The International Seismological Summary.

1941 January, February, March.

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 number constitutes the beginning of the fifth volume of the International Seismological Summary in which travel times and Epicentral distances are calculated with reference to "Geocentric" latitudes of epicentres and observing stations. As explained in the introduction to the 1937 volume, tables which take into consideration the ellipticity of the earth have been used†, and distances calculated from modified direction-cosines defined by :—

$$A = \cos \phi' \cos \lambda$$
$$B = \cos \phi' \sin \lambda$$
$$C = \sin \phi'$$

λ being the east longitude from Greenwich and ϕ' the modified *geocentric* latitude whose relationship to the ordinary *geographic* latitude ϕ is :—

$$\tan \phi' = \cdot 99328 \tan \phi.$$

These formulae are used to determine direction-cosines of both epicentre and station, though the position is in every case referred to normal ϕ and λ.

The notation is that generally accepted. P and S stand for the times of onset of the direct longitudinal and transverse waves. Pg, Sg, P*, S* for short distances are used for times for these waves transmitted through the superficial "Granitic" and "Intermediate" layers respectively. Reflections of the direct waves at the earth's surface are denoted by PP, PS, PPP, SS . . . and at the outer surface of the central core by PcP, PcS . . .

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† "Seismological tables," H. Jeffreys and K. E. Bullen, British Assoc., London, 1950.

The refracted longitudinal wave through the central core is known as K. Such waves as PKP, SKS, PKS, SKKS, are frequently recorded at great distances from the epicentre. All times are given as Greenwich Civil Time and are referred to the adopted T_0 as zero.

The arrangement of the " Summary " consists of :—

(1) Date and Time at Origin (T_0), calculated from the above-mentioned tables, together with the depth of focus where this is assumed not to be in the surface. The time calculated is that at which the P wave leaves the focus, not that when P arrives at the epicentre.

(2) Epicentre constants :—

$A=\cos\phi'\cos\lambda$ $D=\sin\lambda$ $G=\sin\phi'\cos\lambda$
$B=\cos\phi'\sin\lambda$ $E=-\cos\lambda$ $H=\sin\phi'\sin\lambda$
$C=\sin\phi'$ $K=-\cos\phi'$

from which distances, Δ, and where necessary Azimuths, of stations with respect to the epicentre may be calculated by means of the formulae :—

$$\cos\Delta=aA+bB+cC$$
$$2-2\cos\Delta=(a-A)^2+(b-B)^2+(c-C)^2$$
$$2+2\sin\Delta\sin Az.=(a-D)^2+(b-E)^2+c^2$$
$$2+2\sin\Delta\cos Az.=(a-G)^2+(b-H)^2+(c-K)^2$$

a, b, c being related to the observing station in the same way as A, B, C are to the epicentre.

δ is defined as the nearest integer to $10^5(A^2+B^2+C^2-1)$ and may be used to compare distances calculated by the first two formulae above, whose equivalence depends on the assumption

$$A^2+B^2+C^2=1$$

h is the height, in kilometres, of the epicentre above the sphere of equal volume concentric with the earth and is given by

$$h=-3\cdot549+10\cdot738\cos 2\phi$$

(3) The tabular matter consisting of the station names arranged in order of epicentral distances, followed by this distance and the Azimuth measured round the epicentre from North through East. Other columns give the P phase and its residual, or PKP, in which the residual is shown in brackets [ ]. The S phase or an associated phase follows with its residual. If SKS is entered here the residual is shown in [ ], and if SKKS in { }. Under " Supp " is placed the time of some other, preferably well recorded, phase such as PS, SS, or, in the case of deep focus shocks, pP. The final column, L, records the onset, if known, of Rayleigh waves.

(4) Readings for which space is not available in the tabular part, added at the foot.

The letters E, N, Z after a phase indicate that the reading was taken on an instrument recording East-West, North-South, or Vertical component of motion, though some stations have instruments oriented to record North-East or North-West components. Reflections near the epicentre take place, and in the case of deep focus earthquakes can be distinguished from the direct phases. These are distinguished as pP, sS, sP, pPP—the small p and s referring to the initial portion of the path towards the surface.

The letters a, k after a P or PKP phase stand for the terms " Anaseismic " and " Kataseismic," and indicate whether the first longitudinal motion was one away from the origin or towards it.

The epicentres for earthquakes with abnormal focal depth are calculated from travel times appropriate to them in the tables cited above. The depth to be assumed can be obtained from these tables when the observational data are plentiful, and the epicentre then determined in the usual way. When the data are scanty an indication of depth can be obtained from the evidence of the readings of certain individual stations.

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.

January, 1952.

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The first quarter for 1941 contains 97 determined epicentres, of which 56 are repetitions from previous epicentres.

Cases of abnormal focal depth are noticed as below :—

Jan.	2d. 16h.	2·0N.	124·0E.	0·080
	6d. 9h.	11·5N.	86·3W.	0·005
	20d. 3h.	35·2N.	33·6E.	Suggested Deep
	21d. 12h.	27·0N.	92·0E.	Suggested Deep
	24d. 5h.	3·4S.	76·3W.	0·010
	25d. 23h.	15·0S.	176·0W.	0·080
	31d. 2h.	6·5S.	128·5E.	0·030
Feb.	4d. 14h.	10·0N.	124·5E.	0·090
	4d. 20h.	33·0N.	137·8E.	0·060
	16d. 10h.	Undetermined Shock		Suggested Deep
	22d. 19h.	20·5S.	177·5W.	0·060
	23d. 11h.	18·1N.	99·9W.	Suggested Deep
	24d. 12h.	15·6S.	173·6W.	Suggested Deep
Mar.	3d. 7h.	0·8S.	100·6E.	Suggested Deep
	11d. 21h.	36·3N.	71·0E.	0·025
	14d. 16h.	0·5S.	119·2E.	0·010
	15d. 19h.	40·6N.	139·3E.	0·025
	16d. 16h.	38·4N.	12·1E.	Suggested Deep
	21d. 7h.	7·0N.	34·6W.	Suggested Deep
	22d. 22h.	33·5N.	138·2E.	0·040

1941 JANUARY, FEBRUARY, MARCH.

Jan. 1d. Readings at 1h. (Palomar, Haiwee, Tinemaha, Riverside, Mount Wilson, Pasadena, and Mizusawa), 2h. (Tucson), 7h. (near Balboa Heights), 8h. (Haiwee, near College, Tucson, Riverside, Tinemaha, Mount Wilson, and Pasadena), 9h. (Huancayo, Palomar, Tucson, Riverside, Mount Wilson, Tinemaha, and Pasadena), 10h. (Pasadena, Tinemaha, Mount Wilson, and Riverside), 12h. (Pasadena, Tinemaha, Mount Wilson, Riverside, Palomar, Tucson, Christchurch, Wellington, Riverview, and Sydney), 13h. (Palomar and Huancayo), 19h. (La Paz), 20h. (Palomar, Riverview, Wellington, Christchurch, Tucson, Riverside, Mount Wilson, Tinemaha, and Pasadena), 21h. (Huancayo, Ukiah, and Berkeley).

Jan. 2d. 16h. 49m. 33s. Epicentre 2°·0N. 124°·0E. Depth of Focus 0·080.

A = −·5589, B = +·8285, C = +·0347; δ = −1; h = +7;
D = +·829, E = +·559; G = −·019, H = +·029, K = −·990.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	•	L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		7·0	144	i 2 1	pP	i 5 36	?	i 13 54	S_cS	—
Palau		11·7	63	e 2 52	pP	5 9	sS	—	—	—
Batavia		19·0	245	(i 3 49)	+ 1	i 6 51	− 1	—	—	—
Karenko		22·0	354	4 18	+ 2	6 16	?	—	—	—
Naha		24·3	7	4 56	pP	—	—	—	—	—
Titizima		30·4	33	10 5	S	(10 5)	+12	—	—	—
Hukuoka		32·0	10	e 5 48	+ 5	—	—	—	—	—
Koti		32·6	15	5 55	+ 7	9 58	−29	—	—	—
Hamada		33·6	12	6 0	+ 3	10 40	− 2	—	—	—
Osaka		34·2	17	11 28	sS	—	—	—	—	—
Perth		34·6	192	e 6 22	+17	i 11 17	+19	7 10	PP	14·7
Hikone		35·0	19	11 37	SS	—	—	15 38	SSS	—
Nagoya		35·1	19	6 17	+ 8	11 10	+ 5	—	—	—
Yokohama		36·3	21	e 6 28	+ 9	—	—	—	—	—
Tokyo Cen. Met. Ob.		36·6	21	6 28	+ 6	i 11 29	+ 2	15 29	S_cS	—
Sendai		39·3	22	6 50	+ 7	11 48	−19	—	—	—
Mizusawa		40·1	21	i 6 59	+ 9	i 12 24	+ 6	—	—	—
Calcutta	N.	40·2	303	e 6 47	− 4	i 12 11	− 9	i 15 37	?	—
Vladivostok		41·6	9	i 7 6	+ 4	i 12 42	+ 2	8 33	pP	—
Mori		42·6	17	7 18	+ 8	13 4	+10	—	—	—
Riverview		43·9	147	—	—	i 13 47	+34	i 16 43	SS	—
Colombo	E.	44·2	277	7 21	− 1	13 9	− 8	—	—	—
Kodaikanal	E.	46·9	282	i 7 19k	−24	—	—	—	—	—
Hyderabad		47·3	292	7 50	+ 4	13 52	− 8	16 53	SS	—
Agra	E.	50·6	304	8 7k	− 4	14 36	− 9	i 17 2	SS	—
Irkutsk		52·7	345	i 8 27	+ 1	i 15 12	− 1	—	—	—
Bombay		52·8	292	i 8 24	− 3	i 15 3	−11	i 10 14	sP	—
Almata		58·6	322	—	—	16 26	− 3	—	—	—
Frunse		59·9	320	9 13?	− 3	16 43	− 3	—	—	—
Andijan		60·4	316	i 9 17	− 2	16 55	+ 3	e 11 34	PP	—
Semipalatinsk		60·7	330	e 11 34	PP	16 52	− 4	—	—	—
Tashkent		62·8	316	9 35	+ 1	i 17 18	− 4	i 20 11	sS	—
Tchimkent		62·9	317	9 33	− 2	17 19	− 4	—	—	—
Samarkand		63·8	313	9 41	0	17 27	− 7	e 11 41	PP	—
Sverdlovsk		74·0	329	i 10 45	+ 3	i 19 27	− 3	i 12 28	pP	—
Grozny		80·1	313	11 19	+ 4	20 33	− 2	21 7	PS	—
Moscow		86·4	325	11 49	+ 3	21 32	− 4	i 13 40	pP	—
Ksara		87·3	303	e 11 55	+ 4	e 21 47	+ 3	—	—	—
College		87·4	25	—	—	e 21 38	− 7	—	—	e 35·9
Simferopol		88·5	315	12 0	+ 4	21 52	− 3	12 50	pP	—
Pulkovo		90·1	328	e 12 7	+ 4	e 22 5	− 4	25 22	sS	—
Helwan		91·3	299	i 12 10a	+ 1	i 22 18	− 2	e 15 45	PP	—
Bucharest		94·3	314	e 21 12	?	i 22 45	0	—	—	—
Tinemaha	z.	110·6	50	e 17 34	[+ 4]	i 20 32	SKP	i 18 38	PP	—
Haiwee	z.	111·1	50	—	—	e 20 33	SKP	i 28 51	PKKP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mount Wilson		111·6	52	e 14 6	P	e 28 39	PS	e 18 32	PP	—
Pasadena		111·6	52	i 18 24	PP	i 23 46	[+23]	i 20 34	SKP	—
Riverside	z.	112·2	52	e 18 34	PP	i 28 36	PS	i 28 45	PKKP	—
La Jolla	z.	112·7	53	—	—	e 28 34	PS	e 28 43	PKKP	—
Palomar	z.	112·8	52	i 17 57	[+23]	—	—	i 18 47	PP	—
Tucson		118·0	52	e 17 59	[+14]	i 24 1	[+12]	i 28 21	PKKP	e 40·8
St. Louis		128·7	34	e 20 51	PP	i 26 35	?	—	—	—
Cape Girardeau		130·0	35	i 20 57	PP	e 24 41	[+17]	—	—	—
Buffalo		130·8	22	i 20 42	PP	—	—	—	—	—
Pennsylvania		133·0	23	e 21 15	PP	—	—	—	—	—
Harvard	z.	133·5	15	e 18 26	[+11]	—	—	e 20 50	PP	—
Fordham		134·3	18	e 20 28	PP	e 24 53	[+19]	e 23 51	PPP	—
San Juan		157·4	26	e 21 33	?	—	—	—	—	—
La Paz	z.	161·3	141	19 11	[+13]	—	—	—	—	—

Additional readings and note :—
Batavia P reading has been diminished by 2m.
Perth SS = +12m.47s., i = +14m.27s.
Mizusawa eSN = +12m.30s.
Calcutta iN = +15m.58s.
Vladivostok sS = +15m.33s.
Riverview iN = +16m.19s.
Agra iSSS?E = +18m.17s.
Bombay isSE = +17m.16s., isSN = +17m.19s.
Samarkand eS_cP = +13m.25s.
College eS = +22m.33s.
Pulkovo SKS = +21m.42s.
Tinemaha i = +28m.42s. and +28m.48s.
Mount Wilson iSKPZ = +20m.35s., iPKKPZ = +28m.48s.
Pasadena iPP = +18m.37s., iPKKPZ = +28m.48s.
Riverside iZ = +18m.50s.
Palomar iZ = +18m.22s., iSKPZ = +20m.38s., iZ = +28m.35s., iPKKPZ = +28m.44s.
Tucson iPP = +19m.22s., i = +20m.47s., e = +21m.34s. and +34m.45s.
St. Louis iE = +26m.53s.
Cape Girardeau eSEN = +26m.43s.
Buffalo i = +21m.12s.
Harvard i = +21m.7s.
Fordham e = +21m.0s., i = +21m.10s., e = +27m.9s.

Jan. 2d. Readings also at 3h. (Harvard), 4h. (Mount Wilson, Pasadena, Riverside, Tinemaha, La Paz, and Haiwee), 8h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and Palomar), 12h. (San Juan), 13h. (Bombay and Calcutta), 16h. (near Mizusawa), 21h. (St. Louis, Puebla, Oaxaca, Tucson, Tinemaha, Riverside, and Mount Wilson), 22h. (Wellington, Tinemaha, Riverside, Mount Wilson, Palomar, and Pasadena).

Jan. 3d. 9h. 15m. 41s. Epicentre 12°·9N. 91°·4W. (as on 1939 Jan. 20d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca		6·6	309	2 21	P_g	—	—	—	—	—
Puebla		9·0	312	—	—	i 3 24	−34	—	—	—
Balboa Heights		12·2	107	e 3 19?	PPP	—	—	—	—	—
Cape Girardeau		24·4	3	e 5 16	− 5	e 9 40	+ 1	e 5 56	PP	—
San Juan		24·9	74	e 5 36	+10	—	—	e 6 13	PPP	e 10·3
St. Louis		25·7	2	i 5 31	− 2	e 9 57	− 4	i 5 53	pP	e 13·4
Florissant		25·8	2	e 5 33	− 1	e 10 4	+ 2	—	—	—
Tucson		26·2	321	i 5 38	0	—	—	i 6 32	PPP	e 13·1
Lincoln		28·2	354	—	—	e 9 1	?	—	—	e 11·2
Chicago U.S.C.G.S.		29·1	5	—	—	e 9 52	−64	—	—	e 11·5
Pittsburgh		29·2	20	—	—	e 11 37	+39	—	—	e 18·1
Huancayo		29·5	146	e 6 44	PP	i 11 34	+32	—	—	e 14·6
Palomar	z.	30·9	318	i 6 21a	+ 1	—	—	—	—	—
Riverside		31·6	317	e 6 27	+ 1	—	—	—	—	—
Mount Wilson	z.	32·2	317	i 6 32a	0	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena		32·2	317	i 6 32a	0	(e 14 19?)	SSS	—	—	e 14·3
Salt Lake City		33·1	332	e 6 39	− 1	—	—	—	—	e 22·3
Haiwee		33·3	319	e 6 42	+ 1	—	—	—	—	—
Tinemaha		34·0	321	e 6 48a	0	—	—	e 9 32	?	—
Harvard	Z.	34·1	27	e 6 51	+ 3	e 14 18	SS	—	—	e 19·3
Ottawa		35·0	19	e 6 57	+ 1	e 12 37	+ 9	—	—	19·3
Bozeman		36·7	339	—	—	e 12 31	−23	—	—	e 18·6
Berkeley		37·1	318	—	—	e 17 7	?	—	—	e 20·5
La Paz		37·2	140	7 52	+37	13 43	+41	—	—	19·3
Seven Falls		38·2	23	—	—	e 13 19?	+ 2	—	—	19·3
Agra	E.	138·9	14	—	—	e 28 19	{−55}	—	—	—

Additional readings :—
Cape Girardeau eN = +6m.26s.
San Juan e = +7m.52s.
St. Louis eSN = +9m.42s., eN = +10m.2s.
Florissant eN = +9m.45s., iN = +10m.14s., iZ = +10m.33s.
Tucson i = +5m.51s., +7m.5s., and +8m.24s.
Chicago U.S.C.G.S. e = +11m.7s.
Pasadena eZ = +9m.25s.
Ottawa eN = +16m.13s.
Berkeley eN = +17m.37s.
Long waves were also recorded at Butte, College, East Machias, Ukiah, Scoresby Sund, Sitka, Seattle, and Santa Clara.

Jan. 3d. Readings also at 2h. (Mizusawa, Haiwee, Riverside, Palomar, Tinemaha, Pasadena, and Mount Wilson), 6h. (Tinemaha), 8h. (La Paz), 9h. (near La Paz), 11h. (Tucson, San Juan, Tinemaha, Pasadena, Mount Wilson, Huancayo, and near Apia), 12h. (Mount Wilson, Tinemaha, and near Apia), 14h. (Taihoku), 16h. (Riverview), 19h. (Branner), 23h. (Huancayo).

Jan. 4d. 3h. 12m. 44s. Epicentre 7°·0S. 123°·0E. (as given by stations of U.S.S.R.).

$A = -\cdot5406$, $B = +\cdot8325$, $C = -\cdot1211$; $\delta = -3$; $h = +7$;
$D = +\cdot839$, $E = +\cdot545$; $G = +\cdot066$, $H = -\cdot102$, $K = -\cdot993$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		6·1	58	i 1 57	P_g	e 3 14	S_g	—	—	—
Batavia		16·1	273	3 50	+ 1	8 11	L	—	—	(8·2)
Perth		25·7	194	(6 8)	PPP	(11 16)	SSS	—	—	(13·3)
Medan		26·4	294	5 49	+ 9	i 10 20	+ 8	—	—	—
Riverview		37·3	140	—	—	e 13 34	+30	—	—	e 20·5
Colombo	E.	45·2	287	e 8 16?	− 4	—	—	—	—	—
Kodaikanal	E.	48·5	291	i 9 52	PP	—	—	—	—	—
Vladivostok		50·5	9	i 9 10	+ 8	—	—	—	—	—
Agra	E.	55·2	311	e 9 32	− 5	17 11	− 9	13 3	PPP	—
Bombay		55·7	299	e 9 41	+ 1	i 17 17	− 9	i 11 53	PP	27·3
Christchurch		56·6	139	8 53	−54	18 7	PPS	27 56	Q	32·3
Wellington		57·1	135	10 11	+21	24 31	?	—	—	33·3
Irkutsk		61·2	347	e 10 18	− 1	e 18 37	− 1	—	—	—
Frunse		66·3	323	e 10 55	+ 3	—	—	—	—	—
Andijan		66·4	319	e 10 54	0	—	—	—	—	—
Tashkent		68·7	319	e 11 8	+ 1	i 20 8	− 2	—	—	—
Samarkand		69·4	316	e 11 12	0	—	—	—	—	—
Sverdlovsk		81·3	331	12 20	0	22 25	− 5	—	—	—
Baku		81·8	310	e 17 3	PPP	e 22 37	+ 2	—	—	—
Tinemaha	Z.	117·0	52	e 18 54	[+ 7]	—	—	—	—	—
Haiwee	Z.	117·5	52	e 18 54	[+ 6]	—	—	—	—	—
Pasadena	Z.	117·7	54	i 18 55	[+ 7]	—	—	—	—	—
Mount Wilson	Z.	117·8	54	i 18 55	[+ 7]	—	—	—	—	—
Riverside	Z.	118·4	54	i 18 56	[+ 7]	—	—	—	—	—
Palomar	Z.	118·9	55	e 18 58	[+ 8]	—	—	—	—	—
Tucson		124·1	54	e 19 8	[+ 7]	e 25 47	[−16]	e 20 53	PP	—
La Paz	Z.	154·2	155	20 13	[+19]	—	—	—	—	—
San Juan		165·6	37	e 21 9	[+63]	e 27 19	[+10]	—	—	—

For Notes see next page.

NOTES TO JANUARY 4d. 3h. 12m. 44s.

Additional readings :—
Perth PP = +7m.6s., PPP = +7m.36s., all phases wrongly identified.
Medan iSN = +10m.23s.
Agra E. i = +9m.45s., S_eS = +18m.49s., SS = +20m.47s., sSS? = +21m.19s.
Bombay eN = +10m.27s., iE = +21m.18s.
Tucson i = +19m.22s. and +19m.35s., e = +26m.31s. and +29m.56s., ePS = +30m.48s., eSS = +37m.14s., e = +42m.0s.
San Juan e = +31m.18s.
Long waves were also recorded at Huancayo.

Jan. 4d. Readings also at 1h. (Batavia and Medan), 2h. (Mount Wilson, La Paz, Haiwee, Sverdlovsk, Samarkand, Agra, Riverview, and Fordham), 4h. (Palomar, Mount Wilson, and Tinemaha), 7h. (Istanbul), 11h. (near Harvard), 12h. (La Paz), 13h. (Batavia, Perth, and Medan), 14h. (Bombay), 16h. (near Apia), 21h. (Tucson, College, and near Mizusawa), 22h. (Aberdeen, Stuttgart, Chur, Zurich, Neuchatel, and Ksara), 23h. (Tinemaha and Christchurch).

Jan. 5d. 18h. 46m. 59s. Epicentre 1°·7N. 122°·0E.

Intensity V in Northern and Central Celebes, also at Jolo.

Meteorologische en Geophysische Dienst te Batavia, Serie A, No. 44. Aardbevingen in Ned-Indie, Waargenomen gedurende het jaar 1941, p. 14. Epicentre 1°·8N. 122°·3E. depth 70kms. (Batavia).

A = −·5327, B = +·8458, C = +·0295 ; δ = +2 ; h = +7 ;
D = +·846, E = +·533 ; G = −·016, H = +·025, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		8·0	132	i 1 59	− 1	i 3 30	− 3	—	—	—
Batavia		17·2	243	i 4 4	+ 1	i 7 14	0	i 7 25	SS	—
Isigakizima		22·6	6	e 4 42	−21	8 41	−26	—	—	—
Taihoku		23·2	359	e 5 4	− 5	9 18	0	—	—	—
Medan		24·0	277	i 5 26	+ 9	i 9 33	+ 1	—	—	—
Zi-ka-wei	N.	29·3	0	i 6 4	− 2	10 53	− 6	i 7 13	PPP	15·7
Titizima		31·7	37	6 27	0	—	—	—	—	—
Hukuoka		32·6	14	6 37	+ 2	11 52	+ 1	—	—	—
Koti		33·4	18	6 43	+ 1	11 57	− 6	—	—	—
Perth		34·0	189	6 46	− 2	12 6	− 7	7 51	PP	17·9
Kobe		35·0	20	e 6 58	+ 2	12 18	−10	—	—	—
Zinsen		35·8	6	e 7 6	+ 3	12 39	− 2	—	—	—
Gihu		36·2	22	7 4	− 2	12 27	−20	—	—	—
Nagano		37·8	22	7 18	− 2	13 9	− 2	—	—	—
Calcutta	N.	38·9	306	e 7 32	+ 3	i 13 28	0	e 8 57	PP	e 19·2
Adelaide		39·5	159	i 7 31	− 3	i 13 31	− 6	9 1	PP	22·1
Sendai		40·2	24	7 43	+ 3	13 43	− 5	—	—	—
Mizusawa		41·1	23	e 7 43	− 4	13 54	− 7	—	—	19·6
Vladivostok		42·1	12	e 7 53	− 2	i 14 9	− 7	—	—	—
Riverview		44·6	145	e 8 15	− 1	i 14 53	+ 1	i 8 47	pP	e 22·2
Sapporo		44·6	21	8 21	+ 5	—	—	—	—	—
Sydney		44·7	145	i 8 22	+ 6	i 14 43	−11	e 18 13	SS	e 20·6
Kodaikanal	E.	45·2	284	i 9 29a	+69	i 16 1	+60	19 26	SSS	i 23·6
Hyderabad		45·7	294	8 23	− 1	15 5	− 3	10 23	PP	21·5
Agra	E.	49·3	307	i 8 51k	− 2	15 51	− 8	9 27	pP	—
Dehra Dun	N.	50·6	311	e 9 33	+31	e 15 54	−23	e 20 59	SSS	e 30·0
Bombay		51·3	294	e 9 7	− 1	i 16 16	−10	i 9 48	pP	26·0
Irkutsk		52·6	347	9 18	0	e 16 34?	−10	—	—	—
Almata		57·7	324	9 55	0	17 52	− 1	—	—	—
Frunse		59·0	322	9 58?	− 6	18 9?	− 1	—	—	—
Andijan		59·4	318	10 7	+ 1	i 18 16	+ 1	—	—	—
Semipalatinsk		60·1	332	10 10	− 1	i 18 21	− 3	—	—	—
Tashkent		61·7	318	i 10 20	− 2	18 43	− 1	—	—	—
Tchimkent		61·9	319	i 10 24	0	i 18 50	+ 3	—	—	—
New Plymouth		62·5	136	10 30	+ 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Samarkand		62·7	315	i 10 28	− 1	18 57	0	—	—	—
Arapuni		63·2	135	11 1	+29	19 43	+40	e 13 1	PP	—
Christchurch		63·7	142	10 34	− 2	19 9	− 1	—	—	—
Wellington		64·0	138	10 34	− 4	19 11	− 2	11 11	pP	28·0
Tuai		64·5	135	10 54	+13	—	—	—	—	—
Sverdlovsk		73·4	332	i 11 31	− 5	i 20 56	− 9	—	—	—
Baku		75·4	313	11 51	+ 4	i 21 28	+ 1	—	—	—
Tananarive		76·1	251	11 52	+ 1	21 31	− 4	14 25	PP	e 34·5
Grozny		79·0	314	12 9	+ 2	22 6	0	—	—	—
Erevan		79·5	311	12 13	+ 3	22 13	+ 2	—	—	—
Honolulu		80·0	69	i 12 15	+ 2	e 22 4	−13	i 12 28	P_cP	e 32·8
Pjatigorsk		81·0	316	12 19	+ 1	22 25	− 2	—	—	—
Sotchi		83·4	315	12 31	+ 1	—	—	—	—	—
Moscow		85·6	327	i 12 39	− 2	e 22 56	[− 9]	—	—	—
Ksara		86·0	304	e 12 46	+ 3	e 23 22	+ 5	e 24 27	PS	—
Yalta		87·4	315	13 11	+21	—	—	—	—	—
College		88·5	26	i 12 54	− 2	e 23 15	[− 9]	e 16 11	PP	e 38·0
Pulkovo		89·5	331	e 13 0	0	23 21	[− 8]	16 15	PP	—
Helwan		89·9	300	e 12 58	− 4	23 28	[− 4]	16 52	PP	—
Istanbul		91·3	311	12 28	−41	22 59	[−41]	16 1?	PP	e 53·0
Bucharest		93·2	314	e 17 22	PP	e 23 25	[−26]	e 18 38	PPP	—
Sitka		95·3	32	e 17 14	PP	e 24 2	[− 1]	e 25 35	PS	e 40·2
Sofia		95·3	313	e 13 25	− 2	e 23 57	[− 6]	e 18 1?	PP	—
Warsaw		95·5	322	—	—	i 23 56	[− 8]	e 26 56	PPS	e 47·0
Upsala	E.	95·8	331	—	—	e 24 0?	[− 5]	e 26 0?	PS	—
Belgrade		97·1	314	e 17 36a	PP	e 24 8	[− 4]	e 19 57	PPP	e 49·3
Kecskemet	Z.	97·3	317	e 17 42	PP	e 26 31	PS	—	—	—
Budapest		97·6	318	e 17 6	PP	i 24 8	[− 7]	—	—	e 47·0
Kalossa		97·8	317	e 17 31	PP	e 24 14	[− 2]	—	—	—
Copenhagen		99·6	328	—	—	24 21	[− 4]	26 40	PS	—
Prague		100·0	322	i 14 31	+43	e 24 20	[− 7]	e 17 31	PP	e 48·0
Potsdam		100·2	325	i 13 48k	− 1	i 24 21	[− 7]	i 18 1	PP	e 40·0
Jena		101·5	322	e 13 55	0	e 24 31	[− 3]	e 18 7	PP	e 46·0
Hamburg		101·6	326	i 13 56	0	e 24 32	[− 3]	e 18 10	PP	e 46·0
Heligoland	N.	102·6	326	—	—	e 24 34	[− 5]	—	—	e 48·0
Rome		103·4	313	18 15	PP	i 24 37	[− 6]	27 59	PS	48·0
Scoresby Sund		103·7	348	—	—	i 24 42	[− 2]	i 27 49	PS	e 43·2
Stuttgart		103·7	321	e 13 54	−11	e 24 35	[− 9]	e 18 10	PP	e 51·0
Chur		104·1	319	e 18 14	PP	e 24 35	[−11]	—	—	—
Zurich		104·5	320	e 19 10?	—	e 29 22	PPS	e 21 45	PP	—
Strasbourg		104·6	322	e 18 29	PP	i 24 42	[− 7]	e 27 31	PS	52·0
Victoria		104·6	39	e 18 19	PP	e 24 51	[+ 2]	e 27 34	PS	48·0
De Bilt		104·9	326	i 14 10k	0	i 24 48	[− 2]	i 18 35	PP	e 48·0
Basle		105·1	320	e 18 26	PP	e 29 35	PPS	—	—	—
Seattle		105·6	39	—	—	e 31 29	?	e 33 51	SS	e 43·5
Neuchatel		105·7	320	e 18 19	PKP	—	—	—	—	—
Uccle		105·9	325	e 14 5	P	i 24 49	[− 6]	e 18 30	PP	e 49·0
Aberdeen		106·4	332	i 24 49	S	(i 24 49)	[− 8]	i 27 24	PS	46·2
Paris		107·8	323	18 23	PKP	25 1	[− 2]	e 19 0	PP	57·0
Ukiah		107·8	47	e 20 6	PPP	e 26 27	?	e 28 9	PS	e 44·7
Kew		108·2	327	18 57	PP	i 24 57	[− 7]	e 28 7	PS	e 53·0
Stonyhurst		108·3	329	24 52	SKS	(24 52)	[−13]	—	—	54·0
Clermont-Ferrand		108·6	319	e 18 55	PP	i 28 11	PS	—	—	e 63·3
Oxford		108·6	327	—	—	i 24 59	[− 7]	e 28 51	PPS	e 51·5
Berkeley		108·9	49	e 18 55	PP	i 25 46	{−11}	i 28 17	PS	e 49·0
Santa Clara		109·2	49	i 19 11	PP	e 28 26	PS	—	—	e 50·4
Tinemaha	Z.	112·1	48	e 18 40	[+ 3]	—	—	e 29 29	PKKP	—
Butte		112·3	36	—	—	e 27 9	{+48}	e 35 2	SS	e 47·8
Haiwee	Z.	112·7	48	e 18 47	[+ 9]	—	—	—	—	—
Mount Wilson		113·2	51	i 18 39	[0]	—	—	e 19 31	PP	—
Pasadena		113·2	51	i 18 40	[+ 1]	i 28 59	PS	e 19 23	PP	e 45·9
Bozeman		113·5	36	e 19 48	PP	e 25 20	[− 6]	i 29 20	PS	e 46·4
Riverside	Z.	113·8	51	e 18 39	[− 2]	—	—	e 19 31	PP	—
Salt Lake City		115·2	42	e 14 53	P	e 27 3	{+22}	e 19 53	PP	e 46·7
Toledo		115·9	316	e 18 47	[+ 2]	—	—	19 53	PP	49·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Almeria		116·0	313	18 46	[+ 1]	25 30	[− 6]	19 46	PP		55·0
Granada		116·7	314	18 33k	[−13]	25 28	[−10]	19 47	PP		61·1
Coimbra		118·7	318	e 17 6	?	27 31	{+26}	22 36	PPP		58·5
San Fernando		118·9	314	e 20 36	PP	e 30 28	PPS	e 23 6	PPP	e	55·0
Lisbon		119·2	317	20 25	PP	26 10	[+23]	22 48	PKS		59·8
Tucson		119·6	50	i 18 52	[0]	e 25 37	[−11]	i 20 17	PP	e	48·2
Lincoln		124·9	34	—	—	e 31 25	PS	e 38 29	SSP	e	55·2
Chicago U.S.C.G.S.		129·0	28	e 22 30	PKS	e 31 5	PS	38 25	SS		54·4
Florissant	z.	129·8	32	i 19 7	[− 5]	i 31 23	PS	i 21 37	pPP		—
St. Louis		130·0	32	i 19 12	[0]	e 38 45	SS	i 21 22	PP		—
Seven Falls		130·1	10	—	—	—	—	e 48 19	?		57·0
Ottawa		130·5	16	e 19 13	[0]	e 38 49	SS	e 22 38	PKS	e	62·0
Toronto		130·9	20	e 22 34	PKS	e 34 37	?	—	—		59·0
Cape Girardeau		131·3	35	e 19 15	[+ 1]	—	—	e 22 38	PKS		—
Buffalo		131·7	20	19 10	[− 5]	e 22 34	SKP	i 21 32	PP		—
Fordham		135·2	16	i 19 23	[+ 1]	i 23 1	SKP	i 22 3	PP		—
Georgetown		135·9	20	e 19 25	[+ 2]	—	—	—	—		—
Bermuda		145·5	9	e 19 38	[− 2]	e 41 27	SS	e 23 9	PP	e	65·5
La Plata		147·0	180	19 31	[−12]	29 49	{−13}	23 1	PP		72·5
Rio de Janeiro	E.	154·6	215	e 20 1	[+ 7]	—	—	—	—		—
Balboa Heights		155·9	62	e 19 1?	[−54]	—	—	—	—		—
San Juan		158·5	21	e 20 5	[+ 6]	i 26 20	[−43]	i 44 18	SS	e	64·5
Huancayo		159·8	121	i 20 4	[+ 4]	i 27 4	[0]	e 24 36	PP		—
La Paz		162·1	146	i 20 7	[+ 4]	i 26 59	[− 7]	i 21 37	pPKP		77·0

Additional readings :—
Medan iSN = +9m.37s.
Zi-ka-wei iN = +11m.4s.
Perth PPP = +8m.3s., i = +9m.49s., +11m.16s., and +15m.11s.
Calcutta iSN = +15m.58s., iS_cSN = +17m.46s.
Adelaide P_cP = +9m.26s., i = +11m.51s. and +13m.51s., SS = +15m.53s., i = +16m.41s., S_cS = +16m.59s.
Mizusawa SN = +13m.49s.
Riverview iP = +8m.18s.k, iZ = +8m.26s., sSSE? = +15m.45s., iSSN = +18m.10s.
Hyderabad PSE = +15m.15s., SSE = +18m.32s.
Agra pPPE = +10m.46s., sS?E = +17m.0s., SSE = +18m.34s., sSS = +19m.33s.
Bombay iP_cPE = +10m.19s., iE = +10m.36s., iPPPN = +11m.58s., iSPPE = +12m.8s., iN = +13m.22s. and +14m.29s., iSN = +16m.25s., iSSE = +20m.6s., iE = +22m.28s.
Wellington sPz = +11m.26s., iZ = +12m.54s. and +15m.33s., i = +19m.31s., SP = +19m.51s., sS = +20m.24s., SPS = +20m.41s.
Tananarive PS = +22m.22s., SS = +26m.23s.
Honolulu e = +13m.26s., ePP = +15m.31s., e = +17m.14s. and +19m.47s., i = +22m.25s., iSS = +22m.45s., e = +26m.4s. and +28m.24s.
Ksara e = +13m.25s.
College e = +23m.32s., +23m.55s., and +26m.8s., eSS = +29m.25s.
Pulkovo S = +23m.43s., ePS = +24m.49s.
Helwan SKKS = +24m.13s., SE = +24m.37s.
Bucharest eE = +19m.32s., eN = iE = +23m.49s.
Sitka e = +21m.14s., i = +24m.46s. and +26m.28s., iSS = +30m.7s., i = +31m.4s. and +33m.17s., eSSS = +34m.27s.
Sofia e?E = +26m.5s.
Warsaw iE = +24m.16s., iZ = +26m.5s., eE = +26m.9s.
Upsala eE = +31m.14s. and +35m.1s?, eN = +37m.1s.?
Belgrade eSS = +27m.1s., e = +30m.25s. and +33m.16s.
Budapest iEN = +17m.38s., iE = +24m.28s.
Kalossa e = +24m.24s.
Prague ePS = +26m.13s., eSS = +31m.25s., eSSS = +35m.25s.
Potsdam iPPN = +18m.11s., iE = +20m.33s., iN = +22m.51s., iE = +24m.37s., iSN = +25m.23s., iEZ = +26m.44s., iPSEZ = +27m.13s., iPPSN = +28m.1s.
Jena eN = +18m.10s., eNZ = +18m.14s., eEN = +27m.1s.
Hamburg iPPN = +18m.8s., ePSE = +26m.44s., eSSSE = +36m.25s.
Rome PPS = +28m.25s., SS = +33m.14s., SSS = +38m.7s.
Scoresby Sund iSKS = +26m.26s., e = +30m.11s.
Stuttgart ePPZ = +18m.25s., ePPEN = +18m.33s., ePPPE = +20m.27s., ePPPEN = +20m.30s., eEN = +23m.14s., eSEN = +26m.13s., ePSN = +27m.23s., ePPS = +18m.13s., eSSEN = +33m.6s., eSSE = +33m.11s., eSSSE = +37m.21s.
Strasbourg iS = +26m.7s., eSSS = +37m.7s.
Victoria e = +33m.25s., eN = +43m.19s.
De Bilt eS = +26m.1s., iPS = +27m.33s., iPPS = +28m.31s., eSS = +33m.31s., eSSS = +38m.1s., eSSSS = +43m.46s.
Seattle e = +35m.25s. and +38m.36s.

Continued on next page.

Uccle iSN = +26m.38s., iPSEZ = +27m.44s., iPPS = +28m.50s., iSSE = +33m.45s., iSSSN = +37m.4s., iE = +38m.8s., iN = +43m.46s.
Aberdeen iPPPE = +28m.49s., iSEN = +33m.40s., iPSE = +34m.12s., iE = +41m.39s. All phases wrongly identified.
Paris iPS = +28m.4s., iPPS = +29m.7s., ePSS = +34m.49s., Q = +53m.1s.
Ukiah e = +27m.6s., +30m.4s., and +32m.53s., eSS = +34m.14s., i = +35m.37s., eSSS = +38m.27s.
Kew eEZ = +20m.36s., iZ = +22m.41s., iN = +26m.35s., e = +28m.51s., EZ = +29m.26s., EN = +30m.13s.
Stonyhurst PP = +29m.4s.
Berkeley iE = +19m.13s. and +25m.41s., eN = +26m.12s., ePSZ = +28m.23s., iSSN = +33m.25s., eQE = +42m.37s.
Pasadena iPKKPZ = +29m.27s., eEN = +30m.47s., eSSN = +35m.11s.
Bozeman e = +26m.23s., +29m.49s., and +30m.45s., eSS = +35m.9s.
Riverside ePKKPZ = +29m.25s.
Salt Lake City e = +21m.33s., ePS = +29m.31s., e = +30m.56s., eSS = +35m.39s., e = +39m.50s.
Almeria PPP = +22m.9s., PKS = +22m.22s., SKKS = +26m.41s., PS = +29m.26s., PPS = +30m.38s.
Granada PPP = +22m.6s., SKKS = +27m.10s., PS = +28m.58s., PPS = +29m.52s., SS = +35m.19s., SSP = +36m.28s., SSS = +40m.43s., Q = +52·2m.
Coimbra ePN = +17m.9s., PPP = +26m.36s., S = +29m.40s., PS = +31m.6s., eE = +32m.36s., EN = +33m.40s., SS = +36m.46s., SSS = +41m.36s.
San Fernando ePPSN = +31m.48s., eSSN = +36m.14s.
Lisbon SKKSE = +27m.9s., N = +32m.56s.
Tucson i = +19m.8s., ipPP = +20m.32s., isPP = +20m.56s., i = +22m.23s., +24m.47s., +29m.13s., +30m.19s., +32m.7s., and +33m.6s., iSS = +36m.20s., i = +38m.17s.
Lincoln e = +33m.29s. and +46m.19s.
Chicago U.S.C.G.S. e = +28m.13s., eSP = +31m.5s., i = +32m.16s. and +33m.31s., e = +42m.40s.
Florissant iZ = +19m.21s., eZ = +21m.21s. and +22m.31s., iN = +22m.34s., iSSN = +38m.44s.
St. Louis iZ = +19m.19s., iSKPE = +22m.31s., iSKPZ = +22m.35s., eN = +43m.1s.
Cape Girardeau eSKPN = +22m.51s.
Buffalo ipPKP = +19m.16s., e = +19m.50s. and +23m.9s.
Bermuda e = +19m.54s., +20m.19s., +28m.30s., and +35m.17s., eSSS = +47m.28s., e = +51m.5s.
La Plata PKPN = +19m.37s., PSN = +35m.19s., N = +39m.13s., PPSN = +42m.31s.
Huancayo i = +20m.27s. and +21m.1s., e = +23m.18s., i = +26m.16s., +28m.11s., +31m.9s., +34m.51s., and +38m.46s., iSS = +44m.42s., i = +48m.39s.
San Juan i = +23m.0s. and +33m.30s., e = +39m.0s., eSSS = +50m.8s.
La Paz iPKP$_2$N = +20m.26s., isPKP = +22m.35s., SKP = +23m.21s., iPPN = +24m.45s., iSKKS = +31m.29s., iSSN = +42m.39s., iSSS = +47m.29s.
Long waves were also recorded at Bergen, Algiers, Harvard, and Edinburgh.

Jan. 5d. Readings also at 2h. (Riverview), 18h. (near La Paz), 19h. (Wellington), 21h. (Tinemaha and Riverside), 22h. (Pennsylvania).

Jan. 6d. 9h. 48m. 36s. Epicentre 11°·5N. 86°·3W. Depth of Focus 0·005. (as given by Pasadena).

A = +·0633, B = −·9782, C = +·1981 ; δ = +13 ; h = +6 ;
D = −·998, E = −·065 ; G = +·013, H = −·198, K = −·980.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		7·0	109	e 1 39	− 3	e 3 2	+ 1	—	—	4·0
San Juan		20·6	68	e 4 34	− 2	e 8 40	+22	i 5 44	PPP	e 10·2
Huancayo		25·8	155	e 5 29	+ 2	i 9 59	+10	i 6 1	PP	i 11·5
Cape Girardeau	N.	25·9	355	i 5 28	0	e 9 41	−10	i 6 11	sP	—
St. Louis		27·2	354	i 5 39	− 1	e 9 56	−16	i 6 13	pP	e 14·3
Florissant	N.	27·4	354	i 5 42	+ 1	—	—	i 6 12	pP	—
Georgetown		28·5	17	5 54	+ 3	10 56	+23	—	—	14·4
Bermuda		28·6	41	e 5 55	+ 3	e 11 25	SS	—	—	e 13·4
Pittsburgh		29·3	12	e 6 0	+ 2	—	—	—	—	e 17·4
Pennsylvania		30·1	14	e 6 8	+ 2	—	—	—	—	—
Chicago U.S.C.G.S.		30·2	358	e 8 4	?	e 10 58	− 2	—	—	i 11·5
Lincoln		30·6	347	e 6 9	− 1	e 10 50	−16	e 8 40	PcP	e 13·1
Tucson		30·6	317	i 6 9a	− 1	i 11 7	+ 1	i 7 5	PP	—
Fordham		31·2	20	i 6 16	+ 1	11 51	+35	—	—	—
Buffalo		32·0	12	i 6 19	− 3	e 12 18	+50	i 7 31	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toronto		32·6	11	—	—	e 12 12	+35	—	—	17·4
La Paz	N.	33·1	147	i 6 34k	+ 2	i 11 59	+14	7 52	PP	i 18·2
Vermont		34·7	17	—	—	i 12 45	+35	—	—	i 14·8
Ottawa		35·0	13	6 49	+ 1	12 49	+34	8 16	PP	18·4
Palomar	Z.	35·4	314	i 6 52a	0	i 13 9	S_cP	i 9 22	P_cP	—
La Jolla		35·5	313	e 6 52	0	—	—	—	—	—
Riverside		36·1	315	i 6 57a	0	e 17 16	S_cS	i 9 23	P_cP	—
Mount Wilson		36·7	315	i 7 2a	0	—	—	i 9 24	P_cP	—
Pasadena		36·8	315	i 7 2a	− 1	—	—	i 8 30	PP	e 16·4
Salt Lake City		36·8	328	e 7 27	+24	e 13 16	+34	e 8 32	PP	e 20·0
Shawinigan Falls		36·8	16	e 7 4	+ 1	—	—	—	—	20·4
East Machias		36·9	23	—	—	e 13 23	+39	—	—	e 19·3
Haiwee		37·7	318	e 7 10	− 1	—	—	i 9 28	P_cP	—
Seven Falls		37·8	17	—	—	e 15 42	SS	—	—	18·4
Tinemaha		38·4	318	e 7 16	− 1	e 17 26	S_cS	e 8 50	PP	—
Fresno	N.	39·2	316	e 7 25	+ 2	—	—	—	—	—
Bozeman		40·1	334	e 7 36	+ 5	e 13 36	+ 4	e 9 11	PP	e 16·8
Santa Clara		41·0	316	i 7 45	+ 7	—	—	—	—	e 22·9
Berkeley		41·5	316	i 7 42	0	e 14 11	+18	i 16 49	SS	e 20·0
Ukiah		42·8	318	e 8 1	+ 8	e 14 30	+18	e 10 38	PPP	e 19·1
Victoria		48·1	329	e 8 48	+13	e 15 24	− 4	—	—	26·4
Rio de Janeiro	E.	54·3	128	e 9 59	pP	—	—	—	—	—
Lisbon	E.	72·9	53	—	—	32 44	?	—	—	35·6
Coimbra		73·4	51	e 11 57	pP	e 20 57	+ 7	—	—	30·9
Toledo		76·8	52	e 12 7	+21	e 21 48	+21	—	—	32·7
Granada		77·4	55	e 12 11	pP	22 50	PS	—	—	—
Almeria		78·3	55	12 24	pP	21 52	+ 9	16 56	PPP	35·4
Clermont-Ferrand		81·5	46	e 12 38	pP	—	—	—	—	e 39·4
Uccle		81·6	40	—	—	e 21 59	−19	e 23 16	PS	e 36·4
Stuttgart		85·0	42	e 12 56	pP	—	—	—	—	e 41·9
Rome		88·8	48	e 16 32	PP	e 21 8	?	e 28 50	SS	—
Calcutta	N.	145·9	6	e 19 47	[+16]	—	—	—	—	—

Additional readings :—
San Juan iP = +6m.42s., e = +6m.30s.,i = +8m.55s. and +9m.23s.
Huancayo iP = +5m.39s., i = +6m.39s., iP_cP = +8m.32s., i = +8m.46s. and +10m.55s.
Cape Girardeau eE = +11m.1s.
St. Louis iZ = +6m.33s. and +6m.49s., esSN = +10m.46s., iN = +10m.49s.
Florissant iN = +6m.17s. and +6m.25s., iPPN = +6m.32s., iN = +6m.35s. and +9m.23s.
Tucson i = +6m.19s., +6m.56s., +7m.18s., +7m.42s., +7m.56s., +8m.45s., +9m.6s., +9m.33s., and +12m.4s.
Buffalo e = +13m.56s.
La Paz PPPN = +8m.11s., iSSN = +14m.13s., iN = +15m.24s., S_cSN = +17m.1s.
Ottawa SSS = +15m.24s.
Palomar iZ = +7m.5s.
Mount Wilson eS_cPZ = +13m.11s.
Riverside eS_cPZ = +13m.11s.
Pasadena iZ = +7m.22s., iP_cP = +9m.25s., iS_cPNZ = +13m.12s., iS_cSEN = +17m.20s.
Salt Lake City e = +16m.3s., eS_cS = +17m.20s.
Tinemaha iZ = +7m.30s., iP_cP = +9m.30s., eS_cPZ = +13m.18s.
Fresno eN = +9m.36s.
Bozeman i = +9m.19s., e = +12m.51s., i = +15m.8s.
Berkeley eE = +18m.8s.
Coimbra ?N = +18m.54s.
Almeria pP = +12m.36s., PP = +12m.40s., S_cS = +22m.31s.
Uccle eSSE = +28m.10s., eSSSE = +31m.16s.
Long waves were also recorded at Kew, De Bilt, Upsala, Tananarive, Bombay, Scoresby Sund, Sitka, Agra, Butte, College, Harvard, Warsaw, Aberdeen, Averroes, and Seattle.

Jan. 6d. Readings also at 0h. (Pennsylvania), 5h. (Sydney and Riverview), 8h. (near Mizusawa), 10h. (Tinemaha, Pasadena, Riverside, Mount Wilson, Palomar, and Balboa Heights), 11h. (Fresno), 15h. (San Juan), 16h. (near Bucharest), 20h. (near Frunse, Andijan, and Tchimkent), 21h. (Tacubaya and Tucson), 22h. (Salt Lake City).

Jan. 7d. 10h. 37m. 36s. Epicentre 1°·0N. 123°·3E. (as on 1939 March 25d.).

Intensity IV in Northern Celebes.

Meteorologische en Geophysische Dienst te Batavia, Serie A, No. 44. Aardbevingen in Ned-Indië, Waargenomen gedurende het jaar, 1941. Epicentre 0°·2S. 123°·2E. depth 200km. (Batavia).

$A = -\cdot5489$, $B = +\cdot8357$, $C = +\cdot0173$; $\delta = -2$; $h = +7$;
$D = +\cdot836$, $E = +\cdot549$; $G = -\cdot009$, $H = +\cdot014$, $K = -1\cdot000$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Amboina		6·7	133	i 1 41	− 1	i 2 51	− 9	—	—
Batavia		17·9	246	4 5	− 7	i 6 44	−46	—	—
Sintiku		23·8	355	3 45	?	5 20	P	—	—
Medan		24·7	276	5 27	+ 3	9 35	− 9	—	—
Titizima		31·6	34	6 29	+ 3	—	—	—	—
Nagoya		36·3	20	7 9	+ 2	—	—	—	—
Nagano		38·1	19	7 24	+ 2	—	—	—	—
Calcutta	N.	40·2	305	e 8 39	+59	i 13 41	− 7	—	—
Sendai		40·5	22	7 42	0	13 45	− 7	—	—
Mizusawa		41·3	21	e 7 48	− 1	10 19	PPP	—	—
Vladivostok		42·6	10	i 8 1	+ 2	—	—	—	—
Riverview		43·4	145	e 8 25	+19	e 14 15	−20	e 17 31	SS
Sapporo		44·5	18	8 20	+ 5	—	—	—	—
Bombay		52·6	293	i 9 15	− 3	i 16 31	−13	i 20 20	SS
Irkutsk		53·5	346	9 23	− 1	17 15?	+18	—	—
Almata		58·6	323	10 3	+ 2	—	—	—	—
Frunse		60·2	321	10 38?	+26	—	—	—	—
Andijan		60·7	317	e 10 12	− 3	—	—	14 35	PPP
Tashkent		63·0	317	i 10 27	− 4	—	—	—	—
Samarkand		64·0	314	10 36	− 2	—	—	—	—
Sverdlovsk		74·5	329	i 11 38	− 4	—	—	i 14 32	PP
Baku		76·7	311	e 12 6	+11	22 34	PPS	—	—
Moscow		86·8	326	i 12 42	− 5	—	—	—	—
Rome		104·3	313	e 18 23	PP	—	—	—	—
Tinemaha	Z.	111·7	49	i 18 32	[− 4]	—	—	e 19 56	PP
Haiwee	Z.	112·3	50	e 18 33	[− 4]	—	—	—	—
Pasadena		112·7	52	i 18 33	[− 5]	—	—	—	—
Mount Wilson	Z.	112·8	52	i 18 33k	[− 5]	—	—	—	—
Riverside	Z.	113·4	52	i 18 34	[− 6]	—	—	—	—
La Jolla	Z.	113·9	53	e 18 34	[− 7]	—	—	—	—
Tucson		119·6	51	i 18 45	[− 7]	e 26 0	[+12]	i 19 53	PP
St. Louis	N.	129·9	34	e 22 19	?	—	—	—	—
Fordham		135·5	17	i 19 13	[− 9]	—	—	—	—
Huancayo		158·5	122	e 19 56	[− 3]	—	—	—	—
San Juan		158·6	24	e 18 26	?	—	—	e 24 10	PP
La Paz	Z.	160·9	145	19 57	[− 5]	—	—	—	—

Additional readings :—
Medan SE = +9m.38s.
Riverview eN = +8m.29s., eE = +14m.11s.
Bombay eN = +9m.18s., eE = +17m.23s.
Baku eSSS = +31m.58s.
Tucson i = +18m.55s. and +20m.18s., e = +22m.5s., +23m.54s., +26m.43s., and +28m.2s., i = +32m.43s.
St. Louis eN = +22m.33s.
Huancayo e = +20m.31s. and +21m.37s.
Long waves were also recorded at Strasbourg.

Jan. 7d. Readings also at 3h. (Granada and Toledo), 4h. (near Sofia, Bombay, Rome, Huancayo, Averroes, Ksara, Uccle, De Bilt, and Helwan), 6h. (La Paz), 12h. (Salt Lake City), 15h. (Philadelphia).

Jan. 8d. Readings at 0h. (Balboa Heights), 5h. (Riverside, Mount Wilson, Tinemaha, Haiwee, and Mizusawa), 8h. (Mizusawa), 9h. (Riverside, Mount Wilson, Pasadena, Tinemaha, Haiwee, and Mizusawa), 12h. (Riverview and near Mizusawa), 14h. (near Algiers), 17h. (near La Paz), 18h. (Taihoku and Rome), 19h. (near Cape Girardeau and Tacubaya), 20h. (Seattle and Salt Lake City), 21h. (Ksara, Pennsylvania, Harvard, and La Paz), 22h. (Port au Prince), 23h. (Andijan and Tchimkent).

Jan. 9d. 10h. 28m. 42s. Epicentre 31°·7N. 115°·1W. (as on 1940 Dec. 7d.).

$A = -\cdot3616$, $B = -\cdot7719$, $C = +\cdot5229$; $\delta = +1$; $h = +7$;
$D = -\cdot906$, $E = +\cdot424$; $G = -\cdot222$, $H = -\cdot474$, $K = -\cdot852$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
La Jolla		2·2	303	i 0 35	− 3	i 1 8	+ 2	—	—
Riverside		3·0	320	i 0 48	− 2	i 1 35	S*	—	—
Mount Wilson		3·5	316	i 0 59	+ 2	i 1 50	S*	—	—
Pasadena		3·5	316	i 0 58	+ 1	i 1 48	S*	i 1 3	P*
Tucson		3·6	83	i 0 57	− 1	i 1 40	− 2	i 1 4	P*
Santa Barbara		4·7	306	e 1 27	P*	—	—	—	—
Haiwee		5·0	332	e 1 20	+ 2	e 2 42	S_g	i 1 29	P*
Tinemaha		6·0	335	e 1 31	− 1	e 3 11	S_g	—	—
Fresno	N.	6·3	324	e 1 52	P*	e 3 22	S_g	—	—

Additional readings:
Tucson i = +1m.13s., +1m.25s., +1m.56s., and +2m.12s.
Fresno iN = +3m.37s.
Long waves were also recorded at Bozeman.

Jan. 9d. 18h. 13m. 24s. Epicentre 38°·0N. 27°·5E. (as on 1937 May 23d.).

Several houses destroyed near Smyrna. Epicentre 38°·0N. 27°·0E. (Strasbourg).

J. P. Rothé.
Chronique séismologique, Revue pour l'Etude des Calamités, tome VII, No. 21, Genève 1944, p. 49.

$A = +\cdot7007$, $B = +\cdot3648$, $C = +\cdot6131$; $\delta = -5$; $h = -1$;
$D = +\cdot462$, $E = -\cdot887$; $G = +\cdot544$, $H = +\cdot283$, $K = -\cdot790$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		3·3	21	−0 2	−55	1 48	S_g	—	—	—
Sofia		5·7	327	e 1 31	+ 3	i 2 40	+ 5	i 3 4	S_g	—
Bucharest		6·5	350	e 1 50	P*	i 2 57	+ 2	2 20	P_g	—
Ksara		8·0	118	e 2 5	+ 5	e 3 38	+ 5	4 33	S_g	—
Yalta		8·2	36	2 4	+ 1	3 34	− 4	—	—	—
Belgrade		8·6	325	e 2 14	+ 5	e 4 36	S_g	e 3 7	?	e 7·6
Helwan		8·7	159	e 2 12	+ 2	e 3 54	+ 4	e 2 31	PPP	—
Simferopol		8·7	34	2 6	− 4	3 41	− 9	—	—	—
Kalossa		10·6	328	2 39	+ 3	e 5 34	L	—	—	(e 5·6)
Kecskemet	Z.	10·6	330	—	—	e 4 6	−31	—	—	e 5·6
Sotchi		10·8	55	e 2 45	+ 6	—	—	—	—	—
Budapest		11·3	330	—	—	e 5 11	SS	e 5 41	SSS	6·2
Ogyalla	E.	12·0	328	e 4 1	?	i 5 8	− 3	—	—	—
Triest		12·8	311	—	—	e 6 32	SSS	—	—	e 7·1
Warsaw		14·9	346	e 3 36	+ 2	e 6 27	+ 7	e 6 39	SS	e 7·6
Chur		15·9	309	e 3 46	− 1	e 8 39	L	—	—	(e 8·6)
Zurich		16·7	310	e 3 59a	+ 2	e 7 38	SS	—	—	—
Stuttgart		17·1	315	e 4 1	− 1	e 6 1	?	—	—	e 9·5
Jena		17·2	324	e 4 6	+ 3	e 7 18	+ 4	—	—	e 8·4
Basle		17·4	309	e 4 4	− 2	—	—	—	—	—
Neuchatel		17·6	307	e 4 7	− 1	—	—	—	—	—
Potsdam		17·6	330	i 4 9a	+ 1	i 7 35	+12	—	—	8·6
Strasbourg		17·8	313	e 4 11	0	e 7 24	− 4	—	—	e 9·7
Moscow		19·0	17	i 4 26	0	i 8 3	+ 8	—	—	—
Hamburg		19·7	328	e 4 31	− 3	e 8 12	+ 2	—	—	e 10·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Copenhagen		20·4	337	i 4 40	− 1	—	—	—	—	9·6
Uccle		20·8	315	i 4 45	0	e 8 34	+ 1	—	—	e 10·6
Pulkovo		21·9	3	4 55	− 2	i 9 2	+ 8	—	—	—
Toledo	z.	24·5	284	e 4 52	−30	—	—	—	—	—
Sverdlovsk		28·9	39	e 6 2	− 1	—	—	—	—	—
Tashkent		32·1	71	e 6 35	+ 4	—	—	—	—	—
Tucson		100·1	325	e 13 49	0	e 24 9	[−18]	e 18 7	PP	—

Additional readings :—
Istanbul P = +2s.
Sofia iN = +3m.14s.
Bucharest P*EN = +2m.7s., S*EN = +3m.19s., S_eEN = +3m.34s.
Belgrade ePPS = +4m.16s., eSS = +4m.50s., e = +5m.6s.
Helwan eE = +3m.30s.
Kalossa e = +2m.55s.
Ogyalla iN = +5m.1s.
Budapest iN = +5m.58s.
Warsaw eSZ = +6m.34s.
Stuttgart iPE = +4m.6s.
Jena eN = +5m.52s.
Potsdam iPN = +4m.17s., iSEZ = +7m.41s.
Copenhagen +7m.28s.
Tucson e = +14m.10s. and +31m.49s.
Long waves were also recorded at Kew, De Bilt, Aberdeen, Stonyhurst, Upsala, and Paris

Jan. 9d. Readings also at 0h. (Fresno), 1h. (Riverview and Apia), 2h. (Bozeman, Sitka, Riverview, and Apia), 9h. (Batavia), 11h. (Medan and Batavia), 15h. (near Apia), 19h. (Riverview).

Jan. 10d. 7h. 38m. 14s. Epicentre 34°·0N. 77°·0E.

A = +·1869, B = +·8095, C = +·5566 ; δ = +3 ; h = 0 ;
D = +·974, E = −·225 ; G = +·125, H = +·542, K = −·831.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dehra Dun	N.	3·8	165	e 1 11	+10	i 2 17	−30	—	—	—
Agra		6·9	173	e 1 46	+ 1	e 2 58	− 7	e 1 54	PP	—
Andijan		7·6	333	1 55	0	i 3 25	+ 2	—	—	—
Frunse		9·1	348	2 15	+ 1	3 54	− 6	—	—	—
Almata		9·3	0	2 13	− 4	3 53	−12	—	—	—
Tashkent		9·5	322	e 2 25	+ 5	—	—	—	—	—
Tchimkent		10·1	327	i 2 29	+ 1	4 29	+ 4	—	—	—
Calcutta	N.	15·2	136	e 3 32	− 6	e 6 8	−20	i 8 55	PeP	i 7·5
Bombay		15·5	195	e 3 45	+ 3	e 6 36	+ 1	i 6 45	SS	e 7·9
Hyderabad		16·5	175	3 50	− 4	6 46	− 2	—	—	7·8
Semipalatinsk		16·6	7	3 46	−10	—	—	—	—	—
Baku		22·5	295	e 5 25	+23	e 9 36	+31	—	—	—
Kodaikanal	E.	23·7	181	—	—	i 9 28	+ 1	—	—	—
Sverdlovsk		25·4	340	5 28	− 3	9 50	− 6	—	—	—
Grozny		26·0	301	5 41	+ 5	10 16	+10	—	—	—
Irkutsk		26·8	37	e 5 50	+ 6	e 10 4	−15	—	—	—
Colombo	E.	27·1	174	10 25	?	14 37	?	—	—	—
Stuttgart	Z.	51·3	308	e 9 8	0	—	—	—	—	—
Tucson		113·7	7	i 18 16	[−24]	—	—	i 20 21	PP	—

Additional readings :—
Agra iN = +3m.9s., S*E = +3m.27s., S_eEN = +3m.42s.
Calcutta iS_eSN = +16m.9s.
Bombay iSSN = +6m.49s., iE = +7m.0s.
Tucson e = +18m.30s., i = +18m.39s., e = +19m.39s. and +20m.56s.
Long waves were recorded at Fordham, Warsaw, Upsala, Bergen, and Potsdam.

Jan. 10d. Readings also at 9h. (Bucharest), 11h. (Huancayo (2)), 12h. (near Mizusawa), 13h. (near La Paz), 18h. (Huancayo), 20h. (near Agra), 21h. (near Amboina), 23h. (La Paz).

Jan. 11d. 2h. 45m. 54s. Epicentre 7°·2S. 155°·3E. (as on 1939 Jan. 31d.).

A = −·9014, B = +·4146, C = −·1245; δ = −8; h = +7;
D = +·418, E = +·909; G = +·113, H = −·052, K = −·992.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	20·3	185	i 4 48	+ 8	i 8 30	+ 7	—	—	—
Riverview	N.	26·8	187	e 6 4	+20	e 10 20	+ 1	—	—	—
Sydney		26·8	187	—	—	e 10 18	− 1	—	—	e 17·3
Arapuni		35·9	151	—	—	13 12	+30	15 54	SS	—
Wellington		38·1	155	7 18	− 4	13 21	+ 5	8 56	PP	19·6
Christchurch		39·2	159	6 39	−52	13 34	+ 2	17 8	Q	20·4
Perth		44·2	230	—	—	i 14 51	+ 5	—	—	29·9
Batavia		48·1	268	8 43	0	15 40	− 2	—	—	—
Medan		57·5	279	8 3	?	—	—	—	—	—
Calcutta	N.	71·8	297	—	—	i 20 46	0	—	—	—
Agra	E.	82·1	298	12 23	− 1	22 33	− 5	23 40	sS	—
Victoria	E.	89·6	41	—	—	e 25 6?	?	—	—	45·1
Pasadena		91·1	56	i 13 8	0	—	—	—	—	e 44·7
Mount Wilson	Z.	91·2	56	i 13 9	+ 1	—	—	—	—	—
Tinemaha	Z.	91·4	53	e 13 11	+ 2	—	—	—	—	—
Riverside	Z.	91·8	56	i 13 12	+ 1	—	—	—	—	—
Tucson		97·1	58	e 17 31	PP	—	—	—	—	e 43·6
Ottawa		122·6	39	i 18 57	[− 1]	—	—	—	—	e 61·1
La Paz		131·0	119	19 21	[+ 7]	—	—	i 22 46	PKS	66·1

Additional readings :—
Sydney e = +14m.42s.
Wellington SS = +16m.11s., Q = +17m.18s.
Perth PP = +20m.1s., PPP = +20m.49s., S = +24m.31s., SS = +27m.1s., SSS = +27m.31s. Phases have been wrongly identified.
Agra SSS?E = +31m.0s.
Pasadena iZ = +13m.42s.
Mount Wilson iZ = +13m.44s.
Riverside iZ = +13m.44s.
Tucson i = +17m.51s.
Long waves were also recorded at Uccle and other American stations.

Jan. 11d. 8h. 31m. 54s. Epicentre 16°·0N. 43°·0E.

A = +·7034, B = +·6559, C = +·2739; δ = 0; h = +6;
D = +·682, E = −·731; G = +·200, H = +·187, K = −·962.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan		17·5	324	i 4 6a	− 1	i 7 33	+12	4 27	PPP	—
Ksara		18·9	342	e 4 24	0	e 7 34	−19	8 3	SS	—
Baku		25·0	13	e 5 32	+ 5	i 9 50	+ 1	—	—	—
Grozny		27·3	5	5 50	+ 2	—	—	—	—	—
Istanbul		27·7	337	5 43	− 9	—	—	—	—	—
Piatigorsk		28·0	0	5 52	− 3	—	—	—	—	—
Bombay		28·7	80	i 6 1	0	i 10 44	− 6	i 6 19	pP	i 14·6
Yalta		29·4	348	6 3	− 4	—	—	—	—	—
Simferopol		29·8	348	6 5	− 6	—	—	—	—	—
Sofia	E.	31·5	332	e 6 27	+ 1	e 11 24	−10	—	—	—
Samarkand		31·5	37	6 25	− 1	—	—	7 45	PP	—
Tashkent		33·9	37	i 6 44	− 3	i 12 7	− 4	—	—	—
Kodaikanal	E.	34·0	94	i 6 52a	+ 4	i 12 14	+ 1	i 8 1	PP	i 16·9
Hyderabad		34·0	82	6 51	+ 3	12 9	− 4	7 44	PP	17·1
Agra		34·3	66	e 6 49	− 1	i 12 11	− 6	7 59	PP	i 16·8
Belgrade		34·5	332	e 6 50	− 2	—	—	e 8 11	PP	e 11·4
Tchimkent		34·7	36	6 53	− 1	—	—	—	—	—
Tananarive		35·0	173	e 9 21	PPP	12 42	+14	—	—	16·9
Dehra Dun	N.	35·1	60	e 6 47?	−10	e 12 27	− 3	—	—	19·3
Andijan		35·4	41	6 59	− 1	12 28	− 4	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kalossa	E.	36·4	333	7 10	+ 2	e 12 48	− 2	—	—	—
Rome		36·8	321	i 7 14k	+ 3	e 13 3	+ 7	i 8 36	PP	—
Budapest		37·1	335	i 7 15	+ 1	12 59	− 2	—	—	e 23·6
Colombo	E.	37·2	100	7 17	+ 2	13 6?	+ 4	8 47	PP	23·0
Frunse		38·0	39	i 7 24	+ 3	13 11	− 3	8 45	PP	—
Triest		38·4	328	i 7 27	+ 2	i 13 20	0	i 8 59	PP	—
Almata		39·7	39	7 40	+ 4	13 44	+ 4	—	—	—
Moscow		39·9	356	i 7 35	− 2	13 38	− 5	—	—	—
Warsaw		40·2	341	i 7 37k	− 3	13 45	− 3	9 11	PP	e 21·0
Algiers		41·0	309	i 7 52	+ 6	—	—	—	—	i 22·0
Prague		41·1	333	i 7 46a	− 1	e 13 44?	−17	—	—	e 21·1
Chur		41·4	326	e 7 50	0	—	—	e 9 18	PP	—
Zurich		42·3	326	e 7 56k	− 1	—	—	e 9 32	PP	—
Stuttgart		42·8	329	e 8 1k	0	i 14 29	+ 3	e 9 53	PP	24·1
Neuchatel		42·9	325	e 8 3	+ 1	—	—	—	—	—
Sverdlovsk		42·9	15	i 7 59	− 3	i 14 19	− 8	—	—	—
Basle		42·9	326	e 8 2	0	—	—	—	—	—
Jena		43·0	333	e 7 52	−11	e 14 27	− 2	e 9 42	PP	—
Calcutta	N.	43·2	74	e 8 3	− 1	i 14 27	− 5	e 9 38	PP	—
Potsdam		43·3	335	i 8 4k	− 1	i 14 39	+ 6	i 9 48	PP	25·1
Strasbourg		43·4	327	e 8 8	+ 2	e 14 33	− 2	e 9 49	PP	25·1
Pulkovo		44·7	352	e 8 16	0	e 14 48	− 6	—	—	—
Clermont-Ferrand		44·7	321	i 8 25a	+ 9	—	—	—	—	—
Almeria		45·2	307	i 8 23	+ 3	15 16	+15	10 11	PP	25·1
Hamburg		45·5	335	i 8 23	0	e 15 6	+ 1	e 18 36	SS	—
Semipalatinsk		45·6	33	e 8 23	− 1	15 1	− 5	—	—	—
Copenhagen		46·0	338	i 8 26k	− 1	14 48	−24	15 14	PS	—
Granada		46·2	308	i 8 33k	+ 5	15 30	+15	—	—	31·2
Paris		46·5	324	e 8 29	− 2	15 28	+ 9	10 23	PP	30·1
Uccle		46·5	328	i 8 19?	−12	—	—	—	—	—
Heligoland	E.	46·8	332	e 8 34	+ 1	e 15 24	0	—	—	e 25·3
De Bilt		46·9	330	i 8 34k	0	i 15 26	+ 1	e 10 23	PP	—
Toledo		47·2	310	i 8 40	+ 4	16 28	+59	—	—	26·1
Upsala		47·5	344	i 8 42	+ 4	e 15 28	− 4	e 19 21	SS	—
Averroes		48·5	302	e 6 42	?	e 18 26	SS	—	—	23·4
Kew		49·4	327	i 8 54k	+ 1	e 16 1	+ 1	e 19 45	SS	e 23·1
Coimbra		50·5	311	e 11 0	PP	17 22	?	21 32	SSS	28·9
Lisbon		50·8	308	9 15	+11	16 42	+22	—	—	e 26·4
Stonyhurst		51·7	329	e 16 29	PPS	—	—	e 20 34	SS	31·1
Aberdeen		53·2	333	—	—	i 16 48	− 4	i 20 56	SS	30·9
Medan		56·1	97	9 46	+ 3	17 37	+ 5	—	—	20·1
Irkutsk		60·0	39	10 8?	− 3	18 15?	− 8	—	—	—
Scoresby Sund		66·7	342	e 10 54	− 1	i 19 48	+ 2	e 13 20	PP	e 27·8
Batavia		66·9	104	i 10 58	+ 2	19 52	+ 3	—	—	—
Ivigtut		76·7	330	11 54	− 1	—	—	—	—	—
Vladivostok		78·5	48	i 12 5	+ 1	i 21 58	− 3	—	—	—
East Machias		92·6	318	—	—	e 24 20	+ 2	e 23 54	SKS	37·6
Rio de Janeiro		92·7	247	13 26	+11	—	—	—	—	—
Seven Falls		93·9	321	—	—	24 42	+13	—	—	53·1
Bermuda		96·0	306	e 14 2	+32	e 24 23	[+16]	e 17 29	PP	45·8
Ottawa		97·5	321	e 13 45	?	e 27 32	PS	—	—	52·1
College		99·0	4	—	—	e 26 51	PS	e 31 37	SS	50·5
San Juan		102·3	293	i 18 22	PP	i 24 52	[+14]	e 28 37	PPS	e 47·8
Florissant		110·2	323	e 19 10	PP	e 28 30	PS	e 29 0	PS	—
St. Louis		110·2	323	e 19 9	PP	e 28 31	PS	—	—	—
Lincoln		112·2	328	—	—	e 25 40	[+19]	—	—	—
La Paz		114·2	259	19 23	PP	29 36	PS	—	—	55·6
Salt Lake City		118·9	339	—	—	e 27 17	{+11}	40 14	SSS	61·4
Huancayo		120·2	265	e 19 54	[+61]	27 45	{+30}	e 20 27	PP	49·0
Tinemaha	Z.	124·3	341	e 19 8	[+ 7]	—	—	e 20 37	PP	—
Haiwee	Z.	125·1	341	e 19 10	[+ 7]	—	—	e 20 54	PP	—
Tucson		125·9	333	e 19 6	[+ 2]	26 11	[+ 3]	21 3	PP	47·5
Riverside	Z.	126·9	340	i 19 8	[+ 2]	—	—	e 21 1	PP	—
Mount Wilson	Z.	126·9	340	e 19 12	[+ 6]	—	—	21 2	PP	—
Pasadena		127·0	340	e 19 11	[+ 5]	—	—	21 3	PP	77·1

For Notes see next page.

NOTES TO JANUARY 11d. 8h. 31m. 54s.

Additional readings :—
Helwan SSE = +8m.10s.
Ksara P_cP = +9m.15s.
Bombay isPPE = +7m.34s., P_cPE = +8m.52s., iSE = +12m.13s.
Sofia eN = +10m.48s.
Kodaikanal SSE = +13m.57s.
Hyderabad P_cPE = +9m.50s., SSN = +14m.16s.
Agra P_cPE = +9m.29s., sSE = +12m.59s., iN = +13m.5s., SSEN = +14m.19s., iN = +14m.41s., SSS?E = +15m.10s.
Belgrade e = +7m.26s.
Tananarive E = +13m.45s.
Dehra Dun e?N = +14m.59s.
Rome iEZ = +8m.53s., e = +9m.18s., iSEZ = +15m.44s.
Budapest iE = +7m.20s., iN = +7m.23s. and +13m.14s.
Triest iSS = +16m.3s.
Warsaw eE = +15m.13s., eSSE = +16m.48s., iE = +17m.23s.
Algiers e = +20m.31s.
Stuttgart eE = +14m.22s., iSE = +14m.34s.
Jena ePN = +7m.57s., ePPNZ = +9m.45s.
Calcutta iS_cSN = +18m.7s.
Potsdam iPE = +8m.9s., iSN = +14m.43s.
Strasbourg epP = +8m.29s., i = +14m.38s., eSS = +17m.57s.
Almeria SS = +18m.45s., iSSS = +19m.43s.
Copenhagen +8m.50s.
Paris e = +15m.10s., SS = +19m.12s., Q = +27·1m.
De Bilt eSS = +18m.36s.
Kew iPPZ = +10m.50s., eZ = +17m.13s., eNZ = +17m.47s., S_cSNZ = +18m.45s.
Coimbra ePN = +11m.46s., SN = +18m.42s., eN = +22m.22s.
Lisbon PE = +9m.20s., Z = +20m.31s.
Aberdeen iN = +16m.52s., iN = +22m.46s.
Medan SE = +17m.16s.
Scoresby Sund e = +14m.2s., i = +20m.32s., iS_cS = +20m.59s.
Bermuda ePS = +26m.22s., e = +37m.47s.
College e = +34m.13s. and +37m.52s.
San Juan e = +30m.55s. and +37m.14s.
Ottawa e = +17m.35s.
St. Louis iPZ = +19m.18s., eN = +22m.19s.
La Paz PPN = +23m.6s., iSN = +30m.54s., SZ = +31m.1s., Q = +51m.26s.
East Machias eSKS = +23m.54s.
Salt Lake City e = +33m.54s. and +38m.14s.
Huancayo e = +21m.15s. and +22m.22s., iPS = +30m.33s., e = +33m.23s. and +38m.35s., eSS = +37m.15s.
Tucson i = +19m.19s., +21m.14s., and +22m.25s., e = +23m.41s., ePS = +30m.49s., e = +41m.37s.
Long waves were also recorded at Johannesburg, Chicago, San Fernando, Butte, Bozeman, Harvard, Bergen, and Ukiah.

Jan. 11d. Readings also at 4h. (near Belgrade), 5h. (Riverview), 6h. (Ksara), 9h. (Christchurch), 16h. (Pasadena, Mount Wilson, Tinemaha, Riverside, La Paz, La Plata, Tucson, and Huancayo), 21h. (Balboa Heights), 23h. (near Amboina).

Jan. 12d. 0h. 18m. 37s. Epicentre 1°·7N. 122°·0E. (as on 1941 Jan. 5d.).

A = −·5327, B = +·8458, C = +·0295 ; δ = +2 ; h = +7.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Amboina		8·0	132	2 2	+ 2	3 44	+11	—	—	—
Batavia		17·2	243	4 3	0	7 41	SS	—	—	—
Taito		20·9	357	4 51	+ 5	8 39	+ 4	—	—	—
Karenko		22·1	0	4 57	− 2	7 10	?	—	—	—
Miyakozima		23·1	9	5 19	+11	9 19	+ 3	—	—	—
Medan		24·0	277	i 5 2	−15	9 2	−30	—	—	—
Perth		34·0	189	12 38	S	(12 38)	+25	i 14 30	SS	i 16·3
Calcutta	N.	38·9	306	e 7 50	+21	i 13 43	+15	e 16 11	SSS	—
Riverview		44·6	145	e 8 15	− 1	i 14 53	+ 1	e 18 37	SSS	e 26·4
Kodaikanal	E.	45·2	284	e 8 23	+ 3	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hyderabad		45·7	294	e 8 27	+ 3	15 11	+ 3	18 19	SS	—
Agra		49·3	307	8 49	− 4	15 49	−10	9 3	pP	—
Bombay	E.	51·3	294	e 9 8	0	i 16 27	+ 1	e 11 57	PPP	—
Irkutsk		52·6	347	e 9 14	− 4	16 42	− 2	—	—	—
Almata		57·7	324	e 9 55	0	—	—	—	—	—
Andijan		59·4	318	e 10 7	+ 1	18 18	+ 3	—	—	—
Tashkent		61·7	318	e 10 22	0	e 18 44	0	—	—	—
Tchimkent		61·9	319	10 24	0	—	—	—	—	—
Samarkand		62·7	315	10 28	− 1	—	—	—	—	—
Sverdlovsk		73·4	332	11 33	− 3	20 59	− 6	—	—	—
Baku		75·4	313	e 11 52	+ 5	21 31	+ 4	—	—	—
Moscow		85·6	327	e 12 38	− 3	e 23 7	[+ 2]	16 18	PP	—
Pulkovo		89·5	331	e 13 2	+ 2	e 24 0	+10	—	—	—
Helwan		89·9	300	—	—	e 23 59	+ 5	e 25 17	PPS	—
Upsala	N.	95·8	331	e 20 23?	PPP	—	—	—	—	—
Tucson		119·6	50	e 18 52	[0]	—	—	e 20 18	PP	—
Huancayo		159·8	121	e 20 4	[+ 4]	e 26 49	[−15]	e 38 4	PPS	e 87·1
La Paz		162·1	146	i 20 7	[+ 4]	45 55	SSP	24 37	PP	83·4

Additional readings :—
Batavia iSN = +7m.25s.
Perth i = +15m.35s.
Agra PP = +10m.47s., sS = +16m.21s., S_cS = +18m.34s., sSS?E = +19m.39s.
Bombay eE = +12m.37s., eSN = +16m.31s., iE = +20m.28s.
Tucson e = +19m.8s.
Huancayo e = +31m.17s., +44m.58s., and +48m.57s., i = +52m.56s.
Long waves were also recorded at La Plata, De Bilt, Warsaw, Scoresby Sund, Potsdam, Uccle, and Kew.

Jan. 12d. 1h. 56m. 17s. Epicentre 1°·7N. 122°·0E. (as at 0h.).

A = −·5327, B = +·8458, C = +·0295; δ = +2; h = +7.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		8·0	132	e 2 5	+ 5	3 54	S*	—	—	—
Batavia		17·2	243	4 2	− 1	i 7 25	+11	—	—	—
Medan		24·0	277	5 13	− 4	9 33	+ 1	—	—	—
Calcutta	N.	38·9	306	e 7 45	+16	i 13 44	+16	—	—	—
Colombo	E.	42·5	278	8 2	+ 3	14 22	0	—	—	—
Kodaikanal	E.	45·2	284	e 8 18	− 2	e 14 58	− 3	—	—	—
Agra	E.	49·3	307	e 8 50	− 3	15 56	− 3	e 10 51	PP	—
Bombay	E.	51·3	294	e 9 8	0	e 16 26	0	e 20 1	SS	—
	N.	51·3	294	e 9 15	+ 7	e 16 29	+ 3	—	—	—
Andijan		59·4	318	10 8	+ 2	18 17	+ 2	—	—	—
Tashkent		61·7	318	e 10 22	0	e 18 42	− 2	—	—	—
Tchimkent		61·9	319	e 10 27	+ 3	—	—	—	—	—
Sverdlovsk		73·4	332	11 33	− 3	20 57	− 8	—	—	—
Tucson		119·6	50	e 18 52	[0]	i 30 4	PS	i 19 46	PP	e 36·5
Huancayo		159·8	121	—	—	e 50 47	SSS	—	—	e 51·9

Additional readings :—
Medan SN = +9m.41s.
Agra SS?E = +19m.42s.
Tucson i = +19m.3s., +21m.15s., +22m.18s., and +29m.15s.
Huancayo e = +51m.9s.

Jan. 12d. Readings also at 1h. (near Mizusawa), 4h. (Tucson), 9h. (Pasadena and near Amboina), 10h. (Tashkent, Bombay, Kodaikanal, Calcutta, Potsdam, and Agra), 12h. (Tucson), 13h. (Pasadena, Mount Wilson, Riverside, and Tinemaha), 14h. (Toledo and near Mizusawa), 15h. (Bucharest, Calcutta, and Agra), 20h. (near Brannner), 22h. (Port au Prince).

Jan. 13d. 16h. 27m. 36s. Epicentre 4°·5S. 152°·7E.

Strong throughout the whole Gazelle Peninsula, east of New Britain. Epicentre 21 miles S.S.W. of Rabaul (Wunga), intensity IX. Macroseismic zone comprises half of New Britain and the whole of New Ireland. Epicentre 4°·4S. 152°·1E.

N. H. Fisher.
The Gazelle Peninsula, New Britain. Earthquake of Jan. 14, 1941.
Bulletin of the Seismological Society of America, Vol. 34, No. 1, Jan. 1944, Berkeley, pp. 1-12, 5 Fig., 1 isoseismic chart.

$A = -\cdot8859$, $B = +\cdot4573$, $C = -\cdot0779$; $\delta = +1$; $h = +7$;
$D = +\cdot459$, $E = +\cdot889$; $G = +\cdot069$, $H = -\cdot036$, $K = -\cdot997$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	22·9	178	i 5 0	− 6	i 9 24	+11	—	—	—
Amboina		24·5	271	i 5 4	− 8	i 9 27	−13	—	—	—
Riverview		29·2	183	e 6 8	+ 3	i 11 13	+15	i 7 12	PPP	12·3
Sydney		29·2	183	e 6 3	− 2	i 11 9	+11	i 7 33	PPP	e 14·0
Titizima		33·0	343	6 41	+ 2	—	—	—	—	—
Adelaide		33·0	202	i 6 41	+ 2	i 11 52	− 5	7 43	PP	17·8
Apia		36·2	107	e 7 19	+13	e 13 22	+35	8 37	PP	18·4
Manila		36·7	302	i 7 7	− 3	12 54	0	—	—	—
Arapuni		39·4	152	7 42	+ 9	13 54	+19	17 0	Q	18·4
Miyakozima		39·5	320	7 35	+ 1	13 20	−17	—	—	—
New Plymouth		39·5	153	7 59?	+25	—	—	—	—	—
Tuai		40·7	150	7 57	+13	e 15 9?	?	—	—	—
Miyazaki		41·5	333	e 7 50	0	e 13 44	−23	—	—	17·2
Wellington		41·6	155	8 4	+13	14 27	+19	i 10 9	PPP	18·4
Yokohama		41·6	344	e 7 47	− 4	e 12 32	?	—	—	e 17·9
Tokyo Cen. Met. Ob.		41·8	345	7 54	+ 1	16 41	?	i 10 6	PPP	—
Nagoya		42·1	342	7 58	+ 3	13 58	−18	—	—	—
Taihoku		42·2	316	e 7 58	+ 2	e 14 12	− 5	—	—	—
Kobe		42·3	339	7 55	− 2	14 13	− 6	—	—	—
Matuyama		42·5	336	7 56	− 3	14 10	−12	—	—	—
Christchurch		42·7	159	8 18a	+18	14 33	+ 9	—	—	—
Hukuoka		43·4	333	8 6	0	14 28	− 7	—	—	—
Sendai		43·9	348	8 9	− 1	14 40	− 2	—	—	—
Mizusawa		44·7	348	e 8 18	+ 2	14 43	−11	—	—	18·3
Batavia		45·7	296	8 15	− 9	14 56	−12	—	—	22·4
Zi-ka-wei		46·4	323	e 8 24	− 6	15 0	−18	18 42	SS	i 23·9
Mori		47·7	349	8 37	− 3	15 48	+12	—	—	19·6
Nemuro		48·0	354	8 48	+ 5	15 38	− 3	—	—	—
Zinsen		48·3	332	8 44	− 1	15 39	− 6	—	—	—
Sapporo		48·4	350	8 42	− 4	15 42	− 4	—	—	—
Vladivostok		51·0	341	i 9 3	− 3	i 16 22	0	—	—	—
Medan		54·6	278	9 28	− 4	17 4	− 7	—	—	—
Honolulu		54·8	60	i 10 15	+41	i 17 35	+21	e 22 15	SS	i 23·3
Calcutta	N.	68·3	296	e 11 13	+ 8	i 20 1	− 5	e 12 13	pP	i 31·1
Irkutsk		69·8	331	11 13	− 1	20 17	− 6	—	—	—
Colombo	E.	73·6	278	11 38	+ 1	21 30	+23	—	—	46·2
Kodaikanal	E.	76·3	281	e 11 52	0	i 21 39	+ 2	26 33	SS	i 36·8
Hyderabad		76·4	289	11 49	− 4	21 39	+ 1	26 38	SS	36·8
Agra		78·5	298	e 11 59	− 5	21 50	−11	26 22	SS	35·3
Dehra Dun	N.	79·1	302	e 12 17	+ 9	e 22 26	+19	—	—	e 33·3
College		81·6	22	e 12 26	+ 5	e 22 38	+ 5	i 27 55	SS	33·9
Bombay		81·9	289	e 12 20	− 3	i 22 36	0	27 54	SS	34·4
Semipalatinsk		82·4	322	12 25	0	—	—	—	—	—
Almata		82·8	315	12 31	+ 4	22 46	+ 1	—	—	—
Sitka		84·1	32	e 12 43	+ 9	i 22 53	− 5	28 45	SS	i 34·6
Frunse		84·4	313	e 12 38	+ 2	e 22 58	− 3	—	—	—
Andijan		85·6	311	e 12 46	+ 5	23 22	+ 9	—	—	—
Ferndale	N.	87·6	49	—	—	e 23 32	0	—	—	e 37·3
Tchimkent		87·9	312	e 12 52	− 1	26 35	?	—	—	—
Tashkent		88·0	311	e 12 51	− 2	e 23 29	− 7	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ukiah		88·2	51	e 13 31	+37	i 24 5	+27	e 29 41	SS	e 35·9
San Francisco		88·7	52	e 23 19	?	e 23 54	+11	29 31	SS	e 38·3
Berkeley		88·8	52	e 13 0	+ 3	e 23 9	[−16]	—	—	e 37·4
Branner		88·8	52	—	—	e 23 55	+11	—	—	40·4
Santa Clara		89·0	52	i 13 33	+35	i 23 37	− 8	i 26 50	?	e 40·6
Samarkand		89·5	309	e 12 59	− 1	i 24 30	+40	—	—	—
Victoria		89·8	41	13 34	+32	23 59	[+27]	24 29	SKKS	e 42·4
Seattle		89·9	42	e 12 43	−19	e 22 41	−73	i 24 25	PS	e 35·0
Santa Barbara		90·5	56	e 13 15	+10	e 24 22	+23	—	—	—
Pasadena		91·8	56	e 13 10	− 1	i 24 13	+ 2	e 23 34	SKS	e 37·6
Tinemaha		91·8	53	e 13 11	0	i 24 14	+ 3	i 17 29	PP	—
Mount Wilson		91·9	56	e 13 9	− 2	i 24 14	+ 3	i 17 14	PP	—
Haiwee		92·1	54	e 13 14	+ 2	e 24 11	− 2	—	—	—
Riverside		92·4	56	e 13 12	− 2	i 24 17	+ 1	—	—	—
Spokane		93·3	42	e 13 48	+30	e 24 34	+10	—	—	e 45·4
Butte		96·5	43	e 24 31	?	i 25 1	+10	e 31 3	SS	i 40·3
Salt Lake City		97·0	49	e 14 11	PP	i 24 53	− 2	e 31 35	SS	i 41·7
Logan		97·1	48	e 14 8	+33	e 25 4	+ 8	e 32 24	SS	e 40·6
Bozeman		97·6	44	e 14 8	+30	i 25 33	+33	i 24 55	SKS	i 40·2
Tucson		97·8	58	e 13 51	+13	i 25 1	− 1	17 57	PP	i 40·0
Saskatoon		100·1	38	—	—	e 25 16	− 5	—	—	42·4
Denver		102·3	51	—	—	e 24 30	[− 8]	26 2	S	e 48·9
Tananarive		102·8	249	—	—	24 37	[− 3]	32 49	SS	e 48·2
Moscow		107·7	327	e 14 19	P	25 33	SKKS	18 50	PP	—
Lincoln		108·5	47	e 20 6	?	25 45	{− 9}	28 46	PS	e 41·3
Tacubaya		108·6	71	e 18 58	PP	—	—	—	—	—
Pulkovo		109·7	333	e 14 36	P	e 25 21	[+10]	19 8	PP	—
Florissant		113·7	49	e 16 37	?	e 29 22	PS	e 19 37	PP	—
St. Louis		113·8	49	e 18 59	[+18]	e 25 19	[− 8]	e 26 59	SKKS	—
Scoresby Sund		114·0	356	i 19 29	?	i 25 26	[− 2]	i 29 6	PS	e 49·6
Cape Girardeau		114·7	52	—	—	e 27 29	?	e 28 54	PS	—
Ksara		114·7	304	e 19 49	PP	e 29 30	PS	30 31	PPS	—
Chicago U.S.C.G.S.		114·8	45	e 19 49	PP	e 35 36	SS	i 29 56	PS	e 47·7
Upsala		115·1	337	i 19 43	PP	25 22	[−10]	29 10	PS	e 48·4
Istanbul		117·9	314	19 38	[+50]	—	—	29 34	PS	e 62·4
Warsaw		118·0	328	e 18 55k	[+ 6]	e 27 1	{+ 1}	e 31 27	PPS	e 53·4
Bucharest		118·7	319	e 20 23	PP	29 58	SKS	22 33	PPP	67·7
Bergen		119·0	342	e 17 50	[−61]	e 36 14	SS	—	—	48·9
Helwan		119·3	301	44 24	?	—	—	—	—	56·4
Copenhagen		119·9	335	e 15 48	P	25 54	[+ 4]	20 24	PP	—
Toronto		119·9	40	e 21 29	?	e 36 54	SS	—	—	e 50·4
Buffalo		120·5	41	i 18 28	[−26]	e 25 31	[−21]	e 20 25	PP	—
Pittsburg		120·8	44	e 19 25	[+31]	—	—	—	—	—
Ivigtut		121·3	11	19 24	[+29]	36 54	SS	30 27	PS	—
Sofia		121·3	318	e 19 6	[+11]	e 27 24	{+ 2}	e 30 18	PS	54·1
Ottawa		121·4	37	19 5	[+10]	e 26 35	[+41]	20 36	PP	e 52·9
Kecskemet	z.	121·5	323	e 19 17	[+21]	—	—	i 20 34	PP	e 65·4
Budapest		121·6	324	e 19 7	[+11]	e 27 37	{+13}	i 20 42	PP	55·4
Potsdam		121·8	332	i 19 28a	[+32]	30 28	PS	i 20 26	PP	58·4
Hamburg		122·4	335	e 19 5	[+ 8]	e 37 30	SSP	i 20 36	PP	e 53·4
Shawinigan Falls		122·6	34	e 19 24	[+26]	e 37 42	SSP	—	—	52·4
Heligoland	E.	122·8	336	e 20 41	PP	e 37 48	SSP	—	—	e 56·4
Vermont		123·4	37	e 21 5	PP	e 25 53	[− 8]	e 32 10	PPS	i 61·4
Seven Falls		123·4	33	e 19 36	[+37]	28 36	{+59}	—	—	48·4
Jena		123·5	330	e 19 9	[+ 9]	e 37 9	SS	e 30 41	PS	e 51·4
Aberdeen		123·8	343	i 20 47	PP	i 37 42	SSP	e 41 31	SSS	e 58·6
Philadelphia		124·3	43	e 21 36	?	e 26 9	[+ 5]	—	—	e 51·7
Fordham		124·8	41	i 19 32	[+30]	i 26 26	[+21]	i 21 54	?	—
Edinburgh		125·2	343	e 22 28	?	e 30 48	PS	—	—	—
De Bilt		125·5	336	e 19 14	[+11]	e 37 44	SS	i 20 44	PP	e 59·4

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
	°	°	m. s.	s.	m. s.	s.	m. s.			m.
Stuttgart	126·1	330	e 19 9	[+ 5]	e 37 44	SS	e 42 9	SSS		59·9
East Machias	126·7	35	e 21 46	PP	e 26 0	[−11]	e 27 27	SKKS	i	49·9
Uccle	126·8	335	e 19 13	[+ 7]	i 26 36	[+25]	i 28 10	SKKS		57·4
Stonyhurst	126·8	341	i 21 15	PP	i 31 18	PS	—	—		56·4
Strasbourg	126·9	331	e 19 31	[+25]	i 38 11	SS	e 21 5	PP		59·4
Chur	127·2	329	e 19 10	[+ 3]	—	—	e 21 11	PP		—
Zurich	127·3	330	e 19 14	[+ 7]	—	—	e 20 28	PP?		—
Basle	127·7	330	e 19 27	[+19]	—	—	e 21 14	PP		—
Balboa Heights	128·0	81	e 19 34	[+26]	38 44	SSP	e 22 28	PKS	e	58·4
Kew	128·1	338	i 19 14	[+ 6]	e 26 24?	[+ 9]	21 12	PP	e	60·4
Oxford	128·2	339	i 21 37	PP	e 26 39	[+24]	e 22 55	PKS	e	53·4
Neuchatel	128·4	330	e 20 17	[+68]	—	—	—	—		—
Rome	128·6	321	e 19 14	[+ 5]	i 43 17	SSS	e 32 12	PPS	e	59·0
Halifax	128·9	32	e 23 42	PPP	—	—	—	—		53·4
Paris	129·1	334	21 23	PP	—	—	23 2	PKS		59·4
Huancayo	129·5	109	e 19 30	[+19]	i 26 17	[− 2]	i 39 35	SSP	i	54·4
Clermont-Ferrand	131·2	331	e 19 17	[+ 3]	—	—	e 21 23	PP		—
La Plata	131·4	146	35 18	?	44 24	SSS	—	—		66·8
La Paz	134·6	118	19 20	[− 1]	i 26 8	[−22]	i 22 40	PP		61·6
Bermuda	135·3	47	19 8	[−14]	i 26 18	[−13]	—	—	e	60·6
Algiers	137·5	322	e 19 34	[+ 8]	40 4	SS	i 22 16	PP	e	60·4
Toledo	139·0	332	i 19 38	[+ 9]	26 30	[− 8]	20 3	PKP_2		—
San Juan	139·6	66	e 19 39	[+ 9]	i 29 51	{+32}	25 36	PPP	i	59·9
Almeria	140·6	328	19 50	[+19]	27 6	[+26]	25 16	PPP		57·4
Coimbra	140·6	335	e 21 40	?	46 52	SSS	34 44	PPS		61·7
Granada	140·9	329	i 19 32k	[0]	26 24	[−16]	29 49	SKKS		63·2
Lisbon	142·1	336	23 2	PKS	27 5	[+23]	26 4	PPP		—
San Fernando	142·7	331	e 20 48?	?	i 30 9	{+32}	i 46 9	SSS	e	64·4
Averroes	145·9	330	e 19 29	[−12]	—	—	—	—	e	68·4
Rio de Janeiro	148·6	151	e 20 21	[+36]	i 29 0	{−71}	—	—	e	42·5

Additional readings :—
Brisbane ePE = +5m.6s.
Riverview ePE = +6m.12s., i = +6m.22s., iN = +6m.37s., i = +7m.18s., iE = +7m.28s., iZ = +7m.35s., iE = +9m.28s., eN = +10m.9s., iE = +10m.31s. and +11m.20s.
Adelaide i = +7m.4s., +7m.57s., and +8m.11s., P_cP = +9m.30s., i = +9m.44s., +12m.13s., and +16m.34s.
Apia i = +10m.32s., SS? = +15m.41s., SSS? = +16m.34s., S_cS = +17m.19s.
Miyazaki i = +7m.53s., i = +14m.8s.
Wellington pPZ = +8m.14s., sPZ = +8m.22s., iZ = +8m.54s., sS = +14m.47s., i = +15m.27s. and +16m.7s., Q = +17m.32s.
Tokyo Cent. Met. Obs. i = +13m.38s.
Batavia SE = +14m.37s.
Zi-ka-wei iN = +8m.30s., iE = +15m.14s., iN = +16m.0s., SSSN = +20m.4s., SSSS = +20m.38s.
Medan iN = +12m.19s. and +16m.20s.
Honolulu iP_cPZ = +11m.1s., i = +11m.47s., iPP = +12m.9s., ipPP = +12m.40s., i = +13m.31s. and +16m.51s., iS = +17m.49s., i = +19m.49s.
Calcutta esSN = +21m.55s.
Kodaikanal iPSE = +22m.15s.
Hyderabad PPE = +14m.50s., PSE = +22m.3s.
Agra iE = +12m.5s., eN = +12m.9s., pP?E = +12m.28s., iE = +13m.27s., PPE = +15m.4s., PPPE = +15m.54s., iE = +17m.9s., +18m.4s., and +21m.13s., iN = +22m.2s., PSE = +22m.23s.
Dehra Dun e?N = +16m.26s.
College e = +13m.51s., ePP = +15m.41s., e = +17m.37s. and +22m.11s., iS = +22m.45s., e = +24m.40s., i = +27m.50s. and +31m.26s.
Bombay iP_cPE = +12m.26s., isPN = +12m.55s., iN = +13m.36s., iEN = +13m.56s., iN = +14m.39s., iE = +14m.53s., iE = +23m.3s., iPSN = +23m.11s., iE = +23m.48s.
Sitka ipP = +13m.3s., i = +13m.48s. and +15m.51s., ePP = +16m.33s., i = +17m.33s., +19m.51s., +23m.36s., +24m.22s., +24m.45s., +25m.55s., and +32m.10s.
Ukiah i = +14m.54s., +18m.53s., and +23m.56s., iPS = +24m.34s., isSS = +30m.21s. i = +33m.1s.
San Francisco eN = +23m.57s.
Berkeley iPE = +13m.5s., iPZ = +13m.11s., eN = +13m.26s., iZ = +13m.31s., iE = +18m.0s. and +20m.21s., eE = +23m.24s., iN = +23m.44s., eN = +23m.57s.
Branner eSE = +23m.59s.
Mount Wilson iZ = +13m.48s.
Samarkand iP = +13m.25s.

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Victoria SS = +29m.36s. ,e = +37m.7s.
Seattle eP = +13m.17s., e = +18m.4s. and +21m.2s., csS = +23m.12s., i = +24m.49s., e = +29m.39s. and +32m.9s.
Santa Barbara iZ = +13m.37s.
Pasadena i = +13m.23s., iZ = +13m.43s., iPPZ = +17m.11s., iE = +26m.20s., eSSEZ = +28m.54s.
Tinemaha iZ = +13m.35s. and +13m.44s.
Riverside iZ = +13m.46s.
Spokane eE = +20m.17s. and +22m.51s., isSE = +24m.56s. and +25m.8s., eSSN = +39m.50s.
Butte e = +28m.3s. and +28m.45s.
Salt Lake City iPP = +19m.3s., e = +20m.34s., iS = +25m.14s., e = +27m.0s., i = +30m.15s., e = +32m.55s. and +35m.5s.
Logan ePP = +17m.46s., iSKS = +24m.37s., e = +30m.4s.
Bozeman i = +14m.15s., ePKP = +17m.58s., e = +18m.58s. and +23m.6s., iSP = +27m.8s., iSS = +33m.26s., e = +35m.34s.
Tucson iP = +13m.54s., i = +14m.12s., and +14m.28s., ipPP = +18m.17s., i = +18m.29s., +20m.40s., and +25m.31s., iSP = +26m.34s., iSS = +31m.53s., i = +32m.42s. and +35m.54s.
Denver eE = +24m.34s., iE = +24m.52s.
Tananarive SE = +25m.43s., PS = +26m.58s.
Moscow S = +26m.15s., SS = +33m.42s.
Lincoln iS = +26m.56s., i = +30m.8s. and +30m.51s., e = +33m.19s. and +36m.33s.
Pulkovo PKP = +18m.44s., S = +26m.34s.
Florissant eE = +19m.41s., iE = +19m.52s., eN = +19m.55s., iZ = +20m.22s., eSN = +27m.18s., iZ = +29m.31s.
St. Louis iPPZ = +20m.3s., iPS?Z = +28m.32s., iPPSEN = +29m.49s.
Scoresby Sund iPP = +19m.41s., e = +24m.39s., iS = +27m.32s., i = +29m.15s., iSS = +36m.1s., i = +36m.15s.
Chicago e = +20m.47s., eS = +27m.31s., i = +35m.54s. and +40m.24s.
Upsala iPPN = +19m.46s., ePSN = +29m.24s.?, eSSE = +35m.24s.?, eSSN = +35m.47s.
Istanbul PP = +25m.1s.
Warsaw eZ = +20m.10s., eE = +20m.19s., eZ = +21m.3s., iE = +30m.9s., eE = +31m.22s., eZ = +34m.25s., eN = +36m.31s., eE = +36m.51s., iN = +37m.17s., eZ = +38m.39s., eE = +40m.13s.
Bucharest ePN = +19m.55s., eE = +20m.39s. and +21m.9s., N = +21m.18s., PPE = +24m.57s., eE = +25m.44s. and +27m.18s, PPPE = +28m.13s., SKKSE = +32m.12s., SKSPE = +35m.12s.
Copenhagen e = +19m.20s., +20m.12s., +26m.57s., +30m.15s., +36m.24s., and +40m.54s.
Toronto e = +28m.24s. and +39m.42s.
Buffalo e = +21m.30s., i = +30m.12s. and +38m.16s.
Ivigtut +20m.28s.
Sofia eN = +23m.6s.
Ottawa iZ = +19m.26s., S = +28m.36s., SS = +37m.12s.
Budapest ePN = +19m.12s., iE =eN = +20m.31s., eE = +21m.1s., +30m.26s., and +36m.54s., eN = +37m.2s.
Potsdam iZ = +20m.30s., iE = +20m.33s., iPPP = +23m.11s., iPPS = +31m.51s., iN = +33m.34s., iEZ = +33m.41s., iSSN = +37m.17s., iSSPZ = +37m.39s., iSSSE = +41m.39s., iE = +44m.0s.
Hamburg ePSZ = +30m.28s., ePPSZ = +31m.52s., eSSSE = +42m.2s., eE = +43m.54s., eN = +50m.34s.
Heligoland eE = +32m.8s.
Vermont e = +25m.37s., eS = +28m.52s., eSS = +37m.43s., e = +41m.5s., +45m.45s., and +49m.35s.
Seven Falls SKP = +21m.54s., PS = +30m.42s., SS = +38m.12s.
Jena e = +19m.18s., eZ = +19m.21s., e = +20m.42s., eN = +31m.5s. and +31m.12s., e = +37m.18s., eE = +37m.24s.
Aberdeen iPPPEN = +26m.18s., iE = +30m.20s., iN = +30m.31s., iSN = +31m.10s., iN = +38m.57s., iE = +46m.37s., eQE = +51m.55s.
Philadelphia e = +23m.1s., +28m.27s., and +47m.32s.
Fordham iSKKS = +28m.27s.
De Bilt iP = +16m.16s., eEN = +22m.48s.
Stuttgart e = +19m.31s., iZ = +19m.38s., eEN = +20m.1s., iPPEN = +20m.59s., ePPPZ = +23m.43s., ePSNE = +30m.54s., eNE = +35m.4s., eQE = +58·4m.
East Machias e = +24m.7s., i = +25m.46s., eSP = +31m.11s., e = +36m.46s., iSS = +38m.11s., i = +40m.40s., e = +42m.35s.
Uccle iZ = +19m.37s., iPP = +21m.8s., iSKPZ = +22m.17s., iEN = +22m.52s., iZ = +22m.57s., iPPPZ = +23m.35s., iPPSN = +33m.0s., iSSEN = +38m.27s., iEN = +41m.12s.
Strasbourg e = +19m.52s., ePPP = +23m.47s., iPS = +30m.52s., i = +38m.31s., eSSS = +42m.58s.
Chur e = +19m.36s.
Kew iZ = +19m.42s., eZ = +21m.2s., e = +22m.55s., EN = +25m.24s., e = +28m.2s. and +29m.12s., eZ = +31m.24s.?, e = +33m.30s., eEN = +34m.52s., eE = +36m.24s.?, Z = +36m.57s., eEN = +38m.39s., e = +40m.54s.?, eQEN = +55·4m.
Oxford i = +38m.34s.

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Rome ePZ = +16m.0s., eZ = +18m.6s., ePKPZ = +19m.28s., iPPZ = +21m.7s., iPPEN = +21m.25s., eE = +22m.42s., ePSZ = +30m.58s., eE = +33m.18s., eSSE = +37m.52s.
Paris SS = +40m.24s.?, PSS = +41m.24s.?
Huancayo i = +20m.2s., epPP = +22m.7s., i = +22m.59s., +24m.35s., +26m.1s., +27m.59s., and +28m.54s., iPS = +32m.9s., i = +33m.41s., +36m.17s., and +38m.4s.
La Plata PPE = +38m.12s., E = +40m.0s., N = +40m.12s., PPP?N = +41m.30s., PPP?E = +41m.54s., N = +42m.42s., SKKSN = +44m.48s., SKSPE = +48m.0s., PSE = +49m.0s., SKKSE = +51m.54s.
La Paz iPKPZ = +19m.35s., iSKPZ = +23m.20s., iPPPZ = +25m.26s., iSKKS = +29m.44s., iSSN = +40m.56s., iSSS = +45m.48s., Q = +57·4m.
Bermuda i = +23m.28s. and +27m.16s., e = +30m.25s., i = +33m.18s. and +35m.12s., iSS = +39m.38s., i = +40m.21s., +42m.26s., +44m.8s., and +49m.7s.
Algiers e = +24m.0s., iPPP = +24m.54s., e = +27m.0.s, ePPS = +34m.18s., e = +43m.24s.?
Toledo ePPZ = +33m.27s.
San Juan e = +20m.28s., ePP = +23m.39s., i = +33m.1s. and +38m.9s.
Almeria PP = +22m.30s., SKP = +23m.27s., PPS = +34m.46s., SS = +40m.27s.
Coimbra i = +22m.56s. and +23m.16s., P = +24m.32s., PP = +26m.24s., SPPN = +28m.18s., SPSN = +33m.2s., E = +35m.52s., PSN = +36m.55s., PPSE = +41m.2s., PPSN = +41m.32s., SSN = +42m.32s., E = +43m.52s., N = +45m.34s. and +51m.34s., E = +54m.12s.
Granada pPKP = +19m.50s., PP = +22m.32s., pPP = +22m.54s., PPP = +25m.31s., sSKS = +27m.3s., SKKS = +28m.51s., PPS = +34m.53s., SS = +40m.24s.
Lisbon PKSE = +23m.19s., pPPN = +23m.24s., pPKSN = +23m.44s., E = +25m.27s., SKKPN = +31m.30s., PPSN = +35m.35s., SKS = +36m.58s. All phases wrongly identified.
San Fernando ePKPE = +22m.49s., iPPE = +24m.33s., ePPPN = +27m.33s., iSE = +32m.33s., ePPSN = +37m.13s., iSSEN = +42m.21s.
Averroes e = +22m.16s. and +29m.5s.
Rio de Janeiro iPE = +20m.24s.
Long waves were also recorded at Pennsylvania and Harvard.

Jan. 13d. Readings also at 0h. (Port au Prince), 2h. (Bucharest and near La Paz), 13h. (Samarkand, Tashkent, Tchimkent, Andijan, and Frunse), 19h. (Sofia).

Jan. 14d. 10h. 28m. 5s. Epicentre 55°·5N. 155°·0W. (as on 1938 Nov. 16d.).

A = −·5157, B = −·2405, C = +·8223 ; δ = −4 ; h = −7 ;
D = −·423, E = +·906 ; G = −·745, H = −·348, K = −·569.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		10·0	18	e 3 20	+53	e 4 45	+23	e 5 28	—	i 5·8
Sitka		11·0	74	e 2 49	+ 7	—	—	—	—	e 5·8
Victoria		20·6	96	e 4 1	−42	e 8 41	+12	—	—	8·9
Tinemaha	z.	30·9	111	e 6 22	+ 2	—	—	—	—	—
Mount Wilson	z.	33·2	113	e 6 41	+ 1	—	—	—	—	—
Riverside	z.	33·7	113	i 6 45	0	—	—	—	—	—
Tucson		38·5	108	i 7 26	0	e 13 24	+ 2	e 8 58	PP	—
Sverdlovsk		64·4	340	i 10 37	− 3	e 19 15	− 3	—	—	—
Tashkent		76·5	327	e 11 52	− 2	e 21 34	− 5	—	—	—

Tucson gives also e = +8m.29s. and +9m.31s., iS = +13m.40s., e = +14m.49s.
Long waves were recorded at Chicago.

Jan. 14d. Readings also at 5h. (La Paz), 7h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 8h. (near Mizusawa), 10h. (Batavia), 13h. (Ravensburg, Strasbourg, Stuttgart, and Port au Prince), 14h. (College), 16h. (Harvard and near Fresno), 20h. (Cape Girardeau), 23h. (Ksara and near La Paz).

Jan. 15d. 2h. Local Japanese shock. Tokyo Imp. Univ. suggests 36°·18N. 139°·08E.

Tokyo P = 49m.25s., S = 49m.33s.
Tukubasan P = 49m.27s., S = 49m.32s.
Mitaka P = 49m.27s., S = 49m.36s.
Titibu P = 49m.27s., S = 49m.36s.
Kamakura P = 49m.27s., S = 49m.40s.
Koyama P = 49m.27s., S = 49m.41s.
Kiyosumi P = 49m.27s., S = 49m.44s.
Komaba P = 49m.28s., S = 49m.36s.
Susaki P = 49m.42s., S = 49m.58s.
Mizusawa ePE = 50m.5s., S = 50m.44s.

Jan. 15d. Readings also at 1h. (La Paz), 3h. (Tacubaya, Huancayo (2), near La Paz (2), and near Batavia), 4h. (Harvard), 6h. (near La Paz), 12h. (Amboina (2)), 13h. (Bombay, Mount Wilson, Pasadena, Riverside, Tinemaha, and Haiwee), 18h. (Fresno), 22h. (near Balboa Heights).

Jan. 16d. Readings at 1h. (Bozeman), 5h. (Tucson), 7h. (Berkeley and near Lick), 11h. (Batavia), 12h. (Florissant and Zurich), 15h. (Chicago, Bozeman, Tucson, Lincoln, Salt Lake City, Pasadena, and Tinemaha), 18h. (near Spokane (2)), 20h. (Huancayo and La Paz), 22h. (near Lick (2) and Branner.)

Jan. 17d. 12h. 35m. 38s. Epicentre 18°·5N. 63°·0W.

A = +·4308, B = −·8456, C = +·3154 ; δ = +11 ; h = +5 ;
D = −·891, E = −·454 ; G = +·143, H = −·281, K = −·949.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		2·9	268	e 0 48	0	i 1 15	− 9	—	—	—
Port au Prince		8·9	274	—	—	e 3 47	− 8	4 5	SS	—
Bermuda		13·8	355	e 3 23	+ 4	e 5 50	− 4	e 3 33	PP	e 6·0
Balboa Heights		18·6	243	e 4 22	+ 1	—	—	—	—	—
Philadelphia		23·8	338	—	—	e 9 22	− 6	—	—	e 10·9
Fordham		24·1	342	i 5 25	+ 7	i 9 48	+14	—	—	—
Harvard		25·0	347	e 5 50	PP	e 10 5	+16	—	—	—
East Machias		26·4	354	—	—	e 11 19	SS	—	—	—
Ottawa		28·8	342	e 6 1	− 1	—	—	—	—	11·7
St. Louis		31·0	317	e 6 21	0	e 11 12	−14	i 7 12	PP	e 14·5
Chicago U.S.C.G.S.		31·4	323	e 7 0	PP	e 11 4	−28	—	—	e 12·0
Huancayo		32·7	204	e 6 37	+ 1	i 11 52	0	e 8 45	?	i 14·1
La Paz	N.	35·1	189	6 58	+ 1	i 15 0	SS	—	—	19·7
Tucson		45·0	299	e 8 17	− 2	e 14 58	0	i 9 56	PP	e 17·4
Bozeman		47·9	316	—	—	(e 18 30)	SSS	—	—	e 18·5
La Jolla		50·4	299	e 9 0	− 1	—	—	—	—	—
Riverside	Z.	50·6	300	i 9 1	− 1	—	—	—	—	—
Mount Wilson		51·2	300	i 9 6	− 1	—	—	—	—	—
Haiwee		51·2	303	e 9 7	0	—	—	—	—	—
Pasadena		51·3	300	e 9 6	− 2	—	—	—	—	—
Tinemaha		51·5	304	e 9 10	+ 1	—	—	—	—	—
Santa Barbara		52·6	300	e 9 17	− 1	—	—	—	—	—
Uccle		61·4	43	e 10 22	+ 2	—	—	—	—	e 29·4
Stuttgart	Z.	64·6	45	e 10 41	0	—	—	—	—	—
Copenhagen		66·7	37	e 10 57	+ 2	—	—	—	—	32·4

Additional readings :—
Fordham i = +5m.38s.
Tucson i = +8m.22s., +9m.7s., +9m.37s., and +12m.4s.
Riverside iZ = +9m.17s.
Haiwee iZ = +9m.24s.
Pasadena iNZ = +9m.24s.
Stuttgart iZ = +10m.57s.
Long waves were also recorded at Rome and College.

Jan. 17d. Readings also at 1h. (near Balboa Heights), 2h. (La Paz), 17h. (near Amboina).

Jan. 18d. Readings at 2h. (Stuttgart, near Basle, Neuchatel, and Zurich), 3h. (Besancon), 12h. (La Paz), 13h. (near Balboa Heights and near Taihoku), 16h. (Tucson), 18h. (Bozeman, Mount Wilson, Palomar, Pasadena, Riverside, and Tinemaha), 19h. (La Paz, Palomar, Pasadena, Mount Wilson, Riverside, Tinemaha, Batavia, Medan, and Jena), 20h. (Tucson, Mount Wilson, Palomar, Pasadena, Riverside, Tinemaha, and Honolulu), 23h. (near Harvard).

Jan. 19d. 3h. Undetermined shock. S. Atlantic in vicinity of South Georgia.

Rio de Janeiro eE =19m.20s., eN =19m.27s., eLE =24m.26s.
La Paz iPZ =21m.25s.a, ipPZ =22m.5s., isPZ =22m.21s., iPPN =23m.18s., iPPZ = 23m.22s., isPPZ =24m.24s., iSN =27m.56s., isSZ =28m.56s., iS_cS =30m.56s., LZ = 35m.30s.
Huancayo iP =22m.23s., iPP =24m.16s., i =25m.29s., iS =29m.45s., i =30m.19s., iL = 33m.40s.
Christchurch PZ =25m.41s., S =35m.46s., R =51m.44s.
Wellington P?Z =25m.42s.?, iZ =25m.51s. and 26m.6s., S =36m.0s., i =36m.16s., R = 52m.
San Juan e =26m.3s., ePP =28m.19s., eS =34m.36s., iL =43m.36s.
Bermuda eP =26m.17s., ePP =29m.38s., eS =36m.39s., i =36m.59s., e =40m.53s., eSS =42m.38s., eL =48m.49s.
Fordham eP =27m.3s., ePP =31m.0s., eSKS =37m.33s., SS =45m.29s.
Coimbra e =27m.4s., eE =28m.52s., e =37m.52s. and 40m., L =61m.30s.
Tucson eP =30m.19s., i =31m.17s., iPP =32m.10s., i =32m.15s., 32m.21s., and 34m.41s., e =37m.37s. and 41m.49s., eL =57m.27s.
Almeria e =30m.38s., L =63m.
Philadelphia e =30m.51s. and 36m.10s., eSKS =37m.30s., eSS =44m.40s., e =44m.55s., eL =53m.18s.
Palomar eZ =30m.53s. and 32m.27s.
Granada P =30m.54s., ePP =34m.48s., ePS =41m.39s.
Harvard eEZ =31m.0s., eLEZ =35m.
Toledo ePZ =31m.5s., SN =40m.24s.
Riverside eZ =31m.6s. and 31m.57s., e =32m.28s.
Pasadena eZ =31m.18s. and 32m.2s., e =32m.31s., ePKKPZ? =43m.2s., eLEZ = 66m.36s.
St. Louis eZ =31m.19s. and 31m.29s., eLE =54m.31s.
Florissant ePKP =PPEN =31m.26s., iZ =31m.29s., cE =31m.36s., eZ =31m.41s., eSKSN =37m.52s., eN =38m.22s., eE =45m.46s.
Ottawa e =31m.31s., eN =38m.0s., e =46m.0s., L =56m.
Buffalo i =31m.38s., iL =63m.30s.
Tinemaha eZ? =31m.41s., eZ =32m.34s. and 42m.57s.
Mount Wilson eZ =32m.3s., 32m.31s., and 43m.3s.
Colombo eE =33m.
Kodaikanal eE =33m.
Agra eE =35m.49s.
Perth eP =37m.10s., eL =39m.2s.
Riverview eN =37m.17s. and 60m.37s., eLN =66m.54s.
East Machias iSKS =37m.48s., eL =57m.38s.
Chicago e =37m.58s. and 46m.9s., eL =62m.32s.
Toronto eN =38m.0s., L =59m.
Helwan iE =39m.48s., LE =66m.
Salt Lake City iPS =42m.22s., e =43m.35s., eSS =48m.57s., eL =70m.22s.
Long waves were also recorded at Sydney, Tananarive, Bombay, Scoresby Sund, and other American and European stations.

Jan. 19d. Readings also at 1h. (near Mizusawa), 8h. (Harvard, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Santa Barbara, Tinemaha, Tucson (2), San Juan, Huancayo, Rio de Janeiro, and near La Paz), 11h. (Christchurch), 13h. (Brisbane, Riverview, Sydney, and Wellington), 14h. (Christchurch, Irkutsk, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Santa Barbara, Haiwee, and Tinemaha), 17h. (La Paz).

Jan. 20d. 3h. 36m. 59s. Epicentre 35°·2N. 33°·6E.

The epicentre was between Cyprus and the Syrian coast, probably near the S.E. coast of Cyprus. Damage on the Isle of Cyprus. Intensity IX at Paralimni, 13 miles from Famagouste. Shocks felt at Smyrna and at 700km. from the epicentre at Ksara, Beyrout, and in Palestine. Epicentre probably in the sea, 35°·5N. 34°·7E.

J. P. Rothé.
Chronique seismologique, Revue pour l'Etude des Calamités, tome VII, No. 21, Geneva 1944, p. 50.

A. Aziz.
Luminous phenomenon accompanying the Cyprus earthquake, January 20, 1941.
"Nature," London 1942, Vol. 149, p. 640.

$A = +\cdot6822$, $B = +\cdot4532$, $C = +\cdot5739$; $\delta = +15$; $h = 0$.
$D = +\cdot553$, $E = -\cdot833$; $G = +\cdot478$, $H = +\cdot318$, $K = -\cdot819$.

Pasadena suggests depth 100km.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		2·3	126	i 0 39	− 1	i 1 2	− 7	—	—	—
Helwan		5·6	200	i 1 28a	+ 1	2 34	+ 1	1 56	P_g	—
Yalta		9·2	3	2 25	+ 9	—	—	—	—	—
Sebastopol		9·4	0	2 24	+ 6	—	—	—	—	—
Simferopol		9·7	3	2 26	+ 4	e 4 18	+ 3	—	—	—
Erevan		9·9	57	e 2 32	+ 7	—	—	—	—	—
Bucharest		10·8	330	i 2 44	+ 5	i 4 42	0	i 5 25	S*	—
Sofia	E.	10·9	316	e 2 43	+ 3	e 5 45	+61	—	—	—
Piatigorsk		11·4	37	e 2 48	+ 1	—	—	—	—	—
Grozny		12·4	46	3 1	0	5 33	+12	—	—	—
Belgrade		13·9	318	e 3 21k	0	e 6 10	PP	e 3 31	PP	e 9·8
Kalossa		15·8	320	3 40	− 5	—	—	i 3 52	PP	—
Budapest	E.	16·4	323	i 3 58	+ 5	e 8 41	L	4 36	PPP	(e 8·7)
Ogyalla		17·0	322	4 4	+ 3	i 7 39	+29	i 4 59	PPP	10·0
Rome		17·8	298	i 4 16a	+ 5	i 7 14	−14	—	—	i 9·9
Warsaw		19·2	337	4 30a	+ 2	7 58	− 1	e 4 49	PP	e 11·0
Prague		20·4	324	i 4 36a	− 5	i 8 33	+ 8	—	—	e 12·5
Moscow		20·7	7	4 43	− 1	8 25	− 6	e 5 16	sP	—
Chur		21·5	311	e 4 52	0	e 8 50	+ 3	—	—	—
Zurich		22·3	311	e 4 59a	− 2	e 8 47	−15	—	—	—
Jena		22·4	323	i 5 0	− 2	i 9 8	+ 4	i 5 28	PP	e 11·0
Stuttgart		22·5	317	e 5 2	0	i 9 7	+ 2	—	—	e 13·2
Potsdam		22·6	327	i 5 3a	0	i 9 12	+ 5	i 5 32	pP	13·0
Basle		23·0	312	e 5 6	− 1	e 9 8	− 6	—	—	—
Neuchatel		23·2	310	e 5 9	0	—	—	—	—	—
Strasbourg		23·3	315	e 5 8	− 2	9 18	− 2	i 5 41	PPP	13·0
Algiers		24·7	283	i 5 28	+ 4	i 9 48	+ 4	i 5 44	pP	—
Hamburg		24·7	326	e 5 22	− 2	e 9 42	− 2	—	—	e 12·6
Pulkovo		24·7	357	i 5 24	0	e 9 39	− 5	e 6 0	sP	—
Copenhagen		25·1	332	e 5 27	− 1	i 9 50	− 1	—	—	—
Clermont-Ferrand		25·3	305	i 5 32a	+ 2	e 9 50	− 4	—	—	—
Heligoland	E.	26·1	325	e 5 32	− 5	e 9 31	−36	—	—	e 10·7
Uccle		26·2	316	i 5 39a	+ 1	i 10 14	+ 5	—	—	e 13·0
De Bilt		26·4	320	—	—	e 9 1?	?	—	—	e 14·0
Paris		26·6	311	e 5 41	− 1	—	—	—	—	12·0
Samarkand		26·8	71	5 42	− 2	—	—	—	—	—
Upsala		26·8	342	e 5 43	− 1	e 10 1	−18	6 18	PP	e 16·0
Sverdlovsk		28·3	32	i 5 55	− 2	i 10 32	−11	e 6 19	pP	—
Tashkent		28·5	67	e 5 56	− 3	e 10 36	−10	—	—	—
Tchimkent		28·8	66	6 8	+ 6	—	—	—	—	—
Almeria		29·1	285	i 6 7-	+ 3	10 53	− 3	7 4	PP	14·0
Kew		29·2	315	i 6 5	0	—	—	i 7 49	?	e10·0
Granada		30·0	286	i 6 29	+17	11 37	+27	6 53	pP	15·6
Toledo		30·1	290	i 6 13	0	i 11 33	+21	—	—	15·0
Andijan		30·9	69	6 22	+ 2	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Frunse		32·5	65	6 30	− 4	—	—	—	—	—
Coimbra		33·4	293	e 7 25	+43	14 21	SS	—	—	19·8
Averroes		33·8	280	e 6 38	− 8	e 12 1	− 9	e 7 13	sP	e 16·1
Semipalatinsk		36·8	51	e 7 17	+ 6	—	—	—	—	—
Bombay	N.	38·2	105	e 6 25	−58	—	—	—	—	—
Agra	E.	38·6	90	i 7 22k	− 4	i 13 17	− 6	8 56	PP	18·9
Hyderabad		43·5	102	7 59	− 8	14 28	− 8	9 56	PP	21·6
Scoresby Sund		45·9	338	i 8 27	+ 1	i 15 11	.0	e 10 15	PP	e 21·8
Kodaikanal	E.	47·0	111	e 8 33	− 2	17 40	?	i 20 23	S_cS	25·6
Calcutta	N.	49·0	90	e 8 52	+ 2	i 15 55	0	e 10 22	P_cP	i 23·7
Colombo	E.	50·9	113	9 7	+ 2	16 16	− 5	—	—	26·3
Irkutsk		51·8	48	e 9 7	− 5	16 19?	−14	—	—	—
Ivigtut		56·0	325	9 41	− 2	—	—	—	—	—
Medan		67·6	102	11 1	0	19 35	−22	—	—	—
East Machias		73·0	313	—	—	e 20 59	− 1	—	—	e 35·6
Seven Falls		73·7	317	11 36	− 2	21 8	0	—	—	35·0
Ottawa		77·5	318	i 11 59	0	e 21 43	− 7	—	—	35·0
Bermuda		78·3	301	e 11 58	− 5	e 21 53	− 6	e 23 10	sPS	e 37·1
Fordham		79·2	313	i 12 9	+ 1	i 22 9	+ 1	—	—	—
Batavia		80·0	105	11 37	−36	—	—	—	—	—
College		80·3	1	—	—	i 22 14	− 6	—	—	e 32·5
Philadelphia		80·5	313	—	—	e 22 22	0	—	—	e 40·3
Toronto		80·6	318	—	—	e 22 31	+ 8	—	—	39·0
Buffalo		80·8	317	i 12 18	+ 1	—	—	—	—	—
Chicago U.S.C.G.S.		86·3	321	—	—	e 23 2	−18	—	—	e 48·1
Sitka		87·1	354	—	—	e 23 28	0	e 29 46	SS	e 40·7
San Juan		87·2	290	e 13 0	+11	i 23 11	[− 4]	i 23 39	sS	e 35·7
Florissant		90·0	321	i 13 12	+ 9	e 23 42	[+ 9]	i 16 41	PP	—
St. Louis		90·0	321	e 13 0	− 3	e 23 25	[− 8]	—	—	e 66·9
Rio de Janeiro		92·8	245	—	—	e 24 1	−18	—	—	—
Bozeman		93·7	336	—	—	e 24 10	−17	—	—	e 41·1
Tucson		104·1	330	i 14 11	+ 4	e 24 41	[− 5]	i 18 30	PP	e 40·4
Mount Wilson	z.	106·0	336	i 18 38	PP	e 30 5	?	—	—	—
Riverside		106·0	336	e 18 0	PKP	i 29 39	PPS	e 18 39	PP	—
Pasadena		106·1	336	e 18 38	PP	e 30 4	?	—	—	e 49·2
Palomar	z.	106·4	335	e 18 38	PP	—	—	—	—	—
La Paz		108·8	293	18 50	PP	38 9	SSS	—	—	56·0
Huancayo		112·3	270	—	—	e 29 13	PPS	—	—	e 46·0

Additional readings :—
Helwan $P^*EZ = +1m.41s.$, $S^*Z = +2m.52s.$, $S_gZ = +3m.3s.$
Bucharest $iS_g = +5m.53s.$
Belgrade $e = +4m.51s.$ and $+7m.41s.$, $ePS = +7m.50s.$, $eSS = +8m.6s.$
Kalossa $PN = +3m.49s.$
Budapest $P_cP = +7m.13s.$
Ogyalla $iN = +5m.13s.$ and $+6m.38s.$, $iE = +8m.4s.$
Rome $iZ = +6m.13s.$, $iN = +6m.29s.$, $iSZ = +7m.39s.$, $i = +8m.41s.$
Warsaw $SZ = +8m.8s.$, $iN = +8m.24s.$
Jena $iSE = +9m.12s.$
Stuttgart $eN = +6m.35s.$, $eE = +6m.41s.$, $iSE = +9m.14s.$
Potsdam $iPNW = +5m.9s.$, $iPPPZ = +5m.56s.$, $iSZ = +9m.21s.$, $isSN = +9m.56s.$, $iSSZ = +10m.13s.$, $iSSSNW = +10m.32s.$, $iSSSZ = +10m.37s.$
Strasbourg $i = +5m.13s.$, $e = +6m.33s.$
Algiers $i = +5m.34s.$, $iPP = +5m.58s.$, $PPP = +6m.13s.$, $SS = +10m.31s.$
Copenhagen $= +10m.8s.$
Heligoland $eN = +5m.35s.$
Upsala $eSE = +10m.11s.$
Sverdlovsk $isP = +6m.33s.$
Almeria $P_cP = +9m.21s.$, $P_cS = +13m.3s.$
Granada $sP = +7m.7s.$, $sPP = +8m.21s.$, $sS = +12m.25s.$, $P_cS = +13m.8s.$
Coimbra $PN = +7m.29s.$, $EN = +15m.57s.$
Averroes $e = +6m.50s.$, $ePP = +7m.57s.$, $eP_cP = +9m.3s.$, $iS = +12m.9s.$, $eSS = +12m.36s.$ and $+14m.24s.$, $e = +14m.37s.$
Agra $iE = +7m.37s.$, $SSE = +16m.10s.$
Hyderabad $SSE = +17m.52s.$, $S_cSE = +18m.13s.$
Scoresby Sund $esS = +15m.48s.$, $iSS = +18m.20s.$, $i = +18m.28s.$
Kodaikanal $ePPE = +12m.23s.$, $iSSE = +20m.56s.$
Medan $SN = +19m.45s.$
East Machias $e = +21m.35s.$

Continued on next page.

Bermuda eSS = +26m.57s.
Buffalo i = +12m.41s. and +12m.57s.
Sitka e = +35m.56s.
Florissant iSE = +24m.0s.
Bozeman e = +36m.54s.
Mount Wilson eZ = +29m.48s.
Tucson e = +14m.29s., i = +14m.32s. and +14m.45s., e = +17m.51s., eS = +25m.47s.
Palomar eZ = +19m.36s.
La Paz iN = +28m.49s.
Long waves were also recorded at Stonyhurst, Butte, Ukiah, Aberdeen, Bergen, San Fernando, and Berkeley.

Jan. 20d. Readings also at 1h. (near Apia), 3h. (La Plata), 5h. (near Ferndale), 9h. (Christchurch, Wellington, Palomar, Riverside, Mount Wilson, Pasadena, Tinemaha, Riverview, and Brisbane), 11h. (Lick), 12h. (Riverview and Brisbane), 13h. (near San Francisco, Fresno, Branner, Berkeley, and Lick), 14h. (Tucson), 17h. (Palomar, Riverside, Mount Wilson, and Tinemaha), 18h. (San Juan and Huancayo), 20h. (La Paz, Helwan, Ksara, and Huancayo), 21h. (Baku, Palomar, Riverside, Tinemaha, and Pasadena).

Jan. 21d. 12h. 41m. 41s. Epicentre 27°·0N. 92°·0E. (as on 1940 Feb. 13d.).

A further improvement to the above epicentre would be 27°·2N. 92°·0E. Intensity VIII at Shillong, VII at Gauhati, VI at Silchar, Dibrugarh, V at Bogra Town.

See Government of India Seismological Bulletin for 1941, p. 24. Epicentre N. Assam. 27°·5N. 92°·5E. Bombay.

$A = -\cdot0311$, $B = +\cdot8917$, $C = +\cdot4516$; $\delta = +4$; $h = +3$;
$D = +\cdot999$, $E = +\cdot035$; $G = -\cdot016$, $H = +\cdot451$, $K = -\cdot892$.

Pasadena quotes depth 180km.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta		5·5	217	e 1 28k	+ 3	i 2 38	+ 8	i 3 2	S_g	—
Agra		12·5	275	3 0	− 2	i 5 10	−13	i 6 8	SSS	—
Dehra Dun	N.	12·7	288	e 3 29	PP	e 5 25	− 3	—	—	e 7·1
Hyderabad		15·7	236	3 46	+ 2	6 27	−12	—	—	7·5
Bombay		19·4	250	i 4 31k	+ 1	i 7 59	− 5	i 4 44	PP	—
Almata		20·3	328	4 36	− 4	8 36	+13	—	—	—
Andijan		21·2	315	e 4 46	− 3	i 8 48	+ 7	5 18	PP	—
Frunse		21·2	323	e 5 25	PPP	9 3	SS	—	—	—
Colombo	E.	23·1	213	5 14	+ 6	i 9 24	+ 8	—	—	—
Tashkent		23·5	313	i 5 9	− 3	9 27	+ 4	—	—	—
Tchimkent		23·8	316	e 5 13	− 2	—	—	—	—	—
Medan		24·1	165	5 22	+ 4	10 48	SS	—	—	e 16·3
Samarkand		24·3	307	—	—	9 45	+ 8	—	—	—
Semipalatinsk		25·0	342	5 25	− 2	9 51	+ 2	e 6 5	PP	—
Zi-ka-wei		26·0	74	e 5 37	+ 1	10 9	+ 3	—	—	i 14·5
Taihoku		26·6	88	e 10 23	S	(e 10 23)	+ 7	—	—	e 14·5
Karenko		26·8	90	5 50	+ 6	10 22	+ 3	—	—	—
Irkutsk		26·9	17	5 43?	− 2	10 4?	−16	—	—	—
Kumamoto		33·9	71	e 6 49	+ 2	—	—	—	—	—
Batavia		36·0	155	7 3	− 2	13 19	+35	—	—	—
Vladivostok		36·0	53	e 7 3	− 2	13 7	sS	8 7	sP	—
Baku		37·1	302	7 9	− 5	i 13 8	+ 7	—	—	—
Sverdlovsk		37·2	333	i 7 11	− 4	e 12 54	− 8	—	—	—
Sumoto		37·4	68	e 7 12	− 4	13 12	+ 7	—	—	—
Grozny		40·6	306	7 55	+12	14 6	+12	—	—	—
Erevan		41·2	301	8 0	+12	—	—	—	—	—
Mizusawa	E.	42·5	61	7 55	− 4	14 4	−18	—	—	—
	N.	42·5	61	e 7 59	0	e 13 50	−32	—	—	—
Platigorsk		42·6	307	8 1	+ 2	14 33	+10	—	—	—
Amboina		46·4	126	8 31	+ 1	15 16	− 2	—	—	—
Moscow		48·2	322	8 39	− 5	15 34	− 9	9 18	pP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		48·4	292	e 8 47	+ 1	e 16 50	+64	—	—	—
Yalta		49·0	306	9 11	+21	15 59	+ 4	—	—	—
Simferopol		49·1	307	8 55	+ 4	16 3	+ 7	—	—	—
Helwan		52·9	288	9 19	− 1	i 16 43	− 5	i 17 9	PPS	30·1
Pulkovo		52·9	326	9 16	− 4	16 40	− 8	9 55	pP	—
Bucharest		54·8	307	e 9 39	+ 5	17 17	+ 3	10 40	P_cP	36·3
Sofia		57·0	305	e 9 50	0	e 17 43	0	—	—	—
Warsaw		57·7	317	e 10 12a	+17	17 53	0	e 22 2	SS	e 33·3
Belgrade		58·8	308	—	—	e 18 0	− 7	e 22 11	SS	e 31·5
Kecskemet	z.	59·0	312	e 8 41	?	—	—	—	—	—
Upsala		59·3	326	10 4	− 2	e 18 11?	− 3	—	—	e 30·3
Budapest		59·4	311	e 10 3	− 3	e 18 11	− 4	—	—	e 32·8
Kalossa		59·6	310	e 10 6	− 2	—	—	—	—	—
Prague		62·0	315	e 4 25	?	e 12 37	PP	(e 25 26)	SSS	e 25·3
Copenhagen		62·4	322	e 10 24	− 3	18 50	− 3	22 59	SS	—
Potsdam		62·5	318	i 10 26a	− 2	i 18 54	0	i 11 43	sP	e 33·3
Tananarive		62·8	229	e 10 36	+ 6	19 0	+ 2	23 21	SS	32·8
Perth		62·9	158	10 29	− 1	19 27	+27	12 55	PP	32·0
Triest		63·3	310	i 10 33	0	i 18 57	− 7	i 13 7	PP	—
Jena		63·7	316	e 10 30	− 6	e 19 2	− 8	—	—	e 31·3
Hamburg		64·1	320	e 10 30	− 8	e 19 14	0	e 24 1	SS	e 32·3
Rome		65·1	306	i 10 45a	0	i 19 20	− 7	i 24 5	SS	e 34·3
Bergen		65·3	328	8 44	?	—	—	—	—	—
Stuttgart		65·6	314	e 10 44	− 4	i 19 36	+ 3	e 24 49	SS	e 35·0
Chur		65·9	313	e 10 45	− 5	e 19 30	− 7	—	—	—
Zurich		66·4	313	e 10 48	− 5	e 19 28	−15	—	—	—
Strasbourg		66·6	314	e 10 52	− 2	—	—	i 14 41	PPP	e 36·3
Basle		67·0	313	e 10 53	− 4	—	—	e 14 17	PP	—
De Bilt		67·3	319	i 11 1k	+ 2	i 19 55	+ 1	—	—	e 33·3
Neuchatel		67·5	313	e 10 56	− 4	—	—	—	—	—
Uccle		68·1	317	e 11 1	− 3	i 20 0	− 3	i 20 59	PS	e 36·3
Aberdeen		69·9	325	—	—	i 21 15	PPS	—	—	e 31·1
Paris		69·9	315	e 11 21	+ 6	e 20 18	− 6	13 42	PP	42·3
Clermont-Ferrand		70·5	312	—	—	e 26 20	SSS	—	—	—
Kew		70·7	319	i 11 17	− 3	e 20 32	− 2	15 45	PPP	e 34·3
Scoresby Sund		72·3	341	e 11 32	+ 3	i 21 28	sS	e 14 26	PP	e 31·2
Algiers		73·6	303	11 36	− 1	i 21 5	− 2	e 12 36	sP	e 48·3
Adelaide		75·7	143	—	—	i 21 32	+ 2	—	—	e 33·3
College		77·5	22	e 20 0	?	e 21 44	− 6	e 22 31	PS	e 30·7
Toledo		77·5	308	i 11 57	− 2	(i 15 25)	PP	(16 39)	PPP	16·6
Almeria		77·6	305	i 12 6	+ 6	—	—	—	—	—
Granada		78·3	306	i 12 11	+ 8	—	—	12 41	pP	—
Brisbane		79·8	128	—	—	i 22 13	− 1	—	—	—
Coimbra		80·4	311	e 11 29	−46	e 22 23	+ 3	—	—	35·1
Riverview		82·5	134	e 12 34	+ 8	e 22 43	+ 1	—	—	e 38·8
Ivigtut		86·4	341	12 42	− 3	—	—	—	—	—
Sitka		86·9	24	e 13 4	+16	i 23 10	[− 4]	e 29 23	SS	e 42·1
Victoria		98·4	24	—	—	e 24 26	[+ 7]	—	—	48·3
Seattle		99·5	23	e 22 49	?	e 24 49	{− 1}	e 27 12	PS	e 53·7
Christchurch		101·8	134	(14 15)	+19	(24 25)	[−10[	27 9	PS	56·4
Bozeman		104·7	17	—	—	e 24 51	[+ 2]	e 33 30	SSP	e 50·6
Ukiah		106·4	28	—	—	e 24 51	[− 6]	e 38 24	SSS	e 53·9
Ottawa		107·1	352	e 18 43	PP	—	—	—	—	53·3
Berkeley		107·9	29	—	—	e 24 50	[−13]	e 27 52	PS	e 59·7
Salt Lake City		109·0	20	e 19 3	PP	e 25 14	[+ 6]	—	—	e 42·7
Tinemaha		110·2	26	e 18 49	[+16]	—	—	e 29 41	PKKP	—
Haiwee		111·1	26	e 19 18	PP	—	—	—	—	—
Fordham		111·2	349	—	—	i 25 20	[+ 3]	e 28 44	PS	e 64·3
Chicago U.S.C.G.S.		111·6	1	—	—	e 26 19	{+ 3}	e 28 39	PS	e 49·3
Philadelphia		112·3	350	—	—	e 25 21	[0]	e 28 36	PS	e 54·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Pasadena		112·8	27	e 18 43	[+ 4]	—	—	i 29 20	PPS		54·6
Mount Wilson	z.	112·9	27	e 18 45	[+ 6]	—	—	i 19 28	PP		—
Riverside		113·2	27	e 18 40	[0]	—	—	e 19 19	PP		—
Palomar	z.	114·0	27	e 18 46	[+ 5]	—	—	i 19 36	PP		—
Florissant		114·5	3	—	—	e 25 17	[−13]	e 29 1	PS		—
St. Louis		114·7	3	e 18 39	[− 3]	e 25 26	[− 5]	e 29 28	PS		—
Bermuda		117·0	338	e 20 0	PP	e 27 0	{+ 6}	—	—	e	62·0
Tucson		117·2	22	e 18 47	[0]	i 25 58	[+18]	i 19 59	PP	e	47·6
San Juan		130·1	333	e 22 40	?	e 28 13	{− 8}	e 38 33	SS	i	71·8
Rio de Janeiro	E.	139·3	266	—	—	e 34 59	PPS	—	—		—
La Paz		158·8	296	i 20 7k	[+ 8]	31 7	{+ 1}	i 23 33	SKP		75·3
Huancayo		161·0	318	e 20 20	[+18]	e 31 20	{+ 2}	e 20 37	pPKP	e	71·0

Additional readings :—
Calcutta iPN = +1m.31s., iS_gN = +3m.16s.
Agra eE = +3m.6s., P_gEN = +4m.6s., S_gEN = +6m.44s.
Bombay iE = +5m.24s. and +6m.27s., iSN = +7m.56s., iSSE = +8m.17s., iSSN = +8m.21s.
Medan SE = +10m.54s.
Batavia PN = +7m.6s.
Helwan SE = +18m.31s., PSN = +19m.4s.
Bucharest PPE = +11m.32s., PPPE = +12m.44s., PSE = +18m.2s., S_cSE = +19m.19s.
Warsaw ePEN = +10m.16s., SZ = +17m.59s., eN = +23m.34s., eE = +23m.53s.
Belgrade e = +25m.52s.
Budapest eN = +10m.9s.
Copenhagen +20m.24s.
Potsdam iEZ = +10m.31s., iE = +10m.37s., iPPPE = +14m.33s., iPSE = +19m.38s.
Tananarive SSS = +26m.15s.
Perth PS = +20m.2s., SSS = +26m.44s.
Triest iSS = +23m.7s.
Jena ePN = +10m.33s., eSE = +19m.6s.
Hamburg eSSSN = +26m.31s.
Rome i = +14m.48s., i = +20m.4s., iE = +20m.54s., +21m.37s., and +22m.41s., i = +33m.46s.
Stuttgart iP = +10m.47s.
Strasbourg ePPP = +14m.53s.
Uccle iSSN = +24m.6s., iSSSE = +27m.14s.
Paris e = +16m.38s.
Kew eSSSNZ = +28m.34s., eQEN = +29·3m.
Scoresby Sund e = +11m.39s., i = +15m.58s., e = +17m.33s., and +26m.22s.
Toledo PP given as iS, PPP as L.
Almeria i = +12m.42s.
Granada PPP = +14m.2s.
Riverview eE = +22m.51s.
Seattle e = +25m.23s.
Christchurch SKSPNW = +18m.7s., SSS = +32m.45s., QEN = +47m.6s. P and S have been increased by 10m.
Sitka iS = +23m.41s., e = +23m.51s.
Bozeman ePS = +27m.36s., e = +33m.14s. and +37m.33s.
Ukiah e = +31m.6s.
Berkeley eE = +25m.6s., iN = +30m.6s., iE = +34m.13s. and +44m.37s.
Salt Lake City e = +19m.35s., +23m.18s., and +26m.53s.
Tinemaha eZ = +19m.8s.
Fordham e = +35m.4s.
Pasadena eZ = +19m.11s. and +19m.26s., iPKKPZ = +29m.34s.
Mount Wilson eZ = +19m.12s.
Riverside iZ = +19m.12s., ePKKPZ = +29m.31s.
Palomar ePKKPZ = +29m.28s.
Florissant eE = +25m.27s., eN = +26m.41s., eZ = +30m.27s.
St. Louis eZ = +19m.16s., eN = +26m.32s. and +29m.8s.
Tucson i = +20m.9s., e = +22m.15s., iSKS = +25m.7s., i = +26m.59s., e = +28m.16s., iSP = +28m.38s.
La Paz iPKPNZ = +20m.42s., iPPN = +25m.5s., SSN = +44m.19s., SSSN = +50m.5s.
Huancayo e = +25m.29s., ePS = +35m.50s., i = +37m.58s., eSS = +42m.40s., i = +44m.33s.
Long waves were also recorded at Lincoln, Stonyhurst, East Machias, Wellington, Butte, and La Plata.

Jan. 21d. Readings also at 2h. (Ottawa and near Harvard), 6h. (Wellington, Christchurch, Riverview, Brisbane, Sydney, Arapuni, and Adelaide), 9h. (San Juan), 12h. (Clermont-Ferrand), 14h. (Calcutta), 15h. (Bombay), 16h. (Ferndale).

Jan. 22d. Readings at 0h. (La Paz), 1h. (near Mizusawa and near La Paz), 5h. (near Taihoku), 6h. (Haiwee, Palomar, Riverside, Tinemaha, Sitka, and near College), 9h. (near Lick), 11h. (near Mizusawa), 12h. (Stuttgart), 15h. (Port au Prince), 17h. (Haiwee, Pasadena, Tinemaha, and Balboa Heights), 18h. (near Berkeley, Branner, and Lick), 19h. (Palomar and Tinemaha), 23h. (Riverview).

Jan. 23d. 5h. Undetermined shock.
Brisbane ePN =18m.48s., iSEN =22m.48s.
Riverview eP?N =20m.5s., eSN =24m.37s., eLN =29m.6s.
Adelaide eN =23m.50s.
Sydney e =24m.36s.
Pasadena iP =27m.13s.a, eLZ =57m.
Haiwee iP =27m.14s.
Tinemaha iP =27m.14s.a.
Mount Wilson iP =27m.15s.
Palomar iPZ =27m.19s.a.
Tucson iP =27m.41s., e =27m.48s., 28m.13s., and 34m.6s., eL =55m.25s.
Christchurch P? =39m.45s., S =34m.0s., Q =34m.30s., R =36m.34s.
Long waves were also recorded at Sitka and Bozeman.

Jan. 23d. Readings also at 0h. (near Harvard), 3h. (Riverview), 4h. (Tucson), 9h. (Adelaide), 11h. (Calcutta), 12h. (Bombay, Branner, Fresno, Lick, San Francisco, Berkeley, and near Ferndale), 15h. (Adelaide), 17h. (Bombay, Colombo, Kodaikanal, Rome, Huancayo, and La Paz), 18h. (Calcutta), 20h. (Berkeley), 22h. (Ksara).

Jan. 24d. 5h. 44m. 3s. Epicentre 3°·4S. 76°·3W. Depth of Focus 0·010.

A = +·2364, B = −·9699, C = −·0589 ; δ = +6 ; h = +7 ;
D = −·972, E = −·237 ; G = −·014, H = +·057, K = −·998.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		8·6	175	i 2 3	0	i 3 36	− 3	i 2 44	PPP	i 4·5
Balboa Heights		12·7	346	e 3 0	+ 2	—	—	—	—	—
La Paz		15·3	149	3 26	− 6	i 6 35	+16	i 3 33	pP	i 7·7
San Juan		23·9	25	—	—	i 9 13	+ 1	i 10 2	sS	—
La Plata		35·7	154	6 49	− 2	12 15	− 5	7 6	PP	13·0
Bermuda		37·1	17	e 7 5	+ 2	e 12 30	−11	e 7 35	pP	e 17·0
Rio de Janeiro	E.	37·4	124	e 8 27	PP	—	—	—	—	i 12·7
Cape Girardeau		42·3	345	e 7 47	+ 1	e 13 57	− 2	—	—	—
Philadelphia		43·2	2	e 7 50	− 3	e 14 13	+ 1	e 15 9	sS	—
St. Louis		43·8	345	i 7 59	+ 1	i 14 20	− 1	i 8 24	pP	—
Florissant		44·0	345	e 7 58	− 1	i 14 20	− 4	e 8 28	pP	—
Fordham		44·1	4	i 8 0	0	i 14 28	+ 3	i 9 42	PP	—
Chicago U.S.C.G.S.		46·1	348	e 8 14	− 2	e 14 48	− 6	—	—	e 18·5
Buffalo		46·2	358	e 8 14	− 3	—	—	e 9 6	pP	—
Tucson		48·3	321	i 8 33	0	i 15 29	+ 4	e 9 11	pP	e 19·6
Ottawa		48·6	1	8 36	0	15 31	+ 2	18 57	SS	—
Shawinigan Falls		49·8	5	8 45	0	15 51	+ 5	—	—	—
La Jolla		52·9	317	e 9 7	− 1	—	—	i 9 36	pP	—
Palomar	Z.	52·9	318	i 9 12k	+ 4	—	—	i 9 40	pP	—
Riverside		53·7	318	i 9 13k	− 1	e 16 42	+ 3	i 9 42	pP	—
Mount Wilson		54·3	318	i 9 19	+ 1	—	—	i 9 46	pP	—
Pasadena		54·3	318	i 9 18	0	i 16 42	− 5	i 9 46	pP	—
Salt Lake City		54·7	328	—	—	i 16 55	+ 3	—	—	—
Haiwee		55·3	320	e 9 26	0	—	—	i 9 54	pP	—
Tinemaha		56·1	320	i 9 30k	− 2	e 17 16	+ 5	i 9 59	pP	—
Bozeman		57·8	333	e 10 5	pP	i 17 30	− 3	—	—	e 21·5
Lick		58·1	319	e 9 50	+ 4	—	—	e 10 17	pP	—
Berkeley	N.	59·1	319	e 11 56	PP	—	—	e 12 24	PPP	—
Clermont-Ferrand		85·0	44	e 12 12	−14	—	—	—	—	—
Neuchatel		87·9	43	e 12 41	+ 1	—	—	—	—	—

Additional readings :—
San Juan i = +10m.43s.
La Plata PPPN = +7m.14s., S?E = +12m.3s., SN = +12m.18s.
Bermuda eS = +12m.45s., eSS = +15m.54s.
Philadelphia e = +8m.51s. and +17m.33s.

Continued on next page.

St. Louis iPPZ = +9m.44s., iZ = +10m.12s., iSSEN = +17m.46s.
Florissant iZ = +14m.23s., esSN = +15m.13s.
Buffalo i = +8m.21s., e = +9m.47s.
Tucson i = +8m.41s. and +9m.1s., iP_cP = +10m.0s., i = +11m.7s., +15m.35s., and +18m.42s.
Haiwee iZ = +10m.4s. and +10m.25s.
Tinemaha iZ = +10m.15s., iEZ = +10m.27s.
Long waves were also recorded at Butte.

Jan. 24d. 15h. 35m. 49s. Epicentre 0°·1S. 19°·9W.

A = +·9403, B = −·3404, C = −·0017; δ = +4; h = +7;
D = −·340, E = −·940; G = −·016, H = +·006, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rio de Janeiro	E.	32·1	225	e 6 31	0	i 11 36	− 7	—	—	e 14·5
Averroes		35·2	19	e 6 56	− 2	e 12 41	+10	e 7 56	PP	e 15·3
San Fernando		38·5	18	e 9 13	PP	e 13 29	+ 7	e 16 21	SS	e 22·2
Lisbon		39·9	13	7 16	−21	12 54	−49	—	—	18·1
Granada		40·1	20	e 7 41	+ 2	13 57	+11	9 36	P_cP	—
Almeria		40·2	22	i 7 56	+16	14 17	+29	8 17	pP	21·1
Coimbra		41·5	14	e 7 47	− 3	13 41	−26	e 10 5	PP	19·4
Toledo		42·3	19	i 7 58	+ 1	e 14 28	+ 9	—	—	21·6
Algiers		42·4	28	8 1	+ 3	e 14 23	+ 3	9 33	PP	i 22·2
San Juan		49·0	295	e 10 26	PP	i 15 53	− 2	i 19 49	SS	e 20·3
La Plata	E.	49·6	222	15 55	S	(15 55)	− 8	—	—	25·1
Clermont-Ferrand		50·0	21	i 9 1k	+ 3	—	—	i 10 54	PP	e 26·2
La Paz		50·2	248	i 9 3	+ 3	i 16 10	− 1	10 59	PP	24·7
Rome		51·0	31	i 9 6a	0	i 16 30	+ 8	i 11 2	PP	i 25·0
Paris		52·4	19	e 9 30	+14	i 16 54	+12	19 21	S_cS	28·2
Neuchatel		52·4	23	e 9 14	− 2	—	—	—	—	—
Basle		53·1	23	e 9 21	0	—	—	—	—	—
Bermuda		53·2	312	e 9 21	− 1	i 17 0	+ 8	e 21 21	SS	e 22·5
Chur		53·4	24	e 9 23	− 1	—	—	—	—	—
Zurich		53·4	23	e 9 22a	− 2	—	—	—	—	—
Kew		54·0	15	—	—	17 8	+ 5	—	—	e 22·2
Strasbourg		54·1	22	e 9 27	− 2	e 17 11	+ 6	—	—	—
Triest		54·4	28	i 9 29	− 2	i 17 11	+ 2	e 10 19	pP	—
Uccle		54·7	18	—	—	i 17 17	+ 4	—	—	e 24·2
Stuttgart		54·8	23	e 9 32	− 2	e 17 25	+11	e 11 39	PP	e 27·9
De Bilt		56·1	18	i 9 46k	+ 3	i 17 41	+ 9	—	—	e 24·2
Huancayo		56·3	256	e 9 48	+ 3	e 17 32	− 2	e 10 42	P_cP	e 23·9
Helwan	E.	57·1	54	9 47	− 3	17 44	− 1	—	—	—
Belgrade		57·2	34	—	—	e 18 0	+14	e 19 22	?	e 32·5
Jena		57·4	24	e 9 53	0	e 17 55	+ 6	—	—	—
Sofia		57·6	37	e 9 54	0	(e 17 53)	+ 2	—	—	—
Prague		57·9	26	—	—	—	—	e 21 11	SS	e 27·9
Hamburg		58·9	20	e 10 2	− 1	—	—	—	—	e 25·2
Potsdam		59·1	23	i 10 4k	0	e 18 20	+ 9	i 18 55	PPS	e 29·2
Bucharest		60·2	37	e 10 11	− 1	e 18 27	+ 2	—	—	38·2
East Machias		61·3	323	—	—	i 18 40	+ 1	e 20 23	?	e 25·4
Copenhagen		61·5	20	e 10 21	0	18 41	− 1	—	—	—
Ksara		62·1	52	e 10 29	+ 4	e 18 59	+10	—	—	—
Warsaw		62·4	27	10 27a	0	e 19 3	+10	—	—	e 33·2
Philadelphia		64·1	316	e 13 29	PP	e 19 17	+ 3	e 22 35	?	e 26·7
Seven Falls		64·6	325	—	—	e 19 25	+ 4	—	—	27·2
Upsala		66·5	19	—	—	e 19 47	+ 3	—	—	—
Ottawa		66·7	321	10 54	− 1	19 51	+ 5	—	—	e 27·2
Toronto		68·5	318	e 14 17	PP	e 20 5	− 3	—	—	28·2
Pulkovo		71·2	24	e 11 23	0	e 20 41	+ 1	—	—	—
Moscow		72·3	30	11 29	0	20 52	0	—	—	—
Chicago U.S.C.G.S		73·7	314	—	—	e 21 4	− 4	—	—	e 31·5
St. Louis		74·8	310	e 11 38	− 6	e 21 20	0	e 21 50	PS	e 34·3
Baku		74·8	48	e 11 56	+12	i 21 25	+ 5	—	—	—
Sverdlovsk		84·9	33	i 12 37	− 1	23 3	− 3	15 50	PP	—

Continued on next page,

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tashkent		89·5	49	i 13 0	0	e 23 52	+ 2	24 49	PS	—
Tucson		90·8	302	e 13 6	0	e 23 23	[−15]	e 13 59	?	e 37·2
Bozeman		90·9	315	—	—	e 30 22	SS	—	—	e 40·8
Andijan		91·8	50	e 13 35	+24	e 25 20	PS	—	—	—
Bombay	E.	92·6	72	e 13 39	+24	i 23 55	[+ 7]	e 17 1	PP	—
Almata		95·1	47	e 17 28	PP	—	—	—	—	—
Colombo	E.	99·7	84	—	—	e 24 11?	[−14]	—	—	—
Irkutsk		110·3	33	—	—	e 26 11	{ + 4}	e 28 35	PS	—

Additional readings :—
Lisbon S?E = +12m.24s., N = +14m.19s.
Granada P_cS = +13m.43s.
Almeria PP = +9m.41s., P_cP = +9m.51s., S_cS = +17m.53s.
San Juan e = +12m.3s.
Rome iE = +10m.26s. and +11m.6s., iN = +19m.10s., iSS = +20m.0s., iN = +20m.31s.
Bermuda esS = +18m.28s., e = +22m.0s.
Strasbourg e = +9m.43s.
Triest ePP = +11m.35s., isS = +18m.3s.
Uccle iSE = +17m.20s.
Stuttgart ePPP = +12m.49s.
Huancayo eS_cP = +14m.11s., iS = +17m.38s., i = +18m.0s., eSS = +21m.30s. and +22m.53s.
Sofia eSE = +17m.11s. True S is given as PSNE.
Potsdam ePE = +10m.11s., iE = +18m.13s.?, iSZ = +18m.23s.
Bucharest ePE = +10m.14s., e = +11m.5s., eE = +12m.5s. and +12m.54s., eN = +13m.44s., eE = +19m.3s., eN = +19m.49s. and +20m.46s.
Copenhagen +18m.48s.
St. Louis ePPSE = +22m.38s., eSSE = +26m.20s.
Sverdlovsk P_cP = +12m.56s., eSS = +28m.41s.
Tashkent eSKS = +23m.29s.
Tucson e = +14m.19s., iPP = +16m.45s., e = +27m.43s.
Irkutsk eSS = +34m.11s.
Long waves were also recorded at Bergen, Stonyhurst, Scoresby Sund, Butte, College, Sitka, and Kodaikanal.

Jan. 24d. 19h. 27m. 54s. Epicentre 5°·1S. 153°·1E. (as on 1940 Oct. 21d.).

A = −·8883, B = +·4507, C = −·0883 ; δ = 0 ; h = +7 ;
D = +·452, E = +·892 ; G = +·079, H = −·040, K = −·996.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	22·3	182	i 4 54	− 7	i 9 0	− 2	—	—	—
Riverview		28·6	184	e 6 4	+ 4	i 11 2	+14	—	—	e 15·6
Christchurch		42·0	159	11 28	?	17 46	SS	20 34	Q	23·5
Perth		43·9	228	—	—	i 17 16	SS	—	—	22·8
Bombay	E.	82·5	290	e 12 29	+ 3	e 22 39	− 3	—	—	—
Andijan		86·3	311	e 12 44	− 1	—	—	—	—	—
Tashkent		88·7	312	i 12 57	0	23 50	+ 7	e 23 25	SKS	—
Sverdlovsk		95·6	327	13 30	+ 2	24 4	[0]	31 28	SS	—

Additional readings :—
Brisbane iSN = +8m.54s.
Perth i = +19m.31s. and +21m.6s.
Sverdlovsk SSS = +35m.42s.
Long waves were also recorded at Sydney, Wellington, Sitka, Bozeman, Tucson, and Aberdeen.

Jan. 24d. Readings also at 0h. and 2h. (Tucson), 5h. (Harvard, near Algiers, Almeria, Granada, and near Toledo), 9h. (Haiwee, Pasadena, Palomar, Riverside, Tinemaha, and Neuchatel), 10h. (near La Paz), 12h. (Rome), 14h. (near Almata, Andijan, Frunse, Samarkand, and Tchimkent, also La Paz).

Jan. 25d. 23h. 35m. 36s. Epicentre 15°·0S. 176°·0W. Depth of Focus 0·080.
(as on 1940 July 5d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		4·3	74	i 0 55	−29	i 1 50	−41	—	—	—
Arapuni		24·1	197	e 6 24?	PPP	—	—	—	—	—
Tuai		24·5	193	—	—	i 7 56	−25	i 6 44	PPP	—
New Plymouth		25·5	197	—	—	8 24	−13	—	—	—
Wellington		27·4	196	4 37	−27	9 29	+22	6 24	PP	—
Christchurch		30·1	197	4 27a	?	9 24	−25	i 7 1	PP	—
Riverview		35·1	232	e 6 27	+18	i 10 52	−13	i 15 43	SS	—
Honolulu		40·2	27	—	—	—	—	(e 16 18)	SS	e 16·3
Santa Barbara		72·6	48	i 10 35	+ 1	—	—	e 11 46	pP	—
Berkeley	z.	72·8	43	e 10 36	+ 1	—	—	—	—	—
La Jolla		73·6	50	i 10 41	+ 1	—	—	—	—	—
Pasadena		73·6	48	i 10 39k	− 1	—	—	e 12 1	pP	—
Mount Wilson	z.	73·7	48	e 10 38	− 2	—	—	—	—	—
Fresno	N.	73·8	46	e 10 52	+11	—	—	e 12 17	pP	—
Palomar	z.	74·1	50	i 10 42	0	—	—	—	—	—
Riverside		74·1	48	i 10 42	0	—	—	e 12 2	pP	—
Haiwee		74·7	46	i 10 47	+ 1	—	—	e 12 10	pP	—
Tinemaha		75·0	45	e 10 49	+ 2	—	—	e 12 14	pP	—
Vladivostok		75·0	323	i 10 48	+ 1	i 17 17	?	—	—	—
Tucson		78·0	53	i 11 4	0	e 20 36	sS	i 12 27	pP	e 37·8
Sitka		79·7	22	—	—	(e 20 37)	+ 6	—	—	e 20·6
Salt Lake City		81·2	44	—	—	(e 21 8)	+22	—	—	e 21·1
College		82·5	12	—	—	(i 21 11)	+12	—	—	—
Bozeman		84·1	40	e 16 17	PP	e 21 24	+10	e 17 56	pPP	e 24·5
Florissant	E.	95·9	52	—	—	i 22 32	−27	—	—	—
St. Louis		96·0	52	i 12 30	0	i 22 31	−29	e 13 56	pP	—
Huancayo		97·0	105	i 22 39	?	i 23 36	?	—	—	e 24·9
La Paz	N.	102·2	111	i 23 3	SKS	(i 23 3)	[+18]	—	—	40·4
Agra	E.	110·7	293	e 18 4	[+34]	i 27 8	PS	i 29 28	?	—
San Juan		113·1	76	—	—	i 23 48	[+19]	—	—	—
Bombay	E.	114·4	284	e 18 30	PP	e 28 4	PS	e 30 19	?	—
Copenhagen		138·9	352	e 18 17	[− 9]	—	—	—	—	—
Warsaw		140·5	344	e 18 28k	[− 1]	—	—	e 33 24?	PPS	—
De Bilt	z.	143·0	359	i 18 32k	[− 2]	—	—	—	—	—
Jena		143·7	351	e 18 34	[− 1]	—	—	—	—	—
Uccle	z.	144·3	1	i 18 34k	[− 1]	—	—	i 20 6	pPKP	—
Bucharest		145·1	332	e 18 43	[+ 7]	e 24 36	[−16]	e 20 15	pPKP	—
Ksara		145·7	301	e 18 41	[+ 4]	—	—	e 20 33	pPKP	—
Stuttgart		146·1	354	i 18 39a	[+ 1]	—	—	i 20 12	pPKP	—
Strasbourg		146·4	355	i 18 43	[+ 4]	—	—	i 20 13	pPKP	—
Zurich		147·5	354	e 18 40k	[0]	—	—	—	—	—
Sofia	E.	147·8	332	e 18 41	[0]	—	—	—	—	—
Chur		147·9	353	e 18 41	[0]	—	—	e 20 16	pPKP	—
Neuchatel		148·0	355	e 18 42	[+ 1]	—	—	—	—	—
Triest		148·4	347	i 18 47	[+ 6]	—	—	e 20 23	pPKP	—
Clermont-Ferrand		149·3	2	i 18 44k	[+ 2]	—	—	i 20 21	pPKP	—
Helwan		150·8	304	i 18 43a	[− 2]	e 32 48	PS	i 22 36	PP	—
Rome		152·2	347	i 18 48k	[+ 2]	i 24 51	[−10]	e 28 31	SKKS	—
Toledo		154·2	14	i 18 52	[+ 3]	—	—	i 20 31	pPKP	—

Additional readings and notes :—
Wellington $P_cS = +11m.42s.$, $S_cS = +15m.24s.$?
Tucson $i = +11m.12s.$, $ipP = +11m.29s.$, $i = +11m.36s.$, $e = +14m.11s.$, $i = +14m.42s.$
College gives S as PS.
Bozeman $e = +23m.7s.$
Florissant $iE = +23m.4s.$
St. Louis $iE = +22m.59s.$
La Paz $iN = +25m.51s.$ and $+31m.28s.$
Jena $iPN = +18m.38s.$, $iE = +18m.57s.$
Bucharest $eEN = +19m.6s.$, $eE = +19m.25s.$, $eN = +19m.35s.$, $eEN = +20m.46s.$ and $+22m.32s.$

Continued on next page.

Stuttgart iP = +18m.42s., i = +20m.34s.
Strasbourg esPKP = +20m.32s., e = +21m.51s.
Zurich i = +18m.45s.
Sofia eEN = +18m.46s.
Chur e = +18m.46s.
Triest ePPS = +34m.36s.
Rome iZ = +18m.56s., +19m.8s., and +24m.43s.
Toledo i = +19m.1s.

Jan. 25d. Readings also at 3h. (Huancayo, La Paz, and La Plata), 5h. (Mount Wilson, Riverside, and Tinemaha), 10h. (Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 19h. (Agra and Samarkand).

Jan. 26d. Readings at 2h. (Scoresby Sund), 3h. (Kodaikanal), 7h. (Riverview), 9h. (Haiwee, Riverside, Mount Wilson, Tinemaha, and Pasadena), 11h. (near Mizusawa), 16h. (Port au Prince), 19h. (Riverside, Tinemaha, Mount Wilson, and Pasadena), 20h. (Huancayo and La Paz), 22h. (La Paz).

Jan. 27d. 2h. 30m. 4s. Epicentre 27°·0N. 92°·0E. (as on 1941 Jan. 21d.).
Intensity V at Gauhati. Epicentre N. Assam, 27°·2N. 92°·7E. (Bombay).
See Government of India Seismological Bulletin, 1941, p. 24.

$A = -\cdot0311$, $B = +\cdot8917$, $C = +\cdot4516$; $\delta = +4$; $h = +3$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	5·5	217	i 1 30k	+ 5	i 2 50	S*	i 1 47	P_g	—
Agra		12·5	275	i 2 57a	− 5	i 5 12	−11	—	—	—
Dehra Dun	N.	12·7	288	e 3 4	− 1	e 5 20	− 8	—	—	i 6·8
Hyderabad	N.	15·7	236	3 43	− 1	6 30	− 9	—	—	7·7
Bombay		19·4	250	i 4 29	− 1	i 7 55	− 9	i 4 45	PP	—
Almata		20·3	328	4 40	0	—	—	—	—	—
Andijan		21·2	315	4 49	0	8 51	+10	—	—	—
Frunse		21·2	323	e 4 52	+ 3	e 8 58	SS	—	—	—
Colombo	E.	23·1	213	5 12	+ 4	9 45	SS	—	—	—
Tashkent		23·5	313	—	—	i 9 26	+ 3	—	—	—
Medan		24·1	165	5 9	− 9	i 9 30	− 4	—	—	—
Samarkand		24·3	307	i 5 23	+ 3	—	—	—	—	—
Irkutsk		26·9	17	5 45	0	10 21	+ 1	—	—	—
Batavia		36·0	155	7 3	− 2	—	—	—	—	—
Vladivostok		36·0	53	e 7 4	− 1	i 13 26	sS	8 32	PP	—
Baku		37·1	302	7 21	+ 7	i 13 9	+ 8	—	—	—
Sverdlovsk		37·2	333	i 7 15	0	13 1	− 1	7 55	pP	—
Grozny		40·6	306	7 48	+ 5	13 56	+ 2	—	—	—
Piatigorsk		42·6	307	e 7 58	− 1	14 17	− 6	—	—	—
Amboina		46·4	126	8 25	− 5	15 10	− 8	—	—	—
Moscow		48·2	322	e 8 43	− 1	15 38	− 5	9 23	pP	—
Ksara		48·4	292	e 8 46	0	e 15 52	+ 6	—	—	—
Sebastopol		49·5	307	9 9	+15	16 16	+14	9 56	pP	—
Helwan		52·9	288	e 9 20	0	16 47	− 1	e 19 8	?	—
Pulkovo		52·9	326	9 20	0	16 44	− 4	9 59	pP	—
Bucharest		54·8	307	e 9 35	+ 1	e 17 18	+ 4	e 11 41	PP	26·9
Sofia		57·0	307	e 9 51	+ 1	e 17 44	+ 1	e 12 0	PP	—
Warsaw		57·7	317	9 53a	− 2	17 51	− 2	e 11 57	PP	e 29·9
Upsala		59·3	326	e 18 12	S	(e 18 12)	− 2	e 24 44	SSS	e 30·9
Copenhagen		62·4	322	i 10 26a	− 1	18 55	+ 2	23 1	SS	—
Potsdam		62·5	318	i 10 25a	− 3	i 18 54	0	i 14 22	PPP	e 33·9
Jena		63·7	316	e 10 34	− 2	—	—	—	—	—
Hamburg		64·1	320	e 10 35	− 3	—	—	—	—	e 34·9
Rome		65·1	306	e 10 42k	− 3	i 19 24	− 3	i 13 22	PP	e 33·4
Stuttgart		65·6	314	i 10 47	− 1	e 19 31	− 2	e 12 56	PP	e 34·9
Chur		65·9	313	e 10 47	− 3	—	—	—	—	—
Zurich		66·4	313	e 10 50	− 3	—	—	—	—	—
De Bilt		67·3	319	—	—	e 19 58	+ 4	—	—	e 35·9
Uccle		68·1	317	11 3	− 1	i 20 6	+ 3	—	—	e 32·9
Clermont-Ferrand		70·5	312	i 11 18k	0	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kew		70·7	319	i 11 20	0	i 20 34	0	—	—	e 33·9
Oxford		71·2	320	—	—	i 20 36	− 4	—	—	—
Algiers		73·6	303	i 11 37	0	e 21 6	− 1	e 21 48	PS	—
Toledo		77·5	308	i 11 59	0	i 21 52	+ 2	—	—	36·9
Almeria		77·6	305	12 14	+14	21 54	+ 3	12 54	pP	35·9
Granada		78·3	306	12 9a	+ 6	22 30	PS	—	—	—
Haiwee	z.	111·1	26	e 19 16	PP	—	—	—	—	—
Pasadena	z.	112·8	27	e 19 8	PP	—	—	e 29 28	PKKP	—
Riverside	z.	113·2	27	e 19 11	PP	—	—	e 29 36	PKKP	—
Tucson		117·2	22	e 18 50	[+ 3]	e 25 31	[− 9]	e 36 27	SS	e 46·3

Additional readings :—
Calcutta $iP_g = +2m.4s.$, $iS^*N = +3m.16s.$
Bombay $ePN = +4m.32s.$, $iEN = +5m.26s.$, $eN = +5m.53s.$, $iE = +6m.2s.$, $iSSE = +8m.13s.$
Vladivostok $SS = +14m.56s.$
Bucharest $eE = +10m.22s.$ and $+10m.54s.$, $e = +11m.51s.$, $eE = +14m.34s.$, $+18m.4s.$, and $+18m.35s.$, $S_eSN = +19m.23s.$, $eSSE = +21m.7s.$, $e = +23m.13s.$
Warsaw $eE = +21m.55s.$ and $+22m.35s.$
Upsala $ePPN = +19m.50s.$
Copenhagen $+20m.25s.$
Potsdam $iE = +10m.30s.$
Rome $iE = +10m.54s.$, $iPSN = +20m.3s.$, $i = +20m.38s.$, $iSS = +23m.45s.$
Stuttgart $eSN = +19m.34s.$
Algiers $eS = +20m.23s.$, $e = +33m.7s.$
Almeria $PP = +15m.14s.$, $PPP = +17m.4s.$, $S_eS = +22m.32s.$, $PS = +23m.2s.$, $PPS = +23m.22s.$, $SS = +27m.6s.$, $SSS = +30m.34s.$
Tucson $e = +28m.32s.$ and $+39m.47s.$
Long waves were also recorded at Fordham, Huancayo, Bozeman, Sitka, Stonyhurst, La Paz, and Bergen.

Jan. 27d. Readings also at 1h. (Bergen), 2h. (Amboina), 4h. (Huancayo and Tacubaya), 6h. (Lick, Fresno, and near Mizusawa), 8h. (Rome), 23h. (Port au Prince).

Jan. 28d. 3h. Undetermined shock.
Apia $eP = 15m.15s.$, $iSE = 20m.30s.$, $i = 21m.33s.$
Brisbane $eE = 25m.36s.$, $eN = 30m.42s.$, $eE = 31m.48s.$, $iN = 34m.12s.$
Christchurch $P = 25m.45s.$, $S = 30m.21s.$, $Q = 31·2m.$, $R = 32·8m.$
Arapuni $e = 28m.0s.$, $L = 30·0m.?$
Pasadena $ePZ = 31m.2s.$, $eLEZ = 52·9m.$
Riverside $ePZ = 31m.4s.$
Vladivostok $eP = 31m.6s.$, $eS = 40m.40s.$
Tinemaha $iPZ = 31m.11s.$
Tucson $iP = 31m.28s.$, $i = 31m.41s.$ and $31m.50s.$, $e = 34m.31s.$ and $36m.27s.$, $iL = 55·4m.$
Wellington $i = 31m.37s.$, $R = 35·0m.?$
Berkeley $eP?Z = 32m.0s.$, $eN = 40m.26s.$, $eE = 40m.58s.$, $iN = 41m.22s.$, $eE = 49m.54s.$, $eN = 49m.59s.$, $eLZ = 52·0m.$
Irkutsk $eP = 33m.5s.$, $ePP = 36m.59s.$
Adelaide $eN = 36m.6s.$, $i = 41m.13s.$, $41m.30s.$, $44m.50s.$, $45m.56s.$, and $47m.5s.$
Ksara $e = 39m.0s.$
Rome $ePKP = 39m.24s.$, $iN = 40m.6s.$, $eE = 40m.25s.$, $iN = 41m.15s.$ and $42m.6s.$
Stuttgart $eP = 40m.5s.$
Agra $eE = 45m.43s.$
Long waves were also recorded at Bozeman, Ukiah, Bermuda, Warsaw, Uccle, Honolulu, Butte, De Bilt, Paris, Scoresby Sund, Chicago U.S.C.G.S., Kodaikanal, Huancayo, Potsdam, Riverview, and La Paz.

Jan. 28d. 8h. Undetermined shock.
Brisbane $eN = 58m.6s.$, $iE = 58m.48s.$, $iEN = 62m.6s.$
Riverview $iEN = 59m.53s.$, $iZ = 60m.36s.$, $iEN = 63m.58s.$ and $64m.54s.$, $eLN = 67·2m.$
Adelaide $iPN = 66m.19s.$, $iPP = 66m.36s.$, $i = 69m.20s.$, $iS = 70m.32s.$, $iSS = 71m.14s.$, $iS_eS = 77m.20s.$
Tinemaha $iPZ = 66m.52s.$
Haiwee $ePZ = 66m.54s.$, $eZ = 67m.31s.$
Pasadena $iP = 67m.17s.$, $iZ = 67m.54s.$, $eZ = 70m.38s.$
Riverside $iPZ = 67m.19s.$, $eZ = 70m.41s.$
Palomar $ePZ = 67m.31s.$
Tucson $iP = 67m.42s.$, $i = 68m.13s.$, $e = 69m.23s.$, $69m.49s.$, and $71m.18s.$
Bombay $eE = 72m.14s.$, $iE = 78m.43s.$, $eE = 79m.46s.$
Colombo $eE = 78m.0s.$
Kodaikanal $eE = 78m.10s.$
Agra $iE = 78m.29s.$
Long waves were also recorded at Wellington, Butte, and Huancayo.

Jan. 28d. Readings also at 3h. (near Amboina), 7h. (Branner, Fresno, and near Lick), 9h. (near Rome, Zurich, Clermont-Ferrand, Chur, Tananarive, near Lick, Fresno, and Branner), 12h. (Wellington and Christchurch), 13h. (Bombay, Calcutta, and Agra), 17h. (near Mizusawa), 19h. (near Amboina), 20h. (San Juan), 21h. (La Paz), 23h. (near Mizusawa).

Jan. 29d. Readings at 0h. (Haiwee, Tinemaha, Riverside, and Pasadena), 2h. (Sitka), 4h. (Puebla, Oaxaca, and Tucson), 5h. (Mount Wilson, Haiwee, Tinemaha, Riverside, and Pasadena), 7h. (Warsaw, near Sofia, Bucharest, and Copenhagen), 8h. (Stuttgart), 23h. (La Paz).

Jan. 30d. 1h. 34m. 45s. Epicentre 34°·0N. 118°·0W. (as given by Pasadena).

Intensity VI at Los Angeles, Santa Monica, Rodondo Beach, Long Beach, and Claremont. Epicentre 33°58′N. 118°03′W. Depth 15km.

C. F. Richter.
Earthquake near Whittier, California, Jan. 29, 1941. Bulletin of the Seismological Society of America, Vol. 32, No. 1, Jan. 1942 (Berkeley and Los Angeles), pp. 7-9, 2 tables.

A = −·3900, B = −·7336, C = +·5566; δ = +7; h = 0;
D = −·883, E = +·469; G = −·261, H = −·491, K = −·831.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.	
Pasadena		0·2	316	i 0 7k	− 3	i 0 10	− 6	—	—
Mount Wilson		0·2	348	i 0 8k	− 2	i 0 12	− 4	—	—
Riverside		0·5	91	i 0 14a	0	i 0 22	− 1	—	—
Palomar	Z.	1·1	125	i 0 24	+ 2	—	—	—	—
Santa Barbara		1·5	287	i 0 28	0	i 0 47	− 2	—	—
Haiwee		2·1	1	i 0 37	0	i 1 12	S_g	—	—
Fresno	N.	3·1	332	i 0 57	P*	i 1 41	S_g	—	—
Tinemaha		3·1	356	i 0 51	0	i 1 39	S*	i 0 58	P*
Tucson		6·2	104	e 1 44	P*	e 2 46	− 2	e 2 9	P_g

Tucson also gives e = +2m.27s., i = +3m.29s., +3m.33s., +3m.46s., and +4m.11s.

Jan. 30d. Readings also at 3h. (Mount Wilson, Tinemaha, and Riverside), 4h. (Mount Wilson, Tinemaha, Riverside, La Paz, Huancayo, and Tacubaya), 9h. (Agra, Bombay, Kodaikanal, Calcutta, Medan, and Colombo), 10h. (Colombo), 11h. (Mount Wilson, Tinemaha, and Pasadena), 13h. (La Paz), 15h. (La Paz, Haiwee, Pasadena, Mount Wilson, Tinemaha, Huancayo, and Riverside), 19h. (near Balboa Heights), 21h. (near Branner).

Jan. 31d. 2h. 38m. 40s. Epicentre 6°·5S. 128°·5E. Depth of Focus 0·030. (as on 1939 Oct. 7d.).

A = −·6186, B = +·7777, C = −·1125; δ = +14; h = +7;
D = +·783, E = +·623; G = +·070, H = −·088, K = −·994.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Amboina		2·8	353	i 0 56	+ 7	i 1 36	+ 9	—	—	—
Palau		15·0	24	3 21	− 1	5 59	− 4	—	—	—
Batavia		21·5	270	i 4 40	+ 8	i 8 27	+16	—	—	—
Perth		27·9	203	6 20	+49	11 58	?	7 20	PPP	16·2
Adelaide		29·8	164	i 5 48	0	i 10 25	− 2	11 29	SS	—
Isigakizima		30·9	352	e 4 18	?	9 0	?	—	—	—
Brisbane		31·3	135	e 6 44	PP	i 10 38	−13	—	—	—
Medan		31·4	288	6 6	+ 4	10 54	+ 2	—	—	—
Riverview		34·3	146	e 6 28	+ 1	e 11 35	− 2	i 7 22	pP	—
Sydney		34·3	146	e 7 20	+53	e 11 29	− 8	e 13 59	SS	—
Titizima		35·9	21	e 6 34	− 6	11 44	−17	—	—	—
Zi-ka-wei	N.	38·1	351	e 6 52	− 7	i 12 26	− 9	i 8 36	PP	—
Miyazaki		38·3	5	e 6 59	− 1	12 31	− 7	—	—	—
Nagoya		42·2	12	e 7 33	+ 1	13 25	−10	—	—	—
Sendai		46·0	13	i 7 59	− 4	14 18	−12	—	—	—
Mizusawa		46·9	13	8 6	− 4	14 29	−13	—	—	—
Calcutta	N.	48·8	308	e 9 27	+63	i 15 12	+ 3	e 10 15	pP	—
Mori		49·6	13	8 30	0	15 11	− 9	—	—	—
Colombo	E.	50·3	285	8 29?	− 7	15 25?	− 5	—	—	—
Arapuni		53·0	133	—	—	16 20?	+14	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Christchurch		53·4	141	—	—	(16 9)	− 3	—	—	27·0
Kodaikanal	E.	53·5	288	i 8 55	− 4	i 16 13	0	—	—	—
Wellington		53·7	137	—	—	16 5	−11	—	—	22·3
Agra	E.	59·2	307	i 9 39a	− 1	i 17 24	− 4	11 29	PP	—
Bombay	E.	60·4	296	i 9 48	0	i 17 41	− 2	e 10 45	pP	33·3
Dehra Dun	N.	60·6	311	e 10 42	+53	(e 17 35)	−11	e 14 32?	?	e 17·6
Irkutsk		62·1	344	9 58	− 1	i 18 2	− 3	10 58	pP	—
Almata		68·0	322	e 10 45	+ 8	—	—	—	—	—
Frunse		69·3	321	e 10 50	+ 5	—	—	—	—	—
Andijan		69·7	318	e 10 50	+ 3	—	—	15 9	PPP	—
Semipalatinsk		70·3	330	10 51	0	—	—	—	—	—
Tashkent		72·0	317	—	—	i 20 2	− 1	24 34	SS	—
Tchimkent		72·2	318	11 5	+ 3	—	—	—	—	—
Samarkand		72·9	315	11 10	+ 4	—	—	12 21	pP	—
Sverdlovsk		83·6	329	i 12 2	− 2	i 21 56	−10	13 6	pP	—
Baku		85·6	311	12 36?	+22	i 22 32	+17	e 28 8	SS	—
Ksara		95·7	303	e 15 57	PP	e 25 59	PS	—	—	—
Moscow		95·9	325	—	—	23 48	− 9	—	—	—
Helwan		99·4	299	—	—	e 23 32	[− 1]	—	—	—
Pulkovo		99·7	330	—	—	e 23 20	[−14]	—	—	—
Berkeley		109·1	52	—	—	i 25 44	?	e 33 29	SS	—
Haiwee	Z.	112·3	54	e 18 11	[+ 2]	—	—	—	—	—
Tinemaha		112·4	53	e 18 10	[+ 1]	e 26 12	PS	e 18 52	?	—
Mount Wilson	Z.	113·0	56	i 18 11	[+ 1]	—	—	e 18 53	?	—
Pasadena		113·0	56	i 18 10	[0]	i 26 14	PS	i 18 57	?	e 45·3
Riverside	Z.	113·6	56	e 18 11	[0]	—	—	e 19 2	?	—
Rome		113·6	313	i 20 44	PP	e 26 6	PS	e 36 7	SS	e 54·3
Bozeman		115·7	42	—	—	e 30 32	PPS	e 34 51	SS	e 47·8
Tucson		119·3	56	i 18 23	[0]	i 30 44	PPS	i 32 52	?	e 49·6
Florissant	Z.	132·4	41	i 21 47	PP	—	—	e 23 45	PKS	—
Cape Girardeau	N.	133·8	43	e 23 5	PPP	e 23 35	PPP	—	—	—
Ottawa		135·9	24	e 18 42	[−13]	e 21 57	PP	e 23 56	PPP	56·3
Huancayo		150·0	128	e 19 24	[+ 5]	e 29 42	SKKS	e 22 55	PP	e 41·5
La Paz		151·8	144	e 19 28	[+ 7]	42 50	SS	i 24 0	PP	74·3
San Juan		161·5	49	e 21 56	?	e 32 18	?	—	—	e 44·1

Additional readings :—
Perth PPP = +7m.53s., i = +10m.5s. and +11m.8s., SS = +13m.57s.
Adelaide i = +6m.5s., PP = +6m.25s., PPP = +6m.37s., i = +6m.43s., +6m.49s., +7m.13s., +7m.48s., and +8m.46s., P_cP = +9m.19s., i = +9m.55s., i = +11m.8s., +12m.0s., +12m.9s., +12m.30s., +15m.12s., and +16m.30s.
Brisbane eN = +12m.20s., iE = +12m.26s.
Medan iSE = +10m.58s.
Riverview eZ = +7m.20s. and +7m.47s., iEN = +7m.51s., iN = +14m.5s., iE = +14m.12s.
Calcutta isSN = +16m.45s.
Christchurch S = +21m.49s. True S is given as PP.
Agra P_cPE = +10m.44s., isS?E = +18m.29s., S_cSE = +19m.28s., SSE = +21m.8s.
Bombay esPE = +11m.16s., iE = +12m.11s. and +18m.46s., isSEN = +19m.11s.
Irkutsk sS = +19m.46s.
Andijan sP_cP = +12m.44s.
Samarkand iP_cP = +11m.25s., esP_cP = +13m.17s.
Sverdlovsk isS = +23m.50s.
Baku eSKS = +22m.18s.
Helwan eN = +24m.27s., eEZ = +25m.56s.
Berkeley eE = +26m.12s. and +33m.32s., eN = +37m.26s. and +44m.17s.
Riverside eZ = +20m.8s.
Rome iE = +22m.17s., i = +25m.33s., iSKKS = +26m.33s., S? = +28m.15s., ePPS = +30m.39s., e = +34m.35s. and +38m.23s., eSSS = +41m.4s., e = +42m.2s.
Bozeman e = +38m.33s.
Tucson e = +19m.42s. and +20m.32s., i = +21m.7s., e = +21m.42s., +23m.39s., and +26m.6s.
Ottawa e = +23m.20s.? and +39m.20s.?
Huancayo iP = +19m.29s., e = +20m.16s., +20m.54s., and +23m.51s.
Long waves were also recorded at Potsdam, Ukiah, Scoresby Sund, Kew, De Bilt, and Uccle.

Jan. 31d. Readings also at 4h. (near Medan), 6h. (near Balboa Heights), 8h. (Agra, near Almata, Andijan, Samarkand, Tashkent, Frunse, and Tchimkent), 11h. (near Berkeley, Branner, and Lick), 12h. (Christchurch), 13h. (Mount Wilson and Tinemaha), 16h. and 17h. (Stuttgart), 20h. (Sitka), 22h. (Huancayo), 23h. (near Fresno, Berkeley, Branner, and Lick).

Feb. 1d. 5h. 30m. 56s. Epicentre 40°·8N. 117°·5W.

$A = -·3506$, $B = -·6734$, $C = +·6509$; $\delta = +6$; $h = -2$;
$D = -·887$, $E = +·462$; $G = -·301$, $H = -·577$, $K = -·759$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		3·7	188	i 1 1	+ 1	i 1 41	− 4	i 1 6	P*	—
Fresno	N.	4·4	204	i 1 12	+ 2	i 1 51	−11	—	—	—
Berkeley		4·7	233	e 1 11	− 3	e 1 54	−16	e 1 37	P_g	—
Haiwee		4·7	186	i 1 21	P*	e 2 6	− 4	—	—	—
Lick		4·7	224	e 1 12	− 2	i 1 53	−17	—	—	—
San Francisco	N.	4·8	233	e 1 57	?	i 2 2	−10	—	—	—
Branner		4·9	228	e 1 18	+ 1	i 2 3	−12	—	—	—
Mount Wilson	Z.	6·6	185	i 1 43	+ 2	i 3 7	+ 9	—	—	—
Pasadena	Z.	6·6	185	e 1 42	+ 1	e 3 5	+ 7	—	—	—
Santa Barbara		6·6	196	e 1 44	+ 3	e 2 56	− 2	—	—	—
Riverside		6·8	177	e 1 44	0	e 3 19	S*	—	—	—
Tucson		10·1	146	e 3 16	+48	—	—	—	—	e 5·4

Additional readings :—
Berkeley eN = +1m.17s., iE = +1m.46s., eN = +1m.59s.
Lick iN = +1m.15s.
Branner i = +1m.59s.
Tucson e = +3m.43s.

Feb. 1d. Readings also at 0h. (Tacubaya, Tinemaha, Mount Wilson, and near Balboa Heights), 2h. (near Berkeley), 4h. (near Medan), 7h. (near Amboina and Tacubaya), 9h. (near Mizusawa and Batavia (2)), 17h. (Tinemaha, Mount Wilson, Riverside, Tucson, and near Apia), 19h. (La Paz and Tacubaya), 23h. (San Francisco).

Feb. 2d. 19h. 0m. 11s. Epicentre 36°·9N. 121°·7W.

$A = -·4213$, $B = -·6821$, $C = +·5978$; $\delta = +12$; $h = -1$;
$D = -·851$, $E = +·525$; $G = -314$, $H = -·509$, $K = -·802$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lick		0·4	6	i 0 14	+ 1	i 0 21	0	—	—	—
Santa Clara		0·5	336	i 0 16	+ 2	i 0 25	+ 2	—	—	—
Branner		0·6	323	e 0 18	+ 3	i 0 30	+ 4	—	—	—
San Francisco	N.	1·0	325	e 0 23	+ 2	i 0 40	+ 4	—	—	—
Berkeley		1·1	335	e 0 23	+ 1	i 0 41	+ 2	—	—	—
Fresno	N.	1·5	96	e 0 29	+ 1	e 0 45	− 4	e 0 34	P_g	i 2·9
Tinemaha		2·8	86	e 0 47	0	i 1 27	S*	—	—	—
Santa Barbara	Z.	2·9	147	i 0 50	+ 2	—	—	—	—	—
Haiwee		3·1	104	e 0 51	0	i 1 34	S*	—	—	—
Mount Wilson	Z.	4·0	131	e 1 1	− 3	—	—	—	—	—
Pasadena		4·0	131	e 1 0	− 4	e 1 59	S*	—	—	—
Riverside	Z.	4·6	128	e 1 9	− 3	—	—	—	—	—
Tucson		10·1	114	e 3 13	?	—	—	—	—	i 5·3

Additional readings :—
San Francisco $iS_gN = +43s.$
Berkeley eE = +28s., iN = +38s.

Feb. 2d. 23h. 38m. 35s. Epicentre 6°·5N. 78°·0W. (as on 1938, December 12d.).

$A = +·2066$, $B = -·9720$, $C = +·1125$; $\delta = +12$; $h = +7$;
$D = -·978$, $E = -·208$; $G = +·023$, $H = -·110$, $K = -·994$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		2·9	328	e 0 49	+ 1	—	—	—	—	1·5
Port au Prince		13·2	24	—	—	i 5 54	SS	—	—	—
San Juan		16·5	43	e 3 49	− 5	i 7 7	+ 9	i 4 2	PP	i 8·1
Huancayo		18·6	172	i 4 13	− 8	i 7 27	−19	e 8 34	SSS	i 8·9
Tacubaya	E.	24·2	304	i 5 26	+ 7	—	—	—	—	—
La Paz	N.	24·8	156	5 17	− 8	9 43	− 3	—	—	13·3
Bermuda		28·4	24	e 8 37	?	e 10 50	+ 5	—	—	i 13·2
St. Louis		33·9	342	e 6 46	− 1	e 12 0	−11	—	—	i 17·1
Florissant		34·0	342	e 6 49	+ 1	i 12 16	+ 3	—	—	i 17·1
Harvard		36·3	8	i 7 6	− 1	—	—	—	—	e 25·4
Ottawa		38·8	2	7 28	0	13 29	+ 3	—	—	e 17·4
Tucson		39·9	315	i 7 39	+ 2	—	—	i 9 14	PP	i 25·9
Seven Falls		40·9	6	—	—	e 14 4	+ 6	—	—	17·4
Riverside	Z.	45·5	313	e 8 25k	+ 2	—	—	—	—	—
Mount Wilson	Z.	46·2	313	i 8 29k	+ 1	—	—	—	—	—
Pasadena		46·2	313	i 8 30k	+ 2	—	—	—	—	—
Santa Barbara	Z.	47·4	312	e 8 36	− 2	—	—	—	—	—
Tinemaha	Z.	47·6	316	e 8 41	+ 2	—	—	—	—	—
Bozeman		48·4	330	e 10 43	PP	e 15 51	+ 5	—	—	e 19·9

Additional readings :—
San Juan i = +3m.55s. and +7m.41s.
Huancayo i = +4m.16s. and +5m.55s., e = +6m.37s., iS = +7m.39s.
St. Louis iPZ = +6m.50s., iSE = +12m.12s.
Florissant ePN = +6m.53s.
Tucson i = +8m.1s., +8m.47s., +9m.44s., and +10m.47s.
Bozeman ePP = +10m.51s.
Long waves were also recorded at Chicago, U.S.C.G.S., and La Plata.

Feb. 2d. Readings also at 0h. (Balboa Heights), 2h. (Tinemaha, Riverside, and Mount Wilson), 4h. (near Bucharest, Frunse, Tchimkent, Andijan, and La Paz), 11h. (Pasadena, Riverside, Tinemaha, and Mount Wilson), 15h. (Frunse, Tchimkent, and Andijan), 17h. (near Lick), 21h. (Rome, Warsaw, Helwan, De Bilt, and Uccle), 22h. (La Paz).

Feb. 3d. 8h. 1m. 4s. Epicentre 17°·0N. 147°·0E. (as on 1940, September 9d.).

$A = -·8025$, $B = +·5212$, $C = +·2906$; $\delta = +10$; $h = +5$;
$D = +·545$, $E = +·839$; $G = -·244$, $H = +·158$, $K = -·957$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Nagoya		20·2	336	e 4 35	− 4	8 23	+ 2	—	—
Nagano		21·1	340	4 43	− 5	8 32	− 7	—	—
Sendai		21·8	346	4 59	+ 3	8 26	−26	—	—
Irkutsk		48·6	325	e 9 1	+14	—	—	e 10 47	PP
Sverdlovsk		74·0	325	11 37	− 2	21 8	− 3	—	—
Tinemaha	Z.	83·6	53	e 12 30	− 2	—	—	—	—
Pasadena	Z.	84·5	55	e 12 35	− 1	—	—	—	—
Mount Wilson	Z.	84·6	55	e 12 36	0	—	—	—	—
Riverside	Z.	85·3	55	e 12 37	− 3	—	—	—	—

Feb. 3d. Readings also at 0h. (Taihoku (2) and Manila), 3h. (near Mizusawa), 5h. (Taihoku), 7h. (Haiwee, Mount Wilson, Pasadena, Tinemaha, and Riverside), 8h. (Manila), 9h. (Berkeley, Almata, Tashkent, Andijan, Samarkand, Tchimkent, and Frunse), 16h. (Tacubaya), 17h. (near Branner), 23h. (near Branner and Lick).

Feb. 4d. 9h. 17m. 42s. Epicentre 16°·0N. 43°·0E. (as on 1941, January 11d.).

$A = +·7034$, $B = +·6559$, $C = +·2739$; $\delta = 0$; $h = +6$;
$D = +·682$, $E = -·731$; $G = +·200$, $H = +·187$, $K = -·962$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Helwan		17·5	324	4 12	+ 5	7 30	+ 9	4 29	PPP
Ksara		18·9	342	e 4 29	+ 5	e 8 6	+13	—	—
Baku		25·0	13	e 5 25	− 2	i 9 59	+10	—	—
Bombay	E.	28·7	80	e 6 4	+ 3	i 10 50	0	6 25	PP
Samarkand		31·5	37	e 6 19	− 7	—	—	—	—
Tashkent		33·9	37	e 6 49.	+ 2	e 12 8	− 3	—	—
Kodaikanal	E.	34·0	94	—	—	e 11 18	−55	—	—
Agra	E.	34·3	66	e 6 42	− 8	12 2	−15	—	—
Tchimkent		34·7	36	6 54	0	12 22	− 2	—	—
Andijan		35·4	41	—	—	12 39	+ 5	—	—
Moscow		39·9	356	e 7 38	+ 1	e 13 48	+ 5	—	—
Sverdlovsk		42·9	15	8 1	− 1	14 25	− 2	—	—
Calcutta	N.	43·2	74	e 14 1	S	(14 1)	−31	—	—
Pulkovo		44·7	352	e 8 18	+ 2	e 14 56	+ 2	—	—
Tucson		125·9	333	i 19 11	[+ 7]	—	—	—	—

Additional readings :—
Ksara i = +9m.55s. and e = +10m.46s.
Tucson e = +19m.44s., e = +21m.7s., and i = +25m.36s.
Long waves were recorded at Warsaw and Huancayo.

Feb. 4d. 11h. 55m. 49s. Epicentre 37°·8N. 142°·6E.

Intensity IV at Sendai, Hukusima; II-III at Onahama, Miyako, Mizusawa, Morioka, Kakioka, and Hatinohe. Macroseismic radius 200-300km.
Bull. Seismo. Cent. Met. Obs., Japan, 1941. Tokyo, 1950, pp. 5-6; chart p. 5.
Epicentre as given by Tokyo, Cent. Met. Obs.

$A = -·6293$, $B = +·4811$, $C = +·6103$; $\delta = -6$; $h = -1$;
$D = +·607$, $E = +·794$; $G = -·485$, $H = +·371$, $K = -·792$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sendai	1·4	289	0 27a	0	0 50	+ 4	—	—	—
Hukusima	1·7	268	0 31k	0	0 53	− 1	—	—	—
Mizusawa	1·7	286	i 0 32	+ 1	i 0 57	+ 3	—	—	—
Miyako	1·9	345	0 30a	− 4	0 54	− 5	—	—	—
Mito	2·2	230	0 38a	0	1 26	+20	—	—	—
Kakioka	2·5	231	0 41	− 2	1 15	+ 1	—	—	—
Tyosi	2·5	214	0 43	0	1 23	+ 9	—	—	—
Utunomiya	2·5	240	0 42	− 1	1 14	0	—	—	—
Akita	2·7	315	0 40k	− 5	1 22	+ 3	—	—	—
Hatinohe	2·8	343	0 47	0	1 22	0	—	—	—
Kumagaya	3·1	237	0 50	− 1	1 34	+ 5	—	—	—
Tokyo, Cen. Met. Ob.	3·1	227	0 51	0	1 29	0	—	—	—
Maebasi	3·2	244	0 51	− 1	1 37	+ 5	—	—	—
Aomori	3·3	335	0 57k	+ 4	1 47	+12	—	—	—
Yokohama	3·4	223	0 55	0	1 46	+ 9	—	—	—
Aikawa	3·5	272	0 58	+ 1	—	—	—	—	—
Mera	3·6	219	0 57	− 1	—	—	—	—	—
Nagano	3·7	254	1 1	+ 1	1 58	+13	—	—	—
Hunatu	3·8	235	0 57	− 4	1 47	0	—	—	—
Kohu	3·9	237	1 2	0	2 0	+10	—	—	—
Misima	3·9	230	1 3	+ 1	2 11	+21	—	—	—
Osima	4·0	222	1 1	− 3	1 49	− 3	—	—	—
Shizuoka	4·4	232	1 10	0	2 4	+ 2	—	—	—
Toyama	4·5	255	1 14	+ 3	2 13	+ 8	—	—	—
Wazima	4·5	264	1 12	+ 1	2 18	+13	—	—	—
Mori	4·6	340	1 18	+ 6	2 21	+14	—	—	—
Hamamatu	5·0	234	1 17	− 1	2 32	+14	—	—	—
Hatidyozima	5·2	206	1 21	0	—	—	—	—	—
Nagoya	5·2	242	1 25	+ 4	2 32	+10	—	—	—
Gihu	5·3	245	1 27	+ 5	2 31	+ 6	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo		5·3	349	1 34	+12	2 38	+13	—	—	—
Hikone		5·7	246	1 33	+ 5	2 42	+ 7	—	—	—
Kyoto		6·2	246	1 35	0	—	—	—	—	—
Osaka		6·2	244	1 35	0	3 12	S*	—	—	—
Owase		6·4	237	1 36	− 2	3 32	S_g	—	—	—
Toyooka		6·6	253	1 41	0	3 7	+ 9	—	—	—
Kobe		6·7	245	2 4	+22	3 28	S*	—	—	—
Siomisaki		7·0	234	2 6	+20	—	—	—	—	—
Wakayama		7·0	242	1 46	0	2 51	−17	—	—	—
Sumoto		7·1	244	2 23	+35	3 10	0	—	—	—
Muroto		8·2	239	2 16	+13	—	—	—	—	—
Koti		8·5	243	2 17	+10	4 22	+37	—	—	—
Hamada		9·0	254	2 7	− 6	—	—	—	—	—
Vladivostok		9·7	306	2 33	+11	e 4 59	+44	—	—	—
Zinsen		12·7	273	2 32	−33	—	—	—	—	—
Irkutsk		30·3	312	e 6 24	+ 9	e 13 35	SSS	—	—	—
Agra	E.	54·6	278	—	—	e 17 27	+16	—	—	—
Tashkent		55·1	299	e 9 33	− 3	e 17 28	+10	—	—	—
Sverdlovsk		55·2	319	e 9 34	− 3	e 17 29	+ 9	—	—	—
Moscow		67·3	323	e 10 45	−14	e 19 49	− 5	—	—	—
Copenhagen		77·7	334	e 11 57	− 3	—	—	—	—	40·2

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

Feb. 4d. 12h. 29m. 51s. Epicentre 9°·0N. 83°·4W. (as on 1937 March 29d.).

A = +·1135, B = −·9813, C = +·1554 ; δ = −2 ; h = +7 ;
D = −·993, E = −·115 ; G = +·018, H = −·154, K = −·988.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		3·8	89	e 0 44	−17	e 1 22	−25	—	—	e 1·5
San Juan		19·2	59	(i 4 28)	0	i 4 28	P	—	—	e 8·2
Huancayo		22·4	158	e 5 0	− 2	i 8 57	− 7	e 9 27	SS	i 10·7
La Paz		29·5	147	e 6 8	0	—	—	—	—	15·1
Tucson		34·4	317	i 6 50	− 1	—	—	i 8 32	PPP	—
Riverside	z.	39·9	314	e 7 37	0	—	—	—	—	—
Mount Wilson	z.	40·5	314	e 7 43	+ 1	—	—	—	—	—
Pasadena		40·6	314	e 7 43	0	—	—	—	—	—
Tinemaha	z.	42·1	317	e 7 56	+ 1	—	—	—	—	—

Additional readings :—
Huancayo i = +7m.48s.
Tucson i = +7m.2s. and +7m.15s.
Riverside eZ = +7m.48s.
Pasadena eE = +7m.54s.
Tinemaha eZ = +8m.7s.

Feb. 4d. 14h. 3m. 18s. Epicentre 10°·0N. 124°·5E. Depth of focus 0·090.

A = −·5579, B = +·8118, C = +·1725 ; δ = +3 ; h = +6 ;
D = +·824, E = +·566 ; G = −·098, H = +·142, K = −·985.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		5·7	323	i 1 36 a	− 3	i 2 59	+ 1	—	—	—
Palau		10·2	104	i 2 27	+ 6	4 29	+15	—	—	—
Amboina		14·2	164	i 3 5	+ 5	i 5 34	+ 9	13 49	S_cS	—
Taihoku		15·2	350	3 8	− 2	i 5 40	− 3	—	—	—
Naha		16·3	9	3 23	+ 3	6 10	+ 8	—	—	—
Zi-ka-wei	N.	21·3	354	e 4 6	− 1	i 7 26	+ 1	—	—	—
Miyazaki		22·4	17	4 22	+ 5	6 59	−43	14 22	S_cS	—
Batavia		23·9	228	i 4 27 a	− 3	i 8 4	− 2	—	—	—
Hukuoka		24·0	13	e 4 32	+ 1	8 8	0	—	—	—
Koti		24·8	18	e 4 39	+ 1	8 21	+ 1	e 14 26	S_cS	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hamada		25·7	15	4 45	− 1	8 36	+ 2	—	—	—
Sumoto		26·0	21	i 4 50	+ 2	8 40	+ 1	i 13 33	S_cS	—
Medan		26·4	258	4 50	− 2	8 38	− 7	—	—	—
Nagoya		27·5	24	5 3	+ 2	9 7	+ 5	—	—	—
Dairen		28·8	355	4 13	−60	—	—	—	—	—
Yokohama		28·8	27	5 13	0	9 23	+ 1	—	—	e 12·0
Heizyo		28·9	2	5 3	−10	8 53	−31	—	—	—
Tokyo Cen. Met. Ob.		29·0	27	e 5 15	+ 1	9 28	+ 2	—	—	—
Nagano		29·3	22	5 19	+ 2	9 28	− 2	—	—	—
Sendai		31·7	26	i 5 39	+ 2	10 8	+ 1	—	—	—
Mizusawa		32·5	25	5 47	+ 3	10 15	− 4	—	—	—
Vladivostok		33·6	10	i 5 55	+ 2	i 10 36	0	i 7 28	pP	—
Mori		34·9	21	6 7	+ 3	10 58	+ 3	—	—	—
Sapporo		36·0	21	6 15	+ 2	11 15	+ 3	—	—	—
Calcutta	N.	36·8	294	e 6 20	0	11 20	− 4	8 14	sP	—
Perth		42·6	191	6 54	−12	12 47	0	—	—	—
Colombo	E.	44·2	270	7 18	0	i 13 3	− 7	—	—	22·1
Irkutsk		45·2	343	7 25	− 1	i 13 25	+ 1	9 11	pP	—
Hyderabad		45·2	285	7 29	+ 3	i 13 13	−11	9 13	pP	18·2
Kodaikanal	E.	46·3	275	i 7 32	− 2	i 13 38	− 1	i 9 14	pP	20·1
Brisbane		46·5	145	i 7 18	−18	i 13 24	−18	i 9 18	P_cP	—
Adelaide		46·7	164	i 7 41	+ 3	i 13 45	+ 1	17 54	S_cS	21·9
Agra	E.	46·9	298	7 29	−10	13 36	−11	—	—	—
Dehra Dun	N.	47·6	303	e 7 54	+10	e 14 1	+ 4	—	—	—
Riverview		50·5	151	i 8 8a	+ 2	i 14 40	+ 4	i 9 10	pP	—
Sydney		50·5	151	e 8 42	+36	i 14 33	− 3	—	—	—
Bombay		50·7	286	e 8 3	− 4	i 14 32	− 7	e 9 10	pP	—
Almata		52·7	318	8 21	− 1	15 5	0	—	—	—
Semipalatinsk		54·2	327	e 8 29	− 3	—	—	—	—	—
Frunse		54·3	316	e 8 32	− 1	15 26	0	—	—	—
Andijan		55·2	313	8 37	− 2	i 15 35	− 3	9 29	P_cP	—
Tashkent		57·5	313	i 8 53	− 2	i 16 7	0	i 10 15	pP	—
Tchimkent		57·6	314	i 8 52	− 3	i 16 6	− 2	—	—	—
Samarkand		58·8	310	i 9 4	0	16 21	− 3	—	—	—
Sverdlovsk		67·5	328	i 9 57	− 2	i 18 1	− 8	i 11 58	pP	—
Arapuni		67·6	139	—	—	18 42	+32	—	—	—
Wellington		68·9	141	10 7k	0	18 25	0	19 11	S_cS	—
Christchurch		68·9	145	—	—	18 31	+ 6	—	—	22·7?
Baku		71·8	310	10 30	+ 6	19 1	+ 4	12 32	pP	—
Erevan		75·9	309	e 10 54	+ 7	e 19 42	0	—	—	—
Sotchi		79·4	313	e 11 6	0	20 16	− 2	—	—	—
College		80·0	26	—	—	e 20 28	+ 4	e 23 41	sS	—
Moscow		80·1	325	11 7	− 2	20 18	− 7	13 14	pP	e 36·1
Tananarive		81·1	249	e 11 13	− 1	20 34	− 1	13 23	pP	—
Theodosia		82·3	314	11 15	− 5	20 38	− 9	—	—	—
Simferopol		83·2	314	11 26	+ 1	20 55	− 1	—	—	—
Ksara		83·3	302	e 11 26	+ 1	e 20 59	+ 2	e 13 39	pP	—
Pulkovo		83·5	330	11 25	− 1	20 55	− 4	13 32	pP	—
Helwan		87·8	299	11 45	− 2	21 16	−23	13 54	sP	—
Bucharest		89·0	315	e 11 48	− 5	e 21 27	−22	e 14 9	PP	35·7
Upsala		89·7	331	i 11 54	− 2	i 21 24	−32	—	—	e 35·7
Warsaw		90·2	323	e 11 58k	0	i 21 58	− 2	e 21 33	SKS	e 46·7
Sofia		91·4	313	e 12 3	− 1	e 21 44	[+ 5]	—	—	—
Copenhagen		93·8	328	i 12 13k	− 2	22 30	− 1	—	—	—
Potsdam		94·8	325	i 12 17k	− 2	i 22 40	+ 1	14 29	pP	e 50·7
Prague		94·9	322	e 7 36	?	e 22 48	+ 8	—	—	—
Bergen		95·1	334	e 12 5	−15	e 21 57	[− 2]	e 22 42	SKS	36·7
Hamburg		96·0	327	e 12 23	− 1	e 22 38	−11	—	—	e 49·7
Jena		96·3	323	e 12 25	− 1	e 22 55	+ 3	e 22 6	SKS	—
Scoresby Sund		96·5	349	e 17 56	PPP	i 22 10	[+ 4]	i 22 55	S_cS	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
	°	°	m. s.	s.	m. s.	s.	m. s.	m.
Triest	97·0	318	—	—	i 23 6	+ 8	i 22 4 SKS	—
Stuttgart	98·6	322	e 12 36	0	e 23 15	+ 4	e 22 17 SKS	—
Chur	99·2	321	e 12 37	− 2	e 22 17	[− 1]	— —	—
De Bilt	99·3	326	i 14 52k	PP	i 22 22	[+ 3]	— —	27·2
Rome	99·3	315	e 14 56	PP	i 22 27	[+ 8]	— —	—
Zurich	99·5	322	e 12 38k	− 2	e 22 23	[+ 2]	— —	—
Basle	100·0	322	e 12 41	− 2	e 22 18	[− 5]	— —	—
Aberdeen	100·1	334	i 22 24	SKS	(i 22 24)	[+ 1]	i 23 26 S	—
Uccle	100·4	325	e 12 43	− 1	e 22 6	[−17]	i 14 56 pP	—
Ukiah	100·5	47	—	—	25 1	PS	— —	35·5
Kew	102·5	327	—	—	e 22 36	[+ 2]	e 23 16 S	e 48·7
Stonyhurst	102·5	330	—	—	i 22 13	[−21]	— —	55·7
Paris	102·5	324	e 15 10	pP	i 25 16	S?	e 17 25 pP	55·7
Oxford	102·9	328	—	—	22 38	[+ 2]	i 26 15 sS	—
Santa Barbara	104·9	50	—	—	e 22 53	[+ 6]	— —	—
Tinemaha	104·9	47	i 13 7	P	i 22 52	[+ 5]	e 26 54 SP	—
Bozeman	105·5	36	—	—	e 36 15	SSS	e 25 56 SP	—
Haiwee	105·5	48	i 13 10	P	e 22 58	[+ 9]	i 17 20 PKP	—
Mount Wilson	106·2	50	i 13 14	P	i 26 4	SP	i 17 21 PKP	—
Pasadena	106·2	50	e 13 12	P	i 22 58	[+ 7]	i 17 20 PKP	—
Riverside	106·8	50	i 13 15	P	e 23 1	[+ 6]	e 17 20 PKP	—
Salt Lake City	107·6	42	—	—	e 23 5	[+ 7]	e 27 6 SP	e 43·3
Tucson	112·5	48	i 13 44	P	—	—	i 17 43 PKP	e 42·4?
Granada	113·0	317	20 22	PP	27 16	PS	— —	—
Coimbra	113·8	322	e 20 14	PP	29 32	PPS	— —	36·7
Shawinigan Falls	121·6	12	17 47	[+ 1]	23 55	[+ 6]	— —	—
Florissant	121·6	31	18 9	[+23]	25 42	SKKS	— —	—
St. Louis	121·8	31	i 17 47	[+ 1]	i 28 8	SP	i 19 39 PP	—
Ottawa	121·9	16	17 48	[+ 1]	—	—	19 32 PP	32·7
East Machias	124·3	9	e 30 56	PS	i 35 59	SS	— —	—
Fordham	126·6	16	i 17 57	[+ 2]	i 21 19	SKP	e 20 3 PP	—
Balboa Heights	149·5	51	e 17 42?	[−56]	—	—	— —	—
San Juan	149·9	20	e 18 46	[+ 8]	—	—	i 22 34 PP	—
Huancayo	160·4	99	e 18 58	[+ 7]	i 25 20	[+22]	e 22 4 pPKP	—
La Paz	166·1	119	19 1k	[+ 4]	29 48	PS	i 20 11 pPKP	51·7

Additional readings :—
Zi-ka-wei iN = +6m.40s., iN = +7m.36s.
Hukuoka e = +5m.55s., e = +10m.59s., e = +14m.26s.
Yokohama e = +7m.10s.
Tokyo C.M.O. i = +6m.56s.
Mori i = +7m.44s.
Calcutta isSN = +14m.39s.
Perth i = +8m.30s., i = +15m.15s., i = +15m.54s.
Irkutsk isS = +16m.37s.
Hyderabad SSE = +16m.15s.
Kodaikanal iSSE = +16m.24s.
Brisbane iSSN = +16m.6s.
Adelaide i = +7m.46s., +7m.55s., +9m.12s., +13m.9s., +13m.49s., +13m.53s., and +14m.0s., SS = +16m.7s.
Agra iE = +9m.21s., +16m.16s., and +17m.14s.
Dehra Dun eN = +11m.2s.
Riverview iZ = +14m.53s., iE = +15m.37s., isS? = +16m.57s.
Bombay isPE = +9m.48s., eN = +10m.3s., iN = +16m.51s., iE = +16m.55s., eSSN = +17m.49s.
Tashkent esS = +16m.24s.
Sverdlovsk sS = +21m.33s.
Wellington PPZ = +12m.50s., SS = +23m.9s.
College eSP = +21m.31s., e = +25m.37s., esSS = +28m.48s., e = +29m.30s.
Moscow sS = +23m.53s.
Tananarive e = +16m.12s. and +18m.5s., SN = +20m.31s., SSE = +25m.57s.
Ksara esS = +24m.45s.
Pulkovo sS = +24m.30s.
Salt Lake City e = +26m.28s., eSS = +32m.28s., e = +32m.35s., esSS = +35m.33s.
Helwan PPZ = +15m.6s., sPPZ = +17m.6s., SPE = +22m.9s., sSE = +23m.54s., SSE = +26m.45s.
Bucharest eEN = +11m.54s., eN = +13m.5s., eE = +14m.3s., PPPE = +16m.19s., ePSEN = +21m.47s., SSE = +25m.51s.
Upsala iSKSN = +21m.50s., eN = +25m.40s., eSSE = +26m.36s., eSSSE = +30m.42s.?

Continued on next page.

Warsaw iZ = +14m.6s., PSZ = +22m.1s., iZ = +23m.10s., iE = +25m.46s., iNZ = +25m.56s., eE = +26m.57s.
Copenhagen +14m.25s., +18m.3s., +21m.53s., +23m.47s., +25m.8s., +26m.18s., and +27m.34s.
Potsdam ipPPEZ = +18m.6s., iSKSE = +21m.58s., iSPZ = +23m.55s.
Hamburg iZ = +14m.34s., eE = +22m.3s.
Scoresby Sund +18m.15s., i = +25m.14s. and +26m.46s., esSS = +33m.8s., e = +45m.31s.
Triest eSS = +28m.12s. and +30m.4s.
Stuttgart eZ = +14m.48s., ePPZ = +16m.55s., ePPSN = +26m.57s.
Rome iN? = +26m.42s. and +28m.30s., eN = +30m.25s., e = +34m.10s.
Uccle epPP = +18m.51s., ePS = +24m.56s.
Aberdeen iPPPN = +24m.56s., eEN = +27m.17s., eSEN = +30m.51s., eN = +33m.56s., eE = +34m.26s.
Paris iPKP = +19m.7s., esS = +29m.15s., eSS = +34m.51s., SSS = +40m.8s.
Kew eZ = +25m.14s. and +26m.16s., eEZ = +26m.48s., eEN = +31m.42s.?
Stonyhurst i = +23m.43s., e = +29m.13s.
Ukiah i = +26m.25s., e = +28m.51s., i = +31m.4s.
Mount Wilson iZ = +19m.41s.
Pasadena ePP = +19m.31s., iPSEZ = +26m.11s., ePKKPZ = +28m.40s., ePKKPZ = +28m.58s., eZ = +30m.55s.
Riverside iPSZ = +26m.16s., iPKKPZ = +28m.38s.
Tucson i = +13m.56s., +14m.26s., +17m.30s., +17m.54s., +18m.7s., and +18m.12s., ePP = +18m.38s., i = +28m.21s. and +29m.9s.
Coimbra e = +20m.32s., i = +21m.32s., PPP = +25m.28s.
Florissant eEN = +24m.4s.
St. Louis iEN = +23m.55s., iE = +32m.8s., iN = +35m.30s.
East Machias eS = +31m.33s., esSS = +39m.16s.
Fordham i = +18m.4s. and +18m.11s., e = +29m.57s.
San Juan i = +18m.54s. and +23m.9s., e = +32m.16s., e = +34m.59s.
Huancayo i = +19m.46s., +21m.27s., and +23m.0s., iPP = +23m.54s., i = +29m.25s., +32m.9s., +32m.34s., and +46m.25s.
La Paz iN = +19m.17s., PPZ = +22m.54s., iN = +38m.54s. and +44m.0s.
Long waves were recorded at Almeria.

Feb. 4d. 17h. 4m. 19s. Epicentre 22°·9N. 121°·5E. (as on 1938, December 9d.).

$A = -\cdot4818$, $B = +\cdot7862$, $C = +\cdot3869$; $\delta = -7$; $h = +4$;
$D = +\cdot883$, $E = +\cdot522$; $G = -\cdot202$, $H = +\cdot330$, $K = -\cdot922$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Manila		8·3	183	1 54	−10	4 19	S*	—
Zi-ka-wei	E.	8·3	356	—	—	e 3 29	−11	i 4·3
Vladivostok		21·9	22	e 4 57	0	i 9 1	+ 7	—
Irkutsk		32·2	340	e 7 2	+30	—	—	—
Andijan		44·8	305	8 18	+ 1	—	—	—
Tashkent		47·2	306	e 8 40	+ 4	e 15 25	− 4	—
Samarkand		48·8	303	8 51	+ 2	—	—	—
Sverdlovsk		55·2	324	i 9 37	0	e 17 16	− 4	—
Moscow		68·0	323	e 11 2	− 1	—	—	—

Long waves were also recorded at Agra and De Bilt.

Feb. 4d. 19h. 9m. 7s. Epicentre 27°·3N. 53°·2E. (as on 1939, July 24d.).

$A = +\cdot5330$, $B = +\cdot7125$, $C = +\cdot4562$; $\delta = -14$; $h = +3$;
$D = +\cdot801$, $E = -\cdot599$; $G = +\cdot273$, $H = +\cdot365$, $K = -\cdot890$.

Doubtful identification.

	Δ	Az.	P.	P−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Ksara	16·3	298	e 4 19	+27	e 7 49	+56	—
Samarkand	16·8	39	3 57	− 1	7 5	0	—
Tashkent	19·3	39	e 4 24	− 5	e 7 56	− 6	—
Helwan	19·4	284	—	—	e 8 41	?	i 11·6
Tchimkent	20·1	37	4 33	− 5	—	—	—
Andijan	20·7	45	e 4 48	+ 4	—	—	—
Sverdlovsk	30·0	9	e 7 0	+48	—	—	—
Zurich	40·1	313	e 7 47k	+ 8	—	—	—
Copenhagen	40·7	326	i 7 57	+13	—	—	—

Long waves also recorded at Calcutta.

Feb. 4d. 20h. 5m. 26s. Epicentre 33°·0N. 137°·8E. Depth 0·060.

Intensity II-III at Tokyo, Tukubasan, Utunomiya, Kakioka, Katsuura. Radius 200-300km. Depth 300km.
Seismological Bulletin of the Central Meteorological Observatory, Japan, 1941, Tokyo, 1950, pp. 7-8. Macroseismic Chart, p. 7.

A = −·6225, B = +·5644, C = +·5421 ; δ = −7 ; h = +1 ;
D = +·672, E = +·741 ; G = −·402, H = +·364, K = −·840.

		△	Az.	P.	P−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Hamamatu		1·7	358	0 55a	− 1	1 34	− 6
Hatidyozima		1·7	87	0 58	+ 2	—	—
Owase		1·7	309	0 55	− 1	1 33	− 7
Siomisaki		1·8	285	0 56a	0	1 34	− 7
Susaki		1·9	31	0 56	− 1	1 39	− 3
Shizuoka		2·0	14	0 59k	+ 1	1 40	− 3
Osima		2·2	37	1 2	+ 3	1 43	− 2
Nagoya		2·3	342	1 0	0	1 42	− 4
Osaka		2·3	311	0 58	− 2	1 41	− 5
Misima		2·4	24	1 0	0	1 42	− 6
Mera		2·5	41	1 0	− 1	1 46	− 3
Wakayama		2·5	299	1 1	0	1 43	− 6
Gihu		2·6	340	1 1	− 1	1 44	− 6
Hunatu		2·6	18	1 3	+ 1	1 46	− 4
Hikone		2·7	330	1 1a	− 1	1 44	− 7
Kamakura		2·7	32	1 5	+ 3	—	—
Kohu		2·7	14	1 4	+ 2	1 48	− 3
Kyoto		2·7	320	1 0	− 2	1 49	− 2
Sumoto		2·8	299	1 2	− 1	1 44	− 9
Kobe		2·8	308	1 0a	− 3	1 43	−10
Yokohama		2·9	32	1 5k	+ 1	1 50	− 4
Komaba		3·0	30	1 8	+ 3	1 53	− 3
Mitaka		3·0	28	1 5	0	1 52	− 4
Muroto		3·1	275	1 4	− 2	1 52	− 5
Tokyo, Imp. Univ.		3·2	31	1 6	0	1 54	− 4
Tokyo, Cen. Met. Ob.		3·2	31	1 8	+ 2	1 53	− 5
Titibu		3·2	20	1 5	− 1	1 56	− 2
Togane		3·3	40	1 5	− 2	1 57	− 3
Kumagaya		3·4	22	1 8	0	1 58	− 4
Maebasi		3·5	17	1 10	+ 1	1 58	− 5
Koti		3·6	279	1 6a	− 4	1 57	− 8
Nagano		3·7	5	1 12	+ 1	2 2	− 4
Toyama		3·7	353	1 17	+ 6	2 2	− 4
Tukubasan		3·7	30	1 11	0	2 1	− 5
Tyosi		3·7	42	1 13	+ 2	2 5	− 1
Kakioka		3·8	31	1 13	+ 1	2 3	− 5
Utunomiya		3·9	26	1 12	0	2 3	− 7
Mito		4·0	33	1 16	+ 3	2 6	− 5
Simidu		4·1	268	1 57	+43	—	—
Hiroshima		4·7	288	1 20	0	—	—
Hukusima		5·2	24	1 26k	+ 1	2 28	− 4
Miyazaki		5·5	260	1 32a	+ 4	2 41	+ 3
Sendai		5·8	25	1 32	0	2 39	− 5
Kumamoto		6·0	270	1 35a	+ 1	2 46	− 1
Hukuoka		6·2	277	1 38	+ 2	2 51	0
Kagosima		6·3	259	1 40	+ 3	—	—
Mizusawa	E.	6·7	23	e 1 43	+ 2	i 2 57	− 4
Akita		6·9	15	2 22	+38	3 5	− 1
Titizima		7·0	146	1 51	+ 6	3 11	+ 3
Hatinohe		8·1	21	1 57	0	3 25	− 5
Aomori		8·2	16	1 52	− 6	—	—

Feb. 4d. Readings also at 4h. (Riverview, Wellington, and Christchurch), 9h. (near Mizusawa), 13h. (near Medan), 17h. (La Paz, Huancayo, and Calcutta), 18h. (San Juan), 21h. (Huancayo).

Feb. 5d. 13h. 33m. 6s. Epicentre 31°·7N. 115°·1W. (as on 1941, January 9d.).

$A = -·3616$, $B = -·7719$, $C = +·5229$; $\delta = +1$; $h = +7$;
$D = -·906$, $E = +·424$; $G = -·222$, $H = -·474$, $K = -·852$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palomar	Z.	2·0	318	i 0 35	0	—	—	—	—	—
Riverside		3·0	320	e 0 48	− 2	e 1 29	+ 2	—	—	—
Pasadena		3·5	316	e 0 58	+ 1	i 1 50	S*	—	—	—
Mount Wilson		3·5	316	e 0 55	− 2	i 1 49	S*	—	—	—
Tucson		3·6	83	i 0 57	− 1	e 1 49	S*	1 11	P_g	i 3·0
Haiwee	Z.	5·0	332	i 1 20	+ 2	i 2 42	S_g	—	—	—
Tinemaha	Z.	6·0	335	e 1 34	+ 2	—	—	i 1 52	P*	—

Tucson also gives i = +1m.14s., +1m.17s., +1m.33s., +1m.59s., and +2m.17s.

Feb. 5d. 23h. 4m. 32s. Epicentre 3°·7N. 128°·5E. (as on 1939, September 16d.).

$A = -·6212$, $B = +·7810$, $C = +·0641$; $\delta = -4$; $h = +7$;
$D = +·782$, $E = +·623$; $G = -·040$, $H = +·050$, $K = -·998$.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Amboina		7·4	183	1 45	− 7	i 3 7	+11	—
Manila		13·1	326	i 3 16k	+ 6	6 0	SS	7·8
Batavia		23·8	245	5 10	− 5	9 20	− 8	—
Medan		29·8	272	5 45	−26	10 45	−22	—
Vladivostok		39·4	3	—	—	i 13 57	+22	—
Calcutta	N.	43·2	298	e 8 11	+ 7	i 14 32	0	—
Colombo	E.	48·5	276	15 40	S	(15 40)	− 8	—
Irkutsk		52·4	343	—	—	16 43	+ 1	—
Bombay	E.	56·4	291	e 9 43	− 2	i 17 32	− 4	—
Almata		60·2	319	10 18	+ 6	—	—	—
Tashkent		64·7	315	e 10 42	0	e 19 21	− 1	—
Sverdlovsk		74·9	329	e 11 44	0	21 17	− 5	—
Baku		78·9	311	—	—	i 22 26	+21	—

Additional readings :—
Amboina iPN = +1m.51s.
Batavia ePN = +5m.20s., SN = +9m.23s.
Medan iSN = +10m.59s.
Long waves were also recorded at Sydney, Rome, De Bilt, and Huancayo.

Feb. 5d. Readings also at 2h. (near Zurich and Chur, Stuttgart and Balboa Heights), 4h. (Batavia, Titibu, Mitaka, Kamakura, Tokyo, Imp. Univ., and Komaba), 8h. (Mizusawa, Tinemaha, Mount Wilson, Pasadena, Riverside, and near Huancayo), 10h. (Frunse, Andijan, Samarkand, Tashkent, Almata, and La Paz), 12h. (La Paz), 19h. (Tucson), 21h. (near Bucharest and Sofia, San Juan, Huancayo, Balboa Heights, and La Paz), 22h. (Sofia).

Feb. 6d. Readings at 4h. (Huancayo), 6h. (near La Paz), 7h. (Colombo), 10h. (near Lick, Berkeley, Fresno, and Tucson), 11h. (near Mizusawa), 13h. (Tucson), 16h. (near Bagneres).

Feb. 7d. 15h. 13m. 26s. Epicentre 55°·5N. 165°·0E. (as on 1940, October 15d.).

$A = -·5496$, $B = +·1473$, $C = +·8223$; $\delta = -7$; $h = -7$;
$D = +·259$, $E = +·966$; $G = -794$, $H = +·213$, $K = -·569$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Sapporo	19·7	241	4 34	0	—	—	—	—	—
Mizusawa	22·8	233	e 5 7	+ 2	9 11	0	—	—	—
Sendai	23·6	233	e 5 13	0	9 25	0	—	—	—
College	24·7	49	i 5 25	+ 1	e 8 44	−60	—	—	10·0
Tokyo, Cen. Met. Ob.	26·3	232	e 5 49	+10	—	—	—	—	—
Gihu	27·9	235	5 53	− 1	10 56	+19	—	—	—
Kobe	29·2	235	(6 5)	0	(11 37)	+39	—	—	—
Taikyu	31·6	247	7 54	PPP	13 23	SS	—	—	—
Sitka	32·1	63	e 6 31	0	e 11 56	+13	i 7 53	PP	e 14·0
Miyazaki	33·3	238	7 42	+61	13 6	+64	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Irkutsk		34·9	292	6 53	− 2	12 17	−10	—	—	—
Victoria		42·8	69	e 7 40	−21	e 14 46	+20	—	—	e 22·6
Seattle		43·9	70	e 11 28	?	—	—	—	—	e 20·6
Honolulu		44·0	125	e 10 58	PPP	e 15 20	+37	—	—	e 19·1
Semipalatinsk		48·3	302	8 58	+13	—	—	—	—	—
Ukiah		49·1	79	e 8 58	+ 7	e 16 9	+13	—	—	e 23·9
Butte		50·1	63	—	—	e 16 55	SS	e 19 52	SS	e 27·0
Berkeley		50·5	79	e 8 58	− 4	e 16 8	PS	i 11 24	PP	e 20·4
Bozeman		51·1	64	e 9 12	+ 6	e 16 34	+10	—	—	e 20·6
Sverdlovsk		52·5	318	i 9 11	− 6	18 56	?	—	—	—
Manila		53·0	237	i 9 21a	0	16 51	+ 1	—	—	25·1
Tinemaha		53·3	76	i 9 27	+ 4	—	—	i 9 36	?	—
Haiwee		54·1	76	e 9 33	+ 4	—	—	i 9 44	?	—
Salt Lake City		54·1	69	e 9 47	+18	e 17 22	+17	e 21 24	SS	e 26·1
Scoresby Sund		54·2	4	i 9 30	+ 1	e 17 0	− 6	i 11 33	PP	e 26·2
Santa Barbara	Z.	54·4	79	e 9 35	+ 4	—	—	—	—	—
Almata		54·8	298	9 49	+15	—	—	—	—	—
Mount Wilson		55·5	78	i 9 43	+ 4	—	—	—	—	—
Pasadena		55·5	78	i 9 42	+ 3	—	—	e 13 2	PP	i 31·4
Riverside	Z.	56·0	78	i 9 46	+ 3	—	—	i 10 10	?	—
Frunse		56·3	298	e 9 43	− 2	—	—	—	—	—
Andijan		59·0	298	10 9	+ 5	18 25	PS	—	—	—
Pulkovo		59·5	336	10 1	− 6	18 7	− 9	—	—	—
Tucson		60·9	74	i 10 21	+ 4	i 18 51	+17	i 10 48	pP	e 31·8
Moscow		61·1	149	10 11	− 7	18 28	− 9	—	—	—
Upsala		62·1	343	—	—	e 18 34	−15	—	—	e 32·6
Samarkand		62·5	301	10 21	− 7	18 43	−11	—	—	—
Calcutta	N.	64·2	273	e 10 37	− 2	i 19 16	+ 2	e 11 12	PcP	e 31·2
Chicago, U.S.C.G.S.		65·1	53	e 14 0	PP	e 19 57	+30	23 57	SS	e 26·6
Agra	E.	66·4	284	10 43	−10	19 24	−19	20 36	?	—
Florissant		66·4	57	i 10 55	+ 2	e 19 48	+ 5	i 11 5	pP	—
St. Louis		66·6	57	i 10 55	+ 1	e 19 32	−13	i 11 6	pP	e 33·0
Copenhagen		66·9	345	i 10 51	− 5	19 46	− 3	—	—	—
Ottawa		67·2	43	i 10 56	− 2	e 20 46	− 6	e 13 21	PP	e 32·6
Toronto	N.	67·2	46	—	—	e 29 45	Q	—	—	37·6
Seven Falls		67·5	38	—	—	e 19 50	− 6	—	—	37·6
Warsaw		68·6	338	e 11 0a	− 7	e 20 5	− 4	—	—	e 35·6
Heligoland		69·1	348	—	—	e 20 58	+43	—	—	e 39·6
Hamburg	Z.	69·4	345	e 11 7	− 5	—	—	—	—	—
Baku		69·7	313	i 11 13	− 1	i 20 19	− 3	—	—	—
Potsdam		70·0	343	i 11 10	− 5	e 20 18	− 8	i 13 44	PP	37·6
East Machias		70·7	37	e 15 20	PP	e 20 43	+ 9	e 25 25	SS	e 32·3
Sotchi		71·0	321	11 19	− 3	—	—	—	—	—
Harvard	Z.	71·2	41	e 11 22	− 1	—	—	—	—	—
De Bilt		71·5	348	i 11 21	− 3	e 20 49	+ 6	—	—	39·6
Fordham		71·8	44	i 11 25	− 1	e 21 36	+50	e 15 58	PP	—
Uccle		72·9	349	e 11 28	− 5	e 21 6	+ 7	e 25 44	SS	34·6
Medan		73·8	253	e 11 55	+17	21 1	− 8	—	—	—
Hyderabad		73·9	277	11 35	− 4	21 1	− 9	21 37	PS	—
Stuttgart		74·1	344	e 11 36	− 4	e 21 50	+38	—	—	43·1
Strasbourg		74·5	345	e 11 38	− 4	—	—	—	—	—
Basle		75·6	345	11 43	− 5	—	—	e 13 55	PP	—
Zurich		75·6	345	e 11 43	− 5	—	—	—	—	—
Bombay		75·9	283	e 11 46	− 4	i 21 23	− 9	e 12 37	?	—
Chur		75·9	344	e 11 47	− 3	—	—	—	—	—
Neuchatel		76·2	345	e 11 48	− 4	—	—	—	—	—
Triest		76·3	340	—	—	e 21 42	+ 5	—	—	—
Batavia		77·9	240	—	—	21 49	− 5	—	—	—
Rome		80·2	339	i 12 10a	− 4	e 22 18	− 1	e 15 22	PP	e 38·8
Kodaikanal	E.	80·3	274	—	—	i 22 7	−13	22 32	pS	—
Ksara		81·0	319	e 12 28	+10	e 22 38	+11	—	—	—
Colombo	E.	81·6	270	e 12 24	+ 3	22 19	−14	—	—	40·4
Bermuda		82·7	41	e 12 30	+ 3	e 22 54	+10	e 15 49	PP	e 33·6
Coimbra		84·5	356	e 12 8	−28	e 23 12	+10	15 32	PP	47·6
Toledo		84·5	352	e 12 33	− 3	—	—	13 17	?	48·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lisbon		86·0	356	12 41	− 2	23 11	− 6	15 59	PP	53·4
Helwan		86·2	321	12 40	− 4	i 23 10	− 9	e 15 52	PP	—
Granada		87·2	352	i 12 44a	− 5	23 26	− 2	—	—	e 48·6
Almeria		87·4	350	12 46	− 4	23 8	[− 9]	13 15	pP	51·6
San Juan		94·7	48	e 20 41	?	e 24 6	[+ 7]	—	—	e 43·2
Huancayo		116·5	73	e 19 53	PP	e 25 49	[+11]	i 35 54	SS	e 44·9
La Paz	z.	124·0	67	20 51	PP	e 32 21	PPS	—	—	—

Additional readings :—
College e = +6m.0s. and +6m.18s.
Kobe readings have been reduced by 4m.
Sitka i = +7m.49s., e = +9m.47s., i = +12m.19s.
Victoria eE = +10m.4s., eN = +13m.53s.
Honolulu e = +12m.8s. and +13m.38s.
Berkeley ePN = +9m.2s., ePZ = +9m.10s., iSSN = +16m.46s.
Bozeman i = +12m.23s., e = +16m.55s.
Salt Lake City e = +10m.30s. and +13m.33s.
Scoresby Sund i = +17m.30s., e = +21m.39s.
Tucson i = +10m.29s., +10m.40s., and +11m.44s., e = +20m.1s., i = +22m.4s.
Upsala eN = +24m.10s., eE = +25m.22s.
Calcutta iS_cSN = +20m.32s., eSSN = +23m.20s.
Chicago, U.S.C.G.S. e = +20m.6s.
Agra iE = +24m.47s.
Florissant isSE = +20m.20s.
St. Louis esSE = +19m.52s., eSSN = +22m.32s., eEN = +24m.12s., iSSSN = +25m.0s., iN = +27m.32s.
Copenhagen +20m.8s.
Warsaw eSN? = +20m.8s.
Potsdam iPPSZ = +20m.59s.
Harvard eZ = +12m.34s., +13m.58s., +15m.15s., and +15m.28s.
Fordham e = +28m.40s.
Medan S?EN = +20m.12s.
Rome eSSN = +28m.14s., eSSSN = +31m.22s.
Kodaikanal SS?E = +27m.14s.
Bermuda e = +14m.4s., +25m.3s., and +26m.16s., eSS = +28m.19s.
Coimbra iN = +23m.38s.
Lisbon PN = +12m.44s., PPN = +16m.2s., SE = +23m.25s.
Almeria PP = +16m.7s., PPP = +18m.7s., SS = +28m.55s., SSS = +32m.24s.
San Juan e = +26m.2s., i = +35m.58s.
Huancayo ePP = +20m.2s., i = +22m.39s. and +22m.48s., e = +26m.56s. and +28m.35s., i = +29m.43s., e = +31m.23s. and +36m.28s.
Long waves also recorded at Lincoln, Santa Clara, and other European stations.

Feb. 7d. 16h. Undetermined shock.
Balboa Heights eP = 8m.40s., L = 9m.30s.
Huancayo iP = 11m.57s., i = 12m.21s., 17m.52s., and 20m.32s., eS = 23m.23s., i = 24m.52s. e = 26m.25s., eL = 30m.22s.
San Juan e = 12m.16s.
La Paz PZ = 13m.11s., iZ = 18m.11s.
La Plata P?N = +15m.54s., P?E = 16m.6s., S?N = 18m.6s., LN = 19m.36s.
Tucson e = 25m.13s., i = 25m.32s., 25m.40s., and 27m.38s.
Riverside eZ = 25m.45s.
Mount Wilson ePZ = 25m.56s.
Tinemaha ePZ = 26m.10s.

Feb. 7d. Readings also at 12h. (Agra, Tashkent, Irkutsk, Mizusawa (3), Copenhagen (3), and Tucson), 13h. (Huancayo, Tucson, and Scoresby Sund), 14h. (Copenhagen, Kew, and Mizusawa), 18h. (La Paz, Haiwee, Mount Wilson, Pasadena, Riverside, Santa Barbara, Tinemaha, Sverdlovsk, and Manila), 19h. (La Paz, Rome, near Huancayo, and near Berkeley), 23h. (Bombay and Calcutta).

Feb. 8d. 14h. Readings which would appear to belong to a very deep focus earthquake. The data is, however, insufficient to base a determination.
Huancayo iP = 19m.12s., i = 19m.50s., eS = 20m.15s., iL = 20m.27s.
La Paz iPNZ = 19m.34s., iSN = 20m.53s., iLN = 21m.6s.
La Plata PN = 22m.40s., PE = 22m.43s., SE = 26m.40s., L?E = 29m.36s.
Cape Girardeau ePE = 25m.35s., eSEN = 31m.57s.
Mount Wilson iP = 27m.5s., iZ = 28m.6s. and 29m.2s.
Riverside iPZ = 27m.0s., iZ = 27m.21s., 27m.34s., and 28m.57s.
Pasadena iP = 27m.5s.a, iZ = 27m.37s., eZ = 29m.2s.
Haiwee iP = 27m.11s.
Tinemaha iP = 27m.17s., iZ = 27m.45s. and 29m.16s.
Tucson iP = 29m.9s., i = 29m.38s., +30m.10s., and 33m.24s., e = 36m.10s.
Copenhagen iP = 29m.57s.

Feb. 8d. 18h. 46m. 11s. Epicentre 2°·0N. 120°·3E.

$A = -·5042$, $B = +·8629$, $C = +·0347$; $\delta = +2$; $h = +7$;
$D = +·863$, $E = +·505$; $G = -·018$, $H = +·030$, $K = -·999$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		12·5	5	i 3 10k	+ 8	i 6 16	− 7	—	—	i 7·9
Palau		15·1	69	3 40	+ 4	6 41	SS	—	—	—
Batavia		15·7	239	3 32a	−12	i 6 32	− 7	—	—	i 8·1
Medan		21·6	275	4 53	− 1	8 50	+ 1	—	—	—
Isigakizima		22·5	9	e 4 58	− 4	9 8	+ 3	—	—	—
Zi-ka-wei	N.	29·1	2	e 6 5	+ 1	10 59	+ 3	—	—	—
Miyazaki		31·5	19	6 27	+ 1	11 44	+10	—	—	16·0
Hukuoka		32·8	15	6 40	+ 3	12 3	+ 9	—	—	—
Koti		33·8	19	e 6 36	−10	12 7	− 3	—	—	—
Husan		33·9	12	6 46	− 1	12 17	+ 6	—	—	—
Perth		34·0	186	i 7 4	+16	i 12 1	−12	7 56	PP	15·6
Kobe		35·4	21	e 7 0	0	12 37	+ 3	—	—	—
Nagoya		36·5	23	7 10	+ 1	12 55	+ 4	—	—	—
Calcutta	N.	37·1	305	e 7 19	+ 5	i 13 13	+12	e 15 42	SS	e 20·1
Yokohama		37·8	26	e 9 18	PPP	—	—	—	—	e 27·5
Tokyo, Cen. Met. Ob.		38·1	26	e 9 4	PPP	—	—	—	—	—
Nagano		38·3	22	7 13	−11	13 17	− 2	—	—	—
Adelaide		40·5	157	i 7 28	−14	13 48	− 4	8 58	PP	—
Sendai		40·7	25	7 42	− 2	13 57	+ 2	—	—	—
Mizusawa		41·6	24	e 7 52	+ 1	e 14 2	− 6	—	—	—
Vladivostok		42·2	12	i 7 57	+ 1	i 14 21	+ 4	—	—	—
Brisbane	E.	43·0	136	i 7 49	−14	i 17 19	SS	—	—	—
Kodaikanal	E.	43·3	283	i 8 2k	− 3	i 14 25	− 8	17 49	SS	—
Hyderabad		43·8	293	8 5	− 4	14 35	− 5	18 0	SS	21·8
Mori		43·9	21	8 15	+ 5	14 36	− 6	i 10 7	PP	—
Riverview		46·0	143	i 8 14a	−13	e 14 54	−18	i 18 7	SS	e 23·1
Sydney		46·0	143	e 8 19	− 8	e 15 1	−11	—	—	e 22·2
Agra	E.	47·6	306	8 31	− 8	i 15 31	− 4	10 26	PP	22·4
Bombay		49·4	293	e 8 51	− 2	i 15 58	− 2	e 10 45	PP	—
Irkutsk		51·9	347	9 11	− 1	16 39	+ 4	—	—	—
Almata		56·3	323	9 47	+ 2	—	—	—	—	—
Frunse		57·6	321	e 9 55	+ 1	17 59	+ 8	—	—	—
Andijan		57·9	318	e 9 56	0	18 2	+ 7	—	—	—
Tashkent		60·2	318	i 10 10	− 2	i 18 29	+ 4	—	—	—
Tchimkent		60·5	319	10 11	− 3	18 31	+ 2	—	—	—
Samarkand		61·1	314	10 21	+ 3	18 39	+ 2	—	—	—
Wellington		65·5	138	—	—	27 32	?	—	—	34·8
Sverdlovsk		72·2	330	i 11 28	− 1	i 20 52	+ 1	—	—	—
Baku		73·8	311	11 45	+ 7	21 18	+ 9	—	—	—
Tananarive		74·4	250	e 11 33	− 9	21 5	−11	—	—	—
Piatigorsk		79·4	314	12 12	+ 3	—	—	—	—	—
Moscow		84·3	325	i 12 37	+ 2	22 53	− 7	15 54	PP	—
Ksara		84·8	303	e 12 41	+ 4	e 23 4	− 1	—	—	—
Theodosia		85·0	315	—	—	23 6	− 1	—	—	—
Simferopol		85·9	315	12 39	− 4	—	—	—	—	—
Helwan		88·1	299	12 57	+ 3	23 37	0	16 22	PP	—
Pulkovo		88·3	329	e 12 55	0	23 35	− 4	16 27	PP	—
College		89·0	25	e 18 35	PPP	e 23 20	[− 7]	e 29 21	SS	e 45·8
Bucharest		91·6	314	e 18 1	PPP	e 23 42	[− 1]	—	—	28·8
Sofia		93·8	313	—	—	e 23 49	[− 5]	—	—	—
Warsaw		94·1	322	e 20 49?	?	i 23 51	[− 5]	i 25 53	PS	e 52·8
Upsala		94·6	330	23 50	SKS	(23 50)	[− 9]	30 44	SS	e 45·8
Belgrade		95·6	315	—	—	25 16	+33	30 20	SS	e 53·8
Sitka		96·0	32	i 18 15	PP	i 24 4	[− 3]	i 26 53	PPS	e 45·6
Copenhagen		98·3	327	—	—	i 24 16	[− 3]	i 26 33	PS	—
Potsdam		98·9	324	e 13 58	+15	i 24 13	[− 8]	i 17 47	PP	56·8
Triest		100·1	317	e 18 5	PP	i 24 17	[−10]	e 26 52	PS	—
Hamburg		100·3	326	e 17 51	PP	i 24 18	[−10]	e 35 49	SSS	e 54·8
Rome		101·8	313	e 18 1	PP	e 24 29	[− 7]	e 27 8	PS	—
Stuttgart		102·2	321	e 14 2	+ 4	i 24 31	[− 6]	e 18 4	PP	e 59·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m s.	s	m. s.			m.
De Bilt		103·5	325	i 18 21k	PP	i 24 41	[− 3]	i 20 47	PPP		e 53·8
Scoresby Sund		103·5	348	—	—	i 24 42	[− 2]	e 27 31	PS		e 56·1
Uccle		103·9	324	—	—	i 24 43	[− 3]	e 27 36	PS		e 58·8
Victoria		105·6	38	24 47	SKS	(24 47)	[− 6]	34 23	SSP		48·8
Paris		106·4	322	20 39	PPP	i 27 57	PS	34 7	SSP		60·8
Kew		106·9	325	—	—	—	—	i 28 48	PPS		e 56·8
Berkeley		110·1	48	—	—	e 27 24	?	—	—		e 51·1
Tinemaha	z.	113·3	48	e 18 37	[− 3]	—	—	e 20 2	PP		—
Almeria		114·4	312	e 20 34	PP	—	—	—	—		71·8
Bozeman		114·4	37	—	—	e 25 26	[− 4]	i 29 12	PS		e 47·1
Toledo		114·4	315	e 20 3	PP	25 26	[− 4]	—	—		66·3
Mount Wilson	z.	114·5	51	e 18 33	[− 9]	—	—	—	—		—
Pasadena		114·5	51	e 18 35	[− 7]	e 29 15	PS	e 19 46	PP		e 52·7
Granada		115·1	313	e 21 4	PPP	39 7	SS	—	—		70·8
Coimbra		117·2	317	e 20 34	PP	26 59	{+ 4}	35 32	SS		e 65·8
Tucson		120·9	50	e 18 50	[− 4]	e 30 2	PS	e 20 20	PP		e 55·9
Chicago, U.S.C.G.S.		129·6	27	e 19 11	[0]	e 28 15	{− 2}	31 49	PS		e 51·1
St. Louis		130·3	32	e 22 27	PP	—	—	i 22 45	P_cP		—
Florissant		130·5	32	i 22 31	PP	—	—	i 22 42	P_cP		—
Fordham		135·4	14	i 22 50	PP	e 28 50	{− 3}	—	—		—
La Plata		147·2	183	(19 31)	[−12]	—	—	—	—		19·5
San Juan		158·8	17	e 20 42	[+43]	—	—	e 25 5	PP		e 38·1
Huancayo		161·6	124	e 19 56	[− 6]	i 31 7	{−14}	i 24 48	PP		e 64·6
La Paz		163·4	151	i 20 2a	[− 2]	i 31 18	{−12}	24 30	PP		77·8

Additional readings :—
Perth SS = +13m.51s.
Calcutta iS_cSN = +17m.31s.
Adelaide P_cP = +9m.18s., SS = +16m.43s., S_cS = +17m.23s.
Mizusawa eSN = +14m.6s.
Riverview iE = +9m.15s., eE = +15m.8s., iZ = +18m.37s., i = +22m.54s., iN = +22m.59s.
Agra sSE = +16m.13s., SSE = +19m.11s.
Bombay iPE = +8m.55s., iE = +16m.21s.
Wellington i = +17m.32s.
Helwan SKSE = +23m.13s., PSE = +24m.33s., PPSE = +25m.1s., SSE = +29m.31s.
Pulkovo SKS = +23m.15s.
College i = +23m.47s., ePS = +26m.39s., eSS = +32m.0s.
Bucharest eEN = +19m.37s.
Upsala pPN = +24m.27s., PPE = +25m.51s.
Belgrade e = +27m.52s.
Potsdam iSKKSN = +24m.47s., iSNW = +25m.11s., iPSE = +26m.32s., iPSZ = +26m.35s.
Triest iS = +25m.16s.
Sitka e = +37m.12s.
Rome eZ = +19m.36s., eSKKSE = +24m.47s., eSSN = +32m.39s., eE = +35m.51s., eN = +39m.53s.
Stuttgart ePPSE = +28m.13s., eSSE = +33m.7s.
De Bilt iPS = +27m.26s., ePPS = +28m.19s., eSS = +32m.59s., eSSS = +37m.19s.
Victoria PP = +27m.25s., SSS = +42m.49s. ?
Paris iPPP = +24m.54s., PS = +32m.34s.
Berkeley eN = +44m.49s. ?
Bozeman e = +26m.35s., eSS = +35m.34s., e = +36m.4s. and +40m.24s.
Pasadena eN = +35m.25s.
Coimbra ePN = +20m.38s., ? = +21m.26s., PP = +25m.2s., S = +33m.16s., PPS = +37m.2s., SSN = +41m.4s., SSS = +46m.4s.
Tucson i = +22m.44s., e = +28m.52s., i = +35m.35s., eSS = +36m.19s.
Chicago, U.S.C.G.S., e = +22m.31s., +38m.7s., +45m.50s., and +47m.52s.
St. Louis ePPE = +26m.17s., ePPPN = +28m.17s., eN = +38m.54s. and +41m.17s.
Florissant ePPEN = +26m.17s., iPPPN = +28m.18s.
San Juan e = +23m.16s. and +33m.55s.
Huancayo e = +20m.17s., i = +20m.48s., +21m.9s., +23m.38s., +32m.51s., +38m.0s., and +41m.14s., iSS = +44m.57s.
La Paz $iPKP_2N$ = +20m.39s., PSKS = +35m.3s., SSN = +44m.10s., iN = +47m.1s., SSS = +47m.6s., SSSS = +53m.10s.
Long waves were also recorded at Salt Lake City, Aberdeen, Honolulu, Ukiah, and San Fernando.

Feb. 8d. Readings also at 2h. (near Mizusawa), 4h. (near Berkeley), 12h. (Kew), 19h. (Honolulu).

Feb. 9d. 4h. 15m. 44s. Epicentre 35°·5N. 141°·0E. (as on 1940, June 15d.).

Intensity V at Tyosi, Mito, Yokohama ; IV at Kakioka, Tukubasan, Tokyo, Utunomiya, Osima ; II-III at Mera, Misima, Ito, Hunatu, Maebasi, Kohu, Shizuoka, Hukusima, Onahama, Hukui, Morioka, and Shirakawa. Epicentre 35°·3N. 140°·8E. Shallow.
See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1941. Tokyo, 1950, p. 8-9.

$A = -\cdot6342$, $B = +\cdot5135$, $C = +\cdot5781$; $\delta = +9$; $h = 0$;
$D = +\cdot629$, $E = +\cdot777$; $G = -\cdot449$, $H = +\cdot364$, $K = -\cdot816$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tyosi	0·2	335	0 15	+ 5	—	—	—	—	—
Togane	0·5	277	0 24	+10	0 34	+11	—	—	—
Kiyosumi	0·7	242	0 24	+ 7	0 36	+ 8	—	—	—
Kakioka	1·0	318	0 20k	− 1	0 38	+ 2	—	—	—
Mito	1·0	334	0 21k	0	0 38	+ 2	—	—	—
Tokyo. Cen. Met. Ob.	1·0	281	0 22k	+ 1	0 35	− 1	—	—	—
Tokyo, Imp. Univ.	1·0	281	0 20	− 1	0 36	0	—	—	—
Tukubasan	1·0	315	0 21	0	0 37	+ 1	—	—	—
Komaba	1·1	278	0 24	+ 2	—	—	—	—	—
Mera	1·1	289	0 24a	+ 2	0 37	− 2	—	—	—
Yokohama	1·1	267	0 24k	+ 2	0 38	− 1	—	—	—
Kamakura	1·2	262	0 24	0	0 39	− 2	—	—	—
Mitaka	1·2	278	0 24	0	0 42	+ 1	—	—	—
Onahama	1·4	357	0 45k	S	(0 45)	− 1	—	—	—
Utunomiya	1·4	320	0 25k	− 2	0 44	− 2	—	—	—
Kumagaya	1·5	296	0 28k	0	0 51	+ 2	—	—	—
Osima	1·5	241	0 29k	+ 1	0 48	− 1	—	—	—
Koyama	1·6	265	0 24	− 6	0 45	− 6	—	—	—
Titibu	1·6	287	0 24	− 6	0 44	− 7	—	—	—
Misima	1·7	257	0 31k	0	0 52	− 2	—	—	—
Maebasi	1·8	300	0 34k	+ 2	0 57	+ 1	—	—	—
Hunatu	1·9	270	0 32k	− 2	0 57	− 2	—	—	—
Kohu	2·0	274	0 38k	+ 3	0 59	− 3	—	—	—
Shizuoka	2·2	256	0 38k	0	1 6	0	—	—	—
Hukusima	2·3	349	0 42k	+ 2	1 8	− 1	—	—	—
Hatidyozima	2·6	202	0 25	−19	1 7	−10	—	—	—
Nagano	2·6	297	0 43k	− 1	1 13	− 4	—	—	—
Hamamatu	2·8	254	0 48a	+ 1	1 19	− 3	—	—	—
Sendai	2·8	358	0 48k	+ 1	1 19	− 3	—	—	—
Nagoya	3·3	264	0 55k	+ 2	1 53	S_g	—	—	—
Toyama	3·3	291	0 56	+ 3	1 34	− 1	—	—	—
Aikawa	3·4	318	0 52	− 3	1 31	− 6	—	—	—
Gihu	3·5	269	0 56k	− 1	1 36	− 4	—	—	—
Mizusawa	3·7	4	1 0	0	i 1 41	− 4	—	—	—
Kameyama	3·8	263	1 2a	+ 1	2 3	S_g	—	—	—
Wazima	3·8	301	0 59	− 2	1 46	− 1	—	—	—
Hikone	3·9	269	1 2k	0	1 54	+ 4	—	—	—
Akita	4·2	350	1 12k	+ 5	2 8	S*	—	—	—
Miyako	4·2	10	0 36	−31	1 17	−40	—	—	—
Owase	4·2	252	1 8	+ 1	2 29	S_g	—	—	—
Kyoto	4·3	265	1 8	0	2 10	S*	—	—	—
Osaka	4·6	261	1 10	− 2	2 10	+ 3	—	—	—
Kobe	4·8	262	1 15	0	2 20	+ 8	—	—	—
Siomisaki	4·8	247	1 14k	− 1	2 49	S_g	—	—	—
Hatinohe	5·0	4	1 20	+ 2	2 14	− 4	—	—	—
Toyooka	5·0	273	1 17	− 1	2 30	S*	—	—	—
Wakayama	5·0	257	1 17a	− 1	2 23	+ 5	—	—	—
Sumoto	5·2	258	1 20a	− 1	2 39	S*	—	—	—
Aomori	5·3	358	1 25k	+ 3	—	—	—	—	—
Muroto	6·1	250	1 34	0	3 25	S_g	—	—	—
Koti	6·5	254	1 33	− 6	2 51	− 4	—	—	—
Mori	6·6	358	1 48k	+ 7	2 35	−23	—	—	—
Matuyama	7·0	259	1 44	− 2	3 20	+12	—	—	—
Hirosima	7·1	266	1 51	+ 3	3 41	S*	—	—	—
Simidu	7·2	250	1 50a	+ 1	3 16	+ 3	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hamada		7·3	269	1 52	+ 2	3 39	S*	—	—	—
Sapporo		7·5	2	2 0	+ 7	3 29	+ 9	—	—	—
Titizima		8·4	174	2 6	0	3 36	− 7	—	—	—
Nemuro		8·6	23	3 1	+52	4 36	S_g	—	—	—
Izuka		8·7	261	2 8	− 2	4 21	S*	—	—	—
Miyazaki		8·7	249	3 13	+63	5 1	+11	—	—	—
Hukuoka		8·9	261	2 14	+ 2	—	—	—	—	—
Kumamoto		8·9	255	2 13a	+ 1	4 34	S*	—	—	—
Unzendake		9·4	256	2 34	+16	4 18	+11	—	—	—
Husan		9·8	272	2 25	+ 1	4 54	S*	—	—	—
Taikyu		10·1	276	2 30	+ 2	5 12	S*	—	—	—
Vladivostok		10·4	320	i 2 33	− 1	i 4 33	+ 1	—	—	—
Tomie		10·6	257	2 38	+ 2	5 30	+53	—	—	—
Keizyo		11·4	284	2 48	+ 1	—	—	—	—	—
Zinsen		11·8	281	2 52	− 1	—	—	—	—	—
Naha		14·7	235	3 33	+ 2	—	—	—	—	—
Zi-ka-wei	E.	16·9	260	e 3 56	− 3	—	—	i 4 18	PPP	i 9·2
Miyakozima		17·3	236	4 10	+ 6	7 35	+19	—	—	—
Isigakizima		18·3	239	5 23	+66	—	—	—	—	—
Manila		27·5	227	i 6 28	PP	i 12 12	SSS	—	—	—
Irkutsk		30·9	315	e 6 16	− 4	—	—	—	—	—
Calcutta		47·3	269	i 8 35	− 2	—	—	—	—	—
Almata		49·0	301	8 47	− 3	—	—	—	—	—
Frunse		50·8	301	9 9	+ 5	16 37	PS	10 15	P_cP	—
Andijan		53·0	298	e 9 21	0	16 45	− 5	—	—	—
Agra	E.	53·7	280	i 9 20a	− 6	16 44	−15	e 11 21	PP	—
Tchimkent		54·5	300	9 30	− 2	—	—	—	—	—
Tashkent		55·0	299	i 9 32	− 3	i 17 9	− 8	—	—	—
Sverdlovsk		56·1	320	i 9 40	− 3	i 17 24	− 8	—	—	—
Samarkand		57·2	298	9 52	+ 1	17 42	− 4	—	—	—
Bombay	E.	61·8	274	i 10 19	− 4	i 18 45	− 1	—	—	—
Colombo	E.	62·6	258	10 23	− 5	18 53	− 3	—	—	34·8
Moscow		68·3	324	11 2	− 3	19 57	− 9	—	—	—
Pulkovo		69·3	330	11 6	− 5	20 6	−11	—	—	—
Tinemaha		77·0	53	e 11 58	+ 2	—	—	—	—	—
Santa Barbara	z.	77·5	57	e 12 1	+ 2	—	—	—	—	—
Haiwee		77·7	55	e 12 3	+ 3	—	—	—	—	—
Mount Wilson		78·7	56	i 12 9	+ 3	—	—	—	—	—
Pasadena		78·7	56	e 12 8	+ 2	—	—	—	—	e 36·3
Copenhagen		79·1	333	i 12 6a	− 2	—	—	—	—	38·3
Riverside	z.	79·3	56	e 12 11	+ 2	—	—	—	—	—
Palomar	z.	80·0	56	e 12 15	+ 2	—	—	—	—	—
Potsdam		81·4	332	i 12 14	− 6	—	—	—	—	e 45·3
Ksara		81·8	305	e 12 41	+19	e 22 19	−16	—	—	—
Tucson		84·8	53	i 12 39	+ 2	e 22 49	−16	e 17 30	PPP	e 39·2
Stuttgart	z.	85·8	330	e 12 41a	− 1	—	—	—	—	—
Helwan		87·3	305	12 47	− 3	e 23 22	− 7	—	—	—
Rome		89·7	325	e 12 59	− 2	e 23 26	[− 5]	i 16 32	PP	e 41·3
La Paz		147·9	60	i 19 51k	[+ 7]	—	—	—	—	71·3

Additional readings :—
Onahama S = +1m.2s.
Agra sS? = +17m.1s., SSE = +20m.7s., sSSE = +20m.56s.
Tucson i = +12m.48s., +13m.1s., and +24m.19s.
Rome eZ = +14m.3s.
La Paz PKP_2N = +20m.7s.
Long waves were also recorded at Upsala, Warsaw, Huancayo, Paris, and De Bilt.

Feb. 9d. 8h. 10m. 41s. Epicentre 41°·6N. 142°·0E. (as on 1939, January 13d.).

Intensity V at Hakodate, Hatinohe, Aomori, Miyako; IV at Urakawa, Mori, Morioka, Obihiro; II-III at Muroran and Sapporo. Epicentre 41°·7N. 141°·9E. Shallow.
See Seismological Bulletin of the Central Met. Obs., Japan for the year 1941. Tokyo, 1950, p. 9-10.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hatinohe		1·1	198	0 25k	+ 3	0 41	+ 2	—	—	—
Aomori		1·2	229	0 26k	+ 2	0 43	+ 2	—	—	—
Mori		1·2	295	0 25a	+ 1	0 40	− 1	—	—	—
Sapporo		1·6	342	0 30	0	0 46	− 5	—	—	—
Miyako		1·8	180	0 34k	+ 2	0 58	+ 2	—	—	—
Morioka		2·0	198	0 37k	+ 2	1 3	+ 1	—	—	—
Akita		2·4	229	0 27	−14	—	—	—	—	—
Mizusawa		2·6	195	i 0 44	0	i 1 16	− 1	—	—	—
Nemuro		3·2	57	0 53	+ 1	1 28	− 4	—	—	—
Sendai		3·4	194	0 56k	+ 1	1 37	0	—	—	—
Hukusima		4·0	198	1 4	0	1 53	+ 1	—	—	—
Aikawa		4·6	220	1 13	+ 1	—	—	—	—	—
Onahama		4·8	192	1 13	− 2	—	—	—	—	—
Mito		5·4	195	1 26	+ 2	2 30	+ 2	—	—	—
Utunomiya		5·4	200	1 21	− 3	2 24	− 4	—	—	—
Kakioka		5·5	194	1 24	− 1	2 28	− 2	—	—	—
Tukubasan		5·6	196	1 25	− 2	2 26	− 7	—	—	—
Maebasi		5·7	205	1 28	0	2 41	+ 6	—	—	—
Kumagaya		5·8	201	1 29	0	2 40	+ 2	—	—	—
Nagano		5·8	213	1 31	+ 2	2 50	S*	—	—	—
Wazima		5·8	225	1 31	+ 2	2 37	− 1	—	—	—
Tyosi		5·9	191	1 30	− 1	2 46	+ 6	—	—	—
Tokyo, Cen. Met. Ob.		6·2	198	1 25	−10	2 33	−15	—	—	—
Toyama		6·2	218	1 47	P*	—	—	—	—	—
Yokohama		6·5	198	1 42	+ 3	3 0	+ 5	—	—	—
Hunatu		6·6	203	1 41	0	3 17	S*	—	—	—
Kohu		6·6	204	1 43	+ 2	3 3	+ 5	—	—	—
Mera		6·9	195	1 41	− 4	—	—	—	—	—
Misima		6·9	201	1 45	0	3 16	+11	—	—	—
Osima		7·1	198	1 44	− 4	3 3	− 7	—	—	—
Shizuoka		7·2	204	1 53	+ 4	3 27	+14	—	—	—
Gihu		7·4	215	1 52	0	—	—	—	—	—
Nagoya		7·5	213	1 55	+ 2	3 46	S*	—	—	—
Hamamatu		7·7	207	1 46	−10	—	—	—	—	—
Hikone		7·8	217	1 57	− 1	—	—	—	—	—
Kyoto		8·2	219	2 35	P*	—	—	—	—	—
Osaka		8·6	218	2 10	+ 1	3 38	−10	—	—	—
Kobe		8·8	220	2 11k	0	4 50	S_g	—	—	—
Owase		8·8	217	2 11	0	4 22	S*	—	—	—
Wakayama		9·1	218	2 17	+ 3	4 14	+14	—	—	—
Siomisaki		9·6	212	2 22	+ 1	—	—	—	—	—
Sverdlovsk		52·1	316	9 8	− 6	16 28	−10	—	—	—
Tinemaha	z.	72·8	56	e 11 28	− 4	—	—	—	—	—
Haiwee	z.	73·4	57	e 11 32	− 4	—	—	—	—	—
Mount Wilson	z.	74·7	58	i 11 40	− 3	—	—	—	—	—
Pasadena	z.	74·7	58	e 11 39	− 4	—	—	—	—	—
Riverside	z.	75·3	58	i 11 41	− 6	—	—	—	—	—
Tucson		80·6	56	e 12 12	− 4	e 22 30	+ 7	e 15 10	PP	—
Stuttgart	z.	80·9	330	e 12 1	−16	—	—	—	—	—

Additional readings:—
Tinemaha eZ = +11m.50s.
Pasadena iZ = +11m.57s.
Tucson e = +12m.23s., +16m.31s., and +20m.54s.

Feb. 9d. 9h. 23m. 15s. Epicentre 41°·0N. 29°·0E.

$A = +·6620$, $B = +·3670$, $C = +·6535$; $\delta = 0$; $h = -3$;
$D = +·485$, $E = -·875$; $G = +·572$, $H = +·317$, $K = -·757$.

The epicentre is approximate.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		0·1	—	0 24	P_g	0 46	S_g	0 52	?	—
Sofia		4·6	294	e 1 14	+ 2	—	—	—	—	—
Sebastopol		4·9	41	1 41	P_g	2 38	S_g	—	—	—
Yalta		5·2	46	1 32	P*	2 22	0	—	—	—
Simferopol		5·4	42	1 44	P_g	2 46	S*	—	—	—
Theodosia		6·2	48	1 45	P*	—	—	—	—	—
Ksara		9·0	140	e 3 12	+59	—	—	—	—	e 5·5
Warsaw		12·5	337	—	—	e 5 45?	+22	—	—	e 6·8
Stuttgart	z.	16·0	306	e 3 51	+ 3	—	—	—	—	—

Long waves were recorded at Budapest, Kalossa, Kecskemet, Rome, and Triest.

Feb. 9d. 9h. 44m. 5s. Epicentre 40°·4N. 125°·1W. (as on 1940, November 17d.).

Intensity VI at Arcata, Eureka, Ferndale, and Punta Gorda.
Macroseismic area in California and in southern Oregon, 17,000 square miles.
Epicentre 40°·7N. 125°·4W. (U.S.C.G.S.).

F. Neumann.
United States Earthquakes, 1941, Washington, 1943, p. 7, chart p. 8.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ferndale		0·6	75	i 0 17	+ 2	i 0 30	+ 4	i 0 23	PP	—
Ukiah		1·9	131	i 0 38	+ 4	—	—	i 0 46	PPP	—
Berkeley		3·4	138	i 0 57	+ 2	i 1 41	+ 4	i 1 2	PP	—
San Francisco	E.	3·4	140	e 0 59	+ 4	i 1 41	+ 4	i 1 3	PP	i 1·9
Branner		3·8	141	e 1 2	+ 1	i 1 49	+ 2	i 1 6	PP	i 3·3
Santa Clara		3·9	139	i 1 9	P*	i 1 55	+ 5	i 1 18	P_g	—
Lick		4·1	137	e 1 9	P*	i 1 59	S*	—	—	i 2·4
Fresno		5·5	129	e 0 55?	P	—	—	—	—	—
Tinemaha		6·3	120	e 1 41	+ 5	i 3 14	S*	i 1 47	PP	—
Haiwee		7·0	125	i 1 52	+ 6	i 3 37	SSS	—	—	—
Santa Barbara		7·3	143	i 1 55	+ 5	i 3 21	+ 6	—	—	—
Seattle		7·5	14	e 1 56	+ 3	—	—	—	—	4·6
Victoria		8·1	9	i 1 55	− 7	4 1	+26	—	—	5·9
Pasadena		8·4	136	i 2 8	+ 2	i 3 46	+ 3	i 2 11	PP	i 3·9
Mount Wilson		8·4	134	i 2 9	+ 3	i 3 50	+ 7	—	—	—
Riverside	z.	8·9	133	i 2 16	+ 4	i 4 2	+ 7	—	—	—
Spokane		9·2	35	i 2 9	− 7	i 4 11	+ 8	—	—	i 4·8
Palomar	z.	9·6	134	i 2 26	+ 5	—	—	—	—	—
La Jolla		9·8	138	e 2 33	+ 9	—	—	—	—	—
Logan		10·1	78	i 2 31	+ 3	—	—	—	—	—
Salt Lake City		10·1	83	e 2 29	+ 1	e 4 44	+19	i 2 44	PPP	i 5·6
Butte		10·7	54	i 2 32	− 6	i 4 35	− 4	i 2 59	PP	i 5·6
Bozeman		11·6	58	i 2 47a	− 3	i 4 58	− 3	3 4	PP	i 5·6
Tucson		14·1	121	i 3 28a	+ 5	i 6 8	+ 6	i 3 35	PP	i 8·0
Denver		15·5	85	e 3 44	+ 2	i 6 50	+15	i 3 46	PP	i 8·6
Saskatoon		17·3	41	4 3	− 1	7 22	+ 6	4 30	PPP	e 8·9
Sitka		17·9	342	i 4 6	− 6	7 25	− 5	4 17	PP	i 8·1
Lincoln		21·6	80	i 4 50	− 4	e 8 50	+ 1	5 2	PP	e 11·9
Florissant		26·7	83	i 5 42	− 1	i 10 18	+ 1	—	—	—
St. Louis		26·9	83	i 5 40	− 5	e 10 17	− 3	i 5 56	pP	e 14·7
Guadalajara	N.	27·0	132	e 5 35	−10	—	—	—	—	—
Cape Girardeau		27·8	85	e 5 51	− 2	e 10 43	+ 8	i 6 30	PP	e 14·3
College		27·8	339	e 5 49	− 4	i 10 32	− 3	i 6 31	PP	i 12·3
Chicago, Loyola		28·1	75	e 5 55	0	i 11 2	+22	i 12 30	SSS	—
Chicago		28·1	75	i 5 54a	− 1	i 10 44	+ 4	i 11 40	SS	i 13·7

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	N.	30·5	127	e 6 19	+ 2	—	—	—	—	—
Mobile		31·4	97	i 6 36	+11	i 11 51	+19	i 7 38	PP	—
Vera Cruz	Z.	32·2	122	e 6 33	+ 1	—	—	—	—	—
Honolulu		33·7	245	e 6 35	−10	i 12 13	+ 5	i 8 10	PPP	i 14·0
Pittsburgh		34·1	75	e 6 46	− 2	12 14	0	—	—	—
Buffalo		34·3	71	i 6 48	− 2	i 12 16	− 1	7 36	PP	—
Pennsylvania		35·5	75	i 7 3	+ 3	e 12 37	+ 1	i 8 48	PPP	e 18·5
Merida	N.	35·8	113	i 7 18	+15	—	—	—	—	—
Ottawa		36·1	65	7 4	− 1	12 45	0	15 19	SS	e 17·3
Georgetown		36·6	77	i 7 11	+ 1	c 13 6	+13	—	—	—
Philadelphia		37·7	74	i 7 19a	0	13 6	− 4	16 2	SSS	e 18·6
Shawinigan Falls		37·9	63	7 19	− 1	13 9	− 4	16 31	SSS	19·3
Vermont		38·0	66	e 7 27	+ 6	i 13 11	− 3	8 43	PP	15·9
Fordham		38·4	72	i 7 25	0	i 13 23	+ 3	i 8 49	PP	i 20·4
Seven Falls		39·1	62	7 29	− 2	13 33	+ 2	8 59	PP	18·1
Harvard		39·6	69	e 7 42	+ 7	—	—	e 9 8	PP	19·9
Weston		39·8	69	i 7 38	+ 2	i 13 44	+ 2	9 10	PP	—
East Machias		42·0	65	e 7 47	− 7	e 14 14	0	i 17 24	SS	i 19·8
Halifax		44·6	64	8 20	+ 4	14 51	− 1	—	—	20·9
Bermuda		48·4	80	e 8 51	+ 5	e 15 47	+ 1	i 19 5	SS	i 20·3
Ivigtut		49·6	40	8 57	+ 2	15 59	− 4	19 25	SS	—
Balboa Heights		51·1	115	e 9 18	+12	—	—	—	—	—
San Juan		54·8	95	i 9 35	+ 1	i 17 19	+ 5	i 21 10	SS	e 23·0
Scoresby Sund		56·7	24	e 9 50	+ 2	i 17 36	− 4	21 35	SS	i 27·5
Sendai		69·1	303	e 11 10	0	19 28	−47	—	—	—
Huancayo		69·6	128	e 11 17	+ 4	i 20 31	+10	i 25 26	SS	i 28·9
Aberdeen		71·6	29	—	—	i 20 40	− 4	i 25 12	SS	e 31·5
Bergen		71·7	24	e 11 28	+ 2	e 20 50	+ 5	—	—	e 30·9
Vladivostok		71·7	311	11 22	− 4	i 20 41	− 4	—	—	—
Nagano		71·8	304	e 11 27	+ 1	20 49	+ 3	—	—	—
Edinburgh		72·2	31	—	—	e 25 32	SS	—	—	—
Gihu		73·5	302	11 40	+ 4	—	—	—	—	—
Stonyhurst		74·4	32	—	—	i 25 57	SS	—	—	37·9
Kobe		75·0	303	e 11 52	+ 7	21 18	− 5	—	—	—
Upsala		75·5	19	e 11 51	+ 3	c 21 29	+ 1	26 7	SS	e 33·9
Kew		76·6	33	i 11 56	+ 2	i 21 39	− 1	i 15 7	PP	e 34·9
Koti		76·7	303	11 53	− 2	21 28	−13	—	—	—
Heligoland		77·5	29	—	—	21 55	+ 5	26 25	SS	e 34·6
La Paz		77·5	125	i 12 5	+ 6	i 21 59	+ 9	i 26 43	SS	38·2
Copenhagen		77·7	23	i 11 58	− 2	21 52	0	14 59	PP	—
Pulkovo		78·1	12	e 12 1	− 1	21 51	− 5	—	—	—
Irkutsk		78·2	332	e 12 2	− 1	21 53	− 4	—	—	—
De Bilt		78·3	29	i 12 5k	+ 2	e 21 55	− 4	e 26 55	SS	e 32·9
Hamburg		78·7	26	e 12 5	− 1	e 21 43	−20	e 27 7	SS	e 33·9
Uccle		79·0	31	e 12 6	− 1	i 22 5	− 1	26 47	SS	33·9
Miyazaki		79·1	302	12 28	+20	22 10	+ 3	—	—	—
Paris		79·8	33	i 12 12	0	e 21 55?	−19	i 15 24	PP	—
Potsdam		80·7	25	i 12 18a	+ 2	e 22 22	− 2	i 22 34	ScS	e 27·9
Coimbra		81·2	44	e 12 17	− 2	i 22 23	− 6	15 39	PP	—
Jena		81·5	27	e 12 19	−. 2	e 22 31	− 1	23 17	PS	e 33·9
Lisbon		81·9	46	12 29	+ 6	22 33	− 3	—	—	35·2
Strasbourg		82·1	30	e 12 21	− 3	e 22 36	− 2	—	—	33·9
Stuttgart		82·5	29	e 12 17	− 9	e 22 40	− 2	e 15 29	PP	38·4
Basle		82·9	31	e 12 27	− 1	e 22 52	+ 6	—	—	—
Sverdlovsk		83·0	357	i 12 25	− 3	i 22 38	− 9	—	—	—
Prague		83·1	25	e 12 29	0	c 22 46	− 2	27 49	SS	e 33·9
Moscow		83·1	10	12 27	− 2	22 48	0	—	—	—
Neuchatel		83·1	31	e 12 27	− 2	—	—	—	—	—
Warsaw		83·2	21	e 12 27k	− 2	e 22 53	+ 4	15 14	PP	e 35·9
Bagneres		83·3	37	e 11 43	?	e 21 49	?	e 23 19	?	32·9
Zurich		83·4	31	e 12 28k	− 2	e 22 50	− 1	28 13	SS	—
Toledo		83·7	42	i 12 32	0	22 55	+ 1	—	—	35·2
Chur		84·2	30	e 12 34	0	—	—	—	—	—
San Fernando		85·1	46	—	—	i 23 10	+ 2	—	—	37·4
Granada		86·0	44	6 19a	?	23 27	+10	22 43	SKS	36·0

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Almeria		86·8	43	12 50	+ 3	23 14	−11	13 6	pP	35·9
Triest		86·8	28	i 12 59	+12	i 23 9	[− 3]	i 15 15	PP	e 35·0
Budapest	E.	86·9	25	e 12 55	+ 7	e 23 36	+10	e 24 24	PS	e 39·9
	N.	86·9	25	e 12 49	+ 1	e 23 34	+ 8	12 56	P_cP	e 40·9
Kecskemet	Z.	87·6	25	e 12 51	0	e 23 55?	+23	—	—	e 53·4
Kalossa		87·7	25	e 13 1	+ 9	e 23 32	[+14]	—	—	—
Rome		89·5	30	i 12 58k	− 2	i 23 53	+ 3	24 52	PS	i 38·6
Algiers		89·6	40	e 12 55	− 6	e 23 55	+ 4	e 23 30	SKS	e 35·9
Bucharest		91·7	21	e 13 25	+15	e 23 49	[+ 6]	e 16 35	PP	e 40·9
Sofia		92·5	23	e 13 7	− 7	—	—	25 29	PS	e 37·9
Almata		94·4	344	13 11	−12	—	—	—	—	—
Frunse		95·2	346	e 13 28	+ 1	—	—	e 16 41	PP	—
Istanbul		95·6	20	i 30 55?	SS	—	—	—	—	—
Grozny		96·3	7	13 40	+ 8	—	—	—	—	—
Tchimkent		96·6	349	13 41	+ 8	—	—	17 0	PP	—
La Plata		97·1	130	—	—	24 19	[+ 7]	—	—	45·9
Tashkent		97·6	350	13 38	0	24 17	[+ 2]	17 26	PP	—
Andijan		97·7	347	e 13 50	+12	24 22	[+ 7]	—	—	—
Wellington		97·9	222	—	—	31 55?	SSP	40 55	Q	46·9
Manila		98·0	296	13 40	+ 1	24 19	[+ 2]	17 30	PP	46·4
Rio de Janeiro		98·6	113	e 16 55	?	—	—	—	—	e 44·6
Samarkand		99·5	351	e 14 1	+15	—	—	—	—	—
Baku		99·5	4	—	—	24 34	[+ 9]	32 27	SS	—
Ksara		104·1	17	e 18 40	PP	—	—	e 27 41	PS	—
Amboina		105·3	278	e 19 14	PP	—	—	—	—	e 46·9
Helwan		106·8	22	e 19 25	PP	25 49	{+ 6}	e 27 58	PS	—
Riverview		106·8	240	18 47	PP	—	—	e 34 3	SSP	e 44·6
Agra	E.	109·5	338	19 17	PP	26 36	{+34}	i 29 33	PPS	—
Calcutta	N.	110·1	327	e 18 16	[−17]	25 6	[− 6]	34 49	SS	54·5
Hyderabad	E.	118·4	334	e 24 0	?	40 39	SSS	—	—	54·9
Bombay		118·7	341	e 20 3	PP	—	—	e 29 56	PS	—
Medan		120·7	307	e 20 58	PP	—	—	—	—	e 52·9
Kodaikanal	E.	125·5	333	i 20 55	PP	—	—	—	—	—
Colombo	E.	127·6	328	e 19 7	[0]	38 14	SS	—	—	56·2
Tananarive		157·7	20	25 32	PP	44 11	SS	37 19	PPS	71·2

Additional readings :—
Berkeley iN = +1m.15s.
Seattle i = +2m.17s., i = +2m.24s.
Spokane iE = +2m.55s., iE = +3m.56s., iE = +4m.5s.
Salt Lake City i = +3m.19s., iS = +4m.49s., i = +5m.17s.
Butte i = +3m.23s., e = +4m.30s., i = +4m.58s., i = +5m.19s.
Bozeman i = +3m.23s., i = +3m.53s., i = +5m.6s., i = +5m.26s.
Tucson i = +3m.55s., i = +5m.37s., i = +5m.50s., i = +6m.13s., i = +6m.27s., i = +6m.41s.
Denver iN = +3m.49s., iE = +4m.27s., iE = +4m.43s., eN = +4m.54s., eEN = +7m.36s., eEN = +7m.53s., iE = +8m.15s.
Saskatoon SS = +7m.55s.?
Sitka i = +4m.12s., i = +5m.0s., i = +5m.30s., i = +6m.19s., +7m.47s., and +7m.55s.
Lincoln e = +5m.26s., e = +6m.24s., e = +7m.57s., iS = +8m.57s., e = +9m.28s.
Florissant iZ = +5m.54s., iSE = +10m.21s., iSE = +10m.24s.
St. Louis iPPZ = +6m.24s., iPPPE = +6m.46s., iP_cPE = +9m.2s., iZ = +10m.31s., isSE = +11m.0s., iSSE = +12m.23s.
Cape Girardeau iPPP = +6m.48s., iE = +7m.29s., eSSE = +11m.58s., eE = +12m.28s.
College i = +5m.56s., i = +7m.40s.
Chicago i = +6m.8s., i = +7m.42s., e = +10m.27s., i = +12m.39s.
Honolulu i = +8m.28s., i = +9m.0s., i = +13m.17s., i = +13m.39s.
Pittsburgh iZ = +6m.49s. and +6m.52s., iS = +12m.19s.
Buffalo i = +7m.18s., iPPP = +8m.4s., i = +11m.21s., i = +15m.14s., i = +16m.41s., i = +17m.35s.
Pennsylvania e = +7m.23s., e = +11m.13s., e = +11m.32s.
Ottawa PP = +8m.14s.
Philadelphia i = +7m.40s., i = +8m.19s., i = +16m.26s.
Vermont i = +14m.19s.
Weston SS = +16m.17s.
East Machias i = +7m.55s., i = +8m.51s., e = +11m.35s.
Bermuda iPP = +10m.34s., iS = +15m.55s., i = +18m.13s., i = +20m.3s.
Ivigtut +10m.55s. and +19m.49s.
San Juan i = +10m.55s., +11m.19s., and +13m.47s., e = +19m.0s.
Scoresby Sund i = +12m.37s., e = +14m.23s., eS = +17m.31s., i = +17m.58s., e = +21m.52s.

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Huancayo i = +11m.32s., i = +12m.37s., i = +12m.53s., i = +13m.24s., i = +15m.52s., i = +20m.40s., i = +22m.26s., i = +23m.56s.
Aberdeen iEN = +28m.44s.
Stonyhurst i = +20m.2s., i = +28m.42s., i = +35m.57s.
Upsala SN = +21m.20s., eSSSN = +29m.25s., eSSSE = +29m.35s.
Kew iPNZ = +12m.16s., eP_cPNZ = +12m.43s., ePPPZ = +16m.46s., iSEN = +21m.49s., eSS = +26m.39s., eSSS = +30m.25s.?, eQEN = +31·9m.
Heligoland eN = +30m.37s.
La Paz iPPN = +14m.54s., PSN = +22m.34s., iSSN = +27m.19s., iSSS? = +31m.24s., Q = +36·2m.
Copenhagen +12m.23s. and +26m.49s.
De Bilt iZ = +12m.26s.
Hamburg eN = +22m.8s., eSSSN = +30m.41s., eE = +31m.1s.
Uccle iZ = +12m.29s.
Paris eP_cP = +12m.40s., iPPP = +16m.6s., SS = +26m.55s.?, SSS = +30m.55s., Q = +33·9m.
Potsdam ePN = +12m.24s., iSN = +22m.26s.
Coimbra PPE = +15m.49s.
Jena eS = +22m.25s., eN = +32m.7s.
Lisbon PEW = +12m.32s.
Strasbourg e = +14m.22s., eSS = +28m.20s.
Stuttgart ePZ = +12m.27s., ePPPN = +17m.30s., eSE = +22m.35s., eSSEN = +28m.41s., eSSSEN = +32m.15s.
Prague ePS = +23m.25s., eSSS = +32m.25s.
Warsaw eN = +12m.30s., eE = +12m.33s., eZ = +15m.39s., eZ = +16m.1s., eN = +23m.33s., eE = +23m.39s., eEN = +28m.9s., eN = +32m.35s.
San Fernando eSE = +23m.21s., eSSN = +27m.43s.
Granada SKS = +22m.43s.
Almeria PP = +16m.14s., PPP = +18m.9s., S_cS = +23m.29s., PS = +24m.22s., PPS = +24m.46s., SS = +29m.2s., SSS = +32m.37s.
Triest iS = +23m.36s., iPS = +29m.1s.
Budapest iE = +13m.1s., eSKKSN = +23m.21s., eS_cSN = +24m.18s.
Rome iN = +13m.39s., iE = +16m.11s., iE = +16m.51s., iE = +18m.21s., iSKSN = +23m.21s., i = +23m.39s., iE = +24m.3s., i = +24m.41s., i = +25m.4s., e = +28m.16s., iSSE = +29m.15s., i = +33m.5s. and +34m.27s.
Algiers ePPS = +25m.25s.
Bucharest eN = +14m.25s., +15m.17s., and +17m.30s., eE = +18m.2s., eN = +18m.19s., eE = +18m.33s., eN = +18m.42s., +19m.46s., and +20m.18s., eEN = +25m.7s., eE = +26m.39s., eEN = +27m.20s.
Kalossa ePE = +13m.21s., eE = +23m.45s.
La Plata N = +24m.31s.
Tashkent eS = +24m.48s.
Manila SKKS = +24m.42s., PSEN = +26m.14s., PPS = +26m.55s., SS = +31m.39s.
Ksara e = +16m.44s.
Amboina ePN = +19m.18s.
Helwan eE = +27m.13s., eN = +28m.28s.
Riverview eE = +34m.7s.
Agra SS = +33m.22s.
Calcutta ePPN = +19m.16s., ePSN = +28m.56s.
Hyderabad SE = +34m.56s., PSE = +36m.13s.
Bombay ePE = +20m.7s., eE = +27m.58s., eN = +40m.50s.
Long waves were also recorded at Arapuni, Oaxaca, Ogyalla, Apia, and Bagneres.

Feb. 9d. 19h. 19m. 31s. Epicentre 4°·5S. 152°·7E. (as on 1941 Jan. 13d.).

A = −·8859, B = +·4573, C = −·0779; δ = +1; h = +7;
D = +·459, E = +·889; G = +·069, H = −·036, K = −·997.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palau	21·6	303	e 4 29	−25	—	—	—	—	—
Amboina	24·5	271	5 16	− 6	10 18	+38	—	—	—
Riverview	29·2	183	e 6 19	+14	e 10 41	−17	—	—	e 14·2
Sydney	29·2	183	e 6 17	+12	e 11 5	+ 7	e 7 17	PP	e 14·2
Adelaide	33·0	202	e 7 5	+26	i 11 55	− 2	i 7 49	PP	17·6
Apia	36·2	107	e 14 41	?	e 11 53	−54	e 14 54	SS	—
Manila	36·7	302	i 7 8a	− 2	13 10	+16	—	—	18·9
Arapuni	39·4	152	9 29?	PP	13 53	+18	17 17	Q	19·5
Tuai	40·7	150	—	—	13 46	− 9	—	—	—
Miyazaki	41·5	333	7 52	+ 2	14 29	+22	—	—	19·0
Wellington	41·6	155	7 51	0	14 25	+17	8 10	sP	19·5
Yokohama	41·6	344	e 8 37	+46	—	—	—	—	—
Tokyo Cen. Met. Ob.	41·8	345	e 7 59	+ 6	—	—	—	—	20·5
Koti	42·0	336	e 8 6	+12	14 16	+ 2	—	—	—
Kobe	42·3	339	7 6	−51	14 1	−18	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Christchurch		42·7	159	8 12	+12	14 13	−11	17 40	Q	19·5
Hukuoka		43·4	333	e 8 1	− 5	—	—	—	—	—
Hamada		43·7	336	e 8 6	− 2	15 1	+22	—	—	—
Sendai		43·9	348	e 8 5	− 5	14 6	−36	—	—	—
Mizusawa		44·7	348	e 8 14	− 2	—	—	—	—	—
Batavia		45·7	296	8 15	− 9	—	—	—	—	21·5
Mori	N.	47·7	349	e 8 39	− 1	—	—	—	—	—
Zinsen		48·3	332	e 8 46	+ 1	—	—	—	—	—
Sapporo		48·4	350	8 46	0	—	—	—	—	—
Vladivostok		51·0	341	11 31	PP	i 16 33	+11	—	—	—
Medan		54·6	278	9 22	−10	17 50	+38	—	—	—
Honolulu		54·8	60	e 11 4	?	e 19 17	?	13 22	PPP	i 25·0
Calcutta	N.	68·3	296	e 11 7	+ 2	e 19 14	−52	e 13 11	PP	e 29·5
Irkutsk		69·8	331	i 11 9	− 5	20 17	+ 2	—	—	—
Colombo	E.	73·6	278	11 18	−19	21 36	+29	—	—	36·3
Kodaikanal	E.	76·3	281	i 11 47	− 5	e 21 29	− 8	—	—	—
Agra	E.	78·5	298	i 11 57a	− 7	21 43	−18	26 57	SS	36·3
College		81·6	22	—	—	22 15	−18	—	—	e 32·1
Bombay		81·9	289	e 12 14	− 9	i 22 21	−15	e 23 8	PS	—
Almata		82·8	315	e 12 26	− 1	—	—	—	—	—
Sitka		84·1	32	—	—	e 22 51	− 7	e 28 11	SS	e 33·9
Frunse		84·4	313	e 12 33	− 3	—	—	23 31	SeS	—
Andijan		85·6	311	12 41	0	—	—	23 41	SeS	—
Tchimkent		87·9	312	12 49	− 4	—	—	23 45	SeS	—
Tashkent		88·0	311	e 12 47	− 6	e 23 25	[+ 5]	e 16 1	PP	—
Ukiah		88·2	51	—	—	e 23 44	+ 6	e 29 54	SS	e 36·4
Berkeley		88·8	52	—	—	i 23 39	− 5	i 29 43	SS	i 36·8
Santa Clara	E.	89·0	52	—	—	e 25 6	PS	—	—	—
Samarkand		89·5	309	12 58	− 2	23 26	[− 4]	—	—	—
Victoria		89·8	41	e 12 53	− 9	e 23 45	[+13]	e 16 26	PP	e 37·5
Seattle		89·9	42	e 14 1	+59	e 24 0	+ 6	e 30 42	SS	i 41·9
Pasadena		91·8	56	i 13 5	− 6	i 24 2	− 9	i 30 45	SS	i 38·3
Tinemaha		91·8	53	e 13 7	− 4	—	—	—	—	—
Mount Wilson		91·9	56	i 13 6	− 5	—	—	—	—	—
Haiwee		92·1	54	e 13 8	− 4	—	—	—	—	—
Riverside	Z.	92·4	56	i 13 8	− 6	—	—	—	—	—
Sverdlovsk		94·9	326	i 13 20	− 5	i 24 29	− 8	17 12	PP	—
Butte		96·5	43	—	—	e 27 7	PPS	e 31 53	SS	e 39·9
Salt Lake City		97·0	49	—	—	e 24 32	[+20]	e 34 38	SSS	e 41·5
Logan		97·1	48	—	—	e 24 34	[+22]	—	—	e 39·2
Bozeman		97·6	44	—	—	e 24 5	[−10]	e 26 57	PS	e 39·8
Tucson		97·8	58	i 13 37	− 1	i 23 55	[−21]	i 17 33	PP	e 45·3
Baku		102·3	310	e 13 58	− 1	25 12	−28	e 18 27	PP	—
Tananarive		102·8	249	—	—	34 45	SS	—	—	50·2
Moscow		107·7	327	14 19	P	25 33	[+31]	18 43	PP	—
Lincoln		108·5	47	—	—	e 28 15	PS	e 37 2	?	e 49·7
Pulkovo		109·7	333	19 0	PP	26 33	S	e 21 15	PPP	—
Florissant		113·7	49	i 19 7	PP	e 26 29	{− 2}	—	—	—
St. Louis		113·8	49	e 18 33	[− 7]	26 59	{+28}	e 39 46	SSS	e 47·9
Scoresby Sund		114·0	356	e 19 39	[+58]	e 25 58	[+30]	e 35 7	SS	e 51·8
Ksara		114·7	304	e 15 39	P	e 26 4	{−34}	—	—	—
Chicago U.S.C.G.S.		114·8	45	e 29 18	PS	40 5	SSS	—	—	e 47·7
Upsala		115·1	337	—	—	25 29?	[− 3]	35 29?	SS	e 53·5
Warsaw		118·0	328	e 19 29	PP	e 26 13	[+30]	—	—	e 59·5
Helwan	E.	119·3	301	e 20 7	P	i 27 37	{+28}	—	—	—
Copenhagen		119·9	335	e 18 46	[− 6]	27 44	{+31}	—	—	—
Toronto	N.	119·9	40	—	—	e 26 11	[+21]	—	—	50·5
Pittsburg	Z.	120·8	44	i 8 1	?	—	—	—	—	—
Ivigtut		121·3	11	—	—	30 35	PS	—	—	58·5
Sofia		121·3	318	e 18 59	[+ 4]	—	—	—	—	—
Ottawa		121·4	37	e 18 49	[− 6]	37 17	SS	—	—	e 51·5
Potsdam		121·8	332	e 18 52	[− 4]	26 29	?	e 20 27	PP	e 58·5
Hamburg		122·4	335	e 20 35	PP	—	—	—	—	e 59·5
Prague		122·6	329	—	—	e 25 11	[−47]	27 59	SKKS	e 59·5
Vermont		123·4	37	—	—	e 37 31	SS	—	—	e 50·0

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Seven Falls	123·4	33	e 20 47	PP	e 37 23	SS	e 30 23	PS	49·5
Aberdeen	123·8	343	—	—	e 37 36	SS	28 4	SKKS	e 57·5
Philadelphia	124·3	43	e 20 54	PP	e 26 29	[+25]	e 37 39	SS	e 52·2
De Bilt	125·5	336	i 20 57	PP	e 30 39	PS	e 38 29	SSP	e 63·5
Triest	125·7	326	i 19 15	[+11]	26 39	[+31]	e 31 2	PS	—
Stuttgart	126·1	330	e 18 58k	[− 6]	e 26 24	[+15]	20 53	PP	e 63·0
East Machias	126·7	35	—	—	e 27 21	{−37}	—	—	e 53·5
Uccle	126·8	335	e 19 3	[− 3]	e 28 23	{+24}	e 31 1	PS	—
Chur	127·2	329	e 18 55k	[−11]	—	—	—	—	—
Zurich	127·3	330	e 18 59	[− 7]	—	—	—	—	—
Basel	127·7	330	e 19 0	[− 8]	—	—	—	—	—
Kew	128·1	338	i 19 1	[− 8]	e 26 43	[+28]	e 28 35	SKKS	—
Rome	128·6	321	i 19 5k	[− 4]	e 22 24	SKP	e 21 3	PP	64·3
Paris	129·1	334	e 19 6	[− 4]	39 26	SSP	i 31 36	PS	64·5
Huancayo	129·5	109	e 19 9	[− 2]	e 26 21	[+ 2]	i 33 29	PPS	i 60·7
La Plata	131·4	146	—	—	22 35	PKS	38 29?	SS	61·8
La Paz	134·6	118	i 19 19k	[− 1]	25 20	PPP	i 22 46	PP	65·1
Bermuda	135·3	47	e 22 56	PP	i 40 22	SS	—	—	55·9
Toledo	139·0	332	i 19 26	[− 3]	—	—	23 4	PP	70·5
San Juan	139·6	66	e 19 38	[+ 8]	i 26 36	[− 2]	i 22 58	PP	e 61·6
Almeria	140·6	328	i 19 29	[− 2]	26 29	[−11]	23 34	PP	70·5
Coimbra	140·6	335	e 20 11	P?	41 59	SSP	35 1	PPS	e 64·0
Granada	140·9	329	19 31k	[− 1]	23 5	SKP	19 50	PKP_2	70·5
Lisbon	142·1	336	19 26	[− 8]	—	—	23 32	PP	69·0
Rio de Janeiro	148·6	151	—	—	29 44	{−27}	42 17	SSP	—

Additional readings :—
Riverview iPZ = +6m.26s., iN = +11m.6s.
Adelaide i = +12m.18s., +12m.37s., +12m.41s., and S_cS? = +17m.21s.
Wellington PP?Z = +9m.38s., P_cPZ = +9m.50s., PPPZ = +10m.4s., iZ = +10m.29s., S = +·13m.59s., i = +15m.34s., SS? = +17m.19s. and Q = +17·5m.
Mori iN = +9m.5s.
Medan SN = +17m.59s.
Honolulu e = +15m.39s., i = +16m.43s., iSS = +23m.9s.
Calcutta eSSN = +20m.59s.
Agra iE = +12m.58s., +22m.42s. and +26m.17s.
Bombay iPE = +12m.18s., eN = +12m.57s., iE = +13m.8s., eE = +27m.52s.
Sitka e = +23m.17s. and +24m.7s.
Ukiah e = +33m.36s.
Berkeley iZ = +23m.43s., iE = +23m.49s. and +24m.45s., eZ = +29m.45s., iN = +29m.51s.
Victoria eE = +23m.21s. and +25m.13s., e = +29m.5s. and +33m.59s.
Seattle e = +20m.50s., +28m.23s., +33m.38s., and +37m.5s.
Sverdlovsk SKKS = +24m.15s.
Salt Lake City e = +26m.43s. and +39m.1s.
Bozeman iSKS = +24m.36s., e = +26m.19s., eSS = +32m.5s., e = +35m.33s.
Tucson i = +15m.9s., e = +22m.36s., i = +26m.37s., eSS = +31m.48s.
Moscow S = +25m.57s.
Pulkovo SKS = +25m.12s., ePS = +28m.22s.
Florissant iZ = +19m.28s., iEZ = +19m.59s., eE = +25m.57s., eSE = +26m.57s., eN = +35m.6s.
St. Louis eZ = +19m.27s. and +29m.30s., eN = +35m.39s.
Scoresby Sund e = +29m.2s. and +29m.24s., iPS = +29m.37s., e = +36m.16s.
Chicago e = +33m.53s. and +43m.21s.
Upsala eE = +25m.58s., eN = +27m.7s.
Warsaw eZ = +30m.11s., eE = +30m.17s.
Bermuda i = +40m.8s., e = +48m.47s.
Helwan iE = +26m.14s.
Copenhagen +26m.17s. and +30m.29s.
Sofia eN = +23m.41s.
Ottawa e = +26m.17s., e = +45m.29s.?
Aberdeen eN = +33m.26s.
Philadelphia eSS = +32m.45s., e = +44m.44s.
De Bilt ePP = +22m.49s.
Triest iSKKS = +28m.22s., iPPS = +33m.41s.
Stuttgart ePSE = +31m.11s., eSSEN = +37m.47s., eSSSN = +42m.53s.
Uccle iZ = +22m.51s., ePPS = +32m.23s., eN = +36m.23s., eEN = +38m.59s.
East Machias e = +28m.27s., S = +39m.21s., e = +49m.17s.
Kew iPPZ = +22m.55s., eZ = +30m.59s.?, eSSEN = +38m.29s.?, eEN = +46m.29s.?, eZ = +51m.29s.?
Rome i = +19m.26s., iZ = +22m.59s., eE = +28m.21s., eEN = +31m.31s., iPS?Z = +31m.47s., iPPSN = +33m.22s., eSSN = +39m.28s., eSSSN = +43m.51s., eN = +47m.25s.

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Paris ePP = +21m.18s., iPKS = +23m.2s., iPPP = +24m.19s., PPS = +32m.40s.
Huancayo e = +21m.33s., iPP = +22m.35s., i = +23m.23s., e = +28m.8s., i = +38m.58s., e = +52m.21s.
La Plata SKS?N = +22m.41s., N = +22m.53s.
La Paz iSKPZ = +23m.4s., SKKS = +30m.11s., SSN = +39m.58s., SSS = +43m.53s.
Bermuda i = +40m.8s., e = +48m.47s.
Toledo iPKP$_2$ = +19m.55s.
San Juan e = +24m.9s., iPS = +34m.36s., i = +38m.49s., eSS = +41m.6s., e = +46m.6s.
Almeria PKP$_2$ = +19m.55s., PKS = +23m.1s., PPP = +26m.48s., SKKS = +30m.6s., PPS = +36m.12s., SS = +42m.18s.
Coimbra ePE = +21m.25s., PP = +24m.59s., SKP = +26m.1s., PPP = +27m.29s.
Granada iPPZ = +23m.35s., SKSZ = +25m.56s., ePPP = +29m.38s., SKKS = +30m.31s., SS = +43m.5s.
Long waves were also recorded at Harvard, Bergen, Stonyhurst, Heligoland, and Budapest.

Feb. 9d. Readings also at 9h. (near Manila), 10h. (near Istanbul), 11h. (near Amboina), 14h. (near La Paz), 15h. (Tucson, College, Riverside, Haiwee, Mount Wilson, Tinemaha, and Pasadena), 18h. (Tananarive), 22h. (near Manila).

Feb. 10d. Readings at 1h. (Huancayo and near La Paz), 5h. (Huancayo), 7h. (La Plata, Manila, and near Amboina), 8h. (Port au Prince), 12h. (Huancayo), 13h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Huancayo, and La Paz), 15h. (Sofia, Tucson, near Apia, and near Balboa Heights), 18h. (Harvard), 22h. (Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 23h. (near Manila).

Feb. 11d. 4h. 50m. 39s. Epicentre 40°·4N. 125°·1W. (as on 1941, February 9d.).

$A = -\cdot4391$, $B = -\cdot6248$, $C = +\cdot6456$; $\delta = -2$; $h = -2$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ferndale		0·6	75	e 0 12	− 3	i 0 23	− 3	—	—	—
Ukiah		1·9	131	i 0 34	0	e 1 3	+ 4	—	—	—
Berkeley		3·4	138	e 0 54	− 1	i 1 28	− 9	—	—	e 1·8
San Francisco	E.	3·4	140	e 1 4	P_g	—	—	—	—	—
Branner		3·8	141	e 0 59	− 2	e 1 55	S*	e 1 9	P*	—
Lick		4·1	137	e 1 5	0	e 1 54	− 1	—	—	—
Fresno	N.	5·5	129	e 1 21?	− 4	—	—	—	—	—
Tinemaha		6·3	120	e 1 38	+ 2	—	—	i 1 46	P*	—
Haiwee		7·0	125	e 1 49	+ 3	—	—	—	—	—
Pasadena		8·4	136	i 2 5	− 1	i 4 10	S*	—	—	—
Mount Wilson	z.	8·4	134	e 2 6	0	—	—	—	—	—
Riverside	z.	8·9	133	i 2 12	0	—	—	—	—	—
Palomar	z.	9·6	134	e 2 24	+ 3	—	—	—	—	—
Tucson		14·1	121	e 1 38	?	—	—	—	—	—

Additional readings :—
Ukiah e = +51s. and +1m.30s.
Berkeley eE = +0m.59s. and +1m.15s.
Branner iN = +2m.5s.
Tucson e = +3m.26s., i = +3m.33s., +3m.49s., and +3m.53s.
Long waves were also recorded at Bozeman, Butte, and Salt Lake City.

Feb. 11d. 8h. 52m. 35s. Epicentre 45°·5N. 12°·0E.

$A = +\cdot6879$, $B = +\cdot1462$, $C = +\cdot7109$; $\delta = -4$; $h = -4$;
$D = +\cdot208$, $E = -\cdot978$; $G = +\cdot695$, $H = +\cdot148$, $K = -\cdot703$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Triest		1·3	83	i 0 28	+ 3	i 0 41	− 3	—	—
Chur		2·2	308	e 0 47	P_g	e 1 17	S_g	—	—
Ravensburg	E.	2·8	324	i 0 58	P_g	i 1 29	S_g	—	—
Zurich		3·0	308	e 0 59	P_g	e 1 40	S_g	—	—
Basle		3·7	306	e 0 59	− 1	e 2 5	S_g	—	—
Stuttgart		3·8	331	i 1 13	P_g	i 1 40	− 7	i 2 1	S_g
Jena		5·4	357	—	—	e 2 37	+ 9	e 2 44	S*

Jena gives also eN. = +2m.41s.

Feb. 11d. 14h. 35m. 31s. Epicentre 15°·2N. 94°·4W.

$A = -\cdot0741$, $B = -\cdot9626$, $C = +\cdot2606$; $\delta = 0$; $h = +6$;
$D = -\cdot997$, $E = +\cdot077$; $G = -\cdot020$, $H = -\cdot260$, $K = -\cdot966$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	2·9	309	i 0 41	− 7	—	—	—	—	—
Vera Cruz	N.	4·4	337	e 1 13	+ 3	—	—	—	—	—
Puebla	N.	5·2	317	e 1 21	0	—	—	—	—	—
Tacubaya	N.	6·2	313	e 1 31	− 4	—	—	—	—	—
Merida	N.	7·3	38	i 2 13	P*	—	—	—	—	—
Guadalajara	E.	10·1	302	i 2 16	−12	—	—	—	—	—
Manzanillo	N.	10·2	294	e 2 9	−22	—	—	—	—	—
Mazatlan	N.	13·8	307	e 3 10	− 9	—	—	—	—	—
Balboa Heights		15·8	111	e 4 2	PP	e 7 9	SSS	—	—	—
Cape Girardeau		22·4	10	e 5 0	− 2	e 9 10	+ 6	i 5 40	PPP	—
Tucson		22·6	322	i 5 2a	− 1	i 9 12	+ 5	i 5 26	PP	i 11·1
St. Louis		23·6	7	e 5 9	− 4	e 9 55	SSS	i 5 27	PP	—
Florissant		23·8	7	i 5 13	− 2	e 9 34	+ 6	i 5 40	PP	—
Lincoln		25·6	358	e 5 30	− 2	e 9 54	− 5	i 10 31	SS	e 12·0
Denver		26·2	341	e 5 56	+18	e 10 46	SS	e 6 18	PP	e 15·5
Chicago, U.S.C.G.S.		27·1	10	i 5 47	+ 1	i 10 28	+ 4	—	—	e 17·3
San Juan		27·2	79	e 5 46	− 1	i 10 55	+30	i 6 21	PP	i 12·3
La Jolla	z.	27·2	315	e 5 47	0	—	—	—	—	—
Riverside	z.	27·9	316	e 5 49	− 5	—	—	—	—	—
Pittsburgh		28·1	24	e 5 55	0	e 10 46	+ 6	—	—	—
Mount Wilson	z.	28·5	316	e 5 57	− 2	—	—	—	—	—
Pasadena		28·5	316	i 5 57a	− 2	i 10 48	+ 2	—	—	—
Salt Lake City		29·6	332	e 6 6	− 3	e 11 1	− 3	i 7 24	PP	e 14·9
Haiwee		29·6	320	e 6 7	− 2	—	—	—	—	—
Philadelphia		29·8	31	e 6 6	− 5	e 11 13	+ 6	e 12 31	SS	i 14·3
Logan		30·4	333	i 6 12	− 4	e 11 11	− 5	e 7 11	PP	e 16·7
Tinemaha		30·4	320	e 6 12	− 4	—	—	—	—	—
Toronto		31·1	21	e 7 29?	?	11 32	+ 4	e 12 39	SS	e 16·5
Fordham		31·2	31	e 6 19	− 4	e 11 43	+14	—	—	—
Bermuda		31·8	53	e 6 30	+ 2	e 12 32	+54	e 7 26	PP	e 13·4
Santa Clara		32·9	318	i 6 49	+11	e 12 5	+ 9	—	—	e 15·8
Huancayo		33·0	145	i 6 42	+ 3	i 11 45	−12	i 7 56	PP	i 14·6
Berkeley		33·4	318	i 6 37	− 5	i 12 5	+ 2	—	—	i 15·9
Bozeman		33·4	339	i 6 40	− 2	i 12 7	+ 4	e 7 44	PP	i 14·7
Harvard	z.	33·5	31	e 6 44	+ 1	(e 13 29?)	SS	i 8 6	PP	e 13·5
Weston		33·6	31	e 6 42	− 2	i 12 9	+ 3	—	—	e 18·5
Ottawa		34·0	23	6 45	− 3	12 15	+ 2	8 5	PPP	17·5
Butte		34·3	339	i 6 47	− 3	i 12 16	− 1	i 8 5	PP	e 15·5
Vermont		34·3	27	e 5 51	−59	i 11 22	−55	e 8 14	PP	e 15·1
Ukiah		34·7	319	e 6 51	− 3	i 12 31	+ 7	8 20	PP	16·5
Shawinigan Falls		36·1	25	7 7	+ 2	12 49	+ 4	8 29	PPP	17·2
East Machias		37·3	32	7 16	0	i 13 2	− 2	e 8 39	PP	i 15·9
Seven Falls		37·4	26	7 15	− 1	13 5	0	8 44	PP	20·5
Spokane	E.	37·6	334	i 8 35	PP	—	—	9 43	PPP	e 23·5
Saskatoon		38·1	347	7 47	+25	13 47	+31	—	—	22·5
Halifax		39·2	35	7 36	+ 5	13 47	+15	9 17	PPP	19·5
Seattle		39·8	330	e 10 20	?	e 14 58	?	—	—	e 22·4
La Paz		40·8	139	i 7 48k	+ 3	i 13 54	− 2	9 53	PPP	21·0
Victoria		40·9	330	7 41	− 5	13 59	+ 1	17 35	SSS	e 20·5
Sitka		52·2	333	i 9 10	− 5	e 16 36	− 3	e 11 14	PP	e 21·8
Ivigtut		56·5	25	9 43	− 3	17 42	+ 5	—	—	28·5
Honolulu		60·2	286	—	—	e 18 28	+ 3	—	—	e 25·0
La Plata		60·7	146	—	—	18 29	− 3	23 17	SS	39·4
College		61·2	337	e 10 17	− 2	e 18 32	− 6	i 20 10	S_cS	e 25·7
Scoresby Sund		69·9	20	i 11 15	0	i 20 27	+ 3	e 25 18	SS	e 31·4
Lisbon		77·0	54	11 58	+ 2	21 52	+ 7	14 59	PP	38·1
Coimbra		77·3	52	11 59	+ 1	21 50	+ 2	—	—	38·5
Edinburgh		78·2	35	—	—	21 59	+ 2	22 49	PS	—
Aberdeen		78·6	34	i 12 2	− 3	i 22 6	+ 4	i 27 18	SS	e 37·1
Stonyhurst		79·0	37	i 12 10	+ 3	i 22 12	+ 6	—	—	38·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Fernando		79·7	56	e 12 23	+12	i 22 25	+12	—	—	38·5
Oxford		80·1	40	i 12 16a	+ 3	i 22 20	+ 2	—	—	e 37·1
Toledo		80·7	52	i 12 16	0	i 22 32	+ 8	—	—	33·7
Kew		80·8	40	i 12 16a	− 1	e 22 28	+ 3	e 15 17	PP	e 35·5
Granada		81·6	54	i 12 17k	− 4	i 22 42	+ 9	i 15 30	PP	39·6
Bergen		81·6	30	e 12 18	− 3	e 22 44	+11	—	—	e 39·5
Almeria		82·6	54	i 12 26	0	i 22 41	− 2	12 49	P_cP	39·8
Paris		83·2	42	e 12 29	0	22 36	−13	12 40	P_cP	38·5
Alicante		83·7	52	e 12 31	− 1	22 56	+ 2	—	—	—
Uccle		83·8	40	i 12 32	0	i 23 0	+ 5	23 47	PS	38·5
De Bilt		83·9	38	i 12 33a	0	i 22 59	+ 3	e 15 49	PP	e 39·5
Heligoland		84·8	36	e 12 41	+ 4	e 23 5	0	—	—	e 40·5
Hamburg		86·2	35	e 12 44	0	e 23 18	− 1	—	—	e 40·5
Neuchatel		86·6	43	e 12 47	+ 1	—	—	—	—	—
Strasbourg		86·6	41	—	—	e 23 29	+ 6	e 24 38	PS	—
Algiers		86·8	53	e 12 42	− 5	23 29	+ 4	—	—	44·5
Basle		86·8	42	e 12 48	+ 1	(e 23 28)	+ 3	—	—	23·5
Copenhagen		86·8	34	e 12 50	+ 3	23 16	− 9	24 23	PS	41·5
Stuttgart		87·4	40	e 12 51	+ 1	e 23 26	− 4	—	—	42·5
Zurich		87·5	42	e 12 51	0	—	—	—	—	—
Upsala		87·6	28	e 12 47	− 4	e 23 22	−10	e 28 47	SS	e 41·5
Jena		88·1	38	e 13 5	+11	e 23 42	+ 5	—	—	e 39·5
Chur		88·3	42	e 12 57	+ 2	—	—	—	—	—
Potsdam		88·4	36	e 12 51	− 4	i 23 31	− 9	i 16 11	PP	41·5
Prague		90·1	37	e 12 59	− 4	e 23 39	[+ 6]	e 25 29	PS	e 38·5
Triest		91·5	42	i 13 12	+ 2	i 23 47	[+ 5]	i 16 44	PP	—
Rome		92·1	46	13 12	0	i 23 49	[+ 4]	16 26	PP	—
Warsaw		92·8	34	e 13 13k	− 3	e 23 49	[0]	e 17 1	PP	e 43·5
Pulkovo		93·1	24	13 20	+ 3	23 54	[+ 3]	e 17 2	PP	—
Belgrade		96·1	41	e 12 7	?	e 24 8	[+ 1]	e 17 54	PP	e 42·4
Moscow		98·6	25	e 13 48	+ 6	24 23	[+ 3]	17 51	PP	—
Sofia		98·9	42	—	—	e 24 23	[+ 2]	—	—	—
Arapuni		99·2	233	—	—	26 59	PS	—	—	45·5
Wellington		100·5	230	17 29	PP	24 29	[0]	i 34 35	?	46·0
Christchurch		102·4	228	24 46	S	(24 46)	[+ 7]	33 0	SSP	42·7
Sverdlovsk		105·3	14	e 14 17	P	24 53	[+ 1]	i 18 32	PP	—
Vladivostok		108·1	326	e 18 48	PP	25 10	[+ 6]	i 29 28	PPS	—
Helwan		111·1	49	e 19 14	PP	e 25 23	[+ 6]	e 28 41	PS	—
Irkutsk		111·9	348	e 18 41	[+ 4]	—	—	—	—	—
Baku		115·5	29	—	—	28 41	PS	—	—	—
Riverview		118·5	240	—	—	e 27 14	{+11}	e 36 15	SS	e 60·8
Frunse		121·3	9	20 47	PP	—	—	—	—	—
Andijan		123·0	12	21 11	PP	—	—	—	—	—
Manila		134·2	308	19 20	[0]	39 38	SS	22 47	SKP	64·0
Agra	E.	137·3	9	e 18 14	[−71]	—	—	—	—	69·4
Calcutta	N.	142·9	354	e 19 26	[− 9]	i 41 34	SS	i 22 58	SKP	e 69·4
Bombay		143·9	21	e 19 35	[− 2]	—	—	e 22 54	SKP	72·5
Kodaikanal	E.	153·6	18	e 20 2	[+10]	—	—	—	—	—

Additional readings :—
Cape Girardeau iEN = +5m.13s., eE = +6m.13s.
Tucson i = +7m.15s., +8m.46s., +9m.20s., and +10m.31s.
St. Louis iN = +6m.24s., iP_cP = +9m.17s., eE = +10m.15s.
Florissant iE = +9m.22s., iN = +9m.26s., iE = +10m.3s.
Lincoln e = +10m.12s.
Denver eE = +6m.12s., eSN = +10m.49s., iSE = +10m.53s., eN = +12m.22s.
Chicago U.S.C.G.S. e = +9m.2s., S = +10m.37s., i = +13m.21s.
San Juan i = +7m.35s. and +11m.4s.
Salt Lake City e = +9m.25s., iS = +11m.7s., e = +13m.24s. and +13m.34s.
Logan P = +6m.45s. and +6m.57s., iSS = +12m.53s.
Bermuda e = +8m.8s.
Huancayo i = +7m.10s., +8m.18s., +8m.49s., +10m.13s., +12m.20s., +13m.3s., and +13m.58s.
Berkeley iPZ = +6m.11s., ePE = +6m.40s., iN = +9m.57s., iSE = +12m.29s.
Bozeman i = +6m.54s., i = +8m.22s., +8m.47s., +12m.25s., and +13m.7s.
Harvard eZ = +7m.33s. and +10m.8s.
Butte i = +6m.59s.; iP_cP = +9m.5s., e = +14m.37s.

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Vermont ePP = +6m.59s., e = +12m.27s.
Ukiah e = +8m.36s., iSS = +14m.12s., e = +15m.6s.
East Machias e = +9m.58s., i = +10m.27s., e = +13m.56s.
Seven Falls SSS = +16m.1s.
Saskatoon eE = +17m.47s.
Seattle e = +11m.15s. and +15m.27s., eSS = +18m.8s., e = +19m.54s.
La Paz iSE = +14m.1s., SSN = +16m.29s.
Sitka i = +9m.39s., +9m.52s., and +12m.38s., iS = +16m.41s., iS_cS = +16m.57s., e = +19m.21s., iSS = +20m.32s.
Honolulu i = +17m.41s.
La Plata QE = +25·2m., E = +31m.29s.? and +33m.29s.?
College e = +13m.20s. and +22m.2s., eSS = +22m.30s., e = +23m.2s.
Scoresby Sund i = +12m.33s. and +20m.46s., e = +23m.11s., +26m.52s., and +28m.46s.
Coimbra iPP = +13m.26s., ? = +17m.26s.
San Fernando ePP = +13m.8s., SSSN = +32m.3s.
Kew iP_cPZ = +12m.30s., ePSE = +22m.11s., eN = +23m.41s. and +26m.44s., eE = +28m.39s., eSSSE = +31m.59s., eQEN = +33·5m.
Granada PS = +23m.45s., ePPS = +24m.30s., SS = +27m.51s., SSS = +31m.4s.
Almeria PP = +16m.5s., PPP = +17m.43s., S_cS = +23m.16s., PPS = +23m.48s., SS = +28m.26s.
Paris PP = +15m.47s., i = +19m.45s., SKKS = +23m.5s., S = +23m.14s., PS = +23m.40s., SS = +28m.51s.
Uccle SSSE = +32m.23s.
De Bilt iZ = +18m.59s. and +22m.19s., eSS = +28m.29s.
Heligoland iN = +23m.14s.
Hamburg eN = +23m.26s.
Copenhagen +16m.9s.
Stuttgart iSEN = +23m.39s.
Upsala eN = +15m.29s.? and +36m.29s.?
Jena ePN = +13m.11s.
Chur e = +13m.45s.
Potsdam iPZ = +12m.57s.k, eSKSNW = +23m.34s., iS = +23m.48s., iSZ = +23m.52s.
Triest iS = +24m.23s., iSS = +29m.28s.
Rome iE = +14m.29s., iN = +15m.27s., eN = +15m.43s., iN = +17m.0s. and +23m.56s., iSKKS = +24m.2s., iS = +24m.21s., iN = +25m.9s., iPSE = +25m.28s., iE = +27m.27s., iSS = +30m.43s., eZ = +37m.51s., eN = +41m.9s., eZ = +42m.29s.
Warsaw eE = +23m.52s.
Pulkovo S = +24m.29s.
Belgrade e = +19m.13s. and +39m.26s.
Moscow eS = +25m.14s.
Manila SSSN = +44m.44s.
Calcutta iPSKS = +33m.6s., iSSS = +47m.2s.
Bombay cE = +20m.44s., eN = +23m.50s., eE = +23m.54s.
Long waves were also recorded at Ferndale, San Francisco, Fresno, Branner, Lick, Colombo, Pennsylvania, Sydney, Budapest, and Tananarive.

Feb. 11d. Readings also at 0h. (Stuttgart, Tinemaha, Riverside, Pasadena, and Mount Wilson), 5h. (near Amboina), 6h. (near Fresno), 8h. (near Bucharest), 12h. (near Mizusawa), 15h. (Port au Prince), 19h. (Huancayo), 23h. (Medan, Calcutta, Agra, and Toledo).

Feb. 12d. Readings at 0h. (Agra, Bombay, Colombo, Medan, Manila, and Riverview), 1h. (near Manila (2)), 3h. (near Lick), 5h. (La Paz), 6h. (Riverview), 8h. (Tinemaha and near La Paz), 17h. (Baku, Helwan, Ksara, and Tashkent), 18h. (Manila and Samarkand), 20h. (Merida and St. Louis), 22h. (Harvard).

Feb. 13d. 14h. 49m. 15s. Epicentre 23°·0N. 109°·0W. (as on 1939 June 23d.).
A = −·3000, B = −·8712, C = +·3885; δ = −8; h = +4;
D = −·946, E = +·326; G = −·126, H = −·367, K = −·921.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mazatlan	z.	2·4	85	i 0 51	P_g	—	—	—	—	—
Tucson		9·4	350	i 2 13	− 5	i 3 43	−24	i 2 19	PP	i 5·1
Tacubaya	E.	9·8	109	2 36	+12	—	—	—	—	—
La Jolla		12·2	325	e 3 0	+ 2	—	—	—	—	—
Mount Wilson	z.	13·7	327	e 3 22	+ 4	—	—	—	—	—

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	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena	13·7	327	e 3 21	+ 3	(e 5 51)	− 1	—	—	e 5·8
Haiwee	15·2	331	e 3 35	− 3	—	—	—	—	—
Tinemaha	16·2	332	e 3 49	− 1	—	—	—	—	—
Salt Lake City	17·9	353	e 4 7	− 5	e 7 16	−14	e 7 33	SS	e 9·0
Berkeley	18·7	325	i 4 21	− 1	e 7 56	+ 8	—	—	e 9·0
Ukiah	20·1	326	—	—	i 8 27	+ 8	—	—	e 9·5
Lincoln	20·6	28	e 5 5	+22	—	—	—	—	e 10·7
Cape Girardeau	22·0	46	e 4 57	− 1	e 9 0	+ 4	—	—	e 11·2
Florissant	22·4	40	e 5 3	+ 1	e 8 58	− 6	—	—	i 11·1
St. Louis	22·4	40	e 4 59	− 3	e 8 57	− 7	—	—	e 11·7
Bozeman	22·7	356	e 5 1	− 3	e 9 8	− 1	—	—	i 11·8
Butte	23·1	354	e 5 7	− 1	e 9 19	+ 3	—	—	e 12·3
Ottawa	35·0	41	e 6 59	+ 3	—	—	—	—	17·8

Additional readings :—
Tucson i = +4m.22s. and +4m.40s.
Berkeley eSE = +7m.59s.
Lincoln e = +7m.27s. and +9m.48s.
Cape Girardeau eE = +6m.48s.
Florissant ePZ = +5m.21s.
Long waves were also recorded at Scoresby Sund and other stations in North America.

Feb. 13d. 16h. 30m. 23s. Epicentre 23°·0N. 109°·0W. (as at 14h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		9·4	350	i 2 18	0	—	—	—	—	i 5·4
Haiwee		15·2	331	e 3 38	0	—	—	—	—	—
Tinemaha	z.	16·2	332	e 3 54	+ 4	—	—	—	—	—
Florissant	N.	22·4	40	—	—	e 9 4	0	—	—	—
St. Louis		22·4	40	e 4 56	− 6	e 8 56	− 8	—	—	e 11·4

Tucson gives also i = +2m.25s., +4m.44s., and +4m.53s.
Long waves were recorded at Tacubaya, Berkeley, Pasadena, Salt Lake City, and Chicago.

Feb. 13d. Readings also at 0h. (Calcutta and Manila), 3h. (near Berkeley and Branner), 4h. (near Triest), 5h. (Sofia), 10h. (Bucharest), 11h. (Logan and Tucson), 12h. (Manila), 13h. (Calcutta, Medan, Amboina, Batavia, Tashkent, Frunse, Sverdlovsk, and La Paz), 14h. (Huancayo and near La Paz), 20h. and 21h. (Tucson), 22h. (Tucson and near Mizusawa), 23h. (Oaxaca and Tacubaya).

Feb. 14d. 7h. 2m. 58s. Epicentre 19°·2N. 121°·2E. (as on 1940 March 12d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Manila		4·6	184	i 1 24a	P*	i 2 29	S_g	—	—
Zinsen		18·8	12	e 4 20	− 3	—	—	—	—
Sumoto		19·4	37	e 4 28	− 2	8 0	− 4	—	—
Gihu		21·2	38	e 4 48	− 1	8 38	− 3	—	—
Nagano		22·9	38	e 5 9	+ 3	9 18	+ 5	—	—
Tokyo Cen. Met. Ob.		23·2	41	e 5 8	− 1	—	—	—	—
Vladivostok		25·5	19	e 5 32	0	i 10 2	+ 5	—	—
Medan		26·9	239	e 5 44	− 1	—	—	i 11 53	SSS
Batavia	z.	28·9	211	6 10	+ 7	—	—	—	—
Calcutta	N.	30·9	283	e 5 41	−39	e 11 49	+25	—	—
Irkutsk		35·6	343	e 6 58	− 3	—	—	—	—
Bombay	E.	45·6	278	i 8 29	+ 5	i 15 11	+ 5	i 10 17	PP
Andijan		46·7	308	—	—	15 42	+20	—	—
Tashkent		49·1	309	e 8 54	+ 3	e 16 3	+ 7	—	—
Sverdlovsk		58·1	327	i 9 58	0	i 18 0	+ 2	—	—

Batavia gives also ePN = +7m.9s., ePE = +7m.26s.

Feb. 14d. 18h. 55m. 3s. Epicentre 56°·0S. 133°·0W. Approximate.

$A = -·3831$, $B = -·4109$, $C = -·8273$; $\delta = +3$; $h = -8$;
$D = -·731$, $E = +·682$; $G = +·564$, $H = +·605$, $K = -·562$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Christchurch		36·3	267	8 41	PP	13 14	+26	—	—	15·7
Arapuni		38·3	276	—	—	13 33	+14	—	—	16·6
La Plata		53·8	100	—	—	17 3	+ 2	—	—	23·0
Riverview		55·1	260	e 10 1	PP	e 17 54	+36	—	—	e 24·8
Brisbane	N.	58·8	267	e 13 57	?	i 18 21	+14	—	—	—
Adelaide		61·0	249	e 19 13	?	—	—	—	—	e 29·0
Huancayo		62·3	68	e 10 27	+ 1	i 18 54	+ 2	i 12 42	PP	e 27·2
La Paz		62·5	78	i 10 33a	+ 5	i 19 2	+ 8	12 49	PP	29·6
Tucson		89·9	19	e 13 1	− 1	e 23 52	− 2	i 29 0	SS	e 36·5
Pasadena		90·7	12	e 13 7	+ 1	e 23 55	− 6	—	—	e 36·6
Haiwee		92·7	12	e 13 16	+ 1	—	—	—	—	—
Tinemaha	Z.	93·6	12	e 13 19	0	—	—	—	—	—
Berkeley		94·0	9	—	—	e 39 9	?	—	—	—
Salt Lake City		98·1	16	—	—	e 37 9	?	—	—	e 45·7
Bozeman		103·0	15	—	—	e 38 27	?	—	—	e 42·9
Fordham		108·7	43	—	—	e 25 12	[+ 5]	e 28 23	PS	e 52·4
Manila		110·9	264	20 2	PP	—	—	—	—	—
East Machias		114·6	45	—	—	i 35 36	SS	e 39 54	SSS	e 54·8
Seven Falls		115·2	41	—	—	e 29 21	PS	—	—	49·0
Calcutta	N.	134·9	239	e 23 8	PKS	e 40 32	SSP	—	—	—
Bombay		138·2	218	e 23 15	PKS	e 28 9	?	—	—	e 59·0
Helwan		151·6	150	e 20 18	[+28]	e 38 27	?	—	—	—
Rome	Z.	153·6	107	—	—	e 32 53	?	—	—	e 73·4
Uccle	E.	154·4	83	—	—	e 44 51	SSP	—	—	—

Additional readings :—
Huancayo i = +11m.13s., +15m.53s., +19m.22s., and +20m.22s., iSS = +23m.5s., i = +25m.5s.
La Paz iSSN = +22m.58s.
Tucson i = +13m.28s. and +14m.22s., e = +22m.27s., i = +26m.30s.
Berkeley eN = +42m.21s., eZ = +42m.51s.
Salt Lake City e = +41m.6s.
East Machias e = +48m.53s.
Long waves were also recorded at Honolulu, Wellington, Tananarive, Scoresby Sund, and other American and European stations.

Feb. 14d. Readings also at 1h. (La Jolla, Mount Wilson, Pasadena, Tucson, and near Mizusawa), 4h. (Mount Wilson, Pasadena, and Tinemaha), 9h. (Ksara), 10h. (Riverview, Brisbane, Batavia, Medan, Calcutta, Bombay, Haiwee, La Jolla, Mount Wilson, Pasadena, Tinemaha, Palomar, Tucson, and near Mizusawa), 11h. (near Rome), 13h. (Riverview, Huancayo, Haiwee, Mount Wilson, Pasadena, Tinemaha, and Tucson), 15h. (Chicago), 16h. (near Branner), 18h. (Manila).

Feb. 15d. 8h. 56m. 8s. Epicentre 15°·3N. 89°·4W. (as on 1937 Dec. 26d.).

$A = +·0101$, $B = -·9650$, $C = +·2622$; $\delta = +8$; $h = +6$;
$D = -1·000$, $E = -·010$; $G = +·003$, $H = -·262$, $K = -·965$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Merida	E.	5·6	358	e 1 52	P_g	—	—	—	—	—
Oaxaca	N.	7·2	285	e 1 49	0	—	—	—	—	—
Vera Cruz	E.	7·5	302	e 2 7	P*	—	—	—	—	—
Tacubaya	N.	10·2	295	2 20	−1	—	—	—	—	—
Cape Girardeau		21·9	0	e 5 13	+16	e 9 20	+26	e 9 49	SS	—
San Juan		22·5	78	e 5 34	+32	e 8 22	−43	—	—	e 11·2
St. Louis		23·3	358	i 5 15	+ 5	e 9 37	+17	—	—	e 12·5
Tucson		25·8	316	e 5 30	− 4	i 10 0	− 2	i 6 8	PP	e 13·1
Lincoln		26·2	351	—	—	e 10 35	+26	—	—	i 11·2
Chicago		26·6	3	e 6 38	PP	i 11 13	+57	—	—	e 13·4

Continued on next page.

		△	Az.	P.	O−C.	S°	O−C.	Supp.		L.
		°	°	m s.	s.	m. s.	s.	m. s.		m.
Bermuda		28·0	49	e 8 21	?	e 12 8	?	—	—	e 14·6
Fordham		28·8	25	—	—	e 11 33	+42	—	—	—
Huancayo		30·5	152	e 6 34	+17	i 11 30	+12	—	—	i 14·0
Mount Wilson	z.	32·0	312	i 6 27	− 3	—	—	—	—	—
Salt Lake City		32·0	327	—	—	e 10 36	−66	—	—	e 17·0
Ottawa		32·1	18	i 6 52	+21	—	—	—	—	12·9
Haiwee	z.	32·9	315	e 6 37	− 1	—	—	—	—	—
Tinemaha	z.	33·6	316	i 6 41	− 3	—	—	i 9 28	?	—
East Machias		34·8	28	i 8 49	PPP	i 12 56	+31	e 15 37	SSS	e 18·6
Seven Falls		35·3	22	e 8 48	PPP	e 16 22	?	—	—	19·9
La Paz		37·9	145	i 7 57	+37	13 33	+20	15 37	SS	20·4

Additional readings :—
Cape Girardeau iN = +5m.38s., eE = +6m.14s.
St. Louis iZ = +5m.40s. and +6m.30s., iN = +10m.12s.
Tucson i = +5m.50s., +6m.43s., +9m.52s., +10m.20s., and +11m.38s.
Chicago e = +9m.18s., e = +12m.3s.
Huancayo i = +6m.39s., e = +7m.11s. and +12m.9s.
Salt Lake City e = +11m.46s.
East Machias i = +9m.3s. and +16m.3s.
Long waves were also recorded at Scoresby Sund and other American stations.

Feb. 15d. Readings also at 0h. (near Taihoku), 1h. (near Mizusawa), 3h. (Haiwee, Tinemaha, and Puebla), 4h. (Riverview and Sydney), 6h. (Sverdlovsk, Warsaw, Rome, De Bilt, Paris, Kew, Algiers, Bermuda, Ottawa, Chicago, San Juan, Huancayo, and La Paz), 7h. (Fordham), 12h. (near Amboina), 19h. (Philadelphia), 23h. (Berkeley, Tucson, Mount Wilson, Pasadena, Riverside, Tinemaha, Huancayo, La Paz, Wellington, and Christchurch).

Feb. 16d. 10h. Undetermined shock. Pasadena suggests deep.

Wellington PZ? = 37m.20s., S? = 43m.40s.
Riverview i = 40m.23s., eN = 44m.56s.
Manila iPZ = 44m.6s.a, S = 48m.25s., LEN = 51·5m.
Batavia PZ = 44m.47s.
Berkeley iPZ = 47m.16s., eZ = 47m.53s., eN = 47m.56s.
Mount Wilson iPZ = 47m.25s., iZ = 48m.3s.
Pasadena iPNZ = 47m.25s.a, iEZ = 48m.3s.
La Jolla ePZ = 47m.27s., eZ = 48m.4s.
Riverside ePZ = 47m.28s.a, iZ = 48m.4s.
Haiwee eP = 47m.30s.a, eZ = 48m.7s.
Palomar ePZ = 47m.30s.
Tinemaha iP = 47m.30s.a, eZ = 48m.6s.
Tucson iP = 47m.52s., i = 47m.59s., 48m.29s., 50m.58s., 58m.38s., and 61m.7s., eL = 78·5m.

Feb. 16d. 16h. 38m. 59s. Epicentre 33°·3N. 58°·7E.

Intensity X-XII at Mohamed Abatkan; VI at Birdjand. Epicentre 33°·5N. 58°·5E. (U.S.C.G.S.).

J. R. Rothé
Chronique seismologique, Revue pour l'Etude des Calamités, tome VII, No. 21, Geneva 1944, p. 52.

A = +·4351, B = +·7156, C = +·5464; δ = −5; h = +1;
D = +·854, E = −·520; G = +·284, H = +·467, K = −·838.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Samarkand		9·2	44	e 2 12	− 4	—	—	—	—	—
Baku		10·0	318	e 2 30	+ 3	—	—	—	—	—
Tashkent		11·6	43	i 2 46	− 4	e 4 56	− 5	—	—	—
Tchimkent		12·4	41	e 2 54	− 7	—	—	—	—	—
Andijan		13·2	52	e 3 8	− 3	—	—	—	—	—
Grozny		14·2	319	e 3 28	+ 4	—	—	—	—	—
Frunse		15·7	48	i 3 41	− 3	6 33	− 6	—	—	—
Piatigorsk		16·2	316	3 53	+ 3	—	—	—	—	—
Dehra Dun	N.	16·7	95	e 4 12	+15	e 7 29	+26	—	—	e 10·3
Almata		17·4	50	4 6	0	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m s.	s.	m. s.	s.	m. s.		m.
Agra		17·8	105	i 4 7a	− 4	7 35	+ 7	4 46	PPP	i 10·0
Sotchi		18·0	312	4 16	+ 3	7 39	+ 7	—	—	—
Ksara		19·0	276	i 4 31	+ 5	i 8 14	+19	10 54	SS	—
Bombay		19·1	134	i 4 26k	− 1	i 8 9	+12	i 4 53	PP	10·5
Theodosia		21·5	310	4 46	− 6	—	—	—	—	—
Yalta		22·0	308	e 4 48	−10	e 8 51	− 5	—	—	—
Simferopol		22·3	309	4 56	− 5	—	—	—	—	—
Sebastopol		22·5	308	—	—	e 8 53	−12	—	—	—
Semipalatinsk		23·3	36	e 5 18	+ 8	—	—	—	—	—
Helwan		23·5	268	i 5 15	+ 3	9 25	+ 2	5 41	PP	—
Sverdlovsk		23·6	3	i 5 11	− 2	i 9 22	− 3	—	—	—
Hyderabad		23·8	126	5 19	+ 4	9 34	+ 6	10 14	SS	12·2
Moscow		26·8	335	e 5 41	− 3	10 17	− 2	—	—	—
Bucharest		27·5	304	i 5 52k	+ 2	10 35	+ 5	6 52	PP	—
Calcutta	N.	28·2	103	(e 5 7)	−49	(i 10 39)	− 2	(e 7 43)	PcP	(i 15·4)
Kodaikanal	E.	28·7	138	i 5 51	−10	i 11 6	+16	—	—	15·2
Sofia		29·2	299	e 6 8	+ 3	—	—	—	—	e 15·4
Belgrade		31·6	302	e 6 28a	+ 2	e 12 31	+56	e 7 52	PP	e 18·5
Pulkovo		32·4	334	e 6 33	− 1	i 11 47	− 1	—	—	—
Colombo	E.	32·8	138	6 37	0	11 58	+ 4	15 10	SS	18·2
Budapest	E.	33·0	307	e 7 1	+22	e 13 40	SS	—	—	—
Warsaw		33·0	316	6 39k	0	e 14 8	SS	—	—	e 21·0
Triest		36·4	304	i 7 6	− 2	i 12 47	− 3	e 8 14	PP	—
Prague		36·5	311	e 7 1?	− 8	—	—	—	—	e 19·0
Rome		37·2	297	i 7 14a	− 1	i 13 5	+ 3	i 8 31	PP	i 18·3
Irkutsk		37·7	46	i 7 21	+ 2	13 7	− 3	—	—	—
Potsdam		37·8	315	i 7 18k	− 2	i 13 7	− 4	e 8 38	PP	16·0
Upsala		37·8	327	8 44	PP	e 13 7	− 4	17 42	SS	e 21·3
Jena		38·4	311	e 7 23	− 2	—	—	—	—	e 21·0
Copenhagen		38·9	320	i 7 30	+ 1	13 30	+ 2	—	—	—
Chur		39·3	306	e 7 30	− 2	—	—	—	—	—
Stuttgart		39·7	309	e 7 34k	− 2	—	—	e 9 5	PP	—
Hamburg	Z.	39·8	316	e 7 38	+ 2	—	—	e 16 43	?	—
Zurich		40·0	306	e 7 37k	− 1	—	—	—	—	—
Basle		40·7	307	e 7 42	− 2	—	—	—	—	—
Heligoland	E.	41·1	315	e 7 39	− 8	e 17 19	SS	—	—	e 25·4
Neuchatel		41·1	306	e 7 45	− 2	—	—	—	—	—
Uccle		42·9	311	i 8 2	0	—	—	—	—	e 25·0
Algiers		45·2	290	e 8 21	+ 1	e 13 50	−71	—	—	e 33·0
Aberdeen	N.	47·1	320	—	—	i 20 2	?	—	—	i 26·6
Medan		48·0	118	8 37	− 6	17 32	SS	—	—	—
Almeria		49·4	292	8 52	− 1	15 56	− 4	9 6	pP	23·0
Toledo		49·9	296	i 8 57	0	e 13 44	?	—	—	—
Zinsen		54·5	65	9 30	− 2	17 8	− 2	e 11 34	PP	29·8
Scoresby Sund		55·9	337	i 9 42	0	i 17 32	+ 3	e 11 46	PP	e 22·7
Vladivostok		56·7	57	i 9 47	− 1	i 17 32	− 8	—	—	—
Manila		59·1	92	i 10 6k	+ 2	i 18 16	+ 5	—	—	—
Batavia	Z.	60·2	120	10 6	− 6	—	—	—	—	—
Koti		61·1	67	10 12	− 6	18 37	0	—	—	25·5
Kobe		61·9	64	18 49	S	(18 49)	+ 2	22 40	SS	33·9
Ivigtut		68·9	330	i 11 7k	− 2	20 16	+ 3	—	—	—
College		80·0	11	—	—	e 22 18	+ 1	—	—	e 39·5
Ottawa		91·4	330	e 13 9	0	—	—	—	—	45·0
Chicago		99·0	336	—	—	e 24 19	[− 3]	e 32 32	SS	e 44·4
St. Louis		102·8	336	i 18 8	PKP	e 24 39	[− 1]	e 27 6	PS	—
Salt Lake City		105·8	353	—	—	—	—	e 41 36	?	e 49·1
San Juan		106·4	306	e 18 39	PKP	e 25 4	[+ 7]	31 54	SS	e 46·1
Haiwee	Z.	110·9	357	e 19 13	PP	—	—	—	—	—
Mount Wilson	Z.	112·8	357	e 19 26	PP	—	—	—	—	—
Pasadena	Z.	112·8	357	e 19 30	PP	i 29 2	PS	—	—	e 50·0
Tucson		114·1	350	e 18 44	[+ 3]	i 30 16	PS	i 20 12	PP	e 41·1
La Paz	Z.	129·5	276	i 19 12	[+ 1]	—	—	22 38	PP	67·0
Huancayo		133·1	286	e 19 21	[+ 3]	—	—	e 21 46	PP	e 44·9

For Notes see next page.

NOTES TO FEBRUARY 16d. 16h. 38m. 59s.

Additional readings :—
Dehra Dun e?N = +9m.22s.
Bombay iPN = +4m.30s., iE = +5m.6s., iN = +5m.10s., iEN = +6m.2s., iN = +7m.30s., iE = +7m.35s., iSSE = +8m.29s., iSSN = +8m.32s.
Helwan PPPZ = +5m.52s., P_cPE = +9m.7s., SSE = +10m.25s.
Bucharest PPE = +7m.4s., SN = +10m.50s., iEN = +11m.25s., SSN = +11m.54s.
Calcutta eSSN = (+12m.43s.); all readings have been increased by 3m.
Sofia eN = +10m.26s., eE = +11m.43s., eN = +12m.26s.
Belgrade ePSNW = +10m.42s., eSSNE = +14m.18s.
Budapest eN = +14m.27s.
Warsaw eZ = +13m.22s. and +15m.20s., eE = +16m.11s., eZ = +16m.26s., eN = +19m.4s., eE = +19m.22s., eN = +19m.56s., eE = +20m.24s.
Triest ePPP = +8m.39s.
Rome iZ = +14m.0s., i = +14m.29s., iSSN = +15m.13s., iN = +17m.14s.
Potsdam ePNW = +7m.21s., iE = +7m.58s., iZ = +8m.2s., iPPPEZ = +8m.55s.
Upsala PPPN = +11m.14s., SN = +15m.20s., eE = +15m.42s.
Jena iP = +7m.26s.
Copenhagen +14m.41s.
Stuttgart epPNE = +8m.39s., ePPEN = +9m.11s.
Heligoland eE = +21m.55s.
Almeria P_cP = +10m.18s., PP = +10m.50s., PPP = +11m.42s., P_cS = +14m.14s., PS = +16m.10s.
Scoresby Sund e = +18m.43s.
Batavia PE = +10m.56s.
Kobe e = +23m.50s., S = +26m.38s.
Ivigtut +21m.7s.
College e = +31m.38s.
St. Louis eN = +32m.17s.
Tucson e = +19m.11s., i = +19m.36s., e = +23m.4s., i = +29m.10s., e = +38m.20s.
La Paz sPKPZ = +21m.22s.
Huancayo i = +22m.52s. and +23m.37s., e = +29m.47s., iSS = +38m.51s.
Long waves were also recorded at other European and American stations.

Feb. 16d. Readings also at 3h. (La Paz), 4h. (Huancayo and Ksara), 5h. (near Mizusawa), 9h. (Agra, Dehra Dun, Bombay, and Tashkent), 15h. (La Paz), 18h. (Toledo, Frunse, Tchimkent, Sverdlovsk, Ksara, Tashkent, Samarkand, and Agra), 19h. (La Paz), 21h. (Samarkand), 22h. (La Paz).

Feb. 17d. Readings at 2h. (near Toledo, Almeria, Coimbra, Serra do Pilar, and La Paz), 5h. (Samarkand), 8h. (Riverview), 10h. (Tinemaha, Riverside, Haiwee, Tucson, San Juan, and Merida), 18h. (Manila), 21h. (near Manila, Lincoln, Sverdlovsk, and Irkutsk).

Feb. 18d. Readings at 3h. (Mount Wilson and Riverside), 4h. (Manila, Amboina, and Sverdlovsk), 7h. (near Bucharest and Sofia), 9h. (Huancayo), 12h. (Batavia), 19h. (near Cape Girardeau, near Tashkent, Tchimkent, Samarkand, Frunse, Andijan, and near Sofia), 20h. (Huancayo, Tucson, San Juan, Pasadena, Tinemaha, Mount Wilson, and Riverside), 21h. (Potsdam, Philadelphia, Bermuda, De Bilt, Kew, and Fordham), 22h. (Honolulu).

Feb. 19d. Readings at 10h. (near Mizusawa, Tucson, Pasadena, Mount Wilson, Riverside, Tinemaha, and Haiwee), 14h. (Tucson, Pasadena, Mount Wilson, Riverside, Tinemaha, Haiwee, and Wellington), 15h. (near Mizusawa, Pasadena, Mount Wilson, Riverside, Tinemaha, and Haiwee), 19h. (Manila).

Feb. 20d. Readings at 5h. (Huancayo and La Paz), 7h. (near Mizusawa), 11h. (near Tananarive), 15h. (Manila, near Medan, Kodaikanal, Colombo, Calcutta, Bombay, and Agra), 16h. (La Plata, near La Paz, Tucson, near Fresno, and Zurich), 17h. (Haiwee, Riverside, Tinemaha, and Zurich), 20h. (Bucharest), 23h. (Pasadena, Haiwee, Riverside, Tinemaha, and La Paz).

Feb. 21d. Readings at 10h. (near Fresno), 11h. (near Berkeley, Fresno, and Tucson), 12h. (Amboina and Medan), 13h. (Riverview and Manila), 21h. and 22h. (Tucson).

Feb. 22d. 19h. 14m. 46s. Epicentre 20°·5S. 177°·5W. Depth 0·060.
(as on 1938, November 21d.).

$A = -·9365$, $B = -·0409$, $C = -·3481$; $\delta = -12$; $h = +5$;
$D = -·044$, $E = +·999$; $G = +·348$, $H = +·015$, $K = -·937$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		8·6	40	i 2 4	+ 1	i 3 36	− 4	—	—	—
Tuai		18·8	194	3 54	+ 2	6 58	− 2	—	—	—
New Plymouth		19·9	199	4 10	+ 7	7 27	+ 8	—	—	—
Wellington		21·7	197	4 21	+ 1	7 49	− 1	—	—	9·7
Christchurch		24·4	198	4 53	+ 8	8 37	+ 3	—	—	—
Brisbane	E.	27·8	252	i 5 14	− 1	i 9 20	− 8	i 12 2	SSS	—
Riverview		30·8	237	i 5 43a	+ 2	i 10 9	− 5	i 7 11	pP	e 13·8
Manila		69·2	295	i 10 27k	+ 2	i 18 52	− 5	—	—	—
Batavia		74·5	269	i 10 52	− 4	i 19 45	−11	—	—	—
Pasadena		78·3	47	i 11 15	− 2	e 20 33	− 4	i 13 3	pP	—
Mount Wilson		78·5	47	i 11 17a	− 1	—	—	i 13 5	pP	—
Palomar	z.	78·8	49	e 11 17	− 3	—	—	—	—	—
Riverside	z.	78·8	47	i 11 18	− 2	—	—	e 13 2	pP	—
Haiwee		79·6	45	e 11 23	− 1	—	—	e 13 11	pP	—
Tinemaha		80·0	44	e 11 24	− 2	—	—	e 13 10	pP	—
Tucson		82·5	52	i 11 38	− 1	i 21 19	− 1	i 13 22	pP	—
Medan		85·5	275	11 8	−46	20 51	−58	—	—	—
College		88·1	12	—	—	e 21 43	−30	—	—	—
Huancayo		97·0	105	—	—	i 22 44	[− 2]	i 27 2	SP	—
Sverdlovsk		124·3	325	18 7	[− 4]	27 15	SKKS	—	—	—
Copenhagen		144·1	350	i 18 43	[− 4]	—	—	—	—	—
Warsaw	z.	145·2	340	e 18 48	[− 1]	—	—	—	—	—
Ksara		147·6	300	e 18 57	[+ 4]	—	—	e 22 24	PP	—
Stuttgart	z.	151·3	350	e 18 55	[− 3]	—	—	—	—	—

Additional readings :—
Brisbane iE = +7m.38s.
Riverview isSN = +13m.4s.
Mount Wilson iZ = +11m.29s.
Tucson i = +11m.46s., +12m.4s., and +13m.26s., ipPP = +16m.44s., isS = +24m.30s., i = +30m.0s.
Medan SN = +20m.37s.
College isS = +21m.59s.
Huancayo iS = +25m.17s., i = +28m.29s. and +30m.37s.
Stuttgart iPZ = +19m.2s.

Feb. 22d. Readings also at 0h. (La Paz and near Berkeley), 4h. (Manila), 5h. (near Simferopol, Yalta, and Theodosia), 6h. (near Mizusawa), 8h. and 9h. (Tacubaya), 13h. (Ksara), 15h. (Cape Girardeau), 19h. (Huancayo), 20h. (Ksara and La Paz).

Feb. 23d. 9h. 56m. 29s. Epicentre 28°·0N. 97°·0E.

$A = -·1078$, $B = +·8777$, $C = +·4670$; $\delta = +7$; $h = +2$;
$D = +·993$, $E = +·122$; $G = -·057$, $H = +·464$, $K = -·884$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	9·6	237	e 2 15	− 6	i 4 10	− 2	1 5 22	S_g	—
Dehra Dun	N.	16·7	282	e 4 1?	+ 4	e 7 33	+30	—	—	e 8·9
Agra	E.	16·9	272	3 58	− 1	7 8	+ 1	—	—	—
Almata		22·2	319	4 58	− 2	—	—	—	—	—
Frunse		23·4	315	5 15	+ 4	—	—	—	—	—
Andijan		23·9	308	5 18	+ 2	9 31	+ 1	—	—	—
Bombay		23·9	253	i 5 19	+ 3	e 9 34	+ 4	10 12	SS	11·6
Medan		24·3	177	e 4 49	−31	13 19	L	—	—	(13·3)
Irkutsk		24·9	11	5 25	− 1	e 9 46	− 1	—	—	—
Manila		26·0	117	e 5 48	+12	11 54	SSS	—	—	16·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m s.	s.	m. s.	s.	m. s.		m.
Tashkent		26·3	307	e 5 39	0	e 10 10	− 1	e 5 57	pP	—
Colombo	E.	26·5	221	10 21	S	(10 21)	+ 7	—	—	—
Samarkand		27·4	302	e 5 47	− 2	—	—	—	—	—
Sverdlovsk		38·6	329	i 7 23	− 3	13 14	− 9	—	—	—
Copenhagen		64·4	321	e 10 38	− 2	—	—	—	—	—

Additional readings :—
Calcutta iS*N = +4m.52s.
Agra iE = +4m.19s.
Bombay iEN = +9m.42s., eE = +10m.36s., iE = +11m.1s.

Feb. 23d. 11h. 32m. 9s. Epicentre 18°·1N. 99°·9W.

A = −·1635, B = −·9370, C = +·3088 ; δ = +6 ; h = +5 ;
D = −·985, E = +·172 ; G = −·053, H = −·304, K = −·951.

Pasadena suggests depth 100km.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	N.	1·5	27	0 30	+ 2	—	—	—	—	—
Oaxaca	N.	3·1	110	0 55	+ 4	—	—	—	—	—
Vera Cruz	Z.	3·7	74	1 3	+ 3	—	—	—	—	—
Guadalajara	N.	4·0	308	1 7	+ 3	—	—	—	—	—
Tucson		17·2	327	i 4 3	0	e 7 10	− 4	i 4 20	PP	e 8·8
Cape Girardeau		21·2	25	e 4 41	− 8	e 8 36	− 5	i 4 46	pP	—
La Jolla		21·4	318	e 4 50	− 1	—	—	e 5 9	pP	—
St. Louis		22·1	21	i 5 2	+ 3	i 9 0	+ 2	i 5 16	pP	—
Florissant		22·2	21	e 4 55	− 5	e 8 56	− 4	i 5 16	pP	—
Riverside		22·2	320	e 4 58	− 2	—	—	—	—	—
Mount Wilson		22·8	320	i 5 5	0	i 8 55	−16	i 5 25	pP	—
Pasadena		22·8	320	i 5 4	− 1	i 8 55	−16	i 5 26	pP	e 10·5
Haiwee		24·0	323	i 5 16	− 1	—	—	i 5 35	pP	—
Salt Lake City		24·8	339	e 5 42	+17	e 9 47	+ 1	—	—	e 12·7
Tinemaha		24·8	324	i 5 24a	− 1	e 8 59	−47	i 5 47	pP	—
Fresno	N.	25·8	322	e 5 33	− 1	—	—	—	—	—
Chicago, U.S.C.G.S.		25·9	21	e 5 54	+19	e 10 0	− 4	—	—	—
Lick		27·0	320	e 5 44	− 1	—	—	—	—	—
Berkeley		27·8	320	—	—	e 11 11	+36	e 11 27	SS	e 13·4
Victoria		35·9	334	e 9 9	PPP	—	—	—	—	18·9
Huancayo		38·5	139	—	—	e 12 6	?	—	—	e 17·2

Additional readings :—
Tucson i = +4m.25s. and +4m.57s., i = +7m.45s. and +8m.5s.
Cape Girardeau iEN = +5m.1s., iN = +5m.6s.
St. Louis iN = +5m.26s., iZ = +5m.38s., isSN = +9m.30s.
Florissant ipPEN = +5m.20s., iPPEN = +5m.27s., ipPPN = +5m.43s., iSE = +9m.1s., eE = +9m.8s. and +9m.16s., isSE = +9m.26s., esSE = +9m.32s.
Chicago, U.S.C.G.S., e = +10m.37s.
Long waves were also recorded at Bozeman.

Feb. 23d. 18h. 36m. 14s. Epicentre 33°·5N. 116°·6W. (as on 1939, May 12d.).

Pasadena gives epicentre 33° 30′N. 116° 29′W.

A = −·3741, B = −·7472, C = +·5493 ; δ = −1 ; h = +1 ;
D = −·894, E = +·448 ; G = −·246, H = −·491, K = −·836.

		△	Az.	P.	O−C.	S.	O−C.		Supp.
		°	°	m. s.	s.	m. s.	s.	m.	s.
La Jolla		0·8	221	i 0 17a	− 1	i 0 28	− 3	—	—
Riverside		0·8	307	i 0 17a	− 1	i 0 29	− 2	—	—
Mount Wilson		1·4	301	i 0 28a	+ 1	i 0 48	+ 2	—	—
Pasadena		1·5	296	i 0 28k	0	i 0 48	− 1	—	—
Haiwee		2·8	337	i 0 49	+ 2	i 1 32	S_g	—	—
Santa Barbara	Z.	2·8	290	i 0 48	+ 1	i 1 24	+ 2	—	—
Tinemaha		3·8	343	i 1 2	+ 1	i 2 6	S_g	—	—
Fresno	N.	4·1	323	e 1 18	P_g	i 2 30	+35	—	—
Tucson		5·0	102	i 1 13	− 5	i 2 12	− 6	i 1 32	P*
Lick		5·6	316	e 1 30	+ 3	e 2 55	S*	c 1 59	P_g

Tucson i = +1m.38s., +2m.38s. and +2m.52s.
Lick eE = +3m.5s.

Feb. 23d. 20h. 12m. 40s. Epicentre 44°·1N. 7°·3E.

Intensity V-VI at Larche, V at Barcelonnette, Isola, Saint-Delmas, and near Digne, Castellane, Menton, Turin, Savone Cuneo, and Mondovi.
Epicentre 44°08′N. 7°17′E. (Strasbourg). Macroseismic radius 70km. approx.

See Annales de l'Institut de Physique du Globe de Strasbourg, 2 partie. Seismologie, t. VI, Strasbourg 1948, p. 3.

$A = +\cdot7147$, $B = +\cdot0916$, $C = +\cdot6935$; $\delta = +13$; $h = -2$;
$D = +\cdot127$, $E = -\cdot992$; $G = +\cdot688$, $H = +\cdot088$, $K = -\cdot720$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Marseilles		1·6	240	i 0 30	0	i 0 51	0	i 1 2	S_g	—
Neuchatel		2·9	355	e 0 49	+ 1	e 1 25	+ 1	i 0 56	P_g	—
Chur		3·2	30	e 0 52	0	e 1 32	0	—	—	—
Zurich		3·4	14	e 0 55	0	e 1 45	+ 8	e 1 1	P_g	—
Basle		3·4	3	e 0 55	0	e 1 50	S_g	—	—	—
Clermont-Ferrand		3·5	299	e 1 5	P_g	i 1 52	S_g	—	—	—
Ravensburg		4·1	23	e 1 18	P_g	e 1 50	− 5	e 2 5	S*	—
Ebingen		4·2	15	e 1 24	P_g	—	—	e 2 15	S_g	—
Strasbourg		4·5	5	e 1 11	0	e 1 57	− 8	i 2 25	S_g	e 2·8
Triest		4·8	69	e 1 44	P_g	e 2 30	S*	e 2 48	S_g	—
Stuttgart		4·9	15	e 1 16	− 1	e 2 5	−10	i 2 42	S_g	—
Paris		5·8	326	—	—	e 2 20?	−18	—	—	—
Uccle		7·0	344	e 1 47	+ 1	—	—	—	—	—
Jena	N.	7·4	21	e 2 14	P*	—	—	e 2 36	P_g	—
Potsdam		9·1	23	—	—	e 4 20	S*	e 5 2	S_g	—

Additional readings :—
Marseilles e = +54s. and +57s.
Clermont-Ferrand S_g = +2m.2s., i = +2m.31s., +2m.48s., and +2m.56s.
Ebingen eS_gZ = +2m.29s., eE = +2m.43s.
Ravensburg eE = +1m.47s.
Strasbourg e = +2m.7s.
Triest eP_g = +1m.55s.
Stuttgart eZ = +1m.28s., iP_g = +1m.38s., eNE = +1m.54s., iNW = +1m.57s., iS*NW = +2m.32s.
Jena eE = +2m.20s.

Feb. 23d. 20h. 18m. 13s. Epicentre 44°·1N. 7°·3E. (as at 20h. 12m.).

$A = +\cdot7147$, $B = +\cdot0916$, $C = +\cdot6935$; $\delta = +13$; $h = -2$;

	△	Az.	P.	O−C.	S.	O−C.	Supp.		
	°	°	m. s.	s.	m. s.	s.	m. s.		
Marseilles	1·6	240	—	—	e 0 54	+ 3	—	—	
Neuchatel	2·9	355	e 0 48	0	e 1 26	+ 2	i 0 55	P*	
Chur	3·2	30	e 0 52	0	e 1 31	− 1	—	—	
Basle	3·4	3	e 0 55	0	e 1 42	+ 5	—	—	
Zurich	3·4	14	e 0 57	+ 2	e 1 43	+ 6	—	—	
Clermont-Ferrand	3·5	299	—	—	e 1 56	S_g	—	—	
Ravensburg	4·1	23	—	—	e 1 47	− 8	c 2 9	S*	
Stuttgart	4·9	15	e 1 30	P*	i 2 8	− 7	c 1 39	P_g	

Additional readings :—
Ravensburg eN = +1m.55s. and +2m.25s.
Stuttgart eS_g = +2m.39s.

Feb. 23d. 22h. 30m. 50s. Epicentre 3°·3S. 126°·5E. (as on 1938 June 13d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		1·7	103	i 0 51	+20	i 1 31	+37	—	—	—
Manila		18·6	344	i 4 45k	PP	i 8 38	SSS	—	—	—
Batavia		19·8	263	4 36	+ 1	8 27	+14	—	—	—
Medan		28·6	285	6 12	+12	—	—	—	—	—
Perth		30·2	198	6 18	+ 4	11 10	− 3	7 5	PP	14·1
Adelaide		33·4	162	6 33	− 9	11 19	−44	—	—	—
Brisbane	N.	34·9	136	e 10 40	?	i 12 34	+ 7	—	—	—
Riverview		38·1	146	i 6 24	−58	e 13 10	− 6	—	—	—
Mizusawa		44·3	16	8 10	− 3	—	—	—	—	—
Calcutta	N.	45·3	307	—	—	i 15 23	+21	—	—	—
Vladivostok		46·5	6	i 8 30	− 1	i 15 21	+ 2	16 40	sS	—
Colombo	E.	47·6	283	8 45	+ 6	—	—	—	—	—
Bombay		57·2	295	e 9 50	− 1	i 17 54	+ 8	—	—	—
Irkutsk		58·5	344	10 2	+ 2	i 18 14	+11	10 45	pP	—
Andijan		66·0	318	10 51	+ 1	19 46	+ 8	—	—	—
Tashkent		68·3	318	i 11 6	+ 1	e 20 10	+ 4	11 48	pP	—
Tchimkent		68·5	319	i 11 8	+ 2	i 20 14	+ 6	—	—	—
Samarkand		69·2	315	e 11 17	+ 7	e 20 24	+ 8	—	—	—
Sverdlovsk		79·8	330	i 12 7	− 5	i 22 2	−12	12 49	pP	—
Baku		82·0	312	e 12 25	+ 2	22 29	− 8	—	—	—
Grozny		85·5	314	e 12 38	− 3	—	—	—	—	—
Piatigorsk		87·6	314	e 12 46	− 5	—	—	—	—	—
Tinemaha	z.	112·0	51	e 18 9	[−28]	—	—	e 18 55	PP	—
Riverside	z.	113·4	53	e 19 1	PP	—	—	i 19 10	?	—
Tucson		119·1	54	i 18 25	[−26]	e 25 13	[−34]	—	—	—
Ottawa	z.	133·8	20	18 45	[−34]	22 8	PKS	—	—	—
La Paz	z.	155·5	144	19 32	[−23]	—	—	—	—	—

Additional readings and notes :—
Amboina P reading may be really S.
Batavia ePN = +4m.41s.
Perth PPP = +7m.25s., SS = +12m.28s.
Adelaide i = +11m.29s., +13m.56s., +14m.29s., and +14m.50s.
Riverview eE = +13m.47s., iE = +14m.43s., iN = +14m.56s., iZ = +15m.7s., iE = +15m.21s., iN = +16m.27s., iE = +16m.49s. and +17m.47s., iN = +18m.9s.
Bombay eE = +10m.52s. and +12m.57s., eN = +13m.11s., eEN = +18m.39s., iEN = +19m.8s., eEN = +20m.48s.
Tashkent pS = +20m.54s.
Tucson i = +21m.32s. and +27m.43s., e = +29m.22s., i = +31m.22s.

Feb. 23d. Readings also at 1h. (Manila, Brisbane, and Riverview), 5h. (Balboa Heights and Manila), 8h. (Tucson), 10h. (near Lick), 12h. (Medan and Batavia), 18h. (Stuttgart, Zurich, Basle, Neuchatel, and Samarkand), 19h. (Ksara).

Feb. 24d. 12h. 44m. 6s. Epicentre 15°·6S. 173°·6W. (as on 1940 Aug. 24d.).

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

Pasadena suggests deep focus.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia	2·5	45	i 0 38	− 5	i 0 58	−16	—	—	—
New Plymouth	25·8	202	5 50	+16	—	—	—	—	—
Wellington	27·5	200	6 2	+12	—	—	—	—	13·9
Riverview	36·5	235	e 7 26	+17	e 13 21	+30	—	—	e 18·5
Manila	71·3	293	e 11 21	− 2	20 55	+14	—	—	35·7

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	Z.	71·4	46	e 11 23	− 1	—	—	—	—	—
Berkeley		71·8	42	—	—	e 20 48	+ 2	21 29	PS	e 31·9
La Jolla		72·2	48	e 11 29	0	—	—	—	—	—
Pasadena		72·3	46	i 11 27	− 2	—	—	i 11 45	pP	e 32·3
Mount Wilson		72·4	46	i 11 28	− 2	—	—	i 11 45	pP	—
Riverside	Z.	72·8	46	e 11 31	− 1	—	—	—	—	—
Haiwee		73·5	45	i 11 38	+ 2	—	—	—	—	—
Tinemaha		73·9	44	e 11 38	− 1	—	—	—	—	—
Tucson		76·6	51	i 11 55	+ 1	e 21 40	0	16 58	PPP	i 34·6
Huancayo		94·6	104	e 17 22	PP	24 2	[+ 3]	30 59	SS	e 43·1
La Paz	N.	99·9	110	—	—	e 25 34	+14	—	—	48·5

Additional readings :—
Apia iPEN = +0m.33s.
Berkeley eSN = +20m.42s., eZ = +28m.18s.
La Jolla eZ = +11m.46s.
Tucson i = +12m.16s. and +12m.29s., e = +27m.46s.
Huancayo e = +21m.6s. and +24m.55s.
Long waves were also recorded at Christchurch, Sitka, Uccle, De Bilt, Rome, Paris, College, East Machias, Philadelphia, and Salt Lake City.

Feb. 24d. Readings also at 0h. (Riverview), 11h. (near Apia), 17h. (near Mizusawa), 19h. (near Mizusawa), 23h. (near Branner, Fresno, Lick, and Berkeley).

Feb. 25d. 5h. 37m. 30s. Epicentre 9°·5S. 124°·7E.

Felt at Timor. Epicentre 9°·5S. 124°·5E. (Batavia).

Meteorologische en Geophysische Dienst te Batavia, Serie A, No. 44. Aardbevingen in Ned-Indië waargenomen gedurende het jaar 1941, p. 16.

$A = -·5616$, $B = +·8110$, $C = -·1640$; $\delta = +1$; $h = +6$;
$D = +·822$, $E = +·569$; $G = +·093$, $H = -·135$, $K = -·987$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		6·7	30	1 44	+ 2	i 3 43	S_g	—	—	—
Batavia		18·0	279	i 4 15	+ 2	7 42	+10	—	—	—
Palau		19·4	31	4 30	0	8 4	0	—	—	—
Perth		23·8	198	i 5 20	+ 5	i 9 30	+ 2	5 42	PP	11·9
Manila		24·2	352	i 5 22a	+ 3	i 10 3	+28	—	—	12·8
Adelaide		28·3	156	6 0	+ 3	10 47	+ 4	6 41	PP	i 14·9
Medan		29·0	296	6 1	− 3	11 9	+15	6 4	PP	—
Brisbane		32·1	128	i 6 30	− 1	i 11 36	− 7	7 24	PP	—
Riverview		34·3	140	i 6 51k	+ 1	i 12 20	+ 3	—	—	—
Sydney		34·3	140	e 6 50	0	e 12 30	+13	—	—	e 15·5
Miyazaki		41·7	9	7 52	0	13 37	−37	—	—	—
Koti		43·6	10	e 8 8	0	14 27	−11	—	—	—
Kobe		45·1	12	e 8 18	− 2	15 9	+10	—	—	—
Colombo	E.	47·5	288	8 36	− 2	15 31	− 3	—	—	29·3
Nagano		47·7	15	e 8 41	+ 1	15 47	+11	—	—	—
Calcutta	N.	47·8	312	e 8 48	+ 7	i 15 43	+ 5	10 46	PP	e 27·3
Sendai		49·9	17	e 8 58	+ 1	16 7	0	—	—	—
Mizusawa		50·7	17	9 4	+ 1	16 19	+ 1	—	—	—
Kodaikanal	E.	50·9	292	e 9 4	− 1	e 16 18	− 3	—	—	23·8
Hyderabad	E.	53·0	301	9 19	− 2	16 45	− 5	—	—	26·1
Christchurch		53·6	138	9 22	− 3	17 1	+ 3	21 19	Q	25·4
Arapuni		53·8	131	—	—	17 6	+ 5	—	—	26·8
Wellington		54·2	135	9 25a	− 4	17 0	− 6	22 0	Q	25·5
Agra	E.	58·1	311	9 56	− 2	i 17 52	− 6	13 45	PPP	27·6
Bombay		58·4	299	i 9 59	− 1	i 18 0	− 2	e 18 27	PPS	29·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Irkutsk		64·0	346	10 37	− 1	19 13	0	11 39	sP	—
Almata		68·1	325	e 11 5	+ 1	—	—	—	—	—
Frunse		69·3	323	e 11 12	+ 1	—	—	—	—	—
Andijan		69·4	320	e 11 12	0	20 18	0	—	—	—
Tashkent		71·7	320	i 11 27	+ 1	e 20 45	0	12 11	pP	—
Tchimkent		72·0	321	i 11 28	0	i 20 48	− 1	—	—	—
Samarkand		72·6	317	i 11 32	+ 1	—	—	—	—	—
Tananarive		74·9	253	11 46	+ 2	21 28	+ 6	26 28	SS	36·3
Sverdlovsk		84·3	331	i 12 36	+ 1	i 23 0	0	i 13 22	pP	—
Baku		84·7	312	12 46	+ 9	i 23 7	+ 3	—	—	—
Grozny		88·5	314	e 13 1	+ 5	—	—	—	—	—
Piatigorsk		90·6	315	e 13 7	+ 2	—	—	—	—	—
College		97·5	25	—	—	e 24 2	[−12]	31 51	SS	e 42·0
Helwan		97·6	299	—	—	e 24 30	[+15]	—	—	—
Pulkovo		100·3	329	e 13 49	− 1	25 24	+ 1	e 18 3	PP	—
Bucharest		102·7	313	—	—	e 24 42	[+ 2]	(28 30?)	PPS	28·5
Sitka		103·3	33	e 18 8	PP	i 24 49	[+ 6]	28 43	PPS	e 52·2
Warsaw		105·6	321	e 18 30?	PP	25 1	[+ 8]	28 59	PPS	e 53·5
Upsala		106·7	330	27 54	PS	33 48	SS	28 30?	PPS	e 48·5
Belgrade		106·7	313	—	—	e 30 1	?	—	—	e 33·5
Copenhagen		110·3	326	19 15	PP	—	—	—	—	—
Potsdam		110·6	322	e 18 12	[−22]	i 28 37	PS	e 19 14	PP	e 54·5
Triest		111·4	315	—	—	e 25 16	[− 2]	e 28 53	PS	—
Victoria		111·5	41	e 19 48	PP	e 25 10	[− 8]	—	—	46·5
Hamburg		112·2	324	e 19 24	[+47]	25 28	[+ 7]	—	—	e 52·5
Rome		112·8	311	e 29 19	PS	—	—	—	—	e 60·3
Ukiah		113·1	51	e 29 9	PS	e 35 3	SS	—	—	e 47·2
Berkeley		113·9	53	e 19 34	PP	e 35 27	SS	e 29 14	PS	e 56·2
De Bilt		115·4	323	i 19 52a	PP	e 40 0	SSS	e 29 30	PS	—
Scoresby Sund		115·6	349	—	—	e 25 40	[+ 6]	29 53	PS	—
Uccle		116·3	322	e 19 59	PP	e 25 46	[+ 9]	e 30 55	PPS	e 58·5
Tinemaha	z.	117·2	53	e 18 51	[+ 4]	—	—	—	—	—
Haiwee	z.	117·6	54	e 18 53	[+ 5]	—	—	—	—	—
Pasadena	z.	117·7	56	i 18 51	[+ 3]	29 48	PS	—	—	e 51·9
Mount Wilson	z.	117·8	56	e 18 52	[+ 4]	—	—	—	—	—
Paris		118·1	320	e 20 9	PP	—	—	—	—	70·5
Riverside	z.	118·4	56	e 18 52	[+ 3]	—	—	—	—	—
Kew		118·8	324	—	—	e 25 48	[+ 2]	e 31 30?	PPS	e 57·5
Salt Lake City		12 ·3	47	—	—	41 30	SSS	37 12	SSP	e 62·0
Tucson		124·1	57	i 19 5	[+ 4]	32 1	PPS	20 41	PP	59·3
Toledo		125·4	312	e 19 7	[+ 4]	—	—	—	—	—
Chicago		136·9	36	—	—	39 53	SS	—	—	e 70·3
Florissant		137·2	41	i 19 29	[+ 4]	e 32 16	PS	e 22 11	PP	—
Toronto		140·0	27	e 24 6	?	e 41 30	SSP	—	—	80·5
Ottawa		140·2	22	e 19 33	[+ 2]	—	—	e 23 0	PP	e 46·5
Seven Falls		140·3	16	—	—	e 41 30	SSP	—	—	66·5
Fordham		144·7	24	i 19 41	[+ 3]	—	—	—	—	—
Huancayo		150·8	137	e 19 55	[+ 7]	30 30	{+ 8}	23 9	PP	e 61·6
La Paz		151·2	154	i 19 54a	[+ 5]	30 26	{+ 1}	21 15	pPKP	73·5
San Juan		166·3	48	e 20 55	[+48]	31 45	{+ 1}	45 31	SS	e 81·0

Additional readings :—
Amboina SN = +3m.37s.
Perth SS = +10m.38s.
Adelaide P_cP = +10m.39s., i = +11m.36s., SS = +12m.4s., S_cS = +16m.16s.
Riverview iE = +12m.34s., eEN = +13m.7s.
Calcutta eN = +16m.37s., iS_cS = +18m.39s., iSSN = +20m.16s.
Wellington i = +17m.19s.
Agra iE = +23m.5s.
Bombay iE = +12m.7s., e?E = +13m.44s., eEN = +14m.12s., eSSN = +18m.33s., iE = +19m.17s., iN = +19m.51s., QEN = +27·5m.
Tananarive sS = +21m.40s.
Sverdlovsk isS = +24m.20s.
College e = +35m.7s.
Pulkovo SKKS = +24m.28s.

Continued on next page.

Bucharest iSN = +24m.51s.
Sitka e = +25m.44s., +29m.48s., and +31m.45s.
Warsaw eZ = +28m.0s., eE = +28m.21s.
Potsdam ipPKP = +18m.44s., iPPE = +19m.18s., iSPZ = +28m.46s., iE = +40m.5s.
Triest ePPP = +26m.8s., eS = +30m.48s.
Hamburg eE = +29m.34s.
Rome e = +43m.23s.
Berkeley iE = +23m.4s. and +24m.30s., iN = +34m.38s., eN = +48m.0s.
De Bilt eZ = +24m.20s., eE = +36m.30s.
Scoresby Sund e = +25m.20s. and +40m.39s.
Uccle eSKSPE = +29m.39s., eEN = +42m.6s.
Paris e = +26m.30s.?
Tucson i = +19m.18s., +23m.55s., +28m.54s., and +34m.6s., eSS = +38m.10s., i = +38m.24s., +41m.39s., +44m.35s., +45m.3s., and +46m.23s., e = +50m.52s., +53m.34s., and +56m.9s.
Florissant eSKPE = +23m.3s. and eSKPE = +23m.9s.
Fordham i = +19m.48s. and +20m.8s.
Huancayo i = +20m.46s. and +21m.58s., iPP = +24m.19s., i = +34m.8s., +44m.34s., +49m.58s., and +58m.33s.
La Paz iPKP$_2$N = +20m.20s., isPKP = +21m.58s., iPPN = +23m.46s., SSN = +43m.12s., iSSS = +49m.2s.
San Juan ipPP = +25m.43s., i = +29m.0s., e = +36m.57s., +37m.48s., and +53m.30s.
Long waves were also recorded at Stonyhurst.

Feb. 25d. Readings also at 1h. (near Amboina), 4h. (Triest), 6h. (Tinemaha, Mount Wilson, Riverside, Tucson, and La Paz), 7h. (Kew), 8h. (Pasadena, Haiwee, Tinemaha, Mount Wilson, and Riverside), 12h. (Lick), 14h. (Tucson), 18h. (La Paz), 19h. (Rome and Manila), 20h. (near Harvard).

Feb. 26d. 7h. 4m. 59s. Epicentre 39°·6N. 70°·3E. (as on 1938, Jan. 12d.).

$A = +\cdot2604$, $B = +\cdot7273$, $C = +\cdot6349$; $\delta = -13$; $h = -2$;
$D = +\cdot941$, $E = -\cdot337$; $G = +\cdot214$, $H = +\cdot598$, $K = -\cdot773$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Andijan	1·9	54	0 36	+ 2	i 1 13	+14	—	—
Tashkent	1·9	336	e 0 37	+ 3	—	—	0 40	P_g
Samarkand	2·6	272	i 0 36	− 8	i 1 13	− 4	0 40	P_g
Tchimkent	2·7	349	e 0 47	+ 2	1 14	− 5	i 1 23	S*
Frunse	4·6	43	e 1 12	0	2 37	S_g	—	—
Almata	6·2	51	1 33	− 2	2 49	+ 1	3 35	S_g

Tchimkent gives also $S_g = +1m.32s.$

Feb. 26d. Readings also at 0h. (De Bilt, Kew, Rome, Huancayo, La Paz, near Branner and Lick), 3h. (Stuttgart), 6h. (near Lick), 7h. (near Algiers), 13h. (Palomar, Tucson, near La Jolla, Mount Wilson, Pasadena, and Riverside), 14h. (Tucson), 16h. and 17h. (near Mizusawa), 21h. (near Algiers).

Feb. 27d. 9h. 43m. 59s. Epicentre 3°·7N. 128°·5E. (as on 1939, September 16d.).

Intensity IV in the Isles of Sangi and Talaud. Epicentre 4°·3N. 126°·5E.; depth = 100km. (Batavia).

Meteorologische et Geophysische Dienst te Batavia Serie A., No. 44, Aardbevingen in Ned-Indië Waargenomen gedurende het jarr, 1941, p. 16.

$A = -\cdot6212$, $B = +\cdot7810$, $C = +\cdot0641$; $\delta = -4$; $h = +7$;
$D = +\cdot782$, $E = +\cdot623$; $G = -\cdot040$, $H = +\cdot050$, $K = -\cdot998$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		7·4	183	e 2 14	P*	3 59	S_g	—	—	—
Manila		13·1	326	i 3 4a	− 6	i 5 22	−16	—	—	—
Isigakizima		20·9	350	4 46	0	8 32	− 3	—	—	—
Naha		22·4	357	5 10	+ 8	9 9	+ 5	—	—	—
Batavia		23·8	245	5 10	− 5	—	—	—	—	—
Zi-ka-wei	N.	28·2	348	e 5 57	+ 1	i 10 47	+ 6	e 6 19	PP	—
Medan		29·8	272	e 6 6	− 5	10 49	−18	—	—	—
Koti		30·1	9	6 28	+15	—	—	—	—	—
Kobe		31·5	11	e 6 4	−22	11 31	− 3	—	—	—
Gihu		32·5	13	e 6 39	+ 5	11 51	+ 2	—	—	—
Tokyo, Cen. Met. Ob.		33·5	16	6 32	−11	—	—	—	—	—
Zinsen		33·7	356	5 47	−58	—	—	—	—	—
Sendai		36·2	17	e 7 15	+ 9	12 50	+ 3	—	—	—
Perth		37·4	198	e 9 3	PPP	i 13 8	+ 3	13 29	SS	e 15·1
Brisbane		39·0	143	i 7 49	+19	i 13 55	SS	i 17 13	SSS	—
Vladivostok		39·4	3	i 7 39	+ 6	i 13 35	0	—	—	—
Adelaide		39·6	168	7 54	+19	14 0	+22	9 19	PP	—
Sapporo		40·8	14	7 52	+ 7	—	—	—	—	—
Riverview		43·0	153	i 8 24k	+21	i 14 59	+30	i 10 11	PP	e 25·0
Calcutta	N.	43·2	298	e 8 7	+ 3	e 14 6	−26	e 16 38	SS	e 20·0
Colombo	E.	48·5	276	7 50	−56	15 20	−28	10 40	PP	23·3
Hyderabad	E.	50·9	290	8 55	−10	15 52	−29	18 40	S_eS	22·8
Kodaikanal	E.	51·0	280	e 8 57	− 9	i 15 46	−36	—	—	—
Irkutsk		52·4	342	9 15	− 1	16 30	−12	11 19	PP	—
Agra	E.	53·5	301	e 9 16	− 8	16 24	−33	11 6	PP	—
Bombay		56·4	291	e 9 37	− 8	i 17 6	−30	i 13 9	PPP	27·0
Almata		60·2	319	10 17	+ 5	—	—	—	—	—
Arapuni		60·3	139	—	—	i 19 1	PPS	—	—	36·0
Wellington		61·5	143	—	—	e 18 1?	−41	—	—	24·0
Frunse		61·6	318	e 10 19	− 3	—	—	—	—	—
Andijan		62·3	315	e 10 27	+ 1	e 18 35	−17	—	—	—
Tashkent		64·7	315	e 10 40	− 2	e 19 0	−22	—	—	—
Tchimkent		64·8	316	e 10 43	0	—	—	11 21	P_cP	—
Samarkand		65·9	312	e 10 44	− 6	—	—	—	—	—
Sverdlovsk		74·9	329	11 43	− 1	i 21 2	−20	—	—	—
College		84·0	25	—	—	e 23 5	+ 8	e 23 37	PS	e 38·5
Ksara		90·1	303	e 13 16	+13	e 23 26	[− 7]	—	—	—
Sitka		90·2	33	i 13 30	+26	e 24 10	+14	i 25 51	PS	e 42·5
Pulkovo		90·9	330	e 13 24	+17	e 23 31	[− 7]	e 17 1	PP	—
Helwan	E.	94·4	300	—	—	i 23 49	[− 9]	e 31 1	SS	—
Victoria		99·1	40	—	—	e 24 37	[+14]	—	—	46·0
Berkeley		102·8	50	—	—	e 25 58	+14	—	—	e 47·9
Rome		106·5	315	e 18 59	PP	e 25 0	[+ 3]	e 37 7	SSS	e 55·5
Pasadena		107·0	53	e 14 48	P	e 25 12	[+13]	e 18 41	PKP	e 38·0
Tucson		113·4	52	e 14 45	P	i 25 34	[+ 8]	i 19 8	PP	i 52·7
Ottawa		126·6	21	e 19 15	[+10]	—	—	—	—	62·0
Fordham		131·2	22	e 19 10	[− 4]	—	—	e 22 51	PKS	—
Balboa Heights		149·3	63	e 20 1?	[+15]	—	—	—	—	—
Huancayo		155·0	111	e 20 12	[+18]	i 31 2	{+16}	i 24 22	PP	e 69·3
La Paz		159·3	129	i 20 15a	[+15]	31 31	{+23}	24 29	PP	77·5

For Notes see next page.

NOTES TO FEBRUARY 27d. 9h. 43m. 59s.

Additional readings :—
Medan ePN = +6m.9s.
Perth PP = +9m.24s., i = +10m.26s.
Adelaide i = +8m.15s., P_cP = +10m.10s., SS = +16m.39s., S_cS = +18m.7s.
Riverview iE = +15m.9s., eE = +18m.5s., iSSNZ = +18m.22s., iEN = +18m.28s.
Calcutta eS_cSN = +18m.19s.
Hyderabad SS = +19m.40s.
Agra S_cS = +18m.54s., sSS? = +20m.6s.
Bombay iE = +10m.16s., +16m.27s., and +19m.20s., eN = +19m.25s., eE = +21m.28s.
Sitka eSS = +31m.40s.
Pulkovo eS = +23m.47s.
Pasadena eZ = +20m.42s., ePKKPZ = +30m.17s.
Tucson ePKP = +18m.54s., iPP = +19m.34s., i = +27m.19s., eSS = +35m.23s., i = +39m.29s.
Huancayo e = +20m.36s., +23m.24s., i = +34m.47s., eSS = +44m.2s., i = +44m.55s., +45m.15s., e = +53m.9s.
La Paz $iPKP_2$ = +20m.49s., iPPZ = +24m.38s., SSN = +44m.39s.
Long waves were also recorded at Kew, Uccle, Paris, De Bilt, Upsala, San Juan, Ukiah, Potsdam, Christchurch, Honolulu, Warsaw, Chicago, and Philadelphia.

Feb. 27d. Readings also at 1h. (Huancayo), 3h. (La Plata, Riverside, Haiwee, Tinemaha, Mount Wilson, La Paz, Tucson, and Pasadena), 5h. (La Paz), 6h. (near Lick), 11h. (near Apia), 13h. (Tucson, Riverside, and Tinemaha), 14h. (La Paz), 15h. (La Paz, Tucson, Balboa Heights, Tinemaha, Pasadena, Mount Wilson, Haiwee, Riverside, and Huancayo), 16h. (Manila), 22h. (near Mizusawa).

Feb. 28d. 3h. Undetermined epicentre probably in Montana.
Butte iP = 28m.24s., i = 28m.41s. and 28m.56s.
Logan iP = 28m.49s., iS = 29m.30s.
Salt Lake City eP = 29m.14s., eS = 30m.0s., e = 30m.17s. and 30m.31s.
Spokane ePE = 29m.15s., iSE = 30m.23s.
Tinemaha iPZ = 30m.32s., i = 31m.35s.
Haiwee eZ = 30m.55s.
Tucson eP = 31m.5s., i = 31m.55s., 32m.18s., 34m.42s., 35m.42s., and 36m.8s.
Pasadena ePZ = 31m.24s., e = 34m.3s.
Riverside eZ = 31m.38s. and 33m.59s.

Feb. 28d. 23h. 52m. 56s. Epicentre 35°·7N. 23°·2E. (as on 1937 Dec. 16d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Sofia		7·0	1	e 1 59	P_g	—	—	—	—
Helwan	N.	9·0	128	—	—	i 3 58	0	—	—
Ksara		10·6	96	e 2 50	+14	e 4 46	+ 9	—	—
Triest		12·2	327	—	—	e 5 9	− 7	—	—
Simferopol		12·4	38	3 14	+13	5 55	+34	—	—
Basle		16·6	318	e 3 55	− 1	—	—	—	—
Erevan		17·4	68	3 57	− 9	—	—	—	—
Grozny		18·9	60	4 27	+ 3	8 5	+12	—	—
Copenhagen		21·3	345	1 4 47	− 3	—	—	—	—
Toledo		21·9	290	e 4 59	+ 2	—	—	6 49	PP

Helwan gives also iE = +3m.28s.
Copenhagen i = +5m.0s.
Long waves were also recorded at Rome.

Feb. 28d. Readings also at 4h. (Bermuda), 5h. (Fresno, San Francisco, near Berkeley, Branner, and Lick), 6h. (Tucson), 8h. (near Mizusawa), 9h. (near Mizusawa), 11h. (Huancayo and La Paz), 13h. (Puebla, Tacubaya, Vera Cruz, and Tucson), 19h. (Almata, near Andijan, Tashkent, Tchimkent, and Samarkand), 20h. (near Ferndale), 23h. (La Paz).

March 1d. 3h. 52m. 47s. Epicentre 39°·5N. 22°·5E.

Judged by its effects, the earthquake of 1892 belonged to the group of destructive earthquakes Class 2. The shock of 1941 concluded a series of severe shocks. The movements were probably associated with the formation of faults cutting abruptly across local features.

Galanopoulos A.
Les deux violents séismes de Larissa de 1892 et de 1941 (Grèce). C. R. Acad. Sci. Fr. (1946), 223, 821-2. Intensity X-XII at Larissa. Felt at Assona, Karditsa, and Trikkola.

J. P. Rothé.
Chronique séismologique, Revue pour l'Etude des Calamités, tome VII, No. 21. Genève 1944, p. 48.

N. Criticos.
Das Zerstorënde Erdbeben in Larissa (Griechenland). Vom 1, Marz, 1951. Veröffentlichungen der Reichsanstalt für Erdbeben-forschung in Jena, Heft 40, Berlin 1941, pp. 31-45, 10 figures, une carte isoséiste.

Epicentre 10km. North of Larissa, 39°·7N. 22°·45E.

$A = +\cdot7148,\ B = +\cdot2961,\ C = +\cdot6335;\quad \delta = -6;\quad h = -2;$
$D = +\cdot383,\ E = -\cdot924;\quad G = +\cdot585,\ H = +\cdot242,\ K = -\cdot774.$

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	3·2	11	e 0 53a	+ 1	i 1 46	S_g	i 1 3	PPP	—
Istanbul	5·2	71	1 32	P*	2 36	S*	—	—	3·4
Belgrade	5·5	347	i 1 23	− 2	i 2 31	+ 1	i 1 44	P_g	—
Bucharest	5·6	27	e 1 26	− 1	i 2 32	− 1	i 1 55	P_g	—
Kalossa	7·5	343	1 53	0	i 3 48	S*	i 2 27	PPP	4·1
Kecskemet	7·7	346	1 56	0	i 4 16	S_g	2 3	PPP	e 5·9
Rome	8·0	290	1 57k	− 3	i 3 35	+ 2	i 3 57	SSS	i 4·5
Budapest	8·4	346	2 5	− 1	3 44	+ 1	—	—	4·5
Triest	8·9	317	e 2 16	+ 4	e 3 45	−10	—	—	—
Simferopol	10·2	54	2 39	+ 8	e 4 42	SS	—	—	—
Theodosia	11·0	56	2 48	+ 6	e 5 1	SS	—	—	—
Chur	11·9	312	2 54	0	—	—	—	—	e 6·3
Prague	12·0	335	2 51a	− 4	e 5 23	SS	—	—	5·7
Helwan	12·1	140	i 2 55k	− 2	5 4	−10	3 2	PP	—
Ksara	12·1	113	e 3 1?	+ 4	e 5 25	+11	—	—	6·9
Ravensburg	12·5	316	e 3 15	+13	i 5 29	+ 6	e 5 33	SS	i 6·6
Warsaw	12·8	358	3 7a	+ 1	e 5 34	+ 4	i 5 37	SS	7·2
Zurich	12·8	312	e 3 3	− 3	e 5 35	+ 5	—	—	—
Ebingen	13·1	316	e 3 9	− 1	e 5 40	+ 2	—	—	e 7·4
Stuttgart	13·3	319	i 3 12a	− 1	e 5 50	+ 8	e 3 33	PP	e 7·1
Marseilles	13·4	298	e 0 43	?	—	—	—	—	e 7·2
Basle	13·5	312	e 3 10	− 5	—	—	—	—	e 6·8
Neuchatel	13·6	309	e 3 14	− 3	—	—	—	—	e 7·8
Jena	13·7	330	e 3 13	− 5	e 5 55	+ 3	3 25	PP	i 6·2
Strasbourg	13·9	315	e 3 24	+ 3	e 6 8	+11	—	—	i 7·2
Potsdam	14·4	337	i 3 23a	− 4	i 5 52	−17	i 3 37	PP	6·2
Algiers	15·5	266	e 3 43	+ 1	i 6 40	+ 5	i 3 50	PP	8·9
Clermont-Ferrand	15·6	300	i 3 45k	+ 2	—	—	—	—	i 10·0
Hamburg	16·5	333	e 3 53	− 1	e 6 56	− 2	e 7 3	SS	e 8·7
Uccle	17·0	318	i 4 2a	+ 1	i 7 12	+ 2	i 7 22	SSS	8·2
Paris	17·1	310	i 4 1a	− 1	7 11	− 1	—	—	9·2
Bagneres	17·2	290	e 4 7	+ 4	e 7 22	+ 8	—	—	e 10·0
De Bilt	17·4	322	i 4 10a	+ 4	i 7 28	+ 9	—	—	e 8·2
Copenhagen	17·5	341	e 4 7	0	e 7 25	+ 4	—	—	8·2
Heligoland	17·7	331	e 4 7	− 3	e 7 21	− 5	—	—	e 9·6
Grozny	17·8	70	e 4 15	+ 4	e 7 43	+15	—	—	—
Moscow	19·0	28	4 22	− 4	7 53	− 2	—	—	—
Almeria	19·8	271	i 4 32	− 3	8 3	+10	4 48	PP	10·0
Kew	19·9	316	i 4 35a	− 1	8 17	+ 2	e 9 43?	Q	e 10·2
Toledo	20·4	280	e 4 40	− 1	i 8 26	+ 1	—	—	11·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oxford	E.	20·5	315	i 4 35k	− 7	i 8 26	− 1	—	—	i 10·6
Granada		20·6	273	i 4 45k	+ 2	i 8 41	+12	5 10	PP	10·6
Upsala		20·6	353	4 42?	− 1	i 8 30	+ 1	i 8 55	SS	e 10·5
Pulkovo		20·9	12	i 4 38	− 8	i 8 22	−13	—	—	—
Baku		21·0	80	i 4 54	+ 7	i 8 54	+17	—	—	—
Stonyhurst		22·2	320	4 43	−17	i 9 3	+ 3	—	—	11·2
Coimbra		22·8	283	5 6	+ 1	9 25	+14	5 48	PPP	14·7
San Fernando		22·8	272	e 5 8	+ 3	i 9 10	− 1	e 5 24	PP	12·7
Bergen		23·6	340	—	—	e 8 53?	−32	—	—	e 11·2
Edinburgh		23·7	324	—	—	9 29	+ 2	—	—	—
Aberdeen		23·9	328	(i 9 19)	S	i 9 19	−11	i 9 58	SS	i 13·5
Lisbon		24·5	280	5 22	0	9 43?	+ 3	6 1	PPP	13·3
Samarkand		34·0	78	e 6 51	+ 3	—	—	—	—	e 15·3
Tashkent		35·3	72	e 6 58	− 1	e 12 37	+ 4	—	—	—
Andijan		37·7	73	e 7 24	+ 5	—	—	—	—	—
Almata		40·4	67	e 7 47	+ 6	—	—	—	—	—
Semipalatinsk		41·3	56	e 7 47	− 2	—	—	—	—	—
Agra	E.	47·3	88	8 34	− 3	15 26	− 5	10 30	PP	i 19·6
Bombay		47·8	102	e 8 41	0	e 15 35	− 3	10 35	PP	23·2
Irkutsk		55·4	49	e 9 37	− 1	—	—	e 12 48	PPP	—
Kodaikanal	E.	56·7	106	e 11 13?	PP	—	—	—	—	—
Calcutta	N.	57·7	87	e 9 58	+ 3	e 17 53	0	—	—	—
Colombo	E.	60·7	108	e 9 13?	−62	—	—	—	—	—
Ottawa		68·2	312	e 11 3	− 1	—	—	—	—	32·2
Fordham		69·7	307	i 11 13	− 1	—	—	—	—	—
Vladivostok		75·9	47	—	—	e 21 29	− 3	—	—	—
San Juan		77·5	284	—	—	e 21 20	−30	—	—	e 36·1
St. Louis		80·8	314	i 12 13	− 4	22 35	+10	—	—	e 35·6
Sitka		81·5	349	—	—	e 22 42	+10	23 30	PPS	e 42·3
Victoria		87·3	338	—	—	e 23 43?	+14	—	—	40·2
Tucson		96·5	322	i 13 32	0	i 24 40	−11	i 17 21	PP	i 38·8
La Paz		100·8	258	13 58	+ 6	—	—	—	—	55·2
Huancayo		103·6	266	27 46	PS	—	—	—	—	e 42·4

Additional readings :—
Sofia iS = +1m.50s.
Belgrade i = +1m.58s., +2m.37s., and +3m.1s.
Bucharest iP* = +1m.46s., iSE = +2m.28s., S*NZ = +2m.54s. and S_gNZ = +3m.6s.
Kalossa iE = +2m.58s., iN = +3m.29s. and +3m.42s.
Kecskemet eZ = +3m.28s., iSZ = +4m.28s.
Rome iE = +2m.1s. and +2m.17s., iSE = +3m.24s., iN = +3m.40s.
Budapest PP = +2m.42s., iN = +2m.49s. and +3m.1s., iE = +3m.21s., i = +3m.39s., SS = +4m.32s.
Helwan SSNZ = +5m.23s.
Ravensburgh iNE = +3m.59s.
Jena iN = +3m.28s. and +3m.31s., eSE = +6m.1s.?
Potsdam iP = +3m.26s., iZ = +5m.41s., iE = +5m.44s.
Hamburg eSE = +6m.41s.
Bagneres e = +5m.5s. and +6m.1s.
Copenhagen i = +7m.32s.
Almeria PPP = +5m.0s., SS = +8m.48s., SSS = +8m.59s.
Granada P_gP = +9m.6s., SS = +9m.32s.
Upsala iSE = +8m.27s., iN = +9m.8s., SSSE = +9m.27s.
Cofmbra SS = +10m.13s.
Edinburgh S = +8m.50s. True S given as SS.
Aberdeen iSEN = +13m.24s., iN = +13m.49s., iSS = +14m.24s., iEN = +14m.54s., iN = +15m.25s., iE = +16m.17s. All phases wrongly identified.
Lisbon PPZ = +6m.4s., Z = +6m.17s., SN = +9m.51s., E = +10m.5s., Z = +10m.30s., E = +10m.57s., Z = +11m.9s., N = +11m.33s.
Bombay iE = +16m.49s., e = +19m.55s.
San Juan e = +33m.16s.
Sitka e = +29m.25s. and +32m.25s.
Tucson i = +14m.7s., +14m.43s., +17m.1s., +18m.4s., and +19m.32s., iSKS = +23m.51s., iE = +24m.23s., +25m.39s., and +26m.19s., iSS = +30m.39s.
Long waves were also recorded at Seattle, Scoresby Sund, Salt Lake City, Pasadena, Butte, Bozeman, Ukiah, Berkeley, Chicago, and East Machias.

March 1d. 7h. 51m. 8s. Epicentre 39°·5N. 22°·5E. (as at 3h.).

$A = +\cdot7148$, $B = +\cdot2961$, $C = +\cdot6335$; $\delta = -6$; $h = -2$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		3·2	11	e 0 44	− 8	—	—	i 1 11	P*	—
Belgrade		5·5	347	i 1 35	P*	i 2 43	S*	i 1 51	P_g	—
Bucharest		5·6	27	e 1 20	− 7	e 2 26	− 7	e 1 49	P_g	—
Kalossa	N.	7·5	343	e 2 22	P_g	e 3 58	S*	—	—	—
Rome		8·0	290	i 2 17	P*	i 3 52	S*	i 4 27	S_g	—
Budapest		8·4	346	—	—	e 3 17	−26	e 4 22	S_g	i 4·5
Triest		8·9	317	e 2 40	+28	e 3 36	−19	—	—	—
Zurich		12·8	312	e 2 12	−54	—	—	—	—	e 6·9
Stuttgart		13·3	319	—	—	e 6 15	SSS	—	—	—
Strasbourg		13·9	315	—	—	e 6 19	SSS	—	—	e 7·9

Additional readings :—
Sofia iEN = +51s., iE = +1m.19s.
Belgrade e = +2m.23s., i = +3m.16s. and +4m.21s.
Bucharest eS_gN = +3m.4s.
Kalossa eE = +2m.52s.
Rome eN = +2m.52s., iEN = +4m.39s.
Long waves were also recorded at Warsaw, Upsala, Kew, and Potsdam.

March 1d. 15h. 0m. 55s. Epicentre 39°·5N. 22°·5E. (as at 7h.).

$A = +\cdot7148$, $B = +\cdot2961$, $C = +\cdot6335$; $\delta = -6$; $h = -2$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	3·2	11	e 0 52	0	i 1 40	S*	i 0 57	P*	—
Belgrade	5·5	347	e 1 39	P*	e 2 58	S_g	e 1 50	P_g	—
Bucharest	5·6	27	e 1 31	+ 4	e 2 39	+ 6	e 1 45	P_g	—
Rome	8·0	290	e 2 1	+ 1	i 4 3	S*	e 2 47	P_g	5·2
Triest	8·9	317	e 2 35	+23	e 3 43	−12	e 3 7	PP	—
Warsaw	12·8	358	—	—	e 5 5?	−25	—	—	e 6·1
Stuttgart	13·3	319	—	—	e 6 29	SSS	—	—	—
Strasbourg	13·9	315	—	—	e 6 13	SS	—	—	e 8·1
Potsdam	14·4	337	i 3 23	− 4	—	—	—	—	8·1
Moscow	19·0	28	e 4 29	+ 3	—	—	—	—	—
Pulkovo	20·9	12	e 4 41	− 5	e 8 33	− 2	—	—	—
Sverdlovsk	30·3	44	e 6 12	− 3	e 11 25	+10	—	—	—

Additional readings :—
Sofia iE = +1m.28s.
Belgrade e = +3m.53s.
Bucharest S*N = +2m.57s.
Potsdam iZ = +4m.22s.
Long waves were also recorded at Upsala and Prague.

March 1d. Readings also at 4h. (Rome, Bucharest, Budapest, Belgrade, and near Triest), 7h. (Bucharest, Belgrade, near Triest, Chur, and Sofia), 8h. (Sofia (2)), 9h. (Sofia and Belgrade), 10h. (Belgrade), 11h. (near Almata, Andijan, and near Sofia), 12h. (Tucson), 13h. (Zurich), 14h. (Wellington, Christchurch, near Almata, and Andijan), 16h. (Erevan (2) and Grozny), 17h. (Sofia), 18h. (near Cape Girardeau), 20h. (Sofia (2)), 22h. (La Paz), 23h. (Bozeman, Rome, Zurich, and Chur).

March 2d. 19h. Indian Ocean, probably in the vicinity of the Chagos Islands.

Colombo PE =44m.39s., SE =47m.55s.
Kodaikanal ePE =45m.8s., iSE =48m.38s.
Bombay ePN =46m.11s., eSEN =50m.31s.
Hyderabad ePN =46m.12s., SEN =50m.41s., LN =52m.51s.
Agra eSE =52m.56s.
Calcutta eSN =53m.25s., eN =58m.37s.

March 2d. Readings also at 3h. (Sofia and Tucson), 4h. (near Medan), 7h. (Samarkand, near Andijan, and near Manila), 11h. (Batavia, Medan, Manila, Brisbane, Riverview, Sydney, and Christchurch), 12h. (Perth, Wellington, Berkeley, and near Rome (2)), 13h. (Paris, Rome, and near La Paz), 14h. (near Ravensburg, Stuttgart, Basle, Neuchatel, and Zurich), 15h. (near Erevan), 18h. (Balboa Heights (2)), 20h. (near Mizusawa), 22h. (near Almata and Samarkand).

Mar. 3d. 7h. 27m. 46s. Epicentre 0°·8S. 100°·6E.

Scale V on the west coast of Sumatra. Epicentre 1°·5S. 100°·5E., depth 100km. (Batavia).

Meteorologische en Geophysische Dienst te Batavia, Serie A, No. 44, Aardbevingen in Ned-Indie waargenomen gedurende het jaar 1941, p. 16.

$A = -\cdot1839$, $B = +\cdot9828$, $C = -\cdot0138$; $\delta = -9$; $h = +7$;
$D = +\cdot983$, $E = +\cdot184$; $G = +\cdot003$, $H = -\cdot014$, $K = -\cdot1\cdot000$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		4·8	337	—	—	i 2 38	S_g	1 2 49	?	—
Batavia		8·2	131	2 3	0	i 4 7	S*	—	—	—
Colombo	E.	22·1	291	4 55	− 4	8 55	− 3	—	—	—
Manila		25·3	53	5 23	− 7	10 34	SS	i 6 22	PPP	15·2
Kodaikanal	E.	25·5	298	i 5 51	PP	10 54	SS	—	—	—
Calcutta	N.	26·1	334	e 5 39	+ 2	e 10 9	+ 2	e 5 53	sP	—
Hyderabad	E.	28·4	311	5 59	+ 1	11 22	+37	—	—	15·8
Bombay		33·6	308	i 6 40	− 4	i 12 11	+ 5	i 7 59	PP	—
Agra	E.	35·3	325	e 6 55	− 4	12 26	− 7	8 19	PP	—
Almata		48·7	338	8 52	+ 4	e 15 55	+ 5	—	—	—
Andijan		48·7	331	8 50	+ 2	i 15 53	+ 3	—	—	—
Tashkent		50·6	330	i 9 3	+ 1	e 16 17	0	—	—	—
Samarkand		50·7	326	9 5	+ 2	16 16	− 2	—	—	—
Tchimkent		51·2	332	i 9 6	− 1	i 16 30	+ 5	—	—	—
Irkutsk	E.	53·0	2	e 9 25	+ 4	16 55	+ 5	—	—	—
Erevan		65·3	317	10 46	0	—	—	—	—	—
Sverdlovsk		65·8	338	i 10 50	+ 1	i 19 35	0	i 11 19	pP	—
Helwan	E.	72·5	302	—	—	e 20 44	−10	e 21 14	PS	—
Theodosia		73·3	319	11 27	− 8	—	—	—	—	—
Yalta		73·9	317	11 36	− 3	—	—	—	—	—
Simferopol		74·1	318	11 39	− 1	—	—	—	—	—
Pulkovo		80·9	332	12 18	+ 1	22 22	− 4	e 12 47	pP	—
Tinemaha	Z.	129·1	40	e 19 32	[+22]	—	—	i 22 30	PKS	—
Haiwee	Z.	129·9	40	e 19 33	[+21]	—	—	e 22 33	PKS	—
Mount Wilson	Z.	130·9	43	e 19 16	[+ 2]	—	—	e 21 36	PP	—
Pasadena	Z.	130·9	43	e 19 15	[+ 1]	—	—	e 22 35	PKS	—
Riverside	Z.	131·5	43	e 19 17	[+ 2]	—	—	i 22 39	PKS	—
Tucson		136·9	39	e 19 21	[− 4]	—	—	i 22 29	PP	—

Additional readings :—
Calcutta isSN = +10m.31s., eSSN = +11m.7s.
Bombay iN = +9m.59s., iE = +10m.51s., eSN = +12m.21s., SSEN = +13m.48s.
Agra SSS?E = +15m.17s.
Mount Wilson e = +22m.33s.
Pasadena iZ = +19m.34s.
Riverside eZ = +19m.34s.
Tucson i = +19m.42s., +19m.50s., +20m.37s., +22m.57s., +23m.30s., and +24m.31s.
Long waves were also recorded at Huancayo.

March 3d. Readings also at 6h. (near Amboina and Tchimkent (2)), 9h. (Riverview and Balboa Heights), 11h. (near Amboina), 12h. (Huancayo), 13h. (Belgrade, Rome, Bucharest, near Sofia, and Triest), 14h. (near Andijan, Tacubaya (2), Tashkent, Almata, and Samarkand), 17h. (Andijan), 20h. (Samarkand), 21h. (Huancayo), 23h. (near Stuttgart).

March 4d. 15h. 18m. 3s. Epicentre 7°·0S. 68°·0E.

$A = +\cdot3718$, $B = +\cdot9203$, $C = -\cdot1211$; $\delta = -15$; $h = +7$;
$D = +\cdot927$, $E = -\cdot375$; $G = -\cdot045$, $H = -\cdot112$, $K = -\cdot993$.

Very rough.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kodaikanal	E.	19·5	30	e 5 5	+34	i 8 57	+51	—	—	i 11·0
Bombay		26·2	10	e 5 34	− 4	e 10 17	+ 8	e 6 17	PP	—
Hyderabad		26·4	23	e 5 34	− 6	10 16	+ 4	11 14	SS	13·2
Medan		32·4	72	e 6 31	− 3	13 58	SS	—	—	—
Agra	E.	35·3	16	—	—	i 12 31	− 2	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	35·5	34	—	—	e 12 43	+ 7	e 15 17	SS	e 17·3
Andijan		47·7	4	e 8 43	+ 3	—	—	—	—	—
Tashkent		48·1	2	e 8 44	+ 1	e 15 39	− 3	—	—	—
Tchimkent		49·1	2	e 9 0	+ 9	e 16 1	+ 5	—	—	—
Manila		56·7	68	11 24	PP	18 6	+26	—	—	25·4
Sverdlovsk		63·9	356	e 10 35	− 2	19 2	−10	—	—	—
Moscow		67·4	342	10 56	− 3	—	—	—	—	—
Pulkovo		73·0	341	e 11 28	− 5	e 20 51	− 9	—	—	—
Tinemaha	Z.	149·5	9	e 19 31	[−16]	—	—	—	—	—
Haiwee	Z.	150·5	9	e 19 34	[−14]	—	—	—	—	—

Additional readings :—
Bombay SSE = +11m.18s.
Medan SE = +14m.1s.
Long waves were also recorded at Tananarive and De Bilt.

March 4d. 21h. 38m. 49s. Epicentre 17°·0N. 107°·5W.

A = −·2877, B = −·9126, C = +·2906 ; δ = +6 ; h = +5 ;
D = −·954, E = +·301 ; G = −·087, H = −·277, K = −·957.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Guadalajara	N.	5·4	47	1 22	− 2	—	—	—	—	—
Tacubaya	N.	8·3	72	2 17	+13	—	—	—	—	—
Tucson		15·5	350	i 3 40	− 2	e 6 27	− 8	—	—	i 7·8
La Jolla	Z.	18·1	334	e 4 45	+31	—	—	—	—	—
Riverside	Z.	19·1	334	e 4 30	+ 3	—	—	—	—	—
Pasadena		19·6	334	i 4 37	+ 3	—	—	—	—	—
Haiwee		21·2	337	e 4 53	+ 4	—	—	—	—	e 9·4
Tinemaha		22·2	337	i 5 3	+ 3	—	—	—	—	—
Lincoln		25·5	21	—	—	e 9 53	− 4	e 12 37	SS	e 13·5
Cape Girardeau		25·7	37	e 5 33	0	e 10 0	− 1	—	—	—
St. Louis	E.	26·3	31	e 5 26	−13	i 10 6	− 5	—	—	—
Florissant		26·4	31	i 5 41	+ 1	e 10 11	− 1	—	—	—
Bozeman		28·7	355	—	—	e 11 3	+13	—	—	e 14·3

Additional readings :—
Tucson i = +3m.48s., +4m.4s., +4m.12s., +4m.23s., +4m.58s., and +7m.45s.
Cape Girardeau iE = +5m.44s.
St. Louis ePN = +5m.30s., eE = +9m.4s., eSEN = +9m.52s., iE = +9m.57s.
Florissant iE = +5m.46s., +10m.14s., and +10m.24s.
Long waves were also recorded at Berkeley, Salt Lake City, Butte, Chicago, Philadelphia, and Scoresby Sund.

March 4d. 23h. The Russian stations suggest epicentre 28°·5N. 21°·0E., but no determination seems to account for all the readings. An alternative interpretation of the observations suggests an epicentre off the coast of Tunis.

Rome eSZ = +48m.20s., eEQ = +51m.?
Helwan ePZ = 48m.30s.?, eE = 52m.12s., eSE = 52m.48s., SSN = 53m.31s., LN = 55m.0s.
Granada P = 48m.56s., PP = 49m.13s., S = 52m.37s.
Ksara e = 49m.20s. and 52m.30s.
Toledo iPZ = 49m.29s., eSN = 52m.57s.
Almeria e = 50m.17s., L = 55m.
Moscow eP = 51m.12s., eS = 56m.14s.
Algiers e = 51m.19s., 52m.9s., and 52m.56s., eL = 54m.22s.
Pulkovo eP = 51m.37s., eS = 56m.54s.
Coimbra e = 52m.20s., ? = 54m.0s., S = 56m.50s., eL = 58m.0s.
San Fernando eE = 52m.35s. and 57m.48s.
Tashkent eP = 52m.45s.
Sverdlovsk P = 52m.49s., S = 58m.54s.
Warsaw eN = 53m.?, eE = 54m.?, eZ = 54m.11s., eLE = 59m.
Paris eS = 53m.39s., L = 56m.
Potsdam iE = 53m.57s., eZ = 54m., iEN = 54m.23s., eLEN = 57m.
Uccle eE = 54m.3s.
Lisbon Z = 54m.17s., N = 54m.28s., E = 61m.51s., Z = 72m.29s. and 73m.24s.
De Bilt e = 54m.20s., LZ = 60m.
Long waves recorded at Kew and Triest.

March 4d. Readings also at 4h. (Bermuda, Potsdam (2), Helwan, and near Ksara), 5h. (Amboina, Oaxaca, Puebla, Tacubaya, and Vera Cruz), 6h. (Tucson, Potsdam, Warsaw, and near Mizusawa), 7h. (near Medan), 8h. (La Paz), 16h. (near Berkeley and near Sofia), 17h. (La Paz, Sofia, Almata, Samarkand, Tashkent, near Andijan, and Tchimkent), 18h. (near Ottawa), 19h. (near Piatigorsk).

March 5d. Readings at 0h. (Mizusawa), 1h. (near La Paz), 3h. (near Tashkent, Tchimkent, Samarkand. and Andijan), 5h. (Rome), 7h. (near Ottawa), 12h. (near Samarkand, Andijan, Almata, and near Mizusawa), 23h. (Sofia).

March 6d. 12h. 37m. 56s. Epicentre 2°·2N. 126°·9E. (as on 1939 April 22d.).

$A = -\cdot6000$, $B = +\cdot7991$, $C = +\cdot0382$; $\delta = +2$; $h = +7$;
$D = +\cdot800$, $E = +\cdot600$; $G = -\cdot023$, $H = +\cdot031$, $K = -\cdot999$.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Amboina	6·0	167	i 1 33	+ 1	i 2 29	−14
Manila	13·6	335	e 3 28	+11	i 6 9	+19
Batavia	21·7	248	i 4 53	− 2	i 8 47	− 4
Vladivostok	41·0	6	7 40	− 6	13 51	− 8
Almata	60·3	321	e 10 14	+ 1	—	—
Andijan	62·3	316	10 26	0	18 48	− 4
Tashkent	64·4	315	i 10 43	+ 3	e 19 16	− 2
Tchimkent	64·8	317	10 40	− 3	19 19	− 4
Samarkand	65·7	313	10 52	+ 4	—	—
Sverdlovsk	75·3	329	i 11 46	− 1	i 21 16	−10
Baku	78·7	311	—	—	e 21 59	− 4
Grozny	82·0	313	e 12 16	− 7	22 30	− 7
Sotchi	86·5	314	12 47	+ 1	—	—

Manila also gives ePN = +3m.31s.

March 6d. Readings also at 2h. (near Tchimkent and near Andijan), 7h. (near Berkeley, Branner, and San Francisco), 11h. (La Paz), 12h. (near Theodosia), 17h. (Stuttgart, near Basle, Neuchatel, and Zurich), 20h. (Philadelphia, Samarkand, Tchimkent, and near Andijan).

March 7d. Readings at 2h. (Tinemaha, Santa Barbara, Pasadena, Mount Wilson, Haiwee, Riverside, and Tucson (2)), 3h. (near Mizusawa and Tcledo), 6h. (near Mizusawa), 8h. (La Paz), 12h. (La Paz), 15h. (near Sotchi, Baku, Erevan, Sverdlovsk, and Ksara), 21h. (Samarkand, near Tashkent, Tchimkent, and Almata).

March 8d. 11h. Local Japanese shock. Tokyo Imperial University gives Epicentre 34°·48N. 139°·29E.

Susaki P = 0m.49s., S = 0m.56s.
Kamakura P = 1m.3s., S = 1m.20s.
Kiyosumi P = 1m.3s., S = 1m.16s.
Mitaka P = 1m.3s., S = 1m.25s.
Titibu P = 1m.3s., S = 1m.28s.
Togane P = 1m.3s., S = 1m.25s.
Tokyo Imp. Univ. P = 1m.3s., S = 1m.24s.
Tukubasan P = 1m.3s., S = 1m.28s.
Koyama P = 1m.3s., S = 1m.21s.
Komaba P = 1m.4s., S = 1m.25s.
Mizusawa ePN = 1m.54s., S = 2m.54s.

March 8d. Readings also at 1h. (Clermont-Ferrand), 7h. (La Paz), 15h. (near Mizusawa), 16h. (near Simferopol and Sofia), 17h. (Huancayo), 18h. (near Sotchi), 20h. (Tinemaha and Riverside), 21h. (Balboa Heights, Tinemaha, Riverside, Pasadena, and Mount Wilson), 22h. (Sitka, Tucson, Haiwee, Tinemaha, Riverside, Pasadena, and Mount Wilson).

March 9d. 7h. Local Japanese shock. Tokyo Imperial University gives Epicentre 36°·07N. 140°·0E.

Tokyo Imp. Univ. P =46m.11s., S =46m.22s.
Kamakura P =46m.13s., S =46m.27s.
Kiyosumi P =46m.13s., S =46m.27s.
Koyama P =46m.13s., S =46m.29s.
Mitaka P =46m.13s., S =46m.25s.
Titibu P =46m.13s., S =46m.23s.
Togane P =46m.13s., S =46m.24s.
Tukubasan P =46m.13s., S =46m.20s.
Komaba P =46m.14s., S =46m.26s.
Susaki P =46m.26s., S =46m.45s.
Mizusawa ePE = +46m.47s., eSE = +47m.25s.

March 9d. 16h.

San Juan e =56m.42s. and 57m.46s., eS =58m.45s., eL =61m.43s.
Merida PN =56m.54s.
Cape Girardeau iPN =57m.8s., ipP?N =57m.48s.
St. Louis eZ =57m.10s., iPZ =57m.19s., eN =61m.27s., eE =61m.31s. and 62m.47s., iE =62m.53s., eN =63m.6s.
Florissant ePN =57m.20s., iSE =62m.59s.
Huancayo eS =57m.38s., eL =60m.11s.
Tucson eP =57m.51s., i =57m.55s., ePP =58m.27s., i =58m.34s., e =59m.7s., i =59m.30s., e =61m.36s., eS? =64m.13s.
Riverside iPZ =58m.36s., iZ =59m.25s.
Mount Wilson ePZ =58m.42s., iZ =59m.28s.
Pasadena iPZ =58m.43s., iZ =59m.30s.
Tinemaha ePZ =58m.47s.

March 9d. Readings also at 1h. (near Berkeley, Branner (2), Lick (2), Fresno, and San Francisco), 5h. (near Rome), 6h. (Agra, Bombay, Calcutta, near Dehra Dun, Almata, and near Samarkand), 9h. (near Berkeley, Branner, Lick, and San Francisco), 13h. (near Apia), 18h. (Almata, near Andijan, and near Belgrade (3)), 19h. (near Basle, Chur, Neuchatel, Zurich, near Stuttgart, and near Almata), 22h. (Bucharest).

March 10d. 3h. 47m. 30s. Epicentre 7°·5N. 81°·5W. (as on 1940, May 17d.; but see below at 4h.).

A = +·1466, B = −·9807, C = +·1297; δ = +9; h = +7;

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		2·4	53	0 27	−14	—	—	—	—	—
San Juan		18·4	53	i 4 13	− 5	e 7 35	− 6	—	—	—
Huancayo		20·4	163	e 4 47	+ 6	e 8 32	+ 7	—	—	e 9·6
La Paz		27·3	151	e 5 48	0	—	—	—	—	e 9·8
Tucson		36·7	316	e 7 11	+ 1	—	—	—	—	—
Tinemaha	z.	44·5	317	e 8 17	+ 2	—	—	—	—	—

Additional readings :—
Huancayo e = +5m.5s. and +5m.51s.
Tucson i = +7m.33s., e = +7m.39s., i = +8m.20s.

March 10d. 4h. 5m. 42s. Epicentre 7°·5N. 81°·5W. (as at 3h.; and on 1940, May 17d.).

A = +·1466, B = −·9807, C = +·1297; δ = +9; h = +7;
D = −·989, E = −·148; G = +·019, H = −·128, K = −·992.

U.S.C.G.S. gives epicentre 7°·5N. 80°·7W. La Paz 9°·0N. 81°·8W.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		2·4	53	i 0 29	−12	—	—	—	—	—
Merida	N.	15·5	331	i 6 37	S	(i 6 37)	+ 2	—	—	—
San Juan		18·4	53	i 4 10	− 8	i 7 40	− 1	—	—	—
Huancayo		20·4	163	e 4 37	− 4	e 8 26	+ 1	i 4 48	PP	e 10·5
Columbia		26·4	1	—	—	e 10 14	+ 2	—	—	i 10·7
										e 13·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		27·3	151	i 5 49	+ 1	i 10 28	+ 1	—	—	14·9
Cape Girardeau	N.	30·6	347	e 6 18	0	e 8 58	?	—	—	—
St. Louis		32·0	347	i 6 31	+ 1	e 11 44	+ 2	—	—	e 13·3
Florissant		32·2	347	e 6 34	+ 2	i 11 45	0	e 7 30	PP	13·4
Philadelphia		32·8	11	—	—	e 11 58	+ 4	—	—	e 14·4
Tucson		36·7	316	e 7 12	+ 2	—	—	i 8 43	PP	e 15·2
Ottawa		38·1	8	7 21	− 1	13 18	+ 2	16 18?	SSS	19·3
Seven Falls		40·5	11	—	—	e 13 59	+ 7	—	—	17·3
La Jolla	Z.	41·6	313	e 7 53	+ 2	—	—	—	—	—
Riverside	Z.	42·3	314	e 8 0	+ 3	—	—	—	—	—
Mount Wilson		42·9	314	i 8 3	+ 1	—	—	—	—	—
Pasadena		42·9	314	i 8 2	0	—	—	—	—	—
Haiwee	N.	43·8	317	e 8 24	+15	—	—	—	—	—
Santa Barbara	Z.	44·2	313	e 8 18	+ 6	—	—	—	—	—
Tinemaha	Z.	44·5	317	e 8 15	0	—	—	—	—	—
Bozeman	E.	45·8	332	—	—	e 15 18	+ 9	e 18 28	SS	e 24·5
Rio de Janeiro	E.	48·1	130	e 9 18	+35	—	—	—	—	—
Toledo		75·6	52	e 11 44	− 4	—	—	—	—	—
Uccle		81·6	40	e 12 24	+ 3	e 22 31	− 2	—	—	e 38·3
Potsdam		86·9	38	—	—	i 23 26	0	—	—	e 48·3
Rome		88·0	48	e 21 26?	?	e 23 44	+ 8	—	—	—

Additional readings :—
San Juan e = +4m.59s., +5m.28s., and +9m.0s.
Huancayo e = +5m.5s., i = +5m.47s.
St. Louis eN = +7m.37s., +11m.38s., and +12m.37s.
Florissant eN = +7m.36s., +7m.39s., and +13m.37s.
Tucson i = +7m.15s. and +7m.47s., eP_cP = +9m.28s., i = +9m.56s.
Tinemaha iZ = +8m.42s.
Toledo i = +11m.48s.
Potsdam iE = +23m.29s.
Long waves were also recorded at De Bilt, Paris, Warsaw, Kew, Scoresby Sund, and other American stations.

Repetitions of the above shock were recorded at Balboa Heights :—

h.	m.	s.	h.	m.	s.	h.	m.	s.	h.	m.	s.
4	12	24	5	6	41	6	13	0	10	6	29
4	16	8	5	10	20	6	21	4	14	14	54
4	16	41	5	31	1	7	28	55	14	16	33
4	22	49	5	37	6	8	43	29	14	18	11
4	29	42	5	46	34	8	44	13	17	23	50
4	33	21	6	5	14	8	52	33	18	38	16
4	35	5	6	9	31	8	54	23	19	45	23

March 10d. Readings also at 0h. (near Rome (2)), 5h. (Huancayo, Almata, Frunse, Tashkent, and near Andijan), 6h. (Mount Wilson, Pasadena, Tinemaha, and near Piatigorsk), 8h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, La Paz, and near Huancayo), 11h. (near Manila and near Theodosia), 17h. (Branner and near Manila), 20h. (Tucson).

March 11d. 13h. Undetermined shock.
Vladivostok eP = 33m.36s., eS = 37m.58s.
Manila eP = 36m.6s., SE = 44m.8s., LEN = 54·8m.
Sverdlovsk P = 38m.11s., S = 46m.8s., SS = 49m.52s.
Rome eZ = 41m.20s.
Bombay eEN = 40m.20s., LE = 66·0m.
Potsdam iPZ = 40m.25s., eLN = 69·0m.
De Bilt iZ = 40m.39s., eL = 73·0m.
Stuttgart ePZ = 40m.53s.
Paris e = 40m.59s., L = 76·0m.
La Paz ePKP = 43m.31s.
Calcutta eN = 45m.32s.
Long waves were also recorded at Agra, Scoresby Sund, College, and other European stations.

March 11d. 21h. 48m. 53s. Epicentre 36°·3N. 71°·0E.; depth of focus 0·025.
(as on 1940, December 25d.).

Intensity VII at Srinagar; VI at Muzafferabad, Peshawar; V at Skardu, Rawalpindi, Cherat, Chakdara, Fort, Drosh; IV at Kabul.
Epicentre, Hindou-Kouch.
See Government of India, Seismological Bulletin for 1941, p. 24.

$A = +\cdot2630$, $B = +\cdot7638$, $C = +\cdot5894$; $\delta = -5$; $h = 0$;
$D = +\cdot946$, $E = -\cdot326$; $G = +\cdot192$, $H = +\cdot557$, $K = -\cdot808$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		4·6	14	i 1 9	− 1	1 58	− 6	—	—	—
Samarkand		4·6	319	1 10	0	—	—	—	—	—
Tashkent		5·2	347	i 1 15	− 3	i 2 10	− 8	—	—	—
Tchimkent		6·1	351	1 27	− 2	—	—	—	—	—
Frunse		7·1	22	1 44	+ 2	2 55	− 7	—	—	—
Almata		8·3	32	e 1 56	− 2	—	—	—	—	—
Dehra Dun	N.	8·4	133	e 2 23k	pP	i 3 53	sS	—	—	—
Agra	E.	10·9	145	2 31	− 1	4 30	− 1	i 3 2	pP	—
Baku		17·0	290	3 51	+ 3	i 7 1	+12	—	—	—
Bombay		17·4	174	i 3 55a	+ 3	i 7 6	+ 8	i 7 20	sS	—
Hyderabad	N.	19·9	159	5 3	PPP	8 40	SS	—	—	11·0
Calcutta	N.	20·4	127	i 4 26	+ 3	i 8 9	+13	e 4 41	pP	—
Sverdlovsk		21·7	345	4 36	0	i 8 23	+ 4	i 5 10	pP	—
Moscow		29·8	321	5 50	− 1	e 10 36	+ 4	6 28	pP	—
Colombo	E.	30·4	163	e 6 37	pP	—	—	—	—	—
Pulkovo		35·1	325	i 6 36	− 1	e 11 59	+ 5	i 7 19	pP	—
Warsaw		38·3	311	e 7 3	0	e 15 7	SS	—	—	—
Potsdam		43·2	311	i 7 44	0	e 15 7	PS	i 8 46	pP	e 17·1
Copenhagen		43·6	315	e 7 46	− 1	17 35	SS	10 31	PPP	—
Rome		45·0	296	i 7 57	− 1	e 14 33	+12	i 9 1	pP	—
Stuttgart		46·0	306	e 8 6	0	—	—	e 9 8	pP	—
Chur		46·1	304	e 8 6	− 1	—	—	—	—	—
Zurich		46·6	304	e 8 9	− 1	—	—	—	—	—
Basle		47·3	304	e 8 14	− 2	—	—	—	—	—
Neuchatel		47·8	304	e 8 19	− 1	—	—	—	—	—
Uccle	z.	48·8	310	e 8 27	0	—	—	e 9 30	pP	—
Clermont-Ferrand		50·7	303	e 8 35	− 7	—	—	—	—	—
Toledo		57·5	298	i 9 32	+ 1	—	—	—	—	—

Additional readings:—
Bombay iN = +4m.44s., iEN = +7m.46s.
Calcutta eSSN = +8m.33s.
Warsaw eZ = +9m.31s. and +15m.16s.
Potsdam iPN = +7m.48s., iPPPE = +10m.28s., iPPPN = +10m.33s.
Rome iE = +8m.19s., eE = +9m.40s.
Stuttgart eEN = +11m.6s.
Uccle eZ = +11m.14s.

March 11d. Readings also at 0h. (near Lick and Branner), 2h. (Balboa Heights (2)), 6h. (Rome), 8h. (Tchimkent and Andijan), 16h. (La Paz), 18h. (near Andijan), 22h. (Balboa Heights (2)), 23h. (near Branner).

March 12d. 14h. 16m. 31s. Epicentre 39°·6N. 143°·5E.

Scale IV at Miyako, Morioka, Mizusawa ; II-III at Hatinohe and Aomori.
Epicentre 39°·6N. 143°·5E. Macroseismic radius 200-300km. Shallow.
See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1941 ; Tokyo, 1950, p. 10. Macroseismic chart, p. 10.

$A = -\cdot6211$, $B = +\cdot4596$, $C = +\cdot6349$; $\delta = +10$; $h = -2$;
$D = +\cdot595$, $E = +\cdot804$; $G = -\cdot510$, $H = +\cdot378$, $K = -\cdot773$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyako	1·2	272	0 26 a	+ 2	0.40	− 1	—	—	—
Hatinohe	1·8	302	0 32 a	0	0 57	+ 1	—	—	—
Mizusawa	1·9	256	i 0 36	+ 2	1 4	+ 5	—	—	—
Aomori	2·4	300	0 43 a	+ 2	1 18	S_g	—	—	—
Sendai	2·4	237	0 41 a	0	1 10	− 2	—	—	—
Akita	2·6	273	0 51 k	P_g	1 29	S_g	—	—	—
Hukusima	3·0	232	0 50 a	0	1 36	S*	—	—	—
Mori	3·3	320	0 56 a	+ 3	2 4	+29	—	—	—
Sapporo	3·8	335	1 1 a	0	2 3	S_g	—	—	—
Mito	4·0	218	1 4	0	1 59	S*	—	—	—
Utunomiya	4·2	224	1 6	− 1	2 2	+ 5	—	—	—
Kakioka	4·3	219	1 4	− 4	—	—	—	—	—
Tukubasan	4·3	220	1 9	+ 1	2 8	S*	—	—	—
Aikawa	4·4	251	1 10	0	2 22	S_g	—	—	—
Tyosi	4·4	209	0 57	−13	2 9	+ 7	—	—	—
Kumagaya	4·7	225	1 15 a	+ 1	2 5	− 5	—	—	—
Maebasi	4·7	229	1 15	+ 1	2 21	S*	—	—	—
Tokyo Cen. Met. Ob.	4·9	219	1 18	+ 1	2 33	S*	—	—	—
Nagano	5·1	237	1 22 a	+ 2	2 31	S*	—	—	—
Yokohama	5·2	218	1 22	+ 1	2 27	+ 5	—	—	—
Hunatu	5·5	224	1 26	+ 1	2 33	+ 3	—	—	—
Mera	5·5	213	1 28	+ 3	2 48	S*	—	—	—
Kohu	5·6	226	1 28	+ 1	2 48	S*	—	—	—
Wazima	5·6	249	1 31	+ 4	2 49	S*	—	—	—
Misima	5·8	221	1 33	+ 4	2 55	S*	—	—	—
Osima	5·8	216	1 33	+ 4	3 5	S_g	—	—	—
Toyama	5·8	242	1 31	+ 2	3 5	S_g	—	—	—
Shizuoka	6·2	223	1 31	− 4	2 55	+ 7	—	—	—
Hamamatu	6·7	225	1 52 a	P*	3 20	S*	—	—	—
Gihu	6·8	234	1 42	− 2	3 6	+ 3	—	—	—
Nagoya	6·8	232	1 47	+ 3	3 7	+ 4	—	—	—
Hikone	7·2	236	1 55	+ 6	3 21	+ 8	—	—	—
Kameyama	7·4	232	2 1	+ 9	3 31	+13	—	—	—
Kyoto	7·7	236	1 56	0	2 49	−36	—	—	—
Owase	8·0	229	2 0	0	3 11	−22	—	—	—
Toyooka	8·0	242	2 8	+ 8	3 47	+14	—	—	—
Osaka	8·1	235	2 6	+ 4	3 59	S*	—	—	—
Kobe	8·2	236	2 2 a	− 1	3 49	+11	—	—	—
Wakayama	8·5	234	1 58	− 9	3 45	0	—	—	—
Sumoto	8·7	236	2 14 a	+ 4	4 21	S*	—	—	—
Siomisaki	8·8	228	2 0	−11	—	—	—	—	—
Vladivostok	9·4	296	i 2 20	+ 2	i 4 25	+18	—	—	—
Muroto	9·8	233	2 43	PP	5 31	S_g	—	—	—
Koti	10·0	236	2 37	+10	4 33	+11	—	—	—
Hamada	10·2	246	2 33	+ 2	4 38	+11	—	—	—
Hirosima	10·3	243	2 20	−12	4 34	+ 4	—	—	—
Matuyama	10·4	240	2 33	− 1	4 53	SS	—	—	—
Ooita	11·5	240	2 53	+ 5	5 56	+57	—	—	—
Izuka	11·9	244	2 52	− 2	5 19	+10	—	—	—
Hukuoka	12·1	244	3 56	+59	7 8	L	—	—	(7·1)
Kumamoto	12·4	241	2 59 a	− 2	5 47	SS	—	—	—
Miyazaki	12·4	236	2 55	− 6	5 42	SS	—	—	—
Taikyu	12·4	257	3 0	− 1	5 49	SS	—	—	—
Keizyo	13·1	266	3 23	PP	—	—	—	—	—
Zinsen	13·4	266	3 12	− 2	5 53	+ 8	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°		m. s.	s.	m. s.	s.	m. s.		m.
Zi-ka-wei	N.	19·8	252	e 4 31	− 4	8 17	+ 4	i 8 45	SS	—
Irkutsk		29·7	309	6 8	− 2	11 21	+15	—	—	—
Manila		31·8	224	e 6 28	0	12 32	SS	—	—	17·7
Semipalatinsk		44·7	306	8 14	− 2	—	—	—	—	—
College		46·1	34	—	—	e 15 12	− 2	—	—	—
Almata		48·8	298	e 8 47	− 2	—	—	—	—	—
Calcutta	N.	49·5	267	e 8 57 a	+ 3	e 16 8	+ 6	e 19 11	S_cS	e 24·6
Frunse		50·6	298	e 9 2	0	—	—	—	—	—
Andijan		52·9	296	e 9 20	0	e 17 3	+15	—	—	—
Medan		54·1	240	10 0	+31	e 17 29	+24	—	—	—
Sverdlovsk		54·3	319	i 9 30	0	i 17 7	0	—	—	—
Agra	E.	55·0	278	9 34	− 1	17 16	− 1	11 38	PP	—
Bombay	E.	63·5	273	i 10 33	− 1	i 19 6	− 1	—	—	—
Victoria		63·5	48	—	—	e 19 14	+ 7	—	—	38·5
Moscow		66·2	323	10 49	− 3	19 34	− 6	—	—	—
Pulkovo		66·8	330	e 10 53	− 3	e 19 43	− 5	—	—	—
Baku		68·1	305	e 11 5	+ 1	e 20 5	+ 2	—	—	—
Grozny		69·0	309	e 11 11	+ 2	—	—	—	—	—
Scoresby Sund		69·7	356	—	—	i 20 23	+ 1	e 25 4	SS	e 34·6
Upsala		71·4	335	—	—	e 20 37	− 5	—	—	e 34·5
Erevan		71·6	307	e 11 27	+ 2	—	—	—	—	—
Tinemaha		73·0	56	e 11 33	0	—	—	—	—	—
Haiwee	N.	73·7	56	e 11 38	0	—	—	—	—	—
Mount Wilson	Z.	74·8	58	e 11 44	0	—	—	—	—	—
Pasadena		74·8	58	i 11 46	+ 2	—	—	—	—	e 32·0
Riverside	Z.	75·4	58	e 11 44	− 3	—	—	—	—	—
Warsaw		75·8	328	e 11 49	− 1	e 21 32	+ 1	e 26 30	SS	e 41·5
Copenhagen		76·3	334	e 11 52	0	21 37	0	14 41	PP	37·5
Potsdam		78·8	332	i 12 4	− 2	i 22 3	− 1	i 15 4	PP	e 37·5
Hamburg		78·9	334	e 12 7	0	e 21 35?	−30	—	—	e 41·5
Bucharest		79·2	319	—	—	e 22 9	+ 1	—	—	40·5
Prague		80·1	330	—	—	e 22 17	− 1	—	—	—
Jena		80·5	331	e 12 13	− 2	—	—	—	—	—
Tucson		80·8	56	i 12 21	+ 4	—	—	i 15 27	PP	i 34·0
De Bilt		81·7	336	i 12 22 a	0	e 21 49	−45	i 15 33	PP	e 42·5
Uccle		83·1	336	e 12 24	− 5	e 22 49	+ 1	15 42	PP	e 43·5
Stuttgart		83·2	331	e 12 28	− 1	—	—	—	—	—
Kew		84·0	338	e 12 33	0	e 22 53	− 4	e 28 29?	SS	e 38·5
Chur		84·6	331	e 12 37	+ 1	—	—	—	—	—
Zurich		84·6	331	e 11 59	−37	—	—	—	—	—
Basle		84·8	331	e 12 36	− 1	—	—	—	—	—
Paris		85·4	335	e 12 42	+ 2	e 35 29?	?	e 16 4	PP	48·5
Neuchatel		85·5	331	e 12 40	− 1	—	—	—	—	—
Helwan		86·5	306	12 47	+ 1	23 5	[− 6]	16 14	PP	—
Rome		87·5	326	e 12 46	− 5	e 23 17	[0]	e 16 0	PP	e 43·9
Florissant		87·7	39	e 12 56	+ 4	i 23 32	− 1	—	—	—
Clermont-Ferrand		87·9	333	e 12 53	0	—	—	—	—	e 50·5
Ottawa		88·4	27	e 12 57	+ 2	—	—	—	—	51·5
Coimbra		96·5	338	e 12 55	−37	25 55	PS	22 59	SKP	56·5
Toledo		95·5	335	15 7	?	—	—	—	—	52·9
Granada		97·8	334	e 12 42	−56	—	—	—	—	55·0

Additional readings :—
Calcutta iPN = +9m.14s., eSSN = +19m.24s.
Medan PE = +10m.3s.
Agra SSE = +21m.12s.
Bombay iSKSEN = +19m.20s., eE = +23m.37s.
Riverside eZ = +12m.11s.
Bucharest eE = +24m.29s. and +28m.45s., eN = +28m.50s.
Tucson i = +12m.38s., +13m.17s., and +15m.3s.
Kew eSSSEN = +31m.29s.?
Helwan SE = +23m.23s.
Rome eE = +14m.54s., eZ = +16m.27s., eE = +22m.31s. and +23m.31s., ePSE = +24m.6s., eSSS = +31m.59s.
Coimbra SSS = +38m.59s., ? = +52m.29s.
Long waves were also recorded at East Machias, Triest, Chicago, Seattle, Huancayo, Heligoland, Lisbon, Almeria, Aberdeen, San Fernando, Bergen, Belgrade, Strasbourg, and Budapest.

March 12d. 21h. 36m. 48s. Epicentre 39°·6N. 143°·5E. (as at 14h.).

Scale IV at Miyako and Mizusawa, Scale II-III at Hatinohe, Morioka, Aomori, Akita, and Nemuro. Epicentre 39°·6N. 143°·5E. Macroseismic radius 200-300km. Shallow.
See Seismological Bulletin of the Central Met. Obs. Japan for the year 1941. Tokyo 1950.

$A = -\cdot6211$, $B = +\cdot4596$, $C = +\cdot6349$; $\delta = +10$; $h = -2$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyako		1·2	272	0 27a	+ 3	0 44	+ 3	—	—	—
Hatinohe		1·8	302	0 33a	+ 1	0 56	0	—	—	—
Mizusawa	E.	1·9	256	i 0 36	+ 2	i 1 3	+ 4	—	—	—
Aomori		2·4	300	0 43a	+ 2	1 17	+ 5	—	—	—
Sendai		2·4	237	0 41a	0	1 8	− 4	—	—	—
Akita		2·6	273	0 49a	+ 5	1 27	S_g	—	—	—
Hukusima		3·0	232	0 49a	− 1	1 19	− 8	—	—	—
Mori		3·3	320	0 56a	+ 3	1 54	S_g	—	—	—
Onahama		3·3	217	1 2	P*	1 57	S_g	—	—	—
Sapporo		3·8	335	0 57a	− 4	1 53	+ 6	—	—	—
Mito		4·0	218	1 4	0	—	—	—	—	—
Utunomiya		4·2	224	1 5	− 2	2 8	+11	—	—	—
Kakioka		4·3	219	1 8	0	—	—	—	—	—
Tukubasan		4·3	220	1 0k	− 8	1 34	−26	—	—	—
Aikawa		4·4	251	1 10	0	2 23	S_g	—	—	—
Tyosi		4·4	209	0 54	−16	—	—	—	—	—
Kumagaya		4·7	225	1 14	0	2 3	− 7	—	—	—
Maebasi		4·7	229	1 15	+ 1	2 9	− 1	—	—	—
Tokyo Cen. Met. Ob.		4·9	219	1 16	− 1	2 22	+ 7	—	—	—
Nagano		5·1	237	1 21a	+ 1	2 43	S_g	—	—	—
Yokohama		5·2	218	1 21	0	2 20	− 2	—	—	—
Hunatu		5·5	224	1 26	+ 1	2 26	− 4	—	—	—
Mera		5·5	213	1 31	+ 6	3 6	S_g	—	—	—
Kohu		5·6	226	1 28	+ 1	2 47	S*	—	—	—
Wazima		5·6	249	1 29	+ 2	2 46	S*	—	—	—
Misima		5·8	221	1 31	+ 2	2 33	− 5	—	—	—
Osima		5·8	216	1 29	0	2 53	S*	—	—	—
Toyama		5·8	242	1 30	+ 1	3 6	S_g	—	—	—
Shizuoka		6·2	223	1 30	− 5	3 0	S*	—	—	—
Gihu		6·8	234	1 43	− 1	3 9	+ 6	—	—	—
Nagoya		6·8	232	1 46	+ 2	3 4	+ 1	—	—	—
Hikone		7·2	236	1 50	+ 1	3 17	+ 4	—	—	—
Kameyama		7·4	232	2 5	P*	3 32	S*	—	—	—
Kyoto		7·7	236	1 56	0	3 44	S*	—	—	—
Owase		8·0	229	2 3	+ 3	2 54	−39	—	—	—
Toyooka		8·0	242	2 10	+10	3 45	+12	—	—	—
Osaka		8·1	235	2 10	+ 8	4 4	S*	—	—	—
Kobe		8·2	236	2 14a	+11	3 50	+12	—	—	—
Wakayama		8·5	234	1 48	−19	3 28	−17	—	—	—
Siomisaki		8·8	228	2 43	PPP	—	—	—	—	—
Vladivostok		9·4	296	i 2 20	+ 2	i 4 13	+ 6	—	—	—
Muroto		9·8	233	2 48	PPP	5 30	S_g	—	—	—
Koti		10·0	236	2 40	PP	4 31	SS	—	—	—
Hamada		10·2	246	2 35	+ 4	4 22	− 5	—	—	—
Hirosima		10·3	243	2 32	0	4 48	SSS	—	—	—
Matuyama		10·4	240	2 33	− 1	4 53	SSS	—	—	—
Ooita		11·5	240	3 7	PPP	6 16	L	—	—	(6·3)
Izuka		11·9	244	2 57	+ 3	5 39	SS	—	—	—
Hukuoka		12·1	244	3 5	+ 8	5 19	+ 5	—	—	—
Kumamoto		12·4	241	2 58	− 3	5 36	SS	—	—	—
Miyazaki		12·4	236	2 38	−23	—	—	—	—	—
Taikyu		12·4	257	3 1	0	5 54	SS	—	—	—
Kagosima		13·2	237	3 20	+ 9	—	—	—	—	—
Zinsen		13·4	266	3 9	− 5	6 12	SSS	—	—	—
Zi-ka-wei	E.	19·8	252	e 4 28	− 7	8 28	+15	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Irkutsk		29·7	309	e 6 8	− 2	e 11 20?	+14	—	—	—
Manila		31·8	224	6 38	+10	11 44	+ 6	—	—	15·6
Semipalatinsk		44·7	306	8 14	− 2	—	—	—	—	—
College		46·1	34	—	—	e 15 11	− 3	—	—	e 18·4
Almata		48·8	298	e 8 48	− 1	—	—	—	—	—
Calcutta	N.	49·5	267	e 8 52	− 2	i 16 5	+ 3	—	—	—
Frunse		50·6	298	e 9 0	− 2	—	—	—	—	—
Andijan		52·9	296	e 9 20	0	—	—	—	—	—
Sitka		53·2	42	—	—	e 17 5	+13	—	—	e 21·7
Tchimkent		54·2	299	i 9 27	− 2	—	—	—	—	—
Sverdlovsk		54·3	319	i 9 30	0	17 8	+ 1	—	—	—
Tashkent		54·8	298	i 9 33	− 1	e 17 11	− 3	—	—	—
Agra	E.	55·0	278	9 32	− 3	17 14	− 3	11 34	PP	—
Samarkand		57·1	296	9 49?	− 1	17 43?	− 2	—	—	—
Hyderabad	N.	60·0	268	—	—	19 4	PPS	—	—	—
Bombay		63·5	273	e 10 28	− 6	e 19 6	− 1	—	—	—
Victoria		63·5	48	—	—	e 19 6	− 1	—	—	39·2
Moscow		66·2	323	10 50	− 2	19 39	− 1	—	—	—
Pulkovo		66·8	330	e 10 51	− 5	e 19 45	− 3	—	—	—
Baku		68·1	305	e 10 55	− 9	—	—	—	—	—
Scoresby Sund		69·7	356	—	—	i 20 25	+ 3	—	—	e 37·0
Berkeley		69·9	57	—	—	e 30 12	?	—	—	—
Upsala		71·4	335	—	—	e 25 12	SS	—	—	e 41·2
Erevan		71·6	307	e 11 26	+ 1	—	—	—	—	—
Sotchi		72·4	312	e 11 32	+ 2	—	—	—	—	—
Warsaw		75·8	328	e 11 49	− 1	—	—	—	—	e 42·2
Copenhagen		76·3	334	e 11 52	0	21 40	+ 3	—	—	40·2
Potsdam		78·8	332	i 12 6	0	i 22 3	− 1	e 15 3	PP	e 38·2
Bucharest		79·2	319	—	—	e 22 6	− 2	e 23 15	PPS	44·2
Tucson		80·8	56	i 11 39	−38	e 23 24	PS	31 58	SSS	—
De Bilt		81·7	36	e 12 23	+ 1	—	—	e 15 29	PP	e 43·2
Sofia	E.	81·8	319	e 12 23	+ 1	e 22 45	+10	—	—	—
	N.	81·8	319	e 12 12	−10	e 22 33	− 2	—	—	—
Uccle		83·1	336	e 12 32?	+ 3	—	—	—	—	e 42·2
Stuttgart		83·2	331	e 4 55	?	—	—	—	—	e 46·2
Chur		84·6	331	e 12 50	+14	—	—	—	—	—
Zurich		84·6	331	i 12 34	− 2	—	—	—	—	—
Basle		84·8	331	e 12 36	− 1	—	—	—	—	—
Paris		85·4	335	e 12 12?	−28	—	—	—	—	49·2
Neuchatel		85·5	331	e 12 40	− 1	—	—	—	—	—
Helwan		86·5	306	12 46	0	e 23 10	[− 1]	—	—	—
Rome		87·5	326	e 12 48	− 3	e 23 12?	[− 5]	e 16 14	PP	e 44·2
Florissant	E.	87·7	39	—	—	i 23 31	− 2	—	—	—
St. Louis		87·9	39	i 12 56	+ 3	i 23 33	− 2	—	—	—
Granada		97·8	334	17 36	PP	—	—	—	—	50·6
La Paz		144·1	59	20 22	[+45]	—	—	—	—	—

Additional readings :—
Calcutta iPN = +9m.1s.
Sitka e = +18m.2s.
Agra SSE = +21m.12s.
Bombay ePE = +10m.31s.
Bucharest eE = +22m.44s.—
Tucson i = +12m.18s., +12m.33s., +13m.5s., +23m.17s., and +23m.44s.
Helwan eE = +23m.18s.
Rome eE = +14m.47s., ePPE = +16m.45s., ePSE = +24m.29s., eE = +26m.4s., eSSSN = +32m.12s.
St. Louis iE = +13m.38s.
Long waves were also recorded at Budapest, Triest, Bergen, San Fernando, Aberdeen, Huancayo, Toledo, Clermont-Ferrand, Prague, and Coimbra.

March 12d. Readings also at 0h. (Balboa Heights, Riverside, Mount Wilson, Pasadena, Haiwee, and Tinemaha), 2h. (San Juan, Balboa Heights, Riverview, Bermuda, and La Paz), 3h. (Clermont-Ferrand, La Paz, Haiwee, Riverside, Huancayo, Pasadena, and Tucson), 6h. (Tucson), 9h. (Manila), 10h. (Haiwee, Riverside, Tinemaha, Pasadena, and Mount Wilson), 14h. (Colombo), 16h. (Huancayo), 18h. (near Mizusawa (2)), 20h. (Zurich), 22h. (near Mizusawa), 23h. (Sofia, near Bucharest, and Balboa Heights).

March 13d. 19h. 31m. 24s. Epicentre 39°·6N. 143°·5E. (as on March 12d.).

Scale IV at Miyako, Mizusawa. Scale II-III at Morioka. Epicentre 39°·6N. 143°·6E. Macroseismic radius 200-300km. Shallow.
See Seismological Bulletin of the Central Met. Obs. Japan for the year 1941. Tokyo 1950, p. 13. Macroseismic chart p. 13.

$A = -\cdot 6211$, $B = +\cdot 4596$, $C = +\cdot 6349$; $\delta = +10$; $h = -2$.

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Miyako		1·2	272	0 23	− 1	0 41	0
Hatinohe		1·8	302	0 32a	0	0 56	0
Mizusawa	E.	1·9	256	i 0 35	+ 1	i 0 55	− 4
Aomori		2·4	300	0 43k	+ 2	1 27	S_g
Sendai		2·4	237	0 41a	0	1 5	− 7
Akita		2·6	273	0 52k	P_g	1 22	S*
Hukusima		3·0	232	0 49	− 1	1 26	− 1
Mori		3·3	320	1 1a	P*	1 54	S_g
Sapporo		3·8	335	1 23	P_g	2 11	S_g
Mito		4·0	218	1 5	+ 1	1 47	− 5
Utunomiya		4·2	224	1 4	− 3	2 18	S_g
Kakioka		4·3	219	1 10	+ 2	1 54	− 6
Tukubasan		4·3	220	1 8	0	2 12	S*
Aikawa		4·4	251	1 9	− 1	2 13	S*
Tyosi		4·4	269	1 7	− 3	—	—
Kumagaya		4·7	225	1 15	+ 1	2 4	− 6
Maebasi		4·7	229	1 15	+ 1	2 7	− 3
Tokyo Cen. Met. Ob.		4·9	219	1 15a	− 2	2 24	S*
Nagano		5·1	237	1 22	+ 2	2 38	S*
Yokohama		5·2	218	1 38	P*	—	—
Hunatu		5·5	224	1 26	+ 1	2 31	+ 1
Kohu		5·6	226	1 27	0	2 41	+ 8
Misima		5·8	221	1 29	0	3 0	S*
Osima		5·8	216	1 29	0	2 31	− 7
Toyama		5·8	242	1 28	− 1	2 52	S*
Hamamatu		6·7	225	1 37	− 5	—	—
Gihu		6·8	234	1 43	− 1	3 6	+ 3
Nagoya		6·8	232	1 47	+ 3	3 28	S*
Hikone		7·2	236	1 50	+ 1	3 19	+ 6
Kameyama		7·4	232	2 31	P_g	—	—
Kyoto		7·7	236	1 56	0	—	—
Toyooka		8·0	242	2 1	+ 1	3 32	− 1
Osaka		8·1	235	1 36	−26	3 27	− 8
Kobe		8·2	236	2 3	0	3 54	+16
Wakayama		8·5	234	2 5	− 2	3 57	+12
Vladivostok		9·4	296	i 2 18	0	e 4 23	+16
Irkutsk		29·7	309	e 6 12	+ 2	e 11 20	+14
Sverdlovsk		54·3	319	i 9 30	0	17 11	+ 4
Tashkent		54·8	298	9 33	− 1	—	—

Long waves were also recorded at Agra, Calcutta, Rome, Paris, Kew, Potsdam, and De Bilt.

March 13d. Readings also at 1h. (near Mizusawa), 2h. (Calcutta), 3h. (Honolulu), 6h. (Rome), 8h. (near Mizusawa), 9h. (Coimbra), 11h. (near Mizusawa), 12h. (near La Paz), 13h. (Tucson and Balboa Heights), 14h. (La Paz), 16h. (Branner and Tucson), 17h. (near Mizusawa (2)), 20h. (near Mizusawa), 21h. (near Lick), 22h. (Balboa Heights), 23h. (Balboa Heights, Riverview, Fresno, Wellington, near Baku, and Grozny).

March 14d. 14h. 30m. 41s. Epicentre 39°·6N. 143°·5E. (as on 1941 March 13d.).

Scale IV at Miyako and Mizusawa, Scale II-III at Hatinohe, Morioka, and Aomori.
Epicentre 39°·7N. 143°·6E. Macroseismic radius 200-300km. Shallow.
See Seismological Bulletin of the Central Met. Obs. Japan for the year 1941. Tokyo 1950, pp. 14-15. Macroseismic chart p. 14.

$A = -\cdot6211$, $B = +\cdot4596$, $C = +\cdot6349$; $\delta = +10$; $h = -2$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyako		1·2	272	0 23a	− 1	0 37	− 4	—	—	—
Hatinohe		1·8	302	0 30a	− 2	0 53	− 3	—	—	—
Mizusawa	E.	1·9	256	i 0 35	+ 1	i 0 57	− 2	—	—	—
Aomori		2·4	300	0 43a	+ 2	1 26	S_g	—	—	—
Sendai		2·4	237	0 41a	0	1 15	+ 3	—	—	—
Akita		2·6	273	0 45	+ 1	1 21	+ 4	—	—	—
Hukusima		3·0	232	0 49a	− 1	1 31	+ 4	—	—	—
Mori		3·3	320	0 55	+ 2	1 53	S_g	—	—	—
Sapporo		3·8	335	1 1a	0	2 3	S_g	—	—	—
Mito		4·0	218	1 4	0	1 56	+ 4	—	—	—
Utunomiya		4·2	224	1 5	− 2	2 1	+ 4	—	—	—
Kakioka		4·3	219	1 7	− 1	1 55	− 5	—	—	—
Tukubasan		4·3	220	1 7	− 1	1 55	− 5	—	—	—
Aikawa		4·4	251	1 9k	− 1	2 19	S*	—	—	—
Tyosi		4·4	209	1 7	− 3	1 55	− 7	—	—	—
Kumagaya		4·7	225	1 13	− 1	2 3	− 7	—	—	—
Maebasi		4·7	229	1 15	+ 1	2 7	− 3	—	—	—
Tokyo Cen. Met. Ob.		4·9	219	1 19	+ 2	2 22	+ 7	—	—	—
Nagano		5·1	237	1 21a	+ 1	2 38	S*	—	—	—
Yokohama		5·2	218	1 21	0	2 19	− 3	—	—	—
Hunatu		5·5	224	(1 25)	0	(2 31)	+ 1	—	—	—
Mera		5·5	213	1 23	− 2	3 20	S_g	—	—	—
Kobu		5·6	226	1 27	0	2 46	S*	—	—	—
Wazima		5·6	249	1 27a	0	2 41	+ 8	—	—	—
Misima		5·8	221	1 29	0	—	—	—	—	—
Osima		5·8	216	1 28	− 1	2 28	−10	—	—	—
Toyama		5·8	242	1 29	0	3 6	S_g	—	—	—
Shizuoka		6·2	223	1 34	− 1	2 44	− 4	—	—	—
Hamamatu		6·7	225	1 41a	− 1	3 16	+16	—	—	—
Gihu		6·8	234	1 42	− 2	3 7	+ 4	—	—	—
Nagoya		6·8	232	1 44	0	3 13	+10	—	—	—
Hatidyozima		7·1	206	1 57	+ 9	2 47	−23	—	—	—
Hikone		7·2	236	1 47a	− 2	3 24	+11	—	—	—
Kameyama		7·4	232	1 53	+ 1	2 45	−33	—	—	—
Kyoto		7·7	236	1 54	− 2	—	—	—	—	—
Owase		8·0	229	2 3	+ 3	—	—	—	—	—
Toyooka		8·0	242	2 1	+ 1	3 43	+10	—	—	—
Osaka		8·1	235	1 55	− 7	3 55	S*	—	—	—
Kobe		8·2	236	2 3	0	3 41	+ 3	—	—	—
Wakayama		8·5	234	1 56	−11	3 56	+11	—	—	—
Sumoto		8·7	236	2 7a	− 3	4 27	S*	—	—	—
Siomisaki		8·8	228	2 47	PPP	—	—	—	—	—
Vladivostok		9·4	296	i 2 18	0	i 4 25	SS	—	—	—
Muroto		9·8	233	2 47	PPP	4 0	−17	—	—	—
Koti		10·0	236	2 26	− 1	4 34	SS	—	—	—
Hirosima		10·3	243	2 1	−31	4 1	−29	—	—	—
Matuyama		10·4	240	2 33	− 1	4 42	+10	—	—	—
Hukuoka		12·1	244	2 56	− 1	5 43	SS	—	—	—
Husan		12·3	254	3 1	+ 2	6 35	L	—	—	(6·6)
Kumamoto		12·4	241	2 58	− 3	—	—	—	—	—
Taikyu		12·4	257	3 1	0	5 59	SSS	—	—	—
Keizyo		13·1	266	3 10	0	—	—	—	—	—
Zinsen		13·4	266	3 11	− 3	—	—	—	—	—
Irkutsk		29·7	309	6 9	− 1	—	—	—	—	—
Manila		31·8	224	e 6 50	+22	13 45	SSS	—	—	—
College		46·1	34	—	—	e 15 12	− 2	—	—	e 21·7
Calcutta	N.	49·5	267	e 14 23	?	—	—	—	—	—
Sverdlovsk		54·3	319	i 9 29	− 1	i 17 6	− 1	—	—	—
Tashkent		54·8	298	e 9 34	0	e 17 12	− 2	—	—	—
Bombay		63·5	273	e 10 33	− 1	e 19 6	− 1	e 12 57	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Moscow		66·2	323	10 49	− 3	19 36	− 4	—	—	—
Pulkovo		66·8	330	10 53	− 3	e 19 46	− 2	—	—	—
Grozny		69·0	309	e 11 9	0	—	—	—	—	—
Sotchi		72·4	312	e 11 29	− 1	—	—	—	—	—
Tinemaha	z.	73·0	56	e 11 43	+10	—	—	—	—	—
Haiwee	N.	73·7	56	e 11 47	+ 9	—	—	—	—	—
Pasadena	z.	74·8	58	e 11 43	− 1	—	—	—	—	—
Mount Wilson	z.	74·8	58	e 11 44	0	—	—	—	—	—
Riverside	z.	75·4	58	i 11 47	0	—	—	—	—	—
Copenhagen		76·3	334	e 11 52	0	21 40	+ 3	—	—	39·3
Potsdam	z.	78·8	332	e 12 5	− 1	—	—	—	—	e 41·3
Hamburg		78·9	334	e 12 7	0	—	—	—	—	e 43·3
Jena		80·5	331	e 11 19?	−56	—	—	—	—	—
Tucson		80·8	56	e 12 10	− 7	—	—	—	—	—
Uccle		83·1	336	e 12 28	− 1	—	—	—	—	48·3
Stuttgart		83·2	331	e 12 30	+ 1	—	—	—	—	41·3
Chur		84·6	331	e 12 36	0	—	—	—	—	—
Zurich		84·6	331	e 12 35	− 1	—	—	—	—	—
Basle		84·8	331	e 12 37	0	—	—	—	—	—
Neuchatel		85·5	331	e 12 40	− 1	—	—	—	—	—
Florissant	E.	87·7	39	—	—	e 23 32	− 1	—	—	—
Clermont-Ferrand		87·9	333	e 12 51	− 2	—	—	—	—	e 55·3
La Paz		144·1	59	e 20 17	[+40]	—	—	—	—	—

Additional readings :—
Hunatu readings have been decreased by 1m.
Bombay ePSEN = +19m.18s.
Tucson i = +12m.32s. and +12m.41s., e = +12m.54s., i = +13m.38s. and +14m.25s., e = +16m.21s.
Long waves were also recorded at Rome, De Bilt, Warsaw, Upsala, Medan, Prague, Kew, and Paris.

March 14d. 16h. 8m. 11s. Epicentre 0°·5S. 119°·2E. Focal depth 0·010.
(as on 1938 May 19d.).

A = −·4879, B = +·8729, C = −·0087 ; δ = +8 ; h = +7 ;
D = +·873, E = +·488 ; G = +·004, H = −·008, K = −1·000.

The focus may be at a greater depth than that adopted.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		9·5	109	i 2 13	− 3	i 3 55	− 6	—	—	—
Batavia		13·6	245	i 2 59	−11	i 5 16	−23	—	—	—
Manila		15·1	8	i 4 23a	+54	i 7 11	+57	—	—	i 11·4
Medan		20·9	282	4 44	+ 8	8 21	+ 2	—	—	—
Calcutta	N.	37·8	309	—	—	i 13 17	+25	—	—	e 16·3
Colombo	E.	39·9	281	8 55	PP	—	—	—	—	—
Brisbane		42·1	132	i 6 31?	?	i 14 43	+47	—	—	—
Riverview		44·7	141	i 12 9	?	i 15 22	+48	—	—	—
Bombay		49·4	296	e 11 20	PP	i 15 30	−10	—	—	—
Irkutsk		54·1	349	e 9 30	+13	—	—	11 26	PP	—
Tashkent		61·4	319	i 10 9	+ 1	e 18 22	+ 2	e 12 2	PP	—
Sverdlovsk		73·8	331	i 11 24	− 2	i 20 41	− 7	i 13 20	PP	—
Ksara		84·7	303	—	—	e 22 21	−21	—	—	—
Mount Wilson	z.	116·9	51	i 18 0	[−34]	—	—	—	—	—
Pasadena	z.	116·9	51	i 18 0	[−34]	—	—	—	—	—
Riverside	z.	117·6	51	e 18 1	[−34]	—	—	—	—	—
Tucson		123·3	50	e 18 10	[−36]	—	—	—	—	—
Harvard	z.	137·1	10	—	—	i 33 41	PPS	e 36 17	?	—
La Paz		161·4	159	e 21 19	PKP_2	—	—	—	—	—

Additional readings :—
Medan iN = +8m.42s.
Brisbane iN = +11m.31s., iE = +11m.37s. and +14m.49s.
Bombay iN = +15m.27s., eEN = +18m.1s., iE = +18m.28s. and +18m.44s.
Tucson i = +18m.14s., e = +18m.56s., i = +20m.36s. and +20m.39s., e = +21m.54s. and +22m,59s.

March 14d. Readings also at 0h. (near Mizusawa), 3h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Santa Barbara, Clermont-Ferrand, and Riverview), 4h. (Toledo, Tucson, and near Mizusawa), 5h. (Tchimkent and near Andijan), 7h. (Tucson), 8h. (near Mizusawa), 13h. (Tucson), 14h. (near Balboa Heights and near Mizusawa), 15h. (Balboa Heights, near Amboina (2), and near Mizusawa), 16h. (near Erevan), 17h. (near Mizusawa and near Tananarive), 19h. (Balboa Heights and near Samarkand), 23h. (Mizusawa).

March 15d. 5h. 46m. 19s. Epicentre 28°·1N. 113°·6W.

Epicentre as quoted by Pasadena.

$A = -\cdot3537$, $B = -\cdot8096$, $C = +\cdot4686$; $\delta = +14$; $h = +2$;
$D = -\cdot916$, $E = +\cdot400$; $G = -\cdot188$, $H = -\cdot429$, $K = -\cdot883$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		4·7	29	i 1 7	− 7	i 1 52	−18	—	—	i 2·1
La Jolla		5·7	327	e 1 37	+ 9	i 2 51	+16	—	—	—
Riverside		6·7	332	e 1 40	− 2	e 3 17	+17	—	—	—
Pasadena		7·1	329	i 1 47	− 1	i 3 12	+ 2	—	—	—
Mount Wilson		7·2	329	e 1 48	− 1	e 3 28	+15	—	—	—
Mazatlan	N.	8·1	126	e 2 7	+ 5	—	—	—	—	—
Haiwee		8·8	336	e 2 9	− 2	i 4 21	+28	—	—	—
Tinemaha		9·8	337	e 2 25	+ 1	e 4 52	+35	—	—	—
Fresno		10·0	330	e 2 30	+ 3	e 3 17	−65	—	—	e 5·2
Lick		11·4	325	e 2 49	+ 2	e 5 25	+29	—	—	e 6·1
Santa Clara		11·6	324	e 3 4	+14	e 5 35	+34	—	—	e 5·9
Branner		11·7	324	(e 2 46)	− 5	e 2 46	P	—	—	e 5·8
Guadalajara	N.	11·9	127	e 3 3	+ 9	—	—	—	—	—
San Francisco	E.	12·1	325	e 3 11	+14	—	—	—	—	e 5·7
Berkeley		12·2	325	e 2 54	− 4	i 5 17	+ 1	e 3 31	PPP	i 5·8
Salt Lake City		12·7	5	i 3 1	− 4	e 6 17	+49	e 3 32	PPP	i 6·9
Ukiah		13·6	326	e 3 16	− 1	e 5 52	+ 2	e 5 58	SS	i 6·6
Denver		13·7	29	e 3 30	+12	e 6 23	SSS	—	—	i 7·1
Logan		13·7	6	i 3 16	− 2	i 5 58	+ 6	3 26	PP	6·8
Ferndale		15·2	328	e 3 47	+ 9	e 6 48	+20	—	—	e 9·2
Tacubaya	N.	15·7	120	e 3 55	+11	—	—	—	—	—
Bozeman		17·6	5	i 4 7	− 1	e 7 29	+ 6	i 4 38	PPP	9·1
Butte		17·9	3	i 4 9	− 3	i 7 41	+11	i 4 29	PP	i 10·4
Vera Cruz	Z.	18·3	116	i 4 19	+ 2	—	—	—	—	—
Lincoln		18·8	45	i 4 19	− 4	i 7 54	+ 4	i 4 23	PP	e 9·3
Spokane	N.	19·8	352	i 4 39	+ 4	e 9 19	SSS	—	—	e 11·2
Seattle		20·7	344	e 5 29	PPP	—	—	—	—	e 11·3
Victoria		21·7	343	4 56	+ 1	9 6	+15	10 5	SSS	e 10·7
Florissant		22·1	56	i 4 56	− 3	i 9 1	+ 3	5 14	PP	i 11·6
St. Louis		22·1	56	i 4 55	− 4	e 8 58	0	—	—	e 10·1
Cape Girardeau		22·2	63	e 4 54	− 6	i 9 3	+ 3	—	—	e 11·5
Merida	E.	22·9	104	i 5 6	0	—	—	—	—	—
Chicago U.S.C.G.S.		25·2	50	i 5 28	− 1	e 9 49	− 3	i 11 17	SSS	e 12·4
Chicago J.S.A.		25·2	50	e 5 28	− 1	i 10 4	+12	e 6 8	PP	e 13·0
Ann Arbor		28·0	52	e 6 5	+10	i 11 5	+27	12 41	SS	i 13·7
Columbia		28·4	69	e 6 0	+ 2	e 10 42	− 3	—	—	e 13·1
Pittsburgh		30·2	57	e 6 11	− 3	e 11 42	+29	—	—	14·7
Toronto		31·5	51	—	—	e 10 51	−43	—	—	—
Buffalo		31·6	53	i 6 25	− 1	i 11 47	+12	i 7 25	PP	e 15·9
Pennsylvania		31·9	57	i 6 29	0	—	—	—	—	15·3
Sitka		33·2	339	i 6 35	− 5	e 11 48	−12	—	—	e 15·4
Philadelphia		33·7	60	e 6 44	− 1	e 12 6	− 2	e 7 50	PP	e 15·5
Ottawa		34·5	49	6 49	− 3	12 16	− 4	14 23	SS	—
Fordham		34·8	58	i 6 52	− 2	e 12 29	+ 4	—	—	i 17·6
Harvard		36·8	56	e 6 59	−12	12 59	+ 3	e 8 36	PP	e 18·7
Shawinigan Falls		36·8	49	e 7 13	+ 2	12 54	− 2	—	—	17·7
Seven Falls		38·3	48	7 22	− 2	13 20	+ 1	8 51	PP	—
East Machias		40·2	53	e 7 40	0	e 13 56	+ 8	i 9 16	PP	e 18·8
Honolulu		40·2	272	e 7 56	+16	e 14 10	+22	e 16 57	SS	e 18·0
College		42·6	340	e 8 0	+ 1	e 14 28	+ 5	—	—	e 17·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Halifax		42·8	54	—	—	e 13 41	PS	—	—	18·7
San Juan		44·4	92	e 8 14	0	14 49	0	i 10 4	PP	e 18·2
Ivigtut		54·0	34	—	—	17 1	− 2	—	—	26·7
Huancayo		54·4	132	e 9 37	+ 6	17 25	+16	e 21 4	SS	e 24·1
La Paz		62·5	130	i 10 33a	+ 5	20 3	?	12 53	PP	31·7
Scoresby Sund		64·4	22	i 10 39	− 1	19 18	0	12 56	PP	e 32·8
Aberdeen		77·5	32	—	—	e 27 2	SS	—	—	e 37·2
Kew		81·5	36	i 12 20	0	—	—	e 15 24	PP	e 33·7
Upsala		83·6	23	e 12 33	+ 1	e 23 1	+ 8	—	—	—
De Bilt		83·9	33	i 12 33k	0	e 22 57	+ 1	i 15 43	PP	e 38·7
Uccle		84·3	35	e 12 34	− 1	e 22 37	[−19]	15 45	PP	e 37·7
Paris		84·6	38	e 12 36	0	23 41?	PS	e 15 52	PP	e 38·7
Copenhagen		84·7	28	e 12 37	0	23 5	+ 1	—	—	36·7
Hamburg		85·6	31	e 12 39	− 2	e 23 59	PS	—	—	e 44·7
Toledo		85·9	47	e 11 34	−69	e 21 49	?	—	—	—
Clermont-Ferrand		86·7	40	e 12 47	0	—	—	—	—	e 44·2
Vladivostok		87·1	318	12 49	0	i 23 24	− 4	—	—	—
Potsdam		87·3	30	i 12 49	− 1	i 23 27	− 2	16 16	PP	e 38·7
Pulkovo		87·5	18	e 12 51	0	e 23 21	[+ 4]	24 35	PS	—
Granada		87·7	50	i 12 52	0	24 21	PS	16 44	PP	47·4
Warsaw		90·7	26	e 13 8a	+ 2	—	—	e 16 40	PP	e 45·7
Moscow		92·9	16	13 16	0	—	—	i 16 55	PP	—
Irkutsk		93·4	338	13 20	+ 2	e 23 54	[+ 2]	e 17 1	PP	—
Rome		94·4	37	13 20	− 3	e 25 49	PS	e 17 19	PP	e 43·7
Sverdlovsk		95·3	3	13 27	0	24 45	+ 4	17 10	PP	—
Baku		110·2	13	19 24	PP	28 40	PS	—	—	—
Tashkent		110·9	357	19 6	PP	28 38	PS	29 50	PPS	—
Agra	E.	124·0	348	—	—	e 41 40	SSS	—	—	—

Additional readings :—
Tucson i = +1m.9s.
Pasadena i = +2m.2s., eSN = +3m.28s.
Berkeley iN = +2m.57s., iZ = +4m.18s., eN = +5m.45s.
Salt Lake City e = +4m.10s., iS = +6m.23s.
Ukiah e = +4m.45s., i = +6m.19s.
Denver eE = +7m.1s.
Logan i = +6m.38s.
Bozeman e = +5m.9s., i = +5m.50s., iS = +7m.35s., i = +8m.32s. and +9m.3s.
Butte i = +4m.55s., e = +8m.44s., i = +9m.4s. and +9m.21s.
Lincoln e = +4m.58s., eS = +7m.47s., e = +8m.58s.
Seattle e = +6m.18s., +6m.31s., +9m.23s., and +9m.42s.
Florissant iPZ = +4m.59s., i = +5m.4s., iN = +8m.56s. and +9m.4s., esSN = +9m.21s.
St. Louis iEN = +4m.58s.
Cape Girardeau iPEN = +4m.58s., eSE = +8m.56s.
Chicago U.S.C.G.S. i = +5m.49s., iS = +10m.0s., i = +10m.19s., e = +11m.34s.
Chicago J.S.A. iP = +5m.33s.
Buffalo i = +6m.29s., SS = +13m.40s.
Pennsylvania e = +14m.41s.
Sitka e = +12m.28s.
Harvard iEZ = +7m.14s.
Fordham eS = +12m.35s.
Seven Falls SSS = +16m.5s.
East Machias e = +9m.6s. and +10m.11s., eSS = +16m.30s., e = +17m.1s.
Honolulu e = +8m.56s., i = +11m.8s., e = +15m.26s.
San Juan e = +9m.9s., +10m.38s., and +13m.53s.
Huancayo e = +10m.48s., +12m.25s., +14m.20s., and +18m.15s., iS_cS = +19m.36s.
Scoresby Sund e = +14m.29s., eSS = +23m.40s.
Aberdeen iN = +32m.25s., iE = +33m.19s.
De Bilt iPS = +23m.50s.
Uccle eSKKSE = +23m.3s., iPSE = +23m.48s.
Potsdam iP_cPE = +12m.58s., iSN = +23m.35s., eS_cSZ = +23m.41s.
Pulkovo S = +23m.36s.
Granada PS = +26m.23s., SS = +31m.41s.
Rome eE = +19m.23s., eN = +20m.57s.
Sverdlovsk PS = +26m.0s.
Long waves were also recorded at Almeria, Coimbra, Wellington, Strasbourg, Bermuda, and Bergen.

March 15d. 19h. 7m. 35s. Epicentre 40°·6N. 139°·3E. Depth of focus 0·025.

Scale IV at Hatinohe, Scale II-III at Obihiro, Morioka, Miyako, Urakawa, and Nemuro. Epicentre 40°·6N. 139°·3E. Macroseismic radius 200-300km. Depth 160km.
See Seismological Bulletin of the Central Met. Obs. Japan for the year 1941. Tokyo 1950, pp. 15-16, macroseismic chart p. 15.

$A = -\cdot5773$, $B = +\cdot4966$, $C = +\cdot6482$; $\delta = +5$; $h = -2$;
$D = +\cdot652$, $E = +\cdot758$; $G = -\cdot491$, $H = +\cdot423$, $K = -\cdot762$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Akita		1·1	145	0 29a	− 1	0 53	0	—	—	—
Aomori		1·2	79	0 26	− 5	0 49	− 6	—	—	—
Hatinohe		1·7	92	0 34a	− 1	0 57	− 6	—	—	—
Mori		1·8	32	0 32a	− 4	0 59	− 6	—	—	—
Mizusawa	N.	2·0	136	i 0 38	0	i 1 5	− 3	—	—	—
Miyako		2·3	115	0 36k	− 6	1 3	−11	—	—	—
Sendai		2·6	152	0 44k	− 1	1 19	− 1	—	—	—
Aikawa		2·7	197	0 48	+ 2	1 24	+ 2	—	—	—
Sapporo		2·9	32	0 48	− 1	1 22	− 4	—	—	—
Hukusima		3·0	162	0 49k	− 1	1 27	− 1	—	—	—
Wazima		3·7	210	1 1	+ 3	1 47	+ 3	—	—	—
Onahama		3·8	160	0 55	− 5	1 19	−27	—	—	—
Utunomiya		4·1	173	1 2	− 1	1 50	− 3	—	—	—
Maebasi		4·2	182	1 5	0	1 53	− 2	—	—	—
Toyama		4·2	203	1 7k	+ 2	1 58	+ 3	—	—	—
Mito		4·3	168	1 3	− 3	1 42	−15	—	—	—
Kakioka		4·4	171	1 8	+ 1	2 0	+ 1	—	—	—
Kumagaya		4·4	180	1 8	+ 1	1 51	− 8	—	—	—
Tukubasan		4·4	172	1 5	− 2	1 55	− 4	—	—	—
Tokyo Cen. Met. Ob.		4·9	176	1 12k	− 2	2 5	− 6	—	—	—
Kohu		5·0	187	1 4	−11	—	—	—	—	—
Tyosi		5·0	165	1 11	− 4	1 59	−14	—	—	—
Yokohama		5·2	178	1 17	− 1	2 16	− 2	—	—	—
Misima		5·4	183	1 13	− 7	2 24	+ 2	—	—	—
Gihu		5·5	202	1 25	+ 3	2 27	+ 2	—	—	—
Mera		5·7	176	1 20	− 4	—	—	—	—	—
Nagoya		5·7	200	1 27	+ 3	2 31	+ 2	—	—	—
Shizuoka		5·7	188	1 34	+10	2 27	− 2	—	—	—
Hikone		5·8	205	1 27a	+ 2	2 36	+ 4	—	—	—
Osima		5·8	179	1 28	+ 3	2 26	− 6	—	—	—
Hamamatu		6·0	192	1 31k	+ 3	—	—	—	—	—
Kameyama		6·1	203	1 34	+ 5	2 45	+ 6	—	—	—
Toyooka		6·1	217	1 34	+ 5	2 44	+ 5	—	—	—
Vladivostok		6·1	297	1 31	+ 2	i 2 45	+ 6	—	—	—
Kyoto		6·2	208	1 34	+ 3	2 44	+ 3	—	—	—
Osaka		6·7	208	1 37	0	2 53	0	—	—	—
Kobe		6·9	211	1 39	− 1	2 56	− 1	—	—	—
Sumoto		7·2	210	1 43k	− 1	3 7	+ 2	—	—	—
Hatidyozima		7·4	177	2 48	+62	—	—	—	—	—
Siomisaki		7·6	203	1 54	+ 5	—	—	—	—	—
Hamada		8·0	227	2 1	+ 7	3 34	+11	—	—	—
Koti		8·4	215	2 7	+ 8	3 34	+ 1	—	—	—
Simidu		9·3	215	2 12	+ 1	3 55	+ 1	—	—	—
Izuka		9·7	228	2 20	+ 4	4 5	+ 2	—	—	—
Kumamoto		10·4	224	2 28a	+ 3	—	—	—	—	—
Miyazaki		10·7	219	2 34	+ 5	4 28	+ 2	—	—	—
Kagosima		11·4	221	3 4	pP	—	—	—	—	—
Irkutsk		26·4	309	—	—	9 42	+ 4	—	—	—
Almata		45·5	295	e 8 6	+ 4	—	—	—	—	—
Andijan		49·6	294	8 37	+ 3	15 30	+ 4	—	—	—
Tchimkent		50·9	296	—	—	15 43	− 1	—	—	—
Sverdlovsk		51·4	317	i 8 48	+ 1	i 15 53	+ 3	—	—	—
Tashkent		51·5	295	e 8 49?	+ 1	i 15 55	+ 3	—	—	—
Samarkand		53·8	294	9 8	+ 3	16 25	+ 2	—	—	—
Baku		64·9	303	—	—	i 18 49	+ 4	e 23 55?	SS	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		75·0	55	e 11 22k	0	—	—	—	—	—
Mount Wilson	z.	77·0	56	i 11 33k	0	—	—	—	—	—
Pasadena	z.	77·0	56	i 11 32	− 1	—	—	—	—	—
Riverside	z.	77·6	56	i 11 36	0	—	—	—	—	—
Tucson		82·8	53	i 12 4	0	—	—	e 12 53	pP	—

Tucson gives also i = +14m.31s.
Long waves were also recorded at Wellington.

March 15d. Readings also at 0h. (Bombay, near Branner, Lick, and Fresno), 3h. (Riverview), 6h. (Tucson), 8h. (Tucson), 9h. (Tucson and near La Paz), 10h. (near Erevan), 12h. (Ksara), 15h. (Balboa Heights and Rome), 16h. (Mount Wilson, Riverside, and Tucson), 20h. (near Mizusawa), 23h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tucson, and near Branner).

March 16d. 7h. 42m. 20s. Epicentre 50°·2N. 157°·3E.

A = −·5929, B = +·2480, C = +·7662; δ = +10; h = −5;
D = +·386, E = +·922; G = −·707, H = +·296, K = −·643.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro		10·6	234	3 32	+56	6 38	L	—	—	(6·6)
Sapporo		13·1	243	3 20	PP	6 56	L	—	—	7·8
Mori		14·1	242	3 33	PP	—	—	—	—	8·6
Mizusawa	E.	15·9	232	e 3 50	+ 3	6 43	− 1	—	—	—
Sendai		16·7	231	3 51	− 6	7 16	SS	—	—	—
Vladivostok		18·8	257	i 4 20	− 3	i 8 18	SS	—	—	—
Nagano		19·3	235	4 26	− 3	8 20	+18	—	—	—
Tokyo Cen. Met. Ob.		19·3	228	e 4 31	+ 2	8 8	+ 6	—	—	—
Yokohama		19·6	228	e 4 33	+ 1	e 8 55	SS	—	—	—
Gihu		21·0	232	4 47	0	8 44	+ 7	—	—	—
Kobe		22·4	234	5 1	− 1	9 13	+ 9	—	—	—
Hamada		23·9	240	5 18	+ 2	9 28	− 2	—	—	—
Matuyama		24·3	237	5 22	+ 2	9 41	+ 4	—	—	—
Zinsen		25·3	253	5 31	+ 1	9 58	+ 4	—	—	—
Hukuoka		25·8	239	5 40	+ 6	10 10	+ 8	—	—	—
Miyazaki		26·5	235	5 42	+ 1	10 15	+ 1	—	—	13·5
College		31·7	42	e 6 27	0	e 11 36	− 1	—	—	i 14·4
Irkutsk		32·6	295	6 37	+ 2	12 9	+18	—	—	—
Zi-ka-wei	N.	32·7	248	e 6 8	−28	12 12	+20	—	—	—
Sitka		38·9	53	e 7 33	+ 4	e 13 31	+ 3	i 9 28	PP	i 17·8
Honolulu		45·5	113	e 10 14	PP	i 15 6	+ 1	i 19 10	SS	i 20·9
Manila		46·1	232	i 8 29	+ 1	15 6	− 8	i 15 29	PS	i 22·6
Semipalatinsk		47·1	302	i 8 35	0	—	—	—	—	—
Victoria		49·3	60	8 57	+ 4	16 1	+ 2	e 11 11	PP	23·7
Seattle		50·4	61	—	—	e 16 30	+16	—	—	e 20·9
Almata		53·0	295	e 9 20	− 1	—	—	—	—	—
Sverdlovsk		53·2	317	i 9 22	0	e 16 43?	− 9	17 23	PS	—
Frunse		54·6	296	e 9 32	0	—	—	—	—	—
Ukiah		55·0	69	e 9 45	+10	i 17 33	+16	—	—	e 23·7
Berkeley		56·4	70	i 9 28	−17	e 17 32	− 4	—	—	e 23·9
Butte		56·7	56	i 9 53	+ 5	e 17 40	0	e 18 4	PS	e 28·4
Branner		56·8	70	e 9 51	+ 3	e 17 41	0	—	—	e 28·2
Santa Clara		57·0	70	e 10 26	+36	e 17 57	+14	—	—	—
Andijan		57·2	295	e 9 50	− 1	—	—	—	—	—
Bozeman		57·8	56	e 9 55	0	i 17 54	0	e 10 48	P_cP	e 25·7
Tchimkent		57·8	299	9 55	0	17 59	+ 5	—	—	—
Tashkent		58·6	298	e 10 1	0	18 5	+ 1	—	—	—
Tinemaha		59·3	68	i 10 6	0	—	—	—	—	—
Scoresby Sund		59·6	0	i 10 10	+ 2	i 18 23	+ 6	e 18 43	PS	e 27·9
Calcutta	N.	59·7	269	i 10 20a	+11	i 18 37	+18	e 22 30	SS	e 29·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Logan		59·9	60	e 10 11	+ 1	e 18 27	+ 6	—	—	e 29·5
Haiwee	N.	60·2	68	e 10 15	+ 3	—	—	—	—	—
Salt Lake City		60·6	61	e 10 20	+ 5	i 18 31	+ 1	e 22 28	SS	e 26·8
Dehra Dun	N.	60·8	283	e 7 20?	?	e 18 24?	− 9	—	—	e 33·8
Samarkand		61·0	298	e 10 19	+ 1	—	—	—	—	—
Mount Wilson		61·4	70	i 10 18	− 2	—	—	—	—	—
Pasadena		61·4	70	i 10 19	− 1	i 18 41	+ 1	—	—	e 26·1
Riverside	Z.	62·0	70	e 10 21	− 3	—	—	—	—	—
Pulkovo		62·3	333	e 10 25	− 1	e 18 40	−12	—	—	—
Agra	E.	63·0	280	i 10 27a	− 4	19 16	+15	23 18	SS	—
Moscow		63·2	327	10 32	0	18 56	− 7	—	—	—
Upsala		65·5	339	10 47	0	19 39	+ 7	e 23 52	SS	e 32·7
Tucson		67·1	67	i 10 57	0	i 19 53	+ 2	i 13 42	PP	e 29·1
Ivigtut		67·1	13	—	—	20 0	+ 9	—	—	33·7
Bergen		67·5	346	i 11 1	+ 1	19 57	+ 1	—	—	37·7
Medan		67·6	248	11 29	+28	21 12	PPS	—	—	e 37·7
Lincoln		68·6	51	e 11 11	+ 4	e 20 7	− 2	e 25 36	SS	e 32·0
Grozny		69·4	314	i 11 16	+ 4	20 20	+ 2	—	—	—
Hyderabad		69·7	273	11 13	− 1	20 22	0	11 42	PcP	31·4
Copenhagen		70·5	340	e 11 18a	0	20 33	+ 1	20 45	PS	33·7
Batavia		71·1	234	11 17	− 5	20 38	0	—	—	—
Warsaw		71·4	334	11 25a	+ 1	e 20 46	+ 4	e 29 36	SSS	e 37·7
Aberdeen		71·6	349	i 20 56	S	(i 20 56)	+12	(i 28 43)	SSS	38·4
Sotchi		71·9	318	i 11 25	− 2	—	—	—	—	—
Chicago U.S.C.G.S.		72·1	46	e 11 33	+ 5	i 20 48	− 2	e 16 0	PPP	i 34·8
Bombay		72·2	278	i 11 30k	+ 1	e 20 59	+ 8	i 21 28	PS	35·7
Erevan		72·4	312	11 34?	+ 4	—	—	—	—	—
Theodosia		72·6	321	e 11 32	+ 1	—	—	—	—	—
Heligoland		72·9	343	e 11 34	+ 1	e 21 4	+ 5	—	—	e 38·9
Hamburg		73·0	341	i 11 34	+ 1	e 21 9	+ 9	—	—	e 39·7
Simferopol		73·2	322	e 11 40	+ 5	—	—	—	—	—
Florissant		73·3	50	i 11 44	+ 9	e 21 10	+ 6	i 11 50	pP	i 35·3
Potsdam		73·4	339	i 11 36a	0	i 21 3	− 2	i 11 44	PcP	e 31·7
St. Louis		73·5	50	i 11 33	− 3	i 21 4	− 2	i 11 56	pP	e 32·2
Yalta		73·5	321	e 11 38	+ 2	—	—	—	—	—
Ottawa		74·3	36	11 39	− 2	21 5	−10	29 40?	SSS	37·7
Shawinigan Falls		74·3	33	11 40	− 1	21 13	− 2	—	—	—
Toronto		74·3	39	—	—	e 21 13	− 2	e 26 4?	SS	37·7
Seven Falls		74·5	32	11 52?	+10	21 17	0	29 58?	SSS	37·7
Cape Girardeau		74·9	50	e 11 42	− 2	e 21 18	− 4	e 21 37	sS	—
Stonyhurst		74·9	348	—	—	21 29	+ 7	—	—	40·7
Buffalo		75·1	39	i 11 46	0	—	—	—	—	—
Jena		75·1	338	i 11 46	0	i 21 52	+28	—	—	e 40·7
Prague		75·2	336	11 44a	− 2	e 21 4	−21	—	—	e 34·7
De Bilt		75·4	343	i 11 50a	+ 3	i 21 32	+ 5	e 14 40	PP	e 40·7
Kodaikanal	E.	75·7	269	e 11 50	+ 1	e 22 5	PS	—	—	41·6
Bucharest		76·6	326	e 11 56	+ 2	e 21 54	+14	e 14 48	PP	31·2
Colombo	E.	76·7	265	11 55	0	21 50	+ 9	—	—	42·1
Pittsburgh		76·7	42	e 11 55	0	i 21 38	− 3	—	—	—
Oxford		76·8	346	e 11 18	−37	21 46	+ 4	—	—	e 41·7
Uccle		76·8	344	i 11 56a	+ 1	21 46	+ 4	14 45	PP	e 36·7
Kew		76·9	346	i 11 57a	+ 1	21 41	− 3	e 14 51	PP	—
Brisbane		77·4	175	—	—	i 21 40	− 9	—	—	—
East Machias		77·7	31	e 12 8	+ 8	e 21 50	− 2	i 14 37	PP	e 33·9
Stuttgart		77·7	339	i 12 1	+ 1	e 21 55	+ 3	i 12 11	PcP	e 41·7
Belgrade		78·2	330	e 12 1	− 2	e 22 23	PS	i 12 13	PcP	e 42·7
Strasbourg		78·2	340	e 12 3	0	e 22 7	+10	e 22 59	PS	50·7
Harvard	Z.	78·3	35	i 12 2	− 1	—	—	i 14 56	PP	e 42·7
Fordham		78·8	38	e 12 4	− 2	e 22 12	+ 8	e 15 9	PP	—
Paris		79·0	343	e 12 10a	+ 3	—	—	e 15 2	PP	42·7
Halifax		79·1	28	e 18 10?	?	—	—	—	—	40·7
Philadelphia		79·1	39	e 12 10	+ 2	e 21 58	− 9	e 27 11	SS	e 38·6
Sofia		79·1	327	e 12 10	+ 2	e 22 10	+ 3	e 22 46	PS	37·8
Zurich		79·1	339	e 12 8	0	—	—	—	—	—
Basle		79·2	340	e 12 8	0	e 22 21	+13	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chur	79·4	338	e 12 11	+ 2	—	—	—	—	—
Triest	79·4	335	i 12 10	+ 1	i 22 24	+14	i 15 26	PP	—
Neuchatel	79·9	340	e 12 14	+ 2	—	—	—	—	—
Columbia	81·6	46	—	—	e 22 33	0	e 27 54	SS	39·5
Ksara	81·6	313	e 12 30	+ 9	—	—	—	—	—
Clermont-Ferrand	81·8	342	i 12 24a	+ 2	—	—	—	—	e 42·7
Rome	83·2	335	i 12 30a	+ 1	i 22 54	+ 5	i 23 39	PS	e 42·5
Riverview	83·8	185	e 7 5	?	e 22 57	+ 2	—	—	e 42·5
Helwan	87·0	315	e 12 49	+ 1	23 30	+ 3	e 16 13	PP	—
Toledo	88·8	346	i 12 57	0	i 23 30	[+ 5]	—	—	i 40·8
Coimbra	89·1	349	e 12 24	−34	23 48	+ 2	—	—	44·8
Lisbon	90·7	349	—	—	23 51	−10	25 21	PS	45·1
Granada	91·4	345	i 13 23a	+14	i 23 53	[+12]	17 0	PP	49·8
Almeria	91·5	343	e 13 21	+11	24 1	− 7	13 30	pP	52·7
Wellington	92·4	167	17 0	PP	23 45	[− 2]	—	—	43·7
San Fernando	92·5	347	i 23 53	S	(23 53)	[+ 6]	—	—	e 51·7
Christchurch	94·3	169	13 39	+16	24 14	[+17]	17 30	PP	46·7
San Juan	101·7	42	e 16 6	?	e 25 28	− 7	e 33 21	SSP	40·5
Huancayo	122·7	67	e 20 24	PP	e 26 5	[+ 6]	e 30 40	PS	e 51·9
La Paz	130·5	63	19 12	[− 1]	—	—	i 22 40	SKP	75·2
Rio de Janeiro	148·4	37	—	—	e 26 40	[−12]	—	—	—

Additional readings :—
College e = +7m.27s., iS = +11m.39s., e = +12m.4s., esS = +12m.16s., e = +13m.31s.
Sitka iP = +7m.37s., i = +11m.3s., +14m.45s., and +16m.53s.
Honolulu e = +13m.2s., +11m.55s., and +14m.41s., i = +15m.14s.
Manila iE = +21m.26s.
Victoria SS = +19m.40s.?
Sverdlovsk SS = +20m.52s.?
Ukiah e = +10m.50s. and +16m.45s.
Berkeley ePE = +9m.44s., ePN = +9m.49s., eE = +9m.58s., eN = +10m.10s., eE = +17m.36s., eZ = +17m.39s.
Butte e = +16m.8s. and +23m.2s.
Bozeman e = +10m.12s. and +14m.4s., i = +18m.5s., esS = +18m.57s., i = +20m.5s., iSS = +21m.45s.
Scoresby Sund e = +15m.27s., i = +20m.0s., e = +24m.9s.
Logan P = +10m.15s.
Upsala eS?N = +19m.21s., eSSE = +24m.4s.
Tucson i = +11m.0s., +12m.5s., and +15m.47s., e = +19m.9s., eSS = +24m.6s., i = +27m.24s.
Medan PE = +11m.46s.
Lincoln e = +21m.13s. and +28m.28s.
Hyderabad S_eSEN = +20m.58s., SSE = +24m.55s.
Warsaw eE = +20m.52s., eZ = +31m.8s. and +37m.10s.
Aberdeen S is given as iPEN, SSS as iSE, iSSSE = +33m.0s.
Chicago U.S.C.G.S. e = +21m.34s., eSS = +26m.15s., e = +29m.4s.
Bombay ePSN = +21m.36s.
East Machias e = +12m.22s., +22m.35s., +25m.29s., +29m.7s., +29m.57s., and +32m.55s.
Hamburg eN = +21m.16s.
Florissant iN = +11m.56s., iZ = +12m.4s. and +12m.15s., iN = +21m.22s., esSN = +21m.27s., eE = +21m.53s.
Potsdam iPE = +11m.39s., iP_ePEZ = +11m.48s., iN = +12m.34s., and +14m.32s., iE = +17m.15s. and +21m.16s., iPSN = +21m.42s., iPPSNZ = +21m.51s.
Cape Girardeau eE = +12m.7s. and +12m.27s., ePSE = +21m.57s.
Buffalo i = +12m.41s.
Jena eE = +11m.59s.
Bucharest eE = +16m.50s.
Oxford eP = +11m.18s.
Uccle PSN = +22m.23s., eSSN = +27m.36s.
Kew iP_ePZ = +12m.8s., ePPPEZ = +17m.10s.?, eSS = +27m.40s.?, eSSS = +30m.40s.?
Belgrade e = +13m.25s. and +23m.1s.
Harvard iZ = +13m.14s.
Paris e = +12m.20s. and +33m.29s.
Philadelphia e = +18m.8s., +30m.30s., and +31m.21s.
Triest iPS = +23m.0s.
Rome iZ = +12m.42s., iE = +13m.24s., iZ = +13m.43s., iE = +25m.34s., iN = +25m.46s., +26m.45s., and +27m.38s., eSSSE = +31m.58s., eQE = +39m.29s.
Helwan SKKSEN = +24m.16s., SE = +24m.55s.
Coimbra PN = +12m.58s., ePE = +13m.36s., SN = +23m.40s.
Lisbon SE = +24m.16s., E = +27m.39s.
Granada PS = +24m.34s.

Continued on next page.

Almeria PP = +16m.50s., PPP = +18m.53s., S_cS = +24m.13s., PS = +25m.13s., PPS = +25m.45s., SS = +29m.59s., SSS = +33m.34s.
Wellington SKKS = +24m.10s.
Christchurch S = +25m.11s., Q = +40m.11s.
San Juan ePKP = +18m.57s., esSS = +34m.23s.
Huancayo e = +24m.22s. and +28m.32s., eSS = +37m.24s., i = +40m.30s. and +43m.17s.
La Paz ePKP = +19m.58s., PPN = +23m.48s.
Long waves were also recorded at Tananarive, Bagneres, and Algiers.

March 16d. 16h. 35m. 9s. Epicentre 38°·4N. 12°·1E.

Intensity VI at Trapani, IV-V at Palermo, IV at Isle of Ustica. Epicentre 38°26′N. 12°07′E., depth 87km.

Domenico di Filippo.
Studio microsismico del terremoto del basso Tirreno del 16 Mars, 1941, XIX.
Estratto dal " Bolletino della Societa Sismolog. Italiana," Vol. XXXIX, No. 3-4, Anno 1941 Public. de l'Institut Géophysique de Rome, No. 86.

A = +·7682, B = +·1647, C = +·6186 ; δ = −8 ; h = −1 ;
D = +·210, E = −·978 ; G = +·605, H = +·130, K = −·786.

Pasadena quotes U.S.S.R. Depth 100km.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rome		3·6	2	i 0 56k	− 2	i 1 35	− 7	i 1 3	P*	i 1·9
Marseilles		7·0	134	e 1 51	+ 5	i 3 6	− 2	i 2 5	P*	—
Algiers		7·3	261	1 51	+ 1	3 51	S*	—	—	—
Chur		8·7	348	e 2 10	0	e 5 0	S_g	—	—	—
Belgrade		9·0	42	i 2 11	− 2	e 4 0	+ 2	e 2 59	PPP	e 10·2
Neuchatel		9·4	340	e 2 20	+ 2	1 5 12	S_g	—	—	—
Zurich		9·4	344	e 2 18k	0	e 4 43	S*	—	—	—
Kalossa		9·6	30	e 3 26	+65	—	—	—	—	e 6·2
Ravensburg		9·6	349	e 2 22	+ 1	e 4 9	− 3	—	—	e 5·0
Sofia		9·6	60	e 2 20	− 1	e 4 5	− 7	i 5 18	S_g	—
Basle		9·7	342	2 23	+ 1	e 5 7	S_g	—	—	—
Clermont-Ferrand		9·9	321	i 2 25	0	i 5 19	S_g	—	—	e 5·7
Ebingen		10·1	347	e 2 28k	0	e 4 23	− 1	—	—	e 4·9
Bagneres		10·2	301	e 2 29	− 2	e 4 27	0	e 4 45	SS	—
Budapest		10·4	27	e 2 41	PP	e 5 16	SSS	—	—	5·9
Stuttgart		10·6	350	i 2 35a	− 1	e 4 32	− 5	—	—	e 5·6
Strasbourg		10·7	345	e 2 36	− 2	e 4 36	− 3	i 2 53	PP	i 6·3
Almeria		11·6	269	i 2 57	+ 7	i 6 5	+64	15 21	S_cS	7·6
Prague		11·8	7	e 2 48?	− 5	e 5 17?	+11	—	—	e 5·9
Bucharest		12·1	57	e 2 54	− 3	e 5 7	− 7	e 3 0	PP	5·7
Granada		12·5	262	i 3 5	+ 3	i 5 28	+ 5	3 21	sP	7·5
Jena	N.	12·5	359	e 3 0	− 2	e 5 51	SSS	—	—	e 6·3
Paris		12·5	330	3 3?	+ 1	e 6 34	L	—	—	(e 6·5)
Toledo		12·6	282	e 3 5	+ 2	i 5 41	SS	—	—	—
Uccle		13·6	339	i 3 17k	0	5 52	+ 2	i 3 23	PP	6·9
Potsdam		14·0	2	e 3 21	− 1	i 6 17	SS	i 3 36	PP	i 6·9
De Bilt		14·5	343	i 3 31k	+ 3	e 6 21	+10	i 3 42	PP	e 6·9
San Fernando		14·7	267	—	—	e 6 20	+ 4	—	—	e 7·9
Hamburg		15·2	357	e 3 40	+ 2	e 6 48	SS	—	—	e 8·1
Warsaw		15·2	21	e 3 37k	− 1	—	—	e 3 50	PP	e 8·1
Kew		15·7	332	i 3 43k	− 1	e 6 45	+ 6	i 3 54	PP	e 8·4
Coimbra		16·0	283	3 48	0	7 1	SS	e 4 1	PP	8·0
Heligoland	N.	16·1	350	e 3 51?	+ 2	e 7 3	SS	—	—	e 9·1
Oxford		16·3	329	i 3 51k	− 1	6 57	+ 4	e 4 17	PPP	8·7
Lisbon		16·6	278	4 1	+ 5	7 28	SS	—	—	8·2
Copenhagen		17·3	1	e 4 4k	0	7 16	0	7 25	SS	7·9
Yalta		17·6	63	4 5	− 3	—	—	—	—	—
Simferopol		17·7	61	4 8	− 2	—	—	—	—	—
Helwan		18·0	115	e 4 10	− 3	7 48	+16	—	—	14·3
Stonyhurst		18·4	333	e 4 19	+ 1	i 8 10	SS	—	—	9·9

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Theodosia		18·6	63	4 22	+ 1	7 48	+ 2	—	—	—
Ksara		19·7	99	e 4 36	+ 2	e 8 26	+16	—	—	—
Edinburgh		20·3	336	4 50	+10	8 21	− 2	—	—	e 10·9
Aberdeen		21·0	342	i 4 51	+ 4	i 8 45	+ 8	—	—	—
Sotchi		21·4	68	4 49	− 2	—	—	—	—	—
Upsala		21·8	9	4 54	− 2	8 54	+ 2	—	—	e 11·9
Bergen		22·4	353	e 5 1	− 1	i 9 12	+ 8	—	—	e 12·9
Piatigorsk		23·9	67	5 17	+ 1	9 41	+11	—	—	—
Moscow		24·3	37	5 17	− 3	9 39	+ 2	5 37	pP	—
Pulkovo		24·3	24	i 5 17	− 3	i 9 37	0	e 5 47	sP	—
Erevan		25·1	76	5 27	− 1	—	—	—	—	—
Grozny		25·8	69	5 35	+ 1	10 3	+ 1	—	—	—
Sverdlovsk		36·6	44	e 7 9	− 1	e 12 51	− 2	—	—	—
Scoresby Sund		36·7	342	e 7 18	+ 8	e 12 13	−41	i 8 48	PP	e 14·8
Samarkand		42·1	71	e 7 54	− 1	—	—	—	—	—
Tashkent		43·3	68	i 8 4	− 1	e 14 23	−10	8 28	pP	—
Tchimkent		43·3	66	8 2	− 3	—	—	—	—	—
Andijan		45·7	68	e 8 24	0	—	—	—	—	—
Almata		48·2	63	e 8 46	+ 2	—	—	—	—	—
Agra	E.	55·5	82	e 10 8	+29	17 14	−10	—	—	—
Bombay	N.	55·7	93	e 10 5	+25	—	—	—	—	—
East Machias		57·5	305	—	—	e 21 56	SS	—	—	e 22·8
Irkutsk		62·0	45	—	—	e 18 47	− 1	—	—	—
Ottawa		62·6	309	e 10 26	− 2	e 18 57?	+ 1	—	—	28·9
Fordham		63·6	303	e 10 38	+ 3	e 19 18	+10	—	—	—
Buffalo		65·8	307	i 10 46	− 3	—	—	—	—	—
Calcutta	N.	65·9	80	—	—	e 19 51	+14	—	—	—
Colombo	E.	68·4	100	e 10 21	−45	—	—	—	—	—
Florissant	N.	75·3	309	—	—	i 21 31	+ 5	—	—	—
St. Louis		75·3	309	e 11 37	−10	e 21 22	− 4	—	—	—
Vladivostok		82·2	41	12 23	− 1	e 22 33	− 6	—	—	—
Victoria		84·9	333	—	—	e 23 16	+10	—	—	37·8
Tucson		91·9	315	i 13 12	+ 1	e 24 19	+ 8	i 13 36	pP	e 45·4
Tinemaha	Z.	92·0	323	e 13 17	+ 5	—	—	—	—	—
La Paz		92·3	252	e 40 1	?	—	—	—	—	50·1
Riverside	Z.	94·1	321	e 13 25	+ 3	—	—	—	—	—
Mount Wilson	Z.	94·2	321	e 13 21	− 1	—	—	—	—	—
Pasadena	Z.	94·3	321	e 13 25	+ 2	—	—	—	—	—

Additional readings :—
Rome iE = +59s. and +1m.6s., iEN = +1m.48s.
Marseilles i = +1m.58s., e = +2m.26s. and +3m.28s., i = +4m.31s., +5m.35s., +6m.19s. and +7m.16s., iP_cP = +9m.43s.
Algiers i = +4m.49s.
Belgrade ePPS = +3m.41s., eSS = +5m.21s., e = +5m.58s. and +7m.21s.
Kalossa ePN = +3m.29s.
Ravensburg eSN = +3m.56s.
Bagneres e = +3m.27s. and +5m.37s.?
Budapest eE = +3m.41s. and +4m.9s., eN = +4m.14s., eSN = +5m.21s.
Strasbourg i = +3m.17s.
Almeria P_cS = +11m.36s.
Bucharest S = +4m.54s. True S given as SS.
Granada sS = +6m.8s.
Uccle iN = +4m.3s., SE = +5m.56s.
Potsdam iPNZ = +3m.25s.a, iZ = +3m.31s., iPPPEN = +3m.47s., iE = +3m.55s., iN = +4m.59s., iSSEN = +6m.24s.
Kew iZ = +4m.16s., eQEN = +7·4m.
Copenhagen ? = +4m.8s.
Stonyhurst iP = +4m.25s.
Upsala ePE = +4m.58s.
Scoresby Sund e = +7m.31s., i = +9m.20s., e = +10m.38s. and +13m.21s.
Tashkent sP = +8m.40s.
Bombay eE = +10m.8s.
Buffalo i = +10m.53s.
St. Louis eE = +11m.52s.
Tucson i = +13m.17s. and +13m.59s., ePP = +17m.6s., e = +29m.28s. and +33m.57s.
Long waves were also recorded at Berkeley, Huancayo, San Juan, Harvard, Bozeman, Butte, Ukiah, Sitka, and Ivigtut.

March 16d. 18h. 48m. 16s. Epicentre 38°·4N. 12°·1E. (as at 16h.).

A = +·7682, B = +·1647, C = +·6186 ; δ = −8 ; h = −1 ;

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Rome	3·6	2	i 0 56k	− 2	i 1 35	− 7	i 1 1	P*	—
Marseilles	7·0	134	—	—	e 3 7	− 1	—	—	—
Chur	8·7	348	e 2 9	− 1	e 4 48	S_g	—	—	—
Belgrade	9·0	42	—	—	e 4 24	S*	e 5 16	S_g	e 11·8
Neuchatel	9·4	340	e 2 21	+ 3	—	—	—	—	—
Zurich	9·4	344	e 2 18	0	—	—	—	—	—
Sofia	9·6	60	e 2 26	+ 5	e 6 8	?	—	—	—
Basle	9·7	342	e 2 24	+ 2	—	—	—	—	—
Clermont-Ferrand	9·9	321	e 2 24	− 1	—	—	—	—	e 5·7
Stuttgart	10·6	350	e 2 36	0	e 4 24	−13	—	—	e 5·9
Strasbourg	10·7	345	e 2 37	− 1	—	—	—	—	e 6·7
Almeria	11·6	269	e 2 18	−32	—	—	—	—	5·7
Prague	11·8	7	—	—	(e 4 44?)	−22	—	—	e 4·7
Bucharest	12·1	57	e 2 30	−27	—	—	e 3 4	PP	6·0
Granada	12·5	262	3 4k	+ 2	5 46	SSS	—	—	6·3
Jena	12·5	359	e 3 2	0	—	—	—	—	e 6·7
Paris	12·5	330	e 2 56?	− 6	—	—	—	—	5·7
Toledo	12·6	282	e 2 59	− 4	—	—	—	—	—
Uccle	13·6	339	e 3 16	− 1	e 5 50	0	—	—	e 6·7
Potsdam	14·0	2	e 3 24	+ 2	e 6 20	SS	e 3 44	PP	7·7
De Bilt	14·5	343	i 3 35a	+ 7	—	—	—	—	e 7·7
Hamburg	15·2	357	e 3 41	+ 3	e 6 49	SS	—	—	e 8·4
Warsaw	15·2	21	e 3 38	0	e 6 37	+ 9	—	—	e 8·2
Kew	15·7	332	i 3 53k	+ 9	e 6 46	+ 7	—	—	e 7·7
Coimbra	16·0	283	3 46	− 2	7 10	SS	—	—	7·8
Heligoland	16·1	350	e 3 56	+ 7	—	—	—	—	e 9·0
Lisbon	16·6	278	4 4	+ 8	—	—	—	—	9·3
Copenhagen	17·3	1	e 4 8	+ 4	7 26	+10	—	—	8·7
Stonyhurst	18·4	333	8 8	SS	10 53	L	—	—	(10·9)
Aberdeen	21·0	342	—	—	8 26	−11	—	—	e 12·1
Upsala	21·8	9	e 4 57	+ 1	e 8 55	+ 3	—	—	e 11·7
Bergen	22·4	353	e 5 1	− 1	e 9 9	+ 5	—	—	e 12·7
Moscow	24·3	37	5 18	− 2	9 40	+ 3	e 5 38	pP	—
Pulkovo	24·3	24	e 5 18	− 2	e 9 40	+ 3	—	—	—
Sverdlovsk	36·6	44	e 7 8	− 2	e 12 48	− 5	—	—	—
Tashkent	43·3	68	e 8 4	− 1	e 14 19	−14	—	—	—

Additional readings :—
Rome iEZ = +1m.46s.
Belgrade e = +5m.44s. and +7m.20s.
Bucharest eE = +2m.48s. and +3m.0s., eEN = +3m.26s.
Potsdam iSN = +6m.23s.?, iSSSZ = +6m.54s.
Lisbon PE = +4m.7s.
Long waves were also recorded at Bagneres.

March 16d. 20h. 54m. 57s. Epicentre 7°·5N. 73°·8E.

Epicentre given by Bombay.

A = +·2766, B = +·9522, C = +·1297 ; δ = +1 ; h = +7 ;
D = +·960, E = −·279 ; G = +·036, H = +·125, K = −·992.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Kodaikanal	E.	4·5	53	i 1 15	+ 4	i 2 11	+ 6	—	—	3·0
Colombo	E.	6·0	96	1 30	− 2	2 37	− 6	—	—	3·7
Hyderabad		10·9	24	2 39	− 1	4 24	−20	—	—	6·4
Bombay		11·4	355	i 2 53	+ 6	i 5 2	+ 6	e 3 6	PP	5·6
Agra	E.	19·9	13	4 40	+ 4	8 21	+ 6	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Calcutta	N.	20·5	43	i 5 14?k	+32	e 9 17?	SSS	—	—	e 11·4?
Medan		25·1	98	5 24	− 4	—	—	—	—	—
Tashkent		33·9	354	e 7 0	+13	e 12 41	+30	—	—	—
Helwan	E.	45·6	305	—	—	e 15 3	− 3	—	—	—
Sverdlovsk		50·3	351	i 9 0	0	16 17	+ 4	—	—	—
Moscow		56·0	337	e 9 39	− 4	e 17 40	+10	—	—	—
Pulkovo		61·6	337	e 10 18	− 4	e 18 40	− 3	—	—	—
Rome		63·8	313	e 9 57	−39	e 19 5	− 6	—	—	—
Copenhagen		67·9	328	11 0	− 2	20 1	0	—	—	35·0
Basle		68·5	319	e 11 0	− 6	—	—	—	—	—
Neuchatel		68·8	318	e 11 3	− 5	—	—	—	—	—

Additional readings :—
Rome eE = +10m.41s., eEN = +10m.58s., eE = +11m.27s., +18m.19s., and +21m.13s.
Long waves were also recorded at De Bilt and Potsdam.

March 16d. Readings also at 3h. (near Balboa Heights), 6h. (near Branner, Lick, near Bucharest and Sofia), 7h. (La Paz, La Plata, Huancayo, Pasadena, Mount Wilson, Riverside, Tinemaha, Tucson, and near Andijan), 9h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 12h. (Bermuda), 13h. (near Mizusawa), 14h. (Huancayo and La Paz), 15h. (La Paz), 18h. and 19h. (Rome), 20h. (near Ottawa and Rome), 21h. (Bermuda and near Medan), 22h. (Balboa Heights and near Rome (2)), 23h. (College, Riverside, Haiwee, Mount Wilson, Pasadena, Tinemaha, Tucson, and Balboa Heights).

March 17d. Readings at 0h. (near Balboa Heights (2)), 1h. (3) and 2h. (Rome), 3h. (Rome, Balboa Heights, and near Belgrade), 4h. (Manila and Zurich), 5h. (Haiwee, La Jolla Mount Wilson, Pasadena, Riverside, and Tucson), 8h. (Adelaide, Brisbane, Riverview, Perth, Arapuni, Christchurch, Wellington, Pasadena, Riverside, Mount Wilson, Tinemaha, Tucson, near Almeria, Algiers, Coimbra, Granada, Toledo, Rome, and De Bilt ; these readings do not appear to belong to the same shock), 11h. (Riverview, Balboa Heights, near Almata and Andijan), 15h. (Rome and Tucson), 17h. (Andijan, Sverdlovsk, near Batavia, and near Medan), 20h. (Tucson), 21h. (Ferndale and Ksara), 23h. (Copenhagen, Tucson, and near Mizusawa).

March 18d. Readings at 0h. (near Branner, Huancayo, and La Paz), 1h. (San Juan), 3h., (near Lick (2) and near Rome), 4h. (near Lick), 6h. (Brisbane, Riverview, Arapuni and Wellington), 7h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 10h. (Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 11h. (Huancayo, near La Paz, La Plata, Tucson, Mount Wilson, Pasadena, Riverside, Tinemaha, and near Apia), 13h. (Tucson), 17h. (near Ksara), 18h. (Tucson (2)), 20h. (Stuttgart, near Basle, Chur, Neuchatel, and Zurich).

March 19d. 1h. 31m. 40s. Epicentre 10°·5N. 44°·5E. (as on 1938, March 11d.).

$A = +\cdot7015$, $B = +\cdot6893$, $C = +\cdot1811$; $\delta = +3$; $h = +6$;
$D = +\cdot701$, $E = -\cdot713$; $G = +\cdot129$, $H = +\cdot127$, $K = -\cdot984$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		
		°	°	m. s.	s.	m. s.	s.	m.	s.	
Helwan		22·8	330	4 59	− 6	e 9 6	− 5	—		—
Ksara		24·5	342	e 5 20	− 2	e 9 35	− 5	—		—
Baku		30·1	8	e 6 15	+ 2	e 11 12	0	—		—
Samarkand		35·3	31	e 7 1	+ 2	—	—	—		—
Agra	E.	35·6	57	e 7 4	+ 3	—	—	—		—
Tashkent		37·7	31	i 7 20	+ 1	13 8	− 2	—		—
Tchimkent		38·5	30	i 7 23	− 3	—	—	—		—
Andijan		38·9	34	e 7 35	+ 6	—	—	—		—
Moscow		45·5	355	e 8 20	− 3	—	—	—		—
Sverdlovsk		47·9	12	e 8 40	− 2	—	—	—		—
Pulkovo		50·3	351	e 8 59	− 1	e 16 3	−10	—		—
Toledo		51·9	313	i 9 11	− 1	—	—	i 11 11		PP

No additional readings.

March 19d. 2h. 44m. 53s. Epicentre 39°·6N. 143°·5E. (as on 14d.).

Scale V at Miyako; Scale IV at Hatinohe, Morioka, Mizusawa, Aomori, and Sakata. Macroseismic radius 200-300km. Seismological Bulletin of Central Met. Obs., Japan, 1941. Tokyo, 1950.

$A = -\cdot6211$, $B = +\cdot4596$, $C = +\cdot6349$; $\delta = +10$; $h = -2$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Miyako		1·2	272	0 23k	− 1	0 36	− 5	—	—	—
Hatinohe		1·8	302	0 29	− 3	0 47	− 9	—	—	—
Mizusawa	E.	1·9	256	i 0 33	− 1	i 0 54	− 5	—	—	—
Aomori		2·4	300	0 39a	− 2	1 9	− 3	—	—	—
Sendai		2·4	237	0 42k	+ 1	1 9	− 3	—	—	—
Akita		2·6	273	0 49k	+ 5	1 16	− 1	—	—	—
Hukusima		3·0	232	0 49k	− 1	1 24	− 3	—	—	—
Mori		3·3	320	0 54	+ 1	1 8	?	—	—	—
Onahama		3·3	217	0 53	0	1 49	S_g	—	—	—
Sapporo		3·8	335	1 1k	0	2 1	S_g	—	—	—
Mito		4·0	218	1 5	+ 1	2 4	S*	—	—	—
Nemuro		4·1	22	1 2a	− 3	1 46	− 9	—	—	—
Utunomiya		4·2	224	1 7	0	2 4	S*	—	—	—
Kakioka		4·3	219	1 9	+ 1	—	—	—	—	—
Tukubasan		4·3	220	1 8	0	1 56	− 4	—	—	—
Aikawa		4·4	251	1 9	− 1	2 7	+ 5	—	—	—
Tyosi		4·4	209	1 11	+ 1	2 25	S_g	—	—	—
Kumagaya		4·7	225	1 15	+ 1	2 17	+ 7	—	—	—
Maebasi		4·7	229	1 16	+ 2	2 11	+ 1	—	—	—
Tokyo		4·9	219	1 19	+ 2	2 37	S_g	—	—	—
Nagano		5·1	237	1 22	+ 2	2 22	+ 2	—	—	—
Hunatu		5·5	224	1 26	+ 1	2 32	+ 2	—	—	—
Mera		5·5	213	1 28	+ 3	2 56	S_g	—	—	—
Kohu		5·6	226	1 39	P*	3 11	S_g	—	—	—
Wazima		5·6	249	1 25	− 2	2 35	+ 2	—	—	—
Misima		5·8	221	1 30	+ 1	2 51	S*	—	—	—
Osima		5·8	216	1 30	+ 1	2 33	− 5	—	—	—
Toyama		5·8	242	1 42	P*	2 54	S*	—	—	—
Shizuoka		6·2	223	1 43	P*	3 19	S_g	—	—	—
Hamamatu		6·7	225	1 36	− 6	2 43	−17	—	—	—
Gihu		6·8	234	1 43	− 1	3 12	+ 9	—	—	—
Nagoya		6·8	232	1 45	+ 1	3 13	+10	—	—	—
Hatidyozima		7·1	206	1 52	+ 4	3 40	S*	—	—	—
Hikone		7·2	236	1 48	− 1	3 18	+ 5	—	—	—
Kameyama		7·4	232	1 58	+ 6	3 50	S*	—	—	—
Kyoto		7·7	236	1 57	+ 1	3 25	0	—	—	—
Owase		8·0	229	2 0	0	4 5	S*	—	—	—
Toyooka		8·0	242	2 0	0	3 41	+ 8	—	—	—
Osaka		8·1	235	2 11	+ 9	3 39	+ 4	—	—	—
Kobe		8·2	236	2 11	+ 8	3 47	+ 9	—	—	—
Wakayama		8·5	234	2 7	0	3 41	− 4	—	—	—
Siomisaki		8·8	228	2 14	+ 3	4 32	S*	—	—	—
Muroto		9·8	233	2 46	+22	5 3	S_g	—	—	—
Koti		10·0	236	2 36	+ 9	—	—	—	—	—
Hamada		10·2	246	2 36	+ 5	4 48	+21	—	—	—
Hirosima		10·3	243	2 36	+ 4	5 59	?	—	—	—
Izuka		11·9	244	2 29	−25	5 38	+29	—	—	—
Hukuoka		12·1	244	3 18	PPP	—	—	—	—	—
Husan		12·3	254	3 3	+ 4	7 15	L	—	—	(7·2)
Miyazaki		12·4	236	3 0	− 1	6 40	L	—	—	(6·7)
Kumamoto		12·4	241	3 2	+ 1	5 50	+29	—	—	—
Taikyu		12·4	257	3 2	+ 1	5 32	+11	—	—	—
Keizyo		13·1	266	3 11	+ 1	6 7	SSS	—	—	—
Zinsen		13·4	266	3 13	− 1	—	—	—	—	—
Miyakozima		21·3	231	4 34	−16	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sintiku		24·0	239	5 41	+24	—	—	—	—	—
Taito		25·3	236	5 34	+ 4	—	—	—	—	—
Irkutsk		29·7	309	6 7?	− 3	11 19	+13	—	—	—
Manila		31·8	224	i 7 43	+75	11 34	− 4	—	—	—
Almata		48·8	298	e 8 56	+ 7	—	—	—	—	—
Calcutta	N.	49·5	267	e 9 8	+14	e 16 2	0	—	—	—
Andijan		52·9	296	e 9 20	0	e 16 46	− 2	—	—	—
Sitka		53·2	42	—	—	e 17 0	+ 8	—	—	e 22·8
Medan		54·1	240	9 49	+20	17 1	− 4	—	—	31·1
Tchimkent		54·2	299	i 9 23	− 6	i 17 0	− 6	—	—	—
Sverdlovsk		54·3	319	i 9 29	− 1	i 17 3	− 4	—	—	—
Tashkent		54·8	298	—	—	e 17 7	− 7	—	—	—
Agra	E.	55·0	278	9 33	− 2	17 9	− 8	19 12	S_eS	—
Batavia		56·8	225	—	—	17 37	− 4	—	—	—
Samarkand		57·1	296	e 9 51	+ 1	17 34	−11	—	—	—
Bombay	N.	63·5	273	e 10 32	− 2	e 18 59	− 8	e 11 23	PP	—
Colombo	E.	65·4	258	—	—	e 19 37	+ 7	—	—	—
Moscow		66·2	323	10 48	− 4	19 32	− 8	—	—	—
Pulkovo		66·8	330	e 10 52	− 4	—	—	e 20 14	PS	—
Baku		68·1	305	e 11 5	+ 1	19 57	− 6	—	—	—
Scoresby Sund		69·7	356	—	—	e 21 1	PPS	—	—	e 37·4
Berkeley	E.	69·9	57	—	—	e 20 29	+ 5	—	—	e 29·8
Piatigorsk		70·2	311	e 11 26	+ 9	—	—	—	—	—
Sotchi		72·4	312	e 11 25	− 5	—	—	—	—	—
Tinemaha	Z.	73·0	56	i 11 35a	+ 2	—	—	—	—	—
Santa Barbara	Z.	73·6	59	i 11 39	+ 2	—	—	—	—	—
Theodosia		73·9	315	e 11 37	− 2	—	—	—	—	—
Mount Wilson	Z.	74·8	58	i 11 45a	+ 1	—	—	—	—	—
Pasadena		74·8	58	i 11 44a	0	—	—	—	—	e 32·0
Riverside	Z.	75·4	58	i 11 48	+ 1	—	—	—	—	—
La Jolla	Z.	76·2	59	e 11 50	− 2	—	—	—	—	—
Copenhagen		76·3	334	e 11 51	− 1	—	—	—	—	40·1
Potsdam		78·8	332	i 12 4k	− 2	i 22 14	+10	—	—	e 42·1
Jena	N.	80·5	331	e 12 14	− 1	—	—	—	—	—
Tucson		80·8	56	i 12 18	+ 1	e 22 38	+13	e 16 25	PP	—
Uccle		83·1	336	e 12 26	− 3	e 22 38	−10	—	—	e 42·1
Stuttgart	Z.	83·2	331	e 12 29	0	—	—	—	—	—
Triest		83·9	327	e 10 45	?	e 23 29	+33	e 22 15	SKS	—
Kew		84·0	338	12 31	− 2	—	—	—	—	e 37·1
Zurich		84·6	331	e 12 33	− 3	—	—	—	—	—
Basle		84·8	331	e 12 35	− 2	—	—	—	—	—
Paris		85·4	335	e 12 39	− 1	—	—	—	—	45·1
Neuchatel		85·5	331	e 12 39	− 2	—	—	—	—	—
Helwan		86·5	306	12 45	− 1	23 7	−15	23 44	SKKS	—
Rome		87·5	326	e 12 49	− 2	e 23 31	0	e 16 13	PP	—
Florissant		87·7	39	e 12 53	+ 1	i 23 31	− 2	—	—	—
St. Louis		87·9	39	i 12 51	− 2	i 23 34	− 1	—	—	—
Clermont-Ferrand		87·9	333	e 12 52	− 1	—	—	—	—	e 53·1

Additional readings :—
Berkeley eN = +20m.33s.
Potsdam eE = +22m.25s.
Tucson i = +12m.55s. and +13m.10s., e = +13m.52s.
Rome iSKSE = +23m.13s., ePSEN = +24m.35s.
St. Louis eSEN = +23m.30s.
Long waves were also recorded at College, Bozeman, San Juan, and other European stations.

March 19d. 21h. 23m. 46s. Epicentre 12°·0N. 91°·9W. (as on 1938 April 12d.).

$A = -·0324$, $B = -·9779$, $C = +·2066$; $\delta = +2$; $h = +6$;
$D = -·999$, $E = +·033$: $G = -·007$, $H = -·206$, $K = -·978$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Merida	Z.	9·2	13	2 13	− 3	—	—	—	—	—
Tacubaya	N.	10·2	317	e 2 16	−15	—	—	—	—	—
Cape Girardeau		25·3	6	e 5 39	+ 9	e 10 13	+19	—	—	—
San Juan		25·7	73	e 8 33	?	—	—	—	—	e 13·6
Tucson		26·6	323	i 5 38	− 4	i 10 5	−11	i 6 24	PP	i 13·3
St. Louis		26·6	3	i 5 40	− 2	i 10 11	− 5	i 6 3	PP	—
Florissant	N.	26·7	3	i 5 43	0	e 10 13	− 4	—	—	—
Riverside	Z.	31·9	317	e 6 37	+ 8	—	—	—	—	—

Additional readings :—
Cape Girardeau ePN = +5m.51s., eN = +6m.2s., eEN = +10m.49s.
San Juan e = +12m.51s.
Tucson i = +5m.51s. and +6m.4s., e = +7m.9s., eP_cP = +8m.28s., i = +11m.22s.
St. Louis eE = +10m.18s., isSN = +10m.31s., eE = +11m.14s.
Long waves were also recorded at Huancayo, Berkeley, Pasadena, Salt Lake City, and Potsdam.

March 19d. Readings also at 1h. (Ksara and Tucson), 2h. (Rome), 3h. (Toledo), 4h. (Sitka, Manila, and near Amboina (2)), 6h. and 7h. (near Mizusawa), 9h. (near Grozny and near Manila), 10h. (near Mizusawa), 13h. (Bucharest, Sofia, and near Balboa Heights), 14h. (St. Louis, Rome, and near Taihoku), 15h. and 16h. (near Balboa Heights), 17h. (La Paz), 19h. (Agra, Calcutta, Samarkand, Tashkent, and Manila), 20h. (Bombay, De Bilt, Potsdam, Warsaw, and Paris), 21h. (Tucson), 22h. (Huancayo, San Juan, Tucson, Mount Wilson, Pasadena, Riverside, Tinemaha, and near Balboa Heights), 23h. (Balboa Heights, Tucson (2), De Bilt, Paris, and Potsdam).

March 20d. Readings at 1h. (Aberdeen), 3h. (Balboa Heights (2), Tucson, Mount Wilson, Pasadena, Riverside, Tinemaha, and Riverview), 5h. (near Amboina), 6h. (Rome, Warsaw, Batavia, Brisbane, Perth, and Riverview), 12h. (Basle, De Bilt, Paris, Uccle, Granada, Rome, Huancayo, and La Paz), 13h. (Warsaw), 17h. (Sydney), 19h. (Tucson), 22h. (Scoresby Sund).

March 21d. 7h. 58m. 0s. Epicentre 7°·0N. 34°·6W.

$A = +·8171$, $B = -·5636$, $C = +·1211$; $\delta = -4$; $h = +6$;
$D = -·568$, $E = -·823$; $G = +·100$, $H = -·057$, $K = -·993$.

Pasadena quotes J.S.A. depth 250km., U.S.C.G.S. depth 100km.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		32·7	294	i 6 35	− 1	e 11 55	+ 3	i 7 28	PP	e 13·8
Bermuda		37·8	317	i 7 16	− 4	e 13 9	− 2	i 8 45	PP	e 15·9
Lisbon	N.	39·0	32	7 29	− 1	i 13 31	+ 2	9 0	PP	18·6
San Fernando		39·1	37	e 7 33	+ 2	e 13 32	+ 1	—	—	18·6
Coimbra		40·5	33	e 7 35	− 7	13 52	0	9 29	PP	18·2
La Paz		40·6	235	i 7 45k	+ 2	i 13 56	+ 2	9 12	PP	20·6
Granada		41·2	39	i 7 53a	+ 5	i 14 15	+13	9 44	PP	21·3
Almeria		41·7	40	e 7 54	+ 2	i 14 9	− 1	9 55	P_cP	20·5
Toledo		42·7	36	i 8 1	+ 1	i 14 22	− 2	i 8 48	pP	—
Balboa Heights		44·5	277	i 8 8	− 7	—	—	—	—	—
Huancayo		44·7	246	i 8 17	+ 1	i 14 38	−16	i 10 1	PP	i 21·8
Algiers		45·3	44	i 8 22	+ 1	15 1	− 1	10 13	PP	22·0
La Plata	N.	47·1	207	8 32	− 3	15 31	+ 3	19 0	SS	23·6
East Machias		47·2	329	i 8 34	− 2	e 15 29	0	i 10 28	PP	e 19·2
Harvard		48·1	324	i 8 43	0	15 35	− 7	—	—	e 23·0
Fordham		48·6	321	i 8 47	0	i 15 51	+ 2	i 10 41	PP	—
Philadelphia		48·9	320	i 8 50	0	i 15 56	+ 3	e 10 42	PP	e 23·7
Columbia		50·5	310	e 9 1	− 1	e 16 15	− 1	—	—	e 23·1
Clermont-Ferrand		50·5	34	e 9 2	0	e 16 23	+ 7	—	—	e 24·3
Seven Falls		50·6	330	9 4	+ 2	16 26	+ 9	19 54?	SS	22·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Shawinigan Falls		51·2	329	9 8	+ 1	16 29	+ 4	—		—	—
Paris		52·1	31	9 13	− 1	16 39	+ 1	20 10		SS	24·0
Ottawa		52·2	325	9 14	− 1	16 42	+ 3	22 0?		SSS	24·0
Pittsburgh		52·4	318	i 9 17	+ 1	e 16 45	+ 3	—		—	—
Oxford		52·4	26	—	—	i 16 44	+ 2	—		—	e 23·0
Kew		52·6	27	i 9 16	− 1	e 16 45	+ 1	e 20 16		SS	e 24·5
Buffalo		52·8	321	i 9 19	0	—	—	—		—	—
Stonyhurst		53·4	23	11 46	PP	i 16 58	+ 3	—		—	23·5
Neuchatel		53·4	35	e 9 22	− 2	e 16 55	0	—		—	—
Toronto		53·5	322	17 1	PPS	—	—	—		—	23·0
Basle		54·0	35	e 9 27	− 2	e 17 4	− 2	—		—	—
Rome		54·2	44	i 8 30	−59	i 17 8	+ 2	11 31		PP	i 25·5
Uccle		54·3	29	e 9 29	− 1	i 17 8	+ 1	—		—	e 25·0
Zurich		54·5	35	e 9 30	− 2	e 17 10	0	—		—	—
Strasbourg		54·7	33	e 9 29	− 4	e 17 3	−10	13 3		PPP	e 27·0
Chur		54·8	36	e 9 32	− 2	—	—	—		—	—
Edinburgh		54·8	22	—	—	17 15	+ 1	—		—	—
Ivigtut		55·0	352	9 39	+ 4	17 20	+ 3	—		—	—
De Bilt		55·5	29	i 9 39a	0	i 17 27	+ 3	e 11 41		PP	e 25·0
Stuttgart		55·6	35	e 9 38	− 2	i 17 26	+ 1	e 11 49		PP	e 25·5
Aberdeen		56·1	21	17 31	S	(17 31)	− 1	—		—	i 26·1
Triest		56·7	39	i 9 48	0	i 17 40	0	i 11 53		PP	—
Heligoland		58·1	28	e 10 4	+ 6	e 18 2	+ 4	—		—	e 27·0
Jena	N.	58·1	34	e 10 0?	+ 2	e 18 0	+ 2	e 12 12?		PP	e 26·0
Cape Girardeau		58·2	308	i 9 56	− 2	e 17 56	− 3	12 3		PP	—
Chicago U.S.C.G.S.		58·3	316	e 9 54	− 5	i 18 3	+ 2	e 21 51		SS	e 24·9
Hamburg		58·7	30	e 10 2	0	e 18 6?	0	e 12 17		PP	e 27·1
St. Louis		59·1	312	e 10 4	0	i 18 13	+ 2	18 24		PS	—
Florissant		59·2	312	e 10 5	0	i 18 14	+ 2	e 10 54		PcP	—
Prague		59·2	35	e 10 1	− 4	e 18 8	− 4	—		—	e 28·0
Potsdam		59·6	32	i 10 9k	+ 1	i 18 19	+ 2	13 56		PPP	e 24·0
Budapest	E.	60·8	39	e 10 4	−12	e 18 30	− 3	—		—	34·0
Kecskemet	Z.	61·0	40	e 10 18	0	—	—	12 30		PP	—
Copenhagen		61·1	29	e 10 16	− 2	18 39	+ 2	—		—	—
Sofia		61·9	46	e 10 25	+ 1	e 18 51	+ 4	23 0		SS	30·3
Warsaw		63·9	35	e 10 40	+ 3	19 16	+ 4	e 12 48		PP	e 30·0
Scoresby Sund		63·9	4	e 10 46	+ 9	19 16	+ 4	12 23		PP	26·5
Bucharest		64·4	44	e 10 18	−22	e 19 12	− 6	12 45		PP	31·0
Lincoln		64·6	313	i 10 38	− 3	e 23 21	SS	—		—	e 32·6
Helwan		65·7	62	i 10 47k	− 1	19 30	− 4	13 12		PP	—
Upsala		65·7	27	e 10 45?	− 3	i 19 34	0	e 24 0		SS	33·0
Ksara		69·9	58	e 11 17?	+ 2	e 20 31	+ 7	—		—	—
Simferopol		70·0	46	e 11 2	−13	—	—	—		—	—
Yalta		70·0	46	e 11 4	−11	—	—	—		—	—
Theodosia		71·0	46	11 21	− 1	—	—	—		—	—
Pulkovo		71·5	29	e 11 25	+ 1	e 20 43	0	—		—	—
Moscow		74·2	34	11 41	+ 1	21 16	+ 2	—		—	—
Tucson		74·7	302	i 11 44	+ 1	e 21 28	+ 9	i 14 25		PP	e 33·4
Bozeman		75·6	316	i 11 47	− 1	i 21 31	+ 2	e 26 17		SS	32·8
Logan		75·6	313	11 50	+ 2	21 35	+ 6	e 14 55		PP	40·1
Salt Lake City		75·8	311	e 11 51	+ 1	e 21 34	+ 3	—		—	e 33·3
Butte		76·6	317	e 12 42	+48	e 21 44	+ 4	—		—	e 32·3
Erevan		77·2	51	12 1	+ 4	—	—	—		—	—
Grozny		78·2	48	12 8	+ 5	—	—	—		—	—
Riverside		80·1	304	i 12 14k	+ 1	—	—	—		—	—
Pasadena		80·8	304	i 12 19k	+ 2	—	—	—		—	e 41·0
Baku		81·3	51	e 12 29	+ 9	i 22 37	+ 7	—		—	—
Lick		83·5	308	e 12 34	+ 3	—	—	—		—	—
Berkeley		83·9	308	i 12 14	−19	e 23 2	+ 6	i 15 25		PP	e 38·6
Victoria		84·0	319	12 35	+ 2	23 5	+ 8	—		—	40·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sverdlovsk		87·1	34	e 12 49	0	23 31	+ 3	—	—	—
Sitka		89·9	328	e 14 12	?	i 24 0	+ 6	e 23 29	SKS	e 37·6
College		93·3	337	e 13 34	+16	e 24 39	+15	e 23 52	SKS	e 42·5
Tchimkent		95·7	46	e 13 34	+ 5	i 24 8	[+ 3]	—	—	—
Tashkent		95·7	48	13 34	+ 5	24 6	[+ 1]	17 22	PP	—
Andijan		98·1	47	e 14 1	+21	26 33	PS	—	—	—
Almata		100·6	43	e 14 42	+51	—	—	—	—	—
Bombay		104·0	68	e 18 16	PP	i 24 52	[+ 6]	i 27 34	PS	54·0
Agra	E.	106·6	59	e 18 33	PP	24 55	[− 2]	i 28 2	PS	—
Kodaikanal	E.	110·2	68	e 19 0?	PP	i 28 35	PS	—	—	—
Irkutsk		111·4	25	19 18	PP	25 53	PS	—	—	—
Colombo		113·2	79	e 19 36	PP	—	—	—	—	55·6
Medan		132·2	78	19 46	[+30]	i 22 48	?	—	—	—
Christchurch		136·5	209	11 28	?	33 2	PS	22 12	PP	64·7
Manila		147·6	48	i 19 49a	[+ 6]	34 0	PSKS	—	—	—
Riverview		152·6	191	e 19 45	[− 6]	—	—	—	—	e 70·9

Additional readings :—
San Juan i = +8m.33s., eS? = +11m.40s.
Bermuda e = +7m.24s., ePP = +8m.53s., e = −12m.42s.
Lisbon PPZ = +9m.7s., SSN = +16m.23s.?
Coimbra ePN = +7m.41s.?, +7m.55s., +10m.53s., and +14m.1s., SS = +16m.57s., SSS = +17m.11s.
La Paz ipPN = +8m.25s., isPN = +8m.41s., iN = +9m.30s., ipPP = +9m.46s., isPP = +10m.21s., isSN = +15m.30s., iScS = +15m.56s., SSN = +17m.14s., SSS = +18m.0s.
Granada pP = +8m.31s., PPP = +11m.0s., sS = +15m.10s.
Almeria PcS = +13m.47s., ScS = +17m.49s.
Balboa Heights i = +12m.2s.
Huancayo isP = +8m.58s., i = +9m.24s., +10m.37s., and +11m.31s., iSS = +18m.9s.
Algiers SS = +18m.5s.
La Plata PcPN = +10m.12s., PcPE = +10m.18s., SE = +15m.18s., ScSE = +18m.18s.
East Machias iS = +15m.32s., i = +18m.32s.
Fordham i = +8m.53s. and +18m.43s.
Philadelphia e = +11m.27s., +13m.26s., +16m.48s., and +18m.42s.
Columbia e = +18m.55s.
Seven Falls SSS = +21m.18s.?
Ottawa e = +19m.4s.
Kew iZ = +9m.28s., ePPPEN = +12m.18s., eEN = +17m.13s., e = +18m.26s., eQEN = +22·5m.
Rome isPNZ = +11m.0s., iZ = +11m.42s., iN = +11m.48s., iN = +11m.59s., iPPP = +12m.28s., i = +12m.48s., iNZ = +13m.54s., iN = +13m.57s., iZ = +14m.0s. and +14m.14s., i = +14m.40s., iPSEN = +17m.42s., iZ = +17m.48s. and +18m.33s., i = +19m.27s., iZ = +20m.33s., iSSEN = +20m.54s., iSSS = +22m.25s., iZ = +23m.43s.
Strasbourg i = +14m.25s.
De Bilt iP = +9m.43s.k
Aberdeen iE = +19m.34s., iSEN = +25m.20s.
Triest ipP = +10m.22s., iSKS = +19m.43s.
Cape Girardeau ePPPE = +13m.18s., eN = +19m.46s.
Hamburg eZ = +18m.21s.
St. Louis eN = +16m.19s., eE = +16m.57s.
Florissant iZ = +10m.18s., epPZ = +11m.5s., esSN = +19m.56s.
Potsdam iE = +10m.23s., iZ = +18m.15s., iSN = +18m.22s., iSKSE = +20m.7s., iSSE = +22m.25s.
Budapest eE = +17m.0s.
Warsaw eE = +13m.15s., SZ = +19m.19s., eE = +23m.33s., eE = +26m.43s.
Scoresby Sund e = +11m.0s., i = +20m.39s., eSS = +24m.26s.
Bucharest ePcPE = +10m.43s., ePcPN = +10m.50s., SSE = +22m.50s.
Lincoln i = +20m.33s.
Helwan pPZ = +11m.6s., PPPEZ = +14m.54s., esSE = +20m.10s., eE = +24m.0s.
Upsala eN = +28m.0s., eE = +29m.18s.?
Tucson i = +12m.20s., +12m.50s., +13m.38s., +16m.20s., +17m.36s., and +29m.54s.
Bozeman epP = +12m.4s., e = +12m.20s., e = +22m.32s.
Logan e = +12m.58s., S = +21m.55s.
Salt Lake City e = +24m.48s.
Berkeley iE = +12m.36s., eN = +16m.48s., iE = +18m.48s., eEN = +19m.36s., eE = +23m.47s., iZ = +24m.21s.
Sitka e = +18m.6s., eSP = +25m.15s., e = +27m.5s., and +33m.20s.
College e = +29m.31s.
Bombay eN = +20m.36s., iE = +20m.39s.
Agra SSE = +33m.51s., SSSE = +37m.33s.
Christchurch e = +41m.4s.
Manila iEN = +44m.57s.
Riverview iZ = +19m.53s.
Long waves were also recorded at Seattle, Ukiah, and Wellington.

March 21d. Readings also at 0h. (near Rome), 1h. (Harvard), 3h. (Riverview, Tucson, Samarkand, and near Andijan), 5h. (Zurich, Neuchatel, and Basle), 14h., 15h., 16h., and 17h. (Balboa Heights), 22h. (near Rome (2), near Andijan, and Samarkand), 23h. (Almata, Oaxaca, and Puebla).

March 22d. 14h. Undetermined shock.

Batavia PZ =27m.31s., iE =32m.8s., iN =32m.19s.
Manila eP =29m.24s., SN =33m.52s., iN =35m.27s.
Medan PE =29m.32s., PN =29m.42s., iE =34m.40s., iN =35m.8s.
Adelaide ePN =39m.23s., iPP =39m.34s., iSN =42m.57s., SS =43m.17s., P_cP =43m.33s., i =44m.13s., iL =45·6m.
Bombay eE =41m.17s., LE =50·0m.
Riverview eN =41m.24s.?, eL?N =43·7m.
Pasadena iP =43m.7s.a.
Haiwee ePZ =43m.8s.
Tinemaha ePZ =43m.8s.
Mount Wilson iPZ =43m.9s.a.
Riverside ePZ =43m.9s.
Tucson i =43m.22s.
La Paz eP =44m.13s.
Harvard iNZ =45m.52s.
Christchurch eNW =53m.4s., eZ =58m.32s., iSL =60m.14s.
Wellington S? =55m.0s., L =60·0m.
Long waves were also recorded at Arapuni and Huancayo.

March 22d. 22h. 6m. 3s. Epicentre 33°·5N. 138°·2E. Depth of Focus 0·040. (as on 1937, January 30d.).

Scale II-III at Kakioka, Utunomiya, and Katuura.
Epicentre 33°·4N. 138°·0E. Macroseismic radius 200-300km., depth 320km.
See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1941, Tokyo, 1950, p. 18. Macroseismic chart, p. 18.

A = −·6229, B = +·5570, C = +·5493 ; δ = −2 ; h = +1 ;
D = +·667, E = +·745 ; G = −·409, H = +·366, K = −·836.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hatidyozima	1·4	106	0 44	+ 2	1 21	+ 7	—	—	—
Osima	1·6	38	0 46	+ 3	1 24	+ 8	—	—	—
Misima	1·7	21	0 46	+ 2	—	—	—	—	—
Owase	1·8	289	0 44	0	1 21	+ 2	—	—	—
Nagoya	1·9	329	0 49	+ 4	1 25	+ 5	—	—	—
Kameyama	2·0	313	0 46a	0	1 23	+ 1	—	—	—
Mera	2·0	44	0 47	+ 1	1 27	+ 5	—	—	—
Siomisaki	2·0	269	0 45	− 1	1 24	+ 2	—	—	—
Hunatu	2·1	13	0 48	+ 1	1 48	+25	—	—	—
Kohu	2·1	8	0 49a	+ 2	1 29	+ 6	—	—	—
Gihu	2·2	328	0 49a	+ 1	1 28	+ 3	—	—	—
Yokohama	2·3	32	0 51a	+ 3	1 30	+ 4	—	—	—
Hikone	2·4	318	0 49a	0	1 31	+ 3	—	—	—
Osaka	2·4	298	0 50	+ 1	1 30	+ 2	—	—	—
Tokyo, Cen. Met. Ob.	2·5	30	0 53	+ 3	1 35	+ 5	—	—	—
Kobe	2·8	295	0 55	+ 2	1 32	− 3	—	—	—
Kumagaya	2·8	20	0 53	0	1 37	+ 2	—	—	—
Sumoto	2·9	287	0 52	− 2	1 35	− 1	—	—	—
Maebasi	3·0	14	0 56	+ 1	—	—	—	—	—
Tyosi	3·1	44	0 58	+ 2	1 43	+ 3	—	—	—
Kakioka	3·2	30	0 56	− 1	1 41	− 1	—	—	—
Nagano	3·2	0	0 57a	0	—	—	—	—	—
Tukubasan	3·2	30	0 56	− 1	—	—	—	—	—
Toyama	3·3	346	0 58	0	—	—	—	—	—
Utunomiya	3·3	24	0 58	0	1 45	+ 1	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mito		3·4	31	1 0	+ 1	1 49	+ 3	—	—	—
Toyooka		3·5	308	0 58	− 2	1 45	− 3	—	—	—
Koti		3·9	272	1 2	− 3	1 53	− 3	—	—	—
Wazima		4·0	346	1 6	0	—	—	—	—	—
Onahama		4·1	32	1 44	+37	—	—	—	—	—
Hukusima		4·6	21	1 12	− 1	2 9	− 1	—	—	—
Matuyama		4·6	276	1 10k	− 3	2 6	− 4	—	—	—
Sendai		5·2	24	1 17	− 3	2 21	− 1	—	—	—
Mizusawa	N.	6·1	22	1 26	− 5	2 38	− 4	—	—	—
Aomori		7·6	12	1 48	− 1	—	—	—	—	—

March 22d. Readings also at 1h. (Harvard), 2h. (Samarkand and Andijan (2)), 7h. (Riverview), 8h. (Piatigorsk, Grozny, and Tucson), 10h. (Port au Prince), 12h. (Tucson), 15h. (Mizusawa), 16h. (near Rome, Coimbra, and Granada), 18h. (Harvard), 19h. (Wellington, Arapuni, and Huancayo), 20h. (College and Granada), 21h. (Balboa Heights).

March 23d. 9h. 0m. 27s. Epicentre 17°·1N. 83°·9W.

A = +·1016, B = −·9509, C = +·2922 ; δ = −9 ; h = +5 ;
D = −·994, E = −·106 ; G = +·031, H = −·291, K = −·956.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Merida	E.	6·7	306	1 33?	− 9	—	—	—	—	—
Balboa Heights		9·1	153	2 14	0	—	—	—	—	—
San Juan		17·0	82	i 4 2	− 1	—	—	—	—	e 9·2
Cape Girardeau		20·8	348	i 4 42	− 3	e 8 55	SS	i 4 50	PP	—
Florissant		22·4	346	i 4 59	− 3	9 3	− 1	i 5 15	PP	—
Bermuda		22·9	45	e 5 4	− 2	e 9 12	− 1	—	—	e 10·7
Philadelphia		24·0	16	e 5 16	− 1	e 9 32	0	—	—	e 12·7
Chicago		24·9	352	e 5 27	+ 1	e 9 56	+ 9	—	—	e 13·8
Fordham		25·2	18	i 5 31	+ 2	i 9 59	+ 7	—	—	e 12·6
Tucson		28·7	307	i 6 0	− 1	—	—	6 52	PP	—
Ottawa		29·0	11	6 1	− 3	10 57	+ 3	—	—	15·6
Huancayo		30·2	164	—	—	e 11 7	− 6	—	—	e 14·1
Seven Falls		31·8	17	—	—	e 12 3?	+25	—	—	17·6
Riverside	Z.	34·4	306	e 6 51	0	i 9 27	?	—	—	—
Pasadena	Z.	35·0	306	i 6 57	+ 1	—	—	—	—	—
Haiwee	Z.	35·6	310	e 7 0	− 1	i 9 30	?	—	—	—
Tinemaha	Z.	36·2	310	e 7 7	+ 1	9 33	?	—	—	—
La Paz		36·8	154	7 25	+14	—	—	—	—	—

Additional readings :—
Florissant eZ = +5m.6s., iNZ = +5m.9s., iSE = +9m.7s.
Philadelphia e = +12m.0s.
Tucson i = +6m.15s., e = +6m.19s., i = +6m.26s., +6m.42s., and +7m.9s.
Long waves were also recorded at Columbia and Scoresby Sund.

March 23d. Readings also at 1h. (Tucson), 2h. (Riverview), 4h. (Rome), 6h. (Warsaw), 10h. (Balboa Heights), 11h. (Calcutta and Bombay), 13h. (near Lick and Tananarive), 17h. (Coimbra, Kew, Paris, De Bilt, Bermuda, and Scoresby Sund), 18h. (Tananarive), 20h. (near Lick), 21h. (Tucson), 23h. (Balboa Heights).

March 24d. Readings at 1h. (Bombay), 3h. (Tucson and Riverview), 5h. (Warsaw), 6h. (near Mizusawa), 7h. (Sofia and Bucharest), 8h. (La Paz), 11h. (Helwan, Ksara, and Bombay), 14h. (Frunse and Tchimkent), 17h. (near Samarkand and Tchimkent), 18h. (Erevan, near Grozny, Piatigorsk), 21h. (Harvard).

March 25d. 1h. Two local shocks recorded at stations of Imperial University, Tokyo. Epicentres attributed respectively 35°·45N. 137°·07E. and 35°·39N. 140°·17E.

Koyama (I) P = 32m.40s., S = 32m.43s. ; (II) P = 36m.33s., S = 36m.48s.
Kamakura (I) P = 32m.40s., S = 32m.46s. ; (II) P = 36m.33s., S = 36m.43s.
Mitaka (I) P = 32m.40s., S = 32m.47s. ; (II) P = 36m.33s., S = 36m.44s.
Titibu (I) P = 32m.40s., S = 32m.47s. ; (II) P = 36m.33s., S = 36m.48s.
Komaba (I) P = 32m.40s., S = 32m.48s. ; (II) P = 36m.33s., S = 36m.43s.
Kiyosumi (I) P = 32m.40s., S = 32m.56s. ; (II) P = 36m.33s., S = 36m.42s.
Togane (I) P = 32m.40s., S = 32m.56s. ; (II) P = 36m.33s., S = 36m.41s.
Tukubasan (I) P = 32m.40s., S = 32m.57s. ; (II) P = 36m.33s., S = 36m.43s.
Tokyo Imp. Univ. (I) P = 32m.41s., S = 32m.50s. ; (II) P = 36m.33s., S = 36m.42s.
Susaki (I) P = 32m.42s., S = 32m.53s. ; (II) P = 36m.39s., S = 36m.54s.

March 25d. Readings also at 1h. (Oaxaca, Tacubaya, and near Sofia), 3h. (La Paz and Riverview), 5h. (Almeria, Coimbra, Granada, Toledo, Hamburg, Paris, Kew, Potsdam, Warsaw, Sofia, and near Rome), 6h. (near Granada, Rome, and near Manila), 7h. (San Juan and Warsaw), 8h. (Rome), 11h. (Coimbra, Almeria, Granada, Toledo, Potsdam, Rome, Kew, and Warsaw), 15h. (Manila), 16h. (Balboa Heights), 17h. (Manila), 19h. (La Paz and near Balboa Heights), 20h. (Tucson), 22h. (Florissant), 23h. (Tucson, near Fresno, and Lick).

March 26d. Readings at 0h. (Balboa Heights), 2h. (Bucharest), 3h. (Riverview), 4h. (Batavia, Perth, Riverview, Tucson, Kew, and near Erevan), 5h. (Haiwee, Mount Wilson, Pasadena, Riverside, Huancayo, Agra, and Bombay), 7h. (near Branner), 8h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 9h. (near Mizusawa), 10h. (near Branner), 11h. (La Paz), 14h. (Tucson, Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and Balboa Heights), 15h. (near Branner (4) and near Berkeley), 16h. (Frunse, Samarkand, Tashkent, Tchimkent, and near Andijan), 17h. (near Tananarive), 20h. (near Berkeley).

March 27d. Readings at 0h. (Mount Wilson and Tucson), 1h. (Balboa Heights), 2h. (Tucson, Mount Wilson, Pasadena, Riverside, and near Samarkand), 3h. (Riverview), 6h. (Agra, Bombay, Kodaikanal, Ksara, and near Samarkand), 10h. (near Berkeley, Branner, Lick, and Fresno), 12h. (La Paz), 18h. (Sofia and near Manila (2)), 19h. (near Sofia), 20h. (near Bucharest and Sofia), 21h. (near Berkeley and near Sofia), 22h. (Christchurch and San Juan).

March 28d. 21h. 13m. 19s. Epicentre 28°·3N. 54°·2E.

$A = +·5158$, $B = +·7152$, $C = +·4716$; $\delta = -3$; $h = +2$;
$D = +·811$, $E = -·585$; $G = +·276$, $H = +·382$, $K = -·882$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku	12·6	345	e 3 6	+ 3	e 5 26?	0	—	—	—
Erevan	14·3	329	3 29	+ 3	—	—	—	—	—
Samarkand	15·5	40	3 40	− 2	6 45	+10	—	—	—
Grozny	16·5	338	4 2	+ 8	—	—	—	—	—
Ksara	16·6	294	e 4 0	+ 4	e 7 18	+18	—	—	9·7
Tashkent	17·9	39	i 4 16	+ 4	i 7 36	+ 6	—	—	—
Piatigorsk	18·1	333	4 7	− 7	—	—	—	—	—
Tchimkent	18·7	37	i 4 24	+ 2	i 7 58	+10	—	—	—
Sotchi	19·2	327	4 28	0	—	—	—	—	—
Andijan	19·4	46	e 4 29	− 1	8 7	+ 3	—	—	—
Bombay	19·4	116	i 4 32a	+ 2	e 8 7	+ 3	—	—	e 9·9
Helwan	20·1	280	4 38	0	8 17	− 2	5 9	PP	11·4
Agra	21·1	89	4 49	+ 1	8 41	+ 2	—	—	—
Frunse	22·0	43	e 4 36	−22	—	—	—	—	—
Theodosia	22·4	324	5 3	+ 1	—	—	—	—	—
Yalta	22·7	321	5 5	+ 1	—	—	—	—	—
Simferopol	23·0	322	5 6	− 1	—	—	—	—	—
Sebastopol	23·2	320	5 8	− 1	—	—	—	—	—
Almata	23·6	44	e 5 18	+ 5	—	—	—	—	—
Bucharest	27·6	314	e 5 58	+ 7	e 10 33	+ 1	e 6 26	PP	15·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kodaikanal	E.	28·3	125	e 6 1	+ 4	e 10 53	+10	—	—	—
Sofia		28·8	309	e 6 4	+ 2	10 50	− 1	11 12	SS	—
Sverdlovsk		28·9	8	6 2	− 1	10 50	− 3	—	—	—
Semipalatinsk		29·6	34	e 6 9	0	—	—	—	—	—
Moscow		29·9	342	e 6 13	+ 1	e 11 4	− 5	—	—	—
Calcutta	N.	31·3	93	e 8 35	?	e 10 53	−38	12 35	SS	e 14·9
Colombo	E.	32·3	127	e 6 49?	+16	—	—	—	—	—
Pulkovo		35·4	340	e 6 58	− 2	e 12 30	− 4	—	—	—
Triest		36·2	310	—	—	e 12 45	− 2	—	—	—
Rome		36·4	303	i 7 0	− 8	i 12 48	− 2	8 40	PPP	—
Potsdam		38·8	321	i 7 29a	+ 1	i 13 22	− 4	—	—	e 23·7
Chur		39·3	310	e 7 31	− 1	—	—	—	—	—
Zurich		40·1	310	e 7 36a	− 3	—	—	—	—	—
Copenhagen		40·4	325	13 49	PS	—	—	—	—	—
Basel		40·8	310	7 42	− 3	—	—	—	—	—
Neuchatel		41·5	310	7 44	− 6	—	—	—	—	—
Uccle		43·5	316	e 8 9	+ 2	—	—	—	—	—
Irkutsk		44·0	43	e 8 10?	− 1	e 14 34?	− 9	—	—	—

Additional readings :—
Bombay iE = +9m.37s.
Helwan SE? = +9m.5s. True S is given as P_cP.
Bucharest eN = +6m.53s., SSEN = +11m.21s.
Sofia eE = +20m.0s.
Rome eSSSE = +15m.26s.
Long waves were also recorded at De Bilt, Kew, and Warsaw.

March 28d. 22h. 30m. 0s. Epicentre 29°·3S. 178°·2W. (as on 1939 Sept. 12d.).

A = −·8730, B = −·0274, C = −·4869 ; δ = −5 ; h = +2 ;
D = −·031, E = +1·000 ; G = +·487, H = +·015, K = −·873.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Arapuni	10·1	208	2 30?	+ 2	4 30?	+ 5	—	—	5·0
Wellington	13·3	203	3 10	− 3	5 35	− 7	i 5 56	SS	7·3
Christchurch	16·0	207	3 41	− 7	6 31	−15	—	—	—
Apia	16·5	23	3 41	−13	e 7 10	+12	4 29	PPP	(8·1)
Brisbane	25·4	267	i 5 30	− 1	i 9 54	− 2	i 6 6?	PP	—
Riverview	26·4	251	e 5 49	+ 9	e 10 12	0	e 6 20	PP	e 12·6
Sydney	26·4	251	e 6 0	+20	e 10 12	0	—	—	e 12·9
Adelaide	36·8	250	e 7 46	+35	i 12 55	− 1	i 15 14	SS	15·7
Honolulu	54·0	24	—	—	e 17 27	+24	i 20 30	SS	e 23·4
Perth	56·0	249	e 17 25	S	(e 17 25)	− 5	—	—	27·0
Manila	73·1	298	i 11 38k	+ 4	21 8	+ 7	—	—	35·5
Batavia	73·9	272	11 39	0	—	—	—	—	—
Pasadena	84·8	47	i 12 54	+17	—	—	—	—	e 34·2
Berkeley	84·9	42	i 14 0	?	i 23 28	+22	—	—	e 35·5
Ukiah	85·2	40	—	—	e 23 44	+35	e 29 6	SS	e 35·9
Riverside	85·3	47	12 44	+ 4	—	—	—	—	—
Medan	85·7	276	e 12 58	+16	—	—	—	—	e 46·0
Haiwee	86·3	45	e 12 54	+ 9	—	—	—	—	—
Tucson	88·5	51	e 13 3	+ 7	e 23 53	+12	i 30 23	SS	i 37·8
Seattle	91·6	35	—	—	e 25 43	PPS	e 30 1	SS	e 37·1
Victoria	91·7	34	—	—	e 24 37	+27	—	—	44·0
Salt Lake City	92·9	43	—	—	e 24 34	+14	e 34 51	SSS	e 39·2
Sitka	93·7	21	—	—	e 25 52	SP	e 30 13	SS	e 38·2
Huancayo	95·1	107	e 17 48	PP	e 24 10	[+ 8]	e 26 10	PS	e 40·8
Butte	95·6	40	—	—	e 27 13	PPS	e 31 29	SS	e 41·5
Bozeman	96·3	40	—	—	e 24 23	[+15]	e 31 27	SS	e 37·5
College	96·8	13	—	—	e 24 20	[+10]	—	—	e 40·6
La Paz	98·6	115	e 14 22	+40	26 50	PS	e 18 11	PP	46·0
Lincoln	102·7	51	e 14 10	+10	—	—	—	—	e 39·1
Calcutta N.	103·6	288	e 18 8	PP	e 24 51	[+ 7]	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	103·7	270	e 18 28	PP	—	—	—	—	—
Florissant		106·2	55	—	—	e 26 30	+18	e 34 2	SSP	i 43·7
St. Louis		106·2	55	—	—	e 25 42	[−14]	e 34 0	SSP	e 45·6
Kodaikanal	E.	107·4	272	e 19 0?	PP	—	—	—	—	—
Chicago U.S.C.G.S.		109·3	52	—	—	e 34 41	SS	—	—	e 44·1
Agra	E.	114·0	289	e 18 31	[−10]	26 43	{+10}	35 28	SS	—
Bombay	E.	115·2	278	e 20 8	PP	e 27 6	{+25}	—	—	—
Ottawa		118·6	51	e 18 59	[+ 9]	e 36 0	SS	—	—	e 49·0
Seven Falls		122·3	50	—	—	e 27 6?	{−23}	e 37 48?	SSP	e 58·0
Bermuda		123·5	68	—	—	e 31 24	PS	—	—	e 37·6
East Machias		124·3	54	—	—	e 37 55	SS	—	—	e 46·7
Scoresby Sund		136·7	11	e 22 30	PP	e 27 2	[+28]	e 45 43	SSS	e 59·8
Warsaw	Z.	153·0	334	e 20 0?	[+ 8]	—	—	—	—	e 78·0
Helwan	Z.	154·3	278	e 20 36	[+42]	—	—	—	—	—
Bucharest		155·5	315	e 24 40	?	e 30 32	{−16}	—	—	80·0
Potsdam		155·5	345	i 20 13	[+18]	e 50 0	SSS	i 24 26	PP	e 70·0
De Bilt		157·1	354	—	—	i 44 20	SS	e 50 25	SSS	e 74·0
Kew		157·8	3	e 11 17	?	e 44 0?	SS	e 62 0	Q	e 76·0
Sofia		158·1	313	e 20 42	[+43]	—	—	e 24 29	PP	—
Uccle		158·4	356	—	—	e 31 12?	{+ 8}	e 44 24?	SS	e 75·0
Paris		160·5	359	e 21 13	?	—	—	—	—	80·0
Triest		161·2	334	e 20 6	[+ 4]	e 27 4	[− 2]	e 24 18	PP	e 78·4
Rome		164·7	328	i 20 22a	[+17]	i 32 9	{+33}	i 45 39	SS	i 72·1
Toledo		168·4	22	e 21 21	?	28 12	[+61]	—	—	77·2
Granada		170·9	29	22 1	?	46 40	SS	25 40	PP	84·2
Almeria		171·7	24	e 21 43	?	—	—	—	—	83·0

Additional readings :—
Wellington Q? = +6m.35s.
Christchurch SNW = +6m.21s.
Apia L given as S.
Brisbane iPN = +5m.36s., iN = +6m.0s.?
Riverview iZ = +6m.2s.
Adelaide i = +13m.8s. and +13m.50s.
Honolulu e = +19m.12s.
Perth PP = +18m.30s., S = +22m.51s., SS = +24m.35s.
Berkeley iE = +14m.12s., eN = +19m.20s. and +22m.30s.
Ukiah e = +25m.48s.
Tucson i = +13m.6s., +13m.18s., and +14m.27s., e = +15m.12s., i = +16m.10s. and +24m.30s.
Seattle e = +28m.44s.
Salt Lake City e = +25m.22s. and +26m.49s.
Sitka i = +28m.10s., +32m.14s., and +33m.43s.
Huancayo e = +20m.50s., iS = +25m.5s., e = +27m.15s., i = +31m.30s.
Bozeman i = +25m.38s., eSS = +29m.30s.
College e = +25m.16s., +28m.46s., and +33m.19s.
Lincoln e = +15m.18s. and +21m.18s.
Florissant iN = +38m.3s.
St. Louis eN = +26m.37s.
Agra iE = +30m.55s.
Bombay eEN = +24m.13s.
Ottawa eN = +28m.12s.?
Seven Falls e = +41m.24s.?
East Machias e = +38m.39s. and +40m.38s.
Scoresby Sund e = +30m.28s. and +50m.9s.
Bucharest eN = +28m.8s., eE = +32m.46s., eN = +34m.34s.
Potsdam iPKP$_2$Z = +20m.36s.
Kew ePKPZ = +12m.10s., ePPPZ = +21m.11s., eZ = +31m.48s.
Sofia eEN = +28m.21s.
Uccle eE = +50m.24s.? and +66m.42s.?
Triest eSKKS = +30m.56s.
Rome iN = +21m.54s., iNZ = +24m.53s., iE = +28m.7s., iEN = +29m.2s., iE = +44m.47s., iSSSE = +51m.43s.
Toledo PKP$_2$ = +21m.42s.
Granada ePPS = +39m.19s., SSS = +51m.22s.
Long waves were also recorded at Columbia, Fresno, Ferndale, Coimbra, Tananarive, Stuttgart, Lick, Aberdeen, Prague, Lisbon, and Upsala.

March 28d. Readings also at 0h. (near Berkeley), 2h. (Amboina), 6h. (Tucson), 7h. (Balboa Heights), 8h. (Manila and near Piatigorsk), 9h. (Amboina, Manila, Scoresby Sund, and Tucson), 10h. (near Mizusawa), 11h. (San Fernando), 12h. (Pasadena, Riverside, and Tucson (2)), 13h. (Sitka and near Balboa Heights), 14h. (Tucson), 17h. (near La Paz), 19h. (Ebingen, Ravensburg, Strasbourg, near Stuttgart, Basle, Chur, Neuchatel, Zurich, and near Medan), 20h. (Batavia).

March 29d. 0h. 37m. 36s. Epicentre 28°·3N. 54°·2E. (as on 1941 March 28d.).

$A = +\cdot5158$, $B = +\cdot7152$, $C = +\cdot4716$; $\delta = -3$; $h = +2$;
$D = +\cdot811$, $E = -\cdot585$; $G = +\cdot276$, $H = +\cdot382$, $K = -\cdot882$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Samarkand		15·5	40	e 3 44	+ 2	—	—	—
Ksara		16·6	294	e 4 0?	+ 4	e 7 16?	+16	9·6
Tashkent		17·9	39	e 4 11	− 1	e 7 35	+ 5	—
Tchimkent		18·7	37	e 4 27	+ 5	—	—	—
Bombay	N.	19·4	116	e 4 32	+ 2	—	—	—
Helwan		20·1	280	e 4 36	− 2	e 8 17	− 2	e 11·4
Zurich		40·1	310	e 7 34	− 5	—	—	—
Basle		40·8	310	e 7 43	− 2	—	—	—

March 29d. 19h. 54m. 56s. Epicentre 1°·5N. 97°·0E.

$A = -\cdot1219$, $B = +\cdot9922$, $C = +\cdot0260$; $\delta = 0$; $h = +7$;
$D = +\cdot992$, $E = +\cdot122$; $G = -\cdot003$, $H = +\cdot026$, $K = -1\cdot000$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Colombo	E.	17·9	288	4 14	+ 2	—	—	9·1
Calcutta	N.	22·5	339	—	—	i 9 31	SS	—
Manila		27·0	60	e 5 46	+ 1	11 33	SS	—
Bombay	N.	29·3	308	—	—	e 10 41	−18	e 13·3
Agra	E.	31·4	327	—	—	e 11 40	+ 8	—
Andijan		45·0	333	e 8 20	+ 1	—	—	—
Samarkand		46·8	328	e 8 38	+ 5	—	—	—
Tashkent		46·9	332	e 8 34	0	e 15 59	+34	—
Tchimkent		47·5	333	e 8 34	− 4	—	—	—
Sverdlovsk		62·3	338	10 24	− 2	18 57	+ 5	—

March 29d. Readings also at 2h. (Tananarive), 3h. (Riverview and near Frunse), 5h. (near Berkeley), 6h. (near Amboina), 8h. (Merida, Oaxaca, Tacubaya, and Vera Cruz), 9h. (College, Sitka, Seattle, Ukiah, Berkeley, Bozeman, Butte, Victoria, Haiwee, Riverside, Tucson, Salt Lake City, Chicago, Ottawa, Columbia, East Machias, Bermuda, and Kew), 10h. (near La Paz), 13h. (2) and 15h. (near Amboina), 21h. (Ksara, Tucson, near Basle, and Zurich (2)), 23h. (La Paz).

March 30d. Readings at 2h. (Sofia), 3h. (Riverview), 4h. (Honolulu), 6h. (Adelaide), 8h. (Manila), 10h. (Haiwee, Mount Wilson, Riverside, and Tinemaha), 12h. (Honolulu, San Juan, and near Erevan).

March 31d. Readings at 0h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tucson, Andijan, Mizusawa, and near Vladivostok), 1h. (Mount Wilson, Riverside, Tucson, Bozeman, Sitka, College, and East Machias), 2h. (Tucson), 3h. (near Sofia), 4h. (Haiwee, Mount Wilson, Riverside, Pasadena, Tinemaha, and Tucson), 5h. (Huancayo), 6h. (Apia), 7h. (College, Sitka, Bozeman, Riverside, and Tucson), 10h. (Warsaw), 11h. (Helwan), 13h. (near Manila), 15h. (near Samarkand), 20h. (near Berkeley), Branner, and Lick), 23h. (Basle and Tucson).

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/

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