The International Seismological Summary.

1943 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 1943 contains 99 epicentres, 67 of which are repetitions from previous determinations.

Cases of abnormal focal depth are noted below :—

July	1d.	4h.	36·2N.	139·9E.	0·005
	6d.	9h.	17·7S.	69·2W.	0·015
	11d.	2h.	33·0S.	178·0W.	Base of Superficial Layers
	23d.	14h.	8·6S.	109·9E.	0·005
Aug.	1d.	16h.	19·9S.	169·9E.	0·020
	2d.	0h.	45·0S.	167·0E.	0·005
	6d.	11h.	8·0S.	112·0E.	Suggested Deep
	7d.	15h.	Undetermined shock		,, ,,
	10d.	3h.	,,	,,	,, ,,
	12d.	11h.	19·1N.	67·1W.	,, ,,
	22d.	1h.	36·8N.	140·9E.	0·005
	31d.	16d.	14·3N.	91·2W.	Suggested Deep
Sept.	2d.	13h.	34·2N.	136·8E.	0·050
	2d.	23h.	Undetermined shock		Suggested Deep
	9d.	4h.	36·3N.	71·0E.	0·015
	10d.	8h.	35·6N.	134·2E.	Suggested Deep
	12d.	1h.	1·2N.	121·8E.	0·010
	13d.	6h.	Undetermined schock		Suggested Deep

Sept.	14d.	2h.	22·0°S.	170·3°E.	Suggested Deep
	14d.	3h.	22·0S.	170·3E.	,, ,,
	14d.	7h.	30·1S.	177·8W.	,, ,,
	17d.	3h.	39·0N.	15·2E.	0·040
	17d.	10h.	14·7S.	167·3E.	0·010
	22d.	12h.	38·0S.	73·0W.	0·010
	24d.	11h.	36·4N.	73·5E.	Suggested Deep
	27d.	4h.	35·4N.	135·8E.	0·050
	27d.	22h.	30·1S.	177·8W.	Base of Superficial Layers
	28d.	10h.	18·1N.	147·5E.	0·010

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.

July, 1953.

1943 JULY, AUGUST, SEPTEMBER.

July 1d. 4h. 39m. 42s. Epicentre 36°·2N. 139°·9E. Depth of focus 0·005.
(as on 1940 November 15d.).

Intensity VI at Tukubasan, Kakioka, Mito, Onahama; V at Utunomiya, Tokyo, Titibu, Tyosi, Misima, Kobe; IV at Katuura, Hunatu, Osima, Hukusima; II-III at Owase.
Epicentre 39°·2N. (?36°·2N.), 140°·0E.
Radius of macroseismic area 200-300 km. Depth 50 km.
Seismological Bulletin of the Central Meteorological Observatory, Japan for the year 1943, Tokyo 1950, pp. 34-35, macroseismic chart p. 34.

$A = -\cdot6187$, $B = +\cdot5210$, $C = +\cdot5880$; $\delta = -3$; $h = 0$;
$D = +\cdot644$, $E = +\cdot765$; $G = -\cdot450$, $H = +\cdot379$, $K = -\cdot809$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Kakioka		0·2	82	0 9	− 2	0 17	− 2	—	—	—
Tuknbasan		0·2	84	0 9a	− 2	0 13	− 6	—	—	—
Utunomiya		0·3	356	0 10k	− 2	0 20	0	—	—	—
Mito		0·5	68	0 13a	0	0 22	− 1	—	—	—
Tokyo		0·5	192	0 11	− 2	0 20	− 3	—	—	—
Maebasi		0·7	287	0 15k	0	0 27	0	—	—	—
Tyosi		0·9	121	0 20	+ 2	0 31	0	—	—	—
Onahama		1·1	48	0 19k	− 1	0 32	− 4	—	—	—
Hunatu		1·2	233	0 20k	− 2	0 35	− 3	—	—	—
Kohu		1·2	242	0 22a	0	0 35	− 3	—	—	—
Misima		1·3	215	0 20k	− 3	0 42	+ 2	—	—	—
Nagano		1·4	289	0 26k	+ 2	0 46	+ 3	—	—	—
Osima		1·5	196	0 23k	− 3	0 39	− 6	—	—	—
Hukusima		1·6	16	0 30	+ 3	0 53	+ 6	—	—	—
Shizuoka		1·7	225	0 28k	0	0 48	− 2	—	—	—
Omaesaki		2·1	221	0 32a	− 2	1 5	+ 6	—	—	—
Aikawa		2·2	324	0 29a	− 6	1 13	+11	—	—	—
Sendai		2·2	21	0 34k	− 1	1 7	+ 5	—	—	—
Toyama		2·2	283	0 38	+ 3	1 20	+18	—	—	—
Nagoya		2·6	247	0 41k	0	1 25	+13	—	—	—
Gihu		2·7	253	0 56a	+14	1 39	+25	—	—	—
Hatidyozima		3·1	181	0 44	− 4	1 17	− 7	—	—	—
Kikone		3·1	253	0 47k	− 1	1 26	+ 2	—	—	—
Kameyama		3·1	244	0 48	0	1 33	+ 9	—	—	—
Mizusawa	N.	3·1	18	0 51	+ 3	1 33	+ 9	—	—	—
Kyoto		3·6	251	0 56	+ 1	1 51	+14	—	—	—
Owase		3·7	237	0 56	0	1 9	−30	—	—	—
Miyako		3·8	24	1 0	+ 2	1 15	−27	—	—	—
Osaka		3·9	248	0 59	0	1 57	+13	—	—	—
Kobe		4·2	248	1 2k	− 1	1 53	+ 1	—	—	—
Toyooka		4·2	261	1 4	+ 1	2 10	+18	—	—	—
Wakayama		4·3	245	1 5	0	—	—	—	—	—
Siomisaki		4·4	233	1 3	− 3	2 10	+13	—	—	—
Hatinohe		4·5	16	1 11a	+ 4	2 4	+ 5	—	—	—
Sumoto		4·5	247	1 6k	− 1	2 10	+11	—	—	—
Aomori		4·7	9	1 14	+ 4	2 15	+11	—	—	—
Muroto		5·5	240	1 13	− 8	2 46	+22	—	—	—
Hirosima		6·4	255	1 31	− 3	2 18	−28	—	—	—
Matuyama		6·4	249	1 33	− 1	2 52	+ 6	—	—	—
Hamada		6·5	261	1 46	+11	2 59	+10	—	—	—
Sapporo		6·9	8	1 38	− 3	3 17	+18	—	—	—
Izuka		8·0	254	2 0	+ 4	4 17	+51	—	—	—
Kumamoto		8·3	249	2 5	+ 5	4 5	+32	—	—	—
Kagosima		9·1	242	2 7k	− 4	4 0	+ 7	—	—	—
Titizima		9·3	167	2 8	− 6	3 42	−16	—	—	—
Tomie		9·9	252	4 17	S	(4 17)	+ 5	—	—	—
Nake		11·7	231	2 42	− 4	—	—	—	—	—
Miyakozima		17·0	232	4 8	+13	—	—	—	—	—
Tashkent		53·9	298	9 21	+ 2	16 53	+ 5	—	—	—
Sverdlovsk		55·0	319	e 9 26	− 1	17 4	+ 2	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Berkeley	Z.	74·2	54	i 11 33	+ 1	—	—	—	—	—
Tinemaha		77·3	53	i 11 51	+ 2	—	—	—	—	—
Santa Barbara		77·8	56	e 11 53	+ 1	—	—	—	—	—
Haiwee		78·0	53	i 11 54	+ 1	—	—	—	—	—
Copenhagen		78·1	333	i 11 55	+ 1	21 43	+ 2	—	—	—
Mount Wilson		79·1	55	i 12 1a	+ 2	—	—	—	—	—
Pasadena		79·1	55	i 12 0a	+ 1	—	—	—	—	—
Riverside		79·7	55	i 12 3	+ 1	—	—	—	—	—
La Jolla		80·4	56	i 12 8	+ 2	—	—	—	—	—
Stuttgart		84·7	330	i 12 29	+ 1	e 21 48?	−61	—	—	e 44·3
Tucson		85·1	53	i 12 33a	+ 3	—	—	—	—	—
Bogota		128·4	45	i 19 4	[+ 4]	—	—	—	—	—
La Paz		148·3	58	19 43	[+ 7]	—	—	—	—	—

Bogota also gives i = 19m.19s.
Long waves were also recorded at Kew, Paris, De Bilt, and Granada.

July 1d. Readings also at 0h. (near Branner and Berkeley), 5h. (Tinemaha, Mount Wilson, Pasadena, Riverside, Tucson, Tashkent, Sverdlovsk, Mizusawa, Tortosa, Toledo, near Granada, and Almeria, and near Bogota), 6h. (Stuttgart, Copenhagen, Paris, Kew, De Bilt, Uccle, and La Paz), 7h. (Tinemaha, Mount Wilson, Tucson, Stuttgart, Pasadena, and Copenhagen), 9h. (Kew), 10h. (Mount Wilson, Tucson, and Tacubaya), 12h. (Bucharest).

July 2d. 6h. Undetermined shock.

Miyakozima e = 49m.1s.
Naha e = 49m.28s.
Kumamoto e = 50m.50s.
Nagano e = 52m.9s.
Irkutsk eP = 54m.6s.?, eS = 58m.49s.?.
Zinsen e = 55m.3s.
Tokyo Cent. Met. Obs. e = 56m.33s.
Kobe e = 58m.3s.
Calcutta eN = 59m.15s., iN = 64m.49s., and 66m.4s.
New Delhi iE = 69m.34s. and 72m.5s.
Long waves were recorded at Bombay and European stations.

July 2d. Readings also at 6h. (Granada), 10h. (Tucson), 11h. (near Tashkent and Tchimkent), 12h. (Helwan, Ksara, and Tashkent), 17h. (near Stalinabad, Tchimkent, and Tashkent), 21h. (Riverside, Mount Wilson, Tucson, near Tashkent, and Tchimkent), 23h. (near Mizusawa, near Tashkent (2), and Tchimkent (2)).

July 3d. Readings at 0h. (near Tashkent and Tchimkent), 2h. (near San Juan), 5h. (Bogota and near La Paz), 6h. (Toledo), 7h. (near Fort de France), 10h. (near Bogota), 14h. (Pasadena, Mount Wilson, Tucson, and near Tashkent), 16h. (Auckland), 18h. (Jena, Strasbourg, near Ebingen, Ravensburg, Zürich, Basle, and Stuttgart), 19h. (near Branner), 21h. (Stuttgart and St. Louis), 22h. (Fort de France and Tacubaya).

July 4d. 4h. 37m. 8s. Epicentre 48°·2N. 9°·0E. (as on June 3d.).

A = +·6609, B = +·1046, C = +·7432 ; δ = +8 ; h = −5 ;
D = +·156, E = −·988 ; G = +·754, H = +·116, K = −·670.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Ebingen	0·0	—	i 0 3	P*	i 0 4	S*	—	—	—
Ravensburg	0·6	135	e 0 8?	− 7	i 0 17?	S_g	—	—	—
Stuttgart	0·6	13	i 0 10	− 5	i 0 17	S_g	—	—	—
Strasbourg	0·9	295	e 0 19	− 1	i 0 30	− 4	—	—	—
Zürich	0·9	198	e 0 18	− 2	i 0 31	− 3	—	—	—
Basle	1·2	235	e 0 22	− 2	e 0 39	− 2	—	—	—
Neuchatel	1·8	229	e 0 31	− 1	e 1 0	+ 4	—	—	—
Jena	3·2	32	e 0 59	P*	i 1 26	− 6	(i 1 36)	S*	i 1·6
Potsdam	4·9	33	—	—	e 2 40	S_g	—	—	—

Jena also gives iEN = 1m.21s.

July 4d. 8h. 8m. 39s. Epicentre 46°·3N. 10°·5E. (as on 1937 June 7d.).

Intensity IV at Ofenpass, in the Munstertal and the lower Engadine.
Epicentre 46° 40′ N. 10° 20′ E. (Strasbourg). Radius of macroseismic area 30 km.
Dr. E. Wanner.
Jahresbericht des Erdbebendienstes der Schweiz im Jahre 1943, p. 2 with map fig. 5 in appendix.

A = +·6817, B = +·1263, C = +·7206; δ = −7; h = −4;
D = +·182, E = −·983; G = +·709, H = +·131, K = −·693.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chur		0·9	310	e 0 18	P_g	i 0 26	S_g	—	—	—
Ravensburg		1·6	338	—	—	e 0 47?	− 4	—	—	—
Zürich		1·7	309	e 0 35	P_g	e 0 54	0	—	—	—
Basle		2·3	302	e 0 48	P_g	e 1 15	S_g	—	—	—
Triest		2·4	106	—	—	e 1 8	− 4	—	—	i 1·5
Neuchatel		2·5	286	e 0 52	P_g	e 1 24	S_g	—	—	—
Stuttgart		2·6	340	e 0 45	+ 1	e 1 19	+ 2	e 0 50	P_g	e 1·5
Strasbourg		2·9	321	—	—	e 1 35	S_g	—	—	i 1·7
Jena		4·7	10	e 1 36	P_g	—	—	—	—	—

Stuttgart also gives e = 1m.11s.

July 4d. 9h. 51m. 58s. Epicentre 9°·4N. 84°·6W.

A = +·0929, B = −·9824, C = +·1623; δ = +8; h = +7;
D = −·996, E = −·094; G = +·015, H = −·162, K = −·987.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		5·0	95	e 1 19	+ 1	e 2 20	+ 2	—	—	—
Bogota		11·5	113	e 2 49	+ 1	e 5 50	+61	i 2 57	PP	6·8
Tacubaya	N.	17·3	307	4 2	− 2	—	—	—	—	—
San Juan		20·0	63	e 4 33	− 4	i 8 28	+11	i 5 26	PPP	i 9·9
Mobile		21·4	352	i 4 56	+ 5	i 8 27	−18	—	—	—
Huancayo		23·2	157	e 5 9	0	i 9 27	+ 9	e 5 48	PPP	e 10·9
Fort de France		23·5	76	e 5 10	− 2	e 9 41	+18	5 44	PP	e 12·2
Columbia		24·7	7	e 5 24	0	e 9 47	+ 3	—	—	e 12·2
Bermuda		29·4	37	e 6 25	+18	e 12 19	SS	—	—	e 14·5
St. Louis		29·6	352	e 6 8	− 1	e 10 56	− 8	—	—	i 13·3
Georgetown		30·1	14	e 5 51	−22	e 11 3	− 9	6 49	PP	e 13·4
La Paz	z.	30·5	147	i 6 18k	+ 1	10 41	?	—	—	13·7
Pittsburgh		31·2	8	e 6 23	0	e 11 31	+ 2	—	—	—
Philadelphia		31·6	16	e 6 35	+ 9	e 12 42	+67	e 7 40	PP	e 13·4
Chicago		32·4	356	e 6 34	0	e 11 39	− 9	e 7 38	PP	e 13·6
Fordham		32·7	17	e 6 38	+ 2	e 11 54	+ 2	—	—	—
Tucson		33·3	318	e 6 40	− 1	e 11 59	− 3	e 8 13	PPP	e 15·8
Buffalo		33·8	9	e 6 39	− 7	e 11 57	−13	e 7 54	PP	—
Harvard		34·9	18	e 6 56	+ 1	e 12 28	+ 1	—	—	e 19·0
Weston		34·9	18	e 6 52	− 3	e 12 25	− 2	—	—	—
Vermont		36·3	14	e 8 44	PPP	e 12 52	+ 4	—	—	e 15·2
Ottawa		36·7	11	7 9	− 1	12 52	− 2	8 34	PP	19·0
La Jolla		38·1	314	e 7 22	0	—	—	—	—	—
Palomar	z.	38·1	315	e 7 23	+ 1	—	—	—	—	—
Shawinigan Falls		38·4	14	e 7 26?	+ 1	—	—	—	—	e 20·0
Riverside	z.	38·8	315	e 7 27	− 1	—	—	—	—	—
Mount Wilson		39·4	315	i 7 33	0	—	—	—	—	—
Pasadena		39·4	315	i 7 33	0	i 13 41	+ 6	i 9 44	PcP	e 21·8
Seven Falls		39·4	16	e 9 8?	PP	13 34	− 1	—	—	16·0
Salt Lake City		39·5	328	e 9 14	PP	e 13 52	+15	—	—	e 17·8
Logan		40·2	329	e 8 2	+22	—	—	e 9 48	PPP	i 17·8
Santa Barbara		40·7	314	e 7 43	− 1	—	—	—	—	—
Tinemaha		41·0	318	e 7 48	+ 2	—	—	—	—	—
Bozeman		42·7	333	e 10 22	PPP	e 14 39	PPS	e 17 55	SS	e 18·1
Santa Clara		43·7	316	e 8 11	+ 3	e 14 48	PS	e 18 14	SS	—
Berkeley		44·2	316	i 8 13	+ 1	i 14 52	+ 6	—	—	e 23·8
Ukiah		45·4	317	e 10 11	PP	e 15 10	+ 6	e 18 19	SS	e 24·3
Saskatoon		46·2	342	e 9 2?	?	—	—	i 18 26	SS	29·0
Seattle		49·7	328	—	—	e 19 44	SS	—	—	e 31·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		50·8	328	e 9 26?	+22	—	—	e 18 57	ScS	29·0
Rio de Janeiro		51·7	129	e 16 31	S	(e 16 31)	− 1	e 16 34	PS	(e 27·1)
Ivigtut		58·2	20	e 14 59	PcS	—	—	—	—	e 24·7
Sitka		61·7	332	e 10 50	PcP	e 18 48	+ 4	i 20 13	ScS	e 27·2
College		70·3	337	—	—	e 20 29	0	e 21 20	ScS	e 33·4
Scoresby Sund		72·2	19	e 11 30	+ 1	e 20 46	− 5	—	—	e 25·8
San Fernando	E.	75·2	55	e 11 20	−26	i 21 32	+ 7	21 52	PS	37·0
Toledo		76·8	52	e 11 54	− 1	i 21 45	+ 3	—	—	37·0
Granada		77·2	54	i 11 59	+ 2	i 21 53	+ 6	12 14	PcP	35·9
Stonyhurst		77·8	37	e 12 9	+ 8	i 21 49	− 4	i 22 11	ScS	e 37·0
Aberdeen		78·1	33	—	—	i 21 56	0	e 21 46	SKS	e 35·4
Almeria		78·2	55	12 4	+ 1	i 21 57	0	22 29	PS	38·5
Kew		79·2	40	e 12 9	+ 1	e 22 3	− 5	e 30 32	SSS	e 35·0
Tortosa	E.	80·2	51	e 12 12	− 2	22 2	−17	—	—	e 40·0
Paris		81·1	43	i 12 20	+ 2	e 22 28	0	—	—	40·0
Clermont-Ferrand		81·7	46	e 12 20?	− 2	e 22 37	+ 3	—	—	—
Bergen		81·9	30	—	—	e 23 2?	ScS	—	—	e 34·0
Uccle		82·1	40	e 12 24	0	e 22 36	− 2	—	—	e 38·0
De Bilt		82·5	39	i 12 26	0	i 22 44	+ 2	—	—	e 38·0
Stuttgart		85·4	42	e 12 39	− 1	e 23 11	0	e 23 2	SKS	e 43·1
Copenhagen		86·3	34	e 12 45	0	23 22	+ 2	23 8	SKS	—
Potsdam		87·2	38	—	—	i 23 33	+ 5	—	—	e 47·0
Cheb		87·3	40	—	—	e 23 22	{ 0}	—	—	e 46·0
Florence		87·8	47	i 23 31	S	(i 23 31)	− 3	e 29 9	SS	e 51·0
Upsala		88·0	30	—	—	e 23 32?	− 4	—	—	e 43·0
Prague		88·6	40	e 5 29?	?	e 14 43	?	—	—	e 29·0
Triest		89·1	44	e 12 56	− 2	i 23 27	[0]	—	—	e 43·0

Additional readings :—
Bogota ePPPP =3m.4s., e =4m.30s.
San Juan iP =4m.40s.
Fort de France PPP =5m.56s.
Georgetown 12m.5s.
Philadelphia e =8m.35s.
Tucson e =7m.18s.
Buffalo e =7m.38s.
Ottawa SS =15m.10s.
Pasadena iSSEN =17m.44s.
Logan e =11m.15s. and 16m.2s.
Santa Clara ePcSScPE =24m.35s.
Rio de Janeiro L given as S.
Granada SS =26m.10s.
Stonyhurst e =32m.2?s.
Almeria PP =14m.57s., PPP =16m.53s., ScS =22m.17s., SS =27m.39s., SSS =30m.49s.
Stuttgart ePP =15m.50s., eSS =29m.8s.?, eQ =39m.2s.?
Long waves were also recorded at Honolulu, Christchurch, and Wellington.

July 4d. 22h. 15m. 13s. Epicentre 4°·0N. 126°·3E.

Epicentre 4°·5N. 127°·5E. (stations of the U.S.S.R.).

A = −·5906, B = +·8040, C = +·0693 ; δ = +3 ; h = +7 ;
D = +·806, E = +·592 ; G = −·041, H = +·056, K = −·998.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kobe	31·6	15	6 57	+31	11 44	+ 9	—	—	—
Osaka	31·7	14	6 30	+ 3	12 9	+32	—	—	—
Misima	33·1	19	e 6 38	− 2	—	—	—	—	—
Nagano	34·3	17	6 52	+ 2	—	—	—	—	—
Sendai	36·6	20	7 10	0	13 3	+10	—	—	—
Mizusawa	37·5	19	e 7 12	− 5	e 13 6	− 1	—	—	—
Sapporo	41·1	16	e 7 51	+ 4	14 9	+ 8	—	—	—
Irkutsk	51·5	343	e 9 10	+ 1	i 16 33	+ 4	—	—	—
Tashkent	63·0	316	e 10 27	− 4	i 19 0	− 1	—	—	—
Moscow	86·0	326	i 12 28	−15	e 23 2	−15	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Copenhagen		99·9	329	—	—	24 23	[− 4]	—	—	—
Triest		102·6	319	—	—	1 24 30	[− 9]	—	—	—
Stuttgart		104·4	323	e 14 5?	− 3	e 24 41	[− 7]	e 18 17?	PP	—
De Bilt		105·3	327	—	—	e 24 47?	[− 5]	—	—	54·8
Uccle		106·3	326	—	—	e 26 12	− 1	e 24 47	SKS	—
Tinemaha	z.	107·5	49	e 18 53	PP	—	—	—	—	—
Pasadena	z.	108·5	52	e 18 28	[− 2]	—	—	1 18 49	PP	e 50·8
Mount Wilson	z.	108·6	52	e 18 40	PP	—	—	—	—	—
Tucson		115·0	51	e 18 29	[−14]	—	—	—	—	—
Granada		118·0	316	—	—	1 25 28	[−15]	29 56	PS	63·7
Philadelphia		132·0	21	e 22 40	PP	—	—	—	—	—

Mizusawa also gives ePN =7m.22s., eSE =13m.9s.

July 4d. Readings also at 0h. (near Lisbon), 1h. (Tucson), 2h. (Scoresby Sund and Bogota), 4h. (Stuttgart and Ebingen), 6h. (New Delhi and Mizusawa), 9h. (Tacubaya), 10h. (Balboa Heights), 11h. (Pasadena, Mount Wilson, Riverside, Tucson, and Balboa Heights (2)), 12h. (Rio de Janeiro), 13h. (La Plata, La Paz, Huancayo, Tacubaya, Fort de France, Scoresby Sund, San Juan, Bermuda, Columbia, Tucson, Harvard Vermont, Chicago, Seven Falls, Christchurch, Wellington, Auckland, Moscow, Sverdlovsk, Tashkent, and De Bilt), 14h. (Pasadena, Sitka, College, Cheb, Uccle, Florence, Toledo, San Fernando, Tortosa, Granada, and Ksara), 17h. (near Andijan and near Mizusawa), 18h. (Andijan, Stuttgart, San Juan, Harvard, Riverside, Pasadena, Mount Wilson, Tucson, and St. Louis), 19h. (Tinemaha, Mount Wilson, Tucson, Pasadena, and Riverside), 22h. (Tinemaha, Mount Wilson, Pasadena, Tucson, Columbia, Harvard, Philadelphia, Pittsburgh, San Juan, Balboa Heights, La Paz, and Huancayo).

July 5d. 13h. Undetermined shock.

Brisbane eE =48m.6s., eN =48m.9s. and 49m.46s., eE =52m.7s., iN =57m.43s. and 59m.0s.
Riverview i?Z =48m.37s., eLN =59·5m.
Auckland S =50m.6s., i =51m.20s.
Tuai S =50m.42s., i =50m.45s. and 50m.58s.
Wellington S =51m.55s., iZ =52m.55s., Q? =53m.36s., R =55m.
Mount Wilson iPNZ =58m.35s.
Riverside ePZ =58m.36s.
Pasadena ePZ =58m.37s., eLZ =87m.
Tucson iP =58m.53s., i =59m.14s., eL =96m.23s.
Sydney e =60m.24s.?
Almeria PKP =67m.39s. and 68m.15s., PP =71m.50s., PPP =75m.22s., SKKS = 77m.49s., PKKS =81m.39s., SS =91m.19s., L =137m.
Tortosa eE =68m.30s. and 71m.20s., eLE =137m.
Granda ePKP? =68m.46s., PP? =72m.21s., SKS? =74m.59s., eL =136m.54s.
Long waves were also recorded at Arapuni, Christchurch, Kew, De Bilt, and Stuttgart.

July 5d. 21h. 7m. 47s. Epicentre 15°·8S. 73°·8W.

A = +·2686, B = −·9245, C = −·2706 ; δ = +7 ; h = +6 ;
D = −·960, E = −·279 ; G = −·075, H = +·260, K = −·963.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		4·0	338	i 1 16	P_g	i 2 15	S_g	—	—	—
La Paz		5·5	99	i 1 27 a	+ 2	i 2 33	+ 3	i 2 41	S*	3·0
La Plata	E.	23·8	147	5 16	+ 1	9 19	− 9	—	—	12·0
	N.	23·8	147	5 16	+ 1	9 15	−13	5 37?	PP	12·1
	Z.	23·8	147	5 9	− 6	—	—	—	—	14·5
Balboa Heights		25·2	347	e 5 34	+ 5	—	—	—	—	—
Rio de Janeiro		29·7	109	e 6 20	+10	e 11 10	+ 4	—	—	e 14·7
Fort de France		32·8	24	e 6 40	+ 3	—	—	—	—	—
San Juan		34·8	12	e 6 52	− 2	e 12 26	+ 1	e 8 0	PP	e 15·3
Bermuda		48·7	10	e 8 54	+ 6	e 16 13	PPS	(e 19 43)	SS	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.
Columbia		50·0	352	e 9 0	+ 2	e 16 15	+ 6	e 11 3	PP	e 24·5
Georgetown		54·5	357	i 9 34	+ 2	i 17 18	+ 8	i 17 34	PPS	25·2
Cape Girardeau		54·9	345	e 9 37	+ 2	e 17 18	+ 2	—	—	—
Philadelphia		55·5	359	i 9 39	0	e 17 35	PS	i 17 46	PPS	e 23·7
Pittsburgh		56·2	355	i 9 45	+ 1	i 17 40	+ 7	—	—	—
St. Louis		56·3	345	i 9 45	0	i 17 37	+ 3	i 19 30	S_cS	—
Fordham		56·4	1	i 9 47	+ 2	e 17 45	+ 9	—	—	—
Weston		57·9	3	i 9 56	0	i 18 3	+ 8	—	—	—
Harvard		58·0	3	i 9 56	− 1	e 18 3	+ 6	—	—	e 30·2
Buffalo		58·6	356	i 9 57	− 4	—	—	—	—	—
Chicago		58·7	348	e 10 2	0	e 18 4	− 2	i 19 48	S_cS	e 31·4
Tucson		59·5	324	i 10 7	0	e 18 17	+ 1	i 10 49	P_cP	e 30·8
Ottawa		60·9	358	10 18	+ 1	18 46	+12	e 20 1?	S_cS	e 29·2
Seven Falls		62·7	2	10 31	+ 2	19 1	+ 4	—	—	29·2
La Jolla		63·8	320	e 10 35	− 1	—	—	—	—	—
Riverside		64·6	321	i 10 41	0	e 19 25	+ 4	—	—	—
Mt. Wilson		65·2	321	i 10 45	0	e 19 36	+ 8	i 12 3	?	—
Pasadena		65·2	321	i 10 45a	0	i 19 35	+ 7	e 39 32	P′P′	e 32·2
Santa Barbara		66·3	320	e 10 53	+ 1	—	—	—	—	—
Logan		67·2	330	i 10 59	+ 1	e 19 46	− 6	e 13 43	PP	e 32·7
Tinemaha		67·2	323	e 10 58	0	—	—	—	—	—
Bozeman		69·9	334	e 13 54	PP	e 20 25	+ 1	e 24 35	SS	e 37·8
Victoria		77·7	329	11 41	−19	21 36	−16	—	—	38·2
Lisbon		81·1	46	12 19k	+ 1	—	—	—	—	41·2
San Fernando	E.	82·2	49	i 11 26	−58	i 21 47	−52	—	—	41·7
Granada		84·4	49	i 12 34	− 2	i 23 7	+ 6	12 48	P_cP	43·5
Almeria		85·1	50	i 12 36	− 3	i 23 13	+ 5	13 17	pP	45·2
Toledo		85·2	47	i 12 40	+ 1	i 23 16	+ 7	—	—	—
Tortosa	E.	88·8	47	12 36	−21	23 7	[−18]	—	—	e 45·2
Sitka		88·9	332	—	—	e 23 27	[+ 1]	—	—	e 45·5
Stonyhurst		92·0	34	i 23 42	SKS	i 23 53	{− 3}	i 24 14	S	e 44·2
Kew		92·3	37	e 13 12a	− 1	e 23 45	[− 1]	e 25 40	PS	e 37·2
Paris		93·0	40	i 13 17	0	e 23 49	[− 1]	i 17 2	PP	49·2
Scoresby Sund		93·2	15	e 13 19	+ 2	e 23 53	[+ 2]	e 16 58	PP	e 47·5
Aberdeen		93·6	31	—	—	i 23 54	[+ 1]	—	—	e 45·6
Uccle		94·8	38	e 13 24	− 1	e 24 0	[0]	17 14	PP	e 42·2
De Bilt		95·7	37	i 13 29	0	e 24 7	[+ 3]	i 17 23	PP	e 44·2
Stuttgart		97·2	41	e 13 35	− 1	e 24 15	[+ 2]	e 17 28	PP	e 46·3
Florence	N.	97·3	47	—	—	e 25 21	+23	—	—	—
Cheb		99·5	40	—	—	e 24 22	[− 2]	—	—	e 53·2
Copenhagen		100·8	35	e 13 52	0	25 39	+12	18 0	PP	—
Prague		100·8	41	e 28 49?	?	—	—	—	—	—
Upsala		104·2	31	—	—	e 24 43	[− 4]	e 48 13	?	e 57·2
Bucharest		107·9	48	e 19 13?	PP	—	—	—	—	58·2
Moscow		114·9	35	e 15 3	P	25 20	[−12]	19 30	PP	—
Sverdlovsk		126·6	29	13 41	?	27 49	{− 9}	—	—	—
Tashkent		139·3	44	i 19 30	[+ 1]	26 27	[−11]	e 22 16	PP	—

Additional readings :—
La Plata N =6m.1s.?, 8m.7s.?, and 8m.49s.
Columbia e =18m.50s.
Philadelphia ePP =11m.58s., e =12m.52s., 14m.37s., and 19m.19s., eSS =21m.47s.
Buffalo e =10m.11s., i =11m.21s.
Tucson ePP =12m.21s., e =14m.37s., ePKP,PKP =39m.42s.
Logan e =21m.10s.
Granada SS =28m.38s.
Almeria sP =13m.28s., PP =15m.58s., pPP =16m.21s., PPP =17m.17s., SKS =22m.54s., PS =24m.31s., SS =28m.43s.
Stonyhurst iPPS =25m.39s.
Kew ePPZ =16m.56s., eSS?Z =31m.50s.?
Scoresby Sund e =32m.0s.
Uccle ePSE =26m.1s.
Stuttgart eSPZ =26m.13s.?
Copenhagen 24m.32s.
Moscow SKKS =26m.30s.
Long waves were also recorded at Wellington, Christchurch, Arapuni, Bergen, Potsdam, and Bombay.

July 5d. Readings also at 4h. (Granada and Ksara), 7h. (Lincoln), 9h. (near Strasbourg, Stuttgart, and Ebingen), 10h. (near Mizusawa), 11h. (Prague), 12h. (Tacubaya), 13h. (Tuai, Arapuni, Auckland, Wellington, Christchurch, Riverview, Harvard, and near Berkeley, Branner, and Lick), 14h. (Stuttgart, near Tashkent, and Stalinabad), 15h. (near Berkeley and Branner), 16h. (near Lick, Fresno, Branner, Berkeley, Santa Clara, and San Francisco), 19h. (La Plata, Tucson, and Riverside), 20h. (Moscow).

July 6d. 9h. 39m. 56s. Epicentre 17°·7S. 69°·2W. Depth of focus 0·015.

Scale IV, in Chili. See Annales de l'Institut de Physique du Globe de Strasbourg, 2e partie, Seismologie, Tome VII, VIII, p. 32.

A = +·3385, B = −·8911, C = −·3022 ; δ = −3 ; h = +5 ;
D = −·935, E = −·355 ; G = −·107, H = +·282, K = −·953.

		△	Az.	P.	O−C.	S.	O−C.		Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.		m.
La Paz		1·6	40	i 0 35k	+ 5	—	—	—	—		1·0
Montezuma		4·9	176	e 1 0?	−13	e 2 0?	− 9	—	—		e 2·5
Huancayo		8·2	313	i 2 57	+60	i 4 5	?	—	—		i 4·7
La Plata		19·9	151	i 4 33	+10	i 8 6	+11	8	11	S	—
Fort de France		33·2	15	e 6 21	− 6	—	—	e 6	59	pP	—
San Juan		36·0	4	e 7 53	pP	i 12 7	?	—		—	e 14·8
Cape Girardeau	E.	58·0	341	—	—	e 17 20	−10	e 17	25	S	—
Pittsburgh	N.W.	58·7	350	—	—	i 17 31	− 8	—		—	—
St. Louis		59·4	340	i 9 47	− 4	e 17 37	−11	i 10	25	pP	—
Tucson		63·7	321	e 10 19	− 1	—	—	i 11	0	pP	—
La Jolla		68·1	317	e 10 48	0	—	—	e 11	28	pP	—
Riverside	Z.	68·9	318	i 10 53	0	—	—	i 11	33	pP	—
Mount Wilson		69·5	318	i 10 57k	0	—	—	i 11	37	pP	—
Pasadena		69·5	318	i 10 57k	0	—	—	i 11	38	pP	—
Tinemaha		71·5	320	i 11 8k	− 1	—	—	i 11	49	pP	—
Granada		82·4	47	i 12 10	+ 1	i 22 14	+ 1	e 15	59	PP	—
Almeria		83·0	48	12 13	+ 1	22 19	0	23	29	PS	—
Toledo		83·4	45	i 11 57	−17	22 25	+ 2	—		—	—
Tortosa		86·9	46	e 13 10	+39	i 22 23	−34	—		—	e 46·1
Stuttgart	Z.	95·7	41	e 13 12	0	—	—	—		—	—

Additional readings :—
Pittsburgh eEN = 19m.15s.
St. Louis esSE = 18m.43s.
Granada PS = 23m.11s., SS = 28m.5s.

July 6d. 13h. 13m. 44s. Epicentre 31°·5N. 40°·8W. (as on 1941, July 23d.).

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

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bermuda	20·4	278	e 4 43	+ 2	—	—	—	—	e 9·7
San Juan	26·3	246	e 6 2	+23	—	—	—	—	e 11·3
Harvard	26·8	304	e 5 44	0	—	—	—	—	e 13·3
Fordham	28·2	299	e 5 57	+ 1	e 10 45	+ 4	—	—	—
Philadelphia	29·0	296	e 6 3	− 1	e 10 59	+ 5	e 7 13	PP	e 13·6
Granada	31·1	68	i 6 30	+ 8	11 35	+ 7	7 19	PP	14·8
Almeria	32·0	69	e 7 19	?	11 37	− 5	e 7 28	PP	16·3
Pittsburgh	32·7	298	e 6 38	+ 2	e 12 0	+ 8	—	—	—
Tortosa	E. 34·3	63	e 7 33	PP	11 47	−30	i 9 35	?	e 18·0
Kew	35·7	44	e 7 5	+ 3	e 12 41	+ 2	e 15 1	?	e 17·3
Clermont-Ferrand	36·7	55	—	—	e 12 58?	+ 4	—	—	—
Paris	36·8	49	e 7 12	+ 1	e 12 59?	+ 3	—	—	e 17·3
Scoresby Sund	40·4	9	e 8 43	+62	e 13 45	− 5	—	—	e 17·0
St. Louis	40·7	295	e 7 42	− 2	e 13 58	+ 3	—	—	—
Stuttgart	41·1	51	e 7 49	+ 2	e 14 1	0	e 8 35	?	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florence	N.	42·4	57	—	—	e 15 41	?	—	—	—
Copenhagen		44·1	40	—	—	14 51	+ 6	—	—	—
Tucson		58·4	291	e 10 0	0	e 18 11	+ 9	e 12 18	PP	e 29·6
Tinemaha	Z.	62·6	298	e 10 28	0	—	—	—	—	—
Riverside	Z.	63·0	295	e 10 31	0	—	—	—	—	—
La Jolla	N.	63·3	293	e 10 34	+ 1	—	—	—	—	—
Mount Wilson		63·4	295	i 10 34	0	—	—	i 10 40	P	—
Pasadena	Z.	63·6	295	i 10 34	− 1	—	—	—	—	e 32·3

Additional readings :—
Almeria i = 8m.31s.
St. Louis eZ = 7m.34s.
Tucson iP = 10m.6s.
Long waves were also recorded at San Fernando, Cheb, De Bilt, and Sitka.

July 6d. 22h. 10m. 14s. Epicentre 45°·0N. 72°·5W.

A = + ·2134, B = − ·6767, C = + ·7047 ; δ = +6 ; h = −4 ;
D = − ·954, E = − ·301 ; G = + ·212, H = − ·672, K = − ·710.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vermont	0·7	224	i 0 10?	− 7	i 0 15?	−13	—	—	i 0·4
Shawinigan Falls	1·6	353	0 30	0	0 52	+ 1	—	—	—
Ottawa	2·3	280	i 0 34	− 6	i 1 0	− 9	—	—	1·2
Seven Falls	2·4	29	0 44	+ 3	1 20	+ 8	—	—	—
Harvard	2·6	165	i 0 43	− 1	i 1 11	− 6	—	—	i 1·5
Fordham	4·3	194	i 1 10	+ 2	i 2 2	+ 2	—	—	i 2·1
Philadelphia	5·4	203	—	—	i 2 36	+ 8	—	—	e 2·9
Pittsburgh	7·1	233	—	—	i 3 21	+11	i 3 57	S_g	—

Additional readings :—
Ottawa i = 1m.4s. and 1m.9s.
Seven Falls e = 1m.24s. and 1m.28s.
Harvard iP = 45s., iS = 1m.14s. and 1m.21s.

July 6d. Readings also at 2h. (Bucharest), 3h. (Granada, Mount Wilson, Tucson, and Tinemaha), 7h. (Tashkent and near Tchimkent), 10h. (near Buffalo), 11h. (Balboa Heights, San Juan, Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, and Pittsburgh), 13h. (Victoria, near Berkeley, Branuer, and Lick), 14h. (Riverview), 15h. (Cheb), 19h. (near Branner).

July 7d. 12h. 45m. 13s. Epicentre 5°·6S. 150°·5E. (as on 1943, March 21d.).

A = − ·8663, B = + ·4901, C = − ·0969 ; δ = +6 ; h = +7 ;
D = + ·492, E = + ·870 ; G = + ·084, H = − ·048, K = − ·995.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	21·9	174	i 4 54	− 3	i 8 58	+ 4	i 9 13	SS	i 10·8
Riverview		28·1	179	e 6 2	+ 7	i 10 49	+ 9	i 11 59	SS	e 14·5
Sydney		28·1	179	e 8 17?	?	e 11 11?	+31	—	—	—
Auckland		38·2	147	—	—	12 47?	−30	—	—	—
Arapuni		39·6	148	—	—	e 14 47?	+69	—	—	20·3
Wellington		41·6	152	—	—	14 2	− 6	i 18 2	SSS	21·5
Christchurch		42·5	156	—	—	14 13	− 9	17 46	SS	21·8
Honolulu		57·3	60	—	—	e 17 30	−17	—	—	e 26·3
Irkutsk		69·7	332	e 11 17	+ 3	e 20 13	− 9	—	—	—
Bombay	E.	80·2	290	e 12 19	+ 5	i 23 0	PS	e 27 47?	SS	—
College		83·5	22	—	—	e 22 36	−16	—	—	e 39·9
Sitka		86·3	32	e 12 41	− 4	e 23 22	+ 2	e 23 6	SKS	e 35·4
Tashkent		87·1	312	i 12 56	+ 7	i 23 36	+ 8	—	—	—
Victoria		91·6	42	—	—	e 23 43	[+ 1]	—	—	38·8
Santa Barbara		92·9	56	e 13 14	− 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena		94·2	56	i 13 18 a	− 4	—	—	i 13 25	P	e 38·8
Mount Wilson	z.	94·3	56	i 13 19 a	− 4	—	—	—	—	—
Tinemaha		94·3	53	e 13 19	− 4	—	—	—	—	—
Sverdlovsk		94·6	326	e 17 19	PP	24 12	[+13]	26 8	PPS	—
La Jolla		94·9	57	e 13 23	− 2	—	—	—	—	—
Riverside		94·9	56	i 13 21 a	− 4	—	—	—	—	—
Tucson		100·3	58	e 13 49	− 1	—	—	e 17 49	PP	e 44·5
Scoresby Sund		115·0	357	e 24 6	?	e 25 56	[+24]	e 35 52	SS	e 54·5
Cheb		123·5	329	e 17 47?	?	—	—	—	—	e 67·8
Stuttgart		125·9	329	e 19 7	[+ 3]	e 32 35?	PPS	e 21 2	PP	—
Kew		128·2	337	e 21 19	PP	e 26 38	[+23]	e 22 43	PKS	e 55·8
Paris		129·1	333	i 21 25	PP	—	—	—	—	73·8
Bermuda		137·7	46	—	—	e 42 10	SS	—	—	e 66·3
Almeria		140·3	325	19 18	[−13]	—	—	i 23 11	PP	79·8
Granada		140·7	327	20 5k	[+33]	41 54	SS	23 51	PP	75·9

Additional readings :—
Riverview eN =6m.13s., iZ =11m.1s., iEN =11m.7s.
Christchurch Q =18m.26s.
Sverdlovsk SS =31m.20s.
Scoresby Sund e =29m.2s.
Stuttgart e =36m.17s. ?, eSSS =43m.17s. ?
Kew ePPPZ =24m.23s. ?, ePS?Z =31m.8s., eSSN =38m.47s. ?
Almeria PPP =26m.43s.
Long waves were also recorded at Huancayo and other American and European stations.

July 7d. Readings also at 0h. and 1h. (Fort de France), 3h. (Tucson), 5h. (Bucharest), 8h. (Philadelphia), 10h. (La Jolla, Mount Wilson, Pasadena, Tucson, and Riverside), 11h. (Tucson, Arapuni, Auckland, Christchurch, Wellington, and Riverview), 12h. (Pasadena), 13h. (La Jolla, Mount Wilson (2), Tucson, Pasadena (2), Riverside (2), and Tinemaha (2)), 17h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and Riverview).

July 8d. 14h. 35m. 46s. Epicentre 4°·0N. 126°·3E. (as on 4d.).

$A = -\cdot5906$, $B = +\cdot8040$, $C = +\cdot0693$; $\delta = +3$; $h = +7$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Naha		22·1	3	e 5 9	+10	—	—	—	—	—
Nake		24·4	7	e 5 23	+ 2	9 44	+ 5	—	—	—
Kagosima		27·7	8	e 5 48	− 4	—	—	—	—	—
Kotî		30·2	12	e 6 13	− 1	—	—	—	—	—
Kobe		31·6	15	7 19	+53	14 3	?	—	—	—
Nagoya		32·5	17	e 6 32	− 2	—	—	—	—	—
Tokyo, Cen. Met. Ob.		33·9	20	e 8 37	?	—	—	—	—	—
Nagano		34·3	17	6 50	0	—	—	—	—	—
Sendai		36·6	20	7 7	− 3	12 48	− 5	—	—	—
Brisbane	N.	40·5	143	e 9 11	PP	e 13 38	−14	e 14 21	PPS	e 16·5
Calcutta		41·1	301	(i 7 47)	0	—	—	(i 9 29)	PP	
Sapporo		41·1	16	e 7 52	+ 5	14 5	+ 4	—	—	—
Riverview		44·4	151	i 8 18	+ 4	e 14 32	−17	e 17 44	SS	—
Sydney		44·4	151	—	—	e 14 32?	−17	e 17 50?	SS	—
Colombo		46·3	276	—	—	e 15 14?	− 2	—	—	—
Kodaikanal		48·8	281	e 10 46	PP	i 15 52	0	—	—	—
Hyderabad	E.	49·2	290	e 7 51	−61	15 55	− 3	16 18	PS	26·2
Irkutsk		51·5	343	i 9 10	+ 1	16 27?	− 2	—	—	—
Bombay		54·2	291	—	—	17 2	− 4	i 17 47	PPS	—
Stalinabad		62·4	313	e 10 19	− 8	—	—	—	—	—
Tashkent		63·0	316	i 10 30	− 1	i 19 1	0	—	—	—
Wellington		63·1	141	—	—	18 50	−12	—	—	33·2
Sverdlovsk		73·5	329	i 11 34	− 2	21 1	− 5	—	—	—
College		84·6	26	—	—	e 22 52	[− 6]	—	—	e 38·6
Moscow		86·0	326	i 12 42	− 1	23 16	− 1	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		88·1	304	e 12 58	+ 4	—	—	e 13 42	PcP	—
Yalta		88·8	315	—	—	e 23 24	[− 1]	—	—	—
Helwan		92·3	300	e 13 14	+ 1	e 24 8	− 7	e 23 44	SKS	—
Bucharest		94·5	315	e 15 14?	?	i 22 54	[−64]	—	—	—
Upsala		95·8	331	e 30 14?	PKKP	—	—	—	—	e 46·2
Copenhagen		99·9	329	—	—	24 33	[+ 7]	—	—	—
Victoria		100·3	40	—	—	e 24 32?	[+ 4]	—	—	47·2
Cheb		102·0	323	—	—	e 25 14?	{+ 5}	—	—	e 60·2
Scoresby Sund		102·7	350	e 15 0	+60	e 25 59	+16	(e 32 34)	SS	e 32·6
Stuttgart		104·4	323	e 14 7	− 1	e 25 55	− 2	e 18 22	PP	e 50·7
Uccle		106·3	326	e 14 15	− 2	e 27 52	PS	e 18 55	PP	e 51·2
Tinemaha	z.	107·5	49	e 18 28	[0]	—	—	—	—	—
Kew		108·5	328	e 18 55	PP	e 31 4?	?	e 28 19	PS	e 54·2
Paris		108·5	325	e 13 55?	P	—	—	e 28 11	PS	55·2
Mount Wilson	z.	108·6	52	e 18 26	[− 4]	—	—	e 18 41	PP	—
Tucson		115·0	51	e 18 41	[− 2]	i 29 17	PS	e 19 55	PP	e 53·8
Almeria		117·4	315	e 20 42	PP	e 29 47	PS	—	—	70·2
Granada		118·0	316	i 17 44	[−65]	29 25	PS	36 42	PSS	65·6
San Fernando		120·2	316	e 20 54	PP	e 27 39	{+24}	—	—	74·2
Philadelphia		132·0	21	i 22 40	?	e 32 7	PS	—	—	e 67·5
Bermuda		142·3	14	e 19 29?	[− 6]	—	—	e 31 55?	?	e 70·7
Huancayo		157·1	113	—	—	e 30 57	{ 0}	e 44 48	PSS	e 73·9

Additional readings :—
Brisbane eSN =13m.34s.
Calcutta readings reduced by 4m.
Hyderabad SSE =19m.40s.
Bombay iN =21m.14s.
Helwan eZ =13m.26s., eN =25m.38s.
Scoresby Sund e =18m.6s., eS? =24m.38s. and 27m.49s.
Stuttgart ePPP =20m.26s., eSKS =24m.54s., ePPS =28m.20s., eSSS =37m.20s.?.
Tucson e =33m.12s.
Long waves were also recorded at Arapuni, Sitka, and other European stations.

July 8d. Readings also at 6h. (near Tucson), 9h. (near Huancayo), 13h. (Pittsburgh, Tucson, Tinemaha, Sofia, and near Bucharest), 14h. (Mount Wilson, Pasadena, Riverside, Tucson, and Tinemaha), 15h. (St. Louis, Tinemaha, Tucson, and near Mizusawa), 19h. (Mount Wilson, Tucson, Riverside, and Tinemaha), 20h. (near Mizusawa), 22h. (Andijan, Bucharest, and Sofia).

July 9d. 23h. 28m. 29s. Epicentre 52°·0N. 166°·9W.

A = −·6021, B = −·1401, C = +·7860 ; δ = −5 ; h = −6 ;
D = −·227, E = +·974 ; G = −·766, H = −·178, K = −·618.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		16·2	30	e 3 49	− 1	(e 6 53)	+ 2	—	—	e 6·9
Sitka		18·9	62	i 4 25	+ 1	e 7 56	+ 3	e 4 53	PPP	e 9·7
Victoria		27·7	80	e 5 53	+ 1	—	—	—	—	11·5
Ferndale	E.	31·2	93	—	—	e 13 47	SSS	—	—	—
Honolulu		31·5	163	e 7 37	PP	e 10 59	−35	—	—	e 13·4
Berkeley		34·0	96	i 6 49	+ 1	e 14 54	SSS	—	—	e 15·9
Santa Clara	z.	34·6	96	e 6 52	− 1	—	—	—	—	—
Tinemaha	z.	37·0	94	e 7 12	− 1	—	—	—	—	—
Santa Barbara		37·8	98	i 7 22	+ 2	—	—	—	—	—
Salt Lake City		38·7	84	—	—	e 13 30	+ 5	—	—	e 16·7
Mount Wilson		39·0	97	i 7 30	0	—	—	—	—	—
Pasadena		39·0	97	i 7 29	− 1	—	—	i 7 50	?	e 16·4
Riverside		39·6	97	i 7 35	0	—	—	i 7 52	?	—
Palomar	z.	40·3	97	e 7 41	+ 1	—	—	—	—	—
La Jolla	z.	40·4	98	i 7 42	+ 1	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		44·8	93	i 8 17	0	—	—	i 9 38	PP	e 21·7
Irkutsk		51·1	308	e 9 4	− 2	e 16 17	− 7	—	—	—
St. Louis		53·1	72	i 9 19	− 2	e 16 48	− 3	—	—	—
Cape Girardeau	N.	54·4	73	e 9 27	− 4	—	—	—	—	—
Scoresby Sund		55·2	14	e 9 42	+ 5	e 17 12	− 8	e 19 28	?	e 22·7
Ottawa		56·7	57	e 9 45	− 3	e 17 31?	− 9	25 31?	?	28·5
Seven Falls		58·0	53	—	—	e 17 31?	−26	—	—	27·5
Fordham		60·6	59	i 10 15	0	e 16 33	?	—	—	—
Philadelphia		60·8	61	e 10 23	+ 7	e 18 30	− 3	e 22 14	SS	e 25·0
Harvard		60·9	57	i 10 14	− 3	—	—	—	—	e 34·5
Sverdlovsk		64·7	333	10 46	+ 4	19 19	− 3	—	—	—
Moscow		70·8	345	11 18	− 2	20 28	− 7	—	—	—
Copenhagen		72·7	1	e 11 32	0	20 55	− 2	11 45	?	—
Tashkent		75·1	319	e 11 46?	0	i 21 24	0	—	—	—
De Bilt		76·1	5	—	—	i 21 41	+ 6	—	—	e 43·5
Jena		77·4	1	e 15 58	PPP	—	—	—	—	—
Paris		79·2	8	i 12 14	+ 6	—	—	—	—	50·5
Stuttgart		79·5	3	e 12 7	− 3	e 22 10	− 1	—	—	—
Yalta		82·2	345	e 12 25	+ 1	e 22 37	− 2	—	—	—
Tortosa	E.	86·9	10	—	—	e 23 1	[−13]	—	—	e 45·1
Toledo		87·3	13	e 12 51	+ 1	e 23 26	− 3	—	—	53·5
Granada		90·0	13	e 14 1a	+58	23 41	[+ 8]	25 14	PS	48·3
Almeria		90·5	12	e 12 59	− 6	e 24 1	+ 2	—	—	55·5

Additional readings :—
Tucson i = 8m.36s.
Harvard i = 10m.21s. and 10m.29s.
Jena eE = 16m.1s.?, EN = 16m.13s.
Granada SS = 28m.31s.
Long waves were also recorded at Florence, Ukiah, Chicago, and Columbia.

July 9d. Readings also at 0h. (near Bogota), 1h. (Wellington and Tucson), 2h. (Riverview, Pasadena, Mount Wilson, and Tinemaha), 3h. (Balboa Heights, St. Louis, and Kew), 4h. (near Almata and Tashkent), 5h. (Kew, Bucharest, near Andijan, and near Fort de France), 14h. (Cheb, Prague, and near Andijan), 18h. (Huancayo), 19h. (Kew, San Fernando, Granada, Stuttgart, Tortosa, Almeria, Helwan (2), and Ksara), 20h. (Harvard), 23h. (near Tashkent).

July 10d. 0h. Undetermined shock.

Tuai P? = 2m.0s., S = 4m.0s.
Wellington P = 2m.30s., S = 5m.16s., S_cS = 13m.0s.
Auckland S = 4m.7s., i = 5m.17s.
Pasadena iP = 10m.36s.k.
Mount Wilson iP = 10m.37s.k.
Riverside iP = 10m.38s.k, eZ = 11m.46s.
Palomar ePZ = 10m.39s.
Santa Barbara ePZ = 10m.40s.
Tinemaha iP = 10m.45s., eZ = 12m.55s.
Tucson iP = 10m.57s., e = 13m.5s.
Yalta eP = 17m.38s.
Copenhagen iP = 17m.45s.k, 17m.49s.

July 10d. Readings also at 2h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Tucson, also Yalta, near Sofia, Bucharest, Bacau, Focsani, Cernauti, and Campulung), 3h. (near Fresno), 16h. (Pasadena, Mount Wilson, Riverside, and Tucson), 19h. (Tacubaya), 20h. (near Mizusawa), 21h. (La Paz).

July 11d. 2h. 10m. 17s. Epicentre 33°·0S. 178°·0W. Base of Superficial layers.

Epicentres 34°·5S. 177°·0W (Stations of the U.S.S.R.), 33°·0S. 178°·5W. (Pasadena). Pasadena suggests depth of focus 180km.

$A = -·8398$, $B = -·0293$, $C = -·5421$; $\delta = -1$; $h = +1$;
$D = -·035$, $E = +·999$; $G = +·542$, $H = +·019$, $K = -·840$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		7·0	236	1 43	0	3 6	+ 4	i 3 18	sS	4·4
Tuai		7·0	213	1 46	+ 3	3 9	+ 7	i 2 4	sP	—
Arapuni		7·2	224	—	—	3 43?	SSS	i 4 13?	?	5·0
Hastings		7·8	211	—	—	e 3 43	SS	3 53	SSS	—
New Plymouth		8·8	225	i 2 28	pP	3 36	−11	i 4 40	SSS	5·7
Bunnythorp		8·9	214	—	—	e 3 23?	−26	—	—	—
Wellington		10·1	213	2 20?	− 6	4 13	− 6	4 48	Q	6·0
Kaimata		12·7	217	3 16	PP	5 18	− 4	i 4 8	?	—
Christchurch		12·8	212	3 5	+ 3	5 23	− 2	i 4 2	?	—
Apia		19·9	20	i 4 23	− 8	e 8 7?	− 1	i 5 9	PPP	e 10·0
Brisbane	N.	25·6	275	e 5 25	− 3	i 10 55	+64	i 6 42	PPP	i 15·2
Riverview		25·7	259	i 5 33a	+ 4	i 10 25	+32	i 6 21	PPP	i 13·5
Sydney		25·7	259	i 5 40	+11	i 11 16	SSS	e 6 37	PPP	14·4
Honolulu		57·3	22	e 9 35	−12	e 17 35	− 4	e 12 17	PP	e 23·1
Naha		78·3	311	e 11 57	− 1	—	—	—	—	—
Shizuoka		79·0	325	e 11 19	−43	22 0	+ 3	—	—	—
Tokyo Cen. Met. Ob.		79·0	326	e 12 20	+18	e 22 32	+35	15 2	PP	39·4
Nagoya		79·9	324	e 12 12	+ 5	—	—	—	—	—
Osaka		80·2	322	12 8	− 1	22 15	+ 5	—	—	—
Miyazaki		80·3	318	12 13	+ 4	21 54	−17	—	—	45·0
Koti		80·4	320	e 12 7	− 3	—	—	—	—	—
Kagosima		80·5	317	e 12 11	+ 1	—	—	—	—	—
Nagano		80·5	325	12 15	+ 5	—	—	—	—	—
Sendai		80·5	329	12 3	− 7	22 6	− 7	—	—	—
Mizusawa	E.	81·2	329	e 12 14	0	22 14	− 6	—	—	—
	N.	81·2	329	e 12 8	− 6	22 8	−12	—	—	—
Kumamoto		81·4	318	e 12 9	− 6	—	—	—	—	—
Hukuoka		82·1	318	12 16	− 3	—	—	—	—	—
Mori		83·9	330	(12 28)	0	(i 22 53)	+ 5	—	—	—
Sapporo		84·4	332	12 34	+ 4	22 57	+ 4	i 23 46	SP	e 39·3
Santa Barbara		86·6	45	e 12 38	− 3	—	—	i 13 23	pP	—
La Jolla		87·0	47	i 12 41	− 2	—	—	i 13 26	pP	—
Branner		87·2	41	e 12 43	− 1	—	—	e 12 46	P	—
Pasadena		87·3	46	i 12 43k	− 2	e 23 30	+ 9	i 13 28	pP	e 39·6
Santa Clara		87·3	41	i 12 43	− 2	e 23 30	+ 9	i 13 30	pP	—
Mount Wilson		87·4	46	i 12 43k	− 2	—	—	i 13 27	pP	e 39·4
Berkeley		87·5	41	i 12 42	− 4	i 23 34	+11	i 13 27	pP	i 40·4
Lick	N.	87·5	41	e 12 46	0	—	—	—	—	—
Palomar		87·5	47	e 12 45	− 1	—	—	e 13 27	pP	—
Riverside		87·7	46	i 12 44k	− 3	—	—	i 13 28	pP	—
Fresno	N.	88·1	43	e 12 47	− 1	—	—	—	—	—
Ferndale		88·4	38	e 12 37	−13	e 23 23	− 8	e 37 27	Q	—
Haiwee		88·8	44	e 12 49	− 3	—	—	i 13 35	pP	—
Tinemaha		89·3	44	i 12 51k	− 3	—	—	i 13 37	pP	—
Tucson		90·7	51	i 12 59	− 2	e 23 58	+ 6	i 13 43	pP	—
La Plata	E.	92·1	134	14 7	pP	31 1?	SS	26 7	PPS	39·6
	N.	92·1	134	13 19	+12	25 13?	+69	14 2	pP	39·9
	Z.	92·1	134	13 49?	pP	—	—	—	—	46·2
Huancayo		93·9	106	e 13 21	+ 6	e 24 9	−11	e 19 20	PPP	42·2
Seattle		94·5	34	e 13 18	0	e 24 26	+ 1	e 18 36	PPP	e 39·6
Victoria		94·7	33	e 12 59	−21	e 24 33	+ 4	—	—	38·7
Salt Lake City		95·4	44	e 14 12	pP	e 24 51	+18	e 18 57	PPP	e 41·8
Logan		96·1	43	i 13 25	0	e 24 10	[+12]	e 14 4	pP	e 40·9
La Paz	z.	97·0	114	13 31	+ 1	i 25 13	+27	i 14 17	pP	45·7
Sitka		97·1	21	e 13 27	− 3	e 24 23	SKKS	e 17 8	PP	e 40·0
Bozeman		99·0	40	e 13 26	−12	e 25 5	+ 2	e 14 11	pP	e 41·4
College		100·4	12	e 17 56	PP	e 24 17	[− 3]	e 26 3	sS	e 39·8
Colombo		104·5	268	e 17 43?	?	e 25 27	−22	—	—	49·7

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Lincoln		104·9	50	—	—	e 24 21	[−20]	e 42 51	Q		e 51·8
Saskatoon		105·2	36	e 18 27	PP	—	—	e 27 43?	PS		49·7
Kodaikanal		107·6	271	e 13 58	P	25 53	−21	29 18	SPP		51·9
Cape Girardeau	E.	108·0	56	e 18 43	PP	—	—	e 19 27	pPP		—
St. Louis	E.	108·1	54	e 14 21	P	e 26 32	+13	e 15 0	pP		e 48·3
Irkutsk		108·5	320	e 18 35	PP	24 59	[+ 2]	21 5	PPP		—
Rio de Janeiro	N.	109·6	136	e 18 45	PP	e 28 34	PS	—	—		—
Hyderabad	E.	110·4	278	(e 18 5)	[−24]	(24 56)	[− 9]	(19 26)	PP		(53·6)
Chicago		111·4	52	e 19 4	PP	e 28 39	PS	e 35 4	SSP		45·2
Tananarive		112·5	227	e 19 21	PP	26 6	SKKS	29 39	PPS		54·7
Columbia		112·7	62	e 19 16	PP	e 28 51	PS	e 29 37	PPS		e 56·2
Bombay	N.	115·8	276	—	—	25 6	[−20]	26 14	SKKS		—
Pittsburgh		116·1	56	e 18 53	[+13]	e 29 16	PS	i 19 46	PP		—
San Juan		117·9	84	e 19 52	PP	e 27 36	S	i 31 29	PPS		e 55·1
Philadelphia		119·4	59	e 19 3	[+16]	—	—	e 22 33	PPP		e 50·7
Fordham		120·6	58	e 18 52	[+ 3]	i 29 44	?	i 37 50	SSP		—
Ottawa		120·7	53	19 32	[+43]	30 19?	PS	20 49?	PP		55·7
Vermont		122·2	55	e 20 30	PP	e 30 54	PS	e 36 37	SS		54·7
Harvard		122·7	57	i 18 52	[− 1]	e 31 0	SP	i 19 36	pPKP		e 61·7
Shawinigan Falls		123·0	52	e 19 37?	pPKP	—	—	—	—		56·7
Seven Falls		124·4	51	19 31?	pPKP	30 33	PS	20 34	PP		56·7
Bermuda		124·8	70	(e 19 23?)	pPKP	(e 30 17?)	PS	(20 32?)	PP		—
Tashkent		126·9	299	e 21 24	PP	i 26 57	[+55]	i 23 5	PKS		—
Halifax		128·9	56	e 19 44	pPKP	—	—	e 39 13?	SSP		57·7
Sverdlovsk		133·9	319	e 19 27	[+12]	i 29 21	SKKS	i 22 43	PKS		—
Ivigtut		137·3	33	e 19 39	[+19]	—	—	e 22 46	PKS		—
Scoresby Sund		140·2	12	e 19 26	[+ 1]	e 29 15	SKKS	e 19 58	pPKP		62·8
Moscow		146·5	324	i 19 36	[− 1]	27 20	[+40]	23 45	PKS		—
Upsala		151·2	344	e 19 43?	[− 1]	—	—	e 42 26	SS		e 78·7
Ksara		151·8	280	e 19 56	[+11]	e 26 52	[+ 5]	e 20 42	pPKP		—
Bergen		152·5	356	e 20 23	pPKP	—	—	e 43 8	SS		e 76·7
Yalta		152·6	304	e 19 49	[+ 3]	30 19	SKKS	—	—		—
Helwan		154·8	270	e 19 49	[0]	31 22	SKKS	e 20 13	PKP_3		—
Aberdeen		155·7	5	i 20 55	[+64]	—	—	i 25 17	?		78·0
Copenhagen		156·2	346	e 19 50a	[− 1]	—	—	20 16	PKP_3		—
Focsani		156·9	313	e 20 31?	PKP_3	—	—	—	—		—
Bucharest		158·1	308	e 20 23	PKP_3	i 31 1	SKKS	—	—		51·7
Stonyhurst		158·9	7	e 20 56	$pPKP_3$	—	—	—	—	e	71·7
Potsdam	N.	159·0	342	e 20 39	PKP_3	—	—	i 21 18	$pPKP_3$	e	78·7
Prague		160·6	335	e 20 13?	[+16]	e 27 31?	[+34]	20 34	pPKP	e	74·7
Sofia		160·6	306	e 20 1	[+ 4]	e 31 13	SKKS	e 31 58	SKKKS		74·7
Jena		160·7	340	e 19 55	[− 2]	—	—	i 20 37?	PKP_3		69·7
De Bilt		160·8	353	i 19 57k	[0]	—	—	e 20 43	PKP_3	e	74·7
Ogyalla		160·8	326	e 19 8	[−49]	e 31 43	SKKS	e 19 13?	PKP	e	34·7
Cheb		161·3	340	e 20 39	PKP_3	—	—	e 24 2	PP	e	87·7
Belgrade		161·5	314	e 20 41a	PKP_3	—	—	—	—	e	55·7
Kew		161·5	4	i 19 57a	[0]	e 26 48?	[− 9]	i 20 43	PKP_3	e	75·7
Uccle		162·1	357	e 19 52	[− 6]	e 26 10	[−47]	i 20 42	PKP_3		—
Stuttgart		163·4	343	e 19 57	[− 2]	e 38 43	PPS	i 20 43	PKP_3		75·7
Strasbourg		163·8	346	e 20 44	PKP_3	—	—	e 25 14	PP		92·7
Paris		164·2	358	i 20 1	[+ 1]	—	—	i 20 44	PKP_3		83·7
Triest		164·5	328	e 20 43	PKP_3	—	—	—	—		—
Zurich		164·8	342	e 20 42	PKP_3	—	—	—	—		—
Basle		164·9	346	e 20 44	PKP_3	—	—	—	—		—
Besançon		165·4	348	e 22 43?	?	—	—	—	—		86·7
Neuchatel		165·5	345	e 20 1	[0]	—	—	—	—		—
Milan		166·4	338	e 20 46	PKP_3	—	—	28 35	PPP		80·9
Florence		167·0	330	i 20 8	[+ 6]	i 27 43	[+42]	i 21 23	PKP_3		—
Clermond-Ferrand		167·3	357	i 20 2k	[0]	—	—	i 21 2	PKP_3	e	81·7
Lisbon		169·3	54	e 20 7	[+ 3]	—	—	e 20 17	pPKP		69·0
Toledo		171·6	34	e 20 6	[+ 1]	26 58	[− 5]	i 25 18	PP		85·5
Tortosa		172·1	9	19 42	[−23]	—	—	25 37	PP	e	82·7
San Fernando		172·4	60	i 20 11	[+ 6]	i 26 58	[− 5]	i 21 29	PKP_3		84·2
Granada		173·8	46	i 20 2	[− 4]	47 26	SS	21 33	PKP_3	i	87·8
Almeria		174·7	42	i 20 7	[0]	26 46	[−18]	20 51	pPKP		82·2

For Notes see next page.

NOTES TO JULY 11d. 2h. 10m. 17s.

Additional readings :—
Auckland i = 2m.46s., Q? = 3·7m.
Tuai i = 2m.20s., 2m.34s., 3m.3s., and 3m.6s.
Wellington iZ = 3m.38s.
Apia iZ = 5m.43s.?.
Brisbane iSSN = 12m.56s., iQN = 13·5m.
Riverview iEZ = 5m.36s., iE = 6m.40s., iEZ = 6m.47s., iN = 6m.57s., iE = 10m.48s., iZ = 10m.58s., iN = 11m.10s., iEZ = 11m.15s., iN = 11m.34s., iQN = 11·9m.
Honolulu epP = 10m.23s.
Tokyo PPP? = 19m.3s., pS = 23m.39s., SS = 27m.55s.
Mori readings have been reduced by 1m.
Pasadena iPPZ = 16m.12s., ipPPZ = 17m.2s., iE = 28m.27s., Q = 36·0m.
Mount Wilson iPPNZ = 16m.4s., ipPPZ = 16m.53s., ePKKPZ = 30m.38s., iZ = 31m.24s.
Berkeley ePEN = 12m.45s., iSN = 24m.13s., iN = 36m.41s., iE = 36m.48s., eN = 38m.43s.
Riverside iZ = 13m.40s., iPKKPZ = 30m.53s., iZ = 31m.38s.
Tinemaha eZ = 30m.50s., iZ = 31m.18s.
Tucson i = 16m.19s., iPP = 16m.36s., ePPP = 18m.12s., e = 19m.2s., ePS = 24m.48s., e = 25m.51s., and 30m.47s.
La Plata SSSE = 34m.31s.?, PPN = 18m.13s., PSN = 26m.13s.?, PPSN = 26m.55s.?.
Huancayo e = 16m.19s. and 25m.13s., ePS = 26m.1s., isSS = 31m.41s., e = 38m.46s.
Salt Lake City e = 14m.53s., ePS = 25m.33s., e = 32m.39s.
Logan ePP = 17m.14s., ePS = 26m.13s., eSSS = 34m.45s.
La Paz iPZ = 13m.34s.a, iPPZ = 17m.29s., iPPSZ = 26m.59s.
Sitka epPP = 18m.18s., i = 25m.48s.
Bozeman ePP = 17m.35s., e = 18m.21s., 27m.23s., and 32m.35s.
Kodaikanal SSE = 35m.40s.
Cape Girardeau eN = 20m.24s.
St. Louis iPPZ = 18m.47s., epPPZ = 19m.28s., isSP?E = 28m.49s., ePPS?E = 29m.25s.
Irkutsk SKKS = 25m.44s., SS = 33m.50s.
Hyderabad SKKSE = 25m.55s., PPSE = 28m.45s., SSE = 35m.1s., all readings reduced by 1m.
Chicago e = 29m.20s.
Columbia e = 35m.56s.
Bermuda eSS = (36m.56s.?), all readings increased by 10m.
Bombay PSN = 29m.50s., iN = 30m.22s. and 31m.35s.
Pittsburgh iSSNW = 35m.25s.
San Juan e = 21m.21s. and 30m.24s., i = 34m.14s., eSSS = 41m.26s.
Philadelphia e = 27m.46s. and 30m.35s.
Ottawa SS = 36m.43s.?, SSS = 41m.43s.?.
Vermont e = 21m.41s., isSS = 38m.7s., e = 46m.46s.
Harvard i = 20m.2s. and 20m.22s., ePP = 21m.12s., e = 26m.39s. and 28m.8s., eSP = 31m.0s., e = 35m.58s.
Seven Falls PPS = 31m.19s.?, e = 38m.23s.
Tashkent iSKKS = 28m.43s., SKSP = 32m.19s.
Sverdlovsk iPPP = 24m.47s.
Ivigtut e = 23m.36s. and 26m.19s., eSKKS? = 27m.59s., e = 33m.12s., eSS = 41m.14s.
Scoresby Sund ePP = 23m.1s., e = 34m.31s. and 42m.26s., eSSS = 54m.27s.
Moscow SKKS = 29m.53s., iPS = 34m.1s.
Upsala eE = 43m.31s. and 61m.43s.?, eN = 62m.43s.?.
Ksara e = 36m.25s.
Bergen e = 24m.28s.
Helwan PKKP?Z = 20m.43s., eZ = 22m.58s., eEN = 25m.3s., eN = 32m.49s. and 41m.31s
Aberdeen eEN = 53m.17s.
Copenhagen 20m.19s., 20m.37s., 20m.50s., 24m.37s.
Bucharest iPZ = 20m.27s., ePN = 20m.31s.?, iPSEN = 31m.44s.
Stonyhurst e = 28m.56s., i = 41m.28s. and 49m.28s., e = 59m.43s.?.
Prague ePP = 25m.2s., ePPP = 29m.1s.?, eSKKS = 30m.43s.?,?, ePPP($\Delta > 180°$) = 31m.43s., eSS = 45m.13s.?, eSSS = 51m.49s.?.
Jena eN = 20m.0s., iN = 21m.1s.?, iN = 21m.19s., iEN = 21m.43s., eN = 22m.22s. and 25m.1s.
De Bilt ePP = 24m.23s., ePPP = 28m.55s.
Cheb e = 28m.7s.?, 31m.57s., and 52m.21s.
Belgrade i = 21m.31s., ePP = 25m.34s., iSKKS = 32m.1s., iSKSP = 35m.32s., e = 38m.50s.
Kew eN = 22m.5s., ePP = 24m.16s., iZ = 25m.3s., ePPP = 28m.22s., iNZ = 30m.48s., eSKKS = 31m.35s., ePSS?E = 34m.43s.?, ePPS = 39m.13s.?, eSSE = 45m.13s.?, ePSS?NZ = 46m.13s.?, eSSSNZ = 51m.43s.?.
Uccle ipPKP$_2$Z = 21m.27s., isPKP$_2$Z = 22m.7s., iPPZ = 24m.27s., epPPNZ = 24m.49s., isPPZ = 25m.9s., eZ = 28m.45s., iN = 28m.52s., eSKKSE = 30m.51s.
Stuttgart ePPPZ = 24m.35s., iPPP?Z = 25m.17s., eS?Z = 29m.36s., eS = 29m.43s.?, ePS = 32m.10s., ePPS = 32m.57s.
Strasbourg e = 26m.34s., eSKS$_2$ = 32m.55s.
Paris ePP = 25m.24s., e = 35m.37s.
Milan PPE = 25m.53s.
Florence iSKPE = 23m.52s., ePPZ = 25m.11s., iSKKSE = 31m.43s., iPSKSE = 35m.51s. iSSE = 46m.9s.

Continued on next page.

Clermont-Ferrand epPKP =20m.45s., iSKP =23m.24s., ePPP =28m.54s.
Lisbon ePKP$_2$Z =20m.50s., ePKP$_2$N =21m.57s., PPZ =24m.57s. and 25m.9s., Z = 25m.50s.
Toledo SSN =46m.41s.
Tortosa PPPE =29m.35s., iN =31m.55s. and 38m.20s., SSE =44m.0s., SSSN =51m.32s.
San Fernando iPPE =26m.12s., SSE =47m.23s., iSSSE =54m.36s.
Granada PKP$_2$ =22m.20s., pPKP$_2$ =22m.54s., iPP =26m.9s., pPP =26m.43s., sPP = 27m.44s., sSKS =29m.10s., PPP =30m.2s., pPPP =30m.22s., SKKS =32m.50s., sSKKS =34m.3s., SKSP =36m.38s., sSS =48m.39s.
Almeria sPKP =21m.15s., PKP$_2$ =21m.50s., pPKP$_2$ =22m.43s., sPKP$_2$ =23m.0s., PP = 25m.23s., pPP =26m.11s., PPP =29m.43s., pPPP =30m.11s., SP =35m.5s., PS = 35m.27s., SS =46m.17s., sSS =46m.25s., SSS =53m.33s.

July 11d. 2h. Undetermined Pacific shock. Probably an aftershock of 2h. 10m. 17s.

Tuai i =19m.17s., S =20m.23s.
Wellington i =20m.56s., S =21m.30s.
Mount Wilson iPZ =30m.1s.
Pasadena iPZ =30m.1s., iZ =30m.16s., iE =41m.40s., iZ =41m.18s.
Riverside ePZ =30m.1s., iZ =30m.18s.
Haiwee ePZ =30m.9s.
Tinemaha iPZ =30m.11s., iZ =30m.26s.
Tucson e =40m.35s., 40m.42s., 46m.6s., 49m.44s., eL =60m.10s.

July 11d. 16h. Undetermined Pacific shock. Probably an aftershock of 2h. 10m. 17s.

Pasadena suggests deep focus.
Tuai P? =4m.20s., i =4m.31s., S =5m.35s.
Auckland S =5m.40s., i =6m.12s. and 6m.55s.
Wellington S =6m.40s.?, Q? =9·0m., R =13·0m.
Mount Wilson iP =15m.12s., eZ =15m.26s.
Pasadena iPZ =15m.13s., iZ =15m.26s.
Riverside ePZ =15m.13s., eZ =15m.28s.
Haiwee ePZ =15m.19s.
Tinemaha ePZ =15m.22s., eZ =15m.36s.
Tucson iP =15m.29s., e =16m.48s., eL =58·1m.
Stuttgart eZ =23m.13s. and 23m.18s.
Long waves were also recorded at Harvard, Huancayo, Riverview, and Christchurch.

July 11d. Readings also at 2h. (Wellington), 3h. (Mount Wilson, Riverside, Tinemaha, Tucson, Edinburgh, Tchimkent, and near Tashkent), 4h. (near La Paz), 6h. (Berkeley), 10h. (Huancayo, La Paz, Mount Wilson, Pasadena, Tucson, Riverside, Tinemaha, and near Mizusawa), 11h. (near La Paz), 13h. (Granada), 14h. (La Paz), 15h. (Christchurch), 19h. (near Bucharest and Sofia), 21h. (Prague).

July 12d. Readings at 8h. (Arapuni, Auckland, Christchurch, Tuai, Wellington (2), Riverview, Mizusawa, Tucson, Mount Wilson, Pasadena, Riverside, Tinemaha, Cape Girardeau, and St. Louis), 9h. (Harvard), 14h. (Andijan and near Bogota), 16h. (Mount Wilson, Pasadena, Riverside, Tucson, and Tinemaha), 19h. (Riverside, Pasadena, Tucson, and Tinemaha), 22h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, Riverview, Clermont-Ferrand, and Granada), 23h. (Auckland and Wellington).

July 13d. 16h. Eastern Europe.

Istanbul P =4m.36s., S$_g$ =5m.22s.
Sofia ePEN =5m.54s.?, eEN =8m.9s. and 8m.36s.?.
Ksara e =6m.3s. and 7m.46s.
Bucharest ePZ =6m.18s., eP$_g$Z =6m.47s., iSN =7m.32s., iS*E =7m.50s., iS$_g$E = 8m.6s.
Helwan eNZ =6m.18s., eN =7m.54s.
Stuttgart eP?Z =8m.31s.
Triest e =10m.40s.
Florence iPZ =12m.18s., eSE =13m.32s.
Copenhagen 12m.57s., L =17m.
Cheb e =14m.?.
Kew iP?Z =14m.30s., iS?Z =18m.15s., eLNZ =20m.43s.

July 13d. Readings also at 2h. (Basle, Zürich, Bogota, and near Mizusawa), 3h. (Pasadena, Tinemaha, Tucson, Stuttgart (2), Clermont-Ferrand, and near Zürich), 4h. (Andijan), 6h. (Granada), 8h. (Auckland), 9h. (near Andijan), 12h. (Cheb), 13h. and 14h. (Stuttgart), 15h. (Mizusawa), 16h. (Cheb), 17h. (near Almata), 19h. (Fort de France, Cheb, and near Mizusawa), 23h. (near Branner).

July 14d. 4h. 16m. 32s. Epicentre 48°·2N. 9°·0E. (as on 4d.).

$A = +·6609$, $B = +·1046$, $C = +·7432$; $\delta = +8$; $h = -5$;
$D = +·156$, $E = -·988$; $G = +·734$, $H = +·116$, $K = -·670$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ebingen	0·0	—	i 0 5?	− 2	—	—	—	—	—
Ravensburg	0·6	135	e 0 23	+ 8	—	—	—	—	—
Stuttgart	0·6	13	i 0 13	− 2	i 0 20	− 6	—	—	—
Strasbourg	0·9	295	e 0 20	0	i 0 31	− 3	—	—	—
Zürich	0·9	198	e 0 20	0	e 0 33	− 1	—	—	—
Basle	1·2	235	e 0 24	0	i 0 40	− 1	—	—	—
Chur	1·4	165	e 0 29	+ 2	e 0 51	+ 5	—	—	—
Neuchatel	1·8	229	e 0 34	+ 2	e 1 1	+ 5	i 0 38	P_g	—
Milan	2·7	177	e 0 53?	P*	1 22	+ 3	—	—	—
Jena	3·2	32	i 1 2	P_g	—	—	i 1 7	?	i 1·5
Prague	4·0	62	—	—	e 2 9	S_g	—	—	—
Clermont-Ferrand	4·7	236	e 1 33	P_g	—	—	—	—	—

July 14d. 19h. Undetermined shocks.

Auckland P = 45m.0s.?, S? = 46m.13s., i = 46m.22s., L = 46m.45s., second shock, i = 49m.30s.?, 50m.0s., and 50m.40s.
Arapuni S? = 46m.0s., second shock S? = 49m.6s.?.
Wellington S? = 46m.9s., i = 46m.55s.?, R = 49m.0s., second shock S? = 49m.20s., iZ = 50m.13s., L = 52·1m.
Brisbane eP?N = 47m.22s., eE = 54m.23s., iN = 57m.21s., eE = 58m.1s., eN = 58m.44s.
Riverview iP?E = 47m.30s., iPP?E = 48m.8s., iEZ = 50m.37s., iS?E = 52m.12s., iSS?N = 53m.23s., eLE = 55m.0s.
Christchurch S = 48m.3s., Q = 48m.32s., R = 50m.17s.
Sydney e = 48m.42s.? and 51m.18s.?.
Haiwee ePZ? = 54m.33s., eZ = 57m.55s.
Santa Barbara ePZ = 54m.37s., eZ? = 57m.46s.
Mount Wilson iPNZ = 54m.39s., iZ = 57m.48s.
Pasadena ePZ = 54m.40s., iZ = 57m.47s., eLZ = 86m.
Riverside ePZ = 54m.40s., iZ = 57m.48s.
La Jolla ePN = 54m.46s.
Tinemaha ePZ = 54m.49s., iZ = 57m.56s.
Tucson iP = 54m.57s., i = 58m.4s., eL = 89m.40s.
Moscow P = 61m.30s., S = 64m.42s.
Yalta eP = 61m.51s.
Stuttgart eZ = 62m.0s. and 62m.43s., eL = 70m.
Almeria PKP = 63m.39s., pPKP = 64m.20s., PP = 69m.1s., SKS = 70m.22s., SP = 78m.49s.
Granada PKP = 64m.19s., pPKP = 65m.12s., SKP = 67m.48s., pSKP = 68m.26s., ePP = 70m.10s., sPP = 71m.11s., ePPP = 74m.20s., sSKKS = 78m.11s., SS? = 89m.19s., sSS = 91m.54s., sSSP = 92m.2s., SSS = 98m.38s., eL = 129m.18s.
Helwan eZ = 64m.54s. and 66m.3s.
Pittsburgh eEN = 65m.2s. and 70m.34s., eL?EN = 108m.51s.
Honolulu e = 66m.22s., eL = 71m.20s.
San Juan e = 67m.43s., 75m.13s., and 81m.15s., eL = 104m.39s.
Huancayo e = 69m.4s., eL = 88m.20s.
Uccle eN = 77m., eE = 86m.36s.?.
Santa Clara eE = 81m.29s. and 88m.49s.
Long waves were also recorded at other American and European stations.

July 14d. Readings also at 7h. (Bucharest, Stuttgart, and Triest), 9h. (Arapuni, Auckland, Wellington, Riverview, Mount Wilson, Tucson, and Tinemaha), 10h. (La Jolla, Mount Wilson, Pasadena, Riverside, Tucson, Bozeman, Tinemaha, St. Louis, and La Plata), 11h. (Harvard, Philadelphia, Pittsburgh, and Clermont-Ferrand), 12h. (Salt Lake City), 14h. (Riverview), 15h. (Stuttgart), 16h. (Auckland, Arapuni, Wellington, Riverview, Mount Wilson, Tucson, Pasadena, Riverside, and Tinemaha), 20h. (Kew), 23h. (near Arapuni, Auckland, Christchurch, Wellington, Riverview, Mount Wilson, Riverside, Tucson, and Stuttgart).

July 15d. 11h. 53m. 52s. Epicentre 39°·9N. 78°·3E.

A = +·1560, B = +·7533, C = +·6389; δ = −1; h = −2;
D = +·979, E = −·203; G = +·130, H = +·626, K = −·769.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tashkent		7·0	284	1 47	+ 1	i 3 9	+ 1	2 24	P_g	—
Tchimkent		7·0	293	e 2 3	P*	i 3 45	S_g	—	—	—
Stalinabad		7·5	263	1 55	+ 2	—	—	—	—	—
Dehra Dun	N.	9·6	181	—	—	e 4 16	+ 4	—	—	e 6·3
New Delhi	N.	11·3	185	i 2 44	− 2	i 4 48	− 6	5 1	SS	—
Calcutta	N.	19·3	151	—	—	i 8 10	+ 8	—	—	e 10·5
Sverdlovsk		20·5	332	4 41	− 1	8 30	+ 3	—	—	—
Bombay		21·5	194	e 4 55	+ 3	e 8 49	+ 2	9 18	SS	12·3
Irkutsk		21·7	47	4 58	+ 3	e 8 55	+ 4	—	—	—
Hyderabad	E.	22·4	179	9 10	S	(9 10)	+ 6	—	—	(12·1)
Kodaikanal	E.	29·6	182	—	—	e 13 28	?	i 15 53	?	16·8
Moscow		31·1	314	e 6 24	+ 2	—	—	—	—	—
Colombo	E.	32·9	177	e 8 8?	PPP	—	—	—	—	—
Bucharest		38·4	295	e 6 38?	−47	e 10 45	?	—	—	24·1
Upsala	E.	42·1	319	e 7 58	+ 3	e 16 50	SS	e 9 41	PP	e 21·7
Copenhagen		45·2	313	e 8 21	+ 1	15 0	− 1	e 10 6	PP	24·1
Triest		46·6	299	e 8 28	− 4	e 15 8	−13	—	—	—
Bergen		48·2	321	—	—	e 19 23	SS	—	—	e 25·9
Stuttgart		48·7	304	e 8 48	0	e 15 54	+ 4	e 10 43	PP	26·8
De Bilt		50·2	310	—	—	e 20 8	SS	—	—	e 26·1
Uccle	Z.	51·0	309	e 9 6	0	—	—	—	—	e 27·7
Kew		53·6	311	e 21 22	?	e 26 50?	?	—	—	e 28·6
Scoresby Sund		56·2	337	—	—	e 17 54	+21	e 22 54	SSS	e 30·1

Additional readings :—
Tashkent iS_g = 3m.53s.
Bombay iE = 8m.56s., eN = 9m.2s., iN = 11m.9s.
Hyderabad records S as P. and L as S, also SSE = 12m.25s.
Upsala eN = 17m.13s., eE = 17m.39s.
Copenhagen 15m.10s. and 18m.17s.
Stuttgart eSS = 19m.42s., eQ = 25m.44s.?.
Kew readings are wrongly identified, other phases given are ePP?Z = 22m.46s., eP_cP?Z = 24m.40s.?.
Long waves are also recorded at other European stations.

July 15d. 12h. 23m. 2s. Epicentre 17°·0N. 76°·0W.

Severe damage to buildings in rural parts of the island of Jamaica. Most severe at Baladava.
Seismolog. Notes, Bull. Seismolog. Soc. of America, vol. 33, 1943, p. 296.

A = +·2315, B = −·9285, C = +·2906; δ = +15; h = +5;
D = −·970, E = −·242; G = +·070, H = −·282, K = −·957.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bogota		12·4	171	e 3 44	PPP	—	—	—	—	—
Fort de France		14·4	96	e 3 25	− 2	—	—	—	—	—
Columbia		17·5	347	e 4 5	− 2	—	—	(e 7 28)	SS	e 7·5
Philadelphia		22·9	4	(e 5 8)	+ 2	(e 9 16)	+ 3	(e 6 6)	PPP	(e 11·3)
Cape Girardeau		23·5	333	e 5 2	−10	—	—	—	—	—
Pittsburgh		23·6	354	e 5 15	+ 2	e 9 23	− 2	—	—	e 11·4
St. Louis		24·9	333	e 5 20	− 6	e 9 43	− 4	e 5 52	PP	e 11·8
Harvard		25·7	9	e 5 36	+ 3	—	—	—	—	e 18·0
Chicago		26·6	340	—	—	e 10 20	+ 4	—	—	e 13·3
Tucson		34·9	304	e 6 54	− 1	—	—	e 15 14	SSS	e 24·2
Riverside	Z.	40·7	303	e 7 50	+ 6	—	—	—	—	—
Pasadena	Z.	41·4	303	e 7 51	+ 1	—	—	—	—	—
Tinemaha	Z.	42·2	307	e 7 55	− 1	—	—	—	—	—
Sitka		59·5	327	e 13 36	PPP	—	—	—	—	e 30·3

Additional readings :—
Philadelphia readings reduced by 3 hours.
St. Louis eZ = 5m.41s.
Long waves were also recorded at College.

July 15d. 20h. Undetermined shock.
Epicentre 39°·5N. 144°·0E. (stations of the U.S.S.R.).
Irkutsk eP =44m.28s., eS =49m.35s.
Mizusawa eSE =46m.0s.
Tashkent P =46m.59s.?, eS =54m.41s.?.
Sverdlovsk iP =47n .33s., eS =55m.13s.
Ksara e =50m.6s. and 59m.16s.
Copenhagen iP =50m.26s.k.
Helwan ePZ =50m.28s., e =60m.36s.
De Bilt iZ =50m.56s.
Uccle ePZ =51m.0s., eSN =61m.18s., eL =81m.
Kew ePZ =51m.9s., ePPZ =54m.40s., ePPP?Z =57m.18s., ePSZ =63m.0s., eLNZ =84m.
Tinemaha ePZ =51m.26s., eZ =55m.10s.
Mount Wilson iPNZ =51m.33s., eNZ =55m.10s.
Pasadena iPZ =51m.33s.
La Jolla ePEZ =51m.35s.
Riverside ePZ =51m.35s.
Palomar iPZ =51m.40s., eZ =55m.26s.
Tucson e =56m.8s.
Florence eS?E =82m.11s.

July 15d. Readings also at 0h. (Zürich, Granada, Harvard, St. Louis, Pasadena, and near Fresno), 1h. (De Bilt, Kew, and Uccle), 2h. (near New Delhi, near Mizusawa, and near Tashkent), 7h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Tucson, near Mizusawa), 8h. (Ksara and College), 10h. (Mizusawa, near Bogota, and near Yalta), 11h. (near Bogota), 13h. (New Delhi), 20h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Tucson, Palomar, near La Paz), 21h. (St. Louis and Tucson), 23h. (Fort de France).

July 16d. 1h. 20m. 2s. Epicentre 41°·6N. 142°·0E. (as on June 15d.).

Scale IV at Hakodate, Miyako, and Urakawa; II-III at Hatinohe, Amori, Marioka, and Obihiro. Radius of Macroseismic area 200-300km., depth 20km.
Seismological Bulletin of the Central Met. Obs. Japan for 1943, Tokyo 1950 p. 35 with macroseismic chart.

$A = -\cdot5910$, $B = +\cdot4617$, $C = +\cdot6614$; $\delta = -10$; $h = -2$;
$D = +\cdot616$, $E = +\cdot788$; $G = -\cdot521$, $H = +\cdot407$, $K = -\cdot750$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hatinohe		1·1	198	0 21a	− 1	0 36	− 3	—	—	—
Aomori		1·2	229	0 25k	+ 1	0 42	+ 1	—	—	—
Sapporo		1·6	342	0 30k	0	0 52	+ 1	—	—	—
Miyako		1·8	180	0 31	− 1	0 52	− 4	—	—	—
Mizusawa	N.	2·6	195	0 43	− 1	1 13	− 4	—	—	—
Sendai		3·4	194	0 55	0	1 30	− 7	—	—	—
Hukusima		4·0	198	1 5	+ 1	1 58	+ 6	—	—	—
Aikawa		4·6	220	1 11	− 1	2 2	− 5	—	—	—
Mito		5·4	195	1 22	− 2	2 27	− 1	—	—	—
Utunomiya		5·4	200	1 20	− 4	—	—	—	—	—
Tukubasan		5·6	196	1 22	− 5	2 48	S*	—	—	—
Maebasi		5·7	205	1 26	− 2	2 36	+ 1	—	—	—
Nagano		5·8	213	1 30	+ 1	2 37	− 1	—	—	—
Hunatu		6·6	203	1 42	+ 1	3 6	+ 8	—	—	—
Misima		6·9	201	1 55	+10	3 21	S*	—	—	—
Shizuoka		7·2	204	2 3	P*	3 14	+ 1	—	—	—
Gihu		7·4	215	1 48	− 4	3 21	+ 3	—	—	—
Nagoya		7·5	213	1 56	+ 3	3 16	− 4	—	—	—
Hikone		7·8	217	2 55k	+57	—	—	—	—	—
Kameyama		8·0	215	2 5	+ 5	—	—	—	—	—
Toyooka		8·3	225	2 3	− 1	—	—	—	—	—
Osaka		8·6	218	2 5	− 4	3 14	?	—	—	—
Kobe		8·8	220	2 20	+ 9	3 45	− 8	—	—	—
Tinemaha	z.	72·8	56	e 11 26	− 6	—	—	e 11 42	pP	—
Mount Wilson		74·7	58	i 11 38	− 5	—	—	i 11 52	pP	—
Pasadena	z.	74·7	58	e 11 40	− 3	—	—	i 11 54	pP	—
Riverside	z.	75·3	58	e 11 47	0	—	—	e 11 57	pP	—
Palomar	z.	76·1	57	e 12 1	+10	—	—	—	—	—
Tucson		80·6	56	e 12 10	− 6	—	—	e 12 29	pP	—
Stuttgart	z.	80·9	330	e 12 23	+ 6	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Clermont-Ferrand		85·6	332	e 12 36	− 5	—	—	—	—	—
St. Louis		87·0	39	e 12 42	− 6	e 23 14	[0]	e 23 45	S	e 40·0

St. Louis also gives eSSE = 29m.4s.

July 16d. 1h. 54m. 2s. Epicentre 33°·0N. 21°·5E.

A = +·7818, B = +·3080, C = +·5421 ; δ = −5 ; h = +1 ;
D = +·367, E = −·930 ; G = +·504, H = +·199, K = −·840.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan	Z.	9·0	108	2 13	0	e 4 1	+ 3	2 25	PP	—
Sofia		9·8	8	e 2 31	+ 7	—	—	—	—	e 7·1
Bucharest		11·9	16	e 2 58	+ 4	—	—	—	—	—
Ksara		12·1	82	3 6	+ 9	—	—	—	—	—
Florence	E.	13·4	326	e 4 42	?	e 6 5	+20	—	—	—
Triest		14·0	337	e 3 17	− 5	e 6 14	+15	—	—	—
Stuttgart		18·3	334	e 4 16	− 1	e 7 47	+ 8	—	—	—
Cheb		18·4	342	—	—	e 7 51	+10	—	—	e 9·1
Tortosa	E.	18·5	302	i 3 46	−33	i 7 19	−25	—	—	e 11·0
Clermont-Ferrand		19·0	317	e 4 25	− 1	e 7 58	+ 3	—	—	—
Jena		19·3	343	e 4 33	+ 4	—	—	—	—	—
Almeria		20·0	289	i 4 31	− 6	8 10	− 7	4 47	PP	15·7
Granada		20·9	290	i 4 49	+ 3	i 8 28	− 7	5 2	pP	13·9
Toledo		21·6	296	e 4 49	− 5	i 9 0	+11	9 47	SS	—
Uccle		21·8	330	e 4 56	0	e 8 35	−17	e 9 6	?	e 11·0
De Bilt		22·5	334	i 5 4	+ 2	i 9 16	+11	—	—	e 14·0
Copenhagen		23·6	348	e 5 15	+ 2	9 32	+ 7	—	—	—
Kew		24·4	326	e 5 22	+ 1	e 9 44	+ 5	—	—	e 13·0

Additional readings :—
Helwan eZ = 3m.8s., SNZ = 5m.16s., P_cPE = 7m.16s.
Almeria P_cP = 8m.29s., SS = 8m.48s., SSS = 9m.10s.
Granada sS = 8m.55s., P_cP = 9m.14s.

July 16d. Readings also at 0h. (near Mizusawa), 5h. (La Plata), 6h. (Palomar and near Irkutsk), 8h. (Haiwee, Tucson, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and Stuttgart), 9h. (Granada), 11h. (near Almata, Andijan, Stalinabad, and Tashkent), 12h. (Tashkent and near Andijan), 15h. (Merida, near Basle and Zürich), 16h. (San Juan, Cape Girardeau, St. Louis, near Tucson, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Strasbourg, Ebingen, Uccle. De Bilt, Kew, Stuttgart (2), and Prague), 20h. (near Andijan and near La Paz), 21h. (Tashkent and near Tchimkent), 22h. (near Lisbon and near Mizusawa), 23h. (Auckland and near La Paz).

July 17d. Readings at 2h. (New Delhi), 4h. (near Mizusawa), 5h. (near Tucson (2)), 6h. (St. Louis), 10h. (Florence), 17h. and 23h. (near Mizusawa).

July 18d. 7h. 55m. 7s. Epicentre 22°·5S. 70°·5W.

A = +·3087, B = −·8718, C = −·3805 ; δ = +11 ; h = +4;
D = −·943, E = −·334 : G = −·127, H = +·359, K = −·925.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		1·5	94	i 0 25?	− 3	i 0 45?	− 4	—	—	—
La Paz	Z.	6·4	21	i 1 42	+ 4	i 2 58	+ 5	—	—	3·4
Huancayo		11·4	335	e 2 57	+10	e 4 45	−11	e 3 12	PP	e 5·6
La Plata	E.	16·5	141	3 59?	+ 5	6 47?	−11	—	—	8·1
	N.	16·5	141	3 59?	+ 5	6 59?	+ 1	—	—	8·2
	Z.	16·5	141	4 5	+11	—	—	—	—	8·8
Bogota		27·2	353	e 5 50	+ 3	—	—	e 6 0	pP	—
San Juan		40·9	8	e 8 5	+19	e 13 56	− 2	e 17 6	SS	e 21·2
Cape Girardeau	N.	62·1	344	e 10 24	− 1	e 18 46	− 3	e 10 34	pP	—
Pittsburgh		63·2	353	—	—	e 19 4	+ 1	—	—	—
St. Louis		63·6	344	e 10 31	− 4	e 19 1	− 7	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		66·7	324	i 10 55	0	—	—	—	—	e 34·5
La Jolla	z.	70·9	320	e 11 21	0	—	—	e 11 32	pP	—
Palomar	z.	71·0	321	i 11 21	− 1	—	—	i 11 31	pP	—
Riverside		71·7	320	i 11 26	0	—	—	i 11 37	pP	—
Mount Wilson		72·3	320	i 11 29	0	—	—	i 11 41	pP	—
Pasadena		72·3	320	i 11 29	0	—	—	i 11 40	pP	—
Santa Barbara		73·4	319	e 11 37	+ 1	—	—	e 11 47	pP	—
Tinemaha		74·4	322	e 11 42	0	—	—	e 11 52	pP	—
Granada		86·5	48	i 12 7	−39	—	—	—	—	49·2
Stuttgart	z.	100·1	42	e 23 51	?	e 24 20	[− 7]	—	—	—

Additional readings :—
St. Louis eZ =10m.40s., eE =19m.18s.
Tucson i =11m.8s., e =22m.40s., i =23m.38s.
Long waves were also recorded at De Bilt and Kew.

July 18d. Readings also at 1h. (Cheb, Ebingen, Stuttgart, and near Zürich), 3h. and 4h. (near Mizusawa), 5h. (near San Juan, New Delhi, near Tashkent, and Tchimkent), 8h. (Brisbane, Riverview, Arapuni, Wellington, La Jolla, Tucson, Mount Wilson, Pasadena, Riverside, Palomar, Tinemaha, Bogota, and near Mizusawa), 11h. (Ebingen and near Stuttgart), 17h. (Balboa Heights), 21h. (Bogota, Huancayo, and near La Paz), 22h. (Harvard, Mount Wilson, Tucson, Pasadena, Palomar, Riverside, and Tinemaha), 23h. (Palomar, Tucson, and near Tashkent).

July 19d. Readings at 0h. (near Stalinabad), 1h. (De Bilt, Uccle and Kew), 5h. (near Fort de France), 7h. (Wellington), 9h. (Ksara), 10h. (Bucharest), 11h. (Bogota, Cape Girardeau, St. Louis, Pittsburgh, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and Scoresby Sund), 15h. (Stuttgart), 16h. (Triest), 20h. (near Branner and near La Paz), 21h. (Florence, Sofia, Bucharest, near Istanbul, and near Mizusawa), 22h. (St. Louis and near Tucson), 23h. (near Ottawa).

July 20d. Readings at 1h. (Apia, Auckland, Christchurch, Wellington, Mount Wilson, Pasadena, Palomar, Tucson, Riverside, and Tinemaha), 6h. (St. Louis, Mount Wilson (2), Pasadena (2), Palomar, Tucson (2), Riverside (2), and Tinemaha (2)), 10h. (Mount Wilson, Pasadena, Palomar, Tucson, Riverside, and Tinemaha), 11h. (near Andijan), 15h. (Berkeley).

July 21d. 2h. 6m. 49s. Epicentre 38°·0N. 21°·0E. (as on 1943 June 14d.).

$A = +·7375$, $B = +·2831$, $C = +·6131$; $\delta = -6$; $h = -1$;
$D = +·358$, $E = -·934$; $G = +·572$, $H = +·220$, $K = -·790$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		5·1	21	e 1 21	+ 1	i 2 19	− 1	i 2 47	S_g	—
Belgrade		6·8	357	e 1 46	+ 2	e 3 41	S_g	e 2 25	P_g	—
Bucharest		7·4	30	e 2 0	+ 8	i 3 46	S*	—	—	—
Focsani		9·0	28	e 2 59?	?	—	—	—	—	—
Florence	E.	9·4	311	e 3 31	?	e 4 45	L	—	—	(e 4·8)
Triest		9·4	327	e 2 19	+ 1	i 3 49	−18	—	—	—
Milan		11·5	314	e 3 1	+13	—	—	—	—	6·5
Chur		12·2	320	e 2 50	− 8	e 5 1	−15	—	—	—
Prague		13·0	341	e 3 45	+36	—	—	—	—	—
Zürich		13·1	320	e 3 17	+ 7	e 5 15	−23	—	—	—
Cheb		13·6	336	—	—	e 5 11?	−39	—	—	e 6·2
Basle		13·7	319	e 3 9	− 9	—	—	—	—	—
Neuchatel		13·7	316	e 3 13	− 5	—	—	—	—	—
Stuttgart		13·7	326	e 3 11	− 7	e 6 23?	+31	—	—	e 7·8
Strasbourg		14·3	322	—	—	e 6 16	+10	—	—	—
Jena		14·5	336	e 3 21	− 7	e 7 26	?	e 3 24	P	i 8·0
Uccle		17·4	323	e 4 5?	− 1	e 7 17?	− 2	—	—	e 9·6
De Bilt		17·9	327	—	—	e 7 32	+ 2	—	—	e 9·2
Copenhagen		18·6	345	e 4 19	− 2	7 47	+ 1	—	—	—
Kew		20·2	320	e 4 31?	− 8	e 8 20	− 1	e 10 53	Q	e 11·8
Upsala		22·0	356	e 5 1	+ 3	e 8 55	− 1	—	—	—

Additional readings :—
Belgrade e =2m.6s., i =4m.3s.
Bucharest iS*?N =4m.18s., iS*?E =4m.22s., iN =4m.30s.
Long waves were also recorded at Paris, Potsdam, Bergen, and Aberdeen.

July 21d. 4h. 13m. 58s. Epicentre 33°·0S. 110°·0W. (as on 1940 March 7d.).

This determination and the shock of 1940 March 7d. are both intended to be very approximate.

$A = -·2874$, $B = -·7896$, $C = -·5421$; $\delta = -6$; $h = +1$;
$D = -·940$, $E = +·342$; $G = +·185$, $H = +·509$, $K = -·840$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		38·0	64	e 7 20	− 1	i 13 31	+17	e 8 58	PP	e 16·4
La Paz	Z.	41·1	77	7 39	− 8	13 49	−12	i 16 7	SS	20·0
La Plata	N.	42·8	106	8 44?	+43	17 26?	SS	9 44?	PP	21·0
Bogota		50·6	49	e 9 3	+ 1	—	—	—	—	—
Wellington		58·8	239	—	—	—	—	e 22 2?	SS	26·0
Arapuni		59·2	242	e 15 2?	PPP	—	—	—	—	26·0
Christchurch		59·6	235	10 18	+10	17 37	−40	12 20	PP	25·9
Auckland		60·3	244	—	—	—	—	i 22 2?	SS	27·0
Tucson		64·9	359	e 10 43	0	e 19 52	+28	e 14 16	PPP	e 32·4
La Jolla	Z.	65·9	354	e 11 8	+18	—	—	—	—	—
San Juan		66·1	46	e 11 5	+14	e 19 51	+12	e 14 39	PPP	e 30·4
Palomar	Z.	66·3	355	e 10 51	− 1	—	—	—	—	—
Riverside		67·0	353	e 10 55	− 2	—	—	e 11 5	pP	—
Pasadena		67·2	353	i 11 1	+ 3	e 20 14?	PS	i 11 18	pP	e 32·2
Mount Wilson		67·3	353	i 11 1	+ 2	—	—	—	—	—
Santa Barbara		67·7	352	e 11 4	+ 3	—	—	—	—	—
Haiwee		69·2	354	e 11 15	+ 5	—	—	—	—	—
Tinemaha	Z.	70·2	354	e 11 15	− 2	—	—	e 11 24	pP	—
Honolulu		70·7	314	—	—	e 20 54	PS	e 28 54	SSS	e 30·6
Berkeley		71·4	350	i 15 53	PPP	i 21 4	PS	—	—	e 35·3
Columbia		72·0	25	—	—	e 21 13	PS	—	—	e 35·3
Cape Girardeau	N.	72·5	17	e 11 33	+ 3	—	—	—	—	—
Ukiah		72·8	349	—	—	e 21 19	PS	e 26 18	SS	e 32·4
Salt Lake City		73·4	359	e 12 54	?	e 21 24	PS	—	—	e 37·7
St. Louis		73·5	15	e 11 36	0	i 21 28	PS	e 26 23	SS	e 32·6
Bermuda		77·7	38	e 12 15	+15	e 22 10	+18	—	—	e 33·4
Pittsburgh		78·2	23	e 12 21	+18	e 22 17	+20	—	—	—
Riverview	E.	78·9	237	—	—	e 21 20	−45	—	—	e 34·2
Philadelphia		79·4	27	—	—	e 22 25	+15	e 28 4	SS	e 34·4
Victoria		82·0	352	—	—	e 22 59	+22	—	—	41·0
Harvard		83·0	28	e 12 38	+10	—	—	e 17 26	*PPP	e 41·0
Ottawa		84·0	23	—	—	e 23 14	+17	—	—	39·0
Saskatoon		84·8	2	—	—	e 23 24	+19	—	—	42·0
Seven Falls		87·2	26	—	—	e 23 26?	− 2	—	—	38·0
Scoresby Sund		120·1	22	e 21 22	PP	e 26 59	{−16}	e 37 7	SS	e 48·2
Almeria		121·8	64	—	—	e 32 37	PPS	e 38 34	SS	61·0
Aberdeen	E.	126·5	40	—	—	—	—	e 39 43	SS	62·8
Kew		126·9	47	e 21 10	PP	e 30 32?	PS	e 23 2?	PPP	e 60·0
Paris		128·3	51	e 18 38?	[−31]	—	—	—	—	62·0
Uccle		129·7	48	e 21 26?	PP	e 33 26?	PPS	e 38 8?	SS	e 63·0
Cheb		134·8	49	—	—	—	—	e 50 2?	?	e 69·0
Helwan	Z.	147·0	85	19 26	[−17]	—	—	23 12	PP	—

Additional readings :—
La Plata E = 9m.32s., N = 18m.44s.?.
Christchurch Q = 21m.32s.
Tucson iP = 10m.49s.
San Juan eSS = 24m.13s.
Berkeley iE = 21m.10s., iN = 25m.57s., eE = 31m.46s.
St. Louis iPZ = 11m.40s.
Philadelphia e = 23m.23s.
Harvard e = 14m.50s.
Scoresby Sund e = 41m.42s.
Kew eSSEZ = 37m.2s.?, eSSSZ = 42m.2s.?.
Helwan PKKPZ = 19m.47s., sPKP?Z = 20m.5s., sPKKP?Z = 20m.23s., eZ = 21m.43s., and 22m.56s., sPPZ = 23m.47s.
Long waves are also recorded at Bozeman, College, Sitka, and other European stations.

July 21d. 22h. 43m. 3s. Epicentre 0°·8N. 80°·5W. (as on 1943 March 16d.).

A = +·1650, B = −·9862, C = +·0138 ; δ = +1 ; h = +7 ;
D = −·986, E = −·165 ; G = +·002, H = −·014, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bogota		7·5	59	e 2 14	P*	e 3 40	S*	i 2 22	P_g	—
Huancayo		13·7	158	e 3 17	− 1	e 5 42	−10	—	—	e 6·7
La Paz	z.	21·1	146	i 4 46a	− 2	i 8 40	+ 1	—	—	12·0
San Juan		22·5	39	e 5 11	+ 9	e 9 32	+27	e 6 33	?	e 10·7
Fort de France		23·6	56	e 5 24	+11	—	—	—	—	—
Cape Girardeau	N.	37·3	349	e 7 19	+ 3	—	—	—	—	—
St. Louis		38·7	348	i 7 30	+ 3	e 13 38	+13	e 16 27	SSS	—
Tucson		42·4	322	i 8 0	+ 2	e 14 3	−17	—	—	e 22·5
Palomar	z.	47·0	318	i 8 37	+ 2	—	—	—	—	—
Riverside		47·8	318	i 8 43	+ 2	—	—	—	—	—
Mount Wilson	z.	48·4	318	i 8 45	− 1	—	—	—	—	—
Pasadena	z.	48·4	318	i 8 46k	0	—	—	—	—	—
Santa Barbara	z.	49·6	317	i 8 57	+ 2	—	—	—	—	—
Tinemaha	z.	50·2	321	e 9 2	+ 2	—	—	—	—	—

July 21d. Readings also at 6h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, and near Apia), 10h. (Mount Wilson, Tucson, Pasadena, Tinemaha, Huancayo, La Plata, and near La Paz), 15h. (near Ottawa), 16h. (near Ebingen and Stuttgart).

July 22d. 0h. 10m. 29s. Epicentre 40°·4N. 124°·2W. (as on 1942 May 28d.).

Felt in Mendocino Co.

A = −·4293, B = −·6316, C = +·6456 ; δ = +2 ; h = −2 ;
D = −·827, E = +·562 ; G = −·363, H = −·534, K = −·764.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ferndale		0·2	343	i −0 9	?	i 0 16	0	—	—	i 0·5
Berkeley		2·9	149	e 0 41	− 7	i 1 20	− 4	i 0 52	P*	—
Branner		3·4	152	e 0 54	− 1	e 1 22	−15	—	—	—
Santa Clara •	E.	3·5	150	e 1 35	S	(e 1 35)	− 5	—	—	—
Lick		3·6	146	e 1 4	+ 6	i 1 58	S_g	e 1 26	P_g	—
Fresno	N.	5·0	135	e 1 21	+ 3	—	—	—	—	—
Tinemaha		5·7	124	e 1 28	0	1 2 34	− 1	—	—	—
Haiwee		6·5	129	e 1 40	+ 1	e 2 51	− 4	—	—	—
Mount Wilson		7·9	140	i 1 59	0	e 3 26	− 4	—	—	—
Pasadena	z.	7·9	140	i 1 56	− 3	e 3 27	− 3	—	—	—
Riverside	z.	8·4	137	e 2 3	− 3	—	—	—	—	—
Palomar	z.	9·2	138	e 2 17	+ 1	—	—	e 3 20	?	—
Tucson		13·5	123	e 3 27	+12	—	—	e 6 44	SSS	—

Berkeley also gives iPE = 0m.57s., eN = 1m.2s., iE = 1m.8s.

July 22d. 2h. 9m. 18s. Epicentre 0°·6S. 81°·7W. (as on April 28d.).

Epicentre 0°·5S. 81°·5W. (U.S.C.G.S.).

A = +·1443, B = −·9895, C = −·0104 ; δ = +4 ; h = +7 ;
D = −·990, E = −·144 ; G = −·002, H = +·010, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bogota		9·2	56	e 2 14	− 2	—	—	i 2 34	PPP	i 5·4
Balboa Heights		9·7	13	e 2 19	− 3	i 3 58	−17	(e 4 52)	S*	e 4·9
Huancayo		13·0	151	e 3 15	− 6	i 5 30	− 5	—	—	e 6·5
La Paz	z.	20·7	141	i 4 47a	+ 3	i 8 42	SS	—	—	12·1
San Juan		24·3	38	i 5 18	− 2	i 9 30	− 7	—	—	e 10·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fort de France		25·4	54	e 5 22	− 9	e 9 48	− 8	—	—	—
Columbia		34·4	2	e 6 50	− 1	e 12 15	− 4	—	—	e 14·4
Bermuda		36·5	25	e 11 6	?	e 12 46	− 5	—	—	—
Cape Girardeau	N.	38·4	351	e 7 22	− 3	e 13 16	− 4	e 9 0	PP	—
St. Louis		39·8	350	i 7 34	− 2	e 13 35	− 7	e 9 11	PP	—
Philadelphia		40·8	9	e 7 47	+ 2	i 13 50	− 6	e 9 2	PP	e 16·9
Pittsburgh		40·9	3	e 7 53	+ 7	e 13 50	− 8	—	—	—
Tucson		42·7	323	i 8 3	− 3	e 14 35	PS	i 9 49	PP	e 21·9
Rio de Janiero	N.	43·5	123	e 14 42	S	(e 14 42)	+ 6	—	—	e 21·7
Ottawa		46·1	7	8 24	− 4	15 6?	− 8	19 12?	SSS	22·7
La Jolla		47·2	319	i 8 39	+ 3	—	—	—	—	—
Palomar	Z.	47·3	320	e 8 38	+ 1	—	—	i 8 49	?	—
Riverside		48·0	320	i 8 43	0	—	—	i 8 54	?	—
Seven Falls		48·5	10	—	—	e 15 43	− 5	—	—	23·7
Mount Wilson		48·6	320	i 8 48k	+ 1	—	—	i 8 59	?	—
Pasadena		48·6	320	i 8 49k	+ 2	i 16 28	PPS	—	—	e 23·3
Haiwee		49·7	322	e 8 59	+ 3	—	—	—	—	—
Bozeman		52·9	335	e 9 24	+ 4	e 16 52	+ 4	—	—	e 27·8
Berkeley		53·5	321	i 9 26	+ 2	i 17 6	+ 9	—	—	e 30·0
Victoria		60·8	330	10 19	+ 3	18 42	+ 9	—	—	30·7
Scoresby Sund		80·8	17	e 12 16	− 1	e 22 15	−10	—	—	—
Granada		80·9	52	i 12 14	− 3	i 22 28	+ 2	12 32	P_cP	e 40·8
Toledo		80·9	50	i 12 17	0	e 22 22	− 4	—	—	—
Almeria		81·8	53	12 20	− 2	22 38	+ 3	12 33	P_cP	37·2
Kew		85·1	39	e 12 37	− 2	—	—	—	—	e 21·7
Clermont-Ferrand		86·8	45	e 12 45	− 2	e 23 13	[0]	—	—	e 48·7
Uccle		88·0	39	e 12 45	− 8	e 23 31	− 5	—	—	e 41·7
De Bilt		88·5	38	e 12 54	− 2	i 23 27	[+ 3]	—	—	e 43·7
Stuttgart	Z.	91·0	42	e 13 4	− 3	—	—	—	—	—
Florence	E.	92·6	47	—	—	e 24 22	+ 4	—	—	—
Triest		94·2	45	—	—	e 23 42	[−15]	—	—	—

Additional readings :—
Bogota i = 2m.55s.
St. Louis eSSSE = 16m.39s.
Almeria PP = 15m.26s., PPP = 17m.16s., S = 22m.24s., PS = 23m.0s., PPS = 23m.27s., SS = 31m.0s.
Long waves were also recorded at Chicago and La Plata.

July 22d. 7h. 9m. 28s. Epicentre 38°·8N. 20°·6E. (as on 1938 March 13d.).

Epicentre 38°·8N. 20°·2E. (Strasbourg).

A = +·7314, B = +·2749, C = +·6240 ; δ = −11 ; h = −1 ;
D = +·352, E = −·936 ; G = +·584, H = +·220, K = −·781.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	4·4	27	e 1 13	+ 3	i 2 6	+ 4	i 1 51	P_g	—
Belgrade	6·0	359	e 1 32	0	e 2 41	− 2	e 1 42	P*	—
Bucharest	7·0	35	e 1 47	+ 1	i 3 20	+12	e 1 51	P*	—
Campulung	7·3	26	e 2 20?	P_g	—	—	—	—	4·5
Kalossa	7·8	353	e 1 52	− 6	e 3 22	− 6	—	—	e 4·6
Focsani	8·5	34	e 2 14?	+ 7	—	—	—	—	e 4·5
Triest	8·5	326	i 2 5	− 2	i 3 42	− 3	—	—	—
Florence	8·6	308	e 2 18	+ 9	i 4 4	+16	i 4 26	S*	i 5·8
Bacau	9·0	29	e 2 44?	PPP	—	—	—	—	5·0
Ogyalla	9·2	350	e 3 52	?	e 4 22	+19	—	—	6·0
Milan	10·8	312	e 2 39	0	5 57	L	—	—	(5·9)
Chur	11·4	318	e 2 46	− 1	e 4 57	+ 1	—	—	—
Yalta	11·6	57	e 3 5	PPP	—	—	—	—	—
Prague	12·1	341	e 2 47	−10	e 4 32?	?	—	—	e 6·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zürich		12·3	316	e 3 7	PP	e 7 2	L	—	—	(e 7·0)
Helwan		12·6	132	i 2 56k	− 7	e 5 47	SS	i 3 11	PP	i 6·8
Cheb		12·7	335	—	—	e 5 29	+ 1	—	—	e 6·5
Basle		12·9	317	e 3 25	PPP	e 7 39	L	—	—	e 7·6
Neuchatel		12·9	314	e 3 5	− 2	—	—	—	—	—
Stuttgart		12·9	324	e 3 5	− 2	e 5 52	SS	e 3 20	PP	e 8·0
Ksara		13·3	107	e 3 15	+ 2	e 5 58	SS	—	—	—
Strasbourg		13·5	321	e 3 15	0	—	—	—	—	e 7·3
Jena		13·7	335	e 3 13	− 5	e 6 9	SS	i 3 27	PP	e 7·5
Potsdam		14·6	341	e 3 40	+10	e 6 35	SS	—	—	7·5
Clermont-Ferrand		14·7	304	i 3 27a	− 4	e 6 17	+ 1	—	—	e 7·0
Tortosa		15·6	284	i 3 1	?	6 16	−21	—	—	e 7·5
Paris		16·4	313	i 3 56	+ 3	e 7 2	+ 6	—	—	e 9·5
Uccle		16·6	324	e 3 56k	0	e 7 12	+12	e 7 15	SS	e 8·9
De Bilt		17·1	326	e 4 3a	+ 1	—	—	—	—	e 9·5
Copenhagen		17·8	344	e 4 11	0	e 7 35	+ 7	—	—	9·5
Almeria		18·3	273	i 4 12	− 5	7 55	SS	4 24	PP	11·8
Toledo		19·1	283	i 4 24	− 3	i 8 0	+ 3	—	—	—
Granada		19·2	274	i 4 22	− 6	i 7 55	− 4	4 32	PP	10·4
Kew		19·4	319	e 4 27a	− 3	e 8 8	+ 4	e 4 59	PPP	e 10·5
Upsala	E.	21·2	355	e 4 57	+ 8	e 8 42	+ 1	—	—	e 11·5
	N.	21·2	355	4 51	+ 2	e 8 46	+ 5	e 5 21	PPP	e 11·5
San Fernando	E.	21·3	273	e 4 53	+ 3	e 9 28	SS	—	—	e 12·4
Lisbon		23·2	281	5 5	− 4	9 20	+ 2	7 41?	?	12·7
Aberdeen		23·7	330	i 5 8	− 6	i 9 32	+ 5	—	—	13·2
Bergen		23·7	343	5 15	+ 1	9 33	+ 6	—	—	13·0
Tashkent		37·0	71	e 6 39	−34	13 26?	+27	—	—	—
Tchimkent		37·0	69	7 13	0	—	—	—	—	—
Scoresby Sund		38·6	340	e 9 0	PP	—	—	e 14 58	?	e 21·4
St. Louis		80·2	313	e 12 11	− 3	—	—	—	—	e 40·5
Tucson		96·1	321	e 13 31	0	—	—	—	—	—
Palomar	Z.	98·1	325	e 12 47	−53	—	—	—	—	—

Additional readings :—
Sofia iE = 2m.22s., iS_gEN = 2m.40s.
Belgrade i = 1m.58s. and 2m.30s., iS = 3m.19s.
Bucharest iS?E = 3m.32s., iS*?EN = 4m.7s.
Helwan eZ = 3m.44s., eEN = 5m.8s.
Jena iE = 3m.19s., iN = 3m.23s., eN = 4m.26s. and 4m.29s.
Almeria PP = 4m.28s., PPP = 4m.51s., SS = 8m.3s.
Granada PP = 4m.46s., pPP = 4m.53s., S = 8m.23s.
Kew eP_cPEN = 7m.36s., eZ = 8m.43s., eSSZ = 9m.55s.
Long waves were also recorded at Besançon and Barcelona.

July 22d. 14h. 2m. 26s. Epicentre 48°·2N. 9°·0E. (as on 14d.).

A = +·6609, B = +·1046, C = +·7432 ; δ = +8 ; λ = −5.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ebingen	0·0	—	i 0 3?	− 4	i 0 3?	S*	—	—	—
Ravensburg	0·6	135	e 0 15?	0	e 0 21?	S*	—	—	—
Stuttgart	0·6	13	e 0 11	P_g	i 0 18	S_g	—	—	—
Strasbourg	0·9	295	i 0 29	S_g	i 0 33	− 1	—	—	—
Zürich	0·9	198	e 0 19	− 1	e 0 32	− 2	—	—	—
Basle	1·2	235	i 0 24	0	e 0 41	0	—	—	—
Neuchatel	1·8	229	e 0 36	P_g	e 1 0	S_g	—	—	—

Long waves were recorded at Kew.

July 22d. Readings also at 1h. (Ksara), 5h. (Tinemaha), 9h. (Mizusawa), 10h. (near Irkutsk), 12h. (Pasadena, Tucson, Mount Wilson, Riverside, Tinemaha, Palomar), 13h. (De Bilt, Triest, Florence, Bucharest, Uccle, near Ebingen, Stuttgart (2), and near Sofia), 14h. (Zürich, near Stuttgart, and Ebingen), 15h. (Harvard and near Branner).

July 23d. 14h. 53m. 8s. Epicentre 8°·6S. 109°·9E. Depth of focus 0·005.

A = −·3366, B = +·9299, C = −·1485; δ = +7; h = +7;
D = +·940, E = +·340; G = +·051, H = −·140, K = −·989.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	N.	33·7	296	i 6 34	− 3	11 49	− 5	—	—	—
Kodaikanal	E.	37·3	301	i 7 12k	+ 4	i 12 42	− 8	14 32	SS	17·8
Calcutta	N.	37·6	327	i 7 9a	− 1	i 12 34	−20	—	—	—
Naha		38·6	26	i 7 20	+ 2	13 14	+ 4	—	—	20·6
Hyderabad	E.	40·4	311	7 32	− 1	13 42	+ 5	8 55	PP	20·8
Nake		40·8	28	i 7 43	+ 6	13 53	+10	—	—	—
Kagosima		44·6	26	8 10	+ 2	14 38	0	—	—	—
Brisbane	E.	44·8	121	i 8 6	− 3	i 14 32	− 9	—	—	—
Riverview		45·5	130	i 8 14k	− 1	i 14 50	− 1	i 8 37	pP	e 21·1
Sydney		45·5	130	i 8 19	+ 4	e 14 52	+ 1	—	—	—
Bombay	E.	45·6	297	i 8 15	− 1	i 14 53	+ 1	8 38	pP	—
Kumamoto		45·7	25	i 8 17	+ 1	14 55	+ 1	—	—	—
Hukuoka		46·3	24	9 10	+49	15 53	+51	—	—	—
Koti		47·6	28	i 8 32	+ 1	15 21	0	—	—	—
Hiroshima		47·8	26	8 34	+ 1	15 24	0	—	—	—
Hamada		48·1	25	8 34	− 1	15 23	− 5	—	—	—
Zinsen		48·4	18	8 38	+ 1	15 33	+ 1	—	—	—
New Delhi	E.	48·6	321	i 8 46	+ 7	i 15 39	+ 4	10 38	PP	21·4
	N.	48·6	321	i 8 36	− 3	i 15 29	− 6	10 24	PP	21·6
Dehra Dun	E.	49·3	324	i 9 3a	+19	i 15 55	+10	—	—	e 21·7
Kobe		49·3	29	i 8 46	+ 2	14 44	−61	—	—	—
Kameyama		50·0	30	8 49	− 1	15 50	− 4	—	—	—
Hatidyozima		50·3	33	8 49	− 3	14 49	−69	—	—	—
Nagoya		50·5	30	8 54	0	16 4	+ 3	—	—	—
Misima		51·4	31	8 59	− 1	16 14	0	—	—	—
Yokohama		52·0	32	9 4	− 1	16 18	− 4	e 9 17	pP	—
Nagano		52·3	29	9 7	0	16 23	− 3	—	—	—
Tokyo Cen. Met. Ob.		52·3	32	9 6	− 1	16 16	−10	10 24	pP	—
Wazima		52·3	28	9 9	+ 2	16 29	+ 3	—	—	—
Sendai		54·8	31	9 25	− 1	16 57	− 3	—	—	—
Mizusawa		55·6	30	9 31	0	17 10	0	9 34	P	—
Hatinohe		56·9	29	9 40	− 1	17 19	− 9	—	—	—
Mori		57·7	27	9 48	+ 2	i 17 38	0	—	—	—
Sapporo		58·9	27	9 33	−22	17 52	− 2	—	—	—
Stalinabad		60·5	324	i 10 4	− 2	e 18 12	− 2	—	—	—
Irkutsk		60·8	357	i 10 8	0	18 21	+ 3	—	—	—
Tananarive		61·2	254	i 10 10	0	e 18 23	0	10 35	pP	28·0
Tashkent		62·1	327	i 10 18	+ 2	i 18 37	+ 2	—	—	—
Tchimkent		62·6	328	i 10 17	− 3	—	—	—	—	—
Christchurch		64·4	135	10 32	0	19 9	+ 6	13 8	PP	30·6
Auckland		64·8	128	10 44?	+10	19 29	+21	10 59	pP	27·4
Wellington		65·5	132	10 37	− 2	19 14	− 3	10 52	pP	29·9
Arapuni		65·7	128	10 58?	+18	19 46?	+27	27 52?	Q	30·6
Apia		76·7	103	e 11 42	− 4	e 20 46	−40	i 12 12	pP	—
Sverdlovsk		76·7	335	i 11 35	−11	21 24	− 2	—	—	—
Ksara		81·7	306	e 12 15	+ 2	e 22 32?	+13	e 15 26	PP	—
Helwan		84·4	301	e 12 27	0	i 22 42	− 4	15 40	PP	—
Yalta		85·9	316	i 12 46	+12	i 23 1	0	—	—	—
Moscow		87·3	328	12 40	− 1	23 0	[0]	—	—	—
Istanbul		88·7	312	12 47	0	23 13	[+ 4]	13 13	pP	—
Focsani		91·0	318	e 13 4	+ 6	e 24 5	+17	e 23 59	SKS	—
Bacau		91·4	317	e 13 4	+ 4	e 24 4	+13	e 16 42	PP	—
Bucharest		91·5	315	i 13 2a	+ 1	i 23 29	[+ 4]	i 16 37	PP	41·9
Campulung		92·4	315	e 13 5	0	e 23 10?	[−20]	e 16 45	PP	—
Cernauti	E.	92·4	319	e 13 4	− 1	e 23 28	[− 2]	e 16 42	PP	—
Sofia		93·3	312	e 13 10	+ 1	e 23 35	[0]	e 16 56	PP	41·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Honolulu		95·2	69	e 13 21	+ 3	i 24 32	+ 8	e 13 46	pP	e 37·0
Belgrade		95·6	314	13 19k	0	i 23 51	[+ 4]	i 17 12	PP	e 49·7
Kalossa	E.	96·8	316	13 26	+ 1	(e 23 52?)	[− 3]	(17 20)	PP	e 23·9
	N.	96·8	316	13 29	+ 4	(23 55)	[0]	(i 17 23)	PP	23·9
Ogyalla		97·4	317	e 14 12	+44	e 22 32	[−86]	e 17 42	PP	e 36·9
Upsala	E.	98·5	329	e 13 34	+ 1	i 24 5	[+ 2]	i 17 39	PP	e 46·9
	N.	98·5	329	e 13 40	+ 7	24 10	[+ 7]	i 25 7	S	e 46·9
Prague		100·0	320	e 13 35	− 4	e 29 52?	?	e 17 29	PP	e 51·9
Triest		100·4	315	i 13 42	+ 1	i 24 13	[0]	i 17 49	PP	e 47·9
Potsdam		100·9	322	i 13 49	+ 6	i 24 15	[0]	i 17 55	PP	e 46·9
Copenhagen		101·2	326	e 13 44	− 1	24 19	[+ 2]	17 55	PP	—
Cheb		101·4	319	e 13 50	+ 4	i 24 20	[+ 2]	i 17 56	PP	e 52·9
Jena		101·9	320	e 13 46	− 2	i 24 20	[0]	e 17 42	PP	e 41·9
Florence		102·1	313	i 13 53k	+ 4	i 24 9	[−12]	i 17 21	PP	e 45·5
College		103·0	25	e 13 55	+ 2	e 24 17	[− 8]	e 17 13	PP	e 45·4
Chur		103·3	317	e 13 54	0	—	—	i 18 10	PP	—
Stuttgart		103·5	318	e 13 55a	0	e 24 27	[0]	e 18 3	PP	55·5
Milan		103·6	314	e 13 59	+ 4	24 32	[+ 4]	i 18 12	PP	51·3
Zürich		103·9	317	e 13 46	−11	e 24 30	[+ 1]	e 18 7	PP	—
Strasbourg		104·4	318	e 14 15	P	i 24 33	[+ 2]	i 18 12	PP	e 54·9
Bergen		104·6	331	i 14 4	P	24 36	[+ 4]	18 14	PP	e 51·9
Basle		104·6	318	e 13 58	P	—	—	e 18 12	PP	—
Neuchatel		105·1	317	e 14 1	P	—	—	e 18 5	PP	—
Besançon		105·7	317	e 17 30	?	—	—	i 18 29	PP	56·4
De Bilt		105·8	322	e 14 6a	P	i 24 42	[+ 4]	e 32 52?	SS	e 46·9
Uccle		106·4	321	e 14 7a	P	i 24 43	[+ 3]	i 18 34	PP	e 47·9
Clermont-Ferrand		107·8	315	i 14 14a	P	i 24 55	[+ 8]	i 18 46	PP	e 50·1
Paris		107·9	319	i 14 18	P	i 24 49	[+ 2]	i 18 45	PP	56·9
Aberdeen		109·0	328	i 14 25	P	i 24 55	[+ 3]	i 18 56	PP	56·0
Barcelona		109·0	311	e 17 25	?	28 20	PS	e 18 45	PP	e 54·5
Kew		109·2	322	i 14 20a	P	i 24 51	[− 2]	i 18 23	PKP	e 50·9
Edinburgh		109·9	326	18 15	[− 9]	28 20	PS	18 54	PP	—
Stonyhurst		110·0	324	17 52	[−32]	25 4	[+ 8]	i 19 2	PP	i 55·3
Tortosa	E.	110·2	310	i 13 51	P	24 21	[−36]	18 21	PKP	52·9
Sitka		110·4	32	e 14 30	P	e 25 5	[+ 7]	e 19 14	PP	e 44·8
Scoresby Sund		111·2	345	e 14 31	P	i 25 10	[+ 9]	i 18 11	PKP	e 50·8
Almeria		113·0	307	14 41	P	25 14	[+ 6]	18 33	PKP	55·4
Granada		113·8	307	i 14 37	P	25 2	[− 9]	14 58	pP	57·1
Toledo		113·8	310	14 37	P	24 46	[−25]	i 19 15	PP	47·9
San Fernando		116·0	306	i 9 13	?	i 19 45	?	34 51	SS	56·9
Lisbon		117·9	310	18 34	[− 5]	26 16	[+49]	19 20	pPKP	57·9
Victoria		120·2	38	14 16?	P	26 9	[+35]	19 7	PP	48·9
Seattle		121·3	38	e 19 34	PP	e 27 39	PS	e 37 47	SS	—
Ukiah		123·7	48	e 18 57	[+ 7]	e 25 32	[−14]	e 20 22	PP	e 51·3
Berkeley		124·8	50	i 18 55	[+ 2]	e 30 11	PS	i 20 46	PP	—
Branner		125·0	50	e 18 58	[+ 5]	—	—	—	—	—
Ivigtut		125·0	347	e 18 54	[+ 1]	e 30 42	PS	e 29 39	PP	e 51·2
Santa Clara		125·2	50	e 19 5	[+12]	e 30 57	PS	e 37 57	SS	—
Saskatoon		127·4	27	e 19 3	[+ 5]	e 37 6	PS	e 21 10?	PP	e 53·9
Santa Barbara		127·8	53	i 19 3	[+ 4]	—	—	i 19 25	pPKP	—
Tinemaha	Z.	128·1	49	e 19 1	[+ 2]	—	—	i 19 27	pPKP	—
Haiwee		128·6	50	i 19 4	[+ 4]	—	—	i 19 32	pPKP	—
Bozeman		129·0	36	e 19 9	[+ 8]	e 26 9	[+ 8]	e 21 4	PP	e 50·6
Pasadena		129·1	52	e 18 54	[− 7]	e 26 13	[+12]	i 19 27	pPKP	e 52·9
Mount Wilson		129·2	52	e 18 49	[−12]	—	—	i 19 26	pPKP	—
Riverside	Z.	129·8	52	e 18 52	[−11]	—	—	i 19 29	pPKP	—
La Jolla		130·3	54	e 19 6	[+ 2]	—	—	—	—	—
Palomar	Z.	130·4	53	i 19 5	[+ 1]	i 22 25	PP	i 19 29	pPKP	—
Logan		130·6	40	i 19 8	[+ 4]	e 27 48	SKKS	i 21 28	PP	e 53·7
La Plata	E.	135·2	194	19 40?	[+28]	28 58?	SKKS	23 10?	PKS	63·6
	N.	135·2	194	19 34?	[+22]	31 34	SKSP	23 10?	PKS	63·1
	Z.	135·2	194	19 15	[+ 3]	31 28	SKSP	22 10?	PP	—

Continued on next page.

		Δ	Az.	P.		O−C.	S.		O−C.	Supp.			L.
		°	°	m.	s.	s.	m.	s.	s.	m.	s.		m.
Tucson		135·5	52	e 19	3	[−10]	i 26	25	[+ 9]	i 21	49	PP	e 56·2
Rio de Janeiro	N.	139·1	221	e 19	21	[+ 2]	—		—	—		—	—
Seven Falls		141·6	1	e 19	21	[− 3]	e 27	34	?	e 22	31	PP	63·9
Shawinigan Falls		142·1	2	e 19	21	[− 4]	e 29	22?	SKKS	e 22	32	PP	75·9
Ottawa		143·0	6	19	24	[− 3]	29	25	SKKS	22	36	PP	61·9
Chicago		143·5	22	e 19	23	[− 4]	e 29	20	SKKS	i 22	39	PP	e 55·4
Halifax		143·7	351	e 19	27	[− 1]	e 41	58?	SS	—		—	61·9
Vermont		144·2	3	i 19	30	[+ 2]	e 29	33	SKKS	i 22	48	PP	e 62·0
Florissant		144·8	27	i 19	29	[+ 1]	i 26	46	[+15]	i 20	9	pPKP	—
St. Louis		145·0	27	i 19	30	[0]	i 26	47	[+16]	i 20	10	pPKP	—
Harvard		146·2	1	i 19	33a	[+ 1]	i 27	32	[+60]	i 20	5	pPKP	e 71·9
Weston		146·3	1	19	33	[0]	22	56	PP	20	5	pPKP	41·7
Cape Girardeau		146·4	29	e 19	34	[+ 1]	—		—	e 19	37	PKP	—
Pittsburgh		147·1	13	e 19	34	[0]	i 41	45	SS	i 22	56	PP	—
Fordham		147·7	4	e 19	36	[+ 1]	e 29	51	SKKS	i 20	5	pPKP	—
Philadelphia		148·4	6	i 19	41	[+ 5]	e 26	28	[− 8]	e 20	17	pPKP	e 61·3
La Paz		155·0	186	i 19	48	[+ 2]	i 31	5	SKKS	i 20	29	pPKP	75·6
Bermuda		155·8	349	e 19	59	[+12]	e 30	40	SKKS	e 23	52	PP	e 76·9
Merida	N.	157·5	54	e 19	36	[−13]	—		—	—		—	—
Huancayo		158·8	166	e 19	46	[− 5]	e 26	7	[−41]	e 24	14	PP	e 64·3
Fort de France		169·3	305	i 20	1	[+ 1]	e 26	40	[−15]	i 25	7	PP	—
San Juan		169·5	339	e 20	5	[+ 5]	i 31	44	SKKS	i 46	19	SS	e 73·2
Balboa Heights		170·6	87	e 20	7	[+ 6]	—		—	—		—	—
Bogota		174·4	135	e 20	5	[+ 3]	i 29	10	PPP	e 25	54	PP	—

Additional readings :—
Hyderabad P_cPE =9m.12s., SSE =16m.40s., S_cSE =17m.29s.
Riverview iPPE =9m.58s., iE =11m.6s., 11m.39s., and 15m.9s., isSE =15m.24s., isSN =15m.27s., iSSEN =18m.10s., iZ =18m.15s., iE =18m.33s., iN =18m.36s., eQEN =18m.46s.
Bombay PPE =10m.7s., iE =11m.30s., sSE =15m.32s., SSE =18m.23s.
New Delhi PPPN =11m.13s., PPPE =11m.27s., P_cSE =14m.11s., P_cSN =14m.22s., iN =17m.37s., S_cSN =18m.14s., SSN =18m.21s., SSSN =19m.46s.
Tokyo SE =16m.21s., S_cS? =18m.54s.
Tananarive sP =10m.45s., PP =12m.26s., PPP =13m.49s., SS =22m.22s., SSS =25m.17s.
Christchurch iZ =18m.29s., PS =19m.41s., Q =26m.17s.
Auckland P_cP =11m.9s., PP =13m.4s., i =19m.19s., sS =19m.52s., S_cS =20m.30s., SS =23m.32s., SSS? =25m.58s., i =26m.37s.
Wellington iZ =12m.45s., PPZ =13m.5s., sS =19m.46s., S_cS =20m.25s., sS_cS? =21m.32s., SS =23m.32s., SSS =26m.47s., i =27m.12s., Q =27m.34s. ?
Apia isP? =12m.35s., isS? =21m.32s.
Ksara e =17m.13s.
Helwan eZ =12m.52s. and 14m.0s., PPPZ =17m.34s., SSN =28m.13s.
Istanbul pS =23m.39s. ; readings given as P and S_g of two local shocks.
Bucharest iEN =13m.7s., iPPZ =16m.41s., iPSN =26m.2s.
Campulung ePPN =16m.49s.
Cernauti eSN =23m.31s.
Sofia PSEN =24m.20s.
Honolulu ePP =17m.5s., e =17m.29s., eSKS =23m.53s., e =29m.43s., eSS =30m.52s., e =34m.0s.
Belgrade e =16m.14s., e =18m.55s.
Kalossa PP's and SKS's are given as S and L.
Ogyalla ePPN =17m.52s.?, iE =20m.34s.
Upsala eE =16m.30s., eN =16m.42s., iSKKSE =24m.37s., iPSE =26m.27s., eSSE =31m.52s. ?, eSSS?N =34m.52s. ?, eSSS?E =35m.34s. ?, eN =40m.22s. ?
Prague eSSS =31m.58s. ?
Potsdam ePN =13m.52s. ?, iE =eN =17m.41s., iPPN =17m.58s., ipPPN =18m.31s.
Copenhagen 16m.48s., 17m.27s., 19m.51s., 26m.55s., and 32m.8s.
Cheb eSS =27m.48s., e =32m.21s.
Jena eEN =15m.33s. and 16m.17s., eN =16m.32s., eE =16m.37s., eEN =17m.30s., eN =17m.45s., iN =17m.52s. ?, iNZ =17m.58s., iE =18m.2s., eN =22m.40s., iEN =24m.52s. ?, eZ =26m.52s. ?, eN =32m.8s., eE =32m.24s., eN =32m.32s.
Florence ipPP?Z =18m.3s., iSE =24m.34s., isSS?E =31m.38s.
College e =20m.55s., eS =25m.21s., e =31m.12s.
Stuttgart e =16m.58s., iPP =18m.12s., ePPP?Z =20m.7s., eS =25m.7s., eSPZ =27m.14s., eSP =27m.17s., e =27m.36s., ePKKPZ =30m.11s., eSS =32m.34s., eQ =53m.22s. ?
Milan iSSE =28m.16s.
Strasbourg e =17m.21s., i =20m.1s., iPS =27m.25s.
Bergen ipPZ =14m.26s., eZ =16m.58s. and 17m.47s., PPP =20m.14s., eE =22m.16s. and 23m.59s., eN =24m.8s., eE =25m.52s., PS =27m.40s., SS =32m.55s., PKKS =34m.0s.

Continued on next page.

Uccle eZ =16m.59s., eE =17m.18s., iPPZ =18m.38s., iZ =19m.3s., eE =20m.31s., ePSE =27m.45s.
Clermont-Ferrand e =16m.59s., iPPP =21m.3s., iSKKS? =25m.46s., i =26m.10s., iPS = 28m.2s., eSS =33m.55s., i =34m.40s., iSSS =37m.37s.
Paris e =17m .36s., iPS =27m.42s., e =32m.38s.
Aberdeen iPPSEN =28m.10s., iEN =34m.10s., iN =44m.30s.
Kew eEZ =17m.31s., iPP =19m.1s., iPPP =21m.19s., eE =22m.52s. ?, iSKKSE = 25m.27s., iN =26m.31s., iPSEZ =28m.15s., ePPS =29m.13s., eSSNZ =34m.7s., eSSSZ =37m.52s. ?, eQEN =44·9m.
Edinburgh PPP =21m.16s., PPS =28m.59s.
Stonyhurst iPPP =21m.28s., iSKKS =25m.58s., iPS =28m.25s., iPPS? =28m.47s., SS =33m.52s. ?
Tortosa PPPE =20m.41s., PSE =27m.52s., SSPE =34m.14s., QN =46m.14s.
Sitka e =21m.58s., i =26m.2s., iS =26m.40s., ePS =28m.40s., iSS =34m.20s., e =38m.10s.
Scoresby Sund iPP =19m.11s., e =21m.26s. and 28m.26s., eSS =34m.1s., e =39m.37s.
Almeria pP =15m.1s., sP =15m.12s., pPKP =18m.55s., PP =19m.22s., pPP =19m.42s., PPP =21m.50s., pPPP =22m.6s., SKKS =25m.51s., PS =29m.3s., SP =29m.14s., SS =35m.2s., SSS =39m.0s.
Granada iPKP =17m.49s., pPKP =18m.21s., PP =19m.7s., sPP =19m.36s., S =26m.46s., sS =28m.11s., PS =29m.17s., PPS =30m.56s., sPPS =32m.56s., SS =35m.52s.
Toledo eS =27m.9s.
San Fernando iPPSE =29m.28s. ; the record has been wrongly interpreted.
Lisbon PPEZ =19m.52s., iPPE =19m.56s., iPPZ =20m.0s., PSZ =29m.45s. ?, iPSE = 29m.53s.
Victoria PKP =17m.58s.?, SKKS =27m.0s., PS =28m.52s., PPS =29m.52s. ?, SS = 35m.26s.
Seattle e =29m.4s.
Ukiah e =27m.30s., ePS =30m.24s., eSS =37m.4s.
Berkeley iPN =19m.0s., iE =21m.46s. and 27m.35s., eN =28m.41s., eZ =30m.41s., eN =35m.56s.
Ivigtut e =27m.11s., eSS =37m.45s., esSS =38m.13s.
Saskatoon e =29m.1s.
Tinemaha iPKKPNZ =19m.4s., iZ =22m.16s.
Bozeman i =22m.26s. and 27m.59s., eS? =29m.14s., eSS =38m.24s.
Pasadena iPKKPZ =19m.3s., ePPEZ =21m.5s., isPPEZ =21m.46s., iSKKPZ =32m.9s.
Mount Wilson iPKKPZ =19m.3s.
Riverside iPKKP =19m.4s., iSKKPZ =32m.3s.
Palomar iZ =19m.16s., iSKKPZ =32m.2s.
Logan i =19m.27s. and 22m.27s., e =34m.55s., eSS =38m.38s., i =40m.55s.
La Plata Z =19m.37s., E =39m.34s., SSN =40m.28s., PSSE =42m.22s. ?, SSSN = 44m.52s. ?, SSSE =45m.10s. ?, N =52m.4s. ?, E =53m.52s. ?, and 56m.4s.?
Tucson iPKP =19m.16s., i =19m.44s., 22m.40s., and 31m.29s., iPS =32m.7s., eSS = 39m.30s., e =43m.14s.
Seven Falls e =40m.53s. and 48m.22s.?
Shawinigan Falls e =42m.28s.
Ottawa PPSN =34m.52s. ?, SSE =40m.40s.?
Chicago e =31m.36s., 32m.56s., and 35m.29s., eSS =41m.6s., esSS? =42m.6s., eSSS = 46m.36s.
Vermont ePPP =25m.58s., e =40m.34s. and 47m.23s.
Florissant iPP =22m.48s., iSKP =23m.6s., $iSKP_2$ =23m.31s., iPPP =26m.1s., iSKKS = 29m.38s., iS? =31m.16s.
St. Louis iPPN =22m.49s., iSKPZ =23m.7s., $iSKP_2E$ =23m.32s., iPPPN =26m.2s., iSKKSE =29m.38s., iS?N =32m.16s.
Harvard isPKP =20m.17s., iPP =22m.52s., iPKS =23m.9s., i =25m.11s., e =30m.24s., ePSKS =32m.47s., i =33m.3s., ePPS =35m.31s., e =36m.45s. and 41m.33s., i = 41m.43s.
Fordham iPP =23m.3s.
Philadelphia iPP =23m.9s., i =30m.0s., e =34m.7s. and 36m.57s., iSS =41m.56s., eSSS = 47m.22s.
La Paz iZ =20m.58s., iPPZ =24m.8s., iZ =26m.21s., iPPP =27m.32s., iSS? =45m.12s.
Bermuda i =34m.0s., e =37m.2s. and 39m.1s.
Huancayo e =30m.54s., 33m.59s., and 37m.35s., i =44m.14s., eSS =46m.52s.
Fort de France e =20m.50s., 21m.8s., 26m.29s., and 28m.37s.
San Juan i =21m.3s., 25m.5s., 34m.48s., and 35m.58s.
Bogota i =26m.19s.
Long waves were also recorded at Salt Lake City.

July 23d. Readings also at 0h. (near Granada), 3h. (Bogota), 6h. (Bombay, Tashkent, and Stuttgart), 7h. (St. Louis, Kew, Florence, Triest, near Bucharest, Sofia, and Istanbul), 9h. (near Bogota), 10h. (Cape Girardeau, Tucson, and Tinemaha), 12h. (Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 14h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tucson, Palomar, Tinemaha, and near Istanbul), 15h. (Granada and De Bilt), 16h. (near Mizusawa), 18h. and 20h. (Fort de France);

July 24d. 1h. 43m. 55s. Epicentre 46°·0N. 12°·2E. (as on 1939 July 10d.).

E. Trapp.
Makroseismische Beobachtungen in den Jahren 1941-1945 Anhang 8, Jahrbuch für 1947 der Zentralanstalt für Meteorologie nnd Geodynamik in Wien, p. D.48.

Annales de l'Institnt de Physique du Globe de Strasbourg, Strasbourg 1951, 2éme partie Seismologie, Tomes VII et VIII, p. 33. Epicentre 46°·0N. 11°·9E.

$A = +·6814$, $B = +·1473$, $C = +·7170$; $\delta = +9$; $h = -4$;
$D = +·211$, $E = -·977$; $G = +·701$, $H = +·152$, $K = -·697$.

	E.	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Triest		1·1	108	i 0 27	+ 5	i 0 46	+ 7	—	—	—
Chur		2·0	295	e 0 37	+ 2	e 1 0	− 2	—	—	—
Milan		2·2	256	i 0 37	− 1	i 1 8	+ 2	i 0 41	P*	—
Florence		2·3	197	i 0 39k	− 1	i 1 7	− 2	i 0 45	P_g	i 1·5
Ravensburg		2·5	315	e 0 44?	+ 1	e 1 13?	− 1	i 0 48?	P_g	—
Zürich		2·8	299	e 0 47	0	e 1 22	0	i 0 53a	P*	—
Ebingen		3·1	315	e 0 50	− 1	e 1 26	− 3	e 0 58	P*	—
Stuttgart		3·4	325	i 0 56k	+ 1	i 1 34	− 3	i 1 6	P_g	2·0
Basle		3·5	298	i 0 56	− 1	i 3 29	L	i 1 5	P*	(i 3·5)
Neuchatel		3·7	287	i 0 59	− 1	e 1 54	+ 9	i 1 9	P*	—
Strasbourg		4·0	313	e 1 3	− 1	i 1 47	− 5	i 1 13	P*	—
Cheb		4·1	2	e 1 8	+ 3	e 1 54	− 1	e 1 19	P_g	e 2·3
Prague		4·3	18	e 1 16	P*	2 21	S_g	e 1 26	P_g	—
Besançon		4·5	288	e 0 58	−13	—	—	—	—	e 2·9
Ogyalla		4·5	63	(1 33)	P_g	(2 21)	S*	(2 29)	S_g	(3·1)
Kalossa		4·8	80	e 1 25	P*	1 56	−16	—	—	2·8
Jena		4·9	356	i 1 17	0	i 2 12	− 3	i 1 29	P*	i 2·5
Clermont-Ferrand		6·3	270	e 1 31	− 5	e 3 21	S_g	—	—	4·3
Potsdam		6·4	5	e 1 59?	P*	e 3 1	+ 8	e 3 12	S*	3·4
Uccle		7·1	315	e 1 59?	P*	—	—	—	—	e 4·8
Paris		7·2	296	e 2 14	P*	e 3 2	−11	e 3 45	S*	—
Copenhagen		9·7	1	2 22	0	—	—	—	—	6·1
Kew		9·9	308	e 4 56	S*	i 5 46	L	i 5 30	S_g	(i 5·8)
Tortosa	E.	9·9	243	e 3 44	?	e 4 37	+17	—	—	e 9·2
Upsala		14·2	13	e 2 19	−65	—	—	—	—	e 7·3

Additional readings :—
Florence iZ = 0m.49s., iS^*Z = 1m.16s., iS_gZ = 1m.18s.
Ravensburg e = 1m.9s.? and 1m.18s.?, iS_g = 1m.21s.?.
Zürich eS_g = 1m.28s.
Ebingen eS_g = 1m.37s.
Stuttgart iS_g = 1m.47s., i = 1m.54s.
Strasbourg iS^* = 1m.55s., iS_g = 2m.3s.
Ogyalla readings reduced by 1 minute.
Jena iNZ = 1m.20s., i = 1m.37s. and 2m.25s.
Kew iEZ = 5m.35s.?, i = 5m.39s.
Long waves were also recorded at Bucharest, De Bilt, and Granada.

July 24d. 3h. 26m. 15s. Epicentre 46°·0N. 12°·2E. (as at 1h.).

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Triest	1·1	108	i 0 24	+ 2	i 0 42	+ 3	—	—	—
Chur	2·0	295	e 0 35	0	i 0 59	− 3	—	—	—
Milan	2·2	256	e 0 41	+ 3	i 1 9	+ 3	1 5	S*	—
Florence	2·3	197	e 1 11	S	(e 1 11)	+ 2	e 1 26	S_g	(e 1·7)
Zurich	2·8	299	e 0 46	− 1	e 1 27	+ 5	i 0 51	P*	—
Stuttgart	3·4	325	e 0 54	− 1	i 1 33	− 4	i 1 6	P_g	—
Basle	3·5	298	e 0 56	− 1	e 1 36	− 4	e 1 47	S*	—
Neuchatel	3·7	287	i 0 58	− 2	e 1 54	+ 9	i 1 8	P*	—
Strasbourg	4·0	313	e 1 22	P_g	i 2 2	S*	i 2 5	S_g	—

Additional readings :—
Florence L given as S.
Stuttgart eS_g = 1m.47s., e = 1m.53s.

July 24d. 23h. American shock.
Cape Girardeau ePN =34m.43s., eSN =38m.47s.
St. Louis ePZ =34m.45s., eSE =38m.50s., eLE =40m.49s.
Tucson iP =34m.55s., i =35m.14s., e =38m.20s., i =39m.18s., eL =43m.16s.
Palomar ePZ =35m.47s.
Mount Wilson ePZ =35m.53s.
Riverside ePZ =36m.5s.
Tinemaha iPZ =36m.12s.
Toledo ePZ =42m.22s., e =42m.48s.
Stuttgart eZ =42m.51s.
Long waves were also recorded at Pasadena.

July 24d. Readings also at 5h. (Mizusawa and near Yalta), 6h. (Tinemaha and near Branner), 7h. (Kew, near Andijan, and Tashkent), 10h. (Strasbourg, near Stuttgart, and Ebingen), 11h. (Tinemaha, Pasadena, Mount Wilson, Tucson, Riverside, La Paz, and near Yalta), 13h. (Arapuni and Wellington), 15h. (Upsala, Stuttgart, Helwan, Bombay, New Delhi, Ksara, Tashkent (2), Andijan (2), and Stalinabad), 16h. (De Bilt, Kew, and Prague), 20h. (Stuttgart, New Delhi, Almata, Tashkent, Stalinabad, and near Andijan (2)), 21h. (Tucson and Pasadena).

July 25d. Readings at 1h. (Mount Wilson, Palomar, Riverside, Tucson, and Tinemaha), 3h. (Tashkent and near Andijan), 6h. (Cape Girardeau, near St. Louis, and near Bogota), 7h. (Huancayo, La Paz, Mount Wilson, Pasadena, Tucson, Palomar, Riverside, and Tinemaha), 8h. and 15h. (Istanbul), 18h. (Berkeley), 21h. (near Mizusawa).

July 26d. Readings at 1h. (La Paz and near Fort de France), 2h. (Huancayo, La Paz, St. Louis, and near Lick), 9h. (Tacubaya), 13h. (Haiwee, Mount Wilson, Tucson, Pasadena, Palomar, Riverside, and Tinemaha), 14h. (Stuttgart), 15h. (near Istanbul).

July 27d. Readings at 3h. (Fresno, near Branner, and Lick), 4h. (Granada), 11h. (La Paz , Palomar, Tucson, and Riverside), 18h. (Berkeley).

July 28d. 4h. 4m. 41s. Epicentre 60°·2N. 148°·9W. (as on 1937 July 25d.).

$A = -\cdot4277$, $B = -\cdot2580$, $C = +\cdot8663$; $\delta = -3$; $h = -9$;
$D = -\cdot517$, $E = +\cdot856$; $G = -\cdot742$, $H = -\cdot447$, $K = -\cdot500$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		4·7	6	i 1 17	+ 3	i 2 25	S*	—	—	i 2·6
Sitka		7·7	107	e 1 56	0	e 3 17	− 8	—	—	e 3·6
Victoria		18·9	118	e 4 27	+ 3	—	—	—	—	9·3
Saskatoon		24·5	91	—	—	e 9 52	+12	—	—	13·3
Bozeman		26·6	106	e 5 46	+ 4	e 10 29	+13	—	—	e 14·2
Salt Lake City		30·0	113	—	—	e 11 26	+16	—	—	e 17·3
Tinemaha		30·3	127	e 6 15	0	—	—	i 6 25	pP	—
Haiwee		31·2	127	e 6 23	0	—	—	i 6 34	pP	—
Santa Barbara	z.	32·0	130	e 6 28	− 2	—	—	—	—	—
Mount Wilson		32·8	128	i 6 36k	− 1	—	—	i 6 45	pP	—
Pasadena		32·9	128	i 6 37k	− 1	—	—	i 6 46	pP	e 45·8
Riverside		33·3	128	i 6 40	− 1	—	—	i 6 48	pP	—
Palomar	z.	34·1	127	i 6 47k	− 1	—	—	i 6 59	pP	—
Tucson		37·5	121	i 7 17	0	—	—	e 8 47	PP	e 19·8
Chicago		40·9	89	e 9 24	PP	—	—	e 16 38	SS	e 21·6
St. Louis		42·1	94	e 7 53	− 2	e 14 13	− 3	e 9 30	PP	e 23·3
Cape Girardeau	N.	43·5	95	e 9 49	PP	e 9 52	?	—	—	—
Ottawa		44·2	76	8 12	0	14 47	+ 1	18 1	SS	22·3
Shawinigan Falls		44·8	72	e 9 17	+60	—	—	—	—	24·3
Seven Falls		45·3	71	—	—	e 14 55?	− 7	—	—	23·3
Pittsburgh		45·8	83	—	—	—	—	e 18 15	SS	i 22·4
Philadelphia		48·6	80	—	—	e 15 47	− 2	e 18 33	S_cS	e 22·3
Uccle		67·3	19	e 10 57	− 2	e 19 53	− 1	—	—	e 33·3
Stuttgart	z.	69·9	15	e 11 14	− 1	—	—	—	—	—

Additional readings :—
Pasadena iZ =6m.49s.
Tucson i =7m.30s.
St. Louis eZ =7m.56s. and 8m.4s., eSS?E =17m.19s.
Long waves were also recorded at Scoresby Sund, Columbia, Bermuda, Kew, and De Bilt.

July 28d. 17h. Undetermined shock.

Ksara eP =33m.30s.?, eS? =35m.10s., eS_s? =36m.5s.
Helwan iPZ =34m.42s.k, eZ =35m.6s. and 39m.6s., iZ =42m.2s.
Tashkent P =36m.1s., eS =39m.48s.
Sverdlovsk iP =36m.20s., S =40m.24s.
Triest e =36m.37s., i =40m.56s.
Florence ePZ =36m.58s.a, eE =46m.29s.
Stuttgart eZ =37m.7s.
Long waves were also recorded at Granada and De Bilt.

July 28d. Readings also at 1h. (Mizusawa), 3h. (Tacubaya and Istanbul), 5h. (Tacubaya), 6h. (near Tucson), 7h. (Tinemaha, Palomar, Tucson, and Mount Wilson), 8h. (near La Paz), 17h. (Florence and Ksara), 20h. and 21h. (Fort de France).

July 29d. 3h. 2m. 14s. Epicentre 19°·1N. 67°·1W.

Scale V at Bainet, St. Maroc, Port au Prince, Marmelade, Cap. Haitien, and Port de Paix.
Observatoire Météorologique du Séminaire St. Marticl, Port au Prince. "Relevé des macroseisms de 1938-1946." Epicentre as adopted quoted from J.S.A.
Bulletin of Seismo. Soc. of America, Vol. 33, 1943, p. 296.
Strong earth tremors at Ciudad Trujillo (Dom.) and San Juan, magnitude (estimated at Pasadena) 7¾.

$A = +\cdot3680$, $B = -\cdot8711$, $C = +\cdot3252$; $\delta = -1$; $h = +5$;
$D = -\cdot921$, $E = -\cdot389$; $G = +\cdot127$, $H = -\cdot300$, $K = -\cdot946$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		1·2	128	i 0 23	− 1	—	—	—	—	—
Port au Prince		5·0	265	1 24	P*	2 41	S_g	i 1 39	P_g	—
Fort de France		7·2	127	1 43	− 6	3 5	− 8	2 35	P_g	—
Bermuda		13·4	9	i 3 9	− 5	(i 5 39)	− 6	—	—	i 5·6
Balboa Heights		15·7	232	i 3 44	0	i 6 36	− 3	—	—	e 8·1
Bogota		15·9	206	e 3 46	− 1	i 6 51	+ 7	e 3 54	PP	9·8
Columbia		19·4	324	i 4 26	− 4	e 7 55	− 9	—	—	—
Merida	N.	21·2	279	i 5 2	+13	—	—	—	—	—
Georgetown		21·6	340	i 4 54	0	9 2	+13	—	—	11·7
Philadelphia		21·9	344	i 4 59	+ 2	1 8 55	+ 1	—	—	i 10·3
Mobile		22·3	306	5 1	0	—	—	—	—	—
Fordham		22·4	348	e 5 1	− 1	i 9 7	+ 3	—	—	—
Weston		23·5	353	e 5 11	− 1	i 9 25	+ 2	—	—	—
Harvard		23·6	353	i 5 14	+ 1	i 9 26	+ 1	—	—	—
Pittsburgh		24·0	336	e 5 20	+ 3	—	—	—	—	—
Halifax		25·6	6	5 30	− 2	9 52	− 7	e 5 55	PP	11·8
Buffalo		25·7	341	i 5 34	+ 1	i 10 22	+21	i 6 14	PP	—
Vermont		25·8	350	e 5 36	+ 2	i 10 5	+ 3	i 6 35	PP	e 11·0
Cape Girardeau	N.	26·7	317	e 5 44	+ 1	i 10 13	− 4	i 5 48	P	—
Ann Arbor		27·1	333	e 5 52	+ 6	i 10 28	+ 4	6 34	PP	i 14·5
Ottawa		27·2	347	5 50	+ 3	10 28	+ 3	6 24	PP	13·3
Vera Cruz	Z.	27·4	276	i 5 54	+ 5	—	—	—	—	—
Shawinigan Falls		27·8	353	5 52	− 1	10 40?	+ 5	i 11 31	SS	13·8
St. Louis		28·0	319	i 5 54	− 1	i 10 38	0	i 6 36	PP	i 13·5
Seven Falls		28·1	355	5 59	+ 4	10 42	+ 2	11 27	SS	12·8
Oaxaca	E.	28·3	272	e 6 2	+ 5	—	—	—	—	—
Chicago		28·6	326	i 5 59	− 1	i 10 45	− 3	—	—	e 11·4
Puebla	E.	29·4	276	e 6 58	PP	—	—	—	—	—
Tacubaya		30·3	276	i 6 18	+ 3	i 10 52	−23	i 13 13	SSS	—
Huancayo		32·0	196	i 6 26	− 4	i 11 18	−24	—	—	—
Guadalajara	E.	34·1	280	e 6 53	+ 5	—	—	—	—	—
Manzanillo	E.	35·1	277	e 6 54	− 3	—	—	—	—	—
La Paz		35·4	181	i 6 57a	− 3	i 12 45	+11	i 15 12	SS	i 18·8
Chihuahua	Z.	36·8	293	i 7 8	− 3	—	—	—	—	—
Denver		38·6	310	e 7 32	+ 6	e 13 29	+ 6	e 9 0	PP	e 18·7
Tucson		41·3	298	i 7 48	− 1	i 14 4	0	1 9 26	PP	i 17·4
Montezuma		41·5	182	e 8 42	+52	e 13 52	−15	(e 16 56)	SS	e 16·9
Salt Lake City		43·8	310	i 8 9	0	i 14 39	− 1	i 9 51	PP	i 17·5
Logan		44·1	312	i 8 11	− 1	e 14 29	−16	i 10 17	PP	i 18·2
Ivigtut		44·1	13	e 8 10	− 2	e 14 40	− 5	e 10 9	PP	e 19·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman		44·8	317	i 8 17	0	i 14 31	−24	—	—	e 18·0
Saskatoon		45·1	327	8 22	+ 2	14 55	− 4	18 11	SS	20·8
Palomar	Z.	46·4	299	i 8 29 a	− 1	—	—	—	—	—
Riverside		46·9	300	i 8 33 a	− 1	—	—	—	—	—
Mount Wilson	Z.	47·5	300	i 8 38 a	0	—	—	—	—	—
Haiwee		47·6	303	i 8 38	− 1	—	—	—	—	—
Pasadena		47·6	300	i 8 38	− 1	i 15 37	+ 2	i 10 39	PP	e 19·2
Rio de Janeiro		47·8	149	i 8 43	+ 2	i 15 26	−12	i 18 28	SS	i 21·8
Tinemaha		48·0	303	i 8 42 a	− 1	i 15 45	+ 4	—	—	—
Santa Barbara	Z.	48·9	300	i 8 46	− 4	—	—	—	—	—
Fresno	N.	49·1	303	e 8 55	+ 4	—	—	—	—	e 25·6
Spokane		49·6	317	i 8 56	+ 1	e 15 59	− 4	—	—	—
Lick		50·7	304	i 9 7	+ 4	e 16 19	+ 1	—	—	e 26·3
Santa Clara		50·9	304	i 9 7	+ 2	i 16 27	+ 6	—	—	e 25·4
Branner	E.	51·1	304	e 9 10	+ 4	e 16 32	+ 8	—	—	—
	N.	51·1	304	e 9 13	+ 7	e 16 27	+ 3	—	—	e 24·2
Berkeley		51·2	304	i 9 6	− 1	e 16 18	− 7	—	—	e 26·2
Ukiah		52·1	306	i 9 13	− 1	i 16 39	+ 1	e 18 20	?	e 23·8
Seattle		52·8	316	e 9 46	+27	e 18 59	?	—	—	e 23·2
Lisbon		53·5	56	e 9 21 a	− 3	16 56	− 1	10 6?	P_cP	22·4
Victoria		53·7	317	9 26	0	16 55	− 4	11 40?	PP	25·8
Reykjavik		54·2	22	9 34	+ 5	17 11	+ 5	10 36	P_cP	31·8
La Plata	E.	54·4	170	9 40?	+ 9	19 10	S_cS	20 28?	SS	22·4
	N.	54·4	170	9 34?	+ 3	21 58?	SSS	20 40	SS	26·5
	Z.	54·4	170	9 28?	− 3	16 58?	−11	—	—	22·0
San Fernando		55·7	59	i 9 42	+ 2	17 9	−17	11 58	PP	25·8
Toledo		57·5	55	i 9 51	− 2	i 17 49	− 1	21 52	SS	26·8
Granada		57·8	57	i 9 57	+ 2	i 17 58	+ 4	10 17	pP	i 27·6
Scoresby Sund		58·0	16	e 9 56	− 1	i 17 49	− 8	i 12 9	PP	—
Almeria		58·7	58	i 10 3	+ 1	i 18 8	+ 2	10 16	pP	27·3
Edinburgh		59·8	36	10 7	− 2	18 15	− 5	12 20	PP	—
Stonyhurst		59·9	38	i 10 9	− 1	i 18 20	− 1	i 10 55	P_cP	27·9
Aberdeen		60·6	34	i 10 16	+ 1	i 18 27	− 3	—	—	e 27·9
Kew		60·9	40	i 10 14	− 3	i 18 31	− 3	i 12 19	PP	e 28·8
Tortosa		61·0	53	i 10 28	+10	18 43	+ 8	12 46	PP	28·6
Barcelona		62·2	52	i 10 26	0	i 18 49	− 2	—	—	e 28·5
Sitka		62·4	325	e 10 26	− 1	i 18 50	− 3	e 13 50	PP	i 24·9
Paris		62·5	44	i 10 27	− 1	i 18 48	− 6	22 59	SS	26·8
Clermont-Ferrand		62·8	47	e 10 27	− 3	i 18 55	− 3	—	—	e 29·3
Uccle		63·8	42	e 10 32 k	− 4	i 19 9	− 2	i 23 20	SS	29·8
De Bilt		64·3	40	i 10 36 k	− 3	i 19 17	0	i 13 26	PP	e 29·8
Marseilles		64·5	50	e 10 30	−11	e 19 10	− 9	e 23 16?	SS	e 30·8
Besançon		64·8	45	i 10 41	− 2	e 18 54	−29	—	—	e 29·8
Bergen		64·9	31	i 10 42?	− 1	19 20	− 4	13 19	PP	e 29·3
Neuchatel		65·5	46	e 10 46	− 1	e 19 28	− 4	—	—	—
Basle		65·9	45	e 10 48	− 2	e 19 37	0	—	—	—
Strasbourg		66·0	44	e 10 44	− 6	i 19 33	− 5	i 13 2	PP	30·8
Zürich		66·6	46	e 10 53 k	− 1	e 21 8	?	e 13 25	PP	—
Stuttgart		66·9	44	e 10 52	− 4	i 19 47	− 2	i 13 26	PP	e 31·4
Milan		67·1	48	i 10 56	− 1	i 19 47	− 4	—	—	30·2
Chur		67·3	46	e 10 55	− 4	—	—	e 24 53	SS	—
Jena		68·3	42	i 11 4	− 1	e 19 58?	− 8	e 13 39	PP	e 28·8
Copenhagen		68·6	37	e 11 9	+ 2	20 14	+ 5	13 57	PP	—
Florence		68·8	49	i 11 7 k	− 1	i 19 55	−16	i 13 24	PP	—
Cheb		68·9	43	e 11 10	+ 1	e 20 25	+12	—	—	—
College		69·0	334	e 11 8	− 1	e 20 4	−10	i 20 9	S	e 27·2
Potsdam		69·1	40	i 11 13	+ 3	i 20 16	+ 1	i 21 10	S_cS	e 26·8
Prague		70·2	42	i 11 16	− 1	20 24	− 4	e 13 51	PP	e 29·8
Triest		70·3	47	i 11 16	− 1	i 20 27	− 2	—	—	e 31·8
Upsala		71·1	32	e 11 25	+ 3	20 38	0	14 12	PP	e 30·8
Ogyalla		73·0	45	12 3	+30	e 21 26	+26	14 33	PP	e 31·8
Kalocsa		73·7	46	12 31	+53	e 21 6	− 2	e 28 46	SSS	e 34·8
Belgrade		75·1	47	e 11 45 k	− 1	i 21 28	+ 4	i 14 43	PP	e 36·6
Sofia		77·6	49	e 12 2	+ 2	e 21 59	+ 8	e 21 41	S	—
Cernauti	N.	78·0	43	e 12 4	+ 2	e 21 58	+ 3	e 22 8	pS	—
Campulung		78·1	47	e 12 8	+ 6	e 22 3	+ 7	22 25	pS	37·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Bacau		79·1	45	e 12 10	+ 2	e 22 8	+ 1	—		—	34·8
Bucharest		79·1	47	e 12 7	− 1	22 3	− 4	i 15 6		PP	34·8
Focsani		79·5	46	e 12 17	+ 7	22 16?	+ 5	—		—	37·8
Istanbul		82·2	50	12 24	0	22 40	+ 1	—		—	44·7
Moscow		82·3	33	12 26	+ 1	22 39	− 1	—		—	—
Honolulu		83·9	291	e 12 31	− 2	e 22 41	−15	e 28 46		SS	e 39·9
Yalta		84·5	45	i 12 29	− 7	i 22 46	−16	—		—	—
Helwan		87·7	59	12 52	0	23 16	[− 3]	15 58		PP	—
Ksara		89·8	55	e 13 8?	+ 6	e 23 58	+ 5	e 23 34		SKS	—
Sverdlovsk		92·7	26	e 13 18	+ 3	i 23 37	[−11]	—		—	—
Tashkent		107·6	33	e 14 26	P	i 25 5	[+ 3]	18 3		PKP	—
Apia		108·1	261	—	—	e 25 8	[+ 4]	e 29 23		PPS	e 50·3
Irkutsk		108·5	6	e 14 38	P	26 22	S	19 3		PP	—
Sapporo		112·8	338	e 19 40	PP	29 22	PS	—		—	41·2
Sendai		117·2	335	e 19 32	PP	29 51	PS	35 28		SS	47·4
Tananarive		118·6	101	e 20 15	PP	25 45	[0]	37 15		SS	e 57·2
Nagano		119·6	337	e 19 19	[+27]	—	—	—		—	—
Tokyo Cen. Met. Obs.		119·9	335	—	—	e 24 40	[−70]	—		—	e 65·3
Dehra Dun	N.	120·5	35	e 21 4	PP	—	—	e 37 22		SS	e 65·1
Misima		120·7	335	e 18 37	[−17]	—	—	—		—	64·8
Nagoya		121·4	337	—	—	e 40 51	SSS	—		—	74·1
New Delhi	N.	121·4	37	e 20 18	PP	25 51	[− 4]	23 0		PPP	66·8
Zinsen		122·3	348	e 36 22	SS	—	—	—		—	65·3
Osaka		122·4	338	e 20 40	PP	—	—	—		—	e 64·9
Kobe		122·5	338	20 34	PP	—	—	41 40		SSS	50·8
Arapuni		122·8	236	20 46?	PP	30 34?	PS	38 16?		SS	57·8
Hamada		123·3	341	—	—	e 30 2	PS	—		—	47·8
Wellington		123·4	232	i 19 41	[+42]	28 1	{+24}	20 41		PP	56·8
Auckland		123·5	237	20 52	PP	29 11	?	38 21		SS	57·8
Koti		124·1	339	20 40	PP	—	—	—		—	—
Christchurch		124·8	229	18 59	[− 3]	26 13	[+ 8]	20 52		PP	58·7
Bombay	E.	125·5	49	e 19 10	[+ 7]	26 11	[+ 4]	20 57		PP	—
Calcutta	N.	132·2	31	e 21 42	PP	i 39 22	SS	e 22 53		PKS	e 60·6
Kodaikanal	E.	134·5	53	22 6	PP	32 41	PS	39 56		SS	—
Colombo	E.	138·4	55	e 19 3	[−25]	—	—	—		—	—
Brisbane	N.	142·3	249	e 19 53	[+18]	e 29 13	{−22}	e 35 22		PPS	—
Riverview		143·0	238	i 19 32	[− 4]	i 29 47	{+ 8}	i 22 46		PP	e 67·1
Sydney		143·0	238	e 19 40?	[+ 4]	e 29 34?	{− 5}	—		—	—
Perth		166·9	191	—	—	i 30 51	{−57}	—		—	i 80·4

Additional readings:—
Port au Prince i = 2m.4s. and 2m.9s.
Fort de France P* = 2m.2s., e = 2m.42s.
Bermuda i = 5m.15s., iS? = 5m.27s.
Bogota iP = 3m.49s., iSS = 7m.12s.
Columbia i = 7m.34s.
Philadelphia i = 5m.3s. and 8m.33s.
Fordham iP = 5m.4s.
Harvard i = 5m.19s.
Buffalo iPPP = 6m.26s., iSS = 11m.30s.
Vermont i = 7m.40s.
Ann Arbor SS = 11m.58s.
Ottawa e = 7m.10s., iZ = 11m.9s., SS = 11m.26s.
St. Louis iPZ = 5m.59s., iN = 6m.18s., 7m.30s., 7m.36s., 8m.0s., 8m.7s., and 8m.13s., iE = 11m.16s., iN = 12m.40s., 12m.44s., 12m.50s., and 12m.54s.
Seven Falls e = 8m.18s.
Chicago i = 9m.56s., iS? = 10m.26s.
Huancayo i = 12m.38s. and 13m.32s.
La Paz iZ = 7m.23s., iSSZ = 15m.15s., iZ = 16m.16s.
Denver eE = 17m.32s.
Tucson i = 10m.29s. and 13m.37s.
Salt Lake City e = 10m.13s.
Logan e = 8m.55s. and 13m.0s.
Ivigtut e = 8m.58s.
Palomar iZ = 8m.36s.
Mount Wilson i = 8m.42s.
Pasadena iZ = 8m.41s.
Rio de Janeiro iSSN = 18m.40s.
Berkeley ePN = 9m.9s., ePE = 9m.12s., iSE = 16m.39s., eN = 21m.9s,

Continued on next page.

Lisbon iPZ =9m.24s. a, P_cP?Z =10m.11s., SN =17m.8s., SSE =20m.37s.
Victoria PPP =12m.29s., eE =18m.12s., SSS =22m.2s.
San Fernando PSE =17m.30s., SSE =20m.34s.
Granada P_cP =10m.51s., PP =12m.41s., pPP =12m.53s., PPP =13m.23s., pP_cS = 15m.7s., sS =18m.24s., Q =25m.34s.?.
Scoresby Sund iSS =21m.49s.
Almeria P_cP =10m.47s., PP =12m.16s., PPP =13m.40s., P_cS =14m.37s., S_cS =19m.39s., SS =22m.7s., SSS =25m.4s.
Edinburgh P_cP =10m.53s., PPP =13m.46s., PS =18m.33s., S_cS =19m.52s., SS =22m.13s. SSS =24m.44s.
Stonyhurst PPP? =13m.25s., iPS =18m.32s., PPS? =18m.50s., S_cS? =19m.17s., SSS =24m.52s., Q =25m.40s.
Kew iP_cPEZ =10m.59s., iPPPN =13m.29s., iP_cSEN =14m.48s., iPSN =18m.41s., iS_cSN =20m.11s., eSSEN =22m.23s., eSSSN =24m.46s.?.
Tortosa P_cPN =11m.9s., PPPN =13m.52s., PSE =19m.11s., SSE? =23m.0s., SSSE? = 24m.38s., QN =25m.23s., ePKP, PKPN =40m.8s.
Sitka e =22m.50s., eSS =23m.16s.
Uccle iP =10m.35s.
De Bilt eSS =23m.16s., iSSS =26m.46s.
Bergen ePPP =14m.46s., PS =19m.49s., SS =23m.34s.
Basle e =12m.25s.
Strasbourg iP =10m.50s., i =12m.9s., iPPP =14m.6s., i =19m.58s.
Stuttgart iP =10m.56s.k, i =13m.46s., ePPPZ =14m.59s., eSS =24m.21s., eSSS = 27m.41s., ePKP,PKPZ =39m.19s.
Jena iPN =11m.8s., eEZ =20m.6s., eN =21m.2s., eE =21m.14s., eEN =24m.30s.
Copenhagen 26m.17s.
Florence iPPPE =14m.40s., iPSE =20m.32s.
Potsdam iPN =11m.17s.
Prague ePPP =15m.52s.?, ePS =21m.10s.?.
Upsala iE =12m.7s., PP?N =14m.15s., iPPPE =16m.6s., iE =21m.30s. and 22m.20s., SS?N =25m.13s.
Ogyalla eSE =19m.21s., eSN =19m.41s.
Belgrade i =12m.2s. and 13m.35s.
Bucharest iZ =12m.19s., iPPP?E =16m.38s., SKS?EN =21m.44s., S?E =23m.4s.
Honolulu e =16m.0s., 18m.18s., and 32m.54s.
Helwan PPPZ =18m.0s., PSEN =24m.3s., SSEN =28m.58s.
Apia ePSEN =28m.10s., eSSEN =34m.29s., eSKKSEN =37m.23s., iPKPSKS? = 45m.19s.
Tananarive PPP =22m.25s., SKKS =27m.9s., PS =29m.42s., PPS =31m.17s., SSS = 40m.51s.
New Delhi N SKKS =27m.21s., PS =30m.11s., PPS =31m.58s., SSS =41m.18s.
Wellington iZ =20m.53s. and 30m.51s., PPPS =33m.56s., SSS =38m.41s., i =47m.46s., Q =51·8m.
Auckland i =21m.26s., SSS =42m.36s., i =43m.31s., Q =52m.28s.
Christchurch PKS =22m.19s., SKKS =27m.53s., PS =30m.49s., PPS =32m.22s., SS = 37m.53s., SSS =42m.17s., Q =51m.59s.
Bombay PKSE =22m.39s., PPPE =23m.39s., SKKSE =27m.51s., PPSE =32m.29s., SSE =38m.17s., SSSE =42m.57s.
Calcutta iPPP?N =25m.17s.
Brisbane iN =41m.41s.
Riverview iEZ =19m.35s., iPPPZ =25m.57s., iSKSPZ =33m.3s., iE =33m.7s. and 34m.27s., iPPSZ =35m.17s., iN =35m.47s., iE =35m.57s., iSSE =41m.20s., iN =41m.39s., iE =42m.47s., iZ =43m.23s., iSSSE =46m.53s., eQN =60m.22s.?.
Perth i =41m.46s.
Long waves were also recorded at other Japanese stations.

July 29d. 4h. 7m. 45s. Epicentre 19°·1N. 67°·1W. (as at 3h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Bogota		15·9	206	e 3 51	+ 4	e 7 7	+23	i 3 55	PP
Harvard		23·6	353	i 5 15	+ 2	i 9 25	0	i 5 31	PP
La Paz		35·4	181	6 48	−12	—	—	—	—
Tucson		41·3	298	i 7 49	0	e 13 38	−26	i 8 2	?
Palomar	z.	46·4	299	i 8 31	+ 1	—	—	—	—
Riverside		46·9	300	e 8 34	0	—	—	—	—
Mount Wilson		47·5	300	i 8 40	+ 2	—	—	—	—
Haiwee		47·6	303	e 8 39	0	—	—	—	—
Pasadena		47·6	300	i 8 40	+ 1	—	—	—	—
Tinemaha		48·0	303	i 8 43	0	—	—	—	—
Toledo	z.	57·5	55	i 9 53	0	—	—	—	—
Stuttgart	z.	66·9	44	e 10 55	− 1	—	—	—	—
Perth		166·9	191	i 20 20	[+12]	—	—	i 23 10	PKS

July 29d. 7h. 15m. 14s. Epicentre 12°·9N. 124°·3E. (as on May 3d.).

$A = -·5495$, $B = +·8055$, $C = +·2218$; $\delta = -2$; $h = +6$;
$D = +·826$, $E = +·564$; $G = -·125$, $H = +·183$, $K = -·975$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta		35·5	291	—	—	i 12 43	+ 7	—	—	i 19·3
Irkutsk		42·4	342	e 7 58	0	14 10	−10	—	—	—
New Delhi	N.	46·4	298	e 12 37	?	15 5	−13	i 18 20	SS	—
Bombay	E.	49·7	284	e 10 50	PP	i 16 5	+ 1	e 19 1	SS	—
Tashkent		55·5	312	9 38	− 1	i 17 22	− 2	—	—	—
Sverdlovsk		65·0	328	10 42	− 2	19 17	− 9	—	—	—
Wellington		71·2	142	—	—	e 20 46?	+ 6	—	—	—
Ksara		81·6	303	e 12 33?	+12	e 22 35	+ 2	—	—	—
Helwan		86·2	300	e 12 46	+ 2	23 21	+ 2	e 13 13	PcP	—
Upsala		87·1	332	—	—	e 23 22	− 6	—	—	e 39·8
Prague		92·5	323	—	—	e 24 10	− 7	e 25 23	PS	—
Cheb		93·7	323	—	—	e 24 46?	+19	—	—	e 56·8
Triest		94·7	319	e 14 46	?	—	—	—	—	—
Stuttgart		96·2	323	e 15 4?	?	e 23 58	[−10]	—	—	e 49·3
Florence		97·1	318	e 11 41	?	e 18 6	PP	e 13 39	P	—
Uccle		97·9	326	e 26 14	PS	—	—	—	—	e 47·8
Palomar	Z.	105·8	50	e 18 34	PP	—	—	—	—	—
Toledo		108·9	320	i 18 57	PP	e 22 23	PKS	—	—	—
Tucson		110·8	48	e 18 58	[+23]	—	—	e 19 4	PP	—
Bogota		154·8	47	e 20 5	[+11]	—	—	—	—	—

Additional readings :—
Bombay eE = 15m.47s.
Prague e = 26m.55s.
Long waves were also recorded at Bergen and De Bilt.

July 29d. 11h. 42m. 44s. Epicentre 19°·1N. 67°·1W. (as at 4h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		1·2	128	i 0 28?	+ 4	—	—	—	—	—
Port au Prince		5·0	265	e 1 19	+ 1	i 2 9	− 9	—	—	i 2·6
Fort de France		7·2	127	e 1 53	+ 4	—	—	—	—	—
Bermuda		13·4	9	e 5 9	?	e 5 28	−17	—	—	—
Bogota		15·9	206	i 3 53	+ 6	e 6 54	+10	—	—	—
Columbia		19·4	324	e 4 24	− 6	e 8 0	− 4	—	—	—
Philadelphia		21·9	344	e 4 56	− 1	e 8 49	− 5	e 5 47	PP	e 10·3
Harvard		23·6	353	i 5 30	+17	i 9 23	− 2	—	—	e 11·3
Pittsburgh		24·0	336	e 5 50	+33	e 9 43	+11	—	—	—
Cape Girardeau	N.	26·7	317	e 6 2	+19	e 10 44	+27	—	—	e 14·3
Ottawa		27·2	347	e 5 46?	− 1	(10 16?)	− 9	—	—	10·3
St. Louis	Z.	28·0	319	e 5 51	− 4	e 11 7	+29	—	—	—
Chicago		28·6	326	—	—	e 10 43	− 5	—	—	e 13·8
Huancayo		32·0	196	e 7 0	+30	e 12 6	+24	—	—	e 13·5
La Paz		35·4	181	e 6 59	− 1	—	—	—	—	—
Tucson		41·3	298	i 7 48	− 1	i 14 11	+ 7	e 9 22	PP	i 18·9
Salt Lake City		43·8	310	e 13 6	?	e 18 7	?	—	—	e 19·5
Bozeman		44·8	317	—	—	e 15 48	+53	—	—	e 19·7
Palomar	Z.	46·4	299	e 8 30	0	—	—	—	—	—
Riverside	Z.	46·9	300	e 8 32	− 2	—	—	—	—	—
Mount Wilson		47·5	300	e 8 38	0	—	—	—	—	—
Haiwee		47·6	303	i 8 40	+ 1	—	—	—	—	—
Pasadena		47·6	300	i 8 39	0	—	—	—	—	e 25·6
Tinemaha		48·0	303	i 8 41	− 2	—	—	—	—	—
Santa Barbara	Z.	48·9	300	e 8 47	− 3	—	—	—	—	—
Toledo		57·5	55	i 9 54	+ 1	e 17 29	−21	12 7	PP	—
Granada		57·8	57	—	—	i 16 54	−60	—	—	i 28·4
Scoresby Sund		58·0	16	—	—	e 17 54	− 3	—	—	e 24·2
Kew		60·9	40	e 10 19	+ 2	(e 18 16?)	−18	—	—	e 18·3
Uccle		63·8	42	—	—	e 19 10?	− 1	—	—	e 27·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
De Bilt		64·3	40	i 10 44	+ 5	e 19 16	− 1	—	—	e 28·3
Stuttgart	z.	66·9	44	e 5 56	?	—	—	—	—	—

Additional readings :—
St. Louis iZ = 6m.26s., eZ = 11m.10s., and 11m.14s.
Long waves were also recorded at College, Sitka, Ukiah, and other European stations.

July 29d. Readings also at 3h. (Bogota and Mizusawa), 4h. (La Paz), 5h. (Bogota, Harvard, Tucson, Palomar, Riverside, and Tinemaha), 6h. (Bogota (2), Harvard (2), Mount Wilson (2), Pasadena, Palomar (2), Riverside (2), Tucson (2), Tinemaha (2), St. Louis and Wellington), 7h. (Tucson and Palomar), 8h. (Bogota (2), Harvard (3), Mount Wilson, Tucson (2), Pasadena (2), Palomar (2), Riverside, Tinemaha (2), and Florence), 9h. (Bogota, Harvard, Chicago, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and near Mizusawa), 11h. (La Paz), 12h. (Bombay, Calcutta, New Delhi, and Tashkent), 15h. (Stuttgart), 16h. (Riverview, Arapuni, and Wellington), 17h. (De Bilt and Kew), 18h. (St. Louis), 20h. (Florence, Riverview, Christchuch, Arapuni, and Wellington), 21h. (Granada), 22h. (Columbia), 23h. (Harvard and Tucson).

July 30d. 1h. 2m. 30s. Epicentre 19°·1N. 67°·1W. (as on 29d.).

$A = +\cdot3680$, $B = -\cdot8711$, $C = +\cdot3252$; $\delta = -1$; $h = +5$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		1·2	128	i 0 23	− 1	i 0 39	− 2	—	—	—
Port au Prince		5·0	265	i 1 36	P_g	i 2 33	S*	i 1 49	P_g	i 3·0
Fort de France		7·2	127	1 49	0	3 10	− 3	2 7	P*	—
Bermuda		13·4	9	3 10	− 4	i 5 37	− 8	e 5 20	—	—
Balboa Heights		15·7	232	i 3 47	+ 3	e 6 44	+ 5	—	—	—
Bogota		15·9	206	e 3 48	+ 1	i 7 27	SSS	i 3 52	P	—
Columbia		19·4	324	i 4 29	− 1	i 8 8	+ 4	—	—	e 9·0
Merida	E.	21·2	279	i 4 59	+10	—	—	—	—	—
Georgetown		21·6	340	i 4 59	+ 5	i 8 51	+ 2	—	—	11·0
Philadelphia		21·9	344	e 4 56	− 1	e 8 54	0	i 5 1	P	e 10·0
Mobile		22·3	306	i 5 5	+ 4	i 9 16	+14	—	—	—
Fordham		22·4	348	e 5 2	0	i 9 6	+ 2	i 5 9	P	—
Harvard		23·6	353	i 5 14	+ 1	i 9 27	+ 2	—	—	—
Pittsburgh		24·0	336	e 5 18	+ 1	i 9 22	−10	—	—	—
Halifax		25·6	6	e 5 30?	− 2	—	—	—	—	9·5
Cape Girardeau	N.	26·7	317	e 5 42	− 1	e 10 16	− 1	e 6 11	PP	e 13·3
Ottawa		27·2	347	5 47	0	10 24	− 1	6 18?	PP	13·5
Shawinigan Falls		27·8	353	e 5 53	0	—	—	e 11 24	SS	13·5
St. Louis		28·0	319	e 5 54	− 1	i 10 35	− 3	i 6 32	PP	i 13·1
Florissant		28·1	319	i 5 56	+ 1	i 10 40	0	i 6 34	PP	—
Seven Falls		28·1	355	e 6 30	PP	10 40	0	—	—	12·5
Chicago		28·6	326	e 5 59	− 1	e 10 46	− 2	e 6 13	?	e 12·6
Huancayo		32·0	196	e 6 23	− 7	i 11 38	− 4	e 7 35	PP	e 15·8
La Paz		35·4	181	7 1	+ 1	12 54	+20	—	—	21·2
Tucson		41·3	298	i 7 49	0	e 14 6	+ 2	i 9 27	PP	e 17·4
Salt Lake City		43·8	310	e 8 11	+ 2	e 14 34	− 6	—	—	e 18·1
Logan		44·1	312	e 8 12	0	i 14 41	− 4	e 17 48	SS	e 18·1
Bozeman		44·8	317	e 8 18	+ 1	e 14 55	0	e 18 12	SS	e 20·3
Saskatoon		45·1	327	—	—	e 14 55	− 4	e 18 14	SS	22·5
Palomar	Z.	46·4	299	i 8 32a	+ 2	—	—	i 8 50	P	—
Riverside		46·9	300	i 8 34a	0	—	—	i 8 52	P	—
Mount Wilson	Z.	47·5	300	i 8 39a	+ 1	—	—	—	—	—
Pasadena		47·6	300	i 8 40a	+ 1	i 15 37	+ 2	—	—	e 19·6
Haiwee		47·6	303	i 8 41a	+ 2	—	—	—	—	—
Tinemaha		48·0	303	i 8 42a	− 1	—	—	—	—	—
Santa Barbara		48·9	300	e 8 49	− 1	—	—	—	—	—
Santa Clara		50·9	304	e 9 8	+ 3	—	—	—	—	e 28·7
Berkeley		51·2	304	i 9 0	− 7	i 16 27	+ 2	i 9 4	P	e 30·0
Ukiah		52·1	306	e 9 12	− 2	e 16 40	+ 2	—	—	e 26·3
Lisbon		53·5	56	9 15	− 9	16 52	− 5	9 18?	P	22·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		53·7	317	9 48?	+22	—	—	—	—	24·5
San Fernando		55·7	59	e 9 36	− 4	e 17 23	− 3	—	—	26·0
Toledo		57·5	55	i 9 49	− 4	e 17 46	− 4	12 1	PP	—
Granada		57·8	57	9 54	− 1	i 17 49	− 5	10 15	pP	24·4
Scoresby Sund		58·0	16	e 9 54	− 3	e 17 55	− 2	e 13 18	PPP	e 23·3
Almeria		58·7	58	i 10 2	0	18 2	− 4	12 24	PP	28·0
Edinburgh		59·8	36	—	—	18 15	− 5	—	—	—
Stonyhurst		59·9	38	e 10 2	− 8	i 18 19	− 2	10 14	P	28·3
Aberdeen		60·6	34	i 10 10	− 5	i 18 25	− 5	—	—	28·1
Kew		60·9	40	i 10 11	− 6	e 18 31	− 3	e 11 2	P_cP	e 26·5
Tortosa	E.	61·0	53	10 27	+ 9	18 45	+10	—	—	e 25·5
Barcelona		62·2	52	—	—	e 18 42	− 9	—	—	e 29·7
Sitka		62·4	325	e 10 41	+14	e 18 51	− 2	e 20 17	S_cS	e 25·7
Paris		62·5	44	e 10 25	− 3	e 18 48	− 6	—	—	26·5
Clermont-Ferrand	•	62·8	47	i 10 27k	− 3	e 18 53	− 5	—	—	e 28·8
Uccle		63·8	42	i 10 32k	− 4	i 19 5	− 6	23 13	SS	e 29·5
De Bilt		64·3	40	i 10 36k	− 3	i 19 15	− 2	e 23 25	SS	e 27·5
Bergen		64·9	31	—	—	e 19 20	− 4	—	—	e 29·5
Zürich		66·6	46	e 10 51	− 3	—	—	—	—	—
Stuttgart		66·9	44	i 10 53	− 3	e 19 43	− 6	e 24 10	SS	e 31·5
Milan		67·1	48	e 10 30?	−27	—	—	—	—	—
Jena		68·3	42	e 11 3	− 2	—	—	—	—	e 27·5
Copenhagen		68·6	37	e 11 5	− 2	20 6	− 3	21 4	S_cS	32·5
Florence	E.	68·8	49	e 11 6	− 2	i 20 5	− 6	i 13 20	PP	—
Cheb		68·9	43	e 11 7	− 2	e 20 9	− 4	—	—	e 32·5
College		69·0	334	—	—	e 20 7	− 7	—	—	e 31·9
Potsdam		69·1	40	e 11 14	+ 4	e 20 12	− 3	e 11 17	P	e 30·5
Prague		70·2	42	e 11 15	− 2	e 20 28	0	e 21 13	S_cS	e 29·5
Triest		70·3	47	i 11 15	− 2	i 20 23	− 6	—	—	e 33·5
Upsala		71·1	32	e 12 30?	+68	e 20 29?	− 9	—	—	e 31·5
Bucharest		79·1	47	(e 12 8)	0	(i 22 2)	− 5	(22 21)	SKS	(35·5)
Moscow		82·3	33	12 25	0	22 36	− 4	—	—	—
Yalta		84·5	45	—	—	e 22 58	− 4	—	—	—
Helwan		87·7	59	i 12 51k	− 1	23 15	[− 4]	16 15	PP	—
Ksara		89·8	55	13 20	+18	e 23 53	0	23 34	SKS	—
Sverdlovsk		92·7	26	13 16	+ 1	24 16	− 2	—	—	—
Tashkent		107·6	33	e 18 57	PP	i 25 52	{+ 4}	e 28 12	PS	—

Additional readings :—
Port au Prince i = 1m.58s. and 2m.47s.
Fort de France P_g = 2m.39s.
Bogota i = 4m.2s. and 4m.10s.
Philadelphia e = 8m.42s.
Fordham i = 8m.59s.
Cape Girardeau ePPP?N = 6m.40s.
St. Louis iPZ = 5m.58s., iN = 6m.39s. and 6m.45s., iPPPZ = 6m.48s., iN = 6m.51s. and 6m.57s., eN = 11m.15s., 11m.24s., 11m.27s., 11m.32s., and 11m.40s.
Florissant i = 11m.0s., SS = 11m.50s.
Tucson i = 8m.7s., 8m.41s., and 13m.36s.
Berkeley iN = 27m.25s., iE = 28m.36s.
Granada P_cP = 11m.39s., i = 22m.3s.
Scoresby Sund e = 19m.40s.
Almeria P_cP = 10m.56s., PPP = 13m.24s., P_cS = 14m.53s., PS = 18m.23s.
Stonyhurst PS = 18m.32s., ePPS = 19m.3s., S_cS = 19m.49s., SS = 22m.9s.
Kew ePPZ = 12m.21s.?, ePPPZ = 13m.56s.?, eSSEZ = 22m.21s., eSSSE = 24m.30s.?.
Florence ePPPE = 14m.2s., ePSE = 20m.38s.
Bucharest readings increased by 67 minutes.
Helwan eZ = 12m.58s.

July 30d. 2h. Undetermined shock in Pacific off South America.
Huancayo iP = 13m.2s., i = 14m.27s., iL = 15·5m.
Bogota eP = 14m.29s., i = 14m.48s., iS = 17m.39s., iSS? = 17m.42s., i = 18m.39s.
La Paz PZ = 15m.3s., S? = 18m.19s., LZ = 19·9m.
Cape Girardeau ePN = 19m.30s., eN = 19m.41s.
St. Louis ePZ = 19m.43s., eZ = 19m.53s., eS?N = 24m.55s., eSS?N = 26m.27s.
Tucson iP = 20m.2s., i = 20m.15s.
Palomar iPZ = 20m.35s.
Riverside ePZ = 20m.39s.
Mount Wilson iPZ = 20m.44s.
Pasadena iPZ = 20m.45s.
Tinemaha iP = 20m.59s.
Toledo iPZ = 23m.50s., eSN = 29m.37s.

July 30d. 4h. 23m. 15s. Epicentre 19°·1N. 67°·1W. (as at 1h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fort de France		7·2	127	1 57	+ 8	—	—	—	—	—
Bogota		15·9	206	e 3 48	+ 1	e 6 55	+11	—	—	—
Harvard		23·6	353	i 5 16	+ 3	i 9 29	+ 4	i 5 23	P	i 16·9
Cape Girardeau	N.	26·7	317	e 5 41	− 2	e 11 9	SS	—	—	—
St. Louis		28·0	319	e 5 52	− 3	e 10 55	+17	—	—	e 14·1
Tucson		41·3	298	e 7 47	− 2	—	—	—	—	—
Palomar	Z.	46·4	299	i 8 27	− 3	—	—	—	—	—
Riverside	Z.	46·9	300	e 8 33	− 1	—	—	—	—	—
Mount Wilson	Z.	47·5	300	e 8 38	0	—	—	—	—	—
Tinemaha	Z.	48·0	303	e 8 41	− 2	—	—	—	—	—

Additional readings :—
Harvard i = 5m.33s. and 9m.42s.
Long waves were also recorded at De Bilt and Kew.

July 30d. Readings also at 3h. (Wellington), 5h. (Bogota), 8h. (near Basle, Neuchatel, and Zürich), 9h. (near Sofia), 11h. (near Mizusawa), 12h. (near Bogota), 13h. (near Triest and near Stalinabad), 15h. (near Mizusawa and near Stalinabad, Tashkent, and Tchimkent), 16h. (Florence), 18h. (St. Louis, near Tucson, Palomar, Riverside, Mount Wilson, and Pasadena), 21h. (Huancayo, Tacubaya, La Paz, Columbia, San Juan, Philadelphia, Pittsburgh, St. Louis, Logan, Pasadena, and Tucson), 22h. (Kew, Riverview, and Wellington), 23h. (Wellington).

July 31d. 3h. 22m. 7s. Epicentre 19°·1N. 67°·1W. (as on 30d.).

A = +·3680, B = −·8711, C = +·3252 ; δ = −1 ; h = +5.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		1·2	128	i 0 28	+ 4	i 0 43	+ 2	—	—	—
Port au Prince		5·0	265	i 1 35	P_g	i 2 25	S^*	—	—	i 2·6
Fort de France		7·2	127	e 1 47	− 2	—	—	—	—	—
Bermuda		13·4	9	e 3 12	− 2	(e 5 34)	− 1	e 5 26	?	e 5·6
Bogota		15·9	206	e 3 55	+ 8	e 6 49	+ 5	i 7 0	SS	—
Columbia		19·4	324	e 4 26	− 4	e 8 2	− 2	—	—	e 9·2
Philadelphia		21·9	344	e 4 55	− 2	i 8 52	− 2	e 6 2	PPP	e 10·0
Fordham		22·4	348	i 5 5	+ 3	i 9 3	− 1	i 8 50	P_cP	—
Harvard		23·6	353	i 5 13	0	i 9 17	− 8	—	—	—
Pittsburgh		24·0	336	e 5 19	+ 2	e 9 23	− 9	—	—	—
Cape Girardeau	N.	26·7	317	e 5 44	+ 1	—	—	—	—	—
St. Louis		28·0	319	e 5 43	−12	e 10 33	− 5	i 6 45	PP	e 13·2
Chicago		28·6	326	—	—	e 10 34	−14	—	—	e 14·0
Huancayo		32·0	196	—	—	e 11 55	+13	—	—	e 17·0
La Paz		35·4	181	7 25	+25	—	—	—	—	22·4
Tucson		41·3	298	e 7 47	− 2	—	—	e 9 30	PP	e 22·1
Palomar	Z.	46·4	299	i 8 30	0	—	—	e 8 45	P	—
Riverside	Z.	46·9	300	e 8 32	− 2	—	—	i 8 48	P	—
Mount Wilson	Z.	47·5	300	i 8 37	− 1	—	—	i 8 53	P	—
Pasadena		47·6	300	i 8 38a	− 1	—	—	—	—	e 25·4
Tinemaha		48·0	303	i 8 41	− 2	—	—	e 8 58	P	—
Santa Barbara	Z.	48·9	300	e 8 48	− 2	—	—	—	—	—
Toledo		57·5	55	i 9 16	−37	16 46	−64	—	—	24·9
Granada		57·8	57	i 9 58	+ 3	—	—	—	—	—
Almeria		58·7	58	10 5	+ 3	18 40	PPS	10 16	pP	29·4
Kew		60·9	40	e 10 19	+ 2	e 18 39	+ 5	—	—	e 25·9
Paris		62·5	44	e 10 26	− 2	—	—	—	—	28·9
Clermont-Ferrand		62·8	47	e 10 30	0	e 18 56	− 2	—	—	e 30·8
Uccle		63·8	42	e 10 39?	+ 3	e 18 59?	−12	—	—	e 29·9
De Bilt		64·3	40	e 10 38	− 1	—	—	—	—	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.
Stuttgart	66·9	44	e 10 53	− 3	—	—	—	—	—
Copenhagen	68·6	37	—	—	20 7	− 2	—	—	—
Florence	68·8	49	i 11 27	+19	—	—	e 21 8	S_eS	—

Additional readings :—
Bogota i = 4m.5s.
Harvard i = 5m.26s., 5m.29s., 9m.20s., and 9m.29s.
St. Louis eZ = 6m.7s., iPPZ = 6m.26s.
Tucson e = 8m.8s.
Long waves were also recorded at Bozeman, Logan, Sitka, and other European stations.

July 31d. 4h. 37m. 40s. Epicentre 43°·9N. 13°·1E. (as on 1937 Nov. 26d.).
Scale V at Ancona and Osimo ; IV at Maccrata and Pesaro, epicentre 43°·8N. 13°·1E. (Strasbourg).
R. P. Coppede.
" Annuario Sismico del Osservatorio Ximeniano," Florence, p. 18.

A = +·7041, B = +·1638, C = +·6909 ; $\delta = -7$; $h = -3$;
D = +·227, E = −·974 ; G = +·673, H = +·157, K = −·723.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florence	z.	1·3	265	i 0 30	+ 5	i 1 1	?	i 1 11	?	—
Triest		1·8	15	e 0 29	− 3	—	—	—	—	—
Milan		3·2	299	e 1 4?	P_g	2 19	S_g	—	—	—
Zürich		4·7	318	—	—	e 2 14	+ 4	—	—	—
Basle		5·3	316	e 1 21	− 1	—	—	—	—	—
Stuttgart	z.	5·6	332	e 1 26	− 1	e 2 26	− 7	e 1 56	P_g	4·3
Strasbourg		6·0	324	e 2 37	S	i 3 44	S_g	i 3 6	S*	—
Jena		7·1	352	e 2 44	?	i 3 14	+ 4	i 4 1	S_g	—

Additional readings :—
Stuttgart e = 2m.47s., eS_g = 3m.15s.
Jena eN = 2m.51s.
Long waves were also recorded at De Bilt, Uccle, and Potsdam.

July 31d. 20h. Undetermined Caribbean shock.

Fort de France e = 4m.13s.
Port au Prince eP = 4m.26s., eS = 5m.16s., iS = 5m.21s., iL = 5m.35s.
Bogota iP = 6m.34s., i = 6m.44s., e = 9m.30s. and 9m.56s.
Philadelphia eP = 7m.44s., e = 8m.31s., eS = 11m.24s., eL = 13m.12s.
Harvard eP = 7m.55s., i = 8m.14s., iS = 12m.7s., i = 30m.31s.
Fordham iP = 7m.57s., iS = 11m.51s.
Pittsburgh ePNW = 8m.26s., eSNW = 12m.30s.
La Paz P = 9m.46s., LZ = 25·0m.
Tucson iP = 10m.33s., i = 10m.43s.
Palomar iPZ = 11m.14s., iZ = 11m.27s.
Riverside iP = 11m.19s., iZ = 11m.27s.
Mount Wilson iPZ = 11m.22s.
Pasadena iP = 11m.24s.k.
Tinemaha iP = 11m.27s., eZ = 11m.37s.
Santa Barbara iPZ = 11m.32s., iZ = 11m.46s.
Long waves were also recorded at De Bilt, Uccle, Granada, and Bermuda.

July 31d. Readings also at 0h. (Tucson, Palomar, and Bogota), 3h. (Tchimkent, Sverdlovsk, and near Tashkent), 5h. (Harvard), 6h. (Kew, Tchimkent, and near Tashkent), 8h. (Fort de France and Harvard), 9h. (Clermont-Ferrand and near Florence), 10h. (Suva), 13h. (near Mizusawa), 17h. (Kew, Mount Wilson, Palomar, Tucson, and Tinemaha), 19h. (Balboa Heights, Palomar, Tucson, and Tinemaha), 20h. (Fort de France and Harvard), 21h. (Bogota, St. Louis, Florence, and Stuttgart), 22h. (Fort de France and near Tashkent), 23h. (Mount Wilson, Tucson, Palomar, Riverside, and Tinemaha).

Aug. 1d. 1h. Undetermined shock. Probably aftershock of July 31d. 3h. (off Puerto Rico).

Fort de France e = 14m.1s.
Philadelphia e = 17m.25s., eS = 21m.13s., eL = 22·7m.
Harvard eP = 17m.40s., eS = 21m.44s., e = 40m.34s.
St. Louis ePZ = 18m.20s., eZ = 18m.33s., eSE = 23m.44s., eLE = 27·4m.
Tucson iP = 20m.1s., e = 21m.41s.
Palomar iPZ = 20m.42s., eZ = 20m.57s.
Riverside ePZ = 20m.45s., eZ = 20m.58s.
Mount Wilson iPNZ = 20m.49s.
Pasadena iPZ = 20m.50s.
Tinemaha iP = 20m.53s.
Pittsburgh eS?NW = 22m.0s., eL?NW = 28·1m.
Long waves were also recorded at Kew and De Bilt.

Aug. 1d. 14h. 18m. 32s. Epicentre 54°·6N. 162°·3E.

A = −·5544, B = +·1769, C = +·8133; δ = +11; h = −7;
D = +·304, E = +·953; G = −·775, H = +·247, K = −·582.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo		17·9	239	e 4 12	0	—	—	—	—	—
Sendai		21·9	231	4 56	− 1	9 3	+ 9	—	—	—
Kakioka		23·9	231	e 5 15	− 1	—	—	—	—	—
Nagano		24·4	234	e 5 20	− 1	—	—	—	—	—
Tinemaha		55·0	74	i 9 36a	+ 1	—	—	—	—	—
Haiwee		55·8	74	i 9 42	+ 1	—	—	—	—	—
Santa Barbara	Z.	56·1	77	e 9 43	0	—	—	—	—	—
Mount Wilson		57·2	76	i 9 51a	0	—	—	—	—	—
Pasadena		57·2	76	i 9 51a	0	—	—	—	—	e 27·5
Riverside		57·7	76	e 9 53a	− 2	—	—	—	—	—
Palomar	Z.	58·5	76	i 9 59a	− 1	—	—	—	—	—
Tucson		62·7	72	i 10 30	+ 1	—	—	i 10 53	pP	—
Jena	N.	72·0	341	e 11 26	− 2	—	—	—	—	—
Harvard		72·9	39	i 11 31	− 2	—	—	—	—	—
Stuttgart		74·5	342	e 11 39	− 3	e 21 28?	+11	—	—	e 41·5
Zürich		76·0	343	e 11 53	+ 2	—	—	—	—	—
Neuchatel		76·7	343	e 11 52	− 3	—	—	—	—	—
Toledo	Z.	85·2	350	i 12 38	− 1	—	—	—	—	51·7
Helwan	Z.	85·9	320	12 40	− 3	—	—	e 12 49	pP	—
Granada		87·8	350	i 12 54	+ 2	e 22 54	[−25]	23 57	PS	45·1
Almeria		88·0	348	e 12 41	−12	23 14	[− 6]	16 36	PP	47·0

Additional readings :—
Granada SSS = 31m.55s.
Almeria PPP = 18m.40s., PS = 26m.15s.
Long waves were also recorded at other European stations.

August 1d. 16h. 18m. 38s. Epicentre 19°·9S. 169°·9E. Depth of focus 0·020.

Pasadena suggests 20°S. 170°E., depth 230 km.

A = −·9264, B = +·1651, C = −·3384; δ = −1; h = +5;
D = +·175, E = +·984; G = +·333, H = −·059, K = −·941.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Suva		8·3	80	i 2 5	+ 7	i 3 32	+ 1	—	—	—
Brisbane	N.	17·2	241	i 3 53	+ 1	i 6 59	+ 3	—	—	i 8·3
Auckland		17·4	168	4 22?	+28	7 32	+31	4 41	pP	—
Apia		18·6	74	i 4 6	− 1	e 7 20	− 6	e 4 13	pP	—
Arapuni		18·8	167	4 28?	+18	7 46?	+16	—	—	—
New Plymouth		19·4	170	4 16	0	7 39	− 3	—	—	—
Tuai		19·9	164	4 17	− 4	7 44	− 7	—	—	—
Riverview		21·7	226	i 4 38a	− 1	i 8 20	− 4	i 5 15	pP	e 10·2
Sydney		21·7	226	—	—	i 8 22	− 2	e 9 34	SS	—
Wellington		21·7	171	4 38	− 1	i 8 16	− 8	5 10	pP	12·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Christchurch		23·7	176	4 56	− 2	7 48	−70	i 5 25	pP	—
Honolulu		51·7	39	e 11 49	PPP	i 16 0	0	e 19 40	SS	e 21·7
Yokohama		62·1	332	e 10 7	+ 1	e 18 22	+ 6	—	—	—
Tokyo Cen. Met. Ob.		62·2	333	(10 12)	+ 5	(18 24)	+ 6	(i 11 28)	sP	—
Nagoya		63·1	331	i 10 16	+ 3	18 29	0	—	—	—
Miyazaki		63·3	324	10 16	+ 2	18 36	+ 5	i 19 55	sS	—
Kobe		63·5	329	i 10 17	+ 2	18 35	+ 1	—	—	—
Koti		63·5	326	i 10 15	0	18 32	− 2	—	—	—
Nagano		63·7	332	e 10 10	− 7	—	—	—	—	—
Sendai		63·9	335	i 10 19	+ 1	18 30	− 9	—	—	—
Mizusawa	E.	64·6	336	10 24	+ 2	18 52	+ 5	—	—	—
	N.	64·6	336	e 10 19	− 3	18 46	− 1	—	—	—
Wazima		64·9	331	10 26	+ 2	18 44	− 7	—	—	—
Hukuoka		65·2	324	e 10 24	− 2	—	—	—	—	—
Sapporo		67·9	339	10 46	+ 3	20 26	+59	—	—	—
Santa Clara		85·7	48	e 12 27	+ 5	i 22 45	+ 6	—	—	e 39·8
Ukiah		85·7	46	—	—	i 22 39	0	—	—	e 42·8
Berkeley		85·8	48	i 12 23	+ 1	i 22 24	[− 5]	i 22 40	S	—
Santa Barbara		86·0	52	i 12 22	− 1	i 22 44	+ 2	—	—	—
Pasadena		87·0	52	i 12 29a	+ 1	i 22 53	+ 2	i 13 23	pP	—
Mount Wilson		87·1	52	i 12 29a	0	i 22 54	+ 2	e 13 24	pP	—
Riverside		87·5	52	i 12 30a	− 1	i 22 57	+ 1	i 13 26	pP	—
Palomar	Z.	87·6	54	i 12 31a	0	—	—	i 13 29	pP	—
Haiwee		88·0	50	i 12 33a	0	i 23 3	+ 2	—	—	—
Tinemaha		88·2	50	i 12 34a	0	i 23 6	+ 3	i 13 33	pP	—
Sitka		89·6	26	—	—	i 23 12	− 3	e 22 48	SKS	—
Victoria		90·3	38	e 13 58?	sP	e 23 22	0	—	—	36·4
College		90·5	16	—	—	e 22 50	[− 8]	e 24 53	PS	e 38·7
Irkutsk		91·6	325	—	—	i 23 1	[− 4]	e 16 9	PP	—
Tucson		91·8	56	i 12 52	+ 1	i 23 41	+ 6	i 14 7	sP	e 39·5
Colombo		92·3	276	23 5	SKS	(23 5)	[− 3]	—	—	—
Salt Lake City		94·3	48	—	—	e 23 18	[− 1]	i 24 0	S	—
Logan		94·7	47	i 16 4	?	e 23 17	[− 5]	i 24 4	S	—
Kodaikanal	E.	95·7	279	—	—	e 23 12	[−16]	25 2	?	—
Bozeman		96·3	44	—	—	e 24 18	+ 4	e 30 53	SS	e 40·5
New Delhi	N.	101·5	296	—	—	23 42	[−15]	—	—	—
Saskatoon		101·6	38	—	—	e 25 4?	+ 6	—	—	53·4
Andijan		108·3	307	e 17 37	PKP	—	—	—	—	—
Huancayo		108·4	110	e 18 50	PP	e 24 12	[−16]	e 19 30	pPP	e 51·5
St. Louis		109·7	55	e 17 51	[−20]	e 24 25	[− 9]	e 18 46	PP	—
Cape Girardeau	N.	110·0	56	—	—	e 25 30	SKKS	e 26 8	S	—
Tashkent		110·7	307	e 17 48	[−25]	i 24 35	[− 2]	e 18 54	PP	—
La Paz	Z.	112·5	119	i 19 5a	PP	—	—	(27 53)	SP	27·9
Sverdlovsk		117·0	325	e 19 7	pPKP	i 24 57	[− 5]	26 11	SKKS	—
Pittsburgh	N.W.	117·8	53	—	—	i 24 58	[− 7]	—	—	—
Ottawa		120·9	48	e 18 31	[− 2]	—	—	—	—	50·4
Philadelphia		121·4	54	e 20 10	PP	e 25 11	[− 5]	e 36 22	SS	—
Fordham		122·4	53	e 17 16	?	e 25 14	[− 6]	—	—	—
Harvard		124·1	51	i 18 38	[− 2]	—	—	i 21 51	SKP	e 61·4
Seven Falls		124·2	45	—	—	30 22?	PS	e 21 28?	SKP	58·4
San Juan		127·3	81	e 20 53	PP	e 25 32	[− 3]	e 21 47	SKP	e 67·2
Bermuda		129·9	63	e 21 19	PP	e 38 14	SS	e 22 13	SKP	—
Fort de France		131·1	88	e 18 48	[− 5]	e 26 18	[+34]	i 21 57	SKP	—
Upsala		135·4	340	e 21 45	PP	e 25 44	[−10]	e 22 13	SKP	—
Yalta		135·9	313	e 21 37	PP	25 46	[− 9]	28 10	SKKS	—
Ksara		137·0	298	e 18 50?	[−14]	—	—	e 22 28	SKP	—
Copenhagen		140·4	340	22 9	PP	28 42	SKKS	22 20	SKP	—
Helwan	Z.	141·3	292	19 4	[− 7]	e 25 55	[− 9]	22 27	SKP	—
Potsdam		142·9	336	e 19 15	[+ 1]	—	—	i 22 31	PP	—
Ogyalla		143·9	327	e 19 47	pPKP	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		143·9	315	e 19 17	[+ 1]	e 40 58	SS	e 22 34	PP	—
Prague		144·1	332	e 19 21	[+ 5]	e 28 59	SKKS	—	—	—
Kalossa		144·4	324	19 22?	[+ 5]	—	—	—	—	—
Jena		144·6	335	e 19 15	[− 2]	—	—	i 22 34	PP	—
De Bilt-		145·7	343	i 19 21k	[+ 2]	i 29 17	SKKS	i 22 38a	PP	e 96·4
Uccle	z.	147·1	344	i 19 24k	[+ 2]	i 26 9	[− 4]	i 22 55	PP	—
Stuttgart		147·3	336	i 19 25k	[+ 3]	i 29 22	SKKS	i 22 34	PP	e 67·5
Kew		147·6	348	e 19 25	[+ 3]	—	—	—	—	e 78·4
Triest		147·7	328	e 19 22	[− 1]	—	—	—	—	—
Strasbourg		148·0	337	e 19 33	[+10]	—	—	i 20 41	sPKP	—
Chur		148·7	334	e 19 30	[+ 6]	—	—	—	—	—
Zürich		148·7	335	e 19 28	[+ 4]	—	—	—	—	—
Basle		148·9	336	e 19 29	[+ 4]	—	—	e 19 34	PKP_2	—
Paris		149·4	343	i 19 31k	[+ 6]	—	—	i 23 7	PP	78·4
Neuchatel		149·6	336	e 19 30	[+ 4]	—	—	—	—	—
Milan		149·9	331	e 19 30	[+ 4]	29 33	SKKS	—	—	—
Florence		150·2	327	i 19 36a	[+10]	i 29 27	SKKS	i 22 40	PP	—
Clermont-Ferrand		152·0	340	i 19 28	[− 1]	—	—	i 23 21	PP	e 83·4
Tortosa	N.	157·3	338	i 20 22	PKP_2	—	—	24 1	PP	—
Toledo		159·4	346	i 20 20	PKP_2	30 31	SKKS	23 57	PP	—
Almeria		161·8	340	20 28	PKP_2	—	—	i 24 10	PP	74·9
Granada		161·9	344	i 19 53	[+11]	26 34	[+ 5]	20 33	pPKP	76·8
San Fernando		163·1	349	e 20 36	PKP_2	e 44 35	SS	e 24 4	PP	76·4

Additional readings :—
Auckland i = 5m.9s., 5m.37s., and 7m.47s., P_cP? = 8m.15s.
Apia i = 8m.34s.
Riverview isP = 5m.51s., iN = 8m.25s., iNZ = 8m.38s., iEZ = 8m.43s., iN = 8m.46s. and 9m.15s., iSSZ = 9m.23s., isS = 9m.35s., iE = 9m.46s., iS_cSE = 15m.35s.
Wellington sPZ = 5m.40s., i = 6m.32s., iZ = 6m.53s., S = 8m.7s., iZ = 8m.39s., P_cP = 8m.58s., sS? = 9m.29s., sP_cP = 10m.19s., S_cP?Z = 11m.19s.
Christchurch P_cP = 9m.37s.
Tokyo i = (11m.55s.), (14m.28s.), (19m.18s.), (19m.47s.), and (20m.45s.). All readings have been increased by 2m.
Riverside eEZ = 22m.54s.
Sitka ePS = 24m.47s., e = 32m.46s.
College eSS = 29m.28s.
Irkutsk iS = 23m.33s., PS = 24m.51s.
Tucson i = 13m.52s., 15m.40s., and 24m.50s., e = 28m.58s. and 34m.48s.
Logan iSP = 25m.18s.
Bozeman e = 34m.49s.
Huancayo eS = 26m.6s., e = 28m.3s.
St. Louis eSKKSE = 25m.26s., iSN = 26m.10s., esSN = 27m.49s., eSP?E = 28m.11s., ePPS?E = 29m.49s., eE = 33m.29s.
Cape Girardeau esSN = 27m.51s.
Tashkent SKKS = 25m.34s., PS = 28m.10s.
Ottawa eZ = 21m.46s., e = 27m.44s.
Philadelphia e = 26m.49s., 30m.36s., eSSS = 41m.13s.
San Juan e = 27m.12s., eSS = 37m.52s., e = 41m.54s.
Bermuda 26m.39s.
Upsala iE = 28m.13s., e = 31m.22s.?.
Ksara e = 23m.32s.
Copenhagen 31m.31s.
Helwan eZ = 19m.58s., PPZ = 22m.18s., eZ = 25m.1s.
Jena eEN = 19m.18s., EN = 19m.21s., E = 19m.34s.?, e = 20m.22s., N = 20m.30s., E = 20m.34s., and 22m.40s.
De Bilt ipPKP = 20m.17s.a, iPPP = 26m.0s.
Uccle ipPKPZ = 20m.20s., eZ = 22m.33s., iSKKSZ = 29m.22s.
Stuttgart iZ = 20m.21s. and 20m.33s., e = 23m.46s. and 38m.17s., eSS = 41m.46s.?.
Kew eZ = 20m.22s., eNZ = 29m.7s.
Strasbourg e = 21m.24s.
Paris ePPP = 26m.24s.
Florence ipPZ = 20m.43s., iPSE = 30m.16s., eSSE = 34m.22s., eSSSE = 38m.13s.
Clermont-Ferrand i = 21m.16s., 25m.47s., and 31m.54s.
Toledo pPZ = 21m.25s.
Almeria pPKP = 21m.0s., sPKP = 21m.12s., PKS = 25m.3s., PPP = 27m.49s., PPS = 37m.13s.
Granada PKP_2 = 21m.3s., PP = 24m.17s., PPP = 24m.57s., sPP = 25m.12s., PPP = 28m.19s., pPPP = 28m.49s., SKKS = 30m.48s., SKSP = 33m.53s., PPS = 38m.12s., iSS = 44m.19s., sSS = 45m.22s.

August 1d. Readings also at 1h. (near Port au Prince), 2h. (Bogota), 3h. (Balboa Heights), 5h. (Fort de France), 6h. (Haiwee, Mount Wilson, Palomar, Pasadena, Riverside, Tinemaha, and Tucson), 7h. (St. Louis and near Port au Prince), 8h. (Bucharest), 10h. (near Andijan, Tashkent, and near Mizusawa), 14h. (Huancayo, La Paz, La Plata, Rio de Janeiro, Pittsburgh, and Wellington), 15h. (Harvard), 18h. (Tacubaya, Palomar, and Tucson), 22h. (Tucson and near Florence), 23h. (near Reykjavik, near Chur, Stuttgart, and Triest).

August 2d. 0h. 46m. 43s. Epicentre 45°·0S. 167°·0E. Depth of focus 0·005.
(as on 1938 Dec. 16d.).

Intensity VI in the southern part of South Island, New Zealand.
Epicentre 45°·5S. 166°·8E. Depth of focus 50-80 km.

R. C. Hayes.
"Earthquakes in New Zealand during the year 1943," Wellington 1944, extracted from New Zealand Journal of Science and Technology, vol. XXV, No. 5B, p. 228, one epicentral chart.

$A = -·6913$, $B = +·1596$, $C = -·7047$; $\delta = -3$; $h = -4$;
$D = +·225$, $E = +·974$; $G = +·687$, $H = -·159$, $K = -·710$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverview		16·5	307	i 3 43k	− 6	i 6 47	− 2	i 3 51	PP	e 8·1
Sydney		16·5	307	i 3 47	− 2	i 6 35	−14	—	—	e 9·3
Brisbane	E.	20·7	324	i 4 39	+ 2	i 8 40	SS	—	—	—
	N.	20·7	324	i 4 40	+ 3	i 8 39	SS	i 4 49	PP	i 10·0
Suva		28·4	23	e 5 47	− 3	e 10 32	+ 1	i 6 59	PPP	e 13·6
Apia		35·9	38	e 6 56	0	e 12 47	+19	e 16 26	Q	e 17·6
Perth		41·5	271	7 47	+ 5	13 47	− 6	9 17	PP	i 20·0
Honolulu		73·4	35	e 11 24	− 3	e 19 54	−56	e 21 44	PS	e 31·6
Kagosima		83·1	330	11 17	−63	—	—	—	—	—
Kumamoto		84·2	331	e 12 23	− 3	—	—	—	—	—
Nagoya		84·3	335	e 12 24	− 2	—	—	—	—	—
Nagano		85·4	338	e 12 31	− 1	—	—	—	—	—
Sendai		86·2	341	12 26	− 9	—	—	—	—	—
Sapporo		90·6	343	e 12 27	−29	—	—	—	—	—
La Plata	N.	90·7	146	—	—	23 41	− 4	33 29	SSS	39·1
Colombo	E.	92·8	277	23 24	SKS	(23 24)	[− 9]	—	—	—
Tananarive		95·9	237	—	—	e 23 51	[+ 2]	24 39	S	40·0
Kodaikanal	E.	96·8	278	i 23 51	SKS	(i 23 51)	[− 4]	27 1	PPS	49·5
Calcutta	N.	98·4	294	—	—	i 24 6	[+ 3]	—	—	—
Huancayo		100·2	119	e 17 40	PP	e 24 22	[+10]	e 25 21	S	e 39·5
La Paz	Z.	101·0	128	i 13 42	− 2	27 6	PS	32 23	SS	47·3
Pasadena		103·9	56	e 13 58	+ 1	e 24 17?	[−12]	e 27 11?	PS	e 43·2
Mount Wilson	Z.	104·0	56	e 18 12	PP	—	—	—	—	—
Santa Clara		104·0	51	e 18 29	PP	e 27 44	PS	—	—	—
Palomar	Z.	104·1	57	e 14 3	+ 6	—	—	e 18 12	PP	—
Berkeley		104·2	51	e 18 16	PP	e 27 37	PS	e 27 41	?	e 43·7
Ukiah		104·6	49	e 18 25	PP	e 25 34	− 9	e 27 45	PS	e 43·8
Tinemaha	Z.	105·9	54	e 18 20	PP	—	—	e 29 54	PKKP	—
Bombay	E.	106·0	281	—	—	33 18	SS	37 27	SSS	i 43·3
Rio de Janeiro	N.	107·0	152	e 18 37	PP	—	—	—	—	—
Tucson		107·0	62	e 17 34	?	e 28 4	PS	e 28 36	PPS	e 41·8
New Delhi	N.	109·5	292	—	—	—	—	i 37 58	SSS	i 65·7
Irkutsk		110·9	324	18 45	PP	28 24	PS	e 21 30	PPP	—
Victoria		111·2	42	e 18 41?	PP	—	—	e 28 53?	PS	51·3
Salt Lake City		112·0	55	—	—	e 28 53	PS	e 40 56	?	e 50·3
Sitka		112·5	30	e 19 23	PP	—	—	e 28 57	PS	e 47·8
Logan		112·7	54	e 19 19	PP	e 28 53	PS	e 39 19	SSS	—
College		115·1	19	e 19 41	PP	e 27 2	SKKS	e 29 16	PS	e 47·8
Andijan		120·1	299	18 42	[− 1]	e 25 50	[+16]	—	—	—
Saskatoon		121·8	47	e 20 17?	PP	—	—	—	—	58·3
Tashkent		122·4	298	e 18 46	[− 2]	i 25 51	[+ 9]	i 20 32	PP	—
Cape Girardeau	N.	123·9	70	—	—	e 27 26	SKKS	e 28 35	?	e 59·8
St. Louis		124·1	68	e 18 48	[− 3]	e 25 51	[+ 4]	e 20 32	PP	e 59·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Chicago		127·5	65	e 21 7	PP	e 31 5	PS	e 38 43		SSP	e 43·0
San Juan		128·7	104	e 21 6	PP	—	—	e 32 52		PPS	e 64·1
Pittsburgh	N.E.	131·9	71	e 21 25	PP	—	—	i 22 31		PKS	e 62·4
Sverdlovsk		134·3	313	e 19 10	[0]	39 2	SS	i 22 34		PKS	—
Philadelphia		134·9	74	e 21 43	PP	e 31 39	SP	1 22 22		PKS	e 63·5
Fordham		136·1	73	e 19 8	[− 6]	e 22 45	PKS	e 21 48		PP	—
Ottawa		136·8	66	e 19 17?	[+ 2]	e 22 45	PKS	e 34 17?		PPS	e 57·3
Vermont		138·1	68	e 21 7	?	e 40 5	SS	e 21 47		PP	e 63·6
Bermuda		138·4	90	e 19 19	[+ 1]	e 32 20	SP	e 22 6		PP	49·4
Harvard		138·4	72	e 19 7	[−11]	e 28 56	SKKS	e 22 8		PP	e 66·3
Seven Falls		140·6	65	e 19 17?	[− 5]	e 28 56	SKKS	e 22 17?		PP	63·3
Ksara		141·2	271	e 19 3	[−20]	—	—	e 22 30		PP	—
Helwan	Z.	142·2	263	19 17	[− 8]	22 55	SKP	22 32		PP	—
Moscow		146·7	308	19 35	[+ 2]	e 29 44	SKKS	—		—	—
Yalta		146·9	286	e 19 27	[− 6]	—	—	—		—	—
Bucharest		152·4	284	e 19 50	[+ 8]	—	—	—		—	49·3
Ivigtut		153·8	39	e 19 58	[+14]	—	—	—		—	e 61·5
Sofia		153·8	278	e 19 57	[+13]	—	—	e 20 1		?	43·3
Scoresby Sund		154·1	7	e 19 43	[− 1]	e 43 26	SS	e 23 39		PP	e 59·4
Belgrade		156·4	281	e 20 20	PKP_3	—	—	—		—	e 50·3
Upsala	E.	156·4	319	e 20 8	pPKP	e 37 10	PPS	e 50 17		SSS	e 72·3
	N.	156·4	319	e 19 51	[+ 4]	e 49 59	SSS	e 33 1		PPKP	e 68·3
Kalocsa		157·7	287	e 20 22	PKP_3	—	—	—		—	—
Ogyalla		158·4	289	e 20 32	PKP_3	—	—	—		—	—
Copenhagen		160·7	313	e 19 48	[− 5]	—	—	24 16		PP	—
Triest		160·7	282	e 19 56	[+ 3]	i 31 6	SKKS	—		—	—
Prague		160·8	296	e 20 33	PKP_3	e 30 59?	SKKS	—		—	e 76·3
Bergen		161·1	331	e 19 49	[− 4]	e 35 2	?	37 57		PPS	e 74·3
Cheb		162·2	297	e 20 17	pPKP	—	—	—		—	e 83·3
Florence		162·6	276	e 19 51k	[− 4]	i 26 42	[− 9]	e 21 4k		PKP_3	—
Chur		164·2	287	e 19 50	[− 6]	—	—	e 24 35		PP	e 87·8
Milan		164·4	280	e 19 42?	[−14]	28 35	PPP	—		—	78·3
Stuttgart		164·4	293	e 19 46	[−10]	e 44 53?	SS	e 20 48		PKP_3	e 85·8
Aberdeen	E.	166·0	335	i 19 59	[+ 1]	i 45 14	SS	i 24 46		PP	e 73·0
Neuchatel		166·0	287	e 19 51	[− 7]	—	—	—		—	—
De Bilt		166·1	307	i 19 56k	[− 2]	i 45 27	SS	i 21 0	a	PKP_3	e 67·3
Uccle		167·0	303	e 19 52	[− 6]	e 31 32	SKKS	e 21 2		PKP_3	—
Barcelona		168·4	258	i 24 54	PP	—	—	—		—	—
Almeria		168·6	230	i 19 53	[− 7]	i 31 56	SKKS	21 8		PKP_3	76·3
Clermont-Ferrand		168·7	278	i 19 55k	[− 5]	i 26 42	[−13]	i 21 7		PKP_3	e 81·0
Paris		168·7	295	i 19 54	[− 6]	e 26 39	[−16]	e 31 42		SKKS	57·3
Stonyhurst	E.	168·8	324	e 24 50	PP	e 26 41	[−14]	i 32 6		SKKS	e 69·3
Tortosa	E.	169·3	252	25 17	PP	i 32 7	SKKS	i 46 7		SS	e 80·3
Kew		169·4	311	i 19 56k	[− 4]	e 31 46	SKKS	i 25 2		PP	e 86·3
Granada		169·5	227	19 58	[− 2]	22 52	SKP	20 12		pPKP	77·2
San Fernando		170·0	214	e 19 55	[− 5]	46 6	SS	25 3		PP	85·3
Toledo		171·7	235	i 19 55	[− 6]	32 10	SKKS	i 21 18		PKP_3	76·3
Lisbon		173·1	207	19 57?	[− 5]	—	—	25 11?		PP	75·2

Additional readings :—
Riverview iN =4m.30s. and 6m.51s., iSSZ =7m.7s.
Suva e? =7m.45s. and 8m.12s., eP_cP =8m.57s., iP_cS =12m.32s.
Perth PPP =9m.47s., SS =16m.32s.
La Plata E =28m.55s.
Tananarive N =24m.45s., SS =31m.0s.
Kodaikanal eSE =34m.7s.
Huancayo e =26m.48s., eSS =32m.28s.
La Paz iPPZ =17m.54s.
Pasadena ePPZ =18m.14s., eSS =32m.29s.?, eSSSZ =36m.17s.?.
Ukiah eSS =33m.43s.
Tucson e =18m.33s., eSS =34m.25s.
Irkutsk SS =33m.44s.
Tashkent eSKKS =27m.22s., S =28m.19s., iPS =30m.22s.
St. Louis eSKPE =21m.56s., ePPPP?E =24m.46s., eSKKSE =27m.27s., eS?E = 28m.30s., ePSE =30m.38s., ePPS?N =31m.38s., ePPPS?N =32m.26s., eSSN = 37m.30s., ePPSSE =38m.25s., eN =40m.47s., eSSSN =42m.6s., eSSSSN = 46m.10s., eN =49m.12s.

Continued on next page.

Chicago e = 27m.55s.
Sverdlovsk ePP = 21m.40s.
Philadelphia e = 28m.40s., eSS = 39m.47s.
Fordham ePP = 25m.6s., e = 32m.0s. and 34m.13s.
Vermont e = 33m.42s.
Bermuda eSS = 40m.26s.
Harvard ePPP = 25m.7s., ePS = 32m.27s.
Seven Falls e = 41m.59s.?.
Helwan eZ = 20m.50s., PSKSZ = 32m.44s.
Ivigtut e = 21m.31s., 30m.23s., and 38m.40s.
Scoresby Sund e = 33m.57s., 38m.47s., and 48m.19s.
Belgrade e = 30m.13s., 34m.21s., and 39m.33s.
Upsala ePP?E = 23m.28s., eSS = 43m.17s.?.
Copenhagen 25m.19s., 31m.47s., and 44m.27s.
Prague e = 34m.59s.?, 39m.47s.?, and 44m.27s.
Bergen eE = 31m.47s., eZ = 35m.12s., and 40m.47s., SS = 44m.37s., eE = 51m.7s.
Cheb e = 23m.30s., 27m.47s., and 30m.52s.
Florence iPPZ = 24m.34s.k, iSKKSE = 31m.11s., iPSKSE = 35m.20s., iSSE = 44m.43s., eSSSE = 52m.35s.
Stuttgart ePKPZ = 19m.52s., ePPZ = 24m.25s., e = 37m.59s.?, eQ = 76m.47s.?.
Aberdeen iE = 30m.50s.
De Bilt ePP = 24m.45s.a, ePPP = 28m.57s., iE = 35m.14s., eSSS = 51m.17s.?.
Uccle ePPEZ = 24m.50s., eN = 32m.4s., ePSKSE = 35m.21s., eE = 37m.24s., iSSN = 45m.38s.
Almeria iPP = 24m.58s., PPS = 38m.39s., SS = 45m.53s., SSS = 51m.59s.
Clermont-Ferrand iPP = 24m.50s., iPPP = 28m.24s.
Paris e = 29m.28s., iPSKS = 35m.22s., i = 38m.43s.
Stonyhurst eE = 34m.43s., 38m.1s., and 45m.36s., E = 49m.41s., iE = 53m.56s.
Kew iPKP$_2$ = 21m.20s., ePPPEZ = 29m.34s., eSKSP? = 35m.40s., eSS = 45m.52s., eSSSZ = 53m.47s., eQN = 75·3m.
Granada PKP$_2$ = 21m.10s., pPKP$_2$ = 21m.32s., PP = 24m.58s., pPP = 25m.7s., PPP = 28m.46s., pPPP = 29m.18s., SKKS = 31m.31s., SKSP = 35m.27s., sSKSP = 36m.6s., SS = 45m.30s., SSS = 46m.8s.
Toledo PPZ = 25m.8s.
Lisbon E = 29m.57s.?.
Long waves were also recorded at Columbia, Edinburgh, Potsdam, and Jena.

August 2d. 8h. Undetermined shock.
Suva eP = 39m.15s., iS = 40m.30s., eL = 41m.8s.
Brisbane iP = 41m.54s., iSE = 45m.44s., eLN = 49m.50s.
Riverview iPEZ = 42m.44s., iN = 45m.41s., iSEN = 47m.15s., eRN = 49·2m.
Wellington P = 43m.23s., PPZ = 43m.50s., S = 47m.17s., R = 49m.
Apia eN = 44m.24s.? and 46m.30s.?.
Auckland S = 47m.0s.?, L = 48·3m.
Christchurch S = 47m.51s., Q = 49m.4s., R = 51m.21s.
Mount Wilson iPZ = 49m.45s.
Pasadena iPZ = 49m.45s., eLZ = 75m.
Palomar iPZ = 49m.48s.
Riverside iPZ = 49m.48s., iZ = 49m.52s.
Tinemaha iPZ = 49m.51s.
Tucson eP = 50m.11s., i = 50m.14s.
Long waves were also recorded at Honolulu, Paris, and De Bilt.

August 2d. 12h. 1m. 32s. Epicentre 19°·1N. 67°·1W. (as on July 31d.).

$A = +·3680$, $B = -·8711$, $C = +·3252$; $\delta = -1$; $h = +5$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		1·2	128	i 0 25	+ 1	i 0 43	+ 2	—	—	i 1·5
Fort de France		7·2	127	e 1 50	+ 1	—	—	—	—	—
Cape Girardeau	N.	26·7	317	e 5 43	0	—	—	e 6 40	PPP	—
St. Louis		28·0	319	e 5 51	− 4	e 11 10	?	e 6 47	PP	—
Tucson		41·3	298	i 7 49	0	—	—	—	—	—
Palomar	z.	46·4	299	i 8 31	+ 1	—	—	—	—	—
Riverside	z.	46·9	300	e 8 34	0	—	—	—	—	—
Mount Wilson	z.	47·5	300	i 8 38	0	—	—	—	—	—
Pasadena		47·6	300	i 8 40	+ 1	—	—	—	—	—
Haiwee	z.	47·6	303	i 8 39	0	—	—	—	—	—
Tinemaha	z.	48·0	303	i 8 42	− 1	—	—	—	—	—

St. Louis also gives eZ = 6m.25s. and 6m.37s., eSSE = 12m.55s.
Long waves were also recorded at Philadelphia, Kew, and De Bilt.

August 2d. 20h. Undetermined shock.

Port au Prince eP =21m.0s., iS =21m.35s., i =21m.49s. and 22m.6s., iL =22m.23s.
Fort de France e =22m.58s.
Bogota iP =24m.9s., e =24m.29s. and 27m.6s.
Philadelphia e =25m.18s., eL =29m.15s.
Harvard eP =25m.24s., eS =29m.25s., e =46m.19s. and 46m.50s.
St. Louis ePZ =25m.58s., eSE =30m.18s., eL?E =33m.4s.
Tucson eP =27m.45s., i =27m.54s.
Riverside ePZ =28m.31s.
Tinemaha iPZ =28m.40s.
Chicago e =31m.11s., eL =50m.19s.
Long waves were also recorded at Bermuda.

August 2d. Readings also at 2h. (St. Louis, Palomar, Riverside, Pasadena, Mount Wilson, Tinemaha, Tucson, and Tacubaya, and near Andijan), 3h. (near Triest), 4h. (Tinemaha, Palomar, Tucson, St. Louis, Cape Girardeau, Harvard, near Port au Prince, and near Apia), 5h. (Tinemaha, Pasadena, Mount Wilson, Riverside, Palomar, Tucson, St. Louis, Cape Girardeau, La Paz, and Bogota), 7h. and 8h. (Fort de France), 9h. (near La Paz and near Port au Prince), 10h. (Bogota, Philadelphia, St. Louis, and Harvard), 12h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, and Tucson), 13h. (Triest and Bogota), 14h. (near Stuttgart), 17h. (near Stalinabad), 20h. (Fort de France).

August 3d. Readings at 0h. (Copenhagen), 5h. (Riverview), 6h. (Riverview, Palomar, Tinemaha, and Tucson), 8h. (Yalta and Tananarive), 13h. (Ebingen and Stuttgart) 18h. (near Berkeley, San Francisco, Fresno, Lick, and Branner), 19h. (Tucson, Palomar, Auckland, Wellington, and Suva), 20h. (Christchurch and Suva), 22h. (near Branner).

August 4d. 0h. Undetermined shock. Caribbean Sea.

San Juan eP =55m.8s., i =55m.31s., iL =56m.1s.
Port au Prince e =55m.44s., i =56m.53s., 57m.8s., and 57m.34s.
Bogota iP =58m.26s., e =58m.39s., eS? =61m.27s.
Harvard iP =60m.6s., iS =63m.59s., e =82m.29s.
St. Louis ePZ =61m.1s., eS?N =65m.25s., ePS?N =65m.41s., eN =69m.16s., eE = 71m.27s.
Tucson eP =62m.21s.
Palomar ePZ =63m.4s
Riverside ePZ =63m.7s.
Mount Wilson ePZ =63m.12s.
Pasadena ePZ =63m.12s.
Tinemaha iPZ =63m.15s.
Long waves were recorded at Philadelphia, Kew, and De Bilt.

August 4d. Readings also at 6h. (Tucson, Pasadena, Mount Wilson, and Palomar), 10h. (Tashkent), 11h. (near Apia), 17h. (near Mizusawa), 22h. (Pasadena, Mount Wilson, Palomar, and Riverside), 23h. (Balboa Heights).

August 5d. Readings at 0h. (Bogota and Harvard), 1h. (Fort de France, Florence, Triest Stuttgart, Granada, and Tortosa), 2h. (near Yalta (4)), 3h. (Ksara and Yalta), 4h. (Granada, near Tashkent, and Andijan), 8h. (near Bogota), 10h. (Riverside, Tinemaha, and La Paz), 17h. (Pasadena, Mount Wilson, Tucson, Tinemaha, and Palomar), 22h. (La Paz and Bogota).

August 6d. 11h. 55m. 47s. Epicentre 8°·0S. 112°·0E.

Rough. Pasadena suggests deep focus.

A = −·3710, B = +·9183, C = −·1383; δ = +4; h = +7;
D = +·927, E = +·375; G = +·052, H = −·128, K = −·990.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Perth		24·1	172	i 5 23	+ 5	i 9 28	− 6	—	—	—
Riverview		44·3	131	i 14 41	SP	i 18 6	SS	i 18 10	SS	e 21·5
Hikone		48·7	27	8 52	+ 4	—	—	—	—	—
Misima		49·9	29	9 1	+ 4	—	—	—	—	—
Nagano		50·8	26	e 8 58	− 6	—	—	—	—	—
Wazima		50·8	26	9 7	+ 3	—	—	—	—	—
Mizusawa		54·1	28	e 9 29	0	e 17 4	− 1	e 9 32	?	—
Andijan		60·7	326	e 10 10	− 5	e 18 29	− 3	—	—	—
Tashkent		62·8	325	10 27	− 3	18 49	− 9	—	—	—
Sverdlovsk		77·0	333	i 11 44	−12	21 38	− 7	—	—	—
Granada		115·1	307	19 9	[+26]	—	—	19 39	pPKP	68·6
Tinemaha		126·1	50	i 19 5	[0]	—	—	i 21 9	PP	—
Haiwee		126·6	50	i 19 7	[+ 1]	—	—	i 21 5	PP	—
Pasadena		127·1	52	i 19 7a	[+ 1]	—	—	e 21 3	PP	—
Mount Wilson		127·2	52	i 19 8a	[+ 2]	—	—	i 21 7	PP	—
Palomar	z.	128·4	53	i 19 10	[+ 1]	—	—	e 21 11	PP	—
Tucson		134·4	52	e 19 18	[− 2]	—	—	e 21 48	PP	—
St. Louis		143·5	30	i 19 35	[− 1]	—	—	—	—	—
Fordham		146·9	7	i 19 44	[+ 2]	—	—	—	—	—

Additional readings :—
Riverview iE = 14m.44s.
Pasadena iZ = 19m.32s., eLZ = 21m.12s.
Tucson e = 19m.40s., i = 22m.45s.
St. Louis eN = 19m.39s. and 19m.47s.
Long waves were also recorded at Kew and Scoresby Sund.

August 6d. Readings also at 1h. (near Bacau, Bucharest, Campulung, and Focsani) 5h. (Kew, Port au Prince, and near Reykjavik (2)), 7h. (Kew and near Reykjavik), 8h. (Tucson), 10h. (Brisbane, Palomar, Tucson, and near Mizusawa), 20h. (Cheb), 23h. (near Andijan).

August 7d. 15h. Central America.

Pasadena suggests depth 200 km.
Oaxaca eN = 59m.44s.
Merida eN = 60m.20s.
Tacubaya eN = 61m.3s.
St. Louis ePZ = 64m.0s., epPZ = 64m.29s., eZ = 64m.45s., and 65m.5s., eS?E = 67m.56s., esS?E = 68m.48s., eE = 69m.10s.
Tucson iP = 64m.12s., i = 64m.34s., e = 68m.51s., 70m.29s., and 71m.15s., eL = 72m.23s.
Palomar iPZ = 64m.56s.k, ipPZ = 65m.36s., iZ = 65m.58s.
Mount Wilson iP = 65m.7s.k, ipPZ = 65m.48s., eZ = 66m.14s.
Pasadena iP = 65m.7s.k, ipPZ = 65m.47s., iZ = 66m.13s.
Haiwee ePE = 65m.17s.
Tinemaha iP = 65m.22s.k, epPZ = 66m.4s., iZ = 66m.25s., iS_cPZ = 71m.38s.

August 7d. 19h. Undetermined shock.

Ksara eP = 48m.13s., sS_g = 51m.59s.
Helwan ePZ = 48m.48s., eZ = 49m.45s. and 50m.22s., eE = 52m.11s., eEN = 54m.6s.
Tashkent iP = 49m.24s., eS = 52m.58s.
Sverdlovsk eP = 50m.46s., eS = 55m.22s.
Stuttgart eZ = 52m.0s. and 52m.10s., eQ = 65m.42s.?.
New Delhi eN = 54m.24s., iN = 60m.24s.
Copenhagen 57m.44s.
Florence eS?E = 61m.4s.
Long waves were also recorded at Granada.

August 7d. Readings also at 3h. (Granada, Kew, Andijan, Tashkent, Calcutta, Bombay, and near New Delhi), 8h. (near Istanbul), 9h. (Jena), 10h. (Stuttgart, Brisbane, Riverview, and Christchurch), 11h. (Pittsburgh, Mount Wilson, Pasadena, Tinemaha, Tucson, and Sitka), 12h. (Stuttgart (2), Basle, Chur, Neuchatel, Zürich, and Clermont-Ferrand), 20h. (near Mizusawa (2)), 21h. (Fort de France and near Mizusawa).

August 8d. 0h. 38m. 41s. Epicentre 19°·1N. 67°·1W. (as on 2d.).

Epicentre 19°N. 68°W. (Pasadena).

$A = +\cdot3680$, $B = -\cdot8711$, $C = +\cdot3252$; $\delta = -1$; $h = +5$;
$D = -\cdot921$, $E = -389$; $G = +\cdot127$, $H = -\cdot300$, $K = -\cdot946$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
San Juan		1·2	128	i 0 28	+ 4	i 0 46	+ 5	i 0 42 S•	—
Fort de France		7·2	127	e 1 50	+ 1	3 13	0	2 9 P•	—
Bogota		15·9	206	i 3 44	− 3	e 6 34	−10	i 3 56 PP	e 7·5
Columbia		19·4	324	e 4 27	− 3	e 8 3	− 1	— —	e 9·4
Philadelhpia		21·9	344	e 4 59	+ 2	i 9 6	+12	— —	e 10·6
Fordham		22·4	348	i 5 15	+13	i 9 0	− 4	i 9 12 PcP	—
Harvard		23·6	353	i 5 16	+ 3	i 9 31	+ 6	i 5 34 PP	e 11·3
Pittsburgh		24·0	336	e 5 21	+ 4	i 9 35	+ 3	— —	—
Cape Girardeau	N.	26·7	317	e 5 42	− 1	e 10 13	− 4	e 6 6 PP	—
Ottawa		27·2	347	e 5 49?	+ 2	e 10 19?	− 6	— —	13·3
St. Louis		28·0	319	e 5 52	− 3	e 10 34	− 4	e 6 54 PP	e 13·1
Chicago		28·6	326	e 5 50	−10	e 10 45	− 3	— —	e 13·9
Huancayo		32·0	196	e 7 1	+31	e 11 30	−12	— —	e 21·5
La Paz		35·4	181	6 58	− 2	— —	—	— —	21·3
Tucson		41·3	298	i 7 47	− 2	e 14 0	− 4	i 9 31 PP	e 23·1
Palomar	Z.	46·4	299	e 8 29	− 1	—	—	i 8 36 ?	—
Mount Wilson		47·5	300	e 8 37	− 1	—	—	i 8 44 ?	—
Pasadena		47·6	300	i 8 38	− 1	—	—	i 8 47 ?	e 26·3
Haiwee	E.	47·6	303	e 8 39	0	—	—	— —	—
Tinemaha		48·0	303	i 8 41	− 2	—	—	i 8 50 ?	—
Santa Barbara		48·9	300	e 8 47	− 3	—	—	— —	—
Toledo		57·5	55	i 9 56	+ 3	—	—	— —	30·3
Granada		57·8	57	i 10 2	+ 7	1 17 54	0	— —	26·9
Almeria		58·7	58	e 10 9	+ 7	e 18 14	+ 8	12 29 PP	30·3
Stuttgart		66·9	44	e 10 58	+ 2	—	—	— —	e 38·3

Additional readings :—
Fort de France P_g = 2m.43s.
Bogota i = 4m.11s. and 7m.13s.
Cape Girardeau eN = 5m.54s.
St. Louis ipPZ = 6m.1s., iZ = 6m.5s., ePPZ = 6m.15s., eSSN = 12m.3s.
Tucson e = 9m.17s., i = 9m.49s., e = 14m.52s.
Almeria pP = 10m.17s.
Long waves were also recorded at Bermuda, Sitka, and at other European stations.

August 8d. 6h. Undetermined shock—
Misima P = 58m.26s., S = 61m.55s.
Kobe P = 58m.35s., S = 62m.10s.
Nagano P = 58m.43s., S = 62m.34s.
Merida eN = 66m.6s.
Tinemaha iPZ = 66m.34s., iZ = 70m.33s.
Pasadena ePZ = 66m.38s., eLZ = 80m.
Mount Wilson ePZ = 66m.39s., eZ = 70m.17s.
Palomar ePZ = 66m.46s., iZ = 70m.4s.
Tucson e = 67m.10s., i = 69m.22s., e = 77m.39s., eL = 80m.15s.
Bogota e = 68m.18s.
Cape Girardeau ePN = 69m.0s.
St. Louis ePZ = 69m.11s., eZ = 69m.34s.

August 8d. 8h. Mexican shock.

Oaxaca PZ = 32m.21s.
Puebla ePN = 32m.59s.
Vera Cruz PN = 33m.4s.
Tacubaya PN = 33m.12s.
Merida eN = 34m.36s.
Tucson iP = 36m.51s., i = 37m.19s., eS = 40m.25s., iL = 43m.0s.
Bogota e = 37m.41s.
Cape Girardeau ePN = 37m.5s., ePPN = 37m.28s., eSN = 41m.9s.
St. Louis ePZ = 37m.16s., iPZ = 37m.19s., iZ = 37m.26s., ePPZ = 37m.43s., eZ = 37m.50s., ePPPZ = 37m.56s., eZ = 38m.8s., eSE = 41m.31s.
Guadalajara eN = 37m.36s.
Palomar iPZ = 37m.36s.
Mount Wilson iPZ = 37m.49s.
Pasadena iP = 37m.49s., eLEN = 43m.
Haiwee ePZ = 37m.59s.
Tinemaha iP = 38m.5s.
Long waves were also recorded at Salt Lake City, Santa Clara, and Bozeman.

August 8d. 15h. South American shock.

Pasadena suggests deep focus.
La Paz iPZ = 30m.53s. a, LZ = 31m.59s.
La Plata N = 32m.54s., E = 33m.12s., LEN = 35m.36s.
Bogota e = 35m.1s. and 35m.43s.
Cape Girardeau ePN = 39m.35s., epPN = 40m.25s., eS?N = 47m.45s., esS?N = 49m.3s.
Tucson iP = 40m.13s., e = 40m.59s.
Palomar iPZ = 40m.40s., iZ = 40m.56s., epPZ = 41m.27s.
Mount Wilson iPZ = 40m.47s., ipPZ = 41m.37s.
Pasadena iPZ = 40m.48s., ipPZ = 41m.33s.
Haiwee iPZ = 40m.54s.
Tinemaha iP = 40m.58s., iZ = 41m.8s., epPZ = 41m.46s.
Long waves were also recorded at Kew.

August 8d. Readings also at 0h. (Fort de France), 1h. (near Port au Prince), 7h. (near Branner), 9h. (near Belgrade and near Mizusawa), 11h. (near Fort de France), 14h. (Granada), 15h. (St. Louis, Tinemaha, Mount Wilson, Pasadena, Palomar, Tucson, Guadalajara, and near Mizusawa), 21h. (Tashkent).

August 9d. 5h. 30m. 4s. Epicentre 38°·2N, 118°·2W.

Scale VI at Basalt, Dyer, and Fallon; V at Keeler and Pinehurst Ranger Station, Goldfield, and Schurz. Macroseismic area 34,000 sq. m. Epicentre given by Pasadena.
R. R. Bodle.
United States Earthquakes 1943, Washington 1945, p. 14. Isoseismic chart p. 13.

$A = -\cdot3723$, $B = -\cdot6943$, $C = +\cdot6159$; $\delta = -1$; $h = -1$;
$D = -\cdot881$, $E = +\cdot473$; $G = -\cdot291$, $H = -\cdot543$, $K = -\cdot788$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		1·1	182	i 0 20 a	− 2	i 0 30	− 9	—	—	—
Fresno	N.	1·9	221	i 0 36	+ 2	—	—	i 2 0	?	—
Haiwee		2·1	175	i 0 34 a	− 3	i 1 4	0	—	—	—
Lick		2·9	252	e 0 52	P*	i 2 30	?	i 0 55	P_g	—
Santa Clara		3·1	254	i 1 2	P_g	i 1 44	S_g	—	—	—
Berkeley		3·2	264	i 0 56	+ 4	i 1 32	0	e 1 3	P_g	—
Branner	N.	3·3	256	i 0 57	+ 4	i 1 41	S*	—	—	—
Santa Barbara		3·9	198	i 1 6	+ 4	i 2 1	S*	—	—	—
Mount Wilson		4·0	178	i 1 2 a	− 2	i 2 3	S*	—	—	—
Pasadena		4·1	180	i 1 3 a	− 2	i 2 2	S*	—	—	—
Ukiah		4·1	285	e 1 17	P*	i 2 10	S*	—	—	e 2·4
Palomar	Z.	5·0	167	i 1 14 a	− 4	—	—	—	—	—
Ferndale		5·2	299	i 1 54	?	i 3 0	?	—	—	—
Salt Lake City		5·5	60	e 1 33?	P*	e 2 30?	0	—	—	i 2·9
Tucson		8·5	132	i 2 3	− 4	i 3 34	−11	i 2 40	P_g	i 4·2
Bozeman		9·2	33	e 2 20	+ 4	e 4 11	+ 8	e 2 58	P_g	e 4·8
Seattle		9·9	344	—	—	e 4 14	− 6	—	—	e 5·7
Victoria		11·0	342	e 2 44?	+ 2	—	—	—	—	5·9
Saskatoon		16·1	27	3 56	+ 7	7 11	+22	—	—	8·5
St. Louis		21·9	80	i 4 56	− 1	e 8 58	+ 4	i 5 16	PP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sitka		22·4	335	—	—	e 9 13	+ 9	—	—	e 11·6
Cape Girardeau	N.	22·7	83	e 5 6	+ 2	e 9 11	+ 2	—	—	e 11·8
Chicago		23·7	72	e 5 14	0	e 9 30	+ 3	—	—	e 12·1
Pittsburgh		29·5	74	—	—	e 11 6	+ 4	e 12 23	SS	i 16·0
Philadelphia		33·2	74	—	—	e 12 0	0	—	—	e 13·8
Bogota		52·2	118	e 9 14	− 1	—	—	—	—	—
Granada		83·8	47	—	—	e 21 38	−77	—	—	32·9

Additional readings :—
Santa Clara eN = 1m.21s.
Berkeley iZ = 1m.0s., iN = 1m.36s., iE = 1m.43s., eZ = 1m.47s., eN = 1m.56s. and 3m.21s.
Branner iN = 1m.7s.
St. Louis eZ = 5m.1s., iZ = 5m.5s., ePPP?Z = 5m.29s., eZ = 5m.36s. and 6m.46s., iN = 11m.45s., eS_cPZ = 12m.46s.
Long waves were also recorded at Kew, Scoresby Sund, San Juan, and other American stations.

August 9d. 16h. 57m. 51s. Epicentre 9°·0N. 128°·0E. (as on 1940 April 14d.)

A = −·6082, B = +·7785, C = +·1554 ; δ = +12 ; h = +7 ;
D = +·788, E = +·616 ; G = −·096, H = +·122, K = −·988.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	40·3	296	—	—	i 13 41	− 8	i 14 40	?	—
Brisbane	E.	43·6	147	e 7 48	−20	e 14 29	− 9	i 17 46	SS	—
Irkutsk		47·3	341	8 40	+ 3	15 35	+ 4	—	—	—
Colombo	E.	47·7	272	—	—	15 35	− 1	—	—	—
Riverview		47·9	154	i 8 38	− 4	i 15 32	− 7	i 18 54	SS	e 24·2
Sydney		47·9	154	—	—	e 18 15?	SS	—	—	—
Hyderabad	E.	48·8	285	8 46	− 3	15 39	−13	10 40	PP	—
Kodaikanal	E.	49·8	277	e 8 49	− 7	i 15 42	−24	10 45	PP	—
New Delhi	N.	51·5	300	e 10 11	P_cP	i 16 16	−13	18 41	S_cS	—
Bombay		54·3	287	e 9 31	+ 1	16 58	− 9	10 32	P_cP	27·2
Andijan		58·4	312	e 9 59	− 1	i 18 1	− 1	—	—	—
Tashkent		60·7	313	i 10 17	+ 2	i 18 31	− 1	—	—	—
Christchurch		66·1	146	21 41	?	28 1	L	—	—	(28·0)
Sverdlovsk		70·2	328	i 11 17	0	20 17	−11	—	—	—
Moscow		82·9	325	12 38	+10	—	—	—	—	—
Sitka		86·1	34	e 12 47	+ 3	e 23 18	0	e 29 30	SS	e 33·3
Ksara		86·8	304	e 12 52?	+ 5	e 23 26?	+ 1	—	—	—
Helwan		91·3	300	e 13 7	− 2	e 24 2	− 4	e 23 36	SKS	—
Upsala		92·3	331	—	—	e 23 9?	[−37]	—	—	e 50·2
Copenhagen		96·5	329	—	—	24 9	[0]	—	—	—
Scoresby Sund		98·1	350	e 17 42	PP	e 24 21	[+ 4]	—	—	e 52·1
Triest		100·0	319	e 15 25	?	i 24 23	[− 4]	—	—	—
Stuttgart		101·4	323	e 13 53	− 2	e 24 29	[− 5]	e 27 3?	PS	e 53·7
Florence	E.	102·4	318	i 16 55	?	i 24 29	[−10]	i 27 14	PS	—
Tinemaha	Z.	103·0	49	e 18 19	[0]	—	—	—	—	—
Uccle		103·1	327	—	—	e 26 21?	?	—	—	e 54·2
Pasadena	Z.	104·1	51	e 18 26	PP	e 29 33?	?	—	—	e 47·8
Mount Wilson	Z.	104·2	51	e 18 26	PP	—	—	—	—	—
Riverside	Z.	104·8	51	e 18 18	PP	—	—	—	—	—
Kew		105·2	329	e 18 40	PP	—	—	—	—	e 59·2
Paris		105·2	325	—	—	e 36 8	SSS	—	—	62·2
Palomar	Z.	105·4	51	e 18 23	PP	—	—	—	—	—
Tucson		110·5	50	e 18 38	[+ 4]	—	—	e 19 16	PP	e 53·5
Harvard		125·7	17	(i 19 2)	[− 1]	—	—	(i 21 0)	PP	(e 74·2)
San Juan		149·4	26	e 12 20	?	—	—	e 19 48	PKP	e 24·5
Bogota		154·2	59	e 20 49	[+56]	—	—	—	—	—
Fort de France		154·7	21	e 19 56	[+ 2]	—	—	—	—	—
La Paz		162·6	116	i 20 6k	[+ 3]	—	—	—	—	82·2

Continued on next page.

NOTES TO AUGUST 9d. 16h. 57m. 51s.

Additional readings :—
Riverview iN =15m.29s. and 19m.1s.
Hyderabad S_cSE =18m.35s., SSE =19m.45s.
Kodaikanal iE =15m.59s.
New Delhi iN =11m.38s.
Bombay PPE =11m.32s., S_cSE =19m.10s., S_cSE =19m.13s., eN =20m.17s., SSE = 20m.55s.
Stuttgart eS =25m.31s.
Florence iPKPE =20m.12s., iSKKS?E =28m.33s., eSE =29m.44s.
San Juan e =12m.31s. and 23m.59s.
Long waves were also recorded at Wellington, Vladivostok, Huancayo, and other European stations.

August 9d. Readings also at 3h. (Mount Wilson, Palomar, and Tinemaha), 4h. (San Fernando, near Granada, Toledo, Almeria, and Tortosa), 7h. (near Fresno), 8h. (La Plata), 9h. (Triest), 10h. (near Fort de France), 15h. (Belgrade and near Reykjavik), 16h. (Granada), 18h. (Fort de France), 21h. (Granada), 23h. (Tananarive).

August 10d. 3h. Undetermined shock. Pasadena suggests depth of focus 600 km.

Suva i =50m.38s., e =50m.51s. and 51m.19s.
Santa Barbara ePZ =60m.4s.
Mount Wilson iPNZ =60m.16s.k, epPZ =62m.28s., eSN =69m.33s.
Pasadena iP =60m.16s.k, epPZ =62m.26s., eSEN =69m.34s.
Riverside iPZ =60m.17s.k, epPZ =62m.28s.
Palomar iPZ =60m.19s.k, epPZ =62m.27s.
Haiwee iP =60m.23s.
Tinemaha iP =60m.24s.k, epPZ =62m.35s., eSN =69m.52s.
Tucson iP =60m.38s., i =60m.47s., e =62m.49s., eS? =70m.20s.
Granada i =66m., L =90m.
Copenhagen P =67m.33s.
Florence ePE =67m.39s., ePPE =72m.40s., iSKSE =79m.17s., iPSE =82m.21s.
Stuttgart eZ =67m.46s., iZ =67m.53s., eZ =68m.5s. and 70m.16s.

August 10d. 12h. Northern California.

Fresno eN =25m.6s. and 27m.15s.
Tinemaha ePZ =25m.39s., i =25m.57s., iSEZ =27m.2s.
Logan iP =25m.49s., i =25m.57s., iS =26m.53s., iL =27m.17s.
Mount Wilson ePZ =26m.19s., eSZ =28m.36s.
Pasadena iPZ =26m.20s., iZ =27m.11s., eS =28m.36s., eNZ =29m.16s.
Haiwee e =26m.21s., iS =27m.37s.
Riverside ePZ =26m.22s., eZ =26m.57s., eSEZ =28m.46s.
Palomar ePZ =26m.32s., eZ =27m.4s. and 29m.16s.
Tucson eP =27m.9s., e =27m.58s., eL =30m.35s.
Santa Barbara eSNZ =28m.27s.
Long waves were also recorded at Ukiah.

August 10d. 13h. 48m. 48s. Epicentre 3°·3S. 126°·5E. (as on 1941 February 23d.).

$A = -\cdot5938$, $B = +\cdot8025$, $C = -\cdot0572$; $\delta = -12$; $h = +7$;
$D = +\cdot804$, $E = +\cdot595$; $G = +\cdot034$, $H = -\cdot046$, $K = -\cdot998$.

		△	Az.	P.	O−C.	S.	O−C.		Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Perth		30·2	198	i 6 12	− 2	i 11 27	+14	i 7	12 PP	—
Brisbane	E.	34·9	136	i 6 53	− 2	e 13 13	P_cS	i 11	33 ?	—
	N.	34·9	136	i 6 46	− 9	i 13 6	P_cS	i 16	55 Q	i 19·8
Kumamoto		36·2	7	7 11	+ 5	12 55	+ 8	—	—	—
Riverview		38·1	146	i 6 20k	−62	i 11 30	?	—	—	e 15·2
Sydney		38·1	146	e 7 45	+23	—	—	e 12	18? ?	—
Hikone		39·4	15	i 7 33	0	13 38	+ 3	—	—	—
Nagoya		39·6	14	e 7 40	+ 5	13 41	+ 3	—	—	—
Nagano		41·2	14	7 47	− 1	14 3	+ 1	—	—	—
Kakioka		41·4	17	7 35	−15	14 0	− 5	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Wazima		41·6	12	e 7 51	0	14 10	+ 2	—	—	—
Sendai		43·5	17	8 4	− 3	14 27	− 9	—	—	—
Mizusawa		44·3	16	e 8 8	− 5	e 14 41	− 7	14 35	?	—
Colombo	E.	47·6	283	10 12?	PP	—	—	—	—	—
Sapporo		48·1	14	8 42	− 1	15 39	− 3	—	—	—
Kodaikanal	E.	50·6	286	e 9 9	+ 7	i 17 54	?	i 12 37	PP	—
Hyderabad	E.	51·7	295	9 15	+ 4	17 29	+57	21 41	SSS	—
Suva		52·9	110	i 15 14	?	—	—	i 18 8	?	—
New Delhi	N.	57·0	308	e 9 52	+ 2	—	—	i 14 23	PcS	—
Christchurch		57·1	141	8 54	−56	16 2	?	21 6	SS	30·0
Bombay	E.	57·2	295	9 54	+ 3	18 46	+60	10 40	PcP	—
Irkutsk		58·5	344	10 3	+ 3	18 17	+14	—	—	—
Andijan		66·0	318	10 53	+ 3	—	—	11 31	PcP	—
Tashkent		68·3	318	i 11 7	+ 2	—	—	e 13 55	PP	—
Sverdlovsk		79·8	330	i 12 8	− 4	22 8	− 6	—	—	—
Ksara		92·3	303	e 13 29	+16	e 23 28	[−18]	—	—	—
Helwan		96·4	299	e 14 34	+62	e 23 42	[−27]	e 26 4	PS	—
Sitka		97·2	32	e 17 14	PP	e 26 24	PS	i 23 33	?	—
Bucharest		99·7	314	—	—	i 10 52	?	—	—	—
Upsala		102·3	331	e 19 12?	?	—	—	e 38 12	?	e 52·2
Cheb		107·8	322	e 24 12?	?	—	—	—	—	—
Triest		108·1	317	e 19 12	PP	—	—	—	—	—
Scoresby Sund		109·9	349	e 19 11	PP	e 25 42	[+30]	—	—	e 36·2
Stuttgart		110·2	321	e 18 14	[−19]	e 24 40	[−33]	e 19 12	PP	58·2
Florence		110·4	316	i 20 41	?	i 24 43	[−31]	e 25 54	SKKS	—
De Bilt		111·4	325	e 19 28	PP	i 26 6	{− 8}	e 20 32	?	e 54·2
Tinemaha	Z.	112·0	51	e 14 22	P	i 21 27	SKP	e 18 9	PKP	—
Pasadena		112·7	53	e 14 22	P	i 24 38	[−45]	i 18 12	PKP	—
Mount Wilson	Z.	112·8	53	e 14 20	P	e 21 29	SKP	e 18 13	PKP	—
Aberdeen	E.	112·8	332	—	—	i 24 58	[−26]	—	—	—
Riverside	Z.	113·4	53	e 14 23	P	—	—	i 18 57	PP	—
Palomar	Z.	114·0	54	e 14 10	P	e 21 27	SKP	i 19 6	PP	—
Paris		114·3	323	e 19 45	PP	e 30 17	PPS	e 23 23	?	64·2
Kew	Z.	114·8	327	i 19 50	PP	e 25 27?	[− 4]	(e 29 12?)	PS	e 29·2
Clermont-Ferrand		115·3	320	e 19 44?	PP	i 30 20	PPS	—	—	—
Tortosa	E.	118·9	315	e 19 42	PP	—	—	e 31 6	PPS	e 66·2
Tucson		119·1	54	e 18 23	[−28]	—	—	i 19 44	PP	—
Toledo	Z.	122·4	316	e 18 38	[−19]	i 32 3	PPS	i 20 39	PP	—
Granada		123·2	313	20 3	[+64]	31 0	PS	23 15	PPP	63·4
San Fernando	E.	125·4	313	e 21 9	PP	—	—	—	—	70·2
Cape Girardeau	N.	132·7	39	e 22 0	PP	e 28 16	{−20}	e 22 20	?	—
Pittsburgh	N.W.	136·0	29	e 21 44	PP	—	—	—	—	—
Fordham		138·4	22	e 19 7	[−21]	—	—	i 22 23	PP	—
La Paz		155·5	144	19 33	[−22]	—	—	i 19 39	?	25·7
San Juan		160·6	37	e 19 48	[−13]	—	—	—	—	e 49·6

Additional readings :—
Perth i = 10m.2s.
Brisbane iN = 11m.28s., iSSN = 16m.0s.
Riverview i = 7m.43s., iN = 12m.36s., iE = 12m.41s.
Kodaikanal SSE = 21m.37s.
Hyderabad PSE = 17m.57s.
Christchurch Q = 25m.27s.
Bombay sPE = 10m.59s., PPE = 12m.15s., PSE = 19m.10s., sSE = 19m.59s., eN = 20m.42s., eE = 20m.46s., iN = 21m.48s., SSE = 23m.1s.
Stuttgart eZ = 22m.50s.
Tinemaha iPPZ = 18m.54s.
Pasadena eZ = 14m.35s., ePPZ = 18m.59s., eSKPZ = 21m.24s., iEN = 25m.37s., eSN = 26m.24s., ePSZ = 28m.8s., ePPSZ = 29m.42s., eSSNZ = 34m.24s.?, eSSSN = 38m.30s.?.
Mount Wilson eZ = 14m.36s., iPPZ = 19m.0s.
Palomar eZ = 14m.29s.
Kew eZ = 20m.35s., ePP?Z = 20m.54s.
Clermont-Ferrand e = 19m.52s., i = 30m.47s.
Tucson e = 21m.39s.
Granada SKP = 26m.51s., SKKS = 32m.37s., S = 33m.10s.
San Juan e = 30m.30s., 34m.21s., and 43m.49s.

August 10d. 15h. 13m. 17s. Epicentre 55°·0N., 161°·6E.

Epicentres 54°N. 161°E. (U.S.C.G.S.); 56°·0N., 162°·5E. (Pasadena).

A = −·5468, B = +·1818, C = +·8173; δ = +2; h = −7;
D = +·316, E = +·949; G = −·776, H = +·258, K = −·576.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo		17·8	239	4 11	0	7 56	+28	—	—	—
Mizusawa		21·0	230	e 4 44	− 3	e 8 26	−11	8 23	?	11·5
Sendai		21·8	228	4 52	− 4	8 50	− 2	—	—	—
Nagano		24·3	233	e 5 19	− 1	9 56	+19	—	—	—
Wazima		24·3	235	e 5 17	− 3	9 39	+ 2	—	—	—
Tokyo Cen. Met. Ob.		24·5	228	5 20	− 2	—	—	—	—	—
Gihu		26·0	231	e 5 35	− 1	10 15	+ 9	—	—	—
Nagoya		26·1	234	e 5 44	+ 7	—	—	—	—	—
College		26·4	48	e 5 40	0	i 10 13	+ 1	(e 10 58)	SS	e 11·0
Koti		29·0	235	e 6 17	+13	10 54	0	—	—	—
Irkutsk		33·3	291	e 6 38	− 3	11 47	−15	—	—	—
Sitka		34·0	60	e 6 50	+ 2	i 12 17	+ 4	e 7 52	PP	e 14·5
Victoria		44·8	66	8 2·	−15	14 35	−20	18 12	SS	20·7
Honolulu		45·3	122	e 8 24	+ 3	i 14 55	− 7	e 18 24	SS	e 19·2
Seattle		45·8	66	e 9 39	+14	—	—	e 15 39	PPS	e 18·6
Saskatoon		50·8	54	9 13?	+ 9	16 19	− 1	18 52	S_cS	24·7
Ukiah		51·1	75	e 9 8	+ 2	e 16 24	0	—	—	e 24·3
Sverdlovsk		51·5	317	9 9	0	16 30	+ 1	—	—	—
Berkeley		52·5	77	i 9 16	− 1	i 16 40	− 3	i 9 24	?	e 25·3
Bozeman		53·0	62	e 9 20	− 1	e 16 46	− 4	e 20 33	SS	e 24·2
Santa Clara		53·0	77	e 9 30	+ 9	è 16 53	+ 3	—	—	e 25·6
Fresno	N.	54·7	75	e 9 32	− 1	—	—	—	—	—
Scoresby Sund		54·8	3	e 9 36	+ 2	e 17 15	+ 1	e 13 1	PPP	i 24·7
Tinemaha		55·3	74	i 9 36	− 2	e 17 21	0	i 9 39	?	—
Logan		55·4	66	i 9 39	+ 1	17 19	− 3	e 19 26	S_cS	23·3
Haiwee		56·1	74	i 9 42	− 1	e 17 33	+ 1	—	—	—
Salt Lake City		56·1	67	e 9 42	− 1	e 17 32	0	e 17 54	PPS	e 24·8
Santa Barbara		56·4	77	i 9 44k	− 1	e 17 57	PPS	—	—	—
Andijan		57·5	297	e 9 58	+ 5	18 3	PS	e 10 52	P_cP	—
Mount Wilson		57·5	76	i 9 51	− 2	e 17 48	− 2	—	—	—
Pasadena		57·5	76	i 9 51k	− 2	i 17 49	− 1	e 39 42	P′P′	e 24·4
Riverside		58·0	76	i 9 54k	− 3	e 17 54	− 3	—	—	—
Tashkent		58·7	299	i 9 59	− 3	18 21	PS	i 20 0	S_cS	—
Palomar	Z.	58·8	76	i 10 1k	− 1	—	—	e 39 34	P′P′	—
Moscow		60·6	328	10 11	− 4	18 26	− 4	—	—	—
Ivigtut		61·8	17	e 10 22	− 1	e 18 45	− 1	—	—	e 25·9
Upsala		61·9	341	i 10 27	+ 3	e 18 41?	− 6	e 14 19	PPP	e 29·7
Tucson		62·9	73	i 10 29	− 1	e 19 1	+ 1	i 11 26	P_cP	e 26·7
Bergen		63·4	348	10 37?	+ 3	e 19 3	− 3	i 10 42	?	e 28·7
New Delhi	N.	64·0	284	i 10 36	− 2	i 18 45	−28	20 19	S_cS	32·4
Copenhagen		66·8	343	i 10 55	− 1	19 50	+ 2	—	—	32·7
Chicago		67·0	51	e 10 56	− 1	e 19 47	− 3	e 20 48	S_cS	e 24·8
Aberdeen		67·4	352	e 10 59	0	i 19 59	+ 4	e 29 43	?	e 35·3
Ottawa		68·9	40	11 6	− 3	20 5	− 8	13 43?	PP	33·7
Seven Falls		69·1	36	11 8	− 2	i 20 10	− 5	27 58	SSS	35·7
Cape Girardeau	N.	69·8	55	e 11 13	− 1	e 20 19	− 4	e 11 22	P_cP	—
Potsdam		69·9	341	e 11 14	− 1	e 20 31?	+ 7	e 21 3	PPS	e 34·7
Vermont		70·6	39	—	—	—	—	e 25 49	?	e 29·9
Stonyhurst	E.	70·7	351	e 15 0	?	i 20 41	+ 7	i 21 4	PS	e 31·7
Pittsburgh		71·4	46	e 11 15	− 9	i 20 36	− 6	e 16 23	?	—
De Bilt		71·5	346	i 11 24a	0	i 21 3	PS	i 11 41a	P_cP	e 31·7
Jena		71·5	341	i 11 23	− 1	e 20 55?	+12	—	—	e 31·7
Bacau		71·8	331	—	—	e 21 3	PS	—	—	37·7
Prague		71·8	340	e 11 12	−14	e 20 38	− 8	e 15 43	PPP	e 34·7
Hyderabad	E.	72·0	275	—	—	20 36	−13	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Cheb		72·2	341	e 15 45	PPP	e 20 51	0	—	—	e 38·7
Focsani		72·5	329	e 11 55?	PcP	e 21 37?	PPS	—	—	—
Kew		72·8	349	i 11 31a	− 1	e 20 56	− 2	i 11 44	PcP	e 36·2
Harvard		72·9	39	i 11 31	− 2	—	—	—	—	—
Uccle		72·9	347	i 11 32	− 1	e 20 56	− 3	i 11 48	PcP	e 35·7
Ogyalla		73·0	336	e 10 37	−56	e 21 36	PS	e 12 3	PcP	40·7
Weston		73·1	39	i 11 37	+ 3	e 20 56	− 5	14 18	PP	—
Fordham		73·5	41	e 11 34	− 2	i 20 59	− 7	e 16 18	PPP	e 37·7
Halifax		73·6	32	—	—	e 21 3	− 4	—	—	36·7
Philadelphia		73·7	43	11 39	+ 1	i 21 2	− 6	e 21 39	PS	e 33·7
Georgetown		73·9	44	e 11 39	0	e 21 3	− 7	—	—	34·2
Bucharest		74·0	329	e 11 44	+ 5	e 21 23	+12	22 2	PPS	38·7
Kalossa		74·0	336	e 11 43?	+ 4	—	—	—	—	—
Stuttgart		74·0	342	i 11 38a	− 1	e 21 11	0	22 17	PPS	e 38·0
Bombay	N.	74·1	281	11 35	− 5	21 25	+13	21 58	PPS	—
Suva		74·3	165	—	—	i 21 14	− 1	i 22 24	PPS	e 39·1
Strasbourg		74·5	343	i 11 57a	PcP	—	—	—	—	38·7
Paris		75·1	347	i 11 46	0	21 31	+ 7	e 14 51	PP	36·7
Belgrade		75·2	333	e 11 46	0	e 21 46	PS	e 12 10	PcP	e 42·0
Basle		75·5	343	e 11 48	0	—	—	—	—	—
Zürich		75·5	343	e 11 47a	− 1	e 21 44	+16	e 12 53	?	—
Chur		75·8	341	e 11 49	− 1	e 21 19	−12	—	—	—
Neuchatel		76·1	343	e 11 51	0	e 22 58	PPS	—	—	—
Triest		76·1	338	i 11 53	+ 2	i 21 47	+12	—	—	e 36·7
Columbia		76·4	50	e 11 54	+ 1	e 21 31	− 7	e 26 10	SS	e 32·5
Sofia		76·4	330	e 11 56	+ 3	e 21 37?	− 1	e 32 7	?	42·1
Milan		77·2	341	i 11 56	− 1	22 3	ScS	—	—	40·7
Clermont-Ferrand		78·0	345	i 12 1a	− 1	e 22 12	ScS	e 22 40	PS	e 35·5
Kodaikanal	E.	78·3	272	e 11 43	−20	e 21 56	− 3	—	—	—
Florence		78·4	339	i 12 7a	+ 3	i 22 7	+ 7	i 22 17	ScS	e 39·6
Ksara		80·1	317	e 12 16	+ 3	e 22 31	ScS	—	—	—
Barcelona		82·4	346	e 12 8	−17	e 23 5	ScS	—	—	e 46·2
Tortosa		83·2	346	i 12 34	+ 5	22 54	+ 5	18 7	PPP	39·1
Bermuda		84·3	39	e 12 35	0	i 23 2	+ 2	e 28 21	SS	e 34·7
Toledo		84·7	350	i 12 38	+ 1	i 23 15	ScS	—	—	36·7
Helwan		85·3	319	i 12 40	0	23 8?	− 2	23 49	PS	—
Lisbon		86·2	354	12 32k	−12	23 28	+ 9	16 3	PP	—
Granada		87·3	349	i 12 47	− 3	i 23 47	ScS	24 49	PS	41·4
Almeria		87·5	349	12 40	−11	23 44	ScS	12 57	PcP	—
San Fernando	E.	88·3	351	e 13 33	?	e 23 55	ScS	e 16 42	PP	41·2
Riverview		88·9	189	i 13 10a	PcP	e 23 43	− 1	23 17	SKS	e 36·3
San Juan		96·4	46	e 13 34	+ 2	e 24 46	− 4	e 24 4	SKS	e 48·0
Wellington		96·6	171	e 17 43?	PP	—	—	—	—	44·7
Christchurch		98·6	173	—	—	40 55	?	43 28	Q	45·9
Bogota		105·0	59	e 14 8	− 3	—	—	—	—	—
Huancayo		118·5	70	20 9	PP	e 30 0	PS	e 37 14	SSP	e 48·6
La Paz		126·0	65	—	—	22 38	PKS	32 48	PPS	58·7
Rio de Janeiro	E.	143·0	40	e 21 43	?	—	—	—	—	—

Additional readings :—
Scoresby Sund i = 19m.43s., e = 21m.8s.
Logan i = 9m.47s., eSS = 21m.4s.
Pasadena iZ = 10m.0s.
Palomar iZ = 10m.9s.
Upsala ePP?E = 13m.15s., eSN = 18m.38s., eN = 20m.30s., and 22m.51s., eSS?E = 23m.23s., eSSS?E = 25m.52s.
Tucson i = 10m.41s., e = 20m.46s., eSS = 23m.5s.
Ottawa SS = 24m.31s.?.
Cape Girardeau eN = 20m.36s.
Potsdam ePE = 11m.17s.
Stonyhurst iPPSE = 21m.18s., iSKSE = 21m.24s., iScSE = 21m.32s., E = 21m.42s. and 22m.34s., SSE = 24m.14s., eQE = 28·7m.
De Bilt iPP = 14m.5s.a, ipPP = 14m.23s.a, ePPP = 15m.53s., isS = 21m.23s.
Jena N = 11m.26s.
Kew eE = 12m.12s., ePPNZ = 14m.18s., ePPPNZ = 16m.3s., ePSEN = 21m.17s., ePPS = 21m.50s., eSSNZ = 25m.43s.?, eQEN = 30·2m.?.

Continued on next page.

Uccle ePPZ =14m.16s., iN =21m.52s., SSN =25m.43s.?.
Ogyalla eSE =21m.52s.
Weston SS =25m.29s.
Fordham eSS =25m.42s.
Philadelphia e =14m.53s. and 16m.20s., eSS =25m.53s., e =29m.24s.
Bucharest PSE =22m.9s.
Stuttgart iP_cPZ =11m.55s., ePPZ =14m.25s., ePPP =16m.13s., eSS =26m.23s.
Bombay SSN =26m.50s.
Suva e =28m.22s.
Belgrade e =32m.45s.
Columbia e =30m.0s.
Clermont-Ferrand iPP =14m.58s., iPPP =17m.6s.
Florence iPPE =14m.52s., iPPPE =16m.56s., iPSE =23m.18s.
Tortosa SSN =29m.2s.
Bermuda e =13m.44s.
Helwan eZ =13m.12s. and 14m.43s., eNZ =19m.49s., SN =24m.17s., PSN =25m.27s.
Lisbon PN =12m.46s.
Granada SS =29m.14s., SSS =32m.26s.
Almeria sP =13m.18s., PP =16m.33s., S =22m.58s., PS =24m.42s., SS =29m.43s.
Riverview eN =19m.53s., ePSZ =24m.45s., eZ =28m.45s., eN =29m.3s.
San Juan ePP =18m.8s., eSS =31m.16s.
Huancayo eSSS? =41m.0s.
Long waves were also recorded at Colombo and Besançon.

August 10d. 15h. 36m. 29s. Epicentre 55°·0N. 161°·6E. (as at 15h. 13m.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo		17·8	239	e 4 9	− 2	—	—	—	—	—
Mizusawa	E.	21·0	230	4 44	− 3	8 44	+ 7	—	—	—
Sendai		21·8	228	4 53	− 3	8 52	0	—	—	—
Wazima		24·3	235	e 5 22	+ 2	—	—	—	—	—
Tokyo Cen. Met. Ob.		24·5	228	e 5 20	− 2	—	—	—	—	—
Gihu		26·0	231	e 5 37	+ 1	10 24	+18	—	—	—
Nagoya		26·1	234	e 5 40	+ 3	—	—	—	—	—
Tinemaha		55·3	74	e 9 36	− 2	—	—	i 9 39	?	—
Logan		55·4	66	i 8 46	−52	—	—	—	—	—
Haiwee		56·1	74	e 9 45	+ 2	—	—	—	—	—
Santa Barbara		56·4	77	i 9 46	+ 1	—	—	—	—	—
Mount Wilson		57·5	76	e 9 50	− 3	—	—	i 9 53	?	—
Pasadena		57·5	76	e 9 51	− 2	i 17 53	+ 3	e 39 43	P′P′	—
Riverside		58·0	76	i 9 55	− 2	—	—	—	—	—
Palomar	Z.	58·8	76	i 10 3	+ 1	—	—	e 38 48	P′P′	—
Tucson		62·9	73	i 10 29	− 1	—	—	i 18 13	?	—
Copenhagen		66·8	343	10 58	+ 2	—	—	—	—	28·5
Cape Girardeau	N.	69·8	55	e 11 17	+ 3	e 20 24	+ 1	e 11 26	P_cP	—
Jena		71·5	341	i 11 25	+ 1	—	—	e 11 28	P_cP	—
Harvard		72·9	39	e 21 25	PS	e 25 11	SS	—	—	—
Stuttgart	Z.	74·0	342	i 11 40	+ 1	—	—	—	—	—
Basle		75·5	343	e 11 49 a	+ 1	—	—	—	—	—
Zürich		75·5	343	e 11 49	+ 1	—	—	—	—	—
Chur		75·8	341	e 11 43	− 7	—	—	—	—	—
Neuchatel		76·1	343	e 11 53	+ 2	—	—	—	—	—
Tortosa	N.	83·2	346	i 12 40	P_cP	—	—	—	—	—
Toledo	Z.	84·7	350	i 12 39	+ 2	—	—	—	—	—
Helwan	Z.	85·3	319	i 12 43	+ 3	—	—	i 12 54	P_cP	—
Lisbon	Z.	86·2	354	12 49?	+ 5	(23 37)	+18	—	—	23·6
Granada		87·3	349	e 12 47	− 3	22 53	?	—	—	—

Long waves were also recorded at Tananarive.

August 10d. Readings also at 0h. (Tananarive), 1h. and 3h. (near Mizusawa), 4h. (near Fresno), 5h. (Pasadena and Tucson), 9h. (Bombay and New Delhi), 10h. (New Delhi, Bombay, and Tashkent), 12h. (Bombay and near Triest), 13h. (near Mizusawa), 14h. (New Delhi, Almata, near Tashkent, and Andijan), 15h. (Pasadena (2), Mount Wilson (3), Tinemaha (3), Riverside (3), Haiwee (2), Palomar (3), Tucson (3), Toledo, La Paz, and Christchurch), 16h. (Tucson, Riverside, Tinemaha, and Palomar), 18h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Tucson, and Palomar), 23h. (near Andijan).

August 11d. 5h. Pacific ocean.

Mizusawa ePN =22m.51s., ePE =22m.55s., SE =24m.35s., SN =24m.40s.
Irkutsk eP =27m.53s., eS =33m.35s.
Tashkent P =30m.54s., eS =38m.58s.
Tinemaha ePZ =33m.4s.k.
Haiwee iPZ =33m.8s.
Mount Wilson iPZ =33m.11s.k.
Pasadena iPZ =33m.11s.k, eLN =57m.
Riverside ePZ =33m.13s.
Palomar iPZ =33m.18s., iZ =33m.30s.
Tucson e =33m.44s., eL =63m.42s.
La Paz PZ =40m.44s.
Copenhagen 43m.56s.
New Delhi eN =52m.27s.
Long waves were also recorded at Stuttgart, De Bilt, and Kew.

August 11d. Readings also at 3h. (Palomar, Tinemaha, Tucson, and near Irkutsk), 5h. (Florence), 8h. (near La Paz and near Mizusawa), 11h. (San Juan), 12h. (Tucson, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Santa Barbara, Cape Girardeau, Philadelphia, Fort de France, and near Port au Prince), 13h. (Granada, Tortosa, Kew and Pittsburgh), 14h. (near Tashkent), 18h. (near Branner). 22h. (near Fort de France).

August 12d. 4h. 50m. 37s. Epicentre 37°·3N. 139°·8E.

Scale V at Shirakawa, Tukubasan ; IV at Niigata, Hukusima, Yamagata, Mito, Sakata, Kakioka, and Takada ; II-III at Iida, Nagano, Tokyo, Titibu, Yokohama, and Hamamatu.
Radius of Macroseismic area 300 km. Shallow. Damage caused by ground movement and falling masonry. Thirty-nine aftershocks were recorded.
Seismological Bulletin of Central Meteorological Observatory Japan for 1943, Tokyo 1950, pp. 36-37, two macroseismic charts.
H. Kawasumi :
" Seismology in Japan 1939-1947." Bull. Seism. Soc. America, vol. 39, 1949, p. 161.
Epicentre as adopted.

$$A = -\cdot 6091,\ B = +\cdot 5147,\ C = +\cdot 6034 ;\quad \delta = +1 ;\quad h = -1 ;$$
$$D = +\cdot 645,\ E = +\cdot 764 ;\quad G = -\cdot 461,\ H = +\cdot 389,\ K = -\cdot 797.$$

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hukusima		0·7	50	0 15	− 2	0 23	− 5	—	—	—
Utunomiya		0·8	176	0 17	− 1	0 29	− 2	—	—	—
Onahama		0·9	113	0 16k	− 4	0 21	−13	—	—	—
Kakioka		1·1	164	0 13	− 9	0 33	− 6	—	—	—
Maebasi		1·1	213	0 23	+ 1	0 39	0	—	—	—
Mito		1·1	150	0 22	0	0 45	+ 6	—	—	—
Tukubasan		1·1	167	0 22a	0	0 37	− 2	—	—	—
Sendai		1·3	42	0 23k	− 2	0 41	− 3	—	—	—
Aikawa		1·4	300	0 28	+ 1	0 45	− 1	—	—	—
Tokyo Cen. Met. Ob.		1·6	181	0 30	0	0 50	− 1	—	—	—
Tyosi		1·8	151	0 33	+ 1	1 3	+ 7	—	—	—
Kohu		1·9	211	0 36	+ 2	1 0	+ 1	—	—	—
Mizusawa	E.	2·1	30	0 38	+ 1	1 8	+ 4	—	—	—
Misima		2·3	197	0 40	0	1 13	+ 4	—	—	—
Wazima		2·3	272	0 40k	0	1 12	+ 3	—	—	—
Akita		2·4	6	0 46	+ 5	1 22	S_g	—	—	—
Shizuoka		2·6	204	0 46a	+ 2	1 18	+ 1	—	—	—
Miyako		2·9	36	0 49k	+ 1	1 31	+ 7	—	—	—
Omaesaki		3·0	205	0 49a	− 1	1 31	+ 4	—	—	—
Gihu		3·1	232	0 52k	+ 1	1 43	S_g	—	—	—
Hamamatu		3·1	213	0 54a	+ 3	1 41	S_g	—	—	—
Nagoya		3·1	227	0 54k	+ 3	1 42	S_g	—	—	—
Hatinohe		3·5	22	0 57	0	1 43	+ 3	—	—	—
Hikone		3·5	236	0 58k	+ 1	1 40	0	—	—	—
Kameyama		3·7	229	1 2	+ 2	1 55	S*	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kyoto		4·0	236	1 5	+ 1	2 10	S_g	—	—	—
Hatidyozima		4·2	180	1 7	0	1 41	−16	—	—	—
Toyooka		4·4	247	1 11	+ 1	2 12	+10	—	—	—
Kobe		4·6	236	1 12k	0	2 7	0	—	—	—
Wakayama		4·9	232	1 18k	+ 1	2 30	S*	—	—	—
Sumoto		5·0	235	1 19k	+ 1	2 27	S*	—	—	—
Siomisaki		5·1	222	1 29	P*	2 34	S*	—	—	—
Sapporo		5·9	11	1 34	+ 3	3 17	S_g	—	—	—
Koti		6·3	236	1 36	0	2 51	+ 1	—	—	—
Hamada		6·7	251	1 43	+ 1	—	—	—	—	—
Matuyama		6·7	241	1 49	+ 7	3 45	S_g	—	—	—
Hukuoka		8·5	247	2 15	+ 8	4 32	S_g	—	—	—
Kumamoto		8·7	242	2 10k	0	4 5	+15	—	—	—
Unzendake		9·1	243	3 7	P_g	4 47	S*	—	—	—
Kagosima		9·5	236	2 25	+ 5	5 0	S_g	—	—	—
Nake		12·4	227	2 50	−11	3 21	?	—	—	—
Irkutsk		29·0	313	—	—	e 10 48?	− 6	—	—	—
Calcutta	N.	46·4	267	—	—	i 15 17	− 1	—	—	i 27·0
College		49·6	32	e 8 52	− 3	e 16 1	− 2	—	—	e 23·6
Tashkent		53·3	298	9 21	− 2	i 16 55	+ 1	—	—	—
Sverdlovsk		54·1	319	9 26	− 3	i 17 3	− 2	—	—	—
Moscow		66·3	324	10 51	− 1	19 39	− 3	—	—	—
Upsala		72·1	334	e 16 31	?	e 20 44	− 6	e 28 55	SSS	e 37·4
Tinemaha		76·7	54	i 11 54a	− 1	—	—	—	—	—
Copenhagen		77·1	333	—	—	21 44	− 2	—	—	39·4
Santa Barbara	Z.	77·3	56	e 11 57	− 1	—	—	—	—	—
Haiwee		77·4	54	i 11 58a	0	—	—	—	—	—
Mount Wilson	Z.	78·5	56	i 12 3a	− 1	—	—	—	—	—
Pasadena		78·5	56	i 12 3a	− 1	e 21 1	−60	—	—	—
Riverside		79·1	56	e 12 5a	− 3	—	—	—	—	—
Potsdam	E.	79·4	330	i 12 15	+ 6	e 22 10	0	—	—	e 42·4
	N.	79·4	330	e 12 11?	+ 2	e 22 14	+ 4	—	—	e 45·4
Palomar	Z.	79·8	56	i 12 10a	− 2	—	—	—	—	—
Jena	N.	81·1	329	e 12 15	− 3	—	—	—	—	—
Stuttgart		83·7	330	i 12 29a	− 3	e 21 47?	−67	e 22 53?	PS	48·1
Uccle		83·9	334	i 12 30	− 3	e 22 58	+ 2	—	—	e 42·4
Triest		84·2	325	—	—	i 22 54	− 5	—	—	—
Tucson		84·5	54	i 12 35	− 1	—	—	e 15 46	PP	e 40·0
Kew		85·0	336	e 12 37	− 1	e 23 2	− 5	e 36 23?	Q	e 42·4
Helwan		85·4	304	12 38	− 2	e 23 11	0	—	—	—
Paris		86·3	333	i 12 44	− 1	e 23 9	[0]	—	—	47·4
Milan		86·4	327	e 12 44	− 1	23 10	[0]	—	—	—
Florence		86·8	325	i 12 47k	0	e 23 3	[−10]	i 16 14k	PP	—
Clermont-Ferrand		88·6	331	e 12 54	− 2	e 23 30	[+ 6]	—	—	e 49·6
Cape Girardeau	N.	92·9	38	e 13 41	+25	e 24 21	+ 1	e 25 28	PS	—
Tortosa	E.	93·8	330	—	—	e 23 58	[+ 3]	e 31 20	SSP	e 50·4
Pittsburgh	N.W.	94·5	30	—	—	e 24 33	− 1	—	—	—
Toledo		96·3	333	i 13 29	− 3	25 11	+22	17 23	PP	49·0
Almeria		98·4	330	e 18 40	?	e 28 34	?	—	—	56·4
Granada		98·5	331	e 20 55	?	29 34	?	—	—	e 57·3
La Paz		147·8	57	19 50	[+ 6]	—	—	—	—	—

Additional readings :—
Mizusawa SN = 1m.13s.
Upsala eN = 20m.11s.
Tucson e = 13m.8s.
Florence iSKKSE = 23m.23s.?, iSE = 23m.47s., iPSE = 24m.32s., iPPSE = 25m.4s., iSSSE = 33m.40s.
Long waves were also recorded at Bozeman, Harvard, Philadelphia, and other European stations.

August 12d. 11h. 17m. 26s.. Epicentre 19°·1N. 67°·1W. (as on 8d.).

Pasadena suggests deep focus.

$A = +\cdot3680$, $B = -\cdot8711$, $C = +\cdot3252$; $\delta = -1$; $h = +5$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Port au Prince		5·0	265	e 1 22	+ 4	i 2 22	+ 4	i 2 33	S*	i 2·8
Fort de France		7·2	127	e 2 46	P_g	—	—	—	—	—
Bogota		15·9	206	e 3 50	+ 3	e 6 55	+11	—	—	—
Harvard		23·6	353	e 5 7	− 6	e 9 15	−10	—	—	—
Cape Girardeau	N.	26·7	317	e 5 52	+ 9	e 10 41	+24	—	—	e 13·4
Tucson		41·3	298	i 7 44	− 5	—	—	—	—	—
Palomar	Z.	46·4	299	i 8 27	− 3	—	—	—	—	—
Riverside		46·9	300	i 8 29	− 5	—	—	—	—	—
Mount Wilson		47·5	300	e 8 35	− 3	—	—	—	—	—
Haiwee		47·6	303	i 8 50	+11	—	—	—	—	—
Pasadena		47·6	300	i 8 36	− 3	—	—	—	—	—
Tinemaha		48·0	303	i 8 37a	− 6	—	—	—	—	—
Santa Barbara		48·9	300	i 8 45	− 5	—	—	—	—	—
Granada		57·8	57	—	—	18 34?	+40	—	—	—
Kew		60·9	40	—	—	(e 19 34?)	+60	—	—	e 19·6

Additional readings :—
Bogota e = 4m.0s.
Harvard e = 5m.25s. and 9m.20s.
Tucson i = 7m.58s.
Palomar iZ = 8m.40s., eZ = 8m.51s.
Riverside iNZ = 8m.43s., iZ = 8m.54s.
Mount Wilson iNZ = 8m.48s., iZ = 8m.59s.
Pasadena eEN = 8m.50s.
Tinemaha iZ = 8m.53s. and 9m.21s.
Santa Barbara iZ = 8m.59s., e = 9m.9s.
Long waves were also recorded at Philadelphia and Pittsburgh.

August 12d. Readings also at 3h. (Tucson, Palomar, and Tinemaha), 4h. (New Delhi), 5h. (Cape Girardeau, Mount Wilson (2), Pasadena, Riverside (2), Tinemaha (3), Palomar (2), Tucson (2), Bozeman, La Paz, and near Mizusawa), 6h. (near Mizusawa (2)), 7h. (Rio de Janeiro, Mount Wilson, Riverside, Tucson, near Fort de France, and near Mizusawa), 8h. (Philadelphia, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, and Mizusawa), 9h. (near Mizusawa), 11h. (De Bilt, Kew, Stuttgart, Florence (2), Triest, Bucharest, Sofia, La Paz, and near Fort de France), 12h. (Zürich and Sofia), 16h. (La Paz), 19h. (Fort de France), 21h. (La Paz).

August 13d. 7h. 37m. 9s. Epicentre 0°·7N. 29°·4W. (as on 1937 Dec. 28d.).

$A = +\cdot8711$, $B = -\cdot4909$, $C = +\cdot0122$; $\delta = -5$; $h = +7$;
$D = -\cdot491$, $E = -\cdot871$; $G = +\cdot011$, $H = -\cdot006$, $K = -1\cdot000$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		40·1	296	e 7 38	− 1	e 13 44	− 2	e 9 13	PP	e 16·8
San Fernando		41·6	29	—	—	e 14 3	− 5	e 18 1	SSS	23·9
La Paz	Z.	41·9	246	7 54	0	14 20	+ 7	—	—	21·9
Granada		43·4	30	6 21	?	i 12 48	?	8 18	pP	20·1
Almeria		43·8	32	8 4	− 5	14 10	−30	8 13	pP	20·4
Bogota		44·8	276	e 8 18	+ 1	—	—	—	—	—
Toledo		45·3	28	i 8 20	− 1	i 15 10	− 8	—	—	19·9
Huancayo		47·3	253	e 8 41	+ 4	e 15 30	− 1	e 10 26	PP	e 24·2
Tortosa	E.	48·3	32	e 9 7	+22	15 51	+ 6	e 10 8	PP	e 24·4
Clermont-Ferrand		53·2	29	e 9 27	+ 5	e 17 4	+12	—	—	e 26·0
Paris		55·2	25	e 9 36	− 1	i 17 26	+ 6	—	—	25·9
Florence		56·1	35	i 9 45	+ 2	e 17 37	+ 5	e 11 56	PP	e 27·8
Kew		56·2	22	e 9 56?	+12	e 17 42	+ 9	—	—	e 23·9
Uccle		57·5	25	—	—	e 17 54	+ 4	—	—	e 26·9
Stuttgart		58·3	29	e 9 56	− 3	e 18 1	0	e 10 41	P_cP	e 29·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Columbia		58·5	311	—	—	e 18 5	+ 2	—	—	e 27·1
Triest		58·6	34	e 8 13	?	i 18 11	+ 7	—	—	—
De Bilt		58·8	25	—	—	e 18 11	+ 4	—	—	e 27·9
Ottawa		60·3	324	e 10 11	− 2	e 18 29	+ 3	(e 24 51)	SSS	e 24·9
Pittsburgh		60·5	318	—	—	e 18 32	+ 3	e 24 49	SSS	—
Copenhagen		64·4	25	—	—	19 25	+ 7	—	—	—
Helwan		64·5	58	e 10 42	+ 1	e 19 15	− 4	—	—	—
Chicago		66·3	317	e 10 52	0	e 19 35	− 7	—	—	e 34·4
St. Louis		67·1	313	e 10 55	− 2	e 19 48	− 3	e 11 7	pP	31·5
Ksara		69·2	55	e 11 21	+11	e 20 32	+16	—	—	—
Upsala		69·2	23	e 10 32	−38	—	—	—	—	e 33·9
Tucson		82·4	303	i 12 27	+ 2	—	—	e 15 34	PP	e 41·3
Palomar	z.	87·5	304	e 12 53	+ 2	—	—	—	—	—
La Jolla	z.	87·8	303	e 12 55	+ 3	—	—	—	—	—
Riverside	z.	87·9	304	e 12 55	+ 2	—	—	e 16 29	PP	—
Haiwee	z.	88·4	306	e 12 59	+ 4	—	—	—	—	—
Mount Wilson	z.	88·5	304	e 12 57	+ 1	—	—	—	—	—
Pasadena		88·6	304	e 12 57	+ 1	—	—	e 16 29	PP	e 42·4
Tinemaha	z.	88·7	307	e 12 59	+ 2	—	—	—	—	—

Additional readings :—
Granada P_cS =12m.12s.
Almeria sP =8m.21s., PP =9m.50s., P_cP =10m.2s., PPP =10m.26s., sS =14m.43s., SS =17m.17s.
Huancayo e =19m.18s.
Tortosa iE =7m.55s.
Florence iSSE =21m.4s.
St. Louis iPZ =10m.58s., eZ =11m.1s., esSE =20m.13s., eE =25m.5s., esSSS?E = 27m.23s.
Upsala eE =23m.26s., eN =26m.51s.?
Long waves were also recorded at Scoresby Sund, Bergen, Potsdam, Harvard, and Philadelphia.

August 13d. Readings also at 0h. (St. Louis, Riverside, Palomar, Tinemaha, Tucson, near Bogota (2), and Balboa Heights (2)), 1h. (Cape Girardeau), 3h. (near Mizusawa), 4h. (Granada), 7h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, and Mizusawa), 9h. (near Stuttgart), 14h. (Bogota), 15h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, Tucson, and St. Louis), 17h. (near Andijan), 18h. (Mount Wilson, Tucson, Tinemaha, and Palomar).

August 14d. 8h. 7m. 48s. Epicentre 31°·0S. 178°·5W. (as on 1938 January 3d.).

$A = -·8584$, $B = -·0225$, $C = -·5125$; $\delta = +1$; $h = +2$;
$D = -·026$, $E = +1·000$; $G = +·512$, $H = +·013$, $K = -·859$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		8·1	222	2 4	+ 2	3 1	−34	—	—	—
Arapuni		8·5	212	2 30?	P*	4 12?	S*	—	—	—
Wellington		11·6	206	2 21	−29	i 4 2	−59	—	—	6·0
Suva		13·1	347	i 3 35	PPP	6 32	SSS	e 4 54	?	7·8
Christchurch		14·4	207	—	—	5 36	−33	5 56	Q	7·2
Brisbane	E.	25·1	271	i 5 30	+ 2	e 9 52	+ 1	i 5 45	PP	—
Riverview		25·7	255	5 30	− 3	i 9 56	− 5	i 6 11	PP	e 12·2
Sydney		25·7	255	e 6 24?	PP	—	—	—	—	—
Santa Barbara		85·5	45	e 12 40	− 1	—	—	—	—	—
La Jolla		85·9	48	e 12 43	0	—	—	—	—	—
Pasadena		86·2	46	i 12 45 a	+ 1	e 25 0	PPS	i 12 55	P_cP	e 39·4
Mount Wilson	z.	86·3	46	i 12 45 a	0	—	—	i 12 56	P_cP	—
Palomar	z.	86·5	47	i 12 46 a	0	—	—	i 12 57	P_cP	—
Riverside		86·6	46	i 12 46 a	0	—	—	i 12 57	P_cP	—
Haiwee		87·6	45	e 12 53	+ 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		88·1	44	i 12 54 a	0	—	—	i 13 5	P_cP	—
Tucson		89·9	50	i 13 1	− 1	e 25 8	PS	i 13 12	P_cP	e 41·7
Huancayo		94·9	107	—	—	e 23 49	[−12]	e 30 55	SS	e 43·2
La Paz		98·2	114	13 45	+ 5	—	—	26 11	PS	45·2
St. Louis		107·4	55	e 18 47	PP	e 25 48	(+ 1)	e 27 39	PS	—
Ksara		150·9	282	e 19 46	[− 3]	—	—	—	—	—
Helwan	z.	154·3	274	19 48	[− 6]	—	—	—	—	—
Kew		159·5	2	(e 19 12?)	[−48]	—	—	—	—	e 19·2
Stuttgart		161·3	343	e 19 56	[− 6]	38 12	PSKS	e 20 50	PKP_2	e 83·2
Paris		162·2	357	i 19 58	[− 5]	—	—	i 23 38	PKS	89·2
Clermont-Ferrand		165·2	356	i 20 0	[− 6]	—	—	i 24 52	PP	e 86·2
Toledo	z.	170·1	25	i 20 6	[− 3]	—	—	i 21 27	PKP_2	—
Tortosa		170·2	4	e 20 4	[− 5]	—	—	e 46 27	SS	e 94·2
Granada		172·5	33	20 33	[+22]	32 45	(+29)	22 1	PKP_2	84·0

Additional readings :—
Riverview iPPPN = 6m .26s., iE = 6m.42s., iN = 10m.14s., iEN = 10m.29s.
Pasadena ePPZ = 16m.15s.
Mount Wilson iZ = 13m.2s.
Palomar eZ = 13m.23s.
Riverside eZ = 13m.14s.
Tinemaha eZ = 13m.21s.
Tucson ePP = 16m.28s.
Ksara e = 20m.15s. and 29m.31s.
Helwan eZ = 20m.12s. and 21m.15s.
Stuttgart ePP?Z = 24m.22s., eZ = 35m.12s.?.
Toledo iPPZ = 25m.19s.
Tortosa eE = 24m.27s., iE = 24m.38s.
Granada iPP = 25m.57s., SKSP = 36m.55s., SS = 46m.51s.
Long waves were also recorded at Harvard and Uccle.

August 14d. Readings also at 2h. (Oaxaca, Tacubaya, Bogota, Cape Girardeau, San Juan, St. Louis, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Santa Clara, Bozeman, and Philadelphia), 3h. (Harvard), 4h. (Pittsburgh, near Bogota, and near La Paz), 9h. (Mizusawa), 12h. (near Andijan and near Mizusawa), 15h. (near Fort de France), 16h. (Tortosa), 17h. (near La Paz), 20h. (Cheb), 22h. (Bogota and Fort de France).

August 15d. 0h. 13m. 15s. Epicentre 19°·5N. 68°·0W.

$A = +·3534$, $B = -·8746$, $C = +·3318$; $\delta = -9$; $\lambda = +5$;
$D = -·927$, $E = -·375$; $G = +·124$, $H = -·308$, $K = -·943$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan	2·1	122	i 0 29	− 8	i 0 47	−17	—	—	—
Port au Prince	4·2	258	i 0 54	−13	i 1 19	−38	—	—	i 1·8
Fort de France	8·1	125	e 1 52	−10	3 20	−15	—	—	—
Bermuda	13·2	13	e 3 18	+ 7	e 5 34	− 6	—	—	e 6·9
Balboa Heights	15·3	228	e 3 38	− 1	—	—	—	—	—
Bogota	15·9	203	e 3 43	− 4	e 6 33	−11	—	—	i 7·1
Columbia	18·5	325	e 2 45?	?	e 6 19?	?	—	—	e 7·6
Philadelphia	21·3	346	e 4 58	+ 8	e 8 40	− 3	i 5 28	PP	e 9·9
Fordham	21·9	350	i 5 11	+14	i 8 50	− 4	—	—	—
Harvard	23·1	355	e 5 28	+20	e 9 23	+ 7	—	—	e 12·8
Pittsburgh	23·3	337	e 5 12	+ 2	i 9 32	+12	—	—	e 11·3
Ottawa	26·6	348	e 5 45	+ 3	—	—	—	—	10·3
St. Louis	27·1	320	i 5 47	+ 1	e 10 26	+ 2	—	—	e 12·5
Seven Falls	27·7	356	e 6 45?	+53	e 10 36	+ 3	—	—	12·8
Chicago	27·8	327	e 6 14	+21	e 10 34	− 1	—	—	e 12·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		32·2	194	e 7 28	PP	e 11 33	−12	—	—	e 13·3
La Paz		35·8	180	i 7 1	− 2	13 1	+20	—	—	21·8
Rapid City		38·2	319	e 8 19?	PP	e 12 36?	−41	—	—	e 15·4
Tucson		40·3	298	i 7 42	+ 2	e 13 52	+ 3	i 9 22	PP	e 20·5
Salt Lake City		42·9	310	—	—	—	—	(e 17 56)	SS	e 17·9
Bozeman		44·0	317	—	—	—	—	e 18 18	SS	e 22·4
Palomar	Z.	45·5	299	i 8 25 a	+ 2	—	—	—	—	—
La Jolla		45·8	298	i 8 26 a	+ 1	—	—	—	—	—
Riverside		46·0	300	i 8 27 a	0	—	—	—	—	—
Mount Wilson		46·6	300	i 8 33 a	+ 1	—	—	—	—	—
Pasadena		46·7	300	i 8 32 a	0	i 15 27	+ 5	i 10 27	PP	e 23·8
Tinemaha		47·0	303	i 8 36 a	+ 1	—	—	—	—	—
Santa Barbara		47·9	300	e 8 43	+ 1	—	—	—	—	—
Scoresby Sund		57·8	17	—	—	e 17 58	+ 4	—	—	e 29·0
Toledo		57·9	55	i 9 54	− 2	e 17 55	0	12 4	PP	27·1
Granada		58·3	58	i 10 12	+13	i 18 23	+22	—	—	24·6
Almeria		59·2	58	9 58	− 7	i 18 11	− 1	12 15	PP	29·2
Tortosa	E.	61·4	54	e 8 44	?	i 18 38	− 2	—	—	e 27·8
Sitka		61·6	325	—	—	e 20 12	?	—	—	e 31·2
Paris		62·8	45	e 10 27	− 3	—	—	—	—	29·8
Clermont-Ferrand		63·2	48	e 10 28	− 4	e 18 47	−16	—	—	e 35·2
Uccle		64·0	42	—	—	e 19 10	− 3	—	—	e 29·8
Stuttgart	Z.	67·2	44	e 10 54	− 4	—	—	—	—	—
Florence		69·1	49	e 11 35	+25	e 20 10	− 5	—	—	—
Triest		70·6	47	i 10 27	−52	i 20 26	− 7	—	—	—
Helwan	.	88·2	59	e 12 57	+ 3	e 23 35	− 3	—	—	—

Additional readings :—
Fort de France e = 2m.9s. and 2m.42s.
Bogota i = 3m.52s., 4m.11s., and 4m.58s.
Philadelphia e = 6m.36s.
Fordham i = 9m.2s.
Rapid City e = 2m.27s.?.
Tucson i = 8m.6s. and 13m.29s.
Palomar iZ = 8m.35s.
Pasadena iZ = 8m.48s.
Almeria P_cP = 10m.39s., PPP = 13m.52s., P_cS = 14m.41s., S_cS = 19m.47s.
Long waves were also recorded at other European stations.

August 15d. 2h. 29m. 42s. Epicentre 13°·7N. 147°·6E.

$A = -·8206$, $B = +·5208$, $C = +·2354$; $\delta = +3$; $h = +6$;
$D = +·536$, $E = +·844$; $G = -·199$, $H = +·126$, $K = -·972$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nake		22·3	314	e 4 56	− 5	7 20	?	—	—	—
Misima		22·7	343	e 5 12	+ 8	9 14	+ 5	—	—	—
Tokyo Cen. Met. Ob.		23·0	344	e 5 28	+21	—	—	—	—	—
Nagoya		23·4	339	e 5 13	+ 2	—	—	—	—	—
Kôti		23·6	330	i 5 13	0	9 28	+ 3	—	—	—
Kagosima		23·7	322	5 13	− 1	9 36	+ 9	—	—	—
Kobe		23·7	335	e 5 20	+ 6	9 36	+ 9	—	—	—
Hikone		23·8	338	e 5 19	+ 4	9 31	+ 3	—	—	—
Nagano		24·4	342	e 5 32	+11	—	—	—	—	—
Riverview	E.	47·4	176	—	—	i 15 2	−30	i 18 40	SS	—
Irkutsk		51·7	328	—	—	16 33	+ 1	e 20 29	SS	—
Andijan		70·1	309	e 11 17	+ 1	e 20 27	0	11 51	P_cP	—
Sitka		71·6	34	—	—	e 20 52	+ 8	—	—	e 30·9
Tashkent		72·4	310	11 27	− 3	20 53	0	—	—	—
Sverdlovsk		77·0	326	e 11 56	0	21 20	−25	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara		84·6	56	e 12 36	0	—	—	—	—	—
Tinemaha		85·1	54	i 12 39	0	—	—	—	—	—
Mount Wilson	z.	85·9	56	i 12 42	− 1	—	—	—	—	—
Pasadena		85·9	56	i 12 42	− 1	i 23 21	+ 5	—	—	e 35·3
Riverside		86·5	56	i 12 44	− 2	—	—	—	—	—
La Jolla	z.	86·9	57	e 12 47	− 1	—	—	—	—	—
Palomar	z.	87·1	56	i 12 49	0	—	—	—	—	—
Tucson		92·3	56	e 13 7	− 6	e 23 52	[+ 6]	e 25 35	PS	e 42·7
Helwan	z.	104·9	306	18 33	PP	—	—	—	—	—
Triest		107·7	328	—	—	e 25 9	[+ 7]	—	—	e 54·4
Uccle		108·2	337	i 18 58	PP	—	—	—	—	e 50·3
Kew		109·4	340	e 19 6	PP	—	—	—	—	e 27·3
Florence	E.	110·3	327	e 28 33	PS	e 39 0	SSS	—	—	e 40·1
Paris		110·5	337	i 19 14?	PP	—	—	—	—	64·3
Clermont-Ferrand		112·7	334	i 19 28	PP	—	—	—	—	e 68·3
Almeria		122·3	332	e 20 34	PP	—	—	—	—	60·3
Granada		122·6	333	e 23 3	PPP	25 39	[−19]	e 32 21	PPS	59·0

Additional readings :—
Helwan eZ =19m.0s. and 19m.44s.
Almeria e =23m.54s. and 34m.23s.
Long waves were also recorded at Huancayo, Philadelphia, and at other European stations.

August 15d. Readings also at 4h. (near Fresno and near Bogota), 6h. (Potsdam, near Basle, Zürich, Ravensburg, and Stuttgart), 8h. (Bogota, Fort de France, and La Paz), 9h. (La Plata, Huancayo, and near Basle), 10h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, Tucson, and Bogota), 11h. (Suva and Kew), 12h. (Stuttgart), 13h. (Pasadena, Riverside, Tinemaha, Palomar, Tucson, and Sitka), 14h. (Pasadena, Mount Wilson, Tinemaha, and Granada), 16h. (near Triest and Florence), 17h. (near Granada and Almeria), 19h. (Tacubaya).

August 16d. Readings at 3h. (Strasbourg, Ravensburg, near Basle, Neuchatel, Zürich (2), and Stuttgart (2)), 4h. (near Stalinabad, Tashkent, and Tchimkent), 5h. (near Tashkent), 6h. (Tucson, Palomar, and Tinemaha), 8h. (Cheb, La Plata, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, and Mizusawa), 9h. (near Bogota), 10h. (near Stuttgart), 15h. (Tucson, Mount Wilson, Palomar, Riverside, and Tinemaha), 16h. (Fort de France, Ksara, and near Branner), 18h. (near Tananarive), 20h. (near Bogota), 21h. (Tucson, Tinemaha, and near Branner).

August 17d. 9h. Undetermined shock.

Riverview iPZ =12m.21s. a, ipPZ =14m.22s., iSE =18m.9s., iE =19m.2s., isSEN = 21m.34s.
Andijan eP =14m.8s., eS =22m.20s.
Tashkent P =14m.24s., iS =22m.50s.
Sverdlovsk eP =15m.34s., S =24m.58s.
Irkutsk eS =20m.50s.
Stuttgart eZ =22m.4s.
Tinemaha ePKPZ =22m.29s., eZ =23m.16s., ePKKPZ =23m.26s., eZ =23m.34s., iPKKPZ =33m.17s.
Mount Wilson ePKPZ =22m.31s., eZ =23m.20s.
Pasadena iPKP =22m.31s., eZ =23m.24s.
Riverside ePKPZ =22m.32s., eZ =23m.31s.
La Jolla ePKPZ =22m.33s.
De Bilt iZ =22m.38s., eL =58m.
Tucson e =22m.43s., 23m.54s., 32m.48s., and 36m.15s.
St. Louis eP?Z =23m.4s., eZ =26m.16s., eE =26m.31s., eE =33m.56s.
Bogota e =23m.54s. and 24m.44s.
La Paz P =23m.57s.
Long waves were also recorded at Kew.

August 17d. Readings also at 0h. (near Mizusawa), 1h. (Stuttgart, Tucson, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, St. Louis, and near Mizusawa), 3h. (Fort de France, Bogota, Cape Girardeau, Philadelphia, St. Louis, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and Kew), 7h. (near Tashkent), 9h. (Reykjavik (2), near Fort de France, and near Stuttgart), 11h. (Reykjavik), 13h. (Suva, Arapuni, Auckland, Christchurch, Wellington, Brisbane, Sydney, Riverview, Perth, Riverside, Tucson, Tinemaha, and La Paz), 14h. (Kew, De Bilt, Uccle, Paris, Clermont-Ferrand, Stuttgart, Tortosa, Granada, Toledo, Scoresby Sund, Huancayo, and Pasadena), 15h. (De Bilt, Uccle, Stuttgart (2), Jena, Andijan, Tashkent, Irkutsk, Sverdlovsk, Riverview, La Paz, Mount Wilson, Palomar, Tucson, Tinemaha, and near Branner), 16h. (Kew, Andijan, and Pasadena), 18h. (Tacubaya), 19h. (Andijan).

August 18d. Readings at 0h. (Tucson), 1h. (Andijan, Tashkent, and New Delhi), 5h. (near Andijan and Tashkent), 6h. (Suva, Wellington, Riverview, Palomar, Tucson, and Tinemaha), 8h. (Bucharest, Sofia, and near Istanbul), 9h. (near Ksara and near Mizusawa), 11h. (near Mizusawa), 12h. (Tacubaya), 13h. (near Berkeley), 15h. (Tucson, Palomar, and Tinemaha), 16h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Santa Barbara, Tinemaha, Tucson, St. Louis, Bogota, Fort de France, and near La Paz), 21h. (near Almeria, Granada, and Toledo).

August 19d. Readings at 1h. (Tananarive and Sofia), 2h. (Mount Wilson, Pasadena, Riverside, Tucson, and Tinemaha), 5h. (La Paz, Rio de Janeiro, Fort de France (2), Mount Wilson, Pasadena, Palomar, Tucson, Riverside, and Tinemaha), 9h. (Ksara), 10h. (Haiwee, Mount Wilson, Pasadena, Palomar, Tucson, Riverside, Tinemaha, St. Louis, Stuttgart, Tashkent, and Mizusawa), 12h. (Helwan, Ksara, Stuttgart, Tashkent, Riverside, Tinemaha, and Tucson), 16h. (near Fort de France), 23h. (Oaxaca, Puebla, Vera Cruz, Tacubaya, St. Louis, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Clermont-Ferrand, Ebingen, Strasbourg, Ravensburg, near Basle, Zürich, Stuttgart, and near Berkeley).

August 20d. 1h. 22m. 5s. Epicentre 10°·3N. 126°·0E. (as on 1942 December 3d.).

$A = -\cdot5784$, $B = +\cdot7962$, $C = +\cdot1776$; $\delta = +2$; $h = +6$;
$D = +\cdot809$, $E = +\cdot588$: $G = -\cdot104$, $H = +\cdot144$, $K = -\cdot984$.

		△	Az.	P.	O−C.	S.	O−C.		Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Kôti		24·2	15	e 5 23	+ 4	—	—	—	—	—
Nagoya		26·7	20	e 6 1	+18	—	—	—	—	—
Zinsen		27·1	1	e 5 40	− 6	—	—	—	—	—
Nagano		28·5	19	e 6 2	+ 3	—	—	—	—	—
Mizusawa		31·7	23	e 6 29	+ 2	11 33	− 4	e 6 32	?	—
Sapporo		35·3	19	e 7 1	+ 2	—	—	—	—	—
Calcutta	N.	38·0	294	e 2 26	?	i 13 5	− 9	i 9 41	P_cP	i 17·8
Irkutsk		45·4	342	8 24	+ 2	15 2	− 2	—	—	—
Colombo		45·7	269	8 25	+ 1	15 2	− 6	—	—	22·9
Brisbane	N.	45·8	145	—	—	i 14 48	−21	i 18 6	SS	—
Hyderabad	E.	46·6	284	8 39	+ 7	15 39	PPS	10 32	pP	23·4
Kodaikanal	E.	47·4	275	i 8 43a	+ 5	i 15 49	PS	10 37	PP	—
New Delhi	N.	49·1	298	—	—	i 16 3	+ 7	i 19 45	SS	27·7
Riverview		50·0	152	i 8 56a	− 2	i 15 50	−19	i 10 58	PP	e 24·2
Sydney		50·0	152	—	—	—	—	e 21 1?	SSS	—
Tashkent		58·4	313	i 9 59	− 1	i 18 20	+18	—	—	—
Suva		59·0	117	e 12 30	PP	i 18 0	−10	e 13 34	PPP	—
Arapuni		66·8	139	e 7 55?	?	—	—	—	—	33·9
Sverdlovsk		68·0	328	10 55	− 8	19 56	− 6	—	—	—
Wellington		68·2	143	—	—	19 45	−19	35 55?	Q	40·9
Honolulu		73·5	70	e 11 11	−25	—	—	e 16 52	?	e 20·9
Moscow		80·7	325	12 14	− 2	—	—	—	—	—
Ksara		84·4	303	e 12 40	+ 4	e 23 23	+22	—	—	—
Sitka		86·0	32	—	—	e 23 11	− 6	—	—	e 35·4
Helwan		88·9	300	12 55	− 3	23 55	+11	16 28	PP	—
Bucharest		89·8	316	e 14 55?	?	e 23 43?	{+ 3}	—	—	47·9
Upsala		90·2	332	—	—	e 23 34	[0]	e 23 43	SKKS	e 35·9
Copenhagen		94·4	329	13 24	+ 1	24 11	{− 3}	—	—	—
Potsdam		95·4	326	—	—	e 24 14	[+11]	—	—	e 51·9
Bergen		95·5	335	—	—	25 0	+18	—	—	e 35·9

Conti nued on next page.

		△	Az.	P.	O−C.	S.	O−C.		Supp.	
		°	°	m. s.	s.	m. s.	s.	m.	s.	
Prague		95·6	323	—	—	e 24 37?	− 6	e 23 55?	SKS	—
Victoria		95·6	40	—	—	e 24 1?	[− 3]	—	—	38·9
Scoresby Sund		96·5	351	e 17 7	PP	e 24 14	[+ 5]	e 31 24	SS	e 35·2
Cheb		96·8	324	—	—	—	—	e 27 55?	?	—
Triest		97·7	320	—	—	i 24 20	[+ 5]	—	—	—
Stuttgart		99·2	323	e 13 41	− 4	e 25 19?	+ 5	e 26 43?	PS	e 47·2
De Bilt		99·9	328	e 13 47	− 1	e 24 35	[+ 8]	e 26 55	PS	e 47·9
Florence	E.	100·1	318	e 18 1	PP	i 24 36	[+ 9]	e 26 57	PS	—
Berkeley		100·4	49	e 24 25	SKS	(e 24 25)	[− 4]	e 27 8	PS	e 46·0
Uccle		101·0	327	e 17 55?	PP	e 24 38	[+ 6]	e 27 10	PS	e 47·9
Paris		103·0	326	e 18 16	PP	e 24 50	[+ 9]	e 28 14	PPS	56·9
Kew		103·1	329	e 14 4	+ 2	e 24 36	[− 6]	e 27 16	PS	e 50·9
Tinemaha	Z.	103·6	49	e 14 3	− 1	—	—	e 18 12	PP	—
Mount Wilson	Z.	104·9	50	e 18 20	PP	—	—	—	—	—
Pasadena		104·9	50	e 17 59	?	e 27 37	PS	e 18 27	PP	e 37·3
Riverside	Z.	105·5	50	e 18 4	?	—	—	—	—	—
Palomar	Z.	106·2	51	e 14 12	P	—	—	e 17 34	?	—
Tortosa	E.	108·5	320	—	—	i 25 10	[+ 4]	—	—	e 56·9
Tucson		111·3	49	e 18 37	[+ 1]	e 28 42	PS	e 19 14	PP	e 45·6
Toledo		111·9	321	e 19 23	PP	—	—	22 31	PKS	—
Almeria		112·6	317	e 18 4	?	29 1	PS	e 20 3	?	59·9
Granada		113·2	318	19 40	PP	29 15	PS	21 42	PPP	58·7
St. Louis		120·7	33	e 18 51	[− 3]	e 30 6	PS	e 31 34	PPS	e 51·7
Bermuda		136·4	14	e 22 3	PP	—	—	e 40 18	SS	—
San Juan		149·1	22	e 20 2	[+16]	e 42 41	SS	e 33 32	?	e 50·1
Bogota		155·1	54	e 19 56	[+ 1]	—	—	—	—	—
La Paz		165·0	116	e 20 6k	[0]	—	—	i 25 14	PP	78·9

Additional readings :—
Hyderabad SSE =18m.38s.
Riverview iE =15m.54s., iSSEN =19m.14s.
Suva e =16m.3s., 17m.35s., and 24m.25s.
Helwan eZ =14m.0s., 15m.49s., and 17m.55s.
Stuttgart ePP?Z =17m.47s., eZ =22m.31s.?, eSSS? =36m.7s.?.
De Bilt ePP =17m.55s.
Kew ePPZ =18m.16s., ePPPZ =21m.17s., eSKKSE =25m.32s., ePPSEZ =28m.14s., eZ =31m.37s., eSSSE =38m.25s.?
Tucson e =21m.12s., 22m.8s., 33m.12s., and 37m.22s.
Granada PPP =24m.3s., SS =38m.33s. Readings wrongly identified.
St. Louis eSKKS?N =30m.48s., eSSE =36m.45s.
La Paz iZ =21m.10s., PPPZ =28m.19s.
Long waves were also recorded at Auckland, Christchurch, Huancayo, Philadelphia, Stonyhurst, and Clermont-Ferrand.

August 20d. Readings also at 0h. (near Mizusawa), 1h. (Mount Wilson, Tucson, Riverside, Tinemaha, and Palomar), 2h. (Ksara), 3h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Tucson, and Palomar), 5h. (Palomar, Tucson, and St. Louis), 8h. (near Fort de France and near Marseilles), 10h. (La Paz), 18h. (near Mizusawa), 19h. (Triest), 21h. (Tucson, Pasadena, Mount Wilson, Tinemaha, and Palomar), 23h. (Jena).

August 21d. 9h. Undetermined shock.

Huancayo eP =19m.52s., eS =23m.52s., eL =27m.10s.
Tucson iP =20m.26s., e =21m.41s., i =23m.36s., eS =28m.40s., eL =39m.25s.
Palomar iPZ =20m.33s.
Riverside ePNZ =20m.37s.
Mount Wilson iPNZ =20m.38s.
Pasadena iPNZ =20m.39s.k, eLE =36m.
Haiwee ePZ =20m.51s.
Tinemaha ePNZ =20m.58s.
Cape Girardeau ePN =21m.24s.
St. Louis ePZ =21m.33s., eZ =21m.37s., eSE =30m.38s., eSSS?E =38m.21s.
Christchurch S =34m.56s., Q =37m.36s., R =41m.36s.
Long waves were also recorded at La Paz, Honolulu, Riverview, and De Bilt.

August 21d. Readings also at 0h. (near Tananarive), 1h. (near Mizusawa), 7h. (near Lick), 8h. (Ferndale), 10h. (near Andijan and Tashkent), 14h. (La Paz), 15h. (near Irkutsk), 17h. (near Mizusawa), 18h. (Ksara and near Bacau, Bucharest, Campulung, Focsani), 19h. (Helwan and Ksara), 20h. (De Bilt), 23h. (Belgrade, Triest, near Bucharest and Sofia).

August 22d. 1h. 24m. 37s. Epicentre 36°·8N. 140°·9E. Depth of focus 0·005.

Intensity V at Tukubasan ; IV at Sendai, Shirakawa, Mito, Kakioka, Titibu ; II-III at Kumagaya, Miyako, and Hatinohe.
Epicentre as adopted. Radius of macroseismic area 200-300 km.
Seismological Bulletin of the Central Meteorological Observatory, Japan, for the Year 1943, Tokyo 1950, pp. 37-38, with macroseismic chart p. 37.

$A = -\cdot6229$, $B = +\cdot5062$, $C = +\cdot5964$; $\delta = -6$; $h = -1$;
$D = +\cdot631$, $E = +\cdot776$; $G = -\cdot463$, $H = +\cdot376$, $K = -\cdot803$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Mito		0·5	220	0 15k	+ 2	0 21	− 2	—	—
Kakioka		0·8	225	0 21k	+ 4	0 33	+ 4	—	—
Tukubasan		0·9	228	0 18k	0	0 33	+ 2	—	—
Utunomiya		0·9	253	0 19k	+ 1	0 31	0	—	—
Tyosi		1·1	181	0 21	+ 1	0 36	0	—	—
Tokyo Cen. Met. Ob.		1·4	220	0 28	+ 4	0 47	+ 4	—	—
Maebasi		1·5	255	0 28k	+ 2	0 50	+ 5	—	—
Sendai		1·5	0	0 19k	− 7	0 34	−11	—	—
Kohu		2·2	238	0 40	+ 5	—	—	—	—
Misima		2·3	223	0 41	+ 4	1 17	+13	—	—
Mizusawa	E.	2·3	5	0 30	− 7	0 53	−11	—	—
Aikawa		2·4	300	0 37	− 1	1 13	+ 6	—	—
Shizuoka		2·7	228	0 44	+ 2	1 24	+10	—	—
Miyako		3·0	17	0 41	− 6	1 8	−14	—	—
Omaesaki		3·1	225	0 55	+ 7	—	—	—	—
Hamamatu		3·3	231	1 1	+10	1 40	+11	—	—
Wazima		3·3	280	0 50k	− 1	1 29	0	—	—
Gihu		3·6	249	0 59	+ 4	1 47	+10	—	—
Nagoya		3·6	244	1 0	+ 5	1 46	+ 9	—	—
Hatidyozima		3·8	193	1 4	+ 6	1 46	+ 4	—	—
Hatinohe		3·8	8	0 52	− 6	1 32	−10	—	—
Aomori		4·0	359	0 53	− 8	1 41	− 6	—	—
Hikone		4·1	250	1 4k	+ 2	2 2	+13	—	—
Kameyama		4·1	243	1 16	+14	2 1	+12	—	—
Kyoto		4·5	249	1 11	+ 4	—	—	—	—
Owase		4·7	236	1 25	+15	2 23	+19	—	—
Kobe		5·1	248	1 19a	+ 3	2 25	+11	—	—
Siomisaki		5·4	233	2 1	S	(2 1)	−21	—	—
Sumoto		5·5	245	1 19a	− 2	2 37	+13	—	—
Sapporo		6·3	3	1 26	− 6	2 41	− 3	—	—
Koti		6·8	244	1 46	+ 7	3 8	+12	—	—
Kumamoto		9·3	248	2 17	+ 3	—	—	—	—
Andijan		52·3	296	e 9 7	0	e 16 35	+ 9	—	—
Tashkent		54·3	298	9 21	− 1	17 1	+ 8	—	—
Sverdlovsk		55·1	319	e 9 25	− 3	e 17 3	− 1	—	—
Tinemaha		76·3	54	e 11 43	− 1	—	—	i 11 57	pP
Pasadena	z.	78·0	56	i 11 52	− 1	—	—	i 12 6	pP
Mount Wilson	z.	78·1	56	i 11 51	− 3	—	—	i 12 5	pP
Riverside	z.	78·7	56	e 12 8	pP	—	—	e 15 5	PP
La Jolla		79·4	57	e 12 13	pP	—	—	—	—
Palomar	z.	79·4	56	e 12 0	− 1	—	—	i 12 14	pP
Tucson		84·1	54	i 12 24	− 1	—	—	i 12 39	pP
St. Louis		91·4	38	e 13 0	0	e 23 47	− 4	—	—

Additional readings :—
Palomar iZ = 15m.11s.
Tucson i = 12m.53s., e = 15m.50s.
Long waves were recorded at Kew and De Bilt.

August 22d. 11h. 3m. 20s. Epicentre 51°·6N. 177°·8W. (as on 1940 June 2d.).

$A = -·6232$, $B = -·0239$, $C = +·7817$; $\delta = 0$; $h = -6$;
$D = -·038$, $E = +·999$; $G = -·781$, $H = -·030$, $K = -·624$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		20·4	38	e 4 43	+ 2	e 8 31	+ 6	—	—	e 9·9
Sitka		25·0	59	e 5 28	+ 1	e 9 50	+ 1	i 10 15	?	e 13·3
Victoria		34·4	73	—	—	e 12 19	0	—	—	18·7
Bozeman		43·1	70	—	—	e 14 19	−11	e 18 18	SSS	e 26·4
Tinemaha		43·8	85	e 8 9	0	—	—	i 10 0	PP	—
Haiwee		44·6	85	i 8 25	+ 9	—	—	—	—	—
Mount Wilson	z.	45·7	88	e 8 24	0	—	—	—	—	—
Pasadena		45·7	88	i 8 24	0	—	—	e 10 16	PP	e 19·5
Riverside	z.	46·3	88	e 8 27	− 2	—	—	—	—	—
La Jolla		47·1	88	e 8 49	+14	—	—	—	—	—
Palomar	z.	47·1	88	i 8 34	− 1	—	—	—	—	—
Tucson		51·5	84	i 9 10	+ 1	—	—	—	—	e 25·4
St. Louis		59·5	65	i 10 7	0	e 18 7	− 9	e 18 25	PS	—
Cape Girardeau	N.	60·9	67	e 10 36	+19	e 18 28	− 6	—	—	—
Pittsburgh	N.W.	63·9	57	e 11 47	+70	e 19 10	− 2	—	—	e 38·9

Additional readings :—
Tinemaha iZ = 8m.19s.
Mount Wilson iZ = 8m.39s. and 8m.42s.
Pasadena iZ = 8m.38s.
Riverside eZ = 8m.41s., iZ = 8m.46s.
Palomar iZ = 8m.48s. and 8m.57s.
Tucson e = 9m.18s. and 15m.17s.
Long waves were also recorded at Honolulu, Scoresby Sund, and De Bilt.

August 22d. Readings also at 0h. (Florence), 9h. (near Fort de France), 10h. (Helwan), 12h. (Tashkent), 14h. (Calcutta, New Delhi, Bombay, near Tashkent, and Andijan), 22h. (Wellington, Auckland, and Suva), 23h. (Florence, near Andijan, and Tashkent).

August 23d. 7h. New Zealand shock.

Intensity VII in the region of Christchurch.
R. C. Hayes.
Earthquakes in New Zealand during the year 1943, Wellington, 1944, New Zealand Journal of Science and Technology, Vol. XXV, No. 5B, p. 228. Map of epicentres, p. 226, isoseismic chart. Epicentre 42°·8S. 171°·8E.

Suva i = 8m.31s. and 9m.39s., e = 19m.7s. and 21m.21s.
Riverview iP = 11m.2s., iSNZ = 14m.34s., iSSE = 14m.47s., iP_ePN = 15m 16s., eRE = 16m.30s.
Brisbane iPZ = 11m.21s., iPPN = 11m.36s., ePPZ = 11m.40s., iSN = 15m.41s.
Sydney e = 14m.30s.?.
Santa Barbara iPZ = 17m.1s.
Mount Wilson iPNZ = 17m.5s.a.
Pasadena iP = 17m.6s.a, eLNZ = 55m.
La Jolla ePNZ = 17m.6s.
Palomar iPZ = 17m.8s.a.
Haiwee iPZ = 17m.14s.
Tinemaha iP = 17m.14s.a.
Tucson iP = 17m.31s., i = 17m.46s., e = 22m.50s., eL = 55m.35s.
Helwan PZ = 26m.21s., eZ = 26m.51s.
Stuttgart eZ = 27m.50s.
Long waves were also recorded at Huancayo, Sitka, Kew, and De Bilt.

August 23d. Readings also at 1h. (La Paz, near Tchimkent, Tashkent, and Andijan), 3h. (near Strasbourg, Chur, Basle, Zürich, Ravensburg, Stuttgart, and Ebingen), 4h. (Florence), 11h. (near Marseilles), 16h. (La Paz), 19h. (near Branner), 22h. (near Tashkent), 23h. (Florence).

August 24d. Readings at 7h. (near Mizusawa and near Fort de France), 13h. (Riverview), 14h. (Fort de France), 15h. (near Tashkent), 17h. (Tucson, Pasadena, Riverside, Tinemaha, Palomar, Fort de France, Stuttgart, Kew, Uccle, De Bilt, Triest, near Bucharest, Sofia, and near Suva), 18h. (Tucson, Riverside, Tinemaha, and Suva (2)).

August 25d. Readings at 0h. (Tucson, Tinemaha, Bogota, and La Paz (2)), 5h. (Tucson, Mount Wilson, Riverside, Tinemaha, Palomar, near Suva, near Mizusawa and near Fort de France), 6h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Zurich, and Triest), 10h. (Tucson, Mount Wilson, Riverside, Tinemaha, Palomar, La Paz, and near Mizusawa), 17h. (near Andijan and Tashkent).

August 26d. Readings at 1h. (Pittsburgh), 6h. (near Mizusawa), 7h. (Stuttgart, Tinemaha, Tucson, Palomar, and near Mizusawa), 8h. (near Mizusawa), 10h. (Tucson, Pasadena, Mount Wilson, and Tinemaha), 11h. (Tinemaha and Tucson), 12h. (Riverview), 15h. (Tucson, Tinemaha, Auckland, and Suva), 22h. (near Andijan).

August 27d. 0h. Pacific.

Suva i=43m.55s., ?=44m.20s., i=44m.51s., ?=46m.42s., i=47m.30s.
Auckland PP?=44m.55s., i=45m.40s., S=46m.5s., L=47m.0s.
Wellington PP?=45m.4s., S=47m.28s., R=49m.
Christchurch P=46m.51s., Q=49m.3s., R=50m.27s.
Arapuni S=47m.0s.?, L?=47·7m.
Apia eS?=47m.24s.?, eEZ=49m.50s., eE=60m.30s.?.
Brisbane eN=47m.41s., and 53m.9s.
Riverview iZ=47m.48s., iSE=52m.1s., iN=53m.56s.
Sydney e=53m.6s.?.
Riverside ePZ=53m.35s.
Berkeley iPZ=53m.38s., iPE=54m.9s., iSEN=64m.0s., eE=76m.2s., eN=76m.32s., eZ=81m.13s.
Pasadena ePZ=53m.39s., eLN=86m.
Mount Wilson ePZ=53m.40s.
Palomar ePZ=53m.41s.
Tinemaha ePZ=53m.47s.
Tucson iP=53m.57s., e=61m.50s., eL=79m.56s.
Santa Clara ePZ=54m.9s., ePSE=64m.4s., eLE=76m.46s.
Honolulu· eS=57m.48s., e=60m.0s., eL=63m.11s.
Copenhagen P=61m.9s., 78m.14s., 82m.2s., 84m.15s.
Stuttgart eZ=61m.13s., and 65m.24s.?, eR?=126m.
Ksara e=61m.28s. and 70m.34s.
Helwan eZ=61m.39s.
De Bilt eZ=61m.42s., eL=126m.
Kew eZ=62m.8s.?, eEZ=65m.34s., eL=124m.
San Fernando ePKPE=62m.37s., ePPE=67m.19s., eSSE=87m.41s., LE=127·5m.
Granada ePKP=63m.31s., PP=67m.16s., PPP=71m.13s., SKKS=74m.4s., SS=87m.13s., L=128·6m.
Florence ePKPE=63m.42s., ePKP,E=67m.20s., eSKS?E=70m.24s., ePPPE=72m.16s.
Almeria e=64m.7s., L=128·5m.
Ukiah eS=64m.7s., eL=75m.22s.
St. Louis eSKSE=65m.29s., eSKKSE=66m.42s., eSE=67m.26s., eSSS=79m.20s., eLN=87m.25s.
Uccle eZ=65m.36s.?.
San Juan eSKS?=66m.47s., eL=99m.25s.
Huancayo e=67m.2s., eL=88m.38s.
Victoria e=67m.43s., L=87m.
Triest e=68m.8s., eL=133m.
Tortosa eE=71m.56s., 87m.2s. and 90m.53s., eLE=131m.
Long waves were also recorded at La Paz, Scoresby Sund, and other American and European stations.

August 27d. Readings also at 0h. (near Andijan and Tashkent), 4h. (Arapuni, Auckland, Christchurch, Wellington, Suva, Riverview, Riverside, Tinemaha, and Tucson), 5h. (Auckland, Wellington, Suva, and Kew), 6h. (Suva, Tinemaha, and Tucson), 7h. (Calcutta, Tashkent, and Stuttgart), 8h. (De Bilt and Kew), 9h. (Mount Wilson, Pasadena, Palomar, Riverside, Tucson, Tinemaha, and Logan), 10h. (Haiwee, Mount Wilson, Pasadena, La Jolla, Palomar, Riverside, Tinemaha, Tucson, College, Sitka, Bozeman, Salt Lake City, Ukiah, St. Louis, Chicago, and La Paz), 11h. (Tucson, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Kew, and Colombo), 13h. (Auckland, Christchurch, Wellington, and Riverview), 15h. (De Bilt and Fort de France), 17h. (La Paz and near Balboa Heights), 20h. (Fort de France).

August 28d. Readings at 2h. (Tacubaya and near Mizusawa (2)), 3h. (Granada), 7h. (near Tashkent and Tchimkent), 10h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Suva, Wellington, and near Apia), 11h. (Tucson, Tinemaha, and near Lick), 12h. (near Fort de France), 19h. (La Paz).

August 29d. 2h. 46m. 14s. Epicentre 18°·2N. 100°·3W. (as on 1939 May 23d.).

Mexico stations suggest epicentre 18° 38′N. 101° 58·W.

$A = -\cdot1700$, $B = -\cdot9353$, $C = +\cdot3104$; $\delta = +3$; $h = +7$;
$D = -\cdot984$, $E = +\cdot179$; $G = -\cdot056$, $H = -\cdot305$, $K = -\cdot951$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tacubaya	E.	1·6	41	0 46	+16	—	—	—
Guadalajara	N.	3·8	312	0 42	−19	—	—	—
Vera Cruz	E.	4·1	75	1 26	P_g	—	—	—
Tucson		16·9	328	i 4 2	+ 3	i 9 8	+121	e 10·8
La Jolla		21·1	318	e 4 46	− 2	—	—	—
Palomar	z.	21·2	320	e 4 46	− 3	—	—	—
Riverside	z.	21·9	320	i 4 54	− 3	—	—	—
St. Louis		22·2	21	e 5 6	+ 6	e 9 19	+19	—
Mount Wilson		22·5	320	i 5 1	− 1	—	—	—
Pasadena		22·5	320	e 5 1	− 1	—	—	e 11·8
Tinemaha		24·6	324	i 5 22	− 1	—	—	—
Rapid City		25·9	355	—	—	e 9 23?	−41	e 13·4

Additional readings :—
Tucson e = 4m.33s. and 8m.1s.
St. Louis eZ = 5m.10s.
Long waves were also recorded at other American stations.

August 29d. 3h. 45m. 9s. Epicentre 34°·4N. 116°·9W. (as on 1942, Feb. 1d.).

Scale VI at Lake Arrow-head, and Seven Oaks; V at Banning, Colton, and Los Angeles.
Macroseismic area 16,000 sq. m. Epicentre 34° 16′N. 116° 58′W.
R. R. Bodle :
United States Earthquakes, Washington 1945, p. 14, isoseismic chart p. 13.

$A = -\cdot3741$, $B = -\cdot7374$, $C = +\cdot5624$; $\delta = 0$; $h = 0$;
$D = -\cdot892$, $E = +\cdot452$; $G = -\cdot254$, $H = -\cdot502$, $K = -\cdot827$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Riverside		0·6	224	i 0 13a	− 2	—	—	—	—	—
Mount Wilson		1·1	259	i 0 22a	0	i 0 34	− 5	—	—	—
Pasadena		1·1	257	i 0 24a	+ 2	i 0 36	− 3	—	—	—
Palomar	z.	1·1	178	i 0 22k	0	—	—	—	—	—
La Jolla		1·6	191	i 0 30k	0	1 0 47	− 4	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara		2·3	271	i 0 43 a	+ 3	—	—	—	—	—
Tinemaha		2·9	338	i 0 54 k	+ 6	i 1 42	S_g	—	—	—
Fresno	z.	3·3	316	i 0 59	P*	i 1 52	S_g	i 1 7	P_g	—
Lick		4·8	309	i 1 19	+ 4	i 2 33	S_g	—	—	—
Branner		5·2	307	i 1 30	P*	i 2 58	S_g	i 1 52	P_g	—
Berkeley		5·4	311	i 1 29	+ 5	i 2 45	S*	i 1 37	P*	—
Tucson		5·5	111	i 1 26	+ 1	—	—	i 1 36	P*	i 3·0
Ukiah		6·9	315	—	—	e 3 15	+10	—	—	e 4·1
Salt Lake City		7·5	31	e 2 34	P_g	—	—	—	—	i 4·1
Logan		8·4	27	e 2 16	+10	e 4 1	S*	—	—	4·5
Rapid City		14·3	43	e 2 53?	?	e 7 3?	?	—	—	e 8·5
St. Louis		21·8	71	i 5 2	+ 6	e 9 13	+21	—	—(e	11·5)

Additional readings :—
Berkeley iPN = 1m.32s., iZ = 2m.54s., iN = 3m.1s., iE = 3m.7s.
Logan i = 2m.40s. and 3m.5s.
St. Louis eZ = 5m.17s.
Long waves were also recorded at Bozeman, Chicago, Pittsburgh, and Philadelphia.

August 29d. Readings also at 3h. (Tucson (2), Santa Clara, and near Fresno), 4h. (Mizusawa, Mount Wilson, Tucson, Tinemaha, and near Fort de France), 7h. (near Andijan and Tashkent), 19h. (Basle near Stuttgart, and Zurich), 23h. (Stuttgart and Zürich).

August 30d. 23h. 37m. 41s. Epicentre 7°·6N. 127°·5E. (as on 1943 May 25d.).

A = −·6035, B = +·7865, C = +·1314 ; δ = +6 ; h = +7 ;
D = +·793, E = +·609 ; G = −·080, H = +·104, K = −·991.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyakozima		17·2	353	e 4 8	+ 5	—	—	—	—	—
Nake		20·7	5	e 4 47	+ 3	—	—	—	—	—
Kagosima		24·0	6	e 5 11	− 6	—	—	—	—	—
Misima		29·3	20	e 6 28	+22	—	—	—	—	—
Calcutta	N.	40·5	296	e 9 5	PP	i 13 48	− 4	—	—	—
Riverview		46·9	153	i 8 33 a	− 1	e 15 20	− 5	i 18 48	SS	—
Colombo	E.	47·2	272	e 8 19?	−17	—	—	—	—	—
Irkutsk		48·4	341	e 8 45	− 1	15 46	0	—	—	—
Bombay	E.	54·2	288	e 9 30	+ 1	19 13	?	i 13 25	?	—
Suva		56·4	118	11 19?	PP	—	—	—	—	—
Tashkent		61·3	313	10 19	− 1	18 40	+ 1	—	—	—
Wellington		65·1	142	10 19?	−26	e 25 19?	?	—	—	38·3
Ksara		87·2	303	e 12 56	+ 7	e 23 30	+ 2	—	—	—
Helwan		91·6	300	e 13 11	+ 1	i 24 9	0	—	—	—
Florence		103·1	317	e 30 8	?	e 37 9	SSS	—	—	e 53·6
Tinemaha	z.	104·3	49	e 18 26	PP	—	—	—	—	—
Paris		106·1	325	e 22 13	PKS	—	—	—	—	e 67·3
Tucson		111·8	50	e 18 39	[+ 2]	—	—	—	—	e 32·8
Granada		116·2	317	25 24	SKS	(25 49)	[+12]	40 0	SSS	67·3
St. Louis		122·2	34	e 18 57	[0]	e 30 17	PS	e 20 29	PP	—
San Juan		150·9	26	e 19 49	[0]	—	—	e 22 48	PKS	e 79·1
La Paz		162·3	121	20 8	[+ 5]	—	—	—	—	79·8

Additional readings :—
Riverview iE = 18m.51s.
Helwan eZ = 13m.32s., eE = 23m.39s.
Granada PP = 27m.36s.
Long waves were also recorded at Huancayo, Pasadena, and other European stations.

August 30d. Readings also at 6h. (Zurich), 9h. (Suva and Wellington), 10h. (Stuttgart), 13h. (near Andijan and Tashkent), 19h. (Stuttgart), 21h. (Tashkent), 23h. (near Branner).

August 31d. 15h. 33m. 57s. Epicentre 30°·6N. 42°·4W.

A = +·6367, B = −·5814, C = +·5065; δ = −4; h = +2;
D = −·674, E = −·738; G = +·374, H = −·342, K = −·862.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toledo		32·5	63	6 31	− 3	—	—	—	—	16·0
Almeria		33·6	68	(6 38)	− 6	6 38	P	e 7 23	PP	16·0
Clermont-Ferrand		38·3	54	e 7 25	+ 1	—	—	—	—	—
Paris		38·4	49	i 7 33	+ 8	—	—	—	—	19·0
St. Louis		39·8	295	e 7 37	+ 1	e 13 51	+ 9	—	—	e 20·0
Stuttgart		42·8	49	e 7 57	− 4	e 14 21	− 5	—	—	e 20·0
Cheb		44·9	47	—	—	e 16 3?	?	e 18 3?	SS	e 23·0
Copenhagen		45·7	40	—	—	15 12	+ 4	—	—	—
La Paz		53·0	210	9 20	− 1	—	—	—	—	28·0
Tucson		57·5	291	e 9 53	0	—	—	—	—	—
Palomar	z.	61·3	293	e 10 23	+ 3	—	—	—	—	—
Tinemaha	z.	61·8	298	e 10 23	0	—	—	—	—	—
Mount Wilson	z.	62·6	295	e 10 29	+ 1	—	—	—	—	—
Helwan	z.	62·6	69	10 25	− 3	—	—	—	—	—
Tchimkent		84·3	43	12 20	−15	—	—	—	—	—
Tashkent		84·7	44	12 36	− 1	e 23 13	+ 9	—	—	—

Additional readings :—
Granada (△ = 32°·7), P = 15h.34m.17s., S = 15h.41m.35s., L = 15h.47·8m.
Helwan iZ = 10m.30s.
Long waves were also recorded at Fordham, Pittsburgh, Pasadena, and other European stations.

August 31d. 16h. 10m. 36s. Epicentre 14°·3N. 91°·2W. (as on 1942 August 8d.).

Epicentre 14°·2N. 91°·5W. (Pasadena). Depth 80 km. 13°·5N. 91°·5W. (U.S.C.G.S.).

A = −·0203, B = −·9692, C = +·2454; δ = −2; h = +5;
D = −1·000, E = +·021; G = −·005, H = −·245, K = −·969.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	z.	6·0	297	i 1 34	+ 2	—	—	—	—	—
Vera Cruz	N.	6·8	317	i 1 47	+ 3	—	—	—	—	—
Puebla	N.	8·2	306	e 1 4	−59	—	—	—	—	—
Tacubaya	N.	9·2	305	2 17	+ 1	—	—	—	—	—
Balboa Heights		12·6	114	e 3 11	+ 8	—	—	—	—	—
Guadalajara	N.	13·2	299	e 2 15	−56	—	—	—	—	—
Mobile		16·5	8	4 4	+10	7 19	SS	—	—	—
Port au Prince		18·6	74	i 4 34	PP	e 7 58	+12	4 44	PP	e 9·4
Bogota		19·4	118	e 4 35	+ 5	e 8 31	SS	e 4 52	PP	—
Columbia		21·7	24	e 4 48	− 7	i 8 55	+ 4	—	—	e 9·7
St. Louis		24·3	2	i 5 20	0	i 9 33	− 4	i 6 4	PPP	—
San Juan		24·4	77	e 5 20	− 1	e 9 34	− 5	e 5 51	PP	e 11·0
Tucson		25·3	319	i 5 29	− 1	i 9 45	− 9	i 6 32	PPP	e 12·7
Chicago		27·6	6	e 5 53	+ 2	—	—	e 11 21	SS	e 17·0
Pittsburgh		27·8	18	e 5 55	+ 2	i 10 41	+ 6	—	—	—
New Kensington		28·0	18	e 6 6?	+11	e 10 52?	+14	e 6 57?	PPP	e 12·6
Fort de France		29·1	86	e 6 7	+ 3	—	—	e 12 51	SSS	—
Philadelphia		29·2	27	i 6 7	+ 2	i 10 43	−15	—	—	e 12·1
Palomar	z.	30·0	315	i 6 12	0	—	—	i 6 38	pP	—
La Jolla		30·1	313	i 6 11	− 2	e 16 48	S_cS	i 9 15	P_cP	—
Fordham		30·5	27	i 6 18	+ 1	i 11 13	− 5	i 6 35	pP	—
Huancayo		30·5	148	e 6 21	+ 4	i 11 20	+ 2	i 6 51	pP	e 13·3
Riverside		30·8	314	i 6 17k	− 3	e 16 50	S_cS	i 6 44	pP	—
Mount Wilson		31·4	314	i 6 22k	− 3	—	—	i 6 41	pP	—
Pasadena		31·4	314	i 6 24k	− 1	i 11 32	0	i 6 42	pP	e 14·4
Rapid City		31·4	344	e 6 0?	−25	e 11 54?	+22	—	—	—
Salt Lake City		31·9	329	e 6 29	0	e 11 37	− 3	—	—	e 14·7
Santa Barbara		32·6	313	i 6 35	0	e 13 35	SS	i 9 19	P_cP	e 17·6
Logan		32·7	331	i 6 37	+ 1	i 11 50	− 2	e 7 29	PP	e 13·7
Harvard		32·8	28	i 6 38	+ 1	i 11 53	− 1	e 13 59	SS	e 17·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Weston		32·8	28	e 6 35	− 2	i 11 54	0	e 7 34	PP	—
Tinemaha		33·1	318	i 6 39k	− 1	i 17 5	S_cS	i 9 23	P_cP	—
Ottawa		33·7	20	6 45	0	12 4	− 4	7 56	PP	16·4
Fresno	N.	33·9	317	e 6 46	− 1	—	—	—	—	—
Bozeman		35·5	337	e 7 15	+15	e 12 31	− 5	—	—	e 17·0
Santa Clara	E.	35·7	317	i 7 3	+ 1	i 12 41	+ 2	—	—	e 17·7
Shawinigan Falls		35·7	22	7 3	+ 1	—	—	—	—	16·4
Branner	E.	35·9	316	7 5	+ 1	—	—	—	—	—
Berkeley		36·2	317	i 7 6	0	e 12 47	0	—	—	—
Seven Falls		36·9	23	7 12	0	12 59	+ 1	8 44	PP	19·4
Ukiah		37·5	318	e 7 14	− 3	e 13 5	− 2	e 13 45	P_cS	e 18·7
La Paz	Z.	38·2	142	7 24a	+ 1	i 13 15	− 2	i 9 24	PPP	16·8
Halifax		38·3	33	7 24?	0	13 14	− 5	9 1	PP	16·4
Saskatoon		39·7	345	—	—	—	—	e 9 42	PPP	17·4
Victoria		43·2	330	8 5	+ 1	14 33	+ 1	17 57	SS	23·4
Sitka		54·4	333	—	—	i 17 6	− 3	—	—	e 29·5
Ivigtut		56·1	24	—	—	e 17 18	−14	—	—	e 22·8
College		63·3	337	e 10 48	+15	e 18 53	−11	—	—	e 26·1
Scoresby Sund		69·7	20	—	—	e 20 17	− 5	e 23 23	?	e 28·3
Aberdeen		77·6	33	—	—	i 21 37	−14	—	—	37·5
San Fernando	E.	77·7	55	—	—	e 22 6	+14	—	—	36·9
Kew		79·5	40	e 12 30	P_cP	—	—	—	—	e 34·4
Granada		79·6	55	12 8	− 2	21 59	−13	12 17	P_cP	36·2
Almeria		80·6	55	e 12 14	− 2	22 29	+ 6	15 3	PP	36·9
Uccle		82·5	40	e 12 27	+ 1	22 33	− 9	28 0	SS	e 39·4
De Bilt		82·7	39	i 12 29k	+ 2	e 22 34	−10	c 27 54	SS	e 38·4
Clermont-Ferrand		82·9	45	12 26	− 2	—	—	—	—	—
Basle		85·4	42	e 12 26	−14	—	—	—	—	—
Copenhagen		85·8	33	e 12 42	0	23 5	[− 1]	16 2	PP	41·4
Stuttgart		86·1	41	e 12 41	− 3	e 23 6	[− 2]	—	—	e 41·2
Potsdam	E.	87·3	38	—	—	i 23 21	{− 1}	—	—	e 42·4
Florence	E.	89·0	45	—	—	e 24 6	+21	—	—	—
Triest		90·0	43	—	—	e 23 41	{− 1}	—	—	—
Suva		94·7	252	—	—	24 24?	{+ 8}	—	—	—
Helwan		109·4	51	—	—	e 25 6	[− 4]	e 28 48	PS	—
Ksara		110·5	46	19 24?	PP	—	—	e 29 12	PS	—

Additional readings :—
Port au Prince SS = 8m.30s.
Bogota iP = 4m.40s., eP_cP? = 12m.15s., eS_cS? = 16m.11s.
St. Louis iPZ = 15m.23s., iZ = 5m.31s., ipPZ = 5m.37s., iN = 9m.42s., isSN = 10m.9s.
Tucson i = 5m.39s.
Philadelphia i = 6m.24s., ePP = 6m.52s., e = 9m.43s., i = 11m.29s.
Palomar iP$_c$PZ = 9m.14s., ipP$_c$PZ = 9m.33s., iZ = 11m.13s., eZ = 11m.42s., eS$_c$PZ = 12m.52s., iP$_c$SZ = 13m.27s.
La Jolla esS$_c$SE = 17m.22s.
Riverside iP$_c$PZ = 9m.15s., ipP$_c$PZ = 9m.34s., iS$_c$PZ = 12m.53s., eP$_c$SZ = 13m.28s., esS$_c$SE = 17m.25s.
Mount Wilson iZ = 6m.50s., iP$_c$PZ = 9m.14s., ipP$_c$PZ = 9m.35s.
Pasadena iP$_c$P = 9m.16s., ipP$_c$PZ = 9m.36s., esP$_c$PZ = 9m.50s., iS$_c$PZ = 12m.55s., iP$_c$SZ = 13m.30s., iS$_c$SEN = 16m.53s., isS$_c$SEN = 17m.24s.?.
Logan e = 6m.52s., eS = 11m.35s.
Harvard ipP = 6m.56s., esS = 12m.25s., eSSS = 14m.45s.
Weston iP = 6m.39s., eS = 11m.47s.
Tinemaha iZ = 6m.48s. and 7m.3s., iS$_c$PZ = 13m.3s., iP$_c$SZ = 13m.38s., esS$_c$SE = 17m.42s.
Ottawa i = 7m.2s., e = 14m.36s.
Seven Falls SS = 15m.20s.
Granada SS = 27m.20s.
Almeria S = 22m.13s., SSS = 30m.59s.
Uccle SSSE = 31m.17s.
Copenhagen 16m.20s.
Long waves were also recorded at Christchurch, Wellington, Bermuda, Paris, Toledo, and Tortosa.

August 31d. Readings also at 0h. (near Mizusawa), 6h. (Auckland, New Plymouth, Tuai, Wellington, Suva, Mount Wilson, Pasadena, Tucson, Palomar, Riverside, and Tinemaha), 7h. (Mount Wilson (2), Tucson, Palomar (2), Riverside (2), and Tinemaha (2)), 11h. (Kew and near La Paz), 17h. (Tananarive), 18h. (De Bilt and Stuttgart), 21h. (near Mizusawa).

Sept. 1d. Readings at 0h. (Tinemaha, Riverside, Palomar, Tucson, Mount Wilson, Pasadena and Suva), 6h. (near Tananarive), 10h. (New Delhi, near Tchimkent, Tashkent, and Stalinabad), 12h. (Pasadena, Mount Wilson, Tucson, Palomar, Tinemaha, and St. Louis), 15h. (Tashkent and near Mizusawa), 16h. (Mount Wilson, Palomar, Tucson, and St. Louis).

Sept. 2d. 13h. 40m. 32s. Epicentre 34°·2N. 136°·8E. Depth of focus 0·050.
(as on 1940 December 30d.).

Intensity II-III at Tukubasan. Epicentre 34°·7N. 136°·9E. Radius of macroseismic area 300 km. Depth 340 km.
Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1943, Tokyo 1950, p. 38, 1 macroseismic chart p. 38.

$A = -\cdot6042$, $B = +\cdot5674$, $C = +\cdot5595$; $\delta = +4$; $h = 0$;
$D = +\cdot685$, $E = +\cdot729$; $G = -\cdot408$, $H = +\cdot383$, $K = -\cdot829$.

		△	Az.	P.	O−C.	S.	
		°	°	m. s.	s.	m. s.	s.
Kameyama		0·7	337	0 47	+ 2	1 20	0
Nagoya		1·0	8	0 47	+ 1	1 19	− 3
Hikone		1·1	337	0 48	+ 2	1 22	− 1
Osaka		1·1	292	0 53	+ 7	—	—
Wakayama		1·4	271	0 52	+ 4	1 32	+ 7
Sumoto		1·6	275	0 51 a	+ 2	1 30	+ 3
Misima		2·0	63	0 50	− 2	1 28	− 4
Toyooka		2·1	309	0 54	+ 2	—	—
Toyama		2·5	7	0 56	+ 1	1 36	− 3
Nagano		2·7	25	0 55	− 2	1 37	− 5
Maebasi		2·9	40	0 57	− 2	1 37	− 8
Tukubasan		3·4	52	0 59	− 4	1 42	−11
Utunomiya		3·4	47	1 1	− 2	1 43	−10
Kakioka		3·5	52	1 1	− 3	1 42	−13
Mito		3·7	53	1 4	− 2	1 49	− 9
Hukusima		4·6	39	1 13	− 3	2 4	−11
Mizusawa		6·0	33	e 1 58	+27	2 32	−11
Tinemaha	z.	80·5	52	i 11 37	+ 2	—	—
Mount Wilson	z.	82·3	54	e 11 46	+ 2	—	—
Palomar	z.	83·6	54	i 11 53	+ 2	—	—

Sept. 2d. 23h. Mexican shock. Pasadena suggests deep focus.

Guadalajara eN = 11m.24s.
Puebla PE = 13m.40s.
Tacubaya PN = 13m.40s.
Oaxaca PN = 13m.45s.
Vera Cruz PN = 14m.4s.
Tucson iP = 16m.59s., i = 17m.18s., e = 21m.33s., eL = 22m.5s.
Palomar iPZ = 17m.45s., iZ = 18m.0s.
Riverside iP = 17m.52s., iZ = 18m.8s.
Cape Girardeau ePN = 17m.55s., epPN = 18m.6s., ePPN = 18m.35s.
Mount Wilson ePNZ = 17m.59s., iZ = 18m.14s.
Pasadena iP = 17m.59s., iZ = 18m.13s.
St. Louis ePZ = 18m.1s., epPZ = 18m.19s., eSN = 22m.12s., eN = 22m.42s.
Santa Barbara ePZ = 18m.10s.
Tinemaha eP = 18m.19s., iZ = 18m.39s.

Sept. 2d. Readings also at 0h. (near Harvard), 1h. (near Lick, Berkeley, and Branner), 6h. (Cheb and Almeria), 9h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, Tucson, St. Louis, Bogota, and La Paz), 13h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, Tucson, St. Louis, La Paz, and near Toledo), 14h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Tucson, Palomar, and near Mizusawa), 15h. (near Reykjavik), 20h. (near Andijan and near Mizusawa), 23h. (Almeria).

Sept. 3d. 2h. 25m. 42s. Epicentre 44°·2N. 21°·8E.

Intensity VI at Zugubica, Loznica, Vukovac, Osanica, Milatovac, Ribure, and Bliznak. Epicentre as adopted, radius of macroseismic area 45 km.
J. Mihailovic.
Annuaire microséismique et macroséismique 1943, Belgrade 1950, p. 42.

$A = +\cdot6679$, $B = +\cdot2671$, $C = +\cdot6947$; $\delta = +4$; $h = -3$;
$D = +\cdot371$, $E = -\cdot928$; $G = +\cdot645$, $H = +\cdot258$, $K = +\cdot719$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Belgrade		1·1	302	i 0 22	0	i 0 38	− 1	i 0 35	S_g	—
Kalossa		3·0	319	e 0 50	0	1 37	S_g	0 54	P*	1·7
Bucharest		3·1	72	e 1 0	P_g	1 36	S*	1 46	S_g	2·7
Ogyalla		4·4	326	0 57	−13	i 1 31	P_g	i 1 34	?	2·2
Triest		5·9	287	e 1 33	+ 2	i 2 33	− 7	—	—	—
Florence	E.	7·6	270	(e 2 2)	+ 7	(e 3 40)	S*	(e 2 22)	P_g	—
Stuttgart	z.	9·8	302	e 2 22	− 2	e 3 16	−61	e 2 25	P	—

Florence also gives eS?E =(3m.7s.), readings have been reduced by 2 mins.

Sept. 3d. Readings also at 3h. (Tucson, Palomar, San Juan, La Paz, and Huancayo), 4h. (Pasadena, St. Louis, and near Bogota), 5h. (near La Paz), 6h. (Sofia), 9h. (near Stalinabad), 15h. (Palomar, Tinemaha, Tucson, near Tashkent and Andijan), 19h. (Pasadena, Tucson, Tinemaha, Bucharest, and near Sofia), 23h. (near Branner, Lick, and Fresno).

Sept. 4d. Readings at 6h. (near San Juan), 7h. (St. Louis, Ukiah, Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, Tucson, and near San Juan), 12h. (Tinemaha, Palomar, Tucson, St. Louis, De Bilt, Bucharest, and near Sofia), 19h. (near La Paz), 21h. (Fort de France and near San Juan).

Sept. 5d. 8h. 34m. 33s. Epicentre 1°·2N. 121°·8E. (as on 1937 July 10d.).

Epicentre 0° 125°E. (U.S.C.G.S.); 4°N. 123°E. (Pasadena).

$A = -\cdot5268$, $B = +\cdot8497$, $C = +\cdot0208$; $\delta = -6$; $h = +7$;
$D = +\cdot850$, $E = +\cdot527$; $G = -\cdot011$, $H = +\cdot018$, $K = -1\cdot000$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyakozima		23·7	9	5 13	− 1	9 32	+ 5	—	—	—
Kumamoto		32·0	15	e 6 35	+ 5	11 45	+ 3	—	—	—
Perth		33·5	189	6 42	− 1	12 32	+27	7 57	PP	17·7
Koti		34·0	18	e 6 44	− 4	12 9	− 4	—	—	—
Husan		34·4	11	6 46	− 5	12 23	+ 4	—	—	—
Kobe		35·6	19	3 32	?	9 16	?	—	—	—
Kameyama		36·2	22	e 5 9	?	—	—	—	—	—
Mera		37·5	26	2 41	?	8 55	?	—	—	—
Yokohama		37·9	25	e 4 27	?	8 55	?	—	—	—
Wazima		38·6	20	e 7 24	− 2	12 17	−66	—	—	—
Calcutta		38·8	306	e 7 44	+16	i 13 32	+ 6	9 9	PP	—
Brisbane	N.	41·4	136	i 7 45	− 5	i 13 57	− 8	e 9 21	PP	i 19·3
Mizusawa	N.	41·7	23	e 7 51	− 1	14 1	− 9	—	—	—
Colombo		42·2	279	8 27?	+31	14 27?	+10	—	—	21·4
Vladivostok		42·7	11	e 8 0	0	—	—	i 9 17	PP	—
Mori		44·1	21	e 8 15	+ 3	—	—	—	—	—
Riverview		44·5	145	i 8 15 a	0	i 14 52	+ 1	i 10 2	PP	e 20·5
Sydney		44·5	145	e 8 9	− 6	e 14 30	−21	e 10 33	PP	e 23·4
Kodaikanal		45·0	286	i 8 27	+ 8	i 15 7	+ 9	18 27?	SS	22·3
Hyderabad	E.	45·6	294	8 39	+15	15 13	+ 7	—	—	—
New Delhi	N.	50·5	308	e 9 12	+10	i 16 18	+ 2	11 19	PP	27·0
Dehra Dun		50·6	311	e 9 21	+19	—	—	i 18 37	S_cS	e 29·9
Bombay		51·1	294	e 9 8	+ 2	i 16 25	+ 1	10 59	PP	i 22·5
Irkutsk		53·0	347	e 9 25	+ 4	—	—	i 12 0	PPP	—
Suva		58·9	112	e 9 47	−16	i 18 7	PPS	i 12 47	PPP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stalinabad		61·0	315	e 10 9	− 9	e 18 41	+ 6	—	—	—
Tashkent		61·8	318	10 23	0	i 18 50	+ 4	i 10 38	?	—
Auckland		62·0	134	—	—	18 55	+ 7	i 20 32	S_cS	25·5
Tchimkent		62·7	320	i 10 26	− 3	i 18 51	− 6	—	—	—
Arapuni		63·1	135	10 51?	+19	—	—	—	—	28·5
Christchurch		63·6	141	10 38k	+ 3	19 19	+11	23 20	SS	31·7
Wellington		63·9	138	10 14	?	19 35	+23	10 38	P	27·5
Apia	E.	67·5	106	11 15?	+15	—	—	e 20 14	PS	—
Sverdlovsk		73·6	330	e 11 42	+ 5	i 21 2	− 5	i 11 53	?	—
Tananarive		75·5	251	e 11 49	+ 1	e 21 29	+ 1	22 4	PS	36·1
Honolulu		80·6	69	e 12 17	+ 1	e 22 17	− 6	e 27 11	SS	e 39·9
Moscow		85·7	326	(12 40)	− 2	(23 0)	[− 6]	—	—	—
Ksara		85·9	303	e 12 46	+ 3	23 21	+ 5	—	—	—
College		89·1	26	e 12 35	−23	e 23 21	[− 6]	e 18 55	PPP	e 36·8
Helwan		89·8	299	13 3	+ 1	23 51	− 2	23 30	SKS	—
Bucharest		93·2	314	e 16 27?	?	i 23 51	[0]	—	—	—
Sofia		95·4	313	e 13 51?	+23	e 24 2	[− 1]	e 17 21	PP	e 31·5
Sitka		95·9	33	e 13 42	+12	i 24 46	0	i 24 5	SKS	e 38·9
Upsala		96·1	331	e 13 35	+ 4	e 24 0	[− 7]	e 26 32	PS	e 44·5
Belgrade		97·2	315	e 14 39	+63	i 24 8	[− 5]	e 26 26	PS	e 65·8
Copenhagen		99·8	327	i 18 10	PP	25 9	−10	24 24	SKS	—
Prague		100·2	322	16 27?	?	e 25 27	+ 5	e 24 27?	SKS	41·5
Potsdam		100·4	324	e 18 16	PP	e 25 21?	− 3	e 24 27?	SKS	e 45·5
Cheb		101·4	322	e 18 10	PP	e 24 36	[+ 2]	e 32 43	SSP	e 57·4
Bergen		101·7	333	—	—	e 24 32	[− 3]	e 27 2	PS	e 34·6
Triest		101·7	317	—	—	i 25 34	− 1	i 32 51	SSP	—
Stuttgart		103·8	321	e 14 7	+ 2	e 25 47	− 5	e 24 40	SKS	e 51·0
Florence		103·9	316	i 18 38	PP	i 24 47	[+ 1]	i 33 19	SSP	e 49·9
Scoresby Sund		104·6	349	18 31	PP	25 58	− 1	i 27 32	PS	—
Milan	E.	104·8	318	i 24 50	SKS	(i 24 50)	[+ 1]	—	—	—
Strasbourg		104·8	321	e 18 29	PP	e 27 41	PS	e 20 53	PPP	43·5
De Bilt		105·1	326	e 14 17	+ 6	i 26 12	+ 9	i 24 47	SKS	e 48·5
Victoria		105·3	39	19 13	?	24 51	[− 1]	27 45	PS	e 47·5
Uccle		106·0	325	18 57	PP	i 26 13	+ 3	i 24 55	SKS	e 50·5
Aberdeen		106·6	332	i 24 26	SKS	(i 24 26)	[−31]	i 28 50	PPS	e 52·4
Paris		107·9	322	e 14 33	P	e 28 10	PS	i 19 11	PP	44·5
Kew		108·4	326	i 14 38	P	i 25 7	[+ 2]	e 25 58	SKKS	50·5
Ukiah		108·4	48	e 18 57	PP	e 25 3	[− 2]	26 1	SKKS	e 44·6
Stonyhurst		108·5	329	—	—	e 25 4	[− 2]	28 14	PS	e 54·5
Clermont-Ferrand		108·7	320	i 19 13a	PP	i 26 5	{+ 9}	i 29 28	PPS	e 65·5
Berkeley		109·5	49	i 19 12	PP	i 25 9	[− 1]	i 28 21	PS	e 49·7
Santa Clara		109·9	49	e 19 32	PP	e 28 24	PS	e 34 41	SSP	—
Barcelona		111·0	316	e 19 31	PP	—	—	(e 38 35)	SSS	e 38·6
Tortosa	E.	112·4	315	i 20 41	?	i 29 53	PPS	—	—	e 51·5
Tinemaha	Z.	112·7	49	e 18 41	[+ 2]	—	—	e 29 36	PKKP	—
Pasadena		113·8	52	e 15 0	P	e 25 29	[+ 2]	e 18 41	PKP	e 45·0
Mount Wilson	Z.	113·9	52	i 18 41	[0]	—	—	e 29 32	PKKP	—
Bozeman		114·1	37	e 19 42	PP	e 26 35	{+ 1}	e 28 59	PS	e 41·0
Riverside	Z.	114·5	52	e 18 42	[0]	—	—	e 29 23	PKKP	—
Palomar	Z.	115·1	52	e 18 41	[− 2]	—	—	i 29 26	PKKP	—
Logan		115·5	41	e 19 52	PP	e 25 34	[0]	e 29 18	PS	—
Salt Lake City		115·9	43	e 19 35	PP	e 25 35	[− 1]	e 29 30	PS	e 47·2
Toledo		115·9	316	e 19 6	[+21]	i 29 52	PS	29 22	PKKP	—
Almeria		116·0	313	19 57	PP	26 57	{+10}	22 54	PPP	62·0
Granada		116·7	314	e 18 12k	[−34]	25 34	[− 4]	29 48	PS	55·5
Ivigtut		117·3	355	e 17 42	[−65]	e 25 34	[− 6]	e 29 34	PS	—
San Fernando	E.	118·9	314	e 20 33	PP	e 25 55	[+ 9]	—	—	62·0
Rapid City		119·7	35	e 18 21?	[−31]	—	—	—	—	e 53·8
Lisbon		120·0	317	20 7	PP	25 49	[− 1]	27 15	SKKS	56·7
Tucson		120·2	51	e 18 53	[0]	e 25 53	[+ 2]	e 29 42	PS	e 47·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Chicago		129·6	28	e 22 11	PKS	e 28 6	{−11}	e 43 35	SSS		—
Florissant		130·4	33	e 19 14	[+ 2]	e 28 35	{+13}	i 21 37	PP		—
St. Louis		130·6	33	e 19 13	[0]	e 26 38	[+14]	e 28 25	SKKS		—
Seven Falls		130·6	11	22 40	PKS	28 33?	{+ 9}	38 39?	SS		54·5
Ottawa		131·1	16	19 14	[0]	28 27?	{ 0}	22 36	SKP	e	63·5
Cape Girardeau	N.	131·9	35	e 22 42	SKP	—	—	e 22 53	SKP		—
Pittsburgh	N.W.	134·0	22	e 19 14	[− 6]	i 28 40	{− 5}	i 22 50	SKP		—
Harvard		134·9	13	e 19 23	[+ 2]	e 26 49	[+18]	e 40 15	SSP	e	70·5
Fordham		135·8	16	e 19 25	[+ 2]	i 22 53	SKP	e 34 15	PPS		—
Philadelphia		136·2	18	e 21 57	PP	e 28 50	{− 8}	i 22 59	SKP	e	54·2
Bermuda		146·0	10	e 19 57	[+16]	e 29 53	{− 3}	e 41 36	SS		—
La Plata		146·5	181	19 39?	[− 3]	29 51?	{− 8}	22 57?	SKP		59·5
Rio de Janeiro	N.	154·0	214	e 20 27	[+34]	e 30 49	{+ 9}	(e 44 27)	SSP	e	44·4
San Juan		159·0	21	e 20 2	[+ 2]	—	—	e 44 15	SS	e	72·1
Huancayo		159·9	123	19 44	[−17]	e 44 34	SS	e 24 35	PP	e	66·2
La Paz		161·9	148	i 20 7	[+ 4]	27 16	[+10]	31 31	SKKS		81·5
Bogota		163·1	70	e 20 7	[+ 3]	—	—	e 21 29	?		—
Fort de France		163·8	11	e 20 5	[0]	—	—	—	—		—

Additional readings :—
Perth PPP =8m.27s., SS =15m.2s.
Calcutta iSSN =16m.10s.
Brisbane eN =12m.43s., iQN =16m.54s.
Riverview iP_cPEZ =9m.55s., PPP =10m.40s., iPPSEN =15m.10s., iE =15m.21s. and 15m.54s., iSSN =18m.6s., iE =18m.16s., iN =18m.26s.
Sydney eSS =18m.24s.
New Delhi i =9m.19s., PPP =12m.9s., PS =16m.50s., S_cS =18m.39s., SS =19m.59s., SSS =21m.54s.
Bombay E =9m.21s., eN =9m.47s., PP?E =10m.53s., iE =11m.23s. and 17m.4s., iN =17m.8s., S_cSN =18m.54s., S_cSE =18m.59s., SSEN =20m.12s., iE =20m.52s., SSSN =21m.30s.
Irkutsk SSS =21m.17s.
Suva eP_cP =10m.11s., eS_cS =20m.17s., ? =21m.57s.
Christchurch SSS =26m.19s., Q =27m.6s.
Moscow readings increased by 30 seconds.
Helwan pPZ =13m.30s., PPEZ =16m.48s., sPPZ =17m.20s., sSN =24m.33s., sPSN =25m.37s., SSN =29m.57s.
Sitka ePP =16m.51s., i =26m.5s., iSS =30m.42s.
Upsala PPE =17m.32s., eSKSE =23m.56s., eN =29m.27s.?, eSSE =31m.13s., ePKP,PKP?N =38m.27s.?.
Belgrade e =17m.55s., 36m.54s., and 56m.5s.
Copenhagen 26m.46s. and 32m.15s.?.
Prague e =20m.20s., 32m.9s.?, 36m.3s.?, and 40m.27s.?.
Bergen eE =28m.2s., eEN =32m.36s.
Stuttgart ePPZ =18m.7s. and 18m.41s., eZ =18m.59s., ePPPZ =20m.52s., eSP =27m.27s., eSS =33m.14s., eSSS =37m.22s., eSSSS =41m.7s.
Florence iSKSN =29m.1s., ePSN =31m.33s., ePPSE =32m.13s., eSSE =37m.1s., eSSSE =41m.19s.
Scoresby Sund 24m.42s., 28m.31s., 32m.2s., SS =33m.45s.?.
Strasbourg eSS =33m.27s., eSSS =37m.17s.
De Bilt iPP =18m.47s., iPS =27m.42s., iPPS =28m.42s., eSS =33m.27s.?, eSSS =37m.27s.?.
Victoria SS =33m.21s.?, SSS =37m.27s.?, eN =43m.33s.?.
Uccle iPPSE =29m.0s., iSSEN =33m.49s., iSSSN =37m.50s., iSSSE =37m.54s.
Aberdeen iSE =34m.1s., eE =37m.51s.
Kew iPP =19m.13s., eS?EN =26m.38s., ePS =27m.56s.?, ePPSZ =28m.50s., iSS =34m.22s.
Ukiah PS =28m.9s., e =34m.5s.
Stonyhurst SKKS =29m.11s., eSS =37m.47s., eSSS =41m.47s.
Clermont-Ferrand eSKP =21m.36s.
Berkeley iPNZ =19m.15s., iN =28m.35s., eE =34m.39s., eN =44m.59s.
Tortosa eE =32m.44s. and 34m.11s.
Pasadena ePPZ =19m.43s., ePS =28m.56s., ePKKPZ =29m.25s., iSSN =35m.21s.
Bozeman eSS =35m.7s.
Logan e =22m.58s., 26m.51s., and 33m.28s.
Salt Lake City eS =26m.50s.
Almeria pPKP =20m.15s., sPKP =20m.26s., pPP =23m.2s., PKS =23m.26s., PS =33m.40s., PPS = 35m.9s.
Granada iPP =19m.56s., iPPP =22m.51s., PS =30m.48s., SS =36m.15s. SSS =40m.54s.
Ivigtut ePP? =19m.39s., e =39m.39s.
Rapid City e =24m.9s.?, 28m.19s.?, and 35m.12s.?.

Continued on next page.

Lisbon PPE =20m.35s., PPZ =20m.40s., SKSE =25m.55s., PS?E =29m.22s., PS?N = 29m.30s., PS?Z =30m.3s., SS?N =36m.25s.?, SS?E =36m.54s.
Tucson ePP? =19m.53s., i =20m.10s. and 20m.29s., e =24m.2s. and 29m.3s., eSS = 35m.40s., e =41m.42s. and 45m.32s.
Seven Falls PPS =34m.7s., SS =39m.15s., SSS =43m.29s.
Chicago e =33m.54s., eSS =38m.1s.
Florissant i =22m.26s., iSKP? =22m.31s., iSKP =22m.41s.
St. Louis eZ =21m.20s., ePPE =21m.39s., eZ =22m.34s., eSKPZ =22m.47s., $eSKP_3Z$ = 23m.3s., eS?E =30m.51s., eE =31m.27s.
Ottawa PPS =34m.27s., SSS =43m.27s.?.
Cape Girardeau eN =24m.12s. and 25m.2s.
Harvard iPP =22m.7s., iPKS =22m.51s., e =30m.48s., eSKSP =32m.7s., eS_cS,PKP = 34m.50s., e =37m.55s., eSSS =45m.2s., e =45m.44s.
Fordham eSS? =40m.39s.?.
Philadelphia e =34m.18s., eSS =39m.43s., e =45m.5s., and 50m.4s.
Bermuda e =25m.10s., 37m.31s., and 47m.46s.
La Plata PKPZ =19m.44s., PPPN ($\triangle > 180°$) =32m.57s.?, SS =41m.27s.?, SSS = 47m.27s.?.
San Juan e =39m.42s. and 52m.53s.
Huancayo e =29m.54s. and 42m.54s., eSSS? =51m.57s.
La Paz PP =24m.17s., PPS =38m.20s.

Sept. 5d. Readings also at 2h. (near Bogota (2)), 4h. (Tashkent and Tchimkent), 10h. (near Stalinabad), 16h. (Stuttgart and Scoresby Sund).

Sept. 6d. 3h. 41m. 15s. Epicentre 55°·1S. 158°·5E.

Epicentre { 53°·2S. 159°·4E. (U.S.C.G.S.).
53°·S. 159°E. Magnitude 7·75 (Pasadena).

A = −·5348, B = +·2107, C = −·8183 ; δ = +2 ; h = −7 ;
D = +·367, E = +·930 ; G = +·761, H = −·300, K = −·575.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Monowai		11·0	36	2 45	+ 3	4 37	−10	(4 57?)	SS	5·0
Christchurch		14·8	44	3 26½	− 6	—	—	—	—	—
Kaimata		15·2	39	3 34	− 4	i 6 31	+ 3	i 6 37	SS	8·6
Wellington		17·5	45	4 5	− 2	7 15	− 6	4 28	PPP	8·3
Bunnythorp		18·7	45	4 24	+ 2	7 38?	−10	—	—	—
New Plymouth		19·1	42	4 25	− 2	7 46	−11	4 36	PP	10·4
Arapuni		20·6	42	4 27	−16	8 3	−26	—	—	—
Tuai		20·6	45	4 42	− 1	8 22	− 7	i 5 19	PP	10·7
Auckland		21·4	38	4 52	+ 1	—	—	—	—	—
Sydney		21·8	346	i 4 48	− 8	i 8 48	− 4	—	—	—
Riverview		21·9	346	i 4 56a	− 1	i 8 56	+ 2	(i 9 39?)	SSS	i 9·7
Brisbane		27·9	350	i 5 55	+ 1	—	—	—	—	—
Perth		37·8	290	7 35	+15	13 10	− 1	8 50	PP	—
Suva		39·9	31	i 7 38	+ 1	—	—	—	—	—
Apia		47·2	43	i 8 39	+ 3	i 15 33	+ 4	i 10 26	PP	—
Miyakozima		84·5	330	e 12 45	+ 9	—	—	—	—	—
Honolulu		84·7	41	e 12 30	− 7	e 23 0	− 4	e 12 48	PcP	e 35·3
La Plata	E.	85·1	151	12 53	PcP	23 27?	+19	23 3?	SKS	34·8
	N.	85·1	151	12 53	PcP	23 15	+ 7	16 15?	PP	33·1
	Z.	85·1	151	12 54	PcP	23 9	+ 1	—	—	40·5
Tananarive		86·0	243	13 2	PcP	23 34	+17	16 13	PP	40·0
Johannesburg		88·6	224	e 13 15?	PcP	e 23 45?	+ 3	e 16 45?	PP	i 42·2
Colombo		89·1	283	13 12	PcP	23 42	− 4	—	—	36·3
Hatidyozima		89·3	345	13 6	+ 7	23 33	[+ 4]	—	—	—
Matuyama		91·3	339	e 13 4	− 5	23 35	[− 5]	—	—	—
Misima		91·4	345	13 18	+ 9	23 47	[+ 6]	—	—	—
Hukuoka		91·6	337	13 19	+ 9	23 52	{− 1}	—	—	42·4
Yokohama		91·6	345	i 13 19	+ 9	e 24 20	+11	—	—	e 44·1
Nagoya		91·8	344	i 13 22	+11	23 55	{ 0}	—	—	—
Tokyo Cen. Met. Ob.		91·8	345	13 24	+13	25 2	?	25 27	PS	42·7

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ituhara		92·4	337	12 25	−49	22 58	[−49]	—	—	—
Hamada		92·5	339	e 13 23	+ 9	23 50	[+ 3]	—	—	—
Montezuma		92·7	137	e 16 51	PP	—	—	e 25 53	PS	e 43·0
Nagano		93·0	344	12 41	−36	—	—	—	—	—
Sendai		94·2	347	13 25	+ 3	24 3	[+ 6]	—	—	—
Aikawa		94·4	345	13 32	+ 9	24 6	[+ 8]	—	—	—
Mizusawa		95·0	347	e 13 35	+ 9	24 6	[+ 5]	24 23	SKKS	—
Calcutta	N.	97·6	299	e 13 51	+13	24 26	[+11]	25 18	S_cS	54·7
Mori		98·0	347	e 14 1	+22	e 24 37	{− 3}	e 17 30	PP	—
La Paz		98·5	136	14 2	+20	24 39	{− 5}	25 29	S	46·0
Hyderabad	E.	98·6	288	—	—	24 45	{+ 1}	26 57	PS	48·8
Sapporo		98·9	348	13 51	+ 8	20 46	?	—	—	e 34·9
Huancayo		99·3	127	e 14 6	+21	e 25 42	+28	i 24 28	SKS	i 42·0
Rio de Janeiro	E.	100·1	159	i 14 18	+29	i 24 45	{−10}	i 18 49	?	i 42·5
	N.	100·1	159	i 14 5	+16	i 24 53	{− 2}	i 18 47	?	—
Bombay	N.	102·9	285	e 18 3	PP	i 24 51	[+11]	i 25 23	SKKS	i 43·0
New Delhi	N.	108·2	294	e 14 41	P	25 14	[+ 9]	26 7	SKKS	50·8
Dehra Dun	N.	109·2	296	e 18 25	[− 6]	e 25 17	[+ 8]	e 28 24	PS	e 45·0
Guadalajara	N.	111·3	84	—	—	—	—	e 28 56	PS	—
Tacubaya		112·7	89	e 19 41	PP	—	—	e 29 21	PS	—
Santa Barbara		113·1	63	e 18 50	[+11]	e 29 53	PPS	e 19 39	PP	—
La Jolla		113·2	66	e 18 51	[+12]	e 29 15	PS	i 19 36	PP	—
Pasadena		113·7	64	e 14 59	P	e 25 33	[+ 7]	e 18 51	PKP	i 50·9
Mount Wilson	Z.	113·8	64	e 18 51	[+10]	—	—	i 19 40	PP	—
Palomar	Z.	113·8	66	e 14 51	P	—	—	i 18 49	PKP	—
Riverside		114·0	64	e 18 51	[+10]	i 29 26	PS	i 19 43	PP	—
Branner		114·2	59	e 19 46	PP	e 35 40	SSP	e 29 20	PKKP	e 51·4
Santa Clara		114·3	59	i 19 46	PP	i 35 59	SSP	i 29 25	PKKP	e 46·9
Vera Cruz	N.	114·3	91	e 20 16	PP	—	—	—	—	—
Bogota		114·4	119	i 18 56	[+14]	e 29 33	PS	i 19 56	PP	59·7
Lick	N.	114·4	59	e 19 49	PP	—	—	e 29 33	PS	—
Berkeley		114·5	59	e 15 6	P	—	—	e 18 52	PKP	e 53·1
Fresno	N.	114·9	61	e 19 53	PP	—	—	—	—	e 53·0
Ukiah		115·1	57	e 15 9	P	i 29 37	PS	e 19 10	PKP	e 46·6
Balboa Heights		115·3	112	e 19 53	PP	—	—	e 29 45	PS	e 47·2
Ferndale	E.	115·7	55	e 20 3	PP	e 36 1	SSP	e 28 57	PS	e 50·8
	N.	115·7	55	e 19 53	PP	e 36 5	SSP	e 29 45	PS	e 51·0
Tinemaha		115·9	62	e 18 56	[+11]	e 29 43	PS	i 20 1	PP	—
Chihuahua	Z.	116·0	76	—	—	—	—	e 40 58	SSS	—
Tucson		116·1	70	e 15 12	P	e 27 13	{+25}	e 18 56	PKP	e 48·6
Merida	N.	119·4	95	e 20 6	PP	—	—	—	—	—
Andijan		120·2	299	e 19 3	[+10]	—	—	e 21 47	?	—
Stalinabad		120·4	295	19 22	[+29]	—	—	—	—	—
Salt Lake City		122·0	63	e 19 7	[+10]	i 30 42	PS	e 20 38	PP	e 49·2
Seattle		122·0	51	e 19 57	[+60]	e 30 54	PS	e 37 35	SSP	e 51·2
Tashkent		122·2	297	i 19 10	[+13]	i 25 0	[−57]	e 26 45	?	—
Victoria		122·2	50	19 9?	[+12]	26 27?	[+30]	20 43	PP	54·8
Logan		122·7	62	e 19 11	[+13]	i 25 57	[− 2]	i 20 51	PP	i 50·6
Sitka		124·3	36	e 19 12	[+11]	e 26 14	[+10]	e 20 50	PP	e 48·7
Bozeman		125·9	59	e 19 20	[+16]	e 26 6	[− 3]	e 21 8	PP	e 51·5
College		126·5	25	e 19 15	[+10]	e 38 5	SS	e 21 3	PP	e 49·4
Port au Prince		127·1	113	e 20 57	PP	—	—	—	—	—
Mobile		127·7	88	21 24	PP	—	—	—	—	—
Rapid City		128·8	65	e 17 46?	?	—	—	e 21 18?	PP	e 52·2
Fort de France		129·4	127	e 19 21	[+10]	e 28 15	{− 1}	e 21 25	PP	—
San Juan		130·2	119	e 19 18	[+ 6]	i 33 3	PPS	i 44 0	SSS	e 54·3
Cape Girardeau	N.	131·7	82	e 19 24	[+ 9]	e 22 47	SKP	e 21 43	PP	—
St. Louis		132·2	80	e 19 20	[+ 4]	i 28 26	{− 7}	i 21 48	PP	—
Florissant		132·3	80	i 19 5	[−11]	e 22 50	PKS	e 21 52	PP	—
Saskatoon		132·4	56	19 29	[+12]	26 33?	[+ 7]	21 49	PP	55·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Columbia		134·2	91	e 19 38	[+18]	e 23 0	SKP	e 22 0	PP		e 55·1
Helwan		135·0	258	19 33	[+12]	23 2	SKP	22 12	PP		—
Ksara		135·3	265	e 19 39	[+17]	—	—	22 24	PP		—
Chicago		135·8	78	e 19 38	[+15]	e 28 45	{−11}	e 22 8	PP		e 48·1
Sverdlovsk		136·6	308	e 19 35	[+11]	e 27 25	[+51]	i 22 21	PP		—
Pittsburgh		139·3	85	e 19 27	[− 2]	e 29 22	{+ 5}	i 22 31	PP		—
New Kensington		139·5	85	e 19 59	[+29]	e 29 12	{− 6}	e 22 52	PP		e 65·3
Philadelphia		141·5	90	i 19 38	[+ 5]	e 30 0	{+30}	i 22 50	PP		e 57·1
Bermuda		142·3	108	i 19 51	[+16]	e 33 4	PS	e 23 17	PP		i 60·4
Fordham		143·1	89	i 19 42	[+ 6]	i 30 0	{+20}	i 23 0	PP		—
Ottawa		144·8	82	19 46	[+ 7]	26 45?	[− 2]	23 5	PP		e 60·8
Harvard		145·5	90	i 19 48	[+ 8]	i 30 15	{+22}	i 23 15	PP		e 73·7
Shawinigan Falls		147·2	82	e 19 52	[+ 9]	—	—	e 47 39?	SSS		63·8
Moscow		147·4	296	18 20	?	—	—	i 21 50	?		—
Bucharest		148·0	271	e 19 54 s	[+10]	32 25	?	i 23 3	PP		64·8
Focsani		148·2	274	e 20 1	[+16]	—	—	—	—		64·8
Seven Falls		148·6	83	19 59	[+14]	35 33?	PPS	23 3?	PP		61·8
Sofia		148·6	266	e 20 0	[+15]	—	—	e 42 45?	SS		60·8
Bacau		148·8	275	e 20 5	[+19]	—	—	—	—		64·8
Campulung		149·2	271	e 20 5	[+19]	—	—	—	—		—
Halifax		151·3	93	e 19 39	[−10]	e 36 21?	PPS	e 23 21?	PP		51·8
Belgrade		151·5	266	e 19 58	[+ 8]	i 26 56	[− 1]	e 43 17	SS		e 49·2
Kalossa	E.	153·4	270	21 14	?	e 30 45?	{+ 8}	—	—		e 44·8
Ogyalla		154·5	272	e 19 27	?	e 28 41	?	20 17	PKP		e 48·8
Triest		155·8	262	e 20 7	[+11]	—	—	—	—		—
Florence	N.	156·1	256	i 20 13	[+17]	i 27 5	[+ 4]	i 23 55	SKP		—
Almeria		157·6	223	i 20 7	[+ 9]	27 8	[+ 6]	20 20	PKP_2		74·8
Prague		157·8	273	19 33?	[−26]	e 27 58	PPP	e 20 56	PKP_2		63·8
Granada		158·3	221	i 20 13	[+14]	31 30	{+27}	21 0	PKP_2		i 64·6
Milan	E.	158·3	257	e 20 18	[+19]	—	—	—	—		60·6
San Fernando	E.	158·6	215	i 20 15	[+16]	26 34	[−29]	i 24 44	PP		78·8
Upsala		158·7	299	e 20 17	[+17]	e 31 31	{+25}	e 24 23	PP		e 63·8
Cheb		158·9	271	e 20 15	[+15]	e 28 11	PPP	e 20 55	PKP_2		e 93·8
Chur		158·9	261	e 20 10	[+10]	—	—	—	—		—
Barcelona		159·3	239	e 20 8	[+ 8]	—	—	i 45 49	SSP		46·5
Potsdam		159·5	278	e 20 9	[+ 9]	—	—	e 44 39?	SS		e 58·8
Tortosa		159·6	235	i 20 18	[+18]	31 8	{− 2}	20 59	PKP_2		73·8
Zürich		159·8	260	e 20 8	[+ 7]	—	—	e 20 54	PKP_2		—
Jena		159·8	272	i 20 7	[+ 6]	e 31 5	{− 6}	i 20 53	PKP_2		e 57·8
Stuttgart		160·2	265	i 20 8 a	[+ 7]	i 35 48	PSKS	i 20 57	PKP_2		e 77·3
Basle		160·4	260	e 20 0	[− 1]	—	—	e 20 56	PKP_2		—
Neuchatel		160·5	259	e 20 11	[+10]	—	—	—	—		—
Copenhagen		160·8	287	i 20 12	[+10]	44 3?	SS	20 50	PKP_2		—
Toledo		160·8	224	20 12	[+10]	27 19	[+14]	21 7	PKP_2		67·9
Strasbourg		160·9	263	e 20 16	[+14]	34 26	PSKS	i 21 4	PKP_2		64·8
Lisbon		161·6	212	20 15k	[+12]	31 52	{+31}	21 5	PKP_2		78·7
Clermont-Ferrand		161·8	249	i 20 13 a	[+10]	—	—	e 21 2	PKP_2		e 78·9
De Bilt		163·9	273	i 20 15 a	[+10]	—	—	i 45 35	SS		—
Uccle		163·9	266	i 20 15 a	[+10]	i 32 5	{+33}	i 21 14	PKP_2		65·8
Paris		164·0	258	i 20 17	[+12]	e 31 49	{+16}	i 25 1	PP		e 59·8
Scoresby Sund		164·5	1	20 13	[+ 7]	31 35	{− 1}	21 20	PKP_2		—
Ivigtut		164·7	56	e 18 53	?	e 31 46	{+ 9}	e 20 22	PKP		e 65·6
Bergen		164·8	301	e 20 17	[+11]	27 27	[+19]	e 21 4	PKP_2		e 66·4
Kew		166·8	265	i 20 17	[+10]	27 15?	[+ 5]	i 21 40	PKP_2		e 86·8
Stonyhurst		168·8	271	e 20 35	[+26]	i 28 8	[+57]	23 47	PKS		80·1
Aberdeen		169·0	289	e 20 34	[+25]	i 32 54 s	{+56}	i 25 39	PP		**72·5**
Edinburgh		169·6	282	e 21 12	[+63]	27 10	[− 2]	21 33	PKP_2		—
Reykjavik		170·9	1	25 21	PP	26 13	[−59]	46 14	SS		e 71·3

Additional readings :—
Kaimata S = 6m.20s., Q? = 7m.38s.
Bunnythorp e = 5m.21s.?, i = 5m.55s.
New Plymouth i = 5m.40s., Q? = 9m.12s.
Tuai i = 6m.16s. and 9m.20s.
Perth PPP = 9m.20s., SS = 15m.40s., SSS = 15m.55s.

Continued on next page.

Apia eSS?E =19m.28s.
Honolulu e =16m.52s., 19m.13s. and 21m.25s., eSS =28m.34s.
La Plata E PP? =15m.15s.?, 26m.57s.?, SS =28m.33s.?.
La Plata N 15m.39s.?, PPP =17m.57s.?, PPS =24m.15s.?, SS =24m.39s.?.
Tananarive PPP =17m.55s., iSEN =23m.47s., PS =24m.34s., SS =28m.55s., SSS = 32m.43s.
Johannesburg eEN =14m.45s.?, eE =24m.3s.?, iEN =25m.21s.?, eSSN =29m.33s.?.
Tokyo PP =17m.15s., PPP =18m.21s., SSS =33m.28s.
Calcutta iN =17m.41s. and 30m.21s.
La Paz PPN =17m.57s., eN =20m.27s., PPSN =27m.3s., eSSN =31m.45s., eSSSN = 35m.45s.
Hyderabad SE =25m.41s., SSE =32m.21s.
Huancayo iPP =18m.9s., i =23m.48s., iPS? =26m.44s., e =31m.37s., eSS =32m.30s., i =36m.10s.
Bombay iN =18m.51s., PPPN =21m.1s., iN =25m.55s. and 27m.48s., SPPN =28m.12s., SSN =33m.6s.
New Delhi N PP =19m.10s., i =22m.8s., S =26m.48s., PS =28m.26s., SS =34m.23s., SSS =38m.23s.
Dehra Dun eSS =34m.13s.
Pasadena eZ =18m.8s., iPP =19m.42s., iZ =21m.19s., eSZ =27m.53s., iPS =29m.28s., ePKKPZ =29m.47s., iSS =35m.3s., iZ =35m.53s., i =39m.28s., iQEN =46m.15s.?
Mount Wilson iZ =20m.30s., iPKKPZ =29m.46s.
Palomar eZ =18m.2s., iPPZ =19m.41s.
Riverside ePKKPZ =29m.44s.
Branner eSSE =35m.52s.
Bogota e =30m.36s.
Berkeley ePKPE =19m.7s., iPPZ =19m.51s., iPKKPEZ =29m.32s.
Ukiah ePP? =19m.53s., eSS =35m.55s.
Tinemaha ePKKP =29m.22s.
Tucson iPP? =19m.58s., e =28m.9s. and 28m.20s., iPS? =29m.37s., i =31m.2s., eSS =36m.14s., e =39m.48s., eSSS =40m.5s., e =43m.57s.
Salt Lake City i =37m.25s., e =41m.41s.
Victoria PS =30m.40s., i =33m.1s., SS =37m.27s., SSS =41m.39s.?.
Logan iPS =30m.51s., eSS =37m.22s., e =41m.5s., eSSS =41m.31s., i =44m.23s.
Sitka e =23m.56s. and 29m.5s., ePS =30m.51s., i =37m.17s., iSS =37m.40s., i = 41m.49s.
Bozeman e =28m.13s., iPS =31m.16s., eSS =38m.40s., e =45m.53s.
College e =29m.30s. and 46m.2s.
Rapid City ePP =19m.52s.?, ePS =30m.1s.?, eSS =37m.42s.?.
Fort de France iSKP =22m.47s.
San Juan iPP =22m.16s.
Cape Girardeau eN =25m.17s. and 27m.45s.
St. Louis iZ =19m.23s., iPKPZ =19m.26s., iSKPE =22m.50s., iPS?E =31m.52s., iPKP, PKP =35m.46s., iSSN =38m.51s.
Florissant ePKP =19m.29s., iSKP =22m.54s.
Saskatoon SKP =22m.52s., e =32m.7s., PPS =33m.45s., SS =39m.45s.?, SSS =43m.45s.
Columbia ePS =32m.28s., eSS =40m.2s., e =43m.48s.
Helwan eZ =19m.54s., PPPZ =25m.11s., PSKSE =32m.15s., PPSN =34m.27s.
Ksara SS =41m.7s.
Chicago i =23m.5s., e =26m.6s., 31m.58s., 34m.7s. and 38m.33s., eSS =40m.11s., eSSS? =44m.38s.
New Kensington e =27m.4s. and 32m.54s.
Philadelphia i =23m.18s., e =32m.56s., iSS =40m.57s., eSSS =46m.18s., e =50m.42s.
Bermuda i =41m.47s. and 47m.0s.
Fordham iSS =41m.44s.
Ottawa PPN =21m.11s., PPS =33m.25s., SSS =42m.45s., e =46m.57s.?.
Harvard i =20m.25s., 21m.20s., 22m.13s., 25m.24s., 25m.59s., and 27m.41s., ePPPP = 28m.29s., e =29m.19s., eSKSP =33m.23s., ePS =33m.53s., i =34m.23s., e = 35m.21s., 36m.11s., 36m.59s., 37m.29s., 41m.17s., 42m.30s., 44m.33s., 45m.49s., and 48m.1s., i =48m.13s., e =49m.45s., and 51m.17s.
Shawinigan Falls e =33m.9s.? and 41m.39s.
Bucharest eP?E =19m.57s., iP? =20m.1s., iPP?E =24m.38s., SKSP?EN =34m.53s., SS?E =37m.1s., SSSE =42m.45s.
Seven Falls SS =42m.3s.?, SSS =46m.45s.?.
Sofia iPEN =20m.4s.
Halifax e =33m.41s. and 43m.21s.?.
Belgrade i =20m.9s., 21m.27s., 24m.51s., and 26m.23s., e =35m.56s.
Kalossa i =21m.33s.
Ogyalla PPE =22m.43s., PPN =23m.1s., SSE =32m.57s., SSSE =35m.7s.
Florence iPKP$_2$N =21m.9s., iPPN =25m.1s., iPPPE =29m.15s., iSKKSN =31m.19s.
Almeria PKP$_2$ =20m.53s., iPP =24m.29s., PPP =28m.20s., SKKS =31m.25s., SKSP = 34m.54s., PPS =37m.53s., SS =44m.35s., SSP =44m.39s., SSS =50m.40s., Q = 64·8m.
Prague eSKP =24m.20s., ePP =25m.8s., ePPP =29m.3s.?, eSKKS =32m.9s., ePPP (Δ >180°) =32m.15s., eSKSP =35m.9s.?, eSS =44m.33s.?, eSSS =50m.45s.
Granada PP =24m.36s., PPP =28m.15s., SKSP =34m.37s., iSS =44m.41s.
Milan iPPE =25m.12s., iPPPE =29m.34s., PSE =34m.59s.
San Fernando iSSE =44m.41s., iSSSE =51m.15s.

Continued on next page.

Upsala iE =20m.44s., eE =23m.3s., eN =24m.55s., PPP?N =28m.30s., eE =30m.45s., eN =36m.31s., and 39m.48s., SSN =44m.27s., eE =45m.45s.?, eN =49m.48s., SSSE =50m.54s., eN =52m.31s., 54m.50s., and 58m.31s.
Cheb eSKP =24m.31s., eSKKS =32m.33s., eSKSP =34m.54s., eSS =44m.39s.
Potsdam iPP =25m.5s., iN =28m.33s., iE =28m.41s.?, iPPPN =28m.58s.
Zürich ePP? =24m.35s.
Tortosa SKPE? =23m.53s., PPE =24m.25s., PPPE =27m.40s., SKSP? =35m.15s., SSE =43m.52s., SSPN =44m.41s., QN? =62m.57s.
Jena iPZ =20m.11s., iZ =20m.56s., iE =21m.15s., iNZ =24m.31s., i =25m.5s., eZ = 28m.25s., eEN =28m.45s., eN =31m.45s.?, 35m.37s., and 44m.39s.?, eE = 44m.55s., eZ =45m.9s.,?, eN =45m.37s.
Stuttgart iPPZ =24m.50s., iZ =29m.30s., iPPPZ =33m.0s., ePPSZ =38m.21s., eSS = 44m.57s., eSSS =51m.43s., eQ? =70m.45s.?.
Basle e =25m.42s. and 30m.4s.
Copenhagen 24m.44s., 28m.17s., 30m.39s.?, 32m.54s., 35m.17s.
Toledo SS =45m.21s.
Strasbourg iPP =25m.1s., e =29m.45s. and 40m.45s., SS =44m.45s.
Lisbon iZ =20m.20s., Z =21m.59s., E =23m.55s., PPE =24m.44s., iPPN =24m.54s., Z =25m.29s.?, N =25m.37s., E =25m.40s., PPPN =28m.59s., N =40m.20s., and 44m.53s., SSEN =44m.57s.?, E =45m.40s. and 57m.57s., N =59m.15s.?, E =65m.21s.?.
De Bilt iPP =24m.5s.
Uccle eEZ =21m.54s., iZ =24m.25s., iPPZ =25m.1s., iPSKSE =35m.27s., iE =36m.1s., eE =38m.37s., iSS =45m.37s.
Scoresby Sund 20m.46s., PP =24m.50s., 30m.12s., 31m.15s., 35m.34s., 36m.13s., 39m.45s., 41m.20s., 45m.30s., 46m.33s.?, and 51m.27s.?.
Ivigtut ePPP =28m.2s., eSS =45m.22s., eSSS =51m.27s.
Bergen iZ =20m.20s., ePKSE =23m.38s., PP =25m.7s., ePPP =29m.9s., eSKKS = 32m.0s., eZ =38m.7s., ePPS =38m.25s., SS =45m.35s., eZ =49m.40s. and 51m.35s., eEN =52m.2s.
Kew ePPEN =25m.9s., eEN =26m.8s., ePPPN =28m.57s., iSKKSEN =32m.5s., iPSS?N =35m.41s., ePPSN =39m.13s., eSSN =46m.3s., eSSSEN =52m.15s.?, eQEN =58·8m.
Stonyhurst iPKP =22m.17s., e =25m.25s., iPP =27m.9s., P_cP,PKP =29m.37s., 30m.13s., iPPP =31m.27s., PPS =41m.30s., SS =49m.57s., Q =73m.5s.
Aberdeen iPPPN =27m.34s., iEN =36m.21s., iSSSEN =45m.32s., iE =51m.16s., QN =69m.19s.
Edinburgh PKS =23m.45s., PP =25m.25s., PPP =29m.31s., SKKS =33m.37s., PPS = 39m.22s., SS =46m.22s., SSP =47m.32s., SSS =53m.8s.
Reykjavik SSS =53m.5s.
Long waves were also recorded at Pennyslvania.

Sept. 6d. 13h. European shock.

Intensity V at Roanda and Rajkinac; IV in many parts of the Carpathians and Balkans.
Epicentre 44° 11′N., 21° 22′E. Radius of macroseismic area 30 km.
J. Mihailovic.
Annuaire microseisimique et macroseismique, 1943, Beograd, 1950, p. 43.

Bucharest eEZ =35m.12s.?, S_g?E =37m.0s.?, S_gN =37m.15s.
Helwan eZ =33m.4s., eN =38m.30s.
Sofia eP?EN =35m.33s., iSE =36m.31s., iEN =36m.46s.
Belgrade e =38m.19s., i =38m.36s.
Zürich e =38m.4s.
Neuchatel eP =37m.8s.
Focsani eEN =37m.30s.?, LE =38m.14s.
Stuttgart eZ =38m.3s. and 38m.13s., eQ =42m.48s.?.
Prague eS? =40m.38s., eL =41m.30s.
Cheb e =41m.0s.?, eL =42m.52s.
Bergen e =42m.0s.?.
Long waves were also recorded at Potsdam, De Bilt, Kew, and Upsala.

Sept. 6d. 16h. 32m. 44s. Epicentre 39°·7N. 30°·8E.

$A = +·6627$, $B = +·3950$, $C = +·6362$; $\delta = -5$; $h = -2$;
$D = +·512$, $E = -·859$; $G = +·546$, $H = +·326$, $K = -·772$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bucharest	5·9	325	i 1 26	− 5	i 2 41	+ 1	i 2 3	P_g	—
Sofia	6·4	301	e 1 52	P*	e 3 16?	S*	—	—	i 3·9
Focsani	6·6	337	e 1 40?	− 1	2 56	− 2	—	—	—
Ksara	7·1	144	e 1 48	0	e 3 57	S_g	—	—	—
Belgrade	9·2	307	—	—	e 4 6	+ 3	i 5 4	S_g	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan	9·8	178	e 2 32	+ 8	e 5 7	S_g	—	—	—
Prague	15·5	317	e 3 37	− 5	e 6 4?	−31	—	—	e 8·3
Moscow	16·6	12	2 34	?	—	—	—	—	—
Chur	17·0	302	e 4 8	+ 7	—	—	—	—	—
Potsdam	17·6	322	e 5 7	+59	—	—	—	—	e 10·3
Zürich	17·8	303	e 4 8	− 3	—	—	—	—	—
Stuttgart	17·9	308	e 4 13	+ 1	e 7 36	+ 6	—	—	e 9·6
Basle	18·5	304	e 4 21	+ 2	—	—	—	—	—
Copenhagen	20·1	329	4 28	−10	8 20	+ 1	—	—	12·3
Clermont-Ferrand	21·2	295	e 4 46	− 3	—	—	—	—	—
Uccle	21·6	310	e 5 4?	+10	e 9 4?	+15	—	—	e 11·3
Upsala	21·8	342	e 4 29	−27	8 39	−13	—	—	—
Sverdlovsk	25·9	39	e 5 21	−14	e 9 36	−28	—	—	—
Granada	27·0	276	—	—	i 10 46	+24	—	—	i 15·7
Tashkent	29·1	74	e 6 5	+ 1	10 59	+ 3	—	—	—
Andijan	31·5	74	e 6 18	− 8	—	—	—	—	—

Additional readings :—
Bucharest P*Z = 1m.46s., iSE = 2m.49s., iS_gEN = 3m.38s.
Belgrade i = 5m.26s., 6m.13s. and 6m.58s.
Upsala eE = 6m.21s.
Long waves were also recorded at other European stations.

Sept. 6d. Readings also at 7h. (Bogota), 8h. (near Ferndale and near Fort de France), 9h. (Helwan and Ksara), 10h. (Suva), 11h. (Auckland, Apia, Suva, and Riverview), 12h. (Suva), 14h. (Mount Wilson, Pasadena, Tucson, Riverside, and Tinemaha), 17h. (Sofia, Bucharest, and Stuttgart), 18h. (near Mizusawa), 23h. (near Andijan and Tashkent).

Sept. 7d. 19h. 26m. 12s. Epicentre 70°·0N. 138°·0W. Rough.

$A = -·2557$, $B = -·2302$, $C = +·9389$; $\delta = -9$; $h = -12$;
$D = -·669$, $E = +·743$; $G = -·698$, $H = -·628$, $K = -·344$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
College	6·4	221	e 1 36	− 2	e 2 51	− 2	—	—	i 3·2
Sitka	12·6	173	e 2 53	−10	e 5 36	+10	e 3 30	PPP	i 6·2
Victoria	22·7	153	e 8 37	P_cP	—	—	—	—	10·9
Saskatoon	23·0	125	e 8 30	P_cP	—	—	—	—	e 11·1
Bozeman	27·8	137	—	—	e 10 25	−10	—	—	e 14·1
Rapid City	31·3	127	e 5 56?	−28	e 11 16?	−15	—	—	e 15·3
Logan	31·4	140	—	—	e 12 57	SS	—	—	e 16·0
Tinemaha	34·6	151	e 6 54	+ 1	—	—	e 7 22	?	—
Mount Wilson	37·5	152	e 7 18	+ 1	—	—	—	—	—
Pasadena	37·5	152	e 7 18	+ 1	—	—	—	—	e 18·1
Riverside z.	37·8	152	e 7 19	− 1	—	—	—	—	—
Chicago	38·1	111	—	—	e 14 55	?	—	—	e 19·2
Ottawa	38·8	96	—	—	—	—	e 16 22	SSS	e 18·8
Shawinigan Falls	38·8	91	e 7 46	+18	—	—	—	—	19·8
Seven Falls	39·0	89	—	—	—	—	e 16 42?	SSS	e 20·2
St. Louis	40·1	115	e 7 46	+ 7	—	—	—	—	i 20·7
Tucson	40·7	144	i 7 46	+ 2	—	—	e 10 32	?	e 17·2
Philadelphia	43·8	98	—	—	e 17 17	SS	—	—	e 21·8

Sitka also gives eS = 5m.8s.
Long waves were also recorded at other American and European stations.

Sept. 7d. Readings also at 5h. (Sofia, Ksara, Bucharest, Riverside, Mount Wilson, Tucson, and Tinemaha), 9h. (Tinemaha), 11h. (Oaxaca and Triest), 13h. (Arapuni, Wellington, Christchurch, Brisbane, and Riverview), 17h. (Pasadena, Mount Wilson, Tucson, Riverside, and Mizusawa), 18h. (near Balboa Heights), 21h. and 23h. (near Fort de France).

Sept. 8d. 17h. 3m. 17s. Epicentre 19°·5N. 68°·0W. (as on Aug. 15d.).

Doubtful identification.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		2·1	122	i 0 34	− 3	i 0 53	−11	—	—	i 1·7
Port au Prince		4·2	258	e 0 44	−23	i 1 44	−13	i 1 33	P_g	i 2·2
Bogota		15·9	203	i 3 31	−16	e 6 35	− 9	i 3 35	P	—
Harvard		23·1	355	e 5 27	+19	e 9 33	+17	—	—	—
Tucson		40·3	298	e 7 39	− 1	—	—	—	—	—
Palomar	z.	45·5	299	i 8 25	+ 2	—	—	—	—	—
Mount Wilson	z.	46·6	300	i 8 33	+ 1	—	—	—	—	—
Tinemaha	z.	47·0	303	i 8 35	0	—	—	—	—	—

Sept. 8d. 17h. Undetermined shock.
Miyakozima P =19m.21s.
Naha eP =20m.6s.
Nagano iP =21m.30s.
Nagoya P =22m.3s.
Mizusawa ePE =22m.17s., SEN =23m.21s.
Yokohama eP =22m.45s.
Irkutsk eP =24m.38s., eS =29m.45s.
Ksara 30m., e =39m.18s.
Calcutta eN =30m.7s. and 31m.32s.
Helwan PZ =30m.13s., eEN =40m.3s., eN =40m.48s.
Copenhagen P =30m.25s.
Stuttgart ePZ =30m.51s., eS =41m.18s., e =42m.5s., eL =65m.
Uccle ePZ =30m.58s., eSE =41m.24s.?, eL =64m.
Zürich e =30m.58s.
Istanbul e =31m.
Bogota iP =37m.40s., i =37m.44s.
Florence eE =40m.19s.
Clermont-Ferrand e =41m.15s.
De Bilt e =60m., eL =66m.
Long waves were also recorded at Kew.

Sept. 8d. Readings also at 1h. (near Bogota and near La Paz), 7h. (Stuttgart and Triest), 13h. (near Istanbul), 14h. (Brisbane, Riverview, Sydney, Auckland, Arapuni, Christchurch, Wellington, and near Bogota), 15h. (Kew, Tucson, and near Ottawa 16h. (near Istanbul), 18h. (Huancayo, Pasadena, Tucson, Mount Wilson, Palomar, and Riverside), 19h. (Tucson, Seven Falls, and near Mizusawa).

Sept. 9d. 4h. 6m. 9s. Epicentre 36°·3N. 71°·0E., depth of focus 0·015 (as on 1943 April 20d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dehra Dun	N.	8·4	133	i 2 9k	+ 9	i 3 27	− 7	—	—	—
Bombay	N.	17·4	174	i 4 3	+ 7	i 7 16	+13	4 19	PP	—
Calcutta	N.	20·4	127	i 4 34	+ 5	i 8 15	+10	i 5 34	sP	—
Sverdlovsk		21·7	345	i 5 44	+62	i 9 32	+64	—	—	—
Kodaikanal	E.	26·6	166	e 6 36	PP	e 10 33	+42	—	—	13·0
Irkutsk		28·4	44	5 46	+ 2	10 18	− 2	i 6 26	pP	—
Ksara		28·8	275	e 5 52	+ 4	e 10 30	+ 3	e 6 32	pP	—
Moscow		29·8	321	6 56	+59	—	—	7 34	pP	—
Colombo	E.	30·4	163	—	—	—	—	12 8	sS	—
Helwan		33·7	270	e 6 31	0	11 39	− 4	i 7 12	pP	—
Bucharest		34·8	297	6 51?	+11	—	—	—	—	23·8
Sofia		36·9	295	e 7 16	+18	e 12 33	0	—	—	—
Belgrade		38·8	298	e 7 15	+ 1	e 13 2	0	e 7 56	pP	—
Kalossa		39·7	302	e 8 23	PP	—	—	(e 9 21?)	?	e 9·4
Ogyalla		40·1	304	e 7 19	− 5	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Upsala		41·2	322	7 29	− 4	13 3	−34	e 8 9	pP	—
Prague		42·5	308	(e 8 15)	pP	(e 13 37)	−19	(e 9 24)	PP	—
Potsdam		43·2	311	e 7 51?	+ 1	i 14 3	− 3	i 8 34	pP	—
Triest		43·3	301	i 7 46	− 5	i 14 4	− 4	—	—	—
Copenhagen		43·6	315	i 7 53k	0	14 8	− 4	8 33	pP	—
Cheb		43·8	308	e 8 39	pP	e 14 16	+ 1	—	—	—
Jena		44·2	308	i 7 58	0	—	—	i 8 40	pP	—
Florence		45·5	299	i 8 13	+ 5	i 14 36	− 3	i 9 41	PP	—
Stuttgart		46·0	306	i 8 13	+ 1	i 14 45	− 1	i 8 53	pP	—
Milan		46·6	302	e 8 16	− 1	14 49	− 6	i 9 2	pP	—
Strasbourg		47·0	306	—	—	—	—	e 9 0	pP	—
Bergen		47·4	323	8 23	0	e 14 51?	−15	9 5	pP	—
De Bilt		48·1	312	i 8 29k	0	i 15 15	− 1	i 9 11	pP	e 18·8
Uccle		48·8	310	i 8 34	0	e 15 21	− 5	i 9 14	pP	—
Paris		50·4	307	e 8 45	− 1	e 15 45	− 3	i 9 27	pP	—
Clermont-Ferrand		50·7	303	e 8 48	0	e 15 51	− 1	e 9 31	pP	e 26·8
Kew		51·6	312	i 9 36	pP	i 15 59	− 6	—	—	—
Tortosa		54·0	298	e 9 3	−10	e 16 8	−29	i 19 13	SS	20·5
Scoresby Sund		57·2	337	10 18	pP	17 21	+ 1	13 5	?	—
Toledo		57·5	298	i 9 36	− 2	e 17 16	− 7	10 20	pP	—
Almeria		57·6	294	i 9 37	− 2	17 16	− 9	10 19	pP	—
Granada		58·3	295	e 9 31	−13	i 17 28	− 6	10 26	pP	24·7
San Fernando	E.	60·5	295	e 10 36	pP	e 17 53	− 9	—	—	—
St. Louis		103·4	345	e 18 43	PP	e 24 4	[− 9]	e 26 31	PS	—
Tinemaha	Z.	106·5	7	e 14 3	P	i 18 28	PP	i 29 31	PKKP	—
Santa Barbara		108·9	8	e 18 9	[− 5]	—	—	—	—	—
Mount Wilson		109·3	7	e 18 8	[− 7]	i 18 45	PP	e 19 29	pPP	—
Pasadena	Z.	109·4	7	e 18 7	[− 8]	i 18 46	PP	i 19 29	pPP	—
Riverside	Z.	109·6	7	—	—	e 18 47	PP	i 19 30	pPP	—
Palomar	Z.	110·5	6	e 19 5	PP	e 29 23	PKKP	e 19 41	pPP	—
Tucson		111·8	1	e 15 27	P	e 19 36	PP	e 18 21	PKP	e 62·2
Bogota		127·8	314	e 18 52	[+ 2]	—	—	e 19 43	pPKP	—

Additional readings :—
Bombay iN =4m.49s. and 7m.26s.
Helwan PPPZ =7m.51s.
Belgrade e =8m.21s., 8m.49s., 9m.49s., 16m.26s., and 21m.3s.
Ogyalla ePN =6m.41s., eN =8m.29s., eE =8m.51s.?, and 16m.21s.?, eN =17m.21s.?.
Upsala PPE =8m.59s., iPPPN =9m.29s., iP_cS =13m.25s., eE =13m.47s., eSSN = 16m.5s.
Prague readings have been increased by 10 minutes.
Copenhagen 8m.54s., PP =9m.36s., sS =15m.23s., SS =17m.28s., sSS =18m.26s.
Jena i =9m.43s., iZ =10m.45s.?, iEN =10m.51s.
Florence iPPPE =10m.13s., eSSSE =18m.21s.
Stuttgart isPZ =9m.13s., ePPZ =10m.3s., esS =15m.57s.
Strasbourg e =10m.43s., i =12m.22s.
Bergen PP =10m.16s., eSS =18m.27s.
De Bilt iZ =9m.31s., isS =16m.39s.
Uccle isPEZ =9m.36s., iPPZ =10m.0s., epPPZ =11m.2s., eSSEN =19m.27s.?.
Clermont-Ferrand i =10m.30s.
Kew iEZ =9m.57s. and 17m.23s., e =19m.51s.?.
Almeria P_cP =10m.28s., sP =10m.39s., PP =11m.51s., pPP =12m.32s., sPP =12m.53s., PPP =13m.10s., S_cP =13m.37s., sS =18m.31s., S_cS =18m.57s., SS =21m.17s., sSS =22m.28s.
Granada PP =11m.50s., PPP =12m.58s., PS =17m.57s., sS =18m.10s., SS =20m.35s.
St. Louis eZ =22m.30s., eN =28m.38s. and 33m.4s.
Tinemaha eZ =17m.18s.
Mount Wilson iPKKPZ =29m.23s.
Pasadena eSPZ =27m.49s., iPKKPZ =29m.20s.
Tucson e =28m.18s. and 33m.24s.
Long waves were also recorded at Auckland, Christchurch, Wellington, and Riverview.

Sept. 9d. Readings also at 2h. (Tortosa), 5h. (near Istanbul), 9h. (near Bogota), 11h. (Christchurch and Wellington), 12h. (Auckland), 15h. (near Lick), 17h. (near Calcutta), 18h. (Helwan), 19h. (Stuttgart and Wellington).

Sept. 10d. 2h. 31m. 34s. Epicentre 19°·1N. 67°·1W. (as on 1943 Aug. 12d.).

Epicentre 18°·9N. 67°·0W. (U.S.C.G.S.).

$A = +·3680$, $B = -·8711$, $C = +·3252$; $\delta = -1$; $h = +5$;
$D = -·921$, $E = -·389$; $G = +·127$, $H = -·300$, $K = -·946$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		1·2	128	i 0 19	P*	—	—	i 0 26	P	—
Port au Prince		5·0	265	e 1 7	−11	i 1 53	−25	i 1 17	P*	2·5
Fort de France		7·2	127	e 1 41	− 8	3 1	−12	2 0	P*	e 6·7
Bermuda		13·4	9	e 3 16	+ 2	(e 5 32)	−13	—	—	e 5·5
Balboa Heights		15·7	232	i 3 50	+ 6	e 6 47	+ 8	—	—	—
Bogota		15·9	206	e 3 51	+ 4	e 6 56	+12	i 3 57	PP	e 17·3
Columbia		19·4	324	e 4 33	+ 3	e 8 14	+10	—	—	e 9·6
Philadelphia		21·9	344	e 5 1	+ 4	8 58	+ 4	e 5 22	PP	10·8
Fordham		22·4	348	e 5 4	+ 2	i 9 7	+ 3	i 5 25	PP	—
Harvard		23·6	353	i 5 15	+ 2	i 9 25	0	i 5 35	PP	e 12·4
Ottawa		27·2	347	5 50	+ 3	10 26?	+ 1	e 6 23	PP	13·4
St. Louis		28·0	319	e 5 54	− 1	e 10 40	+ 2	i 6 31	PP	—
Seven Falls		28·1	355	e 6 50?	PP	—	—	—	—	11·4
Chicago		28·6	326	—	—	e 10 48	0	—	—	e 13·7
Huancayo		32·0	196	e 6 33	+ 3	—	—	e 7 32	PP	18·1
La Paz		35·4	181	i 6 58	− 2	i 12 28	− 6	—	—	—
Rapid City		39·1	318	e 6 38?	−53	—	—	—	—	e 15·6
Tucson		41·3	298	e 7 51	+ 2	—	—	e 9 3	PP	e 17·4
Salt Lake City		43·8	311	—	—	e 14 38	− 2	—	—	e 18·2
Palomar	z.	46·4	299	e 8 37	+ 7	—	—	—	—	—
La Jolla		46·7	298	e 8 32	0	—	—	e 8 51	?	—
Riverside		46·9	300	e 8 37	+ 3	—	—	—	—	—
Mount Wilson	z.	47·5	300	e 8 40	+ 2	—	—	—	—	—
Pasadena		47·6	300	i 8 43	+ 4	e 15 41	+ 6	—	—	e 16·4
Tinemaha		48·0	303	e 8 44	+ 1	—	—	i 9 18	?	—
Santa Barbara		48·9	300	e 8 43	− 7	—	—	e 8 59	?	—
San Fernando	z.	55·7	59	e 9 37	− 3	—	—	—	—	—
Toledo		57·5	55	i 9 47	− 6	e 17 44	− 6	21 48	SS	24·8
Granada		57·8	57	9 47	− 8	i 17 41	−13	19 40	S_eS	i 26·9
Almeria		58·7	58	9 59	− 3	18 2	− 4	18 22	PS	29·9
Tortosa	E.	61·0	53	9 30	−48	17 32	−63	—	—	e 28·4
Sitka		62·4	326	e 19 45	PPS	—	—	—	—	e 31·0
Uccle		63·8	42	e 10 32	− 4	e 19 1	− 10	—	—	e 29·4
Stuttgart		66·9	44	e 10 52	− 4	e 19 40	− 9	—	—	e 31·7
Florence	E.	68·8	50	—	—	e 20 3	− 8	e 20 51	PPS	—
Helwan	z.	87·7	60	e 12 53	+ 1	—	—	e 19 23	?	—
Ksara		89·8	55	e 13 22	+20	—	—	e 16 56	PP	—
Tashkent		107·6	34	e 15 17	?	25 3	[+ 1]	e 21 52	?	—

Additional readings :—
Fort de France S_e = 2m.37s.
Philadelphia e = 9m.37s.
Fordham e = 9m.0s., i = 9m.12s.
Harvard i = 9m.40s.
St. Louis ePPPZ = 6m.46s., eN = 9m.20s. and 11m.8s.
Huancayo e = 12m.52s.
Tucson ePPP = 10m.18s., e = 16m.3s.
Almeria P_cP = 10m.53s., PP = 12m.26s., PPP = 13m.20s., S_cS = 19m.59s., SS = 22m.15s., SSS = 24m.26s.
Long waves were also recorded at Logan and at other European stations.

Sept. 10d. 8h. 36m. 54s. Epicentre 35°·6N. 134°·2E. (as on 1943 March 12d.).

Scale IX at Tottori ; VII-VIII at Okayama ; VI at Sakai, Saigo, Matsue, Hukui, Sumoto, Osaka and Hikone ; V at Hamada, Kameyama, Nagoya, Simidu, and Saga ; II-III at Shizuoka, Kumamoto, Maebasi, and Niigata. 1190 killed, 6158 severely injured, nearly 14,000 houses destroyed. Fissures were formed causing a new system of faults, one of which extended for about 7.5 km. in the direction of Shikano.
Epicentre : 35°·5 N. 134°·2E., depth 10 km. (Tokyo Met. Obs.).
35°·1N. 133°·3E. (U.S.C.G.S.).
35°N. 134°E. (Pasadena), magnitude 7·5.

H. Kawasumi.
Seismology in Japan 1939-1947. Bull. Seismo Soc. Amer. vol. 39, 1949, p. 161.
Epicentre in the mid stream of Saka-gawa, Ketaka-Gori. Tottori prefecture. Felt in wide area extending from Maebasi and Niigata in the east to Kumamoto in the west. The city of Tottori and its suburbs were badly shaken, with many collapsed houses and casualties. Conspicuous faults appeared near Yosioka and Sikano, also many ground fissures.

F. Kishinouye.
" General Report of the damage caused by the Tottori Earthquake," of Sept. 10, 1943.
" Zisin," the Journal of the Seismo Soc. of Japan, vol. 15, 1943.
" Damage from the Tottori Earthquake on Sept. 10. 1943,"
Bull. of Earthquake Research Insittute, vol. XXIII, parts 1-4, 1945. (In Japanese).

S. Miyamura.
Die Zwei Verwerfungen beim Tottori-Beben vom 10 Sept. 1943, und ihre Bewegungen nach dem Beben, Bull. of Earthquake Research Institute, vol. XXII, part 1, 1944. (In Japanese).

Syun'itiro Omote.
" Provisional report on the observations of aftershocks of the Tottori Earthquake of Sept · 10, 1943."
" Zisin," the Journal of the Seismological Society of Japan, vol. 15, 1943.

H. Tsuya.
Geological Observations of the Earthquake faults (Sikano and Ysiosaka) of 1943 in Tottori Prefecture (in Japanese) Bull. of Earthquake Research Institute, vol. XXII, part 1, 1944.

Anonymous.
Reports of the Precise Levelling in the Tottori districts carried out after the Earthquake of 1943 Sept. 10. Bulletin of the Earthquake Research Institute, vol. XXII, part 1, 1944 (in Japanese).

$A = -·5682$, $B = +·5843$, $C = +·5795$; $\delta = +8$; $h = 0$;
$D = +·717$, $E = +·697$; $G = -·404$, $H = +·415$, $K = -·815$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toyooka	0·5	98	0 9	P_g	0 14	S_g	—	—	—
Kyoto	1·4	115	0 25k	− 2	0 47	+ 1	—	—	—
Osaka	1·4	131	0 26k	− 1	0 49	+ 3	—	—	—
Sumoto	1·4	156	0 24	− 3	0 44	− 2	—	—	—
Hikone	1·7	101	0 30k	− 1	1 2	+ 8	—	—	—
Hamada	1·9	248	0 29k	− 5	0 51	− 8	—	—	—
Hirosima	1·9	230	0 34a	0	0 59	0	—	—	—
Kameyama	2·0	112	0 34	− 1	—	—	—	—	—
Koti	2·1	195	0 34a	− 3	1 2	− 2	—	—	—
Matuyama	2·1	214	0 32a	− 5	—	—	—	—	—
Nagoya	2·3	101	0 39k	− 1	1 14	+ 5	—	—	—
Owase	2·3	133	0 40k	0	1 3	− 6	—	—	—
Siomisaki	2·5	149	0 37	− 6	1 11	− 3	—	—	—
Toyama	2·7	66	0 59	P_g	1 28	+ 9	—	—	—
Wazima	2·8	51	0 46a	− 1	1 44	S_g	—	—	—
Simidu	3·0	200	0 47a	− 3	1 24	− 3	—	—	—
Nagano	3·4	71	1 8a	P_g	2 10	S_g	—	—	—
Omaesaki	3·4	107	1 6	+11	2 50	L	—	—	(2·8)
Kohu	3·5	88	1 2	+ 5	2 6	S_g	—	—	—
Shizuoka	3·5	101	0 57	0	1 55	S_g	—	—	—
Misima	3·9	96	1 1	− 1	1 59	+ 9	—	—	—
Kumamoto	4·0	227	1 3a	− 1	2 3	S*	—	—	—
Maebasi	4·0	77	1 6	+ 2	2 15	S_g	—	—	—
Osima	4·3	100	1 8	0	2 20	S_g	—	—	—
Yokohama	4·4	91	1 17	+ 7	2 34	S_g	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tokyo		4·5	87	1 15	+ 4	2 12	+ 7	—	—	—
Utunomiya		4·7	77	1 9	− 5	2 26	S*	—	—	—
Kakioka		4·9	81	1 16	− 1	2 37	S_g	—	—	—
Mito		5·1	79	1 26k	+ 6	2 47	S_g	—	—	—
Hatidyozima		5·3	116	1 21	− 1	2 36	S*	—	—	—
Hukusima		5·5	65	1 31	+ 6	2 47	S*	—	—	—
Sendai		6·0	62	1 32a	0	2 47	+ 4	—	—	—
Mizusawa	N.	6·5	55	1 43	+ 4	3 14	S*	—	—	—
Aomori		7·3	43	1 52k	+ 2	2 38	P_g	—	—	—
Miyako		7·4	55	2 1a	+ 9	4 38	L	—	—	(4·6)
Hatinohe		7·6	48	2 0	+ 5	3 43	S*	—	—	—
Sapporo		9·3	34	2 21	+ 4	4 26	+21	—	—	—
Naha		10·9	213	2 43	+ 3	5 46	+62	—	—	—
Miyakozima		13·2	218	3 9	− 2	7 54	L	—	——	(7·9)
Irkutsk		27·0	318	i 5 47	+ 2	i 10 28	+ 6	—	—	—
Calcutta		41·8	265	e 7 51	− 2	i 14 28	+17	i 9 38	PP	20·5
Dehra Dun		46·9	280	8 34	0	e 15 8	−17	e 10 58	PPP	e 24·1
Andiian		48·0	296	e 8 41	− 2	—	—	9 45	P_cP	—
Tashkent		50·1	297	e 8 58	− 1	i 16 20	PS	11 4	PP	—
Stalinabad		51·3	294	e 9 8	0	—	—	e 17 2	PPS	—
Sverdlovsk		52·4	319	i 9 19	+ 3	i 16 44	+ 2	—	—	—
College		53·4	32	e 9 22	− 2	e 16 56	+ 1	—	—	e 22·9
Bombay		56·2	270	9 44	0	e 17 29	− 4	17 41	PS	28·1
Colombo	E.	57·2	254	17 6?	S	(17 6?)	−40	—	—	—
Kodaikanal	E.	57·2	259	10 1	+10	i 17 51	+ 5	—	—	24·2
Honolulu		60·4	84	e 11 8	P_cP	e 18 16	−12	e 18 38	PS	e 24·4
Sitka		61·0	39	e 10 20	+ 2	i 18 47	+12	e 14 14	PPP	e 25·5
Moscow		64·9	322	10 42	− 1	19 20	− 4	—	—	—
Brisbane		65·2	162	i 10 48	+ 3	i 19 32	+ 4	e 11 38	P_cP	e 31·8
Suva		67·9	135	e 12 42	?	i 20 11	+10	e 15 48	P_cS	—
Perth		69·4	197	e 11 11	− 1	i 20 21	+ 3	13 46	PP	32·8
Apia		70·9	123	—	—	e 21 30?	S_cS	e 29 30?	?	e 33·1
Riverview		70·9	165	e 11 24	+ 3	i 20 41	+ 5	i 21 38	S_cS	i 30·7
Sydney		70·9	165	e 11 18?	− 3	i 20 36	0	e 29 42?	?	e 32·1
Victoria		71·5	43	11 6	−18	20 31	−12	24 36?	?	33·1
Upsala		71·6	332	e 11 18	− 7	20 35	− 9	e 25 6?	SS	e 32·1
Seattle		72·6	43	e 12 7	P_cP	e 21 8	+12	—	—	e 33·2
Scoresby Sund		72·8	352	11 35	+ 2	21 2	+ 4	11 44	P_cP	23·4
Bacau		75·4	317	e 13 6?	?	21 36	+ 9	22 13	PPS	36·1
Ferndale		75·5	50	—	—	e 21 38	+10	e 21 42	PS	—
Bergen		75·6	337	i 11 49	+ 1	21 20	− 9	e 31 28	?	34·3
Focsani		75·7	316	e 12 0?	+11	21 42	+12	e 21 57	PS	36·1
Copenhagen		76·4	331	i 11 54	+ 1	21 32	− 6	26 32	SS	—
Ukiah		76·9	51	e 11 52	− 4	21 49	+ 6	—	—	e 31·7
Bucharest		77·1	316	11 56	− 1	i 21 46	0	i 22 22	PS	36·6
Ksara		77·1	302	e 11 56	− 1	e 21 56	+10	—	—	—
Istanbul		77·4	311	(11 46)	−12	(21 55)	+ 6	—	—(e 35·6)	
Saskatoon		77·8	34	—	—	e 22 3	+10	—	—	35·1
Berkeley		78·3	52	i 12 4	+ 1	i 22 2	+ 3	i 12 7	P_cP	e 33·6
Potsdam		78·5	328	e 12 6?	+ 2	i 22 5	+ 4	—	—	e 36·1
Branner		78·6	52	i 12 8	+ 3	e 22 8	+ 6	—	—	e 33·2
Santa Clara		78·8	52	i 12 13	+ 7	e 22 14	+10	e 22 24	S_cS	—
Ogyalla	N.	79·2	322	11 24	−44	21 22	−46	—	—	39·1
	E.	79·2	322	11 30	−38	e 21 32	−36	—	—	39·1
Prague		79·5	326	e 12 10	0	e 22 10	− 1	—	—	e 36·1
Kalosca		79·7	321	(e 12 17)	+ 6	(e 22 18)	+ 5	(e 12 34)	P_cP	(e 38·6)
Sofia		79·8	316	e 12 15	+ 3	e 22 16	+ 2	e 12 20	P_cP	33·4
Belgrade		80·0	319	e 12 18	+ 5	i 22 23	+ 6	i 12 34	P_cP	e 40·9
Bozeman		80·0	40	e 12 18	+ 5	e 22 20	+ 3	e 27 38	SS	e 34·6
Jena		80·2	327	i 12 14	0	e 22 18	− 1	i 12 18?	P_cP	e 37·1
Cheb		80·4	327	e 12 19	+ 4	e 22 28	+ 7	—	—	e 40·1
Aberdeen		80·5	338	—	—	i 22 27	+ 5	i 31 12	SSS	40·0
Tinemaha		81·3	51	e 12 20	0	e 22 37	+ 7	—	—	—
Auckland		81·4	150	12 26	+ 6	22 36	+ 5	i 23 41	PPS	35·1
De Bilt		82·0	332	i 12 24	+ 1	i 22 38	+ 1	i 28 6?	SS	e 37·1

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara		82·0	53	e 12 24	+ 1	—	—	—	—	—
Logan		82·2	44	i 12 28	+ 4	i 22 43	+ 4	e 15 57	PP	34·1
Helwan		82·6	301	12 26	0	22 51	+ 8	23 26	PS	—
Arapuni		82·8	148	—	—	22 54	+ 9	35 6?	Q	38·1
Salt Lake City		82·8	44	e 12 29	+ 2	e 22 40	− 5	e 32 8	?	e 35·6
Stuttgart		82·8	327	i 12 28k	+ 1	i 22 47	+ 2	e 15 22	PP	e 40·1
Mount Wilson	z.	83·2	52	i 12 30	+ 1	—	—	—	—	—
Pasadena		83·2	52	i 12 29	0	e 22 52	+ 3	i 12 42	PcP	e 34·2
Uccle		83·3	332	e 12 30	0	i 22 47	− 3	e 28 8	SS	39·1
Stonyhurst		83·4	336	—	—	(i 22 56)	+ 5	(23 33)	PS	(36·5)
Ivigtut		83·5	2	—	—	e 22 55	+ 3	e 24 48	?	e 35·4
Strasbourg		83·6	328	e 12 54?	PcP	i 23 1	+ 8	e 23 13	ScS	43·1
Riverside	z.	83·8	52	e 12 32	0	—	—	—	—	—
Chur		84·1	326	e 12 32	− 2	e 22 57	− 1	e 13 36	?	—
Basle		84·4	327	e 12 34	− 2	e 23 12	ScS	—	—	—
Palomar	z.	84·5	52	e 12 40	+ 4	—	—	i 12 52	PcP	—
Kew		84·6	333	e 12 38	+ 2	e 23 2	− 1	i 23 52	PS	e 39·1
La Jolla		84·6	53	e 12 36	0	—	—	—	—	—
Zürich		84·6	327	e 12 32k	− 4	e 22 51	−12	e 12 35	PcP	—
Neuchatel		85·1	327	e 12 40	+ 1	e 23 9	+ 1	—	—	—
Rapid City		85·1	38	i 11 50?	−49	e 22 18?	−50	e 28 8?	SS	e 36·1
Wellington		85·1	150	12 38	− 1	23 6	− 2	24 6	PS	40·1
Milan		85·3	324	e 12 40	0	23 3	[0]	—	—	40·2
Florence		85·5	322	i 12 43	+ 2	i 23 12	0	i 12 47	PcP	e 44·8
Paris		85·6	330	e 12 43	+ 2	e 23 9	− 4	—	—	e 35·1
Christchurch		86·2	153	12 46	+ 2	23 15	− 4	15 43	PP	36·9
Clermont-Ferrand		87·8	328	i 12 43	− 9	e 23 37	+ 3	e 25 14	PPS	e 38·4
Tucson		89·1	50	e 12 59	+ 1	e 23 56	+10	23 38	SKKS	e 33·5
Barcelona		91·6	326	—	—	e 23 40	[− 2]	—	—	e 36·2
Tortosa		92·9	326	12 21	−55	24 23	+ 3	26 0	PPS	48·7
Chicago		94·0	31	e 17 10	PP	e 24 32	+ 2	23 53	SKS	e 38·2
Seven Falls		94·6	17	e 17 30?	PP	e 24 35	0	31 4	SS	43·1
Shawinigan Falls		94·7	18	e 13 36?	+12	e 24 6?	[+ 7]	—	—	46·1
Ottawa		95·0	20	13 36?	+10	24 48	+10	24 4	SKS	e 45·1
St. Louis		95·5	34	e 13 30	+ 2	i 24 56	+14	i 24 7	SKS	—
Toledo		95·6	329	i 12 29	−59	i 24 40	− 3	16 44	?	—
Almeria		97·4	326	13 54	+17	e 25 8	+ 9	24 21	SKS	44·3
Granada		97·7	327	13 50	+12	24 20	[+ 5]	26 17	PS	50·6
New Kensington		98·1	25	e 17 35	PP	e 24 23	[+ 5]	—	—	—
Tananarive		98·1	253	—	—	e 23 44	[−34]	26 28	PS	e 41·4
Lisbon		98·7	332	17 45?	PP	25 8	− 2	25 16	ScS	46·1
Harvard		98·8	18	i 13 51	+ 8	i 25 17	+ 7	i 24 25	SKS	e 46·1
San Fernando		99·4	329	e 17 13	?	e 25 12	− 3	—	—	50·6
Fordham		99·7	21	e 14 0	+13	i 24 32	[+ 6]	i 26 56	PS	i 37·1
Philadelphia		100·1	22	e 18 1	PP	e 24 16	[−11]	e 26 53	PS	e 43·3
Columbia		103·3	30	e 18 17	PP	e 24 42	[− 1]	e 32 35	SS	e 48·9
Bermuda		110·1	17	e 19 4	PP	e 25 2	[−11]	e 28 44	PS	e 48·3
San Juan		123·0	23	e 20 5	?	e 30 27	PS	e 41 32	SSS	e 49·7
Huancayo		144·5	57	e 19 57	[+19]	e 41 5	SS	e 47 44	SSS	e 58·5
La Paz		152·5	51	i 20 0	[+ 9]	i 30 43	{+11}	i 23 32	PP	73·6
Rio de Janeiro	N.	167·2	349	e 23 56	?	—	—	(e 45 41)	SS	e 45·7
La Plata	E.	170·1	90	33 18?	?	—	—	46 0?	SS	76·0
	N.	170·1	90	36 24?	?	39 6?	PPS	46 12?	SS	70·4

Additional readings :—
Calcutta iSSN =17m.8s., iSSSN =18m.6s.
Dehra Dun eN =18m.14s.
Bombay iE =10m.15s., PPE =11m.50s., SE =17m.24s., PPSE =17m.48s., iE =18m.40s. and 19m.15s., ScSN =19m.31s., iE =20m.28s., iN =20m.39s., iE =21m.44s.
Sitka e =11m.56s. and 21m.47s., iSS =23m.6s.
Brisbane iPPN =13m.4s., iN =16m.40s., iScSE =20m.30s., iSSE =23m.42s., iQE = 27m.49s.
Suva e =17m.16s., ePP =18m.6s., eSP =27m.36s.
Perth PPP =15m.11s., SS =24m.56s., i =28m.31s.
Riverview eE =28m.39s.

Continued on next page.

Upsala eSSSN =28m.47s., eSSSE =28m.50s.
Focsani SE =21m.47s.
Ukiah e =23m.35s. and 27m.37s.
Bucharest PPE =14m.48s., PPN =14m.59s., PPPE =16m.56s., PPPN =17m.6s., iN = 21m.56s., iPSN =22m.25s., SSN =27m.2s.
Istanbul readings reduced by 12 minutes.
Berkeley eSE =22m.8s.
Branner eE =33m.5s.
Kalossa readings reduced by 1 minute.
Sofia ePPN =15m.54s.?.
Belgrade e =13m.46s., 16m.57s., and 26m.55s.
Bozeman e =31m.29s.
Jena eSE =22m.14s., eSZ =22m.24s.
Aberdeen eN =32m.52s.
Auckland i =13m.23s., PPP =17m.6s., SS =27m.34s., SSS =31m.26s.
De Bilt eSSS =33m.6s.?.
Logan e =24m.27s., eSS =28m.6s., e =31m.58s.
Helwan eN =12m.58s. and 23m.58s., SSN =29m.42s.
Arapuni e =29m.6s.?.
Stuttgart eSS =28m.6s., e =33m.42s.?, eQ =38m.6s.
Stonyhurst S_eS =(23m.18s.), SSS =(30m.49s.), Q =(32m.56s.). Readings reduced by 3 minutes.
Strasbourg e =20m.15s.
Palomar iZ =13m.17s.
Kew iP_ePNZ =12m.47s., e =14m.30s., ePPEZ =15m.40s., ePPPNZ =17m.26s., e = 19m.30s., iS =23m.16s., iPPS =24m.19s., eSS?EN =27m.42s.?, eSSSNZ =31m.11s. eSSSE =31m.46s., eQE =34·1m.
Wellington iZ =18m.31s., S_eSPZ =25m.41s., iZ =27m.56s., SS =28m.28s., Q =36·1m.
Florence ePPE =16m.2s., ePPPE =17m.48s., isS =23m.30s., eSSSE =32m.30s.
Christchurch PPP =17m.51s., S =22m.26s., SS =27m.51s., SSS =31m.11s., Q =33m.27s.
Clermont-Ferrand eP =12m.49s., iPP =16m.25s., eSKS =22m.45s., e =23m.15s.
Tucson iP =13m.3s., i =13m.37s., e =16m.25s., iPS =24m.59s.,, eSS =29m.49s.
Tortosa PPE? =16m.3s., SSN =32m.5s., SSSN =36m.33s., QE =42m.25s.
Chicago ePS =25m.49s., eSS =30m.13s., e =33m.23s.
Ottawa PP =17m.12s.?, PS =25m.56s., SS =31m.6s.?, SSS =35m.36s.?.
St. Louis ePPZ =17m.28s., iS?E =25m.56s., iSS?E =31m.22s.
Almeria PP =17m.51s., PPP =20m.5s., PS =26m.34s., SS =31m.55s., SSS =36m.7s.
Granada PKP =17m.50s., S =25m.51s., iSS =31m.14s., Q =44m.6s.?.
Tananarive SS =31m.58s.
Lisbon SKSEN =23m.47s., E =41m.0s.?, N =41m.6s.?.
Harvard ipP =14m.1s., iPP =17m.45s., i =19m.46s. and 20m.41s., ePS =26m.52s., ePPS? =27m.16s., e =28m.6s., i =28m.54s., e =30m.43s., eSS =32m.15s., e = 41m.17s.
Fordham ePP =18m.2s., iSS =32m.36s.
Philadelphia eSS =32m.22s., e =36m.25s.
Columbia e =40m.52s.
San Juan ePP? =20m.36s.
Huancayo e =24m.7s., 28m.57s., and 30m.47s.
La Paz iZ =22m.46s., iPP?Z =24m.16s., iPPPZ =27m.12s., iPSKS =34m.19s., SS?Z = 44m.0s., SSSZ =49m.30s., QN =65m.6s.
La Plata SSN =41m.48s.?, SSS?N =52m.48s.?, N =56m.48s.?.

Sept. 10d. 9h. 4m. 57s. Epicentre 35°·6N. 134°·2E. (as at 8h.).

Intensity VI at Okayama ; V at Matsue, Yonago, Saigo ; IV at Sumoto, Kyoto, Koti, Hikone, Tokusima ; II-III at Hamada, Kashiwara, Uwazima.
Epicentre 35°·4N. 130°·8E. radius of macroseismic area 200-300 km. Shallow.
Seismological Bulletin of the Central Meteorological Observatory, Japan, year 1943, Tokyo 1950, pp. 40-41, macroseismic chart p. 40.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Toyooka	0·5	98	0 12	− 2	0 24	+ 1
Kyoto	1·4	115	0 26	− 1	0 47	+ 1
Sumoto	1·4	156	0 9	−18	0 26	−20
Hikone	1·7	101	0 35	+ 4	0 58	+ 4
Hamada	1·9	248	0 26	− 8	0 47	−12
Hirosima	1·9	230	0 29a	− 5	0 49	−10
Kameyama	2·0	112	0 40	+ 5	1 27	+25
Owase	2·3	133	0 39a	− 1	1 9	0
Siomisaki	2·5	149	0 38	− 5	1 11	− 3
Simidu	3·0	200	0 44	− 6	1 21	− 6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Nagano		3·4	71	1 3	P*	—	—
Omaesaki		3·4	107	1 3	P*	1 53	S_g
Kohu		3·5	88	0 53	− 4	1 58	S_g
Shizuoka		3·5	101	0 57	0	1 55	S_g
Misima		3·9	96	1 21	P_g	2 7	S_g
Maebasi		4·0	77	1 14	P*	2 20	S_g
Aikawa		4·1	52	0 37	?	1 44	−11
Osima		4·3	100	1 5	− 3	2 19	S_g
Yokohama		4·4	91	1 16	+ 6	2 27	S_g
Kakioka		4·9	81	1 7	−10	—	—
Mito		5·1	79	1 48	P_g	2 49	S_g
Tomie		5·4	238	2 24	S	(2 24)	− 4
Hukusima		5·5	65	1 46	P_g	2 14	−16
Sendai		6·0	62	1 25	− 7	2 41	− 2
Mizusawa	E.	6·5	55	e 1 40	+ 1	3 56	S_g
Aomori		7·3	43	1 53	+ 3	—	—
Sapporo		9·3	34	2 23	+ 6	4 25	+20
Tinemaha	z.	81·3	51	e 12 17	− 3	—	—
Mount Wilson	z.	83·2	52	e 12 26	− 3	—	—
Pasadena	z.	83·2	52	e 12 26	− 3	—	—
Riverside	z.	83·8	52	e 12 27	− 5	—	—
Palomar	z.	84·5	52	i 12 42	+ 6	—	—
Tucson		89·1	50	e 13 1	+ 3	—	—

Sept. 10d. 9h. 32m. 9s. Epicentre 35°·6N. 134°·2E. (as at 9h. 4m.).

Intensity IV at Toyooka, Matsue; II-III at Yonago, and Kyoto. Epicentre 35°·4N. 133°·9E. Radius of macroseismic area 200-300 km. Shallow.
Seismological Bulletin of the Central Meteorological Observatory, Japan for the year 1943, Tokyo 1950, p. 41, macroseismic chart p. 41.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Toyooka	0·5	98	0 10k	P_g	0 20	S*
Kyoto	1·4	115	0 25	− 2	—	—
Hikone	1·7	101	0 30	− 1	0 56	+ 2
Hamada	1·9	248	0 25	− 9	0 47	−12
Kameyama	2·0	112	1 5	S	(1 5)	+ 3
Nagoya	2·3	101	0 43	+ 3	1 14	+ 5
Owase	2·3	133	0 35	− 5	1 5	− 4
Siomisaki	2·5	149	0 39	− 4	1 12	− 2
Toyama	2·7	66	0 56	P_g	1 44	S_g
Simidu	3·0	200	0 47	− 3	1 24	− 3
Nagano	3·4	71	1 8	P_g	2 10	S_g
Kohu	3·5	88	1 9	P_g	2 0	S_g
Shizuoka	3·5	101	1 6	P_g	2 12	S_g
Misima	3·9	96	0 40	−22	1 7	P
Maebasi	4·0	77	1 5	+ 1	2 14	S_g
Aikawa	4·1	52	1 7	+ 2	2 5	S*
Yokohama	4·4	91	1 52	S	(1 52)	−10
Tokyo	4·5	87	2 25	S_g	—	—
Kakioka	4·9	81	1 26	P*	2 27	S*
Mito	5·1	79	2 3	?	—	—
Sendai	6·0	62	2 45	S	(2 45)	+ 2

Sept. 10d. 13h. 36m. 5s. Epicentre 35°·6N. 134°·2E. (as at 9h.).

Intensity V at Toyooka, Tottori ; IV at Yonago, Saigo, Okayama, Matsue, Takamatsu, Kyoti ; II-III at Sumoto, Tokusima, Hikone, Uwazima.
Epicentre 35°·5N. 134°·0E. Radius of macroseismic area 300 km. Shallow.
Seismological Bulletin of the Central Meteorological Observatory, Japan for the Year 1943, Tokyo 1950, p. 42. Macroseismic chart p. 42.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Toyooka		0·5	98	0 14	0	0 24	+ 1	—
Kyoto		1·4	115	0 27	0	0 48	+ 2	—
Sumoto		1·4	156	0 23k	− 4	0 40	− 6	—
Hikone		1·7	101	0 31	0	0 59	+ 5	—
Hamada		1·9	248	0 36	+ 2	—	—	—
Kameyama		2·0	112	0 38	+ 3	1 1	− 1	—
Nagoya		2·3	101	0 51	P_g	1 18	S_g	—
Owase		2·3	133	0 39k	− 1	1 7	− 2	—
Siomisaki		2·5	149	0 41	− 2	1 14	0	—
Toyama		2·7	66	0 47	+ 2	1 28	+ 9	—
Simidu		3·0	200	0 51	+ 1	1 30	+ 3	—
Nagano		3·4	71	0 58	+ 3	2 0	S_g	—
Omaesaki		3·4	107	0 55	0	1 50	S*	—
Kohu		3·5	88	0 57k	0	1 52	S*	—
Shizuoka		3·5	101	0 57	0	1 54	S*	—
Misima		3·9	96	1 5	+ 3	2 6	S_g	—
Aikawa		4·1	52	1 5	0	2 7	S*	—
Osima		4·3	100	1 11	+ 3	2 20	S_g	—
Yokohama		4·4	91	1 30a	P_g	2 31	S_g	—
Tokyo		4·5	87	1 37	P_g	2 30	S_g	—
Tukubasan		4·8	81	1 40	P_g	2 40	S_g	—
Mito		5·1	79	1 44	P_g	2 48	S_g	—
Hatidyozima		5·3	116	1 21	− 1	3 8	S_g	—
Sendai		6·0	62	1 34	+ 2	2 50	+ 7	—
Mizusawa		6·5	55	e 1 41	+ 2	3 19	S*	—
Aomori		7·3	43	1 54	+ 4	—	—	—
Tinemaha	z.	81·3	51	e 12 17	− 3	—	—	—
Mount Wilson	z.	83·2	52	e 12 28	− 1	—	—	—
Pasadena	z.	83·2	52	e 12 28	− 1	—	—	e 40·9
Riverside	z.	83·8	52	e 12 30	− 2	—	—	
Tucson		89·1	50	e 11 57	−61	—	—	—

Long waves were also recorded at Wellington, Christchurch, Auckland, Riverview, Calcutta, and European stations.

Sept. 10d. Readings also at 0h. (near Tashkent), 2h. (La Paz), 4h. (Chur, Basle, Zürich, and Neuchatel), 6h. (Bogota, Stuttgart, Helwan, and near Ksara), 7h. (San Juan), 8h. (Bogota), 12h. (near Strasbourg), 18h. (Riverside, Tinemaha, Tucson, and Palomar), 22h. (Mount Wilson, Palomar, Tinemaha, Tucson, Auckland, Christchurch, and Apia).

Sept. 11d. 1h. 16m. 37s. Epicentre 35°·6N. 134°·2E. (as on 10d.).

Intensity V at Yonago, Saigo, Matsue, Kobe, Kyoto ; IV at Tottori, Sumoto, Tokusima ; II-III at Hukui, Uwasima, and Ibukiyama.
Epicentre 35°·4N. 133°·8E.
Seismological Bulletin of the Central Meteorological Observatory, Japan, for the Year 1943, Tokyo 1950, pp. 42-43. Macroseismic chart p. 42.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Toyooka	0·5	98	0 13k	− 1	0 23	0	—	—	—
Kobe	1·2	139	0 23k	− 1	0 40	− 1	—	—	—
Kyoto	1·4	115	0 25	− 2	0 46	0	—	—	—
Sumoto	1·4	156	0 23	− 4	0 41	− 5	—	—	—
Hikone	1·7	101	0 32k	+ 1	1 6	+12	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hamada		1·9	248	0 27k	− 7	0 47	−12	—	—	—
Hirosima		1·9	230	0 27	− 7	0 48	−11	—	—	—
Kameyama		2·0	112	0 36	+ 1	1 8	+ 6	—	—	—
Nagoya		2·3	101	0 40	0	1 17	+ 8	—	—	—
Owase		2·3	133	0 37	− 3	1 6	− 3	—	—	—
Siomisaki		2·5	149	0 37	− 6	1 7	− 7	—	—	—
Toyama		2·7	66	0 47	+ 2	1 32	S_g	—	—	—
Simidu		3·0	200	0 43a	− 7	1 21	− 6	—	—	—
Omaesaki		3·4	107	(1 1)	+ 6	(1 55)	S_g	—	—	—
Kohu		3·5	88	1 1	+ 4	1 59	S_g	—	—	—
Shizuoka		3·5	101	0 57	0	1 53	S*	—	—	—
Misima		3·9	96	1 2	0	2 7	S_g	—	—	—
Aikawa		4·1	52	1 6k	+ 1	2 6	S*	—	—	—
Osima		4·3	100	1 2	− 6	2 11	S*	—	—	—
Tokyo Cen. Met. Ob.		4·5	87	1 25	P*	2 32	S_g	—	—	—
Tukubasan		4·8	81	1 17	+ 2	2 39	S_g	—	—	—
Kakioka		4·9	81	1 14	− 3	2 44	S_g	—	—	—
Mito		5·1	79	1 22	+ 2	2 50	S_g	—	—	—
Hatidyozima		5·3	116	1 20	− 2	2 22	− 3	—	—	—
Hukusima		5·5	65	1 30	+ 5	2 42	S*	—	—	—
Onahama		5·6	74	1 30	+ 3	2 17	−16	—	—	—
Sendai		6·0	62	1 38k	+ 6	2 56	S*	—	—	—
Mizusawa		6·5	55	e 1 45	+ 6	3 14	S*	—	—	—
Aomori		7·3	43	1 54	+ 4	—	—	—	—	—
Calcutta	N.	41·8	265	e 13 20	P_cS	—	—	e 17 13	SS	—
Tashkent		50·1	297	e 8 48	−11	e 16 3	− 7	—	—	—
Tinemaha	Z.	81·3	51	e 12 22	+ 2	—	—	e 12 56	?	—
Stuttgart		82·8	327	e 12 33	+ 6	—	—	—	—	e 40·9
Mount Wilson	Z.	83·2	52	e 12 31	+ 2	—	—	—	—	—
Pasadena		83·2	52	i 12 31	+ 2	—	—	i 12 51	P_cP	e 36·7
Riverside	Z.	83·8	52	e 12 26	− 6	—	—	e 12 47	P_cP	—
Florence	N.	85·5	322	—	—	e 23 27	+15	—	—	—
Tucson		89·1	50	e 12 58	0	—	—	—	—	—
St. Louis	E.	95·5	34	—	—	—	—	e 31 38	SSP	e 43·4
Almeria		97·4	326	i 29 21	?	e 32 15	SSP	e 36 30	?	54·4
Granada		97·7	327	i 29 52	?	—	—	—	—	50·4

Omaesaki readings decreased by one minute.
Almeria also gives e −38m.27s.
Long waves were also recorded at Bombay and at other European stations.

Sept. 11d. 19h. 34m. 5s. Epicentre 16°·3S. 172°·8W. (as on 1937 April 1d.).

Epicentre : 16°·5S. 173°·0W. (U.S.C.G.S.)
15°S. 177°W. (Apia)

$A = -·9528$, $B = -·1204$, $C = -·2789$; $\delta = +11$; $h = +5$;
$D = -·125$, $E = +·992$; $G = +·277$, $H = +·035$, $K = -·960$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		2·7	21	i 0 46k	+ 1	i 1 42	S_g	e 0 55	P_g	1·9
Auckland		23·2	208	4 35?	−34	i 9 30	+12	i 5 50	PPP	11·7
Arapuni		24·0	203	2 55?	?	9 31?	− 1	—	—	10·9
Wellington		27·1	202	5 50	+ 4	10 25	+ 1	6 21	PP	12·5
Christchurch		29·8	202	6 15	+ 4	11 8	+ 1	7 18	PPP	14·9
Brisbane		33·5	245	i 6 28	−15	i 11 45	−20	i 7 47	PP	i 16·2
Riverview		36·8	236	i 7 5?	− 6	i 12 45	−11	i 8 25	PP	e 17·1
Sydney		36·8	236	e 6 55	−16	e 12 19	?	e 8 25	PP	e 17·5
Honolulu		40·1	22	e 7 41	+ 2	e 13 42	− 4	e 9 54	PPP	e 16·1
Perth		65·9	242	—	—	—	—	i 27 10	SSS	i 31·1
Santa Barbara		71·4	45	e 11 24	0	—	—	—	—	—
Branner	N.	71·5	41	i 11 26	+ 2	e 20 58	PS	—	—	e 35·5
Santa Clara		71·7	41	e 11 35	+ 9	e 21 21	PPS	—	—	e 32·8
Berkeley		71·8	41	e 11 25	− 1	i 20 50	+ 4	i 20 59	PS	e 33·1
Ukiah		72·0	39	—	—	e 21 3	+14	—	—	e 30·1

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Jolla	z.	72·1	47	e 11 27	− 1	—	—	—	—	—
Pasadena		72·2	46	i 11 26	− 3	e 21 5	+14	i 11 29	P	e 32·5
Ferndale		72·3	37	—	—	e 21 3	+11	e 21 13	PS	—
Mount Wilson	z.	72·4	46	e 11 27	− 3	—	—	e 14 11	PP	—
Palomar	z.	72·7	47	e 11 30	− 2	—	—	i 11 33	P	—
Riverside		72·7	46	e 11 29	− 3	—	—	i 11 32	P	—
Tinemaha		73·9	43	e 11 35	− 4	—	—	i 11 38	P	—
Tucson		76·4	50	i 11 52	− 1	e 21 35	− 3	e 16 6	PPP	e 33·8
Victoria		78·0	32	—	—	e 21 47	− 8	—	—	35·9
Sitka		79·9	20	—	—	e 23 25	PPS	—	—	e 32·8
Salt Lake City		80·0	43	e 12 5	− 7	e 22 32	+15	e 27 35	SS	e 37·0
Logan		80·6	42	i 12 16	0	e 22 26	+ 3	e 23 6	PS	e 34·3
Bozeman		83·1	39	e 13 43	?	e 23 7	+19	—	—	e 35·2
College		83·1	10	e 12 27	− 2	e 22 33	−15	e 25 15	?	e 34·1
Rapid City		87·2	44	e 12 13?	−36	e 22 53?	−35	e 15 42?	PP	e 40·0
Saskatoon		88·9	35	—	—	e 23 54	+10	e 29 55?	SS	40·9
Huancayo		93·7	104	15 4	?	e 24 11	{+ 2}	e 23 22	SKS	e 37·7
St. Louis		94·4	51	e 13 23	0	e 24 18	{+ 4}	e 26 6	PS	—
Chicago		97·2	48	—	—	e 24 17	[+ 4]	e 31 31	SS	e 42·4
La Paz	z.	98·9	110	e 15 19	?	—	—	18 15	PP	48·4
Columbia		100·4	57	—	—	e 24 35	[+ 6]	e 30 32	?	e 46·5
Pittsburgh		102·5	51	—	—	e 24 45	[+ 6]	e 26 9	S	—
Calcutta		104·1	290	e 5 22	?	—	—	e 12 37	P	—
Ottawa		106·9	46	—	—	e 28 7?	PS	e 32 55	?	e 47·9
Fordham		107·1	51	—	—	e 24 40	[−20]	e 34 14	SSP	e 49·9
Harvard		109·0	50	e 18 25	[− 6]	e 28 34	PS	e 29 50	PPS	e 45·9
Seven Falls		109·9	45	—	—	e 25 25?	[+13]	e 28 25?	PS	51·9
San Juan		110·4	75	e 19 33	PP	e 26 33	{+25}	e 35 6	SSP	e 48·7
Kodaikanal	E.	111·6	275	21 55	PPP	—	—	—	—	—
Bombay	E.	117·7	283	19 45	PP	i 27 16	{+18}	29 22	PS	62·9
Andijan		119·2	307	e 19 53	PP	—	—	—	—	—
Tashkent		121·5	308	19 30	?	30 5	PS	23 8	PPP	—
Scoresby Sund		123·0	11	20 30	PP	26 9	[+ 9]	30 31?	PS	49·9
Sverdlovsk		123·2	328	e 20 29	PP	31 37	PPS	e 36 45	?	—
Moscow		134·4	336	19 13	[− 7]	—	—	—	—	—
Upsala		135·8	353	e 22 38?	PP	—	—	—	—	e 66·9
Copenhagen		140·5	356	e 19 35	[+ 4]	—	—	22 25	PP	—
Potsdam		143·7	354	e 22 55?	PP	—	—	—	—	e 75·9
De Bilt		144·2	2	e 19 38	[+ 1]	—	—	i 41 24	SS	e 65·9
Kew		144·4	7	e 19 37	[− 1]	e 26 33	[−13]	e 35 43	PPS	e 65·9
Uccle		145·5	4	e 19 37?	[− 3]	e 41 41	SS	e 46 56	SSS	—
Prague		145·8	351	e 21 31?	?	—	—	e 25 55?	PPP	e 68·9
Cheb		146·1	353	e 23 10	PP	—	—	e 33 15	PS	e 75·9
Ogyalla		147·2	346	e 18 55?	[−48]	—	—	—	—	—
Paris		147·4	6	e 19 40	[− 3]	—	—	i 19 50	PKP_2	70·9
Stuttgart		147·6	358	e 19 37	[− 6]	e 34 7?	PS	e 47 19?	SSS	e 71·2
Bucharest		147·7	334	e 19 55?	[+12]	—	—	—	—	—
Strasbourg		147·8	359	e 19 43	[− 1]	—	—	i 19 50	PKP_2	—
Kalossa		148·3	346	e 20 48	[+64]	—	—	—	—	—
Basle		148·8	358	e 19 45	[− 1]	—	—	—	—	—
Ksara		148·9	309	e 19 38	[− 8]	—	—	e 23 12	PP	—
Zürich		149·0	358	e 19 44	[− 2]	—	—	—	—	—
Neuchatel		149·4	0	e 19 45	[− 1]	—	—	—	—	—
Belgrade		149·5	340	e 19 51	[+ 4]	e 29 38	?	e 23 17	PP	e 80·4
Sofia		150·3	335	e 19 49	[+ 2]	—	—	—	—	—
Clermont-Ferrand		150·4	5	i 19 45	[− 2]	—	—	e 20 19	PKP_2	69·9
Milan		150·9	356	e 19 50	[+ 1]	—	—	31 57	?	—
Florence		152·4	353	i 19 52k	[+ 1]	i 29 41	?	i 20 34	PKP_2	e 67·4
Lisbon		153·5	28	19 2	[−51]	—	—	23 57	PP	71·5
Helwan		154·1	305	19 55	[+ 2]	33 49	PSKS	20 3	PKP_2	—
Toledo		154·6	20	e 19 57	[+ 3]	31 20	{+36}	e 20 42	PKP_2	77·9
San Fernando		156·7	28	e 20 4	[+ 7]	e 27 4	[+ 2]	e 37 25	PPS	76·4
Granada		157·1	22	20 2	[+ 5]	27 17	[+15]	20 35	PKP_2	75·5
Almeria		157·8	20	20 0	[+ 2]	26 43	[−20]	20 14	PKP_2	75·9

For Notes see next page.

NOTES TO SEPTEMBER 11d. 19h. 34m. 5s.

Additional readings :—
Auckland S? =8m.50s., Q =10m.30s.
Wellington i =5m.59s., iZ =7m.0s. and 7m.52s., Q? =11m.19s.?.
Christchurch Q =12m.52s.
Brisbane ipPEZ =6m.31s., iQE =14m.4s.
Riverview ipPZ =7m.15s., iPPPEZ =8m.46s., iSS?N =15m.25s.
Tucson e =13m.21s. and 17m.25s.
Salt Lake City e =31m.13s.
Logan e =12m.59s. and 26m.36s.
Huancayo e =18m.21s., eSS? =30m.27s.
St. Louis eZ =14m.42s., ePPZ =17m.9s.
Harvard e =19m.35s. and 21m.5s., eSS =34m.35s.
Seven Falls e =29m.42s. and 35m.1s.?.
San Juan eS? =27m.14s., e =30m.17s.
Bombay iE =20m.7s. and 28m.22s.
Scoresby Sund 37m.7s.?.
Copenhagen 23m.3s. and 26m.6s.
Kew eZ =21m.43s., ePP?Z =22m.35s., ePKS?Z =23m.14s., ePPP?Z =25m.35s., eSKKS?Z =29m.7s., eZ =31m.7s., ePS?NZ =34m.23s., eSS? =41m.31s., eZ =52m.55s.?.
Stuttgart eZ =20m.35s., e =22m.10s., eQ =67·9m.
Belgrade i =19m.57s., e =44m.37s.
Clermont-Ferrand ePKP =19m.49s., eSS =41m.55s.?.
Florence iPKPN =22m.32s., iPPE =25m.1s., iSKP =26m.17s., iPPPZ =28m.59s., eSN =33m.23s., ePPSE =37m.13s., iSSE =42m.49s., iSSSN =47m.34s.
Lisbon Z =21m.20s., E =24m.43s. and 49m.7s.?.
Helwan eZ =21m.4s., 21m.43s., 23m.47s. and 24m.19s., PPSN =37m.37s.
Toledo PP =24m.35s.
San Fernando eSS?E =44m.50s.
Granada SKP =23m.32s., PP =24m.31s., SKKS =30m.26s., SKSP =34m.16s., SS =43m.12s.
Almeria PKP_2 =21m.7s., PP =24m.37s., PPP =28m.17s., SKKS =30m.29s., SKP =34m.22s., PPS =38m.10s., SSS =51m.15s.
Long waves were also recorded at Colombo, Tananarive, and at other European stations.

Sept. 11d. Readings also at 0h. (Granada, Tortosa, Stuttgart, and Irkutsk), 5h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, Ksara, Bombay, Riverview, Auckland, Wellington, New Plymouth, and Apia), 6h. (Pasadena, Mount Wilson, Riverside, Tinemaha, La Jolla, Santa Barbara, Palomar, and Tucson (2)), 7h. (near La Paz), 9h. (Palomar, Tucson, and Riverview), 11h. (Mount Wilson, Riverside, Tinemaha, Tucson, and La Paz), 18h. (Florence and near Mizusawa), 22h. (Pasadena, Mount Wilson, Tinemaha, Tucson, and Palomar).

Sept. 12d. 1h. 31m. 8s. Epicentre 1°·2N. 121°·8E. (as on 5d.). Depth of focus 0·010.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	38·8	306	—	—	i 13 24	+17	i 16 13	SS	—
Brisbane	N.	41·4	136	i 7 27	−11	i 13 41	− 5	i 16 51	SS	e 21·5
Colombo	E.	42·2	279	e 6 50	−55	—	—	—	—	—
Riverview		44·5	145	i 8 9a	+ 6	i 14 38	+ 7	i 8 15	pP	e 21·1
Bombay	N.	51·1	294	—	—	e 16 16	+12	20 11	SS	—
Andijan		59·5	318	e 9 48	− 7	—	—	—	—	—
Tashkent		61·8	318	e 10 13	+ 2	i 18 37	+12	—	—	—
Auckland		62·0	134	10 22?	+10	18 44	+17	—	—	25·9
Arapuni		63·1	135	—	—	15 52?	?	—	—	—
Christchurch		63·6	141	10 20	− 3	18 26	−21	23 3	Q	26·5
Wellington		63·9	138	10 17	− 8	18 29	−22	11 3	PcP	28·9
Tuai		64·5	136	10 27	− 2	—	—	—	—	—
Sverdlovsk		73·6	330	11 35	+11	i 20 56	+11	—	—	—
Moscow		85·7	326	12 30	+ 1	22 50	− 2	15 54	PP	—
Ksara		85·9	303	e 12 48	+18	e 23 12	+18	—	—	—
Helwan	N.	89·8	299	—	—	i 23 46	+16	e 25 40	PPS	—
Bucharest		93·2	314	—	—	22 52?	[−35]	25 52?	PPS	—
Copenhagen		99·8	327	—	—	24 12	[+ 9]	25 8	S	—
Potsdam		100·4	324	—	—	—	—	e 26 42	PS	e 52·9
Stuttgart		103·8	321	e 18 23	PP	e 24 28?	[+ 6]	e 27 16?	PS	e 50·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Florence		103·9	316	e 18 25	PP	e 24 29	[+ 7]	e 28 22	PPS		e 49·7
Scoresby Sund		104·6	349	—	—	24 33	[+ 7]	27 26	PS		52·9
De Bilt		105·1	326	i 18 38	PP	i 24 40	[+12]	e 33 22	SS		51·9
Uccle		106·0	325	e 18 40	PP	e 24 40	[+ 8]	e 33 38	SS		e 51·9
Paris		107·9	322	e 18 54	PP	—	—	e 28 0	PS		60·9
Kew		108·4	326	e 18 57	PP	e 28 2	PS	e 29 4	PPS		e 53·9
Clermont-Ferrand		108·7	320	e 19 0	PP	—	—	e 28 10	PS		e 43·2
Tinemaha	z.	112·7	49	e 17 56	?	—	—	e 18 30	PKP		—
Pasadena		113·8	52	—	—	—	—	e 28 52	PS		e 46·9
Mount Wilson	z.	113·9	52	e 18 31	[+ 3]	—	—	e 19 3	PP		—
Palomar	z.	115·1	52	i 29 18	PKKP	—	—	—	—		—
Granada		116·7	314	20 8	PP	—	—	40 38	SSS		61·6
Tucson		120·2	51	e 18 42	[+ 2]	e 28 51	?	i 19 2	?		—
La Paz		161·9	148	i 19 56	[+ 6]	—	—	i 20 43	PKP_2		82·9

Additional readings :—
Riverview iN = 17m.52s., iEN = 18m.15s.
Wellington PPPZ = 13m.54s.
Copenhagen 26m.32s.
Stuttgart eSS? = 32m.52s.?, eSSS? = 37m.4s.?.
Scoresby Sund 28m.21s.
De Bilt eSSS = 37m.22s.
Uccle eN = 26m.4s., eE = 37m.28s.
Kew eZ = 22m.52s.? and 34m.22s.?.
Tinemaha iPKKPZ = 29m.26s.
Granada PS = 34m.2s.
La Paz PPZ = 24m.25s.
Long waves were also recorded at Upsala, Prague, Bergen, St. Louis, and Huancayo.

Sept. 12d. Readings also at 0h. (Florence), 1h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Palomar, Tucson, Mizusawa, and Bogota), 3h. (near Mizusawa), 5h. (Florence), 8h. (near Bogota), 18h. (Kew), 19h. (Stalinabad, Tashkent, and Tchimkent), 22h. (Kew).

Sept. 13d. 6h. Undetermined shock. Pasadena suggests deep focus.
Christchurch P = 14m.55s., S = 20m.57s., Q = 23m.7s., R = 26m.17s.
Wellington P?Z = 20m.42s.?, S = 21m.8s., LZ = 23m.
Tuai P = 18m.10s., i = 18m.46s., S = 19m.58s., L = 20m.48s.
Auckland P = 18m.15s.?, S = 20m.5s.
Arapuni e = 20m.24s.?.
Brisbane iPZ = 21m.23s.
Pasadena iP = 28m.25s. a, iZ = 28m.42s., eLZ = 60m.
Mount Wilson iPZ = 28m.26s. a, iZ = 28m.43s.
Palomar iPZ = 28m.28s. a, iZ = 28m.45s.
Riverside ePNZ = 28m.28s.
Haiwee eP = 28m.32s.
Tinemaha iPNZ = 28m.36s., iZ = 28m.54s.
Tucson iP = 28m.41s., i = 28m.59s.
Copenhagen P = 35m.47s.
Stuttgart eZ = 36m.29s.

Sept. 13d. 22h. Undetermined shock.
Auckland i = 21m.0s., S? = 22m.5s., L = 23m.42s.?.
Sydney e = 21m.0s.? and 25m.36s.
Wellington P?Z = 21m.5s.?, PPZ = 21m.48s., S = 24m.18s., P_cP?Z = 24m.25s., Q? = 25m.27s., R = 26m.30s.
Riverview iPZ = 21m.33s. a, iSEZ = 25m.40s., iEN = 25m.49s., eLZ = 27m.0s.
Tuai S? = 21m.42s., L = 25m.23s.
Arapuni e = 22m.0s.?, L = 25m.36s.?.
Brisbane iPZ = 22m.34s., iN = 23m.16s., eN = 27m.14s., iE = 27m.22s. and 28m.14s., eL?N = 29m.34s.
Long waves were also recorded at Christchurch and Tucson.

Sept. 13d. Readings also at 0h. (near Bogota), 1h. (Florence), 5h. (Mount Wilson, Riverside, Tinemaha, Tucson, and Palomar), 6h. (near Lick), 13h. (Riverview, Christchurch, Belgrade, Stuttgart, Basle, Zürich, near Florence and Triest), 16h. (Riverview), 17h. and 20h. (near Mizusawa), 21h. (Brisbane), 22h. (near Berkeley, Lick, Branner, and Santa Clara), 23h. (Tinemaha, Riverside, Tucson, Mount Wilson, Pasadena, Bogota, Tananarive, San Fernando, Paris, Florence, Clermont-Ferrand, Kew, De Bilt, Stuttgart, and near Ksara).

Sept. 14d. 2h. 1m. 10s. Epicentre 22°·0S. 170°·3E. (as on 1943 March 15d.).

Epicentre 22°S. 171°E., depth 50 km., magnitude 7 (Pasadena).

$A = -\cdot9148$, $B = +\cdot1564$, $C = -\cdot3724$; $\delta = 0$; $h = +4$;
$D = +\cdot168$, $E = +\cdot986$; $G = +\cdot367$, $H = -\cdot063$, $K = -\cdot928$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		15·3	166	3 30	− 9	6 15	−15	4 15	PP	—
Brisbane		16·6	247	i 3 54	− 2	i 6 58	− 2	i 4 3	PP	i 10·4
Arapuni		16·7	165	4 8?	+11	7 20?	+17	—	—	—
New Plymouth		17·3	171	4 33?	+29	—	—	i 4 49	PP	8·2
Tuai		17·7	165	4 7	− 3	7 20	− 6	—	—	8·4
Bunnythorp		18·8	167	—	—	7 50?	0	—	—	—
Avia		18·9	70	i 4 27k	+ 3	e 7 51?	− 2	—	—	—
Wellington		19·6	172	4 23	− 9	7 47	−21	5 2	PP	—
Riverview		20·7	230	i 4 42k	− 2	i 8 36	+ 5	5 6	PP	e 9·7
Sydney		20·7	230	i 4 36	− 8	i 8 32	+ 1	—	—	e 10·5
Christchurch		21·6	177	4 46	− 8	8 45	− 4	—	—	11·1
Perth		49·1	247	9 0	+ 9	16 10	+14	10 55	PP	22·5
Honolulu		53·1	38	e 9 23	+ 2	e 17 8	+17	—	—	e 18·9
Naha		63·4	317	e 10 30	− 4	—	—	—	—	—
Miyakozima		63·8	315	e 10 46	+10	—	—	—	—	—
Nagoya		65·1	332	10 40	− 5	—	—	—	—	—
Kobe		65·5	328	10 46	− 1	18 8	?	—	—	—
Koti		65·5	327	10 46	− 1	19 35	+ 3	—	—	—
Nagano		65·8	332	e 10 54	+ 5	—	—	—	—	—
Sendai		66·0	337	e 10 50	0	19 50	+12	—	—	—
Mizusawa	E.	66·7	337	e 10 59	+ 4	20 1	+15	—	—	—
	N.	66·7	337	11 8	+13	20 4	+18	—	—	—
Wazima		66·9	332	e 10 59	+ 3	—	—	—	—	—
Hamada		67·3	327	e 11 7	+ 8	20 8	+14	—	—	—
Sapporo		70·0	339	11 20	+ 5	21 34	+68	—	—	—
Branner	E.	86·7	48	e 12 50	+ 3	—	—	—	—	e 40·6
Berkeley	E.	86·9	48	i 12 48	0	i 23 23	− 3	—	—	e 46·0
Santa Clara		86·9	48	e 12 53	+ 5	e 23 21	− 5	—	—	e 40·5
Ukiah		86·9	46	e 12 43	− 5	e 23 17	− 9	—	—	e 36·5
Santa Barbara	Z.	87·0	52	e 12 50	+ 2	—	—	—	—	—
Pasadena		88·0	52	e 12 54	+ 1	i 23 28	− 8	e 16 21	PP	e 36·8
Mount Wilson	Z.	88·1	52	e 12 53	− 1	—	—	—	—	—
Riverside	Z.	88·5	52	e 12 54	− 2	—	—	—	—	—
Palomar	Z.	88·6	54	i 12 57	+ 1	—	—	—	—	—
Haiwee	Z.	89·1	49	e 13 1	+ 3	—	—	—	—	—
Tinemaha		89·3	49	e 13 3	+ 4	—	—	—	—	—
Calcutta	N.	91·3	294	e 13 37	+28	i 24 27	+21	i 25 34	PS	—
Sitka		91·3	27	e 13 13	+ 4	e 23 40	[0]	e 17 38	PP	e 39·3
Victoria		91·7	38	19 13	PP	23 47	[+ 4]	30 56?	SS	42·8
Seattle		91·9	39	e 21 14	?	e 23 40	[− 4]	—	—	e 42·3
Tucson		92·7	56	i 13 18	+ 3	e 23 58	[+10]	e 18 14	PP	e 42·3
Colombo	E.	92·9	276	e 12 44	−32	23 58	[+ 8]	—	—	44·8
Irkutsk		93·5	325	e 13 26	+ 7	—	—	—	—	—
Salt Lake City		95·4	48	e 17 5	PP	24 1	[− 2]	26 11	PS	e 38·0
Logan		95·8	47	—	—	e 24 13	[+ 7]	e 26 15	PS	e 41·4
Kodaikanal	E.	96·4	279	—	—	i 24 20	[+11]	26 40	PS	—
Bozeman		97·9	44	e 17 17	PP	e 24 27	[+11]	i 26 39	PS	e 46·1
Hyderabad	E.	98·0	286	17 26	PP	—	—	—	—	—
Rapid City		102·6	47	e 17 8?	PP	23 32?	[−67]	e 26 13?	PS	e 50·3
New Delhi	N.	102·8	296	—	—	e 24 56	[+16]	i 26 0	S	—
Saskatoon		103·0	39	—	—	e 24 50	[+ 9]	e 27 34	PS	48·8
Bombay	E.	103·6	285	e 14 14	+10	i 24 57	[+13]	i 18 45	PP	—
La Plata	E.	107·2	140	26 14?	S	30 14?	?	—	—	59·8
	N.	107·2	140	26 26?	S	32 32?	?	37 8	SSS	58·8
Huancayo		107·3	111	e 19 6	PP	e 26 41	S	e 29 53	PPS	e 43·9
St. Louis		110·6	55	e 14 48	P	i 25 20	[+ 5]	i 28 43	PS	e 52·7
Tananarive		110·8	239	—	—	e 25 26	[+11]	28 35	PS	53·2
La Paz		111·2	119	14 44	P	i 25 0	[−17]	19 3	PP	56·2
Chicago		113·1	53	e 19 31	PP	e 25 36	[+11]	e 29 12	PS	e 48·1
Columbia		117·0	62	e 19 49	PP	e 25 46	[+ 7]	e 29 50	PS	e 56·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pittsburgh		118·7	55	e 17 50	?	i 25 50	[+ 5]	e 29 52	PS	—
New Kensington		118·9	55	e 22 2	PKS	e 26 3	[+17]	e 30 23	PS	—
Sverdlovsk		118·9	324	20 11	PP	25 50	[+ 4]	30 18	PS	—
Georgetown		120·8	57	20 16	PP	i 26 15	[+22]	e 29 58	PS	—
Ottawa		122·0	48	18 56	[− 1]	26 2?	[+ 5]	20 50?	PP	58·8
Philadelphia		122·3	55	e 20 17	PP	i 26 7	[+ 9]	e 30 59	PS	e 51·4
Fordham		123·3	54	e 19 7	[+ 8]	i 26 7	[+ 6]	i 30 47	PS	—
Rio de Janeiro	N.	124·7	142	e 20 50	PP	—	—	—	—	—
Harvard		125·1	53	e 19 8	[+ 5]	e 22 20	PKS	e 20 55	PP	e 58·8
Weston		125·2	53	e 34 2	?	—	—	—	—	—
Seven Falls		125·3	46	20 56	PP	26 19	[+12]	27 56?	SKKS	58·8
San Juan		127·2	83	e 19 25	[+19]	e 26 12	[0]	e 37 54	SS	—
Bermuda		130·5	66	e 21 42	PP	i 22 54	PKS	e 33 38	PPS	e 61·4
Halifax		130·6	49	e 22 2?	PP	—	—	—	—	58·8
Fort de France		130·8	90	e 19 17	[+ 3]	—	—	e 22 20	PKS	—
Scoresby Sund		131·0	6	19 26	[+12]	22 46	PKS	21 40	PP	58·8
Ivigtut		132·7	25	—	—	e 22 51	PKS	—	—	e 62·7
Upsala		137·5	341	e 22 5	PP	—	—	e 45 50?	SSS	e 61·8
Ksara		138·3	296	e 19 44	[+17]	—	—	e 23 16	PKS	—
Bergen		140·2	348	e 22 37	PP	e 28 58	{−24}	e 23 18	PKS	e 67·8
Helwan		142·4	291	e 19 33	[− 2]	e 29 5	{−30}	e 23 14	PKS	—
Copenhagen		142·5	340	e 19 32	[− 3]	22 46	PP	23 22	PKS	—
Bucharest		143·0	316	e 19 36	[0]	—	—	—	—	68·8
Aberdeen	E.	144·4	353	i 19 36	[− 2]	—	—	—	—	e 72·8
Potsdam		145·0	337	e 19 45	[+ 6]	—	—	—	—	e 61·8
Sofia		145·6	315	e 19 46	[+ 6]	—	—	—	—	—
Ogyalla	N.	145·9	326	18 53	[−48]	—	—	—	—	—
Belgrade		146·2	320	e 19 44	[+ 3]	e 42 4	SS	e 23 19	PP	e 84·3
Kalossa		146·2	324	e 19 50?	[+ 9]	—	—	—	—	—
Prague		146·2	332	i 19 49k	[+ 8]	e 26 50?	[+ 1]	e 23 32	PP	e 66·8
Jena		146·7	335	e 19 45	[+ 3]	—	—	(e 36 50)	PPS	e 36·8
Cheb		147·0	335	e 19 55	[+12]	e 30 15	{+13}	e 23 24	PP	e 72·8
Stonyhurst		147·7	352	20 14	[+30]	23 15	PP	43 58	SS	e 68·8
De Bilt		147·8	343	i 19 49a	[+ 5]	—	—	i 42 46	SS	e 69·8
Uccle		149·2	344	e 19 38	[− 8]	e 20 6	PKP_2	e 43 2?	SS	—
Stuttgart		149·3	336	e 19 43	[− 3]	e 33 38?	PS	e 43 2?	SS	e 75·3
Triest		149·6	327	e 19 50	[+ 3]	—	—	—	—	e 66·8
Kew		149·7	349	i 19 47	[0]	e 23 36	PP	e 33 41	PS	e 70·8
Strasbourg		150·0	337	e 20 0	[+13]	—	—	—	—	—
Zürich		150·7	335	20 2	[+14]	—	—	—	—	—
Basle		151·0	336	20 0	[+11]	e 27 41	[+46]	e 31 4	SKKS	—
Paris		151·5	344	e 19 52	[+ 2]	e 30 38	{+12}	e 23 46	PP	74·8
Neuchatel		151·7	335	19 51	[+ 1]	—	—	—	—	—
Milan	E.	151·9	331	e 19 57	[+ 7]	43 26	SS	i 25 6	?	76·0
Florence		152·2	327	i 20 4k	[+13]	i 31 30	{+60}	i 24 18	PP	—
Clermont-Ferrand		154·1	340	i 19 55	[+ 2]	e 34 31	PS	e 23 54	PP	e 56·8
Barcelona		158·2	336	e 24 21	PP	—	—	(e 51 2)	SSS	e 51·0
Tortosa	E.	159·3	337	e 20 56	[+56]	31 24	{+15}	—	—	82·2
Toledo		161·5	347	e 20 4	[+ 2]	e 26 42	[−24]	e 24 42	PP	83·8
Lisbon		163·3	358	19 45	[−19]	—	—	23 57	PP	76·9
Almeria		163·9	338	20 0	[− 5]	26 54	[−14]	20 27	pPKP	82·3
Granada		164·0	342	i 20 8	[+ 3]	i 45 29	SS	i 24 44	PP	84·0
San Fernando		165·3	349	20 11	[+ 5]	46 25	SS	25 22	PP	82·3

Additional readings :—
Auckland sS? =7m.25s.
Brisbane iPPN =4m.6s., iPPPN =4m.18s., iSN =7m.2s.
Apia eZ =7m.17s.
Wellington i =4m.28s. and 6m.6s., sS =9m.17s., P_cP =10m.7s., pS_cS =15m.50s., i = 19m.0s. and 24m.10s.?.
Riverview PPPEN =5m.16s., iN =5m.45s., iSN =8m.40s., iE =8m.50s.
Perth PPP =11m.50s., i =19m.50s., SSS =20m.20s.
Honolulu e =14m.21s.
Branner ePN =12m.54s.
Berkeley ePEN =13m.0s., iSZ =23m.36s.
Pasadena iPSEN =24m.53s., eSSSEN =33m.2s.?.

Continued on next page.

Sitka e =30m.58s.
Tucson e =14m.41s. and 24m.44s., ePS =25m.29s., eSS =30m.25s., e =34m.40s.
Salt Lake City ePP =17m.13s., e =24m.15s., eSS =31m.42s.
Logan eSS =31m.43s.
Bozeman e =25m.20s. and 31m.6s., eSSS =35m.47s.
New Delhi iN =33m.6s.
Saskatoon e =33m.26s.? and 40m.32s.?.
Bombay PPPE =20m.59s., SKKSN =26m.4s., SKKSE =26m.8s., PSEN =27m.53s., SSN =33m.16s, SSSE =37m.10s., SSSN =37m.16s.
La Plata PPP?N =27m.50s.?.
Huancayo eSS =34m.6s., eSSS =38m.47s.
St. Louis ePPE =19m.12s., iSKKSE =26m.23s., eSN =27m.2s., eE =27m.38s., iPPSE =31m.2s., eSSSE =39m.12s., eSSSSE =42m.32s.
Tananarive SS =34m.54s.
La Paz iZ =20m.49s., iSKKS =26m.7s., iPPS =28m.52s., iSS =33m.25s., iZ = 40m.46s.
Chicago e =26m.7s., eSS =35m.32s.
Columbia eSS =36m.16s.
Georgetown SS =32m.5s.
Ottawa SKPN =21m.50s.?, PSE =30m.20s.?, SSE =37m.50s.?.
Philadelphia eSS =37m.31s.
Harvard e =23m.40s., 25m.47s., and 31m.50s., i =32m.35s., e =38m.35s., and 39m.58s.
Seven Falls PS =30m.56s., SS =37m.43s.
San Juan ePP =21m.22s., e =33m.22s.
Bermuda e =34m.36s. and 41m.42s.
Scoresby Sund 26m.37s., 31m.57s., 34m.47s., 40m.8s.?, 41m.32s.?, and 44m.20s.?.
Ivigtut e =35m.4s. and 48m.43s.
Upsala eN =43m.50s. iN =57m.50s.
Helwan eEZ =22m.59s., eZ =19m.50s.
Copenhagen 19m.45s.
Sofia iN =20m.3s.
Ogyalla ePE =18m.58s.
Belgrade e =20m.9s., and 20m.43s., i =24m.31s., e =31m.36s., e =43m.44s.
Prague ePPP =27m.26s., eSKKS =30m.8s., ePPP ($\Delta > 180°$) =32m.50s., eSKKS ($\Delta > 180°$) =33m.50s.?, ePPS =37m.26s., eSS =43m.20s., eSSS =48m.50s.
Jena i =19m.50s., iNZ =20m.19s.
Cheb eSS =43m.2s.
Stonyhurst PP =24m.7s., PPP =27m.53s., PPPP =33m.40s., PPS =37m.26s., eSSS? = 50m.5s.
Uccle eSSSN =48m.52s., eN =53m.51s.
Stuttgart ePKP?Z =19m.48s., iZ =19m.58s., ePP?Z =21m.39s., eS =30m.17s., eSS? =39m.8s.?, eQ =68m.20s.?.
Strasbourg e =20m.22s.
Paris i =20m.12s.
Florence iPKP$_2$E =20m.50s., iSKSE =25m.50s., iPPP =28m.29s., iPSKSE =35m.18s., iSSE =45m.1s.
Clermont-Ferrand ePKP =20m.0s., ePKP$_2$ =20m.32s., e =38m.41s.
Tortosa SKPE? =24m.21s., PPE =25m.36s.
Toledo iPKP$_2$? =20m.51s., SS =45m.13s.
Lisbon PKP$_2$Z =20m.57s., PPN =25m.20s., PPPN =27m.56s. and 28m.50s., PPPE = 29m.12s.?.
Almeria PKP$_2$ =21m.43s., sPKP$_2$ =21m.55s., PP =24m.54s., pPP =25m.20s., pSKS = 27m.28s., PPP =28m.52s., SPP =38m.26s., PPS =38m.47s., SSS =51m.42s.
Granada PKP$_2$ =21m.16s., SKSP =35m.48s.
Long waves were also recorded at Balboa Heights and Lick.

Sept. 14d. 3h. 47m. 12s. Epicentre 22°·0S. 170°·3E. (as at 2h.).

Epicentre 22°S. 170°E. Depth 50 km. Magnitude 7·2 (Pasadena).

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland	15·3	166	3 33	− 6	i 6 33	+ 3	—	—	(8·0)
Brisbane	16·6	247	i 3 56	0	i 7 1	+ 1	i 4 0	pP	—
Arapuni	16·7	165	4 6?	pP	7 24	+21	—	—	—
New Plymouth	17·3	171	4 23	pP	7 21	+ 5	—	—	7·8
Tuai	17·7	165	4 5	− 5	7 15	−11	i 4 18	pP	9·6
Bunnythorp	18·8	167	—	—	7 48?	− 2	—	—	—
Apia	18·9	70	i 4 23	− 1	e 7 59	+ 6	—	—	—
Wellington	19·6	172	3 31	−61	7 55	−13	4 51	pP	—
Riverview	20·7	230	i 4 43	− 1	i 8 40	+ 9	i 5 3	PP	i 9·8
Sydney	20·7	230	i 4 24	−20	i 8 24	− 7	—	—	e 9·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Christchurch		21·6	177	4 49	− 5	8 43	− 6	—	—	10·8
Perth		49·1	247	8 18	−33	16 0	+ 4	10 18	PP	22·0
Honolulu		53·1	38	9 26	+ 5	16 46	− 5	e 10 48	PP	e 22·2
Osima		63·6	332	e 10 27	− 8	—	—	—	—	—
Miyakozima		63·8	315	e 10 19	−17	—	—	—	—	—
Yokohama		64·0	333	10 43	+ 5	—	—	—	—	—
Misima		64·1	332	i 10 43	+ 5	19 18	+ 4	—	—	—
Tukubasan		64·6	334	10 11	−30	19 16	− 5	—	—	—
Nagoya		65·1	332	i 10 50	+ 5	19 33	+ 6	—	—	—
Nagano		65·8	332	i 10 54	+ 5	—	—	—	—	—
Sendai		66·0	337	e 10 50	0	19 45	+ 7	—	—	—
Mizusawa		66·7	337	11 0	+ 5	20 24	+38	—	—	—
Aikawa		66·9	333	e 10 58	+ 2	—	—	—	—	—
Hukuoka		67·1	325	11 2	+ 5	—	—	—	—	—
Morioka		67·1	337	e 11 2	+ 5	—	—	—	—	—
Hamada		67·3	327	10 57	− 2	19 55	+ 1	—	—	—
Mori		69·5	338	e 11 19	+ 7	—	—	—	—	—
Sapporo		70·0	339	11 20	+ 5	21 24	+58	—	—	32·8
Zinsen		72·1	325	e 11 20	− 8	20 54	+ 4	—	—	—
Branner		86·7	48	e 12 49	+ 2	—	—	—	—	e 40·4
Berkeley		86·9	48	i 12 48	0	—	—	—	—	e 40·7
Santa Clara		86·9	48	i 12 51	+ 3	e 23 44	+18	e 24 40	PS	e 40·1
Ukiah		86·9	46	e 12 48	0	e 23 30	+ 4	—	—	e 36·2
Santa Barbara	Z.	87·0	52	i 12 54	+ 6	—	—	—	—	—
Pasadena		88·0	52	e 12 53	0	i 24 41	PS	e 16 15	PP	e 36·1
La Jolla		88·1	54	e 12 53	− 1	—	—	—	—	—
Mount Wilson		88·1	52	i 12 54	0	—	—	—	—	—
Riverside		88·5	52	e 12 55	− 1	—	—	—	—	—
Palomar	Z.	88·6	54	i 12 57	+ 1	—	—	—	—	—
Haiwee		89·1	49	e 12 59	+ 1	—	—	—	—	—
Tinemaha	Z.	89·3	49	e 13 1	+ 2	—	—	—	—	—
Calcutta	N.	91·3	294	e 13 24	+15	i 24 14	+ 8	i 25 21	PS	—
Sitka		91·3	27	e 16 46	PP	e 24 2	− 4	i 25 18	PS	e 40·2
Victoria		91·7	38	—	—	e 23 48	[+ 5]	—	—	49·8
Seattle		91·9	39	e 18 53	PPP	e 25 25	PS	e 30 49	SS	e 43·0
College		92·4	17	—	—	—	—	e 30 52	SS	e 40·5
Tucson		92·7	56	i 13 14	− 1	e 23 50	[+ 2]	e 16 57	PP	e 41·2
Salt Lake City		95·4	48	e 16 40	PP	e 24 5	[+ 2]	e 25 44	PS	e 39·8
Logan		95·8	47	—	—	i 24 8	[+ 3]	i 26 13	PS	e 38·6
Kodaikanal	E.	96·4	279	e 13 38	+ 6	24 18	[+ 9]	26 40	PS	—
Bozeman		97·9	44	e 18 57	?	e 26 31	PS	e 32 7	SS	e 42·1
Rapid City		102·6	47	e 16 28?	PP	e 23 22?	[−77]	e 26 59?	PS	e 34·6
New Delhi		102·8	296	—	—	i 24 47	[+ 7]	i 25 50	SKKS	—
Saskatoon		103·0	39	18 24?	PP	27 24	PS	33 24?	SS	48·8
Bombay		103·6	285	18 23	PP	i 24 47	[+ 3]	33 6	SS	—
Huancayo		107·3	111	e 17 57	PKP	e 25 19	[+19]	e 33 49	SS	e 50·0
St. Louis		110·6	55	e 19 2	PP	i 25 16	[+ 1]	e 26 50	S	e 51·8
Tananarive		110·8	239	—	—	24 42	[−33]	28 39	PS	47·1
La Paz		111·2	119	19 15k	PP	25 33	[+16]	i 28 41	PS	65·1
Tashkent		112·2	307	e 18 40	[+ 3]	i 27 16	S	—	—	—
Chicago		113·1	53	e 19 10	[+31]	e 34 4	SS	e 29 2	PS	e 47·2
Columbia		117·0	62	—	—	e 27 11	(+17)	e 29 47	PS	e 49·4
Pittsburgh	N.E.	118·7	55	e 20 2	PP	—	—	—	—	e 59·0
New Kensington		118·9	55	e 20 21	PP	—	—	—	—	e 59·7
Georgetown		120·8	57	e 18 24	[−30]	—	—	—	—	57·8
Ottawa		122·0	48	18 58	[+ 1]	37 12?	SS	20 30?	PP	e 52·8
Philadelphia		122·3	55	20 33	PP	—	—	e 30 39	PS	e 51·3
Fordham		123·3	54	e 18 59	[0]	—	—	e 30 9	PS	—
Harvard		125·1	53	e 19 4	[+ 1]	e 32 26	PPS	e 20 50	PP	e 58·8
Weston		125·2	53	e 19 5	[+ 2]	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Seven Falls		125·3	46	20 54	PP	30 54?	PS	37 39	SS	55·8
San Juan		127·2	83	19 15	[+ 8]	e 30 59	PS	e 22 20	PKS	—
Bermuda		130·5	66	i 22 47	PKS	e 28 14	{− 9}	e 41 44	?	e 62·5
Halifax		130·6	49	e 22 4	PP	—	—	—	—	56·8
Fort de France		130·8	90	e 19 13	[− 1]	e 22 36	PKS	—	—	—
Scoresby Sund		131·0	6	19 16	[+ 2]	22 42	PKS	39 54	SS	—
Ivigtut		132·7	25	e 22 42	PKS	e 40 24	SS	—	—	e 57·2
Upsala		137·5	341	e 19 12?	[−14]	i 22 53	PKS	e 45 48?	SSS	e 55·8
Ksara		138·3	296	e 19 33	[+ 6]	—	—	e 23 11	PKS	—
Bergen		140·2	348	e 19 20	[−11]	e 41 8	SS	e 22 28	PP	e 65·8
Helwan		142·4	291	19 33	[− 2]	33 3	PS	22 51	PP	—
Copenhagen		142·5	340	19 28	[− 7]	23 17	PKS	22 42	PP	—
Bucharest		143·0	316	e 19 36	[0]	—	—	—	—	83·8
Potsdam		145·0	337	i 19 43	[+ 4]	—	—	—	—	e 61·8
Sofia		145·6	315	e 19 45	[+ 5]	e 25 56	PPP	e 33 12	PS	—
Ogyalla		145·9	326	18 38	[−63]	—	—	—	—	e 73·3
Belgrade		146·2	320	i 19 46	[+ 5]	i 23 13	PKS	i 23 4	PP	e 74·3
Kalossa		146·2	324	e 19 48?	[+ 7]	—	—	—	—	—
Prague		146·2	332	i 19 47k	[+ 6]	e 27 0?	[+11]	e 23 0	PP	e 63·8
Jena		146·7	335	i 19 47	[+ 5]	—	—	—	—	—
Cheb		147·0	335	e 19 46	[+ 3]	—	—	—	—	e 67·8
Stonyhurst		147·7	352	e 15 24	P	—	—	—	—	—
De Bilt		147·8	343	e 19 45	[+ 1]	—	—	e 23 18	PP	e 61·8
Uccle	z.	149·2	344	19 46	[0]	e 23 25	PKS	—	—	—
Stuttgart	z.	149·3	336	i 19 46	[0]	—	—	i 23 36	PP	—
Triest		149·6	327	e 19 48	[+ 1]	—	—	—	—	e 72·8
Strasbourg		150·0	337	e 19 50	[+ 3]	e 29 43	{−35}	—	—	66·8
Zürich		150·7	335	e 19 53	[+ 5]	—	—	—	—	—
Basle		151·0	336	e 19 54	[+ 5]	—	—	—	—	—
Paris		151·5	344	i 19 50	[0]	—	—	(e 47 48?)	SSS	e 47·8
Neuchatel		151·7	335	e 19 54	[+ 4]	—	—	—	—	—
Milan		151·9	331	e 19 52	[+ 2]	44 32	SS	i 24 44	PP	69·1
Florence		152·2	327	i 19 52k	[+ 1]	i 31 20	{+50}	i 24 36	PP	—
Clermont-Ferrand		154·1	340	e 19 59	[+ 6]	—	—	e 34 23	PSKS	e 65·8
Barcelona		158·2	336	e 24 4	PP	—	—	(e 51 0)	SSS	e 51·0
Tortosa	E.	159·3	337	19 58	[− 2]	e 44 56	SS	50 25	SSS	84·4
Toledo		161·5	347	i 20 7	[+ 5]	e 27 0	[− 6]	i 24 34	PP	67·8
Lisbon		163·3	358	19 11	[−53]	44 30?	SS	24 45	PP	80·9
Almeria		163·9	338	20 3	[− 2]	26 54	[−14]	20 26	pPKP	81·3
San Fernando		165·3	349	20 10	[+ 4]	—	—	25 23	PP	—

Additional readings :—
Auckland L is given as S?.
Brisbane iPPN =4m.11s., iPPPN =4m.19s., iPPPZ =4m.22s., iSZ =6m.55s., iZ = 7m.29s.
New Plymouth i =4m.33s.
Tuai i =7m. 28s.
Apia eEN =4m.34s., eZ =9m.18s., eEN =9m.23s.
Wellington i =4m.9s., sP =5m.46s., sP_cP =8m.40s., S_cP =9m.20s., sS =10m.15s., i =11m.40s., and 14m.8s., pS_cS? =15m.10s., sS_cS =17m.8s.?.
Riverview iE =5m.49s. and 6m.6s., iEN =8m.52s., iN =9m.41s.
Perth PPP =11m.18s., PS =16m.28s., SS =19m.18s.
Honolulu e =13m.23s. and 20m.50s.
Yokohama e =11m.33s.
Mizusawa ePN =11m.6s.
Sitka e =21m.34s., eSS? =29m.35s., i =33m.18s.
Victoria e =25m.33s., 30m.0s.?, and 42m.48s.?.
Tucson e =19m.12s., eS =24m.43s., e =25m.34s., eSS =30m.31s., eSSS =34m.7s., ePKPPKP =38m.47s.
Salt Lake City e =16m.48s., and 24m.25s., eSS =31m.35s., eSSS? =34m.46s.
Logan eSS =31m.25s. and i =34m.35s.
Bozeman eSSS =35m.45s.
New Delhi SSN =32m.57s.
Saskatoon SSS =36m.57s.
Bombay PPPE =20m.38s., PPPN =20m.48s., SN =25m.40s., iN =25m.58s., iE = 26m.5s., PPSEN =28m.21s., SSPE =33m.15s., SSSN =36m.58s.
Huancayo eS =26m.35s., e =30m.24s.
St. Louis eSKKSE =26m.15s., iPSE =28m.38s., iPPS?E =29m.16s., iSSE =35m.0s., iPKP,PKP?N =37m.25s., iSSSSE =42m.37s., eQN =46m.46s.

Continued on next page.

La Paz PPS = 29m.36s., SSS = 39m.12s.
Chicago e = 30m.25s., eSSS = 39m.15s.
Ottawa PPS = 31m.48s.?, eE = 38m.0s.
Fordham e = 20m.45s.
Harvard e = 20m.10s., ePKS? = 22m.18s., e = 24m.36s., and 33m.48s.
San Juan e = 35m.55s.
Scoresby Sund 21m.32s., 24m.0s., and 44m.12s.?.
Upsala eN = 19m.22s.
Bergen eEN = 37m.13s. and 46m.16s.
Helwan eZ = 19m.42s., eEZ = 22m.47s.
Copenhagen 19m.36s.
Ogyalla PE = 18m.50s.
Belgrade e = 26m.3s., eSKSP = 33m.25s., ePPS = 36m.40s.
Prague ePPP = 26m.33s., e = 29m.18s., ePPP ($\Delta > 180°$) = 33m.6s.?, ePPS = 35m.54s., eSS = 41m.12s.
Jena iZ = 19m.54s.?, iEN = 20m.12s.
Stonyhurst e = 15m.56s., iS = 20m.1s., 20m.43s., i = 21m.0s., iSS = 21m.13s., SSS = 21m.28s., P_cS? = 22m.18s., L = 22m.35s. Trace wrongly interpreted.
De Bilt iZ = 19m.50s. and 20m.49s.
Uccle iZ = 19m.54s., iPKP_2Z = 20m.8s.?, eZ = 49m.6s.?.
Stuttgart eZ = 23m.4s. and 24m.21s.
Strasbourg i = 20m.1s. and 20m.39s.
Paris e = 19m.58s.
Florence iPKP_2Z = 20m.48s., iPPPN = 28m.45s., iSSN = 44m.34s.
Tortosa SSPE? = 45m.52s.
Toledo iPKP_2 = 20m.53s., SS = 45m.22s.
Lisbon PKP_2NZ = 20m.5s., PPN = 23m.20s., SKSP?E = 34m.7s., N = 35m.14s., E = 35m.20s., SS?N = 37m.44s., E = 50m.19s., N = 50m.54s.?, E = 68m.54s.? and 76m.48s.?, N = 77m.24s.?.
Almeria PKP_2 = 21m.9s., pPKP_2 = 21m.37s., PP = 24m.43s., pPP = 25m.12s., pSKS = 27m.29s., PPP = 28m.52s., SPP = 38m.25s., PPS = 38m.48s., SS = 45m.33s., SSS = 51m.41s., Q = 76m.9s.
Long waves were also recorded at La Plata and Lick.

Sept. 14d. 7h. 18m. 4s. Epicentre 30°·1S. 177°·8W.

Epicentre 30°S. 177°W. Depth of focus 60 km. Magnitude 7·5. (Pasadena).

A = −·8660, B = −·0333, C = −·4990; δ = +7; h = +2;
D = −·038, E = +·999; G = +·499, H = +·019, K = −·867.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		9·2	221	2 17	+ 1	—	—	—	—	—
Arapuni		9·6	213	2 56?	PPP	5 14?	+62	—	—	—
Tuai		9·6	204	2 23	+ 2	4 12	0	2 48	PPP	5·1
New Plymouth		11·2	215	3 5	PPP	5 33	SSS	i 5 9	SS	6·9
Bunnythorp		11·5	207	2 56?	+ 8	6 20?	L	—	—	(6·3)
Wellington		12·7	207	2 56	− 9	5 16	−12	3 13	PP	—
Christchurch		15·4	207	3 39	− 1	6 21	−11	—	—	—
Apia		17·1	22	e 4 0	− 2	i 7 11	− 1	e 4 10	PP	—
Brisbane	z.	25·7	268	i 5 34	+ 1	i 8 40	P_cP	i 5 39	pP	—
Riverview		26·5	254	i 5 45a	+ 4	i 10 16	+ 2	i 6 6	PP	e 12·7
Sydney		26·5	254	e 5 20	−21	e 11 35	SS	e 6 23	PP	e 13·9
Honolulu		54·6	23	e 9 39	+ 7	e 17 8	− 3	e 9 49	pP	e 22·5
Perth		56·1	250	—	—	24 1	SSS	—	—	26·9
Osima		76·1	325	e 11 52	+ 1	—	—	—	—	—
Yokohama		76·5	325	e 12 1	+ 7	—	—	(e 21 59)	PS	e 22·0
Misima		76·6	324	11 52	− 2	20 34	−66	—	—	—
Naha		76·6	310	e 11 58	+ 4	—	—	—	—	—
Shizuoka		76·8	324	e 11 53	− 2	21 43	+ 1	—	—	—
Kumagaya		77·2	325	11 59	+ 2	22 2	+15	—	—	—
Nagoya		77·6	324	i 11 58	− 2	22 13	+22	—	—	—
Nagano		78·2	325	i 12 4	+ 1	—	—	—	—	—
Sendai		78·2	328	e 11 58	− 5	22 9	+12	—	—	—
Kôti		78·3	320	12 5	+ 2	21 40	−19	—	—	—
Mizusawa	E.	78·8	329	12 5	− 1	22 23	+19	—	—	—
	N.	78·8	329	e 12 8	+ 2	22 28	+24	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Morioka		79·2	329	e 12 11	+ 3	—	—	—	—	—
Hukuoka		80·0	318	e 12 13	0	—	—	—	—	—
Hamada		80·1	320	e 12 15	+ 2	22 13	− 5	—	—	—
Mori		81·5	330	e 12 28	+ 7	e 22 50	+18	—	—	—
Sapporo		81·9	332	12 25	+ 2	22 54	+18	—	—	34·9
Santa Barbara		84·4	45	i 12 35	− 1	—	—	i 12 40	P_cP	—
La Jolla		84·9	47	e 12 36	− 2	—	—	i 12 54	P_cP	—
Branner		85·0	41	i 12 41	+ 3	e 23 5	− 2	—	—	e 38·1
Pasadena		85·1	46	i 12 37 a	− 2	i 23 2	[+ 1]	i 15 50	PP	i 34·6
Santa Clara		85·1	41	e 12 38	− 1	e 23 6	− 2	—	—	e 38·6
Berkeley		85·2	41	i 12 37	− 2	e 23 12	+ 3	i 23 6	SKS	e 38·6
Lick	N.	85·2	41	e 12 42	+ 3	—	—	—	—	e 37·9
Mount Wilson		85·3	46	e 12 37	− 3	—	—	i 12 45	P_cP	—
Palomar	Z.	85·4	47	e 12 39	− 1	—	—	i 12 46	P_cP	—
Riverside		85·5	46	e 12 39	− 2	—	—	i 12 45	P_cP	—
Ukiah		85·6	39	e 12 41	0	e 23 21	+ 8	e 22 41	SKS	e 38·4
Fresno	N.	85·9	43	e 12 42	− 1	—	—	—	—	e 39·3
Ferndale		86·0	37	i 12 44	+ 1	e 23 24	+ 7	e 23 32	S_eS	e 39·5
Haiwee	Z.	86·6	44	i 12 45	− 1	—	—	i 12 59	P_cP	—
Tinemaha		87·0	44	e 12 47	− 1	—	—	i 13 9	P_cP	—
Tucson		88·7	51	i 12 55	− 2	e 23 50	+ 7	i 13 15	P_cP	e 42·3
Seattle		92·0	34	e 13 13	+ 1	e 23 39	[− 5]	—	—	e 42·3
Victoria		92·1	33	13 21	+ 9	24 19	+ 6	30 56?	SSP	36·9
Salt Lake City		93·2	44	e 13 18	+ 1	e 23 46	[− 5]	e 30 31	SS	e 38·4
Logan		93·8	43	13 21	+ 1	e 23 35	[−19]	i 13 31	pP	42·0
La Plata	E.	94·0	134	15 44?	?	24 2?	[+ 6]	25 45	PS	29·9
	N.	94·0	134	13 20?	− 1	23 56	[0]	25 38?	PS	31·0
Sitka		94·3	21	e 13 24	+ 1	e 24 12	{− 1}	e 13 40	pP	e 38·9
Huancayo		94·6	107	e 13 27	+ 3	i 24 1	[+ 2]	i 25 55	PS	e 35·0
Bozeman		96·7	40	e 13 37	+ 4	e 24 8	[− 2]	e 25 12	S	e 44·4
College		97·5	12	e 17 32	PP	e 24 3	[−11]	e 30 31	?	e 38·4
La Paz		98·0	114	i 13 44k	+ 5	i 24 34	{− 6}	25 16	S	40·9
Saskatoon		102·7	36	18 26	PP	24 32	[− 8]	27 32?	PS	47·9
Calcutta		104·1	287	—	—	i 27 54	PS	i 29 1	PPS	—
Bogota		104·2	93	e 14 13	+ 6	—	—	e 18 28	PP	58·9
St. Louis		106·3	54	e 14 17	P	i 26 16	+ 3	i 28 2	PS	43·0
Irkutsk		106·4	321	e 18 6	PP	e 24 51	[− 6]	—	—	—
Kodaikanal		107·8	272	19 16	PP	i 25 26	[+23]	28 24	PS	—
Chicago		109·5	52	e 19 16	PP	e 25 10	[0]	e 28 38	PS	e 42·0
Hyderabad	E.	110·2	279	19 24	PP	—	—	29 9	PS	—
Columbia		111·3	62	e 19 22	PP	e 28 51	PS	e 34 57	SS	e 47·4
Rio de Janeiro	N.	111·6	135	e 18 56	PP	e 25 13	[− 6]	e 28 56	PS	e 34·1
Pittsburgh		114·4	56	i 19 9	PP	e 25 16	[−14]	i 29 12	PS	—
New Kensington		114·6	56	e 20 1	PP	e 25 41	[+11]	e 29 49	PS	e 54·0
Tananarive		114·6	228	—	—	29 32	PS	35 46	SSP	48·3
Bombay		115·7	277	19 47	PP	29 30	PS	i 31 10	PPS	—
New Delhi	N.	115·8	289	—	—	i 26 1	[+26]	i 27 11	SKKS	—
San Juan		117·4	83	e 15 13	P	e 25 35	[− 5]	i 29 47	PS	—
Philadelphia		117·7	58	e 20 1	PP	e 25 29	[−13]	e 29 41	PS	e 47·8
Ottawa		118·8	51	18 48?	[− 2]	25 38?	[− 8]	30 8?	PS	e 54·9
Fordham		118·9	57	e 18 53	[+ 2]	i 25 45	[− 1]	i 30 11	PS	—
Fort de France		120·1	90	e 18 56	[+ 3]	—	—	—	—	—
Harvard		121·0	55	e 18 54	[− 1]	e 25 56	[+ 3]	e 30 4	PS	e 57·9
Shawinigan Falls		121·1	50	e 19 14?	[+19]	—	—	—	—	53·9
Weston		121·1	55	e 15 30	P	e 25 56	[+ 2]	e 30 20	PS	—
Seven Falls		122·5	50	20 36	PP	26 2	[+ 4]	30 20	PS	54·9
Andijan		123·2	301	18 59	[0]	—	—	—	—	—
Bermuda		123·6	69	e 20 53	PP	e 26 28	[+26]	e 30 48	PS	e 52·2
Tashkent		125·6	301	e 19 6	[+ 2]	e 26 28	[+20]	—	—	—
Halifax		127·1	54	e 20 44?	PP	e 37 56?	SS	e 28 44?	?	53·9

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Sverdlovsk		131·8	321	22 41	PKS	i 28 43	{+12}	33 50 PPS	—
Ivigtut		134·8	32	e 22 6	PP	e 22 53	PKS	c 39 36 SS	—
Scoresby Sund		137·4	11	19 18	[− 8]	23 9	PKS	22 8 PP	42·4
Grozny		143·1	303	e 19 34	[− 2]	—	—	— —	—
Upsala		148·5	345	e 19 38?	[− 7]	e 29 55	{−15}	e 35 56? PPS	e 63·9
Bergen		149·6	356	i 19 53	[+ 6]	—	—	e 43 6 SSP	e 61·5
Ksara		151·3	285	e 19 55	[+ 6]	—	—	e 36 57 PPS	—
Aberdeen		152·8	5	i 20 22	[+30]	—	—	i 43 6 SS	68·9
Copenhagen		153·4	347	19 51	[− 1]	30 19	{−18}	i 20 7 PKP_2	—
Helwan	z.	154·8	275	19 56	[+ 2]	—	—	20 35 PKP_2	—
Stonyhurst		156·0	6	i 17 56	?	44 12	SSP	c 20 8 PKP	e 75·9
Bucharest		156·3	314	e 19 20?	[−36]	—	—	— —	50·9
Potsdam		156·3	344	e 20 10	[+14]	—	—	— —	e 63·9
De Bilt		157·9	355	e 19 56a	[− 2]	e 44 26	SS	c 23 56 PP	—
Prague		158·0	339	i 20 37k	PKP_2	e 31 20	{+18}	c 37 38 PPS	e 65·9
Ogyalla		158·4	330	e 19 11	[−48]	—	—	— —	e 50·9
Cheb		158·6	343	e 19 56?	[− 3]	e 44 36	SS	e 33 56? ?	e 71·9
Kew		158·6	3	i 19 56	[− 3]	c 37 38	PPS	c 24 16 PP	e 54·9
Sofia		158·9	312	e 19 56?	[− 4]	e 30 56?	{−11}	e 44 56? SS	51·4
Kalossa		159·0	328	e 20 6	[+ 6]	—	—	— —	—
Uccle		159·3	357	e 19 58	[− 2]	i 34 36	PSKS	e 24 26? PP	—
Belgrade		159·4	320	e 20 7	[+ 7]	e 34 31	SKSP	e 24 44 PP	e 44·3
Stuttgart		160·6	345	i 19 59a	[− 3]	e 27 1	[− 4]	i 20 47 PKP_2	e 76·9
Strasbourg		161·0	348	e 20 4	[+ 2]	i 30 56	{−22}	i 37 52 PPS	65·9
Paris		161·3	359	i 20 1	[− 1]	—	—	c 24 16 PP	69·9
Triest		162·0	333	e 20 15	[+12]	—	—	— —	—
Basle		162·1	347	e 20 7	[+ 4]	—	—	c 20 53 PKP_2	—
Zürich		162·1	346	e 20 2	[− 1]	—	—	— —	—
Neuchatel		162·7	348	e 22 50	?	—	—	— —	—
Milan		163·7	342	e 20 7	[+ 2]	—	—	45 14 SS	68·9
Clermont-Ferrand		164·4	357	—	—	e 32 10	{+35}	— —	78·6
Florence		164·6	25	i 20 10k	[+ 4]	i 31 52	{+16}	i 21 10 PKP_2	—
Lisbon		167·3	44	20 0k	[− 7]	32 0	{+10}	21 2 PKP_2	78·0
Barcelona		168·7	0	e21 48	?	—	—	— —	e 51·9
Toledo		169·0	26	e 20 9	[0]	46 10	SSP	i 21 22 PKP_2	80·9
Tortosa	E.	169·2	7	20 8	[− 1]	31 15	{−44}	— —	79·1
San Fernando	E.	170·5	45	e 20 18	[+ 8]	27 58	[+46]	46 10 SS	80·9
Granada		171·5	32	i 20 17	[+ 7]	27 40	[+28]	i 20 43 pPKP	81·8
Almeria		172·2	28	20 21	[+11]	39 24	PPS	21 27 PKP_2	82·4

Additional readings :—
Wellington P? =3m.9s.?, sPZ =3m.31s., iZ =3m.53s. and 4m.6s., S =6m.1s.?, sS? = 6m.56s., P_cP? =8m.11s., P_cS =11m.11s., S_cS =12m.20s.
Apia iE =7m.18s., iS?EN =7m.24s., iN =7m.27s.
Brisbane iZ =6m.1s.
Riverview iE =6m.45s., iEN =10m.41s., and 11m.3s., iN =11m.48s.
Honolulu e =12m.48s., isS =17m.35s., eSS =20m.51s.
Santa Barbara i =12m.55s.
Pasadena ePKP,PKPZ =38m.54s.
Berkeley eSE =23m.15s.
Mount Wilson ePKKPZ =30m.45s., iPKP,PKPZ =39m.0s., ePKP,PKP,PKPZ = 59m.31s.
Palomar iZ =13m.0s., ePKP,PKPZ =38m.59s., ePKP,PKP,PKPZ =59m.35s.
Riverside iNZ =13m.1s., ePKKPZ =30m.46s., ePKP,PKPZ =38m.59s., ePKP,PKP, PKPZ =59m.33s.
Ukiah e =28m.14s.
Haiwee iZ =13m.7s., ePKKPZ =30m.48s., ePKP,PKPZ =39m.56s.
Tinemaha ePKP,PKPZ =38m.53s., ePKP,PKP,PKPZ =59m.39s.
Tucson i =15m.37s., e =18m.3s., eS =23m.20s., i =24m.58s., eSS =29m.12s., esSS? = 30m.13s., eSSS =32m.56s., e =36m.23s.
Salt Lake City eSSS =34m.35s.
Logan ipP =13m.52s., iPP =16m.37s., ipPP =17m.22s., e =28m.45s. and 31m.12s., esSS =31m.32s., e =34m.36s.
Sitka epP =13m.40s., eSKS =23m.34s., i =24m.53s., eSS =30m.33s., esSS =31m.6s., e =37m.8s.
Huancayo i =14m.1s., e =16m.48s., i =17m.6s., e =18m.43s., eS =23m.57s., iSS = 30m.57s.
Bozeman ePP =17m.24s., e =26m.16s. and 30m.20s., esSS =31m.42s., eSSS =35m.13s.

Continued on next page.

La Paz iPP = 17m.34s., iZ = 17m.51s., iPPP = 19m.44s., iPS = 26m.29s., iPPS = 26m.56s., SSN = 30m.56s., SSS = 35m.32s.
Saskatoon SS = 32m.56s.?.
St. Louis ePZ = 14m.27s., epPZ = 14m.56s., ePP?Z = 17m.56s., epPP?Z = 18m.48s., eN = 21m.59s., eE = 22m.59s., eSKSE = 24m.47s., iSKSE = 24m.57s., esSKS?E = 25m.7s., eSKKSE = 25m.27s., isSPN = 28m.14s., iSSE = 33m.26s., iSSS = 37m.58s., iSSSSE = 40m.21s., iE = 41m.13s.
Kodaikanal SS = 33m.44s.
Chicago e = 26m.45s., eSS = 34m.25s., eSSS = 38m.43s.
Bombay PPPE = 22m.30s., SSN = 35m.55s., SSPE = 36m.29s., SSPN = 36m.41s.
New Delhi SN = 27m.58s., PSN = 29m.59s., PPSN = 31m.6s., SSN = 36m.49s.
San Juan ePP = 20m.5s., e = 27m.2s. and 40m.30s.
Philadelphia e = 33m.30s., eSS = 35m.45s., e = 38m.58s. and 41m.9s.
Ottawa PP = 19m.56s., SN = 28m.8s.?, SS = 36m.32s., SSS = 40m.56s.
Fordham ePP = 20m.23s., i = 20m.43s., iSKKS = 27m.3s., iSS = 36m.33s.
Fort de France e = 25m.2s. and 28m.52s.
Harvard ePP = 20m.32s., e = 21m.8s., eSKKS? = 27m.12s., eSS = 37m.20s.
Weston ePKP = 18m.57s., ePP = 20m.25s., e = 24m.12s., eSKKS = 27m.18s., eSS = 36m.41s.
Seven Falls SS = 37m.41s., e = 45m.50s.?.
Bermuda e = 37m.21s.
Scoresby Sund 19m.44s., 24m.20s.?, and 40m.15s.
Upsala eN = 38m.56s.?, eSSE = 42m.31s., eSS?N = 42m.56s.?, eSSS = 47m.56s.?, eE = 52m.56s.?.
Bergen iZ = 20m.1s., eZ = 20m.47s., eE = 25m.41s., eN = 33m.31s.
Copenhagen 19m.56s., 20m.2s., 23m.39s., 29m.30s., and 33m.36s.
Helwan PPZ = 24m.14s.
Stonyhurst ? = 20m.36s., iS = 20m.48s., iSS = 21m.4s., iSSS = 21m.10s., i = 21m.44s., and 22m.5s., e = 23m.26s., 24m.39s., eSKS = 42m.26s., PKKP = 45m.15s., PS = 47m.51s., PKKS = 48m.26s., PPP_2 = 51m.22s., SSS = 59m.52s., phases wrongly identified.
Prague ePP = 24m.34s., eSKS = 27m.50s.?, ePPP = 28m.2s., ePPP ($\triangle > 180°$) = 32m.44s., eSKKS ($\triangle > 180°$) = 34m.38s.?, eSS = 44m.20s.?, eSSS = 50m.44s.?.
Kew iZ = 23m.48s., eEZ = 33m.12s., eN = 33m.56s.?, eE = 44m.26s.?.
Sofia ePPE = 24m.26s., eE = 34m.35s.
Uccle eN = 20m.6s., iSSE = 44m.38s., iSSSE = 50m.52s.
Belgrade i = 20m.58s. and 21m.21s., e = 31m.27s.
Stuttgart ePPZ = 24m.14s., iPPZ = 24m.47s., ePPP = 32m.18s., e = 34m.26s.?, ePPSZ = 38m.1s., eSS = 44m.51s., eSSS = 51m.32s.
Strasbourg $iPKP_2$? = 21m.14s., iPP = 24m.40s., i = 31m.39s.
Basle e = 25m.6s. and 29m.33s.
Florence iPPE = 24m.50s., iPSKSN = 35m.23s., iSSE = 45m.36s., iSSSN = 51m.55s.
Lisbon PKPE = 20m.31s., PKPN = 20m.49s., $iPKP_2Z$ = 21m.30s., PPZ = 24m.52s., iPPE = 25m.4s., PPN = 25m.11s., iPPZ = 25m.19s., SKSPE = 35m.39s., SSN = 45m.57s., N = 55m.14s.?, and 68m.2s.?, Z = 69m.50s.?.
Toledo pPKP = 20m.30s., iPP = 25m.10s.
Tortosa PKP_2E = 20m.40s., PPE = 24m.20s., PPPE = 28m.5s.
San Fernando PPEN = 25m.38s.
Granada $iPKP_2$ = 21m.53s., $pPKP_2$ = 22m.1s., iPP = 25m.32s., pPP = 25m.52s., sPP = 26m.1s., pPPP = 29m.49s., sSKKS = 33m.36s., SS = 46m.36s., SSS = 53m.40s., Q = 73m.50s.?.
Almeria pPKP = 20m.46s., PP = 25m.23s., P? = 29m.17s., P_cP = 30m.32s., P_cS = 34m.41s., S = 37m.16s., SS = 41m.14s., SS = 46m.26s.?.
Long waves were also recorded at Montezuma and Cape Girardeau.

Sept. 14d. Readings also at 0h. (Stuttgart, Mount Wilson, Tucson, Riverside, Tinemaha, Arapuni, Auckland, Wellington (2), Christchurch, Riverview, Brisbane, and near Tananarive), 2h. (near Tuai and Arapuni), 3h. (Jena, Strasbourg, near Zürich, Basle, Stuttgart, Ravensburg, and Ebingen), 4h. (Tinemaha, Tucson, La Paz, and Stuttgart (4)), 7h. (near Stalinabad and Tashkent), 8h. (Stuttgart), 9h. (Palomar (2), Haiwee, Tinemaha (2), Riverside (2), Mount Wilson (2), Pasadena, Tucson (2), Christchurch, Wellington, and Tuai), 10h. (Stuttgart, Wellington, Auckland, and Arapuni), 11h. (Pasadena, Mount Wilson, Tinemaha, Palomar (2), Tucson (2), and St. Louis), 14h. (Auckland (2), Tuai (3), Wellington, Christchurch, Arapuni, Brisbane, Riverview (2), Sydney, Stuttgart, De Bilt, Paris, Kew, Uccle, Tucson, Santa Clara, Pasadena, and near Fort de France), 15h. (Riverview, Arapuni, Wellington (2), Auckland, Stuttgart, Kew, Clermont-Ferrand, Florence, San Fernando, Almeria, Harvard, St. Louis, Palomar (2), Tinemaha (2), Tucson, Mount Wilson (2), Pasadena, near Branner, Berkeley, Lick, and Fresno), 16h. (San Francisco and Huancayo), 17h. (Palomar and Tucson), 18h. (Auckland and Wellington), 19h. (near Branner), 20h. (Palomar, Tucson, Pasadena, Mount Wilson, Riverview, New Plymouth, Wellington (2)), 21h. (Clermont-Ferrand, Stuttgart, and near Strasbourg).

Sept. 15d. 23h. Undetermined shock.

Suva 23m.0s.?.
Arapuni S = 28m.30s., L? = 33m.18s.
Auckland S? = 28m.35s., L = 32m.
Wellington S = 29m.35s., R = 32m.?.
Christchurch S = 29m.41s., Q = 30m.53s., R = 32m.39s.
Riverview iN = 30m.43s., eN = 33m.29s., iN = 33m.39s.
Mount Wilson ePZ = 37m.50s.
Pasadena ePZ = 37m.51s., eLZ = 65m.
Palomar ePZ = 37m.52s.
Tinemaha ePZ = 37m.53s.
Tucson eP = 38m.11s.
Stuttgart eZ = 41m.10s.

Sept. 15d. Readings also at 1h. (Santa Clara), 2h. (Riverview, Auckland, Mount Wilson, Tucson, and Palomar), 4h. (near Bogota), 6h. (Stuttgart, Christchurch, Auckland, Wellington, Arapuni, Suva, and Riverview), 7h. (Stuttgart and near Santa Clara), 8h. (Palomar and Tucson), 9h. (Stuttgart, Tucson, Haiwee, Mount Wilson, Riverview, Auckland, near Tuai, near Toledo, Almeria, and Granada), 10h. (Palomar and Tucson), 11h. (Riverview, Auckland, and Suva), 13h. (Santa Clara), 14h. (Riverview, Christchurch, Wellington, Auckland, Suva, and near Tuai), 15h. (Riverview, Arapuni, Auckland, Christchurch, Wellington, Tuai, and Suva), 18h. (Stuttgart (2), Mount Wilson, Tinemaha (3), Palomar (3), Tucson (2), Auckland, Wellington, Christchurch, Riverview, Suva, La Paz, and Bogota), 20h. (Cheb), 21h. (Stuttgart, Riverview, Christchurch, Arapuni, Auckland, Wellington, and Suva), 22h. (Florence), 23h. (Stuttgart).

Sept. 16d. 0h. 7m. 24s. Epicentre 55°·1S. 158°·5E. (as on Sept. 6d.).

$A = -\cdot5348$, $B = +\cdot2107$, $C = -\cdot8183$; $\delta = +2$; $h = -7$;
$D = +\cdot367$, $E = +\cdot930$; $G = +\cdot761$, $H = -\cdot300$, $K = -\cdot575$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Christchurch		14·8	44	3 30	− 2	c 6 15	− 3	6 55	SS	—
Wellington		17·5	45	4 6	− 1	7 26	+ 5	—	—	8·2
New Plymouth		19·1	42	(4 31)	+ 4	—	—	—	—	10·6
Arapuni		20·6	42	1 36	?	(8 36?)	+ 7	—	—	8·6
Tuai		20·6	45	4 43	0	8 34	+ 5	—	—	11·2
Auckland		21·4	38	i 4 6	?	4 51	P	—	—	11·1
Riverview		21·9	346	i 4 57a	0	i 9 5	+11	—	—	—
Calcutta	N.	97·6	299	—	—	e 24 23	[+ 9]	e 25 13	S	—
Huancayo		99·3	127	e 17 14	PP	e 24 38	[+14]	e 25 43	S	e 46·7
Bombay		102·9	285	—	—	i 24 51	[+10]	i 25 59	S	—
Pasadena		113·7	64	e 19 37	PP	e 29 36?	PS	—	—	e 51·6
Mount Wilson	Z.	113·8	64	e 19 38	PP	—	—	—	—	—
Palomar	Z.	113·8	66	e 19 37	PP	—	—	—	—	—
Riverside	N.	114·0	64	e 19 40	PP	—	—	—	—	—
Tinemaha		115·9	62	i 19 42	PP	—	—	—	—	—
Tucson		116·1	70	i 29 20	PS	e 40 52	SSS	—	—	e 53·3
Tashkent		122·2	297	e 19 4	[+ 7]	26 9	[+12]	e 20 27	PP	—
Sitka		124·3	36	e 20 48	PP	e 30 52	PS	e 37 23	SS	e 61·9
San Juan		130·2	119	e 22 40	PKS	e 33 1	PPS	e 48 46	?	e 70·2
Helwan		135·0	258	19 30	[+ 9]	i 28 57	{+ 6}	23 3	PKS	—
Bermuda		142·3	108	e 22 14	PP	—	—	e 47 6	?	e 68·1
Fordham		143·1	89	e 23 1	PKS	—	—	—	—	e 74·6
Florence		156·1	256	i 20 40	[+44]	i 30 54	{+ 2}	i 23 59	PP	e 78·9
San Fernando		158·6	215	e 20 12	[+13]	—	—	e 44 44	SS	86·6
Chur		158·9	261	e 20 45	[+45]	—	—	—	—	—
Tortosa	E.	159·6	235	i 21 47	?	i 38 55	PPS	i 44 40	SS	e 92·6
Zürich		159·8	260	e 20 22k	[+22]	—	—	—	—	—
Stuttgart		160·2	265	e 20 6	[+ 5]	e 31 18?	{+ 5}	e 24 29	PP	—
Basle		160·4	260	e 20 49	[+48]	—	—	—	—	—
Clermont-Ferrand		161·8	249	i 19 59	[− 4]	—	—	—	—	e 80·6
De Bilt	E.	163·9	273	—	—	i 31 43	{+10}	—	—	e 92·6
Uccle		163·9	266	e 21 5	?	e 24 52	PP	e 30 24?	?	—
Paris		164·0	258	e 21 5	?	e 32 1	{+28}	e 24 45	PP	e 93·6
Kew		166·8	265	e 25 4	PP	e 32 0	{+13}	e 47 46	SS	e 87·6

For Notes see next page.

NOTES TO SEPTEMBER 16d. 0h. 7m. 24s.

Additional readings and notes :—
New Plymouth gives P as SS?.
Huancayo e = 18m.26s. and 32m.56s.
Bombay iEN = 27m.33s.
Tucson e = 33m.7s. and 37m.2s.
Tashkent ePS = 30m.33s.
Florence iSSE = 45m.46s.
Tortosa eE = 65m.25s.
Stuttgart ePKP$_2$Z = 20m.46s.
Clermont-Ferrand ePKP$_2$ = 21m.10s.
Kew ePPZ = 28m.15s., eSKKS = 35m.36s., eSSS? = 51m.26s., phases wrongly identified.
Long waves were also recorded at Ukiah, Logan, Chicago, La Paz, Toledo, Stonyhurst, and Tananarive.

Sept. 16d. 7h. 52m. 21s. Epicentre 36°·0N. 117°·7W. (as on 1939 Jan. 7d.).

Epicentre 36°01′N. 117°56′W. (Pasadena).

A = −·3769, B = −·7180, C = +·5852 ; δ = +4 ; h = 0 ;
D = −·885, E = +·465, G = −·272, H = −·518, K = −·811.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Haiwee		0·3	302	i 0 5 a	− 6	i 0 8	−10	—
Tinemaha		1·2	338	i 0 22 a	− 2	i 0 37	− 4	—
Mount Wilson		1·8	189	i 0 33	+ 1	—	—	—
Fresno		1·9	289	i 0 33	− 1	i 1 55	+56	—
Pasadena		1·9	192	i 0 34	0	i 0 58	− 1	—
Riverside	z.	2·0	173	e 0 35	0	—	—	—
Santa Barbara	z.	2·3	226	e 0 39	− 1	—	—	—
Palomar	z.	2·7	166	i 0 46	+ 1	i 1 28	S_g	—
Lick		3·4	294	i 0 57	+ 2	—	—	—
Branner		3·9	295	i 1 5	+ 3	i 2 5	S_g	—
Berkeley		4·1	298	i 1 6	+ 1	e 2 1	+ 6	—
Tucson		6·8	121	1 41	− 3	i 3 26	S*	i 3·6

Additional readings :—
Palomar iZ = 52s.
Berkeley ePN = 1m.13s.
Tucson i = 2m.12s.

Sept. 16d. 12h. Pacific.

Christchurch S = 50m.58s., Q = 52m.37s., R = 55m.41s.
Tuai P = 51m.44s., S = 55m.46s.
Auckland i = 51m.54s., S? = 52m.17s., i = 53m.27s., L = 56m.
Arapuni S? = 53m.0s.?, e = 55m.0s.?.
Wellington i = 53m.12s.?, S = 54m.35s.?, P$_e$S = 55m.30s., SS? = 56m.25s., i = 57m.25s., R = 58m.
Brisbane iPZ = 53m.22s., iE = 53m.46s., iZ = 56m.35s.
Riverview iP?EZ = 54m.1s. a, iE = 57m.22s. and 58m.35s., iN = 58m.41s. and 61m.15s.
Sydney e = 54m.48s.?.
Apia e = 55m.0s.?, 56m.48s.?, and 59m.54s.?, eE = 75m.?.
Mount Wilson ePZ = 60m.21s., eZ = 63m.34s.
Pasadena ePZ = 60m.21s., eZ = 63m.32s., eLZ = 87m.
Palomar ePZ = 60m.22s., eZ = 63m.36s.
Haiwee ePZ = 60m.27s., eZ = 63m.51s.
Tinemaha ePZ = 60m.29s., eZ = 63m.43s.
Tucson iP = 60m.37s., i = 63m.52s., eL = 91m.12s.
Tashkent eP = 68m.33s., ePKP = 72m.23s., ePP = 73m.20s., eSKS = 78m.57s.
Stuttgart eZ = 71m.30s. and 76m.0s., e = 92m.18s., and 95m.42s.?
Victoria eN = 72m.4s., e = 75m.16s., L = 94m.
Bombay eE = 77m.40s., and 78m.5s., iE = 79m.26s., eE = 81m.18s. and 81m.58s.
Long waves were also recorded at New Plymouth, Huancayo, La Paz, Harvard, and other European stations.

Sept. 16d. Readings also at 0h. (Christchurch, Wellington, Sydney, Fresno (2), and Tucson), 3h. (Mount Wilson, Pasadena, Tucson, and Palomar), 5h. (Clermont-Ferrand, Ebingen, Basle, near Stuttgart, and Zürich), 6h. (Ebingen and near Stuttgart (2)), 7h. (Ebingen, Stuttgart, Basle (2), near Zürich (2), and Wellington), 8h. (near Fresno), 10h. (Mount Wilson, Pasadena, Palomar, Tucson, and Tinemaha), 11h. (Stuttgart, near Basle, and Zürich), 17h. (Ebingen, Jena, Ravensburg, Strasbourg, near Stuttgart, and Zürich), 18h. (Stuttgart), 21h. (Wellington and Auckland), 22h. (Christchurch and Riverview), 23h. (Arapuni, Auckland, Christchurch, Wellington, Riverview, and near Bogota).

Sept. 17d. 3h. 39m. 15s. Epicentre 39°·0N. 15°·2E. Depth of focus 0·040.
(as on 1938 April 13d.).

Epicentre 39°·5N. 15°·5E. (Strasbourg). Depth 270 kms.
A = +·7519, B = +·2043, C = +·6268; δ = −3; h = −1;
D = +·262, E = −·965; G = +·605, H = +·164, K = −·779.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florence		5·7	328	i 1 27	+ 1	i 2 29	− 4	i 1 38	pP	i 3·2
Triest		6·7	352	e 1 38	0	i 2 48	− 7	—	—	—
Sofia		7·2	55	e 1 45?	+ 1	e 2 56	−10	—	—	—
Milan		7·8	327	e 1 56	+ 4	e 3 24	+ 4	—	—	—
Chur		8·9	334	e 2 7	+ 2	e 3 45	+ 1	—	—	—
Zürich		9·7	332	e 2 16k	+ 1	e 3 56	− 6	—	—	—
Bucharest		9·8	53	—	—	3 45	−19	—	—	—
Neuchatel		10·0	326	e 2 19	0	—	—	—	—	—
Stuttgart	z.	10·7	338	e 2 26	− 2	—	—	e 3 52	?	—
Strasbourg		11·0	333	e 2 38	+ 7	—	—	e 3 23	?	—
Prague		11·1	357	—	—	e 4 25?	− 8	—	—	—
Clermont-Ferrand		11·2	311	i 2 38	+ 4	—	—	—	—	—
Jena	E.	12·2	349	e 2 45	− 1	—	—	i 2 50	PP	—
Toledo		14·9	280	i 3 27	+ 8	—	—	i 6 17	SS	—
Copenhagen		16·8	354	3 39	− 1	—	—	—	—	—

Florence also gives iS*N = 2m.52s.

Sept. 17d. 4h. Undetermined shock.

Suva eP = 15m.45s., ePP = 17m.47s., ePPP = 18m.17s., iSS = 25m.52s., eL = 27m.
Wellington PP = 24m.2s., P_cPZ = 24m.38s., S = 28m.20s., SS = 30m.28s., i = 32m.11s., R = 33m.?.
Auckland P? = 26m.15s.?, S? = 29m.30s., L = 31m.
Brisbane iE = 26m.41s., iN = 27m.43s., eE = 27m.49s., iZ = 27m.56s., iN = 30m.3s., eN = 32m.14s.
New Plymouth S? = 27m.?.
Riverview iP?EZ = 27m.31s., iZ = 28m.43s., iS?E = 31m.19s., iZ = 31m.25s., iEN = 32m.39s., eLN = 33·7m.
Arapuni e = 30m.0s.
Christchurch i = 32m.45s., R = 35m.3s.
Pasadena iZ = 35m.33s. and 36m.46s., eLZ = 64m.42s.
Mount Wilson eZ = 35m.34s., iZ = 36m.47s. and 54m.32s.
Palomar iZ = 35m.35s. and 36m.49s.
Tinemaha eZ = 35m.41s. and 36m.54s.
Tucson eP = 35m.57s., e = 37m.7s. and 67m.15s.
Stuttgart eZ = 42m.33s., 42m.40s., and 43m.53s.
De Bilt eZ = 42m.36s. and 43m.50s., eL = 103m.
Long waves were also recorded at St. Louis, Harvard, Huancayo, and at other European stations.

Sept. 17d. 6h. 47m. 21s. Epicentre 48°·2N. 9°·0E. (as on July 22d.).

$A = +·6609$, $B = +·1046$, $C = +·7432$; $\delta = +8$; $h = -5$;
$D = +·156$, $E = -·988$; $G = +·734$, $H = +·116$, $K = -·670$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Ebingen	0·0	—	e 0 7	0	i 0 9	− 2
Ravensburg	0·6	135	—	—	e 0 26?	0
Stuttgart	0·6	13	i 0 10k	P_g	i 0 16	S_g
Strasbourg	0·9	295	—	—	i 0 36	+ 2
Zürich	0·9	198	e 0 22	+ 2	e 0 36	+ 2
Basle	1·2	235	e 0 26	+ 2	e 0 43	+ 2
Neuchatel	1·8	229	e 0 33	+ 1	e 1 4	+ 8

Sept. 17d. 10h. 9m. 31s. Epicentre 14°·7S. 167°·3E. Depth of focus 0·010.
(as on 1942 June 3d.).

Epicentre 14°·5S. 167°E. (U.S.C.G.S.)
16°S. 170°E. (Pasadena)
15°·5S. 168°E. (Wellington)

$A = -·9440$, $B = +·2127$, $C = -·2522$; $\delta = -2$; $h = +6$;
$D = +·220$, $E = +·976$; $G = +·246$, $H = -·055$, $K = -·968$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Suva		11·2	109	i 3 47	?	3 55	?	5 51	?	—
Brisbane		18·4	224	i 4 10	0	i 7 33	+ 5	e 4 16	pP	12·0
Apia		20·3	90	i 4 34	+ 4	i 8 18	+11	—	—	—
Auckland		23·1	164	4 57	− 1	i 9 1	+ 3	e 5 42	PPP	13·8
Riverview		24·0	215	i 5 8a	+ 2	i 9 15	+ 1	i 5 36	pP	12·4
Sydney		24·0	215	e 4 23	?	—	—	e 4 29	?	—
Arapuni		24·4	164	e 2 59	?	10 53	SSS	—	—	—
Tuai		25·5	161	5 20	− 1	—	—	—	—	—
Wellington		27·3	168	5 34	− 3	i 10 3	− 5	5 59	pP	14·5
Christchurch		29·1	173	i 5 51	− 3	—	—	9 50	Q	12·0
Honolulu		49·5	44	e 11 16	PPP	e 15 44	+ 3	e 16 31	sS	e 20·2
Perth		49·8	240	—	—	i 15 39	− 7	i 18 29	S_cS	—
Misima		56·4	332	e 9 37	+ 3	—	—	—	—	—
Hikone		57·8	330	9 49	+ 5	17 43	+10	—	—	—
Kobe		57·8	329	9 44	0	17 32	− 1	—	—	—
Kôti		57·8	326	9 44	0	—	—	—	—	—
Sendai		58·2	336	9 45	− 1	16 35	−63	—	—	—
Mizusawa		58·9	337	9 48	− 3	17 42	− 6	e 9 52	pP	—
Sapporo		62·2	340	10 15	+ 1	19 56	S_cS	—	—	—
Ukiah		84·0	49	e 12 39	pP	e 22 30	− 5	e 28 5	SS	e 35·0
Berkeley		84·1	49	i 12 22	+ 1	i 22 32	− 4	—	—	—
Santa Clara		84·2	49	e 12 37	pP	e 22 45	+ 8	—	—	—
Santa Barbara		84·7	53	e 12 25	+ 1	—	—	—	—	—
Calcutta		85·7	294	—	—	i 22 43	[0]	i 23 50	PS	—
Sitka		85·8	27	e 12 54	pP	e 22 44	[+ 1]	e 28 26	SS	e 35·0
Pasadena		85·8	53	i 12 29a	− 1	e 22 23?	[−20]	i 12 56	pP	e 35·4
Mount Wilson	z.	85·9	53	i 12 29a	− 1	—	—	e 15 52	PP	—
La Jolla		86·1	55	e 12 31	0	—	—	—	—	—
College		86·3	17	—	—	e 22 42	−16	—	—	—
Riverside	z.	86·4	53	e 12 32	− 1	—	—	i 30 31	PKKP	—
Palomar	z.	86·5	55	i 12 43a	+10	—	—	e 38 37	P′P′	—
Haiwee	z.	86·7	51	e 12 35	+ 1	—	—	e 30 29	PKKP	—
Tinemaha		86·8	51	i 12 34	− 1	—	—	i 30 30	PKKP	—
Victoria		87·8	38	—	—	e 22 58	[+ 2]	—	—	40·5
Tucson		91·0	57	i 12 55	+ 1	e 23 39	− 2	e 24 56	PS	e 39·9
Bombay	N.	98·8	287	—	—	23 55	[− 4]	24 48	S	—
Saskatoon		99·1	38	—	—	e 23 56	[− 3]	—	—	47·5
Rapid City		99·7	46	—	—	e 23 13?	[−50]	—	—	e 53·2
Tashkent		105·4	309	e 17 12	?	i 24 31	[+ 1]	—	—	—
Stalinabad		105·6	306	—	—	e 24 36	[+ 5]	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
St. Louis		108·7	53	e 17 41	?	e 24 38	[− 6]	e 28 0	SP	—
Chicago		110·8	49	—	—	e 26 33	S	e 29 27	PPS	e 47·6
Huancayo		112·5	109	—	—	e 28 54	PS	e 34 46	SS	e 45·8
Pittsburgh		116·6	51	—	—	(e 26 18)	SKKS	—	—	e 26·3
Philadelphia		120·3	52	—	—	e 25 25	[− 3]	e 29 44	PS	e 47·9
Seven Falls		122·2	42	—	—	e 25 38	[+ 3]	e 29 41	SP	55·5
San Juan		128·8	77	e 21 9	PP	—	—	e 29 42	SP	e 39·0
Ksara		132·3	302	e 19 8	[+ 4]	e 35 22	?	e 22 26	PKS	—
Copenhagen		134·8	341	19 9	[+ 1]	28 24	SKKS	22 27	PKS	—
Bucharest		135·8	320	21 29?	PP	—	—	—	—	55·5
Helwan	N.	136·8	298	—	—	—	—	e 40 56	SSP	—
Prague		138·4	334	e 21 53	PP	e 28 48	SKKS	—	—	—
Belgrade		138·9	324	e 22 45	PKS	e 28 53	SKKS	e 23 44	?	—
Jena		138·9	336	e 19 11	[− 5]	—	—	—	—	—
De Bilt		140·0	343	i 19 15	[− 3]	—	—	i 22 44	PP	—
Uccle		141·4	344	e 19 18	[− 2]	i 29 7	SKKS	i 22 47	PP	—
Stuttgart		141·6	337	e 19 16	[− 4]	i 29 7	SKKS	e 22 47	PP	e 56·8
Kew		142·0	347	i 19 16	[− 5]	—	—	i 22 46	PP	e 55·5
Triest		142·0	330	e 19 31	[+10]	i 29 8	SKKS	—	—	—
Strasbourg		142·2	338	e 19 32	[+11]	—	—	e 20 48	?	—
Zürich		142·9	336	e 19 20k	[− 3]	—	—	—	—	—
Chur		143·0	335	e 19 21a	[− 2]	—	—	—	—	—
Basle		143·2	337	e 19 21	[− 2]	—	—	e 20 2	pPKP	—
Neuchatel		143·9	337	e 19 23	[− 1]	—	—	—	—	—
Milan		144·2	333	e 19 27	[+ 3]	29 19	SKKS	41 59	SSP	—
Florence		144·5	330	i 19 26	[+ 1]	i 29 23	SKKS	i 19 49	pPKP	e 62·6
Clermont-Ferrand		146·3	340	i 19 31a	[+ 2]	—	—	e 26 15	PPP	69·5
Tortosa	E.	151·6	338	19 46	[+ 9]	i 30 2	SKKS	i 23 56	SKP	—
Toledo		153·8	345	e 19 40	[0]	e 26 38	[+ 2]	i 20 4	pPKP	104·5
Almeria		155·9	340	i 19 41	[− 2]	27 0	pSKS	20 11	pPKP	80·5
San Fernando	E.	157·6	347	e 19 50	[+ 5]	—	—	—	—	—

Additional readings :
Brisbane iPPE = 4m.25s., iZ = 4m.29s., iPPN = 4m.50s., iSZ = 7m.36s.
Auckland i = 6m.27s., S? = 9m.56s., i = 10m.59s. and 11m.44s.
Riverview iPP = 5m.52s., iZ = 9m.28s., isSN = 9m.54s., isSE = 9m.57s., iSS?EN = 10m.34s., iZ = 10m.55s., iS_cSEN = 16m.5s.
Wellington $sP?$ = 6m.22s., iZ = 6m.45s., P_cPZ = 7m.39s., sP_cPZ = 8m.17s., S = 11m.19s., sS = 12m.24s., i = 13m.2s.
Perth i = 17m.19s., 20m.9s., 21m.24s., 21m.54s., and 25m.24s.
Pasadena iZ = 12m.39s., eZ = 13m.4s., iZ = 15m.5s.a, and 16m.26s., ePKP,PKPZ = 38m.37s.
Mount Wilson iZ = 13m.35s., iPKKPZ = 30m.32s., ePKP,PKPZ = 38m.37s.
Riverside iZ = 13m.37s., ePKP,PKPZ = 38m.29s.
Palomar eZ = 16m.28s.
Tucson e = 13m.57s., 15m.47s. and 17m.4s., eSKS = 23m.16s., eSS = 29m.45s., isSS = 30m.22s., ePKP,PKP = 38m.22s.
Bombay PSE = 26m.24s., iE = 30m.30s.
St. Louis eSKKSE = 25m.34s., eSN = 26m.18s., esSN = 27m.17s.
Chicago e = 34m.12s.
Philadelphia e = 26m.35s., eS? = 27m.51s., e = 35m.55s.
San Juan i = 22m.16s., e = 29m.7s.
De Bilt iPPP = 25m.50s.
Stuttgart eSS = 34m.23s.?.
Kew ePKS?Z = 20m.5s., eSSS? = 41m.45s.
Florence iPKPZ = 22m.40s., iPPE = 24m.34s., eSKPE = 25m.49s., iSKKSE = 31m.42s., ePPSE = 35m.39s., iSSE = 41m.15s.,
Clermont-Ferrand eSKP = 22m.55s., iPSKP = 32m.46s.
Toledo SS = 43m.25s.
Almeria sPKP = 20m.20s., $pPKP_1$ = 21m.26s., PP = 24m.22s., pPP = 24m.42s., sSKS = 27m.11s., iSKKS = 30m.23s., SKSP = 34m.3s., SS = 44m.15s., SSS = 50m.40s.
Long waves were also recorded at Harvard.

Sept. 17d. Readings also at 0h. (Tucson, Florence, Uccle, De Bilt, and Stuttgart), 1h. (Pasadena, Mount Wilson, Tucson, Riverside, Palomar, Tinemaha, Kew, Arapuni, Auckland, and Wellington), 2h. (Kew), 4h. (Sofia and Riverview), 5h. (Stuttgart), 6h. (Palomar, Tucson, and near Balboa Heights), 14h. (Stuttgart, Wellington, Brisbane, Riverview, Arapuni, Calcutta, and Tashkent), 15h. (De Bilt, Uccle, Kew, and Florence).

Sept. 18d. Readings at 4h. (Suva and Auckland), 5h. (Stuttgart and Riverview), 10h. (Jena, near Basle, Zürich, Strasbourg, Ravensburg, Stuttgart, and Ebingen), 11h. (Calcutta), 14h. (Tinemaha, Tucson, Suva, and near Andijan), 15h. (Palomar, Tucson, and Tinemaha), 16h. (near Florence), 17h. (Stuttgart and Zürich), 20h. (Stuttgart, Uccle, Florence (2), Calcutta, and Bogota), 21h. (Kew and De Bilt).

Sept. 19d. 4h. 47m. 46s. Epicentre 28°·5S. 113°·5W. (as on 1940 Jan. 2d.).

$A = -\cdot3510$, $B = -\cdot8072$, $C = -\cdot4747$; $\delta = +11$; $h = +2$;
$D = -\cdot917$, $E = +\cdot399$; $G = +\cdot189$, $H = +\cdot435$, $K = -\cdot880$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		39·2	73	e 9 2	PP	i 13 26	− 6	—	—	e 16·3
La Paz	z.	43·4	84	i 8 0	− 6	i 13 52	−43	—	—	19·8
La Plata	E.	47·2	112	9 26	+50	15 38	+ 9	—	—	20·9
Bogota		50·2	56	e 8 54	− 6	—	—	i 8 58	P	—
Arapuni		58·7	241	—	—	19 2?	+56	—	—	27·7
Wellington		58·7	237	13 29	PPP	18 21	+15	—	—	27·2
Auckland		59·7	241	13 34	PPP	18 44	+25	—	—	30·2
Christchurch		59·8	233	—	—	22 29	SS	24 39	Q	27·2
Tucson		60·5	2	i 10 15	+ 1	e 18 30	+ 1	e 12 22	PP	e 26·5
La Jolla	z.	61·1	357	e 10 27	+ 9	—	—	—	—	—
Palomar	z.	61·6	357	e 10 23	+ 1	—	—	—	—	—
Riverside	z.	62·3	356	e 10 26	0	—	—	—	—	—
Mount Wilson	z.	62·5	356	e 10 28	0	—	—	—	—	—
Pasadena		62·5	356	e 10 29	+ 1	e 19 10	+16	—	—	e 26·8
Rio de Janeiro	N.	62·8	102	e 18 55	S	(e 18 55)	− 3	—	—	e 25·7
Haiwee	z.	64·4	355	e 10 42	+ 2	—	—	—	—	—
San Juan		65·3	50	e 10 57	+11	e 19 25	− 4	—	—	e 29·4
Tinemaha	z.	65·4	355	e 10 48	+ 1	—	—	—	—	—
Santa Clara		66·0	352	e 11 9	+19	e 20 9	+31	—	—	e 32·5
Fort de France		66·4	57	e 10 40	−13	—	—	—	—	—
Berkeley		66·5	352	i 11 58	+64	i 19 45	+ 1	—	—	e 32·0
Ukiah		67·9	352	—	—	e 20 18	+17	—	—	e 32·4
Salt Lake City		68·9	2	e 11 5	− 4	e 20 20	+ 7	—	—	e 33·8
Logan		69·9	2	11 43	+28	e 20 32	+ 8	e 25 12	SS	e 30·6
St. Louis		70·2	19	e 11 14	− 3	i 20 31	+ 3	e 21 5	PS	—
Bozeman		73·9	3	—	—	e 21 21	+11	e 26 12	SS	e 31·9
Pittsburgh	N.W.	75·3	26	e 18 25	?	i 21 25	− 1	—	—	—
Bermuda		76·1	41	—	—	e 21 47	+12	—	—	e 32·3
Philadelphia		76·9	30	e 15 30	PP	e 21 46	+ 3	—	—	e 32·4
Victoria		77·2	353	e 12 20?	+23	e 21 54	+ 7	—	—	38·2
Fordham		78·2	30	e 12 8	+ 5	e 21 56	− 1	—	—	e 33·2
Riverview		78·8	237	—	—	e 22 12	+ 8	e 22 50	PS	e 36·8
Harvard		80·5	31	e 12 23	+ 8	—	—	e 17 23	PPP	e 45·2
Seven Falls		84·5	28	e 12 32	− 4	—	—	(27 14?)	SS	27·2
Sitka		87·2	348	e 22 58	SKS	e 23 34	+ 6	e 29 44	SS	e 41·2
College		96·8	346	—	—	e 24 19	[+ 8]	—	—	e 46·5
Granada		121·7	62	20 56	PP	31 17	PPS	—	—	58·8
Almeria		122·5	62	—	—	e 31 28	PPS	—	—	59·2
Kew		126·0	44	—	—	e 27 14?	{−40}	—	—	e 52·4
Clermont-Ferrand		128·0	52	—	—	e 31 45	PS	—	—	e 61·2
Uccle		128·8	46	—	—	e 27 20?	{−52}	e 31 32?	PS	e 61·2
De Bilt		129·4	43	—	—	e 39 14?	SS	—	—	e 62·2
Stuttgart		132·1	48	e 19 14	[− 2]	—	—	e 31 44?	PS	e 65·2
Copenhagen		133·1	38	23 41	PKS	—	—	—	—	—
Florence		133·7	55	e 19 58	[+39]	i 31 39	PS	i 39 42	SS	e 64·5
Helwan	z.	149·4	79	19 50	[+ 4]	—	—	e 23 29	PP	—
Ksara		153·3	71	e 20 22	[+30]	e 33 55	PS	—	—	—
Calcutta	N.	159·4	259	—	—	—	—	e 39 51	?	e 90·9
Tashkent		167·0	351	e 20 12	[+ 5]	e 27 57	[+47]	—	—	—
Bombay	E.	168·8	213	—	—	—	—	e 45 58	SS	—

For Notes see next page.

NOTES TO SEPTEMBER 19d. 4h. 47m. 46s.

Additional readings :—
Huancayo e = 9m.34s.
La Plata S?N = 15m.14s.?.
Wellington PPP = 14m.4s., i = 15m.59s. and 17m.5s., Q = 24m.14s.?.
San Juan e = 11m.30s. and 23m.36s.
Berkeley eSN = 19m.14s., eE = 31m.45s., eN = 31m.49s.
St. Louis esSN = 21m.16s.
Riverview eE = 27m.33s.
Sitka e = 33m.25s.
Granada SKKS = 32m.9s.
Almeria i = 31m.40s.
Clermont-Ferrand i = 40m.57s., e = 59m.44s.?.
Uccle eN = 38m.32s.
Florence iPKPE = 23m.12s., iSKPE = 25m.56s., iPPPE = 27m.52s., iPPSE = 36m.28s., eSSN = 41m.31s., eSSSE = 46m.56s., phases wrongly identified.
Helwan eZ = 20m.5s. and 21m.2s.
Tashkent ePS = 30m.44s., ePPS = 31m.56s.
Long waves were also recorded at Honolulu, Paris, and San Fernando.

Sept. 19d. 6h. Pacific.

Tuai P = 0m.37s., i = 0m.53s., S = 2m.24s., i = 2m.29s., L = 3m.13s.
Auckland P = 0m.56s., S = 2m.40s., L = 3m.30s.
Wellington P = 1m.30s., S = 3m.29s., L = 4m.30s.
Arapuni S = 3m.30s.?.
La Jolla eP = 10m.48s., i = 11m.6s.
Mount Wilson iPNZ = 10m.49s.a, iZ = 11m.3s., iNZ = 11m.7s.
Palomar iPZ = 10m.50s.a, eZ = 10m.59s., iZ = 11m.3s., 11m.8s., and 11m.30s.
Pasadena iPZ = 10m.50s.a, iZ = 11m.7s., eLZ = 36·4m.
Tinemaha eP = 10m.50s.a, iZ = 11m.12s. and 11m.17s., eZ = 14m.25s.
Riverside iP = 10m.51s., i = 11m.5s.
Haiwee eP = 10m.56s.
Tucson iP = 11m.7s., i = 11m.25s. and 11m.36s., e = 14m.44s. and 21m.12s.
Apia eN = 11m.30s.?, eE = 14m.54s.?, eN = 15m.36s.?.
Copenhagen ePKP = 18m.12s.
Stuttgart eZ = 18m.12s. and 22m.32s.
Granada PKP = 19m.7s., and 20m.15s., PP = 24m.4s.
Long waves were also recorded at Christchurch, Riverview, Harvard, and Clermont-Ferrand.

Sept. 19d. Readings also at 0h. (Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tucson, Tinemaha, Copenhagen, and Stuttgart), 1h. (near Istanbul (2)), 5h. (Fort de France), 9h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Clermont-Ferrand, Stuttgart, Basle, Chur, Neuchatel, Zürich, near Berkeley, Branner, and Lick, not all one shock), 11h. (near La Paz, Riverview, Auckland, and Wellington), 12h. (Stuttgart), 14h. (Andijan, near Stalinabad, and Tashkent), 15h. (Mount Wilson, Pasadena, Palomar, Tucson, and Tinemaha), 20h. (Riverview).

Sept. 20d. 0h. 53m. 46s. Epicentre 20°·4N. 108°·8W. (as on 1943 June 1d.).

Epicentre 19°·5N. 109°W. (U.S.C.G.S.)

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		11·9	352	i 2 58	+ 4	e 5 35	+26	—	—	e 6·4
La Jolla	z.	14·5	330	e 3 29	+ 1	—	—	—	—	—
Palomar	z.	14·8	333	e 3 32a	0	—	—	—	—	—
Riverside		15·5	333	e 3 43	+ 1	—	—	—	—	—
Mount Wilson		16·0	331	e 3 50	+ 2	—	—	—	—	—
Pasadena		16·0	331	i 3 49k	+ 1	—	—	—	—	e 7·0
Santa Barbara		17·0	329	e 4 2	+ 1	—	—	—	—	—
Haiwee	z.	17·6	335	e 4 10	+ 2	—	—	—	—	—
Tinemaha	z.	18·6	337	i 4 20a	− 1	—	—	—	—	—
Fresno	N.	18·9	333	e 5 27	+63	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lick		20·2	330	e 4 49	+10	—	—	—	—	—
Santa Clara		20·4	330	i 5 2	+21	i 9 1	+36	—	—	—
Salt Lake City		20·5	352	e 4 44	+ 2	e 8 52	+25	—	—	e 10·9
Branner	E.	20·6	329	i 4 48	+ 5	—	—	—	—	—
Berkeley		21·0	330	i 4 46	− 1	i 9 0	+23	—	—	—
Logan		21·4	354	e 4 55	+ 4	e 8 57	+12	e 6 3	PP	e 10·4
Ukiah		22·4	330	e 5 2	0	i 9 21	+17	—	—	e 11·5
Cape Girardeau	E.	23·8	41	e 5 29	+14	e 9 51	+23	—	—	—
Ferndale		24·0	331	e 9 14?	S	(e 9 14?)	−18	—	—	—
St. Louis		24·2	38	e 5 16	− 3	e 9 37	+ 2	—	—	—
Bozeman		25·3	357	e 5 32	+ 2	e 10 7	+13	—	—	e 13·2
Chicago		27·9	34	e 5 50	− 4	e 10 39	+ 2	—	—	e 11·7
Columbia		28·1	54	e 8 41	?	e 10 51	+11	—	—	e 15·9
Victoria		30·3	341	6 12	− 3	11 2	−13	—	—	15·2
Pittsburgh	N.W.	31·7	45	—	—	i 11 41	+ 4	—	—	—
Saskatoon		31·7	3	—	—	e 11 46	+ 9	—	—	15·2
Philadelphia		34·7	49	e 8 10	PP	e 12 26	+ 2	e 13 28	SS	e 14·6
Fordham		36·0	48	e 7 2	− 3	e 12 53	+ 9	e 8 20	PP	e 19·5
Ottawa		36·9	39	7 14	+ 2	13 2	+ 4	15 44?	SSS	e 17·2
Harvard		38·2	46	e 7 24	+ 1	e 13 26	+ 9	e 8 36	PP	i 20·4
San Juan		40·2	85	e 7 39	− 1	e 13 46	− 2	e 10 30	PP	e 16·8
Seven Falls		40·7	40	9 33	PP	17 2?	SS	21 40	?	25·2
Bermuda		41·0	64	e 9 22	PP	e 14 4	+ 5	—	—	e 17·0
Sitka		41·5	339	—	—	e 14 18	+11	e 17 39	?	e 17·9
Honolulu		45·7	280	e 12 56	?	—	—	—	—	e 19·8
Huancayo		46·1	131	—	—	e 18 39	SS	—	—	—
La Paz		54·2	128	9 23	− 6	—	—	—	—	—
Uccle		88·1	36	—	—	e 23 10	[−11]	e 23 41	S	e 41·2
Florence		95·8	39	e 22 21	?	e 24 53	+ 8	e 31 25	SS	e 43·5

Additional readings :—
Tucson i = 3m.18s. and 3m.48s.
Palomar iZ = 3m.38s. and 3m.48s.
Pasadena iZ = 3m.58s.
Branner iPN = 4m.52s.
Berkeley eN = 4m.58s., iSZ = 9m.6s.
St. Louis ePZ = 5m.20s., iPZ = 5m.24s., ipPZ = 5m.35s., iSN = 9m.51s., isSE = 10m.4s., iE = 11m.0s.
Fordham eSS = 15m.32s.
Harvard i = 7m.36s., eSSS = 16m.38s., eS_cS = 17m.39s.
Uccle eSSN = 29m.26s.?, eSSSEN = 36m.30s.
Long waves were also recorded at Riverview, Seattle, and other European stations.

Sept. 20d. Readings also at 1h. (Stuttgart, Tucson, Mount Wilson, Palomar, and Riverside), 3h. (Haiwee, Mount Wilson, Pasadena, Tucson, Palomar, Tinemaha, Stuttgart, and Sofia), 4h. (Mount Wilson, Pasadena, Palomar, and Tucson), 6h. (near La Paz), 8h. (Mount Wilson, Pasadena, Palomar, Riverside, Tucson, Tinemaha, La Paz, and Bogota), 9h. (near Bogota), 10h. (Mount Wilson, Tucson, and Palomar), 13h. (Auckland, Christchurch, Wellington, Riverview, and Suva), 16h. (near La Paz), 22h. (Auckland, Christchurch, Wellington, Riverview, Suva, and near Mizusawa), 23h. (Fort de France and Stuttgart).

Sept. 21d. Readings at 1h. (Wellington), 3h. (near Tuai, Auckland, Christchurch, Wellington, Arapuni, Suva, Riverview, Haiwee, Mount Wilson, Pasadena, Tucson, Palomar, Riverside, Tinemaha, Bacau, Bucharest, Campulung, and near Focsani), 4h. (near Tuai, Auckland, Wellington (2), Christchurch, Arapuni, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, and St. Louis), 5h. (Granada), 6h. (La Paz and Kew), 12h. (near La Paz), 15h. (Fort de France and near Stalinabad), 18h. (Stuttgart, Riverview, Auckland, and Wellington), 19h. (Auckland and Wellington).

Sept. 22d. 12h. 4m. 44s. Epicentre 38°·0S. 73°·0W. Depth of focus 0·010.
(as on 1940 Dec. 2d.).

Intensity VIII at San Carlos, Chillan, and Burnes. Macroseismic radius 250km. Macroseismic epicentre 36°·7S. 72°·0W.

F. Greve.
"Determinacion del Coeficiente de Seguridad antisismico para la diferentes Zonas de Chile," p. 15.
Annales de l'Institut de Physique du Globe de Strasbourg. Strasbourg 1951, 2e partie, Séismologie tomes VII-VIII, p. 37.

$A = +·2310$, $B = -·7555$, $C = -·6131$; $\delta = +3$; $h = -1$;
$D = -·956$, $E = -·292$; $G = -·179$, $H = +·586$, $K = -·790$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata	E.	12·5	80	2 58?	+ 2	5 16?	+ 3	—	—	6·0
La Paz		21·8	15	4 44a	− 1	8 36	+ 1	—	—	12·8
Huancayo		25·9	356	e 5 37	+12	(e 9 37)	− 8	e 5 57	pP	e 9·6
Fort de France		53·6	16	e 9 5	− 8	—	—	—	—	—
St. Louis	z.	77·9	347	i 11 45	− 4	—	—	i 12 5	pP	—
Tucson		78·3	328	i 11 51	0	—	—	—	—	—
La Jolla		81·7	323	i 12 9	0	—	—	—	—	—
Palomar	z.	81·9	325	i 12 11a	+ 1	—	—	—	—	—
Riverside	z.	82·6	323	i 12 15a	+ 1	—	—	—	—	—
Pasadena		83·1	323	i 12 16a	0	—	—	i 12 31	pP	—
Mount Wilson		83·2	323	i 12 17a	0	—	—	i 12 33	pP	—
Santa Barbara	z.	84·1	322	i 12 23	+ 2	—	—	—	—	—
Haiwee		84·7	325	i 12 25	+ 1	—	—	—	—	—
Tinemaha		85·6	325	i 12 30a	+ 1	—	—	i 12 45	pP	—

Additional readings:—
La Plata PN = 3m.4s.?.
Fort de France e = 18m.47s.
Pasadena iZ = 12m.38s.

Sept. 22d. 23h. Pacific shock. No determination available.

Epicentre 36°S. 177°W. Magnitude 6½ (Wellington).
34°S. 179°W. Magnitude 6¾ (Pasadena).

Apia iP = 23m.10s., eS? = 27m.28s., eSSS? = 29m.0s.
Sydney eP = 23m.24s., eS = 28m.12s., eL = 31m.0s.?.
Brisbane iPN = 23m.35s., iPZ = 23m.38s., iPPN = 24m.3s., iPPE = 24m.7s., iSN = 28m.5s., iSSE = 28m.53s., iLE = 30m.49s.
Riverview iPE = 23m.39s., iE = 24m.12s., iSE = 27m.52s., iE = 28m.27s. and 28m.53s., iN = 28m.58s., eLZ = 30m.18s.
Honolulu iP = 28m.25s., e = 31m.15s., iS = 36m.35s., eL = 44m.35s.
Kodaikanal eE = 28m.37s.
Harvard e = 30m.7s., i = 37m.15s., 39m.5s., 40m.25s. and 49m.8s., eL = 80m.
Pittsburgh iNW = 30m.51s., eNW = 42m.25s.
La Jolla eP = 31m.12s.
Santa Barbara ePZ = 31m.13s.
Pasadena iP = 31m.13s.k, ePPZ = 34m.38s., iPPZ = 34m.45s., eSKSEN = 41m.48s., eQEN = 54m.46s.
Mount Wilson ePNZ = 31m.14s.
Riverside iP = 31m.15s.
Palomar iPZ = 31m.16s., iZ = 31m.29s.
Santa Clara ePZ = 31m.17s., eSE = 41m.59s., eE = 57m.26s.
Haiwee eP = 31m.21s.
Tinemaha ePNZ = 31m.22s., ePPZ = 34m.56s.
La Paz eP? = 31m.22s., iSKKS = 42m.35s., iPPS = 44m.47s., LE = 67m.42s.
Berkeley iPN = 31m.26s., eE = 41m.56s., eN = 41m.59s.
Huancayo eP = 31m.28s., ePP = 35m.25s., e = 37m.46s. and 42m.22s., eS = 42m.53s., e = 44m.16s., eSS = 48m.53s., e = 53m.5s., eL = 61m.19s.
Tucson iP = 31m.29s., i = 31m.42s., ePP = 35m.8s., eSKS = 42m.15s., eS = 42m.49s., ePS = 43m.58s., e = 44m.27s., eSS = 48m.41s., eL = 58m.39s.
Fordham e = 31m.56s. and 38m.44s.
Colombo eE = 32m.?.
Wellington S? = 33m.53s.
Arapuni e = 34m.?.
La Plata N = 34m.48s.?, and 41m.48s., E = 42m.0s., LN = 59m.
Perth P = 35m.0s., PP = 36m.25s., PPP = 37m.5s., S = 41m.25s., SS = 44m.10s., L = 48m.0s.

Continued on next page.

Sitka e =35m.20s., ePP =35m.53s., eSKS =42m.39s., eS? =43m.34s., e =45m.10s., eSS =50m.16s., e =55m.13s., eL =58m.10s.
Ukiah e =35m.32s., ePPP? =36m.42s., eSKS? =41m.50s., eS =42m.14s., e =52m.15s., eL =55m.18s.
Rapid City e =35m.48s.?, eSS =50m.18s.?, eL =69m.7s.
Logan ePP =36m.4s., eSKS =42m.34s., e =55m.48s., eL =60m.14s.
College ePP =36m.45s., e =42m.37s. and 54m.37s., eL =63m.24s.
Barcelona e =36m.46s., i =42m.8s., eL =111m.13s.
St. Louis ePKP?Z =36m.47s., epPKP?Z =37m.10s., eSKSE =43m.13s., eSKKS?E =44m.31s., eSN =45m.13s., iPS?E =46m.51s., ePPS?N =48m.4s., eSSN =51m.58s., iSSSN =57m.11s., eN =62m.39s.
Saskatoon e =37m.0s.? and 46m.21s., L =69m.
Rio de Janeiro ePN =37m.0s., eSN =46m.47s.
Fort de France ePKP =37m.6s.
Ottawa PKPZ =37m.11s., PPE =39m.0s. ?, SN =47m.0s. ?, PSE =48m.36s.?, SS =56m.0s. ?, eL =72m.
Andijan PKP =37m.21s.
Seven Falls PKP =37m.21s., PP =39m.24s. ?, PS =49m.24s. ?, SS =56m.54s., L =87m.
Tashkent ePKP =37m.25s., ePP =39m.32s., ePKS =40m.50s. ?, eSKS =44m.15s. ?, ePPS =51m.28s. ?
Sverdlovsk ePKP =37m.44s., iPKS =41m.23s., eSSS =63m.54s.
Chicago ePP? =37m.45s., eS =45m.31s., ePS =47m.27s., eSS =53m.27s., eSSS =57m.49s., eL =65m.37s.
Basle ePKP =37m.50s.
Grozny PKP =37m.50s.
Lisbon PKPZ =37m.50s., PKP_2Z =39m.44s., PKP_2E =39m.52s.?, PPZ =43m.37s., PPE =43m.43s.?, SKSPE =54m.14s.?, E =57m.2s., SSE =64m.40s., SSN =64m.48s.?, LN =103.8m.
Ksara ePKP? =38m.9s., e =41m.38s.
Helwan PKPZ =38m.10s., PKKPZ =38m.30s., pPKKPZ =39m.19s., PPZ =41m.54s.
Copenhagen PKP =38m.12s., 38m.33s., 42m.31s., and 46m.47s.
Triest e =38m.14s., i =49m.52s., eL =94m.
Scoresby Sund PKP =38m.16s., 41m.0s.?, 42m.6s.?, and 59m.30s., L =90m.
Stuttgart ePKP?Z =38m.18s., $ePKP_2$?Z =39m.23s. and 39m.35s., ePPZ =43m.40s., $ePPP_2$? =49m.34s., eQ =97m.30s.
Zürich ePKP =38m.18s.
Chur ePKP =38m.20s.
Milan ePKPZ =38m.20s.
Kew iZ =38m.20s. and 38m.41s., eZ =48m.26s., eE =49m.21s., eNZ =50m.25s., e =56m.41s., eZ =60m.27s., eEZ =63m.21s., eZ =70m.18s., eL =96m.
De Bilt ePKP =38m.20s.a, ePP =43m.10s., iSS =63m.20s., eL =95m.
Uccle ePKPZ =38m.20s., ePPNZ =43m.46s., eSKKS?N =49m.42s., ePSKS?N =53m.12s., eN =56m.17s.
Bombay PPE =38m.21s., PPPE =41m.4s., SKKSE =44m.47s., PSE =47m.46s., PPSE =49m.13s.
Paris ePKP =38m.22s., eL =107m.
Toledo iPKPZ =38m.27s., $ePKP_2$ =39m.50s., ePP =43m.49s., SS =65m.13s., L =105m.
Clermont-Ferrand ePKP =38m.28s., i =39m.29s., e =47m.43s., eSSS =69m.24s., eL =96m.
Sofia eEN =38m.30s. ?
San Juan ePP =38m.32s., e =40m.29s., eSKS =44m.10s., ePS =48m.20s., e =55m.25s., eL =68m.37s.
Almeria iPKP =38m.33s., pPKP =39m.20s., PKP_2 =40m.18s., $pPKP_2$ =40m.54s., $sPKP_2$ =41m.22s., iPP =43m.57s., SKS =45m.12s., pSKS =46m.18s., PPP =47m.58s., pPPP =48m.55s., SKSP =53m.49s., PSKS =54m.8s., PPS =58m.10s., sSS =66m.1s., SSS =71m.42s., L =105m.
Florence iPKPZ =38m.33s., $iPKP_2E$ =39m.25s., ePPE =43m.12s., ePPPE =46m.36s., iSKKSN =49m.55s., iPSKSE =53m.49s., iSSE =63m.30s., iSSSE =71m.13s., eLN =93m.22s.
San Fernando ePKP?Z =38m.34s., ePP?Z =43m.56s., eSKS?E =45m.7s., eSS?E =65m.42s., LE =101m.30s.
Granada iPKP =38m.42s., pPKP =39m.26s., PKP_2 =40m.8s., $pPKP_2$ =40m.36s., $sPKP_2$ =41m.0s., SKP =41m.50s., iPP =43m.50s., ipPP =44m.24s., sPP =44m.53s., PPP =48m.6s., pPPP =49m.0s., eSKKS =49m.9s., esSKSP =55m.45s., sSS =65m.42s.
Philadelphia e =38m.43s., ePP =38m.59s., eSKS? =44m.9s., ePS =48m.34s., eSS? =54m.23s., e =59m.11s., eL =69m.8s.
Bermuda ePP =39m.13s., e =47m.50s., ePS? =49m.13s., eSS =56m.38s., eL =70m.43s.
Calcutta eN =39m.31s. and 45m.46s., iN =51m.36s.
Halifax e =40m. ?, L =84m.
Bucharest eEN =42m.0s. ?
Salt Lake City eSKS =42m.34s., eL =59m.30s.
Victoria e =42m.36s., L =64m.
Bozeman eSKS =42m.48s., eL =61m.10s.
Prague e =47m.30s.?, 56m., 67m., 69m., and 71m., eZ =102m.
Columbia ePS =47m.40s., e =59m.33s., eL =70m.55s.
Aberdeen eE =48m.47s., eN =50m.57s., LEN =103m.50s.
Cheb e =49m.24s. and 58m.22s., eL =105m.

Continued on next page.

Stonyhurst e = 50m.57s., i = 52m.16s., ePKP = 54m.8s., iPPP = 59m.20s., iSKS = 61m.52s., e = 65m. and 69m., $ePPP_2$ = 72m., iSSP = 73m.9s., iSSS = 77m.23s., eL = 92m., $eSSS_2$ = 102m.
Tananarive EN = 57m.12s., 69m.37s., and 78m.20s.
Ferndale eE = 59m.0s. ?
Upsala eN = 68m. and 76m.9s., eLE = 98m.
Long waves were also recorded at Ivigtut and other European stations.

Sept. 22d. Readings also at 6h. (near La Paz and near Triest), 9h. (Triest and near Berkeley), 15h. (near Fort de France), 16h. (Riverview), 23h. (Haiwee, Pasadena, Palomar, Riverside, Mount Wilson, Tucson, Tinemaha, Sitka, Potsdam, and near Fort de France).

Sept. 23d. 12h. Mexico.

Tucson iP = 38m.7s., iS = 38m.24s., iL = 39m.17s.
Palomar ePZ = 38m.34s., iSZ = 40m.14s.
La Jolla ePZ = 38m.50s., e = 39m.3s., iS = 40m.7s.
Riverside ePEZ = 39m.10s., iS = 40m.37s.
Mount Wilson ePZ = 39m.22s., iSZ = 40m.59s.
Tinemaha ePZ = 39m.29s., eSZ = 42m.16s.
Pasadena iNZ = 39m.40s., eSN = 40m.48s.
Tacubaya eE = 41m.1s., i = 45m.51s.
St. Louis iPZ = 42m.2s., eSE = 45m.54s., eLE = 47m.57s.
Long waves were also recorded at Santa Clara, Cape Girardeau, Salt Lake City, Logan, Bozeman, Chicago, and Philadelphia.

Sept. 23d. 15h. 0m. 32s. Epicentre 14°·8N. 91°·5W.

Felt strongly in the State of Chiapas.
Epicentre : 15°·5N. 92°·2W.
15°N. 92°W. (U.S.C.G.S.).
Catâlogo compendiado de temblores, 1941-44, Mexico, 1945, p. 52.

$A = -\cdot0253$, $B = -\cdot9669$, $C = +\cdot2538$; $S = -5$; $h = +6$;
$D = -1\cdot000$, $E = +\cdot026$; $G = -\cdot007$, $H = -\cdot254$, $K = -\cdot967$.

		△	Az.	P.	O−C.	S.	O−C.		Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Oaxaca	N.	5·5	294	i 1 28	+ 3	—	—	—	—	—
Vera Cruz	N.	6·2	315	e 1 38	+ 3	—	—	—	—	—
Merida	N.	6·3	16	i 1 49	P*	—	—	—	—	—
Puebla	E.	7·7	304	e 1 58	+ 2	—	—	—	—	—
Tacubaya	N.	8·7	303	e 2 14	+ 4	—	—	—	—	—
Guadalajara	E.	12·7	299	e 3 2	− 3	—	—	—	—	—
Balboa Heights		13·1	115	e 3 18	+ 8	—	—	—	—	—
Mobile		16·1	10	3 58	+ 9	—	—	—	—	—
Port au Prince		18·7	76	e 4 9	−13	7 39	− 9	4 26	PP	e 8·3
Bogota		19·9	118	e 4 42	+ 6	e 7 36	−39	i 4 53	PP	e 12·4
Columbia		21·3	24	i 4 55	+ 5	i 8 51	+ 8	i 5 28	PPP	e 11·6
Cape Girardeau	E.	22·5	15	e 5 5	+ 3	e 9 6	+ 1	—	—	—
St. Louis		23·8	2	i 5 17	+ 2	i 9 26	− 2	i 5 52	PP	i 10·1
San Juan		24·6	77	i 5 26	+ 3	i 9 43	+ 1	—	—	i 10·7
Tucson		24·7	319	i 5 25	+ 1	i 9 45	+ 1	5 45	PP	e 12·6
Chicago		27·1	5	i 5 45	− 1	i 10 16	− 8	i 6 22	PP	e 11·2
Pittsburgh		27·5	20	i 5 51	+ 1	i 10 24	− 6	e 6 21	PP	—
New Kensington		27·6	20	e 6 11	+20	e 10 52	+20	—	—	e 14·7
Philadelphia		28·9	27	i 6 4	+ 1	i 10 48	− 5	i 6 57	PP	i 12·0
Fort de France		29·3	87	e 6 29	+23	e 10 56	− 3	—	—	—
La Jolla		29·5	313	i 6 6	− 2	e 10 55	− 7	i 9 14	PcP	—
Palomar	Z.	29·5	314	i 6 7a	− 1	i 12 46	ScP	i 9 12	PcP	—
Bermuda		30·0	50	e 6 24	+12	e 11 32	+22	—	—	e 13·1
Fordham		30·2	28	i 6 14	0	i 11 1	−12	i 12 27	SS	—
Riverside		30·2	314	i 6 13	− 1	e 11 10	− 3	i 9 14	PcP	—
Mount Wilson		30·8	314	i 6 20a	0	i 12 51	ScP	i 9 17	PcP	—
Pasadena		30·8	314	i 6 20a	0	i 11 20	− 3	i 9 16	PcP	e 13·3
Rapid City		30·8	344	e 6 20?	0	e 11 7?	−16	e 12 25?	SS	—
Huancayo		31·1	148	i 6 28	+ 6	i 11 32	+ 4	e 7 34	PP	i 13·9
Salt Lake City		31·3	330	e 6 24	0	e 11 15	−16	e 12 39	SS	e 16·7

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Haiwee		31·8	318	i 6 28	0	i 12 53	S_cP	i 9 18	P_cP		—
Logan		32·1	331	i 6 30	− 1	i 11 37	− 6	i 7 37	PP		i 11·9
Santa Barbara		32·1	313	i 6 29	− 2	e 11 37	− 6	i 9 20	P_cP		e 17·8
Weston		32·5	28	i 6 36	+ 2	e 11 46	− 3	e 7 56	PP		—
Harvard		32·5	28	i 6 36 a	+ 2	i 11 46	− 3	i 7 54	PP		e 19·5
Tinemaha		32·5	319	6 34 a	0	e 16 38	S_cS	i 8 10	PPP		e 16·5
Fresno	N.	33·3	317	i 7 2	+21	—	—	e 7 42	PP		—
Ottawa		33·3	20	6 42	+ 1	11 57	− 5	7 42	PP		e 15·5
Bozeman		34·9	336	e 6 55	0	e 12 19	− 8	8 16	PP		e 15·9
Santa Clara		35·1	316	i 6 58	+ 1	i 12 26	− 4	—	—		e 16·9
Branner		35·3	316	e 7 0	+ 1	e 12 28	− 5	—	—		e 17·2
Shawinigan Falls		35·3	22	6 59	0	12 31	− 2	8 28	PPP		19·5
Berkeley		35·6	316	i 7 3	+ 2	i 12 34	− 4	i 13 16	?		—
Seven Falls		36·5	24	7 8	− 1	12 48	− 3	8 40	PP		19·5
Ukiah		36·9	318	e 7 10	− 2	i 12 52	− 6	e 8 41	PP		e 15·7
Halifax		38·0	33	6 32	−49	12 10?	−64	8 4	?		21·5
Ferndale		38·4	319	i 13 14	?	i 13 19	− 1	—	—		i 17·5
La Paz		38·7	142	i 7 28	+ 1	i 13 28	+ 3	9 44	P_cP		19·8
Saskatoon		39·2	346	7 32	+ 1	14 1	+29	9 4	PP		—
Seattle		41·5	330	e 7 45	− 5	e 14 1	− 6	—	—		e 23·2
Victoria		42·7	330	7 50	−10	14 8	−16	17 40	SSS		23·5
Sitka		53·8	333	e 9 50	+24	i 16 53	− 8	i 19 4	?		e 24·8
Ivigtut		55·7	24	e 12 59	PPP	e 17 20	− 6	—	—		e 22·7
La Plata	E.	58·8	148	9 58?	− 4	17 52?	−15	18 46?	PPS		—
	N.	58·8	148	9 58?	− 4	18 4	− 3	12 22?	PP		—
	Z.	58·8	148	10 3	+ 1	—	—	10 28	?		—
College		62·7	337	e 10 27	− 2	e 18 49	− 8	e 19 32	PPS		e 25·9
Scoresby Sund		69·4	20	15 34?	PPP	20 12	− 6	24 34	SS		—
Lisbon		75·0	53	12 13	+28	21 54	+31	26 16	SS		34·4
San Fernando		77·6	56	e 12 28	+28	21 46	− 5	e 15 23	PP		37·0
Stonyhurst		77·6	37	e 12 0	0	i 21 43	− 8	e 26 48	SS		e 37·0
Toledo		78·7	52	i 12 5	− 1	e 21 55	− 8	—	—		—
Kew		79·4	39	e 12 51	+42	e 22 31	+21	e 14 58	PP		e 37·5
Granada		79·6	55	i 12 8	− 2	22 11	− 1	i 12 37	pP		37·4
Almeria		80·5	55	i 12 11	− 4	22 21	− 1	i 12 38	pP		37·5
Bergen		80·6	30	—	—	e 22 58	PS	—	—		e 38·5
Paris		81·6	42	e 12 20	− 1	c 22 22	−11	—	—		39·5
Tortosa	E.	82·0	50	e 11 43	−40	22 22	−15	15 27	PP		e 38·7
Uccle		82·3	39	e 12 21	− 4	e 22 28	−12	e 27 58	SS		e 38·5
De Bilt		82·5	38	i 12 25 a	− 1	e 22 32	−10	e 27 58	SS		e 38·5
Clermont-Ferrand		82·7	45	i 12 26 a	− 1	e 22 34	−10	i 15 34	PP		e 39·1
Neuchatel		85·0	43	e 12 32	− 6	—	—	—	—		—
Basle		85·2	42	e 12 38	− 1	—	—	e 13 7	?		—
Copenhagen		85·6	33	e 12 41	0	22 57	[− 7]	15 57	PP		36·5
Stuttgart		85·9	41	i 12 41 a	− 2	e 23 4	[− 3]	i 13 10	pP		e 40·4
Zürich		85·9	42	e 12 42	− 1	—	—	e 13 10	pP		—
Upsala		86·6	29	e 13 31	?	e 24 4?	PS	—	—		e 41·5
Chur		86·7	42	e 12 46 a	− 1	e 23 15	[+ 3]	e 13 16	?		—
Milan		86·9	44	e 12 47	− 1	24 40	PS	15 17	?		—
Potsdam		87·1	37	—	—	i 23 17	[+ 2]	i 23 55	?		e 41·5
Cheb		87·4	38	e 12 28?	−22	23 14	[− 3]	e 16 28?	PP		e 44·5
Prague		88·7	38	e 11 58?	?	e 23 22?	[− 3]	—	—		e 44·5
Florence		88·8	45	i 12 54 a	− 3	e 23 14	[−11]	i 18 57	PPP		e 41·7
Triest		89·9	43	—	—	i 23 8	[−24]	—	—		—
Sofia		97·4	42	e 16 58?	PP	—	—	—	—		—
Bucharest		98·3	39	22 28?	?	—	—	—	—		—
Wellington		102·4	231	—	—	24 36	[− 3]	—	—		46·5
Christchurch		104·3	228	24 45	SKS	(24 45)	[− 3]	33 43	SSP		47·4
Sverdlovsk		105·0	15	e 19 2	PP	e 33 19	SS	—	—		—
Helwan		109·3	50	e 19 3	PP	e 25 0	[− 9]	e 28 28	PS		—
Ksara		110·4	45	e 19 7?	PP	28 45	PS	—	—		—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Riverview		120·7	239	e 20 22	PP	i 25 46	[− 6]	i 30 18	PS		55·5
Tashkent		121·4	16	e 17 56	[−60]	i 30 23	PS	19 58	PP		—
Andijan		122·7	14	20 13	PP	32 18	PPS	—	—		—
Calcutta	N.	142·9	0	—	—	42 24	SSP	—	—		e 70·2
Bombay	E.	143·1	24	19 44	[+ 8]	42 58	SSP	23 16	PKS		—

Additional readings :—
Port au Prince eS =7m.14s.
St. Louis iZ =5m.40s., iSE =9m.34s.
Tucson i =5m.39s., eS =9m.32s.
Philadelphia e =6m.28s.
La Jolla iS_cPZ =12m.57s.
Palomar iZ =6m.31s.
Fordham iPS =13m.3s.
Riverside iS_cPZ =12m.48s.
Pasadena iSSEN =12m.0s., iS_cPZ =12m.51s., iS_cSEN =16m.46s.
Logan i =7m.8s., eS =11m.32s.
Santa Barbara iS_cPZ =12m.55s., eS_cSNZ =16m.54s.
Weston e =7m.0s., and 11m.36s.
Harvard i =8m.52s., iP_cP =9m.30s., i =12m.14s., iP_cS =13m.10s., eSSS =13m.56s., e =16m.52s., eS_cS =17m.8s.
Tinemaha iP_cPZ =9m.21s., iS_cP =12m.55s.
Ottawa i =7m.6s., PPP =8m.0s., iZ =12m.28s.
Bozeman e =12m.57s.
Seven Falls SS =14m.58s.?.
Halifax SSS =15m.22s.?.
La Paz iSSZ =16m.2s., S_cS =17m.42s.
Saskatoon SSS =17m.28s.
Sitka i =17m.41s.
La Plata E =19m.40s.
Scoresby Sund 20m.43s.
Lisbon E =14m.32s. and 21m.13s.
San Fernando ePS?E =22m.25s.
Stonyhurst i =12m.22s., 12m.59s., SKS =21m.58s., iS_cS =22m.10s., iPPS? =23m.14s., eSSS =30m.7s.
Kew ePPP?EN =16m.41s., eSKS =21m.57s., ePSE =23m.4s., eZ =25m.28s.?, eQEN =33m.28s.?.
Granada sP =13m.13s., PP =15m.0s., pPP =15m.10s., SS =22m.45s., PSS =24m.12s.
Almeria P_cP =12m.15s., sP =12m.53s., PP =15m.39s., pPP =16m.12s., sPP =16m.23s., PPP =17m.48s., S =22m.44s., pS =23m.12s., sS =23m.27s., SP =23m.48s., PS =24m.2s.
Tortosa iP_cPE? =12m.45s., PPPE =17m.5s., SSE =26m.37s.
Uccle iEZ =12m.53s., ePSE =23m.42s., eE =32m.24s., eN =34m.29s.
De Bilt iP =12m.55s.k.
Clermont-Ferrand ePS =23m.12s. and 23m.26s.
Copenhagen 23m.39s., 24m.22s.
Stuttgart ePPZ =16m.8s., ePPPZ =17m.50s., esS? =23m.53s., eSP =24m.26s., eSS =28m.52s.
Potsdam eN =23m.22s.
Florence iSE =24m.33s., ePSE =25m.35s., iSSSE =35m.34s.
Christchurch PP =27m.29s., SS =37m.55s. Phases wrongly identified.
Helwan eZ =19m.40s.
Riverview iSKKS?E =27m.19s., eSS? =37m.35s.
Tashkent iPPS =31m.49s.
Bombay iE =37m.46s.

Sept. 23d. 15h. Undetermined shock.

Port au Prince eP =31m.44s., iS =32m.46s., i =33m.11s., 33m.25s., and 33m.41s.
San Juan e =32m.0s.
Bogota iP =32m.4s., i =32m.14s., and 33m.32s.
Fort de France e =32m.18s., eS_g? =33m.59s., e =38m.36s.
Balboa Heights i =32m.23s., e =34m.7s.
Huancayo eP =35m.21s., e =35m.57s., i =39m.41s., eL =40m.46s.
La Paz PZ =36m.8s., SZ =42m.8s., LZ =47m.14s.
St. Louis ePZ =36m.38s.
Tucson iP =38m.5s., i =38m.15s., e =38m.50s.
Riverside eZ? =38m.43s., iZ =38m.50s. and 39m.1s.
Mount Wilson ePZ =38m.54s., iNZ =39m.5s.
Pasadena ePZ =38m.54s.
Tinemaha eP =39m.3s., iZ =39m.10s.
Haiwee iPZ =39m.46s., iZ =39m.57s.
Stuttgart eZ =41m.55s.

Sept. 23d. Readings also at 0h. (Santa Clara), 1h. (Triest, Bucharest, Stuttgart, Sofia, and Neuchatel), 3h. (Florence Triest, and Stuttgart), 4h. (near Fort de France), 5h. (Florence, Stuttgart, Helwan, and near Ksara), 6h. (near Andijan and Tashkent), 9h. (La Paz), 16h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Tucson, and Palomar), 23h. (Tortosa, near Bogota, near Berkeley, and Branner).

Sept. 24d. 2h. Pacific.

Riverview eP?Z = 46m.32s., iSEN = 50m.49s., iSS?N = 51m.32s., eLEZ = 53m.0s., iN = 62m.39s., eL = 68m.6s. (as two shocks).
Arapuni e = 52m.42s.?, S? = 60m.30s.?, L = 61m.36s.
Santa Barbara ePZ = 53m.40s.
Pasadena iPZ = 53m.53s., iZ = 54m.8s., eLZ = 63m.23s.
Mount Wilson ePZ = 53m.53s., iZ = 54m.15s., ePPZ = 57m.13s.
Haiwee iPZ = 53m.57s.
Riverside ePZ = 53m.57s., eZ = 54m.5s. and 54m.12s., ePPZ = 57m.18s.
Tinemaha iPZ = 53m.57s., iZ = 54m.22s.
Tucson iP = 54m.18s.
Wellington P? = 55m.40s., S = 58m.17s., R = 59m.42s.?.
Christchurch P = 55m.55s., Q = 59m.5s., R = 60m.12s.?.
St. Louis eZ = 60m.7s., eL?N = 79m.38s.
Stuttgart eZ = 60m.36s.
Clermont-Ferrand iP? = 60m.52s., e = 61m.36s.
Toledo ePZ = 60m.58s., PP? = 61m.10s.
Granada iZ = 61m.45s., and 62m.9s.
Auckland S? = 61m.55s., L = 64m.
Long waves were also recorded at De Bilt and Florence.

Sept. 24d. 6h. 43m. 31s. Epicentre 85°·0N. 10°·0E.

High latitude determination, marred by the anomalous readings at Irkutsk.

$A = +\cdot0864$, $B = +\cdot0152$, $C = +\cdot9961$; $\delta = -9$; $h = -14$;
$D = +\cdot174$, $E = -\cdot985$; $G = +\cdot981$, $H = +\cdot173$, $K = -\cdot088$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Upsala	E.	25·3	171	i 5 29	− 1	e 9 56	+ 2	e 8 29?	?	—
Uccle		34·4	187	e 6 52	+ 1	e 12 25	+ 6	e 14 48	SS	e 15·5
Stuttgart		36·4	181	e 7 9	+ 1	e 12 53	+ 3	—	—	e 18·0
Irkutsk		38·6	80	e 9 17	?	e 16 29	?	—	—	—
Florence		41·4	178	—	—	e 17 27	SS	—	—	—
Toledo	Z.	45·4	195	e 8 24	+ 2	—	—	—	—	—
Tashkent		46·4	117	8 30	0	e 15 19	+ 1	—	—	—
Bozeman		47·3	305	—	—	e 15 44	+13	—	—	e 25·1
Granada		48·1	195	i 8 45	+ 2	—	—	i 9 29	PP	—
Chicago		49·3	283	e 10 42	PP	e 19 34	SS	—	—	e 24·6
Pittsburgh	N.W.	49·9	274	—	—	i 16 15	+ 8	—	—	—
St. Louis		52·6	285	e 11 39	PP	e 16 40	− 4	e 20 15	SS	e 22·4
Tinemaha		56·3	312	e 9 44	− 1	—	—	—	—	—
Haiwee		57·2	311	e 9 51	0	—	—	—	—	—
Mount Wilson	Z.	59·1	311	e 10 2	− 2	—	—	e 13 40	PP	—
Pasadena		59·2	311	e 10 3	− 2	—	—	e 13 39	PP	e 30·5
Riverside	Z.	59·3	311	e 10 7	+ 1	—	—	—	—	—
Tucson		60·6	303	e 10 12	− 3	—	—	e 22 40	SS	e 32·6

Additional readings :—
Upsala eE = 6h.43m.57s., eN = 6h.44m.2s.
Toledo i = 8m.35s.
St. Louis eE = 18m.15s.
Mount Wilson iZ = 10m.10s.
Long waves were also recorded at Scoresby Sund, Paris, and Kew.

Sept. 24d. 11h. 31m. 22s. Epicentre 36°·4N. 73°·5E.

Felt in North India.
" Annales de l'Institut de Physique du Globe de Strasbourg," 2e partie, Séismologie, tome VII, VIII, p. 37, Strasbourg 1950. Epicentre 36°·5N. 73°·0E., depth suggested 120 km.

$A = +·2291$, $B = +·7736$, $C = +·5908$; $\delta = -1$; $h = 0$;
$D = +·959$, $E = -·284$; $G = +·168$, $H = +·566$, $K = -·807$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stalinabad		4·3	301	i 1 15	+ 7	—	—	i 1 26	P_g	—
Tashkent		5·9	328	i 1 35	+ 4	3 7	S*	—	—	—
Dehra Dun	N.	7·2	146	i 2 2k	P*	i 3 14	+ 1	—	—	—
New Delhi	E.	8·4	157	e 2 10a	+ 4	e 3 42	− 1	—	—	—
Bombay	E.	17·4	183	i 4 5	− 1	i 7 16	− 3	4 22	PP	i 8·0
Calcutta	N.	18·9	133	i 4 23k	− 1	i 7 38	−15	i 4 31	PP	—
Hyderabad	E.	19·4	166	4 21	− 9	7 48	−16	—	—	—
Sverdlovsk		22·2	342	i 5 0	0	i 9 2	+ 2	—	—	—
Kodaikanal	E.	26·3	172	e 5 38	− 1	i 10 28	+17	—	—	13·3
Irkutsk		26·9	43	i 5 45	0	i 10 45	+25	—	—	—
Colombo	E.	29·9	168	6 16	+ 4	11 57	+48	—	—	—
Ksara		30·8	277	e 6 21	+ 1	—	—	e 13 14	SS	—
Helwan	Z.	35·7	273	i 7 2k	0	14 20	SS	9 29	PP	—
Bucharest		36·5	299	i 7 10a	+ 1	—	—	—	—	i 18·7
Sofia		38·7	296	i 7 31	+ 4	—	—	i 9 20?	PP	e 16·6
Belgrade		40·5	300	i 7 44	+ 2	e 13 54	+ 2	i 9 18	PP	e 26·6
Kalossa	E.	41·3	304	7 51	+ 2	—	—	—	—	e 27·6
Upsala	E.	42·4	323	i 7 54	− 4	e 14 31	+11	i 9 28	PP	i 23·0
Prague		44·0	309	i 8 9k	− 2	e 18 4	SS	—	—	e 23·6
Potsdam		44·7	312	i 8 19	+ 3	i 18 25	SS	i 10 3	PP	—
Copenhagen		44·9	317	i 8 18a	0	i 14 59	+ 3	10 5	PP	—
Triest		45·1	303	i 8 20	0	i 15 0	+ 1	i 10 7	PP	—
Cheb		45·3	309	e 8 25	+ 4	—	—	e 18 51	SS	e 28·6
Jena		45·8	310	i 8 24	− 1	—	—	i 10 17	PP	e 23·6
Kumamoto		46·6	77	e 8 31	− 1	—	—	—	—	—
Florence		47·2	300	i 8 38a	+ 2	i 15 31	+ 2	i 9 10	pP	e 22·2
Stuttgart		47·6	307	i 8 39a	0	e 15 36	+ 1	i 10 32	PP	e 24·0
Chur		47·7	305	e 8 39a	− 1	—	—	—	—	—
Milan		48·2	303	i 8 44	0	15 41	− 2	—	—	22·9
Zürich		48·3	306	e 8 43a	− 2	—	—	e 10 39	PP	—
Strasbourg		48·6	307	i 8 52	+ 5	e 16 4	+15	i 11 16	PPP	—
Bergen		48·6	323	—	—	—	—	e 20 28	SSS	—
Kôti		48·6	75	e 8 47	0	—	—	—	—	—
Basle		48·9	306	e 8 49	− 1	—	—	—	—	—
Neuchatel		49·4	306	e 8 53	0	—	—	—	—	—
De Bilt		49·5	312	i 8 55a	+ 1	i 16 4	+ 2	i 10 50	PP	e 25·6
Uccle		50·3	311	i 8 59a	− 1	e 16 10	− 3	e 19 43	SS	e 25·6
Nagano		51·1	69	8 46	−20	—	—	—	—	—
Paris		51·9	308	i 9 11	− 1	e 16 48	+13	—	—	31·6
Misima		52·2	71	9 12	− 3	—	—	—	—	—
Clermont-Ferrand		52·3	304	i 9 16a	+ 1	e 16 28	−12	e 20 51	SS	e 34·6
Mizusawa		52·4	65	e 9 19	+ 3	16 40	− 2	—	—	—
Sendai		52·5	66	9 4	−13	16 38	− 5	—	—	—
Aberdeen	E.	52·8	319	—	—	e 20 27	SS	—	—	i 27·6
Kew		53·0	313	i 9 21	0	e 16 51	+ 1	e 20 44	SS	e 25·6
Stonyhurst		53·7	316	—	—	e 20 50	SS	i 21 26	SSS	i 30·0
Tortosa	E.	55·7	299	i 9 39	− 1	i 17 27	+ 1	11 46	PP	32·1
Scoresby Sund		57·9	338	—	—	18 20	+25	—	—	—
Almeria		59·3	296	i 10 2	− 4	i 18 10	− 4	10 27	pP	38·5
Toledo		59·3	300	i 10 6	0	18 16	+ 2	i 12 15	PP	25·1
Granada		60·0	297	i 10 11	0	i 19 10	+47	13 0	PP	34·1
San Fernando		62·2	296	i 10 25	− 1	18 53	+ 2	25 32	SSS	—
Seven Falls		90·9	336	—	—	e 24 2	− 1	—	—	47·6
Saskatoon		91·8	0	—	—	e 23 50	[+ 7]	—	—	49·6
Ottawa		94·0	338	e 13 22	+ 1	e 23 56?	[0]	e 17 14	PP	e 46·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		94·1	10	—	—	e 23 50?	[− 6]	—	—	49·6
Chicago		100·3	346	—	—	e 24 29	[+ 1]	—	—	e 52·2
St. Louis		103·8	347	e 14 6	P	e 24 43	[− 2]	e 18 20	PP	—
Tinemaha	z.	106·1	9	e 14 15	P	—	—	e 18 38	PP	—
Haiwee	z.	107·1	9	e 18 32	PP	—	—	—	—	—
Mount Wilson	z.	108·9	9	e 14 29	P	—	—	e 38 4	P′P′	—
Pasadena	z.	109·0	9	e 18 34	PP	e 21 24	PPP	i 29 41	PKKP	e 54·6
Riverside	z.	109·2	9	e 18 35	PP	—	—	e 29 40	PKKP	—
Palomar	z.	109·9	8	e 14 35	P	—	—	e 17 17	?	—
Tucson		111·6	3	e 18 41	[+ 5]	e 21 51	PPP	e 28 48	PS	e 55·1
Bogota		129·2	316	e 18 43	[−27]	—	—	—	—	—
La Paz	z.	140·7	290	i 19 34	[+ 2]	—	—	i 22 34	PP	72·6
Huancayo		142·9	302	e 19 40	[+ 4]	—	—	—	—	e 72·4

Additional readings :—
New Delhi iPN = 2m.13s.
Bombay SSE = 7m.31s.
Calcutta iP_cP = 10m.10s.
Helwan P_cP = 7m.35s., eZ = 7m.56s., pP?Z = 8m.53s.
Bucharest iEN = 8m.2s., iE = 8m.28s., iZ = 8m.34s.
Belgrade e = 10m.37s., eSS = 17m.8s.
Upsala iSE = 13m.36s., iN = 17m.24s.
Potsdam iPN = 8m.22s., ePPN = 10m.8s.
Copenhagen 18m.20s.
Jena iN = 10m.23s., eN = 18m.38s. ?
Florence iPPZ = 10m.42s., iPPPE = 11m.32s., isSE = 16m.49s., iSSE = 19m.14s.
Stuttgart eP_cPZ = 9m.47s., eSS = 19m.18s.
Zürich e = 9m.7s.
Strasbourg eSS = 19m.36s.
De Bilt iSS = 19m.48s.
Uccle eSSE = 19m.54s.
Mizusawa SE = 16m.45s.
Kew iNZ = 17m.11s.
Almeria sP = 10m.34s., P_cP = 10m.43s., PP = 12m.19s., pPP = 12m.34s., PPP = 13m.47s., pPPP = 14m.33s., sS = 18m.43s., S_cS = 19m.31s., SS = 22m.21s.
Granada pP = 10m.26s., P_cP = 10m.32s., sP_cP = 11m.23s., pPP = 13m.11s., P_cS = 14m.2s., sS_cS = 21m.32s.
San Fernando PSE = 20m.8s.
St. Louis ePPPPN = 23m.47s., eSKKSN = 25m.29s., eSN = 25m.50s., ePSN = 27m.19s., ePPSN = 28m.26s., ePKKP?Z = 29m.55s., eZ = 30m.15s.
Tinemaha eZ = 18m.0s.
Mount Wilson eZ = 17m.54s., ePKKPZ = 29m.42s.
Tucson e = 17m.33s. and 37m.57s.
Long waves were also recorded at Bozeman, College, Pittsburgh, and Riverview.

Sept. 24d. Readings also at 1h. (near Andijan), 4h. (near Mizusawa), 9h. (near La Paz), 11h. (Haiwee, La Jolla, Mount Wilson (2), Pasadena, Palomar, Riverside, Santa Barbara, Tinemaha, Tucson, St. Louis, Stuttgart, and near Apia), 12h. (Almeria and Granada), 13h. (near Apia and near Tashkent), 14h. (Arapuni, Auckland, Christchurch, Wellington, Riverview, Mount Wilson, Pasadena, Palomar, Tucson, La Paz, Stuttgart, and near Apia), 16h. (near Apia), 17h. (Bucharest and Sofia), 22h. (Fordham).

Sept. 25d. Readings at 5h. (near Shawinigan Falls and Seven Falls), 8h. (near Pa Paz, Palomar, Riverside, Tucson, and Tinemaha), 12h. (near Bogota and La Paz), 13h. (Bogota and Riverview), 14h. (near Bogota), 15h. (Milan), 16h. (Harvard), 17h. (near New Delhi and near Tashkent), 21h. (Ravensburg, Stuttgart, Basle, near Chur, and Zürich).

Sept. 26d. 2h. 8m. 10s. Epicentre 39°·0S. 51°·1E. (as on 1941, Nov. 24d.).

$A = +·4893$, $B = +·6064$, $C = -·6268$; $\delta = +1$; $h = -1$;
$D = +·779$, $E = -·627$; $G = -·394$, $H = -·488$, $K = -·779$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tananarive		20·3	350	i 4 29	−11	e 8 7	−16	4 48	PP	9·9
Colombo	E.	52·9	37	9 22	+ 2	—	—	—	—	—
Kodaikanal	E.	54·8	33	—	—	i 17 22	+ 8	—	—	—
Bombay	E.	61·1	24	10 18	0	18 39	+ 2	11 0	P_cP	—
	N.	61·1	24	10 19	+ 1	18 35	− 2	12 16	PP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta		70·4	37	—	—	i 20 43	+13	—	—	33·7
Helwan		70·9	342	i 11 18a	− 3	e 20 28	− 8	e 21 26	PPS	—
New Delhi	N.	71·5	25	e 11 27	+ 3	e 20 40	− 3	21 6	PS	—
Ksara		73·8	347	e 12 37	+59	e 21 11	+ 2	—	—	—
La Plata	E.	81·4	232	12 24	+ 4	—	—	12 44?	P_cP	—
Tashkent		81·7	14	e 16 20	?	e 22 35	+ 1	e 32 3	L	(e 32·1)
Wellington		85·0	141	—	—	23 20	+13	—	—	40·8
Sofia		85·1	340	e 12 45	+ 6	e 22 2	−66	—	—	—
Florence	E.	89·9	28	e 13 22	+20	i 23 33	[+ 1]	i 24 39	PS	e 40·0
Almeria		90·2	319	13 2	− 2	23 55	− 1	24 48	PS	45·8
Granada		91·0	318	13 3k	− 4	24 5	+ 2	24 48	PS	—
San Fernando	E.	91·8	316	e 13 14	+ 3	e 24 14	+ 3	e 25 29	PS	47·3
Tortosa	E.	91·9	323	—	—	i 24 10	− 1	—	—	e 53·8
Toledo		93·3	320	e 13 18	0	e 24 24	0	—	—	—
Clermont-Ferrand		94·7	327	i 12 26k	−58	e 24 41	+ 5	i 16 9	?	e 43·1
Stuttgart		95·0	333	e 13 25	− 1	e 23 38	[−23]	e 25 58	PS	e 47·0
Uccle		98·4	331	e 17 38?	PP	e 25 11	+ 4	e 26 20	PS	e 46·8
De Bilt		99·1	333	—	—	—	—	e 32 0	SS	e 48·8
Seven Falls		137·7	300	e 22 20?	PP	—	—	—	—	66·8
Pittsburgh	N.W.	142·7	288	e 23 14	PP	—	—	—	—	e 89·0
Chicago		148·6	288	e 19 42	[− 3]	—	—	—	—	e 80·3
St. Louis		150·0	281	e 19 51	[+ 4]	e 26 51	[− 3]	e 33 25	PSKS	—
Tucson		163·9	251	i 20 11	[+ 6]	—	—	i 24 47	PP	e 83·0
La Jolla		168·7	240	e 20 16	[+ 8]	—	—	e 25 14	PP	—
Palomar	Z.	168·8	244	i 20 17	[+ 9]	—	—	i 25 14	PP	—
Riverside	Z.	169·5	245	i 20 18	[+ 9]	—	—	e 26 17	PP	—
Mount Wilson		170·1	243	i 20 19	[+10]	—	—	i 25 22	PP	—
Pasadena		170·1	243	e 20 16	[+ 7]	—	—	i 25 22	PP	—
Haiwee		170·9	254	e 20 17	[+ 7]	—	—	e 25 24	PP	—
Santa Barbara	Z.	171·3	241	e 20 21	[+11]	—	—	e 25 29	PP	—
Tinemaha		171·4	259	e 20 19	[+ 9]	—	—	e 25 27	PP	—

Additional readings :—
Tananarive SS = 8m.29s., P_cP = 9m.0s.
Bombay PPPE = 13m.40s., S_cSE = 20m.16s., S_cSN = 20m.25s., SSE = 22m.35s., SSSE = 25m.34s.
Helwan iZ = 11m.26s., PPZ = 13m.52s.
New Delhi PPN = 15m.7s., SKSN = 21m.26s., SSN = 25m.3s.
Florence ePPE = 16m.23s., ePPE = 17m.43s., iSSE = 29m.58s., eSSSE = 32m.22s.
Almeria pP = 13m.34s., PP = 17m.0s., PPP = 19m.2s., SKS = 23m.18s., PS = 24m.34s., pSP = 25m.38s., SS = 30m.24s., SSS = 38m.2s.
Granada PP = 16m.33s., SS = 30m.30s., SSS = 34m.3s.
San Fernando ePPE = 17m.9s., eSKSE = 23m.18s., eSSSE = 30m.38s.
Stuttgart ePPZ = 16m.40s. and 17m.10s., e = 23m.2s. ?, eSS = 31m.2s.
Uccle eSKS?EN = 24m.20s. ?, eEN = 31m.50s. ?
St. Louis iPKPZ = 19m.56s., iZ = 20m.2s., ePPE = 23m.5s., ePPPPE = 28m.51s., ePPPPPE = 30m.30s., eE = 38m.41s., eSPSN = 42m.39s.
Tucson e = 20m.58s. and 32m.12s.
Palomar $iPKP_2Z$ = 21m.24s.
Mount Wilson $ePKP_2Z$ = 21m.32s.
Pasadena $iPKP_2Z$ = 21m.31s., ePPPZ = 29m.20s.
Haiwee $ePKP_2NZ$ = 21m.30s.
Long waves were also recorded at La Paz, Huancayo, Christchurch, Riverview, Aberdeen, Kew, Stonyhurst, Paris, Lisbon, and Bozeman.

Sept. 26d. 13h. Undetermined shock.

Auckland P? = 7m.35s., S? = 16m.5s., i = 18m.53s., R = 28m.
Riverview eN = 15m.12s., iN = 19m.6s., eLN = 20m.54s.
Colombo eE = 19m.30s.
Sydney e = 19m.48s. ? and 23m.54s. ?
New Delhi eN = 20m.25s. and 38m.32s.
Bombay eE = 20m.29s., 22m.32s., and 23m.5s., LE = 29m.
Pasadena ePZ = 21m.21s., iZ = 21m.41s., eLZ = 60m.
Mount Wilson ePZ = 21m.24s., eZ = 21m.39s.
Tucson eP = 21m.38s., e = 21m.52s.
Wellington S? = 22m.10s. ?, R = 30m.
Christchurch S = 25m.50s., Q = 27m.54s., R = 30m.37s.
Long waves were also recorded at Arapuni, Kew, and De Bilt.

Sept. 26d. 18h. 10m. 48s. Epicentre 52°·0N. 176°·2E.

$A = -·6168$, $B = +·0410$, $C = +·7860$; $\delta = -8$; $h = -6$;
$D = +·066$, $E = +·998$; $G = -·784$, $H = +·052$, $K = -·618$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		22·4	41	e 5 1	− 1	e 9 4	0	—	—	e 11·0
Tinemaha	z.	47·4	82	i 8 39	+ 1	—	—	—	—	—
Haiwee	z.	48·2	82	e 8 45	+ 1	—	—	—	—	—
Mount Wilson		49·4	84	i 8 54	+ 1	—	—	—	—	—
Pasadena		49·4	84	i 8 52	− 1	—	—	—	—	e 22·7
Riverside	z.	50·0	84	e 8 57	− 1	—	—	—	—	—
Palomar	z.	50·7	84	i 9 4	+ 1	—	—	—	—	—
La Jolla		50·8	85	e 9 5	+ 1	—	—	—	—	—
Tucson		55·2	81	e 9 34	− 3	—	—	—	—	e 26·6
Sverdlovsk		59·4	325	10 1	− 5	—	—	19 5	PPS	—
Chicago		61·8	58	—	—	e 18 49	+ 3	e 24 22	?	e 29·7
St. Louis		62·7	62	e 10 27	− 2	e 19 0	+ 3	e 19 20	PS	—
Seven Falls		65·8	44	—	—	e 19 30	− 5	—	—	32·2
Andijan		66·5	307	e 10 21	−33	—	—	—	—	—
Pittsburgh		66·7	54	—	—	e 19 47	+ 1	—	—	e 33·5
Tashkent		67·6	309	e 10 59	− 2	e 19 51	− 6	—	—	—
New Delhi	N.	73·2	295	—	—	—	—	e 21 37	PS	—
Uccle		77·3	356	e 12 0	+ 2	e 21 42?	− 6	e 22 54?	PPS	e 37·2
Stuttgart		79·0	353	e 1 44	?	e 22 18?	+12	e 41 18?	Q	e 43·3
Bermuda		80·5	49	—	—	e 22 52	PS	—	—	e 40·0
Clermont-Ferrand		82·4	356	e 27 12	?	—	—	—	—	e 53·2
Bombay		83·2	292	e 16 45	?	e 22 46	− 3	e 23 34	PS	—
Florence	Z.	83·7	350	i 12 8	−24	—	—	i 15 59	PP	—
San Juan		91·5	58	—	—	e 24 31	+23	—	—	e 46·8
Helwan	N.	92·9	330	—	—	e 23 48	[− 2]	—	—	—

Additional readings :—
Tucson e −9m.56s., 12m.19s., and 22m.23s.
St. Louis eSE =18m.53s., eSS?E =23m.41s.
Uccle eN =26m.46s.
Bombay eE =23m.38s.
Florence iPPPZ =18m.31s., iSSN =30m.34s.
Long waves were also recorded at Sitka, Santa Clara, Philadelphia, Calcutta, and at other European stations.

Sept. 26d. 22h. 38m. 9s. Epicentre 5°·0N. 82°·5W. (as on 1943, March 5d.).

Epicentre as adopted (U.S.C.G.S.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		4·9	35	1 16	− 1	i 2 13	− 2	—	—	—
Bogota		8·4	90	i 2 7	+ 1	i 3 44	+ 1	i 2 47	P_g	—
Huancayo		18·7	157	i 4 17	− 5	e 7 59	+11	—	—	e 9·2
San Juan		20·8	48	i 4 43	− 2	e 8 39	+ 6	i 8 45	SS	e 11·1
Fort de France		23·1	65	e 5 9	+ 1	—	—	—	—	—
La Paz		25·7	146	5 35	+ 2	—	—	—	—	—
St. Louis		34·2	350	e 6 47	− 2	e 12 14	− 2	e 8 30	PPP	—
Tucson		37·9	319	e 7 18	− 2	—	—	e 8 57	PP	e 19·5
La Jolla		42·6	315	e 7 56	− 3	—	—	—	—	—
Palomar	z.	42·6	316	i 7 59	0	—	—	—	—	—
Riverside	z.	43·3	316	e 8 4	− 1	—	—	—	—	—
Mount Wilson	z.	43·9	316	e 8 10	0	—	—	—	—	—
Pasadena	z.	44·0	316	e 8 12	+ 1	—	—	—	—	e 21·9
Santa Barbara	z.	45·2	315	e 8 21	+ 1	—	—	—	—	—
Tinemaha	z.	45·7	319	e 8 24	0	—	—	—	—	—

Sept. 26d. Readings also at 0h. (Tinemaha, Riverside, Palomar, and Tucson), 1h. (near Ksara), 3h. (near Andijan and Tashkent), 4h. (Stuttgart, Uccle, De Bilt, and Kew) 8h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Santa Barbara, Haiwee, Palomar, and Tucson), 9h. (near Andijan, Tashkent, and Stalinabad), 11h. (near Bogota), 14h. (Wellington and near Stuttgart), 15h. (Stuttgart, Pasadena, Riverside, Tinemaha, Tucson, and near Bogota), 17h. (near Granada, and near Berkeley, Lick, Branner, Fresno, and Santa Clara), 19h. and 21h. (near Reykjavik), 22h. (Tinemaha, Tucson, near Ferndale, and Branner).

Sept. 27d. 4h. 40m. 40s. Epicentre 35°·4N. 135°·8E. Depth of focus 0·050.
(as on 1937 August 16d.).

Intensity II-III at Ibukiyama and Tukubasan. Epicentre 35°·5N. 135°·4E.
Radius of macroseismic area 300 km. Depth 360 km.
Seismological Bulletin of the Central Meteorological Observatory, Japan for the year 1943, Tokyo 1950, pp. 43-44. Macroseismic chart p.43.

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

	△	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Hikone	0·4	105	0 48k	+ 4	1 17	− 2	—	—
Kyoto	0·4	188	0 44	0	—	—	—	—
Gihu	0·8	90	0 47k	+ 2	1 23	+ 2	—	—
Kameyama	0·8	135	0 47	+ 2	1 24	+ 3	—	—
Toyooka	0·8	279	0 45k	0	1 21	0	—	—
Kobe	0·9	215	0 44	− 2	1 22	+ 1	—	—
Nagoya	1·1	104	0 48k	+ 2	1 26	+ 3	—	—
Sumoto	1·3	216	0 47k	0	1 15	− 9	—	—
Wakayama	1·3	204	0 47	0	1 24	0	—	—
Owase	1·4	166	0 48k	0	1 27	+ 2	—	—
Toyama	1·7	41	0 52	+ 2	1 32	+ 3	—	—
Siomisaki	2·0	181	0 50	− 2	1 32	0	—	—
Omaesaki	2·1	112	0 52k	0	—	—	—	—
Kohu	2·2	84	1 0k	+ 7	1 45	+10	—	—
Shizuoka	2·2	111	0 54k	+ 1	1 41	+ 6	—	—
Wazima	2·2	24	0 54a	+ 1	1 37	+ 2	—	—
Nagano	2·3	57	0 57	+ 3	1 43	+ 7	—	—
Misima	2·6	96	0 58k	+ 2	1 47	+ 7	—	—
Maebasi	2·8	69	1 0	+ 2	1 46	+ 3	—	—
Hirosima	3·0	250	0 57k	− 3	1 42	− 4	—	—
Kumagaya	3·0	76	0 58	− 2	1 48	+ 2	—	—
Osima	3·0	105	1 1	+ 1	1 50	+ 4	—	—
Hamada	3·1	261	0 58k	− 3	1 45	− 3	—	—
Yokohama	3·2	89	1 4	+ 2	1 54	+ 4	—	—
Aikawa	3·3	37	1 3	+ 1	1 51	− 1	—	—
Mera	3·3	98	1 2	0	1 56	+ 4	—	—
Utunomiya	3·5	70	1 4	0	1 54	− 1	—	—
Tukubasan	3·6	74	1 5	0	1 57	0	—	—
Kakioka	3·7	75	1 16k	+10	2 7	+ 9	—	—
Mito	3·9	73	1 9	+ 1	2 2	0	—	—
Tyosi	4·1	85	1 13	+ 3	—	—	—	—
Hatidyozima	4·1	123	1 14	+ 4	2 7	+ 1	—	—
Hukusima	4·4	57	1 15	+ 1	—	—	—	—
Onahama	4·4	112	1 15	+ 1	2 12	+ 1	—	—
Kumamoto	4·9	240	0 49	?	1 20	P	—	—
Sendai	5·0	53	1 20a	0	2 22	− 1	—	—
Akita	5·5	37	1 28	+ 2	2 37	+ 4	—	—
Mizusawa	5·6	48	c 1 29	+ 2	2 35	0	—	—
Morioka	6·1	43	1 32a	0	2 43	− 2	—	—
Miyako	6·4	47	1 36	0	2 49	− 3	—	—
Tomie	6·5	247	1 36k	− 1	2 54	0	—	—
Yakusima	6·7	224	1 33	− 7	—	—	—	—
Hatinobe	6·8	40	1 39	− 2	2 54	− 6	—	—
Mori	7·7	28	1 49	− 2	3 17	− 2	—	—
Nake	8·8	219	2 1	− 3	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Sapporo		8·8	28	2 2	− 2	3 40	− 3	—	—
Andijan		49·3	296	e 8 4	−12	i 14 49	− 6	—	—
Tinemaha		80·4	52	i 11 33k	− 1	—	—	—	—
Santa Barbara		81·0	54	i 11 37	− 1	—	—	—	—
Haiwee		81·2	52	i 11 36k	− 3	—	—	—	—
Pasadena		82·2	53	i 11 42k	− 2	i 21 28	0	i 13 6	pP
Mount Wilson	N.	82·3	53	e 11 42	− 2	—	—	—	—
Riverside		82·9	53	i 11 43k	− 4	—	—	—	—
La Jolla		83·6	54	i 11 48	− 3	—	—	—	—
Palomar	Z.	83·6	53	i 11 48k	− 3	—	—	i 12 8	PeP
Stuttgart	Z.	83·7	328	i 11 45	− 6	—	—	—	—
Chur		85·0	326	e 11 52k	− 6	—	—	—	—
Zürich		85·0	326	e 11 52	− 6	—	—	—	—
Basle		85·3	326	e 11 54	− 5	—	—	—	—
Neuchatel		86·0	326	e 11 58	− 4	—	—	—	—
Tucson		88·2	51	i 12 5	− 8	—	—	e 15 42	PP
St. Louis	Z.	94·9	34	i 12 41	− 3	—	—	e 16 38	PP
La Paz		151·5	54	19 15	[+ 9]	—	—	—	—

Additional readings :—
Pasadena iZ = 12m.6s., iPPZ = 14m.55s.
Tucson e = 12m.59s.

Sept. 27d. 22h. 3m. 41s. Epicentre 30°·1S. 177°·8W. Focus at Base of superficial layers. (as on 14d.).

Epicentre 29°·8S. 177°·9W. (U.S.C.G.S.). Depth 100 kms. 30°S. 176°W. (Wellington).

$A = -\cdot8660$, $B = -\cdot0333$, $C = -\cdot4990$; $\delta = +7$; $h = +2$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		9·2	221	2 12	− 1	3 53	− 4	i 2 29	PPP	4·3
Arapuni		9·6	213	2 19?	0	4 7?	0	—	—	4·5
Tuai		9·6	204	2 18	− 1	4 2	− 5	—	—	—
New Plymouth		11·2	215	2 49	+ 8	4 43	− 3	i 3 4	pP	i 5·3
Wellington		12·7	207	2 51?	−10	5 6	−16	i 2 59	pP	6·3
Christchurch		15·4	207	3 42	+ 6	6 15	−11	—	—	7·7
Apia		17·1	22	e 3 54	− 4	e 6 51	−15	e 7 14	SS	e 8·2
Brisbane		25·7	268	i 5 30	+ 1	i 9 52	− 1	i 5 48	PP	i 12·4
Riverview		26·5	254	i 5 37a	+ 1	i 10 7	+ 1	i 10 22	sS	e 12·1
Sydney		26·5	254	i 5 46	pP	e 10 34	sS	e 6 37	PPP	e 12·5
Misima		76·6	324	11 49	0	—	—	—	—	—
Kumagaya		77·2	325	11 55	+ 3	—	—	—	—	—
Nagoya		77·6	324	11 55	+ 1	—	—	—	—	—
Hikone		78·1	323	11 57	0	—	—	—	—	—
Nagano		78·2	325	e 11 53	− 5	—	—	—	—	—
Sendai		78·2	328	11 56	− 2	—	—	—	—	—
Kôti		78·3	320	11 57	− 1	—	—	—	—	—
Kagosima		78·5	317	e 12 0	+ 1	—	—	—	—	—
Mizusawa		78·8	329	11 59	− 2	16 19	?	e 12 6	pP	—
Santa Barbara		84·4	45	i 12 31	+ 1	—	—	i 12 50	pP	—
La Jolla		84·9	47	e 12 32	− 1	—	—	—	—	—
Pasadena		85·1	46	i 12 34	0	i 23 0	+ 1	i 12 49	pP	e 34·7
Santa Clara		85·1	41	i 12 37	+ 3	—	—	—	—	e 39·9
Berkeley	E.	85·2	41	i 12 38	+ 4	i 22 57	− 3	—	—	—
		85·2	41	i 12 35	+ 1	i 22 54	[+ 1]	i 12 55	pP	—
Mount Wilson	N.	85·3	46	e 12 35	0	—	—	—	—	—
Palomar	Z.	85·4	47	i 12 37a	+ 2	—	—	e 12 52	pP	—
Riverside		85·5	46	i 12 37	+ 1	—	—	i 12 55	pP	—
Ukiah		85·6	39	—	—	e 23 16	sS	—	—	e 39·0
Haiwee		86·6	44	i 12 42	+ 1	e 23 8	[+ 5]	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		87·0	44	e 12 43	0	e 23 26	+ 8	—	—	—
Tucson		88·7	51	i 12 52	+ 1	e 23 18	[+ 2]	i 13 9	pP	e 40·6
Victoria		92·1	33	—	—	e 23 36	[+ 1]	—	?	e 43·4
Salt Lake City		93·2	44	e 22 24	?	e 24 23	+ 9	—	—	e 43·4
Logan		93·8	43	13 17	+ 2	e 24 12	− 7	e 13 35	pP	e 40·3
Sitka		94·3	21	e 23 1	?	i 24 25	+ 2	i 25 39	PS	e 42·7
Huancayo		94·6	107	e 13 37	pP	i 24 0	[+10]	e 25 49	PS	e 41·1
Bozeman		96·7	40	—	—	e 23 34	[−27]	e 31 4	SS	e 43·9
College		97·5	12	—	—	e 24 4	[− 1]	—	—	e 45·7
La Paz		98·0	114	13 43	+ 9	23 48	[−20]	i 26 24	PS	45·6
Rapid City		100·4	43	—	—	e 24 10?	[−10]	—	—	e 46·7
Calcutta		104·1	287	e 14 4	+ 3	e 24 37	[0]	e 27 42	PS	51·9
Colombo	E.	104·1	270	18 19	PP	—	—	33 11	SS	54·0
St. Louis		106·3	54	e 18 34	PP	e 24 46	[− 1]	e 18 49	pPP	—
Chicago		109·5	52	—	—	e 25 49	S	e 28 25	PS	e 45·4
Rio de Janeiro	N.	111·6	135	e 19 19	PP	—	—	—	—	—
Bombay	E.	115·7	277	19 50	PP	25 30	[+ 4]	29 24	PS	—
New Delhi	N.	115·8	289	e 19 42	PP	e 25 24	[− 2]	i 29 26	PS	—
San Juan		117·4	83	e 20 3	PP	e 25 35	[+ 3]	e 29 45	PS	e 33·5
Philadelphia		117·7	58	e 20 13	PP	e 25 31	[− 2]	e 29 43	PS	e 48·7
Ottawa		118·8	51	i 18 45	[− 1]	—	—	e 36 19	SS	e 47·3
Fort de France		120·1	90	e 18 50	[+ 2]	—	—	—	—	—
Harvard		121·0	55	e 18 49	[− 1]	—	—	e 19 7	pPKP	e 59·3
Seven Falls		122·5	50	—	—	e 25 55?	[+ 5]	e 37 31	SSP	46·3
Andijan		123·2	301	e 18 50	[− 4]	—	—	—	—	—
Bermuda		123·6	69	e 21 15	PP	e 26 21	[+28]	e 31 3	PS	e 52·2
Tashkent		125·6	301	e 18 59	[+ 1]	e 26 3	[+ 4]	e 30 35	PS	—
Sverdlovsk		131·8	321	i 19 8	[− 3]	e 31 42	PS	i 21 25	PP	—
Scoresby Sund		137·4	11	19 21	[0]	—	—	21 37	PP	—
Upsala	E.	148·5	345	19 43	[+ 3]	—	—	—	—	70·3
Ksara		151·3	285	e 19 48	[+ 4]	—	—	e 23 29	PP	—
Copenhagen		153·4	347	i 19 47a	[0]	33 52	PS	23 26	PP	—
Helwan		154·8	275	19 49	[− 1]	—	—	20 14	sPKP	—
Bucharest		156·3	314	e 20 19?	[+28]	—	—	—	—	79·3
De Bilt		157·9	355	i 19 53a	[− 1]	—	—	i 24 4	PP	75·3
Jena		158·0	343	e 20 0	[+ 6]	—	—	i 20 36	sPKP	—
Prague		158·0	339	e 36 19?	?	—	—	e 50 19	SSS	e 59·3
Kew		158·6	3	e 19 55	[0]	e 30 15	?	e 20 28	PKP_2	e 77·3
Sofia		158·9	312	e 20 7?	[+12]	—	—	—	—	—
Uccle		159·3	357	e 19 54	[− 1]	—	—	e 20 32	PKP_2	—
Belgrade		159·4	320	e 19 54	[− 1]	—	—	e 20 34	PKP_2	e 33·1
Stuttgart		160·6	345	i 19 55	[− 2]	e 31 6	SKKS	i 20 38	PKP_2	e 77·8
Paris		161·3	359	e 19 56	[− 1]	—	—	e 24 22	PP	e 82·3
Triest		162·0	333	e 19 58	[0]	—	—	—	—	—
Basle		162·1	347	e 19 57	[− 1]	—	—	e 20 45	PKP_2	—
Zürich		162·1	346	e 19 56	[− 2]	—	—	e 21 44	?	—
Chur		162·3	345	e 19 56a	[− 2]	—	—	i 20 46	PKP_2	—
Neuchatel		162·7	348	e 19 58	[− 1]	—	—	—	—	—
Milan	Z.	163·7	342	i 19 59	[− 1]	—	—	—	—	—
Clermont-Ferrand		164·4	357	e 20 2	[+ 2]	—	—	i 20 55	PKP_2	e 46·7
Florence		164·6	25	e 19 59k	[− 2]	i 32 0	SKKS	e 20 56	PKP_2	—
Lisbon		167·3	44	19 59	[− 3]	31 43	SKKS	20 5k	pPKP	84·3
Toledo		169·0	26	i 20 4	[0]	46 19	SS	25 21	PP	—
San Fernando		170·5	45	i 20 5	[0]	—	—	—	—	82·3
Granada		171·5	32	20 9	[+ 4]	35 27	SKSP	i 25 20	PP	90·6
Almeria		172·2	28	i 20 5	[0]	26 46	[−17]	20 27	pPKP	82·8

Additional readings :—
Wellington i = 3m.34s., 4m.7s., and 6m. 11s.?, P_cS = 12m.7s., S_cS = 15m.38s.
Brisbane eZ = 9m.13s.
Riverview iPPP = 6m.34s., iEZ = 10m.34s., iN = 10m.51s., iE = 11m.0s., iSSSN = 11m.39s.
Pasadena iZ = 13m.42s., ePPZ = 16m.7s., iPSZ = 24m.0s., eSSEN = 28m.44s.
Palomar iZ = 12m.57s., ePPZ = 16m.10s.
Tucson isP = 13m.27s., ePP = 16m.29s., epS = 23m.45s., ePS? = 24m.43s., e = 29m.50s., i = 30m.33s.

Continued on next page.

Logan e = 23m.49s.
Huancayo ePP = 17m.23s., i = 26m.0s., eSS = 31m.1s., eSSS = 34m.56s., e = 39m.2s.
La Paz ePPZ = 17m.40s., iPPZ = 17m.52s., PPP = 19m.42s., SSS? = 35m.56s.
Calcutta ePP = 18m.30s., eSSN = 34m.2s., esSSN = 38m.27s.
St. Louis iSKKSE = 25m.38s., eSN = 26m.20s., ePSE = 27m.54s., ePPSE = 29m.45s., eZ = 29m.56s., eN = 32m.27s., eSSSE = 37m.53s.
Chicago eSS = 34m.9s., e = 37m.40s.
Bombay iE = 21m.33s., PPPE = 22m.15s., PPPN = 22m.18s., SKKSE = 26m.35s., PSN = 29m.27s., PPSN = 30m.31s., iE = 31m.35s., SSE = 35m.29s.
San Juan e = 26m.46s.
Philadelphia e = 26m.46s., eSS = 35m.54s.
Harvard ePP = 20m.27s., epPP = 20m.46s., ePS = 30m.6s., ePPS = 31m.35s.
Bermuda ePS = 31m.13s., e = 38m.20s.
Tashkent iPP = 20m.47s.
Scoresby Sund 23m.1s., 28m.57s., 31m.47s., and 34m.25s.?, SS = 39m.25s.
Helwan eZ = 21m.52s., PP?Z = 23m.49s., eE = 38m.55s.
Kew ePP = 23m.58s., eZ = 24m.36s., eZ = 32m.40s., eSKKS = 33m.5s., eSKSPEN = 34m.49s. ?, eSSS = 51m.19s.
Uccle eSKP = 23m.28s., ePPNZ = 24m.11s., eZ = 24m.38s., eSKKS?N = 30m.13s., ePSKS?N = 34m.35s.
Stuttgart iPP = 24m.18s., ePPP = 27m.59s., ePPP$_2$ = 32m.49s., e = 33m.57s., ePSKS = 34m.40s., eSS = 44m.43s.
Paris e = 32m.22s.
Basle i = 24m.48s.
Clermont-Ferrand e = 30m.26s.
Florence iPPN = 24m.40s., ePPPN = 28m.23s., iPSKSN = 35m.15s., iSSSN = 51m.25s.
Lisbon PPZ = 25m.1s., PPN = 25m.5s., PPE = 25m.10s., PPPZ = 29m.17s.
San Fernando iPPEN = 25m.51s., eSSE = 48m.8s.
Granada SS = 46m.26s.
Almeria sPKP = 20m.38s., PKP$_2$ = 21m.45s., pPKP$_2$ = 22m.13s., sPKP$_2$ = 22m.29s., iPP = 25m.20s., pPP = 25m.49s., sPP = 26m.9s., pSKS = 27m.29s., PPP = 29m.20s., SKSP = 35m.13s., PPS = 39m.29s., SS = 46m.17s., SSS = 52m.51s.
Long waves were also recorded at Tananarive, Kodaikanal, Bergen, and Potsdam.

Sept. 27d. Readings also at 3h. (near Reykjavik), 5h. (Almeria), 6h. (San Francisco), 9h. (near Andijan), 14h. (Stuttgart, Riverview, Christchurch, Auckland, and Wellington), 16h. (Fort de France and Ottawa), 17h. (Pasadena, Riverside, Tucson, Palomar, and near St. Louis), 19h. (La Plata), 22h. (Granada).

Sept. 28d. 10h. 45m. 42s. Epicentre 18°·1N. 147°·5E. Depth of focus 0·010.
(as on 1940, Dec. 31d.).

$A = -\cdot8022$, $B = +\cdot5111$, $C = +\cdot3088$; $\delta = +11$; $h = +5$;
$D = +\cdot537$, $E = +\cdot843$; $G = -\cdot260$, $H = +\cdot166$, $K = -\cdot951$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa		21·7	348	e 4 44	0	8 32	− 1	—	—	—
Brisbane		45·6	172	i 8 15	+ 3	i 14 58	+11	i 10 1	PP	—
Irkutsk		47·9	326	8 24	− 6	—	—	—	—	—
Riverview		51·8	176	i 9 8	+ 8	i 16 25	+12	i 9 23	pP	e 22·4
Calcutta	N.	55·3	285	—	—	e 17 0	0	—	—	—
Auckland		60·4	156	—	—	e 25 18?	SSS	—	—	37·3
Arapuni		61·8	155	—	—	19 18?	+53	—	—	—
College		63·1	26	—	—	e 18 45	+ 4	e 25 27	SSS	e 29·4
Wellington		64·3	158	10 28	+ 1	20 28?	?	12 59	PP	34·3
New Delhi	N.	64·6	293	—	—	e 18 28	−32	—	—	—
Christchurch		65·5	160	—	—	18 18	−53	—	—	—
Colombo	E.	66·7	269	—	—	19 23	− 2	—	—	—
Sitka		68·1	35	—	—	e 19 54	+12	—	—	e 32·0
Tashkent		69·5	308	10 54	− 6	19 54	− 5	—	—	—
Bombay	E.	70·3	284	e 11 10	+ 5	20 3	− 5	13 38	PP	34·3
Stalinabad		70·3	305	11 10	+ 5	—	—	—	—	—
Sverdlovsk		73·3	325	i 10 17	−66	—	—	—	—	—
Berkeley		79·3	54	i 11 55	− 1	i 22 14	+27	i 12 12	pP	—
Santa Barbara		82·2	57	e 12 13	+ 1	—	—	i 12 26	pP	—
Tinemaha		82·6	54	i 12 14	0	—	—	i 12 27	pP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Haiwee		83·1	54	e 12 17	+ 1	—	—	—	—	—
Pasadena		83·5	56	i 12 18k	0	e 22 53	+23	i 12 40	pP	e 39·8
Mount Wilson		83·6	56	i 12 19k	0	—	—	i 15 32	PP	—
Riverside		84·2	56	e 12 21k	− 1	—	—	e 12 34	pP	—
La Jolla		84·6	57	e 12 23	− 1	—	—	—	—	—
Palomar	z.	84·8	57	i 12 25k	0	—	—	i 12 41	pP	—
Bozeman		85·0	44	—	—	e 22 55	+10	e 28 55	SS	e 39·7
Logan		85·8	48	i 12 30	0	—	—	e 12 54	pP	e 42·6
Moscow		86·0	328	e 12 26	− 5	22 44	[− 1]	—	—	—
Sale Lake City		86·1	49	e 12 31	0	e 22 43	[− 3]	—	—	e 41·1
Tucson		89·9	56	i 12 50	+ 1	e 23 59	+28	i 16 20	PP	e 40·6
Ksara		96·9	308	14 18?	+57	e 24 18	−14	—	—	—
St. Louis		101·9	43	e 17 56	PP	e 24 19	[+ 5]	e 32 23	SS	—
Helwan		102·2	307	e 17 51	PP	e 24 18	[+ 3]	—	—	—
Stuttgart		103·8	333	e 13 46	− 6	e 32 6?	SS	e 18 9	PP	e 49·5
Florence		106·5	328	e 18 40	PP	e 29 3	PPS	—	—	e 52·7
Toledo		116·5	336	e 19 36	PP	—	—	—	—	73·3
Bermuda		121·1	31	e 20 50	PP	e 30 38	PS	—	—	e 60·5
San Juan		130·9	44	e 22 9	PKS	e 28 59	?	e 34 27	?	—
Fort de France		136·8	42	e 20 53	?	—	—	—	—	—
Huancayo		138·3	88	e 22 58	PKS	—	—	e 41 3	SS	e 65·7
La Paz		146·0	92	19 34	[+ 6]	—	—	—	—	68·3
Rio de Janeiro	N.	168·9	119	(e 23 18)	PKS	—	—	—	—	—

Additional readings :—
Brisbane eN = 10m.8s., eZ = 15m.2s., iZ = 15m.9s.
Riverview eE = 15m.40s.
Wellington P_cPZ = 10m.38s., iZ = 11m.38s., SSS = 28m.42s.
Bombay SN = 20m.7s., S_cSN = 20m.52s., S_cSE = 20m.56s., SSE = 25m.20s.
Pasadena iZ = 12m.32s.
Mount Wilson iZ = 12m.33s.
Tucson i = 13m.35s., e = 18m.57s.
St. Louis eSN = 25m.31s., ePSE = 26m.47s.
Helwan eZ = 18m.22s. and 19m.30s.
Stuttgart eZ = 20m.31s.
Florence eS?E = 29m.41s., iN = 43m.39s.
Rio de Janeiro readings have been diminished by 1 hour.
Long waves were also recorded at Honolulu and other American and European stations.

Sept. 28d. Readings also at 4h. (La Paz), 5h. (near Lisbon), 7h. (Jena), 8h. (Mount Wilson, Pasadena, Palomar, Tucson, Riverside, Tinemaha, St. Louis, and Triest), 9h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Arapuni, Auckland, Wellington, Christchurch, and near Apia), 10h. (Stuttgart, Belgrade, Sofia, and near Bucharest), 11h. (near Stalinabad), 12h. (Palomar, Tucson, Pittsburgh, and Riverside), 13h. (Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Santa Barbara, Tinemaha, Tucson, and La Paz), 14h. (Florence), 15h. (near La Paz), 16h. (Mount Wilson, Pasadena, Palomar, Riverside, Tucson, Tinemaha, near Seven Falls, Ottawa, and Shawinigan Falls), 17h. (Bombay, Calcutta, New Delhi, Tashkent, Ksara, Helwan, Copenhagen, Florence, and Stuttgart), 19h. (Mizusawa).

Sept. 29d. Readings at 4h. (Mount Wilson, Palomar, Riverside, Tucson, and Tinemaha), 5h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, St. Louis, Huancayo, La Paz (2), Stuttgart, and De Bilt), 7h. (Auckland, Tuai, Wellington, Riverview, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 8h. (Mount Wilson, Pasadena, Palomar, Tucson, and Riverside), 9h. (Stuttgart, Uccle, Mount Wilson, Pasadena, Palomar, Tucson, Riverside, Tinemaha, Auckland, Arapuni, Christchurch, Wellington, Riverview, Tucson, and near Apia), 10h. (De Bilt, Paris, Huancayo (2), La Paz, and St. Louis), 16h. and 18h. (near Fort de France), 20h. (Mount Wilson, Tucson, Riverside, and Tinemaha), 22h. (near La Paz), 23h. (Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha).

Sept. 30d. Readings at 0h. (Florence, St. Louis, and Wellington), 4h. (near Almata, Andijan, Tashkent, Bombay, Calcutta, and New Delhi), 7h. (Christchurch, Arapuni, Wellington, Riverview, Sydney, Brisbane, Mount Wilson, Pasadena, Riverside, Stuttgart, near Florence and Triest), 8h. (De Bilt, St. Louis, and Tucson), 11h. (Bombay, Calcutta, New Delhi, Kodaikanal, Andijan, Tashkent, Brisbane, and Riverview), 12h. (Christchurch, Wellington, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, and St. Louis), 13h. (Triest, near Andijan and Stalinabad), 14h. (Triest and Florence), 17h. (Bombay, New Delhi, near Andijan, Stalinabad, and Tashkent), 19h. (near Mizusawa), 23h. (Basle and near Branner).

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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