The International Seismological Summary.

1940 July, August, September.

INTERNATIONAL GEODETIC AND GEOPHYSICAL UNION.

ASSOCIATION OF SEISMOLOGY.

FORMERLY THE BULLETIN OF THE BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

The Director of the I.S.S. wishes to express his thanks to U.N.E.S.C.O. for financial support, which has covered the cost of the preparation of this volume.

The third quarter of 1940 contains 117 determined epicentres, of which 68 are repetitions from previous epicentres.

Cases of abnormal focal depth are noticed as below :—

July	4d.	9h.	44°·8N.	148°·8E.	0·040
	6d.	8h.	18·5N.	61·5W.	0·010
	10d.	5h.	44·9N.	130·4E.	0·070
	14d.	5h.	52·0N.	178·2E.	0·005
	14d.	15h.	36·2N.	140·0E.	Base of Superficial Layers.
	15d.	23h.	52·0N.	178·2E.	0·005
	21d.	0h.	40·2N.	142·8E.	0·005
	21d.	5h.	16·1S.	168·8E.	0·040
	27d.	13h.	14·3N.	91·7W.	0·005
August	1d.	12h.	25·9S.	179·7E.	0·060
	7d.	2h.	22·6S.	68·8W.	Base of Superficial Layers
	8d.	14h.	38·6N.	70·5E.	0·015
	15d.	21h.	18·8N.	145·2E.	0·025
	25d.	10h.	36·0N.	140·1E.	0·005
	26d.	2h.	12·2S.	75·8W.	0·005
September	8d.	1h.	22·0S.	171·7E.	Suggested Deep
	12d.	0h.	0·1N.	122·7E.	0·020
	18d.	15h.	22·6S.	68·8W.	Base of Superficial Layers
	21d.	13h.	37·3N.	70·9E.	0·020
	22d.	22h.	7·5N.	123·5E.	0·100
	23d.	7h.	23·0S.	63·5W.	0·080
	26d.	8h.	11·9S.	166·8E.	0·015
	27d.	21h.	28·2N.	139·0E.	0·080
	29d.	1h.	32·5S.	70·0W.	Suggested Deep
	30d.	11h.	27·4S.	177·7W.	0·005
	30d.	14h.	27·4S.	177·7W.	0·005

KEW OBSERVATORY,
RICHMOND,
SURREY.

August, 1951.

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1940 JULY, AUGUST, SEPTEMBER.

July 1d. 21h. 14m. 15s. Epicentre 43°·6N. 29°·2W. (as on 1939 July 12d.).

A = +·6342, B = −·3544, C = +·6872; δ = +5; h = −3;
D = −·488, E = −·873; G = +·600, H = −·335, K = −·726.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toledo	19·1	92	e 4 26	− 1	—	—	—	—	8·8
Stonyhurst	20·3	50	—	—	e 8 35	+12	—	—	—
Granada	20·5	100	i 4 42k	0	9 9	SS	4 53	pP	10·0
Kew	20·9	58	—	—	e 8 8	−27	—	—	e 9·8
Almeria	21·4	99	4 49	− 2	8 44	− 1	5 25	PP	10·8
Uccle	23·8	60	e 5 16	+ 1	9 29	+ 1	—	—	e 11·8
De Bilt	24·4	57	—	—	e 9 55	+16	—	—	—
Scoresby Sund	27·2	5	—	—	e 10 36	+11	—	—	—
Rome	30·4	79	—	—	e 13 11	SSS	—	—	—
Seattle	61·3	310	e 4 14	?	—	—	—	—	—
Tucson	63·0	290	e 10 34	+ 3	—	—	—	—	—

Additional readings :—
Granada PP = +5m.19s., iP_cP = +8m.39s.
Kew e = +8m.48s.
Long waves were also recorded at Potsdam, Warsaw, and Prague.

July 1d. 21h. 29m. 41s. Epicentre 43°·6N. 29°·2W. (as at 21h. 14m.).

A = +·6342, B = −·3544, C = +·6872; δ = +5; h = −3;
D = −·488, E = −·873; G = +·600, H = −·335, K = −·726.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lisbon		15·9	101	3 44	− 3	—	—	—	—	i 7·0
San Fernando		19·0	105	4 21	− 5	7 53	− 2	—	—	9·8
Toledo		19·1	92	e 4 25	− 2	e 8 5	+ 8	—	—	—
Stonyhurst		20·3	50	i 4 45	+ 5	i 8 35	+12	—	—	10·1
Oxford		20·4	57	i 4 38	− 3	i 8 30	+ 5	—	—	8·8
Granada		20·5	100	i 4 44k	+ 2	9 7	SS	4 54	pP	10·7
Edinburgh		20·7	45	—	—	e 8 38	+ 7	—	—	—
Kew		20·9	58	i 4 46	0	i 8 45	+10	e 5 10	PP	e 10·3
Almeria		21·4	99	e 4 53	+ 2	8 52	+ 7	5 22	PPP	11·2
Clermont-Ferrand		23·0	73	e 5 7	0	—	—	i 5 43	PPP	—
Uccle		23·8	60	i 5 15k	0	e 9 28	0	—	—	e 11·3
De Bilt		24·4	57	i 5 21k	0	e 9 45	+ 6	—	—	e 11·8
Halifax		24·6	285	e 5 27	+ 4	9 55	+13	—	—	13·3
Algiers		25·4	96	e 5 35	+ 4	e 10 7	+11	—	—	12·6
Neuchatel		25·5	69	e 5 31	− 1	—	—	—	—	—
Basle		25·9	68	e 5 35	0	e 10 20	+16	—	—	—
Zurich		26·6	68	e 5 41k	− 1	—	—	—	—	—
Stuttgart		26·9	65	e 5 44	− 1	e 10 9	−11	e 6 21	PP	e 12·5
East Machias		27·2	286	e 5 49	+ 2	e 10 37	+12	e 6 40	PP	e 11·4
Scoresby Sund		27·2	5	e 5 51	+ 4	e 10 34	+ 9	e 6 37	PP	e 11·2
Hamburg		27·4	54	e 5 48	− 1	e 11 40	SS	—	—	e 14·7
Copenhagen		29·1	50	i 6 4k	0	10 59	+ 3	—	—	—
Potsdam		29·2	58	i 6 5	0	i 11 0	+ 2	i 12 19	SS	e 14·8
Seven Falls		29·2	292	6 7	+ 2	11 11	+13	—	—	14·3
Bermuda		30·1	260	e 6 15	+ 2	e 11 22	+10	e 7 2	PP	e 12·9
Rome		30·4	79	6 16k	0	e 11 17	+ 1	7 26	PPP	i 15·7
Triest		30·4	71	e 6 13	− 3	e 11 14	− 2	i 7 4	PP	i 15·0
Harvard		30·7	284	i 6 22	+ 3	i 11 33	+12	—	—	e 15·3
Upsala	R.	32·4	45	—	—	e 11 19?	−29	—	—	—
Ottawa		32·9	291	e 6 42	+ 4	e 12 9	+13	—	—	e 16·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Philadelphia		34·1	279	e 6 52	+ 4	i 12 23	+ 9	e 7 51	PP	e 15·6
Warsaw		34·1	59	i 6 48	0	e 12 12	− 2	i 8 6	PP	e 14·3
Toronto		35·9	289	—	—	e 12 46	+ 4	—	—	18·3
Sofia		37·8	74	e 7 21	+ 1	e 13 13	+ 2	e 8 49	PP	20·3
Pulkovo		38·8	43	e 7 28	0	e 13 28	+ 2	—	—	e 17·9
Bucharest		39·1	69	e 7 19	−12	—	—	—	—	22·3
San Juan		39·9	243	e 7 44	+ 7	e 13 54	+11	e 9 23	PP	e 15·9
Chicago U.S.C.G.S.		42·2	290	e 8 1	+ 5	e 14 20	+ 3	e 17 19	SS	e 21·3
Istanbul		42·4	73	e 7 58	0	—	—	—	—	—
Moscow		43·2	49	8 4	0	e 14 33	+ 1	—	—	19·6
St. Louis		45·3	287	i 8 25	+ 4	e 15 10	+ 8	e 10 13	PP	22·4
Florissant		45·4	287	e 8 24	+ 2	i 15 9	+ 5	i 10 16	PP	—
Lincoln		48·8	292	e 8 51	+ 2	e 15 59	+ 7	e 10 49	PP	e 19·8
Helwan	E.	49·4	85	e 10 55	PP	i 16 1	+ 1	—	—	—
Ksara		50·5	79	i 9 4	+ 2	e 16 26	+10	e 10 58	PP	—
Sverdlovsk		54·9	42	i 9 34	− 1	e 17 18	+ 2	—	—	24·3
Bozeman		55·8	304	e 9 35	− 6	e 17 28	0	e 11 47	PP	e 23·0
Butte		56·5	305	e 9 52	+ 6	e 17 43	+ 6	e 10 40	P_cP	e 22·8
Baku		56·7	65	e 9 41	− 7	17 53	+13	—	—	26·3
Salt Lake City		58·8	300	e 10 4	+ 2	e 18 8	+ 1	e 12 4	PP	e 23·6
Seattle		61·3	310	e 14 9	PPP	e 18 44	+ 5	e 23 16	SS	—
Victoria		61·5	311	e 14 7	PPP	e 18 49	+ 7	—	—	30·3
Tucson		63·0	290	i 10 34k	+ 3	e 19 11	+10	e 11 11	P_cP	e 25·8
Haiwee		65·4	298	e 10 49	+ 2	—	—	—	—	—
Palomar	z.	66·4	295	i 10 54	+ 1	—	—	—	—	—
Mount Wilson		66·6	296	i 10 57	+ 3	—	—	—	—	—
Pasadena	z.	66·7	296	e 10 57	+ 2	—	—	—	—	—
Lick		67·0	301	e 11 1	+ 4	—	—	—	—	—
Santa Clara		67·2	301	e 11 6	+ 8	e 20 3	+11	e 13 35	PP	—
Riverside	z.	67·4	296	i 10 55	− 4	—	—	—	—	—
Berkeley		67·6	301	i 9 59	−62	e 20 9	+12	—	—	e 36·5
Santa Barbara	z.	67·6	297	e 11 3	+ 2	—	—	—	—	—
Tashkent		68·2	54	i 11 1	− 3	e 20 1	− 3	—	—	36·1
La Paz		69·6	221	e 11 19	+ 6	—	—	—	—	—

Additional readings :—
Lisbon Z = +3m.57s.
Granada PP = +5m.16s., PPP = +5m.22s., iP_cP = +8m.40s., i = +9m.53s., P_cS = +11m.37s.
Kew eE = +5m.22s., eN = +5m.36s., eSS = +10m.12s.
Almeriá i = +4m.56s., P_cP = +8m.42s., SS = +9m.41s.
Stuttgart eSNE = +10m.29s., eSSN = +11m.53s.
East Machias i = +10m.48s. and +10m.54s.
Hamburg eN = +11m.48s.
Potsdam ePN = +6m.10s., iSE = +11m.7s.
Rome iZ = +6m.28s., e = +8m.13s., iZ = +11m.58s., SS = +12m.47s.
Triest eP = +8m.53s., eSS = +12m.50s.
Warsaw eE = +8m.36s., eN = +12m.7s.
Chicago U.S.C.G.S. eS_cS = +17m.47s.
St. Louis iSE = +15m.13s., eE = +18m.35s.
Florissant eSE = +15m.12s.
Lincoln ePPP = +11m.31s.
Bozeman e = +9m.43s., ePPP = +12m.59s., e = +17m.51s., eS_cS = +19m.36s., eSS = +21m.7s.
Butte e = +17m.58s., eS_cS = +19m.43s., eSS = +21m.5s.
Salt Lake City e = +10m.22s. and +18m.13s., eS_cS = +20m.4s., eSS = +12m.12s.
Tucson i = +10m.37s., ePP = +12m.42s., ePPP = +14m.23s., eS_cS = +20m.25s., eSS = +22m.57s.
Santa Clara eP_cSS_cPN = +26m.23s.
Berkeley ePE = +10m.35s., eE = +11m.2s., eSN = +16m.56s., eSZ = +18m.58s.
Long waves were also recorded at Sitka, Jena, Budapest, Ukiah, and Irkutsk.

July 1d. Readings also at 0h. (near Branner, Lick, and Berkeley), 5h. (near Manila, Chur, Ravensburg, Stuttgart, Zurich, and near Triest), 6h. (Shawinigan Falls and Ottawa), 10h. (Tananarive and Istanbul), 11h. (Baku, Sotchi, Sverdlovsk, Grozny, and Erevan), 16h. (Triest), 17h. (La Plata), 18h. (Tucson and Rome), 19h. (La Paz and Harvard), 20h. (Tananarive), 22h. (Triest),

July 2d. 1h. 36m. 27s. Epicentre 33°·6N. 141°·5E. (as on 1940 Jan. 7d.).

$A = -·6532$, $B = +·5196$, $C = +·5508$; $\delta = +4$; $h = +1$;
$D = +·623$, $E = +·783$; $G = -·431$, $H = +·343$, $K = -·835$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Osaka		5·0	282	1 26	P*	2 32	S*	—
Mizusawa		5·5	358	e 1 16	− 9	2 13	−17	—
Vladivostok		12·1	325	e 2 52	− 5	e 5 26	+12	6·6
Scoresby Sund		75·5	356	—	—	e 20 47	−41	—
Mount Wilson		79·5	56	e 12 12	+ 2	—	—	—
Riverside	z.	80·1	56	e 12 15	+ 2	—	—	—
Ksara		83·2	306	e 12 36	+ 7	e 23 51	PS	—
Tucson		85·5	54	e 12 43	+ 2	—	—	—
Triest		88·0	327	23 48	S	(e 23 48)	+12	e 49·8
La Paz		148·4	64	e 20 1	[+16]	—	—	—

Triest also gives ePP = +26m.57s., eS = +33m.52s., eSS = +39m.14s., eSSS = +42m.28s.
Long waves were also recorded at other stations in Europe and U.S.S.R.

July 2d. 19h. 8m. 53s. Epicentre 15°·0S. 176°·0W.

$A = -·9640$, $B = -·0674$, $C = -·2572$; $\delta = -1$; $h = +6$;
$D = -·068$, $E = +·998$; $G = +·257$, $H = +·018$, $K = -·966$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia	z.	4·3	74	i 0 57	−11	i 2 42	?	—	—	3·4
Arapuni		24·1	197	—	—	9 43	+ 9	—	—	12·1
Wellington		27·4	196	5 47	− 2	11 11	SS	8 2	P_cP	14·6
Christchurch		30·1	197	3 52	?	10 15	−57	13 17	S_cS	15·9
Brisbane		31·3	241	i 6 19	− 5	i 11 19	−12	i 7 19	PP	—
Riverview		35·1	232	e 7 16	+19	e 12 21	− 9	e 15 11	SSS	e 16·1
Sydney		35·1	232	e 7 19	+22	e 11 22	−68	e 8 22	PP	—
Honolulu		40·2	27	e 7 42	+ 2	e 13 54	+ 6	e 9 18	PP	e 16·8
Adelaide		45·2	235	e 10 12	PP	i 15 15	+14	11 17	PPP	21·4
Santa Barbara		72·6	48	e 11 30	− 1	—	—	—	—	—
Santa Clara	N.	72·7	43	e 11 45	+13	e 21 2	+ 5	—	—	e 31·1
Berkeley		72·8	43	i 11 41	+ 9	i 21 4	+ 6	i 24 33	SS	e 35·9
Ukiah		73·0	41	e 12 18	+45	e 21 11	+11	e 26 32	?	e 31·2
Pasadena		73·6	48	e 11 35	− 2	e 21 12	+ 5	i 21 39	PS	e 30·1
Mount Wilson		73·7	48	e 11 33	− 5	—	—	—	—	—
Palomar	z.	74·1	50	e 11 36	− 4	—	—	—	—	—
Riverside	z.	74·1	48	e 11 36	− 4	—	—	—	—	—
Haiwee		73·7	46	e 11 42	− 1	—	—	—	—	—
Vladivostok		75·0	323	e 11 32	−13	i 21 29	+ 6	—	—	32·5
Tinemaha		75·0	45	i 11 43	− 2	—	—	—	—	—
Tucson		78·0	53	i 11 58	− 4	e 22 2	+ 7	e 15 11	PP	e 32·6
Seattle		78·6	35	e 12 11	+ 6	e 22 18	+16	e 30 49	SSS	e 32·2
Victoria		78·6	33	e 12 25	+20	e 22 11	+ 9	—	—	33·1
Sitka		79·7	22	—	—	e 22 11	− 2	—	—	e 32·0
Salt Lake City		81·2	44	e 12 27	+ 8	e 22 30	+ 1	e 17 33	PPP	e 34·1
College		82·5	12	e 12 50	+24	e 22 41	− 1	e 23 29	PS	e 33·4
Butte		83·3	39	—	—	e 22 51	+ 1	e 23 18	S_cS	e 34·7
Bozeman		84·1	40	e 12 45	+11	e 23 2	+ 4	e 23 29	S_cS	e 35·4
St. Louis	E.	96·0	52	—	—	e 23 56	[−11]	e 26 23	PS	—
Huancayo		97·0	105	—	—	e 24 51	− 4	e 26 45	PS	e 41·6
Chicago U.S.C.G.S.		98·7	49	—	—	e 24 40	[+19]	e 32 0	SSS	e 43·0
La Paz	z.	102·2	111	i 18 18	PP	—	—	—	—	48·1
Ottawa		107·7	46	e 19 7	PP	e 28 7	PS	e 34 13	SS	e 46·1
Philadelphia		107·7	53	—	—	e 25 26	[+24]	e 29 14	PPS	e 50·1
Harvard		110·6	50	e 19 7	PP	e 28 25	PS	e 34 51	SS	e 55·0

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Seven Falls	111·1	45	—	—	e 26 49	{+36}	e 34 55	SS	51·1
San Juan	113·1	76	—	—	e 25 51	[+27]	—	—	—
East Machias	113·6	47	e 21 1	PPP	e 35 32	SS	e 30 36	PPS	e 48·5
Tashkent	118·2	308	e 20 0	PP	e 29 38	PS	—	—	e 46·3
Sverdlovsk	120·5	327	e 20 15	PP	e 37 7	SSP	e 31 27	PPS	48·1
Scoresby Sund	122·3	10	e 20 54	PP	e 37 4	SS	e 23 43	PPP	e 50·3
Moscow	131·9	335	e 19 14	[− 2]	e 22 52	PKS	e 21 31	PP	e 60·9
Baku	132·8	311	e 22 40	?	39 43	SS	e 32 40	PS	63·1
Piatigorsk	136·0	319	—	—	32 42	PS	—	—	—
Warsaw	140·5	344	e 19 7?	[−24]	—	—	e 22 7?	PP	e 68·1
Hamburg	141·3	355	e 19 49	[+16]	—	—	e 23 7?	PKS	e 75·1
Potsdam	142·0	351	e 19 39	[+ 5]	—	—	i 23 13	PKS	e 67·7
De Bilt	143·0	359	e 19 37	[+ 1]	—	—	—	—	e 72·1
Kew	143·5	4	e 19 30	[− 7]	—	—	e 23 6	PKS	e 66·1
Uccle	144·3	1	e 19 33	[− 5]	e 41 51	SS	—	—	e 60·1
Bucharest	145·1	332	e 19 43	[+ 4]	—	—	—	—	78·1
Ksara	145·7	301	e 19 47	[+ 7]	36 12	PPS	e 23 14	PP	71·1
Istanbul	146·1	325	e 19 50	[+ 9]	—	—	—	—	—
Stuttgart	146·1	354	e 19 39	[− 2]	—	—	—	—	84·1
Basle	147·4	355	e 19 47	[+ 4]	—	—	—	—	—
Zurich	147·5	354	e 19 48a	[+ 5]	—	—	—	—	—
Triest	148·4	347	e 20 3	[+18]	e 43 50	SS	e 23 35	SKP	—
Clermont-Ferrand	149·3	2	19 47	[+ 1]	—	—	—	—	81·1
Helwan Z.	150·8	304	i 19 55	[+ 7]	—	—	i 23 55	SKP	—
Rome	152·2	347	e 19 52	[+ 1]	e 27 52	[+56]	—	—	e 73·5
Toledo	154·2	14	e 20 20	[+27]	—	—	—	—	e 76·1
Granada	156·9	16	20 15	[+18]	43 10	SS	24 33	PP	78·1
Almeria	157·5	14	e 19 54	[− 4]	—	—	—	—	—

Additional readings :—
Arapuni sS? = +10m.55s.
Wellington sP = +7m.2s., sS = +12m.9s., L_q = +12m.42s., P_cS? = +13m.32s.
Christchurch L_q = +12m.21s.
Brisbane eN = +7m. 25s.
Riverview eE = +7m.25s. and +12m.25s.
Honolulu ePPP = +10m.9s., i = +14m.0s.
Adelaide P_cP = +12m.47s., SS = +16m.35s., S_cS = +20m.17s.
Berkeley eSZ = +21m.23s. and +30m.31s., iSSSE = +31m.5s.
Ukiah e = +21m.31s., eSSS = +30m.16s.
Pasadena eZ = +17m.12s.
Tucson ePPP = +17m.27s., eS_cS = +22m.30s.
Salt Lake City e = +22m.36s., eS_cS = +22m.57s., ePS = +23m.19s.
College eSSS = +31m.22s.
Bozeman ePS = +23m.52s., eSS = +28m.30s.
St. Louis eE = +30m.38s.
Huancayo eS = +25m.14s., eSS = +31m.41s.
Philadelphia eSS = +34m.14s.
Baku PPS = +34m.44s.
Potsdam ePKSN = +23m.27s., eE = +23m.48s., eN = +24m.35s., eE = +27m.33s.
Triest ePKP,E = +20m.38s., ePP = +24m.3s., ePPP = +27m.49s., i = +28m.35s., ePSKS = +34m.31s., ePPS = +37m.48s., eSSS = +48m.56s.
Helwan iZ = +21m.47s.
Rome e = +23m.2s. and +24m.57s. ?
Granada PPP = +28m.38s., i = +34m.1s., SKKS = +35m.10s., PPS = +38m.37s., SSP = +44m.41s., SSS = +50m.34s.
Stuttgart eZ = +19m.45s.
Long waves were also recorded at Columbia, Bermuda, San Fernando, Irkutsk, and Kodaikanal.

July 2d. 20h. 58m. 24s. Epicentre 11°·5N. 95°·0E. (as on 1939, September 14d.).

$A = -·0854$, $B = +·9765$, $C = +·1981$; $\delta = +9.$; $h = +6$;
$D = +·996$, $E = +·087$; $G = -·017$, $H = +·197$, $K = -·980$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Phu-Lien		14·5	49	e 3 41	PP	—	—	—
Kodaikanal	E.	17·3	267	e 3 36	−28	—	—	—
Agra	E.	22·3	317	5 1	0	i 9 1	− 1	—
Almata		35·3	337	e 7 3	+ 4	e 12 43	+10	—
Andijan		35·3	329	e 6 55	− 4	12 32	− 1	—
Frunse		35·9	334	e 7 2	− 2	e 12 42	0	—
Tashkent		37·3	328	i 7 13	− 3	e 13 1	− 3	e 18·6
Vladivostok		44·9	39	e 8 24	+ 6	i 15 6	+10	26·2
Baku		49·0	314	e 8 50	0	—	—	26·6
Sverdlovsk		52·4	337	9 13	− 3	—	—	26·6
Moscow		62·5	328	10 22	− 6	—	—	—
Zurich		79·2	316	e 12 13	+ 5	—	—	—
La Paz	Z.	162·9	251	19 56	[− 8]	—	—	—

July 2d. Readings also at 1h. (near Triest and Rome), 2h. (Tananarive), 3h. (La Paz), 5h. (Triest), 7h. (near Triest, Scoresby Sund, and Bucharest), 9h. (Mizusawa), 11h. (Wellington, Rome, Triest, Granada (2), Stuttgart, Basle, Potsdam, Baku, Kew, Uccle, Jena, Cape Town, Algiers (2), Almeria, Helwan, Istanbul, Clermont-Ferrand, Ksara, San Fernando, Zurich, Sverdlovsk, and Tashkent), 12h. (Aberdeen, De Bilt, Hamburg, Bucharest, Scoresby Sund, and La Paz), 13h. (Wellington), 14h. (Tananarive), 15h. (near Branner), 18h. (Agra), 19h. (near Balboa Heights), 20h. (Hong Kong), 21h. (La Paz).

July 3d. 16h. 1m. 24s. Epicentre 52°·6N. 132°·1W. (as on 1938, March 22d.).

$A = -·4089$, $B = -·4525$, $C = +·7924$; $\delta = -15$; $h = -6$;
$D = -·742$, $E = +·670$; $G = -·531$, $H = -·588$, $K = -·610$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Sitka		4·8	339	e 0 59	−16	e 1 46	−26	i 2·2
Seattle		8·0	124	—	—	e 3 33	0	e 4·6
Butte		14·3	110	e 3 30	+ 4	—	—	e 7·4
Bozeman		15·4	109	e 3 44	+ 4	e 6 56	SS	e 8·0
Tinemaha		18·3	142	i 4 17	0	—	—	—
Haiwee		19·3	142	e 4 30	+ 1	—	—	—
Santa Barbara		20·2	148	e 4 39	0	—	—	—
Mount Wilson		21·0	145	i 4 44	− 3	—	—	—
Pasadena		21·0	145	i 4 44	− 3	—	—	—
Riverside	Z.	21·4	145	e 4 49	− 2	—	—	—
Tucson		25·5	134	i 5 29	− 3	—	—	—

Additional readings :—
Sitka i = +1m.53s. and +2m.7s.
Seattle e = +4m.4s.
Long waves were also recorded at College, Harvard, East Machias, Scoresby Sund, Kew, and Granada.

July 3d. Readings also at 3h. (Tucson, Apia, and Wellington), 4h. (La Paz and Warsaw), 7h. (Kew and Ksara), 13h. (Rome), 14h. (Mount Wilson, Pasadena, Palomar, and Riverside), 17h. (Mizusawa), 18h. (Harvard, Philadelphia, Tucson, La Jolla, Santa Barbara, Mount Wilson, Tinemaha, Pasadena, Riverside, Palomar, Granada, Christchurch, and Wellington), 19h. (Chicago, Ksara, and Toledo), 20h. (Berkeley and Prague), 21h. (Ksara), 22h. (Jena), 23h. (Triest).

July 4d. 9h. 0m. 35s. Epicentre 44°·3N. 143°·8E.

Moderate at Urakawa, Hatinohe, slight at Kusiro and Aomori.

Epicentre 44°·3N. 144°·5E. Depth 200km.

Radius greater than 300km.

See Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1940. Tokyo, 1950, pp. 18-19. Macroseismic Chart, p. 18.

$A = -\cdot5794$, $B = +\cdot4241$, $C = +\cdot6960$; $\delta = -2$; $h = -3$;
$D = +\cdot591$, $E = +\cdot807$; $G = -562$, $H = +\cdot411$, $K = -\cdot718$.

Tables for depth of focus 0·040 have been used.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro	1·6	119	0 38	− 5	0 47	−29	—	—	—
Sapporo	2·2	234	0 44a	− 4	1 21	− 4	—	—	—
Aomori	4·1	213	1 4a	− 3	1 59	− 1	—	—	—
Hatinohe	4·1	204	1 3a	− 4	1 55	− 5	—	—	—
Miyako	4·8	197	1 14	− 1	2 12	− 2	—	—	—
Akita	5·4	211	1 21k	− 1	2 23	− 4	—	—	—
Mizusawa	5·5	202	e 1 21	− 3	2 25	− 4	—	—	—
Sendai	6·4	211	1 33	− 1	2 48	0	—	—	—
Hukusima	7·0	202	1 42	0	3 0	− 2	—	—	—
Onahama	7·7	197	1 56	+ 6	3 20	+ 3	—	—	—
Mito	8·3	199	2 0	+ 2	3 29	− 2	—	—	—
Utunomiya	8·3	202	2 0	+ 2	—	—	—	—	—
Kakioka	8·5	200	1 59	− 1	3 31	− 4	—	—	—
Tukubasan	8·6	200	2 3	+ 1	3 33	− 4	—	—	—
Maebasi	8·7	206	2 2	− 1	3 42	+ 2	—	—	—
Nagano	8·7	211	2 4	+ 1	3 41	+ 1	—	—	—
Vladivostok	8·7	266	i 1 59	− 4	e 3 36	− 4	—	—	e 4·6
Wazima	8·7	219	2 2	− 1	3 39	− 1	—	—	—
Kumagaya	8·8	204	1 59	− 5	3 37	− 5	—	—	—
Tyosi	8·8	196	2 3	− 1	3 42	0	—	—	—
Toyama	9·1	215	2 26	+18	3 47	− 1	—	—	—
Tokyo, Cen. Met. Ob.	9·2	201	2 16	+ 7	3 51	0	—	—	—
Misima	9·9	204	2 22	+ 4	4 10	+ 4	—	—	—
Gihu	10·4	214	2 25k	+ 1	4 9	− 9	—	—	—
Nagoya	10·5	212	2 26	+ 1	4 37	+17	—	—	—
Hamamatu	10·7	208	2 35	+ 7	—	—	—	—	—
Kameyama	11·0	213	2 30k	− 1	4 51	SS	—	—	—
Kyoto	11·2	216	2 34	0	—	—	—	—	—
Osaka	11·6	216	2 31	− 8	4 38	− 6	—	—	—
Kobe	11·7	217	2 39	− 1	4 25	−22	—	—	—
Hamada	13·0	228	2 57	+ 1	5 27	+12	—	—	—
Muroto	13·3	217	3 0	0	5 1	−21	—	—	—
Taikyu	14·3	239	3 13	+ 1	5 55	+11	—	—	—
Zinsen	14·6	248	3 17k	+ 2	5 58	+ 8	—	—	—
Hukuoka	14·9	229	3 19	0	—	—	—	—	—
Miyazaki	15·7	222	3 31	+ 3	6 25	+11	—	—	—
Kagosima	16·4	224	3 39	+ 3	6 33	+ 5	—	—	—
Yakusima	17·4	222	3 48	+ 2	—	—	—	—	—
Nake	19·6	221	4 11	+ 3	—	—	—	—	—
Irkutsk	27·2	302	e 5 16	− 4	—	—	—	—	20·5
Almata	47·0	294	e 8 4	0	e 14 36	+ 3	—	—	—
Frunse	48·8	294	e 8 20	+ 2	e 15 3	+ 5	—	—	—
Sverdlovsk	51·1	316	i 8 33	− 2	i 15 27	− 3	—	—	19·4
Andijan	51·2	293	8 38	+ 2	15 37	+ 6	—	—	—
Tashkent	53·0	295	i 8 49	0	i 15 55	− 1	—	—	—
Moscow	62·6	322	—	—	17 56	− 4	—	—	—
Scoresby Sund	65·1	355	—	—	e 18 4	−26	—	—	—
Baku	65·7	303	—	—	18 43	+ 5	—	—	e 27·6
Tinemaha	70·2	58	i 10 44	0	—	—	—	—	—
Santa Barbara z.	71·0	61	i 10 48	0	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Halwee		71·0	58	i 10 48	0	—	—	—	—	—
Warsaw		72·0	328	—	—	i 19 48	− 3	—	—	e 35·4
Mount Wilson		72·2	60	i 10 56	+ 1	—	—	i 11 56	pP	—
Pasadena		72·2	60	i 10 55	0	—	—	e 11 56	pP	—
Riverside	z.	72·8	60	i 10 58	− 1	—	—	i 11 59	pP	—
Palomar	z.	73·5	59	i 11 2	− 1	—	—	—	—	—
La Jolla		73·6	60	e 11 4	0	—	—	—	—	—
Hamburg		74·8	334	—	—	e 20 23	+ 1	—	—	—
Potsdam		74·8	332	—	—	i 20 19	− 3	—	—	e 41·7
Tucson		78·0	57	i 11 28	0	—	—	e 12 28	pP	—

Potsdam also gives iN = +20m.23s.

July 4d. Readings also at 3h. (near Tucson), 5h. (near Triest, Huancayo, and La Paz), 6h. (Manila, Hong Kong, and Warsaw), 7h. (Scoresby Sund and Potsdam), 8h. (Scoresby Sund), 10h. (Helwan and Ksara), 11h. (La Paz), 13h. (Warsaw), 15h. (near Algiers (3)), 16h. (near La Paz), 21h. (Tucson), 22h. (near Tananarive).

July 5d. 14h. 3m. 46s. Epicentre 15°·0S. 176°·0W. (as on 1940, July 2d.).

A = −·9640, B = −·0674, C = −·2572; $\delta = -1$; $h = +6$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		4·3	74	e 1 4	− 4	1 44	−16	i 1 28	P_g	—
Santa Barbara	z.	72·6	48	e 11 33	+ 2	—	—	—	—	—
Pasadena		73·6	48	i 11 38	+ 1	—	—	—	—	e 33·4
La Jolla		73·6	50	e 11 37	0	—	—	—	—	—
Mount Wilson		73·7	48	i 11 38	0	—	—	—	—	—
Fresno	N.	73·8	46	e 11 42	+ 4	—	—	—	—	—
Palomar	z.	74·1	50	i 11 40	0	—	—	—	—	—
Riverside	z.	74·1	48	e 11 40	0	—	—	—	—	—
Halwee		74·7	46	e 11 45	+ 2	—	—	—	—	—
Tinemaha		75·0	45	i 11 48	+ 3	—	—	—	—	—
Tucson		78·0	53	i 12 2	0	—	—	—	—	—
Jena		143·7	351	e 19 44	[+ 7]	—	—	—	—	—
Uccle	z.	144·3	1	i 19 45a	[+ 7]	—	—	—	—	—
Ksara		145·7	301	e 19 44	[+ 4]	—	—	—	—	—
Basle		147·4	355	e 19 50	[+ 7]	—	—	—	—	—
Zurich		147·5	354	e 19 56	[+13]	—	—	—	—	—
Triest	z.	148·4	347	e 19 53	[+ 8]	—	—	—	—	—
Clermont-Ferrand		149·3	2	e 19 56	[+10]	—	—	—	—	—

Additional readings :—
Mount Wilson iZ = +11m.54s.
Tucson i = +12m.19s. and +12m.29s.
Uccle eZ = +20m.2s.
Ksara i = +20m.12s.

Jnly 5d. Readings also at 0h. (near La Paz and Scoresby Sund), 2h. (Honolulu), 3h. (near Tananarive), 7h. (Mizusawa and Ksara), 8h. (Scoresby Sund), 13h. (Ksara, Mount Wilson, Tucson, and Pasadena), 16h. (near Osaka), 18h. (Tananarive), 19h. (Stuttgart), 20h. (Clermont-Ferrand, Scoresby Sund, near Mizusawa, near Granada, San Fernando, Almeria, and Toledo), 21h. (Triest, Uccle (2), Rome (3), near Harvard, Sverdlovsk, Irkutsk, Baku, Vladivostok, Tashkent, De Bilt, Warsaw, Moscow, Osaka, Potsdam, Scoresby Sund, Granada, and Ksara).

July 6d. 3h. 40m. 15s. Epicentre 13°·5N. 61°·5W.

Intensity IV-V at La Martinique.

Epicentre : 13°·0N. 61°·4W., depth 160kms. (U.S.C.G.S.).
13°·5N. 60°·0W., depth 160kms. (Pasadena).

See Annales de l'Institut de Physique du Globe de Strasbourg, Tome V, 2e partie, Seismologie, 1940. Strasbourg, 1948, p. 12.

$A = +\cdot4641$, $B = -\cdot8548$, $C = +\cdot2320$; $\delta = -10$; $h = +6$;
$D = -\cdot879$, $E = -\cdot477$; $G = +\cdot111$, $H = -\cdot204$, $K = -\cdot973$.

Tables for depth of focus 0·010 have been used.

		△	Az.	P.		O−C.	S.		O−C.		Supp.		L.
		°	°	m.	s.	s.	m.	s.	s.	m.	s.		m.
Fort de France		1·3	15	0	35	+11	0	55	+13	—		—	—
San Juan		6·6	318	i 1	44	+ 8	i 2	58	+ 8	—		—	—
Balboa Heights		18·3	257	e 4	8	− 1	—		—	—		—	—
Bermuda		19·0	351	i 4	19a	+ 3	i 7	50	+ 9	e 4	55	pP	i 9·3
Columbia		27·0	322	e 5	36	+ 1	e 10	0	− 3	e 6	5	pP	i 11·5
Georgetown		28·8	335	e 5	53	+ 2	14	34	?	e 6	20	pP	—
Huancayo		28·9	208	i 5	49k	− 3	i 10	10	−24	e 6	15	pP	i 11·7
Philadelphia		29·0	339	e 5	52	− 1	i 10	32	− 3	i 6	25	pP	—
Weston		30·0	346	i 6	2	0	i 10	52	+ 1	6	16	pP	—
Harvard		30·2	346	i 6	4	+ 1	i 10	54	0	e 6	34	pP	—
La Paz		30·5	191	i 6	4	− 2	i 10	53	− 6	i 6	50	pP	14·6
Pennsylvania		30·7	334	e 6	6	− 2	i 11	3	+ 1	e 6	39	pP	—
Halifax		31·1	357	6	13	+ 2	11	7	− 1	7	7	PP	13·8
East Machias		31·6	351	e 6	17	+ 1	i 11	14	− 2	e 6	52	pP	i 13·1
Buffalo		32·9	336	i 6	19	− 8	i 11	39	+ 2	i 7	3	pP	—
Toronto		33·8	336	6	38	+ 3	11	51	+ 1	e 7	9	pP	13·8
Ottawa		34·0	341	6	38	+ 2	11	55	+ 1	e 7	14	pP	15·8
Shawinigan Falls		34·3	346	6	40	+ 1	11	59	+ 1	e 7	12	pP	18·7
Seven Falls		34·4	348	6	43	+ 3	12	1	+ 1	e 13	6	sS	14·8
St. Louis		35·7	319	e 6	49	− 2	i 12	14	− 6	i 7	24	pP	—
Florissant		35·9	319	i 6	52	0	i 12	20	− 3	i 8	28	PP	—
Chicago, U.S.C.G.S.		36·3	325	e 6	56	0	e 12	12	−17	i 7	31	pP	e 14·9
Rio de Janeiro		40·4	153	e 7	33	+ 3	i 13	13	−18	i 16	3	SS	i 18·0
Lincoln		41·0	318	e 7	34	− 1	e 13	22	−18	e 8	12	pP	i 17·0
La Plata	E.	48·3	175	8	39	+ 6	15	10	−15	16	10	sS	19·0
	N.	48·3	175	8	24	− 9	15	4	−21	16	15	sS	18·8
	Z.	48·3	175	8	28	− 5	15	9	−16	9	15	pP	—
Ivigtut		48·6	8	e 8	28	− 8	i 15	26	− 3	e 9	10	pP	—
Tucson		48·7	300	i 8	36k	0	i 15	28	− 2	i 9	16	pP	e 19·8
Salt Lake City		51·5	311	e 8	58	0	e 16	5	− 4	e 9	35	pP	e 21·0
Bozeman		52·6	317	e 9	5	− 1	i 16	22	− 2	i 9	46	pP	e 21·4
Butte		53·7	318	e 9	14	0	i 16	40	+ 1	e 9	50	pP	e 22·1
Palomar		53·9	300	i 9	14k	− 2	—		—	i 9	55	pP	—
La Jolla		54·1	300	e 9	17	0	—		—	—		—	—
San Fernando		54·3	54	—		—	i 16	49	+ 2	—		—	—
Riverside		54·4	302	i 9	17k	− 2	—		—	i 10	0	pP	—
Mount Wilson		55·0	302	i 9	22k	− 2	—		—	i 10	4	pP	—
Pasadena		55·1	302	i 9	23k	− 1	i 16	53	− 5	i 10	2	pP	e 26·2
Haiwee	Z.	55·2	304	i 9	24	− 1	—		—	i 10	4	pP	—
Tinemaha		55·6	305	i 9	27	− 1	—		—	—		—	—
Santa Barbara		56·4	301	i 9	32	− 2	—		—	—		—	—
Granada		56·5	54	i 9	29a	− 5	i 17	16	0	9	59	PcP	e 28·2
Toledo		56·6	51	e 9	36	+ 1	i 17	16	− 2	—		—	—
Fresno	N.	56·7	305	e 9	35	− 1	—		—	—		—	—
Almeria		57·3	55	i 9	47	+ 7	17	31	+ 4	10	37	pP	25·8
Lick	N.	58·3	305	e 8	51	−56	—		—	—		—	—
Branner	E.	58·7	305	i 9	51	+ 1	—		—	—		—	—
Berkeley		58·8	305	e 9	37	−13	i 17	46	0	i 10	29	pP	e 29·3
San Francisco	E.	58·9	305	e 9	51	0	—		—	e 10	32	pP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ukiah		59·7	307	e 9 56	− 1	e 18 0	+ 2	e 10 36	pP	e 24·1
Seattle		60·6	316	e 10 12	+ 9	e 18 15	+ 5	e 19 9	sS	—
Stonyhurst		61·1	35	e 10 9	+ 3	i 18 14	− 2	—	—	25·2
Oxford		61·2	38	—	—	i 18 16	− 1	—	—	e 28·8
Edinburgh		61·4	33	—	—	i 18 15	− 5	—	—	—
Victoria		61·5	318	i 10 9	0	i 18 17	− 4	24 45?	SSS	28·8
Algiers		61·7	57	13 23	PPP	—	—	—	—	—
Kew		61·7	38	i 10 8	− 2	18 22	− 1	i 10 45	P_cP	e 25·8
Scoresby Sund		61·9	13	e 10 11	− 1	e 18 17	− 9	e 10 45	pP	e 26·0
Aberdeen		62·3	31	i 10 13	− 1	i 18 24	− 7	i 10 48	pP	29·2
Clermont-Ferrand		62·8	45	e 10 16	− 2	i 18 40	+ 3	i 10 52	pP	29·8
Uccle		64·4	40	i 10 27k	− 1	e 18 51	− 6	i 11 1	pP	—
De Bilt		65·2	38	i 10 33k	0	i 19 7	0	i 11 7	pP	e 30·8
Neuchatel		65·6	44	e 10 34	− 2	e 19 9	− 3	—	—	—
Basle		66·0	43	e 10 36	− 2	e 19 19	+ 2	—	—	—
Zurich		66·7	44	e 10 41	− 2	e 19 23	− 2	—	—	—
Bergen		66·9	29	e 11 3	+19	19 25	− 3	—	—	—
Heligoland		67·1	36	e 10 45	0	i 19 27	− 3	—	—	e 32·8
Stuttgart		67·2	42	i 10 44a	− 2	i 19 29	− 2	e 11 19	pP	—
Hamburg		68·3	37	e 10 51k	− 2	i 19 44	0	i 11 29	P_cP	—
Jena		69·0	40	e 10 58	+ 1	e 19 45	− 8	—	—	e 29·8
Rome		69·2	50	i 10 58k	0	i 19 56	+ 1	i 11 35	pP	—
Copenhagen		69·9	34	i 11 2	0	i 20 3	0	i 11 38	pP	—
Potsdam		70·0	38	i 11 1k	− 2	i 20 0	− 4	i 11 37	pP	—
Sitka		70·0	326	i 10 59	− 4	e 19 53	−11	i 11 40	pP	e 34·9
Triest		70·2	46	i 11 3k	− 1	i 20 3	− 4	—	—	—
Prague		70·7	41	e 11 6	− 1	i 20 13	+ 1	—	—	e 26·8
Upsala		73·0	31	e 11 18	− 3	e 20 32	− 7	—	—	—
Warsaw		74·9	38	i 11 32k	0	i 20 56	− 4	i 12 8	pP	e 33·8
College		76·3	334	e 11 40	0	e 21 9	− 6	e 12 18	pP	e 31·8
Sofia		77·2	48	e 11 47	+ 2	e 21 24	− 1	—	—	30·0
Pulkovo		79·4	31	i 11 57	0	i 21 45	− 3	i 12 33	pP	e 38·7
Istanbul		81·7	49	12 2	− 7	22 5	− 7	—	—	e 49·8
Moscow		84·0	34	i 12 20	− 1	i 22 26	− 9	12 57	pP	38·8
Yalta		84·6	45	12 25	+ 1	—	—	—	—	—
Helwan		85·8	60	i 12 30a	0	22 40	[− 4]	13 6	pP	—
Ksara		88·6	56	i 12 44k	+ 1	23 1	[0]	i 13 23	pP	—
Sotchi		88·7	45	12 47	+ 3	23 21	+ 1	—	—	—
Piatigorsk		90·9	44	e 13 4	+10	—	—	—	—	—
Sverdlovsk		95·2	28	13 13	− 1	30 51	SS	13 51	pP	40·8
Baku		97·0	46	e 13 22	0	23 48	[− 1]	31 21	SS	e 41·8
Tashkent		109·0	37	e 18 45	PP	i 24 42	[− 3]	19 30	sPP	e 41·4
Frunse		111·0	33	19 24	pPP	—	—	—	—	—
Andijan		111·2	36	19 25	PP	24 52	[− 2]	28 24	SP	—
Vladivostok		122·3	347	e 20 21	PP	i 25 31	[− 3]	i 30 1	PS	31·1
Agra	E.	123·6	44	—	—	e 25 30	[− 9]	e 31 2	PPS	—

Additional readings :—
Bermuda i = +4m.59s., isP = +5m.7s., iP_cP = +8m.31s., isS = +8m.43s.
Columbia esP = +6m.26s., ePP = +6m.34s., eP_cP = +8m.54s., esS = +11m.7s.
Huancayo isP = +6m.31s., iPP = +6m.36s., i = +10m.16s. and +10m.25s., isS = +11m.27s.
Philadelphia isP = +6m.40s., i = +10m.38s., isS = +11m.30s., i = +11m.39s. and +12m.2s.
Weston sS = +11m.50s.
La Paz isPZ = +7m.16s., iZ = +7m.43s., PP = +8m.5s., isS = +11m.59s., SS = +13m.17s.
Pennsylvania i = +7m.22s., e = +12m.5s. and +12m.57s.
East Machias ePP = +7m.22s., eP_cP = +9m.9s., i = +11m.20s., esS = +12m.16s.
Buffalo iPP = +7m.24s., esS = +12m.37s., i = +17m.27s.
Toronto e = +8m.34s.
Ottawa PPP = +7m.51s., eN = +12m.55s., SSE = +13m.57s.
Seven Falls SS = +13m.51s.
St. Louis eN = +7m.9s., eE = +8m.11s., iN = +8m.37s., eN = +9m.54s., isSN = +13m.15s., iSSEN = +14m.32s.
Florissant isSN = +13m.24s., iSSN = +14m.47s.
Chicago ePP = +8m.15s., ipPP = +9m.2s., i = +12m.25s., esS = +13m.23s.

Continued on next page.

Lincoln esP = +8m.29s., ePP = +9m.12s., ePcP = +9m.25s., ePPP = +9m.56s., i = +13m.37s., esS = +14m.34s., eSS = +16m.29s.
La Plata N = +11m.11s.
Ivigtut ePcP = +9m.56s., ePP = +10m.23s., ePPP = +11m.21s., isS = +16m.26s., eScS = +18m.10s.
Tucson isP = +9m.38s., ePcP = +10m.2s., ePP = +10m.48s., ipPP = +11m.11s., eScP = +13m.14s., i = +15m.37s., esS = +16m.37s., eScS = +17m.48s., eSS = +19m.9s., esSS = +19m.35s.
Salt Lake City ePcP = +10m.10s., ePP = +11m.5s., epPP = +11m.37s., esPP = +11m.58s., i = +16m.9s., esS = +17m.9s., eScS = +18m.31s.
Bozeman ePP = +11m.14s., epPP = +12m.4s., eS = +16m.12s., isS = +17m.22s., eSS = +20m.11s., esSS = +20m.51s.
Butte esP = +10m.12s., ePP = +11m.18s., epPP = +12m.14s., esS = +17m.33s., eScS = +18m.53s., esSS = +21m.46s.
Pasadena iE = +10m.43s., eE = +18m.1s. and +18m.55s.
Granada PP = +11m.23s., PPP = +13m.19s., PcS = +14m.1s., PS = +17m.29s., SS = +21m.55s.
Almeria PP = +12m.5s., PPP = +13m.29s., ScS = +19m.29s.
San Francisco eN = +10m.35s.
Berkeley iPZ = +9m.49s., eE = +9m.54s., iN = +10m.58s. and +14m.27s., eSZ = +16m.45s., iSE = +17m.39s., eN = +23m.47s., eE = +24m.39s., eZ = +24m.45s.
Ukiah e = +10m.14s., ePcP = +10m.50s., ePP = +12m.23s., epPP = +13m.0s., eScP = +14m.21s., esS = +19m.5s., esSS = +23m.15s.
Kew ePcSE = +14m.52s., eScS = +19m.46s., eSSEN = +22m.45s. ?
Scoresby Sund epPP = +13m.9s., ePPP = +13m.59s., i = +18m.28s., esS = +19m.13s., i = +19m.52s., isSS = +23m.15s., iSSS = +25m.28s.
Aberdeen iEN = +18m.31s.
Uccle iSEZ = +18m.55s., isSN = +19m.59s., i = +20m.9s., iSSE = +23m.15s., iE = +26m.34s.
De Bilt eSS = +23m.15s., eSSS = +26m.48s.
Stuttgart esPNE = +12m.3s., esSE = +20m.27s., esSSN = +25m.3s.
Hamburg eE = +27m.45s. ?
Rome i = +12m.5s. and +12m.44s., PP = +13m.59s., i = +14m.32s. and +22m.8s.
Copenhagen i = +20m.51s.
Potsdam iPN = +11m.7s., ipPN = +11m.42s., isSE = +20m.46s. and +20m.50s.
Sitka i = +20m.1s., epS = +20m.49s., isS = +21m.12s., eSS = +24m.11s., eSSS = +27m.51s.
Warsaw iZ = +12m.24s., PSN = +21m.27s., SSE = +25m.34s., iE = +27m.16s.
College epPP = +15m.7s., esS = +22m.19s., eSS = +26m.6s., eSSS = +29m.27s.
Moscow sP = +13m.13s.
Helwan sPEZ = +13m.16s., PPE = +16m.9s., SEZ = +22m.51s., sSE = +23m.51s., PSE = +24m.1s., sPSE = +24m.41s.
Ksara pPP = +16m.59s., eS = +23m.21s., sS = +24m.31s., PKP,PKP = +38m.31s.
Sverdlovsk pPP = +17m.37s.
Vladivostok esSKS = +27m.9s.

July 6d. 7h. 20m. 14s. Epicentre 33°·2N. 46°·4E.

(Foreshock of quake at 17h. and as on 1938 January 26d.).

A = +·5782, B = +·6072, C = +·5450; δ = +3; h = +1;
D = +·724, E = −·690; G = +·376, H = +·395, K = −·839.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku		7·7	20	—	—	3 30	+ 5	—	—	4·6
Ksara		8·8	277	e 2 30	PP	e 4 0	+ 7	4 53	S_g	—
Helwan		13·3	260	e 3 16	+ 3	i 5 48	+ 6	i 4 22	?	9·4
Istanbul		15·9	305	3 44	− 3	9 52	SS	—	—	—
Bucharest		19·3	312	e 4 28	− 1	—	—	—	—	e 11·3
Tashkent		19·9	59	i 4 39	+ 3	i 8 21	+ 6	—	—	i 13·4
Sofia		20·5	305	e 4 40	− 2	e 8 34	+ 7	—	—	e 11·4
Andijan		22·0	64	—	—	9 22	SS	—	—	12·2
Moscow		23·4	348	5 9	− 2	9 17	− 4	—	—	e 13·0
Sverdlovsk		25·6	19	5 38	+ 6	10 7	+ 8	—	—	14·3
Warsaw		26·4	325	e 5 37k	− 3	10 25	+13	—	—	e 15·8
Agra	E.	27·9	94	—	—	e 11 33	SS	—	—	—
Potsdam		30·7	319	—	—	e 11 24	+ 3	e 12 28	SS	e 18·8
Scoresby Sund		51·9	337	—	—	e 16 9	−26	—	—	—
Harvard	Z.	85·6	319	e 12 40	− 1	—	—	—	—	—

Additional readings :—
Ksara i = +3m.6s.
Helwan PcPZ = +7m.12s., SN = +7m.22s.
Long waves were also recorded at Kew, Frunse, and De Bilt.

July 6d. 17h. 45m. 11s. Epicentre 33°·2N. 46°·4E. (as at 7h.).

$A = +\cdot5782$, $B = +\cdot6072$, $C = +\cdot5450$; $\delta = +3$; $h = +1$;
$D = +\cdot724$, $E = +\cdot690$: $G = +\cdot376$, $H = +\cdot395$, $K = -\cdot839$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		8·8	277	e 2 25	+14	i 5 21	S_g	i 3 9	P_g	—
Helwan		13·3	260	3 20	+ 7	7 25	?	3 46	PPP	—
Istanbul		15·9	305	3 44	− 3	6 54	+10	—	—	—
Tashkent		19·9	59	i 4 31	− 5	e 8 5	−10	—	—	e 10·7
Sofia		20·5	305	e 4 47	+ 5	e 8 43	SS	—	—	e 11·9
Andijan		22·0	64	e 4 57	− 1	8 54	− 2	—	—	e 12·9
Moscow		23·4	348	5 9	− 2	9 18	− 3	—	—	13·6
Frunse		24·1	59	e 5 16	− 2	e 9 31	− 3	—	—	e 13·8
Sverdlovsk		25·6	19	5 30	− 2	9 55	− 4	—	—	13·3
Almata		25·9	58	e 5 37	+ 2	e 10 5	+ 1	—	—	—
Warsaw		26·4	325	e 5 37	− 3	e 10 18	+ 6	—	—	e 14·8
Triest		27·8	307	e 5 55	+ 2	e 11 30	SS	e 6 58	PP	—
Agra	E.	27·9	94	—	—	e 10 42	+ 5	—	—	—
Rome		28·1	298	i 5 56a	+ 1	e 11 36	SS	—	—	e 17·3
Pulkovo		28·7	344	e 6 18	+17	—	—	—	—	—
Potsdam		30·7	319	—	—	e 10 49	−32	—	—	e 17·8
Zurich		31·8	308	e 6 29k	+ 1	—	—	—	—	—
Hamburg	E.	32·9	319	—	—	e 11 49?	− 7	—	—	—
Uccle		35·3	313	e 7 1	+ 2	—	—	—	—	e 19·8
Scoresby Sund		51·9	337	—	—	e 16 37	+ 2	—	—	—
College		81·6	7	e 10 14	?	—	—	—	—	—
East Machias		81·8	319	—	—	e 30 14	SSS	—	—	—
Harvard		85·6	319	—	—	e 29 9	SS	e 33 5	SSS	—
Philadelphia		89·4	318	—	—	e 28 49?	?	—	—	—
Chicago		94·2	328	—	—	e 27 22	?	—	—	—
St. Louis	N.	98·0	327	—	—	e 28 34	?	e 31 24	SS	—
Bozeman		98·9	344	e 21 24	PKS	—	—	—	—	—
Mount Wilson	Z.	111·4	345	e 15 23	P	—	—	—	—	—
Riverside	Z.	111·4	345	e 15 24	P	—	—	—	—	—
Pasadena	Z.	111·5	345	e 15 23	P	—	—	—	—	—
Tucson		111·5	339	i 15 51	P	—	—	—	—	—
Palomar	Z.	112·0	345	e 15 30	P	—	—	—	—	—

Additional readings :—
Helwan PPPEZ = +3m.57s., P_cPZ = +7m.22s., SSN = +8m.19s.
Warsaw eZ = +5m.41s., eN = +5m.44s., iN = +10m.24s.
Triest ePPP = +7m.19s., eSS = +12m.40s.
Potsdam eE = +11m.7s., eN = +11m.19s.
College i = +11m.18s. and +11m.51s.
Harvard eEZ = +30m.2s., eZ = +30m.15s.
St. Louis eN = +33m.40s.
Long waves were also recorded at Kew and De Bilt.

July 6d. Readings also at 0h. (near Berkeley (2), San Francisco (2), near Tuai, and La Paz), 1h. (Mizusawa), 2h. (Rome, Helwan, Ksara, Zurich, Sverdlovsk, La Paz, Tashkent, and Baku), 4h. (La Plata), 7h. (near Granada), 10h. (Warsaw, Sofia, Istanbul, Triest, and Rome), 14h. (near Triest), 16h. (Tuai, Hastings, near Wellington, and New Plymouth), 17h. (St. Louis), 21h. (San Juan, Tucson, Pasadena, Riverside, Mount Wilson, Philadelphia, Harvard, Triest, and St. Louis).

July 7d. Readings at 0h. (La Paz), 1h. (Fresno), 5h. (Tucson and Ksara), 7h. (near Almeria, Toledo, and Granada), 8h. (near Berkeley), 13h. (near Branner, Lick, San Francisco, and Berkeley), 15h. (near Triest (2)), 18h. (Mount Wilson, La Jolla, Pasadena, Palomar, Riverside, San Juan, Tucson, and Fresno), 22h. (La Paz), 23h. (Harvard, Tucson, and near Algiers).

July 8d. 10h. 4m. 56s. Epicentre 37°·5N. 118°·5W. (as on 1940 Feb. 24d. and see below).

$A = -·3795$, $B = -·6989$, $C = +·6062$; $\delta = -4$; $h = -1$;
$D = -·879$, $E = +·477$; $G = -·289$, $H = -·533$, $K = -·795$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fresno	N.	1·3	233	e 0 25	0	i 0 57	+13	—	—	—
Lick		2·5	266	e 0 43	0	e 1 20	+ 6	—	—	—
Branner		2·9	268	e 0 52	+ 4	i 1 35	S_g	—	—	—
Berkeley		3·0	277	e 0 30	−20	i 1 28	+ 1	—	—	—
San Francisco		3·2	275	e 0 54	+ 2	e 1 32	0	—	—	—
Tucson		8·2	128	e 1 55	− 8	e 3 30	− 8	e 2 34	P_g	i 4·8

Additional readings :—
Lick eSE = +1m.25s.
Berkeley iPN = +34s., iE = +38s., ePZ = +43s., ePN = +51s., iN = +59s., iSNZ = +1m.33s., iE = +1m.44s.
San Francisco eSEN = +1m.37s.
Tucson e = +2m.17s., eS_g = +4m.41s.
Long waves were also recorded at San Juan.

July 8d. 10h. 57m. 37s. Epicentre 37°·5N. 118°·5W. (as at 10h. 4m.).

$A = -·3795$, $B = -·6989$, $C = +·6062$; $\delta = -4$; $h = -1$;
$D = -·879$, $E = +·477$; $G = -·289$, $H = -·533$, $K = -·795$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fresno	N.	1·3	233	e 0 21	− 4	i 0 37	− 7	—	—	—
Haiwee		1·4	163	i 0 30	+ 3	i 0 52	+ 6	—	—	—
Lick		2·5	266	e 0 40	− 3	i 1 10	− 4	—	—	—
Santa Clara		2·7	267	e 1 1	+16	i 1 38	+19	—	—	—
Branner		2·9	268	i 0 47	− 1	i 1 20	− 4	—	—	—
Berkeley		3·0	277	i 0 46	− 4	i 1 10	−17	—	—	—
Santa Barbara		3·2	198	i 0 54	+ 2	i 1 45	S_g	—	—	—
San Francisco		3·2	275	e 0 48	− 4	e 1 24	− 8	—	—	—
Mount Wilson		3·3	174	i 0 57	+ 4	i 1 48	S_g	—	—	—
Pasadena		3·4	175	i 0 57	+ 2	i 1 48	S^*	—	—	—
Riverside		3·6	165	i 1 1	+ 3	i 1 57	S_g	—	—	—
Ukiah		4·1	296	—	—	e 2 16	S_g	—	—	e 2·6
Palomar	Z.	4·4	162	i 1 10	0	—	—	—	—	—
Salt Lake City		6·1	55	—	—	e 3 16	S_g	—	—	—
Tucson		8·2	128	e 2 5	+ 2	e 3 46	+ 8	e 2 45	P_g	e 4·9

Additional readings :—
Berkeley eE = +55s., eN = +59s., 1 = +1m.4s., iS^*E = +1m.17s., iS^*N = +1m.21s., iS_gZ = +1m.28s., iN = +1m.43s. and +1m.47s.
San Francisco eE = +59s., eN = +1m.2s., eSEN = +1m.49s.
Tucson eS_g = +4m.50s.
Long waves were also recorded at Bozeman.

July 8d. Readings also at 2h. (Rome), 4h. (near Frunse, Andijan, and Almata), 6h. (Berkeley, Ksara, Scoresby Sund, Wellington, Tucson, Huancayo, and Pasadena), 7h. (Huancayo, Tucson, La Paz, Mizusawa, and Tananarive), 8h. (Ksara, near Tuai, Wellington, Berkeley, Pasadena, Scoresby Sund, Helwan, and New Plymouth), 10h. (San Juan, and near Tananarive), 11h. (La Paz and near Mizusawa), 14h. (near Tananarive), 15h. (Tucson, Mount Wilson, Palomar, Haiwee, Riverside, Tinemaha, Osaka, Mizusawa, Pasadena, Frunse, Andijan, Almata, and Sverdlovsk), 16h. (Prague), 17h. (near Branner), 19h. (New Plymouth, Wellington, and Potsdam), 20h. (Warsaw, Sotchi, Baku, Istanbul, Potsdam, Sverdlovsk, Helwan, Ksara, and Rome).

July 9d. Readings at 3h. (San Juan), 10h. (San Juan, San Francisco, and Berkeley), 14h. (New Plymouth and near Tuai), 17h. (near Tuai, Huancayo, and La Paz), 19h. (near Branner), 23h. (La Paz).

July 10d. 5h. 49m. 52s. Epicentre 44°·9N. 130°·4E.

Moderate at Hakodate, Urakawa, Hatinohe, slight at Wazima, Aomori, Obihiro, Miyako, Kusima, Utunomiya, Onahama, and Yokohama.

Epicentre 44°·8N. 130°·6E. Radius greater than 300kms. Depth 560kms.

See Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1940, Tokyo 1950, pp. 19-21, macroseismic chart p. 19.

$A = -\cdot4606$, $B = +\cdot5412$, $C = +\cdot7035$; $\delta = -4$; $h = -3$;
$D = +\cdot762$, $E = +\cdot648$; $G = -\cdot456$, $H = +\cdot536$, $K = -\cdot711$.

Tables for depth of focus 0·070 have been used.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vladivostok	2·1	149	i 1 17	+13	e 2 14	+19	—	—	—
Keizyo	7·8	200	2 0k	+ 5	3 34	+ 8	—	—	—
Mori	7·9	107	2 0	+ 4	3 35	+ 7	—	—	—
Zinsen	7·9	202	2 3k	+ 7	3 29	+ 1	—	—	—
Sapporo	8·0	99	2 2k	+ 5	3 36	+ 6	—	—	—
Aomori	8·7	114	2 8k	+ 3	3 52	+ 8	—	—	—
Dairen	8·8	231	2 16k	+10	4 38	+52	—	—	—
Akita	8·9	122	2 9k	+ 2	3 50	+ 2	—	—	—
Wazima	9·0	144	2 8k	0	3 50	+ 1	—	—	—
Aikawa	9·1	137	2 8	− 1	3 46	− 5	—	—	—
Taikyu	9·1	189	2 14k	+ 5	3 57	+ 6	—	—	—
Hatinohe	9·3	114	2 11k	0	3 56	+ 1	—	—	—
Toyama	9·7	145	2 15	0	4 2	− 1	—	—	—
Mizusawa	9·8	122	2 17	+ 1	14 7	+ 2	—	—	—
Hamada	10·1	172	2 20k	0	4 12	+ 1	—	—	—
Miyako	10·1	118	2 20k	0	4 10	− 1	—	—	—
Nagano	10·1	142	2 20k	0	4 12	+ 1	—	—	—
Sendai	10·3	126	2 20	− 2	4 12	− 3	—	—	—
Hukusima	10·4	130	2 22	− 1	4 16	− 1	—	—	—
Hirosima	10·6	171	3 27	+62	5 19	+58	—	—	—
Gihu	10·7	151	2 24k	− 2	4 22	− 1	—	—	—
Kyoto	10·7	156	2 26k	0	4 22	− 1	—	—	—
Maebasi	10·8	139	2 24	− 3	4 23	− 2	—	—	—
Kobe	10·9	158	2 27k	− 1	4 21	− 6	—	—	—
Nagoya	10·9	150	2 27k	− 1	4 32	+ 5	—	—	—
Nemuro	11·0	93	2 35a	+ 6	4 35	+ 6	—	—	—
Osaka	11·0	157	2 28	− 1	4 28	− 1	—	—	—
Utunomiya	11·0	136	2 29	0	4 20	− 9	—	—	—
Kameyama	11·1	153	2 29k	− 1	4 29	− 2	—	—	—
Kumagaya	11·1	139	2 28k	− 2	4 38	+ 7	—	—	—
Sumoto	11·1	160	2 30k	0	4 27	− 4	—	—	—
Izuka	11·2	178	2 33k	+ 2	4 35	+ 2	—	—	—
Kohu	11·2	143	2 30	− 1	4 29	− 4	—	—	—
Matuyama	11·2	170	2 28k	− 3	4 31	− 2	—	—	—
Onahama	11·2	131	2 31	0	4 37	+ 4	—	—	—
Hukuoka	11·3	180	2 35k	+ 3	4 37	+ 2	—	—	—
Wakayama	11·3	159	2 32k	0	4 27	− 8	—	—	—
Hunatu	11·4	143	2 32	− 1	4 34	− 2	—	—	—
Kakioka	11·4	136	2 30k	− 3	4 34	− 2	—	—	—
Mito	11·4	134	2 29k	− 4	4 24	−12	—	—	—
Tukubasan	11·4	136	2 31	− 2	4 28	− 8	—	—	—
Hamamatu	11·6	148	2 36a	0	4 38	− 2	—	—	—
Koti	11·6	167	2 34	− 2	4 37	− 3	—	—	—
Tokyo Cen. Met. Ob.	11·6	139	2 36	0	4 43	+ 3	—	—	—
Owase	11·7	155	2 15	−22	4 37	− 5	—	—	—
Misima	11·8	143	2 35k	− 3	4 40	− 4	—	—	—
Yokohama	11·8	140	2 34	− 4	4 35	− 9	—	—	—
Omaesaki	11·9	147	2 37	− 2	—	—	—	—	—
Muroto	12·0	164	2 38	− 2	4 48	0	—	—	—
Kumamoto	12·1	179	2 41k	0	4 50	0	—	—	—

Continued on next page

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nagasaki		12·1	182	2 45k	+ 4	5 7	+17	—	—	—
Tyosi		12·1	135	2 39	− 2	4 46	− 4	—	—	—
Unzendake		12·1	180	2 32	− 9	4 42	− 8	—	—	—
Siomisaki		12·2	158	2 40k	− 2	4 48	− 4	—	—	—
Mera		12·3	142	2 42	− 1	—	—	—	—	—
Simidu		12·3	170	2 42	− 1	4 49	− 5	—	—	—
Tomie		12·4	186	2 46	+ 2	4 58	+ 2	—	—	—
Miyazaki		13·0	176	2 50k	0	5 7	− 1	—	—	—
Kagosima		13·3	179	2 54k	0	—	—	—	—	—
Hatidyozima		13·9	145	2 59	− 1	5 25	0	—	—	—
Yakusima		14·4	180	3 3k	− 2	5 32	− 2	—	—	—
Zi-ka-wei		15·4	210	i 3 12	− 3	5 38	−15	i 3 38	pP	—
Nake		16·5	183	3 23	− 3	6 6	− 7	—	—	—
Irkutsk		18·7	303	i 3 52	+ 4	i 7 2	+10	—	—	9·1
Naha		18·8	190	3 48	− 1	6 47	− 7	—	—	—
Titizima		20·1	148	3 58	− 3	7 7	−11	—	—	—
Miyakozima		20·5	194	4 1	− 4	—	—	—	—	—
Isigakizima		21·2	196	4 2	−10	—	—	—	—	—
Sintiku		21·5	203	4 14	0	—	—	—	—	—
Karenko		22·1	202	4 18	− 2	—	—	—	—	—
Taityu		22·2	203	4 18	− 3	7 12	−39	—	—	—
Arisan		22·7	203	4 15	−10	—	—	—	—	—
Taito		23·4	202	5 30	+58	7 54	−16	—	—	—
Hong Kong		26·2	216	4 53	− 4	7 36	?	—	—	8·8
Phu-Lien		31·1	227	i 5 37	− 3	i 12 56	SS	7 13	PP	—
Manila		31·3	196	i 5 39k	− 2	i 10 13	− 1	—	—	i 14·6
Semipalatinsk		33·7	299	i 6 2	+ 1	i 10 52	+ 1	i 13 44	SS	—
Palau		37·6	174	8 17	PP	—	—	—	—	—
Almata		37·9	288	i 6 38	+ 2	—	—	8 19	pP	—
Frunse		39·6	288	6 52	+ 2	12 26	+ 7	i 16 2	SS	—
Calcutta	N.	40·9	251	i 6 56	− 5	i 12 36	− 2	i 13 17	sS	—
Andijan		42·0	286	i 7 11	+ 1	12 59	+ 5	i 8 45	PcP	—
Dehra Dun	N.	43·2	269	e 7 9	−10	e 13 3	− 8	e 9 9	pP	e 16·7
Sverdlovsk		43·7	312	i 7 24	+ 1	i 13 15	− 3	i 9 11	pP	26·5
Tashkent		43·8	289	i 7 25	+ 1	13 17	− 2	i 9 10	pP	e 16·2
Agra		45·1	265	7 30	− 4	13 33	− 5	9 39	PcP	—
College		47·2	36	e 7 49	− 1	i 14 5	− 2	e 9 51	pP	e 20·3
Hyderabad	E.	51·2	256	8 7	−13	14 48	−13	9 55	pP	22·2
Bombay		54·0	261	i 8 39	− 1	i 15 38	− 1	i 9 48	pP	22·6
Sitka		55·7	42	i 8 53a	+ 1	i 16 10	+ 9	i 10 46	PP	e 23·8
Moscow		56·0	317	i 8 52	− 2	i 15 59	− 6	10 44	pP	—
Kodaikanal	E.	56·9	250	i 8 59k	− 1	i 16 7	−10	i 10 52	PP	24·1
Pulkovo		57·0	324	i 8 59	− 2	16 11	− 7	i 10 54	pP	—
Baku		57·1	297	e 9 2	0	i 16 17	− 2	—	—	—
Colombo	E.	57·8	245	9 2	− 4	16 2	−26	—	—	—
Grozny		58·0	302	i 9 10	+ 2	—	—	—	—	—
Sotchi		61·5	305	9 31	0	17 9	− 6	—	—	—
Upsala		62·1	329	e 9 31	− 4	17 7	−15	11 28	pP	e 34·1
Honolulu		62·5	87	i 9 35a	− 3	e 17 14	−13	i 11 42	pP	e 26·1
Scoresby Sund		63·2	351	i 9 43a	+ 1	i 17 33	− 3	e 11 36	pP	i 26·3
Yalta		64·2	308	9 47	− 2	17 42	− 6	—	—	—
Sebastopol		64·4	309	i 9 49	− 1	—	—	12 29	PP	—
Warsaw		65·8	321	9 58k	− 1	i 18 2	− 5	i 11 53	pP	e 26·1
Bergen		65·9	334	e 9 59	0	i 18 5	− 3	—	—	e 35·1
Victoria		66·8	45	10 1	− 4	i 18 22	+ 3	12 8?	pP	27·1
Copenhagen		67·0	328	i 10 5k	− 1	i 18 16	− 5	12 0	pP	—
Seattle		67·9	45	e 10 17	+ 5	e 18 27	− 5	e 12 14	pP	—
Cluj		68·3	316	i 9 7	−67	e 17 26	−70	9 49	PcP	—
Bucharest		68·6	312	e 10 15	− 1	i 18 34	− 6	i 22 1	SS	29·1
Istanbul		69·2	307	10 12	− 7	19 39	sS	12 7	pP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Potsdam		69·2	325	i 10 17 a	− 2	i 18 39	− 8	i 12 17	pP	—
Hamburg		69·5	328	e 10 23 k	+ 2	i 18 48	− 2	e 12 21	pP	e 31·1
Heligoland		69·9	330	e 10 26	+ 2	i 18 47	− 8	e 19 24	sS	e 29·1
Ksara		69·9	298	i 10 23 k	− 1	18 57	+ 2	i 12 18	pP	—
Budapest	E.	70·0	317	10 26	+ 2	18 56	0	12 26	PP	—
	N.	70·0	317	10 27	+ 3	i 18 59	+ 3	12 36	PP	28·1
Kecskemet	Z.	70·1	316	10 12	−13	18 45	−12	e 12 12	PP	—
Prague		70·3	323	10 26	0	18 59	0	e 19 32	PS	—
Spokane		70·3	42	i 10 21	− 5	i 19 2	+ 3	e 32 8	SS	—
Kalocsa		70·7	316	10 31	+ 3	19 6	+ 2	11 8	P_cP	—
Aberdeen		70·8	335	i 10 30	+ 1	i 19 2	− 3	i 12 32	pP	26·5
Jena		70·9	324	e 10 27	− 2	i 19 8	+ 2	i 12 29	pP	e 32·1
Sofia		71·2	312	e 10 32	+ 1	i 19 5	− 4	i 12 33	pP	30·2
Saskatoon		71·6	34	10 37	+ 3	19 11	− 3	e 22 33	?	28·1
Edinburgh		72·2	335	—	—	19 10	−10	20 13	PS	—
De Bilt		72·5	328	i 10 40 a	+ 1	i 19 19	− 5	i 12 39	pP	—
Ukiah		73·4	51	e 10 40	− 4	e 19 27	− 7	e 12 48	pP	e 30·3
Stuttgart		73·5	324	i 10 44 a	0	i 19 28	− 7	e 12 40	pP	e 36·6
Stonyhurst		73·7	333	e 10 48	+ 2	i 19 33	− 4	e 12 48	pP	—
Butte		73·8	40	e 10 46	0	e 19 36	− 2	i 12 49	pP	e 30·6
Uccle		73·8	329	e 10 45 a	− 1	i 19 31	− 7	e 12 40	pP	e 41·1
Triest		73·9	320	e 10 44 k	− 3	i 19 30	− 9	i 12 47	pP	e 30·6
Ivigtut		74·3	359	e 10 46	− 3	i 19 35	− 9	e 13 50	PP	i 30·8
Bozeman		74·7	40	e 10 49 a	− 2	i 19 43	− 5	e 12 53	pP	e 30·6
Berkeley		74·8	53	i 10 50	− 2	i 19 55	+ 6	i 12 55	pP	e 34·9
Chur		74·8	323	e 10 52	0	e 19 42	− 7	—	—	—
San Francisco		74·8	53	e 10 51	− 1	e 19 41	− 8	e 13 48	PP	—
Brisbane		74·9	159	i 10 56	+ 4	i 19 38	−12	—	—	—
Zurich		74·9	324	e 10 50 a	− 2	e 19 51	+ 1	i 12 50	pP	—
Kew		75·0	331	i 10 53	0	i 19 44	− 7	i 12 53	pP	27·1
Basle		75·1	324	e 10 53	− 1	e 19 49	− 3	i 12 57	pP	—
Oxford		75·1	332	i 10 51	− 3	i 19 45	− 7	12 56	pP	—
Branner		75·2	53	e 10 52	− 2	e 19 49	− 4	—	—	—
Santa Clara		75·3	53	i 11 11	+16	i 20 12	+18	i 14 15	PP	—
Helwan		75·4	297	i 10 53 a	− 2	19 43	−13	12 53	pP	—
Lick		75·5	53	i 10 54	− 2	e 19 53	− 4	—	—	—
Fresno	N.	77·0	51	e 11 2	− 2	e 20 32	+19	—	—	—
Rome		77·3	318	i 11 6 a	0	i 20 10	− 6	i 13 7	pP	—
Tinemaha		77·5	50	i 11 8 a	+ 1	—	—	i 13 18	pP	—
Perth		77·6	193	i 12 43	pP	20 18	− 1	i 14 13	PP	—
Salt Lake City		78·1	44	e 11 9 a	− 1	e 20 21	− 3	e 13 18	pP	e 32·2
Apia		78·4	123	e 11 9	− 2	e 20 19	− 8	e 24 50	SS	—
Clermont-Ferrand		78·4	325	e 11 10	− 1	—	—	—	—	—
Haiwee		78·4	50	i 11 11	0	e 20 23	− 4	e 40 36	SKSPKP	—
Santa Barbara		78·7	53	i 11 12 a	− 1	e 20 29	− 1	i 13 19	pP	—
Mount Wilson		79·8	52	i 11 18 a	− 1	e 20 35	− 7	i 13 24	pP	—
Pasadena		79·8	52	i 11 17 a	− 2	i 20 35	− 7	i 13 20	pP	—
Riverside		80·3	52	i 11 20 a	− 1	e 20 41	− 6	i 13 34	pP	—
Riverview	E.	80·6	163	—	—	e 20 38	−12	—	—	—
Palomar	Z.	81·1	52	i 11 23 a	− 3	i 20 52	− 3	i 13 27	pP	—
La Jolla		81·2	52	i 11 24 a	− 2	e 20 51	− 5	i 13 30	pP	—
Lincoln		84·8	34	e 11 44	0	e 21 10	−21	e 13 49	pP	e 34·7
Tucson		85·2	49	i 11 45 a	− 1	i 21 28	− 7	i 13 55	pP	e 35·6
Algiers		85·8	320	e 11 54	+ 5	i 21 38	− 3	i 13 51	pP	—
Toledo		86·2	327	i 11 49	− 2	i 21 27	−17	—	—	—
Seven Falls		86·5	15	11 50	− 2	e 21 40	− 7	27 42	SS	—
Chicago, J.S.A.		87·1	29	i 11 53	− 2	i 21 44	− 9	—	—	—
Chicago, U.S.C.G.S.		87·2	29	i 11 54	− 2	i 21 21	−33	e 13 58	pP	i 34·6
Ottawa		87·2	19	11 54	− 2	21 50	− 4	14 52	PP	34·6
Toronto		87·9	22	12 0	+ 1	21 29	−31	e 15 8?	PP	—
Almeria		88·1	324	e 11 50	−10	21 15	−47	12 5	?	35·1
Granada		88·3	325	i 12 0 a	− 1	i 21 38	−26	i 14 4	pP	42·5
Buffalo		88·7	22	i 12 3	0	i 23 5	sS	i 14 7	pP	—
Florissant		88·9	31	i 12 3	− 1	i 22 10	+ 1	i 14 7	pP	—
St. Louis		89·1	31	i 12 2	− 2	i 22 14	+ 3	i 22 6	SP	—
Lisbon		89·2	329	12 7	+ 2	22 15	+ 3	14 14	pP	31·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
East Machias		89·3	14	e 12 9	+ 4	e 22 4	− 9	e 14 13 pP	e 36·5
San Fernando		90·0	326	14 13	pP	i 21 49	−30	i 25 55 PPS	—
Harvard		90·8	16	i 12 11	− 1	i 22 17	− 9	i 14 19 pP	—
Pennsylvania		91·0	21	i 12 13	0	i 22 18	−10	i 13 54 pP	—
Weston		91·0	16	i 12 12	− 1	i 21 18	?	15 6 ?	—
Fordham		91·9	18	12 9	− 8	—	—	— —	—
Philadelphia		92·5	19	e 12 17	− 3	e 22 30	−10	e 14 13 pP	e 43·2
Arapuni		92·8	146	—	—	22 50	+ 7	i 26 38 ?	—
Georgetown		93·0	21	i 12 20	− 2	i 21 58	−47	e 14 26 pP	—
Wellington		94·6	148	12 23	− 7	22 48	−10	14 43 pP	—
Christchurch		95·7	151	12 27	− 8	23 1	− 7	14 42 pP	—
Columbia		96·4	26	e 15 41	sP	e 22 18	[−10]	e 16 52 PP	e 39·4
Bermuda		102·0	12	e 17 30	PP	e 22 48	[− 8]	e 19 21 pPP	—
San Juan		115·3	17	e 18 52	PP	e 23 56	[+ 5]	e 21 6 pPP	e 46·8
Balboa Heights		120·0	34	e 17 8?	[−48]	—	—	— —	—
Cape Town		127·7	256	i 20 33	PP	i 24 32	[+ 2]	e 30 45 PS	—
Huancayo		140·5	42	e 18 25	[−10]	e 31 7	PS	i 21 17 SKP	i 57·6
La Paz	Z.	147·7	34	i 18 44	[− 2]	i 25 2	[− 5]	22 28 PP	69·7
Rio de Janeiro		157·4	344	e 21 38	?	—	—	— —	—
La Plata	E.	168·2	34	19 20	[+10]	38 8	SPP	20 26 pPKP	—
	N.	168·2	34	20 21	[+71]	34 2	SKSP	30 8 pPPP	—
	Z.	168·2	34	19 15	[+ 5]	—	—	20 21 pPKP	—

Additional readings :—
Zi-ka-wei iN = +3m.24s., iE = +4m.6s., iN = +4m.44s., +5m.56s., and +14m.8s.
Hong Kong ? = +7m.47s.
Calcutta iN = +7m.21s., eSSN = +14m.48s.
Andijan isS = +16m.14s.
Dehra Dun e?N = +16m.2s.
Sverdlovsk isS = +16m.21s.
Agra iE = +7m.38s., iN = +7m.43s. and +13m.40s., SSE = +16m.9s., sSS?N = +16m.26s., sSSE = +16m.30s., SSS = +17m.5s., S_cSE = +17m.24s.
College eP_cP = +9m.10s., ePP = +10m.12s., esP = +10m.49s., eS_cP = +12m.16s., esPP = +12m.33s., i = +14m.16s., eS_cS = +16m.32s., isS = +17m.37s., iSS = +18m.0s.
Hyderabad PSE = +15m.1s., SSE = +18m.1s.
Bombay iE = +9m.12s. and +9m.30s., iSP = +10m.31s., iPP = +10m.54s., iE = +16m.54s., isS = +17m.34s., i = +18m.45s., iSS = +19m.36s., i = +20m.51s.
Sitka i = +9m.1s., iPP = +11m.15s., isP = +11m.52s., iS_cP = +12m.56s., iS_cS +17m.47s., esS = +19m.16s., iSS = +20m.43s.
Moscow sS = +19m.12s.
Kodaikanal iSSE = +19m.29s.
Upsala iPP = +12m.2s., PPPE = +13m.45s., PPPN = +13m.48s., iN = +18m.24s., iE = +18m.30s., esSN = +20m.34s., iSS = +21m.26s.
Honolulu i = +9m.39s. and +9m.47s., iP_cP = +9m.59s., i = +11m.52s., ePP = +12m.8s., isP = +12m.31s., ipPP = +13m.30s., isPP = +14m.55s., e = +17m.18s., i = +17m.25s., iS_cS = +18m.15s., esS = +20m.42s., eSS = +21m.49s.
Scoresby Sund i = +9m.59s., eP_cP = +10m.11s., ePP = +12m.19s., esP = +12m.32s., epPP = +13m.53s., ePPP = +14m.7s., i = +17m.38s., iS_cS = +18m.20s., isS = +20m.55s., isSS = +25m.18s.
Warsaw PE = +10m.1s., iZ = +12m.39s., +13m.33s., and +14m.24s., iSZ = +18m.5s., iN = +19m.7s., iSSN = +21m.34s., eSSZ = +21m.39s.
Victoria iN = +19m.19s., e = +21m.31s., iE = +23m.4s.
Copenhagen +12m.44s. and +14m.32s., i = +18m.21s., +19m.8s., +19m39s. +20m.8s., and +21m.28s.
Seattle eP_cP = +10m.34s., ePP = +13m.13s., epPP = +14m.43s., ePPP = +15m.6s., i = +18m.52s., eS_cS = +19m.19s., iSS = +23m.24s., iSSS = +27m.9s.
Cluj PPN = +11m.19s., N = +17m.22s., iSN = +17m.29s., PSE = +17m.32s., PSN = +17m.35s., S_cSN = +18m.56s., SSN = +21m.33s.
Bucharest iZ = +10m.18s. and +10m.22s., iPPNZ = +12m.16s., iE = +16m.23s., ePSZ = +18m.39s., iPSE = +18m.42s., iZ = +18m.49s., iN = +19m.29s.
Potsdam iPN = +10m.20s., iPPN = +13m.2s., iPPE = +13m.6s., iPPNW = +13m.9s., iN = +14m.0s., ipPPZ = +14m.51s., ipPPE = +14m.55s., isPPN = +15m.58s., isPPNW = +16m.1s., iZ = +16m.15s., iE = +16m.59s., iSE = +18m.44s., iSZ = +18m.47s., iZ = +19m.4s., iS_cSNW = +19m.16s., iS_cSE = +19m.20s., iSPNW = +19m.26s., iSPE = +19m.29s., iSPZ = +19m.36s., iN = +19m.47s., iNW = +19m.51s., iPPSZ = +20m.11s., iNW = +20m.39s., iN = +21m.52s., iZ = +21m.56s., iE = +22m.1s., isSNW = +22m.7s., iE = +23m.5s. and +23m.18s., iSSN = +23m.38s., isSSN = +26m.23s.
Hamburg eN = +12m.56s., eZ = +14m.55s., iN = +19m.24s., eE = +22m.8s.
Heligoland iN = +18m.55s., eEN = +22m.14s.
Ksara sS = +22m.19s.
Budapest E. P_cS = +15m.4s., e = +21m.36s., i = +22m.21s.

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Budapest N. P_cP = +11m.14s., i = +13m.28s., P_cS = +15m.1s., PS = +19m.9s., SKS = +20m.4s., i = +22m.31s., SS = +23m.1s.
Kecskemet iZ = +10m.18s.
Spokane eSSSE = +27m.48s.
Kalossa E. PP = +12m.44s., P_cS = +15m.8s., PS = +19m.30s., S_cS = +20m.41s., e = +23m.10s.
Kalossa N. e = +15m.1s. and +19m.34s., i = +20m.14s., e = +20m.50s.
Aberdeen iE = +11m.12s. and +19m.9s., iPSEN = +19m.43s., iEN = +22m.30s. and +23m.31s., L_gN = +26m.22s.
Jena iP = +10m.32s., iN = +12m.25s., iE = +18m.59s., iN = +19m.36s. and +19m.44s.
Sofia iPEN = +10m.35s., iN = +13m.23s., iPS?EN = +19m.13s., iE = +19m.40s., iN = +19m.50s., iEN = +22m.30s.
Edinburgh PPS = +20m.55s.
De Bilt iPP = +13m.33s., ipPP = +15m.20s., iS_cS = +19m.59s., esS = +22m.44s., esSS = +27m.8s. ?
Ukiah eP_cP = +10m.48s., ePP = +13m.42s., epPP = +15m.23s., eS_cS = +19m.41s., eSP = +20m.12s., esS = +22m.48s., eSS = +24m.26s., esSS = +27m.32s.
Stuttgart i = +10m.51s., iZ = +10m.58s., iP_cP = +11m.6s., eZ = +11m.54s., ipP = +12m.48s., ePPE = +13m.37s., iPPZ = +13m.45s., iPPNE = +13m.48s., eZ = +14m.32s., eNE = +14m.36s., iNE = +14m.41s., epPPE = +15m.8s., iS = +19m.36s., iS_cSZ = +20m.1s., iS_cSNE = +20m.6s., ePSN = +21m.38s., isSN = +22m.59s., eSSEN = +24m.37s., esSSE = +27m.38s., eN = +29m.48s.
Stonyhurst i = +13m.52s., sS = +23m.3s.
Butte i = +10m.52s., iPP = +13m.48s., ePPP = +15m.41s., i = +19m.43s., eSP = +20m.11s., iSS = +23m.13s., esSP = +23m.58s., eSSS = +28m.31s.
Uccle iPZ = +10m.48s., ipPZ = +12m.48s., iPPZ = +13m.42s., isPPZ = +15m.37s., i = +19m.42s., iN = +19m.47s., iSP = +20m.10s., isSPE = +23m.2s., iE = +27m.26s. and +31m.4s.
Triest iE = +11m.34s. and +12m.1s., iPP = +13m.51s., iE = +19m.36s., +19m.44s., and +21m.5s., isS = +23m.5s., iSS = +24m.42s., iSSS = +27m.58s.
Ivigtut i = +19m.42s., iS_cS = +19m.48s., isS = +23m.8s., esPS = +23m.50s., iSS = +24m.35s., isSS = +28m.5s., eSSS = +28m.35s.
Bozeman iP_cP = +11m.0s., iPP = +13m.55s., epPP = +15m.33s., esPP = +16m.31s., i = +19m.49s., isS = +23m.17s., iSS = +24m.55s., iSSS = +29m.21s.
Berkeley iZ = +12m.44s., eE = +12m.54s., iZ = +13m.34s., iPPZ = +13m.50s., eSE = +19m.42s., eN = +23m.0s., eZ = +23m.8s., iN = +24m.1s., iE = +24m.8s., eN = +26m.25s., iE = +28m.38s. and +28m.54s., eN = +31m.16s.
San Francisco eN = +10m.56s., eEN = +11m.0s., eE = +11m.4s., iEN = +11m.22s., eE = +11m.34s., iN = +11m.38s., eE = +13m.51s., eSE = +19m.45s.
Zurich ePP = +13m.49s., eSS = +22m.33s.
Kew eEZ = +11m.37s., iSPZ = +13m.52s., epPPZ = +15m.32s., iS_cSE = +19m.52s., iE = +20m.18s., iZ = +20m.28s., eEZ = +20m.48s., ePSE = +21m.36s., iZ = +22m.0s., isSZ = +22m.8s., e = +23m.22s., eSSE = +24m.52s.
Basle eSS = +23m.20s.
Branner iN = +11m.1s.
Santa Clara esSE = +23m.14s., eSSE = +25m.12s.
Helwan SKPZ = +13m.56s., PPZ = +15m.38s., PSE = +22m.46s., PPSZ = +24m.26s.
Rome iZ = +11m.22s., i = +13m.45s., iPP = +14m.13s., PPP = +16m.6s., i = +19m.41s., iPS = +20m.55s., isS = +23m.22s., iSSE = +25m.43s., iE = +31m.39s., and +36m.49s.
Tinemaha i = +11m.16s., eSKP,PKPZ = +40m.28s.
Perth i = +16m.43s.
Salt Lake City esP = +14m.21s., epPP = +16m.21s., e = +20m.31s. and +20m.42s., esS = +23m.57s., esSP = +24m.36s., eSS = +26m.4s., eSSS = +29m.21s.
Clermont-Ferrand i = +11m.13s.
Santa Barbara eZ = +40m.33s.
Mount Wilson eSKP,PKPZ = +40m.7s.
Pasadena isPZ = +14m.16s., eSKP,PKPZ = +40m.8s., eZ = +40m.21s., iZ = +40m.35s.
Riverside eSKP,PKPZ = +40m.24s., iZ = +40m.34s.
Riverview eN = +20m.44s.
Palomar iSPZ = +14m.42s., iZ = +29m.46s., eSKP,PKPZ = +40m.12s., iZ = +40m.37s., iPKP,PKP,PKPZ = +58m.20s.
Lincoln iP_cP = +11m.51s., ePP = +15m.10s., i = +21m.19s., iS = +21m.29s., isS = +25m.6s., eSS = +27m.27s., esSS = +30m.51s.
Tucson iP_cP = +11m.48s., i = +11m.59s., isP = +14m.47s., iPP = +15m.22s., ipPP = +17m.7s., iPPP = +17m.18s., isPP = +18m.16s., iSKS = +21m.12s., i = +21m.45s., isS = +25m.12s., iSS = +27m.36s., iPKKP = +28m.21s., iSSS = +31m.16s., iSKKP = +39m.57s., i = +40m.21s.
Algiers i = +13m.57s., iPPP = +14m.47s. and +17m.19s., e = +20m.23s. and +20m.28s.
Seven Falls i = +21m.21s., e = +25m.17s., SSS = +30m.26s.
Chicago JSA i = +12m.2s.
Chicago U.S.C.G.S. i = +12m.1s., esP = +14m.53s., ePPP = +18m.0s., isS = +25m.21s.
Ottawa e = +18m.16s., +25m.28s., and +27m.48s., eN = +31m.31s.
Toronto eN = +18m.30s., e = +25m.32s. and +28m.8s.? eN = +31m.44s.
Almeria PP = +14m.15s., PPP = +16m.16s., S_cS = +21m.34s., SS = +25m.17s., SSS = +28m.38s.
Granada P_cP = +12m.12s., PPP = +17m.31s., pPPP = +17m.38s., PS = +22m.10s., PPS = +22m.50s., sS = +25m.25s., SS = +27m.47s., sSS = +30m.18s.

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Buffalo iPP = +15m.3s., i = +16m.0s., +35m.8s., and +49m.58s.
Florissant iZ = +15m.4s. and +15m.50s., iSKSE = +21m.38s., isSE = +25m.40s.
St. Louis iN = +12m.10s., +12m.54s., +13m.13s., and +15m.50s., i = +21m.45s.
Lisbon Z = +14m.9s. and +14m.19s., E = +14m.23s., Z = +15m.46s., PPN = +15m.52s., E = +21m.39s., SKSZ = +21m.48s., SS = +25m.56s., sSN = +26m.0s.
East Machias esP = +15m.9s., ePP = +15m.51s., ePPP = +18m.31s., eSKS = +21m.37s., eSKKS = +21m.44s., i = +22m.11s., esP = +23m.23s., isS = +25m.48s., eSS = +28m.32s., esSS = +31m.32s., eSSS = +32m.13s.
Harvard iEZ = +12m.19s., ePPZ = +15m.15s., eZ = +16m.0s., +17m.39s., and +18m.42s., eSKSE = +21m.37s., isSE = +26m.1s., eSSE = +28m.38s.
Pennsylvania i = +12m.21s., +12m.38s., and +18m.46s., e = +24m.1s., +26m.11s., and +28m.56s.
Weston SKS = +20m.47s., sSKS = +25m.2s.
Philadelphia ePP = +16m.8s., epPP = +18m.14s., iSKS = +21m.54s., esS = +25m.59s., ePKKP = +28m.54s., eSS = +29m.8s., esSS = +32m.30s.
Georgetown i = +16m.15s. and +18m.21s., isS = +25m.57s.
Wellington PPZ = +18m.51s., SS = +26m.28s.
Christchurch iZ = +15m.32s., eZ = +19m.3s., sS = +26m.47s.
Columbia epPP = +18m.52s., esPP = +19m.54s., eS = +23m.7s., e = +23m.18s., epS = +25m.42s., ePS = +25m.56s., esS = +26m.51s., esPS = +28m.12s., eSS = +30m.17s., esSS = +33m.29s.
Bermuda ePPP = +20m.12s., iS = +24m.0s., epS = +26m.36s., esPS = +29m.7s., esSS = +34m.45s.
San Juan eS = +25m.46s., esS = +29m.37s., eSP = +31m.28s., eSS = +34m.11s., esSS = +37m.4s.
Cape Town iN = +20m,37s., eN = +26m.23s., eE = +26m.28s. and +32m.17s.
Huancayo i = +18m.32s. and +21m.24s., epPP = +23m.27s., ipPKS = +24m.30s., isPKS = +25m.12s., iSKKS = +27m.12s., iPS = +32m.54s., iSS = +39m.17s., isSS = +42m.55s., iSSS = +44m.41s.
La Paz iPKP$_3$Z = +18m.54s., iZ = +20m.30s., isPKPZ = +21m.58s., iSKKS = +27m.38s., pSKS = +28m.28s., sSKS = +29m.24s., SKSP = +31m.42s., SSZ = +39m.50s., SSSZ = +44m.34s.
La Plata E. pPPP = +29m.56s., E = +32m.2s.
La Plata N. +31m.56s., SPP = +37m.56s.
La Plata Z. +20m.29s., PPP = +24m.15s.

July 10d. 13h. 10m. 56s. Epicentre 40°·5N. 43°·0E. (as on 1940 April 17d.).

A = +·5577, B = +·5201, C = +·6469; δ = +1; h = −2;
D = +·682, E = −·731; G = +·473, H = +·441, K = −·763.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grozny	3·4	36	0 46	− 9	i 1 26	−11	—	—	—
Sotchi	3·9	322	i 1 0	− 2	i 2 0	S*	i 1 12	P*	—
Baku	5·3	89	e 1 17	− 5	—	—	—	—	3·7
Yalta	7·6	304	1 55	0	3 26	+ 3	—	—	—
Ksara	8·8	223	e 2 33	P*	e 4 22	S*	—	—	—
Istanbul	10·6	274	2 37	+ 1	6 50	?	—	—	—
Bucharest	13·1	293	e 3 16	+ 6	e 5 34	− 4	—	—	9·5
Helwan	14·2	226	e 3 40	PP	—	—	—	—	i 7·3
Sofia	14·9	285	e 3 42	PP	—	—	—	—	e 8·9
Moscow	15·7	349	3 32	−12	6 18	−21	—	—	—
Kalossa	18·4	296	e 4 22	+ 4	—	—	—	—	—
Budapest	18·5	300	e 4 22	+ 3	e 8 7	+23	—	—	—
Warsaw	19·1	315	e 4 19	− 8	8 1	+ 4	—	—	e 10·1
Tashkent	19·8	77	i 4 25	−10	—	—	—	—	10·7
Sverdlovsk	19·9	30	i 4 22	−14	7 57	−18	—	—	9·6
Pulkovo	20·9	343	e 4 43	− 3	8 28	− 7	—	—	10·6
Triest	21·9	294	e 4 57	0	e 9 11	+17	i 5 21	PP	—
Andijan	22·2	80	e 4 57	− 3	—	—	—	—	—
Rome	23·0	283	5 8	+ 1	i 9 33	+19	i 5 50	PP	—
Potsdam	23·6	312	i 5 15	+ 2	i 9 38	+13	e 8 52	P$_c$P	13·1
Jena	24·1	307	e 5 21	+ 3	—	—	—	—	—
Upsala	25·0	330	—	—	e 9 54	+ 5	—	—	e 12·9
Copenhagen	25·2	318	e 5 30	+ 1	9 56	+ 4	—	—	—
Almata	25·3	73	e 5 31	+ 1	—	—	—	—	—
Stuttgart	25·3	301	e 5 32	+ 2	e 10 12	+18	e 5 59	PP	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zurich	25·6	298	e 5 34	+ 2	—	—	—	—	—
Hamburg	25·8	312	—	—	e 10 9	+ 7	—	—	e 15·1
Neuchatel	26·7	297	e 5 45	+ 2	—	—	—	—	—
Granada	36·1	281	e 8 24 a	PP	i 13 4	+19	—	—	24·0
Scoresby Sund	44·1	334	—	—	e 14 37	− 8	—	—	—

Additional readings :—
Grozny $iP^* = +49s.$, $iP_g = +52s.$, iPP = +1m.4s.
Sotchi $iS_g = +2m.4s.$
Ksara iSS = +5m.29s.
Bucharest eE = +5m.40s.
Kalossa ePN = +4m.26s.
Warsaw ePZ = +4m.24s., iPZ = +4m.27s., iPN = +4m.33s., iSN = +8m.6s.
Triest iPPP = +5m.28s., e = +6m.59s., eSS = +9m.50s.
Potsdam ePN = +5m.18s., iN = +9m.49s. and +11m.38s.
Jena ePN = +5m.32s.
Stuttgart eZ = +5m.43s.
Granada iSS = +16m.59s.
Long waves were also recorded at Bergen, Kew, Uccle, De Bilt, Aberdeen, and Vladivostok.

July 10d. Readings also at 1h. (Istanbul, Ksara, and Scoresby Sund), 2h. (near Triest (7), Warsaw, Potsdam, Rome (2), Baku, Moscow, and Sverdlovsk), 6h. (Osaka), 8h. (near Wellington), 9h. (near La Paz), 14h. (Stuttgart, Zurich, Warsaw, and Jena (2)), 15h. (Jena), 16h. (Clermont-Ferrand and near Branner), 22h. (La Plata and La Paz).

July 11d. 1h. 23m. 29s. Epicentre 39°·3N. 47°·5E.

A = +·5242, B = +·5721, C = +·6308 ; δ = −1 ; h = −1 ;
D = +·737, E = −·676 ; G = +·419, H = +·458, K = −·776.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Baku	2·2	60	e 0 38	0	1 1 7	+ 1	—	—	1·5
Grozny	4·2	345	1 17	P*	2 31	S_g	1 27	P_g	—
Sotchi	7·2	309	—	—	4 52	?	—	—	—
Ksara	10·8	244	e 3 40	+61	e 5 22	SSS	—	—	—
Samarkand	15·0	82	e 3 38	+ 3	—	—	—	—	—
Andijan	19·1	78	e 4 20	− 7	—	—	—	—	—
Sverdlovsk	19·6	21	4 28	− 4	8 2	− 6	—	—	10·5
Frunse	20·7	71	e 4 43	− 1	e 8 23	− 8	—	—	—
Pulkovo	23·2	337	—	—	e 9 24	+ 6	—	—	—
Triest	25·6	295	e 5 48	+16	e 10 23	+24	—	—	—
Rome	26·6	285	—	—	e 11 10	SS	—	—	e 17·6
Potsdam	27·0	308	—	—	e 9 49	−33	—	—	—

Additional readings :—
Ksara iSS = +6m.28s.
Potsdam eN = +11m.1s.
Long waves were also recorded at Warsaw.

July 11d. Readings also at 0h. (Balboa Heights), 3h. (Agra, Sverdlovsk, and Andijan), 4h. (De Bilt, Warsaw, and Potsdam), 7h. (Palomar, Riverside, Tucson, and Pasadena), 9h. (Sofia), 13h. (near La Paz), 14h. (near Berkeley and Jena), 17h. (Jena (2)), 18h. (St. Louis and Jena), 21h. (near Mizusawa).

July 12d. Readings at 0h. (near La Paz), 1h. (Tinemaha, Tucson, Mount Wilson, Pasadena, and Riverside), 4h. (near Triest), 8h. (Scoresby Sund), 9h. (near Branner and San Juan), 10h. (Tucson), 13h. (near Mizusawa), 16h. (Warsaw and near Berkeley), 19h. (St. Louis, Santa Clara, Pasadena, Harvard, Salt Lake City, Lincoln, Bozeman, Berkeley, Scoresby Sund, and Tucson), 21h. (Philadelphia).

July 13d. 16h. 47m. 25s. Epicentre 7°·6N. 82°·4W.

A = +·1311, B = −·9827, C = +·1314; δ = +15; h = +7;
D = −·991, E = −·132; G = +·017, H = −·130, K = −·991.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		3·0	64	i 0 51	+ 1	e 1 17	−10	—	—	1·6
San Juan		19·1	54	i 4 24	− 3	i 7 35	−22	i 4 43	PP	—
Huancayo		20·7	160	i 4 46a	+ 2	i 8 41	+10	i 5 23	PPP	i 11·6
Fort de France		22·0	70	i 4 55	− 3	i 9 3	+ 7	9 36	SS	e 11·2
Columbia		26·3	3	e 5 45	+ 6	i 10 9*	− 2	e 6 47	PPP	i 11·2
La Paz	z.	27·8	148	i 5 52a	− 1	i 7 44	?	i 7 5	PP	15·4
St. Louis		31·7	348	e 6 23	− 4	i 11 29	− 8	i 6 45	PP	15·1
Florissant		31·9	348	e 6 26	− 3	i 11 35	− 5	i 7 24	PP	—
Philadelphia		32·9	11	e 6 36	− 2	i 11 45	−11	e 7 43	PP	e 13·3
Pennsylvania		33·3	7	e 6 47	+ 6	e 12 1	− 1	—	—	e 15·3
Fordham		34·0	13	6 48	0	12 9	− 4	—	—	—
Chicago, U.S.C.G.S.		34·4	353	e 6 51	0	e 12 7	−12	e 8 5	PP	e 14·1
Chicago, J.S.A.		34·5	353	e 6 55	+ 3	e 14 55	SSS	—	—	—
Buffalo		35·3	6	i 6 59	0	i 14 32	SS	i 8 23	PP	i 19·7
Lincoln		35·4	344	e 6 58	− 2	e 12 28	− 6	e 8 24	PP	e 14·8
Harvard		36·0	15	i 7 5	0	e 12 41	− 3	—	—	e 14·6
Toronto		36·0	4	7 11	+ 6	12 41	− 3	—	—	15·6
Tucson		36·0	317	i 7 5a	0	i 12 45	+ 1	i 8 31	PP	e 14·5
Weston		36·0	14	i 7 3	− 2	i 12 38	− 6	8 28	PP	—
Ottawa		38·1	9	7 21	− 1	i 13 11	− 5	8 55	PPP	e 17·6
East Machias		39·3	18	e 7 37	+ 5	e 13 35	+ 1	e 9 2	PP	i 17·0
Shawinigan Falls		39·7	10	e 7 35	− 1	e 17 41	?	e 9 11	PP	19·6
Halifax		40·4	21	7 39	− 2	13 42	− 8	16 55	SSS	19·6
Seven Falls		40·6	13	7 43	0	13 49	− 5	16 53	SSS	19·6
La Jolla		40·9	313	e 7 46	0	—	—	—	—	—
Palomar	z.	40·9	314	i 7 47	+ 1	—	—	i 9 48	PPP	—
Riverside		41·6	314	i 7 52	+ 1	—	—	i 9 55	PPP	—
Pasadena		42·2	314	i 7 57a	+ 1	e 14 24	+ 7	e 13 45	S_cP	e 19·7
Mount Wilson		42·2	314	i 7 58a	+ 2	—	—	—	—	—
Salt Lake City		42·2	326	e 7 57k	+ 1	i 14 18	+ 1	e 9 42	PP	e 16·9
Logan		42·8	328	e 8 1	0	e 14 31	+ 5	—	—	e 21·2
Haiwee		43·1	317	i 8 4	0	—	—	—	—	—
Santa Barbara	z.	43·5	313	e 8 7	0	—	—	—	—	—
Tinemaha		43·8	318	i 8 9	0	—	—	—	—	—
Fresno	n.	44·7	316	i 8 16	0	e 14 57	+ 3	—	—	—
Bozeman		45·3	332	e 8 19	− 2	i 14 59	− 2	e 10 5	PP	i 18·3
Butte		46·2	332	e 8 26	− 2	e 15 15	0	e 9 43	P_cP	e 18·8
Lick		46·3	316	e 8 30	+ 1	e 15 20	+ 4	—	—	—
Santa Clara		46·5	316	i 8 59	+28	e 15 54	+35	—	—	—
Branner	e.	46·7	316	e 8 33	+ 1	e 14 40	−42	—	—	—
Berkeley		47·0	316	i 8 34	− 1	e 15 26	0	e 10 5	PP	e 24·0
San Francisco		47·0	316	e 8 36	+ 1	—	—	—	—	—
La Plata	e.	48·2	152	8 43	− 1	15 41	− 2	10 29	SKP	27·1
	n.	48·2	152	8 47	+ 3	15 41	− 2	19 41	SSS	26·5
	z.	48·2	152	8 48	+ 4	15 52	+ 9	10 47	PP	29·6
Ukiah		48·2	317	e 8 43	− 1	e 15 45	+ 2	e 10 0	P_cP	e 19·4
Rio de Janeiro		48·9	128	e 8 54	+ 4	i 15 43	−10	i 10 47	PP	i 23·3
Seattle		52·3	327	e 9 25	+10	e 16 40	0	e 12 23	PPP	e 21·1
Victoria		53·4	327	9 24	0	16 55	0	e 19 12	?	23·6
Ivigtut		59·2	19	e 13 34	PPP	e 18 7	− 5	—	—	e 24·3
Sitka		64·4	331	i 10 41	+ 1	e 19 5	−13	e 20 30	S_cS	e 27·5
Lisbon		72·2	53	11 26?	− 3	20 48	− .3	14 40	PP	—
College		72·8	336	e 11 35	+ 3	i 20 59	+ 1	e 26 2	SS	—
Scoresby Sund		73·3	18	e 11 29	− 6	i 20 55	− 9	e 14 8	PP	e 30·4
Honolulu		73·7	290	—	—	e 21 10	+ 2	e 25 53	SS	e 29·8
San Fernando	e.	74·4	55	—	—	e 21 20	+ 4	—	—	36·6
Toledo		76·2	51	i 11 50	− 2	i 21 48	+12	—	—	27·6
Granada		76·5	53	i 11 56	+ 2	21 50	+11	12 33	P_cP	i 35·7
Almeria		77·4	54	11 54	− 4	22 17	+28	12 11	P_cP	38·0
Edinburgh		77·7	35	—	—	i 21 48	− 4	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stonyhurst		78·0	37	e 14 51	PP	i 21 55	0	—	—	30·6
Aberdeen		78·4	33	e 14 41	PP	i 21 55	− 5	e 26 55	SS	e 35·6
Oxford		78·6	39	12 17	+12	21 57	− 5	—	—	e 36·6
Kew		79·2	39	i 12 6k	− 2	e 22 4	− 4	e 22 52	PS	—
Uccle		82·1	40	e 12 22	− 2	22 35	− 3	28 9	SS	e 37·6
Bergen		82·3	29	—	—	e 22 35?	− 5	—	—	e 36·6
De Bilt		82·6	38	e 12 25	− 1	i 22 42	− 1	i 12 38	pP	38·6
Basle		84·4	43	e 12 34	− 2	e 23 2	+ 1	—	—	—
Zurich		85·1	43	e 12 37	− 2	—	—	—	—	—
Hamburg		85·4	37	e 12 35	− 5	e 23 0	[− 3]	—	—	e 38·6
Stuttgart		85·4	41	e 12 42	+ 2	e 23 12	[+ 9]	e 28 50	SS	e 37·1
Chur		85·8	44	e 12 42	0	—	—	—	—	—
Copenhagen		86·5	34	e 12 45	− 1	23 9	[− 2]	24 22	PS	—
Jena		86·7	40	e 12 41	− 6	—	—	—	—	—
Potsdam		87·4	38	i 12 48	− 2	i 23 31	+ 1	i 13 8	P_cP	35·6
Prague		88·6	40	e 13 2	+ 6	e 23 41	− 1	—	—	e 37·6
Rome		88·6	49	i 12 55k	− 1	i 23 23	[− 1]	e 16 28	PP	—
Triest		88·9	44	i 13 0	+ 2	i 23 24	[− 2]	i 16 23	PP	e 42·4
Warsaw		92·2	37	e 13 11	− 2	i 23 43	[− 2]	e 16 15	PP	e 39·6
Pulkovo		94·6	28	e 13 26	+ 2	e 23 56	[− 3]	e 17 14	PP	e 43·8
Bucharest		97·7	43	e 17 47	PP	24 11	[− 5]	—	—	38·6
Moscow		99·9	130	e 13 53	+ 5	24 22	[− 5]	17 51	PP	41·9
Istanbul		100·9	46	17 55	PP	e 24 29	[− 2]	—	—	—
Cape Town	E.	103·2	123	—	—	24 57	[+15]	i 27 27	PS	48·0
Christchurch		106·1	227	14 42	P	25 12	[+17]	18 48	PP	49·8
Helwan		106·4	56	e 18 49	PP	i 24 56	[0]	i 27 58	PS	—
Ksara		108·6	51	e 18 40	PP	e 24 55	[−11]	e 28 1	PS	—
Sverdlovsk		109·0	20	18 48	PP	e 24 55	[−13]	e 28 23	PS	40·6
Baku		115·1	38	e 19 53	PP	e 26 52	{+11}	e 29 23	PS	54·1
Mizusawa		118·5	322	21 52	PPP	27 20	{+17}	—	—	—
Irkutsk		120·1	356	—	—	e 25 41	[− 9]	e 29 44	PS	48·6
Osaka		124·5	322	e 19 55	[+54]	27 52	{+ 8}	21 23	PP	—
Tashkent		124·8	26	e 19 3	[+ 1]	e 26 2	[− 3]	e 20 38	PP	e 37·7
Andijan		126·6	24	19 30	[+25]	—	—	—	—	—
Agra	E.	140·6	27	—	—	e 35 50	PPS	i 40 53	SS	—
Manila		148·0	313	19 53	[+ 9]	26 44	[− 7]	42 35	SS	71·6
Calcutta	N.	148·7	16	e 20 1	[+16]	—	—	—	—	—

Additional readings :—
San Juan i = +7m.55s.
Huancayo i = +4m.49s. and +7m.51s.
Columbia e = +6m.20s., i = +10m.51s.
La Paz iZ = +6m.42s. and +13m.8s., iSSZ = +13m.24s.
St. Louis iN = +7m.24s., iPPPE = +7m.31s., eN = +12m.17s., iSSE = +13m.29s., iSSSN = +14m.12s.
Florissant eN = +11m.29s., iE = +13m.1s. and +13m.31s.
Philadelphia i = +11m.52s.
Pennsylvania i = +6m.57s.
Chicago, U.S.C.G.S. e = +12m.23s.
Buffalo i = +11m.3s., eSSS = +15m.30s., i = +17m.40s.
Lincoln e = +7m.8s. and +12m.43s.
Tucson i = +7m.9s., iPPP = +8m.44s., iP_cP = +9m.11s., i = +12m.49s.
Ottawa SSS = +15m.59s.
East Machias e = +7m.57s., i = +13m.39s.
Salt Lake City e = +8m.30s., ePPP = +10m.15s.
Bozeman e = +8m.47s., eP_cP = +9m.43s., ePPP = +10m.48s., i = +15m.8s., eSS = +17m.55s.
Butte ePP = +10m.23s., ePPP = +11m.15s., e = +15m.33s., eSS = +18m.26s.
Berkeley iSN = +15m.19s., iSE = +15m.31s., eSN = +15m.41s., eSSN = +18m.29s., iSSSE = +19m.47s., eEN = +20m.43s., eSSSSEN = +21m.43s.
La Plata E. PP = +10m.55s., SSS = +20m.11s. and +21m.23s., L_q = +22m.5s.
La Plata N. +11m.53s., L_q = +21m.29s.
Ukiah ePP = +10m.42s., e = +15m.51s., eS_cS = +18m.42s.
Rio de Janeiro iSSE = +19m.31s., iSSN = +19m.37s.
Seattle eS_cS = +19m.6s., eSS = +20m.31s.
Sitka e = +19m.17s., eSS = +23m.15s.
Lisbon PPE = +14m.21s., N = +31m.53s., Z = +33m.29s., E = +33m.35s.
College e = +21m.11s., eSSS = +29m.9s.
Scoresby Sund e = +11m.36s., ePPP = +16m.10s., eS_cS = +21m.41s., eSS = +25m.35s., iSSS = +28m.51s.

Continued on next page.

Honolulu i = +21m.18s. and +21m.22s., iSSS = +29m.5s.
Granada iS_cS = +22m.0s., PS = +22m.14s.
Almeria PP = +15m.31s., S = +22m.31s., S_cS = +22m.53s., PS = +23m.21s., SSS = +31m.33s.
Aberdeen eE = +27m.17s., eL_gE = +30m.5s.
Kew ePPSZ = +23m.14s., eSSEZ = +27m.35s.?, eSSSZ = +31m.5s. ?
De Bilt eSS = +28m.25s.
Hamburg eN = +23m.11s.
Copenhagen +23m.22s.
Jena eE = +12m.44s., e = +12m.55s.
Potsdam ePN = +12m.53s., iE = +23m.16s., iSKKSZ = +23m.43s., iSN = +23m.47s.
Rome e = +15m.36s., iSZ = +23m.43s., i = +24m.5s., iE = +25m.51s., iZ = +26m.42s.
Triest iN = +13m.53s., ePPP = +18m.9s., iSN = +23m.48s., iN = +24m.4s., iPSN = +24m.37s., iPPS = +25m.6s., eSSN = +29m.45s., eSSS = +33m.25s.
Warsaw eE = +24m.21s., eN = +24m.24s., eZ = +25m.25s., eE = +26m.51s., eN = +27m.6s.
Pulkovo eS = +24m.32s., iPS = +25m.52s.
Stuttgart i = +12m.47s., e = +23m.28s. and +25m.19s.
Cape Town SSE = +33m.8s., SSSE = +37m.11s.
Christchurch PS = +27m.55s., PPS = +28m.47s., SS = +34m.7s., SSSN = +38m.7s., L_gN = +43m.45s.
Helwan eN = +33m.44s., iE = +37m.59s.
Ksara PPS = +28m.55s.
Sverdlovsk eS = +26m.33s.
Irkutsk eSS = +36m.23s.
Osaka PPP = +24m.7s., SKS = +26m.49s.
Long waves were also recorded at Colombo, Sydney, Tananarive, Wellington, and Bombay.

July 13d. 20h. 15m. 53s. Epicentre 34°·1N. 24°·9E. (as on 1938, Jan. 2d.).

A = +·7527, B = +·3494, C = +·5580; δ = 0; h = 0;
D = +·421, E = −·907; G = +·506, H = +·235, K = −·830.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan		6·9	126	1 40	− 5	3 9	+ 4	2 0	P*	—
Istanbul		7·7	24	1 54	− 2	4 12	S_g	—	—	—
Sofia		8·7	354	e 1 38	−32	e 3 25	−25	—	—	—
Ksara		9·1	90	e 3 35	?	—	—	—	—	e 7·0
Bucharest		10·3	358	e 2 33	+ 1	e 4 23	− 7	e 2 56	PP	—
Rome		12·5	312	—	—	e 5 47	SSS	—	—	i 9·2
Triest		14·3	327	—	—	e 5 57	− 9	—	—	i 7·4
Chur		17·2	322	e 4 6	+ 3	—	—	—	—	—
Zurich		18·1	321	e 4 7	− 7	—	—	—	—	—
Warsaw		18·3	354	e 4 27	+10	e 7 55	SS	e 4 33	PP	e 10·1
Basle		18·7	320	e 4 11	−11	—	—	—	—	—
Stuttgart		18·7	327	e 5 2	PPP	—	—	—	—	e 15·5
Jena		19·4	334	e 4 21	− 9	—	—	—	—	—
Potsdam		20·2	338	e 4 48	+ 9	i 8 13	− 8	e 8 47	SS	e 11·1
Baku		20·8	64	e 5 15	PP	—	—	—	—	e 11·6
Hamburg	z.	22·2	336	e 5 1	+ 1	—	—	—	—	—
Uccle		22·4	323	e 5 3	+ 1	e 9 18	+14	—	—	e 11·1
De Bilt		22·9	328	—	—	e 9 37	+24	—	—	—
Moscow		23·4	18	e 5 11	0	e 9 11	−10	—	—	—
Kew		25·2	322	—	—	e 10 7?	+15	—	—	e 14·1
Pulkovo		25·9	7	e 5 40	+ 5	e 9 58	− 6	—	—	e 14·8
Scoresby Sund		44·2	340	e 8 40	+28	—	—	—	—	—

Additional readings :—
Helwan P_gS_gZ = +2m.34s., S_gZ = +3m.15s.
Bucharest iE = +4m.53s. and +5m.0s.
Warsaw eE = +4m.40s. and +9m.3s., eN = +9m.35s., eZ = +9m.48s.
Jena eE = +4m.25s., eN = +4m.40s., eE = +4m.45s.
Potsdam eE = +8m.7s.
Long waves were also recorded at Sverdlovsk.

July 13d. Readings also at 0h. (La Paz), 2h. (near Berkeley, Lick, and Branner), 6h. (La Paz), 7h. (near Berkeley), 10h. (near Almata, Frunse, and Andijan), 11h. (near Apia), 12h. (Bermuda, Huancayo, St. Louis, and La Paz), 15h. (College), 16h. (Tucson and Fresno), 17h. (near Wellington and New Plymouth, Lincoln, Salt Lake City, Butte, Tucson, and Balboa Heights), 18h. (Balboa Heights (2)), 21h. (Balboa Heights (2)), 22h. (Balboa Heights (2) and Tucson), 23h. (Tucson and Balboa Heights).

July 14d. 5h. 52m. 55s. Epicentre 52°·0N. 178°·2E.

$A = -·6179$, $B = +·0194$, $C = +·7860$; $\delta = -3$; $h = -6$;
$D = +·031$, $E = +1·000$; $G = -·786$, $H = +·025$, $K = -·618$.

Tables for depth of focus 0·005 have been used.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		21·6	41	i 4 49	+ 3	i 8 41	+ 5	i 5 3	pP	e 8·9
Sikka		22·3	278	4 55	+ 2	8 50	+ 1	—	—	—
Sapporo		26·2	266	5 29	− 1	10 11	sS	5 57	PP	14·6
Sitka		26·9	61	i 5 38a	+ 1	i 10 11	+ 4	i 6 41	PP	i 11·4
Mori		27·2	265	5 39	− 1	10 21	+ 9	—	—	13·8
Mizusawa		28·6	258	5 52	0	10 57	sS	—	—	—
Akita		28·9	259	5 54	− 1	11 20	sS	—	—	—
Tokyo Cen. Met. Ob.		31·7	255	6 19	− 1	7 22	PP	—	—	—
Nagano		32·0	259	6 22	0	11 43	sS	—	—	—
Vladivostok		32·0	272	i 6 22	0	i 11 6	−22	6 47	pP	13·4
Yokohama		32·0	254	e 6 20	− 2	e 11 57	sS	e 6 46	pP	14·6
Nagoya		33·7	256	6 57	pP	13 30	SS	—	—	—
Osaka		35·0	258	6 57	+ 9	12 51	sS	—	—	—
Honolulu		35·8	139	e 6 52a	− 3	i 12 23	− 4	i 7 12	pP	i 14·3
Victoria		36·6	72	7 5	+ 3	12 50	+11	8 43	PPP	18·1
Koti		36·9	258	7 5	+ 1	12 45	+ 1	—	—	—
Seattle		37·7	73	e 7 7a	− 4	i 12 50	− 6	e 7 54	sP	i 16·1
Zinsen		38·6	269	7 19	+ 1	13 1	− 9	—	—	—
Hukuoka		38·8	261	7 20	0	13 7	− 6	—	—	21·1
Miyazaki		39·3	257	7 26	+ 2	14 1	sS	i 16 18	SS	18·9
Ferndale		40·4	82	i 7 37	+ 4	i 13 43	+ 6	i 8 13	pP	e 19·8
Ukiah		41·9	84	i 7 46a	0	e 13 56	− 3	e 8 7	pP	e 16·7
Berkeley		43·2	85	i 7 58	+ 2	e 13 28	−50	—	—	—
San Francisco		43·2	85	e 7 59	+ 3	e 14 54	SS	e 8 54	pP	—
Irkutsk		43·5	302	i 7 58	− 1	14 5	−17	10 7	pPP	20·1
Branner	E.	43·6	85	i 8 2	+ 3	e 14 26	+ 2	—	—	e 20·6
Santa Clara		43·8	85	i 8 5	+ 4	i 14 30	+ 3	—	—	—
Lick		44·0	85	e 8 4	+ 1	e 14 34	+ 5	—	—	—
Butte		44·2	68	e 8 5	+ 1	e 14 30	− 2	e 8 44	pP	i 18·3
Saskatoon		44·2	59	8 6	+ 2	i 15 5	sS	10 31	PPP	21·1
Bozeman		45·3	68	e 8 13	0	i 14 44	− 4	i 8 34	pP	—
Fresno	N.	45·5	84	e 8 18	+ 3	i 15 29	sS	—	—	—
Naha		45·7	256	8 18	+ 2	14 52	− 2	—	—	—
Zi-ka-wei		45·9	266	e 8 19	+ 1	14 29	−28	i 8 53	pP	22·1
Tinemaha		46·2	83	i 8 23	+ 3	e 15 16	+15	i 13 42	S_cP	—
Haiwee	Z.	47·0	83	i 8 28	+ 1	—	—	i 13 45	S_cP	—
Santa Barbara		47·0	86	i 8 28	+ 1	—	—	i 13 46	S_cP	—
Salt Lake City		47·8	74	e 8 32a	− 1	e 15 22	− 2	e 8 49	pP	—
Mount Wilson		48·2	85	i 8 38a	+ 2	i 15 31	+ 2	i 13 50	S_cP	—
Pasadena		48·2	85	i 8 36a	0	i 15 30	+ 1	i 13 49	S_cP	i 20·7
Riverside		48·8	85	i 8 41a	0	e 15 40	+ 2	i 13 51	S_cP	—
Palomar	Z.	49·5	85	i 8 46a	0	i 15 53	+ 6	i 13 56	S_cP	—
La Jolla		49·6	86	i 8 49	+ 2	e 15 53	+ 4	e 13 56	S_cP	—
Denver	E.	52·4	72	i 9 5	− 3	i 16 15	−12	i 9 31	pP	e 24·3
Tucson		54·0	82	9 21a	+ 1	i 16 52	+ 3	i 9 48	pP	—
Lincoln		56·5	64	i 9 38	0	i 17 19	− 3	e 9 57	pP	e 22·9
Semipalatinsk		56·7	311	i 9 39	0	—	—	—	—	27·1
Scoresby Sund		57·0	8	i 9 42k	+ 1	i 17 34	+ 5	i 10 8	pP	i 23·9
Manila		58·6	252	i 9 52k	− 1	i 17 57	+ 7	—	—	27·5
Sverdlovsk		60·0	327	i 10 2	0	i 18 0	− 8	—	—	26·1
Chicago J.S.A.		60·7	59	e 10 5	− 2	i 18 15	− 2	—	—	—
Chicago U.S.C.G.S.		60·8	59	i 10 10	+ 2	i 18 18	0	i 10 30	pP	i 27·8
Ivigtut		61·2	24	i 10 10	0	i 18 24	+ 1	i 10 33	pP	i 25·2
Florissant		61·4	63	i 10 11	− 1	i 18 17	− 9	i 10 31	pP	—
St. Louis		61·6	63	i 10 14	+ 1	i 18 19	− 9	i 10 31	pP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Phu-Lien		62·6	269	10 19	− 1	e 18 40	− 1	—	—	—
Almata		63·3	307	i 10 24	0	—	—	—	—	29·1
Toronto		63·6	53	10 25	− 1	18 51	− 3	14 35	PPP	28·1
Ottawa		64·1	49	e 10 29	− 1	18 57	− 3	14 17	PPP	e 30·1
Buffalo		64·4	53	i 10 34	+ 2	i 19 5	+ 2	i 10 52	pP	e 58·2
Shawinigan Falls		64·5	46	10 32	0	19 3	− 2	19 37	PS	30·1
Frunse		64·8	308	i 10 35	+ 1	—	—	—	—	32·1
Seven Falls		65·0	45	10 35	0	19 8	− 3	19 43	PS	33·1
Pulkovo		65·6	343	i 10 37	− 2	19 4	−14	11 4	pP	e 31·1
Apia		66·1	168	e 10 49	+ 7	e 19 32	+ 8	23 35	SS	—
Pennsylvania		66·5	54	e 10 55	+10	i 19 29	0	i 20 24	sS	e 30·2
Upsala		67·4	351	i 10 47	− 4	i 19 35	− 5	i 20 10	PS	e 32·1
Andijan		67·5	307	i 10 53	+ 2	—	—	—	—	36·1
Bergen		67·8	357	i 10 51	− 2	19 48	+ 3	—	—	29·6
Moscow		67·8	337	i 10 54	+ 1	i 19 31	−14	11 21	pP	—
East Machias		68·3	45	e 10 54	− 2	i 19 47	− 4	e 11 6	pP	i 28·1
Harvard		68·3	48	i 10 54a	− 2	i 19 47	− 4	e 31 5	L_g	e 36·1
Fordham		68·4	51	10 54	− 3	19 49	− 3	—	—	—
Philadelphia		68·5	53	i 10 58a	0	i 19 52	− 1	i 20 21	sS	e 27·8
Tashkent		68·5	310	i 10 55	− 3	e 19 29	−24	—	—	e 32·2
Columbia		70·0	61	e 11 12	+ 5	e 20 3	− 8	e 11 41	pP	e 28·5
Halifax		70·0	42	11 6	− 1	20 6	− 5	20 44	PS	33·1
Aberdeen		71·2	1	i 11 14	0	i 20 26	+ 1	i 11 42	P_cP	33·6
Copenhagen		72·0	352	i 11 20k	+ 1	i 20 37	+ 3	14 23	PP	—
Edinburgh		72·4	2	11 28	+ 7	20 42	+ 4	14 8	PP	—
Calcutta	N.	72·5	284	i 11 20k	− 2	i 20 37	− 3	i 11 40	P_cP	—
Dehra Dun	N.	72·5	296	e 11 30	+ 8	e 20 48	+ 8	e 14 37	PP	e 38·3
Heligoland		73·9	355	i 11 31	+ 1	i 20 57	+ 2	e 16 8	PPP	e 31·0
Hamburg		74·3	353	i 11 35k	+ 3	e 21 4	+ 4	e 14 48	PP	e 36·3
Warsaw		74·4	346	i 11 33k	0	i 20 59	− 2	14 48	PP	37·1
Stonyhurst		74·5	1	e 11 41	+ 8	i 21 3	+ 1	i 14 50	PP	31·6
Agra		75·0	294	i 11 35k	− 1	i 21 5	− 3	14 27	PP	34·9
Potsdam		75·2	351	i 11 36k	− 1	i 21 3	− 7	i 12 3	pP	—
De Bilt		76·1	356	i 11 45k	+ 3	i 21 24	+ 4	i 12 11	pP	c 36·1
Jena		76·8	351	i 11 45	− 1	i 21 25	− 2	e 12 5	pP	e 33·1
Piatigorsk		76·8	329	11 47	+ 1	—	—	—	—	—
Kew		76·9	359	i 11 47k	0	i 21 30	+ 2	i 12 14	P_cP	e 37·1
Prague		77·4	350	i 10 52k	−58	e 21 0	−34	e 21 30	PS	e 31·1
Uccle		77·4	357	i 11 51k	+ 1	i 21 35	+ 1	i 12 18	pP	32·1
Baku		77·6	322	i 11 55	+ 4	22 46	pPS	21 46	S_cS	—
Sotchi		78·1	330	e 11 55	+ 1	—	—	—	—	—
Sebastopol		79·0	336	e 12 0	+ 1	—	—	—	—	—
Yalta		79·0	335	e 12 3	+ 4	—	—	—	—	—
Cluj		79·2	343	i 12 16	+16	e 22 13	sS	22 37	PS	e 38·1
Stuttgart		79·2	353	i 12 0k	0	i 21 54	+ 1	i 12 29	pP	e 32·3
Budapest	N.	79·3	346	12 2	+ 2	22 3	+ 9	i 12 10	P_cP	e 40·1
Bermuda		79·6	51	c 12 4	+ 2	i 21 58	+ 1	i 12 22	pP	e 34·7
Kecskemet	Z.	79·7	346	12 56	pP	e 22 48	sS	e 16 5	PPP	e 34·6
Kalossa		80·2	346	12 7	+ 2	22 8	+ 5	12 15	P_cP	e 37·1
Basle		80·5	354	e 12 7	0	e 22 41	PS	—	—	—
Zurich		80·6	354	e 12 7k	0	e 22 14	+ 6	e 22 46	PS	—
Besançon		80·9	355	i 12 10	+ 1	22 23	pS	15 32	pPP	—
Bucharest		81·0	340	i 12 10	+ 1	i 22 46	PS	i 15 14	PP	41·1
Chur		81·0	353	e 12 9	0	e 22 18	+ 6	—	—	—
Triest		81·8	349	i 12 13k	0	i 22 23	+ 3	i 12 39	pP	i 37·8
Brisbane	N.	82·2	202	i 12 11	− 4	i 22 23	− 1	i 12 35	pP	33·2
Hyderabad	N.	82·3	288	12 11	− 5	22 24	− 1	15 19	PP	37·7
Clermont-Ferrand		82·5	357	i 12 15	− 2	—	—	—	—	—
Sofia		83·2	341	i 12 21	0	i 22 34	0	i 12 54	pP	28·7
Istanbul		83·5	337	12 24	+ 2	22 38	+ 1	16 4	PP	e 53·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Bombay	N.	84·4	293	i 12 25	− 2	i 22 48	+ 2	i 28 5		SS	i 42·0
Bagnères		85·2	358	17 5?	PPP	i 27 44	SS	—		—	37·1
Rome		85·3	350	i 12 34k	+ 3	i 23 5	+10	i 13 6		pP	—
Ksara		88·4	329	i 12 47k	+ 1	i 23 12	[+ 5]	24 5		PS	41·1
Kodaikanal	E.	88·5	285	e 12 33	−14	i 23 12	[+ 4]	i 24 5		PS	i 40·8
Toledo		88·5	2	i 12 46	− 1	i 23 25	0	—		—	—
Riverview		88·7	202	e 12 49	+ 2	i 23 9	[0]	24 26		PS	e 36·2
Sydney		88·7	202	e 13 17	pP	i 23 26	− 1	e 29 35		SS	34·1
Lisbon		89·4	7	12 50	− 1	23 51	sS	16 22		PP	38·5
Arapuni		89·7	182	—	—	23 53	sS	30 5		SS	37·1
Colombo		89·7	280	12 54	+ 2	23 38	+ 2	—		—	38·5
San Juan		90·4	59	e 12 58	+ 3	i 23 21	[+ 2]	e 13 15		pP	i 36·1
Balboa Heights		90·5	75	e 13 3	+ 7	—	—	—		—	—
Granada		91·2	2	i 13 1	+ 2	23 19	[− 5]	14 8		pP	e 36·9
Algiers		91·5	356	e 13 2	+ 1	e 23 25	[0]	13 28		pP	i 44·5
Almeria		91·5	1	e 12 58	− 3	24 0	+ 8	13 25		PcP	39·1
San Fernando		91·8	4	e 12 56	− 6	i 23 28	[+ 1]	e 16 40		PP	42·1
Wellington		93·0	183	13 7	− 1	23 24	[−10]	13 28		pP	42·5
Adelaide		93·3	212	e 24 5	S	(e 24 5)	− 3	i 24 41		sS	45·3
Helwan		93·5	331	i 13 10a	0	23 37	[0]	16 56		PP	45·6
Christchurch		95·3	185	13 20	+ 2	23 45	[0]	16 58		PP	44·1
Perth		99·8	230	17 10	PP	25 38	sS	19 25		PPP	37·0
Huancayo		109·5	85	e 14 22	P	e 24 52	[− 2]	e 14 58		sP	i 43·6
La Paz	Z.	117·6	81	e 15 4	pP	i 28 10	?	i 19 54		PP	56·1
Tananarive		129·4	292	e 21 16	PP	39 16	SSP	e 33 17		PPS	e 54·2
La Plata	E.	137·0	90	19 11	PKP	32 11	PS	21 59		PP	64·3
	N.	137·0	90	19 17	PKP	32 53	pPS	22 17		pPP	64·1
	Z.	137·0	90	19 17	PKP	—	—	19 35		pPKP	65·2
Rio de Janeiro	N.	137·0	63	e 19 5?	PKP	—	—	—		—	i 40·1
Johannesburg		145·8	306	i 19 35	[+ 4]	i 30 17	SKKS	i 20 5		pPKP	e 69·1
Cape Town		156·8	313	e 20 21	pPKP	i 27 17	[+32]	e 23 57		SKP	71·5

Additional readings :—
College isP = +5m.14s., iPP = +5m.39s., i = +7m.39s. and +8m.8s., ePcP = +8m.45s.
Sapporo SE = +10m.18s., SSN = +12m.17s.
Sitka isP = +6m.13s., i = +6m.19s., isS = +10m.40s.
Mori i = +8m.47s.
Yokohama PPZ? = +7m.21s.
Honolulu i = +6m.57s., ipPP = +8m.36s., i = +8m.40s., iPcP = +9m.13s., i = +12m.30s. and +12m.37s.
Victoria iN = +9m.35s., SSS = +15m.35s., e = +16m.17s.
Seattle epPP = +9m.2s., isS = +13m.56s.
Hukuoka e = +17m.54s.
Miyazaki i = +17m.51s.
Ferndale eN = +8m.16s. and +9m.38s., iSN = +14m.14s., iE = +14m.35s. and +17m.12s., iN = +18m.13s.
Ukiah isP = +8m.25s., ePP = +9m.28s., esPP = +10m.0s., iPPP = +10m.13s., ePcS = +13m.27s., i = +14m.4s. and +14m.28s., isS = +14m.37s.
San Francisco eN = +8m.11s., eEN = +14m.21s., eN = +17m.46s.
Berkeley eN = +14m.23s.
Irkutsk sSS = +17m.47s.
Butte E = +8m.25s., ePP = +10m.2s., esPP = +10m.29s., ePcS = +13m.44s., isS = +14m.55s., iScS = +17m.47s., iSS = +17m.57s.
Saskatoon i = +17m.54s., SS = +18m.29s.
Bozeman e = +8m.18s. and +18m.29s., i = +9m.10s., ePcP = +9m.36s., ePP = +10m.0s., ipPP = +10m.24s., isPP = +10m.36s., i = +14m.56s., and +15m.1s., isS = +15m.22s., iScS = +17m.58s., iSS = +18m.2s.
Zi-ka-wei iE = +8m.47s. and +15m.29s.
Tinemaha iScSN = +18m.11s.
Salt Lake City i = +9m.27s., ePcP = +9m.51s., ePP = +10m.26s., isPP = +11m.2s., ePPP = +11m.15s., i = +11m.39s. and +15m.32s., isS = +15m.57s., eScS = +18m.13s., i = +18m.20s., iSS = +18m.51s., isSS = +19m.15s.
Pasadena iScSN = +18m.23s., ePKP,PKPZ = +39m.20s.
La Jolla iScSEN = +18m.35s.
Denver eE = +16m.9s., iE = +16m.27s., isSE = +16m.40s., iE = +19m.0s., eE = +19m.9s., iSSE = +19m.31s., isSSE = +20m.31s.
Tucson i = +9m.40s., iPcP = +10m.16s., iPP = +11m.37s. ipPP = +11m.52s., iPcS = +14m.15s., i = +17m.14s. and +17m.21s., isS = +17m.32s., iScS = +18m.47s., i = +19m.35s.and +19m.40s., ePKP,PKP = +38m.59s.
Lincoln iPcP = +10m.35s., ePP = +11m.43s., epPP = +12m.11s., esPP = +12m.33s., iPPP = +13m.20s., i = +17m.47s., eScS = +19m.16s.

Continued on next page.

Scoresby Sund iP_cP = +10m.35s., iPPP = +13m.10s., iS_cP = +14m.14s., iP_cS = +14m.33s., i = +17m.51s., isS = +18m.9s., iSS = +21m.14s., isSS = +21m.55s.
Chicago, U.S.C.G.S. esPP = +13m.11s., isS = +18m.59s., eSS = +22m.29s., iSSS = +25m.24s.
Ivigtut isP = +10m.49s., epPP = +12m.55s., ePPP = +13m.49s., isS = +18m.59s., iS_cS = +19m.53s.
Florissant ipSE = +18m.33s., isSE = +18m.49s., iSPE = +18m.57s., iE = +19m.19s.
St. Louis iN = +10m.40s., iE = +18m.26s., iSPE = +18m.59s., isSPE = +19m.19s., iE = +20m.31s.
Toronto SSN = +24m.11s., SSS = +25m.53s.
Ottawa PS = +19m.23s., SSS = +26m.5s.?, e = +28m.5s. ?
Buffalo isS = +19m.37s.
Pennsylvania e = +26m.59s.
Upsala eSSE = +24m.32s., eSSSE = +27m.29s.
Moscow sP = +11m.37s., sS = +20m.19s.
East Machias iP_cP = +11m.18s., iPP = +13m.48s., isS = +20m.21s., esPS = +21m.20s., eSS = +24m.38s., i = +28m.4s.
Philadelphia iS_cS = +20m.25s., esSS = +24m.59s., eSSS = +27m.35s.
Columbia esPP = +14m.35s., ePPP = +15m.38s., i = +20m.14s. and +20m.25s., isS = +20m.48s., iPS = +20m.59s., iSS = +25m.11s., eSSS = +28m.14s.
Halifax SSS = +28m.5s.
Aberdeen iPE = +11m.19s., iPPN = +13m.56s., iN = +16m.24s., iE = +17m.27s., iPSEN = +20m.58s., iE = +24m.53s., iSSN = +25m.19s., iSSSN = +28m.29s., iE = +28m.45s.
Copenhagen i = +11m.25s., +11m.48s., +16m.15s., +20m.59s., and +21m.10s.
Edinburgh SKS = +21m.24s.
Calcutta iPPN = +13m.51s., iPSN = +20m.55s., iS_cSN = +21m.26s.
Dehra Dun e?N = +26m.2s. and +29m.39s.
Heligoland ePE = +11m.34s., iPSE = +21m.34s., eSSN = +25m.36s., eSSSE = +29m.23s.
Hamburg ePPPZ = +16m.23s., iPSE = +21m.41s., eE = +22m.59s., eZ = +30m.37s.
Warsaw PPPZ = +16m.9s., iZ = +16m.33s. and +17m.48s., iSE = +21m.2s., PSN = +21m.36s., PSZ = +21m.41s., SSE = +26m.21s., SSSE = +28m.58s.
Stonyhurst i = +21m.42s., +23m.36s., and +25m.51s.
Agra iEN = +12m.2s., iN = +14m.43s., PPPE = +16m.11s., PS?E = +21m.28s., SSE = +25m.55s., sSS = +26m.25s., sSSN = +26m.31s., iE = +29m.42s.
Potsdam iE = +12m.41s., iZ = +14m.19s., iPPN = +14m.43s., iE = +15m.9s., iPPPE = +16m.34s., iPPPZ = +16m.38s., iPPPN = +16m.43s., iE = +17m.30s., iSKSE = +20m.39s., iSNW = +21m.8s., iZ = +21m.16s., ipSE = +21m.26s., isSE = +21m.46s. and +21m.53s., iNW = +22m.0s., iPSN = +22m.5s., iE = +24m.3s., iN = +25m.32s., iE = +25m.51s. and +25m.55s.
De Bilt iPPP = +16m.22s., ipPPP = +16m.55s., isS = +21m.55s., iSS = +26m.27s., isSS = +27m.2s., iE = +32m.12s. and +33m.30s.
Jena e = +16m.29s., iSN = +21m.59s. and +22m.17s.
Kew iPPZ = +14m.51s., ePPPEZ = +16m.34s., iPSE = +22m.5s., iZ = +22m.36s., eSSE = +26m.5s. ?, eSSS = +30m.5s.?, eL_g = +32m.5s.
Uccle i = +12m.43s., iPPN = +14m.57s., ipPPZ = +15m.11s., iPPPN = +16m.40s., ipPPPZ = +17m.7s., ipSN = +22m.4s., ipSE = +22m.8s., iSSE = +26m.38s.
Stuttgart eZ = +12m.25s., epPZ = +12m.33s., ePPN = +14m.58s., epPPN = +15m.27s., isSE = +22m.27s.
Budapest N. PP = +15m.5s., SKS = +22m.13s., iS_cS = +22m.32s., PS = +22m.53s.
Bermuda eP_cP = +12m.12s., e = +15m.14s., ePPP = +17m.16s., i = +22m.1s., isS = +22m.41s., iPS = +22m.59s., eSS = +26m.58s., eSKKP = +32m.31s.
Kecskemet iZ = +13m.36s., PSZ = +23m.47s.
Kalossa eE = +12m.38s., eN = +16m.23s., eSKS = +22m.15s., iE = +23m.5s., eSSE = +27m.7s.
Zurich e = +26m.49s.
Besançon sSS = +27m.56s.
Bucharest iZ = +12m.37s., PPPNZ = +17m.1s., SKS = +22m.15s., iSE = +22m.48s., iPSEN = +23m.36s.
Triest iPP = +15m.18s., iPPP = +17m.40s., i = +22m.50s., +23m.21s., and +23m.39s., i = +27m.15s., iSS = +27m.29s., iE = +32m.34s.
Brisbane iN = +20m.5s., iSKSN = +22m.47s., iSKKSN = +22m.59s.
Hyderabad PSN = +22m.47s., SSN = +27m.7s.
Sofia ePEN = +12m.24s., iSKSE = +22m.39s., iSEN = +23m.11s.
Istanbul PPP = +19m.18s.
Bombay iN = +12m.45s., +13m.16s., +16m.5s., and +23m.8s., iL_gN = +35m.12s.
Bagnères i = +27m.5s. ?
Rome i = +14m.21s., iPP = +16m.6s., PPP? = +17m.59s., ePKP = +18m.48s., SS = +29m.5s.
Kodaikanal iSSE = +28m.34s.
Riverview iSE = +23m.29s., SKKSN = +23m.40s., iE = +23m.57s., iN = +24m.10s., SSN = +29m.42s., iE = +29m.49s.
Sydney e = +20m.53s.
Lisbon PZ = +13m.17s., PPPN = +16m.51s., PPPE = +16m.57s., E = +17m.37s. and +23m.35s., S_cSE = +24m.8s., PS = +25m.0s., E = +26m.35s. and +26m.49s., SSN = +29m.37s.
San Juan i = +13m.58s., iPP = +16m.48s., ePPP = +18m.28s., iS = +23m.48s., iSS = +29m.18s., eSSS = +33m.8s.

Continued on next page.

Granada PP = +17m.16s., pPP = +17m.24s., sPP = +17m.31s., PPP = +17m.56s., iS = +23m.41s., isS = +23m.48s., PS = +24m.9s., SS = +29m.21s.
Algiers PP = +16m.33s., epPP = +17m.5s., i = +24m.3s., PS = +24m.46s., SS = +29m.51s.
Almeria PP = +16m.44s., PPP = +18m.56s., S_cS = +24m.14s., PS = +24m.40s., PPS = +25m.4s., SS = +28m.59s.
San Fernando iSE = +23m.36s.
Wellington PPZ = +16m.57s., sPP = +17m.25s., PPP = +18m.40s., iZ = +19m.32s., S = +23m.56s., sS = +24m.29s., sPS = +25m.34s., SS = +30m.0s., SSS = +34m.2s., L_q = +37m.30s., i = +39m.58s.
Adelaide i = +24m.25s., +30m.5s., +30m.47s., +31m.25s., and +32m.35s., S?N = +33m.35s., i = +34m.18s., +34m.35s., +37m.0s., +42m.47s., and +44m.25s.
Helwan iPZ = +13m.35s., PPPEZ = +19m.7s., SKKSN = +24m.10s., SE = +24m.29s.
Christchurch SEN = +24m.22s., SS = +30m.49s., iE = +31m.16s., L_qE = +38m.27s.
Perth PPP = +20m.53s., i = +22m.50s. and +25m.9s., PS = +26m.5s., i = +28m.5s., SS = +30m.5s., SSS = +32m.24s., i = +34m.12s. and +35m.55s.
Huancayo ePKP = +18m.16s., ePP = +18m.54s., ePPP = +21m.17s. i = +24m.56s., iSKKS = +25m.28s., iS = +26m.24s., i = +26m.44s., ipS = +27m.4s., ePS = +28m.17s., ipPS = +28m.29s., isPS = +28m.53s., iSS = +33m.46s., isSS = +34m.28s., iSSS = +37m.54s.
La Paz PKPZ = +18m.38s., iZ = +20m.39s., PSKS = +21m.30s., PPPZ = +22m.10s., SKKSZ = +27m.18s., PSZ = +29m.38s., PPS = +27m.50s., iSSZ = +36m.14s., SSSZ = +42m.2s.
Tananarive PPEN = +21m.46s.
La Plata E. +36m.11s. and +40m.11s., SSS? = +45m.23s. and +51m.5s.?
La Plata N. sPP = +22m.41s., pPKS = +23m.11s., SS = +39m.59s. and +42m.5s., SSS? = +44m.5s. and +48m.47s., L_q = +57m.41s.
La Plata Z. sPP = +22m.41s., pPKS = +23m.18s.
Johannesburg e?EN = +22m.59s., e?N = +34m.35s., i?N = +37m.53s., e?N = +41m.59s., iSSN = +43m.35s.
Cape Town ePKPE = +20m.26s., $iPKP_2N$ = +20m.48s., eSKPN = +24m.3s., iPPE = +24m.22s., iPPN = +24m.27s., iPPPE = +27m.58s., iSKKSE = +31m.17s., iPSKSN = +34m.27s., iPSKSE = +34m.30s., ePPSE = +37m.55s., eSSEN = +43m.57s., eSSN = +44m.10s., eSSSE = +49m.56s.
Long waves were also recorded at Samarkand.

July 14d. 15h. 31m. 29s. Epicentre 36°·2N. 140°·0E. (as on 1939, May 31d.).

Strong at Tukubasan, Yokohama, Kakioka, rather strong at Kumagaya, Tokyo, Utunomiya, Tyosi, Mito, Takeyama, moderate at Maebasi, Hunatu, Ito, Kohu, Onahama, Osima, Katuura, Karuizawa, slight at Mera, Misima, Hukusima, and Oiwake.

Epicentre 36°·1N. 140°·0E. Radius 200-300km., depth = 50km. See Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1940, Tokyo, 1950, pp. 21-22, Macroseismic Chart, p. 21.

$A = -·6196$, $B = +·5199$, $C = +·5880$; $\delta = -6$; $\lambda = 0$;
$D = +·643$, $E = +·766$; $G = -·450$, $H = +·378$, $K = -·809$.

Tables for a focus at the base of the superficial layers have been used.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tukubasan	0·1	—	0 9k	+ 3	0 15	+ 4	—	—	—
Kakioka	0·2	77	0 10a	+ 3	0 18	+ 5	—	—	—
Mito	0·4	64	0 16a	+ 7	0 24	+ 8	—	—	—
Utunomiya	0·4	343	0 13k	+ 4	0 21	+ 5	—	—	—
Kumagaya	0·5	264	0 11k	+ 1	0 19	+ 1	—	—	—
Tokyo, Cen. Met. Ob.	0·5	200	0 11a	+ 1	0 18	0	—	—	—
Tokyo, Imp. Univ.	0·5	200	0 15	+ 5	0 23	+ 5	—	—	—
Komaba	0·6	200	0 12	0	0 21	0	—	—	—
Mitaka	0·6	214	0 12	0	0 21	0	—	—	—
Togane	0·7	155	0 12	− 1	0 24	+ 1	—	—	—
Maebasi	0·8	285	0 18k	+ 3	0 30	+ 4	—	—	—
Titibu	0·8	254	0 12	− 3	0 20	− 6	—	—	—
Yokohama	0·8	200	0 16a	+ 1	0 26	0	—	—	—
Tyosi	0·9	124	0 15a	− 1	0 24	− 4	—	—	—
Kamakura	1·0	202	0 12	− 6	0 24	− 7	—	—	—
Onahama	1·0	45	0 22	+ 4	0 34	+ 3	—	—	—
Hunatu	1·2	235	0 20	0	0 37	+ 1	—	—	—
Koyama	1·2	224	0 12	− 8	0 27	− 9	—	—	—
Kohu	1·3	244	0 22k	0	0 39	+ 1	—	—	—
Mera	1·3	186	0 20k	− 2	0 35	− 3	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Misima		1·4	218	0 22k	− 1	0 41	0	—	—	—
Nagano		1·5	288	0 26k	+ 1	0 48	+ 4	—	—	—
Osima		1·5	199	0 22k	− 3	0 37	− 7	—	—	—
Hukusima		1·6	14	0 29k	+ 3	0 50	+ 4	—	—	—
Omaesaki		2·2	222	0 31	− 4	0 58	− 3	—	—	—
Sendai		2·2	19	0 37	+ 2	1 9	+ 8	—	—	—
Aikawa		2·3	322	0 39a	+ 3	1 18	+14	—	—	—
Toyama		2·3	282	0 39	+ 3	1 11	+ 7	—	—	—
Hamamatu		2·4	231	0 37	− 1	1 10	+ 4	—	—	—
Gihu		2·7	253	0 40a	− 2	1 20	+ 6	—	—	—
Nagoya		2·7	247	0 42k	0	1 28	+14	—	—	—
Wazima		2·8	295	0 39	− 4	1 38	+22	—	—	—
Hatidyozima		3·1	182	0 43	− 5	1 16	− 8	—	—	—
Mizusawa		3·1	17	0 52	+ 4	1 30	+ 6	—	—	—
Kameyama		3·2	245	0 49k	0	1 36	+ 9	—	—	—
Akita		3·5	1	1 2k	+ 9	1 36	+ 2	—	—	—
Kyoto		3·7	253	0 55	− 1	1 51	+12	—	—	—
Miyako		3·7	23	1 2	+ 6	1 53	+14	—	—	—
Owase		3·8	236	0 58	0	1 59	+17	—	—	—
Osaka		4·0	248	1 16	+16	2 6	+19	—	—	—
Kobe		4·2	251	1 15a	+12	2 1	+ 9	—	—	—
Toyooka		4·3	263	1 3	− 2	2 5	+11	—	—	—
Siomisaki		4·4	233	1 11	+ 5	—	—	—	—	—
Wakayama		4·4	245	1 9	+ 3	2 2	+ 5	2 7	sS	—
Hatinohe		4·5	15	1 10	+ 2	2 5	+ 5	—	—	—
Sumoto		4·6	248	1 11a	+ 2	2 17	+15	—	—	—
Aomori		4·7	7	1 16a	+ 6	2 14	+ 9	—	—	—
Muroto		5·6	240	1 34	+11	2 45	+18	—	—	—
Koti		5·9	246	1 32	+ 5	2 38	+ 3	—	—	—
Mori		5·9	4	1 34	+ 7	3 1	+26	—	—	—
Hirosima		6·4	256	1 33	− 1	3 9	+22	—	—	—
Matuyama		6·4	250	1 38	+ 4	3 16	+29	—	—	—
Hamada		6·6	261	2 44	+67	—	—	—	—	—
Simidu		6·7	242	1 45	+ 6	3 5	+10	—	—	—
Izuka		8·0	254	1 55	− 2	4 3	+36	—	—	—
Hukuoka		8·3	255	1 51	−10	4 18	+43	—	—	—
Miyazaki		8·3	241	2 5	+ 4	4 32	+57	—	—	—
Kumamoto		8·4	249	2 3	+ 1	4 29	+52	—	—	—
Vladivostok		9·3	321	e 2 18	+ 3	i 4 11	+12	—	—	5·2
Yakusima		9·8	237	2 24	+ 2	—	—	—	—	—
Almata		48·0	300	e 8 41	+ 3	—	—	—	—	—
Frunse		49·7	299	e 8 53	+ 2	—	—	—	—	—
Andijan		52·0	296	9 5	− 3	—	—	—	—	—
Sverdlovsk		55·0	319	9 27	− 3	17 4	− 4	—	—	26·5
Samarkand		56·2	297	e 9 34	− 5	—	—	—	—	—
Moscow		67·3	323	e 10 50	− 3	—	—	—	—	e 36·7
Scoresby Sund		72·5	354	—	—	e 20 51	+ 5	e 21 13	sS	e 35·2
Tinemaha	z.	77·2	54	e 11 53	+ 1	—	—	—	—	—
Warsaw		77·2	327	e 11 49	− 3	—	—	—	—	e 39·5
Mount Wilson		79·0	56	i 12 4	+ 2	—	—	—	—	—
Pasadena	z.	79·0	56	e 12 1	− 1	—	—	—	—	—
Riverside	z.	79·6	56	e 12 5	0	—	—	—	—	—
Palomar	z.	80·3	56	i 12 9	0	—	—	—	—	—
Ksara		80·7	305	e 12 10	− 1	e 23 37	PS	—	—	42·5
Tucson		85·0	54	i 12 33	0	—	—	—	—	—
Rome		88·6	324	e 16 12	PP	e 23 14	[− 2]	—	—	45·5
La Paz	z.	148·3	59	19 45	[+ 6]	—	—	—	—	—

Additional readings :—
Scoresby Sund eSSS = +28m.9s.
Long waves were also recorded at Baku, Kew, De Bilt, and Potsdam.

July 14d. Readings also at 0h. (Balboa Heights, Tucson, Mount Wilson, and Fresno), 1h. (Balboa Heights (2)), 4h. (near Almeria, Granada, and Toledo), 7h. (Balboa Heights), 8h. (Balboa Heights and near Wellington), 9h. (Balboa Heights and Harvard), 10h. (near Mizusawa), 11h. (Balboa Heights), 12h. (Balboa Heights (2)), 15h. (near Apia), 16h. (De Bilt and Calcutta), 17h. (Granada), 18h. (Balboa Heights (5)), 19h. (Balboa Heights and near Triest), 22h. (near Stonyhurst, near Branner, and Kew).

July 15d. 8h. 46m. 25s. Epicentre 0°·1N. 122°·7E. (as on 1940, June 22nd).

$A = -\cdot5402$, $B = +\cdot8415$, $C = +\cdot0017$; $\delta = -6$; $h = +7$;
$D = +\cdot842$, $E = +\cdot540$; $G = -\cdot001$, $H = +\cdot001$, $K = -1\cdot000$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila	14·5	353	i 3 26a	− 2	i 8 30	?	—	—	12·2
Phu-Lien	25·9	324	e 6 10	+35	—	—	—	—	—
Vladivostok	43·6	10	—	—	i 14 10	−28	—	—	—
Frunse	60·5	321	10 28	+14	—	—	e 19 3	PS	—
Andijan	60·9	318	10 21	+ 4	18 43	+ 9	—	—	—
Tashkent	63·3	317	e 10 36	+ 3	e 19 10	+ 6	—	—	e 29·7
Sverdlovsk	75·0	331	11 41	− 4	21 14	− 9	—	—	36·6
Moscow	87·2	326	i 12 46	− 3	e 23 24	− 4	—	—	e 52·1
Ksara	87·3	304	i 12 54k	+ 4	e 23 50	+21	e 16 27	PP	49·6
Potsdam	101·8	324	—	—	e 24 35	[− 1]	e 25 38	SKKS	e 53·3
Scoresby Sund	105·8	349	e 18 20	PKP	i 24 25	[−29]	—	—	—
Balboa Heights	156·0	66	—	—	e 39 21	?	—	—	—
La Paz	160·5	147	e 19 36	[−25]	—	—	—	—	—

Additional readings :—
Ksara ePS = +24m.48s.
Long waves were also recorded at other European stations.

July 15d. 23h. 56m. 14s. Epicentre 52°·0N. 178°·2E. (as on 1940 July 14d.).

$A = -\cdot6179$, $B = +\cdot0194$, $C = +\cdot7860$; $\delta = -3$; $h = -6$;

Tables for depth of focus 0·005 have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		21·6	41	e 4 49	+ 3	—	—	—	—	—
Berkeley		43·2	85	i 7 57	+ 1	—	—	i 8 14	pP	—
Fresno	N.	45·5	84	e 8 16	+ 1	—	—	—	—	—
Tinemaha		46·2	83	i 8 21	+ 1	—	—	i 8 39	pP	—
Haiwee		47·0	83	i 8 26	− 1	—	—	i 8 43	pP	—
Santa Barbara		47·0	86	i 8 27	0	—	—	i 8 45	pP	—
Mount Wilson		48·2	85	i 8 36a	0	—	—	i 8 53	pP	—
Pasadena		48·2	85	i 8 35a	− 1	—	—	i 8 52	pP	—
Riverside		48·8	85	i 8 39a	− 2	—	—	i 8 57	pP	—
Palomar	Z.	49·5	85	i 8 47a	+ 1	—	—	i 9 3	pP	—
Tucson		54·0	82	i 9 19	− 1	—	—	e 9 46	pP	—
Scoresby Sund		57·0	8	—	—	e 17 32	+ 3	—	—	—
Sverdlovsk		60·0	327	10 17	+15	i 18 41	sS	—	—	29·8
Pulkovo		65·6	343	—	—	e 19 18	0	—	—	—
Moscow		67·8	337	e 10 51	− 2	19 46	+ 1	11 9	pP	—
Philadelphia		68·5	53	—	—	e 21 40	?	—	—	—
Warsaw		74·4	346	—	—	e 20 46?	−15	—	—	—
Baku		77·6	322	—	—	e 22 8	PS	—	—	e 38·8

Tucson also gives i = +9m.36s.
Long waves were also recorded at Harvard, Toledo, and Irkutsk.

July 15d. Readings also at 2h. (Fresno, Balboa Heights (2), San Juan, and near Tucson), 3h. (Balboa Heights and near Mizusawa), 4h. (Balboa Heights (2)), 7h. (near Balboa Heights (2) and Tananarive), 8h. (near Balboa Heights, San Juan, and near Osaka), 9h. (2), 10h. (3), and 12h. (2) (Balboa Heights), 13h. (near Balboa Heights (2) and near Mizusawa), 15h. (Balboa Heights), 16h. (Balboa Heights (2), Manila, Ksara, and near Branner), 18h. (near Triest, near Bucharest, and Cluj), 19h. (Manila), 20h. (near Berkeley), 21h. (Balboa Heights), 23h. (San Fernando and Tinemaha).

July 16d. 3h. 17m. 32s. Epicentre 20°·9N. 155°·1W.

A = −·8481, B = −·3937, C = +·3547; δ = +9; h = +4;
D = −·421, E = +·907; G = −·322, H = −·149, K = −·935.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Honolulu		2·6	279	i 0 42	− 2	i 1 11	− 6	i 0 52	P_g	i 1·5
Ukiah		32·8	50	e 7 48	PP	e 11 54	0	e 8 41	P_gP	e 13·6
Branner		32·9	53	—	—	e 14 34	SSS	—	—	—
Berkeley		33·0	53	e 6 46	+ 7	e 12 56	+59	e 7 52	PP	e 14·5
Lick	N.	33·3	53	—	—	e 14 28	SSS	—	—	—
Fresno	N.	34·5	55	e 7 8	+16	—	—	—	—	—
Pasadena		35·1	60	e 6 56	− 1	—	—	—	—	e 14·8
Mount Wilson		35·2	60	i 6 57	− 1	—	—	—	—	—
Haiwee	E.	35·7	57	e 7 21	+19	—	—	—	—	—
Riverside	Z.	35·7	60	e 7 1	− 1	—	—	—	—	—
Tinemaha		35·8	55	e 7 8	+ 5	—	—	—	—	—
Palomar	Z.	36·0	62	e 7 4	− 1	—	—	—	—	—
Victoria		37·4	36	e 8 4	+48	i 13 10	+ 5	—		16·5
Seattle		37·6	37	e 7 16	− 2	e 12 55	−13	e 8 39	PP	e 16·2
Sitka		39·4	17	—	—	e 12 56	−39	—	—	e 16·4
Tucson		40·9	64	e 7 44	− 2	e 13 45	−13	e 9 16	PP	i 17·1
Salt Lake City		41·6	51	e 8 2	+11	e 13 55	−13	—	—	e 17·1
Butte		42·7	45	—	—	e 14 25	+ 1	—	—	e 17·8
Bozeman		43·6	45	e 8 38	+30	e 14 40	+ 2	e 10 3	PPP	e 18·5
College		44·2	4	e 8 47	+35	e 14 43	− 3	e 10 41	PPP	e 18·0
Lincoln		53·0	54	e 9 18	− 3	e 16 46	− 4	—	—	e 21·9
St. Louis		57·9	57	—	—	e 17 51	− 4	—	—	—
Chicago U.S.C.G.S.		59·8	53	—	—	e 18 18	− 2	—	—	e 25·7
Philadelphia		69·3	54	—	—	e 20 15	− 2	—	—	e 28·0
Harvard		71·5	51	e 11 40	+16	e 21 0	+17	—	—	e 34·5
East Machias		74·0	48	—	—	e 21 8	− 3	—	—	e 31·5
Scoresby Sund		83·2	14	e 12 48	+19	e 22 45	− 4	e 23 59	PPS	36·1

Additional readings :—
Honolulu i = +58s., +1m.23s., and +1m.27s.
Ukiah e = +12m.2s.
Berkeley eN = +6m.49s.
Seattle e = +7m.37s., ePPP = +9m.6s., e = +13m.5s.
Sitka e = +13m.24s.
Tucson e = +7m.47s., +7m.50s., and +13m.54s.
Salt Lake City e = +8m.6s. and +14m.18s.
Bozeman ePPP = +10m.39s.
Lincoln e = +10m.3s.
Scoresby Sund e = +22m.51s., eSS = +28m.27s., eSSS = +32m.1s.
Long waves were also recorded at Santa Clara, Kew, Columbia, Irkutsk, De Bilt, Potsdam, and Sverdlovsk.

July 16d. 4h. 47m. 33s. Epicentre 1°·5N. 126°·0E. (as on 1940 Feb. 12d.).

A = −·5876, B = +·8088, C = +·0260; δ = +11; h = +7;
D = +·809, E = +·588; G = −·015, H = +·021, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palau		10·2	55	4 33	S	(4 33)	+ 6	—	—	(6·6)
Manila		13·9	339	i 3 29	+ 8	i 8 30	L	—	—	(i 8·5)
Naha		24·6	3	5 30	+ 7	9 50	+ 8	—	—	—
Zi-ka-wei	Z.	29·8	353	e 6 3	− 8	—	—	—	—	—
Kobe		34·1	15	6 48	0	12 15	+ 1	—	—	—
Nagoya		35·0	16	6 55	− 1	—	—	—	—	—
Nagano		36·8	15	7 11	0	12 54	− 2	—	—	—
Sendai		39·0	19	7 30	0	13 26	− 3	—	—	—
Mizusawa		39·9	20	e 7 41	+ 4	9 52	PPP	—	—	—
Vladivostok		41·8	7	e 7 54	+ 1	i 14 14	+ 3	—	—	22·3
Calcutta	N.	42·1	303	—	—	i 14 14	− 2	—	—	—
Sydney		42·4	149	—	—	e 12 27?	?	—	—	—
Agra	E.	52·6	304	e 9 11	− 7	17 5	+21	12 21	PPP	—
Irkutsk		53·7	344	e 9 22	− 4	e 16 56	− 3	—	—	e 27·5
Frunse		61·6	319	10 27	+ 5	e 19 3	+20	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		62·1	316	e 10 27	+ 2	e 19 0	+11	—	—	—
Tashkent		64·5	316	e 10 35	− 6	i 19 16	− 3	—	—	e 26·0
Sverdlovsk		75·5	330	e 11 44	− 4	21 18	−10	—	—	36·4
Baku		78·4	311	—	—	e 21 57	− 3	—	—	e 40·5
Moscow		87·9	326	12 50	− 3	23 16	[− 4]	16 23	PP	e 52·2
Ksara		89·3	303	i 13 2k	+ 3	e 23 56	+ 8	e 16 34	PP	—
Pulkovo		91·6	330	e 13 9	− 1	23 35	[− 7]	17 9	PP	—
Warsaw		98·0	322	—	—	e 24 8	[− 9]	—	—	e 48·5
Potsdam		102·6	324	e 18 16	PP	e 24 36	[− 3]	—	—	e 51·5
Scoresby Sund		105·1	349	e 13 49	−22	—	—	—	—	—
Aberdeen		108·3	333	—	—	e 25 7	[+ 2]	e 41 47	?	e 54·8
Kew		110·5	327	—	—	e 28 32	PS	e 29 32	PPS	e 40·4
Tucson		116·7	52	e 18 43	[− 3]	—	—	i 19 52	PP	—
Granada		119·6	315	25 37	S	(25 37)	[−11]	28 55	PS	65·0
Harvard		133·4	17	e 17 27	?	e 39 18	SS	e 21 43	PP	e 70·4
La Paz	z.	159·6	138	20 3	[+ 3]	—	—	—	—	—

Additional readings :—
Palau L given as S.
Agra S_cSE = +19m.1s., SSE = +20m.52s.
Ksara ePS = +24m.55s.
Pulkovo S = +24m.5s., ePS = +25m.15s.
Warsaw eZ = +22m.27s.? eN = +24m.14s.
Long waves were also recorded at Phu-Lien, Christchurch, Uccle, De Bilt, Pasadena, Wellington, and San Fernando.

July 16d. 19h. Undetermined shock.

Brisbane ePN =18m.30s., S =22m.48s.
Adelaide PN =19m.10s., iPP =20m.14s., iP_cP =21m.20s., i =22m.20s. and 22m.49s., iS =24m.46s., SS =26m.30s., i =28m.19s., S_cS =28m.52s., L =30·8m.
Manila eP =19m.19s., SEN =24m.28s., LEN =28·3m.
Zi-ak-wei eZ =20m.50s., iZ =27m.20s., Lz =33m.47s.
Sydney eP =24m.42s., eS =29m.54s., eL =32·4m.
Tashkent eP =25m.24s., eS =35m.49s., eL =50·6m.
Christchurch P =26m.20s., SE =31m.26s., L_q =33m.25s., L =35·8m.
Riverview eN =24m.18s., eLE =30·3m.
Perth i =27m.38s., 30m.25s., and 34m.45s.
Calcutta iN =32m.3s.
Wellington e =33m.0s., L =38·0m.
Ksara ePP =33m.9s., ePS =42m.50s.
Sitka e =35m.54s.
Scoresby Sund e =36m.2s.
Victoria e =37m.0s., L =58·0m.
Warsaw eEN =40m., eZ =42m., eLN =71m.
Honolulu e =40m.58s.
Potsdam eN =49m.0s., eE =49m.24s., eL =73·0m.
Granada P =49m.30s., PP =53m.14s., PS =62m.53s., PPS =64m.4s., eSS =70m.39s., L =86·9m.
Aberdeen eE =68m.0s., eLEN =80·0m.
Long waves were also recorded at Toledo, Rome, Kew, De Bilt, Uccle, Moscow, Philadelphia, Pasadena, Vladivostok, Sverdlovsk, and Harvard.

July 16d. 23h. Undetermined shock.

Manila eP =20m.28s., SEN =28m.23s.
Zi-ka-wei eZ =26m.34s., iZ =36m.40s., LZ =40·0m.
Scoresby Sund e =28m.46s.
Vladivostok iPP =29m.41s., iS =34m.33s., eL =39·6m.
Almata P_cP =31m.9s.
Tashkent eP =31m.11s., eS =41m.30s., eL =58·0m.
Andijan eP_cP =31m.38s.
Sverdlovsk P =31m.47s., eS =42m.18s., L =57·0m.
Calcutta eN =33m.2s.
Ksara e =38m.28s.
Warsaw eN =42m., eE =45m., eZ =49m., eLN =74m.
Granada eP =45m.0s., PP =47m.58s., e =52m.30s., PS =59m.0s., i =62m.54s. and 65m.10s., SS =77m.2s., L =97·4m.
Potsdam eE =53m.48s., eN =55m.0s., eLN =74·8m.
Long waves were also recorded at San Fernando, Rome, Uccle, De Bilt, East Machias Philadelphia, Kew, Aberdeen, and Moscow.

July 16d. Readings also at 4h. (La Paz), 7h. (near Honolulu), 12h. (Balboa Heights and near Berkeley), 15h. (Scoresby Sund), 16h. (Edinburgh, Bombay, and near Aberdeen), 19h. (Berkeley, Balboa Heights (3), and Tucson). 20h. (Balboa Heights (2)), 21h. (Balboa Heights (2)), 22h. (Pasadena, Ksara, near Apia, Palomar, Riverside, La Jolla, Mount Wilson, Santa Barbara, Haiwee, Tinemaha, Tucson, and Balboa Heights), 23h. (Perth, Victoria, Wellington, Riverview, Christchurch, Sydney, Adelaide, Brisbane, and Honolulu).

July 17d. 6h. 36m. 26s. Epicentre 37°·3N. 70°·9E. (as on 1940, June 17d.).

$A = +\cdot2609$, $B = +\cdot7535$, $C = +\cdot6034$; $\delta = -8$; $h = -1$;
$D = +\cdot945$, $E = -\cdot327$; $G = +\cdot197$, $H = +\cdot570$, $K = -\cdot797$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		3·6	18	i 0 57	− 1	—	—	—	—	—
Frunse		6·3	27	i 1 33	− 3	—	—	—	—	—
Almata		7·5	36	—	—	4 33	S_g	—	—	—
Dehra Dun	N.	9·1	138	e 1 51?	−23	e 4 0	0	—	—	e 5·0
Agra	E.	11·8	147	—	—	3 44	?	—	—	—
Bombay		18·4	175	e 5 35	?	i 7 45	+ 4	i 8 15	SSS	i 9·6
Sverdlovsk		20·7	344	4 42	− 2	i 8 33	+ 2	11 10	L_g	12·7
Hyderabad		20·9	159	—	—	8 32	− 3	—	—	—
Calcutta	N.	21·0	129	e 5 55	?	i 8 50	+13	e 9 1	SS	e 10·3
Kodaikanal	E.	27·6	166	—	—	e 9 34?	−58	—	—	—
Ksara		28·6	273	e 6 4	+ 4	e 11 20	+32	—	—	—
Moscow		29·0	321	e 6 1	− 3	10 50	− 4	—	—	—
Pulkovo		34·2	325	—	—	12 38	+22	—	—	e 14·8
Warsaw		37·6	310	e 8 4	+46	e 15 41	SS	e 15 57	SSS	e 19·6
Upsala		40·4	322	—	—	e 16 17	SS	—	—	e 24·7
Potsdam		42·5	311	e 10 12	PPP	e 14 16	− 6	i 17 41	SS	e 21·4
Aberdeen		50·7	318	—	—	e 20 2	SS	—	—	e 27·0
Scoresby Sund		56·3	336	—	—	e 17 34	0	—	—	—

Additional readings :—
Warsaw eZ = +8m.34s.? and +15m.48s., eE = +16m.19s. and +17m.10s., eN = +17m.27s., eEN = +17m.58s.
Potsdam ePPPZ = +10m.20s., eZ = +16m.44s., eN = +16m.47s., iSSSN = +18m.51s., iN = +20m.26s.
Aberdeen eN = +20m.17s.
Long waves were also recorded at Kew, Helwan, De Bilt, Bucharest, Uccle, San Fernando, Toledo, Triest, Stuttgart, Granada, Bergen, Colombo, Harvard, Baku, College, Bozeman, and Philadelphia.

July 17d. 11h. 44m. 47s. Epicentre 37°·3N. 70°·9E. (as at 6h.).

$A = +\cdot2609$, $B = +\cdot7535$, $C = +\cdot6034$; $\delta = -8$; $h = -1$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tashkent		4·2	343	i 1 9	+ 2	e 1 59	+ 2	—	—	—
Frunse		6·3	27	1 45	P*	—	—	—	—	—
Almata		7·5	36	2 4	P*	—	—	—	—	—
Dehra Dun	N.	9·1	138	e 2 26?	PP	e 3 57	− 3	—	—	e 5·0
Agra	E.	11·8	147	e 3 15	PPP	5 0	− 6	5 43	SSS	—
Semipalatinsk		14·7	24	e 3 33	+ 2	e 6 23	+ 7	—	—	—
Bombay		18·4	175	—	—	e 7 53	+12	e 8 24	SSS	e 10·0
Grozny		20·1	296	4 37	− 1	8 23	+ 4	—	—	—
Sverdlovsk		20·7	344	4 41	− 3	i 8 32	+ 1	—	—	12·9
Hyderabad	N.	20·9	159	—	—	e 8 39	+ 4	—	—	e 11·2
Calcutta	N.	21·0	129	e 5 39	PPP	e 8 34	− 3	i 10 42	P_cP	e 10·0
Piatigorsk		22·1	297	4 59	0	—	—	—	—	—
Kodaikanal	E.	27·6	166	—	—	e 11 13?	SS	—	—	—
Irkutsk		27·7	46	e 6 19	PP	e 11 9	+36	—	—	14·9
Ksara		28·6	273	e 5 59	− 1	e 11 13	+25	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Moscow		29·0	321	6 1	− 3	e 10 51	− 3	6 19	pP	16·6
Helwan	E.	33·6	269	—	—	e 13 35	SS	e 14 33	SSS	—
Pulkovo		34·2	325	e 6 45	− 4	e 12 11	− 5	—	—	e 16·6
Warsaw		37·6	310	e 8 13?	PP	e 15 36	SS	e 15 53	SSS	e 20·2
Upsala		40·4	322	—	—	e 16 13?	SS	—	—	—
Potsdam		42·5	311	i 7 56	− 3	e 17 1	SS	9 36	PP	e 22·5
Hamburg	E.	44·3	312	e 11 13?	?	—	—	—	—	—
Bergen		46·6	323	—	—	e 17 35	?	—	—	—
Scoresby Sund		56·3	336	—	—	e 17 41	+ 7	—	—	—
Tinemaha		105·5	8	i 22 21	PKS	—	—	—	—	—
Mount Wilson	Z.	108·4	8	i 22 8	PKS	—	—	—	—	—
Pasadena		108·4	8	i 22 8	PKS	—	—	—	—	—
Riverside		108·6	8	i 22 3	PKS	—	—	—	—	—
Palomar	Z.	109·3	7	i 21 57	PKS	—	—	—	—	—
La Jolla	Z.	109·8	7	e 21 57	PKS	—	—	—	—	—
Tucson		110·8	2	i 21 16	PPP	—	—	—	—	—
San Juan		111·4	316	e 18 6	[−30]	—	—	—	—	—
La Paz	Z.	138·4	288	20 59	?	—	—	—	—	—

Additional readings :—
Agra S_e = +6m.23s.
Calcutta eSSN = +8m.45s., eS_eSN = +17m.59s.
Warsaw eNZ = +9m.13s.?, eN = +15m.57s., eE = +16m.23s. and +17m.12s., eN = +17m.28s., eEN = +18m.0s., eN = +18m.44s. and +19m.12s.
Potsdam eSSE = +17m.39s.
Long waves were also recorded at Colombo, Kew, Vladivostok, Aberdeen, Bucharest, Rome, Uccle, Baku, Stuttgart, and De Bilt.

July 17d. Readings also at 0h. (near Triest, Berkeley, and Balboa Heights), 2h. (near Apia), 6h. (Andijan (2), Frunse (2), Almata (2), Agra, Moscow, Samarkand, Tashkent (2), and Balboa Heights), 10h. (Tucson), 11h. (Triest), 12h. (Granada), 14h. (Balboa Heights), 15h. (Balboa Heights), 20h. (near Triest), 21h. (Potsdam, Pulkovo, Sverdlovsk, Warsaw, near Berkeley, Scoresby Sund, and Moscow), 22h. (near Christchurch, Wellington, New Plymouth, and Scoresby Sund (2)), 23h. (Balboa Heights, and near Mizusawa).

July 18d. Readings at 0h. (near Algiers), 2h. (Istanbul, Mount Wilson, Pasadena, Palomar, Riverside, and Tucson), 5h. (near La Paz), 6h. (Agra, and Balboa Heights), 10h. (near La Paz), 12h. (Balboa Heights), 13h. (near Tananarive (2) and near Berkeley), 14h. (near Balboa Heights (2)), 15h. (Scoresby Sund, Huancayo, Tinemaha, La Paz, Mount Wilson, Pasadena, Palomar, Riverside, and Tucson), 16h. (Balboa Heights (2)), 17h. (Manila), 18h. (Mizusawa), 20h. (Manila), 21h. (Potsdam), 22h. (Wellington, Branner, and Berkeley).

July 19d. 4h. 47m. 27s. Epicentre 52°·2N. 173°·9E.

A = −·6119, B = +·0654, C = +·7882 ; δ = −4 ; h = −6 ;
D = +·106, E = +·994 ; G = −·784, H = +·084, K = −·615.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
College	23·2	42	e 5 10	+ 1	e 9 10	− 8	e 5 47	PP	i 9·7
Sapporo	23·6	261	5 16	+ 3	9 34	+ 9	—	—	—
Mizusawa	26·1	253	—	—	e 6 7	PP	—	—	—
Sendai	26·8	251	5 33	−11	11 7	SS	—	—	—
Sitka	29·1	60	e 6 0	− 4	i 10 53	− 3	—	—	e 11·7
Vladivostok	29·4	268	e 6 5	− 2	i 11 14	+13	—	—	14·5
Nagano	29·5	252	e 6 21	+13	—	—	—	—	—
Kobe	32·6	252	6 37	+ 2	11 58	+ 7	—	—	—
Honolulu	37·8	133	e 7 19	− 1	e 13 16	+ 5	e 8 48	PP	e 15·2
Victoria	39·1	69	7 33?	+ 2	13 33?	+ 2	—	—	16·6
Seattle	40·1	70	e 7 42	+ 3	—	—	e 9 3	PP	—
Irkutsk	41·1	299	7 48	+ 1	—	—	—	—	21·1
Ukiah	44·5	81	e 8 44	+29	e 14 47	− 4	e 9 59	PP	e 18·2
Berkeley	45·9	82	e 8 24	− 2	e 16 8	+57	e 10 11	PP	e 20·8
Santa Clara	46·4	82	e 8 47	+17	e 15 19	+ 1	—	—	e 21·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Butte		46·6	65	e 8 31	− 1	e 15 18	− 3	e 9 45	PcP	e 18·9
Lick	N.	46·6	82	e 8 40	+ 8	—	—	—	—	—
Bozeman		47·7	66	e 8 38	− 2	e 15 29	− 7	e 10 0	PcP	e 19·3
Fresno	N.	48·1	81	e 8 57	+14	—	—	—	—	—
Haiwee		49·6	80	e 9 0	+ 5	—	—	—	—	—
Santa Barbara	Z.	49·6	83	i 9 4	+ 9	—	—	—	—	—
Salt Lake City		50·2	72	e 9 6	+ 6	e 16 7	− 4	e 10 22	PcP	e 20·0
Mount Wilson		50·8	82	e 9 3	− 1	—	—	—	—	—
Pasadena		50·8	82	e 8 58	− 6	i 16 17	− 3	—	—	e 21·7
Riverside		51·4	82	e 9 13	+ 4	—	—	—	—	—
Manila		56·2	248	i 9 46	+ 2	17 39	+ 6	—	—	24·9
Tucson		56·5	78	i 9 47	+ 1	e 17 41	+ 4	e 10 41	PcP	e 22·3
Scoresby Sund		57·1	6	e 9 51	+ 1	i 17 47	+ 2	e 12 3	PP	e 22·8
Sverdlovsk		58·4	323	i 10 0	0	—	—	—	—	27·6
Lincoln		58·8	62	e 9 58	− 4	i 18 3	− 4	e 12 0	PP	e 23·1
Ivigtut		62·1	21	e 10 25	0	e 18 47	− 2	e 22 23	SS	e 25·8
Chicago, U.S.C.G.S.		62·9	57	e 10 28	− 2	i 18 56	− 4	—	—	e 25·9
Florissant		63·6	60	e 10 30	− 5	i 19 4	− 4	—	—	—
St. Louis		63·8	60	e 10 34	− 2	e 19 6	− 5	—	—	e 26·8
Pulkovo		64·6	340	i 10 42	+ 1	e 19 22	+ 1	—	—	e 31·3
Toronto		65·6	50	—	—	e 19 27	− 6	—	—	32·5
Ottawa		65·9	46	—	—	e 19 29	− 8	e 26 59	SSS	35·6
Shawinigan Falls		66·3	43	10 51	− 1	19 36	− 6	—	—	—
Tashkent		66·3	307	10 53	+ 1	—	—	—	—	34·8
Moscow		66·6	334	i 10 55	+ 1	19 47	+ 2	—	—	39·6
Seven Falls		66·6	42	—	—	e 19 42	− 3	e 27 21	SSS	33·6
Upsala		66·7	347	e 10 53	− 2	e 19 40	− 6	e 24 33?	SS	e 33·6
Calcutta	N.	69·9	280	—	—	i 20 28	+ 4	—	—	—
East Machias		70·0	42	e 11 14	− 1	e 20 19	− 7	e 21 16	ScS	—
Georgetown		70·3	51	e 11 16	− 1	i 20 6	−23	—	—	—
Philadelphia		70·4	49	e 11 13	− 5	e 20 22	− 8	e 14 0	PP	e 31·5
Columbia		72·2	57	—	—	e 20 51	0	e 28 50	SSS	e 29·2
Agra	E.	72·5	290	e 14 26	PP	—	—	—	—	—
Warsaw		73·5	343	e 11 33?a	− 3	e 20 57	− 9	i 21 41	PS	e 37·6
Hamburg		73·7	351	e 11 38a	0	e 21 8	0	—	—	e 38·6
Potsdam		74·5	348	e 11 42	0	i 21 58	PS	i 14 27	PP	—
De Bilt		75·6	353	i 11 49a	+ 1	i 21 32	+ 3	e 27 3	SS	e 37·6
Baku		75·8	319	—	—	e 27 15	SS	e 30 27	SSS	—
Kew		76·6	356	i 11 53	− 1	e 21 43	+ 3	e 16 43	PPP	e 26·6
Uccle		77·0	353	i 11 56a	0	e 21 44	− 1	e 14 49	PP	e 37·6
Stuttgart		78·6	349	e 12 6	+ 1	e 22 10	+ 8	e 22 59	PS	—
Hyderabad		79·7	284	22 9	S	(22 9)	− 4	—	—	—
Bucharest		79·8	337	e 12 15	+ 3	—	—	—	—	46·6
Zurich		80·0	350	e 12 12	− 1	—	—	—	—	—
Triest		81·0	346	e 12 21	+ 3	i 22 44	+17	e 17 19	PPP	e 45·1
Bermuda		81·4	47	—	—	e 22 27	− 4	e 27 50	SS	e 33·5
Clermont-Ferrand		82·1	353	e 12 24	0	—	—	—	—	—
Rome		84·9	347	i 12 39a	+ 1	i 23 1	− 5	e 15 53	PP	—
Ksara		86·8	326	i 12 50a	+ 3	e 23 45	+20	—	—	—
Toledo		88·3	358	e 12 55	0	—	—	—	—	47·5
Granada		91·0	358	i 13 7k	0	23 48	[+ 9]	17 16	PP	43·8
Almeria		91·3	357	—	—	e 21 48	?	—	—	—
San Juan		92·6	55	—	—	e 24 2	−16	e 25 41	PS	e 36·7

Additional readings :—
College i = +5m.23s., e = +9m.19s., l = +19m.26s.
Sitka e = +6m.7s.
Honolulu i = +7m.36s., ePPP = +9m.10s.
Ukiah e = +14m.53s.
Berkeley ePEN = +8m.29s., eNZ = +8m.35s., eSS?N = +19m.13s.
Butte e = +8m.47s., ePPP = +11m.0s., eScS = +18m.27s.
Bozeman e = +8m.43s. and +9m.10s., ePP = +10m.42s., ePPP = +11m.18s., e = +15m.35s., eScS = +18m.35s., eSS = +18m.53s.
Salt Lake City e = +9m.10s., ePPP = +11m.56s., eScS = +18m.47s., eSS = +19m.31s.
Pasadena i = +9m.11s.

Continued on next page.

Tucson i = +9m.56s. and +10m.1s., ePP = +11m.58s., ePPP = +12m.59s., eS_cS = +19m.36s., eSS = +21m.10s.
Scoresby Sund iPPP = +13m.35s., eSS = +21m.31s.
Lincoln e = +10m.22s., eS_cS = +19m.45s.
Chicago U.S.C.G.S. e = +10m.37s.
Florissant ePE = +10m.33s.
St. Louis eSN = +20m.19s.
East Machias eSSS = +28m.3s.
Philadelphia e = +11m.17s., eSSS = +28m.8s.
Warsaw eE = +21m.1s.
Potsdam ePE = +11m.47s., eN = +16m.57s., iE = +17m.24s., iPPSZ = +22m.5s., iZ = +23m.7s., eN = +23m.23s., eZ = +26m.51s.
Kew eN = +22m.31s., eZ = +22m.39s.
Uccle eSN = +21m.49s., eSSN = +27m.18s.
Stuttgart eSN = +22m.13s.
Triest ePS = +23m.22s., eSS = +28m.29s., eSSS = +31m.39s.
Rome e = +15m.56s., ePS = +23m.52s., eSS = +28m.33s.?
Granada PS = +25m.1s., PPS = +25m.45s., SS = +30m.8s., SSS = +33m.19s.
Long waves were also recorded at Bombay, San Fernando, and Huancayo.

July 19d. 4h. Undetermined shock.

Baku eP = 54m.55s., eS = 56m.5s., L = 57·8m.
Grozny iP = 55m.52s.
Tashkent eP = 55m.55s., eS = 57m.46s., L = 59·3m.
Andijan P = 56m.30s.
Ksara iP = 57m.26s.
Sverdlovsk P = 57m.40s., eS = 61m.10s.
Helwan ePZ = 58m.21s., eEN = 62m.33s.
Moscow eP = 58m.39s., eS = 63m.31s.
Pulkovo eP = 59m.41s., eS = 64m.35s.
Sotchi S = 60m.2s.
Bombay e = 67m.0s.

July 19d. 10h. 12m. 17s. Epicentre 43°·2N. 16°·4E. (as on 1939 Jan. 3d.).

Seismic disturbances on the Isle of Huar. Strongly felt near the epicentre at Jelsa 43°10′N. 16°27′E. Many repetitions, mostly slight occurred during July and August.

Extrait du texte serbe, Edit. de l'Academie serbe des Sciences, pp. 3-9.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		3·1	322	e 0 54	P*	i 1 26	− 3	i 1 1	P_g	i 1·7
Rome		3·2	246	e 0 57	P*	e 1 29	− 3	e 1 14	P_g	—
Kalocsa		3·8	28	0 59	− 2	i 2 0	S*	1 3	P*	e 2·1
Kecskemet	z.	4·4	31	—	—	e 2 19	S*	—	—	—
Budapest		4·6	23	e 1 13	+ 1	i 2 21	S*	—	—	e 3·0
Sofia		5·1	93	e 1 25	+ 5	e 2 37	S*	—	—	—
Chur		6·0	307	e 1 28	− 4	e 2 41	− 2	—	—	—
Ravensburg		6·6	316	e 1 41	0	e 2 48	−10	—	—	—
Zurich		6·9	309	e 1 45	0	—	—	—	—	—
Bucharest		7·1	77	—	—	e 3 10	0	e 4 3	S_g	—
Ebingen		7·2	316	e 1 48	− 1	e 3 19	+ 6	e 1 55	P*	—
Stuttgart		7·5	320	e 1 45a	− 8	i 3 35	+15	e 2 14	P*	—
Basle		7·6	307	e 1 47	− 8	e 3 27	+ 4	—	—	—
Jena		8·4	338	e 1 43	−23	—	—	e 2 26	PP	e 3·1
Potsdam		9·5	347	—	—	e 4 39	S*	e 5 5	S_g	—

Additional readings :—
Triest iP* = +58s., i = +1m.7s. and +1m.29s., iS* = +1m.34s.
Rome i = +1m.47s., iS* = +1m.52s., i = +1m.55s.
Budapest eN = +1m.51s., iN = +2m.28s.
Ravensburg eN = +2m.39s.
Bucharest eE = +3m.16s.
Stuttgart iSNE = +2m.54s.
Potsdam eE = +4m.43s., iN = +5m.22s.
Long waves were also recorded at De Bilt, Uccle, Hamburg, and Warsaw.

July 19d. 20h. 9m. 40s. Epicentre 43°·2N. 16°·4E. (as at 10h.).

$A = +\cdot7015$, $B = +\cdot2065$, $C = +\cdot6821$; $\delta = 0$; $h = -3$;

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		3·1	322	i 0 57	P*	i 1 25	− 4	i 1 1	P_g	i 1·7
Rome		3·2	246	e 0 50	− 2	e 1 42	S*	i 1 4	P_g	—
Budapest		4·6	23	e 1 10	− 2	i 2 26	S*	—	—	—
Sofia		5·1	93	e 1 26	P*	e 2 38	S*	—	—	—
Chur		6·0	307	e 1 34	+ 2	e 2 44	+ 1	—	—	—
Ravensburg		6·6	316	e 2 35	?	e 2 50	− 8	—	—	—
Zurich		6·9	309	e 1 46	+ 1	e 3 10	+ 5	—	—	—
Bucharest		7·1	77	—	—	e 3 16	+ 6	e 3 52	S_g	—
Ebingen		7·2	316	—	—	e 3 39	S*	—	—	—
Stuttgart		7·5	320	e 1 49a	− 4	i 3 14	− 6	e 2 22	P_g	—
Basle		7·6	307	e 1 51	− 4	e 3 35	+12	—	—	—
Jena		8·4	338	3 8	P_g	e 3 50	+ 7	—	—	i 4·3
Potsdam		9·5	347	—	—	e 4 38	S*	i 5 22	S_g	—

Additional readings :—
Triest e = +1m.5s.
Rome eN = +1m.14s., iN = +1m.51s., iS* = +1m.58s.
Budapest eN = +1m.13s.
Ravensburg eE = +3m.2s., eN = +3m.6s.
Stuttgart eP* = +1m.57s., eS = +2m.51s., eS_g = +3m.31s.
Jena eE = +3m.20s.
Potsdam eE = +5m.2s., eZ = +5m.8s.

July 19d. Readings also at 0h. (near Berkeley), 3h. (Tucson, Riverside, Pasadena, and Mount Wilson), 4h. (Helwan, Huancayo, Pennsylvania, and La Paz), 5h. (Adelaide and near Mizusawa), 6h. (Wellington), 8h. (Balboa Heights), 10h. (near Triest), 11h. (Balboa Heights), 16h. (Philadelphia, East Machias, College, and Tucson), 19h. (near Triest), 20h. (Christchurch, New Plymouth, near Manila, and near Wellington), 21h. (near Branner), 22h. (near Granada, Tucson, Riverside, Pasadena, and Mount Wilson).

July 20d. 1h. 53m. 52s. Epicentre 15°·6S. 173°·6W. (as on 1939 June 17d.).

$A = -\cdot9576$, $B = -\cdot1074$, $C = -\cdot2673$; $\delta = -2$; $h = +6$;
$D = -\cdot111$, $E = +\cdot994$; $G = +\cdot266$, $H = +\cdot030$, $K = -\cdot964$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		2·5	45	i 0 30k	−13	i 1 3	−11	—	—	—
Arapuni		24·3	201	—	—	10 8	SS	—	—	e 11·7
Wellington		27·5	200	5 52	+ 2	10 28	− 2	i 12 8	SS	16·6
Christchurch		30·2	200	6 16	+ 2	11 18	+ 5	12 58	L_q	15·0
Brisbane	E.	33·1	245	i 8 8	PPP	—	—	—	—	e 16·6
Riverview		36·5	235	e 8 47	PPP	e 13 16	+25	—	—	e 15·8
Sydney		36·5	235	i 7 56	+47	e 14 2	+71	—	—	e 16·1
Honolulu		39·8	24	e 7 39	+ 3	e 13 33	− 9	e 9 9	PP	e 15·9
Adelaide		46·8	238	i 12 18	?	18 20	SSS	—	—	—
Manila		71·3	293	11 29	+ 6	19 25	?	—	—	28·9
Santa Barbara	Z.	71·4	46	e 11 27	+ 3	—	—	—	—	—
Santa Clara		71·6	42	e 11 30	+ 5	e 20 49	+ 5	—	—	e 29·7
Berkeley		71·8	42	e 11 24	− 2	e 20 28	−18	e 25 8	SS	e 31·1
Ukiah		72·0	40	—	—	e 20 42	− 7	e 21 23	S_cS	e 29·5
La Jolla		72·2	48	e 11 22	− 7	—	—	—	—	—
Pasadena		72·3	46	i 11 25	− 4	e 20 50	− 2	—	—	e 31·1
Mount Wilson		72·4	46	i 11 27	− 3	—	—	—	—	—
Riverside	Z.	72·8	46	e 11 29	− 3	—	—	—	—	—
Haiwee		73·5	45	e 11 35	− 1	—	—	—	—	—
Tinemaha	Z.	73·9	44	e 11 35	− 4	—	—	—	—	—
Tucson		76·6	51	i 11 52	− 2	e 21 37	− 3	e 14 18	PP	e 30·4
Vladivostok		76·8	323	i 11 57	+ 2	e 21 51	+ 9	—	—	36·2
Seattle		77·8	34	—	—	e 21 43	−10	e 22 19	S_cS	e 32·5
Victoria		77·8	33	11 58	− 3	i 21 49	− 4	26 56	SS	38·1
Sitka		79·1	21	e 12 5	− 3	e 21 58	− 9	e 27 32	SS	e 32·5

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		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Salt Lake City		80·1	43	e 12 12	− 1	e 22 14	− 4	e 17 19	PPP		e 31·8
Butte		82·3	38	e 12 24	− 1	i 22 36	− 4	e 23 0	S_eS		e 32·6
College		82·6	11	e 12 23	− 3	i 22 38	− 5	e 32 10	SSS		e 34·1
Bozeman		83·1	39	e 12 29	0	e 22 46	− 2	e 15 40	PP		e 33·8
Lincoln		90·5	48	e 13 23	+18	e 23 23	[−13]	e 25 11	PPS		e 36·7
Florissant		94·5	52	e 13 24	+ 1	i 23 56	[− 2]	i 31 7	SS		—
St. Louis		94·5	52	e 13 23	0	e 23 56	[− 2]	—	—		—
Huancayo		94·6	104	e 13 55	+31	i 24 7	[+ 8]	i 25 21	PS		e 36·4
Chicago U.S.C.G.S.		97·3	49	e 16 33	PP	e 24 12	[− 1]	e 26 20	PS		e 40·5
Irkutsk		97·4	322	—	—	26 51	PS	28 57	?		48·1
Columbia		100·6	58	—	—	e 24 36	[+ 6]	e 26 44	PS		—
Toronto		103·6	48	—	—	e 24 44	[0]	e 33 4	SSP		47·1
Ottawa		106·4	47	—	—	e 26 8?	− 6	e 33 50	SS		e 44·1
Philadelphia		107·2	53	—	—	e 24 55	[− 5]	e 27 43	PS		e 46·6
Harvard		109·2	50	e 14 20	P	e 28 33	PS	e 18 26	PP		e 53·1
Seven Falls		109·9	45	e 19 26	PP	e 25 14	[+ 2]	e 28 32	PS		51·1
San Juan		111·0	76	e 19 29	PP	e 25 16	[0]	e 28 31	PS		e 45·3
East Machias		112·3	47	—	—	e 25 24	[+ 3]	e 29 5	PS		e 48·6
Agra	E.	113·1	294	—	—	i 25 28	[+ 4]	e 35 34	SS		—
Bermuda		113·9	61	—	—	e 25 33	[+ 5]	e 29 5	PS		e 57·1
Rio de Janeiro	E.	118·2	127	—	—	e 36 38	SS	—	—		—
Sverdlovsk		122·2	328	e 18 57	[0]	e 26 1	[+ 4]	i 20 32	PP		49·1
Scoresby Sund		122·5	11	e 18 59	[+ 1]	e 28 26	{+56}	e 20 33	PP		e 49·9
Pulkovo		132·5	345	e 19 23	[+ 6]	i 22 48	PKS	i 21 40	PP		—
Moscow		133·4	336	e 19 21	[+ 3]	25 59	[−29]	22 48	PKS		66·6
Baku		134·9	313	e 19 32	[+11]	—	—	e 23 10	PKS		—
Upsala		135·1	353	e 22 8?	PP	—	—	—	—		e 66·1
Aberdeen	E.	138·0	8	—	—	e 36 18	?	e 40 22	SS		e 65·4
Copenhagen		139·7	354	e 19 35	[+ 5]	—	—	22 26	PP		—
Warsaw		141·7	346	e 19 29k	[− 4]	e 32 53	PS	e 22 35	PP		e 72·1
Potsdam		142·9	353	i 19 31	[− 4]	e 23 6	PKS	i 22 44	PP		76·5
De Bilt		143·6	1	19 36k	[0]	i 41 40	SS	e 22 50	PP		e 71·6
Kew		143·8	6	19 35	[− 2]	e 26 51	[+ 6]	e 22 35	PP		e 69·1
Uccle		144·9	3	i 19 38	[− 1]	e 41 49	SS	e 22 58	PP		e 60·1
Bucharest		146·8	335	e 19 46	[+ 4]	—	—	—	—		77·1
Stuttgart		146·8	357	e 19 46a	[+ 4]	—	—	—	—		—
Ksara		147·8	310	e 19 50	[+ 6]	36 32	PPS	e 23 20	PP		—
Zurich		148·3	359	e 19 48	[+ 3]	—	—	—	—		—
Chur		148·7	358	e 19 48	[+ 3]	—	—	—	—		—
Sofia		149·3	336	e 19 52	[+ 6]	—	—	—	—		85·1
Triest		149·4	351	e 19 52	[+ 6]	e 26 43	[−10]	e 23 25	PP		e 71·8
Clermont-Ferrand		149·8	5	e 20 54	[+67]	—	—	—	—		—
Helwan		153·0	307	e 20 2	[+10]	30 40	{+ 5}	23 50	PP		—
Rome		153·3	350	e 19 53	[+ 1]	e 33 18	PPS	e 23 40	PP		—
Toledo		154·1	19	20 16	[+23]	—	—	—	—		—
Granada		156·7	21	19 56k	[− 1]	26 25	[−36]	23 42	SKP		77·3
Almeria		157·4	18	e 24 47	PP	—	—	—	—		80·1

Additional readings :—
Apia iS = +51s.
Wellington i = +13m.3s., L_q = +14m.58s.
Riverview eN = +8m.51s.
Honolulu e = +7m.47s., ePPP = +9m.33s., i = +13m.44s.
Adelaide PP = +13m.3s., P_cP = +14m.22s., S = +17m.0s.
Berkeley ePN = +11m.35s., eSN = +20m.33s., eSZ = +20m.43s., eE = +28m.50s., eN = +29m.23s.
Tucson i = +11m.55s., +11m.59s., and +12m.9s., ePPP = +16m.26s., eSS = +25m.43s.
Seattle i = +21m.50s., ePS = +22m.27s., eSS = +26m.31s., eSSS = +29m.41s.
Salt Lake City e = +12m.22s., eS_cS = +22m.37s., ePPS = +23m.29s., eSS = +27m.37s.
Butte ePPS = +23m.29s.
Bozeman ePPS = +23m.37s., eSS = +28m.22s., eSSS = +32m.10s.
Lincoln eS = +23m.57s., eSSS = +33m.15s.
Florissant iE = +24m.29s., eN = +24m.34s.
St. Louis eSKKSN = +24m.32s., iSE = +24m.37s.
Huancayo eS = +24m.35s., i = +24m.52s., eSS = +30m.19s., iPSPS = +31m.12s.
Columbia eSS = +32m.38s.
Philadelphia eS = +26m.13s., eSS = +33m.26s.

Continued on next page.

Harvard ePKPZ = +16m.38s., eSSE = +33m.38s.
Seven Falls e = +34m.38s.
San Juan eSS = +34m.47s., eSSS = +39m.13s.
East Machias eS = +27m.7s., eSS = +34m.45s.
Bermuda ePSPS = +35m.25s.
Scoresby Sund ePS = +30m.23s., eSS = +36m.53s.
Copenhagen +23m.11s.
Warsaw eN = +22m.59s., +23m.12s., and +38m.17s., eE = +41m.11s.
Potsdam ePKPN = +19m.35s., ePKPE = +19m.38s.
De Bilt ePPP = +24m.6s., eE = +59m.58s.
Kew eSKSEZ = +33m.30s., ePPSNZ = +35m.20s., eZ = +37m.45s., ePSSE = +41m.41s., E = +42m.59s., eSSS = +46m.8s. ?, eL_g = +59·1m.
Stuttgart eZ = +19m.50s.
Helwan PKP_2E = +20m.14s., SKPE = +23m.35s., PSKSEN = +34m.2s.
Triest $ePKP_2$ = +20m.0s., ePPP = +26m.51s., eSKKS = +30m.9s., ePSKS = +33m.39s., ePPS = +36m.32s., eSS = +42m.36s., eSSS = +48m.13s.
Rome e = +21m.20s., +23m.46s., +24m.33s., and +36m.50s.
Granada PKP_2 = +20m.50s., PP = +25m.9s., PP(Δ >180°) = +27m.29s., SKKS = +32m.51s., PPS = +37m.53s., SS = +44m.2s., SSP = +45m.57s., SSS = +50m.59s.
Long waves were also recorded at Edinburgh, San Fernando, Ivigtut, Stonyhurst, and La Plata.

July 20d. Readings also at 1h. (near Lick), 2h. (near Apia), 3h. (Agra), 4h. (near Apia), 7h. (near Apia and Wellington), 8h. (Scoresby Sund), 10h. (Manila and near Triest), 11h. (Scoresby Sund and Sverdlovsk), 17h. (Tucson, Tinemaha, Riverside, Mount Wilson, and Pasadena), 18h. (Rome, College (2), Harvard, and Scoresby Sund), 19h. (Scoresby Sund), 20h. (near Tricst), 22h. (Granada and near Berkeley).

July 21d. 0h. 1m. 53s. Epicentre 40°·2N. 142°·3E. (as on 1938, September 11d.).

Strong at Miyako, Hakodate, Hatinohe, moderate at Morioka, Mizusawa, and slight at Aomori, Urakawa, Tukubasan, and Kakioka.

Epicentre 40°·1N. 142°·6E. Radius 200-300km. Shallow.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1940, Tokyo 1950, pp. 22-23.

$A = -·6060$, $B = +·4684$, $C = +·6429$; $\delta = -5$; $h = -2$;
$D = +·612$, $E = +·791$; $G = -·509$, $H = +·393$, $K = -·766$.

Tables for depth of focus 0·005 have been used.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyako	0·6	203	0 16k	+ 2	0 27	+ 2	—	—	—
Hatinohe	0·7	300	0 19k	+ 4	0 31	+ 4	—	—	—
Morioka	1·0	240	0 28a	+ 9	0 48	+15	—	—	—
Mizusawa	1·4	220	1 0 25	+ 1	0 43	0	—	—	—
Akita	1·7	254	0 33	+ 5	0 54	+ 4	—	—	—
Sendai	2·2	209	0 32	− 3	0 54	− 8	—	—	—
Hukusima	2·8	210	0 43k	− 1	1 15	− 2	—	—	—
Sapporo	2·9	346	0 48	+ 3	1 24	+ 5	—	—	—
Onahama	3·5	199	0 50	− 4	1 25	− 9	—	—	—
Mito	4·0	201	1 0	− 1	1 41	− 6	—	—	—
Nemuro	4·0	37	1 5	+ 4	1 44	− 3	—	—	—
Utunomiya	4·1	208	1 0	− 2	1 41	− 8	—	—	—
Kakioka	4·3	204	1 2	− 3	1 50	− 4	—	—	—
Tukubasan	4·3	204	1 2	− 3	1 47	− 7	—	—	—
Kumagaya	4·6	210	1 8	− 1	1 59	− 3	—	—	—
Maebasi	4·6	215	1 11	+ 2	2 3	+ 1	—	—	—
Tyosi	4·6	194	1 3	− 6	1 53	− 9	—	—	—
Nagano	4·8	224	1 11	− 1	2 27	+20	—	—	—
Tokyo, Cen. Met. Ob.	4·9	205	1 13	0	2 2	− 7	—	—	—
Yokohama	5·2	205	1 23	+ 6	—	—	—	—	—
Kohu	5·4	214	1 20	0	2 16	− 6	—	—	—
Mera	5·6	201	1 40	+17	—	—	—	—	—
Misima	5·7	208	1 32	+ 8	2 25	− 4	—	—	—
Osima	5·9	204	1 25	− 2	2 23	−11	—	—	—
Gihu	6·5	224	1 35	0	2 44	− 5	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nagoya		6·6	221	1 36	− 1	2 58	+ 7	—	—	—
Kameyama		7·1	223	1 57	+13	—	—	—	—	—
Hatidyozima		7·4	197	1 47	− 1	2 59	−12	—	—	—
Tinemaha	z.	73·4	57	i 11 26	− 1	—	—	e 11 50	pP	—
Pasadena	z.	75·3	58	i 11 37	− 1	—	—	i 12 2	pP	—
Mount Wilson	z.	75·4	58	i 11 37	− 1	—	—	i 12 2	pP	—
Riverside	z.	75·9	58	i 11 40	− 1	—	—	i 12 5	pP	—
Tucson		81·2	56	i 12 9	− 1	—	—	—	—	—

July 21d. 5h. 16m. 17s. Epicentre 16°·1S. 168°·3E. (as on 1939, November 3d.).

A = −·9413, B = +·1949, C = −·2756; δ = −1; h = +6;
D = +·203, E = +·979; G = +·270, H = −·056, K = −·961.

Tables for depth of focus 0·040 have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	18·1	229	i 3 55	+ 2	i 7 13	+12	i 4 37	pP	—
Riverview		23·5	217	e 4 53	+ 7	i 8 57	+21	i 5 40	pP	—
Sydney		23·5	217	e 3 43?	−63	—	—	—	—	—
Wellington	z.	25·7	170	e 4 43?	−23	—	—	—	—	—
Manila		55·8	301	e 9 24	+15	16 24	− 9	—	—	—
Pasadena	z.	85·9	53	e 12 9	0	—	—	e 12 49	pP	—
Mount Wilson	z.	86·0	53	e 12 9	0	—	—	e 12 51	pP	—
Riverside	z.	86·4	53	e 12 12	+ 1	—	—	e 12 53	pP	—
Tinemaha	z.	86·9	50	i 12 13	− 1	—	—	e 12 54	pP	—
College		87·3	17	e 16 2	PP	e 23 45	pS	—	—	—
Tucson		91·0	57	i 12 34	+ 1	e 24 10	sS	e 13 15	pP	—
Scoresby Sund		125·3	4	e 20 9	PP	e 36 41	SS	e 30 42	SP	—
Warsaw		135·6	331	e 22 0	PP	—	—	e 22 59	pPP	—
Triest		143·6	330	e 19 56	[+56]	—	—	i 22 38	pP	—
Rome		146·9	325	i 18 56s	[−10]	—	—	i 19 48	pPKP	—
Clermont-Ferrand		147·9	341	e 26 9	PPP	—	—	e 27 14	?	—
Toledo		155·4	346	e 19 28	[+10]	—	—	—	—	—
Almeria		157·8	340	e 19 16	[− 5]	e 32 32	?	—	—	—
Granada		157·8	343	i 20 21k	[+60]	26 22	[+25]	i 24 20	SKP	91·1

Additional readings :—
Tucson esP = +13m.52s.
Warsaw eEN = +22m.15s., eZ = +23m.20s.
Rome e = +20m.51s., ePP = +22m.21s. and +23m.9s.
Toledo i = +19m.42s.
Granada PP = +25m.7s., SKKS = +31m.34s., SKSP = +35m.11s., SS = +43m.56s., SSS = +53m.1s.
Long waves were also recorded at Balboa Heights.

July 21d. 15h. 38m. 25s. Epicentre 2°·3N. 120°·9E.

Intensity V in Borneo and in Northern and Central Celebes

Epicentre 2°·2N. 121°·5E. (Batavia).

Aardbevingen in Ned. Indie Waargenomen gedurende het Jaar, 1940, p. 17.

A = −·5132, B = +·8574, C = +·0398; δ = +9; h = +7;
D = +·858, E = +·514; G = −·020, H = +·034, K = −·999.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		12·2	1	i 3 1k	+ 3	i 5 33	+17	—	—	—
Taito		20·3	1	4 42	+ 2	8 26	+ 3	—	—	—
Phu-Lien		23·1	324	5 8	0	9 21	+ 5	—	—	—
Naha		24·6	14	5 16	− 7	9 40	− 2	—	—	—
Zi-ka-wei	N.	28·7	2	e 6 1	0	10 53	+ 3	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyazaki		31·1	19	6 20	− 2	11 14	−14	—	—	—
Koti		33·3	20	6 45	+ 4	12 30	+28	—	—	—
Hamada		34·1	17	6 47	− 1	12 10	− 4	—	—	—
Perth		34·4	187	i 6 56	+ 5	12 15	− 4	8 10	PP	18·5
Osaka		35·0	22	6 55	− 1	12 44	+16	—	—	—
Zinsen		35·4	7	12 22	S	(12 22)	−12	—	—	—
Nagoya		35·9	23	7 4	0	—	—	—	—	—
Yokohama		37·3	26	e 7 36	+20	e 15 52	SS	—	—	—
Calcutta	N.	37·5	305	i 7 16k	− 1	i 13 2	− 5	e 8 35	PP	—
Tokyo, Cen. Met. Ob.		37·6	26	e 7 19	+ 1	12 19	−49	i 8 48	PP	18·2
Nagano		37·7	23	7 19	0	12 58	−12	—	—	—
Sendai		40·2	25	7 40	0	13 41	− 7	—	—	—
Adelaide		40·6	158	7 45	+ 2	13 54	0	9 19	PP	21·6
Mizusawa		41·0	24	e 7 45	− 1	14 0	+ 1	—	—	—
Colombo	E.	41·1	278	7 47	0	14 1	0	—	—	25·1
Vladivostok		41·8	12	e 7 53	0	i 14 10	− 1	—	—	22·1
Brisbane	N.	42·8	137	e 7 59	− 2	i 14 17	− 9	i 17 29	SS	—
Mori		43·4	21	8 7	+ 1	i 14 30	− 5	—	—	—
Kodaikanal		43·9	283	i 8 5a	− 5	i 14 35	− 7	i 9 50	PP	22·1
Hyderabad		44·3	293	8 12	− 1	14 48	0	9 58	PP	21·0
Sapporo		44·5	20	e 8 15	0	e 14 49	− 2	e 18 18	SS	—
Riverview		45·9	145	e 8 46	+20	e 15 13	+ 2	i 18 39	SS	e 21·3
Sydney		45·9	145	e 9 11	+45	e 15 14	+ 3	—	—	i 18·7
Agra	E.	47·9	306	i 8 40a	− 2	i 15 31	− 8	10 34	PP	23·1
Bombay		49·8	293	i 8 57k	+ 1	i 16 9	+ 3	i 10 58	PP	23·6
Irkutsk		51·7	347	9 12	+ 1	i 16 33	+ 1	—	—	24·6
Almata		56·5	323	e 9 47	+ 1	e 17 41	+ 4	—	—	24·6
Frunse		57·7	321	e 9 54	− 1	17 55	+ 2	—	—	31·6
Andijan		58·1	318	e 9 57	− 1	18 2	+ 4	—	—	33·6
Tashkent		60·4	317	i 10 15	+ 2	i 18 29	+ 1	—	—	e 24·9
Samarkand		61·3	314	e 10 22	+ 2	18 44	+ 5	—	—	—
Arapuni		64·5	135	—	—	e 19 35	+16	—	—	—
Christchurch		65·0	142	10 40a	− 4	19 28	+ 2	27 14	L_q	31·4
Wellington	Z.	65·3	138	10 45	− 1	—	—	—	—	31·6
Sverdlovsk		72·2	330	i 11 28	− 1	i 20 48	− 3	—	—	31·6
Tananarive		75·0	250	—	—	21 26	+ 3	—	—	e 36·1
Grozny		77·6	314	12 2	+ 2	—	—	e 12 17	P_cP	—
Honolulu		81·0	69	e 12 13	− 5	e 22 16	−11	e 12 27	pP	e 32·2
Sotchi		82·0	314	12 24	+ 1	—	—	e 12 46	P_cP	—
Moscow		84·4	327	i 12 34	− 2	i 22 56	− 5	15 53	PP	42·6
Ksara		84·6	303	e 12 41	+ 5	e 23 8	+ 5	—	—	—
Pulkovo		88·3	330	e 12 54	− 1	e 23 18	[− 4]	e 16 32	PP	e 42·7
College		88·5	26	—	—	e 23 19	[− 4]	e 24 48	PS	e 36·4
Helwan		88·5	300	i 12 56k	0	23 42	+ 1	16 26	PP	—
Istanbul		89·9	311	13 5	+ 3	23 35?	[+ 3]	16 3	PP	—
Bucharest		91·9	314	e 13 11	0	e 23 39	[− 5]	—	—	57·6
Warsaw		94·2	322	13 23a	+ 1	e 23 56	[0]	i 25 45	PS	47·6
Upsala		94·7	330	e 17 14	PP	e 23 52	[− 7]	e 26 35?	PPS	—
Sitka		95·4	32	e 16 38	PP	e 23 53	[−10]	e 25 47	SP	e 39·6
Budapest		96·3	318	e 13 35?	+ 3	—	—	—	—	—
Copenhagen		98·4	327	e 13 41a	0	i 24 19	[0]	17 43	PP	—
Prague		98·8	321	—	—	e 23 35?	[−46]	e 26 5	PS	—
Potsdam		99·0	324	i 13 42	− 2	i 25 11	− 1	e 17 43	PP	44·6
Jena		100·3	322	e 17 56	PP	e 22 35	?	—	—	e 36·6
Triest		100·3	317	i 17 55	PP	i 24 22	[− 6]	i 20 6	PPP	e 46·2
Bergen		100·4	333	—	—	e 24 5	]−24]	e 31 35?	SS	42·6
Hamburg		100·4	325	e 13 52	+ 2	e 25 25	+ 1	e 17 56	PP	e 51·6
Cape Town	E.	101·6	236	—	—	24 36	[+ 1]	27 2	PS	47·6
Rome		102·1	313	e 13 55a	− 3	i 24 35	[− 2]	e 18 5	PP	e 50·7
Stuttgart		102·4	321	e 18 3	PP	e 27 13	PS	e 31 58	SS	e 52·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Scoresby Sund		103·3	349	e 13 59	− 4	e 24 19	[−24]	e 18 14	PP		e 42·1
De Bilt		103·7	325	e 14 5	0	i 25 54	+ 3	i 18 26	PP		e 49·6
Uccle		104·4	325	e 18 28	PP	i 26 3	+ 6	i 27 36	PS		e 51·6
Victoria		105·0	38	e 19 23	?	e 24 46	[− 5]	e 27 29	PS		47·6
Aberdeen	E.	105·3	332	i 24 49	S	(i 24 49)	[− 3]	i 28 14	PPS		e 49·6
Seattle		106·0	39	—	—	e 24 32	[−23]	e 27 39	PS		e 44·6
Edinburgh		106·4	331	—	—	e 24 55	[− 2]	—	—		—
Kew		107·0	326	i 14 22	P	e 24 50	[− 9]	i 18 51	PP		e 43·6
Berkeley		109·4	49	e 18 42	PP	e 25 8	[− 2]	e 34 24	SS		e 50·2
Santa Clara		109·8	49	e 19 51	pPP	e 25 10	[− 2]	e 28 31	PS		e 50·5
Butte		112·7	36	e 15 0	pP	e 25 19	[− 4]	e 19 24	PP		e 46·5
Tinemaha	Z.	112·7	48	e 18 43	[+ 5]	—	—	i 29 27	PKKP		—
Bozeman		113·8	36	e 18 51	[+11]	e 25 25	[− 2]	e 19 8	pPKP		e 52·1
Pasadena		113·8	52	i 18 42	[+ 2]	e 25 26	[− 1]	i 20 10	PP		e 51·8
Mount Wilson	Z.	113·9	52	i 18 41	[+ 1]	—	—	e 29 30	PKKP		—
Riverside	Z.	114·5	52	i 18 43	[+ 1]	—	—	e 29 23	PKKP		—
Toledo		114·5	316	e 18 57	[+15]	—	—	—	—		59·6
Almeria		114·7	312	e 20 13	PP	—	—	e 27 35	?		74·6
Granada		115·3	313	i 19 51	PP	(25 53)	[+20]	23 17	PPP		i 73·9
Salt Lake City		115·7	42	e 20 0	PP	e 25 35	[+ 1]	e 29 22	PS		e 48·3
Ivigtut		116·1	354	—	—	e 29 23	PS	e 35 11	SS		e 51·9
Tucson		120·2	50	e 18 54	[+ 1]	e 25 54	[+ 3]	e 19 14	pPKP		e 55·2
Lincoln		125·1	33	e 19 42	sPKP	e 25 55	[−11]	e 32 18	PPS		—
Chicago U.S.C.G.S.		129·0	28	e 22 29	PKS	e 30 50	PS	e 39 10	SSP		e 54·8
Seven Falls		129·7	10	e 23 29	?	e 38 52	SS	—	—		54·6
Florissant	Z.	129·9	32	e 19 12	[0]	i 22 33	SKP	e 21 24	PP		—
St. Louis		130·2	32	i 18 20	[−52]	i 27 53	{−28}	e 43 1	SSS		46·8
Ottawa		130·3	15	e 19 13	[+ 1]	e 33 11	PPS	e 22 35	PKS		65·6
Toronto		130·7	19	e 22 39	PKS	e 38 35	SS	—	—		64·6
Buffalo		131·6	19	i 21 31	PP	e 31 48	PS	e 22 36	PKS		e 68·6
East Machias		132·6	7	e 21 42	PP	i 28 33	{− 3}	i 22 44	PKS		—
Halifax		133·1	3	e 22 44	PKS	e 28 35	{− 4}	e 44 35?	SSS		66·6
Harvard		134·0	12	e 19 20	[0]	—	—	i 22 47	PKS		e 65·6
Philadelphia		135·4	17	e 22 0	PP	e 39 54	SS	e 22 50	PKS		e 54·9
Bermuda		145·2	8	e 19 42	[+ 2]	e 41 50	SS	—	—		e 58·2
Rio de Janeiro	N.	154·4	216	e 21 10	?	—	—	—	—		—
San Juan		158·3	17	e 20 1	[+ 2]	e 30 58	{− 5}	e 27 56	PPP		e 63·9
Huancayo		161·2	122	e 20 8	[+ 6]	e 29 54	?	—	—		e 68·2
La Paz		163·3	148	20 0	[− 4]	—	—	—	—		—

Additional readings :—
Perth PP? = +7m.18s., i = +9m.45s., +13m.10s., and +14m.27s., SS = +15m.0s., SSS = +15m.45s., i = +16m.40s.
Calcutta iP_cPN = +9m.43s., eSSN = +15m.23s.
Tokyo Cen. Met. Ob. i = +10m.16s. and +15m.43s.
Adelaide P_cP = +9m.29s., i = +10m.9s.
Kodaikanal SSE = +18m.5s.
Hyderabad S_cSE = +18m.12s.
Agra iE = +19m.22s.
Bombay eE = +11m.57s. and +12m.7s., iSSEN = +19m.42s.
Christchurch iEZ = +11m.46s.
Wellington iZ = +10m.56s.
Tananarive N = +30m.41s.
Honolulu eP_cP = +12m.19s., iPP = +14m.56s., iPPP = +17m.12s., ipS = +22m.32s., isS = +22m.38s., iPS = +23m.1s., eSS = +26m.56s., eSSS = +30m.26s.
Moscow PS = +24m.3s.
Pulkovo S = +23m.33s., iPS = +24m.42s.
College eSS = +28m.43s., esSS = +29m.44s., eSSS = +33m.10s.
Helwan PSEN = +24m.47s.
Bucharest eZ = +13m.28s.
Warsaw eZ = +17m.10s., iN = +24m.34s., iZ = +25m.54s.
Upsala eN = +30m.54s., eE = +30m.59s.
Sitka iPS = +26m.0s.
Copenhagen +25m.8s. and +26m.32s.
Potsdam ePE = +13m.45s., ePN = +13m.51s., iPPNZ = +17m.49s., iPSNZ = +26m.36s., iN = +32m.10s.
Triest iSKKSE = +24m.55s., eSN = +25m.19s., ePPSE = +27m.13s., iSSN = +32m.23s., eSSSN = +36m.19s.
Hamburg eE = +24m.22s. and +36m.35s.?, eN = +45m.5s.?

Continued on next page.

Rome eZ = +14m.2s., iPPZ = +18m.10s., iPPP = +20m.23s., e = +22m.5s., ePS = +27m.17s., e = +36m.17s. and +44m.56s.
Scoresby Sund e = +14m.7s., ePPP = +20m.49s., eSKKS = +24m.42s., iS = +25m.46s., eSP = +27m.17s., epPS = +27m.55s., iSPP = +28m.18s., ePKKP = +30m.23s., eSS = +32m.32s., eSSS = +36m.39s.
De Bilt iPPP = +20m.41s., iPS = +27m.25s., eSS = +33m.15s., eSSS = +37m.5s.
Victoria eE = +33m.33s.
Aberdeen eE = +36m.12s. and +41m.35s.?
Seattle eSKKS = +24m.52s., eSPP = +28m.27s., ePKKP = +30m.2s., eSSS = +38m.41s.
Kew ePPPZ = +21m.6s., eSN = +26m.22s., ePSE = +27m.50s., ePPSNZ = +28m.38s., eEN = +31m.42s., eSSZ = +33m.58s., eSSS = +37m.35s.?
Berkeley ePKPE = +19m.28s., ePSZ = +28m.6s., eE = +28m.20s., ePPSE = +29m.24s., eN = +35m.31s. and +44m.19s., eE = +44m.30s.
Santa Clara eSSE = +35m.14s.
Butte eSPP = +19m.58s., epS = +27m.27s., ePS = +28m.50s., esSS = +35m.19s., eSSS = +38m.46s.
Bozeman ePP = +19m.42s., epPP = +19m.58s., ePPP = +22m.10s., eSP = +29m.5s., eSS = +35m.23s.
Pasadena iZ = +18m.57s., iPSEZ = +29m.3s., iPKKPZ = +29m.31s., ePPSEZ = +30m.17s., eSSE = +35m.17s.
Granada PP = +24m.2s., PPP = +27m.2s., SKS = +29m.38s., SKKS = +30m.50s., S = +32m.54s., isS = +33m.52s., PPS = +35m.55s., SS = +39m.56s., sSS = +41m.4s., PKP,PKP = +42m.50s., SSS = +44m.33s., sSSS = +45m.59s.
Salt Lake City ePPP = +22m.11s., eSKKS = +26m.0s., eS = +27m.15s., eSPP = +30m.18s., ePPS = +30m.38s., esSS = +36m.11s., eSSS = +40m.3s.
Ivigtut eSSS = +40m.6s.
Tucson i = +18m.57s., iPP = +20m.14s., esPP = +21m.0s., ePPP = +22m.28s., eSKKS = +26m.39s., iPS = +30m.4s., eSS = +36m.40s., eSSS = +40m.11s.
Lincoln esSS = +38m.44s.
Chicago U.S.C.G.S. eSSS = +43m.40s.
Florissant iN = +27m.48s. —
Ottawa eN = +38m.11s. and +44m.35s.?
East Machias eSPP = +33m.31s., eSS = +39m.1s.
Philadelphia esPP = +22m.39s., eSPP = +33m.53s., eSSS = +45m.47s.
San Juan esPKP = +20m.48s., esPP = +25m.4s., eSKSP = +34m.4s.
Huancayo epPKP = +20m.24s., iSSS = +52m.49s.
La Paz iZ = +21m.23s.
Long waves were also recorded at Algiers, Ukiah, and San Fernando.

July 21d. Readings also at 2h. (Tananarive), 4h. (Balboa Heights), 8h. (Salt Lake City, Palomar, Tucson, La Jolla, Pasadena, Mount Wilson, Riverside, and Fresno), 13h. Tucson (2), Tinemaha, Riverside, Mount Wilson, and Pasadena), 14h. (Uccle, Potsdam, near Lick, Fresno, and Berkeley), 18h. (near Wellington, Tuai, Jena, Copenhagen, Christchurch, Berkeley, Pasadena, La Jolla, Tucson, Tinemaha, Riverside, and Mount Wilson), 19h. (Riverside, Pasadena, Tucson, Tinemaha, Mount Wilson, and near Branner (2)), 20h. (Granada and Helwan), 22h. (Branner, near Berkeley, Lick (2), and Fresno).

July 22h. 12h. 30m. 17s. Epicentre 43°·2N. 16°·4E. (as on 19d.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Triest		3·1	322	i 0 54	P*	i 1 24	− 5	i 1 3	P_g		i 1·6
Rome		3·2	246	e 0 54	P*	i 1 50	S_g	i 2 3	?		—
Kecskemet	Z.	4·4	31	—	—	e 2 13	S*	—	—		—
Budapest	E.	4·6	23	e 2 3	?	2 18	S*	—	—		e 2·7
	N.	4·6	23	e 1 55	?	2 24	S*	—	—		e 3·1
Sofia		5·1	93	e 1 25	+ 5	i 2 33	S*	—	—		—
Chur		6·0	307	e 1 28	− 4	—	—	—	—		—
Zurich		6·9	309	e 1 1	?	—	—	—	—		—
Stuttgart		7·5	320	—	—	e 3 28	+ 8	—	—		—
Basle		7·6	307	—	—	e 3 13	−10	—	—		—
Jena		8·4	338	—	—	e 3 43	0	e 3 55	?		—

Additional readings :—
Triest iP_g = +58s., e = +1m.13s., eS_g = +1m.33s.
Long waves were also recorded at Bucharest and Warsaw.

July 22d. 23h. 0m. 34s. Epicentre 37°·6N. 118°·9W.

$A = -·3839$, $B = -·6954$, $C = +·6076$; $\delta = +14$; $h = -1$;
$D = -·875$, $E = +·483$; $G = -·294$, $H = -·532$, $K = -·794$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		0·7	135	i 0 13	− 4	i 0 23	− 5	—	—	—
Fresno	N.	1·1	219	i 0 20	− 2	i 0 36	− 3	—	—	—
Haiwee		1·6	153	i 0 30	0	—	—	—	—	—
Lick		2·2	263	e 0 40	+ 2	i 1 10	+ 4	—	—	—
Santa Clara		2·4	266	e 0 49	P_g	i 1 32	S_g	—	—	—
Branner		2·6	267	e 0 46	+ 2	i 1 20	+ 3	—	—	—
Berkeley		2·7	276	i 0 46	+ 1	i 1 22	+ 3	—	—	—
San Francisco		2·8	273	e 0 48	+ 1	e 1 31	S_g	—	—	—
Santa Barbara		3·2	192	e 0 54	+ 2	i 1 35	+ 3	—	—	—
Pasadena		3·5	171	i 0 56	− 1	e 1 47	+ 7	—	—	—
Mount Wilson		3·5	169	i 0 56	− 1	i 1 47	+ 7	—	—	—
Riverside	Z.	3·8	161	i 1 0	− 1	—	—	—	—	—
Tucson		8·5	126	e 2 3	− 4	e 3 42	− 3	e 2 44	P_g	i 4·7

Berkeley gives also iSZ = +1m.26s.
Long waves were also recorded at Salt Lake City and Seattle.

July 22d. Readings also at 0h. (La Plata), 1h. (Uccle), 3h. (Mizusawa and Uccle), 5h. (Wellington, Mount Wilson, Palomar, Tinemaha, and Tucson), 7h. (Istanbul), 8h. (Ksara (2)), 12h. (near La Paz), 13h. (Christchurch, Bunnythorp, near New Plymouth, Tuai, and Wellington), 22h. (Seattle).

July 23d. 6h. 21m. 39s. Epicentre 43°·2N. 16°·4E. (as on 22d.).

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest	3·1	322	e 0 55	P*	i 1 23	− 6	i 1 4	P_g	i 1·6
Rome	3·2	246	e 0 56	P*	e 1 41	S*	—	—	—
Sofia	5·1	93	e 1 21	+ 1	e 2 36	S*	—	—	—
Chur	6·0	307	e 1 32	0	e 2 40	− 3	—	—	—
Ravensburg	6·6	316	e 2 36	?	e 3 2	+ 4	—	—	—
Zurich	6·9	309	e 2 0	P*	e 3 7	+ 2	—	—	—
Basle	7·6	307	—	—	e 3 14	− 9	—	—	—
Jena	8·4	338	—	—	e 3 21	−22	—	—	e 4·4

Additional readings:—
Triest i = +1m.0s., +1m.13s., and +1m.20s., eS_g = +1m.30s.
Rome e = +1m.13s., +1m.32s., and +1m.46s., iN = +2m.4s.
Ravensburg eN = +2m.47s., eE = +2m.51s. and +3m.14s.
Long waves were also recorded at Bucharest and Potsdam.

July 23d. Readings also at 0h. (Bozeman, Butte (2), Fresno, Mount Wilson (2), Riverside, Tinemaha, Salt Lake City, Sitka, Tucson (2), St. Louis, San Juan, Huancayo, La Paz (2), La Plata, Rio de Janeiro, Scoresby Sund, Granada, Toledo, and Ksara), 1h. (Potsdam, De Bilt, and Triest), 2h. (Christchurch, Wellington, Riverview, Sydney, Manila, Ksara, and Scoresby Sund), 3h. (Aberdeen, Agra, Helwan, De Bilt, San Fernando, and Potsdam), 4h. (Granada and near Fresno), 7h. (Ksara and near Sotchi), 8h. (Baku, Grozny, and Sverdlovsk), 9h. (Manila), 14h. (Harvard, Huancayo, Ottawa, Philadelphia, Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, and Scoresby Sund), 17h. (Granada, Manila, and Rome), 18h. (Huancayo), 21h. (near Triest (4)).

July 24d. 22h. 15m. 18s. Epicentre 34°·5N. 34°·5E.

$A = +\cdot6806$, $B = +\cdot4678$, $C = +\cdot5638$; $\delta = -8$; $h = 0$;
$D = +\cdot566$, $E = -\cdot824$; $G = +\cdot465$, $H = +\cdot319$, $K = -\cdot826$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara	1·3	121	i 0 28	+ 3	i 0 44	0	—	—	—
Helwan	5·3	211	i 1 24a	+ 2	2 16	− 9	1 33	P*	—
Istanbul	7·8	328	2 11	P*	3 45	S*	—	—	—
Yalta	10·0	359	e 2 18	− 9	e 4 20	− 2	—	—	—
Sebastopol	10·1	356	e 2 21	− 7	—	—	—	—	—
Bucharest	11·8	329	e 2 59	+ 6	e 5 10	+ 4	e 5 42	SSS	e 5·9
Sofia	12·0	317	e 3 25	PPP	—	—	—	—	e 6·6
Grozny	12·4	41	i 3 7	+ 6	5 44	SS	—	—	—
Baku	13·6	60	e 3 25	+ 8	6 3	SS	—	—	7·7
Rome	18·8	298	e 3 25a	−58	i 6 52	+ 2	—	—	i 10·1
Triest	19·3	312	e 4 28	− 1	e 8 1	− 1	i 4 42	PP	e 9·4
Warsaw	20·2	336	e 4 38a	− 1	8 28	+ 7	—	—	e 11·7
Moscow	21·3	7	i 4 51	+ 1	8 50	+ 7	—	—	—
Chur	22·5	312	e 5 3	+ 1	—	—	—	—	—
Zurich	23·3	312	e 5 11	+ 1	e 9 21	+ 1	—	—	—
Jena	23·4	323	e 5 6	− 5	e 9 25	+ 4	—	—	—
Potsdam	23·6	327	i 5 10	− 3	i 9 29	+ 4	—	—	—
Stuttgart	23·6	316	e 5 8	− 5	e 9 23	− 2	i 5 34	PP	—
Basle	24·0	312	e 5 18	+ 1	e 9 30	− 2	—	—	—
Pulkovo	25·4	356	i 5 32	+ 1	e 10 7	+11	—	—	e 12·5
Hamburg	25·8	326	e 5 36	+ 2	e 10 1	− 1	—	—	e 13·7
Copenhagen	26·1	332	i 5 38a	+ 1	10 7	0	—	—	—
Clermont-Ferrand	26·3	305	e 5 39	0	—	—	—	—	—
Uccle	27·3	316	e 6 12	+24	e 10 24	− 3	—	—	e 12·7
De Bilt	27·4	320	—	—	e 10 42?	+14	—	—	—
Tashkent	28·1	66	e 5 56	+ 1	e 10 42	+ 2	—	—	—
Sverdlovsk	28·5	31	i 5 59	0	—	—	—	—	13·7
Andijan	30·5	67	6 19	+ 2	13 6	SSS	—	—	—
Granada	30·9	287	—	—	i 11 20	− 4	—	—	22·4
Scoresby Sund	46·8	337	e 8 5	−28	—	—	—	—	—
Lincoln	92·6	325	e 12 50	−25	—	—	—	—	—

Additional readings :—
Helwan $P_gE = +1$m.42s., $S_gE = +2$m.40s.
Rome ePPP = +3m.52s., i = +8m.29s.
Triest iPP = +4m.48s., ePPP = +4m.52s., esP = +4m.57s., i = +6m.17s., iE = +8m.7s., esS = +8m.16s., eSS = +8m.38s.
Warsaw SNZ = +8m.31s.
Jena ePE = +5m.12s.
Potsdam ePE = +5m.14s.
Stuttgart eP = +5m.14s., eZ = +5m.22s. and +6m.18s.
Long waves were also recorded at Kew.

July 24d. Readings also at 0h. (Fresno, near Lick and Branner), 3h. (La Plata), 6h. (La Paz), 8h. (near Triest and Tananarive), 13h. (Scoresby Sund, De Bilt, Uccle, Potsdam, Warsaw, Kew, Granada, and near Mizusawa), 14h. (Mizusawa, Lincoln, near Berkeley, Mount Wilson, Tucson, and Riverside), 22h. (near Berkeley)

July 25d. Readings at 2h. and 4h. (Scoresby Sund), 5h. (near Manila), 10h. (Fresno and Lick), 11h. (Balboa Heights), 17h. (Ksara and near Triest), 19h. (near Granada), 20h. (Scoresby Sund), 21h. (De Bilt, Kew, and Scoresby Sund), 23h. (Scoresby Sund).

July 26d. Readings at 0h. (Balboa Heights), 1h. (Ksara), 8h. (near Rome), 9h. (Bermuda), 11h. (Ksara), 12h. (Granada and Helwan), 15h. (Ksara, Kew, Mizusawa, and Osaka), 17h. (Fresno, near Branner, and near Lick), 18h. (Lick), 19h. (Lincoln, Tucson, *Pasadena, Riverside, Tinemaha, Ksara, Rome, Bucharest, Stuttgart, Istanbul, near Basle, Zurich, and Neuchatel), 22h. (near Berkeley), 23h. (near Berkeley and Rome).

July 27d. 13h. 32m. 32s. Epicentre 14°·3N. 91°·7W. (as on 1939, December 5d.).

$A = -\cdot0288$, $B = -\cdot9690$, $C = +\cdot2454$; $\delta = +1$; $h = +6$;
$D = -\cdot999$, $E = +\cdot030$; $G = -\cdot007$, $H = -\cdot245$, $K = -\cdot969$.

Tables for depth of focus 0·005 have been used.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Guatemala		1·2	76	1 1	+39	i 1 21	+43	—	—	—
San Salvador		2·4	103	i 2 10	?	i 2 13	?	—	—	—
Balboa Heights		13·0	113	e 3 1	− 3	—	—	—	—	e 6·7
Columbia		21·9	23	i 4 49a	0	i 8 46	+ 4	i 5 8	pP	—
St. Louis		24·3	3	i 5 15	+ 3	i 9 26	+ 2	i 5 30	pP	—
Florissant		24·4	3	e 5 14	+ 1	i 9 30	+ 4	i 5 35	pP	—
San Juan		24·9	76	i 5 13	− 5	i 9 34	0	i 5 48	sP	i 10·4
Tucson		25·0	320	i 5 18a	− 1	i 9 42	+ 6	i 5 44	pP	i 11·7
Cincinnati		25·5	14	i 5 34	+10	e 9 49	+ 5	i 6 2	sP	e 13·5
Lincoln		26·8	355	e 5 36	0	e 10 10	+ 5	e 5 52	pP	i 11·7
Chicago, J.S.A.		27·7	6	i 5 45	+ 1	e 11 25	sS	i 6 45	PP	—
Chicago, U.S.C.G.S.		27·7	6	i 5 43	− 1	e 10 14	− 6	e 5 59	pP	i 11·6
Denver		27·8	339	e 5 49	+ 4	i 11 10	sS	e 6 10	pP	—
Pennsylvania		29·0	23	i 8 52	?	e 12 22	SS	—	—	e 19·4
Philadelphia		29·4	28	i 5 59a	0	i 10 52	+ 5	e 6 13	pP	e 11·8
La Jolla		29·7	314	e 6 3	+ 1	e 10 58	+ 6	—	—	—
Riverside		30·4	315	i 6 8	0	e 11 11	+ 8	i 6 27	pP	—
Buffalo		30·6	20	i 6 11	+ 1	i 10 45	−21	i 6 23	pP	i 13·1
Huancayo		30·8	147	i 6 9k	− 3	i 11 6	− 3	i 6 55	sP	i 12·7
Mount Wilson		31·1	315	e 6 14	0	e 11 22	+ 8	—	—	—
Pasadena		31·1	315	i 6 15k	+ 1	i 11 23	+ 9	i 6 30	pP	e 13·2
Toronto		31·1	18	6 11	− 3	11 11	− 3	—	—	14·5
Salt Lake City		31·7	330	e 6 20a	0	e 11 24	+ 1	e 6 58	sP	e 13·0
Haiwee		32·0	320	i 6 24	+ 2	i 11 36	+ 8	—	—	—
Santa Barbara		32·3	314	i 6 19	− 6	e 11 39	+ 6	i 9 15	P_cP	—
Logan		32·4	333	i 6 27	+ 1	i 11 49	+15	7 41	PP	e 15·9
Tinemaha		32·8	320	i 6 33	+ 4	i 11 49	+ 8	i 9 17	P_cP	—
Harvard		33·0	28	i 6 31a	0	e 11 47	+ 3	—	—	e 16·5
Fresno	N.	33·6	318	e 6 40	+ 4	e 11 57	+ 4	—	—	—
Ottawa		33·8	20	6 38	0	i 12 0	+ 4	7 36	PP	15·5
Lick		35·1	317	e 6 51	+ 2	e 12 27	+11	—	—	—
Bozeman		35·3	337	e 6 52	+ 1	e 12 21	+ 2	e 7 11	pP	e 14·5
Santa Clara		35·3	317	i 6 57	+ 6	i 12 32	+13	e 7 11	pP	e 17·0
Branner		35·5	317	e 6 59	+ 7	e 12 32	+10	—	—	—
Berkeley		35·8	317	e 6 54	− 1	i 12 36	+ 9	i 8 28	PP	e 17·2
Shawinigan Falls		35·9	22	6 55	− 1	12 31	+ 3	8 23	PP	16·7
Butte		36·2	338	e 6 59	+ 1	i 12 33	0	e 7 19	pP	e 14·9
East Machias		36·7	29	i 7 1a	− 1	e 12 47	+ 6	e 7 19	pP	e 14·7
Seven Falls		37·1	33	7 5	− 1	12 50	+ 3	8 36	PP	17·5
Ukiah		37·1	318	e 7 8	+ 2	e 12 48	+ 1	e 7 32	pP	e 15·8
La Paz	Z.	38·4	141	7 11	− 6	i 12 59	− 8	i 8 38	PP	18·5
Halifax		38·5	33	7 19	+ 1	13 12	+ 4	8 53	PPP	18·5
Ferndale		38·6	322	—	—	e 13 16	+ 6	—	—	e 16·7
Spokane		39·5	333	i 7 26	0	e 13 32	+ 9	i 7 40	pP	—
Seattle		41·9	330	e 7 43	− 3	i 13 48	−11	e 9 32	PP	e 16·8
Victoria		42·9	330	i 7 54	0	i 14 18	+ 5	9 43	PP	20·5
Sitka		53·9	333	i 9 21	+ 2	i 16 53	+ 5	e 9 41	pP	e 24·9
Ivigtut		56·3	24	e 9 29	− 7	i 17 19	− 1	i 9 50	pP	i 23·0
La Plata	E.	58·5	147	9 46	− 6	17 46	− 3	12 16	sPP	29·5
	N.	58·5	147	9 28?	−24	17 38	−11	12 10	sPP	29·3
Rio de Janeiro		60·2	126	i 9 58	− 6	i 18 11	0	—	—	i 29·1
Honolulu		63·0	287	e 10 21	− 1	e 18 44	− 2	e 10 41	pP	e 26·1
College		63·1	337	e 10 22	− 1	e 18 43	− 4	e 10 39	pP	e 26·3
Scoresby Sund		69·9	19	i 11 6a	0	e 19 47	−23	i 13 42	PP	e 28·6
Lisbon		75·5	54	11 37	− 2	21 42	SS	—	—	31·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Edinburgh		77·5	35	11 47	− 3	21 32	− 3	14 50	PP	—
Aberdeen		77·9	34	i 12 51	pP	i 21 41	+ 2	i 23 13	PS	33·8
San Fernando	N.	78·1	56	e 11 52	− 2	e 21 14	−27	—	—	31·5
Stonyhurst		78·2	37	i 11 55	+ 1	i 21 42	0	—	—	37·3
Oxford		79·2	39	11 54	− 6	21 49	− 4	—	—	e 37·1
Toledo		79·2	52	i 11 57	− 3	i 21 54	+ 1	—	—	—
Kew		79·8	39	i 12 0a	− 3	i 21 57	− 2	e 15 8	PP	e 35·5
Granada		80·0	54	i 12 5k	+ 1	22 48	sS	15 9	PP	36·6
Almeria		81·0	54	i 12 4	− 5	22 30	+18	23 17	PS	37·5
Bergen		81·1	30	e 12 10	0	i 22 16	+ 3	—	—	31·5
Uccle		82·8	40	i 12 17a	− 1	i 22 29	− 1	i 23 7	PS	e 38·5
De Bilt		83·0	38	i 12 19	− 1	i 22 32	0	—	—	e 39·0
Heligoland		84·0	36	e 12 26	+ 1	e 22 44	+ 2	—	—	e 39·9
Algiers		85·3	54	e 12 28	− 3	22 54	− 1	e 13 19	pP	40·5
Neuchatel		85·5	42	e 12 30	− 2	e 22 50	[+ 2]	—	—	—
Basle		85·7	42	e 12 32	− 1	e 22 56	[+ 6]	—	—	—
Copenhagen		86·1	33	i 12 35a	0	22 55	[+ 3]	13 53	pP	—
Stuttgart		86·4	40	i 12 36a	0	e 22 54	[0]	e 15 37	PP	e 41·0
Zurich		86·4	43	e 12 35a	− 1	e 22 58	[+ 4]	e 15 54	PP	—
Upsala	N.	87·0	29	e 12 38	− 1	e 23 1	[+ 3]	e 28 11	SS	e 37·5
Chur		87·2	43	e 12 39	− 1	—	—	—	—	e 42·0
Jena		87·2	39	e 12 39	− 1	e 23 3	[+ 4]	e 13 14	pP	e 38·5
Potsdam		87·6	37	i 12 40a	− 2	i 23 18	+ 1	e 16 0	PP	41·5
Prague		89·2	38	—	—	e 22 26	[−46]	—	—	e 41·5
Triest		90·4	43	i 12 54	− 1	i 23 22	[+ 3]	i 13 20	pP	e 40·8
Rome		90·8	46	i 11 58a	−59	i 22 27	[−55]	i 12 16	pP	e 40·6
Warsaw		91·5	35	13 2a	+ 1	i 23 29	[+ 4]	i 16 41	PP	40·5
Budapest		93·0	40	e 14 58	pP	23 37	[+ 3]	e 16 48	PP	44·5
Sofia		97·8	42	e 17 28?	PP	e 24 3	[+ 3]	—	—	—
Moscow		98·3	26	13 31	− 1	24 7	[+ 5]	17 8	PP	—
Bucharest		98·8	40	e 16 22	?	24 6	[+ 1]	24 34	PS	47·5
Arapuni		100·7	233	—	—	e 32 28?	SS	—	—	46·5
Wellington		101·9	231	—	—	27 28?	PPS	—	—	46·5
Istanbul		102·4	41	e 13 57	+ 7	24 40	[+17]	18 1	PP	e 57·5
Sverdlovsk		105·5	15	e 14 2	P	24 41	[+ 5]	i 18 26	PP	47·5
Helwan		109·7	51	i 18 53	PP	24 58	[+ 3]	29 22	PS	—
Vladivostok		110·3	327	i 18 55	PP	25 9	[+12]	34 46	SS	45·5
Grozny		110·7	32	e 19 3	PP	—	—	e 21 23	PPP	—
Ksara		110·9	46	e 14 31	P	e 28 34	PS	i 19 4	PP	—
Irkutsk		112·3	350	19 14	PP	25 10	[+ 5]	34 46	SS	e 53·5
Cape Town	E.	114·5	121	19 52	PP	i 24 44	[−30]	i 29 7	PS	—
Baku		115·0	32	e 19 35	PP	e 25 28	[+12]	—	—	55·5
Semipalatinsk		115·2	5	e 19 31	PP	—	—	—	—	58·5
Riverview	E.	120·3	239	—	—	e 30 10	PS	—	—	e 52·7
Tashkent		121·9	16	e 18 50	PKP	25 43	[+ 3]	e 20 18	PP	e 40·5
Andijan		123·3	14	18 52	PKP	25 54	[+ 9]	—	—	61·5
Manila		136·8	310	e 18 39?	PKP	—	—	i 22 56	PP	—
Agra	E.	137·6	13	e 19 35	PKP	i 35 40	?	i 23 3	PP	—
Phu-Lien		140·7	331	e 22 45	PP	—	—	—	—	—
Calcutta	N.	143·4	0	e 19 12	[−15]	i 29 32	SKKS	e 22 49	PP	e 68·7
Bombay		143·7	26	e 19 21	[− 6]	i 29 24	SKKS	e 21 0	pPKP	—
Hyderabad		147·0	17	19 34	[0]	29 46	SKKS	23 10	PP	—
Colombo		157·3	23	e 20 28?	[+40]	—	—	—	—	—

Additional readings :—
San Salvador i = +2m.17s., iS* = +2m.26s.
Columbia isP = +5m.22s., iPP = +5m.40s., i = +9m.24s., +12m.5s., and +15m.51s.
St. Louis isPN = +5m.40s., ipSN = +9m.45s., isSN = +9m.55s.
Florissant isSE = +10m.3s., iE = +10m.18s.
San Juan iPP = +5m.55s., isS = +10m.18s.
Tucson i = +5m.49s., isP = +6m.0s., i = +6m.6s. and +6m.9s., iPP = +6m.22s., i = +7m.38s., iP_cP = +8m.41s., i = +8m.56s. and +9m.55s., isS = +10m.36s.
Cincinnati i = +8m.19s.
Lincoln esP = +6m.6s., ePP = +6m.34s., eP_cP = +8m.49s., isS = +10m.49s.
Chicago, J.S.A. eSS = +13m.30s.
Chicago, U.S.C.G.S. iP_cP = +9m.6s., i = +10m.21s., isS = +11m.6s.

Continued on next page.

Denver ePPN = +6m.43s., eE = +7m.30s., iN = +8m.7s., iSSEN = +12m.4s., eEN = +12m.28s., esSSN = +12m.40s., iN = +12m.51s.
Pennsylvania i = +9m.40s., e = +16m.28s.
Philadelphia isP = +6m.46s., isS = +11m.20s.
Riverside iP$_c$PZ = +9m.9s., ipP$_c$PZ = +9m.26s., iS$_c$PZ = +12m.50s., iZ = +13m.21s.
Buffalo iSP = +6m.39s., iPP = +6m.58s., i = +7m.6s., +7m.36s., and +9m.51s., iSS = +11m.40s.
Huancayo i = +6m.12s., iPP = +7m.8s., i = +11m.12s., isS = +11m.39s.
Pasadena iZ = +7m.12s., ePPE = +7m.52s., iP$_c$PZ = +9m.10s., ipP$_c$PZ = +9m.27s., isSN = +11m.53s., iS$_c$PZ = +12m.54s., iZ = +13m.25s., eS$_c$SN = +16m.44s.
Salt Lake City epPP = +7m.53s., i = +11m.31s. and +11m.41s., isS = +12m.12s.
Tinemaha iZ = +9m.35s., iS$_c$PZ = +13m.2s., iS$_c$SN = +16m.57s.
Fresno eN = +9m.42s.
Ottawa PPP = +7m.56s., i = +12m.32s.
Bozeman esP = +7m.33s., ePP = +8m.18s., eP$_c$P = +9m.8s., i = +12m.27s., iS$_c$P = +12m.49s., iP$_c$S = +12m.58s.
Berkeley ePZ = +6m.58s., iPPE = +8m.40s., ePPP?N = +8m.46s., iSZ = +12m.41s., iSSSE = +15m.41s., ipS$_c$S?N = +18m.24s.
Butte esP = +7m.39s., ePP = +8m.28s., epPP = +8m.42s., eP$_c$P = +9m.16s., eS$_c$P = +12m.54s.
East Machias isP = +7m.34s., iPP = +8m.32s., ipPP = +8m.49s., eP$_c$S = +12m.59s.
Seven Falls SSS = +15m.46s.
Ukiah ePP = +8m.42s., epPP = +8m.56s., i = +12m.58s., isS = +13m.30s.
La Paz iPPP = +8m.52s., SSN = +15m.16s., S$_c$SN = +17m.11s.
Halifax SSSN = +16m.19s.
Ferndale eSE = +13m.20s.
Spokane iN = +17m.30s.
Seattle epPP = +9m.45s., esPP = +9m.55s., iPPP = +10m.13s., eS$_c$P = +13m.10s., eP$_c$S = +13m.24s., i = +13m.59s., isS = +14m.20s.
Victoria eN = +14m.48s., SSS = +17m.44s.
Sitka i = +17m.4s. and +17m.26s., eS$_c$S = +18m.59s.
Ivigtut epPP = +11m.59s., ePPP = +12m.59s., isS = +17m.53s., iSS = +21m.15s.
La Plata E. +19m.34s., SS = +21m.34s., and +22m.58s.
La Plata N. sS = +18m.10s. and +19m.34s., SS = +21m.28s., SSS = +24m.22s.
Rio de Janeiro iSN = +18m.18s.
Honolulu ePP = +12m.31s., i = +18m.54s., isS = +19m.20s., iS$_c$S = +19m.38s.
College epPP = +13m.8s., ePPP = +14m.7s., i = +18m.53s., isS = +19m.19s., iS$_c$S = +20m.6s., eSS = +22m.43s., esSS = +23m.27s.
Scoresby Sund epPP = +14m.5s., iPPP = +15m.17s., i = +20m.10s., isS = +20m.48s., iSS = +24m.47s., iSSS = +27m.31s.
Edinburgh SKS = +21m.43s.
Aberdeen eE = +21m.28s.?, iN = +22m.15s., iSE = +22m.40s.
Kew eE = +16m.28s., ePPPEZ = +17m.4s., ePSNZ = +22m.38s., eE = +22m.48s., eSSEZ = +26m.36s., eSSS = +29m.58s., eL$_g$EN = +33·5m.
Granada PPP = +17m.32s., S$_c$S = +22m.7s., PS = +23m.17s. and +24m.8s., eSS = +28m.17s., eSSS = +31m.37s., G = +33m.21s.
Almeria S$_c$S = +23m.3s., PPS = +23m.43s., SS = +28m.49s.
Uccle iZ = +23m.36s., SSE = +27m.58s., SSSE = +31m.23s.
Algiers e = +35m.28s. ?
Copenhagen i = +15m.54s., +23m.49s., and +24m.13s.
Stuttgart ePPNE = +15m.41s., eSN = +22m.59s., ePSN = +23m.51s., ePPSN = +24m.22s., eN = +26m.54s., +30m.46s.
Jena eSN = +23m.8s., e = +23m.28s.
Potsdam iPPZ = +16m.6s., iN = +23m.2s., iE = +23m.7s., iSZ = +23m.29s., iPSZ = +24m.35s.
Triest iPPE = +16m.22s., ePKPE = +19m.48s., isSE = +24m.7s., iPS = +24m.26s., iSSE = +29m.21s.
Rome iE = +13m.37s., ePP = +15m.27s., ePPP = +17m.13s., iSE = +22m.45s., iE = +24m.28s., e = +35m.51s.
Warsaw eZ = +23m.34s., iEN = +23m.57s., iZ = +24m.1s., eN = +27m.55s. and +30m.4s., iE = +30m.45s., eN = +32m.30s.
Budapest SN = +23m.40s.
Moscow S = +24m.38s.
Sverdlovsk SS = +33m.28s.
Helwan PPZ = +22m.43s., PSE = +31m.54s.
Vladivostok S = +26m.39s.
Ksara pPP = +19m.33s., eSS = +44m.44s.
Irkutsk S = +26m.51s.
Cape Town eE = +30m.29s., E = +34m.56s., N = +35m.18s. and +39m.9s., E = +39m.23s.
Calcutta iPPPN = +26m.14s., iSSSN = +47m.56s.
Bombay ePP = +22m.59s., i = +34m.15s.
Hyderabad PKS = +23m.37s., SKSP = +33m.11s., SS = +42m.27s.
Long waves were also recorded at Adelaide, Frunse, and Tananarive.

July 27d. Readings also at 2h. (Rome and Triest), 4h. (Rome (2), near Triest (2), and Zurich), 5h. (Triest, Zurich, Rome, Agra, Stuttgart, Basle, La Paz, and near Mizusawa), 6h. (Scoresby Sund), 9h. (Balboa Heights), 13h. (Christchurch), 16h. (near Apia), 17h. (Scoresby Sund, near Berkeley (2), Lick, Fresno, Tinemaha, Pasadena, Riverside, and near Branner), 20h. (near Branner), 21h. (near Rome), 22h. (near Balboa Heights), 23h. (near Branner).

July 28d. Readings at 1h. (Fresno and Lick), 2h. (Ksara), 3h. (San Juan), 5h. (Mizusawa), 10h. (near Berkeley), 11h. (near Berkeley and near Tananarive (3)), 12h. (near Tananarive), 19h. (Pasadena, Tinemaha, Riverside, Tucson, and Mizusawa).

July 29d. Readings at 0h. (near Mizusawa), 1h. (near Branner and Lick), 6h. (Sverdlovsk and Vladivostok), 7h. (Wellington and Ksara), 10h. (Almata), 12h. (near Fresno). 15h. (Ksara), 20h. (near Tucson).

July 30d. 0h. 12m. 6s. Epicentre 39°·5N. 35°·2E.
Damage at Akdag Maden, district of Yozgad (according to Kandilli Observatory).

Epicentre : 39° 40′N. 35° 50′E. (Istanbul).
39°·2N. 34°·0E. (Strasbourg).

$A = +\cdot6322$, $B = +\cdot4460$, $C = +\cdot6335$; $\delta = -8$; $h = -1$;
$D = +\cdot576$, $E = -\cdot817$; $G = +\cdot518$, $H = +\cdot365$, $K = -\cdot774$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		5·0	290	1 15	− 3	2 39	S_g	1 31	P*	3·1
Yalta		5·0	351	—	—	e 2 30	S*	—	—	—
Sotchi		5·3	38	e 1 19	− 3	e 2 27	+ 2	—	—	—
Ksara		5·7	174	i 1 32k	+ 4	i 3 23	sS_g	—	—	—
Piatigorsk		7·4	49	1 14	−38	—	—	—	—	—
Bucharest		8·4	309	e 2 10	+ 4	i 3 41	− 2	i 4 3	S*	i 4·3
Grozny		8·8	61	e 2 16	+ 5	e 4 0	+ 7	—	—	—
Sofia		9·5	294	e 2 26	+ 6	i 4 27	+17	—	—	—
Helwan		10·1	199	i 2 33k	+ 5	4 49	SSS	2 40	PP	—
Cluj	E.	11·1	314	e 2 45	+ 2	e 5 41	SSS	2 56	PP	—
	N.	11·1	314	e 2 51	+ 8	5 45	SSS	—	—	—
Baku		11·3	81	e 2 46	0	5 7	SS	—	—	6·2
Kecskemet	z.	13·5	308	4 21	+66	—	—	—	—	e 7·6
Kalozza	N.	13·8	306	e 3 29	PP	—	—	—	—	e 7·3
Budapest		14·2	310	3 29	+ 5	e 6 14	+10	3 38	PP	e 7·0
Warsaw		16·1	327	3 44k	− 5	6 48	− 1	7 28	SSS	e 9·9
Moscow		16·3	5	i 3 46	− 6	e 6 43	−10	—	—	—
Triest		16·9	298	i 4 5	+ 6	i 7 23	+16	i 4 24	PP	i 8·8
Rome		17·4	285	i 4 53a	PPP	i 8 16	SSS	—	—	i 8·9
Prague		18·1	313	i 4 14	0	e 7 40	+ 5	—	—	e 8·9
Chur		20·0	301	e 4 37	0	e 8 22	+ 5	—	—	—
Potsdam		20·0	318	i 4 38k	+ 1	i 8 9	− 8	i 5 7	PPP	—
Jena		20·1	314	e 4 38	0	e 8 24	+ 5	—	—	e 9·9
Pulkovo		20·5	353	e 4 40	− 2	e 8 18	− 9	—	—	e 9·8
Stuttgart		20·8	306	e 4 44a	− 1	e 8 36	+ 3	i 5 23	PP	e 9·6
Zurich		20·8	301	e 4 46a	+ 1	e 8 38	+ 5	—	—	—
Basle		21·5	301	e 4 52	0	e 8 53	+ 6	—	—	—
Neuchatel		21·8	300	e 4 55	− 1	e 8 56	+ 4	—	—	—
Copenhagen		22·2	325	i 4 59	− 1	i 9 2	+ 2	—	—	—
Hamburg		22·2	318	e 4 58	− 2	e 9 0	0	i 10 33	SSS	e 11·4
Besançon		22·5	300	i 5 6	+ 4	9 8	+ 3	—	—	11·6
Marseilles		22·6	289	5 54?	PPP	e 9 33	SS	—	—	—
Upsala		23·2	337	5 6	− 3	i 9 20	+ 2	—	—	e 11·0
Heligoland	N.	23·6	318	e 5 15	+ 2	e 9 28	+ 3	—	—	e 11·8
Sverdlovsk		24·0	36	i 5 17	0	i 9 28	− 4	11 24	L_g	14·7
De Bilt		24·2	312	i 5 19a	0	i 9 44	+ 9	i 5 59	PP	e 11·2
Uccle		24·3	308	i 5 21a	+ 1	e 9 36	− 1	e 6 1	PP	i 1·4
Clermont-Ferrand		24·4	296	e 5 21	0	—	—	—	—	—
Samarkand		24·4	81	e 5 25	+ 4	e 9 50	+11	—	—	17·0
Algiers		25·4	274	e 5 31	0	i 10 12	+16	e 6 9	PP	12·4
Tashkent		25·9	75	i 5 35	0	i 10 13	+ 9	—	—	i 13·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kew		27·4	309	e 5 43	− 6	e 10 27	− 1	i 6 41	PP	e 12·9
Bergen		28·0	330	e 6 0	+ 5	e 10 40	+ 2	—	—	e 12·9
Oxford		28·0	309	5 51	− 4	e 10 36	− 2	1 6 46	PP	e 14·9
Andijan		28·3	76	5 58	+ 1	10 47	+ 4	—	—	19·3
Stonyhurst		29·2	313	e 7 54?	?	i 10 54	− 4	—	—	15·9
Almeria		29·6	278	i 6 10	+ 1	e 11 1	− 3	6 52	PP	13·9
Frunse		29·7	71	e 6 10	0	—	—	—	—	19·9
Toledo		30·0	283	e 6 11	− 1	i 11 10	0	—	—	12·9
Edinburgh		30·1	316	e 7 49	PPP	e 12 49	SS	—	—	—
Granada		30·4	279	i 6 9	− 7	i 11 17	+ 1	7 10	PP	14·7
Almata		31·3	69	i 6 23	− 1	—	—	—		21·9
San Fernando		32·6	278	e 6 39	+ 4	11 45	− 6	—	—	14·9
Lisbon		34·2	284	6 50	+ 1	12 18	+ 2	8 2	PP	15·8
Dehra Dun	N.	36·0	92	e 5 54?	−71	e 14 53	SS	—	—	e 20·2
Agra		37·5	96	e 7 8	− 9	e 13 4	− 3	8 40	PP	18·9
Bombay		38·4	112	e 4 23	?	e 13 21	+ 1	e 16 18	SSS	e 19·0
Scoresby Sund		42·5	336	e 7 58	− 1	e 14 16	− 6	e 9 48	PP	e 17·4
Hyderabad		43·4	108	—	—	i 18 1	SSS	—	—	—
Kodaikanal	E.	47·5	117	e 12 54?	?	e 18 54?	SS	—	—	i 23·9
Calcutta	N.	47·9	95	e 9 15	+33	i 15 35	− 4	e 10 47	PP	e 22·1
Irkutsk		48·0	51	e 8 41	− 2	—	—	—	—	26·9
Ivigtut		53·3	323	e 10 7	+44	e 16 54	0	e 19 34	S_cS	e 22·5
East Machias		71·0	313	e 11 23	+ 1	e 20 26	−11	e 15 28	PPP	—
Seven Falls		71·5	316	11 26	+ 2	20 48	+ 5	—	—	30·9
Harvard		74·8	313	e 11 42	− 2	e 21 23	+ 3	—	—	e 32·9
Ottawa		75·2	317	11 46	0	21 28	+ 3	—	—	33·9
College		75·9	2	—	—	e 22 19	PPS	—	—	—
Bermuda		77·1	301	—	—	e 21 49	+ 3	e 26 47	SS	e 37·0
Manila		77·7	82	e 17 27?	PPP	—	—	—	—	—
Toronto		78·3	318	—	—	e 21 54?	− 5	—	—	34·9
Philadelphia		78·6	313	—	—	e 22 0	− 2	e 22 57	PPS	e 32·2
Georgetown		80·4	313	e 12 13	− 2	22 21	0	—	—	—
Sitka		83·5	355	e 17 40	PPP	e 22 53	+ 1	—	—	e 41·9
Chicago, U.S.C.G.S.		83·8	321	—	—	e 22 54	− 1	—	—	e 34·3
Columbia		86·1	312	—	—	e 23 17	− 1	e 24 21	PS	e 34·4
San Juan		86·9	291	e 16 2	PP	e 23 12	[− 1]	e 18 27	PPP	e 33·9
St. Louis		87·6	321	e 12 55	+ 4	e 23 25	− 7	—	—	—
Lincoln		88·8	326	—	—	e 23 39	− 5	e 24 26	PS	e 35·7
Bozeman		89·9	337	e 13 18	+16	e 23 39	[+ 7]	e 16 44	PP	e 35·9
Butte		90·1	338	e 16 41	PP	e 24 37	+42	e 24 59	PS	e 35·5
Victoria		90·4	346	—	—	e 23 44	[+ 9]	—	—	42·9
Salt Lake City		94·7	337	—	—	e 24 43	+ 7	e 25 21	S_cS	e 37·4
Tucson		102·0	332	e 14 2	+ 5	e 25 43	+ 6	e 18 10	PP	e 40·5
Pasadena		102·7	338	e 17 56	PP	—	—	—	—	e 47·1
La Paz		110·5	265	e 18 29	[− 5]	—	—	—	—	56·4

Additional readings :—
Bucharest eZ = +2m.16s., iZ = +2m.24s., i = +2m.37s., iEZ = +3m.31s., iN = +3m.44s., iSN = +4m.0s.
Sofia iEN = +2m.30s., iE = +3m.42s.
Cluj iE = +5m.9s., SSN = +5m.52s.
Budapest eN = +4m.2s., iN = +4m.42s., eE = +4m.46s., eN = +5m.59s., iE = +6m.2s., eSE = +6m.34s.
Warsaw PE = +3m.47s., SE = +6m.52s., SZ = +6m.58s.
Triest iPE = +5m.41s., eN = +7m.46s., iSSE = +7m.54s., iP_cPE = +8m.34s.
Rome iPPE = +5m.38s., iN = +6m.12s.
Potsdam iE = +5m.41s., iSN = +8m.18s.
Jena iP = +4m.42s., eSN = +8m.27s.
Stuttgart iP = +4m.49s., eSE = +8m.39s.
Basle e = +4m.57s.
Copenhagen i = +5m.5s. and +9m.8s.
Hamburg iSEN = +9m.12s.
Uccle iS = +9m.51s., iSSN = +10m.37s.
Clermont-Ferrand i = +5m.26s.
Algiers i = +6m.48s.
Kew eE = +7m.27s., eZ = +11m.3s. and +12m.15s.
Almeria P_cP = +9m.3s.
Toledo i = +6m.17s.
Granada PPP = +7m.21s., P_cP = +8m.39s.

Continued on next page.

San Fernando iSN = +11m.51s.
Lisbon PE = +6m.56s.
Agra pPPEN = +8m.52s., SSE = +15m.43s., sSSEN = +15m.54s.
Bombay eE = +7m.38s., eEN = +9m.3s.
Scoresby Sund i = +8m.5s., ePPP = +10m.23s., e = +14m.35s.
Calcutta iN = +19m.21s.
East Machias e = +11m.39s. and +20m.38s., i = +20m.44s., eS_cS = +21m.20s., eSS = +24m.41s., eSSS = +28m.6s.
Harvard eZ = +12m.30s.
Sitka e = +23m.1s.
Chicago U.S.C.G.S. e = +22m.59s.
San Juan eS = +23m.26s., i = +23m.34s., ePPS = +24m.34s., eSS = +29m.23s., eSSS = +32m.7s.
Lincoln eSS = +28m.57s.
Bozeman ePPP = +18m.33s., ePS = +25m.1s., eSS = +29m.21s., eSSS = +33m.13s.
Butte eSS = +30m.14s.
Salt Lake City ePS = +25m.55s., eSS = +30m.33s.
Tucson e = +14m.6s., ePPP = +20m.20s., ePS = +26m.50s., eSS = +31m.50s., eSSS = +36m.0s.
Long waves were also recorded at Huancayo, Cape Town, Wellington, Tananarive, Semipalatinsk, Vladivostok, Seattle, Ukiah, and Colombo.

July 30d. 15h. 27m. 5s. Epicentre 5°·0N. 82°·5W. (as on 1940 March 9d.).

A = +·1300, B = −·9877, C = +·0866; δ = −5; h = +7;
D = −·991, E = −·131; G = −·011, H = −·086, K = −·996.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		4·9	35	i 1 19	+ 2	e 1 43	−32	—	—	2·3
Huancayo		18·7	157	e 4 16	− 6	e 7 13	−35	—	—	—
San Juan		20·8	48	i 4 47	+ 2	i 8 43	+10	—	—	e 13·5
La Paz	z.	25·7	146	5 33	0	—	—	—	—	12·1
St. Louis		34·2	350	e 6 49	0	e 12 20	+ 4	e 8 10	PP	—
Philadelphia		35·4	9	—	—	e 12 40	+ 6	—	—	e 15·2
Tucson		37·9	319	i 7 21	+ 1	e 13 24	+11	i 8 57	PP	e 18·5
Riverside	z.	43·3	316	i 8 6	+ 1	—	—	—	—	—
Pasadena	z.	44·0	316	e 8 9	− 2	—	—	—	—	e 22·3
Salt Lake City		44·3	328	—	—	e 14 54	+ 6	e 17 29	SS	e 22·9
Tinemaha	z.	45·7	319	e 8 25	+ 1	—	—	—	—	—

Additional readings :—
Huancayo e = +4m.20s. and +7m.23s.
Tucson i = +7m.30s. and +7m.44s.
Long waves were also recorded at Lincoln, Bermuda, Scoresby Sund, and Chicago U.S.C.G.S.

July 30d. 16h. 5m. 24s. Epicentre 19°·4N. 75°·1W. (as given by U.S.C.G.S.).

A = +·2427, B = −·9122, C = +·3302; δ = +4; h = +5;
D = −·966, E = −·257; G = +·085, H = −·319, K = −·944.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Port au Prince		2·8	108	i 1 0	P_g	—	—	—	—	—
San Juan		8·5	95	e 2 8	+ 1	e 4 3	S*	—	—	e 4·5
Balboa Heights		11·2	203	e 1 36?	−68	—	—	—	—	—
Philadelphia		20·5	0	i 4 42	0	e 8 34	+ 7	—	—	e 9·9
St. Louis		23·2	329	e 5 7	− 2	e 9 18	0	—	—	—
Florissant		23·4	329	e 5 10	− 1	i 9 23	+ 2	—	—	e 12·2
Ottawa		25·9	359	5 36	+ 1	10 16	+12	—	—	12·6
East Machias		26·1	13	e 5 44	+ 7	e 10 14	+ 7	—	—	—
Lincoln		28·2	326	e 8 8	P_cP	e 10 41	0	—	—	e 12·4
Tucson		34·4	300	e 6 48	− 3	—	—	e 7 58	PP	e 14·3
La Paz	z.	36·3	168	e 7 8	+ 1	—	—	—	—	—
Salt Lake City		37·9	313	—	—	(e 14 58)	SS	—	—	e 15·0
Pasadena	z.	40·9	300	e 8 9	+23	—	—	—	—	e 25·9
Tinemaha		41·5	304	i 7 49	− 1	—	—	—	—	—
Granada		64·0	57	—	—	e 29 14	?	—	—	e 31·4

Additional readings :—
Florissant eN = +9m.20s., eZ = +9m.30s.
East Machias e = +5m.53s. and +10m.24s.
Tucson i = +6m.53s., ePPP = +8m.22s.
Long waves were also recorded at Bermuda, College, Columbia, and Bozeman.

July 30d. Readings also at 2h. (La Paz), 3h. (Moscow, Pulkovo, and Tashkent), 5h. (San Juan, Tucson, Ukiah, Honolulu, La Paz, Bozeman, Lincoln, Salt Lake City, Pasadena, Riverside, Philadelphia, and St. Louis), 6h. (Seattle and Scoresby Sund), 7h. (Ksara), 9h. (La Paz), 10h. (La Paz), 12h. (La Paz), 13h. (Ksara, Budapest, and Berkeley), 15h. (Huancayo), 18h. (Florissant and Tucson), 19h. (Tucson, Tinemaha, Haiwee, Santa Barbara, East Machias, St. Louis, Philadelphia, Riverside, Pasadena, Salt Lake City, Lincoln, and Bozeman), 20h. (Scoresby Sund), 21h. (near La Paz and Huancayo), 22h. (La Paz, Ksara, Bucharest, Warsaw, Rome, Potsdam, Mount Wilson, Pasadena, Riverside, Philadelphia, and Tucson).

July 31d. 10h. 36m. 31s. Epicentre 39°·5N. 35°·2E. (as on 1940 July 30d.).

$A = +\cdot6322$, $B = +\cdot4460$, $C = +\cdot6335$; $\delta = -8$; $h = -1$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		5·0	290	1 19	+ 1	2 55	S_g	—	—	—
Sebastopol		5·3	347	i 1 14	− 8	2 15	−10	—	—	—
Ksara		5·7	174	i 1 29k	+ 1	e 2 50	S*	—	—	—
Bucharest		8·4	309	e 2 16	+10	3 34	− 9	i 4 3	S*	—
Sofia		9·5	294	e 2 29?	+ 9	e 4 37	S*	—	—	—
Helwan		10·1	199	2 29	+ 1	e 4 44	SSS	—	—	i 12·4
Baku		11·3	81	e 2 54	PP	e 5 9	SS	—	—	6·5
Kalossa	N.	13·8	306	e 3 29?	+10	—	—	—	—	e 7·0
Warsaw		16·1	327	e 3 44	− 5	e 6 59	+10	7 33	SS	e 8·5
Moscow		16·3	5	3 46	− 6	6 49	− 4	—	—	—
Triest		16·9	298	e 4 4	+ 5	e 7 16	+ 9	e 4 59	PPP	e 8·4
Rome		17·4	285	i 4 53k	PPP	i 8 18	SSS	—	—	i 9·6
Chur		20·0	301	e 4 36	− 1	—	—	—	—	—
Potsdam		20·0	318	e 4 29	− 8	i 8 20	+ 3	—	—	12·3
Jena		20·1	314	e 4 35	− 3	e 8 29	+10	—	—	e 10·5
Pulkovo		20·5	353	e 4 39	− 3	e 8 21	− 6	—	—	e 11·1
Stuttgart		20·8	306	e 4 41	− 4	e 8 42	+ 9	—	—	e 11·0
Zurich		20·8	301	e 4 43a	− 2	—	—	—	—	—
Basle		21·5	301	e 4 50	− 2	e 8 52	+ 5	—	—	—
Neuchatel		21·8	300	e 5 2	+ 6	e 9 4	+12	—	—	—
Upsala		23·2	337	e 5 11	+ 2	e 9 14	− 4	5 52	PPP	e 12·5
Sverdlovsk		24·0	36	5 16	− 1	9 32	0	—	—	11·5
De Bilt		24·2	312	i 5 24	+ 5	e 9 47	+12	—	—	e 11·5
Uccle		24·3	308	e 5 23	+ 3	e 9 38	+ 1	—	—	e 11·5
Clermont-Ferrand		24·4	296	e 6 25	PPP	—	—	—	—	—
Tashkent		25·9	75	i 5 35	0	e 10 14	+10	—	—	e 16·2
Granada		30·4	279	i 8 58k	?	13 49	SSS	—	—	16·5
Scoresby Sund		42·5	336	—	—	e 15 50	?	—	—	—

Additional readings :—
Ksara i = +3m.34s.
Bucharest eN = +3m.1s. and +3m.13s., SEN = +3m.57s., S*E = +4m.25s., S*N = +4m.30s.
Warsaw ePN = +3m.48s., SSN? = +7m.40s.
Triest iPPE = +4m.16s., iE = +5m.37s., iSS = +7m.42s., ePcP = +8m.45s.
Rome iN = +4m.56s., ePP = +5m.11s., eE = +5m.23s. and +5m.49s.
Potsdam iPZ = +4m.35s., eSE = +8m.29s.
Stuttgart iZ = +4m.46s.
Upsala eSN = +9m.20s.
Long waves were also recorded at Budapest, Kecskemet, and Bergen.

July 31d. Readings also at 2h. (near Rome, near Lick, Fresno, Riverside, Mount Wilson, Clermont-Ferrand, and Tucson), 3h. (La Paz), 9h. (near New Plymouth and Wellington), 10h. (near Mizusawa), 11h. (Sydney, Perth, Manila, La Paz, Tucson, Riverside, Mount Wilson, Tinemaha, Brisbane, Riverview, Wellington, Christchurch, and Pasadena), 12h. (Scoresby Sund, De Bilt, and Potsdam), 14h. (Pasadena, Christchurch, Wellington, Riverview, Brisbane, Tinemaha, Mount Wilson, Riverside, Tucson, and near Mizusawa), 16h. (Ksara), 19h. (Ksara and Granada), 22h. (near Wellington, Christchurch, and New Plymouth), 23h. (near Mizusawa).

Aug. 1d. 12h. 39m. 31s. Epicentre 25°·9S. 179°·7E.

$A = -\cdot 9007$, $B = +\cdot 0047$, $C = -\cdot 4344$; $\delta = -1$; $h = +3$;
$D = +\cdot 005$, $E = +1\cdot 000$; $G = +\cdot 434$, $H = -\cdot 002$, $K = -\cdot 901$.

Tables for depth of focus 0·060 have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Arapuni		12·6	194	—	—	4 59	− 4	i 5 26	sS	—
Tuai		13·0	188	2 51	− 2	5 5	− 6	—	—	—
Hastings		13·9	189	—	—	5 29?	0	—	—	—
New Plymouth		14·0	199	3 5	+ 1	5 29	− 2	—	—	—
Apia		14·4	36	e 3 14	+ 6	e 5 45	+ 7	i 5 54	sS	e 10·5
Wellington		15·9	196	3 19	− 4	5 55	−12	i 6 25	sS	—
Christchurch		18·5	197	3 50	+ 1	6 41	−14	—	—	i 14·2
Sydney		25·9	245	e 4 29	−29	i 7 11	?	—	—	—
Riverview		26·0	245	i 4 59k	0	i 8 54	− 5	i 6 18	pP	—
Adelaide		36·4	245	i 6 29	+ 1	i 11 29	−11	14 55	SS	16·6
Honolulu		51·7	28	e 8 22	− 7	e 15 12	− 5	e 17 8	SeS	e 21·3
Manila		69·9	298	i 9 28k	− 1	14 22	?	—	—	—
Nagoya		73·0	325	10 49	+ 1	—	—	—	—	—
Osaka		73·4	323	10 44	− 6	19 39	− 5	—	—	—
Nagano		73·5	326	10 50	0	19 41	− 4	—	—	—
Sendai		73·5	330	10 50	0	19 42	− 3	—	—	—
Miyazaki		73·7	318	10 52	+ 1	—	—	—	—	—
Mizusawa		74·1	330	10 55	+ 1	—	—	13 3	PP	—
Sapporo		77·2	333	11 11	0	—	—	—	—	—
Vladivostok		81·5	327	11 33	− 1	21 10	0	13 22	pP	—
Santa Barbara		83·0	47	i 11 43	+ 2	e 21 28	+ 3	i 13 31	pP	—
Santa Clara		83·4	43	e 11 46	+ 3	e 21 27	− 2	e 13 36	pP	—
Berkeley		83·6	43	i 11 44	0	i 21 18	−13	i 13 33	pP	—
Lick		83·6	43	e 11 45	+ 1	e 21 19	−12	—	—	—
La Jolla		83·7	49	i 11 45	0	e 21 21	−11	e 13 35	pP	—
Ukiah		83·8	41	e 13 32	pP	e 21 22	−10	e 22 31	PS	e 34·2
Pasadena		83·9	48	i 11 44a	− 2	e 21 21	−12	e 13 34	pP	—
Mount Wilson		84·0	48	i 11 46a	0	e 21 23	−11	i 13 35	pP	—
Riverside		84·3	48	i 11 47a	− 1	e 21 26	−11	i 13 38	pP	—
Fresno	N.	84·4	45	e 12 0	+12	e 21 39	+ 1	—	—	—
Phu-Lien		84·7	296	e 11 50	0	—	—	—	—	—
Haiwee		85·2	46	i 11 52	0	e 21 49	+ 4	e 13 42	pP	—
Tinemaha		85·6	46	i 11 55	+ 1	e 21 34	−16	e 13 46	pP	—
Tucson		87·9	53	i 12 5a	0	e 21 47	[− 5]	i 13 56	pP	e 37·9
Seattle		89·8	35	—	—	i 22 27	− 1	i 23 23	SP	e 36·3
Sitka		90·9	23	e 18 43	sPP	i 22 34	− 4	e 28 39	SS	—
Salt Lake City		91·8	45	e 12 22	− 1	i 22 48	+ 2	e 14 11	pP	e 37·3
College		93·9	13	e 20 13	pPPP	i 22 57	− 7	e 29 24	SS	e 38·9
Butte		94·2	41	e 15 55	PP	i 23 3	− 3	e 18 55	sPP	e 37·0
Bozeman		94·9	42	e 14 43	pP	e 22 23	[− 9]	i 26 35	sS	e 35·9
Huancayo		97·9	108	e 12 55	+ 4	i 22 43	[− 5]	e 14 43	pP	e 39·8
La Plata		98·6	136	—	—	22 35	[−16]	24 59	PS	—
Calcutta	N.	100·7	289	e 14 45	pP	—	—	—	—	—
Irkutsk		101·7	323	13 21	+13	22 57	[− 8]	15 29	pP	—
La Paz		101·7	115	i 14 59k	pP	i 23 42	−27	26 19	PPS	48·5
Lincoln		102·0	51	e 15 54	sP	i 22 51	[−16]	e 17 19	PP	e 42·2
Kodaikanal	E.	105·2	274	e 16 19	sP	—	—	—	—	—
Agra	E.	111·1	291	e 18 13	PP	i 23 36	[−10]	24 36	sS	—
Columbia		111·2	61	e 16 1	pP	e 23 58	[+12]	i 27 27	PS	—
Bombay	E.	112·8	280	e 18 39	PP	i 23 45	[− 8]	e 20 55	PPP	—
Rio de Janeiro	N.	116·1	136	e 18 59	PP	—	—	—	—	—
Almata		116·8	308	19 8	PP	23 58	[−10]	—	—	—
Philadelphia		117·3	57	e 19 14	PP	e 23 58	[−12]	e 34 37	SS	—
Frunse		117·8	307	17 48	[−10]	24 4	[− 8]	—	—	—
Ottawa		117·9	50	e 17 54	[− 4]	e 23 51	[−21]	e 19 18	PP	—
Andijan		119·1	304	17 58	[− 3]	24 10	[− 7]	—	—	—
San Juan		119·1	83	e 14 43	P	i 24 4	[−13]	e 15 53	pP	e 49·5
Tashkent		121·5	305	18 0	[− 6]	24 15	[−10]	28 51	SP	27·8
Samarkand		123·0	302	18 9	[0]	—	—	—	—	—
East Machias		123·7	52	e 19 56	PP	i 24 18	[−14]	e 21 45	pPP	—

Continued on next page.

		△	Az.	P.		O−C.	S.		O−C.	Supp.			L.
		°	°	m.	s.	s.	m.	s.	s.	m.	s.		m.
Bermuda		124·0	67	e 20	2	PP	e 30	6	PS	e 24	16	pPPP	—
Sverdlovsk		127·1	324	18	14	[− 2]	24	35	[− 7]	20	8	PP	52·5
Ivigtut		132·7	29	e 20	50	PP	e 26	55	SKKS	e 23	47	sPP	i 56·1
Scoresby Sund		133·7	10	e 18	23	[− 6]	e 26	37	SKKS	i 20	10	pPKP	e 54·2
Baku		136·1	303	18	36	[+ 3]	—		—	e 33	54	SP	54·0
Grozny		138·9	307	18	31	[− 7]	—		—	21	30	PP	—
Moscow		139·5	328	18	29	[−11]	25	3	[− 4]	e 20	35	pPKP	—
Pulkovo		140·1	337	i 18	31	[−10]	24	59	[− 9]	e 20	38	pPKP	e 33·5
Sotchi		143·1	309	18	43	[− 3]	—		—	—		—	—
Upsala		143·9	345	i 18	43	[− 3]	e 27	55	SKKS	—		—	e 38·5
Bergen		145·3	355	e 18	51	[+ 2]	—		—	—		—	e 40·5
Yalta		146·6	312	18	58	[+ 6]	—		—	—		—	—
Ksara		147·8	292	i 18	52k	[− 1]	27	54	SKKS	i 20	52	pPKP	—
Copenhagen		148·8	347	i 18	53k	[− 2]	—		—	—		—	—
Warsaw		149·2	335	18	54k	[− 2]	i 41	8	SS	e 20	57	pPKP	e 48·5
Hamburg	Z.	151·3	348	i 18	55k	[− 3]	—		—	e 20	59	pPKP	—
Istanbul		151·4	310	18	59	[+ 1]	—		—	—		—	—
Potsdam		151·7	343	i 18	56	[− 2]	i 35	12	PPS	i 22	33	PP	—
Bucharest		151·8	317	e 18	56k	[− 2]	—		—	e 21	19	pPKP	—
Helwan		151·8	285	i 18	57a	[− 1]	i 28	49	SKKS	22	51	PP	—
Jena		153·4	342	e 18	58	[− 3]	e 28	37	SKKS	—		—	—
De Bilt		153·5	352	i 18	59k	[− 2]	e 41	57	SS	e 20	59	pPKP	—
Budapest		153·6	330	e 18	33	[−28]	—		—	—		—	—
Sofia		154·4	317	e 19	59	[+57]	e 22	59	PP	—		—	—
Uccle		154·9	354	i 19	1k	[− 3]	e 29	6	SKKS	e 23	6	PP	—
Stuttgart		156·0	344	i 19	3k	[− 2]	e 29	9	SKKS	e 21	7	pPKP	—
Triest		157·3	334	e 19	21	[+15]	e 25	24	[− 7]	e 21	13	pPKP	—
Zurich		157·4	345	e 19	3k	[− 3]	—		—	—		—	—
Basle		157·5	346	e 19	4	[− 3]	e 29	42	SKKS	—		—	—
Chur		157·7	343	e 19	3	[− 4]	—		—	—		—	—
Neuchatel		158·2	346	e 19	5	[− 3]	—		—	—		—	—
Clermont-Ferrand		160·0	353	e 19	11	[+ 1]	—		—	—		—	—
Rome		160·9	330	i 19	7k	[− 4]	43	11	SS	i 20	43	pPKP	—
Toledo		165·7	11	i 19	13	[− 2]	(43	59)	SS	—		—	44·0
San Fernando	N.	168·3	24	e 19	27	[+10]	e 44	53	SS	—		—	53·5
Granada	Z.	168·4	13	i 19	16a	[− 1]	29	48	SKKS	22	31	SKP	e 77·4
Almeria		169·0	8	e 19	33	[+15]	—		—	—		—	59·5

Additional readings :—
Arapuni S_cS? = +14m.29s.
Wellington S_cS = +14m.16s.
Riverview isPE = +7m.18s., iZ = +7m.21s., isSN = +11m.33s., iE = +11m.38s., iS_cS?EN = +14m.58s., isS_cS?E = +18m.29s.
Adelaide i = +11m.54s. and +14m.1s., SSS = +15m.43s.
Honolulu i = +15m.19s. and +15m.31s., eSS = +19m.13s.
Mizusawa S?E = +13m.6s.
Vladivostok SKS = +21m.5s., sS = +24m.24s.
Berkeley iSZ = +21m.34s., iN = +24m.48s.
Santa Clara eSSE = +24m.51s.
Ukiah esSP = +25m.46s., eSS = +27m.41s.
Pasadena eSPZ = +14m.27s., ePPZ = +14m.58s., i = +21m.34s., iZ = +21m.56s., iE = +22m.34s., and +24m.49s., ePKP,PKPZ = +38m.3s.
Mount Wilson iZ = +15m.8s., eEN = +21m.38s., iPKP,PKPZ = +38m.1s.
Riverside eN = +21m.40s.
Tinemaha eEN = +21m.54s.
Tucson i = +12m.24s., isP = +14m.45s., iPP = +15m.39s., epPP = +17m.13s., iPPP = +17m.53s., iS = +22m.8s., i = +22m.16s., eSP = +23m.3s., iSS = +28m.15s., ePKKP = +28m.41s., esSS = +30m.43s., eSSS = +31m.57s.
Seattle iSKS = +21m.52s., i = +22m.32s., isS = +25m.37s., eSS = +28m.24s., eSSS = +32m.26s.
Sitka eSKS = +22m.2s., esS = +25m.43s., e = +28m.52s.
Salt Lake City ePP = +16m.24s., epPP = +17m.56s., eSKS = +22m.8s., eSP = +23m.58s., ePS = +25m.3s., esS = +26m.5s., eSS = +29m.8s., esSS = +31m.30s., eSSS = +32m.50s.
College eSKS = +22m.16s., eSP = +24m.21s., esS = +26m.16s., esSP = +26m.54s. eSSS = +33m.21s.
Butte eSKS = +22m.17s., eSP = +24m.42s., esS = +26m.28s., isSP = +27m.10s., eSS = +29m.31s., esSS = +32m.57s.
Bozeman iS = +23m.17s.

Continued on next page.

Huancayo ePP = +16m.58s., ePPP = +19m.0s., esPP = +19m.16s., iS = +23m.29s., i = +23m.37s., iSP = +25m.6s., ePS = +26m.2s., esS = +27m.11s., eSS = +30m.29s., eSSS = +34m.15s.
La Plata +23m.29s., N = +26m.11s.
La Paz isPZ = +15m.54s., pSKS = +25m.41s.
Lincoln iSKKS = +23m.40s., iS = +24m.16s., eSP = +25m.41s., epS = +26m.16s., eSS = +31m.11s., eSSS = +35m.36s.
Agra S_cS?E = +28m.4s.
Columbia eSPP = +28m.19s.
Bombay iE = +24m.51s.
Philadelphia iSKKS = +25m.20s., eS = +26m.13s., esSS = +37m.48s.
Ottawa eZ = +20m.41s., eE = +25m.27s., eN = +26m.31s., e = +27m.29s.?
Andijan S? = +26m.35s.
San Juan ePKP = +17m.49s., iPP = +19m.26s., esPP = +21m.38s., epPPP = +23m.48s., eSKKS = +24m.33s., i = +25m.30s., iSP = +27m.40s., epS = +28m.30s., eSS = +34m.54s.
East Machias esPP = +22m.34s., ePPP = +23m.18s., iSKKS = +26m.3s., iS = +27m.16s., eSKSP = +29m.5s., ePSKS = +30m.3s., eSPP = +30m.45s., ePPS = +31m.39s., iSS = +36m.11s., esSS = +39m.3s.
Bermuda eSS = +36m.21s., esSS = +39m.11s.
Ivigtut iSS = +37m.53s.
Scoresby Sund ePP = +20m.59s., ePKS = +22m.0s., epPKS = +23m.41s., esPP = +24m.0s., esPKS = +24m.42s., eSKSP = +30m.18s., ePS = +31m.43s., epPS = +32m.54s., iSS = +38m.11s., esSS = +41m.9s., eSSS = +43m.7s.
Upsala eN = +28m.3s.
Ksara isPKP = +21m.41s., iPP = +22m.28s., ipPP = +24m.13s., PPS = +35m.22s.
Copenhagen i = +18m.57s.
Warsaw eE = +18m.59s., eZ = +21m.46s. and +22m.32s., eE = +35m.28s., eN = +37m.43s. and +41m.5s.
Potsdam ePKPN = +18m.59s., iPKP$_2$Z = +19m.14s., eN = +20m.12s., iPPZ = +22m.43s., ePPPE = +26m.17s., iN = +28m.49s., +33m.11s., +36m.7s., and +37m.54s.
Bucharest eEN = +19m.9s., iZ = +19m.18s., eE = +21m.29s.
Helwan iEZ = +19m.16s., SKSE = +29m.29s., PPSE = +32m.23s., SSE = +37m.23s.
Jena iPZ = +19m.8s., iPEN = +19m.11s., e = +19m.23s., eZ = +19m.26s.
De Bilt iZ = +19m.24s., iPP = +22m.58s., iPPP = +26m.34s., e = +29m.5s., esSS = +45m.8s.
Uccle iNZ = +19m.30s., eN = +33m.29s. and +36m.4s., eE = +42m.13s.
Stuttgart iPKP$_2$Z = +19m.35s., epPKPZ = +21m.29s., eN = +22m.5s., ePPEN = +23m.7s., epPPN = +25m.5s., eEN = +27m.48s., iSKKSN = +29m.17s., eSSSE = +42m.11s., eSSN = +42m.19s.
Triest ePKP$_2$N = +19m.54s., ePPN = +23m.20s., ePPP = +25m.55s., iSKKS = +29m.21s., iPSKSN = +33m.41s., iPPSN = +36m.38s.
Chur e = +19m.41s.
Neuchatel e = +19m.43s.
Clermont-Ferrand e = +19m.55s.
Rome iPKPZ = +19m.54s., eN = +20m.27s., epPKP$_2$E = +22m.26s., iPPE = +23m.16s., iZ = +23m.39s., ipPPE = +26m.4s., iEN = +27m.36s., eEN = +28m.20s., eN = +29m.39s., eE = +31m.24s., eSKSPN = +33m.10s., PSKS = +34m.10s.
San Fernando eE = +45m.0s.
Granada iPKP$_2$Z = +20m.31s., sPKPZ = +22m.10s., iPPZ = +24m.22s., pPPZ = +26m.16s., PPPZ = +26m.24s., sPPZ = +27m.4s., SSZ = +48m.23s.

August 1d. 15h. 8m. 20s. Epicentre 44°·3N. 139°·1E.

Strong at Haboro; fairly strong at Sapporo, Asahigawa, and Suttsu; moderate at Hakodate and Wakkanai; slight at Aomori, Mizusawa, Tukubasan, and Muroran; damage caused by Tsunami

Epicentre 44°·3N. 139°·1E. Radius greater than 300km. Shallow.

See Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1940, Tokyo, 1950, pp. 23-25. Macroseismic chart p. 23.

Miyaki (Naomi): Tsunami associated with the earthquake of August 2, 1940 (in Japanese, with abstract in English), Bulletin of the Earthquake Research Institute, Vol. 19, Part I, p. 104-114, 13 fig. Tokyo, March, 1941.

A = −·5427, B = +·4701, C = +·6960; δ = −7; h = −3;
D = +·655, E = +·756; G = −526, H = +·456, K = −718.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo	2·1	127	0 34k	− 3	0 57	− 7	—	—	—
Mori	2·4	154	0 43k	+ 2	1 12	0	—	—	—
Aomori	3·7	160	0 56a	− 4	1 39	− 6	—	—	—
Hatinohe	4·2	154	1 4a	− 3	1 53	− 4	—	—	—
Akita	4·7	170	1 17k	+ 3	2 28	S•	—	—	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro	4·8	99	1 11k	− 4	2 15	+ 3	—	—	—
Miyako	5·2	154	1 18	− 3	2 39	S*	—	—	—
Vladivostok	5·3	260	i 1 23	+ 1	—	—	10 28	?	—
Mizusawa	5·4	162	i 1 23	− 1	2 32	+ 4	—	—	—
Sendai	6·2	166	1 33a	− 2	2 52	+ 4	—	—	—
Aikawa	6·3	185	1 44	+ 8	2 55	+ 5	—	—	—
Hukusima	6·6	171	1 43a	+ 2	3 9	+11	—	—	—
Wazima	7·1	194	1 49k	+ 1	3 28	S*	—	—	—
Nagano	7·6	185	1 58	+ 3	3 16	− 7	—	—	—
Toyama	7·7	191	1 58k	+ 2	3 41	+16	—	—	—
Utunomiya	7·8	175	1 57a	− 1	3 40	+12	—	—	—
Maebasi	7·9	180	2 3	+ 4	3 40	+10	—	—	—
Mito	8·0	172	1 58a	− 2	3 47	+14	—	—	—
Kakioka	8·1	174	2 2a	0	3 39	+ 4	—	—	—
Kumagaya	8·2	179	2 2a	− 1	4 8	S*	—	—	—
Tukubasan	8·2	174	2 0a	− 3	3 37	− 1	—	—	—
Tokyo, Cen. Met. Obs.	8·6	176	2 8	− 1	4 7	S*	—	—	—
Kohu	8·7	183	2 15	+ 5	—	—	—	—	—
Tyosi	8·7	172	2 11	+ 1	3 43	− 7	—	—	—
Hunatu	8·8	182	2 12	+ 1	—	—	—	—	—
Yokohama	8·9	177	2 12a	0	4 18	S*	—	—	—
Gihu	9·0	192	2 18k	+ 5	4 14	+16	—	—	—
Misima	9·2	181	2 18k	+ 2	4 4	+ 1	—	—	—
Hikone	9·3	195	2 21k	+ 4	4 16	+11	—	—	—
Nagoya	9·3	191	2 22a	+ 5	4 12	+ 7	—	—	—
Mera	9·4	176	2 20	+ 2	4 31	S*	—	—	—
Toyooka	9·4	202	2 24	+ 6	4 16	+ 9	—	—	—
Osima	9·5	178	2 20	0	4 36	S*	—	—	—
Hamamatu	9·6	186	2 24a	+ 3	4 21	+ 9	—	—	—
Kameyama	9·6	193	2 25a	+ 4	4 34	S*	—	—	—
Kyoto	9·6	197	2 27	+ 6	4 29	SS	—	—	—
Omaesaki	9·7	184	2 25	+ 3	4 33	SS	—	—	—
Kobe	10·0	199	2 33k	+ 6	4 30	+ 8	—	—	—
Osaka	10·0	197	2 31	+ 4	4 30	+ 8	—	—	—
Owase	10·4	193	2 38	PP	4 48	SS	—	—	—
Sumoto	10·4	199	2 39a	PP	4 39	+ 7	—	—	—
Hamada	10·8	212	2 39	0	4 52	+10	—	—	—
Siomisaki	11·1	194	2 45a	+ 2	4 54	+ 5	—	—	—
Hatidyozima	11·2	177	2 42	− 2	4 41	−11	—	—	—
Hirosima	11·2	210	2 50k	+ 6	5 3	+11	—	—	—
Keizyo	11·4	238	2 57	PP	5 45	?	—	—	—
Koti	11·6	204	2 55k	+ 5	5 9	+ 8	—	—	—
Matuyama	11·6	207	2 52k	+ 2	5 6	+ 5	—	—	—
Zinsen	11·6	238	2 49	− 1	5 14	SS	—	—	—
Muroto	11·7	201	2 52	+ 1	5 13	+ 9	—	—	—
Taikyu	11·7	227	2 53	+ 2	5 16	SS	—	—	—
Izuka	12·5	214	3 4k	+ 2	6 16	L	—	—	(6·3)
Simidu	12·5	205	3 36k	+34	6 7	SSS	—	—	—
Hukuoka	12·7	215	3 8	+ 3	5 24	− 4	—	—	—
Kumamoto	13·2	213	3 16k	+ 5	5 53	SS	—	—	—
Unzendake	13·5	214	3 34k	PPP	6 1	SS	—	—	—
Nagasaki	13·6	215	3 21	+ 4	6 0	+10	—	—	—
Dairen	14·1	253	4 23	+60	7 14	L	—	—	(7·2)
Tomie	14·2	218	3 30	+ 6	6 24	SS	—	—	—
Kagosima	14·4	211	3 30k	+ 3	—	—	—	—	—
Titizima	17·4	171	4 1	− 5	—	—	—	—	—
Nake	17·7	209	4 14a	+ 4	7 42	SS	—	—	—
Zi-ka-wei	19·1	233	4 30	+ 3	7 34	−23	4 45	PP	10·2
Naha	20·3	212	3 47	−53	8 47	SS	—	—	—
Miyakozima	22·5	214	4 10k	−52	9 13	+ 8	—	—	—
Isigakizima	23·4	217	4 42	−29	11 7	?	—	—	—
Giran	24·1	223	5 9	− 9	—	—	—	—	—
Irkutsk	24·3	303	i 5 19	− 1	9 41	+ 4	19 56	?	22·7
Karenko	24·8	221	5 31	+ 6	—	—	—	—	—
Taito	26·1	221	5 41	+ 4	10 10	+ 3	—	—	—

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		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		33·4	213	i 6 43a	+ 1	12 10	+ 7	—	—	—
Phu-Lien		35·7	239	e 7 2	0	i 12 49	+10	i 8 36	PP	16·7
Palau		37·0	188	7 37	+24	—	—	—	—	—
Almata		43·9	292	8 11	+ 1	—	—	—	—	i 23·8
College		44·1	36	e 8 8	− 4	i 14 35	−10	i 10 4	PP	i 18·4
Frunse		45·7	292	8 25	+ 1	—	—	—	—	24·9
Calcutta	N.	46·8	260	i 8 36a	+ 3	i 15 33	+ 9	i 10 6	PcP	—
Andijan		48·1	290	8 45	+ 2	—	—	—	—	i 26·1
Sverdlovsk		48·7	315	i 8 48	0	i 15 47	− 3	—	—	21·7
Dehra Dun	N.	49·4	275	e 8 39	−14	e 15 50	−10	e 10 43	PP	e 24·3
Tashkent		49·9	292	i 8 56	− 1	16 2	− 5	—	—	e 20·4
Agra		51·3	272	9 5	− 3	i 16 24	− 2	11 13	PP	24·7
Samarkand		52·2	291	i 9 17	+ 2	16 35	− 4	—	—	i 28·5
Sitka		52·2	44	e 9 8	− 7	e 16 28	−11	i 9 36	pP	i 22·5
Honolulu		56·3	92	e 9 45	0	i 17 34	0	i 11 57	PP	i 23·1
Hyderabad		57·1	262	9 51	+ 1	17 46	+ 1	19 41	ScS	27·8
Bombay		60·3	267	e 10 13	0	i 18 13	−13	i 11 57	PP	30·1
Moscow		60·5	320	i 10 10	− 4	18 19	−10	—	—	—
Pulkovo		61·1	327	i 10 16	− 2	18 29	− 8	—	—	e 30·6
Kodaikanal	E.	62·7	257	i 10 25a	− 4	i 18 49	− 8	i 23 5	SS	i 28·5
Colombo	E.	63·4	252	10 38	+ 4	19 13	+ 7	—	—	31·7
Grozny		63·6	305	e 10 36	+ 1	—	—	—	—	—
Seattle		63·9	49	e 10 34	− 3	i 19 0	−12	i 11 16	PcP	e 26·1
Piatigorsk		64·7	308	10 42	0	—	—	—	—	32·5
Scoresby Sund		64·7	353	e 10 39	− 3	i 19 8	−14	i 11 29	PcP	i 25·3
Upsala		65·7	332	10 45	− 3	19 38	+ 4	13 30	PP	e 30·0
Spokane		66·4	46	e 10 45	− 8	e 19 44	+ 1	i 20 19	PS	27·7
Sotchi		66·8	309	10 56	0	—	—	—	—	—
Ferndale		67·2	56	e 11 0	+ 2	e 20 14	+22	e 13 6	PP	e 32·3
Saskatoon		68·5	37	11 5	− 1	20 12	+ 4	25 10	SS	30·7
Ukiah		68·7	56	e 11 7	0	e 20 13	+ 3	i 13 50	PP	i 28·1
Bergen		69·1	337	11 12	+ 2	20 30	+15	15 26	PPP	e 30·2
Yalta		69·3	312	11 15	+ 4	20 16	− 1	—	—	—
Sebastopol		69·5	313	e 11 21	+ 9	—	—	—	—	—
Butte		70·0	44	e 11 9	− 6	i 20 23	− 3	e 14 11	PP	e 28·3
Berkeley		70·1	57	i 11 14	− 2	e 20 39	+12	—	—	e 44·2
San Francisco		70·1	57	e 11 14	− 2	e 20 35	+ 8	—	—	e 29·5
Warsaw		70·1	324	11 15a	− 1	i 20 21	− 6	13 1	PP	e 34·7
Branner		70·5	57	e 11 21	+ 3	e 20 38	+ 6	—	—	e 45·5
Santa Clara		70·6	57	e 11 21	+ 2	i 20 54	PS	—	—	e 29·0
Copenhagen		70·7	331	i 11 18a	− 2	20 31	− 3	14 10	PP	—
Lick		70·8	57	e 11 19	− 1	e 20 46	+11	—	—	—
Bozeman		71·0	44	i 11 16	− 6	i 20 34	− 3	—	—	i 29·6
Fresno	N.	72·3	56	e 11 28	− 1	e 20 53	+ 1	—	—	—
Tinemaha		73·0	55	i 11 33a	0	e 21 8	+ 8	i 11 47	pP	—
Apia		73·1	129	e 11 33	− 1	21 23	+22	29 43	SSS	33·2
Potsdam		73·1	329	i 11 29a	− 5	i 20 57	− 4	i 14 46	PP	e 26·5
Hamburg		73·2	332	i 11 32a	− 3	e 21 11	+ 9	e 14 31	PP	e 32·2
Heligoland		73·4	334	e 11 30	− 6	e 21 2	− 3	e 14 31	PP	e 32·3
Logan		73·4	48	i 11 33	− 3	i 21 9	+ 4	i 17 7	?	—
Bucharest		73·5	317	e 11 38a	+ 2	21 6	0	14 25	PP	34·7
Aberdeen		73·8	339	i 11 40	+ 2	i 21 23	+14	i 14 35	PP	i 39·2
Haiwee		73·8	55	i 11 36	− 2	—	—	i 11 51	pP	—
Santa Barbara		73·9	58	e 11 38	− 1	—	—	i 11 52	pP	—
Salt Lake City		74·1	49	i 11 37	− 3	e 21 12	0	i 14 38	PP	i 32·7
Istanbul		74·4	312	11 44	+ 2	21 20	+ 4	—	—	40·9
Prague		74·4	327	e 11 40	− 2	e 21 9	− 7	—	—	e 30·7
Budapest		74·5	322	11 43	+ 1	21 19	+ 2	14 8	PP	e 34·7
Ivigtut		74·7	4	e 11 38	− 5	e 21 5	−14	e 16 25	PPP	i 30·2
Jena		74·8	328	i 11 41	− 3	i 21 21	+ 1	i 16 9	PPP	e 26·7
Mount Wilson		75·1	57	i 11 44a	− 2	—	—	i 11 58	pP	—
Pasadena		75·1	57	i 11 43a	− 3	e 21 21	− 3	i 11 57	pP	i 31·6
Edinburgh		75·2	339	11 42	− 4	21 3	−22	11 58	PcP	—
Kalossa	N.	75·2	322	11 47	+ 1	e 21 50	PS	e 22 19	PPS	35·7
Ksara		75·6	303	i 11 48a	0	21 45	+16	e 14 51	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m.	s.		m.
Riverside		75·7	57	i 11 46 a	− 3	—	—	i 12	0	pP	—
De Bilt		76·1	333	i 11 51 a	0	i 21 34	− 1	i 15	0	PP	e 36·2
Sofia		76·1	317	e 11 53	+ 2	i 21 37	+ 2	e 15	11	PP	30·5
La Jolla		76·5	58	e 11 52	− 2	—	—	i 12	6	pP	—
Stonyhurst		76·9	338	e 11 57	+ 1	i 21 57	+14	15	0	PP	38·7
Stuttgart		77·5	329	i 11 57 a	− 2	e 21 52	+ 2	e 15	13	PP	e 32·7
Uccle		77·5	333	i 11 57	− 2	i 21 57	+ 7	i 15	2	PP	i 34·7
Trieste		78·2	324	i 12 1 k	− 2	i 22 4	+ 7	i 14	56	PP	e 37·9
Denver		78·3	45	e 15 3	PP	i 22 2	+ 3	i 22	45	PPS	e 39·2
Kew		78·3	335	i 12 2 a	− 1	i 21 57	− 2	i 15	17	PP	e 34·7
Riverview		78·5	169	e 12 5	+ 1	i 22 4	+ 3	e 26	52	SS	e 34·1
Sydney		78·5	169	i 12 16	+12	i 22 13	+12	i 15	22	PP	—
Perth		78·8	200	9 0	?	18 20	?	27	5	SS	34·2
Zurich		78·8	328	e 12 4 a	− 2	e 22 10	+ 6	e 15	19	PP	—
Adelaide		78·9	180	i 12 8	+ 1	i 22 10	+ 5	i 15	4	PP	i 42·6
Chur		78·9	327	e 11 47	−20	e 22 11	+ 6	—		—	—
Basle		79·1	329	e 12 6	− 2	e 22 14	+ 7	—		—	—
Neuchatel		79·8	329	e 12 9	− 3	e 22 17	+ 3	—		—	—
Besançon		79·9	329	e 11 53	−19	e 28 40?	?	e 17	50	?	—
Tucson		80·7	54	i 12 15 a	− 1	e 22 7	−17	i 12	30	pP	i 32·7
Helwan		81·1	303	i 12 20 k	+ 2	22 26	− 2	15	33	PP	37·5
Lincoln		81·6	39	e 12 17	− 4	e 22 13	−20	i 15	29	PP	e 32·8
Rome		81·8	323	i 12 21 a	− 1	i 22 44	+ 9	i 15	36	PP	e 38·0
Clermont-Ferrand		82·3	330	e 12 27	+ 2	—	—	—		—	e 46·7
Marseilles		83·5	327	e 12 40	+ 9	e 22 10	−42	e 29	40?	?	—
Chicago, J.S.A.		84·5	34	i 12 33	− 3	e 22 49	−13	i 24	37	PPS	—
Chicago, U.S.C.G.S.		84·5	34	i 12 35 a	− 1	e 22 50	−12	e 16	3	PP	e 35·1
Seven Falls		85·2	20	12 39	0	i 23 11	+ 2	29	17	SS	36·7
Shawinigan Falls		85·2	21	12 31	− 8	23 16	+ 7	e 24	21	PPS	43·7
Ottawa		85·5	24	12 38	− 3	23 8	− 4	16	12	PP	e 38·7
Toronto		85·9	27	12 41	− 2	23 10	[+ 3]	28	52	SS	36·7
Florissant		86·0	37	i 12 41	− 2	i 23 18	+ 1	i 24	31	ScS	37·1
St. Louis		86·2	37	e 12 43	− 1	e 23 22	+ 3	i 16	15	PP	28·9
Buffalo		86·8	27	i 11 46	−61	i 27 59	SS	i 16	21	PP	—
East Machias		88·2	19	i 12 52	− 2	e 23 22	[0]	i 16	27	PP	e 35·7
Arapuni		88·4	152	e 13 40?	+45	24 10	+30	30	10	?	42·7
Pennsylvania		89·0	28	e 12 58	0	e 23 41	− 4	—		—	e 42·1
Halifax		89·2	16	12 59	0	23 44	− 3	29	40?	SS	38·7
Harvard		89·3	22	i 12 57	− 2	e 23 44	− 4	i 13	5	PcP	e 30·7
Toledo		89·9	332	i 13 2	0	i 23 57	+ 3	—		—	37·7
Algiers		90·0	326	e 13 0	− 3	23 27	[− 6]	e 16	24	PP	e 42·7
Fordham		90·2	24	i 13 2	− 2	i 23 52	− 4	—		—	—
Philadelphia		90·6	25	i 13 5 a	0	i 23 53	− 7	i 18	44	PPP	i 38·7
Georgetown		91·0	27	e 13 8	+ 1	i 24 0	− 3	16	43	PP	43·0
Wellington		91·0	155	13 6	− 1	23 40	[+ 1]	13	15	pP	43·7
Almeria		92·0	330	13 5	− 7	23 40	[− 4]	13	21	PcP	42·7
Granada		92·1	331	i 13 12 k	0	23 49	[+ 4]	13	30	pP	i 48·6
Christchurch		92·4	157	13 13 a	− 1	23 54	[+ 8]	16	46	PP	43·0
San Fernando		93·7	333	e 13 13	− 7	i 23 59	[+ 5]	—		—	41·7
Columbia		93·9	33	e 13 18	− 3	e 23 46	[− 9]	i 17	11	PP	e 38·0
Bermuda		100·7	20	e 13 58	+ 6	e 24 20	[−10]	e 18	12	PP	i 41·4
Tananarive		104·1	257	e 18 27	PP	24 47	[+ 1]	27	37	PS	e 38·7
San Juan		113·5	26	e 14 56	P	e 25 48	[+22]	i 19	42	PP	e 45·6
Balboa Heights		116·5	43	e 18 40?	[− 6]	—	—	—		—	—
Cape Town		133·7	262	19 30	[+11]	26 18	[−10]	20	16	PP	56·0
Huancayo		136·4	53	e 16 29	P	i 26 24	[− 8]	i 22	1	PP	i 53·7
La Paz		144·0	47	i 19 34 a	[− 3]	29 42	[− 2]	i 22	54	PP	61·7
Rio de Janeiro		158·6	5	i 20 0	[+ 1]	i 31 51	[+46]	—		—	i 44·6
La Plata	E.	163·9	60	20 10	[+ 6]	27 10	[+ 2]	24	46	PP	—
	N.	163·9	60	20 16	[+12]	27 4	[− 4]	24	58	PP	68·4
	Z.	163·9	60	20 10	[+ 6]	—	—	24	40	PP	77·7

For Notes see next page.

NOTES TO AUGUST 1d. 15h. 8m. 20s.

Additional readings :—
Zi-ka-wei iN = +5m.0s. and +5m.6s., iE = +5m.36s. and +6m.6s., iN = +7m.12s., SS = +8m.6s., iN = +8m.22s. and +9m.50s.
College i = +8m.18s. and +8m.43s., iPPP = +10m.48s., i = +14m.54s., +15m.1s., +15m.39s., and +15m.46s., iSS = +17m.43s., iS_cS = +18m.19s.
Calcutta ePPN = +10m.20s., iS_cSN = +18m.29s., iSSN = +18m.46s.
Dehra Dun eN = +19m.52s.
Agra iN = +9m.9s., iE = +9m.13s., PPN = +11m.18s., iN = +16m.44s., S_cSE = +18m.58s., SSE = +20m.14s., SSN = +20m.20s.
Sitka i = +9m.15s., +9m.20s., and +9m.43s., iP_cP = +10m.47s., iPP = +11m.18s., i = +12m.50s. and +16m.52s., iS_cS = +19m.18s.
Honolulu i = +9m.52s., +9m.57s., and +10m.17s., iPPP = +12m.56s., i = +17m.58s., +18m.15s., and +18m.26s., iS_cS = +19m.2s., iSS = +20m.57s.
Hyderabad SSE = +21m.39s.
Bombay iPEN = +10m.21s., iEN = +14m.3s., iSE = +18m.23s., iE = +22m.17s. and +22m.32s.
Seattle e = +10m.55s., iPP = +13m.5s., iPPP = +14m.26s., i = +19m.13s. and +19m.38s., iS_cS = +20m.13s.
Scoresby Sund iP = +10m.42s., i = +10m.48s., iPPP = +14m.54s.
Upsala PPP = +14m.58s., i = +16m.0s., eSSN = +24m.14s., eSSSN = +26m.51s., SSSE = +27m.2s., iE = +28m.30s.
Spokane ePE = +10m.49s., iEN = +11m.2s. and +11m.48s., eE = +13m.50s., eN = +17m.54s., iSEN = +19m.47s., iEN = +19m.56s., iN = +21m.18s., iE = +25m.10s.
Ferndale ePE = +11m.4s., ipPEN = +11m.12s., iE = +11m.44s., iN = +14m.20s., ePPPN = +15m.12s., ePPPE = +15m.16s., iEN = +15m.44s., iE = +18m.28s., eN = +19m.20s., +22m.2s., and +28m.52s., eE = +29m.48s.
Saskatoon i = +11m.43s.
Ukiah i = +11m.20s., iS_cS = +21m.2s., eSSS = +27m.24s.
Butte i = +12m.3s., iPPP = +15m.28s., i = +20m.46s., iS_cS = +21m.18s., eSS = +24m.32s.
San Francisco eEN = +11m.28s., eN = +19m.46s., eSE = +20m.44s.
Warsaw PPPZ = +15m.44s., eZ = +17m.51s., PSZ = +20m.45s., SSZ? = +25m.26s., SSSZ? = +28m.38s.
Branner eE = +11m.24s.
Copenhagen +12m.15s., +15m.48s., +20m.43s., and +21m.25s.
Potsdam iPE = +11m.33s., iP_cP = +11m.45s., iNW = +15m.6s., iPPPE = +16m.11s., iPPPNW = +16m.15s., iNW = +18m.4s. and +21m.14s., iE = +21m.18s., iPS = +21m.37s., iPPS = +21m.51s., iNW = +23m.15s., iE = +24m.15s., iNW = +25m.4s., iSSE = +25m.39s.
Hamburg ePPPZ = +16m.14s., eZ = +17m.57s., ePSN = +21m.57s., eSSNZ = +26m.34s., eSSSN = +29m.48s.
Heligoland ePPPE = +16m.5s., ePSN = +21m.52s., eE = +22m.49s., eSSN = +26m.26s., eSSSN = +29m.52s.
Bucharest PPPN = +15m.57s., PPPE = +16m.7s., SS?E = +25m.15s.
Aberdeen iPPPEN = +16m.18s., iN = +21m.52s., iPSE = +22m.3s., iSSEN = +26m.22s., iSSSEN = +29m.42s., iL_g = +34m.35s.
Salt Lake City i = +11m.51s., iPPP = +16m.23s., i = +21m.20s., iS_cS = +21m.42s., i = +22m.11s., iSS = +26m.15s., iSSS = +29m.35s.
Budapest P_cPN = +11m.54s., iE = +13m.43s., iN = +15m.28s., iE = +16m.19s., iN = +16m.25s., and +17m.37s., PSE = +21m.33s., PSN = +21m.37s., S_cSN = +22m.8s., iN = +23m.3s., eN = +25m.14s., eSSN = +25m.53s., iN = +30m.5s.
Ivigtut i = +11m.49s. and +21m.38s., iSS = +26m.2s., i = +27m.39s., eSSS = +29m.15s.
Jena iP = +11m.49s., i = +12m.41s., iE = +16m.17s., iSZ = +21m.40s., iSN = +21m.49s.
Mount Wilson ePKP,PKPZ = +39m.19s.
Pasadena iPPE = +14m.29s., iE = +22m.0s. and +22m.34s., ePKP,PKPZ = +38m.55s.
Edinburgh PP = +14m.30s., PPP = +16m.15s., SKS = +21m.35s., S_cS = +21m.39s., SS = +25m.51s.
Kalossa iN = +12m.14s.
De Bilt iPPP = +16m.33s., eSS = +27m.10s.
Sofia iEN = +12m.5s., iN = +15m.23s., eN = +26m.23s., SSE = +26m.40s.?
Stonyhurst PPP = +16m.30s., SS = +26m.55s., SSS = +31m.0s.
Stuttgart iZ = +12m.6s. and +12m.14s., iPPPN = +16m.32s., ePPPZ = +16m.53s., iSE = +22m.2s., eSSE = +26m.50s.
Uccle iZ = +12m.10s., iE = +22m.2s., iNZ = +22m.29s., iN = +23m.36s., iSSEN = +27m.47s., iSSSE = +31m.4s.
Triest iP_cP = +12m.8s., iPKP = +18m.24s., iS_cS = +22m.23s., iPS = +22m.33s., iSS = +26m.47s., i = +27m.58s., iSSS = +30m.14s., ePKP,PKP = +38m.47s.
Denver ePPE = +15m.10s., iN = +16m.15s., iPPPN = +16m.47s., eN = +21m.56s., eSE = +22m.8s., iE = +22m.59s., iN = +23m.6s., eE = +34m.40s.
Kew iP_cPNZ = +12m.16s., ePPPNZ = +16m.50s., iNZ = +21m.27s., iPSN = +22m.30s., eSSNZ = +27m.10s., eSSSNZ = +30m.40s.?, eL_gN = +31·7m.
Riverview iNZ = +12m.13s., iSN = +22m.10s., SSS?N = +30m.53s.
Sydney iPS = +21m.52s.
Perth PP = +12m.15s., PPP = +13m.20s., i = +14m.0s. and +17m.30s., PS = +19m.8s., i = +22m.12s., SS = +23m.45s.

Continued on next page.

Adelaide i = +12m.16s., +12m.25s., +12m.32s., +13m.50s., +13m.59s., +14m.9s., and +15m.10s., PPP = +16m.33s., i = +22m.25s., SS = +27m.30s., SSS = +30m.36s.
Tucson i = +12m.24s., +12m.38s., and +12m.51s., iPP = +15m.34s., iPPP = +17m.17s., iSKS = +22m.16s., ipS = +22m.45s., iPS = +23m.12s., iSS = +27m.19s., iSSS = +30m.42s., iPKP,PKP = +38m.55s.
Helwan P_cPEZ = +12m.28s., iE = +13m.40s., SE = +22m.52s., PSN = +23m.42s., GE = +34m.58s.
Lincoln i = +12m.25s., +12m.30s., and +22m.29s., iS_cS = +23m.9s., eSS = +27m.26s., eSSS = +31m.18s.
Rome iN = +14m.29s., iPPPZ = +17m.38s., PS = +23m.35s., SS = +28m.40s., iN = +31m.44s., eE = +32m.29s.
Chicago J.S.A. i = +12m.48s., eS = +23m.5s.
Chicago U.S.C.G.S. i = +12m.49s., e = +22m.55s., i = +23m.5s., iS_cS = +23m.18s., eSS = +28m.50s., eSSS = +32m.28s.
Seven Falls SSS = +33m.27s.
Ottawa PPPN = +17m.50s., PS = +24m.1s., SS = +28m.58s., SSS = +33m.8s., eE = +35m.28s.
Toronto SSS = +32m.40s.?
Florissant iE = +12m.54s. and +12m.59s., eN = +23m.24s.
St. Louis i = +12m.57s., iPPP = +18m.7s., eSKS = +22m.52s., iS_cS = +24m.35s.
Buffalo i = +13m.49s., +20m.21s., and +25m.20s.
East Machias i = +13m.2s., iPPP = +18m.24s., eSKS = +23m.8s., i = +23m.36s. and +23m.42s., iS_cS = +23m.57s., i = +24m.21s., iPS = +24m.46s., isPS = +25m.7s., eSS = +29m.26s., isSS = +29m.56s., eSSS = +33m.9s.
Arapuni L_q = +36·7m.
Pennsylvania e = +15m.4s., +18m.52s., and +36m.34s.
Harvard iZ = +13m.53s., iPPNZ = +16m.39s., iZ = +17m.53s., iPPPZ = +18m.32s., iS = +23m.49s., iS_cSPNZ = +25m.8s.
Algiers e = +24m.18s. and +29m.10s.
Philadelphia ePS = +25m.17s., eSSS = +34m.33s.
Georgetown iP = +13m.20s.
Wellington PPZ = +16m.50s., PPP?Z = +18m.37s., i = +24m.0s., SKKS? = +24m.35s., PS = +25m.30s., SS = +30m.42s., SSS = +34m.18s., L_q = +37m.20s.
Almeria PP = +16m.52s., PPP = +19m.14s., iS = +24m.27s., PS = +24m.33s., SS = +30m.35s., SSS = +34m.58s.
Granada PP = +17m.10s., pPP = +17m.33s., S = +24m.34s., SS = +31m.22s., L_q = +40m.58s.
Christchurch iE = +24m.44s. and +25m.40s., SSN = +29m.52s., SSE = +30m.20s., L_qE = +37m.34s.
San Fernando ePE = +13m.19s., i?EN = +13m.28s.
Columbia i = +13m.26s., ePPP = +19m.14s., iS = +24m.10s., i = +24m.42s., iPS = +25m.37s., ipPS = +25m.54s., iSS = +30m.23s., isSS = +31m.19s., eSSS = +34m.15s.
Bermuda ePPP = +19m.48s., eSP = +26m.46s., eSS = +32m.32s., eSSS = +36m.22s.
Tananarive PPPE = +20m.45s., PSN = +27m.40s., PPSE = +28m.19s., SSN = +33m.36s., SSE = +33m.45s.
San Juan ePKP = +18m.51s., iS = +27m.19s., iPS = +29m.13s., iSPP = +30m.18s., iSS = +34m.44s., iSSS = +39m.9s.
Cape Town SKPE = +21m.24s., SKPN = +21m.52s., PPPE = +22m.50s., PPPN = +22m.54s., SN = +28m.16s., SE = +28m.48s., SSSN = +40m.30s., SSSE = +40m.35s.
Huancayo ePKP = +19m.20s., e = +19m.39s., i = +22m.14s., iPPP = +24m.52s., iSKKS = +28m.15s., iPS = +32m.24s., iSPP = +33m.57s., iPPS = +34m.6s., iSS = +40m.36s., iSSS = +44m.27s.
La Paz iE = +20m.55s., SKPN = +23m.7s., PSKP = +33m.18s., SSN = +41m.46s., SSSN = +47m.10s.
La Plata E. +21m.4s., PPP = +28m.22s., PPP($\triangle$ >180°) = +32m.10s., SKKS ($\triangle$ >180°) = +33m.58s., SSS = +51m.46s., +55m.52s., and +58m.40s.?
La Plata N. +20m.34s., +21m.4s., and +25m.22s., PPP = +28m.28s. and +30m.16s., SKKS = +30m.58s., PPP($\triangle$ >180°) = +32m.16s. and +33m.4s., SKSP = +35m.10s., +35m.52s., and +36m.40s., SKSP($\triangle$ >180°) = +38m.34s., SS = +45m.16s., PSS = +45m.52s., SSS = +51m.52s., +57m.52s., and +61m.58s.
La Plata Z. +21m.4s., PPP = +28m.40s., PPP($\triangle$ >180°) = +32m.16s.

Aug. 1d. 19h. 44m. 55s. Epicentre 37°·6N. 72°·4E.

$A = +·2402$, $B = +·7571$, $C = +·6076$; $\delta = +7$; $h = -1$;
$D = +·953$, $E = -·302$,; $G = +·184$, $H = +·579$, $K = -·794$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		3·1	359	i 0 55	+ 4	i 1 24	− 5	i 0 59	P*	—
Tashkent		4·4	327	i 1 11	+ 1	e 2 16	S*	e 1 30	P_g	i 2·1
Samarkand		4·7	298	i 1 17	+ 3	2 11	+ 1	i 1 39	P_g	—
Frunse		5·5	17	1 27	+ 2	—	—	2 53	P_g	—
Almata		6·6	30	e 1 42	+ 1	3 31	S_g	e 1 58	P*	—
Dehra Dun	N.	8·6	146	e 2 34?	P*	e 3 32	−16	—	—	e 4·4
Agra	E.	11·5	154	e 2 49	+ 1	4 51	− 8	6 4	S_g	—
Semipalatinsk		14·0	21	3 23	+ 1	e 6 3	+ 4	—	—	7·3
Bombay	E.	18·6	179	—	—	e 8 3	SS	—	—	—
Calcutta	N.	20·3	134	—	—	i 8 14	− 9	—	—	—
Hyderabad	E.	20·8	164	—	—	e 9 6	SS	—	—	11·5
Sverdlovsk		20·8	341	4 45	0	8 27	− 6	—	—	10·9
Grozny		21·0	294	4 45	− 2	—	—	—	—	—
Irkutsk		26·7	46	—	—	10 16	− 1	—	—	14·1
Kodaikanal	E.	27·6	170	—	—	e 10 58	+26	—	—	14·4
Moscow		29·6	319	6 7	− 2	e 11 2	− 2	—	—	—
Ksara		29·8	273	e 6 14	+ 3	12 28	SS	e 7 36	PP	—
Pulkovo		34·7	323	6 53	− 1	e 12 28	+ 4	—	—	17·7
Helwan		34·8	269	e 6 56	+ 2	—	—	e 8 17	PP	—
Warsaw		38·4	310	—	—	e 15 12	SS	—	—	e 20·1
Potsdam		43·2	310	—	—	e 14 29	− 3	e 17 17	SS	e 23·7
Triest		43·7	300	i 9 57	PP	e 14 40	+ 1	e 11 50	?	e 25·3
Rome		45·5	295	e 8 31	+ 8	e 14 58	− 7	e 10 10	PP	e 23·8
Manila		48·7	105	e 13 49	?	17 12	?	—	—	—
Scoresby Sund		56·5	21	e 22 23	?	—	—	—	—	—

Additional readings :—
Andijan $S_g = +1$m.33s.
Tashkent P = +1m.22s.
Samarkand iP* = +1m.29s., iS* = +2m.21s., $iS_g = +2$m.37s.
Hyderabad eE = +10m.58s.
Kodaikanal eE = +13m.12s.
Warsaw eE = +15m.51s., eZ = +16m.10s.
Potsdam eN = +14m.32s., eN = +17m.45s.
Triest ePPPE = +12m.43s., eSS = +21m.2s.
Rome eE = +15m.50s., +18m.12s., and +18m.43s.
Long waves were also recorded at Colombo, Vladivostok, and European stations.

Aug. 1d. Readings also at 0h. (Ksara, near Mizusawa, and near Apia), 5h. (Tucson and near Triest), 9h. (Scoresby Sund and Ksara), 11h. (near Triest, near Apia, and near La Paz), 13h. (Mount Wilson, Pasadena, and Lick), 15h. (Tucson), 16h. (Tucson), 17h. (near Fresno, Samarkand, Andijan, Frunse, and Almata), 18h. (Andijan, Frunse, and Almata), 19h. (Tucson (2) and near Mizusawa).

Aug. 2d. 3h. 3m. 59s. Epicentre 28°·0N. 90°·5E. (as on 1938 Feb. 26d.).

$A = -\cdot0077$, $B = +\cdot8843$, $C = +\cdot4670$; $\delta = +13$; $h = +2$;
$D = +1\cdot000$, $E = +\cdot009$; $G = -\cdot004$, $H = +\cdot467$, $K = -\cdot884$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	6·0	201	1 35	+ 3	i 2 43	0	i 1 55	P_g	—
Agra	E.	11·1	269	e 3 12	+29	5 21	S*	—	—	—
Dehra Dun	N.	11·1	285	e 4 26?	S	(e 4 26?)	−23	—	—	e 5·6
Bombay		18·6	245	—	—	i 7 14	−32	—	—	—
Almata		18·8	329	e 4 12	−11	e 7 42	− 8	—	—	—
Andijan		19·6	315	e 4 33	+ 1	e 8 9	+ 1	—	—	—
Kodaikanal	E.	21·5	219	e 4 1?	?	—	—	—	—	—
Tashkent		21·9	313	e 4 57	0	e 8 52	− 2	—	—	i 12·1
Samarkand		22·7	307	5 3	− 1	9 4	− 5	—	—	13·0
Ksara		46·7	291	e 9 2	+30	—	—	e 10 26	PP	—

Additional readings and note :—
Calcutta $P^*N = +1m.45s.$, $iSN = +2m.29s.$, $iS_gN = +2m.54s.$; the reading entered for S is given as iS^*N.
Agra $iE = +3m.20s.$
Bombay $iE = +7m.18s.$
Long waves also recorded at Sverdlovsk, Warsaw, Potsdam, and De Bilt.

Aug. 2d. Readings also at 3h. (Manila, Bombay, and near Hyderabad), 4h. (De Bilt, Potsdam, Warsaw, Arapuni, near New Plymouth, Tuai, and Wellington), 5h. (Arapuni, Hastings (2), Christchurch (2), near New Plymouth, Tuai, and Wellington; Brisbane, Riverview, Sydney, Manila, Vladivostok, Sverdlovsk, Samarkand, Ksara, Granada, and Tucson), 6h. (Agra, Baku, De Bilt, Potsdam, Kew, Pulkovo, and Warsaw), 8h. (Mizusawa), 9h. (Balboa Heights, Tinemaha, Tucson, Rome, and near Agra), 10h. (Bombay), 11h. (Scoresby Sund, Riverview, Rome, and Tucson), 13h. (New Plymouth (2), Tucson, Tinemaha, and Mount Wilson), 14h. (Mount Wilson, Pasadena, Tinemaha, Tucson, Potsdam, Warsaw, De Bilt, Vladivostok, Sverdlovsk, Irkutsk, Pulkovo, Moscow, Kodaikanal, Grozny, Agra, Almata, Samarkand, near Andijan, and Frunse), 15h. (Tucson, Mount Wilson, Pasadena, Riverside, Haiwee, and Tinemaha), 20h. (near Mizusawa), 21h. (Sitka).

Aug. 3d. Readings at 1h. (Lincoln, Mount Wilson, Tinemaha, and Tucson), 3h. (Ksara, near Toledo, near La Paz, and near Granada), 6h. (Tucson), 8h. (College, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 9h. (Almata, near Andijan, Frunse, and Tashkent), 12h. (Wellington and near Harvard), 14h. (Rome), 15h. (near Florissant), 16h. (Balboa Heights, Kodaikanal, and near Osaka), 18h. (near Mizusawa), 19h. (near Berkeley), 20h. (College, Mount Wilson, Pasadena, Riverside, Tucson, and near Mizusawa), 23h. (Mount Wilson, Pasadena, and Tucson).

Aug. 4d. Readings at 0h. (Mount Wilson (2), Tinemaha (2), Tucson (2), Berkeley, near Branner, and Lick), 1h. (Florissant), 2h. (Mount Wilson, Pasadena, and Tucson), 5h. (Ksara), 6h. (near Toledo, Almeria, and Granada), 8h. (near La Paz), 9h. (Pennsylvania, Mount Wilson, Pasadena, Tinemaha, Tucson, Osaka, and near Mizusawa), 10h. (Ksara), 11h. (near Christchurch, New Plymouth, and Wellington), 13h. (San Juan), 14h. (Rome), 15h. (near Rome (2)), 16h. (Mount Wilson, Pasadena, Tinemaha, Tucson, Shawinigan Falls, near Ottawa, Basle, Chur, Zurich, Jena, near Ravensburg, Ebingen, Stuttgart, La Paz, La Plata, and near Huancayo), 18h. (near Tucson), 23h. (Almata, Frunse, near Andijan and Tashkent).

Aug. 5d. 8h. 19m. 42s. Epicentre 51°·7N. 178°·5W. (as on 1940 Feb. 12d.).

$A = -·6221$, $B = -·0163$, $C = +·7828$; $\delta = +5$; $h = -6$;
$D = -·026$, $E = +1·000$; $G = -·782$, $H = -·020$, $K = -·622$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		20·6	38	e 4 38	− 5	e 8 25	− 4	e 4 53	PP	e 9·1
Sitka		25·3	60	e 5 41	+11	i 10 36	SS	—	—	i 11·4
Mizusawa	E.	30·6	262	6 38	+20	9 5	?	—	—	—
Honolulu		34·3	144	—	—	e 12 43	+26	—	—	i 15·2
Victoria		34·9	73	e 8 5	PP	e 12 24	− 3	—	—	15·3
Seattle		35·9	75	e 7 16	+12	e 12 29	−13	e 8 32	PP	e 14·6
Ukiah		39·8	87	—	—	e 14 1	+19	—	—	e 17·7
Berkeley		41·2	87	e 7 48	0	e 13 47	−15	e 17 27	SSS	e 20·4
Santa Clara		41·7	87	e 8 2	+10	e 14 25	+15	—	—	e 20·0
Lick		41·9	87	e 7 57	+ 3	—	—	—	—	—
Butte		42·4	70	e 8 36	+38	e 14 50	+30	e 9 33	PP	e 15·9
Bozeman		43·5	70	e 8 4	− 3	—	—	e 10 1	PPP	e 17·0
Tinemaha		44·2	84	e 8 12	0	—	—	i 10 3	P_cP	—
Haiwee		45·0	85	i 8 18	− 1	—	—	i 9 53	P_cP	—
Santa Barbara		45·0	88	e 8 19	0	—	—	—	—	—
Salt Lake City		45·8	77	e 8 30	+ 5	e 15 5	− 4	e 10 2	P_cP	i 18·7
Pasadena		46·1	87	e 8 26a	− 2	e 15 14	0	i 14 1	S_cP	e 18·8
Mount Wilson		46·2	87	i 8 27a	− 1	e 15 14	− 1	—	—	—
Riverside		46·7	87	i 8 31	− 1	—	—	—	—	—
Palomar	Z.	47·5	88	i 8 37	− 1	—	—	i 9 40	P_cP	—
La Jolla		47·6	88	e 8 38	− 1	—	—	—	—	—
Tucson		52·0	84	i 9 11a	− 2	e 16 33	− 3	i 10 31	P_cP	—
Scoresby Sund		56·9	9	—	—	e 21 58	SS	—	—	e 23·9
Chicago U.S.C.G.S.		59·1	61	—	—	e 18 23	+12	—	—	e 27·1
Florissant		59·7	65	e 10 9	0	e 18 13	− 6	—	—	28·2
St. Louis		59·9	65	e 10 5	− 5	e 18 25	+ 4	—	—	e 27·7
Manila		60·5	256	e 10 50	+36	18 32	+ 3	—	—	—
Sverdlovsk		61·4	328	10 19	− 1	18 38	− 2	—	—	28·3
Toronto		62·1	54	—	—	e 19 36	PPS	—	—	30·3
Ottawa		62·7	50	e 10 48	+19	e 18 48	− 9	—	—	e 28·3
Shawinigan Falls		63·3	47	e 10 36	+ 3	—	—	—	—	38·3
Seven Falls		63·7	46	—	—	e 20 0	PPS	—	—	32·3
Almata		65·1	309	e 11 19	P_cP	—	—	—	—	—
Pulkovo		66·4	345	e 10 53	0	e 19 37	− 6	—	—	34·1
Frunse		66·6	310	e 11 22	P_cP	—	—	—	—	—
Philadelphia		67·0	55	—	—	e 19 44	− 6	e 24 33	SS	e 27·6
East Machias		67·1	46	—	—	e 20 21	PS	e 21 25	S_cS	e 28·6
Columbia		68·4	62	—	—	e 20 8	+ 1	e 21 19	S_cS	e 31·4
Moscow		68·8	339	e 11 5	− 3	e 20 4	− 7	—	—	—
Andijan		69·3	310	e 11 47	P_cP	—	—	—	—	—
Tashkent		70·3	312	e 11 25	+ 8	20 34	+ 5	—	—	25·0
Potsdam		75·8	353	—	—	e 21 27	− 4	—	—	e 38·3
De Bilt		76·5	358	—	—	e 32 23	?	—	—	e 45·3
Agra	E.	77·0	297	—	—	e 21 55	+10	—	—	—
Jena	N.	77·4	353	e 12 4	+ 6	—	—	—	—	—
Uccle		77·8	359	—	—	e 21 49	− 4	—	—	e 32·3
Istanbul		84·5	340	—	—	e 23 2	0	—	—	—
Toledo		88·7	5	e 11 6	?	—	—	—	—	38·8
San Juan		88·8	61	—	—	e 23 32	[+ 6]	e 24 30	PS	e 36·0
Ksara		89·7	332	e 15 42	PP	e 25 14	PS	—	—	—
Granada		91·4	4	—	—	e 22 18	?	—	—	43·1
Huancayo		107·5	87	—	—	e 25 25	[+24]	—	—	e 42·4

Additional readings :—
College e = +8m.34s.
Seattle eP_cP = +9m.16s.
Berkeley eSE = +14m.5s., eSSE = +17m.46s., iN = +19m.41s.
Bozeman i = +8m.8s.
Tinemaha iNZ = +8m.22s., eS_cPZ = +13m.46s.
Salt Lake City ePP = +10m.22s., ePPP = +10m.54s., i = +15m.15s., eS_cS = +18m.10s.
Pasadena iZ = +8m.36s.

Continued on next page.

Mount Wilson iZ = +8m.36s.
Palomar iZ = +8m.47s., eS$_c$PZ = +13m.46s.
Tucson iPP = +11m.26s., iPPP = +12m.3s., iP$_c$S = +14m.26s., eS$_c$S = +19m.9s., eSS = +19m.52s.
St. Louis ePE = +10m.8s., eN = +18m.11s.
Philadelphia e = +20m.10s.
East Machias eSS = +24m.25s., eSSS = +27m.50s.
Potsdam eN = +22m.6s.
Huancayo eS = +26m.27s.
Long waves were also recorded at San Fernando, La Paz, Bombay, Triest, Bucharest, Warsaw, Upsala, Sofia, Ivigtut, Lincoln, and Vladivostok.

Aug. 5d. 9h. 55m. 5s. Epicentre 40°·0N. 122°·0E.

A = −·4071, B = +·6515, C = +·6402; δ = +4; h = −2;
D = +·848, E = +·530; G = −·339, H = +·543, K = −·768.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Vladivostok		8·1	64	e 2 9	+ 7	i 4 0	S*	e 4·3
Zi-ka-wei	E.	8·8	182	e 2 37	P*	i 5 35	?	—
Osaka		12·0	112	3 0	+ 5	5 26	SS	—
Mizusawa		14·8	89	e 3 27	− 5	6 30	SS	—
Irkutsk		17·3	321	4 5	+ 1	7 24	+ 8	9·1
Phu-Lien		23·2	219	—	—	e 9 22	+ 4	—
Manila		25·3	183	i 5 35	+ 5	i 10 19	+25	—
Semipalatinsk		30·8	305	e 6 19	− 1	—	—	17·9
Calcutta	N.	33·4	249	—	—	e 12 11	+ 8	i 16·9
Almata		33·5	291	e 6 48	+ 5	—	—	17·9
Frunse		35·3	290	e 7 1	+ 2	e 12 38	+ 5	e 18·9
Andijan		37·4	287	7 18	+ 2	13 9	+ 4	e 19·9
Agra	E.	38·5	264	—	—	e 13 32	+10	—
Tashkent		39·5	290	i 7 37	+ 3	e 13 38	+ 1	e 14·9
Sverdlovsk		42·5	315	8 1	+ 2	14 21	− 1	19·9
College		54·7	32	—	—	e 17 13	0	e 23·5
Moscow		55·3	318	e 9 35	− 3	—	—	e 30·8
Pulkovo		57·3	323	9 52	0	e 17 47	0	e 31·3
Ksara		66·5	295	e 10 52	− 2	—	—	—
Istanbul		67·1	305	—	—	e 26 55?	SSS	—
Hamburg		70·0	325	—	—	e 32 55?	?	44·9
Jena		71·0	321	e 11 19	− 3	—	—	e 34·9
Stuttgart		73·6	321	e 11 39	+ 2	—	—	—
Uccle		74·4	325	e 11 44	+ 2	—	—	e 36·9
Chur		74·7	319	e 11 41	− 2	—	—	—
Zurich		74·8	320	e 11 55	+11	—	—	—
Basle		75·2	321	e 11 43	− 3	—	—	—
Rome		76·4	313	e 14 30	PP	e 21 59	PS	—
Tinemaha	z.	85·4	45	e 12 43	+ 3	—	—	—
Mount Wilson	z.	87·7	47	e 12 52	0	—	—	—
Pasadena	z.	87·7	47	e 12 52	0	—	—	—
Riverside	z.	88·2	47	e 12 56	+ 2	—	—	—
Palomar	z.	89·0	46	e 12 57	− 1	—	—	—
Tucson		93·6	43	e 13 18	− 1	—	—	—

Additional readings :—
Zi-ka-wei iE = +5m.59s. and +6m.15s.
Mizusawa S?E = +6m.35s.
Tucson e = +13m.21s.
Long waves were also recorded at Granada, De Bilt, Toledo, Almeria, Ogyalla, Potsdam, Sofia, Budapest, Bucharest, Philadelphia, Lisbon, Kew, Upsala, Prague, Warsaw, Triest, San Fernando, and St. Louis.

Aug. 5d. 15h. Local Japanese shock. Tokyo Imperial University gives Epicentre 35°·97N. 140°·00E.

Kamakura P = 23m.41s., S = 23m.53s.
Kiyosumi P = 23m.41s., S = 23m.56s.
Komaba P = 23m.41s., S = 23m.51s.
Koyama P = 23m.41s., S = 23m.56s.
Titibu P = 23m.41s., S = 23m.51s.
Togane P = 23m.41s., S = 23m.51s.
Tokyo Imp. Univ. P = 23m.41s., S = 23m.50s.
Tukubasan P = 23m.41s., S = 23m.50s.
Mizusawa ePE = 24m.2s., SE = 24m.59s., eSN = 25m.2s.

Aug. 5d. 21h. 29m. 10s. Epicentre 23°·0N. 122°·0E.

A = −·4883, B = +·7814, C = +·3885; $\delta = -4$; $h = +4$;
D = +·848, E = +·530; G = −·206, H = +·329, K = −·921.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zi-ka-wei		8·2	354	e 2 2	− 1	i 4 24	S_v	—	—	i 5·6
Manila		8·4	187	i 2 26	P*	i 6 10	?	—	—	—
Phu-Lien		14·5	262	e 4 0	PPP	—	—	—	—	7·8
Vladivostok		21·7	22	e 4 53	− 2	i 9 11	+20	—	—	11·0
Calcutta	N.	31·0	276	e 8 59	?	i 12 4	+38	i 13 56	SSS	i 17·1
Irkutsk		32·2	340	6 27	− 5	e 11 59	+14	—	—	15·8
Agra	E.	39·9	286	i 9 16	PP	—	—	—	—	—
Almata		42·2	311	e 7 54	− 2	—	—	—	—	22·8
Frunse		43·8	309	e 8 13	+ 4	—	—	—	—	23·8
Andijan		45·1	305	e 8 21	+ 1	—	—	—	—	25·7
Tashkent		47·5	306	i 8 40	+ 2	e 15 33	− 1	—	—	e 25·4
Samarkand		49·1	303	i 8 51	0	—	—	e 9 38	P_cP	26·8
Sverdlovsk		55·4	325	i 9 37	− 1	e 17 25	+ 3	—	—	25·8
Baku		62·2	305	e 10 29	+ 3	—	—	—	—	—
Moscow		68·3	323	e 11 2	− 3	e 20 4	− 2	—	—	36·3
Pulkovo		71·3	328	e 11 21	− 2	e 20 41	0	—	—	—
Ksara		74·5	300	i 11 44 s	+ 2	e 23 24	?	—	—	42·8
Helwan		79·4	298	i 12 11	+ 2	e 22 8	− 2	—	—	—
Potsdam		82·9	325	i 12 26	− 2	—	—	—	—	e 41·8
Jena	N.	84·4	324	e 12 37	+ 1	—	—	—	—	—
Triest		85·7	319	e 19 10	?	e 29 14	SS	—	—	—
Uccle		88·3	327	i 12 55	0	e 23 37	− 2	—	—	e 42·8
Rome		88·4	315	e 12 54	− 1	e 23 18	[− 4]	e 16 22	PP	—
Clermont-Ferrand		92·0	323	e 13 16	+ 4	—	—	—	—	—

Additional readings :—
Zi-ka-wei iE = +4m.28s. and +4m.58s.
Triest ePS = +29m.56s.
Rome eEZ = +13m.24s., ePSE = +24m.9s., eE = +24m.49s., eSSEN = +29m.23s.
Long waves were also recorded at Scoresby Sund, Bombay, Granada, Almeria, Toledo, St. Louis, East Machias, Bergen, Aberdeen, Stonyhurst, De Bilt, San Fernando, Kew, Warsaw, Upsala, Bucharest, and Hamburg.

Aug. 5d. Readings also at 3h. (Lincoln and near Tananarive), 4h. (Tucson, Palomar, Riverside, Pasadena, Mount Wilson, and Tinemaha), 5h. (near Mizusawa, Tucson, Palomar, Mount Wilson, and Tinemaha), 8h. (near Tananarive), 13h. (Apia), 14h. (Honlulu, Wellington, Tinemaha, Mount Wilson, Palomar, Tucson, Pasadena, and Riverside), 16h. (La Paz), 20h. (La Paz, near Berkeley, Lick, and Branner), 21h. near Mizusawa).

Aug. 6d. Readings at 3h. (Philadelphia), 5h. (near Harvard), 9h. (near Harvard), 10h. (La Paz), 11h. (La Paz and near Triest), 13h. (Ivigtut), 15h. (near Ravensburg, Stuttgart, Ebingen, Basle, Chur, Zurich, Neuchatel, and Jena), 16h. (Toledo), 22h. (Balboa Heights), 23h. (near Harvard and Montezuma).

Aug. 7d. 2h. 55m. 53s. Epicentre 22°·6S. 68°·8W. (as on 1939 Oct. 5d.).

$A = +·3342$, $B = -·8616$, $C = -·3821$; $\delta = +4$; $h = +4$;
$D = -·932$, $E = -·361$; $G = -·138$, $H = +·356$, $K = -·924$.

Pasadena suggests depth 110kms. Tables for a focus at the base of the superficial layers have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		6·1	5	i 1 38	+ 8	i 2 31	− 9	—	—	3·3
Huancayo		12·2	328	e 3 0	+ 6	i 5 35	+25	i 3 22	pP	i 6·9
La Plata	N.	15·5	145	3 37	− 1	7 7	SS	—	—	8·2
	Z.	15·5	145	3 42	+ 4	7 1	SS	—	—	8·2
Rio de Janeiro	E.	23·6	95	i 5 7	− 2	i 9 10	− 7	—	—	i 12·1
Balboa Heights		33·1	340	e 6 7?	−28	—	—	—	—	—
San Juan		40·8	4	—	—	e 13 29	−19	e 14 4	sS	e 17·2
Columbia		57·5	348	—	—	e 17 34	− 8	e 18 20	sS	e 24·9
St. Louis		64·1	341	e 10 30	− 3	e 18 57	− 9	i 10 54	pP	—
Florissant		64·3	341	e 10 33	− 1	i 19 0	− 8	e 11 1	pP	—
Harvard		64·8	358	e 10 37	− 1	—	—	e 11 4	pP	—
Buffalo		65·8	352	i 10 44	0	—	—	i 11 11	pP	—
East Machias		67·1	1	e 11 11	pP	e 19 31	−11	e 15 11	PPP	e 27·7
Tucson		67·7	322	i 10 57k	+ 1	e 19 30	−20	i 11 26	pP	e 28·3
Ottawa		68·0	355	e 10 57	− 1	e 19 47	− 6	e 11 25	pP	28·1
Lincoln		68·2	333	e 10 57	− 2	i 19 47	− 9	e 11 39	sP	e 28·0
La Jolla		72·0	319	e 11 23	+ 1	—	—	e 11 52	pP	—
Palomar	z.	72·1	319	i 11 24k	+ 1	—	—	i 11 52	pP	—
Riverside		72·8	319	i 11 29k	+ 2	—	—	i 11 58	pP	—
Mount Wilson		73·4	319	i 11 32k	+ 2	—	—	—	—	—
Pasadena		73·4	319	i 11 33k	+ 3	—	—	i 12 1	pP	—
Haiwee		74·6	321	e 11 39	+ 1	—	—	—	—	—
Santa Barbara	z.	74·6	318	i 11 38	0	—	—	—	—	—
Salt Lake City		74·7	327	e 12 5	pP	e 21 6	− 5	e 21 43	pS	—
Tinemaha		75·5	321	i 11 44k	+ 1	—	—	i 12 12	pP	—
Bozeman		78·0	331	e 11 51	− 6	e 21 42	− 5	e 12 36	sP	—
Berkeley		78·4	319	e 12 0	+ 1	—	—	e 12 28	pP	—
Butte		79·0	331	e 11 56	− 6	e 21 46	−11	e 12 25	pP	e 31·9
Granada		85·4	47	12 36k	+ 1	i 23 41	PS	16 7	PP	45·3
Almeria		86·0	47	e 12 38	0	—	—	—	—	43·1
Victoria		86·0	327	e 13 22	pP	e 23 7	− 1	—	—	—
Toledo		86·6	44	e 12 41	0	e 23 12	− 2	—	—	—
Uccle		97·2	37	e 14 17	pP	i 24 0	[− 3]	—	—	e 40·1
De Bilt	E.	98·3	36	—	—	e 24 7	[− 2]	e 27 7	PPS	—
Scoresby Sund		98·5	14	—	—	e 24 6	[− 4]	e 30 52	SS	e 40·8
Rome		98·6	49	e 17 32	PP	i 24 7	[− 4]	e 31 25	SS	—
Triest		100·9	45	e 17 52	PP	i 24 18	[− 4]	—	—	—
Potsdam		102·8	38	e 14 19	pP	e 24 29	[− 3]	e 18 43	PP	e 51·8
Warsaw		107·4	40	—	—	e 24 7?	[−45]	—	—	e 33·1
Helwan		109·3	65	e 18 55	PP	e 24 55	[− 5]	e 28 47	PPS	—
Ksara		114·0	62	e 19 30	PP	e 29 3	PS	30 15	PPS	55·1

Additional readings :—
La Paz $iP^*N = +1m.48s.$, $iP_gN = +1m.58s.$, $iS_gN = +2m.57s.$
Huancayo $i = +3m.4s.$, $iPP = +3m.39s.$, $i = +5m.39s.$
San Juan $i = +14m.14s.$
St. Louis $iE = +10m.42s.$, $iN = +10m.58s.$, $iE = +11m.5s.$, $eN = +11m.11s.$, $esSE = +19m.40s.$, $esSN = +19m.44s.$
Florissant $iE = +16m.4s.$, $isSE = +19m.48s.$, $iE = +21m.9s.$
Buffalo $i = +11m.23s.$
East Machias $e = +11m.39s.$, $i = +19m.35s.$, $isS = +20m.23s.$, $iS_cS = +20m.29s.$, $eSS = +24m.14s.$, $esSS = +24m.28s.$
Tucson $iP_cP = +11m.30s.$, $isP = +11m.35s.$, $ePP = +13m.29s.$, $ePPP = +14m.56s.$, $esS = +20m.10s.$, $eS_cS = +20m.23s.$, $eSS = +24m.2s.$, $eSSS = +26m.51s.$, $ePKP,PKP = +39m.23s.$
Ottawa $e = +20m.33s.$
Lincoln $ePP = +13m.37s.$, $isS = +20m.35s.$
Pasadena $isPZ = +12m.12s.$
Salt Lake City $isS = +21m.56s.$, $eSS = +26m.10s.$
Bozeman $ePP = +14m.50s.$
Butte $epS = +22m.19s.$, $iSP = +22m.37s.$, $esSP = +23m.24s.$
Granada $i = +13m.2s.$, $S_cS = +22m.47s.$, $PS = +24m.38s.$, $SS = +30m.11s.$
Scoresby Sund $eS = +24m.52s.$, $esSS = +31m.39s.$, $eSSS = +35m.57s.$
Potsdam $eN = +24m.7s.$, $iN = +25m.33s.$

Aug. 7d. Readings also at 3h. (Warsaw), 4h. (near Mizusawa), 5h. (near Mizusawa), 6h. (Christchurch, La Paz, and Wellington), 7h. (Scoresby Sund), 8h. (Helwan, Ksara, Toledo, Tucson, Granada, Triest, La Jolla, Tinemaha, Riverside, Mount Wilson, Pasadena, Palomar, and La Paz), 10h. (Harvard), 13h. (New Plymouth, Wellington, and near Mizusawa (2)), 14h. (La Plata, St. Louis, near Sofia, Bucharest, Stuttgart, Basle, Chur, Zurich, Kew, La Paz, La Jolla, Palomar, Pasadena, Mount Wilson, Riverside, Tinemaha, near Triest, Granada, Warsaw, Potsdam (2), De Bilt, Uccle, and Tucson), 16h. (Uccle, Potsdam, near Andijan, Tashkent, Frunse, and Sverdlovsk), 17h. (Ivigtut, Uccle, Potsdam, De Bilt, Warsaw, Granada, and Scoresby Sund), 18h. (near Osaka, Tucson, and Tinemaha), 19h. (Mizusawa), 20h. (near Berkeley, Huancayo, Tucson, Tinemaha, near Triest, Riverside, Palomar, and La Paz), 21h. (La Paz), 23h. (near Ottawa and Shawinigan Falls).

Aug. 8d. 14h. 8m. 21s. Epicentre 58°·0S. 147°·0E. (as on 1940 March 14d.).

$A = -\cdot4466$, $B = +\cdot2900$, $C = -\cdot8464$; $\delta = -6$; $h = -8$;
$D = +\cdot545$, $E = +\cdot839$; $G = +\cdot710$, $H = -\cdot460$, $K = -\cdot533$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Christchurch		21·5	59	4 56	+ 4	8 54	+ 7	i 9 10	SS	11·0
Adelaide		23·7	343	i 5 15	+ 1	i 9 29	+ 2	i 5 39	PP	i 13·4
Riverview		24·3	10	i 5 14k	− 6	e 9 34	− 3	5 50	PP	e 11·0
Sydney		24·3	10	e 4 45	−35	e 9 27	−10	e 6 9	PPP	—
Wellington		24·3	58	5 18	− 2	9 29	− 8	5 40	PP	11·1
Brisbane	N.	30·8	10	i 6 9	−11	e 11 15	− 8	i 7 3	PP	—
La Paz		100·3	147	15 3	?	—	—	—	—	47·6
Ksara		128·9	272	e 21 14	PP	e 32 59	PPS	e 23 32	PPP	—
Rome		147·3	260	e 20 9	[+26]	—	—	—	—	—
Granada		151·6	236	(19 45)	[− 5]	(30 51)	{+24}	i 35 53	PPS	e 68·4
Potsdam	z.	153·5	278	e 20 33	[+41]	—	—	—	—	—
Scoresby Sund		166·6	344	e 21 11	[+64]	—	—	—	—	—

Additional readings :—
Christchurch iEZ = +6m.6s., i = +10m.44s., P_cSEN = +12m.53s.
Adelaide iP_cP = +8m.16s., iSS = +10m.27s., i = +11m.8s., +11m.13s., +11m.39s., +11m.48s., and +12m.21s., iS_cS = +15m.44s.
Riverview eN = +9m.44s.
Brisbane eN = +5m.27s., eE = +8m.9s., iE = +11m.39s., eN = +13m.39s.
Rome e = +20m.34s. and +21m.3s.
Granada PKP and SKKS given as SKS and PPS. SSZ = +40m.26s., SSS = +43m.58s.
Long waves were also recorded at Arapuni, Huancayo, and Pasadena.

Aug. 8d. 14h. 48m. 28s. Epicentre 38°·6N. 70°·5E. (as given by stations of U.S.S.R.).

Intensity VIII at Gulmarg, VI at Gilgit, V at Drosh, III at Rawalpindi. See Government of India Seismological Bulletin, 1940, p. 70.

$A = +\cdot2615$, $B = +\cdot7386$, $C = +\cdot6213$; $\delta = -7$; $h = -1$;
$D = +\cdot943$, $E = -\cdot334$; $G = +\cdot207$, $H = +\cdot586$, $K = -\cdot784$.

Tables for depth of focus 0·015 have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		2·6	34	e 0 43	+ 1	1 18	+ 4	—	—	—
Samarkand		2·9	291	0 49	+ 3	i 1 31	+10	—	—	—
Tchimkent		3·8	352	i 1 3	+ 5	1 42	− 1	—	—	—
Frunse		5·3	35	1 20	+ 2	i 2 34	+15	—	—	—
Almata		6·8	44	1 31	− 8	2 47	− 8	—	—	—
Dehra Dun	N.	10·4	141	e 1 52	−35	—	—	—	—	—
Agra	E.	13·1	148	e 2 9	−53	3 59	?	—	—	—
Semipalatinsk		13·7	27	e 3 3	− 7	5 59	sS	—	—	—
Sverdlovsk		19·4	344	i 4 21	+ 3	e 8 15	sS	—	—	—
Bombay		19·7	175	e 4 17	− 4	i 6 57	−54	—	—	9·5
Calcutta	N.	22·1	131	i 4 2a	−43	i 7 20	?	—	—	—
Ksara		28·3	272	e 6 24	pP	e 9 54	−25	—	—	—
Helwan		33·3	267	e 6 38	+11	—	—	e 7 40	PP	—
Warsaw		36·6	309	e 8 32?	?	e 15 32?	SSS	—	—	e 51·5
Potsdam		41·5	310	e 8 0	pP	e 13 50	+ 9	e 9 23	PP	e 41·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rome	z.	43·7	294	e 7 49	− 5	—	—	—	—	—
Chur		44·5	303	e 7 53	− 7	—	—	—	—	—
Clermont-Ferrand		49·1	302	e 8 36	0	—	—	—	—	—
Toledo		56·1	297	i 9 21	− 7	—	—	—	—	42·0

Additional readings :—
Andijan $P_g = +52s.$, SS = +1m.28s.
Samarkand $P^* = +55s.$, $S_g = +1m.42s.$
Tchimkent $P^* = +1m.12s.$, $P_g = +1m.15s.$, $S^* = +1m.49s.$, $iS_g = +2m.8s.$
Frunse $iP^* = +1m.34s.$
Almata $P_g = +2m.4s.$
Bombay $e = +6m.49s.$
Calcutta iSSN = +7m.36s.
Potsdam $iN = +13m.53s.$, $eN = +24m.2s.$, $eE = +24m.24s.$
Long waves were also recorded at De Bilt, Aberdeen, and San Fernando.

Aug. 8d. Readings also at 1h. (La Paz), 11h. (near Branner, Lick, Berkeley, and Tucson), 12h. (Philadelphia and Potsdam), 13h. (Butte, Columbia, Bozeman, Salt Lake City, Seattle, East Machias, San Juan, Florissant, Huancayo, Tucson (2), Scoresby Sund, Granada, Pasadena, Tinemaha (2), Palomar (2), Lincoln, Mount Wilson (2), and St. Louis (2)), 14h. (Warsaw, Granada, and Potsdam), 15h. (Granada, Rome, near Algiers, Fresno (2), Mount Wilson, Palomar, Tinemaha, Pasadena, Tucson, La Paz (2), near Branner (2), Lick (2), Berkeley (2), Toledo, and Riverside), 16h. (Ivigtut, Palomar, Tinemaha, Tucson, St. Louis, and Lincoln), 17h. (La Paz), 21h. (Triest and Toledo), 22h. (Tucson, Riverside, Pasadena, Tinemaha, and Mount Wilson), 23h. (Scoresby Sund).

Aug. 9d. Readings at 2h. (Ksara), 5h. (near Balboa Heights, Tucson, Tinemaha, and La Paz), 6h. (La Paz, near Andijan, Frunse, Almata, Samarkand, Tchimkent, and Tashkent), 8h. (La Paz), 9h. (Balboa Heights), 10h. (near Florissant and Potsdam), 12h. (near Mizusawa), 13h. (Potsdam, Tinemaha, Tucson, Rome, Palomar, San Juan, and Pasadena), 15h. (Potsdam), 20h. (near Berkeley and Mizusawa), 23h. (near Florissant).

Aug. 10d. Readings at 2h. (Mizusawa), 4h. (Istanbul, Riverside, Palomar, Pasadena, Mount Wilson, Tucson, and Tinemaha), 5h. (Scoresby Sund, Palomar, Pasadena, Mount Wilson, Tucson, and Tinemaha), 7h. (near Triest), 11h. (Tuai, Wellington, La Paz, Christchurch, and near Apia), 15h. (near Tuai), 16h. (Lincoln), 17h. (La Paz and Philadelphia), 19h. (near Florissant), 20h. (Harvard), 21h. (Prague).

Aug. 11d. 7h. 17m. 54s. Epicentre 40°·5N. 77°·1E. (as on 1939 April 17d.).

$A = +·1703$, $B = +·7433$, $C = +·6469$; $\delta = -2$; $h = -2$;
$D = +·975$, $E = -·223$; $G = +·144$, $H = +·631$, $K = -·763$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Almata	2·8	358	0 49	+ 2	e 1 37	S_g	—	—	—
Frunse	3·0	322	0 46	− 4	i 1 39	S_g	i 0 51	P^*	—
Andijan	3·6	275	0 59	+ 1	1 40	− 2	1 12	P_g	—
Tchimkent	5·9	290	1 30	− 1	2 37	− 3	—	—	—
Tashkent	6·0	282	e 1 50	P^*	—	—	—	—	e 4·2
Samarkand	7·8	268	2 12	P^*	3 48	S^*	2 49	P_g	—

Andijan also gives $S^* = +1m.52s.$, $S_g = +2m.2s.$
Long waves were also recorded at Moscow and Sverdlovsk.

Aug. 11d. 16h. 46m. 42s. Epicentre 14°·9S. 173°·3W.

A = −·9599, B = −·1128, C = −·2569 ; δ = +13 ; h = +6 ;
D = −·117, E = +·993 ; G = +·255, H = +·030, K = −·967.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		1·9	54	i 0 35a	+ 1	i 0 55	− 4	—	—	—
Wellington		28·2	199	5 52	− 4	—	—	—	—	14·3
Christchurch		30·9	199	6 24	+ 4	11 38	+14	13 14	L_q	15·6
Brisbane	N.	33·6	242	—	—	e 11 18	−48	—	—	e 14·1
Sydney		37·1	233	e 6 48	−26	e 12 36	−25	—	—	—
Riverview		37·2	233	e 8 37	PP	e 16 0	SSS	i 8 56	PPP	e 17·7
Honolulu		39·1	24	—	—	e 13 41	+10	—	—	e 16·8
Adelaide		47·4	235	—	—	e 15 40	+ 8	i 18 32	SS	i 21·0
Santa Barbara		70·8	45	i 11 23	+ 3	—	—	—	—	—
Santa Clara		71·0	41	i 11 29	+ 7	e 20 49	+12	—	—	e 32·0
Berkeley		71·1	41	i 11 24	+ 2	i 20 42	+ 4	—	—	e 32·0
Lick		71·2	41	e 11 25	+ 2	—	—	—	—	—
Manila		71·3	291	e 11 23	0	20 50	+ 9	—	—	—
Ukiah		71·3	39	e 11 20	− 3	e 20 44	+ 3	e 21 21	S_cS	e 30·4
La Jolla		71·6	47	i 11 28	+ 3	—	—	—	—	—
Pasadena		71·7	46	i 11 26	0	e 20 46	+ 1	i 14 7	PP	e 32·5
Mount Wilson	Z.	71·8	46	e 11 27	+ 1	—	—	i 14 7	PP	—
Palomar	Z.	72·1	47	i 11 30	+ 2	—	—	—	—	—
Riverside		72·1	46	i 11 30	+ 2	—	—	—	—	—
Haiwee	N.	72·9	44	e 11 36	+ 3	—	—	—	—	—
Tinemaha		73·2	43	i 11 35	0	—	—	—	—	—
Tucson		76·0	51	e 11 52	+ 1	i 21 39	+ 5	e 14 46	PP	e 30·9
Vladivostok		76·5	322	e 11 54	0	i 21 40	+ 1	—	—	35·1
Seattle		77·2	33	—	—	e 21 44	− 3	—	—	—
Victoria		77·2	32	—	—	e 21 46	− 1	—	—	35·3
Sitka		78·8	20	e 12 3	− 3	i 21 45	−19	e 22 4	S_cS	e 33·6
Salt Lake City		79·4	43	e 12 20	+11	i 22 12	+ 2	e 15 18	PP	e 34·5
Butte		81·7	38	e 12 49	+27	e 22 23	−11	e 23 24	PPS	e 33·2
College		81·9	11	e 12 22	− 1	i 22 31	− 5	—	—	e 34·3
Bozeman		82·4	39	e 12 26	+ 1	e 22 34	− 7	i 23 2	S_cS	e 34·4
Florissant		93·9	52	i 13 41	+20	e 23 55	[0]	e 24 18	S_cS	44·0
St. Louis		93·9	52	i 12 31	−50	e 23 57	[+ 2]	e 17 19	PP	e 43·6
Huancayo		94·5	104	—	—	e 24 37	+ 3	i 24 47	S_cS	—
La Paz	Z.	99·8	110	14 7	+20	—	—	—	—	51·3
Toronto		103·0	47	—	—	e 24 42	[+ 1]	—	—	48·3
Ottawa		105·8	46	—	—	e 24 54	[0]	e 28 0	PS	48·3
Seven Falls		109·3	44	—	—	e 25 12	[+ 3]	e 28 30	PS	51·3
San Juan		110·6	75	e 19 17	PP	e 25 12	[− 2]	e 28 45	PS	e 51·6
Bermuda		113·3	61	—	—	e 35 27	SS	—	—	e 59·2
Tashkent		120·3	310	e 18 54	[+ 1]	25 47	[− 4]	e 20 13	PP	e 53·5
Scoresby Sund		121·8	12	e 20 28	PP	e 25 59	[+ 3]	e 30 26	PS	e 50·9
Sverdlovsk		121·8	329	e 18 58	[+ 2]	i 36 59	SS	e 20 28	PP	e 49·3
Pulkovo		132·0	345	19 17	[+ 1]	26 29	[+ 4]	e 24 50	PPP	—
Moscow		133·0	337	19 19	[+ 1]	28 40	{+ 2}	21 42	PP	—
Warsaw		141·1	347	e 19 31	[− 1]	e 41 1	SS	e 22 52	PP	e 68·3
Hamburg	Z.	141·4	357	e 19 39	[+ 6]	—	—	—	—	e 75·3
Potsdam		142·4	354	e 19 38	[+ 3]	i 29 34	{− 1}	e 22 24	PP	e 67·3
De Bilt		143·0	1	i 19 43a	[+ 7]	—	—	i 23 7	SKP	e 67·3
Uccle		144·2	3	i 19 39	[+ 1]	e 29 46	{+ 1}	e 33 10	PS	e 67·3
Stuttgart		146·3	356	i 19 44k	[+ 3]	—	—	—	—	e 73·3
Zurich		147·3	358	e 19 45	[+ 2]	—	—	—	—	—
Basle		147·5	358	e 19 45	[+ 2]	—	—	—	—	—
Istanbul		147·6	327	e 19 43	[0]	—	—	—	—	—
Ksara		147·6	310	e 19 48	[+ 5]	36 45	PPS	e 23 30	PP	74·0
Chur		148·1	357	e 19 43	[− 1]	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		148·9	335	e 19 53	[+ 8]	—	—	—	—	81·3
Triest		148·9	349	i 19 52	[+ 7]	e 26 50	[− 2]	e 23 24	SKP	e 70·8
Clermont-Ferrand		149·1	5	19 52	[+ 6]	—	—	—	—	—
Lisbon		152·5	26	19 54	[+ 3]	—	—	23 43	PP	75·3
Rome	z.	152·7	349	i 20 18?	[+27]	—	—	—	—	—
Helwan		152·9	307	i 19 53	[+ 1]	e 30 27	[− 7]	e 23 58	PP	—
Toledo	z.	153·5	18	e 14 31	?	—	—	—	—	—
Granada		156·1	20	i 20 8	[+12]	27 5	[+ 4]	23 6	SKP	i 72·2
Almeria		156·8	18	20 3	[+ 6]	—	—	—	—	73·3

Additional readings :—
Honolulu e = +15m.1s.
Ukiah e = +11m.48s.
Tucson i = +12m.3s. and +12m.12s., ePPP = +16m.29s., eSS = +26m.5s., eSSS = +29m.35s.
Salt Lake City iS_cS = +22m.40s., ePPS = +22m.53s.
College e = +12m.41s.
Bozeman e = +12m.50s., i = +22m.45s., ePS = +23m.29s., ePPS = +23m.45s., eSS = +28m.4s.
Florissant iSE = +23m.59s.
St. Louis eE = +12m.34s., eN = +13m.40s., eE = +23m.53s., iN = +24m.30s.
Ottawa e = +33m.42s., eE = +41m.18s.?
San Juan ePPS = +29m.19s., eSSS = +39m.47s.
Scoresby Sund eSKKS = +27m.15s., ePPS = +31m.58s., eSS = +37m.33s.
Sverdlovsk eSKKS = +27m.26s.
Pulkovo ePS = +31m.41s.
Moscow PS = +31m.33s.
Warsaw eE = +23m.1s., eN = +23m.15s., eZ = +34m.26s., eE = +34m.59s.
Potsdam iPKPZ = +19m.43s., iZ = +22m.44s., PKSN = +23m.8s., iN = +33m.9s., iSSN = +42m.8s.
Uccle e = +29m.46s., eN = +41m.40s.
Stuttgart i = +19m.56s.
Ksara i = +20m.11s.
Triest iPKP$_2$N = +20m.0s., ePPN = +23m.28s., iPKS = +23m.41s., eSKKSN = +30m.9s., ePSKS = +33m.45s., ePPS = +36m.34s., eSS = +42m.57s.
Lisbon P?Z = +20m.12s.
Helwan iZ = +20m.1s.
Granada PKP$_2$ = +20m.56s., PP = +24m.14s., PPP = +27m.51s., SKKS = +31m.5s., PPP(Δ >180°) = +22m.53s., PPS = +37m.11s., SS = +44m.56s., SSP = +45m.31s., SSS = +50m.22s.
Almeria e = +22m.43s. and +29m.31s.
Long waves were also recorded at Ivigtut, East Machias, Harvard, Kew, Jena, Prague, Aberdeen, Stonyhurst, Edinburgh, San Fernando, Irkutsk, Upsala, and Colombo.

Aug. 11d. Readings also at 4h. (Warsaw and Potsdam), 6h. (Potsdam), 7h. (Palomar, Mount Wilson, Pasadena, Tinemaha (2), Riverside, La Paz, and Tucson (2)), 12h. (Bucharest and Sofia), 14h. (Tucson), 15h. (near Mizusawa), 16h. (near La Paz, Sverdlovsk, Vladivostok, and Irkutsk), 17h. (near Mizusawa), 18h. (near Branner and Granada), 19h. (St. Louis).

Aug. 12d. 15h. Undetermined shock.

Tananarive P = 37m.58s., i = 38m.33s., e = 40m.30s.
Helwan ePZ = 44m.0s., PPZ = 45m.34s., eSE = 50m.30s.
Ksara eP = 44m.15s., ePP = 46m.7s., eS = 51m.36s., L = 59·5m.
Colombo eE = 47m.0s.
Cape Town E. 48m.0s., 53m.58s., 55m.58s., N = 58m.18s.
Bombay eEN = 53m.46s.
Agra eE = 54m.56s.
Pasadena iPZ = 55m.20s.
Tinemaha ePZ = 55m.40s.
Tucson iP = 55m.44s., i = 55m.54s.
Riverside iPZ = 55m.50s.
Mount Wilson iPZ = 55m.52s.
Lincoln e = 60m.21s., i = 60m.47s.
Long waves were also recorded at Scoresby Sund, Huancayo, De Bilt, Warsaw, Potsdam, and Toledo.

Aug. 12d. Readings also at 3h. (near Mizusawa), 7h. (near Rome (2)), 10h. (near Triest), 12h. (near Mizusawa (2)), 16h. (Warsaw and near Mizusawa (2)), 17h. (Mizusawa, Rome, near Florissant, Potsdam, Mount Wilson, Riverside, Tucson, Tinemaha, Pasadena, Haiwee, and Santa Barbara), 19h. (La Paz), 22h. (near Agra, Dehra Dun, and near Fresno), 23h. (Harvard).

Aug. 13d. 5h. 20m. 11s. Epicentre 13°·5N. 51°·5E.

A = +·6055, B = +·7612, C = +·2320; δ = −12; h = +6;
D = +·783, E = −·623; G = +·144, H = +·182, K = −·973.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		24·7	327	i 5 27	+ 3	e 10 49	SSS	e 5 51	PP	—
Helwan		24·8	314	5 24	− 1	9 59	+13	5 57	PP	—
Kodaikanal	E.	25·6	94	—	—	e 10 49?	SS	—	—	—
Baku		26·8	357	e 5 50	+ 6	e 10 25	+ 6	—	—	13·8
Agra	E.	28·2	58	—	—	i 10 42	+ 1	—	—	—
Colombo	E.	28·7	101	e 8 49?	?	—	—	—	—	—
Tashkent		31·8	26	e 6 28	0	e 11 37	− 1	—	—	e 17·0
Andijan		32·7	30	e 6 39	+ 3	e 11 54	+ 2	—	—	e 22·8
Calcutta	N.	36·1	70	e 7 0	− 5	—	—	—	—	i 20·1
Moscow		43·5	348	e 8 5	− 2	14 35	− 1	—	—	—
Sverdlovsk		43·8	6	e 8 7	− 2	e 14 34	− 6	—	—	20·8
Rome		44·1	318	—	—	e 14 57	+12	e 18 12	SS	e 23·7
Warsaw		45·8	335	e 8 22	− 3	e 15 10	+ 1	e 18 35	SS	—
Pulkovo		48·8	346	e 8 41	− 8	e 15 42	−10	—	—	e 25·3
Potsdam		49·4	330	e 14 55	?	e 15 49	−11	—	—	e 30·8
Granada		54·3	307	—	—	e 17 23	+16	—	—	29·0
Scoresby Sund		71·8	342	—	—	e 21 0	+14	—	—	—

Additional readings :—
Ksara e = +6m.6s.
Helwan PPPZ = +6m.10s.
Warsaw eE = +15m.2s. and +18m.40s., eN = +18m.46s.
Potsdam eN = +16m.13s.
Long waves were also recorded at Toledo, De Bilt, and Kew.

Aug. 13d. 15h. 36m. 42s. Epicentre 36°·1N. 132°·1E.

Strong at Matsue and Sakai; rather strong at Saigo, Tsugura, Hirosima, and Utsuryato; moderate at Hamada, Okayama, Toyooka, Tadotu, Miyadu, and Izuhara; slight at Matuyama, Tokusima, Hukuoka, Wazima, and Simonoseki.

Epicentre 36°·1N. 132°·1E. Radius greater than 300kms. Shallow.

See Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1940, Tokyo, 1950, pp. 25-26. Macroseismic chart p. 25.

A = −·5430, B = +·6009, C = +·5866; δ = +3; h = 0;
D = +·742, E = +·670; G = −·393, H = +·435, K = −·810.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hamada	1·2	181	0 22a	− 2	0 32	− 9	—	—	—
Hirosima	1·8	171	0 29k	− 3	0 56	0	—	—	—
Matuyama	2·3	167	0 37a	− 3	1 12	+ 3	—	—	—
Izuka	2·7	205	0 34a	−11	0 54	−25	—	—	—
Koti	2·8	155	0 45	− 2	1 23	+ 1	—	—	—
Hukuoka	2·9	209	0 46	− 2	1 30	S*	—	—	—
Kobe	2·9	119	0 43k	− 5	1 23	− 1	1 32	S*	—
Sumoto	2·9	128	0 44k	− 4	1 30	S*	—	—	—
Taikyu	2·9	265	0 45k	− 3	1 44	+20	—	—	—
Osaka	3·1	118	0 46	− 5	1 25	− 4	0 55	P*	—
Wakayama	3·1	127	0 48k	− 3	1 33	+ 4	—	—	—
Kyoto	3·2	110	0 47	− 5	1 36	+ 4	—	—	—
Muroto	3·3	149	0 50	− 3	1 49	S_g	—	—	—
Simidu	3·4	168	0 53k	− 2	1 52	S_g	—	—	—
Hikone	3·5	102	0 54k	− 3	1 38	− 2	—	—	—
Kumamoto	3·5	200	0 56a	− 1	1 51	S*	—	—	—
Gihu	3·8	99	0 59	− 2	—	—	—	—	—
Kameyama	3·8	108	1 2k	+ 1	1 59	S*	—	—	—
Nagasaki	3·8	210	1 4	+ 3	1 45	− 2	—	—	—
Owase	3·9	119	1 12	P*	1 57	+ 7	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Siomisaki		4·0	130	1 0a	− 4	1 57	+ 5	—	—	—
Nagoya		4·1	102	1 2k	− 3	2 5	S*	—	—	—
Wazima		4·1	70	1 0	− 5	—	—	—	—	—
Miyazaki		4·2	188	1 8a	+ 1	2 7	S*	—	—	—
Toyama		4·2	80	1 10k	+ 3	2 32	S_g	—	—	—
Keizyo		4·4	291	1 16k	P*	2 15	S*	—	—	—
Tomie		4·4	220	1 17	P*	2 20	S_g	—	—	—
Zinsen		4·6	290	1 9	− 3	2 7	0	—	—	—
Kagosima		4·7	196	1 35a	P_g	—	—	—	—	—
Matumoto		4·7	87	1 7	− 7	2 16	+ 6	—	—	—
Hamamatu		4·8	105	1 19k	+ 4	2 22	S*	—	—	—
Nagano		4·9	81	1 15a	− 2	2 13	− 2	—	—	—
Omaesaki		5·2	105	1 25	+ 4	2 35	S*	—	—	—
Aikawa		5·3	66	1 25	+ 3	2 42	S*	—	—	—
Kohu		5·3	93	1 20	− 2	1 59	−26	—	—	—
Hunatu		5·4	94	1 28	+ 4	2 48	S*	—	—	—
Maebasi		5·6	85	1 38	P*	3 1	S_g	—	—	—
Misima		5·7	98	1 26	− 2	2 51	S*	—	—	—
Kumagaya		5·9	88	1 30	− 1	2 58	S*	—	—	—
Osima		6·1	100	1 36	+ 2	3 7	S*	—	—	—
Tokyo Cen. Met. Ob.		6·2	91	1 41	+ 6	3 8	S*	3 45	S_g	—
Yokohama		6·2	94	1 40k	+ 5	3 7	S*	—	—	—
Utunomiya		6·3	83	1 43	+ 7	3 24	S_g	—	—	—
Mera		6·4	98	1 51	P*	3 33	S_g	—	—	—
Tukubasan		6·4	87	1 41	+ 3	2 56	+ 3	—	—	—
Kakioka		6·5	87	1 35	− 4	3 28	S_g	—	—	—
Mito		6·8	85	1 45k	+ 1	3 13	+10	—	—	—
Hukusima		6·9	73	1 54	P*	3 22	S*	—	—	—
Hatidyozima		7·0	113	1 55	P*	2 55	−13	—	—	—
Vladivostok		7·0	359	i 1 50	+ 4	—	—	—	—	3·2
Tyosi		7·1	91	1 55	+ 7	3 32	S*	—	—	—
Akita		7·3	58	1 54	+ 4	3 14	− 1	—	—	—
Sendai		7·4	70	1 51	− 1	3 31	S*	—	—	—
Mizusawa		7·8	64	1 55	− 3	3 41	+13	—	—	—
Nake		8·0	197	2 5	+ 5	4 14	S_g	—	—	—
Aomori		8·3	52	2 2	− 2	3 50	+10	—	—	—
Miyako		8·6	63	2 12	+ 3	3 56	+ 8	—	—	—
Hatinohe		8·7	56	2 8	− 2	3 58	+ 8	—	—	—
Dairen		8·8	292	2 28	PPP	4 37	S*	—	—	—
Mori		8·9	45	2 18	+ 6	3 40	−15	—	—	—
Sapporo		10·0	43	1 29	−58	—	—	—	—	—
Zi-ka-wei		10·1	244	e 2 38	PP	4 48	SSS	5 8	L	(5·1)
Naha		10·6	202	2 40	+ 4	5 9	SSS	—	—	—
Titizima		12·4	134	3 10	PP	—	—	—	—	—
Nemuro		12·6	51	3 6	+ 3	5 16	−10	—	—	—
Isigakizima		13·6	212	4 51	?	—	—	—	—	—
Giran		14·4	221	3 41	PP	—	—	—	—	—
Sintiku		14·8	223	3 36	+ 4	6 41	SS	—	—	—
Karenko		15·1	220	3 41	+ 5	6 47	SS	—	—	—
Arisan		15·9	221	3 41	− 6	6 58	SS	—	—	—
Taito		16·4	219	4 3	PP	7 15	SS	—	—	—
Kosyun		17·2	218	2 13	?	—	—	—	—	—
Manila		23·6	208	i 5 13a	0	i 9 44	+19	—	—	—
Irkutsk		25·4	318	e 5 30	− 1	i 10 7	+11	—	—	13·3
Phu-Lien		27·0	242	5 52	+ 7	e 10 33	+11	—	—	—
Semipalatinsk		39·6	309	e 7 30	− 5	13· 42	+ 4	—	—	19·3
Calcutta	N.	40·2	263	i 7 46k	+ 6	i 13 46	− 2	e 9 12	PP	e 20·1
Almata		42·4	298	e 7 57	− 1	14 31	+11	—	—	22·3
Frunse		44·2	297	e 8 5	− 7	e 14 49	+ 3	—	—	25·3
Dehra Dun	N.	45·1	279	e 8 48?	+28	e 15 22	+23	e 18 34	SS	e 22·6
Andijan		46·2	294	e 8 29	+ 1	15 24	+ 9	i 10 4	PP	25·3
Agra		46·4	275	i 8 32a	+ 2	i 15 20	+ 2	e 10 21	PP	—
Tchimkent		47·9	298	8 39	− 3	15 46	+ 7	—	—	26·3
Tashkent		48·4	296	8 42	− 4	e 15 51	+ 5	—	—	e 25·6
Samarkand		50·5	295	9 7	+ 5	16 30	+14	—	—	27·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hyderabad		50·7	263	9 9	+ 6	16 24	+ 6	11 1	PP	24·7
Sverdlovsk		50·8	318	i 9 0	− 4	i 16 21	+ 1	—	—	26·5
College		53·2	32	e 9 28	+ 6	i 17 4	+12	e 11 35	PP	—
Bombay		54·5	268	i 9 37	+ 5	i 17 16	+ 6	i 10 50	P_cP	23·5
Kodaikanal	E.	55·6	257	9 46a	+ 6	17 29	+ 4	—	—	—
Colombo	E.	55·8	252	9 46	+ 5	17 38	+10	—	—	36·1
Sitka		61·9	39	i 10 25	+ 1	i 18 53	+ 6	e 10 58	P_cP	—
Honolulu		62·0	83	e 10 27	+ 3	e 18 56	+ 8	e 13 0	PP	e 25·0
Baku		62·4	302	i 10 30	+ 3	i 19 0	+ 7	—	—	32·3
Moscow		63·4	321	e 10 28	− 6	19 6	0	—	—	23·3
Grozny		64·0	306	10 44	+ 6	—	—	—	—	—
Pulkovo		65·0	327	e 10 40	− 4	i 19 27	+ 1	—	—	i 31·5
Piatigorsk		65·4	308	10 50	+ 3	19 37	+ 7	—	—	—
Brisbane	N.	66·2	160	i 10 48	− 4	i 19 42	+ 2	i 23 54	SS	e 28·3
Sotchi		67·8	309	10 57	− 5	—	—	—	—	—
Upsala		70·3	331	11 18	+ 1	e 20 26	− 3	e 14 9	PP	e 35·3
Yalta		70·8	311	11 28	+ 8	—	—	—	—	—
Adelaide		70·9	175	—	—	e 20 41	+ 5	—	—	—
Sebastopol		71·1	312	11 37	+15	—	—	—	—	—
Riverview		71·8	163	e 13 45	PP	e 20 48	+ 2	e 21 8	PS	e 32·2
Scoresby Sund		72·1	352	i 11 30a	+ 2	e 20 44	− 6	e 14 8	PP	i 30·6
Victoria		72·4	43	11 38	+ 8	21 0	+ 7	—	—	37·3
Seattle		73·4	43	e 11 52	+16	e 21 2	− 3	e 14 21	PP	—
Warsaw		73·5	323	11 38a	+ 2	i 21 7	+ 1	14 21	PP	35·3
Bergen		74·4	336	i 11 45	+ 3	e 21 19	+ 3	—	—	e 36·3
Copenhagen		75·1	330	i 11 48a	+ 2	21 26	+ 2	26 18	SS	—
Ksara		75·4	301	e 11 43	− 4	e 21 33	+ 6	22 11	PS	—
Bucharest		75·6	315	11 51a	+ 3	21 32	+ 3	14 44	PP	40·3
Istanbul		75·8	312	11 47	− 3	22 18	PPS	29 55	SSS	e 45·3
Potsdam		77·1	327	e 11 52	− 5	i 21 47	+ 1	i 12 1	P_cP	e 35·4
Budapest		77·5	320	12 3	+ 4	i 21 55	+ 5	12 16	P_cP	e 41·3
Hamburg		77·6	330	i 12 3a	+ 3	e 21 53	+ 2	e 15 1	PP	e 37·3
Ogyalla		77·7	321	12 7	+ 7	21 59	+ 7	12 23	P_cP	42·3
Ukiah		77·9	50	e 12 3	+ 2	e 21 50	− 4	e 16 53	PPP	e 31·0
Prague		78·1	324	12 2	0	e 21 56	0	e 26 54	SS	e 37·3
Sofia		78·2	314	e 12 8	+ 5	e 21 56	− 1	—	—	41·8
Jena		78·8	326	e 12 3	− 3	e 22 6	+ 2	—	—	e 33·3
Berkeley		79·3	51	e 12 5	− 4	e 22 6	− 3	—	—	e 38·8
Aberdeen		79·4	336	i 12 22	+13	i 22 12	+ 2	i 27 18	SS	e 37·7
Branner		79·6	51	e 12 17	+ 7	—	—	—	—	—
Butte		79·7	39	i 12 21	+10	i 22 8	− 5	e 15 31	PP	e 32·8
Santa Clara	E.	79·8	51	e 12 24	+12	i 22 23	+ 9	—	—	—
Lick		80·0	51	e 12 19	+ 6	—	—	—	—	—
Bozeman		80·7	39	e 12 18	+ 2	i 22 26	+ 2	e 15 34	PP	—
De Bilt		80·7	330	i 12 19a	+ 3	i 22 26	+ 2	i 12 33	pP	e 38·3
Edinburgh		80·8	336	e 12 18	+ 1	22 20	− 5	12 26	P_cP	—
Helwan		80·8	299	e 12 15	− 2	22 23	− 2	12 43	pP	—
Stuttgart		81·4	326	e 12 16k	− 4	e 22 33	+ 2	e 15 31	PP	e 41·5
Fresno	N.	81·5	51	e 12 26	+ 5	—	—	—	—	—
Triest		81·5	322	i 12 25k	+ 4	i 22 33	+ 1	i 12 31	P_cP	e 38·7
Uccle		82·0	330	i 12 25a	+ 2	i 22 37	0	i 15 38	PP	e 39·3
Stonyhurst		82·2	335	i 12 28	+ 4	i 22 38	− 1	i 31 28	SSS	e 41·3
Tinemaha	Z.	82·3	50	i 12 22	− 3	—	—	—	—	—
Chur		82·7	325	e 12 18	− 9	e 22 44	0	—	—	—
Zurich		82·8	326	e 12 29a	+ 2	e 22 51	+ 6	e 15 45	PP	—
Ivigtut		83·0	0	i 12 28	0	e 23 3	+16	e 15 43	PP	i 37·1
Santa Barbara		83·0	52	i 12 25	− 3	—	—	—	—	—
Basle		83·1	326	e 12 22	− 7	e 22 47	− 1	—	—	—
Haiwee		83·1	50	i 12 26	− 3	e 22 57	+ 9	—	—	—
Kew		83·3	332	i 12 35	+ 5	e 22 52	+ 2	e 15 41	PP	e 34·3
Oxford		83·5	333	i 12 34	+ 3	e 22 44	− 8	—	—	e 43·4
Salt Lake City		83·6	44	i 12 37	+ 5	e 22 58	+ 5	e 16 0	PP	—
Neuchatel		83·8	326	e 12 27	− 5	e 22 55	0	—	—	—
Besançon		84·0	326	i 12 48	+15	—	—	—	—	e 43·3
Arapuni		84·1	147	—	—	e 24 18?	PPS	e 31 18?	SSS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mount Wilson		84·2	52	i 12 31 a	− 3	—	—	—	—	—
Pasadena		84·2	52	i 12 31	− 3	i 23 2	+ 3	—	—	—
Riverside		84·8	52	i 12 33	− 4	—	—	—	—	—
Rome		84·8	319	i 12 39 a	+ 2	23 8	+ 3	i 12 49	pP	e 42·0
Palomar	z.	85·5	52	i 12 37 a	− 4	—	—	i 16 1	PP	—
La Jolla		85·6	53	e 12 46	+ 5	—	—	—	—	—
Wellington		86·4	149	—	—	e 24 18?	PS	—	—	43·3
Clermont-Ferrand		86·5	327	e 12 44	− 2	—	—	—	—	e 48·3
Christchurch		87·4	152	12 54 a	+ 4	23 20	[+ 3]	16 33	PP	43·8
Tucson		90·0	49	i 13 0	− 3	i 23 38	[+5]	i 16 36	PP	—
Algiers		93·4	321	e 13 32	+14	e 25 42	PS	e 30 49	SS	e 48·3
Chicago U.S.C.G.S.		94·3	29	e 13 29	+ 6	i 24 39	+ 7	e 17 8	PP	e 48·8
Toledo		94·3	327	i 13 27	+ 4	—	—	e 17 27	PP	—
Seven Falls		94·6	15	e 13 30	+ 6	e 24 2	[+ 3]	—	—	47·3
Shawinigan Falls		94·7	16	e 13 27	+ 3	e 24 3	[+ 4]	e 30 54	SS	60·3
Ottawa		95·1	19	e 13 29	+ 3	e 24 0	[− 2]	e 17 18	PP	48·3
Florissant		95·3	32	i 13 33	+ 6	e 24 7	[+ 5]	e 17 14	PP	—
Toronto		95·4	22	e 13 36	+ 8	e 24 7	[+ 4]	—	—	52·3
St. Louis		96·0	32	e 13 36	+ 6	i 24 9	[+ 2]	i 17 23	PP	—
Almeria		96·1	325	13 45	+14	24 32	−16	17 17	PP	49·3
Granada		96·3	326	i 13 35 k	+ 3	24 21	[+13]	17 30	PP	e 49·6
Buffalo		96·4	22	i 13 37	+ 5	e 26 13	PS	—	—	e 61·3
Lisbon		97·4	330	—	—	20 25	?	—	—	—
East Machias		97·6	13	e 13 41	+ 3	i 24 16	[+ 1]	e 17 52	PP	—
Halifax		98·4	11	—	—	e 24 14	[− 5]	—	—	48·3
Harvard		98·8	17	e 13 46	+ 3	—	—	e 17 48	PP	e 38·3
San Fernando	N.	98·9	327	e 18 27	PP	e 26 43	PS	e 35 51	SSS	50·3
Philadelphia		100·2	20	e 13 54	+ 5	e 24 28	[0]	e 20 0	PPP	e 45·6
Bermuda		110·1	15	e 19 10	PP	e 28 35	PS	e 21 19	PPP	e 54·0
San Juan		123·1	20	e 21 20	PP	e 27 25	{−10}	e 30 40	PS	—
Huancayo		145·6	53	e 19 38	[− 2]	e 29 48	{− 6}	e 23 16	PP	e 61·0
La Paz		153·4	48	i 19 59 a	[+ 7]	29 45	{−52}	i 23 55	PP	75·3

Additional readings :—
Zi-ka-wei iE = +3m.8s.
Calcutta eSSN = +16m.18s.
Agra iE = +15m.45s., S_cSE = +18m.13s., SSE = +18m.37s., SSN = +18m.41s., sSS = +19m.3s.
Hyderabad SSE = +20m.6s.
College eS_cS = +19m.21s.
Bombay ePN = +9m.41s., eE = +17m.12s., iE = +17m.41s., iS_cSE = +19m.29s., iSSEN = +21m.0s.
Sitka ePPP = +14m.14s., iS_cS = +20m.21s., eSS = +21m.50s.
Honolulu ePPP = +14m.5s., eSS = +22m.42s.
Brisbane eSSSN = +26m.42s.
Upsala ePPPN = +15m.35s., ePPPE = +15m.43s., eE = +24m.0s., eSSN = +24m.48s., eE = +28m.41s.
Riverview eE = +13m.59s., eN = +29m.36s.
Scoresby Sund i = +11m.34s., +11m.41s., and +11m.46s., ePPP = +15m.53s., i = +16m.24s. and +20m.55s., iS_cS = +21m.50s., iSS = +25m.25s., eSSS = +28m.49s.
Seattle e = +12m.15s., eSS = +25m.24s.
Warsaw SZ = +21m.10s., PSZ = +21m.33s., PSE = +21m.39s., iSSN = +25m.57s., SSE = +26m.2s., iSSSN = +29m.30s., iSSSE = +29m.37s.
Copenhagen i = +14m.40s.
Bucharest PPN = +14m.48s., PSE = +21m.52s.
Potsdam ePN = +11m.57s., iP_cPN = +12m.6s., iN = +12m.23s., iPPEZ = +14m.53s., iN = +15m.7s., iPPPZ = +16m.49s., iN = +19m.6s., eZ = +21m.18s., iSN = +22m.47s., iSSEZ = +26m.55s., iN = +27m.19s., and +30m.26s., iE = +30m.30s., iZ = +31m.7s.
Hamburg eSSSE = +30m.37s.
Ogyalla ePPE = +15m.7s., PSN = +22m.15s., PSE = +22m.19s., eS_cS = +22m.43s., eSSE = +26m.47s.
Ukiah e = +22m.0s.
Jena iP = +12m.10s., eN = +14m.8s.
Berkeley iEZ = +12m.12s., eN = +12m.15s., +22m.12s., and +33m.48s.
Aberdeen iSSSEN = +30m.40s.
Bozeman i = +12m.23s. and +12m.27s., ePPP = +17m.43s., eS_cS = +22m.54s., ePS = +23m.6s.
De Bilt iPP = +15m.25s., iPPP = +17m.27s., iPS = +23m.6s., eSS = +28m.18s.

Continued on next page.

Edinburgh SKS = +22m.29s., SS = +27m.32s.
Helwan P_cPEZ = +12m.18s., PPEZ = +15m.40s., pPPZ = +16m.4s., PPPEZ = +17m.33s., SE = +22m.33s., sSE = +23m.18s., sPSE = +24m.8s., SSE = +28m.15s.
Stuttgart i = +12m.24s., eNE = +15m.18s., ePPE = +15m.35s., eSSN = +27m.56s., eSSE = +28m.2s.
Triest iPPE = +15m.32s., iPPP = +17m.18s., iS_cS = +22m.51s., iPS = +23m.15s., iSS = +27m.59s.
Uccle PPPZ = +17m.21s., SSN = +27m.29s.
Tinemaha iZ = +12m.30s.
Ivigtut ePS = +23m.48s., eSS = +28m.20s., eSSS = +31m.42s.
Santa Barbara i = +12m.33s.
Haiwee i = +12m.34s.
Kew eN = +15m.20s., ePPPEN = +17m.48s., eSKKSEN = +23m.11s., ePPSEN = +23m.42s., eSSEN = +28m.18s.?, eSSSEN = +31m.58s.
Salt Lake City e = +12m.51s., ePPP = +18m.9s.
Mount Wilson iNZ = +12m.40s., iZ = +12m.51s.
Pasadena i = +12m.40s.
Riverside iNZ = +12m.41s.
Rome iEZ = +12m.53s., iE = +13m.30s., iPPZ = +15m.57s., iZ = +17m.2s. and +19m.32s., eZ = +23m.4s., PSE = +24m.4s., iSSE = +28m.51s., eZ = +28m.54s., eSSSE = +32m.14s.
Palomar iZ = +12m.45s. and +12m.53s.
Christchurch SN = +24m.3s., iZ = +24m.46s., PSN = +25m.7s., eEN = +29m.26s., L_g = +37m.9s.
Tucson i = +13m.8s., iPPP = +18m.44s., iS = +24m.4s., iPS = +25m.10s., iSS = +30m.28s., eSSS = +33m.42s.
Chicago U.S.C.G.S. e = +13m.36s., eSKS = +23m.58s., i = +24m.43s., eSS = +30m.45s., eSSS = +35m.40s.
Florissant iPZ = +13m.36s., iP_cP = +13m.43s., ePSE = +24m.51s., ePSN = +24m.55s., iZ = +27m.13s.
St. Louis iPSN = +24m.58s.
Almeria pP = +13m.51s., PPP = +19m.20s., PS = +25m.48s., PPS = +26m.15s., SS = +30m.28s., SSS = +34m.5s.
Granada PPPE = +20m.37s., PPSZ = +26m.23s., SSE = +28m.17s., SSSZ = +35m.43s.
Buffalo i = +13m.46s. and +41m.55s.
East Machias iPPP = +19m.43s., eSKKS = +24m.49s., eS = +25m.9s., ePS = +26m.26s., ePSPS = +32m.21s., eSSS = +35m.54s.
Philadelphia e = +18m.3s., ePS = +26m.55s., eSS = +32m.26s., eSSS = +36m.13s.
San Juan ePSPS = +38m.31s., eSSS = +43m.31s.
Huancayo i = +19m.46s., eSKSP = +33m.26s., eSSS = +45m.58s.
Long waves were also recorded at Tananarive, Cape Town, Columbia, and Pennsylvania.

Aug. 13d. 22h. 7m. 26s. Epicentre 36°·2N. 120°·3W. (as given by Pasadena).

A = −·4081, B = −·6984, C = +·5880,; δ = +5; h = 0;
D = −·863, E = +·505; G = −·297, H = −·508, K = −·809.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fresno	N.	0·7	38	i 0 11	− 6	i 0 19	− 9	—	—	—
Lick		1·6	316	e 0 23	− 7	i 0 41	−10	i 0 26	P_g	—
Santa Clara	E.	1·7	311	e 0 30	− 1	i 0 54	0	—	—	—
Santa Barbara		1·8	165	i 0 35	+ 3	i 1 3	S_g	—	—	—
Branner		1·9	309	i 0 30	− 4	i 0 55	− 4	i 0 38	P_g	—
Haiwee		1·9	92	i 0 36	+ 2	i 1 3	+4	—	—	—
Tinemaha		1·9	61	i 0 35k	+ 1	i 0 59	0	—	—	—
Berkeley		2·3	317	i 0 32	− 8	i 1 8	− 1	e 0 41	P*	—
San Francisco		2·3	312	e 0 39	− 1	i 1 10	+ 1	e 0 51	P_g	—
Pasadena		2·7	140	i 0 47	+ 2	—	—	—	—	—
Mount Wilson	Z.	2·7	137	i 0 47	+ 2	—	—	—	—	—
Riverside	Z.	3·2	133	e 0 54	+ 2	—	—	—	—	—
Tucson		8·7	114	—	—	e 3 48	− 2	e 4 2	SS	e 4·5
Seattle		11·5	355	—	—	e 5 9	SS	—	—	—
Bozeman		11·8	34	e 3 8	PPP	e 5 3	− 3	—	—	e 6·0

Additional readings :—
Fresno iN = +15s.
Lick iN = +29s., iSE = +44s., iS_gE = +47s.
Branner iN = +46s., iEN = +1m.4s.
Berkeley iP_gNZ = +38s., ePE = +44s., iS*N = +1m.3s., iSN = +1m.15s.
San Francisco iN = +1m.7s., iS_gE = +1m.13s.
Long waves were also recorded at Butte.

Aug. 13d. Readings also at 0h. (Ksara), 1h. (Ksara), 3h. (Frunse, near Almata, Andijan, and Tucson), 5h. (near Florissant), 7h. (Stuttgart and near Triest), 8h. (Tucson, Huancayo, La Jolla, Palomar, Riverside, Mount Wilson, Pasadena, Tinemaha, Haiwee, and La Paz), 13h. (near Berkeley), 14h. (near Algiers), 15h. (Warsaw, St. Louis, and near Florissant), 16h. (near Osaka and Ksara), 17h. (near Harvard), 18h. (La Paz), 20h. (Ksara), 21h. (near Granada and Toledo).

Aug. 14d. 8h. 49m. 24s. Epicentre 11°·0N. 46°·0E.

A = +·6821, B = +·7063, C = +·1896; δ = +7; h = +6;
D = +·719, E = −·695; G = +·132, H = +·136, K = −·982.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan	23·2	326	i 5 11 a	+ 2	9 26	+ 8	5 38	PP	—
Ksara	24·5	338	i 5 24 a	+ 2	e 13 4	L	—	—	(e 13·1)
Baku	29·5	6	e 6 15	+ 7	—	—	—	—	16·6
Grozny	32·2	0	6 40	+ 8	—	—	—	—	—
Istanbul	33·5	337	e 8 36?	?	18 36?	L	—	—	(18·6)
Samarkand	34·1	30	e 6 53	+ 5	e 12 14	0	—	—	—
Tashkent	36·5	31	i 7 7	− 2	e 12 52	+ 1	—	—	e 21·4
Andijan	37·7	34	e 7 17	− 2	13 0	−10	—	—	e 23·6
Moscow	45·1	353	8 18	− 2	e 15 0	+ 1	—	—	—
Warsaw	45·8	339	e 8 24	− 1	e 15 12	+ 3	—	—	e 25·6
Sverdlovsk	47·1	11	8 34	− 1	15 25	− 3	—	—	23·6
Pulkovo	50·1	350	e 8 58	− 1	e 16 12	+ 2	—	—	—

Additional readings: —
Helwan PPPZ = +5m.48s., SSE = +10m.26s.
Warsaw eE = +14m.46s.
Long waves were also recorded at Potsdam, De Bilt, Uccle, and Scoresby Sund.

Aug. 14d. Readings also at 0h. (near Granada), 4h. and 5h. (Lincoln), 6h. (La Paz and Scoresby Sund), 9h. (Warsaw, Granada, and near Mizusawa), 11h. (Ksara), 14h. (Warsaw and Mizusawa).

Aug. 15d. 4h. Undetermined shock.
Ferndale eN = 39m.32s., eE = 40m.39s.
Tinemaha eP = 39m.36s.
Ukiah eS = 40m.1s., e = 40m.11s.
Santa Clara ePZ = 30m.9s., eSE = 41m.38s., eE = 43m.40s.
Pasadena iP = 40m.9s.
Riverside eP = 40m.9s.
Mount Wilson eP = 40m.10s.
Palomar iPZ = 40m.17s.
Seattle eS = 40m.25s., iL = 40m.50s.
Berkeley eN = 40m.42s., eZ = 41m.6s., eE = 41m.22s., eNZ = 41m.32s., eE = 42m.36s., eZ = 43m.6s., eN = 43m.26s.
Bozeman eP = 40m.53s., eS = 43m.4s., eL = 44m.15s.
Tucson eP = 41m.22s., ePP = 41m.42s., eS = 45m.2s., eL = 47m.12s.
Butte eS = 42m.18s.
Salt Lake City eS = 42m.50s., eL = 44m.15s.
Sitka eS = 42m.59s., e = 43m.13s.
College eS = 46m.0s.
Chicago eS = 48m.13s., eL = 52m.26s.
Ottawa eE = 50m., L = 57m.
Philadelphia eS = 50m.35s., eL = 53m.50s.
Long waves recorded also at Honolulu, Harvard, and East Machias.

Aug. 15d. 14h. Local Japanese shock. Tokyo Imperial University gives Epicentre 36°·20N. 139°·91E.

Tokyo Imp. Univ. P = 54m.3s., S = 54m.12s.
Komaba P = 54m.4s., S = 54m.13s.
Mitaka P = 54m.5s., S = 54m.14s.
Kamakura P = 54m.5s., S = 54m.17s.
Kiyosumi P = 54m.5s., S = 54m.22s.
Koyama P = 54m.5s., S = 54m.22s.
Titibu P = 54m.5s., S = 54m.15s.
Tukubasan P = 54m.5s., S = 54m.11s.
Mizusawa eP = 54m.43s., SN = 55m.19s.
Osaka P = 54m.53s., S = 55m.46s.

Aug. 15d. 21h. 23m. 35s. Epicentre 18°·3N. 145°·2E. (as on 1939 Dec. 4d.).

$A = -\cdot7802$, $B = +\cdot5422$, $C = +\cdot3121$; $\delta = +10$; $h = +5$;
$D = +\cdot571$, $E = +\cdot821$; $G = -\cdot256$, $H = +\cdot178$, $K = -\cdot950$.

Tables for depth of focus 0·025 have been used.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Titizima		9·1	346	2 8	0	3 44	− 5	—	—	—
Naha		18·0	299	4 8	+ 9	—	—	—	—	—
Tokyo Cen. Met. Ob.		18·0	346	4 1	+ 2	7 16	+ 6	—	—	—
Koti		18·4	328	4 1	− 2	7 25	+ 7	—	—	—
Osaka		18·4	335	4 5	+ 2	7 55	SS	—	—	—
Gihu		18·6	341	4 5	0	7 13	− 9	—	—	—
Nagano		19·3	344	4 10	− 2	7 37	+ 2	—	—	—
Hamada		20·2	328	4 51	PP	8 52	SS	—	—	—
Sendai		20·2	352	4 13	− 8	7 48	− 4	—	—	—
Mizusawa		21·1	352	e 4 32	+ 2	8 15	+ 6	—	—	—
Karenko		22·7	289	4 52	+ 6	9 40	SS	—	—	—
Taikyu		22·9	289	5 14	pP	9 44	SS	—	—	—
Manila		23·5	266	i 5 0a	+ 6	i 9 42	SS	—	—	—
Calcutta	N.	53·2	285	—	—	e 16 24	+ 9	—	—	—
College		63·8	26	—	—	e 18 27	− 5	e 19 36	sS	—
Kodaikanal	E.	65·8	274	—	—	e 18 25	−31	—	—	—
Tashkent		67·7	309	11 14	pP	—	—	—	—	—
Sitka		69·1	35	e 11 23	pP	i 19 36	+ 1	—	—	—
Sverdlovsk		71·9	326	11 2	− 2	19 50	−18	i 11 39	pP	29·4
Berkeley		80·9	54	i 11 51	− 3	—	—	i 12 31	pP	—
Lick		81·6	54	e 12 35	pP	—	—	—	—	—
Fresno	N.	83·1	55	e 12 39	pP	—	—	—	—	—
Tinemaha	Z.	84·2	53	i 12 8	− 3	—	—	i 12 49	pP	—
Moscow		84·6	328	12 10	− 3	—	—	12 52	pP	—
Haiwee		84·7	54	i 12 10	− 4	—	—	i 12 51	pP	—
Butte		85·2	43	e 12 42	pP	—	—	e 22 11	S_cS	—
Pasadena	Z.	85·2	56	i 12 13	− 3	—	—	i 12 49	pP	—
Mount Wilson		85·3	56	i 12 13a	− 3	—	—	i 12 49	pP	—
Salt Lake City		87·6	48	e 13 5	pP	i 22 35	[0]	e 16 41	pPP	e 35·2
Scoresby Sund		91·0	356	e 16 35	PP	e 22 54	[− 2]	e 24 21	pS	—
Tucson		91·6	55	e 13 16	pP	i 23 3	[+ 4]	e 13 51	sP	—
Warsaw		94·7	329	e 19 25?	PPP	e 23 54	0	—	—	e 45·4
Ksara		95·1	307	e 17 0	PP	e 27 18	?	e 17 52	pPP	—
Potsdam		98·3	332	e 17 47	PP	e 25 25	sS	e 32 8	SSP	e 50·0
Helwan	E.	100·3	306	—	—	i 23 49	[+ 5]	e 25 1	sS	—
De Bilt		101·7	336	e 18 19	pPP	e 27 32	PPS	—	—	e 53·4
Triest		102·6	327	e 19 9	PPP	e 23 56	[+ 1]	—	—	—
Florissant		103·0	42	e 18 25	PP	i 23 57	[0]	i 26 47	PS	—
Uccle		103·1	336	e 18 38	PP	e 24 0	[+ 3]	e 27 13	PS	e 48·4
Rome	E.	105·9	324	e 19 45	PPP	e 27 58	PS	—	—	—
Ottawa		106·4	29	—	—	e 24 13	[0]	—	—	43·4
Seven Falls		107·3	25	—	—	e 24 7	[− 9]	—	—	45·4
San Juan		132·3	42	(23 52)	PPP	—	—	—	—	e 27·8

Additional readings :—
College esSS = +23m.25s.
Sitka i = +19m.41s.
Berkeley eN = +12m.34s.
Salt Lake City esS = +23m.47s.
Tucson epP = +13m.25s., iS = +23m.29s., isS = +24m.36s., eSS = +29m.3s.
Ksara e = +28m.8s.
Potsdam eN = +17m.50s.
Triest epPN = +21m.2s.
Uccle eN = +24m.58s., eE = +31m.46s.
San Juan PPP is given as SS.
Long waves were also recorded at Kew and Baku.

Aug. 15d. Readings also at 0h. (near Berkeley), 2h. (Palomar, Pasadena, Riverside, Tinemaha, San Juan, and near Balboa Heights), 3h. (near Mizusawa (2)), 4h. (Berkeley, Bozeman, Seattle, Tucson, Santa Clara, Ukiah, Sitka, Ferndale, Mount Wilson, Palomar, Pasadena, Riverside, Tinemaha, San Juan (2), Balboa Heights, Huancayo, La Paz, and Clermont-Ferrand), 5h. (Honolulu, Salt Lake City, Philadelphia, East Machias, Scoresby Sund, and Triest), 9h. (near Almata and Frunse), 11h. (near Toledo, Almeria, Granada, and San Fernando), 12h. (Granada and Kew), 14h. (Ksara and Sofia), 18h. (near Berkeley and near Mizusawa), 19h. (Fresno), 20h. (Lick), 21h. (Triest, La Paz, and near Branner), 22h. (Lick).

Aug. 16d. 16h. 2m. 23s. Epicentre 35°·7N. 30°·8E. (as on 1937 April 28d.).

Strasbourg gives Epicentre 35°·9N. 30°·25E.
De Bilt quotes Epicentre 36°·0N. 31°·0E. (U.G.G.I.).

$A = +·6992$, $B = +·4168$, $C = +·5810$; $\delta = +16$; $h = 0$;
$D = +·512$, $E = -·859$; $G = +·499$, $H = +·297$, $K = -·814$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		4·5	111	e 1 20	P*	i 2 42	S_g	—	—	—
Istanbul		5·5	346	1 17	− 8	3 12	S_g	2 13	SP_g	5·2
Helwan		5·8	175	i 1 37a	P*	2 43	+ 5	2 4	P_g	—
Sofia		9·0	323	e 2 15	+ 2	5 5	S_g	—	—	—
Bucharest		9·4	339	e 2 17	− 1	4 40	S*	5 7	S_g	—
Kecskemet	Z.	13·9	327	e 3 25	+ 4	7 50	?	—	—	—
Budapest		14·6	327	3 34	+ 4	8 22	L	i 3 40	PP	(8·4)
Ogyalla	E.	15·3	326	e 3 59	PP	e 9 5	L	—	—	(e 9·1)
Rome		15·5	299	i 3 49a	+ 7	i 6 27	− 8	i 6 57	SS	i 8·6
Triest		16·3	313	i 3 56	+ 4	i 6 52	− 1	i 4 0	PP	e 7·9
Warsaw		17·9	341	e 4 10a	− 2	7 32	+ 2	8 3	SS	e 9·6
Prague		18·6	326	4 20	− 1	e 7 50	+ 4	—	—	e 9·6
Chur		19·4	312	e 4 27	− 3	e 7 40	−24	—	—	—
Zurich		20·2	312	e 4 38	− 1	e 8 11	−10	—	—	—
Stuttgart		20·5	318	e 4 40a	− 2	i 8 28	+ 1	—	—	e 10·6
Jena		20·6	326	e 4 37	− 6	e 8 25	− 4	—	—	e 10·6
Basle		20·9	312	e 4 43	− 3	e 8 33	− 2	—	—	—
Potsdam		20·9	328	i 4 43	− 3	i 8 32	− 3	i 8 52	SS	e 10·2
Neuchatel		21·1	311	e 4 45	− 3	e 8 35	− 4	—	—	—
Algiers		22·4	281	e 5 5	+ 3	9 4	0	5 27	PP	—
Hamburg		23·0	328	i 5 7	0	e 9 12	− 2	—	—	e 11·7
Clermont-Ferrand		23·1	304	e 5 12	+ 4	e 9 23	+ 7	—	—	e 15·5
Copenhagen		23·6	335	e 5 12a	− 1	9 24	− 1	—	—	—
Uccle		24·3	317	i 5 19a	− 1	9 32	− 5	—	—	11·6
Heligoland		24·4	325	e 5 19	− 2	e 9 35	− 4	—	—	e 12·9
De Bilt		24·5	322	i 5 20a	− 2	e 9 37	− 3	—	—	e 11·6
Upsala		25·6	345	5 32	0	e 9 54	− 5	—	—	e 13·6
Almeria		26·7	283	5 52	+ 9	10 30	+13	6 42	PPP	15·9
Kew		27·2	316	i 5 45	− 2	e 10 17	− 8	—	—	e 11·1
Granada	Z.	27·6	284	i 6 18k	PP	i 11 46	SS	—	—	e 15·9
Toledo		27·7	289	e 5 57	+ 5	e 10 45	+12	—	—	—
Oxford		27·9	316	e 5 52	− 2	—	—	—	—	e 10·6
Stonyhurst		29·4	319	—	—	e 10 7	−54	—	—	15·6
Bergen		29·6	335	—	—	e 10 58	− 6	—	—	15·6
Aberdeen		30·7	325	—	—	i 11 11	−10	—	—	e 15·6
Edinburgh		30·7	322	e 9 7	?	—	—	—	—	—
Agra	E.	40·9	89	—	—	i 13 53	− 5	—	—	—
Scoresby Sund		44·5	338	e 8 9	− 6	—	—	—	—	—
Calcutta	N.	51·3	89	—	—	e 16 32	+ 6	—	—	—
Ivigtut		54·3	324	—	—	e 16 59	− 8	—	—	—
Seven Falls		71·8	315	e 11 26	0	e 21 31	PPS	—	—	31·6
Ottawa		75·6	316	e 11 47	− 1	e 19 55	?	—	—	33·6

Additional readings :—
Helwan $P^*Z = +1m.49s.$, $S_eZ = +3m.19s.$
Sofia iEN = +2m.33s. and +4m.17s.
Kecskemet SSZ = +8m.53s.
Budapest iE = +3m.47s., iN = +4m.37s.
Rome $iP_eE = +4m.46s.$
Triest i = +4m.9s., iSS = +6m.59s.
Warsaw SE = +7m.36s., eZ = +7m.45s., iSSE = +8m.8s.
Jena iPN = +4m.41s., iPE = +4m.47s., eSE = +8m.29s., eEN = +9m.37s.
Potsdam iPE = +4m.46s., iPPN = +4m.49s., iSSSN = +8m.59s.
Algiers i = +6m.15s.
Copenhagen e = +5m.15s.
Almeria pP = +6m.5s., PPP = +6m.56s., $S_eS = +11m.7s.$
Kew eZ = +6m.1s.
Granada PPZ = +7m.35s., SSZ = +13m.42s.
Long waves were also recorded at San Fernando, Colombo, Bombay, Cape Town, Bozeman, Salt Lake City, and La Paz.

Aug. 16d. 18h. 23m. 12s. Epicentre 35°·7N. 30°·8E. (as at 16h.)

A = +·6992, B = +·4168, C = +·5810 ; δ = +16 ; λ = 0.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		4·5	11	e 1 22	P*	i 2 45	sS_e	—	—	—
Istanbul		5·5	346	1 25	0	3 13	S_e	2 13	SP_e	—
Helwan		5·8	175	i 1 36a	+ 7	2 42	+ 4	1 48	P*	—
Sofia		9·0	323	e 2 16	+ 3	e 3 57	− 1	i 4 54	S_e	—
Bucharest		9·4	339	e 2 18a	0	4 38	S*	5 7	S_e	5·4
Budapest		14·6	327	3 29	− 1	e 8 13	L	—	—	(e 8·2)
Ogyalla	E.	15·3	326	e 3 34	− 5	e 8 34	L	—	—	(8·6)
Rome		15·5	299	i 3 45a	+ 3	i 6 23	−12	i 6 44	SS	—
Baku		15·7	67	e 4 1	PP	e 7 2	SS	—	—	8·8
Triest		16·3	313	e 3 54	+ 2	e 6 49	− 4	e 4 6	PP	e 7·9
Warsaw		17·9	341	e 4 9a	− 3	7 35	+ 5	e 7 55	SS	e 9·8
Prague		18·6	326	e 4 19	− 2	e 7 54	+ 8	—	—	—
Chur		19·4	312	e 4 25	− 5	—	—	—	—	—
Zurich		20·2	312	e 4 35	− 4	—	—	—	—	—
Stuttgart		20·5	318	e 4 40a	− 2	e 8 21	− 6	—	—	—
Jena		20·6	326	i 4 40	− 3	e 8 24	− 5	—	—	e 10·8
Moscow		20·6	12	4 41	− 2	8 34	+ 5	4 57	PP	—
Basle		20·9	312	e 4 42	− 4	e 8 31	− 4	—	—	—
Potsdam		20·9	328	i 4 41	− 5	i 8 31	− 4	i 9 0	SS	e 11·3
Neuchatel		21·1	311	e 4 45	− 3	e 8 37	− 2	—	—	—
Algiers		22·4	281	e 5 1	− 1	e 9 4	0	—	—	—
Hamburg		23·0	328	e 5 4a	− 3	e 9 7	− 7	—	—	—
Clermont-Ferrand		23·1	304	e 5 10	+ 2	—	—	—	—	—
Copenhagen		23·6	335	e 5 11a	− 2	9 23	− 2	—	—	—
Pulkovo		24·1	0	i 5 17	− 1	e 9 38	+ 4	e 5 35	pP	e 12·3
Uccle		24·3	317	i 5 18a	− 2	9 31	− 6	—	—	e 11·8
De Bilt		24·5	322	i 5 19a	− 3	e 9 33	− 7	—	—	e 12·8
Upsala		25·6	345	e 5 50	+18	e 9 55	− 4	—	—	e 14·8
Kew		27·2	316	i 5 44	− 3	e 10 48	+23	8 18	P_cP	e 12·8
Granada	Z.	27·6	284	6 5a	+14	12 34	SSS	e 8 12	P_cP	17·5
Toledo		27·7	289	e 6 12	+20	—	—	—	—	e 17·8
Samarkand		28·8	72	e 6 3	+ 1	—	—	—	—	—
Sverdlovsk		29·1	35	i 6 6	+ 2	—	—	—	—	14·8
Bergen		29·6	335	—	—	e 12 48?	SSS	—	—	—
Tashkent		30·4	68	e 6 18	+ 2	e 11 18	+ 2	e 6 36	pP	e 18·1
Tchimkent		30·7	66	6 23	+ 4	—	—	—	—	—
Andijan		32·8	70	e 6 41	+ 4	—	—	—	—	—
Almata		36·0	63	7 8	+ 3	—	—	—	—	—
Scoresby Sund		44·5	338	—	—	e 13 16	?	—	—	—

Additional readings :—
Helwan S*Z = +3m.3s., S_e = +3m.16s.
Bucharest SSN = +5m.10s.
Rome i = +4m.21s., iE = +6m.50s.
Triest iSS = +6m.56s.
Warsaw iZ = +4m.22s., SSN = +8m.3s., SSE = +8m.8s.
Potsdam ePE = +4m.45s., iSSE = +8m.35s., iSSSZ = +8m.53s.
Copenhagen e = +5m.14s.
Upsala ePE = +5m.54s.
Kew iZ = +5m.58s., eEN = +11m.46s., S_cSN = +16m.0s.

Aug. 16d. Readings also at 2h. (Tucson), 5h. (near Osaka), 13h. (Huancayo), 14h. (La Paz), 16h. (Algiers), 17h. (Wellington), 18h. (near Berkeley and Riverview), 19h. (Granada and Uccle), 20h. (near Mizusawa), 21h. (near Triest), 23h. (Ravensburg).

Aug. 17d. Readings at 2h. (Zurich, near Chur, Triest, Stuttgart, and near Tananarive), 3h. (Potsdam, De Bilt, near Almeria, Granada, San Fernando (2), Toledo, and near Mizusawa), 5h. (San Juan), 8h. (near Mizusawa), 9h. (near Rome), 12h. (San Juan, St. Louis, Mount Wilson, Palomar, Pasadena, Tucson, and Scoresby Sund), 13h. (near New Plymouth and Wellington), 14h. (Christchurch), 15h. (Istanbul and Ksara), 17h. (La Paz), 20h. (near Berkeley and near Algiers), 22h. (near Toledo, Almeria, and near Granada (2)), 23h. (De Bilt and Potsdam).

Aug. 18d. 5h. Pacific shock.

Apia eP =58m.4s., eZ =60m.44s., eE =60m.49s., eN =62m.14s.
Arapuni S? =61m.
Wellington S? =61m.16s., L =65m.30s.
Riverview eN =61m.30s., eLEN =70m.24s.
Sydney e =63m.0s.
Brisbane eN =66m.0s., 67m.24s., and 68m.18s.
Mount Wilson ePZ =67m.14s.
Pasadena ePZ =67m.14s., eLZ =94m.
Riverside ePZ =67m.16s.
Berkeley ePZ =67m.18s., eLN =94m.24s.
Tinemaha ePZ =67m.22s.
Haiwee ePZ =67m.24s.
Tucson iP =67m.34s., i =67m.38s., iPPP =72m.41s., ePS =78m.35s., iSS =83m.21s., iSSS =87m.5s., eL =94m.27s.
Salt Lake City eP =68m.9s., e =68m.17s., ePPP =73m.27s., eS_cS =78m.55s., ePPS = 80m.9s., eL =98m.59s.
Potsdam eZ =74m.46s. and 78m.36s., eLZ =137m.
Ksara ePKP =74m.48s., ePP =78m.27s., PSKS =88m.49s., PPS =91m.48s.
Granada z ePKP =74m.57s., PP =79m.58s., SKKS =86m.37s., SKSP =90m.31s., eL =137m.18s.
Helwan iPZ =75m.12s., eE =79m.18s.
Victoria e =78m., L =99m.
St. Louis eE =79m.28s., eN =79m.32s., eLE =107·9m.
Toledo eZ =79m.47s., L =151m.
Long waves also at Huancayo, La Paz, Butte, Harvard, East Machias, Scoresby Sund, Agra, De Bilt, and Uccle.

Aug. 18d. Readings also at 0h. (near Berkeley and near Tananarive), 2h. (Scoresby Sund), 4h. (near Tananarive), 6h. (near Mizusawa), 7h. (Helwan (2) and Ksara (2)), 8h. and 11h. (near Mizusawa), 12h. (Triest and near Rome), 16h. (Agra, Calcutta, Bombay, Sverdlovsk, Baku, Almata, Andijan, Frunse, Tashkent, Samarkand, and Ksara), 19h. (Andijan, Tashkent, Agra, Calcutta, Bombay, and Sverdlovsk), 22h. (Tucson), 23h. (Ksara, near Toledo, Almeria, Granada, and San Fernando).

August 19d. 20h. 43m. 36s. Epicentre 40°·0N. 30°·0E. (approximate).

$A = +·6653$, $B = +·3841$, $C = +·6402$; $\delta = +1$; $h = -2$;
$D = +·500$, $E = -·866$; $G = +·554$, $H = +·320$, $K = -·768$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s	m. s.		m.
Istanbul	2·8	326	1 24?	S	(1 24)	+ 2	—	—	—
Sofia	5·7	300	e 1 45	P*	—	—	—	—	4·4
Ksara	7·8	141	e 1 59	+ 1	—	—	—	—	e 4·7
Helwan	10·2	174	e 2 30	− 1	e 4 42	+15	—	—	—
Triest	13·2	301	e 3 13	+ 2	e 5 48	+ 8	e 6 13	SSS	—
Rome	13·4	284	e 3 29	+15	e 5 49	+ 4	—	—	e 6·9
Baku	15·2	82	e 3 36	− 2	e 7 54	L	—	—	(e 7·9)
Chur	16·3	302	e 3 54	+ 2	—	—	—	—	—
Potsdam	17·0	323	—	—	e 8 12	SSS	—	—	e 8·9
Zurich	17·1	302	e 4 2	0	—	—	—	—	—
Basle	17·8	302	e 4 10	− 1	—	—	—	—	—
Neuchatel	18·1	302	e 4 11	− 3	—	—	—	—	—
Uccle	20·9	310	e 4 51	+ 5	e 8 58	SS	—	—	e 11·4
Granada	26·3	276	i 5 13k	−26	9 49	−22	8 9	P_cP	e 15·0

Additional readings :—
Istanbul S_g = +2m.54s., SS_g = +3m.40s.
Helwan eE = +3m.24s.
Rome eE = +3m.43s.
Granada SSE = +11m.39s.
Long waves were also recorded at De Bilt, Kew, Bucharest, Sverdlovsk, Pulkovo, Tashkent, and Warsaw.

August 19d. Readings also at 2h. (near Lick), 9h. (near Triest), 12h. (near Triest, Stuttgart, Basle, and Sofia), 14h. (near Triest, New Plymouth, Wellington, and Christchurch), 16h. (near La Paz and near Mizusawa), 17h. (near Tananarive), 18h. (Scoresby Sund, New Plymouth, Wellington, and Christchurch), 19h. (near Berkeley and Granada), 22h. (near Lick), 23h. (near Tchimkent, Andijan, Frunse, Almata, and Tashkent).

Aug. 20d. 17h. 29m. 45s. Epicentre 6°·2S. 149°·1E.

$A = -\cdot8531$, $B = +\cdot5106$, $C = -\cdot1073$; $\delta = +1$; $h = +7$;
$D = +\cdot514$, $E = +\cdot858$; $G = +\cdot092$, $H = -\cdot055$, $K = -\cdot994$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palau		19·8	312	5 47	?	—	—	—	—	—
Brisbane	N.	21·5	170	i 4 51	− 1	i 8 39	− 8	—	—	—
Riverview		27·6	176	e 5 55	+ 4	e 10 34	+ 2	e 6 8	PP	e 13·9
Sydney		27·6	176	e 5 57	+ 6	e 10 27	− 5	—	—	—
Adelaide		30·2	197	(6 15)	+ 1	14 15	?	—	—	18·9
Apia		39·2	104	e 7 28	− 3	e 16 39	SS	e 8 47	PP	e 19·6
Arapuni		39·9	147	—	—	13 57	+14	—	—	17·2
Perth		40·3	226	6 40	−60	13 50	+ 1	9 17	PP	21·2
Miyazaki		41·5	338	7 53	+ 3	e 13 35	−32	—	—	e 19·1
Wellington		41·8	151	7 54	+ 1	14 5	− 6	9 55	P_cP	17·4
Koti		42·2	340	7 57	+ 1	14 5	−12	—	—	—
Yokohama		42·4	349	e 8 7	+ 9	—	—	—	—	—
Christchurch		42·5	154	7 52	− 7	14 19	− 3	17 39	L_q	20·7
Tokyo, Cen. Met. Ob.		42·6	350	e 8 13	+14	e 14 23	0	—	—	—
Kobe		42·7	343	8 1	+ 1	14 21	− 3	—	—	—
Nagoya		42·7	346	8 4	+ 4	—	—	—	—	—
Hamada		43·9	340	8 10	0	15 7	+25	—	—	—
Nagano		43·9	348	8 10	0	15 0	+18	—	—	—
Sendai		44·9	352	8 17	− 1	14 50	− 6	—	—	—
Mizusawa		45·7	352	e 8 23	− 1	14 57	−11	—	—	—
Zinsen		48·2	335	8 43	− 1	15 40	− 3	—	—	—
Mori		48·7	352	e 8 36	−12	—	—	—	—	—
Sapporo		49·5	353	8 55	+ 1	—	—	—	—	—
Honolulu		58·8	61	—	—	i 18 4	− 3	—	—	e 27·7
Calcutta	N.	65·9	298	—	—	e 19 37	0	—	—	—
Irkutsk		69·6	332	e 11 9	− 4	e 20 35	+14	—	—	35·2
Colombo	E.	70·3	280	—	—	e 20 45	+16	—	—	—
Bombay		79·1	290	e 13 32	?	e 22 9	+ 2	e 22 42	PS	e 38·9
Almata		81·4	315	e 12 24	+ 4	—	—	—	—	—
Andijan		84·1	312	e 12 35	+ 1	—	—	—	—	—
College		84·5	23	—	—	e 22 52	−10	—	—	—
Tashkent		86·4	312	12 44	− 1	e 23 14	[+ 4]	—	—	e 36·6
Sitka		87·5	32	—	—	e 23 25	− 6	i 23 54	S_cS	e 35·5
Ukiah		92·1	51	—	—	e 24 0	−13	—	—	e 42·7
Berkeley		92·7	53	—	—	e 23 49	[+ 1]	e 25 51	PS	e 42·7
Victoria		92·9	42	—	—	e 24 15?	− 5	—	—	42·2
Santa Clara	E.	92·9	53	e 15 5	?	e 26 0	PPS	—	—	e 42·9
Seattle		93·6	43	—	—	e 24 49	+23	e 25 8	PS	e 42·2
Sverdlovsk		94·3	326	e 13 19	− 4	e 23 46	[−12]	e 17 11	PP	42·2
Pasadena	Z.	95·7	56	e 13 29	0	e 26 3	PS	e 31 33	SS	e 43·8
Mount Wilson	Z.	95·8	56	e 13 31	+ 2	—	—	—	—	—
Tinemaha		95·8	54	e 13 31	+ 2	—	—	—	—	—
Riverside		96·4	56	i 13 34	+ 2	—	—	—	—	—
Tananarive		98·9	250	—	—	e 24 18	[− 3]	e 32 17	SS	e 49·8
Salt Lake City		100·8	50	—	—	e 24 32	[+ 1]	e 27 40	PPS	e 46·6
Baku		101·0	310	e 17 33	PKP	e 24 46	[+14]	e 27 37	PPS	48·2
Bozeman		101·3	44	—	—	e 24 35	[+ 2]	e 27 5	PS	e 41·6
Tucson		101·8	59	i 17 59	PP	e 24 39	[+ 3]	e 20 33	PPP	i 42·5
Moscow		107·2	326	14 20	P	e 24 53	[− 7]	e 18 50	PP	—
Pulkovo		109·6	332	18 58	PP	e 34 27	SS	e 28 29	PS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		112·7	303	e 15 7	P	e 29 6	PS	e 19 32	PP	—
Upsala		115·1	335	—	—	e 35 15?	SS	—	—	e 55·2
Scoresby Sund		115·5	357	e 19 51	PP	e 25 47	[+13]	e 22 11	PPP	i 45·6
Istanbul		116·5	313	e 20 1	PP	—	—	—	—	—
Helwan	E.	117·1	300	e 19 39	PP	25 33	[− 7]	30 9	PS	—
Bucharest		117·6	317	e 22 15?	PPP	—	—	—	—	52·3
Warsaw		118·5	326	e 20 0	PP	e 29 42	PS	—	—	e 52·2
Chicago, U.S.C.G.S.		118·6	45	—	—	e 30 27	PPS	—	—	e 54·2
Potsdam		121·6	330	i 20 28a	PP	e 30 29	PS	—	—	58·5
Hamburg		122·3	333	e 20 33	PP	—	—	—	—	e 59·2
Aberdeen		124·4	341	—	—	i 30 47	PS	—	—	e 63·6
De Bilt		125·5	334	i 21 0	PP	e 30 55	PS	—	—	e 59·2
Columbia		126·1	52	e 23 8	PPP	—	—	—	—	e 52·9
Uccle		126·7	333	e 21 0	PP	—	—	e 23 42	PPP	e 57·2
Rome		127·7	319	e 19 12	[+ 4]	e 37 41	SS	i 23 55	PPP	e 59·2
Philadelphia		128·0	43	e 22 25	PKS	e 38 43	SS	—	—	e 54·8
Huancayo		132·2	113	e 19 18	[+ 2]	e 42 53	SSS	e 21 47	PP	e 55·0
La Paz		136·8	122	e 19 23	[− 1]	29 25	{+23}	22 43	PKS	65·2
Toledo		138·3	328	e 23 4	PKS	—	—	—	—	57·4
Almeria		139·9	324	20 12	[+42]	—	—	e 23 24	PKS	—
Granada		140·4	325	19 26a	[− 5]	29 31	{+ 8}	22 29	PP	70·6
Lisbon		141·7	331	23 25	PKS	—	—	—	—	72·0
San Juan		143·6	66	e 19 32	[− 5]	e 26 52	[+ 8]	e 22 55	PP	e 58·5
Rio de Janeiro		148·7	158	e 19 55	[+10]	—	—	—	—	—

Additional readings :—
Riverview eE = +7m.40s., iSN = +10m.43s., iE = +12m.22s.
Sydney e = +11m.3s.
Adelaide P = 17h.14m.0s., SS = +18m.0s.
Apia ePZ = +7m.31s., eE = +9m.3s.
Perth PP = +8m.25s., i = +16m.25s., SS = +16m.55s., SSS = +18m.10s.
Miyazaki i = +14m.6s.
Wellington i = +14m.23s.
Mizusawa S?N = +15m.0s.
Bombay e = +14m.16s.
Tashkent eS = +23m.28s.
Sitka e = +23m.32s., ePPS = +24m.34s.
Ukiah eS = +24m.5s.
Berkeley eSZ = +24m.23s., eN = +37m.53s.
Sverdlovsk eSS = +31m.5s.
Pasadena ePPZ = +15m.27s.
Bozeman eS = +25m.51s., eSS = +32m.30s., ePSPS = +33m.19s., eSSS = +36m.36s.
Tucson iPS = +27m.11s., eSS = +32m.40s., iSSS = +36m.10s.
Moscow ePS = +28m.10s., eSS = +34m.21s.
Pulkovo ePPS = +29m.31s.
Scoresby Sund ePS = +29m.45s., eSS = +36m.25s., iSSS = +40m.49s.
Helwan ePSE = +34m.3s.
Warsaw eN = +29m.45s.
Potsdam iE = +20m.34s., eN = +30m.32s.
Aberdeen eE = +41m.43s.
Rome ePPSE = +43m.13s., eSS = +47m.52s.
Huancayo e = +19m.21s., iPKS = +22m.48s., ePSPS = +40m.17s.
La Paz iPKPZ = +19m.27s., iSKPZ = +23m.23s., SSZ = +41m.55s.
Granada PPZ = +23m.18s., PPPZ = +25m.47s., PPE(Δ >180°) = +28m.3s., SKSP = +33m.36s., PPPZ (Δ >180°) = +34m.25s., ePPSZ = +37m.15s., SSE = +42m.13s., SSPZ = +43m.31s., SSSZ = +48m.33s.
San Juan e = +20m.43s., iPKS = +23m.39s., ePPP = +25m.41s., eSKKS = +29m.55s., eSKSP = +32m.53s., ePPS = +35m.53s., eSS = +41m.6s., ePSPS = +42m.42s., eSSS = +46m.46s.
Long waves were also recorded at Phu-Lien, Prague, Budapest, La Plata, Butte, East Machias, Bermuda, Kew, San Fernando, Lincoln, Harvard, Triest, Bergen, and Stuttgart.

August 20d. Readings also at 3h. (near Triest), 5h. (Mizusawa, Osaka, Tinemaha, Riverside, and Tucson), 6h. (Palomar, Pasadena, Mount Wilson, Tinemaha, Riverside, and Tucson), 7h. (Tinemaha and Tucson), 8h. (Tucson, Tinemaha, Pasadena, Wellington, and Ksara), 9h. (Granada, Pasadena, Ksara, and Berkeley), 10h. (near Christchurch, New Plymouth (2), Tuai, and Wellington (3)), 13h. (near La Paz), 16h. (La Paz), 17h. (Columbia, Scoresby Sund, Seattle, College, Tucson, Toronto, Ottawa, Seven Falls, St. Louis, Sitka, Salt Lake City, Bozeman, and Butte), 19h. (East Machias, Huancayo, Tucson, La Paz, Butte, Pasadena, Ksara, Berkeley, Mount Wilson, Riverside, Bozeman, Salt Lake City, Sitka, St. Louis (2), Santa Clara, and Honolulu), 22h. (near Branner).

August 21d. Readings at 0h. (La Paz), 4h. (near La Paz), 6h. (near Fresno and Lick), 9h. (Balboa Heights), 12h. (near Harvard), 15h. (La Paz, Branner, near Berkeley (3), Lick, near Andijan, Tashkent, Tchimkent, and Almata), 19h. (Ksara, La Paz, Pasadena, Tucson, and Huancayo), 20h. (Sverdlovsk, Baku, Samarkand, Salt Lake City, Granada, near Almata, Tchimkent, Andijan, and Berkeley).

August 22d. 3h. 27m. 13s. Epicentre 52°·3N. 165°·5W.

$A = -·5945$, $B = -·1538$, $C = +·7892$; $\delta = -8$; $h = -6$;
$D = -·250$, $E = +·968$; $G = -·764$, $H = -·198$, $K = -·614$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
College		15·5	29	e 3 39a	− 3	i 6 15	−20	i 3 49	PP	i 7·5
Sitka		18·0	63	i 4 14	+ 1	i 7 21	−11	i 4 21	PP	—
Victoria		26·8	82	5 53	+ 9	10 37	+18	6 24	PP	—
Seattle		27·8	83	e 6 28	PP	e 11 7	+32	i 9 16	PcP	e 11·7
Honolulu		31·5	166	i 6 34	+ 8	i 11 41	+ 7	i 7 35	PP	i 12·8
Ukiah		31·8	98	e 6 30	+ 2	e 11 38	0	e 7 41	PP	i 13·9
Berkeley		33·2	99	e 6 38	− 2	e 12 14	+14	—	—	e 14·6
Nemuro		33·5	275	6 44	+ 1	12 1	− 4	—	—	—
Branner		33·6	99	e 6 53	+ 9	e 12 14	+ 8	—	—	e 14·0
Santa Clara		33·7	99	i 6 57	+12	i 12 13	+ 5	—	—	—
Lick		33·9	99	e 6 50	+ 3	e 12 28	+17	—	—	e 19·9
Butte		34·5	78	e 6 49	− 3	e 12 7	−13	i 9 13	PcP	i 13·7
Saskatoon		35·2	67	6 48	−10	12 20	−11	—	—	16·8
Fresno	N.	35·5	98	e 7 5	+ 5	e 11 17	?	e 8 9	PP	e 15·3
Bozeman		35·6	79	e 7 5	+ 4	i 12 43	+ 5	e 8 21	PP	i 14·3
Sapporo		36·2	278	7 4	− 2	12 54	+ 7	—	—	17·0
Tinemaha		36·2	96	e 7 4	− 2	—	—	i 9 34	PcP	—
Haiwee		37·0	97	i 7 14	+ 1	e 13 7	+ 8	i 9 36	PcP	—
Mori		37·2	277	7 1	−14	12 53	− 9	—	—	e 18·6
Salt Lake City		37·8	86	e 7 23	+ 3	i 13 21	+10	e 8 54	PP	e 16·1
Mount Wilson		38·2	99	i 7 21	− 2	—	—	i 9 36	PcP	—
Pasadena		38·2	99	e 7 20	− 3	e 13 23	+ 6	i 9 34	PcP	i 16·2
Mizusawa		38·7	272	e 7 24	− 3	13 22	− 3	—	—	—
Riverside		38·8	99	e 7 26	− 2	e 13 35	+ 9	i 9 43	PcP	—
Sendai		39·3	271	7 29	− 3	13 42	+ 8	—	—	—
Palomar	Z.	39·5	99	e 7 29	− 5	—	—	—	—	—
Tokyo, Cen. Met. Ob.		41·7	269	e 7 57	+ 5	14 14	+ 4	—	—	—
Yokohama		41·9	269	7 57	+ 3	14 17	+ 4	17 18	SS	e 19·5
Nagano		42·0	272	7 53	− 1	14 25	+11	—	—	—
Denver		42·6	84	e 8 2	+ 3	e 14 30	+ 7	e 18 8	SSS	e 21·2
Nagoya		43·7	270	8 12	+ 4	14 50	+11	—	—	—
Tucson		43·9	95	i 8 8a	− 2	i 14 29	−13	i 8 31	pP	i 17·9
Osaka		45·0	272	e 8 15	− 4	15 5	+ 7	8 51	pP	—
Hamada		46·9	274	8 36	+ 2	15 28	+ 3	—	—	—
Koti		46·9	272	8 35	+ 1	15 30	+ 5	—	—	—
Lincoln		47·0	75	e 8 33	− 2	e 15 9	−17	i 10 36	PP	—
Zinsen		48·5	281	8 48	+ 2	15 54	+ 6	—	—	—
Hukuoka		48·8	274	e 8 49	0	15 57	+ 5	—	—	—
Miyazaki		49·3	271	e 8 52	− 1	e 15 41	−18	i 16 7	PS	21·9
Chicago, J.S.A.		51·6	70	e 9 14	+ 4	e 16 28	− 3	—	—	—
Irkutsk		51·6	309	9 9	− 1	i 16 35	+ 4	—	—	24·8
Chicago, U.S.C.G.S.		51·7	70	e 9 9a	− 2	e 16 4	−28	e 11 9	PP	e 23·5
Florissant		52·0	74	e 9 3	−10	i 16 34	− 2	i 10 38	PcP	—
St. Louis		52·2	74	e 9 10	− 5	i 16 40	+ 1	—	—	—
Cape Girardeau		53·5	75	e 9 19	− 5	i 16 51	− 6	i 11 16	PP	e 23·9
Scoresby Sund		54·7	16	i 9 36	+ 3	e 17 4	− 9	i 10 39	PcP	i 22·6
Toronto		55·0	63	9 43	+ 8	i 17 24	+ 7	11 50	PP	25·8
Naha		55·7	270	9 38	− 2	17 29	+ 3	—	—	—
Buffalo		55·8	63	e 9 45	+ 4	e 17 51	PS	e 11 32	PP	27·0
Ottawa		55·8	59	e 9 38	− 3	17 29	+ 1	11 53	PP	27·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zi-ka-wei		55·9	278	e 9 41	− 1	17 35	+ 6	i 11 51	PP	27·3
Ivigtut		56·3	33	i 9 48	+ 3	e 17 31	− 3	e 10 45	PcP	e 22·8
Shawinigan Falls		56·6	56	9 41	− 6	17 47	+ 9	22 47	SSS	29·8
Seven Falls		57·2	54	9 47	− 4	17 46	0	12 8	PP	27·8
Pennsylvania		57·8	64	i 10 1	+ 6	e 17 58	+ 4	e 12 27	PP	—
Georgetown		59·5	65	i 10 14	+ 7	e 17 23	−53	—	—	—
Fordham		59·9	62	10 18	+ 8	18 19	− 2	—	—	—
Philadelphia		59·9	63	i 10 12	+ 2	e 18 15	− 6	e 12 13	PP	i 26·0
Harvard		60·0	59	i 10 7	− 4	e 18 32	+ 9	e 12 30	PP	e 29·8
East Machias		60·5	54	e 10 14	0	e 18 16	−13	i 10 37	pP	e 24·5
Columbia		60·8	72	e 10 19	+ 3	i 18 36	+ 3	e 12 20	PP	e 24·3
Halifax		62·4	53	10 37	+10	19 0	+ 7	12 56	PP	30·8
Apia		66·1	187	e 10 9	−42	19 14	−25	26 47?	SSS	—
Pulkovo		66·9	352	11 0	+ 4	i 19 55	+ 6	—	—	e 30·6
Bergen		67·4	6	i 11 1	+ 2	i 20 1	+ 6	—	—	e 30·3
Upsala		68·2	359	e 11 4	0	i 20 4	0	13 42	PP	e 29·8
Manila		68·5	266	i 11 10k	+ 4	i 20 16	+ 8	—	—	—
Aberdeen		70·0	11	i 11 21	+ 6	i 20 33	+ 7	i 11 59	PcP	33·8
Almata		70·6	317	11 21	+ 2	—	—	—	—	35·8
Moscow		70·7	346	11 18	− 2	20 32	− 2	—	—	34·5
Bermuda		71·1	62	i 11 25	+ 3	i 20 44	+ 6	i 15 55	PPP	i 29·1
Edinburgh		71·1	11	11 24	+ 2	20 28	−10	14 3	PP	—
Frunse		71·9	318	11 27	0	—	—	—	—	39·8
Copenhagen		72·4	2	e 11 25	− 5	i 21 3	+10	14 14	PP	—
Phu-Lien		72·6	282	11 36	+ 5	21 7	+11	—	—	—
Stonyhurst		73·3	12	i 11 37	+ 2	i 21 17	+13	14 37	PP	32·8
Heligoland		73·7	6	e 11 43	+ 5	i 21 16	+ 8	e 26 11	SS	e 31·8
Hamburg		74·4	3	e 11 38k	− 4	i 21 26	+10	e 16 6	PPP	e 32·8
Tchimkent		74·4	321	11 40	− 2	—	—	—	—	37·8
Andijan		74·6	318	11 40	− 3	—	—	—	—	39·8
Kew		75·5	10	e 11 50	+ 2	i 21 42	+14	i 11 59	PcP	—
De Bilt		75·7	8	i 11 52a	+ 3	e 21 35	+ 5	i 14 50	PP	e 37·3
Potsdam		75·7	2	i 11 50a	+ 1	i 21 36	+ 6	i 11 57	PcP	31·8
Warsaw		75·7	357	e 11 47a	− 2	i 21 37	+ 7	14 45	PP	e 31·8
Uccle		76·9	8	e 11 55	− 1	i 21 52	+ 9	i 14 59	PP	32·8
Jena		77·1	3	e 12 3	+ 6	e 21 53	+ 7	e 31 47	SSS	e 32·8
Samarkand		77·7	322	12 2	+ 2	21 55	+ 3	—	—	37·8
Prague		78·0	1	i 12 5k	+ 3	22 2	+ 7	e 26 47?	SS	33·8
Stuttgart		79·2	5	e 12 7	− 1	i 22 16	+ 8	i 14 53	PP	e 38·1
Ogyalla	E.	80·2	358	12 24	+10	i 22 32	+13	12 30	PcP	e 38·8
Basle		80·4	6	e 12 11	− 4	e 22 22	+ 1	—	—	—
Balboa Heights		80·5	88	e 11 47?	−28	—	—	—	—	—
Budapest		80·5	357	12 15	0	i 22 32	+10	12 20	PcP	37·8
Besançon		80·6	7	e 12 35	+19	e 22 41	+18	—	—	38·8
Zurich		80·6	6	e 12 14a	− 2	e 22 33	+10	e 14 50	PP	—
Dehra Dun	N.	80·8	308	e 12 28	+11	e 22 30	+ 5	e 14 43	PP	e 34·1
Neuchatel		80·9	6	e 12 15	− 2	e 22 30	+ 4	e 15 2	PP	—
Piatigorsk		80·9	340	12 17	0	—	—	—	—	—
Grozny		81·0	338	12 19	+ 1	—	—	—	—	—
Chur		81·1	5	e 12 16	− 2	e 22 33	+ 5	—	—	—
Kecskemet	Z.	81·1	337	12 16	− 2	22 42	+14	—	—	e 33·1
San Juan		81·2	72	e 12 18	− 1	e 22 18	−11	i 12 46	pP	e 32·9
Calcutta	N.	81·8	296	i 12 20a	− 2	i 22 40	+ 5	i 15 26	PP	e 40·8
Clermont-Ferrand		81·8	9	e 12 20	− 2	e 22 46	+11	i 15 22	PP	e 48·8
Yalta		82·1	347	12 26	+ 2	—	—	—	—	—
Baku		82·3	334	12 33	+ 8	i 22 57	+17	—	—	—
Triest		82·4	1	i 12 34a	+ 9	i 22 48	+ 7	i 12 50	pP	i 36·0
Bucharest		83·2	352	e 12 33a	+ 4	i 22 56	+ 7	15 28	PP	39·8
Agra		83·5	306	12 32	+ 1	i 22 54	+ 2	15 47	PP	40·4
Marseilles		84·4	7	e 12 49	+13	e 23 16	+15	—	—	39·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		85·1	354	e 12 44	+ 5	e 23 12	+ 4	24 6	PS	37·8
Istanbul		86·2	350	12 46	+ 2	23 47?	+28	16 1	PP	e 74·8
Rome		86·2	2	i 12 44	0	i 23 29	+10	i 12 51	pP	—
Toledo		86·8	15	i 12 52	+ 5	i 23 41	+16	—	—	—
Fort de France		87·0	71	i 12 51	+ 3	e 23 18	[+ 4]	—	—	e 40·6
Lisbon		87·0	19	e 12 49	+ 1	i 23 32	+ 5	16 20	PP	41·6
Brisbane		87·3	216	i 12 59	+ 9	i 23 29	0	i 25 17	PPS	—
Granada		89·5	16	i 13 3k	+ 3	i 24 12	+22	i 16 44	PP	41·9
San Fernando		89·8	18	e 13 3	+ 1	i 23 55	+ 2	16 16	PP	44·8
Almeria		90·0	14	13 8	+ 5	23 56	+ 2	13 30	pP	38·8
Algiers		90·7	10	e 13 6	0	23 45	[+ 8]	16 47	PP	44·3
Hyderabad		91·3	301	13 8	− 1	23 44	[+ 3]	16 29	PP	42·2
Arapuni		91·5	196	e 20 47	?	25 47	PPS	30 47	SS	38·3
Ksara		92·2	343	e 13 15	+ 2	25 21	PS	—	—	44·8
Bombay		92·9	307	e 13 19	+ 3	i 24 5	−15	i 17 8	PP	44·1
Riverview		93·8	216	e 13 17	− 3	i 23 58	[+ 4]	31 31	SS	e 38·1
Sydney		93·8	216	—	—	e 22 59	[−55]	—	—	e 38·5
Wellington		94·8	196	13 27	+ 2	23 53	[− 7]	17 15	PP	44·8
Helwan		96·9	346	i 13 35k	+ 1	24 12	[+ 1]	17 37	PP	47·2
Christchurch		97·3	197	13 41a	+ 5	24 13	[0]	17 34	PP	45·0
Kodaikanal	E.	97·8	299	i 13 42	+ 4	i 24 36?	[+20]	i 17 47	PP	48·0
Colombo	E.	99·2	295	13 55	+10	24 38	[+15]	17 53	PP	46·1
Huancayo		99·5	98	i 13 56a	+10	i 24 26	[+ 1]	i 17 56	PP	i 42·0
Adelaide		99·6	225	i 17 47	PP	i 27 41	PPS	i 20 27	PPP	i 47·6
La Paz		107·4	95	14 21	P	i 25 45	SKKS	i 18 49	PP	51·8
Perth		108·2	242	i 18 47	PP	i 28 27	PS	—	—	59·7
La Plata	E.	127·0	102	21 11	PP	27 59	{− 1}	33 5	SKSP	55·8
	N.	127·0	102	19 11	[+ 5]	27 59	{− 1}	21 47	PP	54·3
Rio de Janeiro		127·4	80	i 21 15	PP	—	—	—	—	—
Tananarive		137·9	311	e 22 22	PP	32 33	PSKS	23 11	SKP	63·3
Johannesburg		152·0	334	e 20 5	[+15]	i 43 17	SS	i 23 47	PP	—
Cape Town	N.	161·4	349	20 55	[+53]	27 35	[+29]	24 35	PP	79·1

Additional readings :—
College i = +3m.55s., +4m.8s., and +6m.48s.
Sitka i = +4m.18s., +5m.31s., +7m.27s. +7m.47s., and +7m.54s.
Victoria SS = +11m.43s.
Honolulu iPPP = +8m.0s., iP_cP = +9m.0s., i = +12m.33s.
Ukiah i = +6m.38s. and +7m.12s., iP_cP = +9m.18s., i = +11m.49s., isS = +12m.6s.
Berkeley eZ = +6m.42s., iE = +6m.48s., iN = +6m.52s., iZ = +9m.27s.
Branner eSN = +12m.17s.
Lick eEN = +14m.59s.
Butte e = +6m.56s., i = +12m.21s.
Fresno eN = +8m.25s.
Bozeman i = +7m.11s., iP_cP = +9m.17s., i = +13m.6s.
Tinemaha iZ = +7m.13s.
Haiwee i = +7m.24s.
Salt Lake City i = +7m.30s. and +8m.59s., eP_cP = +9m.37s., isS = +14m.5s.
Mount Wilson i = +7m.32s., iZ = +39m.17s.
Pasadena i = +7m.32s., iZ = +12m.26s.
Mizusawa SE = +13m.26s.
Riverside i = +7m.37s., iZ = +39m.22s.
Palomar iZ = +7m.41s.
Tokyo, Cen. Met. Ob. i = +14m.21s.
Denver iPEN = +8m.12s., iE = +8m.17s., iN = +8m.20s., eEN = +14m.12s. and +14m.20s., iSN = +14m.34s., iSE = +14m.37s., iE = +14m.49s., iN = +14m.52s., eN = +18m.18s. and +19m.16s.
Tucson i = +8m.12s., +8m.16s., and +8m.20s., isP = +8m.45s., i = +8m.49s., iP_cP = +9m.46s., iPP = +9m.50s., isPP = +10m.22s., iPPP = +10m.31s., i = +10m.36s. and +13m.3s., iS_cP = +13m.31s., iP_cS = +13m.48s., i = +14m.1s., +14m.35s., +14m.52s., +15m.3s., +15m.28s., and +16m.9s., iSS = +17m.41s.
Osaka iP = +8m.25s., P_cP = +9m.53s., PP = +10m.7s.
Lincoln e = +8m.37s., i = +8m.41s., iPPP = +11m.14s., i = +15m.27s.
Miyazaki i = +8m.59s.
Chicago U.S.C.G.S. i = +9m.16s. and +16m.33s., eSS = +20m.11s.
Florissant ePZ = +9m.7s., iPZ = +9m.14s., ePPZ = +11m.3s., iPSE = +17m.11s., iE = +18m.47s.?
Cape Girardeau iPN = +9m.27s., iEN = +9m.54s., eSSN = +20m.49s.
Scoresby Sund i = +9m.43s. and +10m.19s., iPP = +12m.5s., ePPP = +12m.53s., i = +17m.22s., iS_cS = +19m.39s., iSS = +21m.5s., isSS = +22m.0s.

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Toronto i = +19m.13s., SS = +21m.17s.
Buffalo ePPP = +11m.52s.
Ottawa SS = +21m.35s.
Zi-ka-wei iN = +9m.57s. and +17m.45s.
Ivigtut iPP = +11m.55s., ePPP = +13m.8s., i = +17m.39s., eS_cS = +19m.5s., eSS = +21m.32s.
Shawinigan Falls SSS = +24m.5s.
Seven Falls PPP = +13m.27s., SS = +21m.49s., i = +24m.21s.
Pennsylvania eP_cP = +11m.6s., ePPP = +14m.7s., eS_cS = +20m.51s., eSS = +23m.9s.
Philadelphia iPPP = +13m.49s., i = +18m.22s., iS_cS = +20m.7s., eSS = +22m.24s., i = +22m.42s.
Harvard iP = +10m.17s., ePPP = +13m.52s.
East Machias i = +10m.23s., ePP = +12m.30s., i = +12m.37s., iPPP = +14m.6s., i = +18m.30s. and +18m.37s., iS_cS = +19m.26s., iSS = +22m.42s.
Columbia i = +10m.25s., ePPP = +14m.5s., iS_cS = +20m.14s., iSS = +22m.33s.
Halifax PPP = +14m.23s., SS = +23m.5s.
Apia eE = +19m.43s.
Upsala iPN = +11m.12s., ePE = +11m.15s., SE = +20m.8s., eSSN = +24m.49s., eE = +25m.24s., eSSSE = +27m.45s., eSSSN = +27m.48s.
Aberdeen iPPN = +14m.8s., iPPPN = +15m.40s., iE = +20m.40s. and +21m.27s., iSSN = +25m.14s., iSSSEN = +28m.3s., iSSSSE = +30m.3s.
Bermuda i = +12m.21s., +21m.6s., and +24m.32s., eSS = +25m.13s., i = +25m.19s.
Edinburgh e = +12m.9s., +14m.52s., and +20m.54s., SKS = +21m.12s., e = +21m.36s. and +24m.32s., SS = +25m.2s., SSS = +28m.9s.
Copenhagen i = +11m.31s.
Heligoland iN = +22m.33s., eSSSN = +30m.11s.
Hamburg iZ = +11m.46s., iN = +23m.11s., eSSSZ = +29m.23s.
Kew iPPN = +14m.55s., ePPPEN = +16m.40s., iEN = +22m.10s., +22m.26s., and +22m.47s., eSSEN = +26m.2s., eSSSEN = +29m.47s.?
De Bilt eSS = +27m.33s., eSSS = +30m.57s.
Potsdam iE = +15m.46s., iSKSE = +21m.43s., iN = +27m.21s., iNW = +27m.25s., iZ = +30m.52s., iNW = +31m.28s.
Warsaw iPNZ = +11m.51s., SSZ = +26m.43s., SSSZ? = +30m.7s.
Uccle iNZ = +12m.5s., i = +12m.55s., iPSN = +22m.41s., iN = +27m.13s.
Jena iPE = +12m.8s., eN = +14m.6s.
Stuttgart iPN = +12m.15s., iSE = +22m.19s., eN = +25m.13s., eSSN = +27m.17s., eL_qE = +33m.17s.
Ogyalla E. ePP = +15m.12s., i = +15m.26s., S_cS = +23m.0s., PS = +23m.6s.
Budapest PP = +15m.23s., eS_cS = +22m.50s., eE = +23m.22s., eSSN = +28m.2s.
Zurich e = +27m.40s.
Dehra Dun e?N = +27m.34s.
Chur i = +12m.26s.
Kecskemet iZ = +12m.30s.
San Juan iP_cP = +12m.25s., iPP = +15m.34s., ePPP = +17m.3s., iSKS = +22m.31s., iPS = +23m.14s., iSS = +27m.5s., i = +28m.50s., eSSS = +30m.32s.
Calcutta iS_cSN = +22m.57s., iPSN = +23m.22s., eSSN = +28m.20s.
Clermont-Ferrand iP = +12m.27s.
Triest iN = +13m.13s., iPPN = +15m.35s., iPPPN = +17m.31s., iN = +22m.53s., isSN = +23m.14s., iPSN = +23m.35s.
Bucharest iN = +12m.37s., iEN = +12m.48s., PPPE = +16m.5s., iSE = +22m.59s., PSN = +23m.31s.
Agra iE = +24m.26s., SSN = +28m.22s., SSE = +28m.38s., SSSN = +32m.16s.
Sofia eE = +23m.22s.
Istanbul SS = +48m.47s.?
Rome iE = +16m.25s., iPSN = +24m.27s.
Lisbon iPN = +12m.57s., Z = +13m.22s., N = +16m.4s., PPN = +16m.23s., SKSE = +23m.36s., iSE = +23m.43s.?, iSN = +23m.47s., iSZ = +23m.55s.?, PSE = +24m.25s., SSN = +29m.17s.
Brisbane iN = +20m.11s., iSE = +23m.35s., iN = +26m.17s., eN = +27m.17s., iE = +27m.23s., eSSE = +28m.29s., eSSN = +28m.53s.
Granada PPPZ = +18m.52s., S_cSE = +23m.11s., SKKSZ = +23m.51s., PSE = +25m.14s., SSE = +30m.20s., SSSZ = +32m.56s., iL_q = +38m.45s.
San Fernando iSSN = +29m.34s.
Almeria PP = +16m.49s., PPP = +18m.48s., S_cS = +24m.14s., PS = +25m.2s., SS = +29m.50s., SSS = +33m.2s.
Algiers i = +13m.17s. and +14m.1s., e = +15m.52s., S = +24m.15s., PS = +25m.16s., SS = +30m.12s.
Hyderabad SEN = +24m.8s., SSE = +30m.17s.
Bombay iPEN = +13m.23s., iSKKSEN = +24m.25s., iPSEN = +25m.43s., eSSEN = +30m.50s.
Riverview eEN = +13m.27s., iE = +24m.4s., iN = +24m.36s., SS?N = +31m.39s.
Sydney e = +24m.5s.
Wellington S = +24m.33s., PS = +25m.52s., SS = +31m.11s., L_q = +38·8m.
Helwan P_ePZ = +13m.43s., PPPZ = +19m.44s., SEN = +25m.5s., PSN = +26m.19s., SSE = +31m.50s.
Christchurch SE = +25m.3s., PS = +26m.26s., SS = +31m.11s., L_qE = +40m.11s.
Kodaikanal SKKSE = +25m.15s.?, SE = +25m.45s., SSE = +32m.17s.
Colombo SSE = +32m.8s.

Continued on next page.

Huancayo i = +18m.33s., iPPP = +20m.6s., iSKKS = +24m.58s., iS = +25m.21s., iSP = +26m.29s., iPS = +27m.1s., isSS = +32m.26s., i = +32m.39s., iSSS = +36m.21s.
Adelaide iPP = +20m.37s., i = +21m.27s., +22m.47s., +24m.30s., +25m.48s., +27m.5s., and +27m.47s., iPS = +27m.57s., iSS = +32m.27s.
La Paz iPKPZ = +14m.27s., iPPP = +21m.9s., iSZ = +26m.15s., PSZ = +27m.51s., PPS = +28m.47s., iSSSZ = +33m.57s., iSSS = +37m.43s., L_q = +47m.47s.
Perth i = +22m.37s., +25m.37s., +35m.10s., +42m.47s., +48m.42s., +55m.10s., and +58m.9s.
La Plata E. PP = +22m.23s., PPP($\Delta > 180°$) = +34m.5s., +38m.11s., and +43m.11s.
La Plata N. PKP = +19m.47s. +31m.5s., SKSP = +33m.5s., +39m.5s., and +43m.5s., SSS = +47m.17s.
Tananarive PPPN = +25m.16s., PPSN = +34m.17s., eEN = +37m.31s.
Johannesburg $iPKP_2N$ = +20m.17s., $ePKP_2E$ = +20m.23s.
Cape Town N. +23m.41s., +28m.35s., +31m.41s., +35m.5s., and +56m.55s.
Long waves were also recorded at Semipalatinsk and Sverdlovsk.

Aug. 22d. Readings also at 0h. (Ksara and Granada), 2h. (near Granada, Almeria, San Fernando, and Toledo), 3h. (near Tchimkent, Andijan, and Samarkand), 4h. (Aberdeen), 6h. (Haiwee, Mount Wilson, Tinemaha, Pasadena, Riverside, Tucson, and La Paz), 9h. (near Mizusawa), 11h. (Huancayo, San Juan, Palomar, Balboa Heights, Mount Wilson, Tinemaha, Riverside, Pasadena, and Tucson), 13h. (Tucson, Tinemaha, Pasadena, Mount Wilson, and Palomar), 14h. (Balboa Heights), 20h. (near St. Louis and Florissant), 21h. (New Plymouth, Christchurch, Wellington, and La Paz), 23h. (Colombo and Granada).

Aug. 23d. 5h. 11m. 5s. Epicentre 41°·0N. 38°·0E. (as given by stations of U.S.S.R.).

A = +·5964, B = +·4660, C = +·6535; δ = −9; h = −2;
D = +·616, E = −·788; G = +·515, H = +·402, K = −·757.

	Δ	Az.	P.	O−C.	S.	O−C.		L.
	°	°	m. s.	s.	m. s.	s.		m.
Sotchi	2·9	26	0 55	P*	e 1 39	S_g		—
Piatigorsk	4·8	49	e 1 9	− 6	—	—		—
Grozny	6·3	65	1 39	+ 3	2 51	+ 1		—
Ksara	7·4	195	e 2 29	P_g	e 4 19	S_g		—
Baku	9·1	96	e 2 17	+ 3	e 4 21	SSS		5·1
Sverdlovsk	21·6	35	e 4 49	− 5	8 43	− 6		11·9

Aug. 23d. Readings also at 6h. (Almata and near Tchimkent), 8h. (Butte, La Paz, and Balboa Heights), 11h. (Granada, Kew, and Scoresby Sund), 13h. (Tucson) 15h. (near Berkeley), 17h. (near Berkeley and Balboa Heights), 18h. (La Paz), 20h. (Fresno and St. Louis), 21h. (Fresno), 23h. (near New Plymouth (2), Tuai, Wellington, and near Berkeley).

Aug. 24d. 7h. 53m. 18s. Epicentre 53°·1N. 151°·9W.

A = −·5319, B = −·2840, C = +·7977; δ = −10; h = −7;
D = −·471, E = +·882; G = −·704, H = −·376, K = −·603.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sitka		10·5	58	—	—	e 4 20	−15	—	—	e 5·6
College		12·0	9	e 2 55	0	e 5 11	0	—	—	e 5·9
Victoria		18·5	93	e 4 24	+ 5	—	—	—	—	8·7
Berkeley		25·5	115	—	—	e 12 0	SSS	—	—	e 13·5
Bozeman		27·3	89	—	—	e 10 20	− 7	e 11 18	SS	e 11·9
Tinemaha	z.	28·3	112	e 5 58	+ 1	—	—	—	—	—
Mount Wilson		30·5	115	i 6 17	0	—	—	—	—	—
Pasadena	z.	30·5	115	e 6 17	0	—	—	—	—	—
Riverside		31·1	115	e 6 21	− 1	—	—	—	—	—
Palomar	z.	31·8	115	i 6 28	0	—	—	—	—	—
Tucson		36·0	109	i 7 3	− 2	—	—	e 8 34	PP	—

Additional readings:—
Sitka e = +4m.40s.
Tucson iP_cP = +9m.29s.
Long waves were also recorded at Scoresby Sund, San Juan, Columbia, East Machias, Philadelphia, Granada, and Salt Lake City.

Aug. 24d. 13h. 31m. 3s. Epicentre 15°·6S. 173°·6W. (as on 1940 July 20d.).

$A = -·9576$, $B = -·1074$, $C = -·2673$; $\delta = -2$; $h = +6$;
$D = -·111$, $E = +·994$; $G = +·266$, $H = +·030$, $K = -·964$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		2·5	45	i 0 33k	−10	1 22?	S_g	0 51	P_g	—
Arapuni		24·3	201	—	—	e 10 15	SS	—	—	i 16·0
Wellington		27·5	200	—	—	e 10 17	−13	—	—	14·8
Christchurch		30·2	200	8 53	?	13 9	SSS	14 1	L_g	15·2
Sydney		36·5	235	e 8 33	PP	—	—	—	—	e 19·0
Riverview		36·5	235	e 8 45	PPP	e 15 53	SSS	—	—	e 19·7
Manila		71·3	293	i 11 26	+ 3	i 16 57	?	—	—	—
Santa Barbara		71·4	46	e 11 19	− 5	—	—	—	—	—
Santa Clara		71·6	42	e 11 30	+ 5	e 21 38	PPS	—	—	—
Berkeley		71·8	42	—	—	e 20 47	+ 1	—	—	e 29·0
Ukiah		72·0	40	—	—	e 20 45	− 4	e 21 17	S_eS	e 31·0
La Jolla		72·2	48	e 11 28	− 1	—	—	—	—	—
Pasadena		72·3	46	e 11 27k	− 2	e 20 48	− 4	—	—	e 32·2
Mount Wilson		72·4	46	e 11 26k	− 4	—	—	—	—	—
Palomar	z.	72·8	48	i 11 30k	− 2	—	—	—	—	—
Riverside		72·8	46	e 11 29	− 3	—	—	—	—	—
Haiwee		73·5	45	e 11 36	0	—	—	—	—	—
Tinemaha		73·9	44	i 11 36	− 3	—	—	—	—	—
Tucson		76·6	51	i 11 53	− 1	e 21 40	0	e 14 23	PP	—
Victoria		77·8	33	11 18	−43	21 11	−42	—	—	35·0
Salt Lake City		80·1	43	—	—	e 22 16	− 2	e 22 36	S_eS	e 36·7
College		82·6	11	—	—	e 22 34	− 9	e 30 34	SSS	e 34·0
Bozeman		83·1	39	e 12 34	+ 5	e 23 6	PS	e 15 15	PP	e 34·6
Florissant		94·5	52	e 13 32	+ 9	i 24 5	[+ 7]	e 17 8	PP	—
St. Louis		94·5	52	e 11 51	?	e 23 57	[− 1]	—	—	e 44·4
Huancayo		94·6	104	—	—	e 24 6	[+ 7]	e 24 58	S_eS	e 44·3
Ottawa		106·4	47	—	—	e 24 57?	[0]	e 33 57?	SS	42·0
Seven Falls		109·9	45	—	—	e 28 27	PS	—	—	53·0
Ksara		147·8	310	i 19 51a	[+ 7]	36 15	PPS	e 23 17	PP	76·4
Sofia		149·3	336	e 19 57?	[+11]	e 30 21	{+ 7}	—	—	—
Triest		149·4	351	i 20 8	[+22]	e 27 8	[+15]	e 23 6	PP	—
Clermont-Ferrand		149·8	5	e 19 50	[+ 3]	—	—	—	—	—
Helwan		153·0	307	i 20 3	[+11]	i 33 59	?	i 23 47	PP	—
Granada		156·7	21	23 2	?	(31 36)	{+41}	27 38	PPP	e 80·0

Additional readings :—
Apia P*E = +42s., SEN = +1m.26s.
Arapuni S? = +11m.51s.
Wellington S = +12m.57s.
Berkeley iSE = +21m.3s.
Ukiah eSS = +24m.58s.
Tucson iS_eS = +22m.13s., eSS = +25m.37s.
Salt Lake City eSS = +27m.22s., eSSS = +30m.44s.
Bozeman iS_eS = +22m.44s., eSS = +28m.14s., eSSS = +31m.36s.
Florissant eSN = +24m.38s.
St. Louis eE = +23m.51s., iE = +24m.0s., eN = +24m.3s.
Huancayo i = +24m.16s., iS = +24m.51s., ePS = +26m.1s., ePSPS = +32m.0s.
Triest iPKP_2N = +20m.14s., iSKKSN = +30m.15s.
Clermont-Ferrand iPKP_2 = +19m.55s.
Helwan iEZ = +20m.13s.
Granada SKS = +29m.47s., SKKS given as PPP, ePPS = +40m.46s., eSS = +48m.32s., SSS = +54m.5s.
Long waves were also recorded at Warsaw, De Bilt, Harvard, Sitka, La Paz, Philadelphia, Honolulu, East Machias, Potsdam, and Kew.

Aug. 24d. Readings also at 0h. (near Triest), 1h. (Ksara), 7h. (Riverside, Tinemaha, Mount Wilson, Pasadena, Palomar, and Tucson), 8h. (Sitka), 11h. (near Balboa Heights), 13h. (Tinemaha, Mount Wilson, Pasadena, Palomar, and Tucson), 15h. (near San Francisco), 17h. (near Tuai, near Andijan, Frunse, Almata, and Tchimkent), 19h. (Bucharest, Helwan, Sofia, and Ksara), 20h. (near Triest), 21h. (near Harvard and Ksara), 23h. (near Lick and Berkeley).

Aug. 25d. 10h. 31m. 45s. Epicentre 36°·0N. 140°·1E. (as on 1938 Jan. 23d.).

Strong at Kakioka; rather strong at Tukubasan, Yokohama, and Shirakawa; moderate at Tokyo, Utunomiya, Kumagaya, Mito, Hunatu, Ito, Oiwake, Osima, and Takeyama; slight at Maebasi, Tyosi, Misima, Kohu, Onahama, Takada, Hukusima, Katuura, and Karuizawa.

Epicentre 36°·0N. 140°·1E. Macroseismic radius 200-300kms. Depth 60kms. approx.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1940, Tokyo, 1950, pp. 27-28. Macroseismic chart p. 27.

The position 35°·8N. 140°·1E. of 1937 June 26d. would be more in accord with the observations.

$$A = -\cdot6221,\ B = +\cdot5202,\ C = +\cdot5852\ ; \qquad \delta = +8\ ; \qquad h = 0\ ;$$
$$D = +\cdot641,\ E = +\cdot767\ ; \qquad G = -\cdot449,\ H = +\cdot375,\ K = -\cdot811.$$

Tables for depth of focus 0·005 have been used.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kakioka	0·2	16	0 14a	+ 3	0 22	+ 3	—	—	—
Tukubasan	0·2	0	0 13a	+ 2	0 22	+ 3	—	—	—
Tokyo Imp. Univ.	0·4	222	0 15	+ 3	0 25	+ 3	—	—	—
Tokyo Cen. Met. Ob.	0·4	222	0 15	+ 3	0 24	+ 2	—	—	—
Komaba	0·5	224	0 15	+ 2	0 25	+ 2	—	—	—
Mito	0·5	38	0 18a	+ 5	0 30	+ 7	—	—	—
Togane	0·5	153	0 13	0	0 22	− 1	—	—	—
Kumagaya	0·6	285	0 17	+ 3	0 28	+ 3	—	—	—
Mitaka	0·6	233	0 13	− 1	0 24	− 1	—	—	—
Utunomiya	0·6	341	0 17	+ 3	0 28	+ 3	—	—	—
Tyosi	0·7	113	0 19k	+ 4	0 32	+ 5	—	—	—
Yokohama	0·7	213	0 14k	− 1	0 27	0	—	—	—
Kamakura	0·8	213	0 13	− 4	0 27	− 2	—	—	—
Kiyosumi	0·8	175	0 13	− 4	0 21	− 8	—	—	—
Titibu	0·8	269	0 13	− 4	0 26	− 3	—	—	—
Maebasi	0·9	296	0 17	− 1	0 29	− 2	—	—	—
Koyama	1·1	234	0 13	− 7	0 26	−10	—	—	—
Mera	1·1	191	0 19k	− 1	0 35	− 1	—	—	—
Onahama	1·1	35	0 27k	+ 7	0 44	+ 8	—	—	—
Hunatu	1·2	245	0 19	− 3	0 32	− 5	—	—	—
Misima	1·3	227	0 21k	− 2	0 36	− 4	—	—	—
Kohu	1·3	254	0 21k	− 2	0 37	− 3	—	—	—
Osima	1·4	205	0 22k	− 2	0 37	− 6	—	—	—
Nagano	1·7	294	0 27a	− 1	0 51	+ 1	—	—	—
Hukusima	1·8	10	0 34k	+ 4	0 57	+ 5	—	—	—
Omaesaki	2·1	228	0 34	0	1 8	+ 9	—	—	—
Hamamatu	2·3	237	0 35	− 2	1 5	+ 1	—	—	—
Sendai	2·3	16	0 41	+ 4	1 12	+ 8	—	—	—
Aikawa	2·4	324	0 40a	+ 2	1 6	− 1	—	—	—
Toyama	2·4	286	0 37	− 1	0 50	−17	—	—	—
Hatidyozima	2·6	184	0 43	+ 2	1 15	+ 3	—	—	—
Nagoya	2·7	252	0 39	− 3	1 26	+12	—	—	—
Gihu	2·8	258	0 38a	− 6	1 16	− 1	1 2	?	—
Hikone	2·9	257	0 47a	+ 2	1 16	− 3	—	—	—
Wazima	2·9	298	0 43	− 2	1 27	+ 8	—	—	—
Kameyama	3·2	249	0 46a	− 3	1 37	+10	—	—	—
Mizusawa	3·2	15	0 53	+ 4	1 33	+ 6	—	—	—
Akita	3·7	359	1 3a	+ 7	1 49	+10	—	—	—
Kyoto	3·7	255	0 54	− 2	1 47	+ 8	—	—	—
Osaka	4·0	252	e 0 48	−13	1 38	− 9	—	—	—
Kobe	4·2	254	1 16	+13	1 59	+ 7	2 2	sS	—
Toyooka	4·3	266	1 1	− 4	2 6	+12	—	—	—
Wakayama	4·4	248	1 3k	− 3	1 58	+ 1	—	—	—
Sumoto	4·6	251	1 24	+15	2 13	+11	—	—	—
Hatinohe	4·7	14	1 12	+ 2	2 7	+ 3	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Aomori		4·8	6	1 9	− 3	2 39	sS	—	—	—
Koti		5·9	248	1 55	pP	—	—	—	—	—
Mori		6·1	3	1 36	+ 6	2 48	+ 9	—	—	—
Matuyama		6·4	252	1 32	− 2	3 3	+17	—	—	—
Sapporo		7·1	6	1 35	− 9	—	—	—	—	—
Izuka		8·1	256	1 33	−24	—	—	—	—	—
Nemuro		8·4	26	2 21	pP	3 38	+ 2	—	—	—
Vladivostok		9·5	322	e 2 8	− 9	i 4 9	+ 6	—	—	4·9
Sverdlovsk		55·2	319	e 8 24	−64	—	—	—	—	27·2
Pasadena	z.	79·0	56	i 12 0	+ 1	—	—	—	—	—
Mount Wilson	z.	79·1	56	i 12 2	+ 3	—	—	—	—	—
Riverside	z.	79·7	56	i 12 3	+ 1	—	—	—	—	—
Palomar	z.	80·4	57	e 12 6	0	—	—	—	—	—
Tucson		85·1	53	i 12 31	+ 1	—	—	i 18 13	PPP	—

Aug. 25d. Readings also at 0h. (near Granada, Toledo, Almeria, and Balboa Heights), 1h. (Tucson (2), Palomar, Riverside, Mount Wilson, La Jolla, and Pasadena), 2h. (Bucharest), 8h. (Tucson), 13h. (Ksara), 14h. (Ksara and Granada), 15h. (Ksara and Granada), 21h. (Pennsylvania).

Aug. 26d. 2h. 27m. 53s. Epicentre 12°·2S. 75°·3W. (as on 1939 April 25d.).

$A = +\cdot2481$, $B = -\cdot9457$, $C = -\cdot2100$; $\delta = 0$; $h = +6$;
$D = -\cdot967$, $E = -\cdot254$; $G = -\cdot053$, $H = +\cdot203$, $K = -\cdot978$.

Pasadena suggests depth 120kms.

Tables for focal depth 0·005 have been used as for the earlier shock from this epicentre.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		0·2	346	i 0 23	+12	i 0 38	+19	—	—	i 2·0
La Paz	z.	8·1	123	i 1 43a	−14	i 2 53	−35	—	—	i 3·9
San Juan		31·7	16	e 7 13	PP	i 11 27	+ 4	—	—	e 13·8
St. Louis		52·5	346	e 9 8	− 1	e 16 27	− 2	—	—	—
Florissant		52·7	346	e 9 10	0	e 16 36	+ 5	i 9 35	pP	—
Harvard	z.	54·5	4	i 9 24	+ 1	—	—	—	—	—
Tucson		55·7	324	i 9 34	+ 1	e 16 57	−16	e 9 56	pP	—
Ottawa		57·3	0	e 9 44	0	e 17 43	+10	—	—	26·1
La Jolla		60·1	320	e 10 5	+ 2	—	—	e 10 43	?	—
Riverside		60·9	321	i 10 10k	+ 2	—	—	—	—	—
Mount Wilson		61·5	321	i 10 14k	+ 2	—	—	—	—	—
Pasadena		61·5	321	i 10 13k	+ 1	—	—	—	—	—
Haiwee		62·7	323	e 10 21	+ 1	—	—	—	—	—
Santa Barbara	z.	62·7	320	e 10 22	+ 2	—	—	—	—	—
Tinemaha		63·5	323	i 10 28	+ 2	—	—	—	—	—
Lick		65·7	322	e 10 42	+ 2	—	—	—	—	—
Granada	E.	83·2	50	12 17	− 4	22 38	+ 4	17 15	PP	e 53·0
Toledo		83·8	47	i 12 22	− 2	e 22 44	+ 4	—	—	—
Rome	E.	96·4	48	—	—	e 23 23	[−30]	—	—	—

Additional readings :—
La Paz $iP_gZ = +2$m.13s., $iS_gZ = +3$m.31s.
St. Louis eE = +16m.33s. and +17m.16s., eN = +21m.49s.
Florissant isSE = +17m.21s.
Tucson isP = +10m.12s., i = +10m.19s., $eP_cP = +10$m.41s., ePP = +11m.32s., isPP = +12m.14s., ePPP = +12m.35s.
Riverside iZ = +10m.37s. and +10m.49s.
Mount Wilson iZ = +10m.40s. and +10m.53s.
Pasadena iZ = +10m.42s. and +10m.53s.
Santa Barbara eZ = +11m.0s.
Granada PPE = +13m.42s., SKSE = +19m.36s., SPE = +24m.8s., PPSE = +26m.13s., SSE = +28m.51s.
Rome eE = +23m.52s. and +24m.34s.
Long waves were also recorded at Balboa Heights and La Plata.

Aug. 26d. 5h. 0m. 46s. Epicentre 1°·5N. 90°·3W.

A = −·0052, B = −·9997, C = +·0260; δ = +10; h = +7;
D = −1·000, E = +·005; G = ·000, H = −·026, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Balboa Heights	N.	13·0	55	e 3 14	+ 5	e 6 2	SSS	—		—	7·7
Huancayo		20·1	134	i 4 35k	− 3	i 8 19	0	i 5 0	PP		i 9·1
La Paz	Z.	28·3	130	5 57	0	i 10 50	+ 7	—		—	14·0
San Juan		29·0	53	e 6 6	+ 2	i 10 59	+ 5	e 7 0	PP		e 11·8
Columbia		33·5	13	e 7 56	PP	e 12 7	+ 2	—		—	e 13·9
Tucson		36·2	330	i 7 4	− 2	e 12 37	−10	i 8 16	PP		e 14·7
St. Louis		37·0	0	e 7 14	+ 1	e 13 3	+ 4	e 8 25	PP		e 14·9
Florissant		37·1	0	e 7 12	− 2	e 13 4	+ 3	i 8 45	PPP		—
Bermuda		38·9	36	e 7 32	+ 3	e 13 22	− 6	e 9 9	PP		e 16·9
Lincoln		39·6	354	e 8 25	+50	i 13 41	+ 3	—		—	e 18·8
Chicago U.S.C.G.S.		40·2	2	e 7 40	0	e 13 40	− 8	—		—	e 16·6
La Jolla		40·2	324	e 7 37	− 3	—	—	—		—	—
Philadelphia		40·7	19	e 7 43	− 1	e 13 43	−12	—		—	e 17·0
Riverside	Z.	41·1	325	e 7 45	− 2	—	—	—		—	—
Mount Wilson		41·6	325	i 7 50	− 1	—	—	—		—	—
Pasadena		41·6	325	e 7 50	− 1	e 14 13	+ 5	—		—	e 20·5
Haiwee		42·9	327	e 8 2	0	—	—	—		—	—
Toronto		43·1	12	8 6	+ 2	14 40	+10	—		—	18·2
Salt Lake City		43·7	336	e 8 16	+ 8	e 14 41	+ 2	e 9 31	PcP		e 18·0
Tinemaha		43·8	327	e 8 9	0	—	—	—		—	—
Harvard		44·1	21	e 8 7	− 5	e 14 56	+11	—		—	e 22·2
Ottawa		45·6	15	8 22	− 2	15 16	+10	18 14	SS		22·2
Berkeley		46·6	325	e 8 30	− 2	e 15 8	−13	e 18 42	SS		e 23·0
Bozeman		47·6	341	e 8 45	+ 6	e 15 19	−16	e 18 21	ScS		e 19·1
East Machias		47·6	23	e 10 39	PP	e 15 38	+ 3	e 18 14	ScS		e 19·4
Ukiah		48·0	326	e 8 47	+ 4	e 15 49	+ 8	e 18 59	SS		e 19·3
Butte		48·4	341	e 8 50	+ 4	e 15 53	+ 7	e 9 51	PcP		e 20·4
Seven Falls		48·5	19	—	—	e 15 56	+ 8	—		—	24·2
Seattle		53·7	334	e 12 35	PPP	—	—	—		—	e 21·4
Victoria		54·8	334	9 37	+ 3	17 20	+ 6	—		—	24·2
Sitka		66·2	335	—	—	e 19 26	−14	e 22 42	SS		e 27·0
Granada	E.	86·2	54	14 43	?	i 23 31	+12	16 59	PP		41·6
Toledo		86·2	50	e 12 49	+ 5	e 23 31	+12	—		—	—
Uccle	E.	91·8	39	—	—	e 23 50	[+ 7]	e 25 28	PS		e 43·2
De Bilt	E.	92·2	37	—	—	e 30 39	SSP	e 34 14	SSS		e 43·7
Rome		98·5	47	—	—	e 23 48	[−32]	e 26 40	PS		e 51·8
Ksara		118·5	50	e 20 22	PP	e 30 12	PS	31 22	PPS		61·7

Additional readings :—
Huancayo i = +5m.59s., +7m.3s., and +8m.23s.
La Paz iPZ = +6m.1s.
San Juan ePcP = +8m.30s., i = +11m.22s.
Columbia e = +12m.19s.
Tucson i = +7m.7s., ePPP = +8m.44s., ePcP = +9m.20s., i = +12m.55s.
St. Louis eN = +13m.6s. and +13m.10s.
Florissant iSE = +13m.8s., eN = +13m.11s., iSSSE = +15m.53s.
Bermuda e = +7m.56s., ePcP = +9m.22s., e = +13m.59s.
Chicago U.S.C.G.S. e = +13m.53s.
Philadelphia e = +13m.51s.
Berkeley eSZ = +15m.27s.
Bozeman e = +15m.39s.
East Machias i = +15m.44s.
Butte eSS = +18m.54s.
Sitka i = +19m.44s.
Granada PPPE = +18m.55s., PSE = +24m.27s., ePPSE = +24m.52s., eSSE = +28m.46s., SSSE = +31m.27s.
Uccle eE = +29m.12s., eSSE = +33m.44s.
Rome eE = +25m.57s., eN = +31m.46s. and +41m.27s.
Long waves were also recorded at Clermont-Ferrand, La Plata, Potsdam, Warsaw, Hamburg, College, Honolulu, Kew, Ivigtut, and Scoresby Sund.

Aug. 26d. Readings also at 0h. (Tucson, Mount Wilson, Pasadena, and Tinemaha), 1h. (Balboa Heights), 4h. (near Sverdlovsk, Samarkand, Tashkent, near Almata, Andijan, and Frunse), 5h. (Christchurch), 6h. (Neuchatel), 7h. (Potsdam, Stuttgart, Clermont-Ferrand, and Zurich), 11h. (Ksara), 15h. (Tananarive), 17h. (Lick, Sitka, near Fresno, and near Mizusawa), 18h. (Rome, Stuttgart, and near Triest), 19h. (Ksara), 22h. (Fresno).

Aug. 27d. 23h. Undetermined shock. Epicentre Central Africa.

Ksara e =5m.40s., 7m.14s., and 13m.22s.
Baku eP =6m.57s., eS =13m.48s., L =24m.
Rome PEN =7m.10s., eN =7m.14s., eSE =14m.20s., eN =17m.52s., eLN =22·4m.
Triest ePN =7m.36s., eSE =15m.4s.
Granada iPZ =7m.45s.k, iSZ =13m.58s., SSE =15m.34s., L =24·2m.
Uccle ePZ =8m.30s., eE =16m.39s., eL =31·0m.
Sverdlovsk eP =8m.52s., L =25m.
Helwan ePE =13m.20s., PPPE =13m.36s., SE =16m.25s., SSE =17m.0s., P_cPE = 18m.19s.
Cape Town P =14m.7s., S =15m.19s.
Zurich eP =17m.55s.
Potsdam eE =31m.0s., eLN =36·8m.
Long waves were also recorded at La Paz, Tashkent, De Bilt, and Kew.

Aug. 27d. Readings also at 0h. (Ksara, Rome, and Warsaw), 6h. (Apia), 7h. (Tucson, Tinemaha, Riverside, Haiwee, Pasadena, and Mount Wilson), 9h. (Tucson), 13h. (near Berkeley), 14h. (near Mizusawa and Upsala), 22h. (near Mizusawa), 23h. (Granada, San Fernando, Almeria, Toledo, and Johannesburg).

Aug. 28d. 12h. Undetermined shock. Epicentre near Apia.

Apia eP =30m.26s., eS =31m.58s.
Mount Wilson iP =40m.12s.k, ipPZ =41m.1s.
Riverside iP =40m.13s.k.
Palomar iPZ =40m.14s.k, ipPZ =41m.4s.
Haiwee iP =40m.18s.
Tinemaha iPZ =40m.21s., ipPZ =41m.10s.
Pasadena iP =40m.11s.k, epPZ =40m.58s.
Tucson iP =40m.34s., iP_cP =40m.45s., ipP =41m.24s., iPKP,PKP =67m.4s.
Santa Barbara iZ =40m.38s.
Copenhagen iP =47m.46s., i =48m.39s.
Potsdam iPZ =47m.54s., eE =48m.0s., eN =48m.16s.
Jena eP =47m.55s., i =48m.1s., iN =48m.8s.
Ksara iPKP =47m.58s.k, pPKP =48m.54s., sPKP =49m.23s., PP =51m.31s.
Stuttgart ePZ =47m.58s.k, eZ =48m.5s., iZ =48m.16s.
Basle eP =48m.0s.
Chur eP =48m.0s., i =48m.24s.
Triest iPN =48m.0s., e =56m.25s.
Uccle iPZ =48m.1s.k, i =48m.9s.
Clermont-Ferrand ePKP =48m.3s.
Zurich eP =48m.7s.
Rome iPZ =48m.36s.

Aug. 28d. 15h. 15m. 37s. Epicentre 25°·0N. 142°·0E.

A = −·7150, B = +·5587, C = +·4203; δ = +2; h = +3;
D = +·616, E = +·788; G = −·331, H = +·259, K = −·907.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Mizusawa		14·1	358	e 3 25	+ 2	4 49	?	—
Tashkent		61·3	306	—	—	e 18 53	+14	e 29·9
Baku		75·8	309	e 11 59	+ 9	e 21 51	+20	37·8
Tinemaha	z.	82·6	54	e 12 17	− 9	—	—	—
Pasadena	z.	83·9	56	e 12 32	− 1	—	—	—
Mount Wilson		84·0	56	i 12 33	0	—	—	—
Riverside		84·6	56	e 12 36	0	—	—	—
Palomar	z.	85·2	56	e 12 39	0	—	—	—
Ksara		88·7	307	e 13 37	+40	e 23 53	+10	46·4
Tucson		90·2	55	i 13 8	+ 4	—	—	—
Uccle		95·8	335	e 13 59	+30	—	—	e 38·4
Rome	z.	98·7	324	e 13 49	+ 7	—	—	—

Tucson also gives i = +13m.18s.
Long waves were also recorded at Scoresby Sund, Kew, Potsdam, De Bilt, Sverdlovsk, and Irkusk.

Aug. 28d. 20h. 7m. 28s. Epicentre 40°·8N. 71°·8E. (as on 1937 April 30d.).

$A = +·2371$, $B = +·7212$, $C = +·6509$; $\delta = +2$; $h = -2$;
$D = +·950$, $E = -·312$; $G = +·203$, $H = +·618$, $K = -·759$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Andijan	0·4	96	0 29	+16	i 0 44	+23	—
Tashkent	2·0	285	i 0 34	− 1	i 0 52	−10	1·0
Tchimkent	2·3	312	i 0 40	0	1 6	− 3	—
Frunse	3·0	45	2 9	?	2 45	?	—
Samarkand	3·9	255	i 1 2	0	e 2 2	S*	—
Almata	4·6	55	1 43	P_g	2 30	S_g	—

Additional readings :—
Frunse S* = +2m.54s.
Almata S_g = +2m.51s.
Long waves were also recorded at Potsdam and Sverdlovsk.

Aug. 28d. Readings also at 1h. (Christchurch and Wellington), 4h. (La Plata, Huancayo, near La Paz, and near Fresno), 11h. (Hamburg), 12h. (Fresno), 13h. (Mount Wilson, Riverside, Palomar, Tinemaha, Pasadena, and Tucson), 16h. (Tucson), 18h. (near Apia), 19h. (near Tananarive), 20h. (near Andijan, Almata, Tchimkent, and near San Juan), 23h. (Algiers).

Aug. 29d. 8h. 3m. 11s. Epicentre 34°·9N. 90°·8E.

$A = -·0115$, $B = +·8219$, $C = +·5696$; $\delta = +10$; $h = 0$;
$D = +1·000$, $E = +·014$; $G = -·008$, $H = +·570$, $K = -·822$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dehra Dun	N.	11·7	250	e 2 26	−25	e 4 38	−26	—	—	e 6·0
Calcutta	E.	12·5	190	e 2 59	− 3	i 5 29	+ 6	—	—	i 6·5
Agra	E.	13·4	238	3 11	− 3	e 5 40	− 5	—	—	—
Almata		13·6	312	3 18	+ 1	—	—	—	—	8·0
Andijan		15·7	297	e 3 50	+ 6	e 6 57	SS	—	—	9·2
Semipalatinsk		17·3	337	e 4 4	0	7 24	+ 8	—	—	9·8
Tashkent		18·1	298	i 4 13	− 1	e 7 40	+ 5	—	—	10·1
Tchimkent		18·1	302	e 4 19	+ 5	—	—	—	—	—
Samarkand		19·5	292	e 4 30	− 1	8 10	+ 4	—	—	12·8
Phu-Lien		19·8	132	e 4 34	− 1	e 8 18	+ 5	—	—	—
Irkutsk		19·9	25	4 36	0	8 24	+ 9	—	—	10·6
Hyderabad		20·6	216	e 4 42	− 1	8 36	+ 7	—	—	—
Bombay		22·6	230	e 5 4	+ 1	i 9 12	+ 5	i 9 52	SSS	12·0
Kodaikanal	E.	27·4	211	e 5 49?	0	10 52	+24	—	—	12·8
Colombo	E.	29·6	203	e 8 19	PPP	—	—	—	—	—
Sverdlovsk		30·0	327	i 6 11	− 1	—	—	—	—	15·8
Baku		32·5	293	e 6 41	+ 7	—	—	—	—	18·2
Vladivostok		32·7	64	6 36	0	12 0	+ 8	—	—	17·9
Sotchi		40·0	299	e 7 33	− 5	—	—	—	—	—
Moscow		41·6	319	7 52	+ 1	e 14 13	+ 5	—	—	21·8
Ksara		44·9	285	i 8 19a	+ 1	e 15 34	+38	e 10 8	PP	—
Pulkovo		45·9	323	e 8 26	0	15 14	+ 3	—	—	25·0
Helwan	E.	49·8	282	8 58	+ 2	16 25	+19	10 55	PP	—
Warsaw		51·4	313	e 9 7	− 2	e 16 32	+ 4	e 20 29	SSS	e 25·8
Upsala		52·3	323	—	—	e 23 1	?	—	—	e 27·9
Prague		55·9	312	e 22 27?	?	e 26 42?	?	—	—	e 30·3
Hamburg	E.	57·6	317	—	—	e 20 13	?	—	—	e 30·3
Triest		57·6	307	(e 9 53)	− 1	(i 18 0)	+ 9	(e 12 7)	PP	(e 27·9)
Stuttgart		59·6	312	e 10 3	− 5	e 17 9	−68	e 22 9	SS	—
Rome		59·8	303	e 10 8	− 1	e 18 21	+ 1	—	—	e 30·8
Scoresby Sund		64·6	342	—	—	e 26 32	SSS	—	—	—
Granada		73·0	304	e 16 13	PPP	—	—	—	—	—

For Notes see next page.

NOTES TO AUGUST 29d. 8h. 3m. 11s.

Additional readings :—
Bombay e = +6m.6s., iE = +9m.20s.
Ksara ePS = +16m.9s.
Warsaw eE = +20m.34s.
Upsala eN = +24m.43s.
Triest ePPP =(+13m.11s.), eSS =(+22m.2s.), eSSS =(+23m.58s.); all readings have been increased by 2 minutes.
Long waves were also recorded at Kew, Uccle, De Bilt, Bergen, and Frunse.

Aug. 29d. Readings also at 1h. (Berkeley), 2h. (Bucharest, Zurich, Potsdam, Rome, Uccle, Triest, Stuttgart, and Warsaw), 5h. (Tucson, Palomar, and Mount Wilson), 7h. (Warsaw), 10h. (Tucson), 14h. (Sydney, New Plymouth, Tuai, Christchurch, Wellington, Brisbane, Riverview, Huancayo, and La Paz), 15h. (Tinemaha, Riverside, Huancayo, Pasadena, Ksara, Tucson, Palomar, and Mount Wilson), 16h. (Kew), 22h. (Scoresby Sund and La Paz), 23h. (near Branner and Balboa Heights).

Aug. 30d. 12h. 30m. 40s. Epicentre 44°·8N. 79°·6E.

A = +·1285, B = +·7002, C = +·7023 ; δ = +2 ; h = −3 ;
D = +·984, E = −·181 ; G = +·127, H = +·691, K = −·712.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Almata		2·4	231	i 0 38	− 3	1 6	− 6	(0 47)	P_g	—
Frunse		4·1	243	i 1 5	0	i 2 8	S*	—	—	—
Semipalatinsk		5·6	5	i 1 29	+ 2	i 2 54	S*	—	—	—
Andijan		6·7	235	e 1 44	+ 2	2 52	− 8	—	—	—
Tashkent		8·3	249	e 2 4	0	e 3 36	− 4	—	—	—
Samarkand		10·6	246	e 2 36	0	i 5 35	S_gS_g	—	—	—
Sverdlovsk		16·9	322	3 54	− 5	e 7 14	+ 7	—	—	8·8
Irkutsk		17·9	57	4 13	+ 1	7 40	+10	—	—	9·4
Calcutta	N.	23·3	159	—	—	i 9 34	SS	—	—	—
Grozny		24·3	279	5 24	+ 4	9 44	+ 7	—	—	—
Piatigorsk		26·0	283	5 44	+ 8	10 20	+14	—	—	—
Moscow		28·6	309	e 5 59	− 1	e 10 57	+ 9	—	—	—
Pulkovo		32·8	316	e 6 40	+ 3	13 56	SS	—	—	16·8
Kodaikanal	E.	34·5	184	—	—	e 15 20?	SSS	—	—	—
Ksara		35·2	267	e 12 50	S	(e 12 50)	+19	—	—	(e 18·1)
Warsaw		38·5	304	—	—	e 15 20?	SS	—	—	e 20·5
Potsdam		43·2	306	—	—	e 17 38	SS	e 18 14	SSS	i 21·4
Hamburg		44·6	308	—	—	e 20 20?	?	—	—	e 23·8
Rome		47·6	292	e 8 33	− 6	e 14 57	−38	—	—	e 25·1
Kew		51·2	308	—	—	e 20 20?	SS	—	—	e 25·3

Additional readings :—
Almata P_g = +41s., P_g given as S.
Ksara L given as S.
Potsdam eN = +19m.44s.
Rome eE = +21m.2s.
Long waves were also recorded at Uccle, De Bilt, Stuttgart, Bergen, Upsala, Vladivostok, and Baku.

August 30d. 15h. 2m. 3s. Epicentre 44°·8N. 79°·6E. (as at 12h.).

$A = +\cdot1285$, $B = +\cdot7002$, $C = +\cdot7023$; $\delta = +2$; $h = -3$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Almata		2·4	231	i 0 38	− 3	1 7	− 5	—	—	—
Frunse		4·1	243	e 1 4	− 1	i 1 55	0	—	—	—
Semipalatinsk		5·6	5	i 1 29	+ 2	i 2 57	S*	—	—	—
Andijan		6·7	235	—	—	i 3 19	S*	—	—	—
Tashkent		8·3	249	e 2 4	0	—	—	—	—	4·1
Samarkand		10·6	246	2 35	− 1	i 5 34	S_eS_g	—	—	—
Dehra Dun	N.	14·5	185	e 2 51	−37	e 5 16	−55	—	—	e 7·0
Sverdlovsk		16·9	322	3 55	− 4	7 14	+ 7	—	—	8·8
Agra	E.	17·7	185	e 4 8	− 2	7 24	− 2	—	—	—
Irkutsk		17·9	57	e 4 13	+ 1	7 41	+11	—	—	9·6
Calcutta	N.	23·3	159	i 5 24k	+14	i 9 35	+15	e 9 13	P_eP	e 12·5
Grozny		24·3	279	5 28	+ 8	—	—	—	—	—
Piatigorsk		26·0	283	5 37	+ 1	10 11	+ 5	—	—	—
Bombay		26·4	195	i 5 44	+ 4	i 10 20	+ 8	i 11 45	SSS	i 13·7
Moscow		28·6	309	—	—	10 55	+ 7	—	—	—
Pulkovo		32·8	316	—	—	e 12 8	+14	—	—	16·2
Kodaikanal	E.	34·5	184	e 4 47?	?	—	—	—	—	—
Ksara		35·2	267	e 9 12	?	e 15 23	SSS	—	—	—
Colombo	E.	37·8	180	—	—	e 17 27	?	—	—	—
Warsaw		38·5	304	—	—	e 12 57?	−25	e 16 6	SS	e 20·4
Upsala		39·2	316	—	—	e 18 2	?	—	—	e 20·5
Copenhagen		42·7	311	e 8 1	+ 1	—	—	—	—	—
Potsdam		43·2	306	—	—	e 17 38	SS	—	—	e 19·0
Hamburg		44·6	308	—	—	e 18 57?	SSS	—	—	21·3
Bergen		45·1	318	—	—	e 19 57?	?	—	—	e 23·0
Heligoland	N.	45·6	310	—	—	e 20 39	?	—	—	—
Stuttgart		46·8	302	i 8 37k	+ 4	—	—	—	—	e 24·8
Rome		47·6	292	i 8 32	− 7	e 15 49	+14	—	—	e 25·0
De Bilt		47·9	308	—	—	e 19 37	SSS	—	—	e 25·4
Kew		51·2	308	—	—	e 18 57?	?	—	—	—
Stonyhurst		51·4	312	e 12 57?	PPP	—	—	—	—	—
Clermont-Ferrand		51·8	300	e 10 15	+63	—	—	—	—	e 27·0
Scoresby Sund		52·2	337	—	—	e 21 29	SSS	—	—	—

Additional readings :—
Almata $P_e = +41$s., S = +55s.
Calcutta eSSN = +10m.18s.
Upsala eN = +18m.16s.
Potsdam eE = +17m.45s.
Long waves were also recorded at Aberdeen, Triest, Tucson, Baku, Vladivostok, and Uccle.

Aug. 30d. 16h. 50m. 29s. Epicentre 44°·8N. 79°·6E. (as at 15h.).

$A = +\cdot1285$, $B = +\cdot7002$, $C = +\cdot7023$; $\delta = +2$; $h = -3$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Almata	2·4	231	i 0 38	− 3	1 7	− 5	0 42	P*	—
Frunse	4·1	243	i 1 3	− 2	i 2 6	S*	—	—	—
Semipalatinsk	5·6	5	1 27	0	i 2 52	S*	—	—	—
Andijan	6·7	235	e 1 48	+ 6	i 3 35	S_g	—	—	—
Tashkent	8·3	249	e 2 28	P_g	e 4 0	S*	—	—	—
Samarkand	10·6	246	e 2 38	+ 2	—	—	—	—	—
Sverdlovsk	16·9	322	e 4 1	+ 2	e 7 19	+12	—	—	8·9
Irkutsk	17·9	57	—	—	e 7 39	+ 9	—	—	9·6

Almata also gives S* = +1m.3s.
Long waves were also recorded at De Bilt, Bergen, Hamburg, Potsdam, Upsala, Warsaw, Baku, and Kew.

Aug. 30d. Readings also at 4h. (Rome), 7h. (Tucson), 11h. (near Triest, near Rome, and La Paz), 16h. (near Tucson), 18h. (Tucson, Haiwee, Palomar, near Mizusawa, Tinemaha, Pasadena, and Mount Wilson), 21h. (Kew, Uccle, Tucson, Warsaw, Upsala, Potsdam, Hamburg, De Bilt, Scoresby Sund, Rome, Ksara, Tinemaha, Pasadena, and Mount Wilson), 22h. (Columbia).

Aug. 31d. 1h. 31m. 30s. Epicentre 42°·8N. 17°·9E. (as on 1939 Feb. 2d.).

Intensity VI at Mostar. Radius of macroseismic area = 48kms. Intensity V at Dubrovnik (42°38′N. 18°07′E.).

J. Mihailovic.

Epicentres des tremblements de terre en Yougoslavie, 1940, publ. in manuscript.

$A = +·7004$, $B = +·2262$, $C = +·6770$; $\delta = +6$; $h = -3$;
$D = +·307$, $E = -·952$; $G = +·644$, $H = +·208$, $K = -·736$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	4·0	89	e 1 0	− 4	—	—	—	—	—
Rome	4·1	259	e 0 58	− 7	e 1 56	+ 1	—	—	i 2·6
Triest	4·1	316	i 1 9	+ 4	1 1 44	−11	i 1 13	P_g	i 2·1
Chur	7·2	307	e 1 51	+ 2	e 3 14	+ 1	—	—	—
Zurich	8·0	308	e 2 6	+ 6	e 3 37	+ 4	—	—	—
Stuttgart	8·5	316	e 2 3	− 4	—	—	—	—	i 4·7
Neuchatel	8·8	302	e 2 11	0	—	—	—	—	e 4·9
Jena	9·2	334	e 3 42	?	e 4 6	+ 3	—	—	e 5·1
Warsaw	9·7	12	—	—	—	—	e 4 57	S_g	e 5·5
Clermont-Ferrand	11·1	291	—	—	4 41	− 8	—	—	—

Additional readings :—
Rome eZ = +1m.6s., eN = +1m.35s., eZ = +2m.9s., iS_gN = +2m.25s.
Triest iN = +1m.47s., iS_g = +1m.58s.
Stuttgart eZ = +2m.14s. and +2m.43s., eNW = +3m.29s.
Long waves were also recorded at Potsdam and Uccle.

Aug. 31d. 17h. 12m. 19s. Epicentre 12°·4S. 68°·7W.

$A = +·3549$, $B = -·9102$, $C = -·2134$; $\delta = -4$; $h = +6$;
$D = -·932$, $E = -·363$; $G = -·078$, $H = +·199$, $K = -·977$

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz	z.	4·1	172	i 1 6k	+ 1	i 1 42	−13	—	—	i 1·8
Huancayo		6·5	273	i 1 39	0	i 2 53	− 2	—	—	i 3·7
La Plata		24·4	158	i 5 1	−20	—	—	—	—	—
San Juan		30·7	6	—	—	e 13 11	SS	—	—	—
Tucson		60·0	319	i 10 11	0	—	—	e 10 30	pP	—
Palomar	z.	64·6	316	i 10 41	0	—	—	—	—	—
Riverside	z.	65·3	316	i 10 46	0	—	—	—	—	—
Mount Wilson	z.	65·9	316	i 10 50	0	—	—	—	—	—
Pasadena		66·0	316	i 10 49	− 1	—	—	—	—	—
Haiwee	z.	67·0	318	i 10 57	0	—	—	—	—	—
Tinemaha	z.	67·8	319	i 11 2	0	—	—	—	—	—
Ksara		108·8	58	e 20 4	?	e 28 48	PS	—	—	—

Additional readings :—
Huancayo i = +2m.37s., +3m.6s., and +3m.27s.
Tucson iP_cP = +10m.53s.
Mount Wilson iZ = +11m.41s.
Haiwee eZ = +11m.21s.
Tinemaha iZ = +11m.27s., eZ = +11m.49s.
Long waves were recorded at Balboa Heights.

Aug. 31d. Readings also at 0h. (Clermont-Ferrand, Calcutta, Tashkent, Sverdlovsk, Vladivostok, and Zi-ka-wei), 1h. (Warsaw, Hamburg, De Bilt, Uccle, Kew, Potsdam, Clermont-Ferrand, and Rome), 5h., 6h., 11h., and 12h. (Tucson), 15h. (De Bilt, Kew, and Potsdam), 16h. (Tucson, Palomar, Pasadena, Riverside, Tinemaha, and near La Paz), 19h. (Huancayo, Pasadena, Riverside, Mount Wilson, and Tucson), 21h. (Samarkand), 23h. (near Branner).

Sept. 1d. 8h. 13m. 45s. Epicentre 9·5N. 126°·7E. (as on 1939, March 29d.).

$A = -·5895$, $B = +·7909$, $C = +·1640$; $\delta = -7$; $h = +7$;
$D = +·802$, $E = +·598$; $G = -·098$, $H = +·131$, $K = -·986$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		7·5	313	i 1 57	+ 4	3 25	+ 5	—	—	—
Phu-Lien		22·4	304	e 4 59	− 3	e 9 2	− 2	—	—	—
Mizusawa	E.	32·2	22	(e 6 40)	+ 8	e 6 40	P	—	—	—
Vladivostok		33·8	9	i 6 47	+ 1	e 14 17	SSS	—	—	17·2
Agra	E.	49·1	299	e 10 40	PP	—	—	—	—	—
Bombay	E.	52·9	287	e 9 33	+13	—	—	e 11 33	PP	e 28·3
Almata		54·7	318	e 9 32	− 1	—	—	—	—	—
Andijan		57·1	313	e 9 49	− 1	e 17 38	− 7	—	—	—
Tashkent		59·5	314	10 6	− 1	e 18 8	− 8	—	—	e 30·2
Sverdlovsk		69·1	329	i 11 7	− 3	20 6	− 9	—	—	30·2
Ksara		85·5	303	i 12 40	− 1	e 23 30	+18	e 24 24	PS	—

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

September 1d. 18h. 46m. 31s. Epicentre 36°·6N. 68°·7E. (As given by stations of U.S.S.R.).

$A = +·2923$, $B = +·7497$, $C = +·5936$; $\delta = -15$; $h = 0$;
$D = +·932$, $E = -·363$; $G = +·215$, $H = +·553$, $K = -·805$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Samarkand		3·4	337	0 55	0	1 31	− 6	1 9	P_g	—
Tashkent		4·8	6	e 1 16	+ 1	—	—	—	—	e 3·1
Andijan		5·0	33	1 17	− 1	2 17	− 1	e 1 30	P*	—
Tchimkent		5·8	7	1 26	− 3	2 32	− 6	e 1 54	P_g	—
Frunse		7·8	35	e 1 53	− 5	3 27	− 1	4 13	S_g	—
Almata		9·2	41	2 17	+ 1	5 8	S_g	—	—	—
Dehra Dun	N.	10·0	126	e 4 32	S*	—	—	e 5 52	S_g	e 7·0
Agra	E.	12·3	137	—	—	e 4 51	−27	—	—	e 8·6
Baku		15·2	290	4 36	+58	9 12	L	—	—	(9·2)
Semipalatinsk		16·1	27	3 48	− 1	—	—	—	—	—
Sverdlovsk		21·0	348	4 50	+ 3	—	—	—	—	11·7
Calcutta	N.	22·1	124	e 4 24	−35	1 8 51	− 7	—	—	—
Ksara		26·9	274	e 5 55	+10	e 11 44	SSS	—	—	—
Kodaikanal	E.	27·4	162	—	—	e 8 29?	?	—	—	—
Moscow		28·5	322	4 5	?	—	—	—	—	—
Irkutsk		29·5	47	9 29	?	—	—	—	—	21·5
Helwan	E.	31·8	269	e 9 35	?	—	—	—	—	e 15·8

Additional readings :—
Samarkand S* = +1m.41s., S_g = +1m.55s.
Andijan S* = +2m.28s., iS_g = +2m.51s.
Tchimkent S* = +2m.48s., iS_g = +3m.12s.
Long waves were also recorded at Bombay, Potsdam, Kew, De Bilt, Vladivostok, Uccle, Triest, Aberdeen, Colombo, Warsaw, Hamburg, and Upsala.

September 1d. Readings also at 6h. (Ksara), 11h. (Pasadena, Mount Wilson, Tinemaha, Tucson, Palomar, and Mizusawa), 14h. (La Paz), 18h. (near Mizusawa), 21h. (near Wellington, Christchurch, near Ferndale and Ksara).

September 2d. 18h. Local Japanese shock.

Tokyo Imperial University gives Epicentre 35°·88N. 139°·91E.

Kamakura P = 14m.53s., S = 15m.5s.
Kiyosumi P = 14m.53s., S = 15m.9s.
Koyama P = 14m.53s., S = 15m.6s.
Mitaka P = 14m.53s., S = 15m.4s.
Titibu P = 14m.53s., S = 15m.6s.
Togane P = 14m.53s., S = 15m.7s.
Tokyo, Imp. Univ., P = 14m.53s., S = 15m.4s.
Tukubasan P = 14m.53s., S = 15m.5s.
Komaba P = 14m.54s., S = 15m.4s.

Sept. 2d. Readings also at 1h. (Tucson), 8h. (La Jolla, Palomar (2), near Honolulu, Ukiah, Mount Wilson (2), Berkeley, Tinemaha, Riverside, Tucson (2), and Pasadena (2)), 9h. (Bozeman, Salt Lake City, and Sitka), 10h. (Helwan and Ksara), 18h. (La Paz), 19h. (Mizusawa), 23h. (Mount Wilson, Riverside, Tucson, and Pasadena).

September 3d. 1h. 27m.52s. Epicentre 22°·0S. 171°·7E.

$A = -·9184$, $B = +·1340$, $C = -·3724$; $\delta = +10$; $h = +4$;
$D = +·144$, $E = +·990$; $G = +·368$, $H = -·054$, $K = -·928$.

Pasadena suggests depth 100km.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Arapuni		16·4	169	e 5 8?	?	6 56	0	—	—	—
Tuai		17·4	166	4 6	0	7 21	+ 2	—	—	—
Brisbane		17·8	248	i 4 14	+ 3	i 7 26	− 2	—	—	—
Wellington		19·4	174	4 29	− 1	8 13	+ 9	4 46	pP	10·1
Christchurch		21·5	179	(5 5)	+13	—	—	—	—	9·3
Riverview		21·6	232	e 4 46	− 8	i 8 48	− 1	—	—	i 13·1
Sydney		21·6	232	i 4 50	− 4	i 8 50	+ 1	—	—	—
Adelaide		31·7	238	—	—	i 9 18	?	—	—	i 13·6
Manila		61·6	302	i 10 19	− 3	18 45	+ 2	—	—	—
Berkeley		86·0	47	e 12 44	+ 1	e 23 4	[− 4]	—	—	e 40·3
Pasadena	z.	86·9	51	i 12 48	0	—	—	e 13 16	pP	e 43·1
La Jolla		87·0	53	e 12 49	+ 1	—	—	—	—	—
Mount Wilson		87·1	51	i 12 48	− 1	—	—	e 13 17	pP	—
Riverside	z.	87·4	51	e 12 50	0	—	—	e 13 17	pP	—
Palomar	z.	87·5	53	i 12 51	0	—	—	13 24	pP	—
Haiwee		88·0	50	e 12 54	+ 1	—	—	—	—	—
Tinemaha		88·3	49	i 12 55	0	—	—	e 13 28	pP	—
Tucson		91·6	56	i 13 10	0	e 24 3	− 6	e 13 37	pP	—
Salt Lake City		94·4	48	—	—	e 24 31	− 2	e 25 23	PS	—
Ksara		139·5	296	e 19 31	[+ 1]	e 35 33	?	e 22 28	PP	—
Helwan		143·7	291	i 19 32	[− 5]	—	—	e 22 38	PP	—
Potsdam		145·5	338	e 18 44	[−56]	—	—	—	—	—
Hamburg	z.	145·6	341	i 19 40	[0]	—	—	—	—	—
De Bilt	z.	148·2	344	e 19 47	[+ 3]	—	—	e 23 16	PP	—
Uccle		149·6	345	e 19 51	[+ 4]	—	—	e 23 25	PP	—
Rome		153·4	323	i 20 14	[+22]	e 38 49	?	e 24 25	PP	—
Clermont-Ferrand		154·6	342	e 20 17	[+23]	—	—	—	—	—
Granada		164·3	346	i 24 49k	PP	32 19	SKKS	25 40	pPP	92·4

Additional readings :—
Wellington $P_cPZ = +8m.41s.$, $L_g? = +9m.8s.$, $S_cS? = +15m.55s.$
Christchurch $P = 23m.57s.$, $S = +30m.44s.$; P given as S_cS.
Riverview i?E $= +1m.30s.$, iE $= +4m.56s.$, iN $= +8m.53s.$
Berkeley eN $= +21m.50s.$
Pasadena isPZ $= +13m.28s.$
Mount Wilson isPZ $= +13m.23s.$
Tucson isP $= +13m.50s.$, iPS $= +24m.57s.$
Ksara i $= +19m.58s.$
Potsdam eN $= +19m.32s.$, iZ $= +19m.35s.$
Rome eSSS $= +43m.45s.$
Granada PPP $= +28m.35s.$, pPPP $= +29m.18s.$, SS $= +49m.28s.$

September 3d. 14h. 40m. 33s. Epicentre 30°·5N. 91°·5E.

$A = -·0226$, $B = +·8628$, $C = +·5050$; $\delta = -4$; $h = +2$;
$D = +1·000$, $E = +·026$; $G = -·013$, $H = +·505$, $K = -·863$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m.	s.		m.
Calcutta	N.	8·4	200	i 2 2k	− 4	i 3 33	−10	i 4	3	S*	—
Debra Dun	N.	11·6	272	e 3 50	PPP	e 5 46	SSS	—		—	e 7·5
Agra		12·3	258	3 0	+ 1	5 7	−11	—		—	5·7
Phu-Lien		16·7	122	e 3 58	+ 1	e 7 14	+11	—		—	i 9·2
Almata		17·2	322	4 1	− 2	e 7 16	+ 2	—		—	9·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hyderabad		17·6	225	4 11	+ 3	7 37	+14	4 20	PP	9·7
Frunse		18·3	318	4 16	− 1	—	—	—	—	11·0
Andijan		18·6	308	4 22	+ 1	i 7 56	+10	—	—	10·5
Bombay		20·5	240	e 4 43	+ 1	i 8 41	+14	i 5 15	PPP	11·1
Tashkent		20·9	308	i 4 46	0	i 8 40	+ 5	—	—	11·9
Semipalatinsk		21·6	342	4 49	− 5	—	—	—	—	11·5
Samarkand		22·0	302	e 5 0	+ 2	—	—	—	—	13·0
Irkutsk		23·7	20	5 13	− 1	—	—	—	—	12·4
Kodaikanal	E.	24·0	219	5 22	+ 5	i 9 47	+15	—	—	i 12·0
Zi-ka-wei	N.	25·7	82	e 5 31	− 2	i 10 17	+16	—	—	i 14·1
Colombo	E.	25·9	208	e 5 48	+13	10 15	+11	—	—	—
Manila		31·4	115	i 6 28	+ 3	11 33	+ 1	—	—	15·0
Sverdlovsk		34·0	331	6 46	− 2	12 9	− 4	—	—	17·5
Vladivostok		34·4	59	i 6 47	− 4	i 12 10	− 9	—	—	18·1
Baku		35·0	299	e 7 3	+ 7	12 34	+ 6	—	—	18·5
Grozny		38·3	304	e 7 33	+ 9	—	—	—	—	—
Piatigorsk		40·3	305	e 7 51	+11	14 0	+11	—	—	—
Mizusawa		41·2	65	6 52	−56	—	—	—	—	—
Moscow		45·3	321	8 20	− 1	14 57	− 5	—	—	24·7
Ksara		46·6	290	i 8 34	+ 2	i 15 30	+ 9	e 10 26	PP	22·8
Pulkovo		49·7	325	8 57	+ 1	i 16 3	− 1	—	—	e 24·1
Istanbul		50·8	301	e 9 7	+ 3	20 15	SSS	11 52	PPP	—
Helwan		51·4	286	i 9 8k	− 1	16 27	− 1	11 9	PP	—
Bucharest		52·4	306	e 9 27?	+11	16 47	+ 5	—	—	33·5
Warsaw		54·9	315	e 9 28	− 7	i 17 16	0	i 21 37	SSS	e 30·5
Upsala		56·2	325	e 13 30	PPP	e 17 27	− 6	e 23 27?	SSS	i 30·8
Prague		59·3	315	—	—	e 18 17	+ 3	e 24 15	SSS	e 31·5
Copenhagen		59·4	321	e 10 6	0	18 17	+ 2	—	—	—
Potsdam		59·7	317	i 10 5	− 4	i 18 16	− 3	i 24 33	SSS	i 29·2
Triest		60·8	310	e 9 12	−64	i 18 32	− 1	e 11 51	PP	e 32·3
Jena		60·9	315	e 10 20	+ 3	—	—	—	—	e 31·5
Hamburg		61·2	319	e 10 27?	+ 8	e 18 39	+ 1	—	—	e 32·5
Bergen		62·2	327	—	—	e 18 49	− 2	—	—	e 30·5
Rome		62·7	304	e 10 26a	− 3	e 18 44	−13	e 12 48	PP	e 30·5
Stuttgart		62·9	314	e 10 28	− 2	e 18 59	− 1	e 12 45	PP	e 35·1
Chur		63·2	312	e 10 32	0	—	—	—	—	—
Basle		64·3	313	e 10 39	0	e 20 32	+75	—	—	—
De Bilt		64·4	318	i 10 39	− 1	e 19 19	+ 1	e 23 27	SS	e 32·5
Uccle		65·3	317	e 10 44	− 2	19 27	− 2	e 25 54	SSS	e 31·5
Aberdeen		66·8	325	—	—	i 19 48	0	—	—	e 32·0
Clermont-Ferrand		67·8	311	e 11 3	+ 1	—	—	—	—	e 39·4
Edinburgh		67·8	324	—	—	e 19 57	− 3	—	—	—
Kew		67·9	319	i 11 2a	0	19 59	− 2	e 24 27	SS	e 29·5
Stonyhurst		68·2	322	—	—	e 19 57	− 7	e 27 27	SSS	36·5
Oxford		68·3	319	—	—	e 19 58	− 8	—	—	e 37·3
Scoresby Sund		68·9	342	—	—	e 20 35	+22	—	—	e 27·3
College		74·4	24	—	—	e 21 16	ScS	—	—	e 38·8
Toledo		75·0	308	i 11 43	− 2	e 21 24	+ 1	—	—	—
Almeria		75·3	305	11 27	−20	21 28	+ 2	11 43	pP	32·5
Granada		76·0	306	i 11 48a	− 3	21 49	+15	14 34	PP	31·8
Lisbon	E.	79·1	309	—	—	22 6	− 1	—	—	—
Tinemaha	Z.	107·2	24	e 18 47	PP	—	—	—	—	—
Mount Wilson	Z.	109·8	26	e 19 6	PP	—	—	—	—	—
Tucson		114·1	21	i 19 33	PP	—	—	—	—	—
Huancayo		158·0	324	e 20 35	[+37]	—	—	—	—	e 85·5

Additional readings :—
Calcutta $eS_cN = +4m.23s.$
Agra $SN = +5m.11s.$
Bombay $iPEN = +4m.46s.$, $eEN = +8m.23s.$, $iSSEN = +9m.13s.$, $iEN = +9m.37s.$, $iE = +10m.37s.$
Mizusawa $P?E = +7m.36s.$
Helwan $PSE = +17m.5s.$
Warsaw $iN = +10m.3s.$, $iE = +17m.13s.$
Potsdam $iPE = +10m.9s.$, $iSN = +18m.20s.$, $eZ = +23m.27s.$, $eN = +28m.35s.$
Triest $ePPP = +13m.29s.$, $iPS = +18m.52s.$, $eSS = +22m.56s.$, $eSSS = +26m.12s.$

Continued on next page.

Jena iPN = +10m.23s.
Rome ePPP = +14m.31s., eSN = +18m.53s., eSS = +22m.58s.
Stuttgart ePPPE = +14m.7s., eSSSEN = +25m.51s.
Kew eN = +20m.37s. and +21m.9s., eSSS = +27m.57s.
Almeria PP = +14m.31s., PPP = +16m.23s., S_cS = +21m.54s., SS = +26m.37s., SSS = +29m.58s.
Granada PPP = +16m.30s., S_cS = +21m.29s., PS = +22m.16s., SS = +26m.13s., SSS = +29m.53s.
Tucson i = +19m.46s.
Long waves were also recorded at Bozeman, Butte, San Fernando, Pasadena, Cape Town, East Machias, and Sitka.

September 3d. 19h. 57m. 7s. Epicentre 30°·5N. 91°·5E. (as at 14h.).

A = −·0226, B = +·8628, C = +·5050; δ = −4; h = +2.

		Δ	Az.	P.	O−C.	S.	O−C.		Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Calcutta	N.	8·4	200	e 2 33	PPP	i 4 4	S*	i 4 34	S_g	—
Dehra Dun		11·6	272	—	—	e 5 22?	SSS	—	—	e 6·9
Agra		12·3	258	2 58	− 1	5 16	− 2	—	—	—
Almata		17·2	322	4 0	− 3	7 13	− 1	—	—	9·9
Hyderabad		17·6	225	e 4 18	+10	7 44	SS	—	—	9·6
Frunse		18·3	318	4 16	− 1	7 47	+ 8	—	—	9·9
Andijan		18·6	308	4 20	− 1	i 7 54	+ 8	—	—	i 10·9
Bombay		20·5	240	e 4 47	+ 5	i 8 40	+13	e 9 39	SSS	10·5
Tashkent		20·9	308	e 4 46	0	e 8 43	+ 8	—	—	e 12·0
Tchimkent		21·1	311	4 46	− 2	8 47	+ 8	—	—	12·9
Samarkand		22·0	302	4 59	+ 1	9 6	+10	—	—	—
Kodaikanal	E.	24·0	219	e 5 33?	+16	9 51	+19	—	—	12·2
Colombo	E.	25·9	208	e 6 23	PPP	—	—	—	—	—
Sverdlovsk		34·0	331	6 50	+ 2	12 9	− 4	—	—	17·4
Moscow		45·3	321	8 20	− 1	e 14 56	− 6	—	—	—
Ksara		46·6	290	e 10 52	PPP	e 19 13	SSS	—	—	—
Pulkovo		49·7	325	—	—	e 16 1	− 3	—	—	e 24·9
Helwan	E.	51·4	286	—	—	i 16 31	+ 3	—	—	—
Warsaw		54·9	315	—	—	e 21 38	SS	—	—	e 29·9
Potsdam		59·7	317	—	—	e 25 23	?	—	—	32·9
Rome		62·7	304	—	—	e 26 53?	?	—	—	—

Additional readings:—
Calcutta iS_gN = +4m.54s.
Bombay eS = +8m.44s.
Warsaw eNZ = +21m.53s. ?
Potsdam eE = +26m.17s., eZ = +28m.41s.
Long waves were also recorded at Hamburg, Vladivostok, Baku, Upsala, Bergen, De Bilt, Uccle, Kew, Irkutsk, and Granada.

September 3d. Readings also at 6h. (Tucson), 10h. (near Mizusawa), 11h. (Andijan, Baku, Vladivostok, and Sverdlovsk), 12h. (Tucson, Riverside, Palomar, Tinemaha, and Mount Wilson), 15h. (Manila), 18h. (Ksara and Mizusawa), 23h. (Bombay).

September 4d. 19h. 11m. 26s. Epicentre 33°·5N. 91°·5E.

A = −·0219, B = +·8353, C = +·5493; δ = −6; h = +1;
D = +1·000, E = +·026; G = −·014, H = +·549, K = −·836.

		Δ	Az.	P.	O−C.	S.	O−C.		Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Calcutta	N.	11·3	195	i 3 8k	PPP	i 5 39	SSS	—	—	i 6·4
Debra Dun	N.	11·9	258	e 4 43?	?	e 6 7	L	—	—	(e 6·1)
Agra		13·3	245	e 3 9	− 4	e 6 32	+50	—	—	—
Frunse		16·2	310	3 56	+ 6	—	—	—	—	9·6
Andijan		16·9	301	4 3	+ 4	7 9	+ 2	—	—	9·1
Phu-Lien		18·4	129	e 4 51	+33	—	—	—	—	—
Semipalatinsk		18·8	338	4 23	0	—	—	—	—	10·6
Tchimkent		19·0	303	4 25	− 1	7 54	− 1	—	—	12·1
Tashkent		19·3	300	4 23	− 6	7 50	−12	—	—	e 10·6
Hyderabad		19·8	219	4 39	+ 4	8 25	+12	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		22·1	234	i 5 1	+ 2	i 9 9	+11	—	—	11·7
Colombo	E.	28·6	205	—	—	e 12 4	SS	—	—	—
Manila		32·7	119	e 13 11	SS	—	—	—	—	(18·6)
Moscow		43·1	318	8 6	+ 2	14 25	− 5	—	—	—
Ksara		45·8	286	e 12 51	?	e 15 27	+18	—	—	—
Pulkovo		47·3	323	—	—	e 15 32	+ 1	e 18 58	SS	e 23·5
Bucharest		50·8	303	—	—	e 18 34?	?	—	—	30·6
Warsaw		52·8	314	—	—	e 20 34?	SS	—	—	e 28·6
Potsdam		57·5	315	—	—	e 21 34	SS	—	—	e 28·9
Hamburg		59·0	317	—	—	e 23 34?	SSS	—	—	e 31·9

Additional readings :—
Manila L given as S.
Warsaw eE = +20m.45s., eZ = +20m.49s.
Potsdam eZ = +22m.10s., eE = +22m.16s.
Long waves were also recorded at other Russian and European stations.

September 4d. Readings also at 0h. (Tashkent, Tchimkent, Andijan, Frunse, Samarkand, near Branner), 4h. (La Paz), 9h. (La Paz), 23h. (La Paz).

September 5d. Readings at 3h. (Tucson), 8h. (Tucson, Tinemaha, near Christchurch, Tuai, Hastings, New Plymouth, and Wellington), 9h. (Tucson), 10h. (Helwan, Ksara, near Tuai, New Plymouth, and Wellington), 20h. (Ksara), 22h. (Ksara).

September 6d. 2h. 51m. 7s. Epicentre 54°·6N. 161°·6E.

A = −·5522, B = +·1837, C = +·8133 ; δ = +13 ; h = −7 ;
D = +·316, E = +·949 ; G = −·772, H = +·257, K = −·582.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Irkutsk		33·4	290	e 6 53	+11	—	—	—	—	19·9
Sitka		34·2	60	—	—	e 12 14	− 2	—	—	e 15·4
Victoria		45·0	66	—	—	e 14 23	−35	—	—	22·9
Sverdlovsk		51·8	317	e 9 11	− 1	e 16 28	− 5	—	—	25·9
Bozeman		53·2	61	—	—	e 20 36	SS	—	—	—
Tinemaha		55·4	74	i 9 40	+ 2	—	—	—	—	—
Haiwee		56·2	74	e 9 45	+ 1	—	—	—	—	—
Santa Barbara		56·5	76	e 9 47	+ 1	—	—	—	—	—
Mount Wilson		57·6	76	i 9 55	+ 1	—	—	—	—	—
Pasadena	Z.	57·6	76	i 9 53	− 1	—	—	—	—	e 27·4
Andijan		57·7	296	10 27	+32	e 18 18	PPS	—	—	—
Riverside		58·1	76	e 9 52	− 6	—	—	—	—	—
Tashkent		58·8	298	10 3	+ 1	e 18 9	+ 2	—	—	30·8
Palomar	Z.	58·9	76	i 10 3	0	—	—	—	—	—
Moscow		60·9	328	e 10 17	0	—	—	—	—	e 38·0
Tucson		63·1	72	i 10 32	0	i 19 5	+ 3	i 11 14	PcP	e 25·7
Florissant		68·5	53	i 11 7	+ 1	e 20 4	− 4	i 11 16	pP	—
Warsaw		68·6	336	e 11 7	0	e 20 24	+15	—	—	e 38·9
St. Louis		68·7	53	e 11 6	− 1	e 20 9	− 1	e 12 8	PcP	e 36·1
Ottawa		69·2	39	e 11 8	− 2	e 20 11	− 5	—	—	e 31·9
Seven Falls		69·4	36	—	—	e 20 14	− 4	—	—	27·9
De Bilt		71·9	345	i 11 27a	0	e 21 39	PPS	—	—	36·4
Jena		71·9	340	i 11 28	+ 1	—	—	—	—	—
Harvard	Z.	73·2	38	e 12 34	+59	—	—	—	—	—
Uccle		73·3	346	e 11 33	− 2	e 21 17	+13	e 21 55	PS	e 35·9
Zurich		75·9	342	e 11 50a	0	—	—	—	—	—
Chur		76·2	342	e 11 53	+ 1	—	—	—	—	—
Neuchatel		76·5	343	e 11 54	0	—	—	—	—	—
Triest		76·5	338	e 11 52	− 2	e 21 37	− 2	e 22 3	PS	—
Clermont-Ferrand		78·4	345	i 12 5	+ 1	—	—	—	—	—

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		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		80·3	316	e 12 16	+ 2	e 23 16	PS	—	—	—
Rome		80·3	338	i 12 14a	0	e 22 17	− 3	—	—	e 35·9
Toledo		85·1	350	i 12 41	+ 2	e 22 13	[−48]	—	—	—
Helwan	E.	85·6	318	i 12 42k	+ 1	e 23 23	+10	—	—	—
Granada		87·7	348	i 12 55	+ 3	23 22	[+ 4]	24 22	PS	32·9
Almeria		87·9	347	12 52	− 1	21 58	?	—	—	32·9

Additional readings :—
Tinemaha iZ = +9m.49s.
Haiwee iZ = +9m.56s.
Mount Wilson iZ = +10m.5s.
Pasadena iZ = +10m.4s.
Andijan ePPP = +14m.23s.
Palomar iZ = +10m.14s.
Tucson i = +10m.42s. and +10m.49s.
Warsaw eN = +17m.53s.?, eE = +19m.53s.?
Florissant epP_cPZ = +11m.47s., iE = +20m.8s., esSN = +20m.23s., eEN = +21m.2s.
St. Louis eE = +11m.16s., esSN = +20m.15s.
Triest eSSS = +29m.34s.
Rome iN = +22m.30s., iE = +22m.37s., eS = +28m.52s.
Almeria e = +13m.48s.
Long waves were also recorded at Bombay, Agra, Vladivostok, Baku, Bucharest, Kew, Upsala, Scoresby Sund, Ukiah, San Juan, Honolulu, Potsdam, and Berkeley.

September 6d. 6h. Shock for which no determination of epicentre is possible.

Ksara eP = 18m.16s., e = 29m.15s. and 35m.15s.
Manila eP = 18m.18s., SEN = 20m.30s.
Vladivostok eP = 19m.36s., S = 25m.48s., L = 28m.6s.
Sverdlovsk iP = 23m.23s., eS = 33m.2s., L = 48m.30s.
Andijan P = 23m.24s.
Tashkent P = 23m.55s., S = 34m.19s., L = 51m.
Tinemaha ePZ = 24m.14s.
Mount Wilson ePZ = 24m.19s.
Pasadena ePZ = 24m.19s., eLZ = 57m.
Riverside ePZ = 24m.21s.
Palomar ePZ = 24m.24s.
Tucson iP = 24m.51s., i = 25m.5s., 25m.24s., 26m.55s., and 61m.3s.
La Paz ePZ = 31m.27s.
Rome eP = 40m.2s.a, eS = 49m.54s.
Long waves were also recorded at De Bilt, Uccle, Kew, and Warsaw.

September 6d. Readings also at 2h. (La Paz), 3h. (Granada), 6h. (near Lick), 11h. (Scoresby Sund), 13h. (Jena), 15h. (near Mizusawa), 19h. (Warsaw), 20h. (Haiwee, Tucson, Mount Wilson, Pasadena, Riverside, Palomar, and La Paz), 21h. (La Paz), 23h. (near New Plymouth and Wellington).

September 7d. 10h. 36m. 25s. Epicentre 36°·5N. 121°·5W.

A = −·4210, B = −·6871, C = +·5922 ; δ = +5 ; h = 0 ;
D = −·853, E = +·522 ; G = −·309, H = −·505 ; K = −806.

		Δ	Az.	P.	O−C.	S.	O−C.		Supp.
		°	°	m. s.	s.	m. s.	s.	m.	s.
Lick	E.	0·9	352	e 0 17	P_g	i 0 29	S_g	—	—
Santa Clara		0·9	337	e 0 21	+ 1	i 0 33	− 1	—	—
Branner		1·1	329	i 0 23	+ 1	i 0 35	− 4	—	—
Fresno	N.	1·4	80	e 0 26	− 1	i 0 45	− 1	—	—
Berkeley		1·5	336	e 0 10	−18	i 0 51	+ 2	e 0 30	P_g
San Francisco		1·5	329	e 0 29	+ 1	i 0 48	− 1	—	—
Tucson		9·8	113	e 2 0	−24	—	—	—	—

Additional readings :—
Branner iE = +42s.
Berkeley eZ = +25s., iN = +56s., eSN = +1m.2s., eE = +1m.5s.
Tucson i = +2m.10s. and +2m.17s.

September 7d. 10h. 38m. 36s. Epicentre 36°·5N. 121°·5W. (as at 10h. 36m.).

$A = -\cdot4210$, $B = -\cdot6871$, $C = +\cdot5922$; $\delta = +5$; $h = 0$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lick	E.	0·9	352	i 0 17	P_g	i 0 28	S_g	—	—	—
Santa Clara		0·9	337	e 0 20	0	i 0 33	− 1	—	—	—
Branner		1·1	329	i 0 22	0	i 0 36	− 3	—	—	—
Fresno	N.	1·4	80	i 0 27	0	e 0 43	− 3	—	—	—
Berkeley		1·5	336	e 0 26	− 2	i 0 50	+ 1	e 0 29	P_g	—
San Francisco		1·5	329	e 0 28	0	i 0 48	− 1	—	—	—
Tucson		9·8	113	e 2 15	− 9	e 3 56	−21	i 2 36	PP	i 5·5

Additional readings :—
Berkeley eN = +43s., iE = +56s., eN = +1m.4s. and +1m.35s.
San Francisco eN = +45s., iN = +1m.9s.

Sept. 7d. 13h. 2m. 7s. Epicentre 36°·5N. 121°·5W. (as at 10h.).

$A = -\cdot4210$, $B = -\cdot6871$, $C = +\cdot5922$; $\delta = +5$; $h = 0$;
$D = -\cdot853$, $E = +\cdot522$; $G = -\cdot309$, $H = -\cdot505$, $K = -\cdot806$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lick	E.	0·9	352	i 0 16	− 4	i 0 28	S_g	—	—	—
Santa Clara		0·9	337	e 0 18	− 2	i 0 31	S_g	—	—	—
Branner		1·1	329	i 0 22	0	i 0 36	−3	—	—	—
Fresno	N.	1·4	80	(e 0 25)	− 2	(i 0 42)	− 4	—	—	—
Berkeley		1·5	336	e 0 26	− 2	i 0 49	0	i 0 30	P_g	—
San Francisco		1·5	329	i 0 26	− 2	e 0 46	− 3	e 0 33	P_g	—
Santa Barbara	Z.	2·5	145	i 0 44	+ 1	—	—	—	—	—
Tinemaha		2·6	77	e 0 45	+ 1	—	—	—	—	—
Haiwee		2·9	97	i 0 50	+ 2	—	—	—	—	—
Mount Wilson	Z.	3·6	128	i 0 58	0	—	—	—	—	—
Pasadena		3·6	129	i 0 58	0	i 1 37	− 5	—	—	—
Riverside		4·2	126	i 1 16	P*	—	—	—	—	—
Palomar	Z.	4·9	126	i 1 16	− 1	—	—	—	—	—
Tucson		9·8	113	i 2 25	+ 1	i 4 13	− 4	—	—	e 5·1

Additional readings :—
Fresno readings have been reduced by 1m. iN = +2m.21s.
Berkeley iE = +43s., iSZ = +53s., iSN = +57s.
Tucson i = +2m.35s. and +4m.31s.

Sept. 7d. 19h. 23m. 31s. Epicentre 9°·5N. 126°·7E. (as on 1940 Sept. 1d.).

$A = -\cdot5895$, $B = +\cdot7909$, $C = +\cdot1640$; $\delta = -7$; $h = +7$;
$D = +\cdot802$, $E = +\cdot598$; $G = -\cdot098$, $H = +\cdot131$, $K = -\cdot986$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		7·5	313	i 2 0a	+ 7	3 35	+15	—	—	—
Phu-Lien		22·4	304	e 5 1	− 1	—	—	—	—	—
Vladivostok		33·8	9	i 6 49	+ 3	i 12 14	+ 4	—	—	18·4
Calcutta	N.	38·9	295	e 7 45	+16	—	—	—	—	—
Colombo	E.	46·4	270	8 30	0	15 25	+ 7	—	—	29·3
Irkutsk		46·4	341	e 8 34	+ 4	15 22	+ 4	—	—	e 24·5
Kodaikanal	E.	48·5	276	e 8 47	+ 1	—	—	—	—	—
Agra	E.	49·1	299	i 8 49a	− 2	15 47	− 9	10 43	PP	—
Bombay		52·9	287	e 9 21	+ 1	e 16 51	+ 3	e 11 24	PP	—
Frunse		56·2	317	9 56	+12	17 52	+19	—	—	—
Andijan		57·1	313	10 0	+10	18 2	+17	—	—	—
Tashkent		59·5	314	i 10 6	− 1	e 18 16	0	—	—	e 29·8
Samarkand		60·8	311	10 19	+ 3	—	—	—	—	—
Wellington		67·1	143	e 6 29?	?	—	—	—	—	31·5
Christchurch		67·3	146	(10 59)	0	(19 32)	−22	(13 46)	PP	35·5

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		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sverdlovsk		69·1	329	i 11 10	0	e 20 12	− 3	—	—	32·0
Moscow		81·7	326	e 12 21	− 1	e 22 39	+ 5	—	—	44·2
Pulkovo		85·1	330	e 12 38	− 1	23 4	[+ 3]	—	—	—
Ksara		85·5	303	i 12 42a	+ 1	e 24 17	PS	e 16 5	PP	—
Helwan		90·0	300	13 2	− 1	23 39	[+ 6]	25 53	PPS	—
Victoria		95·8	39	—	—	e 25 29?	PS	—	—	46·5
Seattle		96·8	39	—	—	e 23 52	[−19]	—	—	e 40·4
Rome		101·1	315	e 17 55?	PP	e 24 41	[+ 9]	e 36 41	SSS	e 49·9
Uccle		102·0	326	—	—	e 24 41	[+ 4]	—	—	e 52·5
Riverside	z.	105·5	52	e 18 35	PP	—	—	—	—	—
Tucson		111·2	50	e 18 49	[+14]	i 25 9	[− 8]	i 19 23	PP	e 45·7
San Juan		149·6	25	e 20 8	[+21]	—	—	—	—	e 59·8
Huancayo		158·2	99	e 19 53	[− 6]	e 27 9	[+ 6]	—	—	—
La Paz		164·0	117	20 23	[+18]	—	—	—	—	—

Additional readings :—
Agra S_cSE = +18m.48s., SSS?E = +19m.47s.
Bombay eEN = +23m.52s.
Christchurch P given as SKS, S = +12m.20s., PP given as PS, PPS = +14m.23s., S given as SSN, SSSE = +23m.56s., L_qN = +28m.26s.
Helwan iE = +13m.41s., SE = +24m.41s.
Seattle eSKKS = +24m.17s.
Rome e = +41m.11s.
Tucson i = +18m.51s. and +19m.37s., iPPP = +21m.40s., iS = +26m.43s., epS = +27m.9s., ePS = +28m.45s., iSS = +34m.37s.
Huancayo e = +20m.9s. and +20m.50s.
Long waves were also recorded at Granada, Toledo, Pasadena, Warsaw, De Bilt, Potsdam, Kew, and Berkeley.

Sept. 7d. Readings also at 0h. and 1h. (Rome), 2h. (Bombay), 6h. (Lincoln, Mizusawa, and Tucson), 10h. (near Lick (3), San Juan, La Paz, and Branner), 11h. (near Berkeley, Fresno, Branner, and Lick), 13h. (near Branner (2) and Lick (2)), 14h. (Almata, Samarkand, Andijan, and Frunse), 15h. (Tucson), 16h. (near Lick and Ksara), 17h. (Harvard (2)), 21h. (near Berkeley), 21h. (Sverdlovsk and Manila), 22h. (Rome).

Sept. 8d. 10h. 15m. 8s. Epicentre 53°·3N. 170°·5E.

A = −·5897, B = +·0987, C = +·8016 ; δ = +5 ; h = −7 ;
D = +·165, E = +·986 ; G = −·791, H = +·132, K = −·598.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		23·7	45	e 5 16	+ 2	i 9 31	+ 4	—	—	e 13·3
Vladivostok		27·4	264	i 5 48	− 1	i 10 24	− 4	—	—	13·1
Victoria		40·5	70	—	—	e 14 52?	+60	—	—	24·9
Tinemaha		50·6	79	i 9 4	+ 2	—	—	—	—	—
Haiwee		51·4	79	i 9 11	+ 2	—	—	—	—	—
Mount Wilson		52·7	80	i 9 18	0	—	—	—	—	—
Pasadena		52·7	80	i 9 19	+ 1	—	—	—	—	e 27·8
Riverside	z.	53·2	80	e 9 23	+ 1	—	—	—	—	—
Palomar	z.	54·0	81	i 9 29	+ 1	—	—	—	—	—
Sverdlovsk		56·1	322	i 9 43	0	17 29	− 3	—	—	26·4
Tucson		58·3	77	e 9 59	0	e 18 41	sS	i 10 45	P_cP	e 25·2
Frunse		60·1	303	10 14	+ 3	18 23	− 1	—	—	—
Andijan		62·8	302	10 28	− 2	18 52	− 6	—	—	—
Tashkent		63·9	304	i 10 37	0	e 19 8	− 4	—	—	e 33·2
Moscow		64·5	332	e 10 42	+ 1	e 19 21	+ 2	—	—	—
Florissant		64·8	58	i 10 45	+ 2	e 19 28	+ 5	—	—	—
St. Louis		65·0	58	e 10 42	− 2	e 19 24	− 2	—	—	e 34·1
Samarkand		66·3	305	10 52	0	—	—	—	—	—
Ottawa		66·5	45	e 10 50	− 4	—	—	—	—	e 23·9
Seven Falls		67·1	40	—	—	e 19 46	− 5	e 24 34	SS	35·9
Harvard		70·6	43	i 11 13	− 6	—	—	—	—	—
Baku		73·1	317	e 11 38	+ 4	e 21 9	+ 8	—	—	37·3
Simferopol		75·1	330	15 14	PP	—	—	—	—	—
Yalta		75·5	329	11 46	− 2	—	—	—	—	—
Clermont-Ferrand		80·6	351	i 12 17	+ 1	—	—	—	—	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rome	83·2	344	i 12 28	− 1	e 22 49	0	e 15 38	PP	—
Ksara	84·6	323	i 12 38	+ 2	e 23 4	+ 1	e 16 0	PP	—
Helwan	89·8	325	—	—	i 24 4	+11	—	—	—
San Juan	93·5	53	—	—	e 24 17	− 8	e 30 28	SS	e 49·1

Additional readings :—
Tucson i = +10m.12s., iPP = +12m.17s., eSS = +21m.55s.
St. Louis eE = +19m.2s. and +19m.21s., eSE = +19m.27s.
Rome eSSN = +28m.25s.
Ksara ePS = +23m.52s.
San Juan ePS = +24m.57s.
Long waves were also recorded at Irkutsk, Butte, Potsdam, Berkeley, Scoresby Sund, Bozeman, Seattle, Sitka, East Machias, Philadelphia, Salt Lake City, De Bilt, Warsaw, Granada, and Bucharest.

Sept. 8d. Readings also at 0h. (near Mizusawa and Lick), 1h. (Haiwee, Tinemaha, Pasadena, Mount Wilson, Riverside, Palomar, and Tucson), 6h. (Chicago, Salt Lake City, Philadelphia, East Machias, St. Louis, Tucson (2), Pasadena, Butte, and Bozeman), 7h. (Potsdam), 8h. (Samarkand, Tashkent, Andijan, and Frunse), 9h. (near Triest), 10h. (Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 12h. (Ksara), 16h. (Lick), 17h. (Salt Lake City), 18h. (Seattle, Tucson, near Lick, Riverside, Palomar, Pasadena, Bozeman, and Butte), 19h. (Salt Lake City).

Sept. 9d. 20h. 22m. 51s. Epicentre 7°·5N. 126°·7E. (as on 1940 April 20d.).

$A = -\cdot5926$, $B = +\cdot7950$, $C = +\cdot1297$; $\delta = +2$; $h = +7$;
$D = +\cdot802$, $E = +\cdot598$; $G = -\cdot078$, $H = +\cdot104$, $K = -\cdot992$.

	△	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Manila	9·0	322	i 2 11	− 2	i 3 54	− 4	—
Vladivostok	35·8	6	—	—	12 49	+ 8	18·8
Tashkent	60·8	313	i 10 17	+ 1	e 18 25	− 8	e 29·4
Sverdlovsk	70·8	328	i 11 20	0	i 20 24	−11	33·2
Moscow	83·4	326	e 12 34	+ 4	e 22 40	−11	—
Ksara	86·6	303	e 12 54	+ 8	e 22 22	−61	—
Pulkovo	86·8	330	—	—	23 17	[+ 4]	—
Tucson	112·5	50	e 19 26	PP	—	—	—

Long waves were recorded at Baku and European stations.

Sept. 9d. 21h. 34m. 24s. Epicentre 17°·0N. 147°·0E. (as on 1938 Dec. 1d.).

$A = -\cdot8025$, $B = +\cdot5212$, $C = +\cdot2906$; $\delta = +10$; $h = +5$;
$D = +\cdot545$, $E = +\cdot839$; $G = -\cdot244$, $H = +\cdot158$, $K = -\cdot957$.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tashkent		69·8	307	i 11 14	0	e 20 30	+ 7	37·0
Sverdlovsk		74·0	325	11 42	+ 3	21 21	+10	36·6
Pasadena	z.	84·5	55	e 12 36	0	—	—	—
Mount Wilson	z.	84·6	55	e 12 37	+ 1	—	—	—
Riverside	z.	85·3	55	e 12 38	− 2	—	—	—
Palomar	z.	85·8	55	e 12 40	− 2	—	—	—
Tucson		91·0	56	i 13 8	+ 1	—	—	—
Potsdam		100·2	333	—	—	e 22 36	?	e 59·5
La Paz	z.	146·4	93	19 51	[+10]	—	—	—

Additional readings :—
Tucson i = +13m.17s.
Long waves were also recorded at Vladivostok, De Bilt, and Baku.

Sept. 9d. Readings also at 1h. (near Berkeley (2), Branner (2), Fresno (2), and Lick (2)), 3h. (near Mizusawa), 4h. (St. Louis, Huancayo, Tinemaha, Pasadena, Mount Wilson, Riverside, Palomar, Tucson, La Paz, and Haiwee), 5h. (Ksara), 11h. (near Berkeley), 12h. (near Mizusawa), 13h. (Zurich, near Stuttgart, and Ravensburg), 14h. (Balboa Heights), 17h. (La Plata, La Paz, Tucson, and near Branner), 19h. (near Berkeley (2)), 23h. (College, Tucson, Haiwee, Palomar, Riverside, Mount Wilson, Pasadena, and Balboa Heights).

Sept. 10d. Readings at 4h. (Balboa Heights), 8h. (Huancayo and Ksara), 9h. (Manila, Potsdam, Bucharest, and La Paz), 10h. (near Mizusawa), 13h. (Riverview), 14h. (Calcutta and La Paz), 15h. (Ksara and Huancayo), 18h. (Ksara and Helwan), 20h. (La Paz), 22h. (Sofia), 23h. (Balboa Heights).

Sept. 11d. Readings at 1h. (La Paz, Harvard, Ottawa, Shawinigan Falls, and Seven Falls), 3h. (Huancayo, La Paz, and near Istanbul), 6h. (La Paz), 9h. (Sofia), 10h. (Tucson), 13h. (Istanbul, Ksara, Sofia, Harvard, and Bucharest), 14h. (near Apia), 15h. (Sofia and Berkeley), 16h. (near Branner), 17h. (La Paz), 22h. (Balboa Heights, near Mizusawa, Stuttgart, Uccle, Zurich, Clermont-Ferrand, Basle, and Neuchatel), 23h. (Ksara).

Sept. 12d. 0h. 21m. 27s. Epicentre 0°·1N. 122°·7E. (as on 1940 June 22d.).

Intensity IV in the Celebes (Central and Northern) and Batjan.

Epicentre 0°·2S. 123°·4E., depth 200 km. (Batavia).

Aardbevingen in Ned. Indië waargenomen gedurende het Jaar 1940, p. 19.

$A = -\cdot5402$, $B = +\cdot8415$, $C = +\cdot0017$; $\delta = -6$; $h = +7$;
$D = +\cdot842$, $E = +\cdot540$; $G = -\cdot001$, $H = +\cdot001$, $K = -1\cdot000$.

Tables for depth of focus 0·020 have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		14·5	353	i 3 24 a	+ 5	i 6 12	sS	—	—	—
Phu-Lien		25·9	324	e 5 23	+ 4	—	—	—	—	—
Perth		32·6	190	—	—	i 11 28	+ 7	i 12 46	SS	—
Calcutta	N.	40·2	307	i 7 36	pP	—	—	—	—	—
Mizusawa		42·4	21	(7 38)	− 2	7 38	P	—	—	—
Riverview		43·1	144	—	—	e 13 49	−10	i 17 16	SS	—
Vladivostok		43·6	10	i 7 47	− 3	i 15 1	+55	8 23	pP	22·2
Kodaikanal	E.	46·1	285	e 8 13	+ 3	—	—	—	—	—
Bombay		52·4	294	i 8 59	+ 1	i 16 19	+ 9	i 9 37	pP	—
Frunse		60·5	321	9 59	+ 4	—	—	—	—	—
Andijan		60·9	318	e 10 0	+ 2	—	—	—	—	—
Tashkent		63·3	317	i 10 15	+ 1	e 19 35	+ 4	10 50	pP	37·0
Tchimkent		63·5	319	10 14	− 1	—	—	—	—	—
Samarkand		64·2	314	10 11	− 9	19 46	sS	—	—	—
Sverdlovsk		75·0	331	i 11 26	+ 1	21 48	+60	12 7	pP	28·6
Baku		78·1	312	11 41	− 2	—	—	—	—	41·6
Moscow		87·2	326	12 29	0	—	—	13 9	pP	—
Ksara		87·3	304	i 12 32 a	+ 2	24 6	PS	i 13 30	pP	—
Sitka		96·4	32	e 16 41	PP	—	—	—	—	—
Potsdam		101·8	324	i 17 53	PP	—	—	—	—	e 40·6
Rome		104·9	313	—	—	e 33 19	SS	—	—	e 56·6
Uccle		107·5	324	e 18 36	PP	e 25 30	S	e 28 52	PPS	e 53·6
Clermont-Ferrand		110·2	319	i 18 53	PP	—	—	—	—	—
Mount Wilson		113·8	52	i 18 21	[+ 2]	—	—	i 19 1	PP	—
Pasadena	Z.	113·8	52	e 14 27	P	—	—	i 19 1	PP	—
Riverside	Z.	114·4	52	i 18 21	[0]	—	—	—	—	—
Palomar	Z.	115·0	53	i 18 23	[+ 1]	—	—	—	—	—
Toledo		117·3	316	i 19 44	PP	e 28 47	PS	—	—	—
Tucson		120·2	51	i 18 33	[+ 1]	e 27 26	S	e 19 6	pP	—
Huancayo		158·5	124	i 19 43	[+ 5]	—	—	i 20 18	pPKP	—
La Paz	Z.	160·5	147	i 19 43 a	[+ 3]	—	—	—	—	—

Additional readings :—
Perth i = +14m.6s. and +14m.23s.
Mizusawa eP = +6m.56s.
Riverview iE = +13m.56s.
Bombay iEN = +10m.3s., iE = +17m.13s., iN = +23m.33s.
Ksara PP = +15m.57s., SS = +29m.16s.
Potsdam eN = +17m.55s.
Pasadena iPKPZ = +18m.21s., iZ = +21m.8s. and +21m.42s.
Tucson iPP = +19m.57s., ipPP = +20m.13s., ePPP = +22m.23s., epS = +28m.12s., iPKKP = +28m.46s., eSSS = +41m.58s.
Long waves were also recorded at De Bilt.

Sept. 12d. 13h. 17m. 4s. Epicentre 4°·5S. 153°·3E. (as on 1939 Aug. 25d.).

Strongly felt at Rabaul and Kokopo.

Epicentre 4°·5S. 150°·5E. (U.S.C.G.S.).
4°·5S. 153°·0E. (Gutenberg).

See Annales de l'Institut de Physique du Globe de Strasbourg, Tome V, 2ème partie, Seismologie, 1940, Strasbourg, 1948, p. 14.

$A = -·8907$, $B = +·4480$, $C = -·0779$; $\delta = +12$; $h = +7$;
$D = +·449$, $E = +·893$; $G = +·070$, $H = -·035$, $K = -·997$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		22·9	182	i 5 8	+ 2	i 9 20	+ 7	i 6 8	PPP	—
Riverview		29·2	184	i 6 10a	+ 5	i 10 54	− 4	i 7 3	PP	e 12·9
Sydney		29·2	184	e 6 20	+15	i 10 56	− 2	e 7 14	PPP	e 13·5
Adelaide		33·2	202	i 7 42	PP	—	—	—	—	—
Apia		35·6	107	e 6 57	− 4	e 12 41	+ 3	e 9 7	PPP	e 15·0
Manila		37·2	301	7 15k	0	i 12 26	−36	—	—	i 15·8
Arapuni		39·1	151	9 14	PP	—	—	14 20	PcS	19·7
Naha		39·3	322	7 32	0	13 45	+11	—	—	—
Wellington		41·4	155	7 49a	− 1	13 31	−34	8 8	pP	19·9
Christchurch		42·5	159	8 1	+ 2	14 27	+ 5	9 30	PcP	20·3
Matuyama		42·8	336	7 11	−50	14 3	−23	—	—	—
Nagasaki		43·2	331	8 8	+ 4	14 26	− 6	—	—	—
Sendai		44·1	347	8 15	+ 3	14 22	−23	—	—	—
Perth		44·5	227	10 24	PPP	14 51	0	11 1	PP	17·3
Mizusawa		44·8	347	e 8 19	+ 2	14 55	0	—	—	—
Sapporo		48·6	348	8 37	−10	15 37	−12	—	—	—
Zinsen		48·6	331	8 37	−10	15 23	−26	—	—	—
Vladivostok		51·2	340	i 9 5	− 2	17 0	PPS	11 19	PP	20·0
Dairen		52·2	329	9 11	− 4	16 54	+15	—	—	—
Phu-Lien		52·2	301	e 9 13	− 2	e 16 37	− 2	—	—	—
Honolulu		54·3	59	i 9 45	+15	i 17 12	+ 5	e 10 36	PcP	i 23·0
Calcutta	N.	68·9	296	i 11 23a	+14	i 20 11	− 2	i 13 41	PP	—
Irkutsk		70·1	331	11 16	0	e 20 31	+ 4	—	—	36·9
Colombo	E.	74·2	278	11 34	− 6	21 14	0	—	—	30·4
Kodaikanal	E.	76·9	282	11 56	0	21 45	+ 2	26 27	SS	35·9
Hyderabad		77·0	288	e 12 25	+29	21 54	+ 9	26 30	SS	33·5
Agra	E.	79·0	299	12 12	+ 5	22 3	− 3	15 12	PP	37·3
College		81·4	21	e 12 31	+11	e 22 24	− 7	e 12 43	pP	e 36·5
Bombay		82·5	290	i 12 25	− 1	i 22 33	− 9	i 15 19	PP	35·3
Sitka		83·7	31	e 12 38	+ 6	i 22 57	+ 3	e 12 55	pP	e 34·2
Ferndale		87·2	49	—	—	e 38 2	?	—	—	e 47·4
Ukiah		87·8	51	e 13 21	pP	e 23 43	+ 9	e 16 27	PP	e 36·8
Berkeley		88·4	52	e 12 52	− 3	e 23 30	[+ 7]	e 16 28	PP	e 42·4
Branner		88·4	52	e 13 20	pP	e 23 44	+ 4	—	—	e 27·2
Tashkent		88·4	312	i 12 56	+ 1	23 36	− 4	e 16 29	PP	e 36·9
Santa Clara		88·5	52	e 13 25	pP	e 23 44	+ 3	—	—	e 41·8
Lick	E.	88·8	52	e 13 18	+21	e 23 8	[−17]	—	—	e 41·0
Victoria		88·9	41	13 21	+23	23 34	[+ 8]	29 56?	SS	39·9
Seattle		89·5	42	e 16 34	PP	e 24 18	pS	i 24 53	SP	—
Fresno	N.	90·2	53	e 13 23	+19	—	—	—	—	—
Pasadena		91·3	56	e 13 12	+ 3	e 23 45	[+ 5]	e 16 52	PP	e 37·5
Mount Wilson		91·4	56	i 13 13	+ 4	—	—	—	—	—
Tinemaha	z.	91·4	53	e 13 15	+ 6	—	—	—	—	—
Haiwee		91·6	54	e 13 19	+ 9	—	—	—	—	—
Riverside		91·9	56	e 13 15	+ 4	—	—	—	—	—
La Jolla	z.	91·9	57	e 13 19	+ 8	—	—	—	—	—
Palomar	z.	92·3	57	e 13 17	+ 4	—	—	—	—	—
Sverdlovsk		95·2	327	e 13 27	0	23 53	[− 9]	i 17 16	PP	41·9
Butte		96·1	44	—	—	e 25 19	pS	e 26 23	PS	e 39·9
Salt Lake City		96·1	49	e 13 59	pP	e 24 17	[+10]	e 17 36	PP	e 39·2

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman		97·2	44	e 14 0	pP	i 24 24	[+11]	e 14 18	sP	i 40·4
Tucson		97·3	58	e 13 43	+ 7	i 24 6	[− 7]	i 14 6	pP	i 40·6
Saskatoon		99·7	38	e 17 56?	PP	—	—	—	—	44·9
Baku		103·7	310	e 14 18	+13	24 40	[− 5]	18 34	PP	48·4
Grozny		105·8	313	18 58	PP	—	—	—	—	—
Lincoln		108·0	48	—	—	e 26 19	S	e 29 23	SPP	e 51·6
Moscow		108·0	328	e 14 34	P	25 20	[+16]	18 57	PP	49·3
Pulkovo		110·0	334	19 10	PP	25 25	[+13]	28 17	PS	50·6
Sotchi		110·1	315	19 24	PP	—	—	—	—	—
Florissant		113·2	49	e 18 21	[−18]	e 26 39	{+12}	e 19 31	PP	48·0
Yalta		113·7	316	—	—	25 32	[+ 5]	—	—	—
Scoresby Sund		114·0	358	—	—	i 28 10	?	i 29 21	PS	55·8
Chicago U.S.C.G.S.		114·1	46	—	—	e 29 15	SP	e 37 48	SS	e 46·3
Ksara		115·2	305	e 18 20	[−23]	30 11	PS	20 2	PP	—
Upsala		115·3	337	e 20 2	PP	e 29 10	PS	e 35 45	PPS	e 51·9
Warsaw		118·3	329	e 19 54	PP	i 29 44	PS	e 20 2	PP	e 47·9
Istanbul		118·4	315	20 20	PP	26 26	[+42]	30 2	PS	60·4
Bucharest		119·1	319	e 20 6	PP	—	—	—	—	—
Helwan		119·1	302	18 56	[+ 5]	30 32	PPS	e 20 25	PP	—
Bergen		119·2	343	—	—	e 30 15	PS	—	—	e 52·9
Toronto		119·5	42	e 22 32	PPP	e 25 38	[−10]	e 31 20	PPS	49·9
Copenhagen		120·1	336	20 16	PP	30 23	PS	23 4	PPP	—
Ottawa		121·1	38	e 19 0	[+ 5]	e 25 56?	[+ 3]	e 20 26	PP	e 49·9
Columbia		121·7	52	—	—	e 26 4	[+ 9]	e 31 57	SPP	—
Sofia		121·7	318	e 19 14	[+ 8]	e 28 14	{+49}	e 42 26	SSS	—
Budapest	E.	121·9	324	e 19 56?	[+60]	—	—	—	—	e 58·9
Potsdam		122·1	333	e 19 11	[+14]	i 30 30	PS	i 21 0	PP	55·9
Shawinigan Falls		122·3	35	e 19 20	[+23]	—	—	—	—	63·9
Hamburg		122·7	336	e 19 5	[+ 7]	e 26 0	[+ 1]	—	—	e 54·9
Cape Town		122·8	224	—	—	e 30 20	PS	e 36 13	SS	—
Prague		122·9	330	e 20 47	PP	e 31 49	PPS	e 37 32	SS	e 53·9
Heligoland		123·1	337	—	—	e 31 56?	PPS	—	—	e 56·4
Seven Falls		123·1	34	e 19 20	[+21]	e 27 44	{+ 9}	e 30 45	PS	50·9
Philadelphia		123·9	43	e 21 44	sPP	e 26 7	[+ 5]	e 30 57	PS	e 51·4
Aberdeen	E.	124·0	344	i 23 0	PPP	i 37 2	SS	49 58	L_q	59·8
Edinburgh		125·4	344	—	—	e 38 26	SSP	—	—	—
De Bilt		125·7	338	e 21 10a	PP	e 30 56	PS	e 32 26	PPS	e 55·9
Triest		126·0	326	e 12 26	?	e 26 1	[− 8]	e 21 7	PP	e 61·1
Stuttgart		126·4	332	e 19 4	[− 1]	e 29 22	?	e 21 6	PP	e 57·9
East Machias		126·7	35	e 21 32	PP	e 29 19	?	e 31 10	PS	e 50·5
Stonyhurst		127·0	343	e 20 56?	PP	e 30 56?	PS	—	—	i 50·3
Uccle		127·0	337	e 19 17	[+11]	e 38 5	SS	e 21 6	PP	e 55·9
Zurich		127·6	331	e 19 20	[+13]	—	—	—	—	—
Basle		128·0	332	e 19 13	[+ 5]	e 28 28	{+21}	—	—	—
Kew		128·3	340	e 21 18	PP	e 27 30	{−39}	—	—	e 50·9
Neuchatel		128·7	331	e 19 10	[+ 1]	—	—	—	—	—
Huancayo		128·9	109	e 19 16	[+ 6]	e 26 18	[+ 1]	e 19 36	pPKP	i 54·2
Rome		129·0	323	e 19 5	[− 5]	26 6	[−11]	e 21 18	PP	e 49·8
La Plata		131·0	146	22 38	PP	—	—	—	—	64·9
Clermont-Ferrand		131·4	332	e 19 21	[+ 7]	—	—	e 21 37	PP	e 73·2
La Paz		134·0	118	i 19 41	[+21]	i 26 38	[+ 9]	i 22 14	PP	63·4
Bermuda		134·9	47	e 22 42	pPP	e 39 54	SS	—	—	e 57·4
San Juan		139·0	66	—	—	e 26 40	[+ 2]	e 35 42	PPS	e 73·4
Toledo		139·3	333	e 19 42	[+13]	41 10	SS	22 55	SKP	—
Almeria		140·9	328	19 54	[+22]	29 46	{+20}	23 16	PP	58·9
Granada		141·2	331	i 19 37a	[+ 4]	26 12	[−29]	20 36	pPKP	77·3
Lisbon	N.	142·4	337	23 13	PP	26 24	[−19]	—	—	72·0
San Fernando		143·0	332	e 19 41	[+ 5]	—	—	—	—	71·9
Rio de Janeiro	E.	148·4	150	e 19 56	[+11]	(e 42 56)	SS	—	—	e 42·9

For Notes see next page.

NOTES TO SEPTEMBER 12d. 13h. 17m. 4s.

Additional readings :—
Brisbane iPE = +5m.14s.
Riverview iN = +6m.35s. and +12m.41s.
Arapuni L_q? = +17m.56s.
Wellington iZ = +8m.31s., PP?Z = +9m.36s., P_cPZ = +9m.58s., pP_cP = +10m.14s., sP_cP = +10m.36s., sS = +14m.1s., pP_cS = +14m.21s., S_cS = +17m.36s.
Christchurch i = +10m.4s., P_cSE = +13m.40s., L_q = +17m.54s., S_cSZ = +17m.57s.
Perth (PPP) = +11m.21s., i = +12m.46s., SS +16m.6s.
Honolulu ePP = +11m.42s., iPPP = +12m.58s., isS = +17m.56s., iSS = +21m.3s.
Calcutta ePSN = +20m.23s., eS_cSN = +21m.20s., iSSN = +24m.19s.
Hyderabad iN = +21m.36s.
Agra iE = +22m.15s. and +22m.55s., SS?E = +27m.45s., SSSE = +30m.50s.
College epS = +22m.43s., esS = +22m.59s., ePS = +23m.21s., esPS = +23m.49s., eSS = +27m.44s., eSSS = +31m.53s.
Bombay iEN = +13m.18s., iS_cSE = +22m.51s., iPSEN = +23m.13s., iE = +23m.36s. and +24m.4s.
Sitka isP = +13m.15s., ipS = +23m.12s., ePS = +23m.52s., epPS = +24m.23s., eSS = +28m.10s., isSS = +28m.47s.
Ukiah esP = +13m.37s., esPP = +17m.11s., ipS = +24m.8s., eSP = +24m.40s., esSP = +25m.18s., eSS = +29m.36s., eSSS = +33m.33s.
Berkeley ePZ = +13m.2s., ePN = +13m.6s., ePPN = +16m.6s., iSN = +23m.40s., eSZ = +24m.34s., iSSN = +29m.2s., eSSE = +30m.2s., eE = +36m.16s., iN = +38m.59s., eZ = +39m.17s., eEZ = +40m.32s.
Tashkent S = +23m.54s.
Victoria S = +24m.7s., SSS = +36m.56s.?
Seattle epPS = +25m.17s., eSS = +28m.37s., eSSS = +33m.3s.
Pasadena iZ = +25m.41s., iSSZ = +30m.43s.
Sverdlovsk S = +24m.37s.
Butte esPS = +27m.15s., eSS = +31m.40s.
Salt Lake City eS = +24m.44s., epS = +25m.15s., ePS = +26m.26s., eSS = +31m.39s., eSSS = +35m.21s.
Bozeman esPP = +18m.16s., epS = +25m.18s., ePS = +26m.36s., isSS = +32m.22s., iSSS = +36m.20s.
Tucson e = +13m.49s., isP = +14m.17s., iPP = +17m.39s., ipPP = +18m.2s., esPP = +18m.22s., iPPP = +20m.1s., iSKKS = +24m.20s., eS = +25m.16s., ipS = +25m.28s., iPS = +26m.35s., isPS = +27m.5s., iSS = +31m.52s., iSSS = +35m.46s.
Lincoln eSS = +34m.22s.
Moscow PS = +28m.12s.
Florissant eN = +19m.35s., iPKPZ = +19m.39s., iZ = +19m.51s., eZ = +23m.19s., iPPPZ = +23m.34s., eSE = +29m.1s., eSZ = +29m.24s.
Chicago U.S.C.G.S. ePS = +29m.22s., eSPP = +30m.30s., eSSS = +40m.36s.
Upsala eE = +29m.16s., PPSE = +35m.58s., eSSE = +39m.58s.
Warsaw eE = +20m.8s., eZ = +20m.14s., iN = eZ = +29m.58s., iN = +30m.18s., iZ = +31m.47s., iN = +36m.36s., iE = +36m.58s., iZ = +37m.1s. and +38m.4s., eE = +38m.8s.
Istanbul PP = +23m.50s.
Helwan PPZ = +23m.23s., PSE = +32m.44s., PPSE = +33m.44s.
Ottawa e = +30m.14s. and +37m.16s.
Columbia eSS = +37m.20s., iSSS = +42m.22s.
Potsdam iZ = +20m.42s. and +23m.1s., iPPPE = +23m.23s., iZ = +24m.32s., iE = +30m.35s., iPSN = +30m.38s., iZ = +31m.51s., iPPSZ = +32m.38s., iN = +37m.6s.
Hamburg eE = +32m.52s., eN = +47m.44s.
Cape Town e = +42m.31s. and +50m.36s., eN = +50m.41s.
Prague eSSS = +42m.8s.
Seven Falls e = +20m.52s., +32m.50s., and +36m.6s.
Philadelphia eSKKS = +27m.26s., ePPS = +32m.28s., eSS = +37m.52s., eSSS = +42m.10s.
Aberdeen eE = +33m.13s., iE = +46m.15s.
De Bilt ePPS = +33m.26s., eSS = +37m.56s.?, eSSS = +42m.56s.?
Triest ePSKS = +28m.6s., iPPS = +31m.2s.
Stuttgart iZ = +19m.14s., ePPZ = +21m.11s., ePPPEN = +24m.31s., ePSEN = +31m.11s., eEN = +38m.11s., eSSSEN = +43m.6s.
East Machias ePPS = +33m.26s.
Uccle eZ = +23m.17s.
Zurich e = +20m.12s.
Kew e = +24m.6s. and +25m.10s., iE = +28m.46s., eZ = +30m.12s., e = +31m.32s.
Huancayo e = +19m.21s., iPP = +21m.39s., ePKS = +22m.33s., ipPKS = +22m.51s., eSKKS = +27m.16s., ePS = +31m.44s., iSPP = +32m.48s., iSS = +39m.10s.
Rome PPP = +23m.30s., e = +28m.48s., ePS = +31m.34s., e = +37m.8s., SS = +38m.13s., SSS = +43m.2s.
La Plata PKPN = +22m.44s.
La Paz iSKPZ = +23m.14s., iPPPZ = +25m.16s., PPSZ = +34m.28s., SSN = +39m.56s.
Bermuda e = +22m.47s.
San Juan eSKKS = +28m.25s.
Almeria PKS = +23m.36s., PPP = +26m.28s., SKS = +28m.8s.
Granada PP = +24m.0s., pPP = +24m.30s., sSKS = +26m.51s., SKKS = +29m.55s., PPS = +36m.25s., SS = +41m.12s., SSS = +48m.15s., L_q = +75·6m.
San Fernando PPN = +19m.57s.
Long waves were also recorded at Ivigtut, Tananarive, and Harvard.

Sept. 12d. Readings also at 0h. (La Plata, Fresno, Tucson (2), Pasadena, Mount Wilson, Palomar, La Jolla, Riverside, and La Paz), 1h. (near Mizusawa), 2h. (near Tananarive), 5h. (La Paz and Huancayo), 7h. (near Tananarive), 9h. (Apia, La Jolla, Haiwee, Tinemaha, Tucson, Pasadena, Mount Wilson, Palomar, and Riverside), 10h. (Ksara), 13h. (near Bucharest), 14h. (Sofia), 15h. (near Triest), 16h. (Cape Town and La Paz), 17h. (Kew), 18h. (near Mizusawa), 21h. (Ksara and La Paz), 22h. (Rome).

Sept. 13d. 11h. 49m. 56s. Epicentre 32°·1N. 114°·3W. (as given by Pasadena).

$A = -\cdot3493$, $B = -\cdot7735$, $C = +\cdot5288$; $\delta = -6$; $h = +1$;
$D = -\cdot911$, $E = +\cdot412$; $G = -\cdot218$, $H = -\cdot482$, $K = -\cdot849$.

		△	Az.	P.	O−C.	S.	O−C.		Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Palomar	Z.	2·6	300	i 0 41	− 3	—	—	—	—	—
La Jolla		2·7	289	i 0 43	− 2	—	—	—	—	—
Tucson		2·9	87	i 0 48	0	i 1 22	− 2	1 0	P_g	i 1·8
Riverside		3·2	306	e 0 52	0	i 1 58	S_g	—	—	—
Mount Wilson		3·8	306	e 1 1	0	i 2 3	S_g	—	—	—
Pasadena		3·9	306	e 1 2	0	i 2 3	S*	—	—	—
Fresno	N.	6·5	318	e 2 13	P_g	e 4 56	?	—	—	—
Lick	E.	8·0	312	e 2 19	P*	e 4 25	S_g	—	—	—
Branner	N.	8·4	312	—	—	e 4 52	S_g	—	—	—
Berkeley		8·7	314	e 4 34	S*	—	—	(e 4 43)	S_g	—
Seattle		16·7	341	—	—	e 7 14	+11	—	—	e 8·9

Additional readings :—
Tucson i = +56s. and +1m.32s., iS_g = +1m.42s.
Berkeley S_g given as ePE, eN = +4m.54s., eE = +5m.5s., eZ = +5m.12s., eSN = +6m.8s., eSZ = +6m.14s., eSE = +6m.32s., eN = +9m.9s.
Long waves were also recorded at other American stations.

Sept. 13d. Readings also at 1h. (near Berkeley), 3h. (near Triest, Sofia, Rome, and Bucharest), 6h. (Clermont-Ferrand, near Almeria, Toledo, and Granada), 7h. (near Berkeley, Branner, Lick, and Fresno), 8h. (Tinemaha, Pasadena, Mount Wilson, Palomar, Tucson, and Riverside), 10h. (Ksara), 12h. (Tucson), 13h. (La Paz), 14h. (La Paz, Santa Clara, Bozeman, Salt Lake City, Fresno, Tucson, and near Berkeley), 15h. (Warsaw, Harvard, Helwan, Upsala, Potsdam, Sofia, Rome, near Istanbul, Ksara, near Berkeley (2), Riverside, Pasadena, Mount Wilson, Palomar, and Bucharest), 16h. (near Istanbul), 17h. (near Tuai, New Plymouth, Christchurch, Wellington, and Balboa Heights), 19h. (near San Francisco, Berkeley, Branner, and Lick), 22h. (Tucson).

Sept. 14d. Readings at 0h. (La Paz), 1h. (Stuttgart and Zurich), 2h. (College, Sitka, Tucson, Pasadena, Mount Wilson, Tinemaha, Haiwee, Riverside, and Palomar), 4h. (Manila and near Mizusawa), 7h. (Ksara and Manila), 11h. (near Mizusawa), 12h. (near Triest), 14h. (Balboa Heights), 15h. (near Balboa Heights), 17h. (near Santa Clara, Berkeley, Lick, Branner, and San Francisco), 18h. (Ukiah, Manila, Riverside, Palomar, Tinemaha, Mount Wilson, Pasadena, and Tucson), 19h. (St. Louis and La Paz), 20h. (Triest), 23h. (Seattle, Salt Lake City, Lincoln, Butte, Bozeman, Riverside, Palomar, Tinemaha, Mount Wilson, Pasadena, Tucson, St. Louis, Haiwee, and Sitka).

Sept. 15d. 11h. 57m. 39s. Epicentre 51°·0N. 173°·5E.

A = −·6278, B = +·0715, C = +·7751; δ = +3; h = −6;
D = +·113, E = +·994; G = −·770, H = +·088, K = −·632.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		24·3	40	e 9 33	S	(e 9 33)	− 4	—	—	—
Tinemaha	z.	49·2	79	e 8 53	+ 1	—	—	—	—	—
Haiwee	z.	50·0	80	e 8 58	0	—	—	—	—	—
Mount Wilson		51·2	82	i 9 7	0	—	—	—	—	—
Pasadena		51·2	82	i 9 5	− 2	—	—	—	—	—
Riverside	z.	51·8	82	e 9 11	− 1	—	—	—	—	—
Palomar	z.	52·5	82	e 9 16	− 1	—	—	—	—	—
La Jolla		52·6	83	e 9 17	− 1	—	—	—	—	—
Tucson		57·0	78	i 9 49	− 1	—	—	—	—	—
Tashkent		66·7	307	e 10 55	0	e 19 42	− 4	—	—	e 41·4
Moscow		67·5	335	e 11 3	+ 3	e 20 5	+ 9	—	—	e 40·8
Baku		76·5	320	—	—	e 21 42	+ 3	30 27	SSS	38·8
Ksara		87·7	326	—	—	e 23 40	+ 7	—	—	—

Long waves were also recorded at Bozeman, Irkutsk, Phu-Lien, Vladivostok, Potsdam, De Bilt, Warsaw, and Sitka.

Sept. 15d. Readings also at 4h. (near New Plymouth and Christchurch), 7h. (Zurich, Sofia, Ravensburg, Stuttgart, and near Triest), 9h. (La Paz), 12h. (Mizusawa), 13d. (Adelaide), 14h. (Riverview, Mount Wilson, Tinemaha, Tucson, Palomar, Riverside, and Pasadena), 15h. (Granada and De Bilt), 16h. (near New Plymouth), 17h. (Mount Wilson, Tinemaha, Tucson, Palomar, Riverside, and Pasadena), 21h. (La Paz (2)).

Sept. 16d. Readings at 1h. (Tucson and La Paz), 2h. (near Tucson), 9h. (Mizusawa), 13h. (near Triest, Granada, Zurich, Jena, Ravensburg, Neuchatel, Stuttgart, Potsdam, and near Wellington), 14h. (near Manila), 16h. (near Branner), 22h. (Helwan).

Sept. 17d. 4h. 30m. 48s. Epicentre 36°·2N. 140°·0E.
(as on 1940 July 14d. and as given by Tokyo Imp. Univ.).

A = −·6196, B = +·5199, C = +·5880; δ = −6; h = 0.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Tukubasan	0·1	—	0 16	+ 8	0 21	+ 8
Tokyo Imp. Univ.	0·5	200	0 16	+ 2	0 25	+ 2
Mitaka	0·6	214	0 16	+ 1	0 26	0
Komaba	0·6	200	0 18	+ 3	0 27	+ 1
Togane	0·7	155	0 16	− 1	0 27	− 1
Titibu	0·8	254	0 16	− 2	0 26	− 5
Kamakura	1·0	202	0 16	− 5	0 27	− 9
Kiyosumi	1·1	172	0 16	− 6	0 31	− 8
Koyama	1·2	224	0 16	− 8	0 30	−11
Mizusawa	3·1	17	e 0 49	− 2	1 27	− 2
Osaka	4·0	248	1 3	− 1	1 55	+ 3

Sept. 17d. 8h. Pacific shock.

Brisbane iPEN = 12m.12s., iE = 13m.0s., iSN = 15m.42s., iSE = 15m.48s.
Riverview e?E = 13m.0s., eN = 13m.34s., eSEN = 17m.34s., eLN = 20m.24s.
Wellington i = 14m.44s., i = 21m.42s., L = 24m.15s.
Sydney e = 17m.36s., eL = 21m.30s.
Tinemaha eZ = 20m.22s.
Palomar eZ = 20m.24s.
Riverside eZ = 20m.24s.
Tucson eP = 20m.56s.
Adelaide e = 25m.19s. and 27m.0s., i = 30m.0s.
Ksara ePKP = 29m.5s., e = 32m.6s.
Long waves were also recorded at Berkeley, Pasadena, and St. Louis.

Sept. 17d. Readings also at 0h. (near La Paz), 2h. (Rome), 3h. (near Mizusawa), 8h. (La Paz and near Huancayo), 9h. (Tucson, Haiwee, Mount Wilson, Palomar, Riverside, and Tinemaha), 10h. (La Paz), 19h. (Huancayo, La Paz, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and Tucson), 22h. (La Paz).

Sept. 18d. 7h. 13m. 0s. Epicentre 34°·6N. 3°·3E.

$A = +·8236$, $B = +·0475$, $C = +·5652$; $\delta = +2$; $h = 0$;
$D = +·058$, $E = -·998$; $G = +·564$, $H = +·033$, $K = -·825$.

Scale VI-VII at Djelfa (Algeria).

Annales de l'Institute de Physique du Globe de Strasbourg, Tome V, 2e partie Seismologie, 1940, Strasbourg, 1948, p. 14.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Algiers	2·2	6	0 37	− 1	1 14	S_g	0 41	P_g	—
Almeria	5·2	297	e 1 19	− 2	4 32	?	1 36	PP	6·0
Granada	6·2	297	1 12	−23	4 34	?	1 52	PP	6·3
Toledo	7·9	315	e 2 4	+ 5	—	—	—	—	5·3
Rome	10·3	42	e 2 25	− 7	(e 4 37)	+ 7	—	—	—
Clermont-Ferrand	11·2	358	(e 2 51)	+ 7	e 3 8	?	—	—	—
Helwan	24·1	93	e 5 21	+ 3	9 48	+14	—	—	—

Additional readings and notes :—
Algiers $P_gP_g = +44s.$, $i = +2m.14s.$
Granada $PPP = +1m.57s.$, $SS = +5m.10s.$, $SSS = +5m.26s.$
Rome gives S as L_g.
Clermont-Ferrand gives P as PP.
Long waves were also recorded at Triest, Lisbon, Kew, and Warsaw.

Sept. 18d. 15h. 9m. 2s. Epicentre 22°·6S. 68°·8W. (as on 1940 Aug. 7d.).

Pasadena suggests depth 110kms.

$A = +·3342$, $B = -·8616$, $C = -·3821$; $\delta = +4$; $h = +4$;
$D = -·932$, $E = -·361$; $G = -·138$, $H = +·356$, $K = -·924$.

Tables for a focus at base of superficial layers are used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		6·1	5	i 1 34	+ 4	i 2 38	− 2	—	—	3·1
Huancayo		12·2	328	e 2 55	+ 1	i 5 10	0	—	—	i 5·8
La Plata		15·5	145	(3 46)	+ 8	—	—	—	—	3·8
Rio de Janeiro	E.	23·6	95	e 5 10	+ 1	e 9 11	− 6	—	—	—
San Juan		40·8	4	—	—	e 13 28	−20	e 14 14	sS	e 16·4
Columbia		57·5	348	e 14 28	S_eP	e 17 32	−10	e 18 19	sS	e 35·2
Philadelphia		62·5	355	—	—	e 18 26	−20	e 19 24	sS	—
Cape Girardeau	E.	62·7	342	i 10 21	− 3	i 18 37	−12	e 10 49	pP	—
Fordham		63·3	356	e 10 55	+27	i 18 47	− 9	—	—	—
St. Louis		64·1	341	e 10 20	−13	e 18 48	−18	—	—	—
Weston		64·7	358	e 10 34	− 3	—	—	—	—	—
Harvard		64·8	358	i 10 36	− 2	—	—	—	—	—
Buffalo		65·8	352	i 10 41	− 3	i 11 11	sP	i 10 46	pP	—
Tucson		67·7	322	i 10 56	0	e 19 46	− 4	i 11 22	pP	e 33·7
Ottawa		68·0	345	e 10 55	− 3	i 19 41	−12	—	—	—
La Jolla		72·0	319	e 11 22	0	—	—	—	—	—
Palomar	Z.	72·1	319	i 11 21k	− 2	—	—	i 11 50	pP	—
Riverside		72·8	319	i 11 28k	+ 1	—	—	i 11 57	pP	—
Mount Wilson		73·4	319	i 11 31k	+ 1	—	—	i 12 1	pP	—
Pasadena		73·4	319	i 11 31k	+ 1	—	—	i 12 0	pP	—
Haiwee		74·6	321	e 11 39	+ 1	—	—	e 12 9	pP	—
Santa Barbara		74·6	318	i 11 38	0	—	—	—	—	—
Tinemaha		75·5	321	i 11 43k	0	—	—	i 12 14	pP	—
Berkeley		78·4	319	i 11 59	0	—	—	i 12 29	pP	—
Toledo		86·6	44	e 12 41	0	—	—	—	—	20·9
Rome		98·6	49	e 17 33	PKP	e 24 3	[− 8]	—	—	—
Helwan	E.	109·3	65	e 19 25	PP	i 29 10	PPS	—	—	—
Ksara		114·0	62	i 19 30	PP	e 29 11	PS	e 19 57	pPP	—

For Notes see next page.

NOTES TO SEPTEMBER 18d. 15h. 9m. 2s.

Additional readings :—
Huancayo i = +3m.12s., +3m.45s., and +5m.25s.
Columbia eS_cS = +19m.25s.
Philadelphia e = +18m.39s., eS_cS = +20m.2s.
Cape Girardeau iE = +11m.3s., esSE = +19m.27s.
Fordham e = +19m.36s., i = +21m.2s.
St. Louis eN = +10m.24s., iZ = +11m.4s., eN = +11m.8s., esSE = +19m.36s., isSN = +19m.40s., eE = +20m.5s. and +21m.3s.
Buffalo i = +11m.23s.
Tucson i = +11m.2s., isP = +11m.39s., i = +11m.53s., eS_cS = +20m.36s.
Ottawa e = +20m.30s.
Palomar isPZ = +12m.4s.
Riverside isPZ = +12m.9s.
Mount Wilson isPZ = +12m.13s.
Pasadena isPZ = +12m.10s.
Haiwee isPZ = +12m.21s.
Berkeley eZ = +12m.42s.
Rome eZ = +26m.27s. and +28m.38s., eE = +30m.40s. and +33m.58s.
Ksara SPP = +20m.12s., PPS = +30m.19s.
Montezuma near the epicentre records four i readings ; +4m.9s., +4m.24s., +4m.31s., and +4m.49s.

Sept. 18d. Readings also at 1h. (near Berkeley, Chur, Stuttgart, Rome, and near Triest), 6h. (Baku, Almata, Frunse, Tashkent, Tchimkent, near Andijan, and Samarkand), 7h. (Mizusawa), 8h. (Ksara, Christchurch, and La Plata), 11h. (Calcutta), 12h. (near Mizusawa), 14h. (Ksara), 20h. (near Granada), 21h. (Calcutta), 23h. (Huancayo and near La Paz).

Sept. 19d. 8h. 20m. 37s. Epicentre 37°·9N. 121°·7W.

$A = -·4157$, $B = -·6731$, $C = +·6117$; $\delta = +5$; $h = -1$;
$D = -·851$, $E = +·526$; $G = -·321$, $H = -·520$, $K = -·791$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Berkeley		0·5	266	i 0 10	− 4	i 0 18	− 5	—
Branner		0·6	218	i 0 15	0	i 0 25	− 1	—
Lick	E.	0·6	176	i 0 14	− 1	i 0 21	− 5	—
Santa Clara		0·6	203	i 0 17	+ 2	i 0 26	0	—
San Francisco		0·6	258	i 0 14	− 1	i 0 24	− 2	—
Fresno	N.	1·9	127	e 0 33	− 1	e 1 11	+12	—
Tucson		10·5	119	e 2 38	+ 3	e 4 19	−16	i 5·7

Additional readings :—
Berkeley iE = +23s.
Lick iE = +18s., iSE = +24s.
Tucson i = +2m.48s. and +4m.53s.

Sept. 19d. 18h. 19m. 39s. Epicentre 23°·3S. 170°·9E.

$A = -·9078$. $B = +·1454$, $C = -·3933$; $\delta = -7$; $h = +4$;
$D = +·158$, $E = +·987$; $G = +·388$, $H = -·062$, $K = -·919$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Arapuni		15·3	166	3 54	+15	6 48	+18	—	—	—
Tuai		16·4	163	3 55	+ 2	7 6	+10	—	—	—
Brisbane	E.	16·7	252	i 3 51	− 6	i 6 57	− 6	—	—	—
	N.	16·7	252	i 3 57	0	i 6 51	−12	—	—	—
Wellington		18·2	172	4 17a	+ 1	7 44	+ 7	8 1	L_q	9·2
Apia		18·9	64	e 4 23k	− 1	i 7 43	−10	4 32	PP	8·3
Christchurch		20·2	177	4 38	− 1	8 25	+ 4	—	—	—
Riverview		20·2	234	i 4 39a	0	i 8 22	+ 1	i 4 57	PP	9·3
Sydney		20·2	234	i 4 39	0	i 8 33	+12	i 4 57	PP	9·8
Adelaide		30·4	240	6 2	−14	i 11 14	− 2	i 7 7	PP	13·6
Perth		49·1	248	9 3	+42	15 53	− 3	18 31	SS	21·7
Honolulu		53·8	37	i 9 33	+ 7	i 17 5	+ 4	e 9 49	pP	e 22·1
Titizima		57·3	330	9 53	+ 1	—	—	—	—	—
Manila		61·7	303	i 10 21k	− 1	i 18 54	+10	—	—	30·4
Naha		64·6	317	10 42	+ 1	19 35	+14	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Yokohama		65·5	332	e 10 59	+12	e 19 36	+ 4	—	—	—
Tokyo Cen. Met. Ob.		65·7	333	10 53	+ 5	19 31	− 3	—	—	26·8
Nagoya		66·5	331	10 40	−14	19 46	+ 2	—	—	—
Miyazaki		66·6	324	i 10 57	+ 3	e 19 35	−10	—	—	27·1
Osaka		66·7	329	11 2	+ 7	19 35	−11	13 39	PP	—
Kobe		66·9	329	10 56	0	19 37	−12	—	—	—
Sendai		67·4	336	10 58	− 1	19 55	0	—	—	—
Kumamoto		67·7	324	11 3	+ 2	19 58	0	—	—	—
Taihoku		67·8	312	11 7	+ 5	—	—	—	—	—
Mizusawa		68·1	336	e 11 0	− 4	19 59	− 4	—	—	—
Hukuoka		68·5	325	e 11 6	0	—	—	—	—	—
Mori		70·9	337	e 11 17	− 4	20 27	− 9	—	—	—
Sapporo		71·4	338	e 11 32	+ 8	20 42	0	—	—	—
Zi-ka-wei	N.	72·0	317	e 11 31	+ 3	—	—	—	—	—
Zinsen		73·4	324	11 37	+ 1	20 56	− 9	—	—	—
Vladivostok		75·2	332	e 11 46	0	21 26	+ 1	21 48	PS	26·0
Phu-Lien		76·4	300	11 21?	−32	—	—	—	—	—
Branner		87·2	48	e 12 52	+ 3	e 23 15	[0]	—	—	e 40·5
San Francisco	N.	87·2	48	—	—	e 23 13	[− 2]	e 36 21?	?	—
Santa Clara		87·3	48	e 12 48	− 2	e 23 35	+ 6	—	—	e 40·7
Santa Barbara		87·4	52	e 12 51	+ 1	—	—	—	—	—
Ukiah		87·4	45	e 12 58	+ 8	i 23 34	+ 4	e 13 21	pP	i 35·8
Lick		87·5	48	e 12 53	+ 2	e 23 21	[+ 4]	—	—	e 41·0
Berkeley		87·6	48	i 12 47	− 4	e 23 11	[− 6]	(e 24 34)	PS	e 40·6
Pasadena		88·3	52	e 12 55k	0	i 23 46	+ 7	e 16 51	PP	e 36·1
La Jolla		88·4	54	e 12 57	+ 2	—	—	—	—	—
Mount Wilson		88·4	52	i 12 56k	+ 1	—	—	—	—	—
Fresno	N.	88·5	49	e 13 1	+ 5	—	—	—	—	—
Riverside		88·8	52	e 12 57k	0	e 23 28	[+ 2]	—	—	—
Palomar	Z.	88·9	53	i 12 57k	− 1	—	—	—	—	—
Haiwee		89·4	50	e 13 1	+ 1	—	—	—	—	—
Tinemaha		89·7	49	i 13 2	+ 1	e 23 58	+ 6	—	—	—
Sitka		91·9	27	e 13 14	+ 3	i 23 48	[+ 4]	e 16 45	PP	e 37·8
Calcutta	N.	92·3	293	i 13 28a	+15	i 24 19	+ 4	—	—	—
Victoria		92·4	38	13 25	+11	23 47	[0]	e 29 47	SS	e 42·3
Seattle		92·6	39	e 13 7	− 8	e 23 41	[− 7]	e 17 36	sPP	e 38·8
Tucson		92·9	56	i 13 17k	+ 1	i 23 55	[+ 5]	i 13 46	pP	i 38·2
College		93·5	16	e 13 8	−11	i 23 49	[− 4]	i 25 27	PS	e 37·3
Colombo	E.	93·6	275	13 26	+ 7	—	—	—	—	—
Irkutsk		94·9	325	e 13 28	+ 3	23 52	[− 9]	e 31 21	SSP	40·4
Salt Lake City		95·8	47	e 13 29	0	e 23 59	[− 6]	e 13 51	pP	e 38·6
Kodaikanal	E.	97·1	278	e 13 36	+ 1	i 24 16	[+ 4]	—	—	i 42·6
Butte		97·6	42	e 14 5	+27	e 24 42	−18	e 19 42	PPP	e 40·3
Bozeman		98·5	44	e 13 44	+ 2	i 24 21	[+ 1]	e 14 6	pP	i 40·0
Hyderabad	N.	98·9	285	e 13 55	+12	24 14	[− 7]	17 36	PP	49·5
Agra	E.	102·7	294	14 4	+ 4	24 33	[− 7]	18 13	PP	—
Saskatoon		103·6	39	—	—	e 23 21	?	—	—	44·4
La Plata	E.	105·9	140	18 33	PP	26 21?	+11	33 33	SS	43·9
	N.	105·9	140	18 45	PP	27 45	PS	—	—	44·4
Huancayo		106·3	111	e 14 18	P	e 24 51	[− 5]	e 18 45	PP	e 42·4
Lincoln		106·6	52	e 18 45	PP	e 25 0	[+ 2]	e 21 35	PPP	—
Semipalatinsk		108·0	318.	18 59	PP	—	—	—	—	—
Almata		108·4	310	e 14 43	P	—	—	e 19 1	PP	—
Frunse		109·9	309	e 19 20	PP	—	—	—	—	43·4
La Paz		110·0	119	e 18 13	[−20]	27 4	{+59}	i 19 11	PP	59·0
Tananarive		110·6	238	—	—	e 25 24	[+10]	34 37	SS	53·2
Florissant		110·8	56	e 14 40	P	e 26 18	{+ 7}	i 19 18	PP	45·6
St. Louis		110·8	56	e 14 37	P	e 25 11	[− 4]	i 19 15	PP	—
Andijan		111·1	306	e 18 35	[0]	26 10	{− 3}	e 19 57	PP	42·4
Cape Girardeau	E.	111·1	57	e 19 14	PP	e 25 15	[− 1]	e 28 52	PS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tchimkent		113·4	307	19 31	PP	(29 21?)	PS	—	—	29·3
Chicago U.S.C.G.S.		113·5	52	e 19 2	[+22]	e 25 16	[−10]	e 22 0	PPP	e 46·3
Tashkent		113·5	306	e 14 50	P	25 28	[+ 2]	29 2	PS	—
Samarkand		114·9	304	19 46	PP	—	—	—	—	—
Columbia		117·1	62	e 15 7	P	e 25 41	[+ 1]	e 20 1	PP	e 48·1
Cape Town	E.	117·3	206	—	—	i 29 49	PS	i 36 10	SS	61·3
Toronto		119·7	51	e 20 33	PP	e 36 44	SS	—	—	50·3
Sverdlovsk		120·2	323	e 15 37	P	25 52	[+ 2]	i 20 21	PP	50·0
Georgetown		121·0	57	18 56	[+ 1]	i 25 57	[+ 4]	20 26	PP	—
Ottawa		122·4	49	18 57	[0]	25 57	[− 1]	20 33	PP	e 51·3
Philadelphia		122·6	57	i 20 40	PP	e 25 55	[− 3]	e 21 3	PP	e 50·7
Rio de Janeiro		123·3	141	e 20 21	PP	e 30 16	PS	—	—	e 51·3
Fordham		123·6	55	i 19 0	[0]	i 26 8	[+ 6]	20 46	PP	1 51·9
Vermont		124·2	50	e 20 48	PP	e 30 7	SP	e 37 41	SS	e 51·3
Shawinigan Falls		124·5	48	—	—	e 33 43	PPS	—	—	54·4
Harvard		125·3	53	e 18 57	[− 6]	—	—	e 21 7	PP	e 52·3
Seven Falls		125·8	47	19 17	[+13]	27 43	{− 9}	21 1	PP	54·4
San Juan		126·8	83	e 15 55	P	e 26 11	[0]	e 20 52	PP	e 51·8
Baku		128·0	304	21 15	PP	31 16	PS	22 10	PKS	60·3
East Machias		128·4	50	e 21 18	PP	e 26 14	[− 2]	e 31 36	PS	e 51·6
Bermuda		130·6	66	e 19 16	[+ 3]	e 38 53	SS	e 21 33	PP	e 54·3
Halifax		131·0	50	e 19 33	[+19]	—	—	e 22 36	PKS	54·4
Scoresby Sund		132·2	6	e 20 24	[+68]	i 26 40	[+15]	i 21 33	PP	56·1
Piatigorsk		132·8	309	22 49	PKS	—	—	—	—	—
Moscow		132·9	325	19 17	[0]	26 29	[+ 2]	31 57	PS	58·8
Ivigtut		133·6	25	e 19 10	[− 9]	e 26 21	[− 7]	e 21 50	PP	e 62·8
Pulkovo		134·3	333	19 20	[0]	26 21	[− 9]	22 2	PP	53·0
Upsala		138·9	340	e 22 28	PP	e 28 57	{−17}	i 23 6	PKS	e 60·4
Yalta		138·9	311	—	—	23 20	PKS	—	—	—
Ksara		139·4	294	e 19 27k	[− 2]	34 54	PPS	e 22 26	PP	—
Bergen		141·6	348	e 19 32	[− 1]	e 29 33	{+ 2}	e 22 45	PP	e 62·4
Warsaw		143·1	329	i 19 32a	[− 4]	e 29 43	{+ 4}	i 22 40	PP	e 59·4
Helwan		143·4	289	i 19 33a	[− 3]	41 29	SS	19 53	pPKP	—
Istanbul		143·5	308	19 39	[+ 3]	29 56	{+15}	23 0	PP	74·9
Copenhagen		143·9	340	e 19 34k	[− 3]	34 5	PS	i 23 3	PP	—
Bucharest		144·4	315	e 19 37k	[− 1]	29 47	{+ 1}	33 13	PS	41·4
Aberdeen	E.	145·8	353	i 19 42	[+ 2]	i 29 52	{− 3}	i 40 46	SS	e 68·5
Potsdam		146·4	336	i 19 49	[+ 8]	e 29 54	{− 4}	—	—	e 65·4
Hamburg		146·5	341	e 19 40k	[− 2]	e 47 33	SSS	—	—	e 59·4
Heligoland		146·6	343	e 19 38	[− 4]	—	—	—	—	e 60·4
Sofia		146·9	313	e 19 46	[+ 4]	—	—	—	—	—
Budapest		147·0	323	19 46	[+ 3]	e 42 21?	SS	i 23 9	PP	e 65·4
Edinburgh		147·1	354	e 23 21	PP	—	—	—	—	—
Ogyalla	E.	147·2	324	19 50	[+ 7]	—	—	i 24 2	PP	—
Prague		147·6	331	e 19 52	[+ 9]	e 30 7	{+ 2}	e 23 21	PP	e 60·4
Jena		148·1	334	e 19 42	[− 2]	—	—	—	—	e 65·4
Stonyhurst		149·1	352	e 20 16	[+30]	i 45 6	?	—	—	71·4
De Bilt		149·2	343	i 19 47k	[+ 1]	e 42 41	SS	i 23 49	PP	77·4
Uccle		150·6	344	e 19 48k	[0]	i 30 23	{+ 1}	e 23 17	SKP	e 64·4
Stuttgart		150·7	335	e 19 49a	[+ 1]	e 26 55	[0]	e 23 42	PP	e 66·4
Oxford		151·0	350	e 19 59	[+10]	—	—	—	—	—
Triest		151·0	326	i 19 54	[+ 5]	i 26 56	[+ 1]	i 23 37	SKP	e 66·7
Kew		151·1	349	e 19 52	[+ 3]	e 26 46	[− 9]	e 23 38	PKS	e 70·4
Chur		152·1	333	e 19 51	[+ 1]	—	—	—	—	—
Zurich		152·1	334	e 19 50	[0]	e 30 15	{−14}	e 23 32	PP	—
Basle		152·4	335	e 19 50	[− 1]	e 28 29	?	—	—	—
Neuchatel		153·1	335	e 19 52	[0]	—	—	—	—	—
Rome		154·1	320	e 19 52k	[− 1]	i 30 43	{+ 2}	i 23 51	PP	e 61·9
Clermont-Ferrand		155·5	339	e 19 57	[+ 2]	—	—	e 24 3	PP	e 78·0
Algiers		162·9	325	e 20 7	[+ 3]	31 34	{+ 7}	28 31	PPP	—
Toledo		162·9	347	e 20 3	[− 1]	45 14	SS	24 53	PP	—
Lisbon		164·6	358	20 15	[+10]	—	—	23 26	SKP	77·4
Almeria		165·3	338	i 20 7	[+ 1]	31 52	{+13}	25 0	PP	80·8
Granada		165·4	342	i 20 8	[+ 2]	31 34	{− 6}	24 9	SKP	82·2
San Fernando	N.	166·6	349	e 20 8	[+ 1]	i 31 50	{+ 4}	46 52	SSP	80·3

For Notes see next page.

NOTES TO SEPTEMBER 19d. 18h. 19m. 39s.

Additional readings :—

Arapuni i = +4m.45s. and +6m.33s.
Apia SS?EN = +7m.55s.
Riverview iEZ = +4m.51s., isP?N = +5m.14s., iE = +5m.17s., iZ = +5m.32s. and +6m.17s., iE = +7m.18s., iN = +7m.30s., iE = +8m.30s., iSN = +8m.34s., iZ = +8m.38s., isS?N = +9m.7s., isS?E = +9m.14s.
Sydney iPS = +7m.18s.
Adelaide iP_cP = +8m.25s., i = +10m.58s., iSS = +12m.48s.
Perth PPP = +11m.29s., i = +12m.14s., +14m.8s., and +14m.51s., SSS = +19m.27s.
Honolulu isS = +17m.38s., iSS = +20m.46s.
Tokyo Cen. Met. Obs. i = +12m.3s.
Miyazaki i = +19m.47s.
Mizusawa SE = +20m.4s.
Vladivostok PKP = +18m.26s.
Ukiah iPPP = +18m.38s., iSKKS = +23m.20s., i = +23m.49s., ePS = +24m.46s., eSS = +29m.7s., eSSS = +32m.29s.
Berkeley iPE = +12m.50s., iZ = +12m.56s., eZ = +29m.23s., eEN = +36m.27s., eN = +36m.45s.
Pasadena eEN = +23m.26s., iZ = +24m.51s., eZ = +28m.11s.
Sitka epPP = +17m.5s., iS = +24m.14s., i = +24m.17s., iPS = +25m.24s., eSS = +30m.16s., esSS = +30m.47s., eSSS = +34m.39s.
Victoria S = +24m.33s., SSS = +34m.33s.
Seattle eS = +24m.25s., eSP = +25m.27s., eSSS = +34m.32s.
Tucson i = +13m.20s., +13m.24s., +13m.36s., and +14m.15s., iPP = +17m.3s., iPPP = +19m.10s., iSKKS = +23m.43s., ipS = +24m.30s., isS = +24m.50s., iPS = +25m.34s., iSS = +30m.29s., eSSS = +34m.39s., ePKP,PKP = +38m.39s.
College iS = +24m.20s., ipPS = +25m.38s., esPS = +25m.58s., eSS = +30m.50s., eSSS = +34m.25s.
Salt Lake City ePP = +17m.26s., ePPP = +19m.30s., iSKKS = +24m.12s., eS = +24m.38s., i = +24m.53s., esS = +25m.24s., eSP = +26m.0s., esSP = +26m.46s., eSS = +31m.15s., esSS = +31m.42s., iSSS = +34m.45s.
Kodaikanal iSE = +24m.28s., iPSE = +25m.21s.
Butte epS = +25m.10s., esS = +25m.37s., epPS = +26m.33s., eSS = +31m.40s., eSSS = +35m.29s.
Bozeman ePP = +17m.51s., epPP = +18m.5s., ePPP = +20m.4s., eS = +25m.9s., e = +25m.14s., epS = +26m.31s., ipPS = +26m.40s., isPS = +26m.53s., iSS = +31m.54s., isSS = +32m.30s., iSSS = +35m.48s.
Hyderabad SKKSN = +24m.50s., SN = +25m.31s., PSN = +26m.52s. SSN = +31m.59s.
Agra S_cSE = +25m.28s., PPSE = +27m.21s., SSE = +32m.42s., SSS = +36m.24s.
Huancayo epPP = +19m.16s., ePPP = +20m.51s., eSKKS = +25m.8s., iS = +26m.27s., iPS = +27m.58s., iPPS = +28m.59s., eSS = +33m.34s., i = +34m.18s., eSSS = +37m.58s.
Lincoln eSP = +27m.39s., iPS = +28m.8s., eSS = +33m.50s., eSSS = +38m.6s.
Almata ePKP = +17m.59s.
La Paz SZ = +28m.35s., iZ = +29m.13s., SSN = +38m.21s.
Tananarive eE = +35m.19s.
Florissant iZ = +19m.42s., iSN = +27m.7s., iSPZ = +28m.52s., iZ = +29m.7s., iN = +29m.10s., iPPSZ = +29m.57s., iSSN = +34m.45s., iN = +39m.5s. and +41m.21s.
St. Louis eE = +17m.56s., eN = +19m.46s., eSKKSE = +26m.9s., iSKKSE = +26m.14s., iN = +26m.17s., iSN = +27m.0s.
Cape Girardeau eE = +19m.44s. and +26m.13s.
Chicago U.S.C.G.S. eS = +27m.22s., eSP = +29m.2s., ePS = +29m.20s., ePPS = +30m.21s., eSS = +34m.52s.
Tashkent PKP = +18m.26s., eS = +26m.57s.
Columbia eS = +27m.37s., e = +27m.57s., esPS = +30m.7s., eSS = +35m.51s., eSSS = +41m.0s.
Cape Town iN = +29m.57s., eE = +43m.46s., eN = +54m.19s., eE = +54m.26s.
Toronto eN = +28m.18s.
Sverdlovsk iPKP = +18m.54s., iS = +28m.16s.
Georgetown PP = +20m.30s., iSKKS = +27m.25s.
Ottawa SKKS = +27m.32s., PS = +30m.51s., SSE = +37m.51s., SSSE = +41m.21s.?
Philadelphia eS = +28m.37s., eSP = +30m.5s., eSS = +37m.18s., esSS = +38m.12s., eSSS = +40m.28s.
Rio de Janeiro eSE = +30m.21s.
Fordham i = +27m.42s. and +32m.18s.
Vermont esSS = +38m.35s.
Seven Falls PS = +31m.3s., SS = +38m.57s.
San Juan ePKP = +19m.6s., ePPP = +23m.36s., eSKKS = +27m.44s., eSP = +30m.59s.
East Machias epPP = +21m.48s., eSKKS = +27m.45s., epPS = +31m.55s., eSPP = +32m.52s., iSS = +38m.35s., esSS = +39m.2s.
Bermuda iPKS = +22m.35s., i = +41m.30s.
Scoresby Sund i = +30m.48s., and +38m.52s., eSS = +40m.31s.
Ivigtut e = +19m.30s., ePKS = +22m.48s., ePS = +32m.15s., eSPP = +33m.40s., eSS = +39m.23s., isSS = +40m.36s., eSSS = +44m.57s.
Upsala eSKKSE = +29m.10s., eSKSPE = +32m.15s., eSKSPN = +32m.30s., ePPSE = +34m.22s., ePPSN = +34m.38s., eSSN = +40m.34s., eSSE = +42m.21s.?, eSSS = +45m.21s.?

Continued on next page.

Warsaw ePKPE = +19m.40s., eN = +22m.56s., iZ = +23m.14s., eN = +32m.42s., eE = +33m.3s., iE = +33m.23s., eZ = +34m.20s., +35m.28s?, and +41m.25s., iN = +41m.37s.
Helwan iZ = +19m.37s. and +20m.31s., PPEZ = +22m.51s., SKPZ = +23m.6s., PKSZ = +23m.18s., SPKSZ = +23m.53s., PSKSE = +33m.1s., PPSE = +35m.31s.
Istanbul PKS = +27m.30s., SS = +41m.0s.
Copenhagen i = +19m.38s., +20m.52s., and +29m.46s.
Bucharest i = +19m.41s., iN = +22m.11s., iE = +22m.15s., iEN = +23m.36s., eN = +36m.31s.
Aberdeen iE = +19m.51s., iSKSPE = +33m.36s., eSSSE = +36m.36s., eN = +47m.21s.?, eE = +60m.31s.
Potsdam iE = +19m.56s., iN = +19m.59s., eSKKSE = +29m.58s.
Hamburg iZ = +19m.44s.
Sofia iPEN = +19m.52s.
Budapest iE = +19m.52s. and +22m.17s., iN = +23m.36s.
Ogyalla E. i = +20m.4s. and +24m.29s.
Ogyalla N. i = +19m.52s. and +22m.27s.
Prague e = +35m.51s. and +42m.51s.
Jena iPZ = +19m.48s., iPEN = +19m.51s., i = +20m.21s.
De Bilt iPKP = +19m.53s., iZ = +20m.6s. and +20m.16s., eSSS = +47m.51s., e = +61m.21s.?
Uccle iNZ = +19m.52s., iSSE = +42m.54s.
Stuttgart iZ = +19m.52s. and +19m.58s., eN = +20m.54s., eSKKSN = +30m.21s., ePSKSN = +34m.45s., eSSE = +42m.56s., eSSN = +42m.59s.
Triest iPKP$_2$ = +20m.15s., iPP = +23m.57s., iPPP = +27m.27s., iSKKS = +30m.28s., iPSKS = +34m.9s., iPPS = +36m.54s., iSS = +43m.35s., eSSS = +49m.31s.
Kew ePKP$_2$NZ = +20m.15s., eSKKS = +30m.24s., ePPPE = +32m.50s., eSKKSNZ = +33m.54s., eSKSPNZ = +38m.54s., eSS = +43m.21s.?, eZ = +46m.51s., eSSS = +48m.51s., eNZ = +59m.21s.?, eL$_q$ = +64·4m.
Rome iZ = +20m.14s., iEZ = +20m.48s., iZ = +21m.35s., iE = +22m.1s., iZ = +22m.31s., iN = +22m.37s., iZ = +24m.36s., eZ = +26m.9s., iPPPZ = +27m.21s., iZ = +28m.54s., eN = +38m.27s., eE = +39m.0s., eSSN = +43m.11s., eN = +43m.29s.
Clermont-Ferrand i = +20m.1s.
Algiers e = +20m.47s., PP = +24m.39s., e = +39m.21s., SS = +53m.21s.?
Toledo ePKP$_2$ = +21m.4s.
Lisbon PKP$_2$E = +21m.44s.?, E = +22m.32s., PPPE = +29m.43s., SS?E = +48m.36s.
Almeria PPP = +29m.19s., SKKP = +35m.48s., SS = +45m.27s.
Granada PKP$_2$ = +21m.52s., iPP = +24m.51s., PPP = +28m.21s., SKKS(Δ >180°) = +33m.37s., SKSP = +35m.21s., SKSP(Δ >180°) = +38m.33s., PPS = +40m.0s., SS = +45m.33s., PSS = +46m.35s., SSS = +51m.54s.
San Fernando ePKPE = +20m.11s., iPPN = +25m.34s.
Long waves were recorded at Ferndale.

September 19d. 23h. 59m. 57s. Epicentre 3°·2S. 143°·7E. (as on 1939, December 9d.).

A = −·8047, B = +·5911, C = −·0555; δ = +2; h = +7;
D = +·592, E = +·806; G = +·045, H = −·033, K = −·998.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		25·7	160	i 5 33	0	i 9 51	−10	i 6 51	PPP	—
Manila		28·6	310	i 6 6a	+ 6	11 6	+18	—	—	i 14·7
Riverview		31·3	168	e 7 39	PP	i 11 28	− 3	—	—	e 12·3
Sydney		31·3	168	e 7 33	PP	e 11 21	−10	e 13 27	SSS	—
Adelaide		31·9	188	e 6 34	+ 5	i 11 57	+17	e 8 59	PPP	17·1
Perth		38·8	219	13 53	S	(13 53)	+27	i 15 58	SS	21·3
Arapuni		45·4	144	(9 57)	PP	9 57	P	—	—	20·0
Wellington		47·1	148	7 18	?	10 45	PP	—	—	12·5
Vladivostok		47·3	349	e 8 31	− 6	i 15 27	− 4	—	—	22·2
Christchurch		47·6	152	7 38a	−61	11 26	PPP	12 2	L_q	13·1
Calcutta	N.	59·8	298	e 11 4	+55	i 18 45	PS	—	—	—
Agra	E.	70·1	301	e 11 17	+ 1	i 20 36	+ 9	—	—	—
Almata		75·5	317	e 11 43	− 5	—	—	—	—	—
Frunse		77·1	316	e 11 56	− 1	—	—	—	—	—
Andijan		78·1	313	e 12 4	+ 2	21 55	− 1	—	—	—
Tashkent		80·5	313	i 12 15	0	22 27	+ 5	—	—	i 38·3
Samarkand		81·9	310	e 12 8	−15	—	—	—	—	—
College		83·9	24	e 16 29	PP	e 29 20	?	—	—	—
Sverdlovsk		88·9	327	e 12 54	− 4	23 24	[− 2]	—	—	36·0
Victoria		94·3	42	—	—	e 24 15	−17	—	—	e 39·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku		95·0	309	17 33	PP	25 8	+30	31 39	SS	50·0
Pasadena		98·5	56	i 16 10	?	—	—	—	—	e 36·0
Haiwee		98·6	54	e 16 7	?	—	—	—	—	—
Mount Wilson	z.	98·6	56	e 13 30	−12	—	—	e 16 1	?	—
Riverside	z.	99·2	56	e 16 3	?	—	—	—	—	—
Palomar	z.	99·6	57	e 15 59	?	—	—	—	—	—
Moscow		101·7	326	e 17 49	PP	24 33	[− 2]	e 27 7	PS	50·4
Tucson		104·8	58	e 16 17	?	e 27 15	PS	—	—	e 42·4
Ksara		106·6	303	e 16 12	?	e 28 50	PPS	e 18 51	PP	—
Istanbul		110·6	313	19 31	PP	28 41	PS	—	—	—
Helwan	E.	110·9	300	e 19 15	PP	e 28 59	PS	—	—	—
Warsaw		112·0	325	—	—	e 30 3?	PPS	—	—	e 55·0
Hamburg		117·1	331	e 22 51	PPP	—	—	—	—	e 58·0
St. Louis		119·7	46	—	—	e 27 27	{+15}	e 29 15	PS	e 56·3
Stuttgart		120·3	326	e 22 56	PPP	—	—	—	—	—
Cape Girardeau	N.	120·7	48	—	—	i 46 59	?	—	—	—
Rome		121·9	318	e 23 20	PPP	e 33 37	?	e 41 11	SSS	—
Seven Falls		127·0	27	—	—	e 33 45	?	—	—	59·0
Granada		134·8	322	e 27 55	?	(31 51)	PS	38 27	SS	97·2
Huancayo		138·6	111	—	—	e 37 25	PSPS	e 41 2	SSP	e 58·7
La Paz	z.	143·0	123	22 48	PP	—	—	—	—	68·0

Additional readings :—
Riverview eN = +7m.42s.
Adelaide ePP = +7m.36s., iSS = +13m.6s., i = +13m.43s. and +15m.51s., S_cS = +16m.38s.
Perth PPP = +14m.53s., i = +16m.28s., +17m.18s., and +17m.51s., S = +18m.43s., i = +19m.1s. and +20m.3s.
College eSSS = +37m.34s.
Sverdlovsk S = +23m.45s.
Moscow S = +25m.29s.
Tucson i = +16m.33s.
St. Louis eN = +27m.45s.
Rome eZ = +23m.29s., eE = +28m.15s., ePSE = +35m.39s., ePPSN? = +36m.24s., eSSSN = +45m.1s.
Granada SKSP = +42m.35s.
Long waves were also recorded at Kew, Aberdeen, Upsala, De Bilt, Triest, Santa Clara, Toledo, Potsdam, Berkeley, Ukiah, Honolulu, East Machias, and Bozeman.

September 19d. Readings also at 0h. (near Berkeley and La Paz), 1h. (Fresno, Tucson, and Manila), 6h. (Mizusawa), 8h. (near Branner (2), Lick, and Berkeley (3)), 9h. (near Berkeley and Balboa Heights), 10h. (near Triest), 11h. (Pasadena, Tucson, Manila, Mount Wilson, Tashkent, and Sverdlovsk), 16h. (near Berkeley and Calcutta), 19h. (Mizusawa), 20h. (Kodaikanal), 23h. (near Branner).

September 20d. Readings at 1h. (Sydney, Riverview, Christchurch, and Wellington), 5h. (Ksara), 9h. (Haiwee, Palomar, Mount Wilson, and Tucson), 11h. (Agra), 12h. (Riverside, Tucson, Palomar, Pasadena, and near Fresno), 14h. (near Rome and De Bilt), 15h. (near Berkeley and Rome), 18h. (near Berkeley, Fresno, Pasadena, Palomar, Tucson, Mount Wilson, Christchurch, near Branner, Lick, Santa Clara, San Francisco, Haiwee, La Paz, Tinemaha, and Mizusawa), 19h. (Basle, Zurich, Rome, Columbia, Ksara, Huancayo, near Lick, Branner, Berkeley, and Tucson).

September 21d. 13h. 48m. 58s. Epicentre 37°·3N. 70°·9E. (as on 1940, July 17d.).

Intensity VIII at Gulmarg, Srinagar; VI at Peshawar, Chakadara; V at Rawalpindi, Kabul, Drosh; IV at Parachinar.

Epicentre, Hindou-Kouch, 36°·0N. 71°·0E., depth 240km. (Bombay). See Government of India, Seismological Bulletin, 1940, p. 70.

$A = +·2609$, $B = +·7535$, $C = +·6034$; $\delta = -8$; $h = -1$;
$D = +·945$, $E = -·327$; $G = +·197$, $H = +·570$, $K = -·797$.

Tables for depth of focus 0·020 have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Samarkand		3·9	309	e 1 9	+ 9	e 1 59	+13	—	—	—
Tashkent		4·2	343	i 1 16	+12	—	—	—	—	—
Tchimkent		5·1	349	1 23	+ 7	2 27	+13	—	—	—
Frunse		6·3	27	i 1 41	+ 9	i 2 59	+16	—	—	—
Almata		7·5	36	1 58	+10	3 31	sS	—	—	—
Dehra Dun	N.	9·1	138	i 2 9	0	i 3 43	− 7	i 3 1	?	—
Agra		11·8	147	2 32	−12	4 32	−21	—	—	—
Semipalatinsk		14·7	24	3 29	+ 8	6 17	sS	—	—	—
Baku		16·7	287	3 48	+ 2	i 6 53	+ 8	—	—	8·0
Bombay		18·4	175	i 3 58	− 7	i 7 8	−14	i 4 40	pP	i 10·1
Sverdlovsk		20·7	344	i 4 34	+ 5	i 8 17	+11	i 5 13	PPP	i 11·7
Hyderabad		20·9	159	4 19	−12	7 52	−17	8 20	SS	9·2
Calcutta	N.	21·0	129	i 4 26k	− 6	i 8 0	−11	e 4 37	pP	—
Sotchi		24·5	295	5 6	0	—	—	—	—	—
Kodaikanal	E.	27·6	166	e 5 31	− 3	i 9 47	−15	i 10 17	SS	i 12·0
Irkutsk		27·7	46	5 38	+ 3	10 8	+ 4	6 46	sP	12·0
Yalta		28·5	297	i 5 44	+ 2	—	—	—	—	12·1
Ksara		28·6	273	e 5 42	− 1	i 10 29	+11	i 6 25	pP	—
Moscow		29·0	321	5 47	0	10 25	0	6 33	pP	—
Colombo	E.	31·4	164	7 7	+59	12 14	+72	—	—	—
Istanbul		32·4	291	6 21	+ 4	12 42	?	8 41	?	—
Helwan		33·6	269	6 20	− 7	11 29	− 8	7 9	pP	—
Pulkovo		34·2	325	e 6 32	0	i 11 47	+ 1	7 18	pP	e 15·1
Bucharest		34·3	297	i 6 33	0	11 47	0	i 7 21	pP	—
Phu-Lien		35·1	109	e 6 37	− 3	—	—	—	—	—
Sofia		36·5	294	e 6 53	+ 2	i 12 21	0	e 8 2	PP	—
Warsaw		37·6	310	e 6 59a	− 2	i 12 36	− 2	i 8 12	PP	e 18·0
Budapest		39·0	303	7 22	+10	e 13 2	+ 3	i 8 25	PP	i 18·6
Ogyalla		39·5	303	e 7 22	+ 6	—	—	e 8 22	PP	16·0
Upsala		40·4	322	e 7 22	− 2	i 13 19	− 1	i 8 37	PP	—
Prague		41·8	309	i 7 36k	+ 1	e 13 37	− 3	e 8 28	pP	—
Potsdam		42·5	311	i 7 39	− 2	i 13 46	− 4	i 8 29	pP	—
Copenhagen		42·8	316	i 7 42a	− 1	i 13 55	0	8 55	pP	—
Triest		42·8	301	i 7 44	+ 1	i 13 51	− 4	i 8 30	pP	—
Jena		43·6	308	e 7 49	− 1	e 15 24	sS	e 8 35	pP	—
Zinsen		43·7	74	7 50	− 1	15 31	sS	—	—	—
Hamburg		44·3	312	e 7 55a	0	e 14 15	− 1	i 9 8	pP	—
Rome		44·5	295	e 7 53a	− 4	i 14 12	− 7	i 8 44	pP	e 21·0
Stuttgart		45·4	306	e 7 56k	− 8	i 14 30	− 2	e 8 53	pP	—
Heligoland		45·5	313	e 8 21	+16	i 14 31	− 3	e 11 14	?	e 18·0
Vladivostok		46·0	64	i 8 8	− 1	14 33	− 8	9 21	sP	22·9
Zurich		46·0	304	e 8 7	− 2	e 17 18	SS	—	—	—
Bergen		46·6	323	e 11 15	PPP	—	—	—	—	—
Basle		46·6	304	e 8 12	− 2	—	—	—	—	—
Neuchatel		47·2	303	e 8 17	− 1	—	—	—	—	—
De Bilt		47·4	311	i 8 19a	− 1	i 15 2	+ 2	i 9 12	pP	—
Uccle		48·1	309	i 8 23a	− 2	i 15 9	− 1	i 9 16	pP	e 17·5
Manila		49·7	104	i 8 33a	− 4	15 28	− 5	9 50	pP	—
Clermont-Ferrand		50·1	303	e 8 41	+ 1	—	—	e 9 28	pP	—
Koti		50·3	76	9 54	PP	17 4	?	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Aberdeen		50·7	319	e 8 23	−22	—	—	i 10 0	PP	e 26·2
Kew		50·9	311	i 8 43	− 4	i 15 46	− 3	i 9 59	PP	24·1
Kobe		51·2	73	8 36	−13	15 53	0	—	—	—
Oxford		51·3	312	i 8 46	− 4	i 15 47	− 8	e 19 54	SS	—
Edinburgh		51·5	317	e 10 2	PP	—	—	—	—	—
Stonyhurst		51·6	315	i 8 52	0	i 20 2	SSS	i 10 2	PP	—
Nagoya		52·3	71	8 57	0	—	—	—	—	—
Nagano		52·7	69	8 59	− 1	—	—	—	—	—
Algiers		53·0	292	e 9 2?	0	16 2?	−16	—	—	—
Mizusawa		53·4	67	e 8 56	− 9	9 51	pP	—	—	—
Scoresby Sund		56·3	336	e 8 15	−71	i 15 59	−63	i 17 23	sS	e 21·6
Toledo		57·0	298	i 9 29	− 2	—	—	10 22	pP	—
Almeria		57·1	295	9 42	+10	18 33	sS	10 43	pP	46·0
Granada		57·7	296	i 9 34a	− 2	e 16 44	−36	10 24	P_cP	—
San Fernando		60·0	296	—	—	e 17 47	− 3	—	—	—
Lisbon		61·1	299	i 11 48	PP	i 18 0	− 4	i 19 31	sS	—
Ivigtut		70·1	334	—	—	i 19 52	− 1	i 21 19	sS	—
Cape Town		86·1	222	—	—	e 22 17	[−14]	e 28 18	SS	—
Seven Falls		89·2	336	—	—	e 22 44	[− 7]	i 24 51	PS	34·0
East Machias		90·0	332	—	—	e 23 24	+ 5	e 24 29	pS	—
Ottawa		92·6	337	e 12 52	− 3	e 23 2	[− 8]	e 24 42	pS	35·0
Victoria		93·6	10	—	—	e 23 2?	[−14]	e 24 56	sS	45·0
Toronto		95·0	339	—	—	e 25 4	sS	—	—	—
Butte		97·0	2	e 18 49	sPP	e 23 29	[− 6]	e 25 12	pS	—
Philadelphia		97·0	334	e 17 42	PP	e 23 26	[− 9]	e 18 12	pPP	—
Bozeman		97·4	1	e 18 32	sPP	e 23 31	[− 6]	e 25 13	sS	—
St. Louis		102·5	345	e 17 53	PP	i 23 52	[−10]	i 18 13	pPP	—
Cape Girardeau		103·6	344	—	—	e 25 43	sS	—	—	—
Tinemaha	z.	105·5	8	e 18 9	PKP	—	—	—	—	—
Mount Wilson	z.	108·4	8	e 17 50	PKP	—	—	i 29 14	PKKP	—
Pasadena		108·4	8	e 17 50	PKP	—	—	e 18 40	PP	—
Riverside	z.	108·6	8	e 18 40	PP	—	—	i 29 12	PKKP	—
Palomar	z.	109·3	7	e 18 4	[− 6]	—	—	e 18 44	PP	—
Tucson		110·8	2	i 18 12	[− 1]	e 24 21	[−17]	e 18 53	PP	e 36·7
La Paz	z.	138·4	288	e 19 9	[+ 3]	—	—	i 21 56	PP	—
Huancayo		140·7	301	e 19 24	[+14]	—	—	e 33 41	pPS	—

Additional readings :—
Bombay isPE = +5m.9s.
Sverdlovsk isP = +5m.38s.
Calcutta iSSN = +8m.19s.
Ksara isS = +11m.44s., S_cS = +15m.54s.
Helwan PPPZ = +7m.38s.
Pulkovo sS = +13m.8s.
Bucharest eN = +7m.2s., iE = +7m.24s., iEZ = +7m.46s., SS?N = +12m.10s., iEN = +13m.2s., iN = +14m.0s., iE = +14m.22s.
Sofia eE = +15m.30s.
Warsaw iZ = +7m.2s., iE = +9m.33s., eN = +9m.38s., iN = +13m.56s., iE = +13m.59s., iSSN = +15m.16s., iSSE = +15m.24s.
Budapest iN = +8m.29s., PPE = +9m.50s., eN = +15m.54s., S?N = +16m.12s., SE = +16m.15s., iN = +16m.53s.
Ogyalla eE = +7m.34s., eN = +8m.32s., iE = +10m.2s. and +10m.22s.
Upsala iN = +9m.7s., iE = +9m.10s. and +10m.6s., eE = +14m.27s., eN = +14m.34s., eE = +16m.4s., iN = +16m.7s.
Prague iPPP = +8m.49s., iE = +10m.27s., e = +11m.8s. and +14m.56s.
Potsdam iPE = +7m.42s., ePN = +7m.46s., isPZ = +8m.39s., iZ = +8m.53s., iN = +8m.59s., iPPZ = +9m.24s., ipPPZ = +10m.10s., isPPZ = +10m.24s., isPPE = +10m.30s., iPPPE = +10m.36s., iPPPN = +10m.40s., iN = +11m.12s. and +12m.21s., iSN = +13m.50s., iE = +14m.18s., isSN = +15m.5s., iE = +15m.13s. and +15m.51s., iSSN = +17m.13s., iSSZ = +17m.17s., iZ = +17m.21s., iE = +17m.24s.
Copenhagen +9m.35s., i = +10m.30s., +15m.12s., +17m.2s., and +17m.26s.
Triest i = +8m.54s., iPP = +9m.30s. and +9m.58s., iPPP = +10m.35s., isS = +15m.16s., iSS = +17m.12s., iS_cS = +17m.49s., iSSS = +18m.27s.
Jena e = +8m.38s., i = +10m.38s.
Hamburg eE = +10m.56s. and +17m.50s.
Rome eEN = iZ = +7m.56s., iE = +9m.11s., iPPPEN = +9m.45s., iE = +11m.4s., +11m.56s., and +14m.14s., isSE = +15m.38s., eE = +16m.40s., eSSSE = +17m.43s., eEN = +18m.57s.

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Stuttgart iPE = +8m.6s., esPZ = +9m.17s., ePPZ = +9m.35s., epPPE = +10m.50s., isSN = +15m.50s., eSS = +17m.30s., isSSN = +19m.10s.
De Bilt iPP = +9m.34s., ipPP = +10m.18s., isPP = +11m.21s., iZ = +12m.13s., isS = +16m.22s., ePS = +19m.14s., eSS = +26m.2s.?
Uccle i = +9m.38s. and +11m.27s., eE = +16m.10s., iN = +16m.32s.
Aberdeen iE = +11m.52s. and +17m.12s., eN = +20m.8s.
Kew iP$_c$PZ = +9m.36s., esPZ = +10m.44s., eZ = +11m.27s., epPPZ = +11m.55s., iZ = +12m.39s., eP$_c$SEZ = +13m.19s., pS = +17m.11s., eS$_c$S = +17m.35s., esSEN = +18m.11s., eSSEN = +19m.49s., e = +20m.35s., eN = +21m.0s., e = +21m.27s., esSSN = +21m.47s., eSSSZ = +22m.23s.
Oxford i = +13m.55s. and +17m.22s.
Stonyhurst i = +11m.52s., +21m.14s., and +21m.50s.
Scoresby Sund isP = +9m.30s., e = +10m.9s., i = +11m.34s., eS$_c$P = +12m.41s., i = +19m.25s., isSS = +21m.20s.
Almeria PPP = +13m.4s., PKS = +13m.25s., SKS = +16m.26s., PS = +20m.7s., PPS = +21m.29s.
Granada PPP = +12m.57s., S$_c$P = +13m.34s., P$_c$S = +14m.1s., sS = +17m.48s., S$_c$S = +18m.50s., SS = +21m.42s.
Ivigtut eSSS = +28m.16s.
Cape Town eN = +23m.58s.
East Machias iPS = +24m.59s., isPS = +25m.58s.
Philadelphia ePPP = +19m.21s., eS = +24m.20s., epS = +25m.59s., eSS = +31m.28s.
Bozeman eS = +24m.18s., esPS = +27m.22s.
St. Louis eZ = +17m.58s., eN = +19m.2s. and +23m.48s., eS?N = +25m.36s.
Pasadena esPPZ = +19m.52s., eN = +29m.2s., iPKKPZ = +29m.13s.
Palomar esPPZ = +19m.58s.
Tucson ipPP = +19m.45s., esPP = +20m.14s., i = +20m.18s., iPPP = +21m.8s., epPPP = +22m.23s., eS = +26m.20s., epS = +27m.24s., ePKKP = +29m.41s.
La Paz iZ = +22m.47s.
Long waves were also recorded at Riverview.

Sept. 21d. Readings also at 0h. (near Fresno, Berkeley, and Lick), 2h. (Tucson), 3h. (Tucson), 6h. (near La Paz and Balboa Heights), 10h. (Christchurch), 12h. (Tucson, Palomar, Mount Wilson, St. Louis, Philadelphia, San Juan, and near Osaka), 13h. (Algiers), 14h. (near Mizusawa), 15h. (near Apia), 18h. (Manila), 21h. (near Algiers).

Sept. 22d. 3h. 38m. 23s. Epicentre 8°·7N. 93°·9E. (as on 1939 Sept. 25d.).

$A = -\cdot0672$, $B = +\cdot9863$, $C = +\cdot1503$; $\delta = -11$; $h = +7$;
$D = +\cdot998$, $E = +\cdot068$; $G = -\cdot010$, $H = +\cdot150$, $K = -\cdot989$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	14·0	264	3 12	−10	—	—	—	—	—
Calcutta	N.	14·8	339	i 3 37a	+ 5	i 6 42	SS	e 3 45	PP	—
Phu-Lien		17·2	44	e 4 9	+ 6	e 6 37	−37	—	—	—
Hyderabad	E.	17·4	302	4 2	− 4	i 7 52	SS	e 4 26	PP	9·9
Bombay		22·8	299	i 5 6	+ 1	i 9 17	+ 6	i 5 34	PP	—
Agra		23·7	324	i 5 12a	− 2	9 28	+ 1	i 10 29	SSS	—
Manila		27·2	75	i 5 46	− 1	10 27	+ 2	—	—	—
Andijan		37·2	332	e 7 15	0	13 3	+ 1	—	—	—
Tashkent		39·1	330	e 7 29	− 2	13 30	− 1	—	—	e 20·3
Tchimkent		39·7	331	e 7 34	− 2	—	—	—	—	—
Vladivostok		47·7	37	e 8 41	+ 1	—	—	e 11 4	PPP	26·3
Baku		50·2	317	e 9 5	+ 5	e 16 14	+ 3	—	—	25·6
Sverdlovsk		54·5	338	9 29	− 3	17 9	− 1	—	—	—
Ksara		58·7	304	i 10 2	0	e 18 29	PS	e 19 1	?	—
Helwan		62·0	299	e 10 22	− 2	e 18 43	− 5	19 4	PS	—
Moscow		64·3	329	10 42	+ 3	e 19 10	− 7	—	—	e 38·2
Pulkovo		69·4	331	—	—	20 12	− 6	—	—	39·1
Warsaw		72·7	323	e 16 1	PPP	e 20 37?	−20	—	—	e 44·6
Potsdam		77·6	322	—	—	e 21 37	−14	—	—	e 43·3
Rome		77·9	310	e 11 58	− 3	e 21 45	− 9	e 15 10	PP	e 38·5
Chur		79·9	317	—	—	e 22 9	− 7	—	—	—
De Bilt		82·4	322	—	—	e 22 37	− 4	—	—	e 49·6
Uccle		83·0	321	—	—	e 22 40	− 7	—	—	e 44·6
Granada		90·7	308	16 21	PP	23 27	[−10]	25 33	PS	—

Additional readings :—
Calcutta eSSN = +6m.55s., iP$_c$PN = +8m.28s., iS$_c$SN = +15m.46s.
Bombay iEN = +5m.24s., iE = +9m.46s. and +10m.7s.
Rome ePPPE = +17m.8s.
Long waves were also recorded at Scoresby Sund and Kew.

Sept. 22d. 22h. 51m. 58s. Epicentre 7°·5N. 123°·5E.

$A = -·5473$, $B = +·8269$, $C = +·1297$; $\delta = +12$; $h = +7$;
$D = +·834$, $E = +·552$; $G = -·072$, $H = +·108$, $K = -·992$.

Tables for depth of focus 0·100 have been used.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		7·4	343	i 1 57k	+ 1	i 3 36	+ 7	—	—	—
Kosyun		14·6	351	3 25	PP	6 1	SS	—	—	—
Naha		19·0	10	3 45	+ 1	6 43	0	—	—	—
Phu-Lien		21·0	311	4 2	0	i 6 43	−33	—	—	—
Zi-ka-wei	N.	23·6	356	e 4 30	+ 5	i 7 34	−23	—	—	—
Miyazaki		25·4	16	4 40	− 1	6 13	?	i 14 17	S_cS	7·6
Hukuoka		26·7	13	e 4 53	+ 1	6 26	?	—	—	—
Kôti		27·5	18	3 59	−60	7 47	−70	—	—	—
Osaka		29·2	20	5 12	− 1	7 39	?	i 6 54	PP	—
Zinsen		30·0	4	4 20	−60	—	—	—	—	—
Nagoya		30·2	22	4 20	−62	8 35	−64	—	—	—
Dairen		31·3	356	4 36	−55	8 23	?	—	—	—
Yokohama		31·5	25	e 5 39	+ 7	e 9 49	−10	—	—	—
Tokyo Cen. Met. Ob.		31·8	25	e 7 6	PP	9 52	−11	i 10 53	sS	—
Mizusawa		35·3	23	e 6 3	− 1	10 50	− 6	—	—	—
Vladivostok		36·2	10	6 10	− 1	i 11 2	− 7	7 58	PP	14·2
Calcutta	N.	37·0	297	i 6 18	0	i 11 18	− 3	i 8 5	PP	—
Mori		37·6	20	e 6 23	0	11 27	− 2	i 8 5	PP	—
Sapporo		38·8	20	6 29	− 3	11 43	− 4	—	—	—
Perth		39·9	190	6 42	+ 1	12 2	0	i 8 15	pP	—
Colombo	E.	43·3	272	i 7 7	− 1	i 12 50	0	—	—	—
Adelaide		44·5	163	e 5 52	?	13 7	0	—	—	22·0
Brisbane	N.	45·0	141	i 7 20	− 1	i 13 8	− 6	i 16 38	SS	—
Hyderabad	E.	45·0	287	7 21	0	13 7	− 7	i 16 39	SS	18·9
Kodaikanal	E.	45·5	277	i 7 27k	+ 2	13 17	− 4	—	—	—
Agra		47·3	300	7 38	0	i 13 34	−12	9 29	pP	—
Irkutsk		47·3	344	7 39	+ 1	13 41	− 5	17 2	sS	25·0
Dehra Dun	N.	48·2	304	e 7 52	+ 7	i 14 5	+ 7	e 9 33	pP	—
Riverview		48·8	149	i 7 51k	+ 2	i 14 5	− 1	17 39	S_eS	—
Sydney		48·8	149	e 6 2	?	i 14 2	− 4	—	—	—
Bombay		50·5	288	i 8 1	− 1	i 14 20	− 9	i 9 57	pP	—
Almata		54·1	320	8 28	+ 1	15 18	+ 2	e 10 30	pP	—
Frunse		55·5	317	8 36	− 1	15 35	+ 1	—	—	—
Semipalatinsk		55·8	328	8 39	0	15 35	− 3	—	—	—
Andijan		56·1	314	i 8 42	+ 1	i 15 45	+ 3	—	—	—
Tashkent		58·5	314	i 8 56	− 1	i 16 8	− 4	11 2	pP	26·4
Tchimkent		58·6	316	i 8 57	− 1	i 16 18	+ 6	—	—	—
New Plymouth		65·2	139	9 46	+ 6	17 42	+ 8	—	—	—
Arapuni		66·4	137	—	—	17 56	+ 8	18 44	S_cS	—
Christchurch		67·5	143	9 54k	0	17 19	−41	22 10	L_q	26·5
Wellington		67·5	140	e 9 53k	− 1	17 54	− 6	10 16	P_cP	23·3
Sverdlovsk		69·1	329	i 10 2	− 2	i 18 4	−15	i 12 10	pP	—
Baku		72·7	310	i 10 26	+ 2	i 18 59	0	—	—	—
Grozny		76·0	313	10 44	+ 1	19 33	− 1	—	—	—
Honolulu		76·8	70	e 10 49	+ 2	i 23 46	sS	i 13 14	pP	e 31·2
Piatigorsk		77·9	314	e 10 52	− 1	—	—	—	—	—
Tananarive		79·3	249	11 0a	0	20 5	− 3	13 17	pP	—
Moscow		81·6	325	i 11 11	− 1	20 25	− 6	13 25	pP	—
College		82·7	26	e 11 15	− 2	e 20 29	−13	e 13 32	pP	e 34·3
Ksara		83·9	303	e 11 25	+ 2	20 40	−13	e 13 48	pP	—
Simferopol		84·3	315	11 29	+ 4	—	—	—	—	—
Yalta		84·3	314	11 28	+ 3	—	—	—	—	—
Sebastopol		84·8	314	11 29	+ 1	—	—	—	—	—
Pulkovo		85·1	313	i 11 27	− 2	i 20 59	− 5	13 45	pP	i 34·8
Helwan		88·2	299	i 11 43a	− 1	21 8	−25	14 2	pP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		88·5	311	11 46	+ 1	21 9	[− 3]	14 8	pP	e 72·0
Sitka		89·7	32	e 11 53	+ 2	i 21 45	− 1	i 13 36	pP	e 37·0
Bucharest		90·1	315	e 11 51k	− 1	i 21 20	−30	i 14 12	pP	35·3
Upsala		91·4	331	11 56	− 2	i 21 54	− 7	e 16 55	PP	e 45·9
Warsaw		91·7	323	i 11 57k	− 3	i 21 25	−38	e 14 16	pP	e 35·0
Sofia	N.	92·4	313	e 12 9	+ 6	e 21 33	−36	e 26 38	SS	—
Kecskemet	Z.	93·9	318	12 10	0	e 21 45	−37	e 18 18	PPP	—
Budapest		94·2	319	12 9	− 2	i 21 38	−47	12 21	P_cP	e 32·0
Ogyalla	E.	94·6	319	e 12 13	0	i 21 43	−43	14 51	PP	e 32·5
Copenhagen		95·4	328	i 12 15a	− 2	i 22 31	− 4	14 36	pP	—
Potsdam		96·3	325	i 12 18k	− 3	i 22 40	− 2	i 18 30	pPP	—
Bergen		96·9	334	e 11 11	−72	22 46	− 1	e 24 9	PS	e 48·0
Hamburg		97·6	327	i 12 24k	− 2	i 21 54	[− 7]	e 30 2	SSS	e 51·0
Jena		97·7	323	i 12 28	+ 1	e 22 54	0	e 14 46	pP	e 28·0
Triest		98·2	318	i 12 28	− 1	i 22 52	− 6	i 13 1	pP	—
Heligoland		98·5	328	e 12 30	− 1	i 22 2	[− 4]	—	—	e 45·0
Scoresby Sund		98·8	350	i 11 18	−74	i 22 55	− 8	27 17	SS	—
Victoria		99·7	38	12 32	− 4	i 22 8	[− 3]	29 2?	?	34·0
Stuttgart		99·9	322	i 12 32a	− 5	i 22 8	[− 3]	e 15 3	pP	—
Rome		100·3	315	i 12 36k	− 3	e 22 11	[− 2]	i 14 58	pP	—
Seattle		100·3	39	—	—	e 24 48	PS	e 34 36	SSS	e 41·9
Chur		100·5	321	e 12 38	− 2	e 22 9	[− 5]	—	—	—
De Bilt		100·8	326	i 12 40k	− 1	i 22 15	[− 1]	e 14 58	pP	—
Zurich		100·9	322	e 12 39k	− 2	e 22 12	[− 4]	e 15 51	PP	—
Basle		101·4	322	e 12 41	− 3	e 22 14	[− 4]	—	—	—
Aberdeen	E.	101·9	333	i 17 8	PP	i 22 21	[+ 1]	i 25 3	PS	—
Uccle		101·9	326	i 12 44k	− 2	i 22 19	[− 1]	e 15 3	pP	—
Neuchatel		102·1	322	e 12 43	− 3	e 22 18	[− 3]	—	—	—
Ukiah		102·9	47	—	—	i 22 26	[+ 2]	i 25 15	PS	e 41·7
Edinburgh		103·1	332	—	—	i 22 19	[− 6]	—	—	—
Stonyhurst		103·9	331	e 19 22	PPP	i 22 22	[− 7]	—	—	—
Kew		104·1	327	i 12 57	P	i 22 28	[− 2]	i 15 14	pP	e 53·0
Branner		104·3	48	—	—	e 22 32	[0]	—	—	—
Santa Clara		104·5	48	e 19 45	PPP	i 22 41	[+ 9]	i 25 34	PS	—
Clermont-Ferrand		105·0	321	e 13 0	P	—	—	e 15 19	pP	—
Lick	E.	105·7	48	—	—	e 22 26	[−12]	—	—	—
Butte		107·0	36	e 17 47	PP	i 22 44	[0]	e 25 58	SP	e 44·9
Tinemaha	Z.	107·7	48	i 13 9	P	—	—	e 16 57	PP	—
Haiwee		107·9	48	e 17 14	PKP	—	—	e 28 29	PKKP	—
Bozeman		108·1	36	e 17 43	PP	i 22 49	[0]	i 26 10	SP	e 43·5
Pasadena		108·5	50	i 13 10	P	i 22 51	[0]	i 26 12	SP	—
Mount Wilson		108·6	50	e 13 15	P	—	—	e 26 22	SP	—
Riverside		109·2	50	e 13 17	P	—	—	i 28 24	PKKP	—
Algiers		109·6	313	16 2	sP	i 22 47	[− 8]	e 26 17	PS	—
Palomar	Z.	109·8	50	e 13 19	P	e 32 30	SS	i 28 23	PKKP	—
Salt Lake City		110·1	41	e 13 25	P	i 22 57	[+ 1]	e 26 26	SP	e 45·1
Ivigtut		111·2	356	e 15 43	pP	e 22 57	[− 3]	e 20 13	pPP	—
Toledo		112·5	318	e 17 11	[−11]	i 26 41	PS	—	—	34·7
Almeria		112·9	315	17 24	[+ 1]	i 26 54	PS	20 33	PPP	33·0
Granada		113·6	316	16 3k	pP	27 21	PS	i 20 0	pPP	68·0
Tucson		114·9	49	i 17 27	[0]	i 23 18	[+ 3]	i 18 32	PP	e 48·0
San Fernando		115·7	316	e 17 28	[0]	e 28 22	PPS	e 22 33	?	62·0
Lisbon		116·4	320	20 55	PPP	23 22	[0]	—	—	—
Florissant		124·2	31	i 17 46	[+ 1]	i 23 43	[− 4]	i 19 41	pPKP	—
Seven Falls		124·2	11	e 20 58	PPP	i 31 3	PPS	—	—	48·0
Shawinigan Falls		124·3	12	e 17 45	[0]	e 25 26	?	—	—	—
St. Louis		124·4	31	i 17 36	[− 9]	e 23 45	[− 3]	i 19 40	PP	—
Ottawa		124·6	16	e 17 45	[0]	e 28 26	PS	e 19 45	PP	46·0
Toronto		125·0	19	—	—	e 24 32	[+42]	—	—	—
East Mchias		127·0	9	e 17 53	[+ 3]	e 23 59	[+ 4]	e 19 57	PP	e 53·0
Pennsylvania		128·1	20	e 17 50	[− 2]	—	—	e 20 21	PP	—
Harvard		128·4	13	i 18 0	[+ 8]	e 29 11	PS	e 20 16	PP	—
Fordham		129·3	16	i 17 54	[0]	—	—	i 20 13	PP	—
Philadelphia		129·7	18	e 17 51	[− 4]	e 30 36	PS	i 20 16	PP	—
Georgetown		130·0	20	e 17 57	[+ 1]	—	—	i 20 18	PP	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
	°	°	m. s.	s.	m. s.	s.	m. s.	m.
Bermuda	139·6	10	e 18 10	[− 5]	e 24 15	[− 6]	e 20 39 pPKP	—
Balboa Heights	151·8	54	e 18 36	[+ 3]	—	—	— —	—
San Juan	152·6	19	e 18 33	[− 2]	e 24 26	[−13]	i 21 21 pPKP	—
La Plata	152·7	177	18 36	[+ 1]	—	—	21 20 pPKP	—
Rio de Janeiro	160·1	219	e 18 52	[+ 7]	—	—	— —	e 42·0
Huancayo	160·9	105	i 18 48	[+ 3]	i 37 43	sPS	i 21 23 pPKP	—
La Paz	165·5	129	i 18 52k	[+ 2]	25 1	[+11]	i 21 20 pPKP	74·5

Additional readings :
Zi-ka-wei iN = +7m.26s.
Tokyo, Cen. Met. Obs. iN = +8m.3s., iE = +8m.13s.
Mizusawa ePN = +6m.6s.
Calcutta iSSN = +14m.22s.
Perth i = +9m.0s., +9m.42s., +11m.12s., and +13m.59s.
Hyderabad iE = +10m.56s.
Kodaikanal iE = +12m.12s.
Agra sPE = +10m.38s., iN = +13m.42s., S_cS?E = +16m.12s., sSN = +17m.6s., sSE = +17m.11s., i = +20m.28s.
Dehra Dun esPN = +10m.59s. ?
Riverview iSE = +14m.8s., S_cSN = +17m.39s., EN = +17m.55s., E = +20m.55s., N = +21m.3s. and +22m.57s.
Bombay eE = +9m.6s., iE = +10m.1s., isPE = +11m.32s., iE = +13m.11s., iN = +14m.32s., iE = +16m.38s., isS = +18m.4s.
Arapuni e = +26m.32s.
Christchurch iZ = +12m.17s., S_cS = +20m.25s., iN = +21m.59s., e = +22m.25s.
Wellington pP_cPZ = +12m.7s., S_cS = +18m.45s.
Sverdlovsk isS = +22m.3s.
Honolulu i = +11m.4s., esP = +14m.7s., ePPP = +15m.50s., eS_cS = +19m.43s., i = +19m.46s., iSP = +20m.21s., esSS = +27m.33s., eSSS = +28m.39s.
Tananarive P_cP = +11m.4s., S_cSE = +20m.12s., SKSN = +20m.15s., sSE = +24m.7s., SSN = +25m.31s.
Moscow sS = +24m.15s.
College esP = +14m.34s., eSKS = +20m.46s., eSP = +21m.32s., esS = +24m.30s., esSP = +25m.16s., eSS = +26m.20s.
Ksara e = +14m.7s., ePP = +14m.59s., iS = +20m.58s., SP = +22m.2s.
Helwan sPZ = +15m.17s., PPZ = +15m.23s., PPPZ = +17m.23s., SN = +21m.23s., sSN = +25m.29s., SSN = +27m.47s., SSSN = +33m.11s.
Istanbul SKS = +18m.25s., PPS = +26m.39s.
Sitka iSKS = +21m.15s., eSP = +23m.3s., esS = +26m.13s., esSP = +26m.56s., iSS = +28m.9s., eSSS = +32m.20s.
Bucharest PPPE = +16m.14s., iE = +20m.48s., iPSE = +21m.37s., iS_cSEN = +21m.52s., iSSEN = +26m.6s., iSSSE = +28m.46s.
Upsala ePPPE = +17m.40s., PPPN = +18m.44s., epPPPE = +19m.2s., iSKSN = +21m.21s., iSKSE = +21m.25s., iSPN = +23m.12s., esPSN = +26m.17s., eN = +27m.10s., eSSSN = +32m.2s.
Warsaw eZ = +15m.1s., iPSE = +21m.57s., eN = +23m.11s., iZ = +23m.15s., eE = +23m.18s., eN = +25m.1s., SSEN = +26m.13s., iN = +27m.2s., iE = +27m.9s., iZ = +27m.16s., eZ = +28m.45s., SSSE = +29m.14s., SSSN = +29m.22s.
Sofia eSSSN = +28m.50s.
Kecskemet eZ = +24m.20s.
Budapest iN = +12m.52s., ePSE = +22m.2s., iS_cSE = +22m.21s., iS_cSN = +22m.24s., SSE = +26m.4s.
Ogyalla PSE = +22m.3s., eS_cSE = +22m.23s.
Copenhagen +16m.22s., i = +21m.46s. and +23m.55s.
Potsdam ePN = +12m.21s., iE = +14m.39s., iZ = +15m.30s., ipPPN = +18m.40s., iSKS = +21m.50s., iSKKSE = +22m.21s., iSZ = +22m.43s., iE = +24m.2s., iZ = +24m.27s., iSPE = +24m.44s., iSPZ = +24m.54s., iZ = +28m.3s. and +28m.6s.
Bergen S = +21m.53s.
Hamburg eZ = +14m.50s.
Jena ePN = +12m.32s., eN = +16m.8s. and +21m.56s., eZ = +24m.18s., eN = +25m.10s.
Triest iPPP = +15m.43s., iSKS = +22m.30s., isS = +23m.38s., i = +24m.24s.
Scoresby Sund ePP = +13m.38s., i = +17m.27s., iS = +20m.51s., i = +21m.51s., SSS = +32m.2s.
Victoria i = +24m.37s.
Stuttgart esPNE = +15m.55s., ePPZ = +18m.50s., iSEN = +23m.15s., iSPE = +24m.42s., iPSE = +24m.44s., ePKKPN = +28m.42s., ePKKPE = +28m.52s., eSSEN = +30m.32s., eSSSN = +34m.2s., eSSSE = +34m.8s., ePKP,PKPE = +37m.42s.
Rome iN = +13m.38s., iZ = +18m.53s. and +19m.6s., iN = +23m.2s., iSN = +23m.55s., iZ = +24m.55s., isSN = +28m.30s., isSE = +28m.55s., iE = +30m.31s., iSSE = +34m.6s., iE? = +35m.5s., iPKP,PKP = +37m.6s., iSSSE = +38m.38s.
De Bilt iEZ = +19m.1s., i = +22m.55s. and +23m.22s., iZ = +24m.48s., i = +25m.57s., e = +29m.2s. ? and +34m.22s.
Aberdeen eE = +19m.4s., iE = +22m.58s., +23m.30s., and +29m.8s., eE = +33m.56s. and +39m.2s. ?

Continued on next page.

Uccle e = +19m.8s., i = +23m.0s., iE = +23m.29s., eZ = +24m.56s., i = +26m.4s., iE = +29m.16s.
Ukiah eSKKS = +22m.54s., eS = +23m.27s., iSPP = +26m.17s., esSP = +29m.28s., eSS = +31m.9s., esSS = +34m.29s.
Stonyhurst i = +25m.22s. and +27m.42s.
Kew iZ = +15m.51s., eZ = +16m.12s., iZ = +17m.8s., +17m.31s., and +18m.14s., iEZ = +19m.28s., eZ = +19m.45s., e = +20m.20s., iEN = +23m.15s. and +23m.49s., i = +25m.27s. and +26m.24s., eE = +27m.20s., iZ = +27m.56s. and +29m.32s., eZ = +30m.14s., e = +35m.2s. ?
Clermont-Ferrand ePPP = +19m.29s.
Butte eSKKS = +23m.25s., i = +23m.36s., eS = +24m.15s., esS = +28m.20s., eSS = +32m.8s., eSSS = +36m.29s.
Tinemaha iPKKPZ = +28m.31s., iZ = +28m.46s.
Bozeman iSPP = +27m.22s., esSP = +30m.26s., iSS = +32m.17s., esSS = +36m.22s.
Pasadena iPKP = +17m.14s. iZ = +19m.48s., eEZ = +27m.23s., iPKKPZ = +28m.27s., iZ = +28m.40s. and +32m.34s., ePKP,PKP,Z = +36m.26s.
Mount Wilson ePKP = +17m.12s., iZ = +19m.47s., iPKKPZ = +28m.27s., iZ = +28m.42s.
Riverside iPKP = +17m.17s., iZ = +28m.39s.
Algiers e = +23m.47s.
Palomar ePKPZ = +17m.18s., iZ = +28m.31s.
Salt Lake City eSPP = +27m.31s., ePS = +27m.59s., eSS = +29m.16s., esPS$_1$ = +30m.41s., eSS = +32m.44s., eSSS = +37m.1s.
Ivigtut iSKKS = +24m.2s., eSS = +32m.7s.
Almeria S$_e$S = +27m.51s., SS = +32m.16s., SSS = +34m.23s.
Granada SKP = +20m.37s., sPP = +23m.3s., PS = +28m.34s., pPS = +30m.4s., sPS = +31m.11s., iSS = +33m.52s.
Tucson i = +17m.30s., ipPP = +20m.44s., isPP = +21m.50s., iSKKS = +23m.43s., eS = +25m.20s., e = +25m.46s., iSP = +27m.13s., iPKKP = +28m.6s., ipS = +28m.14s., iSPP = +28m.24s., esSP = +31m.22s., i = +32m.9s., iSS = +34m.21s., iPKP,PKP = +35m.52s., esSS = +37m.32s.
San Fernando eSKKSN = +29m.41s., ePSN = +33m.26s., eSSN = +38m.34s.
Lisbon N = +22m.15s.?, E = +25m.56s.
Florissant ipPPZ = +20m.17s., iPPPE = +21m.0s., iZ = +21m.53s., eSKSE = +23m.48s., esSN = +25m.25s. and +25m.28s.
St. Louis iZ = EN = +17m.43s., eN = +25m.25s.
Ottawa e = +21m.46s., +25m.32s., and +31m.8s.
East Machias iPKS = +21m.12s., ipPP = +22m.12s., ePPP = +23m.14s., eSKKS = +25m.38s., eSP = +29m.3s., ePS = +30m.29s., iSS = +36m.23s., esSS = +40m.14s.
Harvard i = +20m.20s., eN = +21m.22s., eE = +21m.30s., and +22m.19s., eN = +22m.22s. and +26m.3s.
Fordham i = +21m.21s., +22m.18s., +26m.1s., and +39m.1s.
Philadelphia e = +17m.56s., iPKS = +21m.20s., epPKS = +23m.46s., iSKKS = +26m.1s., eSPP = +30m.52s., eSS = +36m.24s.
Georgetown i = +21m.22s. and +26m.5s.
Bermuda e = +18m.30s., isPKP = +21m.53s.
San Juan e = +18m.53s., ePP = +23m.0s., epPP = +25m.16s., eSPP = +34m.30s., eSS = +41m.54s., eSSS = +48m.6s.
La Plata PKPNZ = +18m.44s., PKPE = +18m.50s., Z = +18m.57s., iN = +19m.0s.
Huancayo iPP = +23m.25s., i = +23m.33s., ipPP = +25m.33s., ePPP = +27m.8s., ipPPP = +29m.10s., iPSKS = +33m.18s., iSPP = +36m.8s., iPKP,PKP = +39m.13s., eSS = +42m.18s., iSSS = +48m.8s.
La Paz iPKP$_2$ = +19m.58s., isPKP = +21m.59s., ipPKP$_2$ = +22m.20s., isPKP$_2$ = +23m.26s., iZ = +23m.42s., pPPZ = +26m.10s., sPPZ = +27m.2s., PPP = +27m.54s., ipSKS = +28m.22s., sSKS = +29m.10s., iSKSP = +33m.5s., iPSKSZ = +33m.45s., iSPPZ = +36m.44s., iPSPN = +38m.10s., SSN = +43m.18s., sSSN = +45m.22s., SSSZ = +50m.54s., L$_q$N = +68m.2s.

Sept. 22d. Readings also at 0h. (near Berkeley), 2h. (near Mizusawa), 3h. (near Mizusawa), 12h. (Palomar, Riverside, Mount Wilson, Haiwee, Tinemah, Tucson, and Manila), 13h. (San Juan, Honolulu, Scoresby Sund, Kew, and Potsdam), 17h. (near Tananariv and Manila), 22h. (near Apia, Pasadena, Tinemaha, and Tucson), 23h. (La Paz).

September 23d. 5h. Local Japanese shock. Tokyo I.U. gives Epicentre 35°·88N, 139°·83E.

Komaba P = 22m.34s., S = 22m.43s.
Tokyo Imp. Univ. P = 22m.34s., S = 22m.43s.
Kamakura P = 22m.36s., S = 22m.45s.
Kiyosumi P = 22m.36s., S = 22m.50s.
Koyama P = 22m.36s., S = 22m.50s.
Mitaka P = 22m.36s., S = 22m.46s.
Titibu P = 22m.36s., S = 22m.48s.
Togane P = 22m.36s., S = 22m.47s.

September 23d. 7h. 15m. 14s. Epicentre 23°·0S. 63°·5W.

$A = +·4111$, $B = -·8246$, $C = -·3885$; $\delta = -10$; $h = +4$;
$D = -·895$, $E = -·447$; $G = -·173$, $H = +·348$, $K = -·921$.

A depth of focus 0·080 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		7·8	325	i 1 54k	− 2	i 3 26	− 3	—	—	i 4·4
La Plata		12·8	159	i 2 47	0	i 5 1	− 1	—	—	6·2
Huancayo		15·7	312	i 3 16a	0	i 5 37	−17	i 4 47	pP	—
Rio de Janeiro		18·7	93	i 3 46	+ 1	—	—	—	—	i 6·8
Balboa Heights		35·4	331	e 6 10	− 2	—	—	—	—	—
Fort de France		37·6	5	i 6 26	− 4	i 11 33	− 9	—	—	—
San Juan		41·2	357	e 7 23	pP	i 12 24	−10	e 15 46	SS	e 16·0
Fordham		64·2	353	i 9 41	− 2	i 17 37	− 1	—	—	—
Cape Girardeau		64·8	337	e 11 30	?	i 17 35	−11	—	—	—
St. Louis		66·2	338	e 9 59	+ 3	e 18 0	− 2	—	—	—
Florissant	E.	66·4	338	—	—	i 17 56	− 9	—	—	—
Ottawa		69·0	352	10 11	− 2	18 30	− 5	21 52	SS	—
Seven Falls		70·1	356	10 18	− 1	18 45	− 2	—	—	—
Tucson		71·2	320	i 10 24a	− 2	i 18 45	−15	i 12 17	pP	e 29·4
La Jolla		75·6	316	e 10 49	− 2	—	—	—	—	—
Palomar	Z.	75·7	317	i 10 50a	− 1	—	—	—	—	—
Riverside		76·4	317	i 10 55a	0	e 19 57	+ 1	i 12 52	pP	—
Mount Wilson		77·0	317	i 10 57a	− 1	i 20 5	+ 2	i 12 53	pP	—
Pasadena		77·0	317	i 10 58a	0	i 20 4	+ 1	i 12 54	pP	—
Salt Lake City		77·7	325	—	—	i 20 10	0	—	—	—
Haiwee		78·1	318	i 11 4a	0	—	—	—	—	—
Santa Barbara	Z.	78·2	316	i 11 4	− 1	—	—	e 13 5	pP	—
Tinemaha		78·9	319	i 11 8a	0	e 20 24	+ 2	e 13 12	pP	—
Bozeman		80·8	329	—	—	e 20 38	− 4	e 24 8	sS	—
Berkeley		81·9	317	i 13 18	pP	—	—	—	—	—
Granada		82·2	45	i 11 26a	+ 1	—	—	13 28	pP	26·8
Almeria		82·8	45	11 24	− 4	18 44	?	13 23	pP	27·8
Toledo		83·6	43	i 11 32	0	—	—	13 30	pP	—
Clermont-Ferrand		91·1	41	i 12 9	+ 1	—	—	—	—	—
Rome		95·3	47	i 12 27k	0	i 22 11	SKS	—	—	—
Potsdam	E.	100·1	37	—	—	i 22 38	[+ 3]	—	—	—
Sofia		103·0	49	e 22 18	?	—	—	—	—	—
Helwan		105·1	64	17 37	PKP	i 22 59	[+ 2]	—	—	—
Bucharest		105·4	48	e 21 49	?	—	—	—	—	—
Agra	E.	145·0	75	e 18 33	[− 3]	e 27 53	?	—	—	—

Additional readings :—
La Plata iPE = +2m.50s., SZ = +5m.4s.
Huancayo i = +5m.50s. and +5m.57s.
San Juan i = +12m.45s.
Fordham i = +10m.11s.
Cape Girardeau eEN = +11m.43s., iEN = +17m.40s., eN = +19m.10s.
St. Louis eE = +17m.49s.
Florissant eE = +18m.56s., iE = +21m.13s.
Tucson i = +10m.30s., iP_cP = +10m.44s., iPP = +13m.5s., ipPP = +14m.44s., i = +18m.57s., iSP = +19m.19s., isS = +22m.19s., esSP = +22m.57s.
Bozeman e = +20m.43s., eSS = +26m.22s.
Berkeley eZ = +13m.23s.
Granada PPP = +14m.44s.
Almeria +11m.42s., PPP = +14m.15s., P_cS = +16m.39s., sS = +19m.20s., S_cS = +21m.12s., SSS = +23m.46s.
Rome eN = +16m.28s.
Sofia eEN = +22m.46s.
Bucharest eN = +22m.2s. and +22m.21s., iE = +22m.25s.

Sept. 23d. 10h. 25m. 56s. Epicentre 55°·9N. 111°·2E. (as on 1937 Dec. 25d.).

$A = -·2037$, $B = +·5251$, $C = +·8263$; $\delta = 0$; $h = -8$;
$D = +·932$, $E = +·362$; $G = -·299$, $H = +·770$, $K = -·563$.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Irkutsk		5·5	232	i 1 31	+ 6	2 36	+ 6	1 1 50	P_g	i 3·1
Vladivostok		18·4	126	i 4 12	− 6	i 7 46	+ 5	—	—	9·5
Semipalatinsk		19·2	267	4 30	+ 2	—	—	—	—	10·1
Almata		25·3	255	5 36	+ 6	—	—	—	—	13·6
Sverdlovsk		27·5	293	—	—	10 31	+ 1	—	—	15·0
Andijan		29·5	256	e 6 17	+ 9	—	—	—	—	15·7
Tchimkent		29·9	261	e 6 8	− 4	—	—	—	—	15·9
Tashkent		30·8	260	e 6 24	+ 4	e 11 26	+ 3	—	—	—
Agra	E.	37·4	233	—	—	e 13 1	− 4	—	—	—
Calcutta	N.	37·4	216	—	—	i 15 54	SSS	—	—	—
Moscow		39·5	302	e 7 32	− 2	e 13 32	− 5	—	—	21·7
Pulkovo		40·7	310	e 7 36	− 8	—	—	—	—	22·7
Manila		41·9	166	e 16 34	S	(e 16 34)	SS	—	—	(20·8)
Grozny		42·6	282	9 13	PP	17 28	SSS	—	—	—
Upsala		45·9	316	—	—	e 19 4?	SSS	—	—	—
Warsaw		49·4	307	—	—	e 16 4?	+ 4	e 21 25	SSS	e 23·5
Kodaikanal	E.	52·6	224	e 14 4?	?	—	—	—	—	—
Potsdam		52·8	311	i 9 19k	0	e 20 52	SSS	—	—	i 28·1
Ogyalla		53·8	303	—	—	e 21 4	SSS	—	—	e 30·1
Sofia		55·0	295	—	—	e 17 4?	−13	—	—	e 27·1
Stuttgart		57·2	310	e 10 0	+ 9	—	—	—	—	e 29·8
Triest		57·5	305	e 13 20	PPP	(e 17 48)	− 2	(e 24 1)	SSS	(e 32·5)
Rome		60·9	303	i 10 17	0	18 32	− 2	e 22 36	SS	e 31·0
Tinemaha	Z.	78·3	38	e 12 1	− 2	—	—	—	—	—
Halwee	Z.	79·2	38	e 12 6	− 2	—	—	—	—	—
Mount Wilson		80·9	40	e 12 13	− 4	—	—	—	—	—
Pasadena	Z.	80·9	40	e 12 15	− 2	—	—	—	—	—
Palomar	Z.	82·1	39	i 12 22	− 2	—	—	—	—	—
Tucson		85·2	35	i 12 32	− 7	—	—	e 13 14	P_cP	—

Additional readings :—
Potsdam eEN = +20m.58s., iN = +23m.22s.
Ogyalla eE = +22m.4s.?
Triest S given as PP, SSS given as eSKS, eSKKS = +24m.49s., L given as eSS.
Rome e = +25m.26s.
Tucson i = +12m.40s. and +12m.50s.
Long waves were also recorded at other European stations.

Sept. 23d. 13h. 14m. 33s. Epicentre 37°·0N. 43°·0E.

$A = +·5855$, $B = +·5460$, $C = +·5992$; $\delta = -3$; $h = -1$;
$D = +·682$, $E = -·731$; $G = +·438$, $H = +·409$, $K = -·801$.

Rough.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.
Grozny	6·6	18	i 1 47	+ 6	—	—	—
Ksara	6·6	244	—	—	e 2 35	−23	—
Piatigorsk	7·0	0	e 1 49	+ 3	—	—	—
Istanbul	11·6	295	4 59	S	(4 59)	− 2	—
Helwan	12·0	237	e 3 36	+41	—	—	—
Moscow	19·1	350	e 4 27	0	e 7 55	− 2	11·0
Tashkent	20·8	70	e 4 37	− 8	e 8 17	−16	e 13·4
Andijan	23·1	73	e 5 10	+ 2	—	—	—
Sverdlovsk	23·1	25	4 57	−11	8 58	−18	11·0

Additional readings :—
Ksara e = +5m.9s. and +5m.27s.
Istanbul SS = +7m.37s.
Helwan iEZ = +8m.51s. and +10m.3s.
Long waves were also recorded at Potsdam and Pulkovo.

Sept. 23d. 19h. 30m. 18s. Epicentre 38°·9N. 39°·4E.

$A = +·6030$, $B = +·4953$, $C = +·6254$; $\delta = +6$; $h = -1$;
$D = +·635$, $E = -·773$; $G = +·483$, $H = +·397$, $K = -·780$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		5·8	210	e 1 31	+ 2	e 2 40	+ 2	i 3 22	S_g	—
Piatigorsk		5·8	27	e 1 34	+ 5	3 14	S_g	—	—	—
Grozny		6·5	45	1 7	−32	—	—	—	—	—
Yalta		6·8	326	i 1 54	P*	—	—	—	—	—
Istanbul		8·2	289	2 12	+ 9	i 4 28	S_g	5 10	SS	—
Helwan	z.	11·2	218	e 2 45	+ 1	6 42	L	3 20	PP	(6·7)
Bucharest		11·3	303	e 2 50	+ 4	—	—	—	—	5·7
Sofia		12·7	293	e 3 6	+ 1	—	—	—	—	6·7
Moscow		16·9	356	3 56	− 3	7 4	− 3	—	—	—
Budapest		17·1	307	4 4	+ 2	—	—	—	—	e 10·7
Ogyalla		17·8	307	e 3 42	−29	—	—	—	—	—
Warsaw		18·4	324	e 4 11	− 7	7 46	+ 5	—	—	e 10·7
Triest		20·1	299	1 4 34	− 4	e 8 30	+11	1 4 49	PP	e 10·4
Rome		20·7	287	1 4 43a	− 1	1 8 42	+11	1 5 23	PPP	10·4
Pulkovo		21·7	348	e 4 52	− 3	e 8 53	+ 2	—	—	e 11·4
Potsdam		22·7	315	e 5 0	− 4	e 9 13	+ 4	e 9 30	SS	e 13·9
Sverdlovsk		22·7	32	5 3	− 1	9 13	+ 4	—	—	11·7
Jena	N.	22·9	311	e 5 12	+ 6	—	—	—	—	—
Tashkent		22·9	74	e 5 6	0	e 9 18	+ 5	—	—	e 12·7
Tchimkent		23·1	72	1 5 6	− 2	—	—	—	—	—
Chur		23·2	302	e 5 9	0	—	—	—	—	—
Stuttgart		23·8	305	e 5 12	− 3	—	—	—	—	—
Zurich		23·9	302	e 5 16	0	—	—	—	—	—
Copenhagen		24·6	323	1 5 24	+ 1	9 48	+ 6	—	—	—
Hamburg	N.	24·8	326	e 5 54	PP	—	—	—	—	e 15·7
Neuchatel		25·0	301	e 5 26	− 1	—	—	—	—	—
Upsala	N.	25·1	334	—	—	e 9 42	− 9	—	—	—
Andijan		25·3	76	e 5 32	+ 2	—	—	—	—	—
Frunse		26·8	70	5 48	+ 4	—	—	—	—	—
Uccle		27·3	308	—	—	e 10 44	+17	—	—	e 13·7
Clermont-Ferrand		27·5	296	e 5 49	− 2	—	—	—	—	—
Almata		28·5	68	5 59	0	—	—	—	—	—
La Paz	z.	113·7	268	14 47	P	—	—	—	—	—

Additional readings :—
Warsaw ePZ = +4m.14s., SEZ = +7m.49s.
Triest iPPP = +4m.58s., eP_cP = +8m.39s., eSS = +9m.19s.
Potsdam eN = +5m.7s.
Clermont-Ferrand e = +6m.0s.
Granada L given as S.
Long waves were also recorded at Agra, De Bilt, Kew, and Granada.

Sept. 23d. Readings also at 2h. (De Bilt, Kew, Potsdam, and Rome), 6h. (Tucson), 14h. (Helwan, Istanbul, Sofia, and Bucharest), 15h. (near Berkeley), 23h. (San Juan, Huancayo, and La Paz).

Sept. 24d. 0h. 48m. 6s. Epicentre 12°·8N. 146°·2E. (as on 1939 Feb. 23d.).

$A = -·8106$, $B = +·5426$, $C = +·2201$; $\delta = -7$; $h = +6$;
$D = +·556$, $E = +·831$; $G = -·183$, $H = +·122$, $K = -·975$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyakozima	23·1	304	5 15	+ 7	9 36	+20	—	—	—
Tokyo Cen. Met. Ob.	23·5	347	5 43	PP	—	—	—	—	—
Koti	23·7	333	5 28	+14	9 33	+ 6	—	—	—
Osaka	23·8	338	5 28	+13	—	—	—	—	—
Kobe	24·0	338	4 48	−29	8 58	−34	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Gihu		24·1	342	5 21	+ 3	9 19	−15	—	—	—
Manila		24·6	277	i 5 25	+ 2	(10 8)	+26	—	—	—
Nagano		24·8	346	5 19	− 6	—	—	—	—	—
Sendai		25·8	351	5 23	−11	10 24	+22	—	—	—
Vladivostok		32·7	340	e 6 35	− 1	—	—	7 28	PP	16·2
Wellington		59·9	155	—	—	e 26 54?	?	—	—	33·9
Christchurch		61·0	158	14 21	PPP	21 48	SS	26 55	L_q	30·9
Agra	E.	65·0	294	e 15 4	PPP	i 19 21	− 5	—	—	—
Almata		66·3	312	10 54	+ 2	—	—	—	—	—
Frunse		68·0	311	—	—	e 20 55	PPS	—	—	—
Andijan		69·6	308	e 11 19	+ 6	20 27	+ 6	—	—	—
Bombay	E.	70·4	285	e 11 17	− 1	e 21 17	PPS	—	—	—
Tchimkent		71·6	310	e 11 22	− 3	—	—	—	—	—
Tashkent		71·9	309	e 11 22	− 5	e 20 39	− 9	—	—	e 37·4
Sverdlovsk		77·0	326	i 11 51	− 5	—	—	—	—	—
Victoria		80·8	42	—	—	e 29 54?	SSS	—	—	40·9
Berkeley	Z.	83·5	53	i 12 31	0	—	—	—	—	—
Branner		83·6	53	e 12 30	− 2	—	—	—	—	—
Santa Barbara		86·2	56	i 12 46	+ 2	—	—	—	—	—
Tinemaha		86·7	53	i 12 48	+ 1	—	—	—	—	—
Haiwee		87·2	53	i 12 50	+ 1	—	—	—	—	—
Pasadena		87·5	55	i 12 50	− 1	—	—	—	—	—
Mount Wilson		87·6	55	i 12 51	0	—	—	—	—	—
Palomar	Z.	88·7	56	i 12 58	+ 1	—	—	—	—	—
Moscow		89·7	328	e 12 57	− 4	23 25	[− 6]	e 16 29	PP	—
Pulkovo		91·5	333	e 13 3	− 7	e 23 33	[− 9]	—	—	—
Tucson		93·9	55	i 13 22	+ 1	—	—	e 13 50	pP	i 44·6
Warsaw		99·9	330	e 16 54?	?	e 24 24	[− 2]	e 27 30	PPS	e 50·9
Bucharest		101·4	321	—	—	e 34 30	?	—	—	59·9
Potsdam		103·6	334	e 18 12	PP	e 24 38	[− 6]	—	—	59·9
Helwan		104·3	305	—	—	i 24 48	[+ 1]	—	—	—
De Bilt		107·1	337	—	—	e 28 0	PS	—	—	e 56·9
Triest		107·8	327	i 25 13	S	(i 25 13)	[+10]	(i 28 54)	PPS	e 56·0
Uccle		108·5	337	e 18 52	PP	i 25 8	[+ 2]	e 33 58	SS	e 49·9
Rome		110·9	324	e 19 12	PP	e 25 19	[+ 3]	e 21 23	PPP	e 51·6
Almeria		122·5	331	e 20 28	PP	—	—	e 22 46	PPP	73·9
Granada		122·7	332	i 20 25k	PP	31 40	PPS	22 58	SKP	76·1
San Juan		135·5	47	e 22 4	PP	—	—	e 23 5	SPP	—
La Paz	Z.	146·6	101	i 19 51	[+ 9]	—	—	—	—	72·9

Additional readings :—
Berkeley eN = +12m.37s., eE = +12m.42s., eZ = +12m.52s. and +13m.29s.
Warsaw eN = +27m.34s.
Potsdam eE = +18m.18s.
Triest PPS given as iPP, ePPP = +31m.20s., eSKS = +35m.35s., eS = +36m.42s.
Rome SKKS = +28m.36s.
Granada PP = +21m.27s., PPP = +24m.6s., SS = +38m.10s.
La Paz iPKPZ = +19m.54s.
Long waves were also recorded at San Fernando, Huancayo, Bozeman, Hamburg, and Phu-Lien.

September 24d. 6h. Undetermined shock. Epicentre in Switzerland.

Neuchatel eP = 29m.6s., e = 29m.49s.
Chur eP = 29m.9s., eS_g = +29m.41s., e = 30m.44s.
Zurich eP = 29m.16s., eS_g = +29m.51s.
Basle eP = 29m.29s., eS_g = +30m.7s.
Ravensburg ePE = 29m.46s., eP_gE = 30m.0s., eSEN = 30m.15s., eN = 30m.25s., eS_gE = 30m.42s., eS = 31m.19s., eS*N = 31m.29s., eS_gE = 31m.45s.
Triest eP = 29m.57s., eP_gP_g = 30m.6s., eE = 30m.12s., i = 30m.17s., iPS = 30m.24s., iS* = 30m.27s., e = 30m.30s., eL_q = 30m.36s.
Clermont-Ferrand e = 30m.3s.
Rome eP = 30m.24s., e = 30m.37s., eS_g = 31m.18s., e = 31m.44s.
Jena eN = 30m.41s., eE = 31m.19s., eN = 31m.33s.
Stuttgart ePZ = 29m.50s., eP_gZ = 30m.4s., iS = 30m.20s., iS_g = 30m.47s., eSNW = 31m.24s., eS_gNE = 31m.48s.

Sept. 24d. 9h. Undetermined shock, Pasadena suggests deep focus.

Huancayo i=57m.0s., 57m.45s., and 58m.17s.
La Paz iPZ=57m.30s.k, iSZ=58m.42s., iLZ=58m.58s.
St. Louis iPE=64m.0s., eE=70m.35s., iSE=70m.38s.
Tucson iP=64m.32s., i=64m.35s., 65m.22s., and 65m.37s.
La Plata PN=64m.40s., S=70m.24s.
San Juan e=65m.3s.
Palomar iPZ=65m.4s.k, iZ=66m.43s.
Mount Wilson iP=65m.12s.k.
Pasadena iP=65m.12s.k, iZ=65m.46s.
Haiwee iP=65m.19s.
Tinemaha iP=65m.24s.k.
Berkeley iZ=65m.43s., eN=65m.46s.
Granada iP=68m.44s., iS=75m.58s., SS=80m.9s., L=85m.54s.

September 24d. Readings also at 0h. (near Osaka), 2h. (near Berkeley), 12h. (Huancayo, La Paz (2), and San Juan), 15h. (near Berkeley), 16h. (Andijan, Frunse, Samarkand, Tashkent, and Tchimkent), 17h. (near Mizusawa), 18h. (Huancayo, near La Paz, and near Mizusawa), 20h. (near Branner), 22h. (near Mizusawa), 23h. (Kodaikanal).

Sept. 25d. 14h. Undetermined shock. Probably Timor Sea.

Perth PPP=33m.15s., S=37m.18s., SSS=39m.28s., L=41m.40s.
Manila iPZ=34m.25s., ePN=34m.28s., SE=40m.32s.
Tashkent eP=39m.38s., S=48m.38s., eL=56m.
Sverdlovsk P=41m.1s., S=51m.15s., L=69m.30s.
Adelaide ePN=42m.20s., iPP=42m.26s., iS=45m.26s., i=45m.35s., SS=45m.54s., L=46m.3s.
Riverview eN=45m.24s., eLE=50m.0s.
Haiwee ePKPZ=47m.52s., eEZ=48m.1s.
Mount Wilson ePKPZ=47m.52s., iZ=48m.1s.
Pasadena iPKPZ=47m.52s., iZ=48m.1s.
Riverside ePKPZ=47m.53s., iZ=48m.2s.
Tinemaha eZ=47m.58s.
Palomar ePKPZ=47m.59s.
Tucson ePKP=48m.5s., i=48m.15s., ePP=50m.26s.
Long waves were also recorded at Sydney.

September 25d. 19h. 31m. 20s. Epicentre 36°·4N. 52°·1E.

A=+·4956, B=+·6367, C=+·5908; δ=+5; h=0;
D=+·789, E=−·614; G=+·363, H=+·466, K=−·807.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Samarkand		12·2	70	i 2 54	− 4	—	—	—	—	9·7
Ksara		13·5	264	e 3 18	+ 3	e 7 7	L	—	—	(e 7·1)
Tashkent		14·2	64	e 3 23	− 1	6 4	0	—	—	e 10·2
Tchimkent		14·8	61	e 3 29	− 3	6 15	− 3	—	—	—
Yalta		15·8	306	e 3 52	+ 7	—	—	—	—	—
Simferopol		16·1	308	4 3	PP	7 13	SS	—	—	—
Sebastopol		16·3	306	3 56	+ 4	e 7 0	+ 7	—	—	—
Andijan		16·4	69	3 57	+ 4	—	—	—	—	9·6
Frunse		18·5	63	4 21	+ 2	—	—	—	—	10·7
Helwan		18·5	256	i 4 19k	0	9 2	?	5 0	PP	11·9
Istanbul		18·5	293	4 21	+ 2	(7 55)	+11	—	—	(11·5)
Almata		20·2	62	4 37	− 2	—	—	—	—	11·6
Sverdlovsk		21·2	13	e 4 50	+ 1	i 8 41	0	—	—	13·2
Bucharest		21·3	302	i 4 49a	− 1	i 8 46	+ 3	5 10	PP	—
Moscow		21·7	338	4 55	0	e 8 47	− 4	—	—	—
Sofia		23·0	296	e 5 9a	+ 2	e 9 20	+ 6	—	—	—
Agra	E.	23·8	105	i 5 15k	0	9 39	+11	10 29	SS	—
Semipalatinsk		24·6	47	5 26	+ 3	—	—	—	—	13·7
Bombay		25·2	129	i 5 35	+ 6	e 9 59	+ 7	e 11 41	SSS	—
Warsaw		27·0	317	5 45a	0	e 10 24	+ 2	e 11 42	SS	e 18·7
Pulkovo		27·3	337	5 48	0	e 10 26	− 1	—	—	e 12·9
Hyderabad	E.	30·0	123	—	—	13 42	SSS	—	—	17·3
Triest		30·1	301	i 6 10	− 3	i 11 9	− 3	i 6 53	PP	—
Rome		31·0	293	i 6 19a	− 2	i 11 27	+ 1	7 42	PPP	e 15·4
Potsdam		31·7	314	i 6 26	− 1	e 11 29	− 9	—	—	20·7

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		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Jena		32·3	310	e 6 34	+ 1	—	—	e 7 28	PP	—
Upsala		32·3	329	e 7 24	+51	e 11 41	− 5	—	—	e 19·7
Copenhagen		33·0	319	i 6 39	0	11 59	+ 2	—	—	—
Chur		33·1	303	e 6 38	− 2	e 11 55	− 4	—	—	—
Stuttgart		33·5	307	i 6 41a	− 2	e 12 0	− 5	i 7 29	PP	—
Hamburg		33·8	315	e 6 45a	− 1	e 11 52	−18	—	—	—
Zurich		33·8	303	e 6 43a	− 3	e 12 5	− 5	—	—	—
Calcutta	N.	34·2	104	e 6 51	+ 2	i 12 19	+ 3	e 14 19	SS	—
Basle		34·5	304	e 6 49	− 3	—	—	—	—	—
Kodaikanal	E.	34·7	132	—	—	e 12 40?	+16	—	—	—
Neuchatel		34·9	303	e 6 52	− 3	e 12 23	− 4	—	—	—
De Bilt		36·4	312	e 7 12	+ 4	e 12 50	0	—	—	e 22·7
Uccle		36·8	309	i 7 11a	0	e 12 58	+ 2	—	—	e 20·7
Clermont-Ferrand		37·6	301	i 7 16	− 2	e 13 4	− 4	—	—	—
Bergen		38·1	326	—	—	e 14 10	+54	—	—	—
Algiers		39·0	286	e 7 20	−10	—	—	e 8 58	PP	—
Aberdeen	E.	41·2	319	—	—	e 16 40?	SS	—	—	e 24·0
Almeria		43·3	288	e 7 57	− 8	—	—	—	—	—
Toledo		43·7	293	i 8 6	− 2	—	—	—	—	27·7
Granada		44·1	289	8 9a	− 3	14 54	+ 9	18 15	S_cS	21·2
Scoresby Sund		50·9	337	i 15 16	?	i 18 43	?	—	—	e 29·9
Manila		64·6	92	10 47	+ 6	19 23	+ 2	—	—	—

Additional readings :—
Helwan iZ = +4m.37s., PPPNZ = +5m.17s., P_cPEN = +7m.48s.
Istanbul S given as PPP and L given as S.
Bucharest ePN = iPE = +4m.52s., PPPZ = +5m.18s., eSZ = iSE = +8m.50s.
Agra i = +5m.21s.
Warsaw ePE = +5m.48s., ePN = +5m.51s., iSN = +10m.36s.
Triest iPPP = +7m.12s., iP_cP = +8m.16s., iSS = +12m.38s.
Rome iE = +6m.46s. and +6m.52s.
Potsdam iZ = +6m.35s., eN = +6m.40s., iSN = +11m.36s.
Jena e = +12m.40s.
Upsala eE = +11m.44s., iSN = +12m.36s.
Stuttgart iZ = +6m.48s., iN = +7m.18s.
Calcutta iS_cSN = +17m.16s.
Uccle iEZ = +7m.19s., eEZ = +8m.33s.
Algiers e = +11m.41s.
Almeria i = +8m.9s.
Long waves were also recorded at Vladivostok and San Fernando.

September 25d. Readings also at 1h. (near Algiers), 9h. (La Paz, Tucson, Palomar, Mount Wilson, Pasadena, Riverside, and Tinemaha), 15h. (near Berkeley), 17h. (near Triest and near Mizusawa), 20h. (Huancayo, La Paz, Rome, Uccle, and near Fresno), 21h. (near Tananarive).

September 26d. 3h. 56m. 33s. Epicentre 11°·9S. 166°·8E.

$A = -·9529$, $B = +·2235$, $C = -·2049$; $\delta = -5$; $h = +6$;
$D = +·228$, $E = +·974$; $G = +·199$, $H = -·047$, $K = -·979$.

Tables for depth of focus 0·015 have been used.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	20·2	218	i 4 21	− 6	i 7 51	−10	i 5 15	PPP	—
Apia	21·0	98	i 4 39k	+ 4	i 8 31	sS	5 1	PP	—
Riverview	26·1	210	e 5 22	− 1	i 9 29	−14	i 5 54	pP	—
Sydney	26·1	210	e 3 57	?	e 8 57	−46	—	—	—
Arapuni	27·2	165	—	—	10 27	sS	12 27?	P_cS	—
New Plymouth	27·8	167	5 42	+ 3	—	—	i 7 34	?	—
Tuai	28·3	163	5 44	0	—	—	—	—	—
Wellington	30·1	168	5 59	− 1	10 44	− 3	6 22	pP	14·0
Christchurch	31·9	172	6 15	0	11 11	− 5	—	—	—
Adelaide	34·4	223	i 6 36	− 1	i 11 47	− 7	i 7 22	PP	17·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Honolulu		47·9	47	e 9 12	pP	i 15 17	+ 4	e 13 33	P_cS	i 20·6
Perth		50·8	237	9 32	pP	15 52	− 2	10 52	PP	21·2
Manila		52·5	299	i 8 57a	− 5	i 16 15	− 2	—	—	23·8
Naha		53·7	315	9 8	− 3	13 24	?	19 52	S_cS	—
Tokyo, Cen. Met. Ob.		53·8	333	8 12	−60	—	—	—	—	—
Siomisaki		53·9	328	9 8	− 4	16 33	− 3	—	—	—
Kobe		55·2	329	9 18	− 4	16 48	− 5	—	—	—
Koti		55·2	326	9 19	− 3	—	—	—	—	—
Miyazaki		55·2	323	9 19	− 3	—	—	—	—	—
Sendai		55·5	336	9 19	− 5	16 50	− 7	—	—	—
Mizusawa		56·1	337	e 9 20	− 8	—	—	(9 59)	pP	—
Vladivostok		63·4	333	e 10 15	− 3	18 36	− 3	10 48	pP	30·1
Phu-Lien		67·5	298	e 10 44	0	—	—	—	—	—
Ukiah		82·4	48	e 12 5	− 4	i 22 18	+ 5	e 12 47	pP	e 34·1
Berkeley		82·7	49	e 12 7	− 4	—	—	i 12 49	pP	e 39·0
Santa Clara	E.	82·7	49	e 12 40	pP	e 24 4	PPS	—	—	e 40·3
Lick	E.	82·9	49	e 12 13	+ 1	—	—	e 12 51	pP	—
Santa Barbara	Z.	83·4	54	e 12 15	+ 1	—	—	i 12 53	pP	—
College		83·8	18	e 12 15	− 1	i 22 23	− 4	e 12 49	pP	—
Calcutta	N.	84·1	294	i 12 23a	+ 5	i 22 23	− 7	13 31	pP	—
Fresno	N.	84·1	52	e 12 22	+ 4	—	—	e 12 57	pP	—
Pasadena		84·5	54	i 12 20a	0	i 24 18	PPS	i 12 58	pP	i 35·5
Mount Wilson		84·7	54	i 12 20k	− 1	—	—	i 12 59	pP	—
Riverside		85·1	54	i 12 22	− 1	—	—	i 13 1	pP	—
Haiwee		85·3	53	e 12 24	0	—	—	i 13 3	pP	—
Palomar	Z.	85·3	55	i 12 21k	− 3	—	—	i 13 0	pP	—
Tinemaha		85·4	52	i 12 24	0	—	—	i 12 32	pP	—
Victoria		85·9	40	12 29	+ 2	22 43	− 4	23 39	PS	35·4
Seattle		86·2	41	e 21 55	PPP	e 24 26	PS	e 24 59	sPS	e 36·4
Colombo	E.	88·4	277	12 39	0	23 14	+ 3	—	—	—
Tucson		89·9	57	e 12 45	− 1	i 23 32	+ 7	i 13 24	pP	e 35·7
Kodaikanal	E.	91·4	280	e 12 27f	−26	—	—	—	—	—
Hyderabad		92·0	287	—	—	23 38	− 5	24 39	PS	—
Butte		92·1	44	—	—	e 24 55	sS	e 34 30	sSSS	—
Bozeman		93·0	44	e 13 0	0	i 23 22	[+ 2]	i 25 10	SP	e 38·3
Agra	E.	94·3	296	i 16 45	PP	i 23 19	[− 8]	—	—	—
Bombay	E.	97·5	287	i 13 17	− 3	i 24 26	− 4	i 17 47	PP	—
Frunse		99·6	311	e 14 3	pP	—	—	—	—	—
Andijan		101·0	309	e 13 48	+12	—	—	18 37	sPP	—
Lincoln		102·6	50	—	—	e 26 30	sS	—	—	e 51·1
Tchimkent		103·2	311	14 34	pP	—	—	18 2	PP	—
Tashkent		103·4	310	e 13 44	− 3	24 1	[−12]	14 18	pP	e 41·5
Florissant		107·3	53	e 14 44	pP	i 24 31	[+ 1]	i 28 36	PPS	—
St. Louis		107·4	53	—	—	e 24 21	[−10]	27 53	PS	—
Huancayo		113·9	109	e 18 27	[+ 3]	e 28 1	PS	e 20 1	pPP	—
Columbia		114·9	58	—	—	e 25 4	[+ 3]	e 29 7	PPS	—
Toronto		115·3	47	e 19 27	PP	e 28 51	PS	—	—	52·5
Ottawa		117·6	44	e 18 31	[0]	e 25 15	[+ 4]	e 29 27	PS	44·5
La Paz	Z.	118·8	117	i 18 39	[+ 6]	29 31	PS	i 19 57	PP	57·4
Seven Falls		120·5	41	e 20 45	pPP	e 25 27	[+ 6]	e 29 55	PS	60·4
Scoresby Sund		121·2	3	e 19 51	PP	e 25 39	[+16]	e 28 58	SP	48·5
Moscow		121·3	329	e 15 3	P	25 24	[+ 1]	15 42	pP	—
Pulkovo		122·4	335	e 15 6	P	25 27	[− 1]	—	—	—
Upsala		127·0	342	e 20 27f	PP	e 42 1	SSS	—	—	e 61·5
San Juan		128·7	75	e 18 53	[+ 1]	i 26 50	SKKS	e 21 1	PP	e 54·1
Bergen		129·7	348	e 21 27f	pPP	—	—	—	—	—
Ksara		130·3	304	e 19 3	[+ 8]	—	—	e 21 34	PP	—
Warsaw		131·2	332	e 18 49	[− 8]	e 39 36	SSP	i 21 52	PP	e 54·5
Copenhagen		132·0	341	i 18 59	[+ 1]	—	—	21 56	PP	—
Bucharest		133·3	321	e 19 1	[0]	i 22 27	?	—	—	23·7
Potsdam		134·4	337	i 19 4	[+ 1]	—	—	i 21 34	PP	64·5
Hamburg		134·5	341	i 19 4k	[+ 1]	—	—	e 21 32	PP	e 57·5
Helwan		135·0	300	e 18 54	[−10]	—	—	21 36	PP	—
Sofia		135·9	321	e 19 7	[+ 1]	e 22 39	SKP	e 21 45	PP	—
Jena		136·1	337	e 19 9	[+ 3]	—	—	(21 57)	PP	e 22·0

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
	°	°	m. s.	s.	m. s.	s.	m. s.	m.
De Bilt	137·2	343	i 19 11k	[+ 3]	i 22 43	SKP	i 19 45 pPKP	—
Uccle	138·6	344	i 18 12k	?	—	—	i 21 35 PP	e 45·5
Stuttgart	138·8	337	e 19 1	[− 8]	e 22 35	SKP	e 21 57 PP	—
Triest	139·3	331	e 19 12	[0]	i 22 46	PP	i 23 19 P_cP	—
Sofia	139·5	321	e 19 7	[− 5]	e 22 39	?	e 21 45 PP	—
Chur	140·2	336	e 19 5	[− 9]	—	—	e 22 10 PP	—
Zurich	140·2	337	e 19 5	[− 9]	—	—	— —	—
Basle	140·4	337	e 19 14	[0]	—	—	— —	—
Neuchatel	141·1	337	e 19 8	[− 7]	—	—	— —	—
Rome	142·6	328	19 11	[− 7]	26 3	[−10]	i 20 46 sPKP	—
Clermont-Ferrand	143·5	340	e 19 16	[− 3]	—	—	i 21 33 PP	—
Toledo	151·0	345	i 19 34	[+ 2]	26 25	[0]	— —	—
Algiers	151·2	332	i 19 39	[+ 7]	—	—	20 42 sPKP	—
Almeria	153·4	341	19 35	[0]	26 43	[+15]	23 3 PKS	69·5
Granada	153·4	343	i 19 35k	[0]	26 23	[− 5]	19 57 pPKP	85·5
San Fernando	154·8	347	e 19 51	[+14]	—	—	e 24 0 ?	—

Additional readings :—
Brisbane iSE = +8m.3s.
Riverview isPE = +6m.11s., isSN = +10m.45s., SSN = +11m.23s., iS_cSE = +16m.10s.
Wellington sPZ = +6m.31s., PPZ = +7m.8s., SPPZ = +7m.33s., iZ = +8m.2s.?, sS = +11m.17s., i = +11m.42s., P_cS = +12m.31s., i = +13m.30s.
Adelaide iP_cP = +9m.24s., iSS = +12m.20s., i = +14m.22s., +15m.8s., +15m.19s., +16m.7s., and +16m.25s., S_cS = +17m.7s.
Perth PPP = +11m.39s., SS = +18m.10s., SSS = +18m.42s., i = +19m.17s.
Manila iPN = +9m.0s.
Ukiah ePS = +23m.15s., esPS = +24m.17s., esSS = +28m.47s.
Berkeley e = +12m.11s., eE = +12m.18s. and +12m.53s.
Calcutta eN = +15m.26s., iPSN = +22m.55s., iS_cSN = +23m.49s., eSSN = +28m.17s.
Pasadena iPKKPZ = +30m.29s., ePKP,PKPZ = +38m.32s.
Riverside iPKKPZ = +30m.28s., ePKP,PKPZ = +38m.33s.
Mount Wilson iPKKPZ = +30m.29s., ePKP,PKPNZ = +38m.34s.
Haiwee ePKKPZ = +30m.29s.
Palomar iPKKPZ = +30m.26s., iPKP,PKPZ = +38m.33s.
Tinemaha ePKKPZ = +30m.29s., ePKP,PKPZ = +38m.30s.
Victoria SS = +28m.40s.
Seattle eSS = +28m.26s.
Tucson isP = +13m.57s., ePP = +16m.31s., epPP = +16m.57s., esPP = +17m.24s., eSKKS = +23m.7s., esS = +24m.33s., ePS = +24m.51s., iPKKP = +30m.17s., iPKP,PKP = +38m.25s.
Bozeman iS = +23m.55s., esSP = +26m.44s., esSS = +31m.15s., eSSS = +33m.57s.
Bombay iE = +16m.10s., +19m.25s., +23m.41s., and +25m.22s.
Tashkent PP = +17m.55s., SKS = +24m.9s.
Florissant iSKSE = +25m.23s., eE = +28m.3s.
St. Louis iE = +24m.36s., eN = +27m.4s. and +31m.57s., eE = +33m.33s.
Huancayo e = +18m.32s.
Ottawa e = +35m.27s.?
Scoresby Sund e = +24m.17s., iSS = +35m.22s.
Moscow SS = +36m.3s.
Pulkovo PKP = +18m.37s., pPKP = +19m.12s.
San Juan e = +19m.1s., epPP = +21m.56s., isPP = +22m.15s., ePPP = +23m.31s., esSS = +39m.41s.
Warsaw eZ = +18m.57s., +19m.35s., and +22m.13s., iN = +22m.26s., iE = +22m.30s., iN = +23m.2s., eZ = +35m.9s., eN = +39m.43s.
Copenhagen +22m.27s.
Bucharest iSN = +22m.33s., iE = +22m.38s. and +22m.56s., iSSE = +23m.9s.
Potsdam eN = +21m.27s., iZ = +22m.10s., iPPZ = +22m.21s., iPKSN = +22m.35s., iE = +23m.8s., iZ = +23m.13s., iN = +28m.16s.
Hamburg eZ = +22m.8s.
Helwan PPPZ = +25m.14s., SPE = +28m.21s., SSSE = +35m.39s.
Sofia eE = +23m.15s.
De Bilt iPP = +21m.54s., ipPP = +22m.29s.
Uccle eZ = +18m.47s., i = +21m.2s., eN = +21m.59s., e = +22m.36s., eN = +23m.21s.
Stuttgart iZ = +19m.5s. and +19m.12s.
Triest ePP = +19m.26s., ePPP = +19m.34s., iSP = +20m.0s., isS = +23m.30s., iSS = +24m.8s.
Chur i = +19m.15s.
Zurich i = +19m.15s.
Rome iPP = +21m.19s., SKP = +22m.12s., PPS = +32m.57s., SS = +39m.16s.
Toledo iPKP_2 = +19m.40s.
Algiers e = +22m.28s.
Almeria PKP_2 = +20m.4s., PP = +23m.39s., PPP = +27m.6s., SKKS = +30m.22s., PPS = +36m.37s., SS = +42m.55s., SSS = +48m.54s.
Granada PKP_2 = +20m.53s., SKP = +23m.25s., PP = +23m.59s., SKKS = +29m.43s., SKSP = +34m.9s., PPS = +36m.44s., i = +40m.55s., SS = +42m.19s., PSS = +44m.13s., SSS = +47m.58s.
Long waves were also recorded at Sverdlovsk.

Sept. 26d. Readings also at 1h. (La Plata and La Paz), 2h. (Tucson), 3h. (La Paz), 4h. (near Algiers), 5h. (near Agra and Calcutta), 9h. (Palomar, Haiwee, Calcutta, Tucson, Tinemaha, and Riverside), 10h. (near Tananarive), 15h. (near Berkeley), 17h. (Mount Wilson, Tucson, Tinemaha, Riverside, and Salt Lake City), 19h. (near Branner and Vermont), 22h. (near Triest, Vermont, and Salt Lake City), 23h. (near Ottawa).

Sept. 27d. 17h. 3m. 24s. Epicentre 40°·4N. 125°·1W. (as on 1938 Oct. 18d.).

Intensity V at Eureka (California). Epicentral region Cape Mendocino, 40°·0N. 124°·0W. approx. (Pasadena). Macroseismic area 2000 square miles.

F. Neumann.

United States Earthquakes, 1940, Washington, 1943, p. 26.

A = −·4391, B = −·6248, C = +·6456; δ = −2; h = −2;
D = −·818, E = +·575; G = −·371, H = −·528, K = −·764.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ferndale		0·6	75	i 0 13	− 2	i 0 26	0	i 0 19	S_g	i 0·9
Ukiah		1·9	131	e 0 39	+ 5	—	—	—	—	e 1·0
Berkeley		3·4	138	i 0 34	−21	i 1 0	−37	i 1 43	S*	i 2·3
Branner		3·8	141	i 1 1	0	i 1 45	− 2	—	—	—
Santa Clara		3·9	139	e 1 22	P_g	i 2 18	S_g	—	—	—
Lick	E.	4·1	137	i 1 6	+ 1	i 1 54	− 1	—	—	—
Fresno		5·5	129	e 1 27	+ 2	e 2 28	− 2	e 2 55	S_g	e 3·5
Tinemaha		6·3	120	i 1 41	+ 5	—	—	—	—	—
Haiwee		7·0	125	i 1 49	+ 3	—	—	—	—	—
Seattle		7·5	14	—	—	e 4 8	S_g	—	—	e 5·9
Mount Wilson	Z.	8·4	134	i 2 4	− 2	—	—	—	—	—
Pasadena		8·4	136	e 2 5	− 1	e 3 37	− 6	—	—	e 5·4
Riverside		8·9	133	i 2 4	− 8	—	—	—	—	—
Tucson		14·1	121	i 3 25	+ 2	i 6 4	+ 2	i 3 34	PP	e 7·4
San Juan		54·8	95	—	—	e 17 11	− 3	—	—	e 21·3

Additional readings:—
Ferndale iE = +16s.
Ukiah e = +48s.
Berkeley iP = +55s., iSE = +1m.34s., iN = +1m.40s.
Long waves were also recorded at Bozeman and Butte.

Sept. 27d. 21h. 30m. 0s. Epicentre 28°·2N. 139°·0E. (as on 1940 June 27d.).

A = −·6661, B = +·5791, C = +·4701; δ = +4; h = +2;
D = +·656, E = +·755; G = −·355, H = +·308, K = −·883.

Tables for depth of focus 0·080 have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Osaka		7·1	336	i 1 47k	− 2	3 12	− 4	—
Mizusawa	E.	11·0	9	e 2 29	0	4 25	− 3	—
Vladivostok		16·0	341	e 3 20	+ 1	e 6 0	0	8·6
Andijan		55·1	302	e 8 41	− 2	e 15 44	0	—
Tchimkent		56·9	304	8 59	+ 4	—	—	—
Tashkent		57·3	303	i 8 57	− 1	i 16 10	− 3	—
Samarkand		59·3	302	e 9 10	− 2	16 36	− 2	—
Sverdlovsk		60·6	322	9 18	− 2	—	—	29·0
Tucson		90·5	53	i 12 10	+ 5	—	—	—

Sept. 27d. Readings also at 2h. (Salt Lake City), 4h. (near Branner, Lick, and Berkeley), 8h. (Calcutta, Agra, Fresno, and near Mizusawa), 10h. (Rome), 13h. (near Bucharest), 15h. (near Berkeley), 17h. (La Paz and near San Francisco), 19h. (near Tashkent, Tchimkent, Samarkand, Andijan, Frunse, and Almata), 21h. (Tucson), 22h. (Butte, Tucson, near Tuai, New Plymouth, Christchurch, and Wellington), 23h. (near Mizusawa).

Sept. 28d. Readings at 0h. (Mizusawa), 4h. and 5h. (near Tananarive), 6h. and 7h. (2) (Tucson), 8h. (Bombay, Calcutta, Zi-ka-wei, and near Phu-Lien), 9h. (Scoresby Sund), 10h. (near Balboa Heights), 13h. (near Mizusawa), 17h. (Tucson), 22h. (near Berkeley and Rome).

September 29d. 1h. 21m. 21s. Epicentre 32°·5S. 70°·0W. (as on 1937, March 22d.).

$A = +\cdot2890$, $B = -\cdot7940$, $C = -\cdot5347$; $\delta = -14$; $h = +1$;
$D = -\cdot940$, $E = -\cdot342$; $G = -\cdot183$, $H = +\cdot502$, $K = -\cdot845$.

Pasadena suggests depth 100km.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata		10·3	106	i 2 29	− 3	4 15	−15	—	—	5·2
La Paz		16·0	6	i 4 4k	PP	i 7 19	SSS	—	—	i 9·3
Huancayo		21·0	346	i 4 58	+11	i 9 2	SS	i 9 28	SSS	i 9·6
Balboa Heights		42·2	347	e 7 39?	−17	—	—	—	—	—
San Juan		50·7	6	—	—	e 16 17	− 1	—	—	—
St. Louis		73·2	344	i 11 33	− 2	e 19 58	?	i 12 1	pP	—
Florissant		73·4	344	i 11 33	− 3	e 21 0	− 5	e 12 1	pP	—
Harvard		74·7	359	i 11 43	0	—	—	—	—	—
Tucson		75·1	326	i 11 43	− 3	i 21 22	− 2	i 12 10	pP	e 32·1
Ottawa		77·7	356	i 11 59	− 1	i 21 49	− 3	—	—	—
Palomar	Z.	79·0	322	i 12 4	− 3	—	—	—	—	—
Riverside		79·8	322	i 12 9k	− 3	—	—	i 12 36	pP	—
Mount Wilson		80·3	322	i 12 13k	− 1	—	—	i 12 40	pP	—
Pasadena		80·3	322	i 12 12k	− 2	—	—	e 12 38	pP	—
Santa Barbara		81·3	320	i 12 19	− 1	—	—	—	—	—
Haiwee		81·7	323	i 12 20k	− 2	—	—	e 12 47	pP	—
Tinemaha		82·6	323	i 12 25	− 1	—	—	i 12 53	pP	—
Berkeley		85·3	321	i 12 37	− 3	—	—	—	—	—
San Francisco	N.	85·3	321	e 12 32	− 8	—	—	—	—	—
Granada		93·0	47	i 17 2k	PP	24 54	+33	19 27	PPP	e 37·0
Rome		105·9	51	e 18 45	PP	e 24 42	[−13]	—	—	—

Additional readings :—
La Plata PN = +2m.32s.
Huancayo i = +6m.3s. and +9m.13s.
St. Louis isSE = +20m.25s., eEN = +20m.30s., esSE = +20m.46s.
Florissant eZ = +12m.10s., ePSN = +21m.37s., esSE = +21m.47s.
Tucson ifP_cP = +11m.51s., isP = +12m.22s., ePP = +14m.51s., ePPP = +16m.22s., epPPP = +16m.44s., eS_cS = +21m.34s., esS = +21m.55s., ePS = +22m.4s.
Berkeley eZ = +13m.5s.
Granada pP = +17m.29s., PPP = +20m.47s., P_cS = +21m.19s., PS = +25m.31s., sS = +26m.18s., SS = +28m.49s.

September 29d. Readings also at 1h. (near Triest), 2h. (La Paz), 3h. (Sitka), 4h. (Mount Wilson, Pasadena, Haiwee, Tucson, and College), 5h. (Sitka, Branner, near Lick, and Berkeley), 6h. (near Triest, Baku, Sverdlovsk, Tashkent, Vladivostok, San Juan, Honolulu, Berkeley, Ukiah, Palomar, Haiwee, Mount Wilson, Pasadena, Tucson, College, Seattle, Bozeman, Columbia, and East Machias), 7h. (Rio de Janeiro), 8h. (Butte), 11h. (near Berkeley), 14h. (De Bilt, Uccle, Hamburg, Potsdam, Rome, Stuttgart, and Warsaw), 16h. (Branner), 17h. (near San Francisco), 19h. (Rome), 21h. (near New Plymouth, Tuai, and Wellington).

September 30d. 11h. 13m. 13s. Epicentre 27°·4S. 177°·7W.

$A = -·8884$, $B = -·0357$, $C = -·4577$; $\delta = +2$; $h = +3$;
$D = -·040$, $E = +·999$; $G = +·457$, $H = +·018$, $K = -·889$.

Tables for depth of focus 0·005 have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Arapuni		12·0	206	—	—	5 23	sS	—	—	—
Apia		14·6	23	e 5 47	S	(e 5 47)	−18	e 6 23	sS	e 8·8
Wellington		15·2	202	3 27	− 5	5 47	−32	—	—	6·8
Christchurch		17·9	203	4 7	+ 1	7 40	sS	7 50	L_q	9·2
Brisbane		26·0	263	e 5 29	0	e 10 35	sS	i 6 17	PP	—
Adelaide		37·9	247	(i 7 35)	+22	(i 13 2)	+ 3	(i 8 56)	PP	—
Honolulu		52·1	25	—	—	e 16 39	sS	e 20 47	SS	e 24·3
Santa Barbara		82·4	45	i 12 22	+ 6	—	—	—	—	—
Santa Clara		83·0	42	e 12 36	pP	e 23 0	sS	—	—	e 23·7
Berkeley		83·1	42	e 22 45	S	(22 45)	+12	—	—	e 43·6
Pasadena	z.	83·2	46	e 12 21	0	—	—	—	—	e 38·4
Mount Wilson	z.	83·3	46	i 12 22	+ 1	—	—	—	—	—
Ukiah		83·4	40	—	—	e 22 19	−17	e 23 24	sS	e 34·7
Palomar		83·6	48	e 12 22	− 1	—	—	—	—	—
Riverside	z.	83·6	46	e 12 24	+ 1	—	—	—	—	—
Haiwee		84·6	45	e 12 28	0	—	—	—	—	—
Tinemaha		85·0	44	e 12 33	+ 3	—	—	—	—	—
Tucson		87·0	52	e 12 36	− 3	e 23 8	− 3	e 12 41	P_cP	e 38·9
Seattle		89·8	35	—	—	e 25 33	pPS	e 26 12	sPS	—
Victoria		89·8	33	—	—	e 23 30	− 7	e 29 59	SSP	43·8
Sitka		91·8	22	—	—	e 24 6	+11	—	—	e 39·6
Butte		93·9	40	e 16 49	PP	e 24 26	sS	—	—	e 39·9
Bozeman		94·6	41	—	—	e 24 34	sS	—	—	e 41·2
College		94·9	12	—	—	e 24 39	sS	e 26 3	pPS	e 41·8
Huancayo		95·2	107	—	—	e 23 56	[+11]	e 25 42	SP	e 52·5
Colombo	E.	104·2	270	—	—	e 23 17	?	—	—	—
Florissant		104·7	55	e 18 22	PP	e 25 55	+11	e 33 7	SSP	—
St. Louis	E.	104·7	55	—	—	e 24 37	[+ 4]	—	—	e 58·5
Kodaikanal	E.	107·7	273	—	—	e 24 47?	[0]	—	—	—
Bombay		115·4	279	e 18 55	[+20]	e 26 3	SKKS	21 20	PPP	—
Ottawa		117·1	51	—	—	e 27 47	?	e 35 59	SS	65·8
Seven Falls		120·7	49	—	—	e 26 47	?	—	—	60·8
Potsdam		153·8	346	e 19 47	[+ 4]	—	—	e 27 35	PPP	e 81·8
Istanbul		154·1	308	e 16 47	P	—	—	—	—	e 89·8
Helwan		154·4	282	e 19 47	[+ 3]	—	—	20 14	PKKP	—
De Bilt		155·2	356	e 19 51k	[+ 5]	e 43 47	SS	e 23 52	PP	e 85·8
Uccle		156·6	358	e 19 47	[0]	—	—	—	—	e 90·8
Rome		163·3	333	e 19 42	[−13]	e 30 55	SKKS	e 27 21	PPP	—
San Fernando		168·4	36	—	—	e 44 47	SS	e 51 7	SSS	89·3
Granada		169·1	25	i 20 0k	[0]	27 21	[+26]	25 5	PP	e 77·9

Additional readings:—
Apia iE = +6m.49s.
Christchurch S_cS?E = +15m.32s.
Adelaide i = (+13m.12s.), (+13m.27s.), and (+13m.42s.), iSS = (+15m.52s.), i = (+16m.4s.); all readings have been diminished by 10 minutes.
Berkeley ePN = +22m.48s., eE = +34m.49s., eN = +35m.35s., eSE = +37m.59s., eSN = +38m.38s., eSZ = +39m.21s.
Ukiah e = +22m.50s., eSS = +28m.26s.
Tucson i = +12m.49s., ipP = +13m.24s., e = +23m.27s., epS = +23m.55s., esPS = +25m.18s., eSS = +28m.49s.
Sitka e = +24m.11s.
College esS = +25m.7s.
Huancayo eS = +24m.32s., eSS = +31m.5s.
Ottawa e = +54m.47s. ?
Helwan PPE = +23m.47s.
De Bilt eZ = +32m.47s. ?
Rome e = +20m.2s., eN = +23m.6s., eEN = +28m.35s., e = +36m.10s., eSSN = +43m.51s.
Granada PKP_2 = +21m.14s., SKKS = +31m.37s., SS = +45m.37s., PSS = +46m.16s., SSS = +50m.40s.
Long waves were also recorded at Warsaw, Kew, Cape Town, Harvard, La Paz, Riverview, Stonyhurst, Perth, Sydney, Scoresby Sund, San Juan, Salt Lake City, Philadelphia, Lisbon, Columbia, and Toledo.

September 30d. 14h. 10m. 34s. Epicentre 27°·4S. 177°·7W. (as at 11h.).

$A = -\cdot8884$, $B = -\cdot0357$, $C = -\cdot4577$; $\delta = +2$; $h = +3$.

Tables for depth of focus 0·005 have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Arapuni		12·0	206	—	—	5 26	sS	—	—	—
Apia	E.	14·6	23	e 5 56?	S	(e 5 56)	− 9	e 6 34	sS	e 8·8
Wellington		15·2	202	3 26?	− 6	5 42	−37	—	—	6·9
Christchurch		17·9	203	4 12	+ 6	7 42	sS	7 52	L_g	9·3
Brisbane		26·0	263	e 5 26	− 3	e 10 56	SS	e 5 44	pP	—
Adelaide		37·9	247	(e 7 34)	+21	(i 13 4)	+ 5	(9 0)	PP	—
Santa Clara		83·0	42	e 11 52	−28	—	—	—	—	e 43·3
Pasadena		83·2	46	e 12 22	+ 1	—	—	—	—	e 38·4
Mount Wilson	Z.	83·3	46	e 12 25	+ 4	—	—	—	—	—
Palomar	Z.	83·6	48	e 12 22	− 1	—	—	—	—	—
Riverside	Z.	83·6	46	e 12 24	+ 1	—	—	—	—	—
Tucson		87·0	52	e 12 38	− 1	—	—	i 12 57	pP	e 37·3
Victoria		89·8	33	—	—	e 23 29	− 8	—	—	44·4
Bozeman		94·6	41	—	—	e 24 34	+15	—	—	e 38·9
Columbia		109·9	61	e 19 10	PP	i 39 32	?	—	—	—
Bombay		115·4	279	e 22 12	PPP	e 26 49	S	—	—	—
Istanbul		154·1	308	e 19 26?	[−18]	—	—	—	—	—
Helwan		154·4	282	e 19 50	[+ 6]	—	—	23 50	PP	—
De Bilt		155·2	356	e 19 46	[0]	e 43 46	SS	e 23 46	PP	e 88·4
Rome		163·3	333	e 24 44	PP	e45 9	SS	e 51 46	SSS	—
Granada		169·1	25	i 19 56k	[− 4]	27 14	[+19]	25 1	PP	80·8
Almeria		169·8	22	i 18 55	[−65]	—	—	—	—	89·4

Additional readings :—
Brisbane iPPE = +6m.14s.
Adelaide iSS = (+15m.52s.), i = (+16m.5s.); all readings have been diminished by 10 minutes.
Tucson i = +12m.50s., isP = +13m.16s.
Helwan PKKPE = +20m.14s.
Rome e = +35m.46s., eN = +41m.57s.
Granada PKP_3 = +21m.14s., PPP = +28m.42s., SKKS = +31m.38s., i = +42m.51s., eSS = +46m.1s., SSS = +49m.23s.
Long waves were also recorded at Kodaikanal, Berkeley, Ukiah, Butte, Toledo, Philadelphia, San Juan, Sydney, Kew, Riverview, Harvard, Cape Town, San Fernando, Uccle, Potsdam, St. Louis, Huancayo, College, Seattle, and Honolulu.

September 30d. Readings also at 7h. (near Wellington, near Apia, Christchurch, and New Plymouth), 9h. (St. Louis, Salt Lake City, Tucson, Mount Wilson, and Riverside), 10h. (Haiwee, Pasadena, Palomar, Seattle, Tucson, Mount Wilson, Riverside, Butte, Bozeman, and Tinemaha), 12h. (Seattle), 13h. (La Paz, Christchurch, Palomar, Haiwee, Pasadena, Tucson, Mount Wilson, and Riverside), 14h. (near Berkeley (2) and Ukiah), 15h. (La Paz), 17h. (Sofia).

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

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A digital hypocenter file of the ISS (Villaseñor and Engdahl, 2005) can be obtained from the USGS web site: http://earthquake.usgs.gov/scitech/iss/

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