The International Seismological Summary.

1941 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. and H.M. Treasury for financial support, which has covered the cost and preparation of this volume.

The third quarter of 1941 contains 134 Epicentres, of which 77 are repetitions from previous determinations.

Cases of abnormal focal depth are noticed as below :—

July	6d.	0h.	31·8N.	140·5E.	0·015
	10d.	9h.	18·8S.	70·5W.	0·020
	19d.	15h.	31·9N.	132·0E.	Base of Superficial Layers
	19d.	17h.	10·0N.	123·0E.	0·070
	25d.	4h.	9·5N.	126·7E.	Base of Superficial Layers
	26d.	4h.	9·5N.	126·7E.	Base of Superficial Layers
August	2d.	11h.	29·3S.	178·2W.	Suggested Deep
	3d.	7h.	34·0N.	138·2E.	0·030
	4d.	10h.	51·6N.	178·7E.	Suggested Deep
	6d.	6h.	55·5N.	163·0W.	0·015
	10d.	16h.	32·5S.	70·0W.	Suggested Deep
	10d.	19h.	22·4S.	62·5W.	0·030
	14d.	1h.	23·7S.	65·7W.	0·015
	20d.	13h.	0·1N.	122·7E.	0·010
Sept.	4d.	10h.	5·1S.	153·5E.	Suggested Deep
	9d.	7h.	6·2S.	154·8E.	0·005
	12d.	7h.	0·7S.	132·4E.	Suggested Deep
	17d.	6h.	0·1N.	122·7E.	0·030
	18d.	13h.	14·0S.	72·0W.	0·010
	24d.	1h.	50·0N.	158·3E.	Suggested Deep
	29d.	17h.	22·0S.	175·0E.	Suggested Deep

Thanks are also due to the Director of the Meteorological Office and the Superintendent of Kew Observatory for hospitality extended to the staff, and assistance with administration.

KEW OBSERVATORY,
RICHMOND, SURREY.

May, 1952.

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1941 JULY, AUGUST, SEPTEMBER.

July 1d. 6h. 25m. 49s. Epicentre 52°·5N. 107°·0E.

$A = -·1787$, $B = +·5846$, $C = +·7914$; $\delta = 0$; $h = -6$;
$D = +·956$, $E = +·292$; $G = -·231$, $H = +·757$, $K = -·611$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Irkutsk		1·7	262	i 0 34	+ 3	0 57	+ 3	—	—	—
Semipalatinsk		16·8	274	4 55	+57	—	—	—	—	—
Vladivostok		19·1	110	i 4 31	+ 4	i 8 7	+10	—	—	—
Almata		22·0	259	5 3?	+ 5	—	—	—	—	—
Andijan		26·3	259	5 44?	+ 5	—	—	—	—	—
Sverdlovsk		26·8	264	i 5 43	− 1	10 16	− 3	—	—	—
Moscow		39·3	304	e 7 30	− 2	—	—	—	—	—
Pulkovo		41·1	312	7 47	0	14 3	+ 2	—	—	—
Stuttgart		57·4	309	e 9 51	− 2	—	—	e 10 41	PcP	e 30·2
Clermont-Ferrand		62·5	310	e 10 26?	− 2	—	—	—	—	—
Toledo		70·3	311	i 11 18	+ 1	e 21 11	PPS	—	—	31·9
Coimbra		72·1	314	e 13 47	PP	25 27	SS	e 15 37	PPP	40·7
Granada		72·3	309	e 11 43k	+14	e 22 11?	?	—	—	e 30·4
Tinemaha	z.	82·5	36	e 12 28	+ 2	—	—	—	—	—
Mount Wilson	z.	85·1	37	i 12 40	+ 1	—	—	—	—	—
Pasadena	z.	85·1	37	e 12 37	− 2	—	—	—	—	—
Riverside	z.	85·6	37	e 12 48	+ 7	—	—	—	—	—
Tucson		89·4	31	i 13 0	0	—	—	—	—	—

Long waves were also recorded at Agra, College, and other European stations.

July 1d. 7h. 50m. 54s. Epicentre 34°·3N. 119°·6W.

Intensity VIII at Santa Barbara, Carpinteria; VII at Goleta and Ventura (California). Epicentre 34°20′N. 119°35′W. (Santa Barbara Canal). Macroseismic area 20,000 sq. miles.

F. Neumann.
United States Earthquakes, 1941; Washington, 1943, pp.10-11, chart p.8.

$A = -·4089$, $B = -·7198$, $C = +·5609$; $\delta = -8$; $h = 0$;
$D = -·869$, $E = +·494$; $G = -·281$, $H = -·495$, $K = -·828$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara		0·2	324	i 0 6	− 4	—	—	—	—	—
Pasadena		1·2	97	i 0 24	0	i 0 39	− 2	—	—	—
Mount Wilson		1·3	94	i 0 25	0	i 0 41	− 3	—	—	—
Riverside		1·9	99	i 0 33	− 1	—	—	—	—	—
Haiwee	z.	2·3	36	i 0 40	0	—	—	—	—	—
Fresno	N.	2·4	356	e 0 40	− 1	—	—	—	—	—
Palomar	z.	2·5	113	i 0 43	0	—	—	—	—	—
Tinemaha		3·0	21	e 0 49	− 1	—	—	—	—	—
Lick		3·5	331	i 0 54	− 3	i 1 30	−10	i 1 0	P*	—
Santa Clara		3·6	327	i 0 56	− 1	i 1 32	−10	i 1 3	P*	—
Branner		3·7	326	i 1 0	0	i 1 50	+ 5	i 1 5	P*	—
Berkeley		4·2	329	i 1 3	− 4	i 1 54	− 3	e 1 24	P_g	—
San Francisco		4·2	326	e 1 6	− 1	i 2 21	S_g	—	—	—
Ukiah		5·6	330	e 1 25	− 2	i 2 43	+10	e 1 37	P*	i 3·7
Ferndale		7·3	330	e 2 27	P_g	e 3 24	+ 9	—	—	i 4·1
Tucson		7·6	103	i 1 53	− 2	i 3 17	− 6	i 2 6	P*	i 3·6
Salt Lake City		8·9	41	i 2 15	+ 3	e 4 13	SS	i 4 25	S*	i 4·7
Logan		9·8	37	i 2 28	+ 4	i 4 36	SS	e 4 48	SSS	5·2
Butte		12·9	23	e 3 8	+ 1	e 5 57	SS	i 3 18	PP	i 6·5
Denver		12·9	61	e 4 29	?	e 5 35	+ 2	e 6 6	SSS	i 6·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman		13·1	27	i 3 12	+ 2	i 6 1	SSS	i 3 21	PP	i 7·0
Spokane		13·5	6	i 5 19	?	i 5 55	+ 8	—	—	i 10·9
Seattle		13·5	352	3 6	− 9	—	—	—	—	—
Victoria		14·5	349	(3 30)	+ 2	3 30	P	—	—	7·1
Lincoln		19·3	65	i 4 28	− 1	i 8 24	SS	—	—	i 10·0
Saskatoon		20·1	23	e 4 46	+ 8	—	—	—	—	11·0
Tacubaya	N.	23·4	124	e 5 30	+19	—	—	—	—	—
Florissant		23·9	71	i 5 17	+ 1	i 9 45	+15	i 5 48	PP	—
St. Louis		24·0	71	e 5 17	0	e 9 34	+ 2	—	—	—
Cape Girardeau	E.	24·5	73	e 5 20	− 2	e 9 41	+ 1	e 6 4	PP	e 12·8
Sitka		25·6	340	e 5 31	− 1	e 10 9	+10	—	—	e 14·9
Chicago, U.S.C.G.S.		26·2	64	i 5 39	+ 1	e 10 11	+ 2	—	—	e 13·3
Cincinnati		28·4	70	i 5 59	+ 1	e 11 0?	+15	—	—	i 17·3
Columbia		31·8	79	—	—	e 11 38	0	—	—	i 16·5
Pittsburgh		31·9	67	i 6 28	− 1	i 11 41	+ 1	—	—	—
Toronto		32·4	61	—	—	e 12 6	+18	—	—	17·1
Georgetown		34·2	69	6 49	0	e 12 15	− 1	—	—	—
College		35·0	340	—	—	e 12 33	+ 5	e 14 55	SS	e 15·9
Ottawa		35·1	58	6 56	− 1	12 31	+ 1	8 12	PP	18·1
Philadelphia		35·6	68	e 7 0	− 1	e 12 33	− 5	e 15 39	SSS	i 17·8
Fordham		36·5	66	7 10	+ 1	12 56	+ 5	—	—	—
Vermont		36·8	60	e 7 12	+ 1	e 12 48	− 8	e 15 28	SSS	e 18·1
Shawinigan Falls		37·2	56	e 7 54	+39	—	—	—	—	17·1
Weston		38·3	63	e 7 26	+ 2	i 13 24	+ 5	—	—	—
Seven Falls		38·5	55	7 27	+ 1	13 34	+12	8 52	PP	20·1
East Machias		41·0	60	i 7 46	0	e 14 7	+ 8	e 9 29	PP	e 19·0
Bermuda		45·3	76	e 10 9	PP	e 14 30	−32	—	—	e 17·8
San Juan		49·9	94	e 8 59	+ 2	i 16 8	+ 1	e 11 4	PP	e 27·1
Scoresby Sund		60·6	23	—	—	e 18 41	+11	—	—	e 30·9
Huancayo		62·4	130	e 10 29	+ 2	i 18 59	+ 6	e 12 30	PP	e 31·2
La Paz		70·3	128	e 11 46	+29	—	—	—	—	40·1
Aberdeen	E.	74·8	31	—	—	e 26 6	SS	—	—	39·1
Vladivostok		79·1	315	i 12 6	− 2	e 22 17	+10	—	—	—
Kew	Z.	79·4	35	i 12 10	+ 1	e 22 27	+17	i 12 15	P_cP	e 45·1
Upsala		79·8	22	—	—	e 32 6?	?	—	—	e 46·1
De Bilt		81·3	32	i 12 21a	+ 1	e 22 41	+11	e 15 26	PP	e 40·1
Uccle		82·0	34	e 12 23a	0	e 22 44	+ 7	e 28 11	SS	e 39·1
Coimbra		82·5	47	e 20 6	?	e 25 36	?	30 36	SSS	47·1
Paris		82·5	36	e 12 28	+ 2	24 6?	PPS	35 6?	?	44·1
Pulkovo		83·0	15	e 12 29	+ 1	e 22 50	+ 3	15 38	PP	—
Potsdam		84·3	28	e 12 38	+ 3	e 23 6?	+ 6	—	—	e 41·1
Clermont-Ferrand		85·0	37	e 12 40	+ 2	—	—	—	—	—
Strasbourg		85·1	33	e 12 42?	+ 3	—	—	—	—	53·1
Toledo		85·2	45	i 12 40	+ 1	e 23 12	+ 3	—	—	42·4
Irkutsk		85·6	335	e 12 43	+ 2	—	—	16 6	PP	—
Warsaw		87·2	24	e 12 48a	− 1	e 23 32	+ 4	—	—	e 47·1
Granada		87·3	46	12 42a	− 8	22 36	[−40]	12 51	P_cP	40·6
Moscow		88·2	14	12 53	− 1	23 15	[− 7]	16 20	PP	—
Sverdlovsk		89·2	0	13 0	+ 1	23 29	[+ 1]	e 29 30?	SS	—
Tashkent		104·3	355	17 59	PKP	24 52	[+ 5]	27 43	PS	—

Additional readings :—
Lick iN = +1m.12s., +1m.35s., and +2m.2s., iE = +2m.39s.
Santa Clara iS_g = +2m.0s.
Branner iN = +1m.22s., iS_gN = +1m.58s., iN = +2m.8s.
Berkeley iE = +2m.7s., iN = +2m.22s., iNZ = +2m.26s., iZ = +2m.50s.
San Francisco iE = +1m.36s.
Ukiah i = +1m.46s., +2m.0s., and +3m.17s.
Ferndale eN = +2m.36s., eE = +3m.29s.
Tucson i = +1m.59s., +2m.14s., +2m.26s., +2m.35s., +2m.45s., and +3m.30s.
Salt Lake City i = +2m.20s., +2m.57s., and +3m.26s.
Logan e = +3m.55s. and +5m.1s.
Butte i = +6m.15s.
Denver eSN = +5m.43s.
Bozeman i = +3m.54s. and +6m.48s.
Spokane iN = +5m.35s.
Florissant iZ = +5m.23s.

Continued on next page.

Chicago, U.S.C.G.S. iS = +10m.19s., e = +12m.15s.
Toronto e = +15m.6s. ?
Ottawa e = +15m.24s. ?
Philadelphia eS = +12m.22s., i = +16m.53s.
Vermont eS = +13m.3s.
East Machias e = +16m.25s., iSS = +17m.10s.
San Juan e = +10m.30s. and +20m.42s.
Huancayo e = +10m.44s., eSS = +23m.17s.
Kew PPZ = +15m.13s., eZ = +16m.47s., ePSZ = +23m.5s., eSSZ = +27m.6s. ?, eSSSZ = +30m.36s. ?, eZ = +38m.6s. ?
Warsaw eE = +23m.39s.
Granada PPP = +17m.51s., SKKS = +23m.0s., S = +23m.15s., PS = +23m.48s., SS = +28m.42s., SSS = +32m.12s.
Long waves were also recorded at Honolulu, Prague, Bergen, Ivigtut, Bucharest, and Stonyhurst.

July 1d. 8h. 18m. 58s. Epicentre 34°·3N. 119°·6W. (as at 7h.).

A = −·4089, B = −·7198, C = +·5609 ; $\delta = -8$; $h = 0$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fresno	N.	2·4	356	e 0 41	0	i 1 14	+ 2	—	—	—
Lick		3·5	331	e 0 54	− 3	i 1 40	0	e 1 0	P*	—
Santa Clara	E.	3·6	327	e 1 27	+29	e 2 9	+27	—	—	—
Branner		3·7	326	e 1 1	+ 1	i 1 41	− 4	e 1 6	P*	—
Berkeley		4·2	329	e 1 8	+ 1	e 2 17	S_g	e 1 11	P*	—
San Francisco		4·2	326	e 1 32	P_g	i 2 25	S_g	—	—	—
Tucson		7·6	103	i 1 54	− 1	i 4 6	S_g	i 2 25	P_g	i 5·8

Additional readings :—
Branner iE = +1m.34s., iN = +1m.38s.
San Francisco eN = +1m.39s.
Tucson i = +3m.11s.

July 1d. 22h. Undetermined shock.

Istanbul P = 47m.56s., S = 48m.23s.
Yalta eP = 49m.51s.
Sofia ePEN = 49m.54s. ?, eE = 51m.16s., eSN = 51m.27s.
Theodosia eP = 50m.4s., S = 53m.37s.
Bucharest ePZ = +50m.9s., eN = 50m.12s., eP_gEN = 50m.58s., eZ = 51m.5s., iSEN = 51m.28s., iS_gN = 51m.56s.
Ksara e = 50m.42s. and 52m.18s.
Stuttgart iP = 52m.22s.
Triest e = 55m.0s., i = 55m.37s.
Warsaw e = 56m.0s., eEN = 57m.0s., eZ = 58m.0s.
Potsdam eEN = 58m.30s. ?
Long waves were also recorded at Scoresby Sund.

July 1d. 23h. 53m. 40s. Epicentre 34°·3N. 119°·6W. (as at 7h.).

A = −·4089, B = −·7198, C = +·5609 ; $\delta = -8$; $h = 0$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara	Z.	0·2	324	i 0 6	− 4	—	—	—	—	—
Pasadena		1·2	97	i 0 24	0	i 0 41	0	—	—	—
Mount Wilson		1·3	94	i 0 26	+ 1	—	—	—	—	—
Riverside		1·9	99	i 0 34	0	—	—	—	—	—
Haiwee	Z.	2·3	36	i 0 41	+ 1	—	—	—	—	—
Fresno	N.	2·4	356	i 0 42	+ 1	e 1 16	+ 4	—	—	—
Tinemaha		3·0	21	i 0 52	+ 2	—	—	—	—	—
Santa Clara	E.	3·6	327	i 1 31	+33	e 2 16	+34	—	—	—
Branner		3·7	326	e 0 58	− 2	e 1 56	S*	e 1 14	P_g	—
Berkeley		4·2	329	e 1 5	− 2	e 2 23	S_g	e 1 19	P*	—
San Francisco		4·2	326	e 1 16	P*	e 1 56	− 1	—	—	—
Ukiah		5·6	330	—	—	e 3 2	S_g	—	—	—
Tucson		7·6	103	e 1 56	+ 1	i 4 22	+59	i 2 27	P_g	e 6·6

Additional readings :—
Branner eN = +1m.20s., eE = +1m.40s.
Berkeley iZ = +1m.8s., eSN = +1m.25s., iSNZ = +2m.52s., eZ = +2m.30s.
Tucson i = +2m.38s., +4m.45s., +5m.9s., and +5m.34s.
Long waves were also recorded at Bozeman.

July 1d. Readings also at 1h. (Medan), 2h. (Amboina), 3h. (Medan), 4h. (near Andijan), 8h. (near Wellington, Tinemaha, near Lick (5), Fresno (3), Riverside, Pasadena, and Mount Wilson), 9h. (Fresno and Lick (2)), 10h. (near Branner, Fresno, and near La Paz), 11h. (Mount Wilson, Pasadena, Tucson, Riverside, and near Andijan), 12h. (near Lick), 13h. (near Andijan, Frunse, Almata, Tashkent, and near Fresno), 15h. (near Semipalatinsk, Andijan, Frunse, Almata, Tashkent, and near Mizusawa), 16h. (near Fresno (2), Branner, Lick, San Francisco, Berkeley, and near Mizusawa), 18h. (Fresno), 20h. (Fresno, near Branner, Tucson, Mount Wilson, Butte, Pasadena, Riverside, Bozeman, Berkeley, Salt Lake City, Philadelphia, Chicago, U.S.C.G.S., and East Machias), 21h. (Berkeley, Scoresby Sund), 22h. (Santa Clara, Ukiah, near Simferopol, Pasadena, Tucson (3), Riverside, Bozeman, Berkeley, Butte, Salt Lake City, Philadelphia, Chicago, U.S.C.G.S., and East Machias), 23h. (Pasadena, Tucson, Butte, and Salt Lake City).

July 2d. 2h. 42m. 6s. Epicentre 12°·4N. 92°·5E. (as on 1941, June 30d.).

Intensity III-IV at Port Blair. Epicentre Gulf of Martaban 15°·0N. 95°·0E. (Bombay). See Government of India Seismological Bulletin for 1941, p.63.

$A = -\cdot0426$, $B = +\cdot9761$, $C = +\cdot2134$; $\delta = +13$; $h = +6$;
$D = +\cdot999$, $E = +\cdot044$; $G = -\cdot009$, $H = +\cdot213$, $K = -\cdot977$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		10·7	144	2 25	−13	—	—	—	—	—
Calcutta	N.	10·8	339	e 2 52	PP	5 0	SS	—	—	(i 5·8)
Colombo	E.	13·6	248	3 18	+ 1	—	—	—	—	—
Kodaikanal	E.	14·9	264	—	—	i 6 26	+ 6	—	—	7·7
Agra	E.	20·0	320	4 42	+ 5	i 8 16	− 1	8 54	SS	—
Bombay		20·0	292	i 4 44	+ 7	e 8 29	+12	—	—	10·6
Almata		33·6	340	e 6 43	− 1	—	—	—	—	—
Frunse		34·1	336	e 6 58	+10	—	—	—	—	—
Tashkent		35·2	329	—	—	e 12 38	+ 7	—	—	—
Sverdlovsk		50·6	338	9 3	+ 1	16 14	− 3	—	—	—
Theodosia		58·2	316	e 9 58	0	—	—	—	—	—
Moscow		60·5	328	10 12	− 2	18 25	− 4	—	—	—
Pulkovo		65·5	331	e 10 46	− 1	e 19 31	− 1	—	—	—
Warsaw		68·9	322	—	—	e 19 54?	−19	—	—	e 40·9
Potsdam		73·8	322	—	—	i 21 7	− 2	—	—	e 41·9
Chur		76·3	316	e 11 49	− 3	—	—	—	—	—
Stuttgart		76·4	318	e 11 49	− 4	—	—	—	—	—
Zurich		76·9	316	e 11 53a	− 3	—	—	—	—	—
Basle		77·5	316	e 11 58	− 1	—	—	—	—	—
Neuchatel		78·0	316	e 12 0	− 2	—	—	—	—	—
Uccle		79·3	320	e 12 11	+ 2	—	—	—	—	e 42·9
Mount Wilson	Z.	125·3	31	i 19 0	[− 3]	—	—	—	—	—
Pasadena	Z.	125·3	31	i 19 0	[− 3]	—	—	—	—	—
Riverside	Z.	125·8	31	i 19 0	[− 4]	—	—	e 22 8	PKS	—
Tucson		130·3	26	i 19 10	[− 3]	—	—	i 22 29	PKS	—
Huancayo		168·1	270	e 20 7	[− 1]	—	—	—	—	—

Additional readings :—
Calcutta L given as S.
Bombay iN = +8m.39s., iNE = +9m.14s.
Potsdam eN = +21m.19s.
Stuttgart i = +12m.4s., e = +13m.28s.
Pasadena eZ = +22m.32s.
Tucson i = +22m.55s.
Huancayo e = +21m.17s.
Long waves were also recorded at Scoresby Sund, Kew, and De Bilt.

July 2d. Readings also at 1h. (near Mizusawa, Haiwee, Tinemaha, Santa Barbara, Tucson (2), Pasadena, Mount Wilson, Riverside, and La Paz), 2h. (Colombo (2) and Columbia), 4h. (Victoria, Wellington, Butte, East Machias, Philadelphia, Salt Lake City, San Juan, Tacubaya (2), Scoresby Sund, Kew, College, Ukiah, Honolulu, Columbia, Tucson (2), Pasadena, Mount Wilson (2), Riverside, La Paz, Huancayo, Berkeley, and Paris), 7h. (Bucharest), 8h. (Fresno), 9h. (La Plata, Huancayo, La Paz, and Tucson), 10h. (Tucson, Paris, Riverside, Mount Wilson, Pasadena, and Tinemaha), 12h. (Riverside, Mount Wilson, Pasadena, Tucson, Columbia, and near La Paz), 16h. (Balboa Heights), 19h. (Triest), 20h. (La Paz), 21h. (near Berkeley), 22h. (near Fresno), 23h. (St. Louis).

July 3d. 1h. Undetermined shock.

Tucson iP = 25m.3s., e = 25m.16s., i = 25m.30s., 25m.43s., and 26m.2s., e = 26m.53s., eS? = 27m.26s., i = 28m.6s., eL = 28·7m.
Mount Wilson ePZ = 26m.2s.
Pasadena ePZ = 26m.2s., eLEN = 29·1m.
Tacubaya eN = 27m.11s.
Santa Clara eE = 30m.47s. and 34m.18s.
Salt Lake City iS = 30m.53s., eL = 32·6m.
Berkeley iSE = 30m.58s., iSN = 31m.7s., iSZ = 31m.10s., eLE = 32·0m.
Lincoln eS = 31m.32s., eL = 34·8m.
Florissant eSE = 31m.55s.
Butte eS = 32m.18s., eL = 36·6m.
Chicago, U.S.C.G.S. eS? = 32m.49s., iL = 37·2m.
Honolulu eSS = 40m.23s., e = 42m.13s., eL = 44·2m.
Long waves were also recorded at East Machias, Ukiah, and Seattle.

July 3d. 7h. 11m. 43s. Epicentre 31°·8S. 67°·8W.

Damage at San Juan, strongly felt at Mendoza, and in the provinces of Cordoba, San Luis, La Rioja, and near Buenos Aires.
Epicentre : 31°·0S. 68°·7W. (J.S.A.).
31°·5S. 69°·5W. (Granada).
32°·5S. 67°·0W. (La Plata).

J. P. Rothé.
Chronique séismologique, Revue pour l'Etude des Calamites, tome VII, No. 21, Genève 1944, p.59.

Obseratorio astronomico, La Plata, Boletin sismologico, 1941.

$A = +·3217$, $B = -·7884$, $C = -·5244$; $\delta = +6$; $h = +1$;
$D = -·926$, $E = -·378$; $G = -·198$, $H = +·486$, $K = -·852$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata		8·8	113	2 12	+ 1	3 53	0	—	—	4·3
La Paz		15·1	359	i 3 43k	+ 7	i 6 45	SS	—	—	8·5
Huancayo		20·9	339	i 4 50	+ 4	i 8 38	+ 3	i 5 2	PP	i 12·3
Rio de Janeiro		23·5	74	i 5 15	+ 3	i 9 17	− 6	—	—	i 12·3
San Juan		49·9	2	e 8 53	− 4	i 19 49	SS	i 11 1	PP	e 23·6
Tacubaya	E.	59·1	325	e 10 6	+ 2	—	—	—	—	—
Bermuda		63·9	4	i 10 34	− 3	19 7	− 5	19 21	PS	—
Columbia		66·6	348	e 10 52	− 2	e 19 28	−17	e 13 6	PP	e 28·3
Georgetown		70·9	354	e 11 19	− 2	i 20 35	− 1	—	—	—
Philadelphia		71·7	355	i 11 27	+ 1	e 20 43	− 2	e 13 49	PP	e 37·2
Cape Girardeau		71·7	343	e 11 22	− 4	e 20 43	− 2	e 14 19	PP	—
Fordham		72·5	356	11 29	− 1	20 56	+ 2	—	—	—
Pittsburgh		72·8	351	e 11 25	− 7	i 21 2	+ 4	—	—	—
St. Louis		73·1	342	e 11 30	− 4	i 21 1	0	i 21 33	PS	—
Florissant		73·7	342	e 11 32	− 6	i 21 0	− 8	i 21 33	PS	—
Chicago, U.S.C.G.S.		75·5	345	e 11 42	− 6	i 21 22	− 6	e 14 8	PP	e 30·6
Tucson		75·6	323	i 11 46	− 2	e 21 34	+ 5	i 14 39	PP	i 30·7
Toronto		75·8	352	11 50	0	21 33	+ 2	—	—	42·3
Vermont		76·1	357	e 11 49	− 2	e 21 39	+ 4	e 14 29	PP	e 40·7
East Machias		76·2	1	i 11 55	+ 3	i 21 35	− 1	i 22 11	S_cS	e 30·2
Lincoln		77·0	339	—	—	e 21 41	− 4	e 25 23	?	e 44·9
Ottawa		77·2	355	11 55	− 2	21 47	0	—	—	36·3
Shawinigan Falls		78·1	357	12 1	− 1	21 59?	+ 3	—	—	—
Seven Falls		78·6	358	12 9	+ 4	22 13	+11	—	—	30·3
Riverside	z.	80·4	320	i 12 13a	− 2	—	—	—	—	—
Mount Wilson	z.	80·9	320	i 12 16a	− 1	—	—	—	—	—
Pasadena		80·9	320	i 12 17a	0	e 22 28	+ 2	e 15 23	PP	e 39·1
Santa Barbara		82·0	319	i 12 23	0	—	—	—	—	—
Haiwee		82·3	321	i 12 24	− 1	—	—	—	—	—
Salt Lake City		82·9	327	i 12 32	+ 4	e 22 48	+ 2	—	—	e 37·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		83·2	321	i 12 28a	− 1	e 22 57	+ 8	—	—	—
Fresno	N.	83·7	320	e 12 33	+ 1	—	—	—	—	—
Logan		83·7	329	12 30	− 2	e 22 51	− 3	e 16 3	PP	e 41·1
Lick		85·2	320	e 12 40	+ 1	e 23 12	+ 3	—	—	—
Santa Clara	E.	85·4	320	i 12 43	+ 3	e 23 14	+ 3	—	—	—
Berkeley		85·9	320	i 12 43	0	e 23 14	− 2	—	—	e 40·3
Bozeman		86·5	332	e 12 46	0	i 23 8	[− 3]	e 16 19	PP	e 36·4
Christchurch		86·9	219	12 45a	− 3	22 59	[−14]	36 8	Q	41·7
Wellington		87·2	222	12 50	+ 1	23 25	− 3	23 39	S_cS	41·3
Ukiah		87·3	320	e 12 51	+ 1	e 23 21	− 8	e 16 24	PP	e 42·7
Butte		87·4	331	e 12 52	+ 2	i 23 27	− 3	e 16 25	PP	e 44·1
Arapuni		88·8	325	e 19 17?	?	23 41?	− 3	e 21 23?	?	—
Lisbon		88·9	43	12 51	− 7	23 28	[+ 2]	16 4	PP	41·8
San Fernando		89·1	46	e 13 37	+39	e 24 1	+15	—	—	38·3
Auckland		90·1	226	—	—	20 47?	?	—	—	40·3
Coimbra		90·3	42	13 5	+ 1	23 28	[− 7]	15 50	?	43·3
Granada		91·1	46	13 5k	− 3	23 23	[−16]	16 47	PP	42·6
Almeria		91·6	47	13 13	+ 3	i 24 13	+ 4	13 33	PP	42·3
Toledo		92·6	44	e 13 18	+ 3	23 53	[+ 5]	—	—	39·6
Seattle		93·0	326	e 22 38	?	e 37 23	?	—	—	e 58·3
Algiers		95·1	50	e 13 36	+10	e 24 36	− 3	—	—	—
Tananarive		100·1	120	e 17 4	PP	24 34	[+ 7]	32 46	SS	50·6
Oxford		101·6	35	—	—	i 25 28	− 6	—	—	e 45·8
Paris		101·7	39	e 14 4	+ 8	24 44	[+ 9]	—	—	47·3
Kew	Z.	101·8	36	e 13 57	+ 1	e 25 51	+16	e 18 5	PP	e 46·3
Stonyhurst		102·2	33	i 5 59	?	32 54	?	i 19 57	?	e 50·3
Basle		103·9	42	e 30 13	?	—	—	—	—	—
De Bilt		105·0	37	e 14 18	+ 7	e 33 27	SS	i 18 37	PP	e 50·3
Riverview		105·1	213	—	—	e 27 48	PS	—	—	e 52·2
Stuttgart		105·5	42	e 14 13	0	e 24 53	[0]	e 33 23	SS	e 51·3
Triest		106·6	46	e 18 36	PP	i 24 58	[0]	—	—	e 56·1
Scoresby Sund		107·1	14	e 18 58	PP	e 25 11	[+11]	e 28 13	PS	e 54·9
Jena		107·9	41	e 18 41	PP	—	—	—	—	e 52·3
Prague		109·1	42	e 28 26	PS	e 38 17	SSS	—	—	e 57·3
Bergen		109·4	29	—	—	e 29 17?	PPS	—	—	e 51·3
Potsdam		109·4	39	e 18 54	PP	i 25 26	[+16]	i 28 31	PS	e 50·3
Belgrade		110·5	50	e 17 2	?	—	—	—	—	e 52·9
Copenhagen		110·5	36	19 11	PP	25 22	[+ 8]	28 47?	PS	—
Sofia		111·5	53	e 13 11?	P	e 29 17?	PPS	e 19 23?	PP	52·3
Helwan	E.	112·2	68	e 19 29	PP	25 41	[+20]	28 57	PS	—
Warsaw		113·8	42	e 19 17?	PP	e 29 15	PS	—	—	e 56·3
College		114·3	332	e 19 38	PP	e 29 9	PS	e 35 22	SS	e 53·3
Upsala		114·7	33	—	—	e 29 14	SS	e 35 17	SS	e 53·3
Istanbul		114·9	56	19 48	PP	29 33	PS	—	—	61·0
Ksara		117·3	66	e 20 5	PP	e 29 59	PS	—	—	—
Yalta		119·5	54	e 21 20	?	—	—	—	—	—
Pulkovo		120·1	35	20 23	PP	30 16	PS	—	—	—
Sverdlovsk		136·8	38	e 19 20	[− 4]	—	—	22 7	PP	—
Tashkent		144·6	62	i 19 38	[0]	e 28 58	?	—	—	—
Hyderabad		146·3	107	19 49	[+ 8]	29 50	{− 8}	23 17	PP	56·9
Andijan		146·9	63	e 19 47	[+ 5]	—	—	—	—	—
Medan		149·2	152	19 57	[+11]	—	—	—	—	e 74·3
Agra	E.	150·0	90	e 19 24	[−23]	e 30 16	{− 2}	e 23 28	PP	—

Additional readings :—
La Plata SE = +3m.47s.
Huancayo i = +4m.55s., +5m.25s., +7m.9s., +8m.57s., and +11m.0s.
San Juan iP = +8m.58s., i = +10m.36s., +11m.19s., +14m.16s., +17m.21s., and +17m.33s., iS_cS = +18m.45s., i = +20m.9s. and +20m.31s.
Bermuda eS_cS = +20m.43s., eSSS = +26m.2s.
Columbia iS = +19m.44s., i = +20m.17s., iS_cS = +20m.58s.
Philadelphia ePPP = +15m.35s., eSSS = +28m.49s.
Cape Girardeau iPN = +11m.26s., eN = +12m.21s., iE = +12m.29s., iSN = +20m.52s.
St. Louis iZ = +11m.40s., eN = +20m.54s., iE = +21m.10s., ePSN = +21m.38s., iN = +22m.18s., +23m.12s., and +24m.33s.

Continued on next page.

Florissant iNZ = +11m.36s. and +11m.42s., eN = +20m.36s., eE = +20m.59s., iE = +21m.13s. and +21m.27s., eSKSE = +21m.52s., eN = +22m.29s. and +22m.38s.
Chicago, U.S.C.G.S. iP = +11m.45s. and +17m.57s., i = +21m.31s., eSS = +25m.57s., e = +26m.41s.
Tucson i = +11m.55s., +11m.59s., +12m.46s., +13m.37s., and +13m.59s., iPP = +14m.50s., iPPP = +16m.35s., e = +17m.41s., +19m.59s., +21m.42s., and +22m.2s., i = +22m.11s., +23m.29s., and +24m.46s., eSSS = +29m.35s.
Vermont eS = +21m.24s., eSSS = +29m.44s.
East Machias e = +12m.9s. and +17m.41s., i = +23m.29s.
Lincoln i = +21m.52s.
Salt Lake City e = +22m.1s.
Fresno iN = +12m.39s.
Logan e = +12m.33s. and +23m.6s.
Lick ePE = +12m.43s., eSN = +23m.24s.
Berkeley iPEZ = +12m.46s., eN = +12m.55s., iSN = +23m.23s.
Bozeman ePPP = +18m.8s., e = +19m.56s., i = +23m.23s. and +23m.55s., e = +26m.36s., eSSS = +32m.10s.
Christchurch S = +23m.26s.
Wellington iZ = +13m.52s., PS = +24m.22s., i = +25m.19s., SSS = +32m.52s., Q? = +37m.17s. ?
Ukiah e = +22m.49s.
Butte e = +22m.50s.
Lisbon Z = +12m.56s., PEN = +13m.1s., PZ = +13m.6s., SKSN = +23m.31s., SE = +23m.41s., PSE = +24m.46s.
Coimbra S = +23m.48s., SS = +29m.50s.
Granada PPP = +18m.41s., SKKS = +23m.56s., S = +24m.23s., PS = +25m.11s., PPS = +25m.32s., SS = +30m.20s., SSS = +34m.11s.
Almeria P_cP = +13m.21s., PP = +16m.54s., PPS = +18m.53s., S_cS = +24m.21s., SS = +30m.21s., SSS = +33m.53s.
Toledo S = +24m.27s.
Tananarive eSE = +25m.24s.
Kew ePSZ = +27m.13s., eSSZ = +32m.47s. ?
Scoresby Sund e = +43m.49s.
Jena e = +18m.47s., eN = +18m.53s.
Petsdam iPPEZ = +19m.4s., iSN = +26m.42s., eZ = +27m.53s., iE = +28m.57s., iN = +29m.0s., iSS?N = +34m.17s. ?
Copenhagen ? = +26m.17s. and +29m.10s.
Stuttgart ePP = +18m.33s.
Helwan SKKSE = +26m.23s., PPSE = +30m.3s.
Warsaw eZ = +19m.36s., eN = +29m.19s., eE = +29m.23s.
Istanbul PP = +23m.38s.
Hyderabad PPE = +23m.57s., PSEN = +33m.27s., SSE = +38m.41s.
Long waves were also recorded at Aberdeen, Honolulu, Uccle, Strasbourg, Ivigtut, Ogyalla, Chur, and Budapest.

July 3d. Readings also at 1h. (Tucson, Mount Wilson, Riverside, and Pasadena), 3h. (near Mizusawa), 5h. (Pasadena), 8h. (Adelaide, Kodaikanal, Bombay, Calcutta, and Colombo), 10h. (near Bucharest, near Amboina, near Simferopol, and Theodosia), 11h. (Lincoln and near Fresno), 12h. (near Andijan, La Paz, Huancayo, Santa Barbara, Tinemaha, Tucson, Pasadena, Riverside, and Mount Wilson), 19h. (Fresno).

July 4d. Readings at 3h. (Bombay), 4h. (near Istanbul), 7h. (Lincoln), 10h. (Batavia and San Juan), 15h. (near Mizusawa), 20h. (Huancayo), 22h. (near Mizusawa, Ksara, and near Erevan).

July 5d. Readings at 0h. (Huancayo), 2h. (Arapuni, Auckland, Christchurch, Wellington, Riverview, Sydney, Granada, Kew, Toledo, and Huancayo), 3h. (La Paz, Berkeley, Pasadena, Ukiah, Kew, De Bilt, Uccle, Potsdam, Paris, Scoresby Sund, and near Mizusawa), 4h. (Warsaw, Sofia, Triest, and Bucharest), 5h. (Salt Lake City and near Balboa Heights), 7h. (Tacubaya and Tucson (2)), 8h. (near Irkutsk), 10h. (near Almata), 11h. (near Algiers), 12h. (Seven Falls), 15h. (near Erevan, near Andijan, Tashkent, and Tchimkent), 16h. (near Huancayo, La Paz, and Tucson).

July 6d. 0h. 34m. 35s. Epicentre 31°·8N. 140°·5E. Depth of focus 0·015.

Intensity II-III at Utunomiya and Tateyama. Epicentre 31°·8N. 140°·5E. Macroseismic radius 200-300km. Depth = 200km.
See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1941. Tokyo 1950, pp. 28-29. Macroseismic chart p. 28.

$A = -·6570$, $B = +·5416$, $C = +·5244$; $\delta = -3$; $h = +1$;
$D = +·636$, $E = +·772$; $G = -·405$, $H = +·334$; $K = -·852$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hatidyozima	1·4	337	0 17k	−11	0 48	0	—	—	—
Osima	3·1	343	0 49	0	1 26	0	—	—	—
Mera	3·2	350	0 50	0	1 29	+ 1	—	—	—
Omaesaki	3·4	326	0 53	0	1 36	+ 3	—	—	—
Misima	3·5	339	0 56k	+ 2	1 38	+ 2	—	—	—
Shizuoka	3·6	332	0 57k	+ 1	1 41	+ 3	—	—	—
Hamamatu	3·7	323	0 58k	+ 1	1 33	− 7	—	—	—
Yokohama	3·7	349	0 58k	+ 1	1 42	+ 2	—	—	—
Tokyo Cen. Met. Ob.	3·9	351	1 2k	+ 3	1 48	+ 3	—	—	—
Hunatu	4·0	339	1 1k	0	1 50	+ 3	—	—	—
Kohu	4·2	338	1 5k	+ 2	2 2	+10	—	—	—
Owase	4·3	303	1 4	− 1	1 53	− 2	—	—	—
Siomisaki	4·3	294	1 3	− 2	1 46	− 9	—	—	—
Kakioka	4·4	357	1 7	+ 1	1 59	+ 2	—	—	—
Nagoya	4·5	320	1 6k	− 2	2 1	+ 2	—	—	—
Kameyama	4·6	314	1 8k	− 1	2 3	+ 1	—	—	—
Mito	4·6	0	1 11	+ 2	2 3	+ 1	—	—	—
Gihu	4·8	320	1 11k	− 1	2 6	− 1	—	—	—
Utunomiya	4·8	354	1 10k	− 2	2 5	− 2	—	—	—
Titizima	4·9	162	1 7	− 6	1 57	−12	—	—	—
Hikone	5·0	316	1 14k	0	2 12	0	—	—	—
Kyoto	5·1	310	1 16	0	—	—	—	—	—
Osaka	5·1	306	1 14	− 2	2 20	+ 6	—	—	—
Wakayama	5·1	300	1 25	+ 9	2 21	+ 7	—	—	—
Nagano	5·2	340	1 19	+ 2	2 39	+23	—	—	—
Kobe	5·3	305	1 18k	0	2 37	+18	—	—	—
Sumoto	5·3	300	1 19k	+ 1	2 19	0	—	—	—
Muroto	5·5	286	1 20	− 1	2 19	− 5	—	—	—
Toyama	5·6	332	1 25k	+ 3	2 40	+14	—	—	—
Toyooka	6·0	310	1 29k	+ 1	2 39	+ 3	—	—	—
Koti	6·2	289	1 28k	− 2	2 35	− 6	—	—	—
Wazima	6·3	333	1 32	0	—	—	—	—	—
Sendai	6·4	3	1 32k	− 1	2 42	− 3	—	—	—
Aikawa	6·5	344	1 34	− 1	—	—	—	—	—
Matuayama	6·8	289	1 37k	− 2	—	—	—	—	—
Hirosima	7·2	293	1 43	− 1	—	—	—	—	—
Mizusawa	7·3	4	i 1 45	0	i 3 4	− 3	—	—	—
Hamada	7·7	296	1 50k	− 1	3 28	+11	—	—	—
Akita	7·9	358	1 55	+ 2	3 18	− 4	—	—	—
Kumamoto	8·4	280	1 59	− 1	3 32	− 2	—	—	—
Izuka	8·5	285	2 2	0	3 38	+ 2	—	—	—
Kagosima	8·5	271	1 59	− 3	—	—	—	—	—
Hukuoka	8·7	284	2 2k	− 2	—	—	—	—	—
Yakusima	8·7	264	2 2k	− 2	3 41	0	—	—	—
Hatinohe	8·8	5	2 0	− 5	3 35	− 8	—	—	—
Aomori	9·0	1	1 56	−12	3 43	− 5	—	—	—
Mori	10·3	0	2 27	+ 2	4 23	+ 4	—	—	—
Taikyu	10·7	296	2 31k	0	4 41	+12	—	—	—
Sapporo	11·3	3	2 40	+ 1	4 45	+ 2	—	—	—
Nemuro	12·2	18	2 49	− 2	4 56	− 8	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Keizyo		12·5	301	2 55	+ 1	—	—	—	—	—
Vladivostok		13·2	331	—	—	i 5 19	− 9	—	—	—
Karenko		18·4	251	3 53	−14	—	—	—	—	—
Arisan		19·3	251	4 13	− 4	—	—	—	—	—
Taito		19·4	248	4 38	+20	—	—	—	—	—
Kosyun		20·1	246	4 35	+ 9	—	—	—	—	—
Manila	z.	24·7	230	e 5 4	− 6	i 9 54	+34	—	—	—
Irkutsk		33·3	319	6 27	0	e 14 7?	SS	7 37	PP	—
Almata		50·6	303	e 8 46	− 2	—	—	—	—	—
Tchimkent		56·1	303	e 9 35	+ 7	—	—	—	—	—
Tashkent		56·5	301	i 9 29	− 2	—	—	—	—	—
Sverdlovsk		58·6	321	i 9 44	− 2	i 17 39	+ 1	—	—	—
Baku		70·6	306	11 2	− 1	i 20 9	+ 4	—	—	—
Moscow		71·1	324	11 4	− 2	20 10	− 1	—	—	—
Seattle		71·7	45	—	—	e 21 5	PS	—	—	—
Pulkovo		72·3	330	11 13	0	20 26	+ 2	—	—	—
Ukiah		75·1	53	—	—	e 32 45	?	—	—	—
Berkeley		76·4	54	i 11 40	+ 3	i 21 19	+ 9	—	—	e 32·8
Lick		77·1	54	e 11 43	+ 2	—	—	—	—	—
Theodosia		77·7	315	11 45	+ 1	—	—	—	—	—
Simferopol		78·5	316	e 11 41	− 7	—	—	—	—	—
Tinemaha		79·5	53	i 11 47a	− 7	—	—	i 12 15	pP	—
Santa Barbara		79·9	56	i 11 59a	+ 3	—	—	—	—	—
Warsaw		81·0	328	e 12 2k	0	e 22 1	+ 2	e 15 10	PP	e 45·4
Logan		81·1	45	12 7	+ 5	22 9	+ 9	—	—	—
Pasadena		81·1	55	i 12 5a	+ 3	i 22 7	+ 7	—	—	e 36·4
Mount Wilson	z.	81·2	55	i 12 6a	+ 3	—	—	i 12 35	pP	—
Riverside		81·8	55	i 12 8a	+ 2	—	—	i 12 36	pP	—
Copenhagen		82·2	333	i 12 8k	0	i 22 14	+ 3	23 2	sS	—
Bucharest		83·6	319	e 10 25?	?	e 22 47	+22	e 23 15	PS	—
Potsdam		84·4	331	i 12 19k	0	e 22 32	− 1	i 15 37	PP	e 44·4
Jena		86·1	330	e 12 24	− 4	—	—	e 15 49	PP	—
Tucson		87·3	53	e 12 36	+ 3	i 22 57	− 4	i 16 4	PP	e 42·4
De Bilt		87·7	334	i 12 36	+ 1	i 23 8	+ 4	i 16 2	PP	e 45·4
Stuttgart		88·8	331	i 12 40k	0	i 23 19	+ 4	i 13 9	pP	—
Strasbourg		89·0	331	—	—	e 23 26	+10	—	—	—
Helwan		89·0	305	12 42	+ 1	23 1	[+ 4]	23 55	PS	—
Triest		89·1	325	i 15 49	PP	i 22 34	[−23]	i 29 18	SS	—
Uccle		89·1	335	e 12 42	0	23 1	[+ 4]	e 16 14	PP	e 45·4
Zurich		90·1	330	e 12 46	− 1	—	—	—	—	—
Chur		90·1	329	e 12 45	− 2	—	—	—	—	—
Kew	z.	90·2	337	e 12 49	+ 2	e 23 31	+ 4	e 16 23	PP	—
Basle		90·4	330	e 12 47	− 1	—	—	—	—	—
Neuchatel		91·1	330	e 12 50	− 1	—	—	—	—	—
Paris		91·4	334	e 12 53	0	e 24 50	PS	e 16 32	PP	26·8
La Paz	z.	149·9	67	19 42	[+12]	—	—	—	—	—

Additional readings :—
Warsaw eZ = +12m.44s. and +13m.14s.
Copenhagen ? = +27m.31s.?
Potsdam ePEN = +12m.25s.?, iSE = +22m.35s., iPSN = +23m.24s.?
Tucson i = +12m.38s., +13m.21s., +13m.32s., and +13m.58s., e = +15m.6s., +15m.36s., +16m.23s., and +17m.38s., eS = +23m.14s., i = +23m.31s., iPS = +24m.11s.
De Bilt ePS = +24m.8s.
Stuttgart esP = +13m.27s., iPP = +16m.12s., epPP = +16m.35s., esPP = +16m.49s., esSE = +24m.5s.
Helwan SEN = +23m.17s.
Uccle iE = +23m.19s.
Kew eZ = +24m.38s., e = +25m.10s.

July 6d. 21h. 13m. 37s. Epicentre 32°·0N. 141°·5E. (as on 1938 Nov. 15d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa		7·1	358	e 1 44	− 4	e 2 46	−24	—	—	—
Vladivostok		13·5	329	i 3 14	− 1	—	—	—	—	—
Irkutsk		33·7	318	e 6 47	+ 2	—	—	—	—	—
College		53·4	30	e 16 36	?	e 16 43	−12	—	—	e 28·7
Honolulu		54·7	85	e 15 31	?	e 17 4	− 9	—	—	e 24·6
Andijan		55·1	300	e 9 41	+ 5	—	—	—	—	—
Tashkent		57·2	302	i 9 55	+ 4	e 17 56	+10	—	—	—
Sverdlovsk		59·0	321	i 10 4	0	i 18 12	+ 2	—	—	—
Moscow		71·4	325	i 11 25	+ 1	20 42	0	—	—	—
Pulkovo		72·6	330	e 11 32	+ 1	—	—	—	—	—
Berkeley		75·6	54	—	—	e 31 29	?	—	—	—
Tinemaha	z.	78·7	54	e 12 3	− 3	—	—	—	—	—
Pasadena		80·3	55	e 12 12	− 2	—	—	—	—	e 36·4
Mount Wilson	z.	80·4	55	e 12 9	− 6	—	—	—	—	—
Riverside	z.	81·0	55	i 12 15	− 3	—	—	—	—	—
Warsaw		81·3	327	e 12 22a	+ 2	—	—	—	—	e 45·4
Bucharest		83·9	319	—	—	e 23 23?	PS	—	—	47·4
Potsdam		84·7	332	e 10 59?	?	e 22 59	− 5	e 15 52	PP	e 42·4
Tucson		86·5	54	i 12 45	− 1	—	—	—	—	—
De Bilt		87·9	335	i 12 53	0	i 23 39	+ 4	i 16 18	PP	e 45·4
Stuttgart		89·0	331	i 12 52	− 6	—	—	i 17 38	?	—
Uccle		89·3	335	e 13 1	+ 2	—	—	—	—	e 46·4
Triest		89·4	326	e 14 53	?	e 23 3	[−26]	—	—	—
Helwan		89·6	305	e 13 5	+ 4	—	—	e 16 38	PP	—
La Paz	z.	149·0	66	19 56	[+10]	—	—	—	—	—

Additional readings :—
College e = +16m.43s. and +23m.51s.
Honolulu e = +15m.45s.
Berkeley eE = +32m.11s.
Warsaw eZ = +13m.1s.
Potsdam eZ = +12m.37s.
Tucson e = +12m.54s., i = +13m.0s., e = +14m.32s.
Helwan eZ = +14m.25s. and +19m.59s.
Long waves were also recorded at Agra, Paris, Toledo, Scoresby Sund, Huancayo, Kew, and Ukiah.

July 6d. Readings also at 0h. (Lincoln, near Andijan, Almata, Tashkent, and Tchimkent), 3h. (near Fresno, San Francisco, Branner, Berkeley, and near Lick), 4h. (near Stuttgart), 5h. (San Juan, Huancayo, Helwan, De Bilt, La Paz (2), and Kew), 6h. (Kew, near Stuttgart, Pasadena, Ravensburg, near Zurich, Basle, Almata, East Machias, Tucson, Agra, Chicago, Paris, Uccle, and Potsdam), 7h. (Balboa Heights), 8h. (Ukiah), 9h. (Triest), 10h. (Amboina and near La Paz), 12h. (Medan, near Sofia, and near Bucharest), 13h. (near Irkutsk), 18h. (near Piatigorsk and Sotchi), 19h. (near Balboa Heights and Lick), 20h. (Sverdlovsk), 21h. (Tucson), 22h. (Frunse, Riverside, Mount Wilson, Andijan, Tashkent, Tchimkent, Pasadena, and Tucson), 23h. (Agra and Tananarive).

July 7d. 22h. 43m. 37s. Epicentre 43°·5N. 16°·0E.

$A = +·6995$, $B = +·2006$, $C = +·6859$; $\delta = 0$; $h = -3$;
$D = +·276$, $E = -·961$; $G = +·659$, $H = +·189$, $K = -·728$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		2·7	323	i 0 42k	− 3	i 1 14	− 5	—	—	—
Belgrade		3·5	66	i 0 51k	− 6	i 1 40	0	i 1 5	P_g	—
Kalossa		3·7	33	1 12	+12	i 1 43	− 2	2 1	S_g	2·1
Kecskemet	Z.	4·3	36	e 1 19	P*	2 23	S_g	—	—	—
Budapest	N.	4·5	27	1 11	0	i 2 2	− 3	1 26	P_g	2·7
Ogyalla		4·6	18	1 18	+ 6	2 4	− 3	—	—	2·6
Sofia		5·4	96	e 1 34	P*	e 3 7	S_g	e 1 49	P_g	e 3·3
Chur		5·7	309	e 1 26	− 2	e 2 35	0	—	—	—
Ravensburg		6·2	316	e 1 43	P*	i 2 46	− 2	e 1 57	P_g	—
Prague		6·6	351	e 1 55	P*	e 3 3	+ 5	—	—	—
Ebingen	Z.	6·8	316	1 37	− 7	e 2 57	− 6	e 2 10	P_g	—
Stuttgart		7·1	321	e 1 43_a	− 5	i 3 1	− 9	i 2 12	P_g	—
Basle		7·1	307	e 1 45	− 3	e 3 3	− 7	—	—	—
Neuchatel		7·3	302	e 1 45	− 5	e 3 2	−13	—	—	—
Bucharest		7·4	79	e 2 35	P_g	i 3 6	−12	e 4 9	S_g	i 4·6
Strasbourg		7·7	315	e 2 23	P*	i 3 30	+ 5	4 7	S_g	i 4·3
Besancon		8·0	301	—	—	e 3 2	−31	—	—	—
Jena		8·0	339	e 1 55	− 5	i 3 22	−11	—	—	e 3·5
Potsdam		9·1	348	e 3 23?	?	e 4 4	+ 4	i 4 27	SS	4·9
Warsaw		9·4	19	e 2 21	+ 3	e 4 18	+11	—	—	e 4·9
Istanbul		10·0	99	5 3	S*	5 53	S_g	—	—	—
Paris		10·8	304	e 2 36	− 3	e 5 55	S_g	—	—	7·4
Uccle		10·8	317	e 2 58	+19	—	—	—	—	i 5·5
De Bilt		11·3	324	e 3 53	+67	e 5 48	+54	—	—	6·2
Algiers		12·0	241	e 2 23?	−32	—	—	—	—	7·4
Copenhagen		12·4	351	—	—	5 26	+ 5	—	—	—
Oxford		14·2	312	—	—	i 5 37	−27	e 6 42	?	e 7·6
Toledo		15·4	263	i 3 39	− 1	6 47	+15	—	—	8·2
Almeria		15·6	251	—	—	6 38	+ 1	—	—	8·4
Upsala		16·4	3	e 4 27	+34	—	—	—	—	e 8·6
Moscow		18·4	42	4 15	− 3	7 42	+ 1	—	—	—
Pulkovo		18·5	24	e 4 19	0	e 7 52	+ 8	—	—	—
Coimbra		18·5	270	e 1 38	?	e 7 37	− 7	—	—	11·4
Sverdlovsk		31·0	49	e 6 19	− 2	e 11 25	− 1	—	—	—
Tashkent		38·8	74	1 8 4	+36	—	—	—	—	—
Andijan		41·2	74	e 7 46	− 2	—	—	—	—	—
Frunse		41·9	70	e 8 24	+30	—	—	—	—	—
Almata		43·4	68	—	—	10 3	PP	—	—	—

Additional readings :—
Belgrade iPPS = +1m.17s., iS_g = +1m.48s., i = +2m.0s. and +2m.15s.
Kalossa P_gN = +1m.17s., iE = +1m.31s., iN = +1m.35s. and +1m.54s.
Kecskemet eZ = +1m.33s.
Budapest PPE = +1m.57s., eE = +2m.7s., SSN = +2m.16s., N = +2m.26s.
Ogyalla iN = +1m.48s., eSN = +2m.13s.
Ravensburg eN = +1m.50s. and +2m.9s., eE = +2m.17s., eSN = +2m.43s., iS*E = +2m.53s., iS*N = +3m.4s., eE = +3m.9s., iS_gN = +3m.14s., iE = +3m.20s.
Prague e = +2m.48s.
Ebingen eSN = +2m.53s., iS_gN = +3m.37s., iS_gEZ = +3m.41s.
Stuttgart i = +1m.51s., +2m.31s., and +2m.41s., eS = +2m.58s., iS_gEN = +3m.41s.
Basle eS = +2m.46s.
Bucharest eZ = +2m.39s., eN = +2m.47s. and +2m.51s., iN = +3m.37s., iZ = +4m.23s.
Strasbourg iS = +3m.4s.
Jena iP = +1m.59s., i = +2m.15s., eS = +3m.18s.
Potsdam eN = +3m.41s.?, eE = +3m.51s., iSN = +4m.13s., iS?E = +4m.16s., iEZ = +4m.19s., iSS?Z = +4m.30s., iSSS? = +4m.34s., i = +4m.40s.
Warsaw eS?Z = +4m.23s.
Upsala eE = +6m.13s.
Tashkent eP_g = +8m.16s., eS_g = +8m.59s.
Andijan iS_g = +8m.9s.
The readings at the stations in Turkestan are as for a local shock beginning at the time of arrival of P for this earthquake. Long waves were also recorded at Aberdeen, Kew, San Fernando, and Scoresby Sund.

July 7d. Readings also at 0h. (Angra do Heroismo), 1h. (Kew), 3h. (near La Paz), 6h. (Butte), 17h. (near Mizusawa), 20h. (near Batavia), 21h. (Salt Lake City and near Harvard).

July 8d. 17h. 12m. 56s. Epicentre 7°·5S. 129°·0E.

$A = -·6240$, $B = +·7706$, $C = -·1297$; $\delta = +2$; $h = +7$;
$D = +·777$, $E = +·629$; $G = +·082$, $H = -·101$, $K = -·992$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina	E.	3·9	347	i 1 11	P*	i 1 54	S*	—	—	—
Batavia		22·0	273	4 56	− 2	i 8 58	+ 2	—	—	—
Manila	Z.	23·3	341	i 5 11	+ 1	9 42	+22	—	—	—
Adelaide		28·7	164	e 11 4	S	(e 11 4)	+14	i 12 34	SS	i 17·0
Brisbane		30·2	134	e 6 52	PP	e 12 25	SS	—	—	i 15·7
Medan		32·2	289	e 6 39	+ 7	12 6	+21	—	—	—
Riverview		33·3	146	—	—	i 13 46	SS	—	—	i 16·5
Sydney		33·3	146	—	—	e 12 16?	+14	—	—	e 16·6
Vladivostok		50·5	3	i 8 58	− 4	i 16 7	− 9	—	—	—
Wellington		52·7	137	—	—	e 23 4?	SSS	—	—	e 29·1
Irkutsk		63·2	344	e 10 14	−18	18 58	− 5	—	—	—
Andijan		70·7	317	e 11 20	0	—	—	—	—	—
Tashkent		73·1	317	i 11 22	−12	—	—	—	—	—
Sverdlovsk		84·7	329	i 12 33	− 4	i 22 48	[−11]	15 50	PP	—
Mount Wilson	Z.	113·1	57	e 19 11	PP	—	—	—	—	—
Riverside	Z.	113·7	57	e 19 31	PP	—	—	—	—	—
La Paz	Z.	150·7	145	19 47	[− 1]	—	—	—	—	—

Additional readings :—
Adelaide i = +11m.34s., iSN = +13m.29s.
Riverview iN = +14m.40s.
Sverdlovsk SS = +28m.26s.

July 8d. Readings also at 0h. (near Almata), 1h. (near Manila), 2h. (Berkeley, Branner, Ukiah, and Tucson), 6h. (La Paz), 7h. (near Mizusawa), 10h. (Kodaikanal and near Mizusawa), 12h. (San Juan), 14h. (near Berkeley), 15h. and 18h. (3) (near Branner), 19h. and 20h. (near Harvard).

July 9d. 0h. 39m. 11s. Epicentre 12°·4N. 92°·5E. (as on 1941 July 2d.).

Intensity V at Port Blair.
See Government of India Seismological Bulletin for 1941, p. 63.

$A = -·0426$, $B = +·9761$, $C = +·2134$; $\delta = +13$; $h = +6$;
$D = +·999$, $E = +·044$; $G = -·009$, $H = +·213$, $K = -·977$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		10·7	144	2 24	−14	4 36	− 3	—	—	—
Calcutta	N.	10·8	339	i 3 3k	PP	i 5 54	SS	—	—	e 7·4
Colombo	E.	13·6	248	3 21	+ 4	—	—	—	—	7·9
Kodaikanal	E.	14·9	264	i 3 37k	+ 3	e 6 33	+13	—	—	7·8
Bombay		20·0	292	i 4 46	+ 9	i 8 39	SS	e 5 6	PP	i 10·4
Andijan		33·3	332	6 42	+ 1	—	—	—	—	—
Tashkent		35·2	329	i 7 0	+ 2	e 12 40	+ 9	—	—	—
Sverdlovsk		50·6	338	i 9 2	0	16 18	+ 1	—	—	—
Bucharest		64·6	314	e 10 49?	+ 8	19 25	+ 4	—	—	43·8
Pulkovo		65·5	331	e 9 49?	−58	—	—	—	—	—
Warsaw		68·9	322	e 11 7	− 2	—	—	—	—	e 41·8
Potsdam		73·8	322	e 11 36	− 2	—	—	—	—	e 41·8

Additional readings :—
Medan PN = +2m.31s.
Calcutta iPP = +3m.10s., iSS = +6m.4s., $ePcP$ = +8m.11s.
Bombay eSN = +8m.44s., iN = +9m.16s.

July 9d. 0h. 48m. 51s. Epicentre 15°·2N. 98°·7W. (as on 1938 June 5d.).

A = −·1460, B = −·9544, C = +·2606; δ = +11; h = +6;
D = −·988, E = +·151,; G = −·039, H = −·258, K = −·965.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	E.	2·6	46	0 46	+ 2	—	—	—	—	—
Puebla	N.	3·9	6	0 55	− 7	—	—	—	—	—
Tacubaya	N.	4·3	353	1 1	− 7	—	—	—	—	—
Vera Cruz	N.	4·7	31	1 10	− 4	—	—	—	—	—
Guadalajara	N.	7·0	321	3 13	S	(3 13)	+ 5	—	—	—
Tucson		20·2	329	i 4 37	− 2	e 8 18	− 3	—	—	e 10·0
Cape Girardeau	E.	23·5	19	e 5 19	+ 7	e 9 34	+11	—	—	—
Palomar	Z.	24·4	321	i 5 24	+ 3	—	—	—	—	—
Riverside		25·2	322	i 5 29	0	—	—	—	—	—
Mount Wilson		25·8	322	i 5 35	+ 1	—	—	—	—	—
Pasadena		25·8	322	i 5 35	+ 1	—	—	—	—	e 13·2
Haiwee		27·0	325	i 5 47	+ 2	—	—	—	—	—
Tinemaha		27·9	326	i 5 54	0	—	—	—	—	—

Additional readings :—
Tucson e = +4m.57s., i = +5m.2s., +5m.15s., and +5m.25s., e = +6m.23s., +8m.41s., and +9m.30s.
Cape Girardeau iPE = +5m.28s., eE = +5m.54s.
Long waves were also recorded at Scoresby Sund, De Bilt, Kew, and other American stations.

July 9d. Readings also at 0h. (Tucson), 1h. (Florissant and La Paz), 2h. (Huancayo, Mount Wilson, and Tinemaha), 9h. (College), 11h. (La Paz), 15h. (near Lick), 16h. (near La Paz), 17h. (Zurich, Potsdam, and near Triest), 18h. (Tucson).

July 10d. 3h. 21m. 49s. Epicentre 12°·8N. 146°·2E. (as on 1940 Sept. 24d.).

A = −·8106, B = +·5426, C = +·2201; δ = −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.
Tokyo Cen. Met. Ob.		23·5	347	5 4	− 8	9 17	− 6	—	—	—
Koti		23·7	333	e 5 10	− 4	9 22	− 5	—	—	—
Kobe		24·0	338	5 55	PP	10 28	SS	—	—	—
Manila		24·6	277	i 5 34a	+11	i 10 14	+32	—	—	—
Hamada		25·5	332	5 32	0	9 51	− 6	—	—	—
Sendai		25·8	351	5 31	− 3	11 23	SSS	—	—	—
Vladivostok		32·7	340	e 6 36	0	i 11 46	− 6	—	—	—
Irkutsk		51·7	329	e 9 12	+ 1	e 16 16?	−16	—	—	—
Honolulu		54·0	72	—	—	e 17 35	PPS	e 20 41	SS	e 25·6
Wellington		59·9	155	—	—	18 39	+18	—	—	28·7
Christchurch		61·0	158	10 45?	+27	18 44	+ 9	22 52	Q	27·7
College		68·4	24	—	—	e 19 59	− 8	—	—	—
Tashkent		71·9	309	e 11 31	+ 4	e 20 47	− 1	—	—	—
Sverdlovsk		77·0	326	11 11?	−45	e 20 51?	−54	14 3	PP	—
Berkeley		83·5	53	i 12 36	+ 5	i 22 54	+ 2	—	—	e 40·9
Santa Barbara	Z.	86·2	56	e 12 52	+ 8	—	—	—	—	—
Tinemaha		86·7	53	i 13 0	+13	—	—	—	—	—
Pasadena		87·5	55	i 12 57	+ 6	—	—	—	—	—
Mount Wilson		87·6	55	e 12 57	+ 6	—	—	—	—	—
Riverside		88·2	55	i 13 0	+ 6	—	—	—	—	—
Butte		88·5	43	—	—	e 23 26	[+ 3]	—	—	—
Bozeman		89·7	43	—	—	i 23 34	[+ 3]	—	—	e 40·6
Salt Lake City		90·6	49	—	—	e 23 47	[+10]	—	—	—
Tucson		93·9	55	e 13 27	+ 6	e 24 36	+ 7	25 48	PS	45·6
Scoresby Sund		96·5	355	—	—	e 24 53	+ 2	—	—	e 49·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Upsala		96·7	336	—	—	e 24 10	[0]	—	—	e 46·2
Warsaw		99·9	330	e 22 11?	?	e 24 31	[+ 4]	—	—	e 49·2
Bucharest		101·4	321	—	—	e 24 41?	[+ 8]	—	—	—
Potsdam		103·6	334	e 18 11?	PP	1 24 48	[+ 4]	—	—	e 52·2
Florissant		106·4	43	e 17 54	PKP	e 25 3	[+ 6]	e 18 38	PP	—
Chicago U.S.C.G.S.		106·5	39	—	—	e 26 9	− 6	—	—	e 41·6
Triest		107·8	327	e 25 6	S	(e 25 6)	[+ 3]	e 34 58	SSP	—
Uccle		108·5	337	e 18 59?	PP	e 25 11?	[+ 5]	e 28 17	PS	e 55·2
Philadelphia		115·0	33	e 29 5	?	—	—	29 11	PS	e 50·3
La Paz	z.	146·6	101	20 2	[+20]	—	—	—	—	—

Additional readings :—
Berkeley iPZ = +12m.39s., iZ = +12m.43s., eE = +23m.1s., eN = +34m.47s.
Tucson e = +13m.39s., +14m.2s., and +14m.12s., i = +14m.26s., e = +20m.53s. and +25m.29s.
Florissant ePKPZ = +19m.22s., eN = +33m.40s.
La Paz iZ = +20m.43s.
Long waves were also recorded at Riverview, East Machias, Ukiah, Kew, and De Bilt.

July 10d. 9h. 29m. 47s. Epicentre 18°·8S. 70°·5W. (as on 1939 Sept. 13d.). Depth 0·020.

A = +·3162, B = −·8929, C = −·3203 ; δ = −16 ; h = +5 ;
D = −·943, E = −·334 ; G = −·107, H = +·302, K = −·947.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		3·2	44	i 0 47k	− 4	i 1 7	−23	—	—	—
Huancayo		8·2	325	i 1 55	− 2	i 3 22	− 6	i 2 6	PP	i 4·2
La Plata	E.	19·5	148	4 20	+ 3	7 48	+ 5	—	—	8·8
San Juan		37·2	8	e 6 50	− 7	12 17	−15	e 8 20	PP	15·9
Cape Girardeau		58·6	344	e 9 37	− 5	e 17 23	− 9	i 10 6	pP	—
Pittsburgh		59·6	353	—	—	i 17 43	− 2	i 18 24	sS	—
St. Louis		60·1	343	i 10 20	pP	e 17 41	−10	—	—	—
Florissant		60·3	343	e 9 50	− 4	e 17 48	− 6	i 10 20	pP	—
Harvard		61·0	0	i 9 54	− 5	—	—	—	—	—
Chicago U.S.C.G.S.		62·3	346	—	—	i 18 14	− 5	i 19 44	sS	—
Tucson		63·8	323	i 10 19	+ 2	—	—	i 10 50	pP	—
Riverside	Z.	68·9	319	i 10 53k	+ 4	—	—	i 11 23	pP	—
Mount Wilson		69·5	319	i 10 56	+ 3	—	—	i 11 27	pP	—
Pasadena		69·5	319	i 10 56k	+ 3	—	—	i 11 26	pP	—
Salt Lake City		70·6	328	—	—	e 19 31	+28	—	—	—
Tinemaha		71·5	321	i 11 8	+ 3	—	—	e 11 38	pP	—
Lick	N.	73·7	320	e 11 22	+ 4	—	—	—	—	—
Berkeley		74·4	320	i 11 25	+ 3	e 21 31?	sS	i 11 56	pP	—
Granada		84·0	48	i 12 12k	− 1	i 22 24	+ 2	12 55	pP	—
Toledo		85·0	46	i 12 17	− 1	22 32	0	12 50	pP	—
Scoresby Sund		95·2	15	—	—	e 23 8	[−17]	e 24 14	S	e 71·5
Uccle		95·6	40	—	—	e 23 28	[0]	—	—	—
Triest		99·3	46	—	—	e 23 50	[+ 4]	—	—	—
Potsdam		100·8	39	—	—	e 23 58	[+ 4]	e 24 43?	S	—
Bucharest		107·5	50	—	—	e 24 31?	[+ 7]	—	—	e 71·4
Helwan	E.	109·4	64	—	—	e 24 38	[+ 5]	e 32 53	SS	—

Additional readings :—
Huancayo i = +2m.58s., +3m.35s., and +4m.11s.
La Plata SN = +7m.52s., E = +7m.57s., N = +8m.4s. and +8m.43s.
San Juan i = +15m.31s.
Cape Girardeau esSN = +18m.19s.
Florissant eZ = +9m.56s., iPSE = +18m.27s., iE = +18m.42s. and +19m.27s.
Tucson i = +11m.38s., e = +12m.0s. and +15m.1s.
Riverside iZ = +11m.38s.
Pasadena iZ = +11m.39s.
Berkeley eE = +26m.55s.
Granada P_gP = +12m.30s., sP = +13m,11s., pS = +23m,11s., PS = +23m,42s., sPS = +24m,17s,

July 10d. 10h. 16m. 32s. Epicentre 12°·8N. 146°·2E. (as at 3h.).

$A = -·8106$, $B = +·5426$, $C = +·2201$; $\delta = -7$; $h = +6$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila	Z.	24·6	277	i 5 29k	+ 6	10 8	+26	—	—	—
Vladivostok		32·7	340	e 6 30	− 6	i 11 44	− 8	—	—	—
Riverview	N.	46·6	174	—	—	e 18 46	SS	—	—	—
Irkutsk		51·7	329	e 9 7	− 4	16 22	−10	—	—	—
Wellington		59·9	155	—	—	21 28?	SS	—	—	33·5
College		68·4	24	—	—	e 19 51	−16	e 25 1	SS	e 28·8
Andijan		69·6	308	e 11 18	+ 5	—	—	—	—	—
Tashkent		71·9	309	e 11 28	+ 1	e 20 37	−11	—	—	—
Sverdlovsk		77·0	326	11 28?	−28	21 8?	−37	—	—	—
Berkeley		83·5	53	i 12 30	− 1	—	—	—	—	—
Santa Barbara	Z.	86·2	56	e 12 45	+ 1	—	—	—	—	—
Tinemaha		86·7	53	e 12 47	0	—	—	—	—	—
Haiwee		87·2	53	e 12 53	+ 4	—	—	—	—	—
Pasadena		87·5	55	i 12 51	0	—	—	—	—	—
Mount Wilson		87·6	55	i 12 51	0	—	—	—	—	—
Riverside		88·2	55	e 12 53	− 1	—	—	—	—	—
Bozeman		89·7	43	—	—	e 23 31	[0]	—	—	—
Salt Lake City		90·6	49	—	—	e 23 3	[−34]	—	—	—
Tucson		93·9	55	i 13 22	+ 1	e 24 36	+ 7	e 26 50	PPS	e 45·6
Warsaw		99·9	330	—	—	e 23 28?	[−59]	—	—	e 51·5
Lincoln		101·2	43	—	—	e 26 3	+33	e 27 53	PPS	e 44·1
Potsdam		103·6	334	—	—	e 24 41	[− 3]	e 28 16	PPS	e 53·5
Helwan	E.	104·3	305	—	—	i 24 50	[+ 2]	—	—	—
De Bilt		107·1	337	—	—	—	—	27 58	PS	e 53·5
Triest		107·8	327	—	—	30 51	PS	—	—	—

Additional readings :—
Berkeley iNZ = +13m.1s.
Tucson i = +14m.5s.
Warsaw eN = +24m.28s.?
Lincoln i = +30m.37s.
Long waves were also recorded at Kew and other American stations.

July 10d. Readings also at 0h. (Tacubaya, Oaxaca, and near Mizusawa), 1h. (near Semipalatinsk), 3h. (Mount Wilson), 4h. (Granada, Almeria, near Lisbon, and near Toledo), 5h. (near Coimbra), 6h. (near Amboina), 8h. (near Ksara), 9h. (Bozeman), Huancayo, and Manila), 10h. (near Andijan), 11h. (Huancayo and Philadelphia), 14h. (Warsaw, near Mizusawa, and near Neuchatel), 16h. (Wellington and near Andijan), 17h. (near Harvard), 20h. (near Mizusawa and near Branner), 21h. (Mount Wilson), 22h. (La Paz), 23h. (Tacubaya and Oaxaca).

July 11d. 1h. 16m. 33s. Epicentre 5°·4N. 82°·6W.

$A = +·1282$, $B = -·9873$, $C = +·0938$; $\delta = -1$; $h = +7$;
$D = -·992$, $E = -·129$; $G = +·012$, $H = -·093$, $K = -·996$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		4·6	40	e 1 11	− 1	e 1 40	−27	—	—	2·1
Port au Prince		16·4	37	i 4 1	PP	—	—	—	—	—
Merida	N.	16·9	337	e 4 8	PP	—	—	—	—	—
Huancayo		18·8	158	i 4 24	+ 1	i 7 45	− 5	i 4 39	PP	i 9·2
San Juan		20·6	50	e 4 39	− 4	i 8 23	− 6	i 8 40	SS	i 9·6
Tacubaya	N.	21·3	313	e 4 48	− 2	—	—	—	—	—
La Paz		26·1	146	5 39	+ 2	10 13	+ 6	—	—	14·1
Columbia		28·5	3	e 5 58	− 1	e 10 51	+ 5	e 11 38	SS	e 13·8
Bermuda		31·6	31	e 6 37	+11	e 11 26	− 9	e 7 10	PP	e 13·0
Cape Girardeau		32·4	351	i 6 31	− 3	e 11 44	− 4	—	—	e 14·0
Georgetown		33·7	10	e 6 45	0	e 11 57	−11	—	—	14·5
St. Louis		33·7	350	i 6 43	− 2	e 12 12	+ 4	e 14 26	SSS	—
Florissant		34·0	350	i 6 43	− 5	e 12 14	+ 1	—	—	—
Pittsburgh		35·0	4	e 6 59	+ 3	i 12 35	+ 7	—	—	—
Philadelphia		35·0	10	6 54	− 2	i 12 31	+ 3	e 8 19	PP	e 14·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fordham		36·1	13	e 7 13	+ 8	i 12 57	+12	e 15 37	SSS	—
Chicago U.S.C.G.S.		36·5	354	e 7 6	− 3	e 12 42	− 9	e 8 28	PP	e 15·5
Tucson		37·5	320	i 7 16	− 1	e 13 14	+ 7	i 8 41	PP	i 19·0
Lincoln		37·5	344	e 8 45	PPP	e 13 5	− 2	—	—	e 15·7
Weston		38·1	14	i 7 22	0	e 13 21	+ 5	8 55	PP	—
Harvard		38·2	14	e 7 22	− 1	e 13 17	0	e 8 59	PP	e 16·0
Toronto		38·2	4	e 8 57?	PP	—	—	—	—	e 15·5
Ottawa		40·3	8	7 39	− 1	13 52	+ 3	9 18	PP	19·5
East Machias		41·4	17	e 7 51	0	e 13 41	−24	i 17 10	SS	e 17·7
Seven Falls		42·8	12	e 14 37	PS	—	—	—	—	17·5
Riverside	Z.	43·0	316	i 8 3	0	—	—	—	—	—
Mount Wilson		43·6	316	i 8 8	0	—	—	—	—	—
Pasadena		43·6	316	i 8 7	− 1	e 14 42	+ 4	—	—	e 20·5
Salt Lake City		43·9	328	e 8 11	+ 1	i 14 44	+ 2	e 10 4	PP	e 22·2
Logan		44·6	330	e 8 20	+ 4	e 14 42	−10	—	—	e 22·6
Santa Barbara	Z.	44·8	315	e 8 14	− 3	—	—	—	—	—
Tinemaha		45·3	319	8 22	+ 1	—	—	—	—	—
La Plata		46·4	152	8 26	− 4	15 21	+ 3	19 3	SSS	21·5
Bozeman		47·1	334	e 8 37	+ 2	i 15 32	+ 4	—	—	e 20·8
Lick		47·7	318	e 8 43	+ 3	—	—	—	—	—
Rio de Janeiro	E.	47·7	127	e 10 27	PP	e 15 27	− 9	—	—	e 18·8
Butte		48·1	334	e 8 43	0	e 15 45	+ 3	e 10 42	PP	e 19·9
Berkeley		48·4	318	i 8 46	0	i 15 55	+ 9	i 19 37	SS	e 22·2
Ukiah		49·7	319	—	—	e 16 13	+ 9	20 39	SSS	e 25·2
Seattle		54·1	328	e 18 12	?	—	—	—	—	e 29·9
Victoria		55·2	328	9 39	+ 2	17 24	+ 4	—	—	28·5
Coimbra		74·4	50	e 11 41	− 1	21 17	PS	—	—	34·5
Scoresby Sund		75·4	18	e 11 49	+ 2	e 28 8	SSS	—	—	e 29·6
Toledo		77·8	51	i 12 4	+ 3	i 22 0	+ 7	—	—	53·2
Granada		78·0	54	i 12 2a	0	e 22 7	+12	15 5	PP	37·3
Almeria		78·9	54	e 22 23	PS	—	—	—	—	39·5
Kew		81·0	39	e 12 20	+ 2	e 22 31	+ 4	e 15 46	PP	e 38·5
Clermont-Ferrand		83·2	45	e 12 31	+ 2	—	—	—	—	—
Uccle		83·9	40	e 12 44	+11	e 22 59	+ 3	e 28 29	SS	e 35·5
De Bilt		84·4	38	i 12 41a	+ 5	e 23 2	+ 1	e 28 42	SS	e 39·5
Potsdam		89·2	38	e 13 1	+ 2	e 23 27?	[− 1]	—	—	e 39·5
Triest		90·6	44	e 13 10	+ 5	1 23 37	[0]	—	—	—
Warsaw		94·0	37	e 13 27?	+ 6	e 24 1	[+ 5]	—	—	e 43·5
Sofia		97·9	45	e 12 28	−69	—	—	—	—	—
Bucharest		99·4	44	—	—	e 22 27?	?	—	—	50·4

Additional readings :—
Huancayo i = +5m.25s., +5m.31s., +6m.41s., and +8m.2s.
San Juan i = +4m.45s., +5m.21s., and +7m.13s.
La Paz iPZ = +5m.43s., SN = +10m.20s.
Columbia e = +9m.41s.
Bermuda e = +9m.52s.
Cape Girardeau eN = +7m.13s.
St. Louis eN = +7m.53s.
Florissant iN = +6m.47s., eE = +12m.8s. and +12m.11s.
Chicago U.S.C.G.S. e = +11m.48s. and +14m.6s.
Tucson i = +7m.39s., +8m.5s., +8m.48s., and +8m.53s., iPPP = +9m.1s., e = +9m.43s., +9m.57s., +11m.19s., +12m.29s., and +13m.37s., eSS = +15m.14s.
Weston SS = +15m.58s.
Ottawa SS = +16m.51s.?
Philadelphia e = +11m.6s.
East Machias e = +12m.31s.
Salt Lake City e = +8m.45s. and +9m.10s., eS = +14m.39s., e = +18m.20s.
La Plata SN = +14m.57s., PSE = +15m.9s., SS?E = +19m.21s. True S was given as PS.
Bozeman i = +15m.38s.
Berkeley iE = +16m.8s.
Kew ePSEZ = +23m.18s., eSSEZ = +28m.20s.?
Uccle eSKSNZ = +23m.2s., eSKKSE = +23m.54s.
De Bilt eSSS = +31m.57s.
Potsdam iSN = +23m.51s.
Warsaw eN = +23m.27s., eZ = +25m.55s.
Long waves were also recorded at College and Honolulu.

July 11d. 1h. 59m. 30s. Epicentre 5°·4N. 82°·6W. (as at 1h. 16m.).

$A = +\cdot1282$, $B = -\cdot9873$, $C = +\cdot0938$; $\delta = -1$; $h = +7$;

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights	N.	4·6	40	e 1 13	+ 1	1 43	−24	—	—	2·1
Merida	N.	16·9	337	e 4 12	+13	—	—	—	—	—
Huancayo		18·8	158	i 4 22	− 1	i 8 0	+10	i 4 46	PP	i 9·6
San Juan		20·6	50	i 4 43	0	i 8 39	+10	i 4 47	PP	e 12·0
Tacubaya	N.	21·3	313	4 51	+ 1	—	—	—	—	—
La Paz		26·1	146	i 5 31	− 6	10 40	+33	—	—	14·0
Columbia		28·5	3	e 9 52	?	e 10 52	+ 6	—	—	—
Cape Girardeau	N.	32·4	351	i 6 33	− 1	—	—	e 7 49	PP	—
St. Louis		33·7	350	i 6 45	0	e 12 12	+ 4	e 15 4	SSS	15·4
Chicago U.S.C.G.S.		36·5	354	—	—	e 10 41	?	—	—	e 15·1
Tucson		37·5	320	i 7 18	+ 1	e 13 15	+ 8	e 8 46	PP	e 19·2
Ottawa		40·3	8	7 40	0	13 54?	+ 5	16 54?	SS	19·5
Riverside	Z.	43·0	316	e 8 3	0	—	—	—	—	—
Mount Wilson		43·6	316	i 8 8	0	—	—	—	—	—
Pasadena		43·6	316	i 8 8	0	e 14 44	+ 6	—	—	e 21·5
Salt Lake City		43·9	328	—	—	e 14 48	+ 6	e 15 7	PPS	24·8
Logan		44·6	330	—	—	e 15 0	+ 8	—	—	e 24·8
Santa Barbara	Z.	44·8	315	e 8 18	+ 1	—	—	—	—	—
Tinemaha		45·3	319	i 8 23	+ 2	—	—	—	—	—
Bozeman		47·1	334	e 8 40	+ 5	e 15 35	+ 7	e 15 40	PPS	e 26·4
Lick	E.	47·7	318	8 44	+ 4	—	—	—	—	—
Butte		48·1	334	e 9 48	+65	e 15 46	+ 4	—	—	e 27·9

Additional readings :—
Huancayo i = +5m.23s., +6m.32s., and +8m.38s., e = +9m.18s.
Tucson e = +8m.1s., i = +8m.53s. and +9m.4s., e = +10m.3s., i = +10m.59s., e = +12m.19s., +13m.14s., and +13m.56s.
Long waves were also recorded at Ukiah and Seattle.

July 11d. 15h. 54m. 19s. Epicentre 5°·4N. 82°·6W. (as at 1h.).

Doubtful determination.

$A = +\cdot1282$, $B = -\cdot9873$, $C = +\cdot0938$; $\delta = -1$; $h = +7$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		37·5	320	e 7 38	+21	e 13 32	+25	e 8 35	PP	e 21·9
Riverside	Z.	43·0	316	e 8 4	+ 1	—	—	—	—	—
Mount Wilson		43·6	316	e 8 8	0	—	—	—	—	—
Pasadena		43·6	316	e 8 5	− 3	—	—	—	—	e 18·7
Salt Lake City		43·9	328	—	—	e 15 34	+52	—	—	e 24·0
Santa Barbara	Z.	44·8	315	e 8 17	0	—	—	—	—	—
Berkeley		48·4	318	—	—	e 15 31	−15	—	—	e 21·3
Victoria		55·2	328	—	—	e 17 41?	+21	—	—	27·7
Honolulu		74·3	291	—	—	i 26 3	SS	—	—	e 27·2

Additional readings :—
Tucson e = +9m.9s., +14m.1s., and +16m.35s., i = +16m.43s.
Salt Lake City e = +20m.51s.
Honolulu e = +16m.15s.
Long waves were also recorded at Seattle, Ukiah, Butte, and Tacubaya.

July 11d. Readings also at 1h. (near Berkeley), 3h. (near Sotchi), 6h. (Pasadena, Mount Wilson, La Paz (2), La Plata, Huancayo, Tucson, and Riverside), 7h. (Riverside and Tinemaha), 9h. (near Mizusawa), 11h. (Sofia), 14h. (Tucson), 15h. (Warsaw), 21h. (Balboa Heights), 23h. (near Harvard).

July 12d. 14h. Undetermined shock, probably off Vancouver.

Haiwee ePN? =12m.22s.
Mount Wilson ePZ =12m.38s.
Pasadena ePZ =12m.38s., eLZ =17·9m.
Riverside ePZ =12m.47s.
Tucson iP =13m.28s., i =13m.41s., iPP =13m.52s., i =14m.10s., e =14m.56s., 15m.12s., and 16m.8s., eS =17m.48s., eL =20m.28s.
Butte eS =13m.54s., eL =14m.46s.
Bozeman eS =14m.28s., eL =15m.22s.
St. Louis iZ =14m.38s., eE =24m.20s.
Florissant ePEN =14m.43s., eZ =14m.48s., eSN =19m.51s.
Ukiah e =14m.44s.
Salt Lake City eS =14m.59s.
College eS =16m.39s.
Columbia e =22m.22s., eL =25·4s.
Long waves were also recorded at Fordham, Philadelphia, Honolulu, East Machias, Chicago U.S.C.G.S., and Berkeley.

July 12d. Readings also at 0h. (near Branner), 5h. (Ksara), 6h. (near La Paz, Cape Girardeau, Harvard, Huancayo, Tucson, Mount Wilson, Pasadena, Riverside, and Tinemaha), 7h. (Tananarive), 9h. (Tacubaya), 10h. (near Lick), 11h. (Manila), 12h. (near Batavia), 16h. (near Manila, near Lick, Tucson, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, and Branner), 17h. (Andijan), 21h. (near Andijan), 22h. (San Juan and Triest), 23h. (San Juan, Merida, and Belgrade).

July 13d. 15h. 39m. 28s. Epicentre 37°·6N. 25°·8E.

A = +·7151, B = +·3457, C = +·6076; δ = +5; h = −1;
D = +·435, E = −·900; G = +·547, H = +·264, K = −·794.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		4·3	35	1 7	− 1	—	—	—	—	—
Sofia		5·4	341	e 1 27	+ 3	i 2 35	+ 7	i 2 44	S*	—
Bucharest		6·8	1	e 1 43	− 1	2 57	− 6	e 2 2	P*	—
Belgrade		8·3	333	e 2 10	+ 6	e 3 46	+ 6	e 2 50	P_g	e 5·9
Helwan		9·0	148	i 2 13k	0	7 2	?	2 54	PPP	—
Ksara		9·0	112	e 2 15	+ 2	e 5 0	S_g	—	—	—
Kalossa		10·2	333	e 2 34	+ 3	e 5 39	S_g	e 2 41	PP	6·2
Kecskemet	Z.	10·3	336	e 2 45	PP	—	—	—	—	e 5·6
Theodosia		10·3	41	e 2 36	+ 4	—	—	—	—	—
Budapest		11·1	334	e 2 45	+ 2	e 5 7	SS	e 5 32	SSS	e 6·0
Ogyalla		11·7	333	e 2 34	−17	e 5 14	SS	e 3 2	PP	6·2
Triest		12·1	316	e 3 6	PP	e 5 55	SSS	—	—	e 6·6
Erevan		14·8	74	e 3 57?	PPP	—	—	—	—	—
Prague		14·9	331	e 3 34	0	e 6 25	+ 5	—	—	e 7·0
Warsaw		15·0	349	e 3 34k	− 1	6 27	+ 4	i 7 5	SSS	e 8·0
Chur		15·2	313	e 3 44	+ 6	e 6 49	SS	—	—	—
Zurich		16·0	313	e 3 53a	+ 5	e 6 51	+ 5	—	—	e 7·7
Grozny		16·2	63	e 3 51	+ 1	—	—	—	—	—
Stuttgart		16·4	319	e 3 58k	+ 5	e 7 12	SS	i 4 2	PP	e 9·6
Basle		16·7	312	e 4 1	+ 4	e 7 26	SS	—	—	e 9·4
Jena	N.	16·7	327	i 3 59	+ 2	e 7 20	+17	i 4 5	PP	e 8·5
Neuchatel		16·8	310	e 4 3	+ 5	e 7 7	+ 2	—	—	e 9·2
Strasbourg		17·1	314	i 4 10k	+ 8	e 7 27	+15	i 4 17	PP	9·5
Potsdam		17·3	333	e 4 1	− 3	i 7 30	+14	i 4 17	PP	e 8·5
Algiers		18·1	275	e 4 14	0	i 8 7	SS	—	—	12·5
Baku		18·9	73	4 21	− 3	7 48	− 5	—	—	—
Copenhagen		20·2	338	e 4 35	− 4	8 27	+ 6	e 4 46	PP	10·5
Uccle		20·2	318	i 4 42k	+ 3	e 8 17	− 4	i 8 48	SS	10·5
Paris		20·3	311	4 42	+ 2	8 32	+ 9	6 2	P_eP	12·5
De Bilt		20·5	323	i 4 45k	+ 3	i 8 47	SS	—	—	e 10·5
Pulkovo		22·4	7	i 5 0	− 2	i 9 4	0	—	—	—
Almeria		22·5	278	i 5 11	+ 9	9 23	+18	5 27	PP	13·4
Upsala		22·9	350	e 5 0?	− 6	e 9 10	− 3	—	—	e 12·5
Kew		23·0	317	e 5 11	+ 4	e 9 30	+16	e 5 34	PP	e 12·0
Granada		23·3	279	e 4 56a	−14	e 9 32	+12	i 6 7	PP	14·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toledo		23·3	286	i 5 17	+ 7	i 9 34	+14	—	—	11·4
Stonyhurst		25·3	320	e 5 42	+12	i 10 7	+13	—	—	—
San Fernando	N.	25·5	278	e 6 21	PPP	e 11 1	SS	—	—	14·5
Bergen		26·3	338	e 5 32?	− 7	e 10 32?	+21	—	—	e 13·5
Coimbra		26·7	288	5 51	+ 8	10 36	+19	6 36	PP	17·1
Edinburgh		26·7	323	—	—	e 9 48	−29	—	—	—
Aberdeen		26·9	327	e 5 42	− 3	i 10 41	+21	—	—	14·8
Lisbon		27·4	286	5 49	0	10 37	+ 9	6 22	PP	15·7
Sverdlovsk		30·0	39	i 6 7	− 5	i 11 6	− 4	—	—	—
Tashkent		33·5	69	i 6 41	− 2	e 12 2	− 3	—	—	—
Scoresby Sund		41·3	338	e 7 51	+ 2	e 14 8	+ 4	e 9 22	PP	e 23·4
Agra	E.	44·8	88	e 8 14	− 3	e 14 49	− 6	—	—	—
Irkutsk		54·8	47	e 9 30?	− 4	—	—	—	—	—
Calcutta	N.	55·2	87	—	—	i 16 45	−35	—	—	—
East Machias		66·7	309	—	—	i 19 52	+ 6	e 20 2	PS	e 32·1
Seven Falls		67·6	313	—	—	e 20 4	+ 7	—	—	32·5
Ottawa		71·4	313	11 27	+ 3	20 46	+ 4	—	—	34·5
Fordham		72·9	308	e 11 34	+ 1	e 20 59	0	—	—	—
Vladivostok		75·4	47	i 11 47	0	—	—	—	—	—
Florissant		83·9	316	e 12 32	− 1	e 21 57	−59	e 24 20	PPS	—

Additional readings :—
Bucharest eEZ = +1m.48s., iE = +2m.36s., iZ = +3m.10s.
Belgrade e = +2m.34s. and +4m.30s., eSS = +5m.53s.
Helwan iEN = +3m.47s., iE = +5m.58s., SSN = +8m.20s.
Kalossa eSN = +5m.55s.
Budapest iN = +6m.3s.
Stuttgart eNE = +8m.58s., iNE = +9m.22s.
Jena eSE = +7m.26s.
Potsdam ePN = +4m.6s., iN = +4m.10s., iPPPNZ = +4m.21s., iZ = +5m.15s., i = +7m.27s., iSEZ = +7m.34s., iNZ = +7m.37s., iSSZ = +7m.53s.
Copenhagen e = +4m.39s.
Almeria P_cP = +9m.5s.
Upsala eP? = +5m.14s.
Kew eZ = +6m.51s., eP_cPZ = +8m.33s., eSSZ = +10m.37s.
Granada iPZ = +5m.19s., P_cP = +8m.34s., i = +10m.2s.
Coimbra SS = +11m.58s.
Lisbon PZ = +5m.56s. and +6m.9s., S?Z = +10m.41s., SE = +10m.55s., SN = +12m.15s.
Scoresby Sund iP = +7m.56s.
East Machias e = +20m.57s., +22m.29s., and +26m.46s.
Florissant iP = +12m.35s., eN = +23m.7s.
Long waves were also recorded at Harvard, Tucson, Ukiah, and Pasadena.

July 13d. Readings also at 0h. (Jena, Bucharest, Sofia, and Triest), 1h. (La Paz, Huancayo (2), San Juan, and Tucson), 8h. (Balboa Heights), 12h. (Triest), 14h. (Kew and Butte), 15h. (Butte, Tucson, Pasadena, Riverside, Harvard, East Machias, Seattle, Salt Lake City, Philadelphia, Lincoln, Columbia, Cape Girardeau, St. Louis, Ukiah, Fordham, and Florissant), 17h. (Tucson, Tinemaha, and Riverside), 19h. (Triest), 20h. (Kew and Paris), 22h. (near Frunse), 23h. (near Lick, Berkeley, and Branner).

July 14d. 2h. 2m. 26s. Epicentre 12°·4N. 92°·5E. (as on 9d.).

Intensity VI-VII at Port Blair.
Epicentre south of the Andaman Isles 11°·0N. 93°·0E. (Bombay), with several after-shocks.
See Government of India Seismological Bulletin for 1941, p. 63.

$A = -·0426$, $B = +·9761$, $C = +·2134$; $\delta = +13$; $h = +6$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		10·7	144	2 28	−10	5 16	SSS	—	—	(7·6)
Calcutta	N.	10·8	339	e 2 53	+14	i 6 21	L	—	—	(i 6·4)
Colombo	E.	13·6	248	3 15	− 2	7 42	L	3 49	PP	(7·7)
Hyderabad		14·4	292	3 45	PP	6 20	+11	—	—	7·6
Kodaikanal	E.	14·9	264	i 3 38k	+ 4	e 6 44	SS	—	—	8·2
Agra	E.	20·0	320	i 4 41	+ 4	i 8 30	+13	9 5	SSS	—
Bombay		20·0	292	i 4 43	+ 6	i 8 30	+13	i 4 53	PP	10·2
Dehra Dun	N.	22·3	326	e 3 34	?	e 8 38	−24	—	—	e 12·7
Batavia		23·3	142	5 11	+ 1	—	—	—	—	e 12·6
Manila	Z.	27·8	83	e 5 49	− 4	11 1	+26	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tashkent		35·2	329	e 7 0	+ 2	e 12 40	+ 9	—	—	—
Tchimkent		35·8	330	e 8 4	+61	—	—	—	—	—
Irkutsk		40·9	11	e 8 13?	+27	—	—	—	—	—
Baku		46·6	314	—	—	15 29	+ 8	—	—	—
Sverdlovsk		50·6	338	e 9 4	+ 2	i 16 19	+ 2	—	—	—
Helwan		59·0	297	i 10 4	0	i 18 24	+14	e 19 52	?	—
Bucharest		64·6	314	e 10 44	+ 3	19 24	+ 3	—	—	39·6
Pulkovo		65·5	331	e 10 50	+ 3	e 19 33	+ 1	—	—	—
Warsaw		68·9	322	e 11 9	0	e 20 11	− 2	—	—	e 37·6
Upsala		71·8	329	—	—	e 20 46	0	—	—	e 38·6
Riverview		72·3	132	—	—	e 28 58	SSS	—	—	e 37·4
Triest		73·4	314	e 21 13	S	(e 21 13)	+ 8	—	—	e 42·2
Potsdam		73·8	322	e 11 34?	− 4	i 21 9	0	—	—	e 36·6
Copenhagen		74·2	325	—	—	21 16	+ 2	—	—	39·6
Chur		76·3	316	e 11 51	− 1	—	—	—	—	—
Zurich		76·9	316	e 11 55	− 1	—	—	—	—	—
De Bilt		78·7	321	e 12 4	− 2	e 22 4	+ 1	e 15 4	PP	e 37·6
Uccle		79·3	320	e 12 27	+18	22 10	+ 1	—	—	e 41·6
Paris		80·8	318	12 29?	+12	23 14	PS	—	—	45·6
Kew	z.	82·2	321	e 12 25	+ 1	e 23 23	−16	e 15 37	PP	e 42·6
Scoresby Sund		86·2	342	—	—	e 23 9	[0]	—	—	e 45·4
Granada		87·4	307	i 23 32	S	(i 23 32)	+ 2	—	—	(e 48·4)
Wellington		92·4	132	—	—	36 4?	?	—	—	e 48·6
Seven Falls		118·9	347	—	—	e 36 52?	SSP	—	—	58·6
Mount Wilson	z.	125·3	31	i 19 5	[+ 2]	i 33 13	PPS	—	—	—
Pasadena	z.	125·3	31	i 19 3	[0]	e 33 11	PPS	—	—	—
Riverside	z.	125·8	31	i 19 5	[+ 1]	e 33 12	PPS	—	—	—
Florissant		129·0	3	e 21 22	PP	e 26 14	[− 3]	e 22 25	PKS	—
Tucson		130·7	26	e 19 13	[0]	—	—	i 22 34	PKS	e 72·0

Additional readings :—
Medan L given as S.
Bombay eE = +5m.52s., iE = +9m.28s.
Warsaw eZ = +20m.15s.
Upsala eN = +33m.21s.
Riverview eE = +34m.42s.
Potsdam ePZ = +11m.38s., iSKSEN = +21m.23s.
Granada PP = +25m.44s., SKS = +31m.16s., PS = +36m.13s. ; all phases wrongly identified.
Mount Wilson iZ = +49m.2s.
Pasadena iZ = +19m.16s.
Riverside iZ = +49m.3s.
Florissant eN = +41m.3s.
Tucson i = +19m.24s. and +22m.57s., e = +23m.41s.
Long waves were also recorded at Stonyhurst, Aberdeen, La Paz, Copenhagen, College, Chicago, U.S.C.G.S., and East Machias.

July 14d. Readings also at 0h. (Bucharest and near Sofia), 1h. (San Juan and Lick), 2h. (Colombo, Tucson), 5h. (San Juan), 6h. (Tinemaha, Mount Wilson, Pasadena, Riverside, and Tucson), 9h. (De Bilt, Sverdlovsk, Victoria, Tucson, San Juan, Berkeley, Riverside, and Florissant), 12h. (near Balboa Heights), 13h. (Honolulu, College, Kew, Tucson, Florissant, Berkeley, Riverside, Pasadena, Mount Wilson, and Tinemaha), 16h. (Balboa Heights), 17h. (near Lick), 18h. (near Lick and Riverside), 20h. (Port au Prince), 21h. (Riverside and Mount Wilson), 22h. (Mount Wilson, Tinemaha, Riverside, and Tucson), 23h. (La Paz, Huancayo, near Lick, Berkeley, San Juan and Tucson).

July 15d. 2h. Local Japanese shock. Tokyo Imperial University gives Epicentre 36°·0N. 139°·43E.

Kamakura P = 12m.29s., S = 12m.43s.
Kiyosumi P = 12m.29s., S = 12m.46s.
Komaba P = 12m.29s., S = 12m.39s.
Mitaka P = 12m.29s., S = 12m.39s.
Titibu P = 12m.29s., S = 12m.36s.
Tokyo, Imp Univ. P = 12m.29s., S = 12m.39s.
Togane P = 12m.29s., S = 12m.43s.
Tukubasan P = 12m.29s., S = 12m.39s.
Koyama P = 12m.29s., S = 12m.40s.

July 15d. 14h. 45m. 24s. Epicentre 36°·7N. 138°·2E.

Epicentre in the vicinity of Nagano. Felt in Tyubu and Kwanto and in parts of Tohoku and Kirki districts. The magnitude was not great, but the epicentre was so shallow that high intensities were experienced in a very limited area. Villages to the north-east of the city of Nagano, Naganuma, Hurusato, Kamisato, Wakatuki, and Asakawa were severely shaken. Small after-shocks were numerous. Felt intensity VIII-IX at Nagano ; VI at Katuizawa, V at Takada, Kohu, Hunatu ; IV at Kumagaya, Niigata, Nagoya, Mito ; II-III at Maebasi, Tokyo, Misima, Tu, and Shirakawa.
Epicentre 36°·7N. 138°·2E. Macroseismic radius greater than 300km. Very shallow.
See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1941, Tokyo 1950, pp. 29-30. Macroseismic Chart, p. 29.

H. Kawasumi.
Seismology in Japan, 1939-1947. Bulletin of the Seismological Society of America, Vol. 39, 1949, p. 160.

Tokutaro Yahasi.
Provincial Report on the strong earthquake of Nagano district on July 15, 1941.
" Zisin," the Journal of the Seismological Society of Japan, Vol. 13, 1941.

Fuyuhiko Kishinouye.
Study of the Nagano Earthquake of July 15, 1941, " Zisin," Vol. 13, 1941.

K. Kanai.
On the damage to buildings in the Nagano earthquake of July 15, 1941 (in Japanese).
Bulletin of the Earthquake Research Institute, Vol. XIX, Part 4, December, 1941.

$A = -\cdot5991$, $B = +\cdot5357$, $C = +\cdot5950$; $\delta = -8$; $h = 0$;
$D = +\cdot667$, $E = +\cdot745$; $G = -\cdot444$, $H = +\cdot397$, $K = -\cdot804$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nagano	0·0	—	0 4a	− 3	—	—	—	—	—
Maebasi	0·7	113	0 17	0	0 29	+ 1	—	—	—
Toyama	0·8	269	0 20k	+ 2	0 33	+ 2	—	—	—
Titibu	1·0	135	0 29	+ 8	0 47	+11	—	—	—
Kohu	1·1	164	0 20a	− 2	0 33	− 6	—	—	—
Aikawa	1·3	2	0 26k	+ 1	0 45	+ 1	—	—	—
Hunatu	1·3	159	0 25a	0	0 36	− 8	—	—	—
Wazima	1·3	303	0 24a	− 1	0 41	− 3	—	—	—
Utunomiya	1·4	96	0 25k	− 2	0 47	+ 1	—	—	—
Mitaka	1·5	133	0 29	+ 1	0 52	+ 3	—	—	—
Koyama	1·5	155	0 29	+ 1	0 52	+ 3	—	—	—
Komaba	1·6	131	0 29	− 1	0 54	+ 3	—	—	—
Tokyo, Cen. Met. Ob.	1·6	128	0 32k	+ 2	0 56	+ 5	—	—	—
Tokyo, Imp. Univ.	1·6	128	0 31	+ 1	0 56	+ 5	—	—	—
Tukubasan	1·6	108	0 29	− 1	0 49	− 2	—	—	—
Gihu	1·7	222	0 34k	+ 3	0 57	+ 3	—	—	—
Kakioka	1·7	106	0 32k	+ 1	0 59	+ 5	—	—	—
Misima	1·7	159	0 33	+ 2	0 58	+ 4	—	—	—
Shizuoka	1·7	175	0 34a	+ 3	1 2	+ 8	—	—	—
Yokohama	1·7	137	0 34a	+ 3	1 3	+ 9	—	—	—
Kamakura	1·8	142	0 29	− 3	0 54	− 2	—	—	—
Nagoya	1·8	213	0 35k	+ 3	1 0	+ 4	—	—	—
Mito	1·9	100	0 35k	+ 1	1 0	+ 1	—	—	—
Hamamatu	2·0	191	0 44a	+ 9	1 0	− 2	—	—	—
Hikone	2·1	228	0 39k	+ 2	1 10	S_e	—	—	—
Hukusima	2·1	60	0 39k	+ 2	1 10	S_e	—	—	—
Omaesaki	2·1	180	0 42a	P_e	1 10	S_e	—	—	—
Susaki	2·1	163	0 39	+ 2	1 8	S_e	—	—	—
Togane	2·1	123	0 29	− 8	1 0	− 4	—	—	—
Kiyosumi	2·2	134	0 29	− 9	1 2	− 4	—	—	—
Osima	2·2	154	0 40a	+ 2	1 6	0	—	—	—
Mera	2·2	143	0 42	+ 4	1 16	S_e	—	—	—
Kameyama	2·3	217	0 43a	+ 3	1 17	S_e	—	—	—
Kyoto	2·6	230	0 47k	P*	1 31	S_e	—	—	—
Sendai	2·7	54	0 45a	0	1 29	S_e	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Osaka		3·0	228	0 52	+ 2	1 34	S*	—	—	—
Toyooka		3·0	247	0 50	0	1 39	S_g	—	—	—
Owase		3·1	212	1 5	P_g	1 39	S_g	—	—	—
Kobe		3·2	231	0 54k	+ 2	1 35	+ 3	—	—	—
Mizusawa	E.	3·3	43	i 0 57	P*	i 1 46	S*	—	—	—
Akita		3·4	26	1 56a	+61	2 46	+69	—	—	—
Wakayama		3·5	226	0 57	0	1 49	S*	—	—	—
Sumoto		3·6	230	1 2	+ 4	1 53	S*	—	—	—
Hatidyozima		3·8	158	1 8	P*	2 0	S*	—	—	—
Siomisaki		3·8	212	1 8	P*	2 0	S*	—	—	—
Miyako		4·2	44	3 33	?	4 34	?	—	—	—
Aomori		4·6	26	1 15k	+ 3	2 22	S*	—	—	—
Hatinohe		4·6	33	1 14	+ 2	2 15	+ 8	—	—	—
Muroto		4·7	225	1 22	P*	2 39	S_g	—	—	—
Koti		5·0	232	1 32	P*	2 31	S*	—	—	—
Hirosima		5·2	245	1 23	+ 2	2 49	S_g	—	—	—
Hamada		5·3	252	1 30	P*	2 34	+ 9	—	—	—
Matuyama		5·3	239	1 26	+ 4	2 44	S*	—	—	—
Mori		5·7	18	1 22	− 6	2 7	−28	—	—	—
Simidu		5·8	229	1 55	P_g	3 8	S_g	—	—	—
Izuka		6·8	246	1 48	+ 4	3 28	S*	—	—	—
Sapporo		6·8	20	1 48k	+ 4	2 58	− 5	—	—	—
Hukuoka		7·1	246	1 52	+ 4	3 35	S*	—	—	—
Kumamoto		7·3	240	1 52	+ 2	3 42	S*	—	—	—
Unzendake		7·7	241	2 2	+ 6	4 10	S_g	—	—	—
Taikyu		7·8	267	2 5	+ 7	4 8	S*	—	—	—
Kagosima		8·2	233	2 7	+ 4	—	—	—	—	—
Nemuro		8·7	38	2 13	+ 3	3 56	+ 6	—	—	—
Yukusima		9·0	228	2 15	+ 2	—	—	—	—	—
Naba		13·8	223	3 33	PP	—	—	—	—	—
Manila	Z.	26·9	219	e 5 36	− 9	8 33	?	—	—	—
Irkutsk		28·4	315	e 6 10	+12	e 11 11	SS	—	—	—
Calcutta	N.	45·1	266	e 11 12	PPP	e 16 58	?	e 19 18	SSS	e 22·0
Medan		49·0	237	e 14 23	?	—	—	—	—	28·2
Andijan		50·4	296	e 8 53	− 8	—	—	—	—	—
College		50·7	32	—	—	e 16 8	−10	—	—	—
Agra	E.	51·2	277	e 9 7	0	e 16 26	+ 1	—	—	—
Tashkent		52·5	298	e 9 16	− 1	e 16 42	− 1	—	—	—
Sverdlovsk		53·7	318	i 9 24	− 2	16 58	− 1	—	—	—
Bombay		59·4	271	—	—	e 18 14	− 1	—	—	—
Moscow		66·0	323	10 36	−14	19 22	−16	—	—	—
Baku		66·3	304	e 10 45	− 7	—	—	—	—	—
Pulkovo		67·1	328	i 10 53	− 4	e 19 47	− 4	—	—	—
Grozny		67·6	308	9 33?	?	—	—	—	—	—
Piatigorsk		68·9	309	e 11 23	+14	—	—	—	—	—
Upsala	N.	72·1	333	—	—	e 20 51	+ 1	—	—	e 35·6
Scoresby Sund		72·2	354	e 11 29	0	e 20 38	−13	e 29 12	SSS	e 42·0
Warsaw		75·9	326	e 11 48a	− 2	21 32	0	—	—	e 36·6
Copenhagen		77·0	332	e 11 56	0	21 44	− 1	—	—	40·6
Bucharest		78·6	317	—	—	e 22 56	PS	e 23 4	PPS	—
Santa Barbara	Z.	78·7	55	e 12 5	− 1	—	—	—	—	—
Potsdam		79·2	329	e 12 6	− 2	i 22 11	+ 3	—	—	40·6
Mount Wilson	Z.	79·9	54	i 12 12	0	—	—	e 15 39	PP	—
Pasadena		79·9	54	i 12 12	0	e 22 18	+ 2	e 15 36	PP	e 35·6
Jena	N.	80·9	328	e 12 19	+ 2	—	—	—	—	e 40·6
La Jolla	Z.	81·3	55	e 12 20	0	—	—	—	—	—
Stuttgart		83·6	328	i 12 30a	− 1	e 22 51	− 2	—	—	—
Triest		84·0	324	e 12 27	− 7	e 22 52	− 5	—	—	—
Helwan		84·7	303	i 12 36a	− 1	23 4	0	15 52	PP	—
Kew		85·0	335	e 12 38	0	—	—	—	—	e 42·6
Basle		85·2	328	e 12 39	0	—	—	—	—	—
Paris		86·2	332	e 12 45	+ 1	—	—	—	—	46·6
Ottawa		92·7	23	e 13 15	0	e 23 48	[0]	—	—	45·6
Toledo		96·3	331	e 7 28	?	21 56	?	—	—	—
La Paz	Z.	149·2	56	19 55	[+ 9]	—	—	—	—	—

For Notes see next page.

NOTES TO JULY 15d. 14h. 45m. 24s.

Additional readings :—
Warsaw SN = +21m.35s.
Paris e = +37m.36s.?
Long waves were also recorded at De Bilt, Strasbourg, San Fernando, Uccle, Budapest, Ukiah, Sofia, Honolulu, East Machias, Bergen, Bozeman, Stonyhurst, Zurich, Prague, and Clermont-Ferrand.

July 15d. Readings also at 0h. (Manila, Kew, and Paris), 9h. (near Balboa Heights), 13h. (Triest, Belgrade, and Lincoln), 15h. (Coimbra, Granada, and Almeria), 16h. (near Mizusawa, near Andijan, Tashkent, and Sverdlovsk), 18h. (near Branner), 20h. (near Berkeley, Huancayo, Lick, La Paz, and Branner), 21h. (La Paz), 22h. (Balboa Heights).

July 16d. 2h. 44m. 26s. Epicentre 24°·5N. 109°·0W. (as on 1939 Dec. 16d.).

$A = -\cdot2966$, $B = -\cdot8614$, $C = +\cdot4124$; $\delta = +6$; $h = +3$;
$D = -\cdot946$, $E = +\cdot326$; $G = -\cdot133$, $H = -\cdot390$, $K = -\cdot911$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chihuahua	Z.	4·8	31	e 2 4	S	(e 2 4)	− 8	—	—	—
Tucson		7·8	350	i 1 57	− 1	i 3 48	S*	i 4 20	S_g	i 4·9
Salt Lake City		16·4	353	—	—	e 7 24	SSS	—	—	e 8·6
Logan		17·4	353	e 4 7	+ 1	—	—	—	—	e 9·1
Ukiah		18·9	325	—	—	e 8 2	+ 9	—	—	e 9·8
Bozeman		21·2	356	—	—	e 8 54	+13	—	—	e 11·7
Florissant		21·3	44	e 4 50	0	e 8 49	+ 6	—	—	—
Butte		21·7	355	—	—	e 9 0	+ 9	—	—	e 12·2
Chicago U.S.C.G.S.		24·8	40	e 9 35	?	e 9 43	− 3	—	—	e 13·0

Additional readings :—
Tucson e = +2m.58s., i = +4m.11s. and +4m.53s.
Long waves were also recorded at Vera Cruz, Bermuda, Seattle, Philadelphia, College, East Machias, Vermont, Columbia, and Pasadena.

July 16d. 3h. 13m. 26s. Epicentre 24°·5N. 109°·0W. (as at 2h.).

$A = -\cdot2966$, $B = -\cdot8614$, $C = +\cdot4124$; $\delta = +6$; $h = +3$;
$D = -\cdot946$, $E = +\cdot326$; $G = -\cdot133$, $H = -\cdot390$, $K = -\cdot911$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chihuahua	Z.	4·8	31	e 2 7	S	(e 2 7)	− 5	—	—	—
Guadalajara		6·4	124	e 1 58?	P*	—	—	—	—	—
Tucson		7·8	350	e 1 56	− 2	i 3 26	− 2	i 2 33	P_g	i 4·4
Tacubaya	N.	10·4	117	2 54	PPP	—	—	—	—	—
La Jolla		11·0	320	e 2 44	+ 2	—	—	—	—	—
Riverside		11·9	325	i 2 55	+ 1	—	—	—	—	—
Mount Wilson	Z.	12·5	324	e 2 59	− 3	—	—	—	—	—
Pasadena		12·5	324	e 3 0	− 2	e 5 34	+11	—	—	—
Vera Cruz	E.	13·0	110	e 3 32	PPP	—	—	—	—	—
Oaxaca	N.	13·6	121	—	—	e 5 22	−28	—	—	—
Santa Barbara	Z.	13·6	319	e 3 15	− 2	—	—	—	—	—
Haiwee		13·9	328	i 3 21	0	—	—	—	—	—
Tinemaha		14·8	330	i 3 38	+ 6	—	—	—	—	—
Fresno	N.	15·3	325	e 3 38	− 1	—	—	i 3 51	PP	e 9·9
Salt Lake City		16·4	353	i 3 53	0	e 7 3	+ 7	i 4 37	PPP	i 8·8
Lick		16·7	323	e 4 2	+ 5	e 5 13	?	e 4 30	PPP	e 11·5
Santa Clara		16·9	322	e 4 3	+ 4	e 7 15	+ 8	—	—	e 8·2
Branner		17·1	322	e 3 58	− 4	—	—	i 4 30	PPP	e 10·0
Logan		17·4	353	4 5	− 1	—	—	—	—	9·0
Berkeley		17·5	323	e 4 6	− 1	e 7 26	+ 5	e 4 19	PP	e 8·8
Ukiah		18·9	325	i 4 24	0	e 7 47	− 6	i 4 42	PP	i 8·8
Lincoln		19·2	32	i 4 28	0	i 8 9	+10	i 8 16	SS	e 10·1
Cape Girardeau		21·0	48	e 4 47	0	—	—	—	—	—
Bozeman		21·2	356	i 4 49	0	i 8 44	+ 3	—	—	i 11·4
Florissant	Z.	21·3	44	e 4 46	− 4	i 8 46	+ 3	—	—	i 9·4

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
St. Louis		21·3	44	e 4 51	+ 1	i 8 47	+ 4	—	—	i 10·9
Butte		21·7	355	e 4 54	− 1	i 8 56	+ 5	—	—	i 12·2
Chicago J.S.A.		24·8	40	e 5 45	+20	e 9 56	+10	—	—	—
Chicago U.S.C.G.S.		24·8	40	e 5 21	− 4	e 9 33	−13	—	—	i 11·9
Cincinnati		25·3	49	i 5 28	− 2	i 9 42	−12	—	—	—
Columbia		26·1	61	e 5 38	+ 1	e 10 9	+ 2	e 8 39	P_cP	e 11·5
Victoria		26·5	339	e 5 42	+ 1	e 10 22	+ 8	—	—	12·6
Pittsburgh		29·0	50	e 5 9	−55	e 10 58	+ 4	—	—	—
Georgetown		30·5	55	e 6 15	− 2	e 11 19	+ 1	—	—	—
Toronto		30·8	44	—	—	e 11 22?	− 1	—	—	14·6
Fordham		33·5	52	—	—	e 12 11	+ 6	—	—	e 14·1
Ottawa		34·0	44	6 47	− 1	11 14	−59	12 16	SS	14·6
Vermont		35·2	47	—	—	e 11 44	−47	—	—	e 15·0
Harvard		35·7	50	e 7 6	+ 4	e 12 45	+ 6	e 15 4?	SS	e 18·1
Shawinigan Falls		36·3	43	e 7 16?	+ 9	—	—	—	—	17·6
Seven Falls		37·8	44	e 7 31	+11	e 12 58?	−13	—	—	17·6
East Machias		39·2	48	e 7 30	− 1	e 13 38	+ 6	i 9 4	PP	e 16·2
San Juan		40·2	90	e 7 41	+ 1	e 13 46	− 2	i 9 37	PPP	i 19·7
College		47·5	339	—	—	e 15 11	−23	—	—	e 19·3
Ivigtut		54·8	32	—	—	22 16	SSS	—	—	26·6
Kew	Z.	82·0	37	—	—	e 22 48	+11	e 23 27?	PS	e 35·6
Coimbra		82·1	50	e 13 37	+73	22 49	+11	16 9	?	38·1
Lisbon		82·2	52	12 24	0	—	—	—	—	40·3
De Bilt		84·6	35	i 12 48	+12	e 23 8	+ 5	—	—	e 35·1
Paris		84·9	39	e 12 40?	+ 2	e 23 34	+28	—	—	—
Toledo		85·3	49	e 12 36	− 4	22 10	[−52]	12 50	P_cP	32·1
Upsala		85·3	25	e 12 44?	+ 4	e 23 15	+ 5	e 28 48	SS	e 39·6
Granada		86·8	51	i 12 48a	+ 1	i 22 50	[−23]	13 1	P_cP	43·4
Almeria		87·8	51	12 49	− 3	23 9	[− 9]	16 1	PP	40·0
Potsdam	E.	88·3	31	—	—	e 21 34?	?	e 24 41	PS	e 37·6
Warsaw		92·0	28	e 16 34?	PP	—	—	—	—	e 44·6
Triest		93·0	37	—	—	e 24 11	−10	e 27 13	?	e 42·6
Wellington		96·2	227	27 55	?	—	—	39 34?	Q	43·6

Additional readings :—
Tucson i = +2m.2s., e = +2m.38s., i = +2m.47s., +2m.51s., +3m.44s., +3m.51s., and +4m.10s.
Salt Lake City i = +5m.41s., +5m.59s., and +7m.34s.
Lick ePN = +4m.5s.
Branner iE = +4m.33s., iN = +4m.40s., eE = +7m.50s., eQE = +8m.28s.
Berkeley ePZ = +4m.9s., ePN = +4m.27s., eN = +4m.54s., eSN = +8m.8s.
Ukiah i = +6m.57s. and +7m.59s.
Cape Girardeau eP?N = +4m.52s., iN = +6m.1s.
Bozeman i = +4m.59s., e = +8m.24s., i = +8m.54s.
Florissant i = +4m.53s. and +5m.2s.
Chicago U.S.C.G.S. i = +10m.2s. and +10m.9s.
Columbia e = +8m.21s.
Vermont eS = +12m.36s.
East Machias e = +9m.13s., +12m.5s., and +13m.43s.
San Juan e = +8m.40s. and +14m.2s.
Coimbra SS = +27m.34s.
Lisbon N = +35m.28s.
Granada PP = +15m.59s., PS = +23m.51s.
Almeria PPP = +17m.58s., SS = +28m.45s., SSS = +32m.16s.
Long waves were also recorded at Scoresby Sund, Sitka, Honolulu, Bucharest, Belgrade, Bergen, Prague, Uccle, San Fernando, Stuttgart, Jena, Clermont-Ferrand, Strasbourg, Pennsylvania, Stonyhurst, and Aberdeen.

July 16d. 18h. Local Japanese shock. Tokyo Imperial University gives Epicentre 36°·51N. 139°·36E.

Kamakura P = 17m.3s., S = 17m.24s.
Kiyosumi P = 17m.3s., S = 17m.30s.
Komaba P = 17m.3s., S = 17m.26s.
Koyama P = 17m.3s., S = 17m.25s.
Mitaka P = 17m.3s., S = 17m.24s.
Togane P = 17m.3s., S = 17m.28s.
Tokyo Imp. Univ. P = 17m.3s., S = 17m.24s.
Tukubasan P = 17m.3s., S = 17m.20s.
Susaki P = 17m.16s., S = 17m.41s.
Mizusawa ePE = 17m.23s., iSE = 17m.56s.

July 16d. Readings also at 2h. (Arapuni and Wellington), 3h. (Agra, Tucson, La Paz, Fordham, Florissant (2), Philadelphia, Huancayo, Vera Cruz, Riverside (2), Tinemaha, Mount Wilson (2), Pasadena (2), and Chihuahua (3)), 4h. (Chihuahua and Tucson), 7h. (near Angra do Heroismo (2)), 8h. (near Bucharest, Honolulu, Scoresby Sund, Berkeley, Ukiah, Pasadena, Mount Wilson, Tinemaha, near Arapuni, Apia, Auckland, Wellington, Warsaw, and Paris), 9h. (Kew), 10h. (Tananarive), 14h. (Chicago U.S.C.G.S., Tucson, and Florissant), 15h. (Helwan, Calcutta, Kodaikanal, Almeria, Granada, De Bilt, Agra, Pasadena, La Paz, and Riverside), 16h. (Tucson, near Mizusawa, Paris, Warsaw, and Wellington), 17h. (near Harvard), 19h. (near Harvard), 22h. (Tucson, Mount Wilson, Pasadena, and Riverside).

July 17d. 7h. Undetermined shock.

Huancayo eP = 54m.6s., iS = 59m.7s., e = 59m.52s., i = 60m.24s. and 60m.53s., e = 61m.14s., L = 62m.15s.
Tucson eP = 55m.8s., e = 55m.32s. and 56m.16s., ePP = 56m.40s., e = 57m.12s., eS = 61m.2s., e = 63m.50s., eL = 65·9m.
La Jolla ePZ = 55m.28s.
La Paz PZ = 55m.37s., S?N = 61m.8s., LN = 65·0m.
Pasadena eP = 55m.38s., ePPZ = 57m.4s., eSN = 61m.48s., eLNZ = 67·1m.
Santa Barbara ePZ = 55m.44s.
Tinemaha ePZ = 56m.1s.
Florissant ePZ = 56m.18s., eSEN = 62m.44s., eS_cS?EN = 66m.6s.
Chicago e = 60m.0s.?
San Juan eS = 62m.34s., eL = 70·1m.
Berkeley eN = 63m.3s., eLEZ = 63·1m.
Salt Lake City eS = 63m.4s., eL = 70·4m.
Ukiah e = 63m.27s., eL = 69·6m.
Bozeman eS = 64m.8s., e = 64m.24s., eL = 70m.15s.
Long waves were also recorded at Honolulu, Kew, Tacubaya, Butte, and Seattle.

July 17d. 22h. 8m. 54s. Epicentre 78°·1N. 9°·8E.

A = +·2045, B = +·0353, C = +·9782 ; δ = −6 ; h = −14 ;
D = +·170, E = −·985 ; G = +·964, H = +·166, K = −·208.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Scoresby Sund		11·3	245	i 2 36	−10	e 4 37	−17	e 3 21	PPP	5·2
Upsala		18·5	168	e 4 21	+ 2	e 7 59	+15	e 8 2	SS	e 9·1
Pulkovo		19·5	148	e 4 32	+ 1	e 8 17	+11	—	—	—
Copenhagen		22·5	178	e 5 5	+ 3	9 24	+19	5 10	PP	—
Moscow		24·4	140	i 5 17	− 4	9 41	+ 2	—	—	—
Stonyhurst		24·8	198	—	—	e 9 51	+ 5	i 9 57	?	e 12·1
Potsdam		25·9	176	e 5 32	− 3	i 10 14	+10	e 6 15	PP	e 13·1
De Bilt		26·2	187	i 5 38	0	e 10 14	+ 5	—	—	e 16·1
Warsaw		26·3	164	5 42k	+ 3	10 21	+10	—	—	e 15·1
Sverdlovsk		27·2	111	5 50	+ 3	10 32	+ 7	—	—	—
Uccle		27·5	189	e 5 50	0	e 10 34	+ 4	—	—	e 13·1
Stuttgart		29·4	180	i 6 12k	+ 5	—	—	—	—	—
Basel		30·7	182	e 6 19	0	—	—	e 7 9	PP	—
Clermont-Ferrand		32·6	189	e 6 36	+ 1	—	—	—	—	—
Bucharest		34·4	159	—	—	11 6	−73	—	—	18·1
Grozny		37·7	135	7 19	0	13 20	+10	—	—	—
Toledo		38·8	197	i 7 28	0	e 14 55	?	—	—	23·1
Irkutsk		40·4	71	e 7 6?	−35	e 13 6?	−44	—	—	—
Baku		41·2	132	e 8 0	+12	e 14 15	+13	—	—	—
Granada		41·4	197	7 55a	+ 5	i 14 3	− 2	e 9 8	PP	20·7
Almeria		41·7	195	e 7 39	−13	13 27	−43	9 11	PP	20·9
Tashkent		43·7	110	e 8 12	+ 4	e 14 49	+10	—	—	—
Helwan	z.	49·3	155	i 8 55	+ 2	—	—	e 10 49	PP	—
Tinemaha	z.	61·0	314	i 10 19	+ 1	—	—	—	—	—
Pasadena		63·9	313	i 10 36	− 1	—	—	—	—	e 37·8
Riverside	z.	63·9	313	e 10 36	− 1	—	—	—	—	—
Tucson		64·5	306	i 10 33	− 8	—	—	—	—	—

Additional readings :—
Potsdam iPZ = +5m.35s., eE = +6m.6s.?, eZ = +10m.0s.?, iE = +10m.32s.
Warsaw S?Z = +10m.34s., eS?E = +10m.37s.
Basel e = +7m.58s.
Granada eSS = +18m.0s.
Almeria PPP = +9m.30s., P_cP = +9m.59s., P_cS = +13m.43s.
Tucson i = +10m.48s. and +11m.18s.
Long waves were also recorded at Agra and other European and American stations.

July 17d. 23h. 34m. 30s. Epicentre 14°·0N. 52°·0E.

A = +·5976, B = +·7649, C = +·2404; δ = −1; h = +5;
D = +·788, E = −·616; G = +·148, H = +·189, K = −·971.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		20·6	73	i 4 44	+ 1	e 8 34	+ 5	i 4 53	PP	e 9·9
Ksara		24·6	325	e 5 23	0	e 9 58	+16	—	—	—
Helwan		24·8	313	i 5 23k	− 2	9 54	+ 8	5 54	PP	—
Kodaikanal	E.	25·2	94	e 6 30?	PPP	—	—	—	—	—
Hyderabad		25·7	78	e 5 39	+ 6	10 6	+ 5	—	—	13·0
Agra	E.	27·6	58	e 5 50	− 1	e 10 34	+ 2	—	—	—
Colombo	E.	28·3	102	e 8 30?	?	—	—	—	—	—
Grozny		29·7	351	8 15	?	—	—	—	—	—
Tashkent		31·2	26	e 6 22	− 1	e 11 9	−20	—	—	—
Bucharest		37·5	330	e 7 44	+27	—	—	—	—	19·5
Sverdlovsk		43·4	7	8 1	− 5	14 28	− 7	—	—	—
Triest		45·1	322	e 14 54	PS	e 15 30	+31	i 15 10	PPS	—
Warsaw		45·5	333	e 8 20	− 3	e 15 7	+ 2	14 59	PS	e 22·5
Potsdam		49·2	329	e 8 54?	+ 2	e 15 54	− 4	—	—	e 19·5
Uccle		53·1	324	e 9 26	+ 5	e 16 50	− 1	—	—	e 24·5
De Bilt		53·2	326	e 9 16	− 6	e 16 50	− 2	—	—	e 27·5
Almeria		53·4	306	9 50	+26	15 43	−72	11 15	PP	26·5
Granada		54·4	306	e 9 44a	+13	i 17 11	+ 2	—	—	28·7
Toledo		55·2	309	e 9 46	+ 9	e 17 10	−10	—	—	22·1
Kew	Z.	56·0	323	e 9 45?	+ 2	e 17 38	+ 8	e 12 44	PPP	e 29·5

Additional readings :—
Bombay iEN = +5m.43s., iE = +8m.4s., iEN = +8m.47s.
Helwan PPPZ = +6m.12s., SSN = +11m.0s.
Warsaw eE = +18m.36s., eZ = +18m.39s.
Almeria PPP = +11m.39s., P_cP = +12m.11s.
Long waves were also recorded at Scoresby Sund and other European stations.

July 17d. Readings also at 1h. (near Grozny, and Piatigorsk), 3h. (Riverview and San Juan), 4h. (Mizusawa).

July 18d. 3h. 53m. 48s. Epicentre 40°·0N. 118°·7W.

A = −·3689, B = −·6738, C = +·6402; δ = −5; h = −2;
D = −·877, E = +·480; G = −·307, H = −·561, K = −·768.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		2·9	173	i 0 45	− 3	i 1 25	+ 1	—	—	—
Fresno		3·4	195	e 0 54	− 1	e 1 34	− 3	—	—	—
Berkeley		3·5	234	e 0 57	0	i 1 37	− 3	—	—	—
Lick		3·5	222	e 0 53	− 4	i 1 36	− 4	—	—	—
San Francisco		3·6	234	e 0 12?	?	i 1 12?	P_g	—	—	—
Branner		3·7	228	e 1 1	+ 1	i 1 46	+ 1	i 1 25	P_g	—
Haiwee		3·9	172	i 1 7	+ 5	i 1 56	+ 6	—	—	—
Salt Lake City		5·3	79	—	—	e 2 49	S*	—	—	—
Santa Barbara	z.	5·6	189	e 1 33	+ 6	i 2 43	+10	—	—	—
Mount Wilson	z.	5·8	175	i 1 26	− 3	i 2 51	S*	—	—	—
Pasadena		5·9	176	e 1 27	− 4	e 2 54	S*	—	—	—
Tucson		10·0	138	e 2 26	− 1	e 5 0	S*	i 5 26	S_g	i 6·3

Additional readings :—
Berkeley eZ = +1m.15s., eN = +1m.21s., iN = +1m.41s., iZ = +1m.46s.
Lick eP*N = +58s., eE = +1m.31s., iSE = +1m.39s.
Salt Lake City i = +2m.58s. and +3m.12s.
Tucson e = +2m.33s., i = +3m.19s. and +5m.37s.
Long waves were also recorded at Ukiah.

July 18d. Readings also at 1h. (Sverdlovsk, Potsdam, Warsaw, Helwan, Ksara, Granada, and Toledo), 4h. (Agra), 7h. (Chicago), 9h. (Agra and Tashkent), 13h. (Tucson), 15h. (Copenhagen, and near Berkeley) 16h. (Huancayo, La Paz, and La Plata), 17h. (Mount Wilson, Haiwee, Pasadena, Riverside, and Tucson), 18h. (near Harvard, near Berkeley, Branner, and Lick), 19h. (Harvard and near St. Louis), 22h. (Harvard), 23h. (near Andijan).

July 19d. 2h. 7m. 15s. Epicentre 16°·8N. 100°·7W. (as on 1938, May 11d.).

$A = -·1778$, $B = -·9412$, $C = +·2872$; $\delta = -5$; $h = +5$;
$D = -·983$, $E = +·186$; $G = -·053$, $H = -·282$, $K = -·958$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	Z.	3·0	29	0 54	+ 4	—	—	—	—	—
Vera Cruz	N.	5·0	61	1 15	− 3	—	—	—	—	—
Tucson		17·9	331	e 4 12	0	e 7 12	−18	i 4 34	PP	e 9·9
La Jolla	Z.	21·9	321	i 4 55	− 2	—	—	—	—	—
Pasadena		23·3	233	i 5 10	0	—	—	—	—	—
Florissant		23·7	233	i 5 17	+ 3	i 9 41	+14	—	—	—
Santa Barbara		24·5	20	i 5 22	0	—	—	—	—	—
Haiwee		24·6	326	i 5 23	0	—	—	—	—	—
Tinemaha		25·5	326	e 5 31	− 1	—	—	—	—	—
Ottawa		35·4	30	e 7 0	0	—	—	—	—	21·8

Tucson also gives i = +4m.13s., +5m.20s., and +5m.36s., e = +6m.18s. and +6m.37s., i = +7m.56s., e = +9m.9s.
Long waves were also recorded at Salt Lake City, Bozeman, Butte, and Seattle.

July 19d. 5h. 59m. 51s. Epicentre 39°·0N. 31°·5W. (Fore shock of quake at 9h.).

$A = +·6644$, $B = -·4071$, $C = +·6268$; $\delta = +4$; $h = -1$;
$D = -·522$, $E = -·853$; $G = +·534$, $H = -·328$, $K = -·779$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Angra do Heroismo	3·4	95	i 1 29	+34	—	—	—	—	2·9
Lisbon	17·4	83	4 11	+ 5	7 31	+12	7 39?	SS	8·7
Coimbra	17·8	79	e 4 12	+ 1	e 7 20	− 8	4 29	PP	9·3
San Fernando	20·1	89	—	—	e 8 30	+11	—	—	—
Toledo	20·3	79	i 4 47	+ 7	8 21	− 2	5 7	PP	9·7
Granada	22·0	86	i 4 47k	−11	i 9 5	+ 9	5 17	PP	11·7
Almeria	23·0	86	4 56	−11	8 54	−20	5 31	PP	10·1
Stonyhurst	24·7	43	—	—	i 10 1	+17	—	—	i 13·4
Kew	25·0	49	e 5 33	+ 6	e 9 55?	+ 6	—	—	e 12·6
Paris	26·2	56	e 5 43	+ 5	—	—	—	—	13·1
Clermont-Ferrand	26·3	64	e 5 42	+ 3	—	—	—	—	—
East Machias	27·2	293	—	—	(e 10 34)	+ 9	—	—	e 10·6
Uccle N.	27·7	52	—	—	e 11 9?	+36	—	—	—
De Bilt	28·5	50	i 6 46	PP	—	—	—	—	e 14·1
Potsdam	33·3	51	e 6 33?	− 8	e 12 9?	+ 7	—	—	e 15·1
San Juan	36·3	245	—	—	(e 15 19)	SS	—	—	e 15·3
Sofia	41·0	37	e 8 33?	+47	—	—	—	—	e 21·6
Tucson	62·9	290	10 29	− 1	—	—	—	—	—
Tinemaha	65·7	298	e 10 49	+ 1	—	—	—	—	—
Pasadena Z.	67·2	295	i 10 58	0	—	—	—	—	—
Agra E.	87·0	57	e 19 21	?	—	—	—	—	—
Calcutta N.	96·9	54	e 17 41	PP	—	—	i 19 53	PPP	—
Medan	117·6	59	16 58	?	—	—	—	—	—

Additional readings :—
Coimbra SS = +8m.9s.
Almeria SS = +9m.28s.
Tucson e = +10m.59s. and +12m.0s.
Long waves were also recorded at Chicago, Bozeman, Scoresby Sund, Warsaw, and Ivigtut.

July 19d. 9h. 24m. 21s. Epicentre 39°·0N. 31°·5W. (as at 5h.).

$A = +·6644$, $B = -·4071$, $C = +·6268$; $\delta = +4$; $h = -1$;
$D = -·522$, $E = -·853$; $G = +·534$, $H = -·328$, $K = -·779$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lisbon		17·4	83	4 6	0	7 32	SS	4 33	PP	8·8
Coimbra		17·8	79	4 8	− 3	e 7 14	−14	4 27	PP	8·7
Toledo		20·3	79	i 4 47	+ 7	i 8 0	−23	5 15	PPP	—
Granada		22·0	86	i 4 55$_s$	− 3	i 9 8	+12	5 19	pP	11·0
Almeria		23·0	86	i 5 7	0	i 9 26	+12	5 18	pP	—
Ivigtut		24·5	340	—	—	9 51	+11	—	—	10·7
Oxford		24·6	49	i 5 25	+ 2	e 9 46	+ 4	i 5 55	PP	e 12·8
Stonyhurst		24·7	43	—	—	e 9 32	−12	—	—	13·0
Paris		26·2	56	5 42	+ 4	10 19	+10	6 54	PP	12·7
Clermont-Ferrand		26·3	64	e 5 39	0	—	—	—	—	—
East Machias		27·2	293	e 5 31	−16	e 10 39	+14	—	—	e 13·5
Uccle		27·7	52	e 5 49	− 3	10 44	+11	—	—	12·7
De Bilt		28·5	50	e 6 29	+30	i 10 57	+11	—	—	e 12·7
Basle		29·4	60	e 6 7	0	e 11 35	+34	—	—	—
Strasbourg		29·6	57	—	—	e 11 15	+11	—	—	—
Seven Falls		29·6	299	e 9 39	?	—	—	—	—	14·6
Zurich		30·1	60	e 5 58	−15	—	—	—	—	—
Harvard		30·4	289	e 6 12	− 4	—	—	—	—	e 15·7
Bergen		31·4	34	—	—	e 13 39?	SSS	—	—	—
Fordham		32·3	287	e 6 31	− 2	i 11 55	+ 9	—	—	—
Ottawa		33·0	295	e 6 39	0	e 12 5	+ 8	—	—	15·7
Potsdam		33·3	51	e 6 39?	− 2	i 12 9	+ 7	i 7 52	PP	e 13·6
Philadelphia		33·5	285	i 6 41	− 2	—	—	—	—	e 14·0
Triest		33·8	63	e 6 43	− 3	—	—	—	—	—
Prague		34·0	55	e 9 47	?	e 12 21	+ 8	—	—	e 15·7
San Juan		36·3	245	—	—	e 15 10	SSS	—	—	e 15·7
Upsala		37·0	39	—	—	e 14 39?	SS	—	—	e 18·7
Warsaw		38·2	52	e 8 39?	PP	e 13 26	+ 9	—	—	e 18·7
Pulkovo		43·4	40	e 8 1	− 5	e 14 42	+ 7	—	—	—
Florissant		45·1	288	e 8 16	− 4	e 15 2	+ 3	e 10 7	PP	—
Moscow		47·6	45	e 8 39	0	e 15 51	+16	—	—	—
Helwan		51·7	80	9 12	+ 1	16 39	+ 7	12 4	PPP	—
Sverdlovsk		59·5	39	10 7	0	e 18 24	+ 8	—	—	—
Baku		60·4	60	e 10 13	0	e 18 39	+11	—	—	—
Tacubaya		60·9	272	8 41	?	—	—	—	—	—
Tucson		62·9	290	e 10 28	− 2	—	—	i 12 47	PP	e 35·8
Tinemaha		65·7	298	e 10 48	0	—	—	—	—	—
Halwee		66·0	297	i 10 51	+ 1	—	—	—	—	—
La Jolla	z.	67·2	293	e 10 57	− 1	—	—	—	—	—
Pasadena		67·2	295	i 10 56	− 2	—	—	e 13 15	PP	—
Lick		67·8	300	e 11 3	+ 1	—	—	—	—	—
Berkeley		68·0	300	i 11 3	0	e 19 37	−25	e 27 39?	SSS	—
Tashkent		72·4	50	e 11 37	+ 7	21 3	+10	—	—	—

Additional readings :—
Coimbra SS = +7m.45s.
Granada PP = +5m.33s., sP = +5m.53s., sPP = +6m.7s., P_cP = +8m.46s., pP_cP = +9m.15s., iS = +9m.23s., sP_cP = +9m.48s., SS = +10m.10s., P_cS = +12m.30s., sP_cS = +13m.28s., pS_cS = +15m.42s.
Almeria P_cP = +8m.39s., P_cS = +12m.20s.
Oxford iS = +9m.58s.
Stonyhurst i = +10m.4s.
Paris P_cP = +9m.9s., SS = +11m.33s.?
East Machias e = +5m.44s., eS = +10m.55s.
Potsdam eN = +6m.51s.?, eE = +6m.56s., iSZ = +12m.14s.
Warsaw eZ = +13m.29s.
Helwan eZ = +9m.45s.
Tucson i = +10m.40s. and +10m.46s., e = +11m.9s. and +12m.24s., ePPP = +14m.19s.
Berkeley eZ = +23m.39s.?
Long waves were also recorded at Kew, Scoresby Sund, Bozeman, Chicago U.S.C.G.S., Butte, Salt Lake City, Columbia, and Seattle.

July 19d. 12h. 8m. 15s. Epicentre 35°·7N. 23°·2E. (as on 1941 Feb. 28d.).

A = +·7481, B = +·3207, C = +·5810; δ = +6; h = 0;
D = +·394, E = −·919; G = +·534, H = +·229, K = −·814.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		7·0	1	e 1 39	− 7	—	—	—	—	—
Bucharest		9·0	14	e 2 39?	PPP	4 38	S*	—	—	—
Triest		12·2	327	e 3 5	+ 7	e 4 23	?	e 3 15	PPP	—
Zurich		16·0	321	e 3 44a	− 4	e 5 49	−57	—	—	—
Basle		16·6	318	e 3 52	− 4	—	—	—	—	—
Neuchatel		16·6	318	e 3 50	− 6	—	—	—	—	—
Uccle	z.	20·1	324	e 5 3	PP	—	—	—	—	—
Granada		21·6	284	e 4 55	+ 1	i 8 47	− 2	—	—	—
Toledo	z.	21·9	290	e 5 3	+ 6	—	—	—	—	—

Bucharest also gives SN = +4m.42s.
Long waves were also recorded at Potsdam.

July 19d. 15h. 13m. 17s. Epicentre 31°·9N. 132°·0E. Focus at the base of the superficial layers.

Intensity VI at Miyazaki; V at Kagosima, Kumamoto, and Ooita; IV at Asosan, Hukuoka, and Saga; II-III at Nagasaki and Sakai. Epicentre 31°·9N. 132°·0E. Macroseismic radius greater than 300km. Shallow.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1941. Tokyo 1950, pp. 31-32. Macroseismic chart p. 31.

A = −·5691, B = +·6321, C = +·5259; δ = 0; h = +1;
D = +·743, E = +·669; G = −·352, H = +·391, K = −·851.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyazaki	0·5	272	0 9a	− 1	0 13	− 5	—	—	—
Simidu	1·2	43	0 22a	+ 2	0 39	+ 3	—	—	—
Kagosima	1·3	255	0 19a	− 3	0 35	− 3	—	—	—
Kumamoto	1·4	310	0 24a	+ 1	0 42	+ 1	—	—	—
Unzendake	1·7	299	0 30a	+ 2	0 51	+ 2	—	—	—
Yakusima	1·9	222	0 29a	− 2	0 51	− 3	—	—	—
Matuyama	2·0	18	0 36	+ 4	0 55	− 1	—	—	—
Nagasaki	2·0	295	0 28	− 4	0 57	+ 1	—	—	—
Izuka	2·1	328	0 34a	+ 1	1 2	+ 3	—	—	—
Koti	2·1	38	0 35a	+ 2	1 4	+ 5	—	—	—
Hukuoka	2·2	322	0 35a	· 0	1 1	0	—	—	—
Muroto	2·3	54	0 37	+ 1	1 3	− 1	—	—	—
Hirosima	2·5	8	1 19a	+40	1 49	+40	—	—	—
Tomie	2·8	285	0 26	−17	1 13	− 3	—	—	—
Hamada	3·0	1	0 50	+ 4	1 24	+ 2	—	—	—
Siomisaki	3·5	63	0 56	+ 3	1 21	−13	—	—	—
Wakayama	3·5	47	0 53	0	1 36	+ 2	—	—	—
Sumoto	3·5	44	0 55k	+ 2	1 44	+10	—	—	—
Kobe	3·9	42	0 59a	0	1 43	− 1	—	—	—
Husan	4·0	323	0 56	− 4	1 47	0	—	—	—
Osaka	4·0	46	1 7	+ 7	2 3	+16	—	—	—
Nake	4·1	213	1 1a	− 1	1 46	− 3	—	—	—
Owase	4·1	57	1 3	+ 1	1 47	− 2	—	—	—
Toyooka	4·3	32	1 27	+22	2 40	+46	—	—	—
Kyoto	4·4	44	1 41k	+35	2 53	+56	—	—	—
Kameyama	4·7	50	1 14	+ 4	2 20	+15	—	—	—
Taikyu	4·8	326	1 14	+ 2	2 22	+15	—	—	—
Gihu	5·3	47	1 21	+ 2	3 20	+60	—	—	—
Nagoya	5·3	50	1 11	− 8	2 23	+ 3	—	—	—
Shizuoka	6·2	58	1 32	0	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toyama		6·4	40	1 37	+ 3	2 47	0	—	—	—
Kohu		6·6	54	1 39	+ 2	3 19	+27	—	—	—
Misima		6·6	59	1 40	+ 3	3 16	+24	—	—	—
Hatidyozima		6·7	78	1 40	+ 1	3 47	+52	—	—	—
Hunatu		6·7	55	1 40	+ 1	3 7	+12	—	—	—
Osima		6·8	63	1 42	+ 2	3 34	+37	—	—	—
Naha		6·8	214	1 37	− 3	3 15	+18	—	—	—
Wazima		6·8	35	1 42	+ 2	3 2	+ 5	—	—	—
Nagano		7·0	45	1 47	+ 4	3 16	+14	—	—	—
Keizyo		7·0	325	1 45	+ 2	3 9	+ 7	—	—	—
Zinsen		7·1	323	1 47	+ 3	3 4	− 1	—	—	—
Yokohama		7·2	59	1 59	+13	3 24	+17	—	—	—
Maebasi		7·4	50	1 50	+ 2	3 37	+25	—	—	—
Tokyo Cen. Met. Ob.		7·4	57	1 57	+ 9	3 32	+20	—	—	—
Tukubasan		7·9	55	2 7	+12	3 49	+24	—	—	—
Utunomiya		8·0	52	2 0	+ 3	—	—	—	—	—
Mito		8·3	55	2 6	+ 5	4 3	+28	—	—	—
Hukusima		9·0	48	2 18	+ 7	—	—	—	—	—
Miyakozima		9·2	221	2 21	+ 8	—	—	—	—	—
Sendai		9·7	46	2 21	+ 1	4 15	+ 6	—	—	—
Akita		10·2	38	2 39	+12	5 1	+39	—	—	—
Isigakizima		10·2	225	2 30	+ 3	—	—	—	—	—
Mizusawa	E.	10·4	43	e 2 31 a	+ 1	5 20	+54	—	—	—
Dairen		11·0	313	2 38	0	5 40	+59	—	—	—
Vladivostok		11·2	0	i 2 44	+ 3	—	—	—	—	—
Aomori		11·3	36	2 50	+ 8	—	—	—	—	—
Hatinohe		11·5	39	3 9	+24	—	—	—	—	—
Taihoku		11·5	236	2 46	+ 1	5 31	+38	—	—	—
Sintiku		12·0	237	3 18	+26	—	—	—	—	—
Karenko		12·1	232	2 57	+ 4	—	—	—	—	—
Arisan		13·0	233	3 9	+ 4	5 50	+21	—	—	—
Taito		13·3	229	4 8	+59	5 43	+ 6	—	—	—
Sapporo		13·4	31	3 21	+11	6 10	+31	—	—	—
Manila	Z.	20·0	213	i 4 30 a	− 2	i 8 15	+ 4	—	—	—
Irkutsk		28·6	324	e 5 43	−12	e 10 43	+ 3	—	—	—
Calcutta	N.	39·7	268	e 6 55	−36	e 13 33	+ 1	e 8 43	PcP	—
Medan		42·1	236	7 51	+ 1	i 14 5	− 3	—	—	—
Semipalatinsk		42·2	313	e 7 49	− 2	—	—	—	—	—
Almata		44·4	303	8 9	0	—	—	—	—	—
Batavia		44·8	218	i 8 11	− 1	i 14 48	+ 1	—	—	—
Agra	E.	46·8	280	i 8 22	− 6	15 8	− 7	i 10 15	PP	—
Andijan		48·0	299	i 8 48	+10	—	—	—	—	—
Tashkent		50·2	300	i 8 53	− 2	e 16 2?	− 1	—	—	—
Sverdlovsk		53·9	321	i 9 18	− 4	i 16 52	− 2	—	—	—
Bombay		54·4	272	e 9 28	+ 2	e 16 57	− 3	e 20 43	SS	30·7
Colombo	E.	54·5	255	—	—	e 17 13	+11	—	—	—
Kodaikanal	E.	54·7	261	e 12 43	PPP	—	—	—	—	—
College		57·5	31	e 9 50	+ 2	i 17 48	+ 6	—	—	e 23·9
Baku		64·6	304	e 10 36	0	i 19 12	0	—	—	—
Moscow		66·7	323	10 46	− 4	19 33	− 5	—	—	—
Piatigorsk		67·9	310	e 10 58	+ 1	—	—	—	—	—
Pulkovo		68·5	329	e 11 0	− 1	e 19 57	− 2	—	—	—
Upsala		73·9	332	20 57	S	(20 57)	− 5	e 29 26	SSS	e 37·8
Victoria		75·5	43	—	—	e 21 45	+25	—	—	30·7
Scoresby Sund		76·2	352	—	—	i 21 30	+ 3	—	—	e 39·2
Warsaw		76·9	325	11 48	− 3	e 21 32	− 3	—	—	e 40·7
Ksara		77·5	303	(e 11 44?)	−10	(e 22 16)	PS	—	—	—
Bergen		78·2	337	e 17 43?	?	—	—	—	—	e 41·7
Bucharest		78·5	316	—	—	e 21 50	− 2	—	—	42·7
Copenhagen		78·7	331	e 11 59	− 1	21 53	− 1	—	—	—

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		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Potsdam		80·6	328	i 12 9a	− 2	i 22 12	− 2	i 12 20	PcP	e 40·7
Sofia		81·1	316	e 12 25?	+12	e 22 19	0	e 16 30	?	—
Belgrade		81·5	318	e 12 4	−12	e 22 26	+ 3	—	—	e 48·8
Berkeley		82·0	52	i 12 18	0	e 22 0	−29	e 26 43?	?	—
Jena	N.	82·3	327	e 12 13	− 7	e 22 29	− 3	—	—	e 41·7
Lick	E.	82·7	52	e 12 23	+ 1	—	—	—	—	—
Helwan		82·9	301	12 20	− 3	22 33	− 5	—	—	—
De Bilt		84·3	331	i 12 28	− 2	i 22 49	− 3	—	—	e 41·7
Triest		84·7	323	e 12 23?	− 9	i 22 49	− 7	e 15 32?	PP	i 45·1
Stuttgart		84·9	327	e 12 31	− 2	e 22 54	− 4	—	—	e 43·7
Tinemaha		85·1	51	e 12 36	+ 2	—	—	—	—	—
Uccle		85·6	331	e 12 33	− 3	22 55	[− 1]	—	—	e 41·7
Santa Barbara		85·7	53	i 12 38	+ 1	—	—	—	—	—
Strasbourg		85·7	327	e 12 34	− 3	i 22 58	[+ 1]	—	—	46·7
Haiwee		85·8	50	i 12 39	+ 2	—	—	—	—	—
Chur		86·0	326	e 12 34	− 4	e 22 55	[− 4]	—	—	—
Zurich		86·1	326	e 12 37a	− 2	e 22 58	[− 1]	—	—	—
Basle		86·5	326	e 12 38	− 3	i 23 1	[− 1]	—	—	—
Pasadena		86·9	52	i 12 42	− 1	—	—	—	—	e 40·7
Kew		87·0	333	e 23 6	S	(e 23 6)	[+ 1]	e 24 13	PS	e 42·7
Oxford		87·1	334	—	—	e 23 15	− 4	—	—	e 45·2
Neuchatel		87·2	326	e 12 43	− 1	e 23 5	[− 1]	—	—	—
Riverside		87·5	52	i 12 46	0	—	—	—	—	—
Paris		87·9	330	12 46	− 1	23 12	[+ 2]	12 57	PcP	46·7
La Jolla		88·3	53	e 12 50	+ 1	—	—	—	—	—
Clermont-Ferrand		89·9	327	e 12 55?	− 2	—	—	—	—	e 53·8
Tucson		92·9	50	e 13 11	0	—	—	i 17 0	PP	i 45·9
Toledo		97·8	327	e 17 20	PP	27 40	PPS	—	—	47·9
Seven Falls		98·7	15	—	—	e 29 43?	?	—	—	43·7
Ottawa		99·1	20	e 13 39	0	—	—	e 17 43?	PP	46·7
Almeria		99·4	325	e 17 50	PP	(24 17)	[+ 2]	—	—	49·7
Coimbra		99·4	331	e 12 43	−57	24 5	[−10]	30 40	?	50·0
Florissant		99·4	33	e 13 39	− 1	e 24 3	[−12]	e 31 37	SS	—
Granada		99·7	326	i 17 45	PP	i 24 14	[− 2]	30 16	?	52·9
Philadelphia		104·2	21	(e 18 41)	PP	—	—	—	—	(73·6)
Huancayo		148·0	58	19 45	[+ 6]	—	—	—	—	—

Additional readings :—
Calcutta eSS = +16m.32s., eS_cSN = +16m.56s.
Agra sSE = +18m.9s.
Bombay e = +13m.51s., eN = +17m.5s., iE = +17m.10s. and +17m.23s., e?N = +23m.31s.
Ksara readings have been increased by 10m.
Copenhagen ? = +12m.9s.
Upsala eN = +34m.43s.?
Berkeley eZ = +31m.1s., eZ = +33m.37s.
Belgrade e = +43m.56s.
Jena iPN = +12m.31s.
Helwan iZ = +12m.31s., SE = +23m.1s.
Triest eP = 15m.32s.
Stuttgart iZ = +12m.44s.
Uccle iZ = +12m.45s.
Strasbourg e = +12m.55s.?
Kew eE = +23m.43s., eSS?Z = +36m.37s.
Paris ePP = +16m.13s., eS = +24m.24s., SS = +30m.43s.?, Q = +43m.43s.?
Tucson e = +13m.32s. and +13m.47s., i = +14m.22s., iPPP = +18m.48s.
Toledo ePP = 21m.47s.
Almeria SKS given as PPP, SKS = +28m.25s., eS? = +29m.22s., PS = +31m.2s.
Coimbra SSS = +35m.35s.
Florissant ePKP = +17m.46s., eN = +23m.50s., iE = +24m.11s., eS?E = +24m.39s., eN = +24m.45s., eE = +25m.6s. and +32m.0s.
Philadelphia e = +29m.34s. ; 20m. have been added to all readings.
Huancayo e = +21m.16s.
Long waves were also recorded at Lisbon, Riverview, Aberdeen, Ukiah, Honolulu, East Machias, Butte, Bozeman, Stonyhurst, Harvard, San Fernando, Ogyalla, Budapest, and Prague.

July 19d. 17h. 54m. 25s. Epicentre 10°·0N. 123°·0E. Depth of focus 0·070.

A = −·5365, B = +·8261, C = +·1725; δ = +3; h = +7;
D = +·839, E = +·545; G = −·094, H = +·145, K = −·985.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila	Z.	5·0	336	i 1 45a	pP	i 3 1	sS	—	—	—
Palau		11·7	102	2 29	− 8	—	—	—	—	—
Amboina		14·3	160	i 3 5	+ 1	i 5 30	− 2	—	—	—
Naha		16·7	15	3 30	+ 2	6 10	− 7	—	—	—
Batavia		22·7	227	6 16	?	—	—	—	—	—
Medan		25·0	258	i 4 56	+10	i 8 47	+11	—	—	—
Sendai		32·4	28	5 41	− 9	10 3	−28	—	—	—
Vladivostok		33·9	12	i 5 57	− 6	i 10 38	−16	—	—	—
Calcutta	N.	35·4	296	—	—	e 16 26	?	—	—	i 21·4
Irkutsk		44·8	344	—	—	i 13 27	− 6	—	—	—
Kodaikanal	E.	44·8	276	e 9 35?	PP	—	—	—	—	—
Agra	E.	45·6	299	—	—	e 13 46	+ 1	—	—	—
Bombay		49·3	287	e 10 13	PP	i 14 38	+ 2	—	—	—
Almata		51·9	319	e 8 26	+ 1	e 15 11	0	—	—	—
Andijan		54·1	314	e 8 43	+ 2	e 15 40	0	—	—	—
Tashkent		56·5	314	i 8 58	0	i 16 10	− 1	—	—	—
Sverdlovsk		66·7	329	i 10 0	− 4	i 18 7	−11	—	—	—
Baku		70·7	310	e 10 24	− 4	i 19 0	− 4	—	—	—
Moscow		79·3	325	e 11 7	− 9	20 17	−19	—	—	—
Ksara		82·1	303	e 11 31?	0	e 21 8	+ 3	—	—	—
Pulkovo		82·8	330	e 11 27	− 7	e 20 57?	−15	—	—	—
Helwan		86·5	300	11 50	− 2	i 21 40	− 7	—	—	—
Bucharest		88·0	315	21 27	?	e 21 54	− 7	e 24 23	PS	—
Warsaw		89·4	323	e 12 0k	− 6	e 22 2	−12	—	—	—
Potsdam		94·0	325	e 11 29	−58	i 22 43	−10	—	—	—
Angra do Heroismo		124·2	332	—	—	i 39 0	?	—	—	—

Additional readings:—
Bombay iE = +14m.53s. and +16m.51s., eN = +18m.2s., iE = +18m.7s.
Helwan eZ = +14m.5s., iE = +21m.17s.
Warsaw eEN = +21m.34s., eZ = +23m.9s.
Potsdam e?Z = +12m.22s., eE = +21m.59s.
Long waves were also recorded at Kew.

July 19d. Readings also at 2h. (near Mizusawa), 8h. (near Balboa Heights), 9h. (Pittsburgh, Potsdam, De Bilt, Angra do Heroismo, and Paris), 10h. (Naha, Kobe, and Tokyo), 11h. (Pasadena and Berkeley), 13h. (Granada, Angra do Heroismo, and Toledo), 16h. (Huancayo, La Paz, Granada, and Toledo (2)), 18h. (near Berkeley Branner, and Lick), 20h. (near Triest).

July 20d. 6h. 0m. 56s. Epicentre 21°·8S. 170°·8E. (as on 1940, Jan. 6d.).

A = −·9173, B = +·1486, C = −·3693; δ = −10; h = +4;
D = +·160, E = +·987; G = +·365, H = −·059, K = −·929.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		15·4	168	3 55?	+15	7 4	+32	—	—	8·4
Arapuni		16·8	166	e 2 4?	?	7 28?	+23	—	—	—
Brisbane	N.	17·1	247	e 3 51	−11	i 7 8	− 4	—	—	—
Apia		18·4	68	e 4 22	+ 4	e 8 38	+57	—	—	i 13·2
Wellington		19·7	172	4 35	+ 1	8 14	+ 4	4 58	pP	10·1
Riverview		21·0	230	i 4 46a	− 1	i 8 37	0	e 5 15	PP	e 10·4
Sydney		21·0	230	e 4 34	−13	e 8 31	− 6	—	—	e 12·1
Adelaide		31·1	238	i 10 31	?	i 14 32	?	15 20	Q	16·2
Manila	Z.	60·8	303	e 10 14	− 2	18 40	+ 7	—	—	—
Mount Wilson	Z.	87·6	52	e 12 58	+ 7	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman		97·5	44	—	—	e 26 34	PS	—	—	e 45·6
Ottawa		121·5	49	e 18 57	[+ 1]	—	—	—	—	58·1
Warsaw		141·7	330	e 19 35	[+ 1]	—	—	e 22 41	PP	e 78·1
Helwan		142·8	292	i 19 34	[− 1]	—	—	e 23 16	PP	—
Potsdam		145·0	338	i 19 40k	[+ 1]	—	—	—	—	e 70·1
Sofia		145·8	316	e 19 49	[+ 9]	—	—	—	—	—
Jena	N.	146·7	335	e 19 33	[− 9]	—	—	—	—	—
De Bilt		147·8	344	e 19 51k	[+ 7]	—	—	e 23 24	PP	e 79·1
Uccle	Z.	149·2	345	e 19 50	[+ 4]	—	—	—	—	—
Kew		149·6	350	(e 20 4?)	[+17]	—	—	—	—	e 79·1
Paris		151·5	345	19 56	[+ 6]	—	—	23 46	PP	82·1
Granada		163·9	344	e 21 29	PKP_2	28 56	PPP	—	—	89·1

Additional readings :—
Wellington iZ = +5m.34s. and +5m.44s., P_cP? = +8m.26s., i = +8m.39s., sS = +8m.49s.
Riverview iSN = +8m.40s., iZ = +8m.43s. and +8m.50s.
Adelaide i = +14m.52s.
Warsaw eEN = +23m.4s.?, eZ = +23m.26s. and +25m.29s.
Potsdam ePE = +19m.43s., ePN = +19m.46s.
Jena eN = +19m.48s.
Kew records PKP as long waves to an earlier shock.
Paris PPP = +25m.4s. ?
Granada iSKP = +25m.42s., iPP = +25m.49s., SKKS = +32m.24s., SS = +45m.27s.
Long waves were also recorded at Kew, Scoresby Sund, Huancayo, and other American stations.

July 20d. Readings also at 1h. (near Mizusawa), 4h. (Granada), 5h. (Helwan), 11h. (Mount Wilson and Pasadena), 17h. (Tucson), 19h. (near Apia), 20h. (near Berkeley).

July 21d. 16h. 36m. 8s. Epicentre 0°·3S. 18°·9W.

A = +·9461, B = −·3239, C = −·0052 ; δ = +4 ; h = +7 ;
D = −·324, E = −·946 ; G = −·005, H = +·002, K = −1·000.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Fernando	38·4	17	e 8 58	PP	e 13 30	+10	—	—	20·9
Granada	39·9	18	i 7 36a	− 1	i 13 51	+ 8	i 9 35	PPP	21·3
Lisbon	39·9	11	7 39	+ 2	13 41	− 2	9 11	PP	18·8
Almeria	40·0	20	i 7 39	+ 1	13 42	− 2	7 53	pP	18·9
Coimbra	41·4	12	e 7 52	+ 2	14 2	− 3	9 5	PP	20·2
Algiers	42·2	26	e 8 0	+ 4	e 14 20	+ 3	—	—	e 21·9
Toledo	42·2	16	i 7 57	+ 1	e 14 19	+ 2	—	—	17·7
Clermont-Ferrand	49·8	20	i 8 58	+ 2	—	—	—	—	—
San Juan	49·9	294	e 8 56	− 1	i 16 3	− 4	—	—	e 22·4
La Paz	51·1	248	9 10	+ 4	—	—	—	—	24·9
Paris	52·3	17	e 9 28	+13	16 45?	+ 5	10 20	P_cP	25·9
Chur	53·1	23	e 9 24	+ 3	—	—	—	—	—
Zurich	53·2	22	e 9 19a	− 3	—	—	—	—	—
Kew	53·9	13	e 9 27	0	e 17 5	+ 3	e 12 37?	PPP	e 22·9
Strasbourg	53·9	21	e 9 28	+ 1	e 17 7	+ 5	—	—	28·9
Oxford	54·0	13	—	—	i 17 6	+ 3	—	—	—
Triest	54·1	28	i 9 29	0	i 17 6	+ 1	e 12 41	PPP	e 25·1
Stuttgart	54·6	22	e 9 31a	− 1	—	—	e 11 39	PP	—
Uccle	54·6	16	e 9 32	0	17 13	+ 2	—	—	e 25·9
De Bilt	56·0	17	i 9 43a	0	i 17 35	+ 5	—	—	e 26·9
Helwan	56·4	53	9 43	− 2	17 37	+ 1	11 52	PP	—
Huancayo	57·2	255	—	—	e 17 45	− 1	i 21 42	SS	i 25·1
Sofia	57·2	36	e 9 53	+ 2	e 17 52	+ 6	—	—	—
Prague	57·7	24	e 9 53	− 2	e 17 52?	− 1	—	—	—
Potsdam	58·9	21	i 10 3k	0	i 18 11	+ 3	i 22 28	SS	e 27·9

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bucharest		59·8	35	e 10 9a	0	e 18 23	+ 3	e 19 52	S_eS	31·9
Copenhagen		61·4	19	e 10 19	− 1	18 42	+ 2	—	—	29·9
Ksara		61·5	51	e 10 22	+ 1	e 18 47?	+ 5	—	—	—
East Machias		62·1	322	—	—	i 18 47	− 2	—	—	—
Warsaw		62·1	25	10 24a	− 1	e 18 40	− 9	e 22 29	SS	e 32·9
Bergen		63·4	12	—	—	e 18 52?	−14	—	—	29·9
Fordham		64·4	316	e 10 38	− 2	e 19 18	0	—	—	e 26·5
Seven Falls		65·3	324	—	—	e 23 34?	SS	—	—	30·9
Upsala		66·3	18	—	—	e 19 41	− 1	—	—	e 28·9
Ottawa		67·5	320	e 10 57	− 3	e 19 52	− 4	—	—	28·9
Pulkovo		71·0	23	e 11 18	− 4	e 20 38	+ 1	—	—	—
Moscow		72·0	30	11 28	0	20 50	+ 1	—	—	—
Baku		74·2	47	e 11 50?	+10	21 12?	− 2	—	—	—
Chicago, U.S.C.G.S.		74·4	313	—	—	e 21 13	− 3	e 29 19	SSS	e 34·1
Sverdlovsk		84·5	33	i 12 36	0	23 1	− 1	—	—	—
Tucson		91·8	302	i 13 10	− 1	—	—	—	—	e 48·3

Additional readings :—
Granada PPP = +10m.10s., P_eS = +13m.31s., eSS = +17m.8s.
Lisbon ?E = +7m.50s., SE = +13m.46s., SSE = +16m.10s., SSN = +16m.34s.
Almeria PP = +9m.14s., PPP = +9m.38s., P_eP = +9m.46s., P_eS = +13m.30s., SS = +16m.12s., SSS = +17m.41s.
Coimbra PPP = +9m.26s., SSS = +17m.22s.
Paris S_eS = +18m.45s. ?
Kew eZ = +10m.5s.
Triest iPS = +17m.43s.
Huancayo i = +23m.16s.
Potsdam iSZ = +18m.19s., iN = +22m.17s.
Bucharest ePEN = +10m.12s.
Warsaw eZ = +11m.3s. and +11m.37s., eSN? = +18m.51s., eSSSN? = +25m.46s.
Chicago, U.S.C.G.S. e = +21m.43s.
Tucson i = +13m.28s., e = +13m.38s.
Long waves were also recorded at **Pasadena, Agra,** College, Scoresby Sund, Harvard, and Stonyhurst.

July 21d. 20h. 19m. 30s. Epicentre 12°·4N. 92°·5E. (as on 14d.).

Intensity V at Port Blair. Epicentre near the Andaman Isles 14°·0 N.96°·0E. (Bombay). See Government of India Seismological Bulletin, 1941, p. 63.

$A = -·0426$, $B = +·9761$, $C = +·2134$; $\delta = +13$; $h = +6$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		10·7	144	1 23	?	—	—	—	—	—
Calcutta	N.	10·8	339	e 3 5	PP	i 4 46	+ 4	e 5 22	SS	(i 5·8)
Colombo	E.	13·6	248	3 17	0	5 51	+ 1	—	—	—
Kodaikanal	E.	14·9	264	i 3 36a	+ 2	—	—	—	—	—
Agra	E.	20·0	320	4 32	− 5	8 11	− 6	8 48	SS	—
Bombay		20·0	292	e 4 39	+ 2	e 8 27	+10	5 1	PP	10·8
Tashkent		35·2	329	e 6 59	+ 1	e 12 33	+ 2	—	—	—
Tchimkent		35·8	330	e 7 2	− 1	—	—	—	—	—
Sverdlovsk		50·6	338	i 9 1	− 1	i 16 15	− 2	—	—	—
Potsdam		73·8	322	e 11 36	− 2	i 21 6	− 3	—	—	e 40·5
Pasadena	Z.	125·3	31	e 19 8	[+ 5]	—	—	—	—	—
Tucson		130·7	26	i 19 12	[− 1]	—	—	i 21 30	PP	—

Additional readings :—
Calcutta L given as iS_e.
Bombay iEN = +4m.50s., iE = +5m.10s., eN = +8m.49s., iE = +8m.52s., iEN = +9m.13s.
Potsdam eE = +11m.50s. and +20m.57s.
Tucson e = +19m.43s.
Long waves were also recorded at Paris and Kew.

July 21d. Readings also at 1h. (near Berkeley, near Zurich, Chur, Neuchatel, Basle, Stuttgart, Triest, and La Paz), 6h. (La Paz), 8h. (Potsdam, near Bucharest (2), Kew, and Warsaw), 9h. (De Bilt, Potsdam, and Warsaw), 10h. (near Lick), 13h. (Paris), 14h. (Harvard and Prague), 18h. (near Mizusawa), 19h. (Tinemaha and Batavia), 20h. (near Harvard), 21h. (near Mizusawa), 22h. (near Irkutsk), 23h. (Tucson).

July 22d. Readings at 0h. (Kew, Chur, and Zurich), 1h. (near Basle, near Stuttgart, Chur, Zurich, and Scoresby Sund), 6h. (Harvard), 9h. (Algiers), 14h. (near Harvard), 16h. (Bucharest), 17h. (near Harvard), 18h. (Fresno, Tucson, and Salt Lake City).

July 23d. 1h. 17m. 6s. Epicentre 17°·0N. 107°·5W. (as on 1941 March 4d.).

$A = -\cdot2877$, $B = -\cdot9126$, $C = +\cdot2906$; $\delta = +6$; $h = +5$;
$D = -\cdot954$, $E = +\cdot301$; $G = -\cdot087$, $H = -\cdot277$, $K = -\cdot957$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Guadalajara	E.	5·4	47	e 1 13	−11	—	—	—	—	—
Tacubaya	E.	8·3	72	e 2 6	+ 2	—	—	—	—	—
Tucson		15·5	350	i 3 38	− 4	i 6 5	−30	i 3 46	PP	i 7·8
Mount Wilson		19·6	334	i 4 35	+ 3	—	—	—	—	—
Pasadena		19·6	334	e 4 40	+ 8	e 8 26	+18	—	—	—
Santa Barbara		20·5	331	e 4 46	+ 4	—	—	—	—	—
Haiwee		21·2	337	i 4 51	+ 2	—	—	—	—	—
Tinemaha		22·2	337	e 5 2	+ 2	—	—	—	—	—
Salt Lake City		24·0	352	e 5 16	− 1	e 9 31	− 1	—	—	e 12·1
Logan		24·9	353	e 5 29	+ 3	e 9 59	+12	—	—	e 13·0
Lincoln		25·5	21	e 5 27	− 5	—	—	—	—	e 13·6
St. Louis		26·3	31	e 5 38	− 1	e 10 0	−11	—	—	e 13·0
Florissant		26·4	31	i 5 38	− 2	e 10 3	− 9	—	—	—
Bozeman		28·7	355	e 6 2	+ 1	e 11 13	+23	—	—	e 14·2
Butte		29·2	356	e 6 4	− 1	e 10 59	+ 1	—	—	e 14·2
Chicago		30·0	29	—	—	i 11 3	− 7	—	—	e 14·4
Philadelphia		36·2	45	e 7 8	+ 2	e 12 33	−14	e 8 18	PP	e 19·0
Fordham		37·5	44	e 7 19	+ 2	e 12 57	−10	e 8 38	PP	—
Ottawa		38·8	36	7 28	0	e 13 16	−10	—	—	19·9
Harvard		39·8	43	e 7 27	− 9	e 13 29	−13	e 9 11	PP	e 23·4
East Machias		43·5	42	—	—	e 14 24	−12	e 9 47	PP	e 22·7

Additional readings :—
Tucson i = +4m.4s., +4m.24s., and +4m.46s., e = +5m.36s. and +6m.26s., f = +6m.40s., e = +6m.58s.
Florissant iN = +10m.10s.
East Machias eS_cS = +17m.58s.
Long waves were also recorded at Vera Cruz, Honolulu, Berkeley, Ukiah, College, Columbia, Kew, and Paris.

July 23d. 9h. 30m. 38s. Epicentre 48°·0N. 151°·0E. (as on 1938 Sept. 18d.).

Pasadena :—Doubtful, may be two shocks at about 30s. interval.

$A = -\cdot5874$, $B = +\cdot3256$, $C = +\cdot7409$; $\delta = -1$; $h = -5$;
$D = +\cdot485$, $E = +\cdot875$; $G = -\cdot648$, $H = +\cdot359$, $K = -\cdot672$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Neimuro	6·0	221	1 27	− 5	2 55	+12	—	—	—
Mizusawa	11·4	223	(e 2 50)	+ 3	e 5 7	+11	—	—	—
Sendai	12·2	221	e 3 4	+ 6	5 16	0	—	—	—
Kobe	17·8	227	4 20	+ 9	7 39	+11	—	—	—
College	36·1	40	—	—	e 12 30	−15	—	—	—
Sverdlovsk	51·9	318	i 9 16	+ 4	17 12	+37	—	—	—
Andijan	54·4	295	e 9 36	+ 5	—	—	—	—	—
Tashkent	55·9	297	e 9 46	+ 4	e 18 10	+41	—	—	—
Pulkovo	62·2	332	e 10 24	− 2	e 19 28	+37	—	—	—
Bozeman	62·4	52	—	—	e 18 34	−19	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Moscow		62·6	326	10 32	+ 4	e 19 39	+43	—	—	—
Tinemaha		64·0	63	e 11 6	+28	—	—	—	—	—
Haiwee		64·8	63	e 11 12	+29	—	—	—	—	—
Santa Barbara		64·9	67	e 10 37	− 6	—	—	i 11 8	?	—
Pasadena	z.	66·0	66	i 10 44	− 6	i 21 48	SS	i 11 12	?	—
Mount Wilson		66·1	66	i 10 45	− 6	—	—	i 11 15	?	—
Baku		67·7	308	e 10 49	−12	e 20 21	+23	—	—	—
Copenhagen		71·0	339	i 11 23	+ 1	—	—	—	—	—
Warsaw		71·4	331	e 11 22a?	− 2	e 16 37	?	—	—	34·4
Tucson		71·8	63	i 11 20	− 6	—	—	—	—	—
Potsdam		73·7	337	e 11 38a	0	e 21 3	− 5	—	—	e 36·4
Jena	N.	75·5	335	e 11 48	0	—	—	—	—	—
Bucharest		76·0	323	e 11 54	+ 3	—	—	—	—	44·4
De Bilt		76·1	340	i 11 52k	+ 1	—	—	—	—	e 71·4
Uccle	z.	77·5	340	i 11 58	− 1	—	—	—	—	—
Florissant		77·8	47	e 11 55	− 6	i 21 33	−20	e 12 28	pP	—
Kew		77·9	343	i 12 1	0	e 23 23	?	e 12 32	?	e 54·4
St. Louis		78·0	47	i 11 56	− 6	e 21 35	−20	i 12 30	pP	—
Stuttgart		78·1	337	e 12 2k	0	—	—	e 12 41	pP	—
Strasbourg		78·7	338	e 19 22?	?	—	—	—	—	—
Zurich		79·5	337	e 12 11	+ 1	—	—	—	—	—
Basle		79·7	336	e 12 11	0	—	—	—	—	—
Chur		79·7	335	e 12 12	+ 1	—	—	—	—	—
Paris		79·8	340	i 12 13	+ 1	e 23 22?	?	—	—	e 40·1
Neuchatel		80·3	336	e 12 15	+ 1	—	—	—	—	—
Clermont-Ferrand		82·5	339	i 12 26	0	—	—	—	—	—
Fordham		83·0	33	—	—	e 22 26	−21	—	—	e 59·2
Helwan		85·5	311	i 12 43a	+ 2	e 23 58	+46	e 16 42	PP	—

Additional readings :—
Mizusawa P reading has been reduced by 2m.
College e = +13m.18s.
Tucson i = +11m.56s., +12m.13s., and +12m.34s., e = +12m.45s.
Florissant isSE = +22m.32s.
St. Louis eS_cSEN = +22m.32s.
Helwan eZ = +13m.43s.

July 23d. 10h. 23m. 42s. Epicentre 31°·5N. 40°·8W. (as on 1939 Feb. 8d.).

A = +·6466, B = −·5582, C = +·5199 ; δ = −3 ; h = +1 ;
D = −·653, E = −·757 ; G = +·394, H = −·340, K = −·854.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		26·3	246	e 5 25	−14	—	—	—	—	e 10·2
Ottawa		30·4	308	e 6 14	− 2	e 11 18?	+ 2	—	—	14·3
Toledo		30·8	65	i 6 21	+ 1	e 10 33	−50	—	—	—
Granada		31·1	68	i 6 44a	+22	i 10 59	−29	7 30	PP	i 14·6
Almeria		32·0	69	e 6 40	+10	e 10 44?	−58	6 52	pP	15·3
Clermont-Ferrand		36·7	55	7 12	+ 2	12 18?	−36	—	—	—
Florissant		40·8	295	e 7 43	− 2	e 13 57	+ 1	—	—	—
Potsdam		44·0	45	e 8 0	−11	—	—	e 8 12	?	e 20·3
La Paz	z.	54·5	212	9 33	+ 1	—	—	—	—	—
Tucson		58·4	291	i 10 2	+ 2	—	—	i 10 22	?	—
Haiwee		62·7	297	e 11 4	+35	—	—	—	—	—
Mount Wilson	z.	63·4	295	e 10 33	− 1	—	—	—	—	—
Pasadena	z.	63·6	295	e 10 31	− 4	—	—	—	—	e 31·9
Santa Barbara	z.	64·6	296	e 11 0	+19	—	—	—	—	—

Additional readings :—
Granada P_cP = +10m.25s.
Almeria P_cP = +10m.32s.
Tucson i = +10m.11s.
Long waves were also recorded at Salt Lake City, Bozeman, and Harvard.

July 23d. 21h. 4m. 41s. Epicentre 14°·4N. 93°·7W. (as on 1939 March 20d.).

$A = -·0625$, $B = -·9670$, $C = +·2471$; $\delta = +5$; $h = +6$;
$D = -·998$, $E = +·065$; $G = -·016$, $H = -·247$, $K = -·969$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca		3·9	312	i 1 11	P*	—	—	—	—	—
Vera Cruz	N.	5·3	335	i 1 35	P*	—	—	—	—	—
Tacubaya	N.	7·2	314	1 56	+ 7	—	—	—	—	—
Merida		7·5	30	e 2 21	P_g	—	—	—	—	—
Guadalajara	N.	11·1	306	e 2 3	−40	—	—	—	—	—
Columbia		22·6	27	e 4 48	−15	e 9 15	+ 8	e 5 24	PP	i 10·8
Tucson		23·7	322	i 5 15	+ 1	i 9 36	+ 9	i 5 47	PP	e 12·7
St. Louis		24·3	7	e 5 20	0	i 9 42	+ 5	—	—	—
Florissant		24·5	7	i 5 19	− 3	e 9 45	+ 5	—	—	—
Lincoln		26·5	358	e 5 40	− 1	e 10 25	+11	—	—	e 17·6
San Juan		26·7	76	e 5 44	+ 1	i 11 12	SS	—	—	i 11·5
Chicago U.S.C.G.S.		27·8	7	e 5 48	− 5	e 10 28	− 7	—	—	e 19·8
Riverside	Z.	29·0	316	e 6 2	− 2	—	—	—	—	—
Mount Wilson		29·6	316	e 6 8	− 1	—	—	—	—	—
Pasadena		29·6	316	i 6 8	− 1	i 11 8	+ 4	—	—	e 14·3
Philadelphia		30·2	29	e 6 8	− 6	e 10 55	−18	e 7 6	PP	e 15·0
Haiwee	E.	30·7	319	e 6 14	− 5	—	—	—	—	—
Salt Lake City		30·7	332	i 6 20	+ 1	e 11 20	− 1	e 13 43	SSS	e 14·3
Santa Barbara		30·8	314	i 6 18	− 2	—	—	—	—	—
Fordham		31·5	29	e 6 24	− 2	—	—	—	—	—
Tinemaha		31·5	320	i 6 25	− 1	—	—	—	—	—
Logan		31·5	333	e 6 27	+ 1	e 11 29	− 5	—	—	e 17·6
Huancayo		32·0	144	i 6 35	+ 5	i 11 50	+ 8	i 13 32	SS	i 14·7
Harvard		33·9	30	i 6 44	− 3	e 12 35	+24	—	—	e 15·3
Santa Clara	E.	33·9	318	e 8 38	PPP	e 12 48	+37	—	—	e 17·9
Ottawa		34·4	21	e 6 49	− 2	e 12 19?	0	—	—	19·3
Bozeman		34·5	338	i 6 54	+ 2	i 12 23	+ 3	i 8 13	PP	e 19·2
Berkeley		34·5	318	i 7 44	+52	i 12 25	+ 5	—	—	e 16·0
San Francisco		34·5	318	i 7 19?	+27	—	—	—	—	—
Butte		35·3	339	i 6 59	0	e 12 33	0	—	—	e 17·2
Ukiah		35·8	319	e 8 33	PP	i 12 46	+ 5	—	—	e 17·8
East Machias		37·6	31	e 7 16	− 2	e 13 19	+11	e 8 44	PP	e 17·6
Seven Falls		37·8	25	—	—	e 12 37?	−34	e 17 19?	?	24·3
La Paz	Z.	39·8	138	7 50	+14	—	—	—	—	—
Seattle		40·8	330	—	—	e 18 19	?	—	—	e 23·1
Victoria		41·8	331	e 8 19?	+26	e 14 19?	+ 8	—	—	22·3
College		62·2	337	—	—	e 18 54	+ 3	e 22 21	SS	e 29·9
Scoresby Sund		70·5	20	i 11 14	− 4	e 20 25	− 7	—	—	e 32·3
Coimbra		77·3	52	e 12 1	+ 3	e 21 59	+11	—	—	39·8
Toledo		80·7	52	e 12 17	+ 1	—	—	15 34	PP	35·5
Kew		81·0	39	e 12 20	+ 2	e 22 30	+ 3	e 30 19?	SSS	e 38·3
Granada		81·5	54	12 21a	0	i 22 33	+ 1	15 52	PP	39·9
Bergen		82·0	30	—	—	e 22 44?	+ 7	—	—	—
Almeria		82·5	55	e 12 19	− 7	22 20	−22	12 43	pP	35·3
Paris		83·3	42	e 12 30	0	e 23 0	+10	—	—	40·3
Uccle		84·0	40	e 12 34	+ 1	e 23 0	+ 3	—	—	e 41·3
De Bilt		84·1	38	e 12 36a	+ 2	e 23 5	+ 7	—	—	e 40·3
Clermont-Ferrand		84·5	45	12 36?	0	—	—	—	—	—
Copenhagen		87·1	33	e 12 52	+ 3	23 22	− 6	—	—	41·3
Stuttgart		87·6	40	e 13 53	+62	—	—	—	—	—
Upsala		88·0	29	—	—	e 23 41?	+ 5	—	—	e 44·3
Potsdam		88·6	36	e 12 59k	+ 3	i 23 49	+ 6	—	—	e 41·3
Triest		91·6	42	e 13 15	+ 5	e 23 24	[−18]	—	—	e 37·3
Warsaw		93·1	34	e 13 20	+ 3	e 23 53	[+ 2]	e 17 2	PP	e 49·3
Bucharest		100·0	39	—	—	e 24 19?	[− 8]	—	—	53·3

For Notes see next page.

NOTES TO JULY 23d. 21h. 4m. 41s.

Additional readings :—
Columbia e = +9m.31s.
Tucson e = +5m.17s., i = +5m.35s., +5m.54s., and +6m.26s., e = +7m.34s. and +7m.59s., i = +10m.8s. and +11m.41s., e = +11m.45s.
San Juan e = +7m.10s. and +7m.53s.
Philadelphia e = +6m.53s., ePPP = +7m.35s., e = +11m.37s. and +14m.3s.
Salt Lake City i = +11m.25s.
Huancayo e = +9m.54s. and +11m.2s.
Bozeman i = +7m.31s.
Berkeley iPNZ = +7m.49s.
East Machias eSS = +16m.4s.
Scoresby Sund e = +16m.36s.
Granada iP = +12m.25s.
Almeria PP = +15m.48s., PPP = +17m.19s., S_cS = +22m.44s., SS = +27m.28s.
Potsdam iSZ = +23m.52s.
Triest iS? = +23m.55s., i = +24m.16s.
Warsaw eZ = +20m.33s., eE = +24m.0s.
Long waves were also recorded at Stonyhurst, Sitka, Honolulu, and Toronto.

July 23d. Readings also at 5h. (near Zurich and Chur), 6h. (La Paz), 7h. (near Chur), 9h. (Pittsburgh), 12h. (near Andijan), 13h. (Jena and near Andijan), 16h. (near Mizusawa), 18h. (Tinemaha and Riverside), 19h. (near Almata, Tashkent, Andijan, and Clermont-Ferrand), 21h. (near Branner, Lick, and Berkeley).

July 24d. 6h. 20m. 5s. Epicentre 21°·0S. 169°·5E.
(Foreshock of 25d. 9h. and as on 1941 June 29d.).

A = −·9188, B = +·1703, C = −·3563 ; δ = +15 ; h = +4;
D = +·182, E = +·983 ; G = +·350, H = −·065, K = −·934.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		16·4	165	—	—	8 27?	?	—	—	9·9
Arapuni		17·8	165	—	—	8 25?	SSS	—	—	—
Riverview		20·6	228	i 4 44a	+ 1	i 8 37	+ 8	—	—	e 10·4
Sydney		20·6	228	—	—	i 8 19	−10	—	—	—
Wellington		20·7	169	4 38	− 6	8 21	−10	5 1	PP	9·9
Christchurch		22·6	174	4 41	−22	9 0	− 7	9 42	0	11·6
Pasadena	z.	87·9	53	i 12 56	+ 3	—	—	—	—	i 40·4
Mount Wilson	z.	88·1	53	i 12 57	+ 3	—	—	—	—	—
Riverside	z.	88·4	53	e 12 54	− 1	—	—	—	—	—
Ottawa		121·9	49	e 18 55	[− 1]	—	—	—	—	71·9
Warsaw	z.	140·4	330	e 19 29	[− 2]	—	—	—	—	e 77·9
Helwan	z.	141·4	293	e 19 31	[− 2]	—	—	e 22 55	PP	—
Potsdam		143·8	335	e 19 37k	[0]	—	—	—	—	e 73·9
Stuttgart		148·1	336	i 19 49	[+ 5]	—	—	—	—	—
Uccle	z.	148·1	343	i 19 49	[+ 5]	—	—	—	—	—
Kew		148·6	348	e 19 45	[0]	—	—	e 23 22	PP	e 79·9
Chur		149·5	335	e 19 52	[+ 5]	—	—	—	—	—
Zurich		149·5	336	e 19 56	[+ 9]	—	—	—	—	—
Basle		149·8	336	e 19 54	[+ 7]	—	—	—	—	—
Paris		150·4	342	19 55?	[+ 7]	—	—	23 20	PP	78·9
Neuchatel		150·4	336	e 19 52	[+ 4]	—	—	—	—	—
Clermont-Ferrand		152·9	338	20 5	[+13]	—	—	22 55	?	—
Granada		162·8	343	i 20 6a	[+ 3]	45 19	SS	24 39	PP	83·0

Additional readings :—
Riverview iN = +4m.49s., eN = +8m.31s., iZ = +8m.41s.
Wellington i = +5m.19s., P_cPZ = +8m.38s., Q? = +9m.5s.
Potsdam ePN = +19m.43s.
Granada PPS = +37m.55s.
Long waves were also recorded at East Machias, De Bilt, and Ukiah.

July 24d. 10h. 30m. 30s. Epicentre 12°·9N. 91°·4W. (as on 1941 May 11d.).

$A = -·0238$, $B = -·9748$, $C = +·2218$; $\delta = 0$; $h = +6$;
$D = -1·000$, $E = +·024$; $G = -·005$, $H = -·222$, $K = -·975$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	6·6	309	—	—	e 2 40	−18	—	—	—
Vera Cruz	E.	7·7	325	e 2 14?	P*	—	—	—	—	—
Merida	N.	8·2	13	e 2 32	+29	—	—	—	—	—
Tacubaya	E.	9·9	312	2 28	+ 3	—	—	—	—	—
San Juan		24·9	74	e 6 23	PPP	—	—	—	—	e 10·7
Florissant		25·8	2	e 5 32	− 2	e 10 5	+ 3	—	—	—
Tucson		26·2	321	i 5 38	0	e 10 12	+ 3	i 6 2	PP	e 13·2
Chicago U.S.C.G.S.		29·1	5	—	—	e 11 31	+35	—	—	e 11·9
Riverside	Z.	31·6	317	e 6 25	− 1	—	—	—	—	—
Mount Wilson	Z.	32·2	317	e 6 32	0	—	—	—	—	—
Pasadena		32·2	317	e 6 32	0	—	—	—	—	e 19·0
Ottawa		35·0	19	e 6 57	+ 1	(14 30)	SS	—	—	14·5
East Machias		37·8	28	—	—	e 13 54	+43	—	—	e 23·0

Additional readings :—
San Juan e = +7m.33s.
Tucson i = +5m.44s., e = +8m.40s., +10m.18s., and +10m.48s.
Long waves were also recorded at Berkeley, Salt Lake City, Columbia, Paris, Kew, Scoresby Sund, and De Bilt.

July 24d. 13h. 52m. 41s. Epicentre 28°·2N. 129°·3E.

Scale VI at Nake, Scale IV at Yakushima, and Scale II-III at Naha. Macroseismic radius over 300km. Shallow. Epicentre 28°·2N. 129°·3E.
See Seismological Bulletin of the Central Meteorological Observatory, Japan, 1941. Tokyo 1950, p. 32, macroseismic chart p. 32.

$A = -·5590$, $B = +·6830$, $C = +·4701$; $\delta = -4$; $h = +2$;
$D = +·774$, $E = +·633$; $G = -·298$, $H = +·364$, $K = -·883$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nake	0·3	44	0 13a	+ 2	0 20	+ 2	—	—	—
Naha	2·5	216	0 38	− 5	1 15	+ 1	—	—	—
Yakusima	2·5	25	0 45k	+ 2	1 5	− 9	—	—	—
Kagosima	3·5	18	1 4	+ 7	1 40	0	—	—	—
Tomie	4·4	354	1 23	+13	2 33	S_g	—	—	—
Unzendake	4·6	10	1 17	+ 5	2 10	+ 3	—	—	—
Kumamoto	4·7	14	1 19	+ 5	2 16	+ 6	—	—	—
Miyakozima	4·9	228	1 25	P*	1 42	−33	—	—	—
Hukuoka	5·5	10	1 28a	+ 3	2 32	+ 2	—	—	—
Izuka	5·6	12	1 30	+ 3	2 39	+ 6	—	—	—
Simidu	5·6	34	1 29	+ 2	2 24	− 9	—	—	—
Isigakizima	6·0	232	2 27	+55	—	—	—	—	—
Matuyama	6·3	27	1 39	+ 3	2 46	− 4	—	—	—
Koti	6·4	33	1 38	0	3 19	S*	—	—	—
Muroto	6·5	38	1 40	+ 1	2 50	− 5	—	—	—
Hiroshima	6·7	23	2 1	P*	3 24	S*	—	—	—
Husan	6·9	358	2 16	P_g	3 41	S_g	—	—	—
Hamada	7·1	19	2 9	P*	4 30	S_g	—	—	—
Giran	7·6	244	1 55	0	3 34	+11	—	—	—
Siomisaki	7·6	45	1 46	− 9	4 44	S_g	—	—	—
Taihoku	7·6	248	1 54	− 1	3 58	S*	—	—	—
Taikyu	7·6	356	2 0	+ 5	3 40	S*	—	—	—
Sumoto	7·8	37	1 58a	0	3 19	− 9	—	—	—
Wakayama	7·8	38	1 57	− 1	—	—	—	—	—
Karenko	8·1	241	1 57	− 5	3 10	−25	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kobe		8·2	36	2 4a	+ 1	3 43	+ 5	—	—	—
Osaka		8·3	38	1 58	− 6	4 7	S*	—	—	—
Kyoto		8·7	37	2 9	− 1	—	—	—	—	—
Toyooka		8·7	31	2 10	0	4 18	S*	—	—	—
Kameyama		9·0	41	2 16	+ 3	4 49	S_g	—	—	—
Hikone		9·2	38	1 54	−22	5 13	S_g	—	—	—
Taito		9·2	236	3 21	+ 5	4 47	S*	—	—	—
Keizyo		9·5	349	2 29	+ 9	4 24	+14	—	—	—
Nagoya		9·5	41	2 25a	+ 5	4 23	+13	—	—	—
Gihu		9·6	39	2 31	+10	4 14	+ 2	—	—	—
Hamamatu		9·7	46	2 25	+ 3	—	—	—	—	—
Hatidyozima		10·3	57	2 40	+ 8	5 40	S_g	—	—	—
Shizuoka		10·3	47	2 37	+ 5	4 31	+ 1	—	—	—
Misima		10·7	48	2 38	0	—	—	—	—	—
Kohu		10·8	45	2 41	+ 2	5 47	SSS	—	—	—
Hunatu		10·8	45	2 41	+ 2	5 31	SSS	—	—	—
Osima		10·8	50	2 38	− 1	—	—	—	—	—
Toyama		10·8	36	2 48	+ 9	5 18	SSS	—	—	—
Mera		11·2	51	2 47	+ 3	—	—	—	—	—
Wazima		11·2	33	2 45	+ 1	5 23	SSS	—	—	—
Nagano		11·3	39	2 53	+ 7	5 17	SSS	—	—	—
Titizima		11·5	92	2 46	− 2	—	—	—	—	—
Maebasi		11·6	43	2 54	+ 4	5 53	+52	—	—	—
Tokyo Cen. Met. Obs.		11·6	47	2 58	+ 8	—	—	—	—	—
Kakioka		12·2	46	2 58	0	—	—	—	—	—
Utunomiya		12·2	44	2 57	− 1	—	—	—	—	—
Aikawa		12·3	35	2 59	0	—	—	—	—	—
Dairen		12·4	331	3 3	+ 2	—	—	—	—	—
Mito		12·5	46	3 7	+ 5	—	—	—	—	—
Onahama		13·1	46	3 22	+12	—	—	—	—	—
Hukusima		13·3	42	3 19	+ 6	—	—	—	—	—
Sendai		13·9	41	3 22	+ 1	—	—	—	—	—
Akita		14·5	35	3 35k	+ 7	—	—	—	—	—
Mizusawa	N.	14·7	39	e 3 27k	− 4	6 19	+ 3	—	—	—
Vladivostok		15·1	7	i 3 51	+15	—	—	—	—	—
Manila	Z.	15·6	211	i 3 45a	+ 2	i 6 51	+14	—	—	—
Aomori		15·7	34	3 50k	+ 6	—	—	—	—	—
Mori		16·6	30	4 17	+21	—	—	—	—	—
Sapporo		17·7	30	4 9	− 1	—	—	—	—	—
Irkutsk		30·4	327	6 14	− 2	—	—	—	—	—
Calcutta	N.	37·3	270	e 7 22	+ 6	i 13 1	− 3	i 8 37	PP	e 17·9
Medan		38·1	234	7 25	+ 3	13 33	+17	—	—	—
Batavia		40·5	214	7 37	− 5	i 13 46	− 6	—	—	—
Agra	E.	45·2	280	9 12	+52	e 15 42	+41	19 3	SSS	—
Hyderabad		47·8	267	8 39	− •2	15 27	−11	—	—	—
Tashkent		50·1	301	e 8 55	− 4	15 58	−12	—	—	—
Colombo	E.	51·2	254	9 2	− 5	16 14	−11	—	—	27·8
Kodaikanal	E.	51·7	260	i 9 9	− 2	e 16 26	− 6	11 3	PP	—
Bombay		52·2	271	i 9 11	− 4	e 16 31	− 8	—	—	25·3
Sverdlovsk		55·3	320	9 33	− 5	17 9	−12	—	—	—
Baku		64·7	303	e 10 45	+ 3	19 17	− 5	—	—	—
Riverview		65·1	159	i 3 55k	?	e 26 43	SSS	—	—	e 32·2
Grozny		66·8	307	10 53	− 3	19 45	− 3	—	—	—
Moscow		68·2	321	11 7	+ 3	20 1	− 3	—	—	—
Pulkovo		70·4	327	e 11 13	− 5	20 21	− 9	—	—	—
Upsala		76·0	331	e 11 40?	−11	e 21 23	−11	—	—	e 36·3
Ksara		77·5	300	e 12 2	+ 3	e 21 45?	− 5	—	—	—
Warsaw		78·4	323	e 12 0	− 4	e 21 53	− 7	—	—	e 41·3
Bucharest		79·4	314	e 12 7k	− 2	e 22 7	− 3	22 44	PS	—
Scoresby Sund		79·5	350	—	—	i 22 6	− 5	23 16	PPS	e 33·1

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		79·8	40	e 12 13?	+ 1	e 22 13?	− 1	—	—	45·3
Bergen		80·6	335	e 12 9?	− 7	e 22 13	−10	—	—	e 38·3
Copenhagen		80·7	329	i 12 13	− 3	22 17	− 7	—	—	—
Sofia		82·0	313	e 12 23?	0	e 22 34	− 3	—	—	—
Potsdam		82·4	326	i 12 22k	− 3	i 22 36	− 5	i 12 35	P_cP	42·3
Helwan		82·7	299	i 12 24a	− 3	22 39	− 5	12 37	P_cP	—
Jena	z.	84·0	324	e 12 31	− 2	—	—	i 12 43	P_cP	—
Aberdeen	E.	85·6	335	—	—	i 23 2	[− 3]	—	—	e 44·5
Triest		86·1	320	i 12 44	0	i 23 0	[− 8]	i 23 37	PS	e 46·9
Berkeley	z.	86·2	48	i 12 42	− 2	e 23 22	+ 3	i 12 57	pP	—
De Bilt		86·3	328	i 12 41k	− 4	i 23 6	[− 3]	e 16 9	PP	e 45·3
Stuttgart		86·6	324	i 12 43a	− 3	e 23 4	[− 8]	—	—	e 47·3
Lick	N.	86·9	48	e 12 45	− 3	—	—	—	—	—
Butte		87·3	37	i 12 49	− 1	i 23 27	− 2	—	—	e 41·9
Strasbourg		87·4	325	e 12 47	− 3	i 23 29	− 1	—	—	53·3
Chur		87·6	323	e 12 54	+ 3	—	—	—	—	—
Uccle		87·6	328	12 47k	− 4	23 11	[− 7]	e 16 31	PP	e 44·3
Zurich		87·8	324	e 13 5a	+13	e 23 23	[+ 4]	—	—	—
Basle		88·2	324	e 12 51	− 3	e 23 32	− 6	—	—	—
Bozeman		88·3	37	e 12 51	− 4	i 23 37	− 2	e 32 57	SSS	e 39·9
Neuchatel		88·9	324	e 12 54	− 4	—	—	—	—	—
Kew		89·2	330	i 12 56	− 3	i 23 39	− 8	e 16 24	PP	e 41·3
Tinemaha		89·3	47	e 13 2	+ 3	—	—	—	—	—
Paris		89·8	327	12 59	− 3	23 23	[− 9]	16 44	PP	40·3
Santa Barbara		89·8	50	e 13 0	− 2	—	—	e 13 13	pP	—
Haiwee		90·1	48	e 13 2	− 1	—	—	—	—	—
Logan		90·4	40	13 6	+ 2	e 23 48	−10	—	—	—
Ivigtut		90·9	358	—	—	e 24 3	0	—	—	—
Salt Lake City		91·0	38	—	—	e 23 58	− 5	e 23 25	SKS	—
Pasadena		91·0	49	i 13 4	− 3	—	—	i 13 19	pP	e 42·1
Mount Wilson	z.	91·1	49	i 13 4	− 4	—	—	i 13 19	pP	—
Riverside	z.	91·4	49	i 13 7	− 2	—	—	—	—	—
Clermont-Ferrand		91·7	324	e 12 20?	−50	—	—	—	—	e 52·7
Tucson		97·0	48	i 13 33	− 2	—	—	e 13 51	pP	—
Toledo		99·6	325	e 13 38	− 8	—	—	e 18 11	PP	47·0
Almeria		101·0	321	14 2	+ 9	21 39	?	16 59	PP	50·3
Granada		101·3	323	e 14 7	+13	i 24 16	[−17]	—	—	56·3
Lisbon		102·9	327	—	—	25 19	{+ 4}	—	—	55·1
Ottawa		103·3	17	e 18 7?	PP	e 24 43?	[0]	—	—	44·3
East Machias		105·8	11	e 19 5	PP	e 24 44	[−10]	e 27 40	PS	e 43·7
Fordham		108·0	17	—	—	e 26 24	{+33}	e 28 11	PS	—
Huancayo		151·9	59	i 19 56	[+ 6]	e 26 47	[− 9]	—	—	—
La Paz	z.	160·1	57	20 19	[+18]	—	—	—	—	—

Additional readings :—
Mizusawa SE = +6m.22s.
Calcutta iSSN = +15m.13s.
Medan iE = +14m.28s.
Bombay eN =iE = +9m.25s.
Warsaw eE = +12m.3s., eZ = +12m.15s. and +18m.32s.
Bucharest SSEN = +26m.46s., SSSN = +30m.27s.
Scoresby Sund e = +27m.48s.
Potsdam iPEN = +12m.25s., iP_cPN = +12m.38s.
Helwan PPEZ = +15m.39s., iEZ = +15m.54s.
Jena eN = +12m.37s.
Stuttgart i = +13m.2s.
Butte i = +13m.4s., e = +31m.16s.
Uccle iSKKSN = +23m.28s.
Kew iSKS = +23m.19s., ePS = +24m.32s., ePPSEN = +25m.10s., eSS = +29m.49s.?
Paris P_cP = +13m.14s.?, iPS = +24m.52s., e = +37m.23s.
Mount Wilson eZ = +16m.41s.
Almeria PKS = +18m.5s., SKS = +20m.39s., PS = +23m.59s., SS = +29m.58s. Phases wrongly identified.
East Machias eS = +26m.4s., e = +33m.38s., +33m.45s., and +42m.32s.
Huancayo e = +20m.7s., +20m.15s., and +20m.36s., i = +21m.30s.
Long waves were also recorded at Wellington, Honolulu, Seven Falls, Budapest, Stonyhurst, and San Fernando.

July 24d. Readings also at 1h. (Fresno), 2h. (near La Paz and Salt Lake City), 3h. (La Paz (2)), 5h. (Columbia, Ottawa, Balboa Heights, San Juan, Paris, Kew, Salt Lake City, Tucson, and Huancayo), 8h. (near Medan, Merida, Vera Cruz, and Tucson), 10h. (Guadalajara), 12h. (near Mizusawa), 13h. (near Mizusawa and Christchurch), 15h. (Huancayo and Toledo), 16h. (near Harvard), 17h. (Amboina and Coimbra), 19h. (La Paz), 20h. (Andijan), 21h. (Riverview, Wellington, and Christchurch), 22h. (Potsdam, Clermont-Ferrand, Paris, Kew, and Port au Prince), 23h. (near Berkeley).

July 25d. 4h. 20m. 5s. Epicentre 9°·5N. 126°·7E. Focus at the base of superficial layers. (as on 1940 Sept. 7d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila	z.	7·5	313	e 2 0	+10	3 25	+10	i 3 43	SS	—
Batavia		25·2	234	i 5 23	− 1	i 9 52	+ 7	—	—	—
Medan		28·4	262	i 5 46	− 8	i 12 51	SSS	—	—	i 16·8
Tashkent		59·5	314	e 9 57	− 5	18 10	+ 2	—	—	—
Sverdlovsk		69·1	329	i 11 6	+ 1	20 7	+ 1	—	—	—
Baku		73·9	310	e 11 13?	−20	e 20 11?	−51	—	—	—
Moscow		81·7	326	e 12 18	+ 1	e 22 23	− 2	—	—	—
Pulkovo		85·1	330	e 12 36	+ 2	e 23 1	+ 2	—	—	—
Warsaw		92·0	322	—	—	e 23 55?	− 8	e 24 55?	?	e 54·9
Potsdam		96·5	326	—	—	e 24 27	−15	—	—	e 49·9

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

July 25d. 9h. 48m. 34s. Epicentre 21°·0S. 169°·5E. (as on July 24d.).

$A = -·9188$, $B = +·1703$, $C = -·3563$; $\delta = +15$; $h = +4$;
$D = +·182$, $E = +·983$; $G = +·350$, $H = -·065$, $K = -·934$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·3	244	i 3 48	− 4	i 7 0	+ 7	—	—	—
Arapuni		17·8	165	—	—	7 56?	SS	—	—	—
Apia		19·2	72	e 4 35	+ 7	8 17	+18	4 48	PP	9·8
Riverview		20·6	228	i 4 51a	+ 8	i 8 43	+14	—	—	e 9·9
Sydney		20·6	228	—	—	i 8 59	SS	—	—	—
Wellington		20·7	169	4 47	+ 3	8 47	+16	5 18	PP	10·9
Christchurch		22·6	174	5 13a	+10	9 34	SS	10 18	Q	12·0
Honolulu		52·8	39	—	—	e 16 57	+10	e 19 34	S_eS	e 23·7
Batavia		62·3	275	e 9 19	−67	18 40	−12	—	—	—
Medan		73·5	281	—	—	20 45	−21	—	—	—
Berkeley		86·8	48	i 12 43	− 4	e 24 40	PPS	—	—	e 40·5
Pasadena		87·9	53	e 12 48	− 5	—	—	i 16 24	PP	e 40·4
Mount Wilson		88·1	53	i 12 49a	− 5	—	—	e 16 25	PP	—
Riverside	z.	88·4	53	i 12 51	− 4	—	—	—	—	—
Haiwee		89·0	51	i 12 55	− 3	—	—	—	—	—
Tinemaha		89·2	50	e 12 56	− 3	—	—	—	—	—
Tucson		92·7	57	i 13 11	− 4	e 25 10	PS	i 16 50	PP	e 42·7
Bozeman		97·7	44	—	—	e 26 33	PS	—	—	e 45·1
Ottawa		121·9	49	e 18 52	[− 4]	—	—	—	—	59·4
Warsaw		140·4	330	e 19 26?	[− 5]	—	—	e 23 26?	PKS	e 75·4
Helwan	z.	141·4	293	e 19 32	[− 1]	—	—	e 23 41	PKS	—
Bucharest		141·8	317	e 21 26?	?	e 23 9	PKS	—	—	—
Potsdam		143·8	335	i 19 29k	[− 8]	—	—	—	—	e 71·4
Sofia		144·4	315	e 19 40	[+ 2]	—	—	—	—	e 57·9
Jena	z.	145·5	334	i 19 34	[− 6]	—	—	—	—	—
De Bilt		146·7	343	i 19 39a	[− 3]	—	—	i 19 49	pPKP	i 76·4
Stuttgart		148·1	336	i 19 43a	[− 1]	—	—	—	—	—
Uccle	z.	148·1	343	i 19 39	[− 5]	—	—	—	—	—
Triest		148·1	328	e 19 43	[− 1]	—	—	—	—	—
Kew	z.	148·6	348	i 19 59	[+14]	—	—	i 20 9	PKP_2	e 71·4

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Strasbourg		148·8	337	19 47	[+ 2]	—	—	—	—	—
Chur		149·5	335	19 46	[− 1]	—	—	—	—	—
Zurich		149·5	336	e 19 46a	[− 1]	—	—	—	—	—
Basle		149·8	336	e 19 46	[− 1]	—	—	—	—	—
Paris		150·4	342	e 19 46?	[− 1]	—	—	23 22?	PP	72·4
Neuchatel		150·4	336	e 19 48	[0]	—	—	—	—	—
Clermont-Ferrand		152·9	338	i 19 55	[+ 4]	—	—	—	—	—
Toledo		160·4	345	e 19 51	[−10]	26 48	[−17]	—	—	—
Almeria		162·7	337	e 20 4	[+ 1]	27 15	[+ 8]	23 37	PKS	85·4
Granada		162·8	342	i 20 0	[− 3]	e 27 13	[+ 6]	i 24 33	PP	e 85·7

Additional readings :—
Apia SS = +8m.59s.
Riverview iZ = +5m.3s., iE = +9m.5s.
Wellington iZ = +5m.46s., P_cPZ = +8m.58s.
Honolulu e = +22m.4s.
Tucson e = +13m.44s., +14m.34s., +17m.55s., and +21m.3s.
Warsaw eN = +20m.26s.
Potsdam eN = +19m.44s.
Jena iZ = +19m.44s.
De Bilt iPP = +23m.6s.
Stuttgart i = +19m.53s., e = +21m.5s.
Uccle iPKPZ = +19m.42s., iZ = +19m.53s., eZ = +20m.32s.
Strasbourg i = +19m.56s.
Zurich i = +19m.56s.
Basle e = +21m.38s.
Paris $iPKP_2$? = +20m.0s.
Almeria PKP_2 = +20m.52s., PPP = +24m.32s., PPP = +28m.12s., SKKS = +31m.17s., PPS = +37m.44s., SS = +44m.31s., SSS = +50m.44s.
Granada PKP_2 = +21m.4s., SKKS = +31m.22s., SKSP = +35m.23s., PPS = +37m.49s., eSS = +44m.34s.
Long waves were also recorded at Salt Lake City.

July 25d. Readings also at 0h. (near Bucharest and near Balboa Heights), 1h. (Toledo), 2h. (Salt Lake City, near Sofia, and Riverview), 7h. (near Mizusawa), 9h. (near La Paz), 10h. (near Lick), 11h. (near Medan, Agra, Bombay, Calcutta, and Kodaikanal), 12h. (Kew), 18h. (Ksara).

July 26d. 4h. 28m. 33s. Epicentre 9°·5N. 126°·7E. Focus at the base of the Superficial Layers. (as on 25d.).

A = −·5895, B = +·7909, C = +·1640 ; δ = −7 ; h = +7.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Manila	Z.	7·5	313	i 2 8a	+18	i 4 9	+54	—	—	—
Amboina		13·2	173	e 2 28	−40	4 26	−68	—	—	—
Batavia		25·2	234	5 9	−15	9 22	−23	—	—	—
Medan		28·4	262	5 59	+ 5	—	—	—	—	—
Irkutsk		46·4	341	e 8 32	+ 7	—	—	—	—	—
Agra	E.	49·1	299	e 8 54	+ 8	e 16 4	+16	—	—	—
Bombay	E.	52·9	287	e 9 10	− 5	e 16 34	− 6	20 46	SS	26·4
Tashkent		59·5	314	e 10 3	+ 1	—	—	—	—	—
Sverdlovsk		69·1	329	i 11 5	0	20 17	+11	—	—	—
Baku		73·9	310	11 32	− 1	21 9	+ 7	—	—	—
Moscow		81·7	326	12 14	− 3	22 30	+ 5	—	—	—
Pulkovo		85·1	330	12 31	− 3	23 2	+ 3	—	—	—
Helwan	Z.	90·0	300	12 52	− 5	—	—	—	—	—
Warsaw		92·0	322	e 13 2	− 5	—	—	—	—	e 51·4
Potsdam		96·5	326	e 13 27	0	e 24 27	−15	e 17 27	PP	e 46·4
Kew		104·1	329	e 18 43	PP	e 29 7	PPS	—	—	e 49·5
Paris		104·1	326	—	—	e 27 49	PS	—	—	47·5
Tucson		111·2	50	e 19 12	PP	e 28 59	PS	i 19 35	PP	e 57·7

Additional readings :—
Bombay iE = +9m.21s., eE = +23m.13s.
Warsaw eE = +14m.0s., eN = +14m.27s.
Tucson e = +52m.1s.
Long waves were also recorded at De Bilt and Uccle,

July 26d. 20h. 11m. 19s. Epicentre 15°·6N. 145°·7E.

$A = -·7960$, $B = +·5430$, $C = +·2673$; $\delta = -9$; $h = +6$;
$D = +·564$, $E = +·826$; $G = -·221$, $H = +·151$, $K = -·964$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Titizima		11·9	345	e 2 54	0	—	—	—	—	—
Palau		13·7	234	3 19	+ 1	5 57	+ 5	—	—	—
Nake		19·7	314	4 33	− 1	8 20	+10	—	—	—
Yokohama		20·5	344	4 46	+ 4	8 31	+ 4	—	—	—
Tokyo Cen. Met. Obs.		20·7	346	4 46	+ 2	9 9	SS	5 27	PPP	11·4
Miyazaki		20·8	323	(e 4 17)	−28	(8 9)	−24	—	—	—
Sumoto		21·1	337	4 49	+ 1	8 55	+16	—	—	—
Gihu		21·3	342	4 50	0	8 37	− 6	—	—	—
Matuyama		21·6	330	e 4 54	0	8 55	+ 6	—	—	—
Nagano		22·0	344	e 4 58	0	9 8	+12	—	—	—
Hukuoka		22·6	326	e 5 5	+ 2	9 16	+ 9	—	—	—
Sendai		23·0	352	5 7	0	9 18	+ 4	—	—	—
Mizusawa		23·8	352	e 5 12a	− 3	9 32	+ 4	—	—	—
Manila	Z.	23·9	271	i 5 18a	+ 2	i 9 43	+13	—	—	12·5
Karenko		24·1	294	e 5 21	+ 3	9 6	−28	—	—	—
Amboina		25·9	223	5 31	− 4	9 25	−39	i 6 33	PP	—
Sapporo		27·6	354	6 27	+36	10 40	+ 8	—	—	—
Zinsen		27·6	325	5 53	+ 2	10 45	+13	—	—	—
Vladivostok		29·9	340	i 6 7	− 5	—	—	i 6 46	PP	—
Brisbane	E.	43·4	170	i 8 4	− 2	i 14 35	0	—	—	—
Batavia		44·2	243	i 8 11	− 1	14 36	− 9	—	—	—
Medan		47·8	261	i 8 48	+ 7	i 15 46	+ 8	—	—	—
Irkutsk		49·1	327	i 8 49	− 2	16 2	+ 6	—	—	—
Riverview		49·4	174	i 8 55a	+ 2	—	—	—	—	e 22·8
Sydney		49·4	174	e 9 38	+45	—	—	—	—	—
Honolulu		53·7	75	e 9 30	+ 4	e 16 50	− 9	e 17 4	PS	e 22·1
Calcutta	N.	54·4	287	i 9 31	0	i 17 10	+ 1	—	—	e 26·4
Auckland		59·0	153	13 41?	PPP	—	—	—	—	28·7
Arapuni		60·3	153	13 41?	PPP	18 41?	PS	—	—	28·7
Wellington		62·7	155	e 13 41?	PPP	i 19 52	PS	—	—	36·7
Dehra Dun	N.	63·2	296	e 10 35?	+ 3	e 19 37	PS	—	—	—
Agra	E.	63·4	292	i 10 30	− 4	19 5	− 1	23 0	SS	—
Christchurch		63·8	158	(10 17)	−19	10 17	P	—	—	33·5
Hyderabad		64·2	282	10 39	0	19 14	− 2	12 56	PP	31·1
Colombo	E.	64·9	270	10 45	+ 2	19 31	+ 7	—	—	38·8
Frunse		65·8	310	e 10 48	− 1	—	—	—	—	—
College		66·0	25	e 10 50	0	i 19 33	− 5	e 20 52	ScS	e 27·8
Kodaikanal	E.	66·5	275	i 10 51k	− 3	i 19 43	− 1	—	—	—
Bombay		69·2	284	i 11 12	+ 2	i 20 14	− 2	i 13 46	PP	33·0
Tchimkent		69·4	309	i 11 9	− 3	i 20 18	0	—	—	—
Tashkent		69·7	308	i 11 14	0	e 20 25	+ 3	—	—	—
Sitka		71·1	34	e 11 17	− 5	e 20 38	0	—	—	e 30·3
Sverdlovsk		74·4	325	i 11 39	− 3	i 21 9	− 7	—	—	—
Victoria		79·1	43	12 8	0	22 10	+ 3	—	—	32·7
Seattle		80·0	44	—	—	e 22 57	ScS	—	—	e 37·6
Ukiah		81·1	52	e 12 19	+ 1	i 22 30	+ 2	e 27 49	SS	e 34·9
Berkeley		82·2	53	i 12 25	+ 1	e 22 39	0	i 15 37	PP	e 33·4
Santa Clara		82·5	53	i 12 21	− 5	—	—	—	—	e 40·8
Lick	N.	82·8	53	e 12 27	0	e 23 17	+32	—	—	—
Baku		84·4	310	12 35	− 1	23 0	− 1	—	—	—
Santa Barbara		85·0	56	i 12 39	+ 1	—	—	—	—	—
Tinemaha		85·4	53	e 12 43	+ 3	e 23 13	+ 2	—	—	—
Haiwee		85·9	54	i 12 45	+ 2	—	—	—	—	—
Pasadena		86·3	56	i 12 45	0	i 23 21	+ 1	e 16 8	PP	e 37·7
Mount Wilson		86·4	56	e 12 46	+ 1	—	—	—	—	—
Grozny		86·5	313	e 12 42	− 4	—	—	—	—	—
Riverside		87·0	56	i 12 48	0	—	—	—	—	—
Moscow		87·1	327	12 46	− 3	23 26	− 2	—	—	—
La Jolla		87·4	57	e 12 51	+ 1	—	—	—	—	—
Palomar	Z.	87·6	56	i 12 51	0	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman		88·0	43	i 12 52	− 1	i 23 31	− 5	i 16 21	PP	e 37·5
Logan		88·8	46	i 12 59	+ 2	e 23 39	− 5	i 16 24	PP	—
Pulkovo		88·8	333	e 12 53	− 4	—	—	—	—	—
Salt Lake City		89·1	48	i 12 58	0	i 23 38	− 8	17 3	PP	e 37·8
Theodosia		92·8	317	e 13 34	+18	—	—	—	—	—
Tucson		92·8	55	e 13 16	0	e 24 5	−14	i 17 15	PP	38·9
Scoresby Sund		93·7	356	e 13 7	−13	—	—	e 16 29	PP	e 40·3
Upsala		94·0	336	e 14 41?	?	e 24 59?	+29	e 30 44	SS	e 41·7
Warsaw		97·3	329	e 13 35a	− 1	27 13	PPS	17 33	PP	e 48·7
Ksara		97·7	307	e 13 35?	− 3	26 42	PS	17 42	PP	—
Bergen		97·9	341	e 16 41?	?	26 41?	PS	—	—	e 45·7
Bucharest		98·9	320	e 13 41?	− 2	27 41	PPS	17 51	PP	32·7
Potsdam		100·9	332	e 13 41?	−11	i 27 58	PPS	i 18 2	PP	e 51·7
Sofia		101·5	319	e 14 5?	+10	—	—	e 18 9	PP	—
Prague		101·8	329	e 18 5	PP	e 27 11?	PS	—	—	e 48·7
Belgrade		102·0	323	e 19 30	PPP	e 28 27	PPS	—	—	e 49·5
Helwan		102·3	305	13 58	− 1	25 49	+ 9	33 1	SS	—
Jena	N.	102·6	331	e 18 11	PP	—	—	28 11	PPS	e 48·7
Aberdeen		102·7	343	e 16 54	?	—	—	e 17 54	PP	e 49·7
De Bilt		104·3	336	i 14 5	− 3	i 33 21	SS	18 25	PP	e 46·7
Florissant		104·7	42	e 14 9	0	e 28 0	PS	e 18 27	PP	—
Chicago U.S.C.G.S.		104·7	38	e 18 41	PP	e 26 1	+ 1	27 39	PS	e 45·3
Stuttgart		105·2	332	e 17 11	PKP	e 33 31	SS	18 29	PP	e 52·7
Triest		105·2	327	e 17 15	PKP	i 27 44	PS	28 36	PS	e 48·7
Stonyhurst		105·7	341	e 18 31	PP	e 26 6	− 2	i 27 56	PS	e 49·7
Uccle		105·7	336	e 17 8	PKP	—	—	e 18 29	PP	48·7
Strasbourg		106·0	332	e 17 41	PKP	—	—	—	—	55·7
Kew		106·9	338	e 14 41?	P	29 19	PPS	e 18 56	PP	e 43·7
Paris		108·0	335	e 14 24	P	—	—	e 18 51	PP	55·7
Ottawa		108·6	28	e 18 41?	PP	—	—	—	—	46·7
Seven Falls		109·5	24	e 18 59?	PP	e 29 35	PPS	—	—	45·7
Clermont-Ferrand		110·2	333	e 17 41	[−53]	—	—	19 10	PP	—
Harvard		112·8	27	e 19 24	PP	25 21	[− 3]	e 21 16	PPP	e 55·7
Fordham		112·9	30	i 19 27	PP	i 29 6	PS	—	—	—
Philadelphia		112·9	32	e 18 50	[+11]	e 25 57	{−28}	e 19 11	PP	e 50·6
Columbia		113·6	41	e 19 5	[+25]	e 29 10	PS	—	—	—
Toledo		118·0	334	e 19 59	PP	—	—	24 28	?	54·9
Coimbra		119·5	337	e 18 26	[−26]	30 3	PS	20 17	PP	55·7
Almeria		119·8	331	20 1	[+ 9]	26 57	{−16}	31 21	PPS	57·7
Granada		120·0	332	e 17 8k	?	27 19	{+ 5}	i 20 16	PP	67·4
Lisbon		121·1	337	20 15	PP	—	—	—	—	62·6
San Juan		133·9	43	e 20 48	?	e 27 8	[+39]	e 21 52	PP	i 55·3
Huancayo		140·0	89	e 19 28	[− 3]	i 41 36	SSP	e 22 29	PP	i 64·8
La Paz	Z.	147·5	96	19 51	[+ 8]	—	—	—	—	—

Additional readings :—
Tokyo i = +7m.39s. and +8m.39s.
Miyazaki readings have been increased by 8m.
Mizusawa SE = +9m.37s.
Amboina iEN = +8m.13s.
Batavia iPEN = +8m.14s., iEN = +11m.44s.
Medan iPN = +8m.53s.
Honolulu i = +9m.41s.
Christchurch S = +11m.33s., SS = +18m.37s., Q = +27m.15s. Phases wrongly identified.
Hyderabad PSE = +19m.25s., S_cSE = +20m.27s., SS = +23m.27s.
College e = +12m.43s. and +15m.31s.
Bombay iE = +11m.20s., iEN = +11m.34s., iN = +12m.6s., iE = +20m.40s. and +23m.45s.
Ukiah e = +12m.26s., +17m.58s., +29m.16s., and +33m.26s.
Berkeley eN = +12m.33s., iPPZ = +14m.7s., iSE = +22m.43s.
Santa Clara eE = +37m.30s.
Pasadena iZ = +12m.55s.
Bozeman i = +14m.32s., e = +15m.28s., ePPP = +18m.12s., iPPS = +25m.7s., i = +31m.26s.
Logan e = +13m.53s., +16m.11s. and +23m.41s.
Salt Lake City i = +24m.18s.
Tucson i = +13m.34s. and +14m.16s., e = +14m.43s., i = +15m.3s., +16m.57s., and +18m.7s., e = +18m.29s., i = +24m.25s. and +24m.47s., e = +24m.55s. and +26m.0s., eSS? = +31m.47s., e = +33m.3s.

Continued on next page.

Scoresby Sund e = +18m.8s.
Upsala eE = +17m.41s.?, SE = +25m.11s., eSSN = +33m.59s.?
Warsaw eE = +15m.41s.?, eZ = +16m.37s., eN = +16m.41s.?, eZ = +21m.18s.
Bucharest eN = +18m.25s., eE = +18m.31s. and +21m.41s.
Potsdam ePNZ = +13m.49s., iZ = +16m.56s., eE = +17m.0s., iZ = +17m.5s., iE = +17m.10s., iN = +17m.20s., iZ = +18m.17s., iEZ = +19m.4s., iN = +19m.14s., iZ = +19m.18s., iPKSN = +21m.51s., iE = +23m.22s., iZ = +27m.44s., iPPSE = +27m.51s., iE = +35m.2s., iN = +35m.14s., iZ = +37m.25s., eN = +49m.41s.
Sofia eEN = +17m.5s., eN = +27m.41s.?
Helwan eZ = +14m.16s., iZ = +17m.1s., PPZ = +18m.13s., PPPEZ = +20m.29s., PPSE = +27m.59s.
De Bilt iZ = +17m.28s.
Jena e = +18m.17s.
Florissant ePKPZ = +18m.12s., eScPE = +29m.9s.
Chicago eSKS = +24m.34s., i = +28m.1s., e = +38m.0s. and +41m.23s.
Stuttgart ePKKP = +28m.28s.
Triest ePP? = +22m.59s., iSKS? = +27m.25s., eSS = +33m.44s.
Uccle eZ = +21m.14s.
Kew ePP?Z = +19m.17s.
Paris e = +17m.41s.
Harvard eZ = +23m.38s., ePSE = +28m.46s.
Fordham ePPP = +21m.51s.
Philadelphia e = +25m.9s., ePS = +28m.48s., e = +47m.42s.
Coimbra e = +22m.41s.
Almeria PP = +21m.36s., PKS = +23m.43s., PPP = +24m.13s., SKKS = +28m.29s., PPS = +32m.49s., SS = +37m.59s., SSS = +42m.37s.
Granada iPP = +22m.59s., PPP = +25m.44s., SKKS = +30m.23s., SKSP = +33m.40s., PS = +33m.59s., PPS = +36m.23s., SS = +40m.44s., SSS = +47m.47s.
Lisbon E = +20m.23s. and +57m.5s.
San Juan i = +22m.48s. and +24m.22s., e = +29m.43s., i = +32m.46s., iPPS = +33m.51s., i = +36m.3s., iSS = +40m.2s., i = +45m.20s.
Huancayo e = +20m.59s., i = +28m.23s., e = +30m.1s., +36m.22s. and +42m.56s.
La Paz i = +20m.12s.
Long waves were also recorded at San Fernando.

July 26d. Readings also at 1h. (Batavia, Medan, La Paz, and near Huancayo), 2h. (La Paz), 7h. (near Mizusawa), 8h. (near Berkeley), 10h. (near Huancayo), 12h. (Stonyhurst, Helwan, and Ksara), 13h. (Stonyhurst), 15h. (Huancayo and La Paz), 16h. (near Berkeley, Lick, and Branner), 17h. (Ksara), 22h. (near La Paz), 23h. (St. Louis, Florissant, Pasadena, Riverside, Palomar, Tacubaya, Tucson, Lincoln, Salt Lake City, Bozeman, Chicago, and Riverview).

July 27d. Readings at 6h. (Andijan, Ksara, Kodaikanal, Calcutta, and Bombay), 7h. (Paris, near Amboina and De Bilt), 9h. (near Berkeley and near Mizusawa), 15h. (Tucson), 17h. (Agra, Medan, Sverdlovsk, Almata, Tashkent, Colombo, Calcutta, Kodaikanal, and Bombay), 20h. (Tacubaya, Vera Cruz, Merida, and Tucson).

July 28d. 15h. Undetermined shock.

Christchurch P? =50m.34s., S =55m.54s., QNW =57m.44s., R =60·8m.
New Plymouth i =53m.5s., S? =56m.15s.
Tuai i =54m.43s., S =55m.31s.
Arapuni S =56m.
Auckland S? =56m.30s.?, i =57m.35s., L =58·4m.
Wellington S =56m.38s., i =57m.55s., L =59·3m.
Riverview iZ =58m.13s.a, iE =62m.33s., eLE =65·5m.
Mount Wilson ePZ =64m.46s.
Pasadena iPNZ =64m.47s., eLZ =97·0m.
Berkeley iPZ =64m.48s., eZ =69m.24s., eLEN =93·7m.
Riverside ePZ =64m.49s.
Tucson i =65m.4s. and 65m.47s., e =66m.3s., 68m.48s., and 77m.35s., iL =101·8m.
Warsaw eZ =72m.7s., eLNZ =145·0m.
Paris ePKP? =72m.9s.?, e =77m.12s., eL =138m.0s.
Potsdam eZ =72m.24s.?, eN =72m.30s.?, eLE =141·0m.
Victoria e =76m.18s.?, L =99·0m.
Uccle eN =86m.48s.
Salt Lake City e =92m.38s. and 95m.10s.
Harvard i =98m.31s. and 98m.34s.
Butte e =104m.29s.
Long waves were also recorded at De Bilt, Scoresby Sund, and Kew.

July 28d. 17h. Local Japanese shock. Tokyo Imperial University gives Epicentre 36°·15N. 139°·53E.

Susaki P =56m.4s., S =56m.17s.
Kamakura P =56m.17s., S =56m.30s.
Kiyosumi P =56m.17s., S =56m.42s.
Komaba P =56m.17s., S =56m.26s.
Koyama P =56m.17s., S =56m.30s.
Mitaka P =56m.17s., S =56m.27s.
Titibu P =56m.17s., S =56m.24s.
Togane P =56m.17s., S =56m.38s.
Tokyo Imp. Univ. P =56m.17s., S =56m.26s.
Tukubasan P =56m.17s., S =56m.27s.

July 28d. Readings also at 0h. (Merida, Tacubaya, Vera Cruz, San Juan, Tucson, Columbia, Scoresby Sund, and near La Paz), 2h. (near Toledo), 4h. (Toledo), 5h. (Kew, De Bilt, Paris, Warsaw, and near La Paz (2)), 6h. (near La Paz), 7h. (near La Paz), 12h. (near Mizusawa), 15h. (near Mizusawa), 17h. (near Fresno, Branner, Lick, and Berkeley), 18h. (Guadalajara (2) and near Mizusawa), 20h. (Spokane).

July 29d. 7h. 57m. 58s. Epicentre 38°·0N. 23°·0E.

Felt at Corinth.

G. Demetrescu and G. Patrescu :—
Bulletin seismique, 1941, Bucharest, 1941, p. 39.

$A = +\cdot7272$, $B = +\cdot3087$, $C = +\cdot6131$; $\delta = +1$; $h = -1$;
$D = +\cdot391$, $E = -\cdot921$; $G = +\cdot564$, $H = +\cdot240$, $K = -\cdot790$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		4·7	3	e 1 13	− 1	1 2 37	S_e	1 1 21	P*	—
Bucharest		6·8	19	e 1 42	− 2	e 3 3	0	e 2 17	P_e	—
Triest		10·3	321	e 3 16	+44	e 5 45	+75	—	—	—
Helwan	z.	10·7	137	—	—	e 4 35	− 4	—	—	e 5·6
Zurich		14·1	316	e 3 32	+ 9	e 6 6	+ 4	—	—	—
Warsaw		14·3	355	—	—	e 6 2?	− 4	—	—	e 9·0
Stuttgart		14·7	322	e 3 32	+ 1	—	—	e 4 15	?	e 7·2
Jena		15·3	332	e 3 34	− 5	—	—	e 3 52	?	e 8·4
Potsdam		16·0	337	—	—	e 7 2?	+16	—	—	e 9·0
Paris		18·4	313	—	—	e 7 51	+10	—	—	12·0
Moscow		20·2	24	e 4 38	− 1	e 8 26	+ 5	—	—	—
Upsala		22·1	353	e 5 0	+ 1	e 8 53	− 5	—	—	e 13·0

Additional readings :—
Bucharest eE = +2m.44s., eN = +2m.47s., eE = +3m.12s., eEN = +3m.18s., S_e = +3m.33s., iEN = +3m.50s. and +4m.6s.
Long waves were also recorded at Belgrade, De Bilt, Uccle, Kew, and Bergen.

July 29d. Readings also at 1h. (Belgrade, Tucson, and Tacubaya), 2h. (Kecskemet, Kalocsa, and Stonyhurst), 7h. (near Berkeley), 8h. (Basel, near Chur, Triest, Stuttgart, Zurich, Sofia, and near Bucharest), 9h. (Warsaw), 10h. (Guadalajara, Tacubaya, Mount Wilson, Riverside, Tucson, Kodaikanal, Belgrade, Triest, Potsdam, Sofia, Warsaw, and Zurich), 13h. (Mount Wilson, Palomar, Pasadena, Riverside, near Huancayo and Tucson), 16h. (Frunse, Sverdlovsk, Tashkent, Tchimkent, and Irkutsk), 17h. (Grozny, Warsaw, Potsdam, De Bilt, and Kew), 19h. (near Branner), 20h. (near Harvard).

July 30d. 1h. 51m. 20s. Epicentre 60°·8N. 151°·1W.

$A = -\cdot4293$, $B = -\cdot2370$, $C = +\cdot8715$; $\delta = -2$; $h = -10$;
$D = -\cdot483$, $E = +\cdot875$; $G = -\cdot763$, $H = -\cdot421$, $K = -\cdot490$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		4·3	19	i 1 10	+ 2	i 2 2	+ 2	i 1 32	P_g	i 2·2
Sitka		8·7	105	i 2 14	+ 4	i 4 9	+19	—	—	i 4·3
Victoria		20·0	115	4 39	+ 2	8 34	+17	—	—	10·7
Seattle		21·1	115	e 4 51	+ 3	e 9 0	+21	i 5 4	PP	i 11·0
Spokane		23·3	108	e 5 14	+ 4	i 9 24	+ 4	e 9 56	SS	e 12·3
Saskatoon		25·6	89	5 39	+ 7	10 15	+16	—	—	12·7
Ferndale		26·1	128	e 5 46	+ 9	e 9 50	−17	—	—	e 12·5
Butte		26·8	104	i 5 45	+ 1	i 10 27	+ 8	i 11 16	SS	i 13·1
Ukiah		27·7	128	i 5 52	0	i 10 46	+13	i 6 29	PP	i 12·1
Bozeman		27·8	104	i 5 53	0	i 10 37	+ 2	i 11 8	SS	i 11·7
Berkeley		29·2	128	e 6 7	+ 2	e 11 4	+ 6	i 6 57	PP	e 14·4
San Francisco	N.	29·2	128	i 5 40?	−25	—	—	—	—	e 14·7
Branner		29·7	128	e 6 10	0	e 10 50	−16	—	—	e 14·9
Lick		29·9	128	e 6 14	+ 2	e 11 32	+23	e 12 48	SS	e 14·5
Logan		30·4	109	i 6 22	+ 6	e 10 59	−17	i 7 32	PPP	e 17·5
Fresno	N.	31·2	126	e 6 22	− 1	e 11 29	0	—	—	—
Salt Lake City		31·2	112	i 6 25	+ 2	i 11 42	+13	i 7 46	PP	e 13·8
Tinemaha		31·5	123	i 6 29	+ 3	e 11 57	+23	9 21	P_cP	—
Haiwee		32·4	123	i 6 37	+ 3	e 12 7	+19	i 7 57	PP	—
Mount Wilson		34·1	125	i 6 50	+ 2	e 12 21	+ 7	—	—	—
Pasadena		34·1	125	i 6 50	+ 2	e 12 18	+ 4	i 8 15	PP	e 14·6
Riverside		34·5	125	i 6 52	0	e 12 39	+19	e 8 21	PP	—
Denver	N.	35·1	105	—	—	e 12 35	+ 5	e 14 30	SS	—
Palomar	Z.	35·3	125	i 6 59	0	e 12 42	+ 9	—	—	—
La Jolla		35·6	126	i 7 4	+ 3	e 12 43	+ 5	—	—	—
Lincoln		38·4	94	e 7 22	− 3	—	—	i 8 55	PP	i 17·2
Tucson		38·7	118	i 7 30	+ 3	e 13 31	+ 6	i 9 3	PP	i 16·6
Honolulu		39·8	189	e 7 53	+17	e 13 40	− 2	—	—	—
Chicago, J.S.A.		42·0	87	e 7 53	− 1	e 17 34	SSS	i 9 44	PP	i 21·8
Chicago, U.S.C.G.S.		42·1	87	i 7 56	+ 1	e 14 9	− 7	i 9 32	PP	e 17·2
Florissant		43·0	92	i 8 4	+ 1	i 14 24	− 5	e 9 53	PP	i 17·7
Sapporo		43·1	278	8 6	+ 2	14 32	+ 2	—	—	—
St. Louis		43·2	92	i 8 5	+ 1	e 14 36	+ 4	e 9 52	PP	—
Scoresby Sund		44·2	23	i 8 13	+ 1	i 14 53	+ 7	i 9 56	PP	e 18·3
Toronto		44·7	78	8 26	+10	i 15 19	+25	10 28	PPP	22·7
Ivigtut		44·8	42	8 16a	− 1	14 57	+ 2	10 14	PP	21·7
Ottawa		45·1	74	i 8 20	0	15 16	+17	10 6	PP	21·7
Buffalo		45·5	79	i 8 22	− 1	e 15 17	+12	i 10 9	PP	—
Shawinigan Falls		45·6	70	8 24	0	15 19	+13	—	—	22·7
Seven Falls		46·1	69	8 30	+ 2	15 32	+18	10 18	PP	21·7
Mizusawa		46·2	274	e 8 20	− 8	18 25	SS	—	—	27·6
Pittsburgh		46·8	82	i 8 34	+ 1	i 15 26	+ 2	—	—	—
Vermont		47·0	73	i 8 38	+ 3	e 15 23	− 3	i 10 23	PP	i 24·6
Vladivostok		47·6	285	e 8 40	+ 1	15 38	+ 3	—	—	—
Williamstown		48·3	74	i 8 45	0	e 15 42	− 3	10 38	PP	i 25·2
Harvard		49·3	73	i 8 53	0	e 16 4	+ 5	i 9 3	pP	e 19·7
Fordham		49·4	76	i 8 54	+ 1	i 16 5	+ 5	i 19 4	SS	—
Georgetown		49·4	80	i 8 54	+ 1	(15 47)	−13	e 10 50	PP	15·8
Philadelphia		49·5	78	e 8 51	− 3	16 4	+ 2	i 10 49	PP	e 19·8
East Machias		49·5	68	i 8 56	+ 2	i 16 3	+ 1	i 10 47	PP	e 23·1
Tokyo, Cen. Met. Ob.		49·6	272	8 11	−44	15 25	−38	—	—	—
Columbia		51·4	88	i 9 9	0	16 22	− 6	e 11 7	PP	e 21·6
Nagoya		51·4	273	8 57	−12	—	—	—	—	—
Irkutsk		52·3	312	9 20	+ 5	—	—	—	—	—
Osaka		52·5	275	9 18	+ 1	16 37	− 6	—	—	—
Koti		54·3	275	e 9 30	0	17 11	+ 4	—	—	—
Zinsen		54·5	285	9 32	0	17 10	0	—	—	—
Tacubaya	N.	55·0	115	9 38	+ 3	—	—	—	—	—
Hukuoka		55·8	278	9 54	+13	17 36	+ 8	—	—	—
Bergen		57·8	14	e 9 53?	− 2	e 17 40?	−14	—	—	e 28·7

Continued on next page.

		△	Az.	P.		O−C.	S.		O−C.	Supp.			L.
		°	°	m.	s.	s.	m.	s.	s.	m.	s.		m.
Upsala		59·4	7	10	4	− 2	18	7	− 8	12	22	PP	26·7
Pulkovo		59·8	359	e 10	7	− 2	—		—	—		—	—
Aberdeen		59·9	19	i 10	10	0	i 18	20	− 1	i 22	10	SS	31·6
Sverdlovsk		60·1	340	i 10	10	− 1	i 18	20	− 4	—		—	—
Bermuda		60·6	75	i 10	7	− 8	e 18	21	− 9	e 14	14	PPP	e 28·3
Stonyhurst		63·0	20	i 15	16	?	i 19	2	+ 1	i 19	33	PPS	e 28·3
Copenhagen		63·1	11	i 10	31a	− 1	i 19	2	0	23	22	SS	—
Moscow		63·6	354	i 10	36	+ 1	19	9	+ 1	—		—	—
Oxford		65·2	20	e 10	56	+11	i 19	26	− 2	i 23	51	SS	—
Kew		65·6	19	e 10	50	+ 2	i 19	33	0	e 23	36?	SS	31·2
De Bilt		65·9	16	i 10	50a	0	i 19	37	0	23	50	SS	e 32·7
Potsdam		66·5	11	i 10	51a	− 3	i 19	41?	− 3	i 13	18	PP	e 30·7
Uccle		67·0	17	e 10	55a	− 2	19	49	− 1	13	24	PP	e 32·7
Warsaw		67·1	5	e 10	57a	0	i 19	50	− 1	—		—	e 34·7
Jena		67·8	11	i 10	59	− 3	e 19	55	− 5	—		—	e 32·7
Paris		68·7	18	11	7	0	e 20	9	− 1	13	38	PP	30·7
Prague		68·9	10	e 11	6	− 3	e 20	13	0	e 13	40?	PP	e 37·7
Strasbourg		69·6	14	e 11	16	+ 3	i 20	24	+ 3	20	40	sS	36·7
Stuttgart		69·6	13	e 11	11	− 2	e 20	20	− 1	i 20	42	sS	e 31·7
Frunse		70·2	325	11	22	+ 5	—		—	—		—	—
Basel		70·6	15	e 11	19	0	e 20	32	− 1	—		—	—
Zurich		70·9	15	e 11	19a	− 2	e 20	36	0	—		—	—
Chur		71·6	14	e 11	24	− 1	e 20	5	−39	—		—	—
Clermont-Ferrand		71·7	19	e 11	26	0	e 20	55	+10	e 14	9	PP	e 38·8
San Juan		71·7	85	i 11	24	− 2	e 20	42	− 3	i 14	15	PP	e 35·4
Tashkent		73·0	329	e 11	33	0	e 20	57	− 3	—		—	—
Triest		73·2	11	e 11	30	− 5	i 21	0	− 2	e 28	28	SSS	e 36·8
Belgrade		74·5	6	e 11	35	− 7	e 21	17	0	23	1	PPS	e 46·7
Coimbra		74·8	28	10	58	−46	21	12	− 8	14	0	PP	36·4
Bucharest		75·1	2	e 11	45k	− 1	e 21	20	− 4	e 14	20	PP	34·7
Grozny		75·3	347	e 11	50	+ 3	—		—	—		—	—
Lisbon		76·1	30	e 11	53	+ 2	21	36	+ 1	14	46?	PP	36·8
Toledo		76·1	26	i 11	52	+ 1	i 21	36	+ 1	—		—	—
Manila	z.	76·4	275	e 12	4k	+11	22	25	PS	—		—	—
Sofia		76·8	4	e 12	5	+10	e 22	7	+25	—		—	35·7
Baku		77·7	344	12	4	+ 4	21	54	+ 2	—		—	—
Granada		78·8	26	11	59a	− 7	i 22	2	− 2	15	10	PP	41·1
San Fernando	N.	78·9	29	e 12	22	+15	i 23	0	PPS	—		—	39·7
Almeria		79·4	25	i 12	6	− 3	22	9	− 1	12	20	pP	38·7
Algiers		80·5	21	e 12	23	+ 8	e 22	18	− 4	—		—	e 42·7
Agra	E.	83·7	316	—		—	i 22	47	− 7	—		—	—
Calcutta	N.	84·2	306	i 12	55	+21	i 23	3	+ 4	e 16	0	PP	e 39·9
Ksara		85·6	354	e 12	53?	+12	e 23	16	+ 3	—		—	—
Helwan		89·6	358	i 13	2k	+ 1	23	48	− 3	13	32	pP	—
Hyderabad		92·5	313	24	13	S	(24	13)	− 4	—		—	—
Bombay	E.	93·1	318	—		—	e 24	17	− 5	30	35	SS	47·1
Huancayo		93·6	108	e 13	20	+ 1	i 24	9	−17	e 17	0	PP	i 43·7
La Paz		100·9	103	i 17	50	PP	i 24	57?	[+25]	—		—	55·7
Riverview		104·8	227	—		—	e 24	50	[0]	—		—	e 50·8

Additional readings :—
Seattle i = +9m.14s.
Spokane iEN = +5m.24s.
Ferndale eE = +5m.56s., eN = +9m.54s.
Butte i = +6m.17s., +8m.41s., and +10m.49s.
Ukiah e = +9m.15s.
Bozeman i = +7m.28s.
Berkeley ePE = +6m.10s., iE = +11m.26s.
Branner eN = +11m.2s.
Lick eE = +6m.28s., eN = +11m.24s.
Logan i = +5m.21s.
Salt Lake City i = +6m.54s., +7m.50s., +11m.48s., +12m.10s.
Haiwee iP_cPZ = +9m.23s.
Mount Wilson iZ = +7m.1s.
Pasadena iZ = +7m.1s., eP_cPZ = +9m.16s.
Riverside iZ = +7m.2s., iP_cPZ = +9m.26s.
Denver eEN = +12m.40s., eN = +14m.10s., eE = +14m.25s., eSSE = +14m.36s.

Continued on next page.

Palomar iZ = +7m.13s.
Tucson i = +7m.46s., +8m.44s., and +9m.16s., iS = +13m.38s., i = +13m.45s.
Chicago J.S.A. i = +8m.5s.
Chicago, U.S.C.G.S. i = +9m.46s., +9m.55s., +10m.4s., +14m.15s., +14m.32s., and +14m.41s.
Florissant iN = +8m.14s., eScPE = +13m.47s., ePS?EN = +14m.46s.
St. Louis eE = +14m.24s., iS?N = +14m.50s.
Scoresby Sund e = +12m.26s., i = +14m.8s.
Toronto SS = +18m.26s.
Ivigtut ? = +15m.10s. and +18m.28s. ?
Ottawa i = +15m.2s., SSS = +18m.28s.
Buffalo i = +9m.19s., eSS = +18m.12s.
Seven Falls SS = +18m.35s.
Pittsburgh iZ = +8m.43s.
Vermont eS = +15m.6s., i = +15m.41s., e = +18m.15s.
Williamstown SS = +19m.5s.
Harvard ePP = +10m.46s., eSSE = +18m.59s.
Fordham i = +9m.5s. and +16m.21s., iSSS = +20m.8s.
Philadelphia iP = +8m.54s., e = +9m.5s., +9m.51s., and +18m.59s.
East Machias i = +16m.14s. and +18m.58s.
Columbia e = +11m.2s., eSS = +20m.3s., i = +20m.19s.
The readings for Nagoya, Osaka, Koti, Zinsen, and Hukuoka have been increased by 1h.
Upsala eP = +10m.21s., ePPN = +13m.26s., SE = +18m.25s., iN = +18m.36s., ScSE = +19m.49s., iScS = +20m.9s., eN = +21m.3s., eE = +23m.39s., eN = +23m.42s., eSSSE = +24m.49s. ?
Aberdeen iEN = +18m.36s., +19m.55s., and +20m.15s.
Bermuda e = +18m.41s., i = +20m.20s., eSS = +22m.30s., e = +23m.7s.
Stonyhurst i = +17m.25s., iSP = +19m.22s., iSSS = +20m.40s., i = +23m.16s.
Copenhagen ? = +10m.40s. and +20m.23s.
Kew iPSEN = +19m.52s., iPPSEN = +20m.2s., iScSEN = +20m.40s., eSSSEN = +25m.36s. ?
De Bilt iPcP = +11m.23s., ePP = +13m.10s., iPS = +19m.56s., iScS = +21m.5s., eSSS = +27m.10s.
Potsdam iNZ = +10m.56s., eE = +10m.59s., iEN = +11m.3s., iSN = +19m.44s., iPSEN = +20m.0s., iPPSZ = +20m.10s., iSKSE = iScSE = +20m.37s., iN = +21m.5s., iE = +23m.26s., iZ = +23m.49s., iSSN = +23m.55s., iN = +27m.27s.
Uccle iEN = +20m.9s., iPSE = +20m.46s., SSE = +24m.6s.
Warsaw iPZ = +11m.1s., ePE = +11m.7s., SZ = +20m.8s.
Jena iPE = +11m.4s., i = +11m.13s., iZ = +11m.16s., iSN = +20m.12s., eSN = +20m.15s.
Paris e = +12m.21s., iS = +20m.26s.
Strasbourg e = +11m.28s.
Stuttgart i = +11m.30s., ePP = +13m.17s., isSN = +20m.39s., eSSNE = +25m.6s., ePKP,PKP = +39m.15s.
San Juan i = +11m.28s., e = +13m.53s., ePPP = +15m.53s., i = +17m.17s., +21m.46s., and +23m.3s., iSS = +25m.44s., i = +28m.30s.
Triest eP = +14m.22s., ePPP? = +16m.8s., ePS = +21m.32s.
Belgrade e = +13m.36s.
Coimbra i = +21m.38s., PS = +22m.14s., SS = +26m.28s., SSS = +29m.22s.
Bucharest ePN = +11m.48s., ePSZ = +21m.41s.
Lisbon Z = +14m.51s., SN = +21m.39s., iSE = +21m.51s.
Sofia eSEN = +21m.41s.
Granada PcP = +12m.4s., PPP = +16m.22s., SKS = +21m.46s., iPS = +22m.51s., PPS = +23m.22s., iSS = +27m.7s., SSS = +30m.4s., PKP,PKP = +38m.52s.
Almeria PP = +15m.8s., PPP = +16m.56s., ScS = +22m.32s., SS = +27m.28s., SSS = +30m.44s.
Calcutta eSSSN = +31m.44s.
Helwan iZ = +13m.12s., PPZ = +16m.43s., iNZ = +24m.11s., eSZ = +24m.28s., PSE = +24m.58s., sPSNZ = +25m.28s.
Huancayo i = +13m.31s., +17m.45s., +26m.7s., and +37m.10s.
Riverview eE = +25m.0s., iN = +25m.14s., iE = +26m.19s. and +26m.37s.
Long waves were also recorded at Santa Clara, Colombo, Wellington, Arapuni, and Auckland.

July 30d. Readings also at 2h. (Mount Wilson, Riverside, Palomar, Tucson, College, and Medan), 5h. (Sofia), 6h. (Warsaw), 8h. (Tucson), 9h. (Bozeman, Tucson, and College), 13h. (near La Paz), 16h. (Scoresby Sund), 17h. (Lincoln), 19h. (Seattle and near Batavia), 20h. (Chicago), 21h. (near Berkeley, Branner, and Lick, Manila, Potsdam, and near Andijan), 22h. (Chicago, U.S.C.G.S., Warsaw, Kew, Paris, and De Bilt), 23h. (Amboina).

July 31d. Readings at 0h. (near Branner), 1h. (near Berkeley), 2h. (College), 4h. (Paris), 6h. (Tucson), 8h. (De Bilt and Paris), 10h. (near Manila), 11h. (near Andijan), 15h. (near La Paz and Warsaw), 16h. (near Amboina), 19h. (near Toledo), 20h. and 21h. (Tacubaya).

August 1d. 3h. 47m. 59s. Epicentre 33°·0N. 85°·5E.

A = +·0659, B = +·8377, C = +·5421; δ = −4; h = +1
D = +·997, E = −·078; G = +·043, H = +·540, K = −·840.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dehra Dun	N.	6·9	249	e 1 43?	− 2	e 3 3	− 2	—	—	—
Agra	E.	8·7	230	e 2 8	− 2	i 3 44	− 6	—	—	—
Calcutta		10·7	167	i 2 42k	+ 4	i 4 56	SS	—	—	(e 5·8)
Almata		12·2	329	e 3 1	+ 3	—	—	—	—	—
Andijan		13·0	310	e 3 13	+ 4	—	—	—	—	—
Tashkent		15·4	307	e 3 41	+ 1	e 6 49	SS	—	—	—
Hyderabad		16·8	204	3 58	0	6 55	−10	—	—	8·5
Bombay		18·1	222	i 4 16	+ 2	i 7 45	+10	i 8 2	SS	9·0
Irkutsk		23·6	30	5 12	− 1	9 30	+ 5	—	—	—
Kodaikanal	E.	23·9	200	—	—	i 9 46	+16	—	—	i 12·7
Colombo	E.	26·5	192	—	—	e 10 1?	−13	—	—	—
Baku		29·3	295	e 6 0	− 6	11 6	+ 7	—	—	—
Sverdlovsk		29·3	332	i 6 6	0	—	—	—	—	—
Manila	Z.	37·0	112	e 4 9	?	8 47	PP	—	—	—
Helwan		45·9	281	i 8 25	− 1	e 15 17	+ 6	10 7	PP	—
Warsaw		49·4	314	e 8 53	0	e 16 1?	+ 1	e 10 49	PP	e 29·0
Upsala		51·7	323	—	—	e 16 20	−12	e 20 1?	SS	e 24·0
Copenhagen		54·2	319	e 9 30	+ 1	17 9	+ 3	—	—	—
Potsdam		54·3	314	e 9 30	0	e 17 1	− 6	e 21 26	SS	30·0
Triest		55·2	306	—	—	e 17 10	−10	—	—	—
Bergen		57·2	325	—	—	e 23 1?	SSS	—	—	e 30·5
Stuttgart		57·4	311	i 9 53a	0	—	—	—	—	—
Zurich		58·2	308	e 9 57	− 1	—	—	—	—	—
De Bilt		59·1	315	i 10 4k	0	e 18 16	+ 5	—	—	e 30·0
Uccle		59·9	314	e 10 9	− 1	e 18 23	+ 2	e 24 4	SSS	e 31·0
Paris		61·7	311	10 22	0	e 25 32	SSS	—	—	e 35·0
Clermond-Ferrand		62·3	308	e 10 25	− 1	—	—	—	—	—
Kew		62·5	316	i 10 27	− 1	e 18 56	+ 2	e 25 31	SSS	—
Toledo		69·4	304	e 11 11	− 1	e 21 47	?	—	—	40·7
Almeria		69·7	301	e 11 6	− 8	e 24 36	SS	—	—	—
Granada		70·2	302	i 11 25	+ 8	e 24 11	?	—	—	—

Additional readings :—
Calcutta L given as S*
Bombay iEN = +4m.20s., iSN = +7m.50s., eEN = +8m.25s.
Helwan iZ = +11m.55s. and +12m.49s.
Warsaw eE = +9m.1s. ?, eZ = +16m.9s., eN = +19m.53s., eE = +19m.58s., eZ = +20m.13s.
De Bilt eS = +18m.16s.
Long waves were also recorded at Scoresby Sund.

Aug. 1d. Readings also at 0h. (Manila and Amboina), 1h. (Sverdlovsk), 5h. (near Triest), 9h. (Triest), 11h. (Mount Wilson), 13h. (Calcutta and Balboa Heights), 14h. (Kew, Potsdam, and Medan), 21h. (near Balboa Heights), 22h. (near Berkeley).

Aug. 2d. 9h. 21m. 32s. Epicentre 30°·0N. 100°·0E.

A = −·1506, B = +·8543, C = +·4975; δ = +2; h = +2;
D = +·985, E = +·174; G = −·086, H = +·490, K = −·868.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta		12·8	237	e 5 25	S	(i 5 25)	− 5	—	—	(i 7·3)
Agra	E.	19·5	267	4 23	− 8	e 8 3	− 3	—	—	—
Bombay	N.	27·0	252	—	—	e 10 43	SS	—	—	e 14·2
Tashkent		27·3	303	i 5 47	− 1	—	—	e 6 30	PP	—
Tchimkent		27·3	306	e 5 47	− 1	—	—	—	—	—
Sverdlovsk		38·3	326	e 7 24	0	e 13 16	− 3	—	—	—
Baku		41·7	299	e 7 56	+ 4	e 14 18	+ 8	—	—	—
Moscow		50·4	320	e 8 59	− 2	—	—	10 56	PP	—
Pulkovo		54·4	324	e 9 34	+ 3	—	—	—	—	—
Potsdam		65·1	318	—	—	28 28	?	—	—	e 31·5

Calcutta L given as S.
Long waves were also recorded at Warsaw, Medan, Kew, Paris, and De Bilt.

Aug. 2d. 11h. 41m. 24s. Epicentre 29°·3S. 178°·2W. (as on 1941, March 28d.).

$A = -\cdot8730$, $B = -\cdot0274$, $C = -\cdot4869$; $\delta = -5$; $h = +2$;
$D = -\cdot031$, $E = +1\cdot000$; $G = +\cdot487$, $H = +\cdot015$, $K = -\cdot873$.

Suggested deep.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		9·6	216	2 26	+ 5	4 32	SS	i 2 43	PPP	—
Arapuni		10·1	208	2 24	− 4	4 36	SS	—	—	5·4
Tuai		10·2	200	2 28	− 3	4 20	− 7	—	—	—
Hastings		11·1	201	—	—	4 36?	−13	—	—	—
New Plymouth		11·7	211	2 58	+ 7	5 14	+10	—	—	—
Wellington		13·3	203	3 11	− 2	5 26	−16	3 24	pP	6·4
Christchurch		16·0	207	3 54k	+ 6	6 32	−14	—	—	—
Apia		16·5	23	e 3 46	− 8	6 59	+ 1	(7 21)	SSS	—
Brisbane	E.	25·4	267	i 5 34	+ 3	i 10 14	+18	—	—	i 12·7
Riverview		26·4	251	i 5 45a	+ 5	i 10 33	+21	i 6 48	PPP	e 12·0
Sydney		26·4	251	i 5 39	− 1	e 11 3	− 9	e 6 39	PP	e 13·9
Adelaide		36·8	250	e 7 23	+12	i 13 2	+ 6	15 15	SS	19·7
Honolulu		54·0	24	i 9 27	− 1	i 16 57	− 6	i 11 57	PP	23·8
Manila	Z.	73·1	298	i 11 35a	+ 1	21 22	+21	i 14 40	PP	35·6
Batavia		73·9	272	e 11 39	0	—	—	—	—	e 28·6
Yokohama		75·7	325	e 11 59	+10	e 21 41	+11	—	—	—
Tokyo, Cen. Met. Ob.		75·8	326	11 52	+ 2	i 21 18	−13	—	—	—
Nagoya		76·8	324	11 58	+ 3	21 51	+ 9	—	—	—
Osaka		77·2	322	11 58	+ 1	21 56	+ 9	—	—	—
Nagano		77·3	326	12 0	+ 2	22 13	+25	—	—	—
Sendai		77·3	329	11 59	+ 1	22 13	+25	—	—	—
Mizusawa		77·9	330	e 12 2	+ 1	22 11	+17	—	—	33·0
Taihoku		79·2	307	e 12 12	+ 4	—	—	—	—	—
Mori		80·6	330	e 12 19	+ 3	e 22 37	+14	—	—	e 37·2
Sapporo		81·0	332	e 12 22	+ 4	22 29	+ 2	—	—	34·6
Santa Barbara		84·1	46	i 12 33	− 1	—	—	e 15 51	PP	—
Zinsen		84·2	318	e 12 37	+ 3	—	—	—	—	—
Branner		84·6	42	e 12 36	0	e 22 59	− 4	i 12 58	pP	e 38·1
La Jolla		84·6	48	e 12 36	0	—	—	—	—	—
Vladivostok		84·6	325	e 12 40	+ 4	i 23 14	+11	i 24 42	PPS	—
San Francisco	E.	84·7	42	i 12 36?	− 1	e 23 36?	+32	—	—	e 38·6
Santa Clara		84·7	42	i 12 35	− 2	i 23 8	+ 4	i 12 43	pP	—
Pasadena		84·8	47	i 12 36a	− 1	e 22 55	−10	e 16 1	PP	e 34·6
Berkeley		84·9	42	e 12 36	− 2	i 23 17	+11	i 12 58	pP	e 38·3
Lick		84·9	42	e 12 38	0	e 23 12	+ 6	e 12 48	P_cP	e 37·8
Mount Wilson		85·0	47	i 12 37a	− 1	—	—	i 16 2	PP	—
Palomar	Z.	85·2	48	i 12 38a	− 1	—	—	e 38 59	P′P′	—
Ukiah		85·2	40	e 12 38	− 1	e 23 12	+ 3	e 16 6	PP	e 34·8
Riverside		85·3	47	i 12 38a	− 2	—	—	e 38 55	P′P′	—
Ferndale	E.	85·6	38	13 1	+20	e 23 28	+15	—	—	e 35·0
	N.	85·6	38	e 12 51	+10	i 23 19	+ 6	—	—	e 38·8
Fresno	N.	85·6	43	e 12 36	− 5	e 23 13	0	—	—	e 38·8
Medan		85·7	276	12 45	+ 3	i 23 15	+ 1	i 16 21	PP	e 41·6
Haiwee		86·3	45	i 12 44	− 1	—	—	—	—	—
Tinemaha		86·7	44	i 12 46	− 1	—	—	e 38 50	P′P′	—
Tucson		88·5	51	i 12 55	− 1	e 23 20	[− 4]	i 13 16	pP	i 36·3
Tacubaya	E.	90·2	68	e 13 3	− 1	—	—	—	—	—
Seattle		91·6	35	e 13 11	+ 1	e 23 26	[−16]	e 30 31	SS	e 37·4
Victoria		91·7	34	13 13	+ 3	24 21	+11	—	—	41·6
Vera Cruz	N.	92·6	70	i 15 6	?	—	—	—	—	—
Salt Lake City		92·9	43	e 13 18	+ 2	i 23 46	[− 4]	e 17 21	PP	e 42·7
Logan		93·5	42	13 20	+ 1	e 23 50	[− 3]	i 13 42	pP	e 43·0
Sitka		93·7	22	e 13 54	+34	e 24 41	+14	e 30 43	SS	e 40·8
La Plata	E.	94·8	135	12 12	−73	23 48	[−12]	13 30	pP	45·4
	N.	94·8	135	12 24	−61	24 5	[+ 5]	25 54	PS	44·6
	Z.	94·8	135	13 42	pP	23 18	[−42]	17 54	sPP	44·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Huancayo		95·1	107	i 13 25	− 1	i 24 5	[+ 3]	i 14 15	pP		e 43·4
Butte		95·6	40	e 13 25	− 3	e 23 53	[−11]	e 31 25	SS		e 38·9
Bozeman		96·3	40	e 13 23	− 9	i 23 59	[− 9]	e 17 38	PP		43·9
College		96·8	13	e 13 32	− 2	e 24 10	[− 1]	e 17 54	PP		e 37·9
La Paz		98·6	115	e 13 36	− 6	24 14	[− 6]	18 9	PP		40·6
Merida	N.	98·8	71	—	—	i 24 41?	[+20]	—	—		—
Lincoln		102·7	51	e 18 1	PP	e 24 38	[− 2]	—	—		e 48·2
Calcutta	N.	103·6	288	e 15 13	?	i 28 13	PPS	i 18 31	PP		i 57·0
Colombo	E.	103·7	270	e 18 8	PP	24 56	[+12]	27 54	PS		49·2
Irkutsk		105·5	320	e 14 11	?	24 39	[−14]	—	—		—
Florissant		106·2	55	e 14 30	P	e 24 56	[0]	e 18 39	PP		—
St. Louis		106·2	55	e 14 11	P	i 24 46	[−10]	e 18 36	PP		—
Kodaikanal	E.	107·4	272	i 19 11	PP	i 25 26	[+25]	i 28 29	PS		—
Chicago, U.S.C.G.S.		109·3	52	e 18 34	PKP	e 25 3	[− 6]	e 19 0	PP		e 45·3
Hyderabad		109·7	279	18 25	PKP	28 58	PS	i 21 38	PPP		47·8
Columbia		111·2	61	e 18 20	[−15]	e 25 21	[+ 4]	e 28 26	PS		e 46·9
Agra		114·0	289	e 15 10	P	25 16	[−12]	29 25	PS		55·0
Pittsburgh		114·2	55	e 15 4	P	i 25 35	[+ 6]	e 19 43	PP		—
Tananarive		114·8	228	e 19 54	PP	25 27	[− 4]	29 27	PS		47·3
Bombay	N.	115·2	278	e 18 46	[+ 3]	e 25 46	[+14]	e 22 51	PPP		e 56·4
Toronto		115·4	52	20 0	PP	25 36?	[+ 3]	29 49	PS		e 46·6
Buffalo		115·8	53	e 19 35	PP	i 29 24	PS	—	—		—
San Juan		117·7	84	e 15 19	P	25 38	[− 4]	i 20 9	PP		e 54·6
Ottawa		118·6	51	18 47	[− 3]	25 44	[− 1]	i 20 2	PP		e 56·6
Fordham		118·8	57	e 15 14	P	i 25 45	[− 1]	i 20 21	PP		e 57·6
Philadelphia		118·8	57	e 19 28	[+38]	e 25 35	[−11]	29 41	PS		e 47·4
Vermont		120·1	54	e 19 13	[+20]	e 29 53	PS	e 36 54	SS		e 49·3
Shawinigan Falls		120·8	50	e 19 16	[+22]	e 28 20	(+61)	—	—		54·6
Harvard	Z.	120·9	55	e 18 59	[+ 5]	e 25 55	[+ 2]	e 20 20	PP		e 29·6
Frunse		121·3	304	e 19 1	[+ 6]	—	—	—	—		—
Seven Falls		122·3	50	18 58	[+ 1]	26 3	[+ 5]	20 31	PP		e 60·6
Bermuda		123·5	68	e 19 4	[+ 4]	e 25 36	[−25]	e 20 32	PP		51·8
East Machias		124·3	54	e 20 28	PP	e 30 46	PS	e 38 19	SSP		e 58·7
Tchimkent		124·8	303	e 19 6	[+ 4]	—	—	—	—		—
Tashkent		124·9	301	19 2	[0]	26 33	[+27]	21 3	PP		—
Sverdlovsk		130·9	322	16 14	P	25 59	[−23]	i 31 46	PS		—
Ivigtut		134·3	30	22 18	PP	39 36	SS	—	—		—
Baku		139·4	299	19 26	[− 3]	26 32	[− 6]	22 26	PP		—
Grozny		142·3	304	e 19 33	[− 2]	—	—	—	—		—
Moscow		143·3	326	i 19 32	[− 4]	29 35	(− 5)	22 38	PP		—
Erevan		143·6	298	e 19 31	[− 6]	—	—	—	—		—
Pulkovo		143·9	336	i 19 35	[− 2]	26 54	[+ 9]	22 46	PP		—
Sotchi		146·6	306	e 18 37	[−65]	—	—	—	—		—
Upsala		147·6	344	19 42	[− 2]	e 30 9	(+ 4)	22 59	PP		—
Bergen		148·6	355	e 19 46	[+ 1]	—	—	—	—		—
Theodosia		149·2	310	e 19 51	[+ 5]	—	—	—	—		—
Yalta		150·2	309	e 19 40	[− 8]	—	—	—	—		—
Ksara		150·7	287	e 20 0	[+12]	36 57	PPS	23 38	PP		—
Aberdeen		152·0	4	e 19 48	[− 2]	i 30 32	(+ 3)	e 43 30	SSP		74·2
Copenhagen		152·6	347	e 19 51a	[0]	43 36	SSP	23 44	PP		—
Warsaw		153·0	334	e 19 50a	[− 2]	e 43 34	SS	i 23 43	PP		e 66·6
Edinburgh		153·2	5	e 20 8	[+16]	e 43 21	SS	—	—		—
Helwan		154·3	278	i 19 52k	[− 2]	26 36	[−23]	23 30	SKP		—
Stonyhurst		155·3	5	e 20 5	[+10]	e 43 51	SS	—	—		e 71·6
Bucharest		155·5	315	19 54	[− 1]	27 16	[+16]	23 40	SKP		31·1
Potsdam		155·5	345	i 19 53a	[− 2]	i 27 0	[0]	i 20 12	pPKP		64·6
De Bilt		157·1	354	i 19 58a	[+ 1]	i 44 26	SS	i 24 16	PP		e 73·6
Jena		157·2	342	e 19 55	[− 2]	e 30 55	(− 3)	e 24 12	PP		e 62·6
Prague		157·2	338	e 19 14	[−43]	e 28 6	[+64]	e 24 12	PP		e 68·6
Kew		157·8	3	i 19 57	[− 1]	e 30 32	(−29)	e 23 42	PKS		e 75·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		158·1	313	e 19 2	[−57]	e 31 13	{+11}	e 23 13	PKS	52·3
Uccle		158·4	356	i 19 58	[− 1]	—	—	24 24	PP	—
Belgrade		158·6	320	e 20 57k	[+58]	e 26 56	[− 7]	e 24 32	PP	e 62·8
Stuttgart		159·7	346	i 20 0	[0]	e 27 8	[+ 4]	i 23 26	PKS	e 60·6
Strasbourg		160·2	348	e 20 2	[+ 1]	e 31 19	{+ 6}	i 24 36	PP	e 63·6
Paris		160·5	359	i 20 1	[0]	e 30 7	{−68}	i 24 38	PP	44·6
Basle		161·2	348	e 20 1	[− 1]	e 26 32	[−34]	—	—	—
Triest		161·2	334	e 20 17	[+15]	e 27 54	[+48]	e 24 18	PP	—
Zurich		161·2	346	e 20 3a	[+ 1]	e 32 11	{+52}	e 24 28	PP	—
Chur		161·5	345	e 20 2	[0]	—	—	—	—	—
Neuchatel		161·9	347	e 20 2	[− 1]	—	—	—	—	—
Clermont-Ferrand		163·5	354	e 20 4	[0]	—	—	—	—	e 79·9
Coimbra		166·3	35	20 19	[+12]	45 59	SS	23 45	SKP	76·4
Lisbon		166·9	41	20 5	[− 2]	45 52	SS	20 19	pPKP	—
Toledo		168·4	22	i 20 10	[+ 2]	—	—	i 25 5	PP	68·6
San Fernando	N.	170·2	41	21 50	PKP_2	32 32	{+28}	25 44	PP	79·6
Granada		170·9	29	i 20 10a	[0]	27 2	[−10]	23 34	SKP	72·0
Almeria		171·7	24	i 20 11	[+ 1]	26 56	[−16]	20 40	pPKP	80·1
Algiers		172·4	352	e 20 18	[+ 7]	e 27 11	[− 1]	i 23 35	SKP	e 47·1

Additional readings :—
Tuai i = +3m.0s.
Hastings i = +4m.58s.
Wellington iZ = +3m.52s., +4m.19s., and +6m.13s., S_cS? = +16m.16s.
Apia iP = +4m.2s., SSS given as S.
Riverview iN = +6m.5s., iE = +6m.57s., iN = +7m.6s. and +7m.43s., iN = +10m.47s., iZ = +11m.0s., iN = +11m.5s., iE = +11m.11s., iN = +11m.33s.
Sydney i = +6m.0s., eSS = +12m.36s.
Adelaide S_cS = +17m.53s.
Honolulu esPP = +12m.27s., iS = +17m.7s., i = +19m.29s.
Batavia iPEN = +11m.52s.
Tokyo Cen. Met. Ob. P = +11m.55s., iZ = +13m.16s.
Branner iEN = +12m.48s., eSE = +23m.10s., iN = +23m.19s., iE = +23m.45s.
Santa Clara iSSN = +23m.20s.
Vladivostok iSS = +29m.30s.
Pasadena iZ = +12m.54s., iSEN = +23m.10s., eSSEN = +27m.52s., ePKP,PKPZ = +38m.43s.
Berkeley eE = +23m.12s., iSN = +23m.59s.
Lick eE = +12m.58s., eN = +13m.1s. and +13m.14s., eSN = +25m.8s.
Mount Wilson ePKP,PKPZ = +38m.52s.
Palomar iZ = +12m.51s. and +13m.0s.
Ukiah e = +17m.15s. and +18m.41s., eSS = +28m.49s.
Riverside iZ = +12m.52s. and +12m.59s.
Medan iSE = +23m.22s.
Tucson i = +13m.8s., +14m.24s., +14m.35s., and +15m.7s., iPP = +17m.8s., e = +17m.52s., ePPP = +18m.17s., isS = +23m.49s., eSS = +29m.30s., e = +29m.41s.
Seattle e = +23m.35s., +24m.25s., and +31m.23s.
Victoria e = +22m.46s., SS = +29m.36s.?
Salt Lake City iS = +24m.45s., iSS = +30m.52s., i = +34m.35s., eSSS = +34m.51s., e = +38m.25s.
Logan isP = +13m.56s., e = +16m.52s.
La Plata E. PP = +16m.48s., and +19m.42s., PS = +25m.36s., SS = +30m.0s.
La Plata N. PPP = +14m.0s., pS = +25m.24s., PS = +26m.30s. and +27m.36s., SS = +30m.54s.
La Plata Z. PS = +26m.0s.
Huancayo i = +14m.1s. and +18m.33s., iS = +24m.13s., i = +24m.37s., iSP = +25m.48s., i = +26m.8s., iSS = +30m.50s., esSS = +31m.18s., iSSS = +34m.41s.
Butte iS = +25m.1s., e = +29m.2s. and +31m.38s., eSSS = +34m.51s.
Bozeman e = +13m.40s., iS = +24m.59s., iSP = +26m.17s., i = +28m.6s., eSS = +31m.4s., eSSS = +35m.3s.
College eS = +24m.55s., i = +25m.4s., epPS = +26m.55s., e = +27m.39s., eSS = +31m.27s., e = +35m.7s., eSSS = +35m.23s., e = +37m.34s.
La Paz iPZ = +13m.54s.a, PPP = +20m.26s., PS = +24m.55s., iNZ = +25m.44s., SS = +29m.36s., SSSN = +32m.2s., SSSZ = +32m.54s.
Lincoln e = +25m.13s.
Calcutta i = +22m.58s., eN = +30m.18s., e = +41m.54s.
Colombo SS?E = +33m.30s.
Irkutsk SKKS = +25m.17s.
Florissant ePKPE = +17m.45s., eE = +24m.38s., eN = +25m.9s., eSKKSE = +25m.40s.
St. Louis ePKPEZ = +17m.37s., eSKKSEN = +25m.36s.
Kodaikanal i = +29m.42s. and +34m.52s.
Chicago U.S.C.G.S. e = +24m.45s., eS = +26m.43s., eSP = +28m.22s., ePS = +28m.29s., e = +33m.5s., eSS = +33m.55s., e = +37m.45s. and +38m.47s.
Hyderabad iE = +30m.3s., SSE = +33m.49s.

Continued on next page.

Columbia e = +24m.30s., +28m.46s., and +34m.52s.
Agra ePKPE = +18m.25s., SKKSE = +26m.45s., PPSE = +30m.45s., SSE = +36m.0s., SSSE = +40m.19s.
Pittsburgh e = +25m.20s., iSKKS = +26m.46s., eS = +27m.36s., iPS = +29m.23s.
Bombay iN = +29m.47s., +30m.0s., and +31m.5s., eN = +36m.14s.
Toronto S = +27m.56s., SS = +35m.54s., SSS = +39m.54s.
Tananarive SS = +35m.57s.
Buffalo iPP = +19m.50s.
San Juan ipPP = +20m.22s., e = +22m.18s., i = +25m.48s., iPS = +29m.51s., i = +33m.57s., e = +36m.32s., isSS = +36m.55s., i = +38m.25s., eSSS = +40m.53s.
Ottawa SN = +28m.4s., PS = +29m.56s., PPSZ = +31m.26s., SS = +36m.36s., SSS = +40m.56s., e = +48m.0s.
Fordham ePKP = +18m.51s., iPKP = +18m.57s., iSS = +36m.51s.
Philadelphia S = +30m.0s., eSS = +36m.15s., e = +36m.29s., SSS = +40m.37s.
Vermont eSSS = +41m.3s.
Harvard eZ = +21m.46s. and +27m.29s.
Seven Falls PS = +30m.26s., SS = +37m.34s., SSS = +41m.24s., e = +45m.24s.
Bermuda e = +21m.55s., +25m.54s., and +27m.31s., iSP = +30m.21s., i = +30m.47s., ePPS = +31m.57s., eSS = +37m.17s., SS = +37m.27s.
East Machias e = +27m.38s.
Sverdlovsk iPKP = +19m.14s.
Ivigtut +22m.47s.
Baku PS = +32m.58s.
Moscow PS = +33m.14s.
Pulkovo PPS = +35m.28s.
Upsala eSKPN = +23m.17s., SKSPE = +33m.32s., eN = +38m.44s., eSSS = +47m.36s.? eN = +52m.6s., eE = +52m.12s.
Aberdeen iN = +20m.3s., iE = +20m.11s., iN = +35m.13s. and +53m.37s., eQE = +67m.58s.
Copenhagen i = +19m.59s., +20m.39s., +28m.24s., +33m.24s., +37m.28s., and +38m.57s.
Warsaw eE = +19m.54s., iZ = +20m.26s., eN = +20m.32s., iZ = +20m.37s., eE = +21m.0s., iZ = +21m.7s., eN = +21m.14s., eZ = +20m.40s., iZ = +23m.43s., eN = +28m.48s., iZ = +33m.33s., eN = +34m.3s. and +37m.10s., eN = +37m.14s., iZ = +40m.0s., eE = +49m.47s.
Helwan PKKPZ = +20m.22s., PPZ = +24m.3s., PSKSEZ = +34m.26s., PPSZ = +37m.28s., SSE = +44m.0s., SSSE = +50m.8s.
Stonyhurst i = +20m.57s., +21m.59s., and +59m.52s.
Bucharest PKPN = +20m.30s., PKPE = +20m.36s., eE = +20m.54s., PPN = +22m.24s., eE = +23m.54s., PPPN = +25m.0s., SKSN = +27m.30s., SKKSE = +29m.14s., SKKSN = +29m.26s., SE = +30m.22s.
Potsdam iN = +20m.1s., iE = +20m.5s., iPKP$_2$NZ = +20m.34s., ipPKP$_2$Z = +21m.3s., isPKP$_2$N = +21m.11s., iPPZ = +23m.56s., iN = +24m.3s., iEN = +24m.8s., isPPZ = +24m.53s. and +30m.49s., iEN = +31m.0s., iPPSN = +37m.21s., iZ = +50m.20s., iN = +50m.26s.
De Bilt eZ = +34m.46s., eN = +35m.36s., iPPS = +37m.26s.
Jena i = +20m.8s., +20m.20s., and +20m.24s., eZ = +24m.7s., e = +25m.18s., eE = +28m.21s., eN = +28m.42s., eZ = +30m.48s., eN = +30m.51s., eE = +34m.36s., eN = +34m.45s., eE = +48m.30s., eN = +50m.12s., eE = +50m.36s., eN = +55m.0s., eE = +55m.6s.
Prague ePP = +20m.27s., eSKKS = +31m.0s. and +34m.42s., eSS = +44m.12s., eSSS = +50m.36s.
Kew PKP$_2$ = +20m.40s., PPNZ = +24m.22s., e = +33m.12s., eSKSPNZ = +34m.22s., ePPSNZ = +37m.42s., eSSEN = +44m.26s., ePSSEN = +45m.26s., eE = +48m.4s., eSSSEN = +51m.6s., eNZ = +52m.56s., eE = +60m.6s., eEN = +62m.6s., eQEN = +67m.36s.
Sofia eEN = +19m.12s.
Uccle iPKPZ = +20m.41s., iN = +34m.30s.
Belgrade ePKP = +23m.42s., e = +31m.50s. and +41m.59s.
Stuttgart ePKP$_2$Z = +20m.48s., iPPZ = +24m.24s., iPPEN = +24m.27s., eSKKSN = +31m.16s., iPSKSEN = +34m.58s., ePPSN = +38m.12s., iSSE = +44m.46s., eSSSN = +49m.54s.
Strasbourg iPSKS = +35m.4s.
Paris e = +23m.16s.
Triest ePSKS = +34m.52s., e = +45m.8s.
Clermont-Ferrand iPKP$_2$ = +21m.2s.
Coimbra PP = +25m.13s., PPP = +28m.55s., PSKS = +35m.43s., PPS = +39m.4s., SSS = +52m.36s.
Lisbon PKP$_2$E = +21m.46s., pPKP$_2$N = +22m.8s., N = +33m.3s., sSSEN = +46m.5s.
Toledo iPKP$_2$ = +21m.35s.
San Fernando PPSN = +39m.30s., SSN = +46m.30s.
Granada ipPKP = +20m.22s., PKP$_2$ = +21m.30s., pPKP$_2$ = +21m.48s., iPP = +25m.13s., ipPP = +25m.35s., iPPP = +29m.25s., ipPPP = +29m.39s., SKSP = +36m.29s., PPS = +39m.32s., SS = +46m.9s., SSP = +47m.56s., SSS = +53m.53s.
Almeria i = +20m.25s., PKP$_2$ = +21m.50s., pPKP$_2$ = +22m.12s., PP = +25m.29s., pPP = +25m.55s., PPP = +29m.38s., SKKS = +31m.20s., SPP = +39m.41s., SS = +46m.36s., SSS = +53m.40s.
Algiers ePP = +25m.36s. and +29m.21s., e = +30m.22s. and +31m.10s., eSKKS = +32m.17s.
Long waves were also recorded at Balboa Heights and Marseilles.

Aug. 2d. Readings also at 3h. (Huancayo), 4h. (Tucson), 8h. (Paris and near Mizusawa), 11h. (Miyazaki), 13h. (Fresno, Lick, and Branner), 15h. and 16h. (near Mizusawa), 17h. (Tashkent, Calcutta, Agra, near Berkeley, Branner, Lick, San Francisco, and Fresno), 18h. (Kew and Potsdam).

Aug. 3d. 7h. 26m. 12s. Epicentre 34°·0N. 138°·2E. Depth of focus 0·030.

Felt II-III at Kakioka. Epicentre 34°·0N. 138°·2E. Macroseismic radius 200-300km. Depth = 240km.

See Seismological Bulletin of the Central Meteorological Observatory, Japan, 1941, Tokyo 1950, p. 34, macroseismic chart p. 34.

$A = -·6193$, $B = +·5538$, $C = +·5566$; $\delta = +3$; $h = 0$;
$D = +·667$, $E = +·745$; $G = -·415$, $H = +·371$, $K = -·831$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Shizuoka	1·0	10	0 36	+ 4	1 3	+ 6
Misima	1·3	30	0 36k	+ 1	1 6	+ 5
Osima	1·3	52	0 37	+ 2	1 13	+12
Nagoya	1·5	319	0 37a	+ 1	1 6	+ 2
Hatidyozima	1·6	123	0 17	−20	—	—
Hunatu	1·6	17	0 38	+ 1	1 8	+ 2
Kohu	1·6	10	0 39	+ 2	1 7	+ 1
Mera	1·6	56	0 40	+ 3	—	—
Kameyama	1·7	301	0 39k	+ 1	1 11	+ 4
Owase	1·7	272	0 41	+ 3	1 12	+ 5
Yokohama	1·8	40	0 40k	+ 1	1 12	+ 3
Hikone	2·0	308	0 41a	0	1 12	0
Tokyo Cen. Met. Obs.	2·1	37	0 43k	+ 1	1 15	+ 1
Kyoto	2·3	297	0 43	− 1	1 16	− 1
Osaka	2·3	286	0 42	− 2	1 17	0
Maebasi	2·5	16	0 44k	− 2	1 16	− 5
Wakayama	2·5	275	0 48a	+ 2	1 24	+ 3
Kobe	2·6	285	0 46a	− 1	1 24	+ 1
Nagano	2·7	0	0 45	− 3	1 18	− 7
Tukubasan	2·7	35	0 46	− 2	1 21	− 4
Kakioka	2·8	36	0 48k	− 1	1 23	− 4
Sumoto	2·8	275	0 50a	+ 1	1 27	0
Toyama	2·8	343	0 52	+ 3	1 21	− 6
Tyosi	2·8	52	0 48	− 1	1 28	+ 1
Utunomiya	2·9	28	0 46k	− 4	1 21	− 8
Mito	3·0	38	0 50	− 1	1 26	− 5
Muroto	3·4	259	0 59	+ 3	1 45	+ 6
Onahama	3·7	37	1 13	+13	1 51	+ 5
Koti	3·9	265	1 27a	+25	1 52	+ 2
Hukusima	4·2	26	1 1	− 5	1 44	−13
Sendai	4·8	26	1 8	− 5	1 57	−14
Mizusawa	5·6	24	e 1 17	− 6	i 2 15	−13
Kagosima	6·9	252	3 7	S	(3 7)	+ 9
Hatinohe	7·1	21	2 22	+40	—	—
Sapporo	9·4	14	2 6	− 6	3 38	−17

Aug. 3d. 10h. 44m. 14s. Epicentre 31°·5S. 71°·0W (as on 1938 June 15d.).

A = +·2781, B = −·8077, C = −·5199; δ = +1; h = +3;
D = −·945, E = −·326; G = −·169, H = +·492, K = −·854.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata	E.	11·4	111	3 3	+16	5 28	+32	—	—	6·2
	N.	11·4	111	3 5	+18	5 10	+14	5 28	SS	6·3
	Z.	11·4	111	3 6	+19	5 22	+26	—	—	6·3
La Paz		15·2	10	3 37k	− 1	i 6 39	+11	—	—	8·2
Huancayo		19·8	349	e 4 32	− 3	e 8 8	− 5	i 5 1	PP	e 12·0
Rio de Janeiro	N.	26·1	78	(e 5 46)	+ 9	(e 10 25)	+18	—	—	(e 14·2)
San Juan		49·8	7	8 51	− 5	e 15 56	−10	e 11 0	PP	e 18·6
Fordham		72·0	359	e 11 27	− 1	e 20 47	− 2	—	—	—
St. Louis		72·0	345	e 11 24	− 4	e 20 39	−10	—	—	—
Florissant		72·2	345	i 11 28	− 1	i 20 43	− 8	—	—	—
Tucson		73·8	326	i 11 36	− 2	—	—	—	—	e 38·9
Lincoln		75·8	341	—	—	e 26 21	SS	—	—	e 39·2
La Jolla	Z.	77·5	322	e 11 58	− 1	—	—	—	—	—
Palomar	Z.	77·7	323	e 12 0	0	—	—	—	—	—
Riverside	Z.	78·4	323	e 12 4	0	—	—	—	—	—
Mount Wilson	Z.	79·0	323	i 12 7	0	—	—	—	—	—
Pasadena	Z.	79·0	323	e 12 6	− 1	—	—	—	—	e 39·8
Tinemaha		81·3	324	i 12 20	0	—	—	—	—	—
Bozeman		85·0	333	—	—	e 22 59	− 8	—	—	e 45·1
Paris		103·3	41	e 18 23	PP	—	—	—	—	e 51·8
Uccle		105·3	39	e 15 46?	?	—	—	e 27 56	PS	—

Additional readings :—
Huancayo iP = +4m.35s., i = +4m.45s., iS = +8m.12s.
Rio de Janeiro, all readings reduced by 1h.
San Juan e = +9m.47s., e = +19m.43s.
Tucson i = +12m.11s. and +12m.58s., e = +13m.28s.
Lincoln i = +28m.16s.
Long waves were also recorded at Berkeley and other European stations.

Aug. 3d. 12h. Undetermined shock.

Christchurch P? = 43m.39s., S? = 51m.45s., Q = 58m.17s., R = 61m.6s.
Brisbane iN = 46m.0s., iN = 49m.35s.
Sydney e = 51m.0s.
Riverview iE = 51m.42s., iE = 53m.9s., eLEN = 55m.12s.
Pasadena ePZ = 54m.37s., eLEZ = 82m.36s.
Mount Wilson ePZ = 54m.38s.
Palomar iPZ = 54m.42s.
Wellington e = 56m., L = 60m.0s.
Adelaide eN = 56m.40s., i = 58m.20s., 59m.8s., 59m.20s., 59m.37s., and 60m.42s.
Toledo ePZ = 61m.26s.
Honolulu e = 62m.50s., e = 63m.54s., eL = 65m.26s.
Agra eE = 65m.0s.
Victoria e = 65m.0s., L = 84m.0s.
Tucson iP = 78m.19s., i = 78m.49s., i = 80m.8s., i = 80m.22s., e = 81m.34s., L = 86m.50s.
Berkeley eN = 78m.42s., eE = 83m.42s.
Long waves were also recorded at Auckland, Bozeman, Chicago, and other European stations.

Aug. 3d. Readings also at 0h. (Lincoln), 1h. (near Berkeley and Logan), 3h. (near Apia) 5h. (Frunse, Tashkent, Tchimkent, and Sverdlovsk), 6h. (Agra), 8h. (Balbo Heights), 9h. (Lincoln), 11h. (near Mizusawa and Coimbra), 12h. (Bombay), 18h. (Frunse (2)), 19h. (Oaxaca, Tacubaya, Vera Cruz, Agra, Tucson, and near La Paz), 21h. (near Mizusawa), 22h. (near Apia).

Aug. 4d. 0h. 25m. 9s. Epicentre 20°·4N. 108°·8W. (as on 1937 July 11d.).

$A = -\cdot3023$, $B = -\cdot8880$, $C = +\cdot3465$; $\delta = -1$; $h = +5$;
$D = -\cdot947$, $E = +\cdot322$; $G = -\cdot112$, $H = -\cdot328$, $K = -\cdot938$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	E.	9·1	95	e 2 22	+ 8	—	—	—	—	—
Tucson		11·9	352	i 2 53	− 1	e 5 6	− 3	i 3 19	PP	e 6·0
Palomar	Z.	14·8	333	e 3 34	+ 2	—	—	—	—	—
Riverside	Z.	15·5	333	e 3 45	+ 3	—	—	—	—	—
Mount Wilson	Z.	16·0	331	e 3 44	− 4	—	—	—	—	—
Pasadena		16·0	331	e 3 44	− 4	e 7 0	+14	—	—	e 7·8
Santa Clara		20·4	330	—	—	e 8 35	+10	—	—	e 11·1
Salt Lake City		20·5	352	e 4 38	− 4	e 8 42	+15	e 4 46	PP	e 10·5
Berkeley		21·0	330	e 3 50	−57	e 8 43	+ 6	—	—	e 10·6
St. Louis		24·2	38	e 5 16	− 3	e 9 25	−10	—	—	e 12·4
Florissant		24·3	38	—	—	e 9 46	+ 9	—	—	—
Bozeman		25·3	357	—	—	e 10 2	+ 8	e 10 13	PP	e 13·1
Butte		25·7	356	—	—	e 10 6	+ 5	—	—	e 15·5
Chicago		27·9	34	—	—	e 10 37	0	—	—	e 11·5
Victoria		30·3	341	—	—	e 11 21	+ 6	—	—	15·8
Ottawa		36·9	39	e 7 13	+ 1	e 15 39	?	—	—	19·8

Additional readings :—
Tucson e = +5m.18s., i = +5m.40s.
Berkeley iSE = +8m.49s.
Florissant eSN = +9m.52s., eE = +10m.9s., eN = +10m.27s.
Long waves were also recorded at Fordham, East Machias, Kew, and Paris.

Aug. 4d. 10h. 53m. 1s. Epicentre 51°·6N. 178°·7E.

$A = -\cdot6235$, $B = +\cdot0142$, $C = +\cdot7817$; $\delta = +1$; $h = -7$;
$D = +\cdot023$, $E = +1\cdot000$; $G = -\cdot781$, $H = +\cdot018$, $K = -\cdot624$.

Pasadena suggests deep.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		21·7	40	e 4 59	+ 4	e 8 55	+ 4	e 5 12	pP	e 11·5
Sapporo		26·5	267	5 41	0	—	—	—	—	—
Sitka		26·9	59	e 5 44	− 1	e 10 9	−11	—	—	e 14·5
Mori		27·5	266	e 5 51	+ 1	e 10 43	+13	—	—	—
Mizusawa		28·9	259	e 5 50	−13	10 48	− 5	—	—	—
Sendai		29·5	258	6 8	0	10 57	− 5	—	—	—
Tokyo Cen. Met. Ob.		31·5	256	e 6 33	+ 7	—	—	i 7 41	PPP	—
Yokohama		32·1	257	e 6 42	+11	—	—	—	—	—
Vladivostok		32·3	274	i 6 32	− 1	i 11 46	0	—	—	—
Nagoya		33·9	257	e 6 46	− 1	—	—	—	—	—
Honolulu		35·3	139	e 7 14	+15	e 12 34	+ 1	—	—	15·5
Kobe		35·4	259	i 6 59	− 1	12 29	− 5	—	—	—
Victoria		36·5	71	7 11	+ 2	12 51	0	8 38	PP	e 16·0
Koti		37·1	259	e 7 14	0	12 59	− 2	—	—	—
Miyazaki		39·5	258	4 53	?	—	—	—	—	—
Ferndale		40·1	82	e 7 52	+13	e 13 52	+ 6	—	—	—
Ukiah		41·6	83	e 7 55	+ 4	14 11	+ 3	e 17 32	SSS	e 19·8
San Francisco	N.	42·9	84	i 7 59?	− 3	e 13 59?	−28	—	—	—
Berkeley		43·0	84	i 8 4	+ 1	i 14 29	0	i 8 16	pP	e 20·4
Branner		43·3	84	i 8 7	+ 2	i 14 34	+ 1	—	—	—
Santa Clara		43·5	84	i 8 9	+ 2	i 14 40	+ 4	i 18 14	SeS	e 20·3
Lick		43·7	84	e 8 5	− 3	e 14 41	+ 2	e 8 18	pP	—
Irkutsk		44·0	302	8 10	− 1	14 38	− 5	—	—	—
Butte		44·1	68	e 8 11	− 1	e 14 40	− 5	e 15 3	PPS	e 24·4
Bozeman		45·2	68	e 8 21	+ 1	e 14 57	− 4	e 18 29	SS	e 22·6
Fresno	N.	45·2	84	e 8 22	+ 2	i 15 3	+ 2	—	—	—
Tinemaha		45·9	83	i 8 29a	+ 3	e 15 15	+ 4	e 18 21	SS	—
Haiwee		46·7	83	i 8 36	+ 4	e 15 23	+ 1	e 18 24	SS	—
Santa Barbara		46·7	87	i 8 35	+ 3	—	—	—	—	—
Logan		47·0	71	i 8 37	+ 2	15 25	− 1	e 8 59	pP	e 23·9

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Salt Lake City		47·6	74	i 8 40	+ 1	i 15 31	− 4	e 10 29	PP	e 22·2
Mount Wilson		47·9	85	i 8 44a	+ 2	e 15 41	+ 2	i 9 58	PcP	—
Pasadena		47·9	85	i 8 43a	+ 1	i 15 39	0	i 8 56	pP	e 21·6
La Jolla		48·3	86	i 8 54	+ 9	—	—	—	—	—
Riverside		48·5	85	i 8 47a	+ 1	e 15 48	0	—	—	—
Palomar	z.	49·9	85	i 8 53a	− 4	e 15 58	− 9	e 18 43	ScS	—
Tucson		53·7	82	i 9 27	+ 1	i 17 1	+ 2	i 9 47	pP	e 24·4
Semipalatinsk		57·1	311	e 11 20	PP	—	—	—	—	—
Manila	z.	58·8	253	i 10 1	− 1	—	—	—	—	—
Sverdlovsk		60·5	327	i 10 16	+ 2	i 18 32	+ 3	—	—	—
Chicago U.S.C.G.S.		60·7	59	e 10 16	+ 1	i 18 29	− 3	e 18 55	sS	e 28·3
Florissant		61·3	63	i 10 19	− 1	i 18 35	− 4	e 10 32	pP	—
Ivigtut		61·5	336	—	—	18 37	− 5	—	—	31·0
St. Louis		61·5	63	i 10 16	− 5	e 18 31	−11	e 12 35	PP	e 27·2
Cape Girardeau		62·8	63	—	—	e 18 55	− 3	i 20 18	ScS	—
Toronto		63·6	52	—	—	e 19 8	0	—	—	32·0
Almata		63·8	307	e 10 22	−14	—	—	—	—	—
Ottawa		64·1	48	10 37	− 1	19 9	− 5	14 33	PPP	e 31·0
Buffalo		64·3	52	i 10 42	+ 3	i 19 20	+ 3	—	—	—
Shawinigan Falls		64·6	45	10 39	− 2	19 15	− 6	—	—	39·0
Seven Falls		65·0	44	10 45	+ 1	19 21	− 5	14 41	PPP	e 32·0
Pittsburgh		65·7	54	e 10 51	+ 3	i 19 31	− 3	i 14 56	PPP	—
Vermont		66·0	47	e 14 8	PPP	e 19 0	−38	—	—	—
Pulkovo		66·1	343	e 10 51	0	e 19 37	− 2	—	—	—
Upsala		67·8	350	e 11 23	+21	e 19 54	− 6	i 20 53	PPS	e 34·0
Andijan		68·0	308	i 11 6	+ 3	e 20 8	+ 6	—	—	—
Bergen		68·2	357	—	—	e 19 59?	− 5	—	—	—
Harvard		68·3	48	i 11 3	− 2	e 19 59	− 7	—	—	e 33·0
Moscow		68·3	338	11 5	0	20 3	− 3	—	—	—
East Machias		68·4	45	—	—	e 20 1	− 6	e 20 41	sS	28·5
Fordham		68·4	51	i 11 8	+ 2	i 20 4	− 3	i 13 38	PP	35·4
Philadelphia		68·5	52	e 11 0	− 6	20 1	− 7	—	—	e 26·9
Weston		68·5	48	10 56	−10	—	—	—	—	—
Tashkent		69·1	310	i 11 11	+ 1	i 20 13	− 2	—	—	—
Columbia		70·0	60	—	—	e 20 23	− 3	—	—	e 35·2
Halifax		70·1	42	—	—	e 20 17	−10	—	—	e 35·0
Tacubaya	E.	70·2	83	i 11 13	− 4	—	—	—	—	—
Copenhagen		72·5	352	e 11 33	+ 3	20 39	−15	—	—	—
Calcutta	N.	72·9	284	e 12 13	+40	21 10	+11	25 23	SS	—
Warsaw		74·8	346	e 11 42	− 2	e 21 17	− 3	e 14 45	PP	e 37·0
Agra	E.	75·4	294	11 41	− 6	i 21 13	−14	—	—	—
Potsdam		75·7	352	e 11 49	0	i 21 45	+15	i 16 36	PPP	e 34·0
De Bilt		76·5	356	i 11 56a	+ 2	i 21 39	0	i 16 56	PPP	e 37·0
Oxford		77·0	0	—	—	i 21 40	− 5	—	—	—
Jena		77·3	351	e 11 59	+ 1	—	—	—	—	—
Kew		77·3	359	e 11 57	− 1	e 21 45	− 3	14 57	PP	e 37·0
Prague		77·8	350	e 11 59?	− 2	e 21 59?	+ 6	—	—	—
Uccle		77·9	357	e 12 3	+ 2	i 21 51	− 3	e 15 12	PP	e 37·0
Baku		78·1	323	e 12 6	+ 4	i 22 0	+ 4	—	—	—
Bermuda		79·6	50	12 11	+ 1	e 22 2	−10	e 14 55	PP	e 38·0
Stuttgart		79·6	353	e 12 10	0	e 22 9	− 3	—	—	—
Paris		79·9	358	e 12 14	+ 2	22 15	− 1	e 15 12	PP	34·0
Strasbourg		79·9	354	—	—	e 22 20	+ 4	—	—	59·0
Chur		81·5	355	e 12 23	+ 2	e 22 36	+ 4	—	—	—
Triest		82·3	349	e 12 20	− 5	i 22 41	+ 1	e 23 49	PS	—
Hyderabad		82·7	288	—	—	22 44	0	—	—	—
Clermont-Ferrand		82·9	357	e 12 29	+ 1	—	—	—	—	e 41·3
Sofia		83·7	341	e 12 29	− 3	e 22 52	− 2	—	—	45·0
Bombay		84·8	293	i 12 34	− 3	i 23 1	− 4	—	—	—
Coimbra		88·4	6	e 13 24	+29	22 38	−62	16 24	PP	38·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverview	N.	88·4	202	—	—	e 23 16	[− 7]	—	—	e 42·1
Ksara		88·9	329	—	—	e 23 26	[0]	e 24 12	PS	—
Toledo		88·9	2	12 48	−10	e 23 45	+ 1	16 22	PP	37·0
San Juan		90·4	59	e 13 6	+ 2	i 23 30	[− 5]	—	—	e 45·7
Granada		91·6	2	i 13 14k	+ 4	22 59	[−43]	13 39	pP	e 46·7
Almeria		91·9	1	e 13 20	+ 9	24 4	− 7	16 52	PP	41·0
San Fernando	N.	92·2	4	—	—	e 24 3	−11	—	—	43·0
Wellington		92·6	184	—	—	23 36	[−12]	—	—	43·0
Helwan		94·0	332	e 13 17	− 4	24 39	+ 9	13 44	pP	—
Huancayo		109·3	86	e 24 5	?	e 26 1	{+ 1}	e 28 41	PS	e 50·7

Additional readings :—
College e = +5m.21s., isS = +9m.29s.
Mizusawa S?E = +10m.20s.
Honolulu e = +12m.17s.
Ferndale eSE = +13m.56s.
Ukiah e = +17m.42s.
Berkeley eN = +16m.59s., iSSE = +18m.1s.
Branner eSN = +14m.37s.
Lick ePE = +8m.11s., eE = +10m.9s. and +18m.7s.
Bozeman e = +18m.37s.
Fresno iPN = +8m.30s.
Tinemaha eS_ePZ = +13m.53s.
Logan iSS = +18m.29s.
Salt Lake City i = +18m.30s., eSS = +19m.21s.
Pasadena iZ = +9m.6s. and +9m.23s., iP_ePZ = +9m.57s., iZ = +10m.24s., iS_eSEN = +18m.32s., eSSEN = +19m.22s.
Tucson i = +9m.38s., epP = +9m.53s., iPP = +11m.24s., e = +11m.43s. and +11m.46s., iPPP = +12m.48s., eS_eS = +14m.28s., e = +14m.31s.. isS = +17m.33s., e = +19m.11s., eSS = +20m.50s., eSSS = +23m.12s.
Florissant iN = +18m.41s., isSN = +19m.8s., iN = +20m.6s.
St. Louis iPSEN = +19m.1s., iE = +20m.4s.
Ottawa i = +20m.25s., SS = +23m.29s., SSS = +26m.5s.
Seven Falls SSS = +26m.59s.?
Pittsburgh i = +20m.41s.
Upsala ePE = +11m.26s., eE = +18m.2s.?, eN = +20m.33s., esSSN = +25m.2s., eE = +25m.45s.
Fordham i = +21m.4s.
Copenhagen i = +20m.53s.
Warsaw eZ = +11m.51s., +11m.58s., +15m.45s., and +16m.37s., eN = +20m.3s.
Potsdam iP_ePZ = +12m.2s., iZ = +17m.45s., eNW = +20m.59s., iE = +21m.27s., iSNW = +21m.51s., ePSZ = +22m.22s.
De Bilt eZ = +18m.14s.
Kew eP_ePZ = +12m.22s., ePPPZ = +16m.55s., eZ = +22m.20s., eSSN = +26m.59s.?, eSSSE = +30m.29s.?, eQ = +53m.0s.
Bermuda e = +27m.54s.
Paris ePPP = +17m.19s.
Triest e = +27m.26s.
Bombay iN = +12m.58s.
Coimbra SSS = +28m.29s.
San Juan i = +23m.54s.
Granada PP = +16m.5s., sPP = +17m.27s., PS = +24m.18s., SS = +28m.56s.
Almeria PPP = +18m.52s., SKS = +23m.44s., PPS = +25m.56s., SS = +30m.18s., SSS = +34m.0s.
Helwan iZ = +13m.34s., PPZ = +17m.23s., SKKSE = +24m.4s., sSE = +25m.41s., iE = +36m.59s.
Long waves were also recorded at Auckland and Christchurch.

Aug. 4d. Readings also at 1h. (near Theodosia), 2h. (La Paz), 4h. (La Paz and near Lick), 7h. (Tucson), 8h. (La Paz), 14h. (near Bucharest), 15h. (Bombay, Calcutta, Agra, Kodaikanal, Andijan, Tashkent, Sverdlovsk, Potsdam, and near Balboa Heights), 16h. (Kew and near Mizusawa), 17h. (Calcutta, Agra, Palomar, and Riverside), 21h. (near Lick), 23h. (Agra).

Aug. 5d. Readings at 2h. (Wellington), 3h. (Tucson), 6h. (near Andijan), 9h. (Tucson, Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, and near Mizusawa), 16h. (near Triest, Stuttgart, near Zurich, and Auckland), 18h. (Cape Girardeau), 19h. (Harvard), 20h. (near Harvard), 23h. (San Juan, Tucson, Wellington, and Auckland).

Aug. 6d. 6h. 15m. 4s. Epicentre 55°·5N. 163°·0W. Depth of focus 0·015.

$A = -·5441$, $B = -·1664$, $C = +·8223$; $\delta = -9$; $h = -7$;
$D = -·292$, $E = +·956$; $G = -·786$, $H = -·240$, $K = -·569$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		12·0	32	e 2 52	+ 4	e 5 4	+ 4	i 3 36	PP	e 6·1
Sitka		15·4	71	i 3 31	0	i 6 20	+ 2	i 3 38	pP	e 9·2
Victoria		25·1	89	5 18	+ 4	9 33	+ 6	5 45	PP	11·9
Seattle		26·2	90	e 5 25	+ 1	e 9 47	+ 2	e 5 59	PP	e 10·5
Ferndale		29·4	104	e 6 5	+12	e 11 49	+73	—	—	e 13·0
Ukiah		31·0	104	e 6 9	+ 1	e 10 51	−11	e 6 36	pP	e 13·2
Berkeley		32·4	105	i 6 18	− 2	e 11 26	+ 3	i 6 51	pP	e 16·6
San Francisco	N.	32·4	105	i 5 56 i	−24	—	—	—	—	—
Butte		32·6	84	i 6 22	+ 1	i 11 29	+ 3	i 7 37	PP	i 17·7
Saskatoon		32·7	72	6 23	+ 1	11 29	+ 1	—	—	14·9
Branner		32·8	105	i 6 24	+ 1	i 16 36	L	i 7 55	PP	(i 16·6)
Santa Clara		33·0	105	e 6 28	+ 3	e 11 42	+ 9	i 12 43	P_eS	—
Lick		33·2	105	e 6 27	0	e 12 32	sS	e 6 58	pP	—
Bozeman		33·7	84	i 6 30	− 1	i 11 44	+ 1	e 7 14	pP	e 14·3
Honolulu		34·4	170	e 6 46	+ 9	e 11 59	+ 5	e 8 13	PP	e 14·4
Fresno	N.	34·6	104	e 6 36	− 2	—	—	—	—	—
Tinemaha		35·2	102	i 6 45a	+ 1	e 12 13	+ 6	i 7 16	pP	—
Logan		35·7	89	i 6 51	+ 3	i 12 16	+ 2	e 8 20	PP	16·9
Haiwee		36·1	102	i 6 53a	+ 2	i 16 53	S_eS	i 7 27	pP	—
Salt Lake City		36·3	92	i 6 53	0	i 12 23	− 1	e 8 22	PP	e 15·3
Santa Barbara		36·4	106	i 6 55	+ 1	—	—	e 16 58	S_eS	—
Mount Wilson		37·4	105	i 7 3a	+ 1	e 16 59	S_eS	i 7 33	pP	—
Pasadena		37·4	105	i 7 3a	+ 1	e 12 46	+ 6	i 7 33	pP	e 17·3
Sapporo		37·4	275	7 2	0	12 40	0	—	—	—
Riverside		38·0	105	i 7 8	+ 1	e 17 2	S_eS	i 7 38	pP	—
Palomar		38·7	105	i 7 14a	+ 1	e 17 11	S_eS	i 7 45	pP	—
La Jolla		38·9	106	i 7 16a	+ 1	e 17 8	S_eS	i 7 48	pP	—
Mizusawa		40·1	270	e 7 22	− 2	17 8	SSS	—	—	24·9
Sendai		40·8	269	7 25	− 5	16 26	SS	17 11	SSS	—
Vladivostok		42·7	282	i 7 51	+ 5	i 14 3	+ 4	—	—	—
Tucson		42·9	100	i 7 49	+ 2	i 14 5	+ 3	i 8 14	pP	i 18·5
Nagano		43·5	270	e 7 55	+ 3	18 39	SSS	—	—	—
Lincoln		44·9	79	8 4	+ 1	i 14 27	− 4	i 8 33	pP	e 20·2
Nagoya		45·2	269	e 8 9	+ 3	—	—	—	—	—
Kobe		46·6	270	e 8 19	+ 2	—	—	—	—	—
Chicago U.S.C.G.S.		49·2	49	e 8 34	− 3	i 15 29	− 2	e 9 10	pP	23·7
Florissant		49·8	77	i 8 40	− 2	i 15 35	− 5	i 9 12	pP	—
St. Louis		50·0	77	i 8 41	− 2	i 15 38	− 4	e 9 13	pP	—
Irkutsk		50·8	308	8 50	+ 1	—	—	—	—	—
Cape Girardeau		51·3	76	e 8 49	− 4	i 15 54	− 6	i 9 17	pP	—
Toronto		52·3	65	9 8	+ 8	i 16 15	+ 1	i 18 40	S_eS	24·9
Ivigtut		52·9	34	9 4	− 1	16 18	− 4	17 22	sS	—
Ottawa		52·9	62	9 4	− 1	16 18	− 4	i 9 39	pP	24·9
Buffalo		53·1	66	e 10 7	?	i 17 23	sS	i 10 50	pP_eP	—
Shawinigan Falls		53·6	58	9 7	− 3	16 24	− 8	i 9 44	pP	24·9
Seven Falls		54·1	57	9 14	0	i 16 38	− 1	e 9 50	pP	24·9
Pittsburgh		54·3	68	i 9 14	− 1	e 16 34	− 7	e 18 48	S_eS	—
Vermont		54·9	61	—	—	e 16 42	− 7	i 18 56	S_eS	—
Pennsylvania		55·1	67	e 9 14	− 7	—	—	e 9 32	pP	—
Georgetown		56·9	67	i 9 33	− 1	i 17 12	− 4	i 19 7	S_eS	—
Harvard		57·1	61	i 9 34	− 1	i 17 17	− 1	i 19 11	S_eS	—
Philadelphia		57·1	66	9 35	0	e 16 58	−20	18 19	sS	—
Fordham		57·2	64	i 9 36	0	i 17 20	0	i 10 10	pP	—
Weston		57·3	61	i 9 36	− 1	i 17 21	0	10 9	pP	—
East Machias		57·5	58	e 10 12	pP	i 17 19	− 4	i 18 18	sS	e 28·7
Columbia		58·4	75	e 9 45	+ 1	e 17 30	− 5	e 13 23	PPP	e 27·9
Halifax		59·4	55	—	—	e 17 45	− 3	—	—	25·9
Sverdlovsk		62·6	334	i 10 12	− 1	i 18 30	+ 1	—	—	—
Bergen	N.	64·1	7	e 10 10	−13	—	—	—	—	—
Pulkovo		64·6	352	e 10 26	0	18 52	− 1	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Upsala		65·0	0	i 10 28	0	e 25 56?	SSS	e 11 2	pP	—
Bermuda		68·3	64	i 10 49	0	i 19 24	−14	e 23 33	SS	—
Copenhagen		69·1	3	i 10 53k	− 1	i 19 49	+ 1	11 33	pP	—
De Bilt		72·3	8	—	—	i 20 28	+ 4	—	—	—
Kew		72·4	12	i 10 54	−20	e 20 26	0	11 52	pP	—
Potsdam		72·5	3	e 11 8	− 6	i 20 23	− 4	i 11 50	pP	42·9
Warsaw		72·6	358	11 15a	0	20 28	0	e 11 52	pP	e 31·9
Tchimkent		72·9	322	i 11 18	+ 1	—	—	—	—	—
Uccle		73·6	10	11 20	− 1	20 36	− 3	i 11 59	pP	—
Jena		73·8	4	e 11 20	− 2	e 20 41	0	e 11 55	pP	—
Tashkent		73·8	321	e 11 21	− 1	e 20 42	+ 1	—	—	—
Paris		75·4	11	e 11 31	0	21 1	+ 2	12 10	pP	e 32·9
Stuttgart		75·9	6	e 11 17k	−17	e 21 7	+ 3	i 12 14	pP	—
Strasbourg		76·0	7	—	—	i 21 11	+ 5	—	—	—
Zurich		77·3	7	e 11 40	− 2	e 21 20	0	e 12 23	pP	—
Chur		77·8	6	e 11 41	− 3	e 22 1	sS	e 12 44	pP	—
Theodosia		78·3	347	11 56	+ 9	—	—	—	—	—
Clermont-Ferrand		78·4	10	i 11 49	+ 1	—	—	—	—	—
Grozny		78·6	339	e 11 54	+ 5	—	—	—	—	—
San Juan		78·9	74	i 11 50	− 1	i 21 34	− 3	i 12 25	pP	—
Triest		79·2	3	i 11 44	− 8	i 21 39	− 1	i 22 53	PS	—
Yalta		79·3	348	e 11 43	−10	—	—	—	—	—
Belgrade		80·0	358	e 11 53	− 4	e 19 41	?	e 13 7	pP	e 23·4
Calcutta	N.	81·7	297	e 12 20	+14	i 22 19	+13	—	—	—
Sofia		82·0	355	e 12 10	+ 3	e 22 11	+ 2	—	—	—
Coimbra		82·2	20	e 12 4	− 4	22 12	+ 1	23 0	PS	33·8
Agra	E.	82·7	307	e 10 42	?	20 43	?	—	—	—
Toledo		83·3	16	i 12 13	− 1	i 22 22	0	—	—	—
Lisbon		83·5	21	—	—	i 22 16	− 8	23 33	sS	—
Granada		86·0	17	i 12 27a	0	22 30	[− 8]	13 15	pP	—
San Fernando	N.	86·3	19	—	—	e 23 12	sS	—	—	34·9
Almeria		86·5	15	e 12 29	− 1	22 51	− 2	12 42	pP	37·5
Ksara		89·6	344	e 13 8	pP	e 23 5	[+ 5]	—	—	—
Hyderabad	E.	90·8	302	—	—	23 36	+ 3	—	—	—
Bombay		92·2	307	e 11 53	−63	i 23 16	[+ 1]	—	—	—
Helwan		94·1	347	e 13 6	+ 1	23 44	[+18]	13 28	pP	—
Riverview		97·2	217	—	—	i 24 40	+12	—	—	e 31·0
Huancayo		98·5	99	e 13 28	+ 3	e 23 44	[− 5]	i 17 31	PP	—
Colombo		99·2	296	(e 13 26)	− 2	—	—	—	—	—
La Paz		106·2	96	i 18 14	PP	i 24 31	[+ 5]	—	—	—

Additional readings :—
Sitka i = +7m.11s. and +8m.11s.
Victoria SS = +10m.29s.
Seattle e = +9m.49s.
Ferndale ePN = +6m.10s.
Ukiah ePP = +7m.17s.
Berkeley iN = +6m.21s., iE = +6m.25s. and +7m.22s., iZ = +8m.16s. and +9m.5s., iS_cPZ = +12m.34s., iSSN = +13m.49s., iSSZ = +14m.2s.
San Francisco ePN = +7m.56s.?
Butte i = +7m.9s. and +13m.56s.
Branner eS_cPE = +12m.37s.
Lick ePPN = +8m.1s., eN = +9m.8s., eE = +12m.37s.
Bozeman iPP = +7m.48s., eS_cP = +12m.27s., e = +13m.36s.
Honolulu e = +8m.31s., eS = +12m.11s.
Fresno iPN = +6m.41s.
Tinemaha iZ = +9m.12s., iS_cP = +12m.43s., eS_cSEN = +16m.48s.
Logan e = +7m.5s., +7m.21s., and +12m.42s.
Haiwee isPE = +7m.42s., iZ = +9m.15s., iS_cP = +12m.47s.
Santa Barbara iS_cPZ = +12m.50s.
Mount Wilson isPZ = +7m.52s., iS_cPZ = +12m.52s.
Pasadena isPZ = +7m.51s., ePPZ = +8m.27s., i = +8m.38s., ipPPNZ = +9m.1s., iS_cP = +12m.51s., eSS = +15m.32s., iS_cSEN = +16m.59s.
Riverside isPZ = +7m.56s., iPPZ = +8m.21s., iS_cPZ = +12m.53s.
Palomar isPZ = +8m.3s., iZ = +8m.51s. and +9m.22s., iS_cPZ = +12m.56s.
La Jolla isPZ = +8m.5s., eZ = +9m.24s., iS_cPNZ = +12m.58s.
Mizusawa eSN = +17m.16s.
Tucson isP = +8m.38s., iP_cP = +9m.38s., epPP = +9m.58s., i = +10m.56s., iP_cS = +13m.13s., e = +17m.36s.

Continued on next page.

Lincoln ePP = +9m.52s., isS = +15m.24s., iSS = +17m.44s.
Chicago U.S.C.G.S. ePP = +10m.34s., epPP = +11m.6s., esS = +16m.25s., i = +18m.13s., eSS = +18m.59s., e = +21m.24s.
Florissant iPZ = +8m.43s., ipPZ = +9m.15s., iPPZ = +10m.40s., ipPPE = +11m.15s., iSEN = +15m.39s., isSEN = +16m.33s. and +16m.36s., iS_eSE = +18m.16s., iS_eSEN = +18m.19s., eSSEN = +19m.13s., iN = +19m.48s.
St. Louis esSEN = +16m.32s., isSEN = +16m.37s.
Cape Girardeau esSE = +16m.33s., iE = +16m.53s. and +18m.24s.
Ivigtut +18m.34s.
Buffalo i = +10m.54s.. iPP = +11m.51s.
Pittsburgh i = +16m.37s. and +18m.52s.
Vermont iS = +16m.45s.
Pennsylvania e = +10m.24s. and +10m.46s.
Harvard iEN = +17m.51s. and +18m.17s., eSS?EN = +20m.16s.
Philadelphia iS = +17m.16s. and +19m.11s., SS = +21m.8s.
Fordham i = +10m.38s., isS = +18m.20s., i = +19m.12s., iSS = +21m.12s.
Weston sS = +18m.25s.
East Machias iSS = +21m.16s.
Columbia e = +19m.20s.
Upsala eN = +15m.35s.
Bermuda i = +19m.34s., isS = +20m.42s., i = +21m.46s., SSS = +27m.25s.
Copenhagen +20m.39s.
Kew iP_ePZ = +11m.14s., SPZ = +12m.9s., iZ = +12m.48s., epPPZ = +14m.38s., ePPPZ = +15m.48s., eSPEN = +21m.9s., epSEN = +21m.34s., isSE = +21m.42s., eSSN = +25m.22s., eSSSN = +29m.2s., eE = +30m.56s. ?
Potsdam iZ = +11m.14s., ipPPZ = +14m.34s., iSEN = +20m.27s., iSKSE = +21m.3s., iPSEN = +21m.11s., iPPSN = +21m.27s., isSE = +21m.40s.
Warsaw eE = +11m.56s. ?, eZ = +15m.50s., eN = +21m.7s., eE = +30m.56s. ?
Uccle ePPZ = +14m.9s., epSEZ = +21m.7s., esSEZ = +21m.47s.
Jena iPZ = +11m.23s., iPN = +11m.26s.
Paris SKS = +21m.35s., PPS = +22m.12s.
Stuttgart i = +11m.33s., eZ = +12m.56s., e = +13m.43s., ePPZ = +14m.54s., eSEN = +21m.32s., eSSEN = +22m.16s., eSSN = +26m.36s.
San Juan e = +14m.3s. and +18m.52s., iPS = +22m.13s., isS = +22m.44s., i = +24m.39s., e = +25m.26s., iSS = +26m.37s., e = +28m.11s., eSSS = +38m.33s.
Coimbra ? = +14m.22s., i = +22m.20s., SS = +28m.44s.
Lisbon SEN = +22m.23s.
Granada iPP = +15m.45s., ipPP = +16m.28s., eS = +24m.10s.
Almeria PP = +15m.47s., PPP = +17m.41s., S = +22m.41s., SS = +28m.19s., SSS = +31m.51s.
Helwan PPZ = +17m.32s., SKKSE = +24m.8s., SZ = +24m.56s., esSEZ = +25m.44s.
Riverview iN = +24m.45s., iE = +25m.47s.
Huancayo ipPP = +18m.25s., e = +18m.40s., i = +20m.35s. and +21m.20s., e = +24m.42s., i = +24m.47s., iS = +24m.52s., i = +32m.35s.
Colombo reading increased by 2 minutes.
La Paz iN = +25m.36s.
Long waves were also recorded at Auckland.

Aug. 6d. Readings also at 2h. (Amboina), 6h. (near Balboa Heights), 13h. (La Paz), 16h. (near Grozny and Tucson), 17h. (near Tacubaya), 20h. (near Tashkent and Tchimkent), 21h. (near Tacubaya (4), and near Manila), 22h. (near St. Louis), 23h. (near Mizusawa).

Aug. 7d. Readings at 13h. (near Manila), 15h. (Lincoln), 16h. (near Mizusawa), 18h. (near Tacubaya and near Andijan), 22h. (near Tacubaya).

Aug. 8d. 22h. 7m. 59s. Epicentre 42°·2N. 34°·2E.

A = +·6145, B = +·4177, C = +·6692; δ = −9; λ = −2;
D = +·562, E = −·827; G = +·554, H = +·376, K = −·743.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Yalta		2·3	359	i 0 54	+14	i 1 51	+42	—	—	—
Theodosia		3·0	17	1 0 57	+ 7	—	—	—	—	—
Bucharest		6·3	293	e 1 35k	− 1	e 2 44	− 6	e 1 48	P*	—
Piatigorsk		6·8	71	1 46	+ 2	—	—	—	—	—
Sofia		8·1	279	e 1 55	− 7	e 4 5	S*	—	—	—
Ksara		8·5	171	e 2 10	+ 3	e 4 23	S*	—	—	—
Belgrade		10·4	290	e 3 14	+40	—	—	—	—	e 7·7
Baku		12·0	96	e 3 1	+ 6	e 5 29	SS	—	—	—
Helwan	z.	12·5	191	2 51	−11	—	—	—	—	—
Warsaw		13·4	323	e 3 11a	− 3	e 5 37	− 8	e 6 27	SS	e 9·0

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		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Moscow		13·7	7	3 17	− 1	e 6 12	SS	—	—	—
Triest		15·1	290	e 3 35	− 1	e 6 40	SS	—	—	—
Potsdam		17·5	313	i 4 4	− 3	i 7 31	+10	—	—	—
Jena		17·8	307	e 4 11	0	—	—	e 4 28	PP	—
Pulkovo		17·8	354	e 4 8	− 3	e 7 42	+14	—	—	—
Stuttgart		18·7	301	e 4 17k	− 5	—	—	—	—	—
Zurich		18·9	296	e 4 20	− 4	—	—	—	—	—
Copenhagen		19·5	323	e 4 26	− 5	—	—	—	—	—
Basle		19·6	297	e 4 29	− 3	—	—	—	—	—
Neuchatel		20·0	296	e 4 32	− 5	—	—	—	—	—
Upsala	E.	20·4	336	i 4 42	+ 1	e 8 27	+ 2	—	—	—
	N.	20·4	336	4 41	0	e 8 20	− 5	8 53	SS	—
De Bilt		22·0	309	i 4 59	+ 1	e 9 16	+20	—	—	e 13·0
Uccle		22·2	305	e 5 4	+ 4	e 9 6	+ 6	—	—	—
Sverdlovsk		22·4	40	i 5 2	0	i 9 18	+14	—	—	—
Clermont-Ferrand		22·6	291	5 4	+ 1	—	—	—	—	—
Paris		23·1	298	e 5 25	+17	—	—	—	—	e 13·0
Kew		25·1	305	i 5 30	+ 2	e 9 54	+ 3	i 5 55	PP	e 11·0
Tashkent		26·1	81	—	—	e 10 25	+18	—	—	—
Granada		29·4	274	—	—	i 10 56	− 5	i 12 13	SS	19·2

Additional readings :—
Bucharest iSEN = +2m.48s., iZ = +3m.2s., iN = +3m.5s., iE = +3m.9s., iN = +3m.21s. and +3m.35s.
Warsaw eZ = +4m.35s. and +6m.0s., eN = +6m.36s.
Potsdam ePNZ = +4m.7s., iSN = +7m.34s.
Jena eE = +4m.31s.
Copenhagen +4m.31s.
Kew ePcPZ = +8m.32s.
Granada i = +14m.23s.

Aug. 8d. Readings also at 2h. (Pasadena; Mount Wilson, and near Tacubaya), 14h. (near Mizusawa), 17h. (near Basle and Zurich), 18h. (near Branner), 19h. (Wellington, Berkeley, Palomar, Tinemaha, Riverside, Pasadena, Mount Wilson, and Tucson), 20h. (Paris and Kew), 21h. (near Ottawa), 22h. (Tucson), 23h. (Piatigorsk, near Branner, Lick, and San Francisco).

Aug. 9d. 15h. 27m. 22s. Epicentre 61°·5N. 30°·0W. (as on 1938, July 27d.).
A = +·4153, B = −·2398, C = +·8775 ; δ = −2 ; h = −9 ;
D = −·500, E = −·866 ; G = +·760, H = −·439, K = −·480.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stonyhurst	16·5	105	i 3 53	− 1	i 6 58	0	—	—	e 7·8
Bergen	17·1	77	—	—	e 6 38?	−34	—	—	—
Oxford	18·4	109	e 4 17	− 1	e 7 55	+14	—	—	—
Kew	19·0	109	i 4 26	0	e 7 55	0	—	—	e 9·1
De Bilt	21·2	100	i 4 47a	− 2	i 8 47	+ 6	—	—	e 10·6
Uccle	21·7	105	e 4 53a	− 2	e 8 42	− 9	—	—	e 10·2
Paris	22·2	111	e 5 1	+ 1	e 8 55	− 5	—	—	10·6
Copenhagen	22·5	85	e 4 59	− 3	8 57	− 8	—	—	10·6
Upsala	23·0	74	—	—	e 8 38?	−36	—	—	—
Clermont-Ferrand	24·8	114	e 5 31	+ 6	—	—	—	—	e 13·0
Potsdam	24·8	91	e 5 16	− 9	e 9 38	− 8	—	—	—
Jena	25·0	95	e 5 28	+ 1	—	—	—	—	—
Coimbra	25·1	138	e 11 7	S	(e 11 7)	+76	—	—	13·1
Stuttgart	25·3	102	i 5 32	+ 2	—	—	—	—	—
Basle	25·5	105	e 5 40	+ 8	—	—	—	—	—
Warsaw	28·7	85	e 6 0	− 1	e 10 37	−14	—	—	e 17·6
Granada	29·4	134	i 6 34	+27	9 33	?	—	—	—
Triest	29·7	102	e 9 59	?	—	—	—	—	e 16·6
Almeria	30·1	133	e 9 27	?	—	—	—	—	—
Sverdlovsk	43·1	53	e 8 12	+ 8	e 14 18	−12	—	—	—
Tucson	57·9	279	—	—	i 17 16	−39	—	—	e 33·8

Additional readings :—
Potsdam eNW = +4m.56s.
Jena e = +5m.32s.
Warsaw eN = +11m.43s., eE = +12m.5s., eN = +12m.37s.
Tucson e = +17m.29s.
Long waves were also recorded at Ivigtut, Aberdeen, Berkeley, Bozeman, Butte, and Salt Lake City.

Aug. 9d. 15h. 34m. 10s. Epicentre 61°·5N. 30°·0W. (as for previous shock).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kew		19·0	109	i 4 27	+ 1	e 7 54	− 1	i 4 42	PP	e 8·8
De Bilt		21·2	100	i 4 47a	− 2	e 8 30	−11	—	—	e 9·8
Uccle		21·7	105	e 4 52a	− 3	e 8 47	− 4	—	—	e 11·1
Copenhagen		22·5	85	e 4 57	− 5	8 56	− 9	—	—	10·8
Clermont-Ferrand		24·8	114	i 5 30	+ 5	—	—	—	—	e 12·6
Potsdam		24·8	91	e 5 22	− 3	e 8 50?	−56	—	—	e 14·8
Jena		25·0	95	e 5 26	− 1	e 9 43	− 6	—	—	e 12·8
Coimbra		25·1	138	(5 45)	+17	(e 10 22)	+31	—	—	11·6
Stuttgart		25·3	102	e 5 30k	0	—	—	—	—	—
Basle		25·5	105	(e 5 34)	+ 2	e 5 34	P	—	—	—
Zurich		26·1	105	e 5 37	0	—	—	—	—	—
Toledo		26·8	132	i 5 56	+12	10 4	−15	—	—	i 12·0
Warsaw		28·7	85	e 6 0	− 1	(e 10 50?)	0	9 25	?	e 10·8
Granada		29·4	134	—	—	i 11 21	+20	—	—	15·6
Triest		29·7	102	e 6 11	+ 1	—	—	—	—	—
Helwan	z.	50·6	99	9 6	+ 4	—	—	e 10 59	PP	—

Jena gives also e = +5m.32s.
Coimbra and Warsaw readings are confused with those of the earlier shock.
Long waves were also recorded at Ivigtut.

Aug. 9d. 22h. 17m. 40s. Epicentre 12°·4N. 92°·5E. (as on 1941, July 21d.).

Intensity VI-VII at Port Blair. Epicentre South Andamans 11°·7N. 93°·7E. (Bombay).

See Government of India Seismological Bulletin for 1941, p. 63.

A = −·0426, B = +·9761, C = +·2134; δ = +13; h = +6;
D = +·999, E = +·044; G = −·009, H = +·213, K = −·977.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		10·7	144	i 2 29	− 9	i 4 30	− 9	—	—	—
Calcutta	N.	10·8	339	i 2 46k	+ 7	i 4 45	+ 3	—	—	(i 5·5)
Hyderabad		14·4	292	3 22	− 5	6 3	− 6	—	—	7·8
Kodaikanal		14·9	264	i 3 32a	− 2	e 6 26	+ 6	—	—	7·7
Agra	E.	20·0	320	4 36	− 1	8 17	0	—	—	—
	N.	20·0	320	e 4 33	− 4	e 8 20	+ 3	—	—	—
Bombay		20·0	292	i 4 38	+ 1	i 8 27	+10	—	—	10·0
Dehra Dun	N.	22·3	326	e 5 9?	+ 8	e 9 10	+ 8	—	—	e 14·3
Batavia		23·3	142	4 31	−39	—	—	—	—	—
Manila		27·8	83	e 5 37	−16	10 45	+10	—	—	—
Almata		33·6	340	e 6 48	+ 4	—	—	—	—	—
Tashkent		35·2	329	e 6 59	+ 1	e 12 36	+ 5	—	—	—
Vladivostok		45·7	41	—	—	e 15 3	− 5	—	—	—
Baku		46·6	314	e 8 37	+ 5	15 27	+ 6	—	—	—
Sverdlovsk		50·6	338	9 0	− 2	e 16 10	− 7	—	—	—
Tananarive		54·1	236	16 50	S	(16 50)	−15	—	—	26·3
Ksara		55·5	302	e 9 55	+16	—	—	—	—	—
Theodosia		58·2	316	e 9 57	− 1	17 58	− 1	—	—	—
Helwan		59·0	297	e 10 0	− 4	—	—	e 13 50	PPP	—
Moscow		60·5	328	e 10 14	0	18 26	− 3	—	—	—
Bucharest		64·6	314	e 10 40a	− 1	19 20	− 1	19 39	PS	—
Pulkovo		65·5	331	e 10 42	− 5	e 19 23	− 9	—	—	—
Sofia		66·4	311	e 11 2	+ 9	e 19 56	+13	—	—	—
Warsaw		68·9	322	e 11 4	− 5	e 20 9	− 4	e 15 25	PPP	e 39·3
Upsala		71·8	329	e 20 59	S	(e 20 59)	+13	e 29 55	SSS	e 39·3
Triest		73·4	314	e 14 25	PP	e 21 37	+32	—	—	—
Potsdam		73·8	322	e 11 44	+ 6	i 21 26	+17	—	—	—
Copenhagen		74·2	325	i 11 48	+ 8	21 11	− 3	21 32	PS	42·3
Jena		74·8	320	e 11 43	− 1	—	—	—	—	—
Stuttgart		76·4	318	i 11 49k	− 4	—	—	—	—	—
Zurich		76·9	316	e 12 2	+ 6	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Basle		77·5	316	e 11 54	− 5	—	—	(e 22 42)	PS	22·7
Bergen		77·9	330	—	—	e 21 20?	−34	—	—	—
De Bilt		78·7	321	e 12 3	− 3	i 22 0	− 3	i 15 23	PP	e 44·3
Uccle		79·3	320	e 12 9	0	—	—	—	—	e 42·3
Clermont-Ferrand		80·8	315	e 12 13	− 4	—	—	—	—	—
Paris		80·8	318	e 12 5	−12	e 23 5	PS	e 15 35	PP	47·3
Kew		82·2	321	i 12 21	− 3	e 22 39	0	e 15 50	PP	e 43·3
Almeria		86·6	307	e 12 55	+ 9	e 23 17	[+ 5]	—	—	—
Toledo		87·1	310	e 12 44	− 5	i 23 45	+17	—	—	—
Granada		87·4	307	e 10 46a	?	23 27	− 3	25 52	PPS	50·1
Mount Wilson	z.	125·3	31	e 18 58	[− 5]	—	—	e 20 58	PP	—
Pasadena	z.	125·3	31	i 18 57	[− 6]	—	—	—	—	e 84·3
Riverside	z.	125·8	31	e 19 0	[− 4]	—	—	—	—	—
Palomar	z.	126·6	31	e 19 0	[− 5]	—	—	—	—	—
Tucson		130·7	26	e 19 7	[− 6]	—	—	i 21 36	PP	—
La Paz	z.	160·8	256	19 55	[− 7]	—	—	24 40	PP	80·3

Additional readings :—
Calcutta L given as S*.
Batavia P = +5m.4s.
Helwan eZ = +10m.59s.
Bucharest PSE = +19m.42s., S_cSN = +20m.20s.
Warsaw eE = +11m.20s.?, eN = +20m.30s., eZ = +20m.37s.
Potsdam eE = +21m.6s.
Jena eE = +11m.51s., eN = +11m.54s.
Uccle eE = +18m.26s. and +21m.15s.
Paris e = +18m.45s., SS = +31m.3s., i = +31m.11s.
Kew iP_cPZ = +12m.37s., eZ = +19m.41s., eSZ = +23m.41s., eS_cSZ = +23m.50s., eZ = +24m.21s., eSSZ = +30m.5s., eSSSN = +33m.20s.?, eZ = +34m.20s.?, eQEN = +43m.20s.
Granada i = +19m.16s., SS = +29m.46s., SSS = +32m.22s.
Pasadena iZ = +19m.13s.
Riverside eZ = +19m.12s.
Tucson +19m.56s., +22m.27s., and +22m.51s.
Long waves were also recorded at Huancayo, Riverview, and Adelaide.

Aug. 9d. Readings also at 0h. (near Mizusawa), 3h. (Florissant), 4h. (Mount Wilson, Palomar, Pasadena, Riverside, Tucson, and Mizusawa), 8h. (near Amboina), 14h. (Kew (2), Reykjavik, De Bilt, and Paris), 15h. (Kew, De Bilt, Paris, Stonyhurst, Toledo, Prague, Reykjavik, and near Mizusawa), 17h. (Clermont-Ferrand), 22h. (Almata, Sverdlovsk, Batavia, and Manila).

Aug. 10d. 5h. 5m. 11s. Epicentre 59°·0N. 139°·0W.

A = −·3906, B = −·3396, C = +·8556 ; δ = −5 ; h = −9 ;
D = −·656, E = +·755 ; G = −·646, H = −·561, K = −·518.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sitka		2·4	127	i 0 44	+ 3	i 1 10	− 2	—	—	—
Victoria		13·9	132	e 3 22	+ 1	—	—	—	—	6·8
Seattle		15·1	132	—	—	e 7 2	SSS	—	—	e 8·1
Saskatoon		19·4	96	e 4 22	− 8	—	—	—	—	9·8
Bozeman		21·5	116	e 4 52	0	i 8 45	− 2	—	—	e 10·9
Ukiah		22·3	146	—	—	e 9 8	+ 6	e 9 57	SSS	e 11·5
Berkeley		23·8	145	e 5 15	0	e 9 43	+15	—	—	—
Branner		24·2	145	e 5 22	+ 3	—	—	i 6 5	PPP	—
Salt Lake City		25·0	125	e 5 23	− 4	e 10 1	+12	—	—	e 12·0
Tinemaha	z.	25·7	139	e 5 39	+ 6	—	—	—	—	—
Haiwee		26·7	139	e 5 47	+ 4	—	—	—	—	—
Mount Wilson		28·4	141	e 5 59	+ 1	—	—	—	—	—
Pasadena		28·4	141	e 5 59	+ 1	—	—	—	—	e 15·1
Riverside	z.	28·8	141	e 6 3	+ 1	—	—	—	—	—
Palomar	z.	29·6	140	e 6 9	0	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		32·8	132	e 6 36	− 1	e 11 59	+ 5	i 7 29	PP	e 14·6
Chicago U.S.C.G.S.		35·9	96	e 8 12	PP	e 12 36	− 6	—	—	e 14·9
Florissant		36·7	101	i 7 11	+ 1	e 12 45	− 9	i 8 29	PP	—
St. Louis		36·9	101	i 6 58	−14	e 12 56	− 2	i 15 2	SS	e 19·1
Cape Girardeau	E.	38·3	101	e 9 39	PPP	—	—	—	—	i 19·6
Toronto		38·9	86	—	—	e 16 49	SSS	—	—	19·8
Ottawa		39·5	81	7 31	− 3	13 29	− 8	15 49	SS?	e 18·8
Buffalo		39·7	81	i 7 33	− 3	i 20 25	L	—	—	(i 20·4)
Shawinigan Falls		40·3	77	e 7 36	− 4	e 16 43	SS	—	—	20·8
Seven Falls		40·9	76	—	—	e 13 55	− 3	—	—	19·8
Vermont		41·5	81	—	—	e 14 0	− 7	—	—	e 20·9
Fordham		43·7	84	e 7 54	−14	e 14 40	+ 1	e 9 54	PP	i 22·1
Harvard	Z.	43·7	81	—	—	e 17 37	SSS	—	—	e 22·2
Philadelphia		43·7	87	—	—	e 14 28	−11	e 17 7	SS	e 17·6
East Machias		44·2	77	—	—	e 14 49	+ 3	e 17 33	SS	e 21·2
Columbia		45·2	97	—	—	e 18 10	SS	—	—	e 18·5
Tacubaya	E.	48·9	127	15 43	S	(15 43)	−10	—	—	—
Kew		64·9	27	e 10 49	+ 6	e 26 49?	SSS	e 13 10	PP	e 31·8
Uccle	Z.	66·6	26	e 10 54	0	—	—	—	—	—
Jena		67·8	20	e 11 3	+ 1	—	—	—	—	—
Warsaw		67·9	14	e 11 3	+ 1	—	—	e 13 32	PP	e 39·8
Paris		68·0	27	e 11 2	− 1	—	—	—	—	37·8
Toledo		74·6	35	i 11 43	0	22 4	PS	—	—	—
Granada		77·2	36	i 12 0a	+ 3	i 22 24	PS	14 24	PP	42·2
Almeria		77·9	34	e 12 1	0	22 29	PS	15 25	?	—

Additional readings :—
Seattle e = +7m.37s.
Bozeman e = +4m.56s.
Berkeley eSN = +9m.47s.
Branner iE = +5m.40s.
Tucson i = +7m.1s., ePPP = +7m.54s.
Florissant eE = +15m.16s.
St. Louis i = +7m.2s., eN = +12m.50s., eE = +16m.12s., eN = +17m.16s.
Cape Girardeau eE = +18m.25s.
Fordham e = +17m.36s.
Philadelphia eSS = +17m.22s.
Granada PPP = +16m.53s., PPS = +24m.15s., SS = +30m.45s.
Almeria PPP = +17m.21s., SS = +28m.11s., SSS = +31m.41s.
Long waves were also recorded at Halifax, De Bilt, La Paz, San Juan, Honolulu, Clermont-Ferrand, and Lincoln.

Aug. 10d. 16h. 59m. 45s. Epicentre 32°·5S. 70°·0W. (as on 1940 Sept. 29d.).

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

Approximate. Pasadena suggests deep focus.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata	E.	10·3	106	2 32	0	4 39	+ 9	—	—	5·4
	N.	10·3	106	2 33	+ 1	4 27	− 3	—	—	5·8
	Z.	10·3	106	2 33	+ 1	4 32	+ 2	—	—	5·8
La Paz		16·0	6	i 4 1k	+13	i 7 18	SSS	—	—	9·2
Huancayo		21·0	346	i 4 56	+ 9	—	—	—	—	e 9·0
Fordham		73·1	357	i 11 33	− 1	—	—	—	—	—
Tucson		75·1	326	i 11 43	− 3	—	—	i 12 10	P_cP	—
La Jolla		78·8	321	i 12 4	− 2	—	—	—	—	—
Palomar	Z.	79·0	322	i 12 6k	− 1	—	—	i 12 37	sP	—
Riverside		79·8	322	i 12 9k	− 3	—	—	i 12 30	pP	—
Mount Wilson		80·3	322	i 12 12k	− 2	—	—	i 12 33	pP	—
Pasadena		80·3	322	i 12 12k	− 2	e 22 51	+31	i 23 34	pP	—
Santa Barbara	Z.	81·3	320	i 12 17k	− 3	—	—	—	—	—
Haiwee		81·7	323	i 12 19	− 3	—	—	—	—	—
Tinemaha		82·6	323	i 12 23k	− 3	—	—	i 12 46	pP	—
Branner		84·9	321	e 12 35	− 3	—	—	—	—	—

For Notes see next page.

NOTES TO AUGUST 10d. 16h. 59m. 45s.

Additional readings :—
La Plata SN = +4m.45s. and +4m.57s., SZ = +5m.3s. and +5m.21s.
Huancayo i = +5m.13s., +5m.46s., and +6m.47s.
Tucson iP_cP = +12m.50s.
Riverside isPZ = +12m.40s.
Mount Wilson is$P$ = +12m.43s.
Pasadena is$P$ = +12m.43s.
Tinemaha is$P$ = +12m.55s.

Aug. 10d. 17h. 25m. 22s. Epicentre 45°·4N. 5°·3E.

Intensity V in the coastal region of Saint-André. Epicentre 45°25′N. 5°17′E. (Strasbourg). Macroseismic area 2200 sq. km.

See Annales de l'Institut de Physique du Globe de Strasbourg 2e partie, Seismologie, t. VI, Strasbourg 1948, p. 14.

A = +·7016, B = +·0651, C = +·7096 ; δ = +1 ; h = −4 ;
D = +·092, E = −·996 ; G = +·707, H = +·065, K = −·705.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Clermont-Ferrand		1·6	283	i 0 32	+ 2	i 0 54	+ 3	—	—	—
Besancon		1·9	14	c 0 56	S	(e 0 56)	− 3	—	—	—
Neuchatel		2·0	36	e 0 30	− 5	e 1 5	S_g	e 0 41	P_g	—
Basle		2·7	36	e 0 45	0	e 1 27	S_g	e 0 53	P_g	—
Zurich		3·0	49	0 49	− 1	e 1 38	S_g	e 0 59	P_g	—
Chur		3·3	63	e 1 2	P*	e 1 45	S*	—	—	—
Ravensburg		3·8	50	e 1 17	P_g	i 1 48	+ 1	i 2 5	S_g	—
Paris		4·0	331	—	—	e 2 2	S*	—	—	—
Stuttgart		4·3	37	e 1 7	− 1	e 1 52	− 8	e 1 23	P_g	—
Uccle	z.	5·5	353	e 1 56	P_g	—	—	—	—	—
Jena		7·0	33	e 2 38	P_g?	e 3 38	S*	e 3 50	S_g	—
Toledo		8·8	236	—	—	e 4 13	+20	—	—	e 5·1

Additional readings :—
Ravensburg eE = +1m.21s., iEN = +2m.15s.
Stuttgart ePNW = +1m.10s., eS*NE = +2m.8s., eNE = +2m.17s., iS_gNW = +2m.19s.
Jena e = +3m.46s.

Aug. 10d. 19h. 17m. 49s. Epicentre 22°·4S. 62°·5W. (as on 1937 Nov. 14d.). Depth 0·030.

A = +·4273, B = −·8208, C = −·3789 ; δ = −14 ; h = +4 ;
D = −·887, E = −·462 ; G = −·175, H = +·336, K = −·925.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz	z.	7·9	316	1 56	+ 3	i 3 16	− 5	—	—	4·6
La Plata	E.	13·1	163	3 6	+ 7	5 28	+ 8	5 47	SS	6·1
	N.	13·1	163	3 6	+ 7	5 23	+ 3	—	—	6·0
Huancayo		16·0	308	i 3 22	−12	i 6 8	−17	—	—	6·8
Fordham		63·8	351	i 10 21	+11	—	—	—	—	—
Tucson		71·3	319	i 10 55	− 2	—	—	i 11 46	pP	—
La Jolla	z.	75·8	315	e 11 20	− 3	—	—	—	—	—
Palomar	z.	75·9	316	i 11 22	− 2	—	—	—	—	—
Riverside		76·6	316	i 11 26k	− 1	—	—	i 12 23	pP	—
Mount Wilson		77·2	316	i 11 28k	− 3	—	—	e 12 22	pP	—
Pasadena		77·2	316	i 11 29k	− 2	—	—	i 12 21	pP	—
Haiwee		78·3	318	e 11 39	+ 2	—	—	—	—	—
Santa Barbara	z.	78·4	315	e 11 35	− 2	—	—	—	—	—
Tinemaha		79·1	318	i 11 41	0	—	—	—	—	—

Additional readings :—
Huancayo i = +6m.2s.
Tucson i = +11m.11s.
Long waves were also recorded at San Juan.

Aug. 10d. Readings also at 0h. (near Berkeley), 4h. (near Branner), 5h. (Palomar, Lincoln, Mount Wilson, and near Sitka (2)), 11h. (near Sotchi), 14h. (Pasadena, Mount Wilson, Riverside, Palomar, Bozeman, near Berkeley, Branner, Tinemaha, Tucson, Honolulu, and Sverdlovsk), 15h. (Chicago U.S.C.G.S.), 16h. (Tucson and near Branner), 17h. (Tucson), 18h. (near Apia), 22h. (Sitka), 23h. (near Tchimkent and near Basle).

Aug. 11d. Readings at 1h. (Manila), 2h. (La Paz), 3h. (Batavia and Medan), 7h. (Tucson), 11h. (near Chur and Zurich), 12h. (near Manila), 13h. (near Mizusawa), 17h. (near Tchimkent and Tananarive), 19h. (Tucson), 21h. (Balboa Heights), 22h. (Columbia), 23h. (Tucson, La Paz, Pasadena, Mount Wilson, La Jolla, Tinemaha, Palomar, near Tchimkent, Frunse, Tashkent, and Andijan).

Aug. 12d. Readings at 0h. (Toledo), 2h. (Medan, Batavia, Bucharest, Sofia, and Triest), 6h. (near Amboina), 10h. (Clermont-Ferrand, near Zurich, and Basle), 12h. (Palomar, Tinemaha, Mount Wilson, Pasadena, Arapuni, Wellington, Columbia, San Juan, and Tucson), 13h. (Berkeley, Tacubaya, Bozeman, Paris, and Huancayo), 14h. (Sverdlovsk, Almata, Tashkent, and near Andijan), 15h. (College and La Paz), 18h. (Tashkent, near Andijan, La Paz, and Tucson), 20h. (Lincoln), 22h. (near Amboina), 23h. (Tucson and Andijan).

Aug. 13d. 0h. 55m. 35s. Epicentre 39°·2N. 70°·7E. (as on 1941 April 20d.).

$A = +\cdot2568$, $B = +\cdot7334$, $C = +\cdot6295$; $\delta = +9$; $h = -2$;
$D = +\cdot944$, $E = -\cdot331$; $G = +\cdot208$, $H = +\cdot594$, $K = -\cdot777$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		2·0	39	i 0 50	+15	—	—	—	—	—
Tashkent		2·4	333	i 0 46	+ 5	—	—	—	—	—
Almata		6·2	47	1 29	− 6	2 38	−10	—	—	—
Semipalatinsk		13·1	28	e 3 7	− 3	5 3	−35	—	—	—
Agra	E.	13·5	151	e 3 40	+25	6 10	+23	—	—	—
Baku		16·0	281	—	—	7 15	+29	—	—	—
Sverdlovsk		18·9	343	4 18	− 6	i 7 32	−21	—	—	—
Bombay	E.	20·3	175	—	—	e 8 50	SS	—	—	i 12·2
Calcutta	N.	22·4	133	—	—	i 9 40	SS	—	—	—
Irkutsk		26·6	49	5 38	− 4	10 4	−12	—	—	—
Moscow		27·5	318	e 5 52	+ 2	10 25	− 5	—	—	—
Pulkovo		32·6	322	—	—	e 12 1	+10	—	—	—
Warsaw	Z.	36·3	309	—	—	e 14 50	SS	—	—	e 21·4
Upsala		38·8	320	—	—	e 16 4	SS	—	—	e 17·8
Prague		40·6	305	—	—	e 17 43	SSS	—	—	—
Potsdam		41·2	309	—	—	e 16 25	SS	—	—	22·4
Copenhagen		41·4	314	i 7 55	+ 5	—	—	—	—	—
Triest		41·8	298	—	—	e 16 55	SS	—	—	—
Bergen		45·0	321	—	—	e 17 42	SS	—	—	e 23·6
De Bilt		46·0	309	—	—	e 18 40	SS	—	—	e 22·4
Paris		48·5	305	—	—	e 19 25?	SS	—	—	29·4
Kew	Z.	49·5	309	e 9 0	+ 6	—	—	—	—	e 24·0
Toledo		56·0	296	i 9 51	+ 8	19 22	?	—	—	—

Additional readings :—
Potsdam eN = +17m.0s., iZ = +20m.49s.
Copenhagen i = +7m.59s.
Kew eZ = +14m.21s. and +18m.57s.
Granada (Δ = 56°·9) gives P = 1h.8m.39s., PP = 15m.37s., S = 20m.0s., PS = 20m.42s., L = 32m.18s.
Long waves were also recorded at Kodaikanal and Uccle.

Aug. 13d. Readings also at 0h. (Bucharest), 1h. (Almata, Andijan, near Tashkent, and near Triest), 2h. (2) and 3h. (near Andijan), 7h. (Tucson and near Andijan (2)), 8h. (Huancayo, La Paz, near Almata, Andijan, and near Coimbra), 10h. (near Huancayo), 11h. and 12h. (near La Paz), 13h. (College and near Andijan), 14h. (Bozeman, Butte, Seattle, and Tucson), 15h. (near Almata), 17h. (near Branner and near Mizusawa), 18h. (Tucson).

Aug. 14d. 1h. 43m. 35s. Epicentre 23°·7S. 65°·7W. Depth of focus 0·015.
(as on 1939 May 13d.).

$A = +\cdot3772$, $B = -\cdot8355$, $C = -\cdot3996$; $\delta = +2$; $h = +4$;
$D = -\cdot911$, $E = -\cdot412$; $G = -\cdot164$, $H = +\cdot364$, $K = -\cdot917$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		7·5	341	i 1 58a	+10	i 3 23	+11	—	—	4·0
La Plata	E.	13·0	151	3 7	+ 6	5 31	+ 8	—	—	5·9
	N.	13·0	151	3 1	0	5 25	+ 2	—	—	6·1
	Z.	13·0	151	3 8	+ 7	5 7	−16	—	—	5·5
Huancayo		14·8	320	i 3 24	0	i 6 4	− 1	i 6 58	sS	i 7·8
Rio de Janeiro	N.	20·7	92	e 4 44	+12	—	—	—	—	e 8·6
San Juan		41·8	0	i 7 40	+ 2	i 13 42	− 4	i 9 26	PP	e 24·4
Columbia		59·2	346	e 9 51	+ 1	e 17 42	− 4	e 19 35	sS	—
Philadelphia		63·9	354	i 10 24	+ 3	e 18 38	− 7	e 19 53	PS	—
Fordham		64·7	354	i 10 28	+ 1	i 18 54	− 1	—	—	—
Cape Girardeau		64·7	340	e 10 21	− 6	e 18 48	− 7	—	—	—
Florissant		66·1	340	i 10 36	0	i 19 9	− 3	e 11 22	pP	—
St. Louis		66·1	340	e 10 34	− 2	e 19 7	− 5	e 10 48	P_cP	—
East Machias		68·2	0	—	—	e 19 40	+ 3	—	—	e 20·6
Ottawa		69·4	354	e 10 58	+ 2	e 19 53	+ 2	—	—	—
Tucson		70·4	321	i 11 1	− 1	i 20 1	− 2	i 12 20	pP	e 29·5
Seven Falls		70·7	358	—	—	e 20 11	+ 5	—	—	29·4
La Jolla		74·7	317	e 11 27	0	—	—	—	—	—
Palomar	z.	74·8	318	i 11 28	0	—	—	—	—	—
Riverside		75·5	318	i 11 30k	− 2	—	—	—	—	—
Mount Wilson		76·1	318	i 11 35k	0	—	—	—	—	—
Pasadena		76·1	318	i 11 34k	− 1	i 21 3	− 4	—	—	—
Salt Lake City		77·1	326	e 11 40	− 1	e 21 12	− 6	—	—	—
Haiwee		77·3	320	i 11 42	0	—	—	—	—	—
Santa Barbara	z.	77·3	317	e 11 41	− 1	—	—	—	—	—
Tinemaha		78·1	320	i 11 46k	0	—	—	—	—	—
Bozeman		80·4	330	e 11 57	− 2	e 21 51	− 2	e 27 4	sSS	—
Butte		81·4	330	—	—	e 23 5	+62	e 23 46	sS	—
San Fernando		82·0	45	—	—	e 22 49	sS	—	—	—
Coimbra		83·0	41	e 18 22	?	i 22 27	+ 8	—	—	—
Granada		84·1	46	i 12 24k	+ 6	22 15	−15	13 4	pP	35·4
Almeria		84·7	47	e 12 21	0	22 47	+11	12 35	pP	35·4
Toledo		85·4	44	i 12 32	+ 8	i 22 44	+ 1	13 19	pP	—
Kew		94·2	34	—	—	e 23 30	[+ 3]	—	—	e 51·4
Paris		94·7	37	—	—	(25 25?)	PS	—	—	25·4
Triest		99·6	43	—	—	i 24 0	[+ 5]	i 25 3	SS	—
Copenhagen		102·9	33	—	—	24 19	[+ 9]	25 1	?	—
Warsaw		106·4	41	—	—	e 24 32	[+ 5]	e 27 44	PS	—
Helwan		107·2	64	—	—	e 24 34	[+ 4]	i 27 50	PS	—
Bucharest		107·4	48	—	—	e 24 35	[+ 4]	—	—	—
Ksara		112·0	62	—	—	e 24 59	[+ 9]	e 28 43	PS	—

Additional readings :—
La Paz iN = +2m.50s. and +3m.42s.
Huancayo i = +4m.2s., iS = +6m.7s., i = +6m.31s.
San Juan e = +8m.12s., i = +13m.25s., eSS = +17m.4s., iSS = +17m.13s., isSS = +18m.25s.
Columbia eS_cS = +18m.57s.
Florissant iP_cPE = +10m.45s., epPZ = +11m.25s., eZ = +11m.49s., eE = +20m.1s., iE = +20m.15s., esSE = +20m.27s., esSN = +20m.30s., iE = +21m.44s.
St. Louis iZ = +11m.5s., +18m.23s., and +19m.18s., isSE = +20m.14s., iN = +20m.30s., iE = +20m.37s.
Tucson i = +11m.50s., e = +11m.59s., isP = +12m.50s., e = +15m.2s.
Butte e = +24m.33s.
Coimbra e = +23m.24s. and +24m.12s.
Granada sP = +13m.35s., PPP = +17m.52s., pPPP = +18m.51s., iS = +22m.39s., pSKS = +23m.34s., pS = +23m.52s., sS = +24m.15s., sPS = +25m.8s., SS = +28m.40s., sSS = +30m.12s., SSS = +32m.46s., PKPPKP = +39m.40s.
Almeria PP = +15m.53s., PPP = +17m.52s., S_cS = +23m.9s., SS = +28m.33s., SSS = +31m.59s.
Kew eE = +24m.13s., eZ = +25m.37s.
Warsaw eN = +26m.2s.
Helwan eZ = +24m.37s., eE = +25m.25s., iEZ = +28m.52s.

Aug. 14d. 9h. 38m. 36s. Epicentre 44°·0N. 85°·0E.

$A = +·0629$, $B = +·7190$, $C = +·6922$; $\delta = +6$; $h = -3$;
$D = +·996$, $E = -·087$; $G = +·060$, $H = +·690$, $K = -·722$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Frunse		7·7	265	e 1 55	− 1	—	—	—	—	—
Tchimkent		11·4	267	i 2 54	+ 7	—	—	—	—	—
Tashkent		11·9	263	e 2 54	0	i 5 9	0	—	—	—
Irkutsk		15·3	50	e 3 39	0	6 22	− 8	—	—	—
Agra	E.	17·7	200	e 4 8	− 2	e 7 11	−15	7 27	SS	—
Sverdlovsk		20·0	319	i 4 35	− 2	i 8 12	− 5	—	—	—
Calcutta		21·6	171	e 4 36	−18	i 8 39	−10	i 9 17	SS	e 11·4
Bombay		27·0	206	e 5 20	−25	i 10 21	− 1	—	—	13·2
Hyderabad		27·0	194	5 52	+ 7	10 37	+15	—	—	13·7
Moscow		32·2	309	6 26	− 6	11 36	− 9	—	—	—
Kodaikanal	E.	34·3	194	—	—	i 14 2	SS	—	—	—
Pulkovo		36·1	315	e 7 1	− 4	e 12 38	− 7	—	—	—
Ksara		39·0	271	e 7 36	+ 6	e 13 42	+13	—	—	—
Bucharest		41·4	292	e 8 24?	+34	—	—	—	—	e 22·4
Warsaw		42·2	306	e 7 52	− 4	e 14 11	− 6	e 9 35	PP	e 23·4
Manila		42·4	123	e 17 39	SS	23 28	L	—	—	(23·5)
Upsala		42·5	317	—	—	e 14 10	−12	e 17 25	SS	e 20·4
Sofia		43·9	291	e 8 18	+ 8	e 14 48	+ 6	e 17 53	SS	e 25·4
Helwan		44·4	270	e 8 18	+ 4	14 54	+ 5	9 51	PP	—
Belgrade		45·0	294	e 13 35	?	e 18 37	SS	—	—	e 25·6
Potsdam		46·8	307	i 8 41	+ 8	i 15 19	− 5	i 10 25	PP	e 21·4
Prague		46·8	304	e 20 33	?	e 23 50	L	—	—	(e 23·8)
Jena		48·2	306	e 8 40	− 4	—	—	—	—	e 24·4
Triest		49·0	299	—	—	e 15 47	− 8	—	—	—
Stuttgart		50·5	304	e 8 57	− 5	e 15 4	−72	c 10 41	PP	—
Zurich		51·6	303	e 9 9a	− 1	—	—	—	—	—
Basle		52·0	304	e 9 12	− 1	—	—	—	—	e 27·3
Uccle		52·5	308	e 9 18	+ 1	—	—	—	—	i 27·8
Paris		54·4	306	e 9 34	+ 3	—	—	—	—	29·2
Toledo		63·2	300	e 10 12	−20	e 19 8	+ 5	—	—	—
College		63·9	23	—	—	e 29 28	?	—	—	e 30·6
Almeria		64·0	297	e 10 42	+ 4	—	—	—	—	42·4
Granada		64·5	298	c 17 16	?	—	—	—	—	37·0
Victoria		84·5	19	—	—	e 23 6	+ 4	—	—	42·4
Ottawa		89·4	347	e 12 54	− 6	e 23 34	[+ 5]	—	—	40·4
Fordham		93·4	344	—	—	e 23 58	[+ 6]	—	—	—

Additional readings :—
Calcutta iPP = +4m.59s.
Bombay eP?N = +5m.24s.
Warsaw eZ = +17m.13s., eE = +19m.55s., iZ = +22m.38s., eN = +22m.41s.
Upsala eN = +18m.46s., eE = +19m.24s.?
Potsdam eSE = +15m.24s., eSSSE = +19m.24s.
Jena eZ = +8m.45s.
Triest iS = +22m.3s.
Stuttgart i = +9m.1s.
Long waves were also recorded at other American and European stations.

Aug. 14d. Readings also at 1h. (Huancayo), 2h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and Tucson), 6h. (La Paz and Tucson), 7h. (La Paz and Huancayo), 8h. (La Paz, near Tashkent and Tchimkent), 14h. (Rio de Janeiro), 18h. (Riverview).

Aug. 15d. 6h. 9m. 24s. Epicentre 19°·4N. 26°·3W.

Felt in the Cape Verde Islands, IV at Praia, and III-IV near Adran (French West Africa). Epicentre 18°·7N. 26°·3W. (Strasbourg).

J. P. Rothé.
Chronique seismologique, Revue pour l'Etude des Calamites, tome VII, No. 21, Genève, 1944, p. 60.

$A = +\cdot8462$, $B = -\cdot4182$, $C = +\cdot3302$; $\delta = -2$; $h = +5$;
$D = -\cdot443$, $E = -\cdot896$; $G = +\cdot296$, $H = -\cdot146$, $K = -\cdot944$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lisbon	24·3	33	i 5 22	+ 2	9 34	− 3	—	—	10·3
San Fernando	24·6	42	i 5 26	+ 3	10 8	+26	5 56	PP	13·6
Coimbra	25·8	32	5 34	0	9 59	− 3	6 6	PP	13·8
Granada	26·6	43	i 5 31k	−11	i 9 59	−17	5 58	pP	13·6
Almeria	27·2	45	i 5 46	− 1	i 10 3	−22	6 7	PP	13·8
Toledo	28·0	38	i 5 53	− 2	i 10 48	+10	—	—	—
Algiers	31·0	50	i 6 22	+ 1	i 11 30	+ 4	i 7 8	PP	14·6
Marseilles	35·7	41	e 6 59	− 3	12 36	− 3	e 7 32	PP	17·1
Clermont-Ferrand	35·8	36	e 7 2	− 1	i 12 49	+ 8	—	—	e 17·4
Bermuda	36·8	298	7 8	− 3	e 12 33	−23	e 8 20	PP	15·2
Paris	37·4	32	i 7 18	+ 2	13 0	− 5	i 8 40	PP	16·6
San Juan	37·6	275	i 7 17	− 1	i 13 8	0	i 8 46	PP	i 15·9
Oxford	37·8	25	i 7 20	0	i 12 28	−43	i 8 43	PP	15·8
Kew	38·0	26	i 7 21a	0	i 13 18	+ 4	i 8 48	PP	e 19·0
Neuchatel	38·6	36	e 7 25	− 1	e 13 33	+10	—	—	—
Stonyhurst	39·0	22	i 7 32	+ 2	i 13 46	+17	—	—	16·6
Basle	39·3	30	e 7 33	+ 1	e 13 34	0	e 8 27	PP	—
Uccle	39·6	29	i 7 34a	− 1	i 13 39	+ 1	i 9 8	PP	18·6
Zurich	39·8	37	e 7 37a	+ 1	e 13 33	− 9	—	—	e 18·6
Halifax	39·9	318	7 33	− 4	13 37	− 6	9 12	PP	17·6
Edinburgh	40·4	20	7 37	− 4	13 39	−11	9 28	PP	—
De Bilt	40·9	29	i 7 46a	0	i 13 59	+ 1	i 9 16	PP	e 19·1
Stuttgart	40·9	35	i 7 45	− 1	i 13 57	− 1	i 9 20	PP	e 18·3
Aberdeen	41·8	19	i 7 54	+ 1	e 14 12	+ 1	i 16 55	SSS	18·4
Triest	42·1	41	i 7 55	0	i 14 15	− 1	i 9 19	PP	—
East Machias	42·4	316	i 7 58	0	i 14 15	− 5	e 9 38	PP	i 17·5
Jena	43·4	35	i 8 4	− 2	e 14 36	+ 1	9 50	PPP	e 20·1
Weston	44·3	312	i 8 13	0	i 14 46	− 2	9 59	PP	—
Harvard	44·5	312	i 8 14	− 1	i 14 48	− 3	—	—	e 28·2
Ivigtut	44·5	345	8 19	+ 4	14 46	− 5	18 12	SS	—
Prague	44·5	36	8 14a	− 1	i 14 48	− 3	e 9 57	PP	e 19·1
Potsdam	44·9	32	i 8 19	+ 1	i 14 57	+ 1	i 8 28	pP	17·6
Rio de Janeiro	45·2	202	e 8 21	+ 1	—	—	—	—	e 21·2
Seven Falls	45·5	318	8 24	+ 1	15 4	− 1	10 24	PPP	20·6
Fordham	45·7	309	8 26	+ 2	15 8	0	—	—	—
Belgrade	46·2	46	e 9 29	+61	e 16 16	+61	e 10 44	PP	e 28·8
Vermont	46·2	313	e 8 21	− 7	e 15 18	+ 3	e 10 15	PP	e 18·6
Copenhagen	46·4	29	i 8 31a	+ 1	15 16	− 2	10 32	PP	—
Philadelphia	46·5	307	8 31	0	15 15	− 4	i 10 21	PP	—
Shawinigan Falls	46·6	317	8 32	0	15 16	− 5	10 20	PP	—
Bergen	46·7	20	i 8 33	+ 1	i 15 24	+ 2	e 10 23	PP	e 20·6
Sofia	47·6	49	i 8 41a	+ 2	e 15 37	+ 2	—	—	19·6
Georgetown	47·8	305	i 8 42	+ 1	i 15 39	+ 1	10 35	PP	—
Ottawa	48·2	314	8 44	0	15 43	0	10 38	PP	e 21·6
Pennsylvania	48·7	308	i 8 46	− 2	e 15 48	− 2	e 10 22	PP	—
Buffalo	49·2	310	e 7 57	−55	e 15 4	−54	i 19 46	SS	—
Warsaw	49·2	36	e 8 52a	0	i 15 57	− 1	i 10 54	PP	e 20·6
Bucharest	50·0	48	e 8 56k	− 2	16 8	− 1	i 9 24	PcP	19·2
Pittsburgh	50·2	307	i 8 57	− 3	i 16 10	− 1	i 9 11	pP	—
Columbia	50·5	298	e 8 59	− 3	i 16 17	+ 1	e 18 54	ScS	e 23·2
Upsala	51·1	26	9 4	− 2	e 16 22	− 2	e 10 46	PP	e 23·6
Balboa Heights	52·5	266	e 9 15	− 2	(16 36)	− 7	—	—	16·6
Helwan	53·0	67	e 9 18a	− 3	16 48	− 2	11 21	PP	25·2
La Paz	54·4	231	i 9 29a	− 2	i 17 8	− 1	i 10 19	pP	26·4
Chicago, U.S.C.G.S.,	56·1	308	i 9 42	− 1	i 17 30	− 2	e 11 42	PP	e 23·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Theodosia		56·6	48	e 9 47	0	17 39	+ 1	—	—	—
Ksara		56·7	63	e 9 48	0	e 17 43	+ 3	—	—	—
Pulkovo		56·8	30	9 46	− 2	17 44	+ 3	—	—	—
Cape Girardeau	N.	57·4	302	e 9 55	+ 2	e 17 48	− 1	e 10 35	PcP	—
Huancayo		57·5	240	e 9 51	− 2	i 17 40	−10	i 10 42	PcP	i 24·2
St. Louis		58·0	304	i 9 55	− 2	i 17 51	− 6	i 18 17	PS	—
Florissant		58·1	304	i 9 56	− 2	i 17 53	− 5	i 10 3	pP	23·4
Moscow		59·5	36	10 8	+ 1	18 21	+ 5	—	—	—
Sotchi		59·6	50	e 10 9	+ 1	e 18 18	+ 1	—	—	—
La Plata	E.	61·8	209	10 16	− 7	18 36	−10	12 36	PP	28·5
	N.	61·8	209	10 16	− 7	18 42	− 4	13 24	PP	31·6
	Z.	61·8	209	10 20	− 3	—	—	—	—	31·6
Lincoln		62·9	306	e 10 26	− 4	i 18 56	− 4	e 23 11	SS	e 30·0
Sverdlovsk		72·3	35	e 11 26	− 3	i 20 53	+ 1	—	—	—
Bozeman		72·8	313	e 11 55	+23	e 20 51	− 7	e 25 49	SS	32·8
Butte		73·8	314	e 13 5	?	i 22 10	PS	—	—	e 33·9
Logan		74·1	311	e 11 41	+ 1	e 21 12	0	e 14 34	PP	e 32·5
Salt Lake City		74·3	308	e 11 41	0	i 21 14	− 1	e 16 14	PPP	34·8
Tucson		75·4	299	i 11 47	0	e 21 28	+ 1	i 14 34	PP	e 33·8
Seattle		79·8	316	e 21 21	?	e 22 28	+14	e 31 23	SSS	e 33·1
Haiwee		80·1	304	i 12 16	+ 3	e 22 17	− 1	—	—	—
Palomar	Z.	80·1	301	i 12 12	− 1	—	—	e 15 13	PP	—
Tinemaha		80·1	305	e 12 12	− 1	e 22 20	+ 2	—	—	—
Riverside		80·3	303	i 12 13	− 1	—	—	e 39 5	P′P′	—
Victoria		80·3	318	12 16	+ 2	22 18	− 2	15 42	PP	36·6
La Jolla		80·5	301	e 12 15	0	—	—	—	—	—
Mount Wilson		80·7	303	e 12 15	− 1	—	—	e 15 20	PP	—
Pasadena		80·9	303	i 12 15	− 2	i 22 22	− 4	i 15 21	PP	e 33·1
Fresno	N.	81·3	305	e 12 24	+ 4	—	—	—	—	—
Tashkent		81·5	49	i 12 22	+ 1	i 22 30	− 2	—	—	—
Tananarive		81·8	113	12 23	+ 1	22 36	+ 1	23 38	PS	36·9
Santa Barbara		82·0	303	e 12 24	+ 1	—	—	i 12 43	PcP	—
Lick		82·6	307	e 12 29	+ 3	e 15 46	PP	e 12 53	PcP	e 39·9
Santa Clara		82·8	307	i 12 29	+ 2	i 23 4	+19	e 23 11	sS	e 39·4
Berkeley		82·9	307	i 12 28	0	e 22 48	+ 2	—	—	e 33·6
Branner		83·0	307	e 12 29	+ 1	e 22 25	−22	—	—	e 39·9
Ukiah		83·2	309	e 12 29	0	e 22 52	+ 3	e 18 3	PPP	e 34·4
Ferndale		83·4	310	e 12 20	−10	e 22 55	+ 4	—	—	e 39·1
Sitka		83·5	328	e 12 39	+ 8	i 23 1	+ 9	e 31 46	SSS	e 39·8
Frunse		84·7	46	e 12 38	+ 1	23 6	+ 2	—	—	—
College		85·0	339	e 12 38	0	e 22 56	[− 5]	e 28 37	SS	e 34·6
Bombay		92·0	70	i 13 16	+ 4	23 44	[0]	e 16 52	PP	40·8
Agra	E.	93·3	61	13 18	0	23 52	[0]	—	—	—
Irkutsk		96·7	29	17 10	PP	24 11	[+ 1]	26 29	PS	—
Hyderabad	E.	97·5	70	e 13 28	− 9	24 14	[0]	17 33	PP	47·4
Kodaikanal	E.	99·4	77	15 16	?	i 24 26	[+ 2]	e 17 49	PP	—
Calcutta	N.	103·5	61	e 13 38	−26	i 24 56	[+12]	e 17 24	PP	e 41·9
Vladivostok		114·6	18	—	—	25 34	[+ 4]	31 10	PPS	—
Honolulu		117·7	308	—	—	e 29 56	PS	e 36 35	SS	—
Manila		133·4	46	21 44	PP	26 10	[−18]	22 52	PKS	—
Amboina		150·6	61	20 36?	?	—	—	—	—	—
Riverview		165·5	175	i 20 8k	[+ 2]	—	—	i 24 52	PP	e 84·3
Brisbane	N.	171·9	176	e 21 28	?	—	—	e 25 34	?	—

Additional readings :—
Lisbon SN = +9m.41s.
San Fernando PPPEN = +6m.24s., SSN = +11m.4s.
Coimbra i = +5m.44s. and +5m.57s., PPP = +6m.18s., i = +6m.42s. and +8m.22s., SE = +10m.3s., i = +10m.29s., +10m.37s., and +10m.51s., SS = +11m.9s., i = +12m.5s.
Granada P_cP = +8m.32s., ipP_cP = +9m.12s., sS = +10m.39s., SS = +10m.56s.
Almeria PPP = +6m.30s., P_cP = +9m.3s., P_cS = +12m.46s.
Algiers i = +8m.6s.
Bermuda e = +8m.41s., +12m.8s., +12m.57s., and +14m.29s.
San Juan i = +8m.58s., +9m.38s., +10m.30s., +13m.45s., and +14m.58s.
Oxford i = +12m.41s. and +13m.17s.

Continued on next page.

Kew i = +7m.32s., iPPPNZ = +9m.15s., iP_cP = +9m.36s., iEZ = +12m.45s., cSSNZ = +15m.54s., eSSE = +16m.4s., cSSSNZ = +16m.28s., S_cSE = +17m.30s., eQ = +18m.0s.
Stonyhurst i = +13m.31s. and +14m.9s.
Uccle iSEZ = +13m.42s., SSSN = +16m.39s.
Halifax SSS = +16m.18s.
Edinburgh eSS = +17m.5s., S_cS = +17m.47s.
De Bilt iZ = +7m.57s., iN = +17m.6s.
Stuttgart i = +7m.49s., and +7m.56s., e = +8m.4s., iSSEN = +16m.52s., eS_cSE = +17m.56s.
Aberdeen iEN = +14m.35s.
Triest ePPP = +9m.49s., iSS = +17m.21s.
East Machias e = +11m.14s.
Jena PPN = +9m.53s., e = +17m.36s.
Weston SS = +18m.12s.
Prague ePPP = +11m.18s., e = +16m.12s., cSS = +18m.4s.
Potsdam iEN = +8m.37s., iP_cPN = +10m.14s., iPPPEN = +10m.47s., iE = +11m.57s., iN = +12m.1s., iP_cSE = +13m.54s.
Rio de Janeiro iPN = +8m.25s.
Seven Falls SSS = +18m.42s.
Belgrade ePPP = +12m.11s., eS_cS = +16m.56s., eSS = +20m.10s.
Vermont i = +8m.29s. and +15m.18s.
Copenhagen i = +15m.21s.
Philadelphia e = +8m.44s., eS_cS = +18m.23s.
Shawinigan Falls SS = +18m.18s.
Georgetown esS = +15m.55s., SS = +19m.10s.
Ottawa eN = +17m.44s., SS = +18m.51s., SSS = +20m.6s.
Pennsylvania e = +9m.7s.
Buffalo i = +11m.9s., eSSS = +21m.14s.
Warsaw PN = +8m.56s., ePPE = +10m.57s., iSZ = +16m.0s., eN = +17m.49s., eZ = +17m.57s., eE = +18m.11s., eN = +18m.43s.
Bucharest ePEN = +9m.0s., iNZ = +9m.8s., eN = +9m.18s., SE = +16m.13s., eS_cSN = +18m.47s., eS_cSE = +18m.50s.
Pittsburgh isS = +16m.31s.
Upsala eE = +10m.52s., eN = +12m.33s., iS_cSE = +18m.57s., iSKSE = +18m.57s.
Helwan iE = +9m.30s., PSN = +17m.20s., SSN = +20m.28s., SSSE = +21m.51s.
La Paz isPN = +10m.45s., iPPN = +11m.33s., isPPN = +13m.8s., sSN = +18m.17s., S_cS = +19m.4s., SSN = +20m.42s., iN = +21m.48s., iSSS = +22m.24s., iN = +23m.20s.
Chicago U.S.C.G.S. e = +11m.13s., eS_cS = +19m.11s., e = +19m.29s.
Cape Girardeau eN = +10m.7s.
Huancayo i = +11m.42s., ePPP = +13m.23s., i = +13m.27s., +15m.59s., +18m.3s., +21m.5s., and +21m.25s.
St. Louis iZ = +10m.14s. and +10m.19s., iE = +18m.49s., iS_cSN = +19m.43s.
Florissant iN = +10m.11s., iSN = +17m.56s., isSN = +18m.9s., iPSN = +18m.20s., iS_cSN = +19m.42s.
La Plata N = +10m.30s., P_cPN = +11m.6s., P_cPE = +11m.18s., N = +12m.30s., SSN = +22m.42s., SSSE = +25m.30s., SSS?N = +26m.18s.
Sverdlovsk i = +11m.29s.
Bozeman e = +25m.29s., eSSS = +29m.6s.
Butte e = +27m.2s. and +31m.10s.
Logan e = +12m.10s., iS = +21m.17s.
Salt Lake City e = +25m.44s.
Tucson i = +12m.33s., +12m.47s., +13m.36s., and +16m.43s., iS_cS = +22m.3s., e = +26m.38s.
Palomar iZ = +12m.25s. and +12m.33s., ePKP,PKPZ = +39m.2s.
Tinemaha iZ = +12m.25s.
Riverside iZ = +12m.24s. and +12m.33s.
Victoria PS = +23m.14s., SS = +27m.36s.?, e = +33m.36s.?
Mount Wilson iZ = +12m.28s., ePKP,PKPZ = +39m.2s.
Pasadena iZ = +12m.28s. and +12m.35s., iPKP,PKPZ = +38m.50s.
Tananarive SEN = +22m.55s., SS = +27m.45s., SSS = +31m.51s.
Santa Barbara iZ = +12m.36s.
Lick eE = +12m.42s.
Berkeley eN = +12m.31s., ePN = +12m.38s., eN = +22m.52s., eZ = +22m.58s., iPKP,PKPZ = +34m.48s.
Branner eN = +22m.48s.
Ukiah e = +27m.45s., eSS = +28m.14s.
Ferndale iN = +12m.51s., iE = +12m.59s., eN = +23m.5s.
Sitka e = +12m.54s.
Agra SKKSE = +24m.22s., SE = +24m.25s.
Bombay iE = +24m.11s., iPSEN = +25m.24s., SSN = +30m.42s., SSE = +30m.45s., iE = +24m.11s.
Hyderabad SE = +25m.0s., PSE = +26m.48s., SSE = +31m.48s.
Calcutta iPSN = +26m.7s., eSSN = +31m.7s.
Vladivostok S = +27m.48s.
Manila SKKS = +28m.31s.
Long waves were also recorded at Medan, Arapuni, Christchurch, and Wellington.

Aug. 15d. 15h. 54m. 44s. Epicentre 19°·4N. 26°·3W. (as at 6h.).

$A = +·8462$, $B = -·4182$, $C = +·3302$; $\delta = -2$; $h = +5$;

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Clermont-Ferrand		35·8	36	e 6 53	−10	—	—	—	—	e 18·0
Kew		38·0	26	e 7 23	+ 2	e 13 44	+30	e 8 51	PP	e 18·3
De Bilt		40·9	29	i 7 48k	+ 2	—	—	e 9 26	PP	e 18·3
Potsdam		44·9	32	e 8 16	− 2	—	—	—	—	e 21·3
Warsaw		49·2	36	e 8 51	− 1	—	—	—	—	e 25·3
Sverdlovsk		72·3	35	i 11 32	+ 3	e 20 56	+ 4	—	—	—
Tucson		75·4	299	e 11 47	0	—	—	—	—	—
Palomar		80·1	302	i 12 13	0	—	—	—	—	—
Riverside		80·3	303	i 12 14	0	—	—	—	—	—
Mount Wilson	z.	80·7	303	e 12 16	0	—	—	—	—	—
Pasadena	z.	80·9	303	i 12 16	− 1	—	—	—	—	—

Additional readings :—
Kew e = +9m.14s., eZ = +17m.19s.
Tucson i = +11m.56s. and +12m.30s.
Long waves were also recorded at San Juan.

Aug. 15d. Readings also at 2h. (near Mizusawa), 6h. (Balboa Heights), 7h. (Tucson), 16h. (near Tchimkent and Frunse), 19h. (Mizusawa), 20h. (Tacubaya), 22h. (La Paz, Huancayo, and Sitka), 23h. (Tucson, Pasadena, Mount Wilson, and Palomar).

Aug. 16d. 3h. Undetermined shock.

Tuai P? =40m.41s., S =42m.2s.
Christchurch P =41m.13s., S =45m.17s., Q =45m.37s., L =47·0m.
Arapuni S? =42m.48s.
Wellington S? =43m.7s., Q =44m.15s., L =45·5m.
Auckland S? =43m.25s., i =44m.15s., L =44·8m.
Riverview eN =50m.6s., eLZ =52·3m.
Pasadena iP =51m.15s., eLEN =70·5m.
Mount Wilson ePZ =51m.17s.
Palomar iPZ =51m.18s.
Tucson iP =51m.34s., i =51m.48s. and 52m.3s., eL =55·8m.
Sydney e =53m.0s.
Kew eZ =53m.53s., eL =64·0m.
Potsdam eE =58m.4s., eNZ =59m.0s., eLZ =67·0m.
De Bilt eZ =58m.35s. and 63m.25s., eL =128·0m.
Warsaw eZ =59m.23s., eLZ =135·0m.
Huancayo e =60m.12s., iSKS =62m.4s., i =72m.6s., eL =79·4m.
Berkeley eN =61m.56s., eE =62m.0s., eLEN =74·7m.
Victoria e =62m.48s., L =83·0m.
San Juan eSKS =64m.8s.
La Paz eZ =65m.0s., LZ =88·0m.
Santa Clara eE =82m.44s., eLE =88·5m.
Long waves were also recorded at Chicago U.S.C.G.S., Honolulu, and Ukiah.

Aug. 16d. Readings also at 2h. (La Paz), 3h. (Andijan (2) and Almata), 4h. (near Mizusawa), 6h. (near Ksara), 8h. (Tacubaya and Tucson), 16h. (Tucson, Riverside, Tinemaha, Palomar, and Mount Wilson), 18h. (near Fresno, San Juan, and Palomar), 22h. (Columbia).

Aug. 17d. Readings at 5h. (La Paz), 7h. (Tucson), 10h. (near Batavia), 11h. (near Fresno), 14h. (Auckland, Riverview, Brisbane, Manila (2), and Medan), 15h. (Tucson and near Almata), 16h. (Palomar, Tinemaha, La Jolla, Santa Barbara, Mount Wilson, Riverside, Tucson, and Pasadena), 19h. (Triest).

Aug. 18d. Readings at 2h. (near Andijan and Tchimkent), 6h. (Tucson), 8h. (Tucson, Mount Wilson, Palomar, Pasadena, and near La Paz), 11h. (Port au Prince), 14h. (near Batavia), 18h. (near Tananarive and near Medan), 23h. (Tucson),

Aug. 19d. 9h. Undetermined shock.

Apia e =58m.45s.
Tucson eP =62m.58s., e =63m.7s., i =63m.22s. and 64m.14s., e =65m.34s. and 67m.54s., i =68m.17s., e =68m.42s.
Riverside ePZ =67m.30s.
Pasadena iPEZ =67m.30s., iEZ =67m.48s.
Palomar ePZ =67m.33s., eZ =67m.45s.
Mount Wilson ePZ =67m.33s., iZ =67m.52s.
Tinemaha iP =67m.42s.
Haiwee iZ =67m.58s.
De Bilt iZ =75m.29s., eZ =79m.18s., eL =140·0m.
Paris e =75m.33s., L =136·0m.
Berkeley e =89m.0s.
Long waves were also recorded at Wellington, Arapuni, Auckland, La Paz, and Huancayo.

Aug. 19d. 16h. 19m. 30s. Epicentre 9°·5N. 93°·7E. (as on 1938 Oct. 7d.).

$A = -·0637$, $B = +·9844$, $C = +·1640$; $\delta = 0$; $h = +7$
$D = +·998$, $E = +·065$; $G = -·011$, $H = +·164$, $K = -·987$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		7·7	139	1 40	−16	i 3 53	+28	i 3 47	SS	—
Calcutta	N.	13·9	339	i 3 31a	+10	i 6 31	+34	i 8 27	L	(i 8·5)
Colombo		13·9	262	3 14	− 7	5 50	− 7	—	—	7·3
Kodaikanal	E.	16·0	273	i 3 43a	− 5	e 6 30	−16	—	—	7·9
Hyderabad	E.	16·8	300	3 58	0	7 22	+17	7 52	SSS	8·7
Batavia		20·3	138	4 36	− 4	9 48	SSS	—	—	—
Bombay		22·3	297	i 5 3	+ 2	i 9 21	+19	i 10 3	SSS	11·3
Agra		23·0	323	e 5 7	0	e 9 32	+18	—	—	11·7
Dehra Dun	N.	25·4	328	e 5 28	− 3	e 10 6	+10	—	—	e 15·1
Manila		27·1	76	6 3	+17	10 31	+ 7	—	—	13·0
Tashkent		38·3	329	e 7 27	+ 3	i 13 25	+ 6	—	—	—
Tchimkent		38·9	331	i 7 37	+ 8	—	—	—	—	—
Irkutsk		43·5	9	e 8 4	− 3	e 14 43	+ 7	—	—	—
Vladivostok		47·2	38	10 36	PP	i 15 48	+19	19 18	SS	—
Baku		49·5	316	9 1	+ 7	16 13	+11	—	—	—
Tananarive		53·5	238	—	—	e 16 45	−12	19 39	?	21·9
Sverdlovsk		53·7	338	9 26	0	17 5	+ 6	—	—	—
Ksara		58·1	303	e 10 7	+ 9	e 18 8	+10	e 20 10	?	—
Helwan		61·4	298	i 10 18	− 2	18 42	+ 2	e 12 3	PP	—
Moscow		63·5	329	10 31	− 3	19 5	− 2	—	—	—
Sofia		69·2	312	e 11 14	+ 4	e 20 48	+32	—	—	—
Warsaw		71·9	322	e 12 32	+65	e 20 30?	−18	15 30?	PPP	40·5
Triest		76·2	315	e 11 59	+ 7	e 21 46	+10	—	—	—
Potsdam		76·8	322	e 11 50	− 5	i 21 36	− 6	e 22 37	PS	e 38·5
Copenhagen		77·3	325	12 2	+ 4	21 47	− 1	—	—	—
Stuttgart		79·3	318	e 12 6	− 3	e 22 0	− 9	—	—	—
Zurich		79·8	316	e 12 10	− 2	e 22 7	− 7	—	—	—
De Bilt		81·7	321	i 12 20	− 2	i 22 35	+ 1	—	—	e 40·5
Uccle		82·3	320	e 12 23	− 2	e 22 36	− 4	—	—	e 40·5
Paris		83·7	318	12 31	− 1	24 6	PPS	e 15 51	PP	48·5
Kew		85·1	321	e 12 37	− 2	e 23 4	− 4	e 16 24	PP	e 36·5
Toledo		89·9	310	i 13 0	− 2	i 23 33	[+ 1]	—	—	—
College		93·0	22	—	—	e 24 32	+11	e 34 55	SSS	e 46·3
Mount Wilson	Z.	127·1	33	e 19 3	[− 3]	—	—	—	—	—
Tucson		132·3	28	i 19 16	[0]	—	—	—	—	—
San Juan		145·9	325	e 19 41	[0]	—	—	—	—	e 82·7

Additional readings :—
Medan iPEN = +1m.46s., iE = +3m.26s., iN = +3m.30s.
Colombo P = +3m.14s.
Bombay iPPEN = +5m.31s., iSSE = +10m.8s., i = +10m.38s.
Agra iP = +5m.13s.
Potsdam ePN = +11m.54s., iE = +12m.0s., iP_cPZ = +12m.6s., iSE = +21m.46s.
Stuttgart e = +13m.52s.
Paris ? = +35m.15s.
Kew ePZ = +12m.42s., eP_cP = +12m.48s., ePPPZ = +19m.22s., eZ = +20m.57s., ePSEZ = +24m.36s., ePPSE = +25m.52s., eZ = +28m.50s., eSSZ = +30m.22s., eSSSZ = +35m.0s.
Tucson i = +19m.49s., +22m.38s., and +22m.42s., e = +23m.2s.
Long waves were also recorded at Upsala, Bozeman, La Paz, and Huancayo.

Aug. 19d. 17h. 40m. 20s. Epicentre 13°·3S. 167°·0E. (as on 1938 Nov. 18d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		19·2	221	i 4 22	− 6	i 8 2	+ 3	i 5 9	PPP	—
Apia		20·7	93	4 53	+ 9	9 10	SS	5 13	PP	—
Auckland		24·5	166	5 40?	+18	10 20	SS	6 25	PPP	13·3
Riverview		25·0	213	i 5 30k	+ 3	i 9 49	0	i 6 31	PPP	e 12·1
Sydney		25·0	213	e 5 46	+19	e 9 58	+ 9	—	—	—
Arapuni		25·9	167	—	—	i 11 28	SS	—	—	12·9
Wellington		28·7	168	6 0	− 1	11 15	+25	i 7 5	PPP	13·7
Christchurch		30·5	171	6 18	+ 1	11 22	+ 4	12 39	Q	14·9
Adelaide		33·5	225	i 6 57	+14	i 12 2	− 3	e 7 49	PP	17·1
Honolulu		48·7	46	—	—	e 16 21	PPS	—	—	e 20·5
Perth		50·3	240	14 34	?	20 50	?	16 5	PS	25·6
Manila		53·3	300	9 13	−10	14 39	?	—	—	—
Nagoya		56·0	331	e 9 40	− 3	—	—	—	—	—
Kobe		56·5	330	9 43	− 3	17 37	0	—	—	—
Nagano		56·6	333	9 46	− 1	—	—	—	—	—
Sendai		56·8	338	9 42	− 6	17 33	− 8	—	—	—
Kumamoto		57·5	325	9 51	− 2	—	—	—	—	—
Batavia		59·6	271	10 7	− 1	18 10	− 7	—	—	—
Vladivostok		64·7	333	e 10 41	− 1	i 19 21	− 1	—	—	—
Medan		69·8	280	11 14	0	20 16	− 7	—	—	—
Ukiah		83·2	49	—	—	e 24 2	PPS	e 27 56	SS	e 34·8
Santa Clara	E.	83·5	51	—	—	e 24 33	PPS	—	—	e 39·0
Irkutsk		84·6	327	e 12 37	+ 1	23 1	− 2	—	—	—
Pasadena		85·2	54	i 12 44	+ 5	e 24 24	PPS	—	—	e 39·9
Mount Wilson	Z.	85·3	54	e 12 45	+ 5	—	—	—	—	—
Riverside	Z.	85·8	54	i 12 48	+ 6	—	—	—	—	—
Palomar	Z.	86·0	56	i 12 46	+ 3	—	—	—	—	—
Tinemaha	Z.	86·1	51	e 12 49	+ 5	—	—	—	—	—
Tucson		90·5	57	e 13 11	+ 6	e 24 51	PS	—	—	e 42·0
Tashkent		104·4	310	—	—	24 46	[− 2]	27 39	PS	—
Florissant		108·0	54	e 28 24	PS	34 39	SSP	29 38	PPS	—
Sverdlodsk		110·0	326	18 53	PP	28 32	PS	—	—	—
Huancayo		113·3	110	—	—	i 29 41	PS	e 36 17	?	e 54·0
Ottawa		118·5	45	e 19 12	[+22]	—	—	—	—	61·7
San Juan		128·8	77	e 21 13	PP	—	—	—	—	e 64·9
Seven Falls		121·4	42	—	—	e 37 40?	SS	—	—	63·7
Ksara		131·3	303	e 19 36	[+22]	—	—	e 22 46	?	—
Warsaw		132·6	333	e 22 46	?	—	—	—	—	e 69·7
Copenhagen		133·3	341	e 19 19	[+ 1]	—	—	e 21 51	PP	—
Potsdam		135·8	338	i 19 25	[+ 2]	—	—	i 22 0	PP	e 63·7
Helwan	Z.	135·9	299	19 25	[+ 2]	—	—	e 22 4	PP	—
Sofia		137·1	320	e 18 40?	[−45]	—	—	e 22 4	PP	—
De Bilt		138·6	343	i 19 31k	[+ 3]	i 23 7	SKP	i 22 17	PP	e 64·7
Uccle		140·0	344	e 19 31	[0]	i 23 13	SKP	i 22 27	PP	—
Stuttgart		140·1	338	e 19 23	[− 8]	—	—	—	—	—
Kew		140·6	348	e 19 30	[− 2]	e 23 14	SKP	e 22 30	PP	e 68·7
Triest		140·6	330	e 19 46	[+14]	i 23 10	SKP	e 22 5	PP	e 71·7
Zurich		141·5	337	e 19 33	[0]	—	—	—	—	—
Basle		141·8	337	e 19 27	[− 7]	—	—	—	—	—
Paris		142·3	344	19 33	[− 2]	—	—	i 22 41	PP	e 74·7
Clermont-Ferrand		144·9	340	e 19 46	[+ 7]	—	—	—	—	—
Toledo		152·4	345	i 20 11	[+20]	26 53	[− 4]	—	—	—
Almeria		154·7	341	20 5	[+11]	27 9	[+10]	23 37	PP	86·7
Granada		154·8	343	i 19 55	[+ 1]	—	—	—	—	99·2
San Fernando	N.	156·1	347	21 0	[+64]	—	—	—	—	—

Additional readings :—
Auckland P_cP? = +8m.28s., Q = +11·5m., P_cS? = +12m.30s.
Riverview SSZ = +10m.38s.
Wellington i = +7m.50s.
Adelaide i = +12m.10s., +12m.18s., and +12m.48s., iSS = +14m.35s.

Continued on next page.

Perth PPP = +16m.35s., i = +17m.22s., +17m.40s., and +23m.9s.
Tashkent S = +25m.57s.
Florissant eE = +28m.35s. and +29m.43s.
San Juan e = +21m.22s.
Warsaw eZ = +23m.2s.
Copenhagen 22m.49s.
Potsdam iZ = +19m.33s., ePPE = +22m.3s., eN = +22m.16s., iN = +22m.24s., iPKS = +22m.58s., iE = +23m.4s.
Helwan iZ = +19m.37s. and +24m.31s.
De Bilt ePPP = +25m.10s.
Kew eZ = +19m.41s., +20m.38s., +23m.38s., +24m.40s. ?, +29m.50s., and +31m.10s. ?, eE = +32m.10s. ?, eZ = +35m.7s., +39m.45s., +42m.30s., and +47m.58s., eQ = +50·7m.
Triest e = +25m.10s. and +28m.10s., ePPS = +37m.10s.
Clermont-Ferrand e = +19m.49s.
Almeria PKP_2 = +21m.25s., PP = +25m.17s., PPP = +29m.21s., SKKS = +32m.0s., PPS = +39m.0s., SS = +45m.59s.
Long waves were also recorded at Tananarive, La Paz, Upsala, Stonyhurst, Prague, and other American stations.

Aug. 19d. Readings also at 2h. (near Mizusawa), 3h. (Manila, Sverdlovsk, Colombo, Tashkent, and near Medan), 5h. (San Juan), 8h. (La Paz and La Plata), 12h. (Huancayo and La Paz), 15h. (near Tacubaya (6)), 16h. (Basle), 17h. (Oaxaca, Mount Wilson, Palomar, Tucson, Vera Cruz, and Tacubaya), 18h. (near Batavia, College, and Berkeley), 19h. (Huancayo, Tucson, Riverside, Pasadena, Palomar, Mount Wilson, Tacubaya (2) and La Paz), 21h. (near Tacubaya (11) and near Ferndale, Branner, Lick, and Berkeley), 23h. (Medan).

Aug. 20d. 8h. Pacific shock.

Auckland S? = +26m.5s., L = 30m.
Brisbane iE = +27m.37s., eN = +31m.31s., eE = 36m.0s.
Arapuni e = 28m., L = 29m.30s.
Christchurch P = 29m.11s., S? = 31m.52s., Q = 32m.8s., R = 33m.50s.
Sydney e = 32m.0s. and 38m.12s.
Branner ePEN = 32m.12s.
La Jolla ePZ = 32m.16s.
Pasadena eP = 32m.16s., eEN = 59m.6s., eE = 69m.42s.
Mount Wilson ePZ = 32m.17s.
Santa Barbara iPZ = 32m.18s.
Riverside ePEZ = 32m.19s.
Palomar iPZ = 32m.19s.
Lick ePEN = 32m.22s., eN = 32m.40s.
Santa Clara ePEZ = 32m.26s., eSE = 42m.5s., eSSSE = 53m.20s., eLE = 60m.25s.
Haiwee ePZ = 32m.26s.
Tinemaha eP = 32m.26s.
Berkeley iPZ = 32m.33s., eSN = 42m.4s., iSE = 42m.13s., eLE = 58m.12s.
Tucson iP = 32m.39s., i = 33m.12s., ePP = 35m.38s., e = 35m.52s., eS_cS = 42m.50s., eL = = 60m.11s.
Huancayo e = 37m.42s., ePP = 39m.22s., i = 44m.26s., e = 46m.37s., 50m.23s., and 51m.29s., eSS = 64m.15s., eL = 70m.32s.
Honolulu e = 38m.40s., eL = 41m.32s.
Warsaw eEN = 40m., eZ = 40m.8s., eL = 104m.
Copenhagen i = 40m.3s.
Potsdam eNZ = 40m.7s., eE = 40m.10s., iZ = 40m.15s., eLN = 95m.
Paris ePKP = 40m.14s., ePKS = 44m., L = 101m.
De Bilt iZ = 40m.15s.k, eL = 105m.
Uccle iPZ = 40m.16s.a.
Helwan iZ = 40m.19s., 40m.29s., and 40m.45s.
Kew eZ = 40m.30s., eLEZ = 98m.
Toledo iPKPZ = 41m.0s. and 42m.10s., PP = 45m.55s., LE = 102m.
College e = 43m.44s. and 44m.0s., eL = 64m.29s.
San Juan e = 45m.37s. and 49m.21s.
Long waves were also recorded at Riverview, Wellington, Ukiah, Bozeman, and Salt Lake City.

Aug. 20d. 10h. 36m. 32s. Epicentre 41°·7N. 15°·4E. (as on 1937, Dec. 15d.).

$A = +·7219$, $B = +·1989$, $C = +·6627$; $\delta = -13$; $h = -2$;
$D = +·266$, $E = -·964$; $G = +·639$, $H = +·176$, $K = -·749$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		4·1	346	1 2	− 3	i 1 47	− 8	i 1 10	P*	—
Belgrade		4·8	48	e 1 8	− 7	e 1 42	−30	e 2 35	S_g	—
Sofia		6·0	77	e 1 41	P*	e 3 9	S*	e 1 55	P_g	—
Ravensburg		7·4	327	—	—	e 3 6	−12	i 3 43	S_g	i 4·2
Zurich		7·5	321	e 1 56	+ 3	e 3 21	+ 1	—	—	—
Basle		8·0	319	e 2 3	+ 3	e 3 28	− 5	—	—	—
Ebingen		8·0	327	e 2 3	+ 3	i 3 40	+ 7	e 2 43	P_g	—
Neuchatel		8·1	314	e 2 12	+10	—	—	—	—	—
Bucharest		8·3	67	e 2 28?	PPP	—	—	—	—	4·5
Stuttgart		8·3	330	i 2 2	− 2	i 3 47	+ 7	i 2 33	PPP	e 4·8
Prague		8·4	356	e 2 4	− 2	e 3 53	SS	e 2 32	PPP	—
Jena		9·6	345	e 2 19	− 2	e 4 4	− 8	—	—	e 4·9
Clermont-Ferrand		9·8	298	e 2 28	+ 4	—	—	—	—	—
Potsdam		10·8	353	e 3 41	?	e 4 28	−14	e 5 5	SSS	e 5·5
Warsaw		11·2	17	—	—	e 4 28?	−24	—	—	e 7·0
Uccle	z.	11·9	324	—	—	e 5 1	− 8	—	—	—
Toledo	z.	14·8	270	e 3 49	PP	—	—	—	—	—
Moscow		20·2	38	4 31	− 8	8 19	− 2	—	—	—
Sverdlovsk		32·5	47	e 6 29	− 5	e 11 39	−10	—	—	—

Additional readings :—
Triest $iP_g = +1$m.14s., $iS = +2$m.2s., $eS_g = +2$m.7s.
Belgrade $e = +3$m.10s.
Ravensburg $eN = +3$m.9s., $+3$m.20s., and $+3$m.27s., $eS_gE = +4$m.4s.
Ebingen $eZ = +3$m.56s., $eE = +4$m.20s., $eS_gZ = +4$m.34s.
Stuttgart $i = +2$m.6s., $iP_gNW = +2$m.42s., $iS = +3$m.24s., $iS^*NW = +4$m.2s., $iNW = +4$m.23s., $iS_gNW = +4$m.32s.
Jena $iPE = +2$m.22s., $eE = +3$m.54s. and $+4$m.0s.
Potsdam $iE = +5$m.15s., $iZ = +5$m.24s.
Uccle $eZ = +6$m.6s.
Long waves were also recorded at Upsala, Kew, Paris, and De Bilt.

Aug. 20d. 13h. 16m. 8s. Epicentre 0°·1N. 122°·7E. Depth of focus 0·010. (as on 1940, Sept. 12d.).

$A = -·5402$, $B = +·8415$, $C = +·0017$; $\delta = -6$; $h = +·7$;
$D = +·842$, $E = +·540$; $G = -·001$, $H = +·001$, $K = -1·000$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		6·7	124	i 1 33	− 4	i 2 43	−10	—	—	—
Manila		14·5	353	i 3 29$_a$	+ 7	i 6 20	+20	—	—	—
Batavia		17·1	248	3 58	+ 4	i 6 59	− 1	—	—	—
Medan		24·2	279	5 24	+16	i 10 4	+47	—	—	—
Mizusawa	E.	42·4	21	(e 7 46)	0	e 7 46	P	—	—	—
Almata		59·3	323	e 9 54	0	—	—	—	—	—
Andijan		60·9	318	e 10 4	− 1	18 16	+ 3	—	—	—
Tashkent		63·3	317	i 10 20	− 1	e 18 40	− 4	—	—	—
Sverdlovsk		75·0	331	i 11 30	− 2	20 51	−10	—	—	—
Baku		76·9	312	e 11 44	+ 1	e 21 20	− 2	—	—	—
Potsdam		101·8	324	—	—	e 27 52	PPS	—	—	—
Mount Wilson	z.	113·8	52	i 18 27	[− 1]	—	—	e 19 17	pPKP	—
Pasadena		113·8	52	i 18 27	[− 1]	—	—	—	—	—
Riverside	z.	114·4	52	e 18 27	[− 2]	—	—	—	—	—
Palomar	z.	115·0	53	e 18 42	[+12]	—	—	—	—	—
Tucson		120·2	51	i 18 40	[0]	—	—	—	—	—

Additional readings :—
Batavia $iS?EN = +7$m.22s.
Potsdam $eN = +29$m.16s., $eE = +30$m.40s.
Tucson $e = +19$m.59s. and $+20$m.42s.

Aug. 20d. Readings also at 4h. (near Amboina), 10h. (near Medan (2)), 11h. (near Medan), 12h. (Zurich, Basle, and Clermont-Ferrand (2)), 13h. (Triest (2)), 14h. (La Paz and near Tacubaya (4)), 17h. and 18h. (Tucson), 22h. (near Branner).

Aug. 21d. 0h. 1m. 9s. Epicentre 30°·0N. 114°·0W. (Rough).

$A = -·3528$, $B = -·7925$, $C = +·4975$; $\delta = +3$; $h = +2$;
$D = -·914$, $E = +·407$; $G = -·202$, $H = -·454$, $K = -·868$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		3·5	50	i 1 4	P*	i 1 36	− 4	i 1 9	P_g	i 2·7
La Jolla	z.	4·0	317	e 1 9	P*	—	—	—	—	—
Palomar	z.	4·1	326	e 1 1	− 4	—	—	—	—	—
Riverside		4·9	325	e 1 10	− 7	e 2 18	+ 3	i 1 24	P*	—
Mount Wilson	z.	5·4	323	i 1 34	P*	—	—	—	—	—
Pasadena		5·4	321	e 1 33	P*	e 2 35	+ 7	—	—	—

Additional readings :—
Tucson i = +1m.18s., and +1m.24s., iS = +1m.48s., i = +2m.5s.
Long waves were also recorded at Berkeley, Ukiah, Salt Lake City, Columbia, Bozeman, and Chicago, U.S.C.G.S.

Aug. 21d. Readings also at 0h. (Tucson), 5h. (Tucson (2)), 6h. (Tucson), 8h. (Mizusawa), 14h. (Tucson), 15h. (near Triest), 16h. (Huancayo), 20h. (near Granada, Toledo, and Almeria), 22h. (Almata), 23h. (Almata, Andijan, Sverdlovsk, near Calcutta, and near Amboina).

Aug. 22d. 19h. Undetermined shock.

Brisbane iP?E = 0m.56s., iS?E = 4m.33s., iS?N = 4m.36s.
Riverview eP?E = 2m.16s., eN = 2m.23s., eS?E = 6m.23s., iN = 6m.31s., iE = 6m.35s., SS?N = 7m.3s., iE = 7m.23s., eLE = 8·9m.
Manila ePEZ = 6m.20s., SN = 13m.31s.
Sydney e = 6m.33s.
Adelaide eN = 6m.36s., iSN = 12m.16s., Q = 13m.10s., R = 15m.36s.
Auckland e = 8m.0s., L = 12·0m.
Riverside ePZ = 9m.21s.
Mount Wilson ePZ = 9m.27s.
Tucson eP = 9m.51s., eL = 38·4m.
Potsdam eZ = 16m.0s., eE = 18m.22s., eZ = 18m.33s., iN = 19m.30s., eLN = 64·0m.
De Bilt iZ = 16m.4s. and 19m.0s., eL = 75·0m.
Paris ePKP = 16m.4s., ePP = 19m.20s., e = 20m.48s., eL = 75m.
Toledo PKPZ = 16m.11s., PP = 20m.35s., L = 95·0m.
Almeria ePKP = 16m.30s., e = 19m.42s. and 29m.27s.
Uccle ePPZ = 18m.57s.
Victoria e = 19m.18s., L = 39·0m.
Triest e = 19m.30s.
Perth = 21m.40s. and 45m.0s.
St. Louis e = 24m.42s., 31m.6s., 36m.59s., and 38m.58s.
Florissant eE = 25m.0s.
Long waves were also recorded at Wellington, Pasadena, Kew, Arapuni, Berkeley, Bozeman, Huancayo, Chicago U.S.C.G.S., College, Honolulu, Salt Lake City, and Ukiah.

Aug. 22d. Readings also at 0h. (Tashkent and De Bilt), 4h. (Balboa Heights), 7h. (St. Louis), 9h. (Sofia), 11h. (Wellington, Riverview, Tucson, and Christchurch), 12h. (Paris, near Manila, and near Tchimkent), 13h. (Tucson), 15h. (near Amboina), 16h. (Tinemaha (2), Mount Wilson (2), Perth, Palomar (2), Calcutta, Colombo, Bombay, Sydney, Bozeman, Adelaide, Riverside, Batavia, Pasadena (2), Christchurch, Riverview, Wellington, College, East Machias, and Tucson (2), 17h. (Granada, Agra, Huancayo, Potsdam, College, East Machias, Paris, De Bilt, and Kew), 18h. (Kew), 20h. (Tucson and East Machias), 22h. (near Mizusawa), 23h. (near Branner).

Aug. 23d. Readings at 2h. (Riverview and near la Paz), 4h. (near La Paz), 5h. (near Branner, Lick, and Berkeley), 13h. (Berkeley), 16h. (Tucson).

Aug. 24d. Readings at 0h. (near Berkeley), 2h. (near Berkeley), 11h. (Sofia and Bucharest), 12h. (Tucson), 17h. (Tucson (2), Copenhagen, Palomar, Tinemaha, Riverside, Mount Wilson, and Pasadena), 21h. (La Paz), 22h. (La Paz, Huancayo, and La Plata), 23h. (Haiwee, San Juan, Tucson, Palomar, Tinemaha, Riverside, Mount Wilson, and Pasadena).

Aug. 25d. 3h. 3m. 56s. Epicentre 16°·4N. 99°·6W.

A = −·1601, B = −·9464, C = +·2806; δ = +4; h = +5;
D = −·986, E = +·167; G = −·047, H = −·277, K = −·960.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	2·8	77	0 50	+ 3	—	—	—	—	—
Tacubaya	E.	3·0	7	0 50	0	—	—	—	—	—
Puebla	N.	3·0	27	0 51	+ 1	—	—	—	—	—
Vera Cruz	N.	4·3	49	1 11	+ 3	—	—	—	—	—
Guadalajara	N.	5·5	321	e 1 26	+ 1	—	—	—	—	—
Tucson		18·8	330	i 4 20	− 3	e 8 23	SS	i 4 56	PPP	i 9·6
La Jolla		22·9	320	e 5 6	0	—	—	—	—	—
Palomar	Z.	23·0	322	i 5 6a	− 1	—	—	—	—	—
Riverside	Z.	23·7	322	i 5 14k	0	—	—	—	—	—
Florissant		23·8	19	e 5 12	− 3	e 9 21	− 7	i 5 25	pP	e 11·2
Mount Wilson	Z.	24·3	322	i 5 18k	− 2	—	—	—	—	—
Pasadena		24·3	322	i 5 19a	− 1	—	—	—	—	e 12·6
Haiwee		25·6	325	i 5 31	− 1	—	—	—	—	—
Tinemaha		26·4	325	i 5 39	− 1	—	—	—	—	—
Chicago		27·3	20	—	—	e 10 22	− 5	—	—	e 12·4

Additional readings :—
Tucson e = +4m.26s., i = +5m.32s.
Florissant eE = +6m.18s.
Long waves were also recorded at Bozeman and Butte.

Aug. 25d. Readings also at 2h. (near Apia), 11h. (Guadalajara, Tacubaya, Pasadena, Riverside, Tinemaha, and Bozeman), 15h. (Oaxaca, Vera Cruz, Tucson, Palomar, and Riverside), 17h. (near Andijan), 19h. (near Berkeley, Fresno, Branner, and Lick), 21h. (Tucson), 23h. (La Paz and near Mizusawa).

Aug. 26d. 17h. Undetermined shock.

Brisbane iN = 14m.16s., eE = 18m.38s., iN = 18m.46s.
Manila iPZ = 15m.31s., S = 20m.39s.
Riverview eE = 20m.17s., eLN = 26·0m.
Tashkent iP = 21m.33s., eS = 31m.56s.
Sverdlovsk eP = 22m.6s., SKS = 32m.35s., SS = 38m.42s., SSS = 43m.0s.
Mount Wilson eZ = 22m.21s.
Riverside eZ = 22m.23s.
Sydney e = 23m.0s.
Perth i = 31m.0s., 33m.23s., and 35m.8s.
Wellington i = 32m.52s., L = 35m.
Long waves were also recorded at Lincoln, Paris, Warsaw, De Bilt, Potsdam, and Pasadena.

Aug. 26d. Readings also at 1h. (Triest, Mount Wilson, Riverside, and Pasadena), 4h. (near Lick, Branner, San Francisco, Berkeley, and Fresno), 5h. (near Piatigorsk), 11h. (Tucson, near Mizusawa, and near Piatigorsk), 16h. (Tucson), 18h. (Mount Wilson, Riverside, Manila, and Palomar), 19h. (Riverview), 22h. (Pasadena, Palomar, Mount Wilson, Riverside, and Tucson), 23h. (Kew, Potsdam, De Bilt, and Manila).

Aug. 27d. 18h. 31m. 15s. Epicentre 14°·8N. 98°·0W. (as on 1939 June 9d.).

$A = -\cdot1346$, $B = -\cdot9578$, $C = +\cdot2538$; $\delta = -9$; $h = +6$;
$D = -\cdot990$, $E = +\cdot139$; $G = -\cdot035$, $H = -\cdot251$, $H = -\cdot967$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	2·5	28	0 44	+ 1	—	—	—	—	—
Puebla	N.	4·2	354	1 1	− 6	—	—	—	—	—
Tacubaya	Z.	4·7	345	1 10	− 4	—	—	—	—	—
Vera Cruz	E.	4·7	21	1 7	− 7	—	—	—	—	—
Tucson		21·0	330	e 4 47	0	i 8 38	+ 1	—	—	e 10·7
Columbia		24·5	35	e 5 26	+ 4	e 9 55	+15	—	—	e 14·4
Florissant		24·8	15	i 5 28	+ 3	e 9 50	+ 4	i 5 36	pP	—
La Jolla	Z.	25·1	320	e 5 37	+ 9	—	—	—	—	—
Riverside	Z.	25·9	321	e 5 39	+ 4	—	—	—	—	—
Mount Wilson	Z.	26·5	321	e 5 46	+ 5	—	—	—	—	—
Pasadena		26·5	321	e 5 44	+ 3	e 10 21	+ 7	—	—	e 14·4
Chicago U.S.C.G.S.		28·5	16	—	—	e 10 46	0	—	—	e 17·0
San Juan		30·7	79	e 7 5	PP	e 11 12	− 9	—	—	—
Berkeley		31·5	322	—	—	e 11 40	+ 6	—	—	e 14·8
Bozeman		32·7	344	—	—	e 11 50	− 2	—	—	e 17·5
Butte		33·4	343	—	—	e 11 53	−10	—	—	e 18·1
Ottawa		35·8	27	e 9 27	?	—	—	—	—	e 12·8
Seven Falls		39·4	30	—	—	e 14 9	+34	—	—	23·8
Victoria		39·5	334	e 7 45?	+11	—	—	—	—	21·8

Additional readings :—
Tucson i = +4m.55s., e = +6m.48s. and +8m.50s.
Florissant eN = +9m.38s., eE = +9m.42s. and +10m.21s.
San Juan e = +10m.19s.
Long waves were also recorded at Guadalajara, College, and Salt Lake City.

Aug. 27d. Readings also at 1h. (Toledo, Granada, Almeria, Kew, De Bilt, and Potsdam), 2h. (Pasadena, Tucson, Mount Wilson, and near Mizusawa), 7h. (near Branner), 11h. (near Mizusawa), 20h. (Manila), 21h. (near Lick and Fresno), 23h. (Mount Wilson, near Branner (2), and Riverside).

Aug. 28d. 0h. 18m. 35s. Epicentre 33°·4N. 47°·3E.

$A = +\cdot5673$, $B = +\cdot6148$, $C = +\cdot5479$; $\delta = 0$; $h = +1$;
$D = +\cdot735$, $E = -\cdot678$; $G = +\cdot372$, $H = +\cdot403$, $K = -\cdot837$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		9·5	275	e 2 30	+10	5 25	S_g	—	—	—
Bucharest		19·8	309	e 4 35k	0	e 8 15	+ 2	4 58	PP	12·4
Sofia		21·0	303	e 4 47	0	e 8 38	+ 1	—	—	e 12·0
Sverdlovsk		25·2	17	i 5 29	0	e 9 58	+ 6	—	—	—
Warsaw		26·7	322	—	—	e 10 25?	+ 8	—	—	e 15·4
Triest		28·4	305	—	—	e 10 39	− 6	—	—	—
Potsdam		31·0	317	—	—	e 10 25	−61	e 14 25	SSS	e 18·4
Stuttgart		32·2	310	e 6 25	− 7	—	—	—	—	—
Zurich		32·3	307	e 6 32a	− 1	e 11 41	− 5	—	—	—
Copenhagen		32·8	323	i 6 38	+ 1	11 58	+ 4	—	—	—
Basle		33·0	307	e 6 38	− 1	—	—	—	—	—
Neuchatel		33·3	306	e 6 41	0	—	—	—	—	—
Uccle		35·7	312	e 7 3	+ 1	12 41	+ 2	—	—	—
Clermont-Ferrand		35·8	303	e 7 3	0	—	—	—	—	—
Calcutta	N.	37·1	95	e 10 26	?	—	—	—	—	i 20·6
Almeria		40·5	289	—	—	e 14 12	+20	e 17 20	SSS	—
Toledo		41·2	294	i 7 49	+ 1	i 14 2	0	—	—	17·0
Granada		41·3	290	—	—	i 14 9	+ 5	17 33	SSS	27·4

Additional readings :—
Bucharest eE = +5m.21s., eN = +5m.34s. and +8m.25s., eE = +8m.29s.
Potsdam eN = +11m.25s., eE = +11m.39s.
Stuttgart e = +6m.31s.
Long waves were also recorded at Paris and De Bilt.

Aug. 28d. 3h. 48m. 42s. Epicentre 18°·0N. 109°·0W. (as on 1938 Aug. 21d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	N.	9·4	80	—	—	e 5 25	S_g	—	—	—
Tucson		14·3	354	e 3 23	− 3	e 5 43	−23	i 3 34	PP	e 6·6
La Jolla		16·5	335	e 3 52	− 2	—	—	—	—	—
Palomar	Z.	16·8	337	e 3 56	− 2	—	—	—	—	—
Riverside		17·6	337	e 4 5	− 3	—	—	—	—	—
Pasadena		18·0	337	e 4 13	0	e 7 25	− 7	—	—	e 8·5
Mount Wilson	Z.	18·1	337	e 4 10	− 4	—	—	—	—	—
Tinemaha		20·7	340	e 4 45	+ 1	—	—	—	—	—
Santa Clara	E.	22·4	333	e 5 36	PP	e 9 11	+ 7	—	—	—
Salt Lake City		22·8	355	e 5 8	+ 3	e 9 11	0	—	—	e 12·1
Berkeley		23·0	333	e 5 12	+ 5	e 9 20	+ 6	—	—	e 12·4
Logan		23·8	355	e 5 27	+12	e 9 31	+ 3	—	—	e 12·9
Ukiah		24·4	334	—	—	e 9 43	+ 4	—	—	e 13·8
Florissant		26·3	35	—	—	e 10 15	+ 4	—	—	—
Bozeman		27·7	357	—	—	e 10 34	+ 1	—	—	e 15·1
Ottawa		38·9	38	—	—	e 16 6	SS	—	—	20·3

Additional readings :—
Tucson i = +4m.15s. and +4m.29s., e = +6m.6s.
Long waves were also recorded at Lincoln, East Machias, Columbia, Chicago U.S.C.G.S., and Butte.

Aug. 28d. 6h. 44m. 55s. Epicentre 18°·0N. 109°·0W. (as at 3h.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	N.	9·4	80	2 40?	PPP	—	—	—	—	—
Tucson		14·3	354	e 3 23	− 3	e 6 9	+ 3	i 3 36	PP	e 6·6
La Jolla	Z.	16·5	335	e 3 52	− 2	—	—	—	—	—
Palomar	Z.	16·8	337	e 3 57	− 1	—	—	—	—	—
Riverside		17·6	337	e 4 11	+ 3	—	—	—	—	—
Pasadena		18·0	337	e 4 13	0	e 7 30	− 2	—	—	e 8·4
Mount Wilson		18·1	337	e 4 15	+ 1	—	—	—	—	—
Santa Barbara	Z.	19·0	334	e 4 26	0	—	—	—	—	—
Haiwee		19·7	340	e 4 34	0	—	—	—	—	—
Tinemaha		20·7	340	e 4 45	+ 1	—	—	—	—	—
Lick		22·2	334	e 5 5	+ 5	—	—	—	—	—
Santa Clara	E.	22·4	333	e 5 31	PP	e 9 10	+ 6	—	—	—
Salt Lake City		22·8	355	e 5 6	+ 1	e 9 14	+ 3	—	—	e 12·3
Berkeley		23·0	333	i 5 11	+ 4	i 9 20	+ 6	—	—	e 11·5
Logan		23·8	355	e 5 24	+ 9	e 9 27	− 1	e 5 48	PP	e 13·2
Ukiah		24·4	334	—	—	e 9 50	+11	—	—	e 11·9
Florissant	N.	26·3	35	—	—	e 10 15	+ 4	e 11 59	SSS	—
Bozeman		27·7	357	—	—	e 10 30	− 3	—	—	e 11·2
Butte		28·1	357	—	—	e 10 38	− 2	—	—	e 15·8

Additional readings :—
Tucson i = +3m.42s. and +4m.19s.
Lick eE = +5m.10s.
Long waves were also recorded at Ottawa, Chicago U.S.C.G.S., Columbia, East Machias, and Lincoln.

Aug. 28d. 20h. 27m. 3s. Epicentre 20°·0S. 174°·0W. (as on 1939 Aug. 23d.).

A = −·9352, B = −·0983, C = −·3400; δ = −14; h = +5;
D = −·105, E = +·995; G = +·338, H = +·036, K = −·940.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		6·5	19	1 22	−17	—	—	—	—	—
Auckland		19·4	208	—	—	i 8 12	+ 8	—	—	11·7
Christchurch		26·0	202	5 37	+ 1	10 37	+31	—	—	14·0
Brisbane		31·0	249	i 6 22	+ 1	e 11 25	− 1	—	—	—
Riverview	E.	33·8	238	e 3 9	?	i 8 23	SS	—	—	e 17·0
Sydney		33·8	238	—	—	e 10 45	?	—	—	—
Manila		72·6	293	i 11 29k	− 2	20 1	−55	—	—	—
Berkeley		75·3	40	e 11 47	0	e 21 27	+ 1	—	—	e 33·0
Pasadena		75·6	45	e 11 48	0	e 21 29	0	—	—	e 33·8
Mount Wilson	z.	75·8	45	e 11 49	− 1	—	—	—	—	—
Palomar	z.	76·0	48	i 11 51	0	—	—	—	—	—
Riverside	z.	76·1	45	e 11 50	− 1	—	—	—	—	—
Tucson		79·7	49	i 12 12	+ 1	—	—	—	—	e 36·2
Salt Lake City		83·5	42	—	—	e 23 3	+11	—	—	e 38·7
Logan		84·1	42	—	—	e 22 41	−17	—	—	e 23·1
Bozeman		86·7	38	e 12 45	− 2	e 23 20	− 4	—	—	e 40·5
College		87·0	10	—	—	e 23 8	[− 6]	—	—	e 40·4
Florissant		97·5	52	e 13 40	+ 3	i 24 23	[+ 9]	e 24 46	S_eS	—
Warsaw		145·8	345	e 19 41	[+ 1]	e 22 56	PKS	—	—	—
Potsdam	z.	147·2	353	i 19 45k	[+ 2]	i 23 2	PKS	—	—	—
De Bilt	z.	148·0	1	i 19 50k	[+ 6]	—	—	—	—	—
Uccle	z.	149·2	2	i 19 53	[+ 7]	—	—	—	—	—
Ksara		150·1	303	e 20 0	[+12]	e 23 23	PKS	—	—	—
Helwan	z.	155·0	298	20 0	[+ 5]	i 23 57	PKS	—	—	—

Additional readings :—
Brisbane eE = +7m.26s.
Manila ePEN = +11m.36s.
Florissant ePPPSE = +26m.31s.
Warsaw eZ = +20m.27s.
Potsdam eN = +17m.57s.
Helwan iZ = +20m.22s.
Long waves were also recorded at Wellington, Ukiah, Kew, and Paris.

Aug. 28d. Readings also at 1h. (Balboa Heights, Riverside, near Berkeley, and Palomar), 2h. (Ksara and near Manila), 5h. (Tashkent), 6h. (near Batavia, and Triest), 10h. (Tacubaya), 11h. (Huancayo, Tucson, Riverside, Mount Wilson, Paris, Salt Lake City, Bozeman, Pasadena, La Paz, and Palomar), 13h. (Lincoln and Huancayo), 15h. (Zurich), 16h. (Huancayo and La Paz), 18h. (Cape Girardeau), 20h. (Honolulu), 22h. (near Mizusawa), 23h. (near Andijan).

Aug. 29d. 2h. 30m. 13s. Epicentre 47°·4N. 12°·2E.

Maximum intensity IV. Macroseismic area 1300 sq. km. Epicentre north of Hopfgarten (Tyrol), 47°25′N. 12°10′E.

E. Trapp.
Makroseismische Beobachtungen in den Jahren 1941-1945. Anhang 8 Jahrbuch für 1947 der Zentralanstalt für Meteorologie und Geodynamik in Wien, p. D. 47, macroseismic chart, p. D. 50.

A = +·6640, B = +·1436, C = +·7338; δ = −2; h = −4;
D = +·211, E = −·977; G = +·717, H = +·155, K = −·679.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ravensburg	1·8	282	e 0 28	− 4	e 0 53	− 3	—	—	—
Triest	2·0	149	e 0 41	+ 6	e 1 2	0	i 1 9	S_e	—
Ebingen	2·2	290	e 0 39	+ 1	e 1 8	+ 2	—	—	—
Stuttgart	2·4	304	e 0 42	+ 1	e 1 4	− 8	i 1 15	S_e	—
Zurich	2·5	269	e 0 38	− 5	e 1 5	− 9	e 1 12	S_e	—
Basle	3·1	272	e 0 52	+ 1	—	—	—	—	—
Jena	3·6	353	e 1 5	P*	e 1 50	S*	e 1 8	P_e	—

Stuttgart gives also eNE = +1m.11s.
Long waves are recorded at Potsdam and Warsaw.

Aug. 29d. 13h. 9m. 55s. Epicentre 41°·0N. 118°·5W.

Pasadena quotes J.S.A. Epicentre 43°·0N. 123°·8W.

A = −·3612, B = −·6652, C = +·6535; δ = +2; h = −2;
D = −·879, E = +·477; G = −·312, H = −·574, K = −·757.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		3·9	178	e 0 46	−16	i 2 19	S_g	—	—	—
Ukiah		4·1	244	e 1 7	+ 2	e 1 53	− 2	—	—	e 2·5
Berkeley		4·3	225	e 1 14	P*	i 2 14	S*	—	—	—
Ferndale		4·4	267	e 1 14	+ 4	i 2 11	S*	e 1 18	P*	—
Fresno	N.	4·4	194	i 1 13	+ 3	i 2 25	S_g	i 1 24	P_g	—
Lick		4·4	215	e 1 3	− 7	e 2 3	+ 1	e 1 19	P*	e 2·8
San Francisco	N.	4·4	225	e 1 5?	− 5	e 2 5?	+ 3	—	—	—
Santa Clara		4·5	217	e 1 22	P*	i 2 29	S_g	—	—	—
Branner	E.	4·6	220	e 1 11	− 1	i 2 21	S*	—	—	—
	N.	4·6	220	i 1 20	+ 8	i 2 23	S*	—	—	—
Haiwee		4·9	175	i 1 46	P_g	i 2 46	S_g	—	—	—
Salt Lake City		5·0	90	e 1 20	+ 2	i 2 32	S*	—	—	i 3·0
Logan		5·1	79	e 1 22	+ 2	e 2 22	+ 2	—	—	3·1
Butte		6·6	39	i 1 45	+ 4	i 2 54	− 4	—	—	e 3·3
Santa Barbara		6·6	189	—	—	i 3 39	S_g	—	—	—
Mount Wilson		6·8	177	e 1 43	− 1	i 3 51	S_g	—	—	—
Pasadena		6·8	178	i 1 44	0	i 3 49	S_g	—	—	i 4·5
Spokane		6·8	7	e 1 20	−24	i 3 0	− 3	—	—	—
Riverside		7·1	172	e 1 47	− 1	e 3 58	S_g	—	—	—
Bozeman		7·2	47	i 1 54	+ 5	i 3 13	0	i 2 34	P_g	i 3·4
Palomar	Z.	7·7	170	e 1 56	0	i 4 8	S_g	—	—	—
Victoria		8·3	337	e 1 5?	−59	—	—	—	—	4·1
Tucson		10·7	142	i 2 39	+ 1	e 4 48	+ 9	i 4 55	SS	i 5·5
Florissant	E.	21·7	87	e 4 46	− 9	e 8 48	− 3	—	—	i 11·4
St. Louis		21·8	87	i 4 46	−10	e 8 52	0	—	—	e 11·3

Additional readings :—
Tinemaha iEZ = +1m.5s.
Berkeley iZ = +1m.35s.
Fresno iN = +1m.33s.
Lick ePE = +1m.9s., eSE = +2m.20s., iSE = +2m.24s.
Butte e = +3m.1s., i = +3m.5s.
Bozeman e = +2m.54s.
Tucson i = +3m.34s.
St. Louis iSSE = +10m.32s.
Long waves were also recorded at Seattle, Cape Girardeau, Lincoln, Columbia, College, and Chicago U.S.C.G.S.

Aug. 29d. 13h. 17m. 12s. Epicentre 41°·0N. 118°·5W. (as at 13h.9m.).

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Tinemaha		3·9	178	e 0 59	− 3	i 2 10	S_g
Fresno	N.	4·4	194	e 1 20	P*	i 2 22	S*
Lick		4·4	215	e 1 12	+ 2	e 2 18	S*
Branner	E.	4·6	220	e 1 13	+ 1	i 2 15	+ 8
Mount Wilson	Z.	6·8	177	e 1 37	− 7	i 3 44	S_g
Pasadena		6·8	178	e 1 41	− 3	e 3 41	S_g

Aug. 29d. Readings also at 0h. (Tucson), 2h. (near Berkeley, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, La Paz, Manila, and near Mizusawa), 6h. (San Juan, near Basle, Zurich, and near Mizusawa), 9h. (Manila), 11h. (Tucson, Pasadena, Tinemaha, and Palomar), 12h. (Triest, Tinemaha, Palomar, and Riverside), 13h. (near Branner and near Manila), 15h. (Mount Wilson, Pasadena, Tinemaha, and Logan), 19h. (Branner, San Francisco, Haiwee, Mount Wilson (2), Pasadena, Palomar, Riverside (2), Tucson, Logan, Salt Lake City, and La Paz).

Aug. 30d. 4h. 41m. 44s. Epicentre 46°·1N. 21°·1E. (as on 1938 July 8d.).

Region of Temesvar. Felt in Jugoslavia, Hungary, and Roumania. Intensity VI at Hotin (Jugoslavia), V at Battonya (Hungary), IV at Mako, Szeded, Gyula, Szabadka, etc. (Hungary). Epicentre 45°41′N. 20°51′E. (Belgrade). Macroseismic radius 75-100km.

Csomor Dezso.
Ungarischer Erdbekenkatalog für das Jahr 1941, Serie B., Az Orszagos Földrengesi Observatorium Kiadvanyai, p. 6-10.

Prof. J. Mihailovic.
Annuaire de l'Institut Seismologique de Beograd, Microséismique et Macroséismique. Année XXI, 1941, p. 46.

$A = +·6492$, $B = +·2505$, $C = +·7182$; $\delta = +2$; $h = -4$;
$D = +·360$, $E = -·933$; $G = +·670$, $H = +·259$, $K = -·696$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Belgrade	1·4	200	i 0 23	− 4	i 0 47	+ 1	i 0 27	P*	—
Sofia	3·8	153	e 1 1	0	e 1 53	+ 6	e 1 11	P*	—
Bucharest	3·9	114	e 1 24	P_g	i 2 14	S_g	—	—	—
Triest	5·2	268	e 1 21	0	e 2 21	− 1	e 1 46	P_g	—
Warsaw	6·1	0	e 2 22	?	e 3 16	S_g	—	—	e 3·8
Jena	7·9	311	e 2 22	P*	e 3 35	+ 5	—	—	e 3·8
Potsdam	8·2	323	—	—	e 4 16	S*	i 4 46	S_g	i 5·2
Stuttgart	8·5	293	e 2 7	0	e 3 37	− 8	e 4 40	S_g	—
Zurich	8·7	283	e 2 12	+ 1	—	—	—	—	—
Basle	9·4	284	e 2 51	PPP	—	—	—	—	—
Neuchatel	9·8	281	e 2 26	+ 2	e 5 27	S_g	—	—	—
Sverdlovsk	26·5	52	5 55	+14	10 36	+22	—	—	—

Additional readings :—
Belgrade $iS_g = +0$m.36s.
Bucharest $eP_gN = +1$m.42s., $iE = +2$m.31s., $S_gN = +2$m.38s.
Triest $i = +2$m.6s., +2m.10s., and +2m.31s.
Warsaw $eZ = +3$m.30s.
Jena $eE = +3$m.24s.
Potsdam $eN = +4$m.19s.
Stuttgart $i = +2$m.11s., $eP^*EN = +2$m.35s., $eP_gN = +2$m.46s., $iSEN = +3$m.40s., $eNW = +4$m.2s., $eS_gN = +4$m.53s.
Long waves were also recorded at De Bilt and Uccle.

Aug. 30d. 9h. 36m. 17s. Epicentre 18°·1N. 146°·8E.

$A = -·7959$, $B = +·5208$, $C = +·3088$; $\delta = +5$; $h = +5$;
$D = +·548$, $E = +·837$; $G = -·259$, $H = +·169$, $K = -·951$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Titizima		9·9	336	e 2 26	+ 1	—	—	—	—	—
Yokohama		18·4	340	e 4 17	− 1	e 7 47	+ 6	—	—	e 10·0
Tokyo Cen. Met. Ob.		18·6	342	e 4 28	+ 7	e 8 2	SS	—	—	—
Kameyama		19·0	335	e 4 25	− 1	8 14	SS	—	—	—
Koti		19·4	325	i 4 32	+ 2	8 8	+ 4	—	—	—
Kobe		19·5	333	e 4 27	− 4	8 20	+14	—	—	—
Miyazaki		19·5	319	4 28	− 3	8 15	+ 9	—	—	12·5
Nagano		20·0	340	e 4 37	0	8 26	+ 9	—	—	—
Kumamoto		20·6	320	e 4 43	0	8 31	+ 2	—	—	—
Sendai		20·7	348	e 4 42	− 2	8 37	+ 6	—	—	—
Hamada		21·3	325	e 4 53	+ 3	8 41	− 2	—	—	—
Mizusawa		21·5	349	e 4 50	− 2	8 43	− 4	—	—	—
Husan		23·1	321	e 5 12	+ 4	9 6	−10	—	—	—
Mori		24·5	350	e 5 24	+ 2	e 9 54	+14	—	—	—
Manila		25·0	266	i 5 33k	+ 6	i 11 3	SSS	—	—	—
Sapporo		25·3	352	(5 40)	+10	5 40	P	—	—	10·0
Vladivostok		28·0	337	e 5 51	− 4	10 39	+ 1	—	—	—
Brisbane	E.	45·7	173	—	—	i 15 7	− 1	e 18 18	SS	—
Batavia		46·2	243	8 18	−10	—	—	—	—	—
Irkutsk		47·6	326	e 8 37	− 2	e 15 36	+ 1	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		49·2	260	9 18	+26	16 12	+14	—	—	—
Riverview		51·8	176	e 9 16	+ 4	e 16 38	+ 5	—	—	e 23·5
Sydney		51·8	176	—	—	e 16 40	+ 7	—	—	—
Honolulu		52·0	77	—	—	e 16 35	− 1	e 17 57	?	e 22·0
Adelaide		53·3	189	e 9 29	+ 6	i 16 58	+ 4	e 11 29	PP	—
Perth		57·9	212	—	—	22 16	SS	—	—	—
Auckland		60·7	154	—	—	18 43?	+11	e 20 13	?	35·7
Arapuni		62·1	155	—	—	18 43?	− 6	—	—	28·7
College		63·3	27	e 10 28	− 5	e 18 57	− 7	e 14 24	PPP	e 26·0
Agra	E.	63·5	292	e 10 33	− 1	—	—	—	—	—
Wellington		64·5	157	—	—	19 18	− 1	30 33	Q	35·7
Christchurch		65·7	160	10 50	+ 2	19 38	+ 4	20 56	S_eS	31·5
Colombo	E.	66·0	270	e 9 49	−61	20 15	+37	—	—	32·2
Tashkent		69·0	309	e 11 8	− 1	e 20 14	0	—	—	—
Bombay		69·6	284	e 11 13	0	e 20 23	+ 2	e 24 37	SS	33·6
Sverdlovsk		72·9	325	i 11 32	− 1	i 20 56	− 3	—	—	—
Victoria		76·5	44	11 57	+ 3	21 37	− 2	—	—	35·7
Ukiah		78·8	54	e 12 10	+ 4	e 22 0	− 4	e 26 58	SS	e 32·4
Berkeley		79·8	55	i 12 17	+ 5	i 22 12	− 9	—	—	e 35·8
Santa Clara		80·2	55	e 12 22	+ 8	e 22 19	0	—	—	e 35·6
Lick		80·5	55	e 12 18	+ 3	—	—	—	—	—
Santa Barbara	Z.	82·8	57	i 12 28	+ 1	—	—	—	—	—
Tinemaha		83·1	55	e 12 28	− 1	i 22 46	− 2	—	—	—
Baku		83·6	311	12 31	0	22 59	+ 6	—	—	—
Haiwee		83·6	55	i 12 35	+ 4	e 22 49	− 4	—	—	—
Mount Wilson		84·1	57	i 12 32	− 2	e 22 54	− 4	—	—	—
Pasadena		84·1	57	e 12 32	− 2	i 22 53	− 5	e 15 53	PP	e 34·2
Butte		84·3	44	e 12 52	+17	e 22 54	− 6	—	—	e 35·0
Riverside		84·7	57	e 12 35	− 2	e 22 58	− 6	—	—	—
La Jolla	Z.	85·2	58	e 12 34	− 5	—	—	—	—	—
Palomar	Z.	85·3	57	e 12 39	− 1	—	—	—	—	—
Bozeman		85·4	44	e 12 43	+ 3	e 23 3	[− 1]	e 29 1	SS	e 37·4
Moscow		85·6	328	e 12 39	− 2	22 59	[− 5]	—	—	—
Logan		86·3	48	e 12 46	+ 1	23 10	[0]	—	—	38·0
Salt Lake City		86·6	49	e 12 50	+ 4	e 23 14	[+ 2]	—	—	e 37·1
Pulkovo		87·0	334	i 12 46	− 2	24 43	PPS	16 14	PP	—
Tucson		90·5	56	e 13 4	− 1	e 23 56	− 3	i 16 42	PP	e 38·1
Upsala		92·1	336	—	—	e 23 39	[− 6]	—	—	e 45·7
Warsaw		95·7	330	e 13 28k	− 1	e 24 7	[+ 2]	e 17 17	PP	e 48·7
Bergen		95·8	341	—	—	e 23 43?	[−22]	—	—	e 46·7
Copenhagen		97·0	335	e 12 54	−41	24 10	[− 2]	17 25	PP	47·7
Potsdam		99·2	333	i 13 43	− 2	i 24 17	[− 6]	i 17 43	PP	e 47·7
Prague		100·2	330	—	—	e 24 56	[+28]	—	—	e 45·7
Sofia		100·3	320	e 18 1	PP	e 25 22	− 1	—	—	54·7
Aberdeen		100·5	343	—	—	e 24 35	[+ 6]	—	—	e 53·7
Belgrade		100·6	323	e 17 36	PKP	—	—	—	—	e 53·1
Helwan		101·2	306	e 13 52	− 2	e 24 37	[+ 4]	e 18 4	PP	—
Florissant		102·1	42	—	—	i 24 34	[− 3]	e 27 42	PPS	—
De Bilt		102·5	336	i 18 12a	PP	e 27 23	PS	—	—	e 49·7
Stuttgart		103·5	332	e 18 18	PP	—	—	—	—	—
Uccle		103·9	337	e 18 18	PP	e 27 31	PS	—	—	—
Kew		105·0	339	e 14 6	P	—	—	e 18 30	PP	—
Paris		106·2	336	e 14 15	P	e 28 2	PS	e 18 39	PP	52·7
Seven Falls		106·8	26	—	—	e 26 19	+ 2	e 33 37	SS	49·7
Columbia		111·0	41	e 21 55	PPP	—	—	—	—	—
Toledo		116·2	335	e 19 36	PP	—	—	24 20	PP	53·3
Almeria		118·1	332	19 45	PP	27 10	{+ 9}	—	—	58·7
Granada		118·3	333	i 19 27	[+38]	(i 26 11)	[+27]	—	—	64·9
San Juan		131·4	43	e 21 20	PP	e 43 43	SSS	e 23 44	PPP	e 61·8
Huancayo		138·9	87	e 23 15	PKS	i 41 13	SSP	—	—	e 71·4
La Paz		146·6	94	i 19 50	[+ 8]	20 47	?	—	—	70·7

Additional readings :—
Miyazaki PEN = +4m.35s.
Batavia iPZ = +8m.30s.

Continued on next page.

Riverview eS?E = +16m.41s.
Adelaide eSS = +20m.13s.
College e = +16m.3s., eSS = +23m.15s.
Christchurch Q = +27m.52s.
Bombay eSN = +20m.32s.
Ukiah e = +12m.24s.
Berkeley eN = +12m.35s., iN = +22m.15s.
Lick eE = +12m.31s., eN = +13m.9s.
Tucson i = +13m.11s. and +14m.2s., e = +20m.40s., +23m.37s., and +25m.4s.
Warsaw eN = +19m.43s.?
Copenhagen +31m.30s.
Potsdam iPPE = +17m.47s., i = +17m.54s.
Helwan eZ = +20m.6s.
Florissant eSSE = +32m.37s., eN = +37m.43s.
Uccle eN = +26m.52s.
Kew eZ = +16m.44s., eNZ = +18m.47s., eEN = +21m.2s.
Almeria PP = +21m.41s., PKS = +23m.22s., PPP = +24m.17s., SKKS = +28m.26s., PS = +31m.23s., PPS = +32m.51s., SS = +38m.19s., SSS = +42m.51s.
Granada PP = +22m.19s., SKS given as PPP, iSKKS = +29m.57s., SS = +33m.39s., PPS = +34m.58s., SSS = +40m.3s.
San Juan e = +22m.36s.
La Paz iPKPN = +19m.53s., iN = +20m.9s.
Long waves were also recorded at Philadelphia, Chicago U.S.C.G.S., Bucharest, Stonyhurst, San Fernando, and Jena.

Aug. 30d. 9h. 50m. 6s. Epicentre 18°·1N. 146°·8E. (as at 9h.36m.).

$A = -\cdot7959$, $B = +\cdot5208$, $C = +\cdot3088$; $\delta = +5$; $h = +5$.

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Nagano		20·0	340	e 4 30	− 7	8 24	+ 7
Sendai		20·7	348	e 4 58	PP	8 53	SS
Tinemaha	z.	83·1	55	e 12 30	+ 1	—	—
Mount Wilson	z.	84·1	57	e 12 35	+ 1	—	—
Pasadena	z.	84·1	57	e 12 35	+ 1	—	—
Riverside	z.	84·7	57	e 12 35	− 2	—	—
Palomar	z.	85·3	57	e 12 41	+ 1	—	—
Triest		103·6	327	e 11 41	?	—	—

Aug. 30d. 13h. 6m. 52s. Epicentre 18°·1N. 146°·8E. (as at 9h.).

$A = -\cdot7959$, $B = +\cdot5208$, $C = +\cdot3088$; $\delta = +5$; $h = +5$;

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Titizima		9·9	336	e 2 28	+ 3	—	—	—	—	—
Palau		16·1	230	i 3 56	+ 7	7 6	+17	—	—	—
Yokohama		18·4	340	4 16	− 2	e 7 51	+10	—	—	e 10·3
Tokyo Cen. Met. Ob.		18·6	342	e 4 20	− 1	e 7 51	+ 5	—	—	e 9·2
Nagoya		19·1	337	4 27	0	8 13	+16	—	—	—
Osaka		19·3	333	4 29	0	8 2	0	—	—	—
Koti		19·4	325	4 30	0	8 4	0	—	—	—
Miyazaki		19·5	319	4 32	+ 1	8 14	+ 8	—	—	11·8
Naha		19·5	297	e 4 35	+ 4	—	—	—	—	—
Kumamoto		20·6	320	4 43	0	8 24	− 5	—	—	—
Sendai		20·7	348	4 42	− 2	8 27	− 4	—	—	—
Hamada		21·3	325	e 4 48	− 2	8 40	− 3	—	—	—
Mizusawa		21·5	349	e 4 49	− 3	8 44	− 3	—	—	—
Husan		23·1	321	e 5 11	+ 3	9 22	+ 6	—	—	—
Mori		24·5	350	e 5 23	+ 1	9 50	+10	—	—	—
Manila		25·0	266	i 5 30 a	+ 3	i 11 12	SSS	—	—	—
Sapporo		25·3	352	5 30	0	10 4	+10	—	—	e 13·2
Vladivostok		28·0	337	i 5 53	− 2	i 10 35	− 3	—	—	—
Amboina		28·4	222	6 58	PP	—	—	—	—	12·1
Brisbane	E.	45·7	173	—	—	i 15 6	− 2	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Batavia		46·2	243	e 8 28	0	15 5	−10	—	—	e 28·1
Irkutsk		47·6	326	9 4	+25	i 16 43	+68	—	—	—
Medan		49·2	260	8 9	−43	14 54	−64	—	—	—
Riverview		51·8	176	9 14	+ 2	e 16 34	+ 1	—	—	e 24·0
Sydney		51·8	176	—	—	e 16 38	+ 5	—	—	e 24·8
Honolulu		52·0	77	—	—	e 16 42	+ 6	e 18 15	?	e 24·3
Adelaide		53·3	189	i 9 26	+ 3	i 16 55	+ 1	i 11 20	PP	31·1
Perth		57·9	212	18 3	PS	—	—	—	—	(30·4)
Auckland		60·7	154	—	—	i 20 28	?	—	—	29·1
Arapuni		62·1	155	—	—	i 19 8	+19	—	—	31·1
College		63·3	27	i 10 37	+ 4	e 18 55	− 9	—	—	e 25·7
Agra	E.	63·5	292	e 10 23	−11	e 18 53	−14	—	—	—
Wellington		64·5	157	—	—	i 19 23	+ 4	e 26 8?	SSS	34·1
Christchurch		65·7	160	4 55	?	19 35	+ 1	29 38	Q	35·5
Colombo	E.	66·0	270	e 11 38	+48	19 30	− 8	—	—	33·0
Tashkent		69·0	309	e 11 10	+ 1	e 20 11	− 3	—	—	—
Bombay		69·6	284	e 11 17	+ 4	i 20 17	− 4	i 21 8	PPS	—
Sverdlovsk		72·9	325	i 11 33	0	20 54	− 5	—	—	—
Victoria		76·5	44	11 51	− 3	21 45	+ 6	26 43	SS	35·1
Seattle		77·4	45	—	—	e 23 36	?	—	—	e 38·6
Ukiah		78·8	54	e 12 25	+19	e 22 13	+ 9	—	—	e 33·9
Berkeley		79·8	55	i 12 9	− 2	i 22 10	− 5	—	—	i 35·3
Santa Clara		80·2	55	e 12 16	+ 2	e 22 22	+ 3	—	—	e 35·9
Lick		80·5	55	e 12 8	− 7	—	—	—	—	—
Santa Barbara	z.	82·8	57	e 12 24	− 3	—	—	—	—	—
Tinemaha		83·1	55	e 12 27	− 2	e 22 46	− 2	—	—	—
Baku		83·6	311	12 34	+ 3	22 54	+ 1	—	—	—
Haiwee		83·6	55	i 12 31	0	—	—	—	—	—
Mount Wilson		84·1	57	i 12 32	− 2	—	—	—	—	—
Pasadena		84·1	57	i 12 32	− 2	e 22 39	−19	e 15 55	PP	e 37·1
Butte		84·3	44	—	—	e 22 30	−30	e 25 4	?	e 39·7
Riverside		84·7	57	i 12 35	− 2	—	—	—	—	—
La Jolla	z.	85·2	58	e 12 37	− 2	—	—	—	—	—
Palomar	z.	85·3	57	i 12 38	− 2	—	—	—	—	—
Bozeman		85·4	44	e 12 38	− 2	e 23 15	+ 4	—	—	e 39·3
Moscow		85·6	328	i 12 39	− 2	e 23 2	[− 3]	—	—	—
Logan		86·3	48	e 12 44	− 1	—	—	—	—	—
Salt Lake City		86·6	49	e 12 46	0	e 23 31	+ 8	—	—	e 39·2
Pulkovo		87·0	334	e 12 47	− 1	e 23 30	+ 3	—	—	—
Tucson		90·5	56	e 13 2	− 3	e 23 49	−10	e 16 28	PP	e 37·2
Theodosia		91·6	319	e 13 14	+ 4	—	—	—	—	—
Upsala		92·1	336	—	—	e 23 38	[− 7]	—	—	e 46·1
Warsaw	z.	95·7	330	e 13 26	− 3	e 34 11	SSS	e 17 13	PP	e 52·1
Bergen		95·8	341	—	—	e 24 8?	[+ 2]	—	—	e 48·1
Ksara		96·4	308	—	—	e 23 50	[−19]	—	—	—
Copenhagen		97·0	335	17 32	PP	—	—	—	—	—
Potsdam		99·2	333	e 13 44	− 1	e 24 16	[− 7]	e 17 44	PP	e 52·1
Prague		100·2	330	e 19 43	PPP	—	—	—	—	e 51·7
Sofia		100·3	320	e 18 32	PP	e 27 44	PPS	—	—	—
Belgrade		100·6	323	—	—	e 24 39	[+ 9]	—	—	e 46·2
Jena		100·8	332	e 17 49	PP	e 32 20	SS	—	—	e 53·1
Helwan		101·2	306	i 18 14	PP	i 24 36	[+ 3]	—	—	—
Florissant		102·1	42	e 18 20	PP	e 24 30	[− 7]	e 27 3	PS	—
De Bilt		102·5	336	e 18 28	PP	e 32 8	SS	—	—	e 48·1
Stuttgart		103·5	332	e 18 8	PP	—	—	—	—	—
Uccle		103·9	337	e 18 20	PP	i 24 46	[0]	e 27 29	PS	—
Tananarive		104·2	254	—	—	32 4	SS	33 13	SSP	—
Kew		105·0	339	e 14 11	0	e 26 1	− 1	e 18 37	PP	e 55·1
Basle		105·1	333	e 18 29	PP	—	—	—	—	—
Paris		106·2	336	e 14 33	P	—	—	e 18 57	PP	e 50·1

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	106·8	26	—	—	e 25 8?	[+10]	—	—	52·1
Clermont-Ferrand	108·4	334	e 18 50	PP	—	—	—	—	e 60·1
Columbia	111·0	41	—	—	e 28 34	PS	—	—	e 55·4
Toledo	116·2	335	18 49	[+ 4]	—	—	23 47	?	55·1
Almeria	118·1	332	18 50	[+ 1]	25 56	[+13]	22 24	PKS	55·1
Granada	118·3	333	e 18 53	[+ 4]	28 49	PS	i 20 27	PP	—
San Juan	131·4	43	e 20 9	?	e 26 41	[+18]	e 22 32	PKS	e 63·2
Huancayo	138·9	87	e 22 56	PP	e 29 8	[− 6]	i 32 36	PS	e 73·5
La Paz	146·6	94	i 19 44k	[+ 2]	—	—	—	—	69·1

Additional readings :—
Manila ePE = +5m.34s., ePN = +5m.37s.
Medan PN = +8m.26s.
Adelaide SS = +20m.18s., Q = +30m.8s.
Perth PP = +19m.56s., S = +25m.11s., PS = +25m.56s., SS = +28m.55s. L given as SSS.
Christchurch SKSZ = +11m.9s., S = +12m.27s.
Bombay SSE = +24m.56s.
Seattle e = +24m.8s.
Berkeley eN = +12m.14s., iSE = +22m.24s.
Lick eE = +12m.14s., and +12m.29s., eN = +13m.6s.
Tucson i = +13m.19s. and +14m.18s., e = +23m.36s.
Upsala eN = +23m.53s.
Warsaw eZ = +38m.42s.
Potsdam iPPZ = +17m.49s., iE = +18m.8s., iZ = +19m.18s., iSKSN = +24m.20s., iN = +31m.56s., iE = +32m.2s.
Jena eN = +18m.2s.
Helwan eZ = +19m.0s.
Florissant eE = +24m.46s., iE = +28m.1s., eE = +28m.31s. and +31m.44s.
De Bilt eZ = +22m.58s.
Uccle eSSN = +33m.8s.
Tananarive E = +43m.0s.
Kew eZ = +14m.59s. and +15m.57s., ePKPZ = +18m.2s., ePPPZ = +21m.2s., ePSZ = +27m.55s., ePPSZ = +29m.39s., eZ = +30m.7s., eSSZ = +32m.8s.?, eSSS = +36m.38s.?, eQ = +48·1m.
Almeria PP = +21m.51s., PPP = +24m.52s., SKKS = +28m.35s., PS = +32m.15s., PPS = +34m.8s., SS = +40m.6s.
Huancayo i = +23m.15s., iSKKS = +28m.51s., eSS = +40m.55s., e = +66m.26s.
La Paz iPKPN = +19m.54s.
Long waves were also recorded at Aberdeen, East Machias, Triest, San Fernando, Chicago U.S.C.G.S., and Philadelphia.

Aug. 30d. 13h. 28m. 55s. Epicentre 41°·0N. 118°·5W. (as on 29d.).

A = −·3612, B = −·6652, C = +·6535 ; δ = +2 ; h = −2 .

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		3·9	178	e 0 55	− 7	i 2 12	S_g	i 1 14	P_g	—
Berkeley		4·3	225	e 1 11	+ 3	e 1 57	− 3	i 2 9	S^*	—
Fresno	N.	4·4	194	e 1 25	P_g	e 2 25	S_g	—	—	—
Lick		4·4	215	e 1 15	P^*	e 2 19	S^*	e 2 29	S_g	—
Santa Clara	E.	4·5	217	e 2 28	S_g	—	—	—	—	—
Haiwee		4·9	175	i 1 37	P_g	i 2 47	S_g	—	—	—
Salt Lake City		5·0	90	e 1 43	P_g	e 2 37	S^*	—	—	e 3·3
Logan		5·1	79	1 19	− 1	2 33	S^*	—	—	3·7
Butte		6·6	39	—	—	e 2 56	− 2	—	—	e 4·2
Mount Wilson		6·8	177	i 1 42	− 2	i 3 48	S_g	—	—	—
Pasadena		6·8	178	e 1 42	− 2	e 3 51	S_g	—	—	—
Riverside		7·1	172	e 1 52	+ 4	e 3 57	S_g	—	—	—
Bozeman		7·2	47	—	—	e 3 5	− 8	—	—	e 7·2
Palomar	Z.	7·7	170	—	—	e 4 18	S_g	—	—	—
Tucson		10·7	142	e 2 37	− 1	—	—	—	—	e 5·8

Additional readings :—
Lick eN = +2m.33s.
Bozeman e = +3m.17s.

Aug. 30d. 15h. Undetermined shock.

Oaxaca eN = 26m.2s.
Vera Cruz eE = 28m.33s.
Merida ePE = 28m.47s.
Tacubaya PE = 28m.57s.?
Puebla iE = 30m.9s.
Tucson iP = 32m.8s., i = 32m.40s., 32m.53s., and 34m.18s., e = 36m.8s. and 36m.33s.
iS = 36m.52s., eL = 39·9m.
Palomar iPZ = 32m.51s.
Riverside ePZ = 32m.55s.
Mount Wilson iPZ = 33m.1s.
Pasadena ePZ = 33m.2s., eLE? = 43·0m.
Tinemaha eP = 33m.17s.
Ottawa e = 33m.36s., L = 47·0m.
Huancayo eS = 36m.36s., e = 38m.42s., eL = 42·3m.
Salt Lake City e = 41m.2s., eL = 44·9m.
Long waves were also recorded at East Machias, Columbia, Potsdam, Bozeman, and Warsaw.

Aug. 30d. 16h. 44m. 47s. Epicentre 12°·4N. 92°·5E. (as on 1941 Aug. 9d.).

Intensity VI-VII at Port Blair. Epicentre Andaman Islands.

See Government of India, Seismological Bulletin for 1941, p. 63.

$A = -\cdot0426$, $B = +\cdot9761$, $C = +\cdot2134$; $\delta = +13$; $h = +6$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		10·7	144	1 23	?	i 3 21	?	—	—	—
Calcutta		10·8	339	i 2 31a	− 8	i 4 30	−12	i 5 13	SSS	—
Colombo	E.	13·6	248	3 20	+ 3	6 3	SS	—	—	—
Kodaikanal	E.	14·9	264	i 2 53k	−41	e 5 43	−37	—	—	6·8
Agra	E.	20·0	320	4 30	− 7	8 12	− 5	8 52	SS	—
Bombay		20·0	292	i 4 41	+ 4	e 8 20	+ 3	i 4 53	PP	10·3
Dehra Dun	N.	22·3	326	e 5 13	PP	e 9 18	SS	—	—	e 13·5
Manila		27·8	83	e 6 17	PP	10 27	− 8	—	—	12·5
Tashkent		35·2	329	i 7 1	+ 3	—	—	—	—	—
Baku		46·6	314	e 8 33	+ 1	15 55	+34	—	—	—
Sverdlovsk		50·6	338	i 9 3	+ 1	e 16 33	+16	—	—	—
Helwan	Z.	59·0	297	10 1	− 3	—	—	12 28	PP	—
Moscow		60·5	328	10 12	− 2	18 47	PS	—	—	—
Pulkovo		65·5	331	i 10 46	− 1	e 19 46	PS	—	—	—
Warsaw	Z.	68·9	322	e 11 8	− 1	—	—	e 15 28	PPP	e 41·2
Potsdam		73·8	322	i 11 36k	− 2	i 21 5	− 4	e 16 22	PPP	e 41·2
Jena		74·8	320	e 11 43	− 1	—	—	—	—	—
Stuttgart		76·4	318	e 11 52	− 1	—	—	—	—	—
Zurich		76·9	316	e 11 58	+ 2	—	—	—	—	—
Basle		77·5	316	e 11 58	− 1	—	—	—	—	—
Neuchatel		78·0	316	e 12 1	− 1	—	—	—	—	—
Clermont-Ferrand		80·8	315	12 17	0	—	—	—	—	—
Paris		80·8	318	e 12 18	+ 1	—	—	—	—	—
Kew		82·2	321	i 12 24	0	e 23 36	+57	e 15 37	PP	48·2
Almeria		86·6	307	e 12 47	+ 1	23 5	[− 7]	13 1	pP	e 47·2
Toledo		87·1	310	i 12 48	− 1	23 24	− 4	16 10	PP	—
Tinemaha	Z.	122·9	29	i 18 58	[0]	—	—	—	—	—
Haiwee	Z.	123·8	29	i 19 0	[0]		—	—	—	—
Mount Wilson	Z.	125·3	31	i 19 3	[0]	—	—	—	—	—
Pasadena	Z.	125·3	31	i 19 3	[0]	—	—	—	—	—
Riverside	Z.	125·8	31	i 19 3	[− 1]	—	—	—	—	—
Palomar	Z.	126·6	31	i 19 10	[+ 5]	—	—	—	—	—
Tucson		130·7	26	i 19 12	[− 1]	—	—	i 22 33	PKS	—

Additional readings :—
Calcutta $iS_gN = +5m.45s.$
Bombay iSE = +8m.24s., iSSE = +8m.57s., SSN = +9m.0s.
Helwan PPPZ = +13m.40s.
Potsdam iPE = +11m.39s., ePN = +11m.42s. and +21m.29s., $iP_gPSN = +21m.42s.$
Jena eN = +12m.9s., eE = +13m.7s.
Kew eZ = +12m.38s. and +19m.31s.
Almeria PP = +16m.5s., PPP = +17m.59s., $S_eS = +23m.25s.$, SS = +28m.37s.
Tucson e = +19m.58s.
Long waves were also recorded at Huancayo and De Bilt.

Aug. 30d. Readings also at 5h. (near Mizusawa), 7h. (Mount Wilson, Palomar, and Tinemaha), 10h. (Ottawa, Seven Falls, and Shawinigan Falls), 12h. (Mount Wilson, Tinemaha, and Riverside), 13h. (Pasadena (2), Mount Wilson (2), Tinemaha (2), and Riverside), 14h. (Riverside, Pasadena, Tinemaha, Mount Wilson, and Mizusawa), 17h. (Colombo), 23h. (Tucson, near Berkeley, and near Mizusawa).

Aug. 31d. 4h. South Pacific.

Apia eP =15m.22s., eS =16m.58s., iS =17m.33s., i =19m.42s. and 25m.4s.
Wellington S? =21m.30s., Q =24m.10s., R =26m.25s.
Arapuni S? =21m.36s., i =22m.42s., L =27m.
Auckland S? =22m.0s., i =23m.5s., R =25m.
Adelaide ePN =22m.10s., eN =23m.30s., 24m.40s., and 25m.26s., LN =34m.57s.
Christchurch S =22m.48s., Q =24m.7s., RZ =26m.19s.
Berkeley iPZ =25m.18s., eSE =35m.12s.
Pasadena ePZ =25m.21s., eZ =25m.50s., eLEN =47m.54s.
Riverside ePZ =25m.21s.
Mount Wilson ePZ =25m.22s.
Palomar iPZ =25m.25s., i =25m.52s.
Tinemaha ePZ =25m.31s.
Santa Clara ePZ =25m.32s., eS$_e$SEN =35m.18s., eLE =47m.16s.
Tucson i =25m.42s., 26m.10s. and 27m.16s., eL =50m.13s.
Copenhagen eP =33m.3s.
Potsdam eZ =33m.7s., iZ =33m.11s., eN =33m.14s., eE =33m.22s., iZ =33m.35s., eE =34m.47s., eN =34m.50s., eLN =94m.
De Bilt eZ =33m.11s., eL =98m.
Paris ePKP =33m.13s., L =99m.
Uccle eZ =33m.16s.
Helwan PZ =33m.18s., iZ =33m.43s., eZ =34m.6s. and 37m.19s.
Honolulu eSS =33m.20s., eL =34m.49s.
Florissant eNZ =34m.12s., eN =38m.13s.
Kew eZ =34m.13s., 34m.19s., 34m.45s., 42m.47s., and 43m.51s., eLZ =92m.
Victoria e =34m.30s., L =56m.
Salt Lake City eS =36m.38s., eL =52m.39s.
San Juan eSKS =38m.48s., e =40m.59s., ePPS =45m.29s., eL =70m.54s.
Long waves were also recorded at Riverview, Bozeman, Ukiah, and La Paz.

Aug. 31d. Readings also at 0h. (near Berkeley), 1h. (College, Mount Wilson, Riverside, Palomar, and La Paz), 2h. (San Juan), 4h. (Ksara), 5h. (Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and Tucson), 7h. (near Lick), 8h. (Lick and near Medan), 10h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 12h. (near Granada), 17h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and Tucson), 20h. (Mount Wilson, Pasadena, Palomar, Riverside, Tucson, and near College), 21h. (Bozeman, Butte, and Florissant), 23h. (Mount Wilson, Pasadena, and Riverside).

Sept. 1d. 6h. Pacific.

Auckland P? =23m.8s., e =25m.55s., S =26m.35s., R =27·5m.
Wellington e =24m.0s., L =26m.
Christchurch S =24m.34s., Q =26m.16s., R =29m.0s.
La Jolla ePZ =26m.31s.
Berkeley iPZ =26m.32s., iE =26m.38s., eSE =36m.4s., eEN =48m.36s. ?, eLEN =52m.48s.
Mount Wilson iPZ =26m.32s.k.
Pasadena iPNZ =26m.32s.k, eNZ =27m.19s., eLZ? =51m.54s.
Palomar iPZ =26m.34s.
Riverside iPZ =26m.34s.
Haiwee iP =26m.41s.
Tinemaha iP =26m.42s.
Tucson iP =26m.54s., i =27m.17s., e =28m.17s.
Ksara e =34m.16s.
Copenhagen iP =34m.19s.
Warsaw eZ =34m.21s., 34m.58s., and 37m.46s., eLZ =99m.
Paris e =34m.29s.
Uccle eZ =34m.30s.
De Bilt iZ =34m.31s., eL =95m.
Granada iP =34m.31s., i =35m.39s.
Kew eZ =34m.36s., 34m.50s., and 37m.58s., eLZ =94m.
Clermont-Ferrand 34m.37s.
Helwan eZ =34m.39s., iZ =35m.5s.
Toledo ePZ =34m.40s., PP =36m.6s.
Huancayo e =45m.47s., eL =58m.41s.
Long waves were also recorded at Riverview, Sydney, La Paz, Bozeman, and Salt Lake City.

Sept. 1d. 14h. 18m. 40s. Epicentre 41°·6N. 24°·5E.

Scale VIII at Cepelare ; VII-VIII at Slaveino ; VII at Smolian.

Institute Meterologique Central, " Tremblements de terre en Bulgarie, No. 42-46," Sofia, 1945, p. 8.

A = +·6825, B = +·3110, C = +·6614 ; δ = −2 ; h = −2 ;
D = +·415, E = −·910 ; G = +·602, H = +·274, K = −·750.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		1·4	322	i 0 28	+ 1	i 0 47	+ 1	—	—	—
Bucharest		3·1	23	e 0 47a	− 4	i 1 36	+ 7	0 57	P_g	—
Istanbul		3·5	97	1 2	+ 5	1 44	+ 4	—	—	—
Belgrade		4·4	325	i 1 13	+ 3	i 2 15	+13	i 1 26	P_g	—
Triest		8·8	301	e 2 48	P_g	e 4 14	S*	—	—	—
Zurich		12·7	302	e 3 3	− 2	—	—	—	—	—
Jena		12·9	321	—	—	e 5 43	+10	—	—	e 7·0
Stuttgart		13·0	309	e 2 55	−14	e 5 11	?	—	—	—
Basle		13·4	302	—	—	e 5 12	?	—	—	—
Neuchatel		13·6	299	e 3 20	+ 3	—	—	—	—	—
Clermont-Ferrand		16·0	292	3 52	+ 4	—	—	—	—	—
Moscow		16·5	26	e 3 53	− 1	e 6 55	− 3	—	—	—
Uccle		16·7	310	e 4 14?	PP	—	—	—	—	e 8·3
Pulkovo		18·6	9	e 4 18	− 3	e 7 40	− 6	—	—	—
Toledo	z.	21·7	275	e 4 57	+ 2	—	—	—	—	—
Sverdlovsk		27·7	44	5 59	+ 7	e 10 41	+ 8	—	—	—

Additional readings :—
Sofia iP_g = +31s.
Bucharest P*Z = +54s., iE = +1m.1s., S_gE = +1m.58s.
Belgrade i = +1m.50s., +2m.50s., and +2m.58s.
Triest i = +4m.44s., e = +5m.8s.
Jena e = +6m.8s.
Stuttgart i = +3m.15s. and +4m.17s.
Long waves were also recorded at Kew, Potsdam, De Bilt, and Upsala.

Sept. 1d. Readings also at 0h. (Uccle and Warsaw), 1h. (Stuttgart, near Basle and Zurich), 3h. (near Agra), 6h. (Tucson), 8h. (Auckland, Wellington, Palomar, Pasadena, and Riverside), 10h. (Jena and Zurich), 12h. (Tucson, Mount Wilson, Tinemaha, Zurich, and near Mizusawa), 13h. (Mount Wilson, Riverside, and Tinemaha), 14h. (near Sofia), 15h. (Cape Girardeau), 18h. (Tucson), 20h. (Wellington), 23h. (Manila, Baku, Tashkent, Sverdlovsk, Moscow, Brisbane, Riverview, Sydney, Wellington, and Riverside).

Sept. 2d. Readings at 0h. (De Bilt, Uccle, Kew, Paris, and Pasadena), 1h. (Paris), 5h. (Granada, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, near Fresno, San Francisco, near Berkeley, Branner, Lick, and Manila), 9h. (Christchurch), 10h. (Apia, Auckland, Wellington, Riverview, Tucson, Berkeley, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 13h. (near La Paz), 18h. (Triest), 20h. (Manila), 21h. (Stuttgart, Zurich, and near Triest), 23h. (Zurich).

Sept. 3d. 4h. 21m. 50s. Epicentre 13°·8N. 93°·1W. (as on 1938, April 16d.).

$A = -\cdot0525$, $B = -\cdot9701$, $C = +\cdot2370$; $\delta = +2$; $h = +6$;
$D = -\cdot999$, $E = +\cdot054$; $G = -\cdot013$, $H = -\cdot237$, $K = -\cdot972$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vera Cruz	N.	6·1	333	e 1 51?	P*	—	—	—	—	—
Merida	N.	7·8	25	e 2 24	P_g	—	—	—	—	—
Tacubaya	N.	8·1	315	2 14?	+12	—	—	—	—	—
Columbia		22·9	26	—	—	e 9 45	+32	—	—	e 13·0
Tucson		24·5	322	i 5 22	0	e 9 40	0	—	—	e 12·8
Florissant		25·0	5	i 5 30	+ 3	e 9 54	+ 5	i 5 57	PP	—
San Juan		26·3	76	e 7 7	PPP	e 10 21	+10	—	—	e 11·3
Palomar	Z.	29·1	316	i 6 3	− 1	—	—	—	—	—
Riverside	Z.	29·8	317	e 6 11	0	—	—	—	—	—
Mount Wilson	Z.	30·4	317	e 6 16	0	—	—	—	—	—
Pasadena		30·4	317	e 6 16	0	—	—	—	—	e 15·6
Clermont-Ferrand		84·5	44	12 49	+13	—	—	—	—	—

Additional readings :—
Tucson i = +5m.39s. and +6m.9s., e = +6m.21s. and +9m.52s.
San Juan e = +7m.27s.
Long waves were also recorded at Toledo, Kew, Paris, Huancayo, and other American stations.

Sept. 3d. 23h. 27m. 9s. Epicentre 49°·2N. 8°·2E.

$A = +\cdot6493$, $B = +\cdot0936$, $C = +\cdot7548$; $\delta = +7$; $h = +2$;
$D = +\cdot143$, $E = -\cdot990$; $G = +\cdot747$, $H = +\cdot108$, $K = -\cdot656$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Stuttgart	0·8	123	i 0 14	− 4	i 0 25	− 6
Ebingen	1·1	154	i 0 22	0	e 0 38	− 1
Basle	1·7	194	e 0 33	+ 2	e 0 57	+ 3
Ravensburg	1·7	146	e 0 38	P_g	e 0 58	+ 4
Zurich	1·9	172	e 0 35	+ 1	e 1 1	+ 2
Neuchatel	2·4	201	e 0 43	+ 2	i 1 17	+ 5
Jena	2·8	51	e 0 48	+ 1	e 1 21	− 1
Uccle Z.	3·0	303	—	—	e 1 31	S*
Clermont-Ferrand	4·9	227	—	—	2 36	S_g

Jena gives also e = +1m.0s. and +1m.11s.

Sept. 3d. Readings also at 0h. (Auckland, Wellington, Palomar, Riverside, and Tucson), 1h. (near Branner and Lick), 3h. (near Medan), 4h. (near Mizusawa), 7h. (Merida, Tacubaya, Vera Cruz, Tucson, Palomar, and near Triest), 8h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, and College), 11h. (near Ferndale), 12h. (near Stalinabad), 14h. (near Triest), 16h. (Tucson), 17h. (Lincoln), 18h. (College, Mount Wilson, Pasadena, Palomar, Riverside, Tucson, Bozeman, Auckland, Paris, Potsdam, Uccle, Irkutsk, and Sverdlovsk), 19h. (Kew and Warsaw), 21h. (Tucson).

Sept. 4d. 10h. 21m. 35s. Epicentre 5°·1S. 153°·5E.

$A = -·8914$, $B = +·4445$, $C = -·0883$; $\delta = -3$; $h = +6$;
$D = +·446$, $E = +·895$; $G = +·079$, $H = -·039$, $K = -·996$.

Pasadena suggests deep.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		22·3	181	i 5 5	+ 4	i 9 4	+ 2	—	—	—
Palau		22·6	303	5 7	+ 4	9 18	+11	—	—	—
Amboina		25·2	273	5 32	+ 3	i 10 47	SS	—	—	13·4
Riverview		28·7	184	i 6 3a	+ 2	i 10 46	− 4	6 50	PP	e 12·9
Sydney		28·7	184	i 5 58	− 3	i 10 40	−10	—	—	e 13·5
Adelaide		32·7	203	i 6 42	+ 6	i 11 53	+ 1	7 43	PP	17·4
Auckland		37·2	150	6 40	−35	12 25	−37	7 0	pP	18·4
Manila		37·7	302	i 7 21k	+ 2	11 46?	?	—	—	14·2
Arapuni		38·5	151	7 19	− 7	13 25	+ 3	—	—	17·4
New Plymouth		38·6	153	7 32	+ 6	12 44	−39	i 8 28	PP	—
Tuai		39·8	151	7 37	+ 1	14 0	+18	i 9 10	PP	17·0
Naha		39·9	322	e 7 42	+ 5	—	—	8 3	pP	—
Wellington		40·7	155	7 46	+ 2	13 50	− 5	8 6	pP	19·4
Christchurch		41·8	159	7 54	+ 1	14 7	− 4	17 30	Q	19·9
Koti		42·9	336	e 8 1	− 1	14 8	−19	—	—	—
Kobe		43·2	339	8 24	pP	15 7	+35	10 12	PPP	21·9
Taihoku		43·2	316	8 9	+ 5	14 28	− 4	—	—	—
Perth		44·2	228	8 28	+16	i 14 45	− 1	9 40	PP	20·8
Hamada		44·6	335	e 8 17	+ 1	14 43	− 9	—	—	—
Sendai		44·7	347	e 8 17	+ 1	14 43	−11	10 28	PP	—
Mizusawa	E.	45·5	347	e 8 26	+ 3	14 53	−12	—	—	18·2
	N.	45·5	347	e 8 20	− 3	14 45	−20	—	—	18·2
Batavia		46·4	267	i 8 30	0	i 15 14	− 4	—	—	e 22·4
Sapporo		49·2	348	8 53	+ 1	15 49	− 9	—	—	20·7
Zinsen		49·2	332	8 52	0	16 19	PPS	10 3	PeP	e 21·0
Vladivostok		51·8	341	i 9 12	0	i 16 26	− 7	i 9 35	pP	—
Honolulu		54·5	59	i 9 33	+ 1	i 17 12	+ 2	i 11 36	PP	i 23·2
Medan		55·4	278	9 36	− 2	17 16	− 6	—	—	e 28·4
Calcutta	N.	69·3	296	i 11 22a	+11	i 20 27	+10	e 13 47	PP	—
Irkutsk		70·7	330	11 20	0	i 20 30	− 4	i 11 40	pP	—
Colombo		74·2	278	i 11 43	+ 3	i 21 13	− 1	21 52	PS	37·2
Kodaikanal	E.	77·2	282	i 11 57	0	i 21 45	− 2	i 22 13	PS	36·5
Hyderabad	N.	77·3	289	12 16	+18	21 44	− 4	14 49	PP	33·9
Agra	E.	79·5	299	e 12 10	0	i 22 6	− 5	12 24	pP	—
Dehra Dun	N.	80·1	302	e 12 23	+10	i 22 18	0	e 17 55	PPP	—
College		81·9	22	e 12 20	− 3	e 22 25	−11	e 22 57	sS	e 33·7
Bombay	E.	82·9	290	e 12 26	− 2	i 22 41	− 5	i 15 42	PP	37·7
Semipalatinsk		83·3	322	i 13 0	+30	i 23 44	+54	—	—	—
Sitka		84·3	31	e 12 35	0	e 22 53	− 7	—	—	e 35·4
Ferndale		87·4	49	i 13 31	+41	e 23 33	+ 3	i 16 32	PP	e 36·5
Ukiah		88·0	51	e 12 52	− 1	e 23 13	[− 7]	—	—	e 36·3
Berkeley		88·6	52	i 12 56	0	e 23 16	[− 8]	i 13 54	pP	e 39·8
Branner	E.	88·6	52	e 13 19	+23	e 24 31	PS	—	—	e 40·4
	N.	88·6	52	e 13 22	+26	e 24 29	PS	—	—	—
Santa Clara		88·7	52	i 13 0	+ 3	i 24 53	+10	i 15 53	PP	e 40·3
Tchimkent		88·9	312	i 23 47	S	(i 23 47)	+ 3	—	—	—
Lick		89·0	52	e 13 7	+ 9	—	—	e 16 37	PP	e 34·7
Stalinabad		89·0	308	i 13 0	+ 2	i 23 47	+ 2	—	—	—
Tashkent		89·0	312	i 13 0	+ 2	i 23 44	− 1	16 43	PP	—
Victoria		89·2	42	12 54?	− 5	23 23?	[− 5]	16 25?	PP	40·4
Seattle		89·8	43	e 15 34	?	—	—	—	—	e 41·9
Santa Barbara	Z.	90·2	56	e 12 59	− 5	—	—	—	—	—
Fresno	N.	90·4	53	e 13 29	+25	—	—	—	—	—
Tinemaha		91·6	53	e 13 10	0	—	—	e 38 38	P′P′	—
Haiwee		91·8	54	i 13 34	+23	—	—	—	—	—
Pasadena		92·0	56	i 13 9a	− 3	e 23 37	[− 7]	e 16 42	PP	e 36·6
La Jolla	Z.	92·1	58	e 13 12	0	—	—	—	—	—
Mount Wilson		92·1	56	i 13 10	− 2	—	—	e 38 44	P′P′	—
Riverside	Z.	92·1	56	e 13 11	− 1	—	—	e 38 40	P′P′	—
Palomar	Z.	92·5	57	i 13 13	− 1	—	—	e 38 41	P′P′	—

Continued on next page.

		△	Az.	P.		O−C.	S.		O−C.	Supp.			L.
		°	°	m.	s.	s.	m.	s.	s.	m.	s.		m.
Sverdlovsk		95·8	326	i 13	27	− 2	23	55	[−11]	i 13	48	pP	—
Butte		96·4	44	e 14	26	+54	24	45	− 5	e 17	24	PP	e 40·5
Salt Lake City		96·8	49	e 14	1	pP	e 24	50	− 2	e 26	33	PS	e 45·0
Logan		96·9	47	e 13	56	+22	e 24	9	[− 2]	e 14	18	pP	e 41·9
Bozeman		97·4	45	e 13	33	− 4	i 24	12	[− 2]	e 17	48	PP	e 40·4
Tucson		97·5	58	e 13	37	0	e 25	0	+ 1	i 17	31	PP	i 41·0
Tananarive		103·3	249		18	17	PP	i 24	43	[0]		27	25	PS	42·9
Baku		103·6	310	e 13	33	−31		26	7	+16	e 13	57	pP	—
Tacubaya	E.	108·0	71	i 18	56	PP	—		—	—		—		—
Lincoln		108·3	48	e 18	11	[−18]	28	13	PS	34	39	SS	e 50·8
Moscow		108·6	327	i 14	23	P	24	59	[− 8]	14	46	pP	—
Florissant		113·4	50	e 14	46	P	26	34	{+ 5}	e 15	7	pP	—
St. Louis		113·6	50	e 18	9	[−31]	e 25	26	[0]	e 18	31	pPKP	—
Cape Girardeau	E.	114·4	51	e 19	40	PP	i 29	22	sSP	e 20	29	pPP	e 74·4
Chicago, U.S.C.G.S.		114·7	46	e 19	36	PP	e 35	12	SS	e 28	1	pS	e 47·1
Ksara		115·7	304		18	25?	[−19]	e 26	48	{+ 3}	e 20	18	PP	—
Upsala		115·9	337	e 20	18	PP	e 25	14	[−21]	e 26	10	SKKS	e 48·4
Warsaw	N.	118·9	328	e 19	25?	[+34]		25	45	[− 1]	e 31	19	PPS	e 56·4
Bucharest		119·7	318	e 18	55	[+ 3]		36	43	SS	e 20	25	PP	—
Bergen		119·8	342	e 20	25?	PP	—		—	—		—	—	e 50·4
Toronto		119·8	41	e 20	33	PP	e 36	36	SS		29	55?	PS	49·4
Helwan		120·3	301	i 18	52k	[− 1]		25	50	[− 1]		36	40	SS	—
Buffalo		120·5	42	e 19	24	[+30]	i 30	15	PS	i 20	18	PP	—
Pittsburgh		120·6	45	i 20	24	PP	i 30	12	PS	—		—	—
Copenhagen		120·8	336		20	22	PP		25	49	[− 4]		30	25	PS	50·4
Ottawa		121·4	38		18	55	[− 1]		25	49?	[− 6]		20	26	PP	e 50·4
Ivigtut		121·7	12		18	55?	[− 1]		30	19	PS		20	25?	PP	—
Columbia		122·0	53	e 20	26	PP	e 25	50	[− 7]	e 30	25	PS	e 52·1
Sofia		122·2	318	e 18	48	[− 9]	e 30	43	PS	e 20	51	PP	e 58·3
Potsdam		122·7	332	i 18	53k	[− 5]	i 25	51	[− 8]	i 20	31	PP	54·4
Belgrade		123·1	321	e 18	50	[− 9]	—		—	—		—	e 56·2
Prague		123·5	329	e 20	45	PP	e 30	55	PS	—		—	e 53·4
Seven Falls		123·6	34		19	2	[+ 2]		26	0	[− 1]		20	39	PP	48·4
Philadelphia		124·2	44	e 20	25	PP	—		—	—		—	e 58·2
Jena		124·4	331	i 19	0	[− 1]	e 30	49	PS	—		—	e 54·4
Aberdeen		124·6	343	e 20	59	PP	i 30	54	PS	—		—	55·0
Fordham		124·7	42		18	57	[− 5]	—		—		20	47	PP	—
Harvard		125·4	39	e 20	3	[+60]	—		—	i 20	51	PP	e 37·4
Weston		125·7	39		19	3	[− 1]		32	30	PPS		20	52	PP	e 58·5
De Bilt		126·3	336	i 19	7a	[+ 2]		30	55	PS	i 21	1	PP	55·4
Triest		126·6	326	e 19	3	[− 3]	i 27	54	{− 4}	e 20	55	PP	52·7
East Machias		126·8	35	e 21	34	pPP	e 31	3	PS	e 21	45	sPP	e 52·7
Stuttgart		127·0	331	e 19	5	[− 1]		27	48	{−12}	e 21	5	PP	e 57·4
Stonyhurst		127·6	342	e 12	43	?	—		—	i 21	13	PP	e 61·2
Uccle		127·7	336	i 19	8a	[0]	—		·—	i 19	33	pPKP	—
Zurich		128·2	330	e 19	9	[0]	—		—	e 21	10	PP	—
Huancayo		128·5	110	e 19	12	[+ 3]	i 38	41	SS	e 21	19	PP	e 52·9
Basel		128·6	331	e 19	11	[+ 2]	—		—	—		—	—
Kew		128·9	339	e 16	19	?	e 28	29	{+17}	e 21	11	PP	e 61·4
Neuchatel		129·3	331	e 19	12	[+ 1]	—		—	—		—	—
Paris		129·9	335	e 16	22	?	i 22	26	SKP		24	33	PPP	56·4
La Plata	E.	130·4	146		18	49	pPKP		31	19	PS		21	19	PP	60·4
	N.	130·4	146		21	13	PP		31	19	PS		—		—	64·4
	Z.	130·4	146		21	25	PP	—		—	—		—		—	61·7
La Paz		133·6	119		19	21a	[+ 2]		26	22	[− 6]	i 21	49	PP	64·2
Bermuda		135·2	48	e 19	28	[+ 6]		39	34	SS	e 21	53	PP	62·8
Algiers		138·4	322	e 19	23	[− 5]	—		—	e 22	43	PP	—
San Juan		139·1	67	e 19	21	[− 8]	i 26	27	[−11]	e 22	20	PP	e 59·7
Toledo		139·9	332	e 22	5	PP	—		—		23	11	pPP	76·4
Coimbra		141·5	337		19	45	[+12]		26	36	[− 6]		21	50	PP	56·9
Almeria		141·5	328	i 19	27	[− 6]		34	29	PPS		22	52	PP	66·4
Granada		141·8	330		19	28a	[− 6]		22	47	SKP		20	38	pPKP	78·5
Lisbon		143·1	337		19	32	[− 4]		42	44	SS		23	8	PP	70·7
San Fernando		143·6	332	i 19	35	[− 2]		37	53	P'P'	e 23	53	PKS	65·4

For Notes see next page.

NOTES TO SEPTEMBER 4d. 10h. 21m 35s.

Additional readings :—
Brisbane iSN = +9m.9s.
Riverview iN = +6m.22s., iE = +8m.49s., iP_cPN = +9m.23s.
Adelaide P_cP = +9m.33s., SS = +13m.30s., S_cS = +17m.0s.
Auckland PP = +8m.14s., pPP? = +8m.31s., i = +12m.45s., SS? = +15m.18s.
Manila iPN = +7m.32s.
New Plymouth i = +9m.40s. and +14m.53s.
Wellington sP = +8m.20s., PP?Z = +9m.27s., pPPZ = +9m.45s., iZ = +10m.52s., i = +14m.15s., SS = +17m.6s., i = +17m.35s., Q = +18·4m.
Kobe P_cP = +9m.37s., PPP = +10m.53s., SS = +18m.36s.
Perth PPP = +10m.20s., SS = +17m.28s., SSS = +18m.10s.
Sendai e = +18m.0s.
Honolulu i = +10m.5s., iPPP = +13m.15s., eSS = +20m.56s.
Calcutta iPSN = +20m.42s.
Kodaikanal SSE = +26m.25s.
Hyderabad PSN = +21m.59s., SSN = +26m.24s.
Agra PPE = +15m.8s., PPPE = +17m.9s., iSN = +22m.2s., sSE = +22m.19s., pSE = +22m.47s., SSE = +27m.26s.
College e = +16m.32s., eSS = +27m.41s., e = +29m.47s.
Bombay iPEN = +12m.32s., iPSE = +23m.26s., SSE = +27m.29s.
Ferndale eSN = +23m.57s.
Berkeley iZ = +13m.0s., eN = +13m.3s., ePN = +13m.8s., eE = +13m.18s., iZ = +13m.21s., iSE = +23m.43s., iN = +24m.8s.
Lick iN = +13m.55s., eE = +13m.58s., eN = +15m.47s., eE = +16m.25s.
Victoria eE = +22m.10s.?, SS = +29m.48s.?, SSS = +33m.10s.?
Seattle e = +27m.7s. and +28m.33s.
Pasadena iEN = +24m.37s., eSSN = +30m.7s., ePKP,PKPZ = +38m.42s.
Sverdlovsk S = +24m.36s.
Butte eSKS = +23m.54s., e = +26m.59s.
Salt Lake City e = +18m.29s., ePPP = +20m.15s., eSS = +31m.34s.
Logan iPP = +17m.32s., eS = +24m.52s., eSS = +31m.13s.
Bozeman e = +16m.56s. and +22m.5s., eS = +24m.51s., e = +25m.54s. and +35m.56s.
Tucson iPP = +15m.52s., i = +18m.30s. and +20m.40s., iSP = +26m.16s., i = +26m.52s. and +29m.48s., iSS = +31m.43s., esSS = +32m.16s., eSSS = +35m.5s.
Tananarive EN = +25m.10s., SS = +33m.5s.
Baku PS = +27m.0s.
Moscow iS = +26m.22s.
Florissant ePKP?Z = +18m.6s., epPKP?Z = +18m.30s., iPPZ = +19m.27s., ipPPZ = +19m.52s., iZ = +20m.17s., eE = +25m.24s., ePPPE = +26m.3s., eE = +26m.55s., iSPE = +29m.4s., isSPE = +29m.48s., iE = +35m.16s. and +35m.37s.
St. Louis ePE = +14m.49s., ePPE = +19m.29s., ipPPZ = +19m.51s., iZ = +19m.55s., +20m.3s., and +20m.9s., ePPPE = +22m.31s., iSKKSE = +26m.57s., iSPE = +29m.7s., isSPE = +29m.50s., eN = +35m.9s., eE = +35m.16s., iE = +35m.41s.
Cape Girardeau iE = +40m.5s. and +40m.29s.
Chicago U.S.C.G.S. e = +20m.17s., i = +29m.22s.
Ksara e = +29m.47s.
Upsala eSKSE = +25m.18s., eE = +29m.28s., eSSN = +35m.34s., eSSS = +39m.25s.?
Warsaw eZ = +19m.46s. and +20m.34s., eN = +27m.50s.
Bucharest eZ = +19m.15s., eEN = +20m.1s., eZ = +20m.18s. and +20m.37s.
Helwan PPZ = +20m.13s., PPPZ = +22m.53s., SKKSE = +27m.12s., PSE = +30m.7s.
Buffalo i = +24m.54s.
Copenhagen ? = +25m.4s., +26m.35s., +27m.15s., and +32m.55s.
Ottawa SKKS = +27m.25s., PS = +30m.15s., SS = +36m.58s.
Columbia e = +23m.38s., +29m.43s., and +35m.16s., eSS = +37m.2s.
Sofia eEN = +25m.54s., eN = +28m.19s. and +40m.34s.
Potsdam iPPE = +20m.35s., i = +20m.53s., iZ = +21m.23s., iE = +21m.27s., iPPPZ = +23m.11s., iSKKSEN = +27m.23s., iE = +28m.10s., iSN = +28m.19s., iPSNZ = +30m.22s., iN = +30m.30s., iSSN = +37m.13s.
Belgrade e = +24m.42s. and +27m.4s.
Seven Falls SKKS = +27m.49s.?, PS = +30m.28s., SS = +36m.43s.
Jena 1 = +19m.25s., eN = +21m.7s., e = +21m.10s., eN = +21m.15s., eE = +22m.25s., and +26m.45s., eN = +26m.55s. and +30m.55s., e = +47m.25s.
Aberdeen iPN = +21m.2s., iSSSEN = +39m.14s., iN = +47m.21s., iE = +50m.9s.
Harvard eZ = +20m.7s., eEZ = +21m.22s., eEZ = +33m.25s. ?
Weston PPP = +24m.4s., e = +37m.46s., eSSSS = +48m.2s.
De Bilt e = +21m.25s., i = +27m.50s.
Triest iPP = +22m.17s., iPPP = +24m.37s., iSKKS = +29m.29s., iS = +31m.22s., iSS = +38m.3s., iSSS = +40m.39s.
East Machias e = +29m.34s., eSS = +38m.10s.
Stuttgart 1 = +19m.33s., +19m.43s., and +19m.59s., ePPEN = +21m.17s., eSKPZ = +22m.20s., eSN = +29m.4s., ePPSEN = +32m.49s., eSSSEN = +38m.11s.
Stonyhurst iP = +12m.50s. and +17m.2s.
Uccle iPPZ = +21m.12s., iZ = +21m.33s. and +23m.4s.
Zurich e = +21m.55s.
Huancayo i = +22m.24s., iSP = +31m.24s., iPS = +31m.34s., iPPS = +33m.2s.

Continued on next page.

Kew iPKPEZ = +19m.9s., iPPEZ = +21m.41s., e = +22m.27s., iPKSZ = +22m.35s., eEN = +22m.51s., iZ = +23m.12s. and +23m.58s., ePPP?N = +24m.27s., iZ = +25m.1s., eEZ = +25m.43s., iSKS?Z = +25m.51s., eEN = +26m.49s., eE = +27m.53s., eSKSPEZ = +31m.15s., ePSSZ = +32m.11s., ePSN = +33m.16s., ePPSZ = +34m.44s., eSKKS = +35m.25s.?, eSS = +39m.25s., eQEN = +53m.25s.
Paris iPKP = +19m.13s., e = +41m.7s.
La Plata Z = +22m.31s., E = +22m.37s. and +38m.49s., N = +39m.25s.
La Paz iSKPZ = +22m.46s., iN = +22m.56s., iPPPN = +24m.34s., PPSN = +33m.46s., SSN = +39m.49s., SSSN = +45m.7s.
Bermuda PP = +22m.39s., ePPP = +24m.49s., e = +27m.2s. and +31m.59s.
Algiers e = +23m.0s.
San Juan epPP = +23m.12s., i = +24m.40s., iSS = +41m.8s., isSS = +41m.43s., eSSS = +45m.43s.
Toledo PPP = +24m.11s.
Coimbra e = +17m.44s., SKP = +22m.49s., PPP = +23m.50s., ? = +25m.49s., S = +29m.50s., ? = +35m.20s., SS = +40m.36s.
Almeria PP = +25m.0s., PPP = +27m.54s., pPPP = +28m.48s., SKKS = +31m.22s., PS = +34m.55s., PPS = +36m.37s., SS = +41m.14s,. SSS = +45m.20s.
Granada iPP = +23m.29s., SKS = +27m.59s., SKKS = +30m.20s., PPS = +37m.56s., SS = +43m.49s.
Lisbon PKPE = +19m.40s., E = +21m.29s., N = +21m.35s., Z = +21m.38s., N = +22m.12s., Z = +22m.15s., N = +22m.23s., PPZ = +23m.11s., N = +35m.23s., Z = +37m.45s., QE = +66m.13s.
San Fernando ePKP$_2$EN = +20m.9s., PPPE = +27m.49s., SKKSN = +30m.49s., SSN = +42m.5s.

Sept. 4d. Readings also at 7h. (Mizusawa), 8h. (near Mizusawa and near Tacubaya).

Sept. 5d. 17h. 10m. 36s. Epicentre 40°·3N. 74°·5E.

A = +·2044, B = +·7370, C = +·6443 ; δ = +7 ; h = −2 ;
D = +·964, E = −·267 ; G = +·172, H = +·621, K = −·765.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		1·7	286	0 29	− 2	i 0 56	+ 2	—	—	—
Almata		3·5	31	1 4	P*	2 4	S_g	1 11	P_g	—
Tashkent		4·1	288	e 1 6	+ 1	—	—	1 17	P*	—
Semipalatinsk		10·9	20	—	—	e 5 10	SSS	—	—	—
Agra	E.	13·5	166	e 3 9	− 6	e 5 19	−28	—	—	—
Baku		18·7	279	—	—	7 51	+ 3	—	—	—
Sverdlovsk		18·8	337	e 4 23	0	e 7 58	+ 8	—	—	—
Calcutta	E.	21·2	143	—	—	e 8 31	−10	—	—	i 11·5
Bombay		21·4	186	i 4 38	−13	i 8 40	− 5	e 7 12	?	—
Moscow		28·7	316	e 6 21	+20	—	—	—	—	—
Copenhagen		42·8	313	i 8 0	− 1	—	—	—	—	—

Additional readings :—
Almata P_g = +1m.14s.
Tashkent P_g = +1m.22s.
Long waves were also recorded at Potsdam, Kew, Hyderabad, De Bilt, Warsaw, and Paris.

Sept. 5d. 23h. 21m. 41s. Epicentre 53°·7N. 169°·0E.

A = −·5837, B = +·1135, C = +·8040 ; δ = 0 ; h = −7 ;
D = +·191, E = +·982 ; G = −·789, H = +·153, K = −·595.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
College	24·2	46	e 5 19	0	e 9 34	− 1	e 9 55	SS	e 12·8
Vladivostok	26·5	261	i 5 40	− 1	e 9 50	−24	—	—	—
Irkutsk	37·8	295	e 7 20?	0	—	—	—	—	—
Victoria	41·3	69	e 9 37?	PP	e 14 1?	− 3	—	—	20·3
Berkeley	48·5	80	—	—	e 15 55	+ 7	—	—	e 21·7
Lick	49·3	80	e 8 51	− 2	—	—	—	—	—
Bozeman	49·8	65	—	—	e 19 57	SS	—	—	e 20·4
Tinemaha	51·4	78	i 9 9	0	—	—	—	—	—
Haiwee	52·2	79	i 9 17	+ 2	—	—	—	—	—
Santa Barbara	52·4	81	e 9 16	0	—	—	—	—	—

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		53·5	80	i 9 24k	0	—	—	—	—	—
Pasadena		53·5	80	i 9 24k	0	—	—	—	—	e 24·1
Riverside	Z.	54·1	80	i 9 27k	− 2	—	—	—	—	—
Palomar	Z.	54·8	80	i 9 34k	0	—	—	—	—	—
La Jolla		54·9	81	e 9 36	+ 1	—	—	—	—	—
Sverdlovsk		55·4	321	i 9 36	− 2	e 17 22	0	—	—	—
Almata		57·8	301	e 9 56	+ 1	—	—	—	—	—
Tucson		59·1	76	i 10 5	+ 1	—	—	i 10 47	P_cP	e 30·0
Andijan		61·9	301	e 10 23	− 1	—	—	—	—	—
Tashkent		63·0	304	e 10 30	− 1	e 18 58?	− 3	—	—	—
Moscow		63·9	332	10 57	+20	19 29	+17	—	—	—
Florissant		65·4	58	i 10 46	− 1	e 19 26	− 4	—	—	—
St. Louis		65·6	58	i 10 44	− 4	e 19 27	− 6	—	—	e 36·1
Agra	E.	69·2	287	—	—	e 20 19?	+ 3	—	—	—
Copenhagen		69·3	347	i 11 10	− 1	20 15	− 2	—	—	—
Warsaw		71·1	340	e 11 19?	− 3	e 20 39	+ 1	—	—	e 41·3
Potsdam		72·4	345	e 11 25	− 5	—	—	—	—	e 32·3
Baku		72·7	316	—	—	20 55	− 2	—	—	—
De Bilt		73·7	350	—	—	i 21 6	− 2	—	—	e 43·3
Kew		74·8	354	—	—	e 21 15	− 5	—	—	e 36·3
Uccle		75·1	351	e 11 49	+ 3	21 19	− 5	21 59	PS	34·3
Paris		77·2	352	e 12 1	+ 4	—	—	—	—	e 39·3
Triest		78·8	343	e 21 59	S	(e 21 59)	− 5	—	—	e 43·3
Clermont-Ferrand		80·2	350	12 14	0	—	—	—	—	—
Toledo		86·6	355	e 12 45	− 1	23 24	+ 1	—	—	—
Helwan		89·1	324	e 12 58	0	23 44	− 2	16 28	PP	—

Additional readings :—
College e = +5m.26s.
Tucson i = +10m.30s., +10m.53s., and +11m.18s.
Florissant iEN = +10m.54s.
St. Louis iZ = +11m.6s.
Helwan eZ = +13m.29s., PPPZ = +18m.22s.
Long waves were also recorded at Columbia, Ukiah, Butte, San Juan, East Machias, Chicago U.S.C.G.S., Sofia, Bombay, and Calcutta.

Sept. 5d. Readings also at 6h. (Huancayo), 7h. (Palomar, Tinemaha, Pasadena, Mount Wilson, and Riverside), 8h. (near Sofia and Bucharest, near Andijan, Almata, Tashkent, and Ksara), 9h. (Tucson, Paris, College, Palomar, Tinemaha, Pasadena, Mount Wilson, and Riverside), 14h. (Agra), 15h. (Manila, Batavia, and near Amboina), 17h. (near Reykjavik), 19h. (Pittsburgh), 20h. (near Amboina and Clermont-Ferrand), 22h. (near Sofia and Bucharest).

Sept. 6d. 3h. 17m. 47s. Epicentre 27°·0N. 92°·0E. (as on 1941, Jan. 21d.).

$A = -·0311$, $B = +·8917$, $C = +·4516$; $\delta = +4$; $h = +3$;
$D = +·999$, $E = +·035$; $G = -·016$, $H = +·451$, $K = -·892$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Calcutta	N.	5·5	217	e 2 7	P_g	i 3 2	S_g	—
Agra	E.	12·5	275	e 3 7	+ 5	e 5 17	− 6	—
Hyderabad	N.	15·7	236	7 2	S	(7 2)	+23	(8·6)
Bombay		19·4	250	e 4 29	− 1	i 8 30	SS	10·7
Almata		20·3	238	4 39	− 1	—	—	—
Andijan		21·2	315	4 49	0	8 42	+ 1	—
Tashkent		23·5	313	e 5 12	0	9 26	+ 3	—
Stuttgart		65·6	314	i 10 45a	− 3	—	—	—

Additional readings :—
Calcutta $eP_gN = +2$m.17s., $iS^*N = +3$m.16s., $iS_g = +3$m.27s.
Hyderabad gives S and P as L and S.
Bombay iE = +9m.20s.
Long waves were also recorded at Potsdam, De Bilt, and Paris.

Sept. 6d. Readings also at 0h. (Lincoln, Mount Wilson, Pasadena, Palomar, Riverside, and Toledo), 6h. (near Sofia), 9h. (Almata), 11h. (La Paz), 12h. (Agra and Calcutta), 15h. (Helwan), 17h. (Harvard (2), Ottawa, near Seven Falls, and Shawinigan Falls), 18h. (Harvard), 21h. (near Berkeley).

Sept. 7d. 0h. 50m. 50s. Epicentre 71°·3N. 4°·2W.

$A = +·3217$, $B = -·0236$, $C = +·9465$; $\delta = -9$; $h = -12$;
$D = -·073$, $E = -·997$; $G = +·944$, $H = -·069$, $K = -·323$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bergen		11·6	156	—	—	e 5 10?	+ 9	—	—	—
Aberdeen		14·2	176	e 1 45	?	—	—	i 4 42	?	6·5
Upsala		14·5	131	i 3 23	− 5	e 6 10	− 1	e 6 23	SS	—
Copenhagen		17·2	148	i 4 3a	0	—	—	—	—	8·2
Stonyhurst		17·5	177	e 2 30	?	i 7 30	+ 9	—	—	8·7
De Bilt		19·7	164	i 4 36a	+ 2	e 8 14	+ 4	—	—	e 9·7
Ivigtut		19·9	263	4 46	+10	8 47	SS	—	—	10·2
Kew		20·0	174	e 4 38	+ 1	i 8 25	+ 8	i 4 49	PP	e 9·7
Potsdam		20·5	150	i 4 39a	− 3	i 8 41	+14	i 5 4	PP	e 9·2
Uccle		21·0	167	i 4 49a	+ 2	i 8 40	+ 3	—	—	10·5
Jena		21·7	153	i 4 56	+ 1	—	—	i 5 31	PP	i 10·1
Warsaw		22·2	136	e 4 59	− 1	i 9 12	+12	e 5 33	PP	e 12·2
Paris		22·8	170	i 5 8	+ 3	i 9 26	+15	6 19	PP	11·2
Stuttgart		23·5	159	i 5 15	+ 3	e 9 35	+12	1 5 45	PP	—
Basle		24·5	162	e 5 26	+ 4	—	—	—	—	—
Zurich		24·8	161	e 5 28	+ 3	—	—	—	—	—
Clermont-Ferrand		25·9	170	i 5 38	+ 3	e 10 23	+19	—	—	e 14·2
Triest		27·2	154	e 5 52	+ 5	i 11 6	SS	e 6 40	PP	e 14·8
Sverdlovsk		30·0	86	6 13	+ 1	e 11 5	− 5	—	—	—
Coimbra		31·3	188	e 5 15	−69	e 11 25	− 6	—	—	e 15·4
Toledo		31·5	180	i 6 28	+ 2	11 39	+ 5	—	—	15·5
Granada		34·2	180	e 6 59a	+10	i 12 38	+22	8 21	PP	—
Almeria		34·5	178	e 6 58	+ 6	15 14	SSS	8 5	PP	17·2
Baku		40·9	110	e 8 45	+59	—	—	—	—	—
Ottawa		42·0	273	7 59	+ 5	14 28	+14	e 16 28?	SS	21·2
Helwan		45·8	136	e 8 25	0	e 15 10	+ 1	—	—	—
Tashkent		46·2	90	e 8 30	+ 2	e 15 14	− 1	—	—	—
Andijan		47·7	88	e 8 48	+ 8	e 15 38	+ 2	—	—	—
Florissant		52·6	282	i 9 20	+ 2	—	—	—	—	—
St. Louis	z.	52·7	282	e 9 19	+ 1	—	—	—	—	e 27·0
Victoria		53·0	314	—	—	e 15 46?	−64	—	—	28·2
Columbia		54·0	272	—	—	e 17 17	+14	—	—	e 26·4
Tinemaha		62·4	305	e 10 29	+ 2	—	—	—	—	—
Lick		63·0	308	e 10 34	+ 3	—	—	—	—	—
Haiwee		63·2	305	i 10 34	+ 2	—	—	—	—	—
Tucson		64·9	297	i 10 46	+ 3	—	—	i 11 17	P_cP	e 33·5
Mount Wilson		65·0	304	i 10 46	+ 2	—	—	e 13 22	PP	—
Riverside	z.	65·1	304	e 10 45	0	—	—	—	—	—
Pasadena		65·2	304	i 10 46	+ 1	—	—	—	—	e 35·7
Santa Barbara		65·3	305	i 10 49	+ 3	—	—	—	—	—
Palomar	z.	65·6	303	i 10 50	+ 2	—	—	—	—	—
La Jolla		66·1	302	e 10 52	+ 1	—	—	—	—	—

Additional readings :—
Upsala eE = +4m.53s.
Kew iZ = +8m.31s., eP_cPEN = +8m.36s., eQEN = +9m.10s.
Potsdam i = +4m.44s., iEN = +4m.50s., iPPE = +5m.9s., iPPPEZ = +5m.21s., iNZ = +6m.3s., iE = +8m.34s., iP_cPEZ = +8m.51s.
Jena iPN = +5m.2s., iN = +5m.36s.
Warsaw eN = +5m.4s., eZ = +5m.8s., eE = +5m.10s.?, eN = +5m.14s. and +5m.55s., eE = +9m.17s., iZ = +9m.20s.
Paris i = +5m.20s.
Stuttgart i = +5m.20s.
Triest i = +9m.2s.
Coimbra eSN = +10m.41s.
Granada P_cP = +9m.42s., SS = +15m.2s.
Almeria P_cP = +9m.18s., P_cS = +13m.13s.
Tucson e = +12m.22s., ePP = +13m.10s.
Long waves were also recorded at Chicago U.S.C.G.S., College, Salt Lake City, Berkeley, Butte, Ukiah, and Bozeman.

Sept. 7d. 22h. 22m. 44s. Epicentre 19°·5S. 70°·6W. (as on 1940, March 31d.).

$A = +·3134$, $B = -·8897$, $C = -·3318$; $\delta = -12$; $h = +5$;
$D = -·943$, $E = -·332$; $G = -·110$, $H = +·313$, $K = -·943$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		3·8	39	i 1 9$_a$	P*	i 2 16	S_g	—	—	2·5
Huancayo		8·7	328	e 2 23	+13	i 4 11	S*	e 2 48	P_g	i 5·1
San Juan		37·9	8	e 7 19	− 1	i 13 10	− 3	e 9 5	—	e 16·3
Cape Girardeau	E.	59·3	345	—	—	e 18 6	− 8	—	—	—
Pittsburgh		60·3	352	—	—	i 18 27	+ 1	—	—	—
Florissant		60·9	344	e 10 20	+ 3	e 18 29	− 5	i 18 42	PS	—
Tucson		64·3	323	e 10 45	+ 6	—	—	—	—	e 37·4
Ottawa		64·8	357	10 40	− 3	e 19 22	− 1	—	—	e 30·3
Seven Falls		66·3	0	—	—	e 19 46?	+ 4	—	—	33·3
Palomar	Z.	68·6	320	e 11 4	− 3	—	—	—	—	—
Riverside	Z.	69·4	320	e 11 8	− 4	—	—	—	—	—
Mount Wilson	Z.	70·0	320	i 11 14	− 1	—	—	—	—	—
Victoria		82·5	328	—	—	e 22 48	+ 6	—	—	46·3
Almeria		85·2	49	e 12 27	−12	i 20 59	?	14 51	PP	32·3
Kew		93·4	36	e 17 12	PP	e 28 14	?	—	—	e 43·3
Triest		99·9	45	e 23 55	SKS	(e 23 55)	[−32]	i 26 52	PS	—
Bucharest	N.	108·1	48	e 16 48	?	—	—	—	—	—

Additional readings :—
Huancayo i = +3m.50s.
San Juan i = +13m.23s.
Florissant eE = +20m.1s.
Tucson e = +11m.2s.
Almeria P_cP = +13m.3s., PPP = +16m.23s., S_cS = +22m.11s., SS = +25m.11s., SSS = +27m.59s.
Bucharest eN = +17m.5s., eE = +17m.9s.
Long waves were also recorded at La Plata and other American and European stations.

Sept. 7d. Readings also at 0h. (San Juan), 4h. and 5h. (Sofia), 7h. (Mount Wilson, Riverside, Manila, Riverview, and Sverdlovsk), 9h. (Batavia), 11h. (near Mizusawa), 14h. (near La Paz), 22h. (near Branner), 23h. (Mount Wilson, Palomar, Riverside, and Amboina).

Sept. 8d. 3h. 12m. 42s. Epicentre 34°·3N. 119°·6W. (as on 1941 July 1d.).

$A = -·4089$, $B = -·7198$, $C = +·5609$; $\delta = -8$; $h = 0$;
$D = -·869$, $E = +·494$; $G = -·281$, $H = -·495$, $K = -·828$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara		0·2	324	i 0 7	− 3	i 0 10	− 6	—	—	—
Pasadena		1·2	97	i 0 24	0	i 0 42	+ 1	—	—	—
Mount Wilson		1·3	94	i 0 26	+ 1	—	—	—	—	—
Riverside		1·9	99	i 0 34	0	—	—	—	—	—
Fresno	N.	2·4	356	i 0 43	+ 2	i 1 16	S_g	i 0 48	P_g	—
Lick	E.	3·5	331	e 0 58	+ 1	i 1 50	S*	—	—	—
	N.	3·5	331	e 0 55	− 2	e 1 40	0	—	—	—
Santa Clara		3·6	327	e 1 35	S	(e 1 35)	− 7	i 2 2	S_g	—
Branner	E.	3·7	326	e 1 3	+ 3	i 1 50	S*	—	—	—
	N.	3·7	326	i 1 18	P_g	i 1 47	+ 2	—	—	—
Berkeley	N.	4·2	329	e 1 8	+ 1	e 1 22	P_g	—	—	—
San Francisco		4·2	326	e 0 18?	?	i 1 18?	P_g	—	—	—
Tucson		7·6	103	e 1 57	+ 2	i 4 11	S_g	i 2 42	P_g	e 5·0
Salt Lake City		8·9	41	e 4 54	S_g	—	—	—	—	(e 5·3)

Additional readings :—
Salt Lake City L given as S.
Branner iEN = +2m.6s.
Long waves were also recorded at Bozeman, Butte, Chicago U.S.C.G.S., and Ukiah.

Sept. 8d. 17h. 30m. 10s. Epicentre 42°·0N. 13°·1E.

Intensity V-VI at Cervara di Roma. Epicentre 42°02′N. 13°04′·5E. Depth = 10km. Macroseismic area 25sq. km. approx.

Domerico di Filippo.
Il terremoto di Cervara di Roma dell' 8 Settembre, 1941, XIX. "Bolletino della Societa Sismologica Italiana," Vol. XL-N, 1-2, Anno 1942, et Public de l'Institut National de Geophysique de Rome, No. 97, isoseismic chart p. 4.

$A = +·7260$, $B = +·1689$, $C = +·6666$; $\delta = -4$; $h = -2$;
$D = +·227$, $E = -·974$; $G = +·649$, $H = +·151$, $K = -·745$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		3·7	8	e 1 19	P_g	e 1 22	−23	e 2 16	S_g	—
Ravensburg		6·3	337	e 2 10	P_g	e 2 45	− 5	e 3 11	S*	—
Zurich		6·3	329	e 1 28	− 8	—	—	—	—	—
Neuchatel		6·6	321	e 1 42	+ 1	—	—	—	—	—
Stuttgart		7·3	339	e 1 50	0	i 3 18	+ 3	e 2 8	P*	—
Jena		9·0	354	e 2 19	+ 6	e 4 0	+ 2	—	—	e 5·2

Additional readings :—
Ravensburg eE = +2m.56s., +3m.22s. and +3m.49s., eN = +3m.52s.
Stuttgart e = +2m.22s., +2m.35s., and +3m.23s., eNE = +3m.36s., iS_gEN = +4m.42s.
Jena eN = +3m.17s.
Long waves were also recorded at Potsdam.

Sept. 8d. Readings also at 2h. (near Manila), 5h. (Riverside, Mount Wilson, and Palomar), 7h. (Lincoln), 10h. (Tinemaha, Riverside, Palomar, Tucson, Merida, Oaxaca, and Tacubaya), 11h. (Huancayo, Balboa Heights, Tinemaha, Riverside, Palomar, Mount Wilson, Tucson, La Paz, and Pasadena), 13h. (Tinemaha and Mount Wilson), 15h. (Pasadena, Mount Wilson, Palomar, and Riverside), 16h. (near Zurich, Stuttgart, Triest, Mount Wilson, Santa Barbara, Pasadena, Palomar, and Riverside), 17h. (near La Paz), 18h. (Tucson and Palomar), 20h. (near Berkeley and Tucson).

Sept. 9d. 7h. 19m. 48s. Epicentre 6°·2S. 154°·8E. (as on 1939 March 8d.). Depth 0·005.

$A = -·8997$, $B = +·4233$, $C = -·1073$; $\delta = +16$; $h = +7$;
$D = +·426$, $E = +·905$; $G = +·097$, $H = -·046$, $K = -·994$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	21·2	184	i 4 35	− 7	i 8 21	− 8	i 4 55	PP	—
Palau		24·3	303	5 17	+ 5	9 39	+15	—	—	—
Amboina		26·7	274	i 5 35	0	9 10	−54	—	—	15·2
Riverview		27·7	187	e 5 38	− 6	i 9 49	−31	i 5 52	pP	e 13·4
Sydney		27·7	187	e 5 33	−11	i 9 42	−38	e 5 54	pP	e 12·2
Adelaide		32·3	205	i 6 19	− 6	i 11 26	− 7	i 7 20	PP	16·8
Apia		33·7	105	e 6 44	+ 7	e 12 17	sS	e 7 44	PP	e 16·3
Auckland		35·6	151	6 45	− 8	12 37	+13	8 26	PP	17·7
Arapuni		36·9	153	7 24	+20	12 48	+ 4	15 12?	SS	—
Tuai		38·2	152	7 12	− 3	—	—	—	—	—
Wellington		39·2	156	7 19k	− 4	13 24	+ 5	7 35	pP	18·2
Manila		39·4	303	i 7 28a	+ 3	13 6	−16	i 9 46	PPP	18·0
Christchurch		40·3	160	7 27k	− 5	13 30	− 5	9 7	P_cP	19·1
Yokohama		43·8	341	e 8 5	+ 4	—	—	—	—	—
Perth		44·5	230	i 8 12	+ 5	i 14 37	0	10 17	PPP	20·6
Taihoku		44·9	315	8 16	+ 6	14 50	+ 8	—	—	—
Matuyama		45·0	335	8 13	+ 2	14 43	− 1	—	—	—
Sendai		46·1	345	e 8 22	+ 3	15 5	+ 5	—	—	—
Mizusawa		46·8	346	e 8 27	+ 2	e 14 42	−27	—	—	19·1
Batavia		47·7	268	i 8 32a	0	—	—	—	—	e 22·2
Zinsen		50·8	331	9 18	pP	16 34	sS	10 23	P_cP	e 42·3
Vladivostok		53·3	340	i 9 17	+ 2	i 16 47	+ 7	—	—	—
Honolulu		53·9	58	e 9 21	+ 2	e 16 56	+ 8	e 12 46	PP	22·2
Medan		56·9	280	9 44	+ 3	i 17 55	SS	—	—	—
Calcutta	N.	70·9	297	i 11 5a	− 7	i 20 13	− 8	i 11 28	P_cP	i 32·7
Irkutsk		72·3	330	i 11 23	+ 3	20 42	+ 5	—	—	—
Colombo	E.	75·5	279	i 11 42	+ 3	21 38	sS	—	—	41·2
Hyderabad	N.	78·9	290	11 59	+ 1	21 55	+ 5	14 31	PP	36·2
Agra	E.	81·2	299	i 12 9a	− 1	22 18	+ 4	12 27	pP	—
College		82·4	21	e 12 16	0	e 22 29	+ 3	e 15 25	PP	e 34·3

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay	E.	84·4	290	i 12 28	+ 1	i 22 45	− 1	i 15 41	PP	38·7
Sitka		84·6	31	e 12 30	+ 2	e 22 48	0	—	—	e 39·8
Almata		85·4	316	e 12 34	+ 2	—	—	—	—	—
Ferndale		87·1	49	e 12 42	+ 2	e 23 24	+12	—	—	—
Ukiah		87·7	51	—	—	e 23 26	+ 8	—	—	36·4
Berkeley		88·2	53	i 12 46	+ 1	e 23 6	[0]	i 36 36	Q	e 40·0
Branner	E.	88·2	52	e 12 50	+ 5	e 23 2	[− 4]	—	—	e 43·6
Andijan		88·3	311	e 12 48	+ 2	—	—	—	—	—
Santa Clara		88·4	52	e 12 37	− 9	e 23 34	+10	—	—	e 41·5
Lick		88·6	52	e 12 52	+ 5	—	—	—	—	e 44·6
Victoria		89·2	42	12 3?	−47	22 51?	[−21]	29 12?	SS	e 36·2
Santa Barbara		89·8	56	e 12 54	+ 1	—	—	—	—	—
Seattle		89·8	42	e 19 23	?	e 24 24	PS	—	—	e 41·3
Tashkent		90·7	312	i 12 58	+ 1	e 23 38	− 7	—	—	—
Pasadena		91·0	56	i 12 59a	+ 1	i 23 49	+ 1	e 30 1	SS	e 36·8
Mount Wilson		91·1	56	i 13 0a	+ 1	—	—	—	—	—
Tinemaha		91·3	53	i 13 1	+ 1	—	—	e 38 29	P'P'	—
Haiwee		91·4	54	e 13 4	+ 4	—	—	—	—	—
La Jolla	z.	91·6	57	e 13 1	0	—	—	—	—	—
Riverside		91·6	56	e 13 1	0	—	—	e 38 30	P'P'	—
Palomar	z.	92·0	57	i 13 4	+ 1	—	—	—	—	—
Butte		96·3	43	e 16 53	PP	e 24 38	+ 4	—	—	e 40·9
Salt Lake City		96·5	50	e 13 42	pP	e 24 20	−15	e 19 44	PPP	e 41·2
Tucson		97·0	58	i 13 28	+ 2	e 24 41	+ 1	i 17 21	PP	e 41·1
Bozeman		97·3	45	e 13 28	+ 1	i 24 3	[+ 6]	i 17 26	PP	e 40·5
Sverdlovsk		97·4	327	i 13 28	0	i 23 57	[− 1]	i 17 22	PP	—
Tananarive		104·2	238	18 7	PP	24 39	[+ 9]	20 57	PPP	e 48·5
Baku		105·3	310	e 14 6	P	—	—	e 18 33	PP	—
Lincoln		108·0	49	e 18 43	PP	e 28 26	PS	—	—	e 53·0
Florissant		113·1	51	e 14 37	P	e 26 27	SKKS	i 19 21	PP	—
St. Louis		113·7	50	e 18 34	[+ 3]	i 26 30	SKKS	e 19 20	PP	48·1
Cape Girardeau	E.	114·1	52	e 19 25	PP	e 29 6	PS	—	—	e 59·2
Chicago U.S.C.G.S.		114·5	46	e 19 26	PP	e 27 1	SKKS	e 29 13	PS	e 47·3
Ksara		117·4	304	e 17 42	?	29 43?	PS	e 19 58	PP	—
Upsala		117·4	337	e 19 52	PP	25 27	[+ 3]	e 36 12?	SS	e 53·2
Pittsburgh		120·5	46	e 15 18	P	i 25 39	[+ 4]	e 20 14	PP	—
Warsaw		120·5	328	18 45	[+ 1]	e 30 6	PS	i 20 17	PP	e 58·2
Bergen		121·2	343	e 20 13	PP	—	—	—	—	e 53·2
Bucharest		121·4	319	e 19 0?	[+15]	e 36 48?	SS	e 20 24?	PP	60·2
Ottawa		121·4	39	18 47	[+ 2]	25 42	[+ 4]	20 16	PP	e 51·2
Columbia		121·6	53	e 20 17	PP	e 25 39	[0]	e 36 42	SS	e 51·3
Helwan	z.	122·0	301	i 18 51a	[+ 4]	27 17	SKKS	20 24	PP	—
Copenhagen		122·3	336	i 18 51a	[+ 4]	25 37	[− 5]	20 17	PP	—
Shawinigan Falls		122·3	36	18 12?	[−35]	—	—	—	—	64·2
Ivigtut		122·5	12	18 49	[+ 1]	30 18?	PS	20 26	PP	54·2
Georgetown		123·1	47	e 18 54	[+ 5]	25 50	[+ 6]	20 30	PP	—
Sofia		123·4	317	e 18 56	[+ 7]	e 30 36	PS	e 20 40	PP	—
Vermont		123·5	39	e 20 31	PP	e 25 49	[+ 4]	e 30 29	PS	e 52·7
Seven Falls		123·6	34	18 53	[+ 3]	30 30	PS	20 36?	PP	61·2
Philadelphia		124·1	45	e 20 23	PP	e 30 46	PS	e 40 40	SS	e 51·6
Potsdam		124·3	333	i 18 55k	[+ 4]	i 28 38	?	i 20 43	PP	56·2
Fordham		124·6	43	18 12	[−40]	—	—	20 38	PP	—
Belgrade		124·8	321	e 20 39	PP	e 25 33	[−16]	e 29 11	?	e 55·2
Prague		125·1	330	—	—	e 32 12?	PPS	—	—	e 57·2
Harvard		125·4	40	i 18 54	[+ 1]	e 25 55	[+ 4]	i 20 44	PP	e 59·7
Weston		125·6	40	18 55	[+ 1]	—	—	—	—	—
Aberdeen		126·0	343	i 20 41	PP	—	—	—	—	e 58·9
Jena		126·0	331	i 18 57	[+ 2]	e 32 36	PPS	e 20 49	PP	e 54·2
East Machias		126·9	37	e 20 53	PP	e 27 50	SKKS	e 31 5	PS	e 53·4
Huancayo		127·0	110	i 18 58	[+ 1]	i 38 25	SS	e 20 59	PP	e 53·5
De Bilt		127·9	337	i 19 1a	[+ 3]	i 30 40	PS	e 21 5	PP	e 57·2
Triest		128·2	327	e 19 52	[+53]	e 31 9	PS	i 21 9	PP	e 55·2
Stuttgart		128·6	332	i 19 2k	[+ 2]	e 43 30	SSS	e 21 8	PP	e 60·9
La Plata	E.	128·8	145	22 12?	PKS	27 54?	SKKS	38 24?	SS	63·5
	N.	128·8	145	22 20?	PKS	27 56?	SKKS	—	—	48·4

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Uccle	128·9	337	i 19 3a	[+ 3]	e 31 49	PS	i 21 15	PP	e 57·2
Stonyhurst	129·0	342	e 16 7	P	—	—	—	—	60·6
Halifax	129·2	34	e 22 19	?	e 31 36?	PS	—	—	62·2
Zurich	129·8	331	e 19 5	[+ 3]	—	—	e 22 26	PKS	—
Basle	130·2	331	e 19 6	[+ 3]	—	—	e 22 32	PKS	—
Kew	130·4	340	i 19 4a	[+ 1]	e 26 16	[+12]	i 21 24	PP	e 60·2
Neuchatel	130·9	332	e 19 4	[0]	—	—	—	—	—
Paris	131·5	336	19 8	[+ 3]	33 43	PPS	i 21 31	PP	60·2
La Paz	131·9	118	i 19 9k	[+ 4]	39 34	SS	i 21 30	PP	62·2
Clermont-Ferrand	133·7	333	i 19 13	[+ 4]	e 22 38	SKP	i 21 43	PP	e 67·3
Bermuda	134·9	49	e 21 29	PP	e 39 20	SS	e 22 33	PKS	e 56·8
San Juan	138·3	68	e 19 19	[+ 2]	e 27 12	[+52]	i 22 52	PKS	e 58·0
Algiers	140·1	323	i 19 26	[+ 5]	i 23 0	SKP	e 22 12	PP	—
Toledo	141·5	334	e 19 17	[− 7]	—	—	i 22 33	PP	60·6
Coimbra	143·0	338	e 18 55	[−32]	29 17	SKKS	22 47	PKS	59·2
Almeria	143·1	329	i 19 20	[− 7]	26 8	[−20]	22 25	PP	72·0
Granada	143·4	331	i 20 24a	pPKP	e 34 16	PPS	20 55	pPKP	71·9
Lisbon	144·5	337	19 30	[+ 1]	29 29	SKKS	19 56	pPKP	70·8
San Fernando	145·2	333	i 19 36	[+ 6]	29 6	SKKS	22 40	PP	61·2

Additional readings :—
Brisbane iSE = +8m.26s.
Riverview iN = +5m.55s., iNZ = +6m.14s., iE = +6m.17s., i = +6m.32s., iN = +10m.7s., iSSEN = +10m.34s., iZ = +13m.7s.
Sydney e = +10m.30s.
Adelaide i = +6m.32s. and +11m.35s., SS = +12m.58s., i = +12m.7s.
Apia iPPP = +8m.6s., SS = +14m.14s., i = +14m.56s.
Auckland i = +9m.25s., +10m.22s., and +11m.7s., PcS = +12m.15s., SS = +14m.45s., Q = +15·7m.
Wellington PPZ = +8m.51s., PcPZ = +9m.25s., PcS = +13m.11s., SS? = +16m.22s.
Manila iE = +10m.2s.
Christchurch PcS = +13m.19s., ScS = +16m.48s., Q = +17m.11s.
Perth i = +11m.30s. and +17m.34s., SSS = +17m.57s.
Mizusawa SE = +14m.45s.
Zinsen PP = +11m.21s.
Honolulu e = +13m.43s. and +17m.45s., eSS = +21m.4s.
Calcutta ePPN = +13m.33s., iPSN = +20m.30s., eSKSN = +21m.5s., iSSN = +24m.33s.
Hyderabad PSN = +22m.18s.
Agra PPE = +15m.17s., sSE = +22m.44s., PSE = +23m.8s., SSE = +27m.32s.
College e = +23m.5s., ePPS = +23m.43s., e = +28m.44s.
Bombay iE = +25m.10s., SSE = +28m.13s., SSN = +28m.19s.
Berkeley iE = +12m.49s., iSKSE = +23m.20s., iSKSNZ = +23m.30s.
Victoria PPSE = +24m.21s.
Seattle e = +21m.41s.
Pasadena eZ = +25m.43s.
Salt Lake City e = +16m.39s. and +19m.56s., ePS = +26m.1s., e = +30m.22s.
Tucson i = +15m.29s., iPPP = +19m.44s., ePS = +26m.6s., e = +29m.46s., eSS = +31m.28s., i = +38m.25s.
Bozeman e = +24m.46s., ePS = +25m.57s., e = +29m.36s., eSSS = +35m.2s.
Sverdlovsk S = +24m.40s., iSS = +31m.30s.
Tananarive PS = +28m.3s.
Florissant iZ = +20m.24s., ePSE = +28m.55s., iPKKPE = +29m.21s.
St. Louis eE = +20m.21s. and +26m.43s., eEN = +27m.4s., eSPE = +28m.55s., iPKKPE = +29m.24s., eSSN = +35m.28s.
Chicago U.S.C.G.S. eSS = +35m.4s.
Upsala ePPSE = +30m.54s., ePPSN = +31m.12s.?, eSSSE = +40m.47s.
Pittsburgh eS = +28m.16s., ePS = +30m.14s.
Warsaw iN = +19m.12s.?, eE = +19m.43s., eZ = +22m.43s., +31m.44s., and +32m.44s.
Bucharest eN = +19m.42s.?
Ottawa SKKSN = +27m.12s.?, PS = +30m.19s., SSN = +37m.12s.
Columbia e = +20m.36s., ePS = +30m.23s.
Helwan iZ = +19m.48s., SKPZ = +21m.49s., PPPE = +23m.12s., iZ = +30m.17s., PSZ = +30m.36s., iZ = +32m.39s.
Copenhagen ? = +22m.12s., +26m.30s., +30m.1s., +32m.6s.?, and +37m.6s.?
Ivigtut ? = +21m.9s. and +32m.3s.
Georgetown SP = +30m.43s.
Vermont SKKS = +26m.16s., e = +32m.37s., eSS = +36m.46s.
Seven Falls PPS = +32m.19s., SS = +37m.36s., SSS = +41m.12s.?, e = +49m.31s.
Potsdam eE = +20m.30s., iZ = +20m.35s., iN = +22m.10s., iPKSN = +22m.27s., iPPPE = +23m.26s., iNZ = +26m.20s., iPSN = +30m.37s., iE = +30m.54s., iN = +31m.0s., iPPSNZ = +32m.15s., iE = +32m.23s., iZ = +36m.2s. and +36m.56s., iSSE = +37m.26s., iSSPN = +37m.47s., iN = +40m.33s. and +45m.57s.
Harvard ePKSZ = +22m.28s., ePPP?Z = +23m.30s., eZ = +24m.27s.

Continued on next page.

Jena eE = +20m.52s. and +32m.40s., e = +38m.6s.
East Machias e = +20m.57s., eSS = +38m.22s.
Huancayo e = +22m.8s., +32m.16s., and +35m.44s.
De Bilt iSKP? = +22m.21s., iPS? = +31m.22s., ePPS = +32m.52s., eSS = +39m.12s.?
Triest i = +22m.22s., ePP = +23m.56s., ePPP = +27m.13s., eSS = +38m.1s.
Stuttgart i = +19m.9s., eSKPEN = +22m.20s., ePPPEN = +23m.40s., ePPSEN = +32m.51s., eSSEN = +38m.24s.
La Plata E. +31m.0s.?, +42m.12s.?, and +49m.12s.?, Q = +53m.12s.?
Uccle iSKPZ = +22m.24s., iSKPEN = +22m.27s., iSKSP?N = +30m.42s., iPPS = +33m.7s., iZ = +33m.58s., eSS?N = +39m.36s.
Stonyhurst i = +17m.28s. and +18m.59s.
Zurich ePP = +23m.12s.
Basle i = +21m.24s.
Kew iPKS = +22m.29s., ePPPNZ = +24m.14s., eSKKS = +28m.8s., iZ = +29m.44s., ePSEN = +31m.20s., ePPS? = +32m.42s.?, eSS = +39m.12s., eQE = +54m.42s.
Paris iSKP = +22m.30s., e = +35m.54s.
La Paz iPPN = +21m.36s., iSKPZ = +22m.30s., iN = +32m.51s., PPSZ = +33m.20s., iN = +33m.50s. and +42m.2s., SSSN = +43m.14s.
San Juan e = +20m.39s. and +24m.20s.
Coimbra PKP = +19m.25s., PP = +21m.47s., SKP = +22m.47s., SKKS = +28m.45s., ? = +49m.17s.
Almeria PKS = +23m.5s., PPP = +25m.27s., SKKS = +29m.14s., P_cS,PKP = +31m.8s., PS = +32m.48s., PPS = +34m.45s., SS = +40m.26s., SSS = +45m.40s., Q = +68m.33s.
Granada PKP_2 = +20m.33s., SKP = +23m.21s., pPP = +24m.24s., PPP = +26m.54s., pPPP = +27m.38s., PPS = +36m.57s., SS = +42m.34s., SSS = +48m.40s.
Lisbon E = +21m.14s., Z = +22m.41s., PP = +23m.32s., N = +35m.18s.
San Fernando ePPPN = +24m.40s., SSN = +42m.14s.

Sept. 9d. Readings also at 5h. (near Mizusawa), 6h. (Sverdlovsk, Ksara, and Balboa Heights), 7h. (Tucson), 10h. (Ksara and near Andijan), 12h. (Columbia, Riverside, and Mount Wilson), 13h. (near La Paz), 15h. (near La Paz), 16h. (near Manila), 17h. (La Plata, Palomar, Tinemaha (2), and Mount Wilson (2)), 19h. (near Medan and near La Paz), 20h. (near Berkeley), 22h. (Huancayo and Victoria), 23h. (La Paz).

Sept. 10d. 10h. Epicentre in Assam. Intensity VI at Dhubri and Rangpur. See Government of India Seismological Bulletin for 1941, p. 63.

Calcutta iPN = 6m.8s., iP_gN = 6m.27s., iSN = 7m.0s., iS*N = 7m.14s., iS_gN = 7m.24s.
Agra ePE = 8m.19s., eSE = 9m.28s., S_gE = 10m.46s.
Bombay PEN = 9m.0s., SEN = 12m.21s., LE = 13·7m.
Andijan eP = 9m.27s., eS = 13m.22s.
Tashkent eP = 9m.52s., eS = 14m.2s.
Hyderabad ePN = 10m.35s., SEN = 12m.8s.

Sept. 10d. 21h. 53m. 52s. Epicentre 39°·5N. 43°·0E.

Damage in Asia Minor at Van, Malazgird, Karakeusse, Erzindjan, Billim, and Agri. Radius of macroseismic area = 200km. Epicentre 39°·5N. 43°·0E. (Strasbourg).

J. P. Rothé.
Chronique séismologique, Revue pour l'Etude des Calamités, tome VII, No. 21. Geneva 1944, p. 51.

$A = +·5658$, $B = +·5277$, $C = +·6335$; $\delta = -8$; $h = -1$;
$D = +·682$, $E = -·731$; $G = +·463$, $H = +·432$, $K = -·774$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku	5·4	76	i 1 20	− 4	—	—	—	—	—
Ksara	8·1	228	e 2 2?	0	e 3 25?	−10	—	—	—
Istanbul	10·8	282	2 41	+ 2	6 31	L	—	—	(6·5)
Bucharest	13·5	297	e 3 22k	+ 7	e 6 26	SSS	e 3 29	PP	9·0
Helwan	13·6	228	3 9	− 8	5 50	0	6 15	SS	—
Sofia	15·2	290	e 3 41	+ 3	e 6 52	SS	—	—	e 8·2
Moscow	16·6	350	e 3 37	−19	6 50	−10	—	—	—
Belgrade	17·5	295	e 4 13a	+ 6	e 7 35	SS	—	—	e 25·1
Warsaw	19·8	328	4 35k	0	8 27	SS	i 4 57	PP	e 12·1
Tashkent	20·1	77	e 4 34	− 4	e 8 24	+ 5	—	—	—
Sverdlovsk	20·8	28	i 4 44	− 1	i 8 34	+ 1	—	—	—
Triest	22·3	297	i 5 2	+ 1	i 9 15	+13	e 5 42	PPP	e 13·2
Andijan	22·4	77	e 4 59	− 3	—	—	—	—	—
Prague	22·6	308	e 5 8	+ 5	e 9 13	+ 6	—	—	e 13·6
Potsdam	24·3	313	i 5 22a	+ 2	i 9 55	+18	i 6 7	PPP	14·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Jena		24·7	308	e 5 28	+ 4	e 10 8?	+24	e 5 48	PP	e 14·1
Almata		25·6	70	e 5 31	− 1	—	—	—	—	—
Stuttgart		25·8	303	e 5 29a	− 5	e 10 21	+19	e 6 22	PPP	e 12·8
Copenhagen		25·9	320	i 5 40	+ 5	10 12	+ 8	5 59	PP	—
Upsala	E.	25·9	330	e 5 38	+ 3	10 12	+ 8	i 10 28	SS	e 12·5
	N.	25·9	330	e 5 40	+ 5	e 10 10	+ 6	i 10 42	SS	e 12·5
Zurich		26·0	300	e 5 37k	+ 1	e 10 11	+ 5	—	—	—
Basle		26·7	300	e 5 45	+ 2	e 10 43	+26	—	—	—
Neuchatel		27·1	299	e 5 46	0	—	—	—	—	—
Semipalatinsk		28·3	55	e 6 2	+ 5	—	—	—	—	—
De Bilt		28·9	310	i 6 3	0	i 11 3	+10	—	—	e 15·1
Uccle		29·2	306	i 6 9k	+ 4	i 11 5	+ 7	—	—	14·1
Clermont-Ferrand		29·8	296	e 6 14	+ 3	e 11 20	+13	—	—	e 17·4
Dehra Dun	N.	30·0	97	e 6 4	− 8	i 13 5	SSS	—	—	e 20·3
Paris		30·2	302	e 6 8	− 6	(11 8)	− 5	—	—	11·1
Algiers		31·4	278	—	—	e 14 26	?	—	—	e 18·9
Bergen		31·4	325	—	—	e 12 28?	+56	—	—	e 15·1
Kew		32·2	307	i 6 35k	+ 3	e 11 52	+ 7	i 7 16	PP	e 14·4
Oxford		32·8	307	—	—	11 52	− 2	—	—	e 14·6
Bombay	E.	32·9	120	e 6 38	0	e 11 55	− 1	7 56	PPP	16·5
	N.	32·9	120	e 6 31	− 7	e 11 53	− 3	—	—	16·7
Stonyhurst		33·7	311	i 9 41	?	i 12 11	+ 3	—	—	19·8
Aberdeen		34·0	317	—	—	i 12 13	0	—	—	18·4
Almeria		35·5	281	7 0	0	12 38	+ 2	8 9	PP	16·6
Toledo		35·9	286	e 7 3	− 1	12 52	+10	8 11	PP	—
Granada		36·3	282	i 7 12	+ 5	i 12 48	0	14 50	SS	e 17·2
Hyderabad		37·8	115	7 12	− 8	13 7	− 4	8 41	PP	18·9
San Fernando		38·5	281	e 7 8	−18	e 13 6	−16	—	—	16·1
Coimbra		39·0	289	e 7 31	+ 1	13 35	+ 6	8 43	PP	19·1
Lisbon		40·0	287	7 41	+ 3	13 47	+ 3	9 22	PP	23·8
Calcutta	N.	41·9	100	e 7 36	−18	i 14 4	− 9	e 9 30	PP	—
Kodaikanal	E.	42·3	124	e 7 8	−49	—	—	—	—	—
Irkutsk		43·3	52	e 8 2	− 3	e 14 29	− 4	—	—	—
Colombo	E.	46·4	125	—	—	e 13 57	?	—	—	27·6
Tananarive		58·3	175	—	—	17 55	− 6	—	—	30·0
Manila		71·7	86	i 11 25k	− 1	20 47	+ 2	—	—	—
East Machias		75·3	316	—	—	e 21 37	+11	—	—	e 38·5
Seven Falls		75·6	320	—	—	e 21 38?	+ 9	—	—	32·1
Ottawa		79·2	321	12 8	0	22 8	0	—	—	33·1
Philadelphia		82·8	317	—	—	e 22 43	− 2	—	—	e 34·1
Pittsburgh		84·9	320	—	—	i 23 11	+ 5	—	—	—
Chicago U.S.C.G.S.		87·5	326	—	—	e 23 19	[+ 2]	—	—	e 44·7
Florissant	E.	91·1	327	—	—	e 23 42	[+ 3]	—	—	—
Victoria		91·5	351	—	—	e 23 56?	[+14]	—	—	45·1
Butte		92·1	343	—	—	e 24 25	+12	—	—	e 45·5
La Paz		116·8	270	i 19 57	PP	—	—	—	—	59·1

Additional readings :—
Bucharest iE = +3m.26s., eZ = +3m.49s., iN = +7m.4s. and +8m.31s.
Helwan PPEN = +3m.17s., iZ = +3m.53s.
Sofia eEN = +4m.48s., eE = +5m.32s.
Belgrade i = +5m.8s., e = +6m.5s., +9m.7s., +11m.5s., and +11m.54s.
Warsaw PN = +4m.45s., eN = +5m.0s., eZ = +5m.21s., SN = +8m.36s.
Potsdam iPN = +5m.25s., iZ = +5m.42s., iN = +6m.33s., iE = +6m.55s., iZ = +7m.52s., iE = +8m.10s. and +9m.47s., iN = +10m.0s., iZ = +11m.33s. and +11m.44s.
Jena eN = +5m.51s., eE = +6m.36s., eN = +6m.44s.
Stuttgart i = +5m.40s., eSN = +10m.25s., iN = +10m.53s.
Copenhagen ? = +10m.20s.
Kew ePcP?Z = +9m.16s., eSS = +13m.12s.
Bombay eN = +6m.36s., SS?E = +13m.57s.
Almeria PPP = +8m.30s., PcP = +9m.21s., PcS = +13m.15s., SS = +14m.33s., SSS = +15m.7s.
Hyderabad SSE = +15m.22s., ScSE = +17m.30s.
Coimbra eN = +7m.35s.
Lisbon PZ = +7m.59s., PPE = +9m.26s., ScSN = +18m.9s., QN = +19m.2s.
Calcutta eSSN = +16m.57s., iScSN = +17m.38s.
Philadelphia eS = +22m.49s.
Florissant eSKKSE = +24m.15s.
Long waves were also recorded at Huancayo, San Juan, Besançon, Wellington, and other American stations.

Sept. 10d. Readings also at 2h. (La Paz, La Plata, and Huancayo), 3h. (De Bilt, Uccle, Kew, Potsdam, and Paris), 11h. (near La Paz), 12h. (Tucson and Riverside), 14h. (Tinemaha, Riverside, Paris, and Mount Wilson), 17h. (Merida, Tacubaya, San Juan, Bozeman, and Tucson), 18h. (Potsdam), 19h. (Pasadena, Riverside, Mount Wilson and near Mizusawa), 20h. (Harvard), 22h. (near Berkeley).

Sept. 11d. Readings at 0h. (Kew), 1h. (Andijan, Almata, Semipalatinsk, Tashkent, Sverdlovsk, and near Berkeley), 2h. (East Machias, San Juan, Columbia, Chicago U.S.C.G.S., Kew, Clermont-Ferrand, Toledo, Paris, San Fernando, Uccle, De Bilt, Almeria, Potsdam, Ksara, La Paz, and Warsaw), 6h. (Ksara), 8h. (Moscow, Helwan, Warsaw, La Paz, Potsdam, Tashkent, Sverdlovsk, and Ksara), 9h. (near Branner), 14h. (Kew), 16h. (Huancayo and La Paz (2)), 17h. (near Bucharest, Sofia, Triest, and near Belgrade), 18h. (near Mizusawa), 19h. (Auckland, Tuai, and Wellington), 22h. (Coimbra), 23h. (Merida, Tacubaya, and Triest).

Sept. 12d. 7h. 1m. 58s. Epicentre 0°·7S. 132°·4E.

Felt in the western parts of New Guinea and especially at Babo and Weſiani; several repetitions at Weſiani. Epicentre 0°·7S. 132°·4E. Depth = 50km. (Batavia). Meteorologische en Geophysische Dienst te Batavia, Serie A, No. 44. Aardbevingen in Ned-Indië waargenomen gedurende het jaar 1941, p. 9.

$A = -\cdot6742$, $B = +\cdot7384$, $C = -\cdot0122$; $\delta = -7$; $h = +7$;
$D = +\cdot738$, $E = +\cdot674$,; $G = +\cdot008$, $H = -\cdot009$, $K = -1\cdot000$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		5·2	235	i 1 27	+ 6	i 2 33	S*	—	—	—
Manila		18·9	325	i 4 26a	+ 2	7 59	+ 6	i 5 37	PPP	10·2
Batavia		26·1	258	i 5 40	+ 3	10 2	− 5	—	—	e 16·0
Taihoku		27·7	339	6 2	+10	—	—	—	—	—
Brisbane		33·2	145	i 6 39	− 1	i 11 55	− 5	—	—	—
Medan		34·0	278	6 48	0	12 21	+ 8	—	—	—
Koti		34·1	2	e 6 27	−21	11 49	−25	—	—	—
Hukuoka		34·2	358	e 7 6	+17	12 12	− 4	—	—	—
Adelaide		34·5	171	i 6 55	+ 3	i 12 26	+ 6	8 5	PP	20·5
Perth		34·8	205	7 2	+ 8	12 32	+ 7	8 17	PPP	16·9
Kobe		35·3	4	i 7 5	+ 6	12 24	− 9	—	—	—
Hamada		35·4	0	e 7 10	+10	12 32	− 2	—	—	—
Tokyo Cen. Met. Obs.		36·9	9	e 5 36	?	11 14	?	—	—	—
Riverview		37·4	154	i 7 17a	+ 1	i 13 9	+ 4	i 8 55	PP	e 18·9
Sydney		37·4	154	e 7 20	+ 4	e 13 26	+21	e 9 5	PP	e 20·0
Zinsen		38·4	351	7 23	− 2	13 19	− 1	—	—	—
Sendai		39·6	10	e 7 33	− 2	13 38	0	—	—	—
Mizusawa	E.	40·4	10	e 7 26	−15	13 35	−15	—	—	—
	N.	40·4	10	e 7 30	−11	e 13 42	− 8	—	—	19·5
Dairen		40·6	346	7 33	−10	13 38	−16	—	—	—
Vladivostok		43·6	359	e 8 27	+19	i 15 8	+30	—	—	—
Calcutta	N.	48·7	301	i 8 45a	− 3	i 15 45	− 5	i 18 40	S_eS	e 22·8
Colombo		52·9	279	9 21	+ 1	16 50	+ 2	—	—	—
Auckland		53·2	137	—	—	17 2?	+10	20 2	SS	23·0
Arapuni		54·4	139	—	—	17 26	+17	23 32	Q	26·0
Wellington		55·6	142	9 37a	− 3	17 19	− 6	9 47	pP	26·0
Christchurch		55·7	146	9 41a	+ 1	17 29	+ 3	19 56	S_eS	27·4
Kodaikanal	E.	55·7	283	i 9 47	+ 7	—	—	—	—	—
Hyderabad	N.	56·1	291	9 45	+ 2	17 32	0	10 49	P_eP	23·7
Apia		56·7	106	—	—	e 17 49	+ 9	e 20 49	SS	23·9
Irkutsk		57·8	340	9 55	0	i 17 55	+ 1	10 25	pP	—
Agra	E.	59·1	302	i 10 2a	− 2	i 18 7	− 4	12 21	PP	—
Bombay		61·6	291	i 10 19	− 3	i 18 37	− 6	i 12 59	PP	31·3
Stalinabad		70·1	312	e 11 15	− 1	e 20 29	+ 2	—	—	—
Tashkent		70·6	315	i 11 20	+ 1	i 20 34	+ 1	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Honolulu		71·5	67	e 11 26	+ 2	e 20 41	− 2	e 25 32	SS	e 29·0
Sverdlovsk		80·7	328	i 12 14	− 2	i 22 20	− 4	12 49	pP	—
Baku		84·7	311	12 38	+ 1	23 8	+ 4	—	—	—
Tananarive		84·9	251	12 44	+ 6	e 23 12	+ 6	27 55	SS	—
College		86·3	25	e 12 42	− 3	e 23 11	[+ 1]	e 16 5	PP	e 32·6
Sitka		91·8	33	—	—	e 23 43	[0]	—	—	e 30·4
Moscow		93·3	326	12 55	−23	—	—	—	—	—
Ksara		95·8	303	e 13 22?	− 7	e 24 40	− 5	e 17 28	PP	—
Helwan		99·9	300	i 13 47k	− 1	i 24 38	[+11]	i 17 45	PP	—
Victoria		99·9	41	13 38?	−10	24 30?	[+ 3]	19 55?	PPP	46·0
Seattle		100·8	42	—	—	e 23 37	[−54]	e 36 19	SSS	e 47·7
Ukiah		101·6	50	e 18 4	PP	e 32 46	SS	—	—	e 47·3
Bucharest		102·1	315	e 17 38	PP	e 25 40	+ 2	—	—	54·0
Berkeley		102·5	52	—	—	i 24 39	[0]	i 27 18	PS	e 47·6
Santa Clara	E.	102·8	52	—	—	e 24 43	[+ 3]	e 27 17	PS	e 50·0
Upsala		102·8	332	e 18 15	PP	e 33 2?	SSP	e 27 23	PS	e 42·0
Warsaw		103·5	324	e 14 2?	− 2	e 25 50	0	e 18 25	PP	e 49·0
Sofia		104·4	314	e 18 2	PP	e 27 50	PS	—	—	—
Tinemaha	z.	105·8	52	e 14 13	P	—	—	—	—	—
Pasadena		106·4	55	i 14 19	P	i 24 58	[+ 1]	e 18 34	PP	e 44·0
Mount Wilson	z.	106·5	55	e 14 19	P	—	—	e 18 35	PP	—
Copenhagen		107·0	330	e 14 20	P	26 17	− 2	18 47	PP	—
Riverside	z.	107·1	55	e 14 18	P	—	—	i 18 54	PP	—
Butte		107·7	41	e 19 15	PP	e 25 2	[0]	e 34 18	SS	e 49·4
Bergen		108·1	336	e 18 50	PP	e 28 2?	PS	e 38 2?	SSS	e 48·0
Potsdam		108·1	327	e 14 22	P	i 26 11	{+19}	i 18 54	PP	52·0
Bozeman		108·8	41	e 15 47	?	i 25 9	[+ 2]	i 28 16	PS	e 48·4
Jena		109·5	324	e 18 44?	PKP	e 29 26	PPS	e 19 2?	PP	e 50·0
Salt Lake City		109·8	47	—	—	e 25 13	[+ 2]	e 28 26	PS	e 51·3
Triest		110·2	319	i 19 10	PP	i 29 44	PPS	—	—	e 52·1
Stuttgart		111·8	323	e 19 22	PP	e 28 38	PS	—	—	—
De Bilt		112·5	328	i 14 49k	P	e 27 2	{+40}	i 19 29	PP	e 50·0
Zurich		112·8	323	e 18 56	[+18]	e 29 10	PPS	—	—	—
Tucson		112·8	55	e 14 53	P	i 35 26	SS	i 28 55	PS	e 46·6
Aberdeen		113·1	335	i 19 31	PP	i 29 5	PPS	46 18	Q	52·8
Basle		113·3	323	e 19 8	PP	—	—	—	—	—
Uccle		113·6	328	e 14 52	P	e 26 48	{+18}	e 19 33	PP	e 50·0
Neuchatel		113·9	323	e 18 32	[− 9]	—	—	—	—	—
Stonyhurst		115·3	333	e 19 40	PP	i 29 36	PS	i 30 42	PPS	53·7
Kew		115·7	329	e 14 56	P	e 29 37	PS	i 19 45	PP	e 54·0
Paris		115·7	326	e 14 56	P	—	—	i 19 50	PP	56·0
Clermont-Ferrand		116·9	322	e 18 50	[+ 3]	—	—	e 19 56	PP	e 66·4
Ivigtut		119·7	1	20 8	PP	29 50?	PS	—	—	—
Lincoln		120·3	41	—	—	e 26 46	{−30}	e 40 54	SSS	—
Toledo		124·4	320	e 19 2	[+ 1]	e 32 11	PPS	i 20 51	PP	—
Almeria		125·0	316	19 10	[+ 8]	26 1	[− 5]	20 34	PP	60·0
Chicago U.S.C.G.S		125·5	36	e 20 47	PP	e 26 7	[0]	e 32 18	PPS	e 48·2
Florissant	E.	125·5	41	e 19 3	[0]	e 26 10	[+ 3]	e 20 50	PP	—
Granada		125·6	317	19 33	[+29]	—	—	—	—	78·4
Coimbra		127·0	323	e 19 52	{+46}	e 29 2	{+62}	e 21 56	PP	e 68·0
San Fernando		127·7	317	—	—	e 40 30	?	—	—	60·0
Lisbon,		128·3	322	18 13	[−56]	25 54	[−21]	21 16	PP	65·1
Toronto		128·7	29	e 21 11	PP	e 30 50?	PS	e 38 56?	SS	53·0
Ottawa		129·1	25	19 11	[+ 1]	39 2?	SS	34 2?	?	57·0
Seven Falls		129·5	19	e 21 26?	PP	e 34 2	?	—	—	39·0
Pittsburgh		130·7	32	e 16 11	P	e 28 13	{−11}	e 22 31	PP	—
Vermont		130·9	24	e 21 28	PP	e 38 29	SS	e 22 40	PKS	e 53·3
East Machias		132·7	18	e 21 43	PP	e 28 30	{− 6}	e 22 42	PKS	e 55·2
Harvard		133·1	23	e 19 20	[+ 2]	—	—	e 21 43	PP	—
Georgetown		133·4	31	19 20	[+ 2]	26 23	[− 5]	i 22 44	PKS	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fordham		133·5	27	19 19	[0]	e 39 44	SS	e 21 39	PP	—
Philadelphia		133·6	29	e 21 35	PP	e 26 8	[−20]	i 22 45	PKS	—
Halifax		134·0	15	e 23 2?	PKS	—	—	—	—	65·0
Columbia		134·4	39	e 21 48	PP	e 41 41	SSP	e 22 51	PKS	e 60·2
La Plata	E.	143·3	165	19 38?	[+ 2]	41 38?	SS	i 44 38?	?	i 77·1
	N.	143·3	165	19 37?	[+ 1]	—	—	21 12	PP	68·0
	Z.	143·3	165	19 34?	[− 2]	—	—	—	—	77·3
Bermuda		144·6	25	e 19 35	[− 3]	e 41 49	SS	e 46 53	SSS	56·4
Huancayo		149·7	116	i 19 49	[+ 2]	e 42 49	SS	e 34 8	PS	e 63·7
La Paz		153·5	131	i 19 55a	[+ 3]	i 26 37	[−21]	23 37	SKP	75·0
San Juan		154·3	45	e 19 53	[− 1]	e 43 50	SS	e 24 40	PP	e 67·6
Rio de Janeiro	E.	156·1	190	e 24 2	PP	—	—	(e 43 58)	SS	e 44·0

Additional readings :—
Batavia PEN = +5m.43s., S?EN = +10m.39s.
Adelaide SS = +14m.22s., Q = +19m.32s.
Perth SS = +14m.22s.
Riverview iE = +13m.16s., eEN = +13m.38s., iE = +15m.52s., iN = +16m.3s., eZ = +16m.41s.
Sydney e = +12m.14s. and +15m.2s.
Calcutta eSSN = +19m.1s.
Wellington iZ = +10m.0s., PP?Z = +11m.57s., SS? = +20m.15s., Q = +23m.32s.
Christchurch Q = +23m.46s.
Hyderabad S_eSN = +19m.14s., SSN = +21m.45s.
Agra PPPE = +13m.30s.
Bombay iE = +18m.8s., iN = +20m.27s., SS = +22m.48s.
Honolulu e = +23m.17s.
Sverdlovsk sS = +23m.14s.
College e = +24m.9s., eSS = +28m.6s.
Helwan iZ = +16m.47s., SKKSE = +24m.56s., SN = +25m.23s., SSZ = +32m.8s.
Victoria PS = +27m.0s., SS = +32m.30s.
Ukiah e = +22m.6s.
Bucharest eEN = +18m.28s. and +20m.2s., eN = +43m.0s.
Berkeley iE = +27m.8s., iSSE = +33m.4s., iSSN = +33m.8s., iQ?N = +42m.34s.
Santa Clara eSSE = +33m.19s.
Upsala ePPN = +18m.21s., eSSSE = +38m.2s.?
Warsaw eN = +18m.2s.?, eE = +20m.41s., +25m.31s., and +27m.32s., eZ = +28m.37s., eE = +28m.45s., eZ = +33m.13s., eN = +33m.24s. and +34m.28s.
Pasadena ePS = +27m.51s., eSS = +32m.50s.?
Copenhagen ? = +28m.2s., +32m.44s.?, and +34m.2s.?
Potsdam iPPEN = +18m.57s., iZ = +20m.50s., iE = +20m.59s., iSN = +26m.31s., iPSN = +28m.8s., iPSE = +28m.13s., iZ = +29m.8s., iPPSE = +29m.17s., iSSN = +34m.9s.
Bozeman e = +32m.30s., iSS = +34m.24s.
Jena eN = +19m.10s., eN = +29m.32s.? and +34m.32s.
Salt Lake City e = +34m.48s.
Stuttgart e = +19m.26s., eE = +29m.52s.
De Bilt iPS = +28m.57s., ePPS = +30m.2s., eSS = +35m.2s.?
Zurich eS = +30m.6s.
Tucson ePKP = +18m.39s., e = +18m.42s., iPP = +19m.27s., i = +20m.18s., e = +33m.5s., eSSS = +38m.57s.
Uccle ePSE = +29m.20s., eSSN = +35m.28s.
Kew ePKP? = +18m.49s., ePPP = +21m.57s., iNZ = +22m.54s., iPPS = +30m.38s., eSS = +36m.2s.?, eSSSEN = +39m.32s., eQZ = +47m.2s.?
Paris ePKP = +18m.44s.
Almeria PKS = +22m.46s., PPP = +23m.6s., SKKS = +27m.24s., PS = +30m.18s., PPS = +31m.36s., SS = +36m.37s., SSP = +36m.59s., SSS = +41m.10s.
Chicago U.S.C.G.S. e = +27m.47s., eSS = +37m.43s.
Florissant eSKPE = +22m.21s., eE = +25m.53s., iE = +27m.49s., eE = +28m.47s., +32m.19s., +33m.19s., and +37m.29s., eSSE = +38m.22s.
Coimbra e = +24m.2s., ? = +33m.32s.
Lisbon PKPZ = +18m.23s., PPZ = +20m.17s. and +20m.30s., PPE = +21m.22s., SKP?N = +22m.34s., E = +27m.25s., QN = +63m.20s.
Seven Falls e = +22m.34s.
Pittsburgh eS = +28m.29s., ePPS = +33m.11s.
East Machias e = +32m.11s., eSS = +39m.7s.
Harvard ePKS = +22m.50s., ePPP?Z = +24m.23s.
Fordham i = +22m.49s.
Georgetown e = +21m.43s. and +24m.58s., S = +28m.26s.
Philadelphia eSKSP = +31m.54s., e = +33m.55s., eSS = +39m.11s.
La Plata PPPN = +24m.44s., QE = +63m.2s.?
Bermuda e = +52m.6s.
Huancayo eSSS = +48m.11s.
La Paz iPKPN = +20m.24s., PPPZ = +27m.31s., SKKSZ = +30m.27s., PKS?Z = +34m.15s., PKSN = +34m.27s., iSSN = +43m.39s., QN = +66m.14s.
San Juan e = +50m.30s.

Sept. 12d. Readings also at 0h. (near Ksara), 2h. (Tashkent, Sverdlovsk, Manila, and Moscow), 3h. (Uccle, Paris, Kew, and Potsdam), 5h. (Calcutta and near Medan), 6h. (Paris, Kew, and Potsdam), 9h. (Prague, Tashkent, Ksara, and Tchimkent), 10h. (near Mizusawa), 13h. (Ksara and Tchimkent), 14h. (near Medan), 16h. (De Bilt, Potsdam, near Mizusawa (2), Paris, and Kew), 18h. (Tucson, near Amboina, Merida, Tacubaya, and Oaxaca), 19h. (near Branner, Lick, and Berkeley), 23h. (near Berkeley).

Sept. 13d. 0h. 0m. 18s. Epicentre 0°·7S. 132°·4E. (as on 12d.).

$A = -\cdot6742$, $B = +\cdot7384$, $C = -\cdot0122$; $\delta = -7$; $h = +7$.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Amboina	5·2	235	1 27	+ 6	i 2 34	S•
Manila	18·9	325	i 4 36	+12	8 7	SS
Batavia	26·1	258	5 30	− 7	e 10 0	− 7
Tashkent	70·6	315	e 11 19	0	e 20 33	0
Sverdlovsk	80·7	328	e 12 15	− 1	e 22 20	− 4
Baku	84·7	311	e 13 7	−30	—	—

Long waves were also recorded at Brisbane, Sydney, Riverview, Potsdam, Wellington, Pasadena, and Kew.

Sept. 13d. 3h. 25m. 10s. Epicentre 0°·7S. 132°·4E. (as at 0h.).

$A = -\cdot6742$, $B = +\cdot7384$, $C = -\cdot0122$; $\delta = -7$; $h = +7$.

	△	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Amboina	5·2	235	i 1 17	− 4	i 2 25	+ 3	—
Manila	18·9	325	i 4 24a	0	8 2	+ 9	—
Batavia	26·1	258	5 54	+17	10 20	+13	—
Tashkent	70·6	315	e 11 18	− 1	20 32	− 1	—
Sverdlovsk	80·7	328	e 12 14	− 2	22 19	− 5	—
Potsdam	108·1	327	e 18 50	PP	—	—	e 58·8

Batavia also gives S?N = +10m.31s.
Long waves were also recorded at De Bilt, Paris, Kew, Pasadena, and Wellington.

Sept. 13d. 9h. 16m. 52s. Epicentre 42°·0N. 20°·5E.

$A = +\cdot6982$, $B = +\cdot2610$, $C = +\cdot6666$; $\delta = -4$; $h = -2$;
$D = +\cdot350$, $E = -\cdot937$; $G = +\cdot624$, $H = +\cdot233$, $K = -\cdot745$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	2·2	72	i 0 36	− 2	i 0 59	− 7	—	—	—
Belgrade	2·8	359	i 0 47	0	i 1 26	+ 4	i 0 50	P•	—
Bucharest	4·8	58	e 1 26?	P•	2 8	− 4	i 2 30	S•	—
Triest	6·1	309	e 1 46	P•	e 2 47	S_g	—	—	—
Zurich	10·1	306	e 2 28	0	e 4 25	+ 1	—	—	—
Warsaw	10·2	2	—	—	e 5 22	S•	e 5 39	S_g	e 7·2
Stuttgart	10·5	315	i 2 34k	− 1	—	—	—	—	e 5·6
Basle	10·7	306	e 2 36	− 2	e 4 58	SS	—	—	—
Jena	10·9	328	e 2 38	− 2	e 4 58	SS	e 2 44	PP	e 5·6
Potsdam	11·5	337	—	—	e 5 8	+ 9	—	—	e 6·2

Additional readings :—
Belgrade i = +1m.10s. and +1m.42s.
Bucharest S?E = +2m.15s.
Stuttgart e = +3m.28s.
Jena eE = +4m.38s.
Long waves were also recorded at Prague and Paris.

Sept. 13d. 18h. 14m. 51s. Epicentre 18°·9N. 107°·0W. (as on 1940, November 1d.).

Pasadena quotes U.S.C.G.S. epicentre 18°·7N. 106°·9W.

$A = -\cdot2768$, $B = -\cdot9054$, $C = +\cdot3220$; $\delta = +5$; $h = +5$;
$D = -\cdot956$, $E = +\cdot292$; $G = -\cdot094$, $H = -\cdot308$, $K = -\cdot947$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manzanillo	N.	2·5	87	i 0 36	− 7	—	—	—	—	—
Guadalajara	N.	3·9	60	i 1 45	S	(i 1 45)	− 5	—	—	—
Tacubaya	N.	7·4	85	e 1 46	− 6	—	—	—	—	—
Chihuahua	Z.	9·7	5	e 2 32	+10	—	—	—	—	—
Oaxaca	E.	9·9	99	i 2 23	− 2	—	—	—	—	—
Vera Cruz	Z.	10·3	85	e 2 28	− 4	—	—	—	—	—
Tucson		13·7	346	i 3 22	+ 4	i 6 9	SS	—	—	i 6·7
Merida	N.	16·5	80	i 3 50	− 4	—	—	—	—	—
La Jolla		16·7	328	i 4 1	+ 4	—	—	—	—	—
Palomar		16·9	330	i 4 3	+ 4	—	—	—	—	—
Riverside		17·7	331	i 4 13k	+ 3	—	—	—	—	—
Mount Wilson		18·2	331	i 4 18	+ 2	—	—	i 4 36	PPP	—
Pasadena		18·2	331	i 4 17k	+ 1	i 8 1	SS	i 4 39	PPP	i 9·0
Santa Barbara		19·2	328	i 4 32	+ 4	—	—	—	—	—
Haiwee		19·7	334	i 4 35k	+ 1	—	—	—	—	—
Tinemaha		20·6	334	i 4 46	+ 3	e 8 56	SS	—	—	—
Denver		20·8	5	i 4 46	+ 1	i 8 36	+ 3	i 4 52	PP	e 10·6
Fresno	N.	21·0	331	i 4 48	+ 1	—	—	i 5 10	PP	10·2
Salt Lake City		22·2	352	i 5 1	+ 1	i 9 18	+18	—	—	i 11·6
Lick		22·4	329	e 5 4	+ 2	e 8 41	−23	i 5 28	PP	e 12·0
Santa Clara		22·6	329	e 5 5	+ 2	e 9 21	+14	—	—	e 11·7
Branner		22·7	328	i 5 9	+ 5	i 9 27	+18	i 5 29	PP	—
Berkeley		23·1	329	i 5 10	+ 2	e 9 37	+21	i 5 36	PP	e 12·2
San Francisco		23·1	328	i 5 9?	+ 1	e 9 9?	− 7	—	—	e 13·1
Lincoln		23·6	21	i 5 21	+ 8	i 9 42	+17	e 6 34	PPP	e 11·7
Cape Girardeau	E.	23·9	35	e 5 22	+ 6	i 9 51	+21	i 5 37	PP	—
Florissant		24·5	33	i 5 21	− 1	i 9 49	+ 9	i 10 46	SSS	—
St. Louis		24·5	33	e 5 21	− 1	i 9 52	+12	i 10 44	SSS	—
Ukiah		24·6	329	e 5 26	+ 3	e 9 57	+15	—	—	e 12·3
Ferndale		26·2	330	e 5 15	−23	e 9 41	−28	—	—	—
Bozeman		26·9	355	e 5 45	0	i 10 29	+ 9	e 6 43	PP	i 14·0
Butte		27·4	354	i 5 52	+ 3	i 10 41	+13	e 8 3	?	e 16·4
Columbia		27·6	51	e 5 47	− 4	e 10 32	0	e 13 1	?	e 13·2
Chicago, U.S.C.G.S.		28·2	31	e 5 56	0	i 10 43	+ 2	e 12 28	SSS	e 14·4
Spokane		30·0	346	e 6 16	+ 4	e 10 16	−54	—	—	e 16·3
Seattle		31·3	340	e 7 7	PP	e 11 48	+17	—	—	e 18·2
Pittsburgh		31·6	41	i 6 27	+ 1	i 11 44	+ 9	—	—	—
Victoria		32·4	340	6 40	+ 6	12 1	+13	8 0	PPP	17·1
Georgetown		32·7	45	i 6 40	+ 4	i 11 56	+ 4	i 7 29	PP	—
Saskatoon		33·2	0	e 6 43	+ 3	—	—	—	—	17·1
Toronto		33·9	37	6 41	− 6	12 14	+ 3	e 13 38	SS	18·1
Philadelphia		34·5	46	e 7 55	PP	e 12 25	+ 5	e 14 10	SS	19·0
Fordham		35·8	44	7 4	+ 1	i 12 47	+ 6	i 8 21	PP	19·6
Ottawa		37·0	36	7 11	− 2	13 3	+ 4	8 41	PP	e 18·1
Vermont		38·0	40	e 7 16	− 5	13 19	+ 5	e 8 40	PP	e 15·2
Harvard		38·1	40	i 7 21	− 1	e 13 23	+ 7	e 8 44	PP	e 20·1
San Juan		38·7	83	e 7 28	+ 1	i 13 23	− 2	e 9 4	PP	e 18·0
Shawinigan Falls		39·4	38	7 31	− 2	e 16 39	SSS	—	—	20·1
Bermuda		40·0	62	7 36	− 2	13 39	− 5	e 8 58	PP	19·7
Seven Falls		40·8	38	7 48	+ 3	14 3?	+ 7	9 28	PP	19·1
East Machias		41·8	43	e 7 51	− 2	e 14 9	− 2	e 9 29	PP	i 17·5
Huancayo		43·8	131	e 8 6	− 3	i 14 49	+ 9	e 10 1	PPP	22·2
Sitka		43·9	338	—	—	e 14 39	− 3	—	—	e 23·6
Halifax		44·2	44	e 8 9?	− 3	e 18 9?	SS	—	—	24·1
Honolulu		47·6	282	e 8 45	+ 6	e 15 49	+14	e 8 54	PP	20·3
La Paz		52·0	129	i 9 9	− 4	i 16 36	0	10 19	PeP	24·0
College		53·3	340	e 9 23	0	e 16 41	−13	e 12 15	PPP	23·3
Ivigtut		58·7	29	10 7	+ 5	18 9	+ 3	19 19	?	30·1
La Plata		71·0	138	11 9?	−13	20 9	−18	23 33?	?	35·1
Stonyhurst		83·2	35	e 6 9	?	i 22 54	+ 5	—	—	40·1

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bergen		84·2	27	e 12 26	− 8	e 23 11	+12	—	—	e 41·1
Coimbra		84·3	50	e 12 26	− 9	22 50	−10	23 38	PS	39·0
Lisbon		84·3	51	12 39	+ 4	22 56	− 4	—	—	39·8
Oxford		84·7	36	12 43	+ 6	23 3	− 1	—	—	e 40·1
Kew		85·3	36	i 12 42	+ 2	e 23 9	− 1	i 12 50	P_cP	e 41·1
Toledo		87·6	48	e 12 52	+ 1	e 23 31	− 1	—	—	42·1
Paris		88·1	38	e 17 8	PP	—	—	—	—	39·1
Uccle		88·3	36	e 12 55	0	e 23 36	− 3	e 16 14	PP	e 39·1
Granada		88·9	51	i 13 0a	+ 2	i 24 7	+23	16 42	PP	44·3
Upsala		89·6	24	e 16 9?	PP	e 23 58	+ 7	e 19 28	PPP	39·1
Clermont-Ferrand		89·8	41	e 13 2	0	—	—	—	—	e 43·6
Almeria		89·9	51	13 2	0	24 0	+ 6	13 16	pP	41·1
Copenhagen		89·9	29	e 13 9?	+ 7	24 3?	+ 9	16 42	PP	—
Basle		91·7	37	e 17 5	PP	—	—	—	—	e 27·4
Stuttgart		92·0	36	e 13 14	+ 2	e 23 51	[+ 7]	—	—	e 45·1
Potsdam		92·1	31	e 15 9	?	i 25 23	PS	e 16 58	PP	41·1
Prague		94·1	33	—	—	e 23 33	[−23]	e 26 3	PS	e 44·1
Warsaw		96·0	29	e 17 22a	PP	e 26 15	PS	e 19 35	PPP	e 48·1
Triest		96·3	36	e 17 25	PP	e 24 53	+ 4	—	—	e 44·1
Vladivostok		98·0	320	17 40	PP	24 20	[+ 3]	—	—	—
Moscow		99·8	18	e 17 35	PP	24 2	[−24]	33 15?	SSP	—
Sverdlovsk		103·9	6	i 14 15	+ 9	e 25 56	+ 3	i 18 24	PP	—
Ksara		116·8	34	e 18 47	PP	e 28 40	?	—	—	—
Helwan	z.	117·1	40	e 20 0	PP	—	—	—	—	—
Baku		117·2	19	—	—	29 55	PS	—	—	—
Agra	E.	134·0	352	e 23 9?	PKS	—	—	—	—	—
Calcutta	N.	136·2	338	i 22 58	PP	—	—	24 15	?	e 66·3
Bombay		142·4	359	e 18 37	[−58]	—	—	e 23 17	PKS	—
Batavia		144·7	286	e 19 17	[−19]	—	—	—	—	—

Additional readings :—
Tucson i = +3m.54s., +4m.25s., and +5m.11s.
Denver eN = +8m.21s., iN = +9m.17s. and +9m.31s.
Fresno eN = +5m.20s.
Salt Lake City i = +6m.51s. and +7m.42s.
Lick iN = +5m.9s. and +5m.31s.
Branner eSE = +9m.31s.
Berkeley iE = +5m.24s.
Cape Girardeau iE = +6m.39s., +7m.59s., and +10m.27s.
Florissant iEN = +5m.25s., iE = +5m.31s., eN = +9m.46s., iE = +9m.57s., iN = +10m.0s.
St. Louis iPZ = +5m.24s., iZ = +9m.56s.
Ferndale eN = +9m.48s.
Bozeman e = +8m.2s., i = +11m.25s., iSS = +12m.17s.
Chicago U.S.C.G.S. eP = +6m.1s., e = +10m.19s.
Victoria SS = +14m.9s. ?
Georgetown PPP = +7m.56s.
Toronto SSS = +14m.59s.
Philadelphia e = +12m.2s., eSS = +17m.32s.
Fordham i = +8m.47s.
Harvard eZ = +10m.57s., e = +14m.21s., eSS = +16m.29s.
San Juan e = +10m.49s.
Bermuda e = +9m.18s.
Seven Falls SS = +16m.27s. ?
Huancayo e = +10m.16s., eSS = +18m.11s.
Honolulu e = +12m.57s.
La Paz PPN = +10m.58s., S_cSN = +18m.58s., iSSN = +20m.2s., iSSSN = +21m.36s.
College e = +16m.53s. and +19m.19s., eSS = +20m.50s.
La Plata SE = +20m.33s. ?
Coimbra ePE = +12m.34s.
Lisbon PE = +12m.59s., Z = +13m.22s., SE = +23m.3s.
Kew ePPZ = +15m.56s., ePPP?Z = +18m.20s., iS = +23m.20s., iPSZ = +24m.12s., ePPS = +24m.30s., eSSEN = +28m.39s. ?, eSSS = +32m.9s. ?, eQ = +35m.9s.
Uccle PSE = +24m.41s., eSSN = +29m.9s.
Granada PPP = +18m.9s.?, PS = +25m.28s., PPS = +25m.51s., SSS = +34m.15s.
Upsala ePPPN = +19m.57s., eSN = +24m.5s.
Almeria PP = +16m.44s., PPP = +18m.52s., sS = +24m.22s., SS = +30m.20s., SSS = +34m.6s.
Copenhagen +25m.9s.
Stuttgart i = +13m.39s.
Potsdam iZ = +17m.4s., iE = +25m.28s.

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Warsaw eE = +17m.34s., eZ = +18m.42s., +27m.7s., and +28m.22s.
Sverdlovsk SS = +33m.9s. ?
Helwan iZ = +20m.9s.
Long waves were also recorded at Colombo, Arapuni, Aberdeen, Wellington, Auckland, and Belgrade.

Sept. 13d. 22h. 53m. 17s. Epicentre 0°·7S. 132°·4E. (as at 3h.).

$A = -\cdot6742$, $B = +\cdot7384$, $C = -\cdot0122$; $\delta = -7$; $h = +7$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Amboina	5·2	235	1 33	P*	i 2 38	S*
Andijan	68·2	45	e 11 15	+11	e 20 5	+ 1
Tashkent	70·6	315	e 11 19	0	e 20 31	− 2
Sverdlovsk	80·7	328	12 13	− 3	—	—
Baku	84·7	311	e 12 39	+ 2	e 23 12	+ 8

Long waves were also recorded at Riverview, Kew, and Pasadena.

Sept. 13d. Readings also at 0h. (Amboina), 1h. (near Weston, Harvard, and Fordham), 2h. (near Amboina), 3h. (Amboina (2) and Adelaide), 5h. (Kew), 9h. (Triest, near Sofia, and Belgrade), 10h. (La Paz), 11h. (Tucson), 13h. (Ksara), 17h. (Rio de Janeiro), 18h. (St. Louis), 19h. (Amboina, near Algiers, and near Mizusawa), 21h. (Tucson), 22h. (Kew), 23h. (Stuttgart, College, Tinemaha (2), Palomar (2), Riverside, Mount Wilson, and Haiwee).

Sept. 14d. 4h. 8m. 40s. Epicentre 0°·7S. 132°·4E. (as on 13d.).

$A = -\cdot6742$, $B = +\cdot7384$, $C = -\cdot0122$; $\delta = -7$; $h = +7$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		5·2	235	1 31	+10	i 2 41	+19	—	—	—
Manila		18·9	325	e 4 23	− 1	8 11	+18	—	—	10·9
Batavia		26·1	258	5 29	− 8	10 22	+15	—	—	—
Brisbane	N.	33·2	145	e 9 36	?	—	—	—	—	16·0
Medan		34·0	278	6 53	+ 5	i 12 26	+13	—	—	—
Adelaide		34·5	171	i 12 2	S	(i 12 2)	−18	—	—	19·0
Perth		34·8	205	e 12 42	S	(e 12 42)	+17	—	—	17·6
Hamada		35·4	0	6 55	− 5	12 26	− 8	—	—	—
Kameyama		35·6	6	6 53	− 8	12 30	− 8	—	—	—
Riverview		37·4	154	e 7 30	+14	e 13 39	+34	i 16 0	SSS	e 18·8
Sydney		37·4	154	—	—	e 13 8	+ 3	—	—	e 18·9
Sendai		39·6	10	7 28	− 7	13 25	−13	—	—	—
Mizusawa	E.	40·4	10	7 20	−21	13 43	− 7	—	—	—
Vladivostok		43·6	359	8 14	+ 6	14 32	− 6	—	—	—
Sapporo		44·3	9	8 11	− 2	14 45	− 3	—	—	—
Calcutta	N.	48·7	301	e 9 32	+44	i 15 51	+ 1	e 11 33	PPP	21·7
Colombo	E.	52·9	279	8 39	−41	16 42	− 6	—	—	—
Auckland		53·2	137	10 20?	?	17 20?	+28	—	—	23·3
Arapuni		54·4	139	—	—	17 50?	PPS	—	—	25·9
Wellington		55·6	142	e 18 20?	?	—	—	—	—	24·3
Christchurch		55·7	146	9 39	− 1	17 31	+ 5	24 20	Q	28·5
Kodaikanal	E.	55·7	283	e 9 20?	−20	—	—	—	—	—
Hyderabad		56·1	291	9 51	+ 8	17 30	− 2	17 57	PPS	23·9
Irkutsk		57·8	340	9 58	+ 3	17 49	− 5	—	—	—
Agra	E.	59·1	302	i 10 2k	− 2	i 18 11	0	—	—	—
Bombay		61·6	291	e 9 53	−29	e 18 43	0	12 41	PP	31·5
Almata		66·1	41	e 10 51	− 1	—	—	—	—	—
Andijan		68·2	45	e 11 3	− 1	—	—	—	—	—
Tashkent		70·6	315	e 11 17	− 2	i 20 30	−3	—	—	—
Honolulu		71·5	67	e 11 26	+ 2	e 21 3	+20	e 13 53	PP	e 32·5
Sverdlovsk		80·7	328	i 12 13	− 3	i 22 15	− 9	—	—	—
Baku		84·7	311	12 45	+ 8	23 2	− 2	—	—	—
College		86·3	25	e 12 48	+ 3	23 3	[− 7]	e 24 9	PS	e 36·1
Moscow		93·3	326	13 39	+21	24 23	− 1	17 9	PP	—
Helwan	Z.	99·9	300	13 57	+ 9	25 20	0	18 5	PP	—

Continued on next page,

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		99·9	41	18 20?	PP	—	—	—	—	45·3
Ukiah		101·6	50	—	—	e 24 26	[− 9]	—	—	e 42·8
Berkeley		102·5	52	—	—	e 24 38	[− 1]	e 27 51	PS	e 42·3
Santa Clara	E.	102·8	52	e 27 37	PS	—	—	—	—	—
Upsala		102·8	332	e 21 36	?	e 25 20	−24	—	—	e 49·3
Warsaw		103·5	324	e 17 20?	?	e 25 24	−26	e 18 35	PP	e 54·3
Tinemaha	z.	105·8	52	e 18 27	PP	—	—	—	—	—
Pasadena	z.	106·4	55	e 18 43	PP	e 28 38	PPS	—	—	e 47·8
Mount Wilson	z.	106·5	55	e 18 35	PP	—	—	—	—	—
Copenhagen		107·0	330	—	—	25 5	[+ 6]	27 56?	PS	—
Riverside	z.	107·1	55	18 15	PKP	—	—	18 38	PP	—
Butte		107·7	41	—	—	e 33 50	SS	—	—	—
Bergen		108·1	336	—	—	e 24 50?	[−14]	—	—	e 54·3
Potsdam		108·1	327	e 17 43	[−46]	e 24 55	[− 9]	i 18 56	PP	52·3
Prague		108·2	323	e 29 20	PPS	e 34 20	SSP	—	—	e 54·3
Bozeman		108·8	41	e 29 5	PPS	—	—	—	—	e 47·6
Logan		109·5	45	e 30 56	?	—	—	—	—	e 50·3
Salt Lake City		109·8	47	—	—	e 25 9	[− 2]	e 28 58	PS	e 48·1
Triest		110·2	319	e 19 32	PP	28 32	PS	i 38 56	SSS	e 59·4
Stuttgart		111·8	323	e 19 20	PP	—	—	—	—	—
Tucson		112·8	55	e 19 26	PP	e 29 6	PS	—	—	e 50·0
Uccle		113·6	328	e 18 51	[+11]	35 6	SS	e 19 39	PP	—
Kew		115·7	329	e 19 50	PP	e 29 27	PS	e 46 50?	Q	e 53·3
Clermont-Ferrand		116·9	322	e 19 51	PP	—	—	—	—	e 89·6
Toledo		124·4	320	e 20 41	PP	—	—	24 3	?	69·2
Almeria		125·0	316	20 53	PP	27 55	{+ 8}	23 7	PPP	66·3
Chicago, U.S.C.G.S.		125·5	36	e 30 59	PS	e 41 57	SSS	—	—	e 58·8
Granada		125·6	317	i 21 13k	PP	27 28	{−23}	24 10	PPP	—
Coimbra		127·0	323	e 20 45	PP	25 30	[−42]	—	—	e 70·2
Lisbon		128·3	322	11 46	?	—	—	—	—	63·2
Toronto		128·7	29	e 24 8?	PPP	e 30 53	PS	—	—	60·3
Ottawa		129·1	25	e 19 6	[− 4]	e 31 38?	PS	e 33 50?	PPS	55·3
Seven Falls		129·5	19	e 31 20?	PS	—	—	—	—	61·3
Pittsburgh		130·7	32	i 22 39	PKS	—	—	—	—	—
East Machias		132·7	18	e 22 32	?	—	—	23 13	PKS	e 64·4
Columbia		134·4	39	e 22 32	PP	—	—	e 23 12	PKS	e 64·0
Huancayo		149·7	116	e 19 51	[+ 4]	e 36 14	PPS	e 23 57	PP	e 72·5
La Paz	z.	153·5	131	i 20 12a	[+19]	—	—	i 24 21	PP	77·4
San Juan		154·3	45	e 20 19	[+25]	—	—	—	—	e 71·2

Additional readings :—
Manila iN = +9m.22s.
Batavia iE = +9m.12s., iN = +9m.32s.
Adelaide iPP = +12m.50s., iSN = +16m.56s., SS = +18m.10s. All phases have been wrongly identified.
Perth i = +13m.24s., PPP = +14m.10s., i = +15m.58s.
Riverview iE = +13m.55s.
Calcutta iSSN = +18m.36s., iS_cSN = +19m.36s.
Hyderabad S_cSN = +19m.39s.
Bombay eN = +9m.59s., SE = +18m.46s., eSSN = +22m.45s., SSE = +23m.4s.
Honolulu e = +23m.38s.
College e = +15m.27s., eS = +23m.13s.
Moscow SKS = +23m.53s.
Helwan PPPZ = +20m.31s.
Ukiah e = +24m.44s.
Berkeley iN = +25m.11s., eN = +34m.42s.
Upsala eN = +22m.20s.?, eE = +27m.8s., e = +31m.8s., eN = +42m.20s. ?
Warsaw eE = +18m.20s.?, eZ = +22m.23s., eN = +24m.20s.?, eE = +25m.20s. and +30m.51s.
Potsdam eEN = +19m.8s., iPPPZ = +21m.22s., eN = +26m.26s., iN = +34m.6s.
Logan e = +32m.39s.
Salt Lake City e = +40m.45s.
Uccle PSEN = +29m.6s.
Kew ePPPZ = +22m.20s., ePPSZ = +31m.10s., eZ = +33m.15s., eSS = +36m.20s.?
Almeria PKS = +24m.23s., PPP = +25m.47s., SKKS = +29m.53s., PS = +33m.3s., PPS = +34m.39s., SS = +40m.15s., SSS = +44m.3s.
Granada PP = +25m.59s., SKKS = +32m.52s., S = +34m.10s., PS = +36m.32s., PPS = +37m.54s.
Coimbra eN = +20m.58s., PS = +34m.9s., PPS = +34m.45s.
Lisbon E = +12m.5s.
Huancayo e = +20m.17s.
San Juan e = +21m.12s., ePKS = +25m.10s., e = +59m.55s.
Long waves were also recorded at Harvard, Neuchatel, Paris, and Jena.

Sept. 14d. 8h. 3m. 37s. Epicentre 37°·6N. 118°·9W. (as on 1940, July 22d.).

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

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Tinemaha		0·7	135	e 0 22	+ 5	i 0 28	0
Haiwee	z.	1·6	153	e 0 36	P_g	—	—
Mount Wilson	z.	3·5	169	e 0 56	− 1	—	—
Pasadena	z.	3·5	171	e 0 56	− 1	—	—
Riverside	z.	3·8	161	e 1 2	+ 1	—	—
Palomar	z.	4·5	159	e 1 10	− 1	—	—

Long waves were also recorded at Butte and Bozeman.

Sept. 14d. 13h. 33m. 12s. Epicentre 6°·8S. 127°·5E. (as on 1939, Feb. 1d.).

$A = -·6045$, $B = +·7878$, $C = -·1176$; $\delta = -12$; $h = +7$;
$D = +·793$, $E = +·609$; $G = +·072$, $H = -·093$, $K = -·993$.

Doubtful identification.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		3·2	12	1 17	+25	i 2 54	?	—	—	—
Batavia		20·5	271	4 12	−30	i 7 50	−37	—	—	—
Manila		22·2	344	i 4 32	−28	9 2	+ 2	—	—	11·9
Adelaide		29·8	161	i 6 48	+37	i 11 58	+51	13 31	SSS	17·4
Medan		30·6	290	6 10	− 8	i 11 34	+14	—	—	—
Brisbane	N.	31·8	133	e 6 59	+31	e 13 14	?	—	—	—
Riverview		34·7	143	e 7 8	+14	i 12 44	+20	—	—	e 16·4
Sydney		34·7	143	6 0	−54	e 12 45	+21	—	—	e 17·4
Kumamoto		39·5	5	7 36	+ 2	—	—	—	—	—
Osaka		41·9	11	7 38	−16	11 5	?	—	—	—
Nagano		44·4	13	8 25	+11	—	—	—	—	—
Sendai		46·5	15	8 44	+13	15 33	+14	—	—	—
Mizusawa	E.	47·4	15	e 8 46	+ 8	e 15 54	+22	—	—	—
	N.	47·4	15	e 8 39	+ 1	e 15 51	+19	—	—	—
Calcutta	N.	48·2	309	(i 8 42)	− 2	(i 15 47)	+ 4	—	—	e 19·4
Vladivostok		49·9	5	e 8 51	− 6	i 16 13	+ 6	—	—	—
Sapporo		51·2	13	9 20	+13	—	—	—	—	—
Auckland		52·4	133	—	—	16 48?	+ 6	25 48?	Q	30·8
Kodaikanal	E.	52·6	289	i 9 11k	− 7	i 16 28	−16	—	—	—
Arapuni		53·5	134	—	—	17 48?	+51	—	—	29·3
Christchurch		53·8	140	9 25a	− 1	17 14	+13	24 41	Q	28·6
Hyderabad	E.	54·1	297	9 26	− 3	16 53	−12	—	—	—
Wellington		54·2	137	—	—	16 48?	−18	24 48?	Q	29·8
Agra	E.	58·2	308	9 56	− 2	17 54	− 5	—	—	—
Bombay	N.	59·6	297	10 0	− 8	18 18	+ 1	22 15	SS	—
Almata		67·6	323	e 11 3	+ 2	—	—	—	—	—
Andijan		69·2	318	e 11 12	+ 2	—	—	—	—	—
Tashkent		71·5	318	e 11 26	+ 2	e 20 36	− 7	—	—	—
Sverdlovsk		83·3	330	i 12 33	+ 3	22 53	+ 3	—	—	—
College		93·8	25	e 17 25	PP	e 24 8	[+14]	e 31 13	SS	—
Moscow		95·5	325	e 13 28	0	24 8	[+ 4]	26 20	PS	—
Sofia		105·0	312	e 18 24	PP	e 24 56	[+ 6]	—	—	—
Warsaw		105·4	322	e 18 11	PP	e 27 55	PS	—	—	e 61·8
Victoria		107·7	42	e 19 6?	PP	e 26 48?	S	—	—	e 53·8
Potsdam		110·2	323	i 19 12a	PP	i 25 23	[+10]	i 28 42	PS	e 54·8
Triest		111·4	316	e 19 18	PP	—	—	—	—	—
Tinemaha	z.	113·4	53	e 19 52	PP	—	—	—	—	—
Pasadena	z.	113·9	56	e 19 44	PP	e 29 42	PS	—	—	e 53·3
Mount Wilson	z.	114·0	56	e 19 52	PP	—	—	—	—	—
Zurich		114·4	319	e 18 21	[−21]	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverside	z.	114·6	56	e 20 5	PP	—	—	—	—	—
De Bilt		114·8	325	e 19 48	PP	e 29 28	PS	—	—	e 56·8
Palomar	z.	115·1	56	e 20 0	PP	—	—	—	—	—
Uccle		115·8	324	e 19 58	PP	e 29 34	PS	—	—	—
Bozeman		116·6	41	e 21 7	PP	e 30 8	PS	—	—	—
Kew		118·2	326	e 18 50	[+ 1]	e 25 3	[−41]	i 20 11	PP	e 59·8
Clermont-Ferrand		118·5	319	20 12	PP	—	—	—	—	—
Almeria		125·6	311	e 20 51	PP	—	—	—	—	e 57·2
Toledo		125·6	314	i 20 57	PP	31 8	PS	—	—	61·6
Granada		126·3	312	e 20 53k	PP	31 6	PS	35 49	?	60·1
Chicago, U.S.C.G.S.		133·3	36	e 22 0	PP	e 36 27	?	—	—	e 53·8
Ottawa		136·6	23	e 19 30?	[+ 6]	e 23 12?	PKS	—	—	62·8
Seven Falls		136·8	18	e 22 30?	PP	—	—	—	—	63·8
East Machias		140·0	16	e 22 51	PKS	e 32 52	PS	—	—	—
Huancayo		150·6	130	e 20 4	[+16]	e 33 22	PS	—	—	e 79·8
La Paz		152·2	150	e 19 59	[+ 8]	—	—	i 24 27	PP	76·3
San Juan		162·4	48	e 20 28	[+25]	e 26 41	[−26]	—	—	—

Additional readings and notes :—
Amboina iEN = +3m.14s.
Batavia PN = +4m.15s., iEN = +6m.18s. and 8m.52s.
Adelaide i = +7m.41s.
Medan iE = +13m.34s.
Riverview iN = +13m.10s.
Calcutta readings are wrongly identified, that entered as P is given as P_cP and that for S as SS. Other readings are ePN = +6m.41s., iSN = +13m.0s. and eS_cSN = +16m.46s.
College e = +17m.57s. and +29m.56s.
Warsaw eZ = +18m.40s. and +19m.39s., eE = +19m.48s.?, eZ = +28m.3s. and 29m.47s.
Potsdam iPE = +19m.17s., iZ = +20m.14s., iE = +22m.54s., iN = +23m.33s. and 26m.47s., iE = +29m.10s.
Kew ePZ = +15m.31s., eZ = +20m.53s., iPPPEZ = +22m.42s., eSKKSNZ = +26m.59s., iPSZ = +29m.51s., iPPSZ = +30m.13s., eZ = +36m.53s., eSSSNZ = +39m.18s.?, eQN = +50·8m.
Granada ePKP = +23m.42s.
Huancayo e = +20m.30s. and +50m.0s.
La Paz iPKPZ = +20m.7s., $iPKP_2Z$ = +20m.43s., ipPKPZ = +21m.27s., SPKPZ = +22m.19s.
San Juan e = +21m.0s., +21m.42s., +32m.55s., +55m.18s. and +62m.7s.

September 14d. 16h. 43m. 34s. Epicentre 37°·6N. 118°·9W. (as at 8h.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fresno	N.	1·1	219	i 0 20	− 2	—	—	—	—	—
Lick		2·2	263	i 0 39	+ 1	i 1 9	S*	i 1 26	S_g	—
Santa Clara		2·4	266	i 0 43	+ 2	i 1 23	S_g	—	—	—
Branner		2·6	267	i 0 45	+ 1	i 1 19	S*	i 0 54	P_g	—
Berkeley		2·7	276	i 0 45	0	i 1 23	S*	i 0 54	P_g	—
San Francisco		2·8	237	i 0 26?	−21	i 1 26?	S*	—	—	—
Ukiah		3·7	296	e 1 6	P*	e 1 51	S*	e 1 12	P_g	i 2·2
Ferndale		5·1	307	—	—	e 2 38	S*	—	—	e 2·7
Salt Lake City		6·3	57	i 1 54	P*	e 3 5	S*	i 1 59	P*	i 3·7
Tucson		8·5	126	i 2 3	− 4	i 3 23	−22	i 2 35	PPP	i 4·4
Bozeman		10·0	34	e 2 27	0	e 4 31	+ 9	e 4 55	SSS	i 5·3
Florissant	E.	22·5	78	e 5 0	− 2	e 9 13	+ 8	—	—	—
St. Louis		22·6	78	i 5 1	− 2	e 9 5	− 2	—	—	—

Additional readings :—
Branner iE = +1m.13s.
Berkeley iN = +1m.10s.
Salt Lake City i = +3m.12s., +3m.15s.
Tucson i = +3m.58s., +4m.11s.
Bozeman i = +5m.15s.
St. Louis iSE = +9m.15s.
Long waves were also recorded at Kew, De Bilt and other American stations.

Sept. 14d. 16h. 55m. 0s. Epicentre 37°·6N. 118°·9W. (as at 16h. 43m.).

Scale VI in Owens Valley, near Rock Creek. Epicentre 37° 34′N., 118° 44′W. (California). Rock slides, huge dust clouds, Macrosiesmic area 30,000 square miles. Magnitude 6 for the two principal shocks. Repetitions on 18h.

F. Neumann.
United States earthquakes 1941, Washington 1943. P.12, chart p.8.

$A = -\cdot3839$, $B = -\cdot6954$, $C = +\cdot6076$; $\delta = +14$; $h = -\cdot1$;
$D = -\cdot875$, $E = +\cdot483$; $G = -\cdot294$, $H = -\cdot532$, $K = -\cdot794$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fresno	N.	1·1	219	i 0 8	−14	i 0 22	−17	—	—	—
Lick		2·2	263	i 0 41	+ 3	i 1 46	S_g	—	—	—
Santa Clara	E.	2·4	266	e 0 54	P_g	e 1 28	S_g	—	—	—
Branner		2·6	267	i 0 47	+ 3	i 1 22	S*	i 0 55	—	—
Berkeley		2·7	276	e 0 47	+ 2	i 1 26	S_g	—	—	—
San Francisco		2·8	273	i 1 0	P_g	—	—	—	—	—
Tucson		8·5	126	e 2 4	− 3	e 3 52	+ 7	i 2 45	PPP	i 4·5
Harvard		36·2	66	e 7 0	− 6	—	—	—	—	e 10·0

Sept. 14d. 18h. 21m. 20s. Epicentre 37°·6N. 118°·9W. (as at 16h.).

$A = -\cdot3839$, $B = -\cdot6954$, $C = +\cdot6076$; $\delta = +14$; $h = -1$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fresno	N.	1·1	219	i 0 21	− 1	—	—	—	—	—
Lick	E.	2·2	263	i 0 39	+ 1	i 1 10	+ 4	—	—	—
Santa Clara		2·4	266	i 0 43	+ 2	i 1 18	+ 6	—	—	—
Branner		2·6	267	i 0 45	+ 1	i 1 21	+ 4	i 0 54	P_g	i 1·4
Berkeley		2·7	276	i 0 46	+ 1	i 1 19	0	—	—	—
San Francisco		2·8	273	i 0 40?	− 7	e 1 40?	S_g	—	—	—
Ukiah		3·5	296	e 1 16	P_g	e 1 57	S_g	—	—	i 2·5
Ferndale		5·1	307	—	—	e 2 34	S*	—	—	—
Salt Lake City		6·6	57	i 1 57	P*	3 14	S*	—	—	3·6
Logan		6·8	51	e 1 48	+ 4	i 3 20	S*	i 2 12	P_g	3·5
Tucson		8·5	126	i 2 4	− 3	i 3 32	−13	e 2 27	P*	i 4·6
Butte		9·6	27	e 3 53	?	e 4 30	SS	—	—	i 5·2
Bozeman		10·0	34	e 3 8	?	e 4 42	SS	e 3 43	?	e 5·3
Seattle		10·3	346	—	—	e 4 21	+ 9	e 4 37	SS	e 5·1
Florissant	E.	22·5	78	e 5 3	+ 1	e 9 11	+ 6	—	—	—
St. Louis		22·6	78	e 5 1	− 2	e 9 9	+ 2	—	—	—
Philadelphia		33·9	72	—	—	e 13 40	SS	—	—	e 14·9

Additional readings :—
Berkeley iSEN = +1m.22s.
Ferndale eSE = +2m.38s.
Tucson i = +2m.36s., +2m.56s., +4m.2s., +4m.9s. and 4m.21s.
Florissant ePE = +5m.7s.
Long waves were also recorded at other American stations.

Sept. 14d. 18h. 39m. 13s. Epicentre 37°·6N. 118°·9W. (as at 18h.21m.).

$A = -\cdot3839$, $B = -\cdot6954$, $C = +\cdot6076$; $\delta = +14$; $h = -1$.

		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 12k	− 5	—	—	—	—	—
Fresno	N.	1·1	219	i 0 21	− 1	—	—	—	—	—
Haiwee		1·6	153	i 0 28k	− 2	—	—	—	—	—
Lick		2·2	263	i 0 40	+ 2	i 1 9	+ 3	—	—	—
Santa Clara		2·4	266	i 0 42	+ 1	i 1 8	− 4	—	—	—
Branner		2·6	267	i 0 46	+ 2	i 1 23	S*	i 0 53	P_g	—
Berkeley		2·7	276	i 0 46	+ 1	i 1 20	+ 1	i 1 27	S_g	i 1·3
San Francisco	E.	2·8	273	i 0 47?	0	e 0 47?	S_g	—	—	—
Santa Barbara		3·2	192	i 0 53k	+ 1	—	—	—	—	—
Mount Wilson		3·5	169	i 0 54k	− 3	i 1 45	+ 5	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena		3·5	171	i 0 55k	− 2	i 1 47	+ 7	—	—	—
Ukiah		3·7	296	e 1 3	+ 3	i 2 3	S_g	—	—	i 2·5
Riverside		3·8	161	i 0 59k	− 2	—	—	—	—	—
Palomar	Z.	4·5	159	i 1 10k	− 1	—	—	—	—	—
Ferndale		5·1	307	e 1 15	− 5	e 2 37	S*	i 2 53	S_g	—
Salt Lake City		6·3	57	e 1 47	P*	i 3 14	S*	i 1 59	P_g	i 4·0
Tucson		8·5	126	i 2 4	− 3	i 3 41	− 4	i 4 2	SS	i 4·3
Butte		9·6	27	e 2 23	+ 2	e 4 26	+14	—	—	i 5·2
Bozeman		10·0	34	e 2 32	+ 5	e 4 26	+ 4	—	—	i 5·3
Seattle		10·3	346	—	—	e 4 53	SSS	—	—	e 5·8
Denver		11·1	73	e 3 10	+27	e 5 47	L	—	—	e 5·8
Victoria		11·4	344	e 2 53?	+ 6	—	—	—	—	6·8
Florissant	E.	22·5	78	i 5 2	0	e 9 11	+ 6	—	—	—
St. Louis		22·6	78	e 5 2	− 1	e 9 9	+ 2	—	—	—
Cape Girandeau	E.	23·3	80	i 5 11	+ 1	—	—	—	—	—
Chicago U.S.C.G.S.		24·4	70	—	—	e 9 51	+12	—	—	e 12·5
Ottawa		32·9	62	e 6 35	− 3	—	—	—	—	16·8
San Juan		49·7	98	e 9 42	+46	—	—	—	—	—

Additional readings :—
Berkeley iN = +1m.11s.
Ferndale eSN = +2m.30s.
Salt Lake City i = +1m.55s.
Tucson i = +2m.49s. and + 3m.8s.
Seattle e = +4m.58s. and +5m.36s.
Denver eE = +5m.11s.
Florissant ePE = +5m.7s.
St. Louis iPZ = +5m.11s. and iSE = +9m.17s.
Long waves were also recorded at Ivigtut, De Bilt, Kew, Uccle, Triest and other American stations.

Sept. 14d. Readings also at 0h. (Potsdam, Calcutta and Kew), 3h. (near Mizusawa), 6h. (Tinemaha and Mount Wilson), 7h. (near Amboina (2), near Apia, Tinemaha, Mount Wilson, Haiwee, Pasadena, Palomar and Riverside), 9h. (De Bilt and Kew), 14h. (Berkeley and Santa Clara), 16h. (Lick), 17h. (near Fresno (2), Branner (2), Lick (2) and near Amboina), 18h. (near Fresno (2), Seattle, Berkeley, Branner (2) and Lick (2)), 19h. (Potsdam, near Lick and Fresno (2)), 20h. (near Branner (3)), 21h. (near Branner (3), Santa Clara, Lick, Fresno, Berkeley, Tucson, and San Francisco), 22h. (Amboina), 23h. (Fresno and Branner).

Sept. 15d. 2h. 33m. 38s. Epicentre 40°·2N. 19°·7E. (as given by Strasbourg).

$A = +\cdot7211$, $B = +\cdot2582$, $C = +\cdot6429$; $\delta = -3$; $h = -2$;
$D = +\cdot337$, $E = -\cdot941$; $G = +\cdot605$, $H = +\cdot217$, $K = -\cdot766$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	3·7	46	e 1 0	0	e 1 54	S*	—	—	—
Bucharest	6·3	46	e 1 38k	+ 2	3 30	S_g	e 2 4?	P_g	3·6
Triest	7·0	323	e 1 45	− 1	i 3 5	− 3	i 3 35	S*	e 3·8
Prague	10·5	342	e 2 30	− 5	e 5 8	SSS	—	—	—
Zurich	10·8	315	e 2 54	PPP	e 4 50	+ 8	—	—	—
Stuttgart	11·3	321	e 2 46	0	e 4 44	−10	i 2 52	PP	—
Basle	11·4	316	e 2 48	+ 1	—	—	—	—	e 6·5
Neuchatel	11·4	310	—	—	e 4 34	−22	—	—	—
Jena	12·1	335	e 3 1	+ 4	—	—	—	—	e 5·4
Potsdam	13·0	342	—	—	e 6 22	SSS	—	—	e 6·8

Additional readings :—
Bucharest eN = +2m.7s.
Triest eP = +1m.50s.
Stuttgart e = +3m.31s.
Jena eN = +4m.28s.
Long waves were also recorded at Clermont-Ferrand, Paris, De Bilt, Kew, Warsaw, and Uccle.

Sept. 15d. Readings also at 1h. (Belgrade, near Santa Clara, Fresno, Lick, Ksara, Berkeley, Branner, and Tucson), 2h. (La Paz, near Branner, and Lick), 4h. (near Branner (2), Lick (2) and Fresno (2)), 5h. (Amboina, near Lick, Fresno, and Branner), 6h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, near Apia, and Tucson), 7h. (Helwan, Berkeley, Clermont-Ferrand, and Ksara), 16h. (Tacubaya), 17h. (Tacubaya), 18h. (Seattle), 19h. (Branner), 20h. (near Branner and Berkeley), 22h. (near Ravensburg, Stuttgart, Zurich, and near Branner), 23h. (near Stuttgart, Zurich, and near Branner).

Sept. 16d. 21h. 39m. 3s. Epicentre 29°·1S. 177°·7W.

$A = -\cdot 8745$, $B = -\cdot 0351$, $C = -\cdot 4838$; $\delta = +4$; $h = +2$;
$D = -\cdot 040$, $E = +\cdot 999$; $G = +\cdot 483$, $H = +\cdot 019$, $K = -\cdot 875$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		10·0	217	1 57	−30	4 11	−11	i 2 23	P	5·0
Arapuni		10·5	210	2 57	+22	4 57	+22	—	—	—
Tuai		10·6	202	2 56	+20	4 26	−11	—	—	—
New Plymouth		12·0	212	3 9?	+14	—	—	—	—	—
Wellington		13·6	205	3 9	− 8	5 33	−17	—	—	6·4
Apia		16·2	21	e 3 48	− 2	i 6 39	−12	3 59	PP	—
Christchurch		16·4	206	3 56	+ 3	6 35	−21	6 49	Q	7·4
Brisbane	E.	25·8	266	i 5 37	+ 3	i 10 35	?	—	—	12·5
	N.	25·8	266	i 5 40	+ 6	i 10 43	?	—	—	12·1
Riverview		26·9	251	i 5 46a	+ 1	i 10 23	+ 3	—	—	e 12·0
Sydney		26·9	251	i 5 51	+ 6	e 10 39	+19	e 6 57	PP	e 13·0
Adelaide		37·3	249	i 9 28	?	i 16 7	?	—	—	16·6
Honolulu		53·6	24	e 9 28	+ 3	e 16 52	− 6	e 11 32	PP	e 22·2
Perth		56·5	249	e 10 7	+21	(17 45)	+ 8	i 12 19	PP	24·4
Amboina		57·1	286	9 51	+ 1	e 17 57	+12	i 13 18	PPP	—
Manila		73·4	297	e 11 35a	− 1	21 19	+14	—	—	35·4
Batavia		74·3	272	i 11 39	− 2	i 21 14	− 1	—	—	e 30·0
Tokyo, Cen. Met. Ob.		75·9	325	12 47	+57	23 15	?	—	—	—
Sendai		77·4	328	11 57	− 1	22 13	+24	—	—	—
Koti		77·6	320	12 1	+ 1	21 49	− 2	—	—	—
Mizusawa		78·0	328	e 12 0	− 2	22 17	+22	—	—	32·5
Nemuro		79·6	334	12 2	− 8	22 11	− 1	—	—	—
Santa Barbara		83·6	46	i 12 31	0	—	—	—	—	—
La Jolla		84·1	47	e 12 34	0	—	—	—	—	—
Branner		84·2	41	i 11 35	−59	i 22 55	− 4	i 11 50	pP	e 38·2
Santa Clara		84·2	41	e 12 36	+ 2	i 23 16	+17	—	—	e 38·3
San Francisco		84·2	41	12 57?	+23	—	—	—	—	e 38·0
Zinsen		84·3	318	12 45	+10	22 54	− 6	—	—	—
Pasadena		84·4	46	i 12 34a	− 2	i 22 54	− 7	e 38 56	P′P′	e 34·2
Berkeley		84·4	41	e 12 35	− 1	e 23 0	− 1	e 34 51?	Q	e 38·2
Lick		84·4	41	i 12 37	+ 1	e 23 1	0	—	—	e 38·4
Mount Wilson	Z.	84·5	46	i 12 35	− 1	i 30 52	PKKP	i 38 56	P′P′	—
Palomar	Z.	84·7	47	e 12 36a	− 1	i 30 52	PKKP	e 38 53	P′P′	—
Riverside		84·8	46	e 12 35	− 2	i 30 51	PKKP	i 38 49	P′P′	—
Ukiah		84·8	39	e 12 37	0	e 23 4	− 1	e 28 31	SS	e 34·6
Fresno	N.	85·1	43	i 12 40	+ 1	e 23 25	+17	—	—	e 49·0
Ferndale	E.	85·2	37	e 12 50	+11	e 23 8	− 1	—	—	—
	N.	85·2	37	e 12 46	+ 7	e 23 11	+ 2	—	—	e 38·0
Vladivostok		85·5	325	i 12 42	+ 1	e 23 30	+18	—	—	—
Haiwee		85·8	45	i 12 43	+ 1	—	—	—	—	—
Medan		86·2	276	e 12 45	+ 1	23 15	− 4	i 16 31	PP	e 39·0
Tinemaha		86·3	44	i 12 45	0	—	—	—	—	—
Tucson		88·0	51	i 12 52	− 1	i 23 22	[+ 1]	e 29 29	SS	i 36·4
Seattle		91·2	34	—	—	e 23 51	[+11]	—	—	e 43·2
Victoria		91·2	33	13 10	+ 2	23 39	[− 1]	24 12	S	e 38·0
Salt Lake City		92·4	44	e 13 14	0	23 45	[− 2]	e 16 19	PP	e 37·6
Logan		93·1	42	i 13 17	0	23 45	[− 6]	e 17 2	PP	e 43·2
La Plata		94·7	134	18 39?	?	23 51?	[− 8]	25 45?	PS	46·2
Huancayo		94·8	106	e 13 57	+32	i 24 3	[+ 3]	17 21	PP	e 39·7
Butte		95·2	39	e 13 45	+18	e 23 59	[− 3]	—	—	e 39·3
Bozeman		95·9	40	e 13 31	+ 1	e 23 51	[−15]	e 17 21	PP	e 41·6
College		96·5	12	e 14 23	+51	e 24 0	[− 9]	e 17 23	PP	e 42·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
La Paz		98·3	115	i 13 49k	+ 8	i 24 18	[− 1]	i 17 45	PP		39·4
Lincoln		102·2	50	—	—	—	—	(e 36 59)	SSS		37·0
Calcutta	N.	103·9	287	e 17 34	?	i 28 6	PS	e 33 26	SS		i 45·0
Colombo	E.	104·2	269	18 31	PP	24 47	[0]	33 47	SS		49·8
Irkutsk		105·6	321	17 45	PKP	24 51	[− 2]	27 55	PS		—
Florissant	E.	105·7	55	e 14 12	− 2	e 24 50	[− 4]	e 18 47	PP		—
St. Louis		105·7	55	e 14 13	− 1	e 24 49	[− 5]	e 18 44	PP		—
Kodaikanal	E.	107·8	272	e 17 42	PKP	i 28 17	PS	21 28	PPP		48·0
Chicago, U.S.C.G.S.		108·8	52	18 36	[+ 6]	e 24 57	[−10]	e 19 9	PP		e 45·0
Hyderabad		110·1	279	e 18 8	[−25]	28 42	PS	35 43	SS		47·8
Columbia		110·7	61	e 18 45	[+10]	e 25 11	[− 4]	e 28 43	PS		e 52·4
Pittsburgh		113·7	55	e 14 52	P	e 25 23	[− 4]	e 29 17	PS		—
Agra	E.	114·3	289	e 17 50	[−52]	i 29 22	PS	35 32	SS		—
Toronto		115·1	52	e 24 3?	?	e 29 39?	PS	e 35 45?	SS		47·0
Tananarive		115·4	228	29 28	PS	—	—	36 16	SS		55·7
Bombay		115·6	277	e 18 6	[−38]	e 25 25	[− 9]	e 19 52	PP		52·2
Philadelphia		117·1	57	e 19 22	[+35]	e 25 35	[− 5]	e 20 4	PP		e 47·3
San Juan		117·2	82	e 20 5	PP	i 25 36	[− 4]	i 29 47	PS		e 47·0
Ottawa		118·1	51	18 49	[0]	25 37	[− 6]	19 57?	PP		e 52·0
Vermont		119·7	53	e 18 10	[−42]	e 29 15	PS	e 37 8	SS		e 45·2
Shawinigan Falls		120·4	50	19 9?	[+16]	—	—	—	—		50·0
Harvard		120·4	55	e 18 55	[+ 2]	e 25 47	[− 4]	e 20 32	PP		e 58·0
Weston		120·5	55	18 54	[0]	—	—	—	—		—
Seven Falls		121·8	50	19 3?	[+ 7]	25 55	[− 1]	30 28?	PS		55·0
Bermuda		123·2	68	e 20 48	PP	e 25 53	[− 8]	e 36 31	SS		49·8
East Machias		123·8	53	e 20 58	PP	e 30 46	PS	e 37 27	SS		e 46·0
Tashkent		125·2	302	19 3	[0]	27 46	{− 2}	32 33?	PPS		—
Halifax		126·4	53	—	—	e 27 51?	{− 5}	e 38 27?	SS		55·0
Sverdlovsk		131·0	321	i 19 14	[0]	e 28 45	{+19}	31 36	PS		—
Ivigtut		133·9	31	22 53	PKS	—	—	39 45	SS		—
Baku		139·7	299	19 26	[− 4]	32 27	PS	22 31	PP		—
Moscow		143·5	327	19 31	[− 6]	29 31	{−11}	33 1	PS		—
Upsala		147·5	345	e 19 44	[+ 1]	e 29 57	{− 7}	23 7	PP		e 63·0
Bergen		148·6	357	i 19 48	[+ 3]	—	—	23 19	PP		e 69·0
Ksara		151·0	287	e 19 59	[+10]	—	—	23 28	PP		—
Aberdeen	E.	151·8	3	i 20 9	[+19]	—	—	—	—		—
Copenhagen		152·5	348	e 19 51	[0]	33 57	PS	23 50	PP		—
Warsaw		153·0	334	19 51a	[− 1]	e 30 32	{− 3}	e 23 42	PP		e 66·0
Helwan		154·7	278	i 19 54k	[0]	—	—	37 12	PPS		—
Stonyhurst		155·0	6	e 20 7	[+12]	i 24 34	PP	i 43 42	SS		e 57·1
Potsdam		155·4	344	i 19 53a	[− 2]	i 43 27	SS	i 23 53	PP		e 59·0
Bucharest		155·7	315	e 19 27	?	—	—	—	—		50·0
De Bilt		156·9	355	i 19 58a	[+ 1]	e 44 12	SS	i 24 5	PP		e 74·0
Jena		157·1	344	e 19 57	[0]	e 37 15?	PPS	e 24 7	PP		e 61·0
Prague		157·1	340	e 19 21	[−36]	e 34 39	?	e 44 21	SS		e 65·0
Oxford		157·2	5	e 20 40	[+43]	—	—	—	—		—
Kew		157·6	3	i 19 58a	[0]	e 26 43	[−19]	i 24 7	PP		e 75·0
Sofia		158·3	313	e20 4	[+ 5]	—	—	e 24 16	PP		51·0
Uccle		158·3	358	e 19 58a	[− 1]	i 34 35	PSKS	e 24 11	PP		e 66·0
Belgrade		158·7	321	e 20 3	[+ 4]	e 34 35	PSKS	e 24 55	PP		e 67·6
Stuttgart		159·7	346	i 20 1a	[+ 1]	i 31 37	{+27}	i 20 6	pPKP		e 66·0
Paris		160·3	0	e 19 57?	[− 4]	—	—	(43 57?)	SS		44·0
Basle		161·1	348	e 20 1	[− 1]	e 31 16	{− 2}	—	—		—
Zurich		161·1	347	e 20 2	[0]	e 21 47	?	e 24 28	PP		—
Triest		161·2	335	e 20 6	[+ 4]	e 31 1	{−18}	e 23 6	PKS		e 64·0
Neuchatel		161·8	349	e 20 3	[0]	—	—	—	—		—
Clermont-Ferrand		163·4	358	e 20 3	[− 1]	—	—	e 23 38	PKS		e 80·0
Coimbra		165·9	36	e 20 12	[+ 5]	45 37	SS	25 6	PP		88·0
Lisbon		166·5	42	20 6	[− 1]	45 42	SS	25 4	PP		78·0
Toledo		168·1	24	i 20 10	[+ 2]	—	—	25 3	PP		80·3
San Fernando		169·7	42	e 20 15	[+ 6]	e 27 12	[+ 1]	—	—		79·0
Granada		170·5	30	i 20 12a	[+ 2]	27 21	[+ 9]	i 25 21	PP		e 74·4
Almeria		171·3	26	i 20 10	[0]	27 10	[− 2]	25 16	PP		80·8
Algiers		172·3	355	i 20 21	[+10]	e 32 45	{+30}	25 36	PP		e 47·0

Continued on next page.

NOTES TO SEPTEMBER 16d. 21h. 39m. 3s.

Additional readings :—
Auckland i = +3m.45s.
Wellington P = +3m.17s., iZ = +3m.32s. and +3m.52s., i = +12m.9s., S_cS? = +15m.52s.
Apia PPP = +4m.2s., iSS = +7m.7s.
Honolulu iP = +9m.32s., ePPP = +13m.0s., e = +20m.45s., eSS = +21m.4s.
Perth SS = +20m.12s., SSS = +21m.37s., S is given as PS.
Amboina iPEN = +9m.58s.
Batavia PEN = +11m.42s.
Mizusawa SN = +22m.21s.
Branner eN = +22m.59s. and = +35m.15s.?, eE = +35m.27s.
Pasadena iPKKPZ = +30m.50s.
Berkeley iN = +23m.3s.
Medan iN = +16m.44s.
Tucson i = +14m.17s. and +15m.26s., e = +22m.30s., i = +29m.54s., eSSS = +32m.53s.
Victoria SS = +29m.57s.?
Salt Lake City eS_cS = +24m.46s., e = +25m.46s., eSS = +30m.23s.
Logan i = +13m.43s. and +14m.0s., eSS = +30m.55s., eSSS = +34m.23s.
La Plata PPE = +19m.15s.?, PKKP?E = +30m.45s.?, SSE. = +34m.15s.?, SSS?E = +36m.39s. ?
Huancayo i = +25m.39s., ePS = +26m.5s., iSS = +31m.8s., eSSS = +35m.0s.
Bozeman e = +28m.48s., SS = +31m.25s.
College e = +24m.29s. and +30m.5s., eSS = +31m.16s.
La Paz iN = +24m.35s., PS = +25m.6s.
Calcutta eN = +20m.46s., iN = +22m.50s. and +28m.50s.
Colombo PS?E = +27m.47s.
Florissant eE = +24m.34s., iSKKSE = +25m.37s., ePSE = +27m.45s., eSE = +33m.9s., ePPPE = +37m.32s.
St. Louis eE = +26m.27s., eSP = +27m.55s., ePPP = +37m.9s.
Kodaikanal SKKSE = +28m.55s., iSE = +29m.35s., SSE = +34m.29s.
Chicago, U.S.C.G.S. e = +26m.28s., ePS = +28m.21s., e = +28m.34s., eSS = +34m.3s.
Hyderabad iE = +21m.35s., +29m.11s., and +30m.3s.
Columbia e = +17m.34s., eSS = +34m.57s.
Pittsburg eSKKS = +26m.31s., e = +26m.48s., eS = +27m.19s., e = +30m.22s.
Agra iE = +30m.43s. and +31m.22s., SSSE = +40m.30s.
Toronto e = +40m.9s.?.
Tananarive Q = +48m.43s.
Bombay eN = +17m.4s., eE = +22m.11s. and +22m.50s., SKS?N = +25m.11s., eE = +29m.4s., iPSEN = +29m.43s., eN = +31m.12s., iE = +31m.15s., eSSN = +36m.26s., iSSE = +36m.29s.
Philadelphia ePPP = +22m.30s., e = +26m.53s., ePS = +29m.47s., ePPS = +31m.5s., eSS = +35m.47s., eSSS = +40m.28s.
San Juan iSKKS = +26m.50s., eSS = +35m.56s., i = +36m.43s., e = +40m.2s.
Ottawa SN = +27m.57s.?, PS = +29m.59s., SS = +36m.27s.?, eEZ = +44m.27s.?.
Harvard eSKKSN = +27m.7s., ePSN = +30m.22s., eN = +37m.3s.
Seven Falls SKKS = +27m.25s., PPS = +31m.55s., SS = +37m.34s., e = +44m.57s.?.
Bermuda eSKKS = +27m.32s., e = +46m.48s.
East Machias e = +28m.48s., e = +41m.9s.
Sverdlovsk eP = +16m.6s.
Ivigtut ? = +23m.8s.
Upsala eN = +27m.23s., eSKSPN = +33m.37s., eE = +35m.57s.?, eSSE = +42m.15s., eSSSN = +47m.15s., eSSSE = +47m.57s.?, eE = +52m.57s.?.
Copenhagen ? = +19m.59s., +20m.19s., +20m.33s., +38m.57s.? and +43m.27s.?.
Warsaw eEN = +19m.57s.?, eN = +34m.2s., eEZ = +34m.21s., eN = +36m.54s. and eZ = +36m.59s.
Helwan PKP_2Z = +22m.48s., SKPZ = +25m.7s., PPPZ = +27m.59s., SKSZ = +29m.49s., SKKSE = +32m.3s. and eSE = +33m.22s.
Potsdam ePKPEN = +19m.57s., $iPKP_2Z$ = +20m.16s., $iPKP_2EN$ = +20m.22s., iPPZ = +23m.56s., iPPE = +24m.2s., iN = +25m.53s., iE = +28m.15s. and +28m.44s., iPSKSZ = +34m.15s., iPSKSE = +34m.20s., iPSKSN = +34m.26s., iPPSZ = +37m.1s., eE = +38m.45s., iN = +43m.56s., iSSPZ = +44m.42s. and iN = +45m.45s.
Bucharest eZ = +19m.57s., eN = +20m.37s., +21m.15s. and +34m.15s.?.
De Bilt ePSKS = +34m.27s. and iPPS = +37m.27s.
Jena eN = +20m.1s., eZ = +20m.5s., eN = +20m.29s., i = +20m.33s.?, eN = +29m.57s.? +34m.15s.?, and +34m.19s.
Kew iNZ = +20m.15s., $iPKP_2NZ$ = +20m.50s., ePPPZ = +27m.49s., eSKSPNZ = +34m.51s., ePPSNZ = +37m.27s.?, eSSNZ = +44m.27s., eSSSNZ = +50m.27s.? and eQN = +70m. 27s.
Uccle i = +20m.23s., $iPKP_2Z$ = +20m.34s., eSKPN = +23m.37s. and ePPSNZ = +37m.28s.
Belgrade ePKP = +22m.11s., ePPP = +27m.51s., ePPS = +37m.59s.
Stuttgart $iPKP_2$ = +20m.40s., $ipPKP_2$ = +20m.46s., ePPZ = +24m.21s., ePPN = +24m.40s., ePPPN = +28m.21s., ePSKSN = +34m.41s., ePPSN = +37m.33s. and eSSSEN = +44m.27s.
Basle e = +20m.47s.
Triest i = +29m.46s. and iPSKS = +34m.50s.

Continued on next page.

Coimbra PKP_2 = +21m.36s., PPP = +31m.37s., ? = +33m.30s. and +34m.4s., PPS? = +39m.6s.
Lisbon iPKPZ = +20m.10s., ePKPE = +20m.15s., E = +27m.59s. and 33m.50s., SSE = +45m.46s. and E = +51m.16s.
Granada PKP_2 = +21m.34s., PPP = +29m.38s., and +31m.21s., SKKS = +32m.9s. and +33m.35s., SKSP = +36m.35s., PPS = +39m.48s., SS = +47m.39s., SSP = +48m.3s. and 51m.27s., SSS = +52m.51s.
Almeria $iPKP_2$ = +21m.28s., PKS = +23m.35s., P_cP.PKP = +28m.35s., PPP = +29m.15s., SKKS = +31m.55s., SKKKS = +33m.3s., SKSP = +35m.39s., PPS = +39m.6s., SS = +46m.3s., SSP = +47m.13s., SSS = +52m.43s. and Q = +74m.9s.
Algiers iPKP = +21m.38s. and e = +31m.33s.
Long waves were also recorded at Besançon.

Sept. 16d. Readings also at 1h. (Tucson, Ottawa, Bucharest, Sofia, Stuttgart, Zurich, and near Ksara), 2h. (La Paz), 3h. (De Bilt and near Branner), 4h. (near Granada), 5h. (La Paz and near Tananarive), 6h. (near Apia), 7h. (Rio de Janeiro and Ukiah), 8h. (near Branner), 10h. and 15h. (La Paz), 16h. (Huancayo and La Paz), 17h. (Amboina and Huancayo), 21h. (Palomar, Riverside and Tucson), 22h. (La Paz and Tucson) 23h. (Tananarive).

Sept. 17d. 6h. 48m. 4s. Epicentre 0°·1N. 122°·7E. Depth of focus 0·030.
(as on 1941, August 20d)

Intensity IV in north and central Celebes and in the Moluccas.

Epicentre 0°·0 122°·0E., depth 250 km. (Batavia).
Meteorologische en Geophysische Diest te Batavia. Serie A., No. 44. Aardbevingen in Ned-Indie, waargenomen gedurende het jaar 1941, p.22.

A = −·5402, B = +·8415, C = +·0017 ; δ = −6 ; h = +7 ;
D = +·842, E = +·540 ; G = −·001, H = +·001, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		6·7	124	i 1 44	+ 7	i 3 4	sS	i 14 41	S_cS	—
Palau		13·8	58	3 13	+ 5	5 53	sS	—	—	—
Manila		14·5	353	i 3 21a	+ 5	6 8	sS	i 4 25	?	—
Batavia		17·1	248	i 3 38	− 9	i 6 41	− 7	—	—	—
Medan		24·2	279	4 56	− 2	i 8 50	− 7	i 5 51	PP	—
Perth		32·6	190	6 11	− 1	11 18	+ 7	6 59	PP	—
Titizima		32·7	34	6 14	+ 1	11 15	+ 3	—	—	—
Koti		34·8	16	6 35	+ 4	11 43	− 2	—	—	—
Hamada		35·7	13	6 46	+ 7	12 2	+ 4	—	—	—
Kobe		36·4	18	6 49	+ 4	12 12	+ 3	—	—	—
Nagoya		37·3	20	6 52	0	12 26	+ 3	—	—	—
Zinsen		37·4	4	6 56	+ 3	12 36	+12	—	—	—
Adelaide		37·9	159	i 6 54	− 3	i 12 26	− 6	i 8 23	PP	—
Brisbane		40·0	136	i 7 14	− 1	i 15 55	SS	—	—	—
Calcutta		40·2	307	i 7 32a	pP	i 12 58	− 8	i 8 16	PP	—
Sendai		41·5	22	7 24	− 3	13 16	− 9	—	—	—
Mizusawa		42·4	21	e 7 34	0	i 13 32	− 6	(17 0)	SS	17·0
Riverview		43·1	144	e 7 43a	+ 3	i 13 48	0	i 9 10	PP	e 20·5
Sydney		43·1	144	e 7 44	+ 4	e 13 56	+ 8	—	—	e 18·9
Colombo	E.	43·3	280	i 7 38	− 3	i 13 34	−17	17 1	S_cS	—
Vladivostok		43·6	10	e 7 53	+ 9	i 14 1	+ 5	15 47	sS	—
Sapporo		45·9	19	8 9	+ 7	14 32	+ 4	—	—	—
Kodaikanal	E.	46·1	285	i 7 56a	− 8	i 12 54	?	—	—	16·0
Hyderabad		46·8	295	8 4	− 5	14 30	−11	9 8	PP	20·8
Agra		50·6	307	i 8 30a	− 8	i 15 13	−21	12 4	PPP	—
Dehra Dun	N.	52·0	310	e 9 16?	pP	i 16 19	sS	—	—	e 22·0
Bombay		52·4	294	e 8 42	− 9	i 15 45	−13	10 32	PP	23·2
Irkutsk		54·2	346	e 8 43	−21	i 16 21	− 1	17 57	?	—
Almata		59·3	323	e 9 41	+ 1	—	—	—	—	—
Auckland		60·6	134	9 36	−13	17 36	−10	19 26	pS_cS	24·9
Andijan		60·9	318	i 9 47	− 4	i 17 47	− 3	11 1	pP	—
New Plymouth		61·0	136	9 55	+ 3	—	—	—	—	—
Arapuni		61·7	134	11 56?	PP	17 56?	− 4	—	—	26·9
Semipalatinsk		61·8	331	e 9 52	− 5	—	—	—	—	—
Christchurch		62·1	142	9 57k	− 2	15 35	?	18 3	Q	19·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Wellington		62·5	138	9 57k	− 5	18 3	− 7	10 16		?	30·9
Tuai		63·0	135	10 10	+ 5	18 9	− 7	—		—	—
Tashkent		63·3	317	i 10 3	− 4	i 18 12	− 8	i 11 10		pP	—
Sverdlovsk		75·0	331	i 11 15	− 3	i 20 22	−14	12 22		pP	—
Tananarive		76·0	251	e 11 21	− 3	i 20 33	−14	21 9		PS	—
Honolulu		80·2	68	i 11 55	+ 8	i 21 37	+ 5	e 14 52		PP	e 34·4
Ksara		87·3	304	e 12 21	− 2	i 22 41	0	—		—	—
College		89·7	25	e 12 44	+10	i 23 7	+ 3	e 24 8		PS	e 35·1
Helwan		91·1	299	12 38	− 2	24 31	SP	13 35		pP	—
Bucharest		94·7	314	e 14 56	?	23 2	[− 7]	—		—	50·2
Sofia		96·8	312	e 13 56	pP	i 23 11	[−10]	e 30 31		SS	55·9
Warsaw		97·1	322	e 13 6k	− 2	e 23 13	[− 9]	e 14 14		pP	e 49·9
Upsala		97·5	331	e 18 14	?	e 23 13	[−11]	e 24 0		S	e 46·9
Belgrade		98·6	315	e 15 4	?	e 23 32	[+ 3]	e 25 22		PS	e 43·1
Copenhagen		101·2	326	e 13 26?	0	i 23 36	[− 6]	14 32?		pP	—
Prague		101·6	321	e 17 6·	PP	e 23 33	[−11]	—		—	e 24·9
Potsdam		101·8	324	i 13 28k	− 1	i 23 35	[−10]	i 14 36		PP	49·9
Bergen		103·1	333	e 19 26?	PPP	e 23 45	[− 5]	—		—	e 48·9
Jena		103·1	321	e 13 38	+ 3	i 23 42	[− 8]	e 17 57		PP	e 56·6
Triest		103 1	316	i 18 53	pPP	i 23 42	[− 8]	i 27 4		PS	—
Stuttgart		105·2	321	e 13 32	P	i 23 51	[− 9]	e 17 56		PP	—
Victoria		105·5	39	e 19 20?	PP	i 24 3	[+ 1]	e 27 4		PS	43·9
Zurich		106·1	320	e 18 3	PP	e 23 56	[− 8]	—		—	—
De Bilt		106·5	325	e 13 52k	P	i 24 2	[− 4]	e 14 58		pP	e 52·9
Basle		106·6	320	e 17 56	PP	e 24 1	[− 5]	—		—	—
Neuchatel		107·2	320	e 18 1	PP	e 24 0	[− 9]	—		—	—
Uccle		107·5	324	e 15 1	pP	i 24 4	[− 6]	e 18 22		PP	e 43·9
Aberdeen	E.	108·0	332	—	—	i 24 3	[−10]	i 27 23		PS	56·4
Berkeley		109·4	49	e 17 59	[− 4]	i 24 20	[+ 2]	i 33 49		SS	e 43·9
Paris		109·4	323	18 34	PP	i 24 11	[− 7]	i 27 28		PS	51·9
Kew		109·8	326	e 15 12	pP	i 24 14	[− 6]	i 18 41		PP	e41·9
Santa Clara		109·9	50	e 18 43	PP	e 24 19	[− 1]	e 27 48		PS	—
Stonyhurst		109·9	329	e 18 46	PP	i 24 15	[− 5]	i 27 32		PS	55·0
Clermont-Ferrand		110·2	319	e 16 33	?	i 27 36	PS	e 18 47		PP	—
Santa Barbara	Z.	112·4	52	e 18 9	[+ 1]	—	—	—		—	—
Tinemaha	Z.	112·8	49	e 18 10	[+ 1]	—	—	—		—	—
Butte		113·3	37	—	—	i 24 36	[+ 2]	e 28 13		PS	e 45·2
Haiwee		113·3	50	e 18 12	[+ 2]	—	—	i 21 25		PPP	—
Mount Wilson	Z.	113·8	52	i 18 12	[+ 1]	—	—	—		—	—
Pasadena		113·8	52	e 14 34	P	i 24 33	[− 3]	i 18 12		PKKP	e 45·2
Bozeman		114·4	37	—	—	e 24 35	[− 3]	e 28 27		PS	e 45·8
Riverside		114·4	52	i 18 12	[0]	—	—	—		—	—
Palomar	Z.	115·0	53	i 18 14	[0]	—	—	i 28 56		PS	—
Logan		115·7	41	—	—	e 24 40	[− 3]	e 28 34		PS	—
Salt Lake City		116·1	43	e 20 52	PPP	e 24 43	[− 2]	e 28 48		PS	—
Toledo		117·3	316	e 18 17	[− 1]	i 24 48	[− 1]	19 6		pPKP	—
Almeria		117·4	312	19 27	PP	(24 45)	[− 4]	19 46		pPP	56·9
Granada		118·1	313	i 18 21a	[+ 1]	(25 9)	[+17]	19 41		PPKP	e 65·5
Ivigtut		118·5	354	—	—	24 50	[− 3]	28 56?		PS	—
Coimbra		120·2	318	i 13 26	?	i 24 56	[− 3]	20 34		?	38·6
Tucson		120·2	51	e 15 31	pP	e 36 14	SS	i 19 39		PP	e 50·1
San Fernando		120·4	314	—	—	e 24 50	[−10]	e 35 56		SS	57·9
Lisbon		121·4	316	18 29	[+ 3]	24 57	[− 6]	19 58		PP	58·7
Chicago U.S.C.G.S.		130·0	29	e 21 3	PP	e 25 25	[− 4]	i 22 7		PKS	—
Florissant		130·8	34	e 18 35	[− 9]	e 25 26	[− 4]	e 21 42		SKP	—
St. Louis		131·0	34	e 18 36	[− 9]	e 25 17	[−14]	1 20 0		pPKP	—
Seven Falls		131·5	11	e 21 46	SKP	e 38 29	SS	e 43 21		SSS	54·9
Shawinigan Falls		131·6	13	18 43	[− 3]	27 37	SKKS	38 8?		SS	—
Ottawa		131·9	17	18 35	[−11]	25 32	[− 1]	30 44?		PS	52·9
Toronto		132·1	21	e 21 52	PKS	e 25 29	[− 5]	e 27 43		SKKS	40·9

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Cape Girardeau	E.	132·7	33	i 21 47	SKP	—	—	i 23 23	PPP	—
Vermont		133·4	15	e 21 24	PP	25 33	[− 3]	e 21 53	pPP	e 56·1
East Machias		134·4	10	e 19 1	[+10]	e 39 0	SS	i 21 56	SKP	—
Pittsburgh		134·7	24	e 21 57	SKP	i 27 56	SKKS	e 22 9	pSKP	—
Harvard		135·7	14	e 18 44	[− 9]	i 25 44	[+ 3]	e 23 45	PPP	—
Fordham		136·6	16	i 18 57	[+ 2]	i 31 21	PS	i 22 1	SKP	—
Philadelphia		136·9	19	e 22 4	SKP	25 54	[+12]	39 33	SS	—
Columbia		139·4	30	e 22 4	PP	e 39 35	SS	i 22 36	PKS	—
La Plata		145·3	179	19 8	[− 3]	41 8	SS	20 8	pPKP	—
Bermuda		147·0	11	e 19 9	[− 6]	e 42 46	SSP	—	—	e 54·8
Huancayo		158·5	124	i 19 32	[+ 2]	e 44 22	SSP	i 20 17	PKP_2	e 61·8
San Juan		159·7	24	e 19 36	[+ 5]	i 43 46	SS	e 27 15	PPP	—
La Paz	Z.	160·5	147	19 33	[+ 1]	e 51 27	SSS	i 20 28	pPKP	66·2

Additional readings :—
Batavia iPEN = +3m.41s., iPZ = +3m.44s.
Perth PPP = +7m.21s., i = +8m.33s. and SS = +12m.44s.
Adelaide i = +8m.30s., iP_cP? = +9m.55s., i = +10m.38s., SS = +14m.8s., i = +15m.10s., +15m.20s., +15m.32s., and +15m.40s.
Calcutta isSN = +14m.13s.
Mizusawa iSE = +13m.38s.
Riverview iP = +7m.46s., eN = +10m.18s., i = +13m.56s., iE = +16m.59s., iN = +17m.9s., iN = +17m.19s., iE = +17m.23s., iZ = +18m.8s., iE = +18m.28s.
Sydney e = +10m.56s.
Hyderabad SSN = +17m.28s., S_cSN = +18m.20s.
Agra ? = +9m.35s., SSE = +17m.55s., SSSE = +19m.5s.
Bombay iN = +8m.47s., iE = +9m.52s., eE = +15m.39s., iE = +16m.55s. and +17m.33s., iEN = +18m.16s., iSSEN = +19m.30s.
Wellington iZ = +10m.4s., sPZ = +10m.27s., sP_cPZ = +11m.14s., iZ = +11m.25s. and +11m.35s., PP?Z = +12m.3s., pPPZ = +12m.33s., iZ = +13m.58s. and +15m.36s., S_cS = +19m.26s., pS_cS = +19m.54s., SS? = +22m.36s., Q = +24·9m.
Tananarive EN = +24m.15s., SS = +24m.42s., SSS = +27m.19s.
Honolulu e = +17m.15s. and +23m.36s., eSS = +26m.54s., e = +30m.33s.
College i = +22m.37s., eSS = +29m.10s., e = +32m.29s., eSSS = +32m.59s.
Helwan sPZ = +14m.8s., PPZ = +17m.17s.
Bucharest iN = +23m.5s.
Sofia eEN = +26m.17s.
Warsaw eZ = +17m.18s. and +18m.1s., eE = +23m.40s., eN = +23m.43s., iZ = +25m.24s., eZ = +26m.4s., eN = +27m.8s., eE = +27m.25s. and +29m.3s., eZ = +29m.11s., eN = +29m.56s., eE = +31m.7s., eZ = +31m.18s.
Upsala eE = +23m.7s., ePSN = +25m.24s., eSSE = +30m.56s. ?
Belgrade e = +29m.6s.
Copenhagen ? = +17m.42s. and +18m.41s., i = +24m.40s., +26m.6s., +27m.45s., +29m.2s.?, +31m.20s.?, +31m.50s.?, +32m.14s.?, +35m.32s.?, and and +39m.50s. ?
Potsdam iZ = +18m.2s., iE = +18m.5s., eN = +18m.9s., iZ = +18m.42s., +18m.45s., iE = +21m.27s., iSKS,NZ = +23m.38s., iSE = +24m.15s., iN = +24m.38s., iPS = +26m.11s., iPPSZ = +27m.11s., iPPSN = +27m.14s., iZ = +27m.51s., iN = +29m.2s., iSSN = +31m.37s., isSSZ = +31m.49s., isSSE = +31m.53s. iN = +33m.40s., iZ = +33m.50s., iSSSE = +35m.21s., iSSSN = +35m.29s., iZ = +37m.12s., iN = +37m.18s.
Jena eN = +18m.48s. and +21m.34s., eN = +23m.46s. and +26m.20s.?, eE = +26m.26s. and +26m.56s.?, eN = +27m.25s., eE = +27m.47s., eN = +27m.56s. and +28m.6s., e = +31m.56s.?, eN = +41m.56s.?, eE = +42m.26s.?
Stuttgart eZ = +13m.54s., ePPZ = +18m.10s., epPPZ = +19m.9s., ePPPZ = +20m.20s., ePSEN = +27m.26s., iPKKP = +29m.22s., eSSEN = +32m.46s., esSSN = +34m.42s.
Victoria eN = +25m.24s. and +33m.2s. ?
Zurich e = +24m.44s.
De Bilt iPP = +18m.19s., ipPP = +19m.21s., i = +24m.52s., iE = +25m.27s., iEZ = +27m.1s., iSS = +33m.6s., iSSSS = +37m.16s., eSSS = +41m.26s.
Uccle iEZ = +19m.26s., iPPPZ = +20m.47s., iSKS = +24m.55s., iPS = +27m.7s., iPPSEZ = +27m.51s., i = +28m.12s., iEZ = +28m.54s., iSSE = +33m.10s., iSSSE = +37m.29s.
Berkeley iPSN = +26m.2s., iSSN = +33m.52s., iSSSN = +37m.55s.
Paris iSKKS = +25m.6s., iPPS = +28m.33s., iSS = +33m.42s., eSSS = +37m.56s. ?
Kew iNZ = +19m.46s., Z = +21m.42s. and +21m.58s., eNZ = +25m.12s. and +25m.56s., iNZ = +27m.30s. and +29m.35s., eNZ = +32m.18s.
Santa Clara ePPSSE = +34m.14s.
Stonyhurst i = +25m.13s. and +42m.26s.
Butte i = +25m.44s., eSS = +34m.30s.
Pasadena eZ = +19m.9s., iZ = +21m.25s., eN = +25m.43s., ePKKPZ = +28m.55s., iSSN = +34m.29s.
Bozeman eS = +26m.34s., eSS = +34m.42s.

Continued on next page.

Salt Lake City eSKS = +24m.48s., eS = +26m.43s., eSS = +35m.7s., e = +39m.47s. and +43m.9s.
Almeria sP = +19m.58s., PKP = +23m.8s., SKS given as PP, i = +25m.58s., PPP = +27m.24s., SKS = +29m.32s., SKKS = +31m.19s., PS = +34m.15s., PPS = +37m.39s., SS = +40m.51s., SSS = +45m.10s., Q = +48m.44s.
Granada sP = +20m.40s., PKP = +21m.32s., pPP = +24m.35s., SKS given as sPP, sPPP = +26m.57s., sSKS = +28m.53s., SKKS = +29m.54s., PPS = +36m.1s.
Ivigtut ? +26m.10s.
Logan eSKS = +25m.58s.
Coimbra PE = +15m.16s., ePN = +17m.6s., ? = +26m.34s. and +28m.34s.
Tucson iPKP = +18m.24s., i = +18m.29s., e = +21m.41s., +26m.31s., and +29m.5s., ePPS = +30m.48s.
San Fernando eSSN = +24m.57s.
Lisbon pPP?Z = +21m.36s., SKSZ = +25m.0s., SPN = +29m.18s., SSE = +36m.5s.
Chicago, U.S.C.G.S. e = +21m.43s., +27m.25s., +37m.18s., +43m.4s., and +45m.33s.
Florissant iSKPEN = +21m.47s., iN = +22m.13s., ePPPEN = +23m.21s., eSKKSE = +27m.29s., iSKKSN = +27m.33s., iN = +27m.55s. and +32m.36s., iE = +32m.39s., eSSE = +38m.12s., iE = +40m.11s., eSSSE = +42m.56s.
St. Louis eSKPE = +21m.43s., eE = +22m.12s., eN = +23m.22s., and +23m.56s., isSKSN = +27m.35s., eN = +27m.56s. and +38m.0s., iSSN = +38m.13s., esSSN = +40m.8s., iN = +40m.27s., iE = +40m.34s.
Seven Falls e = +27m.40s.
Shawinigan Falls SKP = +21m.43s.
Ottawa SKP = +21m.45s., SSE = +38m.26s. ?
Cape Girardeau isSKPE = +22m.13s., eE = +23m.51s., iE = +28m.39s. and +29m.1s., eE = +40m.33s.
Vermont ePKS = +23m.33s., e = +27m.50s. and +38m.39s.
East Machias i = +27m.53s. and +28m.14s., e = +51m.43s.
Pittsburgh ePP = +23m.33s., esS = +28m.22s., eSS = +30m.13s.
Harvard eZ = +18m.53s., iZ = +18m.59s., eZ = +20m.6s., iNZ = +21m.59s., iZ = +25m.21s., eEN = +28m.2s.
Fordham i = +28m.7s.
Philadelphia PKS = +22m.41s., e = +23m.47s., i = +28m.15s., e = +33m.37s. and +41m.29s.
Columbia e = +28m.17s. and +30m.20s.
La Plata PKPE = +19m.14s., Z = +20m.19s. and +20m.25s., E = +21m.20s., PPN = +23m.32s., SKKS = +28m.44s. and +30m.50s., PPS = +36m.14s., PSSE = +42m.14s.
Huancayo i = +19m.38s. and +19m.43s., e = +23m.51s., i = +30m.16s., e = +35m.26s., i = +48m.1s. and +51m.52s.
San Juan i = +30m.14s., e = +34m.7s., +50m.36s., and +60m.58s.
La Paz iPKPZ = +19m.36s., iZ = +20m.19s., sPKP = +21m.41s., SKPZ = +23m.11s., iZ = +24m.1s., +31m.2s., and +33m.21s., SSZ = +39m.9s.

Sept. 17d. Readings also at 3h. (near Bagneres), 6h. (La Paz), 10h. (Balboa Heights), 11h. (Bombay, Agra, and Calcutta), 13h. (Basle, near Branner and Lick), 14h. (San Francisco, near Berkeley, Branner (3), and Lick (4)), 15h. (Tucson, Pasadena, Haiwee, Tinemaha, Mount Wilson, Riverside, and Palomar), 17h. (Columbia, Sitka, Mount Wilson, Riverside, and Palomar), 19h. (near Apia and Riverside), 20h. (near Branner).

Sept. 18d. 2h. 5m. 2s. Epicentre 0°·7S. 132°·4E. (as on 14d.).

$A = -\cdot6742$, $B = +\cdot7384$, $C = -\cdot0122$; $\delta = -7$; $h = +7$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina	5·2	235	i 1 29	P*	i 2 33	S*	—	—	—
Palau	8·3	14	2 3	− 1	3 58	+18	—	—	—
Manila	18·9	325	i 4 24 a	0	8 20	SS	—	—	—
Batavia	26·1	258	5 37	0	10 38	+31	—	—	—
Brisbane	33·2	145	—	—	i 12 0	0	e 14 33	SSS	e 17·6
Medan	34·0	278	6 50	+ 2	12 15	+ 2	—	—	—
Adelaide	34·5	171	e 9 12	?	13 38	?	14 52	SSS	—
Osaka	35·3	4	8 28	PP	—	—	—	—	—
Riverview	37·4	154	—	—	e 16 1	SS	—	—	e 19·8
Sydney	37·4	154	—	—	e 13 46	+41	—	—	e 20·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zinsen		38·4	351	7 23	− 2	13 18	− 2	—	—	—
Vladivostok		43·6	359	10 18	PPP	18 26	SSS	—	—	—
Calcutta	N.	48·7	301	e 8 17	−31	i 15 55	+ 5	i 12 30	?	—
Auckland		53·2	137	—	—	16 18	−34	—	—	e 26·0
Arapuni		54·4	139	—	—	16 58?	−11	—	—	30·0
Wellington		55·6	142	9 41a	+ 1	17 28	+ 3	21 13	SS	27·0
Christchurch		55·7	146	8 59	−41	17 11	−15	23 41	Q	27·8
Kodaikanal	E.	55·7	283	(e 9 38)	− 2	(e 17 23)	− 3	—	—	—
Hyderabad	N.	56·1	291	—	—	17 35	+ 3	—	—	—
Agra	E.	59·1	302	i 10 0a	− 4	e 18 5	− 6	—	—	—
Bombay		61·6	291	e 10 22	0	18 45	+ 2	19 12	PPS	30·0
Almata		66·1	41	e 10 48	− 3	—	—	—	—	—
Andijan		68·2	45	11 6	+ 2	—	—	—	—	—
Tashkent		70·6	315	e 11 14	− 5	20 34	+ 1	—	—	—
Sverdlovsk		80·7	328	e 12 12	− 4	22 33	+ 9	—	—	—
Baku		84·7	311	12 41	+ 4	e 23 17	+13	—	—	—
Moscow		93·3	326	17 12	PP	24 2	[+10]	—	—	—
Victoria		99·9	41	—	—	e 24 58?	−22	—	—	48·0
Bucharest		102·1	315	e 15 58	?	e 24 58?	[+21]	—	—	—
Berkeley		102·5	52	—	—	i 27 24	PS	i 27 42	PPS	e 49·9
Upsala		102·8	332	—	—	e 27 25	PS	—	—	e 54·0
Warsaw		103·5	324	e 17 58?	PKP	—	—	—	—	e 56·0
Pasadena		106·4	55	e 18 30	PP	—	—	—	—	e 48·3
Riverside	z.	107·1	55	e 18 47	PP	—	—	—	—	—
Palomar		107·6	55	e 18 41	PP	—	—	—	—	—
Potsdam		108·1	327	e 18 58	PP	—	—	e 28 17	PS	e 53·0
Triest		110·2	319	e 19 0	PP	e 28 17	PS	e 22 40	PKS	e 65·3
De Bilt		112·5	328	e 19 33a	PP	—	—	—	—	e 59·0
Tucson		112·8	55	e 19 19	PP	e 29 35	PS	—	—	e 51·8
Uccle		113·6	328	e 19 37	PP	e 28 58?	PS	—	—	e 58·0
Stonyhurst		115·3	333	e 20 3	PP	i 29 33	PS	—	—	e 57·0
Kew		115·7	329	e 19 44	PP	e 29 32	PS	e 22 4	PPP	e 57·0
Toledo		124·4	320	e 6 20	?	—	—	—	—	68·0
Almeria		125·0	316	e 17 9	?	—	—	e 21 27	PP	79·0
Granada		125·6	317	e 7 13	?	e 32 55	PPS	21 12	PP	e 75·3
Ottawa		129·1	25	—	—	e 33 58?	PPS	—	—	58·0
Seven Falls		129·5	19	—	—	e 27 58	{−18}	—	—	59·0
East Machias		132·7	18	e 20 56	?	e 32 2	PS	—	—	e 65·1
Harvard	z.	133·1	23	e 21 34	PP	—	—	—	—	e 66·5
Huancayo		149·7	116	i 17 6	?	e 36 10	PPS	—	—	e 73·0
La Paz		153·5	131	i 20 0a	[+ 8]	i 30 37	{ 0}	—	—	77·0

Additional readings :—
Brisbane eN = +12m.5s., eE = +17m.11s.
Adelaide PP = +9m.44s., P_cP = +12m.30s., S_cS = +19m.42s.
Riverview eN = +16m.4s.
Kodaikanal readings have been reduced by 10 minutes.
Agra iPE = +10m.5s.
Bombay SSE = +23m.10s.
Moscow eS = +24m.34s.
Berkeley eN = +42m.50s.
Potsdam eN = +27m.58s.
Tucson e = +19m.46s.
Kew eZ = +20m.40s., eSS?Z = +44m.58s. ?, eSSS?Z = +50m.58s.
Granda PPS = +24m.19s., SSS = +38m.15s.
Huancayo ePP = +20m.5s., e = +31m.5s.
La Paz $iPKP_2N$ = +20m.43s.
Long waves were also recorded at Bergen, Ukiah, Salt Lake City, and Columbia.

Sept. 18d. 7h. 33m. 19s. Epicentre 37°·9N. 121°·7W. (as on 1940, Sept. 19d.).

Scale V at many places near California. Epicentre 37°·4N. 122°·0W. Macroseismic area 4500 sq. m.
F. Neumann, "United States Earthquakes, 1941," Washington, 1943, p. 14.

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

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Berkeley		0·5	266	i 0 19	+ 5	i 0 33	+10	—
Branner		0·6	218	i 0 15	0	—	—	—
Lick	N.	0·6	176	i 0 9	− 6	—	—	—
San Francisco		0·6	258	i 0 41?	+26	—	—	—
Santa Clara		0·6	203	i 0 12	− 3	i 0 16	?	—
Ukiah		1·7	316	—	—	e 0 55	+ 1	—
Fresno	N.	1·9	127	i 0 36	+ 2	i 0 57	− 2	—
Tinemaha		2·8	106	i 0 53	+ 6	i 1 35	S_g	—
Haiwee		3·5	119	i 1 0	+ 3	i 1 51	S*	—
Santa Barbara	Z.	3·8	153	i 0 59	− 2	—	—	—
Mount Wilson	Z.	4·7	140	i 1 12	− 2	i 1 30	P_g	—
Pasadena	Z.	4·7	141	e 1 11	− 3	—	—	—
Riverside		5·2	136	i 1 19	− 2	i 1 34	P*	—
Palomar	Z.	6·0	139	e 1 31	− 1	—	—	—
Salt Lake City		8·2	66	—	—	e 4 40	S_g	e 5 0
Bozeman		11·1	42	—	—	e 6 10	S_g	e 6 9
Sitka		21·6	341	e 4 29	−25	i 6 4	?	—

Sitka gives also e = +3m.35s.

Sept. 18d. 13h. 14m. 12s. Epicentre 14°·0S. 72°·0W. Depth of focus 0·010.

Felt at Cuzco (Peru). Epicentre 13°·0S. 73°·0W. (U.S.C.G.S.).
Obervatorio astronomico, La Plata, Boletin sismologico 1941.

$A = +·3000$, $B = -·9232$, $C = -·2404$; $\delta = +9$; $h = +6$;
$D = -·951$, $E = -·309$; $G = -·074$, $H = +·229$, $K = -·971$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		3·8	300	i 0 53	− 5	i 1 29	−13	—	—	—
La Paz		4·5	124	i 1 12a	+ 5	i 2 4	+ 5	—	—	2·3
Balboa Heights		24·0	342	e 5 6	0	—	—	—	—	—
La Plata	E.	24·4	150	i 5 9	− 1	9 0	−20	5 28	PP	14·0
	N.	24·4	150	i 5 10	0	9 20	0	5 31	PP	10·8
	Z.	24·4	150	i 5 10	0	9 28	+ 8	5 29	PP	14·0
San Juan		32·7	11	e 6 22	− 3	i 11 27	− 6	i 6 41	pP	i 13·6
Bermuda		46·6	9	e 8 16	− 4	e 14 43	−18	e 10 18	PP	e 18·7
Columbia		48·5	350	e 8 34	− 1	e 15 27	0	e 9 6	pP	e 23·2
Georgetown		52·8	356	i 9 7	− 1	e 16 15	−12	—	—	—
Cape Girandeau		53·6	344	i 9 11	− 2	e 16 31	− 7	i 9 35	pP	—
Fordham		54·6	359	i 9 19	− 2	i 16 48	− 3	i 9 52	pP	—
St. Louis		55·1	343	i 9 21	− 3	i 16 55	− 3	i 9 46	pP	—
Florissant		55·3	343	i 9 23	− 3	i 16 58	− 2	i 9 45	pP	—
Weston		56·1	1	i 9 37	+ 5	i 17 15	+ 4	i 10 3	pP	26·3
Harvard		56·2	1	i 9 31	− 1	i 17 13	+ 1	i 9 56	pP	e 20·8
Chicago U.S.C.G.S.		57·3	346	i 9 37	− 3	e 17 24	− 3	e 10 4	pP	e 22·9
Toronto		57·8	354	9 46	+ 2	17 39	+ 6	—	—	28·8
Vermont		58·2	359	e 9 51	+ 5	e 17 39	+ 1	e 13 31	PPP	e 24·6
East Machias		58·7	4	i 9 48	− 2	i 17 48	+ 3	i 13 43	PPP	e 27·8
Halifax		58·8	8	9 48	− 2	17 45	− 1	—	—	24·8
Tucson		59·1	322	i 9 51	− 1	i 17 55	+ 5	i 10 15	pP	i 29·5
Lincoln		59·2	339	e 14 18	PPP	e 22 12	SS	—	—	e 34·4
Ottawa		59·2	358	9 52	− 1	17 54	+ 2	18 38	PS	28·8
Shawinigan Falls		60·3	0	10 0	− 1	18 8	+ 2	—	—	—
Seven Falls		60·8	2	10 5	+ 1	18 18	+ 6	14 0?	PPP	26·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Palomar	z.	63·6	319	i 10 22k	− 1	—	—	i 10 46	pP		—
La Jolla		63·6	318	i 10 22	− 1	—	—	i 10 45	pP		—
Riverside		64·4	319	i 10 26k	− 2	e 18 59	+ 2	i 10 50	pP		—
Mount Wilson		64·9	319	i 10 31k	0	—	—	i 10 55	pP		—
Pasadena		65·0	319	i 10 31k	− 1	i 19 10	+ 6	i 10 55	pP		e 27·7
Salt Lake City		65·8	328	i 10 35	− 2	e 19 13	− 1	e 13 1	PP		e 32·2
Haiwee		66·1	321	i 10 37	− 2	—	—	i 11 0	pP		—
Santa Barbara		66·1	318	i 10 37k	− 2	—	—	e 39 28	P′P′		—
Logan		66·5	329	i 10 41	0	i 19 27	+ 4	i 11 2	pP		—
Tinemaha		66·9	321	i 10 43k	− 1	—	—	i 11 8	pP		—
Bozeman		69·1	332	e 10 54	− 4	e 19 57	+ 3	e 13 49	PP		35·2
Lick		69·2	320	i 10 58	0	e 19 59	+ 4	i 11 24	pP		—
Santa Clara		69·4	320	i 11 0	0	e 20 3	+ 6	i 20 43	sS		—
Branner		69·5	320	i 11 0	0	e 20 4	+ 5	i 11 24	pP		—
Berkeley		69·9	320	i 11 2	0	e 20 6	+ 3	i 11 26	pP		e 33·9
Butte		70·0	331	i 11 3	0	e 21 8	PS	i 11 26	pP		e 38·5
Ukiah		71·2	320	e 11 10	0	e 20 23	+ 5	e 11 36	pP		e 29·1
Victoria		77·1	328	11 45	+ 1	21 34	+10	—	—		37·8
Ivigtut		77·3	12	i 11 46k	0	21 29	+ 3	—	—		—
Lisbon		78·6	45	11 51	− 2	21 48	+ 8	12 19	pP		—
San Fernando		79·7	48	e 12 8	+ 9	i 22 0	+ 8	e 15 8	PP		36·8
Coimbra		79·8	44	12 2	+ 3	22 2	+ 9	12 36	pP		37·3
Granada		81·9	49	i 12 13k	+ 3	e 22 2	−12	12 40	pP		e 41·2
Almeria		82·6	50	12 17	+ 3	22 35	+14	12 43	pP		39·3
Toledo		82·7	46	i 12 17	+ 3	i 22 26	+ 4	12 41	pP		—
Oxford		89·4	36	12 45	− 2	i 23 8	[+ 2]	—	—		—
Stonyhurst		89·6	34	i 12 48	0	i 23 11	[+ 3]	i 16 51	PP		42·4
Clermont-Ferrand		89·8	43	i 12 50	+ 1	e 23 23	− 7	i 13 15	pP		e 42·2
Kew		89·8	36	i 12 49k	0	i 23 13	[+ 4]	i 13 14	pP		e 42·8
Paris		90·5	40	e 12 48?	− 4	i 23 17	[+ 4]	25 18	PPS		47·8
Honolulu		91·2	291	—	—	e 23 46	+ 3	e 30 21	SS		e 38·1
Uccle		92·3	37	i 13 1k	+ 1	23 23	[0]	e 13 27	pP		e 43·8
Neuchâtel		92·7	42	e 13 3	+ 1	e 23 33	[+ 8]	—	—		—
De Bilt		93·2	37	e 13 7k	+ 2	i 23 38	[+11]	e 17 23	PP		e 43·8
Basle		93·3	41	e 12 53	−12	—	—	—	—		—
Zurich		93·9	42	e 13 9k	+ 1	e 23 34	[+ 5]	e 13 38	pP		—
Stuttgart		94·7	40	i 13 11k	0	e 23 42	[+ 7]	i 13 38	pP		—
Bergen		95·9	28	—	—	e 23 50	[+ 7]	—	—		e 41·8
College		96·7	335	e 13 20	0	e 23 48	[+ 1]	e 17 19	PP		e 41·0
Jena		96·7	39	e 13 48?	+28	e 24 48	+18	e 25 42	PS		—
Triest		96·9	44	e 13 24	+ 3	i 23 55	[+ 7]	e 17 44	PP		e 43·8
Wellington		97·5	224	13 46	pP	24 8	[+17]	26 28	PS		45·8
Christchurch		97·9	220	13 26	0	23 55	[+ 2]	40 35	Q		45·7
Potsdam		98·0	37	e 13 24	− 2	i 24 2	[+ 8]	i 14 0	pP		45·8
Arapuni		98·3	227	—	—	23 48?	[− 8]	—	—		—
Copenhagen		98·3	34	e 13 30	+ 2	24 4	[+ 8]	13 55	pP		42·8
Prague		98·3	40	e 15 16	?	e 23 59	[+ 3]	e 26 48	PS		e 40·8
Auckland		99·4	228	e 27 48?	PPS	—	—	—	—		—
Upsala		101·8	30	—	—	e 24 15	[+ 2]	e 26 48	PS		e 48·8
Warsaw		102·8	38	13 53a	+ 5	i 27 0	PS	e 14 21	pP		e 47·8
Sofia		103·2	49	e 18 13	PP	e 24 29	[+10]	—	—		—
Bucharest		105·4	46	e 17 48	PKP	24 41	[+12]	—	—		39·8
Helwan		108·7	62	e 18 15	PKP	e 29 43	PPS	—	—		—
Tananarive		112·1	117	18 25	[+ 1]	29 12	PPS	34 52	PP		55·1
Ksara		112·4	59	e 18 58?	PP	e 29 32	PPS	—	—		—
Moscow		112·4	34	19 4	PP	e 28 36	PS	—	—		—
Riverview		117·0	218	e 19 55	PP	e 29 24	PS	—	—		e 36·1
Sverdlovsk		124·2	28	15 30	P	e 27 26	SKKS	i 20 30	PP		—
Tashkent		136·8	42	19 15	[+ 4]	34 48?	?	40 0?	SSP		—
Vladivostok		144·5	328	e 19 25	[0]	i 23 34	?	—	—		—
Bombay		145·9	77	i 19 31	[+ 4]	e 29 44	SKKS	e 34 48	PPS		—
Kodaikanal	E.	149·9	92	e 20 28	[+54]	i 31 3	?	25 50	PPP		—
Colombo	E.	151·5	101	19 43	[+ 7]	—	—	—	—		—
Calcutta	N.	159·5	62	e 20 14	[+27]	—	—	i 23 27	PP		—
Batavia		159·9	176	20 15	[+28]	—	—	—	—		—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
	°	°	m. s.	s.	m. s.	s.	m. s.	m.
Medan	166·2	137	19 54	[0]	25 10	?	— —	—
Manila	167·4	275	i 19 57k	[+ 3]	27 41	[+55]	— —	37·1

Additional readings :—
La Plata E. P_cP = +8m.48s.?, Q = +11m.0s.
La Plata N. +9m.54s.
La Plata Z. PPP? = +5m.43s., Q = +10m.10s.
San Juan isP = +6m.55s., i = +7m.50s., +8m.13s., isS = +12m.2s.
Bermuda ePPP = +11m.11s., e = +15m.2s.
Columbia e = +11m.10s., isS = +16m.12s., e = +18m.23s.
Cape Girandeau eSE = +16m.39s., esSE = +17m.10s., eE = +19m.15s.
Fordham i = +19m.41s., iSS = +20m.44s.
St. Louis iZ = +9m.55s., eZ = +10m.14s., iSPN = +17m.25s., isSE = +17m.37s.
Florissant iSPN = +17m.27s., iE = +17m.32s., isSEN = +17m.39s., iEN = +17m.46s., iN = +19m.7s.
Weston SS = +21m.25s.
Harvard iZ = +10m.3s., eNZ = +17m.31s., iE = +19m.55s.
Chicago U.S.C.G.S. isS = +18m.5s., eS_cP = +19m.11s.
Vermont i = +17m.48s., esS = +18m.25s., e = +20m.10s., eSS = +21m.37s.
East Machias eSS = +21m.59s., eSSS = +24m.51s.
Tucson i = +11m.2s., iPP = +12m.11s., ipPP = +12m.28s., esS = +18m.43s., e = +20m.32s. and +21m.24s., eSSS = +24m.59s.
Lincoln e = +15m.30s.
Ottawa eE = +20m.16s., SSS = +24m.18s.?.
Seven Falls SS = +22m.24s.?.
Palomar iZ = +10m.59s., iPKP,PKP,Z = +39m.24s.
Riverside iZ = +11m.1s., ePKP,PKP,Z = +39m.20s.
Mount Wilson iZ = +11m.5s., ePKP,PKP,Z = +39m.19s.
Pasadena isPZ = +11m.3s., iZ = +19m.35s., iEN = +19m.45s., eSSEN = +23m.36s.?, ePKP,PKP,Z = +39m.20s., iZ = +39m.45s.
Salt Lake City e = +12m.48s., iS = +19m.17s., eSS = +23m.46s.
Logan ePP = +13m.12s., epPP = +13m.40s., e = +20m.54s.
Tinemaha iPKP,PKP,Z = +39m.15s.
Bozeman e = +15m.31s. and +28m.3s.
Lick isPN = +11m.34s., eSN = +19m.34s.
Branner iN = +11m.4s.
Berkeley iSE = +20m.9s.
Butte esSS = +25m.27s.
Lisbon PE = +11m.56s., pPZ = +12m.29s., E = +22m.59s.
San Fernando eSSN = +26m.20s.
Coimbra SS = +27m.21s.
Granada PP = +15m.17s., pPPP = +17m.38s., sS = +22m.33s., PS = +23m.2s., SS = +27m.44s., eSSS = +33m.2s.
Almeria sP = +12m.53s., PP = +15m.38s., pPP = +15m.59s., PPP = +17m.41s., PS = +23m.3s., SP = +23m.31s., sPS = +24m.18s., SS = +28m.1s., SSS = +34m.1s.
Stonyhurst +18m.36s.
Kew e = +13m.51s., iEZ = +16m.56s., Z = +18m.17s., i = +23m.33s., iEZ = +24m.1s., i = +24m.44s., iNZ = +25m.11s., e = +31m.18s.? and +33m.18s.?, eEN = +35m.48s.?.
Paris eSS = +29m.47s.
Uccle pPPZ = +17m.15s., iPSE = +25m.13s., ipPSE = +25m.45s.
Zurich ePP = +17m.18s., eS = +24m.13s., ePS? = +25m.23s., ePPS = +25m.48s.
Stuttgart ePPSEN = +26m.8s., eSSE = +30m.38s.
College e = +16m.3s., eS = +24m.20s., esPS = +26m.32s., e = +30m.28s., eSSS = +34m.52s.
Jena eEN = +27m.18s.
Triest ePPP = +19m.47s., iPS = +26m.4s., eSS = +29m.21s., e = +30m.59s.
Potsdam iPZ = +13m.27s., iZ = +13m.52s., epPN = +14m.8s., iEZ = +17m.58s., iSKS,EN = +24m.42s., isSZ = +26m.7s., iPSE = +26m.46s., iPSN = +26m.50s., iPSZ = +26m.54s., iPPSE = +27m.30s., iZ = +27m.43s., iN = +30m.58s.
Copenhagen ? = +17m.36s., +18m.1s., +24m.48s., +26m.15s., +26m.51s., and +31m.48s.?.
Prague e = +24m.44s.
Upsala eSKKSE = +24m.48s., ePPSE = +27m.24s., eE = +30m.22s., eSSN = +32m.23s., eN = +33m.14s., eSSE = +37m.12s., eSSN = +37m.48s., eN = +42m.48s.
Warsaw iZ = +18m.3s. and +18m.31s., eZ = +18m.58s.
Sofia eEN = +25m.9s.
Bucharest S?N = +24m.44s., PS?E = +25m.16s., PSN = +25m.20s.
Helwan eZ = +19m.9s., eE = +30m.33s.
Tananarive E = +23m.19s.
Riverview eZ = +29m.30s.
Sverdlovsk eS = +28m.10s., PS = +30m.22s.
Manila iE = +23m.44s.
Long waves were also recorded at Sitka,

Sept. 18d. 18h. Epicentre near Samoa.

Apia eP =18m.57s., iS =19m.20s.
Auckland P =25m.28s., S =29m.45s., Q =32m., R =34m.
Riverview iZ =27m.3s., eE =27m.20s., eN =34m.0s.
Arapuni e =28m.
Mount Wilson ePZ =29m.42s.
Pasadena ePZ =29m.47s., eLNZ =51m.6s.
Palomar ePZ =29m.50s.
Riverside ePZ =29m.52s.
Manila iPZ =29m.56s., SEN =40m.9s.
Tinemaha ePZ =29m.58s.
Tucson eP =30m.11s., i =30m.22s., ePS =40m.32s., eL =52m.28s.
Wellington S? =31m.17s., Q? =32m., R =34m.
La Paz e =32m.11s., LZ =68m.0s.
Uccle eZ =38m.0s.
Clermont-Ferrand 38m.10s.
Victoria e =40m.18s.?, L =61m.
College eS =41m.4s., eL =46m.13s.
Long waves were also recorded at Honolulu, Berkeley, Ukiah, De Bilt, and Kew.

Sept. 18d. Readings also at 0h. (near La Paz), 1h. (Kew), 2h. (Amboina and La Paz), 4h. (La Paz), 5h. (Huancayo, Haiwee, Mount Wilson, Palomar, Riverside, Tinemaha, and near Ferndale), 6h. (Berkeley, Pasadena, Ukiah, Kew, and near Branner), 7h. (near Berkeley and Branner), 8h. (near Lick (2) and near Branner), 11h. (Mount Wilson, Palomar, Riverside, Pasadena, Tinemaha, Columbia, San Francisco, Lick, near Branner, and near Apia), 15h. (Lick and near Branner), 16h. (Bombay and Calcutta), 18h. (Chicago), 20h. (near Andijan), 21h. (near Berkeley and near Almata), 22h. and 23h. (near Amboina).

Sept. 19d. Readings at 0h. (Huancayo, La Paz, Pasadena, Mount Wilson, Riverside, and La Plata), 1h. (near Berkeley and Kew), 2h. (La Paz and La Plata), 5h. (Mount Wilson, Pasadena, Tinemaha, and Palomar), 6h. (Mount Wilson, Kew, Tinemaha, Palomar, Calcutta, Riverside, and Clermont-Ferrand), 7h. (Bombay), 9h. (Bozeman, Tacubaya, Tucson, Palomar, Riverside, Tinemaha, and Mount Wilson), 10h. (Calcutta), 12h. (Mount Wilson), 13h. (near Branner and Lick), 18h. (near Batavia and near Berkeley), 20h. (near Branner and Lick), 21h. (near Branner).

Sept. 20d. 12h. 24m. 4s. Epicentre 37°·0N. 140°·5E.

Felt Scale V at Shirakawa and Kakioka; IV at Mito, Hukusima, and Onahama; II-III at Utunomiya, Tokyo, Sendai, Yokohama, and Morioka.
Macroseismic radius 200-300km. Shallow. Epicentre 37°·0N. 140°·5E.
See Seismological Bulletin of the Central Meteorological Observatory, Japan, 1941, Tokyo, 1950. Macroseismic chart, p. 35.

$A = -\cdot6178$, $B = +\cdot5092$, $C = +\cdot5992$; $\delta = 0$; $h = -1$;
$D = +\cdot636$, $E = +\cdot772$; $G = -\cdot462$, $H = +\cdot381$, $K = -\cdot801$.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Mito	0·6	182	0 15a	0	0 25	− 1
Utunomiya	0·7	228	0 14	− 3	0 25	− 3
Hukusima	0·8	358	0 19	+ 1	0 31	0
Kakioka	0·8	198	0 18	0	0 30	− 1
Tukubasan	0·9	202	0 18a	− 2	0 30	− 4
Maebasi	1·3	242	0 25a	0	0 37	− 7
Togane	1·4	184	0 27	0	0 45	− 1
Tokyo, Cen. Met. Obs.	1·4	205	0 25a	− 2	0 44	− 2
Tokyo, Imp. Univ.	1·4	205	0 25	− 2	0 44	− 2
Komaba	1·5	206	0 27	− 1	0 47	− 2
Mitaka	1·5	210	0 27	− 1	0 48	− 1
Yokohama	1·7	204	0 30a	− 1	0 52	− 2
Kamakura	1·9	204	0 27	− 7	0 53	− 6
Kiyosumi	1·9	188	0 27	− 7	0 57	− 2
Nagano	1·9	260	0 34	0	0 59	0

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Aikawa	2·1	300	0 35	− 2	1 16	S_g
Hunatu	2·1	223	0 35	− 2	1 0	− 4
Kohu	2·1	229	0 36	− 1	1 1	− 3
Koyama	2·1	217	0 27	−10	0 55	− 9
Mera	2·1	195	0 34	− 3	1 3	− 1
Misima	2·2	214	0 37	− 1	1 5	− 1
Mizusawa	2·2	13	i 0 37	− 1	i 1 3	− 3
Osima	2·4	202	0 37	− 4	1 5	− 7
Shizuoka	2·6	220	0 44	0	1 15	− 2
Susaki	2·6	208	0 43	− 1	1 12	− 5
Akita	2·7	353	0 48	+ 3	1 21	+ 2
Toyama	2·7	263	0 47	+ 2	1 21	+ 2
Miyako	2·9	24	0 40	− 8	1 11	−13
Wazima	2·9	278	0 26	−22	0 52	−32
Nagoya	3·4	239	0 55	0	1 41	+ 4
Hatinohe	3·6	11	0 56	− 2	1 41	− 1
Aomori	3·8	3	1 4k	+ 3	1 52	+ 5
Hikone	3·9	244	0 56	− 6	1 55	+ 5
Kameyama	3·9	240	1 11	+ 9	1 40	−10
Kyoto	4·4	244	1 25	P_g	—	—
Owase	4·6	232	1 24	P*	2 24	+17
Osaka	4·7	242	1 28	P*	2 22	+12
Mori	5·1	0	1 24	+ 4	2 22	+ 2
Wakayama	5·1	239	1 4	−16	—	—
Sumoto	5·3	242	1 26	+ 4	—	—
Sapporo	6·1	6	1 46	+12	—	—

Sept. 20d. Readings also at 0h. (near Ferndale), 3h. (Bombay), 5h. (Tashkent), 8h. (Ksara, Huancayo, and near La Paz (2)), 12h. (Riverview and Wellington), 14h. (Paris), 15h. (Manila), 16h. (near Mizusawa and Tucson), 19h. (near Berkeley, Branner, Lick, and San Francisco).

Sept. 21d. 18h. 53m. 21s. Epicentre 11°·0N. 92°·0E. (as on 1938, March 1d.).

$A = -·0343$, $B = +·9813$, $C = +·1896$; $\delta = +7$; $h = +6$;
$D = +·999$, $E = +·035$; $G = -·007$, $H = +·189$, $K = -·982$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		9·9	137	2 47	+22	i 3 56	−24	—	—	—
Calcutta	N.	12·0	343	e 2 44	−11	i 5 22	+11	—	—	—
Colombo	E.	12·6	254	3 28	+25	—	—	—	—	9·9
Kodaikanal		14·3	269	e 3 51a	PP	i 6 54	SS	—	—	—
Bombay		20·1	295	e 4 48	+10	e 8 38	+19	i 8 49	SS	10·1
Agra	E.	20·8	324	e 4 44	− 1	e 8 14	−19	—	—	—
Andijan		34·3	334	e 6 53	+ 3	e 12 40	+23	—	—	—
Tashkent		36·2	331	i 7 8	+ 2	e 12 56	+ 9	—	—	—
Sverdlovsk		51·7	340	i 9 9	− 2	e 16 39	+ 7	—	—	—
Zurich		77·6	316	e 11 12	−48	—	—	—	—	—
Clermont-Ferrand		81·5	315	12 24	+ 3	—	—	—	—	—

Additional readings :—
Calcutta iSN = +4m.40s., eS_gN = +5m.52s.
Bombay iPPEN = +4m.57s.
Long waves were also recorded at Potsdam, De Bilt, and Kew.

Sept. 21d. 19h. 53m. 6s. Epicentre 34°·8N. 119°·0W. (as on 1939, February 23d.).

Felt at Los Angeles, Taft, and Gorman (California). Epicentre 34°52′N. 118°56′W. Macroseismic area 26,000 square miles.
F. Neumann.
United States Earthquakes, 1941, Washington, 1943, p. 14, chart p. 8.

$A = -\cdot3990$, $B = -\cdot7198$, $C = +\cdot5681$; $\delta = +5$; $h = 0$;
$D = -\cdot875$, $E = +\cdot485$; $G = -\cdot275$, $H = -\cdot497$, $K = -\cdot823$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara		0·7	238	i 0 17a	0	—	—	—	—	—
Pasadena		0·9	133	i 0 20k	0	i 0 33	− 1	—	—	—
Mount Wilson		1·0	127	i 0 20k	− 1	—	—	—	—	—
Haiwee		1·6	32	i 0 30	0	i 0 51	0	—	—	—
Riverside		1·6	121	i 0 29k	− 1	i 0 49	− 2	—	—	—
Fresno	N.	2·0	342	i 0 36	+ 1	i 1 2	0	i 1 13	S_g	—
Palomar	Z.	2·3	129	i 0 40	0	—	—	—	—	—
La Jolla	Z.	2·4	143	e 0 42	+ 1	—	—	—	—	—
Tinemaha		2·4	14	i 0 41	0	i 1 13	+ 1	—	—	—
Lick		3·3	322	e 0 53	0	i 1 47	S_g	i 0 56	P*	—
Santa Clara	N.	3·5	318	i 1 8	P_g	i 1 54	S_g	—	—	—
Branner		3·6	317	i 0 58	0	e 1 37	− 5	i 1 14	P_g	—
Berkeley		4·0	321	e 1 2	− 2	i 1 50	− 2	i 2 2	S*	—
San Francisco	N.	4·1	319	e 0 54?	−11	i 1 54?	− 1	—	—	—
Ukiah		5·4	325	—	—	e 2 31	+ 3	—	—	e 4·2
Tucson		7·3	108	e 1 48	− 2	—	—	i 2 24	P_g	i 3·7
Salt Lake City		8·2	41	—	—	e 3 37	− 1	e 4 21	S_g	e 5·0

Additional readings :—
Lick iSN = +1m.50s., iEN = +1m.53s., iN = +2m.3s.
Branner iE = +1m.59s.
Berkeley iN = +2m.19s.
Tucson i = +1m.56s.
Long waves were also recorded at Butte and Bozeman.

Sept. 21d. 22h. 40m. 20s. Epicentre 37°·2N. 28°·3E. (as on 1941, June 23d.).

$A = +\cdot7031$, $B = +\cdot3786$, $C = +\cdot6020$; $\delta = +9$; $h = -1$;
$D = +\cdot474$, $E = -\cdot880$; $G = +\cdot530$, $H = +\cdot285$, $K = -\cdot799$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul	3·9	6	0 42	−20	1 12	P_g	—	—	—
Sofia	6·6	327	e 1 38	− 3	e 2 57	− 1	—	—	—
Ksara	7·0	116	e 1 53	+ 7	4 3	?	—	—	—
Bucharest	7·4	347	e 2 2	+10	3 4	−14	2 21	P_g	—
Helwan	7·7	160	2 19	P*	4 22	S_g	4 40	SS	—
Belgrade	9·6	325	e 2 17	− 4	e 4 27	+15.	e 3 7	P_g	e 11·3
Triest	13·8	312	e 3 20	+ 1	e 5 58	+ 4	—	—	—
Warsaw	15·9	343	e 3 33	−14	e 6 19	−25	—	—	e 8·7
Zurich	17·7	311	e 4 13	+ 3	—	—	—	—	—
Stuttgart	18·1	315	i 4 15s	+ 1	—	—	—	—	—
Potsdam	18·6	330	i 4 18	− 3	i 7 41	− 5	—	—	i 9·8
Neuchatel	18·6	310	e 4 23	+ 2	—	—	—	—	—
Moscow	19·6	16	e 4 7	−25	e 7 29	−39	—	—	—
Clermont-Ferrand	20·6	303	4 52	+ 9	—	—	—	—	—
Copenhagen	21·4	335	e 4 43	− 8	8 30	−15	—	—	10·7
Uccle	21·8	316	e 4 56	0	e 9 2	+10	—	—	e 11·0
De Bilt	22·1	322	i 4 59	0	i 8 58	0	—	—	e 11·7
Upsala	23·7	345	—	—	e 9 11	−16	—	—	e 12·2
Kew	24·7	315	e 5 24	0	e 9 52	+ 8	e 12 10?	Q	e 14·2
Stonyhurst	26·9	318	—	—	e 10 23	+ 3	i 11 47	Q	14·7
Coimbra	28·7	288	e 6 20	+19	e 8 52	?	—	—	—
Sverdlovsk	29·1	37	i 5 51	−13	10 26	−30	—	—	—

For Notes see next page.

NOTES TO SEPTEMBER 21d. 22h. 40m. 20s.

Additional readings :—
Bucharest eP*EN = +2m.14s., S?E = +3m.8s., S_g?E = +3m.20s.
Helwan iZ = +3m.10s. and +3m.50s.
Belgrade e = +6m.22s.
Triest eSS = +6m.26s.
Warsaw eZ = +7m.3s., eE = +7m.59s., eZ = +8m.15s., eN = +8m.23s.
Stuttgart i = +4m.18s.
Potsdam iEZ = +7m.44s.
Clermont-Ferrand e? = +2m.48s.
Coimbra eP? = +22s. and +52s., e = +4m.22s., eN = +8m.17s., S = +9m.52s.
Long waves were also recorded at Aberdeen, Jena, Paris, and Basle.

Sept. 21d. Readings also at 2h. and 3h. (near Manila), 6h. (Calcutta and Manila), 7h. (De Bilt, Potsdam, and Lick), 9h. (Huancayo, La Paz, Tucson, and Wellington), 10h. (De Bilt), 14h. (Warsaw), 17h. (Huancayo and La Paz), 22h. (Amboina (2) and Lick), 23h. (Granada, Sverdlovsk, Tashkent, Manila, and Amboina).

Sept. 22d. Readings at 0h. (Mizusawa and Kew), 3h. (near Berkeley, Branner, Lick, and Fresno), 5h. (La Plata and La Paz), 8h. (Wellington and Fresno), 11h. (near Apia), 16h. (Tucson), 17h. (Clermont-Ferrand).

Sept. 23d. 11h. Local Japanese shock. Tokyo gives epicentre 35°·95N. 140°·54E.

Tokyo Imp. Univ. P = 50m.39s., S = 50m.51s.
Komaba P = 50m.40s., S = 50m.54s.
Kamakura P = 50m.42s., S = 50m.53s.
Kiyosumi P = 50m.42s., S = 50m.56s.
Koyama P = 50m.42s., S = 51m.3s.
Mitaka P = 50m.42s., S = 50m.57s.
Togane P = 50m.42s., S = 50m.49s.
Tukubasan P = 50m.42s., S = 50m.51s.
Susaki P = 50m.52s., S = 51m.18s.
Mizusawa ePN = 51m.11s., eS = 51m.52s.

Sept. 23d. Readings also at 9h. (Mizusawa), 19h. (La Plata, Pasadena, Mount Wilson, Palomar, Tinemaha, and Riverside), 20h. (near Stalinabad), 23h. (Berkeley).

Sept. 24d. 1h. 1m. 12s. Epicentre 50°·0N. 158°·3E.

Pasadena quotes Epicentre : 52°·0N. 158°·0E., approximately (U.S.C.G.S.).
50°·0N. 158°·3E., Depth = 100 km. (J.S.A.).

A = −·5996, B = +·2386, C = +·7639 ; δ = −1 ; h = −5 ;
D = +·370, E = +·929 ; G = −·710, H = +·282, K = −·645.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa	16·3	235	e 3 45	− 7	i 6 33	−20	—	—	—
Vladivostok	19·4	259	i 4 25	− 5	i 8 6	+ 2	—	—	—
Irkutsk	33·3	296	i 6 41	0	i 12 4	+ 2	—	—	—
Sitka	38·5	53	e 7 28	+ 2	e 13 30	+ 8	e 9 1	PP	e 16·3
Honolulu	44·8	112	e 8 23	+ 6	e 14 57	+ 2	e 9 55	PP	e 18·1
Manila	46·5	233	i 8 40	+ 9	15 19	0	—	—	—
Victoria	48·9	60	8 52	+ 2	15 54	+ 1	11 6?	PPP	23·8
Ferndale	53·0	69	e 17 0	S	(e 17 0)	+10	—	—	—
Sverdlovsk	53·8	318	i 9 27	+ 1	i 16 53	− 8	—	—	—
Ukiah	54·5	70	e 9 36	+ 4	i 17 16	+ 6	—	—	e 25·4
Berkeley	55·9	71	i 9 42	0	i 17 33	+ 4	e 9 59	pP	e 23·1
Branner	56·2	71	i 9 44	0	e 17 32	− 1	24 0	SSS	e 26·1
Butte	56·3	57	i 10 5	+20	e 17 35	+ 1	i 19 33	S_cS	e 27·0
Santa Clara	56·4	71	i 9 47	+ 2	i 17 43	+ 7	—	—	—
Lick	56·6	71	e 9 38	− 9	e 17 32	− 6	e 11 55	PP	e 24·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman		57·4	57	e 9 53	0	i 17 51	+ 2	e 13 24	PPP	e 24·0
Tinemaha		58·8	68	i 10 4a	+ 2	—	—	e 39 36	P′P′	—
Tashkent		59·3	299	i 10 6	0	i 18 7	− 7	—	—	—
Logan		59·5	60	i 10 11	+ 4	i 18 22	+ 6	e 10 55	PcP	e 28·9
Halwee		59·6	69	i 10 9a	+ 1	e 18 17	0	e 39 42	P′P′	—
Santa Barbara		59·7	71	i 10 9a	0	—	—	—	—	—
Salt Lake City		60·2	61	i 10 12	0	i 18 26	+ 1	e 20 2	ScS	e 25·1
Calcutta	N.	60·3	270	i 10 17k	+ 4	i 18 24	− 2	e 11 9	PcP	—
Pasadena		60·8	70	i 10 16a	0	e 18 26	− 7	i 10 34	pP	e 25·3
Mount Wilson		60·9	70	i 10 16a	− 1	—	—	i 10 29	pP	—
Dehra Dun	N.	61·4	283	e 10 28?	+ 8	e 18 0	−40	—	—	e 34·9
Riverside		61·4	70	i 10 19a	− 1	e 18 37	− 3	i 10 36	pP	—
Palomar	Z.	62·2	70	i 10 23a	− 3	—	—	e 39 37	P′P′	—
La Jolla		62·3	71	e 10 26	0	—	—	—	—	—
Agra	E.	63·7	281	i 10 34a	− 2	i 19 0	−10	19 28	PS	29·0
Moscow		63·7	327	i 10 36	0	i 19 4	− 6	—	—	—
Upsala		65·9	340	i 10 51	+ 1	19 35	− 2	e 13 13	PP	e 31·8
Tucson		66·6	67	i 10 55	+ 1	e 19 46	+ 1	e 24 16	SS	e 32·0
Ivigtut		67·1	14	10 54?	− 3	19 48?	− 3	—	—	32·8
Bergen		67·8	346	i 10 48?	−14	e 19 48?	−12	—	—	e 30·8
Medan		68·1	248	11 13	+ 9	21 1	+58	—	—	—
Lincoln		68·3	61	—	—	i 20 4	− 2	e 24 28	SS	e 31·7
Hyderabad		70·4	273	11 17	− 1	20 28	− 2	13 48	PP	34·6
Copenhagen		70·9	341	i 11 22a	+ 1	i 20 37	+ 1	14 1	PP	32·8
Batavia		71·5	235	i 11 27	+ 3	20 40	− 3	—	—	—
Chicago U.S.C.G.S.		71·9	47	e 11 25	− 2	20 47	− 1	e 15 13	PPP	e 31·9
Warsaw		71·9	334	i 11 8a	−19	i 20 45	− 3	21 8	PS	e 36·8
Aberdeen		72·0	349	i 11 27	− 1	i 20 33	−16	—	—	e 32·8
Bombay		72·9	278	e 11 33	0	i 20 55	− 4	25 4	SS	33·9
Florissant		72·9	50	i 11 32	− 1	i 20 59	0	i 11 54	pP	—
St. Louis		73·1	50	i 11 34	0	i 21 1	0	i 11 56	pP	—
Potsdam		73·8	339	i 11 38a	0	i 21 4	− 5	i 11 50	pP	35·8
Ottawa		74·0	37	11 38	− 1	21 8	− 3	e 29 48?	SSS	e 33·8
Shawinigan Falls		74·2	33	11 40	0	21 11	− 3	—	—	—
Seven Falls		74·4	32	11 44	+ 2	21 17	+ 1	29 24?	SSS	e 33·8
Cape Girardeau		74·5	49	i 11 42	0	e 21 15	− 2	i 12 3	pP	—
Stonyhurst		75·3	348	e 11 48?	+ 1	i 21 26	0	—	—	e 37·8
Jena		75·5	338	e 11 48?	0	e 21 27	− 1	i 14 34	PP	e 34·8
De Bilt		75·7	343	i 11 51a	+ 2	i 21 35	+ 5	i 14 43	PP	e 33·8
Vermont		75·8	36	e 11 48	− 2	e 21 28	− 3	e 22 1	PS	e 31·3
Pittsburgh		76·4	42	i 11 53	0	i 21 36	− 2	e 12 1	pP	—
Kodaikanal	E.	76·4	270	e 11 56k	+ 3	i 21 36	− 2	14 48	PP	—
Oxford		77·1	347	i 11 50	− 7	21 41	− 5	e 26 42	SS	e 33·8
Bucharest		77·2	327	e 12 0k	+ 3	21 46	− 1	15 7	PP	36·8
Uccle		77·2	344	i 11 58a	+ 1	i 21 46	− 1	i 12 23	pP	e 34·8
Colombo	E.	77·3	265	12 8	+10	21 44	− 4	—	—	42·7
Kew		77·3	346	(i 11 59)	+ 1	(e 21 48?)	0	e 26 48?	SS	e 34·3
East Machias		77·6	32	e 12 0	0	e 21 51	0	e 14 41	PP	e 38·4
Harvard		78·1	35	i 12 3	+ 1	i 21 54	− 2	—	—	e 33·8
Stuttgart		78·1	340	i 12 4a	+ 2	i 21 59	+ 3	e 14 59	PP	40·8
Weston		78·3	35	i 12 5	+ 2	21 58	− 1	12 27	pP	e 36·5
Fordham		78·6	38	i 12 5	0	i 22 1	− 1	i 12 29	pP	—
Belgrade		78·7	331	i 12 12	+ 6	e 22 9	+ 6	e 15 52	PP	e 40·1
Philadelphia		78·8	39	e 12 6	0	i 22 1	− 3	e 27 6	SS	e 37·1
Georgetown		78·9	40	i 12 6	− 1	22 5	0	e 15 8	PP	—
Paris		79·4	344	i 12 11	+ 2	i 22 14	+ 4	i 15 12	PP	39·8
Zurich		79·5	340	e 12 10a	0	e 22 13	+ 2	—	—	—
Basle		79·6	341	e 12 21	+11	e 22 13	+ 1	—	—	—
Sofia		79·6	328	e 12 13	+ 3	i 22 12	0	—	—	39·8
Triest		79·9	336	i 12 13	+ 1	i 22 13	− 3	e 15 21	PP	e 35·5

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Neuchâtel	80·3	341	e 12 11	− 3	e 22 17	− 3	—	—	—
Columbia	81·3	46	e 12 18	− 2	e 22 28	− 2	—	—	e 33·4
Clermont-Ferrand	82·2	343	i 12 26	+ 2	i 22 55	+16	i 15 34	PP	e 40·5
Ksara	82·2	314	e 12 26	+ 2	22 40	+ 1	—	—	—
Riverview	83·7	185	e 12 38	+ 6	e 22 52	− 2	—	—	e 38·4
Helwan	87·6	315	i 12 50k	− 1	23 18	[0]	i 16 28	PP	—
Auckland	87·7	167	12 38	−14	23 3	[−15]	16 28	PP	40·2
Arapuni	89·0	166	—	—	23 48?	+ 3	—	—	42·8
Toledo	89·2	346	i 12 59	0	e 23 30	[+ 2]	13 18	pP	36·9
Coimbra	89·4	350	12 45	−15	23 23	[− 6]	15 55	PP	43·8
Bermuda	89·6	35	e 12 52	− 9	i 23 41	−10	e 29 41	SS	e 36·1
Algiers	90·8	340	e 12 44	−22	23 44	[+ 6]	16 35	PP	—
Lisbon	91·0	350	13 6?	− 1	23 43?	[+ 4]	16 21?	PP	47·4
Granada	91·7	345	i 13 10k	0	i 23 57	[+14]	13 25	pP	43·9
Almeria	91·9	344	13 1	−10	23 44	[0]	16 43	PP	43·3
Wellington	92·0	168	13 28	+16	23 41	[− 3]	17 1	PP	42·8
San Fernando	92·8	347	e 13 28	+12	e 23 50	[+ 1]	—	—	43·8
Christchurch	94·0	169	13 32	+11	23 52	[− 4]	17 14	PP	43·9
San Juan	101·4	42	e 17 58	PP	e 25 28	− 4	e 32 29	SS	e 40·7
Huancayo	122·2	68	e 20 34	PP	e 25 52	[− 5]	e 30 31	PS	e 49·0
La Paz	130·0	64	19 13	[+ 1]	i 26 18	[− 2]	i 21 26	PP	62·8
Rio de Janeiro E.	148·1	38	e 33 28	PS	e 42 26	SS	—	—	—
La Plata	149·7	74	19 52	[+ 5]	—	—	—	—	73·6

Additional readings :—
Mizusawa SN = +6m.39s.
Sitka e = +8m.10s.
Honolulu e = +8m.33s., ePP = +10m.41s.
Manila iE = +12m.0s.
Victoria SS = +18m.36s.?
Berkeley iP_cPZ = +10m.39s., iN = +10m.42s.
Branner eN = +17m.37s.
Lick ePPN = +11m.58s., ePPPN = +12m.50s.
Bozeman eSS = +21m.16s.
Tinemaha iZ = +39m.47s.
Logan eS_cS = +20m.2s.
Santa Barbara iZ = +10m.23s.
Salt Lake City eSS = +22m.16s.
Calcutta iPPN = +12m.21s., iPSN = +18m.28s., iS_cSN = +20m.9s., eSSN = +22m.12s.
Pasadena ePKP,PKPZ = +39m.36s., epPKP,PKPZ = +39m.57s.
Mount Wilson ePKP,PKPZ = +39m.36s., ipPKP,PKPZ = +39m.57s.
Riverside ePKP,PKPZ = +39m.36s., ePKP,PKPZ = +39m.55s.
Palomar iZ = +10m.37s. and +10m.41s.
Upsala ePPPN = +14m.53s., eE = +23m.6s., eSSN = +23m.48s.?, eSSSE = +27m.13s.
Tucson i = +11m.13s. and +12m.31s., e = +22m.8s. and +25m.40s., eSSS = +27m.31s.
Hyderabad PSN = +20m.47s., SSE = +25m.6s.
Copenhagen ? = +15m.47s., +22m.5s., and +24m.48s.
Batavia PE = +11m.30s.
Chicago U.S.C.G.S. e = +21m.29s., eSS = +25m.8s., eSSS = +28m.31s.
Warsaw eN = +11m.28s., iZ = +11m.50s., iPSE = +21m.11s., eSSSE = +27m.54s.?, eN = +29m.0s., eZ = +29m.13s., eE = +29m.17s.
Bombay iSSE = +25m.46s.
Florissant iN = +11m.45s., eE = +11m.58s., iE = +21m.9s. and +21m.15s., eN = +21m.23s. and +21m.33s., isSE = +21m.41s.
St. Louis iP_cPZ = +11m.47s., ipP_cPZ = +12m.6s., iE = +21m.20s., isSEN = +21m.43s., eN = +29m.28s. and +34m.48s.
Potsdam iE = +12m.26s., iPPZ = +14m.19s., iPPN = +14m.24s., iPPPZ = +16m.11s., iSEN = +21m.8s., isSN = +21m.28s., isSEZ = +21m.32s., iN = +29m.57s., iE = +30m.11s.
Cape Girardeau iE = +13m.13s.
Stonyhurst +31m.51s.
Jena iP = +12m.1s., eE = +12m.27s., eN = +12m.36s.?
De Bilt iPPP = +16m.31s., eSS = +26m.28s.
Vermont e = +21m.31s.
Pittsburgh esS = +21m.50s.
Kodaikanal SSE = +26m.40s.
Oxford i = +12m.18s.
Bucharest PPPE = +16m.24s., PS?E = +23m.15s., PS?N = +23m.23s., eN = +25m.40s., SSN = +26m.20s., SSSN = +30m.5s.
Uccle iZ = +12m.10s., ePPNZ = +14m.47s., eN = +18m.1s., iPSZ = +21m.22s., SSE = +26m.41s.
Kew eSKKSZ = +12m.40s., iPSNZ = +14m.56s., iPKKPNZ = +16m.44s.; all phases are wrongly identified.

Continued on next page.

East Machias e = +27m.12s.
Harvard iZ = +12m.14s., eZ = +12m.51s.
Stuttgart i? = +12m.23s., ePPPN = +16m.47s., iPSN = +22m.34s., eSSN = +27m.3s., eQE = +35·8m.
Weston PP = +15m.4s.
Fordham iPP = +15m.8s., i = +22m.27s. and +31m.55s.
Belgrade e = +13m.44s., ePPP = +17m.24s., eSKKS = +23m.4s.
Georgetown i = +12m.51s., PS = +22m.34s.
Triest ePS = +22m.48s., eSS = +27m.30s.
Columbia e = +18m.53s.
Riverview eN = +33m.24s., eE = +35m.42s.
Helwan iZ = +14m.0s. and +15m.6s., SE = +24m.12s.
Auckland SS = +29m.23s.
Coimbra PS = +23m.55s., iPSN = +23m.59s.
Algiers S = +24m.3s., PS = +25m.13s.
Lisbon PN = +13m.57s.?, iE = +24m.16s., PSN = +24m.25s.?, iPSE = +24m.30s., E = +24m.48s. and +26m.26s.
Granada PP = +16m.40s., pPP = +16m.54s., PPP = +17m.0s., pS = +24m.18s., PPS = +26m.29s., SS = +29m.34s., SSS = +33m.45s.
Almeria PPP = +18m.53s., PS = +24m.45s., SS = +29m.57s.
Wellington iZ = +16m.39s., S = +23m.54s., SPP? = +25m.28s.
San Juan e = +18m.55s., eSSS = +36m.16s.
Huancayo e = +25m.33s., eSS = +37m.9s.
La Paz iPPZ = +21m.50s., SKPZ = +22m.21s., iPPP = +24m.42s., iSSN = +39m.6s.
Long waves were also recorded at Tananarive.

Sept. 24d. 18h. 23m. 31s. Epicentre 9°·0S. 153°·0E. approximate.

A = −·8802, B = +·4485, C = −·1554; δ = +5; h = +7;
D = +·454, E = +891; G = +·138, H = −·071, K = −·988.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		18·4	181	i 4 15	− 3	i 7 47	+ 6	—	—	—
Riverview		24·8	184	i 5 27k	+ 2	i 9 52	+ 6	—	—	e 12·2
Sydney		24·8	184	—	—	i 9 59	+13	—	—	e 12·5
Adelaide		29·0	205	e 6 50	PP	i 10 57	+ 3	—	—	i 17·2
Auckland		34·1	148	8 29	PP	11 37	−37	15 19	SS	18·5
Arapuni		35·4	148	8 59	PP	—	—	—	—	17·5
Wellington		37·5	153	7 16k	− 1	13 9	+2	8 39	PP	18·5
Christchurch		38·4	157	7 26	+ 1	13 31	+11	9 6	PcP	19·9
Manila	E.	39·5	305	e 7 37	+ 3	11 57	?	—	—	—
Kodaikanal	E.	77·6	282	—	—	e 26 56	SS	—	—	—
Agra	E.	80·9	299	12 14	− 3	22 22	− 4	—	—	—
Bombay		83·7	290	e 11 13	?	e 22 55	+ 1	—	—	—
Berkeley		91·3	52	—	—	e 24 29	+23	—	—	e 44·0
Victoria		92·4	41	—	—	e 25 47?	PS	—	—	43·5
Pasadena		94·0	56	e 13 29	+ 8	—	—	—	—	e 49·2
Mount Wilson	Z.	94·1	56	i 13 29	+ 7	—	—	—	—	—
Tinemaha	Z.	94·4	53	e 13 28	+ 5	—	—	—	—	—
Riverside	Z.	94·7	56	e 13 31	+ 7	—	—	—	—	—
Tucson		99·9	59	i 17 23	PP	—	—	—	—	—
Bozeman		100·5	45	(e 13 37)	−14	—	—	—	—	e 13·6
Potsdam		125·9	330	e 21 3	PP	—	—	—	—	e 61·5
La Paz		132·1	122	19 29	[+13]	—	—	—	—	—
Toledo		143·9	329	e 19 36	[− 1]	e 22 37	PP	—	—	—
Almeria		144·5	324	19 46	[+ 8]	23 13	PKS	25 56	PPS	—
Granada		144·8	326	19 45k	[+ 6]	(26 11)	[−36]	23 25	PP	26·2
Coimbra		144·8	334	e 18 26	?	e 19 18	?	—	—	—

Additional readings :—
Brisbane iPE = +4m.19s.
Riverview iE = +9m.47s., and +10m.1s.
Adelaide i = +7m.21s., +10m.27s., and +10m.37s.
Auckland Q = +16·5m.
Wellington PcPZ = +9m.7s., and SS = +16m.7s.
Christchurch PcS = +13m.22s., Q = +16m.13s., and ScS = +16m.35s.
Bombay eE = +11m. 25s.
Tucson i +17m.44s., and +18m.11s., iL = +18m.41s.
Granada PP = +20m.19s., and iS = +23m.50s.
Long waves were also recorded at Honolulu, Kew, De Bilt, Uccle and Warsaw.

Sept. 24d. Readings also at 3h. (Branner), 4h. (Riverview), 6h. (near Medan and Calcutta), 9h. (Palomar, Haiwee, Mount Wilson, Tinemaha, Riverside, Toledo, Pasadena, and Tucson), 11h. (Irkutsk), 13h. (near Lick, Berkeley, and Branner), 10h. (near Apia), 18h. (near Apia, Almeria Granada, near Coimbra and Tucson), 19h. (Brisbane, Sydney, Tucson, Riverview and Auckland), 20h. (Tucson, near St. Louis and Pasadena), 21h. (Clermont-Ferrand), 23h. (near Berkeley and Auckland).

Sept. 25d. 3h. 45m. 47s. Epicentre 12°·7N. 53°·7E.

A = +·5777, B = +·7865, C = +·2185; δ = +6; h = +6;
D = +·806, E = −592; G = +129, H = +176, K = −·976.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay	E.	19·4	69	i 4 30	0	e 8 20	+16	—	—	10·2
	N.	19·4	69	e 4 33	+ 3	e 8 8	+ 4	—	—	—
Kodaikanal	E.	23·4	93	5 23	+12	—	—	—	—	—
Colombo	E.	26·4	101	—	—	e 10 43	+31	—	—	—
Ksara		26·6	325	e 5 41	− 1	e 10 11	− 5	—	—	—
Helwan		26·9	314	5 46	+ 1	10 28	+ 8	—	—	—
Tashkent		31·6	23	e 6 23	− 3	e 11 18	−17	—	—	—
Calcutta	N.	34·3	69	—	—	e 12 28	+11	—	—	i 16·1
Almeria		55·5	307	9 40	+ 1	17 30	+ 6	11 46	PP	26·2
Granada		56·5	307	9 43k	− 3	17 25	−12	11 49	PP	e 31·2
Toledo		57·3	310	e 9 50	− 2	17 39	− 8	—	—	—

Additional readings :—
Almeria P_cP = +10m.47s., PPP = +12m.53s., P_cS = +14m.46s., S_cS = +19m.30s., SS = +20m.50s.
Granada PS = +17m.49s., and SS = +21m.32s.
Long waves were also recorded at other European stations.

Sept. 25d. 17h. 48m. 37s. Epicentre 19·2N. 155·5W.

Felt very strongly over the whole of Hawaii and by many people at Honolulu. Much damage at Pahala and Kapapala, and many casualties.
Epicentre to East of Mauna Loa. 19·2°N. 155·°5W.

F. Neumann.
United States Earthquakes of 1941. Washington 1943 p.21.

A = −·8600, B = −·3919, C = +·3269; δ = +5; h = +5;
D = −·415, E = +910; G = −·297, H = −·136, K = −·945.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Honolulu		3·0	314	i 0 45	− 5	i 1 21	− 6	—	—	i 1·7
Branner		34·2	51	e 6 53	+ 4	e 12 22	+ 6	—	—	e 15·7
San Francisco	N.	34·2	51	e 6 49	0	e 12 19	+ 3	—	—	e 14·4
Ukiah		34·2	48	—	—	e 12 23	+ 7	—	—	e 14·1
Berkeley		34·4	51	i 6 52	+ 1	i 12 23	+ 4	14 17?	Q	e 15·6
Santa Clara	E.	34·4	51	e 6 56	+ 5	e 12 25	+ 6	—	—	e 14·5
Lick		34·6	51	e 6 54	+ 1	e 12 27	+ 5	—	—	e 15·6
Santa Barbara	Z.	35·1	58	i 6 59	+ 2	—	—	—	—	—
Pasadena		36·3	58	e 7 6	− 1	i 12 49	+ 1	—	—	e 15·3
Mount Wilson	Z.	36·4	58	e 7 7	− 1	e 13 21	+31	—	—	—
La Jolla		36·8	60	e 7 13	+ 2	—	—	—	—	—
Riverside		36·9	58	e 7 12	0	e 13 23	+25	—	—	—
Haiwee		37·0	55	e 7 13	0	—	—	—	—	—
Tinemaha		37·1	54	i 7 16	+ 2	—	—	—	—	—
Palomar	Z.	37·2	59	i 7 17	+ 2	—	—	—	—	—
Victoria		39·0	34	—	—	i 13 39	+10	—	—	e 16·4
Tucson		42·0	62	i 7 56	+ 2	e 14 20	+ 6	—	—	e 17·8
Salt Lake City		42·9	50	e 8 2	0	e 14 32	+ 5	e 9 46	PP	e 20·5
Logan		43·3	48	i 8 5	0	e 14 25	− 8	e 17 26	SS	e 19·6
Butte		44·2	43	e 9 42	PP	e 14 48	+ 2	—	—	e 19·7

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman	45·1	44	e 8 36	+16	e 15 1	+ 2	e 18 22	SS	e 20·0
College	45·9	4	e 8 26	0	e 15 8	− 3	—	—	e 19·4
Lincoln	54·3	53	e 9 29	− 1	e 12 58	PPP	—	—	e 27·4
Florissant	59·1	56	e 10 3	− 1	e 18 11	0	—	—	e 27·4
St. Louis	59·1	56	e 10 4	0	e 18 11	0	—	—	—
Chicago	61·1	52	e 10 17	− 1	i 18 37	0	—	—	e 29·0
Auckland	62·4	207	—	—	22 23?	SS	—	—	30·4
Ottawa	69·5	48	11 12	0	20 23?	+ 3	—	—	e 32·4
Philadelphia	70·7	54	—	—	e 20 28	− 6	—	—	e 28·5
Fordham	71·5	52	e 11 32	+ 8	i 20 46	+ 3	—	—	—
Port au Prince	77·9	74	i 24 32	?	i 31 34	?	26 15	?	36·0
Manila	79·3	282	i 12 9a	0	22 18	+ 9	—	—	37·9
Irkutsk	81·1	322	e 12 16	− 2	22 30	+ 2	e 27 41?	SS	—
San Juan	83·6	73	—	—	i 22 52	− 1	—	—	e 37·8
Huancayo	84·8	105	e 12 40	+ 3	i 23 9	+ 4	e 24 29	PS	e 39·5
La Paz	92·9	106	13 23	+ 7	23 55	[+ 5]	—	—	47·4
Sverdlovsk	98·4	341	e 13 44	+ 3	24 22	[+ 3]	17 41	PP	—
Moscow	104·6	353	18 28	PP	—	—	19 15	pPP	—
Andijan	105·6	324	18 20	PP	24 58	[+ 5]	—	—	—
Tashkent	106·9	327	18 28	PP	24 48	[−11]	—	—	—
De Bilt	107·0	12	—	—	e 27 53	PS	—	—	e 56·4
Potsdam	108·0	7	—	—	e 28 11	PS	—	—	e 57·4
Uccle	108·1	13	—	—	e 25 15	[+11]	e 28 18	PS	e 56·4
Clermont-Ferrand	112·5	16	19 15	PP	—	—	—	—	—
Bombay	119·3	306	e 20 18	PP	i 30 5	PS	—	—	—

Additional readings :—
Honolulu i = +1m.6s.
Branner eEN = +14m.29s.?.
Lick ePN = +6m.57s.
Tucson i = +8m.19s. and +8m.44s., e = +10m.39s., +14m.45s., and +17m.44s.
Salt Lake City eSS = +18m.7s.
Logan i = +9m.5s., iSeS = +18m.3s.
Lincoln e = +15m.36s.
Florissant eN = +19m.55s. and +25m.26s.
St. Louis iZ = +10m.16s. and +10m.48s., eN = +19m.53s.
Philadelphia e = +21m.20s., +26m.12s., and +28m.4s.
Port au Prince PPP = +27m.13s., i = +31m.54s., record wrongly interpreted.
Huancayo e = +29m.42s.
Sverdlovsk eS = +25m.10s.
Tashkent S = +25m.51s.
Potsdam eZ = +28m.16s., iN = +30m.26s.
Long waves were also recorded at Sitka, Kew, and Warsaw.

Sept. 25d. Readings also at 1h. (near La Paz), 2h. (San Juan and Ottawa), 4h. (Palomar), 5h. (Port au Prince and near Branner), 6h. (Arapuni, Auckland, Wellington (2), and near Audijan), 7h. (near Mizusawa), 10h. (La Paz), 13h. (East Machias), 14h. and 16h. (near Andijan), 17h. (La Paz), 19h. (Bombay), 20h. (near Branner), 21h. (near Berkeley, Branner, Riverside, Palomar, and Clermont-Ferrand).

Sept. 26d. Readings at 0h. (Huancayo), 1h. (near Fresno, Branner, Lick, and Berkeley), 6h. (Amboina), 7h. (near Branner, Lick, Berkeley, Manila, and near Bucharest), 12h. (near Manila), 15h. (near Andijan), 20h. (near Fresno, Branner, Lick, and Berkeley), 21h. (near Andijan and Tucson), 22h. (Columbia, near Mizusawa and Ferndale).

Sept. 27d. Readings at 0h. (near Berkeley (2)), 5h. (Tucson, Haiwee, Mount Wilson, Pasadena, Palomar, Tinemaha, Riverside, and near La Paz), 7h. (Balboa Heights and La Paz), 12h. (near Stalinabad), 13h. (Zurich), 19h. (near Lick and Fresno), 20h. (near Ferndale), 22h. (near Stuttgart, Tucson, Bozeman, Riverside, Tinemaha, Pasadena, and Mount Wilson), 23h. (Mizusawa, Riverside, Tinemaha, Pasadena, Mount Wilson, and Palomar).

Sept. 28d. 5h. 34m. 2s. Epicentre 56°·6N. 157°·7W.

A = −·5117, B = −·2099, C = +·8332; δ = +12; h = −8;
D = −·379, E = +·925; G = −·771, H = −·316, K = −·553.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		9·6	26	e 2 22	+ 1	e 4 28	SS	—	—	e 5·2
Tinemaha		32·7	110	i 6 37	+ 1	—	—	—	—	—
Haiwee		33·5	110	i 6 44	+ 1	—	—	—	—	—
Santa Barbara	z.	34·0	114	e 7 7	+19	—	—	—	—	—
Mount Wilson		35·0	113	i 6 56	0	—	—	—	—	—
Pasadena	z.	35·0	113	e 6 54	− 2	—	—	i 8 27	PPP	—
Riverside		35·5	113	e 7 0	0	—	—	—	—	—
Palomar	z.	36·3	112	i 7 7	0	—	—	—	—	—
Tucson		40·3	107	i 7 40	+ 2	—	—	i 9 23	PP	—
Harvard		54·0	66	i 9 25	− 3	—	—	—	—	—
Sverdlovsk		62·8	337	i 10 30	0	18 55	− 3	—	—	—

Additional readings :—
Tinemaha i = +6m.55s., iZ = +9m.44s.
Haiwee i = +7m.2s.
Mount Wilson i = +7m.13s.
Pasadena i = +7m.14s., iZ = +7m.27s.
Riverside i = +7m.18s., iZ = +9m.51s.
Palomar iZ = +7m.26s.
Tucson i = +7m.58s.

Sept. 28d. Readings also at 2h. (near Sofia and Bucharest), 4h. (Triest), 5h. (Bombay and near Toledo), 7h. (Tacubaya), 9h. (near Manila and near Stalinabad), 10h. (Tashkent, Palomar, Pasadena, Riverside, Mount Wilson, and Tinemaha), 12h. (near Mizusawa, Auckland, Wellington, Stuttgart, Haiwee, Tucson, Clermont-Ferrand, Apia, Palomar, Pasadena, Riverside, Mount Wilson, and Tinemaha), 13h. (Oaxaca and Tacubaya), 15h. (near Lick, Branner, and Fresno), 16h. (Chicago U.S.C.G.S., La Plata, La Paz, Palomar, Riverside, Mount Wilson, and Tinemaha), 17h. (La Plata, La Paz, and Huancayo), 18h. (Tacubaya), 21h. (Tacubaya (2)).

Sept. 29d. 2h. 32m. 0s. Epicentre 30°·7N. 67°·2E.
Intensity VIII-IX at Quetta, with several repetitions on 29d. and 30d.
Epicentre in Baluchistan, near Quetta, 30°·7N. 67°·2E. (Bombay).
See Government of India Seismological Bulletin for 1941, p. 63.

A = +·3338, B = +·7941, C = +·5080; δ = +8; h = +2;
D = +·922, E = −·388; G = +·197, H = +·468, K = −·861.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dehra Dun	N.	9·4	90	e 3 18?	0	i 5 0	S_g	—	—	—
Agra		10·1	107	e 2 21	− 7	e 4 12	−13	2 25	pP	—
Andijan		10·9	22	e 2 47	+ 7	—	—	—	—	—
Bombay		12·8	155	i 3 0	− 6	i 5 15	−15	i 3 28	PP	6·1
Hyderabad		16·7	140	3 49	− 8	7 3	0	—	—	8·7
Calcutta	N.	20·5	108	i 4 50k	+ 8	i 8 38	+11	i 9 0	P_cP	e 10·3
Semipalatinsk		22·0	23	—	—	e 9 18	SS	—	—	—
Colombo	E.	26·5	152	5 50	+ 9	10 10	− 4	—	—	13·7
Sverdlovsk		26·5	353	5 39	− 2	10 19	+ 5	—	—	—
Ksara		26·6	285	e 5 50?	+ 8	e 10 36	+20	—	—	—
Helwan		30·9	278	6 15	− 5	e 12 30	+66	e 7 12	PP	—
Irkutsk		34·6	41	e 6 52	− 1	e 12 19	− 3	—	—	—
Bucharest		35·0	306	—	—	e 12 12?	−16	—	—	22·0
Warsaw		39·9	317	e 7 35	− 2	e 13 41	− 2	e 9 10	PP	e 24·0
Triest		43·8	307	—	—	e 18 0	SS	—	—	—
Upsala		43·9	327	—	—	e 18 18	SSS	—	—	—
Potsdam		44·7	316	i 8 14k	− 2	i 15 0	+ 6	e 18 0	SS	e 26·0
Copenhagen		45·6	320	e 10 18	PP	15 10	+ 4	—	—	—
Stuttgart		46·9	310	e 8 31	− 3	—	—	—	—	—
Zurich		47·4	308	e 8 37	− 1	—	—	—	—	—
Uccle		50·1	313	e 9 1	+ 2	e 16 6	− 4	e 19 46	SS	e 28·0

For Notes see next page.

NOTES TO SEPTEMBER 29d. 2h. 32m. 0s.

Additional readings :—
Agra ePN = +2m.26s., SN = +4m.15s., sSE = +4m.20s.
Bombay iE = +3m.37s. and +5m.41s., iN = +5m.45s.
Helwan PPZ = +7m.35s.
Warsaw eN = +13m.48s., eZ = +16m.40s., eE = +16m.56s., eN = +17m.14s. and +21m.15s., eZ = +21m.34s.
Upsala eN = +18m.28s.
Potsdam iE = +8m.24s., eN = +16m.43s., eE = +18m.17s.
Stuttgart i = +8m.36s.
Long waves were also recorded at College, De Bilt, Sofia, Pasadena, Kew, and Stonyhurst.

Sept. 29d. 13h. 36m. 10s. Epicentre 38°·3N. 141°·6E.
Scale V at Sendai and Mizusawa ; IV at Miyako, Hukusima, Onahama, and Mito ; II-III at Yamagata or Utunomiya. Macroseismic radius 200-300km.
" Seismological Bulletin of Central Meteorologcail Observatory, Japan, 1941," Tokyo, 1950, p. 36.

A = −·6166, B = +·4887, C = +·6172 ; δ = −4 ; h = −1 ;
D = +·621, E = +·784 ; G = −·484, H = +·383, K = −·787 ;

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Sendai		0·6	267	0 15	0	0 25	− 1
Mizusawa		0·9	336	i 0 19	− 1	i 0 34	0
Hukusima		1·1	238	0 21	− 1	0 35	− 4
Miyako		1·4	13	0 9	−18	0 26	−20
Onahama		1·5	202	0 27	− 1	0 46	− 3
Akita		1·8	321	0 35	+ 3	1 15	+19
Mito		2·1	205	0 35	− 2	—	—
Hatinohe		2·2	359	0 42	+ 4	1 2	− 4
Utunomiya		2·2	218	0 36	− 2	1 2	− 4
Kakioka		2·4	209	0 33	− 8	0 48	−24
Aikawa		2·7	264	0 40	− 5	1 12	− 7
Tokyo, Cen. Met. Obs.		2·7	209	0 46	+ 1	1 20	+ 1
Maebasi		2·8	227	0 45	− 2	1 18	− 4
Nagano		3·1	239	0 52	+ 1	1 30	+ 1
Yokohama		3·3	210	0 53	0	1 28	− 7
Hunatu		3·6	219	0 56	− 2	1 40	− 2
Kohu		3·6	223	0 57	− 1	1 39	− 3
Mera		3·7	205	0 58	− 2	—	—
Misima		3·8	215	1 5	+ 4	1 40	− 7
Wazima		3·8	258	0 57	− 4	1 41	− 6
Mori		3·9	348	1 9	+ 7	1 42	− 8
Toyama		3·9	246	1 1	− 1	—	—
Osima		4·0	208	1 0	− 4	1 41	−11
Shizuoka		4·2	219	1 10	+ 3	1 50	− 7
Hamamatu		4·7	222	1 24	+10	—	—
Sapporo		4·8	357	1 39	P_g	2 5	− 7
Nagoya		4·9	231	1 19	+ 2	2 8	− 7
Hikone		5·2	237	1 19	− 2	2 17	− 5
Kameyama		5·4	232	1 34	P*	2 38	+10
Nemuro		5·9	30	1 15	−16	2 25	−15
Osaka		6·1	236	1 2	−32	1 38	−67
Wakayama		6·6	234	1 25	−16	—	—
Tinemaha	z.	74·9	55	i 11 35	− 9	—	—
Halwee		75·7	55	i 11 39	−10	—	—
Mount Wilson	z.	76·8	56	i 11 45	−10	—	—
Pasadena	z.	76·8	56	i 11 45	−10	—	—
Riverside	z.	77·4	56	e 11 47	−11	—	—
Palomar	z.	78·1	56	e 11 53	− 9	—	—

Additional readings :—
Mount Wilson eZ = +12m.7s.
Riverside eZ = +12m.7s.

September 29d. 17h. 8m. 16s. Epicentre 22°·0S. 175°·0E. (as on 1938, July 14d.).

A = −·9246, B = +·0809, C = −·3724; δ = +11; h = +4;
D = +·087, E = +·996; G = +·371, H = −·032, K = −·928.

Pasadena suggests deep.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		14·8	181	3 24	− 8	6 44	SS	4 10	sP	8·4
Apia		15·0	59	3 35	0	6 21	− 2	6 49	SS	—
Arapuni		16·0	178	4 14?	PPP	7 14	SSS	7 50	P_cP	—
Tuai		16·8	174	3 59	+ 1	7 16	+11	—	—	—
New Plymouth		17·0	182	4 12	PP	7 24	SS	—	—	—
Wellington		19·2	181	4 23k	− 5	8 0	+ 1	4 42	pP	9·9
Brisbane	N.	20·7	250	e 3 19	?	i 8 36	+ 5	e 4 51	PP	—
Christchurch		21·5	185	4 50	− 2	8 52	+ 5	—	—	—
Sydney		24·0	235	e 5 11	− 6	e 9 56	+24	—	—	e 11·9
Riverview		24·1	235	e 5 19	+ 1	e 9 28	− 6	5 41	PP	e 11·1
Adelaide		34·3	239	i 2 2	?	e 11 28	−49	—	—	14·5
Amboina		48·9	285	8 44	− 6	—	—	i 10 19	PP	—
Honolulu		50·5	34	—	—	e 16 10	− 6	e 16 52	PPS	e 21·3
Manila		64·2	300	15 48	?	19 20	+ 4	—	—	—
Batavia		67·5	273	e 11 9	+ 9	19 56	0	—	—	e 33·7
Medan		78·7	279	e 12 18	+12	—	—	—	—	e 40·7
Santa Barbara	Z.	83·6	50	e 12 27	− 4	—	—	—	—	—
Berkeley		83·8	46	—	—	i 23 12	+17	i 24 0	PS	e 34·8
Ukiah		83·8	44	e 18 21	?	e 22 56	+ 1	—	—	e 35·1
La Jolla		84·6	52	e 12 34	− 2	—	—	—	—	—
Pasadena		84·6	51	i 12 34	− 2	e 22 44?	−19	i 15 50	PP	e 35·2
Mount Wilson		84·7	51	i 12 34	− 3	—	—	—	—	—
Riverside	Z.	85·0	51	e 12 36	− 2	—	—	—	—	—
Palomar	Z.	85·1	52	e 12 37	− 2	—	—	—	—	—
Haiwee	Z.	85·7	49	i 12 40	− 2	—	—	—	—	—
Tinemaha		86·0	48	i 12 42	− 1	—	—	—	—	—
Tucson		89·0	55	i 12 57	− 1	—	—	—	—	e 36·8
Victoria		89·1	36	—	—	e 23 26	[− 1]	—	—	36·7
Bozeman		94·9	43	—	—	e 23 58	[− 3]	—	—	e 40·1
Colombo	E.	97·3	274	e 24 14	S	(e 24 14)	[+ 1]	—	—	47·7
Kodaikanal	E.	100·2	277	—	—	e 25 24	+ 2	—	—	—
Huancayo		103·2	109	—	—	e 24 8	[−34]	e 27 42	PS	e 43·4
Agra	E.	105·6	294	—	—	24 52	[− 1]	—	—	—
Florissant	Z.	106·9	55	e 19 52	?	—	—	—	—	—
Bombay		107·8	283	e 18 17	PP	—	—	—	—	—
Chicago, U.S.C.G.S.		109·7	51	—	—	e 26 48	{+45}	e 28 46	PS	e 47·2
Ottawa		118·7	49	e 22 48	PPP	e 36 14?	SS	e 40 14?	SSS	e 49·7
Seven Falls		122·1	47	—	—	e 27 44?	{+16}	—	—	59·7
Warsaw	Z.	143·8	332	e 19 44?	[+ 7]	e 28 49	{−54}	—	—	e 70·1
Helwan	Z.	146·5	291	19 44	[+ 2]	24 11	?	—	—	—
Potsdam		146·6	342	i 19 44k	[+ 2]	—	—	—	—	i 73·7
Jena		148·3	338	e 19 56	[+11]	—	—	—	—	—
Sofia		148·6	317	e 19 44	[− 1]	—	—	e 25 44?	PPP	—
Uccle		150·3	349	e 19 56?	[+ 8]	—	—	—	—	e 64·7
Stuttgart		151·0	341	e 19 51	[+ 2]	—	—	—	—	—
Basle		152·6	342	e 20 16	[+25]	—	—	—	—	—
Toledo		162·2	358	i 20 49	[+46]	—	—	—	—	81·7
Granada		164·8	356	20 47a	[+42]	—	—	24 59	PP	76·7
Almeria		165·1	352	20 50	[+44]	—	—	24 56	PP	82·7

Additional readings :—
Auckland i = +3m.29s., +5m.16s. and +7m.4s., sS = +7m.20s.
Wellington iZ = +4m.35s., sPZ = +4m.54s.?, iZ = +6m.0s. and +6m.54s., i = +8m.11s. and +8m.20s., P_cP? = +8m.26s., Q = +9m.14s.
Riverview iNZ = +7m.40s., iN = +9m.53s., iE = +10m.3s., SSZ = +10m.7s.
Berkeley PS is given as iSKSE.
Tucson i = +13m.49s., e = +15m.9s.
Huancayo e = +30m.59s.
Florissant eZ = +23m.55s.

Continued on next page.

Ottawa eN = +28m.8s.?.
Warsaw eZ = +27m.49s.
Helwan PPZ = +20m.20s., PPPZ = +20m.34s., iZ = +22m.29s.
Potsdam iEZ = +20m.8s., i = +20m.32s.
Jena eE = +20m.2s.?.
Stuttgart i = +19m.54s. and +20m.2s.
Long waves were also recorded at Tananarive, De Bilt, San Fernando, Upsala, College, and Columbia.

September 29d. Readings also at 2h. (near La Paz and near Amboina), 3h. (Huancayo, near La Paz, Pasadena, Mount Wilson, Riverside, Palomar, Haiwee, and Tinemaha), 8h. (Bombay (2)), 11h. (Santa Barbara, Manila, Pasadena, Mount Wilson, Riverside, Palomar, Haiwee, Tinemaha, and Tucson), 14h. (near Amboina), 16h. (Bozeman, Vera Cruz, Puebla, Tacubaya, Oaxaca, near Tashkent, Andijan, Tucson, Palomar, Mount Wilson, and Haiwee), 17h. (Pasadena, Palomar, Mount Wilson, Tinemaha, and Riverside), 18h. (near Branner (2)), 21h. (near Berkeley), 23h. (near Berkeley and San Francisco).

September 30d. 8h. 19m. 22s. · Epicentre 10·°0S. 161°·1E. (as on 1939 May 6d.).

$A = -\cdot 9319$, $B = +\cdot 3191$, $C = -1725$; $\delta = +2$; $h = +7$;
$D = +\cdot 324$, $E = +946$; $G = +\cdot 163$, $H = -\cdot 056$, $K = -\cdot 985$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	19·0	202	e 4 24	− 2	i 8 4	+ 9	—	—	—
Riverview		25·4	199	i 5 32k	+ 1	i 9 59	+ 3	i 10 23	SS	e 11·5
Sydney		25·4	199	—	—	i 10 2	+ 6	—	—	e 12·6
Auckland		29·5	159	6 33	+25	11 26	+24	i 13 23	SSS	14·6
Adelaide		32·2	215	—	—	e 11 31	−14	—	—	i 16·5
Wellington		33·4	162	6 42a	0	12 13	+10	7 54	PP	16·6
Christchurch		34·9	165	6 55	0	12 40	+13	15 10	Q	18·1
Perth		47·1	235	e 15 28	S	(e 15 28)	0	20 58	?	i 24·1
Honolulu		50·9	51	—	—	e 16 26	+ 5	—	—	e 23·1
Vladivostock		59·2	336	e 10 29	+24	e 18 18	+ 6	—	—	—
Irkutsk		78·7	329	e 12 7	+ 1	—	—	—	—	—
Ukiah		85·4	49	e 14 10	?	e 23 12	+ 1	—	—	e 40·0
Lick		86·1	52	e 12 44	0	—	—	—	—	—
Santa Barbara	Z.	86·8	54	e 12 49	+ 2	—	—	—	—	—
Pasadena		88·0	54	i 12 53a	0	i 23 38	+ 2	e 16 35	PP	e 39·8
Mount Wilson		88·0	54	i 12 54a	+ 1	—	—	—	—	—
Victoria		88·0	40	—	—	e 23 14?	[− 6]	—	—	40·6
La Jolla		88·4	56	e 12 56	+ 1	—	—	—	—	—
Haiwee		88·6	52	i 12 56	0	—	—	—	—	—
Riverside	Z.	88·6	54	i 12 56a	0	—	—	—	—	—
Tinemaha		88·6	51	i 12 57a	+ 1	—	—	—	—	—
Palomar	Z.	88·9	56	i 12 58	0	—	—	—	—	—
Bombay		91·6	289	i 13 15	+ 5	e 23 14	[−29]	—	—	—
Tucson		93·6	57	i 13 20	+ 1	e 25 22	PS	e 17 30	PP	e 43·2
Andijan		95·5	309	17 34	PP	24 51	+ 9	—	—	—
Tashkent		97·9	311	e 13 40	+ 1	e 24 9	[− 7]	—	—	—
Sverdlovsk		104·0	327	17 55	PKP	24 32	[−14]	27 37	PS	—
Ottawa		120·2	42	e 18 50	[− 3]	—	—	—	—	58·6
San Juan		133·6	73	e 22 49	PKS	—	—	—	—	e 69·2
Toledo	Z.	147·4	339	i 19 43	[0]	—	—	—	—	—

Additional readings :—
Wellington pPP?Z = +8m.19s., pP_cP = +9m.33s., S_cPZ = +22m.40s., Q = +14.6m.
Perth i = +16m.33s., +17m.8s. and +22m.12s.
Tucson i = +13m.51s., e = +22m.50s.
Long waves were also recorded at Upsala, Uccle, De Bilt, Arapuri, Potsdam, Bozeman, Chicago, College, Columbia, and Huancayo.

September 30d. Readings also at 0h. (Puebla, Tacubaya, and Oaxaca), 1h. (Bombay, near Semipalatinsk and Andijan), 4h. (East Machias), 11h. (near Manila, Chicago U.S.C.G.S., Tinemaha, Riverside, and Mount Wilson), 13h. (near Andijan), 20h. (Christchurch, Arapuni, Pasadena, Auckland, Wellington, Sydney, Jena, and Riverview), 21h. (Huancayo, Agra, and Bombay), 22h. (De Bilt and Kew), 23h. (near Berkeley (2) and Riverview).

The scanned images of the bulletins of the International Seismological Summary (ISS) have been obtained as part of a global earthquake relocation project (Villaseñor et al., 1997) initiated with funding from the US National Science Foundation through grant EAR-9725140 and collected by SGA Storia Geofisica Ambiente (Bologna) on behalf of the Istituto Nazionale di Geofisica e Vulcanologia (Rome), in the frame of Euroseismos project.

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/

Villaseñor, A., and E.R. Engdahl, *A digital hypocenter catalog for the International Seismological Summary,* Seism. Res. Lett., vol. 76, no. 5, pp. 554-559, 2005.

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