The International Seismological Summary.

1937 July, August, September.

FORMERLY THE BULLETIN OF THE BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

The present number of the Summary contains 129 determinations of epicentres. In certain cases where a satisfactory epicentre has not been found, but where the data seems rather plentiful, the actual times recorded for the phases at different stations have been quoted as given, affording an opportunity for readers so interested to work on them independently. This is not a new practice, but one which offers an alternative way of dealing with observations which seem too numerous to be discarded altogether.

Twenty-nine of the determinations are listed as repetitions from origins used earlier in the year and computed with geocentric direction cosines. The tables for abnormal focal depth have been used in the following cases.

Date.		Epicentre.		Focal Depth.
		°	°	
July	15d. 19h.	53·6N.	159·5E.	0·005
	19d. 19h.	1·2S.	75·8E.	0·020
	21d. 0h.	46·0N.	145·0E.	0·060
Aug.	5d. 14h.	5·8S.	150·2E.	0·005
	8d. 10h.	18·5N.	146·0E.	0·020
	11d. 0h.	6·5S.	116·5E.	0·080
	15d. 4h.	19·2N.	121·2E.	Tables for a focus at base of superficial layers used.
Sept.	1d. 8h.	32·5S.	179·0W.	
	1d. 21h.	32·5S.	179·0W.	
	3d. 18h.	52·3N.	177·3W.	0·005
	8d. 0h.	56·0S.	27·0W.	0·010
	12d. 11h.	20·5N.	145·3E.	0·020
	15d. 12h.	10·5S.	161·5E.	0·050
	24d. 19h.	22·6S.	68·2W.	0·020
	27d. 8h.	8·7S.	110·8E.	0·005

KEW OBSERVATORY,
RICHMOND,
SURREY.

October, 1948.

July 1d. 6h. 0m. 56s. Epicentre 22°·0N. 109°·0W.

$A = -·3021$, $B = -·8775$, $C = +·3724$; $\delta = -5$; $h = +4$;
$D = -·946$, $E = +·326$; $G = -·121$, $H = -·352$, $K = -·928$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mazatlan	N.	2·7	64	0 42	− 3	—	—	—	—
Tacubaya	N.	9·5	103	2 33	+13	—	—	—	—
Tucson		10·4	351	e 2 31	− 3	e 4 32	0	6·1	—
Pasadena		14·5	328	e 3 36	+ 8	(e 6 16)	+ 5	e 6·3	—
Mount Wilson	Z.	14·6	329	e 3 42	+12	—	—	—	—
Tinemaha	Z.	17·0	334	e 4 7	+ 6	—	—	—	—
Berkeley	E.	19·5	327	e 4 32	+ 1	i 8 20	+14	—	—
	N.	19·5	327	e 4 36	+ 5	e 8 14	+ 8	—	—
Florissant		23·1	40	e 5 13	+ 5	e 9 15	− 1	e 11·4	12·2
Bozeman		23·7	357	—	—	e 9 16	−11	e 12·2	—
Madison		26·6	32	—	—	e 10 28	+12	e 13·8	—
Chicago		26·8	36	—	—	e 10 11	− 8	e 12·6	—
Columbia		27·4	57	—	—	e 10 28	0	e 14·8	—
Philadelphia		33·8	50	—	—	e 11 26	−44	e 17·2	—
Ottawa		35·8	41	—	—	e 12 40	− 1	e 16·1	—
Oak Ridge		37·3	47	e 7 14	− 2	e 13 4	0	e 19·3	—
Seven Falls		39·6	41	—	—	e 13 28	−10	e 18·1	—
East Machias		40·9	46	e 13 30	S	(e 13 30)	−28	e 20·5	—
Scoresby Sund		68·5	21	—	—	20 10	+ 2	34·1	—

Additional readings :—
Tucson e = +4m.44s., SS = +5m.11s., e = +5m.23s., SS = +5m.44s.
Berkeley eZ = +4m.38s. and +9m.56s.
Florissant eEN = +9m.23s.
Bozeman e = +9m.28s.
Chicago eS = +10m.17s., e = +12m.22s.
Philadelphia e = +14m.27s. and +15m.17s.
East Machias eP = +14m.2s., eS = +17m.0s.
Scoresby Sund +24m.28s.
Long waves were also recorded at Ukiah, Sitka, Vermont, Ivigtut, and other European and Asiatic stations.

July 1d. 9h. 54m. 52s. Epicentre 45°·0N. 30°·0W.

$A = +·6144$, $B = -·3548$, $C = +·7047$; $\delta = -3$; $h = -4$;
$D = -·500$, $E = -·866$; $G = +·610$, $H = -·352$, $K = -·709$.

An approximate position suggested by Stuttgart.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Jersey	19·4	68	e 4 26	− 4	e 8 14	+10	e 9·3	—
Bidston	19·4	54	—	—	i 7 44	−20	9·1	—
San Fernando	19·9	107	e 4 53	+17	—	—	9·6	—
Edinburgh	20·1	48	i 4 32	− 6	e 8 29	+10	9·1	—
Kew	20·7	60	i 4 42k	− 2	i 8 33	+ 2	9·1	—
Malaga	21·0	103	e 4 54	+ 7	—	—	—	—
Aberdeen	21·2	45	e 4 40	− 9	e 8 16	−25	—	—
Paris	22·4	68	5 1	− 1	—	—	10·1	11·1
Uccle	23·6	62	5 11	− 2	9 14	−11	e 11·1	—
De Bilt	24·2	58	e 5 17	− 2	9 24	−11	e 11·1	12·6
Strasbourg	25·9	67	i 5 35a	0	—	—	e 11·5	13·6
Scoresby Sund	25·9	5	5 41	+ 6	(11 8?)	SS	11·1	—
East Machias	26·3	284	—	—	e 10 26	+15	e 14·5	—
Stuttgart	26·8	67	e 5 43	− 1	e 10 8	−11	e 12·6	15·1
Hamburg	27·1	56	e 6 8?	+22	—	—	—	14·1
Cheb	28·8	63	e 6 8?	+ 6	e 11 8?	+17	e 14·1	16·1
Ottawa	31·9	288	—	—	e 12 26	+46	17·1	—
Ksara	50·8	79	e 9 12	+ 8	e 16 44	+24	—	—
Tiflis	52·7	65	e 9 42	+24	e 18 31	?	e 28·1	34·3
Sverdlovsk	54·2	43	—	—	e 17 6	0	24·1	—

Additional readings :—
Bidston iS = +8m.41s.
Strasbourg ePPz = +5m.54s., eSS = +11m.0s.
Long waves were also recorded at Toledo, Copenhagen, Graz, Pulkovo, Vermont, Oak Ridge, and Philadelphia.

July 1d. 11h. 49m. 40s. Epicentre 2°·8N. 95°·7E.

$A = -\cdot0992$, $B = +\cdot9939$, $C = +\cdot0485$; $\delta = +3$; $h = +7$;
$D = +\cdot995$, $E = +\cdot099$; $G = -\cdot005$, $H = +\cdot048$, $K = -\cdot999$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Medan	E.	3·1	77	0 54	+ 3	—	—	—	—
Batavia		14·2	129	e 3 17	− 7	—	—	i 7·1	—
Colombo		16·3	285	3 54	+ 2	—	—	8·2	10·6
Phu-Lien		20·8	29	i 4 47	+ 2	e 8 33	0	—	14·0
Calcutta	N.	20·9	341	4 25	−21	7 59	−36	e 10·1	18·1
Hyderabad		22·3	312	4 54	− 7	8 55	− 7	11·6	18·1
Hong Kong		26·4	41	5 40	0	10 35	+23	15·0	17·2
Bombay		27·5	308	i 5 56	+ 6	i 10 36	+ 6	13·6	17·3
Manila		27·6	63	i 5 50a	− 1	10 33?	+ 1	13·7	16·3
Agra	E.	29·5	327	6 2	− 6	i 10 49	−13	14·2	—
Kosyun		30·9	50	5 24	−56	—	—	—	—
Tainan		31·1	48	6 38	+16	—	—	—	—
Taityu		32·1	48	7 18	+47	—	—	—	—
Karenko		32·7	48	6 42	+ 6	—	—	—	—
Amboina	N.	33·1	102	6 26	−14	11 40	−19	e 15·3	—
Zi-ka-wei	Z.	37·2	38	i 7 15k	0	13 8	+ 6	21·1	26·4
Palau		38·9	82	7 29	0	13 21	− 7	—	—
Perth		39·5	153	7 45	+11	i 13 40	+ 3	18·3	23·3
Nake		41·0	48	7 36	−10	—	—	—	—
Tomie		42·9	45	7 58	− 4	—	—	—	—
Andijan		43·3	334	e 7 24	−41	—	—	26·3	—
Almata		43·6	341	e 8 13	+ 5	14 43	+ 5	18·0	—
Frunse		44·1	338	e 8 11	− 1	—	—	23·3	—
Kumamoto		44·3	44	6 29	?	—	—	25·4	—
Miyazaki		44·3	46	8 8	− 5	—	—	24·0	—
Husan		44·6	40	8 14	− 2	—	—	24·6	—
Hukuoka B		44·6	44	i 8 47	+31	e 19 8	SSS	26·1	—
Zinsen		44·7	36	i 8 17a	+ 1	e 14 43	−11	e 24·8	—
Samarkand		45·0	329	e 8 20	+ 1	e 14 55	− 3	—	—
Tashkent		45·1	332	i 8 21	+ 1	i 14 55	− 4	22·7	28·4
Sumoto		48·1	45	e 8 35	− 8	e 15 45	+ 3	e 27·8	33·6
Siomisaki		48·3	47	—	—	i 13 48	?	—	—
Kobe		48·5	45	e 8 26	−20	15 20	−28	e 26·9	33·0
Osaka		48·7	45	8 58	+10	—	—	—	—
Toyooka	N.	48·7	43	—	—	e 20 6	SSS	28·0	33·9
Semipalatinsk		49·2	348	e 8 49	− 3	e 15 51	− 7	—	—
Kameyama		49·5	45	8 54	0	16 9	+ 7	29·1	—
Irkutsk		49·8	7	9 7	+11	i 16 13	+ 7	25·3	30·7
Gihu		50·0	45	8 51	− 7	16 11	+ 2	—	—
Kohu		51·4	46	9 7	− 2	—	—	—	—
Nagano		51·6	44	9 12	+ 2	19 17	?	28·3	—
Oiwake		51·7	44	8 58	−13	—	—	—	—
Tananarive		52·0	244	—	—	e 16 43	+ 7	e 24·7	e 29·4
Tokyo		52·2	46	9 13	− 2	16 33	− 6	30·9	—
Niigata		52·8	43	9 25	+ 6	—	—	—	—
Sendai		54·3	44	9 29	− 1	—	—	—	—
Akita		54·5	43	9 50	+18	—	—	—	—
Mizusawa	E.	54·9	43	9 40	+ 5	17 55	+39	—	—
	N.	54·9	43	9 29	− 6	17 25	+ 9	—	—
Baku		55·7	319	e 9 47	+ 7	i 17 30	+ 4	26·7	34·9
Grozny		59·8	320	e 10 18	+ 9	e 19 16	+56	—	—
Tiflis		59·8	317	10 9	0	18 17	− 3	e 26·4	42·3
Sverdlovsk		60·7	340	i 10 16	+ 1	i 18 30	− 2	28·3	34·0
Melbourne		60·9	137	e 10 22	+ 5	18 35	+ 1	31·6	43·1
Ksara		63·6	307	i 10 38a	+ 3	e 19 14	+ 6	30·5	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	T.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		63·6	130	e 19 7	S	(e 19 7)	− 1	e 31·5	42·2
Helwan		66·4	302	10 55	+ 2	19 45	+ 2	—	40·3
Theodosia		67·3	319	11 1	+ 2	19 52	− 2	33·3	—
Yalta		68·0	318	11 3	0	19 55	− 7	36·3	—
Simferopol		68·2	318	e 11 6	+ 2	—	—	—	—
Sebastopol		68·5	318	i 11 9	+ 3	i 20 48	+40	—	—
Moscow		70·2	331	i 11 17	0	20 23	− 5	36·8	45·2
Bucharest		73·5	316	e 11 39	+ 3	i 21 5	− 1	34·6	52·0
Sofia		75·2	314	e 12 20	+34	e 21 22	− 3	48·5	—
Pulkovo		75·4	333	i 11 47	0	i 21 22	− 5	38·3	46·4
Belgrade		77·6	316	e 12 2a	+ 2	e 21 47	− 4	e 44·6	—
Kecskemet	z.	78·4	318	e 12 4	0	—	—	—	—
Budapest		78·9	318	12 10	+ 3	22 3	− 2	e 48·8	—
Monowai		79·5	138	—	—	i 24 20?	PPS	—	—
Stara Dala		79·6	319	e 12 12	+ 2	e 22 16	+ 4	—	58·3
Vienna		80·8	319	e 12 20	+ 3	e 22 10	−15	e 51·3	—
Zagreb		80·8	317	e 12 16	− 1	e 22 16	− 9	—	—
Cape Town		81·0	234	—	—	i 22 35	+ 8	e 38·6	45·7
Graz		81·3	318	e 12 20	0	e 22 24	− 6	e 45·3	55·6
Upsala	•	81·6	331	e 12 19	− 2	i 22 29	− 4	e 42·3	45·4
Prague		82·3	321	e 12 24	− 1	e 22 39	− 1	e 36·3	51·3
Triest		82·4	317	e 12 25	0	i 22 37	− 4	e 45·6	49·2
Christchurch		82·5	135	—	—	22 37	− 5	37·5	—
Wellington		83·6	132	—	—	i 22 53	0	e 41·3	45·3
Cheb		83·6	321	e 12 20?	−12	e 22 51	− 2	46·3	56·3
Padova		83·7	316	e 13 42	+70	24 5	PPS	—	—
Copenhagen		83·9	327	12 35a	+ 2	i 22 56	0	40·3	—
Göttingen		85·2	323	e 12 37	− 2	—	—	—	59·3
Hamburg		85·2	325	e 12 42a	+ 3	e 23 9	0	e 45·3	49·3
Stuttgart		85·6	320	i 12 43a	+ 2	i 23 14	+ 1	e 45·3	61·3
Zurich		86·0	318	e 12 44	+ 1	e 23 15	− 2	—	—
Strasbourg		86·5	320	e 12 49	+ 3	i 23 23	+ 1	e 43·8	52·8
Basle		86·7	318	e 12 49	+ 2	e 23 23	− 1	—	—
Bergen		87·8	331	12 53	+ 1	23 29	− 5	53·5	—
De Bilt		88·1	323	i 12 56	+ 2	e 23 39	+ 2	e 43·3	50·8
Uccle		88·7	321	e 12 58	+ 1	i 23 43	0	42·3	—
Paris		90·0	319	é 13 5	+ 2	e 23 54	0	54·3	62·3
Kew		91·6	322	i 13 12a	+ 2	i 23 45	[+ 3]	e 43·3	63·8
Aberdeen		91·9	328	e 16 46	PP	e 23 42	[− 2]	54·5	58·7
Durham	N.	91·9	326	e 16 47	PP	i 24 13	+ 2	—	56·8
Oxford		92·1	322	—	—	i 23 50	[+ 5]	e 47·1	58·7
Stonyhurst		92·6	324	e 13 4	−11	e 24 4	−14	56·3	62·5
Edinburgh		92·7	327	i 13 30	+15	e 24 0	−18	50·3	68·7
Jersey		93·0	320	e 11 52	?	—	—	e 42·1	—
Bidston		93·0	324	—	—	i 24 25	+ 4	e 41·3	—
Granada		95·7	308	e 13 38	+ 9	e 24 53	+ 9	—	—
Toledo		95·7	310	e 13 33	+ 4	24 15	[+10]	39·2	57·2
Scoresby Sund		96·3	343	i 13 35	+ 3	24 9	[+ 1]	—	—
Malaga		96·4	308	e 12 33	−59	—	—	56·5	—
San Fernando		97·9	307	—	—	e 25 11	+ 8	57·3	—
College		98·4	23	e 17 38	PP	e 25 38	+31	e 49·5	—
Honolulu		104·3	68	—	—	24 57	[+10]	53·3	—
Sitka		107·6	26	e 18 32	PP	e 24 26	[−36]	e 51·6	—
Ivigtut		110·4	342	19 8	PP	28 38	PS	58·3	—
Victoria		118·7	29	e 20 8	PP	e 39 50	SS	e 57·3	—
Bozeman		126·2	23	e 21 0	PP	e 37 38	SS	—	—
Berkeley	z.	126·4	38	e 20 56	PP	—	—	—	—
Tinemaha	z.	129·3	36	e 19 13	[+ 3]	—	—	—	—
East Machias		130·3	344	e 21 28	PP	—	—	e 65·1	—
Mount Wilson	z.	131·4	38	e 19 3	[−11]	—	—	—	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ottawa		131·4	352	e 21 26	PP	e 38 38	SS	e 60·3	—
Pasadena	Z.	131·4	38	e 19 9	[− 5]	—	—	e 65·3	—
Vermont		131·9	350	e 21 32	?	e 38 36	SS	e 53·3	—
La Jolla	Z.	132·8	39	e 22 37	PKS	—	—	—	—
Oak Ridge		133·5	347	i 19 32	[+13]	e 39 37	SS	e 67·3	—
Toronto		133·5	355	e 22 44	PKS	e 39 20?	SS	e 69·3	—
Weston		133·5	347	e 21 40a	PP	e 39 34	SS	59·0	—
Madison		134·1	5	e 21 57	PP	—	—	—	—
Chicago		135·4	4	e 21 58	PP	e 32 1	PS	e 63·3	—
Rio de Janeiro	E.	135·5	241	—	—	e 23 9	?	e 40·3	—
Philadelphia		136·6	349	e 22 8	PP	e 39 57	SS	e 52·3	—
Tucson		137·0	34	e 19 22	[− 3]	e 34 26	PPS	e 55·7	—
Columbia		143·3	356	—	—	e 41 32	SS	e 61·3	—
San Juan		152·4	321	e 19 50	[− 1]	—	—	—	—
La Paz		159·1	230	20 5	[+ 5]	31 10	{+63}	77·8	90·9
Huancayo		167·3	224	—	—	e 32 1	{+12}	e 81·6	—

Additional readings :—
Batavia iPZ = +3m.26s., iN = +7m.55s.
Calcutta PPN = +4m.47s., SSN = +8m.19s.
Hong Kong PP = +6m.20s., ? = +7m.4s., SS = +12m.9s.
Bombay PP = +6m.23s., PPP = +6m.48s., e = +8m.48s., P_cP = +9m.31s., SS = +11m.31s., S_cS = +16m.43s.
Agra ePPPE = +7m.10s., SSE = +12m.15s.
Sumoto PZ = +8m.41s., eSE = +15m.50s.
Kobe ePE = +8m.32s., eN = +10m.33s.
Osaka PPP = +11m.26s.
Gihu SS = +20m.18s.
Nagano PP = +11m.40s.
Tananarive eSS = +19m.55s.
Tiflis ePPE = +12m.27s., eSSE = +22m.49s.
Melbourne i = +18m.52s., +19m.25s., and +25m.43s.
Ksara iP_cP = +11m.16s., ePS = +19m.42s.
Zi-ka-wei iZ = +7m.34s., PP = +8m.36s., PPPZ = +9m.4s., PPPPZ = +9m.18s., SS = +15m.34s., SSSZ = +16m.20s., SSSSZ = +16m.34s., iZ = +20m.30s.
Riverview eE = +20m.28s., eN = +27m.22s.
Helwan pP = +11m.37s., e = +19m.57s., PS = +20m.16s., sS = +20m.55s.
Bucharest iPPN = +14m.20s., PPE = +14m.30s., iPPPE = +15m.58s., SS = +26m.0s., SSS = +28m.50s.
Budapest iE = +12m.54s.
Vienna P_cP = +12m.56s., e = +14m.58s., PS = +22m.56s.
Zagreb e = +12m.44s. and +32m.20s.?
Cape Town iN = +22m.45s.
Upsala iE = +22m.32s.
Triest i = +13m.22s., e = +16m.17s., i = +23m.32s.
Christchurch SSE = +28m.2s., L_qN = +35·0m.
Copenhagen +13m.3s. and +23m.44s.
Hamburg eN = +35m.24s.
Stuttgart eZE = +13m.12s. and +15m.20s., ePS = +24m.7s., eEN = +25m.25s., eSSN = +29m.44s., eSSSN = +32m.26s.
Strasbourg ePPZ = +15m.40s.
Basle e = +12m.52s.
De Bilt ePPZ = +16m.26s., eSSN = +29m.25s.
Uccle PP = +16m.33s., SS = +29m.48s.
Kew iPPZ = +16m.54s., iS = +24m.9s., eSP = +25m.0s.
Bidston eSP = +25m.15s.
Edinburgh e = +17m.2s., and = +24m.40s., i = +25m.36s.
Jersey e = +13m.47s., ePS = +24m.36s.
Toledo i = +24m.51s.
Scoresby Sund PP = +17m.26s., SKKS = +24m.51s., PSE = +26m.21s., SS = +31m.32s.
Malaga e = +14m.14s., e = +17m.29s., e = +17m.33s.
College eSKS = +23m.38s., eSS = +32m.20s., e = +34m.38s.
Sitka e = +25m.0s., ePS = +27m.48s., e = +28m.24s.
Ivigtut +34m.26s.
Berkeley eN = +21m.0s., eE = +21m.50s., eN = +28m.5s., iE = +28m.52s., eZ = +31m.18s.
East Machias e = +22m.35s. and +22m.40s., ePPP = +23m.20s., e = +33m.8s., ePSPS = +38m.50s.
Mount Wilson ePPZ = +21m.37s., ePKSZ = +22m.39s., iZ = +22m.53s.
Ottawa i = +22m.42s.
Pasadena iPKPZ = +19m.18s., ePPZ = +21m.26s., ePKS = +22m.41s.

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Vermont ePP = +21m.38s., eSKSP = +31m.42s., e = +40m.27s.
Oak Ridge iPP = +21m.50s.
Weston e = +21m.50s., iPP = +22m.52s.
Chicago SKP = +22m.56s.
Philadelphia e = +29m.41s., e = +32m.15s., ePSPS = +40m.8s.
Tucson ePKP = +19m.28s., e = +19m.39s. and +20m.30s., ePP = +21m.55s., e = +22m.59s. and +23m.14s., eSKKKS = +29m.6s.
San Juan e = +23m.38s. and +24m.10s.
La Paz PPN = +23m.35s.
Huancayo e = +45m.34s. and +46m.30s.
Long waves were also recorded at Keizyo, Almeria, and Ukiah.

July 1d. Readings also at 0h. (near Branner), 1h. (Tiflis and near Grozny), 5h. (near Mizusawa), 6h. (near La Paz), 7h. (Tiflis), 10h. (near Kobe, Sumoto, and Balboa Heights (2)), 11h. (near Medan), 12h. (Ksara and Tiflis), 13h. (Stuttgart), 14h. (Huancayo, San Juan, near Balboa Heights, and near Sumoto), 15h. (La Jolla, Mount Wilson, Pasadena, Philadelphia, Vermont (2), Ottawa, Seven Falls, and La Paz), 17h. (near Branner (2)), 18h. (near Branner), 21h. (Vermont, near Kobe, Sumoto, and Nagoya), 23h. (Almata).

July 2d. 2h. 37m. 10s. Epicentre 14°·0S. 167°·0E.

Least square solution leads to co-ordinates differing by 0·1 from these (13°·9S. 166°·9E.), and the origin has not been redetermined.

$A = -\cdot 9458$, $B = +\cdot 2184$, $C = -\cdot 2404$; $\delta = +3$; $h = +6$;
$D = +\cdot 229$, $E = +\cdot 974$; $G = +\cdot 234$, $H = -\cdot 054$, $K = -\cdot 971$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Apia	20·6	92	i 4 48	+ 5	i 8 49	+20	9·8	—
Riverview	24·4	214	i 5 25a	+ 4	i 9 45	+ 6	e 11·3	13·7
Sydney	24·4	214	e 5 20	− 1	e 10 10	+31	12·6	15·3
Wellington	28·0	168	5 50	− 5	10 48	+10	13·8	15·8
Christchurch	29·8	171	i 6 10a	− 1	i 11 7	0	14·9	—
Melbourne	30·8	216	6 22	+ 2	11 21	− 2	14·9	16·7
Palau	38·6	301	7 27	+ 1	—	—	—	—
Amboina	39·6	281	7 6	−29	13 10	−28	e 15·8	—
Honolulu	49·2	45	e 8 52	0	15 55	− 3	e 20·1	—
Perth	49·9	240	14 6	?	18 50	?	24·1	27·3
Manila	53·7	300	8 53	−23	13 34	?	16·3	—
Mera	55·1	333	9 38	+ 2	—	—	—	—
Misima	55·6	332	9 39	− 1	—	—	—	—
Nake	55·6	320	9 41	+ 1	—	—	—	—
Yokohama	55·6	333	9 40	0	—	—	—	—
Numadu	55·7	332	9 27	−13	—	—	—	—
Tokyo	55·7	333	9 37	− 3	17 14	−12	26·8	—
Siomisaki	55·8	329	9 39	− 2	e 17 23	− 5	—	—
Hamamatu	55·9	332	9 38	− 4	17 23	− 6	—	—
Kakioka	56·0	335	9 40	− 3	—	—	—	—
Mito	56·0	335	9 40	− 3	—	—	25·6	—
Hunatu	56·1	332	9 41	− 2	—	—	—	—
Kobu	56·2	332	9 44	0	—	—	—	—
Kumagaya	56·3	333	9 45	0	—	—	—	—
Kameyama	56·6	331	9 43	− 4	—	—	—	—
Maebasi	56·6	334	9 52	+ 5	—	—	—	—
Nagoya	56·6	332	9 46	− 1	(17 35)	− 3	17·6	—
Wakayama	56·7	329	9 45a	− 3	17 32	− 8	—	—
Oiwake	56·8	334	9 50	+ 2	17 36	− 5	—	—
Gihu	56·9	332	9 47a	− 2	—	—	—	—
Osaka	56·9	330	9 26	−23	(17 42)	0	—	—
Osaka B	56·9	330	9 46a	− 3	—	—	—	—
Hikone	57·0	332	9 49	− 1	—	—	—	—
Miyazaki	57·0	324	9 50a	0	17 40	− 3	26·4	—
Sumoto	57·0	329	9 47	− 3	17 36	− 7	e 30·0	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Koti		57·1	327	9 49	− 1	—	—	—	—
Kobe		57·1	330	9 49a	− 1	e 17 26	−19	—	30·6
Hukusima		57·2	336	9 50	− 1	—	—	—	—
Kagosima		57·2	323	9 53	+ 2	—	—	—	—
Nagano		57·2	333	9 51	0	17 43	− 3	26·2	—
Takada		57·6	333	9 57	+ 3	—	—	—	—
Toyama		57·7	332	9 56	+ 1	—	—	—	—
Yamagata		57·7	337	9 57	+ 2	—	—	—	—
Kanazawa		57·8	332	10 20	+25	18 13	+19	—	—
Kosyun		57·8	308	9 57	+ 2	—	—	—	—
Husiki		57·9	332	9 57	+ 1	—	—	—	—
Niigata		57·9	335	10 6	+10	—	—	—	—
Kumamoto		58·1	325	9 56a	− 2	—	—	24·4	—
Mizusawa	E.	58·1	337	e 9 52	− 6	17 52	− 6	26·5	—
	N.	58·1	337	e 9 45	−13	17 48	−10	25·9	—
Karenko		58·2	310	9 59	+ 1	—	—	—	—
Hirosima		58·3	326	9 51	− 8	—	—	—	—
Unzendake		58·3	324	9 58	− 1	—	—	—	—
Sakata		58·4	336	9 59	− 1	—	—	—	—
Wazima		58·4	333	9 58	− 2	—	—	—	—
Nagasaki		58·5	324	9 58a	− 2	—	—	—	—
Arisan		58·6	309	10 2	+ 1	—	—	—	—
Giran		58·6	312	10 17	+16	—	—	—	—
Tainan		58·7	309	9 55	− 7	—	—	—	—
Hukuoka B		58·8	325	10 1	− 1	18 3	− 4	24·8	—
Hamada		58·9	327	10 0	− 3	17 58	−10	26·3	—
Taihoku		58·9	312	10 4	+ 1	—	—	—	—
Tomie		59·0	325	10 2	− 2	—	—	—	—
Batavia		59·6	271	i 10 7a	− 1	18 18	+ 1	e 26·8	—
Hakodate		60·6	338	10 7	− 8	—	—	—	—
Husan		60·7	325	10 14	− 1	18 25	− 7	—	—
Sapporo		61·5	340	10 21	0	—	—	—	—
Zi-ka-wei		62·7	317	i 10 24k	− 5	18 50	− 7	31·3	38·1
Hong Kong		63·1	304	10 30	− 2	18 53	− 9	—	34·7
Zinsen		63·7	325	i 10 34a	− 2	e 19 6	− 4	—	—
Vladivostok		65·3	333	i 10 47	+ 1	i 19 26	− 3	26·8	33·8
Phu-Lien		68·7	299	e 11 7	0	e 20 8	− 2	—	—
Medan		69·9	279	11 17	+ 2	20 44	+20	e 32·8	—
Ukiah		83·7	47	e 12 20	−12	e 22 50	− 4	—	—
Berkeley		83·9	49	e 12 32	− 1	e 22 8	−48	e 34·7	—
Calcutta	N.	85·1	295	12 55	+16	24 3	+55	e 40·5	57·2
Irkutsk		85·2	327	e 13 39	+60	e 22 57	−12	39·8	—
Sitka		85·3	27	e 12 29	−11	e 22 38	−32	—	—
Pasadena		85·6	53	e 12 41	0	e 22 8	−65	—	—
Mount Wilson	Z.	85·7	53	e 12 41	− 1	—	—	—	—
La Jolla		85·9	55	e 12 49	+ 6	—	—	—	—
Riverside		86·2	54	e 12 51	+ 7	—	—	—	—
Tinemaha		86·6	51	i 12 44	− 2	—	—	—	—
Victoria		87·4	39	12 42	− 8	23 23	− 7	35·8	—
Colombo		88·9	277	12 40	−18	23 44	0	—	52·4
Tucson		90·9	57	e 13 5	− 2	e 23 7	[−31]	37·2	—
Bozeman		94·4	44	e 16 58	PP	e 23 56	[− 2]	41·8	—
Agra		95·4	297	13 21	− 7	23 45	[−19]	—	—
Bombay		98·3	287	e 13 38	− 3	i 23 4	[−74]	—	56·8
Semipalatinsk		98·6	320	e 17 33	PP	—	—	—	—
Almata		99·5	313	e 13 48	+ 2	—	—	—	—
Frunse		101·1	312	e 13 46	− 7	—	—	—	—
Andijan		102·5	309	i 14 4	+ 4	—	—	—	—
Tashkent		104·9	310	i 14 7	− 3	25 51	−10	e 37·1	63·2
Florissant		108·4	54	e 14 5	P	e 25 2	[− 3]	e 49·7	e 53·7
St. Louis	E.	108·5	54	e 16 37	?	e 28 8	PS	33·5	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Madison		109·3	48	—	—	e 29 1	PS	e 43·8	—
Sverdlovsk		110·6	326	14 32	P	i 26 23	{+14}	45·8	61·4
Huancayo		113·0	110	e 19 38	PP	e 34 18	SS	e 46·5	—
Columbia		115·8	59	e 23 0	PPP	—	—	e 47·7	—
Toronto		116·6	48	—	—	e 25 50?	[+12]	e 47·8	—
La Paz		117·7	117	19 4	[+16]	29 50	PS	55·8	59·8
Ottawa		119·0	45	e 20 8	PP	e 26 50?	{−17}	e 48·8	—
Philadelphia		120·1	52	e 20 3	PP	e 25 50	[0]	e 50·5	—
Vermont		120·9	46	e 30 2	PS	e 36 10	SS	e 47·8	—
Oak Ridge		121·7	48	e 18 59	[+ 3]	e 37 30	SSP	e 57·8	—
Seven Falls		121·9	42	e 20 8	PP	e 30 26	PS	e 45·8	—
Grozny		122·1	312	e 19 2	[+ 5]	—	—	e 60·8	—
Weston		122·6	48	e 20 34	PP	e 37 22	SS	e 54·0	—
Tiflis		123·1	311	18 59	[0]	e 30 33	PS	e 50·8	70·6
Moscow		123·2	328	18 58	[− 1]	26 2	[+ 2]	59·3	78·1
Scoresby Sund		123·3	4	18 59	[0]	—	—	—	—
Piatigorsk		123·9	314	e 19 2	[+ 2]	—	—	e 62·8	—
Pulkovo		124·4	335	19 2	[+ 1]	37 32	SS	60·8	66·3
East Machias		124·9	45	e 32·43	PS	—	—	e 52·2	—
Ivigtut		126·5	20	19 2	[− 3]	—	—	52·8	—
Theodosia		128·8	317	e 19 13	[+ 4]	—	—	67·8	—
San Juan		128·9	77	e 19 20	[+10]	—	—	—	—
Upsala		129·0	341	e 21 14	PP	—	—	e 61·8	68·1
Simferopol		129·6	318	e 19 14	[+ 3]	—	—	74·5	—
Yalta		129·9	317	e 19 10	[− 2]	—	—	67·8	—
Sebastopol		130·2	318	i 19 21	[+ 9]	—	—	—	—
Ksara		131·7	303	i 19 16	[+ 1]	39 32	SS	—	73·3
Bergen		131·8	349	22 40	PP	—	—	64·0	—
Rio de Janeiro		132·9	141	e 22 50	PP	—	—	e 57·8	—
Copenhagen		134·0	341	19 19	[− 1]	39 20	SS	61·8	—
Bucharest		135·0	321	e 19 25	[+ 4]	i 33 58	PPS	72·8	79·8
Aberdeen		136·1	352	e 22 27	PP	e 34 19	PPS	66·9	83·0
Helwan		136·2	299	e 19 25	[+ 2]	—	—	—	84·6
Hamburg		136·6	342	e 19 24a	[0]	—	—	e 62·8	78·8
Budapest		137·3	328	19 29	[+ 3]	e 40 20	SS	e 73·8	79·3
Edinburgh		137·5	353	e 22 50?	PP	i 26 28	[− 7]	e 64·8	94·8
Sofia		137·5	320	e 19 19	[− 7]	—	—	e 66·8	82·0
Stara Dala		137·5	329	e 22 16	PP	e 40 50?	SSP	—	—
Prague		137·6	335	e 22 14	PP	e 33 44	PS	—	73·3
Jena		138·1	337	e 19 27	[0]	—	—	e 63·8	72·8
Vienna		138·1	331	e 19 27	[0]	—	—	e 74·8	—
Belgrade		138·2	324	e 19 33	[+ 6]	—	—	e 73·9	—
Göttingen		138·2	340	e 19 27	[0]	e 22 14	PP	—	78·8
Durham	N.	138·4	351	e 22 20	PP	—	—	—	82·8
Cheb		138·5	335	e 21 50?	PP	e 33 29	?	e 67·8	87·8
De Bilt		139·3	343	e 19 20	[− 9]	e 32 41	PS	e 67·8	74·0
Stonyhurst		139·4	351	e 23 10	?	—	—	69·8	80·8
Graz		139·4	330	i 22 29	PP	—	—	e 69·8	72·9
Bidston		139·9	352	i 19 26	[− 4]	e 41 7	SS	—	86·0
Zagreb		140·0	329	e 19 33	[+ 2]	e 40 50?	SS	e 64·8	—
Uccle		140·7	344	e 19 31	[− 1]	e 40 50	SS	e 66·8	79·7
Stuttgart		140·8	337	e 19 24k	[− 8]	e 27 8	[+28]	e 70·8	83·8
Karlsruhe		140·9	339	e 19 20	[−12]	—	—	e 65·8	—
Triest		141·2	331	e 19 26	[− 7]	—	—	e 68·1	74·8
Kew		141·3	348	i 19 28k	[− 5]	e 41 10	SS	e 59·8	82·4
Strasbourg		141·5	338	e 19 29	[− 4]	—	—	—	72·3
Zurich		142·1	336	e 19 39	[+ 5]	—	—	—	—
Basle		142·4	338	e 19 32	[− 3]	—	—	—	—
Paris		143·0	344	e 19 31	[− 5]	—	—	68·8	76·8
Neuchatel		143·1	337	e 19 34	[− 2]	—	—	—	—

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Jersey	143·8	349	e 19 50	[+13]	e 32 50	?	e 92·0	—
Tortosa	150·8	338	19 56	[+ 8]	e 33 48	?	e 62·8	84·1
Toledo	153·1	345	e 19 53	[+ 1]	e 34 2	?	—	79·3
Almeria	155·4	340	e 20 15	[+20]	—	—	e 79·3	—
Granada	155·4	343	e 20 10	[+15]	e 29 34	{−74}	—	—
Malaga	156·1	344	19 47	[− 9]	e 27 32	[+31]	82·8	—
San Fernando	156·8	346	e 19 50	[− 7]	e 28 21	?	77·8	—

Additional readings :—
Apia PP = +5m.10s.
Riverview iN = +5m.55s., iEN = +10m.13s., iE = +10m.40s.
Wellington pP? = +6m.7s., PP = +6m.55s., i = +7m.45s., P_cP = +9m.25s., sS = +11m.17s., i = +11m.46s., P_cS = +13m.0s., SSS? = +13m.15s., L_q? = +13m.30s.
Christchurch ipPNZ = +6m.25s., iZ = +11m.22s., isSE = +11m.33s., P_cS = +12m.19s., L_q = +12·9m.
Melbourne SS = +13m.14s.
Honolulu ePPP = +11m.50s., e = +17m.40s.
Oiwake PP = +12m.34s., PPP = +13m.34s.
Osaka PP = +10m.12s., i = +13m.16s., +15m.26s. ; true S is given as SS.
Kobe eSN = +17m.28s., eSZ = +17m.31s.
Nagano PP = +12m.16s., PPP = +13m.28s.
Kumamoto PPP = +13m.14s.
Batavia iE = +19m.12s.
Zi-ka-wei iZ = +10m.38s., PP = +12m.50s., iZ = +20m.30s., SSZ? = +23m.30s.
Hong Kong SS = +23m.8s.
Medan iN = +11m.25s., +11m.57s., and +12m.7s.
Ukiah e = +29m.6s.
Berkeley eN = +12m.38s., eE = +12m.42s., iSEN = +22m.51s.
Calcutta SKSN = +23m.17s., SSN = +28m.53s., SSSN = +32m.20s.
Sitka P = +12m.36s., e = +15m.56s., eS = +22m.44s.
Pasadena i = +12m.58s., eSSN = +29m.14s.
Mount Wilson iPPZ = +16m.3s.
Victoria SSN = +29m.20s.
Tucson e = +43m.8s., i = +13m.33s., +13m.38s., ePP = +16m.48s., e = +23m.35s., eS = +23m.57s., e = +30m.9s., iPSPS = +30m.40s., eSSS = +33m.37s.
Bozeman ePS = +25m.51s.
Agra PPE = +17m.11s., PPSE = +26m.6s.
Bombay iPP = +17m.43s.
Frunse e = +17m.56s.
Andijan e = +18m.51s.
Tashkent PP = +18m.20s., iSKS = +24m.42s., PS = +27m.37s.
Florissant ePZ = +14m.24s., eE = +14m.40s., ePPZ = +18m.45s., eE = +18m.53s., eZ = +19m.15s., ePSZ = +28m.21s., iE = +28m.42s., eE = +33m.44s.
St. Louis ePPSE = +28m.40s., iE = +33m.7s.
Madison e = +32m.44s.
Sverdlovsk PP = +19m.0s., PPP = +21m.12s., PS = +28m.34s., SS = +34m.26s.
Huancayo ePS = +29m.10s. and +29m.35s., eSS = +34m.28s.
Columbia ePS = +29m.30s., ePSPS = +36m.5s.
Toronto eN = +30m.50s?
La Paz PPZ = +20m.16s.
Ottawa eE = +29m.50s., e = +36m.38s.
Philadelphia ePS = +29m.13s., +29m.59s., eSS = +36m.15s. and +36m.32s.
Vermont ePS = +30m.15s., eSS = +36m.44s.
Oak Ridge ePPZ = +20m.50s.
Seven Falls e = +37m.50s.
Weston iZ = +29m.0s., ePSE = +30m.12s., eSSSE = +41m.12s.
Tiflis ePPE = +20m.40s., eSSSE = +42m.26s.
Moscow e = +21m.37s., PS = +30m.0s., SS = +37m.14s.
Scoresby Sund PP = +20m.39s., eN = +30m.14s., PSZ = +30m.38s., PPSN = +32m.14s., eZ = +36m.20s.
Pulkovo PP = +20m.42s., PS = +30m.34s.
East Machias ePSPS = +38m.3s., ePSPS = +38m.33s., e = +46m.13s.
Ivigtut +20m.56s.
Theodosia e = +21m.23s.
San Juan ePP = +21m.31s., e = +22m.12s., i = +22m.31s., e = +22m.52s., ePPP = +23m.56s.
Upsala i = +22m.28s.
Simferopol e = +22m.34s.
Yalta e = +21m.21s.
Sebastopol i = +23m.0s.

Continued on next page.

Ksara iPP = +21m.37s., SKP = +22m.40s., PPS = +33m.32s.
Copenhagen PP = +21m.51s., PKS = +22m.50s., e = +34m.56s.
Bucharest eE = +19m.34s., eN = +21m.36s., eE = +21m.40s., i = +22m.0s., iE = +22m.58s., +33m.58s. and +43m.58s., i = +67m.6s.
Aberdeen e = +40m.5s.
Hamburg eZ = +22m.4s.
Helwan e = +22m.6s. and +22m.58s.
Budapest i = +22m.10s.
Edinburgh e = +35m.27s.
Sofia e = +22m.8s.
Prague e = +40m.20s.
Jena eZ = +22m.15s., e = +22m.55s.
Vienna PKP = +22m.8s., PP = +24m.26s.
Belgrade e = +22m.13s., i = +23m.2s., e = +34m.43s.
De Bilt iZ = +19m.30s., e = +22m.23s.
Bidston i = +23m.8s.
Zagreb e = +19m.39s. and +22m.27s.
Kew iPPZ = +22m.30s., iPKSN = +23m.9s., iPPPZ = +34m.34s.
Uccle PPZ = +22m.32s., e = +32m.50s.
Stuttgart ePKPZ = +19m.53s., ePP = +22m.30s., ePKS = +23m.0s., eS? = +31m.6s., eSKSP = +32m.38s., e = +35m.50s., eSSN = +40m.56s.
Triest i = +22m.33s., e = +41m.14s.
Strasbourg iPPZ = +22m.33s., PPPE = +25m.26s., PSKS = +32m.6s.
Zurich ePP = +22m.18s.
Basle e = +19m.35s., ePP = +22m.41s.
Paris PP = +22m.47s.
Jersey ePP = +23m.38s., e = +68m.55s. and +81m.14s.
Malaga e = +19m.52s., +20m.52s., PP = +24m.40s., e = +34m.0s.
San Fernando eN = +20m.18s., ePPN = +23m.5s., eSSE = +44m.50s.
Long waves were also recorded at College, Tananarive, Hyderbad, Arapuni, and Capetown.

July 2d. 21h. 40m. 20s. Epicentre 38°·2N. 71°·0E. (as on 1937 Jan. 3d.).

$A = +2565$, $B = +\cdot7449$, $C = +\cdot6159$; $\delta = 0$; $h = -1$;
$D = +\cdot946$, $E = -\cdot326$; $G = +\cdot201$, $H = +\cdot582$, $K = -\cdot788$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan	2·7	22	0 32	−13	i 0 57	−22	—	—
Tashkent	3·3	342	i 0 54	+ 1	i 1 35	0	e 1·7	2·2
Samarkand	3·4	297	1 18	P_g	2 26	+49	—	2·8
Frunse	5·4	30	e 1 28	+ 4	i 2 17	−11	—	2·6
Almata	6·8	40	e 1 33	−11	i 2 45	−18	—	3·0
Baku	16·5	285	—	—	e 7 47	+49	e 11·3	—
Grozny	19·8	293	e 4 50	+15	—	—	—	—
Sverdlovsk	19·9	344	e 4 33	− 3	e 8 16	+ 1	11·7	12·0
Tiflis	20·3	289	e 4 51	+11	—	—	e 11·3	—

Additional readings :—
Andijan i = +34s., i = +36s.
Samarkand e = +2m.4s., e = +2m.18s.
Frunse e = +1m.32s., i = +1m.47s., i = +2m.3s., i = +2m.15s.
Almata e = +1m.38s.
Long waves were also recorded at Scoresby Sund, Pulkovo, and Copenhagen.

July 2d. Readings also at 0h. (St. Louis, Florissant), 3h. (La Jolla, Mount Wilson, Pasadena, Tinemaha (2), Kobe, near Nagoya, Sumoto, near Christchurch, New Plymouth (2), and Wellington), 4h. (Tiflis and near Nagoya), 5h. (near Almata), 6h. (Tiflis), 7h. (near Santiago), 9h. (Sverdlovsk, Tiflis (2), Medan, near Kobe (2), and Sumoto (3)), 10h. (Baku and Tashkent), 12h. (Taihoku), 15h. (Sverdlovsk, Tashkent, Tiflis, near Almata, and near Sumoto), 16h. (Tiflis), 17h. (Tiflis, Frunse, Sverdlovsk, Tashkent, near Andijan, Samarkand, and near Taihoku), 20h. (Tiflis), 21h. (Granada and Toledo), 22h. (Amboina), 23h. (Bucharest, Neuchatel, and near Mizusawa).

July 3d. 3h. 56m. 40s. Epicentre 5°·5N. 126°·0E.

$A = -\cdot5851$, $B = +\cdot8054$, $C = +\cdot0952$; $\delta = +7$; $h = +7$;
$D = +\cdot809$, $E = +\cdot588$; $G = -\cdot056$, $H = +\cdot077$, $K = -\cdot996$.

Felt South-east Mindanao, scale II at Davao. 5·0N. 124·5E. Seismo. Bull., 1937, Jy.-Dec., Manila 1938, p.26.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	10·3	332	2 50	+18	4 58	+28	—	—
Batavia	22·4	239	5 1	− 1	—	—	i 10·5	—
Medan	27·3	268	5 47	− 1	—	—	—	—
Tashkent	61·7	314	10 12	−10	i 18 28	−16	e 27·8	37·1
Sverdlovsk	72·1	329	—	—	20 34	−16	35·3	—
Baku	75·9	311	—	—	e 21 29	− 3	e 40·3	—
Grozny	79·2	313	e 12 7	− 1	—	—	—	—
Tiflis	79·8	311	e 12 5	− 7	e 22 5	− 9	e 32·8	—
Moscow	84·6	325	e 12 32	− 4	—	—	—	—
Pulkovo	88·2	330	—	—	e 23 23	−15	45·3	—

Additional readings :—
Batavia iE = +10m.13s.
Tiflis eEZ = +12m.11s.
Moscow i = +12m.36s.
Long waves were also recorded at Scoresby Sund, Copenhagen, De Bilt, Strasbourg, and Stuttgart.

July 3d. 15h. 23m. 17s. Epicentre 36°·9N. 138°·0E. (given by Nagoya).

$A = -\cdot5957$, $B = +\cdot5364$, $C = +\cdot5978$; $\delta = -5$; $h = -1$;
$D = +\cdot669$, $E = +\cdot743$; $G = -\cdot444$, $H = +\cdot400$, $K = -\cdot802$.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Nagoya		1·9	206	0 28	− 6	0 56	− 3	1·4
Toyooka		2·9	242	e 0 48	0	e 1 21	− 3	1·9
Kobe	E.	3·1	226	0 56	P*	i 1 42	S_g	1·8
Mizusawa		3·3	46	0 50	− 3	1 37	+ 2	—
Sumoto		3·6	226	e 0 57	− 1	1 58	S_g	2·1
Hukuoka B		7·0	245	e 1 51	+ 5	e 3 42	S_g	—
Husan		7·5	259	—	—	e 3 28	+ 8	—

Additional readings :—
Toyooka PEN = +1m.1s., eSN = +1m.26s.
Sumoto ePN = +59s., ePE = +1m.1s.
Long waves were also recorded at Hong Kong, Scoresby Sund, and Russian and European stations.

July 3d. 15h. 27m. 57s. Epicentre 36°·9N. 138°·0E. (as at 15h.23m.).

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Nagoya		1·9	206	0 34	0	0 59	0	1·4
Toyooka		2·9	242	0 53	P*	1 29	S*	—
Kobe	E.	3·1	226	1 0	P_g	i 1 46	S_g	1·9
Sumoto		3·6	226	1 7	P*	e 1 58	S_g	2·3

Sumoto gives also ePEN = +1m.10s., eSNZ = +2m.1s.

July 3d. Readings also at 0h. (Andijan and Frunse), 1h. (East Machias), 2h. (Scoresby Sund, Tortosa, Philadelphia, Tucson, La Paz, and near Apia), 4h. (Almata, Frunse, and near Tananarive), 5h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Huancayo, and La Paz), 6h. (Sverdlovsk, Tashkent, Almata, Andijan, Frunse, and near Sumoto), 7h. (Wellington and near Mizusawa), 9h. (Prague), 11h. (Amboina, Scoresby Sund, Wellington, Frunse, near Andijan, and near Nagoya), 13h. (Husan, Nagoya, near Kobe, Sumoto, Hukuoka, and Hukuoka B), 15h. (Tashkent, Frunse, and near Samarkand, and near Nagoya), 16h. (Grozny, Samarkand, Tiflis, Tashkent, Sverdlovsk, Irkutsk, near Almata, Andijan, and Frunse), 17h. (Copenhagen and Pulkovo), 18h. (Mizusawa, Tiflis, and near Medan).

July 4d. 5h. 55m. 15s. Epicentre 11°·2S. 163°·9E.

$A = -\cdot 9427$, $B = +\cdot 2721$, $C = -\cdot 1930$; $\delta = -3$; $h = +6$;
$D = +\cdot 277$, $E = +\cdot 961$; $G = +\cdot 185$, $H = -\cdot 054$, $K = -\cdot 981$.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Apia		23·9	99	i 5 11	− 5	i 9 48	+18	—	—
Riverview		25·4	204	i 5 31k	0	e 9 57	+ 1	—	18·7
Sydney		25·4	204	e 5 27	− 4	i 10 3	+ 7	12·5	18·2
Arapuni		28·8	159	—	—	e 10 49	− 2	—	13·8
Melbourne		31·5	208	6 23	− 3	11 40	+ 6	—	20·5
Wellington		31·5	163	6 30	+ 4	12 7	+33	16·0	16·7
Christchurch		33·1	168	e 6 50a	+10	12 9	+10	16·2	—
Palau		34·6	301	8 33	PPP	—	—	23·2	—
Amboina		36·2	279	7 32	+26	—	—	e 20·8	—
Titizima		43·5	332	8 5	− 2	—	—	—	—
Honolulu		49·6	49	e 8 55	0	e 15 40	−23	e 19·3	—
Hatidyozima		49·7	334	8 59	+ 3	15 55	− 9	—	—
Manila		49·7	300	8 54a	− 2	19 10	SS	—	—
Mera		51·2	335	9 15	+ 8	14 45	?	—	—
Nake		51·5	321	9 9	0	—	—	—	—
Tyosi		51·5	337	8 49	−20	—	—	23·8	—
Numadu		51·8	334	9 20	+ 8	—	—	—	—
Siomisaki		51·9	330	9 3	− 9	16 28	− 7	—	—
Tokyo		51·9	335	9 15	+ 3	16 46	+11	25·9	—
Hamamatu		52·0	334	9 14	+ 1	16 35	− 1	—	—
Hunatu		52·2	334	8 42	−33	—	—	—	—
Kakioka		52·2	337	9 14	− 1	—	—	—	—
Mito		52·2	337	9 7	− 8	—	—	25·0	—
Tukubasan		52·2	337	9 15	0	16 36	− 3	—	—
Kohu		52·4	334	12 31	PPP	19 44	SS	—	—
Kumagaya		52·5	335	9 18	+ 1	—	—	—	—
Muroto		52·5	328	8 51	−26	—	—	26·2	—
Kameyama		52·7	333	9 20	+ 2	16 43	− 3	—	—
Nagoya		52·7	334	9 15	− 3	(16 48)	+ 2	16·8	—
Maebasi		52·8	335	9 28	+ 9	—	—	—	—
Wakayama		52·8	330	9 28	+ 9	16 41	− 6	—	—
Osaka		52·9	330	9 30	+10	16 40	− 8	—	—
Osaka B		52·9	330	9 30	+10	—	—	—	—
Gihu		53·0	334	9 21	0	16 45	− 5	—	—
Miyazaki		53·0	326	9 18	− 3	16 40	−10	—	—
Oiwake		53·0	335	9 24	+ 3	16 52	+ 2	24·5	—
Sumoto		53·0	330	e 9 25	+ 4	16 45	− 5	e 22·9	—
Koti		53·1	328	9 18	− 3	16 40	−11	—	—
Kagosima		53·2	324	9 44	+22	—	—	—	—
Kobe	E.	53·2	330	e 8 57	−25	e 16 48	− 4	—	24·6
	N.	53·2	330	e 9 4	−18	e 16 46	− 6	—	27·8
	Z.	53·2	330	e 9 0	−22	e 16 45	− 7	—	29·4
Hukusima		53·4	338	9 27	+ 3	16 54	− 1	—	—
Nagano		53·4	334	9 25	+ 1	16 50	− 5	—	—
Sendai		53·7	338	9 27	+ 1	16 52	− 7	—	—
Takada		53·8	334	9 56	+30	—	—	—	—
Toyama		53·9	334	9 42	+15	17 6	+ 4	—	—
Yamagata		53·9	338	9 33	+ 6	—	—	—	—
Kanazawa		54·0	334	9 28	0	17 7	+ 4	—	—
Kumamoto		54·0	326	9 22	− 6	22 21	SSS	—	—
Toyooka		54·0	333	9 40	+12	17 3	0	24·2	24·9
Niigata		54·1	336	9 53	+24	—	—	—	—
Mizusawa		54·4	339	9 47	+16	16 56	−13	22·5	—
Nagasaki		54·4	325	9 31	0	17 15	+ 6	—	—
Wazima		54·6	334	9 31	− 1	17 7	− 4	—	—
Sakata		54·7	338	9 45	+12	—	—	—	—
Hukuoka		54·8	326	e 9 47	+13	e 15 8	?	—	—

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Hukuoka B		54·8	326	e 9 54	+20	e 17 0	−14	—	—
Hamada		54·9	328	9 31	− 4	17 11	− 5	—	—
Morioka		54·9	339	9 58	+23	17 13	− 3	—	—
Akita		55·3	338	9 49	+11	—	—	—	—
Batavia		56·6	270	10 26	+39	—	—	e 32·7	—
Husan		56·7	326	e 9 59	+11	—	—	23·9	—
Hakodate		56·9	340	10 18	+29	—	—	—	—
Taikyu		57·5	327	e 9 0	−53	e 13 17	PPP	24·3	—
Sapporo		57·8	341	10 3	+ 8	17 53	− 1	—	—
Zi-ka-wei		58·6	317	10 0	− 1	—	—	28·3	29·9
Hong Kong		59·0	304	10 1	− 3	18 5	− 5	—	31·2
Keizyo		59·6	327	e 11 27	+79	—	—	e 24·7	—
Zinsen	N.	59·7	326	e 9 17	−52	e 16 47	?	—	—
Vladivostok		61·5	334	e 10 19	− 2	i 18 39	− 3	25·7	33·3
Phu-Lien		64·7	299	e 9 56	−46	e 18 59	−23	29·7	—
Medan	N.	66·5	279	e 12 11	?	—	—	—	—
Calcutta	N.	81·2	294	e 12 43	+24	i 22 30	+ 1	—	44·2
Irkutsk		81·2	327	e 12 21	+ 2	22 36	+ 7	35·8	59·9
College		84·0	18	e 12 22	−12	e 27 52	SS	e 34·4	—
Ukiah		84·1	48	e 12 31	− 3	e 23 7	+ 9	—	—
Sitka		84·2	28	e 12 21	−13	e 22 52	− 7	e 34·7	—
Berkeley		84·4	49	e 12 36	0	e 22 41	−20	—	—
Pasadena		86·4	54	i 12 45	0	i 23 24	+ 3	i 36·4	—
Mount Wilson		86·5	54	i 12 46	0	—	—	—	—
La Jolla		86·8	55	e 12 51	+ 4	—	—	—	—
Riverside	Z.	87·0	54	i 12 47	− 1	—	—	—	—
Tinemaha		87·2	51	i 12 50	+ 1	e 23 30	+ 2	—	—
Victoria		87·2	39	12 56	+ 7	23 13	[− 2]	35·8	—
Seattle		87·5	40	—	—	e 23 18	[+ 1]	e 36·4	—
Kodaikanal	E.	88·5	280	e 12 45	−11	23 38	− 3	46·7	55·1
Hyderabad		89·0	287	—	—	23 24	[− 3]	36·5	59·9
Agra	E.	91·4	297	e 12 59	−10	23 32	[− 9]	—	—
Tucson		91·9	57	13 11	0	e 24 3	− 8	37·7	—
Bozeman		94·5	45	—	—	e 23 59	[+ 1]	e 43·6	—
Bombay		94·6	288	e 13 19	− 5	23 46	[−13]	—	—
Frunse		97·0	312	e 15 45	?	—	—	—	—
Tashkent		100·7	310	17 53	PP	24 54	[+24]	e 41·7	57·2
Sverdlovsk		106·6	326	e 14 47	P	26 9	SKKS	44·7	61·2
Florissant		109·2	53	18 41	PKP	e 25 9	[0]	—	—
St. Louis	E.	109·3	53	e 19 10	PP	e 26 0	{ 0}	e 51·0	e 59·4
Chicago		111·1	49	—	—	e 24 50	[−26]	e 44·7	—
Baku		115·4	310	e 18 23	[−21]	i 29 23	PS	51·7	59·3
Huancayo		116·8	110	e 20 7	PP	e 29 57	PS	e 49·7	—
Columbia		116·9	57	e 19 57	PP	e 26 30	{−23}	e 47·2	—
Toronto		116·9	46	e 19 45?	PP	e 36 3	SS	e 54·7	—
Grozny		118·0	313	e 20 0	PP	—	—	e 64·2	—
Tiflis		119·0	312	e 19 18	+27	e 37 24	SS	e 53·7	62·7
Ottawa		119·1	44	20 3	PP	25 51	[+ 4]	e 54·7	—
Moscow		119·2	329	20 8	PP	28 4	?	52·2	60·0
Piatigorsk		119·8	315	e 19 45	PP	—	—	57·8	—
Pulkovo		120·6	335	19 15	[+19]	36 51	SS	54·7	64·0
Philadelphia		120·7	51	e 20 52	PP	e 26 6	[+14]	e 51·3	—
Scoresby Sund		120·7	2	20 33	PP	36 57	SS	58·8	—
Vermont		121·1	45	e 21 5	?	e 26 16	[+23]	e 50·7	—
La Paz		121·6	118	20 28	PP	30 26	PS	58·7	63·9
Seven Falls		121·9	41	20 27	PP	36 57	SS	e 54·7	—
Oak Ridge		122·8	46	e 19 15	[+17]	e 37 27	SS	e 58·7	—
Weston		123·0	46	e 20 49	PP	e 37 25	SS	e 57·4	—
East Machias		124·9	43	e 20 45	PP	e 30 19	PS	e 60·8	—
Upsala		125·3	340	e 21 15	PP	—	—	e 52·7	67·3
Yalta		125·7	317	—	—	e 26 39	[+31]	—	—
Ksara		127·6	304	19 54	[+27]	—	—	—	—
Copenhagen		130·3	340	19 55	[+23]	e 26 0	[−20]	52·7	—
Bucharest		131·0	321	19 33	[+19]	26 39	[+17]	62·7	65·9
San Juan		132·0	275	e 21 3	PP	30 15	SS	e 54·4	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Helwan		132·2	300	e 21 39	PP	—	—	—	—
Aberdeen		132·9	350	e 23 11	?	e 34 48	?	—	78·0
Hamburg		132·9	339	e 19 38	[+21]	—	—	e 54·1	59·7
Budapest	N.	133·3	327	e 22 27	?	i 24 35	?	—	—
Stara Dala		133·5	328	e 19 33	[+14]	e 32 45	PS	—	42·7
Sofia		133·6	319	e 21 2	PP	—	—	—	—
Prague		133·8	333	e 21 15	PP	e 39 27	SS	e 59·7	66·7
Belgrade		134·2	324	e 19 46a	[+26]	e 29 25	{+39}	e 65·9	—
Vienna		134·2	330	e 18 29	[−51]	e 23 13	?	—	—
Edinburgh		134·3	350	e 23 15	?	—	—	e 56·7	—
Cheb		134·7	335	e 20 3?	[+41]	e 30 12	?	e 60·7	66·7
Durham		135·1	348	e 23 5	?	—	—	—	—
De Bilt		135·7	341	e 19 45	[+22]	e 39 57	SS	e 58·7	60·7
Zagreb		136·0	328	e 20 45?	?	e 39 45?	SS	e 65·8	—
Rio de Janeiro		136·1	142	e 22 45	PP	—	—	—	—
Stonyhurst		136·1	349	e 24 5	?	—	—	e 57·7	67·0
Bidston		136·6	349	i 23 0	PP	—	—	e 43·7	84·5
Stuttgart		137·0	336	e 19 46	[+21]	e 40 3	SS	e 57·7	71·7
Uccle		137·1	342	e 19 43	[+18]	40 16	SS	58·7	—
Triest		137·3	329	e 20 3	[+37]	—	—	e 58·2	69·4
Kew		137·8	345	i 19 49k	[+23]	—	—	e 44·8	—
Oxford		137·8	346	e 22 51	PP	—	—	e 55·7	75·0
Strasbourg		137·8	337	e 19 47	[+21]	e 26 26	[− 9]	e 59·2	—
Padova		138·4	330	e 19 45?	[+18]	—	—	—	—
Paris		139·4	342	e 19 54	[+25]	—	—	67·7	83·8
Jersey		140·4	347	e 23 31	PP	e 28 54	{−29}	e 56·6	—
Barcelona		145·9	336	e 19 49	[+ 9]	—	—	e 70·7	89·0
Almeria		151·7	336	e 21 5	?	—	—	—	—
Granada		151·8	340	e 20 28	[+38]	—	—	—	—
Malaga		152·5	339	20 12	[+21]	26 57	[0]	74·2	—
San Fernando		153·3	343	e 20 24	[+32]	e 28 5	?	77·2	—

Additional readings :—
Apia i = +5m.20s. and +5m.47s.
Riverview eSN = +10m.1s., iN = +10m.8s., iE = +11m.14s., iN = +11m.22s. and +12m.54s.
Arapuni i = +11m.54s.
Melbourne i = +12m.17s., e = +12m.56s., i = +13m.25s.
Wellington pP = +7m.25s., sP? = +8m.0s., PP = +8m.11s., P_cP = +8m.38s., i = +9m.1s., sPP? = +9m.43s., sP_cP = +10m.49s., P_cS? = +12m.42s., sS = +13m.40s., SS? = +14m.32s., SSS = +15m.3s.
Christchurch PPNZ = +7m.46s., P_cPNZ = +9m.9s., P_cSE = +13m.30s., L_cE = +14m.5s., iS_cS = +17m.1s.
Amboina PN = +7m.52s.
Honolulu eP = +9m.10s., ePP = +10m.25s., e = +11m.0s., eS = +16m.3s.
Hatidyozima SSS = +20m.45s.
Manila iZ = +10m.48s.
Tokyo SSS = +21m.36s.
Hamamatu SSS = +22m.14s.
Osaka i = +13m.15s., SS = +18m.2s.
Gihu SSS = +22m.32s.
Miyazaki SSS = +22m.27s.
Oiwake P_cP = +10m.30s., PP = +11m.47s., PPP = +12m.24s., P_cS = +14m.19s. SS = +20m.22s., SSS = +22m.31s.
Sumoto ePEN = +9m.29s., SE = +16m.51s., eZ = +27m.0s.
Koti SSS = +22m.39s.
Nagano PP = +11m.54s.
Kumamoto PPP = +12m.27s.
Mizusawa SN = +16m.28s.
Hong Kong SS? = +21m.58s.
Calcutta eN = +21m.23s., iN = +21m.53s., iPSN? = +23m.43s., iN = +26m.35s., eN = +27m.59s. and +32m.49s.
College eP = +12m.50s., e = +15m.59s., eS_cS = +22m.29s., PS = +22m.48s., ePS = +23m.1s., e = +24m.4s., +24m.53s., and +24m.56s.
Ukiah eP = +12m.33s., e = +22m.59s., ePS = +23m.17s.
Sitka eP = +12m.30s., e = +12m.54s., eS = +22m.55s., PS = +23m.49s., +24m.11s., eSSS = +32m.3s.
Berkeley eN = +12m.46s., iSE = +22m.59s., eSN = +23m.1s., eZ = +23m.13s.

Continued on next page.

Pasadena ePPZ = +16m.24s., ePSZ = +24m.10s., iSSN = +29m.13s.
Mount Wilson iPPZ = +16m.21s.
Victoria SS = +29m.21s.
Seattle ePS = +24m.48s., e = +29m.15s. and +29m.23s.
Kodaikanal SKS?N = +23m.23s., PSN = +24m.38s., iE = +25m.35s. and +26m.27s.
Agra PP = +16m.47s., PS = +25m.9s.
Tucson e = +13m.23s., i = +13m.27s., e = +13m.58s., +14m.14s., +14m.27s., +14m.30s., i = +15m.5s., iPP = +16m.20s., e = +23m.47s., eS = +24m.19s., e = +25m.39s., +26m.8s., PSPS = +30m.33s., ePSPS = +30m.40s.
Bombay iE = +14m.7s., ePP = +17m.6s., e = +18m.45s.?, eE = +20m.23s., SKKSE = +24m.21s., PS = +25m.51s., PPSE = +26m.23s., e = +40m.52s.
Tashkent i = +15m.38s., PPP = +20m.47s., S = +25m.47s., SS = +32m.45s., SSS = +36m.45s.
Bozeman ePS = +25m.46s., eSS = +30m.15s.
Sverdlovsk PKP = +18m.38s., iPS = +27m.59s., SS = +33m.51s., SSS = +38m.3s.
Florissant eZ = +16m.6s., ePPZ = +18m.57s., eEZ = +19m.15s., eSKKSN = +26m.26s., eSN = +26m.50s., eE = +28m.1s., ePSE = +28m.29s., eZ = +28m.32s., iE = +28m.40s., eZ = +28m.47s., eE = +34m.13s., +34m.21s., eEN = +34m.23s., eSSE = +34m.41s., eN = +38m.29s., +45m.16s., eE = +51m.28s.
St. Louis eE = +19m.18s., ePSE = +28m.30s., eSS = +34m.30s., eSSSE = +38m.58s., eE = +49m.42s.
Chicago eS = +27m.0s., ePS = +27m.59s., +28m.43s., ePSPS = +34m.18s., PSPS = +34m.39s.
Baku PP = +19m.51s., e = +36m.45s., SSS = +40m.39s.
Huancayo e = +20m.32s., ePSPS = +36m.22s. and +36m.42s., e = +40m.2s.
Columbia e = +26m.35s., +28m.0s., ePS = +29m.35s., e = +31m.35s., ePSPS = +36m.10s.
Toronto eE = +29m.45s.?
Tiflis eEZ = +20m.12s., eE = +23m.0s., ePSE = +30m.0s., eSSSE = +41m.28s.
Ottawa PS = +29m.59s., SS = +36m.29s.
Moscow e = +23m.28s., e = +23m.52s., PS = +29m.58s., e = +34m.5s., SS = +36m.27s.
Pulkovo PP = +20m.45s., PS = +30m.19s., PPS = +31m.17s., SSS = +41m.9s.
Philadelphia ePP = +20m.56s., e = +26m.14s., +28m.43s., ePS = +30m.30s., ePSPS = +36m.55s., +37m.15s.
Scoresby Sund eZ = +21m.3s., PS = +30m.24s., SSS = +41m.51s., L_q = +49·8m.
Vermont ePP = +21m.10s., eSKS = +26m.20s., ePS = +30m.17s., ePS = +30m.45s., e = +33m.16s., ePSPS = +36m.49s., e = +37m.20s. and +40m.17s.
La Paz 4PKPZ = +20m.49s., PPZ = +22m.28s., SSN = +37m.28s.
Seven Falls PS = +30m.27s.
Oak Ridge eZ = +20m.45s.?, +30m.9s., eN = +55m.21s.
Weston ePS = +30m.35s., ePPSN = +31m.55s.
East Machias e = +37m.43s. and +51m.57s.
Upsala eN = +23m.3s.
Ksara i = +21m.9s., PP = +21m.54s., PPS = +33m.57s.
Bucharest PPE = +22m.19s., SKPE = +22m.58s., PPP = +25m.4s., PSKSE = +32m.3s., PPSE = +34m.55s., SSE = +40m.46s.
Copenhagen PP = +21m.45s., eE = +22m.0s., eZ = +22m.39s., PKS = +22m.53s., eE = +24m.56s., eN = +27m.23s., SS = +39m.3s.
San Juan e = +22m.28s. and +22m.38s.
Helwan e = +22m.17s.
Hamburg eE = +22m.50s., iN = +23m.2s.
Stara Dala e = +22m.49s.
Sofia e = +23m.45s.?
Prague e = +22m.51s. and +54m.39s.
Belgrade e = +22m.42s., +24m.37s., and +34m.23s.
Cheb e = +22m.50s.
De Bilt eZ = +22m.19s., +23m.4s.
Zagreb e = +23m.5s. and +54m.45s.?
Bidston i = +23m.15s.
Stuttgart ePKPZ = +20m.32s., ePKS = +22m.57s., ePPP = +25m.21s., eSKKS = +36m.15s., eSSS = +45m.15s.
Uccle PKPN = +22m.28s., SSSN = +45m.27s.
Trieste iPKP = +23m.19s., iE = +24m.3s., iN = +25m.56s.
Kew iPPZ = +22m.32s., iPKSN = +23m.2s., i = +23m.18s.
Strasbourg eSKP = +23m.5s., ePPZ = +25m.27s., PPSZ = +35m.25s., SS = +40m.25s., SSS = +45m.23s.
Paris e = +22m.45s. and +25m.22s.
Jersey e = +25m.29s.
Granada PP = +24m.6s.
San Fernando ePKPAN = +20m.42s., eSS = +43m.19s.
Malaga e = +23m.31s., +24m.43s., SKKS = +30m.43s., PSKS = +37m.0s., e = +60m.50s.
Long waves were also recorded at La Plata, Rathfarnham Castle, Toledo, Graz, Simferopol, Cape Town, and Bergen.

July 4d. 6h. 38m. 47s. Epicentre 11°·2S. 163°·9E. (as at 5h.).

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Apia		23·9	99	i 5 21	+ 5	10 6	+36	—	—
Riverview		25·4	204	e 5 30	− 1	i 10 3	+ 7	—	18·1
Sydney		25·4	204	e 5 31	0	i 9 58	+ 2	12·5	13·2
Arapuni		28·8	159	—	—	e 12 13?	SS	—	14·2
Melbourne		31·5	208	—	—	11 38	+ ·4	—	17·8
Wellington		31·5	163	6 31	+ 5	12 25	+51	17·2	17·2
Christchurch		33·1	168	i 6 47	+ 7	i 12 9	+10	16·4	—
Palau		34·6	301	8 30	PPP	—	—	23·3	—
Amboina		36·2	279	7 58	+52	—	—	e 19·2	—
Hatidyozima		49·7	334	8 52	− 4	16 4	0	21·3	—
Manila		49·7	300	(8 51)	− 5	10 48	?	—	—
Mera		51·2	335	9 23	+16	—	—	—	—
Siomisaki		51·9	330	9 18	+ 6	—	—	—	—
Tokyo		51·9	335	9 23	+11	—	—	—	—
Hamamatu		52·0	334	9 15	+ 2	16 20	−16	—	—
Hunatu		52·2	334	9 6	− 9	—	—	—	—
Kakioka		52·2	337	9 12	− 3	—	—	—	—
Mito		52·2	337	8 42	−33	—	—	—	—
Kohu		52·4	334	9 19	+ 3	16 42	0	—	—
Kameyama		52·7	333	9 20	+ 2	16 45	− 1	22·7	—
Nagoya		52·7	334	9 17	− 1	(16 47)	+ 1	16·8	—
Osaka		52·9	330	9 15	− 5	—	—	—	—
Osaka B		52·9	330	9 28	+ 8	—	—	—	—
Gihu		53·0	334	9 20	− 1	16 50	0	22·9	—
Miyazaki		53·0	326	9 19	− 2	16 45	− 5	22·7	—
Oiwake		53·0	336	9 25	+ 4	16 52	+ 2	24·8	—
Sumoto		53·0	330	e 9 17	− 4	16 48	− 2	—	—
Hikone		53·1	333	9 25	+ 4	—	—	—	—
Koti		53·1	328	9 24	+ 3	16 51	0	22·8	—
Kagosima		53·2	324	9 25	+ 3	—	—	—	—
Kobe		53·2	330	e 9 8	−14	e 16 52	0	—	25·8
Nagano		53·4	334	9 22	− 2	16 55	0	—	—
Sendai		53·7	338	9 23	− 3	17 1	+ 2	—	—
Toyama		53·9	334	9 54	+27	—	—	—	—
Yamagata		53·9	338	9 36	+ 9	—	—	—	—
Kanazawa		54·0	334	9 37	+ 9	17 31	+28	—	—
Kumamoto		54·0	326	9 22	− 6	—	—	23·8	—
Mizusawa	N.	54·4	339	9 39	+ 8	15 4	?	—	—
Nagasaki		54·4	325	9 32	+ 1	17 8	− 1	—	—
Wazima		54·6	334	9 40	+ 8	17 12	+ 1	—	—
Sakata		54·7	338	9 32	− 1	—	—	—	—
Hukuoka B		54·8	326	e 9 32	− 2	e 17 22	+ 8	e 23·5	—
Hamada		54·9	328	9 33	− 2	16 35	−41	22·7	—
Akita		55·3	338	9 47	+ 9	—	—	—	—
Batavia		56·6	270	9 30	−17	—	—	e 33·2	—
Husan		56·7	326	e 10 12	+24	—	—	24·1	—
Hakodate		56·9	340	9 55	+ 6	—	—	—	—
Taikyu		57·5	327	e 9 26	−27	e 13 39	?	—	—
Sapporo		57·8	341	10 11	+16	17 55	+ 1	—	—
Keizyo		59·6	327	e 10 13	+ 5	—	—	e 25·1	—
Jinsen	N.	59·7	326	e 10 14	+ 5	e 18 20	+ 1	e 25·6	—
Medan		66·5	279	e 11 25	+31	—	—	—	—
Calcutta	N.	81·2	294	e 14 35	?	i 19 35	?	—	40·7
Pasadena		86·4	54	i 12 43	− 2	—	—	—	—
Mount Wilson		86·5	54	i 12 45	− 1	—	—	—	—
La Jolla		86·8	55	e 12 44	− 3	—	—	—	—
Riverside		87·0	54	i 12 47	− 1	—	—	—	—
Tinemaha		87·2	51	e 12 47	− 2	e 23 27	− 1	—	—
Agra	E.	91·4	297	—	—	i 25 11	PS	—	—
Tucson		91·9	57	e 13 10	− 1	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bombay		94·6	288	—	—	e 24 37	+ 2	—	48·2
Frunse		97·0	312	e 14 13	+38	—	—	—	—
Andijan		98·4	310	e 14 17	+36	—	—	—	—
St. Louis	E.	109·3	53	—	—	e 26 4	{+ 4}	—	—
Tiflis		119·0	312	e 15 55	?	e 26 22	[+35]	e 51·2	62·2
Scoresby Sund		120·7	2	20 47	PP	—	—	—	—
Upsala		125·3	340	e 21 43	?	—	—	—	60·7
Copenhagen		130·3	340	21 56	PP	—	—	54·2	—
San Juan		132·0	75	22 44	?	—	—	—	—
Hamburg		132·9	339	e 19 55	[+37]	e 22 7	PP	—	64·2
Budapest		133·3	327	e 22 13?	PP	—	—	e 42·3	—
Prague		133·8	333	e 22 13?	PP	—	—	—	67·2
Vienna		134·2	330	e 19 40	[+20]	e 23 13?	?	—	—
De Bilt		135·7	341	—	—	e 22 19	PP	—	77·0
Stuttgart	Z.	137·0	336	e 19 43	[+18]	e 30 32	?	—	—
Uccle		137·1	342	e 22 20	PP	—	—	—	—
Strasbourg		137·8	337	e 20 51	?	e 22 47	PP	—	—
Kew		137·8	345	i 22 45	PP	—	—	e 36·2	40·6
Almeria		151·7	336	e 20 2	[+12]	—	—	e 39·9	—
Granada		151·8	340	e 21 10	[+80]	—	—	39·2	—
Malaga		152·5	339	e 20 21	[+30]	—	—	—	—

Additional readings :—
Apia i = +6m.2s., +6m.40s., e = +10m.40s.
Riverview iEN = +5m.44s., iN = +11m.16s., +12m.15s., and +12m.58s.
Arapuni i = +12m.21s.
Melbourne i = +13m.28s.
Wellington i = +6m.53s., PP = +7m.48s., PPP = +8m.19s., sS? = +13m.53s., i = +14m.48s., L_q = +15m.38s., SS = +16m.13s.
Christchurch L_q = +14·1m.
Amboina iPE = +8m.4s.
Manila eight minutes have been added to the P reading.
Hamamatu SSS = +20m.42s.
Oiwake PPP = +12m.20s.
Sumoto ePE = +9m.19s., ePZ = +9m.25s., SE = +16m.52s.
Kobe ePZ = +9m.11s., eZ = +16m.55s.
Nagano PPP = +11m.51s.
Kumamoto PPP = +12m.29s.
Mizusawa PE = +10m.2s.
Taikyu i = +24m.2s.
Calcutta iN = +26m.11s., eN = +31m.1s.
Tucson i = +13m.16s., e = +13m.34s.
Bombay e = +32m.36s.
Tiflis ePKPZ = +19m.54s., e = +20m.16s., eSKKSZ = +27m.38s., eSSE = +36m.31s.
Vienna e = +21m.13s. and +21m.35s.
Malaga e = +20m.41s.
Long waves were also recorded at Toyooka, Pulkovo, Sverdlovks, Hyderabad, and Paris.

July 4d. 7h. 26m. 11s. Epicentre 11°·2S. 163°·9E. (as at 6h.).

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Apia	23·9	99	i 5 23	+ 7	10 36	SSS	—	—
Riverview	25·4	204	i 5 28k	− 3	i 9 44	−12	12·6	16·7
Sydney	25·4	204	e 5 25	− 6	i 9 49	− 7	12·3	15·1
Arapuni	28·8	159	—	—	e 11 49?	SS	—	13·8
Melbourne	31·5	208	e 9 54	?	i 11 7	−27	13·5	19·3
Wellington	31·5	163	5 54?	−32	11 31	− 3	16·1	16·8
Christchurch	33·1	168	e 6 53a	+13	12 10	+11	16·2	—
Palau	34·6	301	8 20	PPP	12 19	− 3	—	—
Amboina	36·2	279	7 50	+44	—	—	e 18·8	—
Hatidyozima	49·7	334	8 59	+ 3	15 58	− 6	23·0	—
Manila	49·7	300	(9 3)	+ 7	—	—	—	—
Mera	51·2	335	9 19	+12	—	—	—	—
Yokohama	51·7	335	8 49	−22	16 35	+ 3	—	—
Siomisaki	51·9	330	9 4	− 8	16 25	−10	—	—
Tokyo	51·9	335	8 17	−55	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hamamatu		52·0	334	9 17	+ 4	16 35	− 1	22·3	—
Hunatu		52·2	334	9 16	+ 1	—	—	—	—
Tukubasan		52·2	337	9 28	+13	16 23	−16	—	—
Kohu		52·4	334	9 21	+ 5	16 41	− 1	—	—
Kumagaya		52·5	335	9 41	+24	—	—	—	—
Kameyama		52·7	333	9 18	0	16 38	− 8	25·2	—
Nagoya		52·7	334	9 7	−11	—	—	16·7	—
Maebasi		52·8	335	8 48	−31	—	—	—	—
Osaka		52·9	330	9 20	0	17 7	+19	—	—
Gihu		53·0	334	9 24	+ 3	16 43	− 7	22·6	—
Miyazaki		53·0	326	9 19	− 2	16 38	−12	22·9	—
Oiwake		53·0	335	9 27	+ 6	16 52	+ 2	—	—
Sumoto		53·0	330	e 9 15	− 6	16 41	− 9	e 26·7	28·5
Tokusima		53·0	330	10 29	+68	17 15	+25	—	—
Koti		53·1	328	9 19	− 2	16 45	− 6	—	—
Kobe	E.	53·2	330	e 9 23	+ 1	e 16 48	− 4	—	24·6
	N.	53·2	330	e 9 25	+ 3	e 16 46	− 6	—	28·8
	Z.	53·2	330	e 9 21	− 1	e 16 49	− 3	—	28·4
Nagano		53·4	334	9 23	− 1	16 58	+ 3	26·7	—
Toyama		53·9	334	9 36	+ 9	17 7	+ 5	—	—
Yamagata		53·9	338	9 39	+12	—	—	—	—
Kanazawa		54·0	334	19 29	+ 1	18 17	+74	—	—
Kumamoto		54·0	326	9 26	− 2	—	—	26·8	—
Toyooka	E.	54·0	333	—	—	e 17 6	+ 3	e 24·0	27·2
Nagasaki		54·4	325	9 50	+19	17 8	− 1	—	—
Hukuoka		54·8	326	e 12 23	PPP	e 17 3	−11	—	—
Hukuoka B		54·8	326	e 9 3	−31	e 17 6	− 8	e 23·1	—
Hamada		54·9	328	9 33	− 2	17 5	−11	23·8	—
Akita		55·3	338	10 9	+31	—	—	—	—
Batavia	Z.	56·6	270	9 14	−33	—	—	e 27·8	—
Husan		56·7	326	—	—	e 17 38	− 2	—	—
Hakodate		56·9	340	9 45	− 4	—	—	—	—
Sapporo		57·8	341	10 5	+10	18 1	+ 7	—	—
Hong Kong		59·0	304	—	—	18 9	− 1	29·3	33·4
Keizyo		59·6	327	—	—	e 18 15	− 2	—	—
Zinsen	N.	59·7	326	e 10 7	− 2	e 18 10	− 9	e 25·3	—
Medan	N.	66·5	279	e 12 29	?	—	—	e 36·8	—
Calcutta	N.	81·2	294	i 16 19	?	i 22 31	+ 2	—	44·2
Irkutsk		81·2	327	e 14 31	?	e 22 30	+ 1	38·8	—
Sitka		84·2	28	—	—	23 8	+ 9	e 36·1	—
Pasadena	Z.	86·4	54	e 12 44	− 1	—	—	—	—
Mount Wilson	Z.	86·5	54	e 12 44	− 2	—	—	—	—
La Jolla	Z.	86·8	55	e 12 48	+ 1	—	—	—	—
Riverside	Z.	87·0	54	i 12 49	+ 1	—	—	—	—
Tinemaha		87·2	51	e 12 50	+ 1	—	—	—	—
Kodaikanal	E.	88·5	280	—	—	i 23 49	+ 8	50·0	57·1
Agra	E.	91·4	297	—	—	i 24 21	+14	—	—
Tucson		91·9	57	e 13 12	+ 1	—	—	—	—
Andijan		98·4	310	e 14 46	+ 5	e 25 33	+26	—	—
Tiflis		119·0	312	e 19 55	[+64]	e 29 59	PS	e 57·8	72·4
Scoresby Sund		120·7	2	20 57	PP	—	—	—	—
Upsala		125·3	340	e 15 19	?	—	—	—	75·3
Ksara		127·6	304	i 21 29	PP	35 57	?	—	—
Copenhagen		130·3	340	21 35	PP	—	—	56·8	—
San Juan		132·0	75	e 22 44	?	—	—	—	—
Hamburg		132·9	339	e 21 43	PP	—	—	—	71·8
Budapest		133·3	327	e 22 59	PP	—	—	e 66·3	—
Prague		133·8	333	e 16 13	?	e 38 49?	SS	—	67·3
Vienna		134·2	330	e 20 5	[+45]	e 24 15	?	—	—
De Bilt		135·7	341	—	—	e 21 49?	?	—	74·1
Stuttgart		137·0	336	e 19 49	[+24]	—	—	e 67·8	—

For Notes see next page.

NOTES TO JULY 4d. 7h. 26m. 11s.

Additional readings :—
Apia i = +9m.3s.
Riverview iE = +5m.31s., iSN = +9m.47s., iN = +10m.0s., iE = +10m.11s., iN = +10m.56s.
Arapuni i = +12m.51s.
Wellington PP? = +6m.54s., PPP = +7m.25s., P_cP = +8m.11s., sS? = +12m.58s., SS? = +13m.42s., SSS? = +14m.31s., i = +15m.1s.
Christchurch PPN = +8m.1s., P_cPN = +9m.35s., P_cS = +14m.7s., L_q = +14·3m.
Manila ; 13 minutes have been added to the P reading.
Tokyo e = +22m.21s.
Oiwake PP = +11m.56s., PPP = +12m.38s.
Sumoto ePEN = +9m.20s., eN = +12m.29s., SN = +16m.47s.
Nagano PP = +11m.50s.
Kumamoto e = +12m.35s.
Calcutta iN = +19m.0s. and +33m.49s.
Kodaikanal iE = +33m.41s. and +34m.17s.
Tucson e = +13m.40s. and +13m.48s.
Tiflis eE = +20m.53s.
Upsala eN = +39m.49s.?
Copenhagen +23m.4s.
San Juan e = +23m.1s.
Vienna e = +22m.9s.
Long waves were also recorded at Hyderabad, Graz, Tashkent, Almeria, Pulkovo, and Sverdlovsk.

July 4d. Readings also at 2h. (near Santiago), 3h. (Wellington and near Sumoto), 5h. (Almata, La Jolla, Mount Wilson, Pasadena, and Riverside), 6h. (Andijan Ksara, and near Balboa Heights), 7h. (La Jolla, Mount Wilson (2), Pasadena (2), Riverside (2), Tinemaha (2), and near Taihoku), 8h. (Hastings and Wellington), 10h. (Mount Wilson, Pasadena, Tinemaha, and Riverside), 11h. (Baku and Sverdlovsk), 12h. (Tiflis), 13h. (Baku, Sverdlovsk, and Tiflis), 14h. (Sverdlovsk, Tashkent, Irkutsk, Mount Wilson, and Riverside), 15h. (Mount Wilson), 17h. (Vladivostok), 18h. (Tashkent, Irkutsk, Sverdlovsk, Baku, and Scoresby Sund), 19h. (Mount Wilson, Riverside, and Pasadena), 20h. (La Plata, near San Javier (2), and Santiago (2)), 22h. (Mount Wilson, Riverside, and near Nagoya), 23h. (near Santiago).

July 5d. 1h. 41m. 4s. Epicentre 71°·0N. 138°·0W.

A = −·2434, B = −·2191, C = +·9448 ; δ = −10 ; h = −12 ;
D = −·669, E = +·743 ; G = −·702, H = −·632, K = −·328.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka		14·0	174	e 3 27	+ 5	e 5 43	−16	—	—
Scoresby Sund		32·7	35	—	—	11 56	+ 4	16·9	—
Tinemaha	Z.	35·5	152	e 7 0	0	—	—	—	—
Mount Wilson	Z.	38·4	152	i 7 26	+ 1	—	—	—	—
Pasadena		38·4	152	i 7 24	− 1	—	—	e 21·9	—
Riverside	Z.	38·7	152	i 7 26	− 1	—	—	—	—
Florissant	N.	40·4	117	e 7 49	+ 8	e 13 54	+ 4	e 20·0	—
	Z.	40·4	117	e 7 53	+12	e 13 48	− 2	e 20·5	—
St. Louis	E.	40·5	117	—	—	e 13 7	−45	i 20·6	—
Tucson		41·5	144	7 50	0	—	—	e 27·4	—
Oak Ridge		42·9	95	i 8 1a	− 1	e 14 47	+20	e 21·0	—
Weston		43·1	95	i 8 1a	− 3	e 14 7	−23	—	—
Pulkovo		49·3	9	—	—	e 15 54	− 5	38·9	—
Sverdlovsk		51·8	348	e 9 14	+ 2	16 42	+ 9	21·9	—
Tashkent		66·3	339	e 10 40	−12	i 19 40	− 2	—	43·5
Tiflis	E.	67·6	359	—	—	e 20 27	+30	40·9	47·7

Additional readings :—
Florissant eZ = +9m.19s., eN = +16m.38s., eZ = +17m.20s.
St. Louis eE = +15m.53s.
Tucson e = +7m.56s., i = +7m.59s., +8m.4s., and +9m.48s.
Oak Ridge e = +8m.12s.
Weston ipZ = +8m.5s., ipPZ? = +8m.15s., eE = +9m.15s.
Long waves were also recorded at East Machias, Philadelphia, Copenhagen, De Bilt, Uccle, Strasbourg, Paris, Stuttgart, Ksara, and Baku.

July 5d. 16h. 59m. 8s. Epicentre 12°·0S. 111°·5E.

$A = -\cdot3586$, $B = +\cdot9103$, $C = -\cdot2066$; $\delta = -8$; $h = +6$;
$D = +\cdot931$, $E = +\cdot367$; $G = +\cdot076$, $H = -\cdot192$, $K = -\cdot978$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia		7·4	321	1 52	0	i 3 7	−11	—	—
Perth		20·3	169	—	—	i 7 47	−36	i 10·3	—
Manila		28·1	20	5 55	0	10 51	+11	—	—
Melbourne		39·4	137	—	—	i 13 49	+14	20·2	22·4
Calcutta	N.	41·2	327	—	—	i 13 58	− 4	—	34·8
Andijan		63·8	327	e 10 33	− 3	—	—	—	—
Irkutsk		64·3	355	e 10 52	+13	e 18 56	−21	e 33·9	—
Tashkent		65·8	326	—	—	e 19 26	− 9	—	38·3
Sverdlovsk		80·4	335	i 12 11	− 4	22 19	− 2	36·9	—
Tiflis		81·2	316	12 18	− 1	22 45	+16	e 49·4	59·6
Grozny		81·3	318	e 12 21	+ 1	—	—	—	—
Ksara		85·1	305	i 12 40	+ 1	e 22 37	−31	—	52·9
Pasadena		129·8	55	i 19 13	[+ 2]	—	—	—	—
Mount Wilson	Z.	129·9	55	i 19 12	[+ 1]	—	—	—	—
Oak Ridge		149·5	3	i 19 50k	[+ 3]	—	—	—	—
Weston	Z.	149·6	3	i 19 50k	[+ 3]	—	—	—	—

Additional readings :—
Andijan e = 17h.1m.33s.
Irkutsk e = +26m.52s.?
Oak Ridge i = +19m.55s. and +20m.0s.
Long waves were also recorded at Hong Kong and Baku.

July 5d. Readings also at 0h. (Bucharest, Triest, Sofia, Copenhagen, Stuttgart, and near Malaga (2)), 1h. (Santiago), 4h. (Neuchatel), 6h. (near Andijan), 7h. (Sverdlovsk), 9h. (Strasbourg), 11h. (Hong Kong, Huancayo, and Medan), 14h. (near La Paz), 15h. (Oak Ridge), 19h. (Calcutta, Irkutsk, and Sverdlovsk), 23h. (Copenhagen, Simferopol, Yalta, Mount Wilson, Pasadena, Riverside, Tinemaha, Sverdlovsk, near Vladivostok, and near Mizusawa).

July 6d. 6h. 52m. 0s. Epicentre 39°·5N. 26°·0E.

Felt Scale III at Salonica. Annales de l'Institute de Physique du Globe de Strasbourg. Tome II, Seismologie 1937, p. 30.

$A = +\cdot6954$, $B = +\cdot3392$, $C = +\cdot6335$; $\delta = -4$; $h = -1$;
$D = +\cdot438$, $E = -\cdot899$; $G = +\cdot569$, $H = +\cdot278$, $K = -\cdot774$.

Rough.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Athens		2·3	229	i 0 45	+ 5	i 1 15	+ 6	—	—
Sofia		3·8	330	e 1 3	+ 2	i 1 52	+ 5	—	—
Bucharest		4·9	1	1 42	P_g	e 2 33	S*	—	—
Belgrade		6·8	324	e 1 58a	P*	e 3 23	S*	—	4·5
Yalta		7·9	48	e 3 33	S	(e 3 33)	+ 3	—	—
Simferopol		8·2	42	e 3 32	S	(e 3 32)	− 6	—	—
Theodosia		8·9	49	—	—	e 4 37	S*	—	—
Zagreb		9·7	314	e 2 26	+ 4	e 4 50	S*	e 5·3	—
Ksara		9·8	122	—	—	e 4 23	+ 6	e 6·8	9·5
Stara Dala		10·1	328	—	—	e 4 12	−13	e 5·3	8·0
Triest		10·9	309	e 3 16	P_g	e 5 22	S*	i 7·0	7·7
Prague		13·4	326	—	—	e 6 35	+50	—	7·5
Jena	N.	15·2	323	3 46	+ 8	—	—	—	—

Additional readings :—
Sofia eP_g = +1m.12s.
Bucharest P = +20m.0s., eE = +2m.37s., iN = +2m.39s., SN = +3m.1s.
Belgrade e = +2m.19s., +3m.17s., +3m.38s., and +4m.22s.
Yalta e = +5m.42s.
Simferopol S = +5m.57s.
Triest iS = +5m.32s.
Long waves were also recorded at other Russian and European stations.

July 6d. Readings also at 1h. (near Medan and near Santiago), 6h. (Scoresby Sund, near Tananarive, near Triest, and near Mizusawa), 7h. (Batavia and near Medan), 8h. (Hong Kong and Phu-Lien), 9h. (near New Plymouth), 13h. (near Amboina), 15h. (Grozny, Helwan, Ksara, Baku, Tiflis, Triest, Sverdlovsk, Tashkent, and Sumoto), 16h. (Scoresby Sund), 17h. (Frunse and near Andijan), 18h. (Santiago (2)), 19h. (Graz), 22h. (Frunse, Tashkent, near Andijan and Samarkand), 23h. (Sverdlovsk).

July 7d. Readings at 2h. (La Paz, Grozny, and Samarkand), 7h. (near Medan), 8h. (La Paz), 11h. (Huancayo), 12h. (Bunnythorpe, New Plymouth, Christchurch, and Wellington), 13h. (Paris and Strasbourg), 14h. (Strasbourg), 15h. (near Oak Ridge), 17h. (Strasbourg and Scoresby Sund), 18h. (near Kobe), 21h. (near Branner), 22h. (near Santiago and near Manila).

July 8d. 12h. 51m. 8s. Epicentre 2°·6N. 84°·3W.

$A = +\cdot0992$, $B = -\cdot9941$, $C = +\cdot0450$; $\delta = +10$; $h = +7$;
$D = -\cdot995$, $E = -\cdot099$; $G = +\cdot004$, $H = -\cdot045$, $K = -\cdot999$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Huancayo		17·1	149	i 3 59	− 3	e 7 16	+ 4	11·2	—
San Juan		23·7	47	5 14	0	—	—	9·7	—
La Paz		24·8	140	i 5 29a	+ 4	i 10 7	+21	13·9	16·1
St. Louis		36·3	352	i 7 3	− 4	e 12 43	− 5	—	—
Florissant	z.	36·5	352	e 7 10	+ 1	e 12 53	+ 2	—	—
Philadelphia		38·1	13	i 7 21	− 1	e 13 15	− 1	e 16·1	—
Tucson		38·6	323	7 25	− 1	e 13 29	+ 6	e 17·6	—
Oak Ridge		41·3	15	e 7 46	− 3	e 14 1	− 3	e 20·9	—
Weston		41·3	15	i 7 47a	− 2	e 14 2	− 2	e 20·3	—
La Jolla		43·1	318	e 8 1	− 3	—	—	—	—
Riverside		43·9	319	i 8 9	− 1	—	—	—	—
Mount Wilson		44·5	319	i 8 14	− 1	—	—	—	—
Pasadena		44·5	319	i 8 14k	− 1	—	—	—	—
Santa Barbara		45·7	318	e 8 37	+13	—	—	—	—
Tinemaha		46·4	322	e 8 35	+ 5	—	—	—	—
Rio de Janeiro	e.	47·4	125	—	—	e 15 32	0	—	—
Paris		86·0	42	e 12 49	+ 6	—	—	42·9	—
De Bilt		87·7	38	e 12 52	0	—	—	e 42·9	—
Strasbourg		89·4	42	e 12 59	− 1	—	—	e 35·9	—
Stuttgart		90·4	42	e 13 3	− 1	e 23 52	− 6	e 43·9	—
Copenhagen		92·3	34	—	—	24 10	− 5	44·9	—
Sverdlovsk		114·3	20	—	—	e 35 22	SS	53·9	—
Almata		131·3	18	e 22 42	?	—	—	—	—
Andijan		131·9	24	e 19 36	[+20]	—	—	—	—

Additional readings :—
Huancayo i = +4m.33s., eS = +7m.20s., iS = +7m.25s., e = +8m.18s., +9m.8s., and +9m.31s.
San Juan e = +6m.8s., +7m.1s., and +7m.23s.
St. Louis ipPN = +7m.10s., iN = +8m.29s., eN = +8m.54s.
Florissant eZ = +7m.38s., ePPZ = +8m.13s., eZ = +8m.27s.
Philadelphia e = +8m.46s. and +12m.49s.
Tucson i = +7m.30s., e = +7m.32s., i = +7m.39s., e = +7m.43s., ePPP = +9m.5s., e = +9m.44s., e = +14m.26s.
Oak Ridge iZ = +7m.54s., iZ = +8m.0s., e = +17m.27s.
Weston ePPN = +9m.24s., eSSS = +17m.45s.
Riverside iZ = +9m.54s.
Mount Wilson iZ = +9m.58s.
Pasadena iZ = +8m.20s., i = +9m.57s., iZ = +10m.3s.
Long waves were also recorded at Scoresby Sund, Pulkovo, and Irkutsk.

July 8d. Readings also at 1h. (Andijan), 2h. (Irkutsk and Tashkent), 3h. (near Andijan), 4h. (near Manila), 5h. (Bucharest, Simferopol, and Strasbourg), 6h. (Strasbourg), 7h. (Scoresby Sund and Strasbourg), 8h. (near Andijan), 12h. (near Santiago), 14h. (Calcutta, Almata, Samarkand, near Frunse, and near Andijan), 15h. (Toledo, near Grozny, and Tiflis), 18h. (near Kobe), 21h. (Triest), 22h. (Wellington, Mount Wilson, Pasadena, Riverside, Tinemaha, Grozny (2), Tiflis, and near Piatigorsk), 23h. (Grozny, Sverdlovsk, Pulkovo, De Bilt, Uccle, Strasbourg, and Scoresby Sund).

July 9d. 4h. 8m. 5s. Epicentre 32°·8N. 130°·0E.
(given by Weather Bureau, Tyosen).

$A = -\cdot5414$, $B = +\cdot6452$, $C = +\cdot5391$; $\delta = +3$; $h = +1$;
$D = +\cdot766$, $E = +\cdot643$; $G = -\cdot347$, $H = +\cdot413$, $K = -\cdot842$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hukuoka		0·9	23	0 19$_a$	− 1	0 32	− 2	—	0·6
Hukuoka B		0·9	23	i 0 19	− 1	i 0 32	− 2	—	0·6
Husan		2·4	341	i 0 56	P_g	1 25	S_g	—	—
Taikyu		3·3	338	e 1 1	P*	i 1 49	S_g	—	—
Sumoto	E.	4·4	68	1 22	P_g	2 19	S*	—	2·5
	N.	4·4	68	e 1 25	P_g	2 18	S*	—	2·5
	Z.	4·4	68	1 24	P_g	2 21	S*	—	2·6
Kobe		4·7	66	e 1 36	P_g	2 31	S_g	—	2·7
Toyooka		4·9	54	1 36	P_g	e 2 33	S*	—	2·7
Keizyo		5·4	333	e 1 23	− 1	e 2 27	− 1	e 2·9	—
Zinsen		5·4	331	e 2 7	?	e 2 54	S_g	—	—
Nagoya		6·3	66	e 1 37	+ 1	3 16	S*	—	—
Irkutsk		26·9	324	—	—	e 10 55?	+35	e 14·9	—

Toyooka gives also SZ = +2m.38s.
Long waves were also recorded at Hong Kong, Sverdlovsk, and Tashkent.

July 9d. 5h. 14m. 35s. Epicentre 36°·0N. 139°·9E.
(as on 1937 Feb. 12d. and very near position given by Tokyo).

$A = -\cdot6203$, $B = +\cdot5223$, $C = +\cdot5852$; $\delta = +3$; $h = 0$;
$D = +\cdot644$, $E = +\cdot765$; $G = -\cdot448$, $H = +\cdot377$, $K = -\cdot811$.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Tokyo Cen. Met. Ob.	0·3	201	0 13$_a$	+ 2	0 21	+ 3	0·4
Tokyo I.U.	0·3	201	0 13	+ 2	0 21	+ 3	—
Tukubasan	0·3	37	0 10$_a$	− 1	0 16	− 2	—
Komaba	0·4	207	0 15$_a$	+ 2	0 22	+ 1	—
Mitaka	0·5	220	0 14	0	0 22	− 1	—
Kamakura	0·7	203	0 17	0	0 29	+ 1	—
Titibu	0·7	269	0 17	0	0 25	S*	—
Kiyosumi	0·9	165	0 17$_a$	− 3	0 36	+ 2	—
Koyama	1·0	229	0 17	− 4	0 31	S_g	—
Nagoya	2·5	251	0 42	− 1	1 18	S*	1·7
Mizusawa	3·3	17	0 52	− 1	1 28	− 7	—
Kobe E.	4·1	253	1 16	P*	e 2 6	S*	2·5
Sumoto	4·4	254	e 1 41	?	2 19	S*	2·4

Additional readings :—
Kobe eE = +1m.47s.
Sumoto SN = +2m.22s., eZ = +2m.26s.

July 9d. 17h. 27m. 36s. Epicentre 12°·0S. 70°·5W.

$A = +\cdot3266$, $B = -\cdot9223$, $C = -\cdot2066$; $\delta = -1$; $h = +6$;
$D = -\cdot942$, $E = -\cdot334$; $G = -\cdot069$, $H = +\cdot195$, $K = -\cdot978$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Huancayo	4·7	269	i 1 20	P*	(i 2 7)	− 3	i 2·1	—
La Paz	5·0	155	i 1 5	−13	2 15	− 3	2·8	3·4
Santiago	21·3	180	—	—	7 34	−69	—	—
Balboa Heights	22·7	338	e 5 22	+18	—	—	—	—
La Plata	25·5	155	5 2	−30	9 0	−57	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Rio de Janeiro	E.	28·1	115	e 6 24	+29	—	—	—	—
San Juan		30·5	9	i 6 24	+ 7	—	—	e 9·0	—
Florissant		53·8	341	e 9 28	+ 2	e 18 57	?	—	—
Weston		54·1	0	i 9 31a	+ 2	i 17 3	− 2	—	—
Oak Ridge		54·2	0	i 9 32	+ 3	—	—	—	—
Ottawa		57·3	356	—	—	e 17 46	− 1	e 24·4	—
Tucson		58·5	321	i 9 59	− 1	—	—	e 27·9	—
Seven Falls		58·9	0	—	—	i 18 5	− 3	e 24·4	—
La Jolla		63·1	317	i 10 29	− 3	—	—	—	—
Riverside		63·9	318	i 10 35	− 2	—	—	—	—
Mount Wilson		64·4	318	i 10 38	− 2	—	—	—	—
Pasadena		64·5	318	i 10 38k	− 3	e 19 15	− 4	—	—
Santa Barbara		65·7	317	i 10 46	− 2	—	—	—	—
Lick		68·6	319	e 11 4	− 3	—	—	—	—
Kew		87·4	37	—	—	e 22 24?	[−52]	—	—
Paris		88·0	40	10 24?	?	—	—	—	—
Scoresby Sund		88·7	14	e 14 3	+66	23 35	− 8	—	—
Uccle		89·9	38	—	—	e 23 9	[−24]	—	—
De Bilt		90·8	37	e 16 47	PP	e 25 0	?	—	—
Strasbourg		91·3	40	25 5	PS	—	—	e 26·4	—
Stuttgart		92·2	40	e 16 42	PP	e 25 18	?	42·4	—
Copenhagen		95·9	34	17 27	PP	24 36	−10	—	—
Bucharest		103·0	47	—	—	27 24?	PS	—	—
Pulkovo		105·7	31	—	—	e 24 26	[−28]	—	—
Moscow		110·0	35	e 19 5	PP	e 28 4	PS	—	32·2
Tiflis		116·7	49	e 19 52	PP	e 25 15	[−23]	e 63·4	—
Sverdlovsk		121·8	28	e 20 30	PP	e 25 32	[−24]	54·4	—
Tashkent		134·3	43	e 22 19	PP	—	—	e 34·1	40·1

Additional readings :—
Huancayo i = +1m.23s., +2m.9s., and +2m.39s.
San Juan e = +7m.30s. and +7m.46s.
Florissant eZ = +10m.30s., eE = +16m.49s., iEN = +16m.58s.
Weston iPP = +11m.42s., eE = +23m.12s.
Ottawa eE = +19m.24s.
Tucson i = +10m.9s. and +10m.18s., S = +11m.7s., i = +11m.10s., +13m.1s., and +21m.16s.
Mount Wilson iZ = +11m.25s. and +11m.47s.
Pasadena iZ = +11m.6s., eZ = +11m.24s., iE = +20m.16s.
Scoresby Sund +23m.8s.
Strasbourg eZ = +26m.3s.
Stuttgart e = +26m.6s.
Copenhagen +18m.28s., eE = +23m.44s. and +25m.54s.
Pulkovo e = +28m.8s.
Moscow e = +20m.11s., e = +28m.48s., e = +30m.27s.
Tiflis eE = +21m.1s., ePSE = +29m.54s., ePPSEZ = +30m.42s., eSSE = +36m.3s.
Sverdlovsk e = +27m.8s., e = +33m.2s.
Tashkent e = +22m.40s.
Long waves were also recorded at Baku.

July 9d. Readings also at 1h. (Oxford, Kew, Stonyhurst, and Wellington), 4h. (San Juan), 5h. (Samarkand and near Andijan), 6h. (Nagoya, near Mizusawa, and near Manila), 11h. (near Hukuoka B), 12h. (Tucson), 13h. (Grozny, Tiflis, Irkutsk, Sverdlovsk, Kobe, Mizusawa, Mount Wilson, Pasadena, Riverside, Pennsylvania, and Weston), 14h. (Baku), 15h. (La Paz, La Plata, near Santiago (2), and near San Javier (2)), 16h. (Huancayo, Rio de Janeiro, Mount Wilson, Pasadena, Riverside, Paris, Stuttgart, Samarkand, near Santiago, and San Javier), 17h. (Baku, Tashkent, Sverdlovsk, San Javier, near Santiago (2), and near Andijan), 18h. (Tiflis and near Wellington), 21h. (Sverdlovsk, Tashkent, Tiflis, Manila, San Juan, Weston, and near Nagoya), 22h. (La Paz).

July 10d. 20h. 43m. 23s. Epicentre 1°·2N. 121°·8E.

Felt Scale II at Menado (Celebes). Strasbourg gives epicentre 1°·0N. 124°·3E. J. de Boer: "Aardbevingen in der Oost Indischen Archipel waargenomen gedurende het jaar, 1937. Natuurkundig Tijdschrift voor Nederlansch-Indie," Afl. 3, Deel XCIX, 1939, pp. 101-131.

$A = -·5268$, $B = +·8497$, $C = +·0208$; $\delta = -6$; $h = +7$;
$D = +·850$, $E = +·527$; $G = -·011$, $H = +·018$, $K = -1·000$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina		8·0	127	1 19	−41	2 41	−52	—	—
Manila		13·3	357	i 3 9k	− 4	5 53	+11	7·4	—
Batavia		16·6	244	4 0	+ 4	i 7 30	+30	—	—
Kosyun		20·7	358	4 49	+ 5	8 33	+ 2	13·0	—
Taito		21·4	359	5 52	+61	—	—	—	—
Hong Kong		22·3	342	4 57	− 4	9 1	− 1	11·4	14·7
Medan		23·2	277	5 14	+ 5	9 31	+13	—	—
Phu-Lien		24·5	324	e 5 26	+ 4	9 48	+ 8	—	—
Zi-ka-wei		29·8	0	e 6 13	+ 2	11 9	+ 2	i 16·6	21·3
Perth		33·5	189	e 10 37	?	16 23	?	22·0	22·3
Siomisaki		34·7	21	5 55	−59	—	—	—	—
Kobe	E.	35·6	19	e 7 5	+ 4	e 11 45	−53	—	17·6
Osaka B		35·6	19	7 0	− 1	—	—	—	—
Nagoya		36·6	22	e 6 46	−24	—	—	—	—
Oiwake		38·2	23	7 21	− 2	—	—	—	—
Tokyo		38·2	24	7 21	− 2	—	—	—	—
Nagano		38·4	21	7 33	+ 8	—	—	—	—
Calcutta	N.	38·8	306	e 8 48	PP	13 55	+29	—	24·5
Adelaide		39·2	158	i 10 18	?	i 16 50	SSS	—	25·4
Colombo		42·2	279	14 27	PS	—	—	—	27·7
Melbourne		44·4	153	—	—	e 14 34	−15	27·7	29·5
Kodaikanal	E.	45·0	286	—	—	e 15 7	+ 9	—	—
Agra	E.	49·3	306	e 8 48	− 5	i 15 54	− 5	—	—
Irkutsk		53·0	347	e 9 28	+ 7	16 58	+ 8	26·6	—
Frunse		59·1	321	e 10 8	+ 4	—	—	—	—
Andijan		59·5	318	e 10 12	+ 5	—	—	—	—
Tashkent		61·8	318	i 10 19	− 4	i 18 46	0	e 29·6	44·6
Sverdlovsk		73·6	330	i 11 33	− 4	i 21 2	− 5	35·6	52·5
Baku		75·5	312	e 11 56	+ 8	e 21 32	+ 4	37·6	51·5
Grozny		79·0	314	e 12 9	+ 2	e 22 4	− 2	—	—
Tiflis		79·4	312	e 12 8	− 1	22 13	+ 3	e 49·6	56·2
Piatigorsk		81·1	315	e 12 19	+ 1	e 22 19	− 9	—	—
Moscow		85·7	326	e 12 39	− 3	e 23 5	− 9	42·1	53·9
Ksara		85·9	303	e 12 42	− 1	e 23 51	+35	—	—
Theodosia		86·6	315	12 44	− 2	—	—	e 40·6	—
Yalta		87·5	314	e 12 51	0	23 27	− 4	e 46·6	—
Helwan		89·8	299	e 11 37	−85	i 23 55	+ 2	—	56·1
Pulkovo		89·8	329	12 56	− 6	23 42	−11	42·6	55·6
Bucharest		93·2	314	16 37?	PP	e 23 51	[0]	e 63·6	—
Copenhagen		99·8	327	17 53	PP	24 19	[− 7]	49·6	—
Cheb		101·4	322	e 18 37?	PP	e 24 37?	[+ 3]	e 58·6	65·0
Hamburg	N.	101·8	326	—	—	e 24 13	[−23]	e 50·6	—
Stuttgart		103·8	321	e 18 25	PP	e 27 7	PS	e 54·6	—
Scoresby Sund		104·6	349	—	—	24 37?	[−11]	52·6	—
Strasbourg		104·8	321	e 18 36	PP	e 33 10	SS	e 55·6	67·1
De Bilt		105·1	326	e 18 37	PP	e 24 47	[− 4]	e 53·6	69·9
Ucclе		106·0	325	e 18 46	PP	e 24 37?	[−18]	51·6	—
Aberdeen		106·6	332	—	—	e 24 50	[− 8]	—	69·4
Edinburgh		107·8	331	e 22 37?	?	—	—	e 59·6	—
Paris		107·9	322	e 19 0	PP	—	—	57·6	71·6
Kew		108·4	326	e 18 59	PP	—	—	e 51·6	—
Oxford		108·8	326	e 19 1	PP	e 30 13	PS	e 51·6	66·2
Bidston		109·0	329	—	—	i 29 17	PPS	—	—
Jersey		110·5	325	e 17 51	?	—	—	e 68·6	—
San Juan		159·0	21	e 17 37?	?	—	—	—	—
La Paz		161·9	148	i 20 4k	[+ 1]	—	—	80·6	—

For Notes see next page.

Additional readings :—
Batavia iE = +9m.1s. and +10m.53s., iN = +11m.6s.
Hong Kong PP = +5m.14s.
Perth PP = +15m.7s., SS = +19m.17s.
Calcutta SSN = +16m.33s., SSSN = +17m.58s.
Melbourne i = +15m.54s. and +20m.44s.
Agra SS? = +19m.44s.
Andijan e = +10m.54s.
Tiflis ePE = +12m.10s., eE = +22m.51s.
Ksara ePP = +16m.21s., ePS = +24m.53s.
Pulkovo (PP) = +16m.56s., SKS = +23m.20s., S_eS = +24m.0s., e = +25m.12s., SS = +29m.55s.
Copenhagen PS = +26m.43s., SS = +32m.37s.
Cheb e = +28m.49s.
Strasbourg ePS = +27m.40s.
Stuttgart eSS = +33m.25s., e = +36m.37s.
De Bilt eN = +26m.5s.
Uccle e = +33m.49s. and +37m.54s.
Jersey e = +50m.37s.?
Palau △ = 14°·1, P = 20h.43m.13s.
Long waves were also recorded at Rathfarnham Castle, Stonyhurst, Prague, Bergen, and Wellington.

July 10d. Readings also at 2h. (Almata and near Andijan), 4h. (Tiflis), 10h. (Strasbourg and Cheb), 11h. (Strasbourg), 12h. (near Santiago), 13h. (Helwan, Tiflis, and near Granada), 14h. (Huancayo), 17h. (San Juan, Port au Prince, Oak Ridge, and Mizusawa), 18h. (Strasbourg and near Sumoto), 19h. (Grozny and Tiflis), 22h. (Zurich and near Chur), 23h. (Mizusawa).

July 11d. 13h. 39m. 27s. Epicentre 32°·0N. 141°·5E.

A = −·6649, B = +·5289, C = +·5273; δ = −13; h = +1;
D = +·623, E = +·783; G = −·413, H = +·328, K = −·850.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		4·9	311	i 1 18a	+ 1	2 18	+ 3	—	3·5
Kobe	E.	5·9	298	1 34	+ 3	e 2 47	+ 7	—	3·9
	Z.	5·9	298	e 1 30	− 1	e 2 45	+ 5	—	3·8
Sumoto		6·0	296	i 1 33a	+ 1	2 51	+ 8	—	3·9
Toyooka		6·6	305	1 43	+ 2	3 2	+ 4	—	4·6
Mizusawa	E.	7·1	358	1 45	− 3	2 52	−18	—	—
Hukuoka B		9·5	283	e 2 28	+ 8	e 4 22	+12	e 6·2	—
Husan		10·9	290	2 41	+ 1	—	—	6·0	—
Taikyu		11·4	294	i 2 57	+10	e 6 39	?	—	—
Zinsen	E.	13·4	298	e 3 14	0	—	—	e 7·4	—
Vladivostok		13·5	329	e 2 54	−21	e 5 44	− 3	e 6·5	7·6
Heizyo		14·6	304	i 3 32	+ 2	6 55	SSS	8·3	9·6
Zi-ka-wei		17·1	273	i 4 5k	+ 3	8 9	SSS	—	13·9
Manila		25·5	232	e 5 24	− 8	10 46	SS	—	—
Hong Kong		26·1	255	5 43	+ 6	10 19	+12	13·3	16·0
Phu-Lien		33·0	259	e 8 12	PPP	e 11 59	+ 2	—	—
Irkutsk		33·7	318	6 57	+12	e 12 17	+ 9	18·5	21·4
Frunse		53·0	302	e 9 25	+ 4	—	—	—	—
College		53·4	30	—	—	16 46	− 9	e 25·2	—
Honolulu		54·7	85	—	—	e 17 17	+ 4	e 22·8	—
Agra	E.	54·7	283	9 28	− 5	17 4	− 9	—	35·5
Andijan		55·1	300	9 37	+ 1	17 17	− 1	33·6	—
Tchimkent		56·7	303	e 9 46	− 2	—	—	—	—
Tashkent		57·2	302	e 9 40	−11	i 17 38	− 8	e 27·5	37·5
Sverdlovsk		59·0	321	i 10 1	− 3	18 2	− 8	26·6	38·3
Samarkand		59·3	300	e 9 56	−10	e 18 9	− 5	—	—
Sitka		60·2	39	e 10 12	0	e 18 11	−14	e 25·2	—
Bombay	E.	62·5	276	e 10 28	0	e 19 26	+32	—	39·5
Baku		71·2	307	e 11 26	+ 3	i 20 41	+ 1	34·9	40·7
Moscow		71·4	325	i 11 22	− 2	20 33	− 9	38·0	38·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Grozny		72·6	310	e 11 34	+ 3	e 20 52	− 4	e 30·6	—
Pulkovo		72·6	330	11 30	− 1	e 20 48	− 8	36·6	41·8
Piatigorsk		74·0	312	e 11 39	0	e 21 9	− 2	e 42·6	—
Tiflis		74·0	309	11 39	0	e 21 9	− 2	e 38·1	47·1
Berkeley		75·6	54	—	—	e 21 17	−12	—	—
Scoresby Sund		77·1	355	11 56	− 1	21 44	− 2	38·6	—
Upsala		77·5	335	e 16 47	PPP	i 21 42	− 8	—	52·8
Theodosia		78·2	316	12 4	+ 1	21 55	− 2	e 48·6	—
Tinemaha		78·7	54	i 12 17	+11	—	—	—	—
Simferopol		79·0	317	12 8	+ 1	22 1	− 5	—	—
Yalta		79·2	316	12 10	+ 2	22 5	− 3	e 47·6	—
Pasadena		80·3	55	i 12 15	+ 1	—	—	e 34·2	—
Mount Wilson	z.	80·4	55	i 12 15	0	—	—	—	—
Riverside	z.	81·0	55	i 12 13	− 5	—	—	—	—
Copenhagen		82·4	334	12 24	− 1	22 37	− 4	44·6	—
Bucharest		83·9	319	e 12 34	+ 1	22 53	− 3	—	47·8
Ksara		84·2	306	i 12 35a	+ 1	e 22 59	0	—	—
Hamburg		85·0	334	e 12 50	+12	e 22 53	−14	e 44·6	54·6
Aberdeen		85·4	341	—	—	e 23 15	+ 4	e 48·3	—
Budapest		85·5	325	e 12 43	+ 2	e 23 19	+ 7	e 53·6	54·1
Stara Dala		85·7	326	e 12 48	+ 6	e 23 13	− 1	e 46·6	54·6
Prague		85·8	329	—	—	23 9	− 6	e 45·6	54·1
Tucson		86·5	54	e 12 45	− 1	—	—	e 41·9	—
Edinburgh		87·4	341	e 17 33?	?	e 23 23	− 7	e 46·6	—
De Bilt		87·9	335	e 12 52	− 1	e 23 18	[− 2]	e 43·6	53·5
Zagreb		88·2	325	e 12 55	+ 1	e 23 17	[− 4]	e 46·6	—
Stonyhurst		89·0	340	—	—	e 23 23	[− 4]	47·6	—
Stuttgart		89·0	331	e 12 57	− 1	e 23 23	[− 4]	e 47·6	56·2
Uccle		89·3	335	e 13 9	+10	23 25	[− 3]	e 45·6	—
Triest		89·4	326	—	—	i 23 23	[− 6]	e 48·4	51·9
Bidston		89·6	340	—	—	e 23 28	[− 2]	46·6	—
Helwan		89·6	305	e 13 0	− 1	23 25	[− 5]	—	—
Strasbourg		89·8	331	e 12 56	− 6	e 23 36	[+ 4]	—	—
Kew		90·4	337	e 13 4	0	e 23 28	[− 7]	e 46·6	—
Oxford		90·4	338	—	—	e 23 28	[− 7]	e 41·6	61·4
Zurich		90·4	330	e 14 1	+57	—	—	—	—
Rathfarnham Castle		90·6	341	e 13 5	0	—	—	50·5	—
Paris		91·6	334	e 13 11	+ 1	e 23 40	[− 2]	49·6	59·6
Jersey		92·9	337	e 12 41	−35	—	—	e 46·6	—
La Paz	z.	149·0	66	19 56	[+10]	—	—	75·6	96·8

Additional readings :—
Toyooka eE? = +44s., PE = +1m.46s., SZ = +3m.8s.
Mizusawa ePN = +1m.41s.
Vladivostok PPP = +3m.14s., e = +4m.16s.
Zi-ka-wei iZ = +4m.11s., PP = +4m.31s., iZ = +5m.53s. and +9m.31s.
College e = +15m.39s.
Agra PPE = +11m.32s., SS = +21m.5s.
Bombay eE = +20m.18s.?, +23m.32s., and +26m.28s.
Tiflis eE = +16m.12s., eSKSE = +21m.43s.
Scoresby Sund +14m.22s.
Ksara i = +12m.51s., ePP = +15m.49s., ePS = +23m.47s.
Budapest e? = +18m.23s., eSKSE = +23m.6s., eSKKSN = +23m.10s., eSeSE = +23m.34s.
Tucson e = +13m.54s., i = +14m.52s., e = +39m.52s.
Stonyhurst i = +23m.42s., e = +23m.53s.
Stuttgart ePPZ = +16m.27s.
Triest i = +22m.43s.
Bidston ePS = +24m.57s.
Helwan PP = +16m.41s., e = +24m.50s.
Strasbourg ePPZ = +16m.30s.
Kew ePPZ = +16m.35s., eS = +23m.54s., ePS = +25m.5s.
Rathfarnham Castle e = +18m.6s.
Jersey ePP = +16m.14s., ePS = +24m.15s.
La Paz iPKPZ = +20m.0s.
Long waves were also recorded at Wellington, Cheb, Göttingen, San Fernando, Philadelphia, Oak Ridge, Huancayo, Ivigtut, Toledo, and Malaga.

July 11d. 17h. 19m. 25s. Epicentre 20°·4N. 108°·8W.

A = −·3023, B = −·8880, C = +·3465; δ = −1; h = +5;
D = −·947, E = +·322; G = −·112, H = −·328, K = −·938.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mazatlan	N.	3·5	38	0 55?	− 2	—	—	—	—
Manzanillo	N.	4·4	105	1 10	0	—	—	—	—
Guadalajara	E.	5·1	87	1 18	− 2	—	—	—	—
Tacubaya	N.	9·1	95	2 16	+ 2	—	—	—	—
Tucson		11·9	352	i 2 55	+ 1	e 5 15	+ 6	6·0	—
Vera Cruz	E.	12·0	95	5 55	SS	—	—	—	—
Riverside		15·5	333	i 3 40	− 2	—	—	—	—
Mount Wilson		16·0	331	i 3 51a	+ 3	—	—	—	—
Pasadena		16·0	331	i 3 51a	+ 3	i 7 10	SS	—	—
Tinemaha		18·6	337	i 4 33	+12	e 8 7	SS	—	—
Fresno	N.	18·9	333	e 4 5	−19	—	—	—	—
Denver		19·5	10	e 4 31	0	e 8 8	+ 2	e 10·6	12·3
Lick		20·2	330	e 4 42	+ 3	e 8 52	SS	—	—
Branner	E.	20·6	329	e 4 47	+ 4	e 8 49	SS	—	—
	N.	20·6	329	e 4 49	+ 6	e 8 54	SS	—	—
Berkeley		21·0	330	e 4 49	+ 2	i 8 39	+ 2	—	—
San Francisco		21·0	330	e 4 59	+12	e 9 6	SS	—	—
Ukiah		22·4	330	e 5 7	+ 5	e 9 17	+13	—	—
St. Louis		24·2	38	e 5 17	− 2	e 9 33	− 2	e 12·4	e 15·1
Florissant		24·3	38	i 5 17	− 3	i 9 35	− 2	e 11·0	e 12·5
Bozeman		25·3	357	e 5 0	−30	e 9 42	−12	e 12·8	—
Butte		25·7	356	e 5 23	−10	e 9 17	−44	e 13·9	—
Chicago		27·9	34	c 10 18	?	e 10 53	+16	e 13·5	—
Columbia		28·1	54	e 5 30	−25	e 10 44	+ 4	e 12·9	—
Seattle		29·3	342	—	—	e 11 7	+ 8	e 15·0	—
Victoria		30·3	341	6 10	− 5	11 14	− 1	e 14·6	—
Georgetown		32·9	49	e 6 37	− 1	e 11 56	0	—	17·6
Toronto		33·8	40	—	—	12 3	− 7	e 17·1	—
Philadelphia		34·7	49	i 6 53	− 1	i 12 21	− 3	e 14·3	—
Ottawa		36·9	39	7 11	− 1	12 54	− 4	e 17·9	—
Vermont		38·0	42	e 7 22	+ 1	e 13 8	− 6	e 15·6	—
Oak Ridge		38·2	46	i 7 21	− 2	e 13 17	0	e 22·3	—
Weston		38·3	46	e 7 22a	− 2	i 13 17	− 2	e 17·6	—
San Juan		40·2	85	e 7 40	0	i 13 47	− 1	e 18·9	—
Seven Falls		40·7	40	—	—	13 52	− 3	20·6	—
Sitka		41·5	339	—	—	e 13 57	−10	e 20·8	—
East Machias		41·9	45	—	—	e 12 51	−82	e 19·6	—
Honolulu		45·7	280	—	—	e 19 5	SSS	—	—
Huancayo		46·1	131	e 8 59	+31	e 15 19	+ 5	e 19·1	—
College		51·3	340	—	—	e 16 24	− 2	e 22·1	—
La Paz		54·2	128	7 34	?	i 17 46	+40	26·6	31·6
Ivigtut		58·3	30	—	—	23 5	SSS	29·6	—
Scoresby Sund		69·9	20	—	—	20 23	− 1	32·6	—
Rathfarnham Castle		81·1	36	e 17 38	PPP	—	—	31·6	—
Aberdeen		81·7	32	—	—	e 22 10	−24	—	53·2
Edinburgh		81·7	33	—	—	e 20 45	?	e 42·6	—
Bidston		82·8	36	—	—	i 22 42	− 3	e 27·6	—
Stonyhurst		82·9	35	—	—	e 35 55	?	e 42·1	50·1
Oxford		84·5	36	—	—	i 23 0	− 2	e 34·1	41·5
Kew		85·2	37	e 12 39	0	i 23 10	+ 1	e 36·6	—
De Bilt		87·8	34	—	—	e 23 41	+ 7	e 37·6	53·5
Paris		88·0	38	e 14 35?	?	—	—	43·6	51·6
Uccle		88·1	36	e 13 43	+49	23 41	+ 4	e 38·6	—
Upsala		89·0	24	—	—	e 23 44	− 1	e 40·6	54·8
Hamburg		89·4	31	—	—	e 21 35?	?	e 42·6	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Copenhagen	89·5	28	—	—	23 50	0	46·6	—
Stuttgart	91·8	36	e 17 47	?	—	—	e 37·6	—
Cheb	92·7	33	—	—	e 30 35?	SS	—	57·6
Pulkovo	93·4	19	17 2	PP	23 57	[+ 5]	45·6	55·7
Moscow	99·0	18	e 21 57	?	e 26 33	PS	e 48·1	59·1
Irkutsk	102·1	340	e 17 35?	PP	e 25 35?	− 3	e 51·6	—
Sverdlovsk	102·6	6	18 12	PP	24 42	[+ 3]	48·6	64·7
Yalta	107·1	27	e 17 39	?	—	—	—	—
Grozny	112·4	20	e 18 54	[+16]	—	—	—	—
Tiflis	113·6	22	—	—	e 29 11	PS	52·6	68·5
Baku	116·4	18	e 31 4	PS	e 40 59	SSS	55·6	71·1
Ksara	116·4	34	e 18 35	[−11]	e 28 29	?	66·6	—
Tashkent	118·6	2	20 5	PP	36 35	SS	—	74·2

Additional readings :—
Tucson i = +2m.58s., +3m.3s., +3m.6s., +4m.4s., +5m.36s., and +5m.40s.
Pasadena ePPEN = +4m.42s., eLE = +6m.47s.
Denver eE = +4m.42s., ePPN = +4m.47s., eN = +5m.17s., +5m.46s., and +6m.51s., eSN = +8m.15s., eN = +8m.31s., eSSE = +9m.1s.
Lick eE = +8m.41s.
Berkeley iPN = +4m.55s., eSE = +8m.55s., eSN = +8m.58s.
Ukiah eP = +5m.13s., e = +9m.13s. and +9m.19s.
St. Louis i = +5m.34s., iPPN = +5m.46s., iPPP = +5m.59s., eSSE = +10m.44s.
Florissant iPPZ = +5m.40s., iPPZ = +6m.9s., eZ = +9m.42s. and +10m.3s.
Bozeman eP = +5m.29s., e = +5m.40s., ePP = +5m.48s., S = +9m.57s., eS = +10m.19s.
Chicago e = +10m.29s., +10m.31s., and +10m.33s., eS = +11m.11s.
Columbia e = +5m.52s. and +10m.35s.
Seattle e = +11m.11s.
Georgetown e = +13m.13s., eSS = +13m.17s.
Toronto eN = +13m.47s.
Philadelphia i = +12m.18s., e = +13m.7s.
Ottawa SS = +15m.11s.
Vermont e = +13m.6s.
Oak Ridge eSSN = +15m.53s., eN = +20m.1s., eE = +20m.35s.
Weston ePPN = +8m.41s., eP_cPN = +9m.16s., eSSN = +15m.40s.
San Juan e = +8m.16s. and +9m.11s., i = +9m.12s., iPP = +9m.50s., e = +9m.56s.
Seven Falls i = +16m.49s.
Sitka S = +14m.15s., eS_cS = +17m.51s.
East Machias e = +15m.16s. and +17m.2s., eSS = +17m.27s.
Huancayo e = +15m.11s., eSS = +18m.49s.
Scoresby Sund +24m.46s. and +27m.59s.
Upsala eN = +23m.49s.
Pulkovo PS = +25m.38s., SS = +30m.35s.
Moscow e = +32m.0s.
Irkutsk e = +28m.35s.?
Sverdlovsk PS = +27m.12s., SS = +32m.47s.
Baku e = +50m.5s.
Tashkent iPS = +29m.54s., PPS = +31m.11s., SSS = +41m.35s.
Long waves were also recorded at Prague, Ferndale, Strasbourg, Bombay, Triest, San Fernando, Vladivostok, Hong Kong, Toledo, Granada, Bergen, Malaga, Christchurch, and Bucharest.

July 11d. Readings also at 0h. (Huancayo, La Paz, and near Wellington), 2h. (San Javier (2) and near Santiago (2)), 3h. (Sitka), 4h. (Grozny, Frunse, Samarkand, Tashkent, and near Andijan), 5h. (Amboina), 6h. (near Tananarive), 13h. (Amboina, Batavia, near Nagoya, and near Santiago), 14h. (Mount Wilson, Pasadena, and near Nagoya), 15h. (Ksara, Tiflis, near Nagoya, and near Manila (2)), 17h. (near Amboina and near La Paz), 19h. (Tiflis, Nagoya, near Mizusawa, and near Amboina), 21h. (Basle and Zurich), 22h. (Alicante and Tiflis), 23h. (Sitka).

July 12d. 0h. 2m. 31s. Epicentre 5°·6N. 95°·7E.

$A = -\cdot0989$, $B = +\cdot9904$, $C = +\cdot0969$; $\delta = +6$; $h = +7$;
$D = +\cdot995$, $E = +\cdot099$; $G = -\cdot010$, $H = +\cdot096$, $K = -\cdot995$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Medan		3·6	123	0 53	− 5	—	—	—	—
Colombo		15·8	275	i 3 45	0	—	—	—	11·5
Batavia		16·1	136	3 56	+ 7	—	—	i 8·6	—
Phu-Lien		18·5	34	e 3 4	−75	e 7 48	+ 4	9·5	—
Kodaikanal		18·6	289	i 4 22	+ 1	i 8 9	+23	9·8	11·9
Hyderabad		20·6	308	e 4 46	+ 3	8 32	+ 3	9·4	13·2
Hong Kong		24·4	45	5 19	− 2	9 45	+ 6	12·0	14·9
Bombay	E.	25·9	304	e 5 29	− 6	e 10 9	+ 5	—	17·5
Manila		26·4	68	e 5 42	+ 2	e 10 19	+ 7	—	—
Agra	E.	27·2	326	e 5 50	+ 3	10 22	− 3	13·1	17·8
Andijan		40·8	333	e 7 46	+ 1	e 14 6	+10	25·5	—
Husan		42·5	42	e 14 37	S	(e 14 37)	+15	e 22·0	—
Samarkand		42·7	327	e 7 52	− 8	—	—	—	—
Tashkent		42·7	331	i 7 57	− 3	i 14 20	− 4	17·5	26·7
Perth		42·9	154	17 29?	SS	—	—	—	—
Kobe	E.	46·5	47	—	—	e 15 20	+ 1	—	28·0
Irkutsk		47·1	8	e 8 51	+16	e 15 39	+11	25·5	—
Vladivostok		49·1	36	—	—	e 17 6	+70	25·2	31·5
Baku		53·7	318	e 9 7	−19	e 17 2	+ 3	26·5	35·4
Grozny		57·7	320	e 9 56	+ 1	e 17 49	− 4	e 32·5	—
Tiflis		57·7	317	e 9 53	− 2	e 17 51	− 2	e 29·5	38·9
Sverdlovsk		58·1	340	10 1	+ 3	17 56	− 2	34·5	35·4
Ksara		61·9	306	e 10 13	−11	e 18 49	+ 2	—	40·5
Helwan		65·0	301	e 8 59	?	e 19 21	− 5	—	40·6
Theodosia		65·3	318	e 10 44	− 2	19 23	− 6	—	—
Yalta		66·0	318	10 47	− 3	e 20 37	+59	—	—
Moscow		67·8	330	e 11 3	+ 1	19 52	− 8	36·0	46·0
Pulkovo		72·9	332	e 11 34	+ 1	e 20 52	− 7	36·5	39·8
Copenhagen		81·6	327	—	—	22 30	− 3	33·5	—
Stuttgart		83·5	319·	—	—	e 22 48	− 4	e 45·5	—
De Bilt		86·0	323	—	—	e 23 14	− 3	e 41·5	52·8
Uccle		86·6	321	—	—	e 23 12	[+ 1]	e 42·5	—
Paris		87·9	319	e 15 29?	P	—	—	e 50·5	—
Kew		89·4	322	—	—	e 23 40?	− 9	e 46·5	—
Edinburgh		90·4	327	—	—	e 23 29?	[− 6]	e 53·5	—
Bidston		90·8	324	—	—	e 32 36	?	e 44·5	—
Scoresby Sund		93·7	343	—	—	31 11	?	45·5	—

Additional readings :—
Medan iP = +1m.3s.
Batavia PZ = +3m.59s.
Kodaikanal SS?E = +8m.54s.
Bombay eE = +6m.5s.
Agra SSE = +11m.30s.
Kobe eSE = +19m.17s.
Vladivostok e = +21m.51s.
Baku e = +10m.47s.
Tiflis ePPZ = +12m.7s.
Sverdlovsk L_q = +27·4m.
Ksara e = +12m.39s.
Helwan e = +11m.41s.
Kew eN = +32m.40s.
Long waves were also recorded at Zinsen, Bergen, Cape Town, Upsala, Toyooka, Triest, Aberdeen, Hamburg, Stonyhurst, La Paz, and Strasbourg.

July 12d. 12h. 14m. 37s. Epicentre 39°·5N. 23°·0E.

Felt in the Isle of Lemnos. Epicentre 39°·5N. 23°·0E. See Annales de l'Institut de Physique du Globe de Strasbourg, Tome II, Le Partie, Sismalogie, 1937, p. 32, Mende 1940.

$A = +·7122$, $B = +·3023$, $C = +·6335$; $\delta = -6$; $h = -1$;
$D = +·391$, $E = -·921$; $G = +·583$, $H = +·248$, $K = -·774$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Athens	1·6	160	0 42	+12	1 7	S_g	—	—
Sofia	3·2	4	e 0 53	+ 1	i 1 40	+ 8	—	1·9
Bucharest	5·4	24	e 1 23	− 1	2 46	S*	—	—
Belgrade	5·7	342	e 1 54k	P_g	e 3 6	S_g	—	3·5
Zagreb	8·2	323	e 2 22	P*	e 4 47	S_g	—	5·1
Budapest	8·4	343	—	—	e 3 43	0	e 4·7	—
Triest	9·2	315	e 2 47	P_g	5 10	S_g	—	—
Yalta	9·7	56	e 2 14	− 8	e 3 39	−36	—	—
Theodosia	10·7	55	e 2 48	+10	—	—	—	—
Ksara	11·8	114	e 3 23	PPP	e 5 44	SSS	—	9·4
Prague	12·2	333	—	—	e 4 53	−23	—	7·4
Zurich	13·1	312	e 3 40	PPP	—	—	—	—
Tiflis	16·7	75	e 3 51	− 6	e 6 55	− 8	e 9·1	12·7
Moscow	18·9	27	e 4 15	− 9	e 7 39	−14	e 10·6	11·6
Kew	20·1	315	—	—	e 8 29	+10	11·4	—
Oxford	20·8	314	—	—	e 8 55	SS	e 11·3	12·4
Pulkovo	20·8	10	e 4 45	0	e 8 27	− 6	11·4	12·4
Edinburgh	23·9	322	—	—	e 10 3	+33	—	—
Aberdeen	24·1	324	—	—	e 8 10	?	—	—
Rathfarnham Castle	24·2	315	—	—	e 8 31	−64	14·1	—
Sverdlovsk	30·0	42	—	—	e 11 7	− 3	18·0	19·4

Additional readings :—
Sofia $eP_g = +1m.1s.$, $i = +1m.32s.$, $SS = +1m.44s.$
Bucharest $e = +1m.35s.$, $i = +1m.45s.$, $+1m.54s.$, $+2m.19s.$, and $+2m.39s.$
Belgrade $PP = +2m.9s.$
Zagreb $e = +2m.55s.$
Triest $i = +3m.30s.$, $iSS = +5m.33s.$, $i = +5m.51s.$, and $+6m.10s.$
Yalta $e = +7m.4s.$
Kew $e = +8m.42s.$
Edinburgh $e = +13m.41s.$
Rathfarnham Castle $e = +13m.28s.$
Sverdlovsk $e = +10m.0s.$, $L_q = +15·4m.$
Long waves were also recorded at Baku, Bergen, Bidston, Paris, Uccle, De Bilt, Stuttgart, Copenhagen, Irkutsk, Tashkent, Jersey, Basle, Cheb, Strasbourg, Padova, and Hamburg.

July 12d. Readings also at 2h. (Amboina), 4h. (near Medan), 7h. (Hong Kong and Manila), 8h. (Tiflis and near Amboina (3)), 9h. (Andijan and near Samarkand), 13h. (near Irkutsk), 15h. (near Lick), 17h. (near Yalta), 19h. (Mount Wilson, Pasadena, Huancayo, and La Paz).

July 13d. 10h. 51m. 50s. Epicentre 39°·4S. 177°·2E.

$A = -·7739$, $B = +·0379$, $C = -·6322$; $\delta = +3$; $h = -1$;
$D = +·049$, $E = +·999$; $G = +·631$, $H = -·031$, $K = -·775$.

Scale VI in south of Hawke's Bay and at similar distances into the North Island. C. R. Hayes "Earthquakes in New Zealand," New Zealand Official Year Book, 1939. Dominion Observation, Wellington, N.Z. Bulletin No. 138, p. 7.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hastings	0·3	226	i 0 10?	− 1	—	—	—	0·2
Tuai	0·6	356	0 10?	P_g	0 20	S_g	—	0·4
Arapuni	1·8	317	—	—	i 1 0	S_g	—	—
New Plymouth	2·5	278	0 46	P*	1 16	+ 2	—	—
Wellington	2·6	225	0 48	+ 1	1 20	S*	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Christchurch		5·4	218	1 43	P_g	2 28	0	—	—
Riverview		21·6	276	e 7 34	?	—	—	—	14·6
Sydney		21·6	276	e 7 40	?	(9 13)	+24	9·2	11·5
Melbourne		25·2	263	e 7 46	?	i 9 55	+ 3	—	11·1
Perth		49·6	258	10 10?	PP	—	—	—	—

Additional readings :—
Tuai i = +15s.
New Plymouth i = +48s., +51s., +58s., +1m.22s., +1m.29s., +1m.52s., and +2m.3s.
Wellington i = +51s., +54s., +57s., +1m.8s., +1m.26s., +1m.33s., +1m.37s., +1m.42s., +1m.55s.?, and +2m.12s.
Christchurch i = +1m.57s., +2m.2s., +2m.5s., +2m.10s., +2m.14s., +2m.33s., +2m.39s., +2m.47s., +3m.1s., +3m.31s., and +3m.51s.
Long waves were also recorded at Bunnythorpe (Δ = 1°·5), Hong Kong, Irkutsk, Tashkent, and Sverdlovsk.

July 13d. Readings at 0h. (Amboina), 2h. (Manila), 3h. (Andijan, Tashkent, Baku, Hong Kong, Tiflis, Sverdlovsk, Moscow, Pulkovo, Bucharest, and Uccle), 4h. (Scoresby Sund), 5h. (Lick), 6h. (Bucharest), 7h. (near Santiago), 10h. (Manila and Bucharest), 11h. (Phu-Lien), 13h. (Tiflis), 16h. (La Paz), 17h. (Hong Kong, Phu-Lien, Irkutsk, and Tashkent), 20h. (near Batavia), 23h. (Zurich).

July 14d. 4h. 15m. 28s. Epicentre 18°·0N. 109°·0W. (as on 1937 June 2d.).

A = −·3098, B = −·8999, C = +·3071; δ = +11; h = +5;
D = −·946, E = +·326; G = −·100, H = −·290, K = −·952.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		14·3	354	e 3 15a	−11	5 41	−25	6·4	—
		14·3	354	e 3 19a	− 7	e 6 4	− 2	e 6·6	—
Riverside	Z.	17·6	337	e 4 7	− 1	—	—	—	—
Pasadena		18·0	337	e 4 15	+ 2	—	—	e 8·2	—
Mount Wilson	Z.	18·1	337	i 4 14	0	—	—	—	—
Santa Barbara	Z.	19·0	334	i 4 31	+ 5	—	—	—	—
Tinemaha		20·7	340	i 4 44	0	—	—	—	—
Berkeley		23·0	334	e 5 18	+11	i 9 18	+ 4	e 10·8	—
St. Louis		26·1	35	i 5 40	+ 3	e 9 55	−12	—	—
Florissant		26·3	35	e 5 39	0	e 10 0	−11	e 13·0	13·2
Philadelphia		36·5	47	—	—	e 15 32	?	e 18·4	—

Additional readings :—
Tucson eP = +3m.19s., i = +3m.22s., +3m.31s., +3m.37s., and +3m.43s., e = +4m.50s., eS = +6m.4s.
Pasadena eZ = +4m.46s.
Berkeley eZ = +6m.25s.
St. Louis ipP = +5m.43s., iPPN = +6m.3s.
Florissant eE = +5m.42s., eZ = +5m.46s., eE = +6m.19s., eZ = +6m.28s. and +6m.47s., eE = +7m.57s., eZ = +10m.2s.
Philadelphia e = +15m.40s.
Long waves were also recorded at Scoresby Sund.

July 14d. 4h. 54m. 5s. Epicentre 36°·3N. 71°·0E.

A = +·2630, B = +·7638, C = +·5894; δ = −5; h = 0;
D = +·946, E = −·326; G = +·192, H = +·557, K = −·808.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Samarkand		4·6	319	e 1 4	− 8	e 1 34	P_g	—	—
Andijan		4·6	14	e 1 15	+ 3	2 10	+ 3	—	2·7
Tashkent		5·2	347	i 1 21	0	i 1 49	P_g	e 2·4	—
Tchimkent		6·1	351	—	—	e 2 42	− 3	—	—
Almata		8·3	32	e 1 44	−20	—	—	—	—
Grozny		20·6	299	e 4 45	+ 2	e 8 32	+ 3	—	—
Tiflis	E.	21·0	295	e 4 47	0	e 8 55	+18	—	—
Sverdlovsk		21·7	345	4 54	− 1	8 53	+ 2	14·9	—
Piatigorsk		22·6	300	e 5 3	0	e 9 8	+ 1	—	—

Additional readings :—
Tashkent i = +1m.55s.
Tiflis eE = +5m.21s.

July 14d. 22h. 28m. 10s. Epicentre 32°·0N. 141°·5E. (as on 11d.).

A = −·6649, B = +·5289, C = +·5273; $\delta = -13$; $h = +1$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		4·9	311	1 17	0	2 13	− 2	—	3·6
Kobe		5·9	298	e 1 31	0	e 2 44	+ 4	—	3·8
Sumoto		6·0	296	e 1 33a	+ 1	e 3 13	S_g	—	4·1
Toyooka		6·6	305	1 46	+ 5	3 5	+ 7	—	4·0
Mizusawa		7·1	358	1 43	− 5	2 51	−19	—	—
Hukuoka		9·5	283	e 1 45	−35	e 4 56	S*	—	—
Hukuoka B		9·5	283	e 2 23	+ 3	4 14	+ 4	—	—
Husan		10·9	290	(e 2 44)	+ 4	2 44	P	6·0	—
Taikyu		11·4	294	e 2 47	0	e 5 30	+34	6·6	—
Keizyo		13·2	299	e 3 15	+ 4	e 6 43	L	(e 6·7)	8·7
Zinsen	E.	13·4	298	e 3 16	+ 2	—	—	e 6·9	9·0
Heizyo		14·6	304	e 3 39	+ 9	—	—	8·0	—
Zi-ka-wei	Z.	17·1	273	e 4 4	+ 2	7 20	+ 8	—	15·3
Manila		25·5	232	5 36k	+ 4	10 28	+31	14·0	16·5
Hong Kong		26·1	255	5 40	+ 3	10 29	+22	13·8	16·8
Phu-Lien		33·0	259	e 7 58	PP	e 12 22	+25	—	—
Irkutsk		33·7	318	6 48	+ 3	12 12	+ 4	16·8	—
Calcutta	N.	47·8	273	e 9 45	+64	—	—	—	21·3
Almata		51·2	304	9 3	− 4	16 20	− 5	26·0	—
Frunse		53·0	302	e 9 24	+ 3	—	—	27·8	—
Agra	E.	54·7	283	9 28	− 5	17 3	−10	—	36·2
Honolulu		54·7	85	—	—	e 17 10	− 3	e 24·4	—
Andijan		55·1	300	e 9 36	0	17 24	+ 6	31·8	—
Tashkent		57·2	302	e 9 47	− 4	17 37	− 9	e 25·8	36·4
Sverdlovsk		59·0	321	i 9 59	− 5	i 18 1	− 9	26·8	40·7
Samarkand		59·3	300	e 10 4	− 2	—	—	—	—
Sitka		60·2	39	e 10 10	− 2	e 18 15	−10	e 24·9	—
Colombo		62·4	261	19 4	S	(19 4)	+11	—	42·5
Bombay	E.	62·5	276	e 10 38	+10	e 18 50	− 4	—	38·8
Victoria		70·0	45	e 7 50	?	e 20 8	−18	e 27·8	—
Baku		71·2	307	e 11 26	+ 3	i 20 43	+ 3	35·3	49·1
Moscow		71·4	325	e 11 19	− 5	20 33	− 9	38·3	39·0
Grozny		72·6	310	e 11 32	+ 1	e 20 55	− 1	—	—
Pulkovo		72·6	330	11 27	− 4	20 45	−11	35·8	44·3
Tiflis		74·0	309	e 11 39	0	21 8	− 3	33·8	46·9
Berkeley		75·6	54	e 12 8	+20	e 21 25	− 4	—	—
Scoresby Sund		77·1	355	11 57	0	21 43	− 3	37·8	—
Upsala	N.	77·5	335	—	—	e 21 40	−10	e 39·8	—
Tinemaha	Z.	78·7	54	i 12 3	− 3	—	—	—	—
Simferopol		79·0	317	e 12 6	− 1	—	—	—	—
Santa Barbara		79·1	57	i 12 8	0	—	—	—	—
Wellington		79·1	155	—	—	31 50	?	—	—
Yalta		79·2	316	e 12 1	− 7	22 1	− 7	49·8	—
Pasadena		80·3	55	e 12 15	+ 1	e 22 13	− 7	i 36·7	—
Mount Wilson	Z.	80·4	55	i 12 14	− 1	—	—	—	—
Riverside	Z.	81·0	55	i 12 18	0	—	—	—	—
Bergen		81·2	340	—	—	e 22 21	− 8	41·8	—
La Jolla		81·6	57	i 12 33	+12	—	—	—	—
Copenhagen		82·4	334	12 24a	− 1	22 35	− 6	31·8	—
Bucharest		83·9	319	13 50	+77	22 56	0	—	47·3
Ksara		84·2	306	i 12 33a	− 1	e 22 56	− 3	—	—
Hamburg		85·0	334	e 12 34	− 4	e 22 44	−23	e 43·8	—
Aberdeen		85·4	341	—	—	e 23 11	0	e 47·4	57·8
Budapest	E.	85·5	325	e 12 40	− 1	e 23 17	+ 5	e 46·8	54·3
	N.	85·5	325	e 12 55	+14	e 23 10	− 2	e 46·8	54·3
Stara Dala		85·7	326	—	—	e 23 8	− 6	—	57·8
Prague		85·8	329	—	—	e 23 9	− 6	e 33·8	54·3
Tucson		86·5	54	e 12 44	− 2	—	—	e 38·9	—
Cheb		86·7	330	e 12 28?	−19	e 23 21	− 3	e 45·8	50·8
Ivigtut		86·8	6	—	—	23 20	− 5	41·8	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Edinburgh	87·4	341	—	—	i 23 27	− 3	e 45·8	—
Graz	87·5	326	—	—	e 23 8	[− 9]	e 47·8	56·0
De Bilt	87·9	335	12 51	− 2	e 23 16	[− 4]	e 42·8	53·8
Zagreb	88·2	325	e 12 57	+ 3	e 23 32	− 6	—	45·8
Stonyhurst	89·0	340	—	—	e 23 45	0	46·8	55·5
Stuttgart	89·0	331	e 12 57a	− 1	e 23 20	[− 7]	e 45·8	56·3
Uccle	89·3	335	e 12 58	− 1	e 23 24	[− 5]	e 42·8	—
Triest	89·4	326	e 13 9	+ 9	i 23 44	− 5	e 44·8	48·5
Helwan	89·6	305	e 15 25	?	e 23 25	[− 5]	—	—
Strasbourg	89·8	331	e 13 0	− 2	23 27	[− 5]	31·8	57·8
Kew	90·4	337	i 13 3a	− 1	e 23 51	− 7	e 46·8	—
Oxford	90·4	338	e 13 9	+ 5	23 37	[+ 2]	e 39·8	62·3
Rathfarnham Castle	90·6	341	—	—	e 24 3	+ 3	44·3	47·8
Paris	91·6	334	e 13 9	− 1	e 23 50?	[+ 8]	49·8	50·8
Jersey	92·9	337	—	—	e 24 17	− 3	e 49·9	—
Ottawa	95·9	26	—	—	e 24 2	[− 4]	e 43·8	—
Toronto	95·9	29	—	—	e 23 50?	[−16]	e 43·8	—
Seven Falls	96·0	22	—	—	e 23 50?	[−17]	47·8	—
Oak Ridge	99·9	24	—	—	e 24 20	[− 7]	e 41·7	—
Philadelphia	100·7	29	—	—	e 24 23	[− 7]	e 46·2	—
La Paz	149·0	66	i 19 59a	[+13]	30 23	{+10}	73·3	92·4

Additional readings :—
Kobe eSN = +2m.48s.
Toyooka PN = +1m.51s., SZ = +3m.8s.
Husan eP = +31s.
Zi-ka-wei iE = +4m.12s., +5m.52s., and +8m.34s.
Manila iE = +7m.33s., iN = +7m.58s.
Hong Kong PP = +6m.29s.
Phu-Lien e = +14m.46s.
Agra PPE = +11m.31s., PS = +17m.40s., SS = +20m.58s.
Sitka e = +18m.21s.
Bombay eE = +11m.45s., +12m.53s., and +14m.0s.
Scoresby Sund +14m.50s. and +26m.44s.
Copenhagen +22m.45s.
Ksara ePP = +15m.48s.
Aberdeen e = +29m.43s.
Stara Dala e = +40m.8s.
Prague e = +28m.50s.? and +32m.20s.
Tucson P = +12m.46s., e = +12m.53s. and +13m.7s.
De Bilt PPZ = +16m.17s.
Stuttgart ePP = +16m.24s.
Triest eSKS = +23m.44s., eSS = +29m.40s.
Helwan e = +15m.40s. and +23m.50s.
Strasbourg ePPZ = +16m.35s., PPPZ = +18m.29s., eSN = +23m.53s., PS = +24m.47s.
Oxford +23m.53s.
Paris PP = +16m.50s.
Ottawa e = +31m.15s.
Seven Falls e = +30m.50s.?
Philadelphia e = +24m.24s., +32m.15s., +35m.51s.
La Paz SSN = +42m.29s.
Long waves were also recorded at Bidston, Toledo, Malaga, Tortosa, San Fernando, Göttingen, Belgrade, Jena, Christchurch, Kodaikanal, and Hyderabad.

July 14d. Readings also at 0h. (Tashkent and near Samarkand), 3h. (Philadelphia), 5h. (Sverdlovsk, Tashkent, Hong Kong, and Manila), 7h. (La Paz), 8h. (Hong Kong, Sverdlovsk, Tashkent, Phu-Lien, Baku, Irkutsk, and Calcutta), 10h. (Sitka), 13h. (Mount Wilson, Pasadena, and Riverside), 14h. (Almata, near Andijan, Samarkand, and near Batavia), 15h. (Santiago), 20h. (Huancayo and La Paz), 22h. (Jersey and near Nagoya), 23h. (Ottawa, Oak Ridge, and Weston).

July 15d. 19h. 3m. 26s. Epicentre 53°·6N. 159°·5E.

A = −·5583, B = +·2087, C = +·8030; δ = +6; h = −7;
D = +·350, E = +·937; G = −·752, H = +·281, K = −·596.

A depth of focus 0·005 has been assumed.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sapporo		16·0	236	3 50	+ 8	—	—	—	—
Mizusawa	E.	19·1	229	4 23	+ 3	7 49	+ 2	—	—
Sakata		19·9	230	4 37	+ 8	—	—	—	—
Vladivostok		21·0	251	e 4 37	− 3	e 9 16	SS	12·6	15·2
Kakioka		22·0	228	4 55	+ 5	—	—	—	—
Maebasi		22·3	229	4 50	− 3	8 50	+ 1	—	—
Nagano		22·5	230	4 59	+ 4	8 56	+ 3	—	—
Wazima		22·5	233	4 59	+ 4	9 55	SSS	—	—
Oiwake		22·6	230	4 59	+ 3	8 55	+ 1	—	—
Tokyo		22·6	226	4 42	−14	8 58	+ 4	—	—
Hunatu		23·2	226	5 1	− 1	—	—	—	—
Kohu		23·2	227	4 58	− 4	10 9	SSS	—	—
Numadu		23·5	226	5 2	− 3	—	—	—	—
Gihu		24·2	229	5 4	− 7	9 27	+ 5	—	—
Nagoya		24·3	229	e 5 11	− 1	9 31	+ 7	—	—
Osaka		25·4	232	5 16	− 7	9 41	− 1	11·4	—
Osaka B		25·4	232	5 25	+ 2	—	—	—	—
Kobe	E.	25·5	232	—	—	e 9 41	− 3	—	17·6
Miyazaki		29·6	234	6 7	+ 6	10 48	− 2	—	—
Irkutsk		32·6	291	i 6 33	+ 5	(11 34?)	− 3	11·6	—
Manila		49·3	233	10 51	PPP	15 41	− 4	—	—
Sverdlovsk		51·7	317	i 9 2	− 1	e 16 9	− 9	24·6	—
Frunse		54·3	296	e 9 26	+ 4	—	—	—	—
Scoresby Sund		56·2	1	i 9 26k	−10	i 17 18	0	—	—
Tinemaha	Z.	56·9	71	i 9 40	− 1	—	—	—	—
Andijan		57·0	295	e 9 42	+ 1	e 17 4	−25	e 29·6	—
Santa Barbara	Z.	57·9	74	e 9 47	− 1	—	—	—	—
Tashkent		58·2	298	i 9 46	− 4	e 17 14	−31	—	36·2
Mount Wilson	Z.	59·0	73	i 9 56	+ 1	e 18 0	+ 5	—	—
Pasadena		59·0	73	i 9 54	− 1	e 17 53	− 2	—	—
Riverside	Z.	59·6	73	i 9 58	− 1	—	—	—	—
Pulkovo		59·9	333	e 10 0	− 2	e 18 1	− 6	24·6	28·4
La Jolla	Z.	60·5	73	i 10 6	0	—	—	—	—
Samarkand		60·6	298	e 10 5	− 1	—	—	—	—
Moscow		61·1	326	i 10 8	− 2	e 18 16	− 6	25·1	33·2
Bergen		64·5	346	e 13 33	?	—	—	—	—
Tucson		64·6	69	e 10 32	− 1	—	—	e 12·6	—
Copenhagen		67·8	341	i 10 53a	0	19 44	− 1	—	—
Grozny		68·1	313	e 10 55	0	e 20 41	+53	—	—
Baku		68·6	309	e 10 57	− 1	—	—	35·6	42·5
Tiflis		69·8	313	i 11 5a	0	20 54	+46	42·6	48·2
Florissant		70·1	51	e 11 6	− 1	e 20 8	− 4	—	—
Hamburg	Z.	70·2	342	i 11 7a	− 1	—	—	—	—
Theodosia		70·8	321	e 11 11	− 1	—	—	—	—
Erevan		71·1	312	e 11 12	− 1	—	—	—	—
Simferopol		71·3	322	11 14	− 1	—	—	—	—
Yalta		71·7	321	i 11 17	0	e 21 6	+36	—	—
Jena		72·4	339	e 11 24	+ 3	—	—	—	—
De Bilt		72·5	344	i 11 22a	0	e 20 35	− 5	e 29·6	—
Vienna	Z.	73·8	335	e 11 29	0	—	—	—	—
Uccle		73·9	345	i 11 28	− 2	—	—	—	—
Stuttgart		74·9	340	i 11 36	0	e 21 2	− 4	e 31·6	—
Weston		74·9	36	i 11 36a	0	—	—	—	—
Strasbourg		75·4	341	i 11 37	− 1	e 21 4	− 8	e 31·6	—
Paris	Z.	76·1	345	i 11 42	0	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Basle		76·4	341	e 11 45	+ 1	—	—	—	—
Zurich		76·4	340	i 11 44a	0	e 20 22	−61	—	—
Triest	N.	76·9	336	e 11 47	0	—	—	—	—
Neuchatel		77·1	341	e 11 48	0	—	—	—	—
Ksara		80·2	314	i 12 4a	− 1	e 22 44	+41	—	52·6
Toledo		85·8	347	e 12 30	− 4	—	—	—	—
Huancayo		120·2	68	e 14 55	P	—	—	e 16·3	—
La Paz		127·7	64	e 18 18	[−39]	20 53	?	21·9	—

Additional readings :—
Osaka PP = +6m.12s.
Irkutsk i = +6m.52s. and +7m.4s., e = +7m.50s.
Tinemaha iZ = +10m.10s. and +10m.15s.
Santa Barbara iZ = +10m.27s.
Tashkent i = +10m.20s., iPP = +11m.54s., i = +13m.59s., e = +18m.14s.
Mount Wilson iZ = +10m.31s. and +10m.37s., ePKP,PKPZ = +39m.38s.
Pasadena iZ = +10m.25s. and +10m.37s., ePKP,PKPZ = +39m.44s.
Pulkovo e = +14m.8s., e = +18m.54s.
Moscow e = +12m.16s., e = +14m.14s., e = +14m.42s.
Tucson e = +11m.5s., +11m.11s., +11m.15s., +11m.27s., and +11m.31s.
Grozny e = +15m.11s.
Baku e = +20m.38s.
Tiflis $ePcPZ$ = +11m.28s., ePPZ = +14m.13s., ePPPZ = +15m.54s., eSKSZ = +21m.16s., eSSSZ = +29m.4s.
Florissant eZ = +11m.40s., eEN = +20m.5s., eE = +20m.52s. and +21m.50s.
Simferopol e = +13m.57s.
Yalta e = +13m.55s.
Stuttgart e = +16m.40s., ePS = +21m.59s.
Weston i = +11m.44s., iZ = +12m.8s., ipPZ = +12m.11s., iZ = +12m.34s.
Strasbourg eE = +11m.59s., eN = +12m.12s., +12m.26s., and +12m.39s., PS = +21m.58s.
Triest eE = +11m.56s.
Ksara pP = +12m.37s., sP = +12m.50s., ePP = +15m.44s., sS = +23m.42s.
Huancayo e = +15m.0s., i = +15m.14s., e = +15m.19s. and +16m.5s.
Long waves were also recorded at Hong Kong.

July 15d. Readings also at 0h. and 1h. (near Santiago), 2h. (Stuttgart, Sverdlovsk, Wellington, Manila, and near Santiago), 3h. (Tucson, San Juan, Scoresby Sund, Paris, and Samarkand), 4h. (Samarkand), 5h. (Samarkand, Christchurch, and near Wellington), 7h. (Samarkand), 8h. (Andijan), 9h. (La Paz, San Juan, and Ksara), 12h. (Frunse, Samarkand, and near Andijan), 14h. (Paris and Strasbourg), 16h. (Strasbourg), 21h. (Erevan).

July 16d. 10h. 18m. 21s. Epicentre 32°·0N. 141°·5E. (as on 14d.).

A = −·6649, B = +·5289, C = +·5273; δ = −13; h = +1.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		4·9	311	e 1 19	+ 2	2 23	+ 8	—	—
Kobe		5·9	298	e 1 30	− 1	e 3 11	S_g	—	4·3
Sumoto		6·0	296	1 35a	+ 3	3 49	+66	—	4·1
Toyooka		6·6	305	(1 39)	− 2	(e 3 11)	S_g	—	(4·2)
Mizusawa		7·1	358	1 38	−10	2 50	−20	—	—
Hukuoka		9·5	283	e 0 53	?	e 4 34†	S*	—	—
Hukuoka B		9·5	283	e 2 28	+ 8	e 5 39	L	(e 5·6)	—
Husan		10·9	290	2 45	+ 5	—	—	6·9	—
Taikyu		11·4	294	e 2 35	−12	e 6 51	L	(e 6·8)	—
Keisyo		13·2	299	e 3 15	+ 4	—	—	e 7·6	—
Vladivostok		13·5	329	e 3 10	− 5	e 5 39	− 8	7·9	13·3
Zi-ka-wei	z.	17·1	273	4 5	+ 3	—	—	—	12·9
Manila		25·5	232	6 0	PP	10 40	+43	—	—
Hong Kong		26·1	255	6 20	PP	10 39	+32	—	16·7
Phu-Lien		33·0	259	—	—	11 39†	−18	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta	N.	47·8	273	—	—	i 20 56	?	—	36·7
Andijan		55·1	300	e 9 37	+ 1	e 17 23	+ 5	—	—
Tashkent		57·2	302	i 9 58	+ 7	i 17 44	− 2	26·9	38·0
Sverdlovsk		59·0	321	i 10 2	− 2	i 18 3	− 7	27·7	35·8
Bombay		62·5	276	—	—	e 18 39?	−15	—	—
Baku		71·2	307	e 11 25	+ 2	e 20 43	+ 3	36·7	47·5
Moscow		71·4	325	e 11 22	− 2	20 36	− 6	37·2	43·8
Grozny		72·6	310	e 11 34	+ 3	e 21 3	+ 7	—	—
Pulkovo		72·6	330	e 11 28	− 3	e 21 30	+34	34·7	46·3
Tiflis		74·0	309	e 11 41	+ 2	21 9	− 2	e 39·8	47·3
Berkeley		75·6	54	i 11.54	+ 6	e 21 28	− 1	—	—
Scoresby Sund		77·1	355	11 59	+ 2	21 44	− 2	35·7	—
Upsala		77·5	335	—	—	e 21 39?	−11	—	—
Tinemaha	z.	78·7	54	i 12 9	+ 3	—	—	—	—
Santa Barbara	z.	79·1	57	i 12 6	− 2	—	—	—	—
Pasadena		80·3	55	i 12 15	+ 1	i 22 15	− 5	e 36·7	—
Mount Wilson	z.	80·4	55	i 12 15	0	—	—	—	—
Riverside	z.	81·0	55	e 12 16	− 2	—	—	—	—
La Jolla	N.	81·6	57	e 12 21	0	—	—	2 —	—
Copenhagen		82·4	334	—	—	22 39	− 2	41·6	—
Bucharest		83·9	319	—	—	e 22 55	− 1	e 47·7	53·7
Ksara		84·2	306	i 12 38	+ 4	e 29 0	SS	—	—
Hamburg		85·0	334	e 12 33	− 5	e 23 2	− 5	56·6	—
Prague		85·8	329	—	—	e 23 8	− 7	e 44·6	48·6
Tucson		86·5	54	e 12 45	− 1	—	—	e 38·0	—
Ivigtut		86·8	6	—	—	23 22	− 3	—	—
De Bilt		87·9	335	—	—	e 23 34	− 1	e 44·7	56·0
Stuttgart		89·0	331	e 12 58	0	e 23 42	− 3	e 46·6	52·6
Helwan		89·6	305	—	—	e 23 33	[+ 3]	—	—
Strasbourg		89·8	331	e 12 17	−45	e 23 55	+ 2	e 45·7	53·9
Rathfarnham Castle		90·6	341	e 11 45	?	32 39?	?	46·7	—
Seven Falls		96·0	22	—	—	e 23 39?	[−28]	e 44·7	—
La Paz	z.	149·0	66	i 19 56	[+10]	—	—	—	—

Additional readings :—
Kobe ePZ = +1m.33s.
Sumoto SZ = +3m.52s., eSN = +3m.56s.
Toyooka PZ = (+1m.44s.), PE = (+1m.52s.); 3m. have been substracted from the readings.
Tashkent e = +10m.39s., e = +19m.34s., e = +21m.31s., e = +23m.55s. and +24m.39s.
Pulkovo e = +14m.10s., e = +15m.53s., e = +20m.38s.
Tiflis eSKKSZ = +21m.59s., eZ = +34m.57s.
Berkeley eN = +20m.20s., eZ = +23m.39s.
Ksara ePS = +23m.58s.
Stuttgart ePPZ = +16m.20s.
Helwan i = +23m.48s.
Strasbourg e = +13m.58s.
Long waves were also recorded at Bidston, Cheb, Aberdeen, Kew, Copenhagen, Paris, Edinburgh, Zinsen, Uccle, Triest, and Sitka.

July 16d. Readings also at 2h. (Strasbourg), 3h. (Mount Wilson, Pasadena, and Riverside), 4h. (Nagoya, Strasbourg, and near Mizusawa), 5h. (near Santiago), 6h. (Wellington), 7h. (Mount Wilson, Pasadena, Riverside, and Wellington), 10h. (near Erevan), 11h. (Grozny and Tiflis), 12h. (La Paz), 14h. (Edinburgh), 15h. (Tiflis and near Erevan), 16h. (Grozny, Ksara, Baku, Sverdlovsk, and Kobe), 17h. (Mizusawa and La Paz), 18h. (near Manila), 19h. (Andijan, Kobe, and near Nagoya), 20h. (Andijan), 23h. (Andijan, Frunse, and Scoresby Sund).

July 17d. 17h. 11m. 5s. Epicentre 41°·7N. 15°·4E.

Felt Scale VIII at San Severo, Isoseismic Chart, Fig. 64. Some damage at Torre-Maggiore in the Province of Foggia, Italy. See P. Caloi " Attivita Sismica in Italia nel Decennio, 1930-1939. Commissione Italiana de Studio per i problemi del Soccorso alle Popolazioni, Vol. IX, Firence, 1942."

Epicentre 41°·41′N. 15°21′E. Macroseismic area 47,000 sq. km. Radius about 125km. See Bollettino della Societa Sismologica Italiana. Vol. XXXV (1937-XVI), N 5-6 (ultimo), p. 243-244.

$A = +\cdot7219$, $B = +\cdot1989$, $C = +\cdot6627$; $\delta = -13$; $h = -2$;
$D = +\cdot266$, $E = -\cdot964$; $G = +\cdot639$, $H = +\cdot176$, $K = -\cdot749$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bari		1·2	117	0 31	+ 7	—	—	—	—
Naples		1·2	224	0 26	+ 2	—	—	—	—
Capodimonte	N.	1·2	226	i 0 26	+ 2	i 0 37	− 4	—	1·4
Pompeii		1·2	215	0 25	+ 1	—	—	—	—
Prato		3·9	307	e 1 2	0	—	—	—	—
Triest		4·1	346	e 1 18	P_g	i 2 24	S_g	—	—
Zagreb		4·2	6	e 1 5	− 2	i 1 53	− 4	—	2·9
Laibach		4·4	354	e 1 31a	P_g	i 2 35	S_g	—	2·9
Belgrade		4·8	48	e 1 23a	P*	i 2 42	S_g	—	3·6
Graz		5·4	2	i 1 16	− 8	i 1 54	−34	—	i 3·1
Sofia		6·0	77	e 1 37	+ 5	e 3 29	S_g	—	—
Budapest		6·4	23	e 2 37	?	e 2 54	+ 1	—	—
Stara Dala		6·4	16	e 1 55	P*	e 3 42	S_g	—	4·3
Chur		6·6	327	e 1 39	− 2	e 2 49	− 9	—	—
Vienna		6·6	5	e 3 2	S	(e 3 2)	+ 4	—	—
Zurich		7·5	321	e 1 49	− 4	e 3 15	− 5	—	—
Basle		8·0	319	e 1 56	− 4	e 3 23	−10	—	—
Bucharest		8·3	67·	—	—	e 4 12	S*	i 5·0	—
Stuttgart		8·3	330	e 2 35	+31	e 4 2	S*	e 5·0	6·4
Prague		8·4	356	e 2 41	+35	e 4 29	S_g	—	4·9
Cheb		8·6	348	e 1 55?	−14	e 4 7	S*	—	5·1
Strasbourg		8·7	325	e 2 24	+14	e 5 14	S_g	—	—
Karlsruhe		8·8	329	e 1 27	−44	3 15	−38	—	—
Jena	N.	9·6	345	e 2 25	+ 4	e 4 1	−11	—	4·9
Göttingen		10·5	341	e 2 55?	+20	—	—	—	—
Moscow		20·2	38	—	—	e 8 39	+18	—	12·8
Pulkovo		20·3	21	—	—	e 8 18	− 5	11·9	12·4

Additional readings :—
Triest $P_g = +1m.22s.$, i = +1m.38s. and +1m.50s.
Zagreb $eP_gZ = +1m.15s.$, i = +1m.20s., eNE = +1m.37s., eE = +1m.43s., eSPSNE = +1m.51s., iSS = +2m.3s., iSSZ = +2m.8s., iZ = +2m.28s.
Laibach i = +1m.37s., PP = +2m.3s., i = +2m.14s., PPS = +2m.31s.
Belgrade i = +1m.34s., PP = +1m.41s., PPS = +2m.20s.
Budapest eN = +3m.9s. and +3m.30s., iN = +3m.43s., e = +3m.54s., eE = +5m.11s.
Vienna PS = +3m.43s., S* = +3m.53s., eS =iL = +3m.59s., S_g = +4m.3s., SS = +4m.11s.
Zurich $eP_g? = +2m.21s.$, $eS_g? = +4m.39s.$
Bucharest eE = +4m.32s.
Stuttgart e = +4m.20s. and +4m.46s.
Prague e = +3m.46s.
Strasbourg eN = +4m.40s.
Jena eN = +2m.59s. and +3m.44s.
Moscow e = +11m.41s.
Pulkovo e = +11m.24s.
Long waves were also recorded at Bidston, Uccle, Hamburg, De Bilt, Kew, Copenhagen, Jersey, and Paris.

July 17d. 18h. 40m. 37s. Epicentre 32°·0N. 141°·5E. (as on 16d.).

A = −·6649, B = +·5289, C = +·5273; $\delta = -13$; $h = +1$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		4·9	311	e 1 19	+ 2	2 34	+19	—	3·0
Kobe		5·9	298	e 1 32	+ 1	e 1 48	−52	—	—
Sumoto		6·0	296	1 33	+ 1	e 2 36	− 7	—	—
Mizusawa		7·1	358	e 1 45	− 3	2 50	−20	—	—
Husan		10·9	280	e 2 40	0	—	—	—	—
Tashkent		57·2	302	i 9 43	− 8	—	—	e 12·4	18·2
Sverdlovsk		59·0	321	e 9 59	− 5	e 18 0	−10	18·4	—
Grozny		72·6	310	e 11 22	− 9	—	—	—	—
Pulkovo		72·6	330	e 11 24	− 7	e 19 46	−70	33·4	45·2
Tiflis		74·0	309	e 16 10	PPP	—	—	e 43·4	47·0
Scoresby Sund		77·1	355	—	—	21 42	− 4	37·4	—
Tinemaha	z.	78·7	54	i 12 6	0	—	—	—	—
Pasadena		80·3	55	e 12 15	+ 1	—	—	e 37·9	—
Mount Wilson	z.	80·4	55	i 12 16	+ 1	—	—	—	—
Riverside	z.	81·0	55	i 12 18	0	—	—	—	—
Copenhagen		82·4	334	—	—	e 22 41	0	37·4	—
Ksara		84·2	306	e 12 36	+•2	e 23 15	+16	—	54·4

Additional readings:—
Kobe ePN = +1m.34s., eE = +1m.41s., eSN = +1m.53s.
Sumoto PZ = +1m.36s., eZ = +3m.11s. and +3m.51s., eEN = +4m.2s.
Long waves were also recorded at Taikyu, Hong Kong, Stuttgart, De Bilt, Uccle, Moscow, and Baku.

July 17d. Readings also at 0h. (Scoresby Sund), 3h. (Sumoto), 6h. (Sverdlovsk and Tashkent), 7h. (Nagoya, Sumoto, and near Hukuoka B), 8h. (Sverdlovsk, Tashkent, Hong Kong, De Bilt, Uccle, and Stuttgart), 10h. (Sverdlovsk, Tashkent, Frunse, near Andijan (2), and Samarkand (2)), 12h. (Amboina), 13h. (Almeria, near Averroes, Granada, and Malaga), 15h. (Scoresby Sund (2)), 16h. (Andijan (2), near Frunse, and near Nagoya), 18h. (Hong Kong and near Manila), 19h. (near Santiago), 21h. (Scoresby Sund, Frunse, and near Andijan), 23h. (Tiflis).

July 18d. 1h. 1m. 12s. Epicentre 55°·0N. 165°·0W.

A = −·5566, B = −·1491, C = +·8173; $\delta = +1$; $h = -7$;
D = −·259, E = +·966; G = −·789, H = −·212, K = −·576.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka		16·6	71	i 4 8	+12	e 7 21	+21	—	—
Berkeley		33·4	102	—	—	e 12 4	+ 1	—	—
Honolulu		34·1	167	—	—	e 13 48?	?	—	—
Tinemaha		36·2	100	i 7 6	0	—	—	—	—
Santa Barbara	z.	37·3	104	i 7 16	0	—	—	—	—
Mount Wilson	z.	38·4	102	i 7 25	0	—	—	—	—
Pasadena		38·4	102	i 7 25	0	e 13 17	− 3	e 18·1	—
Riverside	z.	39·0	102	i 7 29	− 1	—	—	—	—
La Jolla	N.	39·9	103	e 7 33	− 4	—	—	—	—
Tucson		44·0	98	8 11	0	9 55	?	—	—
Florissant		51·0	76	i 9 8	+ 2	e 16 24	+ 2	—	—
St. Louis		51·2	76	i 9 10	+ 3	i 16 36	+11	—	—
Scoresby Sund		52·0	15	—	—	16 48	+12	22·8	—
Oak Ridge		58·4	59	i 10 4a	+ 4	—	—	—	—
Philadelphia		58·4	64	—	—	e 18 5	+ 4	e 28·2	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Weston	58·6	59	i 10 5a	+ 4	e 17 43	−21	—	—
Sverdlovsk	62·5	334	10 30	+ 2	e 18 59	+ 5	27·8	—
Pulkovo	64·9	351	—	—	e 19 34	+10	33·8	44·4
Copenhagen	69·6	2	—	—	20 36	+15	34·8	—
Tashkent	73·5	321	i 11 35	− 1	i 21 7	+ 1	e 35·8	46·7
Tiflis	80·4	338	e 12 8	− 7	e 22 29	+ 8	—	—
Ksara	89·7	343	e 12 28	−33	—	—	49·8	—

Additional readings :—
Sitka e = +5m.0s., +6m.50s., eS = +7m.30s., e = +8m.8s.
Berkeley eZ = +12m.12s.
Honolulu e = +15m.48s.?
Tucson e = +8m.21s., i = +8m.26s.
Florissant eN = +16m.50s.
St. Louis ipPN = +9m.25s., isSN = +16m.54s.
Philadelphia e = +18m.8s.
Weston iE = +10m.9s., i = +10m.13s., ipP = +10m.20s., i = +10m.35s., iP_cPZ = +11m.0s., ePSE = +18m.11s., ePKP,PKPZ = +42m.5s.
Long waves were also recorded at Andijan, Calcutta, Bombay, Hyderabad, and Frunse.

July 18d. Readings also at 1h. (Tashkent), 2h. (Sverdlovsk and Tiflis), 3h. (Berkeley), 5h. (near Almeria), 11h. (near Berkeley, Branner, Lick, and San Francisco), 12h. (Jersey), 13h. (Sverdlovsk, Tashkent, and Tiflis), 14h. (Andijan), 16h. (Andijan and near San Javier), 20h. (Sverdlovsk, Tashkent, and near Mizusawa), 23h. (Medan and Takaka).

July 19d. 2h. 53m. 40s. Epicentre 5°·5S, 149°·0E.

A = −·8533, B = +·5127, C = −·0952 ; δ = +5 ; h = +7 ;
D = +·515, E = +·857 ; G = +·082, H = −·049, K = −·996.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	28·3	176	e 5 26	−31	e 10 30	−13	e 13·8	17·2
Sydney	28·3	176	e 5 25	−32	e 10 32	−11	13·8	16·3
Adelaide	30·8	197	e 6 25	+ 5	i 11 3	−20	—	20·0
Melbourne	32·4	186	—	—	e 11 35	−13	17·2	20·9
Titizima	33·0	351	6 39	0	—	—	—	—
Manila	34·2	307	6 49k	0	12 47	+31	17·3	—
Perth	40·7	226	8 20	+36	16 15	?	25·3	—
Siomisaki	40·7	344	7 41	− 3	—	—	—	—
Miyazaki	40·8	339	7 44	− 1	13 57	+ 1	19·5	—
Hamamatu	41·4	349	7 33	−17	—	—	—	—
Misima	41·5	350	7 29	−21	—	—	—	—
Numadu	41·5	350	7 57	+ 7	—	—	—	—
Wakayama	41·6	344	7 50	− 1	14 4	− 4	—	—
Kameyama	41·8	346	7 52	− 1	—	—	—	—
Sumoto	41·8	344	7 53k	0	e 14 7	− 4	—	—
Hunatu	41·9	350	7 54	0	—	—	—	—
Kumamoto	41·9	338	7 54	0	—	—	—	—
Osaka	41·9	345	7 57	+ 3	14 23	+10	—	—
Osaka B	41·9	345	7 53	− 1	—	—	—	—
Tokyo	41·9	350	7 46	− 8	—	—	—	—
Kobe	42·0	345	e 7 55	+ 1	14 8	− 6	—	18·6
Nagoya	42·0	347	(e 7 57)	+ 3	7 57	P	—	—
Kohu	42·1	350	7 54	− 1	—	—	—	—
Gihu	42·3	347	7 57	0	—	—	—	—
Hikone	42·3	346	7 57	0	—	—	—	—
Kumagaya	42·4	349	7 54	− 4	—	—	—	—
Mito	42·4	351	7 58	0	—	—	—	—
Wellington	42·4	152	i 7 52	− 6	i 14 0	−20	e 17·3	—
Oiwake	42·7	350	8 0	0	14 35	+11	—	—
Nagano	43·1	348	8 4	0	14 37	+ 7	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Christchurch		43·2	155	(8 12)	+ 8	8 12	P	21·2	—
Hamada		43·2	340	8 3	− 1	14 29	− 3	19·0	—
Toyama		43·4	347	8 5	− 1	—	—	—	—
Hong Kong		43·9	312	8 5	− 5	(14 38)	− 4	—	19·8
Wazima		44·1	347	8 16	+ 4	—	—	—	—
Niigata		44·2	350	8 34	+22	—	—	—	—
Husan		44·5	337	—	—	e 15 18	+27	—	—
Mizusawa		45·0	353	8 20	+ 1	8 49	?	—	—
Sakata		45·0	352	8 24	+ 5	—	—	—	—
Zi-ka-wei	z.	45·0	327	e 8 12	− 7	—	—	—	23·7
Akita		45·7	352	8 29	+ 5	—	—	—	—
Sapporo		48·8	354	8 52	+ 3	—	—	—	—
Vladivostok		50·8	345	e 9 4	0	e 16 27	+ 7	25·7	30·1
Bombay		78·8	291	—	—	e 21 20?	−44	—	54·3
Andijan		83·5	313	12 26	− 5	e 22 46	− 6	—	—
Tashkent		85·9	313	e 12 5	−38	e 22 45	[−22]	e 38·3	48·0
Sitka		86·8	33	e 12 40	− 7	e 29 26	SS	e 39·3	—
Samarkand		87·4	311	e 13 45	+55	—	—	—	—
Victoria		92·5	43	—	—	e 23 38	[− 9]	e 34·3	—
Sverdlovsk		93·7	327	e 13 10	−10	23 39	[−15]	45·8	51·8
Pasadena		95·4	56	i 13 27	− 1	e 25 44	+62	e 39·3	—
Mount Wilson	z.	95·5	56	i 13 24	− 4	—	—	—	—
Riverside	z.	96·0	56	i 13 26	− 4	—	—	—	—
Baku		100·5	310	27 46	PS	e 37 34	SSS	48·3	56·8
Tiflis		104·2	312	e 18 26	PP	e 27 46	PS	e 50·3	69·8
Moscow		106·5	326	e 18 41	PP	—	—	e 51·8	59·5
Pulkovo		108·9	333	18 41	PP	24 54	[−14]	50·3	62·5
Ksara		112·2	303	e 19 25	PP	e 34 58	SS	60·3	—
Scoresby Sund		114·8	357	19 50	PP	29 20?	PS	54·3	—
Bucharest		117·0	318	—	—	e 29 33	PS	—	64·3
Florissant		117·1	49	e 17 23	?	e 25 37	[− 2]	e 55·4	59·4
Copenhagen		119·2	334	20 13	PP	29 50	PS	60·3	—
Ottawa		124·5	36	—	—	e 37 56	SSP	52·3	—
De Bilt		124·8	334	e 20 52	PP	e 30 50	PS	e 62·3	66·7
Stuttgart		125·1	329	e 20 50	PP	e 30 56	PS	e 64·3	—
Strasbourg		125·9	330	e 21 1	PP	e 31 8	PS	53·3	66·3
Uccle		126·1	334	e 21 4	PP	e 38 40	SSP	e 58·3	—
Seven Falls		126·2	32	e 30 50	PS	—	—	e 51·3	—
Bidston		127·1	340	—	—	e 38 20?	SS	e 56·3	—
Kew		127·6	336	—	—	e 39 20?	SSP	e 56·3	73·9
Philadelphia		127·6	42	e 22 18	?	e 38 29	SS	e 53·2	—
Paris		128·3	332	e 7 20	?	—	—	64·3	74·3
Oak Ridge		128·6	38	e 19 5	[− 4]	—	—	—	—
Weston		128·8	38	e 19 7	[− 3]	e 38 32	SS	e 58·3	—
La Paz	N.	137·3	121	19 25	[− 1]	—	—	—	—

Additional readings :—
Riverview eN = +6m.14s.
Adelaide e = +7m.35s., e = +12m.43s.
Melbourne i = +13m.54s. and +15m.12s.
Manila iZ = +8m.36s., iN = +10m.13s.
Perth P_cP = +9m.18s., PP = +10m.50s., PS = +16m.35s., SS = +20m.15s., SSS = +12m.25s.
Osaka PP = +9m.20s.
Kobe ePE = +7m.58s.
Nagoya eP? = +7m.5s.
Gihu PP = +9m.37s.
Christchurch PE = 2h.52m.31s.a, P_cSS_cP = +14m.18s., L_q = +17·7m.
Hamada PPP = +10m.42s.
Hong Kong S? = +13m.10s., true S is recorded as SS?
Tashkent SS = +29m.8s., SSS = +32m.32s.
Sitka eP = +21m.26s., e = +22m.8s.
Samarkand e = +14m.27s.
Sverdlovsk PP = +17m.2s.
Tiflis e = +19m.20s., eE = +24m.36s.

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Moscow e = +21m.1s., e = +26m.36s., e = +27m.42s.
Pulkovo e = +20m.58s., PS = +28m.15s., SS = +34m.14s.
Ksara ePS = +28m.58s.
Scoresby Sund eN = +36m.32s.
Florissant eZ = +19m.49s., eE = +19m.52s., +20m.16s., +26m.51s., +29m.41s., eEZ = +35m.50s., eN = +36m.18s., eE = +42m.56s.
Ottawa e = +32m.20s.?, eN = +48m.50s.
Stuttgart ePPS = +32m.37s.
Strasbourg ePPSZ = +32m.37s., SSE = +39m.1s.
Uccle eN = +31m.2s., eE = +33m.42s.
Philadelphia e = +33m.45s., +37m.49s., e = +46m.15s.
Oak Ridge eZE = +21m.10s., eE = +22m.24s., eE = +33m.32s.
Weston eZ = +19m.29s., ePKPZ = +21m.14s., ePP = +22m.25s., ePPSZ? = +33m.2s.
Long waves were also recorded at Tucson, Rio de Janeiro, San Fernando, Toledo, Stonyhurst, Edinburgh, Aberdeen, Hamburg, Cheb, Prague, Triest, Cape Town, Tortosa, and Phu-Lien.

July 19d. 9h. Pacific shock :—

Adelaide eP = 28m.39s., eS? = 33m.6s., eL? = 37m.46s., MN = 41m.18s.
Christchurch iPZ = 31m.45s., iSEN = 35m.48s., L_qE = 36m.15s., L_rNZ = 36m.56s.
Wellington P? = 31m.56s., PP = 32m.15s., PPP = 32m.52s., P_cP? = 35m.30s., S = 36m.47s., SS = 37m.40s., SSS? = 38m.10s., L = 39m.0s., M = 42m.0s.
Melbourne i = 33m.3s., eS = 36m.38s., L = 37m.23s., M = 38m.36s.
Riverview eE = 35m.30s., eN = 35m.42s., eL = 37m.12s., M = 40m.57s.
Sydney e = 36m.40s., L = 38m.30s., M = 39m.15s.
Chatham Isles e = 39m.0s.
Perth P = 44m.0s.?
Ksara ePKP = 44m.24s., ePP = 47m.18s., ePPS = 59m.44s., L = 91m.
Pulkovo e = 46m.41s., L = 115m.0s., M = 132m.30s.
Moscow eL = 46m.54s., M = 48m.54s.
Oak Ridge ePKP$_2$Z = 46m.55s., iZ = 47m.5s., ePP = 48m.16s., eL = 98m.
Weston ePP = 46m.55s., e = 48m.14s. and 55m.57s., eSSS = 70m.0s., eL = 89m.30s.
Stuttgart eZ = 48m., e = 64m.14s., eL = 111m., M = 131m.
Tashkent e = 49m.24s., 53m.0s., 54m.9s., 64m.8s., 71m.2s., 87m.0s., 93m.0s., 101m.0s., 105m.30s., 111m.30s., and 115m.0s., M = 155·8m.
Tiflis eZ = 49m.38s., eE = 50m.14s. and 51m.54s.; eZ = 64m.47s., eLE = 86m., M = 128·7m.
Helwan i = 50m.5s., M = 109m.
Sverdlovsk e = 50m.12s., 67m.8s., L = 83m., M = 83m.18s.
Baku e = 50m.38s., 64m.10s., 66m.42s., L = 85m., M = 97·1m.
Rio de Janeiro eN = 51m.12s., eLN = 70m.
Paris e = 55m., L = 113·0m., M = 121·0m.
Ottawa eN = 63m., e = 69m.30s., eL = 75m.
Berkeley eN = 63m.10s., eE = 63m.48s., eZ = 84·0m.
Philadelphia e = 67m.33s., 68m.47s., 87m.31s., 90m.14s., eL = 95m.43s.
Seven Falls e = 70m., eL = 89m.
Tucson eS = 70m.4s., e = 77m.42s., eL = 82m.36s.
Long waves were also recorded at Arapuni, Hong Kong, Pasadena, Bombay, Scoresby Sund, Ivigtut, Cape Town, La Paz, and some European stations.

July 19d. 19h. 35m. 27s. Epicentre 1°·2S. 75°·8W.

The Bulletin of the Seismological Society of America gives epicentre 1°42′S. 75° 12′W. See Vol. 29, No. 4, p. 529.

A = +·2453, B = −·9693, C = −·0206; δ = +14; h = +7;
D = −·969, E = −·245; G = −·005, H = +·020, K = −1·000.

A depth of focus 0·020 has been assumed.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights	10·7	340	e 2 39	+ 9	i 4 44	+17	—	—
Huancayo	10·8	178	i 2 26	− 5	i 4 9	−21	—	—
La Paz	17·0	154	i 3 42k	− 8	i 6 57	+ 5	—	10·6
Port au Prince	19·9	9	e 4 32	+11	i 7 55	+ 4	—	—
San Juan	21·6	25	i 4 37	− 1	i 8 5	−17	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya		30·8	313	i 5 58	− 5	i 10 57	+ 4	—	—
Santiago		32·4	172	6 17	0	12 20	+62	—	—
Columbia		35·3	352	e 6 45	+ 4	e 12 6	+ 3	e 18·5	—
La Plata		37·2	154	6 56	− 1	12 33	+ 1	18·0	—
Rio de Janeiro		38·3	125	i 7 3	− 3	i 12 44	− 4	i 17·3	—
Philadelphia		40·9	2	i 7 32a	+ 4	i 13 15	−12	—	—
St. Louis		41·8	342	e 7 33	− 2	e 13 31	− 9	—	—
Florissant		42·0	342	i 7 36	− 1	i 13 33	−10	—	—
Weston		43·6	5	i 7 53a	+ 3	i 14 12	+ 6	—	—
Oak Ridge		43·7	5	i 7 54	+ 3	i 14 12	+ 4	—	—
Chicago		44·2	347	i 7 54	− 1	14 1	−14	e 17·4	—
Toronto		44·8	356	8 15	+16	14 45	+21	20·5	—
Vermont		45·5	3	i 8 8	+ 3	e 14 11	−23	—	—
East Machias		46·4	9	i 8 19	+ 7	i 14 59	+13	e 19·3	—
Ottawa		46·4	0	8 15	+ 3	14 52	+ 6	20·6	—
Tucson		46·9	318	i 8 15k	− 1	e 14 50	− 4	e 18·8	—
Shawinigan Falls		47·6	4	8 24	+ 3	15 15	+12	—	—
Seven Falls		48·3	5	8 27	0	15 7	− 6	18·6	—
La Jolla		51·7	315	e 8 48	− 5	e 15 53	− 7	—	—
Riverside		52·4	316	i 8 56	− 2	i 16 11	+ 1	—	—
Mount Wilson		53·0	316	i 9 1k	− 1	i 16 21	+ 3	—	—
Pasadena		53·0	316	i 9 1k	− 1	i 16 20	+ 2	e 27·0	—
Santa Barbara		54·3	315	e 9 11	− 1	e 16 50	+15	—	—
Tinemaha		54·7	318	i 9 10	− 5	e 16 41	+ 1	—	—
Fresno	N.	55·6	316	e 9 21	0	—	—	—	—
Bozeman		56·1	331	e 9 23	− 2	i 16 59	0	e 26·0	—
Butte		57·1	330	e 9 31	− 1	e 17 15	+ 3	—	—
Lick		57·1	317	e 9 30	− 2	e 17 14	+ 2	—	—
Branner		57·5	317	e 9 33	− 2	e 17 19	+ 2	—	—
Berkeley		57·8	317	e 9 34	− 3	i 17 23	+ 2	—	—
Saskatoon		59·1	338	e 10 33	+47	e 17 45	+ 7	24·6	—
Ukiah		59·1	318	e 9 45	− 1	e 17 26	−12	e 23·8	—
Ferndale	E.	60·6	319	e 9 59	+ 3	e 17 59	+ 1	—	—
	N.	60·6	319	i 10 3	+ 7	e 18 9	+11	—	—
Victoria		64·2	327	10 13	− 7	18 39	− 4	29·5	—
Ivigtut		65·7	15	i 10 30a	0	i 19 8	+ 7	24·6	—
Averroes		72·7	55	11 13	+ 1	20 32?	+ 9	—	—
San Fernando		74·4	52	11 29	+ 7	20 53	+11	—	—
Sitka		74·9	331	e 11 25	0	i 20 51	+ 4	e 30·8	—
Malaga		75·9	51	i 11 38	+ 8	i 21 8	+10	—	—
Granada		76·6	51	i 11 39	+ 5	i 21 14	+ 8	—	—
Toledo		76·8	49	e 11 40	+ 4	e 21 19	+11	—	—
Almeria		77·4	52	e 11 39	0	e 21 17	+ 3	e 37·1	—
Rathfarnham Castle		78·8	35	i 11 51	+ 5	i 21 43	+14	34·6	—
Scoresby Sund		79·7	16	i 11 54	+ 3	i 21 44	+ 5	—	—
Jersey		80·3	39	e 12 0	+ 6	i 21 45	0	e 25·9	—
Tortosa		80·4	48	11 59	+ 4	21 53	+ 7	34·3	35·9
Bidston		80·7	35	i 12 1	+ 4	i 22 5	+16	e 34·6	—
Stonyhurst		81·2	35	12 1	+ 2	e 21 59	+ 5	—	—
Edinburgh		81·3	33	i 12 46	+46	i 21 59	+ 4	27·6	46·6
Oxford		81·4	37	i 12 1a	+ 1	i 22 51	− 5	—	—
Algiers		81·5	53	i 12 8	+ 7	e 22 8	+11	e 64·6	—
Barcelona		81·7	48	12 5	+ 3	22 4	+ 5	e 27·0	45·3
Durham	N.	81·9	34	e 12 6	+ 3	22 8	+ 7	—	—
Kew		81·9	38	i 12 5a	+ 2	i 22 7	+ 6	e 34·6	41·9
Aberdeen		82·2	31	e 12 3	− 1	i 22 3	− 1	27·3	44·9
Honolulu		83·0	291	e 12 1	− 7	e 22 6	− 6	e 35·2	—
Paris		83·2	41	e 12 11	+ 2	i 22 19	+ 5	32·6	36·6
College		83·5	336	e 12 11	0	e 22 12	− 5	e 33·8	—
Uccle		84·7	39	12 18a	+ 1	i 22 25	− 4	—	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
De Bilt	85·4	37	i 12 23a	+ 3	i 22 32	− 4	e 35·5	38·1
Neuchatel	85·9	43	e 12 24	+ 1	e 22 35	[+ 5]	—	—
Basle	86·4	43	e 12 27	+ 2	e 22 42	− 4	—	—
Bergen	86·6	29	12 30	+ 4	16 30	PP	44·6	—
Strasbourg	86·6	41	i 12 27a	+ 1	e 22 57	+ 9	—	52·6
Zurich	87·0	43	e 12 32	+ 4	e 22 42	[+ 4]	—	—
Karlsruhe	87·1	40	e 12 33?	+ 4	22 45	− 7	—	—
Stuttgart	87·6	41	i 12 34a	+ 3	i 23 8	+11	e 45·6	—
Göttingen	88·3	38	—	—	i 22 46	[+ 1]	—	39·6
Hamburg	88·4	36	e 12 36a	+ 1	e 22 50	[+ 4]	e 38·9	43·6
Padova	89·2	45	e 12 44	+ 5	i 22 55	[+ 4]	—	23·4
Jena	89·3	39	e 12 40	+ 1	e 22 56	[+ 5]	e 37·6	40·1
Cheb	89·7	39	e 12 45	+ 4	i 23 1	−15	e 42·6	48·6
Copenhagen	90·0	34	i 12 44a	+ 2	i 23 27	+ 8	—	—
Triest	90·5	44	12 47k	+ 2	23 2	[+ 4]	—	45·8
Prague	91·1	40	e 12 49	+ 1	e 23 3	[+ 1]	36·6	39·6
Graz	91·7	43	i 12 51	+ 1	i 23 3	[− 2]	e 39·6	54·1
Zagreb	92·1	44	e 12 56	+ 4	e 23 11	[+ 4]	—	—
Vienna	92·3	42	e 12 54	+ 1	23 16	[+ 7]	e 38·6	—
Upsala	92·8	30	12 56	+ 1	e 23 9	[− 3]	e 39·6	49·9
Cape Town	92·9	124	i 12 54	− 2	i 23 21	[+ 8]	43·7	56·3
Stara Dala	93·6	43	e 13 59	+60	e 23 18	[+ 2]	—	43·6
Pulkovo	99·1	30	e 13 24	0	24 43	+ 6	41·6	50·0
Bucharest	99·3	45	e 11 27	?	i 23 48	[+ 2]	44·6	54·6
Hastings	102·5	230	i 13 33?	− 6	—	—	—	—
Wellington	103·7	227	14 19	+35	—	—	51·1	—
Moscow	104·0	32	13 50	+ 4	e 24 10	[+ 1]	e 50·1	56·6
Sebastopol	104·5	44	e 18 6	PP	i 24 14	[+ 3]	—	—
Christchurch	104·7	224	i 14 58	P	—	—	—	—
New Plymouth	104·8	229	i 15 24	P	—	—	—	—
Simferopol	104·9	43	e 18 19	PP	e 24 16	[+ 4]	—	—
Yalta	105·0	45	e 16 37	?	—	—	e 52·6	—
Helwan	105·4	300	—	—	i 24 18	[+ 3]	—	65·0
Theodosia	105·7	44	e 18 24	PP	e 24 18	[+ 2]	e 32·6	—
Ksara	108·6	55	e 14 11	P	—	—	—	—
Piatigorsk	111·2	43	e 19 3	PP	e 24 49	[+ 9]	—	—
Grozny	113·3	42	e 18 57	PP	e 24 57	[+ 9]	—	—
Tiflis	113·3	45	e 14 54	P	i 24 54	[+ 6]	e 47·6	72·0
Sverdlovsk	114·6	24	15 16	pP	26 54	SKKS	i 46·2	60·7
Baku	117·3	44	19 54	PP	i 25 11	[+ 7]	e 46·6	51·1
Riverview	123·8	227	i 20 59	PP	e 30 57	PS	—	38·5
Sydney	123·8	227	e 20 8	PP	—	—	30·9	32·0
Melbourne	125·9	220	e 20 31	PP	i 31 6	PS	—	39·4
Samarkand	128·9	37	e 19 8	PKP	—	—	—	—
Tashkent	129·1	33	i 18 50	PKP	—	—	42·6	67·6
Andijan	131·2	32	e 19 44	?	i 26 53	SKKS	—	—
Niigata	131·4	323	19 32	PKP	—	—	—	—
Mito	131·5	321	19 42	PKP	—	—	—	—
Vladivostok	131·5	332	e 18 53	PKP	e 22 18	?	—	40·8
Almata	131·6	26	e 19 46	PKP	—	—	—	—
Adelaide	131·8	219	e 19 36	PKP	—	—	—	32·8
Maebasi	132·4	321	18 17	?	—	—	—	—
Oiwake	132·7	321	18 55	PKP	—	—	—	—
Mera	132·8	319	21 53	PP	—	—	—	—
Nagano	132·8	322	18 59	PKP	—	—	—	—
Hunatu	133·1	320	19 17	PKP	—	—	—	—
Wazima	133·1	325	19 47	PKP	—	—	—	—
Toyama	133·3	323	19 45	PKP	—	—	—	—
Kohu	133·8	320	19 10	PKP	—	—	—	—
Hatidyozima	133·9	318	22 2	PP	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		134·5	322	e 18 52	PKP	—	—	—	—
Osaka		135·7	322	19 28	PKP	—	—	—	—
Osaka B		135·7	322	19 48	PKP	—	—	—	—
Kobe	E.	135·9	322	e 19 42	PKP	—	—	—	—
Tokyo		137·5	320	18 56	[−10]	—	—	—	—
Husan		139·1	329	e 22 20	PP	—	—	—	—
Nagasaki		140·4	325	19 59	PKP	—	—	—	—
Bombay		144·6	59	i 19 19	[+ 2]	i 26 48	[+39]	—	—
Perth		145·3	198	11 23	?	15 18	?	30·6	35·6
Zi-ka-wei	Z.	146·0	333	e 19 11	[− 9]	24 7	?	—	—
Kodaikanal	E.	152·0	70	e 20 26	+57	—	—	—	—
Taito		153·0	325	19 16	[−15]	—	—	—	—
Calcutta	N.	153·8	35	i 21 15	?	i 27 8	[+47]	—	—
Colombo		155·1	77	19 32	[− 2]	—	—	—	44·2
Hong Kong		156·9	336	19 43	[+ 7]	30 22	SKKS	43·6	49·8
Manila		158·8	309	i 19 41k	[+ 3]	—	—	74·6	—
Phu-Lien		160·4	353	e 20 38	[+58]	—	—	—	—
Batavia		172·2	200	19 47	[− 3]	25 40	[−55]	—	—
Medan		174·0	65	e 20 18	[+28]	i 26 51	[+15]	—	—

Additional readings :—

Balboa Heights i = +5m.12s. and +5m.15s.
Huancayo i = +2m.52s. and +3m.24s.
Port au Prince i = +4m.43s., PP = +4m.49s., SS = +8m.39s.
San Juan iPP = +5m.2s., i = +8m.34s.
Columbia e = +7m.23s., +8m.12s., and +13m.5s., i = +16m.38s., e = +17m.23s.
Rio de Janeiro iSSSN = +15m.31s.
Philadelphia i = +8m.10s., ePP = +8m.53s., i = +9m.16s., e = +9m.22s., +12m.40s., +12m.54s., iS = +13m.32s., +13m.36s., i = +14m.30s., +14m.51s., +16m.43s., and +16m.57s.
St. Louis ipP = +8m.14s., isPE = +8m.41s., iPP = +9m.4s., iN = +9m.22s., iPPPN = +9m.54s., ipPPPN = +10m.19s., esSE = +14m.49s., isSS = +17m.17s.
Florissant ipP = +8m.18s., iPPE = +9m.6s., iE = +9m.37s., iPPPZ = +9m.45s., iPPPZ = +9m.52s., i = +9.m57s., eN = +10m.5s., ipPPPE = +10m.15s., iS_cPEZ = +12m.58s., iSE = +13m.40s., iNZ = +13m.45s., eE = +14m.41s., esSE = +14m.59s., eE = +16m.50s., iN = +17m.10s., iZ = +17m.17s., iSSSN = +17m.43s.
Weston iPZ = +7m.59s., ipP = +8m.34s., iSPZ = +9m.2s., iP_cPZ = +9m.28s., i = +10m.18s., iSSE = +18m.28s., eE = +20m.18s., +21m.44s., and +23m.48s.
Oak Ridge ipPZ = +8m.35s., eP_cPZ = +9m.23s., ePPZ = +10m.17s., eSS = +18m.9s., iN = +18m.59s.
Chicago e = +8m.27s., +8m.35s., ePP = +9m.44s., e = +13m.47s., +15m.27s., +17m.7s., +18m.42s.
Toronto i = +9m.3s. and +15m.51s.
Vermont i = +8m.48s., ePP = +10m.3s., i = +10m.25s., +14m.41s., iS = +14m.46s., i = +15m.41s., +15m.54s., iSS = +17m.42s., i = +18m.22s. and +19m.11s.
East Machias i = +8m.57s., ePPP = +10m.52s., e = +12m.2s., +15m.47s., +16m.13s., eSS = +17m.47s., i = +18m.47s.
Ottawa i = +8m.55s., +10m.44s., +16m.9s., e = +17m.54s., iN = +18m.49s.
Tucson i = +8m.18s., e = +8m.49s., i = +8m.56s., +10m.48s., +13m.23s., e = +14m.1s., +17m.51s., +18m.43s., +18m.56s.
Shawinigan Falls i = +9m.5s.
Seven Falls e = +9m.9s. and +16m.32s.
La Jolla ipPEN = +9m.33s.
Riverside ipPNZ = +9m.36s., ePKP,PKPZ = +39m.18s.
Mount Wilson ipP = +9m.43s., iPKP,PKPZ = +39m.18s.
Pasadena ipPEZ = +9m.41s., iSPN = +10m.15s., iP_eSZ = +13m.51s., isSN = +17m.39s., iS_eSN = +18m.33s., isS_cSN = +19m.56s., ePKP,PKPZ = +39m.14s., ipPKP,PKPZ = +40m.7s.
Santa Barbara ipP = +9m.53s., e = +13m.53s.
Tinemaha iZ = +9m.52s., eEN = +18m.44s.
Fresno epPN = +10m.3s.
Bozeman e = +10m.0s., i = +10m.7s., e = +12m.16s., eSS = +20m.58s.
Butte e = +10m.1s., iPP = +10m.14s.
Lick ePE = +9m.33s., ipPN = +10m.15s.
Branner ipP = = +10m.16s., eSN = +17m.23s.
Berkeley ePZ = +9m.37s., ePE = +9m.38s., ipP = +10m.14s., epP = +10m.17s., iZ = +14m.31s.

Continued on next page.

Ukiah e = +10m.26s., +14m.44s., +18m.13s., +18m.33s., eSS = +21m.46s.
Ferndale eN = +10m.43s., eE = +10m.45s.
Victoria i = +10m.56s.
Ivigtut pP = +11m.12s., eZ = +11m.47s., e = +20m.5s. and +20m.19s.
San Fernando ipSN = +21m.28s., sSSN = +28m.5s.
Sitka e = +12m.5s., i = +12m.10s., e = +12m.16s., i = +12m.38s., e = +13m.5s., +14m.46s., +16m.23s., i = +21m.25s., +22m.12s., eSS = +25m.33s., eSS = +26m.45s., e = +25m.58s., +30m.44s.
Malaga PP = +14m.30s., PPPP = +16m.42s., SS = +25m.51s.
Rathfarnham Castle ipP = +12m.49s., i = +22m.51s., isS = +23m.8s., iSS = +26m.57s., i = +28m.19s.
Scoresby Sund pP = +12m.37s., eN = +14m.0s., e = +14m.42s., iZ = +21m.49s., eZ = +22m.17s., e = +22m.33s., eZ = +23m.28s., eN = +26m.27s., SS = +27m.9s.
Jersey ipP = +12m.39s., i = +15m.36s.
Tortosa PN = +12m.3s.
Bidston ipP = +12m.45s., iSSS = +28m.44s., i = +30m.18s.
Edinburgh i = +12m.58s., +14m.56s., +15m.46s., +22m.20s., +22m.51s., and +24m.6s.
Oxford i = +12m.48s. and +15m.11s., e = +21m.10s.
Algiers pP = +13m.3s., e = +23m.16s. and +34m.33s.?
Kew ipP = +12m.47s., iZ = +22m.12s., ipS = +22m.59s., iSS = +23m.39s., iE = +25m.0s., +27m.1s., iSS = +27m.33s., isSS = +28m.47s., iN = +30m.25s., iE = +31s.53s., and +32m.34s.
Aberdeen i = +12m.47s.
Honolulu eP = +12m.9s., e = +12m.49s., +13m.5s., eS = +22m.9s., +22m.14s., iPS = +23m.32s., e = +28m.43s.
Paris pP = +12m.55s., PP = +16m.6s., sS = +23m.17s.
College e = +12m.46s., +12m.53s., i = +12m.58s., ePP = +15m.20s., i = +16m.5s., S = +22m.15s., e = +22m.59s., PS = +23m.13s., e = +23m.36s., +27m.13s., eSS = +27m.23s., e = +38m.45s.
Uccle ipPE = +13m.1s., iPPE = +15m.40s., ipS = +23m.26s.
De Bilt ipPZ = +13m.4s., ePPZ = +15m.45s.
Strasbourg ipPE = +13m.9s., ePPZ = +15m.56s., ipPP = +16m.36s., iSKSE = +22m.39s., sSZ = +23m.48s., eSS = +28m.53s.
Bergen ? = +13m.10s.
Zurich epP = +13m.14s.
Stuttgart pP = +13m.16s., e = +14m.14s., eZ = +15m.37s., e = +16m.43s., +17m.59s., +20m.33s., SKS = +22m.44s., eSP = +23m.47s., epS = +23m.58s., e = +24m.59s., +27m.50s., esSS = +30m.17s., e = +31m.52s., eEZ = +35m.43s., e = +36m.53s., +38m.26s., +38m.45s., +39m.35s., and +42m.33s.
Hamburg iZ = +13m.20s., +16m.49s., eEN = +30m.33s.
Jena eN = +13m.21s., eE = +13m.26s., i = +23m.20s., e = +30m.33s.
Cheb e = +13m.29s., +17m.0s., and +24m.35s.
Copenhagen pPEZ = +13m.27s., eEZ = +15m.50s., PP = +16m.22s., pPP = +17m.0s., iSKS = +22m.59s., pS = +24m.13s., eSP = +24m.43s., sPSZ = +25m.42s.
Triest ePS = +12m.56s., PS = +23m.34s.
Prague eE = +13m.31s., eEN = +17m.11s., e = +29m.33s.?
Zagreb e = +17m.47s. and +18m.13s.
Vienna PP = +16m.38s., SKKS = +23m.50s., PS = +24m.55s.
Upsala i = +13m.42s., ePPE = +16m.33s., iPSN = +23m.49s., eN = +30m.33s.
Cape Town iPPE = +16m.37s., iSN = +23m.41s., iPS = +24m.41s., iSS = +30m.1s., eSSSN = +34m.27s., N = +36m.18s.
Pulkovo pP = +14m.7s., e = +16m.6s., PP = +17m.28s., pPP = +18m.8s., SKS = +23m.44s., sS = +26m.3s., e = +28m.51s., SS = +31m.39s., SSS = +33m.3s.
Hastings i = +13m.44s.
Wellington i = +14m.22s., +14m.24s., +14m.26s., +14m.30s., +14m.38s., and +14m.42s., S = +14m.48s., i = +14m.52s., i = +14m.57s., +15m.0s., +15m.4s., +15m.9s., +15m.15s., +17m.58s., +18m.35s., +26m.32s., L_q? = +33·6m.
Moscow pP = +14m.32s., PP = +18m.7s., pPP = +18m.54s., PPP = +20m.38s., SP = +27m.5s., sS = +29m.1s., SS = +32m.39s.
Sebastopol e = +23m.14s.
Christchurch S? = +15m.41s., i = +15m.50s., +16m.14s., +16m.18s.
New Plymouth i = +15m.28s. and +15m.49s.
Yalta e = +28m.31s.
Helwan i = +25m.8s., +27m.20s., +28m.25s., +28m.47s.
Ksara epP = +14m.57s., iPP = +18m.41s., ipPP = +19m.25s., esPP = +19m.47s., eSP = +27m.41s.
Tiflis ePKPEZ = +18m.25s., pPKPEZ = +19m.17s., eZ = +19m.55s., iE = +26m.0s., isSEZ = +28m.37s., eZ = +33m.7s. and +36m.39s.
Sverdlovsk e = +18m.0s., e = +19m.3s., iPP = +19m.14s., SPP = +19m.58s., SKS = +24m.48s., SKKS = +25m.59s., i = +29m.26s., i = +29m.55s., SS = +34m.51s.

Continued on next page.

Baku i = +26m.32s., SS = +29m.35s., e = +36m.23s.
Melbourne i = +21m.13s.
Samarkand e = +19m.38s.
Tashkent iPP = +20m.38s., sPP = +21m.53s., ePPP = +23m.59s., iPS = +27m.40s., SS = +30m.43s., SSS = +38m.33s.
Vladivostok e = +19m.42s., e = +21m.55s., e = +23m.8s., e = +23m.27s.
Almata e = +22m.11s., e = +23m.14s.
Adelaide i = +22m.18s., e = +29m.7s.
Oiwake SPKP = +19m.38s., PP = +22m.7s.
Nagano PP = +22m.11s.
Osaka PP = +22m.19s.
Kobe iPKPZ = +19m.51s., PPE = +22m.22s.
Bombay iE = +19m.59s., i = +21m.19s., e = +23m.18s., +29m.5s., and +41m.3s.
Perth P_cP = +12m.18s., PS = +15m.33s., SS = +23m.58s., SSS = +26m.33s.
Zi-ka-wei iZ = +19m.18s., +20m.2s., +24m.25s., +26m.37s., and +32m.40s.
Tokyo PP = +22m.15s.
Calcutta +23m.27s., iN = +28m.31s., +29m.59s., +34m.56s., and +35m.19s., eN = +49m.1s. and +50m.1s.
Hong Kong ? = +24m.33s. and +28m.3s.
Manila SKPN = +23m.21s., iZ = +24m.42s.
Phu-Lien e = +24m.44s.
Medan iEN = +31m.46s.
Batavia iZ = +20m.37s. and +21m.15s.

July 19d. Readings also at 0h. (Tiflis), 2h. (near Samarkand (2)), 3h. (Tucson, Philadelphia, Vermont, near Oak Ridge, and Weston), 5h. (La Paz), 7h. (Sitka), 9h. (near Mizusawa), 11h. (La Paz and Sitka), 15h. (Santiago (2) and near Algiers), 18h. (Grozny, near Kobe and Sumoto), 20h. (Hyderabad, Andijan (2), and Samarkand (2)), 21h. (near Branner), 22h. (Granada), 23h. (near Batavia).

July 20d. 7h. 1m. 24s. Epicentre 43°·2N. 16°·4E.

Felt force VIII at Jelsa (43°10′N., 16°42′E.) and around the Isle of Hvar. Epicentre 43°14′N., 16°27′E. Numerous repetitions. See J. Mihailovic "La Seismicite de L'ile de Hvar (extrait), Academie Serbe des Sciences, 2 Mai, 1938, pp. 241-248, fig. 6, surface pleistoseiste, J. Mihailovic, annuaire macroseismique, annee, XVII, 1937, p. 13.

A = +·7015, B = +·2065, C = +·6821; δ = 0; h = −3;
D = +·282, E = −·959; G = +654, H = +·193, K = −·731.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Zagreb		2·6	354	i 0 46	+ 2	i 1 21	+ 4	—	1·8
Capodimonte	N.	2·8	214	e 1 1	P_g	e 1 30	S_g	—	2·1
Triest		3·1	322	e 0 56	P*	1 33	+ 4	—	—
Laibach		3·2	335	e 0 52a	0	i 1 33	+ 1	—	2·0
Belgrade		3·3	61	e 0 52k	− 1	i 1 31	− 4	—	1·9
Graz		3·9	350	i 1 1	− 1	i 1 48	− 2	i 2·2	i 2·5
Padova		4·0	306	e 1 9	P*	2 3	S*	—	3·8
Kecskemet		4·4	31	1 8	− 2	e 2 22	S_g	e 2·5	2·6
Stara Dala		4·8	14	e 1 0	−15	e 2 33	S_g	—	3·3
Vienna		5·0	359	i 1 20	+ 2	2 21	+ 3	—	3·1
Zurich		6·9	309	e 1 44	− 1	e 3 19	S*	—	—
Prague		7·0	350	e 1 21	−25	e 3 24	S*	—	4·0
Bucharest		7·1	77	e 1 49	+ 1	i 3 24	S*	—	5·0
Cheb		7·4	339	e 2 6	P*	—	—	e 3·7	4·3
Stuttgart		7·5	320	e 1 53	0	e 3 14	− 6	—	—
Basle		7·6	307	e 1 58	+ 3	e 3 41	S*	—	—
Neuchatel		7·7	303	e 1 56	0	e 3 33	+ 8	—	—
Karlsruhe		7·9	318	e 2 16	P*	3 48	+18	—	—
Strasbourg		8·1	315	e 1 59	− 3	4 25	S_g	—	—
Jena		8·4	338	i 2 5	− 1	i 3 36	− 7	e 4·5	4·8
Göttingen		9·4	335	e 2 21	+ 3	i 5 12	S_g	—	5·5
Paris		11·2	305	—	—	e 5 35	?	—	—
Uccle		11·2	317	—	—	e 5 1	+ 9	—	—
Copenhagen		12·7	350	3 6	+ 1	5 36	+ 8	6·6	—
Yalta		12·9	78	e 3 17	+10	e 5 47	SS	—	—

Continued on next page.

		△	Az.	P.	O−Z.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Theodosia		13·8	76	—	—	e 5 47	− 7	—	—
Kew		14·0	312	—	—	i 6 9	+10	8·6	—
Stonyhurst		16·4	317	—	—	i 7 16	SS	e 9·3	—
Upsala		16·7	2	e 3 57	0	e 5 18	?	e 8·5	—
Ksara		17·9	115	e 4 10	− 2	e 7 28	− 2	—	—
Rathfarnham Castle		18·1	314	—	—	i 7 7	−28	8·6	—
Aberdeen		18·2	328	—	—	e 6 52	?	—	11·0
Moscow		18·5	42	4 18	− 1	7 43	− 1	10·2	11·6
Pulkovo		18·6	24	4 21	0	7 47	+ 1	9·6	12·4
Tiflis	E.	21·0	84	e 4 51	+ 4	8 47	+10	e 12·1	—
Sverdlovsk		30·9	48	e 7 14	PP	e 11 53	+29	13·6	20·1

Additional readings :—
Zagreb $iP_g = +54s.$, iPPNE = +1m.2s., iNE = +1m.10s., iNW = +1m.14s.
Triest $P_g = +1m.2s.$, PSP = +1m.4s., $iS_g = +1m.45s.$, $iS_gS_g = +1m.48s.$
Laibach iPP = +59s., i = +1m.9s., +1m.15s., iPS = +1m.27s., PSS = +1m.45s.
Belgrade i = +57s., iPP = +1m.4s.
Kecskemet ePZ = +1m.6s., $eP_gN = +1m.22s.$, eN = +1m.35s., eE = +1m.40s., ePPSN = +1m.43s. and +1m.51s., eSZ = +1m.59s., eE = +2m.16s., $eS_gZ = +2m.20s.$
Stara Dala $eP_g = +1m.18s.$, iPS = +2m.10s., eSS = +2m.40s.
Vienna P = +1m.23s., P = +1m.26s., SS = +2m.32s.
Bucharest iE = +4m.0s., iN = +4m.9s.
Stuttgart $eP_g = +2m.27s.$, e = +3m.31s., eS*EN = +3m.46s., iZ = +3m.50s., iEZ = +3m.58s., i = +4m.1s., $iS_g = +4m.16s.$, iEN = +4m.35s.
Strasbourg iSS = +4m.33s.
Jena iN = +3m.31s. and +4m.8s.
Paris e = +6m.24s. and +7m.35s.
Uccle i = +6m.16s.
Yalta e = +6m.52s., e = +7m.51s.
Kew i = +6m.26s., eE = +6m.55s., iZ = +7m.10s., iN = +7m.40s., +7m.57s., and +8m.10s.
Aberdeen i = +7m.49s.
Tiflis eZ = +11m.7s.
Long waves were also recorded at Baku, Scoresby Sund, De Bilt, Bidston, Edinburgh, Hamburg, and Tashkent.

July 20d. Readings also at 0h. (Alicante, near Almeria (2), Toledo, Malaga, and Granada), 1h. (near Amboina), 2h. (Kobe), 5h. (Samarkand, Sumoto, and near Kobe), 7h. (near Sumoto), 8h. (near Hukuoka B), 9h. (Tiflis), 14h. (Tacubaya), 19h. (near Triest and Zagreb), 22h. (Baku and Tashkent), 23h. (near Manila).

July 21d. 0h. 7m. 30s. Epicentre 46°·0N. 145°·0E.

Felt moderately at Kusiro. Radius 200-100kms. See Seismological Bulletin of the Cent. Met. Obs., Japan, for the year 1937, Tokyo, 1939, pp. 44-45, Macroseismic Chart p. 44. Epicentre 46°·0N. 145°·0E.

A = −·5710, B = +·3998, C = +·7170 ; $\delta = -3$; $h = -4$;
D = +·574, E = +·819 ; G = −·587, H = +·411, K = −·697.

A depth of focus 0·060 has been assumed.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nemuro	2·7	171	1 2	0	1 47	− 4	—	—
Haboro	2·9	235	0 36	−28	—	—	—	—
Kusiro	3·1	188	0 43	−23	1 28	−29	—	—
Sapporo	4·0	223	1 8a	− 5	1 57	−14	—	—
Urakawa	4·1	203	1 30	+16	2 22	+ 9	—	—
Muroran	4·6	219	1 13k	− 6	2 7	−15	—	—
Hakodate	5·3	217	1 31	+ 5	2 39	+ 5	—	—
Aomori	6·0	212	1 23	−11	2 28	−19	—	—
Hatinohe	6·0	206	1 29	− 5	2 34	−13	—	—
Miyako	6·7	200	1 39	− 2	2 50	−11	—	—

Continued on next page.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Akita	7·2	211	1 47	0	3 3	− 9	—	—
Mizusawa	7·4	203	i 1 48	− 1	i 3 7	− 9	—	—
Sakata	8·1	210	1 56	− 1	—	—	—	—
Sendai	8·3	203	1 59a	− 1	3 27	− 7	—	—
Hukusima	8·9	204	1 43	−23	3 42	− 4	—	—
Aidu	9·2	205	1 29k	−41	3 31	−21	—	—
Niigata	9·2	211	2 17	+ 7	—	—	—	—
Vladivostok	9·8	257	e 2 8	− 9	i 3 46	−19	—	—
Mito	10·2	201	2 19	− 2	—	—	—	—
Utunomiya	10·2	204	2 23	+ 2	—	—	—	—
Tukubasan	10·4	202	2 23	− 1	—	—	—	—
Kakioka	10·4	202	2 24	0	4 14	− 4	—	—
Maebasi	10·6	207	2 7	−19	—	—	—	—
Nagano	10·6	211	2 25	− 1	4 19	− 3	—	—
Kumagaya	10·7	205	2 28	+ 1	4 20	− 4	—	—
Oiwake	10·8	209	2 27a	− 1	4 22	− 4	—	—
Tokyo Cen. Met. Ob.	11·0	203	2 33	+ 2	4 30	0	—	—
Toyama	11·0	215	2 28	− 3	4 19	−11	—	—
Yokohama	11·3	203	2 36	+ 2	—	—	—	—
Hunatu	11·5	206	2 36	0	—	—	—	—
Mera	11·7	201	2 42	+ 4	—	—	—	—
Misima	11·8	205	2 40	0	—	—	—	—
Numadu	11·8	206	2 42	+ 2	—	—	—	—
Gihu	12·3	213	2 44a	− 1	4 51	− 6	—	—
Nagoya	12·4	212	2 47k	+ 1	4 52	− 7	—	5·1
Hamamatu	12·5	209	2 47	0	—	—	—	—
Ibukisan	12·5	214	2 46	− 1	—	—	—	—
Hikone	12·6	215	2 46	− 2	—	—	—	—
Kameyama	12·9	213	2 51	− 1	—	—	—	—
Toyooka	13·0	220	2 51	− 2	5 10	− 1	—	—
Osaka	13·4	216	2 54	− 3	3 57	?	—	—
Osaka B	13·4	216	2 58k	+ 1	—	—	—	—
Hatidyozima	13·5	199	3 3	+ 5	—	—	—	—
Kobe	13·6	218	i 2 58a	− 1	e 5 11	−12	—	36·2
Wakayama	13·9	216	3 3	0	—	—	—	—
Sumoto	14·0	217	3 2	− 2	e 5 31	0	—	—
Siomisaki	14·4	213	3 10	+ 2	—	—	—	—
Hamada	14·8	226	3 7	− 5	—	—	—	—
Koti	15·2	219	3 18	+ 2	5 58	+ 4	—	—
Keizyo	15·9	244	e 3 23	0	e 6 2	− 5	—	—
Taikyu	16·0	236	3 27	+ 3	i 6 9	0	—	—
Husan	16·3	234	e 3 29	+ 2	e 6 17	+ 2	—	—
Hukuoka B	16·7	227	3 34	+ 3	6 22	0	—	—
Miyazaki	17·5	221	3 44	+ 5	6 49	+12	—	—
Nagasaki	17·6	226	6 45	S	(6 45)	+ 7	—	—
Tomie	18·3	229	3 47	0	—	—	—	—
Sverdlovsk	50·5	315	i 8 10	−10	i 15 0	− 1	24·5	—
Andijan	51·4	292	8 31	+ 4	e 15 19	+ 6	—	—
Tashkent	53·0	294	i 8 40	+ 2	i 15 24	−11	—	32·5
Moscow	61·8	322	—	—	e 17 32	+ 4	—	—
Pulkovo	61·9	329	—	—	e 17 33	+ 3	24·5	—
Grozny	65·4	308	e 10 0	− 2	e 18 31	+19	—	—
Tiflis	67·5	308	10 22	+ 7	18 45	+ 8	e 27·0	—
Yalta	71·1	315	e 10 43	+ 7	—	—	—	—

Additional readings :—
Vladivostok SS = +4m.12s.
Kobe eSZ = +5m.15s., eSN = +5m.18s.
Sumoto eN = +5m.34s.
Moscow e = +19m.0s.
Pulkovo e = +19m.0s.
Tiflis eSKKSE = +21m.0s.
Yalta e = +14m.36s.
Long waves were also recorded at Copenhagen, Scoresby Sund, Hong Kong, and Triest.

July 21d. 16h. Readings for an undetermined shock :—
Sofia e =33m.12s., L =36m.17s.
Simferopol e =34m.28s.
Zagreb eP =34m.46s., eNE =36m.30s. and 37m.42s., e =38m.10s.
Bucharest e =35m.0s., eE =35m.30s., eN =35m.33s., L =36m.20s.
Moscow P =36m.15s., eL =47m.30s.
Tiflis ePE =36m.22s., eSE =40m.51s., LE =42m.30s.
Triest eP =36m.25s., i =37m.55s., 39m.7s., and 39m.14s.
Pulkovo iP =36m.33s., L =46.0m.
Long waves were also recorded at Baku, Scoresby Sund, and other European stations.

July 21d. Readings also at 2h. and 3h. (Samarkand), 5h. (Tacubaya), 6h. (San Juan, Weston, and near Andijan), 11h. (Apia), 12h. (Oak Ridge and Scoresby Sund), 13h. (Basle and near Manila), 14h. (Batavia, Tacubaya, and Tucson), 15h. (Hong Kong, Medan, and near Manila), 16h. (Branner, near Medan (2), and near Tananarive), 17h. (Tacubaya), 18h. (Amboina), 19h. (Wellington), 20h. (Tiflis), 21h. (Sverdlovsk and Baku), 22h. (Baku, Sverdlovsk, Tashkent, near Andijan, and Samarkand).

July 22d. 17h. 9m. 28s. Epicentre 64°·6N. 147°·1W.

E. H. Bramhall. Maximum intensity Force VIII, 30 miles S.E. of Fairbanks. Damage at Fairbanks and some damage at Anchorage. Landslides and cracks. Macroseismic radius 300 miles. Epicentre 64°·6N. 147°·1W. (U.S.C.G.S.). See "The Central Alaska Earthquake of July 22nd, 1937." Bulleton of the Seismological Society of America, Vol. 28, No. 2, April, 1938, pp. 71-75. Macroseismic chart p. 73.

See also "Earthquakes Notes," Vol. IX, 1-2, p. 2, R.R.B. Central Alaska shaken. Proposed epicentre 64°35′N. 145°50′W.

$A = -\cdot3621$, $B = -\cdot2343$, $C = +\cdot9022$; $\delta = -2$; $h = -10$;
$D = -\cdot543$, $E = +\cdot840$; $G = -\cdot758$, $H = -\cdot490$, $K = -\cdot431$

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
College		0·4	311	i 0 6	P_g	—	—	e 11·1	—
Sitka		9·5	137	e 2 6k	−14	—	—	—	—
Victoria		20·7	130	4 43	− 1	8 33	+ 2	13·5	—
Seattle		21·6	129	4 41	−13	i 8 44	− 5	e 10·1	—
Saskatoon		24·1	102	5 12	− 6	9 30	− 4	12·1	—
Bozeman		27·4	116	e 5 48	− 1	e 10 7	−21	e 13·0	—
Ferndale		27·5	139	e 5 58	+ 8	e 10 45	+15	—	—
Ukiah		29·1	139	i 6 7	+ 3	i 10 29	−27	i 12·8	—
Berkeley		30·5	138	i 6 17	+ 1	i 11 17	− 1	e 13·7	—
San Francisco	E.	30·6	138	e 6 21	+ 3	—	—	—	—
Branner		31·0	139	e 6 24	+ 3	e 11 9	−17	—	—
Lick		31·2	138	e 6 20	− 3	—	—	e 14·8	—
Fresno	N.	32·3	137	e 6 36	+ 3	—	—	e 18·2	—
Tinemaha		32·4	134	i 6 35	+ 1	e 11 1	−47	—	—
Halwee		33·4	134	e 6 43	+ 1	—	—	—	—
Santa Barbara		34·5	137	e 6 51	− 1	e 12 34	+14	—	—
Mount Wilson		35·2	135	i 6 57	− 1	i 12 34	+ 3	—	—
Pasadena		35·2	135	i 6 56	− 2	i 12 35	+ 4	i 15·9	—
Riverside		35·6	135	i 7 0	− 1	i 12 45	+ 7	—	—
La Jolla		36·7	135	e 7 7	− 3	—	—	—	—
Sikka		38·8	281	7 38	+10	—	—	—	—
Tucson		39·3	127	i 7 35	+ 3	e 13 33	− 1	—	—
Scoresby Sund		40·0	25	i 7 38	0	13 31	−13	—	—
Chicago		40·2	96	e 7 40	0	13 48	0	20·2	—
Chicago (Loyola)		40·2	96	i 7 40	0	e 13 47	− 1	—	—
Ivigtut		40·8	46	i 7 45k	0	13 54	− 2	17·5	—
Florissant		41·6	100	e 7 48	− 3	i 14 8	0	—	—
St. Louis		41·8	100	e 7 50	− 3	i 14 9	− 2	—	—
Toronto		42·3	86	7 54	− 3	14 11	− 8	19·5	—
Nemuro		42·4	274	7 49	− 9	14 19	− 1	21·1	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ottawa		42·5	81	7 57	− 2	14 19	− 3	19·7	—
Haboro		43·2	278	9 11	+67	—	—	—	—
Seven Falls		43·2	75	8 1	− 3	14 36	+ 4	20·5	—
Honolulu		43·9	194	i 8 15	+ 5	i 14 44	+ 2	e 18·2	—
Vermont		44·3	80	i 8 10	− 3	i 14 47	− 1	e 20·5	—
Sapporo		44·5	277	8 15	0	14 26	−25	20·6	—
Reykjavik		45·4	31	10 18	PP	18 21	SS	—	—
Hakodate		45·8	276	8 32	+ 7	—	—	—	—
Fordham		46·0	84	8 34	+ 7	15 31	+19	—	—
Sendai		46·1	273	8 47	+19	15 47	+33	25·7	—
East Machias		46·5	75	i 8 37	+ 6	e 15 12	− 7	i 23·3	—
Oak Ridge		46·6	80	e 8 28	− 4	e 15 18	− 3	e 22·5	e 23·5
Weston		46·8	80	i 8 32	− 1	i 15 19	− 5	—	26·5
Miyako		47·0	272	8 34	− 1	15 24	− 2	23·1	—
Georgetown		47·2	86	e 8 34	− 2	15 24	− 5	—	—
Philadelphia		47·2	85	e 8 33	− 3	i 15 23	− 6	i 18·8	—
Morioka		47·3	273	8 36	− 1	15 28	− 3	25·3	—
Akita		47·7	275	8 48	+ 8	15 37	+ 1	—	—
Mizusawa	N.	47·8	273	e 8 41	0	15 18	−20	19·3	—
Halifax		48·2	72	8 38	− 6	15 32	−11	20·5	—
Vladivostok		48·4	285	e 8 40	− 6	i 15 42	− 4	e 23·1	29·3
Sakata		48·5	275	9 58	+72	—	—	—	—
Hukusima		49·2	273	8 54	+ 2	15 53	− 5	—	—
Aidu		49·5	273	8 49	− 5	16 25	+23	—	—
Columbia		49·6	94	i 8 57	+ 2	e 16 5	+ 2	e 24·7	—
Niigata		49·7	275	9 6	+10	—	—	—	—
Mito		50·4	273	8 59	− 2	—	—	—	—
Tukubasan		50·4	273	9 2	+ 1	16 12	− 2	—	—
Kakioka		50·6	273	9 32	+30	16 38	+21	—	—
Tyosi		50·7	271	9 4	+ 1	—	—	—	—
Kumagaya		51·0	274	9 5	− 1	16 17	− 5	—	—
Maebasi		51·0	274	9 6	0	16 29	+ 7	—	—
Nagano		51·1	276	9 8	+ 2	16 30	+ 6	25·0	—
Wazima		51·1	277	9 9	+ 3	16 21	− 3	25·6	—
Oiwake		51·2	275	9 7	0	16 31	+ 6	25·0	—
Tokyo		51·2	272	9 8	+ 1	16 38	+13	—	—
Yokohama		51·5	273	9 15	+ 6	16 34	+ 5	—	—
Hunatu		51·9	274	9 10	− 2	16 30	− 5	25·2	—
Kanazawa		51·9	276	9 9	− 3	16 42	+ 7	24·9	—
Mera		51·9	272	9 15	+ 3	16 47	+12	—	—
Misima		52·1	273	9 14	0	—	—	—	—
Numadu		52·1	273	9 15	+ 1	16 41	+ 3	—	—
Guadalajara	N.	52·5	125	e 9 10	− 7	—	—	—	—
Gihu		52·8	275	9 17	− 2	16 38	− 9	26·6	—
Nagoya		52·9	275	9 21	+ 1	—	—	21·7	30·6
Hamamatu		53·0	273	9 13	− 8	17 4	+14	25·1	—
Hikone		53·1	275	9 26	+ 5	17 0	+ 9	—	—
Hatidyozima		53·4	271	9 36	+12	16 51	− 4	25·9	—
Kameyama		53·4	275	9 23	− 1	16 56	+ 1	26·0	—
Toyooka		53·5	277	9 24	0	e 17 5	+ 8	27·0	33·2
Tu		53·5	275	9 31	+ 7	16 59	+ 2	—	—
Manzanillo	N.	53·7	127	—	—	e 16 59	0	—	—
Osaka		54·0	276	9 27	− 1	16 58	− 5	—	—
Osaka B		54·0	276	9 26	− 2	18 14	+71	26·4	—
Yagi		54·0	276	9 29	+ 1	—	—	—	—
Kobe	E.	54·1	276	e 9 45	+16	e 16 59	− 4	e 21·5	28·6
	N.	54·1	276	e 9 36	+ 7	e 17 13	+10	e 21·0	32·4
	Z.	54·1	276	e 9 29	0	e 17 10	+ 7	e 21·6	30·8
Heizyo		54·4	287	e 9 39	+ 8	17 0	− 9	25·2	31·2
Yingkow		54·4	292	8 51	−40	—	—	—	—
Sumoto		54·5	276	9 33	+ 1	17 10	0	21·3	33·9
Wakayama		54·5	276	9 30	− 2	17 9	− 1	—	—
Sjomisaki		54·9	276	9 33	− 2	17 16	0	—	—
Hamada		55·2	279	9 42	+ 5	17 28	+ 8	26·3	—
Tacubaya	N.	55·2	121	e 9 42	+ 5	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Upsala		55·3	9	9 33	− 5	i 17 18	− 3	e 26·5	28·8
Zinsen	N.	55·3	286	e 10 7	+29	e 17 20	− 1	20·8	34·6
Aberdeen		55·7	23	i 9 41	+ 1	i 17 22	− 4	—	31·3
Muroto		55·7	276	9 43	+ 3	17 37	+11	—	—
Koti		55·8	277	9 41	0	17 36	+ 8	28·3	—
Pulkovo		55·9	2	i 9 41	− 1	e 17 25	− 4	26·5	28·3
Taikyu		55·9	283	e 9 18	−24	17 29	0	22·4	—
Dairen		56·2	290	9 21	−23	17 32	− 1	—	—
Husan		56·3	281	9 53	+ 8	17 36	+ 2	e 21·6	—
Vera Cruz	E.	56·5	118	e 9 45?	− 1	—	—	—	—
Hukuoka		57·1	280	e 9 30	−20	17 46	+ 1	—	36·3
Hukuoka B		57·1	280	e 10 2	+12	17 48	+ 3	e 22·0	—
Kumamoto		57·6	280	10 0	+ 6	17 46	− 5	—	—
Titizima		57·6	265	10 0	+ 6	—	—	—	—
Unzendake		57·9	280	9 56	0	17 55	0	—	—
Nagasaki		58·0	280	9 59	+ 2	17 56	− 1	26·9	—
Miyazaki		58·1	276	9 57	− 1	18 1	+ 3	27·3	—
Oaxaca	N.	58·3	118	i 9 54	− 5	—	—	—	—
Durham	N.	58·5	23	i 9 54	− 6	17 56	− 7	—	34·5
Rathfarnham Castle		58·6	27	i 10 0	− 1	i 18 5	+ 1	27·9	35·9
Stonyhurst		58·8	23	10 4	+ 2	18 7	0	28·0	33·8
Copenhagen		59·0	13	i 10 3	− 1	e 18 2	− 8	27·5	—
Bidston		59·1	25	i 10 6	+ 2	i 18 32	+21	28·5	37·5
Semipalatinsk		59·6	327	10 6	− 2	18 8	− 9	30·5	—
Moscow		59·9	357	i 10 9	− 1	18 22	+ 1	30·0	41·8
Hamburg		60·8	15	i 10 16k	0	e 18 34	+ 1	e 26·8	37·5
Oxford		61·0	24	i 10 18k	0	i 18 32	− 3	e 25·4	38·4
Kew		61·4	23	i 10 19k	− 1	i 18 39	− 1	28·5	30·4
De Bilt		61·7	18	i 10 22k	0	i 18 45	+ 1	e 29·5	31·1
Göttingen		62·8	16	i 10 29	− 1	i 19 1	+ 3	—	39·5
Uccle		62·8	21	i 10 28k	− 2	i 18 58	0	30·5	34·9
Zi-ka-wei	Z.	62·9	286	e 10 32	+ 2	19 12	+12	35·7	53·3
Jersey		63·3	25	i 10 40	+ 7	i 18 55	− 9	e 28·6	40·5
Jena		63·6	15	i 10 34	− 1	e 19 4	− 4	e 27·5	34·0
Cheb		64·5	15	e 10 42	+ 1	e 19 21	+ 2	e 34·5	38·5
Paris		64·5	22	i 10 40	− 1	i 19 26	+ 7	24·5	31·5
Prague		64·8	13	10 42k	− 1	e 19 21	− 2	e 25·5	45·0
Karlsruhe		65·1	18	i 10 49	+ 4	19 32?	+ 5	27·0	43·4
Strasbourg		65·5	18	i 10 45k	− 2	i 19 32	0	i 31·8	41·2
Stuttgart		65·5	17	i 10 46k	− 1	e 19 29	− 3	e 27·5	41·0
Lemberg	E.	65·7	7	e 10 45	− 3	e 18 37	−57	e 28·9	54·4
	N.	65·7	7	e 10 50	+ 2	e 19 52	+18	e 32·2	39·5
Basle		66·5	19	e 10 51	− 3	19 43	− 1	—	—
Vienna		66·7	12	e 10 53	− 2	e 19 48	+ 2	e 28·5	50·5
Zurich		66·8	18	e 10 53	− 3	e 19 47	− 1	—	—
Neuchatel		66·9	19	e 10 54	− 2	e 19 50	+ 1	—	—
Port au Prince		66·9	95	i 14 27	PPP	e 19 34	−15	e 32·4	—
Almata		67·1	327	10 59	+ 2	20 18	+27	33·7	—
Stara Dala		67·3	11	e 10 50	− 9	e 19 58	+ 4	e 31·5	44·5
Chur		67·4	18	e 10 58	− 1	e 19 54	− 1	—	—
Graz		67·8	13	i 10 57	− 5	i 20 0	0	e 35·3	45·6
Isigakizima		67·8	280	10 52	−10	—	—	—	—
Frunse		68·0	329	e 10 39	−24	—	—	35·0	—
Kecskemet	Z.	68·3	11	i 11 7	+ 2	e 20 17	+11	e 34·0	41·0
Taihoku		68·3	283	10 13	−52	20 13	+ 7	37·8	—
Laibach		68·8	14	e 11 7k	− 1	e 20 13	+ 2	e 35·9	46·3
Padova		69·1	16	e 11 10	0	20 18	+ 3	e 36·5	40·5
Triest		69·1	15	i 11 8k	− 2	i 20 14	− 1	e 32·3	37·1
Zagreb		69·1	13	e 11 8k	− 2	e 20 12	− 3	e 33·5	36·3
Bagnères		69·6	25	—	—	e 20 44?	+23	i 30·8	36·5
San Juan		69·7	90	e 11 17	+ 3	i 20 19	− 3	e 29·5	—
Andijan		70·5	330	11 19	+ 1	21 10	+38	36·5	—
Belgrade		70·5	9	i 11 17a	− 1	e 20 40	+ 8	e 28·8	37·5
Tainan		70·6	282	10 31	−48	20 34	+ 1	—	—
Tashkent		70·6	332	i 11 16	− 3	i 20 27	− 6	e 30·5	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. r.	s.	m.	m.
Theodosia		70·7	359	11 20	0	20 36	+ 2	—	—
Simferopol		70·8	0	11 20	0	e 20 40	+ 5	—	—
Sebastopol		71·1	1	i 11 22	0	i 20 40	+ 2	25·3	—
Bucharest		71·2	5	i 11 10	−13	i 20 40	0	30·5	46·5
Yalta		71·3	0	i 11 25	+ 2	20 47	+ 6	37·5	—
Piatigorsk		71·4	353	11 22	− 2	i 20 43	+ 1	e 24·5	—
Barcelona		71·6	24	11 24	− 1	20 45	+ 1	32·1	39·6
Grozny		71·9	350	11 30	+ 3	20 50	+ 2	e 25·5	—
Toledo		71·9	30	i 11 27	0	i 20 50	+ 2	28·9	42·4
Tortosa	N.	71·9	26	11 26.	− 1	20 52	+ 4	34·0	49·5
Sotchi		72·0	355	11 28	0	e 20 52	+ 3	—	—
Samarkand		72·7	333	10 56	−36	20 56	− 1	—	—
Sofia		72·8	7	e 11 31	− 1	e 20 58	0	29·4	45·4
Tiflis		73·6	352	i 11 36$_4$	− 1	e 21 8	+ 1	35·5	46·0
Hong Kong		73·8	288	11 41	+ 3	21 5	− 4	33·2	42·6
Capodimonte	N.	73·9	15	i 11 43	+ 4	i 21 32	+22	35·5	40·5
Granada		74·6	30	i 11 40	− 3	i 21 19	+ 1	—	—
San Fernando		74·7	33	11 44	+ 1	i 21 24	+ 5	35·5	—
Malaga		74·8	31	i 11 49	+ 5	i 21 26	+ 6	—	—
Almeria		75·1	29	e 11 48	+ 2	e 21 23	− 1	e 31·7	45·4
Algiers		76·2	24	i 11 52	0	e 21 28	− 8	36·5	49·0
Manila		77·8	278	12 3	+ 2	21 51	− 2	—	39·5
Phu-Lien		78·1	293	e 12 13	+11	e 22 3	+ 7	—	43·4
Dehra Dun		79·0	321	21 52	S	(21 52)	−14	40·0	49·5
Apia		80·4	203	—	—	22 54	+33	—	—
Ksara		81·9	358	i 12 24k	+ 1	22 44	+ 8	—	—
Agra	N.	82·1	320	e 12 25	+ 1	e 22 34	− 4	—	50·8
Calcutta	N.	83·3	310	—	—	i 23 6	+16	39·5	52·9
Helwan		85·8	2	12 47	+ 5	i 23 17	+ 2	—	—
Hyderabad		91·1	323	13 3	− 5	24 3	− 1	43·3	57·5
Bombay		91·3	323	e 12 56	−13	23 20	[−20]	—	58·5
Medan		96·9	294	e 18 25	?	i 24 5	[− 7]	e 44·5	—
Kodaikanal	E.	98·2	316	—	—	e 23 44	[−34]	43·5	57·8
La Paz		100·1	107	e 17 37	PP	i 27 39	PPS	49·9	52·2
Colombo		100·6	313	19 6	?	—	—	50·6	57·1
Batavia		102·4	282	e 18 19	PP	e 25 36	− 4	e 46·5	—
Riverview		109·3	231	—	—	e 25 11	[+ 2]	e 45·9	53·6
Sydney		109·3	231	—	—	e 24 56	[−13]	65·5	71·0
Wellington		109·7	210	19 32?	PP	25 2	[− 9]	52·4	54·5
Christchurch		112·3	211	e 17 2	?	e 29 12	PS	53·5	—
Adelaide		114·7	242	e 7 40	?	e 29 13	PS	46·4	65·5
Melbourne		115·0	235	—	—	i 27 44	{+64}	—	—
Rio de Janeiro		116·4	88	e 19 53	PP	i 29 40	PS	i 43·7	67·5
Perth		121·4	261	26 22	S	(26 22)	[+28]	68·0	—
Tananarive		133·3	341	e 34 8	PPS	e 39 43	SS	68·8	72·8
Cape Town		148·1	23	i 19 48	[+ 4]	i 29 59	{− 8}	e 70·5	81·4

Additional readings :—

Sitka i = +2m.16s. and +2m.54s.
Seattle e = +4m.48s., ePP = +5m.6s., iS = +8m.58s., e = +10m.4s., L = +10m.44s.
Bozeman e = +6m.33s., ePnP = +9m.7s., S = +10m.24s. and +10m.34s.
Ferndale ePN = +6m.7s., eN = +11m.4s.
Ukiah e = +6m.14s., +7m.14s., +8m.32s., +8m.40s., and +9m.56s., eS = +10m.47s., iS = +11m.0s., iS = +11m.14s., i = +14m.42s., iL = +16m.2s., i = +18m.2s.
Berkeley ePZ = +6m.21s., eS = +11m.28s., iSN = +11m.31s.
San Francisco ePN = +5m.52s.
Branner eN = +11m.32s.
Lick iP = +6m.28s.
Tinemaha eZ = +52m.1s.
Mount Wilson iZ = +52m.27s.
Pasadena iZ = +52m.24s.
Tucson i = +9m.12s., S = +13m.38s.
Scoresby Sund iPP = +9m.11s., e = +13m.42s., i = +13m.53s., eE = +15m.26s., SS = +16m.44s.

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Chicago e = +6m.34s., iP = +7m.44s., i = +8m.58s., iPP = +9m.8s., S = +13m.3s., i = +13m.6s., +15m.45s., and +16m.9s., iSS = +16m.44s.
Chicago (Loyola) iPPP = +9m.19s., isSS = +16m.47s.
Ivigtut e = +7m.53s., PP = +9m.18s., e = +9m.24s., eZ = +10m.25s., e = +14m.23s., +16m.14s., and +16m.56s.
Florissant i = +7m.53s., +9m.11s., and +9m.24s., e = +17m.26s. and +19m.1s.
St. Louis iP = +7m.53s., iPP = +9m.12s., i = +9m.31s., iPPP = +9m.42s., iP$_c$P = +9m.51s., i = +14m.1s., iSS = +16m.45s.
Toronto PP = +9m.28s., SSS = +17m.12s.
Ottawa PP = +9m.38s., i = +14m.53s., SSS = +17m.36s.
Seven Falls PP = +9m.44s., SS = +17m.16s.
Honolulu e = +10m.12s., eS = +14m.26s., e = +16m.31s., iS$_c$S = +17m.57s.
Vermont e = +8m.49s., iPP = +9m.53s., e = +13m.59s., iS = +14m.53s., e = +17m.21s., i = +17m.42s., +18m.5s., and +18m.10s., e = +19m.56s., i = +20m.16s.
East Machias i = +10m.30s., eP$_c$P = +10m.32s., e = +14m.41s., eS = +15m.22s., iS = +15m.32s., e = +18m.2s., iSS = +18m.46s. and +19m.24s., i = +22m.45s.
Oak Ridge eE = +8m.46s., ePP = +10m.20s., iSE = +15m.31s., eSS = +18m.42s.
Weston iP$_c$PZ = +9m.45s., iPP = +10m.28s., iSS = +18m.51s.
Miyako PP = +10m.30s., SSS = +19m.2s.
Georgetown iP = +8m.38s., PP = +10m.27s.
Philadelphia iP = +8m.37s., i = +10m.29s., e = +12m.37s., iS = +15m.28s. +15m.39s., i = +15m.59s., iS$_c$S = +18m.18s.
Morioka PP = +10m.34s., SSS = +19m.12s.
Mizusawa ePE = +8m.48s.
Halifax PP = +10m.32s., SS = +19m.2s.
Aidu SS = +20m.22s.
Columbia ePP = +10m.55s., eS$_c$S = +19m.24s.
Mito SSS = +20m.7s.
Kakioka SSS = +20m.56s.
Tyosi SSS = +19m.36s.
Nagano PP = +11m.32s., SS = +20m.29s.
Oiwake PP = +11m.22s., PPP = +12m.4s., P$_c$S = +13m.38s., PS = +16m.41s., S$_c$S = +18m.57s., SS = +20m.5s., SSS = +21m.12s.
Tokyo SS = +19m.40s.
Kanazawa SS = +20m.53s.
Gihu SS = +21m.15s.
Toyooka ePE = +9m.38s.
Sumoto eSZ = +17m.14s.
Hamada PPP = +13m.6s., SS = +21m.29s.
Upsala PPPN = +12m.32s., iSE = +17m.26s., SSN = +21m.26s., SSSE = +23m.12s.
Aberdeen e = +23m.19s. and +26m.29s.
Koti SS = +22m.22s.
Kumamoto SS = +22m.15s.
Unzendake SS = +22m.38s.
Miyazaki SS = +22m.22s.
Durham PPN = +12m.7s., SSN = +21m.49s.
Rathfarnham Castle e = +11m.23s., iPP = +12m.14s., PPP = +13m.19s., iSS = +21m.53s.
Stonyhurst PP = +13m.15s.
Copenhagen P$_c$P = +10m.30s., PPZ = +12m.14s. and +12m.30s., PPP = +13m.40s., eE = +17m.20s., eN = +17m.32s., eSE = +18m.12s., eE = +18m.19s., SSN = +22m.5s., eE = +24m.32s.
Bidston i = +10m.39s., iPP = +12m.24s., iPPP = +13m.37s., e = +16m.42s., iSP = +18m.44s., i = +19m.40s., iSS = +22m.12s., i = +23m.19s. and +27m.2s.
Hamburg ePPN = +13m.56s., eSS = +22m.42s., iSSSE = +24m.54s., eZ = +25m.55s.
Kew i = +10m.45s., iPP = +12m.33s., iPPP = +14m.5s., eN = +16m.48s., i = +17m.28s., iSP = +18m.49s., iE = +19m.24s., iN = +19m.44s., iSSN = +22m.28s., iZ = +22m.59s., iN = +23m.36s., iE = +25m.44s., +26m.4s., i = +27m.4s.
De Bilt iZ = +12m.38s.
Göttingen iZ = +12m.46s., e = +24m.1s.
Uccle P$_c$PZ = +10m.58s., PPZ = +12m.46s., PPPZ = +13m.57s., PS = +19m.7s., iE = +21m.1s., iSSE = +23m.8s., iE = +26m.9s.
Zi-ka-wei iZ = +10m.40s., PPiZ = +13m.0s., PPPZ = +14m.26s., SSZ = +23m.24s., SSSZ = +25m.47s., SSSSZ = +26m.42s., iZ = +31m.38s., iZ = +34m.27s.
Jersey e = +11m.16s. and +15m.3s.
Jena ePE = +10m.38s., eSE = +19m.8s., eN = +19m.48s., eE = +20m.8s., eN = +23m.20s., eE = +23m.24s., eN = +26m.2s., eE = +26m.8s.
Paris ? = +13m.5s., e = +21m.20s.
Prague eSS = +23m.38s.
Strasbourg ePPE = +12m.28s., PPPZ = +14m.29s., e = +19m.44s., iPSN = +20m.8s., SSN = +24m.2s., SSSN = +26m.36s.

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Stuttgart iZN = eE = +10m.54s., ePgPZ = +11m.15s., ePPP = +14m.12s., e = +15m.40s., iS = +19m.42s. iPSE = +20m.20s., eSS = +23m.57s., eSSSEZ = +27m.8s.
Vienna PgP = +11m.34s., e = +14m.31s., +41m.43s., and +19m.58s., PS = +20m.25s., e = +23m.3s., SS = +26m.15s.
Port au Prince iPPNE = +14m.37s.
Stara Dala ePS = +20m.50s.
Graz iPS = +20m.34s., iSS = +24m.48s.
Kecskemet ePPZ = +13m.11s., ePS = +20m.30s., e = +22m.13s.
Taihoku S? = +23m.52s., +27m.17s.
Triest iPS = +20m.52s., SS = +24m.46s.
Zagreb e = +11m.22s., +21m.2s., +25m.8s., and +28m.18s.
San Juan e = +16m.10s. and +17m.14s.
Belgrade i = +12m.13s., PPP = +15m.36s.
Bucharest iP = +11m.20s., pP = +11m.40s., iPP = +14m.0s., iPPE = +14m.3s., PPP = +15m.44s., iSE = +20m.42s.
Toledo SS = +25m.20s., SSS = +27m.53s.
Sofia e = +21m.39s. and +28m.0s.
Tiflis PgP = +12m.1s., eZ = +14m.24s., eSSZ = +26m.7s., eSSSE = +29m.40s.
Hong Kong PS = +21m.38s., SS = +25m.42s., ? = +29m.32s.
San Fernando PPN = +14m.36s., PSN = +22m.6s., SSSN = +29m.34s.
Algiers ePP = +14m.43s., PS = +22m.8s., SS? = +26m.25s., SSS = +30m.2s.
Dehra Dun S = +31m.42s.
Apia SS = +27m.49s., SSS? = +30m.50s.
Ksara PP = +15m.32s.?, PS = +23m.28s., i = +42m.21s.
Calcutta GN = +33m.22s., iN = +33m.53s. and +34m.49s.
Helwan pP = +13m.2s., PP = +16m.12s., i = +20m.57s., isS = +23m.32s., PS = +24m.5s., pS = +24m.32s., SS = +28m.57s.
Bombay e = +18m.42s., S = +23m.40s., eE = +24m.0s., SS = +29m.15s.
Medan PE = +18m.37s.
Kodaikanal eSSE = +28m.36s., eSSS = +32m.14s.
La Paz PZ = +17m.54s., iN = +17m.58s., PPZ = +22m.4s., iS?Z = +28m.55s., SSN = +37m.25s., SSSN = +41m.20s., L_qN = +46·9m.
Batavia PN = +18m.25s., eN = +33m.0s.
Riverview iE = +26m.52s., iEN = +34m.38s.
Wellington PS = +28m.32s.?, PPS = +30m.10s., i = +33m.27s., SS = +35m.32s.?, SKKS = +40m.32s., SSS? = +41m.49s., L_q = +46·5m.
Christchurch ePKPZ = +20m.52s., ePPZ = +21m.17s., iN = +25m.19s., SKSEN = +27m.20s., iPSE = +30m.49s., L_qE = +47·2m.
Adelaide i = +25m.24s.
Melbourne SS = +35m.37s., SSS = +40m.30s., i = +48m.37s.
Rio de Janeiro iSSSN = +36m.44s., iSSSE = +36m.46s.
Perth PP = +30m.47s., PPP = +32m.32s., PPPP = +34m.32s., PS = +37m.32s., PPS = +38m.2s., SS = +43m.27s., SSS = +48m.32s., i = +53m.17s. and +53m.42s.
Tananarive EN = +37m.10s., E = +54m.58s.
Cape Town iPKPE = +20m.4s., iSKPN = +23m.20s., iSKPE = +23m.24s., iPPPN = +26m.36s., iPSKS = +33m.28s., iSSN = +42m.27s., iSSE = +42m.36s., iSSS = +47m.44s.
Long waves were also recorded at Mazatlan and Besançon.

July 22d. 23h. Readings which do not afford determination of epicentre :—

Victoria e = 51m., L = 61m.
College i = 52m.36s.
Tucson eP = 60m.3s., e = 60m.17s., eL = 71m.24s., eS = 74m.12s., eL = 76m.12s.
St. Louis ePN = 60m.24s., eEN = 72m.29s., iEN = 74m.57s. (these readings have all been diminished by 1h.).
Weston iPZ = 61m.4s., e = 65m.1s. and 68m.5s., eSSN = 71m.27s., M = 79m.27s.
Ottawa e = 62m.42s. and 70m.0s., L = 75m.12s.
Bozeman e = 63m.6s., eL = 67m.
Seattle e = 63m.6s.
Tashkent e = 63m.32s., 81m.6s., and 85m.0s., eL = 89m.0s., M = 97m.0s.
East Machias e = 65m.11s., 71m.30s., 76m.35s., 76m.41s., and 77m.5s., i = 77m.15s.
Philadelphia e = 65m.15s., 67m.57s., 71m.22s., and 71m.34s., eL = 74m.18s.
Berkeley eE = 65m.34s., eZ = 66m.30s., eN = 70m.43s.
Sverdlovsk eS = 70m.13s., L = 80m.0s., M = 86m.54s.
Seven Falls e = 70m.42s., L = 74m.24s.
Oak Ridge eZ = 71m.24s., eLZ = 76m.54s.
Scoresby Sund e = 72m.
Vladivostok e = 75m.27s., L = 80m.54s., M = 83m.6s.
Long waves were also recorded at Ivigtut, Grozny, Tiflis, Copenhagen, Pulkovo, De Bilt, Paris, Stuttgart, and Hong Kong.

July 22d. Readings also at 0h. (Andijan), 2h. (Almeria), 4h. (Hong Kong, Manila, and Sverdlovsk), 5h. (Sumoto, near Kobe, Mizusawa, and Nagoya), 6h. (Bucharest, Strasbourg, Sofia, and near Santiago), 7h. (Batavia, Manila, Hong Kong, Kobe, Sverdlovsk, Tiflis, Pulkovo, and Moscow), 8h. (near Andijan), 9h. (near Nagoya), 10h. (Alicante, Mount Wilson, Pasadena, Riverside, and Tinemaha), 13h. (La Paz, Mount Wilson, Pasadena, Riverside, Kew, Bidston, De Bilt, Paris, Stuttgart, Copenhagen, Sverdlovsk, and Pulkovo), 14h. (Guadalajara, Tacubaya, Vera Cruz, and Tashkent), 15h. (Grozny (2)), 16h. (Tashkent, Erevan, Frunse, Tchimkent, Samarkand, and near Andijan), 17h. (College and La Plata), 18h. (College (3)), 19h. (Wellington, Riverview, and near Nagoya), 21h. (Bucharest), 22h. (near Grozny).

July 23d. 7h. Shock from epicentre somewhere far north in Western Hemisphere.
Victoria e = 14m., L = 18m.
Pasadena ePZ = 16m.12s., eZ = 17m.30s., eLE = 25m.30s.
Mount Wilson iPZ = 16m.15s.
Riverside iPZ = 16m.16s.
Berkeley ePE = 16m.22s., eN = 16m.29s., eSE = 20m.23s., eN = 20m.37s., eLE = 22m.31s.
Pulkovo eP = 20m.2s., eS = 28m.49s., L = 47m.0s., M = 50m.0s.
Sverdlovsk iP = 20m.3s., eS = 28m.39s., L = 42m.0s., M = 52m.0s.
Moscow e = 20m.31s. M = 58m.12s.
Tashkent e = 22m.8s. and 31m.1s., L = 51m.0s., M = 58m.30s.
Ottawa e = 25m.18s., L = 29m.
Scoresby Sund 25m.36s., L = 29m.
Seven Falls e = 25m.42s., L = 37m.
Philadelphia e = 26m.20s., 26m.24s., 30m.45s., and 35m.9s., eL = 38m.18s.
Copenhagen S = 29m.40s., L = 48m.
Vladivostok e = 30m.30s., L = 36m.18s., M = 42m.18s.
Tiflis eSE = 31m.59s., eL = 50m., M = 63m.30s.
Long waves were also recorded at College, East Machias, Oak Ridge, Ivigtut, San Juan, Hong Kong, De Bilt, Strasbourg, Stuttgart, and Paris.

July 23d. 20h. 44m. 7s. Epicentre 38°·1N. 73°·2E.

$A = +\cdot2280$, $B = +\cdot7552$, $C = +\cdot6145$; $\delta = -8$; $h = -1$;
$D = +\cdot957$, $E = -\cdot289$; $G = +\cdot178$, $H = +\cdot588$, $K = -\cdot789$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan		2·7	346	i 0 51	P*	1 19	0	—	1·5
Tashkent		4·4	318	i 1 14	+ 4	e 2 17	S*	—	3·3
Frunse		4·9	12	1 16	− 1	i 2 5	−10	—	—
Samarkand		5·1	290	i 0 36	−44	—	—	—	—
Tchimkent		5·1	328	e 1 22	+ 2	i 2 12	− 8	—	3·7
Almata		5·9	27	e 1 25	− 6	e 3 7	S*	—	3·4
Agra	E.	11·6	160	2 54	+ 4	4 59	− 2	—	—
Semipalatinsk		13·3	20	3 13	0	5 29	−13	—	—
Bombay		19·1	181	e 4 23	− 4	e 8 53?	+56	e 9·8	—
Sverdlovsk		20·5	341	i 4 38	− 4	8 19	− 8	10·8	12·4
Grozny		21·4	293	e 4 59	+ 8	—	—	—	—
Tiflis		22·0	289	5 1	+ 3	8 59	+ 3	e 10·2	—
Erevan		22·3	285	e 4 53	− 8	e 8 53	− 9	—	—
Piatigorsk		23·4	295	e 5 17	+ 6	e 9 21	0	—	—
Theodosia		23·9	296	e 6 22	+19	—	—	—	—
Moscow		29·6	319	6 8	− 1	10 52	−12	15·4	19·8
Simferopol		29·8	297	e 6 13	+ 2	—	—	—	—
Sebastopol		30·3	296	—	—	e 13 32	SSS	—	—
Pulkovo		34·7	323	i 6 52	− 2	12 11	−13	16·9	20·9
Copenhagen		43·5	315	9 54	PP	14 27	− 9	17·9	—
Jena	N.	44·5	307	8 45	+30	—	—	—	—
Hamburg	Z.	45·2	312	e 10 4	PP	—	—	—	—
Stuttgart		46·4	305	e 8 30	0	e 15 10	− 8	e 18·9	—
Strasbourg		47·4	305	—	—	e 19 5	SS	—	—
Paris		50·7	306	—	—	21 53?	SSS	—	—
Scoresby Sund		56·3	336	—	—	17 53?	+19	—	—

Additional readings :—
Andijan $P_g = +53s.$, $i = +1m.7s.$, $S^* = +1m.14s.$
Frunse $i = +1m.17s.$, $i = +1m.48s.$, $i = +1m.52s.$
Tchimkent iPP = +1m.38s., i = +2m.8s.
Bombay eN = +5m.11s.
Tiflis e = +9m.4s., SSE = +9m.31s.
Long waves were also recorded at Vladivostok.

July 23d. Readings also at 0h. (Amboina), 2h. (Bucharest and Tiflis), 6h. (Chur, Piatigorsk and Grozny), 7h. (Grozny and Tiflis), 10h. (Grozny, and near Piatigorsk), 11h. (Grozny, Branner (3), and San Francisco (7)), 12h. (Branner (3) and San Francisco (3)), 14h. (Sverdlovsk and Tashkent), 16h. (Granada (2)), 17h. (Sitka), 18h. (Philadelphia and Oak Ridge), 19h. (Tiflis), 21h. (near Simferopol, Sebastopol, Theodosia, and Yalta), 22h. (Malaga, near Berkeley, Branner, Lick, and San Francisco), 23h. (St. Louis and Sitka).

July 24d. 9h. 1m. 45s. Epicentre 64°·6N. 147°·1W. (as on 1937 July 22d.).

$A = -\cdot3621$, $B = -\cdot2343$, $C = +\cdot9022$; $\delta = -2$; $h = -10$.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
College		0·4	311	i 0 14	+ 1	—	—	—
Sitka		9·5	137	—	—	e 4 37	SSS	e 4·9
Berkeley		30·5	138	—	—	e 12 17	+59	—
Haiwee	z.	33·4	134	i 6 49	+ 7	—	—	—
Santa Barbara	z.	34·5	137	e 6 57	+ 5	—	—	—
Mount Wilson	z.	35·2	135	i 6 57	− 1	—	—	—
Pasadena		35·2	135	e 6 57	− 1	—	—	e 19·2
Riverside	z.	35·6	135	i 6 59	− 2	—	—	—
Tucson		39·3	127	i 7 32	0	—	—	e 21·3
Scoresby Sund		40·0	25	—	—	16 45	SS	21·3
St. Louis		41·8	100	i 7 48	− 5	e 14 2	− 9	—
Ottawa		42·5	81	—	—	e 17 33	SS	21·3
Seven Falls		43·2	75	—	—	e 17 51	SS	22·3
Weston		46·8	80	i 8 31a	− 2	e 19 7	SS	e 24·2
Philadelphia		47·2	85	—	—	e 20 16	SSS	e 23·6
Sverdlovsk		57·1	343	—	—	e 17 40	− 5	31·3

Additional readings :—
Berkeley eE = +14m.7s., eZ = +18m.5s., eN = +18m.30s.
Pasadena iZ = +7m.2s., eZ = +7m.52s.
Tucson e = +7m.37s., +20m.27s., +20m.32s., and +20m.57s.
St. Louis iEN = +21m.47s., iE = +22m.21s.
Weston iPZ = +8m.36s., iP_cPZ = +9m.47s., ePP = +10m.21s.
Philadelphia e = +20m.30s., +22m.27s.
Long waves were also recorded at Tashkent, Strasbourg, Paris, East Machias, Oak Ridge, Ivigtut, and Tiflis.

July 24d. 15h. According to Kobe an earthquake in sea off Bonin Island. No determination based on the microseismic observations seems possible and the readings themselves are given here :—
Kobe ePE† = 21m.49s., eSE = 24m.42s.
Nagoya P = 22m.4s., S = 24m.39s.
Sumoto PEN = 22m.4s., eZ = 22m.12s., SEN = 24m.42s., M = 24m.48s.
Toyooka PN = 22m.23s., PE = 22m.25s., MN = 25m.6s.
Mizusawa P = 22m.37s., S = 25m.47s.
Sverdlovsk iP = 29m.17s., S = 37m.50s., L = 53·0m.
La Jolla ePN = 30m.24s.
Tiflis e = 30m.43s.
Santa Barbara iPZ = 30m.47s.
Tinemaha iPZ = 30m.50s.
Mount Wilson iPZ = 30m.53s., iZ = 32m.2s.
Pasadena iPZ = 30m.53s., iZ = 32m.1s.
Riverside iPZ = 30m.56s.
Tashkent records long waves.

July 24d. 16h. 8m. 54s. Epicentre 18°·0N. 109°·0W. (as on July 14d.).

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tucson		14·3	354	3 18	− 8	i 5 46	−20	e 6·1
La Jolla	N.	16·5	335	e 3 50	− 4	e 6 43	−15	—
Riverside		17·6	337	e 4 8	0	e 7 11	−12	—
Pasadena		18·0	337	i 4 15k	+ 2	e 7 38	+ 6	—
Mount Wilson		18·1	337	i 4 15	+ 1	i 7 38	+ 3	—
Santa Barbara	Z.	19·0	334	i 4 29	+ 3	—	—	—
Haiwee		19·7	340	e 4 38	+ 4	—	—	—
Tinemaha	N.	20·7	340	e 4 56	+12	—	—	—
Berkeley	E.	23·0	334	e 6 53	?	e 9 38	+24	—
St. Louis		26·1	35	e 6 19	PP	e 10 24	+17	e 12·6

Additional readings :—
Tucson i = +3m.58s., eP = +4m.9s., i = +4m.25s., iP = +5m.15s., e = +5m.19s., +5m.34s., +5m.37s., and +5m.44s.
Pasadena eE = +7m.16s.
Berkeley eN = +7m.36s. and +10m.6s., eZ = +10m.8s.
St. Louis iEN = +6m.25s.
Long waves were also recorded at Oak Ridge, Philadelphia, East Machias, Ottawa, Ivigtut, Scoresby Sund, and Paris.

July 24d. Readings also at 0h. (Mount Wilson, Pasadena, East Machias, Oak Ridge, Philadephia, Scoresby Sund, Sverdlovsk, and Tashkent), 1h. (Seattle), 2h. (Ivigtut and Scoresby Sund), 6h. (Scoresby Sund), 7h. (near Lick), 10h. (Manila, Christchurch, near Wellington, and near Medan), 11h. (near Medan), 16h. (Branner and near Lick), 17h. (Sverdlovsk, Tashkent, near Mizusawa, New Plymouth, and near Wellington (2)), 19h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 20h. (Zurich), 21h. (Sverdlovsk, Tashkent, and Tiflis), 22h. (Scoresby Sund).

July 25d. 13h. 13m. 1s. Epicentre 60°·2N. 148°·9W.

A = −·4277, B = −·2580, C = +·8663 ; δ = −3 ; h = −9 ;
D = −·517, E = +·856 ; G = −·742, H = −·447, K = −·500.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
College		4·7	6	e 1 17	+ 3	—	—	2·1	—
Sitka		7·7	107	e 1 49	− 7	e 3 21	− 4	—	—
Victoria		18·9	118	4 35	+11	8 11	+18	10·2	—
Saskatoon		24·5	91	e 5 17	− 5	e 9 35	− 5	13·0	—
Berkeley		28·0	131	e 5 58	+ 3	e 10 44	+ 6	—	—
Tinemaha		30·3	127	i 6 18	+ 3	—	—	—	—
Haiwee		31·2	127	e 6 24	+ 1	—	—	—	—
Santa Barbara		32·0	130	e 6 30	0	—	—	—	—
Mount Wilson	Z.	32·8	128	i 6 38	+ 1	—	—	—	—
Pasadena		32·9	128	i 6 38	0	i 11 58	+ 2	e 12·5	—
Riverside		33·3	128	i 6 41	0	—	—	—	—
La Jolla	N.	34·3	128	e 6 46	− 4	—	—	—	—
Tucson		37·5	121	e 7 14	− 3	e 13 9	+ 2	e 18·6	—
Honolulu		39·4	194	—	—	e 17 59?	?	—	—
Chicago		40·9	89	e 7 48	+ 2	e 13 52	− 6	e 21·1	—
St. Louis	E.	42·1	94	e 7 53	− 2	i 15 8	+52	e 22·3	25·5
Toronto		43·7	80	—	—	e 14 29	−10	23·0	—
Ottawa		44·2	76	e 8 11	− 1	e 14 43	− 3	21·0	—
Scoresby Sund		44·4	23	8 13	− 1	14 54	+ 5	—	—
Oak Ridge		48·4	75	e 8 43	− 3	e 15 40	− 6	e 22·0	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Philadelphia	48·6	80	e 8 46	− 1	e 15 39	−10	e 19·4	—
Weston	48·6	75	i 8 46a	− 1	e 15 48	− 1	e 23·7	—
East Machias	48·7	70	e 8 49	+ 1	e 15 50	0	25·2	—
Vladivostok	48·8	287	e 8 50	+ 1	e 16 14	+22	e 24·0	33·1
Columbia	50·3	89	—	—	e 16 8	− 5	25·5	—
Pulkovo	60·4	1	10 13	0	e 18 24	− 4	32·0	39·1
Sverdlovsk	61·0	343	i 10 16	− 2	i 18 37	+ 2	30·0	37·5
Edinburgh	61·1	21	—	—	e 17 59?	−38	—	—
Stonyhurst	63·2	22	—	—	e 19 59?	+56	—	—
Copenhagen	63·5	11	10 32	− 2	—	—	29·0	—
Moscow	64·3	357	10 39	0	19 19	+ 2	37·5	49·6
Kew	65·8	21	e 10 48	− 1	—	—	e 33·0	—
De Bilt	66·1	17	i 10 51	0	—	—	e 39·0	—
Uccle	67·3	19	i 10 58	− 1	—	—	e 35·0	—
Paris	68·9	20	i 11 9	0	—	—	41·0	—
Strasbourg	69·9	16	i 11 12	− 3	—	—	—	44·9
Stuttgart	69·9	15	e 11 15a	0	e 20 35	+11	e 40·0	45·0
Frunse	71·3	328	e 11 21	− 2	—	—	—	—
Zagreb	73·6	11	e 11 39	+ 2	—	—	—	—
Andijan	73·9	329	e 11 41	+ 2	—	—	—	—
Tashkent	74·1	332	i 11 38	− 2	i 21 14	+ 2	e 26·0	48·7
Hong Kong	74·3	287	21 29	S	(21 29)	+14	—	48·5
Theodosia	75·1	356	e 12 13	+27	—	—	—	—
Simferopol	75·2	358	e 11 48	+ 2	—	—	—	—
Piatigorsk	75·7	351	e 11 52	+ 3	—	—	—	—
Yalta	75·7	358	e 11 52	+ 3	e 21 37	+ 7	—	—
Samarkand	76·2	333	e 11 46	− 6	—	—	—	—
Toledo	76·2	28	11 52	0	—	—	—	—
Grozny	76·3	350	e 12 5	+13	—	—	—	—
Tiflis	77·8	350	12 2	+ 1	22 31	+38	e 41·0	51·4
Erevan	79·4	351	e 11 59	−10	—	—	—	—

Additional readings :—
College e = +1m.27s., i = +2m.23s.
Sitka e = +2m.4s., +2m.7s., i = +3m.9s. and +3m.12s.
Berkeley eE = +6m.16s. and +10m.11s.
Tinemaha iZ = +9m.18s.
Tucson iP = +7m.18s., i = +7m.22s., +7m.27s., iPPP = +9m.36s., eSS = +15m.59s.
Chicago eP = +9m.11s., e = +11m.59s., +13m.36s., +13m.49s., +16m.25s., +16m.54s., +18m.50s., +19m.51s., +20m.3s., and +20m.47s.
St. Louis epPE = +7m.57s., isSE = +15m.16s., eSSE = +18m.12s.
Scoresby Sund +9m.53s. and +18m.17s.
Oak Ridge eZ = +10m.30s.
Philadelphia ePPP = +10m.39s., eS = +15m.45s., eSS = +18m.33s.
Weston eP_cPZ = +10m.10s., eSS = +19m.14s.
East Machias ePPP = +10m.44s., e = +16m.32s., +19m.44s., +23m.8s.
Columbia e = +20m.10s., +20m.18s.
Kew ePPZ = +13m.12s.
De Bilt ePPZ = +13m.22s.
Uccle PP = +13m.31s.
Strasbourg iPP = +13m.46s.
Stuttgart ePPNZ = +13m.41s.
Tiflis eE = +23m.31s.
Long waves were also recorded at Vermont, Zi-ka-wei, Ivigtut, and Bidston.

July 25d. Readings also at 0h. (La Paz), 2h. (near Sumoto), 3h. (Seattle, Tashkent, Samarkand, and near Andijan), 4h. (Christchurch and Wellington), 5h. (Seattle), 11h. (Scoresby Sund, Ivigtut, Sverdlovsk, St. Louis, East Machias, Oak Ridge, Vermont, Weston, Tucson, Philadelphia, Mount Wilson, Pasadena, Riverside, and Sitka), 12h. (Tashkent and Simferopol), 13h. (near Granada and Malaga), 14h. (Samrkand and near Semipalatinsk), 15h. (Samarkand), 16h. (Andijan), 19h. (Sverdlovsk, Tashkent, and Seattle), 22h. (Huancayo and Mizusawa), 23h. (Frunse, Sverdlovsk, Samarkand, Tashkent (2), and Andijan).

July 26d. 3h. 47m. 3s. Epicentre 18°·5N. 95°·7W.

$A = -\cdot0943$, $B = -\cdot9443$, $C = +\cdot3154$; $\delta = +7$; $h = -5$;
$D = -\cdot995$, $E = +\cdot099$; $G = -\cdot031$, $H = -\cdot314$, $K = -\cdot949$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Vera Cruz	E.	0·8	330	0 53	+35	—	—	—	—
Oaxaca	N.	1·8	214	1 4	S	(1 4)	+ 8	—	—
Puebla	N.	2·4	283	0 42	+ 1	—	—	—	—
Tacubaya	N.	3·4	286	1 0	+ 5	—	—	—	—
Guadalajara	N.	7·5	288	1 59	+ 6	—	—	—	—
Manazanfillo	N.	8·2	275	2 6	+ 3	—	—	—	—
Mazatlan	N.	11·1	297	i 2 49	+ 6	—	—	—	—
Chihuahua	Z.	13·9	319	e 3 32?	+11	—	—	—	—
Tucson		19·3	318	i 4 29k	0	8 1	− 1	i 8·7	—
Columbia		20·2	37	i 4 41	+ 2	i 8 28	+ 7	10·3	—
St. Louis		20·6	11	i 4 44	+ 1	i 8 24	− 5	—	—
Florissant		20·8	11	i 4 46	+ 1	e 8 34	+ 1	—	—
Port au Prince		22·2	87	i 5 2	+ 2	i 9 7	+ 7	11·1	—
Denver		22·6	340	e 5 4	+ 1	i 9 8	+ 1	—	10·6
La Jolla		24·0	311	i 5 18	+ 1	e 9 32	0	—	—
Chicago (Loyola)		24·3	13	i 5 22	+ 2	i 9 38	+ 1	—	—
Chicago		24·3	13	i 5 22	+ 2	9 39	+ 2	—	—
Riverside		24·7	312	i 5 24	0	—	—	—	—
Mount Wilson		25·3	312	i 5 30k	0	—	—	—	—
Pasadena		25·4	312	i 5 30k	− 1	i 9 48	− 8	i 10·5	—
Georgetown		25·9	35	i 5 37	+ 2	i 10 40	+36	—	—
Haiwee		26·3	316	i 5 39k	0	—	—	—	—
Santa Barbara		26·6	311	i 5 41	− 1	—	—	—	—
Tinemaha		27·1	317	i 5 45k	− 1	—	—	—	—
Philadelphia		27·8	37	i 5 53	0	i 10 32	− 3	i 11·3	—
Fresno	N.	27·9	314	i 5 53	− 1	—	—	—	—
San Juan		28·0	85	i 5 55	0	i 10 51	+13	—	—
Toronto		28·6	25	6 0	0	10 38	−10	14·9	—
Fordham		29·1	35	i 6 51	PP	12 25	SS	—	—
Lick		29·5	316	i 6 6	− 2	10 56	− 6	—	—
Branner		29·9	316	e 6 10	− 2	—	—	—	—
Berkeley		30·2	316	i 6 12k	− 2	e 10 59	−14	—	—
San Francisco		30·2	316	e 6 13	− 1	—	—	—	—
Oak Ridge		31·5	36	i 6 27a	+ 1	e 11 9	−25	—	—
Ottawa		31·5	27	6 27	+ 1	11 32	− 2	15·1	—
Ukiah		31·5	316	6 23	− 3	i 11 28	− 6	—	—
Weston		31·5	36	i 6 27a	+ 1	i 11 33	− 1	e 15·4	—
Vermont		32·0	31	i 6 30	0	i 11 41	− 1	i 14·5	—
Ferndale		32·9	327	e 6 37	− 1	—	—	—	—
Portland		33·0	34	i 6 38	− 1	e 11 52	− 5	—	—
Shawinigan Falls		33·8	29	6 48	+ 2	12 7	− 3	16·9	—
Saskatoon		34·6	348	6 51	− 2	12 15	− 7	18·9	—
Seven Falls		35·1	29	6 54	− 3	12 23	− 7	—	—
East Machias		35·3	36	i 7 5	+ 6	i 12 26	− 7	i 15·8	—
Huancayo		36·4	145	i 7 9	+ 1	e 12 44	− 6	i 16·6	—
Victoria		37·3	329	7 9	− 7	12 48	−16	16·9	—
Halifax		37·4	39	7 18	+ 2	i 12 59	− 6	15·9	—
La Paz		44·1	140	i 8 12k	0	14 43	− 2	20·4	34·5
Sitka		48·4	333	i 8 45	− 1	e 15 38	− 8	e 22·5	—
Ivigtut		54·1	26	i 9 27	− 2	i 16 59	− 6	—	—
Santiago		56·9	155	9 40	− 9	17 34	− 8	—	—
Honolulu		57·5	284	i 9 55	+ 2	i 17 55	+ 5	26·8	—
College		57·7	337	9 51	− 4	17 41	−12	e 24·6	—
La Plata		64·1	145	10 36	− 2	19 9	− 5	39·6	—
Rio de Janeiro		65·7	126	i 10 49	+ 1	i 19 18	−16	i 31·5	—
Scoresby Sund		67·3	20	i 10 58	− 1	e 19 43	−11	—	—
Rathfarnham Castle		75·0	38	i 11 45	0	i 21 8	−15	37·9	44·9
Edinburgh		76·3	36	i 11 53	+ 1	i 21 32	− 5	e 35·9	50·9
Aberdeen		76·6	34	i 11 53	− 1	e 21 21	−19	36·6	40·3
Bidston		76·9	38	i 11 56	0	i 21 39	− 4	e 31·9	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Stonyhurst		77·2	37	i 11 58	+ 1	i 21 41	− 6	37·9	39·9
Durham	N.	77·4	36	i 12 1	+ 3	e 21 44	− 5	—	—
Oxford		78·4	39	i 12 4k	0	e 21 45	−15	e 33·9	43·4
Jersey		78·5	42	i 12 7	+ 3	i 22 16	+15	e 44·5	45·9
Averroes		78·7	58	i 12 4	− 2	21 55?	− 8	36·9	42·4
San Fernando		78·9	56	i 12 8	+ 1	i 22 8	+ 3	37·9	—
Kew		79·0	39	i 12 7a	0	i 21 59	− 7	e 42·9	46·8
Bergen		79·4	29	12 9	0	22 5	− 5	—	—
Toledo		79·6	52	12 11	+ 1	22 10	− 2	—	45·2
Malaga		80·2	54	i 12 14	0	i 22 19	0	—	—
Granada		80·7	54	i 12 18	+ 2	i 22 18	− 6	—	—
Paris		81·5	42	i 12 21a	0	i 22 21	−11	38·9	39·9
Almeria		81·6	54	i 12 21	0	i 22 25	− 8	e 39·5	—
Uccle		82·0	39	i 12 24a	+ 1	i 22 30	− 7	—	41·8
De Bilt		82·1	37	i 12 26a	+ 2	22 33	− 5	e 38·9	40·6
Tortosa		82·7	50	12 27	0	22 37	− 7	39·4	51·8
Barcelona		83·7	48	12 32	0	22 46	− 8	35·4	47·2
Besançon		84·3	42	i 12 36	+ 1	i 22 50	−10	—	—
Hamburg		84·3	35	i 12 36a	+ 1	i 22 50	−10	e 36·9	42·9
Copenhagen		84·7	32	i 12 39	+ 2	i 23 5	+ 1	—	—
Strasbourg		84·9	40	i 12 38a	0	i 22 54	−12	—	47·4
Neuchatel		85·0	42	e 12 39	+ 1	e 22 54	−13	—	—
Göttingen		85·1	37	e 12 43	+ 4	—	—	—	—
Karlsruhe		85·1	40	i 12 45	+ 6	22 57	[− 4]	41·9	—
Basle		85·2	42	i 12 40	+ 1	e 22 57	[− 5]	—	—
Upsala		85·3	28	e 12 38	− 2	i 22 52	[−10]	e 38·9	44·2
Stuttgart		85·7	40	i 12 43a	+ 1	i 23 1	[− 4]	e 40·9	49·7
Algiers		85·8	53	12 38?	− 4	i 23 12	[+ 5]	42·9	52·9
Kecskemet	z.	85·9	38	e 12 33	−10	e 22 45	[−22]	—	—
Zurich		85·9	41	i 12 43	0	e 22 59	[− 8]	—	—
Jena		86·2	38	i 12 45	+ 1	i 22 57	[−12]	e 44·9	41·9
Chur		86·7	42	i 12 47	0	e 23 7	[− 5]	—	—
Cheb		87·0	38	i 12 50	+ 2	i 23 10	[− 4]	e 40·9	52·0
Prague		88·2	37	e 12 57a	+ 3	i 23 16	[− 5]	e 36·9	47·9
Triest		89·8	41	13 2k	0	i 23 52	− 1	e 46·5	52·7
Laibach		90·1	41	e 13 10	+ 7	i 23 50	− 5	—	—
Graz		90·2	40	i 13 3	− 1	i 23 22	[−12]	e 41·9	61·1
Vienna		90·2	38	i 13 4k	0	i 23 28	[− 6]	e 41·9	—
Pulkovo		90·6	24	i 13 4	− 1	i 23 53	− 7	39·9	48·0
Zagreb		91·1	41	e 13 9	+ 1	i 23 32	[− 7]	e 42·9	—
Stara Dala		91·5	38	13 12a	+ 2	e 23 30	[−12]	e 46·9	57·4
Budapest		92·2	38	e 13 3	0	i 24 11	− 3	e 48·9	—
Belgrade		94·4	40	e 13 24	+ 1	i 23 49	[− 9]	e 42·5	—
Moscow		96·2	24	13 31	0	24 39	− 9	46·4	51·9
Bucharest		98·0	37	e 13 13	−26	i 24 7	[−10]	44·9	53·4
Sapporo		99·4	322	13 44	− 2	—	—	—	—
Hakodate		100·6	321	13 56	+ 5	—	—	—	—
Wellington		101·6	231	13 55	− 1	25 0	[+25]	40·6	46·9
Sebastopol		102·0	35	e 17 35	PP	e 24 59	[+22]	—	—
Simferopol		102·1	34	e 14 8	+10	i 24 29	[− 8]	44·7	—
Sverdlovsk		102·4	12	13 56	− 3	32 9	SS	54·4	59·3
Yalta		102·4	34	e 13 59	0	i 24 29	[− 9]	38·9	—
Theodosia		102·7	33	e 14 3	+ 3	e 24 32	[− 8]	41·9	—
Sakata		102·8	318	14 6	+ 5	—	—	—	—
Christchurch		103·7	228	e 13 51a	−14	24 30	[−15]	47·3	—
Mito		103·9	316	14 37	+31	—	—	—	—
Niigata		103·9	318	14 45	+39	—	—	—	—
Vladivostok		104·7	326	14 8	− 1	24 41	[− 8]	—	—
Tokyo		104·8	316	18 5	PKP	—	—	—	—
Nagano		105·2	318	14 17	P	25 29	[+37]	—	—
Oiwake		105·2	318	14 18	P	25 30	[+38]	—	—
Hunatu		105·5	316	17 37	PKP	—	—	—	—
Waxima		105·6	319	14 49	?	—	—	—	—
Toyama		105·8	318	18 12	PKP	27 47	PS	—	—
Nagoya		106·9	317	e 17 19	?	—	—	—	—
Piatigorsk		107·2	30	e 14 25	P	i 24 55	[− 5]	—	—

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Kobe	E.	108·3	318	e 15 0	P	25 44	{− 9}	—	38·8
Sumoto		108·7	318	—	—	37 0	?	—	—
Grozny		109·0	29	e 14 47	P	e 27 19	?	—	—
Tiflis	E.	109·8	31	e 14 41	P	25 5	[− 7]	51·5	—
Helwan		109·9	48	e 14 57?	P	i 26 42	{+38}	—	—
Ksara		110·5	42	e 14 39	P	27 27	SS	—	—
Semipalatinsk		111·3	2	e 19 23	PP	—	—	—	—
Husan		111·8	322	19 19	PP	—	—	—	—
Miyazaki		112·5	317	19 14	PP	—	—	—	—
Baku		113·2	28	e 15 9	?	e 25 18	[− 7]	—	—
Almata		118·2	6	e 18 57	[+ 8]	—	—	—	—
Tashkent		118·9	12	19 5	[+15]	27 45	{+39}	55·9	62·4
Riverview		119·0	241	—	—	e 26 21	[+34]	—	37·6
Sydney		119·0	241	e 20 0	PP	e 25 7	[−40]	30·1	31·2
Zi-ka-wei	Z.	119·1	324	e 18 46	− 5	—	—	—	87·8
Cape Town		119·9	119	i 20 15	PP	i 25 45	[− 5]	e 57·9	—
Samarkand		119·9	15	18 39	[−14]	e 25 42	[− 8]	—	—
Andijan		120·0	10	e 18 54	[+ 1]	e 30 58	PS	53·9	—
Melbourne		124·1	237	i 20 40	PP	—	—	e 57·4	—
Adelaide		129·4	240	e 22 6	PP	e 35 54	SS	—	47·3
Hong Kong		130·0	323	21 18	PP	28 46	{+26}	64·5	—
Dehra Dun		131·1	7	20 17	[+63]	33 7	PPS	64·8	77·9
Manila		131·1	310	19 13k	[− 1]	22 41	PP	—	—
Agra	E.	134·2	7	e 19 13	[− 7]	26 20	SS	62·2	—
Phu-Lien		135·2	329	e 19 21	[− 1]	—	—	—	—
Calcutta		139·0	353	i 18 56	[−33]	—	—	—	—
Bombay		141·2	17	i 19 24	[− 9]	i 26 15	[−26]	—	—
Hyderabad		143·8	9	17 33	?	—	—	60·7	78·2
Perth		148·6	239	19 47	[+ 2]	—	—	—	23·9
Kodaikanal	E.	150·7	14	e 16 57	?	—	—	—	—
Medan		153·9	327	19 56	[+ 3]	—	—	—	—
Colombo		154·4	10	19 55	[+ 1]	—	—	78·5	89·7
Batavia	Z.	154·9	296	i 19 53k	[− 1]	—	—	—	—

Additional readings :—
Tucson PP = +4m.45s., i = +4m.49s., +6m.55s.
Columbia i = +4m.47s., e = +4m.57s. and +5m.2s., iS = +8m.31s., i = +9m.14s.
St. Louis ipP = +4m.55s., ipPPP = +5m.25s.
Florissant iE = +4m.55s., ipPE = +5m.1s., ipPPE = +5m.27s., iN = +8m.37s., isSE = +8m.52s.
Port au Prince PP = +5m.27s., PPP = +5m.37s., SS = +9m.57s.
Denver iN = +5m.9s., ipPE = +5m.15s., iE = +5m.22s., iE = +5m.28s. and +5m.33s., iPPN = +5m.37s., iN = +5m.40s., ipPPE = +5m.51s., iN = +6m.4s., and +6m.17s., iE = +6m.33s., iN = +6m.58s. and +7m.15s., iEN = +7m.33s., iE = +7m.50s., iE = +8m.9s., iN = +8m.19s., ePcPN = +8m.55s., isSE = +9m.24s., iE = +10m.10s.
Chicago (Loyola) i = +5m.41s., iPP = +5m.57s., iSS = +10m.12s.
Chicago iPP = +5m.40s., S = +9m.27s., iS = +9m.33s.
Pasadena iPcPZ = +8m.58s.
Philadelphia i = +6m.17s., +6m.28s., and +9m.18s., e = +11m.2s.
San Juan iPP = +6m.50s.
Toronto i = +6m.26s.
Fordham +7m.38s. and +18m.22s.
Berkeley eN = +6m.21s., ipPN = +6m.59s., ipPZ = +7m.6s., iZ = +7m.53s., esPPN = +9m.10s., eSE = +11m.5s., iSN = +11m.11s., iZ = +12m.5s.
Oak Ridge ipPN = +6m.50s., ePPN = +7m.24s., isPN = +7m.49s., isSN = +12m.3s., eSSN = +13m.15s.
Ottawa i = +6m.51s., PPP = +7m.32s., i = +11m.47s. and +14m.9s.
Weston iPP = +7m.26s., iPPP = +7m.36s., ePcSZ = +12m.54s.
Vermont iP = +6m.52s. and +7m.29s., iPP = +7m.43s., i = +10m.19s.
Portland ePE = +7m.48s. and +8m.18s., eSSE = +12m.38s.
Ferndale ePN = +6m.42s.
Shawinigan Falls PP = +7m.41s., SS = +13m.59s.
Seven Falls e = +8m.4s.
East Machias e = +7m.16s., i = +7m.40s. and +7m.56s., iPP = +8m.24s., i = +8m.54s., e = +11m.7s.
Huancayo i = +7m.29s. and +9m.10s., e = +9m.34s.
Halifax PPP = +8m.43s.
La Paz ipPZ = +8m.37s., sPZ = +9m.4s., iPPZ = +9m.51s., ipPPZ = +10m.15s., isSZ = +16m.9s., ScS = +18m.9s., iSSS = +18m.47s.

Continued on next page.

Sitka i = +9m.7s., iPPP = +11m.1s., i = +18m.31s.
Ivigtut pP = +9m.51s., eE = +10m.16s., PP = +12m.34s., e = +13m.21s., e = +17m.45s., eE = +19m.8s., +19m.50s., and +21m.33s.
Honolulu i = +10m.39s.
College eP = +10m.12s., e = +17m.7s., S = +17m.45s., e = +18m.44s. and +18m.55s., S_cS = +19m.30s., SS = +21m.37s.
Rio de Janeiro iSSE = +23m.43s., iSSN = +23m.48s.
Scoresby Sund iP_cP = +11m.22s., ePP = +13m.51s., eE = +15m.9s., iZ = +15m.29s., iEZ = +15m.42s., iS = +19m.49s., eZ = +20m.23s., eN = +20m.31s., eEN = +20m.45s.
Rathfarnham Castle i = +11m.54s., ipP = +12m.17s., iPP = +14m.51s., PPP = +17m.20s., isS = +21m.56s., PS = +22m.29s., i = +24m.58s.
Edinburgh i = +12m.16s., +13m.35s., +15m.13s., +21m.28s., +22m.21s., and +30m.46s.
Aberdeen e = +30m.45s.
Bidston iPP = +12m.26s.
Stonyhurst ipP = +12m.22s., isS = +22m.35s.
Durham ?N = +14m.18s.
Oxford i = +12m.26s., iS = +21m.50s.
Jersey ipP = +12m.32s., i = +14m.20s., +16m.0s., and +23m.1s., iSS = +27m.0s.
Averroes ePS = +22m.30s., eSS = +27m.16s.
San Fernando iN = +12m.46s. and +33m.26s.
Kew ipP = +12m.31s., iSKSE = +22m.13s., iZ = +22m.50s., isS = +22m.58s.
Paris pP = +12m.44s., SS = +23m.26s.
Uccle ipP = +12m.48s., isPZ = +13m.15s., PPE = +15m.32s., PPPE = +17m.20s., iPSE = +23m.15s., iSSE = +27m.40s., iPKP,PKPZ = +38m.49s.
De Bilt iZ = +12m.50s. and +13m.15s.
Hamburg iPN = +12m.38s., iPE = +12m.40s., iPPPZ = +15m.50s., eZ = +23m.44s., eN = +32m.57s.?
Copenhagen pP = +13m.0s., PP = +15m.49s., pPP = +16m.16s., sPP = +16m.37s., eN = +17m.23s., eE = +18m.18s., +20m.15s., and +22m.9s., eN = +22m.42s., iSKS = +22m.52s., SPZ = +23m.52s., PS = +24m.1s., eNZ = +24m.43s., eN = +26m.33s. and +27m.39s., SS = +28m.21s.
Strasbourg P_cPN = +12m.51s., pP = +13m.32s., iPP = +15m.12s., ipPPZ = +15m.53s., iPPP = +17m.7s., eSKSZ = +21m.44s., PS = +23m.27s.? SSN = +24m.9s., sSSE = +29m.10s., iPKP,PKPZ = +38m.43s.
Upsala iPE = +12m.40s., iPN = +12m.42s., iPPE = +16m.22s., iPPN = +16m.26s., iN = +23m.52s., iSSE = +28m.25s.
Stuttgart P_cP = +12m.52s., ipP = +13m.7s., i = +13m.26s., isP = +13m.32s., e = +14m.35s., +15m.10s., and +15m.26s., ePP = +16m.17s., e = +20m.6s., iS = +23m.14s., e = +23m.43s., ePPS = +24m.44s., e = +25m.18s., +27m.24s., +28m.21s., and +37m.26s.
Algiers PP = +16m.27s., PS = +23m.57s.
Kecskemet eZ = +12m.52s., +14m.10s., and +19m.50s.
Jena iPPEZ = +16m.5s., iPPN = +16m.9s., iSE = +23m.1s., iSN = +23m.17s., i = +23m.57s.
Chur i = +23m.22s.
Cheb e = +13m.17s. and +16m.12s.
Prague ePP = +16m.21s.
Triest i = +13m.39s., iS = +23m.27s.
Laibach e = +13m.37s., +14m.25s., SKS = +23m.24s., SS = +30m.37s.
Graz iPS = +23m.51s.
Vienna e = +13m.53s., +14m.56s., PP = +17m.6s., e = +21m.39s., PS = +23m.56s., PKKP = +29m.52s.
Pulkovo pP = +13m.28s., iPP = +16m.38s., ipPP = +17m.4s., SKS = +23m.27s., sS = +24m.24s., SS = +29m.51s.
Zagreb e = +13m.15s., eZ = +13m.33s., iNE = +23m.43s., i = +24m.3s., e = +24m.41s., +26m.7s., eNW = +29m.27s., eNE = +40m.21s.
Stara Dala ePP = +16m.21s.
Budapest iP_cP = +13m.17s., e = +13m.39s., eN = +13m.58s., ePPN = +16m.55s. eE = +17m.40s., iSKS = +23m.37s., eSN = +24m.15s., eS_cSE = +24m.19s., iN = +24m.42s., iPSE = +25m.20s., eE = +25m.55s., e = +26m.47s., e = +27m.10s.
Moscow pP = +13m.56s., PP = +17m.28s., SKS = +23m.58s., SS = +30m.57s.
Bucharest ePE? = +12m.19s., PP = +16m.41s., PPPN = +18m.39s., PPPE = +18m.45s., SKSE = +22m.58s., PS = +24m.57s.
Sapporo PP = +17m.49s.
Wellington i = +14m.14s., PP = +17m.42s., pPP? = +18m.27s., PPP? = +19m.2s., PS? = +27m.20s., i = +27m.47s., SSS = +34m.2s.; L_q = +37·5m.
Sverdlovsk ipP = +14m.21s., iPP = +18m.10s., pPP = +18m.35s., SSS = +36m.21s.; L_q = +47·2m.
Yalta e = +16m.50s., e = +18m.14s.
Christchurch i = +14m.3s., PP = +17m.44s., iSKKSE = +25m.18s., iSN = +25m.39s., PS = +27m.17s., iPPSEZ = +28m.5s., SS = +32m.44s., SSS = +36m.47s., SSSS = +40m.27s., L_qE = +41·9m.
Mito PP = +16m.22s.

Continued on next page.

Vladivostok pP = +14m.32s., sP = +14m.51s., PP = +18m.28s., SPP = +19m.10s.
Nagano PP = +18m.19s.
Oiwake PP = +17m.58s.
Piatigorsk i = +18m.33s.
Kobe iPKPE = +17m.46s., SE = +28m.2s.
Grozny e = +18m.55s.
Tiflis pPE = +15m.15s., PKPE = +18m.39s., pPKPE = +19m.5s., eE = +19m.26s., SE = +28m.35s., eE = +50m.5s.
Helwan epP = +15m.14s., PP = +19m.7s., pPP = +19m.17s., SKS = +25m.2s., SKKS = +25m.47s., sS = +27m.27s., PS = +28m.27s., PPS = +29m.24s.
Ksara epP = +15m.4s., iPP = +19m.9s., pPP = +19m.32s., SP = +28m.27s., SS = +34m.23s.
Miyazaki e = +28m.44s.
Baku e = +20m.3s.
Tashkent sP = +15m.49s., PP = +20m.4s., pPP = +20m.31s., sS = +28m.21s., SS = +36m.27s., SSS = +37m.3s.
Zi-ka-wei Z i = +20m.10s., i = +22m.44s. and +36m.32s.
Cape Town iSKPE = +21m.27s., iSKKSE = +27m.9s., iPSE = +30m.3s., iPSN = +30m.15s., iPPSE = +31m.15s., iSSN = +36m.33s., iSSSE = +41m.21s.
Melbourne i = +21m.5s., +31m.15s., +31m.44s., +38m.50s.
Adelaide i = +22m.24s., e = +32m.28s. and +38m.26s.
Hong Kong ? = +22m.37s., PKP? = +26m.45s., PP? = +26m.46s., SKS? = +31m.26s., SS? = +43m.57s.
Manila iZ = +21m.27s.
Agra iPKPE = +19m.22s., SKPE = +22m.32s., SKKSE = +28m.5s., PPSE = +33m.16s., SSE = +38m.46s., SSSE = +43m.47s.
Phu-Lien e = +21m.57s. and +22m.54s.
Calcutta eN = +17m.52s. and +21m.30s., SPP?N = +22m.31s., iN = +23m.1s., +23m.42s. and +24m.32s.
Bombay iEN = +19m.32s., ipPPN = +23m.0s., iE = +23m.6s.
Hyderabad SKSP = +30m.43s.
Medan iEN = +20m.17s.
Batavia iZ = +20m.14s.

July 26d. 8h. 18m. 9s. Epicentre 28°·5S. 113°·5W.

A = −·3510, B = −·8072, C = −·4747; δ = +11; h = +2;
D = −·917, E = +·399; G = +·189, H = +·435, K = −·880.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Huancayo		39·2	73	e 7 42	+11	e 13 19	−13	17·7	—
La Paz		43·4	84	e 8 6	0	14 34	− 1	20·3	26·5
Tucson		60·5	2	e 10 11	− 3	—	—	e 27·0	—
Riverside	z.	62·3	356	e 10 29	+ 3	—	—	—	—
Mount Wilson	z.	62·5	356	i 10 26	− 2	—	—	—	—
Pasadena		62·5	356	e 10 27	− 1	—	—	e 29·8	—
San Juan		65·3	50	(e 10 51?)	+ 5	—	—	e 10·9	—
Philadelphia		76·9	30	—	—	e 21 16	−27	—	—
Oak Ridge		80·5	31	e 12 3	−12	e 22 9	−13	e 39·8	—
Ottawa		81·2	26	e 12 21	+ 2	e 22 27	− 2	38·8	—
Seven Falls		84·5	28	—	—	e 23 21	+19	38·8	—
Paris		127·7	49	e 21 51?	?	—	—	68·8	—
Strasbourg		131·2	48	e 21 15	PP	—	—	e 71·8	—
Hamburg		132·1	41	e 22 51?	?	—	—	—	—
Stuttgart		132·1	48	e 19 8	[− 8]	—	—	e 69·8	—
Pulkovo		140·3	27	e 19 24	[− 7]	e 28 32	{−51}	74·8	78·6
Moscow		145·8	29	e 19 34	[− 6]	—	—	—	—
Sverdlovsk		151·4	7	e 19 43	[− 6]	e 27 10	[+14]	73·8	86·3
Ksara		153·3	71	e 19 45	[− 7]	—	—	—	83·8
Tiflis	z.	158·0	48	e 19 54	[− 4]	e 27 15	[+12]	e 90·8	—
Tashkent		167·0	351	e 22 27	?	e 45 38	SS	e 80·8	99·1

Additional readings :—
Huancayo e = +9m.54s., i = +16m.6s.
Tucson e = +10m.13s., +10m.16s.
Philadelphia e = +21m.41s.
Pulkovo e = +22m.27s., e = +33m.11s.
Sverdlovsk e = +43m.39s.
Ksara ePP = +23m.31s., ePPS = +36m.57s.
Tiflis eZ = +24m.3s.
Tashkent e = +24m.29s., i = +31m.51s., e = +47m.1s., e = +50m.51s., e = +52m.21s.
Long waves were also recorded at Santiago, Berkeley, Vladivostok, Baku, De Bilt, Kew, Scoresby Sund, Rio de Janeiro, and Sitka.

July 26d. 17h. Undetermined shock :—

Pasadena iPZ = 57m.20s., eZ = 58m.8s.
Riverside iPZ = 57m.22s.
Haiwee ePEN = 57m.23s.
Tucson P = 57m.45s., i = 57m.48s., 57m.55s., e = 58m.28s., i = 58m.50s., eL = 67m.6s.
Tiflis eZ = 65m.14s., eE = 69m.38s.
Copenhagen 65m.19s., 66m.5s., eN = 69m.42s.
Uccle iPZ = 65m.26s., iZ = 66m.13s.
Vienna PZ = 65m.30s., S = 66m.16s., SS = 66m.36s.
Stuttgart ePN = iZ = 65m.32s., epPE = ipPNZ = 66m.18s.
Paris P = 65m.33s., pP = 66m.17s.
Strasbourg iPZ = 65m.33s.k, ipPZ = 66m.18s.
Ksara iPKP = 65m.34s., ipPKP = 66m.23s., esPKP = 66m.44s., ePP = 69m.2s., epPP = 69m.50s., eSPP = 81m.44s.
Pulkovo e = 65m.45s., 68m.29s., and 69m.15s.
Triest e = 65m.38s., i = 66m.26s.
Moscow e = 65m.54s., 67m.27s., 68m.34s., and 69m.20s.
De Bilt eZ = 66m.9s.
Sverdlovsk e = 66m.14s., 72m.54s., and 82m.34s., L = 95·0m.
Stara Dala e = 66m.32s.
Oak Ridge eN = 70m.42s., eZ = 73m.54s., eLZ = 104m.
Tashkent e = 73m.36s., i = 74m.3s., e = 77m.8s., 80m.6s., and 82m.10s., M = 103·2m.

July 26d. 19h. 56m. 31s. Epicentre 38°·2N. 142°·0E.

Some damage at Isinomaki. Strongly felt at Tukubasan, Mito, Sendai, Mizusawa, and Hukusima. Radius greater than 300kms. See Seismological Bulletin of the Cent. Met. Obs., Japan, for the year 1937, Tokyo, 1939, pp. 45-48. Macroseismic chart, p. 46.

A = −·6208, B = +·4850, C = +·6159; $\delta = -5$; $h = -1$;
D = +·616, E = +·788; G = −·485, H = +·379, K = −·788.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sendai	0·9	274	0 18	− 2	0 31	− 3	—	—
Hukusima	1·3	250	0 23	− 2	0 38	− 6	—	—
Mizusawa	1·3	324	i 0 22	− 3	—	—	—	—
Yamagata	1·3	272	0 25	0	0 41	− 3	—	—
Miyako	1·4	0	0 26	− 1	0 48	+ 2	—	—
Onahama	1·5	215	0 6	−22	0 22	−27	—	—
Aidu	1·6	247	0 28	− 2	0 45	− 6	—	—
Morioka	1·6	337	0 29	− 1	0 46	− 5	—	—
Sakata	1·8	292	0 33	+ 1	—	—	—	—
Akita	2·1	315	0 35	− 2	0 59	− 5	—	—
Mito	2·2	214	0 37	− 1	1 4	− 2	—	—
Hatinohe	2·3	351	0 38	− 2	1 3	− 6	—	—
Niigata	2·3	263	0 39	− 1	1 10	+ 1	—	—
Kakioka	2·4	216	0 42	+ 1	1 11	− 1	—	—
Utunomiya	2·4	226	1 7k	+26	1 41	+29	—	—
Tukubasan	2·5	217	0 43	0	1 12	− 2	—	—
Tyosi	2·6	200	0 47	+ 3	1 19	+ 2	—	—
Aomori	2·8	340	0 43	− 4	1 12	−10	—	—
Kumagaya	2·9	225	0 51	+ 3	1 27	+ 3	—	—
Maebasi	3·0	232	0 51	+ 1	1 28	+ 1	—	—
Takada	3·1	250	0 57	+ 6	1 32	+ 3	—	—
Tokyo, Cent. Met. Ob.	3·1	216	0 52a	+ 1	1 29	0	—	1·9
Tokyo, I.U.	3·1	216	0 53	+ 2	1 30	+ 1	—	—
Komaba	3·2	216	0 53	+ 1	1 31	− 1	—	—
Mitaka	3·2	218	0 53	+ 1	1 32	0	—	—
Titibu	3·2	216	1 0	P*	1 40	S*	—	—
Katuura	3·4	207	1 0	P*	1 48	S*	—	—
Kiyosumi	3·4	207	1 0	P*	1 41	+ 4	—	—
Oiwake	3·4	236	0 55	0	1 32	− 5	—	—
Yokohama	3·4	215	0 57a	+ 2	1 37	0	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kamakura	3·5	216	1 0	+ 3	1 41	+ 1	—	—
Hakodate	3·7	345	0 52	− 8	1 23	−22	—	—
Koyama	3·7	221	1 0	0	1 45	0	—	—
Matumoto	3·7	238	0 57	− 3	1 46	+ 1	—	—
Mera	3·7	208	1 2k	+ 2	1 50	+ 5	—	—
Gotenba	3·8	221	1 13	P_g	2 12	S_g	—	—
Hunatu	3·8	224	1 2a	+ 1	1 48	+ 1	—	—
Kohu	3·8	228	1 1k	0	1 48	+ 1	—	—
Misima	3·9	220	1 7	+ 5	2 3	S*	—	—
Ito	4·0	217	1 6a	+ 2	1 50	− 2	—	—
Numadu	4·0	220	1 5	+ 1	1 59	+ 7	—	—
Urakawa	4·0	9	1 2	− 2	1 52	0	—	—
Toyama	4·1	250	1 6	+ 1	2 5	S*	—	—
Wazima	4·1	260	1 5k	0	1 58	+ 3	—	—
Yosiwara	4·1	223	1 0	− 5	1 55	0	—	—
Husiki	4·2	251	1 8	+ 1	—	—	—	—
Muroran	4·2	350	1 7	0	1 58	+ 1	—	—
Iida	4·3	232	1 9a	+ 1	2 2	+ 2	—	—
Takayama	4·3	242	1 8a	0	2 16	S*	—	—
Kanazawa	4·6	251	1 32	P_g	2 39	S_g	—	—
Omaesaki	4·7	222	1 14	0	2 22	S*	—	—
Obihiro	4·8	11	1 19	+ 4	2 18	+ 6	—	—
Hamamatu	4·9	225	1 18a	+ 1	2 19	+ 4	—	—
Sapporo	4·9	354	1 17	0	2 26	S*	—	—
Nagoya	5·0	235	1 21	+ 3	2 27	S*	—	2·9
Gihu	5·1	238	1 19k	− 1	2 26	+ 6	—	—
Hatidyozima	5·3	200	1 24	+ 2	2 19	− 6	—	—
Hikone	5·4	239	1 27k	+ 3	2 37	+ 9	—	—
Kameyama	5·6	235	1 29k	+ 2	2 34	+ 1	—	—
Tu	5·6	233	1 29	+ 2	2 40	+ 7	—	—
Nemuro	5·8	27	1 25	− 4	2 38	0	—	—
Kyoto	6·0	240	1 33	+ 1	2 39	− 4	—	—
Miyadu	6·1	246	1 35	+ 1	2 48	+ 3	—	—
Haboro	6·2	358	1 21	−14	—	—	—	—
Yagi	6·2	236	1 37	+ 2	2 52	+ 4	—	—
Osaka	6·3	238	1 39a	+ 3	3 11	S*	—	—
Osaka B	6·3	238	1 36a	0	3 3	+13	—	—
Toyooka	6·4	248	e 1 38k	0	2 50	− 3	—	3·7
Kobe	6·5	239	1 40	+ 1	i 2 56	+ 1	—	3·6
Wakayama	6·8	236	1 44	0	3 17	+14	—	—
Siomisaki	6·9	229	1 41	− 4	3 29	S*	—	—
Sumoto	6·9	238	1 43	− 2	3 8	+ 3	—	3·9
Tukusima	7·2	238	1 47	− 2	3 30	S*	—	—
Okayama	7·4	244	1 49	− 3	3 13	− 5	—	—
Sakai	7·5	252	1 54	+ 1	3 34	+14	—	—
Tadotu	7·7	242	1 56a	0	3 40	+15	—	—
Muroto	8·1	234	2 1	− 1	3 42	+ 7	—	—
Koti	8·3	239	2 4	0	3 30	−10	—	—
Hamada	8·6	251	2 10	+ 1	—	—	—	—
Hirosima	8·7	246	2 11	+ 1	4 4	+14	—	—
Matuyama	8·7	243	2 8k	− 2	3 47	− 3	—	—
Uwazima	9·1	240	1 58	−16	3 56	− 4	—	—
Vladivostok	9·1	306	i 2 12	− 2	3 58	− 2	—	5·2
Ooita	9·8	243	2 26a	+ 2	4 29	+12	—	—
Simonosaki	9·9	248	2 28	+ 3	4 29	+ 9	—	—
Hukuoka	10·5	247	2 35	0	4 36	+ 1	—	6·4
Hukuoka B	10·5	247	e 2 36	+ 1	e 4 44	+ 9	—	5·1
Kumamoto	10·7	243	2 37a	− 1	4 37	− 2	—	—
Miyazaki	10·7	237	2 37k	− 1	4 39	0	—	—
Husan	10·9	257	2 41a	+ 1	4 48	+ 4	—	7·0

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sikka		11·0	4	2 55	+13	—	—	—	—
Taikyu		11·0	262	i 2 42a	0	i 4 43	− 4	5·9	—
Unzendake		11·0	244	2 40	− 2	5 9	SSS	—	—
Titizima		11·1	179	2 40	− 3	—	—	—	—
Nagasaki		11·3	245	2 46	0	5 18	SSS	—	—
Kagosima		11·5	238	2 54	+ 6	4 58	− 1	—	—
Tomie		12·1	247	2 58	+ 1	5 31	SS	—	—
Zinsen	Z.	12·2	271	e 2 54	− 4	i 5 14	− 2	—	7·5
Heizyo		12·7	279	i 3 12	+ 7	5 27	− 1	—	—
Nake		14·3	230	3 26	0	6 3	− 3	—	—
Fengtien		14·7	290	4 13	?	7 6	?	—	—
Yingkow		15·5	285	3 40	− 2	—	—	—	—
Dairen		16·0	279	3 47	− 1	6 48	+ 2	—	—
Zi-ka-wei	Z.	18·3	255	i 4 17k	0	7 31	− 8	9·5	11·7
Isigakizima		20·5	235	4 38	− 4	8 30	+ 3	—	—
Taityu		22·9	241	5 13	+ 7	—	—	—	—
Taito		23·6	236	5 17	+ 4	9 39	+14	—	—
Takao		24·3	238	5 3	−17	—	—	—	—
Kosyun		24·4	236	5 23	+ 2	9 33	− 6	—	—
Hong Kong		28·7	246	5 59	− 2	10 41	− 9	—	16·0
Manila		30·0	225	i 6 10k	+ 2	11 9	− 1	—	—
Phu-Lien		35·1	252	e 6 53	− 4	e 12 16	−14	—	23·4
Semipalatinsk		44·6	308	8 11	− 5	—	—	—	—
Calcutta	N.	48·2	268	e 8 53	+ 9	15 40	− 3	—	—
Almata		48·4	299	8 46	0	16 15	+29	24·8	—
Medan		52·4	241	i 9 24	+ 8	i 16 40	− 2	e 25·5	—
Andijan		52·5	297	9 14	− 3	e 16 39	− 4	e 28·5	—
Dehra Dun		52·5	283	10 29	+72	16 39	− 4	28·1	33·5
Tchimkent		53·9	300	9 22	− 5	—	—	—	—
Agra	E.	54·0	279	i 9 17	−11	i 16 45	−18	25·3	33·9
Honolulu		54·0	91	9 39	+11	e 16 56	− 7	e 22·3	—
Tashkent		54·4	299	i 9 23	− 8	i 16 57	−12	23·8	33·1
Sverdlovsk		54·6	320	i 9 25	− 7	i 16 55	−16	i 25·8	34·9
Batavia		54·9	225	i 9 34	− 1	i 17 11	− 5	e 30·5	—
Sitka		55·2	42	e 9 32	− 5	e 17 17	− 3	e 26·4	—
Samarkand		56·7	298	9 40	− 8	e 17 19	−21	—	—
Hyderabad		58·8	269	9 28	−34	i 17 31	−36	28·7	36·5
Bombay		62·4	274	e 10 35	+ 8	i 18 53	0	29·2	36·5
Kodaikanal	E.	63·8	264	i 10 35	− 1	i 19 0	−11	29·5	—
Colombo		64·0	259	10 37	− 1	19 4	− 9	31·6	43·8
Victoria		65·4	48	10 46	− 1	19 17	−13	27·5	—
Moscow		66·6	324	i 10 49	− 5	19 35	−10	34·0	42·7
Pulkovo		67·4	331	i 10 53	− 6	19 42	−13	33·5	41·4
Baku		67·9	306	10 59	− 3	—	—	—	—
Grozny		69·0	310	e 11 7	− 2	e 20 5	− 9	—	—
Piatigorsk		70·2	312	e 11 10	− 7	e 20 22	− 6	e 28·5	—
Ukiah		70·4	56	e 11 15	− 3	e 20 31	+ 1	e 25·1	—
Tiflis		70·5	309	11 13	− 5	i 20 23	− 9	e 29·0	44·4
Scoresby Sund		71·0	356	11 16	− 6	e 20 30	− 7	33·5	—
Berkeley		71·7	57	11 27	+ 1	e 20 31	−14	—	—
Upsala		72·1	336	11 22	− 6	e 20 36	−14	e 33·3	41·8
Riverview		72·2	173	e 11 35	+ 6	i 20 53	+ 2	32·5	35·7
Sydney		72·2	173	e 14 41	PP	—	—	28·9	33·5
Lick		72·4	57	e 11 32	+ 2	e 20 53	0	—	—
Sotchi		72·5	313	e 11 26	− 4	e 20 42	−12	—	—
Adelaide		72·7	184	e 11 32	0	i 20 52	− 5	e 29·2	42·3
Perth		73·9	204	11 41	+ 2	21 34	+24	46·5	—
Theodosia		74·1	316	11 34	− 6	21 4	− 8	29·5	—
Simferopol		74·8	317	11 39	− 5	21 13	− 7	—	—
Yalta		75·1	316	e 11 45	− 1	—	—	34·5	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Santa Barbara		75·3	56	i 11 44	− 3	e 21 21	− 5	—	—
Haiwee		75·5	56	e 11 37	−11	—	—	—	—
Melbourne		75·7	178	—	—	i 21 28	− 2	32·1	—
Pasadena		76·5	58	i 11 51	− 3	i 21 32	− 7	i 30·7	—
Mount Wilson		76·6	58	e 11 53	− 1	e 21 40	0	—	—
Copenhagen		77·2	335	i 11 51a	− 6	e 21 36	−11	33·5	—
Riverside		77·2	58	i 11 53	− 4	—	—	—	—
La Jolla	N.	77·9	59	e 12 4	+ 3	—	—	—	—
Bucharest		79·5	320	e 12 6	− 4	22 3	− 8	39·5	50·5
Hamburg		79·6	335	e 12 5a	− 5	22 4	− 8	e 37·5	43·5
Aberdeen		80·3	342	i 12 12	− 2	e 22 12	− 8	37·8	44·4
Ivigtut		80·6	7	12 16	0	—	—	41·5	—
Budapest		80·7	326	e 12 12	− 4	e 22 16	− 8	e 49·5	51·5
Prague		80·7	330	e 12 9	− 7	22 17	− 7	e 38·5	50·5
Kecskemet	Z.	80·8	327	e 12 37	+20	e 23 12	+47	e 51·5	52·0
Ksara		80·8	306	i 12 13	− 4	—	—	—	—
Stara Dala		80·8	326	e 12 12	− 5	e 22 19	− 6	e 41·5	51·0
Jena		81·2	332	e 12 15	− 4	e 22 17	−12	e 38·5	44·7
Göttingen		81·3	334	e 12 8	−12	e 22 47	+17	—	49·5
Vienna		81·3	328	e 12 15	− 5	e 22 51	+21	42·5	53·0
Cheb		81·5	331	e 12·21	0	e 22 34	+ 2	e 40·5	48·2
Edinburgh		81·7	342	e 12 24	+ 2	i 22 51	+17	37·5	45·3
Belgrade		82·0	323	e 12 18k	− 5	i 22 55	+18	e 40·8	—
Sofia		82·1	320	e 12 22	− 2	—	—	41·5	52·1
Durham	N.	82·3	341	i 12 27	+ 2	e 22 36	− 4	—	—
De Bilt		82·5	336	12 21	− 5	e 22 33	− 9	e 39·5	45·2
Tucson		82·5	56	e 12 21	− 5	e 22 43	+ 1	e 37·0	—
Stonyhurst		83·3	341	i 12 31	+ 1	i 22 46	− 4	39·5	45·5
Zagreb		83·3	327	e 12 26	− 4	e 22 45	− 5	e 31·6	—
Stuttgart		83·8	332	i 12 28a	− 4	e 22 46	− 9	e 42·5	53·0
Karlsruhe		83·9	333	i 12 37	+ 4	22 48	− 8	e 40·8	56·8
Uccle		83·9	336	e 12 27a	− 6	i 22 46	−10	39·5	52·2
Triest		84·4	328	i 12 35a	− 1	i 22 54	− 7	e 41·5	46·2
Strasbourg		84·5	333	i 12 32a	− 4	i 22 55	− 7	—	50·1
Kew		84·8	339	i 12 32a	− 5	i 22 54	−11	39·5	51·8
Oxford		84·8	340	12 31	− 6	22 55	−10	e 38·5	52·3
Rathfarnham Castle		84·8	343	i 12 32	− 5	i 22 44	−21	39·5	46·5
Chur		85·2	332	e 12 34	− 5	e 23 23	+14	—	—
Zurich		85·2	332	e 12 34	− 5	e 23 1	[− 1]	—	—
Basle		85·4	332	e 12 37	− 3	—	—	—	—
Padova		85·5	328	e 12 42	+ 1	23 2	[− 2]	e 52·5	—
Christchurch		86·0	159	12 59a	+16	23 9	[+ 1]	40·3	—
Neuchatel		86·1	332	e 12 39	− 5	e 23 4	[− 4]	—	—
Paris		86·2	336	12 39	− 5	—	—	42·5	52·5
Besançon		86·3	333	e 12 45	0	—	—	e 49·5	—
Helwan		86·3	306	e 12 39	− 6	23 4	[− 5]	—	54·2
Jersey		87·4	339	i 12 53	+ 3	i 23 30	0	e 39·6	53·7
Chicago		88·3	36	e 12 59	+ 4	24 4	+25	e 34·0	—
Florissant		89·5	39	e 12 34	−26	e 23 48	− 2	—	—
St. Louis		89·7	39	e 12 57	− 4	i 23 48	− 4	—	—
Ottawa		90·1	26	13 2	− 1	23 31	[− 2]	40·5	—
Seven Falls		90·1	23	12 59	− 4	23 59	+ 4	38·5	—
Toronto		90·3	30	—	—	i 23 29	[− 5]	44·5	—
Vermont		91·8	25	—	—	e 23 41	[− 2]	e 44·1	—
Barcelona		92·7	332	e 13 4	−11	24 12	− 6	e 37·6	52·4
East Machias		93·3	20	e 13 24	+ 6	i 23 57	[+ 5]	e 37·3	—
Portland		93·6	23	—	—	e 24 12	−14	47·2	—
Tortosa		93·8	332	13 19	− 1	e 23 51	[− 3]	e 44·5	53·2
Oak Ridge		94·1	24	e 12 57	−25	e 23 48	[− 8]	45·5	—
Weston		94·3	24	i 13 19	− 4	e 23 51	[− 6]	e 46·2	52·4

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Philadelphia	95·1	28	e 13 23	− 3	e 23 56	[− 5]	e 37·1	—
Algiers	96·3	328	e 17 29	PP	e 25 59	+70	34·5	53·5
Toledo	96·3	335	e 13 31	− 1	e 23 49	[−19]	—	61·3
Almeria	98·4	332	—	—	e 24 3	[−16]	e 50·4	—
Granada	98·5	333	e 13 51	+ 9	—	—	—	—
Malaga	99·2	333	i 17 56	PP	i 24 20	[− 3]	—	—
San Fernando	100·1	335	e 17 58	PP	24 26	[− 1]	50·0	—
San Juan	117·8	31	e 19 40	[+52]	e 36 10	SS	—	—
Cape Town	134·8	258	e 21 53	PP	i 39 44	SS	e 66·0	78·9
Huancayo	137·8	62	e 14 29	P	e 40 26	SS	e 48·8	—
La Paz	145·8	58	i 19 40a	[0]	29 55	{ 0}	69·5	73·0
Rio de Janeiro E.	164·1	18	e 24 29	PP	—	—	e 45·0	—

Additional readings :—
Toyooka PP = +1m.42s.
Kobe i = +1m.45s., iSZ = +2m.58s.
Sumoto SN = +3m.11s., SZ = +3m.15s.
Vladivostok e = +2m.50s., e = +3m.14s.
Zi-ka-wei i = +4m.39s. and +4m.45s., SZ = +7m.11s., iZ = +8m.7s.
Hong Kong PP? = +6m.21s., ? = +9m.8s.
Manila iN = +14m.9s.
Phu-Lien e = +8m.16s.
Semipalatinsk e = +11m.38s.
Calcutta SSN = +18m.41s.
Medan iN = +9m.41s.
Agra iPPE = +11m.15s., PPPE = +12m.13s., PS = +17m.20s., iSS = +20m.20s., SSSE = +22m.6s.
Honolulu ePP = +10m.4s., i = +16m.44s.
Tashkent i = +9m.30s., SP = +9m.56s., ePP = +11m.29s., ePPP = +12m.44s., sS = +17m.46s., SS = +20m.41s.
Sverdlovsk i = +9m.31s., ipP = +9m.50s., iPP = +11m.32s., pPP = +11m.51s., iPS = +17m.26s., iSS = +21m.5s.
Batavia iPEN = +9m.37s.
Sitka e = +16m.59s., +17m.26s. and +17m.49s., iSSS = +19m.26s., eL = +23m.6s.
Bombay iN = +10m.42s., iE = +10m.58s., ePP = +12m.42s., eSN = +19m.0s., iE = +19m.30s., S_cS? = +20m.36s., eSS = +23m.0s.
Kodaikanal iPSE = +19m.29s., SS = +23m.3s., SSS = +25m.7s.
Moscow i = +10m.55s., pP = +11m.14s., PP = +13m.14s., sS = +20m.0s.
Pulkovo i = +11m.0s., pP = +11m.18s., PP = +13m.22s., SS = +20m.4s., SPS = +21m.15s., sSS = +24m.29s.
Ukiah eP = +11m.21s., eS_cS = +20m.25s., iS = +20m.35s.
Tiflis iEZ = +11m.19s., iP_cPZ = +11m.37s., eZ = +13m.5s., iZ = +13m.57s., ePPPZ = +15m.37s., PSZ = +20m.57s., eSSE = +25m.9s., eSSSZ = +28m.2s.
Scoresby Sund iPNZ = +11m.23s., PP = +13m.53s., eN = +20m.12s., eE = +20m.56s., and +21m.35s., SSN = +24m.59s., eE = +28m.47s.
Berkeley ipPZ = +11m.41s., eSE = +20m.37s., iSEZ = +20m.47s., iSN = +20m.50s.
Upsala iPPE = +14m.8s., eSE = +20m.42s., iPSN = +21m.3s., iPSE = +21m.7s.
Riverview eE = +29m.39s.
Adelaide i = +11m.47s., iSS = +25m.47s.
Perth PP = +16m.14s., PPP = +19m.4s., PPPP = +21m.4s., PS = +25m.34s., PPS = +26m.9s., i = +29m.9s. and +29m.39s., SS = +30m.59s.
Melbourne i = +27m.21s.
Pasadena iZ = +12m.13s., iEN = +21m.39s.
Copenhagen i = +11m.58s., eZ = +12m.18s., PP = +14m.49s. and +15m.6s., PPP = +16m.35s., e = +17m.59s., iEN = +22m.4s., eZ = +22m.29s., sS = +25m.59s., sSSN = +29m.53s.
Bucharest iP = +12m.12s., SE = +22m.5s.
Hamburg i = +12m.12s., ePPN = +15m.14s., ePPPN = +17m.3s., eSSN = +27m.23s., eSSSN = +30m.41s.
Budapest iP_cP = +12m.18s., eE = +12m.27s., eN = +12m.50s., eE = +13m.21s., eN = +13m.44s., ePPE = +15m.18s., ePPN = +15m.21s., eS_cSN = +22m.42s., eS_cSE = +22m.50s., eN = +43m.29s.
Prague iP = +12m.16s.
Kecskemet ePP = +15m.45s., e = +17m.49s.
Ksara ipP = +12m.37s., sP = +12m.47s., PP = +15m.26s., pPP = +15m.45s.
Jena iP = +12m.19s., eSZ = +22m.23s., eSE = +22m.29s.
Vienna e = +14m.14s. and +22m.26s., PPS = +23m.35s.
Edinburgh i = +22m.43s.
Belgrade P_cP = +12m.24s., PP = +15m.36s.
Sofia iP = +12m.26s.

Continued on page next.

De Bilt iZ = +12m.27s., eZ = +12m.45s., ePPZ = +15m.32s.
Tucson i = +12m.24s. and +12m.28s., iP = +12m.31s., i = +12m.45s. and +15m.51s., eS = +21m.14s., +22m.37s., +22m.40s., and +22m.45s., S = +22m.49s. and +23m.34s.
Stonyhurst iSS = +27m.41s.
Zagreb eNE = +15m.44s. and +22m.52s.
Stuttgart iP = +12m.35s., eP_cP = +12m.53s., ePP = +15m.41s., ePPP = +17m.30s., eS_cS = +23m.31s., ePS = +23m.57s., eSS = +27m.55s., eSSS = +32m.59s.
Uccle iP_cPZ = +12m.34s.k, ipPZ = +12m.52s., iPPZ = +15m.47s., iPPPZ = +17m.38s., isSE = +23m.15s., iPSZ = +23m.35s., iN = +29m.12s. and +31m.59s.
Triest PP = +15m.53s., PPP = +17m.41s., eSS = +29m.49s., SSS = +31m.51s.
Strasbourg ipPZ = +13m.0s., iPPZ = +15m.47s., ipPPZ = +16m.15s. PPP = +17m.42s., iPSE = +23m.17s., SSZ = +23m.29s.? SSS = +29m.24s.
Kew iP_cP = +12m.39s., ipP = +12m.57s., iPP = +15m.51s., iPPP = +17m.45s., iPS = +23m.0s., isS = +23m.19s., ePS = +23m.40s., eSSSN = +32m.4s.
Oxford i = +15m.49s.
Rathfarnham Castle ipP = +12m.53s., iPP = +15m.48s., isS = +23m.19s., iSS = +27m.27s.
Christchurch S = +23m.33s., PSEN = +24m.23s., iSSN = +29m.5s., SSSN = +32m.33s., L_q = +35·5m.
Paris P = +12m.46s., PP = +16m.16s.
Helwan i = +12m.44s., pP = +13m.5s., sP = +13m.22s., PP = +16m.3s., e = +16m.19s., PPP = +18m.29s., S = +23m.39s., sS = +24m.29s.
Jersey +28m.32s. and +32m.14s.
Chicago e = +16m.30s. and +23m.20s., iPS = +23m.38s., e = +28m.24s., +28m.33s., and +29m.31s..
Florissant eP = +13m.1s., eEN = +13m.5s., eE = +14m.31s., +16m.35s., +23m.24s., and +23m.27s., iEN = +23m.29s., eE = +29m.47s.
St. Louis iN = +13m.0s., +13m.11s., and +13m.27s., ePPE = +16m.36s., iE = +16m.51s., iSKS = +23m.27s.
Ottawa PP = +16m.41s., SS = +29m.11s.
Toronto e = +29m.29s.?
Vermont i = +24m.4s., e = +25m.9s. and +30m.51s.
East Machias e = +13m.27s. and +17m.10s., e = +30m.4s., +30m.34s., and +33m.48s.
Tortosa eSE = +24m.17s.
Oak Ridge iZ = +13m.2s., ePPZ = +17m.4s., ePPS?Z = +25m.43s.
Weston i = +13m.26s., iPP = +20m.15s., iSKKSE = +24m.22s., eSE? = +24m.53s., iPS = +25m.43s., ePPS = +26m.13s.
Philadelphia e = +13m.26s., +17m.20s., +17m.23s., +21m.8s., and +23m.54s., ePSPS = +30m.17s.
Algiers PP = +19m.23s.
Toledo eS = +24m.32s.
Granada PP = +17m.56s.
San Fernando eSN = +24m.54s., eSSN = +31m.41s., eSSSN = +36m.41s.
San Juan e = +19m.59s., +27m.49s., and +29m.43s.
Cape Town i = +22m.58s., iE = +25m.2s., iN = +24m.58s., iE = +32m.1s. and +40m.32s.
Huancayo ePKP = +19m.16s., e = +22m.41s., +23m.3s., +40m.6s., and +45m.26s.
La Paz iZ = +19m.49s., pPKPZ = +20m.36s., SPKPZ = +21m.16s., iSKS? = +26m.9s., SSN = +42m.41s.
Long waves were also recorded at Wellington.

July 26d. Readings also at 3h. (Hong Kong and Sumoto), 4h. (Mount Wilson, Pasadena, Riverside, Tinemaha, La Paz, and Malaga), 7h. (Tucson (2), Pasadena, Riverside, and La Paz), 8h. (Ksara, Moscow, Sverdlovsk, Huancayo, Berkeley, and Christchurch), 9h. (Scoresby Sund), 13h. (near La Paz), 15h. (near Mizusawa), 16h. (Grozny (3)), 19h. (Erevan and Tucson), 20h. (Mizusawa), 21h. (near Santiago), 22h. (near Mizusawa).

July 27d. Readings at 0h. (Mizusawa), 1h. (Almeria), 2h. (near Mizusawa (2)), 3h. (Andijan), 7h. (Nagoya and near Mizusawa), 8h. (Edinburgh, Stuttgart, Pulkovo, Sverdlovsk, and Scoresby Sund), 9h. (Tiflis, near Oak Ridge, and Weston), 10h. (Andijan), 13h. (Hastings), 14h. (Mizusawa), 20h. (Averroes), 23h. (Andijan).

July 28d. Readings at 0h. (Ottawa), 2h. (near Mizusawa), 4h. (near Nagoya), 5h. (Wellington), 8h. (Batavia), 9h. (East Machias, Oak Ridge, Philadephia, Sitka, College, Scoresby Sund, Sverdlovsk, and near Mizusawa), 10h. (Tashkent), 11h. (Paris, Ivigtut, Scoresby Sund, and San Juan), 12h. (near Santiago), 14h. (Christchurch, near New Plymouth and Wellington), 16h. (Mizusawa), 17h. (near Wellington), 18h. (Andijan), 21h. (Christchurch, Wellington, Sumoto, and near Mizusawa), 22h. (Andijan and Nagoya).

July 29d. Readings at 0h. (Sumoto and near Weston), 1h. (Tiflis), 2h. (Philadelphia), 3h. (Huancayo and near La Paz), 5h. (Christchurch, Hastings, and Wellington), 7h. (Triest), 8h. (Batavia, Medan, Sverdlovsk, and near Hukuoka B), 12h. (La Paz), 13h. (Grozny), 14h. (near Wellington (2)), 17h. (Branner, Lick, near Fresno, Perth, Tashkent, Sverdlovsk, Kobe, near Mizusawa, Nagoya, and near Amboina), 18h. (Branner, Baku, Tiflis (2), and Riverview), 19h. (near Lick), 20h. (Tiflis and near Ksara), 21h. (Tiflis, Tucson, Haiwee, Mount Wilson, Pasadena, Riverside, Santa Barbara, Theodosia, and near Wellington).

July 30d. 13h. Two shocks in South Pacific recorded widely, but not in sufficient detail to give determinations. Except in the case of stations which give the readings explicitly as those of two shocks, *e.g.*, Wellington, the phases are recorded below in simple order of time. The probable interval between the two shocks is 6m.40s.

Christchurch P =57m.6s.a, S =64m.4s., S_0SZ =66m.42s., L_rEZ =71m.24s.
Melbourne i =58m.8s., e =69m.13s., i =74m.30s., e =76m.18s., L =78m.10s., M =81m.24s.
Chatham Isles I i =59m.0s., II i =69m.7s.
Wellington I P =59m.17s., PP =59m.28s., S? =61m.23s., L =63m., M =63m.30s., P_cP? =65m.9s., II P =65m.54s., S? =67m.56s., L =69m.45s., M =70m.0s., P_cP? =71m.40s.
Arapuni I e =60m.7s., i =68m.1s., II i =70m.5s.
Riverview I eN =66m.24s., eL =68m.18s., MN =69m.36s., II eEZ =68m.33s., eL =75m.0s., M =77m.55s.
Sydney e =67m.0s., L =78m.36s., M =81m.30s.
Pasadena I iPZ =68m.56s., II eZ =75m.39s., eLE =100m.
Riverside I iPZ =68m.57s., II ePZ =75m.39s.
Mount Wilson I iPZ =68m.58s., II ePEZ =75m.38s.
Adelaide e =69m.2s. and 73m.9s., iS =75m.35s., iL =79m.4s.
Tucson I e =69m.13s., 69m.16s., and 69m.19s., II eP =75m.50s., e =75m.54s., i =76m.0s., e =88m.28s., eL =111m.12s.
Vladivostok e =75m.15s., 75m.42s., 78m.50s., 85m.10s., and 87m.4s., L =103·4m., M =109·3m.
Zi-ka-wei eZ =75m.23s., MZ =106m.29s.
Tiflis eZ =75m.54s., eE =79m.26s., eZ =82m.30s. and 84m.24s., eLE =137m., M =144·9m.
Moscow e =75m.59s. and 82m.21s.
Theodosia eP =76m.11s., e =82m.54s.
Yalta e =76m.33s. and 83m.9s.
Copenhagen 77m.9s., L =138m.
Pulkovo e =77m.25s., 82m.28s., 84m.7s., 86m.9s., 92m.23s., and 100m.6s., L =129m., M =141·9m.
Bombay eE =78m.
Perth S =80m.0s., PS =80m.5s., SS =83m.45s., ? =86m.0s. and 88m.35s., M =92m.50s.
Honolulu e =81m.0s., 81m.30s., 87m.30s., and 88m.48s.
Sverdlovsk e =82m.23s. and 85m.29s., M =129·6m.
Ksara iPKP =82m.55s., ePP =86m.7s.
De Bilt eZ =83m., eL =140m.
Kew e =83m.
Paris e =83m., L =146m.
Strasbourg e =83m.18s., eL =91m.
Oak Ridge eZ =83m.24s. and 115m., eL =119m.
Uccle eZ =83m.30s., eL =139m.
Tashkent i =83m.37s., e =90m.50s., 92m.45s., 99m.0s., 100m.26s., 105m.9s., eL =122·0m., M =146·2m.
Stuttgart eZ =83m.30s., e =87m.2s., 90m.28s., 97m.24s., and 99m.18s., eL =144m.
Kobe ePE? =83m.39s., eE =98m.31s., ME =103m.19s.
Scoresby Sund 84m., L =126m.
Granada ePKP =84m.35s., PP =88m.29s.
Malaga e =84m.53s.
Baku e =85m.20s., 97m.6s., and 98m.48s., M =154·9m.
Berkeley e =86m.8s.
Sitka e =86m.24s.
Edinburgh e =93m.
Philadelphia e =93m.25s. and 99m.32s., eL =113m.37s.
Huancayo e =94m.25s., 100m.50s., 103m.42s., 107m.36s., 108m.8s., 118m.25s., 123m.40s., and 124m.10s.
Long waves were also recorded at Apia, La Paz, Rio de Janeiro, Cape Town, Ivigtut, East Machias, Rathfarnham Castle, Prague, and San Fernando.

July 30d. Readings also at 0h. (near Oak Ridge), 1h. (near Kobe, Sumoto, and near Wellington), 2h. (Amboina (3)), 3h. (Amboina), 5h. (Sverdlovsk, Tashkent, and Tiflis), 6h. (Christchurch, Hastings, New Plymouth, near Wellington, near Tiflis (2), near Kobe, Sumoto, Toyooka, and Nagoya), 7h. (Grozny, Ksara, Pitigorsk, and near Tiflis), 8h. (Sverdlovsk, Moscow, Pulkovo, Tashkent, Samarkand, Tchimkent, Andijan, Frunse, and near Almata), 9h. (Triest and Zurich), 10h. (Santiago), 13h. (Florissant), 17h. (College, Sitka, and Semipalatinsk), 18h. (East Machias, Oak Ridge, Philadelphia, Scoresby Sund, and Mizusawa), 19h. (near Neuchatel).

July 31d. 2h. 9m. 47s. Epicentre 34°·3N. 134°·5E.

$A = -\cdot5802$, $B = +\cdot5905$, $C = -\cdot5609$; $\delta = -7$; $h = 0$.

	Δ	Az.	P.	O−C.	S.	O−C.	M.
	°	°	m. s.	s.	m. s.	s.	m.
Sumoto	0·3	81	i 0 11k	0	i 0 19	+ 1	0·3
Kobe	0·7	56	0 17k	0	i 0 28	0	0·5
Toyooka	1·3	12	0 26k	+ 1	0 45	+ 1	1·0
Nagoya	2·2	67	0 39	+ 1	1 6	0	1·1
Hukuoka B	3·5	258	0 54	− 3	1 51	+11	—

Long waves were also recorded at Tashkent and Sverdlovsk.

July 31d. 10h. 49m. 26s. Epicentre 33°·6N. 141°·5E. (as on 1937 May 21d.).

$A = -\cdot6532$, $B = +\cdot5196$, $C = +\cdot5508$; $\delta = +4$; $h = +1$;
$D = +\cdot623$, $E = +\cdot783$; $G = -\cdot431$, $H = +\cdot343$, $K = -\cdot835$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		4·1	294	e 1 1	− 4	2 20	S_g	—	3·0
Kobe		5·4	287	e 1 10	−14	e 3 3	S_g	—	—
Mizusawa		5·5	358	1 28	+ 3	2 31	+ 1	—	—
Sumoto		5·5	281	e 1 25	0	e 3 40	L	(e 3·7)	—
Toyooka	E.	5·8	291	e 1 22)	− 7	—	—	—	—
Husan		10·4	281	e 2 33	− 1	—	—	5·9	—
Taikyu		10·9	286	e 2 41	+ 1	—	—	i 6·6	—
Vladivostok		12·1	325	e 3 3	+ 6	—	—	6·6	10·7
Zi-ka-wei	Z.	17·1	267	e 4 5	+ 3	7 29	+17	—	11·6
Tashkent.		56·3	301	e 10 12	+27	e 17 29	− 5	e 27·1	35·2
Sverdlovsk		57·8	321	e 9 53	− 2	17 52	− 2	30·6	39·5
Moscow		70·1	325	e 13 46	PP	i 20 24	− 3	e 38·1	43·8
Baku		70·3	307	—	—	e 20 32	+ 2	e 35·6	48·9
Pulkovo		71·2	330	e 11 27	+ 4	e 20 37	− 3	36·6	44·4
Grozny		71·6	310	e 11 26	+ 1	—	—	—	—
Tiflis		73·0	309	e 11 32	− 1	e 20 58	− 2	39·7	46·8
Scoresby Sund		75·5	356	—	—	21 39	+11	40·6	—
Pasadena		79·4	56	e 12 8	− 1	—	—	e 38·0	—
Mount Wilson	Z.	79·5	56	i 12 8	− 2	—	—	—	—
Riverside	Z.	80·1	56	i 12 11	− 2	—	—	—	—
Ksara		83·2	306	e 12 29	0	—	—	—	—
Tucson		85·5	54	e 12 39	− 2	—	—	e 40·4	—
Edinburgh		85·9	342	—	—	e 22 34?	−42	—	—
Strasbourg		88·4	332	—	—	(e 19 34?)	?	e 19·6	—

Additional readings and notes:—
Kobe eE = +2m.34s., eN = +2m.39s., eZ = +2m.43s., eSE = +3m.18s.
Toyooka ePN = (+1m.28s.), readings having both been increased by 2m.
Tashkent e = +4m.46s., i = +10m.26s., e = +19m.26s.
Sverdlovsk e = +19m.36s.
Ksara ePP = +15m.54s., ePS = +24m.12s.
Long waves were also recorded at Hong Kong, Phu-Lien, and several European stations.

July 31d. 20h. 35m. 45s. Epicentre 35°·2N. 115°·3E.

A = −·3500, B = +·7404, C = +·5739; δ = +5; h = +1
D = +·904, E = +·427; G = −·245, H = +·519, K = −·819.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Dairen		6·2	52	1 34	− 1	2 56	+ 8	—	—
Zi-ka-wei	z.	6·5	126	1 35	− 4	—	—	—	—
Heizyo		9·2	62	i 2 19k	+ 3	e 4 4	+ 1	4·7	6·5
Zinsen	z.	9·4	73	i 2 21a	+ 3	i 3 56	−11	—	6·2
Syuhurei		10·4	81	2 41	+ 7	4 41	+ 9	—	5·2
Taikyu		10·9	82	2 40	0	4 56	+12	5·6	7·2
Husan		11·2	87	e 2 44	0	4 48	− 4	—	6·2
Taihoku		11·4	150	e 2 43	− 4	i 6 13	L	(i 6·2)	6·6
Tomie		11·5	100	2 51	+ 3	5 52	L	(5·9)	—
Giran		11·8	150	3 39	+46	—	—	—	—
Taityu		12·0	156	2 44	−11	—	—	—	—
Nagasaki		12·3	97	3 0	+ 1	6 30	L	(6·5)	—
Karenko		12·4	152	3 0	− 1	6 28	L	(6·5)	—
Saga		12·5	94	2 39	−23	5 35	+12	—	—
Arisan		12·6	156	3 12	+ 9	6 51	L	(6·8)	—
Hukuoka		12·6	93	3 4	+ 1	5 28	+ 2	6·4	7·2
Hukuoka B		12·6	93	i 3 4	+ 1	6 9	SSS	—	7·0
Unzendake		12·7	97	3 6	+ 1	6 29	+ 1	—	—
Tainan		12·9	159	3 8	+ 1	6 59	L	(7·0)	—
Hong Kong		12·9	185	2 58	− 9	6 5	SSS	7·4	8·4
Kumamoto		13·0	96	3 12	+ 3	6 51	L	(6·9)	—
Isigakizima		13·3	142	3 15	+ 2	7 3	L	(7·0)	—
Kagosima		13·3	101	3 14	+ 1	7 13	L	(7·2)	—
Taito		13·4	156	3 23	+ 9	—	—	—	—
Hamada		13·7	86	3 6	−12	—	—	7·3	—
Miyazaki		13·8	99	3 22	+ 3	7 13	L	(7·2)	—
Nake		13·8	115	3 49	PPP	—	—	—	—
Kosyun		14·0	159	3 26	+ 4	7 12	L	(7·2)	—
Hirosima		14·1	88	3 15	− 8	—	—	—	—
Uwazima		14·4	93	3 36	+ 9	—	—	8·0	—
Matuyama		14·5	90	3 29	+ 1	—	—	—	—
Sakai		14·6	83	3 30	0	—	—	—	—
Koti		15·1	91	4 34	+58	—	—	—	—
Vladivostok		15·1	53	i 3 38	+ 2	e 6 32	+ 7	—	12·2
Tadotu		15·2	88	3 19	−19	—	—	—	—
Muroto		15·7	91	3 44	0	6 47	+ 8	—	—
Tokusima		15·9	87	3 50	+ 3	7 56	L	(7·9)	—
Toyooka		15·9	84	3 47	0	6 52	+ 8	—	10·6
Sumoto		16·1	87	3 48k	− 1	7 4	SS	8·6	9·1
Miyadu		16·2	83	3 50	0	—	—	—	—
Kobe		16·3	86	3 51	− 1	7 2	+ 9	—	9·3
Phu-Lien		16·3	210	e 3 52	0	e 6 56	+ 3	7·9	9·7
Wakayama		16·4	88	3 54	+ 1	7 13	SS	8·8	—
Osaka		16·6	86	3 57	+ 1	7 0	0	9·1	—
Osaka B		16·6	86	3 57	+ 1	—	—	—	—
Kyoto		16·7	85	3 58	+ 1	7 24	SS	9·2	—
Yagi		16·8	87	3 50	− 8	—	—	—	—
Siomisaki		17·0	90	4 2	+ 1	7 23	+13	9·1	—
Hikone		17·1	83	4 5	+ 3	—	—	9·2	—
Kameyama		17·3	86	4 5	+ 1	—	—	9·3	—
Kanazawa		17·4	81	3 58	− 8	7 17	− 2	9·1	—
Tu		17·4	81	3 56	−10	7 29	+10	—	—
Gihu		17·5	83	4 7	0	—	—	9·4	—
Wazima		17·5	77	4 9	+ 2	7 38	+17	—	—
Husiki		17·7	80	4 17	+ 7	7 47	SS	11·0	—
Nagoya		17·7	84	4 13	+ 3	9 25	L	—	10·3
Toyama		17·8	80	4 13	+ 2	7 39	+11	10·6	—
Hamamatu		18·4	87	4 20	+ 2	7 50	+ 9	—	—
Iida		18·4	83	4 35	PP	—	—	—	—
Nagano		18·6	81	4 23	+ 2	7 57	+11	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Omaesaki		18·8	87	4 29	+ 6	—	—	10·4	—
Oiwake		18·9	81	4 24	0	8 2	+ 9	10·2	—
Kohu		19·0	83	4 43	+17	—	—	—	—
Hunatu		19·1	83	4 22	− 5	8 5	+ 8	10·4	—
Gotenba		19·3	83	4 26	− 3	—	—	10·7	—
Maebasi		19·3	81	4 31	+ 2	8 36	SS	—	—
Niigata		19·3	75	4 32	+ 3	—	—	—	—
Numadu		19·3	84	4 27	− 2	—	—	10·3	—
Ito		19·5	84	4 37	+ 6	—	—	10·8	—
Kumagaya		19·6	80	4 38	+ 6	8 23	+15	11·0	—
Sakata		19·9	73	4 43	+ 7	—	—	—	—
Tokyo		19·9	82	4 34	− 2	8 25	+10	—	—
Yokohama		19·9	82	4 33	− 3	8 24	+ 9	10·6	—
Mera		20·1	85	4 44	+ 6	8 34	+15	—	—
Akita		20·2	72	4 43	+ 4	—	—	—	—
Kakioka		20·2	80	4 33	− 6	8 15	− 6	10·7	—
Tukubasan		20·2	80	4 33	− 6	8 29	+ 8	—	—
Yamagata		20·3	74	4 38	− 2	—	—	—	—
Hatidyozima		20·4	89	4 42	+ 1	8 31	+ 6	—	—
Mito		20·4	79	4 37	− 4	8 24	− 1	—	—
Aomori		20·8	68	4 45	0	8 58	SS	—	—
Hakokate		20·9	64	4 55	+ 9	—	—	—	—
Mizusawa	E.	20·9	72	4 46	0	8 30	− 5	11·6	—
Morioka		21·0	70	4 44	− 3	8 46	+ 9	12·3	—
Manila		21·2	164	i 4 50a	+ 1	8 55	+14	—	—
Hatinohe		21·3	69	4 46	− 4	8 40	− 3	12·1	—
Miyako		21·6	70	4 48	− 6	8 44	− 5	11·9	—
Sapporo		21·6	61	4 54	0	—	—	—	—
Haboro		22·2	58	4 50	−10	—	—	—	—
Calcutta		26·7	249	e 5 37	− 6	10 22	+ 5	13·2	17·8
Semipalatinsk		29·5	313	6 5	− 3	10 58	− 4	—	—
Almata		30·6	298	6 7	−11	11 15	− 5	15·8	—
Dehra Dun		31·6	272	11 15	S	(11 15)	−20	17·9	18·2
Frunse		32·3	296	e 6 29	− 4	e 11 59	+13	—	—
Agra	E.	32·8	266	i 6 30	− 7	i 11 47	− 7	16·0	20·7
Andijan		34·0	293	6 50	+ 2	12 20	+ 7	—	—
Medan		35·0	211	i 6 59	+ 3	i 12 32	+ 4	—	—
Tchimkent		36·0	296	7 5	0	—	—	—	—
Tashkent		36·3	294	i 7 4	− 3	i 12 46	− 2	17·2	24·2
Hyderabad		37·2	252	7 17	+ 2	13 1	− 1	17·3	23·8
Bombay		40·8	258	e 7 41	− 4	i 13 56	0	—	22·2
Batavia		41·9	193	i 7 56a	+ 2	i 14 16	+ 3	23·2	—
Sverdlovsk		42·3	319	i 7 46	−11	14 18	− 1	i 20·7	25·4
Colombo		43·0	238	8 5	+ 2	14 28	− 1	25·4	28·2
Grozny		53·0	302	9 24	+ 3	e 16 55	+ 5	—	—
Tiflis		54·2	300	9 31	+ 2	17 8	+ 2	e 23·5	35·0
Piatigorsk		54·7	303	9 33	0	e 17 13	0	24·2	—
Moscow		55·1	318	9 35	− 1	17 17	− 1	23·8	31·3
Sotchi		57·1	304	e 9 52	+ 2	e 17 47	+ 2	—	—
Pulkovo		57·9	324	9 54	− 2	17 52	− 3	30·2	33·8
Theodosia		59·6	306	10 6	− 2	18 16	− 1	34·2	—
Simferopol		60·4	307	10 12	− 1	e 18 38	+10	31·2	—
Yalta		60·6	306	10 10	− 5	e 18 27	− 3	40·2	—
Sebastopol		61·0	307	10 13	− 5	—	—	—	—
College		61·5	29	e 9 45	−36	18 7	−35	e 26·4	—
Ksara		63·7	294	i 10 36k	0	e 19 15	+ 5	30·2	35·2
Upsala	E.	63·9	327	e 10 25	−12	e 19 13	+ 1	e 30·2	35·5
	N.	63·9	327	e 10 34	− 3	e 19 8	− 4	e 31·2	35·4
Lemberg	E.	64·8	315	e 13 52	PP	e 23 16	SS	e 32·7	35·8
	N.	64·8	315	e 13 32	PP	e 23 26	SS	e 32·3	35·5
Bucharest		65·9	309	e 10 52	+ 2	19 39	+ 2	—	40·5
Copenhagen		68·3	325	i 11 3	− 2	20 4	− 2	e 32·2	—
Budapest		68·8	314	e 11 11	+ 3	e 20 11	0	e 34·2	37·2
Helwan		69·0	293	11 5	− 4	20 10	− 4	—	—
Stara Dala		69·1	315	e 10 34	−36	e 20 17	+ 2	e 32·2	37·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Belgrade		69·3	310	—	—	e 20 15	− 2	e 34·4	37·8
Vienna		70·0	316	e 11 18	+ 3	—	—	e 62·2	—
Prague		70·2	319	—	—	e 20 22	− 6	e 34·2	39·7
Scoresby Sund		70·2	347	11 17a	0	20 34	+ 6	36·2	—
Hamburg		70·6	324	e 11 17	− 2	e 20 33	0	e 35·8	39·2
Sitka		70·6	33	e 11 17	− 2	20 33	0	e 36·2	—
Graz		71·1	315	e 11 36	+14	e 21 28	+50	e 36·2	48·9
Jena		71·2	320	e 11 21	− 2	e 20 45	+ 5	e 34·2	39·2
Cheb		71·3	319	—	—	e 33 15?	?	e 38·2	39·2
Zagreb		71·5	314	e 11 24	0	e 20 43	0	e 34·6	—
Triest		72·9	315	e 11 34	+ 1	20 56	− 3	e 34·2	39·5
Adelaide		73·1	160	—	—	i 20 58	− 3	e 39·1	47·4
Stuttgart		73·7	319	e 11 37	− 1	e 21 10	+ 2	e 37·2	41·4
De Bilt		73·9	324	11 36	− 3	21 10	0	e 35·2	41·7
Aberdeen		74·0	330	e 11 38	− 1	e 21 8	− 3	37·8	47·1
Chur		74·6	318	e 11 42	− 1	—	—	—	—
Strasbourg		74·6	320	i 11 42k	− 1	e 21 17	− 1	36·2	42·2
Zurich		74·9	319	e 11 45	+ 1	e 21 11	−11	—	—
Uccle		75·1	324	e 11 44	− 2	21 21	− 3	35·2	42·0
Basle		75·3	319	e 11 46	− 1	—	—	—	—
Durham	N.	75·3	328	e 11 47	0	21 25	− 1	—	43·2
Edinburgh		75·3	330	—	—	i 21 23	− 3	37·2	43·3
Honolulu		75·6	74	—	—	e 21 32	+ 3	e 38·0	—
Stonyhurst		76·3	328	—	—	i 21 34	− 3	39·2	43·9
Sidney		76·5	150	—	—	e 20 55	−44	45·4	48·9
Bidston		76·9	328	e 11 54	− 2	i 21 35	− 8	38·2	43·8
Kew		76·9	325	e 11 54	− 2	i 21 41	− 2	38·2	43·3
Oxford		77·2	326	11 56	− 1	i 21 43	− 4	38·3	44·0
Paris		77·2	322	e 11 56	− 1	e 21 44	− 3	39·2	42·2
Melbourne		77·7	156	—	—	i 21 53	+ 1	37·2	44·0
Rathfarnham Castle		78·4	329	i 12 4	0	i 21 59	− 1	40·6	45·7
Marseilles		79·1	316	e 10 13	?	24 7	?	41·2	—
Jersey		79·3	324	i 7 30	?	i 22 11	+ 2	e 33·5	44·4
Victoria		81·7	36	11 57	−25	22 33	− 1	36·2	—
Barcelona		82·2	316	—	—	e 22 9	−30	e 42·1	45·1
Ivigtut		83·0	352	—	—	22 49	+ 2	42·2	—
Tortosa		83·5	316	e 12 36	+ 5	22 49	− 3	e 37·2	45·8
Toledo		86·7	318	e 12 44	− 3	e 23 8	[− 4]	—	48·9
Almeria		87·9	315	e 23 14	S	(e 23 14)	[− 6]	e 47·0	—
Granada		88·3	316	i 12 53	− 2	e 23 24	[+ 2]	—	—
Butte		88·4	31	e 12 53	− 2	e 24 19	+39	e 40·3	—
Berkeley		89·8	42	e 12 45	−17	23 31	[0]	e 40·2	—
San Fernando		90·3	317	—	—	e 23 39	[+ 5]	45·7	—
Tinemaha	z.	92·5	40	e 13 17	+ 3	—	—	—	—
Haiwee		93·4	40	e 13 39	+21	e 23 56	[+ 4]	—	—
Santa Barbara	z.	93·7	43	e 13 22	+ 2	—	—	—	—
Christchurch		94·1	143	24 38a	S	(24 38)	+ 7	45·8	—
Mount Wilson	z.	94·8	42	e 13 25	0	—	—	—	—
Pasadena		94·8	42	e 13 25	0	e 24 0	[0]	e 40·4	—
Riverside	z.	95·3	42	e 13 25	− 2	—	—	—	—
Seven Falls		97·9	4	—	—	e 24 15?	[− 1]	43·2	—
Shawinigan Falls		98·3	5	—	—	e 24 15?	[− 3]	59·2	—
Ottawa		99·2	7	—	—	e 24 21	[− 2]	43·8	—
Vermont		100·3	6	—	—	e 24 24	[− 4]	e 54·0	—
East Machias		100·4	1	e 18 7	PP	e 24 33	[+ 4]	e 46·8	—
Chicago		100·5	17	—	—	e 24 24	[− 5]	e 44·1	—
Toronto		101·0	10	—	—	e 24 21	[−11]	44·2	—
Oak Ridge		102·4	4	i 15 3	+64	e 27 15	PS	e 53·2	—
Florissant		102·6	20	i 18 22	PP	e 24 44	[+ 5]	e 45·1	e 53·6
Weston		102·6	4	e 18 13	PP	i 24 37	[− 2]	e 50·9	—
St. Louis	E.	102·8	20	—	—	i 23 37	?	e 51·3	—
Philadelphia		104·6	?	—	—	i 24 48	[− 1]	e 46·4	—
Columbia		109·5	14	—	—	e 25 15	[+ 5]	e 52·5	—
La Paz	z.	161·1	10	20 4	[− 2]	—	—	80·2	100·1

Continued on next page.

NOTES TO JULY 31d. 20h. 35m. 45s.

Additional readings :—
Dairen e = +3m.26s.
Zinsen iPPZ = +2m.56s., iZ = +4m.25s.
Taihoku ePEN = +2m.47s., e = +5m.34s.
Tomie e = +6m.27s.
Hukuoka iN = +4m.40s.
Kobe eN = +4m.3s., SN = +7m.5s.
Toyooka SZ = +6m.56s., SSN? = +8m.54s.
Osaka PP = +4m.18s., i = +4m.57s., SS = +7m.37s., P_cP = +8m.41s.
Gihu PP = +5m.5s.
Oiwake PP = +4m.41s.
Tokyo PP = +4m.59s., PPP = +5m.4s., i = +6m.12s.
Mito e = +11m.38s.
Mizusawa eSN = +8m.24s.
Calcutta PPPN = +6m.31s., SSN = +11m.37s.
Dehra Dun S = +14m.35s.
Frunse e = +16m.47s.
Agra PPPE = +7m.53s., iN = +11m.55s., SSE = +13m.23s.
Medan iEN = +17m.16s.
Bombay PP = +9m.11s., SS = +16m.50s., S_cS = +17m.32s.
Batavia iSN = +14m.19s., iN = +18m.54s., iEZ = +19m.19s., iZ = +19m.32s.
Colombo PP = +9m.49s.
Tiflis eP_cPZ = +10m.25s., ePPZ = +11m.33s., ePPPZ = +12m.43s., PSE = +17m.46s., SKKSE = +19m.17s.
Yalta e = +31m.33s., e = +33m.39s.
College i = +22m.29s.
Ksara iP_cP = +11m.16s., ePP = +12m.54s.
Copenhagen PP = +13m.40s., eE = +23m.3s., eN = +27m.45s.
Budapest eE = +11m.8s., eN = +15m.26s., e = +28m.15s.? e = +33m.15s.?
Helwan pP = +11m.30s., PP = +13m.38s., PPP = +15m.20s., sS = +20m.55s.
Stara Dala e = +29m.15s.?
Belgrade e = +21m.40s. and +28m.22s.
Vienna PPP = +20m.20s., PS = +30m.13s., PPS = +35m.51s., SSS = +29m.30s., e = +41m.54s., +48m.32s., +50m.19s., +53m.14s., and +57m.9s.
Prague e = +28m.15s.
Scoresby Sund +15m.37s. and +21m.17s., SS = +25m.27s.
Sitka e = +12m.11s., +12m.24s., +14m.36s., and +34m.19s.
Triest i = +12m.39s., PS = +21m.28s.
Adelaide e = +25m.44s.
Stuttgart ePP = +14m.20s., ePPP = +16m.39s., e = +24m.33s., +29m.39s., and +33m.27s.
Aberdeen i = +12m.48s., +14m.29s., and +21m.45s.
Strasbourg ePPZ = +14m.30s., ePPZ = +17m.2s., PS = +21m.49s., SSN = +26m.17s.
Uccle SN = +21m.26s.
Stonyhurst e = +30m.15s.?
Bidston eS = +30m.32s.
Kew eZ = +21m.28s., e = +30m.10s., eZ = +37m.43s.
Paris e = +24m.4s.
Melbourne i = +22m.12s.
Rathfarnham Castle PP = +15m.1s., PPP = +16m.44s., iSN = +22m.3s., iPS = +22m.27s.
Macsilles eN = +35m.15s.?
Ivigtut +26m.45s.
Toledo i = +23m.24s.
Butte eS = +24m.41s.
Berkeley ePZ = +13m.0s., eSZ = +23m.58s.
San Fernando eSSN = +31m.18s.
Christchurch eSN = +33m.39s., L_qN = +40·5m.
Vermont e = +24m.53s., +33m.23s., +46m.26s., and +49m.46s.
East Machias e = +24m.40s., +37m.51s., and +45m.40s.
Chicago e = +24m.27s., +24m.51s., +31m.21s., +34m.46s., +36m.13s., and +39m.28s.
Oak Ridge eZ = +18m.9s.
Florissant eE = +24m.4s., eZ = +25m.52s., eE = +32m.50s.
Weston ePS = +27m.13s., eSSN = +33m.15s.
St. Louis iE = +29m.14s.
Philadelphia e = +26m.39s., +28m.4s., +33m.4s., +35m.29s., and +38m.4s.
Columbia e = +44m.55s., +48m.25s., and +51m.48s.
Long waves were also recorded at Rio de Janeiro, Besançon, Neuchatel, Göttingen, Huancayo, San Juan, Laibach, Malaga, Cape Town, and Wellington.

July 31d. Readings also at 1h. (Adelaide, Honolulu, San Juan, and Ottawa), 3h. (Philadelphia), 6h. (Calcutta, Sverdlovsk, and Tashkent), 8h. (Edinburgh), 11h. (Tucson, San Javier, and near Santiago), 12h. (Seattle), 13h. (Medan), 18h. (Sverdlovsk and Tashkent), 19h. (Perth), 20h. (Andijan and near Nagoya), 21h. (Mount Wilson, Pasadena, Riverside, Santa Barbara, Frunse, and near Almata), 22h. (Zinsen, Zi-ka-wei, and near Keizyo), 23h. (Hukuoka B, Husan, Taikyu, Vladivostok, Hong Kong, Phu-Lien, Moscow, Pulkovo, Sverdlovsk, Tashkent, De Bilt, and Edinburgh).

Aug. 1d. 10h. Epicentre according to Tucson, Gulf of California.

Tucson P = 8m.32s., i = 9m.3s., 9m.43s., 9m.47s., and 9m.55s., iS = 10m.4s., i = 10m.8s. and 10m.29s., iL = 11m.10s.
Riverside ePZ = 9m.26s., eZ = 9m.41s., eS = 11m.29s.
Mount Wilson ePZ = 9m.29s., eSZ = 11m.36s.
La Jolla ePZ = 9m.35s., eS = 10m.52s.
Pasadena e = 11m.37s. and 11m.44s.
Haiwee eEN = 12m.26s.
Tinemaha eZ = 13m.32s.
Berkeley eN = 13m.54s., eZ = 15m.0s.
St. Louis eE = 18m.29s., iE = 18m.44s., 19m.15s., and 19m.25s., eE = 21m.4s.
Long waves at East Machias, Oak Ridge, and Philadelphia.

Aug. 1d. 10h. 41m. 3s. Epicentre 35°·2N. 115°·3E. (as on 1937 July 31d.).

J. P. Rothé.
Damage at Hsou-Tchéou (Kiang-Si) and houses destroyed at Tsao-Tchéou-Fou, in the Province of Chantung. Epicentre 35°15′N. 115°20′E. (Strasbourg). See "Les Seismes de 1937. Revue pour l'etude des Calamites Tome I, p. 96." Geneva, 1938.

$A = -\cdot3500$, $B = +\cdot7404$, $C = +\cdot5739$; $\delta = +5$; $h = +1$;
$D = +\cdot904$, $E = +\cdot427$; $G = -\cdot245$, $H = +\cdot519$, $K = -\cdot819$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Dairen		6·2	52	1 31	− 4	2 56	+ 8	3·2	—
Yingkow		7·7	43	2 5	+ 9	4 27	S_g	—	—
Heizyo		9·2	62	e 2 17	+ 1	e 4 20	+17	5·1	5·4
Fengtien		9·3	42	2 12	− 5	4 5	0	4·9	—
Zinsen	N.	9·4	73	e 2 40	+22	i 4 46	+39	5·4	—
Keizyo		9·7	73	e 2 55	+33	e 4 25	+10	e 4·9	5·9
Syhwei		10·4	81	3 37	+63	5 47	L	(5·8)	6·0
Taikyu		10·9	82	e 2 40	0	e 5 6	SSS	—	6·5
Husan		11·2	87	2 40	− 4	5 18	SSS	—	7·9
Taihoku		11·4	150	e 2 51	+ 4	6 6	L	(6·1)	6·5
Tomie		11·5	100	3 57	+69	6 57	L	(7·0)	—
Ituhara		11·6	91	3 19	+29	6 3	L	(6·0)	—
Giran		11·8	150	2 53	0	6 53	L	(6·9)	—
Taityu		12·0	156	3 22	+27	6 9	L	(6·1)	—
Nagasaki		12·3	97	3 2	+ 3	6 25	L	(6·4)	—
Karenko		12·4	152	3 34	+33	6 42	L	(6·7)	—
Saga		12·5	94	2 49	−13	—	—	—	—
Arisan		12·6	156	3 11	+ 8	6 48	L	(6·8)	—
Hukuoka		12·6	93	2 51	−12	5 22	− 4	6·3	7·0
Hukuoka B		12·6	93	3 5	+ 2	6 17	L	(6·3)	6·9
Unzendake		12·7	97	3 5	0	6 14	L	(6·2)	—
Izuka		12·8	87	3 6	0	6 23	L	(6·4)	—
Tainan		12·9	159	3 6	− 1	6 56	L	(6·9)	—
Hong Kong		12·9	185	3 2	− 5	6 3	SS	7·3	8·4
Kumamoto		13·0	96	3 12	+ 3	6 40	+65	—	—
Kagosima		13·3	101	3 23	PP	7 11	L	(7·2)	—
Taito		13·4	156	3 25	PP	6 35	L	(6·6)	—
Ooita		13·6	93	4 4	+47	7 45	L	(7·7)	—
Hamada		13·7	86	4 17	− 1	7 19	L	(7·3)	—
Miyazaki		13·8	99	3 19	0	6 4	+10	(7·1)	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Uwazima		14·4	93	3 29	+ 2	6 38	SSS	7·7	—
Matuyama		14·5	90	3 28	0	—	—	7·4	—
Sakai		14·6	83	3 33	+ 3	—	—	—	—
Koti		15·1	91	3 56	PPP	6 30	+ 5	—	—
Vladivostok		15·1	53	i 3 34	− 2	e 6 29	+ 4	—	14·6
Tadotu		15·2	88	3 30	− 8	8 6	L	(8·1)	—
Muroto		15·7	91	3 44	0	—	—	—	—
Tokusima		15·9	87	3 58	+11	—	—	—	—
Toyooka		15·9	84	3 49	+ 2	e 6 49	+ 5	i 8·8	10·3
Sumoto		16·1	87	3 50	+ 1	7 2	+13	8·5	8·9
Kobe		16·3	86	e 3 40	−12	e 6 36	−17	—	8·2
Phu-Lien		16·3	210	e 3 51	− 1	e 7 7	+14	7·9	9·3
Wakayama		16·4	88	3 53	0	7 9	+13	8·4	—
Osaka		16·6	86	4 11	PP	—	—	9·4	—
Osaka B		16·6	86	4 3	+ 7	7 39	SSS	—	—
Kyoto		16·7	85	4 0	+ 3	—	—	9·0	—
Yagi		16·8	87	4 2	+ 4	8 45	L	(8·8)	—
Siomisaki		17·0	88	4 3	+ 2	7 21	+11	8·9	—
Hikone		17·1	84	4 8	+ 6	8 49	L	(8·8)	—
Ibukisan		17·2	84	4 19	+16	—	—	—	—
Kameyama		17·3	85	4 3	− 1	—	—	9·4	—
Kanazawa		17·4	78	3 43	−23	7 4	−15	8·9	—
Tu		17·4	85	4 4	− 2	7 24	+ 5	—	—
Gihu		17·5	84	4 8	+ 1	—	—	9·4	—
Wazima		17·5	76	4 5	− 2	7 41	SS	10·7	—
Husiki		17·7	77	4 20	+10	7 43	SS	—	—
Nagoya		17·7	83	e 4 10	0	9 35	L	(9·6)	11·0
Toyama		17·8	77	4 9	− 2	7 37	+ 9	11·0	—
Hamamatu		18·4	85	4 21	+ 3	—	—	—	—
Matumoto		18·4	81	4 12	− 6	—	—	10·2	—
Nagano		18·6	77	4 23	+ 2	7 57	+11	—	—
Omaesaki		18·8	85	4 23	0	—	—	10·4	—
Oiwake		18·9	81	4 27	+ 3	8 4	+11	10·4	—
Hunatu		19·1	84	4 27	0	8 4	+ 7	9·8	—
Maebasi		19·3	81	4 43	PP	8 10	+ 8	—	—
Niigata		19·3	74	4 38	+ 9	7 39	−23	—	—
Numadu		19·3	85	4 27	− 2	—	—	10·4	—
Kumagaya		19·6	80	4 42	+10	8 19	+11	—	—
Sakata		19·9	72	4 36	0	—	—	12·1	—
Tokyo		19·9	82	4 38	+ 2	8 21	+ 6	—	—
Yokohama		19·9	82	4 47	+11	8 24	+ 9	9·9	—
Akita		20·2	71	4 48	+ 9	—	—	—	—
Kakioka		20·2	80	4 33	− 6	8 12	− 9	—	—
Tukubasan		20·2	80	4 38	− 1	—	—	11·2	—
Yamagata		20·3	74	4 37	− 3	—	—	—	—
Hatidyozima		20·4	87	4 55	+14	—	—	12·0	—
Hukusima		20·4	78	4 37	− 4	8 41	+16	—	—
Mito		20·4	80	4 30	−11	8 29	+ 4	12·9	—
Tyosi		20·8	80	4 38	− 7	8 28	− 5	—	—
Hakodate		20·9	63	4 41	− 5	—	—	—	—
Mizusawa		20·9	71	e 4 47	+ 1	9 25	−10	11·6	—
Morioka		21·0	78	4 49	+ 2	9 1	−36	12·5	—
Manila		21·2	166	i 4 50a	+ 1	i 8 55	+14	—	13·5
Hatinohe		21·3	67	4 48	− 2	8 38	− 5	11·6	—
Miyako		21·6	69	5 47	+53	9 45	SSS	11·9	—
Sapporo		21·6	58	4 56	+ 2	8 52	+ 3	—	—
Haboro		22·2	57	5 3	+ 3	—	—	—	—
Asahigawa		22·5	58	5 49	PPP	—	—	—	—
Sikka		24·7	45	5 37	+13	9 51	+ 7	—	—
Calcutta	N.	26·7	250	e 5 29	−14	10 16	− 1	13·1	17·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Semipalatinsk		29·5	312	6 9	+ 1	11 3	+ 1	—	—
Almata		30·6	297	4 49	?	10 1	?	15·7	—
Dehra Dun		31·6	272	11 17	S	(11 17)	−18	17·4	17·9
Frunse		32·3	296	6 31	− 2	e 11 55	+ 9	—	—
Agra	E.	32·8	266	6 32	− 5	i 11 49	− 5	15·8	20·9
Andijan		34·0	292	6 51	+ 3	e 12 20	+ 7	—	—
Medan		35·0	210	e 6 49	− 7	12 31	+ 3	e 18·0	—
Tchimkent		36·0	296	7 2	− 3	—	—	—	—
Tashkent		36·3	294	i 7 3	− 4	i 12 46	− 2	18·3	20·4
Hyderabad		37·2	259	6 31	?	e 11 1	?	13·5	18·5
Samarkand		38·3	291	7 13	−11	—	—	—	—
Bombay		40·8	258	e 7 46	+ 1	i 13 55	− 1	19·1	24·9
Batavia		41·9	193	i 7 56	+ 2	14 16	+ 3	i 23·9	—
Sverdlovsk		4[illegible]	318	i 7 54	− 3	i 14 15	− 4	i 21·0	24·8
Kodaikanal	E.	4[illegible]	244	e 8 19	+21	i 15 21	+61	i 22·7	31·6
Colombo		4[illegible]	[illegible]38	14 31	S	(14 31)	+ 2	23·6	28·3
Baku		50·[illegible]	297	e 9 10	+ 5	e 16 25	+ 4	26·1	30·0
Grozny		53·6	302	9 23	+ 2	16 51	+ 1	—	—
Tiflis		54·2	300	9 29a	0	17 5	− 1	e 26·0	35·0
Piatigorsk		54·7	303	e 9 31	− 2	—	—	e 26·0	—
Moscow		55·1	318	9 35	− 1	17 15	− 3	29·4	30·6
Pulkovo		57·9	324	9 53	− 3	e 17 51	− 4	29·0	35·1
Theodosia		59·6	306	e 10 8	0	e 18 15	− 2	32·6	—
Simferopol		60·4	306	10 11	− 2	18 24	− 4	43·9	—
Yalta		60·6	305	e 10 9	− 6	e 18 21	− 9	30·9	—
Sebastopol		61·0	306	e 10 23	+ 5	—	—	e 32·9	—
Ksara		63·7	294	i 10 33k	− 3	19 12	+ 2	—	—
Upsala		63·9	327	e 10 34	− 3	19 4	− 8	30·9	35·5
Bucharest		65·9	308	e 10 51	+ 1	19 37	0	—	37·3
Copenhagen		68·3	324	i 11 1	− 4	20 2	− 4	e 32·0	—
Budapest		68·8	314	e 12 57	?	e 20 12	+ 1	e 35·0	37·9
Bergen		69·0	331	11 10	+ 1	20 10	− 4	—	38·7
Helwan		69·0	292	11 2	− 7	20 10	− 4	—	—
Stara Dala		69·1	315	e 10 57	−13	e 20 18	+ 3	e 33·0	—
Belgrade	N.W.	69·3	310	—	—	e 20 20	+ 3	e 34·3	37·9
Vienna		70·0	316	e 11 16	+ 1	21 25	[+12]	e 57·2	—
Prague		70·2	318	e 11 14	− 3	e 20 21	− 7	e 34·0	39·4
Scoresby Sund		70·2	347	11 15a	− 2	20 32	+ 4	36·9	—
Hamburg		70·6	323	e 11 17k	− 2	e 20 30	− 3	e 36·4	38·9
Sitka		70·6	33	e 11 15	− 4	20 35	+ 2	e 39·0	—
Jena		71·2	320	e 11 21	− 2	—	—	e 36·0	39·0
Cheb		71·3	319	e 11 23	0	e 20 34?	− 7	e 36·9	41·9
Göttingen		71·8	321	—	—	e 20 57?	+11	—	39·9
Triest		72·9	314	—	—	20 51	− 8	e 36·2	41·3
Adelaide		73·1	160	—	—	e 24 54	?	e 35·5	46·7
Stuttgart		73·7	319	e 11 37k	− 1	e 20 57	−11	e 37·1	41·4
De Bilt		73·9	323	—	—	21 8	− 2	e 35·0	41·7
Aberdeen		74·0	330	e 11 38	− 1	i 21 6	− 5	—	47·1
Karlsruhe		74·0	620	e 9 57?	?	—	—	—	—
Chur		74·6	318	e 11 40	− 3	—	—	—	—
Strasbourg		74·6	319	i 11 40k	− 3	e 21 16	− 2	e 34·9	41·9
Zurich		74·9	318	e 11 40	− 4	—	—	—	—
Uccle		75·1	323	11 45	− 1	21 19	− 5	35·0	42·0
Basle		75·3	318	e 11 44	− 3	—	—	—	—
Durham	N.	75·3	327	e 11 46	− 1	21 27	+ 1	—	44·0
Edinburgh		75·3	329	e 12 45	+58	i 21 24	− 2	e 38·0	43·3
Stonyhurst		76·3	328	e 11 18	−34	21 28	− 9	40·0	44·0
Riverview		76·4	150	—	—	e 35 39	?	39·0	—
Kew		76·9	325	e 11 54	− 2	i 21 39	− 4	37·9	43·3
Paris		77·2	321	i 11 57	0	—	—	41·9	42·9
Rathfarnham Castle		78·4	329	i 12 2	− 2	i 21 58	− 2	38·4	45·8
Jersey		79·3	324	e 12 10	+ 1	e 22 12	+ 3	e 30·7	44·5
Victoria	N.	81·7	35	—	—	e 22 39	+ 5	e 35·9	—
Barcelona		82·2	316	—	—	e 22 35	− 4	e 41·5	45·1
Ivigtut		83·0	352	—	—	22 46	− 1	41·0	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Algiers		84·6	315	—	—	22 57?	− 6	e 42·9	50·9
Toledo		86·7	318	e 12 48	+ 1	e 23 9	[− 3]	e 40·4	51·5
Almeria		87·9	315	—	—	e 23 7	[−13]	e 48·8	—
Granada		88·3	316	e 14 3	+68	i 24 56	PS	—	—
Butte		88·4	30	—	—	e 24 37	PP	e 41·0	—
Bozeman		89·3	30	—	—	e 23 21	[− 8]	e 40·1	—
Berkeley		89·8	42	e 13 1	− 1	i 23 55	+ 2	—	—
San Fernando		90·3	317	—	—	e 23 33	[− 2]	46·4	—
Tinemaha	Z.	92·5	40	e 13 17	+ 3	—	—	—	—
Tuai		93·2	136	i 18 57?	PPP	—	—	—	—
Haiwee	E.	93·4	40	e 13 18	0	—	—	—	—
Christchurch		94·1	142	e 8 31	?	e 28 49	?	46·2	—
Mount Wilson	Z.	94·8	42	e 13 24	− 1	—	—	—	—
Pasadena		94·8	42	e 13 24	− 1	—	—	e 47·0	—
Riverside	Z.	95·3	42	e 13 36	+ 9	—	—	—	—
Seven Falls		97·9	4	—	—	e 39 57?	?	e 57·0	—
Ottawa		99·2	7	—	—	e 24 19	[− 6]	e 45·0	—
Tucson		100·1	38	e 13 48	− 1	—	—	e 48·1	—
Chicago		100·5	17	—	—	e 24 23	[− 6]	e 45·2	—
Toronto		101·0	10	—	—	e 24 18	[−14]	e 45·0	—
Oak Ridge		102·4	4	—	—	e 24 35	[− 3]	e 50·0	—
Weston		102·6	4	—	—	i 24 38	[− 1]	e 47·6	e 56·0
St. Louis	E.	102·8	20	—	—	e 24 37	[− 3]	e 52·0	—
Philadelphia		104·6	7	—	—	i 24 44	[− 5]	e 43·5	—
Columbia		109·5	14	—	—	e 25 7	[− 3]	e 49·0	—
Huancayo		155·0	25	e 23 56	PP	—	—	e 69·6	—
La Paz		161·1	10	i 20 5k	[+ 3]	—	—	84·0	95·3

Additional readings :—
Taihoku e = +5m.35s.
Hamada e = +5m.56s.
Toyooka PN = +3m.52s., PE = +3m.55s.
Kobe eN = +7m.4s.
Osaka PP = +4m.39s.
Oiwake PP = +4m.44s.
Mizusawa SN = +8m.30s.
Sapporo i = +6m.40s.
Calcutta PPPN = +6m.24s., SSN = +11m.31s.
Dehra Dun S = +14m.27s.
Agra PPPE = +7m.49s., iSSE = +13m.34s.
Bombay PP = +9m.22s., SSE = +16m.22s., S_cS = +18m.28s.
Kodaikanal PPE = +9m.59s., PPPE = +10m.45s., iSSE = +18m.56s., iSSSE = +20m.16s.
Colombo S = +17m.53s.
Tiflis ePPEZ = +11m.35s., ePPPE = +12m.39s., eP_cSZ = +14m.18s., eSSE = +20m.57s.
Ksara iP_cP = +11m.12s., PP = +12m.56s.
Copenhagen PP = +13m.38s., e = +19m.52s., eE = +21m.2s., eN = +27m.45s.
Budapest EN = +21m.12s.
Helwan e = +14m.17s., PPP = +15m.17s., PS = +20m.42s.
Stara Dala e = +15m.51s.
Belgrade eNW = +21m.51s. and +28m.19s.
Vienna e = +35m.52s., SSS = +37m.53s., e = +40m.6s. and +43m.2s.
Prague e = +28m.18s.
Scoresby Sund +21m.14s.
Hamburg eSN = +20m.33s.
Sitka ePS = +21m.23s.
Triest i = +22m.34s.
Stuttgart e = +17m.5s., ePS = +21m.43s., e = +29m.47s.
Aberdeen i = +21m.46s.
Strasbourg ePP = +14m.14s.
Uccle eN = +30m.33s.
Kew eZ = +21m.30s., eE = +30m.30s., eZ = +37m.41s.
Rathfarnham Castle iPP = +15m.4s.
Berkeley eSZ = +23m.58s. ; readings are given 2h. early.
Christchurch SKS = +19m.3s., PPPS = +24m.35s., L_q = +39·5m.
Ottawa eE = +37m.57s.
Toronto eE = +34m.57s.?
Oak Ridge eZ = +26m.57s.?
Weston iZ = +27m.15s.
St. Louis eSKSE = +25m.4s.
Philadelphia eSS = +33m.4s.
Long waves were also recorded at Honolulu, Seattle, College, East Machias, Wellington, Cape Town, Rio de Janeiro, and European stations.

Aug. 1d. Readings also at 1h. (Ksara and Triest), 9h. (near Santiago), 10h. (Mizusawa and Perth), 11h. (Samarkand), 15h. (Medan), 17h. (Triest), 18h. (Mizusawa), 20h. and 22h. (Sitka), 23h. (Wellington).

Aug. 2d. 3h. Shock probably Central America.

Huancayo P = 28m.44s., S = 30m.7s., i = 32m.6s.
La Paz PN = 29m.40s., iSN = 31m.18s., L = 31m.44s., M = 32m.14s.
San Juan e = 32m.4s., i = 34m.13s. and 35m.12s.
St. Louis iPE = 34m.35s., epP = 34m.40s., iSE = 40m.40s., eE = 43m.20s.
Oak Ridge i = 34m.41s., iN = 34m.47s., eN = 35m.7s.
Tucson P = 35m.19s., i = 36m.16s., 37m.13s., and 38m.55s.
Riverside iPZ = 35m.55s., iZ = 36m.35s., 37m.54s., and 38m.49s.
Mount Wilson iPZ = 35m.59s., iZ = 36m.39s., eZ = 37m.59s., iZ = 38m.52s.
Pasadena iPZ = 36m.0s., iZ = 36m.38s.
Tinemaha iPZ = 36m.10s., iZ = 36m.45s.

Aug. 2d. 10h. 23m. 49s. Epicentre 38°·5N. 15°·0E. (given by Strasbourg).

A = +·7579, B = +·2031, C = +·6199; δ = −6; h = −1;
D = +·259, E = −·966; G = +·599, H = +·160, K = −·785.

Felt Scale V in South Sicily, epicentre as adopted. Annales de L'Institute de Physique du Globe de Strasbourg, Tome II, 2nd part "Seismologie," 1937, p. 39.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Capodimonte	N.	2·4	346	e 0 51	P_g	—	—	—	—
Prato		6·1	333	e 1 27	− 7	—	—	—	—
Triest		7·2	353	i 1 33	−16	—	—	e 4·6	6·0
Zagreb		7·3	6	e 1 58	+ 8	e 3 40	S*	e 5·3	—
Belgrade	N.W.	7·5	31	—	—	e 3 51	S*	e 5·3	—
Stara Dala		9·7	13	e 3 11?	+49	—	—	—	7·2
Stuttgart		11·1	340	e 2 53	+10	—	—	e 6·2	7·9
Strasbourg		11·4	335	e 3 11?	PP	—	—	e 6·2	—
Prague		11·6	358	—	—	e 5 31	+30	e 6·9	8·2
Cheb		11·7	352	e 3 11?	PP	—	—	e 6·2	7·4
Granada		14·8	271	e 3 30	− 2	e 6 25	+ 7	—	—
De Bilt		15·2	336	e 3 29	− 9	e 6 46	+18	e 7·7	10·9
Copenhagen		17·3	355	3 58	− 6	7 23	+ 7	9·2	—
Ksara		17·5	102	e 4 11	+ 4	e 7 33	+12	—	—
Aberdeen		21·8	334	e 6 36	?	e 8 46	− 6	—	—
Moscow		22·9	36	e 5 9	+ 3	e 9 16	+ 3	14·7	15·2
Tiflis		23·0	72	e 4 59	− 8	e 9 13	− 1	e 16·1	—
Pulkovo		23·4	20	e 5 2	− 9	9 20	− 1	11·7	15·8
Sverdlovsk		35·0	43	e 6 48	− 8	e 15 0	SSS	19·2	—
Tashkent		41·2	68	—	—	17 39	SSS	e 23·4	31·2

Additional readings:—
Triest i = 10h.22m.9s.
Belgrade eNW = +4m.27s.
Ksara P_cP = +8m.43s.
Long waves were also recorded at Scoresby Sund and other European stations.

Aug. 2d. 15h. 45m.38s. Epicentre 48°·6N. 155°·4E.

A = −·6035, B = +·2763, C = +·7479; δ = −9; h = −5;
D = +·416, E = +·909; G = −·680, H = +·311, K = −·664.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Asahigawa	10·2	247	2 24	− 7	—	—	—	—
Haboro	10·4	251	2 24	−10	—	—	—	—
Urakawa	11·0	239	2 40	− 2	—	—	—	—
Sapporo	11·3	246	2 37	− 9	5 13	+19	—	—
Muroran	11·9	244	3 11	+17	—	—	—	—
Kakodate	12·4	242	3 9	+ 8	—	—	—	—
Aomori	13·0	239	3 10	+ 1	5 31	− 4	—	—
Morioka	13·5	234	3 18	+ 3	5 40	− 7	—	—
Mizusawa	14·0	232	e 3 19	− 3	5 44	−15	—	—
Akita	14·1	238	3 21	− 2	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sendai		14·7	231	3 34	+ 3	6 10	− 6	—	—
Sakata		14·8	235	3 43	+11	—	—	—	—
Yamagata		15·0	232	3 39	+ 4	—	—	—	—
Hukusima		15·4	231	3 36	− 4	6 15	−17	—	—
Niigata		15·9	234	4 30	+43	—	—	—	—
Mito		16·4	228	3 51	− 2	—	—	—	—
Kakioka		16·7	228	3 53	− 4	6 52	−11	—	—
Tukubasan		16·7	228	3 55	− 2	—	—	—	—
Tyosi		16·7	225	3 57	0	—	—	—	—
Kumagaya		17·1	229	4 4	+ 2	—	—	—	—
Maebasi		17·1	230	4 3	+ 1	—	—	—	—
Nagano		17·3	233	4 9	+ 5	7 28	+12	—	—
Tokyo		17·3	227	3 45	−19	7 1	−15	—	—
Vladivostok		17·3	260	e 5 0	+56	9 15	?	9·9	13·5
Oiwake		17·4	232	4 6	0	7 43	+24	—	—
Wazima		17·5	238	4 8	+ 1	7 29	+ 8	—	—
Yokohama		17·6	227	4 11	+ 3	7 39	+16	—	—
Mera		17·9	226	4 18	+ 6	—	—	—	—
Toyama		17·9	235	4 16	+ 4	7 37	+ 7	—	—
Hunatu		18·0	229	4 14	+ 1	7 36	+ 4	—	—
Kohu		18·0	230	4 15	+ 2	7 37	+ 5	—	—
Misima		18·2	228	4 30	+14	—	—	—	—
Gihu		19·1	232	4 25	− 2	7 46	−11	—	—
Nagoya		19·1	232	e 4 28	+ 1	7 56	− 1	—	—
Ibukisan		19·3	232	4 29	0	—	—	—	—
Kamayama		19·7	232	4 32	− 2	—	—	—	—
Osaka B		20·3	234	4 16	−24	—	—	—	—
Kobe		20·5	234	e 4 36	− 6	e 8 23	− 4	—	13·5
Wakayama		20·8	234	4 46	+ 1	8 36	+ 3	—	—
Sumoto		20·9	234	4 45	− 1	e 8 48	+13	—	—
Keizyo	E.	23·4	253	e 5 11	0	—	—	—	—
Taikyu		23·4	246	(e 5 18)	+ 7	e 5 18	P	—	—
Husan		23·7	246	5 13	− 1	—	—	—	—
Hukuoka B		23·9	240	5 19	+ 3	9 29	− 1	—	—
Kumamoto		24·3	240	5 12	− 8	—	—	—	—
College		33·7	38	e 5 38	−67	e 11 24	−44	e 13·3	—
Sitka		41·0	50	7 54	+ 8	14 7	+ 8	e 17·2	—
Honolulu		46·1	108	—	—	e 15 40	+26	e 19·0	—
Sverdlovsk		53·5	316	9 21	− 3	e 16 47	−10	26·4	35·4
Frunse		54·2	296	e 9 50	+21	—	—	—	—
Andijan		56·8	295	e 10 10	+22	e 20 7	SS	—	—
Tashkent		58·3	297	i 9 56	− 3	18 13	+12	30·4	36·1
Samarkand		60·7	297	e 9 11	−64	—	—	—	—
Tinemaha		61·1	65	i 10 20	+ 2	—	—	—	—
Scoresby Sund		61·2	359	10 19	0	18 34	− 4	26·4	—
Haiwee	E.	61·9	65	e 10 26	+ 2	—	—	—	—
Mount Wilson		63·1	66	e 10 34	+ 2	—	—	—	—
Pasadena		63·1	66	i 10 33$_a$	+ 1	e 18 34	−28	e 29·4	—
Pulkovo		63·1	332	e 10 26	− 6	18 46	−16	34·4	39·2
Riverside		63·7	66	i 10 35	− 1	—	—	—	—
Moscow		63·8	325	10 33	− 3	19 5	− 6	34·9	42·8
La Jolla		64·5	67	e 10 42	+ 1	—	—	—	—
Upsala		66·6	338	i 11 31	+37	—	—	e 32·4	41·7
Bergen		68·6	345	11 9	+ 2	—	—	39·4	—
Tucson		68·9	64	i 11 10	+ 1	—	—	e 34·5	—
Baku		69·7	308	e 11 17	+ 3	e 20 3	−19	36·4	44·2
Bombay	E.	71·1	277	—	—	i 20 35	− 3	—	43·4
Tiflis		71·3	312	11 22	− 1	20 41	0	e 29·4	45·4
Copenhagen		71·6	339	11 24	− 1	20 35	− 9	34·4	—
Aberdeen		73·0	347	e 19 40	?	e 21 50	+50	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Theodosia	73·0	320	e 11 32	− 1	—	—	—	—
Simferopol	73·6	320	e 11 36	− 1	—	—	—	—
Yalta	74·0	320	e 11 38	− 1	—	—	—	—
Hamburg	74·1	340	i 11 38a	− 2	e 21 10	− 2	e 40·4	44·4
Edinburgh	74·3	348	—	—	e 21 22?	+ 7	—	—
Florissant	75·3	47	e 11 51	+ 4	e 21 28	+ 2	—	e 39·6
Prague	76·1	335	e 11 49	− 2	e 21 28	− 7	e 36·4	48·4
Stonyhurst	76·2	347	e 9 22?	?	21 32	− 4	44·4	—
Ottawa	76·3	34	—	—	e 21 22?	−15	e 38·4	—
Toronto	76·3	37	—	—	e 21 22?	−15	e 37·4	—
De Bilt	76·5	341	—	—	21 36	− 3	e 39·4	44·1
Bidston	76·7	347	i 11 55	0	e 21 46	+ 5	e 37·4	—
Cheb	76·7	336	—	—	e 21 22?	−19	37·4	46·4
Bucharest	77·3	323	14 22?	PP	—	—	e 38·7	45·4
Rathfarnham Castle	77·3	348	i 12 1	+ 3	e 21 42	− 6	37·4	42·9
Uccle	77·9	342	12 0	− 1	21 46	− 8	e 39·4	—
Oxford	78·0	345	11 57a	− 5	21 45	−10	e 39·4	52·1
Kew	78·2	345	i 12 2a	− 1	e 21 50	− 7	e 37·4	51·5
Stuttgart	78·7	338	i 12 5a	− 1	e 21 58	− 5	e 40·4	—
Strasbourg	79·2	338	i 12 8	0	e 22 5	− 3	e 33·4	43·4
Paris	80·2	342	e 12 14	0	—	—	42·4	—
Oak Ridge	80·3	32	i 12 15	+ 1	e 22 16	− 4	e 44·4	—
Weston	80·5	32	i 12 16a	+ 1	e 22 44	+22	e 44·4	—
Philadelphia	81·1	37	—	—	e 22 19	− 9	e 40·2	—
Ksara	81·8	312	i 12 22a	0	22 54	+19	—	—
Helwan	87·3	314	12 52	+ 2	e 23 22	− 7	—	—

Additional readings :—
Mizusawa eSN = +5m.51s.
Toyama i = +4m.34s.
Kobe eSZ = +8m.29s.
Taikyu eP? = +2m.43s.
Sitka ePPP = +9m.40s.
Baku ePPP = +16m.3s., e = +21m.8s., SS = +25m.58s.
Tiflis P_cPZ = +11m.47s., ePPPZ = +15m.42s., ePSE = +21m.7s., eSSZ = +25m.30s.
Copenhagen +11m.47s.
Florissant eNZ = +12m.9s., eN = +21m.50s., eE = +21m.53s.
Ottawa eE = +30m.22s.?
Toronto eE = +30m.22s.?
Stuttgart iP_cP = +12m.29s., ePS = +22m.40s.
Strasbourg iP_cP = +12m.34s.
Philadelphia eS = +22m.22s.
Ksara PP = +15m.34s., SS = +28m.42s.
Long waves were also recorded at Hong Kong, Göttingen, Jersey, Seven Falls, Phu-Lien, Belgrade, San Fernando, Ivigtut, and Wellington.

Aug. 2d. Readings also at 0h. (Granada), 1h. (Amboina and Granada), 2h. (Nagoya and Sitka), 4h. (Samarkand), 7h. (Samarkand and Sitka), 8h. (Triest), 9h. (near Sumoto), 11h. (Edinburgh), 12h. (Upsala, Tiflis, Wellington, and Sitka), 13h. (Sitka), 14h. (Edinburgh, Cheb, and Sitka), 15h. (Sverdlovsk and Tashkent), 16h. (Christchurch), 19h. (near Andijan and near Hukuoka B), 20h. (near Christchurch, New Plymouth, Wellington, and near Tananarive), 21h. (Sitka), 23h. (Sverdlovsk, Tashkent, Tchimkent, Frunse, and near Andijan).

Aug. 3d. 21h. 54m. 49s. Epicentre 16°·0N. 96°·5W.

A = −·1089, B = −·9556, C = +·2739 ; δ = +5 ; h = +6 ;
D = −·994, E = +·113 ; G = −·031, H = −·272, K = −·962.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Oaxaca	N.	1·0	346	0 21	0	—	—	—
Vera Cruz	N.	3·2	6	0 53	+ 1	—	—	—
Tapubaya	N.	4·2	324	1 12	+ 5	—	—	—
Tucson		20·8	324	4 46	+ 1	e 8 34	+ 1	e 10·8
St. Louis	E.	23·2	12	e 5 7	− 2	9 17	− 1	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Florissant		23·4	12	e 5 6	− 5	e 9 23	+ 2	—
Riverside	Z.	26·0	317	e 5 36	0	—	—	e 14·4
Pasadena		26·6	317	e 5 40	− 2	—	—	e 14·6
Haiwee	E.	27·7	321	e 6 3	+11	—	—	e 15·3
Tinemaha		28·5	322	e 6 0	+ 1	—	—	e 15·1
Ottawa		34·1	27	—	—	e 12 11?	− 3	e 18·2

Additional readings :—
Tucson i = +4m.58s. and +5m.17s., eS = +8m.58s., eSS = +10m.20s.
St. Louis iE = +5m.15s., +6m.11s., +6m.19s., and +9m.42s.
Florissant eN = +5m.11s., iN = +9m.28s., eZ = +9m.50s.
Long waves were also recorded at Oak Ridge, Scoresby Sund, Sverdlovsk, Tashkent, and several European stations.

Aug. 3d. 23h. 8m. 44s. Epicentre 35°·0N. 143°·5E.

$A = -·6600$, $B = +·4883$, $C = +·5710$; $\delta = +8$; $h = 0$;
$D = +·595$, $E = +·804$; $G = -·459$, $H = +·340$, $K = -·821$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	4·6	336	1 14	+ 2	1 52	−15	—	—
Nagoya	5·3	273	e 1 23	+ 1	2 30	+ 5	—	2·6
Kobe	6·8	270	e 1 22	−22	e 2 47	−16	—	3·3
Toyooka	7·1	277	1 45	− 3	3 8	− 2	—	3·5
Sumoto	7·1	267	1 47	− 1	3 12	+ 2	—	3·5
Vladivostok	12·1	315	e 2 45	−12	—	—	5·7	6·7
Tashkent	57·0	300	e 9 24	−26	e 17 44	+ 1	e 29·8	34·5
Sverdlovsk	57·8	320	9 57	+ 2	e 17 42	−12	28·3	—
Tiflis	73·4	309	e 11 49	+13	—	—	45·4	47·1

Additional readings :—
Kobe eSE = +2m.50s.
Toyooka SZ = +3m.12s.
Tashkent i = +9m.35s. and +10m.18s.
Long waves were also recorded at Hong Kong, Baku, Ksara, Moscow, Pulkovo, and some European stations.

Aug. 3d. Readings also at 2h. (Sitka), 3h. (Sitka, Stuttgart, and Wellington), 4h. (Huancayo and La Paz), 5h. (Scoresby Sund and Tiflis), 6h. (Scoresby Sund), 7h. (Yalta), 11h. (Nagoya and near Sumoto), 12h. (Samarkand), 13h. (near Mizusawa), 15h. (Granada), 16h. (Sverdlovsk and Tashkent), 17h. (near Tananarive), 18h. (Ksara, Tiflis, Sverdlovsk, Moscow, Pulkovo, Bucharest, Stara Dala, Copenhagen, De Bilt, Uccle, and Stuttgart), 23h. (near Andijan).

Aug. 4d. 23h. 35m. 18s. Epicentre 6°·0N. 94°·5E.

J. de Boer.

Felt Force V in the islands of We, Preuch, Simeuloee, and in the Province of Atjeh (N. Sumatra).

See "Aardbevingen in der Oost Indischen Archipel., Waargenomen gedurende het jaar 1937. Natuurkundig Tijdschrift voor Nederlansch-Indie, Afl 3, Deel XCIX, 39, pp. 101-131."

Epicentre: Bombay and U.S.S.R. 6°·0N. 94°·5E.
U.S.C.G.S. 4°·7N. 94°·6E.

$A = -·0780$, $B = +·9915$, $C = +·1038$; $\delta = -7$; $h = +7$;
$D = +·997$, $E = +·078$; $G = -·008$, $H = +·103$, $K = -·995$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Medan		4·8	119	1 3	−12	1 1 50	−22	—	—
Colombo		14·6	274	1 3 31	+ 1	—	—	—	9·0
Batavia		17·3	135	1 3 47	−17	—	—	—	—
Kodaikanal	E.	17·4	288	1 4 8	+ 2	1 7 17	− 2	18·5	10·0
Calcutta	N.	17·5	341	4 12	+ 5	7 35	+14	8·8	15·0

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Phu-Lien		18·9	38	e 4 26	+ 2	e 8 2	+ 9	—	—
Hyderabad		19·4	308	4 33	+ 3	8 14	+10	10·5	15·2
Bombay		24·7	304	i 5 29	+ 5	i 9 54	+10	—	15·7
Agra		26·2	326	5 43	+ 5	e 10 23	+14	—	—
Manila		27·4	70	i 5 45	− 4	10 18	−10	—	—
Dehra Dun		28·7	330	6 22	+21	10 12	−38	17·0	18·7
Amboina		35·0	106	6 19	−37	i 11 52	−36	—	—
Andijan		39·9	334	7 39	+ 2	i 13 45	+ 2	e 44·7	—
Almata		40·2	341	7 40	0	13 50	+ 2	—	—
Frunse		40·7	338	7 45	+ 1	13 57	+ 2	—	—
Samarkand		41·7	328	e 7 50	− 2	—	—	—	—
Tashkent		41·8	332	i 7 54	+ 1	i 14 10	− 1	e 21·8	27·3
Tchimkent		42·4	333	e 7 59	+ 1	14 18	− 2	—	—
Perth		42·9	153	9 37	PP	14 2	−25	17·4	—
Semipalatinsk		45·8	349	8 29	+ 4	15 12	+ 3	—	—
Sumoto		46·8	48	8 28	− 5	—	—	—	—
Kobe	E.	47·1	48	e 8 33	− 2	—	—	—	—
Nagoya		48·7	48	e 8 44	− 4	—	—	—	—
Vladivostok		49·5	36	i 8 53	− 1	16 1	− 1	28·3	37·3
Baku		52·6	318	e 9 23	+ 5	i 16 48	+ 4	24·7	32·6
Mizusawa	E.	53·4	45	(9 20)	− 4	9 20	P	—	—
Tiflis		56·6	317	e 9 45	− 2	i 17 35	− 3	e 22·7	—
Grozny		56·7	320	9 49	+ 1	e 17 37	− 3	—	—
Sverdlovsk		57·3	340	i 9 51	− 1	i 17 46	− 1	27·1	29·9
Adelaide		58·1	138	—	?	e 17 38	−20	26·3	29·1
Ksara		60·7	305	i 10 16	+ 1	18 36	+ 4	—	—
Helwan		63·8	301	e 10 27	− 9	i 19 8	− 3	—	—
Theodosia		64·2	318	e 10 37	− 2	e 19 10	− 6	—	—
Yalta		64·9	318	—	—	e 19 16	− 8	—	—
Simferopol		65·0	318	e 10 48	− 1	e 19 20	− 6	—	—
Sebastopol		65·3	317	—	—	e 19 23	− 6	—	—
Moscow		66·9	330	10 53	− 3	19 41	− 8	37·2	43·3
Bucharest		70·4	316	e 11 17	− 1	i 20 28	− 2	—	43·7
Pulkovo		72·0	332	11 24	− 4	20 42	− 7	35·7	45·8
Belgrade		74·5	315	e 11 41k	− 1	i 22 11	+54	e 46·5	—
Stara Dala		76·4	318	e 12 10	+17	e 21 32	− 6	—	27·7
Vienna		77·6	319	e 11 54	− 6	e 21 51	0	—	—
Zagreb		77·7	316	e 11 59	− 1	e 21 42?	−10	—	—
Upsala		78·3	331	e 11 58	− 5	i 21 48	−11	e 44·7	—
Prague		79·1	321	e 11 28	−40	e 21 10	−57	44·7	54·7
Triest		79·3	316	12 7	− 2	i 21 59	−10	e 44·0	—
Cheb		80·4	321	e 12 34	+19	e 22 5	−16	—	—
Copenhagen		80·6	327	12 13a	− 3	22 15	− 8	42·7	—
Jena		80·9	321	e 12 24	+ 7	e 22 18	− 8	—	—
Hamburg		82·0	324	e 12 20	− 3	i 22 31	− 6	—	—
Chur		82·2	317	e 12 22	− 2	e 22 32	− 7	—	—
Stuttgart		82·4	319	e 12 23a	− 2	i 22 36	− 5	e 48·7	—
Zurich		82·9	318	e 12 25	− 3	e 22 38	− 3	—	—
Strasbourg		83·4	319	e 12 28	− 2	e 22 46	− 5	—	—
Basle		83·5	318	e 12 29	− 2	e 22 48	− 4	—	—
De Bilt		84·9	323	12 35	− 3	22 52	−14	e 44·7	49·8
Uccle		85·5	321	e 12 38	− 3	e 22 56	[− 8]	e 41·7	—
Paris		86·9	319	e 12 44	− 4	i 23 16	[+ 3]	43·7	44·7
Algiers		87·6	307	e 12 42?	− 9	i 23 28	− 4	—	34·7
Kew		88·3	322	i 12 53a	− 2	i 23 12	[−10]	e 54·7	—
Aberdeen		88·6	328	e 13 8	+12	e 23. 10	[−14]	e 54·9	—
Durham	N.	88·6	325	—	—	i 23 37	− 5	—	—
Oxford		88·9	323	13 12	+14	i 23 35	[+ 9]	—	—
Stonyhurst		89·3	325	—	—	e 23 22	[− 6]	—	—
Edinburgh		89·4	327	—	—	e 23 20	[− 9]	e 55·7	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bidston		89·7	324	—	—	i 23 47	− 5	—	—
Jersey		89·8	320	—	—	e 23 45	− 8	—	—
Toledo		92·7	310	—	—	(e 22 59)	[−49]	e 23·0	—
Granada		92·8	308	e 13 19	+ 3	i 24 19	0	—	—
Scoresby Sund		92·9	344	13 12k	− 4	24 16	− 4	27·7	—
Malaga		93·6	308	e 13 40	+21	i 24 26	0	—	—
Honolulu		104·1	66	e 13 30	−37	—	—	—	—
Ivigtut		107·0	343	—	—	26 12	− 7	—	—
Victoria	E.	116·5	27	e 20 2	PP	e 35 42?	SS	e 53·7	—
East Machias		126·9	343	e 20 54	PP	27 55	{− 4}	e 70·4	—
Ottawa		128·1	352	e 21 6	PP	e 38 6	SS	e 55·7	—
Pasadena		129·5	35	i 19 5	[− 6]	i 22 19	PP	—	—
Oak Ridge		130·1	346	e 19 7	[− 5]	—	—	e 64·7	—
Riverside		130·1	35	i 19 7	[− 5]	22 21	PP	—	—
Weston		131·7	346	i 19 7	[− 8]	—	—	e 58·7	—
Tucson		135·0	30	e 19 13	[− 8]	—	—	—	—
Florissant		135·2	5	e 19 20	[− 2]	—	—	e 75·5	e 88·0
San Juan		149·1	322	—	—	e 29 11	{−62}	e 80·8	—
La Paz	z.	160·0	237	20 18	[+17]	—	—	80·7	85·5

Additional readings :—
Medan iPEN = +1m.6s.
Kodaikanal iSSE = +.7m.50s.
Calcutta PPPN = +4m.32s., SSN = +8m.10s.
Phu-Lien iPPP = +4m.50s., SS = +8m.39s.
Bombay iPP = +5m.57s., eSS = +10m.58s.
Agra epP = +6m.2s., PPE = +6m.36s., iN = +10m.42s., sSE = +10m.53s., SSE = +11m.46s.
Manila iZ = +6m.33s., iN = +12m.17s.
Almata e = +10m.8s.
Perth PP = +10m.42s., SS = +15m.37s.
Sumoto PE = +8m.31s., eEZ = +10m.24s.
Tiflis ePPZ = +12m.17s., ePPPZ = +13m.6s., SKKS = +19m.30s.
Adelaide i = +19m.34s.
Ksara iP$_c$P = +11m.3s., ePP = +12m.35s., SS = +21m.49s.
Helwan e = +10m.54s. and +14m.45s., i = +15m.30s., PS = +19m.42s., i = +20m.57s.
Bucharest PP? = +12m.54s., PPP? = +14m.43s.
Belgrade P$_c$PZ = +11m.59s.
Vienna P$_c$P = +12m.10s.
Upsala eN = +16m.59s., iSE = +21m.51s.
Triest PPP = +16m.48s.
Copenhagen +12m.31s. and +22m.36s., eE = +23m.30s.
Hamburg iE = +23m.4s.
Stuttgart eP$_c$P = +12m.51s., e = +19m.27s., eS$_c$S = +23m.5s., ePS = +23m.42s.
Strasbourg ePP = +15m.2s., ePPP = +19m.42s.?
De Bilt iZ = +13m.4s., iN = +23m.1s.
Uccle iN = +23m.6s., eN = +35m.35s.
Paris e = +16m.42s.?
Kew ePPZ = +16m.28s., i = +23m.33s., iPSN = +23m.41s.
Aberdeen e = +16m.58s. and +18m.51s.
Oxford SKS = +23m.13s.
Stonyhurst e = +23m.42s.
Edinburgh i = +23m.46s.
Jersey e = +25m.44s.
Scoresby Sund +17m.1s. and +25m.30s., SS = +30m.42s.?
East Machias ePS = +31m.23s., ePPS = +32m.10s., eSS = +37m.31s., ePSPS = +38m.13s., eS$_c$SS$_c$S = +40m.50s.
Oak Ridge iZ = +21m.25s.
Weston iZ = +21m.24s., +22m.25s., +22m.56s., and +33m.16s., eEN = +38m.52s.
Tucson ePP = +21m.54s., iPKS = +22m.42s., i = +23m.23s.
Florissant eZ = +19m.53s., ePKP$_a$Z = +21m.47s., eZ = +21m.52s., ePPZ = +22m.37s., eN = +22m.51s.
San Juan eSKKKS = +29m.59s., eSKSP = +33m.20s., ePSPS = +42m.46s.
Long waves were also recorded at Hong Kong, Cape Town, and Seven Falls.

Aug. 4d. Readings also at 2h. (Samarkand and Sitka), 3h. (Sitka and Tiflis), 4h. (Scoresby Sund and Sverdlovsk), 5h. (Sitka and Tashkent), 10h. (near Nagoya and Sumoto), 12h. (Sitka), 14h. (Copenhagen, Paris, De Bilt, Uccle, Strasbourg, Stuttgart, and Malaga), 15h. (near Mizusawa (2) and near Nagoya (2)), 19h. (near Amboina), 20h. (Andijan, Frunse, and Samarkand), 21h. (near Weston), 22h. (De Bilt, Ivigtut, Scoresby Sund, Edinburgh, and Philadelphia), 23h. (Sumoto and Philadelphia).

Aug. 5d. 14h. 43m. 50s. Epicentre 5°·8S. 150°·2E.

$A = -\cdot8634$, $B = +\cdot4945$, $C = -\cdot1004$; $\delta = +7$; $h = +7$;
$D = +\cdot497$, $E = +\cdot868$; $G = +\cdot087$, $H = -\cdot050$, $K = -\cdot995$.

A depth of focus 0·005 has been assumed.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Palau	20·4	310	4 32	− 2	8 27	+13	—	—
Amboina	22·1	275	e 4 44	− 7	—	—	—	—
Riverview	27·9	177	e 5 47	+ 1	i 10 34	+11	—	14·4
Sydney	27·9	177	e 5 34	−12	e 10 28	+ 5	15·2	16·4
Adelaide	30·9	198	e 6 17	+ 4	i 11 5	− 6	i 14·4	19·4
Melbourne	32·3	187	i 6 33	+ 8	11 32	− 1	14·9	20·6
Manila	35·3	306	i 6 50	− 1	12 42	+23	—	—
Hatidyozima	39·9	347	7 30a	+ 1	12 59	+30	—	—
Arisan	40·9	316	7 44	+ 7	—	—	—	—
Perth	41·3	226	8 20	+39	i 13 50	0	—	—
Taihoku	41·4	319	7 42	+ 1	—	—	—	—
Taityu	41·4	317	7 49	+ 8	—	—	—	—
Kagosima	41·6	335	7 47	+ 4	—	—	—	—
Miyazaki	41·6	336	7 43	0	13 53	− 1	—	—
Wellington	41·6	151	7 43	0	13 56	+ 2	20·2	22·2
Mera	41·7	347	7 52	+ 8	—	—	—	—
Hamamatu	42·0	346	7 56	+10	—	—	—	—
Numadu	42·1	346	8 0	+13	—	—	—	—
Koti	42·2	339	8 48	+60	—	—	—	—
Tyosi	42·2	350	7 50	+ 2	—	—	—	—
Tokusima	42·3	341	7 48	− 1	—	—	—	—
Wakayama	42·3	342	7 50	+ 1	—	—	—	—
Tokyo	42·4	348	7 50	0	14 2	− 4	—	—
Christchurch	42·5	155	i 7 52a	+ 1	i 14 15	+ 7	20·3	—
Hunatu	42·5	347	7 39	−12	—	—	—	—
Kameyama	42·5	345	7 49	− 2	—	—	—	—
Osaka	42·5	342	7 56	+ 5	—	—	—	—
Osaka B	42·5	342	7 51	0	—	—	—	—
Sumoto	42·5	342	i 7 49a	− 2	e 14 1	− 7	—	—
Tu	42·5	344	7 46	− 5	—	—	—	—
Kumamoto	42·6	335	7 50	− 1	—	—	—	—
Nagoya	42·6	345	e 7 44	− 7	9 11	?	—	—
Kobe	42·7	342	i 7 51a	− 1	e 14 4	− 7	—	—
Matuyama	42·7	339	7 52	0	14 8	− 3	—	—
Unzendake	42·7	335	7 42	−10	—	—	—	—
Kakioka	42·8	348	7 51	− 2	—	—	—	—
Kyoto	42·8	344	8 1	+ 8	—	—	—	—
Gihu	42·9	345	7 53	− 1	—	—	—	—
Hikone	42·9	346	7 51	− 3	—	—	—	—
Kumagaya	42·9	347	7 54	0	—	—	—	—
Mito	42·9	348	7 51	− 3	—	—	—	—
Nagasaki	42·9	335	7 52	− 2	—	—	—	—
Ibukisan	43·0	346	7 54	− 1	—	—	—	—
Batavia	43·1	268	e 7 53	− 2	i 14 19	+ 3	—	—
Maebasi	43·3	347	7 57	0	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Oiwake		43·3	346	7 59	+ 2	14 27	+ 8	—	—
Tomie		43·3	333	i 12 44	?	—	—	—	—
Hukuoka B		43·4	336	7 59	+ 1	14 8	−13	—	—
Izuka		43·4	336	7 56	− 2	14 15	− 6	—	—
Miyadu		43·5	344	7 57	− 2	—	—	—	—
Toyooka		43·6	344	8 0	+ 1	—	—	—	—
Nagano		43·7	346	8 1	+ 1	14 40	+15	—	—
Hamada		43·9	338	8 2	0	—	—	—	—
Kanazawa		44·0	345	7 59	− 4	—	—	—	—
Toyama		44·0	345	8 5	+ 2	—	—	—	—
Husiki		44·1	345	8 10	+ 6	—	—	—	—
Sakai		44·1	340	8 3	− 1	—	—	—	—
Hukusima		44·3	349	8 8	+ 3	—	—	—	—
Niigata		44·7	348	8 2	− 6	—	—	—	—
Sendai		44·7	350	8 12	+ 4	14 12	−27	—	—
Wazima		44·7	346	8 7	− 1	—	—	—	—
Hong Kong		45·0	310	8 10	− 1	13 20	?	18·0	20·2
Husan		45·3	335	8 17	+ 4	14 48	0	—	—
Mizusawa		45·5	351	e 8 14	− 1	14 46	− 5	—	—
Morioka		46·0	351	8 18	− 1	—	—	—	—
Taikyu		46·1	336	8 22	+ 3	15 4	+ 4	—	—
Hakodate		48·1	351	9 3	+28	—	—	—	—
Keizyo	E.	48·3	335	e 8 42	+ 5	e 11 13	?	—	—
Zinsen		48·3	334	i 8 35 a	− 2	e 15 30	− 1	—	—
Sapporo		49·3	352	8 46	+ 2	15 45	0	—	—
Phu-Lien		50·3	303	e 8 51	− 1	e 16 15	+17	—	—
Vladivostok		51·4	343	i 9 0	0	16 14	0	25·2	—
Medan		52·3	279	e 9 47	+40	i 17 38	+72	—	—
Honolulu		57·6	60	e 9 48	+ 2	17 41	+ 4	23·7	—
Calcutta	N.	66·7	297	e 10 30	−16	19 9	−22	—	—
Kodaikanal	E.	74·2	282	e 11 30	− 2	i 20 51	− 8	i 33·8	40·5
Hyderabad		74·5	290	11 38	+ 5	20 52	−10	32·8	47·3
Agra	E.	77·0	299	10 33	−75	i 20 10	−79	35·9	—
Bombay		80·0	290	e 11 59	− 5	i 21 50	−11	e 37·2	—
Semipalatinsk		81·9	323	e 12 9	− 5	—	—	—	—
College		83·8	22	e 13 13	+49	—	—	e 33·2	—
Andijan		84·6	312	e 12 29	+ 1	e 22 43	− 5	—	—
Sitka		86·5	31	e 12 42	+ 5	i 23 0	− 6	e 35·5	—
Tashkent		87·0	312	e 12 38	− 1	e 23 32	+21	35·8	49·3
Samarkand		88·5	310	12 53	+ 6	—	—	—	—
Berkeley		91·6	52	e 12 57	− 4	e 23 41	−12	—	—
Victoria		92·0	41	e 13 9	+ 6	e 23 26	[− 2]	37·2	—
Seattle		92·6	42	—	—	e 23 58	− 4	—	—
Santa Barbara	Z.	93·3	56	e 13 10	+ 1	—	—	—	—
Pasadena		94·6	56	e 13 13	− 2	e 23 33	[−10]	43·2	—
Sverdlovsk		94·6	326	i 13 10	− 5	24 37	+18	i 46·5	48·5
Mount Wilson		94·7	56	e 13 12	− 3	e 23 30	[−12]	—	—
Tinemaha		94·7	53	i 13 15	0	e 23 40	[− 3]	—	—
Haiwee		94·9	54	e 13 20	+ 4	e 23 44	[− 1]	—	—
La Jolla	Z.	95·2	57	e 13 15	− 3	—	—	—	—
Riverside		95·2	56	e 13 14	− 4	i 23 43	[− 3]	—	—
Tucson		100·6	58	e 13 42	0	e 24 13	[− 1]	e 41·0	—
Baku		101·6	310	e 18 10	PP	e 24 21	[+ 2]	49·2	55·7
Grozny		104·5	313	e 14 53	?	—	—	—	—
Tiflis		105·3	312	e 13 57	P	e 24 21	[−15]	e 41·7	65·3
Moscow		107·4	327	14 10	P	34 10	SS	46·7	60·5
Pulkovo		109·7	332	14 21	P	24 41	[−14]	50·2	59·1
Theodosia		112·2	316	e 13 23	?	e 19 10	PP	—	—
Yalta		112·5	315	e 19 9	PP	i 28 48	PS	—	—
Sebastopol		112·9	316	e 19 34	PP	—	—	—	—
Ksara		113·4	303	e 14 33	P	—	—	—	—
Upsala		115·2	336	e 19 16	PP	e 29 7	PS	e 55·2	—
Scoresby Sund		115·2	358	e 19 25	PP	e 25 10	[− 7]	52·2	—
Florissant		116·4	49	e 13 52	?	e 29 34	PS	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Chicago		117·5	45	e 22 26	?	e 29 37	PS	e 59·1	—
Helwan		117·8	300	e 19 33	PP	e 25 23	[− 3]	—	—
Bucharest		118·0	318	e 19 35	PP	30 18	?	—	60·2
Bergen		119·4	342	e 20 4	PP	—	—	—	—
Cape Town		119·7	226	—	—	26 40?	SKKS	—	—
Copenhagen		120·0	334	18 46	PKP	27 10	SS	52·2	—
Budapest	E.	121·2	323	e 20 10	PP	—	—	—	—
Stara Dala		121·5	324	e 19 45	?	—	—	e 59·2	64·2
Belgrade		121·6	320	e 18 52a	PKP	e 38 9	SSP	e 63·1	—
Prague		122·4	328	e 19 52	PKP	e 37 58	SS	e 57·2	62·2
Vienna		122·4	325	e 19 39	PKP	e 25 41	[− 1]	—	—
Hamburg		122·5	334	e 18 49	PKP	—	—	e 61·2	62·2
Ivigtut		123·0	11	20 22	PP	—	—	52·2	—
Cheb		123·5	329	e 20 10?	PP	—	—	e 56·2	66·2
Zagreb	Z.	123·9	322	e 18 50	PKP	—	—	—	—
Ottawa		124·0	37	e 20 34	PP	e 37 22	SS	e 50·2	—
Aberdeen		124·3	342	e 20 30	PP	—	—	—	—
Triest		125·3	323	i 20 46	PP	e 37 49	SS	e 60·2	69·7
De Bilt		125·6	334	e 18 54	PKP	—	—	e 60·2	62·8
Edinburgh		125·7	342	e 20 48	PP	—	—	e 59·2	—
Seven Falls		125·9	33	e 20 22	PP	e 38 28	SSP	e 50·2	—
Stuttgart		125·9	329	e 18 50	PKP	—	—	e 59·2	78·6
Vermont		126·0	37	e 20 47	PP	e 37 47	SS	e 52·1	—
Durham	N.	126·1	341	e 20 37	PP	—	—	—	—
Strasbourg		126·8	330	e 18 57	PKP	e 25 40	[−15]	65·2	—
Uccle		126·9	334	e 18 53	PKP	i 38 39	SSP	e 61·2	—
Philadelphia		127·0	43	e 20 50	PP	e 30 49	PS	52·7	—
Bidston		127·8	341	i 21 15	PP	—	—	e 44·2	—
Oak Ridge		128·1	38	e 18 58	PKP	—	—	e 57·2	—
Kew		128·3	337	e 19 0	PKP	—	—	e 46·2	69·2
Weston		128·3	28	e 19 3k	PKP	e 38 10	SS	—	—
Rathfarnham Castle		128·9	343	i 21 17	PP	i 26 33	[+32]	34·2	—
Paris		129·1	333	e 19 4	PKP	(38 10?)	SS	38·2	—
East Machias		129·2	34	e 21 11	PP	—	—	e 53·3	—
Huancayo		131·4	111	e 19 7	PKP	26 18	[+11]	e 53·9	—
San Juan		133·9	67	e 19 16	PKP	—	—	e 60·3	—
La Paz		136·1	121	i 19 18k	PKP	—	—	—	—
Toledo		138·9	330	e 19 13	PKP	e 28 50	PP	—	—
Almeria		140·3	325	e 22 22	PP	—	—	—	—
Granada		140·7	327	i 19 27	PKP	—	—	—	—
Malaga		141·4	327	e 19 23	[− 1]	—	—	—	—
San Fernando		142·6	327	e 19 49	[+23]	e 35 45	SS	66·2	—
Rio de Janeiro		148·6	156	e 29 55	?	—	—	—	—

Additional readings :—

Riverview iPPN = +6m.25s., iPPPN = +6m.44s., iSSN = +11m.45s., iE = +11m.58s.
Adelaide esP = +7m.2s., i = +7m.20s., +7m.37s., and +11m.20s.
Melbourne i = +12m.48s. and +14m.8s.
Manila iE = +6m.58s., iZ = +8m.44s.
Perth PP = +10m.5s., SS = +16m.50s., SS = +17m.10s., SSSS = +17m.15s.
Wellington ipP = +8m.6s., isP = +8m.22s., ePP = +9m.25s., P_cP = +9m.33s., isPP = +9m.50s., ipP$_c$P = +10m.7s., P_cS = +13m.42s., isS? = +14m.29s., L_q = +18·2m.
Wakayama i = +10m.33s.
Christchurch iP$_c$P = +9m.52s., iP$_c$SEN = +14m.6s., L_q = +17m.15s., iS$_c$S = +17m.44s.
Osaka i = +10m.25s.
Sumoto eN = +10m.37s., eE = +10m.41s., eZ = +10m.44s.
Kumamoto i = +9m.44s.
Kobe eSZ? = +14m.11s.
Hamada i = +10m.46s.
Toyama i = +10m.9s.
Hong Kong P_cP? = +10m.41s., SS? = +14m.50s.
Mizusawa SN = +14m.27s.

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Zinsen ePP = +10m.26s., eSS = +16m.22s.'
Vladivostok pP = +9m.38s., sP = +9m.46s., PP = +11m.19s., pPP = +11m.42s., sS = +17m.10s., sSS = +20m.40s.
Medan iE = +18m.4s.
Calcutta iN = +19m.32s. and +20m.2s.
Kodaikanal E PS = +21m.28s., e = +26m.3s.
Bombay iE = +22m.14s., e = +26m.38s.
Agra P_gPE? = +10m.37s., pPE = +10m.53s., sPE = +11m.13s., PPE = +13m.13s., PPPE = +15m.17s., S_gSE = +20m.15s., sSE = +21m.1s., SSE = +25m.25s., SSSE = +28m.17s.
Sitka i = +23m.9s., iPS = +24m.10s., i = +24m.27s. and +25m.0s., eSSS = +32m.30s.
Berkeley ePN = +13m.13s., eN = +22m.59s. and eN = +23m.57s., iZ = +25m.2s.
Victoria e = +16m.58s.
Tashkent pP = +13m.11s., sP = +13m.28s., PP = +16m.8s., pPP = +16m.55s., SKS = +22m.54s., sS = +24m.52s., SS = +29m.28s.
Pasadena eN = +24m.13s.
Sverdlovsk ipP = +13m.42s., PP = +16m.57s., ipPP = +17m.47s., PPP = +19m.9s., ipPPP = +19m.47s., SKS = +23m.39s., PS = +25m.13s., pPS = +26m.28s., iPPS = +27m.0s., SS = +31m.16s., L_q = +39·1m.
Tucson ePS = +26m.36s., e = +29m.51s.
Baku e = +16m.16s. and e = +27m.27s.
Grozny e = +18m.27s.
Tiflis ePPZ = +17m.51s., eE = +24m.32s., ePPSE = +27m.35s., eE = +28m.9s., eSSE = +33m.7s.
Moscow epP = +14m.42s., PP = +18m.34s., PPP = +21m.30s., SP = +27m.56s., PPS = +28m.40s.
Pulkovo pP = +15m.0s., PP = +18m.54s., pPP = +19m.27s., pPPP = +22m.3s., SP = +28m.56s., SKSP = +30m.4s., SS = +34m.22s., sSS = +35m.10s.
Ksara ePP = +19m.7s., ipPP = +17m.33s., i = +20m.12s., sS = +27m.21s., SPP = +29m.21s., SS = +34m.19s., PKP,PKP = +38m.13s.
Upsala eN = +19m.22s., eE = +20m.28s.
Scoresby Sund +19m.43s., +20m.17s., and +22m.44s., eE = +28m.10s., eEZ = +29m.11s., eN = +29m.32s., SS = +36m.22s., SSS = +40m.4s., L_q = +46·2m.
Florissant eZ = +14m.8s., ePPZ = +19m.22s., e = +19m.46s., eN = +27m.30s., +28m.16s., and +30m.10s., eE = +30m.22s.
Helwan e = +19m.55s., i = +20m.35s., e = +29m.38s., i = +30m.0s. and +30m.30s.
Bucharest PP = +22m.50s., SKS = +29m.50s., SE = +30m.22s., SSN = +36m.10s.
Copenhagen eZ = +19m.37s., PP = +20m.11s., e = +20m.52s., PS = +30m.3s., eEN = +30m.40s.
Budapest ePN = +20m.21s.
Stara Dala e = +20m.58s.
Belgrade eZ = +19m.42s. and +20m.18s., eNW = +23m.44s.
Prague e = +20m.29s. and +30m.4s.
Vienna e = +20m.28s. and +30m.30s.
Ivigtut +30m.10s., +31m.10s., and +31m.34s.
Cheb e = +31m.10s.?
Zagreb e = +18m.58s., eNW = +19m.38s., eNE = +20m.38s., e = +30m.34s.
Ottawa e = +32m.58s.
Aberdeen e = +21m.23s., i = +24m.19s.
Triest e = +30m.50s. and +31m.21s.
De Bilt ePP = +20m.41s., eEN = +30m.54s.
Stuttgart eZ = +19m.48s., ePP = +20m.42s., ePKS = +21m.25s., ePPP = +23m.33s., e = +24m.17s., ePS = +31m.4s., ePPS = +32m.58s., eSS = +38m.30s., eSSS = +42m.48s., e = +53m.10s.
Seven Falls e = +32m.58s.
Strasbourg iPPZ = +20m.57s., eSKPN = +21m.10s., iZ = +21m.45s., ePPP = +23m.41s., eSN = +27m.41s., ePSN = +31m.10s., ePPSZ = +32m.25s., eSSZ = −38m.10s.
Uccle e = +20m.24s., PP = +20m.56s., iZ = +21m.42s. and +24m.17s., PSE = +31m.6s.
Philadelphia ePPS = +32m.25s., ePSPS = +37m.58s.
Bidston e = +38m.38s. and +43m.5s.
Oak Ridge eZ = +19m.48s., eE = +38m.16s.
Kew iZ = +21m.13s., i = +21m.36s., iZ = +23m.12s., eZ = +24m.20s. and +29m.53s., iZ = +32m.9s., eN = +39m.17s. and +43m.46s.
Weston eZ = +20m.34s., ePKP = +22m.30s., eE = +23m.40s., ePS = +31m.11s.
Rathfarnham Castle e = +21m.53s., i = +25m.22s.
Paris e = +20m.47s. and +22m.28s.
Huancayo ePP = +21m.28s., i = +22m.30s., eSS = +39m.6s., i = +39m.17s., eSSS = +44m.4s.
San Juan ePP = +22m.28s.
La Paz iZ = +19m.54s., +22m.38s., and +23m.52s.
Granada iPP = +22m.36s.
Malaga iPP = +22m.38s.
Long waves were also recorded at Apia, Arapuni, San Francisco, and Jersey.

Aug. 5d. Readings also at 0h. (near Theodosia), 2h. (near Mizusawa and near Nagoya), 3h. (near Sumoto), 5h. (near Berkeley), 6h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, and Tinemaha), 9h. (near Amboina and near Nagoya), 10h. (Baku, Tashkent, Grozny, Tiflis, Ksara, Sverdlovsk, and Samarkand), 11h. (La Paz and near Sumoto), 12h. (Tacubaya and near Medan), 14h. (Belgrade), 15h. (near Berkeley), 19h. (Ferndale), 21h. and 23h. (near Florissant and St. Louis).

Aug. 6d. Readings at 2h. (near La Paz), 3h. (near Berkeley, Branner, Lick, Fresno, San Francisco, Samarkand, and near Capodimonte), 4h. (near Samarkand), 5h. (Adelaide, Riverview, Sydney, Perth, Wellington, Mount Wilson, Pasadena, Riverside, Samarkand, Sverdlovsk, and Tashkent), 6h. (Philadelphia), 7h. (Grozny and Yalta), 8h. (Wellington, Huancayo, La Paz (2), and Ksara), 9h. (Samarkand, Sebastopol, Yalta, De Bilt, Stuttgart, Scoresby Sund, and Berkeley), 10h. (Baku and Sverdlovsk), 11h. (Grozny), 12h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and near Samarkand), 13h. (Sverdlovsk and Tashkent), 15h. (Nagoya and near Sumoto), 19h. (Alicante), 21h. (Samarkand), 22h. (near Florissant).

Aug. 7d. Readings at 4h. (near Mizusawa), 6h. (Amboina and Sverdlovsk), 11h. (near Almeria), 14h. (La Jolla, Mount Wilson, Pasadena, Riverside, and Tinemaha), 15h. (Tiflis), 17h. (Merida and near Baku), 18h. (near Baku), 20h. (Kobe, Sumoto, Husan, and near Hukuoka B and near Amboina (2)), 21h. (Sverdlovsk, Tashkent, Tiflis, Moscow, Pulkovo, Copenhagen, De Bilt, and Stuttgart), 22h. (Mount Wilson, Pasadena, Riverside, Manila, and Scoresby Sund), 23h. (De Bilt, Copenhagen, Stuttgart, Paris, Pulkovo, Ksara, Tiflis, Triest, Sverdlovsk, Tashkent, and near Medan).

Aug. 8d. 4h. 58m. 57s. Epicentre 43°·0N. 86°·0E.

$A = +\cdot0511$, $B = +\cdot7318$, $C = +\cdot6795$; $\delta = -14$; $h = -3$;
$D = +\cdot998$, $E = -\cdot070$; $G = +\cdot047$, $H = +\cdot678$, $K = -\cdot734$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Almata		6·6	276	1 35	− 6	2 55	− 3	—	3·2
Frunse		8·3	273	e 1 46	−18	e 3 40	0	—	—
Semipalatinsk		8·4	334	e 2 4	− 2	e 3 34	− 9	—	—
Andijan		10·5	262	e 2 54	PPP	e 5 0	SSS	—	—
Tchimkent		12·1	273	e 2 55	− 2	—	—	e 6·0	—
Tashkent		12·5	268	e 3 1	− 1	i 5 25	+ 2	i 6·1	6·8
Samarkand		14·7	264	e 3 7	−24	—	—	—	—
Agra	E.	17·1	205	e 4 50	+48	—	—	—	—
Calcutta	N.	20·5	174	—	—	e 8 40	+13	—	—
Sverdlovsk		21·2	319	i 4 49	0	8 36	− 5	12·2	12·3
Bombay		26·5	209	e 10 36	S	(e 10 36)	+22	—	17·0
Grozny		29·2	285	e 6 6	+ 1	—	—	—	—
Tiflis		30·3	282	e 6 17	+ 2	e 12 7	+52	e 19·0	21·4
Moscow		33·3	310	6 41	0	11 57	− 5	16·5	19·5
Simferopol		36·9	292	e 7 10	+ 2	—	—	—	—
Pulkovo		37·3	317	7 15	− 1	e 13 10	+ 6	19·0	21·6
Ksara		39·8	274	e 7 37	+ 1	e 14 46	+64	—	—
Copenhagen		47·3	312	i 8 39	+ 2	—	—	26·0	—
La Paz	z.	145·6	311	20 15	[+35]	—	—	—	—

Additional readings :—
Almata e = +1m.55s., S = +2m.33s.
Frunse e = +3m.16s., e = +3m.24s.
Semipalatinsk e = +4m.33s.
Andijan i = +3m.21s.
Tashkent i = +3m.26s. and +4m.11s., i = +6m.1s.
Sverdlovsk L_g = +10·8m.
Bombay eE = +13m.44s., eEN = +14m.41s. and e = +17m.17s.
Tiflis eP = +6m.29s., e = +8m.18s., eE = +13m.27s., eE = +14m.57s.
Pulkovo PP = +8m.32s., SS = +15m.21s.
Ksara eP_cP = +9m.6s., ePP = +9m.30s.
Copenhagen +24m.3s.
Long waves were also recorded at Vladivostok, Baku, Paris, Scoresby Sund, Strasbourg, La Plata, Hong Kong, Prague, Hamburg, Cheb, Upsala, De Bilt, Stuttgart, and Kodaikanal.

Aug. 8d. 10h. 12m. 3s. Epicentre 18°·5N. 146°·0E. (as on 1937 May 5d.).

$A = -\cdot7868$, $B = +\cdot5307$, $C = +\cdot3154$; $\delta = +17$; $h = +5$;
$D = +\cdot559$, $E = +\cdot829$; $G = -\cdot261$, $H = +\cdot176$, $K = -\cdot949$.

A depth of focus 0·020 has been assumed.

		△	Az.	P.	O−C.	S.	Q−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Titizima		9·3	338	2 6	− 6	—	—	—	—
Palau		15·8	227	3 47	+12	6 51	+26	—	—
Mera		17·2	343	3 49	− 3	—	—	—	—
Misima		17·7	341	3 55	− 3	—	—	—	—
Hamamatu		17·8	338	3 40	−19	—	—	—	—
Yokohama		17·8	347	3 57	− 2	—	—	—	—
Tokyo		18·0	343	4 14	+13	7 6	− 8	—	—
Hunatu		18·1	341	3 58	− 4	7 13	− 3	—	—
Kameyama		18·3	335	4 9	+ 5	—	—	—	—
Kohu		18·3	341	4 3	− 1	7 12	− 8	—	—
Kakioka		18·4	347	3 59	− 6	7 13	− 9	—	—
Mito		18·4	347	4 4	− 1	—	—	—	—
Nagoya		18·4	337	e 4 5	0	7 34	+12	—	—
Tukubasan		18·4	347	4 0	− 5	7 19	− 3	—	—
Wakayama		18·4	331	4 2	− 3	8 18	SSS	—	—
Kumagaya		18·5	334	4 4	− 2	7 24	0	—	—
Osaka		18·6	332	4 13	+ 6	—	—	—	—
Sumoto		18·6	331	4 4	− 3	e 7 21	− 5	—	—
Gihu		18·7	337	4 4	− 4	7 13	−15	—	—
Miyasaki		18·7	318	4 8	0	—	—	—	—
Kobe		18·8	332	e 4 6	− 4	e 7 24	− 6	—	—
Maebasi		18·8	334	4 7	− 3	7 25	− 5	—	—
Nagano		19·3	343	4 12	− 3	7 37	− 3	—	—
Aidu		19·7	347	3 55	−24	7 34	−13	—	—
Toyama		19·7	338	4 17	− 2	—	—	—	—
Hukusima		19·8	348	4 19	− 1	7 40	− 9	—	—
Kumamoto		19·8	321	4 22	+ 2	7 46	− 3	—	—
Sendai		20·2	349	4 21	− 3	—	—	—	—
Yamagata		20·3	348	4 26	+ 1	7 48	−10	—	—
Hamada		20·5	325	4 33	+ 6	7 58	− 4	—	—
Mizusawa	N.	21·0	350	4 31	− 1	8 15	+ 4	—	—
Husan		22·4	321	e 5 19	+33	e 8 38	+ 2	—	—
Manila		24·3	266	i 5 9a	+ 5	10 16	SS	—	—
Sapporo		24·8	352	4 37	−31	8 15	−62	—	—
Vladivostok		27·3	337	5 57	+25	e 9 58	0	e 14·2	18·8
Hong Kong		30·1	283	11 20	S	(11 20)	+38	—	16·2
Tashkent		68·2	308	i 12 38	?	i 20 15	+44	—	40·6
Sverdlovsk		72·2	326	i 11 9	0	i 20 17	0	33·9	—
Tinemaha		83·5	54	i 12 22	+11	i 22 32	+15	—	—
Haiwee		84·1	54	e 12 20	+ 6	—	—	—	—
Mount Wilson	Z.	84·5	56	i 12 24	+ 8	e 16 8	PP	—	—
Pasadena		84·5	56	i 12 22k	+ 6	i 22 39	+12	—	—
Grozny		84·7	314	12 19	+ 2	e 22 36	+ 7	—	—
Moscow		84·8	328	12 19	+ 2	22 33	+ 3	—	—
Riverside		85·2	56	i 12 25a	+ 6	—	—	—	—
La Jolla	Z.	85·6	57	i 12 23	+ 7	—	—	—	—
Tiflis		85·9	313	e 12 26	+ 3	e 22 49	+ 8	e 52·9	—
Pulkovo		86·3	333	e 12 29	+ 4	e 22 42	− 3	45·9	48·0
Scoresby Sund		90·9	357	—	—	23 12	[+11]	—	—
Ksara		95·6	307	e 10 11	?	e 21 32	?	56·9	—
La Paz	N.	147·4	91	19 41	[+19]	—	—	—	—

Additional readings :—
Osaka i = +5m.5s.
Mizusawa SE = +8m.19s.
Manila iZ = +5m.44s., iE = +11m.45s.
Tashkent i = +19m.32s.
Tiflis e = +13m.9s.
Scoresby Sund +23m.34s.
La Paz iN = +20m.29s.
Long waves were also recorded at Cape Town, De Bilt, Copenhagen, Baku, and Stuttgart.

Aug. 8d. 15h. 21m. 6s. Epicentre 5°·5N. 126°·0E. (as on 1937 July 3d.).

$A = -\cdot5851$, $B = +\cdot8054$, $C = +\cdot0952$; $\delta = +7$; $h = +7$;
$D = +\cdot809$, $E = +\cdot588$; $G = -\cdot056$, $H = +\cdot077$, $K = -\cdot996$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	10·3	332	i 2 50	+18	5 10	L	(5·2)	—
Hong Kong	20·2	327	—	—	8 44	SS	—	12·7
Batavia	22·4	240	4 56	− 6	9 44	SS	—	—
Tashkent	61·7	315	i 10 23	+ 1	e 18 46	+ 2	—	39·5
Sverdlovsk	72·1	329	i 11 26	− 2	20 48	− 2	33·9	—
Grozny	79·2	313	e 12 17	+ 9	—	—	—	—
Tiflis	79·8	312	e 12 13	+ 1	e 22 18	+ 4	e 44·9	—
Moscow	84·6	325	12 35	− 1	22 54	− 9	—	52·9
Ksara	87·1	303	e 12 51	+ 2	e 23 19	[+ 5]	—	—
Pulkovo	88·2	330	e 12 50	− 4	23 16	[− 5]	43·9	59·3

Additional readings :—
Manila iE = +3m.50s.
Tiflis PSZ = +23m.11s.
Ksara ePP = +16m.4s., eSS = +28m.59s.
Long waves were also recorded at Scoresby Sund and other European stations.

Aug. 8d. Readings also at 0h. (Sumoto), 3h. (Calcutta), 4h. (Granada), 5h. (near San Javier), 6h. (Samarkand and Tashkent), 7h. (Sverdlovsk), 8h. (Berkeley and Samarkand), 9h. (near Tiflis), 12h. (near Averroes (2)), 14h. (near Santiago), 18h. (Amboina and Andijan), 19h. (near Tiflis), 20h. (Amboina and Sitka), 21h. (Kobe and near Mizusawa), 22h. (Nagoya).

Aug. 9d. 12h. 37m. 25s. Epicentre 27°·0N. 141°·5E. (forerunner of shock at 14h.).

$A = -\cdot6982$, $B = +\cdot5554$, $C = +\cdot4516$; $\delta = -11$; $h = +3$;
$D = +\cdot623$, $E = +\cdot783$; $G = -\cdot353$, $H = +\cdot281$, $K = -\cdot892$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		9·0	336	2 14	+ 1	—	—	—	—
Kobe		9·4	327	e 2 17	− 1	e 3 40	−27	—	5·2
Toyooka		10·3	328	0 32	−120	—	—	—	—
Hukuoka B		11·6	307	e 2 48	− 2	e 5 19	+18	—	—
Husan		13·4	310	e 3 10	− 4	e 6 6	+21	—	—
Taikyu		14·1	312	3 25	+ 2	6 21	+19	—	—
Keizyo	E.	16·2	314	e 3 50	0	e 6 57	+ 6	—	—
Zinsen		16·3	314	i 3 51a	− 1	e 7 2	+ 9	e 9·2	—
Vladivostok		17·9	337	e 4 50	PPP	—	—	8·4	10·9
Manila		22·8	242	i 5 6	+ 1	9 5	− 6	11·6	—
Hong Kong		25·3	265	5 27	− 3	9 54	0	—	—
Calcutta	N.	48·2	277	—	—	i 14 41	−62	—	—
Andijan		57·7	303	e 9 12	−43	—	—	—	—
Tashkent		59·8	304	e 10 26	+17	18 4	−16	—	37·9
Sverdlovsk		62·9	323	—	—	e 19 20	+20	30·6	—
Bombay	E.	63·1	279	e 17 6	?	e 18 58	− 4	—	—
Tiflis		77·2	310	e 11 54	− 3	e 22 7	+20	e 45·1	48·7
Pasadena	Z.	83·1	55	e 12 31	+ 2	—	—	—	—
Mount Wilson	Z.	83·2	55	e 12 35	+ 6	—	—	—	—
Ksara		87·1	306	e 12 48	− 1	—	—	—	—
Prague		90·1	329	—	—	e 38 5	?	—	51·6
Edinburgh		92·1	341	e 22 55	?	—	—	—	—
La Paz	Z.	150·6	75	20 0	[+12]	—	—	—	—

Additional readings :—
Kobe ePEZ = +2m.21s.
Manila ePEN = +5m.11s.
Tashkent e = +18m.44s., e = +19m.23s., e = +26m.35s., e = +29m.5s.
Tiflis eEZ = +23m.26s.
Ksara ePP = +16m.16s., ePS = +24m.46s.
Long waves were also recorded at Granada, Kew, Strasbourg, Copenhagen, Paris, Uccle, Stuttgart, De Bilt, Pulkovo, and Moscow.

Aug. 9d. 14h. 39m. 24s. Epicentre 27°·0N. 141°·5E. (as at 12h.).

$A = -\cdot6982$, $B = +\cdot5554$, $C = +\cdot4516$; $\delta = -11$; $h = +3$;
$D = +\cdot623$, $E = +\cdot783$; $G = -\cdot353$, $H = +\cdot281$, $K = -\cdot892$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		9·0	336	e 2 13	0	5 16	L	(5·3)	—
Sumoto		9·3	324	1 30	−47	4 24	+19	—	—
Kobe		9·4	327	e 2 18	0	e 4 7	0	—	5·2
Toyooka		10·3	328	2 29	− 3	—	—	—	—
Hukuoka B		11·6	307	e 2 48	− 2	e 5 27	+26	—	—
Mizusawa		12·1	358	e 2 52	− 5	6 40	L	8·8	—
Husan		13·4	310	3 18	+ 4	e 6 22	SSS	—	—
Taikyu		14·1	312	3 25	+ 2	6 24	SS	—	—
Keizyo	E.	16·2	314	e 3 50	0	e 6 54	+ 3	—	—
Zinsen		16·3	314	i 3 51a	− 1	e 7 4	+11	e 8·8	—
Vladivostok		17·9	337	e 3 50	−22	6 50	−40	8·8	10·8
Manila		22·8	242	i 5 11	+ 6	8 58	−13	11·3	—
Hong Kong		25·3	265	5 28	− 2	9 54	0	—	—
Phu-Lien		32·4	266	e 7 4	+30	e 11 53	+ 5	—	—
Calcutta	N.	48·2	277	e 8 56	+12	15 44	+ 1	e 22·7	30·3
Honolulu		55·2	82	—	—	e 24 32	?	e 26·1	—
Agra	E.	56·0	286	e 9 36	− 7	17 27	− 3	—	—
Andijan		57·7	303	e 9 51	− 4	e 17 50	− 3	—	—
Tashkent		59·8	304	e 10 24	+15	i 18 36	+16	—	38·4
Kodaikanal	E.	62·3	268	e 10 36	+10	—	—	—	—
Sverdlovsk		62·9	323	10 24	− 6	18 49	−11	30·6	38·6
Bombay	E.	63·1	279	e 10 30	− 2	e 18 59	− 3	—	39·6
Victoria		73·6	44	e 11 42	+ 5	e 21 12	+ 5	e 33·6	—
Baku		74·2	308	e 11 43	+ 3	e 21 7	− 7	37·6	46·7
Moscow		75·6	326	e 15 59	PPP	—	—	—	50·5
Pulkovo		76·9	331	e 11 53	− 3	e 21 56	+13	38·6	47·9
Tiflis		77·2	310	e 12 2	+ 5	e 21 17	−30	e 40·6	48·7
Berkeley	N.	78·4	53	—	—	e 22 48	+48	—	—
Scoresby Sund		82·1	355	12 28	+ 4	22 36	− 2	44·6	—
Pasadena		83·1	55	e 12 31	+ 2	—	—	e 38·1	—
Mount Wilson	Z.	83·2	55	e 12 33	+ 4	—	—	—	—
Riverside	Z.	83·8	55	i 12 33	+ 1	—	—	—	—
Ksara		87·1	306	e 12 51	+ 2	e 23 53	+25	—	—
Bucharest		87·7	320	—	—	22 36?	[−42]	49·1	—
Prague		90·1	329	e 17 6?	PP	e 24 36?	+41	—	53·1
Edinburgh		92·1	341	i 18 36?	PPP	—	—	—	—
De Bilt		92·4	336	e 13 20	+ 6	—	—	e 48·6	56·7
Helwan		92·5	306	e 13 56	+42	e 24 28	+11	—	—
Stuttgart		93·4	331	e 17 6	PP	e 27 24	?	e 52·6	—
Uccle		93·8	336	—	—	e 26 49	PPS	e 47·6	—
Strasbourg		94·1	332	e 16 54	PP	—	—	e 47·8	56·4
Kew		94·9	338	e 13 36?	+11	—	—	—	—
Paris		96·1	335	e 14 36?	+65	—	—	e 53·6	59·6
Philadelphia		105·1	28	e 19 24	?	—	—	—	—
Granada		108·2	332	e 18 54	PP	—	—	e 62·6	—
La Paz	N.	150·6	75	20 0	[+12]	—	—	—	—

Additional readings :—
Toyooka PE = +2m.31s., PN = +2m.38s.
Mizusawa SN = +6m.33s.
Calcutta PPPN = +11m.16s., PSN? = +16m.19s., SSN = +18m.47s.
Agra eSSE = +21m.9s.
Bombay PPE = +12m.57s., SSE = +23m.3s., SSSE = +24m.58s.
Tiflis eE = +22m.16s.
Berkeley eE = +23m.0s.
Ksara ePS = +24m.51s.
Bucharest eE = +25m.20s., e = +29m.51s.
Helwan e = +16m.56s. and +25m.31s.
Long waves were also recorded at Hamburg and Copenhagen.

Aug. 9d. Two shocks near Japan at 16h. and 19h., apparently not from the epicentre of the preceding :—

Nagoya eP =16h.40m.18s., S =42m.38s.
Kobe ePE =40m.51s., eE =42m.44s., M =45m.42s.
Husan e =43m.6s.
Sverdlovsk e =49m.24s. and 66m.48s., L =71m.
Kodaikanal eE =51m.0s.
Long waves also at Hong Kong, Vladivostok, Tashkent, Sitka, and other European stations.

Nagoya eP =19h.20m.12s., S? =20m.57s.
Kobe ePE =21m.0s., M =23m.50s.
Husan eP =21m.59s., eS =25m.13s.
Manila eP =24m.1s., S =28m.6s.
Vladivostok e =27m.36s., M =29m.24s.
Tashkent e =28m.43s., i =32m.28s. and 39m.3s., e =42m.40s., eL =51m.48s., M =56m.30s.
Tiflis eP =30m.30s., eL =64m., M =67m.36s.
Sverdlovsk e =38m.0s., L =52m.
Long waves also at Hong Kong, Sitka, Pulkovo, Moscow, Copenhagen, De Bilt, and Stuttgart.

Aug. 9d. Readings also at 0h. (Philadelphia, Sitka, and Sumoto), 3h. (Grozny), 5h. (Tashkent), 6h. (Sverdlovsk), 8h. (Ksara, Mount Wilson, Pasadena, Riverside, Tinemaha, Amboina, Christchurch, Wellington, and near Apia), 9h. (Oak Ridge, Tiflis, and near Grozny), 13h. (near Hukuoka (4) and Hukuoka B), 15h. (La Paz), 16h. (Fresno, near Branner, Lick, San Francisco, and near Santiago (2)), 17h. (Ksara), 18h. (near Amboina), 19h. (Santiago), 21h. (near Algiers).

Aug. 10d. 16h. 6m. 12s. Epicentre 10°·0N. 86°·0W.

$A = +\cdot0687$, $B = -\cdot9826$, $C = +\cdot1725$; $\delta = -2$; $h = +7$;
$D = -\cdot998$, $E = -\cdot070$; $G = +\cdot012$, $H = -\cdot172$, $K = -\cdot985$.

Very rough.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
San Juan		21·0	64	e 4 46	− 1	e 8 37	0	i 14·1	—
Huancayo		24·3	154	5 25	+ 5	9 54	+17	11·5	—
Philadelphia		29·6	17	e 6 3	− 6	e 11 36	+32	e 15·4	—
La Paz		31·7	145	e 7 26	PP	—	—	14·8	23·3
Tucson		31·9	318	6 31	+ 2	—	—	e 16·4	—
Oak Ridge	Z.	34·8	18	e 6 48?	− 6	—	—	e 14·8	—
Ottawa		36·4	11	e 8 36	PP	e 13 6	+16	e 18·8	—
La Jolla		36·7	313	e 7 12	+ 2	—	—	—	—
Riverside		37·4	315	i 7 18	+ 2	—	—	—	—
Mount Wilson		38·0	315	i 7 24	+ 3	—	—	—	—
Pasadena		38·0	315	i 7 24	+ 3	—	—	—	—
Seven Falls		39·2	16	e 9 30	PPP	—	—	19·8	—
Tinemaha	E.	39·7	318	e 7 41	+ 5	—	—	—	—
Sverdlovsk		107·9	19	—	—	e 25 9	[+ 6]	48·8	—
Ksara		109·7	49	e 10 3	?	—	—	—	59·3

Additional readings :—
San Juan ePP =4m.54s., eS =+7m.53s., eL =+9m.3s.
Huancayo iPP =+5m.59s., i =+6m.42s., S =+10m.7s., i =+10m.11s. and +10m.50s.
Tucson ePPP =+7m.41s.
Mount Wilson eZ =+9m.38s.
Pasadena eZ =+8m.57s., iZ =+9m.38s.
Long waves were also recorded at Scoresby Sund, Ivigtut, Copenhagen, De Bilt, Stuttgart, Paris, Granada, Pulkovo, Moscow, Baku, and Tashkent.

Aug. 10d. Readings also at 1h. (Baku, Sverdlovsk, Tashkent, Tiflis, Ksara, Helwan, and Columbia), 2h. (Manila, Kobe, and Nagoya), 3h. (Sverdlovsk, Tashkent, and near Simferopol), 4h. (Baku, Tashkent, Tiflis, Ksara, Grozny, and near Erevan), 10h. (near Tiflis), 12h. (Tiflis and near Manila), 13h. (Samarkand), 14h. (Christchurch), 17h. (Sitka), 18h. (Manila, Sverdlovsk, Tashkent, and near Branner), 19h. (Guadalajara, Oaxaca, Puebla, Tacubaya, Vera Cruz, Tucson, La Jolla, Haiwee, Mount Wilson, Pasadena, Riverside, Tinedaha, and Berkeley), 20h. (Oak Ridge and Sitka), 21h. (near Kobe and Sumoto), 22h. (Oak Ridge (2)), 23h. (near Grozny and Tiflis (2)),

Aug. 11d. 0h. 55m. 52s. Epicentre 6°·5S. 116°·5E.

Felt most strongly around the South Coast of Java at some distance from the epicentre and at Bali, Lombok, Soemba, Soembawa, Flores, and Roti.

H. P. Berlage.

Voorloopige Gegevens Betreffende de Aardbeving van 11 Augustus, 1937. Natuurkurdig Tydschrift voor Nederlandsch-Indje, Afl. 2 van Deel, XCVIII, 38, blz. 81-84.

$A = -\cdot4434$, $B = +\cdot8893$, $C = -\cdot1125$; $\delta = +11$; $h = +7$;
$D = +\cdot895$, $E = +\cdot446$; $G = +\cdot050$, $H = -\cdot101$, $K = -\cdot994$.

A depth of focus 0·080 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia		9·6	268	i 2 15	0	i 4 3	+ 1	—	—
Amboina		11·9	77	2 34	− 4	i 4 48	+ 3	—	—
Medan		20·4	299	4 2	+ 1	i 7 14	− 1	—	—
Manila		21·4	14	4 13a	+ 3	7 0	−31	—	—
Palau		22·6	52	4 28	+ 7	7 53	+ 2	9·0	—
Perth		25·3	180	4 48	+ 3	8 38	+ 4	—	18·6
Kosyun		28·6	7	5 18	+ 4	—	—	—	—
Hong Kong		28·7	355	5 12	− 3	9 17	−10	—	13·5
Phu-Lien		28·8	340	e 5 16	0	e 8 8	?	—	12·9
Taito		29·4	7	5 25	+ 4	9 35	− 3	—	—
Tainan		29·4	6	5 26	+ 5	9 43	+ 5	—	—
Arisan		30·1	7	5 29	+ 2	9 48	− 1	—	—
Karenko		30·7	7	5 33	+ 1	9 58	0	—	—
Taityu		30·7	6	5 33	+ 1	9 58	0	—	—
Giran		31·5	7	5 50	+11	10 12	+ 2	—	—
Isigakizima		31·5	13	5 43	+ 4	10 13	+ 3	—	—
Taihoku		31·7	7	5 41	0	i 10 2	−11	—	10·2
Naha		34·3	16	6 49	+47	—	—	—	—
Adelaide		34·8	147	i 6 6	− 1	i 10 52	− 8	i 14·1	22·0
Nake		36·9	18	6 24	−0	11 29	− 3	—	—
Zi-ka-wei	Z.	37·8	6	e 6 50	+19	11 26	−19	—	16·0
Calcutta	N.	39·9	317	6 51	+ 3	12 13	− 3	—	—
Kagosima		40·2	18	6 54	+ 3	—	—	—	—
Melbourne		40·5	144	e 6 50	− 3	12 20	− 4	—	24·6
Tomie		40·6	15	6 57	+ 3	11 25	−61	—	—
Miyazaki		40·8	19	6 55	− 1	11 15	−74	14·7	—
Nagasaki		41·0	17	6 57	0	12 30	− 2	—	—
Unzendake		41·1	17	6 46	−12	11 42	−51	—	—
Kumamoto		41·4	17	6 57	− 3	12 29	− 8	—	—
Titizima		41·6	35	7 3	+ 1	12 27	−13	—	—
Hukuoka		42·0	17	8 55	PP	12 41	− 5	—	—
Hukuoka B		42·0	17	e 7 7	+ 2	e 11 44	−62	e 15·8	—
Ooita		42·0	18	7 9	+ 4	—	—	—	—
Riverview		42·0	134	7 0	− 5	i 12 43	− 3	28·5	35·0
Sydney		42·1	134	—	—	i 12 41	− 6	25·7	30·1
Simidu		42·1	20	7 8	+ 2	12 45	− 2	—	—
Kodaikanal	E.	42·3	294	i 7 6	− 2	i 12 33	−17	—	—
Muroto		42·9	22	7 15	+ 3	12 57	− 2	—	—
Husan		43·0	14	7 16	+ 3	11 50	−70	—	—
Koti		43·0	20	7 12	− 1	12 51	− 9	—	—
Matuyama		43·0	19	7 12	− 1	12 56	− 4	—	—
Taikyu		43·7	14	e 6 0	−78	e 11 50	−80	—	—
Hamada		43·7	18	7 18	0	13 5	− 5	14·8	—
Siomisaki		43·7	24	7 20	+ 2	13 8	− 2	—	—
Sumoto	E.	44·2	22	7 23a	+ 1	13 11	− 6	—	13·4
	N.	44·2	22	7 25a	+ 3	13 12	− 5	—	13·3
	Z.	44·2	22	7 21a	− 1	13 8	− 9	—	13·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Wakayama		44·2	22	7 22	0	—	—	—	—
Hyderabad		44·5	303	7 25	0	13 25	+ [redacted]	16·2	26·2
Kobe		44·6	22	e 7 20	− 6	13 18	− 4	—	21·5
Osaka		44·6	22	7 26	0	—	—	—	—
Osaka B		44·6	22	7 28	+ 2	13 19	− 3	—	—
Zinsen		44·8	10	e 7 31	+ 4	i 13 27	+ 2	13·6	—
Keizyo	E.	44·9	11	e 7 26	− 2	e 13 27	0	e 16·7	—
Kyoto		45·1	22	7 27	− 2	13 26	− 3	—	—
Hatidyozima		45·2	27	7 28	− 2	—	—	—	—
Kameyama		45·2	23	7 28	− 2	13 27	− 4	—	—
Toyooka	E.	45·2	21	e 7 29	− 1	13 26	− 5	—	—
	N.	45·2	21	7 23	− 7	13 29	− 2	15·9	—
	Z.	45·2	21	7 27	− 3	13 30	− 1	—	—
Tu		45·2	23	7 30	0	13 24	− 7	—	—
Miyadu		45·4	21	(7 30)	− 2	7 30	P	—	—
Hikone		45·5	22	7 31	− 1	13 27	− 8	—	—
Hamamatu		45·6	25	7 42	+ 9	13 44	+ 8	—	—
Ibukisan		45·7	22	7 41	+ 7	13 29	− 9	—	—
Nagoya		45·7	23	7 33	− 1	13 30	− 8	—	13·7
Omaesaki		45·7	25	7 32	− 2	—	—	—	—
Gihu		45·8	23	7 33	− 2	13 31	− 8	e 17·2	—
Heizyo		46·1	9	e 7 37	0	e 13 41	− 2	—	—
Iida		46·4	24	7 36	− 3	—	—	—	—
Numadu		46·4	25	7 39	0	13 46	− 2	—	—
Misima		46·5	25	7 40	0	13 44	− 5	—	—
Gotenba		46·7	25	7 44	+ 2	13 47	− 5	—	—
Hunatu		46·7	25	7 43	+ 1	13 49	− 3	—	—
Mera		46·7	26	7 41	− 1	13 49	− 3	—	—
Kanazawa		46·8	22	7 36	− 6	13 40	−13	—	—
Kohu		46·8	25	7 39	− 3	13 47	− 6	—	—
Matumoto		47·0	23	7 44	0	13 54	− 2	—	—
Toyama		47·1	22	7 47	+ 2	13 54	− 3	—	—
Yokohama		47·1	26	7 40	− 5	13 47	−10	—	—
Husiki		47·2	22	7 47	+ 1	13 56	− 3	—	—
Yingkow		47·2	6	7 39	− 7	—	—	—	—
Tokyo		47·3	26	7 43	− 3	13 54	− 6	—	—
Oiwake		47·4	24	7 43	− 4	13 56	− 5	—	—
Nagano		47·5	23	7 47	− 1	13 58	− 5	—	—
Kumagaya		47·6	25	7 49	+ 1	13 54	−10	—	—
Maebasi		47·6	25	7 41	− 7	—	—	—	—
Wazima		47·6	22	7 49	+ 1	14 1	− 3	—	—
Tyosi		47·8	27	7 51	+ 1	14 0	− 7	—	—
Takada		47·9	23	7 53	+ 2	—	—	—	—
Tukubasan		47·9	25	7 47	− 4	14 22	+14	—	—
Kakioka		48·0	25	7 49	− 3	13 57	−13	—	—
Mito		48·2	25	7 52	− 1	—	—	—	—
Niigata		48·9	23	8 2	+ 4	14 23	+ 1	—	—
Onahama		48·9	26	8 5	+ 7	14 20	− 2	—	—
Aidu		49·1	26	7 57	− 3	14 17	− 8	—	—
Hukusima		49·4	26	8 0	− 2	14 24	− 5	—	—
Yamagata		49·7	26	8 10	+ 6	—	—	—	—
Bombay		49·9	301	i 8 3	− 3	i 14 21	−14	—	—
Agra	E.	50·0	314	e 7 56	−10	i 14 20	−17	—	—
Sendai		50·0	26	8 7	+ 1	14 33	− 4	—	—
Sakata		50·1	24	7 59	− 8	14 27	−11	—	—
Mizusawa		50·8	24	8 14	+ 2	14 41	− 7	—	—
Akita		50·9	24	8 14	+ 1	14 48	− 1	—	—
Vladivostok		51·3	14	8 6	−10	—	—	21·0	26·7
Morioka		51·4	24	8 16	− 1	14 54	− 2	—	—
Miyako		51·6	25	8 17	− 1	14 50	− 8	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Dehra Dun	52·0	317	8 18	− 3	12 58	?	18·1	23·1
Aomori	52·1	23	8 19	− 3	14 59	− 6	—	—
Hatinohe	52·2	24	8 20	− 2	14 55	−11	18·5	—
Hakodate	52·9	22	8 35	+ 8	—	—	—	—
Obihiro	54·0	23	9 50	+75	16 32	+62	—	—
Sapporo	54·3	22	8 33	− 4	15 29	− 5	—	—
Asahigawa	55·2	22	8 43	− 1	15 43	− 3	—	—
Sikka	60·2	19	9 22	+ 5	16 44	− 6	—	—
Almata	61·1	328	9 21	− 2	16 54	− 7	—	—
Christchurch	61·3	137	i 9 22k	− 3	i 16 57	− 6	—	—
Arapuni	61·9	129	—	—	i 18 8	+58	e 21·8	—
Andijan	62·1	323	—	—	i 17 8	− 5	—	—
Wellington	62·1	133	i 9 28	− 2	i 17 3	−10	24·1	—
Tashkent	64·3	322	9 38	− 6	i 17 29	−11	—	34·4
Tchimkent	64·6	323	9 42	− 4	17 38	− 5	—	—
Tananarive	68·0	252	i 10 6	− 1	i 18 16	− 7	—	—
Apia	70·8	102	10 25	+ 2	18 56	+ 1	—	—
Baku	76·8	314	i 10 59	+ 2	19 57	− 3	—	—
Sverdlovsk	77·7	333	i 10 56	− 6	i 20 2	− 8	—	34·9
Erevan	80·6	313	i 11 8	− 9	i 20 24	−16	—	—
Grozny	80·7	316	11 16	− 2	i 20 37	− 4	—	—
Tiflis	80·9	314	11 3a	−16	i 20 27	−16	e 50·1	—
Platigorsk	82·8	316	11 23	− 5	i 20 56	− 5	e 30·1	—
Sotchi	85·0	315	e 11 38	− 1	i 21 18	− 5	—	—
Ksara	85·8	304	i 11 40k	− 3	i 21 31	+ 1	—	—
Honolulu	88·3	68	i 11 59	+ 4	21 59	+ 6	e 36·3	—
Theodosia	88·3	316	e 11 55	0	21 25	−28	41·1	—
Helwan	89·0	300	i 11 58	0	i 21 56	− 3	—	—
Moscow	89·1	327	e 11 52	− 7	i 21 30	−30	44·6	49·6
Yalta	89·1	315	e 14 6	?	—	—	—	—
Simferopol	89·2	315	i 11 58	− 1	i 21 29	−32	25·1	—
Cape Town E.	93·0	236	e 12 22?	+ 6	i 22 30	− 4	e 43·1	48·1
Cape Town N.	93·0	236	e 12 20	+ 4	i 22 35	+ 1	—	—
Pulkovo	93·6	330	12 16	− 3	22 28	−11	34·1	38·5
Bucharest	94·8	314	e 12 26k	+ 1	i 22 3	−46	37·6	—
Lemberg	96·5	319	e 12 43	+11	e 21 15	?	—	28·3
College	98·3	24	e 12 26	−15	e 23 18	− 1	—	—
Belgrade	98·8	313	i 12 40a	− 3	i 22 20	−63	e 38·2	—
Budapest	99·8	317	12 55	+ 8	i 22 27	− 4	29·1	—
Upsala	100·1	329	i 12 47	− 2	e 23 25	− 9	e 40·1	41·6
Stara Dala	100·4	316	e 12 51	+ 1	e 22 36	[0]	—	63·1
Vienna	101·6	317	e 12 55	0	e 22 41	[− 1]	e 45·6	—
Zagreb	102·0	315	e 12 56	− 1	i 22 35	[− 9]	—	—
Graz	102·3	316	e 15 14	?	e 27 46	PS	e 50·1	64·3
Prague	102·7	319	e 12 54	− 6	e 23 51	− 5	e 39·1	55·6
Copenhagen	103·3	325	i 13 2	− 1	23 56	− 4	—	—
Triest	103·6	314	i 13 4	P	i 22 40	[−11]	—	44·1
Cheb	104·0	319	e 13 6	P	e 22 50	[− 3]	—	57·1
Jena	104·4	319	e 13 8	P	i 22 48	[− 6]	40·1	—
Hamburg	105·0	323	e 13 9k	P	i 22.52	[− 5]	e 42·1	62·1
Göttingen	105·3	321	e 13 10	P	i 22 52	[− 6]	—	63·1
Sitka	105·3	32	e 13 15	P	i 23 2	[+ 4]	—	—
Bergen	106·0	331	13 14	P	22 51	[−11]	35·1	—
Chur	106·3	317	e 13 15	P	e 22 55	[− 8]	—	—
Stuttgart	106·3	318	i 13 16k	P	e 22 50	[−13]	e 56·1	—
Karlsruhe	106·7	319	e 12 49	?	22 15	[−49]	—	—
Zurich	106·9	317	i 13 19	P	e 23 49	[+44]	—	—
Strasbourg	107·2	318	i 13 20k	P	i 23 17	[+11]	—	—
Basle	107·5	317	e 13 21	P	e 23 22	[+14]	—	—
Neuchatel	108·0	317	e 13 21	P	e 23 55	[+45]	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
De Bilt		108·1	322	13 27	P	i 23 7	[− 3]	—	65·3
Besançon		108·6	317	(e 20 50)	PPP	—	—	e 20·9	—
Uccle		108·9	321	e 13 28	P	i 23 8	[− 5]	—	—
Paris		110·6	319	i 13 35	P	—	—	27·1	41·1
Aberdeen		110·7	329	e 13 34	P	26 46	?	37·5	63·7
Scoresby Sund		110·8	346	13 37a	P	23 20	[0]	—	—
Durham	N.	111·3	326	e 18 22	PP	—	—	—	—
Kew		111·6	322	i 13 40k	P	i 23 20	[− 3]	e 37·1	70·9
Edinburgh		111·7	327	e 13 50	P	i 24 31	S	37·1	—
Oxford		112·1	323	13 38	P	i 24 24	S	—	—
Stonyhurst		112·1	325	e 13 51	P	i 24 26	S	37·1	60·7
Barcelona		112·5	311	18 30	?	e 27 14	?	e 32·4	39·2
Algiers		112·6	306	13 17	P	e 23 22	[− 5]	e 44·1	—
Bidston		112·6	325	i 18 36	?	i 23 26	[− 1]	e 37·1	—
Jersey		113·4	321	e 18 23	?	e 23 30	[− 1]	—	—
Tortosa	E.	113·8	311	18 39	?	27 19	SKKS	e 45·1	—
	N.	113·8	311	18 44	?	27 29	SKKS	43·1	62·8
Victoria		114·6	39	18 44	?	27 15	SKKS	38·1	—
Almeria		117·0	307	e 17 50	PKP	—	—	—	—
Toledo		117·4	311	i 17 45	PKP	i 27 55	?	—	—
Ukiah		117·4	49	e 19 11	PP	e 34 36	SS	—	—
Granada		118·0	308	e 17 47	PKP	i 27 49	PS	—	—
Branner	E.	118·3	50	e 17 45	PKP	—	—	—	—
Rathfarnham Castle		118·4	326	i 13 48	P	i 23 31	[−18]	38·1	66·1
Berkeley	E.	118·5	50	e 19 9	PP	—	—	—	—
Malaga		118·5	308	i 17 48	PKP	—	—	—	—
Lick		119·1	50	i 17 46	PKP	—	—	—	—
San Fernando		120·0	307	e 21 26	?	e 27 53	SKKS	49·1	—
Santa Barbara		121·3	54	i 17 48	PKP	—	—	—	—
Tinemaha		121·7	49	e 17 49	PKP	e 30 58	?	—	—
Haiwee		122·2	50	e 17 53	PKP	—	—	—	—
Butte		122·3	37	e 17 53	PKP	e 25 42	S	—	—
Pasadena		122·6	53	e 15 3	P	e 25 36	S	—	—
Mount Wilson		122·7	53	e 14 57	P	—	—	—	—
Riverside		123·3	53	i 17 47	PKP	i 30 38	?	—	—
La Jolla	Z.	123·7	54	e 17 48	PKP	—	—	—	—
Ivigtut		124·2	349	i 17 53	PKP	25 44	S	—	—
Tucson		129·1	53	e 15 20	P	37 8	SS	—	—
La Plata		138·5	188	21 8	PP	—	—	—	—
Chicago		138·8	27	e 18 15	PKP	e 26 56	?	—	—
Seven Falls		139·1	6	e 18 14	PKP	e 22 3	PP	39·1	—
Shawinigan Falls		139·3	8	e 18 8	PKP	27 14	SKKS	39·1	—
Florissant	N.	139·7	32	i 18 17	PKP	—	—	—	—
Ottawa		139·8	12	18 16	PKP	i 24 22	[−22]	38·1	—
St. Louis	E.	139·9	32	e 18 20	PKP	i 24 25	[−19]	—	—
Toronto		140·4	17	18 23	PKP	e 24 19	[−26]	39·1	—
East Machias		141·7	3	e 18 23	PKP	i 27 28	SKKS	e 70·1	—
Tacubaya	N.	143·0	65	18 31	[− 3]	—	—	—	—
Oak Ridge		143·5	8	i 18 26k	[− 8]	e 24 33	[−17]	—	—
Weston		143·6	8	i 18 27k	[− 8]	e 24 35	[−15]	—	—
Rio de Janeiro		144·7	214	i 18 36	[0]	i 27 48	SKKS	40·1	—
Philadelphia		145·1	13	e 18 30	[− 6]	e 27 39	SKKS	—	—
Columbia		148·2	27	e 18 47	[+ 6]	—	—	—	—
La Paz		156·7	171	i 18 57k	[+ 4]	i 25 36	[+29]	71·5	90·1
Huancayo		158·1	149	18 54	[0]	24 51	[−17]	67·3	—
San Juan		168·0	12	e 18 56	[− 8]	25 22	[+ 7]	—	—

Additional readings :—
Batavia iSN = +4m.7s.
Amboina iS$_o$S = +13m.46s.
Medan iE = +6m.40s.
Perth S = +7m.13s.
Kosyun i = +6m.53s.

Continued on next page.

Phu-Lien PP = +5m.22s., isP? = +7m.0s., iSS? = +9m.28s.
Taityu i = +7m.8s.
Taihoku e = +7m.40s.
Adelaide esP = +7m.34s., e = +9m.48s., i = +11m.10s., eSS = +12m.11s.
Zi-ka-wei iZ = +7m.0s., SZ = +8m.38s., iZ = +8m.56s., +10m.2s., and +12m.22s.
Calcutta iN = +7m.21s., +8m.3s., +8m.33s., +9m.43s., +11m.12s., +13m.28s., and +16m.58s.
Kagosima i = +8m.45s.
Melbourne i = +6m.58s., PP = +8m.46s., i = +9m.40s., +11m.11s., and +15m.38s., SS = +15m.48s.
Nagasaki e = +8m.44s.
Unzendake i = +8m.50s.
Riverview i = +7m.7s., iZ = +12m.46s. and +12m.50s., N = +16m.0s., iE = +16m.10s.
Sydney SS = +16m.4s.
Simidu i = +8m.58s.
Kodaikanal iE = +7m.43s., +8m.43s., +9m.53s., +13m.42s., +14m.53s., and +15m.45s.
Muroto PP = +9m.7s.
Koti e = +9m.4s.
Hamada PP = +9m.0s.
Sumoto PN = +7m.25s., PPP = +9m.12s., eZ = +9m.38s., eE = +9m.55s., eN = +10m.8s.
Wakayama i = +9m.14s.
Kobe iPE = +7m.30s., eSZ = +13m.12s.
Osaka PP = +8m.18s., i = +9m.41s.
Hatidyozima i = +9m.20s.
Toyooka PPPN = +9m.21s., PPPZ = +9m.24s.
Gihu i = +9m.26s.
Tokyo i = +9m.43s.
Oiwake PPP = +9m.42s.
Nagano iPP = +9m.48s.
Maebasi i = +11m.16s.
Wazima e = +9m.43s.
Bombay ipP = +9m.55s., ePP = +10m.12s., esP = +11m.5s., eP_cS = +12m.52s., iSE = +14m.26s., eSS = +17m.47s., i = +17m.52s., SS? = +18m.28s.
Agra iPE = +8m.3s., eE = +9m.11s., ipPE = +9m.57s., isPE = +11m.2s., iS_cPE = +12m.14s. iP_cSE = +12m.54s., eE = +16m.54s., iSSE = +17m.39s., iE = +17m.46s., SSE? = +18m.32s., iE = +21m.11s.
Vladivostok P_cP = +9m.11s., pP = +10m.4s., sP = +11m.6s., S_cS = +16m.32s., sS = +18m.10s.
Morioka PP = +10m.12s., eSS = +17m.16s.
Miyako i = +10m.19s.
Sapporo PP = +10m.33s., i = +12m.21s.
Almata e = +13m.24s.
Christchurch ipPZ = +9m.44s., iPP = +11m.20s., iPPP = +12m.20s., isS = +17m.37s.
Wellington i = +9m.33s., +9m.37s., and +9m.39s., iPP = +11m.25s., PPP = +12m.28s., i = +17m.15s., iPS = +17m.29s., iPS = +20m.38s., i = +21m.21s.
Tashkent i = +9m.46s., ipP = +11m.42s., ePP = +12m.12s., sP = +12m.40s., pPP = +13m.56s., sPP = +14m.56s.
Tanaharive isPE = +12m.9s., iE = +18m.20s., esSE = +21m.57s., eSS = +22m.17s.
Baku ipP = +13m.9s., sP = +14m.11s., i = +19m.5s.
Sverdlovsk i = +11m.2s., ipP = +13m.7s., SP = +14m.10s., ipPP = +16m.1s., isP = +20m.48s., sS = +23m.38s.
Tiflis iPEZ = +11m.9s., eZ = +12m.4s., pPZ = +13m.14s., SSE = +23m.27s., eE = +24m.13s.
Ksara ipP = +13m.52s., isP = +14m.53s., sS = +25m.18s., SS = +27m.42s.
Honolulu i = +12m.12s., epP = +13m.56s., esP = +15m.6s., ePP = +15m.47s., epPP = +17m.14s., ePPP = +17m.51s., eSKS = +21m.33s., SP = +23m.0s., isS = +25m.43s., i = +25m.53s.
Helwan e = +12m.20s., i = +14m.8s., SKS = +21m.32s., i = +22m.28s., +23m.0s., and +23m.28s.
Moscow i = +11m.59s., ipP = +14m.11s., isP = +15m.0s., ePP = +15m.37s., iPP = +15m.45s., pPP = +17m.35s., isPP = +18m.42s., iS = +21m.54s., SP = +23m.3s., sS = +25m.49s., isPS = +26m.46s., SS = +28m.6s., isSS = +31m.21s., SSS = +32m.26s.
Cape Town ePPE = +14m.32s., iSKS = +21m.55s., iPSE = +23m.39s., iPSN = +23m.20s., iPPSE = +24m.22s., iPPSN = +24m.30s., iSS = +29m.10s., iSSSE = +32m.38s., iSSSN = +32m.44s., iN = +35m.50s., iE = +36m.0s.
Pulkovo pP = +14m.28s., sP = +15m.20s., PP = +16m.18s., sPP = +19m.12s., SKS = +21m.52s., SP = +23m.52s., sS = +26m.15s., SS = +29m.2s.
Bucharest ePP = +14m.55s., PPE = +15m.16s., iE = +15m.38s., iPSN = +22m.48s., SSS = +29m.28s.

Continued on next page.

College epP = +15m.2s., epPP = +18m.46s., eSKS = +22m.21s., SP = +24m.46s., eSSP = +28m.25s., eSS = +30m.25s.
Belgrade PPZ = +14m.54s., PPPZ = +16m.51s., PSNW = +23m.16s., eNW = +24m.39s.
Budapest P_cPE = +13m.6s., iE = +17m.11s., SN = +22m.33s., PSE = +22m.57s., iN = +23m.27s. and +24m.27s., iE = +25m.7s. and +25m.59s., iN = +27m.15s., SS?E = +27m.26s.
Upsala eE = +17m.12s., eE = +22m.25s., eE = +22m.31s., eE = +23m.0s., eN = +23m.4s., eE = +25m.2s.
Stara Dala e = +23m.34s.
Vienna e = +15m.7s., +17m.12s., +18m.47s., and +23m.41s.
Zagreb iP = +17m.18s., eNE = iZ = +29m.8s., eNE = +34m.19s.
Graz i = +17m.16s.
Prague e = +16m.38s., +17m.18s., and +19m.17s., i = +22m.43s., e = +25m.26s., eSS = +29m.26s., eSSS = +34m.38s.
Copenhagen pP = +15m.15s., iZ = +16m.30s., iEZ = +17m.13s., PP = +17m.27s. and +17m.33s., pPP = +19m.24s., PPP = +20m.22s., eEZ = +21m.31s., SKS = +22m.37s., eEN = +23m.25s., eE = +24m.14s., iSP = +25m.35s., SPP = +26m.36s., sS = +27m.56s., isSP = +29m.36s., SS = +31m.34s., SSS = +34m.38s., eN = +42m.8s.
Triest PPP = +17m.27s.
Cheb ePP = +15m.13s.?, ePPP = +19m.26s., e = +26m.58s.
Jena e = +16m.36s., eE = +17m.33s., eNZ = +17m.38s., eN = +17m.41s., e = +19m.35s., eZ = +25m.42s., eN = +25m.44s. and +25m.50s., eZ = +26m.48s., eE = +26m.52s., eN = +27m.4s. and +29m.14s., eE = +29m.38s., eN = +30m.8s., e = +31m.39s.
Hamburg eZ = +15m.21s., e = +17m.38s., iZ = +19m.34s., eE = +25m.50s. +26m.52s., eE = +35m.8s.
Göttingen iE = +25m.58s.
Sitka pP = +15m.36s., PKP = +17m.33s., ePP = +17m.44s., ipPP = +19m.40s., iPPP = +20m.28s., isPP = +20m.49s., ipPPP = +22m.3s., iSKKS = +23m.51s., eS = +24m.29s., eSP = +26m.2s., ipS = +26m.56s., iSPP = +27m.2s., ePS = +27m.14s., esS = +28m.20s., isSP = +29m.38s., SS = +31m.56s., isSS = +35m.32s.
Bergen PP = +17m.41s., S = +25m.59s., ? = +26m.59s.
Stuttgart pP = +15m.26s., eEZ = +17m.8s. and +17m.42s., iPP = +17m.48s., i = +17m.55s., epPP = +19m.40s., epPP = +19m.51s., esPP = +20m.38s., eSKKSE = +23m.46s., eSN = +24m.16s., e = +25m.8s., epSKS = +25m.58s., ePS = +27m.6s., esSN = +28m.13s., esSPEZ = +30m.8s., e = +30m.44s., eSS = +31m.58s., eSSS = +36m.18s.
Zurich e = +16m.30s., +17m.22s., and +27m.11s.
Strasbourg ipPZ = +15m.31s., iPPZ = +17m.48s., ipPPZ = +19m.50s., iPPPZ = +20m.13s., iSPP = +20m.40s., iSKKSN = +23m.40s., iS = +24m.24s., ipS = +27m.15s., esSN = +28m.26s., PKKP = +29m.13s., isSP = +29m.59s., iSSZ = +32m.6s., SSSZ = +36m.25s., iPKP, PKPZ = +37m.26s.
Basle e = +17m.24s. and +27m.23s.
Neuchatel e = +17m.58s. and +23m.0s.
De Bilt eE = +15m.38s., eEN = +18m.7s., +26m.25s., and +27m.24s.
Uccle epPE = +15m.40s., esPE = +16m.48s., eZ = +17m.29s., iPPEZ = +18m.9s., ipPPE = +20m.8s., ipSKS = +26m.31s., iPS = +27m.29s., iZ = +27m.42s., isPSE = +30m.37s., iSSE = +32m.27s., iSSSE = +36m.29s.
Paris ePP = +17m.33s., e = +18m.17s.
Aberdeen e = +15m.49s. and +18m.13s., i = +27m.51s.
Scoresby Sund pP = +15m.50s., PP = +18m.16s., and +18m.23s., pPP = +20m.23s., PPP = +20m.59s., SPP = +21m.26s., e = +22m.25s., eZ = +23m.42s., eEN = +24m.20s., pSKS = +26m.26s., SP = +26m.50s., PS = +28m.2s., sS = +28m.51s., sSP = +30m.47s., e = +31m.56s., SS = +33m.14s., SSS = +37m.5s.
Kew epP = +15m.50s., iPP = +18m.28s., ipPP = +20m.26s., i = +24m.28s., ipSKS = +26m.56s., iPS = +28m.8s., isPS = +30m.46s., i = +30m.59s., iZ = +31m.56s., iSS = +33m.0s.
Edinburgh e = +15m.56s. and +18m.32s., i = +18m.37s., +21m.38s., +27m.1s., +31m.4s., and +33m.24s.
Oxford e = +16m.54s., i = +18m.30s. and +20m.25s., iS = +26m.59s.
Stonyhurst e = +15m.56s., i = +18m.36s., e = +20m.26s., i = +21m.36s., +27m.1s., and +31m.11s.
Algiers ePP = +18m.31s., ePS = +24m.28s., SS = +26m.57s., SSS = +30m.52s.
Bidston i = +24m.35s., +27m.2s., +28m.24s., +31m.3s., and +33m.28s.
Jersey eSKKS = +23m.38s., esS = +28m.12s., eSS = +31m.20s.
Victoria SS = +31m.15s., SSS = +33m.56s.
Almeria i = +18m.56s., PPP = +24m.52s., eSS = +34m.34s.
Toledo ipP = +19m.7s., iPPP = +25m.1s., iS = +29m.17s., eSS = +31m.56s., iPS = +33m.4s., eSS = +39m.8s., eSSS = +42m.4s.
Ukiah esPP = +22m.10s., epPP = +23m.43s., eSP = +27m.54s., esSP = +31m.46s., ePKP, PKP = +37m.44s., esSS = +38m.14s.
Branner eN = +17m.48s., iE = +17m.54s.

Continued on next page.

Rathfarnham Castle i = +16m.10s., e = +18m.50s. and +20m.38s., i = +21m.50s. and +27m.21s.
Berkeley eNZ = +19m.13s., eEZ = +22m.15s.
Malaga i = +22m.27s., iPS = +28m.10s.
Lick iEN = +17m.49s.
San Fernando eSSN = +34m.50s.
Santa Barbara iPP = +19m.32s., iPKKPZ = +28m.1s.
Tinemaha iPKKPZ = +28m.1s.
Pasadena ePKPZ = +17m.46s., iZ = +17m.50s., iEZ = +17m.53s., iZ = +17m.56s., iZ = +18m.2s., ePPZ = +19m.33s., iPPE = +19m.40s., ipPKPZ = +20m.17s., iE = +22m.42s., iPKKPZ = +27m.55s., eE = +28m.17s., iEN = +32m.36s., and +33m.52s., eN = +35m.24s., iSSE = +36m.7s., iEN = +39m.19s.
Mount Wilson ePKPZ = +17m.49s., i = +17m.52s., iPP = +19m.42s., ipPKPZ = +20m.17s., iPKKPZ = +27m.56s.
Riverside i = +17m.56s., iPP = +19m.45s., iZ = +21m.57s., iPKKPZ = +27m.52s.
La Jolla iPPEN = +19m.49s., iPKKPZ = +27m.50s.
Ivigtut iZ = +17m.55s., e = +19m.44s., +21m.13s., +28m.56s., +31m.26s., and +32m.44s.
Tucson iPKP = +18m.8s., esP = +18m.11s., ipPKP = +20m.24s., iPP = +20m.30s., iSKP = +20m.39s., PKS = +21m.35s., PPP = +23m.27s., sPKS = +24m.50s., PSKS = +30m.29s., SPP = +31m.21s., pPS = +32m.17s.
Chicago ePKP = +18m.22s., epPKP = +20m.42s., PP = +21m.58s., epPP = +23m.42s., epPKS = +24m.17s., i = +27m.21s., ePS = +32m.46s., SPP = +32m.57s., epPS = +33m.57s.
Shawinigan Falls e = +21m.12s.
Florissant iN = +18m.26s., iE = +18m.30s.
Ottawa e = +21m.32s., PSN = +27m.28s.
St. Louis iE = +18m.23s., +18m.32s., +18m.39s., +27m.23s., and +35m.55s.
Toronto PP = +20m.49s., PPP = +22m.4s., PS = +27m.32s.
East Machias i = +18m.48s., epPKP = +20m.50s., iSKP = +21m.38s., esPKP = +21m.45s., ePP = +21m.59s., epPKS = +24m.28s., ePSKS = +31m.42s., eSPP = +33m.31s., epPS = +34m.27s., ePKP$_2$PKP$_2$ = +39m.25s., i = +42m.56s.
Oak Ridge eE = +35m.13s., iZ = +36m.3s., eZ = +36m.39s., iZ = +38m.51s.
Weston iZ = +18m.30s. and +18m.42s., ipPKP = +20m.50s., eSKP = +20m.58s., i = +21m.12s., isPKPZ = +21m.46s., iPPZ = +21m.53s., iZ = +21m.59s., iPKSN = +22m.14s., iZ = +22m.24s., epPPZ = +23m.20s., iZ = +23m.47s., ePPPZ = +24m.52s., eSSN = +38m.44s., eSSS = +44m.17s.
Philadelphia iPKP = +18m.38s., ipPKP = +20m.57s., esPKP = +21m.58s., ipPP = +23m.59s., eSPP = +33m.45s., epPS = +34m.35s.
Columbia epPKP = +21m.0s., epPKP$_2$ = +21m.9s., esPKP = +22m.8s., epPP = +24m.37s., eSPP = +34m.25s., epPS = +35m.13s.
La Paz isPKPZ = +21m.16s., PPZ = +22m.22s., iSKKSN = +28m.57s., SKSP = +31m.2s., eZ = +35m.18s., SS = +40m.24s., iN = +42m.28s., iZ = +43m.40s., iN = +67m.16s.
Huancayo ePKP$_2$ = +19m.46s., epPKP = +21m.14s., epPKP$_2$ = +22m.4s., sPKP$_2$ = +22m.46s., ePP = +23m.20s., epPP = +25m.40s., eSPP = +26m.32s., PPP = +27m.18s., epPPP = +29m.10s., SKSP = +32m.23s., PSKS = +33m.15s., SPP = +35m.45s., pPS = +36m.51s., PPS = +37m.1s., esSP = +37m.51s., SS = +42m.41s., i = +44m.16s., iSSS = +49m.7s., i = +53m.20s.
San Juan ePKP$_2$ = +20m.51s., pPKP = +21m.3s., sPKP = +22m.26s., ipPKP$_2$ = +23m.3s., iPP = +24m.38s., ipPPP = +30m.54s., PSKS = +34m.46s., iSS = +45m.5s., i = +49m.21s.

Aug. 11d. Readings also at 0h. (near Mizusawa), 1h. (Tiflis and Wellington), 4h. (near Kobe), 5h., 7h., and 8h. (Sitka), 9h. (Sverdlovsk, Tashkent, Ksara, Adelaide, Melbourne, Perth, and Manila), 10h. (Christchurch, Wellington, Sitka, Port au Prince, and San Juan), 11h. (Grozny), 12h. (Sitka and Theodosia), 13h. (Paris), 14h. (near Mizusawa), 16h. (Stara Dala and near Tiflis), 18h. (Bucharest), 20h. (near Lick), 21h. (Edinburgh).

Aug. 12d. Readings at 0h. (La Paz, Huancayo, San Juan, Tucson, Oak Ridge, Philadelphia, Berkeley, Mount Wilson, Pasadena, Riverside, East Machias, Sverdlovsk, and Tashkent), 1h. (Copenhagen, Kew, De Bilt, Uccle, Paris, Strasbourg, Stuttgart, and Pulkovo), 2h. (Scoresby Sund), 3h. (Batavia and Sverdlovsk), 4h. (La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, Samarkand, Tiflis, Tashkent, Oak Ridge, near Manila, and near Amboina), 6h. (Scoresby Sund and Tacubaya), 7h. (Branner, Lick, San Francisco, and near Berkeley), 8h. (near Hukuoka B and near Apia), 10h. (near Christchurch, New Plymouth, Tuai, and Wellington), 11h. and 14h. (near Manila), 15h. (Tchimkent and near San Javier), 16h. (Hong Kong and near Manila), 17h. (Sverdlovsk, Tashkent, Tiflis, Strasbourg, and Jersey), 20h. (Tiflis, near Manila, near New Plymouth, and Wellington), 23h. (Tucson).

Aug. 13d. 11h. 47m. 37s. Epicentre 57°·0S. 130°·5W.

$A = -\cdot3554$, $B = -\cdot4161$, $C = -\cdot8370$; $\delta = +2$; $h = -8$;
$D = -\cdot760$, $E = +\cdot649$; $G = +\cdot544$, $H = +\cdot636$, $K = -\cdot547$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Christchurch		37·6	268	e 7 18	0	e 13 53	+45	19·0	—
Wellington		38·0	272	e 6 23?	−58	—	—	e 16·4	25·4
La Paz	N.	61·3	76	10 19	− 1	18 33	− 6	28·2	29·2
Huancayo		61·4	66	e 10 18	− 2	e 18 33	− 7	e 25·8	—
Tucson		90·4	15	e 13 9	+ 5	—	—	e 41·8	—
Riverside	Z.	91·3	11	e 13 10	+ 1	—	—	—	—
Pasadena		91·4	11	e 13 10	+ 1	—	—	e 41·8	—
Mount Wilson	Z.	91·5	11	e 13 9	− 1	—	—	—	—
Kew		150·9	80	e 20 23?	[+35]	—	—	—	—
Paris		151·0	87	e 20 23?	[+34]	e 24 23?	PP	e 80·4	—
Stuttgart		154·7	92	e 20 13	[+20]	—	—	e 79·4	—
Ksara		155·0	153	e 20 30	[+36]	e 37 50	PPS	79·4	86·4
Tashkent		159·8	228	—	—	e 39 51	?	e 75·4	105·9
Tiflis		164·4	167	—	—	e 26 38	[−30]	e 100·4	—
Moscow		173·3	96	e 20 23	[+12]	—	—	e 89·9	94·6
Sverdlovsk		173·9	272	e 22 5	PP	—	—	76·4	—

Additional readings :—
Christchurch $L_q = +16$m.7s.
Huancayo eP = +10m.40s., eSS = +22m.45s.
Tucson P = +13m.13s. and +13m.31s.
Tashkent e = +45m.0s.
Moscow e = +23m.47s., +25m.47s., and +32m.35s.
Sverdlovsk e = +32m.34s. and +47m.24s.
Long waves were also recorded at Philadelphia, Bombay, Baku, Pulkovo, Copenhagen, Strasbourg, and De Bilt.

Aug. 13d. Readings also at 1h. (Copenhagen, Pulkovo, Tashkent, and Sverdlovsk), 2h. (Samarkand), 4h. (Strasbourg), 6h. (Kobe), 7h. (Christchurch and near New Plymouth and Wellington), 10h. (Frunse, Samarkand, and near Andijan), 14h. (Cheb and Strasbourg), 17h. (near Manila), 18h. (Nagoya and Wellington), 22h. (Andijan, Frunse, and Bozeman).

Aug. 14d. Readings at 0h. (East Machias and near Sitka), 1h. (Hastings), 2h. (near Sumoto and near Tashkent), 4h. (Wellington), 5h. and 6h. (near Santiago), 8h. (Tiflis), 10h. (Batavia, Manila, Tashkent, and Bombay), 11h. (Hong Kong, Tiflis, Kodaikanal, Sverdlovsk, Ksara, Melbourne, and Perth), 12h. (Christchurch, Wellington, and near New Plymouth), 13h. (Kobe and Sumoto), 15h. (Williamstown and La Paz), 16h. (near Medan), 17h. (near Andijan), 18h. (Strasbourg), 21h. (Sverdlovsk and near Tiflis), 22h. (Andijan and near Mizusawa).

Aug. 15d. 4h. 27m. 14s. Epicentre 19·2N. 121°·2E.

$A = -·4896$, $B = +·8084$, $C = +·3269$; $\delta = +8$; $h = +5$;
$D = +·855$, $E = +·518$; $G = -·169$, $H = +·280$, $K = -·945$.

Tables for focus at base of superficial layers used.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Kosyun		2·8	351	0 47	+ 4	1 20	+ 4	—	—
Taito		3·5	0	0 58	+ 5	1 34	0	—	—
Tainan		3·9	345	1 1	+ 2	1 46	+ 2	—	—
Arisan		4·3	355	1 10	+ 5	2 1	+ 7	—	—
Manila		4·6	184	1 12k	+ 3	2 18	+16	—	—
Karenko		4·8	4	1 16	+ 4	2 9	+ 2	—	—
Taityu		5·0	354	1 11	− 4	2 6	− 6	—	—
Giran		5·6	5	1 30	+ 7	2 29	+ 2	—	—
Isigakizima		5·8	27	1 19	− 7	2 22	−10	—	—
Taihoku		5·8	3	1 33	+ 7	i 2 35	+ 3	—	—
Hong Kong		7·3	296	1 46	− 1	3 26	+16	4·7	—
Zi-ka-wei	z.	11·9	1	e 2 56	+ 6	6 10	L	(6·2)	10·2
Phu-Lien		13·8	279	i 3 17	+ 1	e 5 57	+ 9	—	—
Tomie		15·0	25	4 41	+70	7 41	L	(7·7)	—
Miyazaki		15·6	34	3 45	+ 6	6 35	+ 4	—	—
Nagasaki		15·6	27	3 10	−29	6 43	+12	—	—
Unzendake		15·7	29	3 45	+ 5	—	—	—	—
Kumamoto		16·0	30	3 48	+ 4	7 31	SSS	—	—
Hukuoka B.		16·5	28	e 3 57	+ 7	e 8 0	L	(8·0)	—
Palau		17·5	132	5 5	?	—	—	—	—
Siomisaki		19·2	41	4 26	+ 2	—	—	—	—
Sumoto		19·4	37	4 28	+ 2	e 7 56	− 1	—	—
Wakayama		19·4	37	4 26	0	8 6	+ 9	—	—
Kobe		19·8	37	e 4 28	− 2	e 8 33	SS	—	—
Osaka		19·9	37	4 37	+ 6	7 36	−32	—	—
Osaka B		19·9	37	4 36	+ 5	—	—	—	—
Yagi		20·0	38	4 35	+ 3	8 23	+12	—	—
Kyoto		20·3	37	4 40	+ 4	—	—	—	—
Kameyama		20·6	38	4 42	+ 3	—	—	—	—
Hikone		20·8	37	4 37	− 4	—	—	—	—
Ibukisan		21·0	37	4 45	+ 2	—	—	—	—
Gihu		21·2	38	4 47	+ 2	8 43	+ 9	—	—
Nagoya		21·2	38	e 4 45	0	6 3	?	—	6·1
Hamamatu		21·3	40	4 44	− 2	—	—	—	—
Hatidyozima		21·7	45	4 53	+ 3	9 11	SS	—	—
Kanazawa		22·0	35	4 42	−11	8 54	+ 5	—	—
Numadu		22·2	42	5 13	PP	—	—	—	—
Misima		22·3	42	5 9	+13	—	—	—	—
Gotenba		22·4	42	4 57	0	—	—	—	—
Hunatu		22·4	41	5 0	+ 3	—	—	—	—
Kohu		22·4	40	5 2	+ 5	—	—	—	—
Toyama		22·4	36	4 57	0	9 0	+ 4	—	—
Mera		22·7	42	5 17	+17	—	—	—	—
Wazima		22·7	34	5 2	+ 2	9 16	+15	—	—
Nagano		22·9	38	5 5	+ 3	9 25	+20	—	—
Oiwake		22·9	39	5 3	+ 1	9 11	+ 6	—	—
Maebasi		23·2	39	5 4	− 1	—	—	—	—
Tokyo		23·2	41	5 12	+ 7	9 44	+34	—	—
Kumagaya		23·3	40	5 11	+ 5	—	—	—	—
Tukubasan		23·8	40	4 43	−28	—	—	—	—
Tyosi		23·9	43	5 4	− 8	—	—	—	—
Mito		24·1	40	5 11	− 3	—	—	—	—
Niigata		24·3	36	5 41	+26	—	—	—	—
Hukusima		25·0	39	5 22	0	—	—	—	—
Yamagata		25·2	39	5 22	− 2	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Vladivostok		25·5	19	i 5 32	+ 5	e 9 52	+ 2	12·4	17·2
Sakata		25·6	35	5 32	+ 4	—	—	—	—
Sendai		25·6	39	5 26	− 2	—	—	—	—
Miznsawa		26·3	37	e 5 36	+ 2	6 6	?	—	—
Morioka		26·7	37	5 39	+ 1	—	—	—	—
Medan		26·9	239	5 44	+ 4	—	—	—	—
Hakodate		28·0	32	6 0	+10	—	—	—	—
Batavia		28·9	211	i 5 59	+ 1	—	—	—	—
Sapporo		29·2	31	6 23	+22	—	—	—	—
Calcutta	N.	30·9	283	e 6 1	−15	10 46	−30	13·8	20·8
Agra	E.	40·3	290	e 7 36	0	i 13 33	− 8	—	27·1
Kodaikanal	E.	43·1	266	e 7 38	−21	e 14 16	− 6	20·9	25·0
Bombay		45·6	278	i 10 10	PPP	e 14 55	− 3	e 21·2	31·8
Andijan		46·7	308	8 41	+14	15 22	+ 8	—	—
Tashkent		49·1	309	e 8 50	+ 4	i 15 45	− 3	e 25·9	31·8
Sverdlovsk		58·1	327	9 46	− 6	i 17 40	−10	27·8	—
Baku		63·7	307	e 10 47	+17	e 19 11	+10	33·8	38·3
Grozny		66·6	310	e 10 59	+10	e 19 43	+ 7	—	—
Tiflis		67·5	309	e 10 55	0	i 19 49	+ 2	29·3	49·9
Piatigorsk		68·5	312	e 11 10	+ 9	e 20 2	+ 3	—	—
Moscow		70·8	324	e 11 16	+ 1	e 20 26	0	38·3	46·4
Theodosia		73·8	313	e 11 36	+ 3	21 2	+ 1	—	—
Pulkovo		74·1	329	e 11 31	− 4	21 1	− 3	38·8	44·4
Simferopol		74·7	313	e 11 37	− 1	e 21 10	− 1	—	—
Yalta		74·7	312	e 11 36	− 2	e 21 8	− 3	—	—
Ksara		75·8	300	i 11 48k	+ 4	e 21 33	+10	—	—
Upsala		80·2	331	e 8 46?	?	—	—	—	—
Bucharest		80·3	314	15 46?	PP	22 14	+ 3	49·8	—
Helwan		80·6	298	e 12 6	− 5	i 22 16	+ 2	—	—
Copenhagen		84·4	328	12 31a	+ 1	22 50	− 3	41·8	—
Hamburg		86·7	327	e 12 43	+ 1	e 23 4	−11	e 45·8	51·8
Cheb		86·9	323	—	—	e 22 46?	[−19]	—	—
Scoresby Sund		86·9	349	12 40	− 3	23 8	− 9	40·8	—
Stuttgart		89·4	323	e 12 55	0	e 23 40	0	e 46·8	58·3
De Bilt		89·9	326	—	—	e 23 26	[+ 3]	e 47·8	57·6
Strasbourg		90·3	323	—	—	e 36 18	?	e 49·8	—
Edinburgh		91·7	323	—	—	e 25 4	+63	e 49·8	—
Oxford		93·4	328	—	—	23 45	[+ 2]	e 47·8	59·4
Santa Barbara		101·3	47	e 14 2	+13	—	—	—	—
Pasadena	Z.	102·5	47	e 13 56	+ 2	—	—	—	—
Mount Wilson	Z.	102·6	47	e 13 55	0	—	—	—	—
Riverside	Z.	103·1	48	e 14 6	+ 9	—	—	—	—
La Paz		170·7	74	20 31	[+27]	—	—	87·8	—

Additional readings :—
Sumoto eE = +8m.11s.
Kobe iPZ = +4m.33s.
Hikone i = +4m.52s.
Kohu i = +5m.21s.
Tukubasan i = +5m.20s.
Calcutta SSN = +11m.46m., iN = +12m.59s.
Agra eE = +7m.45s., PPE = +9m.2s., PPPE = +9m.17s., eE = +13m.50s., SSSE = +16m.54s.
Kodaikanal PPPE = +9m.27s., P_cPE = +10m.0s.
Bombay eSSSE = +18m.13s.
Tiflis PSE = +23m.46s.?, eSSSE = +27m.27s.
Ksara ePP = +14m.44s., ePS = +22m.2s., eSS = +26m.33s., ePKP,PKP = +39m.7s.
Bucharest eE = +22m.54s.
Helwan e = +22m.41s.
Scoresby Sund +29m.4s.
Stuttgart eSKS = +23m.19s., ePS = +24m.40s.
Strasbourg e = +41m.22s.
Long waves were also recorded at Malaga, Hyderabad, Kew, Paris, Tucson, Philadelphia, Uccle, Rathfarnham Castle, Bidston, Aberdeen, Bergen, and Granada.

Aug. 15d. 11h. 36m. 48s. Epicentre 30°·0N. 90°·0E.

$A = \cdot0000$, $B = +\cdot8675$, $C = +\cdot4975$; $\delta = +6$; $h = +2$;
$D = +1\cdot000$, $E = \cdot000$; $G = \cdot000$, $H = +\cdot498$, $K = -\cdot868$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta	N.	7·5	192	e 1 47	− 6	3 18	− 2	—	7·2
Dehra Dun		10·3	275	3 32	+60	5 2	SSS	—	10·4
Agra	E.	10·9	258	2 31	− 9	i 4 16	−28	—	7·1
Hyderabad		16·4	223	3 57	+ 4	7 13	+17	9·4	11·4
Phu-Lien		17·6	118	e 4 44	PPP	e 8 26	+63	—	—
Bombay		19·1	238	e 4 11	−16	e 7 39	−18	—	13·2
Tashkent		20·2	310	i 4 41	+ 2	i 9 11	SSS	10·7	12·7
Kodaikanal	E.	22·9	215	e 5 22	+16	i 9 28	+15	i 10·8	12·4
Hong Kong		23·0	104	10 4	SS	—	—	(13·7)	15·4
Medan	N.	27·5	161	10 46	S	(10 46)	+16	—	—
Sverdlovsk		33·8	331	i 6 44	− 2	e 12 5	− 5	16·2	—
Baku		34·1	299	e 7 30	+42	e 13 13	+59	e 18·2	19·7
Grozny		37·5	303	e 7 21	+ 4	—	—	—	—
Tiflis		38·1	301	e 7 23	+ 1	e 13 28	+12	e 19·2	20·8
Moscow		44·8	321	8 20	+ 3	e 14 49	− 6	20·7	26·3
Theodosia		45·0	306	e 10 32	PPP	—	—	—	—
Ksara		45·7	289	i 8 27	+ 3	e 15 27	+19	—	—
Simferopol		45·9	305	e 8 26	0	—	—	—	—
Yalta		45·9	305	e 8 24	− 2	—	—	—	—
Pulkovo		49·4	325	e 8 55	+ 2	e 16 10	+10	24·2	29·2
Helwan		50·3	285	e 9 0	0	e 16 22	+ 9	—	—
Copenhagen		58·9	320	i 10 7	+ 4	—	—	29·2	—
Stuttgart		62·3	312	e 10 28k	+ 2	—	—	e 34·2	—

Additional readings :—
Calcutta P*N = +2m.7s., P_gN = +2m.21s., S*N = +3m.49s., S_gN = +4m.7s.
Agra P_gE = +3m.21s., iE = +5m.3s.
Bombay ePP = +4m.29s.
Hong Kong gives S and L as P and S respectively.
Medan ePE = +11m.13s.
Tiflis eE = +8m.31s., eSSE = +16m.45s.
Moscow e = +10m.0s., e = +17m.12s., e = +19m.30s.
Ksara eSS = +18m.39s.
Pulkovo PP = +10m.49s., SS = +19m.42s.
Stuttgart e = +12m.44s.
Long waves were also recorded at Prague, Hamburg, Scoresby Sund, De Bilt, Strasbourg, Kew, Bergen, Bidston, and Upsala.

Aug. 15d. Readings also at 0h. (Sverdlovsk, Tashkent, Butte, Tucson, Oak Ridge, Philadelphia, Florissant, and Sitka), 1h. (Wellington and Batavia), 2h. (Baku and Ksara), 3h. (Sverdlovsk), 4h. (near Balboa Heights), 8h. (Helwan, Ksara, Tiflis, Huancayo, and La Paz), 9h. (Strasbourg, Sumoto, Nagoya, and near Mizusawa), 10h. (Tashkent, Mount Wilson, Pasadena, Vladivostok, Kobe, Hong Kong, Moscow, and Stuttgart), 12h. (Agra, Bombay, Calcutta, Kodaiknal, Sebastopol, Tashkent, Hong Kong, Huancayo, near Nagoya, and Mizusawa), 13h. (Sverdlovsk), 16h. (San Juan and Strasbourg), 17h. (Williamstown, near Granada and Malaga), 18h. (near Granada, Malaga, Almeria, and Christchurch), 19h. (Berkeley, Branner, San Francisco, near Fresno, Lick, and near Mizusawa), 20h. (Tiflis), 21h. (Santiago), 22h. (Almeria, near Granada, and Malaga), 23h. (near Santiago).

Aug. 16d. 16h. 38m. 32s. Epicentre 35°·4N. 135°·8E.

Felt very strongly at Ibukisan, Kyoto, Miyadu, Kameyama, Yagi, and Turiga. Epicentre 35°·38N. 135°·85E. Very shallow.

See Seismological Bulletin of the Cent. Met. Obs., Japan, for the year 1937, Tokyo, 1939, pp. 48-49. Macroseismic Chart p. 50. Radius 200-300kms.

$A = -\cdot5857$, $B = +\cdot5696$, $C = +\cdot5767$; $\delta = +7$; $h = 0$;
$D = +\cdot697$, $E = +\cdot717$; $G = -\cdot413$, $H = +\cdot402$, $K = -\cdot817$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kyoto	0·4	188	0 11a	Pg	0 16	Sg	—	—
Hikone	0·4	105	0 7k	Pg	0 13	Sg	—	—
Ibukisan	0·5	92	0 11k	Pg	0 16	Sg	—	—
Miyadu	0·5	285	0 12k	P*	0 20	S*	—	—
Gihu	0·8	90	0 15k	P*	0 25	Sg	—	—
Kameyama	0·8	135	0 16a	P*	0 26	Sg	—	—
Osaka	0·8	202	0 19	+ 1	0 30	− 1	—	—
Osaka B	0·8	202	0 18k	0	0 29	S*	—	—
Toyooka	0·8	279	0 19k	+ 1	0 29	S*	—	0·5
Tu	0·9	139	0 19a	− 1	0 31	Sg	—	—
Kobe	0·9	215	0 20	0	0 31	S*	—	0·6
Yagi	0·9	180	0 20a	0	0 30	S*	—	—
Nagoya	1·1	104	i 0 19k	− 3	0 31	− 8	—	0·6
Kanazawa	1·3	31	0 24	− 1	0 41	S*	—	—
Sumoto	1·3	216	i 0 26k	+ 1	i 0 44	Sg	—	0·7
Wakayama	1·3	204	0 26	+ 1	0 44	Sg	—	—
Takayama	1·4	57	0 24	− 3	—	—	—	—
Iida	1·7	86	0 30	− 1	0 53	− 1	—	—
Hamamatu	1·7	114	0 31a	0	0 55	+ 1	—	—
Toyama	1·7	41	0 35a	Pg	0 57	Sg	—	—
Tokusima	1·7	217	0 30	− 1	0 52	− 2	—	—
Okayama	1·7	244	0 32	+ 1	0 53	− 1	—	—
Husiki	1·8	36	0 32	0	0 55	− 1	—	—
Matumoto	1·9	65	0 34	0	0 58	− 1	—	—
Siomisaki	2·0	181	0 34a	− 1	0 58	− 4	—	—
Tadotu	2·0	236	0 39	Pg	1 7	Sg	—	—
Omaesaki	2·1	112	0 38a	+ 1	1 7	Sg	—	—
Sakai	2·1	274	0 39	P*	1 10	Sg	—	—
Wazima	2·2	24	0 37	− 1	1 8	S*	—	—
Kohu	2·2	84	0 43a	Pg	1 14	Sg	—	—
Nagano	2·3	57	0 42	P*	1 8	− 1	—	—
Hunatu	2·4	88	0 44	P*	1 17	S*	—	—
Oiwake	2·4	67	0 45	P*	1 23	Sg	—	—
Numadu	2·5	97	0 48	Pg	1 16	S*	—	—
Muroto	2·5	212	0 50	Pg	1 25	Sg	—	—
Gotenba	2·6	92	0 51	Pg	1 28	Sg	—	—
Misima	2·6	96	0 45	+ 1	1 19	+ 2	—	—
Koti	2·7	225	0 50	P*	—	—	—	—
Ito	2·7	99	0 50	P*	1 23	+ 4	—	—
Maebasi	2·8	69	0 51	+ 4	1 32	+10	—	—
Hirosima	3·0	250	0 51	+ 1	1 32	+ 3	—	—
Matuyama	3·0	238	0 47	− 3	—	—	—	—
Kumagaya	3·0	76	0 55	P*	1 35	S*	—	—
Hamada	3·1	261	1 1	Pg	—	—	—	—
Yokohama	3·2	89	0 58	P*	1 37	S*	—	—
Tokyo	3·3	85	1 3k	Pg	1 44	S*	—	—
Mera	3·3	98	1 5	Pg	1 46	Sg	—	—
Utunomiya	3·5	76	1 5	P*	1 52	S*	—	—
Simidu	3·5	223	1 10	Pg	2 0	Sg	—	—
Niigata	3·6	45	1 21	Pg	—	—	—	—
Tukubasan	3·6	74	1 6	P*	1 51	S*	—	—
Kakioka	3·7	75	1 3	+ 3	1 53	S*	—	—
Hatidyozima	4·1	123	1 4	− 1	1 47	− 8	—	—
Tyosi	4·1	85	1 14	P*	2 10	S*	—	—
Hukusima	4·4	57	1 18	P*	—	—	—	—

Continued on next page.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Yamagata	4·6	50	1 40	P_g	—	—	—	—
Hukuoka	4·8	249	1 15	0	2 33	S_g	—	2·7
Hukuoka B	4·8	249	1 17	+ 2	2 33	S_g	—	—
Kumamoto	5·0	240	1 19a	+ 1	2 38	S*	—	—
Miyazaki	5·0	228	1 45	P_g	2 57	S_g	—	—
Unzendake	5·3	241	1 24	+ 2	2 48	S*	—	—
Husan	5·5	269	—	—	e 2 32	+ 2	—	—
Mizusawa	5·6	48	e 1 39	P*	e 2 46	S*	—	—
Kagosima	5·8	231	3 4	?	—	—	—	—
Morioka	6·1	43	1 37	+ 3	2 57	+12	—	—
Vladivostok	8·3	339	—	—	e 3 42	+ 2	4·6	5·2
Tashkent	51·3	290	—	—	e 21 34	SSS	25·6	32·5

Long waves were also recorded at Stuttgart and Tiflis.

Aug. 16d. Readings also at 0h. (Mizusawa and Christchurch (2)), 3h. (Tashkent and San Juan), 6h. (near Kobe, Sumoto, and Nagoya), 7h. (near Fresno and Lick), 10h. (Adelaide, Melbourne, Riverview, Sydney, Perth, Christchurch, Wellington, Moscow, and Strasbourg), 11h. (Baku, Ksara, Sverdlovsk, Sebastopol, Tiflis, Scoresby Sund, Edinburgh, Kew, Granada, and Williamstown), 12h. (Strasbourg, Stuttgart, De Bilt, and Oak Ridge), 13h. (Strasbourg and near Batavia), 14h. (Strasbourg and Stara Dala), 15h. and 16h. (Batavia), 17h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 18h. (Batavia), 21h. (Mizusawa), 22h. (La Paz, Medan, Sverdlovsk, Tashkent, Grozny, and Tiflis), 23h. (Grozny and near Balboa Heights).

Aug. 17d. 13h. 9m. 48s. Epicentre 30°·4N. 141°·8E.

A = −·6790, B = +·5343, C = +·5035; δ = +3; h = +2;
D = +·618, E = +·786; G = −·396, H = +·311, K = −·864.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Nagoya		6·2	320	1 36	+ 1	2 56	+ 8	—	3·2
Kobe		7·0	308	e 1 46	0	e 3 18	+10	—	4·4
Sumoto		7·0	306	e 1 46	0	e 3 58	S_g	—	4·5
Toyooka		7·8	313	e 1 58	0	3 33	+ 5	e 4·8	—
Mizusawa		8·7	357	2 8	− 2	3 29	−21	—	—
Hukuoka B		10·2	291	2 33	+ 2	5 11	+44	—	—
Husan		11·8	297	e 2 54	+ 1	—	—	6·5	—
Talkyu		12·3	300	e 3 6	+ 7	e 5 50	SSS	—	—
Vladivostok		15·0	331	3 23	−12	—	—	8·1	9·5
Zi-ka-wei	Z.	17·5	279	4 7	0	7 19	− 2	9·9	11·8
Manila		24·8	235	5 27	+ 2	10 13	SS	13·5	—
Hong Kong		26·0	259	5 34	− 2	10 12	+ 6	13·5	15·8
Phu-Lien		33·0	261	6 12?	−27	—	—	—	—
Calcutta	N.	48·1	274	e 9 36	+53	e 16 12	+30	e 22·7	26·4
Honolulu		54·5	84	—	—	e 16 37	−33	e 22·0	—
Agra	E.	55·4	284	e 12 48	PPP	—	—	—	—
Tashkent		58·2	303	e 9 52	− 6	17 58	− 1	e 27·3	36·6
Sverdlovsk		60·4	322	i 10 10	− 3	i 18 22	− 6	28·2	38·4
Sitka		61·3	38	—	—	e 18 40	+ 1	e 25·6	—
Kodaikanal	E.	62·8	267	e 10 12	−18	—	—	—	—
Baku		72·4	307	e 11 35	+ 5	e 20 52	− 1	35·2	40·4
Moscow		72·8	325	11 31	− 1	20 53	− 5	37·7	46·1
Grozny		73·9	312	e 11 38	− 1	e 21 15	+ 5	—	—
Pulkovo		74·1	331	11 37	− 3	21 7	− 5	38·2	44·5
Tiflis		75·2	310	11 47	+ 1	e 21 31	+ 6	40·0	47·8
Piatigorsk		75·3	313	11 54	+ 7	e 21 32	+ 6	e 47·2	—
Berkeley	E.	76·3	54	—	—	i 21 38	+ 1	—	—
Scoresby Sund		78·7	355	—	—	22 2	− 1	38·2	—
Upsala		79·1	336	e 11 48	−20	e 22 2	− 5	e 43·2	—
Tinemaha	Z.	79·4	54	e 12 15	+ 6	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Theodosia		79·5	317	e 12 11	+ 1	e 22 14	+ 3	—	—
Santa Barbara	z.	79·7	57	e 12 33	+22	—	—	—	—
Simferopol		80·3	317	e 12 13	− 1	—	—	—	—
Mount Wilson	z.	81·0	56	e 12 17	− 1	—	—	—	—
Pasadena		81·0	56	e 12 18	0	—	—	e 36·2	—
Riverside	z.	81·6	56	i 12 21	0	—	—	—	—
La Jolla	z.	82·3	57	e 12 26	+ 1	—	—	—	—
Copenhagen		84·0	334	i 12 34$_a$	0	22 51	− 6	43·2	—
Bucharest	E.	85·3	320	12 12?	−28	22 12	−58	46·2	50·2
Ksara		85·3	306	i 12 40$_a$	0	e 24 7	PS	—	—
Hamburg		86·5	334	e 13 12?	+26	e 23 12	−10	e 44·2	—
Tucson		87·2	55	e 12 49	0	—	—	e 41·3	—
Prague		87·3	330	e 12 48	− 2	e 23 29	0	e 42·2	49·2
Ivigtut		88·4	5	—	—	23 38	− 2	—	—
De Bilt		89·5	335	13 1	+ 1	e 23 46	− 4	e 47·2	54·4
Uccle	z.	90·1	335	e 13 8	+ 5	—	—	—	—
Stuttgart		90·5	331	e 13 5	0	e 23 54	− 5	e 48·2	57·3
Helwan		90·7	305	—	—	e 24 2	+ 2	—	—
Strasbourg		91·3	332	e 13 8	− 1	e 24 8	+ 2	42·2	52·8
Rathfarnham Castle		92·2	342	i 12 36	−37	e 33 22	SSS	41·2	—
Paris		93·2	335	e 13 12?	− 5	—	—	56·2	—
Philadelphia		102·0	29	—	—	e 24 42	[+ 5]	50·2	—

Additional readings :—
Sumoto iP = +1m.53s.
Zi-ka-wei iZ = +4m.41s. and +7m.53s.
Honolulu eS$_e$S = +19m.12s.
Sitka e = +16m.29s.
Tiflis ePPZ = +14m.43s., eSKSE = +21m.51s.
Berkeley eN = +21m.45s.
Upsala eE = +12m.16s.
Tucson eP = +12m.54s.
De Bilt ePPZ = +16m.36s.
Uccle ePPZ = +16m.41s.
Stuttgart ePP = +16m.40s.
Strasbourg ePPZ = +16m.44s., SSN = +30m.12s.?
Philadelphia ePSPS = +32m.54s.
Long waves were also recorded at Malaga, Edinburgh, Granada, Kew, Durham, Cheb, Aberdeen, Bergen, Bombay, Toledo, and Oak Ridge.

Aug. 17d. Readings also at 2h. (near Santiago), 3h. (Tortosa), 15h. (Graz and near Batavia), 16h. (Amboina, Oaxaca, Mount Wilson, Pasadena, and Riverside) 20h. (College, Sitka, Seattle, Butte, Oak Ridge, Philadelphia, East Machias, Scoresby Sund, Sverdlovsk, and Tashkent), 21h. (Grozny, near Manila, near Batavia, and near Santiago), 22h. (near Santiago).

Aug. 18d. 4h. 56m. 5s. Epicentre 5°·0S. 134°·0E.

A = −·6920, B = +·7166, C = −·0866; δ = −12; h = +7;
D = +·719, E = +·695; G = +·060, H = −·062, K = −·996.

Very rough.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Amboina	5·9	282	i 1 30	− 1	i 2 37	− 3	—	—
Manila	23·4	327	5 15	+ 4	9 32	+11	—	—
Adelaide	30·1	173	e 6 17	+ 4	e 10 1	−71	e 15·4	16·7
Perth	31·8	210	8 10	?	13 55	SSS	18·5	—
Riverview	32·8	153	—	—	e 13 25	SS	e 20·6	—
Sydney	32·8	153	e 9 55	?	—	—	17·8	19·4
Melbourne	34·2	164	—	—	e 14 17	SS	17·2	19·7
Nagoya	40·1	5	e 6 43	−56	—	—	—	—
Sverdlovsk	85·2	328	i 12 38	− 1	23 4	[+ 2]	38·9	—
Tiflis	92·7	312	—	—	e 23 58	[+10]	e 25·4	—
Ksara	99·5	303	—	—	28 55?	?	—	—

Additional readings :—
Riverview iN = +16m.36s., iE = +17m.42s. and +18m.5s., iN = +18m.8s. and +18m.41s.
Melbourne i = +15m.35s. and +16m.17s.
Long waves were also recorded at Christchurch, Wellington, Hong Kong, Copenhagen, De Bilt, and Stuttgart.

Aug. 18d. 15h. 6m. 24s. Epicentre 1°·0S. 26°·5W.

$A = +\cdot8948$, $B = -\cdot4461$, $C = -\cdot0173$; $\delta = -3$; $h = +7$;
$D = -\cdot446$, $E = -\cdot895$; $G = -\cdot015$, $H = +\cdot007$, $K = -1\cdot000$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Malaga		42·8	26	e 8 6	+ 5	—	—	—	—
Granada		43·5	26	e 8 14	+ 7	—	—	—	—
San Juan		43·5	299	—	—	e 14 23	−13	—	—
La Paz	N.	43·8	247	—	—	i 18 42	SSS	23·9	24·9
Toledo		45·6	24	8 23	− 1	—	—	—	—
Paris		55·6	22	e 13 2	PPP	e 17 36?	+11	26·6	35·6
Kew	z.	56·8	18	e 9 36	−12	—	—	e 26·6	—
Bidston		57·6	15	—	—	i 17 52	+ 1	—	—
Strasbourg		57·6	26	e 9 53	− 1	e 17 51	0	e 25·6	30·6
Uccle		57·9	22	—	—	e 17 48	− 7	e 24·6	—
Stuttgart		58·4	26	e 9 56	− 4	e 17 54	− 8	e 27·6	—
De Bilt		59·3	22	10 5	− 1	e 18 11	− 3	e 24·6	—
Oak Ridge	z.	59·3	323	e 10 6	0	—	—	e 27·6	—
Edinburgh		59·8	14	—	—	e 17 36?	−44	—	—
Hamburg		62·2	23	—	—	e 22 36?	SS	—	—
Copenhagen		64·8	23	—	—	19 18	− 5	28·6	—
Ksara		67·9	53	i 11 16	+14	e 20 23	+22	—	—
Pulkovo		74·8	26	e 16 13	PPP	e 21 10	−10	33·6	39·3
Tiflis		76·8	47	e 11 57	+ 2	e 21 47	+ 5	e 41·8	46·3
Grozny		77·8	45	e 12 1	0	—	—	—	—
Sverdlovsk		89·3	33	13 3	+ 4	e 23 55	+ 7	38·6	—
Tashkent		95·0	49	—	—	e 30 42	SS	e 49·7	58·6

Additional readings:—
Malaga ePP = +9m.46s.
Granada ePP = +9m.49s.
Strasbourg eZ = +10m.6s., ePPZ = +11m.56s., eSS = +21m.48s., eSSSZ = +23m.36s.?
Stuttgart ePPP = +13m.30s.
De Bilt eZ = +13m.41s.
Ksara ePP = +13m.50s., eSS = +24m.56s.
Tiflis eSSSE = +27m.0s.
Long waves were also recorded at Huancayo, Jersey, Durham, Aberdeen, Scoresby Sund, Helwan, and Baku.

Aug. 18d. Readings also at 1h. (Christchurch, New Plymouth, near Wellington, Tiflis (2), and Triest), 6h. (Nagoya, Tiflis, and near Mizusawa), 7h. (La Paz), 9h. (Tiflis, Tashkent, Sverdlovsk, Copenhagen, Uccle, Paris, Strasbourg, Stuttgart, and Scoresby Sund), 14h. (near Sotchi), 17h. (Kobe, Vladivostok, near Mizusawa, Nagoya, Grozny, Tiflis, near Piatigorsk, and Sotchi), 18h. (Mount Wilson, Pasadena, Baku, Sverdlovsk, Tiflis, Tashkent, and De Bilt), 19h. (Grozny, near Piatigorsk, Sotchi, near Balboa Heights, and near Santiago), 21h. (near Amboina), 23h. (Tuai and near Santiago).

Aug. 19d. 7h. 3m. 32s. Epicentre 38°·8N. 117°·0W. (as on 1937 April 25d.).

$A = -\cdot3547$, $B = -\cdot6962$, $C = +\cdot6240$; $\delta = -12$; $h = -1$;
$D = -\cdot891$, $E = +\cdot454$; $G = -\cdot283$, $H = -\cdot556$, $K = -\cdot781$.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tinemaha	z.	2·0	210	i 0 31	− 4	i 0 44	−18	—
Haiwee	E.Z.	2·8	196	e 0 44	− 3	i 1 11	−11	—
Fresno	N.	3·0	227	i 0 44	− 6	i 1 8	−19	—
Lick		3·9	249	e 1 0	− 2	e 1 37	−13	—
Berkeley		4·3	258	e 1 9	+ 1	e 1 48	−12	—
Branner		4·3	252	e 1 8	0	e 1 51	− 9	—
San Francisco		4·4	258	e 1 16	+ 6	i 1 57	− 5	—
Mount Wilson		4·6	191	e 1 11	− 1	i 2 11	+ 4	—
Pasadena		4·7	192	e 1 15	+ 1	i 2 14	+ 4	—
Riverside	z.	4·7	184	e 1 14	0	i 2 10	0	—
Tucson		8·2	141	2 15	+12	4 54	S_g	5·6

For Notes see next page.

NOTES TO AUGUST 19d. 7h. 3m. 32s.

Additional readings :—
Haiwee iEZ = +47s.
Berkeley iSN = +1m.53s.
Mount Wilson eZ = +1m.14s.
Pasadena iZ = +1m.20s.
San Francisco eN = +1m.52s.
Branner eN = +1m.15s.
Long waves were also recorded at Philadelphia.

Aug. 19d. 20h. Kobe suggests Ariake Bay, off Kagosima.
Hukuoka P = 32m.26s., S = 33m.0s., M = 33m.6s.
Hukuoka B P = 32m.28s., S = 32m.59s.
Sumoto PN = 32m.55s., eZ = 33m.3s., eSN = 34m.3s., eSZ = 34m.10s., ME = 34m.25s.
Kobe ePZ = 32m.56s., ePE = 32m.59s., eSZ = 34m.14s., eSE = 34m.17s., ME = 34m.36s.
Toyooka PZ = 32m.58s., PN = 33m.1s., ePE = 33m.19s., S = 34m.30s., M = 34m.59s.
Husan eP = 33m.15s., S = 34m.2s.
Nagoya P = 33m.23s., S = 35m.26s.,
Zinsen eEN = 35m.34s.
Long waves were also recorded at De Bilt and Stuttgart.

Aug. 19d. Readings also at 2h. (Sotchi and near Santiago), 4h. (near Santiago and near Tananarive), 5h. (near Tananarive), 7h. (Fresno), 8h. (near Kobe), 9h. (Mount Wilson, Riverside, and Tinemaha), 10h. (near Mizusawa), 13h. (Batavia (2) and Santiago), 14h. (Bucharest, Sofia, Triest, Ksara, and Piatigorsk), 15h. (Ferndale, Tiflis (2), and Tananarive), 16h. (near Tananarive), 18h. (Florissant), 19h. and 21h. (near Medan), 22h. (Oak Ridge).

Aug. 20d. 6h. 38m. 3s. Epicentre 26°·0S. 68°·5E.

$A = +\cdot3299$, $B = +\cdot8374$, $C = -\cdot4360$; $\delta = +17$; $h = +3$;
$D = +\cdot930$, $E = -\cdot367$; $G = -\cdot160$, $H = -\cdot406$, $K = -\cdot900$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tananarive		20·6	286	i 4 47	+ 4	i 8 50	+21	—	9·8
Colombo		34·5	20	5 32	?	—	—	14·0	14·8
Kodaikanal	E.	37·0	14	7 16	+ 3	12 57	− 2	—	16·9
Batavia	Z.	41·5	68	i 7 49$_a$	− 1	—	—	—	—
Cape Town		43·7	248	e 8 5	− 3	i 14 45	+ 6	e 22·3	—
Hyderabad		44·2	14	8 12	0	14 39	− 7	20·1	26·1
Bombay		44·8	6	i 8 15	− 2	i 14 52	− 3	18·5	24·0
Calcutta	N.	51·9	24	9 18	+ 6	16 35	0	24·6	32·8
Agra	E.	53·6	11	i 9 24	− 1	i 16 51	− 7	—	—
Dehra Dun		56·7	10	17 17	S	(17 17)	−23	27·3	31·0
Manila		65·1	58	10 42	− 3	15 57	?	—	—
Hong Kong		65·3	47	10 46	0	19 27	− 2	30·9	34·2
Helwan		66·0	325	i 10 52	+ 2	19 37	− 1	—	—
Tashkent		67·0	1	i 10 54	− 3	i 19 44	− 6	e 29·0	43·2
Ksara		67·1	331	i 10 58$_k$	+ 1	e 19 58	+ 7	32·1	38·0
Riverview		70·3	119	—	—	e 24 57	S8	e 34·2	38·5
Tiflis		70·9	342	e 11 18	− 3	e 20 9	−27	31·0	40·5
Grozny		72·1	343	e 11 30	+ 2	e 20 51	+ 1	—	—
Piatigorsk		73·5	342	i 12 34	+58	21 7	+ 1	—	—
Zi-ka-wei	Z.	76·1	45	11 49	− 2	—	—	—	50·3
Theodosia		76·9	337	e 11 57	+ 1	21 49	+ 6	—	—
Yalta		76·9	336	e 11 55	− 1	e 21 39	− 4	—	—
Sebastopol		77·2	335	—	—	e 21 46	− 1	—	—
Simferopol		77·3	336	11 59	+ 1	e 21 52	+ 4	—	—
Bucharest		80·1	331	12 15	+ 2	e 22 20	+ 4	46·5	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Christchurch		82·0	135	i 12 35a	+12	i 22 50	+13	41·9	—
Sverdlovsk		82·8	356	i 12 23	− 4	i 22 41	− 4	37·0	48·8
Wellington		84·5	133	—	—	31 57?	SSS	—	—
Moscow		85·6	344	12 38	− 3	e 23 24	+11	32·5	34·9
Stara Dala		86·3	329	e 12 45	0	—	—	—	—
Triest		86·9	325	i 12 49	+ 1	i 23 16	[+ 3]	—	48·0
Vienna		87·4	328	e 12 49	− 1	—	—	—	—
Algiers		87·7	313	e 12 52	0	e 23 38	+ 5	e 52·0	—
Nagoya		88·8	50	e 12 8	−49	—	—	—	—
Prague		89·6	329	e 13 1	0	e 23 26	[− 4]	—	54·0
Vladivostok		90·1	42	e 12 58	− 5	e 23 58	+ 3	—	—
Cheb		90·6	328	e 13 6	+ 1	e 23 39	[+ 3]	—	—
Pulkovo		91·0	341	13 5	− 2	24 3	0	45·0	53·2
Stuttgart		91·3	326	e 13 6	− 3	e 24 9	+ 3	e 57·0	—
Almeria		91·4	311	e 13 6	− 3	—	—	—	—
Basle		91·4	324	e 13 7	− 2	—	—	—	—
Strasbourg		91·9	324	i 13 10k	− 1	e 24 13	+ 2	—	—
Malaga		92·7	310	i 13 17	+ 2	—	—	—	—
Granada		93·0	310	i 13 18	+ 1	—	—	—	—
Hamburg		94·0	329	i 13 21a	0	e 23 57?	[+ 1]	e 41·0	—
Toledo		94·1	312	e 17 3	PP	—	—	—	—
Copenhagen		94·3	331	13 23	0	23 58	[+ 1]	—	—
Paris		94·9	322	i 13 27	+ 2	(25 59)	PS	26·0	28·0
Uccle		95·0	324	e 13 23	− 3	24 3	[+ 2]	—	—
Upsala	N.	95·2	236	e 13 24	− 3	e 23 59	[− 3]	—	—
De Bilt		95·4	326	i 13 28	0	i 24 7	[+ 4]	e 46·0	—
Kew		97·9	324	i 13 40a	+ 1	e 26 36	PS	e 49·0	—
Rio de Janeiro		98·0	240	e 21 57?	?	—	—	—	—
Oxford		98·5	324	—	—	e 26 40	PS	—	—
Stonyhurst		100·2	325	e 17 57	PP	e 24 27	[− 1]	—	—
Bidston		100·3	324	—	—	e 26 57	PS	—	—
Edinburgh		101·6	327	e 18 9	PP	—	—	—	—
Aberdeen		101·7	328	e 17 41	PKP	e 27 26	PS	—	—
Rathfarnham Castle		101·9	324	i 16 17	?	i 25 28	− 8	—	—
Scoresby Sund		114·4	338	19 39	PP	35 39	SS	—	—
La Paz		120·3	230	e 18 57	[+ 4]	—	—	61·0	65·6
Huancayo		128·4	228	e 19 10	[+ 1]	—	—	—	—
San Juan		137·6	270	e 19 26	[0]	—	—	—	—
Seven Falls		141·7	316	e 19 21	[−12]	—	—	44·0	—
Oak Ridge		143·5	307	i 19 34a	[− 2]	—	—	e 62·0	—
Sitka		144·6	22	e 19 37	[− 1]	—	—	—	—
Williamstown		144·6	308	i 19 41	[+ 3]	i 23 3	PP	—	—
Ottawa		145·5	314	e 19 39	[− 1]	—	—	42·0	—
Philadelphia		146·8	304	e 19 49	[+ 7]	—	—	e 74·0	—
Victoria		155·8	19	e 19 57	[+ 2]	e 43 45	SS	50·0	—
Tinemaha	z.	167·6	26	e 20 10	[+ 2]	—	—	—	—
Mount Wilson	z.	170·1	33	i 20 10	[+ 1]	—	—	—	—
Pasadena	z.	170·1	33	i 20 9	[0]	—	—	—	—
Riverside	z.	170·6	31	e 20 9	[− 1]	—	—	—	—
La Jolla	z.	171·6	34	e 20 10	[0]	—	—	—	—
Tucson		173·7	353	20 11	[0]	—	—	e 83·6	—

Additional readings:—
Tananarive iEN = +4m.53s., eN = +8m.43s., +9m.7s.; eSSN = +9m.24s.
Batavia iPEN = +7m.52s.
Cape Town iE = +8m.14s., +9m.50s., +13m.56s.
Bombay ePP = +9m.53s., iSS = +7m.25s.
Calcutta N PP = +11m.10s., SS = +20m.0s., SSS = +24m.23s.
Agra SSE? = +21m.12s., SSSE? = +23m.59s.
Dehra Dun S = +21m.27s.
Hong Kong PP = +13m.5s.
Helwan PS = +20m.5s.
Ksara PP = +13m.34s., ePS = +20m.32s., eSS = +22m.32s.
Tiflis iPZ = +11m.22s., PPZ = +14m.8s., ePPPZ = +15m.46s., PSE = +20m.38s., eSKSE = +21m.8s., eSSZ = +24m.50s., eSSSE = +28m.1s.

Continued on next page.

Bucharest pPE = +12m.1s., PPE = +15m.15s., PSN = +22m.57s.
Christchurch SS = +27m.54s., SSS = +31m.33s., L_qN = +34·6m.
Sverdlovsk i = +12m.26s., PP = +15m.26s., iPS = +23m.32s., SS = +27m.57s., SSS = +31m.33s.
Moscow e = +15m.41s., PP = +16m.4s.
Triest e = +23m.28s.
Prague e = +29m.57s.?
Vladivostok P_cP = +13m.20s., PP = +16m.35s., PS = +24m.54s., e = +27m.51s.
Pulkovo PP = +16m.10s., SKS = +23m.34s., PS = +25m.4s., SS = +30m.15s.
Stuttgart P = +13m.9s.k, eEZ = +15m.20s., ePP = +16m.17s., eSKSEN = +23m.37s., ePS = +25m.22s.
Strasbourg PPZ = +16m.49s., ePS = +25m.31s., SS = +30m.57s.?
Malaga ePP = +16m.45s.
Granada ePP = +16m.42s.
Copenhagen eZ = +16m.39s., S = +24m.34s., PS = +25m.56s., SS = +30m.57s.
Paris PP = +17m.21s.
Uccle PPZ = +17m.18s., SE = +24m.41s., PSE = +25m.49s., SSE = +31m.5s.
Upsala eE = +23m.54s.
De Bilt iPPZ = +17m.24s.
Kew iPP = +17m.42s., eSS = +31m.21s., eZ = +32m.2s.
Oxford e = +32m.7s.
Stonyhurst e = +26m.57s.and +32m.27s.
Bidston e = +31m.24s.
Aberdeen e = +18m.2s. and +32m.32s.
Rathfarnham Castle iPP? = +16m.47s., i = +24m.40s. and +32m.18s.
Scoresby Sund PS = +29m.17s., eEN = +31m.3s., SSS = +39m.21s.
Huancayo PP = +20m.39s., PPP = +23m.30s.
San Juan ePP = +22m.10s., PPP = +25m.10s., SKSP = +32m.18s.
Oak Ridge iZ = +19m.47s., eE = +22m.57s.
Sitka PP = +22m.59s.
Tinemaha $iPKP_2Z$ = +21m.16s., ePPZ = +25m.7s.
Mount Wilson $iPKP_2Z$ = +21m.23s., iPPZ = +25m.12s., eZ = +28m.45s. and +29m.37s.
Pasadena $iPKP_2Z$ = +21m.23s., iPPZ = +25m.8s., eZ = +28m.58s. and +29m.38s.
Riverside $ePKP_2Z$ = +21m.24s., ePPZ = +25m.10s.
La Jolla $ePKP_2Z$ = +21m.31s.
Tucson PP = +25m.29s., iPP = +25m.34s.
Long waves were also recorded at San Fernando and Florissant.

Aug. 20d. 11h. 59m. 15s. Epicentre 14°·2N. 122°1E.

Destruction on the Isle of Alabat (VIII-IX) and force VII in Manila, where there was some damage. Epicentre 14° 10′N. 122° 05′E. Radius of macroseismic area 400-475kms.

W. Repetti.

The Alabat earthquake of August 20th, 1937. Seismological Bulletin for 1937, July-December, pp. 49-53, Weather Bureau, Manila, 1938.

A = −·5154, B = +·8216, C = +·2438; δ = +10; h = +6;
D = +·847, E = +·531; G = −·130, H = +·206, K = −·970.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	1·1	290	i 0 17k	− 5	—	—	—	—
Kosyun	7·9	351	1 57	− 2	3 49	S*	—	—
Taito	8·6	354	2 7	− 2	4 9	S*	—	—
Takao	8·6	349	2 18	+ 9	4 17	S*	5·6	—
Tainan	8·9	349	2 11	− 1	4 17	+22	—	—
Arisan	9·3	352	2 17	0	4 25	S*	—	—
Karenko	9·7	357	2 21	− 1	4 32	S*	5·7	—
Taityu	10·0	353	2 27	0	4 28	+ 6	—	—
Isigakizima	10·3	10	2 28	− 4	6 9	L	(6·2)	—
Taihoku	10·8	357	e 2 35	− 4	5 12	+30	—	9·7
Hong Kong	11·0	318	2 35	− 7	4 34	−13	—	5·7
Naha	13·0	23	4 9	+60	6 50	+75	—	—
Palau	13·9	118	3 32	+11	6 50	+53	—	—
Nake	15·7	25	3 46	+ 2	6 59	+20	—	—
Phu-Lien	16·2	296	e 3 45	− 5	7 0	+ 9	—	7·4

Continued on next page.

		Δ	Az.	P,	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Zi-ka-wei		16·9	358	i 3 55k	− 4	7 13	+ 6	8·5	12·0
Amboina		18·8	161	4 22	− 1	(7 45?)	− 5	7·7	—
Tomie		19·3	17	4 28	− 1	8 15	+13	—	—
Miyazaki		19·6	24	3 33	−59	7 7	−61	—	—
Nagasaki		19·7	19	4 34	0	8 18	+ 8	—	—
Unzendake		19·9	19	4 29	− 7	8 22	+ 7	—	—
Kumamoto		20·1	20	4 38a	0	8 23	+ 4	—	—
Saga		20·4	19	4 37	− 4	8 26	+ 1	—	—
Hukuoka		20·7	19	4 42a	− 2	8 34	+ 3	—	11·2
Hukuoka B		20·7	19	4 45	+ 1	8 37	+ 6	—	13·3
Ooita		20·8	20	4 54	+ 9	8 44	+11	—	—
Izuka		20·9	19	4 45	− 1	8 39	+ 4	—	—
Ituhara		21·0	16	4 43	− 4	8 41	+ 4	—	—
Simidu		21·0	26	4 54	+ 7	8 39	+ 2	—	—
Husan		21·7	14	5 0	+ 5	9 1	+10	—	11·6
Matuyama		21·8	24	4 54a	− 2	9 3	+11	—	—
Koti		21·9	25	4 57	0	8 49	− 5	—	—
Muroto		21·9	27	5 4	+ 7	9 6	+12	—	—
Hirosima		22·1	22	5 8	+ 9	9 0	+ 2	12·6	—
Taikyu		22·3	12	5 1a	0	9 12	+10	34·7	—
Hamada		22·5	21	5 4	+ 2	9 5	0	—	—
Syuhurei		22·5	11	5 3	+ 1	9 9	+ 4	—	—
Tadotu		22·6	24	5 15	+12	—	—	—	—
Titizima		22·7	51	5 6	+ 2	—	—	—	—
Siomisaki		22·8	30	5 6a	+ 1	9 25	+14	—	—
Okayama		23·0	24	5 20	+13	—	—	—	—
Sumoto		23·1	27	i 5 10a	+ 2	9 11	− 5	—	12·2
Wakayama		23·2	27	5 10a	+ 1	9 22	+ 4	—	—
Sakai		23·5	24	5 16	+ 4	—	—	—	—
Zinsen		23·5	7	i 5 11a	− 1	i 9 25	+ 2	—	16·8
Kobe		23·6	27	e 5 13	0	i 9 39	+14	—	—
Keizyo	E.	23·7	8	e 5 14	0	e 9 26	− 1	e 12·5	17·6
Osaka		23·7	27	5 19	+ 5	9 47	+20	—	—
Osaka B		23·7	27	5 16a	+ 2	10 17	SS	—	—
Yagi		23·7	27	5 14	0	9 36	+ 9	—	—
Kyoto		24·1	27	5 20	+ 2	9 43	+ 9	—	—
Toyooka		24·1	24	e 5 10k	− 8	9 44	+10	10·4	12·6
Kameyama		24·3	29	5 20	0	9 45	+ 8	13·7	—
Miyadu		24·3	26	5 22	+ 2	9 46	+ 9	—	—
Hikone		24·5	27	5 28	+ 6	—	—	—	—
Dairen		24·6	358	5 24	+ 1	9 45	+ 3	—	—
Ibukisan		24·7	27	5 29	+ 5	10 2	+18	—	—
Hamamatu		24·8	31	5 27	+ 2	9 48	+ 2	—	—
Hatidyozima		24·8	36	5 27	+ 2	10 27	+41	—	—
Nagoya		24·8	28	5 26	+ 1	9 52	+ 6	—	16·1
Heizyo		24·9	5	i 5 27a	+ 1	i 10 4	+17	—	18·3
Omaesaki		25·0	32	5 27	0	10 22	−27	14·4	—
Batavia		25·3	217	5 35	+ 5	i 10 45	− 9	12·7	—
Medan		25·4	248	5 34	+ 3	i 10 4	+ 8	—	—
Ito		25·7	32	5 54	+21	10 7	+ 6	—	—
Kanazawa		25·7	27	5 34	+ 1	10 12	+11	13·1	—
Numadu		25·7	32	5 44	+11	10 55	+54	—	—
Takayama		25·7	28	5 40	+ 7	—	—	—	—
Misima		25·8	32	5 37	+ 3	10 56	+54	—	—
Hunatu		26·0	31	5 39	+ 3	10 55	+49	—	—
Kohu		26·0	31	5 52	+16	10 30	+24	—	—
Matumoto		26·1	30	5 32	− 5	—	—	—	—
Mera		26·1	34	5 56	+19	10 54	+47	—	—
Toyama		26·1	27	5 41	+ 4	10 30	+23	12·6	—
Yokohama		26·4	33	5 41	+ 1	11 8	+56	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Katuura		26·5	34	6 12	+31	—	—	—	—
Oiwake		26·5	31	5 44	+ 3	10 38	+22	—	—
Nagano		26·6	28	5 42	0	10 43	+27	—	—
Tokyo		26·6	32	5 47	+ 5	10 44	+28	—	—
Wazima		26·6	26	5 42	0	10 35	+19	—	—
Kumagaya		26·8	31	5 43	− 1	11 8	+49	—	—
Maebasi		26·8	31	5 46	+ 2	11 27	SS	—	—
Takada		27·0	28	5 56	+11	11 48	SSS	—	—
Tukubasan		27·2	31	5 45	− 2	11 31	SS	—	—
Kakioka		27·3	31	5 45	− 3	11 21	+54	—	—
Tyosi		27·3	34	5 54	+ 6	10 31	+ 4	—	—
Mito		27·5	31	5 49	− 1	11 37	SS	—	—
Niigata		28·0	28	6 10	+15	12 26	SSS	18·2	—
Onahama		28·2	32	6 15	+19	11 51	SS	—	—
Aidu		28·3	30	6 2	+ 5	12 18	SSS	—	—
Hukusima		28·6	30	6 2	+ 2	11 14	+26	—	—
Yamagata		28·9	30	6 12	+ 9	—	—	—	—
Sakata		29·1	27	6 11	+ 7	—	—	—	—
Isinomaki		29·5	31	5 55	−13	—	—	—	—
Akita		29·9	28	6 12	0	11 41	+32	—	—
Mizusawa	E.	29·9	30	6 13	+ 1	12 43	SS	—	—
	N.	29·9	30	e 6 15	+ 3	12 49	SS	—	—
Morioka		30·4	30	6 14	− 2	11 20	+ 4	—	—
Miyako		30·8	30	6 18	− 2	11 27	+ 4	—	—
Aomori		31·1	27	6 21	− 1	11 36	+ 8	—	—
Hatinohe		31·3	28	6 23	− 1	11 15	−16	—	—
Hakodate		31·9	26	6 37	+ 8	—	—	—	—
Muroran		32·4	26	6 37	+ 3	—	—	16·1	—
Calcutta	N.	33·0	289	6 57	+18	12 8	+11	15·8	23·5
Urakawa		33·1	27	6 57	+17	—	—	—	—
Sapporo		33·2	25	6 44	+ 4	12 5	+ 5	—	—
Asahigawa		34·2	25	7 6	+17	—	—	—	—
Haboro		34·4	24	6 49	− 2	—	—	—	—
Nemuro		35·3	29	7 3	+ 4	12 30	− 3	15·5	—
Ootomari		36·7	23	7 23	+13	12 55	+ 1	—	—
Otiai		37·3	23	7 24	+ 8	13 14	+10	—	—
Sikka		39·0	21	7 29	− 1	13 28	− 1	—	—
Hyderabad		42·0	280	7 56	+ 2	14 20	+ 6	19·9	22·9
Colombo		42·1	264	7 55	0	14 14	− 2	20·6	33·0
Agra		43·0	294	7 58	− 5	14 17	−12	—	21·8
Dehra Dun		43·5	299	8 45k	+38	14 15	−21	18·1	28·7
Kodaikanal	E.	43·8	271	i 8 7	− 2	i 14 35	− 5	i 21·5	26·7
Perth		46·3	186	8 45	+16	15 30	+14	21·2	22·7
Bombay		47·4	282	e 8 34	− 4	i 15 28	− 4	—	34·2
Almata		48·2	316	8 53	+ 9	—	—	19·6	—
Semipalatinsk		49·5	327	8 51	− 3	15 51	−11	20·7	—
Frunse		49·7	314	9 2	+ 6	—	—	24·2	—
Adelaide		51·3	162	i 9 12	+ 4	i 16 42	+16	i 26·1	27·8
Tashkent		53·0	311	i 9 19	− 2	i 16 41	− 9	25·7	40·7
Tchimkent		53·0	312	9 20	− 1	—	—	—	—
Riverview		55·2	150	e 9 42	+ 5	i 17 23	+ 3	e 23·5	28·7
Sydney		55·2	150	e 9 39	+ 2	i 17 15	− 5	26·7	35·0
Melbourne		56·0	157	9 51a	+ 8	17 33	+ 3	26·0	29·0
Sverdlovsk		62·7	327	e 10 21	− 8	i 18 49	− 8	28·3	29·8
Grozny		70·5	311	e 11 19	+ 1	e 20 28	− 4	e 24·7	—
Apia		71·1	109	e 11 36	+14	20 45	+ 7	—	—
Tiflis		71·3	309	i 11 22a	− 1	20 36	− 5	e 30·7	48·6
Erevan		71·6	307	e 11 31	+ 6	—	—	—	—
Arapuni		72·2	138	—	—	i 20 49	− 2	30·8	32·7
Piatigorsk		72·4	312	i 11 29	− 1	20 49	− 4	e 29·7	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington		73·5	141	e 11 41	+ 6	21 4	− 2	31·5	32·7
Christchurch		73·7	144	i 11 45a	+ 7	i 21 13	+ 5	e 35·0	39·7
Sotchi		74·9	312	e 11 45	+ 1	21 21	− 1	—	—
Moscow		75·3	324	11 42	− 5	21 18	− 8	35·2	41·8
Honolulu		75·9	71	e 11 54	+ 4	i 21 38	+ 6	—	—
College		77·3	25	e 11 58	0	21 42	− 6	e 31·0	—
Theodosia		77·8	313	12 5	+ 4	21 48	− 5	33·7	—
Pulkovo		78·7	329	i 12 2	− 4	21 55	− 8	39·2	41·2
Simferopol		78·7	313	i 12 6	0	21 59	− 4	30·2	—
Yalta		78·7	312	12 5	− 1	21 55	− 8	43·7	—
Ksara		79·1	301	i 12 7a	− 1	22 9	+ 2	—	—
Chatham Ils.		80·4	140	—	—	e 23 27	[66	e 34·2	—
Tananarive		80·4	247	e 12 16	+ 1	e 22 24	+ 3	33·9	47·7
Helwan		83·7	299	i 12 32	0	i 23 5	+11	—	60·0
Bucharest		84·4	314	e 12 35	− 1	22 55	− 6	39·7	46·1
Lemberg		84·4	320	e 11 46	−50	e 23 10	+ 9	e 41·3	50·2
Sitka		84·9	31	e 12 28	−10	i 23 9	+ 3	i 34·5	—
Upsala		84·9	330	i 12 40	+ 2	22 56	−10	e 36·7	46·0
Sofia		86·8	313	e 12 48	+ 1	e 23 12	[0]	35·5	45·7
Kecskemet	Z.	88·0	317	e 12 57	+ 4	e 23 52	+16	e 48·8	56·2
Belgrade		88·2	315	e 12 47k	− 7	i 23 32	− 6	e 44·6	48·8
Budapest	E.	88·2	318	12 54	0	23 17	[− 4]	—	56·8
	N.	88·2	318	12 57	+ 3	23 48	+10	—	46·5
Stara Dala		88·7	319	e 13 0	+ 3	e 23 43	0	e 40·7	58·7
Copenhagen		89·1	328	12 57a	− 1	23 26	[− 1]	35·7	—
Vienna		89·7	319	e 13 0	− 1	e 24 27	+35	e 46·2	49·7
Prague		90·2	322	e 13 1k	− 3	e 23 51	− 5	e 41·2	49·2
Bergen		90·3	334	13 9	+ 5	23 33	[− 1]	—	49·5
Zagreb		90·8	318	e 13 9	+ 3	e 23 40	[+ 3]	e 37·1	50·0
Hamburg		91·3	326	e 13 7	− 2	e 23 39	[− 1]	e 44·7	47·8
Cheb		91·4	323	e 13 10	+ 1	e 23 40	[− 1]	e 40·7	49·2
Jena		91·5	323	e 13 15	+ 5	e 23 45	[+ 3]	e 37·7	50·7
Laibach		91·7	318	e 13 14	+ 4	i 24 37	+27	e 45·2	52·8
Scoresby Sund		92·0	349	i 13 10k	− 2	23 44	[0]	—	—
Göttingen		92·2	325	e 13 12	− 1	e 24 19	[+34]	40·7	50·7
Triest		92·3	318	e 13 10	− 3	i 23 44	[− 2]	e 41·7	49·4
Stuttgart		93·8	322	e 13 17	− 3	i 24 28	0	e 42·7	58·0
Karlsruhe		94·2	323	e 13 31	+ 9	24 1	[+ 4]	e 36·7	52·1
Chur		94·5	321	e 13 21	− 2	e 23 53	[− 5]	—	—
De Bilt		94·5	326	e 13 21	− 2	i 23 57	[− 1]	e 43·7	50·0
Strasbourg		94·8	322	e 13 24	− 1	23 45	[−15]	i 45·1	52·7
Zurich		94·8	321	e 13 23	− 2	e 24 1	[+ 1]	—	—
Victoria		95·0	37	e 13 31	+ 5	e 24 25	−13	e 38·7	—
Uccle		95·1	326	e 13 28	+ 2	i 24 7	[+ 6]	43·7	52·8
Aberdeen		95·3	333	e 13 35	+ 8	i 23 58	[− 4]	—	52·8
Basle		95·4	321	e 13 27	− 1	e 24 46	+ 4	—	—
Seattle		95·9	37	e 13 41	+11	i 24 39	− 7	e 39·7	—
Neuchatel		96·0	321	e 13 29	− 1	e 23 59	[− 8]	—	—
Besançon		96·5	321	—	—	26 9	PS	44·7	63·7
Durham	N.	96·5	331	e 13 44	+12	24 9	[0]	—	54·1
Edinburgh		96·5	332	e 13 45?	+13	i 24 8,	[− 1]	42·7	52·7
Reykjavik		97·2	345	e 14 16	+40	—	—	—	—
Stonyhurst		97·5	331	e 13 45	+ 8	i 24 10	[− 4]	45·7	57·0
Paris		97·7	324	e 13 34	− 4	e 24 13	[− 2]	39·7	52·7
Kew	Z.	97·8	327	e 13 36	− 2	i 23 50	[−26]	47·7	60·9
Bidston		98·0	331	e 13 40	+ 1	—	—	45·7	55·0
Marseilles		98·7	318	e 18 37	PP	e 25 4	− 6	42·7	55·7
Ukiah		99·3	46	e 16 57	?	e 24 39	[+16]	e 40·6	—
Rathfarnham Castle		99·6	332	e 13 45	− 1	i 25 23	+ 6	46·7	54·7
Jersey		100·0	327	18 3	PP	i 23 28	[−59]	50·2	62·7
San Francisco		100·5	47	e 17 45	PP	e 24 45	[+16]	—	—
Berkeley		100·6	47	e 13 51	0	e 24 31	[+ 1]	—	—
Branner		100·8	47	—	—	e 40 21	?	—	—
Lick		101·2	47	e 13 59	+ 5	—	—	—	—
Barcelona		101·8	318	e 17 16	?	e 27 35	?	45·4	55·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Butte		102·5	35	14 17	+17	e 24 11	[−28]	42·3	—
Fresno	N.	102·8	47	e 18 27	PP	—	—	{—	—
Tortosa	E.	103·1	318	12 23	?	e 26 15	+29	37·7	61·2
	N.	103·1	318	12 24	?	e 26 4	+18	36·4	58·5
Bozeman		103·5	35	e 17 31	PKP	e 24 51	[+ 7]	e 42·1	—
Tinemaha	Z.	103·7	46	e 14 15	+10	—	—	—	—
Haiwee	E.	104·4	46	e 18 23	PP	—	—	—	—
Ivigtut		194·5	355	18 23	+15	24 11	[−37]	—	—
Pasadena		105·2	48	e 14 12	0	24 55	[+ 3]	e 43·5	—
Mount Wilson	Z.	105·3	48	e 14 11	− 1	—	—	—	—
Riverside	Z.	105·9	48	e 14 12	P	—	—	—	—
La Jolla	Z.	106·5	49	e 14 8	P	—	—	—	—
Toledo		106·5	319	e 17 48	PKP	e 30 1	?	—	62·5
Almeria		107·2	316	e 18 4	PKP	e 29 44	PPS	—	68·4
Granada		107·8	317	e 14 18	P	i 26 35	S	—	—
Malaga		108·6	317	e 19 4	PP	e 34 43	SS	—	—
Cape Town		109·0	239	i 18 44	PP	i 26 52	S	e 51·3	61·1
San Fernando		109·9	318	e 19 11	PP	i 34 31	SS	50·7	—
Denver	E.	110·8	38	e 19 5	PP	e 24 50	[−25]	e 54·2	—
Tucson		111·5	46	e 14 16	P	e 34 49	SS	e 46·3	—
Averoes		112·6	315	—	—	(33 45)?	SS	33·8	—
Seven Falls		117·4	10	e 17 47	[−61]	e 35 39	SS	51·7	—
Chicago		117·8	26	—	—	e 27 54	{+56}	49·8	—
Shawinigan Falls		118·1	11	e 20 6	PP	e 36 18	SS	57·7	—
Ottawa		118·5	14	e 20 5	PP	e 36 21	SS	e 51·7	—
Florissant		119·2	29	e 19 13	[+22]	e 27 45	{+37}	e 35·2	—
Toronto		119·2	17	e 20 14	PP	e 30 3	PS	e 49·7	—
St. Louis	E.	119·4	29	e 20 23	PP	e 25 38	[−10]	e 50·4	67·9
Vermont		120·0	12	e 20 15	PP	i 36 34	SS	i 55·1	—
East Machias		120·7	7	e 18 58	[+ 4]	e 27 58	{+40}	e 48·2	—
Cincinnati		121·4	23	e 17 7	?	i 30 33	PS	—	—
Williamstown		121·6	13	i 19 3	[+ 7]	—	—	e 63·7	73·7
Oak Ridge		122·2	11	i 18 57k	[0]	—	—	e 72·9	—
Weston		122·4	11	e 19 4	[+ 7]	e 27 15	{−15}	e 58·3	65·7
Fordham		123·3	13	e 19 8	[+ 9]	e 34 20	?	—	—
Philadelphia		123·8	15	e 20 46	PP	e 37 24	SS	e 51·2	—
Colombia		127·3	24	e 19 2	[− 5]	e 26 25	[+13]	e 50·7	—
Tacubaya	N.	127·4	51	i 19 30	[+23]	—	—	—	—
Vera Cruz	E.	129·8	49	e 24 21?	PPP	i 29 41	?	—	—
Merida	N.	133·2	42	e 22 2?	PP	—	—	—	—
San Juan		146·6	14	e 19 47	[+ 5]	i 26 51	[+ 2]	60·5	—
Santiago		157·6	151	20 15	[+17]	—	—	—	91·7
La Plata		159·4	179	20 9	[+ 9]	—	—	69·7	—
Huancayo		162·9	85	e 20 5	[+ 1]	i 26 55	[−12]	65·5	—
Rio de Janeiro		163·6	235	e 20 45	[+41]	i 31 21	{− 9}	i 44·9	—
La Paz		169·9	105	i 20 19k	[+10]	i 27 5	[− 6]	76·1	95·3

Additional readings :—
Phu-Lien iPP = +4m.0s.
Zi-ka-wei iN = +4m.9s., +4m.21s., and +5m.27s., iE = +7m.36s. and +7m.54s.
Amboina iPEN = +4m.25s., iE = +5m.35s.
Taikyu iE = +5m.10s. and +14m.39s.
Siomisaki i = +5m.28s.
Sumoto SN = +9m.16s., SE = +9m.21s.
Wakayama i = +5m.41s.
Kobe SZ = +9m.50s.
Osaka PP = +6m.17s., i = +9m.34s., SSS = +11m.22s., S_cS = +15m.48s.
Toyooka ePNZ = +5m.19s.a, iP = +5m.25s.
Batavia iPEN = +5m.42s., iE = +10m.14s.
Medan iPEN = +5m.38s., iE = +11m.30s.
Numadu PP = +6m.25s.
Kohu i = +6m.52s., +7m.58s., and +9m.14s.
Toyama i = +6m.49s., PPP = +8m.22s.
Yokohama PP = +6m.25s., PPP = +7m.48s., i = +8m.53s., +12m.47s., and +14m.20s.
Oiwake PP = +6m.32s., PPP = +6m.58s., P_cP = +8m.36s.

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Nagano PP = +6m.45s.
Tokyo PP = +6m.25s., i = +7m.15s.
Tyosi i = +6m.29s.
Hukusima PP = +6m.44s.
Morioka PP = +7m.26s.
Calcutta PPN = +7m.48s., PPPN = +8m.7s., SS = +13m.43s.
Sapporo PPP = +8m.9s., SS = +14m.29s.
Agra eN = +8m.25s., PPE = +9m.22s., PPPE = +9m.53s., PPPN = +9m.58s., SSE = +16m.47s., SSSEN = +17m.42s.
Kodaikanal iSSSE = +18m.43s.
Perth P_cP = +10m.30s., PP = +10m.40s., P_cS = +14m.40s., PS = +15m.45s., SS = +19m.10s.
Bombay iPE = +8m.42s., SS = +18m.23s.
Adelaide i = +9m.48s., iPP = +11m.8s., i = +14m.46s., +17m.13s., +19m.54s., and +23m.46s.
Riverview iPEN = +9m.45s., SS?E = +20m.59s.
Melbourne i = +10m.18s., PP = +12m.1s., i = +16m.54s., PS = +18m.22s.
Apia PP = +14m.27s., PPP = +16m.26s., SS = +25m.10s.
Tiflis P_cPZ = +11m.57s., ePPZ = +14m.32s., SE = +20m.38s., eSSE = +25m.42s.
Arapuni e = +19m.45s., SS? = +26m.45s.?, L_q = +29·4m.
Wellington iP = +11m.47s., P_cP = +12m.5s., P_cS = +16m.55s., i = +19m.35s., PS = +21m.13s., SKS = +21m.50s., S_cS? = +22m.1s., i = +23m.21s., +23m.55s., and +26m.14s., iSS = +26m.43s., SSS = +28m.20s., L_q = +29·5m.
Christchurch iP = +12m.17s. and +13m.51s., iSEN = +21m.19s., iSZ = +21m.22s., SN? = +21m.45s., SZ? = +21m.53s., isS = +26m.27s., isSS = +30m.1s., iL_q = +32m.23s.
Honolulu eP = +12m.33s., ePPP = +16m.22s., i = +16m.50s., S = +21m.15s.
College ePP = +14m.29s., iS = +21m.46s., eSS = +26m.39s.
Pulkovo L_q = +32·8m.
Tananarive SSN = +27m.40s., SSE = +27m.45s., E = +33m.42s.
Helwan i = +13m.29s., SKS = +22m.45s., i = +24m.5s. and +24m.45s.
Bucharest iP = +12m.55s., PP = +15m.45s., PPP = +17m.27s., PPPE = +17m.33s., PSE = +24m.41s.
Sitka iP = +12m.45s., PP = +15m.57s., ePPP = +17m.50s., iPS = +23m.54s., iSS = +28m.11s.
Upsala iPPE = +16m.5s., iPPN = +16m.8s., ePPPE = +18m.5s., ePPPN = +18m.9s., iSN = +22m.59s., iN = +35m.25s.
Sofia PPE = +16m.16s., eSN = +23m.18s.
Kecskemet z. eP_cP = +13m.10s., e = +14m.6s. and +14m.48s., ePP = +16m.13s., eS_cS = +24m.21s., ePS = +24m.48s., e = +25m.54s. and +26m.28s., eSS = +30m.58s., ePKKS = +34m.7s., eSKKS = +39m.24s.
Belgrade iNW = +13m.35s., PPNW = +16m.35s.
Budapest iE = +13m.3s., P_cPN = +13m.8s., iE = +13m.14s., iN = +13m.24s., +14m.4s., +16m.34s., and +21m.10s., SKSN = +23m.19s., SE = +23m.41s., PSN = +24m.48s., iE = +24m.15s., iN = +26m.6s., +30m.30s., +36m.6s., +37m.0s., and +43m.30s., iE = +44m.30s.
Stara Dala ePS = +24m.33s.
Copenhagen +16m.33s.
Vienna e = +14m.14s. and +18m.2s., PS = +25m.2s., PPS = +25m.32s.
Prague eSS = +29m.15s.
Zagreb i = +13m.19s., iNE = +16m.50s. and +17m.19s., i = +24m.8s.
Hamburg ePE = +13m.11s.
Cheb ePP = +16m.56s., e = +19m.54s.
Jena eE = +19m.15s., eN = +19m.25s.
Laibach PPNW = +16m.29s.
Scoresby Sund PP = +16m.31s., eE = +24m.27s., e = +25m.9s., +25m.27s., and +26m.15s., SS = +29m.39s., e = +36m.51s. and +38m.27s.
Triest iPP = +16m.54s., i = +22m.36s.
Stuttgart P = +13m.29s.k, ePP = +16m.43s., ePPP = +19m.4s., eSKSN = +23m.35s., eSS = +30m.45s., i = +32m.26s.
De Bilt iPPZ = +17m.27s.
Strasbourg iPPZ = +17m.10s., iPPPZ = +19m.10s., iSN = +24m.37s., PPSN = +26m.17s., SSN = +31m.2s.
Zurich ePP = +17m.5s., eS = +24m.44s.
Victoria e = +13m.57s., eN = +31m.19s.
Uccle PPZ = +17m.27s., iSN = +24m.59s., iE = +25m.41s. and +26m.15s., iSSN = +31m.17s.
Aberdeen e = +14m.3s., +16m.28s., and +17m.28s., i = +26m.4s. and +27m.4s.
Basle ePP = +17m.26s.
Seattle eP = +13m.50s., ePPP = +19m.35s., SKKS = +24m.27s., S = +25m.9s., ePS = +26m.3s.
Besançon e = +39m.39s.
Durham eN = +14m.37s.
Edinburgh i = +26m.25s., +34m.56s. and +37m.12s.

Continued on next page.

Stonyhurst i = +25m.10s.
Paris e = +17m.45s., S = +25m.14s., PS = +26m.58s.
Kew iZ = +14m.8s., +15m.37s., +18m.39s., +26m.31s., +27m.57s., +35m.13s., +37m.44s. and +38m.58s., eZ = +39m.44s., iZ = +45m.27s.
Bidston i = +17m.50s. and +18m.45s., e = +21m.15s., i = +28m.0s.
Marseilles e = +18m.37s., eE = +26m.5s., ePPSN = +27m.23s.?, eN = +28m.38s., eE = +29m.0s., eSSE = +32m.25s.
Ukiah ePP = +17m.6s., ePPP = +19m.45s., eS = +24m.50s. and +25m.27s., ePS = +26m.49s., eSS = +32m.1s., eSSS = +36m.3s.
Rathfarnham Castle i = +14m.34s., iPP = +17m.36s., i = +25m.48s. and +26m.54s.
Jersey iPPS = +26m.51s., e = +27m.49s., SS = +33m.21s.
Berkeley eE = +14m.2s., iN = +14m.16s., eZ = +18m.11s., eN = +21m.46s., eSE = +24m.36s., iN = +24m.42s. and +31m.35s.
Butte ePP = +18m.26s., eSKKS = +25m.34s., ePPS = +28m.2s., ePSPS = +32m.50s.
Bozeman eS = +25m.51s.
Tinemaha eZ = +17m.37s., ePPZ = +18m.30s.
Ivigtut SKKS = +24m.46s., PS = +26m.58s., PPS = +27m.39s., eE = +31m.41s., SS = +33m.11s., SSS = +38m.3s.
Pasadena eZ = +17m.28s., iPPZ = +18m.32s., iPPPNE = +21m.4s., iEN = +25m.20s., eE = +25m.40s., iE = +28m.10s., ePKKPZ = +30m.0s., iEN = +30m.27s., iSSN = +33m.32s., ePKP,PKPZ = +38m.11s.
Mount Wilson eZ = +17m.38s., iPPZ = +18m.33s., ePKKPZ = +29m.59s.
Riverside eZ = +17m.39s., ePPZ = +18m.43s., iPKKPZ = +29m.52s., ePKP, PKPZ = +37m.59s.
La Jolla eZ = +17m.37s., ePPEZ = +18m.42s.
Toledo e = +21m.15s. and +28m.36s., ePS = +31m.34s.
Almeria PPP = +24m.52s.
Malaga PS = +28m.31s.
Cape Town iPPN = +18m.48s., iE = +19m.57s., iSKSE = +25m.16s., iSKKSE = +26m.6s., iPSE = +28m.33s., iPPSE = +29m.38s., iSSE = +34m.8s., iSSN = +34m.16s., iSSSN = +37m.58s., iSSSE = +38m.1s., iN = +39m.29s., i = +42m.4s. and +43m.57s., iE = +46m.0s.
San Fernando eN = +19m.19s., ePSN = +28m.21s.
Denver ePPE = +19m.25s., eN = +19m.39s., eE = +19m.55s., eN = +20m 1s., eE = +21m.27s., ePPPE = +21m.53s., eE = +30m.22s. and +30m.49s., eN = +33m.57s., eE = +47m.45s., eN = +48m.15s.
Tucson ePKP = +18m.2s., PP = +19m.22s., ePSPS = +35m.27s.
Seven Falls e = +20m.9s., i = +40m.24s.
Chicago ePS = +29m.48s., ePPS = +31m.3s., SS = +36m.14s., PSPS = +37m.2s., SSS = +40m.15s.
Shawinigan Falls e = +30m.24s., e = +40m.3s.
Ottawa e = +29m.55s., eN = +31m.57s. and +40m.33s., e = +47m.51s.
Florissant ePPZ = +20m.27s., iZ = +20m.41s., eN = +20m.45s., eE = +20m.50s., iZ = +21m.15s., eE = +23m.21s., eSKSN = +28m.48s., iN = +28m.51s., eN = +29m.34s., iPSN = +29m.50s., eN = +30m.45s., iN = +32m.51s.
Toronto +35m.27s., eE = +47m.45s.
St. Louis eE = +21m.21s., ePPPE = +23m.1s., eSKKSE = +27m.20s., eE = +28m.5s., eSPE = +30m.3s., eSSE = +35m.37s., eE = +39m.13s., ePPPPE = +41m.3s., eSSSSE = +44m.55s.
Vermont i = +30m.22s. and +31m.13s., ePPPS = +36m.5s.
East Machias eP = +19m.10s., ePP = +19m.59s., ePPP = +22m.39s., eSKKS = +26m.45s., PS = +30m.9s., ePPS = +31m.11s., i = +32m.13s., eSS = +35m.46s., ePSPS = +36m.49s., S_cS S_cS = +40m.8s.
Cincinnati ePP = +20m.25s., i = +21m.4s., iSKP = +21m.57s.
Oak Ridge iPPZ = +20m.28s., iZ = +21m.15s. and +24m.11s., ePS = +30m.21s., eL_qE = +55m.15s.
Weston ePPZ = +20m.34s., ePPP = +24m.7s., iPSN = +30m.39s., ePPSZ = +31m.53s., eSS = +37m.29s., eSSS = +42m.11s.
Fordham e = +16m.7s., eSP = +35m.50s.
Philadelphia ePS = +30m.51s., ePSPS = +37m.50s.
Columbia ePP = +21m.1s., eSKKKS = +27m.57s., ePS = +31m.19s., ePPS = +32m.49s.
Tacubaya ePN = +16m.19s.?
San Juan PKP = +19m.52s., P = +20m.42s., +21m.2s., +21m.37s., i = +22m.2s., PP = +23m.32s., i = +24m.52s., +25m.16s., +27m.52s., +31m.8s., eSKSP = +34m.22s., S = +35m.29s., PPPS = +37m.59s., SS = +42m.34s., iSSS = +47m.52s., i = +50m.47s., +51m.14s., and +56m.21s.
Huancayo eP = +20m.10s., i = +20m.17s., i = +20m.52s., +21m.0s., iP = +21m.17s., i = +21m.21s., +23m.45s., +24m.48s., +25m.4s., +31m.18s., +34m.11s., iSKSP = +35m.5s., i = +39m.19s., +39m.55s., SS = +45m.25s., i = +46m.23s. and +50m.41s.
La Paz iN = +21m.5s., iPPN = +25m.21s., iSKSE = +27m.9s., iPPPE = +28m.20s., iZ = +31m.5s., iSKKS = +32m.13s., iN = +32m.59s., iSKSP = +35m.59s., PPS = +40m.9s., SSE = +47m.1s., SSSE = +52m.35s., L_q = +71·1m.
Long waves recorded at Pennsylvania.

Aug. 20d. 12h. 20m. 0s. Epicentre 14°·2N. 122°·1E. (as at 11h. 59m.).

A = −·5154, B = +·8216, C = +·2438; δ = +10; h = +6.

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Manila		1·1	290	0 0?	−22	—	—
Kagosima		18·9	23	4 23	− 1	7 59	+ 6
Kumamoto		20·1	20	4 38	0	—	—
Osaka		23·7	27	4 54	−20	8 58	−29
Toyooka	z.	24·1	24	5 12	− 6	—	—
Kameyama		24·3	29	5 16	− 4	—	—
Numadu		25·7	32	6 0	+27	—	—
Oiwake		26·5	31	5 55	+14	—	—
Nagano		26·6	32	5 44	+ 2	—	—
Mito		27·5	31	6 4	+14	—	—
Sverdlovsk		62·7	327	10 18	−11	—	—
Tiflis		71·3	309	e 11 14	− 9	—	—
Piatigorsk		72·4	312	i 11 23	− 7	—	—

Additional readings:—
Osaka PP = +5m.39s., i = +8m.39s., SS = +10m.0s., i = +15m.36s.
Toyooka PN = +5m.16s.

Aug. 20d. Readings also at 2h. (Scoresby Sund and near Sotchi), 3h. (La Paz and Huancayo), 5h. (Berkeley), 11h. (Huancayo), 12h. (Manila), 13h. (near Lick), 14h. (Berkeley, Branner, Fresno, and Lick), 15h. (La Paz), 16h. (Santiago, San Javier, Grozny, Helwan (2), Ksara (2), and Tiflis), 17h. and 19h. (Ksara) 20h. (near Balboa Heights).

Aug. 21d. 23h. 1m. 57s. Epicentre 30°·4N. 141°·8E. (as on 1937 Aug. 17d.).

A = −·6790, B = +·5343, C = +·5035; δ = +3; h = +2.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		6·2	320	1 36	+ 1	2 57	+ 9	—	3·3
Kobe		7·0	308	e 1 13	−33	3 14	+ 6	—	4·6
Sumoto		7·0	306	e 1 44	− 2	e 3 42	S_E	—	—
Toyooka		7·8	313	1 58	0	—	—	e 4·1	—
Mizusawa	E.	8·7	357	2 9	− 1	3 34	−16	—	—
	N.	8·7	357	e 2 12	+ 2	e 3 37	−13	—	—
Hukuoka B		10·2	291	e 2 29	− 2	e 4 17	−10	—	—
Husan		11·8	297	e 2 52	− 1	e 5 51	+45	—	—
Taikyu		12·3	300	e 3 5	+ 6	6 7	L	(6·1)	—
Zi-ka-wei	z.	17·5	279.	4 7	0	7 21	0	9·6	11·6
Manila		24·8	235	5 24	− 1	10 10	+24	13·3	15·5
Hong Kong		26·0	259	—	—	10 33	+27	—	16·4
Phu-Lien		33·0	261	—	—	12 3?	+ 6	—	—
Tashkent		58·2	303	i 9 57	− 1	i 17 57	− 2	e 27·0	36·6
Sverdlovsk		60·4	322	i 10 8	− 5	18 22	− 6	29·0	38·0
Sitka		61·3	38	—	—	e 18 7	−32	e 24·0	—
Kodaikanal	E.	62·8	267	—	—	e 23 3	SS	—	—
Bombay		62·9	277	—	—	e 18 58	− 2	—	42·0
Baku		72·4	307	e 11 26	− 4	e 20 56	+ 3	35·0	46·3
Moscow		72·8	325	11 33	+ 1	20 53	− 5	38·5	46·0
Grozny		73·9	312	e 11 37	− 2	e 21 5	− 5	—	—
Pulkovo		74·1	331	11 36	− 4	21 3	− 9	39·0	45·5
Tiflis		75·2	310	11 46	0	e 21 31	+ 6	40·1	48·0
Scoresby Sund		78·7	355	12 6	0	22 2	− 1	40·0	—
Upsala		79·1	336	—	—	e 28 3?	SS	—	—
Mount Wilson	z.	81·0	56	e 12 16	− 2	—	—	—	—
Pasadena		81·0	56	e 12 17	− 1	—	—	e 37·9	—
Riverside	z.	81·6	56	e 12 28	+ 7	—	—	—	—
Copenhagen		84·0	334	12 32k	− 2	22 53	− 4	43·0	—
Bucharest		85·3	320	—	—	i 23 9	− 1	—	53·8
Ksara		85·3	306	i 12 41k	+ 1	e 23 18	+ 8	—	50·0

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hamburg	Z	86·8	334	e 12 44	− 2	—	—	53·0	—
Stara Dala		87·1	328	—	—	e 22 3?	[−71]	—	—
Tucson		87·2	55	e 12 47	− 2	e 23 15	[0]	e 41·8	—
Prague		87·3	330	—	—	e 23 27	− 2	—	50·1
Cheb		88·2	331	e 13 3?	+ 9	e 23 33	− 5	e 47·0	53·6
Edinburgh		89·0	342	—	—	i 23 43	− 2	—	—
De Bilt		89·5	335	13 2	+ 2	e 23 46	− 4	e 47·0	56·6
Zagreb		89·7	326	e 16 30	PP	—	—	—	—
Uccle		90·1	335	e 13 6	+ 3	e 23 58	+ 3	e 47·1	—
Stuttgart		90·5	331	e 13 4	− 1	e 23 35	[− 1]	e 48·1	—
Triest		90·8	327	e 16 41	PP	e 23 28	[− 9]	—	51·6
Strasbourg		91·3	332	e 13 7	− 2	e 24 7	+ 1	e 48·1	54·0
Kew		91·9	338	—	—	e 24 7	− 4	e 41·1	—
Oxford		92·0	338	—	—	23 5?	[−39]	e 45·1	—
Paris		93·2	335	i 16 59	PP	—	—	56·1	62·1
Ottawa		97·2	26	—	—	e 31 27	SS	e 48·1	—

Additional readings :—
Sumoto eSEZ = +3m.49s.
Sitka eS$_6$S = +19m.46s.
Tiflis ePPPZ = +16m.23s.
Ksara ePS = +24m.11s., eSS = +29m.6s.
De Bilt ePPZ = +16m.28s.
Stuttgart ePP = +16m.38s., eS = +23m.54s.
Strasbourg ePZ = +16m.42s., eZ = +20m.23s.
Long waves were also recorded at Philadelphia, Honolulu, Stonyhurst, Bergen, Jersey, Budapest, and Calcutta.

Aug. 21d. 23h. 55m. 16s. Epicentre 35°·1N. 8°·8W.

Felt force IV at Casablanca, force III at Rabat, Mazagan, Averroes, and Oued Zern.

Felt uniformly on the Portuguese coast, at Faro and Olha, and in Spain force IV at Huelva and Isla Christina.

Epicentre as given by Strasbourg 35° 6′N. 8° 50′W.

J. Debrach.

Tremblement de terre au Maroc, annales de l'institut de Physique du globe de Strasbourg, tome II, 1937, 20 me partie, Seismologie, pp. 101-102, mende 1940.

$A = +·8103$, $B = -·1254$, $C = +·5724$; $\delta = -5$; $h = 0$;
$D = -·153$, $E = -·988$; $G = +·566$, $H = -·088$; $K = -·820$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Averroes		2·1	148	i 0 51	P_g	1 23	+19	—	—
San Fernando		2·5	57	i 0 45	P*	i 2 0	+46	—	—
Malaga		3·9	64	i 1 10	P*	1 54	+ 4	—	—
Granada		4·7	62	i 1 15	+ 1	i 2 1	− 9	—	—
Coimbra		5·2	3	i 1 18	− 3	—	—	—	—
Almeria		5·4	70	e 1 21	− 3	—	—	—	—
Toledo		6·1	37	i 1 30k	− 4	2 29	−16	—	3·2
Alicante		7·4	61	2 1	+ 9	—	—	—	—
Tortosa		9·3	49	i 2 18	+ 1	e 3 58	− 7	e 5·0	—
Neuchatel		16·8	40	e 4 1	+ 3	—	—	—	—
Basle		17·5	40	—	—	e 7 34	+13	—	—
Zurich		17·9	40	e 4 13	+ 1	—	—	—	—
Uccle		18·3	25	—	—	e 7 22	−17	—	—
Stuttgart		19·0	38	e 4 26	0	—	—	e 9·1	—
Zagreb		21·6	53	4 53	− 1	—	—	—	—
Hamburg	z.	22·7	28	e 5 8	+ 4	—	—	—	—

Additional readings :—
Averroes PP = +0m.56s., PS = +1m.14s., iSS = +1m.35s., +1m.54s., +2m.10s., +2m.25s. and +2m.37s.
Toledo P_g = +1m.37s., i = +1m.47s., eSS = +2m.44s.
Tortosa eSN = +4m.15s.
Basle e = +9m.2s.
Uccle e = +8m.50s.

Aug. 21d. Readings also at 0h. (Manila), 1h. (La Paz and near Santiago), 2h. (near Manila), 3h. (Grozny), 4h. (near Manila (3)), 5h. (Sverdlovsk, Tashkent, and near Manila (2)), 6h. (near Manila (2) and near Sumoto), 7h. (Kew, Hong Kong, Sverdlovsk, Tashkent, near Manila (2), near Christchurch, New Plymouth, and Wellington), 8h. (near Mizusawa (2) and Nagoya (2)), 9h. (near Christchurch and Wellington), 11h. (Kew), 12h. (Ksara), 13h. (Yalta), 14h. (near Sotchi), 15h. (near Manila), 16h. (near Sotchi), 17h. (near Mizusawa and Nagoya), 19h. (near Nagoya), 20h. (Columbia), 22h. (Mount Wilson and Pasadena), 23h. (Malaga, Granada, and Almeria).

Aug. 22d. 2h. 12m. 44s. Epicentre 1°·9S. 105°·2E.

$A = -\cdot2620$, $B = +\cdot9645$, $C = -\cdot0330$; $\delta = -1$; $h = +7$;
$D = +\cdot965$, $E = +\cdot262$; $G = +\cdot009$, $H = -\cdot032$, $K = -\cdot999$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia		4·6	159	e 1 11	− 1	2 29	+22	—	—
Medan		8·5	310	e 2 12	+ 5	4 20	L	(4·3)	—
Kodaikanal	E.	30·1	295	—	—	e 11 16	+ 4	—	—
Andijan		51·9	328	e 8 56	−16	—	—	—	—
Tashkent		54·0	327	e 9 26	− 2	17 7	+ 4	—	34·1
Grozny		69·6	318	e 11 16	+ 3	e 20 17	− 4	—	—
Tiflis		69·7	316	e 11 13	− 1	20 17	− 5	—	—
Ksara		74·0	305	e 11 37	− 2	e 21 13	+ 2	—	39·3
Moscow		79·2	328	e 12 15	+ 7	e 22 13	+ 5	—	—
Pulkovo		84·1	331	12 37	+ 3	23 1	+ 3	49·3	59·2
Copenhagen		93·1	325	—	—	24 28	+ 6	53·3	—

Additional readings :—
Batavia PZ = +1m.14s., iN = +2m.51s.
Medan iN = +4m.8s.
Andijan e = +10m.15s.
Long waves were also recorded at Phu-Lien, Hong Kong, De Bilt, Stuttgart, Sverdlovsk, and Scoresby Sund.

Aug. 22d. 11h. 31m. 41s. Epicentre 7°·5N. 36°·0W.

$A = +\cdot8022$, $B = -\cdot5828$, $C = +\cdot1297$; $\delta = 0$; $h = +7$;
$D = -\cdot588$, $E = -\cdot809$; $G = +\cdot105$, $H = -\cdot076$, $K = -\cdot992$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Rio de Janeiro		31·0	193	—	—	e 11 31	+ 5	e 14·8	—
San Juan		31·2	294	e 6 26	+ 3	11 26	− 3	12·9	—
La Paz	N.	39·7	233	e 7 34	− 2	i 13 41	+ 1	20·1	25·4
Toledo		43·1	37	e 8 4	0	—	—	—	—
Huancayo		43·7	244	8 8	0	14 33	− 6	e 21·5	—
Oak Ridge		46·9	324	e 8 31	− 3	e 15 25	0	e 22·3	—
Rathfarnham Castle		51·6	23	e 9 13	+ 3	i 16 43	+12	22·3	—
Paris		52·4	32	9 17	+ 1	e 16 49	+ 7	23·3	—
Kew		52·8	27	e 9 18	− 1	e 16 50	+ 3	e 22·3	—
Durham	N.	54·6	24	e 9 32	0	e 16 56	−15	—	27·3
Uccle		54·6	30	e 9 31	− 1	e 17 1	−10	e 23·3	—
Edinburgh		54·8	22	—	—	e 17 19?	+ 5	—	—
Strasbourg		55·1	33	e 9 35k	− 1	e 17 19	+ 1	e 25·3	31·2
De Bilt		55·8	29	9 42	+ 1	17 32	+ 4	e 25·3	—
Stuttgart		56·0	34	e 9 40	− 3	e 17 24	− 6	e 25·3	—
Hamburg		59·0	30	e 10 19?	+15	—	—	—	—
Copenhagen		61·4	28	10 20	0	—	—	28·3	—
Scoresby Sund		63·6	5	10 34	− 1	19 19	+11	—	—
Upsala		65·9	27	16 19?	?	—	—	—	—
Ksara		70·8	58	e 11 18	− 2	e 20 36	+ 1	—	38·8
Pulkovo		71·7	29	e 11 24	− 2	e 20 45	0	38·3	42·1
Moscow		74·6	34	e 10 47	−56	e 20 27	−51	33·8	37·9
Tiflis		78·2	49	12 4	+ 1	e 22 4	+ 7	42·3	—
Sverdlovsk		87·4	33	12 50	0	23 35	+ 5	35·3	—
Tashkent		96·4	47	—	—	e 24 52	+ 2	e 42·9	51·5

For Notes see next page.

NOTES TO AUGUST 22d. 11h. 31m. 41s.

Additional readings :—
San Juan ePP = +7m.25s., ePPP = +7m.41s.
La Paz iPZ = +7m.37s.
Toledo e = +9m.37s.
Huancayo PP = +9m.44s., i = +14m.39s., eSS = +17m.30s.
Rathfarnham Castle i = +16m.33s.
Kew eSPZ = +16m.54s.
Strasbourg ePPZ = +11m.44s.
Stuttgart ePPP = +13m.2s.
Ksara ePP = +13m.58s., ePS = +21m.6s., eSS = +25m.19s.
Tiflis ePPZ = +15m.8s.
Sverdlovsk SS = +29m.25s.
Long waves were also recorded at St. Louis, Jersey, and Stonyhurst.

Aug. 22d. Readings also at 0h. (Berkeley, Christchurch, near New Plymouth, and Wellington), 1h. (Berkeley, Fresno, near Branner, and Lick), 3h. (Andijan and near Manila), 5h. (Andijan, Tashkent, Tchimkent, Grozny, Tiflis, Sverdlovsk, Moscow, Pulkovo, Ksara, and near Hukuoka B), 6h. (near Manila), 8h. (Wellington, Mount Wilson, Pasadena, Riverside, and Tinemaha), 9h. (Tiflis), 11h. (Cheb), 12h. (La Jolla, Mount Wilson (2), Pasadena (2), Riverside (2), Tinemaha (2), Oak Ridge, San Juan, and Port au Prince), 14h. (Frunse and near Andijan), 17h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 18h. (near Manila), 20h. (near Bagnères), 22h. (near Santiago).

Aug. 23d. 16h. Pacific epicentre :—

Sydney e = 40m.12s., L = 48m.24s., M = 50m.15s.
Riverview iPE = 40m.32s., iSN = 46m.11s., iSE = 46m.14s., eL = 47m.54s., M = 48m.53s.
Christchurch PNZ = 42m.22s., iNZ = 42m.32s., S = 46m.36s., iNZ = 46m.46s., L_qE = 47m.30s.
Wellington i = 42m.25s. and 42m.42s., S = 46m.10s., iSS = 48m.8s., L = 50m.0s., M = 55m.0s.
Melbourne e = 45m.17s., i = 48m.23s. and 50m.12s., L = 51m.23s., M = 52m.42s.
Riverside PZ = 50m.10s.
Pasadena ePZ = 50m.10s.
Mount Wilson iPZ = 50m.11s.
Adelaide e = 52m.13s., MN = 57·5m.
Tiflis eE = 53m.52s., 60m.40s., and 65m.35s., eLE = 101·5m., M = 130·7m.
Ksara ePKP = 56m.49s., ePPS = 73m.34s., M = 118m.30s.
Kew ePPZ = 57m.7s., eL = 115m.
Strasbourg ePKP = 57m.7s., e = 60m.28s.
Stuttgart ePKP = 57m.7s., e = 118m., eL = 132m.
Uccle eZ = +57m.7s.
Sverdlovsk e = 57m.38s. and 67m.7s., L = 87·0m.
Tashkent e = 58m.6s., 66m.13s., and 72m.0s., eL = 100·6m., M = 108·7m.
Granada e = 58m.15s. and 63m.6s.
Moscow e = 59m.50s., eL = 95·5m.
Scoresby Sund 59m.54s., L = 102m.
Pulkovo e = 59m.58s., L = 100m.0s., M = 117·6m.
Copenhagen 60m., L = 114·0m.
Perth P = 60m.0s.
Malaga e = 65m.36s.
Long waves are also given at Bombay, Kodaikanal, Paris, De Bilt, and Tucson.

Aug. 23d. Readings also at 0h. (Wellington, near Manila, Tashkent, Berkeley, near Branner, Fresno, and Lick), 1h. (Sverdlovsk), 2h. (Hong Kong and Jersey and near Taihoku), 3h. (De Bilt, Copenhagen, Pulkovo, Sverdlovsk, Tashkent, and near Manila), 4h. (near Manila and near Santiago), 6h. (Chur, Sitka, and near Manila), 8h. (near Triest), 13h. (Tiflis), 17h. (Mount Wilson, Pasadena, and Riverside), 18h. (Sitka and near Tananarive), 22h. (near Sumoto and near Tiflis).

Aug. 24d. 18h. 27m. 54s. Epicentre 18°·4S. 172°·2W.

$A = -·9424$, $B = -·1291$, $C = -·3088$; $\delta = +14$; $h = +5$;
$D = -·136$, $E = +·991$; $G = +·306$, $H = +·042$, $K = -·951$.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Apia		4·3	6	1 11	+ 3	1 56	− 4	—	—
Arapuni		22·6	206	—	—	i 8 6?	−61	e 13·1	—
Wellington		25·7	204	5 30	− 3	10 7	+ 6	14·1	—
Chatham Ils.		26·0	188	—	—	e 10 6	0	—	—
Christchurch		28·4	204	i 5 57a	− 1	10 55	+10	14·5	—
Riverview		36·2	237	i 7 6	0	e 12 56	+ 9	e 14·9	18·7
Sydney		36·2	337	e 7 6	0	—	—	17·8	20·6
Honolulu		41·6	21	e 8 19	+28	e 13 29	−39	e 17·2	—
Melbourne		42·2	234	i 7 53	− 3	14 16	− 1	20·3	29·9
Adelaide		46·6	239	—	—	i 13 51	?	e 20·2	22·3
Tokyo		70·2	321	11 22	+ 5	20 34	+ 6	—	—
Hunatu		70·7	320	11 10	−10	—	—	—	—
Maebasi		71·1	321	11 26	+ 4	—	—	—	—
Oiwake		71·4	320	11 29	+ 5	20 33	− 9	—	—
Siomisaki		71·4	316	11 24	0	—	—	—	—
Nagoya		71·6	319	11 19	− 6	—	—	—	—
Nagano		71·8	321	11 27	+ 1	20 53	+ 7	—	—
Gihu		71·9	319	11 26	− 1	20 40	− 8	—	—
Niigata		72·1	322	11 12	−16	—	—	—	—
Osaka		72·2	317	11 0	−29	20 8	−43	—	—
Osaka B		72·2	317	11 32	+ 3	—	—	—	—
Santa Barbara	Z.	72·2	44	i 11 29	0	—	—	—	—
Toyama		72·4	320	11 32	+ 2	—	—	—	—
Kobe		72·5	317	e 11 17	−13	e 20 56	+ 2	—	—
Sumoto		72·5	317	e 11 30	0	e 20 57	+ 3	—	—
Berkeley	N.	72·8	40	e 15 25	PPP	e 25 3	SS	e 34·1	—
La Jolla		73·0	47	i 11 32	− 1	—	—	—	—
Pasadena		73·1	45	i 11 34k	0	i 21 0	− 1	e 30·1	—
Ukiah		73·1	38	e 11 33	− 1	e 20 45	−16	e 29·4	—
Mount Wilson		73·2	45	i 11 33k	− 2	—	—	—	—
Manila		73·4	292	i 11 35k	− 1	—	—	—	—
Miyazaki		73·4	312	11 34	− 2	21 8	+ 3	—	—
Riverside		73·5	38	i 11 35k	− 1	—	—	—	—
Kagosima		73·8	311	11 39	+ 1	—	—	—	—
Sapporo		74·3	327	11 52	+11	—	—	—	—
Haiwee	E.	74·4	43	e 11 41	− 1	—	—	—	—
Kumamoto		74·4	313	11 41	− 1	—	—	—	—
Tinemaha	Z.	74·8	43	i 11 41k	− 3	—	—	—	—
Tucson		77·2	50	11 57	0	21 51	+ 4	e 32·9	—
Seattle		79·2	32	e 12 0	− 8	22 9	+ 1	e 35·6	—
Victoria		79·3	31	12 16	+ 7	22 13	+ 4	38·1	—
Batavia		79·5	267	i 12 10	0	i 22 13	+ 2	—	—
Vladivostok		79·6	322	e 12 13	+ 3	e 22 13	+ 1	e 36·7	55·6
Zinsen		79·8	315	i 12 11k	− 1	—	—	—	—
Zi-ka-wei	Z.	80·4	308	12 12	− 3	22 38	+17	—	63·4
Sitka		81·0	19	e 12 11	− 7	e 22 14	−13	e 34·1	—
Hong Kong		82·4	296	12 26	+ 1	22 40	+ 5	—	49·7
Butte		83·5	38	e 12 21	−10	e 22 15	−37	e 37·2	—
Bozeman		84·2	38	e 12 30	− 4	e 23 12	+13	e 35·4	—
College		84·8	9	e 12 34	− 3	23 0	− 5	e 40·0	—
Huancayo		92·7	104	e 13 18	+ 3	23 57	[+ 9]	—	—
St. Louis	E.	95·0	50	i 13 26	0	e 24 15	[+14]	e 42·1	—
La Paz		97·7	110	i 13 42a	+ 4	24 21	[+ 6]	47·1	51·8
Chicago		98·0	48	—	—	e 24 18	[+ 1]	e 40·5	—
Toronto		104·3	48	e 18 36	PP	e 24 36	[−11]	51·1	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta	N.	105·2	289	e 17 53	PP	i 24 43	[− 9]	—	—
Philadelphia		106·7	53	e 18 43	PP	e 25 42	[+44]	e 44·4	—
Oak Ridge		109·7	50	i 19 7a	PP	e 26 9	{+ 7}	56·1	—
Weston		109·9	50	i 19 6	PP	e 26 7	{+ 3}	e 45·3	e 52·1
San Juan		110·3	76	—	—	e 25 11	[− 2]	—	—
Seven Falls		110·7	45	—	—	e 26 12	{+ 2}	52·1	—
Kodaikanal	E.	112·3	274	e 17 6	?	—	—	—	—
East Machias		113·0	48	e 18 36	[− 3]	e 25 10	[−14]	e 47·2	—
Agra	E.	115·3	292	e 19 26	PP	i 29 28	PS	—	—
Rio de Janeiro		115·6	127	—	—	e 27 6	{+22}	—	—
Bombay		118·7	282	e 19 48	PP	—	—	—	81·1
Frunse		119·0	309	e 20 17	PP	—	—	—	—
Andijan		120·8	307	e 19 17	PP	—	—	—	—
Tashkent		123·0	308	i 18 58	[0]	26 1	[+ 1]	—	81·6
Scoresby Sund		124·6	12	20 54	PP	—	—	62·1	—
Sverdlovsk		125·0	328	i 19 2	[0]	37 48	SS	51·1	90·7
Pulkovo		135·3	344	19 20	[− 2]	40 0	SS	66·1	81·9
Moscow		136·2	336	e 19 22	[− 1]	26 24	[− 9]	69·6	91·6
Baku		137·6	311	e 19 8	[−18]	40 54	SS	62·1	70·1
Upsala	N.	137·7	353	e 20 6?	?	e 23 0	?	e 75·1	—
Grozny		139·3	316	e 19 30	[+ 1]	—	—	—	—
Piatigorsk		140·7	319	e 19 21	[−10]	—	—	—	—
Tiflis		140·7	315	e 19 25	[− 6]	e 29 39	{+14}	e 65·1	82·9
Copenhagen		142·3	356	19 30	[− 4]	22 29	PP	71·1	—
Durham	N.	142·7	8	e 20 53	?	—	—	—	89·1
Rathfarnham Castle		143·2	13	i 19 53	[+17]	i 25 57	[−47]	62·1	—
Bidston		143·8	11	22 6?	PP	—	—	—	—
Hamburg		144·6	358	e 19 34k	[− 4]	—	—	e 73·1	—
Theodosia		144·7	325	e 19 40	[+ 2]	—	—	e 33·1	—
Simferopol		145·4	327	e 19 42	[+ 2]	—	—	—	—
Oxford		145·7	10	i 19 42a	[+ 2]	—	—	e 71·1	83·7
Yalta		145·7	325	i 19 39	[− 1]	—	—	—	—
Sebastopol		145·9	327	e 19 44	[+ 3]	—	—	—	—
De Bilt		146·0	2	i 19 41	[0]	—	—	e 78·1	84·3
Kew		146·1	8	i 19 40k	[− 1]	—	—	e 67·1	83·5
Göttingen		146·6	357	i 19 43	[+ 1]	—	—	—	—
Jena		147·1	354	e 19 44	[+ 1]	—	—	—	—
Uccle		147·3	4	i 19 46k	[+ 3]	—	—	e 25·1	—
Prague		147·7	351	e 19 50	[+ 7]	—	—	e 75·1	90·1
Cheb		147·9	354	e 19 50	[+ 6]	e 31 9	{+62}	e 74·1	93·1
Jersey		148·0	12	e 19 58	[+14]	—	—	e 81·1	—
Budapest	E.	149·0	344	19 55	[+ 9]	—	—	—	—
Paris		149·1	7	i 19 48	[+ 2]	e 24 25	PP	78·1	92·1
Vienna		149·1	348	e 19 46	[0]	—	—	—	—
Karlsruhe		149·2	359	e 19 51	[+ 5]	—	—	—	—
Stuttgart		149·3	357	i 19 48k	[+ 2]	—	—	e 78·1	—
Bucharest		149·6	333	e 19 52	[+ 5]	—	—	—	—
Strasbourg		149·6	359	i 19 44k	[− 3]	e 26 39	[−14]	e 81·1	90·1
Ksara		150·4	306	i 19 50	[+ 2]	—	—	—	—
Basle		150·6	0	e 19 50	[+ 2]	—	—	—	—
Zurich		150·8	359	e 19 49a	[+ 1]	—	—	—	—
Neuchatel		151·0	0	e 19 50	[+ 1]	—	—	—	—
Belgrade		151·3	340	e 19 50k	[+ 1]	—	—	e 100·6	—
Zagreb		151·6	347	e 19 51	[+ 1]	—	—	—	—
Triest		152·1	351	i 20 52	[+62]	e 42 27	SS	—	91·3
Helwan		155·5	302	19 58	[+ 3]	30 59	{+11}	—	—
Toledo		156·0	23	e 21 3	[+67]	—	—	79·1	—
San Fernando		157·9	32	e 20 54	?	—	—	85·1	—
Granada		158·5	26	i 20 2	[+ 3]	—	—	—	—
Malaga		158·6	27	i 20 46	[+47]	26 20	[−43]	—	—
Almeria		159·3	24	e 20 2	[+ 2]	—	—	—	—
Algiers		160·9	11	e 20 17	[+15]	e 31 6?	{−11}	86·1	106·1

For Notes see next page.

NOTES TO AUGUST 24d. 18h. 27m. 54s.

Additional readings :—

Apia i = +2m.12s.
Wellington pP = +5m.59s., PP = +6m.16s., i = +7m.34s., P_cP? = +8m.54s., i = +10m.17s., SS = +11m.3s., P_cS = +12m.2s., L_q? = +12·3m.
Chatham Ils. eS = +15m.48s., i = +16m.24s.
Christchurch iPPZ = +6m.43s., P_cSEZ = +12m.32s., L_qE = +12m.41s.
Riverview eE = +8m.25s., iE = +13m.3s.
Honolulu ePP = +9m.34s.
Tokyo pP = +12m.24s., i = +12m.39s.
Oiwake PP = +13m.32s.
Osaka i = +14m.15s., S_cS = +21m.16s., i = +21m.41s.
Kobe ePZ = +11m.27s.
Sumoto eN = +26m.42s.
Ukiah ePS = +21m.8s.
Manila iZ = +11m.39s.
Tucson = +12m.0s.
Seattle ePP = +16m.51s., ePS = +22m.21s.
Berkeley ePE = +15m.28s., eSZ = +24m.56s., eSE = +25m.1s.
Batavia PEN = +12m.13s., iN = +22m.57s.
Vladivostok S_cS = +23m.13s.
Zi-ka-wei iZ = +12m.20s.
Sitka ePP = +15m.14s., ePS = +22m.53s., ePPS = +23m.10s., eS_cSP = +24m.57s., eSS = +27m.37s.
Hong Kong PP? = +15m.28s., SS? = +28m.36s.
Butte eS = +22m.39s.
College ePS = +23m.43s.
Huancayo SKS = +23m.29s., i = +24m.34s., PS = +25m.30s., PPS = +25m.50s., iS_cSP = +26m.6s., i = +26m.30s., +26m.50s., +27m.10s., and +27m.38s., eSS = +29m.45s., i = +30m.35s., PSPS = +30m.50s., SSS = +33m.51s.
St. Louis ipPE = +13m.36s.
La Paz SN = +25m.34s.
Philadelphia ePS = +27m.57s., ePSPS = +33m.52s.
Oak Ridge eN = +26m.54s., eL_qN = +48·1m.
Weston iN = +27m.4s., i = +28m.35s., e = +34m.47s.
San Juan eSKKS = +25m.42s., ePSPS = +34m.52s.
East Machias ePP = +19m.20s., eSKKS = +26m.18s., ePS = +28m.29s., ePPS = +29m.44s., eSS = +34m.45s.
Bombay eE = +22m.34s.?
Andijan e = +21m.9s.
Tashkent iPP = +20m.28s., ePPP = +23m.37s., SKKS = +27m.41s., PS = +30m.54s., PPS = +32m.30s., SS = +38m.6s.
Sverdlovsk PP = +20m.47s., PPP = +23m.22s.
Pulkovo PP = +21m.50s., PKS = +22m.50s., PS = +32m.2s., e = +36m.54s.
Moscow ePP = +22m.0s., PKS = +22m.49s., PPP = +25m.0s., ePPS = +34m.36s., SS = +40m.6s.
Baku PKS = +23m.8s.
Tiflis eZ = +19m.34s., PKPE = +23m.9s., eSKKSE = +30m.45s., ePPSE = +35m.20s., eSSE = +41m.4s., eSSSE = +46m.6s.
Copenhagen +23m.13s.
Rathfarnham Castle i = +20m.11s., e = +34m.1s.
Theodosia e = +23m.23s.
Simferopol e = +23m.24s.
Yalta e = +23m.50s.
De Bilt iZ = +20m.0s.
Kew iZ = +19m.53s., i = +20m.0s., $iPKP_3$ = +20m.24s., iZ = +21m.2s. and +21m.14s., eSKSPZ = +33m.59s.
Uccle iZ = +21m.10s., ePPZ = +23m.12s.
Prague e = +23m.0s. and +33m.24s.
Budapest PN = +20m.2s., iN = +20m.20s., iE = +20m.23s.
Vienna eP* = +19m.50s., P_g = +20m.0s., S* = +20m.22s. and +20m.27s.; record mistaken for that of a local shock.
Stuttgart ePKP = +19m.51s. and +20m.24s., e = +21m.15s., ePP = +24m.6s., eSKSP = +34m.9s.
Bucharest e = +20m.39s., eE = +21m.6s., iE = +22m.14s.
Strasbourg $iPKP_3$ = +20m.23s., SKPZ = +23m.25s., PPZ = +24m.5s., iPPPZ = +28m.1s., SS = +44m.6s.?
Ksara pPKP = +20m.10s., sPKP = +20m.17s., iPP = +23m.35s.
Belgrade eNW = +20m.55s. and +27m.50s.
Zagreb eNE = +19m.58s.
Triest i = +50m.29s., e = +61m.22s.
Helwan PKP_3 = +20m.24s., PP = +23m.58s., PSKS = +34m.13s.
Malaga PP = +24m.30s., SKKS = +31m.10s.
Granada iPP = +24m.20s.
Algiers $iPKP_3$ = +20m.46s., e = +24m.23s.
Long waves were also recorded at Cape Town, Edinburgh, Perth, Stonyhurst, and Ivigtut.

Aug. 24d. 20h. 13m. 25s. Epicentre 5°·0N. 89°·0W.

$A = +\cdot0174$, $B = -\cdot9961$, $C = +\cdot0866$; $\delta = +2$; $h = +7$;
$D = -1\cdot000$, $E = -\cdot017$; $G = +\cdot002$, $H = -\cdot087$, $K = -\cdot996$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights		10·2	67	e 2 32	+ 1	e 4 42	+15	5·7	—
Oaxaca	N.	14·2	328	i 3 31	+ 7	—	—	—	—
Vera Cruz	E.	15·7	334	i 4 3	+19	—	—	—	—
Merida	N.	15·9	358	i 4 36	+51	—	—	—	—
Puebla	E.	16·6	328	4 2	+ 6	—	—	—	—
Tacubaya		17·4	327	i 4 8	+ 2	—	—	—	—
Huancayo		21·7	141	e 4 55	0	e 8 8	−43	i 11·1	—
San Juan		26·0	56	e 5 27	− 9	e 10 3	− 3	11·5	—
La Paz		29·7	135	i 6 11a	+ 1	i 11 17	+11	13·1	15·1
St. Louis	E.	33·5	357	i 6 39	− 4	—	—	e 14·8	—
Tucson		33·9	325	i 6 45a	− 2	e 12 12	+ 1	16·7	—
Philadelphia		37·0	18	i 7 11	− 2	i 13 0	+ 1	i 15·8	—
Riverside		39·1	321	i 7 28a	− 3	—	—	—	—
Toronto		39·4	10	9 12	PP	13 35	0	19·6	—
Mount Wilson		39·6	321	i 7 33a	− 2	e 13 42	+ 4	—	—
Pasadena		39·7	321	i 7 35a	− 1	i 13 47	+ 7	i 16·8	—
Oak Ridge		40·4	20	i 7 40a	− 1	i 13 50	0	18·6	—
Weston		40·4	20	i 7 40a	− 1	e 13 50	0	19·6	22·7
Santa Barbara		40·8	319	i 7 43	− 2	—	—	—	—
Haiwee	E.	40·9	323	i 7 44	− 2	—	—	—	—
Tinemaha	Z.	41·7	323	i 7 46a	− 6	—	—	—	—
Ottawa		41·9	14	7 51	− 3	14 11	− 2	20·6	—
Lick		43·9	321	e 8 8	− 2	—	—	—	—
East Machias		43·9	22	e 7 58	−12	14 35	− 7	e 18·0	—
Bozeman		44·8	338	—	—	e 14 41	−14	e 23·9	—
Seven Falls		44·8	17	e 8 11	− 6	i 14 55	0	18·6	—
Butte		45·7	337	e 9 21	+57	e 15 5	− 3	e 23·8	—
Seattle		51·2	331	e 9 8	+ 1	e 16 44	+19	e 24·6	—
Victoria		52·2	331	9 13	− 2	16 40	+ 1	24·6	—
Rio de Janeiro		52·6	122	—	—	i 17 45	+61	i 26·6	—
Sitka		63·4	333	—	—	e 18 55	−11	e 30·1	—
Honolulu		68·5	290	—	—	e 27 27	SSS	e 28·1	—
College		72·6	337	—	—	e 20 39	−17	33·7	—
Malaga		82·7	53	e 12 36	+ 9	e 22 49	+ 5	—	—
Toledo		82·9	50	e 12 33	+ 5	—	—	26·6	—
Paris		87·3	41	e 12 48	− 2	—	—	39·6	—
Stuttgart		91·7	40	e 14 35?	?	—	—	e 44·6	—
Strasbourg		92·1	42	e 14 35?	?	e 25 22	PS	—	—
Cheb		93·5	39	e 14 35?	+76	e 23 58	[+ 5]	—	53·6
New Plymouth		98·5	232	—	—	34 51	SSS	—	—
Sverdlovsk		113·6	18	e 19 31	[− 9]	e 35 21	SS	48·6	—
Tashkent		129·8	21	i 22 25	PP	—	—	e 72·2	83·2
Andijan		131·4	19	e 21 44	PP	—	—	—	—

Additional readings :—
Huancayo iP = +4m.58s., PP = +5m.10s., i = +5m.29s., +5m.39s., +5m.44s., +6m.22s., and +6m.45s., iS = +8m.52s. and +9m.2s., i = +10m.8s.
San Juan PP = +6m.15s., eS = +10m.9s., S = +10m.38s.
St. Louis iPPE = +7m.49s., iPPPE = +8m.19s., iE = +11m.2s.
Tucson ePP = +7m.57s., PPP = +8m.11s., eP_cP = +9m.23s., eSS = +14m.38s.
Philadelphia eP = +8m.7s., eS = +12m.29s., e = +14m.59s.
Pasadena iPPZ = +9m.34s.
Oak Ridge ePPP = +9m.20s., eSSS = +16m.32s.
Weston ePPP = +9m.38s., eSS = +16m.36s.
Tinemaha iZ = +8m.21s.
Ottawa PP = +9m.23s., SS = +17m.5s.
East Machias ePP = +9m.52s., ePPP = +10m.51s.
Seattle eP_cP = +10m.21s., eS_cS = +20m.15s.
College eS = +20m.52s.
Stuttgart e = +9m.35s.?
New Plymouth +34m.56s. and +35m.2s.
Tashkent 1 = +23m.5s. and +41m.14s.
Long waves were also recorded at Bombay, Scoresby Sund, De Bilt, Ivigtut, La Plata, and Williamstown.

Aug. 24d. 22h. 55m. 4s. Epicentre 1°·2N. 28°·4W.

$A = +·8795$, $B = -·4755$, $C = +·0208$; $\delta = +5$; $h = +7$;
$D = -·476$, $E = -·880$; $G = +·010$, $H = -·018$, $K = -1·000$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Rio de Janeiro		28·0	210	e 6 31	PP	—	—	—	—
La Paz		43·0	244	i 8 2a	−1	i 14 34	+5	20·9	24·0
Oxford		55·3	20	—	—	i 17 28	+7	e 25·9	28·8
Oak Ridge	Z.	56·4	323	i 9 45a	0	—	—	e 25·9	—
Stuttgart		57·3	29	e 9 56?	+4	e 17 56?	+9	e 27·9	—
De Bilt		58·0	23	—	—	18 3	+6	e 24·9	35·8
Cheb		59·8	28	e 7 56?	?	—	—	—	—
Copenhagen		63·6	23	—	—	19 17	+9	27·9	—
Ksara		68·1	54	e 11 4	0	e 20 34	+31	34·4	—
Pulkovo		73·7	26	e 11 30	−8	e 21 14	+6	34·9	40·1
Moscow		75·7	32	e 11 48	−1	e 21 28	−2	e 38·4	44·8
Tiflis		76·7	47	e 11 54	−1	e 21 50	+9	e 39·9	46·8
Sverdlovsk		88·5	33	i 12 56	0	e 23 52	+11	37·9	—
Tashkent		95·0	48	—	—	e 25 16	+38	e 48·9	55·6

Additional readings :—
Oak Ridge iZ = +9m.53s.
Sverdlovsk e = +24m.48s.
Tashkent e = +34m.56s.
Long waves were also recorded at Scoresby Sund, Ivigtut, Helwan, and other stations in Europe and Great Britain.

Aug. 24d. Readings also at 0h. (Branner, Sitka, and Tananarive), 1h. (San Javier, near Santiago, and near Amboina), 3h. (near Nagoya), 6h. (near Manila), 10h. (near Manila), 14h. (Oaxaca, Tacubaya, and near Tucson), 16h. (Andijan, Semipalatinsk, Frunse, Tashkent, Sverdlovsk, and near Manila), 22h. (Mizusawa and Bucharest).

Aug. 25d. 16h.
Kobe P = 44m.55s., S = 45m.37s.
Sumoto eP = 44m.57s., S = 45m.37s., M = 45m.38s.
Nagoya eP = 44m.57s., S = 45m.38s., M = 45m.40s.
Mizusawa ePE = 45m.42s., S = 46m.55s.

Aug. 25d. 21h. 53m. 6s. Epicentre 9°·0N. 127°·5E.

$A = -·6014$, $B = +·7838$, $C = +·1554$; $\delta = +17$; $h = +7$;
$D = +·793$, $E = +·609$; $G = -·095$, $H = +·123$, $K = -·988$.

Rough epicentre given by U.S.S.R.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		8·4	311	i 2 28a	PPP	4 34	L	(4·6)	—
Hong Kong		18·4	318	4 44	PPP	8 43	SSS	—	15·2
Zi-ka-wei	Z.	22·8	347	e 5 14	+9	9 42	SS	16·6	21·1
Phu-Lien		23·3	303	e 4 59	−11	—	—	—	—
Kobe	E.	26·5	15	e 6 49	PPP	—	—	—	—
Calcutta	N.	39·9	295	—	—	e 13 20	−23	i 22·4	27·9
Tashkent		60·4	313	i 9 54	−19	i 18 9	−19	e 32·4	40·0
Sverdlovsk		69·9	328	11 3	−12	20 11	−13	33·9	41·9
Baku		74·8	310	—	—	e 21 4	−16	e 40·4	—
Grozny		77·9	313	e 11 44	−17	—	—	—	—
Tiflis		78·6	311	e 12 39	+34	e 21 58	−4	e 51·4	55·8
Moscow		82·6	325	e 12 44	+18	—	—	e 47·4	58·0
Pulkovo		85·9	330	e 12 59	+16	e 22 45	[−22]	45·9	53·7
Ksara		86·4	303	e 12 26	−19	e 22 52	[−19]	—	—
Williamstown		125·2	17	e 18 53	[−10]	i 22 0	PP	—	—
Oak Ridge	Z.	125·9	16	e 22 0	?	e 27 24	{−29}	—	—

For Notes see next page.

NOTES TO AUGUST 25d. 21h. 53m. 6s.

Additional readings :—
Baku e = +26m.57s. and +31m.9s.
Tiflis eSKKSE = +23m.16s., eSSE = +27m.23s., eSSSE = +32m.24s.
Moscow e = +18m.4s.
Pulkovo e = +23m.42s.
Ksara ePP = +15m.41s., eSS = +28m.27s.
Oak Ridge iZ = +27m.26s.
Long waves were also recorded at Bombay, Kodaikanal, Paris, Strasbourg, Stuttgart, Copenhagen, and De Bilt.

Aug. 25d. Readings also at 0h. (College and near Manila), 1h. (near Sumoto), 2h. (Balboa Heights), 6h. (Sverdlovsk, Tashkent, and near Taihoku (2)), 8h. (Sverdlovsk, Tashkent, Simferopol, Hong Kong, Phu-Lien, near Medan, and near Taihoku), 10h. (Tacubaya), 11h. (Kobe, Phu-Lien, Hong Kong, Sverdlovsk, Tashkent, and near Taihoku), 12h. (Oaxaca, Merida, Puebla, Tacubaya, Vera Cruz, Tucson, Mount Wilson, Pasadena, Riverside, and Williamstown), 16h. (near Nagoya), 17h. (Wellington and Manila), 20h. (Sitka, near Manila, near Santiago, Columbia, and near Weston), 22h. (near Manila), 23h. (Santiago).

Aug. 26d. 18h. 54m. 10s. Epicentre 31°·4N. 131°·5E.

Felt fairly strongly at Miyazaki, Kumamoto, and Ooita. Radius 200-300kms. See Seismological Bulletin of the Cent. Met. Obs., Japan, for the year 1937. Tokyo, 1939, pp. 50-51. Macroseismic Chart p. 50.

A = −·5666, B = +·6404, C = +·5185 ; δ = −1 ; h = +1 ;
D = +·749, E = +·663 ; G = −·344, H = +·388, K = −·855.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Miyazaki	0·5	354	0 15k	+ 1	0 24	+ 1	—	—
Kagosima	0·8	282	0 21k	+ 3	0 35	+ 4	—	—
Asosan	1·5	346	0 31a	+ 3	0 40	− 9	—	—
Kumamoto	1·6	334	0 31a	+ 1	0 54	+ 3	—	—
Unzendake	1·7	322	0 33a	+ 2	1 0	S_g	—	—
Ooita	1·8	3	0 33a	+ 1	0 59	+ 3	—	—
Simidu	1·8	42	0 41	P_g	1 17	SSS	—	—
Nagasaki	1·9	314	0 34a	0	1 7	S_g	—	—
Uwazima	2·0	26	0 36	+ 1	1 19	SSS	—	—
Saga	2·1	331	0 40a	P*	1 37	?	—	—
Hukuoka	2·4	337	i 0 41a	0	1 11	− 1	—	1·4
Hukuoka B	2·4	337	i 0 42a	+ 1	1 11	− 1	—	1·4
Izuka	2·4	343	0 41a	0	1 23	S_g	—	—
Matuyama	2·6	23	0 45a	+ 1	1 31	S_g	—	—
Simonoseki	2·6	349	0 38	−, 6	1 16	− 1	—	—
Tomie	2·6	298	0 44a	0	1 34	S_g	—	—
Koti	2·8	39	0 48	+ 1	1 40	S_g	—	—
Muroto	2·9	51	0 47	− 1	1 30	S*	—	—
Hirosima	3·0	15	0 56	P*	1 38	S_g	—	—
Ituhara	3·4	328	1 5	P_g	2 4	SSS	—	—
Tadotu	3·4	34	1 6	P_g	2 3	S_g	—	—
Hamada	3·5	8	0 57	0	1 51	S*	—	—
Nake	3·5	210	0 54k	− 3	1 32	− 8	—	—
Tokusima	3·7	43	1 2	+ 2	2 14	?	—	—
Okayama	3·9	32	1 4	+ 2	2 0	S*	—	—
Siomisaki	4·1	59	1 3	− 2	—	—	—	—
Sumoto	4·1	44	(1 5a)	0	(2 27)	S_g	—	(2·6)
Husan	4·2	331	e 0 58	− 9	2 18	S_g	—	—
Wakayama	4·2	47	1 4	− 3	2 30	S_g	—	—
Sakai	4·3	20	1 11	+ 3	2 26	S_g	—	—
Kobe	4·5	43	e 1 9	− 2	2 26	S_g	—	3·1
Osaka	4·7	45	1 17	+ 3	2 56	?	—	—
Osaka·B	4·7	45	1 18	+ 4	2 58	?	—	—
Yagi	4·8	49	1 21	P*	3 0	?	—	—
Kyoto	5·0	44	1 15	− 3	3 0	?	—	—

Continued on next page.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Toyooka		5·0	33	1 18	0	e 2 35	S*	—	3·0
Taikyu		5·1	332	e 0 55	−25	2 27	+ 7	—	—
Miyadu		5·2	36	1 20	− 1	2 54	S_g	—	—
Kameyama		5·4	49	1 22	− 2	2 56	S_g	—	—
Tu		5·4	51	1 16	− 8	2 37	+ 9	—	—
Hikone		5·5	45	1 27	+ 2	3 18	S_g	—	—
Syuhurei		5·6	330	1 32	+ 5	3 10	S_g	—	—
Ibukisan		5·7	45	1 35	P*	3 16	S_g	—	—
Nagoya		5·9	50	1 32	+ 1	3 27	S_g	—	3·7
Gihu		6·0	46	1 30	− 2	3 19	S_g	—	—
Hukui		6·1	40	1 46	P*	—	—	—	—
Hamamatu		6·2	56	1 34	− 1	3 28	S_g	—	—
Naha		6·2	214	1 14	−21	2 39	− 9	—	—
Omaesaki		6·5	59	2 3	P_g	—	—	—	—
Kanazawa		6·6	39	1 49	+ 8	3 49	S_g	—	—
Husiki		7·0	39	1 49	+ 3	4 11	S_g	—	—
Toyama		7·0	41	1 55	+ 9	4 2	S_g	—	—
Hatidyozima		7·2	74	1 49	0	3 50	S_g	—	—
Keizyo		7·2	330	e 1 50	+ 1	e 3 27	+14	e 3·9	4·2
Misima		7·2	57	1 48	− 1	3 43	S*	—	—
Numadu		7·2	57	1 58	P*	4 29	?	—	—
Gotenba		7·3	56	2 0	P*	5 45	?	—	—
Hunatu		7·3	54	1 51	+ 1	4 15	S_g	—	—
Ito		7·3	59	2 3	P*	—	—	—	—
Zinsen		7·3	328	i 1 51k	+ 1	3 33	S*	i 3·9	4·1
Wazima		7·4	35	1 53	+ 1	4 2	S_g	—	—
Oiwake		7·6	48	1 59	+ 4	4 26	S_g	—	—
Nagano		7·7	45	2 0	+ 4	3 59	S*	—	—
Mera		7·8	61	2 22	P*	5 14	?	—	—
Yokohama		7·9	57	2 4	+ 5	4 51	?	—	—
Maebasi		8·0	49	2 4	+ 4	4 37	S_g	—	—
Kumagaya		8·1	52	2 6	+ 4	4 39	S_g	—	—
Tokyo		8·1	56	2 3	+ 1	4 31	S_g	—	—
Utunomiya		8·6	51	1 44	−25	—	—	—	—
Zi-ka-wei	Z.	8·6	271	e 2 8	− 1	3 52	+ 4	5·4	6·0
Tukubasan		8·6	54	2 7	− 2	4 56	S_g	—	—
Kakioka		8·7	54	2 8	− 2	4 56	S_g	—	—
Tyosi		8·9	59	2 15	+ 3	—	—	—	—
Heizyo		9·0	330	e 2 19	+ 6	e 4 44	S*	—	—
Mito		9·0	54	2 4	− 9	—	—	—	—
Isigakizima		9·6	225	2 28	+ 7	—	—	—	—
Hukusima		9·7	47	2 26	+ 4	4 19	+ 4	—	—
Sendai		10·3	46	2 33	+ 1	—	—	—	—
Titizima		10·3	112	2 37	+ 5	—	—	—	—
Mizusawa		11·0	43	2 40	− 2	7 43	?	—	—
Yingkow		11·9	324	2 52	− 2	5 50	?	—	—
Taityu		12·0	236	3 7	PP	—	—	—	—
Arisan		12·3	233	3 6	PP	—	—	—	—
Taito		12·6	230	3 9	PP	—	—	—	—
Tainan		13·1	233	3 26	PPP	—	—	—	—
Hong Kong		17·9	243	4 10	− 2	7 33	+ 3	8·8	12·6
Manila		19·3	212	4 28	− 1	8 15	+13	10·3	—
Palau		24·1	174	6 17	PPP	—	—	—	—
Phu-Lien		24·7	250	e 4 56	−28	—	—	—	—
Calcutta	N.	39·3	268	e 8 45	+73	—	—	—	24·1
Semipalatinsk		42·2	312	e 7 51	− 5	—	—	—	—
Frunse		46·0	301	e 8 20	− 7	e 15 18	+ 6	—	—
Agra	E.	46·5	278	8 23	− 8	15 34	+15	—	30·7
Andijan		47·9	298	e 8 38	− 4	—	—	29·0	—
Tchimkent		49·7	300	e 8 52	− 4	—	—	—	—
Tashkent		50·1	299	i 8 53	− 6	i 16 1	− 9	e 26·3	32·4
Bombay		54·0	271	e 9 25	− 3	—	—	—	36·8
Sverdlovsk		54·0	320	i 9 24	− 4	17 26	+23	30·0	36·8
College		58·1	29	e 9 54	− 4	17 54	− 4	—	—
Baku		64·5	303	e 9 52	+11	e 18 30	−49	32·8	42·0

Continued on next page.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Sitka		65·9	36	—	—	e 19 36	− 1	e 26·4	—
Grozny		66·4	307	e 10 49	− 4	e 19 53	+10	—	—
Moscow		66·8	322	e 10 49	− 7	e 19 51	+ 3	31·3	44·1
Sydney		67·5	162	—	—	e 26 17	?	40·3	42·3
Tiflis		67·6	306	10 56a	− 5	e 19 53	− 4	e 34·8	43·1
Piatigorsk		67·9	309	e 10 57	− 5	—	—	e 35·8	—
Pulkovo		68·7	327	11 0	− 7	20 35	+25	37·3	39·3
Theodosia		72·5	312	e 11 24	− 6	—	—	42·8	—
Sebastopol		73·8	313	e 11 43	+ 5	—	—	—	—
Victoria		76·3	41	—	—	e 21 38	+ 1	32·8	—
Scoresby Sund		76·6	351	—	—	21 44	+ 4	35·8	—
Ksara		77·4	302	i 11 55a	− 3	e 22 6	+17	—	48·8
Copenhagen		78·9	330	i 12 2	− 5	22 14	+ 9	38·8	—
Helwan		82·8	300	—	—	e 23 2	+17	—	—
Zagreb		83·5	321	e 12 28	− 3	e 23 10	+18	e 46·6	—
De Bilt		84·5	330	11 54	−42	e 23 18	+16	e 40·8	47·0
Triest		84·8	321	12 28	− 9	22 56	[− 4]	e 42·2	47·0
Stuttgart		85·0	326	e 12 35a	− 3	e 23 14	+ 7	e 44·8	55·3
Tinemaha	z.	85·7	49	i 12 39	− 3	—	—	—	—
Strasbourg		85·8	327	e 12 42	0	—	—	e 47·9	54·8
Uccle		85·8	330	e 12 38	− 4	e 23 22	+ 7	e 40·8	—
Zurich		86·3	325	e 12 40	− 5	—	—	—	—
Basle		86·7	325	e 12 42	− 5	—	—	—	—
Kew		87·3	332	—	—	e 35 50?	?	e 44·8	54·6
Oxford		87·4	333	—	—	e 23 18	[+ 1]	e 44·3	57·6
Mount Wilson	z.	87·5	51	i 12 48	− 3	—	—	—	—
Pasadena	z.	87·5	51	i 12 49	− 2	—	—	—	—
Riverside	z.	88·1	51	e 12 50	− 4	—	—	—	—
Tucson		93·5	49	13 17	− 2	—	—	—	—
East Machias		102·3	14	—	—	e 24 24	[−14]	e 44·7	—
Weston		103·6	17	—	—	e 27 47	PS	e 47·8	—
Philadelphia		104·8	20	—	—	e 38 30	SSS	e 48·5	—
Huancayo		148·6	58	39 49	PP	48 48	SSS	—	—

Additional readings :—
Sumoto readings have been increased by 1m.
Kobe ePEN = +1m.11s., eEZ = +1m.23s., iN = +1m.51s., iE = +1m.54s., iZ = +1m.56s., iSE? = +2m.32s., iSN? = +2m.37s.
Toyooka PN = +1m.21s., SZ = +2m.41s., SN = +2m.45s., SE = +2m.47s.
Zi-ka-wei iZ = +2m.20s. and +3m.14s.
Hong Kong PP? = +4m.21s.
Calcutta i = +16m.22s.
Agra PPE = +10m.13s., eSSE = +18m.47s.
Sverdlovsk L_q = +27·1m.
College ePP = +12m.21s., eSS = +21m.22s.
Sitka eSS = +23m.30s.
Moscow e = +12m.24s., e = +15m.27s.
Tiflis ePPPZ = +15m.6s., ePSE = +20m.9s., eSKSZ = +20m.43s., eSSE = +24m.46s., eSSSE = +27m.19s.
Pulkovo L_q = +33·8m.
Ksara ePP = +15m.3s., ePS = +22m.49s.
Triest PP = +15m.45s.
Uccle eSSN = +29m.2s.
East Machias ePPS = +27m.56s., eSS = +32m.39s., ePSPS = +33m.2s., eSSS = +36m.41s.
Weston e = +33m.17s., eZ = +44m.25s.
Long waves were also recorded at Hyderabad, Ivigtut, Honolulu, Almata, Oak Ridge, and other European stations.

Aug. 26d. Readings also at 0h. (Manila, Oak Ridge, and Ukiah), 2h. (Mizusawa), 3h. (La Paz), 4h. (Andijan and near La Paz), 8h. and 9h. (near Manila), 10h. (Santiago and near Nagoya), 11h. (Toledo, Ksara, Oak Ridge, Williamstown, Mount Wilson, Pasadena, Riverside, Tinemaha, La Plata, Huancayo, Montezuma, and near La Paz), 12h. (Pulkovo, Sverdlovsk, Tashkent, and Vladivostok), 14h. (near Mizusawa and near Tiflis), 15h. (Grozny, Tiflis, Ksara, Tashkent, Mizusawa (2), Huancayo, Mount Wilson, Pasadena, Riverside, Tinemaha, Zi-ka-wei, Kobe, and near Nagoya (2)), 16h. (Stuttgart, Copenhagen, Sverdlovsk, and near Manila), 18h. (Kodaikanal), 19h. (near Manila), 23h. (Stuttgart, Copenhagen, Moscow, Sebastopol, Pulkovo, Ksara, Tiflis, Scoresby Sund, Seattle, and near Manila).

Aug. 27d. Readings at 0h. (Baku, Sverdlovsk, De Bilt, Strasbourg, Sitka, Berkeley, Fresno, Lick, San Francisco, Ferndale, Pasadena, Tucson, Oak Ridge, and Philadelphia), 1h., 5h., and 7h. (2) (near Manila), 8h. and 10h. (Strasbourg), 14h. (Copenhagen, Andijan, Frunse, Tiflis, Tashkent, De Bilt, Strasbourg, Baku, Sverdlovsk, Hong Kong, Phu-Lien, Vladivostok, and near Hukuoka B), 15h. (Paris), 18h. (La Paz and Wellington), 19h. (near Apia), 21h. (near Tiflis), 22h. (Hong Kong, Medan, Tiflis, Andijan, Sverdlovsk, Tashkent, Ksara, Oak Ridge, near Manila (2), and near Batavia), 23h. (near Tananarive).

Aug. 28d. Readings at 0h. (Sverdlovsk, Tashkent, Hong Kong, and near Manila), 1h. (Sitka), 3h. (near Manila), 6h. and 7h. (near Andijan), 10h. (Nagoya and near Sumoto), 13h. (Ksara, Belgrade, Bucharest, De Bilt, Strasbourg, Triest, and Zagreb), 14h. (near Nagoya), 16h. (Alicante and Wellington), 17h. (Wellington), 19h. (Columbia), 21h. (Sitka), 22h. (Tashkent, Frunse, and near Andijan), 23h. (near Manila).

Aug. 29d. 7h. 6m. 27s. Epicentre 31°·4N. 131°·5E. (as on Aug. 26d.).

		△	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Hukuoka		2·4	337	0 40	− 1	1 16	+ 4	1·3
Hukuoka B		2·4	337	0 38	− 3	1 14	+ 2	—
Sumoto		4·1	44	1 11	+ 6	2 25	S_g	2·6
Husan		4·2	331	e 1 23	P_g	2 22	S_g	—
Kobe		4·5	43	e 1 37	P_g	e 2 34	S_g	2·9
Toyooka	E.	5·0	33	1 24	+ 6	2 46	S_g	2·9
	N.	5·0	33	e 1 28	+10	2 45	S_g	3·0
	Z.	5·0	33	e 1 26	+ 8	2 43	S_g	3·0
Taikyu		5·1	332	e 2 44	S	(e 2 44)	S_g	—
Nagoya		5·9	50	e 1 28	− 3	3 28	S_g	4·0
Keizyo		7·2	330	e 1 45	− 4	e 3 49	S_g	—
Zinsen	E.	7·3	328	—	—	e 3 42	S*	—

Long waves were also recorded at Tashkent, Pulkovo, Sverdlovsk, De Bilt, Copenhagen, and Paris.

Aug. 29d. 18h. North China.
Zi-ka-wei eZ = 1m.57s., M = 3m.17s.
Keizyo ePEN = 2m.0s., eSEN = 4m.4s.
Zinsen ePEN? = 2m.38s., eSEN? = 3m.50s.
Husan eS = 4m.22s., eL = 5m.16s.
Taikyu eS = 4m.24s.
Hukuoka B eP? = 4m.56s.
Vladivostok e = 4m.56s. and 6m.40s., L = 7m.6s., M = 7m.42s.
Ksara e = 6m.33s., L = 39m.
Kobe eE = 6m.50s., M = 9m.46s.
Tashkent e = 9m.18s., 11m.53s., 14m.29s., 17m.22s., and 18m.0s., i = 18m.43s., M = 22·5m.
Sverdlovsk e = 14m.1s. and 16m.46s., L = 20m., M = 22·4m.
Long waves were also recorded at Phu-Lien, Tiflis, Pulkovo, and some of the European stations.

Aug. 29d. Readings also at 0h. (Mount Wilson, Riverside, and Tinemaha), 2h. (near La Paz), 5h. (near Berkeley, Lick (3), Branner (2), Fresno, and San Francisco), 12h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Ksara, and Medan), 13h. (Strasbourg), 22h. (Kobe).

Aug. 30d. Readings at 0h. (Manila and near Nagoya), 2h. (La Plata, Mount Wilson, Pasadena, Riverside, Tinemaha, and near Santiago), 3h. (Santiago), 4h. (Wellington), 9h. (Vienna and Wellington), 13h. (Pasadena, Tinemaha, Riverside, near Batavia, and near Sumoto), 14h. (near Manila), 15h. (Sverdlovsk, Tashkent, and near Manila), 17h. (Tashkent and Sverdlovsk), 18h. (New Plymouth and near Manila (2)), 19h. (Sverdlovsk and Tashkent), 21h. (Bucharest, near Christchurch (2), New Plymouth (2), and Wellington (2)), 22h. (Christchurch, New Plymouth, near Wellington, and near Santiago (2)).

Aug. 31d. 2h. 28m. 54s. Epicentre 13°·3S. 167°·0E.

A = −·9485, B = +·2190, C = −·2285; δ = −17; h = +6;
D = +·225, E = +·974; G = +·223, H = −·051, K = −·974.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		25·0	213	e 5 30	+ 3	9 54	+ 5	e 12·6	14·6
Sydney		25·0	213	e 3 6	?	i 10 24	+35	12·9	15·1
Wellington		28·7	168	—	—	e 11 6?	+16	e 16·1	17·1
Christchurch		30·5	171	6 16	− 1	11 10	− 8	15·9	—
Melbourne		31·4	215	e 6 41	+16	i 11 31	− 1	14·0	17·0
Manila		53·3	300	9 17	− 6	16 43	−11	—	—
Nagoya		56·0	331	e 8 52	−51	—	—	—	—
Kobe	E.	56·5	330	e 9 36	−10	e 17 24	−13	—	29·0
Hong Kong		62·7	304	—	—	18 46	−11	—	23·3
Berkeley		83·4	49	—	—	e 22 53	+ 2	—	—
Pasadena		85·2	54	e 12 40	+ 1	—	—	e 35·7	—
Mount Wilson	z.	85·3	54	e 12 40	0	—	—	—	—
La Jolla	z.	85·5	55	e 12 44	+ 3	—	—	—	—
Riverside	z.	85·8	54	e 12 40	− 2	—	—	—	—
Tinemaha	z.	86·1	51	e 12 42	− 2	—	—	—	—
Tucson		90·5	57	e 13 2	− 3	—	—	e 40·8	—
Sitka		95·3	28	e 21 58	?	—	—	e 35·0	—
Tashkent		104·4	310	i 18 16	PP	25 51	− 6	e 48·1	62·6
Sverdlovsk		110·0	326	18 19	[−14]	25 8	[− 4]	29·1	35·8
Huancayo		113·3	110	e 29 29	?	e 34 51	SS	e 48·0	—
Baku		119·1	310	—	—	(e 28 36)	PS	e 28·6	—
Philadelphia		119·7	51	—	—	e 36 54	SS	e 50·5	—
Weston		122·2	48	—	—	e 37 56	SS	e 59·1	e 65·3
Moscow		122·6	328	e 19 18	[+20]	—	—	57·6	72·4
Tiflis		122·9	311	e 20 33	PP	e 27 26	{− 7}	e 57·6	73·4
Pulkovo		123·7	335	20 30	PP	37 30	SS	62·1	67·7
Ksara		131·3	303	e 19 12	[− 2]	—	—	—	—
Copenhagen		133·3	341	e 19 17	[− 1]	—	—	67·1	—
Bucharest		134·5	321	(e 22 48)	PP	—	—	e 22·8	—
Hamburg		135·9	341	e 19 6?	[−17]	—	—	e 73·1	—
De Bilt		138·6	343	e 19 26	[− 2]	22 14	PP	e 66·1	75·4
Uccle		140·0	344	e 19 24	[− 7]	—	—	e 86·1	—
Stuttgart		140·1	338	e 19 28	[− 3]	—	—	e 71·1	84·1
Oxford		140·5	349	e 23 6	PP	—	—	e 70·1	83·1
Kew		140·6	348	e 19 23	[− 8]	—	—	e 71·1	—
Triest		140·6	330	e 20 31	[+60]	i 23 6	PP	e 66·4	74·1
Strasbourg	z.	141·8	338	e 19 24	[− 9]	e 28 33	{−59}	—	—
Paris		142·3	344	e 23 14	PP	—	—	80·1	—
Toledo		152·4	345	e 19 58	[+ 7]	—	—	—	—
Granada		154·8	343	e 19 55	[+ 1]	—	—	83·1	—
Malaga		155·4	343	e 21 36	?	—	—	—	—

Additional readings :—
Christchurch eL_gE = +13m.28s.
Melbourne e = +13m.38s.
Berkeley eN = +34m.18s., eZ = +38m.6s., eN = +38m.24s.
Mount Wilson ePPZ? = +16m.7s.
Tucson eP = +13m.7s. and +13m.15s., ePS = +25m.11s.
Tashkent SKS = +24m.38s., PS = +27m.27s., PPS = +28m.21s., SS = +33m.6s., SSS = +37m.0s.
Sverdlovsk PS = +28m.20s.
Huancayo ePPS = +30m.27s., PSPS = +35m.58s.
Moscow e = +23m.53s.
Tiflis eZ = +22m.45s., eE = +30m.34s. and +38m.24s.
Pulkovo e = +21m.34s., PS = +30m.32s., ePPS = +31m.40s.
Ksara ePP = +21m.31s., ePPS = +33m.24s.
Copenhagen +21m.40s. and +22m.43s.
Uccle ePPN = +22m.23s.
Stuttgart ePP = +22m.20s.
Strasbourg ePPZ = +22m.23s.
Long waves were also recorded at Adelaide, La Paz, Scoresby Sund, Chicago, Oak Ridge, East Machias, and Arapuni.

***Aug. 31d. 14h. 15m. 7s. Epicentre 25°·9N. 96°·8E.**

$A = -\cdot1066$, $B = +\cdot8944$, $C = +\cdot4344$; $\delta = +2$; $h = +3$;
$D = +\cdot993$, $E = +\cdot118$; $G = -\cdot051$, $H = +\cdot431$, $K = -\cdot901$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta	N.	8·4	246	2 7	+ 1	3 38	− 5	—	10·2
Phu-Lien		10·4	117	e 2 29	− 5	e 4 34	+ 2	5·2	6·4
Hong Kong		16·3	100	3 43	− 9	7 11	+18	8·3	10·0
Agra		16·9	279	i 3 53	− 6	6 52	−15	8·0	12·7
Dehra Dun		17·1	289	3 53	− 9	6 43	−29	8·9	9·9
Hyderabad		19·0	246	4 24	− 2	8 2	+ 7	9·0	13·5
Hokoto		20·8	92	4 43	− 2	—	—	—	—
Tainan		21·5	92	4 54	+ 2	—	—	11·9	—
Taityu		21·7	91	4 59	+ 4	9 39	SSS	11·9	—
Arisan		21·9	92	4 39	−18	—	—	—	—
Kosyun		22·2	95	4 53	− 7	—	—	—	—
Medan		22·3	175	5 3	+ 2	—	—	—	—
Taihoku		22·3	86	5 5	+ 4	9 7	+ 5	12·2	—
Zi-ka-wei		22·3	70	i 4 59k	− 2	9 3	+ 1	—	12·8
Taito		22·4	93	4 55	− 7	—	—	—	—
Giran		22·6	86	4 20	−43	—	—	—	—
Karenko		22·6	90	5 0	− 3	—	—	12·5	—
Bombay		23·2	256	i 5 12	+ 3	i 9 21	+ 3	—	12·9
Almata		23·7	322	5 19	+ 5	9 32	+ 5	—	—
Kodaikanal	E.	24·0	233	i 5 16	− 1	i 9 37	+ 5	i 12·1	18·0
Isigakizima		24·8	87	5 26	+ 1	9 47	+ 1	—	—
Colombo		24·9	222	5 26	0	9 51	+ 4	18·7	20·5
Andijan		25·1	310	e 5 30	+ 2	10 4	+13	e 14·7	—
Manila		25·3	111	5 36	+ 6	9 56	+ 2	12·9	15·2
Tashkent		27·4	310	i 5 49	0	i 10 39	+11	e 14·1	18·8
Heizyo		27·6	54	e 5 43	− 8	10 40	+ 8	15·0	16·0
Semipalatinsk		27·6	337	e 5 54	+ 3	e 10 44	+12	—	—
Zinsen		27·8	58	e 5 49	− 4	e 10 54	+19	e 14·8	15·8
Keizyo		28·1	58	e 5 53	− 2	e 11 45	SS	e 14·9	—
Syuhurei		28·5	67	—	—	e 10 39	− 7	15·5	—
Tomie		28·6	68	6 45	+45	11 17	+29	—	—
Taikyu		28·9	62	6 1	− 2	10 51	− 2	—	—
Husan		29·2	63	e 6 3	− 2	—	—	e 16·0	—
Nake		29·2	77	6 3	− 2	—	—	—	—
Nagasaki		29·6	69	6 7	− 2	—	—	15·6	—
Unzendake		29·9	69	6 10	− 2	—	—	—	—
Hukuoka		30·1	67	6 12	− 1	11 12	0	16·0	19·7
Hukuoka B		30·1	67	6 12	− 1	e 11 11	− 1	e 16·1	—
Kagosima		30·1	71	6 22	+ 9	—	—	—	—
Kumamoto		30·3	68	6 14	− 1	11 23	+ 8	16·2	—
Miyazaki		30·8	70	6 19	− 1	11 30	+ 7	15·6	—
Hamada		31·6	65	6 21	− 5	11 35	0	15·8	—
Muroto		33·2	68	6 49	+ 9	—	—	18·1	—
Batavia		33·3	160	6 41	0	i 17 53	L	(i 17·9)	—
Sumoto		33·8	65	6 44	− 2	—	—	18·0	19·2
Toyooka		33·9	63	6 41	− 6	e 12 8	− 3	16·7	20·2
Kobe		34·1	65	e 6 38	−10	e 12 53	+39	19·2	—
Wakayama		34·1	65	6 47	− 1	—	—	18·3	—
Osaka		34·4	65	6 52	+ 1	12 32	+13	19·2	—
Osaka B		34·4	65	6 52	+ 1	—	—	—	—
Siomisaki		34·5	67	6 51	− 1	—	—	18·2	—
Kyoto		34·6	64	6 52	− 1	—	—	—	—
Hikone		35·0	64	7 0	+ 4	—	—	—	—
Kameyama		35·2	65	6 56	− 2	12 29	− 2	19·3	—
Gihu		35·5	65	6 57	− 3	12 29	− 7	17·6	—
Nagoya		35·6	65	7 0	− 1	—	—	19·0	20·8

Continued on next page.

* *As shown by the preponderance of small negative residuals, the time at origin of this shock should have been 1 sec. earlier. The readings given are of course those appertaining to the printed T_0.*

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Wazima	35·8	61	7 2	− 1	—	—	18·7	—
Toyama	35·9	62	7 4	0	12 40	− 2	—	—
Omaesaki	36·6	66	7 8	− 2	—	—	—	—
Nagano	36·7	63	7 11	+ 1	12 55	+ 1	18·9	—
Oiwake	37·0	63	7 12	− 1	12 56	− 3	20·0	—
Hunatu	37·1	65	7 14	0	13 1	0	19·1	—
Numadu	37·1	65	7 13	− 1	13 2	+ 1	19·9	—
Misima	37·2	65	7 13	− 2	13 2	0	19·9	—
Maebasi	37·4	63	7 15	− 1	—	—	—	—
Niigata	37·5	61	7 24	+ 7	—	—	20·4	—
Kumagaya	37·6	63	7 25	+ 7	—	—	—	—
Yokahama	37·8	65	7 23	+ 3	13 21	+10	20·4	—
Tokyo	37·9	64	7 11	− 9	13 9	− 4	18·3	—
Hatidyozima	37·9	68	7 17	− 3	13 3	−10	20·2	—
Mera	37·9	65	7 33	+13	—	—	—	—
Tukubasan	38·2	63	7 20	− 3	—	—	20·3	—
Kakioka	38·3	63	7 19	− 5	13 9	−10	—	—
Akita	38·5	58	7 24	− 2	—	—	—	—
Mito	38·5	63	7 18	− 8	e 13 9	−13	19·8	—
Hukusima	38·6	61	7 25	− 1	13 20	− 3	—	—
Yamagata	38·6	61	7 26	0	—	—	—	—
Tyosi	38·8	64	7 33	+ 5	13 27	+ 1	20·9	—
Mizusawa	39·3	58	7 33	+ 1	13 34	0	19·2	—
Morioka	39·4	57	7 31	− 2	—	—	21·0	—
Hatinohe	39·8	56	7 29	− 7	—	—	—	—
Miyako	40·0	57	7 36	− 2	—	—	20·7	—
Sapporo	40·0	51	7 37	− 1	i 14 52	?	22·2	—
Sverdlovsk	40·3	330	i 7 42	+ 2	i 13 50	+ 1	20·1	22·4
Titizima	40·5	77	6 5	?	—	—	—	—
Asahigawa	40·9	51	7 54	+ 8	—	—	—	—
Grozny	44·7	306	8 19	+ 3	e 14 53	− 1	—	—
Tiflis	45·3	303	8 23	+ 2	e 14 52	−10	e 23·9	35·4
Piatigorsk	46·7	306	e 8 35	+ 3	e 15 21	− 1	—	—
Sotchi	49·1	306	e 8 51	0	e 15 51	− 5	—	—
Moscow	51·8	321	9 11	− 1	e 16 29	− 4	27·4	31·4
Theodosia	52·3	307	e 9 14	− 1	16 37	− 3	28·9	—
Ksara	52·8	293	i 9 20	+ 1	16 49	+ 2	—	—
Simferopol	53·2	307	9 23	+ 1	e 16 51	− 1	25·4	—
Yalta	53·2	307	9 20	− 2	e 16 48	− 4	—	—
Pulkovo	56·2	325	i 9 42	− 2	17 29	− 4	27·9	34·2
Helwan	57·3	289	i 9 51	− 1	17 41	− 6	—	39·7
Bucharest	58·9	307	10 5a	+ 2	i 18 11	+ 3	30·1	37·1
Sofia	61·2	305	e 10 17	− 2	e 18 35	− 3	—	38·9
Upsala	62·6	326	i 10 25	− 3	i 18 51	− 5	e 30·9	35·5
Budapest	63·3	311	i 10 35	+ 2	i 19 4	0	e 25·4	40·4
Stara Dala	63·8	312	e 10 37	+ 1	e 19 12	+ 1	—	39·9
Vienna	65·0	313	e 10 43	− 1	e 21 12	?	e 36·9	39·9
Zagreb	65·7	310	e 10 48	0	e 19 32	− 2	e 37·4	—
Prague	65·8	315	e 11 0	+11	e 19 32	− 3	—	37·4
Copenhagen	65·9	322	10 49k	− 1	19 36	− 1	32·9	—
Cheb	67·1	316	e 11 1	+ 4	e 20 0	+ 9	e 37·9	39·9
Triest	67·3	310	i 10 58	− 1	i 19 49	− 5	e 31·9	36·5
Jena	67·4	316	e 10 53	− 6	e 19 47	− 8	e 35·9	39·9
Hamburg	67·8	320	e 10 59	− 3	e 19 58	− 2	e 35·9	39·9
Göttingen	68·3	318	e 11 3	− 2	e 20 1	− 5	—	38·9
Bergen	68·6	328	—	—	e 20 6	− 3	—	38·2
Stuttgart	69·5	315	i 11 12	0	i 20 18	− 2	e 38·4	40·4
Chur	69·8	313	e 11 12	− 2	e 20 20	− 3	—	—
Karlsruhe	69·9	316	e 11 23	+ 8	e 20 21	− 3	38·1	—
Strasbourg	70·3	315	i 11 17k	0	i 20 17	−12	32·9	41·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. r.	s.	m.	m.
Zurich		70·3	314	e 11 15	− 2	e 20 18	−11	—	—
Basle		70·9	314	e 11 19	− 2	e 20 34	− 2	—	—
De Bilt		71·0	319	11 22	0	20 35	− 2	e 34·9	40·4
Neuchatel		71·4	314	e 11 22	− 2	e 20 38	− 4	—	—
Uccle		71·9	318	e 11 26	− 1	i 20 45	− 3	36·9	40·9
Aberdeen		73·2	326	i 11 36	+ 1	e 21 1	− 1	e 29·4	40·2
Paris		73·7	316	i 11 37	− 1	i 21 4	− 4	38·9	43·9
Durham	N.	73·9	323	—	—	i 21 7	− 3	—	41·9
Edinburgh		74·3	324	—	—	i 21 15	0	e 37·9	43·4
Kew	z.	74·4	320	i 11 42	0	—	—	e 28·9	47·2
Scoresby Sund		74·7	342	11 47	+ 4	21 18	− 1	36·9	—
Stonyhurst		74·7	322	i 11 44	+ 1	21 23	+ 4	29·9	42·2
Oxford		74·8	320	e 12 43	− 1	i 21 18	− 2	e 36·6	45·0
Bidston		75·2	322	—	—	e 21 25	0	—	42·5
College		76·8	23	e 11 51	− 4	e 21 36	− 6	e 34·9	—
Rathfarnham Castle		77·0	323	e 9 1	?	i 21 41	− 4	33·7	42·9
Melbourne		77·9	142	—	—	i 21 58	+ 4	35·0	47·7
Riverview		78·7	135	—	—	e 21 41	−22	e 38·9	46·0
Sydney		78·7	135	—	—	e 21 43	−20	45·9	48·2
Toledo		81·5	309	e 12 21	0	i 22 29	− 3	—	—
Almeria		81·8	306	e 12 22	0	e 22 30	− 5	—	—
Granada		82·5	306	i 12 30	+ 4	e 22 21	−21	—	—
Malaga		83·2	306	i 12 34	+ 5	i 22 52	+ 3	—	—
San Fernando		84·6	307	e 13 12	+36	e 23 1	− 2	45·9	—
Sitka		86·5	25	e 12 41	− 5	i 23 11	[0]	e 35·0	—
Honolulu		93·8	64	—	—	e 25 46	PS	e 38·1	—
Victoria		97·8	25	—	—	e 24 15	[− 1]	e 43·9	—
Seven Falls		106·5	350	—	—	e 26 5	−10	51·9	—
Berkeley		106·7	31	—	—	e 24 55	[− 3]	e 63·4	—
East Machias		108·2	347	e 18 50	PP	e 24 53	[−11]	e 50·2	—
Ottawa		108·7	353	—	—	e 33 53	SS	48·9	—
Tinemaha	z.	109·2	29	e 18 31	PKP	—	—	—	—
Toronto		110·7	356	—	—	e 26 41	{+31}	48·9	—
Williamstown		111·1	350	e 19 10	PP	—	—	e 54·9	61·9
Oak Ridge		111·1	349	e 19 23	PP	—	—	e 54·9	—
Pasadena		111·7	31	e 18 36	[0]	—	—	e 48·8	—
Riverside	z.	112·2	31	e 18 47	[+ 9]	—	—	—	—
La Jolla	z.	113·2	31	e 18 42	[+ 3]	—	—	—	—
Philadelphia		114·1	352	—	—	e 26 20	{−14}	e 46·4	—
Tucson		116·5	26	e 18 46	[0]	—	—	e 56·4	—
San Juan		132·9	336	e 21 40	PP	e 28 26	{−11}	e 62·6	—
La Paz		163·1	301	i 20 10k	[+ 6]	30 11	?	84·9	94·1
Huancayo		164·4	330	e 20 9	[+ 4]	45 18	SS	66·6	—

Additional readings :—
Calcutta P*N = +2m.27s., P_gN = +2m.47s., S*N = +4m.9s., S_gN = +4m.31s.
Phu-Lien PPP = +2m.34s.
Hong Kong PP = +3m.53s.
Agra PPE = +4m.0s., eN = +4m.7s., SSEN = +7m.18s.
Medan iPEN = +5m.5s., iEN = +10m.37s., iEN = +11m.51s., S?N = +12m.2s., iS?EN = +12m.27s.
Zi-ka-wei iE = +5m.11s., PPZ = +5m.27s., iZ = +5m.51s. and +7m.27s., iE = +9m.14s., SSZ = +9m.59s.
Bombay i = +11m.12s.
Kodaikanal E iSS = +10m.41s.
Colombo PP? = +7m.31s.
Batavia iN = +7m.56s. and +18m.49s.
Sumoto eE = +15m.28s., eN = +15m.46s. and +17m.9s.
Toyooka PEN = +6m.45s.
Osaka PPP = +8m.15s., SS = +14m.32s.
Oiwake PPP = +8m.41s.
Tokyo PPR = +8m.51s.
Misusawa eSN = +13m.29s.
Tiflis iPPEZ = +10m.16s., PSE = +15m.3s., eSSE = +18m.26s.
Ksara PP = +11m.17s., PS = +17m.22s.
Helwan pP = +10m.8s., e = +12m.43s., PPP = +13m.17s., sS = +18m.5s.

Continued on next page.

Bucharest iE = +13m.44s., PS = +18m.53s., S_eS = +19m.40s., SSN = +22m.20s., SSS = +24m.9s.
Budapest iE = +10m.48s. and +12m.55s., iN = +13m.15s., iN = +20m.35s., iE = +20m.59s.
Vienna e = +14m.49s.
Zagreb e = +13m.18s.
Prague e = +26m.59s.
Copenhagen +20m.50s. and +23m.53s., eN = +26m.53s.
Triest PP = +13m.29s.
Jena eSE = +19m.53s.
Stuttgart eZ = +11m.32s. and +12m.33s., ePS = +21m.1s., e = +24m.42s., eSS = +25m.8s., eSSS = +28m.9s.
Strasbourg ePPZ = +13m.58s., ePPPE = +15m.21s., SS = +25m.4s., e = +28m.41s.
De Bilt iZ = +21m.24s., eSS = +25m.11s., eEN = +28m.48s.
Uccle ePPZ = +14m.5s., SSE = +25m.21s., eN = +28m.55s.
Aberdeen e = +20m.34s. and +22m.36s.
Paris ePP = +14m.25s.
College ePP = +14m.45s., eSS = +26m.31s., eSSS = +30m.11s.
Rathfarnham Castle i = +14m.45s.
Riverview eN = +34m.47s.
Toledo ePP = +15m.25s.
San Fernando eSN = +23m.30s.
Sitka ePP = +15m.53s., ePPP = +17m.35s., ePS = +24m.8s., ePPS = +24m.27s., eS_eSP = +25m.39s., eSS = +28m.43s.
Honolulu eSS = +30m.57s., ePSPS = +31m.35s.
Berkeley iE = +25m.0s.
East Machias ePS = +28m.4s.
Oak Ridge eZ = +21m.35s., eN = +28m.53s.
Philadelphia ePS = +29m.0s., eSS = +35m.11s., e(S) = +35m.26s., eSSS = +39m.23s.
Tucson ePP = +19m.49s., ePPP = +22m.23s.
San Juan ePKS = +22m.50s.
La Paz PPZ = +24m.45s., L_q = +76·9m.
Huancayo eP = +20m.46s. and +21m.6s., eSSS = +51m.4s.
Long waves were also recorded at Perth, Cape Town, Seattle, Chicago, Bozeman, Columbia, Ivigtut, and Tortosa.

Aug. 31d. Readings also at 1h. (Christchurch, near New Plymouth, Wellington, near Sumoto, and Kobe), 2h. (Andijan and Frunse), 3h. (Wellington), 4h. (Berkeley), 5h. (near Taihoku), 6h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Oak Ridge, Williamstown, Huancayo, La Paz, and Santiago), 7h. (Tashkent), 8h. (Sverdlovsk and Andijan), 11h. (Batavia), 15h. (Christchurch), 17h. (near Andijan, near Tashkent, and near Mizusawa), 22h. (Tashkent, Sverdlovsk, Nagoya, and near Mizusawa).

Sept. 1d. 8h. 38m. 49s. Epicentre 32°·5S. 179°·0W.

$A = -·8449$, $B = -·0147$, $C = -·5347$; $\delta = -2$; $h = +1$;
$D = -·017$, $E = +1·000$; $G = +·535$, $H = +·009$, $K = -·845$.

These readings have been referred to the tables for a focus at the base of the superficial layers.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hastings		7·9	204	1 41?	−14	—	—	—	2·3
New Plymouth		8·6	219	2 5	0	3 31	−11	—	—
Wellington		10·1	208	e 2 14	−12	e 4 0	−19	—	4·1
Christchurch		12·9	209	e 2 57	− 7	i 5 11	−16	—	—
Apia		19·7	23	e 4 25	− 4	e 8 11?	+ 7	e 9·9	—
Brisbane	E.	24·7	276	i 5 17	− 2	e 9 29	− 7	—	17·0
Sydney		24·9	259	e 5 16	− 5	i 10 11	+31	12·2	14·7
Riverview		25·0	259	i 5 21k	− 1	i 10 20	+39	e 11·6	13·8
Melbourne		29·8	250	e 6 3	− 3	10 53	− 6	13·3	16·6
Adelaide		35·2	254	e 7 29	+36	i 12 51	+28	13·9	16·7
Perth		54·3	252	e 9 37	+12	17 19	+20	26·4	31·6
Amboina		57·1	290	i 9 38	− 8	—	—	—	—
Honolulu		57·2	24	e 9 42	− 4	i 17 39	+ 1	e 23·4	—
Batavia		73·4	274	i 11 24	− 6	—	—	35·2	—
Manila		74·0	300	i 11 31a	− 3	21 23	+20	36·6	42·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tokyo		78·1	327	11 57	0	21 49	+ 1	37·2	—
Hamamatu		78·2	326	11 42	−16	—	—	—	—
Hunatu		78·4	327	11 24	−35	—	—	—	—
Kameyama		79·0	325	12 9	+ 7	—	—	—	—
Maebasi		79·0	327	11 59	− 3	—	—	—	—
Nagoya		79·0	325	11 56	− 6	—	—	—	—
Oiwake		79·2	327	12 0	− 3	—	—	—	—
Osaka		79·3	324	12 3	− 1	21 49	−11	—	—
Osaka B		79·3	324	12 2	− 2	—	—	—	—
Miyazaki		79·4	319	12 2	− 2	21 57	− 5	—	—
Kobe		79·5	324	e 12 1	− 4	21 51	−12	—	—
Kagosima		79·6	317	12 6	+ 1	—	—	—	—
Nagano		79·6	326	12 2	− 3	—	—	—	—
Toyama		80·1	326	12 6	− 2	—	—	—	—
Kumamoto		80·4	319	12 5	− 5	—	—	—	—
Hukuoka B		81·2	319	12 11	− 3	—	—	—	—
Hakodate		82·7	331	12 26	+ 4	—	—	—	—
Sapporo		83·5	333	12 25	− 1	23 8	+24	—	—
Hong Kong		83·9	301	12 24	− 4	23 1	+13	—	45·1
Zi-ka-wei	Z.	84·8	312	i 13 28k	− 4	16 48	?	42·2	45·4
Santiago		85·9	128	—	—	e 22 59	[+ 1]	—	46·2
Santa Barbara		86·8	46	i 12 41	− 1	—	—	—	—
La Jolla		87·3	48	i 12 43	− 2	—	—	—	—
Branner	N.	87·4	42	e 12 46	+ 1	e 23 30	+ 8	e 40·7	—
Pasadena		87·5	47	i 12 44a	− 2	i 23 9	+ 1	e 36·0	—
San Francisco		87·5	42	e 18 12	PPP	e 28 37	SS	—	—
Berkeley		87·7	42	e 12 37	−10	i 23 12	[+ 3]	—	—
Lick		87·7	42	e 12 45	− 2	e 23 31	+ 6	—	—
Mount Wilson		87·7	47	i 12 45a	− 2	e 23 11	[+ 2]	—	—
Riverside		87·9	47	i 12 46a	− 1	e 23 13	[+ 3]	—	—
Ukiah		88·1	40	—	—	e 23 13	[+ 1]	e 36·4	—
Fresno	N.	88·3	44	e 12 49	0	e 23 35	+ 5	—	—
Haiwee	E.	89·0	45	e 12 52	− 1	—	—	—	—
Tinemaha		89·5	44	i 12 54a	− 1	e 23 21	[0]	—	—
Tucson		91·0	51	i 13 2a	0	e 23 29	[− 1]	e 36·6	—
Tacubaya	E.	92·0	69	e 13 3	− 4	e 24 1?	− 2	—	—
Seattle		94·6	35	e 12 54	−25	—	—	e 40·9	—
Victoria		94·7	33	13 24	+ 5	23 38	[−12]	43·2	—
Huancayo		94·8	107	e 13 12	− 8	i 23 56	[+ 5]	e 38·1	—
Sitka		96·5	22	e 13 23	− 4	e 23 59	[− 1]	e 39·8	—
La Paz		97·9	116	13 39	+ 5	i 24 10	[+ 3]	45·2	48·0
Butte		98·5	40	e 16 55	PP	e 23 50	[−20]	e 42·3	—
Bozeman		99·2	41	—	—	e 24 11	[− 3]	e 45·4	—
College		100·1	12	e 13 37	− 7	e 24 11	[− 7]	e 40·5	—
Colombo		103·0	270	18 3	PP	27 16	PS	48·5	60·2
Calcutta	N.	103·9	288	e 17 30	?	e 33 3	SS	—	66·0
Kodaikanal	E.	107·0	272	e 14 52	P	25 42	[+52]	49·9	57·4
Florissant		108·5	55	e 17 53	?	e 24 59	[+ 2]	e 50·3	58·3
St. Louis	E.	108·6	55	e 18 48	PP	i 25 49	[+52]	e 53·1	—
Hyderabad		109·5	278	e 18 9	?	28 30	PS	43·3	58·3
Rio de Janeiro	E.	110·6	136	—	—	e 28 23	PS	e 50·2	—
Chicago		111·8	52	e 19 5	PP	e 25 5	[− 5]	e 51·2	—
Cape Town		111·9	195	—	—	34 53?	SS	—	—
Agra		114·3	288	e 19 23	PP	i 35 23	SS	—	72·2
Bombay		115·0	277	e 18 14	[−24]	e 25 34	[+11]	e 59·8	72·2
Toronto		118·0	53	19 57	PP	25 29	[− 5]	51·2	—
San Juan		118·7	85	e 20 11	PP	i 25 35	[− 2]	54·3	—
Philadelphia		119·8	59	i 20 20	PP	e 25 47	[+ 7]	e 50·4	—
Ottawa		121·1	52	20 19	PP	25 41	[− 4]	53·2	—
Williamstown		122·1	56	i 18 49	[− 2]	—	—	—	44·2

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Oak Ridge	123·0	57	i 18 51a	[− 2]	e 37 11	SS	e 59·2	—
Weston	123·3	57	i 18 49k	[− 5]	e 25 48	[− 4]	—	—
Andijan	123·6	300	e 18 43	[−11]	—	—	—	—
Seven Falls	124·8	52	e 20 29	PP	e 25 46	[−10]	57·2	—
Tashkent	126·0	300	e 18 53	[− 6]	38 11	SS	58·2	80·0
East Machias	126·7	55	e 20 20	PP	e 27 42	SKKS	e 39·1	—
Sverdlovsk	133·0	320	i 19 10	[− 2]	26 11	[− 7]	49·2	78·1
Ivigtut	137·3	33	22 53	PP	—	—	69·2	—
Scoresby Sund	139·9	11	19 9	[−16]	40 35	SS	57·2	—
Baku	140·3	296	e 19 20	[− 6]	e 28 37	SKKS	70·2	80·9
Grozny	143·5	301	e 19 28	[− 3]	—	—	—	—
Tiflis	144·3	298	i 19 28a	[− 5]	e 26 1	[−36]	56·2	79·5
Moscow	145·6	324	i 19 33	[− 2]	—	—	56·7	82·9
Pulkovo	146·5	333	i 19 33	[− 4]	26 45	[+ 5]	76·2	80·0
Sotchi	147·8	302	e 19 38	[0]	—	—	—	—
Upsala	150·5	343	i 19 42	[− 1]	—	—	e 74·2	84·8
Theodosia	150·6	305	19 16	[−27]	—	—	—	—
Ksara	150·8	281	i 19 40a	[− 3]	e 30 6	SKKS	71·2	—
Yalta	151·6	304	19 36	[− 8]	—	—	—	—
Helwan	154·0	272	19 49	[+ 1]	e 26 45	[− 5]	—	85·9
Copenhagen	155·5	345	i 19 47	[− 3]	—	—	—	—
Bucharest	157·1	309	e 20 1	[+ 9]	—	—	85·2	95·2
Edinburgh	156·4	5	e 18 41?	[−70]	e 45 11?	SSP	e 84·2	—
Durham N.	157·7	4	e 20 35	[+42]	24 12	PP	—	86·5
Hamburg	158·0	347	i 19 50a	[− 4]	—	—	e 76·2	82·2
Stonyhurst	158·5	5	i 21 7	?	—	—	e 79·2	87·6
Rathfarnham Castle	158·6	11	e 23 20	PP	—	—	75·2	92·4
Sofia	159·7	306	e 19 51	[− 4]	e 39 35	PPS	—	94·8
Prague	159·8	334	e 19 53	[− 2]	—	—	—	87·2
Stara Dala	159·9	324	e 19 54	[− 1]	—	—	45·2	—
Jena	160·0	338	e 19 53	[− 2]	—	—	e 76·2	87·7
De Bilt	160·2	352	i 19 53	[− 3]	e 30 3	SKKS	75·2	89·8
Cheb	160·5	338	e 20 22	[+26]	e 31 35	SKKS	e 83·2	88·2
Vienna	160·5	328	e 19 48	[− 8]	—	—	e 84·2	—
Oxford	160·7	3	19 39	[−17]	—	—	e 68·5	91·2
Kew	161·0	2	i 19 53a	[− 3]	—	—	e 67·2	91·6
Uccle	161·5	355	i 19 54a	[− 3]	—	—	e 75·2	—
Zagreb	162·4	324	e 19 50	[− 8]	e 27 37	[+40]	e 90·3	94·8
Stuttgart	162·6	341	i 19 55a	[− 3]	—	—	e 79·2	92·0
Strasbourg	163·1	344	i 19 55a	[− 4]	—	—	—	89·2
Triest	163·6	327	20 2	[+ 3]	i 31 42	SKKS	e 78·7	86·8
Paris	163·7	356	i 19 57	[− 2]	—	—	e 80·2	90·2
Zurich	164·0	340	e 19 56	[− 4]	—	—	—	—
Basle	164·2	345	e 19 56	[− 4]	—	—	—	—
Chur	164·3	338	e 19 57	[− 3]	—	—	—	—
Besançon	164·8	347	22 11?	?	—	—	—	—
Neuchatel	164·8	344	e 19 57	[− 3]	—	—	—	—
Toledo	171·6	28	i 20 6	[+ 1]	26 43	[−20]	e 80·5	—
San Fernando	172·9	54	i 20 6	[+ 1]	32 32	SKKS	87·2	—
Malaga	173·9	45	i 20 13	[+ 7]	—	—	—	—
Granada	174·6	38	20 5	[− 1]	—	—	—	—
Almeria	174·9	32	i 20 2	[− 4]	—	—	e 83·2	—
Algiers	175·4	339	i 20 6	[0]	—	—	81·2	100·2

Additional readings :—
Hastings +2m.5s.
New Plymouth +2m.15s., +2m.48s., +3m.48s., and +3m.56s.
Wellington +2m.29s., +2m.40s., +2m.46s., +4m.20s., +4m.39s., and +5m.16s.
Christchurch eS = +5m.7s.
Apia iP = +4m.27s., PP = +4m.52s., i = +8m.59s.
Brisbane iSSE = +10m.17s.
Riverview iE = +5m.53s., iN = +6m.3s.
Melbourne PP = +7m.9s., i = +11m.33s.

Continued on next page.

Perth i = +7m.23s., and +8m.44s., PcP = +10m.49s., PP = +12m.8s., PPP = +12m.59s., PPPP = +13m.38s., i = +15m.19s., SP = +17m.34s., i = +19m.32s., SS = +21m.19s., i = +21m.59s., SSS = +23m.16s., SSSS = +23m.53s.
Amboina iE = +13m.11s. and = +13m.32s.
Honolulu iP = +9m.47s., PP = +11m.28s., ePPP = +13m.1s., iS = +17m.44s., SS = +21m.3s.
Batavia iZN = +14m.31s., iZ = +15m.20s.
Osaka PPP = +6m.13s.
Hong Kong PP? = +15m.43s., PS? = +24m.9s., SS? = +28m.26s.
Pasadena i = +12m.56s., iZ = +13m.5s., eZ = +15m.7s., iPPNZ = +16m.17s., iZ = +16m.34s., eN = +24m.38s.
San Francisco ePN = +18m.16s.
Berkeley eP = +12m.44s., iN = +13m.41s., eE = +13m.59s., eN = +23m.0s., eE = +23m.9s., iSN = +23m.17s., eZ = +23m.26s., iEN = +23m.29s.
Mount Wilson iPPZ = +16m.11s.
Riverside ePPZ = +16m.5s.
Ukiah eS = +23m.26s., +23m.32s., ePS = +24m.36s., eSS = +29m.19s.
Tinemaha iZ = +14m.57s.
Tucson iP = +13m.9s., ePP = +16m.36s., eS = +23m.51s., S = +24m.3s., PS = +24m.25s., PPS = +25m.11s., eSSS = +33m.30s.
Seattle ePP = +16m.48s.
Victoria S = +24m.34s.
Huancayo eP = +13m.44s., ePP = +16m.46s., iS = +24m.28s., PS = +25m.45s., iPPS = +26m.0s., i = +27m.0s., iSS = +30m.42s., iPSPS = +31m.13s., SSS = +34m.59s.
Sitka ePP = +17m.11s., ePPP = +18m.57s., iS = +24m.48s., PS = +25m.37s., PPS = +26m.46s., eSS = +31m.19s., eSSS = +34m.44s.
La Paz iPPZ = +17m.43s., PPN = +17m.49s., SN = +25m.11s., iSZ = +25m.21s., iN = +26m.23s.
Butte ePP = +17m.32s., ePPP = +19m.51s.
College ePP = +17m.38s., eS = +25m.25s., eSSS = +35m.50s.
Calcutta eN = +22m.22s., PS = +27m.38s., e = +36m.19s.
Kodaikanal PPE = +18m.58s., PPP?E = +21m.19s., SKKSE = +26m.27s., eS?E = +26m.49s., PSE = +28m.7s., PPSE = +28m.50s., SSE = +33m.55s., SSSE = +38m.7s.
Florissant ePPZ = +18m.55s., iZ = +19m.6s., eEN = +25m.55s., eSKKSZ = +26m.3s., eSN = +26m.41s., eSPE = +28m.18s., eZ = +28m.22s., +29m.21s., eE = +33m.42s., eN = +34m.7s., eSSE = +34m.24s.
St. Louis eE = +19m.8s. and +26m.11s.
Chicago ePS = +28m.35s.
Agra i = +19m.34s. and +29m.16s.
Bombay ePE = +15m.5s., eEN = +21m.29s., iPS = +29m.14s., eEN = +30m.49s. and +35m.36s.
Toronto SKKS = +26m.48s., PS = +29m.48s., SS = +36m.33s.
San Juan ePPP = +22m.45s., SKKS = +26m.55s., PS = +29m.49s., PSPS = +36m.47s., eSSS = +40m.41s.
Philadelphia iSKKS = +27m.0s., ePS = +29m.49s., eSS = +36m.23s., ePSPS = +36m.35s., eSSS = +41m.19s.
Ottawa SKKS = +27m.11s., S = +28m.23s., PS = +30m.31s., SS = +36m.51s.
Williamstown iPP = +20m.25s., i = +21m.17s., iPPP = +22m.24s.
Oak Ridge iPP = +20m.32s., eSKPE = +22m.3s., ePPPZ = +23m.33s., eSSN = +37m.11s.
Weston iZ = +18m.55s., ePPZ = +20m.32s., eSKKSE = +27m.27s., iPKKPZ = +28m.40s., iPPS = +32m.10s., eSS = +37m.20s.
Seven Falls e = +27m.30s., +30m.5s., and +37m.41s.
Tashkent iPP = +20m.44s., i = +22m.29s., ePPP = +23m.54s., PS = +30m.38s., PPS = +32m.49s., SSS = +44m.5s.
East Machias ePP = +20m.48s., i = +22m.7s., ePPP = +22m.57s., ePS = +31m.15s., iSS = +38m.2s.
Sverdlovsk PKS = +22m.39s., i = +23m.55s., PPS = +33m.45s.
Scoresby Sund +19m.22s., eE = +22m.23s., eEN = +23m.0s.
Baku e = +22m.48s., PPS = +35m.9s., SS = +41m.35s., SSS = +47m.41s.
Tiflis ePPE = +22m.1s., eE = +23m.11s., ePPPZ = +25m.39s., ePSZ = +34m.17s., ePPSZ = +35m.8s., ePPSE = +35m.19s., eSSE = +41m.19s., eSSSE = +46m.59s.
Moscow e = +20m.14s., e = +21m.23s., ePP = +22m.51s., PPP = +26m.27s., e = +27m.49s., e = +38m.47s.
Pulkovo PP = +22m.57s., e = +29m.54s., e = +34m.28s., e = +34m.54s., PPS = +35m.51s., e = +38m.15s., SS = +42m.5s., e = +44m.11s., L_g = +66·2m.
Theodosia i = +19m.44s.
Ksara iPP = +23m.23s., ePSKS = +33m.44s.?, ePPS = +36m.40s.
Yalta e = +23m.44s.
Helwan i = +20m.23s., e = +22m.23s., +25m.29s., +30m.29s., i = +34m.17s.
Bucharest eN = +21m.29s., e = +22m.6s. and +34m.23s.
Copenhagen +19m.57s., +20m.9s., and +23m.48s.

Continued on next page.

Hamburg eZ = +24m.5s., eN = +50m.11s.?
Rathfarnham Castle i = +24m.1s., iPP = +24m.54s., e = +32m.21s. and +44m.1s.
Prague e = +24m.11s., +33m.41s., +40m.11s., and +44m.11s.?
Jena ePE = +20m.11s., iPZ = +20m.33s.
De Bilt iPPZ = +24m.14s., eN = +34m.33s.
Cheb e = +45m.11s.?
Vienna eZ = +20m.35s., PP = +23m.29s., eZ = +24m.35s., PS = +31m.33s., PPS = +32m.16s.
Oxford PP = +24m.18s., i = +34m.40s.
Kew iZ = +20n .55s., iPKP$_2$ = +20m.37s., iZ = +20m.49s., iPPZ = +24m.17s., eZ = +42m.17s.
Uccle iPKP$_2$Z = +20m.40s., PPZ = +24m.21s., SKSPN = +34m.47s.
Zagreb eZ = +24m.21s., e = +24m.58s.
Stuttgart iPKPZ = +20m.9s., i = +20m.46s., ePP = +24m.24s., ePPP = +28m.11s., eSKKSN = +34m.27s., ePPS = +38m.11s., e = +41m.31s., eSSS = +51m.43s.
Strasbourg iPKP$_2$Z = +20m.46s., iPPZ = +24m.29s., iPPPZ = +28m.15s., iZ = +29m.14s., e = +30m.7s.
Triest e = +28m.25s., e = +34m.38s.
Paris PP = +24m.32s., e = +29m.53s.?
Zurich e = +20m.51s.
Basle e = +20m.51s.
Chur e = +20m.51s.
Neuchatel e = +20m.53s.
Toledo iPP = +25m.18s.
San Fernando PPEN = +25m.33s., PSPSN = +36m.33s., eSSN = +46m.28s.
Malaga iPP = +25m.31s.
Granada iPP = +25m.29s.
Almeria ePP = +25m.30s., e = +29m.4s.
Long waves were also recorded at Göttingen, Tortosa, Jersey, Bidston, Aberdeen, Dehra Dun, Mizusawa, and Medan.

Sept. 1d. 17h. 24m. 37s. Epicentre 18°·1N. 95°·1W.

Epicentre determination due to Geological Institute of Mexico.

A = −·0846, B = −·9474, C = +·3088; δ = +8; h = +5;
D = −·996, E = +·089; G = −·027, H = −·308, K = −·951.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Vera Cruz		1·5	318	0 38	+10	—	—	—	—
Oaxaca	N.	1·9	236	0 46	+12	—	—	—	—
Puebla	N.	3·1	288	1 3	P$_g$	—	—	—	—
Tacubaya	N.	4·1	288	1 15	P*	—	—	—	—
Tucson		20·0	319	i 4 38k	+ 1	8 30	+13	e 11·1	—
St. Louis	E.	20·9	10	e 4 50	+ 4	i 8 35	0	—	—
Florissant		21·0	10	e 4 48	+ 1	e 8 40	+ 3	—	—
Riverside	Z.	25·4	314	e 5 29	− 2	—	—	—	—
Mount Wilson	Z.	26·0	314	i 5 33	− 3	—	—	—	—
Pasadena		26·1	314	e 5 35	− 2	—	—	—	—
Santa Barbara	Z.	27·3	312	e 5 50	+ 2	—	—	—	—
San Juan		27·5	84	e 6 1	+11	e 10 46	+16	e 11·5	—
Philadelphia		27·8	34	e 6 20	PP	e 10 18	−17	e 11·3	—
Tinemaha	Z.	27·8	318	i 5 51	− 2	—	—	—	—
Williamstown		30·8	33	i 6 8	−12	—	—	i 14·5	—
Oak Ridge	Z.	31·5	34	e 6 35	+ 9	e 13 23?	SS	e 13·4	—
Ottawa		31·6	26	e 7 23	PP	e 14 11	?	—	—
Sverdlovsk		102·6	14	—	—	e 24 17	[−22]	49·4	59·1

Additional readings :—
Tucson iPP = +4m.54s., i = +5m.1s. and +5m.39s., S = +8m.42s.
St. Louis eE = +5m.9s., iE = +9m.33s., eE = +9m.53s.
Florissant eN = +5m.12s., iNZ = +5m.15s., iN = +5m.48s., eE = +8m.44s., eZ = +8m.47s. and +9m.4s., eE = +9m.7s., eN = +9m.15s.
Riverside iZ = +5m.57s.
Mount Wilson iZ = +6m.14s.
Pasadena iEN = +6m.8s.
Philadelphia eS = +11m.8s.
Williamstown i = +6m.45s. and +7m.12s.
Long waves were also recorded at Merida.

Sept. 1d. 17h. 50m. 10s. Epicentre 29°·0N. 130°·0E.

Very rough.

$A = -·5631$, $B = +·6711$, $C = +·4823$; $\delta = +7$; $h = +2$;
$D = +·766$, $E = +·643$; $G = -·310$, $H = +·369$, $K = -·876$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hukuoka B		4·6	4	1 22	+10	3 4	+57	—	—
Husan		6·2	352	e 1 21	−14	e 3 22	S_g	—	—
Sumoto		6·7	37	i 1 48	+ 6	i 4 0	S_g	—	4·1
Kobe	E.	7·2	36	e 1 47	− 2	e 3 28	SS	—	—
Zi-ka-wei	Z.	7·7	288	e 1 54	− 2	3 42	SSS	5·2	5·8
Manila		16·6	212	i 3 56	0	7 10	+10	—	—
Tashkent		50·2	301	e 8 50	−10	—	—	e 27·2	33·6
Tiflis		68·0	306	e 11 44	+41	e 20 57	+55	e 43·3	—
Ksara		77·6	300	e 12 38	+38	e 22 19	+28	—	51·3
Paris		89·5	328	—	—	e 19 50?	?	57·8	—

Additional readings:—
Kobe ePN = +1m.53s.
Tashkent e = +10m.59s. and +23m.30s.
Long waves were also recorded at Bombay and other European and Russian stations.

Sept. 1d. 21h. 41m. 16s. Epicentre 32°·5S. 179°·0W. (as at 8h.).

$A = -·8449$, $B = -·0147$, $C = -·5347$; $\delta = -2$; $h = +1$.

These readings also have been referred to the tables for a focus at the base of the superficial layers.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
New Plymouth		8·6	219	2 9	+ 4	3 36	− 6	—	—
Wellington		10·1	208	e 2 17	− 9	e 4 1	−18	—	4·1
Christchurch		12·9	209	e 2 58	− 6	5 8	−19	—	—
Riverview		25·0	259	e 6 56	?	e 9 50	+ 9	e 11·7	14·1
Melbourne		29·8	250	i 7 3	PPP	i 10 57	− 2	14·3	16·1
Adelaide		35·2	254	e 9 31	?	e 12 23	0	e 14·8	18·5
Perth		54·3	252	6 44	?	—	—	—	—
Amboina	E.	57·1	290	5 52	?	—	—	—	—
Manila		74·0	300	11 45	+11	21 6	+ 3	—	—
Nagoya		79·0	325	e 17 5	PPP	—	—	—	—
Oiwake		79·2	327	12 3	0	—	—	—	—
Osaka		79·3	324	12 21	+17	21 51	− 9	—	—
Kobe	E.	79·5	324	e 17 23	PPP	e 20 45	?	—	—
Nagano		79·6	326	12 3	− 2	—	—	—	—
Santa Barbara		86·8	46	i 12 43	+ 1	—	—	—	—
La Jolla		87·3	48	e 12 42	− 3	—	—	—	—
Branner		87·4	42	e 12 47	+ 2	—	—	—	—
Pasadena		87·5	47	i 12 46k	0	e 23 8	[0]	—	—
Berkeley		87·7	42	i 12 45	− 2	i 23 30	+ 5	—	—
Mount Wilson	Z.	87·7	47	i 12 47k	0	—	—	—	—
Riverside		87·9	47	i 12 48k	+ 1	—	—	—	—
Fresno	N.	88·3	44	e 12 51	+ 2	—	—	—	—
Haiwee	E.	89·0	45	e 12 54	+ 1	—	—	—	—
Tinemaha		89·5	44	i 12 55	0	e 23 21	[0]	—	—
Tucson		91·0	51	e 13 2k	0	e 23 56	+ 1	e 41·4	—
Victoria		94·7	33	—	—	e 23 44?	[− 6]	44·7	—
Huancayo		94·8	107	—	—	e 34 31	SSS	e 36·6	—
La Paz		97·9	116	e 15 8	PP	—	—	45·7	54·4
College		100·1	12	e 13 21	−23	e 24 49	−23	e 47·2	—
Kodaikanal	E.	107·0	272	e 24 50	S	(e 24 50)	[0]	51·3	57·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Florissant		108·5	55	e 18 58	PP	e 25 57	SKKS	e 53·2	57·9
San Juan		118·7	85	e 18 30	[−15]	e 25 38	[+ 1]	e 53·1	—
Ottawa		121·1	52	—	—	e 26 2	[+18]	54·7	—
Williamstown		122·1	56	i 18 50	[− 1]	—	—	—	e 59·3
Oak Ridge		123·0	57	i 18 53a	[0]	—	—	e 59·7	—
Weston	z.	123·3	57	i 18 53a	[− 1]	—	—	—	—
Tashkent		126·0	300	i 18 54	[− 5]	25 55	[− 5]	e 59·3	74·1
Sverdlovsk		133·0	320	i 19 12	[0]	—	—	59·7	81·4
Baku		140·3	296	e 20 6	[+41]	—	—	71·7	82·6
Grozny		143·5	301	19 37	[+ 6]	—	—	—	—
Tiflis		144·3	298	e 19 30	[− 2]	e 41 37	SS	e 74·7	84·3
Piatigorsk		145·4	303	19 35	[+ 1]	—	—	—	—
Moscow		145·6	324	i 19 35	[0]	29 44	SKKS	e 69·2	95·7
Pulkovo		146·5	333	i 19 36	[0]	29 35	SKKS	71·7	81·9
Sotchi		147·8	302	e 19 40	[+ 2]	—	—	—	—
Theodosia		150·6	305	i 19 44	[+ 1]	—	—	—	—
Ksara		150·8	281	e 19 43	[0]	—	—	72·7	82·7
Simferopol		151·5	306	e 19 51	[+ 7]	—	—	—	—
Yalta		151·6	304	e 19 48	[+ 4]	—	—	—	—
Helwan		154·0	272	—	—	e 27 58	[+68]	—	—
Copenhagen		155·5	345	19 49	[− 1]	—	—	72·7	—
De Bilt		160·2	352	e 20 17	[+21]	—	—	e 83·7	89·8
Vienna		160·5	328	e 19 55	[− 1]	—	—	—	—
Uccle		161·5	355	—	—	e 31 9	SKKS	e 76·7	—
Stuttgart		162·6	341	e 19 56	[− 2]	—	—	e 83·7	—
Strasbourg		163·1	344	—	—	e 25 50?	PP	e 82·4	—
Triest		163·6	327	—	—	e 27 15	[+17]	e 80·2	90·7
Paris		163·7	356	e 20 12	[+13]	—	—	86·7	—
Toledo		171·6	28	i 20 5	[0]	—	—	—	—
San Fernando		172·9	54	e 20 29	[+24]	—	—	92·7	—
Malaga		173·9	45	i 20 11	[+ 5]	—	—	—	—
Granada		174·0	38	e 20 7	[+ 1]	—	—	—	—
Almeria		174·9	32	e 20 12	[+ 6]	—	—	—	—

Additional readings :—
New Plymouth +2m.18s., +2m.51s., +3m.51s., and +4m.0s.
Adelaide i = +13m.44s.
Pasadena iZ = +13m.0s. and +13m.9s., eZ = +15m.58s., ePPEZ = +16m.10s.
Berkeley eSZ = +23m.58s.
Mount Wilson eZ = +15m.57s.
Tucson P = +3m.7s., iP = +13m.18s., ePS = +24m.26s.
College ePS = +26m.54s.
Kodaikanal PPE = +27m.50s.
Florissant eE = +19m.2s., eZ = +19m.12s., eN = +26m.19s. and +26m.36s., eE = +27m.59s., eZ = +28m.26s.
San Juan e = +15m.55s., ePP = +19m.59s., ePS = +29m.49s.
Ottawa e = +30m.8s.
Williamstown i = +20m.40s. and +22m.25s.
Oak Ridge iPPZ = +20m.34s.
Weston iZ = +19m.7s. and +19m.41s.
Sverdlovsk PKS = +22m.34s., i = +22m.58s.
Tashkent e = +17m.57s., ePP = +20m.55s., ePPP = +23m.38s., ePS = +30m.57s., PPS = +32m.51s., eSS = +35m.44s., eSSS = +37m.41s.
Baku PKS = +23m.2s., eScPPcS = +30m.18s., e = +31m.4s.
Tiflis ePPE = +22m.44s., ePSEZ = +34m.12s., ePPSE = +36m.8s.
Moscow e = +19m.57s., ePP = +23m.3s., PPP = +26m.16s., e = +29m.14s.
Pulkovo ePS = +34m.7s., PPS = +35m.40s.
Ksara ipPKP = +20m.4s., isPKP = +20m.13s., ePP = +23m.24s., ePSKS = +33m.46s., ePPS = +36m.45s.
Helwan i = +30m.28s., e = +36m.14s.
Copenhagen +19m.59s. and +20m.11s.
Vienna e = +20m.9s., i = +20m.49s.
Uccle e = +44m.38s.
Stuttgart e = +34m.44s. and +38m.2s.
Strasbourg e = +53m.56s.
Triest i = +31m.21s. and +35m.31s.
Malaga iPP = +25m.35s.
Granada iPP = +25m.31s.
Long waves were also recorded at Stonyhurst, Philadelphia, Scoresby Sund, Kew, Bombay, and Hyderabad.

Sept. 1d. Readings also at 3h. (Huancayo, La Paz, Mount Wilson, Pasadena, Riverside, Tinemaha, Sverdlovsk, and Tashkent), 5h. (Calcutta, Phu-Lien, and Tashkent), 6h. (Arapuni, La Plata, and Sverdlovsk), 7h. (Guadalajara, Manzanillo, Tacubaya, Vera Cruz, Riverside, Mount Wilson (2), Pasadena (2), and Tinemaha (2)), 10h. (near Nagoya), 12h. (Manila, Yalta, near Almata and Frunse), 13h. (Berkeley, Branner, and Lick), 15h. (Wellington), 16h. (Andijan, Tashkent, Branner, Lick, Fresno, and Tucson), 17h. (Vladivostok, near Grozny, and near Nagoya), 18h. (near Nagoya), 19h. (Chicago, near Nagoya and Sumoto), 20h. (Amboina and Florence), 21h. (Tucson).

Sept. 2d. Readings at 0h. (Huancayo, La Paz, Tucson (2), and near Santiago), 3h. (Samarkand (2)), 4h. (Kobe and Samarkand), 5h. (Samarkand), 6h. (Tacubaya, near Andijan, and near Samarkand), 7h. (Andijan and Samarkand), 8h. (Tiflis and near Manila), 11h. (Santiago and Vienna), 12h. (Granada, Malaga, Paris, San Fernando, Stuttgart, Grozny, Tiflis, Ksara, Sverdlovsk, Baku, Tashkent, Bombay, Cape Town, Tananarive, and Tucson), 13h. (De Bilt), 16h. (Balboa Heights, Christchurch, near New Plymouth, and Wellington), 18h. (Manila, Hong Kong, and near Amboina), 19h. (Sverdlovsk, Tashkent, and Tiflis), 22h. (near Nagoya).

Sept. 3d. 18h. 48m. 12s. Epicentre 52°·3N. 177°·3W.

$A = -\cdot 6134$, $B = -\cdot 0289$, $C = +\cdot 7892$; $\delta = -7$; $h = -6$;
$D = -\cdot 047$, $E = +\cdot 999$; $G = -\cdot 788$, $H = -\cdot 037$, $K = -\cdot 614$.

A depth of focus 0·005 has been assumed.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
College	19·6	39	i 4 27a	+ 2	e 8 6	+ 8	e 10·0	—
Sitka	24·4	62	i 5 15a	+ 2	i 9 26	0	i 11·9	—
Nemuro	26·2	266	5 29	− 1	9 49	− 7	—	—
Ootomari	26·3	273	5 35	+ 4	—	—	—	—
Obihiro	27·9	267	5 38	− 8	—	—	—	—
Asahigawa	28·0	268	5 53	+ 6	10 25	0	—	—
Haboro	28·1	269	5 45	− 3	—	—	—	—
Sapporo	29·0	268	5 53	− 3	10 37	− 4	—	—
Hakodate	30·1	267	6 36	+30	—	—	—	—
Hatinohe	30·3	264	6 8	+ 1	10 47	−14	14·0	—
Aomori	30·6	265	6 6	− 4	—	—	—	—
Miyako	30·6	264	6 9	− 1	11 0	− 6	—	—
Morioka	31·0	264	6 12	− 2	11 8	− 4	13·8	—
Mizusawa	31·4	263	6 17	0	11 14	− 5	17·0	—
Akita	31·7	264	6 20	0	11 36	+13	—	—
Isinomaki	31·7	261	6 20	0	—	—	—	—
Sakata	32·4	263	6 46	+20	—	—	—	—
Yamagata	32·4	262	6 25	− 1	—	—	—	—
Hukusima	32·7	260	6 19	− 9	—	—	—	—
Aidu	33·0	261	6 11	−20	12 4	+20	—	—
Niigata	33·4	263	7 1	+27	—	—	16·4	—
Mito	33·6	259	6 35	− 1	11 47	− 6	—	—
Tyosi	33·8	257	6 37	− 1	11 52	− 4	—	—
Kakioka	33·9	260	6 35	− 4	11 49	− 9	13·9	—
Tukubasan	33·9	260	6 36	− 3	11 21	−37	—	—
Victoria	34·0	74	6 42	+ 2	11 57	− 2	15·6	—
Kumagaya	34·4	260	6 43	0	12 16	+11	—	—
Maebasi	34·4	261	6 45	+ 2	—	—	—	—
Honolulu	34·5	146	e 6 39k	− 5	11 24	−43	12·9	—
Takada	34·5	263	6 42	− 2	—	—	—	—
Tokyo	34·5	259	6 46	+ 2	12 3	− 4	—	—
Vladivostok	34·7	276	i 7 3	+17	e 12 26	+16	15·8	18·4
Yokohama	34·7	259	6 47	+ 1	11 48	−22	—	—
Nagano	34·8	262	6 45	− 1	12 7	− 5	—	—
Oiwake	34·8	261	6 45	− 1	12 19	+ 7	16·9	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Seattle		34·9	75	6 47	0	12 14	+ 1	14·5	—
Mera		35·0	256	6 47	− 1	12 8	− 7	—	—
Wazima		35·1	264	6 50	+ 1	12 10	− 6	—	—
Gotenba		35·2	259	6 51	+ 1	—	—	—	—
Hunatu		35·2	259	6 49	− 1	12 17	− 1	—	—
Kohu		35·2	259	6 51	+ 1	12 23	+ 5	—	—
Matumoto		35·2	262	6 52	+ 2	12 12	− 6	14·9	—
Misima		35·3	259	6 51	0	12 14	− 5	—	—
Husiki		35·4	264	6 39	−13	—	—	—	—
Ito		35·4	259	6 54	+ 2	—	—	—	—
Numadu		35·4	259	6 48	− 4	12 17	− 4	—	—
Toyama		35·4	263	6 48	− 4	12 15	− 6	—	—
Takayama		35·7	262	6 55	+ 1	—	—	—	—
Iida		35·8	261	6 55	0	—	—	—	—
Hatidyozima		36·2	257	6 58	0	—	—	—	—
Omaesaki		36·2	259	7 3	+ 5	—	—	—	—
Hamamatu		36·4	260	7 25	+25	—	—	—	—
Gihu		36·5	261	6 58	− 3	12 29	− 9	15·0	—
Nagoya		36·5	261	e 7 1	0	9 3	?	—	9·8
Ibukisan		36·7	261	7 10	+ 8	—	—	—	—
Hikone		36·9	261	7 3	− 1	—	—	—	—
Kameyama		37·0	260	7 5	0	12 51	+ 6	—	—
Miyadu		37·3	263	7 5	− 3	—	—	—	—
Kyoto		37·4	261	7 5	− 3	—	—	—	—
Ferndale		37·6	86	e 7 16	+ 6	i 13 2	+ 8	—	—
Toyooka	E.	37·6	263	7 11	+ 1	12 59	+ 5	—	—
	N.	37·6	263	7 10	0	13 0	+ 6	e 16·0	—
	Z.	37·6	263	7 9	− 1	12 50	− 4	e 18·0	—
Osaka		37·7	261	7 13	+ 2	12 58	+ 2	—	—
Osaka B		37·7	261	7 13	+ 2	12 54	− 2	—	—
Yagi		37·7	260	7 10	− 1	12 50	− 6	—	—
Kobe		37·9	261	7 8	− 5	12 55	− 4	—	—
Wakayama		38·2	261	7 14	− 1	13 0	− 4	—	—
Sumoto		38·3	261	7 14	− 2	12 58	− 7	—	—
Siomisaki		38·4	260	7 15	− 2	—	—	—	—
Tokusima		38·7	261	7 16	− 3	—	—	—	—
Ukiah		39·1	87	7 24$_a$	+ 1	e 13 21	+ 4	16·0	—
Titizima		39·3	246	7 22	− 2	—	—	—	—
Muroto		39·5	261	7 26	0	—	—	—	—
Hamada		39·7	264	7 26	− 2	13 20	− 6	—	—
Hirosima		39·8	263	7 31	+ 3	13 22	− 6	—	—
Matuyama		40·0	262	7 27	− 3	13 25	− 6	—	—
San Francisco		40·4	89	e 7 35	+ 2	e 13 25	−12	—	—
Berkeley		40·5	88	i 7 35	+ 1	e 13 39	+ 1	e 15·9	—
Branner		40·8	89	i 7 36	− 1	i 13 42	− 1	—	—
Heizyo		40·9	275	7 35	− 2	13 35	− 9	—	—
Keizyo		41·1	273	e 7 38	− 1	e 13 42	− 5	—	—
Lick		41·2	88	e 7 41	+ 1	e 13 52	+ 4	—	—
Taikyu		41·2	269	e 7 40	0	e 13 48	0	—	—
Syuhurei		41·3	270	7 42	+ 1	13 45	− 5	—	—
Zinsen		41·3	273	i 7 39$_a$	− 2	i 13 43	− 7	—	14·8
Izuka		41·4	264	7 42	+ 1	14 17	+26	—	—
Husan		41·4	268	e 8 1	+20	e 14 0	+ 9	—	—
Butte		41·5	71	i 7 45	+ 3	i 13 56	+ 3	e 17·5	—
Hukuoka		41·6	264	7 41	− 2	13 35	−19	—	—
Hukuoka B		41·6	264	e 7 42	− 1	e 13 29	−25	e 17·0	—
Saskatoon		41·7	62	7 34	−10	13 44	−12	19·2	—
Ituhara		41·8	267	7 46	+ 1	—	—	—	—
Kumamoto		41·9	264	7 45	− 1	13 55	− 4	—	—
Miyazaki		42·1	262	7 46	− 1	13 22	−40	17·2	—
Yingkow		42·1	279	7 40	− 7	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Unzendake		42·3	264	7 48	− 1	14 13	+ 8	—	—
Nagasaki		42·5	264	7 41	−10	14 6	− 2	—	—
Bozeman		42·6	71	i 7 54	+ 3	i 14 10	+ 1	19·7	—
Fresno	N.	42·7	88	e 7 55	+ 3	i 14 15	+ 4	—	—
Kagosima		42·9	263	7 55	+ 1	—	—	—	—
Tomie		43·3	265	8 54	− 3	15 7	+48	—	—
Tinemaha		43·4	86	i 8 2	+ 4	i 14 26	+ 5	—	—
Haiwee		44·2	87	i 8 7	+ 3	e 14 37	+ 5	—	—
Santa Barbara		44·2	90	i 8 8	+ 4	i 14 36	+ 4	—	—
Mount Wilson		45·4	89	i 8 16	+ 2	i 14 49	− 1	—	—
Pasadena		45·4	89	i 8 15a	+ 1	i 14 49	− 1	—	—
Riverside		46·0	89	i 8 19	0	e 14 52	− 6	—	—
La Jolla		46·8	90	i 8 26	+ 1	i 15 11	+ 2	—	—
Zi-ka-wei	Z.	48·7	270	i 8 38a	− 2	15 38	+ 2	23·6	28·2
Denver		49·8	74	i 8 53	+ 5	i 15 56	+ 4	—	—
Tucson		51·2	85	i 9 0a	+ 1	i 16 14	+ 3	e 20·1	—
Isigakizima		52·0	262	9 0	− 5	16 14	− 8	—	—
Taihoku		53·1	264	e 9 12	− 1	e 16 29	− 8	—	—
Karenko		53·8	263	9 18	0	—	—	—	—
Taityu		54·2	264	9 32	+11	16 48	− 4	—	—
Arisan		54·6	264	9 24	0	16 51	− 6	—	—
Taito		55·0	263	9 23	− 4	17 38	+36	—	—
Takao		55·6	264	9 41	+10	—	—	—	—
Kosyun		55·8	263	9 38	+ 5	17 11	− 2	—	—
Scoresby Sund		56·2	10	9 36k	0	e 17 17	− 1	—	—
Chicago		58·2	62	9 55	+ 5	e 17 46	+ 1	23·2	—
Chicago (Loyola)		58·2	62	e 9 50	0	e 17 44	− 1	—	—
Semipalatinsk		58·5	314	9 53	+ 1	—	—	—	—
Florissant		58·8	66	i 9 53	− 1	e 17 46	− 7	e 27·6	28·6
St. Louis	E.	59·0	66	e 9 54	− 1	e 17 57	+ 2	e 21·8	—
Sverdlovsk		59·5	275	i 10 11	+12	i 18 29	+27	29·9	34·3
Hong Kong		59·6	268	9 58	− 1	(17 57)	− 6	17·9	18·9
Palau		59·6	240	10 6	+ 7	—	—	—	—
Ivigtut		59·8	27	10 1	0	18 6	+ 1	23·8	—
Manila		61·4	257	10 10k	− 2	18 23	− 3	—	—
Cincinnati		61·7	62	i 10 14	0	i 18 28	− 2	28·3	—
Ottawa		61·8	52	10 14	0	18 23	− 8	25·8	—
Shawinigan Falls		62·3	48	10 18	0	18 29	− 8	25·8	—
Seven Falls		62·8	47	10 15	− 6	18 34	−10	25·8	—
Vermont		63·6	50	10 28a	+ 2	i 18 52	− 2	i 26·2	—
Pennsylvania		64·1	56	e 10 25	− 5	e 18 53	− 7	e 31·3	36·8
Williamstown		65·0	52	i 10 35	0	i 19 58	+47	i 30·8	37·7
Almata		65·3	310	10 37	0	—	—	26·7	—
Phu-Lien		65·4	273	e 10 35	− 3	e 19 2	−14	—	—
Oak Ridge		65·9	51	i 10 40a	− 1	i 20 0	+38	—	—
Apia		66·0	174	10 41	− 1	19 19	− 4	—	—
Fordham		66·0	54	i 10 41	− 1	e 19 22	− 1	—	—
East Machias		66·1	48	10 33	− 9	19 26	+ 2	27·0	—
Philadelphia		66·1	55	i 10 42a	0	i 19 17	− 7	i 27·4	—
Pulkovo		66·1	346	10 47	+ 5	19 36	+12	30·3	41·8
Frunse		66·7	311	10 50	+ 4	e 19 47	+16	—	—
Columbia		67·4	63	10 52	+ 1	e 19 36	− 4	27·6	—
Bergen		67·6	0	10 48	− 4	20 38	+56	30·8	32·8
Upsala		67·6	353	i 10 52	0	i 20 41	+59	e 30·8	33·6
Tacubaya	N.	67·7	87	i 10 54	+ 1	—	—	—	—
Moscow		68·5	340	i 10 57	− 1	i 19 53	0	31·3	39·8
Andijan		69·4	311	11 3	0	—	—	e 47·8	—
Tchimkent		69·5	314	e 11 6	+ 2	—	—	e 46·5	—
Tashkent		70·4	313	i 11 4	− 5	i 20 6	− 9	e 30·8	41·7
Aberdeen		70·8	4	i 11 29	+17	i 20 19	− 1	—	38·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Edinburgh		72·0	5	e 11 48?	+29	i 20 35	+ 1	30·8	40·8
Copenhagen		72·1	355	i 11 19	0	i 20 35	0	30·8	—
Merida	N.	72·3	79	i 11 20	0	—	—	—	—
Samarkand		72·8	314	e 11 36	+13	20 56	+13	—	—
Durham	N.	73·2	3	e 11 28	+ 2	e 20 35	−12	i 35·4	50·8
Stonyhurst		74·1	4	e 12 28	+57	i 20 59	+ 2	32·8	40·6
Hamburg		74·3	356	e 11 31k	− 1	i 21 2	+ 2	e 34·0	35·8
Rathfarnham Castle		74·5	7	i 11 26	− 7	i 20 52	−10	—	36·8
Dehra Dun		74·8	300	11 18	−17	21 8	+ 3	—	35·8
Calcutta	N.	75·1	287	e 11 28	− 9	i 20 51	−18	—	—
De Bilt		75·9	359	i 11 42	+ 1	i 21 19	+ 2	e 36·6	37·7
Göttingen		76·3	357	e 11 42	− 2	e 21 22	0	e 37·8	39·8
Oxford		76·3	4	11 47	+ 3	i 21 22	0	e 32·2	47·9
Kew		76·6	3	i 11 44k	− 1	i 21 24	− 1	e 32·8	37·4
Lemberg		76·7	347	e 12 25	+39	e 21 33	+ 7	e 32·8	—
Jena		76·9	355	i 11 45	− 2	i 21 25	− 3	e 32·2	39·3
Agra		77·3	298	i 11 43	− 6	i 21 21	−12	—	—
Uccle		77·3	0	i 11 50a	+ 1	i 21 31	− 2	—	—
Prague		77·5	353	e 11 48?	− 2	e 21 33	− 2	e 33·8	43·3
Cheb		77·7	355	e 11 53	+ 2	e 21 37	0	e 33·8	39·3
Grozny		77·8	330	11 54	+ 2	21 39	+ 1	29·8	—
Piatigorsk		77·9	332	11 52	0	21 38	− 1	e 31·8	—
Jersey		78·8	5	e 12 16	+19	i 22 39	+50	—	—
Baku		79·0	326	e 12 0	+ 1	i 22 13	+22	—	—
Karlsruhe		79·0	357	i 12 12	+13	21 48	− 3	e 37·8	—
Theodosia		79·1	340	11 58	− 1	21 50	− 2	—	—
Stara Dala		79·2	350	e 12 6	+ 6	e 22 18	+25	e 37·8	52·8
Stuttgart		79·2	356	e 11 59k	− 1	i 21 54	+ 1	e 37·8	—
Vienna		79·2	351	e 11 58	− 2	e 22 11	+18	e 39·3	46·8
Paris		79·3	1	i 12 0a	0	i 21 50	− 4	31·8	38·8
Sotchi		79·3	335	11 59	− 1	e 21 48	− 6	—	—
Simferopol		79·4	339	12 1	0	21 56	+ 1	—	—
Strasbourg		79·4	357	i 12 0a	− 1	i 21 54	− 1	—	39·5
Tiflis		79·5	330	12 0	− 1	21 56	0	e 34·8	45·3
Budapest	E.	79·6	350	12 7	+ 5	21 58	+ 1	e 38·8	53·8
	N.	79·6	350	12 4	+ 2	22 9	+12	e 38·8	53·8
Sebastopol		79·9	339	12 13	+10	—	—	—	—
Yalta		79·9	337	11 48	−15	—	—	—	—
Kecskemet	Z.	80·1	349	e 12 9	+ 5	e 22 37	+35	e 38·9	—
Basle		80·4	358	e 12 6	0	e 22 6	+ 1	—	—
Graz		80·4	352	e 12 2	− 4	i 22 2	− 3	e 38·8	50·6
Zurich		80·6	357	e 12 5	− 2	e 22 7	− 1	—	—
Besançon		80·8	358	e 12 48?	+40	i 22 23	+13	—	—
Erevan		81·0	329	12 11	+ 2	22 12	0	—	—
Neuchatel		81·0	358	e 12 9	0	e 22 14	+ 2	—	—
Chur		81·1	357	e 12 9	− 1	e 22 12	− 1	—	—
Bucharest		81·6	344	i 12 13a	+ 1	i 22 36	+18	i 39·4	49·2
Zagreb		81·6	352	e 12 13	+ 1	i 22 22	+ 4	e 39·6	—
Triest		82·0	353	i 12 33	+19	i 22 22	0	e 37·3	42·8
Belgrade		82·1	348	e 12 14a	− 1	i 22 20	− 3	e 40·1	—
Medan		83·5	268	12 23	+ 1	i 22 30	− 7	e 48·8	—
Brisbane		83·6	206	i 12 12	−11	i 22 24	−14	34·2	—
Sofia		83·7	346	e 12 20	− 3	e 22 33	− 6	e 35·6	42·1
Port au Prince		84·3	66	e 12 36	+10	i 22 56	+11	—	—
Hyderabad		84·8	292	12 45	+16	22 54	+ 4	37·0	52·5
Batavia		86·3	256	12 35	− 1	22 54	[0]	28·8	—
Barcelona		86·7	1	e 12 25	−13	e 23 13	+ 5	36·9	54·2
Capodimonte	N.	86·7	351	12 40	+ 2	23 45	+37	45·8	—
Bombay		86·8	297	e 12 41	+ 3	i 22 57	[0]	e 36·7	—
Tortosa	N.	87·2	2	i 12 54	+14	i 23 12	− 1	38·2	51·3
Balboa Heights		87·7	78	e 12 44	+ 1	e 22 57	[− 6]	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. r.	s.	m.	m.
San Juan		87·9	63	e 12 45	+ 1	i 22 58	[− 6]	e 36·0	—
Toledo		88·0	6	i 12 44	0	i 22 59	[− 6]	35·8	—
Ksara		89·5	333	i 12 51a	0	23 31	− 3	51·8	58·5
Riverview		90·1	206	(e 13 6)	+12	(i 23 27)	[+10]	(e 37·0)	42·3
Sydney		90·1	206	e 12 46	− 8	—	—	23·6	24·8
Arapuni		90·2	186	—	—	e 23 30	[+12]	e 37·0	42·8
Granada		90·7	5	i 13 0	+ 3	i 24 54	PS	—	—
Almeria		91·1	6	e 13 16	+17	i 23 12	[−11]	e 42·5	—
Kodaikanal	E.	91·1	288	e 12 4	−55	i 22 26	[−57]	40·3	—
Malaga		91·1	6	i 13 1	+ 2	i 23 18	[− 5]	—	—
Algiers		91·3	0	e 12 59	− 1	23 22	[− 2]	43·5	54·8
San Fernando		91·3	8	e 12 59	− 1	i 23 26	[+ 2]	43·8	—
Colombo		92·4	284	13 9	+ 4	23 27	[− 3]	37·9	—
Wellington		93·5	186	i 13 19	+ 9	i 23 27	[−10]	36·8	42·8
Averroes		94·3	7	e 13 22	+ 9	i 23 47	[+ 6]	e 45·0	—
Helwan		94·4	335	e 13 8	− 6	i 23 41	[0]	—	—
Adelaide		95·0	215	e 16 37	?	i 23 37	[− 7]	e 30·4	44·7
Melbourne		95·6	208	i 13 40	+21	23 58	[+11]	e 38·4	47·4
Christchurch		95·8	188	i 13 21:	+ 1	i 23 48	[0]	43·9	—
Perth		102·2	233	i 21 51	PP	25 12	−11	40·6	48·5
Huancayo		106·7	88	e 14 11	P	i 24 53	[+11]	i 43·2	—
La Paz		114·6	85	e 16 6	?	i 25 16	[+ 2]	48·9	70·4
Santiago		125·5	100	e 19 38	?	—	—	—	38·8
Tananarive		131·8	296	19 21	[+15]	—	—	e 54·4	—
La Plata		134·2	91	19 18	[+ 8]	—	—	51·8	—
Rio de Janeiro		134·4	67	i 22 14	PP	i 28 36	SKKS	i 38·3	—
Cape Town		158·5	322	e 20 28	[+38]	i 32 11	SKKS	e 77·0	85·5

Additional readings :—
College eS = +8m.30s.
Sitka i = +5m.30s., ePP = +5m.59s., iS = +10m.16s.
Sapporo SS = +12m.27s.
Tyosi e = +8m.37s.
Victoria PPP = +8m.5s.
Honolulu iP = +6m.43s., PP = +7m.28s., PPP = +7m.54s., P_cP = +8m.58s., S = +12m.3s.
Yokohama PP = +7m.33s.
Nagano e = +7m.45s., +8m.11s., PPP = +8m.30s.
Oiwake PP = +8m.5s., P_cS = +11m.6s., SS = +14m.32s., SSS = +14m.51s.
Seattle iP = +7m.9s., iPP = +8m.24s., iPPP = +8m.59s., iS = +12m.36s.
Toyama PP = +8m.45s.
Gihu PPP = +8m.32s.
Ferndale eN = +7m.27s.
Osaka PPP = +8m.52s., P_cP = +9m.14s., P_cS = +13m.13s., S_cS = +17m.37s.
Kobe iPZ = +7m.12s., iPE = +7m.15s., iZ = +7m.27s. and +7m.45s., iE = +9m.43s., iE = +13m.42s., +13m.50s., eZ = +15m.47s., eEN = +15m.51s.
Ukiah P = +7m.33s., PP = +9m.5s., PPP = +9m.18s., iS = +13m.36s.
Hamada e = +9m.43s. and +14m.23s.
Matuyama i = +14m.23s.
San Francisco eSE = +13m.39s.
Berkeley eP_cPN = +9m.47s., eN = +13m.30s.
Branner eP_cPE = +9m.36s.
Lick iPN = +7m.49s.
Zinsen ipP = +7m.59s., iE = +9m.39s.
Butte PP = +9m.1s., iS = +14m.38s., i = +14m.51s.
Saskatoon SSS = +16m.48s.
Bozeman iP = +8m.8s., +8m.25s., iP_cP = +9m.36s., iS = +14m.22s., +14m.46s., i = +15m.0s., eSS = +17m.47s., S_cS = +17m.48s.
Fresno iPN = +7m.58s., iN = +8m.9s.
Haiwee iS_cPZ = +13m.29s.
Tinemaha iS_cPZ = +13m.29s., ePKP,PKPZ = +39m.24s.
Mount Wilson iS_cPZ = +13m.30s., ePKP,PKPZ = +38m.40s.
Pasadena iPP = +10m.32s., iE = +18m.14s., ePKP,PKPZ = +39m.10s.
Riverside iS_cPZ = +13m.36s., iEN = +18m.2s., ePKP,PKPZ = +38m.32s.
La Jolla ePPE = +10m.18s., iEN = +18m.6s.
Zi-ka-wei iZ = +8m.58s., +9m.24s., PPZ? = +10m.40s., PPPZ = +11m.22s., PPPP = +11m.44s., PS? = +15m.54s., iN = +18m.34s., SSZ = +19m.28s., SSSZ = +20m.50s., SSSSZ = +21m.30s., i = +22m.56s.
Denver iN = +9m.4s., iEN = +9m.8s., ipP = +9m.19s., iP_cPN = +10m.13s., iPPN = +10m.57s., ipPPE = +11m.22s., isS = +16m.57s.

Continued on next page.

Tucson PP = +11m.0s., iPPP = +11m.30s., SS = +19m.30s.
Scoresby Sund eZ = +10m.6s., +10m.32s., eN = +12m.24s., +13m.12s., eNZ = +13m.23s., eN = +15m.13s., eNZ = +18m.2s., SSN = +23m.6s.
Chicago P = +10m.9s., S_cS = +19m.49s.
Chicago (Loyola) i = +10m.4s., ePP = +12m.12s., isSP = +19m.44s.
Florissant iEN = +10m.8s., ipPZ = +10m.29s., iP_cPZ = +10m.48s., ePPZ = +12m.3s., iPPPN = +12m.34s., eSN = +17m.50s., iSPEZ = +18m.3s., iS_cSEN = +19m.46s., eSSE = +21m.51s., iE = +22m.33s.
St. Louis iE = +10m.4s., +10m.9s., +10m.16s., iP_cPE = +10m.56s., iE = +12m.25s., eE = +17m.45s., iE = +18m.13s., +18m.48s., iS_cSE = +19m.50s., iE = +20m.26s.
Hong Kong PP = +10m.44s., ? = +12m.55s., S = +14m.41s.
Ivigtut +18m.21s. and +18m.51s.
Cincinnati i = +10m.22s., +14m.43s., iSP = +19m.4s., isS = +19m.52s., i = +20m.9s.
Ottawa SS = +22m.30s.
Vermont iP = +10m.37s., iPPP = +14m.52s., iS = +14m.39s., i = +19m.46s., eSS = +23m.26s.
Pennsylvania i = +10m.49s., +11m.11s., +11m.31s., and +20m.23s.
Williamstown ipP = +11m.20s., isP = +11m.37s., iPP = +13m.7s., i? = +15m.13s., iPS = +20m.30s., iSS = +24m.13s., iSSS = +27m.26s., i? = +29m.29s.
Oak Ridge iP_cPZ = +16m.20s., iE = +19m.19s., iPSE = +19m.35s , eZ = +27m.14s., iPKP,PKPZ = +39m.15s., $ePKP_2PKP_2Z$ = +39m.50s., iZE = +41m.40s.
Apia pP = +11m.18s., S_cS = +19m.39s., sS = +20m.34s.
East Machias ePP = +13m.12s., ePPP = +15m.24s., S = +20m.3s., S_cS = +20m.33s., eSS = +23m.32s.
Philadelphia iP = +10m.56s., i = +14m.17s., ePPP = +14m.37s., i = +15m.29s., iS = +19m.23s., i = +20m.2s., +20m.19s., +23m.3s., iSS = +24m.12s.
Columbia ePP = +13m.8s., ePPP = +15m.4s., eS = +19m.56s.
Bergen PP = +14m.6s., PPP = +15m.32s., PS = +20m.1s., SZ = +20m.48s.?
Upsala ePP = +14m.14s., iPPP = +15m.49s., i = +20m.57s., iPSN = +21m.14s., iE = +21m.20s. and +21m.28s., iN = +21m.35s.
Aberdeen i = +11m.44s., e = +13m.29s., i = +16m.9s., +16m.34s., +20m.34s., +21m.12s.
Edinburgh i = +20m.50s., +21m.28s., and +30m.24s.
Copenhagen i = +11m.21s., +11m.36s., iZ = +11m.50s., +12m.0s., and +12m.16s., eN = +14m.6s., e = +14m.42s., +16m.12s., +16m.40s., eZ = +17m.30s., eN = +17m.40s., eE = +20m.50s., eN = +21m.12s., e = +21m.30s.
Durham iPN = +11m.43s., iN = +13m.0s., eN = +14m.28s., iSN = +20m.48s., PSN = +21m.23s., iSSN = +26m.21s.
Stonyhurst iPS = +21m.18s., i = +21m.48s. and +22m.6s.
Rathfarnham Castle ipP = +11m.47s., i = +12m.4s., iPP = +14m.18s., i = +21m.14s., isS = +21m.41s., i = +26m.11s.
Calcutta iN = +11m.43s., pP = +12m.24s., iN = +12m.58s., +21m.14s., +22m.6s., sS?N = +22m.36s., SS?N = +27m.23s.
De Bilt iZ = +11m.53s., +16m.57s., eE = +32m.27s.
Göttingen iZ = +12m.0s.
Kew iP_cP = +12m.4s., ipP = +12m.18s., isP = +12m.41s., iPPP = +17m.0s., iSPE = +21m.42s., ipSZ = +22m.17s., isS = +23m.31s., isSP = +22m.47s., isSSN = +27m.15s.
Jena iPE = +11m.48s., iZ = +12m.5s., iN = +22m.5s., iE = +22m.17s., eN = +26m.48s.
Agra i = +11m.54s., +12m.1s., +12m.46s., pP? = +13m.9s., PP = +15m.30s., sPP? = +16m.19s., PPP = +17m.11s., i = +22m.6s., iSS = +26m.46s., iSSS = +30m.37s., G? = +32m.43s.
Uccle ipP = +12m.8s., isPN = +12m.24s., iPPN = +14m.59s., iSPPN = +15m.25s., sPPPN = +17m.16s., iZ = +18m.34s., ipS = +21m.49s., isS = +22m.8s., iPSE = +22m.32s., isPS = +23m.6s., iSSN = +26m.34s., sSS = +27m.27s., iN = +32m.54s., iE = +37m.19s.
Prague eEZ = +12m.8s., ePP = +15m.4s., ePPP = +16m.5s., ePS = +22m.30s.
Piatigorsk i = +12m.9s.
Jersey i = +21m.48s., eSS = +31m.0s.
Stara Dala eP = +12m.14s.
Stuttgart iZ,ePN = +12m.0s., e = +12m.16s., iP_cPZ = +12m.30s., ipP = +12m.56s., e = +13m.56s., ePP = +15m.3s., e = +15m.34s., esPP = +15m.57s., iPS = +22m.47s., isS = +23m.32s., e = +25m.48s., eSS = +27m.34s., e = +28m.9s., and +33m.48s.
Vienna P_cP = +12m.9s., e = +13m.48s. and +16m.11s., PPP = +17m.55s., e = +18m.27s., PS = +23m.11s.
Paris PP = +15m.13s., PS = +22m.52s.
Sotchi i = +12m.25s.
Strasbourg ipPz = +12m.30s., sP = +12m.51s., iPP = +15m.3s., sPP = +15m.54s., iPPPZ = +16m.54s., pPPPZ = +17m.16s., pSZ = +22m.12s., iPS(sS) = +22m.42s., iSS = +27m.12s., SSS = +30m.42s.

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Tiflis ePcPZ = +12m.14s., ePPZ = +15m.26s., eE = +16m.41s., eZ = +17m.26s., eSKSZ = +22m.19s., ePSZ = +22m.46s., ePPSZ = +23m.5s., eSSE = +27m.18s., eE = +28m.16s., eSSSE = +31m.37s.
Budapest PcP = +12m.14s., iN = +12m.22s., iE = +12m.25s., iN = +12m.36s. and +12m.51s., iE = +13m.9s. and +14m.11s., PPE = +14m.51s., PPN = +14m.58s., iN = +15m.31s., iE = +15m.38s., +15m.53s., +16m.36s., +16m.56s., +17m.45s., +18m.3s., and +18m.48s., iN = +20m.0s., SKSE = +22m.11s., ScSN = +22m.24s., ScSE = +22m.27s., iE = +23m.2s., iN = +23m.45s., SSN = +27m.49s., iN = +35m.22s.
Kecskemet Z ePcP = +12m.25s., e = +12m.28s., +14m.27s., ePP = +15m.28s., e = +19m.35s. j eS = +22m.50s., eScS = +23m.11s., eSS = +18m.26s.
Graz iPcP = +12m.20s., iPS = +22m.56s.
Erevan i = +12m.26s.
Bucharest iPP = +15m.18s., iPPPE = +16m.50s., iSKS = +22m.22s., iPS = +23m.12s., iPSE = +23m.18s., iSSN = +27m.40s., iSSE = +27m.52s., iSSSE = +31m.20s.
Zagreb eZ = +12m.29s., i = +12m.33s.
Belgrade PcP = +12m.33s., PcS = +22m.38s., i = +24m.45s.
Medan iEN = +12m.56s. and +14m.34s.
Brisbane iPPN = +15m.12s.
Sofia iPSN = +23m.27s.
Port au Prince pS = (+23m.42s.). This and the S reading have been decreased by 10 minutes.
Batavia iSEN = +22m.57s.
Bombay iP = +12m.45s., i = +12m.53s. and +13m.36s., e = +16m.13s., +18m.13s., and +22m.50s., i = +23m.18s., +23m.45s., +24m.13s., and +25m.55s., e = +28m.43s.
San Juan iP = +12m.49s., ePP = +16m.10s., PPP = +18m.19s., S = +23m.14s., iPS = +24m.2s., PPS = +24m.55s., SS = +28m.36s., PSPS = +29m.48s.
Ksara pP = +13m.29s., sP = +13m.44s., PP = +16m.33s., pPP = +17m.3s., sS = +24m.41s.
Riverview i = (+13m.20s.), iPP = (+13m.53s.), iPPN = (+16m.52s.), iSE = (+23m.30s.), isSN = (+24m.11s.), eE = (+30m.0s.). Times may be in error ±13s.
Arapuni e = +30m.24s.
Kodaikanal iE = +12m.11s., +16m.2s., +17m.26s., and +23m.3s., PSE = +23m.17s., iE = +23m.32s. and +28m.8s.
Algiers pP = +13m.39s., PP = +15m.35s., PPP = +17m.2s., iS = +23m.39s., PS = +24m.49s., SS = +29m.27s.
San Fernando SSN = +28m.12s., SSSN = +30m.16s.
Wellington ipP? = +13m.48s., i = +16m.49s., ScS = +23m.53s., SS? = +24m.20s., eSS? = +32m.40s., Lg = +33·8m.
Averroes eSP = +14m.8s., PP = +17m.11s., ePPP = +19m.26s., e? = +23m.31s., ePS = +25m.57s., ePPS = +16m.33s., SS = +31m.29s. ?
Helwan e = +13m.33s., i = +17m.33s., +19m.48s., +21m.53s., +23m.53s., +24m.1s., +24m.21s., and +25m.13s., e = +25m.53s., i = +26m.45s. and +31m.33s.
Adelaide i = +17m.1s., e = +18m.32s. and +21m.41s., i = +24m.31s. and +25m.9s.
Christchurch iPPNZ = +17m.21s., iZE = +19m.34s., iNZ = +24m.0s., iE = +24m.34s., iNZ = +24m.43s. and +26m.1s., SS = +30m.52s., SSSNE = +34m.48s., LgE = +39·2m.
Melbourne i = +16m.6s. and +17m.53s., S = +24m.25s., PS = +24m.45s., i = +25m.3s., and +25m.20s.
Perth +23m.48s., +24m.28s., +27m.51s., +32m.36s., +33m.28s., and +33m.53s.
Huancayo ePP = +18m.32s., PPP = +21m.11s., iSKKS = +25m.25s., iS = +26m.19s., PS = +27m.52s., iPPS = +29m.1s., PKKP = +29m.45s., iSS = +33m.45s., iPSPS = +34m.16s., SSS = +38m.14s., PKP,PKP = +38m.23s.
La Paz ePKPZ = +18m.38s., iPPZ = +19m.36s., iZ = +20m.14s., PPPZ = +21m.52s., iSKKS = +26m.43s., iN = +29m.24s., iSSN = +35m.24s., iSSS = +39m.50s.
Tananarive pPP = +22m.19s., iN = +22m.54s., sPPE = +23m.1s., eE = +39m.15s.
Cape Town iSKPE = +24m.4s., iE = +24m.54s., iPPPE = +27m.59s., iPPPN = +28m.2s., iPSKSN = +34m.44s., iPSKSE = +34m.49s., iSSE = +44m.4s., i = +45m.28s., iSSSE = +51m.9s., iSSSN = +51m.24s., iGE = +58m.49s.

Sept. 3d. Readings also at 3h. (Samarkand), 5h. (near Andijan), 6h. (near Manila), 7h. (Andijan and Tashkent), 8h. (San Juan and Balboa Heights), 9h. (Almata, Andijan, Frunse, Samarkand, Tchimkent, Grozny, Sverdlovsk, and near Nagoya), 11h. (near Oak Ridge), 13h. (near La Paz and near Samarkand), 14h. (La Paz), 16h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and near La Paz), 17h. (near Branner), 19h. (Melbourne, Bergen, Vienna, and Zagreb), 21h. (Christchurch, Wellington, Riverview, Sydney, Mount Wilson, Pasadena, Riverside, Tinemaha, and near Manila), 22h. (Adelaide, Huancayo, Manila, Kodaikanal, Tashkent, Sverdlovsk, Ksara and Tiflis), 23h. (Tiflis, Copenhagen, De Bilt, Uccle, Paris, Stuttgart, and Scoresby Sund).

Sept. 4d. 6h. 14m. 21s. Epicentre 17°·5S. 174°·0E.

Epicentre given by U.S.S.R.

$A = -\cdot 9491$, $B = +\cdot 0998$, $C = -\cdot 2989$; $\delta = +9$; $h = +5$;
$D = +\cdot 105$, $E = +\cdot 995$; $G = +\cdot 297$, $H = -\cdot 031$, $K = -\cdot 954$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Apia		14·2	78	3 21	− 3	6 3	− 1	—	—
Arapuni		20·5	177	—	—	e 8 45	+18	—	9·6
Wellington		23·7	179	e 5 14	0	e 9 31	+ 4	11·6	12·6
Christchurch		26·0	182	i 6 1a	+25	i 10 3	− 3	12·4	—
Riverview		26·1	227	(e 6 9)	PP	(i 10 14)	+ 7	(e 12·0)	(13·3)
Melbourne		32·5	225	e 6 52?	+18	11 50	+ 1	13·9	18·0
Adelaide		36·0	233	—	—	i 12 47	+ 3	i 17·3	20·9
Palau		46·2	299	9 1	+33	15 28	+13	—	—
Honolulu		47·4	37	e 10 49	PP	e 15 39	+ 7	19·0	—
Perth		54·2	242	—	—	i 17 11	+ 5	23·8	26·8
Manila		61·2	298	e 10 18	− 1	18 47	+ 9	29·7	34·1
Tokyo		62·1	330	9 59	−26	18 27	−22	—	—
Oiwake		63·2	329	10 33	+ 1	—	—	—	—
Osaka		63·5	325	10 53	+19	19 50	+43	—	—
Nagano		63·6	329	10 37	+ 2	—	—	—	—
Kobe		63·7	325	e 9 43	−53	e 18 10	−60	—	—
Miyazaki		63·9	320	10 37	0	19 4	− 8	—	—
Batavia		66·4	271	10 44	− 9	—	—	35·6	—
Husan		67·5	322	e 13 40	PP	—	—	—	—
Zi-ka-wei	Z.	69·9	314	e 11 13	− 2	20 39	+15	33·7	40·7
Hong Kong		70·7	302	—	—	20 39	+ 5	—	34·6
Phu-Lien	E.	76·2	297	e 11 54	+ 2	—	—	—	—
Berkeley		81·3	46	e 12 23	+ 3	e 22 32	+ 2	—	—
Ukiah		81·3	45	—	—	e 22 47	+17	e 33·2	—
Pasadena		82·4	51	e 12 25	0	e 22 44	+ 3	e 33·8	—
La Jolla	Z.	82·5	53	e 12 26	0	—	—	—	—
Mount Wilson	Z.	82·6	51	e 12 28	+ 2	—	—	—	—
Riverside	Z.	83·0	51	e 12 26	− 2	—	—	—	—
Haiwee	E.	83·5	49	e 12 35	+ 4	—	—	—	—
Tinemaha		83·7	49	e 12 30	− 2	—	—	—	—
Sitka		85·4	25	e 12 46	+ 6	23 14	+ 3	e 33·9	—
Victoria		86·1	37	—	—	e 23 15	− 3	39·2	—
Seattle		86·2	38	e 12 45	+ 1	e 23 12	[+ 4]	e 36·1	—
College		87·1	15	e 12 42	− 7	23 24	− 4	e 36·3	—
Tucson		87·2	55	e 12 48	− 1	e 23 36	+ 8	e 35·9	—
Butte		91·4	42	e 16 45	PP	e 24 4	− 3	e 42·8	—
Bozeman		92·3	43	e 13 57	+44	—	—	e 41·8	—
Calcutta	N.	92·7	293	—	—	i 25 26	+68	—	—
Kodaikanal	E.	99·2	278	e 14 13	+28	24 39	[+16]	46·3	59·4
Agra	E.	103·0	294	e 18 33	PP	24 42	[+ 1]	—	—
Huancayo		105·5	108	e 17 37	?	e 24 58	[+ 5]	42·7	—
Tashkent		112·3	308	i 18 40	[+ 2]	26 15	{− 6}	e 46·3	59·7
Ottawa		116·4	47	—	—	e 26 39?	{−11}	49·7	—
Philadelphia		116·9	54	e 21 15	?	e 27 50	{+57}	e 47·3	—
Sverdlovsk		117·2	325	e 20 0	PP	e 27 50	{+55}	47·2	72·4
Vermont		118·3	48	—	—	26 23	{−39}	e 51·3	—
Seven Falls		119·7	45	e 19 57	PP	e 36 27	SS	54·7	—
East Machias		122·4	47	e 23 1	PPP	e 25 37	[−21]	50·7	—
San Juan		123·0	79	i 19 54	[+55]	27 42	{+ 8}	51·5	—
Rio de Janeiro		125·8	137	—	—	40 39?	?	—	—
Scoresby Sund		126·1	7	21 3	PP	—	—	57·6	—
Baku		127·0	308	e 24 1	PPP	—	—	56·7	63·2
Grozny		129·5	312	e 22 43	?	—	—	—	—
Moscow		129·6	330	e 19 14	[+ 3]	28 24	{+ 8}	65·2	74·7
Pulkovo		130·3	337	e 19 14	[+ 2]	28 54	{+33}	59·2	66·2
Tiflis		130·5	311	e 21 27	PP	e 39 17	SSP	59·7	65·1
Upsala		134·4	345	e 22 39?	?	i 24 12	PPP	e 65·7	77·7
Ksara		139·2	301	e 19 32	[+ 3]	—	—	—	84·2
Copenhagen		139·4	345	19 33	[+ 4]	—	—	57·7	—
Hamburg		141·9	346	e 19 39?	[+ 5]	—	—	e 66·7	76·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bucharest		142·0	322	e 22 39?	PP	—	—	69·7	82·7
Helwan		143·8	297	e 19 47	[+10]	—	—	—	—
Rathfarnham Castle		144·3	0	e 20 7	[+29]	—	—	71·7	—
Vienna		144·3	334	e 19 45	[+ 7]	—	—	—	—
De Bilt		144·4	349	e 19 41	[+ 3]	—	—	e 69·7	83·2
Sofia		144·6	321	e 19 34	[− 4]	—	—	e 85·6	—
Belgrade	z.	144·9	327	e 19 38a	[− 1]	—	—	—	—
Kew		145·8	354	i 19 42	[+ 2]	—	—	68·7	84·9
Uccle		145·8	350	19 43	[+ 3]	—	—	e 58·7	—
Zagreb		146·4	333	e 19 42	[+ 1]	—	—	—	—
Stuttgart		146·5	343	i 19 45a	[+ 3]	—	—	63·7	82·6
Strasbourg		147·0	344	19 47	[+ 4]	26 42	[− 8]	72·7	—
Triest		147·5	335	i 19 48	[+ 5]	—	—	e 68·7	77·7
Zurich		147·9	343	e 19 52	[+ 9]	—	—	—	—
Basle		148·0	343	e 19 49	[+ 5]	—	—	—	—
Chur		148·0	342	e 19 47	[+ 3]	—	—	—	—
Paris		148·0	350	e 19 52	[+ 8]	—	—	71·7	83·7
Neuchatel		148·7	353	e 19 50	[+ 5]	—	—	—	—
Toledo		157·7	356	e 20 19	[+21]	—	—	e 87·3	—

Additional readings :—
Apia PN = +3m.24s., SE = +6m.16s.
Wellington iPP = +5m.37s., iPPP = +6m.24s.
Riverview iE =(+10m.32s.) iN =(+10m.55s.); times may be in error ± 13s.
Melbourne i = +7m.56s.
Adelaide i = +15m.26s.
Honolulu ePPP = +11m.25s., eS = +15m.4s., iS = +15m.45s., SS = +18m.29s.
Perth i = +16m.7s. and +21m.55s.
Osaka i = +12m.42s. and +15m.47s.
Kobe eSZ = +18m.14s.
Berkeley eN = +13m.28s., eSN = +22m.36s.
Ukiah ePS = +23m.2s., eSS = +27m.54s.
Sitka ePP = +15m.49s., ePPP = +17m.30s., ePS = +23m.49s., PPS = +24m.9s., eSS = +28m.4s., eSSS = +31m.54s.
Victoria e = +28m.27s. and +35m.21s.
Seattle ePP = +15m.41s., ePPP = +17m.23s., ePS = +23m.53s., ePPS = +24m.17s., eSS = +27m.59s., ePSPS = +29m.40s.
College ePPP = +18m.21s., eSKS = +23m.5s., eSS = +29m.3s., eSSS = +32m.43s.
Tucson eSS = +28m.56s.
Kodaikanal eE = +17m.59s., +20m.4s., and +25m.31s., iE = +25m.46s., PSE = +26m.51s., e = +27m.27s., SSE = +31m.53s., eE = +36m.4s.
Agra PS = +27m.10s., PPS = +27m.54s., SS = +32m.48s. and +37m.6s.
Huancayo ePP = +18m.53s., ePPP = +20m.29s., eSKKS = +25m.36s., eS = +26m.35s., ePS = +27m.21s., PPS = +28m.33s., PKKP = +29m.47s., eSS = +33m.18s., iPSPS = +33m.46s., eSSS = +36m.52s., ePKP,PKP = +38m.10s.
Tiflis ePPPZ = +24m.5s.
Tashkent ePP = +19m.16s., i = +22m.33s., i = +24m.12s., iS = +27m.7s., PPS = +30m.12s., iSS = +34m.57s.
Ottawa e = +35m.57s.
Philadelphia ePS = +29m.43s., eSS = +36m.5s., eSSS = +39m.23s.
Sverdlovsk e = +36m.4s.
Vermont eS = +28m.0s., ePS = +30m.0s., eSS = +36m.16s., ePSPS = +36m.30s.
East Machias eSKKS = +27m.3s., eS = +28m.27s., ePS = +30m.18s., eSS = +37m.6s., ePSPS = +37m.41s., eSSS = +41m.32s.
San Juan ePPP = +22m.39s., SSS = +39m.42s.
Baku e = +33m.29s., e = +36m.31s., e = +40m.39s.
Moscow e = +22m.16s. and +24m.55s.
Pulkovo ePP = +22m.35s., PPP = +25m.53s.
Ksara ePP = +22m.52s.?, ePPS = +35m.54s.
Copenhagen +22m.20s., eN = +23m.15s.
Helwan e = +23m.59s.
Rathfarnham Castle ePKP = +23m.21s.; e = +24m.9s.
Belgrade e = +20m.14s. and +22m.5s.
Uccle eN = +22m.46s. and +41m.39s.
Zagreb i = +20m.8s.
Stuttgart ePKPZ = +20m.13s., ePP = +22m.52s.
Strasbourg eZ = +22m.47s., ePPZ = +23m.4s., iSKKS = +29m.52s., eSS = +42m.14s.
Long waves were also recorded at Sydney, La Paz, Hyderabad, Prague, Stonyhurst, San Fernando, Granada, Edinburgh, Cheb, Cape Town, Ivigtut, and Malaga.

Sept. 4d. Readings also at 0h. (Christchurch, New Plymouth, and near Wellington), 1h. (Santiago), 2h. (Riverside, Tacubaya, and near Manila), 3h. (Mount Wilson, Pasadena, Santa Barbara, Tinemaha (2), Tiflis, Philadelphia, La Paz, Huancayo, San Juan, and near Tananarive), 4h. (Rio de Janeiro), 5h. (Williamstown), 7h. (Riverview), 9h. (near New Plymouth, Wellington, and near Balboa Heights), 10h. (near Almata and Frunse), 11h. (near Santiago), 13h. (near Tiflis), 14h. (Santiago (4)), 16h. (Tiflis and Tucson), 17h. (Balboa Heights, Kobe, and near Nagoya), 19h. (Mizusawa), 20h. (Tiflis), 21h. (Andijan, Frunse, Tiflis, and Uccle), 22h. (La Paz), 23h. (Hong Kong, near Manila, and near Balboa Heights).

Sept. 5d. 20h. 53m. 22s. Epicentre 5°·5S. 128°·0E.

$A = -\cdot6129$, $B = +\cdot7845$, $C = -\cdot0952$; $\delta = +15$; $h = +7$;
$D = +\cdot788$, $E = +\cdot616$; $G = +\cdot059$, $H = -\cdot075$, $K = -\cdot996$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia		21·1	265	i 4 48	0	i 9 19	SSS	—	—
Manila		21·1	341	i 4 58k	+10	8 56	+17	—	—
Medan		30·6	286	6 25	+ 7	i 16 33	?	—	—
Hong Kong		30·8	334	11 22	S	(11 22)	− 1	—	17·9
Adelaide		30·9	163	e 6 19	− 1	11 55	+31	14·6	15·5
Riverview		35·5	146	—	—	(e 13 9)	+33	—	—
Sydney		35·5	146	—	—	e 11 56	−40	18·5	19·6
Melbourne		35·7	156	—	—	e 13 33	+56	16·8	18·8
Kobe	E.	40·6	10	e 8 45	+62	e 13 25	−29	—	18·1
Nagoya		41·3	11	e 7 52	+ 3	—	—	—	—
Mizusawa	E.	46·0	14	8 41	+14	10 12	?	—	—
Vladivostok		48·5	3	e 9 9	+23	e 15 9	−39	—	—
Andijan		68·6	317	11 5	− 2	20 2	− 7	—	—
Tashkent		70·9	317	i 11 15	− 6	i 20 26	−10	e 34·6	40·1
Sverdlovsk		82·4	329	i 12 20	− 5	i 22 23	−18	37·6	—
Grozny		88·1	313	e 12 28	−26	e 22 59	[−22]	—	—
Tiflis		88·6	312	e 12 52	− 4	e 23 5	[−18]	—	—
Moscow		94·7	325	—	—	e 23 37	[−22]	—	—
Ksara		94·8	303	e 15 4	?	e 25 52	PS	—	58·6

Additional readings :—
Medan iN = +6m.34s.
Adelaide i = +12m.58s.
Riverview iE = (+14m.55s.), iN = (+15m.13s.), iE = (+16m.27s.), iN = (+17m.38s.), iE = (+17m.52s.), iN = (+18m.8s.); times may be in error ± 13s.
Melbourne i = +15m.27s.
Tiflis eZ = +13m.33s., eSKKSZ = +23m.34s.
Long waves were also recorded at Wellington, Copenhagen, and Pulkovo.

Sept. 5d. Readings also at 1h. (Almata, Frunse, Andijan, Baku, Ksara, Platigorsk, Tiflis, and Sverdlovsk), 3h. (Samarkand), 4h. (near Tiflis), 5h. (Frunse, near Andijan, and near Nagoya), 9h. (near Berkeley, Branner, and Lick), 10h. (Bucharest, Sofia, Williamstown, and near Balboa Heights), 11h. (near Weston), 12h. (Tiflis), 15h. (Ksara, Helwan, Tiflis (2), Platigorsk, Bucharest (2), Stuttgart, Triest, and near Berkeley), 16h. (near Manila), 19h. (near Santiago and St. Javier), 21h. (Tiflis and near Manila), 22h. (Tiflis).

Sept. 6d. 16h. 2m. 42s. Epicentre 36°·4N. 140°·6E.

Felt strongly at Tukubasan and fairly strongly at Mito, Kakioka, Kumagaya, Maebasi, and Utunomiya. Radius 200-300km. See Seismological Bulletin of the Cent. Met. Obs., Japan, for the year 1937. Tokyo 1939, pp. 52-53. Macroseismic chart p. 53.

$A = -\cdot6235$, $B = +\cdot5121$, $C = +\cdot5908$; $\delta = +4$; $h = 0$;
$D = +\cdot635$, $E = +\cdot773$; $G = -\cdot457$, $H = +\cdot375$, $K = -\cdot807$.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mito	0·1	261	0 13k	+ 5	0 20	+ 7	—	—
Kakioka	0·4	244	0 11k	− 2	0 19	− 2	—	—
Tukubasan	0·5	246	0 13	− 1	0 20	− 3	—	—
Onahama	0·6	24	0 15a	0	0 24	− 2	—	—
Tyosi	0·7	162	0 16a	− 1	0 26	− 2	—	—
Kumagaya	1·0	256	0 20k	− 1	0 35	− 1	—	—
Tokyo, Cen. Met. Obs.	1·0	224	0 21k	0	0 35	− 1	—	0·6
Tokyo, Imp. Univ.	1·0	224	0 19	− 2	0 33	− 3	—	—
Komaba	1·1	225	0 19	− 3	0 33	− 6	—	—
Mitaka	1·1	229	0 24	+ 2	0 39	0	—	—
Aidu	1·2	342	0 13k	−11	0 28	−13	—	—
Katuura	1·3	195	0 21	− 4	0 37	− 7	—	—
Kamakura	1·3	218	0 28	+ 3	0 46	+ 2	—	—
Maebasi	1·3	270	0 23k	− 2	0 38	− 6	—	—
Titibu	1·3	251	0 28	+ 3	0 45	+ 1	—	—
Yokohama	1·3	219	0 25	0	0 41	− 3	—	—
Hukusima	1·4	356	0 25k	− 2	0 40	− 6	—	—
Misaki	1·5	227	0 28	0	0 48	− 1	—	—
Mera	1·6	203	0 33	+ 3	0 52	+ 1	—	—
Oiwake	1·6	268	0 29k	− 1	0 52	+ 1	—	—
Gotenba	1·7	231	0 31k	0	0 53	− 1	—	—
Koyama	1·7	231	0 28	− 3	0 50	− 4	—	—
Hunatu	1·8	239	0 31	− 1	0 51	− 5	—	—
Kohu	1·8	245	0 32a	0	1 2	S_g	—	—
Misima	1·8	226	0 34	+ 2	0 59	S_g	—	—
Niigata	1·9	321	0 48	+14	—	—	—	—
Numadu	1·9	228	0 36	+ 2	1 15	S_g	—	—
Sendai	1·9	7	0 31	− 3	0 57	S_g	—	—
Yamagata	1·9	354	0 29	− 5	0 51	− 8	—	—
Nagano	2·0	278	0 35k	0	—	—	—	—
Takada	2·0	290	0 35	0	—	—	—	—
Yosiwara	2·0	232	0 28	− 7	0 54	− 8	—	—
Isinomaki	2·1	16	0 38	P*	—	—	—	—
Matumoto	2·1	266	0 37	0	1 1	− 3	—	—
Iida	2·4	248	0 42	+ 1	1 11	− 1	—	—
Sakata	2·5	346	0 50	P_g	1 28	S_g	—	—
Omaesaki	2·7	227	0 43	− 2	1 29	S_g	—	—
Takayama	2·7	265	0 45	0	—	—	—	—
Mizusawa	2·8	9	e 0 45	− 2	1 18	− 4	—	—
Toyama	2·8	276	0 46	− 1	1 13	− 9	—	—
Hamamatu	2·9	234	0 55k	P*	1 30	S*	—	—
Husiki	2·9	278	0 52	+ 4	1 27	+ 3	—	—
Wazima	3·1	288	0 50	− 1	—	—	—	—
Nagoya	3·2	247	e 0 54	+ 2	1 36	+ 4	—	2·2
Gihu	3·3	252	0 52k	− 1	1 34	− 1	—	—
Hatidyozima	3·3	192	0 56	+ 3	1 35	0	—	—
Morioka	3·3	8	0 52	− 1	1 30	− 5	—	—
Akita	3·4	355	0 55	0	—	—	—	—
Miyako	3·4	18	0 52	− 3	1 33	− 4	—	—
Ibukisan	3·6	253	1 16	P_g	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hikone		3·7	253	1 4$_a$	+ 4	1 38	− 7	—	—
Kameyama		3·7	247	1 2	+ 2	1 47	+ 2	—	—
Tu		3·7	244	1 31	+31	2 8	S$_g$	—	—
Hatinohe		4·2	10	1 3	− 4	1 52	−5	—	—
Kyoto		4·2	252	1 4	− 3	2 11	S*	—	—
Aomori		4·4	1	1 10	0	2 6	+ 4	—	—
Yagi		4·4	245	1 19	P*	2 15	S*	—	—
Miyadu		4·5	260	1 10	− 1	—	—	—	—
Osaka		4·5	249	1 11	0	2 16	S*	—	—
Osaka B		4·5	249	1 15	+ 4	2 42	S$_g$	—	—
Kobe		4·7	250	e 1 22	P*	2 20	S*	—	2·7
Toyooka		4·8	261	1 14	− 1	2 13	+ 1	—	2·7
Siomisaki		4·9	235	1 36	P$_g$	—	—	—	—
Wakayama		5·0	244	1 18	0	2 35	S*	—	—
Sumoto	E.	5·1	247	e 1 18	− 2	2 25	+ 5	—	2·9
	N.	5·1	247	e 1 23	+ 3	2 30	+10	—	2·7
Hakodate		5·4	1	1 58	P$_g$	—	—	—	—
Tokusima		5·4	246	1 39	P*	2 50	S*	—	—
Urakawa		6·0	14	2 32	S	(2 32)	−11	—	—
Sapporo		6·7	8	2 11	+29	—	—	—	—
Obihiro		6·8	16	3 11	S	(3 11)	+ 8	—	—
Hamada		7·1	259	3 2	S	(3 2)	− 8	—	—
Hukuoka B		8·8	254	e 3 54	S	(e 3 54)	+ 1	—	—
Miyazaki		8·8	243	2 12	+ 1	—	—	—	—
Kumamoto		8·9	249	2 2	−10	4 36	S*	—	—
Titizima		9·4	171	3 49	?	—	—	—	—
Vladivostok		9·5	318	e 1 54	−26	e 3 32	−38	4·3	—
Tiflis		70·7	308	e 11 17	− 3	—	—	—	—

Additional readings :—
Sumoto SZ = +2m.36s.
Hukuoka B S = +4m.48s.

Sept. 6d. Readings also at 0h. (Oaxaca and near Kobe), 3h. (near Medan and near Sumoto), 4h. and 5h. (3) (Samarkand), 6h. (Samarkand (3) and near Hukuoka B), 7h. and 8h. (Samarkand), 9h. (near La Paz), 10h. (San Juan), 11h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and Philadelphia), 13h. (Tiflis), 15h. (Tucson), 16h. (Christchurch), 19h. (Tiflis), 23h. (Tiflis and Port au Prince).

Sept. 7d. 22h. 52m. 4s. Epicentre 36°·4N. 140°·6E. (as on 6d.).

$\overline{A} = -\cdot6235$, B = +·5121, C = +·5908 ; $\delta = +4$; $h = 0$.

		Δ	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Tukubasan		0·5	246	0 14	0	0 22	− 1	—
Tokyo, Cent. Met. Obs.		1·0	224	0 22$_k$	+ 1	0 36	0	0·6
Tokyo, Imp. Univ.		1·0	224	0 21	0	0 34	− 2	—
Komaba		1·1	225	0 23	+ 1	0 37	− 2	—
Mitaka		1·1	229	0 24	+ 2	0 41	+ 2	—
Kamakura		1·3	218	0 25	0	0 44	0	—
Titibu		1·3	251	0 25	0	0 43	− 1	—
Misaki		1·5	227	0 25	− 3	0 44	− 5	—
Koyama		1·7	231	0 25	− 6	0 48	− 6	—
Yosiwara		2·0	232	0 25	−10	0 50	−12	—
Mizusawa	E.	2·8	9	0 43	− 4	1 18	− 4	—
	N.	2·8	9	e 0 47	0	1 20	− 2	—
Nagoya		3·2	247	e 0 56	+ 4	1 37	S*	2·1

Sept. 7d. Readings also at 0h. (Columbia, near San Juan, and near Mizusawa), 6h. (Andijan, Frunse, and Tiflis), 7h. (Tiflis), 11h. (Oak Ridge), 13h. (near Medan), 15h. (near Manila (2)), 18h. (near Tucson), 20h. (Samarkand), 22h. (Mount Wilson, Pasadena, Riverside, La Jolla, and near Tucson), 23h. (Mount Wilson, Pasadena, Riverside, La Jolla, and Tucson).

Sept. 8d. 0h. 40m. 2s. Epicentre 56°·0S. 27°·0W.

$A = +\cdot5006$, $B = -\cdot2551$, $C = -\cdot8273$; $\delta = +10$; $h = -8$;
$D = -\cdot454$, $E = -\cdot891$; $G = -\cdot737$, $H = +\cdot376$, $K = -\cdot562$.

A depth of focus 0·010 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Plata		29·8	302	6 2	+ 2	10 46	− 2	12·7	—
Rio de Janeiro	N.	35·2	334	i 6 51	+ 4	—	—	i 14·8	—
Santiago		37·5	288	7 15	+ 9	13 9	+22	—	27·7
Cape Town		38·0	74	i 7 10	0	i 12 50	− 5	e 18·1	21·3
La Paz		50·3	305	i 8 46a	− 3	i 15 54	+ 2	22·8	—
Huancayo		57·5	300	e 9 26	−15	17 1	−28	—	—
Tananarive		65·9	89	e 10 38	0	19 20	+ 4	26·8	34·2
Christchurch		79·5	194	i 11 56	− 2	i 21 46	− 4	—	—
San Juan		81·1	323	e 11 55	−11	21 48	−18	33·3	—
Wellington		81·3	195	i 12 3	− 4	21 58	−10	37·0	42·0
Arapuni		84·3	197	—	—	e 22 52	+14	e 35·0	43·0
Melbourne		86·3	173	i 12 33	+ 1	22 47	[+ 1]	35·3	40·9
Perth		86·8	149	10 44	?	22 43	[− 6]	41·0	—
Adelaide		88·6	167	i 12 37	− 6	i 22 55	[− 6]	39·2	48·5
Riverview		90·5	176	i 12 49a	− 3	i 23 8	[− 5]	e 44·2	50·0
Sydney		90·5	176	e 11 28	?	(23 22)	[+ 9]	23·4	24·6
San Fernando		93·8	17	e 13 14	+ 7	i 23 38	[+ 9]	41·0	—
Malaga		94·4	18	i 13 10	0	i 23 30	[− 3]	—	—
Almeria		94·8	20	e 13 12	0	e 23 32	[− 4]	e 37·5	—
Granada		94·9	18	e 13 19	+ 7	i 23 41	[+ 4]	—	—
Algiers		95·9	24	e 16 59	PP	i 23 41	[− 2]	i 30·9	51·0
Brisbane	N.	96·9	180	i 13 16	− 5	i 23 40	[− 8]	—	—
Toledo		97·5	17	i 13 25	+ 1	i 23 51	[0]	e 39·4	51·5
Helwan		98·8	48	17 26	PP	23 58	[− 1]	—	56·0
Tortosa	N.	99·2	21	—	—	25 3	+12	e 35·0	41·5
Barcelona		100·1	21	e 17 45	PP	e 24 3	[− 1]	e 26·6	44·9
Philadelphia		104·0	323	e 14 18	+25	24 15	[− 8]	e 41·8	—
Ksara		104·2	51	e 13 57	P	24 29	[+ 5]	50·0	59·0
Weston		104·9	327	e 14 27	P	e 25 3	−36	—	54·7
Colombo		105·1	100	24 24	SKS	33 7	SS	—	—
Oak Ridge		105·1	327	e 14 25	P	—	—	e 54·0	—
Williamstown		105·8	326	i 13 58	P	e 25 3	[+32]	—	—
East Machias		106·0	331	e 14 20	pP	i 24 18	[−14]	e 42·8	—
Kodaikanal	E.	106·5	96	e 16 47	?	24 30	[− 4]	—	45·6
Neuchatel		106·5	24	e 18 25	PP	—	—	—	—
Jersey		106·9	16	(e 20 58?)	PPP	—	—	e 21·0	—
Triest		106·9	28	i 18 31	PP	i 24 32	[− 3]	—	49·0
Chur		107·0	25	e 18 21	PKP	e 25 30	−26	—	—
Basle		107·2	24	e 18 35	PKP	e 24 35	[− 2]	—	—
Zurich		107·2	24	e 18 15	PKP	e 24 35	[− 2]	—	—
Paris		107·3	20	e 14 36	P	e 24 32	[− 5]	44·0	49·0
Batavia		107·4	132	18 29	PKP	i 24 35	[− 3]	—	—
Belgrade		108·1	34	e 17 26a	?	e 24 40	[− 1]	e 52·8	—
Strasbourg		108·2	24	e 14 13	P	i 24 40	[− 2]	i 44·6	—
St. Louis	E.	108·4	312	e 18 35	PKP	i 24 36	[− 6]	e 27·7	—
Florissant		108·6	312	e 14 42	P	i 24 38	[− 5]	—	—
Stuttgart		108·7	25	e 14 43	P	24 41	[− 3]	e 48·0	59·0
Toronto		108·7	322	e 18 58,	PP	i 24 42	[− 2]	50·0	—
Ottawa		109·0	326	18 4	PKP	24 39	[− 6]	46·0	—
Seven Falls		109·1	330	i 20 46	PPP	—	—	45·0	—
Shawinigan Falls		109·2	329	e 18 40	PP	e 24 39	[− 6]	—	—
Kew		109·4	17	e 14 47	P	i 24 41	[− 5]	e 45·0	58·0
Oxford		109·5	16	e 19 6	PP	i 24 45	[− 1]	e 46·0	61·2
Bucharest		109·6	38	e 18 54	PP	e 24 56	[+ 9]	38·2	52·0
Uccle		109·6	20	e 14 42	P	i 24 46	[− 1]	e 46·0	50·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Kecskemet	z.	109·8	33	e 12 29	?	—	—	—	—
Vienna		110·0	29	e 18 47	[+27]	e 25 47	[+58]	e 59·0	—
Budapest		110·1	32	e 18 58	PP	i 25 45	[+56]	—	63·0
Chicago		110·2	315	e 16 26	?	24 43	[− 7]	—	—
Stara Dala		110·2	31	e 20 6	PP	—	—	e 53·0	—
Cheb		110·7	25	—	—	e 27 58?	?	50·0	62·0
Bidston		110·8	15	—	—	i 24 50	[− 2]	e 45·0	58·2
Bombay		110·9	87	e 19 3	PP	i 26 34	?	—	—
De Bilt		111·0	20	e 14 57	P	e 24 53	[0]	e 45·0	51·1
Prague		111·2	27	e 19 34	PP	e 28 30	PS	e 46·0	54·0
Jena		111·3	25	e 18 58	PP	e 24 46	[− 8]	e 43·0	55·5
Stonyhurst		111·3	15	i 14 31	P	e 24 58?	[+ 4]	47·0	60·2
Göttingen		111·5	24	e 18 49	[+26]	e 28 58?	PS	—	62·0
Medan		112·2	119	18 54	[+30]	i 24 54	[− 4]	e 46·0	—
Sebastopol		112·4	42	e 19 25	PP	e 28 54	PS	—	—
Yalta		112·6	43	e 19 36	PP	e 25 2	[+ 3]	—	—
Tucson		112·8	294	e 18 22	[− 3]	e 24 56	[− 4]	e 44·3	—
Hyderabad		112·9	92	e 19 17	PP	29 12	PS	—	55·2
Simferopol		113·0	42	e 19 20	PP	e 28 56	PS	—	—
Edinburgh		113·2	14	—	—	i 29 34	?	e 49·0	—
Erevan		113·3	52	e 18 23	[− 3]	—	—	—	—
Hamburg		113·3	23	e 19 15	PP	e 28 47	PS	49·0	54·0
Theodosia		113·5	44	e 18 59	[+32]	e 24 59	[− 4]	—	—
Aberdeen		114·6	14	—	—	e 49 18	?	—	—
Tiflis		114·7	52	e 18 27	[− 2]	25 4	[− 4]	e 50·0	66·5
Piatigorsk		115·8	49	e 18 29	[− 2]	e 25 7	[− 5]	28·0	—
Baku		115·9	56	e 19 32	PP	25 16	[+ 4]	52·0	56·8
Copenhagen		115·9	23	e 19 34	PP	e 25 11	[− 1]	44·0	—
Grozny		116·4	51	e 18 35	[+ 3]	i 25 21	[+ 7]	—	—
La Jolla	z.	116·7	290	e 18 31	[− 2]	—	—	—	—
Riverside		117·6	290	e 18 30	[− 5]	e 25 11	[− 7]	—	—
Ivigtut		118·0	347	e 20 16	PP	e 25 15	[− 5]	53·0	—
Mount Wilson	z.	118·1	290	i 18 34	[− 2]	—	—	—	—
Pasadena		118·1	290	i 18 33	[− 3]	i 25 17	[− 3]	—	—
Santa Barbara	z.	119·2	289	i 18 38	[0]	—	—	—	—
Agra	E.	120·3	86	20 14	PP	27 56	SKKS	50·3	—
Tinemaha	z.	120·4	292	i 18 37	[− 3]	—	—	—	—
Upsala		120·8	24	19 13	[+32]	i 25 22	[− 7]	e 49·0	58·4
Calcutta	N.	122·5	98	i 20 56	PP	i 41 58	SS	75·1	—
Branner		122·8	290	e 18 46	[+ 1]	—	—	—	—
Berkeley		123·1	290	e 18 42	[− 4]	i 25 34	[− 3]	—	—
Moscow		123·1	37	18 37	[− 9]	25 34	[− 3]	48·5	63·9
Bozeman		123·3	304	e 20 33	PP	e 25 18	[−20]	e 51·6	—
Pulkovo		124·1	31	e 20 26	PP	—	—	52·5	69·7
Butte		124·3	303	e 20 24	PP	e 25 35	[− 6]	e 49·5	—
Ukiah		124·6	291	e 21 1	PP	e 25 36	[− 6]	—	—
Scoresby Sund		126·2	2	21 10	PP	e 25 47	[+ 1]	50·0	—
Tashkent		126·2	68	18 47	[− 4]	27 24	SKKS	e 52·0	76·0
Andijan		127·4	71	e 18 55	[+ 2]	e 29 8	?	—	—
Palau		129·3	156	22 13	?	—	—	—	—
Honolulu		129·9	248	e 21 8	PP	e 25 53	[− 5]	—	—
Frunse		130·1	70	e 18 56	[− 3]	—	—	—	—
Seattle		130·2	299	e 19 24	[+25]	25 37	[−22]	—	—
Phu-Lien		130·9	116	e 22 12	?	—	—	—	—
Victoria		131·2	299	e 21 28	PP	e 39 16	SS	56·0	—
Manila		131·9	137	e 19 2	[− 1]	—	—	—	—
Sverdlovsk		132·7	48	19 1	[− 3]	i 26 0	[− 3]	63·9	74·0
Hong Kong		135·9	123	21 38	PP	39 36	SS	—	58·4
Semipalatinsk		137·9	66	e 19 14	[0]	—	—	—	—
Kosyun		138·5	131	19 26	[+11]	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka		142·1	303	e 19 26	[+ 5]	e 41 38	sSS	e 58·0	—
Naha		145·0	137	19 18	[− 8]	—	—	—	—
Zi-ka-wei	Z.	146·8	125	e 19 29	[0]	—	—	77·1	85·1
Nake		147·7	139	19 28	[− 3]	—	—	—	—
Titizima		150·1	161	19 39	[+ 5]	—	—	—	—
College		150·6	313	e 18 53	[−42]	e 29 31	SKKS	60·4	—
Kagosima		151·0	138	19 41	[+ 5]	—	—	—	—
Miyazaki		151·6	140	19 36	[− 1]	29 58	SKKS	—	—
Nagasaki		151·7	136	19 33	[− 4]	—	—	—	—
Kumamoto		152·1	137	19 31	[− 6]	—	—	—	—
Matuyama		153·8	140	19 53	[+14]	—	—	—	—
Sumoto		155·0	143	i 19 33	[− 9]	e 26 57	[+20]	—	—
Wakayama		155·0	143	20 7	[+25]	—	—	—	—
Kobe	E.	155·4	143	e 21 42	?	—	—	—	43·5
Kameyama		156·0	146	19 48	[+ 5]	—	—	—	—
Hikone		156·3	144	19 49	[+ 6]	—	—	—	—
Nagoya		156·5	146	(20 32)	[+49]	20 32	P	—	—
Mera		157·1	151	19 54	[+10]	—	—	—	—
Tokyo		157·8	150	19 39	[− 6]	30 35	SKKS	—	—
Oiwake		158·0	147	19 40	[− 5]	30 36	SKKS	—	—
Nagano		158·2	146	20 5	[+20]	30 37	SKKS	—	—
Maebasi		159·8	147	19 48	[0]	—	—	—	—
Vladivostok		161·3	125	19 42	[− 7]	31 39	SKKS	52·1	102·1
Morioka		161·9	149	20 23	[+33]	30 53	SKKS	—	—
Sapporo		165·1	144	19 51	[− 2]	30 49	SKKS	—	—

Additional readings :—

Cape Town iPP? = +7m.45s., iPPP = +8m.39s., iSE = +12m.55s., iSS? = +15m.51s.

La Paz iZ = +9m.16s., ipPZ = +9m.40s., isPZ = +10m.9s., PPZ = +11m.8s., ipPP = +11m.52s., isPP = +12m.20s., iZ = +16m.40s., sSZ = +17m.32s., S_cSZ = +18m.24s., SSZ = +20m.28s.

Huancayo pP = +10m.6s., esP = +10m.22s., P_cP = +10m.26s., PP = +11m.34s., pPP = +12m.13s., esPP = +12m.23s., PPP = +12m.51s., eS_cP = +13m.59s., P_cS = +14m.22s., sS = +18m.15s., S_cS = +18m.40s., SS = +21m.51s., esSS = +21m.58s., i = +22m.13s., i = +23m.33s., +24m.56s., +25m.41s., and +26m.43s.

Tananarive pPE = +10m.58s., sS = +20m.30s., SSE = +23m.7s.

Christchurch iPPZ = +12m.25s., iNZ = +12m.59s., iZ = +14m.58s., iS = +22m.39s., iN = +23m.29s., iEZ = +23m.36s.

San Juan $ePcP$ = +12m.11s., epP = +12m.31s., sP = +12m.40s , PP = +15m.8s., PPP = +15m.43s., sPP = +15m.53s., PPP = +16m.59s., pPPP = +17m.37s. SKS = +22m.2s., pS = +22m.10s., SP = +22m.28s., PS = +22m.52s., PPS = +23m.33s., SS = +26m.43s., SSS = +27m.47s.

Wellington iP_cP = +12m.13s., ipP = +12m.43s., iPP? = +15m.13s., PPP = +16m.54s., ipPPP? = +17m.43s., i = +18m.27s., iS_cS? = +22m.47s., isS? = +23m.9s., SS = +28m.7s., L_q? = +34·5m., i = +38m.8s.

Melbourne i = +16m.23s., +17m.55s , and +28m.45s.

Perth PP = +14m.40s. and +14m.53s., i = +15m.53s., PPP = +17m.46s., i = +20m.8s., S = +22m.58s. and +23m.6s., i = +24m.10s., SS = +29m.3s., SSS = +34m.57s., SSSS = +36m.30s.

Adelaide i = +14m.32s., i = +16m.10s., e = +21m.1s., i = +23m.8s., +24m.29s., e = +27m.23s.

Riverview iN = +16m.26s., iE = +23m.30s., eL_qE = +37·1m.

San Fernando PSN = +24m.29s.

Algiers eS = +24m.40s., ePS = +25m.18s.

Brisbane iPPN = +17m.10s., eSSN = +31m.22s.

Toledo e = +16m.42s., i = +17m.24s., +24m.22s., and +24m.44s., eS = +25m.27s.

Helwan S = +25m.5s., PS = +26m.26s., PPS = +27m.11s., i = +27m.47s.

Philadelphia epP = +14m.21s., ePP = +18m.4s., i = +18m.12s., esPP = +18m.52s., ePPP = +20m.12s., esPPP = +20m.38s., SKKS = +24m.31s., i = +24m.36s., ePS = +26m.54s., epPS = +27m.37s., esPS = +27m.39s., i = +32m.54s., +33m.18s., eSSS = +33m.29s.

Ksara PP = +18m.13s., SKKS = +25m.22s., PS = +27m.27s., PPS = +28m.14s., PKKP = +29m.46s., SS = +33m.18s.

Weston ePKP = +18m.8s., iPP = +18m.43s., eN = +24m.7s., i = +24m.20s., iPS = +28m.5s., iSS = +33m.45s.

Oak Ridge ePP? = +17m.58s., ePS = +25m.5s., eSSS = +32m.10s.

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Williamstown iPKP = +17m.27s., iPP = +18m.51s., ePPP = +21m.21s., iS = +27m.21s., iPS = +28m.17s.
East Machias eSP = +14m.45s., ePKP = +17m.40s., PP = +18m.1s., pPP = +18m.44s., sPP = +19m.16s., SKKS = +24m.58s., esS = +26m.56s., PS = +27m.23s., pPS = +27m.53s., eSPP = +28m.3s., sPS = +28m.11s., PPS = +28m.18s., sSS = +33m.52s.
Kodaikanal SKSE = +27m.52s., SKKSE = +29m.38s., PSE = +33m.28s.
Paris iPP = +18m.33s., i = +25m.26s., eSS = +27m.46s.
Belgrade i = +18m.42s., eS = +27m.59s.
St Louis iE = +19m.5s., ePPPE = +19m.46s., eSE = +25m.28s., ePSE = +26m.6s.
Strasbourg eN = +17m.8s., iZ = +18m.40s., iPPPZ = +20m.3s., i = +20m.56s., +25m.37s., and +26m.26s., iPS = +27m.43s.
Florissant eNZ = +17m.43s., ePP = +18m.41s., i = +19m.8s., iPPPZ = +21m.33s., eEN = +23m.40s., eE = +24m.35s., iSE = +25m.10s., iPSE = +26m.8s., iSKKSE = +29m.29s., iN = +29m.36s., eSSE = +32m.57s.
Stuttgart ePKP = +18m.44s., ePP = +19m.16s., e = +20m.4s. and +21m.5s., eSKSEN = +25m.38s., eS = +28m.1s., ePS = +28m.58s., eN = +34m.13s., eSS = +35m.3s.
Toronto iN = +25m.32s., e = +33m.58s.
Ottawa e = +19m.12s., PPSN = +25m.32s., e = +27m.58s., SSS = +34m.22s.
Seven Falls e = +23m.28s., e = +26m.58s.? and +32m.58s.?
De Bilt iPPZ = +19m.1s., e = +28m.23s.
Shawinigan Falls e = +28m.4s.
Kew iSKS = +25m.39s., eS = +27m.17s., i = +28m.13s., iPS = +29m.12s., i = +31m.31s.
Oxford e = +25m.29s., i = +25m.43s., e = +28m.11s.
Bucharest e = +20m.6s., +24m.54s., i = +25m.54s., SKS?N = +28m.18s., SKSE = +28m.22s., SN = +29m.31s.
Uccle iPPZ = +18m.52s., iSKKS = +25m.46s., iPS = +28m.13s., iSS = +34m.30s., iE = +38m.13s., iN = +41m.48s.
Kecskemet eZ = +13m.7s., +14m.14s., and +16m.1s.
Triest i = +25m.23s. and +27m.46s.
Vienna e = +19m.2s., PP = +21m.17s., P_cP = +23m.48s., e = +28m.15s., S_cS = +28m.32s., e = +29m.14s., SSS = +29m.56s.
Budapest ePE = +19m.4s., iE = +19m.41s., iN = +28m.38s., iE = +28m.42s.
Chicago epPP = +19m.18s.
Bidston i = +25m.55s., e = +27m.20s., i = +28m.25s., and +29m.15s., i = +31m.35s.
Bombay ePP = +20m.59s., iSKKS = +28m.14s., eS = +29m.19s., i = +29m.54s., ePS = +31m.40s., i = +34m.24s., eSS = +38m.34s., e = +45m.11s.
Prague e = +29m.28s.
Stonyhurst i = +29m.1s. and +30m.51s.
Jena eN = +28m.26s.
Medan iEN = +26m.6s.
Yalta e = +29m.5s.
Tucson esP = +15m.40s., PP = +19m.8s., i = +19m.43s., pPP = +19m.48s., SPP = +20m.21s., epPPP = +22m.20s., eSKKS = +25m.33s., eSP = +28m.27s., PS = +28m.36s., eSSS = +39m.10s.
Theodosia e = +39m.39s.
Tiflis eP = +15m.9s., ePPEZ = +19m.24s., SKKSE = +26m.19s., PPSEZ = +29m.9s., eZ = +30m.20s., SSE = +34m.37s., eZ = +36m.1s., SSSEZ = +38m.28s.
Baku PS = +29m.31s., SS = +35m.46s., SSS = +41m.40s.
Copenhagen eZ = +20m.44s., eEN = +22m.4s., eN = +25m.57s., eEN = +26m.30s., PS = +29m.7s., eE = +33m.58s., SS = +35m.4s., SSS = +39m.52s.
Riverside iSKPZ = +21m.58s., iPKKPZ = +28m.55s., eZ = +29m.30s.
Ivigtut +26m.34s., eNZ = +29m.27s., SS = +35m.58s., L_g = +47·0m.
Mount Wilson iSKPZ = +22m.1s., iPKKPZ = +28m.55s.
Pasadena iZ = +18m.52s. and +19m.5s., iPPZ? = +19m.54s., iEZ = +20m.9s., iZ = +20m.37s., iSKPZ = +22m.0s., iPKKPZ = +28m.55s.
Agra SKKSE = +29m.50s., iE = +36m.35s., SSE = +40m.48s.
Tinemaha iZ = +20m.11s., eSKPZ = +22m.2s., ePKKPZ = +28m.46s., eSKKPZ = +31m.44s.
Upsala i = +26m.55s., e = +29m.49s.
Calcutta iN = +34m.20s. and +36m.49s.
Berkeley eE = +13m.40s., ePPE = +20m.16s., ePPZ = +22m.25s., iSSN = +37m.58s.
Moscow PP = +20m.13s., PPP = +23m.7s., PS = +30m.18s., SS = +36m.16s.
Bozeman eSKS = +25m.29s., ePS = +30m.10s., esSS = +37m.39s.
Pulkovo ePP = +22m.50s., e = +30m.26s.
Butte eSPP = +31m.29s., eSS = +37m.5s.
Ukiah eSKKS = +26m.44s., eS = +28m.13s., epS = +29m.13s., epPS = +31m.3s., esSS = +38m.6s.

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Scoresby Sund eN = +22m.42s. and +27m.33s., eEN = +30m.46s., SS = +38m.4s., eEN = +40m.29s. and +42m.10s.
Tashkent iPP = +20m.49s., eS = +28m.43s., ePS = +30m.39s., iSS = +37m.52s.
Honolulu epPP = +21m.48s., esPP = +22m.10s., PPP = +23m.48s., epPPP = +24m.42s., eSKKS = +27m.19s., ePS = +31m.29s., epPS = +31m.48s., esPS = +32m.8s., PPS = +32m.48s., eSS = +38m.15s., esSS = +39m.10s.
Frunse e = +22m.8s.
Seattle ePP = +21m.17s., epPP = +21m.35s., esPP = +22m.1s., ePPP = +24m.4s., epPPP = +24m.45s.
Victoria iE = +21m.50s., iN = +22m.5s.
Manila iEZ = +21m.26s., i = +22m.17s.
Sverdlovsk iPP = +21m.26s., iSKKS = +28m.11s., PS = +31m.28s., SS = +38m.52s.
Hong Kong S? = +33m.28s.
Sitka e = +15m.9s., esPKP = +20m.22s., eSKP = +22m.47s., pPKS = +23m.32s., sPKS = +28m.49s., ePPP = +25m.53s.
Zi-ka-wei iZ = +20m.1s., +20m.9s., +22m.49s., and +40m.8s.
College epPKP = +20m.12s., ePP = +23m.1s., epPP = +23m.53s., epPPP = +27m.2s., ePSKS = +33m.36s., eSPP = +35m.25s., ePPS = +36m.29s., eSS = +42m.15s., esSS = +42m.58s.
Sumoto PZ = +19m.51s., eZ = +23m.37s., eN = +27m.10s., eEN = +30m.46s.
Tokyo i = +23m.57s.
Oiwake e = +21m.34s., PP = +23m.54s., e = +24m.31s., PPP = +25m.40s., PS = +30m.56s.
Nagano PP = +24m.10s.
Vladivostok PP = +25m.13s., SKSP = +34m.24s., SS = +44m.22s.
Sapporo SS = +34m.32s.
Long waves were also recorded at Karlsruhe and Bergen.

Sept. 8d. 2h. 51m. 11s. Epicentre 41°·6N. 23°·8E.

Felt Force V in the regions of Nevrokop-Raslog. Epicentre 41°39′N. 23°47′5E.

K. Jankow.

Das Nevrokoper Bebar von 8 September, 1937, Publications de l'Institut, Meteorologique Central de Bulgarie, t 1, pp. 103-121 (Resume Allemand), Sofia, 1941.

$A = +\cdot6862$, $B = +\cdot3027$, $C = +\cdot6614$; $\delta = -5$; $h = -2$;
$D = +\cdot404$, $E = -\cdot915$; $G = +\cdot605$, $H = +\cdot267$, $K = -\cdot750$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sofia	1·2	343	i 0 19	− 5	i 0 37	− 4	—	—
Bucharest	3·3	31	i 1 2	P*	i 1 46	S_g	—	—
Athens	3·6	181	1 4	P*	1 50	S*	—	—
Belgrade	4·0	325	e 1 3	− 1	i 2 10	S_g	—	2·7
Budapest	6·8	332	1 41	− 3	i 3 43	S_g	3·8	4·0
Stara Dala	7·4	329	—	—	e 3 39	S*	e 4·3	5·1
Yalta	8·1	66	2 7	P*	4 7	S*	—	—
Simferopol	8·3	62	e 1 59	− 5	4 26	S_g	—	—
Triest	8·3	302	2 13	+ 9	e 4 29	S_g	—	—
Vienna	8·5	324	e 2 22	+15	e 4 46	S_g	—	—
Theodosia	9·1	64	e 2 10	− 4	3 47	−13	—	—
Zurich	12·3	303	e 3 2	+ 3	—	—	—	—
Basle	13·0	304	e 3 9	0	—	—	e 7·5	—
Strasbourg	13·3	307	e 4 54	?	—	—	—	7·8

Additional readings :—
Bucharest iP* = +1m.10s., iP_g = +1m.20s., i = +1m.40s., S* = +1m.53s., iS_g = +2m.7s.
Belgrade i = +1m.10s., iPP = +1m.17s.
Budapest ePN = +2m.1s., iE = +2m.16s., i = +2m.40s., iN = +3m.49s. and +3m.58s.
Vienna eS = +5m.0s.
Long waves were also recorded at Prague.

Sept. 8d. Readings also at 0h. (Göttingen, Jena, and Kew), 1h. (La Paz), 5h. (near Yalta and Wellington), 10h. (near Hukuoka B), 11h. (Pasadena, Riverside, and Tinemaha), 13h. (Perth, near Keizyo (2), and near Zinsen (2)), 14h. (Adelaide, Riverview, Amboina, Tashkent, Tiflis, Sverdlovsk, Pasadena, Tinemaha, and La Paz), 15h. (Tiflis and near Branner), 16h. (La Paz, Huancayo, San Juan, Tucson, Mount Wilson, Pasadena, Riverside, and Oak Ridge), 17h. (De Bilt, Uccle, Paris, Strasbourg, Stuttgart, and Granada), 18h. (Andijan, Frunse, Tashkent, and near Samarkand), 20h. (Tashkent, Tucson, Sverdlovsk, Baku, Manila, and Hong Kong), 21h. (Uccle, Granada, Malaga, Kobe, and near Nagoya).

Sept. 9d. 5h. 32m. 57s. Epicentre 15°·0N. 93°·8W. .
(epicentre given by Tacubaya; Catalogue of Earthquakes).

$A = -·0640$, $B = -·9643$, $C = +·2572$; $\delta = +12$; $h = +6$;
$D = -·998$, $E = +·066$; $G = -·017$, $H = -·257$, $K = -·966$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Oaxaca	N.	3·5	305	1 6	P*	—	—	—	—
Tacubaya	N.	6·8	311	1 52	+ 8	—	—	—	—
Merida	N.	7·1	34	2 0	P*	—	—	—	—
Tucson		23·1	322	e 5 6	− 2	—	—	e 14·4	—
Florissant		23·9	8	e 5 9	− 7	e 9 38	+ 8	—	—
San Juan		26·7	79	e 2 59	?	(e 10 25)	+ 8	e 10·4	—
Riverside	Z.	28·5	316	e 5 55	− 4	—	—	—	—
Mount Wilson	Z.	29·1	316	e 6 1	− 3	—	—	—	—
Pasadena	Z.	29·1	316	e 6 1	− 3	—	—	e 19·5	—
Philadelphia		29·7	31	—	—	e 11 16	+10	e 14·4	—
Tinemaha	Z.	30·9	320	i 6 16	− 4	•—	—	—	—
Weston		33·4	31	—	—	e 13 37	?	e 19·0	20·8
East Machias		37·2	32	—	—	e 14 29	S_eS	e 21·0	—

Additional readings:—
Tucson $P_eP = +5$m.32s.
Florissant eZ = +5m.52s., eN = +5m.54s., eZ = +6m.6s. and +9m.54s.
Philadelphia eSS = +13m.54s.
Weston eZ = +14m.36s.
Long waves are also recorded at Oak Ridge, Scoresby Sund, Paris, Strasbourg, Uccle, Sverdlovsk, and Tashkent.

Sept. 9d. 17h. 35m. 26s. Epicentre 36°·3N. 71°·0E. (as on 1937 July 14d.).

Scale VIII at Gulmarg VI at Drosh. India Weather Review, 1937. Annual Summary part D. Seismic Records, pp. D 47.

$A = +·2630$, $B = +·7638$, $C = +·5894$; $\delta = -5$; $h = 0$;
$D = +·946$, $E = -·326$; $G = +·192$, $H = +·557$, $K = -·808$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan		4·6	14	e 1 14	+ 2	2 0	− 7	—	2·7
Samarkand		4·6	319	1 10	− 2	e 1 35	−32	—	—
Tashkent		5·2	347	i 1 22	+ 1	i 2 23	+ 1	2·6	3·1
Tchimkent		6·1	351	e 1 15	−19	e 2 41	− 4	—	3·6
Frunse		7·1	22	e 1 47	− 1	i 3 10	0	—	—
Almata		8·3	32	i 2 3	− 1	e 3 30	−10	e 4·0	4·9
Agra	E.	10·9	145	e 2 36	− 4	4 26	−18	—	—
Semipalatinsk		15·6	22	e 3 37	− 6	e 6 41	+ 4	e 8·2	—
Baku		17·0	290	e 4 8	+ 7	e 7 17	+ 7	e 16·4	—
Bombay		17·4	174	e 4 12	+ 6	e 7 27	+ 8	—	—
Calcutta	N.	20·4	127	e 5 24	+43	8 0	−25	9·6	9·7
Tiflis		21·0	295	4 49	+ 2	e 8 41	+ 4	e 10·9	—
Sverdlovsk		21·7	345	e 4 51	− 4	8 45	− 6	12·4	—
Ksara		28·8	275	e 5 37	−25	e 9 39	?	—	—
Copenhagen		43·6	315	i 5 5	?	—	—	—	—

Additional readings:—
Andijan PP = +1m.28s., i = +1m.33s., S_e = +2m.6s.
Frunse i = +1m.57s., +2m.40s., and +3m.5s.
Calcutta SSN = +8m.42s.
Tiflis eE = +8m.59s.

Sept. 9d. 23h. 37m. 27s. Epicentre 24°·9N. 94°·7E.

India Weather Review, 1937.

Felt Force VIII at Tazpur, Shillong, Dibrugarh, and Force V at Gauhati and Salona. Epicentre 27°·0N. 94°·0E. in Assam. Annual Summary Part D. Seismic Records pp. D 47. Earthquake Reports.

$A = -\cdot0744$, $B = +\cdot9050$, $C = +\cdot4187$; $\delta = -13$; $h = +3$;
$D = +\cdot997$, $E = +\cdot082$; $G = -\cdot034$, $H = +\cdot417$, $K = -\cdot908$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta	N.	6·3	249	1 40	+ 4	2 49	− 1	—	—
Phu-Lien		11·8	108	e 2 53	0	—	—	—	—
Agra	E.	15·2	283	3 26	−12	5 59	−29	—	—
Hyderabad		16·9	247	—	—	9 10	?	10·4	12·8
Hong Kong		18·1	94	—	—	8 5	SSS	—	10·4
Bombay		21·2	258	i 4 46	− 3	e 8 39	− 2	—	11·2
Medan		21·5	169	4 58	+ 6	i 8 58	+11	—	—
Colombo		22·9	221	5 7	+ 1	9 22	+ 9	—	—
Almata		23·4	327	5 8	− 3	9 10	−11	—	—
Andijan		24·4	315	5 14	− 7	e 9 23	−16	—	—
Frunse		24·4	322	e 5 20	− 1	9 54	+15	—	—
Tashkent		26·7	314	5 46	+ 3	i 10 26	+ 9	i 14·2	15·7
Samarkand		27·5	308	e 5 17	−33	e 10 9	−21	—	—
Semipalatinsk		27·8	340	e 5 57	+ 4	—	—	—	—
Vladivostok		35·4	49	e 6 51	− 9	12 34	0	i 18·9	—
Sverdlovsk		40·2	331	e 7 42	+ 2	i 13 50	+ 2	19·6	22·5
Baku		40·3	304	e 7 48	+ 8	e 13 59	+10	21·6	—
Grozny		43·8	307	e 8 16	+ 7	e 14 22	−18	—	—
Tiflis		44·3	304	e 8 11	− 2	e 14 29	−19	e 22·6	—
Theodosia		51·4	308	e 9 11	+ 2	e 16 8	−20	—	—
Ksara		51·4	293	e 9 14	+ 5	—	—	—	—
Simferopol		52·3	308	—	—	e 16 20	−20	—	—
Yalta		52·3	308	e 9 13	− 2	—	—	—	—
Sebastopol		52·7	308	e 9 49	+31	—	—	—	—
Stuttgart		68·8	315	—	—	e 20 21	+10	e 38·5	—

Additional readings :—
Calcutta $P^*N = +1$m.53s., $P_gN = +2$m.8s., $S^*N = +3$m.11s., $S_gN = +3$m.26s.
Bombay ePP = +5m.8s.
Medan iE = +12m.59s., iN = +13m.7s.
Almata e = +7m.10s.
Tiflis eZ = +17m.33s.
Ksara ePS = +16m.44s.
Long waves were also recorded at De Bilt, Copenhagen, Uccle, and Pulkovo.

Sept. 9d. Readings also at 0h. (Lick and near Triest), 2h. (near Mizusawa), 3h. Grozny and Wellington), 4h. (near Tiflis), 5h. (New Plymouth and near Wellington), 7h. (near Mizusawa and Nagoya), 10h. (Oak Ridge and Tinemaha) 11h. (Baku, Sverdlovsk, and Triest), 14h. (near Taihoku), 16h. (La Plata, Mount Wilson, Pasadena, Riverside, and Tinemaha), 17h. (Kew and La Paz), 18h. (Sumoto, near Kobe, and near Taihoku), 19h. (Sitka), 20h. (Oak Ridge), 22h. (near Fresno).

Sept. 10d. Readings at 0h. (Almata), 1h. (Ksara, Wellington, and near Apia), 2h. (Baku, Sverdlovsk, Oak Ridge, and Tashkent), 3h. (Sitka), 5h. (Andijan, Baku, Samarkand, Tashkent, and Tchimkent), 6h. (Sverdlovsk), 13h. (Andijan and Samarkand), 14h. (Manila and near Tananarive), 15h. (Ksara, Tiflis, Tashkent, Nagoya, near Mizusawa, and near Weston), 16h. (Oak Ridge), 17h. (Tiflis), 19h. (Tashkent and Vladivostok), 21h. (Oaxaca and Tacubaya).

Sept. 11d. Readings at 2h. (Andijan (2), Frunse (2), Tchimkent, and near Tashkent), 5h. (Graz), 6h. (Tacubaya and near Tiflis), 7h. (near Mizusawa), 8h. (near Grozny, Tiflis, and near Sotchi), 9h. (Sitka and near Tananarive), 14h. (near Sotchi), 16h. (near Sumoto), 19h. (Baku, Sverdlovsk, and Tashkent), 20h. (Wellington), 21h. (Berkeley, Fresno, Sitka, San Francisco, near Branner and Lick), 22h. (Zagreb), 23h. (Tiflis).

Sept. 12d. 11h. 54m. 57s. Epicentre 20°·5N. 145°·3E. (as on 1937 May 28d.).

$A = -\cdot7707$, $B = +\cdot5336$, $C = +\cdot3481$; $\delta = -12$; $h = +5$;
$D = +\cdot569$, $E = +\cdot822$; $G = -\cdot286$, $H = +\cdot198$, $K = -\cdot937$.

A depth of focus 0·020 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Titizima		7·2	337	1 43	− 1	3 0	− 4	—	—
Misima		15·6	340	3 33	+ 1	—	—	—	—
Numadu		15·6	340	3 33	+ 1	—	—	—	—
Yokohama		15·7	342	3 37	+ 3	—	—	—	—
Tokyo		15·9	345	3 33	− 3	6 35	+ 8	—	—
Hunatu		16·0	340	3 38	+ 1	6 37	+ 8	—	—
Kakioka		16·3	345	3 42	+ 1	6 46	+10	—	—
Kumagaya		16·4	343	3 34	− 8	—	—	—	—
Mito		16·4	346	3 45	+ 3	6 49	+11	—	—
Sumoto		16·6	328	i 3 43	− 2	e 6 46	+ 3	—	—
Maebasi		16·8	342	3 41	− 6	—	—	—	—
Oiwake		16·9	341	3 49	+ 1	6 55	+ 5	—	—
Nagano		17·3	340	3 52	− 1	7 6	+ 8	—	—
Hukusima		17·7	347	3 58	0	7 18	+11	—	—
Kumamoto		17·9	316	3 45	−15	—	—	—	—
Mizusawa	E.	18·9	350	4 18	+ 7	7 43	+11	—	—
Manila		23·9	259	5 11	+11	9 59	+57	—	—
Tashkent		66·4	307	—	—	e 25 4	?	—	40·2
Sverdlovsk		69·2	325	i 10 55	+ 4	i 19 53	+10	34·0	—
Grozny		82·8	313	e 12 9	+ 2	e 22 11	+ 1	—	—
Tinemaha	Z.	82·8	54	i 12 8k	+ 1	—	—	—	—
Pasadena		83·9	56	i 12 12	− 1	—	—	—	—
Mount Wilson	Z.	84·0	56	i 12 13k	0	—	—	—	—
Riverside	Z.	84·6	56	i 12 15	− 1	—	—	—	—

Additional readings :—
Tashkent e = +27m.3s.
Tinemaha iZ = +12m.43s.
Pasadena iZ = +12m.47s.
Mount Wilson eZ = +12m.47s. and +15m.29s.
Riverside eZ = +12m.53s. and +15m.32s.
Long waves were also recorded at Baku.

Sept. 12d. Readings also at 2h. (Tiflis and near Andijan), 9h. (Oaxaca and near Tananarive), 15h. ((near Balboa Heights), 17h. (Baku, Sverdlovsk, and Tashkent), 18h. (Graz), 19h. (Tiflis, near Zagreb (2), near Mizusawa, and Nagoya), 20h. (Baku and Sverdlovsk).

Sept. 13d. Readings at 4h. (Mount Wilson, Pasadena, Tinemaha, and near La Paz), 5h. (Tinemaha, Mount Wilson, near Christchurch, and Wellington), 6h. (Frunse, Tchimkent, near Andijan, Samarkand, Tashkent, and near Medan), 8h. (Ksara), 12h. (Tiflis and near Sumoto), 13h. (New Plymouth and Zagreb), 14h. (Ksara), 21h. (Mizusawa).

Sept. 14d. 2h. 16m. 39s. Epicentre 41°·0N. 44°·5E.

$A = +·5399$, $B = +·5305$, $C = +·6535$; $\delta = -2$; $h = -2$;
$D = +·701$, $E = -·713$; $G = +·466$, $H = +·458$, $K = -·757$.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Erevan	0·8	180	0 26	+ 8	i 0 41	+10	—	0·9
Tiflis	0·8	17	i 0 17	− 1	—	—	i 0·4	—
Grozny	2·5	22	i 0 47	+ 4	—	—	—	—
Piatigorsk	3·2	341	i 0 50	− 2	1 14	−18	—	1·5
Baku	4·2	100	e 1 27	P_g	e 2·34	S_g	e 3·7	—
Sotchi	4·4	307	e 1 7	− 3	e 1 50	−12	—	—
Theodosia	7·8	301	e 2 31	P_g	—	—	—	—
Yalta	8·4	298	e 2 5	− 1	e 3 21	−22	—	—
Ksara	9·9	227	e 2 58	+33	e 5 28	S_g	—	—
Tashkent	18·7	80	e 4 23	+ 1	i 7 49	+ 1	e 9·4	12·0
Sverdlovsk	19·0	28	4 24	− 2	e 7 56	+ 1	10·4	—
Pulkovo	20·8	339	4 46	+ 1	—	—	8·9	12·1

Additional readings :—
Erevan i = +49s.
Baku e = +1m.37s.
Sotchi iP_g = +1m.18s., iS_g = +1m.59s.
Ksara S_g = +6m.57s.
Pulkovo e = +5m.33s.
Long waves were also recorded at Copenhagen, De Bilt, and Moscow.

Sept. 14d. 23h. 45m. 53s. Epicentre 2°·0S. 119°·0E.

$A = -·4845$, $B = +·8741$, $C = -·0347$; $\delta = 0$; $h = +7$;
$D = +·875$, $E = +·485$; $G = +·017$, $H = -·030$, $K = -·999$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia		12·8	250	3 3	− 3	i 6 52	L	(i 6·9)	—
Manila		16·6	7	4 1	+ 5	7 16	+16	—	—
Medan		21·1	286	4 44	− 4	—	—	i 11·7	—
Perth		29·9	184	—	—	11 7	− 2	—	—
Kodaikanal	E.	43·1	288	e 9 37	PP	—	—	—	—
Tashkent		62·4	319	e 10 30	+ 3	i 18 45	− 8	e 33·1	42·5
Sverdlovsk		75·0	332	e 11 37	− 8	i 21 15	− 8	36·1	—
Baku		75·5	312	—	—	e 21 26	− 2	e 39·5	—
Grozny		79·3	315	12 10	+ 1	e 22 1	− 8	—	—
Tiflis		79·6	313	e 12 4	− 6	22 6	− 6	e 39·1	—
Ksara		85·4	303	e 12 44	+ 4	e 23 15	+ 4	—	—
Moscow		86·8	326	—	—	e 23 16	[+ 4]	—	—
Rio de Janeiro		149·8	214	e 19 2	[−45]	—	—	—	—

Additional readings :—
Batavia iSEN = +6m.55s.
Baku e = +29m.21s. and +33m.7s.
Tiflis eSSE = +29m.50s.
Ksara ePP = +15m.59s.
Long waves were also recorded at Hong Kong, Pulkovo, Copenhagen, and Paris.

Sept 14d. Readings also at 2h. and 3h. (5) (Tiflis), 4h. (near Manila), 5h. (Tiflis), 6h. (La Paz), 8h. (Prague, Stara Dala, and Bucharest), 9h. (Sverdlovsk and Moscow), 11h. (Mount Wilson, Pasadena, Tinemaha, near Tucson, Tiflis, and near Manila), 13h. (near Santiago), 14h. (near Sumoto), 15h. (Alicante), 16h. (Sumoto), 18h. (Grozny and near Tiflis), 19h. (Tiflis), 20h. (Sverdlovsk and Tashkent), 21h. (near Zagreb (3)).

Sept. 15d. 0h. 50m. 29s. Epicentre 0°·5S. 80°·5W.

$A = +\cdot1650$, $B = -\cdot9862$, $C = -\cdot0087$; $\delta = -11$; $h = +7$;
$D = -\cdot986$, $E = -\cdot165$; $G = -\cdot001$, $H = +\cdot009$, $K = -1\cdot000$.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Huancayo	12·6	156	e 3 2	− 1	e 5 19	− 7	e 6·6	—
La Paz	20·1	141	4 39k	+ 1	i 8 28	+ 9	11·1	13·1
San Juan	23·5	36	e 5 10	− 2	e 9 15	− 8	10·7	—
Florissant	40·2	348	e 9 23	PP	e 13 44	− 4	—	—
Philadelphia	40·6	5	e 7 44	+ 1	e 13 53	− 1	e 17·0	—
Tucson	43·4	322	e 7 49	−17	—	—	e 20·5	—
Stuttgart	90·2	41	—	—	e 24 1	+ 5	e 78·5	—
Sverdlovsk	115·8	22	—	—	e 37 55	SS	58·5	—
Tashkent	131·0	30	i 22 43	PP	e 39 3	SS	e 60·5	80·0

Additional readings :—
Huancayo S = +5m.31s.
La Paz iSZ = +8m.34s.
San Juan P = +5m.23s., PP = +5m.43s., iS = +9m.53s. and +10m.11s.
Florissant eZ = +9m.29s., eN = +13m.50s., eE = +15m.38s.
Tucson eP = +8m.16s., eL = +16m.31s.
Sverdlovsk e = +47m.7s.
Tashkent e = +23m.57s., +28m.33s., +41m.3s., and +47m.38s.

Sept. 15d. 12h. 27m. 33s. Epicentre 10°·5S. 161°·5E.

$A = -\cdot9327$, $B = +\cdot3121$, $C = -\cdot1811$; $\delta = +13$; $h = +6$;
$D = +\cdot317$, $E = +\cdot948$; $G = +\cdot172$, $H = -\cdot057$, $K = -\cdot984$.

A depth of focus 0·005 has been assumed.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Brisbane	18·7	204	i 4 15	0	i 8 3	SS	—	—
Riverview	25·1	199	i 5 23k	+ 3	i 9 44	+ 7	e 11·2	13·4
Sydney	25·1	199	e 5 7	−13	i 9 55	+18	14·3	15·1
Apia	26·3	99	i 5 33	+ 2	—	—	e 12·4	—
Arapuni	30·2	157	—	—	i 12 9	+69	15·4	16·4
Melbourne	31·0	205	6 18	+ 4	i 11 24	+12	14·8	16·4
Adelaide	32·0	216	i 6 25	+ 3	i 11 37	+ 9	e 14·8	17·7
Palau	32·2	302	9 26	?	16 36	?	—	—
Wellington	32·8	161	i 6 32	+ 3	i 11 47	+ 6	16·2	17·4
Amboina	33·7	279	i 4 40	?	—	—	e 15·4	—
Christchurch	34·3	165	i 6 41a	− 1	12 13	+ 9	16·7	—
Titizima	41·8	334	7 43	− 2	—	—	18·2	—
Perth	47·2	236	i 8 30	+ 2	i 15 26	+11	22·5	26·4
Manila	47·3	301	i 8 29a	0	15 32	+15	—	—
Hatidyozima	48·0	336	8 27	− 7	—	—	21·0	—
Naha	49·1	318	8 44	+ 1	—	—	—	—
Nake	49·5	323	8 46	0	15 51	+ 4	—	—
Mera	49·6	337	8 49	+ 2	15 50	+ 1	—	—
Ito	49·9	337	9 25	+36	—	—	—	—
Tyosi	49·9	339	8 51	+ 2	16 11	+16	—	—
Omaesaki	50·0	336	8 55	+ 5	—	—	—	—
Misima	50·1	336	8 51	0	15 55	− 1	—	—
Siomisaki	50·1	333	8 50	− 1	15 55	− 1	21·7	—
Yokohama	50·1	337	8 51	0	15 57	+ 1	—	—
Numadu	50·2	336	8 55	+ 4	15 56	− 1	—	—
Gotenba	50·3	337	8 52	0	15 58	0	—	—
Tokyo	50·3	338	8 55	+ 3	16 0	+ 2	20·8	—
Hamamatu	50·3	336	8 53	+ 1	16 0	+ 2	—	—
Isigakizima	50·3	314	9 1	+ 9	—	—	—	—
Hunatu	50·5	337	8 54	0	16 1	0	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kakioka	50·6	338	8 55	+ 1	16 12	+ 9	20·4	—
Kohu	50·7	337	8 56	+ 1	16 6	+ 2	—	—
Mito	50·7	339	8 56	+ 1	16 4	0	20·8	—
Muroto	50·7	330	8 55	0	16 5	+ 1	—	—
Tukubasan	50·7	338	8 54	− 1	16 0	− 4	—	—
Tu	50·8	334	8 59	+ 3	16 12	+ 7	—	—
Honolulu	50·9	51	i 8 58	+ 1	e 16 13	+ 6	20·7	—
Iida	50·9	336	8 57	0	—	—	—	—
Kameyama	50·9	334	8 54	− 3	16 10	+ 3	—	—
Kumagaya	50·9	337	8 56	− 1	16 7	0	—	—
Simidu	50·9	329	8 58	+ 1	—	—	23·1	—
Nagoya	51·0	335	i 8 59a	+ 2	16 10	+ 2	—	16·2
Wakayama	51·0	333	8 58	+ 1	16 7	− 1	—	—
Yagi	51·0	333	8 59	+ 2	16 10	+ 2	22·3	—
Miyazaki	51·1	327	8 57	− 1	16 10	+ 1	22·2	—
Osaka	51·2	333	9 1	+ 2	16 13	+ 2	28·1	—
Osaka B	51·2	333	9 0	+ 1	16 13	+ 2	24·8	—
Tokusima	51·2	332	9 2	+ 3	—	—	—	—
Gihu	51·3	335	9 0	0	16 12	0	21·8	—
Koti	51·3	330	9 1	+ 1	16 3	− 9	22·0	—
Sumoto	51·3	333	e 8 58k	− 2	16 11	− 1	22·4	28·6
Hikone	51·4	335	9 2	+ 2	16 9	− 5	—	—
Kobe	51·4	333	i 9 2a	+ 2	16 12	− 2	e 21·6	28·2
Kosyun	57·4	310	9 1	+ 1	16 17	+ 3	—	—
Kyoto	51·4	334	9 2	+ 2	16 15	+ 1	—	—
Oiwake	51·4	337	9 1	+ 1	16 13	− 1	25·6	—
Taito	51·5	311	9 0	− 1	—	—	—	—
Maebasi	51·8	337	9 2	− 1	—	—	—	—
Nagano	51·8	336	9 4	+ 1	16 19	0	—	—
Hukusima	51·9	340	9 4	0	16 18	− 3	—	—
Karenko	51·9	312	9 5	+ 1	—	—	—	—
Matuyama	51·9	330	9 5	+ 1	16 20	− 1	22·2	—
Oita	52·0	328	9 6	+ 1	16 37	+15	—	—
Kumamoto	52·1	327	9 5	− 1	16 21	− 2	22·6	—
Miyadu	52·1	334	9 4	− 2	—	—	—	—
Arisan	52·2	311	9 6	0	—	—	—	—
Sendai	52·2	340	9 8	+ 2	16 30	+ 5	23·1	—
Toyama	52·2	336	9 8	+ 2	16 21	− 4	—	—
Kanazawa	52·3	336	9 4	− 3	—	—	22·4	—
Toyooka	52·3	334	e 9 8	+ 1	16 25	− 1	22·4	25·8
Unzendake	52·3	327	9 4	− 3	16 24	− 2	—	—
Tainan	52·4	311	9 10	+ 2	—	—	—	—
Yamagata	52·4	340	9 4	− 4	16 28	+ 1	—	—
Husiki	52·4	336	9 7	− 1	—	—	—	—
Hirosima	52·5	330	9 6	− 3	16 26	− 3	22·3	—
Nagasaki	52·5	327	9 7	− 2	—	—	—	—
Niigata	52·6	338	9 9	0	—	—	—	—
Taihoku	52·6	313	i 9 11	+ 2	15 29	−61	—	—
Taitu	52·7	312	9 10	0	—	—	—	—
Izuka	52·8	328	9 9	− 2	—	—	23·0	—
Hukuoka B	52·9	328	i 9 12	0	16 33	− 1	e 21·3	—
Mizusawa	52·9	341	9 11	− 1	16 34	0	23·9	—
Wazima	52·9	336	9 12	0	16 34	0	23·5	—
Tomie	53·0	326	8 32	−40	—	—	—	—
Hamada	53·1	330	9 13	0	16 37	0	22·7	—
Miyako	53·1	342	9 11	− 2	16 36	− 1	19·5	—
Sakata	53·1	341	9 19	+ 6	—	—	—	—
Morioka	53·4	342	9 15	0	16 40	− 1	23·1	—
Akita	53·8	340	9 13	− 5	—	—	—	—
Hatinohe	54·0	342	8 58	−22	16 49	0	22·6	—

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		△	Az.	P.	O − C.	S.	O − C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia		54·2	270	i 9 21a	0	i 16 57	+ 5	e 22·4	—
Aomori		54·5	342	9 23	0	16 56	0	—	—
Husan		54·8	328	9 26	0	17 1	+ 1	e 23·2	—
Urakawa		55·1	344	9 32	+ 4	—	—	—	—
Hakodate		55·4	341	9 38	+ 8	—	—	—	—
Nemuro		55·5	347	9 50	+19	18 10	+61	23·7	—
Taikyu		55·6	328	9 31a	0	17 13	+ 3	—	—
Obihiro		55·7	345	9 55	+23	—	—	—	—
Muroran		55·8	343	9 35	+ 2	—	—	—	—
Sapporo		56·4	344	9 38	+ 1	17 23	+ 2	—	—
Zi-ka-wei	Z.	56·5	319	i 9 35k	− 3	17 23	+ 1	—	34·9
Hong Kong		56·7	306	9 37	− 2	17 28	+ 3	24·3	28·5
Asahigawa		56·8	345	9 42	+ 2	—	—	—	—
Keizyo		57·8	328	e 9 47	0	e 17 41	+ 2	e 24·3	—
Zinsen		57·8	328	i 9 47a	0	i 17 40	+ 1	e 24·4	—
Heizyo		59·5	329	i 9 57a	− 2	i 18 5	+ 3	—	—
Vladivostok		59·8	336	i 9 59	− 2	e 18 5	0	26·6	—
Phu-Lien	E.	62·3	300	i 10 18	0	e 18 35	− 2	—	—
Medan		64·1	279	10 33	+ 3	19 40	+40	e 31·4	—
Calcutta	N.	78·8	295	11 49	− 8	i 21 49	0	35·5	—
Colombo		83·1	278	12 19	− 1	—	—	—	—
College		84·1	19	12 32	+ 7	22 50	+ 7	e 34·6	—
Sitka		84·8	29	e 12 28	− 1	22 33	−17	e 34·5	—
Ferndale		85·1	47	e 12 41	+11	e 22 55	+ 2	—	—
Ukiah		85·4	49	e 12 32	0	e 22 53	− 3	e 35·0	—
San Francisco		85·6	51	e 12 33	0	e 22 54	− 4	—	—
Berkeley		85·7	51	e 12 35	+ 2	e 22 53	− 6	e 35·8	—
Branner		85·7	51	e 12 36	+ 3	e 22 58	− 1	—	—
Kodaikanal	E.	86·1	281	i 12 37	+ 2	i 22 59	− 4	40·4	46·9
Lick		86·1	51	e 12 35	0	e 22 56	{+ 4}	—	—
Hyderabad		86·6	288	12 36	− 1	22 56	[0]	39·2	48·9
Fresno	N.	87·3	52	e 12 44	+ 3	—	—	e 38·3	—
Pasadena		87·9	55	i 12 46a	+ 2	e 23 10	[+ 6]	e 39·6	—
Mount Wilson		88·1	55	i 12 46	+ 1	e 23 11	[+ 6]	—	—
Victoria		88·1	40	12 46	+ 1	23 15	− 6	39·4	—
La Jolla		88·4	56	i 12 49	+ 3	e 23 11	[+ 4]	—	—
Seattle		88·5	41	e 12 48	+ 1	e 23 21	− 4	e 40·0	—
Haiwee		88·6	53	i 12 49	+ 2	e 23 30	+ 4	—	—
Riverside		88·6	55	i 12 47a	0	i 23 31	+ 5	—	—
Tinemaha		88·7	52	i 12 50	+ 3	e 23 16	[+ 7]	—	—
Agra	E.	89·0	298	i 12 44	− 5	i 23 6	[− 5]	43·3	—
Bombay	E.	92·1	288	i 13 3	0	i 23 59	+ 1	—	—
Almata		93·2	314	—	—	e 23 35	[0]	—	—
Tucson		93·6	58	13 12	+ 2	e 23 39	[+ 2]	38·0	—
Butte		94·7	43	e 13 37	+22	e 24 18	− 2	e 43·2	—
Frunse		94·8	312	e 13 15	− 1	—	—	—	—
Bozeman		95·7	45	13 23	+ 3	e 23 47	[− 1]	e 39·8	—
Andijan		96·1	310	13 25	+ 3	e 23 52	[+ 1]	47·4	—
Tashkent		98·5	310	i 13 31	− 2	i 24 0	[− 3]	46·4	58·9
Saskatoon		99·3	38	—	—	e 24 27?	[+20]	45·4	—
Sverdlovsk		104·7	326	i 14 1	P	i 24 36	[+ 3]	55·0	59·6
Tananarive		108·6	246	—	—	e 34 23	SS	e 44·4	57·4
Florissant		110·6	53	e 14 27	P	i 26 33	SKKS	e 52·7	55·0
St. Louis	E.	110·7	53	e 17 48	?	e 26 44	SKKS	52·4	54·0
Chicago		112·5	49	e 19 11	PP	e 26 57	SKKS	e 47·7	—
Baku		113·2	309	e 14 45	P	35 3	SS	52·4	62·8
Tiflis		116·8	311	e 14 57	P	e 26 1	[+39]	44·9	70·6
Moscow		117·4	328	14 56	P	25 24	[0]	56·9	67·5
Platigorsk		117·6	314	e 18 56	PKP	e 23 2	PPP	55·4	—
Toronto		118·2	46	e 19 47	PP	e 25 45	[+17]	55·4	—

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		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Columbia		118·5	57	e 18 27?	PKP	—	—	e 47·4	—
Buffalo		118·7	46	i 18 45	PKP	—	—	—	—
Pulkovo		118·9	334	15 3	P	25 27	[− 3]	54·9	65·9
Huancayo		119·3	110	e 18 49	PKP	e 25 36	[+ 4]	48·8	—
Scoresby Sund		120·0	1	20 8	PP	e 36 27	SS	50·4	—
Sotchi		120·1	314	e 20 7	PP	—	—	—	—
Ottawa		120·3	43	18 46	PKP	25 43	[+ 8]	61·4	—
Shawinigan Falls		121·8	40	e 18 51	PKP	e 36 51	SS	60·4	—
Philadelphia		122·1	49	e 20 10	PP	e 25 37	[− 4]	e 51·9	—
Theodosia		122·1	317	e 20 25	PP	e 29 49	PPP	58·4	—
Vermont		122·2	43	e 19 41	?	e 25 51	[+10]	e 54·7	—
Fordham		122·8	48	24 35	?	37 20	SS	—	65·0
Williamstown		122·8	45	i 18 50	PKS	—	—	—	—
Seven Falls		122·9	39	e 18 50	PKP	e 37 15	SS	59·4	—
Cape Town		123·5	217	e 20 44	PP	e 25 59	[+15]	e 59·6	63·8
Simferopol		123·5	318	e 20 31	PP	e 30 24	PS	—	—
Yalta		123·6	317	e 20 30	PP	e 30 18	PS	55·4	—
Upsala		123·9	339	e 20 18	PP	e 30 32	PS	51·4	64·5
Oak Ridge		124·0	45	i 18 52k	PKP	e 37 42	SS	e 62·4	—
Sebastopol		124·0	318	20 53	PP	e 30 49	PS	—	—
La Paz		124·1	118	i 18 56a	PKP	i 25 52	[+ 5]	59·4	65·6
Weston		124·2	45	i 18 52k	PKP	e 37 43	SS	—	63·4
Ivigtut		124·9	16	30 51	PS	e 37 21	SS	50·4	—
Ksara		125·3	303	e 15 34a	P	30 59	PS	—	—
East Machias		126·0	41	e 20 30	PP	27 29	SKKS	e 50·8	—
Belgrade		126·4	322	i 19 9a	PKP	e 31 33	PS	e 74·9	—
Bergen		127·2	346	21 0	PP	—	—	59·4	—
Copenhagen		128·8	338	19 2	PKP	e 27 9	SKKS	54·4	—
Bucharest		128·9	320	e 19 19	PKP	32 31	PPS	61·4	75·4
Helwan		129·8	300	19 5	PKP	26 3	[0]	—	77·3
Budapest		131·4	326	19 13	PKP	—	—	68·0	77·5
Kecskemet	z.	131·4	325	e 19 9	PKP	—	—	—	—
Sofia		131·5	319	e 19 10	PKP	—	—	—	77·4
Stara Dala		131·7	327	e 19 15	PKP	—	—	—	77·4
Aberdeen		131·8	347	i 22 39	?	—	—	e 65·3	—
Prague		132·1	332	e 18 51	PKP	e 38 27?	SS	e 57·4	78·4
Vienna		132·4	329	e 19 10	PKP	31 38	PS	e 68·0	75·4
Jena		132·7	333	i 19 9	PKP	—	—	e 62·4	72·0
Göttingen		132·9	336	e 19 9	PKP	—	—	—	73·4
Cheb		133·0	333	e 21 34	PP	e 31 27?	PS	e 62·4	78·4
Edinburgh		133·1	348	i 18 34	PKP	i 22 39	PP	e 63·4	—
San Juan		133·3	74	e 16 2	P	e 25 57	[−14]	e 53·5	—
Graz		133·6	328	e 19 12	PKP	e 29 37	?	—	76·4
Durham	N.	133·9	346	e 21 38	PP	—	—	—	79·4
Zagreb		134·1	326	e 19 12	PKP	—	—	e 59·4	—
De Bilt		134·3	340	i 19 13	PKP	—	—	e 57·4	68·0
Laibach		134·8	327	e 20 3	?	—	—	—	—
Stonyhurst		134·9	346	i 21 46	PP	—	—	70·4	78·0
Stuttgart		135·4	334	i 19 15a	PKP	—	—	e 64·5	82·0
Triest		135·4	328	19 19	PKP	—	—	e 56·0	62·1
Bidston		135·5	347	i 21 53	PP	—	—	e 44·4	—
Uccle		135·7	340	i 19 16a	PKP	i 28 22	SKKS	58·4	74·6
Strasbourg		136·1	335	i 19 16a	PKP	—	—	e 69·4	79·4
Rathfarnham Castle		136·2	350	i 19 15	PKP	i 29 47	SKKS	54·4	—
Kew		136·5	343	i 16 32	P	i 38 49	SS	e 45·4	—
Oxford		136·5	344	e 19 2	PKP	e 28 43	SKKS	e 45·2	73·0
Chur		136·7	333	e 19 7	PKP	—	—	—	—
Zurich		136·7	333	19 8	PKP	—	—	—	—
Basle		137·0	334	e 19 18	PKP	—	—	—	—
Neuchatel		137·7	334	e 19 20	PKP	—	—	—	—

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		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Besançon		137·9	334	—	—	e 32 27?	PS	78·4	—
Paris		138·0	339	e 19 19	PKP	—	—	59·4	81·4
Rio de Janeiro		138·9	144	i 19 27	PKP	—	—	e 82·2	—
Jersey		139·1	344	e 18 38	?	22 56	?	62·8	—
Barcelona		144·3	333	19 30	[+ 2]	—	—	73·9	88·1
Tortosa	N.	145·5	334	e 19 31	[0]	—	—	40·4	88·5
Algiers		147·4	326	e 19 37	[+ 3]	42 27?	SS	77·4	82·4
Toledo		148·1	338	i 19 38	[+ 3]	—	—	e 61·4	78·3
Almeria		150·0	333	i 19 38a	[0]	—	—	c 73·9	—
Malaga		151·0	336	i 19 45	[+ 5]	29 23	?	—	—
San Fernando		151·9	339	e 19 44	[+ 3]	43 46	SS	57·4	—
Averroes		155·1	338	e 19 41	[− 5]	e 43 57	SS	e 62·4	88·4

Additional readings :—

Riverview iE = +7m.47s., i = +9m.56s., iN = +10m.22s., iE = +10m.33s. and +10m.49s., iN = +10m.54s.
Melbourne i = +7m.31s., e = +11m.9s., i = +11m.47s.
Adelaide i = +6m.48s., iPP = +7m.27s., e = +9m.9s., i = +12m.3s. and +13m.44s.
Wellington ipP = +6m.55s., iPP = +7m.20s., i = +8m.7s., iPPP = +8m.12s., iP_cP = +9m.4s., iSP? = +12m.10s , iP_cS = +12m.36s., L_q = +14·3m.
Amboina iE = +9m.56s., iN = +9m.59s., S?N = +10m.22s.
Christchurch ipPNZ = +7m.5s., iNZ = +7m.44s., i = +8m.15s., isSE = +12m.54s., L_q = +14·5m.
Perth P_cP = +9m.34s., PP = +10m.38s., PPP = +11m.19s., PPPP = +11m.39s., PS = +15m.43s., SS = +19m.19s., SSS = +20m.32s., SSSS = +21m.27s.
Manila iZ = +10m.22s.
Honolulu iP = +9m.1s., eP = +9m.14s., PP = +10m.45s., ePPP = +11m.41s., eS = +15m.56s., i = +16m.34s., S_cS = +18m.41s., i = +18m.47s., SS = +19m.18s.
Simidu PP = +10m.48s., SS = +16m.7s.
Osaka P_cP = +10m.10s., PP = +11m.19s., i = +12m.9s., P_cS = +14m.35s., PS = +16m.35s., SS = +19m.28s., SSS = +21m.10s.
Gihu PPP = +11m.52s.
Kobe iSE = +16m.16s.
Oiwake PP = +10m.42s., PPP = +11m.36s., i = +12m.59s., P_cS = +14m.14s., S_cS = +18m.14s., SSS = +20m.12s.
Batavia iE = +17m.57s.
Sapporo PPP = +12m.47s.
Zi-ka-wei iZ = +9m.53s., PPZ = +11m.53s., iZ = +13m.5s. and +15m.25s., SSZ = +21m.27s., iZ = +22m.37s., SSSZ = +23m.25s., SSSSZ = +24m.19s., iZ = +32m.5s.
Hong Kong SS? = +20m.46s.
Vladivostok e = +10m.15s., +13m.39s., +17m.11s., +19m.45s., +21m.57s., and +25m.36s.
Phu-Lien PPE = +12m.36s., SSN = +22m.30s.
Medan iN = +10m.42s., iE = +17m.54s
College ePP = +15m.37s., eSKS = +22m.44s., S = +23m.5s., i = +23m.22s., ePS = +23m.45s., ePPS = +24m.7s., eSS = +28m.27s., eSSS = +31m.52s.
Sitka P = +12m.30s. and +12m.48s., ePP = +15m.31s, ePPP = +17m.38s., PS = +23m.25s., ePPS = +24m.2s., SS = +28m.23s., eSSS = +32m.21s.
Ferndale eSN = +22m.59s.
Ukiah eSKS = +22m.42s., S = +23m.4s., ePS = +24m.5s., PPS = +24m.33s., eSS = +28m.49s.
Berkeley eP = +12m.39s., iPPE = +16m.9s., iSE = +22m.56s., eSE = +23m.1s., iSN = +23m.4s., iPSZ = +23m.53s.
Branner iP = +12m.38s., eN = +23m.7s.
Kodaikanal PPE = +15m.46s., PPPE = +17m.39s., PSE = +23m.42s., SSE = +28m.36s., SSSE = +31m.45s.
Pasadena ipPZ = +13m.2s., iPPZ = +16m.13s., iEN = +23m.26s., eZ = +59m.20s.
Mount Wilson ipPZ = +13m.4s., eZ = +59m.22s.
Victoria e = +36m.3s.
Riverside eZ = +59m.6s.
Tinemaha eN = +23m.35s.
Seattle iP = +13m.1s., PP = +15m.54s., ePPP = +18m.5s., eS = +23m.36s., PS = +23m.57s., ePPS = +24m.53s., eSS = +29m.13s.
Agra iPPE = +16m.18s., PPS?E = +25m.8s., eSSE = +30m.18s., eSSSE = +34m.28s.
Bombay E ePPE = +16m.41s., iE = +23m.27s., ePSE = +24m.56s.

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Tucson P = +13m.29s., cPP = +16m.51s., +17m.5s., eS = +24m.12s., S = +24m.23s., PS = +24m.54s., PPS = +26m.0s., eSS = +30m.9s., eSSS = +34m.24s.
Butte ePPP = +19m.7s., eS = +24m.49s.
Bozeman eS = +24m.33s., ePSPS = +31m.31s.
Tashkent ePP = +17m.28s., iPPP = +19m.49s., SKKS = +24m.36s., iPS = +26m.22s., PPS = +27m.32s., eSS = +31m.51s.
Sverdlovsk iPP = +18m.13s., iSKKS = +25m.10s., i = +26m.12s., iPS = +27m.30s., iSS = +33m.3s., iSSS = +38m.3s.
Tananarive eE = +28m.20s.
Florissant ePKP = +17m.52s., iPP = +19m.2s., eN = +19m.7s., ePPPPZ = +23m.23s., ePPPPP = +24m.41s., ePSE = +28m.15s., i = +28m.48s., ePPSZ = +29m.18s.
St. Louis ePPE = +19m.2s., iE = +19m.17s., +19m.40s., eE = +20m.6s., eSKKSE = +26m.1s., ePPSE = +28m.48s.
Baku PKP = +18m.38s., PP = +19m.30s., PPP = +22m.7s., PS = +29m.4s., SSS = +29m.57s.
Tiflis PKPN = +18m.37s., ePPE = +19m.37s., eEN = +19m.51s., cPSE = +29m.36s., eSSE = +35m.41s., eSSSE = +40m.39s.
Moscow PKP = +18m.39s., PP = +19m.38s., SKKS = +26m.41s., PS = +29m.28s.
Toronto e = +29m.49s., eE = +36m.27s.?
Columbia ePKKP = +28m.27s.?
Buffalo iPP = +19m.57s., i = +20m.49s., iPPP = +22m.7s., i = +28m.57s., +29m.57s.
Pulkovo PKP = +18m.45s., PP = +19m.59s., PPP = +22m.31s., SKKS = +26m.51s., PS = +29m.31s.
Huancayo ePP = +20m.5s., ePPP = +22m.42s., eSKKS = +26m.44s., ePKKP = +28m.59s., ePS = +30m.10s., ePPS = +31m.9s., eSS = +36m.5s., ePSPS = +37m.1s., SSS = +40m.55s.
Scoresby Sund PS = +29m.57s., eN = +32m.3s., eN = +36m.3s. and +37m.12s.
Ottawa PP = +20m.9s., PS = +29m.58s., SS = +36m.32s.
Shawinigan Falls e = +20m.36s.
Philadelphia i = +20m.19s., eSKKS = +27m.6s., iS = +28m.19s., iPS = +30m.13s., ePPS = +31m.46s., eSS = +36m.18s., eSSS = +40m.33s.
Vermont ePS = +30m.18s., eSS = +36m.50s.
Fordham ePS = +30m.11s.
Williamstown iPP = +20m.25s., i = +20m.50s.
Seven Falls e = +20m.20s., i = +27m.19s., e = +30m.26s.
Cape Town iPSE = +30m.28s., iPSN = +30m.52s., i?E = +32m.41s., iSSE = +37m.22s., iSSN = +37m.30s.
Yalta e = +32m.28s.
Upsala i = +20m.37s., eN = +30m.39s.
Oak Ridge eZ = +20m.31s., iPP = +30m.35s., eZ = +30m.27s.
La Paz ipPKPZ = +20m.42s., isPKPN = +21m.50s., iPPN = +22m.32s., iN = +24m.50s., iSKKS = +28m.22s., iN = +30m.48s., SSN = +41m.4s.
Weston iZ = +19m.15s., iPPZ = +20m.31s., iPPE = +20m.35s., iSKP = +22m.31s.
Ivigtut +32m.51s.
Ksara iPKP = +18m.58s., pPKP = +19m.15s., iPP = +20m.47s., PPS = +32m.21s.
East Machias eSKKKS = +27m.55s., ePS = +30m.55s., SS = +37m.43s. and +38m.1s., ePSPS = +38m.30s., eS_cSS_cS = +40m.39s., eSSS = +42m.12s.
Belgrade i = +22m.38s.
Copenhagen eNZ = +20m.56s., PP = +21m.9s., eEZ = +21m.25s., PKS = +22m.24s., PS = +31m.9s., SS = +38m.27s.?
Bucharest iPNP = +22m.11s., i = +22m.27s., iPPE = +24m.3s., iPPPN = +24m.13s., iSKPN = +25m.3s., iPPPN = +26m.15s., iPPPE = +26m.23s., SE = +32m.34s.
Helwan PP = +21m.7s., i = +21m.33s., +21m.47s., SKP = +22m.27s., PPP = +23m.57s., i = +31m.15s., +32m.19s., PPS = +32m.51s.
Budapest PN = +19m.16s., iN = +19m.51s., iE = +19m.54s., iN = +21m.20s., iEN = +21m.48s., iN = +22m.38s., iEN = +22m.58s., i = +24m.1s.
Kecskemet eZ = +19m.37s., +20m.0s., +20m.39s., +22m.30s., and +23m.20s.
Sofia ePKPN = +22m.33s.
Stara Dala e = +21m.49s., e = +32m.57s.
Prague e = +21m.28s.
Vienna e = +22m.38s., PPP = +27m.43s., PS = +35m.22s.
Jena iE = +21m.27s., iNZ = +21m.32s., = +22m.37s.
Göttingen i = +21m.34s. and +22m.39s.
Chicago ePS = +28m.56s., eSS = +34m.35s.
San Juan ePKP = +19m.0s. and +19m.12s., ePP = +21m.38s., i = +22m.40s., PPP = +24m.35s., eSKKS = +27m.58s., ePPS = +33m.34s., SS = +39m.21s., PSPS = +39m.45s., eSSS = +43m.49s.
Graz i = +22m.36s.

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Durham iN = +22m.41s. and +33m.35s.
Zagreb e = +19m.15s., eZ = +21m.35s., e = +22m.40s.
De Bilt iPPZ = +21m.45s., e = +22m.36s.
Laibach eNW = +21m.50s., iNW = +22m.45s., eNW = +31m.32s.
Stuttgart ePKPZ = +19m.30s., ePP = +21m.34s., iPP = +21m.52s., iPKS = +22m.47s., eZ = +23m.27s., ePSZ = +23m.29s., ePPS = +24m.46s.
Triest SKP = +22m.51s.
Bidston iPKS = +22m.47s.
Uccle PPZ = +21m.40s., iZ = +21m.53s., iSKP = +22m.48s., iPPP = +24m.39s., iN = +38m.58s.
Strasbourg ePP = +21m.47s., SKP = +22m.44s., PPP = +24m.48s., ePSKS = +31m.53s.
Rathfarnham Castle i = +20m.50s., ePP = +21m.22s., iPPS = +34m.2s., iSSS = +45m.1s.
Kew iPP = +22m.1s., iE = +22m.15s., iPKS = +22m.48s.
Oxford iPP = +22m.0s., e = +22m.45s.
Chur ePP = +21m.57s.
Zurich ePP = +21m.59s.
Basle ePP = +22m.1s.
Paris PP = +22m.8s., iSKP = +22m.52s.
Algiers ePKP$_2$ = +20m.3s., SKP = +22m.56s.
Toledo eSKP = +23m.8s., ePSKS = +32m.43s., ePPS = +35m.12s.
Almeria iPP = +23m.21s.
San Fernando iN = +19m.57s. and +20m.17s., iPPN = +23m.22s., iPSN = +33m.51s.
Averroes iPKP$_2$N = +20m.18s., iPP = +23m.53s., iN = +24m.26s., ePPPE = +27m.53s., ePSKS = +34m.27s.?
Long waves were also recorded at Karlsruhe, La Plata, and Granada.

Sept. 15d. 19h. 30m. 0s. Epicentre 10°·5S. 111°·0W.

A = −·3525, B = −·9182, C = −·1811; δ = +14; h = +6;
D = −·934, E = +·358; G = +·065, H = +·169; K = −·984.

Uncertain.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Huancayo		35·0	96	e 6 51	− 5	12 30	+ 2	18·4	—
La Paz	N.	42·0	102	8 3	+ 9	i 14 21	+ 7	19·5	21·6
Tucson		42·5	0	e 8 1	+ 2	e 13 35	−47	e 17·5	—
Riverside	Z.	44·7	352	e 8 25	+ 9	—	—	—	—
Pasadena		44·9	352	e 8 18	0	—	—	e 19·2	—
Mount Wilson	Z.	45·0	352	e 8 19	0	—	—	—	—
Tinemaha	Z.	47·8	353	e 8 51	+10	—	—	—	—
Berkeley		49·3	349	—	—	e 15 57	−2	e 21·0	—
Ksara		141·8	48	—	—	e 45 41	SSS	86·0	—
Tashkent		149·3	359	—	—	e 46 56	SSS	e 68·0	83·0

Additional readings:—
Huancayo P = +7m.56s., ePP = +8m.57s., e = +14m.47s., S$_o$S = +17m.6s.
Tucson ePP = +10m.24s.
Tashkent e = +51m.56s.
Long waves also recorded at Christchurch, Rio de Janeiro, Oak Ridge, East Machias, Philadelphia, Baku, Sverdlovsk, Tiflis, and Vladivostok.

Sept. 15d. 23h. 48m. 51s. Epicentre 14°·3N. 91°·7W.

A = −·0288, B = −·9690, C = +·2454; δ = +1; h = +6;
D = −·999, E = +·030; G = −·007, H = −·245, K = −·969.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Oaxaca	N.	5·5	299	1 31	+ 6	—	—	—	—
Vera Cruz	N.	6·5	319	1 38	− 1	—	—	—	—
Tacubaya	N.	8·8	306	2 13	+ 2	—	—	—	—
Balboa Heights		13·0	113	e 3 6	− 3	—	—	e 7·3	—
Columbia		21·9	23	4 53	− 4	8 47	− 7	e 10·6	—

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		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
St. Louis		24·3	3	e 5 16	− 4	e 9 36	− 1	e 13·0	—
Florissant		24·4	3	e 5 17	− 4	e 9 33	− 6	e 12·0	16·5
San Juan		24·9	76	e 5 20	− 6	i 9 57	+10	i 13·2	—
Tucson		25·0	320	e 5 22	− 5	e 9 37	−12	12·0	—
Chicago		27·7	6	—	—	e 10 29	− 4	—	—
Pennsylvania		29·0	23	e 6 0	− 4	e 11 20	+26	e 18·0	20·1
Philadelphia		29·4	28	i 6 3	− 4	i 10 56	− 5	i 19·7	—
La Jolla		29·7	314	e 6 6	− 4	e 11 6	0	—	—
Riverside		30·4	315	e 6 10	− 6	—	—	—	—
Buffalo		30·6	20	i 6 17	− 1	i 10 57	−23	—	—
Fordham		30·7	28	i 6 13	− 6	i 11 15	− 6	—	17·9
Huancayo		30·8	147	i 6 12	− 8	e 10 30	−53	e 13·2	—
Mount Wilson	Z.	31·1	315	i 6 16a	− 6	—	—	—	—
Pasadena		31·1	315	e 6 17	− 5	i 11 28	0	e 14·2	—
Toronto		31·1	18	6 17	− 5	11 15	−13	15·6	—
Haiwee		32·0	319	e 6 25	− 5	—	—	—	—
Williamstown		32·4	26	e 6 30	− 4	i 11 49	+ 1	i 15·0	18·5
Tinemaha		32·8	320	i 6 31	− 6	—	—	—	—
Oak Ridge		33·0	28	e 6 35	− 4	e 11 44	−13	—	19·1
Weston		33·1	28	e 6 35a	− 5	i 11 55	− 4	i 16·4	19·9
Fresno	N.	33·6	318	e 6 58	+14	—	—	e 17·2	—
Ottawa		33·8	20	6 41	− 5	12 7	− 3	15·6	—
Vermont		34·0	24	i 6 47	− 1	i 12 11	− 2	e 13·5	—
Lick		35·1	317	e 7 51	+54	e 12 29	− 1	—	—
Bozeman		35·3	337	e 6 53	− 6	e 12 26	− 7	e 17·3	—
Branner		35·5	317	e 7 1	+ 1	—	—	e 17·4	—
Berkeley		35·8	317	e 6 59	− 4	e 12 31	−10	e 17·4	—
Shawinigan Falls		35·9	22	7 4	0	12 41	− 1	16·3	—
Butte		36·2	338	e 6 52	−14	e 12 17	−30	e 16·0	—
East Machias		36·7	29	e 7 5	− 5	e 12 38	−16	e 14·8	—
Seven Falls		37·1	33	7 9	− 5	12 56	− 5	16·1	—
Ukiah		37·1	318	e 7 7	− 7	e 12 51	−10	e 18·3	—
La Paz		38·4	141	i 7 25k	0	i 13 23	+ 3	18·4	22·8
Ferndale		38·6	322	e 7 25	− 1	e 13 25	+ 2	—	—
Seattle		41·9	330	e 7 41	−13	e 14 3	−10	e 16·6	—
Victoria		42·9	330	8 0	− 2	14 26	− 1	19·1	—
Sitka		53·9	333	e 9 21	− 6	e 16 56	− 6	e 21·8	—
Ivigtut		56·3	24	—	—	17 25	− 9	—	—
La Plata		58·5	147	9 58	− 2	17 51	−12	30·1	—
Rio de Janeiro	E.	60·2	126	i 10 7	− 5	i 18 15	−10	i 29·6	—
	N.	60·2	126	i 10 9	− 3	i 18 17	− 8	i 29·7	—
Honolulu		63·0	287	—	—	i 19 0	− 1	26·4	—
College		63·1	337	e 10 32	0	19 6	+ 4	e 26·4	—
Scoresby Sund		69·9	19	11 17	+ 2	20 19	− 5	—	—
Edinburgh		77·5	35	—	—	e 21 59	+ 9	—	46·8
Averroes		77·6	57	—	—	e 21 47	− 4	37·1	42·1
Aberdeen		77·9	34	—	—	e 21 43	−11	e 39·1	46·1
Bidston		77·9	37	—	—	e 21 50	− 4	e 33·1	52·3
San Fernando		78·1	56	(e 11 56)	− 6	e 11 56	P	32·1	—
Stonyhurst		78·2	37	—	—	e 21 50	− 7	e 33·1	45·6
Jersey		79·1	41	—	—	e 24 20	?	27·7	—
Oxford		79·2	39	—	—	i 21 55	−13	e 26·7	48·1
Toledo		79·2	52	—	—	22 0	− 8	—	41·5
Kew		79·8	39	i 12 6	− 6	i 21 53	−21	e 33·1	52·5
Granada		80·0	54	i 12 7	− 6	e 22 16	− 1	—	—
Bergen		81·1	30	12 9	− 9	22 23	− 5	34·1	—
Paris		82·1	42	e 12 22	− 2	e 22 27	−11	38·1	48·1
Uccle		82·8	40	12 25	− 2	e 22 35	−10	e 35·1	46·5
De Bilt		83·0	38	i 12 27	− 1	e 22 41	− 6	e 36·1	43·2
Algiers		85·3	54	—	—	e 22 57	[− 6]	33·1	—
Hamburg		85·4	36	e 11 9?	?	e 23 9	− 2	e 34·1	50·1

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		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Neuchatel		85·5	42	e 12 36	− 5	—	—	—	—
Strasbourg		85·5	41	e 12 37	− 4	23 1	[− 3]	39·1	—
Basle		85·7	42	e 12 43	+ 1	—	—	—	—
Göttingen		86·0	37	—	—	(e 23 9?)	[+ 1]	e 23·1	—
Copenhagen		86·1	33	12 42	− 2	23 4	[− 4]	36·1	—
Stuttgart		86·4	40	e 12 39	− 6	e 23 11	[+ 1]	e 37·1	45·2
Zurich		86·4	43	e 12 46	+ 1	—	—	—	—
Upsala		87·0	29	e 22 0?	?	i 22 19	[−55]	e 43·1	50·4
Chur		87·2	43	e 13 43	+54	—	—	e 50·3	—
Jena		87·2	39	—	—	e 23 9	[− 6]	e 36·1	49·6
Cheb		88·0	39	—	—	e 23 9?	[−11]	e 42·1	54·1
Prague		89·2	38	—	—	e 23 3	[−24]	—	47·1
Triest		90·4	43	—	—	23 22	[−13]	—	45·1
Graz		90·9	41	e 12 57	−10	e 23 21	[−17]	e 46·1	54·0
Zagreb		91·8	42	—	—	e 23 37	[− 7]	e 40·1	—
Pulkovo		92·8	29	e 13 10	− 6	24 9	−10	37·6	55·4
Budapest		93·0	40	—	—	e 40 39	?	e 50·6	61·1
Belgrade		95·0	42	—	—	e 23 54	[− 7]	e 49·4	—
Sofia		97·8	42	—	—	e 24 58	− 4	e 54·1	55·6
Moscow		98·3	26	e 13 39	− 2	24 8	[−10]	36·6	55·5
Bucharest		98·8	40	e 19 19	PPP	e 24 13	[− 8]	39·1	49·1
Wellington		101·9	231	i 13 25	−32	i 25 50	+14	47·1	50·1
Christchurch		103·8	229	15 57	?	i 24 31	[−14]	47·8	—
Sverdlovsk		105·5	15	e 14 9	P	24 49	[− 4]	48·1	67·6
Helwan		109·7	51	e 14 33	P	25 9	[− 1]	—	66·5
Vladivostok		110·3	327	i 19 15	PP	e 25 13	[0]	53·7	78·0
Grozny		110·7	32	e 19 39	PP	—	—	—	—
Ksara		110·9	46	e 18 12	[−23]	e 28 48	PS	—	—
Tiflis		111·3	34	e 15 15	P	25 14	[− 3]	e 49·1	65·7
Cape Town	E.	114·5	121	e 19 38	PP	e 25 56	[+26]	e 54·7	62·0
Baku		115·0	32	e 19 46	PP	25 36	[+ 4]	52·1	67·6
Tashkent		121·9	16	e 20 17	PP	e 25 50	[− 6]	—	72·3
Andijan		123·3	14	e 19 20	?	—	—	70·1	—
Zi-ka-wei		124·7	325	e 20 45	PP	—	—	—	—
Melbourne		124·9	234	—	—	e 38 9	SSP	58·4	62·3
Hong Kong		135·7	325	22 58	PP	(31 39)	PS	—	31·6
Manila		136·8	310	19 31	[+ 6]	—	—	—	—
Agra	E.	137·6	13	i 22 59	PP	—	—	—	—
Calcutta	N.	143·4	0	19 31	[− 5]	29 40	{− 1}	44·8	—
Bombay		143·7	26	i 19 31	[− 6]	e 29 32	{−10}	—	—
Kodaikanal	E.	153·4	24	e 19 49	[− 3]	—	—	—	—

Additional readings :—
Columbia PP = +5m.31s., iS = +9m.25s. and +9m.57s.
St. Louis ipPE = +5m.37s., isPE = +5m.52s., ipPPE = +6m.9s., iE = +6m.31s., iSSSE = +10m.24s.
Florissant ipP = +5m.39s., iPPE = +5m.48s., isPZ = +6m.0s., ipPPZ = +6m.10s., iP$_c$PZ = +9m.17s., iNZ = +9m.39s., isSE = +10m.31s.
San Juan iPP = +5m.55s., iPPP = +6m.24s., e = +7m.37s., iSSS = +11m.10s.
Tucson P = +5m.24s., PP = +6m.7s., S = +9m.51s., iS = +10m.6s., iS = +10m.31s.
Pennsylvania e = +12m.49s.
Philadelphia iPP = +7m.5s.
Riverside ePPZ = +7m.18s., eP$_c$PZ = +9m.5s.
Buffalo i = +10m.5s., iSS = +13m.17s.
Huancayo P = +6m.21s., PP = +7m.5s., PPP = +7m.12s.
Mount Wilson iP$_c$PZ = +9m.12s.
Pasadena iPPE = +7m.23s., eP$_c$PZ = +9m.11s., iS$_c$PEZ = +13m.3s., eS$_c$SEN = +17m.1s.
Haiwee eS$_c$SE = +17m.7s.
Williamstown i = +6m.59s., iPP = +7m.34s.
Tinemaha iPPZ = +8m.29s., iP$_c$PZ = +9m.19s., iS$_c$PZ = +13m.9s., eS$_c$SNZ = +17m.2s.
Oak Ridge iN = +11m.48s., eE = +11m.50s., eN = +12m.48s., eP$_c$SN = +13m.33s.
Weston i = +7m.4s., iPP = +7m.43s., iSSZ = +14m.3s.

Continued on next page.

Ottawa PPP = +8m.9s., SS = +14m.38s.
Vermont ePPP = +8m.10s.
Bozeman ePP = +8m.13s., ePPP = +8m.20s., e = +15m.47s., eS_cS = +17m.0s.
Branner ePN = +7m.4s.
Berkeley ePN = +7m.4s., ePZ = +7m.6s., eS = +12m.42s., eS = +13m.2s.
Butte ePP = +8m.23s., eSS = +15m.19s.
East Machias PP = +8m.32s., ePPP = +8m.56s., iS = +12m.48s., S = +13m.6s.
Ukiah ePP = +9m.29s., ePPP = +9m.51s., e = +15m.54s., eS_cS = +17m.19s.
La Paz iPPN = +8m.58s., iPPPN = +9m.56s., iSSN = +16m.0s., iSSSN = +27m.0s.
Ferndale ePN = +7m.39s.
Seattle ePP = +9m.29s., ePPP = +9m.56s., S = +14m.9s.
Victoria SS = +17m.54s.
Sitka P = +9m.28s., ePP = +11m.43s., ePPP = +12m.54s., iS = +17m.1s., eSS = +20m.30s.
Rio de Janeiro iSSE = +22m.18s., iSSN = +22m.25s.
College ePP = +12m.44s., ePPP = +14m.36s., S_cS = +20m.26s., eSS = +22m.44s.
Scoresby Sund +20m.39s. and +24m.51s.
Averroes eSS = +28m.33s., eN = +31m.33s.
Kew iE = +18m.59s., iS_cSE = +22m.6s., ipSE = +22m.22s., iSPE = +22m.50s.
Uccle eE = +24m.37s., iE = +28m.29s. and +32m.7s.
De Bilt eE = +28m.24s. and +32m.11s.
Strasbourg ePPN = +15m.37s., SSN = +28m.37s., SSSE = +32m.9s.
Copenhagen +16m.3s., SS = +28m.51s., SSS = +33m.3s.
Stuttgart ePS = +24m.29s., eSS = +29m.9s.
Prague e = +28m.9s.? and +33m.39s.?
Triest PS = +24m.10s.
Pulkovo ePP = +16m.55s., SKS = +23m.43s., ePS = +25m.55s., e = +29m.51s.
Moscow e = +16m.55s., ePP = +17m.40s., e = +24m.11s., ePS = +26m.26s.
Bucharest eN = +19m.29s., eE = +25m.3s.
Wellington iSKKS = +26m.6s., iS = +26m.32s., eSS = +32m.54s.
Christchurch i = +27m.25s., SS = +33m.11s., SSS = +37m.15s.
Sverdlovsk ePP = +18m.30s., ePPP = +20m.57s., iPS = +27m.47s., eSS = +33m.33s., eSSS = +38m.27s.
Helwan PP = +19m.1s., PS = +28m.27s., i = +28m.57s., PPS = +29m.21s.
Vladivostok e = +26m.10s. and +30m.41s.
Ksara ePP = +19m.10s., eSS = +35m.8s.
Tiflis ePKPEN = +19m.9s., ePSEN = +28m.54s., ePPSEN = +30m.13s., SSE = +34m.39s.
Cape Town ePSE = +29m.26s., iSSE = +35m.26s.
Baku e = +16m.47s., SKKS = +26m.42s., PS = +29m.46s.
Tashkent SKKS = +27m.17s., iPS = +30m.16s., eSS = +36m.27s.
Manila SKP = +23m.3s., PPN = +25m.9s.
Calcutta PPN = +22m.27s., eN = +24m.23s., PPSN = +35m.6s.
Bombay ePP = +22m.42s., ePSKS = +32m.54s.
Kodaikanal eE = +20m.12s.
Long waves were also recorded at Frunse, Kobe, Durham, Theodosia, Yalta, Sebastopol, Almeria, Santiago, Hyderabad, Malaga, Phu-Lien, and Tortosa.

Sept. 15d. Readings also at 4h. (Mizusawa), 5h. (Erevan), 7h. (Mizusawa), 9h. (Huancayo and La Paz (2)), 11h. (near Santiago), 13h. (Batavia and Medan), 14h. (Ivigtut Berkeley, Tiflis, Mizusawa, and Nagoya), 15h. (Nagoya, Grozny, and near Santiago), 16h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 19h. (Mizusawa, Mount Wilson, Pasadena, Tinemaha, and Riverside), 20h. (near Andijan).

Sept. 16d. Readings also at 1h. (Zagreb, Frunse, near Andijan, near Hukuoka B), 2h. (near Medan and near Fresno), 3h. (Tucson), 4h. (near Mizusawa), 10h. (Keizyo, Nagoya, Mizusawa (2), Andijan, Tiflis, Baku, Sverdlovsk, La Jolla, Mount Wilson, Pasadena, and Tinemaha), 16h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, Tiflis (2), Ksara, Sebastopol, Simferopol, Theodosia, Yalta, Copenhagen, Vienna, Chur, Zurich, near Sumoto, and Nagoya), 17h. (Tiflis), 18h. (Weston, Ferndale, Santiago (3), Sverdlovsk, Tashkent Tiflis, Hong Kong, near Manila, and near Florissant), 19h. (Oaxaca), 22h. (Weston, near Oak Ridge, and near Tananarive).

Sept. 17d. 9h. 30m. 37s. Epicentre 56°·3S. 24°·2W.

$A = +·5085$, $B = -·2285$, $C = -·8302$; $\delta = +2$; $h = -8$;
$D = -·410$, $E = -·912$; $G = -·757$, $H = +·340$, $K = -·557$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Rio de Janeiro		36·2	329	e 7 7	+ 1	i 12 50	+ 3	i 15·4	—
Cape Town		36·6	71	e 7 10	0	i 12 50	− 3	e 16·8	21·0
Santiago		39·1	286	e 9 33	PPP	—	—	—	28·4
La Paz		51·7	303	i 9 9a	− 2	i 16 31	− 1	25·4	33·9
Huancayo		59·0	298	10 6	+ 2	18 9	− 1	e 23·5	—
Tananarive		64·4	86	—	—	e 19 26	+ 8	e 31·4	39·4
Christchurch		79·6	193	i 12 10	0	i 22 10	− 2	40·2	—
Wellington		81·5	195	i 12 18	− 3	i 22 28	− 4	48·0	48·4
San Juan		82·3	321	12 21	− 4	e 22 25	−15	32·4	—
Melbourne		85·8	172	i 20 14	?	e 23 11	− 4	43·0	49·3
Adelaide		88·0	166	—	—	i 23 32	− 4	e 46·4	49·7
Sydney		90·1	176	—	—	e 23 36	[+ 3]	50·7	51·9
Riverview		90·2	176	—	—	i 23 53	− 3	48·8	51·7
Averroes		90·4	22	e 17 23?	?	e 23 41	[+ 6]	e 45·4	50·4
San Fernando		93·7	14	e 24 7	S	(e 24 7)	−20	48·9	—
Almeria		94·6	17	—	—	e 26 27	PPS	e 51·0	—
Algiers		95·6	22	—	—	e 26 23?	PS	e 45·4	52·4
Brisbane		96·5	178	—	—	i 24 5	[− 4]	53·2	59·4
Helwan		97·9	47	e 14 43?	+64	25 29	+26	—	56·7
Ksara		103·2	49	e 14 10	+ 7	e 25 18	−29	50·4	58·4
Kodaikanal	E.	104·9	93	e 18 31	PP	i 24 49	[− 1]	50·6	57·0
Philadelphia		105·1	322	—	—	e 24 48	[− 3]	e 55·5	—
Batavia		106·0	129	24 53	S	(24 53)	[− 2]	—	—
Weston		106·1	326	i 18 51	PP	i 26 17	+ 6	—	59·7
Oak Ridge		106·2	326	i 18 42	PP	—	—	e 56·9	—
Sofia		106·5	35	e 16 41	?	e 28 5	PS	—	74·4
Williamstown		107·0	325	e 18 53	PP	—	—	—	e 61·9
East Machias		107·1	330	e 18 44	PP	e 24 41	[−18]	55·0	—
Paris		107·1	18	e 19 23?	?	—	—	52·4	58·4
Belgrade		107·5	32	—	—	e 25 31	[+30]	e 59·7	—
Strasbourg		107·9	22	e 17 47	?	e 24 58	[− 5]	53·4	61·9
Stuttgart		108·3	23	—	—	e 24 23?	[−42]	e 55·4	60·4
Vermont		108·5	326	—	—	e 25 10	[+ 4]	e 43·4	—
Bucharest	E.	108·9	36	20 23?	PPP	—	—	—	63·4
Uccle		109·3	18	—	—	28 40	PS	53·4	62·5
Bombay		109·4	85	e 18 44	PKP	e 25 6	[− 3]	—	—
Toronto		109·9	321	—	—	e 25 5	[− 6]	57·4	—
Florissant		110·0	310	e 19 8	PP	e 25 15	[+ 3]	e 34·5	63·9
Ottawa		110·2	324	—	—	e 26 23?	{+17}	45·4	—
Seven Falls		110·2	328	—	—	e 26 11	{+ 5}	45·4	—
Bidston		110·7	13	—	—	i 30 3	PPS	e 55·6	—
De Bilt		110·7	19	—	—	e 25 23?	[+ 8]	e 53·4	60·7
Prague		110·7	25	—	—	e 28 23?	PS	—	61·4
Hyderabad		111·3	91	e 19 16	PP	28 49	PS	41·0	57·2
Chicago		111·5	314	e 18 26	[−10]	—	—	e 54·2	—
Edinburgh		113·2	13	—	—	e 39 29	SSS	e 58·4	—
Tiflis		113·6	50	e 18 25	[−15]	e 26 41	{+11}	e 56·4	69·2
Tucson		114·4	292	e 18 36	[− 5]	e 25 28	[− 1]	53·4	—
Baku		114·5	54	e 20 5	PP	35 53	SS	57·4	71·5
Piatigorsk		114·8	47	e 19 30	PP	—	—	61·4	—
Grozny		115·4	50	e 20 8	PP	—	—	—	—
Copenhagen		115·5	22	—	—	29 41	PS	53·4	—
Bergen		118·7	16	—	—	e 29 45	PS	e 62·4	—
Agra	E.	118·8	84	e 20 18	PP	e 25 44	[− 2]	—	66·0
Mount Wilson	Z.	119·7	289	e 18 58	[+ 6]	—	—	—	—
Pasadena		119·7	289	e 18 50	[− 2]	e 25 49	[0]	e 60·4	—
Upsala		120·5	23	—	—	e 29 23?	?	—	68·5
Calcutta	N.	120·9	95	e 20 27	PP	1 30 19	PS	—	65·1
Tinemaha	Z.	122·0	290	e 18 55	[− 2]	—	—	—	—
Moscow		122·4	36	e 19 4	[+ 7]	e 30 47	PS	65·9	75·0

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Pulkovo	123·5	29	e 20 3	PP	e 25 59	[− 2]	62·9	71·0
Berkeley	124·7	288	e 20 44	PP	e 26 9	[+ 4]	—	—
Tashkent	124·9	66	i 20 59	PP	27 48	{− 5}	e 60·1	77·2
Scoresby Sund	126·5	1	21 23	PP	29 26	?	59·4	—
Phu-Lien	129·4	114	21 23?	PP	—	—	—	—
Manila	130·6	134	e 19 40	[+27]	—	—	—	—
Seattle	131·7	297	e 21 15	PP	e 26 43	[+20]	—	—
Sverdlovsk	131·8	47	e 20 21	[+66]	—	—	61·4	83·7
Victoria	132·7	296	e 23 14	?	e 39 23?	SS	59·4	—
Hong Kong	134·4	121	22 59	?	—	—	—	80·9
Sitka	143·6	302	e 19 32	[− 4]	e 29 13	{−29}	e 62·0	—
Zi-ka-wei z.	145·3	121	e 19 43	[+ 3]	—	—	—	80·9
College	152·0	312	e 20 13	[+23]	e 43 30	SS	e 61·5	—

Additional readings :—

Cape Town iP = +7m.16s., iPP = +8m.24s., iPPPN = +8m.44s., iPPPE = +8m.47s., iSN = +13m.2s.
La Paz ipP = +10m.1s., isP = +10m.28s., iPPE = +10m.51s., iN = +18m.15s., S_cSN = +19m.6s., iSSN = +19m.59s., iSSSN = +21m.19s.
Huancayo P = +10m.31s., eP_cP = +10m.50s., ePP = +12m.13s., PPP = +13m.33s., eS_cS = +19m.58s.
Tananarive EN = +19m.49s., eE = +29m.7s.
Christchurch L_qE = +33·8m.
Wellington e = +12m.53s., i = +14m.24s., +18m.13s., iS? = +23m.31s., L_q = +42·4m.
San Juan P = +13m.9s., ePP = +15m.32s., ePPP = +17m.41s., S = +22m.39s., iS = +22m.44s., PS = +23m.29s., SS = +27m.21s., eSSS = +30m.36s.
Melbourne e = +27m.49s., i = +35m.58s. and +27m.29s.
Riverview eE = +36m.47s.
Averroes eE = +21m.23s., eN = +25m.6s.
San Fernando ePSN = +32m.23s., eSSSN = +40m.33s.
Brisbane eE = +24m.41s., iN = +28m.59s., iE = +31m.17s., iN = +35m.17s.
Helwan e = +15m.37s., +16m.38s., +17m.38s., ePP = +18m.43s., e = +19m.23s., PPP = +21m.3s., e = +22m.48s., i = +24m.17s., eS = +26m.23s., PS = +27m.29s.
Ksara PP = +18m.26s., ePPP = +20m.49s., ePS = +27m.39s., ePPS = +28m.30s., eSS = +33m.36s.
Kodaikanal eE = +23m.7s., +26m.13s., iE = +27m.49s., eE = +33m.32s. and +34m.18s.
Philadelphia e = +24m.39s., eSS = +33m.23s.
Weston ePSN = +27m.58s., eSS = +33m.40s.
East Machias ePPP = +20m.52s., eS = +25m.52s., ePS = +28m.0s., ePPS = +29m.19s., ePKKP = +30m.5s., eSS = +33m.38s.
Belgrade e = +28m.37s.
Strasbourg ePS = +28m.25s., eN = +34m.45s.
Stuttgart e = +28m.23s.?
Vermont eSKKS = +25m.52s., eSS = +33m.57s.
Uccle e = +34m.53s.
Bombay e = +28m.33s.
Florissant eN = +19m.18s., eE = +26m.9s., iN = +26m.11s., eSN = +28m.52s.
Ottawa eE = +34m.41s.
Seven Falls e = +35m.5s.
De Bilt e = +28m.53s.
Chicago ePP = +19m.16s.
Tiflis ePPE = +19m.15s., eSKKSN = +19m.43s., ePPSE = +29m.38s.
Tucson ePP = +19m.41s., ePPP = +21m.50s., eSKKS = +26m.37s.
Baku PS = +29m.27s., eSSS = +39m.35s.
Agra e = +36m.24s., e = +41m.4s.
Mount Wilson ePPZ = +20m.17s.
Pasadena ePPZ = +20m.14s.
Upsala eE = +36m.21s.
Calcutta eN = +45m.34s.
Tinemaha ePPZ = +20m.41s.
Moscow e = +20m.37s. and +23m.23s.
Pulkovo eS = +27m.35s., PPS = +30m.41s., SSS = +40m.35s.
Berkeley eE = +21m.26s., eN = +32m.22s.
Tashkent ePPS = +32m.51s., SS = +37m.53s., SSS = +43m.5s.
Manila iZ = +23m.4s., iE = +24m.29s., iN = +24m.43s.
Seattle ePPP = +24m.20s.
Sverdlovsk e = +22m.43s., i = +23m.40s., e = +40m.2s.
Sitka eSKKKS = +30m.4s., eSKSP = +33m.15s., ePPS = +35m.44s., ePPPS = +37m.4s., ePSPS = +42m.5s., eSSS = +46m.33s.
College eSS = +38m.51s.
Long waves were also recorded at Dehra Dun, Stonyhurst, Cheb, Aberdeen, Madan, Ivigtut, Toledo, Perth, Hamburg, Malaga, La Plata, Honolulu, Ukiah, Trieste, Göttingen, Graz, Granada, Durham, Budapest, Zagreb, and Tortosa.

Sept. 17d. 12h. 19m. 5s. Epicentre 44°·8N. 10°·3E.

Felt force VI at San Pancrazio (Parma); isoseismic chart, plate 65, radius 30kms. Epicentre 44°45′N. 10°16′E.

Notable earthquake. Bulletin of the Seismological Society of Italy, volume XXXV (1937), N. 5-6 (final).

Macroseismic surface 2200 sq. kms.
P. Caloi.

Seismic activity in Italy, 1930-1939.

"Commissione Italiana di Studio per i problemi del Soccorso alle Popolazioni, Vol. IX, Felix Le Monnier-Firence, 1942."

$A = +\cdot7004$, $B = +\cdot1273$, $C = +\cdot7023$; $\delta = -1$; $h = -4$;
$D = +\cdot179$, $E = -\cdot984$; $G = +\cdot691$, $H = +\cdot126$, $K = -\cdot712$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Prato		1·1	148	e 0 21	− 1	—	—	—	—
Chur		2·1	345	—	—	e 1 36	S_g	—	—
Triest		2·6	71	0 41	− 3	1 18	+ 1	—	—
Zurich		2·8	335	e 0 46	− 1	e 1 34	S_g	—	—
Ravensburg		3·0	351	e 1 0	P_g	1 40	S_g	—	—
Laibach		3·2	67	e 1 23	P_g	i 1 45	S_g	—	—
Neuchatel		3·2	313	e 0 50	− 2	—	—	—	—
Basle		3·3	326	e 1 2	P*	e 1 51	S_g	—	—
Stuttgart		4·1	349	e 1 18	P_g	2 16	S_g	—	—
Zagreb		4·1	75	e 1 18	P_g	i 2 13	S_g	—	3·6
Strasbourg		4·2	337	e 1 25	P_g	i 2 22	S_g	—	—
Graz		4·3	55	e 1 32	P_g	i 1 49	−11	—	2·8
Karlsruhe		4·4	344	e 0 21	−49	1 55?	− 7	—	—
Vienna		5·4	48	e 3 5	S	(e 3 5)	S_g	i 4·2	—
Prague		5·9	26	e 3 8	S	(e 3 8)	S_g	—	4·5
Jena		6·2	9	e 1 55	P*	—	—	3·3	3·8
Budapest		6·6	64	e 4 7	?	—	—	—	—
Uccle		7·2	328	—	—	e 3 25	+12	—	—
Hamburg	E.	8·8	359	—	—	e 4 1	+ 8	—	6·7

Additional readings:—
Triest $S_g = +1m.30s.$
Zurich $e = +54s.$, $eP_g = +57s.$
Laibach $iS = +2m.1s.$, $e = +2m.40s.$
Stuttgart $e = +2m.28s.$, $i = +2m.47s.$
Zagreb $i = +2m.28s.$ and $+2m.48s.$
Strasbourg $ePN = +1m.36s.$, $iE = +2m.30s.$, $iZ = +2m.36s.$, $iN = +3m.11s.$, $eZ = +3m.18s.$, $iE = +3m.36s.$
Vienna $P^* = +3m.12s.$, $iP = +3m.21s.$, $sP = +3m.26s.$, $S^* = +3m.41s.$
Prague $eS = +4m.51s.$
Budapest $e = +4m.55s.$
Long waves were also recorded at Copenhagen.

Sept. 17d. Readings also at 0h. (Sverdlovsk), 4h. (Kobe, and near Manila), 6h. (Berkeley, Branner, Lick, Ukiah, Mount Wilson, Pasadena, and Tinemaha), 7h. (Mizusawa, and near Nagoya), 9h. (near Zagreb), 12h. (Vienna, and near Sumoto), 14h. (Tiflis and Lick), 15h. (Basle, and near Manila), 16h. (Mount Wilson, Riverside, and Tinemaha), 18h. (Fresno, near Branner and Lick), 19h. (Cape Town), 20h. (Baku, Tashkent, Sverdlovsk, and Ksara), 21h. (Wellington).

Sept. 18d. Readings at 1h. (Zagreb), 2h. (near Manila), 3h. (near Batavia), 5h. (near La Paz), 10h. and 12h. (near Santiago), 13h. (near Berkeley, Branner, Lick, Fresno, San Francisco, and near Santiago), 15h. (Göttingen, Besançon, Stuttgart, Strasbourg, near Basle, Chur, Neuchatel, and Zurich), 17h. (Cheb and near Berkeley), 18h. (Huancayo, La Paz, and Wellington), 19h. (Frunse and near Andijan), 22h. (Oaxaca, Oak Ridge, and near San Juan).

Sept. 19d. 16h. 10m. 38s. Epicentre 39°·0N. 71°·8E. (as on 1937 March 9d.).

$A = +\cdot2434$, $B = +\cdot7402$, $C = +\cdot6268$; $\delta = +2$; $h = -1$;
$D = +\cdot950$, $E = -\cdot312$; $G = +\cdot196$, $H = +\cdot595$, $K = -\cdot779$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Andijan		1·8	14	0 30	− 2	i 0 52	− 4	—	1·0
Tashkent		3·0	320	i 0 48	− 2	i 1 27	0	i 1·6	2·0
Tchimkent		3·7	333	1 0	0	1 46	+ 1	—	—
Samarkand		3·8	281	e 0 53	− 8	e 1 30	−17	—	—
Frunse		4·4	28	e 1 10	0	2 3	+ 1	—	2·4
Almata		5·7	41	e 1 29	+ 1	i 2 33	− 2	—	3·1
Baku		16·9	281	e 4 1	+ 2	e 7 11	+ 4	e 11·0	—
Sverdlovsk		19·3	341	e 4 30	+ 1	e 8 5	+ 3	11·7	11·9
Grozny		20·0	291	4 41	+ 4	e 8 27	+10	—	—
Tiflis	N.	20·7	286	e 4 38	− 6	e 8 42	+11	—	—
Moscow		28·2	318	—	—	e 10 46	+ 5	e 14·8	17·5
Pulkovo		33·3	322	—	—	e 11 9	−53	e 16·8	20·2

Additional readings :—
Andijan iPS = +35s., i = +41s. and +48s.
Tchimkent P_g = +1m.12s., e = +1m.35s. and +1m.52s., S_g = +1m.58s., eSS = +1m.59s.
Frunse i = +1m.12s., +1m.14s., and +1m.17s., P_g = +1m.22s., S_g = +2m.18s.
Almata iP_g = +1m.47s., iS_g = +2m.55s.
Sverdlovsk e = +8m.20s., L_Q = +10·1m.
Long waves were also recorded at Semipalatinsk, Copenhagen, and De Bilt.

Sept. 19d. Readings also at 0h. (Kobe, Sumoto, near Hukuoka, and Hukuoka B), 1h. (Tiflis), 7h. (College), 8h. (Strasbourg), 9h. (Guadalajara), Tucson, De Bilt, Paris, Uccle, Strasbourg, Sverdlovsk, Grozny, and Tashkent), 12h. (Strasbourg), 13h. (Wellington and Almeria), 15h. and 16h. (near Amboina), 18h. and 19h. (Tiflis), 22h. (Amboina and Wellington).

Sept. 20d. 7h. 3m. 48s. Epicentre 18°·7N. 105°·2W.

$A = -\cdot2485$, $B = -\cdot9147$, $C = +\cdot3187$; $\delta = 0$; $h = +5$;
$D = -\cdot965$, $E = +\cdot262$; $G = -\cdot084$, $H = -\cdot308$, $K = -\cdot948$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manzanillo	N.	0·9	67	0 19	− 1	—	—	—	—
Guadalajara	N.	2·6	41	0 42	− 5	—	—	—	—
Tacubaya	N.	5·8	80	1 30	+ 1	—	—	—	—
Oaxaca	N.	8·2	101	2 8	+ 5	—	—	—	—
Vera Cruz	E.	8·6	86	2 17	+ 8	—	—	—	—
Tucson		14·4	341	i 3 29k	+ 2	6 21	+12	e 7·2	—
La Jolla		17·8	325	i 4 9	− 2	—	—	—	—
Riverside		18·7	326	i 4 21k	− 1	—	—	—	—
Mount Wilson		19·3	326	i 4 27k	− 2	—	—	—	—
Pasadena		19·3	326	i 4 26k	− 3	i 8 10	+ 8	e 9·3	—
Haiwee		20·7	330	e 4 43	− 1	—	—	—	—
Tinemaha	N.	21·6	330	e 4 54	0	—	—	—	—
Lick	N.	23·5	326	e 5 11	− 1	—	—	—	—
St. Louis	N.	23·8	30	i 5 14	− 1	e 9 39	+11	e 12·8	13·8
Florissant		23·9	30	e 5 14	− 2	e 9 39	+ 9	—	13·0
Berkeley		24·2	326	e 5 15	− 4	e 9 41	+ 6	e 12·2	—
Ukiah		25·7	327	—	—	e 10 1	0	e 11·8	—
Columbia		26·4	49	e 5 39	− 1	e 10 20	+ 8	e 15·8	—
Bozeman		27·3	352	e 6 54	PPP	e 10 26	− 1	e 12·4	—
Chicago		27·5	28	e 5 28	−22	e 10 18	−12	e 14·1	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Butte	27·9	350	e 5 32	−22	e 10 16	−21	e 16·0	—
Seattle	32·1	338	—	—	e 11 58	+15	e 12·8	—
Toronto	33·0	35	e 7 42	PP	—	—	18·2	—
Victoria	33·1	338	—	—	e 12 0	+ 1	17·2	—
Philadelphia	33·4	45	e 6 34	− 8	e 11 58	− 5	e 14·1	—
Ottawa	36·2	36	7 4	− 2	12 44	− 3	19·2	—
San Juan	37·0	83	e 7 13	0	e 13 0	+ 1	19·6	—
Oak Ridge	37·1	42	i 7 12a	− 2	—	—	e 20·2	—
Vermont	37·1	39	e 7 15	+ 1	e 13 2	+ 1	e 16·7	—
Weston	37·2	42	i 7 13a	− 2	e 13 9	+ 7	—	—
Seven Falls	39·9	36	7 37	0	13 37	− 6	21·2	—
East Machias	40·8	41	e 9 21	PP	e 13 48	− 8	e 16·2	—
Huancayo	42·4	134	e 7 56	− 2	e 13 34	−46	19·6	—
Sitka	44·4	337	e 12 32	?	14 59	+10	19·8	—
Honolulu	49·3	282	e 18 31	?	e 19 27	SS	23·0	—
La Paz	50·5	131	i 9 4a	+ 2	i 16 33	+17	24·2	28·8
Ivigtut	58·1	28	10 0	+ 2	18 0	+ 2	31·2	—
Scoresby Sund	70·3	20	11 19	+ 2	20 30	+ 1	32·2	—
Rathfarnham Castle	80·4	37	—	—	e 29 27	?	40·2	48·2
Edinburgh	81·3	34	—	—	e 22 36	+ 6	e 47·2	—
Paris	87·2	39	e 13 12	+23	—	—	48·2	—
De Bilt	87·3	35	—	—	e 23 20	[+ 5]	e 41·2	50·8
Malaga	87·3	52	e 14 3	?	—	—	—	—
Uccle	87·4	37	—	—	e 23 18	[+ 2]	e 40·2	—
Granada	87·7	51	e 13 1	+ 9	—	—	50·2	—
Hamburg	89·1	33	—	—	e 23 12?	[−15]	e 48·2	56·2
Copenhagen	89·2	30	16 29	PP	23 34	[+ 6]	41·2	—
Strasbourg	90·4	37	—	—	e 23 2	[−33]	e 42·7	—
Stuttgart	91·2	37	e 16 46	PP	—	—	e 45·2	—
Pulkovo	93·9	21	—	—	e 24 56	+27	46·7	55·0
Moscow	99·4	19	e 17 48	PP	—	—	e 49·7	59·9
Sverdlovsk	103·8	6	e 18 24	PP	e 32 55	SS	46·2	66·3
Tiflis	113·8	24	—	—	e 28 48	PS	e 51·7	68·0
Ksara	115·9	35	i 19 48	PP	e 25 38	[− 8]	—	—

Additional readings :—
Tucson iP = +3m.35s., S = +6m.39s.
Pasadena iSN = +8m.22s.
Lick ePE = +5m.14s.
St Louis iN = +5m.20s., eSSN = +10m.29s., iN = +13m.25s.
Florissant eE = +9m.8s., eZ = +9m.31s., eN = +9m.45s.
Berkeley eE = +4m.57s., eN = +9m.47s.
Ukiah e = +9m.25s., eS = +10m.24s.
Chicago eP = +5m.46s., eS = +10m.31s.
Philadelphia eP = +6m.41s., ePP = +7m.40s.
Ottawa PP = +8m.17s.
San Juan ePP = +8m.28s., e = +16m.47s., S_cS = +17m.27s.
Vermont ePP = +8m.39s., eS = +13m.21s.
Seven Falls e = +9m.3s.
East Machias S = +14m.15s.
Huancayo P = +8m.5s., ePP = +9m.26s., e = +16m.23s., S_cS = +17m.48s.
Sitka eSS = +18m.32s.
Rathfarnham Castle e = +36m.5s.
Strasbourg e = +38m.12s.?
Stuttgart e = +39m.30s.
Ksara ePS = +29m.36s., ePPS = +30m.48s., eSS = +35m.58s.
Long waves were also recorded at Prague, Baku, Durham, Wellington, and Christchurch.

Sept. 20d. Readings also at 3h. (Kobe and near Sumoto), 4h. (near Medan), 8h. (La Paz), 9h. (Sitka), 14h. (Ksara, La Paz, and near Santiago), 15h. (Cape Town, De Bilt, Paris, Strasbourg, Copenhagen, Tiflis, Baku, and Tashkent), 16h. (near Apia), 20h. (San Juan and Zagreb), 21h. (Nagoya and near Hukuoka B).

Sept. 21d. 7h. 46m. 47s. Epicentre 20°·0N. 102°·0E.

Earthquake in Indo China. Felt feebly at Luang-Prabang (Laos) and Sonla (Tonkin).

Probable epicentre 21°·0N. 101°·5E. (Strasbourg).
21°·0N. 104°·0E. (Bombay).

Annales de l'Institut de Physique du Globe de Strasbourg, Tome II, 2e Partie, Seismologie, p. 105, Mende 1940.

$A = -\cdot1955$, $B = +\cdot9199$, $C = +\cdot3400$; $\delta = +4$; $h = +5$;
$D = +\cdot978$, $E = +\cdot208$; $G = -\cdot071$, $H = +\cdot333$, $K = -\cdot940$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Phu-Lien	E.	4·4	80	e 1 6	− 4	i 2 18	S*	i 2·4	2·7
Hong Kong		11·6	76	5 5	S	(5 5)	+ 4	6·1	6·4
Calcutta	N.	13·0	283	e 5 17?	S	(e 5 17?)	−18	9·7	—
Medan		16·6	191	i 4 4	+ 8	—	—	—	—
Taihoku		18·7	70	6 28	?	9 55	L	(9·9)	—
Manila		18·9	104	i 4 26	+ 2	8 13	+20	—	—
Zi-ka-wei	Z.	20·7	52	e 4 43	− 1	8 37	+ 6	—	11·4
Hyderabad		22·4	268	—	—	9 0	− 4	—	17·5
Agra	E.	23·1	293	i 5 2	− 6	i 9 14	− 2	—	—
Kodaikanal	E.	25·6	253	i 5 30	− 2	i 10 13	+14	13·0	15·4
Batavia		26·4	170	6 44	+64	i 14 54	L	(i 14·9)	—
Tomie		27·0	58	11 7	S	(11 7)	+45	—	—
Bombay	E.	27·5	273	i 5 49	− 1	i 10 49	+19	—	—
Zinsen	E.	27·6	44	e 8 22	?	e 13 58	L	(e 14·0)	—
Keizyo		27·9	46	e 9 59	S	(e 9 59)	−38	(e 14·5)	—
Husan		28·2	53	e 11 0	S	(e 11 0)	+19	(e 15·1)	—
Taikyu		28·2	49	e 11 4	S	(e 11 4)	+23	(15·5)	—
Hukuoka B		28·6	56	e 8 35	?	e 15 40	L	(15·7)	—
Almata		31·3	324	e 6 31	+ 7	e 11 11	−20	17·6	—
Andijan		32·6	316	e 6 38	+ 3	e 11 49	− 2	20·2	—
Toyooka	N.	32·7	54	e 11 42	S	(e 11 42)	−10	—	—
Gihu		34·2	56	6 45	− 4	—	—	—	—
Tashkent		35·0	315	e 7 3	+ 7	1 12 22	− 6	e 17·2	22·8
Nagano		35·7	54	7 2	0	—	—	—	—
Oiwake		35·8	54	7 2	− 1	—	—	—	—
Samarkand		35·8	310	e 6 42	−21	e 12 13	−28	—	—
Sverdlovsk		47·8	331	e 8 36	− 5	15 33	− 5	24·1	28·8
Baku		48·6	307	e 8 58	+11	15 51	+ 2	26·0	29·4
Grozny		52·1	310	e 9 30	+16	e 16 34	− 4	—	—
Tiflis		52·6	308	e 9 13	− 5	e 16 43	− 1	30·9	38·5
Perth		53·3	165	—	—	17 13?	+19	—	—
Moscow		59·3	324	—	—	e 18 8	− 6	e 31·7	35·7
Ksara		59·6	298	i 10 5a	− 3	e 18 41	+24	—	—
Theodosia		59·7	311	e 10 7	− 2	18 14	− 5	—	—
Yalta		60·6	310	e 10 24	+ 9	—	—	—	—
Pulkovo		63·7	328	—	—	e 19 4	− 6	32·7	37·0
Helwan		64·0	294	—	—	i 19 13	0	—	—
Upsala		70·1	328	e 10 13?	?	—	—	—	38·8
Copenhagen		73·5	325	—	—	21 7	+ 1	37·2	—
Cheb		73·7	318	—	—	e 26 13?	SS	—	—
Stuttgart		77·0	318	e 11 13?	−43	—	—	e 42·2	—
Strasbourg		78·0	318	—	—	e 23 13?	PPS	e 41·7	43·2
Paris		81·2	319	—	—	e 23 13?	+44	44·2	—

Additional readings :—
Phu-Lien $iP_gE = +1m.22s.$, $iPSN? = +2m.4s.$
Hong Kong $S = +5m.43s.$
Calcutta $ePN = +5m.20s.$, $iN = +5m.32s.$, $e = +5m.37s.$, $S?N = +8m.37s.$ and $+8m.40s.$
Medan $iN = +8m.23s.$, $iE = +8m.41s.$, $iN = +9m.4s.$, $iEN = +9m.18s.$, $iE = +9m.26s.$, $iN = +9m.54s.$, $iE = +10m.0s.$

Continued on next page.

Zi-ka-wei iZ = +10m.19s. and +10m.57s.
Agra iE = +5m.36s., eE = +6m.2s., +9m.39s., and +10m.20s., iE = +11m.14s., eE = +13m.21s.
Kodaikanal E. SSE = +11m.28s.
Batavia iE = +14m.5s., iSEN = +14m.58s., iE = +15m.12s.
Bombay eE = +6m.26s., and +10m.24s., eE = +11m.13s., SSE = +12m.42s.
Keizyo eSNE = +14m.28s.
Husan eS = +15m.9s.
Taikyu S = +15m.32s.
Andijan e = +13m.47s.
Toyooka eSN = +19m.5s.
Tiflis eS_cSE = +19m.38s., SSN = +28m.39s., eSSSN = +29m.50s.
Moscow e = +24m.50s.
Ksara eSS = +23m.4s., eSSS = +25m.13s.
Pulkovo e = +21m.37s. and +26m.41s.
Upsala eN = +23m.13s.?
Stuttgart ePS = +21m.42s., e = +31m.13s.
Strasbourg eS = +31m.53s.
Long waves were also recorded at Scoresby Sund, and other American, Japanese, Chinese, and European stations.

Sept. 21d. 9h. 39m. 45s. Epicentre 2°·2N. 126°·9E. (as on 1937 May 15d.).

Felt slightly in the north of Celebes, in the Isle of Halmaheira, and in the Isle of Siaoe (Sangi). Epicentre 2°·2N. 126°·8E. (Strasbourg).

J. de Boer.

Aardbevingen in den Oost Indischen Archipel. Waargenomen gedurende het jaar 1937.

Natuurkundig Tijdschrift voor Nederlansch-Indie, Afl. 3, Deel XCIX, 1939, pp. 101-131.

A = −·6000, B = +·7991, C = +·0382; δ = +2; h = +7;
D = +·800, E = +·600; G = −·023, H = +·031, K = −·999.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Palau		9·0	58	2 26	+13	4 8	+10	—	—
Manila		13·6	335	i 3 19	+ 2	i 6 3	+13	—	—
Kosyun		20·6	344	4 15	−28	8 5	−24	—	—
Taito		21·2	345	4 54	+ 5	—	—	—	—
Takao		21·3	345	4 56	+ 6	8 38	− 5	—	—
Batavia		21·7	248	4 57	+ 2	i 8 54	+ 3	14·2	—
Tainan		21·7	345	4 59	+ 4	8 53	+ 2	—	—
Arisan		22·0	345	4 56	− 2	—	—	—	—
Isigakizima		22·1	354	4 35	−24	8 26	−32	—	—
Karenko		22·2	349	5 6	+ 6	—	—	—	—
Taihoku		23·3	349	5 6	− 4	—	—	—	—
Hong Kong		23·5	329	5 8	− 4	9 18	− 5	—	—
Nake		26·1	7	5 37	0	10 22	+15	—	—
Phu-Lien		27·1	316	e 5 48	+ 2	e 10 15	− 9	—	—
Medan		28·2	274	5 57	+ 1	10 45	+ 4	—	—
Titizima		28·8	30	6 2	0	—	—	—	—
Zi-ka-wei	z.	29·3	352	e 6 7	+ 1	10 57	− 2	16·3	18·8
Kagosima		29·4	6	6 15	+ 8	—	—	—	—
Miyazaki		29·9	8	6 16	+ 4	11 12	+ 3	15·2	—
Nagasaki		30·5	5	6 21	+ 4	11 21	+ 3	—	—
Kumamoto		30·7	7	6 19	0	—	—	—	—
Hukuoka B		31·4	6	e 6 24	− 1	e 11 32	0	—	—
Koti		31·8	11	6 30	+ 2	—	—	—	—
Matuyama		31·9	9	6 27	− 2	11 43	+ 3	—	—
Siomisaki		32·2	15	6 34	+ 2	—	—	—	—
Hirosima		32·4	9	6 37	+ 3	—	—	—	—
Husan		32·8	4	6 54	+17	e 11 59	+ 5	—	—
Wakayama		32·8	14	6 41	+ 4	11 56	+ 2	—	—
Hamada		32·9	8	6 41	+ 3	12 3	+ 7	16·7	—
Hatidyozima		33·1	20	6 46	+ 6	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Kobe		33·2	14	6 43	+ 3	e 12 2	+ 2	—	—
Osaka		33·3	14	6 44	+ 3	12 33	+31	—	—
Osaka B		33·3	14	6 47	+ 6	—	—	—	—
Taikyu		33·5	3	6 36	− 7	12 9	+ 4	—	—
Kameyama		33·7	16	6 49	+ 4	—	—	—	—
Hamamatu		33·9	17	6 49	+ 2	12 6	− 5	—	—
Hikone		34·0	14	6 49	+ 1	—	—	—	—
Toyooka	N.	34·0	12	6 49	+ 1	12 16	+ 3	—	—
Nagoya		34·1	15	6 51	+ 3	12 19	+ 5	—	12·6
Gihu		34·3	15	6 49	− 1	12 20	+ 3	17·2	—
Mera		34·7	19	7 46	+52	—	—	—	—
Hunatu		34·9	17	6 56	+ 1	—	—	—	—
Kohu		35·0	17	6 59	+ 3	12 33	+ 5	—	—
Zinsen		35·1	359	7 0	+ 3	e 12 31	+ 1	—	—
Keizyo		35·2	1	e 7 2	+ 4	e 12 37	+ 6	—	—
Tokyo		35·4	19	7 6	+ 6	12 56	+22	—	—
Oiwake		35·6	16	7 4	+ 3	12 39	+ 1	—	—
Perth		35·6	195	i 6 58	− 3	12 31	− 7	17·2	25·3
Toyama		35·6	14	7 7	+ 6	12 42	+ 4	—	—
Kumagaya		35·7	17	7 7	+ 5	—	—	—	—
Maebasi		35·8	17	8 8	+65	—	—	—	—
Nagano		35·8	15	7 3	0	12 44	+ 3	—	—
Tyosi		35·8	21	7 8	+ 5	—	—	—	—
Wazima		36·2	14	7 10	+ 4	12 51	+ 4	—	—
Hukusima		37·5	17	7 21	+ 4	—	—	—	—
Yamagata		37·9	18	7 21	+ 1	13 19	+ 6	—	—
Sendai		38·1	19	7 25	+ 3	13 21	+ 5	—	—
Sakata		38·4	17	7 29	+ 4	—	—	—	—
Brisbane	N.	38·8	141	7 27	− 1	i 13 21	− 5	—	—
Mizusawa		39·0	19	7 33	+ 3	13 35	+ 6	—	—
Hakodate		41·3	16	7 58	+ 9	—	—	—	—
Calcutta	N.	42·5	301	e 8 10?	+11	e 14 18	− 4	e 18·7	21·8
Riverview		42·5	149	i 8 0k	+ 1	i 15 20	+58	e 24·4	28·6
Sydney		42·5	149	e 8 43	+44	i 15 25	+63	24·5	29·7
Sapporo		42·7	16	8 3	+ 3	14 27	+ 3	—	—
Melbourne		43·2	159	i 8 6	+ 2	14 29	− 3	19·4	26·2
Kodaikanal	E.	49·7	282	e 8 49	− 7	i 15 55	− 9	22·8	28·7
Hyderabad		49·9	291	e 8 54	− 3	15 51	−16	22·9	28·5
Agra	E.	52·9	303	e 9 13	− 7	i 16 33	−15	—	—
Bombay	E.	55·4	291	e 9 31	− 7	i 17 38	+16	—	—
Almata		60·3	321	10 13	0	18 27	+ 1	—	—
Christchurch		61·2	144	i 10 14a	− 5	i 18 33	− 5	28·7	—
Wellington		61·3	141	i 10 15	− 5	i 20 10	?	—	40·3
Frunse		61·6	318	10 19	− 3	e 18 37	− 6	—	—
Andijan		62·3	316	10 27	+ 1	18 48	− 4	—	—
Tashkent		64·4	315	e 10 33	− 7	i 19 8	−10	30·1	40·6
Samarkand		65·7	313	e 10 46	− 2	e 18 33	−61	—	—
Sverdlovsk		75·3	329	i 11 42	− 5	i 21 15	−11	34·3	46·6
Honolulu		75·5	69	e 11 52	+ 4	21 4	−24	e 32·1	—
Baku		78·7	311	e 12 8	+ 2	i 21 35	−28	38·3	49·2
Grozny		82·0	313	12 23	0	22 33	− 4	—	—
Tiflis		82·6	311	e 12 23	− 3	i 22 41	− 2	e 40·3	51·7
Piatigorsk		84·0	314	12 36	+ 2	e 22 56	− 1	—	—
College		86·0	325	e 12 38	− 5	e 23 6	[− 2]	e 47·6	—
Sotchi		86·5	314	12 44	− 2	23 8	[− 3]	—	—
Moscow		87·8	326	12 48	− 4	23 15	[− 3]	41·8	53·4
Theodosia		89·5	315	e 12 56	− 4	23 27	[− 3]	53·3	—
Ksara		89·6	304	i 12 58a	− 3	i 23 53	+ 2	—	—
Simferopol		90·4	315	e 13 3	− 1	e 23 35	[0]	—	—
Yalta		90·4	314	13 0	− 4	e 23 31	[− 4]	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sebastopol		90·9	315	e 13 9	+ 2	e 23 35	[− 3]	—	—
Pulkovo		91·4	330	e 13 7	− 2	24 5	− 2	45·8	51·5
Sitka		92·4	33	13 21	+ 7	e 23 43	[− 3]	e 37·4	—
Helwan		93·7	300	e 13 19	− 1	23 51	[− 3]	56·8	—
Bucharest		96·2	315	e 13 33	+ 2	i 24 5	[− 3]	48·3	58·3
Upsala		97·7	332	—	—	i 24 10	[− 5]	e 46·2	60·4
Sofia		98·5	314	e 13 45	+ 3	e 24 36	[+17]	—	—
Belgrade		100·1	316	e 13 47	− 2	e 24 24	[− 3]	e 55·4	—
Budapest		100·3	318	e 18 10	PP	i 24 32	[+ 4]	—	—
Stara Dala		100·8	319	e 24 30	S	(e 24 30)	[− 1]	—	56·3
Victoria		101·4	40	e 18 15?	PP	e 24 27	[− 6]	42·3	—
Copenhagen		101·7	328	18 27	PP	24 33	[− 2]	50·3	—
Zagreb		102·8	318	e 19 15?	?	e 24 31	[− 9]	e 55·5	—
Bergen		103·1	334	—	—	e 24 42	[+ 1]	47·2	—
Cheb		103·8	323	e 11 45	?	e 24 44	[− 1]	e 60·3	65·3
Hamburg		103·8	327	—	—	i 24 45	[0]	e 56·3	59·3
Triest		104·4	318	—	—	24 47	[− 1]	—	55·6
Scoresby Sund		104·6	351	18 30	PP	24 49	[0]	50·3	—
Stuttgart		106·2	322	e 14 15?	P	e 24 51	[− 5]	e 57·3	64·3
Cape Town		106·5	236	—	—	i 24 57	[0]	e 55·1	—
De Bilt		107·1	327	e 18 51	PP	e 24 59	[0]	e 52·3	62·1
Strasbourg		107·1	323	e 14 22	P	e 24 57	[− 2]	e 50·3	56·3
Tinemaha	z.	108·2	50	e 14 27	P	—	—	—	—
Uccle		108·2	327	e 19 2	PP	25 2	[− 2]	e 53·3	—
Pasadena		109·1	53	e 14 31	P	e 34 3	SS	e 44·9	—
Mount Wilson	z.	109·2	53	e 14 32	P	—	—	—	—
Edinburgh		109·3	333	e 21 15?	PPP	—	—	e 55·3	—
Riverside	z.	109·8	53	e 14 34	P	—	—	—	—
Paris		110·2	325	—	—	e 25 13	[0]	60·3	66·3
Stonyhurst		110·2	331	—	—	e 26 5	{− 1}	55·3	66·3
Kew		110·4	328	—	—	e 26 15?	{+ 8}	—	—
Bidston		110·7	331	—	—	i 28 35	PS	—	—
Oxford		110·7	328	—	—	e 28 34	PS	e 56·3	68·3
Jersey		112·6	326	e 17 50	?	e 27 5	?	e 60·3	—
Tucson		115·6	52	18 47	[+ 3]	e 26 53	{+ 9}	e 47·5	—
Toledo		118·7	310	e 20 33	PP	—	—	60·3	—
Granada		119·7	316	e 21 15	?	—	—	73·3	—
Ottawa		128·5	20	e 19 8	[− 1]	—	—	53·3	—
Seven Falls		128·5	15	e 22 15?	?	—	—	47·3	—
Toronto		128·6	24	e 22 15?	?	—	—	65·3	—
East Machias		131·5	13	e 21 32	PP	—	—	e 66·4	—
Oak Ridge		132·5	17	i 21 33	PP	—	—	e 65·3	—
Philadelphia		133·4	22	e 21 42	PP	e 39 0	SS	e 51·6	—
Weston	z.	133·5	17	i 19 18	[− 1]	—	—	—	—
La Plata		147·2	173	19 51	[+ 8]	—	—	—	—
Huancayo		155·9	115	20 2	[+ 6]	26 59	[− 1]	64·9	—
San Juan		155·9	30	e 19 57	[+ 1]	e 26 48	[−12]	63·8	—
La Paz		159·5	135	i 20 3a	[+ 3]	i 31 9	{+60}	77·6	81·0

Additional readings :—
Manila iE = +4m.52s.
Batavia iN = +5m.38s., iE = +8m.36s.
Taihoku i = +5m.51s.
Medan iN = +6m.7s., iE = +11m.5s., iN = +11m.13s. and +11m.48s.
Zi-ka-we. iZ = +6m.35s. and +12m.59s,
Koti i = +7m.46s.
Hatidyozima PPP = +8m.21s.
Kobe ePE = +6m.46s., eSE = +12m.5s.
Osaka PPP = +8m.24s.
Toyooka PZ = +6m.51s., ePE = +6m.55s.
Oiwake PPP = +8m.30s., = +8m.51s. and +15m.36s.
Perth P = +7m.18s., PP = +8m.23s., PPP = +8m.45s., i = +12m.10s., SP = +12m.40s., i = +16m.35s.
Brisbane iPPN = +9m.3s., eSSN = +15m.57s., iS$_0$SN = +17m.51s.

Continued on next page.

Calcutta ePPPN = +9m.50s., eSSN = +16m.6s.
Riverview PP = +9m.54s., eSSN = +18m.23s.
Melbourne SS = +17m.30s.
Kodaikanal PPE = +10m.36s., PPPE = +11m.22s., SSE = +19m.6s.
Agra iE = +9m.17s., PPE = +11m.5s., PS = +17m.10s., SS = +19m.2s.
Bombay eE = +10m.5s., +17m.12s., iS_cSE = +19m.20s.
Almata e = +15m.27s.
Christchurch iS_cSE = +20m.12s., SSE = +22m.42s., L_q = +25m.35s., P_cSS_cPZ = +25m.52s.
Wellington iP_cP = +10m.26s., iPP? = +12m.36s., iPPP = +15m.0s., eSS = +25m.40s., L_q = +31·3m.
Tashkent i = +10m.43s.
Honolulu iP = +11m.54s., ePPP = +16m.30s., iS = +21m.37s.
Tiflis PPSN = +23m.46s., eSSE = +27m.37s., ePKKPE = +30m.45s.
College ePP = +15m.40s.
Moscow PP = +16m.22s., PS = +24m.14s.
Ksara PP = +16m.36s., PS = +24m.51s., SS = +30m.10s.
Pulkovo PP = +16m.44s., eSKS = +23m.36s , PS = +25m.14s.
Sitka ePP = +16m.56s., ePPP = +18m.30s., S = +23m.49s., +24m.23s., ePS = +25m.18s., PPS = +25m.31s., eSS = +31m.2s.
Helwan e = +13m.35s., +13m.57s., and +16m.38s., S = +24m.25s., PPS = +25m.57s.
Bucharest iSE = +24m.47s., iSN = +24m.52s.
Upsala eN = +24m.57s., iE = +27m.24s.
Belgrade e = +17m.57s.
Budapest eE = +18m.33s., i = +25m.29s.
Victoria eE = +33m.45s.
Zagreb e = +24m.37s.
Copenhagen e = +26m.59s.
Triest PS = +27m.32s.
Scoresby Sund SKKS = +25m.32s., eE = +26m.3s., PS = +27m.57s., SS = +32m.33s., SSS = +37m.21s.
Stuttgart ePP = +18m.37s., eS = +26m.15s., ePS = +27m.50s.
De Bilt eZ = +19m.22s.
Strasbourg ePP = +18m.48s., eSKKSN = +26m.12s., eSN = +26m.26s., PSE = +27m.53s., eSSE = +33m.41s., eSSSE = +37m.49s.
Tinemaha eZ = +18m.0s., ePPZ = +18m.55s.
Uccle SE = +26m.28s., PSE = +28m.4s., eSS = +33m.57s.
Pasadena eZ = +18m.32s., ePPEZ = +19m.1s., ePKKPZ = +29m.31s., eZ = +29m.49s
Mount Wilson eZ = +18m.36s , ePPZ = +18m.59s., iPKKPZ = +29m.49s.
Riverside eZ = +18m.33s., iPPZ = +19m.7s., ePKKPZ = +29m.34s.
Paris e = +26m.46s. and +28m.28s.
Jersey e = +31m.30s.
Tucson ePP = +19m.34s., PP = +19m.49s., ePS = +29m.29s., eSSS = +39m.31s.
Ottawa e = +21m.15s.?
East Machias PKS = +22m.41s., ePS = +31m.53s.
Oak Ridge e = +22m.45s.
Philadelphia iPKS = +22m.48s., ePS = +32m.0s., eSSS = +44m.0s.
Huancayo ePP = +23m.52s., PPP = +27m.28s., eSKKS = +30m.42s., SKSP = +34m.39s., ePPS = +37m.9s., SS = +44m.6s.
San Juan PKP = +20m.26s., PP = +23m.22s., SKSP = +34m.9s., eSS = +44m.53s.
La Paz iPPZ = +24m.52s.
Long waves were also recorded at Ivigtut, Arapuni, Prague, Aberdeen, Durham, Ukiah, and San Fernando.

Sept. 21d. 21h. 2m. 39s. Epicentre 57°·0N. 163°·0E.

A = −·5233, B = +·1600, C = +·8370; δ = +1; h = −8;
D = +·292, E = +·956; G = −·800, H = +·245, K = −·547.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
College		24·6	51	e 4 55	−28	e 8 19	?	e 10·1	—
Kobe	E.	29·2	232	e 7 46	PPP	—	—	e 13·1	15·8
Sitka		32·6	63	i 6 39	+ 4	12 0	+ 9	12·2	—
Sverdlovsk		50·6	316	9 0	− 2	16 17	0	23·8	29·1
Tinemaha		54·0	76	i 9 28	0	—	—	—	—
Haiwee	E.	54·9	76	e 9 35	0	—	—	—	—
Mount Wilson		56·2	78	i 9 44	0	—	—	—	—
Pasadena		56·2	78	i 9 44$_s$	0	—	—	—	—
Riverside		56·8	78	i 9 47	− 1	—	—	—	—
La Jolla	Z.	57·7	78	i 9 53	− 2	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Pulkovo		57·7	334	e 9 54	− 1	17 58	+ 5	27·8	35·4
Tashkent		58·4	299	i 10 23	+23	e 17 47	−15	e 27·4	34·4
Moscow		59·3	328	e 10 7	+ 1	e 18 8	− 6	e 32·8	38·0
Tucson		61·6	73	10 21	− 1	—	—	—	—
Agra	E.	65·0	282	—	—	i 19 9	−17	—	—
Grozny		67·1	315	e 10 55	− 2	—	—	e 37·3	—
Baku		67·9	311	e 11 7	+ 5	e 20 1	0	33·9	37·8
Tiflis		68·8	315	e 11 15	+ 7	e 20 22	+11	e 35·3	42·3
Kodaikanal		79·1	272	—	—	e 19 21?	?	—	—
Ksara		79·1	318	e 12 6	− 2	e 22 53	+46	—	53·7

Additional readings :—
Pasadena eZ = +10m.23s.
Tashkent e = +12m.24s., i = +13m.14s. and +17m.53s., e = +24m.19s. and +26m.3s.
Tucson P = +10m.26s., iP = +10m.54s.
Long waves were also recorded at Hong Kong, Calcutta, Philadelphia, Oak Ridge, Scoresby Sund, and some European stations.

Sept. 21d. Readings also at 7h. (Malaga and near Hukuoka B), 8h. (Almata, Simferopol, and Theodosia), 10h. (Melbourne, Riverview, Christchurch, Wellington, Arapuni, Almata Piatigorsk, Grozny, Sotchi, Tiflis (2), Ksara, Tucson, Berkeley, Mount Wilson, Pasadena, Riverside, and Tinemaha), 11h. (De Bilt and Stuttgart), 12h. (Edinburgh), 13h. (near Andijan), 15h. (Stuttgart and near Apia), 17h. (Andijan), 18h. (near Kobe, Sumoto, and Nagoya), 19h. (Christchurch and Wellington).

Sept 22d. 3h. 11m. 6s. Epicentre 12°·5N. 123°·5E.

Felt strongly force VI in the south part of the island of Masbate. Force V in the north of the island, and force IV at Legaspi and Calbayog. Epicentre in the sea of Samoa in the regions of Masbate, 12°03′N. 124°03′E.

W. Repetti.

Seismological Bulletin for 1937, July-December, Weather Bureau, Manila, 1938.

A = −·5390, B = +·8144, C = +·2151 ; δ = +4 ; h = +6 ;
D = +·883, E = +·552 ; G = −·119, H = +·179, K = −·977.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M
		°	°	m. s.	s.	m. s.	s.	m.	m
Manila		3·4	310	0 56k	P*	1 49	S_g	—	—
Kosyun		9·8	345	2 33	+ 9	—	—	—	—
Taito		10·4	349	2 15	−19	4 47	+15	—	—
Takao		10·5	344	2 17	−18	—	—	—	—
Tainan		10·9	344	3 51	?	—	—	—	—
Arisan		11·2	348	2 54	+10	—	—	—	—
Taityu		11·9	347	3 0	+ 6	5 25	+16	—	—
Palau		12·0	115	2 51	− 4	5 22	+11	—	—
Hong Kong		13·2	319	3 12	+ 1	5 43	+ 3	6·6	7·7
Phu-Lien		18·1	300	4 19	+ 5	7 50	+15	—	—
Zi-ka-wei	z.	18·7	356	4 20	− 2	7 42	− 6	10·0	12·1
Kagoshma		20·0	18	4 37	0	—	—	—	—
Miyazaki		20·6	21	4 41	− 2	8 11	−18	11·2	—
Tomie		20·6	15	4 43	0	8 49	+20	—	—
Nagasaki		21·0	16	4 47	0	8 37	0	—	—
Unzendake		21·1	16	4 45	− 3	8 46	+ 7	—	—
Kumamoto		21·2	17	4 48	− 1	—	—	—	—
Izuka		22·0	16	4 24	−34	9 1	+ 5	—	—
Hukuoka B		22·2	16	5 14	+14	e 9 0	0	—	—
Muroto		22·8	24	5 15	+10	9 27	+16	—	—
Koti		22·9	22	5 5	− 1	9 22	+ 9	—	—
Husan		23·0	11	5 7	0	9 26	+12	—	—
Hirosima		23·2	19	4 53	−16	—	—	—	—
Hamada		23·6	18	5 2	−11	9 28	+ 3	—	—
Siomisaki		23·7	26	5 12	− 2	9 30	+ 3	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taikyu		23·7	11	i 5 15	+ 1	i 9 35	+ 8	—	—
Syuhurei		24·0	10	6 19	+62	10 43	+71	—	—
Sumoto		24·1	25	5 16	− 2	9 49	+15	—	11·6
Wakayama		24·1	25	5 15	− 3	9 39	+ 5	—	—
Kobe		24·5	25	5 21	− 1	e 9 36	− 4	—	12·6
Osaka		24·6	25	5 32	+ 9	10 32	+50	—	—
Osaka B		24·6	25	5 23	0	—	—	—	—
Batavia		24·9	224	5 23	− 3	9 54	+ 7	15·9	—
Zinsen	N.	25·0	5	e 5 13	−14	e 10 0	+11	—	—
Keizyo		25·1	7	e 6 46	?	11 2	?	—	—
Toyooka	N.	25·1	23	5 29	+ 1	e 10 2	+11	—	—
Kameyama		25·2	26	5 28	− 1	—	—	—	—
Hamamatu		25·6	29	5 33	+ 1	10 33	+34	—	—
Nagoya		25·6	26	5 39	+ 7	10 40	+41	—	—
Gihu		25·8	28	5 32	− 2	10 4	+ 2	—	—
Medan		26·1	254	5 45	+ 8	10 16	+ 9	—	—
Toyama		27·0	25	5 56	+11	—	—	—	—
Yokohama		27·1	30	6 21	+35	—	—	—	—
Oiwake		27·3	28	6 4	+16	11 23	?	—	—
Tokyo		27·4	30	6 28	+39	11 53	?	—	—
Nagano		27·7	26	5 55	+ 3	11 53	?	—	—
Sendai		30·0	30	6 4	− 8	12 46	SS	—	—
Calcutta	N.	34·9	292	e 7 22	+27	i 12 18	− 9	—	28·0
Hyderabad		43·7	283	8 6	− 2	14 43	+ 4	20·7	31·9
Perth		44·8	189	7 54	−23	i 14 44	−11	—	—
Agra	E.	45·0	297	8 19	0	i 18 22	SS	—	—
Kodaikanal	E.	45·1	273	i 8 20	0	15 5	+ 6	21·7	34·4
Bombay		49·1	285	e 8 20	−31	e 15 56	0	—	—
Andijan		52·7	313	8 51	−27	e 16 53	+ 7	e 29·9	—
Tashkent		55·1	312	i 9 34	− 2	17 19	+ 1	28·4	32·2
Samarkand		56·4	309	e 9 1	−44	—	—	—	—
Sverdlovsk		64·9	328	10 40	− 3	19 24	0	30·4	36·4
Baku		69·5	309	e 11 19	+ 7	20 28	+ 8	33·4	41·8
Grozny		72·6	315	e 11 42	+11	e 20 57	+ 1	—	—
Tiflis		73·4	311	e 11 34	− 2	e 21 4	− 1	36·9	45·0
Sotchi		77·0	313	e 12 1	+ 5	—	—	—	—
Moscow		77·5	326	e 11 58	− 1	e 21 46	− 4	e 39·4	48·3
Theodosia		79·9	315	12 15	+ 3	22 15	− 1	39·9	—
Pulkovo		80·9	331	12 24	+ 7	e 22 40	+14	39·4	48·2
Simferopol		80·9	315	e 13 6	+49	—	—	—	—
Ksara		81·2	303	i 12 22k	+ 3	e 22 42	+13	43·9	50·9
Sitka		85·6	33	—	—	e 23 10	− 3	e 36·0	—
Helwan		85·7	300	e 12 44	+ 2	23 16	+ 2	—	—
Bucharest		86·6	316	15 54?	?	e 23 21	− 2	44·9	50·9
Upsala		87·1	331	e 20 54	?	—	—	e 42·9	48·1
Sofia		89·0	314	e 14 24	?	e 24 54	?	—	50·9
Copenhagen		91·2	329	—	—	24 6	+ 1	42·9	—
Prague		92·4	324	—	—	e 24 12	− 4	—	50·4
Hamburg		93·4	327	e 19 54?	?	—	—	e 46·9	48·9
Cheb		93·6	323	—	—	e 23 54?	[+ 1]	48·9	50·9
Scoresby Sund		93·9	349	—	—	24 33	+ 4	48·9	—
Triest		94·5	319	—	—	i 24 2	[+ 4]	e 46·6	52·5
Stuttgart		96·0	323	e 19 54	PPP	e 31 30	SS	e 48·9	52·4
Strasbourg		96·9	323	i 20 29	PP	—	—	46·9	52·9
Uccle		97·8	326	e 20 21	PP	e 24 54	− 8	e 35·9	53·9
Paris		99·9	325	—	—	e 40 54?	—	51·9	54·9
Tucson		111·6	47	e 17 1	?	—	—	e 50·4	—
San Juan		147·9	16	e 19 19	[−25]	e 30 34	{+28}	e 62·9	—
Huancayo		161·6	92	e 38 8	PPS	e 45 38	SS	e 74·4	—

For Notes see next page.

NOTES TO SEPT. 22d. 3h. 11m. 6s.

Additional readings :—
Zi-ka-wei iZ = +5m.16s., +5m.54s., and +8m.0s.
Kobe eSE = +9m.42s., eSN = +9m.48s.
Osaka e = +12m.46s. and +13m.2s.
Calcutta eN = +8m.23s., eSSN = +15m.3s., eN = +15m.28s.
Perth i = +22m.54s., +27m.36s., and +30m.22s.
Kodaikanal PPPE = +10m.34s., SSE = +18m.7s., SSSE = +19m.9s.
Samarkand e = +20m.11s.
Pulkovo ePP = +15m.55s., e = +22m.21s.
Ksara ePS = +23m.27s., eSS = +28m.20s.
Sitka eSKS = +23m.45s., eS = +24m.1s., ePPS = +25m.13s., eSS = +29m.9s., ePSPS = +30m.25s., eSSS = +32m.12s.
Helwan e = +15m.14s. and +23m.44s., PS = +24m.19s., e = +24m.54s.
Bucharest eN = +23m.24s., eE = +24m.54s.
Sofia e = +19m.6s.
Scoresby Sund +30m.54s.
Triest i = +25m.57s.
Stuttgart ePPS = +27m.12s.
Strasbourg eN = +23m.24s., ePPS = +27m.24s., eN = +29m.48s. and +39m.39s.
Uccle eN = +40m.42s.
San Juan ePKP = +20m.10s., ePP = +24m.9s., eSS = +43m.8s.
Long waves were also recorded at Cape Town, Taihoku, Wellington, Bergen, Ivigtut, Frunse, La Paz, and other American and European stations.

Sept. 22d. Readings also at 0h. (Tiflis), 1h. (La Paz), 2h. and 4h. (Andijan), 6h. (San Juan), 8h. (near Mizusawa), 9h. (Triest, Budapest, Zagreb, Brisbane, Melbourne, Riverview, Sydney, La Jolla, Mount Wilson, Pasadena, Riverside, and Tinemaha), 10h. (Baku, Sverdlovsk, Wellington, and Tiflis), 12h. (Pasadena, Riverside, Mount Wilson, and Tinemaha), 13h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 14h. (near Nagoya), 15h. (Tiflis), 16h. (Santiago), 17h. (Sumoto, near Ferndale, and near Santiago), 18h. (Alicante, near Santiago, near Ferndale, and near Florissant), 20h. (San Juan, near Balboa Heights, near Hukuoka, and Hukuoka B), 22h. (Manila and near Apia), 23h. (Baku, Tashkent, Tiflis, Ksara, Mount Wilson (2), Pasadena, Riverside, and Tinemaha).

Sept. 23d. 13h. 5m. 55s. Epicentre 6°·7S. 153°·8E.

$A = -\cdot 8912$, $B = +\cdot 4385$, $C = -\cdot 1159$; $\delta = -5$; $h = +7$;
$D = +\cdot 442$, $E = +\cdot 897$; $G = +\cdot 104$, $H = -\cdot 051$, $K = -\cdot 993$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Brisbane	20·7	182	i 4 41	− 3	i 8 35	+ 4	—	—
Palau	23·8	305	5 18	+ 3	9 36	+ 8	—	—
Amboina	25·7	276	5 34	+ 1	i 10 8	+ 7	18·1	—
Riverview	27·1	184	i 5 49a	+ 3	i 10 32	+ 8	13·4	14·4
Sydney	27·1	184	e 5 43	− 3	i 10 20	− 4	12·9	14·8
Melbourne	32·0	193	e 6 35	+ 5	11 43?	+ 1	13·2	18·8
Apia	34·6	104	e 6 51	− 2	i 12 18	− 4	15·1	16·1
Titizima	35·4	343	6 59	− 1	—	—	—	—
Arapuni	37·0	151	i 7 12	− 1	i 13 8	+ 9	16·1	21·1
Manila	38·8	303	e 7 29k	+ 1	13 40	+14	19·9	—
Wellington	39·2	155	i 7 31	0	i 13 25	− 7	18·4	24·1
Christchurch	40·2	159	e 7 37k	− 3	i 13 51	+ 3	—	—
Hatidyozima	41·8	343	7 54	+ 1	13 54	−17	18·4	—
Nake	42·0	328	7 27	−27	13 48	−26	—	—
Kosyun	43·2	313	8 5	+ 1	14 25	− 7	—	—
Taito	43·3	314	8 45	+40	15 6	+33	19·5	—
Mera	43·4	344	8 10	+ 4	—	—	—	—
Perth	43·4	230	i 8 5	− 1	14 45	+10	20·9	25·6
Stomisaki	43·4	339	8 5	− 1	14 32	− 3	—	—
Omaesaki	43·6	342	8 7	− 1	—	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ito	43·7	343	8 11	+ 3	—	—	—	—
Karenko	43·8	315	8 11	+ 2	14 50	+10	—	—
Hamamatu	43·9	341	8 12	+ 2	—	—	18·7	—
Misima	43·9	343	8 9	− 1	14 54	+12	—	—
Miyazaki	43·9	333	8 9	− 1	14 42	0	19·7	—
Muroto	43·9	336	8 10	0	—	—	—	—
Numadu	43·9	343	8 10	0	—	—	—	—
Takao	43·9	313	8 15	+ 5	14 59	+17	—	—
Tyosi	43·9	346	8 12	+ 2	—	—	—	—
Simidu	44·0	335	8 9	− 2	14 48	+ 5	18·4	—
Yokohama	44·0	343	8 10	− 1	13 19	?	20·1	—
Arisan	44·1	315	8 5	− 7	—	—	—	—
Kagosima	44·1	331	8 14	+ 2	—	—	—	—
Giran	44·2	317	8 11	− 1	14 58	+12	—	—
Tokyo Cen. Met. Ob.	44·2	344	8 12	0	—	—	—	—
Tainan	44·2	314	8 15	+ 3	15 0	+14	—	—
Hunatu	44·3	343	8 9	− 4	14 54	+ 6	18·2	—
Tu	44·3	340	8 15	+ 2	—	—	—	—
Kameyama	44·4	340	8 11	− 3	15 3	+14	—	—
Koti	44·4	336	8 7	− 7	14 52	+ 3	18·8	—
Tokusima	44·4	338	7 58	−16	14 52	+ 3	—	—
Wakayama	44·4	339	8 13	− 1	—	—	—	—
Yagi	44·4	339	8 14	0	—	—	19·3	—
Kohu	44·5	343	8 11	− 4	—	—	—	—
Taihoku	44·5	317	e 8 14	− 1	i 15 7	+16	—	—
Taityu	44·5	315	8 18	+ 3	—	—	—	—
Kakioka	44·6	345	8 13	− 3	14 57	+ 5	—	—
Mito	44·6	345	8 18	+ 2	15 1	+ 9	—	—
Nagoya	44·6	341	8 12	− 4	14 17	−35	19·0	24·4
Osaka	44·6	339	8 16	0	—	—	18·9	—
Osaka B	44·6	339	8 16	0	15 14	+22	—	—
Sumoto	44·6	339	e 8 9	− 7	14 50	− 2	e 18·0	20·0
Tukubasan	44·6	345	8 14	− 2	—	—	—	—
Kumagaya	44·7	344	8 16	0	—	—	—	—
Kobe	44·8	339	8 18a	+ 1	e 14 58	+ 3	19·0	23·2
Gihu	44·8	341	8 15	− 2	15 2	+ 7	18·5	—
Hikone	44·9	341	8 23	+ 5	—	—	—	—
Kyoto	44·9	340	8 18	0	—	—	—	—
Tadotu	44·9	337	8 28	+10	15 4	+ 8	—	—
Ibukisan	45·0	341	8 17	− 2	—	—	—	—
Kumamoto	45·0	332	8 18	− 1	15 7	+ 9	—	—
Maebasi	45·0	344	8 20	+ 1	—	—	—	—
Matuyama	45·0	336	8 15	− 4	15 5	+ 7	—	—
Oita	45·0	343	7 21	−58	—	—	—	—
Utunomiya	45·0	345	7 46	−33	14 20	−38	—	—
Oiwake	45·1	343	8 20	0	14 58	− 1	18·5	—
Matumoto	45·2	343	8 20	0	15 2	+ 1	18·4	—
Unzendake	45·2	332	8 20	0	15 5	+ 4	—	—
Miyadu	45·5	339	8 17	− 6	—	—	—	—
Nagano	45·5	344	8 20	− 3	15 1	− 4	—	—
Hirosima	45·6	336	8 22	− 2	14 45	−21	18·8	—
Hukui	45·6	342	8 48	+24	—	—	—	—
Saga	45·6	333	7 30	−54	—	—	—	—
Toyooka	45·7	339	e 8 21	− 3	14 8	−60	19·7	28·0
Izuka	45·7	333	8 22	− 2	15 11	+ 3	—	—
Hukuoka	45·8	333	8 24	− 1	14 58	−11	—	—
Hukuoka B	45·8	333	8 22	− 3	14 56	−13	—	—
Tomie	45·8	332	8 26	+ 1	15 18	+ 9	—	—
Kanazawa	45·9	341	8 24	− 2	15 3	− 8	—	—
Takada	45·9	343	8 25	− 1	—	—	—	—
Toyama	45·9	342	8 25	− 1	15 16	+ 5	22·3	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Husiki		46·0	342	8 27	0	—	—	—	—
Hamada		46·2	335	8 30	+ 2	15 10	− 5	20·5	—
Sendai		46·3	347	8 31	+ 2	15 34	+18	—	—
Isinomaki		46·4	347	8 31	+ 1	—	—	—	—
Yamagata		46·4	347	8 32	+ 2	15 36	+18	—	—
Niigata		46·5	345	8 26	− 5	—	—	—	—
Batavia		46·7	268	8 35	+ 3	i 15 30	+ 8	—	—
Wazima		46·7	343	8 28	− 4	15 17	− 5	—	—
Mizusawa		47·1	348	8 36	+ 1	15 25	− 3	23·6	—
Sakata		47·2	347	8 40	+ 4	16 9	+40	—	—
Miyako		47·4	348	8 39	+ 1	15 38	+ 6	23·9	—
Morioka		47·6	348	8 41	+ 2	15 48	+13	24·0	—
Husan		47·7	333	8 42	+ 2	15 38	+ 2	—	15·9
Hatinohe		48·3	348	8 45	0	15 42	− 3	—	—
Hong Kong		48·3	308	8 47	+ 2	15 46	+ 1	—	—
Taikyu		48·5	334	8 38	− 8	15 50	+ 2	—	—
Zi-ka-wei	Z.	48·8	323	i 8 45a	− 4	15 39	−13	26·5	28·7
Syuhurei		49·1	334	8 45	− 6	15 50	− 6	—	—
Hakodate		49·7	348	9 3	+ 7	—	—	—	—
Keizyo		50·7	333	e 9 1	− 2	16 19	+ 1	23·3	—
Zinsen		50·7	332	i 9 1k	− 2	i 16 18	0	—	16·6
Sapporo		50·8	350	9 5	+ 1	16 20	0	—	—
Obihiro		51·1	351	9 0	− 6	—	—	—	—
Asahigawa		51·3	351	9 10	+ 2	—	—	—	—
Haboro		52·0	351	8 40	−33	—	—	—	—
Heizyo		52·4	333	i 9 17	+ 1	i 16 44	+ 2	—	17·1
Phu-Lien	N.	53·8	302	e 9 29	+ 3	i 17 9	+ 8	—	—
Dairen		54·3	329	9 28	− 2	17 19	+12	—	—
Honolulu		55·0	58	e 9 35	0	17 18	+ 1	i 22·2	—
Medan		56·0	280	9 52	+ 9	17 41	+11	—	—
Sikka		56·5	352	9 54	+ 8	—	—	—	—
Calcutta		70·3	297	i 11 20	+ 3	20 29	0	34·0	41·4
Colombo		75·0	279	11 44	− 1	21 32	+ 9	31·2	43·1
Kodaikanal	E.	77·9	282	i 12 2	+ 1	21 55	+ 1	36·7	41·3
Hyderabad		78·2	289	11 58	− 5	21 58	+ 1	37·8	49·8
Agra		80·5	299	i 12 12	− 3	22 22	0	39·9	—
Dehra Dun		81·2	302	12 35k	+16	22 25	− 4	34·2	45·1
College		83·2	22	e 12 28	− 1	22 52	+ 3	e 34·4	—
Bombay		83·7	290	i 12 31	− 1	i 22 54	0	—	—
Almata		85·1	315	12 41	+ 2	e 23 15	+ 7	48·6	—
Sitka		85·4	32	i 12 39	− 1	e 23 14	+ 3	35·4	—
Frunse		86·7	314	12 48	+ 1	e 23 26	+ 2	—	—
Andijan		87·9	311	12 55	+ 2	—	—	—	—
Ferndale	E.	88·2	49	e 13 5	+11	e 23 53	+15	—	—
	N.	88·2	49	e 12 45	− 9	e 23 49	+11	—	—
Ukiah		88·8	51	e 12 58	+ 1	e 23 16	[− 9]	e 36·8	—
San Francisco		89·1	53	e 13 8	+10	e 23 37	[+10]	—	—
Berkeley		89·3	53	e 13 0	+ 1	e 23 31	[+ 3]	e 40·3	—
Branner		89·3	53	e 13 6	+ 7	23 33	[+ 5]	e 40·3	—
Lick	E.	89·7	53	e 13 5	+ 4	e 23 39	[+ 8]	—	—
	N.	89·7	53	e 13 9	+ 8	e 23 43	[+12]	—	—
Tchimkent		90·2	313	e 13 6	+ 2	e 23 52	− 4	—	—
Tashkent		90·3	312	i 13 4	0	i 24 4	+ 7	42·1	54·2
Victoria		90·3	42	13 5	+ 1	24 15	+18	41·1	—
Seattle		90·8	43	e 13 7	+ 1	e 23 35	[− 2]	e 37·5	—
Fresno	N.	91·1	53	e 13 10	+ 2	—	—	—	—
Pasadena		92·1	56	i 13 11k	− 1	e 23 53	[+ 9]	i 38·7	—
Mount Wilson		92·2	56	i 13 12k	− 1	e 23 54	[+ 9]	—	—
Tinemaha		92·4	54	i 13 14	0	e 23 57	[+11]	—	—
Haiwee	E.	92·5	54	e 13 16	+ 2	e 24 20	+ 3	—	—
Riverside	Z.	92·7	56	i 13 14	− 1	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Jolla		92·7	57	e 13 13	− 2	e 23 55	[+ 7]	—	—
Sverdlovsk		97·3	327	i 13 35	− 1	25 7	+ 9	41·6	—
Tucson		98·1	58	e 13 28	−12	e 25 11	+ 7	41·0	—
Bozeman		98·4	44	e 13 42	+ 1	e 24 8	[−11]	e 42·2	—
Denver	E.	102·9	51	e 17 19	?	e 24 36	[− 5]	e 48·7	61·1
Tananarive		103·0	249	21 3	PPP	24 49	[+ 8]	e 42·8	55·8
Baku		104·9	315	e 14 14	+ 4	24 48	[− 2]	48·1	—
Tacubaya	N.	108·2	72	e 18 49	PP	i 27 58	PS	—	—
Tiflis		108·6	311	e 13 28	?	e 25 7	[+]	e 15·1	74·2
Erevan		109·0	310	e 19 53	PP	—	—	—	—
Piatigorsk		109·5	314	e 14 43	P	—	—	32·1	—
Moscow		110·1	327	14 30	P	26 42	{+31}	48·6	63·1
Sotchi		111·4	313	e 18 46	[+10]	—	—	—	—
Pulkovo		112·2	332	e 14 42	P	e 27 15	{+55}	49·6	67·7
Florissant	Z.	114·2	50	e 14 59	P	i 27 33	?	—	—
St. Louis	E.	114·4	50	e 19 38	PP	e 25 33	[+ 4]	e 53·1	—
Theodosia		114·6	316	e 15 2	P	—	—	—	—
Simferopol		115·5	316	e 18 48	[+ 4]	—	—	e 48·6	—
Chicago		115·6	46	e 18 24	[−20]	e 27 27	{+43}	e 52·6	—
Sebastopol		116·0	316	e 18 58	[+13]	e 27 5	{+18}	—	—
Scoresby Sund		116·2	358	18 57	[+12]	25 40	[+ 4]	47·1	—
Ksara		116·8	303	e 15 7	P	e 19 58?	PS	—	—
Upsala		117·5	336	e 19 55	PP	e 25 55	[+14]	e 50·1	55·2
Lemberg		120·0	324	e 20 3	PP	e 28 37	S	e 58·0	72·9
Toronto		120·8	42	e 20 25	PP	41 47	SSS	54·1	—
Bucharest		121·1	318	e 18 12	[−43]	41 5	SSS	68·1	—
Buffalo		121·4	42	e 18 51	[− 4]	—	—	—	—
Helwan		121·4	301	e 15 25	P	26 15	[+21]	—	109·6
Bergen		121·4	342	19 5?	[+10]	—	—	64·1	—
Cape Town	E.	121·5	223	e 20 22	PP	i 31 12	PPS	e 62·4	69·4
Santiago		122·0	137	20 35	PP	30 5	PS	—	—
Copenhagen		122·3	335	18 58	[+ 1]	26 11	[+13]	52·1	—
Ottawa		122·5	39	18 57	[− 1]	26 11	[+13]	51·1	—
Columbia		122·7	53	e 16 13	?	e 25 5	[−54]	e 50·8	—
Pennsylvania		122·9	45	e 20 38	PP	—	—	e 54·2	62·2
Ivigtut		123·2	12	18 59	[0]	e 30 42	PS	—	—
Sofia		123·6	317	e 19 12	[+12]	—	—	—	76·7
Shawinigan Falls		123·7	36	19 1	[+ 1]	27 49	{+11}	58·1	—
Kesckemet	Z.	123·9	323	e 19 3	[+ 3]	30 12	PS	e 37·6	—
Budapest		124·0	324	19 14	[+13]	30 40	PS	e 61·1	70·6
Stara Dala		124·3	325	e 19 16	[+15]	e 27 47	{+ 5}	e 60·1	65·1
Belgrade		124·5	320	e 19 3	[+ 2]	—	—	e 61·5	—
Vermont		124·5	39	e 19 14	[+13]	i 27 51	{+ 7}	51·6	—
Seven Falls		124·6	35	19 0	[− 1]	27 41	{− 3}	53·1	—
Hamburg		124·8	335	e 18 59	[− 2]	e 37 59	SS	e 54·1	63·1
Philadelphia		125·1	45	e 19 6	[+ 4]	i 26 10	[+ 4]	56·2	—
Prague		125·1	329	e 15 53	P	e 38 5	SS	e 59·1	64·1
Vienna		125·1	326	e 19 3	[+ 1]	e 27 55	{+ 8}	58·6	74·1
Williamstown		125·3	40	e 19 0	[− 2]	e 26 7	[0]	—	58·3
Fordham		125·7	43	20 43	PP	30 36	PS	—	—
Jena		125·9	330	e 19 5	[+ 1]	—	—	—	—
Cheb		126·1	330	e 11 32	?	e 21 8	PP	e 60·1	67·1
Aberdeen		126·2	343	e 21 7	PP	e 31 36	PS	e 55·3	—
Göttingen		126·2	333	e 19 7	[+ 3]	—	—	—	—
Graz		126·3	325	e 18 40	[−24]	i 31 8	PS	e 58·1	85·6
Weston		126·7	40	e 19 4k	[− 1]	i 26 16	[+ 5]	e 58·9	—
Zagreb		126·7	323	e 19 9	[+ 4]	e 30 58	PS	e 61·6	—
Laibach		127·4	325	e 19 11	[+ 4]	e 38 41	SS	e 65·2	—
Edinburgh		127·6	343	i 21 21	PP	—	—	e 55·1	—
Huancayo		127·7	111	e 18 57	[−10]	26 40	[+26]	53·8	—

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		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
De Bilt		127·9	336	e 15 53	P	—	—	e 57·1	61·9
East Machias		127·9	36	e 19 5	[− 3]	e 26 18	[+ 4]	e 46·8	—
Triest		128·1	325	e 19 24	[+16]	—	—	e 52·9	61·4
Durham	N.	128·2	342	e 19 18	[+10]	—	—	—	83·6
Stuttgart		128·5	330	e 16 3	P	e 27 13	[+57]	e 60·1	73·2
Karlsruhe		128·7	331	e 19 5?	[− 4]	—	—	e 57·1	—
La Plata		128·9	146	19 29	[+20]	—	—	57·1	—
Stonyhurst		129·2	341	e 19 25	[+15]	i 27 15	[+58]	61·7	63·6
Uccle		129·2	335	e 16 2	P	e 28 11	{− 3}	57·1	62·9
Strasbourg		129·3	331	e 16 6	P	i 28 30	{+16}	55·1	80·1
Chur		129·6	329	e 19 9	[− 2]	—	—	—	—
Bidston		129·8	342	i 19 22	[+11]	—	—	60·1	69·9
Zurich		129·8	330	e 19 5	[− 6]	—	—	—	—
Basle		130·1	330	e 19 14	[+ 2]	—	—	—	—
Capodimonte	N.	130·5	319	18 5	?	21 5	?	—	—
Kew		130·5	338	i 19 14k	[+ 1]	—	—	60·1	70·0
Oxford		130·6	339	i 19 26	[+13]	i 31 35	PS	e 60·1	78·5
Neuchatel		130·8	330	e 19 8	[− 5]	—	—	—	—
Besançon		131·1	331	e 21 39	PP	—	—	—	—
Paris		131·5	334	i 19 24	[+ 9]	—	—	58·1	62·1
La Paz		132·5	120	i 19 20k	[+ 3]	i 26 7	[−19]	64·1	71·4
Jersey		133·0	339	e 16 50	P	e 30 3	?	e 56·6	113·1
Barcelona		137·2	328	19 18	[− 7]	—	—	—	40·6
Tortosa	N.	138·5	328	e 19 31	[+ 3]	—	—	e 59·1	71·4
San Juan		139·4	69	e 19 2	[−27]	i 26 26	[−12]	58·5	—
Algiers		139·9	322	19 21	[− 9]	e 25 32	[−67]	64·4	87·1
Toledo		141·4	332	e 19 29	[− 3]	e 26 26	[−15]	58·6	74·6
Almeria		143·0	328	e 19 36	[0]	—	—	e 66·1	—
Granada		143·3	329	i 19 36	[0]	—	—	—	—
Malaga		144·1	329	i 19 35	[− 2]	—	—	—	—
San Fernando		145·2	331	i 19 43	[+ 4]	29 41	{−10}	69·1	—
Rio de Janeiro		146·2	151	i 19 45	[+ 4]	—	—	i 42·1	—
Averroes		148·3	329	i 19 52	[+ 8]	e 26 31	[−21]	62·1	73·1

Additional readings :—
Brisbane ePE = +4m.47s.
Amboina iEN = +5m.46s., iS?N = +10m.13s.
Riverview eZ = +5m.56s., i = +6m.0s., iN = +6m.41s., +7m.30m., iP_cPE = +9m.4s., iSN = +10m.36s., i = +10m.55s., iE = +11m.18s.
Melbourne iP = +6m.39s., i = +6m.46s., +9m.5s., and +12m.5s.
Apia iP = +6m.58s., iPPP = +8m.19s.
Manila iE = +16m.13s., iN = +17m.41s.
Christchurch iP = +7m.41s.
Wellington i = +8m.1s., iPP = +9m.12s., iPS = +13m.35s., iP_cS = +13m.53s., SS = +15m.37s., L_g = +16·4m.
Perth P = +8m.20s. and +8m.40s., PP = +10m.7s., PPP = +10m.43s., PPPP = +11m.3s., i = +14m.25s., PS = +15m.5s., i = +17m.40s., SS = +18m.5s.
Simidu PP = +10m.30s.
Tokyo PPP = +10m.54s.
Kotî e = +18m.6s.
Taihoku e = +8m.29s. and +18m.27s.
Osaka e = +12m.46s. and +13m.2s.
Sumoto iP = +8m.16s., eE = +13m.9s., eN = +13m.19s., SE = +14m.55s.
Kobe iP = +8m.28s., eZ = +13m.19s., eE = +13m.32s., eN = +15m.4s., eZ = +15m.9s., iE = +18m.34s.
Matuyama PP = +9m.41s., PPP = +10m.17s.
Oiwake PP = +10m.2s., PPP = +10m.28s., P_cS = +13m.55s.
Unzendake i = +11m.16s., SSS = +18m.35s.
Toyooka PZ = +8m.25s., iZ = +8m.33s., iN = +8m.35s.
Tomie PPP = +10m.54s.
Kanazawa PP = +10m.14s., PPP = +11m.3s.
Toyama SS = +19m.5s.
Hamada SS = +18m.48s.
Batavia iE = +14m.5s., iN = +14m.14s., iE = +16m.6s.
Mizusawa eSE = +15m.28s.
Morioka PP = +11m.48s., SS = +18m.49s.
Hong Kong PP? = +10m.26s.

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Taikyu i = +8m.59s.
Zi-ka-wei iN = +9m.1s., iE = +9m.15s., PPZ = +10m.43s., PPPZ = +11m.31s., PPPPZ = +11m.59s., SSZ = +19m.9s., SSSZ = +20m.41s., SSSSZ = +21m.13s.
Phu-Lien eN = +9m.40s., iN = +17m.45s.
Honolulu iP = +9m.47s., P_cP = +10m.31s., PP = +11m.33s., PPP = +12m.41s., i = +14m.56s., iS = +17m.25s.
Medan iEN = +10m.2s.
Calcutta iPPN = +13m.58s., iPPPN = +15m.24s., PSN = +21m.1s., SSN = +25m.7s., SSSN = +27m.44s.
Kodaikanal PPE = +14m.58s., PPPE = +16m.44s., PS = +22m.36s., SSE = +27m.9s., SSSE = +29m.47s.
Agra eN = +12m.24s., PPEN = +15m.26s., PPPE = +17m.24s., ? = +22m.32s., SSE = +28m.2s., SSS = +31m.40s.
College P = +12m.32s., ePP = +15m.44s., ePPP = +17m.42s., ePPS = +24m.4s., eSS = +28m.17s., eSSS = +31m.55s.
Bombay i = +13m.3s., e = +13m.31s., ePP = +15m.34s., PS = +23m.45s., SS = +28m.36s., iE = +58m.6s.
Almata e = +14m.10s.
Sitka P = +12m.48s., iPP = +16m.2s., ePPP = +17m.45s., eS = +22m.37s., iS = +23m.6s., PS = +23m.30s., PPS = +24m.10s., SS = +28m.55s., eSSS = +32m.12s.
Ukiah ePP = +16m.29s., ePPP = +18m.15s., eS = +23m.33s., iS = +23m.58s., PS = +24m.52s., ePPS = +25m.16s., eSS = +29m.5s., ePSPS = +30m.39s., eSSS = +32m.50s.
Berkeley eZ = +13m.4s., eN = +13m.14s., eE = +16m.36s., eSE = +23m.36s., eN = +23m.50s.
Branner eSE = +23m.38s., eSSSN = +35m.17s.
Tashkent ePP = +16m.11s., eSKS = +23m.31s., eS_cS = +24m.27s., ePS = +25m.27s., eSSS = +33m.9s., e = +41m.39s.
Victoria PPS = +25m.45s., SS = +30m.35s., eN = +38m.5s.?
Seattle ePP = +16m.41s., ePPP = +18m.35s., eS = +24m.6s., ePS = +25m.2s., PPS = +25m.45s., eSS = +30m.9s., PSPS = +30m.39s., eSSS = +34m.18s.
Pasadena iPPE = +17m.2s., eZ = +24m.9s., iE = +24m.18s., iS = +24m.26s., ePSE = +25m.26s., eS_cSS_cSN = +37m.5s.?, iPKP,PKPZ = +38m.50s., iZ = +59m.35s.
Mount Wilson eE = +24m.19s., iSE = +24m.29s., ePKP,PKPZ = +38m.50s., eZ = +59m.37s.
Tinemaha eE = +23m.16s.
Riverside eZ = +59m.40s.
Sverdlovsk i = +13m.45s., PKP = +17m.35s., PP = +17m.45s., i = +23m.35s., PS = +26m.40s., i = +27m.16s., i = +28m.16s., i = +29m.4s., i = +30m.29s., i = +35m.43s.
Tucson P = +13m.41s. and +13m.49s., iPP = +17m.41s., PS = +26m.26s., eSS = +32m.2s., SSS = +35m.22s.
Bozeman ePS = +26m.18s., PPS = +26m.47s., eSS = +31m.25s., ePSPS = +32m.16s., eSSS = +35m.36s.
Denver ePPE = +18m.12s., eN = +18m.29s., eE = +20m.21s., ePPPN = +20m.29s., eSKKSE = +25m.28s., ePPSE = +27m.14s., eSSE = +33m.16s., eSSS = +34m.10s., eE = +37m.8s.
Tananarive eE = +21m.30s., PS = +27m.31s., SS = +33m.19s.
Baku ePKP = +18m.13s., iSS = +34m.41s.
Tiflis PPN = +15m.55s., PKPE = +17m.12s., eEN = +18m.11s., eSSE = +28m.33s.
Piatigorsk e = +19m.19s.
Moscow iPP = +19m.9s., e = +23m.21s., PS = +28m.35s., e = +29m.35s., SS = +34m.35s., SSS = +38m.53s.
Sotchi i = +19m.32s.
Pulkovo PP = +19m.24s., PPP = +22m.21s., SKS = +25m.26s., PS = +28m.47s., SS = +35m.23s.
Florissant eZ = +18m.13s., iPKPZ = +18m.41s., iZ = +19m.35s.
St. Louis ePPPE = +21m.59s., eSKKS = +26m.49s., iE = +26m.57s., ePSE = +29m.20s., ePPSE = +30m.41s.
Theodosia e = +19m.48s., e = +29m.20s.
Simferopol e = +27m.46s.
Chicago ePP = +19m.46s., ePS = +29m.32s., ePPS = +30m.44s., eSS = +35m.39s.
Sebastopol e = +19m.37s.
Scoresby Sund P = +15m.10s., PP = +19m.57s., eE = +21m.37s., PPP = +22m.23s., SKKS = +26m.50s., S = +27m.54s., PS = +29m.35s., PPS = +31m.5s., eN = +31m.48s., SS = +36m.17s.
Ksara ePKP = +18m.37s., iPP = +20m.0s.
Upsala iE = +20m.10s., iN = +20m.14s., eN = +30m.53s., eE = +31m.8s., eN = +36m.16s., eE = +36m.26s., eN = +37m.53s.
Bucharest eE = +18m.41s., and +20m.11s., iP = +20m.37s., iPPE = +23m.33s., iSKKS = +30m.31s., iP_cSKSE = +33m.23s., iPPS = +36m.7s., iE = +37m.19s.

Continued on next page.

Buffalo iPKP = +19m.0s., iPP = +20m.27s., i = +29m.35s.
Helwan PKP = +19m.7s., e = +19m.57s., PP = +20m.40s., e = +21m.10s., SKP = +22m.5s., PPP = +23m.15s., i = +23m.42s., SKKS = +27m.32s., e = +28m.20s., PS = +30m.41s., e = +31m.5s.
Bergen PP = +20m.28s.
Cape Town iPKP$_2$ = +21m.7s., iPPP = +26m.10s., iSKS = +28m.9s., iSKKS = +30m.24s., iPS = +33m.32s., i = +37m.35s., iSSSE = +45m.17s.
Copenhagen +19m.11s., PP = +20m.26s. and +20m.35s., PPPN = +23m.36s., eEZ = +25m.5s., SKKS = +27m.31s., eEZ = +30m.5s., PS = +30m.35s., PPS = +31m.41s. and +31m.58s., eZ = +35m.5s., SS = +36m.41s. and +37m.23s., SSS = +40m.29s. and +41m.29s.
Ottawa e = +19m.27s., PPE = +20m.35s., SKKS = +27m.32s., PPS = +31m.47s., SS = +37m.37s., SSS = +42m.5s.
Columbia ePP = +20m.29s., eSKKKS = +27m.45s., ePS = +30m.17s., ePPS = +31m.43s.
Pennsylvania ePP = +25m.47s., ePKP = +33m.16s., ePPP = +37m.17s.
Ivigtut +20m.42s., eN = +29m.53s.
Sofia i = +20m.54s., iN = +28m.52s., iE = +37m.29s., iN = +37m.52s.
Shawinigan Falls PP = +20m.47s., SS = +37m.37s.
Kecskemet epPZ = +19m.56s., esPZ = +20m.13s., eZ = +21m.0s. and +22m.39s., ePPZ = +23m.10s., eZ = +23m.35s., eSPPZ = +24m.13s., ePPPZ = +25m.38s., epPPPZ = +26m.0s., eSKSZ = +29m.26s., epSZ = +31m.14s., eSPZ = +31m.46s., eZ = +36m.18s., eSSZ = +37m.16s.
Budapest pP = +20m.59s., sPN = +21m.30s., iE = +21m.42s., iN = +21m.49s., PKPN = +23m.5s., PPN = +23m.57s., PPPN = +26m.16s., iN = +27m.8s., pSKSE = +31m.8s., pSKSN = +31m.19s., iN = +31m.53s., SPE = +32m.24s., SPN = +32m.34s., iN = +37m.0s., iN = +37m.34s.
Stara Dala ePP = +21m.4s., ePPP = +24m.5s., ePS = +31m.5s., eSS = +37m.53s.
Belgrade e = +21m.0s., i = +21m.3s. and +38m.7s.
Vermont i = +20m.33s., ePP = +20m.49s., i = +21m.37s., ePPP = +23m.40s., iPS = +30m.55s., iPPS = +32m.45s., iSS = +38m.4s.
Seven Falls PP = +20m.47s., PS = +30m.28s., SS = +38m.5s., SSS = +41m.47s.
Hamburg iZ = +19m.13s., eZ = +20m.51s., eN = +22m.59s.
Philadelphia iPP = +20m.49s. and +20m.55s., iSKKKS = +27m.57s., iPS = +30m.45s., iPPS = +32m.47s., iSS = +37m.54s., iPSPS = +38m.18s., iS$_c$SS$_c$S = +41m.3s., iSSS = +42m.29s.
Prague ePKP = +19m.13s., ePP = +20m.55s., ePS = +31m.5s., ePPS = +32m.11s., eSSS = +42m.41s.
Vienna e = +19m.59s. and +20m.57s., PP = +23m.54s., e = +30m.58s. and +31m.46s., PS = +32m.26s., PSS = +37m.59s.
Williamstown iPKP = +19m.5s., iPP = +20m.41s., iPPS = +32m.40s., eSS = +37m.6s., eSSS = +41m.18s.
Jena iZ = +19m.13s., eN = +19m.53s., eZ = +20m.47s., e = +20m.59s., iN = +21m.5s., i = +21m.10s., eEN = +23m.37s.
Aberdeen e = +22m.28s., i = +22m.59s. and +23m.39s., e = +32m.43s.
Göttingen iZ = +21m.11s.
Graz ePP = +22m.28s.
Weston iPKPZ = +19m.7s., iZ = +19m.20s., iPP = +21m.0s., iSKPZ = +23m.7s., iSKKS = +28m.9s., iSS = +38m.41s., eSSS = +42m.43s.
Zagreb i = +21m.7s.
Laibach i = +21m.21s., +22m.38s., and +29m.34s.
Edinburgh i = +21m.47s. and +22m.33s.
Huancayo ePKP = +19m.7s., PKP = +19m.21s., PP = +21m.23s., i = +22m.37s., ePPP = +23m.58s., eSKKS = +27m.41s., SKKKS = +28m.19s., PS = +31m.27s., SS = +38m.18s., iPSPS = +39m.22s., eSSS = +43m.5s.
De Bilt iZ = +19m.10s., iPPZ = +21m.14s., iZ = +22m.3s., e = +22m.35s.
East Machias e = +18m.27s., ePKP = +19m.17s., ePP = +21m.17s., i = +22m.29s., ePPP = +23m.54s., eSKKS = +27m.55s., ePS = +31m.50s., ePPS = +32m.55s., eSS = +37m.55s., ePSPS = +39m.0s., eSSS = +43m.18s.
Triest PP = +21m.16s., SKP = +22m.38s., PPS = +28m.1s.
Durham iN = +21m.17s. and +22m.29s.
Stuttgart ePKP = +19m.10s., iPKP = +19m.20s., e = +20m.13s., and +20m.47s., iPP = +21m.18s., e = +22m.5s., ePKS = +22m.32s., eZ = +30m.59s., ePPS = +33m.5s., eSS = +38m.38s., eSSS = +43m.10s.
Stonyhurst i = +21m.25s. and +22m.45s.
Uccle ePKPZ = +19m.12s., iZ = +19m.22s., iPP = +21m.22s., iSKP = +22m.34s., iPPPN = +24m.15s., iSPPZ = +33m.7s., iSS = +38m.55s.
Strasbourg iPKPZ = +19m.13s., iPPZ = +21m.24s., iSKP = +22m.43s., iZ = +23m.23s., iPPP = +24m.14s., iPPPPE = +27m.8s., iSE = +29m.44s., iE = +30m.56s., iPSZ = +31m.42s., iPPSZ = +33m.22s., iPPPSE = +34m.24s., eSKKSN = +36m.28s., SSE = +38m.27s., iSPSN = +39m.44s., iPPSSE = +39m.51s., iSSSSN = +48m.48s.
Chur ePP = +21m.27s., e = +22m.39s.
Bidston i = +21m.25s., +21m.47s., +22m.33s., and +22m.42s.

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Zurich ePKP = +19m.13s., ePP = +21m.33s., ePPP = +24m.22s.
Basle ePP = +21m.30s., e = +21m.39s.
Kew iPP = +21m.23s., i = +21m.44s., iPKS = +22m.38s., i = +22m.46s.
Oxford e = +21m.10s., i = +21m.34s., i = +22m.39s.
Neuchatel ePP = +21m.42s.
Paris eP = +16m.18s., PP = +21m.36s., PS = +31m.32s.
La Paz iZ = +19m.32s., iN = +19m.51s., ipPKPZ = +20m.42s., isPKPZ = +21m.38s., iPPZ = +21m.59s., iNZ = +23m.1s., iPPPZ = +25m.1s., iSKSE = +26m.16s., SKKSE = +28m.48s., SKSP = +32m.25s., iSSN = +39m.41s., iSSSZ = +44m.47s.
Jersey PP = +21m.59s., i = +22m.48s., PPP = +24m.37s., SS = +39m.16s.
Barcelona e = +22m.24s.
San Juan iPKP = +19m.43s., i = +20m.22s. and +21m.21s., iPP = +22m.34s., i = +23m.13s., PPP = +25m.16s., i = +25m.50s., +27m.37s., and +28m.16s., SKKS = +28m.52s., iSKKKS = +29m.43s.
Algiers iPKP = +19m.42s., ePP = +21m.39s., iSKP = +22m.40s., i = +23m.33s., PPP = +24m.42s., SKKS = +27m.51s., PPS = +34m.41s., eSS = +41m.5s.
Toledo e = +19m.37s., i = +19m.39s., +22m.51s., and +25m.55s.
Almeria iPP = +23m.10s.
Granada iPP = +22m.42s.
Malaga PP = +24m.40s.
San Fernando iPEN = +19m.47s., iPPEN = +24m.45s., SN = +32m.55s., PSN = +35m.10s., SSN = +41m.26s.
Rio de Janeiro iPPN = +23m.13s.
Averroes iN = +21m.58s.?, iSKPE = +23m.17s., ePPN = +23m.23s., iN = +24m.39s., ePSKSE = +33m.43s., ePPS = +36m.29s., SSN = +42m.42s., eSSS = +48m.5s.
Long waves were also recorded at Oak Ridge.

Sept. 23d. 17h. 20m. 46s. Epicentre 6°·7S. 153°·8E. (as at 13h.).

A = −·8912, B = +·4385, C = −·1159; $\delta = -5$; $h = +7$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		27·1	184	e 5 48	+ 2	e 10 38	+14	e 14·2	17·5
Melbourne		32·0	193	—	—	i 12 11	+29	17·0	29·3
Manila		38·8	303	i 7 31	+ 3	—	—	—	—
Perth		43·4	230	i 8 36	+30	i 17 46	SS	i 23·4	—
Agra	E.	80·5	299	i 12 12	− 3	i 22 17	− 5	—	—
Frunse		86·7	314	e 12 44	− 3	—	—	—	—
Andijan		87·9	311	12 48	− 5	23 51	+16	—	—
Tashkent		90·3	312	i 13 3	− 1	i 24 7	+10	—	50·5
Sverdlovsk		90·7	327	13 14	+ 8	—	—	49·2	77·2
Pasadena		92·1	56	i 13 11	− 1	—	—	—	—
Mount Wilson	Z.	92·2	56	i 13 11	− 2	—	—	—	—
La Jolla	Z.	92·7	57	e 13 16	+ 1	—	—	—	—
Riverside	Z.	92·7	56	i 13 14	− 1	—	—	—	—
Tiflis	E.	108·6	311	—	—	e 19 2	PP	e 30·2	—
Ksara		116·8	303	i 19 59	PP	e 25 10	[−28]	—	65·2
Stuttgart	Z.	128·5	330	e 21 18	PP	—	—	—	—
La Paz	Z.	132·5	120	e 19 20	[+ 3]	—	—	—	—

Additional readings:—
Melbourne e = 17h.19m.20s.
Manila eN = +9m.30s.
Perth i = +13m.16s.
Tashkent eSKS = +23m.50s., i = +24m.17s., eS_cS = +24m.34s., iPS = +25m.6s.
Sverdlovsk i = +17m.14s.

Sept. 23d. Readings also at 6h. (New Plymouth and near Wellington), 7h. (Mount Wilson and Scoresby Sund), 8h (Baku, Tashkent, Ksara, Berkeley, Branner, Haiwee, Mount Wilson, Pasadena, Riverside, and near Ferndale), 9h. Perth, Baku, Tashkent, and near Santiago), 10h. (Ksara, near Kobe, and Sumoto), 11h. (Mount Wilson, Pasadena, Riverside, and La Paz), 14h. (Andijan, Mount Wilson, Pasadena, and Riverside), 15h. (Andijan and near Hukuoka and Hukuoka B), 16h. (Santiago, Nagoya, and near Mizusawa), 17h. (Riverview), 19h. (Melbourne, Riverview, Perth, and Santiago), 20h. (Santiago (4)), 21h. (near San Javier and Santiago), 23h. (Tashkent).

Sept. 24d. 19h. 9m. 51s. Epicentre 22°·6S. 68°·8W. (Montezuma).

$A = +\cdot3342$, $B = -\cdot8616$, $C = -\cdot3821$; $\delta = +4$; $h = +4$;
$D = -\cdot932$, $E = -\cdot361$; $G = -\cdot138$, $H = +\cdot356$, $K = -\cdot924$.

Depth of focus 0·020.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Montezuma		0·0	—	0 20	− 1	i 0 31	− 7	—	—
La Paz		6·1	5	1 23	− 6	i 2 23	−15	2·8	3·0
Huancayo		12·2	328	e 2 44	− 5	e 5 2	0	e 6·6	—
Oak Ridge	Z.	64·8	358	i 10 32a	+ 8	—	—	—	—
La Jolla	Z.	72·0	319	e 11 8	0	—	—	—	—
Riverside	Z.	72·8	319	i 11 14k	+ 1	—	—	—	—
Mount Wilson	Z.	73·4	319	i 11 17k	+ 1	—	—	—	—
Pasadena		73·4	319	i 11 18k	+ 2	—	—	—	—
Haiwee	E.	74·6	321	e 11 24	+ 1	—	—	—	—
Tinemaha	Z.	75·5	321	i 11 27	− 1	—	—	—	—
Sitka		96·8	330	e 13 12	− 2	—	—	—	—

Additional readings :—
Huancayo S = +5m.35s., iS = +5m.44s.
Oak Ridge iZ = +10m.51s.
Riverside iZ = +11m.46s.
Mount Wilson iZ = +11m.50s., eZ = +12m.10s.
Pasadena iEZ = +11m.50s., iZ = +12m.6s.
Tinemaha iZ = +11m.59s.
Sitka iP = +14m.17s., ePP = +17m.5s., ePPP = +18m.54s.
Long waves were also recorded at La Plata, East Machias, Philadelphia, Baku, and Tashkent.

Sept. 24d. Readings also at 0h. (near Apia), 1h. (Huancayo, La Paz, Mount Wilson, Pasadena, Tinemaha, San Juan, Ksara, near Balboa Heights, and near Santiago), 2h. (Samarkand, La Paz, Huancayo, San Juan, Mount Wilson, Pasadena, Tinemaha, Riverside, and near Balboa Heights), 3h. (near Andijan), 4h. (Stara Dala), 5h. (Ksara, Christchurch, Wellington, Riverview, Sydney, Perth, Manila, Mount Wilson, Pasadena, Riverside, and Tinemaha (2)), 6h. (Baku, Tashkent, Sverdlovsk, Ksara, Huancayo, Tiflis, Ottawa, Shawinigan Falls, Oak Ridge, Ksara, Wellington, De Bilt, and near Almeria), 9h. (Hong Kong and Manila), 10h. and 12h. (near Santiago), 13h. (near Sotchi, Simferopol, and Theodosia), 14h. (Helwan, Tiflis, Ksara, and near Manila), 15h. (near Santiago), 16h. (Oak Ridge, Mount Wilson, Pasadena, Riverside, Tinemaha, La Paz, and near Manila), 17h. (Wellington), 18h. (Ksara), 19h. (Oak Ridge).

Sept. 25d. 4h. 29m. 40s. Epicentre 43°·4N. 24°·9W.

$A = +\cdot6611$, $B = -\cdot3069$, $C = +\cdot6846$; $\delta = -8$; $h = -3$;
$D = -\cdot421$, $E = -\cdot907$; $G = +\cdot621$, $H = -\cdot288$, $K = -\cdot729$.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Rathfarnham Castle		15·8	45	i 4 11	PPP	i 7 40	SSS	i 8·8	9·4
San Fernando		15·9	110	4 12	PPP	7 27	SS	8·3	—
Toledo		16·0	95	i 3 51a	+ 3	i 5 42	−64	7·7	—
Jersey		16·8	62	i 3 52	− 6	e 6 35	−30	—	8·8
Averroes		17·0	121	4 14	+13	e 7 40	+30	8·7	10·3
Malaga		17·0	106	i 4 12	+11	i 7 24	+14	—	—
Granada		17·4	104	i 6 19	?	i 7 51	+32	—	—
Bidston		17·6	48	i 4 6	− 2	i 7 24	+ 1	8·4	9·8
Oxford		18·0	54	i 4 10a	− 3	i 7 28	− 4	e 7·8	10·2
Stonyhurst		18·1	46	i 4 10	− 4	i 7 39	+ 4	8·8	9·6
Almeria		18·3	103	i 4 22	+ 5	e 8 0	+21	—	—
Kew		18·4	55	i 4 17a	− 1	i 7 40	− 1	8·3	11·0
Edinburgh		18·7	41	i 5 17	+55	i 7 46	− 2	—	10·4
Durham	N.	19·0	45	i 4 22	− 4	i 7 45	−10	—	10·3
Tortosa		19·0	90	4 30	+ 4	—	—	9·5	10·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Paris		19·7	65	i 4 34a	0	i 8 14	+ 4	10·3	11·3
Aberdeen		19·9	39	i 4 27	− 9	i 7 52	−23	—	11·0
Barcelona		20·0	85	4 41	+ 4	8 35	+18	—	11·4
Uccle		21·2	59	i 4 48a	− 1	i 8 32	− 9	9·3	10·5
De Bilt		21·9	56	i 4 55a	− 2	8 47	− 7	e 9·8	11·4
Algiers		22·3	98	i 5 6	+ 5	e 9 18	+16	—	11·3
Ivigtut		22·6	330	5 3	0	9 5	− 2	—	—
Neuchatel		22·7	69	e 5 6	+ 2	—	—	—	—
Basle		23·1	69	e 5 9	+ 1	—	—	—	—
Strasbourg		23·2	65	i 5 9a	0	9 23	+ 5	i 11·5	—
Karlsruhe		23·6	64	i 5 12	− 1	e 8 29	−56	11·3	23·2
Zurich		23·8	69	e 5 17a	+ 2	—	—	—	—
Stuttgart		24·1	65	i 5 20a	+ 2	e 9 45	+11	e 11·2	14·7
Chur		24·4	70	e 5 24	+ 3	e 9 48	+ 9	—	—
Bergen		24·9	36	8 20?	?	(9 44)	− 3	16·3	—
Göttingen		24·8	58	e 5 24	− 1	—	—	e 12·3	13·3
Hamburg		25·0	53	i 5 26a	− 1	—	—	e 10·4	15·3
Jena		25·7	62	e 5 32	− 1	e 10 4	+ 3	e 11·3	13·8
Cheb		26·2	62	e 5 20?	−18	e 10 20?	+11	e 12·3	15·3
Copenhagen		26·8	49	5 42	− 2	10 32	+13	11·3	—
Scoresby Sund		27·2	2	—	—	10 22	− 3	11·3	—
Prague		27·5	91	e 5 50	0	e 10 32	+ 2	e 13·3	16·3
Triest		27·5	72	5 49	− 1	10 34	+ 4	13·5	14·7
Graz		28·4	69	i 5 56	− 2	e 10 53	+ 8	e 14·3	16·8
Vienna		28·9	66	e 6 2	− 1	e 16 29	?	—	—
Zagreb		29·0	71	e 6 6	+ 2	e 9 32	−82	e 15·9	—
East Machias		30·4	288	—	—	e 11 18	+ 2	e 12·4	—
Upsala		30·4	42	e 6 20?	+ 4	e 10 14	−62	e 14·3	18·5
Budapest		30·8	67	e 6 23	+ 3	—	—	e 16·3	18·8
Belgrade		32·3	72	e 6 35	+ 2	—	—	e 17·6	—
Oak Ridge		33·8	285	i 6 49	+ 3	—	—	13·3	—
Sofia		34·9	75	e 8 1	+66	—	—	e 18·8	—
Williamstown		34·9	286	i 6 59	+ 4	—	—	e 16·9	19·5
Pulkovo		36·8	44	e 7 45	+34	—	—	14·8	22·0
Moscow		41·0	50	e 7 45	− 1	e 15 8	+69	e 20·6	24·5
Simferopol		41·6	67	7 52	+ 1	—	—	—	—
Helwan		46·3	88	e 8 32	+ 3	e 15 20	+ 4	—	—
Ksara		47·5	81	i 8 44	+ 6	i 15 40	+ 6	—	—
Piatigorsk		47·8	65	e 8 41	0	—	—	—	—
Grozny		49·9	64	e 9 0	+ 3	—	—	—	—
Tiflis		50·0	67	e 9 2	+ 4	e 16 20	+11	e 23·8	33·9
Sverdlovsk		52·9	43	i 9 16	− 4	16 48	0	29·5	29·7
Baku		54·0	66	e 9 37	+ 9	17 5	+ 2	25·8	36·4
Tashkent		65·8	56	e 10 42	− 7	e 19 20	−15	e 30·5	40·3
Tucson		66·0	292	10 53	+ 3	—	—	e 27·7	—
Tinemaha	z.	67·8	300	i 11 4	+ 2	—	—	—	—
Riverside	z.	69·2	297	e 11 13	+ 3	—	—	—	—
Mount Wilson	z.	69·5	298	e 11 5	− 7	—	—	—	—
Pasadena		69·6	298	e 11 5	− 8	—	—	e 31·3	—
La Paz		71·6	223	e 11 45	+20	21 10	+26	34·3	38·6

Additional readings :—
Toledo PP = +4m.4s., PPP = +4m.13s.
Averroes ePPE = +4m.28s., ePPPN = +4m.39s., SSE = +8m.22s.
Durham iN = +5m.35s.
Aberdeen i = +4m.57s.
Algiers PP? = +5m.37s., SS = +10m.6s.
Strasbourg iPPZ = +5m.42s., ePPPZ = +5m.52s., eSSSN = +10m.47s., eP_cSN = +13m.40s., S_cSN = +17m.20s.?
Stuttgart e = +5m.29s., ePP = +5m.58s., eSS = +10m.56s.
Bergen S = +14m.22s. ; true S is given as PP. These readings are recorded for 24 days.
Jena eN = +6m.50s., eE = +10m.8s.
Vienna e = +15m.23s., PS = +17m.14s., e = +17m.59s.

Continued on next page.

Budapest ePE = +6m.26s., eN = +15m.50s.
Simferopol e = +9m.30s.
Helwan e = +10m.32s.
Ksara eSS = +18m.48s.
Sverdlovsk L_g = +24·3m.
Tucson P = +11m.2s.
Pasadena eZ = +11m.24s.
Long waves were also recorded at Calcutta, Philadelphia, San Juan, Hong Kong, Besançon, and Christchurch.

Sept. 25d. Readings also at 0h. (Scoresby Sund), 3h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Samarkand, Perth, Melbourne, Riverview, and Wellington), 4h. (Andijan and near Lick), 5h. (Andijan and Samarkand), 7h. (San Juan, Huancayo, La Paz, Tucson, Mount Wilson, Pasadena, Riverside, East Machias, Philadelphia, and Williamstown), 8h. (Mount Wilson, Pasadena, Riverside, Perth, Wellington, Scoresby Sund, Ksara, Tashkent, Tiflis, Baku, Sverdlovsk, De Bilt, Uccle, Paris, and Strasbourg), 9h. (Malaga), 11h. (near Medan), 12h. (near Fresno and Lick), 13h. (Manila), 14h. (Prague), 15h. (Christchurch, Wellington, Tucson, La Jolla, Mount Wilson, Pasadena, and Riverside), 17h. (Brisbane, Melbourne, Riverview, Sydney, Perth, Calcutta, Ksara, Sverdlovsk, Manila, Hong Kong, Batavia, near Amboina, near Kobe, Sumoto, and Toyooka), 18h. (Christchurch, Wellington, Baku, near Andijan, and Ferndale), 19h. (Mount Wilson, Riverside, Tinemaha, and near Medan), 20h. (Fresno), 22h. (near Tananarive), 23h. (Oaxaca).

Sept. 26d. 23h. 10m. 6s. Epicentre 6°·7S. 153°·8E. (as on Sept. 23d.).

A = −·8912, B = +·4385, C = −·1159; δ = −5; h = +7;
D = +·442, E = +·897; G = +·104, H = −·051, K = −·993.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	Z.	38·8	303	i 7 25a	− 3	—	—	—	—
Perth		43·4	230	i 6 44	?	i 18 11	SS	i 21·1	—
Bombay		83·7	290	—	—	e 22 47	[− 5]	—	—
Frunse		86·7	314	e 12 47	0	e 23 3	[− 9]	—	—
Andijan		87·9	311	e 12 56	+ 3	e 23 38	+ 3	—	—
Tashkent		90·3	312	i 13 2	− 2	i 23 43	[+ 9]	e 37·9	50·5
Pasadena	Z.	92·1	56	i 13 41	+29	—	—	—	—
Mount Wilson	Z.	92·2	56	e 13 18	+ 5	—	—	—	—
Tinemaha	Z.	92·4	54	e 13 35	+21	—	—	—	—
Riverside	Z.	92·7	56	e 13 40	+25	—	—	—	—
Sverdlovsk		97·3	327	i 13 36	0	24 5	[− 8]	39·9	—
Baku		104·9	315	e 18 57	PP	e 24 45	[− 5]	e 50·4	—
Grozny		107·7	313	e 25 0	S	(25 0)	[− 2]	—	—
Tiflis	N.	108·6	311	—	—	e 25 5	[− 1]	—	—
Ksara		116·8	303	e 19 47	PP	—	—	60·9	67·9

Additional readings :—
Manila iE = +10m.9s. and +11m.46s.
Tashkent SKS = +23m.26s., ePPS = +25m.17s.
Mount Wilson iZ = +13m.29s. and +13m.42s.
Tinemaha iZ = +13m.43s.
Riverside iZ = +13m.44s.
Baku e = +22m.7s. and +29m.27s.
Ksara e = +30m.32s. and +31m.52s.
Long waves were also recorded at Hong Kong, De Bilt, Paris, and Uccle.

Sept. 26d. Readings also at 2h. (near Santiago and near Wellington), 3h. (near Averroes and near Sumoto), 5h. (La Paz, Huancayo, and San Juan), 6h. (La Jolla, Mount Wilson, Pasadena, Riverside, and Tinemaha), 8h. (Christchurch, near New Plymouth, Wellington, and near Santiago (2)), 9h. (Hong Kong), 12h. (Almeria), 13h. (Ksara), 17h. (Wellington and New Plymouth), 18h. (near Nagoya), 19h. (Zagreb, Triest, Andijan, near Samarkand and near Manila), 20h. (Zagreb, near Capodimonte, and near Andijan) 21h. (near Manila and near Triest), 22h. (near Nagoya).

Sept. 27d. 4h. 2m. 35s. Epicentre 43°·1N. 73°·0E.

$A = +\cdot2142$, $B = +\cdot7005$, $C = +\cdot6808$; $\delta = +7$; $h = -3$;
$D = +\cdot956$, $E = -\cdot292$; $G = +\cdot199$, $H = +\cdot651$, $K = -\cdot732$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Frunse	1·2	101	0 23	− 1	0 41	0	—	1·5
Andijan	2·4	191	0 41	0	1 14	+ 2	—	1·2
Tchimkent	2·6	252	e 0 44	0	1 16	− 1	—	—
Almata	2·8	87	—	—	e 2 8	?	—	3·0
Tashkent	3·3	238	i 0 57	+ 4	i 1 36	+ 1	e 1·6	2·3
Samarkand	5·6	235	—	—	e 1 56	P_g	e 2·8	—

Additional readings :—
Frunse $iP_g = +26s.$
Andijan $P_g = +47s.$, $i = +1m.1s.$
Tchimkent $P_g = +48s.$, $ePP = +56s.$, $S_g = +1m.22s.$
Almata $e = +2m.48s.$

Sept. 27d. 8h. 55m. 20s. Epicentre 8°·7S. 110°·8E.

Destruction in the district of Semarang with damage at Klâten and Djokja. Radius of macroseismic area greater than 400ks.

J. de Boer. "Aardbevingen in den Oost Indischen Archipel. Waargenomen gedurende het jaar, 1937.
Natuurkurdig Tijdschrift voor Nederlansch-Indie, Afl. 3, Deel XCIX, 1939, pp. 101-131."

$A = -\cdot3511$, $B = +\cdot9242$, $C = -\cdot1503$; $\delta = +1$; $h = +7$;
$D = +\cdot935$, $E = +\cdot355$; $G = +\cdot053$, $H = -\cdot140$, $K = -\cdot989$.

A depth of focus 0·005 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia		4·6	302	i 1 6k	− 3	i 1 57	− 5	—	—
Medan		17·2	315	3 57	0	i 7 13	+ 8	—	—
Perth		23·6	168	i 5 0	− 6	8 9	−63	9·2	16·4
Manila		25·2	22	i 5 24a	+ 3	9 54	+15	10·4	—
Palau		28·5	55	5 52	+ 1	10 48	+15	—	—
Phu-Lien		29·6	351	6 1	0	10 58	+ 8	14·8	19·6
Hong Kong		31·0	4	6 11k	− 3	11 3	− 9	—	22·8
Kosyun		32·0	16	6 22	0	11 33	+ 5	—	—
Takao		32·5	15	6 40	+13	12 3	+27	15·8	—
Tainan		32·8	15	6 32	+ 3	—	—	—	—
Taito		32·9	16	6 31	+ 1	10 54	−48	—	—
Arisan		33·5	15	6 32	− 3	—	—	—	—
Taityu		34·0	15	6 51	+11	—	—	—	—
Karenko		34·1	15	6 39	− 1	—	—	—	—
Colombo		34·5	294	6 44	0	12 5	− 2	17·6	21·7
Giran		34·9	15	6 52	+ 5	12 14	+ 1	—	—
Taihoku		35·1	15	e 6 46	− 3	12 17	+ 1	—	—
Calcutta	N.	38·1	324	i 7 16	+ 2	i 13 2	0	17·7	—
Zi-ka-wei	z.	41·0	13	i 7 38	0	13 46	0	22·0	27·9
Nake		41·1	24	7 40	+ 1	13 41	− 6	—	—
Hyderabad		41·2	308	7 29	−11	13 39	− 9	17·6	24·5
Melbourne		42·3	137	7 50	+ 1	14 33	+28	22·2	25·0
Brisbane		44·0	120	i 8 4	+ 1	i 14 40	+11	18·8	28·3
Kagosima		44·3	23	8 9	+ 4	—	—	—	—
Tomie		44·5	21	8 8	+ 1	14 39	+ 2	—	—
Riverview		44·7	130	i 8 8k	0	i 15 12	+33	e 21·0	27·9
Sydney		44·8	130	7 55	−14	i 14 40	− 1	23·1	31·2
Miyazaki		44·9	24	8 11	+ 1	14 46	+ 4	21·3	—
Nagasaki		45·0	22	7 40	−31	14 12	−32	—	—
Unzendake		45·2	22	8 14	+ 1	14 47	0	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Kumamoto		45·4	22	8 15	+ 1	14 51	+ 1	23·1	—
Hukuoka		46·0	22	8 8	−11	14 58	0	—	—
Hukuoka B		46·0	22	8 19	0	i 13 59	−59	e 23·5	—
Izuka		46·2	22	8 22	+ 2	14 20	−41	—	—
Bombay	N.	46·4	305	i 8 16	− 6	i 14 58	− 6	—	—
Simidu		46·4	25	8 22	0	15 6	+ 2	—	—
Titizima		46·8	39	8 24	− 1	15 4	− 5	—	—
Husan		46·9	19	8 24	− 2	15 14	+ 3	—	—
Matuyama		47·2	24	8 34	+ 6	15 21	+ 6	—	—
Koti		47·3	25	8 30	+ 1	15 18	+ 1	—	—
Taikyu		47·4	18	8 32	+ 2	15 22	+ 4	—	—
Hirosima		47·5	23	8 30	0	15 19	0	21·1	—
Agra		47·7	319	8 27	− 5	15 13	− 9	23·4	25·7
Hamada		47·8	23	8 33	0	15 20	− 4	21·4	—
Tokusima		48·1	26	8 29	− 6	—	—	—	—
Siomisaki		48·2	28	8 36	0	15 29	0	—	—
Zinsen		48·3	15	i 8 35a	− 2	i 15 28	− 3	—	—
Keizyo		48·4	16	e 8 38	+ 1	e 15 33	+ 1	—	—
Sumoto		48·5	26	8 38	0	15 29	− 4	e 24·9	—
Wakayama		48·5	26	8 39	+ 1	15 35	+ 2	—	—
Kobe		48·9	26	e 8 38	− 3	i 15 41	+ 2	e 22·6	27·2
Osaka		49·1	26	8 47	+ 4	15 43	+ 1	26·4	—
Osaka B		49·1	26	8 45	+ 2	15 44	+ 2	24·2	—
Yagi		49·1	26	8 44	+ 1	15 42	0	26·6	—
Heizyo		49·5	14	9 2	+16	15 49	+ 2	—	—
Kyoto		49·5	26	8 48	+ 2	15 48	+ 1	—	—
Toyooka		49·5	24	8 47k	+ 1	15 45	− 2	—	—
Tu		49·6	27	8 49	+ 2	15 52	+ 3	—	—
Kameyama		49·7	27	8 47	0	15 51	+ 1	—	—
Hikone		49·9	26	8 46	− 3	15 49	− 4	—	—
Dehra Dun		50·0	322	8 40	−10	16 0	+ 6	23·2	29·7
Hamamatu		50·1	28	9 7	+16	16 13	+17	—	—
Gihu		50·2	27	8 51	0	15 57	0	—	—
Nagoya		50·2	27	8 33	−18	15 58	+ 1	23·5	—
Omaesaki		50·5	28	8 48	− 6	15 57	− 4	—	—
Iida		50·8	27	8 56	0	—	—	—	—
Ito		51·0	29	8 44	−13	—	—	—	—
Misima		51·0	29	8 57	0	16 7	− 1	—	—
Numadu		51·0	29	8 59	+ 2	—	—	—	—
Kanazawa		51·1	26	8 45	−13	16 2	− 7	—	—
Takayama		51·1	27	8 47	−11	—	—	—	—
Gotenba		51·2	29	8 59	0	—	—	—	—
Hunatu		51·3	29	9 0	0	16 11	− 1	—	—
Kohu		51·3	29	9 1	+ 1	16 11	− 1	—	—
Mera		51·3	29	9 26	+26	15 55	−17	—	—
Husiki		51·5	26	8 36	−25	15 16	−59	—	—
Matumoto		51·5	27	9 5	+ 4	16 13	− 2	—	—
Toyama		51·5	26	9 0	− 1	16 15	0	—	—
Yokohama		51·7	29	9 1	− 2	16 13	− 5	22·3	—
Kakioka		51·8	28	9 7	+ 4	16 22	+ 3	—	—
Oiwake		51·8	28	9 4	+ 1	16 19	0	27·5	—
Nagano		51·9	27	9 6	+ 2	16 16	− 5	26·3	—
Wazima		51·9	25	9 4	0	16 21	0	—	—
Tokyo		51·9	29	8 58	− 6	16 16	− 5	—	—
Kumagaya		52·1	27	9 4	− 2	16 22	− 1	—	—
Takada		52·3	26	9 0	− 7	—	—	—	—
Tukubasan		52·5	28	9 6	− 3	16 22	− 7	—	—
Tyosi		52·5	30	9 12	+ 3	—	—	—	—
Utunomiya		52·7	28	8 35	−35	16 3	−28	—	—
Mito		52·8	28	9 8	− 3	16 29	− 4	—	—

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		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Maebasi		52·9	28	9 6	− 6	16 19	−15	—	—
Niigata		53·4	26	9 33	+18	—	—	—	—
Aidu		53·6	28	9 18	+ 1	16 41	− 3	—	—
Hukusima		53·9	28	9 19	0	16 46	− 2	—	—
Yamagata		54·2	28	9 24	+ 3	—	—	—	—
Sendai		54·5	28	9 30	+ 7	17 6	+10	—	—
Akita		55·3	27	10 6	+37	17 41	+35	—	—
Mizusawa		55·3	27	i 9 30	+ 1	i 17 6	0	—	—
Morioka		55·8	27	9 31	− 2	17 12	− 1	—	—
Miyako		56·1	27	9 34	− 1	17 15	− 2	—	—
Hatinohe		56·6	27	9 38	− 1	17 22	− 2	—	—
Hakodate		57·2	25	9 51	+ 8	—	—	—	—
Sapporo		58·6	24	9 51	− 2	17 51	+ 1	—	—
Asahigawa		59·6	24	10 8	+ 9	—	—	—	—
Almata		60·2	332	e 10 16	+12	e 18 23	+12	—	—
Andijan		60·6	326	10 5	− 1	18 13	− 3	33·7	—
Tananarive		62·0	252	i 10 10	− 6	e 18 33	− 1	28·7	33·9
Tashkent		62·7	325	i 10 16	− 4	i 18 35	− 7	e 30·2	39·2
Samarkand		62·9	322	e 10 6	−16	e 18 36	− 9	—	—
Tchimkent		63·2	326	10 21	− 3	18 46	− 3	—	—
Christchurch		63·7	133	i 10 23	− 4	i 19 1	+ 6	30·1	—
Sikka		64·3	23	10 30	− 1	19 2	0	—	—
Wellington		64·8	131	i 10 32	− 2	i 19 35	+27	31·7	36·7
Baku		74·3	315	11 32	0	i 21 2	+ 2	35·2	40·3
Apia		75·8	102	11 40?	− 1	i 21 27	+11	—	—
Sverdlovsk		77·1	334	i 11 47	− 1	i 21 26	− 4	35·6	43·8
Grozny		78·4	317	11 58	+ 3	21 40	− 4	—	—
Tiflis		78·4	315	i 11 55	0	i 21 41	− 3	e 37·6	50·7
Platigorsk		80·4	317	12 6	0	22 3	− 2	42·7	—
Ksara		82·5	304	i 12 16k	− 1	i 22 34	+ 7	39·2	45·0
Sotchi		82·5	315	12 17	0	22 20	− 7	—	—
Helwan		85·3	300	12 31	0	i 22 48	[+ 1]	—	52·6
Theodosia		85·9	316	12 36	+ 2	22 52	[+ 1]	44·7	—
Simferopol		86·8	316	i 12 38	0	e 22 56	[− 1]	45·2	—
Cape Town		87·1	235	e 12 41	+ 1	i 23 6	− 6	e 39·2	50·6
Moscow		87·9	327	i 12 42	− 2	i 23 17	− 3	45·2	51·6
Bucharest		92·3	313	i 13 4	0	i 23 31	[+ 1]	46·7	56·0
Pulkovo		92·7	329	i 13 6	0	24 3	0	45·2	54·5
Sofia		94·0	312	e 13 9	− 3	i 23 40	[0]	e 46·7	52·9
Honolulu		94·4	69	e 13 32	+18	e 23 35	[− 6]	e 39·5	—
Lemberg		94·5	319	e 11 4	?	(23 58)	[+17]	—	24·0
Belgrade		96·3	313	e 13 21k	− 1	i 23 51	[− 1]	e 53·7	—
Kecskemet	z.	97·0	315	e 14 21	+55	e 24 55	+15	—	—
Budapest		97·5	316	e 13 42	+14	24 42	− 2	e 54·7	59·7
Stara Dala		98·1	316	e 13 31	0	e 24 5	[+ 4]	—	65·2
Upsala		99·1	329	e 13 29	− 6	i 24 6	[0]	e 47·7	54·1
Graz		99·1	315	e 13 1	−34	i 24 2	[− 4]	e 51·7	61·2
Vienna		99·4	317	e 13 35	− 2	e 24 7	[− 1]	e 51·7	78·2
Zagreb		99·5	315	e 13 42	+ 5	i 24 8	[0]	e 51·9	—
Laibach		100·6	315	e 15 1	?	i 24 14	[0]	—	—
Triest		101·1	315	i 17 52	PP	i 24 16	[0]	e 49·8	59·5
Prague		101·3	319	e 13 40?	− 5	e 24 13	[− 4]	e 49·7	55·7
Copenhagen		101·8	325	13 45	− 2	i 24 21	[+ 1]	—	—
Cheb		102·0	319	e 13 52	+ 4	e 24 24	[+ 3]	e 51·7	56·7
Jena		102·5	320	e 13 52	+ 1	i 24 20	[− 3]	e 50·7	57·2
College		102·7	25	e 13 55	+ 4	24 22	[− 2]	e 44·7	—
Hamburg		103·4	323	e 14 10	+16	i 24 30	[+ 3]	e 51·7	58·7
Göttingen		103·5	321	—	—	i 24 29	[+ 2]	e 55·7	—
Chur		104·0	316	e 13 55	− 2	e 24 24	[− 6]	—	—
Stuttgart		104·1	318	e 13 56	− 1	e 24 28	[− 2]	e 54·7	67·7

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Zurich		104·6	317	e 13 58	0	e 24 31	[− 1]	—	—
Karlsruhe		104·6	318	e 17 13	PP	—	—	e 56·7	—
Strasbourg		105·1	318	e 14 5	?	i 24 35	[+ 1]	49·8	60·7
Bergen		105·2	331	18 27	PP	24 36	[+ 1]	54·7	—
Basle		105·3	317	e 13 52	P	e 24 35	[0]	—	—
Neuchatel		105·8	317	e 13 16	?	e 24 38	[0]	—	—
De Bilt		106·4	322	e 14 10	P	i 24 43	[+ 3]	e 49·7	59·1
Uccle		107·1	320	e 14 16	P	i 24 45	[+ 2]	e 52·7	67·5
Paris		108·5	318	e 14 40?	P	i 24 52	[+ 2]	51·7	70·7
Durham		109·1	325	—	—	e 24 55	[+ 3]	—	59·7
Algiers		109·4	305	—	—	i 36 59	?	58·7	—
Aberdeen		109·6	327	—	—	e 24 55	[+ 1]	e 57·7	66·9
Barcelona		109·7	310	—	—	e 28 23	PPP	—	75·4
Kew		109·9	321	—	—	i 24 56	[+ 1]	e 52·7	—
Tortosa		110·0	310	—	—	e 26 40?	?	e 45·7	64·9
Sitka		110·2	32	e 14 32	P	e 26 28	S	45·3	—
Oxford		110·4	322	—	—	i 24 54	[− 4]	e 50·2	72·4
Edinburgh		110·5	326	i 24 59	S	(i 24 59)	[+ 1]	54·7	71·9
Stonyhurst		110·6	324	—	—	i 24 59	[+ 1]	57·7	60·3
Jersey		111·5	320	e 18 13	PKP	25 14	[+12]	—	—
Scoresby Sund		111·5	345	19 11	PP	25 5	[+ 3]	—	—
Rathfarnham Castle		113·0	324	e 14 30	P	i 25 13	[+ 5]	52·7	61·0
Almeria		113·8	306	e 18 32	PKP	e 25 10	[+ 1]	e 57·4	—
Granada		114·6	307	e 18 8	PKP	—	—	56·7	—
Toledo		114·6	309	e 18 32	PKP	e 28 51	PS	—	63·7
San Fernando		116·8	306	19 58	PP	e 29 53	PS	62·7	—
Averroes		118·3	304	i 18 47	PKP	i 25 31	[+ 3]	e 52·7	60·7
Victoria		119·9	38	i 20 9	PP	i 25 39	[+ 6]	48·7	—
Seattle		120·8	39	e 18. 27	PKP	25 43	[+ 7]	51·7	—
Ukiah		123·1	48	e 20 28	PP	e 25 49	[+ 5]	e 51·1	—
Berkeley		124·2	50	i 18 52	PKP	i 25 54	[+ 7]	—	—
Ivigtut		125·3	347	18 52	PKP	e 27 28	SKKS	—	—
Fresno	N.	126·4	50	e 19 58	?	—	—	—	—
Tinemaha		127·5	50	i 18 59	PKP	—	—	—	—
Haiwee		128·0	50	e 19 1	PKP	—	—	—	—
Pasadena		128·5	53	e 18. 49	PKP	i 38 21	SS	e 53·2	—
Bozeman		128·6	36	e 18 52	PKP	—	—	—	—
Mount Wilson	Z.	128·6	53	e 18 45	PKP	—	—	—	—
Riverside	Z.	129·1	53	e 18 54	PKP	e 30 52	PS	—	—
La Jolla	Z.	129·6	54	e 18 47	PKP	30 44	PS	—	—
Tucson		134·9	52	e 18 59	PKP	e 39 14	SS	e 56·4	—
La Plata		135·3	194	19 16	PKP	—	—	62·9	—
Butte		137·5	36	e 19 1	PKP	27 50	SKKS	e 66·4	—
Santiago		138·1	178	19 17	PKP	—	—	—	71·7
Rio de Janeiro		139·6	219	e 19 40	PKP	—	—	i 40·7	—
Seven Falls		141·7	2	e 19 20	PKP	e 25 22	?	63·7	—
Shawinigan Falls		142·2	3	e 19 26	[+ 1]	e 29 18	SKKS	—	—
Ottawa		143·0	8	19 24	[− 3]	29 22	SKKS	68·7	—
Chicago		143·2	23	e 19 25	[− 2]	e 29 6	SKKS	e 62·0	—
East Machias		144·0	357	e 19 26	[− 2]	26 28	[− 1]	e 69·0	—
Toronto		144·1	12	i 19 30	[+ 2]	i 29 29	SKKS	71·7	—
Vermont		144·2	4	i 19 31a	[+ 3]	i 29 30	SKKS	59·8	—
Florissant		144·5	29	e 19 28	[−1]	i 29 31	SKKS	e 70·7	78·7
St. Louis	E.	144·7	29	i 19 30	[+ 1]	i 29 33	SKKS	—	—
Williamstown		145·9	3	i 19 33	[+ 1]	e 26 12	[−19]	e 70·2	—
Weston		146·4	2	e 19 33k	[0]	i 29 41	SKKS	e 70·5	—
Oak Ridge		146·3	2	i 19 33k	[0]	i 29 40	SKKS	e 71·7	—
Pennsylvania		147·1	12	e 19 33	[− 1]	—	—	—	—
Tacubaya	N.	149·1	67	e 19 41	[+ 4]	—	—	—	—
Columbia		152·6	21	e 18 40?	[−62]	e 29 40?	SKKS	—	—
La Paz		154·9	183	i 19 48k	[+ 3]	i 26 36	[− 7]	76·7	80·4
Huancayo		158·5	163	i 19 54	[+ 4]	—	—	e 65·2	—
San Juan		169·9	343	e 19 17	[−43]	i 26 30	[−25]	67·0	—

For Notes see next page.

NOTES TO SEPT. 27d. 8h. 55m. 20s.

Additional readings :—

Batavia iEN = +1m.17s., iE = +1m.38s.
Medan iEN = +4m.13s., iN = +4m.54s., iE = +5m.5s.
Perth PP = +5m.17s., i = +5m.34s. and +6m.6s.
Manila iN = +6m.38s., iE = +7m.52s. and +8m.24s.
Phu-Lien PPPN = +7m.7s., iE = +7m.16s., SS = +12m.39s.
Hong Kong PP? = +7m.20s., SS = +12m.21s.
Calcutta PPN = +8m.25s., PPPN = +8m.49s., SSN = +15m.7s.
Zi-ka-wei iZ = +8m.30s., PPZ = +9m.6s., PPPZ = +9m.38s., iZ = +11m.24s., +15m.16s., +15m.26s., and +15m.40s., SSZ = +16m.38s., SSSZ = +17m.24s., SSSSZ = +17m.46s.
Melbourne i = +8m.0s., P_cP = +9m.27s., PP = +9m.50s., i = +16m.59s., +17m.20s., and +19m.40s.
Brisbane ePPE = +9m.46s., iSSN = +17m.40s., SSE = S_cSE = +18m.4s.
Riverview iPPN = +9m.47s., iPPEZ = +9m.52s., iEN = +10m.50s., iE = +11m.48s., iN = +12m.16s., iE = +12m.38s., iSSN = +18m.9s., iN = +18m.20s. and +20m.44s.
Bombay N. eN = +14m.49s., eSSN = +17m.49s.
Agra PPE = +10m.2s., PPPE = +10m.47s., SSE = +18m.21s., SSSE = +19m.20s.
Hamada SS = +18m.24s.
Siomisaki i = +18m.26s.
Zinsen eSZ = +15m.33s.
Sumoto SEZ = +15m.32s.
Kobe P = +8m.42s., iPE = +8m.46s., PP = +10m.43s., S_cS = +18m.31s.
Osaka i = +9m.46s., +10m.3s., +10m.48s., +11m.17s., and +18m.42s.
Kameyama i = +18m.38s.
Gihu i = +11m.0s. and +18m.33s.
Toyama i = +11m.23s.
Oiwake i = +9m.54s., +11m.16s., +12m.18s., and +14m.55s.
Tokyo PP = +9m.46s.
Tyosi i = +12m.37s.
Sapporo i = +19m.36s.
Almata e = +12m.57s.
Christchurch iP = +10m.24s., ipPZ? = +10m.43s., iPPZE = +12m.46s., iPS = +19m.31s., iZ = +19m.52s., SS = +23m.14s., L_gN = +26·7m.
Wellington P_cP = +10m.56s., PP = +12m.55s., PPP = +14m.44s., P_cS? = +15m.3s., iPS? = +20m.6s., SS = +23m.56s., L_q = +27·3m.
Apia ipP? = +12m.14s.
Tiflis PPE = +14m.55s., PPPE = +16m.51s., eSKKSE = +22m.28s.
Ksara ipP = +12m.28s., iPS = +23m.20s., SS = +28m.4s.
Helwan i = +12m.48s. and +13m.15s., PP = +15m.40s., i = +18m.20s., +18m.58s., +19m.20s., +20m.32s., +23m.15s., +23m.55s., and +24m.35s., SS = +28m.25s.
Cape Town iPE = +13m.0s., iPPN = +15m.50s., iPPE = +15m.53s., iSN = +23m.16s., iSSE = +23m.46s., iSSN = +23m.55s., iSSE = +28m.57s., iSSSN = +31m.23s., iSSSE = +31m.39s.
Moscow ePP = +16m.3s., e = +17m.2s., e = +23m.3s.
Bucharest iPP = +16m.46s., iN = +18m.30s., iPPPE = +18m.54s., iSE = +24m.0s., iPSE = +25m.0s., iPPSE = +25m.22s., SSN = +30m.9s., SSS = +34m.2s.
Pulkovo PP = +16m.47s., SKS = +23m.34s., PS = +25m.11s.
Honolulu iP = +13m.34s., epP = +13m.43s., esP = +13m.57s., PP = +17m.3s., ePPP = +19m.21s., epPPP = +19m.40s., iS = +24m.30s., pS = +24m.55s., sS = +25m.12s., PS = +25m.38s., SPS = +26m.21s., ePKKP = +29m.54s., eSS = +30m.50s.
Belgrade PPNW = +16m.0s., PPPNW = +20m.5s., i = +26m.5s.
Kecskemet z. e = +4m.35s., epP = +15m.17s., e = +16m.3s. and +17m.25s., ePP = +18m.51s., esPP = +19m.44s., ePPP = +21m.15s., eS = +25m.53s., e = +26m.44s., esS = +27m.25s.
Budapest iN = +14m.49s., iE = +18m.5s., +18m.22s., and +18m.58s., iN = +20m.59s., SKKSE = +23m.59s., iE = +24m.14s., SPE = +26m.14s., SPPE = +26m.57s., SPPN = +27m.14s., SS = +31m.20s.
Upsala ePPE = +17m.38s., iSKKS = +24m.37s., iN = +25m.0s., PSE = +26m.23s., eSSE = +31m.44s.
Vienna e = +19m.40s. and +20m.57s., PS = +24m.50s., PSS = +29m.40s., SSS = +33m.6s.
Zagreb eZ = +16m.59s., e = +17m.4s.
Laibach e = +17m.48s., +25m.43s., and +31m.56s.
Triest SSS = +37m.14s.
Prague ePP = +17m.45s., esKKS = +24m.46s., ePS = +26m.10s., eSS = +31m.52s.
Copenhagen eZ = +13m.59s., +14m.13s., and +14m.36s., PP = +17m.53s., e = +18m.18s. and +18m.32s., SKKSE = +24m.47s., SN = +25m.21s., PS = +26m.52s., e = +28m.34s., SS = +32m.4s.
Cheb e = +17m.56s.

Continued on next page.

Jena eN = +14m.4s., eE = +14m.10s.
College ePKP = +17m.56s., eSPP = +19m.14s., eSKKS = +24m.59s., eS = +25m.56s., eSS = +26m.38s., ePS = +27m.43s., esPS = +28m.8s., PPS = +28m.38s.
Stuttgart e = +17m.8s., PP = +18m.13s., e = +18m.47s., ePPPZ = +20m.55s., eNS = +25m.40s., ePS = +27m.18s., eSS = +32m.34s., eSSS = +36m.46s.
Zurich ePP? = +18m.26s.
Strasbourg iPP = +18m.11s., ePPPZ = +20m.28s., eSKKSN = +25m.43s., iSN = +26m.16s., iPS = +27m.26s., ePPSN = +28m.24s., SSE = +33m.14s., iSSSN = +37m.8s., SSSSZ = +41m.29s.
Bergen e = +27m.31s.
De Bilt ePPZ = +18m.22s., iZE = +27m.39s.
Uccle ePPZ = +18m.34s., iSN = +26m.5s., iPS = +27m.44s., iSSN = +33m.32s.
Paris e = +18m.40s.? iPS = +28m.1s.
Aberdeen i = +25m.50s. and +28m.9s.
Kew iS = +25m.51s.
Sitka eP = +14m.37s., ePKP = +18m.13s., ePP = +19m.2s., epPP = +19m.24s., ePPP = +21m.36s., epS = +27m.5s., eSS = +27m.21s., ePS = +28m.27s., epPS = +29m.3s., ePKKP = +29m.18s., eSPP = +29m.29s., eSS = +34m.22s., esSS = +35m.11s.
Edinburgh i = +25m.58s., iS = +28m.21s., i = +28m.48s.
Stonyhurst i = +26m.0s. and +28m.22s.
Jersey ? = +22m.39s., PPS = +28m.30s., ? = +30m.10s.
Scoresby Sund PPP = +21m.36s., e = +26m.46s. and +28m.13s., PS = +28m.30s., SS = +34m.46s.
Rathfarnham Castle iPP = +19m.8s., iS = +27m.6s., iPS = +28m.38s., iSS = +39m.50s.
Toledo e = +19m.17s., PS = +32m.20s.
San Fernando ePSN = +35m.16s., ePSE = +35m.26s.
Tananarive PSE = +19m.6s., SSEN = +22m.48s.
Averroes ePPN = +19m.56s., eSKPN = +21m.24s., ePPPE = +22m.23s., SSE = +36m.25s., eSSS = +40m.58s.
Victoria iE = +27m.5s., i = +29m.49s., e = +36m.25s.
Seattle ePP = +20m.26s., eSPP = +21m.5s., ePPP = +23m.18s., SKSP = +30m.9s., PPS = +31m.56s., SS = +36m.50s., SSS = +37m.23s., SSS = +41m.1s.
Ukiah eS = +28m.27s., ePS = +30m.43s., eSS = +37m.38s., eSSS = +41m.59s.
Berkeley eN = +20m.30s., eE = +20m.45s.
Ivigtut +22m.10s.
Haiwee eSKPE = +22m.4s.
Pasadena iPKPEZ = +19m.2s., iZ = +19m.29s., ePPZ = +21m.10s., iSKP = +22m.15s., iE = +27m.57s., iZ = +31m.4s. and +32m.41s., iSSE = +38m.34s.
Bozeman ePPS = +33m.10s.
Mount Wilson iPKP = +19m.2s., ePPZ = +21m.4s., eZ = +30m.45s.
Riverside iPKPNZ = +19m.1s., iPPZ = +21m.8s.
La Jolla iPKPZ = +19m.3s., ePP = +21m.3s., eSKP = +22m.25s.
Tucson iPKP = +19m.14s., pPKP = +19m.22s., ePP = +21m.45s., esPP = +22m.20s., PKS = +22m.29s., epPKS = +23m.1s.
Butte ePP = +21m.19s.
Rio de Janeiro ePE = +23m.8s.
Seven Falls e = +36m.22s. and +39m.58s.
Shawinigan Falls e = +42m.40s.?
Ottawa PKP = +22m.34s., S = +32m.40s., SS = +41m.52s.
Chicago eSKSP = +32m.38s., ePSKS = +32m.54s.
East Machias epPKP = +19m.53s., PP = +23m.1s., epPP = +23m.22s., eSKSP = +32m.46s., SPP = +35m.18s., SS = +41m.22s., sSS = +42m.18s.
Toronto e = +22m.46s. and +41m.16s.
Vermont ipPKP = +19m.43s., ePP = +23m.0s., epPP = +23m.20s., ePSKS = +32m.52s., i = +42m.20s., eSSS = +47m.20s.
Florissant ipPKP = +19m.41s., ePPZ = +21m.14s., eSKPZ = +22m.25s., isSKPZ = +22m.39s.
St. Louis iE = +19m.40s., +19m.44s., +19m.57s., and +20m.46s., iSKPE = +22m.58s., eE = +29m.59s. and +31m.9s., ePPSE = +35m.21s.
Williamstown iPKP, = +19m.46s., iPP = +22m.52s., iPPP = +27m.15s., e = +32m.48s.
Weston iPKP, = +19m.37s. and +20m.7s., iPP = +22m.54s., eSS = +41m.38s.
Oak Ridge ipPN = +19m.48s., isSN = +30m.14s., e = +41m.40s.
Pennsylvania i = +19m.39s., e = +19m.52s., i = +19m.56s., +20m.0s., and +20m.10s.
Columbia ePP = +22m.40s.?, eSKSP = +33m.40s.?, eSS = +42m.40s.?
La Paz iPKPZ = +20m.18s., iPKP,N = +20m.30s., ipPKP = +21m.54s., isPKP = +22m.3s., iPP? = +23m.46s., PP = +24m.45s., iSKKS = +30m.38s., iSS = +43m.40s., iSSS = +49m.20s.
Huancayo epPKP = +20m.18s., isPKP = +20m.29s., ePP = +24m.4s., esPP = +24m.41s., pPPP = +28m.1s., SKSP = +33m.54s., SS = +43m.33s.
San Juan epPKP = +20m.12s., aPKP = +20m.20s., i = +21m.57s., +22m.26s., +22m.37s., and +25m.5s., iPP = +25m.37s., pPPP = +30m.6s., i = +40m.5s., iSS = +47m.1s., i = +47m.48s., SSS = +54m.16s.
Long waves were also recorded at Arapuni.

Sept. 27d. 11h. 13m. 27s. Epicentre 2°·5S. 131°·0E.

A = −·6555, B = +·7540, C = −·0433; δ = +7; h = +7;
D = +·755, E = +·656; G = +·028, H = −·033, K = −·999.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		19·7	330	4 35	+ 1	8 19	+ 9	—	—
Riverview		36·4	152	e 7 7	− 1	—	—	e 20·0	24·9
Melbourne		37·4	162	—	—	i 13 6	+ 1	15·9	25·8
Christchurch		55·0	144	8 6	?	16 49	−28	29·0	—
Frunse		67·9	319	e 11 10	+ 8	e 20 39	PPS	—	—
Andijan		68·5	316	e 11 3	− 3	e 20 5	− 3	—	—
Sverdlovsk		81·5	329	i 12 22	+ 1	i 22 28	− 4	36·6	—
Tiflis		88·8	312	e 12 56	− 1	e 23 40	− 4	e 36·2	66·8
Pasadena		108·6	55	e 18 33	PKP	—	—	e 49·6	—
Mount Wilson	z.	108·7	55	e 18 33	PKP	—	—	—	—
Riverside	z.	109·3	55	e 19 3	PP	—	—	—	—
Tucson		115·0	56	e 18 46	[+ 3]	—	—	e 52·8	—

Additional readings and note :—
Christchurch L_qN = +25·4m.
Tiflis iSN = +23m.44s., eE = +24m.1s.
Long waves were also recorded at Hong Kong, Copenhagen, De Bilt, Uccle, and Stuttgart.

Sept. 27d. 13h. 22m. 23s. Epicentre 35°·0N. 140°·2E.
(See Seismometrical Report Earthquake Research Institute of Imperial University Of Tokyo, 1937, July-December).

A = −·6308, B = +·5255, C = +·5710; δ = +10; h = 0;
D = +·641, E = +·768; G = −·439, H = +·366, K = −·821.

		△	Az.	P.	O−C.	S.	O−C.	M.
		°	°	m. s.	s.	m. s.	s.	m.
Kiyosumi		0·1	—	0 18	+10	0 27	+14	—
Misaki		0·5	287	0 18	+ 4	0 29	+ 6	—
Kamakura		0·6	301	0 18	+ 3	0 29	+ 3	—
Komaba		0·8	327	0 18	0	0 31	0	—
Tokyo Cen. Met. Ob.		0·8	333	0 21	+ 3	0 35	+ 4	—
Tokyo Imp. Univ.		0·8	333	0 21	+ 3	0 34	+ 3	—
Mitaka		0·9	322	0 22	+ 2	0 37	+ 3	—
Koyama		1·1	289	0 18	− 4	0 32?	− 7	—
Tukubasan		1·2	356	0 25	+ 1	0 42	+ 1	—
Yosiwara		1·3	277	0 18	− 7	0 35	− 9	—
Titibu		1·4	317	0 18	− 9	0 36	−10	—
Nagoya		2·7	274	1 49	+64	2 22	+63	2·7
Mizusawa	E.	4·2	9	e 2 11	+64	2 50	+53	—

Sept. 27d. Readings also at 0h. (near Apia), 1h. (Tacubaya, Riverside, and Tinemaha); 2h. (Baku, Sverdlovsk, Tucson, and Pasadena), 3h. (near Manila). 6h. (Baku, Sverdlovsk, Tashkent, near Mizusawa, and Nagoya), 7h. (near Apia), 8h. (La Paz and near Sumoto), 9h. (Ksara and Tiflis), 11h. (near Santiago), 12h. (Almata and Andijan), 13h. (near La Paz), 14h. (Santiago and near Nagoya), 16h. (near Manila), 18h. (Tiflis), 19h. (Batavia), 20h. (Baku, Sverdlovsk, Tashkent, Tiflis, Ksara, Jersey, Kew, Uccle, De Bilt, Stuttgart, Paris, Strasbourg, Hamburg, Cheb, Prague, Copenhagen, Moscow, Pulkovo, Triest, Zagreb, Belgrade, Budapest, Bucharest, and near Sofia), 23h. (Sverdlovsk, Tashkent, Wellington, Baku, Christchurch, Mount Wilson, Pasadena, Riverside, and Tinemaha).

Sept. 28d. 6h. 20m. 50s. Epicentre 14°·3N. 91°·7W. (as on 1937 Sept. 15d.).

Felt at Guatemala. Damage near the Mexican frontier.
Epicentre 175km. at the West of Guatemala.
Epicentre 14°·0N. 91°·4W. (U.S.C.G.S.).
14°·0N. 91°·7W. (Strasbourg).

P. Stahl.

Macroseismes Signales. Annales de l'Institut de Physique du Globe de Strasbourg, 1937, Tome II. 2c. partie seismologie. Mende, 1940, pp. 113-115.

$A = -\cdot0288$, $B = -\cdot9690$, $C = +\cdot2454$; $\delta = +1$; $h = +6$;
$D = -\cdot999$, $E = +\cdot030$; $G = -\cdot007$, $H = -\cdot245$, $K = -\cdot969$.

		△	Az.	P_g	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Oaxaca	N.	5·5	299	1 27	+ 2	—	—	—	—
Vera Cruz	N.	6·5	319	1 54	P*	—	—	—	—
Merida	N.	6·9	17	2 32	P_n	—	—	—	—
Tacubaya	N.	8·8	306	2 16	+ 5	—	—	—	—
Guadalajara	N.	12·8	301	3 5	− 1	—	—	—	—
Manzanillo	N.	13·0	294	2 58	−11	—	—	—	—
Columbia		21·9	23	e 5 0	+ 3	8 54	0	11·7	—
St. Louis	E.	24·3	3	e 5 23	+ 3	e 9 49	+12	e 12·2	—
Florissant		24·4	3	i 5 24	+ 3	i 9 52	+13	e 14·3	16·8
San Juan		24·9	76	e 4 56	−30	9 14	−33	e 10·7	—
Tucson		25·0	320	e 5 27	0	10 11	+22	11·4	—
Chicago		27·7	6	5 52	0	e 10 23	−10	e 13·8	—
Pennsylvania		29·0	23	e 6 5	+ 1	—	—	e 15·4	19·5
Philadelphia		29·4	28	i 6 9	+ 2	11 0	− 1	15·1	—
La Jolla		29·7	314	i 6 12	+ 2	—	—	—	—
Riverside		30·4	315	i 6 18	+ 2	—	—	—	—
Fordham		30·7	28	6 18	− 1	11 39	+18	—	18·7
Mount Wilson		31·1	315	i 6 23	+ 1	—	—	—	—
Pasadena		31·1	315	i 6 23a	+ 1	i 11 35	+ 7	e 14·6	—
Toronto		31·1	18	6 24	+ 2	11 40	+12	18·2	—
Williamstown		32·4	26	i 6 34	0	i 11 58	+10	17·0	20·2
Tinemaha		32·8	320	i 6 38	+ 1	—	—	—	—
Oak Ridge		33·0	28	6 40a	+ 1	i 12 8	+11	e 17·2	—
Weston		33·1	28	i 6 40k	0	i 12 3	+ 4	e 16·3	19·3
Ottawa		33·8	20	6 46	0	12 28	+18	18·2	—
Vermont		34·0	24	e 6 49	+ 1	e 12 13	0	e 13·7	—
Berkeley		35·8	317	e 7 2	− 1	e 12 46	+ 5	e 18·5	—
Shawinigan Falls		35·9	22	e 7 5	+ 1	—	—	23·2	—
Butte		36·2	338	e 6 58	− 8	13 2	+15	16·2	—
Seven Falls		37·1	33	7 10	− 4	13 22	+21	19·0	—
Ukiah		37·1	318	e 7 16	+ 2	e 13 16	+15	e 14·3	—
La Paz		38·4	141	i 7 22a	− 3	13 34	+14	20·2	23·8
Victoria		42·9	330	8 3	+ 1	14 43	+16	21·2	—
Sitka		53·9	333	e 9 27	0	e 17 11	+ 9	e 21·5	—
Rio de Janeiro		60·2	126	—	—	e 18 10	−15	e 29·2	—
College		63·1	337	e 10 28	− 4	e 18 57	− 5	e 26·6	—
Scoresby Sund		69·9	19	11 22	+ 7	20 34	+10	27·2	—
Edinburgh		77·5	35	—	—	e 20 10?	?	e 44·2	—
Oxford		79·2	39	e 13 0	+52	e 22 32	+24	e 30·2	51·0
Kew		79·8	39	—	—	e 22 10?	− 4	e 37·2	45·7
Granada		80·0	54	—	—	e 23 27	PPS	42·4	—
Paris		82·1	42	e 12 10?	−14	—	—	39·2	45·2
Uccle		82·8	40	e 11 22	−65	e 23 44	+59	e 34·2	—
De Bilt		83·0	38	e 12 27	− 1	e 23 14	[+27]	e 40·2	47·1
Hamburg		85·4	36	e 12 36	− 4	—	—	e 45·2	51·2
Strasbourg		85·5	41	(e 21 22?)	?	—	—	e 21·4	—
Copenhagen		86·1	33	12 46	+ 2	23 22	+ 4	39·2	—
Stuttgart		86·4	40	e 12 42	− 3	e 23 32	+11	e 37·2	51·2
Cheb		88·0	39	e 13 7	+14	e 23 38	+ 2	e 45·2	52·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Triest		90·4	43	e 18 42	PPP	i 24 29	+31	—	52·0
Pulkovo		92·8	26	e 17 13	PP	e 23 41	[− 8]	41·7	55·7
Moscow		98·3	26	e 18 12	PP	e 25 31	+25	e 42·7	57·1
Sverdlovsk		105·5	15	14 14	P	24 57	[+ 4]	52·2	63·4
Helwan		109·7	51	—	—	e 28 32	PS	—	—
Ksara		110·9	46	e 19 11	PP	e 28 48	PS	—	61·2
Tiflis	N.	111·3	34	e 19 15	PP	—	—	e 66·2	—
Baku		115·0	32	e 20 11	PP	e 29 34	PS	e 53·2	69·0
Tashkent		121·9	16	e 20 31	PP	i 26 0	[+ 4]	60·1	72·9
Bombay		143·7	26	e 19 36	[0]	—	—	—	90·2

Additional readings :—
Columbia S = +9m.20s.
St. Louis iPPE = +5m.43s., iPPPE = +6m.9s., eE = +9m.58s., eSSE = +10m.56s.
Florissant iPP = +5m.51s., iPPZ = +6m.0s., iPPPZ = +6m.12s., eE = +7m.50s. eEZ = +9m.45s., iE = +10m.28s., iSSE = +10m.36s.
San Juan P = +5m.27s., iPP = +6m.5s., iP = +6m.16s., i = +7m.34s., S = +10m.4s.
Tucson P = +5m.29s., iP = +5m.31s., PP = +6m.11s., i = +7m.47s., S = +9m.17s. and +10m.22s.
Pennsylvania i = +6m.30s., e = +11m.39s.
Philadelphia ePPP = +7m.10s., iS = +11m.39s.
Riverside iP_cPZ = +9m.15s.
Pasadena iP_cPZ = +9m.17s., iS_cSE = +16m.58s.
Williamstown i = +7m.2s., PPP = +7m.44s., i = +9m.20s., SS = +14m.8s., SSS = +15m.4s.
Tinemaha iP_cPZ = +9m.21s., iZ = +13m.15s.
Oak Ridge eN = +12m.55s.
Weston iZ = +7m.9s., iPPPZ = +7m.51s., iG = +12m.32s., eSSE = +12m.43s.
Ottawa SS = +14m.52s.
Vermont ePP = +8m.0s.
Berkeley iPZ = +7m.5s., eN = +7m.34s., ePPEZ = +8m.26s., ePPN = +8m.39s., eE = +13m.30s.
Shawinigan Falls e = +17m.10s.?
Seven Falls e = +8m.40s. and +15m.58s.
Ukiah ePP = +8m.47s.
La Paz SSN = +16m.2s.
Sitka iP = +9m.30s., ePPP = +12m.57s., iS = +17m.22s., eS_cS = +19m.20s.
Copenhagen +24m.34s.
Stuttgart ePS = +24m.10s.
Pulkovo e = +25m.44s., e = +29m.35s.
Moscow e = +32m.33s., e = +38m.21s.
Sverdlovsk PP = +18m.35s., PPS = +28m.54s.
Tashkent e = +21m.10s.
Long waves were also recorded at Tortosa, Prague, Graz, Toledo, Jersey, Stonyhurst, Wellington, Hong Kong, Agra, Almeria, San Fernando, Ivigtut, and Bozeman.

Sept. 28d. 13h. 17m. 37s. Epicentre 2°·5N. 122°·0E. (as on 1937 May 25d.).

A = −·5294, B = +·8473, C = +·0433 ; δ = +6 ; h = +7 ;
D = +·848, E = +·530 ; G = −·023, H = +·037, K = −·999.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	12·0	355	3 26a	PPP	6 14	L	(6·2)	—
Palau	13·3	68	3 6	− 7	5 26	−16	—	—
Batavia	17·4	240	i 3 58	− 8	i 7 10	− 9	—	—
Taito	20·1	358	4 53	+15	8 43	+24	—	—
Tainan	20·4	356	4 59	+18	8 57	SS	—	—
Arisan	20·9	357	5 0	+14	—	—	—	—
Hong Kong	21·1	340	4 54	+ 6	9 3	SS	—	10·6
Medan	23·3	274	5 13	+ 3	i 9 22	+ 2	—	—
Titizima	31·2	37	5 16	−67	10 11	−78	—	—
Wakayama	33·9	20	6 55	+ 8	12 4	− 7	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Kobe		34·3	20	—	—	12 13	− 4	—	—
Osaka		34·4	20	6 54	+ 3	12 17	− 2	—	—
Perth		34·7	189	—	—	i 11 19	−65	13·4	15·2
Kameyama		34·9	21	6 52	− 3	12 21	− 6	—	—
Nagoya		35·3	22	7 0	+ 1	12 28	− 5	—	12·6
Gihu		35·5	22	6 50	−10	12 49	+13	—	—
Toyama		36·8	20	7 15	+ 4	12 50	− 6	—	—
Tokyo		36·9	25	7 5	− 7	12 46	−12	—	—
Oiwake		37·0	23	7 15	+ 2	12 48	−11	—	—
Nagano		37·1	22	7 10	− 4	12 51	−10	—	—
Wazima		37·3	19	7 18	+ 2	12 58	− 6	—	—
Sendai		39·6	24	7 33	− 2	13 29	− 9	—	—
Mizusawa		40·4	23	7 41	0	13 42	− 8	—	—
Agra	E.	48·7	305	8 46	− 2	15 44	− 6	—	—
Almata		57·0	323	9 51	+ 1	e 17 43	0	—	—
Frunse		58·2	321	9 55	− 3	—	—	—	—
Andijan		58·7	318	10 2	0	e 18 8	+ 2	—	—
Tashkent		61·0	317	10 19	+ 1	18 33	− 2	—	—
Samarkand		62·0	314	—	—	e 18 24	−24	—	—
Sverdlovsk		72·6	330	i 11 27	− 4	i 20 45	−11	36·4	—
Baku		74·8	311	e 11 41	− 3	e 21 10	−10	40·4	—
Grozny		78·3	314	11 57	− 6	e 21 48	−11	—	—
Tiflis	E.	78·8	312	e 11 52	−14	e 21 46	−18	—	—
Moscow		84·8	326	12 28	− 9	e 22 48	−17	—	—
Ksara		85·4	303	i 12 33	− 7	e 23 9	− 2	—	—
Pulkovo		88·7	331	e 12 48	− 9	23 23	[− 2]	—	—
Copenhagen		98·8	327	17 53	PP	23 57	[−24]	51·4	—
Graz		99·4	318	—	—	e 29 23?	?	e 74·4	97·4
Stuttgart		102·9	322	e 20 35	PPP	—	—	e 64·4	—
Strasbourg		103·9	322	e 17 17	?	—	—	—	—
De Bilt		104·1	325	e 18 30	PP	—	—	e 55·4	—
Paris		107·0	323	22 23?	?	—	—	—	—
Tinemaha	z.	111·7	49	e 18 18	[−19]	—	—	—	—
Pasadena		112·8	51	i 18 21	[−17]	e 24 48	[−35]	—	—
Mount Wilson	z.	112·9	51	i 18 21	[−17]	—	—	—	—
Riverside	z.	113·5	51	e 18 22	[−18]	—	—	—	—
St. Louis		129·4	33	e 21 58	PP	i 27 44	{−31}	—	—
Williamstown		132·9	14	i 22 13	PP	i 27 7	[+40]	—	—

Additional readings :—
Manila iE = +4m.40s.
Hong Kong SS? = +9m.52s.
Medan iE = +12m.35s., iN = +12m.38s.
Kobe eN = +13m.55s., eE = +14m.0s.
Osaka i = +7m.51s., +9m.16s., and +13m.28s.
Oiwake S_cS = +17m.0s.
Almata e = +12m.3s.
Tiflis eE = +17m.10s.
Moscow e = +18m.53s., e = +22m.36s.
Ksara pP = +13m.31s., eSSS = +32m.55s.
Pulkovo ePP = +16m.26s., SKS = +23m.0s.
Strasbourg e = +18m.43s.
Tinemaha eSKPZ = +21m.35s.
Pasadena eSKPZ = +21m.37s., iSKKSE = +25m.35s.
Mount Wilson epPKPZ = +19m.11s., eSKPZ = +21m.38s.
St. Louis eE = +22m.8s. and +22m.36s.

Sept. 28d. 18h. 19m. 16s. Epicentre 14°·3N. 91°·7W. (as at 6h.).

$A = -\cdot0288$, $B = -\cdot9690$, $C = +\cdot2454$; $\delta = +1$; $h = +6$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Oaxaca	N.	5·5	299	1 25	0	—	—	—	—
Vera Cruz	N.	6·5	319	1 47	+ 8	—	—	—	—
Merida	N.	6·9	17	2 23	P_g	—	—	—	—
Tacubaya	N.	8·8	306	2 17	+ 6	—	—	—	—
Columbia		21·9	23	e 4 2	−55	9 8	+14	e 13·5	—
St. Louis	N.	24·3	3	e 5 21	+ 1	e 9 44	+ 7	e 15·0	—
Florissant		24·4	3	e 5 26	+ 5	e 10 0	+21	e 15·8	18·3
San Juan		24·9	76	e 5 3	−23	e 9 13	−34	11·3	—
Tucson		25·0	320	5 25	− 2	e 10 9	+20	13·6	—
Chicago		27·7	6	—	—	e 10 38	+ 5	e 11·7	—
La Jolla		29·7	314	e 6 18	+ 8	—	—	—	—
Riverside	Z.	30·4	315	i 6 15	− 1	—	—	—	—
Huancayo		30·8	148	e 6 27	+ 7	11 13	−10	12·1	—
Mount Wilson	Z.	31·1	315	i 6 24a	+ 2	—	—	—	—
Pasadena		31·1	315	i 6 23	+ 1	—	—	e 14·8	—
Haiwee	E.	32·0	319	6 33	+ 3	—	—	—	—
Williamstown		32·4	26	i 6 35	+ 1	—	—	e 18·2	—
Tinemaha		32·8	320	i 6 38	+ 1	—	—	—	—
Oak Ridge		33·0	28	i 6 40k	+ 1	—	—	e 17·7	—
Weston		33·1	28	i 6 39k	− 1	i 12 47	+48	—	19·9
Ottawa		33·8	20	e 6 47	+ 1	i 13 30	SS	19·7	—
Berkeley		35·8	317	—	—	e 12 49	+ 8	e 17·5	—
Seven Falls		37·1	33	—	—	e 13 14	+13	18·7	—
Sitka		53·9	333	—	—	e 17 12	+10	e 21·9	—
Granada		80·0	54	—	—	e 32 36	?	—	—
De Bilt		83·0	38	e 12 30	+ 2	—	—	e 40·7	48·2
Strasbourg		85·5	41	e 16 59	?	e 24 29	PPS	e 42·7	—
Copenhagen		86·1	33	—	—	23 38	+20	43·7	—
Stuttgart		86·4	40	e 12 44?	− 1	—	—	e 45·7	—
Sverdlovsk		105·5	15	—	—	e 24 55	[+ 2]	46·7	—
Ksara		110·9	46	e 18 44	[+ 9]	e 29 0	PS	—	68·2
Tashkent		121·9	16	—	—	e 25 34	[−22]	e 63·7	77·8

Additional readings :—
St. Louis iN = +5m.46s., iPPPN = +5m.58s., iPPPN = +6m.8s., eN = +9m.56s.
Florissant iZ = +5m.56s., eE = +6m.35s., eNZ = +10m.23s.
San Juan e = +3m.25m., PP = +6m.1s., S = +10m.41s.
Tucson S = +10m.30s.
Chicago e = +9m.28s.
Huancayo ePP = +7m.27s., S = +11m.30s.
Pasadena iP_cPZ = +9m.15s., iS_cSE = +16m.57s.
Tinemaha iP_cPZ = +9m.21s., eZ = +13m.14s., eS_cSEZ = +17m.4s.
Weston iZ = +7m.2s.
Strasbourg eE = +32m.4s., eN = +32m.54s.
Tashkent e = +31m.0s., e = +35m.16s., e = +42m.12s. and +46m.44s.
Long waves were also recorded at Philadelphia, Vermont, Ukiah, La Paz, Rio de Janeiro, College, Scoresby Sund, Edinburgh, Kew, Paris, Uccle, Moscow, Baku, Tiflis, Prague, Jersey, East Machias, Pulkovo, Cheb, and Wellington

Sept. 28d. 22h. 54m. 50s. Epicentre 36°·2N. 139°·9E.

Strongly felt at Utunomiya, fairly strongly at Tukubasan, Kakioka, Kumagaya, Mito, and Onahama. Radius 200-300kms. See Seismological Bulletin of the Cent. Met. Obs., Japan, for the year 1937. Tokyo, 1939, pp. 53-55. Macroseismic Chart p. 53. Epicentre 36°·2N. 139°·9E.

$A = -\cdot6187$, $B = +\cdot5210$, $C = +\cdot5880$; $\delta = -3$; $h = 0$;
$D = +\cdot644$, $E = +\cdot765$; $G = -\cdot450$, $H = +\cdot379$, $K = -\cdot809$.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Kakioka	0·2	82	0 13	+ 3	0 19	+ 3	—	—
Tukubasan	0·2	84	0 12a	+ 2	0 19	+ 3	—	—
Kumagaya	0·4	263	0 15	+ 2	0 22	+ 1	—	—
Mito	0·5	68	0 19a	+ 5	0 27	+ 4	—	—
Tokyo, Cent. Met. Obs.	0·5	192	0 17a	+ 3	0 30	+ 7	—	0·6

Continued on page next.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tokyo I.U.	0·5	192	0 15	+ 1	0 24	+ 1	—	—
Kamaba	0·6	198	0 16	+ 1	0 25	− 1	—	—
Mitaka	0·6	208	0 17	+ 2	0 26	0	—	—
Maebasi	0·7	287	0 14k	− 3	0 24	− 4	—	—
Titibu	0·7	252	0 20	+ 3	0 30	+ 2	—	—
Yokohama	0·8	195	0 20k	+ 2	0 33	+ 2	—	—
Kamakura	0·9	198	0 20	0	0 32	− 2	—	—
Tyosi	0·9	121	0 19a	− 1	0 30	− 4	—	—
Koyama	1·1	221	0 20	− 2	0 35	S_g	—	—
Misaki	1·1	192	0 20	− 2	0 35	S_g	—	—
Oiwake	1·1	277	0 21k	− 1	0 37	− 2	—	—
Onahama	1·1	48	0 21a	− 1	0 36	S_g	—	—
Gotenba	1·2	222	0 24k	0	0 41	0	—	—
Hunatu	1·2	233	0 23k	− 1	0 41	0	—	—
Kohu	1·2	242	0 25	+ 1	0 40	− 1	—	—
Mera	1·3	182	0 25k	0	0 42	S*	—	—
Misima	1·3	215	0 26k	+ 1	0 42	S*	—	—
Ito	1·4	208	0 25	− 2	0 43	− 3	—	—
Nagano	1·4	289	0 27k	0	0 46	0	—	—
Numadu	1·4	218	0 26	− 1	0 42	− 4	—	—
Yosiwara	1·4	224	0 20	− 7	0 37	− 9	—	—
Matumoto	1·5	271	0 28	0	0 47	− 2	—	—
Hukusima	1·6	16	0 31k	+ 1	0 51	0	—	—
Takada	1·6	304	0 29	− 1	0 48	− 3	—	—
Iida	1·8	248	0 34k	+ 2	0 55	− 1	—	—
Niigata	1·9	339	0 32	− 2	1 8	S_g	—	—
Omaesaki	2·1	221	0 35	− 2	1 9	S_g	—	—
Takayama	2·1	269	0 38	+ 1	—	—	—	—
Yamagata	2·1	10	0 39	P*	1 7	S*	—	—
Sendai	2·2	21	0 39k	+ 1	1 4	− 2	—	—
Toyama	2·2	283	0 38	0	—	—	—	—
Hamamatu	2·3	230	0 38	− 2	1 2	− 7	—	—
Husiki	2·4	284	0 43	+ 2	1 13	+ 1	—	—
Isinomaki	2·5	27	0 41	− 2	—	—	—	—
Kanazawa	2·6	277	1 3	+19	1 40	S_g?	—	—
Nagoya	2·6	247	0 43	− 1	1 19	+ 2	—	1·7
Gihu	2·7	253	0 44	− 1	1 13	− 6	—	—
Sakata	2·7	359	0 45	0	—	—	—	—
Wazima	2·7	296	0 43k	− 2	1 24	S*	—	—
Hukui	2·9	267	0 41	− 7	—	—	—	—
Ibukisan	3·0	254	1 0	P_g	1 34	S*	—	—
Hikone	3·1	253	0 50	− 1	1 37	S*	—	—
Kameyama	3·1	244	0 33	−18	1 13	−16	—	—
Mizusawa	3·1	18	0 50	− 1	i 1 26	− 3	—	—
Tu	3·1	242	1 4	P_g	1 37	S*	—	—
Kyoto	3·6	251	0 57	− 1	1 51	S*	—	—
Miyako	3·8	24	1 2	+ 1	1 46	− 1	—	—
Yagi	3·8	244	1 6	P*	1 55	S*	—	—
Miyadu	3·9	260	1 1	− 1	—	—	—	—
Osaka B	3·9	248	1 9	P*	2 2	S*	—	—
Kobe	4·2	248	e 1 21	P_g	2 5	S*	—	2·2
Toyooka	4·2	261	1 5	− 2	e 2 8	S*	—	2·4
Wakayama	4·3	245	1 6	− 2	2 17	S_g	—	—
Siomisaki	4·4	233	1 22	P*	2 18	S*	—	—
Sumoto	4·5	247	e 1 20	P*	2 12	+ 7	—	2·5
Hatinohe	4·5	16	1 10	− 1	2 7	+ 2	—	—
Aomori	4·7	9	1 14	0	2 21	S*	—	—
Tokusima	4·8	246	1 41	P_g	2 37	S_g	—	—
Todotu	5·3	252	1 22	0	2 10	−15	—	—
Hakodate	5·6	6	1 56	P_g	—	—	—	—
Hirosima	6·4	255	1 34	− 4	3 18	S*	—	—
Kumamoto	8·3	249	2 3	− 1	4 18	S*	—	—

Kobe PE = +1m.25s.
Long waves were also recorded at Sverdlovsk and Tashkent.

Sept. 28d. Readings also at 0h. (Manila), 2h. (Bucharest, Butte, Sitka, Tucson, Mount Wilson, Pasadena, Tinemaha, Oak Ridge, Philadelphia, and Scoresby Sund), 5h. (Christchurch), 6h. (Christchurch), 7h. (Tacubaya (2)), 9h. (Santiago), 10h. (Christchurch, New Plymouth, and Wellington), 11h. (Ukiah, Almata, and Frunse), 12h. (Samarkand, Andijan, Sverdlovsk, and Tashkent), 14h. (Santiago (2) and La Paz), 15h. (Santiago (3) and Basle), 18h. (Manila (2)), 20h. (Mount Wilson, Pasadena, Tinemaha, Andijan, Tashkent, and Frunse), 21h. (Cheb), 22h. (Perth, Hastings, Tashkent, and Sverdlovsk), 23h. (Ksara and La Paz).

Sept. 29d. 11h. 30m. 17s. Epicentre 49°·2N. 129°·9W.

$A = -\cdot4199$, $B = -\cdot5040$, $C = +\cdot7548$; $\delta = +6$; $h = -5$;
$D = -\cdot768$, $E = +\cdot640$; $G = -\cdot483$, $H = -\cdot580$, $K = -\cdot656$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Seattle		5·2	105	1 25	+ ·4	2 15	− 7	3·0	—
Sitka		8·6	339	e 2 9	0	e 3 47	− 1	i 5·6	—
Ferndale		9·5	153	e 2 27	+ 7	—	—	—	—
Butte		12·1	91	e 3 25	PPP	e 5 37	SSS	—	—
Berkeley		12·6	152	e 2 5	−58	i 5 30	+ 4	—	—
San Francisco		12·6	152	e 3 4	+ 1	—	—	—	—
Branner		13·0	152	e 3 8	− 1	—	—	—	—
Bozeman		13·2	100	e 3 3	− 8	e 5 25	− 15	e 6·9	—
Fresno	N.	14·4	146	e 3 26	− 1	—	—	—	—
Tinemaha		14·7	141	i 3 32	− 1	—	—	—	—
Haiwee		15·7	142	e 3 45	+ 1	—	—	—	—
Mount Wilson		17·3	146	e 4 3	− 1	—	—	—	—
Pasadena		17·3	146	e 4 4k	0	i 7 21	+ 5	e 8·4	—
Riverside		17·8	144	e 4 10	− 1	—	—	—	—
College		18·4	336	e 4 15	− 3	e 7 57	+16	e 9·0	—
La Jolla		18·8	145	i 4 24	+ 1	—	—	—	—
Tucson		22·1	133	4 59	0	e 8 50	− 8	e 10·1	—
Florissant		29·9	96	i 6 31	+19	e 11 11	+ 2	—	—
Chicago		30·1	89	e 4 7	?	e 10 19	−53	15·2	—
St. Louis	E.	30·1	96	e 6 20	+ 7	—	—	e 16·0	—
Honolulu		35·7	229	e 8 20	PP	e 12 44	+ 5	15·6	—
Ottawa		36·2	75	7 6	0	12 49	+ 2	18·7	—
Pennsylvania		37·0	83	—	—	e 13 9	+10	e 18·0	22·4
Vermont		38·2	75	—	—	e 13 9	− 8	e 20·1	—
Seven Falls		38·5	70	e 8 55	PP	e 12 55	−27	18·7	—
Philadelphia		39·2	82	e 8 56	PP	—	—	e 16·8	—
East Machias		41·8	72	e 7 37	−16	—	—	e 18·6	—
San Juan		59·1	98	—	—	e 18 7	− 4	24·9	—
Sverdlovsk		74·0	355	e 11 56	+17	21 15	+ 4	34·7	—
Tiflis	N.	89·3	5	—	—	e 25 25	PPS	—	—
Baku		90·8	1	e 21 27	?	e 29 30	SS	e 43·7	52·3

Additional readings:—
Sitka P = +2m.15s., S = +4m.17s., iS = +4m.52s. and +5m.24s.
Berkeley eEN = +2m.58s., iZ = +3m.1s., eE = +3m.4s., eZ = +5m.29s., eE = +14m.35s.
Branner ePN = +3m.13s., eN = +8m.8s.
Fresno eN = +11m.31s.
College P = +4m.27s., ePP = +4m.39s., eS = +7m.7s.
Tucson PP = +5m.5s., S = +9m.8s.
Florissant iN = +6m.33s., iZ = +7m.33s., eN = +11m.45s.
St. Louis eE = +6m.35s. and +6m.45s.
San Juan S_cS = +20m.1s., eSS = +21m.37s.
Long waves were also recorded at Oak Ridge, Columbia, Ksara, Tashkent, Moscow, Pulkovo, and European stations.

Sept 29d. Readings also at 0h. (Baku, Sverdlovsk, Tashkent, Paris, Strasbourg, Stuttgart, Uccle, and Rio de Janeiro), 2h. (Cheb and Ferndale), 3h. (Amboina, Sebastopol, Simferopol, Belgrade, Bucharest, Sofia, and Zagreb), 5h. (Tucson), 10h. (Jena, Almeria, Alicante, near Granada, Malaga, Toledo, and Tortosa), 13h. (Tiflis and near Nagoya), 14h. (2) and 16h. (2) (near Grozny), 17h. (near Batavia and near Nagoya), 18h. (Ravensburg, near Basle, Chur, Zurich, Stuttgart, Strasbourg, near Calcutta, and near Nagoya), 19h. (Hong Kong and near Manila), 21h. (Sverdlovsk and Tashkent), 22h. (Christchurch, Wellington, Mount Wilson, Pasadena, Riverside, Tinemaha, Moscow, and near Apia), 23h. (Ksara, Strasbourg, Uccle, Paris, Baku, Sverdlovsk (2), Tashkent, Hong Kong, Mount Wilson, Pasadena, Riverside, and Tinemaha).

Sept. 30d. 7h. 58m. 8s. Epicentre 47°·4N. 66°·3W.

Felt Campbelltown, Frederichtown, Moncktown, New Brunswick, 47°·4N. 66°·3W.

Earthquakes in North Eastern America July-December, 1937. Bulletin of the Seismo. Soc. of America, Vol. XXVIII, No. 3, July, 1938, pp. 169-176, p. 172.

$A = +\cdot2731$, $B = -\cdot6221$, $C = -\cdot7338$; $\delta = +5$; $h = -4$;
$D = -\cdot916$, $E = -\cdot402$; $G = +\cdot295$, $H = -\cdot672$, $K = -\cdot679$.

	△	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Seven Falls	3·3	265	0 58	+ 5	1 23	−12	—
Shawinigan Falls	4·5	260	1 14	+ 3	2 10	+ 5	2·5
Oak Ridge	6·1	219	i 1 35$_a$	+ 1	i 2 43	− 2	—
Weston	6·2	217	i 1 35	0	i 2 45	− 3	—
Williamstown	6·8	228	e 1 42	− 2	i 3 12	+ 9	—
Ottawa	6·8	256	1 43	− 1	3 2	− 1	3·9

Additional readings :—
Oak Ridge PP = +1m.58s., iSE = +3m.25s.
Weston i = +1m.51s., iPP = +1m.58s., iSS = +3m.7s.
Williamstown iP$_g$ = +2m.20s., iS = +3m.26s., and +3m.44s.
Long waves were also recorded at Philadelphia.

Sept. 30d. 15h. 31m. 43s. Epicentre 47°·5N. 8°·9E.

Scale V in Cantons of Thurgau and Zurich. Epicentre 47°·5N. 8°·9E.
E. Wanner, Jahreshericht, 1937, des Schweizerischen Erdbebendienstes.
Separataldruck aus den Annalen der Schweizerischer Meteorologischen Zeutralanstalt, Jahrgang, 1937, p. 3.

$A = +\cdot6699$, $B = +\cdot1049$, $C = +\cdot7350$; $\delta = 0$; $h = -4$;
$D = +\cdot155$, $E = -\cdot988$; $G = +\cdot726$, $H = +\cdot114$, $K = -\cdot678$.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Zurich	0·2	238	i 0 10	0•	i 0 15	− 1
Ravensburg	0·6	60	e 0 15	0	i 0 25	− 1
Ebingen	0·7	4	e 0 16	− 1	i 0 25	− 3
Chur	0·8	147	i 0 21	+ 3	i 0 34	+ 3
Basle	0·9	273	i 0 20	0	i 0 33	− 1
Stuttgart	1·3	9	e 0 26	+ 1	i 0 47	+ 3
Strasbourg	1·3	325	—	—	i 0 45	+ 1
Neuchatel	1·4	249	i 0 29	+ 2	i 0 49	+ 3
Jena N.	3·8	26	e 1 9	P•	e 1 59	S•

Additional readings :—
Ravensburg e = +22s.
Ebingen e = +23s.
Stuttgart eP$_g$ = +29s., i = +41s.
Strasbourg i = +52s., iSS = +55s.
Jena eN = +2m.10s.
Long waves were also recorded at Baku, Sverdlovsk, and Tashkent.

Sept. 30d. 21h. Shock widely recorded, but not in sufficient detail to give a determination.
Sverdlovsk e = 31m.24s., i = 56m.29s., L = 91·0m.
Brisbane iPKPEN = 37m.48s., iPPEN = 38m.30s., ePPP = 39m.48s., iPPP? = 39m.54s., iN? = 41m.12s., eSKSE = 44m.12s., eSKSN = 44m.48s., ePSE = 47m.24s., ePSN = 47m.48s., eSSE = 54m.0s., eSSSN? = 57m.48s., eSSSE = 57m.54s.
Apia P = 38m.11s., S = 39m.1s.
Wellington e = 39m.48s., ePP = 43m.16s., iPKS = 45m.1s., iPPP = 47m.4s., iSKS = 48m.51s., i = 49m.43s., SKKS = 50m.53s., i = 51m.39s., S_cSP? = 53m.13s., i = 55m.15s., i = 57m.40s., iSS = 62m.3s., i = 62m.55s.
Arapuni e? = 40m.0s., iS_cSP? = 53m.0s., M = 54m.
Sydney e = 40m.54s., L = 49m.18s., M = 53m.
Riverview eE = 41m.6s., eL = 47·4m., M = 50·5m.
Melbourne e = 42m.32s., i = 46m.50s., L = 51m.36s., M = 54m.36s.
Manila eP = 45m.26s., SEN = 55m.38s., LN = 74m.50s.
Mount Wilson iPZ = 46m.5s. and 56m.11s.
Pasadena iP = 46m.6s., iSN = 56m.11s., eLN = 66m.15s.
Riverside iPZ = 46m.8s. and 56m.12s.
Haiwee ePE = 46m.11s. and 56m.19s.
Zi-ka-wei eZ = 46m.14s., MZ = 81m.46s.
Tinemaha iPEZ = +46m.15s., iPZ = 56m.22s.
Hong Kong PKP? = 46m.20s., S? = 56m.40s., M = 80m.35s.
Tucson P = 46m.26s., 46m.33s., and 46m.42s., eS = 56m.8s., S = 56m.33s., PS = 57m.5s., eL = 66m.57s.
Honolulu e = 48m.37s., eS = 49m.4s., eSS = 51m.52s., eL = 52m.46s.
Perth eP = 52m.25s., PP = 54m.1s., P_cS = 57m.49s., eS = 58m.2s., SS = 61m.53s., L = 64m.5s., M = 69m.
Copenhagen 53m.42s. and 54m.20s., L = 60m.
Ksara iPKP = 53m.48s., ePP = 57m.28s., i = 63m.56s., eSS = 76m.52s.
Helwan e = 54m.19s. and 60m.12s.
Tashkent e = 54m.39s., 56m.41s., 57m.17s., 60m.1s., 61m.34s., 64m.33s., 71m.54s., 86m.30s., and 94m.36s., M = 118·1m.
Granada ePKP = 55m.18s., ePP = 58m.49s.
Berkeley iPE = 56m.11s.
Ukiah eS = 56m.15s., eL = 66m.11s.
Baku e = 57m.7s., 62m.30s., 67m.11s., 75m.38s., 84m.7s., and 90m.12s., eL = 104·0m., M = 118°·0m.
Tiflis eE = 57m.11s. and 66m.44s., eLE = 108m., M = 119·6m.
Victoria e = 57m.24s., L = 73m.
San Juan e = 57m.27s., eSKS = 59m.28s., eS = 61m.33s., PS = 63m.21s., eL = 87m.50s.
College eS = 57m.53s., ePPS = 59m.5s., eSS = 63m.43s., eSSS = 67m.33s., eL = 72m.8s.
La Paz iN = 58m.22s., LN = 83m.30s., M = 86m.58s.
Kobe eE = 58m.27s. and 68m.28s.
Florissant eE = 58m.29s., eN = 59m.2s., eE = 71m.48s. and 76m.47s., eLE = 84m.54s., iN = 86m.24s., eZ = 87m.12s., ME = 87·3m.
Chicago eSKS = 58m.42s., eL = 86·6m.
Huancayo eS = 58m.54s., eL = 76m.41s.
Kodaikanal ePE = 59m.7s., PPE = 62m.34s., SKSE = 69m.19s., LE = 89m.36s., ME = 98m.29s.
Bombay eN = 59m.36s., M = 107m.
Rio de Janeiro e = 64m.
Ucclе e = 77m.6s., eL = 122m.
Paris e = 98m., L = 118m.
Long waves were also recorded at Cape Town and other American and European stations.

Sept. 30d. Readings also at 3h. (Huancayo, Mount Wilson, Pasadena, Wellington, Riverside, and Tinemaha), 4h. (Christchurch, Wellington, Riverview, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and Vienna), 5h. (Andijan), 6h. (near Manila), 7h. (near Andijan), 9h. (near Wellington), 10h. (near Andijan), 11h. (Grozny and near Andijan), 12h. (Christchurch and East Machias), 13h. (Wellington, Hong Kong, Phu-Lien, Zi-ka-wei, Husan, Keizyo (2), Nagoya, Mount Wilson, Pasadena, Riverside, Jersey, Sverdlovsk (2), and Tashkent (2)), 14h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 15h. (near Mizusawa), 17h. (near Tananarive), 18h. (La Paz and La Plata), 19h. (near Apia), 20h. (Batavia and Tacubaya), 21h. (Baku, Andijan, Almata, Tchimkent, Samarkand, Grozny, Tashkent, Malaga, and Riverview), 22h. (Weston, Oak Ridge, and near Williamstown), 23h. (near Granada, Malaga, and near Manila).