13d. Readings at 16h. (Messina).									
March 14d. 22h. 42m. 56s. Epicentre 8°·2N. 71°·9W. N.1.									
	△	Az.	P.	O-C.	S.	O-C.	L.	M.	
	°	°	m. s.	s.	m. s.	s.	m.	m.	
Piacenza	78·3	45	13 2	+63	23 2	+65	33·7	44·2	
Padova	80·0	45	i 12 6	- 2	—	—	—	—	
Catania	82·7	53	12 16	- 6	22 37	- 7	e 53·0	58·7	
March 15d. 4h. 32m. 19s. Epicentre 10°·8N. 144°·4E. N.1.									
	△	Az.	P.	O-C.	S.	O-C.	L.	M.	
	°	°	m. s.	s.	m. s.	s.	m.	m.	
Piacenza	110·8	328	—	—	e 24 41	[- 36]	—	70·4	
March 15d. 7h. 44m. 34s. Epicentre 39°·7N. 44°·0E. X.									
	△	Az.	P.	O-C.	S.	O-C.	L.	M.	
	°	°	m. s.	s.	m. s.	s.	m.	m.	
Messina	22·1	275	2 40	-132	—	—	—	—	
Catania	22·6	274	2 43	-134	—	—	—	—	
March 16d. Readings at 2h. (Taranto), 13h. (Catania).									
March 17d. Readings at 0h. (Trenta and Messina), 1h. (Catania), 8h. (Prato), 10h. (Messina).									

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March 21d. Readings at 13h. (Casamari).

March 23d. Readings at 4h. and 13h. (Messina).

March 25d. Readings at 12h. (Messina).

March 25d. 23h. 58m. 39s. Epicentre 62°·5N. 153°·3W. R.1.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Treviso	71·2	10	i 11 15	- 3	e 20 41	+ 6	44·4	—
Pavia	71·5	12	11 28	+ 8	—	—	—	—
Piacenza	71·6	12	11 27	+ 7	21 21	PS	29·4	48·5
Prato	72·9	11	e 11 30	+ 2	21 21	PS	29·9	45·4
Collurania	74·3	9	9 34	-122	—	—	—	—
Taranto	76·8	6	11 41	- 9	21 51	+10	—	—
Messina	78·9	8	e 11 58	- 4	22 8	+ 4	—	—
Catania	79·6	9	12 0	- 6	—	—	e 43·2	62·7

March 26d. 9h. 52m. 25s. Epicentre 4°·4S. 128°·3E. N.1.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Messina	110·5	308	e 19 10	PP	28 42	PS	—	—
Treviso	111·3	317	e 18 20	[- 2]	e 26 20	{+ 4}	—	—

March 27d. Readings at 15h. (Camerino, Collurania, Padova, and Treviso).

March 30d. 9h. 56m. 40s. Epicentre 40°·5N. 17°·0E. N.3.

A = +·727, B = +·222, C = +·649; D = +·292, E = -·956;
G = +·621, H = +·190, K = -·760.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Bari	0·6	353	0 10	+ 1	0 16	+ 1	—	—
Trenta	1·3	203	i 0 20	+ 2	0 30	- 3	—	—
Naples	2·1	279	e 0 38	P _g	e 1 12	S _g	—	—
Messina	2·6	206	0 23	-14	0 44	-23	1·1	1·3
Catania	3·3	205	(0 46)	- 1	(1 16)	- 9	—	(2·0)
Collurania	3·3	312	(0 40)	- 7	—	—	—	—
Sarajevo	3·5	17	1 32	S	(1 32)	+ 2	—	4·1
Camerino	3·9	314	2 17	S _g	—	—	—	—
Belgrade	5·0	30	1 58	?	e 2 25	S*	—	—
Zagreb	5·3	352	e 1 58	P _g	i 2 36	S*	—	—
Triest	5·7	335	e 2 25	S	(e 2 25)	0	—	—
Treviso	6·2	327	e 2 25	S	(e 2 25)	-13	—	—

Additional readings and notes:—

Catania readings have been increased by 1m.

Collurania readings have been increased by 2m.

Sarajevo ePS = +3m.54s., S_g = +4m.1s.

Belgrade e = +2m.46s. = S_g + 7s. and +3m.16s.

Zagreb i = +3m.2s.

Triest e = +2m.44s. = S* - 4s., eS = +3m.22s.

Treviso eS = +3m.22s.

The stations other than Amboina, to be found on page 95, March 30d. 9h., have all been incorporated in the above quake, until the additional late stations were received it was not found possible to get any agreement.

April 2d. Readings at 10h. (Angra do Heroismo).

April 4d. 19h. 16m. 41s. Epicentre 30°·6N. 139°·5E. N.1.
Focal depth 0·065.

	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.	
Piacenza	—	-8·1	91·7	327	e 13 19	+53	22 7	-46	56·7

April 4d. Readings at 17h. (Messina (2)).

April 5d. Readings at 8h. (Camerino (2)).

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April 7d. Readings at 15h. (Camerino).

April 12d. 23h. 52m. 40s. Epicentre 4°-5S. 152°-0E. R.2.		△	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Piacenza	127.8	327	e 18 50	[-13]	—	—	—	—	74.3
Catania	128.7	315	e 18 52	[-12]	(22 35)	PKS	—	—	—

April 12d. Readings at 15h. (Angra do Heroismo).

April 14d. 1h. 38m. 30s. Epicentre 57°-9N. 31°-5W. N.1.		△	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Angra do Heroismo	19.4	170	—	—	e 8 24	SS	—	—	9.2
Piacenza	28.1	99	e 6 4	+16	11 8	+34	—	—	19.4

April 18d. 11h. 23m. 7s. Epicentre 24°-5N. 63°-4E. N.2.

April 18d. 11h. 23m. 7s. Epicentre 24°-5N. 63°-4E. N.2.		△	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Piacenza	46.9	310	e 9 7	+39	—	—	—	—	35.2

April 18d. Readings at 0h. (Messina).

April 19d. 0h. 17m. 49s. Epicentre 44°-6N. 10°-6E. X.		△	Az.	P.	O-C.	S.	O-C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Piacenza	0.8	304	e 0 7	- 4	0 23	+ 2	0.6	—
Prato	0.8	154	e 0 0	-11	i 0 11	-10	—	—
Padova	1.2	48	e 0 1	-18	0 14	-17	—	—
Pavia	1.2	300	0 26	S	(0 26)	- 5	—	—
Treviso	1.5	46	e 0 21	0	i 0 35	- 4	0.8	—
Camerino	2.3	309	0 26	- 7	—	—	—	—

April 19d. Readings at 2h. (Collurania and Trenta).

April 20d. Readings at 22h. (Trenta).

April 22d. 4h. 58m. 10s. Epicentre 4°-4S. 103°-1E. N.1.		△	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Trenta	90.3	308	e 12 50	- 9	—	—	—	—	—

April 23d. 9h. 57m. 36s. Epicentre 35°-0N. 22°-5E. R.3.

April 23d. 9h. 57m. 36s. Epicentre 35°-0N. 22°-5E. R.3.		△	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Trenta	6.4	313	e 2 44	S	i 3 24	S _z	—	—	—
Taranto	6.8	324	4 44	?	—	—	—	—	—
Padova	13.1	325	—	—	e 5 44	+15	—	—	—

April 27d. 1h. 47m. 51s. Epicentre 34°-1N. 23°-3E. N.3.

April 27d. 1h. 47m. 51s. Epicentre 34°-1N. 23°-3E. N.3.		△	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taranto	8.0	325	3 39	S	(3 39)	+15	—	—	—

April 28d. Readings at 0h. (Trenta).

April 29d. Readings at 19h. (Piacenza).

April 30d. 1h. 6m. 27s. Epicentre 5°-0S. 11°-3W. N.2.		△	Az.	P.	O-C.	S.	O-C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Dakar	20.6	343	e 5 19	+43	e 9 7	SS	—	—	—
Piacenza	53.5	18	9 25	+ 7	—	—	—	—	30.0

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May 1d. 2h. 42m. 28s. Epicentre 42°·5N. 6°·0E. N.3.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Pavia	3·5	40	e 1 43	S*	—	—	—	—
Piacenza	3·7	46	e 1 14	P _g	—	—	—	4·3
Prato	4·0	69	e 1 17	P _g	2 24	?	—	2·5
Padova	5·1	54	e 1 36	P _g	—	—	—	—

Piacenza P = +1m.50s. = S* + 2s.

May 1d. 16h. 17m. 39s. Epicentre 46°·1N. 10°·9E. (as on 1931 Dec. 11d.). X.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Chur	1·2	308	e 0 40	S _g	—	—	—	—
Piacenza	1·4	220	(0 21)	+ 1	0 21	P	—	0·6
Pavia	1·5	233	i 0 18	- 3	—	—	—	—
Zurich	2·0	309	e 1 19	S _g	—	—	—	—
Prato	2·2	176	e 0 31	0	0 57	0	—	1·1
Neuchatel	2·8	288	e 0 48	+ 8	—	—	—	—

Chur e = +1m.6s.

Piacenza P = +3s.

May 7d. Readings at 6h., 7h. (2), 9h., 10h. (2), 11h., 13h., and 14h. (2) (Messina).

May 13d. Readings at 5h. (Messina).

May 14d. 3h. 45m. 0s. Epicentre 35°·9N. 28°·5E. N.2.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Trenta	10·2	293	2 25	+ 1	—	—	—	—
Messina	10·6	286	2 33	+ 4	—	—	—	—
Casamicciolo	12·4	298	3 2	+ 8	3 26	?	3·8	—
Camerino	13·9	306	3 23	+ 9	—	—	—	—
Prato	15·5	306	e 3 38	+ 3	6 30	+ 3	—	8·0

May 14d. 13h. 11m. 6s. Epicentre 0°·5N. 126°·0E. N.1.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Bari	103·9	313	15 56	?	24 36	[- 9]	54·1	—
Trenta	104·7	312	i 14 14	+ 9	24 44	[- 4]	43·9	56·1
Messina	105·6	310	14 4	- 5	18 25	PP	22·4	25·3
Collurania	105·8	315	13 27	-43	—	—	—	—
Treviso	106·0	318	i 14 10	- 1	i 24 54	[- 1]	53·2	59·8
Camerino	106·1	316	14 20	+ 8	26 3	{+24}	—	—
Catania	106·1	310	14 35	+23	24 45	[-10]	52·8	57·4
Padova	106·3	318	i 14 5	- 8	e 24 48	[- 8]	e 52·9	—
Prato	107·3	317	e 14 22	+ 4	e 24 54	[- 7]	—	37·9
Piacenza	107·8	320	i 14 24	+ 4	i 18 51	PP	i 25·0	35·5
Livorno	107·9	317	14 14	- 7	25 3	[- 1]	—	—
Pavia	108·2	320	e 13 58	-24	—	—	—	—
Carloforte	110·8	313	e 14 38	+ 4	i 25 11	[- 6]	—	—
Dakar	140·8	294	e 18 55	[-28]	—	—	—	89·8

Dakar gives also ePP = +22m.6s., eSS = +40m.58s.

May 15d. Readings at 5h. (Catania), 23h. (Camerino).

May 16d. Readings at 7h. and 18h. (Messina).

May 18d. Readings at 2h. (Camerino).

May 19d. 13h. 17m. 8s. Epicentre 41°·0N. 16°·0E. (as on 1931 Dec. 3d.). X.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Naples	1·3	263	e 0 19	+ 1	e 0 44	S _g	—	1·2
Casamicciolo	1·6	261	0 29	+ 6	0 49	+ 8	—	0·9
Trenta	1·8	172	e 0 22	- 4	0 42	- 4	—	—
Messina	2·9	188	0 37	- 4	—	—	—	1·7
Zagreb	4·8	0	1 48	+40	e 2 40	+37	—	—

Stuttgart records L.

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May 19d. Readings at 12h. (Messina).

May 20d. 4h. 17m. 17s. Epicentre 38°0N. 20°5E.

X.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Trenta	3.5	293	e 1 43	S _g	—	—	—	—

May 20d. 19h. 16m. 18s. Epicentre 36°3N. 53°5E.

N.2.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Piacenza	33.9	299	e 6 42	+ 3	—	—	—	23.2

May 20d. Readings at 2h. (Trenta).

May 21d. 10h. 10m. 19s. Epicentre 13°1N. 87°3W.

N.1.

Focal depth 0.015.

	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	m. s.	s.	m. s.	s.	m.	m.
Dakar	-1.9	67.5	80	e 10 41	- 1	e 19 39	+12	e 31.7	33.3
Piacenza	-2.0	85.6	44	12 21	- 5	22 41	-12	34.7	42.0
Livorno	-2.1	86.4	46	12 43	+13	22 47	-14	—	—
Prato	-2.1	86.9	46	e 11 51	-41	i 23 1	- 5	—	36.7
Treviso	-2.1	87.1	44	e 12 34	+ 1	23 6	- 2	41.7	45.2
Catania	-2.1	91.6	51	e 12 38	-17	22 42	-69	e 39.0	47.7
Messina	-2.1	91.7	51	e 12 57	+ 1	23 39	-13	—	—

Dakar gives also ePP = +13m.36s., ePS = +20m.11s.

May 21d. 15h. 43m. 37s. Epicentre 1°0S. 21°5W.

R.2.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Dakar	16.1	13	—	—	e 6 23?	-18	—	12.7
Prato	53.4	29	e 3 55?	?	e 6 23?	?	—	31.2
Piacenza	53.7	27	e 8 23	-54	—	—	—	34.0

May 22d. 11h. 29m. 23s. Epicentre 20°2S. 174°2W.

N.1.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Piacenza	154.9	354	e 19 47	[- 1]	—	—	—	99.6
Prato	155.9	350	e 20 37	{+12}	e 30 37	{-19}	—	—

May 22d. 17h. 1m. 58s. Epicentre 38°5N. 15°0E.

R.1.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Messina	0.5	125	-0 5	-12	—	—	—	—
Catania	1.0	176	i-0 1	-15	0 8	-18	0.5	0.6
Mineo	1.3	190	-0 4	-22	—	—	—	—
Trenta	1.3	52	i 0 22	+ 4	0 47	+14	—	—
Casamicciolo	2.4	339	0 33	- 1	2 1	+59	2.5	—
Taranto	2.6	41	0 39	+ 2	1 39	S _g	—	—
Collurania	4.3	347	0 29	P _g	—	—	—	—
Camerino	4.8	342	e 1 37	P _g	—	—	—	—
Prato	6.1	332	1 0 58	-29	e 3 57	S _g	4.5	5.0
Treviso	7.5	344	e 3 27	S	(e 3 27)	+16	—	—
Piacenza	7.6	331	2 2	P*	3 32	S*	4.8	10.0

Treviso gives eS = +5m.22s.

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May 22d. 22h. 40m. 7s. Epicentre 14°·7N. 89°·8W. N.2.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Camerino	89·1	45	10 2	?	—	—	—	—

May 22d. Readings also at 1h. (Piacenza), 21h. (Camerino and Collurania).

May 23d. Readings at 6h. (Prato, Trenta, Taranto, and Piacenza.)

May 26d. 16h. 9m. 19s. Epicentre 24°·0S. 179°·2E. N.1.
Focal depth 0·050.

	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	s.	m. s.	s.	m.	m.
Angra do Heroismo	—	153·3	50 e 19 7	[-39]	—	—	—	—	—
Treviso	—	156·0	337 i 19 18	[-31]	19 58	?	60·7	—	
Padova	—	156·3	337 e 19 25	[-24]	—	—	—	—	
Pavia	—	157·3	341 e 19 23	[-27]	—	—	—	—	
Piacenza	—	157·3	341 19 17	[-33]	—	—	—	45·1	
Camerino	—	157·7	332 19 4	[-47]	—	—	—	—	
Prato	—	157·9	337 e 19 21	[-30]	31 11	{+ 4}	—	—	
Livorno	—	158·4	338 e 20 1	[-36]	37 6	?	—	—	
Trenta	—	158·9	321 i 19 31	[-21]	i 20 26	?	—	—	
Casamicciolo	—	159·2	327 19 1	[-51]	19 47	?	—	—	
Messina	—	160·1	319 19 16	[-38]	21 36	?	—	—	
Catania	—	160·8	318 19 25	[-30]	—	—	99·7	110·7	
Dakar	—	161·8	119 e 19 20	[-36]	—	—	—	—	
Carloforte	—	163·1	335 e 19 23	[-34]	e 21 41	?	—	—	

Some of the above phases might belong to the shock at 16h. 9m. 29s., to be found on page 169.

May 27d. 10h. 42m. 15s. Epicentre 45°·2N. 25°·5E. N.3.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Treviso	9·3	278	e 4 45?	S _g	e 6 23	?	—	—
Padova	9·6	277	e 5 31	S _g	—	—	—	—
Prato	10·3	269	e 5 45	S _g	—	—	—	—
Piacenza	11·1	275	e 5 5	S*	—	—	—	10·1

May 28d. 2h. 21m. 25s. Epicentre 29°·2N. 131°·3E. N.1.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Treviso	87·0	321	i 16 11	PP	26 0	?	—	45·6
Prato	88·7	321	e 23 20	S	(e 23 20)	[- 4]	46·6	—
Piacenza	88·8	323	13 0	+ 8	23 43	- 2	—	58·1

May 28d. Readings at 10h. (2) and 21h. (3) (Messina).

May 29d. Readings at 0h. (Messina (2)).

May 30d. 15h. 22m. 19s. Epicentre 43°·7N. 12°·2E. N.3.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Camerino	0·8	132	0 32	?	—	—	—	—
Prato	0·9	283	e 0 26	S	0 46	?	—	—
Collurania	1·5	133	0 2	-19	—	—	—	—

May 31d. 8h. 37m. 24s. Epicentre 8°·0N. 37°·5W. R.2.

	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Dakar	20·8	70	—	—	e 8 33	+11	—	—

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Revision of 33°0N. 139°0E. on page 7.

Jan 7d. 11h. 27m. 32s. Epicentre 30°6N. 139°5E. N.3.

A = -0.654, B = +0.559, C = +0.509 ; D = +0.649, E = +0.760 ;
G = -0.387, H = +0.331, K = -0.861.

A depth of focus 0.065 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
		$^{\circ}$	$^{\circ}$	m. s.		m. s.	s.	m.	m.
Nagoya	+0.7	5.0	335	e l 25	+ 4	2 37	+12	—	—
Tyosi	+0.6	5.2	12	e l 29	+ 7	2 40	+12	—	2.7
Osaka	+0.6	5.2	321	e l 15	- 7	(2 21)	- 7	2.3	3.5
Sumoto	+0.6	5.3	315	e l 19	- 5	e 2 35	+ 4	—	2.6
Kobe	+0.5	5.4	320	—	—	i 2 38	+ 7	—	2.7
Mizusawa	E. -0.4	8.6	8	2 7	+11	3 50	+21	—	—
	N. -0.4	8.6	8	i l 52	- 4	3 46	+17	—	—
Tinemaha	-7.7	80.7	52	i l l 28	- 1	—	—	—	—
Santa Barbara	-7.7	81.0	55	e l l 29	- 2	—	—	—	—
Pasadena	-7.8	82.3	54	i l l 35	- 2	—	—	—	—
Mount Wilson	-7.8	82.4	54	e l l 36	- 2	—	—	—	—
Riverside	-7.8	82.9	54	i l l 38	- 3	—	—	—	—

As on page 51, but with correction for focus applied.

Feb. 19d. 13h. 25m. 28s. Epicentre 32°9N. 140°3E. (given by Tokyo). N.2.

A = -0.646, B = +0.536, C = +0.543 ; D = +0.639, E = +0.769 ;
G = -0.418, H = +0.347, K = -0.840.

A depth of focus 0.010 has been assumed.

	Corr. for Focus	Δ	Az.	P.	O-C.	S.	O-C.	L.	M.
		$^{\circ}$	$^{\circ}$	m. s.		m. l s.	s.	m.	m.
Hatidoyozima	+0.3	0.4	297	0 29	+19	0 47	+29	—	—
Misima	+0.2	2.5	333	0 39	0	1 2	- 7	—	—
Numadu	+0.2	2.5	331	0 40	+ 1	1 8	- 1	—	—
Yokohama	+0.1	2.6	348	0 44	+ 5	1 16	+ 7	—	—
Tokyo	+0.1	2.8	351	0 46	+ 5	1 15	+ 1	—	1.3
Tyosi	+0.1	2.9	9	0 49	+ 6	1 22	+ 5	—	—
Kumagaya	+0.1	3.3	347	0 53	+ 4	1 27	0	—	—
Tukubasan	+0.1	3.3	357	0 51	+ 2	1 26	- 1	—	—
Mito	+0.1	3.5	3	0 56	+ 5	1 32	0	—	—
Nagoya	+0.1	3.6	312	0 51	- 2	1 25	-10	—	1.6
Gihu	+0.1	3.7	314	0 53	- 1	1 31	- 6	—	—
Utunomiya	+0.1	3.7	355	0 54	0	1 32	- 5	—	—
Oiwake	+0.1	3.7	339	0 55	+ 1	1 34	- 3	—	—
Tsu	+0.1	3.7	302	0 51	- 3	1 27	-10	—	—
Kameyama	+0.1	3.7	304	0 53	- 1	1 29	- 8	—	—
Siomisaki	+0.1	3.9	279	0 53	- 4	1 28	-14	—	—
Hikone	+0.1	4.1	307	0 56	- 4	1 33	-15	—	—
Nagano	+0.1	4.1	336	1 0	0	1 51	+ 3	—	—
Kyoto	0.0	4.4	302	0 59	- 4	1 41	-12	—	—
Osaka	0.0	4.4	296	0 59	- 4	(1 43)	-10	1.7	2.0
Wakayama	0.0	4.5	290	1 0	- 4	1 44	-11	—	—
Kobe	0.0	4.7	295	1 3	- 4	1 48	-12	—	1.8
Sumoto	0.0	4.7	290	1 4	- 3	1 50	-10	—	1.9
Hukusima	0.0	4.8	2	1 11	+ 3	2 0	- 3	—	—
Toyooka	0.0	5.2	303	i l 9	- 5	i 2 2	-11	—	2.2

Continued on next page.

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	Corr. for Focus	Δ	Az.	P.		O-C.	S.		O-C.	L.	M.
				m.	s.		m.	s.			
Sendai	0-0	5-3	6	1	23	+ 8	2	16	+ 1	—	—
Wazima	0-0	5-3	329	1	14	- 1	2	7	- 8	—	—
Isinomaki	0-0	5-6	9	1	21	+ 1	2	16	- 7	—	—
Koti	0-0	5-7	276	e	16	- 5	i	2 13	-12	—	—
Titizima	0-0	6-0	165	1	34	+ 9	2	36	+ 3	—	—
Mizusawa	0-0	6-2	6	1	31	+ 3	2	33	- 5	—	—
Morioka	0-0	6-8	6	1	38	+ 1	2	45	- 8	—	—
Akita	0-0	6-8	358	1	30	- 7	2	45	- 8	—	—
Hamada	0-0	7-1	289	1	23	-18	2	33	-28	—	—
Miyazaki	0-0	7-5	265	1	43	- 3	3	1	-10	—	—
Nagasaki	-0-1	8-8	272	3	41	S	(3 41)	—	- 3	—	—
Manila	-0-5	25-4	228	e	4 35	-44	10 19	SS	—	—	—
Tinemaha	-1-3	78-8	53	i	11 53	- 2	—	—	—	—	—
Haiwee	-1-3	79-4	54	i	11 56	- 2	—	—	—	—	—
Pasadena	-1-3	80-5	55	i	12 1	- 3	—	—	—	—	—

No additional readings.

Revision of 37°-0S. 100°-0W. on page 84.

March 23d. 12h. 8m. 2s. Epicentre 38°-2S. 99°-2W. N.3.

A = -126, B = -776, C = -618; D = -987, E = +160;
G = +099, H = +610, K = -786.

	Δ	Az.	P.		O-C.	S.		O-C.	L.	M.
			m.	s.		m.	s.			
Santiago	23-6	87	5	13	+ 7	9	31	+15	—	11-9
La Plata	33-0	97	6	38	+ 6	—	—	—	14-6	—
La Paz	34-8	60	i	6 45	- 2	i	12 15	- 3	15-2	17-9
Sucre	35-2	67	6	48	- 3	—	—	—	—	—
Rio de Janeiro	49-8	88	e	16 8	S	(e 16 8)	—	+10	23-1	—
San Juan	64-5	35	e	10 35	0	e	18 58	-16	e 34-0	—
Pasadena	74-5	344	e	11 36	- 1	—	—	—	—	—
Haiwee	N. 76-3	344	e	11 53	+ 5	—	—	—	—	—
Tinemaha	77-3	344	e	11 53	- 1	—	—	—	—	—
Ottawa	86-2	16	—	—	—	e	22 58	[-10]	e 39-0	—
Baku	156-1	75	e	20 28	{+ 2}	24	32	PP	71-0	—
Ekaterinburg	157-0	29	e	20 0	{+10}	e	34 39	SKSP	64-0	—
Bombay	159-5	158	e	20 58?	{+16}	—	—	—	e 79-0	—
Andijan	173-0	66	e	20 45	{+40}	—	—	—	—	—
Frunse	173-3	43	e	22 42	?	—	—	—	—	—

Additional readings:—

La Paz PPN = +7m.53s., iSN = +12m.21s.

Baku e = +49m.18s. =SSS -9s.

Long waves were also recorded at Wellington, Adelaide, Seattle, Ukiah, Scoresby Sund, and the European stations.

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