The International Seismological Summary.

1942 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 *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 :—

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

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

$$h = -3{\cdot}549 + 10{\cdot}738\cos 2\phi$$

(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, I, records the onset, if known, of Rayleigh waves.

(4) Readings for which space is not available in the tabular part, added at the foot. *Although still referred to the time at origin as zero, these are no longer prefixed with a plus sign.*

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.

The first quarter for 1942 contains 62 determined epicentres, of which 35 are repetitions from previous epicentres.

Cases of abnormal focal depth are noticed as below :—

Jan.	18d.	16h.	41·0N.	71·5E.	Suggested Deep.
	29d.	9h.	18·7S.	168·4E.	Suggested Deep.
	30d.	12h.	6·1N.	95·1E.	Suggested Deep.
Feb.	12d.	5h.	16·1S.	168·3E.	Suggested Deep.
	14d.	12h.	42·4N.	144·2E.	0·010
	16d.	18h.	11·9S.	166·8E.	0·020
	21d.	7h.	37·7N.	141·8E.	Base of Superficial Layers.
	27d.	8h.	17·8N.	87·1W.	Suggested Deep.
March	5d.	19h.	44·5N.	141·5E.	0·030
	21d.	23h.	29·4N.	130·6E.	Base of Superficial Layers.
	22d.	2h.	36·3N.	71·0E.	0·020
	25d.	7h.	0·2N.	125·2E.	0·030
	29d.	1h.	18·3N.	145·2E.	0·010

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

KEW OBSERVATORY,
RICHMOND,
SURREY.

September, 1952.

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

1942 JANUARY, FEBRUARY, MARCH.

Jan. 1d. Readings at 0h. (De Bilt, Cheb, Potsdam, and Uccle), 3h. (near Andijan and near Fresno), 5h. (near Harvard), 7h. (near La Paz), 10h. (La Paz and Calcutta), 11h. (near Mizusawa and near Tchimkent), 13h. (near Mizusawa), 15h. and 19h. (Calcutta), 21h. (near Fresno, Lick, Branner and Berkeley).

Jan. 2d. Readings at 3h. (La Paz and Jena), 4h. (near Tchimkent), 5h. (near Lick), 9h. (near Chur and Zurich), 11h. (near Tchimkent), 14h. (near Apia), 15h. (near Fresno, Lick, Berkeley, and Branner), 17h. (near Irkutsk and near Apia), 18h. (Branner), 23h. (near Branner, Lick, and Berkeley).

Jan. 3d. Readings at 0h. (near Berkeley), 2h. (near Lick), 3h. (Riverview), 4h. (Oaxaca, Merida, Puebla, Vera Cruz, Tucson, Tinemaha (2), Haiwee (2), Riverside (2), Mount Wilson (2), Pasadena (2), and Riverview), 5h. (San Juan, La Paz, and Huancayo), 14h. (near Andijan), 15h. (La Paz, near Balboa Heights, and near Huancayo), 16h. (near Fresno (2) and Lick (2)), 21h. (Merida), 22h. (La Plata).

Jan. 4d. Readings at 9h. (La Paz and Huancayo), 10h. (Fort de France (2)), 13h. (Pasadena, Tinemaha, Tucson, La Paz, and Huancayo), 15h. (Riverview), 18h. (near Mizusawa), 21h. (near Almata and Andijan).

Jan. 5d. Readings at 0h. (Bombay and Calcutta), 4h. (Auckland), 5h. (Berkeley, Lick, Tucson, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 6h. (Lick), 11h. (near Apia and near Irkutsk), 16h. (near Fort de France), 17h. (Lick), 19h. (Balboa Heights and San Juan), 21h. (near Ferndale), 22h. (Huancayo, San Juan, Balboa Heights, Philadelphia, Tucson, Pasadena, Palomar and near Berkeley), 23h. (De Bilt, and near Berkeley).

Jan. 6d. Readings at 0h. (near Lick and Fresno), 2h. (Balboa Heights), 5h. (Bombay and Tchimkent), 8h. (near Lick (2) and Fresno), 9h. (near Lick), 13h. (near Lick and Fresno), 15h. (Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tucson, and near Mizusawa), 23h. (Bombay, Frunse, Tashkent), Tchimkent, Sverdlovsk, and near Lick).

Jan. 7d. 10h. 47m. 54s. Epicentre 6°·1S. 150°·5E. (as on 1940 November 22d.).

$A = -\cdot8655$, $B = +\cdot4897$, $C = -\cdot1055$; $\delta = +3$; $h = +7$;
$D = +\cdot492$, $E = +\cdot870$; $G = +\cdot092$, $H = -\cdot052$, $K = -\cdot994$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	21·4	174	i 4 49	− 2	i 8 46	+ 1	i 5 51	PPP	—
Riverview		27·6	178	e 5 52	+ 1	e 10 45	+13	—	—	i 13·2
Sydney		27·6	178	e 6 36	PP	e 10 18	−14	—	—	e 13·1
Auckland		37·8	147	—	—	13 21	+10	16 25	SSS	18·1
Arapuni		39·2	148	—	—	13 48	+16	e 18 6	?	21·1
Wellington		41·2	152	7 51	+ 3	13 58	− 4	17 13	SS	21·1
Perth		41·3	227	—	—	i 14 1	− 3	i 16 23	?	i 22·0
Christchurch		42·1	156	8 11a	+16	14 33	+17	17 43	SS	20·6
Calcutta	N.	67·1	297	e 16 27	?	i 20 19	PS	—	—	—
Irkutsk		70·1	332	e 11 8	− 8	e 20 10	−17	—	—	—
Agra	E.	77·4	300	e 11 35	−23	21 17	−32	16 21	PPP	i 42·7
Bombay	E.	80·4	290	e 12 6	− 9	21 57	−24	15 11	PP	—
Andijan		85·0	312	e 12 58	+20	22 52	[− 9]	—	—	—
Tashkent		87·4	312	e 12 40	−10	—	—	—	—	—
Pasadena		94·5	56	i 13 26	+ 3	—	—	—	—	e 43·7
Mount Wilson	Z.	94·6	56	i 13 27	+ 3	—	—	—	—	—
Tinemaha	Z.	94·6	54	i 13 32	+ 8	—	—	—	—	—
Sverdlovsk		95·0	326	e 17 15	PP	23 42	[−19]	—	—	—
Riverside	Z.	95·1	56	e 13 30	+ 4	—	—	—	—	—
Baku		102·0	310	—	—	24 24	[−13]	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Uccle		127·3	333	—	—	e 38 48	SS	—	—	e 59·1
Huancayo		131·0	111	e 19 14	[0]	—	—	e 21 31	PP	e 62·3
La Paz	z.	135·7	121	e 19 26	[+ 4]	—	—	i 22 57	PKS	66·1

Additional readings :—
Riverview iZ = 6m.2s., iZ = 10m.53s.
Wellington i = 14m.17s.
Perth i = 13m.44s.
Christchurch Q = 18m.8s.
Bombay eE = 12m.43s., PPS = 23m.14s., eE = 24m.30s. and 25m.45s., SSE = 26m.37s.
Huancayo e = 22m.41s. and 41m.51s.
Long waves were also recorded at Cheb, Upsala, Harvard, Aberdeen, Ukiah, Philadelphia, Bozeman, Scoresby Sund, College, Potsdam, Kew, and De Bilt.

Jan. 7d. Readings also at 1h. (near Berkeley), 6h. (Balboa Heights), 7h. (La Paz), 8h. (near Lick), 9h. (Santa Barbara, La Jolla, Haiwee, Scoresby Sund, Riverside, Bombay, Agra, Jena, De Bilt, College, Sverdlovsk, Irkutsk, Pasadena, Mount Wilson, Tinemaha, Tucson, and near Sofia), 10h. (near Balboa Heights), 11h. (Palomar, Tucson, Pasadena, Mount Wilson, and near Apia), 12h. (Stonyhurst, near Mizusawa, and near La Paz), 15h. (Tucson, Palomar and Tinemaha), 18h. (near Lick), 21h. (near Harvard), 23h. (Balboa Heights).

Jan. 8d. 13h. 31m. 20s. Epicentre 39°·5N. 71°·9E. (as on 1937 April 27d.).

A = +·2404, B = +·7354, C = +·6335 ; δ = −7 ; h = −1 ;
D = +·951, E = −·311 ; G = +·197, H = +·602, K = −·774.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tashkent		2·7	313	0 51	+ 6	1 36	S_g	—	—	—
Almata		5·3	43	1 12	−10	2 10	−15	—	—	—
Semipalatinsk		12·4	26	e 5 16	S	(e 5 16)	− 5	—	—	(6·0)
Agra	E.	13·3	156	3 1	−12	5 19	−23	5 37	SS	—
Baku		16·9	280	e 4 36	+37	7 56	+49	—	—	—
Sverdlovsk		18·8	340	4 29	+ 6	7 58	+ 8	—	—	—
Bombay	E.	20·6	179	—	—	8 28	− 1	8 59	SS	i 10·5
Calcutta	N.	22·0	136	—	—	i 8 37	−19	i 9 7	SS	i 11·8
Hyderabad	N.	22·7	165	—	—	9 12	+ 3	i 11 43	SS	12·8
Irkutsk		25·7	50	—	—	e 9 52	− 9	—	—	—

Additional readings :—
Semipalatinsk gives S and L as P and S.
Bombay eE = 9m.38s.
Calcutta SSSN = 9m.30s.
Long waves were also recorded at Colombo, De Bilt, Potsdam, Warsaw, Uccle, and Upsala.

Jan. 8d. 15h. 12m. 22s. Epicentre 6·°5S. 79°·0W.

Mapa sismico y tectonico de Columbia (Banco de la Republica, Bol. grafico 7, febrero de 1947).

A = +·1896, B = −·9754, C = −·1125 ; δ = +1 ; h = +7 ;
D = −·982, E = −·191 ; G = −·021, H = +·110, K = −·994.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		6·6	147	i 1 45	+ 4	i 3 7	+ 9	i 2 16	P_g	i 4·0
La Paz	N.	14·5	134	i 3 28	0	i 6 21	+10	—	—	i 7·7
Balboa Heights		15·4	357	e 3 38?	− 2	—	—	—	—	—
Fort de France		27·5	41	e 5 44	− 6	—	—	—	—	—
San Juan		27·8	27	e 5 53	0	i 10 21	−14	e 6 58	PPP	e 11·6
La Plata		34·3	148	7 12	+22	12 2	−15	—	—	16·6
Bermuda		40·9	19	—	—	e 13 53	− 5	—	—	e 16·9
Cape Girandeau	N.	44·7	349	e 8 11	− 5	—	—	e 10 5	PP	—
Florissant		46·3	348	i 8 26	− 3	i 15 2	−14	i 18 7	SS	—
Tucson		49·0	324	i 8 51k	+ 1	e 16 0	+ 5	i 9 26	pP	e 21·9

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Harvard	49·2	9	i 8 49	− 3	—	—	—	—	—
La Jolla	53·4	320	i 9 23k	− 1	—	—	—	—	—
Riverside	54·2	321	i 9 29k	0	—	—	—	—	—
Mount Wilson	54·8	321	i 9 34k	0	—	—	—	—	—
Pasadena	54·8	321	i 9 34k	0	—	—	—	—	—
Haiwee	56·0	323	i 9 42k	− 1	—	—	—	—	—
Santa Barbara	56·0	320	e 9 43	0	—	—	—	—	—
Tinemaha	56·8	323	i 9 47k	− 1	—	—	—	—	—
Lick	59·0	321	e 10 5	+ 1	—	—	—	—	—
Berkeley	59·8	321	i 10 8	− 1	—	—	—	—	—
Uccle	90·8	40	—	—	i 23 22	[−16]	—	—	—
De Bilt	92·1	38	—	—	e 23 30	[−15]	—	—	—

Additional readings :—
San Juan i = 6m.29s.
Cape Girandeau eN = 8m.50s.
Florissant eE = 18m.35s. and 19m.2s.
Tucson iPP = 10m.44s., i = 11m.37s., esS = 16m.34s., eSS = 19m.27s., e = 20m.57s.
Harvard i = 9m.17s.
Mount Wilson iZ = 9m.44s., 10m.0s., and 10m. 15s.
Pasadena e = 10m.14s.
Tinemaha iZ = 10m.15s.
Berkeley eZ = 10m.49s.
Uccle iSKKSN = 23m.46s.
De Bilt eN = 23m.55s.

Jan. 8d. Readings also at 15h. (Tucson, Mount Wilson, Pasadena, and Riverside), 17h. (Lick), 21h. (near Branner), 22h. (near Berkeley).

Jan. 9d. 6h. Undetermined shock.

Auckland P? = 32m.25s., I = 36m.25s., S? = 42m.12s., L = 44.1m.
Brisbane iN = 34m.13s., iE = 34m.17s., iN = 34m.42s., iE = 34m46s., 37m.56s., iN = 38m.6s.
Riverview PNZ = 36m.26s., eN = 39m.57s., iSE = 40m.9s., iN = 40m.18s., iE = 40m.40s., iN = 40m.48s., iZ = 40m.57s., iSSE = 41m.14s., eLZ = 43.2m.
Wellington P?Z = 37m.8s., P_cP?Z = 38m.30s., S? = 46m.0s., c = 48m.20s., R = 51m.
Sydney e = 40m.0s.
Tucson e = 42m.45s., ePP = 45m.7s., e = 47m.17s. and 48m20s., eS? = 52m.33s., eL = 73·7m.
Pasadena eP = 42m.54s., i = 43m.0s., iZ = 43m.6s., eLZ? = 71m.
Mount Wilson iP = 42m.55s., iZ = 43m.2s.
Santa Barbara eZ = 42m.55s.
Riverside ePZ = 42m.57s., iPZ = 43m.4s.
Tinemaha ePZ = 42m.57s., iZ = 43m.2s.
Palomar ePZ = 42m.58s., iZ = 43m.4s., and 43m.12s.
Arapuni e = 43m.0s., S? = 45m.36s., R = 50·0m.
Haiwee eZ = 43m.1s.
Christchurch S = 43m.9s., Q = 45m.44s., R = 48·6m.
Perth i = 47m.50.s., 50m.45s., 56m.25s., and 60m.18s.
Calcutta eN = 50m.46s.
Bombay iE = 53m.0s.
Long waves were also recorded at Uccle, De Bilt, and Huancayo.

Jan. 9d. Readings also at 6h. (Tucson), 9h. (Bombay and Calcutta), 10h. (Potsdam, Warsaw, De Bilt, and Uccle), 13h. (Riverview, Tinemaha, Riverside, Mount Wilson, Pasadena, Wellington, Arapuni, and Auckland), 14h. (Arapuni, Auckland, and Wellington), 18h. (Harvard, Wellington, and Auckland), 20h. (near Branner, and Lick, Wellington, and Auckland), 22h. (near Berkeley).

Jan. 10d. Readings at 0h. (near Apia), 1h. (Branner), 5h. (San Juan), 6h. (near Frunse), 9h. (near Mizusawa), 10h. (La Paz), 13h. (Sofia), 18h. (Agra and Bombay), 20h. (Mount Wilson, Tinemaha, Riverside, and Pasadena), 22h. (Ksara), 23h. (near Mizusawa).

Jan. 11d. 5h. Felt in Columbia.

Fort de France e = 21m.49s.
Huancayo iP = 21m.54s., eS = 25m.9s., e = 26m.18s., eL = 27m.59s.
La Paz PZ = 23m.0s., SN = 27m.23s., LN = 29m.39s.
Tucson iP = 26m.22s., e = 30m.25s., 31m.43s., and 37m.10s.
Palomar iPZ = 27m.1s.
Riverside ePZ = 27m.8s.
Pasadena ePZ = 27m.12s., eZ = 27m.41s.
Mount Wilson eZ = 27m.16s.
Tinemaha ePZ = 27m.24s.

Jan. 11d. Readings also at 1h. (near Branner), 2h. (Bombay, Calcutta, and near Agra), 3h. (near Almata), 5h. (Huancayo, La Paz, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 6h. (Huancayo, La Paz, Tucson, Mount Wilson, Palomar and Tinemaha), 10h. (Granada), 11h. (La Paz, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Calcutta), 14h. (near Samarkand), 15h. (Harvard, near Mizusawa, and near Lick), 19h. and 20h. (La Paz), 22h. (near Samarkand), 23h. (Berkeley).

Jan. 12d. 15h. 11m. 39s. Epicentre 7°·8S. 156°·5E. (as on 1939, August 8d.).

A = −·9087, B = +·3951, C = −·1348; δ = +1; h = +7;
D = +·399, E = +·917; G = +·124, H = −·054, K = −·991.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	19·9	170	e 4 29	− 7	e 8 3	−12	—	—	—
Riverview		26·4	190	i 5 37a	− 3	e 10 13	+ 1	i 11 17	SS	e 13·2
Sydney		26·4	190	—	—	e 10 33	+21	—	—	—
Auckland		33·4	153	—	—	12 11	+ 8	17 8	ScS	18·9
Arapuni		34·8	154	—	—	15 51	ScS	—	—	20·4
Wellington		37·1	158	6 51	−23	16 57	ScS	8 59	PP	21·3
Christchurch		38·3	161	7 19	− 5	13 21	+ 2	16 7	Q	18·8
Perth		44·8	232	12 41	?	18 6	SS	19 23	SSS	21·4
Calcutta	N.	73·2	296	—	—	e 19 18	?	i 21 22	PS	—
Bombay	E.	86·6	290	e 12 49	+ 3	23 10	[− 2]	24 3	PS	—
Pasadena		90·5	56	i 13 8k	+ 3	—	—	—	—	—
Mount Wilson		90·6	56	i 13 7k	+ 2	—	—	—	—	—
Tinemaha		90·9	53	i 13 9	+ 2	—	—	—	—	—
Haiwee		91·0	54	e 13 10	+ 3	—	—	—	—	—
Palomar	Z.	91·4	56	i 13 10	+ 1	—	—	—	—	—

Additional readings:—
Riverview iZ = 10m.24s., iN = 10m.28s., iZ = 10m.33s.
Wellington iZ = 7m.18s., Q = 17·4m.
Bombay SE = 23m.23s.

Jan. 12d. 16h. 7m. 19s. Epicentre 7°·8S. 156°·5E. (as at 15h.).

A = −·9087, B = +·3951, C = −·1348; δ = +1; h = +7;
D = +·399, E = +·917; G = +·124, H = −·054, K = −·991.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	19·9	170	i 4 28	− 8	i 8 23	+ 8	—	—	—
Riverview		26·4	190	i 5 38	− 2	i 10 16	+ 4	i 11 20	SS	e 13·2
Sydney		26·4	190	e 5 29	−11	e 10 17	+ 5	—	—	e 13·2
Auckland		33·4	153	8 1	PP	i 12 6	+ 3	14 26	SS	18·4
Wellington		37·1	158	7 9	− 5	14 21	+80	7 21	pP	20·7
Christchurch		38·3	161	7 20	− 4	13 23	+ 4	16 20	Q	18·9
Calcutta	N.	73·2	296	—	—	i 21 20	+18	—	—	—
Irkutsk		74·5	330	e 11 41	− 1	e 21 3	−14	—	—	—
Bombay	E.	86·6	290	i 12 46	0	23 21	[+ 9]	16 3	PP	—
Almata		87·8	314	e 12 54	+ 2	—	—	—	—	—
Santa Barbara	Z.	89·3	56	e 13 0	+ 1	—	—	—	—	—
Pasadena		90·5	56	i 13 6a	+ 1	—	—	—	—	e 41·2
Mount Wilson		90·6	56	i 13 6a	+ 1	—	—	—	—	—
Andijan		90·6	311	e 13 8	+ 3	e 23 42	[+ 6]	—	—	—
Tinemaha		90·9	53	i 13 7a	0	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Haiwee		91·0	54	i 13 7	0	—	—	—	—	—
La Jolla		91·0	57	e 13 8	+ 1	—	—	—	—	—
Palomar	Z.	91·4	56	i 13 9a	0	—	—	—	—	—
Tucson		96·4	59	e 13 33	+ 1	e 26 47	PPS	e 17 25	PP	e 42·6
Ottawa		121·6	40	e 17 36	?	e 18 54	PKP	—	—	60·7
La Paz	N.	129·7	118	i 19 18	[+ 7]	—	—	i 22 46	PP	69·7

Additional readings :—
Riverview eZ = 10m.5s., i = 10m.24s., iE = 11m.26s.
Auckland i = 13m.31s. and 17m.11s.
Wellington P_cPZ = 8m.41s., i = 15m.16s. and 15m.51s., Q = 18·7m.
Bombay PPPE = 17m.54s., iSE = 23m.26s., PSE = 24m.13s., PPSE = 24m.43s., eE = 27m.6s. and 28m.35s.
Tucson e = 20m.14s. and 22m.27s.
Long waves were also recorded at Arapuni, Huancayo, and Tananarive.

Jan. 12d. Readings also at 0h. (Stuttgart, Jena, Zurich, and Chur), 1h. (Calcutta), 2h. (near Samarkand), 3h. (near Andijan), 7h. (La Paz), 10h. (Tucson, Palomar, Tinemaha, Mount Wilson, and Pasadena), 12h. (Columbia), 15h. (Tucson), 16h. (near Granada and Almeria), 18h. (near Ferndale), 21h. (near Berkeley, near Cape Giradeau, near Andijan (3), and La Paz), 23h. (Riverview).

Jan. 13d. 11h. Local Japanese shock.

Tokyo Imperial University gives epicentre 36°·10N. 140°·43E.

Komaba P = 20m.15s., S = 20m.30s.
Koyama P = 20m.15s., S = 20m.34s.
Mitaka P = 20m.15s., S = 20m.30s.
Titibu P = 20m.15s., S = 20m.33s.
Togane P = 20m.15s., S = 20m.28s.
Tokyo Imp. Univ. P = 20m.15s., S = 20m.29s.

Jan. 13d. 17h. Local Japanese shock.

Tokyo Imperial University gives epicentre 35°·13N. 139°·76E.

Komaba P = 36m.15s., S = 36m.24s.
Koyama P = 36m.15s., S = 36m.25s.
Mitaka P = 36m.15s., S = 36m.23s.
Titibu P = 36m.15s., S = 36m.25s.
Togane P = 36m.15s., S = 36m.25s.
Tokyo Imp. Univ. P = 36m.15s., S = 36m.24s.

Jan. 13d. Readings also at 4h. (La Paz), 6h. (Auckland, Arapuni, and Wellington), 10h. (Tinemaha, Riverside, Pasadena, Palomar, Tucson, and Mount Wilson), 12h. (near Samarkand), 13h. (Bombay, Riverview, and Calcutta), 16h. (Tinemaha, Riverside, Pasadena, Palomar, Tucson, and Mount Wilson), 20h. (near Mizusawa and near Berkeley), 23h. (St. Louis, near Berkeley, and Florissant).

Jan. 14d. 5h. Undetermined shock.

Huancayo eP = 6m.48s., e = 7m.34s. and 8m. 7s., eS? = 13m.58s., e = 17m.39s., eL = 20·2m.
La Paz PZ = 7m.0s., iSN = 14m.13s., LN = 21·3m.
Tucson e = 10m.18s., eL = 38·5m.
Tinemaha eZ = 10m.37s.
Mount Wilson eZ = 10m.38s.
Pasadena eZ = 10m.49s., eLNZ = 37·6m.
La Plata S? = 12m.24s, LE = 16·3m.
Wellington S? = 13m.50s., L = 20m.
Christchurch S? = 13m.51s., Q = 16m.49s., R = 20m.6s.
Auckland S? = 14m.30s., L = 21·0m.
Rio de Janeiro eP = 16m.30s.
Helwan eZ = 17m.39s. and 18m.11s.
Riverview eZ = 18m.18s., eLZ = 29·4m.
Arapuni e = 20m.?
San Juan e = 20m.15s. and 25m.33s., eL = 39·7m.
Tananarive e = 54m.12s. and 56m.28s., LN = 58·7m.
Long waves were also recorded at Ukiah and College.

Jan. 14d. Readings also at 2h. (Wellington), 3h. (Tucson, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and near La Paz), 7h. (La Paz), 8h. (near Florissant), 9h. (Tucson, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, also near Berkeley, Branner, Lick, Santa Clara, and Fresno, not all the same shock), 11h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemeha, Tucson, and near La Paz), 13h. (La Paz, near Huancayo, and near Mizusawa), 14h. (Frunse, Tchimkent, and near Tashkent), 18h. (near St. Louis, Florissant, near Frunse, Tchimkent, and near Tashkent), 21h. (Merida, Oaxaca, Tacubaya, Tucson, Haiwee, Mount Wilson, Pasadena, Palomar, Tinemaha, and near Berkeley), 23h. (near Branner).

Jan. 15d. Readings at 2h. (near Mizusawa), 4h. (Huancayo, La Paz, La Plata, Rio de Janeiro, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 10h. (Lick), 11h. (Lick and near Samarkand), 15h. (Balboa Heights), 21h. (near Mizusawa and near Berkeley), 22h. (Harvard and Lick).

Jan. 16d. 21h. Tonga region, depth 400km. (Pasadena).
Apia iP = 25m.19s., iS = 26m.29s.
Santa Barbara iPZ = 34m.49s.
Pasadena iP = 34m.53s.a, ipPZ = 36m.22s., esPZ = 37m.41s.
Mount Wilson iP = 34m.54s.a, ipPZ = 36m.23s., esPZ = 37m.48s., iZ = 37m.57s.
Riverside iP = 34m.55s.a, ipPZ = 36m.25s., esPZ = 37m.52s.
Haiwee iPZ = 35m.0s.a, ipPZ = 36m.30s.
Tinemaha iP = 35m.1s.a, epPZ = 36m.31s.
Tucson iP = 35m.18s.a, i = 35m.39s., ipP = 36m.47s., ePPP = 39m.54s.
La Paz PZ = 41m.13s.
Jena iP = 42m.42s.
Basle eP = 42m.45s.
Chur eP = 42m.46s.k, e = 42m.52s. and 44m.35s.
Uccle iPZ = 42m.46s.
Stuttgart eP = 42m.47s., e = 43m.19s. and 44m.38s.
Neuchatel eP = 42m.48s.
Zurich eP = 42m.51s.k.

Jan. 16d. Readings also at 0h. (near Berkeley), 11h. (near La Paz), 18h. (Harvard, Tucson, and La Paz), 20h. (near Berkeley), 22h. (near Samarkand).

Jan. 17d. 23h. 18m. 50s. Epicentre 14°·7N. 99°·3W.

A = −·1564, B = −·9549, C = +·2522; δ = −10; h = +6;
D = −·987, E = +·162; G = −·041, H = −·249, K = −·968.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	° ′	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	E.	3·4	46	1 13	P_g	—	—	—	—	—
Puebla	N.	4·5	15	1 11	0	—	—	—	—	—
Tacubaya	N.	4·7	3	0 26	−48	—	—	—	—	—
Vera Cruz	N.	5·5	34	1 31	+ 6	—	—	—	—	—
Tucson		20·4	331	i 4 36a	− 5	e 8 24	− 1	i 5 19	PPP	e 9·3
Cape Girardeau	N.	24·2	20	e 5 20	+ 1	—	—	—	—	—
Palomar	Z.	24·5	324	i 5 24	+ 2	—	—	—	—	—
Riverside		25·2	324	e 5 28	− 1	—	—	—	—	—
St. Louis	Z.	25·2	17	i 5 29	0	—	—	—	—	—
Florissant	N.	25·3	17	e 5 28	− 2	e 9 50	− 4	—	—	—
Pasadena		25·7	324	e 5 35a	+ 2	—	—	—	—	e 13·7
Mount Wilson	Z.	25·8	324	e 5 36	+ 2	—	—	—	—	—
Haiwee		27·1	326	i 5 47	+ 1	—	—	—	—	—
Tinemaha		28·0	326	i 5 56	+ 1	—	—	—	—	—

Additional readings:—
Tucson i = 5m.39s., e = 8m.0s.
St. Louis eZ = 5m.54s.
Long waves were also recorded at Guadalajara, Bozeman, and Salt Lake City.

Jan. 17d. Readings also at 1h. (near Cape Girardeau), 2h. (Oaxaca, Vera Cruz, and Tacubaya), 3h. (near Branner), 4h. (La Paz), 6h. (Haiwee, Riverside, Palomar, Riverview, Pasadena, Mount Wilson, and Tinemaha), 8h. (near Samarkand), 10h. (Tinemaha, Mount Wilson, Pasadena, Riverside, Palomar, Tucson, Stuttgart, and near Apia), 11h. (near Lick and Berkeley), 17h. (Bombay, Calcutta, Agra, and near Tchimkent), 20h. (Riverview, Tinemaha, Mount Wilson, Tucson, and near Apia), 22h. (near Berkeley).

Jan. 18d. 16h. 36m. 29s. Epicentre 41°·0N. 71°·5E.

Intensity V at Tchimkent and Tashkent. Epicentre 41°15′N. 71°33′E., depth = 18km. See Institut de Physique de l'U.R.S.S. Bulletin de Réseau séismique de l'U.R.S.S., Jan. to Dec. 1942, p.5.

$A = +\cdot2402$, $B = +\cdot7178$, $C = +\cdot6535$; $\delta = 0$; $h = -2$;
$D = +\cdot948$, $E = -\cdot317$; $G = +\cdot207$, $H = +\cdot620$, $K = -\cdot757$.

The position is calculated by comparison with 41·4N. 71·6E. of 1937 Dec. 18d.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tashkent		1·7	281	0 35	+ 4	—	—	—	—	—
Tchimkent		1·9	312	i 0 38	+ 4	i 1 4	+ 5	—	—	—
Frunse		3·0	51	i 0 51	+ 1	i 1 37	S_g	i 0 55	P*	—
Stalinabad		3·2	221	0 59	+ 7	e 1 43	S_g	—	—	—
Samarkand		3·7	252	0 54	− 6	1 14	P_g	—	—	—
Almata		4·6	59	1 14	+ 2	2 12	+ 5	1 29	P_g	—
Agra	E.	14·8	157	e 3 27	− 5	i 6 1	−17	—	—	6·8
Sverdlovsk		17·3	340	4 3	− 1	7 22	+ 6	—	—	—
Bombay		22·1	176	i 4 59	0	9 0	+ 2	5 20	PP	11·8
Calcutta	N.	23·2	136	e 5 10	+ 1	i 9 24	+ 6	e 10 9	SS	i 13·2
Hyderabad	N.	24·2	163	5 19	0	9 36	+ 1	10 20	SS	12·1
Irkutsk		25·0	52	5 27	0	i 10 4	+15	—	—	—
Kodaikanal	E.	31·1	168	—	—	e 12 33	+65	—	—	16·4
Bucharest		33·2	293	e 13 1	S	(e 13 1)	+61	e 13 38	SS	25·5
Helwan	E.	34·3	264	6 49	− 1	e 13 28	+71	—	—	—
Colombo	E.	34·8	165	—	—	e 14 1	SS	—	—	—
Sofia		35·5	290	e 13 43	S	(e 13 43)	+67	—	—	e 18·5
Warsaw		35·8	307	7 1k	− 2	e 12 34	− 7	e 8 18	PP	e 21·5
Upsala		37·9	319	e 15 14	SS	—	—	—	—	—
Copenhagen		40·6	313	i 7 43	0	13 54	0	9 14	PP	21·5
Potsdam		40·6	308	i 7 44k	+ 1	—	—	i 9 25	PP	26·5
Cheb		41·4	304	e 9 29	PP	e 17 28	SS	—	—	e 22·5
Triest		41·5	297	—	—	i 14 21	+14	i 17 15	SS	—
Jena		41·7	305	e 7 53	+ 1	e 17 31	SS	—	—	e 20·5
Stuttgart		43·7	303	i 8 8	0	16 55	SS	e 10 31	PP	22·0
Chur		44·0	300	e 8 9	− 2	—	—	—	—	—
Zurich		44·5	301	e 8 14	− 1	—	—	—	—	—
Basle		45·1	302	e 8 18	− 2	—	—	—	—	—
Neuchatel		45·6	301	e 8 23	− 1	—	—	—	—	—
Uccle		46·2	307	e 8 28	0	e 18 34	SS	e 10 19	PP	—
Granada		56·7	293	e 13 9	PPP	e 23 49	SSS	—	—	e 34·9
La Plata		140·1	262	39 13	?	40 55	SS	—	—	—

Additional readings :—
Almata $S_g = 2$m.27s.
Agra iE = 3m.37s. and 6m.23s.
Bombay iN = 9m.9s., iE = 9m.12s., SSN = 9m.38s., SSE = 9m.43s.
Kodaikanal iE = 15m.11s.
Helwan eZ = 7m.34s.
Warsaw eZ = 10m.53s., eE = 10m.56s., eZ = 14m.3s., eE = 14m.10s., eS?E = 16m.36s., eS?Z = 16m.42s., eZ = 19m.38s., eE = 20m.40s., eZ = 20m.49s.
Upsala PPPN = 15m.50s., eE = 16m.15s., eS = 19m.7s., eSSE = 19m.52s., eSSSN = 20m.4s.
Copenhagen 16m.59s.
Potsdam iSSE = 17m.3s., iS_eSEN = 18m.1s., iE = 19m.0s., iZ = 19m.7s., iE = 19m.33s., iZ = 20m.42s. and 20m.46s., iN = 20m.54s., iZ = 22m.6s., iN = 22m.32s., iE = 23m.24s., iZ = 24m.6s., iN = 25m.1s.
Jena iN = 7m.59s., e = 8m.55s.
Long waves were also recorded at Almeria, Prague De Bilt, Kew, and Lick.

Jan. 18d. Readings also at 3h. (near Berkeley, Branner, Lick, Santa Clara and Fresno), 6h. (Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 7h. (Tucson (2), Haiwee (2), Mount Wilson (2), Pasadena (2), Palomar (2), Riverside (2), Tinemaha (2), Berkeley, Branner, Lick, Santa Clara, Ukiah, and near Ferndale), 10h. (Auckland), 11h. (Mount Wilson, Pasadena, Tucson, Riverside, Tinemaha, near Lick, and Branner), 12h. (near Lick), 18h. (near Almata, Frunse, Stalinabad, Tashkent (3), and Tchimkent (3)), 19h. (Almata and Stalinabad), 20h. (Agra, Bombay, Calcutta, Colombo, Hyderabad, Almata, Tashkent, near Frunse, and Tchimkent), 21h. (Uccle and De Bilt), 23h. (Agra, Bombay and Calcutta).

Jan. 19h. Readings at 1h. (Agra, Bombay, Calcutta, and Hyderabad), 2h. (near Berkeley, Branner and Lick), 3h. (La Paz and near Andijan), 4h. (Arapuni, Auckland, Christchurch, Wellington, Riverview, Tucson, Haiwee, Mount Wilson, Pasadena, Riverside and Tinemaha), 5h. (Bombay), 14h. (Calcutta, near Andijan, Almata, and near La Paz), 16h. (near Branner and Lick), 17h. (Denver and near Mizusawa), 18h. (Agra, Bombay, and Calcutta), 19h. (Lick), 23h. (Logan).

Jan. 20d. 6h. 25m. 38s. Epicentre 17°·9N. 105°·8W.

$A = -\cdot2593$, $B = -\cdot9162$, $C = +\cdot3055$; $\delta = -1$; $h = +5$;
$D = -\cdot962$, $E = +\cdot272$; $G = -\cdot083$, $H = -\cdot294$, $K = -\cdot952$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Guadalajara	Z.	3·6	40	1 5	P*	—	—	—	—	—
Tacubaya	E.	6·4	76	i 1 38	0	—	—	—	—	—
Vera Cruz	E.	9·3	80	—	—	e 3 58	− 7	—	—	—
Tucson		15·0	343	e 3 34	− 1	e 6 25	+ 2	—	—	i 6·6
Merida	N.	15·6	76	i 3 43	0	—	—	—	—	—
La Jolla		18·1	328	i 4 17	+ 3	—	—	—	—	—
Palomar	Z.	18·3	330	i 4 17	0	—	—	—	—	—
Mount Wilson	Z.	18·9	330	e 4 31	+ 7	—	—	—	—	—
Riverside		19·1	330	e 4 27	0	—	—	—	—	—
Pasadena		19·6	330	i 4 32k	0	—	—	—	—	i 8·4
Mobile		20·5	46	i 4 39	− 3	i 8 27	0	—	—	—
Santa Barbara	N.	20·6	326	e 4 45	+ 2	—	—	—	—	—
Haiwee		21·1	333	i 4 49	+ 1	—	—	—	—	—
Denver		21·8	0	—	—	e 9 0	+ 8	—	—	—
Tinemaha		22·0	333	i 4 58	0	—	—	—	—	—
Fresno	N.	22·4	330	i 5 6	+ 4	e 9 36	SS	—	—	—
Salt Lake City		23·4	347	i 5 14	+ 3	i 9 31	+10	e 6 0	PPP	e 12·1
Lick		23·9	327	e 5 18	+ 2	—	—	—	—	—
Cape Girardeau		24·0	32	i 5 16	− 1	e 9 34	+ 2	—	—	—
Santa Clara		24·0	327	i 5 20	+ 3	e 9 46	+14	—	—	e 12·6
Branner	E.	24·2	327	e 5 24	+ 5	—	—	e 6 1	PPP	e 13·1
Lincoln		24·2	18	e 5 18	− 1	e 9 37	+ 2	—	—	e 12·5
Berkeley	E.	24·6	327	e 5 21	− 2	e 10 11	+29	—	—	—
	N.	24·6	327	e 5 14	− 9	e 10 5	+23	—	—	e 13·0
St. Louis		24·7	28	i 5 23	− 1	i 9 49	+ 5	i 5 53	PP	i 12·2
Florissant		24·8	28	i 5 22	− 3	i 9 44	− 2	i 10 53	SS	—
Ukiah		26·0	328	e 5 38	+ 2	e 9 50	−16	e 6 23	PP	e 12·4
Columbia		27·2	48	e 5 46	− 1	e 10 28	+ 3	e 6 43	PPP	e 11·9
Bozeman		28·0	353	e 5 56	+ 1	e 10 29	− 9	e 7 7	PPP	e 14·6
Chicago U.S.C.G.S.		28·4	28	e 5 54	− 4	e 10 42	− 3	e 6 42	PP	e 13·5
Butte		28·6	351	e 6 0	0	e 10 47	− 1	e 6 43	PP	e 16·1
Pittsburgh		31·6	39	i 6 27	+ 1	e 11 44	+ 9	—	—	—
Pennsylvania		33·1	40	i 6 8	−32	—	—	—	—	18·0
Philadelphia		34·4	44	6 48	− 3	12 18	− 1	—	—	e 16·0
Fordham		35·7	43	i 7 0	− 2	i 12 49	+10	i 8 31	PP	e 18·4
Ottawa		37·1	35	7 13	− 1	e 13 3	+ 2	8 37	PP	e 19·4
San Juan		37·7	83	e 7 55	+36	e 12 59	−11	—	—	e 17·2
Harvard		38·0	42	e 7 22	+ 1	e 13 18	+ 4	—	—	e 20·4
Vermont		38·0	39	7 21	0	e 13 55	+41	e 8 54	PP	20·0
Shawinigan Falls		39·5	36	i 7 33	− 1	13 38	+ 1	—	—	19·4

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Seven Falls		40·8	36	7 46	+ 1	14 4	+ 8	—	—	21·4
East Machias		41·8	42	e 7 54	+ 1	e 14 17	+ 6	e 9 10	PP	e 19·6
Huancayo		42·3	133	e 7 57	0	e 14 14	− 5	—	—	e 17·9
Honolulu		49·0	283	—	—	e 13 45	?	—	—	e 22·1
La Paz	N.	50·4	130	9 1	0	i 16 31	+17	i 10 45	PP	26·7
Rio de Janeiro		73·4	120	e 29 22	?	—	—	—	—	—
Kew		85·4	37	—	—	e 23 21	+10	e 28 30	SS	e 41·9
Granada		88·7	50	e 15 43	PP	e 23 46	+ 3	—	—	42·1
Cheb		93·2	35	—	—	e 22 22	?	e 29 22	SS	e 46·4
Christchurch		96·2	227	26 29	PS	34 19	?	40 32	Q	44·5
Bombay	E.	143·4	2	e 20 3	[+27]	41 38	SS	22 29	PP	68·4

Additional readings :—
Tucson i = 4m.6s., 4m.9s., 4m.16s., and 5m.10s., e = 5m.54s.
Pasadena iZ = 5m.37s.
Denver eSN = 9m.9s.
Lick ePE = 5m.21s.
Cape Girardeau eEN = 9m.38s.
Berkeley ePN = 5m.26s., eSZ = 10m.27s., eE = 12m.9s.
St. Louis eSSE = 10m.54s.
Florissant iPPZ = 5m.56s., iZ = 9m.48s., iE = 9m.56s., iN = 10m.0s.
Bozeman e = 7m.42s., eS = 10m.38s.
Pittsburgh e = 11m.52s., iS = 12m.1s.
Pennsylvania e = 6m.18s.
Philadelphia S = 12m.26s.
Ottawa SSSN = 15m.52s.
San Juan e = 9m.59s.
Vermont e = 15m.45s.
East Machias e = 17m.18s.
Huancayo e = 8m.25s.
Kew eSSSZ = 31m.11s.
Granada i = 23m.52s.
Long waves were also recorded at Potsdam, Warsaw, Uccle, De Bilt, Riverview, Almeria, Auckland, Seattle, Scoresby Sund, College, Wellington, Stonyhurst, and Agra.

Jan. 20d. Readings also at 3h. (Bombay, near Tashkent, Almata and Andijan), 4h. (Tucson, Brisbane, Wellington, Auckland, Riverview, Berkeley, Santa Barbara, Tinemaha Pasadena, Riverside, Mount Wilson, Haiwee, and Palomar), 5h. (near Andijan (2), and Agra), 6h. (Tucson, Vera Cruz, Tacubaya, La Paz, Guadalajara, Manzanillo, Bermuda, Palomar, Tinemaha, Pasadena, Riverside, Mount Wilson, St. Louis, and near Tchimkent), 7h. (near Granada), 8h. (near Andijan, and Almata), 11h. (near Fort de France), 12h. (near Algiers), 13h. (Seven Falls and College), 14h. (Lick, St. Louis, Mount Wilson, Riverside, Pasadena, Tinemaha, Palomar, Haiwee, Tucson, Chicago, Ottawa, Vermont, Fordham, Seven Falls, Shawinigan Falls, Lincoln, and Bozeman), 16h. (near Lick (2)), 17h. (near Almata, Tashkent, and Andijan (2)), 19h. (near Branner), 22h. (near Almeria).

Jan. 21d. 12h. Indian Ocean. U.S.S.R. suggests 13°·0S 94°·5E., but this does not account for any of the readings from India nor Tananarive.

Ksara e = 4m.15s. and 6m.35s.
Perth i = 4m.35s., 6m.48s., and 10m.25s.
Colombo PE = 5m.20s., SE = 9m.42s., LE = 12m.8s.
Calcutta ePN = 6m.0s., iSN = 11m.19s., iSSN = 13m.32s., iSSSN = 13m.55s., eS_eSN = 15m.59s.
Tananarive e = 6m.9s., 8m.56s., 16m.34s., 27m.40s., 29m.12s., and 34m.27s.
Kodaikanal ePE = 6m.25s., PPPE = 7m.45s., eE = 9m.0s., iSE = 11m.45s., SSE = 13m.35s.
Bombay ePEN = 6m.48s., PPEN = 8m.22s., iEN = 8m.37s., and 9m.45s., eS = 12m.38s., e = 13m.38s., SSEN = 15m.25s., eN = 16m.27s., S_eSEN = 17m.11s.
Hyderabad ePN = 6m.57s., eN = 11m.30s., SSN = 14m.24s.
Agra PE = 6m.58s., eE = 13m.11s., iSE = 13m.19s., SSSE = 16m.41s.
Tashkent P = 8m.50s., S = 16m.54s.
Helwan eZ = 8m.54s., iZ = 9m.37s. and 11m.33s.
Irkutsk eP = 9m.36s., PS = 18m.57s., SS = 24m.0s.
Sverdlovsk eP = 10m.38s.
Riverview eEN = 15m.39s., eLN = 25m.18s.
Wellington S? = 19m.42s., e = 28m.50s., iZ = 36m.25s., R = 46m.?.
Auckland S? = 20m.0s.?, e = 30m.15s., L = 37m.18s.
Granada PP = 25m.46s., SKSP = 37m.24s., L = 69m.42s.
Long waves were also recorded at Arapuni, De Bilt, Uccle, and Potsdam.

Jan. 21d. Readings also at 0h. (near Branner), 11h. (College, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 17h. (near Samarkand), 18h. (Mizusawa), 19h. (near Berkeley, Branner, and Lick), 20h. (near Berkeley), 21h. (Agra, Calcutta, and Mizusawa), 22h. (Frunse, Agra, Tashkent, Tchimkent, and near Stalinabad), 23h. (Calcutta, Agra, and Colombo).

Jan. 22d. Readings at 1h. (Wellington), 3h. (near Samarkand), 5h. (near Tananarive), 10h. (Calcutta and Agra), 15h. (Agra), 16h. (Calcutta), 17h. (Merida, Puebla, Tacubaya, Vera Cruz, Oaxaca, and Cape Girardeau), 18h. (Tucson, Tinemaha, Riverside, Palomar, La Paz, and La Plata), 19h. (near Samarkand), 22h. (Mizusawa), 23h. (near Tashkent).

Jan. 23d. 21h. 28m.26s. Epicentre 10°·3N. 126°·0E. (as on 1938 November 13d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyakozima		14·4	358	3 29	+ 2	—	—	—	—	—
Hukuoka		23·5	9	4 21	−51	—	—	—	—	—
Matuyama		24·2	13	5 15	− 4	9 37	+ 2	—	—	—
Hamada		25·1	11	5 28	0	9 53	+ 2	—	—	—
Osaka		25·7	18	5 22	−11	10 22	+21	—	—	—
Nagoya		26·7	20	4 55	−48	—	—	—	—	11·1
Tokyo Cen. Met. Ob.		28·2	23	e 7 0	PPP	11 53	SS	—	—	—
Calcutta	N.	38·0	294	e 7 27	+ 6	i 13 22	+ 8	e 8 52	PP	i 19·0
Irkutsk		45·4	342	8 21	− 1	i 15 3	− 1	—	—	—
Colombo	E.	45·7	269	8 24	0	15 11	+ 3	—	—	27·0
Hyderabad	E.	46·6	285	8 32	0	15 22	+ 1	10 20	PP	22·8
Kodaikanal	E.	47·4	275	e 8 39	+ 1	15 43	+11	10 34?	PP	24·6
Agra	E.	48·1	~~298~~	e 8 41	− 2	15 41	− 1	10 28	PP	—
Riverview		50·0	152	i 8 57a	− 1	e 16 2	− 7	i 10 51	PP	—
Bombay		52·0	285	i 9 12	− 1	e 16 37	+ 1	11 4	PP	—
Almata		53·7	317	e 10 10	+44	—	—	—	—	—
Andijan		56·0	312	10 26	+43	—	—	—	—	—
Tashkent		58·4	313	e 9 58	− 2	18 6	+ 4	—	—	—
Auckland		65·6	138	14 14	PPP	19 24	− 9	—	—	33·6
Sverdlovsk		68·0	328	i 11 1	− 2	i 20 0	− 2	—	—	—
Wellington		68·2	143	—	—	19 42	−22	38 34?	Q	42·6
College		79·1	26	—	—	e 21 52	−15	e 26 54	SS	e 43·7
Helwan	z.	88·9	300	i 12 55k	− 3	23 25	[− 1]	16 42	PP	—
Warsaw		90·9	324	—	—	e 23 34	[− 4]	—	—	e 49·6
Cheb		96·8	324	—	—	e 23 34?	[−37]	—	—	e 53·6
Tucson		111·3	49	e 19 1	PP	e 34 11	SS	e 37 53	SSS	e 54·8
Granada		113·2	318	i 23 36	?	i 35 52	SS	i 28 23	PS	55·7
San Juan		149·1	22	e 19 58	[+12]	e 26 1	[−52]	e 41 58	SS	e 80·3
Huancayo		159·0	97	e 19 56	[− 4]	e 31 9	{+ 2}	e 24 14	PP	e 77·0
La Paz		165·0	116	20 4	[− 2]	31 10	{−28}	24 43	PP	80·6

Additional readings :—
Calcutta eP_cPN =9m.46s., eSSN =15m.51s., eS_cSN =17m.41s.
Hyderabad SSE =18m.12s.
Bombay iE =9m.29s., i =11m.44s., eE =12m.59s., S_cS =19m.0s., SSN =19m.48s., SSE =20m.7s.
Helwan eZ =14m.22s. and 15m.28s., iZ =23m.49s. and 25m.28s.
Warsaw eE =24m.0s.
Granada SS =43m.48s.
San Juan e =21m.43s. and 43m.38s.
Huancayo e =20m.24s., eS? =31m.56s., e =45m.24s.
Long waves were also recorded at Kew, Bozeman, Upsala, Fordham, Jena, De Bilt, Arapuni, Potsdam, Pasadena, and Scoresby Sund.

Jan. 23d. Readings also at 0h. (near Tashkent), 2h. (near Apia), 3h. (Tucson, Tinemaha, Logan, Arapuni, Wellington, and Auckland), 7h. (Agra and Calcutta), 8h. (Potsdam and De Bilt), 11h. (near Samarkand), 12h. (near Andijan), 16h. (Florissant, and St. Louis),

Jan. 24d. Readings at 2h. (near Samarkand), 4h. (La Paz), 10h. (Stuttgart and near Ferndale), 12h. (Irkutsk, Almata, Agra, Andijan, Tashkent, and Calcutta), 13h. (near Almata, Andijan, and Tashkent), 20h. (near Andijan), 21h. (Calcutta, Agra, La Paz, Warsaw, Granada, Cheb, Tucson, Mount Wilson, Tinemaha, Pasadena, and near Tashkent).

Jan. 25d. Readings at 3h. (near Tchimkent), 4h. (near Mizusawa), 7h. (near La Paz), 15h. (near Samarkand), 23h. (near Tashkent, Agra, and Tchimkent),

Jan. 26d. Readings at 0h. (Agra, near Stalinabad, Tchimkent, Tashkent, and Frunse), 5h. (Mizusawa, and Balboa Heights), 6h. (Harvard), 13h. (near Samarkand), 15h. (Copenhagen, Agra, Stalinabad, Frunse, Tashkent, and Tchimkent), 16h. (Tucson, Riverside, and Mount Wilson), 21h. (near Samarkand).

Jan. 27d. 13h. 29m. 9s. Epicentre 4°·3S. 134°·3E. (as on 1937 November 5d.).

$A = -\cdot6965$, $B = +\cdot7137$, $C = -\cdot0745$; $\delta = +3$; $h = +7$;
$D = +\cdot716$, $E = +\cdot698$; $G = +\cdot052$, $H = -\cdot053$, $K = -\cdot997$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	29·2	144	i 6 0	− 5	i 10 25	−33	i 13 5	SSS	—
	N.	29·2	144	i 5 58	− 7	i 10 21	−37	—	—	i 14·9
Naha		31·0	348	6 25	+ 4	—	—	—	—	—
Taihoku		31·7	338	6 36	+ 9	—	—	—	—	—
Perth		32·5	209	6 41	+ 7	11 56	+ 7	7 41	PP	16·3
Riverview		33·3	154	e 6 39	− 2	i 11 53	− 9	i 8 2	PP	16·3
Sydney		33·3	154	e 6 36	− 5	i 11 48	−14	i 14 24	SSS	—
Kumamoto		37·1	356	7 4	−10	13 13	+12	—	—	—
Matuyama		38·0	359	i 7 20	− 1	13 8	− 6	—	—	—
Kobe		38·8	1	7 24	− 4	13 26	0	—	—	—
Hamada		39·0	357	e 7 26	− 4	13 22	− 7	—	—	—
Nagoya		39·3	6	e 7 30	− 2	(16 30)	SS	—	—	16·5
Gihu		39·6	6	e 7 28	− 7	13 26	−12	—	—	—
Tokyo Cen. Met. Ob.		40·1	8	e 8 1	+22	—	—	—	—	19·2
Taikyu		40·3	353	7 41	+ 1	12 46	−63	—	—	—
Nagano		40·9	6	7 51	+ 5	14 9	+11	—	—	—
Sendai		42·8	8	7 55	− 6	14 13	−13	—	—	—
Sapporo		47·6	7	8 41	+ 2	15 27	− 8	—	—	18·9
Nemuro		48·5	11	9 2	+16	—	—	—	—	—
Auckland		49·3	137	8 48	− 5	15 51	− 8	8 56	pP	23·8
New Plymouth		49·9	140	9 5	+ 8	16 8	+ 1	—	—	—
Arapuni		50·5	138	9 27	pP	16 33	+17	11 27	PP	23·9
Wellington		51·6	141	9 1a	− 9	16 16	−15	9 13	pP	23·9
Christchurch		51·7	145	9 7a	− 4	16 19	−13	11 4	PP	24·7
Tuai		51·9	138	9 14	+ 2	16 20	−15	—	—	—
Calcutta	N.	52·2	303	e 8 33	−42	i 16 0	−39	i 18 29	?	—
Apia		54·0	104	e 9 30	+ 2	e 16 46	−17	—	—	—
Colombo	E.	55·5	281	i 9 41	+ 2	i 17 26	+ 2	—	—	26·9
Kodaikanal	E.	58·4	285	i 10 1k	+ 1	i 18 5	+ 3	11 56	PP	28·3
Hyderabad	E.	59·2	294	10 7	+ 2	18 17	+ 5	12 8	PP	29·4
Irkutsk		60·9	340	10 21	+ 4	18 46	+12	12 45	PP	—
Agra	E.	62·6	304	i 10 25k	− 3	i 18 54	− 2	10 33	pP	29·5
Bombay		64·7	293	i 10 43	+ 1	19 26	+ 4	11 7	P_cP	32·8
Almata		70·0	320	e 11 21	+ 6	20 38	+12	—	—	—
Honolulu		71·1	67	e 11 21	− 1	e 20 30	− 8	i 13 53	PP	e 30·7
Semipalatinsk		71·5	328	e 11 25	+ 1	e 20 25	−18	—	—	—
Andijan		72·1	315	11 37	+ 9	21 3	+13	—	—	—
Stalinabad		73·9	313	i 11 47	+ 8	—	—	—	—	—
Tashkent		74·4	315	11 43	+ 1	21 18	+ 2	—	—	—
Sverdlovsk		84·7	328	12 54	+17	23 2	− 2	—	—	—
Tananarive		85·6	251	e 12 44	+ 3	23 8	[+ 3]	16 5	PP	41·0
Baku		88·5	311	13 11	+15	23 45	+ 4	—	—	—
College		88·7	25	e 12 55	− 2	e 23 22	[− 3]	e 24 45	PS	e 36·9
Ksara		99·4	303	—	—	e 24 33	[+ 9]	—	—	—
Victoria		101·3	42	17 36	PP	24 37	[+ 4]	32 27	SS	42·9

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Seattle		102·2	42	e 19 58	PPP	e 25 7	[+29]	e 27 47	PPS	e 47·6
Ukiah		102·4	51	e 14 8	+ 9	e 24 32	[− 7]	e 18 6	PP	e 41·4
Berkeley		103·2	53	e 14 19	+16	e 28 1	PPS	—	—	e 47·0
Santa Clara	E.	103·5	53	—	—	e 24 37	[− 7]	e 27 16	PS	e 47·2
Bucharest	E.	106·0	314	e 16 54	?	e 24 57	[+ 2]	e 18 53	PP	41·9
Tinamaha	Z.	106·5	52	e 14 33	P	—	—	e 18 35	PP	—
Pasadena		106·9	56	e 14 15	P	i 24 51	[− 8]	i 18 37	PP	e 43·5
Upsala		106·9	331	—	—	e 25 8	[+ 9]	e 38 15	SSS	e 46·9
Mount Wilson	Z.	107·0	56	e 14 15	P	—	—	e 18 30	PP	—
Warsaw		107·5	323	e 19 3	PP	e 24 51?	[−11]	e 28 26	PS	e 49·9
Riverside	Z.	107·6	56	e 14 16	P	—	—	—	—	—
Palomar	Z.	108·1	56	i 14 48	P	—	—	e 18 31	PP	—
Sofia		108·3	312	e 17 33	?	e 25 4	[− 1]	e 26 32	SKKS	—
Butte		109·1	42	—	—	e 28 26	PS	e 33 57	SS	e 45·3
Bozeman		110·2	43	e 18 58	PP	i 25 9	[− 4]	e 20 10	PP	e 46·0
Logan		110·6	45	e 19 17	PP	e 28 25	PS	e 38 54	SS	e 44·8
Saskatoon		110·9	35	—	—	e 28 33	PS	e 34 51?	SS	49·8
Copenhagen		111·1	328	e 18 45	[+10]	25 21	[+ 4]	34 45	SS	48·8
Potsdam		112·1	325	i 19 42	PP	i 27 5	{+45}	i 29 27	PS	e 52·8
Prague		112·2	322	e 19 33	PP	e 27 5	{+45}	e 34 51	SS	e 52·8
Tucson		113·3	57	e 14 56	P	e 25 28	[+ 3]	i 19 23	PP	e 46·5
Cheb		113·4	322	e 19 29	PP	e 29 39	PS	—	—	e 57·8
Jena		113·5	323	e 18 51	[+11]	e 35 11	SS	e 38 51	SSS	e 48·8
Triest		114·1	318	e 18 31	[−10]	i 26 37	{+ 3}	—	—	e 57·3
Stuttgart		115·8	323	e 18 54	[+ 9]	29 36	PS	19 57	PP	55·8
Chur		116·4	320	e 18 44	[− 2]	—	—	—	—	—
De Bilt		116·5	327	e 20 19	PP	e 27 51	{+61}	i 36 9	SS	e 49·8
Strasbourg		116·7	323	—	—	e 36 3	SS	e 39 57	SSS	—
Zurich		116·8	321	e 18 46	[0]	—	—	—	—	—
Aberdeen		117·1	335	—	—	i 29 54	PS	i 40 46	SSS	62·8
Basle		117·3	322	e 17 34	?	—	—	—	—	—
Uccle		117·6	326	e 20 3	PP	i 27 49	{+52}	i 36 23	SS	e 52·8
Neuchatel		117·9	321	e 18 51	[+ 2]	—	—	—	—	—
Stonyhurst		119·4	332	i 30 15	PS	i 36 30	SS	—	—	e 50·8
Kew		119·7	328	—	—	e 28 12	{+60}	e 36 59	SS	e 50·8
Paris		119·7	324	—	—	e 27 51?	{+39}	—	—	e 56·8
Marseilles		120·5	318	—	—	e 40 11	?	—	—	58·3
Clermont-Ferrand		120·9	321	e 19 51?	[+57]	—	—	—	—	e 61·4
Lincoln		121·7	43	—	—	e 26 1	[+ 6]	e 30 5	PS	e 59·4
Florissant		126·9	45	i 19 4	[− 2]	e 26 7	[− 4]	i 20 52	PP	—
St. Louis		127·1	45	e 18 50	[−16]	i 26 7	[− 5]	i 20 56	PP	—
Chicago U.S.C.G.S.		127·2	39	e 21 1	PP	e 26 18	[+ 6]	e 31 5	PS	e 52·4
Cape Girardeau		128·2	45	e 20 56	PP	—	—	—	—	e 61·3
Almeria		128·9	315	e 18 57	[−13]	26 11	[− 6]	21 29	PP	63·8
Granada		129·5	316	i 19 21a	[+10]	(26 40)	[+21]	19 39	pPKP	62·5
Ottawa		131·4	28	19 13	[− 2]	26 25	[+ 2]	21 27	PP	57·8
San Fernando		131·6	316	—	—	38 48	SS	—	—	61·8
Shawinigan Falls		131·8	23	e 19 21	[+ 6]	—	—	e 22 39	PP	65·8
Seven Falls		132·1	22	e 19 33	[+17]	31 34	PS	21 27	PP	56·8
Mobile		132·2	52	22 38	PP	26 47	[+22]	28 25	SKKS	61·3
Lisbon		132·3	320	19 21	[+ 5]	39 20?	SS	23 1	PKS	63·4
Vermont		133·3	27	e 22 44	PP	e 26 29	[+ 1]	e 39 27	SS	e 64·3
East Machias		135·4	21	e 22 3	?	e 28 42	{−11}	e 39 43	SS	e 59·9
Philadelphia		135·6	32	e 21 54	?	e 32 2	PS	e 22 51	PKS	e 58·1
Fordham		135·7	30	e 19 24	[+ 1]	i 26 37	[+ 5]	i 21 59	PP	—
Columbia		135·8	43	e 22 54	PKS	e 32 2	PS	e 39 32	SS	e 61·2
Halifax		136·9	18	—	—	e 35 51?	?	—	—	53·8
La Plata		139·3	165	23 9	PKS	29 15	{− 2}	32 51	PS	64·8
Huancayo		146·4	119	i 19 44	[+ 3]	e 27 4	[+15]	e 41 34	SS	e 62·6
Bermuda		146·9	30	e 19 34	[− 8]	e 30 2	{+ 1}	e 23 46	PP	71·8
La Paz		149·7	135	i 19 52a	[+ 5]	i 26 44	[− 9]	i 21 12	pP	71·8
Rio de Janeiro	E.	152·9	186	e 23 51	PP	—	—	(i 42 51)	SS	i 42·8
San Juan		155·6	53	e 20 6	[+11]	e 26 22	[−38]	i 24 33	PP	—

For Notes see next page.

NOTES TO JANUARY 27d. 13h. 29m. 9s.

Additional readings :—
Brisbane iE =11m.54s., iN =11m.58s.
Perth PPP =7m.58s., SS =13m.56s.
Riverview iPEZ =6m.46s., iE =12m.3s., iN =12m.42s., iE =12m.50s., 13m.45s., and 14m.30s., iN =14m.35s., iE =15m.57s.
Sydney i =14m.33s.
Auckland P_cP? =10m.51s., i =15m.59s., SS? =19m.26s., i =20m.31s., Q =21m.51s.
Wellington iZ =9m.41s., P_cP?Z =10m.5s., sP_cPZ =10m.43s., PP?Z =11m.11s., iZ = 12m.21s., 13m.1s., and 13m.51s., P_cS?Z =14m.28s., i =16m.26s. and 17m.1s., S_cS =18m.39s., SS? =19m.6s., i =20m.46s., Q =22m.16s.
Christchurch P_cS =13m.53s., S_cS =19m.5s., Q =20m.56s.
Kodaikanal SSE =21m.58s., SSSE =24m.1s.
Hyderabad PSE =18m.30s., S_cSE =19m.54s., SSE =22m.11s.
Irkutsk S_cS =20m.20s.
Agra PPE =12m.43s., eE =13m.42s., iS?N =19m.3s., PSE =19m.17s., S_cSE =20m.2s., SSE =22m.38s., SSSE =25m.14s.
Bombay iN =11m.55s., iE =12m.2s., PPN =13m.1s., iEN =13m.16s., 14m.3s., and 14m.51s., iN =15m.20s. and 19m.58s., S_cSN =20m.39s., S_cSE =20m.38s., iN = 21m.52s., iE =22m.9s., SSE =23m.28s.
Honolulu e =16m.9s., i =21m.6s., e =24m.18s.
Tananarive S =23m.21s., PS =24m.20s.
College e =12m.58s. and 15m.53s.
Victoria PPS =27m.9s., SSS =35m.51s. ?
Seattle eSS =31m.57s., e =38m.37s.
Ukiah eS =25m.24s., ePS =27m.6s., i =27m.13s., e =31m.46s.
Berkeley eE =23m.49s., eSZ =28m.7s.
Bucharest eE =22m.27s.
Pasadena ePKPZ =17m.58s., eN =25m.30s. and 26m.9s., iEN =27m.51s., eSSEZ = 33m.45s.
Upsala eN =26m.13s., eSN =33m.46s., eSE =33m.50s., eSSSE =41m.51s.?
Warsaw eZ =23m.2s. and 24m.24s.
Butte e =31m.37s.
Bozeman iPS =28m.21s., eSS =34m.29s., eSSS =38m.34s.
Copenhagen 26m.53s. and 29m.21s.
Potsdam iPPPZ =21m.52s., eSE =27m.21s., iZ =29m.36s., iSSE =35m.16s., iSSSN = 39m.27s.
Prague e =39m.9s.
Tucson ePKP =18m.39s., iPPP =21m.47s., e =26m.24s., iPS =28m.57s., e =31m.26s., eSS =34m.27s., eSSS =39m.21s.
Jena ePZ =19m.35s., ePN =19m.39s.
Stuttgart eN =27m.48s., SS =36m.11s., eN =39m.51s.
Aberdeen eQE =53·8m.
Uccle iE =27m.56s.
Stonyhurst i =36m.52s.
Kew ePSE? =18m.24s., e =36m.5s. and 38m.49s., eSSS =40m.13s., eQ =48·3m.
Paris eSS =35m.51s. ?
Lincoln eSS =37m.15s., eSSS =41m.24s.
Florissant iSKPZ =22m.11s., iSKPE =22m.29s., iE =26m.20s., iSKKS =27m.59s., iN =28m.4s., iPSZ =31m.2s., iE =34m.1s.
St. Louis ePKPZ =19m.13s., iSPKEN =22m.9s., iSKKSN =27m.50s.
Chicago U.S.C.G.S. e =22m.17s., e =27m.48s. and 32m.32s., eSS =38m.5s.
Almeria i =22m.52s., PPP =25m.35s., SKKS =29m.14s., SKP =31m.34s., PPS = 33m.27s., SS =38m.36s., SSS =44m.23s.
Granada sP =20m.0s., PKP =22m.22s., pPKP =22m.48s., PP =23m.59s., SKS = 29m.18s., sS =32m.57s., sPPS =36m.41s., i =38m.54s., SS =41m.24s., SSS = 46m.0s. ; true SKS is given as PPP.
Ottawa SKP =22m.37s., PPS =33m.27s., SS =38m.51s.?, e =47m.21s.
Seven Falls SKP =22m.40s., SS =39m.9s., SSS =44m.51s.?, e =50m.27s.
Lisbon PKSE =23m.9s., SSN =39m.27s.?, E =44m.9s.?, N =44m.21s.?
Vermont e =31m.51s. and 34m.22s., eSSS =44m.19s.
East Machias e =22m.46s.
Philadelphia e =33m.57s., eSS =39m.40s., e =45m.7s.
Fordham i =26m.51s., SS =39m.49s.
Columbia e =24m.1s.
La Plata SKS =30m.15s., PSN =37m.21s., SKKS?E =40m.39s., N =41m.27s., PSSE = 44m.51s., SSSN =49m.3s., SSSE =52m.51s.
Huancayo ePP = +22m.49s., e =23m.56s., 29m.55s., 33m.35s., and 47m.28s.
Bermuda i =19m.51s., e =33m.15s., 35m.41s., and 37m.18s., eSS =41m.47s., eSSS = 47m.46s.
La Paz iPKP_2 =20m.16s., iPPZ =23m.32s., iSKKS =30m.12s., iSSN =42m.40s., SSS = 48m.39s.
San Juan i =20m.34s. and 30m.28s.
Long waves were also recorded at Ferndale, Algiers, Lick, Belgrade, and Harvard.

Jan. 27d. Readings also at 0h. (near Balboa Heights (2)), 1h. (Uccle, Lisbon, Basle, Zurich, Stuttgart, Triest, Copenhagen (2), Tucson, Pasadena, Mizusawa, Palomar, Riverside, Mount Wilson, and Tinemaha), 3h. (Tucson, Tinemaha, Mount Wilson, Riverside, Palomar, Balboa Heights, and near Mizusawa), 4h. (Clermont-Ferrand), 8h. (near Andijan and La Paz), 9h. (La Paz, Huancayo, and near Balboa Heights), 15h. (Tananarive, Riverview, Brisbane, near Andijan, Stalinabad, Lick, Helwan, and Lincoln), 16h. (Brisbane (2) and Riverview (2)), 20h. (Riverview, Brisbane, Tucson, and Auckland), 21h. (Tucson, Haiwee, Pasadena, Tinemaha, Mount Wilson, Riverside, and Palomar), 22h. (Pasadena, Tinemaha, Riverside, Palomar, Mizusawa, Copenhagen, Tucson, and Mount Wilson), 23h. (near Mizusawa).

Jan. 28d. Readings at 1h. (Agra, Andijan, near Calcutta, and near Apia), 2h. (near La Paz), 3h. (near Mizusawa), 5h. (Andijan), 9h. (Brisbane, Tucson, and Riverview), 10h. (Brisbane and Riverview), 11h. (Riverview), 14h. (Andijan, near Stalinabad, and Tashkent), 15h. (Tucson (3), Tinemaha (3), Fordham, Palomar (2), Riverside (3), Lincoln (2), Haiwee (2), and Pasadena (3)), 16h. (near Ferndale), 17h. (near Tananarive), 20h. (near Andijan), 21h. (Sydney, Riverview (2), Brisbane, and Auckland), 22h. (near Branner), 23h. (Stuttgart, Neuchatel, Zurich, Chur, and Basle, and near Triest).

Jan. 29d. 7h. Undetermined shock. Near Apia.

Apia iP = 32m.55s., iS = 33m.56s., iZ = 35m.14s.
Calcutta eN = 33m.28s., iN = 36m.40s.
Auckland S? = 38m.58s., i = 41m.30s., Q = 42·5m., R? = 43·6m.
Wellington S? = 39m.20s., Q = 44·5m., R = 47·6m.
Kodaikanal e = 40m.
Bombay eE = 40m.8s., iN = 40m.26s., eE = 41m.18s., eN = 41m.27s., iE = 41m.53s. and 42m.33s.
Riverview eZ = 40m.27s., eN = 44m.38s., eZ = 44m.43s., eLN = 47·2m.
Arapuni e = 41m.36s., Q? = 43·2m.
Mount Wilson ePZ = 43m.36s., iZ = 43m.40s.
Pasadena ePZ = 43m.37s., e = 53m.36s., eLEN = 62·4m.
Riverside ePZ = 43m.41s.
Palomar iPZ = 43m.42s.
Tinemaha ePZ = 43m.51s.
Tucson eP = 44m.2s., e = 46m.22s., iL? = 67·5m.
Huancayo e = 57m.43s., eL = 77·3m.
Long waves were also recorded at Honolulu, La Paz, Ukiah, Bozeman, and Columbia.

Jan. 29d. 9h. 23m. 34s. Epicentre 18°·7S. 168°·4E. (as on 1939, Aug. 19d.).

Pasadena suggests deep.

$A = -·9285$, $B = +·1906$, $C = -·3187$; $\delta = +1$; $h = +5$;
$D = +·201$, $E = +·980$; $G = +·312$, $H = -·064$, $K = -·948$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	16·6	235	i 4 5	+ 9	i 7 4	+ 4	i 4 27	PP	—
	N.	16·6	235	i 4 7	+11	i 7 9	+ 9	—	—	—
Auckland		18·9	166	4 14	−10	7 41	−12	4 47	pP	—
Apia		19·6	79	i 4 34	+ 2	i 8 35	SS	i 4 52	pP	—
Arapuni		20·3	165	4 59	PP	8 26	+ 3	5 32	pP	10·4
New Plymouth		20·9	168	4 42	− 4	8 21	−14	5 23	pP	—
Tuai		21·4	163	4 44	− 7	8 31	−14	—	—	—
Riverview		21·5	223	i 4 53k	+ 1	i 8 46	− 1	i 5 13	pP	e 10·5
Sydney		21·5	223	e 4 59	+ 7	e 8 50	+ 3	—	—	e 10·9
Wellington		23·2	170	5 1a	− 8	8 59	−19	5 26	pP	i 10·9
Christchurch		25·0	173	5 18a	− 9	9 34	−15	9 51	Q	12·1
Perth		49·0	244	9 51	+61	15 46	− 9	11 6	PP	19·7
Honolulu		51·2	42	e 9 18	+11	e 16 26	+ 1	i 9 52	pP	e 23·9
Yokohama	Z.	60·4	333	e 10 18	+ 5	—	—	—	—	—
Tokyo, Cen. Met. Ob.		60·5	334	(e 10 18)	+ 4	—	—	—	—	—
Miyazaki		61·5	325	10 27	+ 6	18 41	− 1	—	—	—
Mori		65·7	339	(e 10 52)	+ 4	—	—	—	—	—
Ukiah		85·9	47	e 12 40	− 3	e 22 58	[− 9]	e 24 1	PS	e 36·3
Berkeley		86·0	49	i 12 40	− 3	e 22 47	[−21]	e 24 8	PS	e 39·6
Santa Clara		86·0	49	i 12 41	− 2	(i 22 54)	[−14]	—	—	e 39·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara	Z.	86·3	53	i 12 44	− 1	—	—	—	—	—
Fresno	N.	87·3	51	e 12 49	− 1	—	—	—	—	—
Pasadena		87·4	53	i 12 48a	− 2	i 23 3	[−14]	i 13 20	pP	e 36·0
La Jolla		87·5	54	i 12 50	− 1	—	—	—	—	—
Mount Wilson		87·5	53	i 12 50a	− 1	—	—	—	—	—
Riverside		87·9	53	i 12 51a	− 2	—	—	—	—	—
Palomar	Z.	88·0	55	i 12 52a	− 1	—	—	i 13 47	pP	—
Calcutta	N.	88·3	295	e 13 32	sP	i 23 25	[+ 3]	i 23 49	sS	—
Haiwee	Z.	88·3	51	i 12 53a	− 2	—	—	—	—	—
Tinemaha		88·5	50	i 12 55a	− 1	—	—	—	—	—
College		89·8	17	e 13 2	0	e 23 16	[−16]	e 24 27	pS	e 37·1
Irkutsk		89·8	327	e 13 9	+ 7	24 1	+ 8	i 23 25	SKS	—
Victoria		90·2	38	(12 56)	− 8	23 27	[− 6]	16 38	PP	e 37·4
Seattle		90·5	39	e 25 44	PPS	e 24 47	PS	e 32 17	SSS	e 39·8
Colombo	E.	90·8	277	13 26?	+20	23 30	[− 8]	—	—	—
Tucson		92·3	56	i 13 12a	− 1	e 24 17	+ 2	i 13 41	pP	e 37·8
Salt Lake City		94·5	47	e 13 23	0	e 24 41	+ 7	e 26 24	PPS	e 39·2
Logan		94·9	46	e 13 28	+ 3	e 24 43	+ 6	e 26 33	PPS	e 41·0
Hyderabad		95·4	287	17 49	PP	23 56	[− 7]	30 55	SS	45·9
Butte		95·9	43	e 25 33	PS	e 24 11?	[+ 5]	e 31 22	SS	e 40·9
Bozeman		96·8	44	e 17 36	PP	i 24 55	+ 1	e 23 58	SKS	41·2
Bombay		100·9	286	i 14 23	sP	i 24 21	[−10]	17 23	PP	—
Almata		103·6	312	e 18 28	PP	—	—	—	—	—
Frunse		105·2	310	e 18 47	PP	—	—	—	—	—
Andijan		106·4	308	e 18 57	PP	—	—	—	—	—
Tchimkent		108·7	308	18 33	PP	—	—	—	—	—
Florissant		110·1	55	—	—	e 25 51	{−15}	i 29 11	PPS	—
Huancayo		110·1	111	e 18 59	[+26]	e 25 6	[− 7]	e 27 33	pS	e 46·1
St. Louis		110·2	55	e 14 37	P	e 25 47	[+34]	i 18 36	PKP	—
La Plata		110·9	141	18 56	[+21]	—	—	—	—	28·0
Tananarive		110·9	240	19 40	PP	25 9	[− 7]	28 28	PS	52·8
Chicago U.S.C.G.S.		112·5	51	e 19 44	PP	35 44	SSP	39 42	SSS	e 51·0
La Paz		114·3	119	i 18 49	[+ 7]	29 4	PS	—	—	58·4
Sverdlovsk		115·2	325	18 46	[+ 3]	25 24	[− 9]	29 14	PS	—
Columbia		117·0	60	e 19 47	PP	e 27 44	?	e 29 40	PS	e 51·7
Ottawa		121·2	47	18 52	[− 3]	22 16	SKP	30 56	PS	50·4
Fordham		122·8	53	i 18 54	[− 4]	e 37 43	SSP	e 20 39	PP	—
Baku		123·4	307	19 5	[+ 6]	26 2	[+ 1]	21 2	PP	—
Seven Falls		124·3	45	18 59	[− 2]	38 30	SSP	31 26	PPS	56·4
Scoresby Sund		127·8	5	—	—	40 10	?	—	—	55·8
Rio de Janeiro	E.	128·4	142	e 21 6	PP	(e 38 8)	SS	—	—	e 38·1
San Juan		128·5	81	e 18 52	[−17]	e 25 38	[−38]	21 8	PP	53·7
Bermuda		130·5	63	e 21 34	PP	e 29 10	{+47}	39 56	SSP	—
Fort de France		132·5	88	e 19 16	[− 1]	—	—	e 22 44	PP	—
Warsaw		137·9	331	e 19 0	[−27]	e 27 51	?	e 22 38	PP	e 66·4
Copenhagen		138·8	341	e 19 21	[− 7]	—	—	i 22 58	PP	—
Bucharest		139·4	319	e 19 39?	[+10]	e 21 38?	?	(22 26)	PP	22·4
Helwan	Z.	139·4	295	e 19 32	[+ 3]	23 16	SKP	20 1	pPKP	—
Potsdam		141·2	336	i 19 35k	[+ 2]	i 23 57	sSKP	22 20	PP	e 65·4
Sofia		142·0	317	e 19 34	[0]	e 23 42	?	33 44	PS	41·2
Jena		142·9	335	e 19 32	[− 4]	—	—	—	—	—
De Bilt		144·2	343	i 19 37a	[− 1]	e 41 46	SS	i 20 9?	pPKP	e 66·4
Stuttgart		145·6	336	e 19 38	[− 2]	—	—	—	—	—
Uccle		145·6	344	i 19 41	[+ 1]	e 42 0	SS	i 20 12	pPKP	—
Triest		145·9	329	e 19 42	[+ 1]	—	—	—	—	e 65·4
Kew		146·1	348	i 19 44	[+ 3]	e 26 26	[−22]	i 20 16	PKP_2	—
Strasbourg		146·3	337	i 19 41	[− 1]	—	—	e 23 16	PP	—
Chur		147·0	335	e 19 41	[− 2]	—	—	—	—	—
Zurich		147·0	336	e 19 41a	[− 2]	—	—	—	—	—
Basel		147·2	337	e 19 42	[− 1]	—	—	—	—	—
Neuchatel		147·9	337	e 19 38	[− 6]	—	—	—	—	—
Clermont-Ferrand		150·4	340	i 19 47	[− 1]	—	—	i 19 57	PKP_2	—
Almeria		160·2	339	24 47	PP	44 21	SS	28 16	PPP	89·4
Granada		160·4	341	19 5k	[−59]	e 31 32	{+17}	20 35	pPKP	87·0

For Notes see next page.

NOTES TO JANUARY 29d. 9h. 23m. 34s.

Additional readings :—
Auckland sP? =5m.18s., i =5m.57s. and 6m.36s., P_cP? =8m.37s., SS? =9m.33s., i = 10m.42s., P_cS? =11m.51s., i =12m.44s., S_cS =15m.31s.
Apia iPP =5m.9s., i =8m.56s., iP_cP =9m.7s., iP_cS =12m.14s.
Riverview i =4m.59s., 5m.35s., 5m.44s., and 5m.58s., iZ =8m.53s., iE =9m.12s., iZ =9m.19s., isSN =9m.29s., iSSNZ =9m.55s., i =10m.10s.
Wellington sP?Z =5m.56s., iZ =6m.15s., pP_cP? =9m.43s., SS =10m.26s.
Perth SSS =18m.26s.
Honolulu ePPP =12m.36s., esS =17m.11s.
Tokyo Cent. Met. Obs., the P reading has been increased by 12m.
Mori, the P reading has been decreased by 5m.
Ukiah e =17m.14s., eS =22m.52s., esPS =24m.53s., eSS =28m.34s.
Berkeley eN =12m.48s., eE =22m.30s., eQN =36m.15s.
Santa Clara S reading has been reduced by 2m.
Pasadena iPPZ =16m.19s., ipPPZ =16m.53s., i =23m.59s.
Calcutta SSN =28m.48s.
College e =25m.35s. and 25m.40s.
Victoria SS =30m.2s., P reading has been increased by 1m.
Tucson e =14m.45s., ePP =16m.54s., ipPP =17m.30s., iPS =25m.4s., e =26m.6s., eSS =30m.36s., esSS =31m.19s., eSSS =34m.16s.
Salt Lake City e =16m.25s. and 25m.20s.
Logan epS =25m.17s.
Bozeman epPP =18m.9s., iPS =26m.25s., eSS =31m.12s., eSSS =35m.50s.
Bombay ipPPE =18m.16s., isPPN =18m.34s., iSKKSE =24m.31s., SN =25m.1s., SE =25m.8s., iPSN =26m.18s., iPPSE =27m.0s., iN =27m.38s., SSSE =32m.30s., iE =36m.31s.
Florissant iSE =26m.50s., iPKKPE =28m.35s.
Huancayo e =25m.29s., ePS =28m.58s., eSS =34m.21s., isSS =35m.12s.
St. Louis ePKPZ =17m.45s., eE =19m.6s., eSE =26m.52s., ePKKPE =28m.37s., iPPSE =29m.14s.
Tananarive SS =34m.40s.
Chicago U.S.C.G.S. e =20m.38s., epS =27m.52s., ePS =28m.58s., i =29m.37s.
Sverdlovsk S =27m.27s.
Columbia ipPS =30m.26s., eSS =36m.11s.
Ottawa SS =37m.26s.
Baku PPS =32m.12s.
Rio de Janeiro SS given as L.
San Juan i =31m.44s., e =39m.14s.
Bermuda i =23m.9s., e =33m.45s.
Warsaw eZ? =19m.23s.a, eZ =19m.59s., eN =23m.3s., eE =23m.12s., 23m.34s., and 25m.11s.
Copenhagen e =19m.32s., 19m.59s., and 22m.56s.
Bucharest eE =19m.44s., phases wrongly identified.
Helwan PPZ =22m.10s., sSKPZ =23m.44s., pSKSZ =27m.10s., PSZ =32m.32s.
Potsdam isPPZ =23m.7s., isPPN =23m.22s., iPPPN =25m.9s., iE =25m.50s.
Jena iZ =19m.36s., iN =19m.39s., eZ =20m.3s., iN =20m.11s., iZ =20m.30s., iE = 20m.33s.
Stuttgart i =19m.41s., 19m.48s., and 20m.16s., eZ =23m.44s.
Uccle eSKPN =23m.15s.
Strasbourg $iPKP_2$ =19m.46s., i =20m.22s. and 20m.30s., e =20m.48s., and 20m.59s.
Chur iP =19m.45s.
Zurich i =19m.45s.a, and e =29m.26s.
Basle i =19m.46s.
Almeria PPS =38m.47s.
Granada $pPKP_2$ =21m.9s., SKP =22m.6s., iPP =24m.39s., pPP =25m.3s., sPP = 25m.29s., PPP =29m.20s., PPP ($\Delta > 180°$) =32m.50s., SKS? =33m.41s., PPS = 38m.34s., SS =44m.32s., SSP =45m.32s., SSS =51m.6s.

Jan. 29d. Readings also at 3h. (Christchurch, Wellington, Auckland, Huancayo, La Paz, Tucson, and Apia), 5h. and 6h. (near Andijan), 8h. (Auckland, Wellington, Riverview, Tucson, Pasadena, Riverside, Palomar, Tinemaha, Mount Wilson, and near Apia), 12h. (Ukiah), 15h. (Riverview), 17h. (Auckland), 18h. (Mizusawa and near Berkeley (2)), 19h. (near Berkeley (3)), 20h. (Riverview, Tucson, Pasadena, Mount Wilson, Palomar, Riverside, and Copenhagen), 22h. (near Florissant and St. Louis), 23h. (near Berkeley).

Jan. 30d. 12h. 12m. 8s. Epicentre 6°·1N. 95°·1E.

Indian Survey suggests depth =120km.

A = −·0884, B = +·9905, C = +·1055; δ = +4; h = +7;
D = +·996, E = +·089; G = −·009, H = +·105, K = −·994.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	15·2	274	3 39	+ 1	—	—	—	—	7·7
Calcutta	N.	17·6	339	i 4 7k	− 1	i 7 31	+ 8	i 4 16	PP	i 9·8
Kodaikanal		17·9	286	e 4 16a	+ 4	e 7 42	+12	—	—	9·0
Hyderabad	E.	19·8	307	4 35	0	8 18	+ 5	4 48	PP	10·0
Bombay		25·2	303	i 5 32	+ 3	i 10 1	+ 9	5 57	pP	—
Agra		26·5	326	e 5 41	0	10 11	− 3	6 5	pP	12·8
Dehra Dun	N.	29·0	330	e 7 8	+64	e 11 58	+64	—	—	e 16·2
Taihoku		31·5	51	e 11 58	S	(e 11 58)	+24	—	—	—
Andijan		40·1	333	e 7 44	+ 5	13 54	+ 8	—	—	—
Stalinabad		40·1	328	7 44	+ 5	i 13 54	+ 8	—	—	—
Almata		40·3	340	7 53	+13	13 59	+10	—	—	—
Frunse		40·9	337	7 49	+ 3	e 13 59	+ 1	—	—	—
Tashkent		41·9	331	e 8 0	+ 6	14 15	+ 2	—	—	—
Zinsen		42·4	38	e 7 58	0	14 19	− 1	—	—	—
Tchimkent		42·6	332	i 7 58	− 1	i 14 27	+ 4	—	—	—
Hamada		44·5	46	8 23	+ 8	—	—	—	—	e 20·8
Koti		44·9	48	—	—	e 15 5	+ 9	—	—	e 20·8
Muroto		45·2	49	e 10 15	PP	15 9	+ 8	—	—	—
Irkutsk		46·6	8	—	—	15 19	− 2	15 35	PPS	—
Osaka		46·9	48	e 13 8	?	18 37	SS	—	—	—
Gihu		48·1	48	e 8 53	+10	15 42	0	—	—	—
Nagoya		48·1	48	e 8 46	+ 3	—	—	—	—	—
Baku		52·9	318	9 31	+11	17 0	PS	—	—	—
Tananarive		53·0	241	—	—	e 16 51	+ 1	e 17 7	PS	22·4
Sapporo		54·9	40	—	—	e 17 3	−13	—	—	e 27·1
Sverdlovsk		57·4	339	e 9 57	+ 4	17 48	− 1	—	—	—
Ksara		61·2	305	e 10 37	+18	e 19 18	+40	—	—	—
Helwan		63·3	300	10 38	+ 5	19 28	+24	—	—	—
Riverview		66·2	132	i 10 30	−22	i 19 31	− 9	—	—	e 29·4
Bucharest	N.	70·8	316	e 11 19	− 1	e 20 31	− 4	e 20 54	PS	28·9
Sofia		72·5	313	e 11 24	− 6	e 20 54	0	e 15 0	PPP	—
Warsaw		75·5	323	11 51a	+ 3	e 21 28	0	e 14 25	PP	e 32·9
Upsala		78·5	331	—	—	e 22 6	+ 5	e 22 19	PS	e 38·9
Prague		79·4	320	—	—	e 22 9	− 1	—	—	e 30·9
Triest		79·6	316	—	—	e 21 42	−30	—	—	e 33·9
Potsdam		80·4	323	e 12 14	− 1	i 22 26	+ 5	i 17 17	PPP	e 37·9
Cheb		80·7	320	12 24?	+ 8	23 11	+47	—	—	e 41·9
Copenhagen		80·9	326	i 12 17	0	22 26	0	—	—	—
Jena		81·2	321	e 12 19	0	e 22 30	+ 1	—	—	e 41·9
Chur		82·6	317	e 12 26	0	e 22 45	+ 2	—	—	—
Stuttgart		82·8	319	i 12 27	0	e 22 54	+ 9	—	—	38·9
Zurich		83·2	317	e 12 30	+ 1	e 22 49	0	—	—	—
Basle		83·9	318	e 12 36	+ 3	—	—	—	—	—
Neuchatel		84·3	317	e 12 35	0	—	—	—	—	—
Christchurch		85·2	135	23 8	S	(23 8)	− 1	37 37	Q	41·4
Auckland		85·4	128	—	—	23 4	[0]	—	—	35·9
Uccle		85·8	321	—	—	e 23 20	+ 5	—	—	42·9
Wellington		86·3	132	—	—	23 14	− 6	36 22	Q	43·9
Arapuni		86·3	130	—	—	23 52?	+32	—	—	44·9
Kew		88·6	322	e 12 42a	−14	e 23 46	+ 4	e 29 28?	SS	e 44·9
Aberdeen		88·8	328	—	—	i 23 49	+ 5	—	—	48·9
Stonyhurst		89·6	324	i 24 23	PS	i 33 14	SSS	—	—	48·9
Almeria		92·4	307	i 13 20	+ 6	24 35	+19	16 53	PP	49·4
Granada		93·2	308	e 12 17	−60	24 29	+ 6	—	—	49·6
College		95·6	22	—	—	e 27 17	PPS	—	—	e 36·3

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		116·0	27	—	—	e 35 22	SS	e 40 52?	SSS	56·9
Tinemaha	Z.	126·9	33	e 19 5	[− 1]	—	—	—	—	—
Mount Wilson	Z.	129·1	35	e 18 59	[−11]	—	—	—	—	—
Pasadena		129·1	35	e 19 9	[− 1]	—	—	e 43 39	SSS	—
Palomar	Z.	130·4	35	e 19 24	[+11]	—	—	—	—	—
Tucson		134·5	31	e 19 22	[+ 2]	—	—	e 22 15	PP	e 60·8
Rio de Janeiro	N.	136·5	243	e 40 22	SS	—	—	—	—	—
Fort de France		148·6	310	e 19 42	[− 3]	—	—	—	—	—
San Juan		149·4	323	e 21 13	?	e 27 51	?	—	—	e 55·8
La Paz		160·6	236	20 12	[+11]	30 40	{−36}	24 15	PP	77·9
Huancayo		168·9	238	e 20 17	[+ 9]	e 27 21	[+10]	e 46 0	SS	e 70·4

Additional readings :—
Calcutta iSSN =7m.49s., iP$_c$PN =8m.38s.
Hyderabad SSE =8m.33s.
Bombay PPEN =6m.28s., iE =7m.3s., iN =7m.10s., iSE =10m.4s., sS =10m.50s.
Agra eS?N =10m.35s., sSE =10m.41s., SSE =11m.18s., SSN =11m.31s.
Irkutsk SS =18m.22s.
Tananarive e =17m.58s.
Helwan eZ =11m.16s. and 13m.29s.
Bucharest eN =14m.33s., eSSN =24m.46s.
Warsaw eE =12m.10s., eZ =12m.49s., 13m.51s., 17m.17s., 19m.13s., 20m.11s., eS?E = 21m.40s., eN =23m.37s., eZ =24m.11s., eN =26m.33s., eE =26m.38s.
Upsala eN =32m.34s.
Potsdam iZ =13m.6s., 14m.13s., iS$_e$SEN =22m.39s., iN =22m.52s., iSPE =23m.2s., ePSZ =23m.10s.
Jena eE =12m.22s., eN =12m.34s.
Basle e =21m.41s.
Kew eSSS =35m.22s.?.
Stonyhurst PP =27m.31s., SS =39m.1s.
Almeria SKS =19m.10s., SKKS =21m.10s., SSS =37m.4s.
Tucson e =19m.31s.
La Paz SSN =43m.42s.
Huancayo e =29m.59s., 56m.58s., and 58m.21s.
Long waves were also recorded at Miyazaki, Tokyo, Nagano, Sendai, Hukuoka, and other European and American stations.

Jan. 30d. Readings also at 2h. (Balboa Heights), 6h. (Wellington, Arapuni and Auckland), 7h. (Tucson (2) and Pasadena), 9h. (Tucson, Mount Wilson, Palomar, La Paz, Pasadena, Tinemaha, and La Plata), 10h. (Huancayo and La Paz (2)), 11h. (Tucson, Palomar, Riverside, Pasadena, and Mount Wilson), 12h. (near Andijan), 16h. (Bombay, Hyderabad, Kodaikanal and Colombo), 20h. (near Andijan), 21h. (Mizusawa and La Paz), 23h. (near Berkeley)

Jan. 31d. 6h. 49m. 4s. Epicentre 51°·5N. 125°·0W.

A = −·3585, B = −·5121, C = +·7806 ; δ = +11 ; h = −6 ;
D = −·819, E = +·574 ; G = −·448, H = −·639, K = −·625.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		3·2	158	0 42	−10	1 12	−20	—	—	—
Spokane		6·2	123	i 1 32	− 3	i 2 47	− 1	i 1 49	P*	i 3·2
Sitka		8·5	317	—	—	e 4 13	S$_e$	—	—	e 4·8
Butte		9·9	119	e 2 56	PPP	—	—	—	—	e 4·8
Bozeman		10·9	118	e 2 36	− 4	e 4 36	− 8	—	—	i 5·4
Saskatoon		11·4	80	—	—	e 4 6	−50	e 5 15	SS	5·9
Ukiah		12·4	174	e 3 3	+ 2	e 4 18	−63	—	—	e 7·4
Berkeley	E.	13·7	172	e 3 22	+ 4	e 6 15	SS	—	—	e 8·7
	N.	13·7	172	e 3 15	− 3	—	—	—	—	e 8·7
	Z.	13·7	172	e 3 19	+ 1	e 6 19	SS	—	—	e 9·8
Salt Lake City		14·0	135	—	—	e 6 14	SS	—	—	i 7·2
Santa Clara		14·3	171	e 3 28	+ 2	—	—	—	—	e 9·2
Fresno	N.	15·2	164	e 4 42	?	—	—	—	—	e 8·5
Tinemaha	N.	15·2	159	e 3 46	+ 8	—	—	—	—	—
Haiwee		16·2	159	e 3 48	− 2	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara		17·5	165	e 4 9	+ 2	—	—	—	—	—
Mount Wilson		18·0	161	i 4 14	+ 1	—	—	—	—	—
Pasadena		18·0	161	i 4 14	+ 1	i 7 36	+ 4	—	—	e 9·2
Riverside		18·3	161	i 4 17	0	—	—	—	—	—
Palomar	z.	19·1	158	i 4 25	− 2	—	—	—	—	—
La Jolla		19·4	160	e 4 30	0	—	—	—	—	—
Tucson		21·9	145	i 4 56a	− 1	e 8 38	−16	i 5 24	PP	e 11·4
Lincoln		22·2	106	e 5 34	PPP	e 8 7	−52	—	—	e 11·2
Chicago U.S.C.G.S.		27·2	96	—	—	e 10 47	+22	—	—	e 12·4
Saint Louis		27·4	103	i 5 47	− 2	i 10 36	+ 8	i 11 38	SS	—
Ottawa		32·7	81	e 6 35	− 1	—	—	—	—	16·9
Shawinigan Falls		34·0	78	e 6 47	− 1	—	—	—	—	16·9
Seven Falls		34·9	76	e 6 57	+ 2	—	—	—	—	16·9
Fort de France		62·4	102	—	—	e 18 46	− 7	—	—	—
Paris		70·5	34	—	—	e 28 26	SSS	—	—	—

Tucson also gives e = 7m.13s.
Long waves were also recorded at Wellington, Auckland, Arapuni, Riverview, and other European and American stations.

Jan. 31d. 17h. 30m. 35s. Epicentre 22°·0N. 100°·5E.

A = −·1691, B = +·9126, C = +·3724; δ = +12; h = +4;
D = +·983, E = +·182; G = −·068, H = +·366, K = −·928.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	s. m.		m.
Calcutta	N.	11·3	275	e 2 39	− 7	i 4 43	−11	5 29	SSS	i 6·0
Taito		19·1	83	4 18	− 9	7 25	−32	—	—	—
Agra		21·1	289	i 4 44a	− 4	8 47	+ 8	4 49	pP	10·9
Hyderabad	E.	21·2	262	4 53	+ 4	9 0	SS	9 50	SSS	11·0
Dehra Dun	N.	21·8	298	e 5 13	PP	e 9 10	SS	—	—	e 12·7
Dairen		24·7	42	e 5 18	− 6	9 38	− 6	—	—	—
Colombo	E.	24·9	236	5 37	+11	10 14	SS	—	—	15·4
Kodaikanal	E.	25·0	246	e 5 35	+ 8	e 10 10	+21	—	—	13·2
Bombay		26·1	269	e 5 39	+ 2	10 17	+10	10 32	SS	—
Zinsen		27·3	49	3 54	?	10 39	+12	—	—	—
Hukuoka		28·8	60	11 58	SS	14 55	L	—	—	14·9
Almata		28·9	324	5 59	− 4	—	—	—	—	—
Andijan		30·2	314	e 6 28	+14	11 32	+19	—	—	—
Hamada		30·4	58	e 12 12	?	—	—	—	—	—
Irkutsk		30·4	4	e 6 27	+11	e 11 34	+18	—	—	—
Matuyama		30·7	60	12 31	SS	18 16	L	—	—	(18·3)
Stalinabad		31·8	310	6 45	+17	—	—	—	—	—
Semipalatinsk		32·5	337	—	—	e 11 53	+ 4	—	—	—
Taskkent		32·6	314	6 34	− 1	11 52	+ 1	—	—	—
Tchimkent		32·8	316	i 6 36	− 1	i 11 53	− 1	—	—	—
Gihu		34·3	59	7 20	+30	—	—	—	—	—
Kohu		35·8	59	5 28	?	—	—	—	—	—
Sendai		38·2	56	7 27	+ 4	15 43	SS	—	—	—
Sverdlovsk		45·4	331	8 20	− 2	15 0	− 4	—	—	—
Ksara		57·5	296	e 10 11?	+18	e 18 2	+12	—	—	—
Helwan		61·9	293	e 10 25	+ 1	e 18 49	+ 2	—	—	—
Bucharest		64·0	310	e 11 49	?	e 19 17	+ 4	—	—	35·4
Warsaw		66·5	319	e 10 53	− 1	19 44	0	e 20 19	PS	e 35·4
Upsala		67·7	327	—	—	e 19 45	−13	e 27 46	SSS	e 34·4
Copenhagen		71·0	324	e 11 21	− 1	20 32	− 5	21 28	PPS	—
Potsdam		71·4	320	e 11 25	+ 1	—	—	—	—	e 38·4
Cheb		72·3	318	e 13 13	?	20 57	+ 5	—	—	e 40·4
Jena		72·6	319	e 9 45	?	—	—	—	—	e 34·4
Riverview	N.	73·5	138	e 11 11	−25	e 21 21	+15	e 34 10	Q	e 39·4
Stuttgart		74·6	316	e 11 40	− 3	—	—	—	—	—
Almeria		86·8	308	e 13 43	+56	e 23 15	[+ 2]	—	—	47·9
Granada		87·5	309	e 11 46a	−55	i 23 41	+10	—	—	48·5
La Paz		168·0	294	36 55	?	—	—	—	—	90·4

For Notes see next page.

NOTES TO JANUARY 31d. 17h. 30m. 35s.

Additional readings :—
Agra PPE =5m.2s., PPPE =5m.13s., eE =5m.32s., SSE =9m.28s.
Bombay eN =5m.43s., iE =8m.26s., eN =8m.31s., P_cP =8m.49s., iE =9m.13s., SSN =11m.33s., SSSN =11m.54s., P_cSN =12m.40s.
Helwan eZ =11m.55s. and 13m.19s.
Warsaw eZ =15m.57s. and 19m. 8s., eSN? =19m.48s., ePS?N =20m.26s.
Upsala eE =19m.54s., eN =31m.25s.?
Potsdam eN =32m.7s.
Jena eE =9m.49s.
Stuttgart i =11m.49s.
Almeria i =19m.37s.
Long waves were also recorded at Tananarive, Nagano, Yokohama, Huancayo, Arapuni, Auckland, Wellington, and other European and American stations.

Jan. 31d. Readings also at 4h. (Harvard and near Ottawa), 5h. (Florissant) 6h. (near Butte), 7h. (Auckland, Chur, and Zurich), 8h. (Jena, Kodaikanal and Stuttgart), 11h. (Pasadena, Mount Wilson, Riverside, and Palomar), 12h. (Scoresby Sund), 14h. (Paris), 15h. (Mount Wilson, Tucson, Riverview, Sydney, and Copenhagen), 16h. (Pasadena, Huancayo, and La Paz), 17h. (Tucson, Pasadena, Mount Wilson, Riverside, and Palomar), 20h. (Sydney, Auckland, Wellington, Riverview, and Brisbane), 21h. (Auckland, Wellington, and Riverview), 23h. (Agra, Calcutta, and Bombay).

Feb. 1d. 15h. 18m. 26s. Epicentre 34°·4N. 116°·9W. (as given by Pasadena).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverside		0·6	224	i 0 14	− 1	i 0 23	− 3	—	—	—
Palomar	Z.	1·1	178	i 0 22	0	—	—	—	—	—
Mount Wilson		1·1	259	i 0 22$_a$	0	i 0 37	− 2	—	—	—
Pasadena		1·1	257	i 0 23$_a$	+ 1	i 0 39	0	—	—	—
La Jolla		1·6	191	i 0 31	+ 1	i 0 52	+ 1	—	—	—
Haiwee		2·0	333	i 0 35	0	i 0 55	− 7	—	—	—
Fresno	N.	3·3	316	i 1 5	P_g	i 1 48	S_g	—	—	—
Lick		4·8	309	e 1 28	P*	—	—	—	—	—
Berkeley		5·4	311	—	—	e 2 31	+ 3	e 3 0	S_g	—
Tucson		5·5	111	i 1 25	0	—	—	i 1 42	P*	i 2·6

Feb. 1d. 16h. 3m. 32s. Epicentre 34°·4N. 116°·9W. (as at 15h.).

$A = -\cdot3741$, $B = -\cdot7374$, $C = +\cdot5624$; $\delta = 0$; $h = 0$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverside		0·6	224	i 0 14$_a$	− 1	i 0 23	− 3	—	—	—
Palomar	Z.	1·1	178	i 0 22	0	—	—	—	—	—
Mount Wilson		1·1	259	i 0 22$_a$	0	i 0 36	− 3	—	—	—
Pasadena		1·1	257	i 0 23$_a$	+ 1	i 0 39	0	—	—	—
La Jolla		1·6	191	i 0 30	0	—	—	—	—	—
Haiwee		2·0	333	i 0 35	0	i 1 4	+ 2	—	—	—
Fresno	N.	3·3	316	i 1 5	P_g	i 1 48	S_g	—	—	—
Lick		4·8	309	e 1 38	P_g	—	—	—	—	—
Berkeley		5·4	311	—	—	e 2 30	+ 2	e 3 1	S_g	—
Tucson		5·5	111	i 1 23	− 2	—	—	i 1 45	P_g	i 2·5

Feb. 1d. Readings also at 5h. (La Paz), 6h. (Brisbane, Riverview, Sydney, Arapuni, Christchurch, Auckland, Logan, near Fort de France, Wellington, Tucson, Riverside, Mount Wilson, Tinemaha, Pasadena, and Palomar), 7h. (Tucson, Haiwee, Palomar, Pasadena, Tinemaha, Mount Wilson, Riverside, and Scoresby Sund), 8h. (La Paz), 10h. (La Paz and near Huancayo), 14h. (Mizusawa and Copenhagen), 15h. (Tucson and Cheb), 16h. (Wellington), 17h. (Scoresby Sund and near Lick), 20h. (Balboa Heights).

Feb. 2d. 17h. 5m. 12s. Epicentre 33°·8N. 26°·5E.

$A = +·7452$, $B = +·3716$, $C = +·5537$; $\delta = -1$; $h = +1$;
$D = +·446$, $E = -·895$; $G = +·496$, $H = +·247$, $K = -·833$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan	Z.	5·7	132	1 28	0	2 19	−16	1 37	P*	—
Istanbul		7·5	15	1 46	− 7	—	—	—	—	—
Ksara		7·8	87	e 0 2	?	3 35	+ 7	(e 2 12)	P*	—
Sofia		9·2	346	e 1 14	−62	e 3 27	−36	—	—	—
Bucharest		10·6	358	e 1 45	−51	i 4 47	+10	—	—	i 5·3
Belgrade		12·0	339	—	—	e 5 39	+28	—	—	i 6·0
Triest		15·3	324	e 4 32	+53	e 6 36	+ 6	—	—	i 7·8
Prague		18·5	335	e 4 11	− 8	e 7 31	−13	—	—	e 8·8
Warsaw	E.	18·8	349	e 4 13	−10	e 7 19	−31	e 8 13	SS	e 8·8
	N.	18·8	349	e 4 8	−15	e 7 3	−47	—	—	e 8·8
	Z.	18·8	349	4 7a	−16	e 7 17	−33	e 8 10	SS	e 8·8
Zurich		19·1	321	e 4 34	+ 7	e 8 50	SSS	—	—	—
Cheb		19·3	333	e 4 24	− 5	e 7 55	− 7	—	—	e 9·8
Stuttgart		19·7	324	i 4 38k	+ 4	e 8 10	0	i 5 15	PPP	—
Baku		19·8	64	—	—	7 48	−25	—	—	—
Basle		19·8	320	e 4 38	+ 3	e 8 28	+15	—	—	—
Neuchatel		19·8	319	e 4 39	+ 4	—	—	—	—	—
Jena		20·3	333	e 4 36	− 4	e 8 8	−15	e 4 57	PP	e 9·8
Potsdam		20·9	336	i 4 40a	− 6	i 8 15	−20	i 5 8	PP	—
Clermont-Ferrand		21·5	310	e 5 4	+12	e 14 29	L	—	—	(e 14·5)
Paris		23·3	317	e 7 48?	?	—	—	—	—	—
Uccle		23·4	323	5 15k	+ 4	9 17	− 4	—	—	e 11·8
Almeria		23·8	285	e 5 37	PP	10 55	?	6 3	PP	—
De Bilt		23·9	327	e 5 17	+ 1	e 9 26	− 4	—	—	e 11·8
Copenhagen		24·0	341	i 5 10	− 7	i 9 10	−22	—	—	—
Granada		24·7	287	i 5 4k	−20	10 55	SS	i 5 15	pP	16·2
Kew		26·2	321	i 10 16	S	(i 10 16)	+ 7	e 11 46	SSS	e 13·3
Upsala		26·7	350	e 5 35	− 8	e 9 56	−21	—	—	e 12·8
Oxford		26·9	320	—	—	10 24	+ 4	—	—	—
Sverdlovsk		32·7	35	6 24	−12	11 19	−33	—	—	—
Tashkent		34·5	65	e 6 54	+ 2	e 12 15	− 5	—	—	—
Tchimkent		34·7	63	e 6 53	− 1	—	—	—	—	—
Andijan		36·8	66	e 7 12	+ 1	—	—	—	—	—
Frunse		38·3	62	e 7 21	− 3	—	—	—	—	—
Almata		40·0	60	e 7 38	0	—	—	—	—	—
Irkutsk		57·0	46	—	—	e 16 48	−55	—	—	—

Additional readings :—
Helwan $P_gZ = 1m.45s.$, $SZ = 2m.33s.$, $S_g = 3m.40s.$
Istanbul $P = 17h.4m.48s.$, $PP = 17h.5m.34s.$, $SS = 17h.7m.54s.$
Ksara P* given as eS.
Sofia eN = 1m.48s.
Bucharest eE = 1m.55s., iS = 3m.55s., eSZ = 4m.1s.
Warsaw eZ = 4m.32s., 5m.26s., and 8m.44s.
Stuttgart eSN = 8m.14s.
Potsdam iSZ = 8m.20s.
Almeria $sP = 6m.14s.$, $PP = 7m.0s.$, $P_cP = 8m.7s.$, $SS = 11m.35s.$, $S_cS = 15m.40s.$
Granda $PP = 6m.23s.$
Kew iNZ = 10m.19s., eS = 12m.48s.
Upsala eE = 5m.48s.
Long waves were also recorded at Scoresby Sund and Huancayo.

Feb. 2d. 17h. 53m. 22s. Epicentre 5°·1S. 153°·5E. (as on 1941, Sept. 4d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	22·3	181	e 5 13	+12	i 9 11	+ 9	—	—	—
Riverview		28·7	184	e 7 12	PPP	e 10 58	+ 8	e 11 24	SS	e 15·1
Christchurch		41·8	159	12 23	?	17 50	SSS	—	—	21·7
Irkutsk		70·7	330	e 11 18	− 2	20 38	+ 3	—	—	—
Almata		83·7	315	12 36	+ 4	—	—	—	—	—
Frunse		85·4	314	12 37	− 3	—	—	—	—	—
Andijan		86·6	311	12 48	+ 2	24 25	PS	—	—	—
Tchimkent		88·9	312	13 0	+ 2	e 23 44	0	—	—	—
Tashkent		89·0	312	12 59	+ 1	e 23 44	− 1	—	—	—
Pasadena	Z.	92·0	56	e 13 11	− 1	—	—	e 13 33	?	e 41·2
Mount Wilson	Z.	92·1	56	e 13 10	− 2	—	—	—	—	—
Riverside	Z.	92·1	56	e 13 10	− 2	—	—	—	—	—
Palomar	Z.	92·5	57	e 13 17	+ 3	—	—	—	—	—
Copenhagen		120·8	336	e 18 56	[+ 2]	—	—	—	—	—
Stuttgart		127·0	331	19 6	[0]	—	—	—	—	—

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

Feb. 2d. Readings also at 5h. (Tucson), 6h. (Tucson (2)), 8h. (Tucson and Pasadena), 11h. (Tucson), 15h. (Ksara), 16h. (Riverview, Auckland, Christchurch, Tucson, Pasadena, Riverside, Palomar, and Mount Wilson), 17h. (Copenhagen), 21h. (Tucson, San Francisco, Mount Wilson, Palomar, Riverside, and Pasadena), 22h. (San Francisco).

Feb. 3d. Readings at 0h. (near Mizusawa), 1h. (near San Francisco), 2h. (Colombo), 8h. (La Plata and La Paz), 12h. (Tashkent), 14h. (near Berkeley), 15h. (near San Franciso), 19h. (near Mizusawa and near Berkeley (2)), 20h. (near Mizusawa (2) and San Francisco), 23h. (Lick).

Feb. 4d. 9h. 8m. 21s. Epicentre 37°·0N. 121°·3W.

Felt strongly at Hollister; slight damage. Epicentre 37°·0N. 121°·3W.
R. R. Bodle, United States Earthquakes, 1942, Washington, 1944, p.9, map of epicentres p.5.

$A = -·4159$, $B = -·6841$, $C = +·5992$; $\delta = +1$; $h = -1$;
$D = -·854$, $E = +·520$; $G = -·311$, $H = -·512$, $K = -·801$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lick		0·4	320	i 0 13	0	i 0 19	− 2	—	—	—
Santa Clara		0·6	304	e 0 16	+ 1	i 0 28	+ 2	—	—	—
Berkeley		1·2	318	i 0 22	− 2	i 0 38	− 3	i 0 25	P_g	—
Fresno	N.	1·2	102	i 0 25	+ 1	0 41	0	—	—	—
Tucson		9·8	115	e 2 45	PPP	e 3 46	−31	—	—	e 6·3

Feb. 4d. Readings also at 3h. (Scoresby Sund, Copenhagen, Tashkent, Sverdlovsk, Bombay (2), Hyderabad, Agra, Kodaikanal (2), Colombo, Calcutta, Tananarive, near Lick (5), San Francisco, and Fresno (2)), 4h. (Calcutta and Agra), 7h. (near Lick), 9h. (near Mizusawa), 10h. (Lick), 16h. (Pasadena, Mount Wilson, Riverside, Palomar, Tinemaha, Haiwee, Tucson, and La Paz (3)), 17h. (Huancayo, San Juan, Philadelphia, Kew, Potsdam, Helwan, Granada, Almeria, De Bilt, Cheb, and Copenhagen), 18h. (Potsdam, Warsaw (2), Calcutta, Copenhagen, and near Lick), 19h. (Cheb), 23h. (Warsaw, Cheb, Sofia, Copenhagen, Triest, Stuttgart, Potsdam, De Bilt, near Bucharest and Istanbul).

Feb. 5d. 1h. 15m. 55s. Epicentre 39°·0N. 28°·0E. (as on 1938, July 2d.).

Intensity VII at Akhissar, felt at Izmir, Manisa, and Kirkagac.
Epicentre 38°·9N. 28°·0E.
Bulletin meteorologique, seismique, et magnétique de l'Observatoire de Kandilli, 1942, Istanbul, 1947, No. 33, p. 36.

A = +·6880, B = +·3658, C = +·6268 ; δ = +3 ; h = −1 ;
D = +·469, E = −·883 ; G = +·553, H = +·294, K = −·779.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		2·2	21	0 44	+ 6	1 8	+ 2	0 52	P_g	—
Sofia		5·1	318	e 1 14	− 6	e 2 31	S*	—	—	—
Bucharest		5·6	344	i 1 27a	0	2 34	+ 1	i 1 42	P*	e 2·6
Ksara		8·2	127	e 2 9	+ 6	e 4 21	L	—	—	(e 4·4)
Helwan	Z.	9·5	163	2 14	− 6	3 59	−11	4 30	SS	4·9
Triest		12·4	307	e 3 12	+11	e 6 19	SSS	—	—	—
Warsaw		14·1	342	3 22a	− 1	6 5	+ 3	—	—	e 7·1
Prague		14·7	324	e 3 33	+ 2	e 7 56	L	—	—	7·9
Cheb		15·7	320	e 3 45	+ 1	—	—	—	—	e 7·1
Zurich		16·4	307	e 3 54k	+ 1	—	—	—	—	e 8·8
Jena		16·6	321	e 3 55	− 1	e 7 5	+ 5	—	—	e 8·6
Stuttgart		16·7	312	e 3 56	− 1	—	—	—	—	e 9·1
Potsdam		16·9	327	i 3 58a	− 1	e 7 14	+ 7	—	—	9·1
Basle		17·1	307	e 4 3	+ 1	—	—	—	—	e 9·7
Neuchatel		17·3	304	e 4 1	− 3	—	—	—	—	—
Clermont-Ferrand		19·7	298	(i 4 29)	− 5	—	—	—	—	(e 12·5)
Copenhagen		19·7	333	i 4 29	− 5	8 8	− 2	—	—	10·1
Uccle		20·4	313	e 4 39	− 2	e 8 32	+ 7	—	—	11·1
De Bilt		20·5	317	e 4 43	+ 1	e 8 41	+14	—	—	e 13·1
Paris		20·7	306	—	—	e 8 5?	−26	—	—	e 11·1
Upsala		21·9	345	e 4 57	0	e 9 11	+17	e 5 5?	PP	e 12·1
Almeria		24·1	275	5 16	− 2	9 26	− 8	5 44	PP	11·6
Granada		24·9	276	i 5 25a	− 1	i 9 59	+12	5 49	PP	—
Sverdlovsk		27·8	39	e 5 53	0	10 33	− 2	—	—	—
Tashkent		31·4	72	—	—	e 11 34	+ 2	—	—	—
Bombay	E.	43·5	104	—	—	e 14 32	− 4	—	—	—

Additional readings :—
Istanbul PS = 1m.20s., S_g = 1m.30s.
Sofia eP = 1m.20s.
Bucharest iP_g = 1m.56s.
Helwan eZ = 3m.35s.
Warsaw eN = 3m.25s., SZ = 6m.10s.
Stuttgart i = 4m.1s.
Clermont-Ferrand readings have been increased by 10m.
Upsala eE = 8m.33s. and 10m.26s.
Almeria SSS = 10m.40s., P_eS = 12m.45s.
Granada iP_eP = 8m.11s., sS = 10m.13s., SS = 11m.52s.
Long waves were also recorded at Kew, Aberdeen, Stonyhurst, and Scoresby Sund.

Feb. 5d. 10h. Undetermined shock.

Brisbane iE = 7m.26s., eN = 10m.49s., eE = 11m.7s.
Riverview iPZ = 8m.38s.a, iPPZ = 9m.12s., iZ = 10m.17s., eSN = 13m.9s., eSE = 13m.13s., iZ = 13m.22s., iN = 13m.29s., SSZ = 14m.14s.
Christchurch P? = 8m.23s., S = 16m.5s., Q = 21m.35s., R = 23m.25s.
Auckland S? = 11m.10s., Q = 20m.20s., R = 21m.48s.
Sydney e = 12m.12s.
Bombay eE = 15m.46s., 16m.7s., 16m.37s., and 26m.19s., eN = 26m.23s., iE = 26m.33s. and 26m.47s.
Mount Wilson ePZ = 16m.6s.
Pasadena ePZ = 16m.7s.
Riverside ePZ = 16m.8s.
Tinemaha ePZ = 16m.9s.
Palomar ePZ = 16m.10s.
Arapuni e = 19m.24s., R? = 23m.0s.
Perth i = 20m.18s., 24m.15s., and 26m.23s.
Wellington i = 24m.25s.?
Agra eE = 25m.44s.

Feb. 5d. Readings also at 0h. (Granada), 2h. (Sofia and Istanbul (2)), 5h. (Bozeman), 11h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Berkeley, Tashkent, Agra, and Riverview), 12h. (Pasadena, Mount Wilson, Riverside, Palomar, Tinemaha, and near Apia), 15h. (near Apia), 17h. (Almata and Tashkent), 19h. (Riverview), 22h. (Cape Girardeau).

Feb. 6d. Readings at 0h. (near Zurich, Basle, Ebingen, and Stuttgart), 1h. (near Apia, and near Tashkent), 2h. (Balboa Heights), 11h. (Vera Cruz, Puebla, Tacubaya, Oaxaca, and Tucson), 12h. (Tucson, Riverside, Mount Wilson, Tinemaha, Pasadena, Palomar, and near Triest), 15h. (Riverview and Christchurch), 16h. (Mizusawa, Copenhagen, Tucson, Palomar, Wellington, Riverside, Mount Wilson, Tinemaha, and Pasadena).

Feb. 7d. 3h. 55m. 7s. Epicentre 45°·8N. 10°·3E. (as given by Strasbourg).

$A = +\cdot6883$, $B = +\cdot1251$, $C = +\cdot7146$; $\delta = +6$; $h = -4$;
$D = +\cdot179$, $E = -\cdot984$; $G = +\cdot703$, $H = +\cdot128$, $K = -\cdot700$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Chur	1·2	333	e 0 26	+ 2	e 0 54	+13	—	—
Zurich	1·8	323	e 0 34	+ 2	e 1 23	S_g	e 0 42	P_g
Ravensburg	2·1	347	—	—	e 0 52	−12	e 1 16	S_g
Triest	2·3	94	e 0 54	P_g	i 1 2	− 7	—	—
Basle	2·5	313	e 0 43	0	e 1 40	S_g	—	—
Neuchatel	2·6	297	e 0 41	− 3	e 1 40	S_g	e 0 54	P_g
Stuttgart	3·1	346	i 0 51 a	0	1 35	S*	i 1 6	P_g
Clermont-Ferrand	5·0	272	—	—	2 55	S_g	—	—
Jena	5·2	8	e 1 56	P_g	e 2 32	S*	e 2 49	S_g

Additional readings :—
Triest e = 59s., i = 1m.29s.
Stuttgart e = 1m.58s., eS_g = 2m.3s.
Jena eE = 2m.5s.

Feb. 7d. 10h. 23m. 34s. Epicentre 38°·9N. 39°·4E. (as on 1940, Sept. 23d.).

$A = +\cdot6030$, $B = +\cdot4953$, $C = +\cdot6254$; $\delta = +6$; $h = -1$;
$D = +\cdot635$, $E = -\cdot773$; $G = +\cdot483$, $H = +\cdot397$, $K = -\cdot780$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		5·8	210	e 2 7	?	3 55	?	—	—	—
Helwan	z.	11·2	218	e 3 4	PP	—	—	—	—	e 9·1
Bucharest		11·3	303	—	—	e 4 39	−15	e 4 20	?	6·4
Warsaw		18·4	324	4 14	− 4	e 7 42	+ 1	e 4 21	PP	e 9·1
Cheb		22·2	311	—	—	e 9 5	+ 5	—	—	e 13·4
Potsdam		22·7	315	e 5 4	0	—	—	—	—	e 13·4
Sverdlovsk		22·7	32	5 6	+ 2	9 7	− 2	—	—	—
Jena		22·9	311	e 4 56	−10	—	—	e 5 36	PP	—
Tashkent		22·9	74	5 19	+13	9 29	+16	—	—	—
Chur		23·2	302	e 5 10	+ 1	—	—	—	—	—
Stuttgart		23·8	305	e 5 15	0	—	—	—	—	—
Zurich		23·9	302	e 5 16 k	0	—	—	—	—	—
Basle		24·6	303	e 5 24	+ 1	—	—	—	—	—
Copenhagen		24·6	323	i 5 24	+ 1	9 39	− 3	—	—	—
Clermont-Ferrand		27·5	296	e 5 57	+ 7	—	—	—	—	—

Additional readings :—
Potsdam iPE = 5m.11s.
Jena eN = 5m.44s.
Long waves were also recorded at Sofia and De Bilt.

Feb. 7d. Readings also at 0h. (Tucson), 1h. (near La Paz), 3h. (Balboa Heights), 9h. (Wellington, Brisbane, Arapuni, Auckland, and Riverview), 11h. (Tacubaya), 23h. (Riverside, Pasadena, Palomar, Granada, Tucson, and Riverview).

Feb. 8d. 20h. Undetermined shock.

Brisbane iPN = 7m.2s., iSN = 11m.0s.
Riverview iPZ = 8m.11s.k, eN = 12m.47s., iSZ = 13m.9s., iE = 15m.24s., eLEZ = 16·8m.
Wellington PZ = 8m.40s., iZ = 9m.30s., P_cP?Z = 10m.8s., P_cP?Z = 14m.27s., S = 16m.0s., SS = 19m.40s., Q = 22m., R = 23·2m.
Sydney e = 13m.0s.
Bombay eE = 14m.27s., 24m.35s., 26m.9s., and 26m.43s.
Auckland S? = 15m.15s., SS = 18m.30s.?
Mount Wilson iPZ = 15m.32s.a, iZ = 15m.42s.
Pasadena iP = 15m.32s.a, eLN = 41·3m.
Riverside iPZ = 15m.35s.a
Palomar ePZ = 15m.36s.
Arapuni S? = 16m.?, SS? = 18m.48s., L = 23·6m.
Tucson eP = 16m.3s., ePKP = 20m.2s., eSKS = 26m.17s., e = 28m.21s. and 32m.32s., eL = 48·3m.
Christchurch P = 16m.21s., S = 19m.37s., L = 22m.8s.
Calcutta eN = 21m.41s.
Fort de France ePKP = 22m.0s.
Kodaikanal eE = 23m.0s.
Uccle eEN = 23m.24s., eN = 24m.37s., 34m.55s., 40m.53s., 44m.55s., and 52m.44s.
Agra eE = 23m.25s.
Cheb e = 33m.7s., eL = 70·0m.
Santa Clara eSE = 33m.49s., eLE = 45·3m.
Huancayo e = 46m.33s., eL = 65·6m.
Aberdeen eE = 65m.18s., eLE = 74·3m.
Long waves were also recorded at Kew, De Bilt, Stonyhurst, Bermuda, Potsdam, Chicago, St. Louis, Bozeman, Scoresby Sund, and Ukiah.

Feb. 8d. Readings also at 0h. (near Apia), 2h. (La Plata and Sofia), 3h. (Balboa Heights), 8h. (Calcutta), 9h. (near Almeria and near Algiers), 10h. (San Juan, Irkutsk, and Port au Prince), 11h. (Port au Prince), 19h. (Andijan, Kodaikanal, and Bombay).

Feb. 9d. Readings at 2h. (Bucharest, Cheb, and Triest), 6h. (Bombay, and Calcutta), 17h. (St. Louis and Florissant), 18h. (near Berkeley), 19h. (St. Louis), 20h. (College (2)).

Feb. 10d. Readings at 1h. (near Andijan and Tchimkent), 2h. (near Algiers), 5h. (near Sofia), 7h. (near La Paz), 9h. (near Lick), 10h. (Tucson, Palomar, and Pasadena), 12h. (near Lick), 14h. (near Mizusawa), 16h. (near Branner and Lick), 17h. (Bombay and Calcutta (2)), 20h. (near Almata), 22h. (Kodaikanal), 23h. (Almata and Frunse).

Feb. 11d. 11h. 20m. 56s. Epicentre 25°·0N. 110°·5W. (as given by J.S.A.).

$A = -·3178$, $B = -·8499$, $C = +·4203$; $\delta = -2$; $h = +3$;
$D = -·937$, $E = +·350$; $G = -·147$, $H = -·393$, $K = -·907$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		7·2	359	i 1 41	− 8	—	—	—	—	i 2·0
Riverside	z.	10·8	327	e 2 33	− 6	—	—	—	—	—
Mount Wilson	z.	11·3	326	i 2 45	− 1	—	—	—	—	—
Pasadena		11·3	326	i 2 46	0	—	—	—	—	e 4·8
Tinemaha		13·8	332	e 3 20	+ 1	—	—	—	—	—
Salt Lake City		15·8	356	e 4 19	PPP	—	—	—	—	e 8·2
Logan		16·7	356	e 4 0	+ 3	—	—	e 5 3	?	e 8·4
Bozeman		20·6	0	e 5 5	PP	—	—	—	—	e 14·4
Florissant	E.	21·9	46	i 5 3	+ 6	—	—	—	—	—
St. Louis		21·9	46	i 5 1	+ 4	i 9 1	+ 7	—	—	—
Ottawa		34·6	45	e 6 58	+ 5	—	—	—	—	18·1

Tucson also gives i = 1m.56s.
Long waves were also recorded at Cape Girardeau, Weston, Tacubaya, Philadelphia, East Machias, and Lincoln.

Feb. 11d. Readings also at 1h. (near Berkeley), 2h. (Jena), 3h. (Tacubaya), 5h. (near Huancayo), 6h. (Lick and La Paz), 8h. (Tucson, Huancayo, La Paz, Riverside, Mount Wilson, Pasadena, and Tinemaha), 10h. (Tinemaha, Pasadena, Mount Wilson, Riverside, and Tucson), 14h. (La Paz), 17h. (near Jena, Chur, Stuttgart, Triest, and Zurich), 22h. (near La Paz).

Feb. 12d. 5h. 56m. 40s. Epicentre 16°·1S. 168°·3E. (as on 1941, April 21d.).

$A = -\cdot 9413$, $B = +\cdot 1949$, $C = -\cdot 2756$; $\delta = -1$; $h = +6$;
$D = +\cdot 203$, $E = +\cdot 979$; $G = +\cdot 270$, $H = -\cdot 056$, $K = -\cdot 961$.

Pasadena suggests deep.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Brisbane		18·1	229	i 4 15	+ 1	i 7 24	−11	—	—	—
Auckland		21·5	166	—	—	8 10	−37	—	—	—
Riverview		23·5	217	i 5 3k	− 9	i 8 5l	−32	i 9 57	SS	—
Sydney		23·5	217	e 7 47	?	—	—	—	—	—
Wellington		25·7	170	5 25?	− 8	8 55	?	—	—	—
Christchurch		27·6	173	6 6	+15	10 31	− 1	—	—	12·9
Berkeley	N.	84·3	49	i 13 40	+65	—	—	—	—	—
Santa Barbara		84·8	53	i 12 40	+ 3	—	—	—	—	—
Pasadena		85·9	53	i 12 45a	+ 2	—	—	—	—	—
Mount Wilson		86·0	53	i 12 46a	+ 3	—	—	—	—	—
Riverside		86·4	53	e 12 49a	+ 4	—	—	—	—	—
Palomar	Z.	86·6	55	i 12 50a	+ 4	—	—	—	—	—
Haiwee		86·8	51	i 12 51	+ 4	—	—	—	—	—
Tinemaha		86·9	50	i 12 52	+ 4	—	—	—	—	—
Tucson		91·0	57	i 13 9	+ 2	—	—	e 16 49	PP	—
Jena		140·5	336	e 19 30	[− 1]	—	—	—	—	—
Uccle		143·1	344	e 19 36	[0]	e 28 44	{−55}	—	—	—
Stuttgart	Z.	143·2	337	i 19 39	[+ 3]	—	—	—	—	—
Chur		144·6	335	e 19 43	[+ 5]	—	—	—	—	—
Zurich		144·6	336	e 19 39	[+ 1]	—	—	—	—	—
Basle		144·8	337	e 19 41	[+ 2]	—	—	—	—	—
Neuchatel		145·5	337	e 19 42	[+ 2]	—	—	—	—	—
Clermont-Ferrand		147·9	341	e 19 48	[+ 4]	—	—	—	—	—

Additional readings :—
Riverview iN = 9m.32s., iZ = 9m.46s.
Tucson ePPP = 19m.6s.
Uccle iZ = 19m.39s.
Basle i = 19m.44s.

Feb. 12d. Readings also at 0h. (near Berkeley), 3h. (near Algiers, near Berkeley (2), and Lick (2)), 4h. (near Lick), 6h. (near Mizusawa), 7h. (Lick), 8h. (La Paz and near Andijan), 9h. (near Algiers), 10h. (Mizusawa, near Almata, Andijan (2), and Tashkent), 11h. (near Andijan (5)), 12h. (Balboa Heights and near Andijan), 14h. (Balboa Heights), 15h. (Tacubaya, near Andijan (2)), 16h. (near Andijan, near Basle, Chur, Neuchatel, Zurich, Stuttgart, and Clermont-Ferrand), 17h. and 18h. (near Ferndale), 21h. (near Andijan), 22h. (Tucson, Mount Wilson, Riverside, Tinemaha, and near Berkeley), 23h. (Salt Lake City).

Feb. 13d. 6h. 18m. 56s. Epicentre 20°·0S. 174°·0W. (as on 1941, Aug. 28d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		6·5	19	i 1 43	+ 4	i 3 18	S*	—	—	i 4·0
Auckland		19·4	208	4 22	− 8	8 4	0	8 39	Q	10·1
Arapuni		20·1	205	4 40	+ 2	8 22	+ 3	—	—	9·1
Wellington		23·3	202	5 7	− 3	9 34	+14	6 10	PPP	12·6
Christchurch		26·0	202	5 28	− 8	9 59	− 7	—	—	12·7
Riverview		33·8	238	e 6 43	− 3	—	—	—	—	e 15·3
Santa Clara	E.	75·2	40	—	—	e 28 54	SSS	—	—	e 40·0
Berkeley	Z.	75·3	40	e 11 49	+ 2	—	—	—	—	e 31·7
Pasadena		75·6	45	i 11 50	+ 2	—	—	—	—	e 34·9
Mount Wilson	Z.	75·8	45	i 11 52	+ 2	—	—	—	—	—
Palomar	Z.	76·0	48	i 11 53	+ 2	—	—	—	—	—
Riverside	Z.	76·1	45	e 11 53	+ 2	—	—	—	—	—
Haiwee		77·0	43	i 11 59	+ 3	—	—	—	—	—
Tinemaha		77·3	42	i 12 0	+ 2	—	—	—	—	—
Tucson		79·7	49	i 12 13	+ 2	e 22 16	+ 3	e 15 33	PP	e 36·3
Logan		84·1	42	i 12 37	+ 3	e 23 5	+ 7	—	—	e 42·8
Bozemán		86·7	38	e 13 23	+36	e 23 13	[+ 1]	—	—	e 42·0
Huancayo		93·9	104	e 14 6	+45	e 23 49	[− 6]	17 9	PP	e 43·6
St. Louis	N.	97·6	52	—	—	i 25 13	+13	—	—	—
La Paz	Z.	98·7	111	e 17 48	PP	—	—	—	—	47·1
Philadelphia		109·2	53	—	—	e 26 55	{+56}	e 28 44	PS	e 54·1
Ottawa		109·7	47	—	—	e 26 52	{+49}	e 28 40	PS	e 46·1
San Juan		112·4	77	e 20 13	PP	25 18	[− 4]	e 21 29	PPP	e 51·0
Seven Falls		113·3	45	e 28 58	PS	—	—	—	—	56·1
Agra	E.	114·4	291	—	—	e 25 28	[− 2]	—	—	—
Warsaw		145·8	345	19 44	[+ 3]	—	—	—	—	e 78·1
Potsdam	Z.	147·2	353	i 19 46a	[+ 3]	—	—	i 19 58	PKP_2	e 77·1
De Bilt		148·0	1	i 19 51k	[+ 7]	—	—	—	—	e 82·1
Jena		148·8	352	i 19 50	[+ 4]	—	—	i 20 4	PKP_2	—
Uccle	Z.	149·2	2	i 19 50	[+ 4]	—	—	—	—	—
Ksara		150·1	303	e 19 54	[+ 6]	—	—	23 22	PP	—
Clermont-Ferrand		154·2	356	20 15	[+22]	—	—	—	—	—
Helwan	Z.	155·0	298	19 55	[0]	—	—	23 49	PP	—
Granada		160·9	23	i 20 52a	[+50]	27 30	[+24]	i 24 57	PP	79·3
Almeria		161·6	20	e 20 7	[+ 5]	27 22	[+16]	24 41	PP	—

Additional readings :—
Wellington i = 9m.0s. and 10m.39s., Q? = 11·1m.
Palomar iZ = 12m.2s.
Riverside e = 12m.1s.
Tinemaha iZ = 12m.9s.
Tucson i = 12m.46s., e = 24m.9s.
Bozeman eS = 22m.39s.
Huancayo eS = 26m.6s. and 30m.48s.
Philadelphia eSS = 34m.31s., e = 41m.19s.
Ottawa e = 34m.34s.
San Juan eSS = 34m.56s.
Warsaw eN = 19m.49s., eZ = 20m.3s. and 20m.45s.
De Bilt iZ = 20m.10s.
Jena eN = 19m.54s.
Helwan PKP_2Z = 20m.16s., iZ = 20m.31s.
Granada PKP_2 = 21m.45s., PPP = 28m.30s., SS = 45m.32s.
Almeria i = 20m.29s., PPP = 28m.31s., SKKS = 31m.23s., SS = 45m.22s., SSS = 53m.2s.
Long waves were also recorded at Sydney, Scoresby Sund, Kew, Ukiah, Chicago, East Machias, and Harvard.

Feb. 13d. Readings also at 12h. (Berkeley), 3h. (Tucson), 5h. (near Andijan), 7h. (Wellington, Auckland, Christchurch, Brisbane, and Riverview), 8h. (Arapuni, Berkeley, Bozeman, Tucson, Riverside, Palomar, Pasadena, Mount Wilson, Tinemaha, Butte), 9h. (near Andijan), 10h. (Tucson), 17h. (near La Paz, near Branner, and near Andijan), 18h. (La Paz), 21h. (Scoresby Sund, and near Andijan), 22h. (Tucson, Mount Wilson, Wellington, Christchurch, Auckland, Arapuni, and Riverview), 23h. (Granada, near Andijan, and Almata).

Feb. 14d. 10h. 44m. 59s. Epicentre 41°·1N. 72°·0E. (as given by stations of U.S.S.R.).

A = +·2336, B = +·7188, C = +·6548 ; δ = +1 ; h = −3 ;
D = +·951, E = −·309 ; G = +·202, H = +·623, K = −·756.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		0·5	142	i 0 4	P_g	—	—	—	—	—
Tashkent		2·0	276	i 0 39	+ 4	1 6	+ 4	—	—	—
Tchimkent		2·2	304	i 0 40	+ 2	i 1 13	+ 7	—	—	—
Frunse		2·7	47	i 0 46	+ 1	1 22	+ 3	—	—	—
Stalinabad		3·5	226	e 1 0	+ 3	e 1 52	+12	—	—	—
Agra	E.	14·8	158	e 3 22	−10	5 56	−22	i 4 6	PPP	e 7·6
Bombay	N.	22·1	178	e 5 3	+ 4	8 58	0	5 41	PPP	i 11·7
Calcutta	N.	23·1	139	e 5 4	− 4	i 9 10	− 6	—	—	e 13·2
Irkutsk		24·0	52	e 5 22	+ 5	—	—	—	—	—
Hyderabad	N.	24·2	167	5 16	− 3	9 29	− 6	—	—	12·7
Kodaikanal		31·1	171	i 9 46	?	i 13 32	SSS	—	—	15·4
Helwan	z.	34·7	264	e 6 52	− 2	—	—	e 8 1	PP	—
Warsaw		36·0	304	—	—	e 15 23	SS	e 15 26	SSS	19·1
Copenhagen		40·8	312	i 7 44	− 1	—	—	—	—	21·0

Additional readings :—
Agra e = 4m.46s., i = 6m.35s.
Bombay eN = 5m.15s., eE = 6m.13s., SSEN = 9m.11s.
Long waves were also recorded at De Bilt, Potsdam, Upsala, and Bucharest.

Feb. 14d. 12h. 52m. 58s. Epicentre 42°·4N. 144°·2E. Depth of focus 0·010.
(as on 1939, Oct. 22d.).

Intensity V at Kusiro ; II-III at Obihiro, Urakawa, Miyako, and Nemuro.
Epicentre 41°·0N. 145°·3E. Radius of macroseismic area 200-300km.
See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1942, Tokyo, 1950, pp. 6-7. Macroseismic chart p. 6.

A = −·6008, B = +·4333, C = +·6718 ; δ = +2 ; h = −3 ;
D = +·585, E = +·811 ; G = −·545, H = +·393, K = −·741.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo	2·2	288	0 37a	+ 1	1 22	+20	—	—	—
Hatinohe	2·7	227	0 40a	− 3	1 16	+ 2	—	—	—
Aomori	3·0	238	0 47a	0	1 25	+ 3	—	—	—
Miyako	3·2	211	0 46	− 4	1 33	+ 6	—	—	—
Mizusawa	4·0	217	0 58	− 2	1 43	− 3	—	—	—
Akita	4·1	230	1 3	+ 1	2 6	+17	—	—	—
Sendai	4·8	213	1 7	− 4	2 4	− 2	—	—	—
Hukusima	5·4	214	1 34	+14	2 34	+13	—	—	—
Onahama	6·0	205	1 23	− 5	2 25	−11	—	—	—
Mito	6·6	207	1 31	− 5	2 44	− 6	—	—	—
Utunomiya	6·7	211	1 35	− 2	2 47	− 6	—	—	—
Kakioka	6·9	209	1 34	− 6	2 51	− 7	—	—	—
Tukubasan	7·0	209	1 35	− 7	2 51	− 9	—	—	—
Tyosi	7·1	202	2 55	S	(2 55)	− 8	—	—	—
Maebasi	7·2	215	1 40	− 4	3 7	+ 2	—	—	—
Kumagaya	7·3	213	1 51	+ 5	3 4	− 4	—	—	—
Nagano	7·3	221	1 47	+ 1	3 14	+ 6	—	—	—
Tokyo, Cen. Met. Ob.	7·5	209	1 51	+ 3	3 7	− 5	—	—	—
Wazima	7·5	231	1 49	+ 1	—	—	—	—	—
Toyama	7·8	226	1 49	− 3	—	—	—	—	—
Yokohatna	7·8	209	2 6	+14	3 15	− 5	—	—	—
Hunatu	8·1	213	1 53	− 4	3 14	−13	—	—	—
Kohu	8·1	215	1 56	− 1	3 23	− 4	—	—	—
Misima	8·3	211	2 2k	+ 3	3 29	− 3	—	—	—
Shizuoka	8·7	213	2 36	+31	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Gihu		9·1	222	2 7	− 3	3 53	+ 1	—	—	—
Nagoya		9·2	220	2 10	− 1	—	—	—	—	—
Kameyama		9·7	222	2 25	+ 7	—	—	—	—	—
Osaka		10·3	224	2 20	− 6	5 5	+45	—	—	—
Kobe		10·5	226	2 26	− 3	5 12	+47	—	—	—
Wakayama		10·8	224	2 32	− 1	—	—	—	—	—
Koti		12·2	227	2 50	− 2	—	—	—	—	—
Keizyo		14·1	255	3 18	+ 2	—	—	—	—	—
Zinsen		14·4	255	4 30	?	—	—	—	—	—
Irkutsk		28·4	306	5 47	0	e 10 43	+17	—	—	—
Calcutta	N.	50·2	265	—	—	e 15 55	+ 4	—	—	e 30·3
Sverdlovsk		52·6	317	9 7	+ 1	16 36	+12	—	—	—
Agra	E.	55·2	277	e 9 23	− 2	—	—	—	—	—
Bombay	E.	63·9	273	—	—	e 19 12	+21	e 23 18	SS	—
Tinemaha	Z.	71·0	57	e 11 14	+ 5	—	—	—	—	—
Mount Wilson	Z.	72·9	59	i 11 23	+ 3	—	—	—	—	—
Pasadena		72·9	59	i 11 24	+ 4	—	—	—	—	—
Riverside	Z.	73·5	59	e 11 28	+ 4	—	—	—	—	—
Copenhagen		74·1	335	i 11 29	+ 2	—	—	—	—	37·0
Palomar	Z.	74·3	59	i 11 33	+ 5	—	—	—	—	—
Potsdam		76·6	332	e 11 43	+ 1	—	—	—	—	e 41·0
Jena		78·3	332	e 11 52	+ 1	—	—	—	—	—
Tucson		78·8	57	e 11 53	− 1	e 21 51	+ 9	e 15 15	PP	e 41·0
Helwan	Z.	85·2	307	i 12 29	+ 2	—	—	i 12 40	pP	—
St. Louis		85·4	41	i 11 12	?	—	—	i 20 1	?	—

Additional readings :—
Bombay eE = 20m.15s.
Tucson e = 11m.59s., eSS = 26m.45s.
Long waves were also recorded at Granada, De Bilt, Kew, Warsaw, San Fernando, Uccle, and Prague.

Feb. 14d. Readings also at 0h. (Tashkent and Andijan (3)), 6h. (Andijan (2) and Almata), 7h. (College), 8h. (Ksara), 9h. (near Andijan (2), Frunse, Tashkent, Tchimkent, Sverdlovsk, and near Mizusawa), 10h. (La Paz and near Andijan), 11h. (Frunse, Tchimkent, and Tashkent), 15h. (La Paz and Balboa Heights), 16h. (Andijan (7), Frunse, Tchimkent, and Tashkent), 18h. (Andijan (3)), 21h. (Ksara), 22h. (Riverview and near Lick), 23h. (near Berkeley).

Feb. 15d. 14h. 20m. 49s. Epicentre 9°·7S. 85°·1W.

A = +·0842, B = −·9823, C = −·1674 ; δ = +3 ; h = +7 ;
D = −·996, E = −·085 ; G = −·014, H = +·167, K = −·986.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		9·9	105	i 2 24	− 1	—	—	i 2 50	PPP	i 4·0
La Paz	Z.	17·8	114	i 4 11k	0	i 7 28	0	—	—	9·1
Fort de France		33·9	46	e 4 31	?	—	—	—	—	—
Tucson		48·4	332	i 8 43	− 3	—	—	—	—	—
Palomar	Z.	52·4	327	i 9 17	+ 1	—	—	i 10 29	P_cP	—
Riverside	Z.	53·2	327	i 9 22	0	—	—	i 10 31	P_cP	—
Mount Wilson		53·7	327	i 9 27k	+ 1	—	—	i 10 36	P_cP	—
Pasadena		53·7	327	i 9 27k	+ 1	—	—	i 10 36	P_cP	—
Haiwee		55·1	328	i 9 36	0	—	—	—	—	—
Tinemaha		56·0	328	i 9 42k	− 1	—	—	i 10 43	P_cP	—

Additional readings :—
Huancayo i = 3m.2s.
Fort de France eS_g = 5m.5s.
Tucson i = 9m.24s. and 9m.43s.
Riverside iZ = 9m.40s.
Mount Wilson iZ = 9m.46s.
Tinemaha eZ = 10m.1s.

Feb. 15d. Readings also at 1h. (Mizusawa), 2h. (near Andijan), 3h. (near Andijan (2)), 5h. (Wellington, Auckland, and near Andijan), 6h. (near Andijan (2)), 7h. (near Andijan), 8h. (near Andijan, Tchimkent, and Tashkent), 9h. (near Andijan and Almata), 10h. (near Andijan, Tchimkent, and Frunse), 13h. (near Mizusawa and Andijan (3)), 14h. (Cheb and near Andijan (2)), 15h. (near Andijan), 16h. (near Andijan), 18h. (near Andijan (2), Tashkent 2), Frunse (2), Tchimkent (2), and Almata (2)), 19h. (near Mizusawa).

Feb. 16d. 18h. 8m. 22s. Epicentre 11°·9S. 166°·8E. Depth of focus 0·020.
(as on 1940, Sept. 26d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		20·2	218	i 4 26	+ 2	i 8 5	+ 9	i 8 8	sS	—
Apia		21·0	98	i 4 36	+ 4	e 8 46	sS	e 9 51	SSS	—
Auckland		25·9	165	6 3	PP	10 48	SS	6 15	pP	11·8
Riverview		26·1	210	i 5 22a	+ 1	e 9 49	+11	i 5 58	PP	—
Sydney		26·1	210	e 5 38	pP	e 10 32	+54	—	—	—
Arapuni		27·2	165	6 38?	PP	(11 38)	SS	—	—	11·6
Wellington		30·4	168	5 58	+ 1	10 48	+ 6	6 3	pP	13·6
Christchurch		31·9	172	5 47	−25	11 18	+ 8	—	—	15·7
Honolulu		47·9	47	e 8 8	−16	e 16 7	+59	—	—	e 19·2
Perth		50·8	237	11 28	PP	15 58	+10	12 0	PPP	21·5
Tokyo, Cen. Met. Ob.		53·8	333	9 14	+ 6	—	—	—	—	—
Nagoya		54·7	331	9 16	+ 1	—	—	—	—	—
Kobe		55·2	329	8 40	−38	15 10	?	—	—	—
Nagano		55·3	333	9 16	− 3	—	—	—	—	—
Sendai		55·5	336	9 15	− 5	16 46	− 5	—	—	—
Zinsen		61·9	325	e 10 1	− 4	—	—	—	—	—
Ukiah		82·4	48	e 12 10	+ 5	e 23 4	PS	e 28 16	SS	e 34·4
Berkeley		82·7	49	i 12 6	− 1	e 22 20	+11	—	—	e 34·4
Santa Clara		82·7	49	i 12 8	+ 1	—	—	e 23 26	PS	e 37·4
Irkutsk		83·3	328	12 7	− 3	i 22 17	+ 2	e 15 31	PP	—
College		83·8	18	e 12 11	− 1	e 22 16	− 4	e 27 57	SS	e 34·1
Calcutta	N.	84·1	294	e 12 37	pP	i 22 47	sS	e 13 5	pP	—
Pasadena		84·5	54	i 12 17a	+ 1	i 23 27	+60	12 46	pP	e 34·8
Mount Wilson		84·7	54	i 12 18a	+ 1	—	—	i 12 49	pP	—
La Jolla		84·9	56	e 12 19	+ 1	—	—	e 12 49	pP	—
Riverside		85·1	54	i 12 19a	0	—	—	i 12 49	pP	—
Haiwee		85·3	53	i 12 21	+ 1	—	—	i 12 51	pP	—
Palomar	Z.	85·3	55	i 12 20a	0	—	—	i 12 49	pP	—
Tinemaha		85·4	52	i 12 22a	+ 2	—	—	i 12 52	pP	—
Victoria		85·9	40	12 21	− 2	22 51	+10	23 45	PS	e 35·6
Colombo	E.	88·4	277	12 52	+17	23 8	+ 4	—	—	—
Tucson		89·9	57	i 12 44	+ 2	e 23 18	0	i 16 23	PP	e 36·8
Salt Lake City		91·2	49	e 12 48	0	e 23 25	− 5	e 16 22	PP	e 38·2
Kodaikanal		91·4	280	i 12 49	0	i 23 16	[+12]	i 30 0	SS	—
Hyderabad		92·0	287	12 52	0	23 13	[+ 6]	24 29	PS	43·0
Bozeman		93·0	44	e 13 15	+19	e 24 3	+18	e 30 47	SS	e 41·0
Agra	E.	94·3	296	e 12 57	− 5	i 23 22	[+ 3]	e 16 37	PP	—
Bombay		97·5	287	e 13 18	+ 1	i 23 42	[+ 5]	16 50	PP	—
Andijan		101·0	309	20 9	PPP	24 8	[+13]	—	—	—
Tashkent		103·4	310	13 42	− 1	e 24 12	[+ 6]	—	—	—
St. Louis		107·4	53	—	—	(e 28 37)	PS	(e 33 35)	SS	—
Sverdlovsk		108·7	326	e 14 20	P	24 34	[+ 4]	e 18 32	PP	—
Chicago, U.S.C.G.S.		109·4	49	—	—	e 27 18	?	e 28 2	PS	e 48·3
Huancayo		113·9	109	—	—	e 20 26	?	e 28 51	PS	e 47·0
Ottawa		117·6	44	e 18 28	[+ 1]	e 29 26	PS	e 36 50	SSP	66·6
La Paz	Z.	118·8	117	e 19 17	PP	—	—	—	—	59·6
Seven Falls		120·5	41	—	—	e 29 44	PS	e 37 22	SSP	59·6
Scoresby Sund		121·2	3	—	—	e 26 33	SKKS	e 29 58	PS	e 47·6
Upsala		127·0	342	—	—	e 39 38?	?	—	—	e 58·6
Bermuda		128·7	58	e 20 58	PP	e 33 1	PPS	—	—	e 61·3

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara	130·3	304	e 18 20	[−31]	—	—	e 22 4	PKS	—
Warsaw	131·2	332	e 18 54	[+ 1]	e 32 55	PPS	e 22 21	PKS	e 61·6
Copenhagen	132·0	341	18 54	[− 1]	e 31 50	PS	21 18	PP	—
Bucharest	133·3	321	—	—	i 22 28	PKS	—	—	31·6
Potsdam	134·4	337	i 18 58a	[− 1]	—	—	i 21 28	PP	e 61·6
Helwan	135·0	300	e 19 2	[+ 2]	28 20	SKKS	21 35	PP	—
De Bilt	137·2	343	i 18 54k	[−10]	e 22 42	PKS	i 19 7	pPKP	e 54·6
Uccle	138·6	344	e 19 9	[+ 2]	—	—	e 21 58	SKP	e 64·6
Stuttgart	138·8	337	i 19 8a	[+ 1]	—	—	i 21 58	SKP	—
Kew	139·2	347	i 19 9	[+ 1]	e 40 38?	SS	i 22 32	PP	e 64·1
Triest	139·3	331	i 22 45	PKS	e 40 50	SS	—	—	—
Clermont-Ferrand	143·5	340	e 19 8	[− 7]	—	—	—	—	e 67·6
Almeria	153·4	341	e 19 38	[+ 7]	—	—	—	—	71·6
Granada	153·4	343	i 19 41k	[+10]	e 43 54	SS	23 21	SKP	81·4

Additional readings :—
Apia i = 12m.16s., iS_cS = 14m.0s.
Auckland i = 6m.58s.
Riverview eE = 9m.58s., eN = 10m.20s., eE = 10m.28s., iSS = 10m.52s., iN = 11m.33s.
Wellington i = 7m.23s., SS? = 12m.23s.
Perth SS = 18m.28s., SSS = 19m.33s.
Berkeley ePEN = 12m.9s., iN = 12m.17s., eSE = 22m.24s., eSZ = 22m.42s.
Irkutsk S_cS = 22m.47s., SS = 27m.38s.?
College e = 24m.11s.
Calcutta iPPN = 16m.6s., isSN = 23m.37s.
Pasadena eE = 22m.26s.
Tucson i = 13m.15s. and 14m.46s., iPS = 24m.29s.
Salt Lake City ePS = 24m.21s., e = 25m.33s. and 28m.3s.
Kodaikanal iE = 17m.11s. and 23m.45s.
Hyderabad sSEN = 23m.43s., SSE = 29m.12s.
Bozeman eS = 25m.51s.
Agra e = 23m.52s. and 25m.22s.
Bombay sS = 24m.30s., iEN = 25m.2s., eE = 26m.44s., eN = 27m.19s.
Sverdlovsk eS = 26m.2s., PS = 27m.44s.
Chicago, U.S.C.G.S. eSS = 34m.10s.
Huancayo eSS = 35m.29s.
Ottawa e = 45m.38s.?
Scoresby Sund e = 33m.11s., eSS = 36m.26s.
Bermuda e = 22m.3s.
Warsaw eZ = 21m.11s., 21m.40s., and 22m.7s., eN = 22m.49s., eZ = 23m.7s.
Copenhagen e = 22m.11s. and 22m.23s., eN = 34m.58s. and 38m.38s.
Potsdam ePPN = 21m.32s., ipPPZ = 21m.58s., isPPN = 22m.30s., isPPE = 22m.38s., iN = 22m.59s., iPPPZ = 24m.15s.
Helwan eZ = 19m.32s. and 19m.59s., SKPEZ = 22m.33s.
De Bilt iZ = 21m.49s. and 22m.18s.
Stuttgart e = 19m.38s.
Kew i = 19m.32s., 20m.29s., and 22m.12s., $iPKP_2N$ = 22m.44s., eSSZ = 43m.38s.?, eSSSEN = 45m.8s.?, eQ = 54·1m.
Almeria e = 21m.52s. and 29m.18s., i = 38m.38s.
Granada iPP = 24m.1s., SKSP = 34m.59s., PPS = 38m.5s., eSS = 51m.24s.
Long waves were also recorded at Tananarive.

Feb. 16d. Readings also at 0h. (near Berkeley (2)), 2h. (near Spokane and near Branner), 3h. (near Tashkent (2) and Andijan), 4h. (near Almata), 5h. (near Andijan), 6h. (Tucson (2), near Andijan, and Almata), 8h. (Calcutta, Bombay, Agra, and near Andijan), 9h. (near Andijan (2)), 10h. (near Zurich), 15h. (near Ottawa), 16h. (near Andijan), 17h. (near Andijan), 18h. (near Andijan), 19h. (Tinemaha, Riverside, Mount Wilson, Pasadena, and Riverview), 20h. (Wellington, Auckland, Riverview, and near Ferndale), 22h. (near Andijan).

Feb. 17d. 4h. 11m. 56s. Epicentre 10°·6S. 165°·5E. (as on 1941, May 17d.).

A = −·9518, B = +·2461, C = −·1828 ; δ = −10 ; h = +6 ;
D = +·250, E = +·968 ; G = +·177, H = −·046, K = −·983.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		20·5	213	i 4 36	− 6	i 8 28	+ 1	—	--	—
Riverview		26·6	208	i 5 43a	+ 1	i 10 15	− 1	—	—	e 13·1
Sydney		26·6	208	e 5 22	−20	e 9 34	?	—	—	—
Auckland		27·5	164	5 54	+ 4	10 39	+ 9	i 6 10	PP	14·6
Arapuni		28·8	164	e 8 4?	?	11 4?	+13	—	—	14·4
Wellington		31·6	167	6 28a	+ 2	11 34	− 1	7 21	PP	15·6
Christchurch		33·4	172	6 45	+ 3	12 2	− 1	—	—	16·2
Perth		50·4	238	—	—	i 16 4	−10	—	—	24·4
Irkutsk		81·6	327	12 17	− 4	22 27	− 6	e 15 19	PP	—
Calcutta	N.	82·4	295	e 12 25	0	e 22 31	−10	—	—	—
Berkeley		82·8	51	e 12 39	+12	—	—	—	—	e 38·1
Santa Clara		82·8	51	i 12 29	+ 2	e 28 3	SS	—	—	e 38·8
Pasadena		84·8	55	i 12 35	− 2	—	—	—	—	e 38·1
Mount Wilson	z.	84·9	55	i 12 36a	− 2	—	—	—	—	—
Riverside		85·4	55	i 12 39	− 1	—	—	—	—	—
Haiwee		85·5	53	e 12 40	− 1	—	—	—	—	—
Palomar	z.	85·6	56	i 12 39	− 2	—	—	—	—	—
Tinemaha		85·6	52	i 12 40	− 1	—	—	—	—	—
Victoria		85·7	40	—	—	e 23 16	+ 2	—	—	40·1
Tucson		90·3	57	i 13 4	0	e 23 24	[−11]	e 16 46	PP	e 42·8
Agra		92·6	97	e 16 12	PP	i 25 26	PS	—	—	—
Huancayo		115·5	109	—	—	e 36 49	SSP	e 38 11	?	e 53·4
Ottawa		117·6	44	e 18 44	[− 4]	—	—	—	—	60·1
La Paz	z.	120·5	117	—	—	e 25 53	[+ 1]	—	—	63·1
Copenhagen		130·3	341	21 22	PP	—	—	22 37	PKS	—
Potsdam		132·7	338	i 22 43a	PKS	—	—	—	—	e 70·1
Helwan		133·3	301	19 17	[− 1]	—	—	e 21 28	PP	—
Granada		151·8	342	e 23 22	PP	—	—	—	—	e 84·1

Additional readings :—
Riverview iSN = 10m.20s., iE = 10m.25s., iN = 10m.34s., iSSZ = 11m.18s., iSSE = 11m.21s.
Auckland Q? = 13m.4s.
Wellington P_cS? = 12m.14s., Q = 14m.34s.?
Perth i = 18m.46s. and 22m.39s.
Irkutsk ePPP = 16m.45s., eSS = 27m.5s.
Calcutta e?N = 21m.34s.
Tucson i = 13m.27s.
Potsdam eE = 22m.46s.
Helwan PPEZ = 21m.43s., eZ = 22m.16s., PPPZ = 24m.49s.
Long waves were also recorded at St. Louis, Kew, Bozeman, Chicago, U.S.C.G.S., Honolulu, Lincoln, Ukiah, Scoresby Sund, Upsala, Warsaw, and De Bilt.

Feb. 17d. Readings also at 0h. (Ksara and near Berkeley), 1h. (Wellington and Arapuni), 2h. (near Andijan (2)), 3h. (near Andijan), 5h. (near Mizusawa), 10h. (near Andijan (3)), 11h. (near Zurich, Ravensburg, Basle, Chur, Stuttgart, Neuchatel, and near Irkutsk), 16h. (near Tchimkent), 17h. (near Mizusawa), 18h. (Neuchatel), 20h. (near Andijan), 22h. (near Andijan (2), near Branner and Berkeley), 23h. (Cape Girardeau and near Andijan).

Feb. 18d. 16h. 52m. 15s. Epicentre 35°·8N. 140°·8E.

Intensity V at Kakioka, Yokohama; IV at Tokyo, Mito, Onahama, Shirakawa; II-III at Osima, Misima, Kohu, Maebasi, and Hunatu.
Epicentre 35°·8N. 140°·8E. Macroseismic radius 200-300km.
Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1942, Tokyo, 1950, pp. 8-9, macroseismic chart p. 8.

$A = -\cdot6300$, $B = +\cdot5138$, $C = +\cdot5823$; $\delta = -4$; $h = -1$;
$D = +\cdot632$, $E = +\cdot775$; $G = -\cdot451$, $H = +\cdot368$, $K = -\cdot813$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Tyosi	0·1	—	0 11k	+ 3	0 15	+ 2	—	—	—
Togane	0·4	236	0 19	+ 6	0 27	+ 6	—	—	—
Kakioka	0·7	311	0 17k	0	0 25	− 3	—	—	—
Mito	0·7	335	0 19k	+ 2	0 29	+ 1	—	—	—
Tukubasan	0·7	306	0 17k	0	0 25	− 3	—	—	—
Kiyosumi	0·8	218	0 19	+ 1	—	—	—	—	—
Tokyo, Cen. Met. Ob.	0·8	263	0 17	− 1	0 31	0	—	—	—
Tokyo, Imp Univ.	0·8	263	0 19	+ 1	0 32	+ 1	—	—	—
Komaba	0·9	261	0 19	− 1	0 31	− 3	—	—	—
Mitaka	1·0	263	0 19	− 2	0 39	+ 3	—	—	—
Yokohama	1·0	249	0 21k	0	0 35	− 1	—	—	—
Onahama	1·1	4	0 26k	+ 4	0 43	+ 4	—	—	—
Utunomiya	1·1	315	0 20k	− 2	0 37	− 2	—	—	—
Kumagaya	1·2	287	0 24k	0	0 43	+ 2	—	—	—
Mera	1·2	222	0 20k	− 4	0 40	− 1	—	—	—
Titibu	1·4	278	0 19	− 8	0 40	− 6	—	—	—
Maebasi	1·5	293	0 28k	0	0 52	+ 3	—	—	—
Osima	1·5	228	0 26k	− 2	0 45	− 4	—	—	—
Misima	1·7	246	0 29k	− 2	1 11	S_g	—	—	—
Hunatu	1·7	260	0 29	− 2	0 50	− 4	—	—	—
Kohu	1·8	265	0 33	+ 1	1 0	+ 4	—	—	—
Hukusima	2·0	352	0 38k	+ 3	1 3	+ 1	—	—	—
Shizuoka	2·1	247	0 37k	0	1 5	+ 1	—	—	—
Nagano	2·3	292	0 40k	0	1 8	− 1	—	—	—
Sendai	2·5	2	0 43	0	1 16	+ 2	—	—	—
Toyama	3·0	287	0 53a	+ 3	1 55	+28	—	—	—
Nagoya	3·2	259	0 53	+ 1	1 44	+12	—	—	—
Mizusawa	3·3	5	0 55	+ 2	1 36	+ 1	—	—	—
Gihu	3·3	263	0 53	0	1 41	+ 6	—	—	—
Wazima	3·5	298	0 58	+ 1	1 56	+16	—	—	—
Kameyama	3·7	257	0 59	− 1	1 56	+11	—	—	—
Hikone	3·8	264	1 0a	− 1	1 45	− 2	—	—	—
Akita	3·9	352	1 7	+ 5	2 4	+14	—	—	—
Miyako	3·9	13	1 6	+ 4	1 49	− 1	—	—	—
Kyoto	4·2	262	1 7	0	2 7	+10	—	—	—
Osaka	4·5	257	1 9	− 2	2 7	+ 2	—	—	—
Kobe	4·7	258	1 13	− 1	2 14	+ 4	—	—	—
Hatinohe	4·8	8	1 15	0	2 8	− 4	—	—	—
Siomisaki	4·8	242	1 12	− 3	2 49	+37	—	—	—
Wakayama	4·9	253	1 15	− 2	2 22	+ 7	—	—	—
Toyooka	4·9	268	1 16	− 1	2 32	S*	—	—	—
Aomori	5·0	0	1 21	+ 3	2 24	+ 6	—	—	—
Sumoto	5·1	255	1 18	− 2	2 46	S_g	—	—	—
Muroto	6·0	247	1 37	+ 5	3 44	+61	—	—	—
Koti	6·4	252	1 37	− 1	2 59	+ 6	—	—	—
Matuyama	6·9	256	1 45k	0	3 25	+20	—	—	—
Hirosima	7·0	261	1 35	−11	3 44	S_g	—	—	—
Hamada	7·2	265	1 53	+ 4	3 37	S*	—	—	—
Sapporo	7·3	3	1 54	+ 4	4 32	L	—	—	(4·5)
Nemuro	8·4	25	2 5	− 1	3 30	−13	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Izuka		8·5	258	2 5	− 2	4 31	L	—	—	(4·5)
Titizima		8·7	172	2 4	− 6	—	—	—	—	—
Kumamoto		8·9	253	2 11a	− 1	4 44	L	—	—	(4·7)
Unzendake		9·3	254	3 12	+55	—	—	—	—	—
Taikyu		9·9	274	4 58	S*	—	—	—	—	—
Naha		14·8	233	3 40	+ 8	—	—	—	—	—
Calcutta	N.	47·2	269	—	—	e 17 33	?	—	—	e 28·2
Almata		48·8	300	e 8 46	− 3	—	—	—	—	—
Sverdlovsk		55·8	320	e 9 35	− 6	17 20	− 8	—	—	—
Bombay		61·6	274	(e 10 18)	− 4	e 18 40	− 3	e 14 5	PPP	—
Tinemaha	Z.	76·9	54	i 11 54	− 2	—	—	—	—	—
Mount Wilson	Z.	78·7	56	e 12 15	+ 9	—	—	—	—	—
Pasadena		78·7	56	e 12 13	+ 7	—	—	—	—	—
Copenhagen		78·8	334	i 12 2	− 4	—	—	—	—	—
Palomar	Z.	80·0	56	e 12 9	− 4	—	—	—	—	—
Tucson		84·7	54	i 12 35	− 2	—	—	—	—	—
Stuttgart		85·4	330	i 12 36a	− 4	—	—	—	—	—
La Paz	Z.	147·9	61	19 47	[+ 3]	—	—	—	—	20·4?

Additional readings :—
Bombay gives P as S.
Palomar iZ = 12m.15s.
Stuttgart i = 12m.50s.
Long waves were also recorded at De Bilt, Cheb, and Potsdam.

Feb. 18d. 19h. 45m. 19s. Epicentre 35°·8N. 140°·8E. (as at 16h.).

Intensity V at Kakioka and Yokohama ; IV at Katsuura, Tokyo, and Onahama ; II-III at Mera, Misima, Kohu, Utunomiya, and Hunatu.
Epicentre 35°·8N. 140°·8E. Macroseismic radius 200-300km.
Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1942, Tokyo, 1950, pp. 9-10. Macroseismic chart p. 9.

$A = -\cdot6300$, $B = +\cdot5138$, $C = +\cdot5823$; $\delta = -4$; $h = -1$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tyosi	0·1	—	0 9k	+ 1	0 13	0	—	—	—
Togane	0·4	236	0 18	+ 5	0 26	+ 5	—	—	—
Kakioka	0·7	311	0 17k	0	0 26	− 2	—	—	—
Mito	0·7	335	0 20k	+ 3	0 30	+ 2	—	—	—
Tukubasan	0·7	306	0 20k	+ 3	0 25	− 3	—	—	—
Kiyosumi	0·8	218	0 18	0	—	—	—	—	—
Tokyo, Cen. Met. Ob.	0·8	263	0 19	+ 1	0 31	0	—	—	—
Tokyo, Imp. Univ.	0·8	263	0 18	0	0 30	− 1	—	—	—
Komaba	0·9	261	0 18	− 2	0 32	− 2	—	—	—
Mitaka	1·0	263	0 18	− 3	0 36	0	—	—	—
Yokohama	1·0	249	0 22k	+ 1	0 36	0	—	—	—
Onahama	1·1	4	0 28a	+ 6	0 44	+ 5	—	—	—
Utunomiya	1·1	315	0 22k	0	0 41	+ 2	—	—	—
Kumagaya	1·2	287	0 25k	+ 1	0 45	+ 4	—	—	—
Mera	1·2	222	0 24k	0	0 39	− 2	—	—	—
Titibu	1·4	278	0 18	− 9	0 41	− 5	—	—	—
Maebasi	1·5	293	0 30k	+ 2	0 52	+ 3	—	—	—
Osima	1·5	228	0 27k	− 1	0 44	− 5	—	—	—
Misima	1·7	246	0 30k	− 1	1 12	+18	—	—	—
Hunatu	1·7	260	0 31k	0	0 52	− 2	—	—	—
Kohu	1·8	265	0 33k	+ 1	0 58	+ 2	—	—	—
Hukusima	2·0	352	0 34a	− 1	1 28	+26	—	—	—
Shizuoka	2·1	247	0 37k	0	1 4	0	—	—	—
Nagano	2·3	292	0 41k	+ 1	1 10	+ 1	—	—	—
Sendai	2·5	2	0 45	+ 2	1 18	+ 4	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hatidyozima		2·7	196	0 46	0	1 17	− 2	—	—	—
Toyama		3·0	287	0 50a	0	1 53	+26	—	—	—
Nagoya		3·2	259	0 53	+ 1	1 38	+ 6	—	—	—
Mizusawa		3·3	5	0 58	+ 5	1 37	+ 2	—	—	—
Gibu		3·3	263	0 54	+ 1	1 41	+ 6	—	—	—
Wazima		3·5	298	1 1	+ 4	2 2	+22	—	—	—
Kameyama		3·7	257	1 0a	0	1 58	+13	—	—	—
Hikone		3·8	264	1 0a	− 1	1 43	− 4	—	—	—
Akita		3·9	352	1 10	+ 8	2 7	+17	—	—	—
Miyako		3·9	13	1 7	+ 5	1 50	0	—	—	—
Kyoto		4·2	262	1 7	0	2 9	+12	—	—	—
Osaka		4·5	257	1 11	0	2 8	+ 3	—	—	—
Kobe		4·7	258	1 13	− 1	2 17	+ 7	2 22	S*	—
Hatinohe		4·8	8	1 15	0	2 9	− 3	—	—	—
Siomisaki		4·8	242	1 13a	− 2	2 48	+36	—	—	—
Wakayama		4·9	253	1 11k	− 6	2 11	− 4	—	—	—
Toyooka		4·9	268	1 15	− 2	2 31	+16	—	—	—
Aomori		5·0	0	1 24	+ 6	2 34	+16	—	—	—
Sumoto		5·1	255	1 17	− 3	2 30	+10	—	—	—
Muroto		6·0	247	1 34	+ 2	3 15	S_g	—	—	—
Koti		6·4	252	1 36	− 2	2 55	+ 2	—	—	—
Matuyama		6·9	256	1 45k	0	3 27	S_g	—	—	—
Hirosima		7·0	261	1 45	− 1	3 41	S_g	—	—	—
Hamada		7·2	265	1 49	0	3 37	S*	—	—	—
Sapporo		7·3	3	2 56	S	(2 56)	−19	—	—	—
Nemuro		8·4	25	2 16	+10	3 31	−13	—	—	—
Titizima		8·7	172	2 6	− 4	—	—	—	—	—
Kumamoto		8·9	253	2 12k	0	4 44	L	—	—	(4·7)
Yakusima		10·2	241	2 28	− 3	—	—	—	—	—
Nake		12·1	235	3 9	+12	—	—	—	—	—
Sverdlovsk		55·8	220	e 9 36	− 5	e 17 19	− 9	—	—	—
Tinemaha	z.	76·9	54	e 11 56	0	—	—	—	—	—
Mount Wilson	z.	78·7	56	e 12 5	− 1	—	—	—	—	—
Pasadena		78·7	56	e 12 5	− 1	—	—	—	—	—
Copenhagen		78·8	334	i 12 3	− 3	—	—	—	—	—
Riverside	z.	79·3	56	e 12 10	+ 1	—	—	—	—	—
Palomar	z.	80·0	56	e 12 13	0	—	—	—	—	—
Tucson		84·7	54	i 12 37	0	—	—	—	—	—
La Paz	z.	147·9	61	19 46	[+ 2]	—	—	—	—	20·5?

Palomar also gives iZ = 12m.47s.
Long waves were also recorded at Ksara.

Feb. 18d. Readings also at 0h. (Cheb), 1h. (Puebla, Vera Cruz, Tacubaya, Oaxaca, and Tucson), 3h. (Vera Cruz, Tacubaya, and Oaxaca), 5h. (Wellington, Auckland, Brisbane, Riverview, Tananarive, near La Paz, and near Andijan), 7h. (near Ottawa), 9h. (Tucson, Pasadena, Mount Wilson, Tinemaha, and near Honolulu), 14h. (Ksara and near Andijan), 15h. (near Granada and Almeria), 16h. (near Andijan, Frunse, Tashkent, and Almata), 22h. (near Berkeley).

Feb. 19d. Readings at 0h. (near Tchimkent), 2h. (near Berkeley), 4h. (Pasadena and Mount Wilson), 5h. (Tucson, Haiwee, Pasadena, Mount Wilson, Tinemaha, and Palomar), 6h. (Tucson, Riverside, Tinemaha, and La Paz), 7h. (Ferndale), 8h. (Agra), 9h. (near Andijan), 13h. (Tucson, La Paz, Tinemaha, Riverside, Palomar, Pasadena, and Mount Wilson), 14h. (La Paz), 19h. (near Andijan), 20h. (Riverview), 23h. (Auckland, Wellington, Christchurch, Arapuni, Riverview, and near Berkeley).

Feb. 20d. 0h. 43m. 5s. Epicentre 5°·08. 129°·2E.

A = −·6296, B = +·7720, C = −·0866; δ = −12; h = +7;
D = +·775, E = +·632; G = +·055, H = −·067, K = −·996.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Perth		29·6	203	i 6 23	+14	i 13 20	SSS	—	—	i 15·8
Brisbane	E.	31·9	139	—	—	e 11 47	+ 7	—	—	—
Riverview		35·2	149	e 6 28	−30	i 11 46	−45	(e 14 55)	SS	e 14·9
Sydney		35·2	149	—	—	e 11 43	−48	—	—	—
Nagoya		40·6	10	7 43	0	(13 49)	− 5	—	—	13·8
Gihu		40·8	10	7 46	+ 1	13 49	− 7	—	—	16·9
Nagano		42·3	10	8 0	+ 3	—	—	—	—	—
Sendai		44·4	13	8 10	− 4	14 43	− 6	—	—	—
Mizusawa		45·3	13	e 8 17	− 4	14 49	−13	—	—	—
Calcutta	N.	48·4	306	e 8 57	+11	i 15 47	+ 1	—	—	—
Colombo	E.	50·6	283	9 7	+ 5	—	—	—	—	—
Auckland		52·4	133	—	—	15 58	−44	16 50	PS	i 23·7
Arapuni		53·5	135	—	—	e 15 55?	−62	—	—	—
Christchurch		54·2	143	9 28	− 1	17 4	− 2	23 0	Q	25·8
Wellington		54·4	139	i 8 25	?	16 53	−16	9 25	P	32·9
Hyderabad		54·8	296	9 28	− 6	17 10	− 4	20 43	SS	26·6
Agra	E.	58·9	306	—	—	i 18 0	− 8	—	—	—
Bombay	E.	60·4	295	i 10 10	− 3	18 19	− 9	10 39	pP	—
Almata		67·3	323	e 11 3	+ 4	e 19 56	+ 2	—	—	—
Andijan		69·0	317	e 11 9	0	e 20 13	− 1	—	—	—
Tashkent		71·4	317	11 21	− 3	20 39	− 3	—	—	—
Sverdlovsk		82·6	329	12 21	− 5	22 30	−13	—	—	—
Helwan		99·3	299	13 37	− 8	25 1	−13	24 10	SKS	—
Warsaw		105·0	323	e 18 36	PP	24 30	[−21]	e 20 49	PPP	58·9
Copenhagen		109·0	328	e 18 21	[−10]	—	—	—	—	—
Potsdam		109·7	324	e 27 55	PS	—	—	e 28 31	PPS	e 56·9
Cheb		110·8	322	—	—	e 24 55?	{−10}	—	—	e 57·9
Tinemaha	Z.	110·9	52	i 18 33	[− 2]	—	—	e 20 30	PP	—
Pasadena		111·5	55	e 18 24	[−12]	—	—	e 19 30	PP	e 50·9
Mount Wilson	Z.	111·6	55	i 18 23	[−13]	—	—	e 19 30	PP	—
Riverside	Z.	112·2	55	e 18 54	[+17]	—	—	e 19 34	PP	—
Palomar	Z.	112·7	55	e 18 49	[+10]	—	—	e 19 47	PP	—
Stuttgart		113·2	322	e 18 28	[−12]	—	—	—	—	—
De Bilt		114·3	326	e 28 47	PS	—	—	—	—	e 58·9
Uccle		115·3	326	—	—	e 26 31	{−11}	e 29 52	PS	—
Tucson		117·9	56	e 18 35	[−14]	e 29 28	PS	20 1	PP	e 54·7
Huancayo		150·3	125	e 19 55	[+ 7]	42 57	SS	23 2	PP	e 69·9
La Paz	Z.	152·6	143	19 43	[− 8]	—	—	—	—	76·9
San Juan		160·0	47	e 19 54	[− 7]	31 32	{+20}	—	—	e 43·3

Additional readings :—
Perth i = 10m.5s.
Riverview iZ = 6m.54s., iPP?N = 7m.53s., iSEN = 11m.42s., iSS?E = 13m.12s., iZ = 13m.22s. and 13m.52s., iNZ = 14m.8s.
Wellington PPPZ = 11m.20s., iZ = 13m.16s., SKS = 15m.50s., SS = 21m.25s., PPPS?Z = 21m.50s., S8S = 25m.30s., Q = 27·5m.
Hyderabad S_cSE = 19m.10s.
Bombay PPE = 12m.25s., PPN = 12m.28s., sS = 19m.11s., S_cSE = 19m.43s., S_cSN = 19m.47s., eN = 20m.28s., SSE = 22m.5s.
Helwan iZ = 17m.19s. and 17m.43s.
Warsaw eZ = 21m.47s., eN = 25m.24s., eZ = 27m.35s. and 28m.4s., eN = 28m.28s., eZ = 28m.36s., eN = 33m.25s., eZ = 34m.5s., eN = 38m.3s.
Pasadena iZ = 19m.39s.
Mount Wilson eZ = 19m.39s.
Stuttgart e = 20m.16s.
Uccle eE = 27m.19s. and 34m.18s.
Tucson ePS = 31m.7s.
Huancayo e = 20m.33s. and 21m.3s.
La Paz iZ = 21m.9s.
San Juan e = 26m.18s.
Long waves were also recorded at Granada.

Feb. 20d. Readings also at 4h. (Auckland, near Branner, near Andijan, Almata, and Tashkent), 7h. (La Paz), 12h. (Auckland and near Andijan), 14h. (near Andijan and Tashkent), 15h. (Bombay and near Andijan), 21h. (near Andijan), 23h. (Berkeley).

Feb. 21d. 7h. 7m. 42s. Epicentre 37°·7N. 141°·8E. (Focus at the base of the superficial layers).
(as on 1939, Dec. 6d.).

Intensity VII-VIII at Kawamata, Hukusima, VI at Sendai; V at Hukusima, Mito, Kakioka, Miyako, Oanahama; IV at Yamagata, Morioka, Yokohama, Tokyo, Kohu, Misima, Hatinohe; II-III at Aomori, Urakawa, Osima, and Takada.
Epicentre 37°·7N. 141°·8E.
Macroseismic radius greater than 300km. Cracks formed in the reinforced dyke of the Onkarta electric power plant in Miyagi prefecture.
See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1942, Tokyo, 1950, pp. 10-11. Macroseismic chart p. 10.

$A = -\cdot6234$, $B = +\cdot4905$, $C = +\cdot6090$; $\delta = +10$; $h = -1$;
$D = +\cdot618$, $E = +\cdot786$; $G = -\cdot479$, $H = +\cdot377$, $K = -\cdot793$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Sendai	0·9	309	0 16k	0	0 29	+ 1	—	—	—
Hukusima	1·1	273	0 20k	+ 1	0 34	+ 1	—	—	—
Mizusawa	1·5	343	i 0 25	+ 1	0 43	− 1	—	—	—
Mito	1·7	219	0 28k	0	0 49	0	—	—	—
Kakioka	1·9	221	0 31k	0	0 52	− 2	—	—	—
Miyako	1·9	4	0 31k	0	0 50	− 4	—	—	—
Utunomiya	1·9	233	0 32k	+ 1	0 55	+ 1	—	—	—
Tukubasan	2·0	222	0 31k	− 1	1 0	+ 4	—	—	—
Akita	2·4	326	0 39k	+ 1	1 12	+ 6	—	—	—
Togane	2·4	208	0 39	+ 1	1 11	+ 5	—	—	—
Kumagaya	2·5	231	0 39k	0	1 20	+11	—	—	—
Maebasi	2·6	239	0 40k	− 1	1 10	− 1	—	—	—
Tokyo, Cen. Met. Ob.	2·6	219	0 40a	− 1	1 9	− 2	—	—	—
Tokyo, Imp. Univ.	2·6	219	0 39	− 2	1 13	+ 2	—	—	—
Komaba	2·7	220	0 39	− 3	1 14	0	—	—	—
Mitaka	2·7	222	0 39	− 3	1 2	−12	—	—	—
Aikawa	2·8	276	0 44a	+ 1	1 22	+ 6	—	—	—
Hatinohe	2·8	356	0 37k	− 6	1 9	− 7	—	—	—
Titibu	2·8	232	0 39	− 4	1 9	− 7	—	—	—
Yokohama	2·8	217	0 46	+ 3	1 19	+ 3	—	—	—
Kiyosumi	2·9	207	0 39	− 6	1 24	+ 5	—	—	—
Nagano	3·0	247	0 49k	+ 3	1 38	+16	—	—	—
Aomori	3·2	346	0 51k	+ 2	1 41	+14	—	—	—
Mera	3·2	210	0 50a	+ 1	1 29	+ 2	—	—	—
Hunatu	3·3	228	0 52	+ 1	1 31	+ 2	—	—	—
Kohu	3·3	231	0 52	+ 1	1 38	+ 9	—	—	—
Koyama	3·3	224	0 39	−12	1 26	− 3	—	—	—
Misima	3·5	223	0 54a	+ 1	1 47	+13	—	—	—
Osima	3·5	214	0 53	0	1 35	+ 1	—	—	—
Toyama	3·8	256	0 59	+ 1	1 39	− 3	—	—	—
Shizuoka	3·9	226	1 2	+ 3	1 39	− 5	—	—	—
Wazima	3·9	267	1 3k	+ 4	2 1	+17	—	—	—
Omaesaki	4·2	224	1 9	+ 6	1 58	+ 6	—	—	—
Hamamatu	4·5	229	1 5	− 3	1 52	− 8	—	—	—
Gihu	4·6	242	1 12a	+ 3	2 5	+ 3	—	—	—
Nagoya	4·7	237	1 10	0	2 18	+13	—	—	—
Hatidyôzima	4·9	200	1 13	0	2 1	− 9	—	—	—
Hikone	5·1	243	1 18a	+ 2	2 17	+ 2	—	—	—
Kameyama	5·2	238	1 20a	+ 2	2 31	+14	—	—	—
Sapporo	5·3	356	1 21	+ 2	—	—	—	—	—
Kyoto	5·6	243	1 24a	+ 1	2 50	+23	—	—	—
Owase	5·8	233	1 29	+ 3	3 6	+34	—	—	—
Osaka	5·9	241	1 17	−10	2 44	+ 9	—	—	—
Toyooka	6·0	251	1 30	+ 1	2 52	+15	—	—	—
Kobe	6·2	243	1 32a	0	2 40	− 2	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro		6·3	26	1 32	− 1	2 31	−14	—	—	—
Wakayama		6·4	240	1 35	+ 1	2 54	+ 7	—	—	—
Siomisaki		6·5	231	1 35a	− 1	3 15	+25	—	—	—
Sumoto		6·5	241	1 37	+ 1	3 10	+20	—	—	—
Muroto		7·6	237	2 10	+19	3 30	+13	—	—	—
Kôti		7·9	241	1 54	− 1	3 18	− 7	—	—	—
Hirosima		8·3	249	2 5	+ 4	3 47	+12	—	—	—
Matuyama		8·3	245	2 2	+ 1	3 53	SS	—	—	—
Hamada		8·4	253	2 4a	+ 2	3 49	+12	—	—	—
Izuka		9·9	249	2 22	− 1	4 52	SSS	—	—	—
Kumamoto		10·3	245	2 29a	+ 1	4 58	SSS	—	—	—
Husan		10·6	260	2 35	+ 2	3 46	−45	—	—	—
Ituhara		10·7	255	2 32	− 2	4 40	+ 6	—	—	—
Taikyu		10·7	264	2 37	+ 3	4 39	+ 5	—	—	—
Unzendake		10·7	246	2 33	− 1	5 3	SSS	—	—	—
Nagasaki		10·9	247	2 39	+ 2	5 10	SSS	—	—	—
Keizyo		11·8	274	2 58	+ 9	—	—	—	—	—
Yakusima		11·8	236	2 51	+ 2	—	—	—	—	—
Dairen		15·9	280	3 42	− 1	6 38	0	—	—	—
Irkutsk		29·9	313	i 6 5	− 2	i 10 58	− 3	6 28	sP	—
Semipalatinsk		44·8	308	i 8 11	− 1	14 43	− 4	—	—	—
Calcutta	N.	48·0	268	i 8 37a	− 1	i 15 32	0	i 8 54	pP	—
College		48·4	33	e 8 38	− 3	e 15 34	− 4	e 9 14	pP	e 22·0
Andijan		52·6	297	i 9 11	− 2	—	—	—	—	—
Agra	E.	54·0	279	i 9 17a	− 6	i 16 47	− 8	9 28	pP	—
Honolulu		54·1	90	e 9 34	+10	i 17 0	+ 4	e 11 26	PP	e 23·1
Tashkent		54·5	298	9 24	− 3	17 1	− 1	9 35	pP	—
Sverdlovsk		54·9	319	i 9 29	− 1	i 17 7	0	i 9 40	pP	—
Hyderabad		58·6	269	9 53	− 3	17 51	− 5	11 53	PP	27·8
Bombay	E.	62·3	274	i 10 18	− 3	i 18 39	− 5	10 31	pP	—
Kodaikanal	E.	63·5	264	i 10 44a	+15	i 19 13	+14	21 0	?	—
Colombo	E.	63·7	258	10 34	+ 4	—	—	—	—	—
Victoria		65·7	48	10 48	+ 5	19 24	− 2	e 20 38	?	27·3
Ukiah		70·8	56	e 11 22	+ 7	e 20 12	−14	e 25 6	SS	e 29·0
Scoresby Sund		71·5	355	i 11 18	− 1	e 20 29	− 5	i 11 38	pP	e 28·9
Riverview		71·7	173	e 11 24k	+ 4	i 20 33	− 4	—	—	e 32·6
Berkeley		72·1	57	e 11 22	− 1	e 20 42	+ 1	—	—	e 31·9
Upsala	E.	72·5	335	11 22	− 3	e 20 44	− 2	21 8	PS	e 34·3
	N.	72·5	335	11 23	− 2	e 20 41	− 5	e 25 18	SS	e 34·3
Santa Clara		72·6	57	e 11 27	+ 1	e 20 48	+ 1	i 11 37	pP	e 35·6
Lick		72·8	57	e 11 43	pP	—	—	—	—	—
Butte		73·3	45	e 11 40	+10	e 20 56	+ 1	e 14 18	PP	e 30·7
Bozeman		74·3	45	e 11 40	+ 4	i 21 5	− 1	e 25 58	SS	e 31·7
Tinemaha		75·1	54	i 11 41	+ 1	—	—	—	—	—
Santa Barbara		75·7	58	e 11 44	0	—	—	—	—	—
Haiwee		75·9	55	e 11 46	+ 1	—	—	—	—	—
Logan		76·3	48	i 11 48	+ 1	21 29	+ 1	i 21 55	sS	e 30·3
Warsaw		76·7	328	i 11 46a	− 4	21 31	− 2	i 14 39	PP	e 39·3
Salt Lake City		76·9	49	e 12 0	+ 9	e 21 32	− 3	e 14 58	PP	e 30·6
Mount Wilson		77·0	56	i 11 51a	0	—	—	i 12 3	pP	—
Pasadena		77·0	56	i 11 50a	− 1	i 21 34	− 2	i 12 0	pP	e 31·8
Copenhagen		77·5	336	i 11 52a	− 2	i 21 39	− 2	12 7	pP	37·3
Riverside		77·6	56	i 11 52	− 2	—	—	—	—	—
La Jolla		78·3	58	e 11 57	− 1	—	—	e 12 8	pP	—
Palomar	Z.	78·3	57	i 11 58	0	—	—	i 12 9	pP	—
Bucharest		79·7	319	e 12 3	− 3	e 21 58	− 7	e 15 3	PP	41·8
Potsdam		79·8	332	i 12 6a	0	i 22 4	− 2	i 12 18	pP	41·3
Auckland		80·2	154	12 20	+11	22 13	+ 3	22 58	sS	37·3
Aberdeen		80·7	341	i 12 11	0	i 22 12	− 3	i 22 46	sS	38·6
Ksara		81·0	305	e 12 37	+24	e 22 55	PS	—	—	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Prague	81·1	329	i 12 13a	0	i 22 8	−11	e 22 36	PS	e 40·3
Jena	81·5	331	i 12 11	− 5	e 22 18	− 5	i 12 27	pP	e 40·8
Arapuni	81·6	154	—	—	27 18?	SS	—	—	35·3
Cheb	81·9	330	e 12 16	− 2	e 22 52	+24	e 15 26	PP	e 42·3
Sofia	82·4	319	e 12 18	− 2	e 22 32	− 1	23 2	PS	44·3
De Bilt	82·9	335	i 12 22a	− 1	e 22 34	− 4	i 15 34	PP	e 37·8
Tucson	82·9	54	i 12 23	0	e 22 37	− 1	i 13 5	sP	e 36·5
Stonyhurst	83·7	340	i 12 26	− 1	i 22 46	0	i 15 40	PP	e 36·3
Stuttgart	84·2	334	i 12 27a	− 2	e 22 48	− 3	i 12 42	pP	e 42·3
Wellington	84·2	157	12 30k	+ 1	22 44	− 7	13 3	sP_cP	39·3
Uccle	84·3	336	i 12 27a	− 3	i 22 48	− 4	15 35	PP	e 40·3
Triest	84·8	327	i 12 28	− 4	e 22 52	− 5	i 28 47	SS	e 41·7
Strasbourg	84·9	332	e 12 30	− 3	e 22 47	−11	e 15 59	PP	38·3
Kew	85·2	347	i 12 32a	− 2	i 22 58	− 2	i 15 54	PP	e 37·8
Oxford	85·2	338	12 30	− 4	i 22 59	− 1	—	—	e 35·3
Lincoln	85·3	41	—	—	e 22 55	[+ 1]	—	—	e 38·7
Christchurch	85·5	159	12 42	+ 6	22 58	[+ 3]	36 5	Q	39·9
Chur	85·6	330	e 12 34	− 2	e 23 3	− 1	—	—	e 44·0
Zurich	85·6	330	e 12 33	− 3	e 23 3	− 1	e 12 45	pP	—
Helwan	86·5	305	i 12 39	− 2	23 3	[+ 1]	i 13 3	pP	—
Neuchatel	86·5	331	e 12 38	− 3	—	—	—	—	—
Paris	86·6	335	12 37	− 4	e 23 3	[+ 1]	e 16 3	PP	44·3
Chicago U.S.C.G.S.	88·9	36	e 13 2	+10	e 23 9	[− 8]	e 16 25	PP	e 40·2
Clermont-Ferrand	89·0	332	e 12 52	− 1	—	—	—	—	—
Florissant	90·0	38	i 13 0	+ 3	i 23 47	+ 1	i 16 27	PP	—
St. Louis	90·2	38	i 12 58	0	i 24 13	+25	—	—	—
Ottawa	90·6	26	12 59	− 1	23 18	[− 9]	29 56	SS	e 43·3
Seven Falls	90·7	22	—	—	e 23 48	− 4	e 29 54	SS	44·3
Toronto	90·8	29	—	—	e 23 30	[+ 2]	—	—	46·3
Cape. Girardeau N.	91·6	39	e 12 25	−40	—	—	—	—	—
Vermont	92·3	25	—	—	i 24 7	+ 1	e 30 5	SS	e 43·7
Pittsburgh	93·3	31	i 13 14	+ 1	e 23 40	[− 2]	i 13 25	pP	—
East Machias	93·7	21	—	—	e 24 15	− 3	e 24 45	pS	e 40·1
Weston	94·8	24	e 13 17	− 3	e 24 23	− 5	—	—	—
Fordham	95·3	27	i 13 24	+ 2	i 23 55	[+ 2]	e 17 10	PP	e 53·6
Philadelphia	95·6	28	—	—	e 23 42	[−13]	e 26 30	PS	e 45·6
Algiers	96·6	328	e 17 27	PP	24 18	[+17]	e 19 18	PPP	52·3
Almeria	98·8	332	e 15 50	?	26 37	PS	17 14	PP	49·3
Tananarive	104·6	258	—	—	e 25 4	[+25]	33 49	SS	54·6
Bermuda	106·1	23	—	—	e 25 18	[+32]	e 33 29	SS	e 43·3
San Juan	118·3	31	e 18 55	[+10]	e 27 39	PS	i 36 12	SS	e 47·9
Huancayo	138·1	63	e 19 20	[− 2]	e 28 41	SKKS	e 22 25	PP	e 49·3
La Paz	146·2	59	i 19 38a	[+ 2]	—	—	i 20 24	pPKP	70·0
La Plata E.	163·8	86	23 48	PKS	31 19	SKKS	35 24	SKSP	75·6
Rio de Janeiro	164·6	17	e 24 46	PP	—	—	—	—	—

Additional readings :—
Calcutta iPPN =10m.31s., isSN =16m.5s., SSN =19m.37s.
College ePP =10m.34s., e =16m.4s., eSS =19m.16s., esSS =19m.41s.
Agra PPE =11m.21s., sSE =17m.6s., iE =17m.17s., SSE =20m.26s.
Honolulu e =12m.25s., eSS =20m.39s.
Hyderabad PSE =18m.4s., S_cSE =19m.34s., SSE =21m.47s.
Bombay P_cPE =11m.1s., iE =11m.39s., PPPE =14m.8s., P_cSE =14m.55s., PSE = 19m.2s., iE =19m.34s., S_cSE =20m.11s., SSE =22m.45s., iE =23m.43s.
Ukiah esSS =25m.41s.
Scoresby Sund esP =11m.53s., ePP =14m.4s., e =14m.33s., isS =20m.56s., eSS = 24m.55s.
Riverview iPZ =11m.29s., iSE =20m.38s.
Berkeley ePE =11m.31s., ePN =11m.36s., eN =29m.42s.
Upsala iN =21m.48s., eE =23m.42s.
Santa Clara ePSE =21m.37s.
Lick eE =11m.46s.
Butte esS =21m.28s., eSS =25m.43s.
Bozeman e =11m.52s. and 22m.5s.
Tinemaha iZ =11m.47s.
Haiwee iZ =11m.50s.
Logan e =21m.46s.
Warsaw eZ =14m.31s., PPPZ =16m.26s., eEN =21m.56s., PSE =22m.1s., PSN = 22m.4s., SSZ =26m.30s., SSSE =29m.26s., SSSN =29m.43s., SSSZ =29m.49s.

Continued on next page.

Salt Lake City iS = 21m.37s., ipS = 22m.4s., eSS = 26m.53s.
Pasadena iZ = 15m.40s., eSSN = 26m.34s.
Copenhagen 14m.44s., 22m.4s., and 26m.24s.
Buchapest ePN = 12m.6s., eSN = 22m.2s., ePSEN = 22m.44s., eSSEN = 27m.21s., eSSS? = 30m.36s.
Potsdam iPPZ = 15m.2s., iPPEN = 15m.6s., ipPPEN = 15m.18s., ipPPZ = 15m.24s., iE = 16m.52s., iZ = 16m.55s., eZ = 18m.6s., iSKSN = 22m.20s., iSKSE = 22m.23s., isSZ = 22m.29s., iPPSN = 23m.26s., iN = 23m.42s., eSSZ = 27m.6s.
Auckland S? = 22m.28s., SS = 27m.28s., Q = 33m.48s.
Aberdeen iE = 27m.25s.
Jena iPN = 12m.15s., iN = 21m.33s., iS = 22m.46s,
Cheb eSS = 31m.19s.
De Bilt iPPP = 17m.24s., eSS = 28m.18s.?
Tucson i = 12m.33s., e = 15m.8s. and 16m.49s., iS = 22m.40s., esS = 23m.31s.
Stonyhurst iPS = 23m.10s., SS = 28m.39s., SSS = 31m.54s.
Stuttgart i = 13m.13s., iPP = 15m.37s., ePPP = 17m.54s., esS = 23m.16s., eSS? = 28m.18s., ePKP,PKP = 38m.53s.
Wellington iZ = 15m.31s., PPZ = 15m.51s., SP?Z = 17m.30s., iZ = 19m.27s., sS? = 23m.13s., SS = 28m.20s.
Uccle iPSZ = 23m.39s., SSE = 28m.13s.
Triest iPP = 15m.50s., i = 23m.8s., eSSS = 31m.57s.
Strasbourg e = 13m.56s., iS = 24m.16s., e = 25m.1s.
Kew ePPPZ = 17m.26s., iPS = 23m.51s., eSS = 28m.46s., eSSSE = 31m.56s., eQ = 34·8m.
Helwan PPZ = 16m.12s., SKKS = 23m.28s., SEN = 23m.33s., PSE = 24m.33s.
Paris iS = 23m.23s., ePS = 24m.23s.
Chicago U.S.C.G.S. iS = 23m.32s., esS = 24m.0s., e = 27m.18s., eSS = 29m.9s.
Florissant iSKKS = 23m.59s., iSE = 24m.14s.
Ottawa S = 23m.47s.
Seven Falls e = 36m.48s.
Cape Girardeau eN = 12m.38s.
Vermont e = 36m.38s.
Pittsburgh iS = 24m.17s., i = 24m.48s.
East Machias e = 26m.17s., eSS = 30m.35s.
Philadelphia eS = 24m.28s., i = 24m.33s. and 36m.55s.
Almeria PPS = 27m.35s.
Tananarive eS = 26m.16s.
Huancayo eSS = 40m.18s.
La Paz isPKP = 20m.56s., PPZ = 23m.12s.
La Plata ?E = 32m.18s.?, PPP?E = 35m.54s., PPSE = 43m.18s.?
Long waves were also recorded at Columbia, Granada, Lisbon, and San Fernando.

Feb. 21d. 21h. 46m. 52s. Epicentre 24°·0N. 90°·3E.

Intensity VII at Faridpur, Narayanganj, Gauhati; V at Shillong and Mymensingh.
Epicentre in Assam 25°·0N. 90°·0E. (Bombay).
See Government of India Seismological Bulletin, 1942, p. 23.

A = −·0048, B = +·9146, C = +·4045; δ = +14; h = +4;
D = +1·000, E = +·005; G = −·002, H = +·404, K = −·915.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	2·3	231	i 0 38k	− 2	—	—	i 0 49	P_g	—
Agra	E.	11·5	289	e 2 41	− 7	4 55	− 4	—	—	—
Hyderabad	E.	12·9	242	3 8	+ 1	5 28	− 5	—	—	6·4
Bombay	E.	17·0	256	e 4 3	+ 2	7 27	SS	4 33	PPP	8·7
Kodaikanal	E.	18·3	226	i 4 36k	PP	i 8 8	SS	—	—	10·1
Colombo	E.	19·7	213	4 40	+ 6	i 8 22	+12	—	—	—
Almata		22·1	335	e 5 1	+ 2	9 2	+ 4	—	—	—
Andijan		22·5	323	5 4	+ 2	—	—	—	—	—
Tashkent		24·6	320	5 23	0	9 42	0	—	—	—
Irkutsk		30·2	17	e 6 30	+16	—	—	—	—	—
Sverdlovsk		39·2	335	7 31	0	13 29	− 3	—	—	—
Helwan		52·4	291	9 16	0	16 53	+11	11 14	PP	—
Warsaw		58·8	318	e 11 8?	+66	e 18 17	+10	e 24 8?	SSS	e 29·1
Upsala		60·9	327	—	—	e 25 8?	SSS	—	—	e 34·1
Copenhagen		63·7	323	e 10 32	− 4	—	—	—	—	—
Potsdam		63·7	319	e 10 32	− 4	—	—	—	—	e 30·1
Cheb		64·4	317	—	—	e 19 8?	PS	—	—	—
Stuttgart		66·6	315	e 10 51	− 3	—	—	—	—	—
Chur		66·8	314	e 10 50	− 6	—	—	—	—	—
Zurich		67·3	314	e 10 55	− 4	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Uccle		69·3	317	e 11 8	− 3	e 20 13	− 4	e 20 51	PPS	e 35·1
Palomar	z.	117·4	25	e 18 53	[+ 6]	—	—	—	—	—
Tucson		120·5	20	i 18 49	[− 5]	—	—	—	—	—

Additional readings:—
Calcutta iP_eN = 1m.1s.
Agra iPE = 2m.45s.
Bombay SSE = 7m.59s., P_ePE = 8m.21s.
Helwan eZ = 12m.32s.
Stuttgart e = 11m.2s.
Tucson i = 19m.2s.
Long waves were also recorded at Scoresby Sund and De Bilt.

Feb. 21d. Readings also at 0h. (near Branner and Lick), 1h. (near Branner, Lick, and Auckland), 3h. (near Mizusawa), 7h. (near Mizusawa and La Paz), 9h. (near Apia, Uccle, near Branner, and Lick), 10h. (San Fernando and near Andijan), 15h. (near Mizusawa), 18h. (Tucson, Palomar, near Honolulu, Ukiah, Berkeley, Mount Wilson, Pasadena, Riverside, and near Fort de France), 19h. (Irkutsk, Bozeman, Salt Lake City, and near Mizusawa), 20h. (Uccle, Stuttgart, Potsdam, Copenhagen, Warsaw, and Cheb), 23h. (Kew).

Feb. 22d. 0h. 47m. 12s. Epicentre 33°·7N. 132°·1E. (as on 1937, Feb. 27d.).

Intensity V at Matuyama, Uwazima; IV at Hirosima, Simonoseki, Kôti, Ooita; II-III at Saga, Simidu, and Takamatsu. Epicentre 33°·6N. 132°·2E. Macroseismic radius 200-300km.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1942, Tokyo, 1950, pp. 12. Macroseismic chart p. 12.

$A = -·5589$, $B = +·6186$, $C = +·5523$; $\delta = +7$; $h = +1$;
$D = +·742$, $E = +·670$; $G = -·370$, $H = +·410$, $K = -·834$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Matuyama	0·6	76	0 16	+ 1	0 23	− 3	—	—	—
Hirosima	0·7	22	0 18	+ 1	0 29	+ 1	—	—	—
Hamada	1·2	359	0 28	+ 4	0 45	+ 4	—	—	—
Koti	1·2	97	0 19	− 5	0 31	−10	—	—	—
Simidu	1·2	142	0 20	− 4	0 33	− 8	—	—	—
Kumamoto	1·5	233	0 29	+ 1	0 49	0	—	—	—
Muroto	1·8	105	0 23	− 9	0 46	−10	—	—	—
Unzendake	1·8	238	0 40	+ 8	1 18	+22	—	—	—
Nagasaki	2·1	243	0 41	+ 4	1 18	+14	—	—	—
Sumoto	2·4	74	0 39	− 2	1 17	S*	—	—	—
Wakayama	2·6	78	0 35	− 9	1 21	S*	—	—	—
Kobe	2·8	69	0 45	− 2	1 23	+ 1	—	—	—
Toyooka	2·9	51	0 51	+ 3	1 30	S*	—	—	—
Osaka	3·0	72	0 48	− 2	1 38	S_e	—	—	—
Tomie	3·0	249	0 49	− 1	0 59	P_e	—	—	—
Siomisaki	3·1	95	0 45	− 6	—	—	—	—	—
Kyoto	3·3	59	0 52	− 1	1 40	+ 5	—	—	—
Owase	3·4	83	1 6	P_e	—	—	—	—	—
Yakusima	3·5	204	0 58	+ 1	1 35	− 5	—	—	—
Hikone	3·8	63	0 58	− 3	1 41	− 6	—	—	—
Kameyama	3·8	70	0 59	− 2	2 7	S_e	—	—	—
Nagoya	4·3	68	1 6	− 2	1 52	− 8	—	—	—
Hamamatu	4·8	76	1 14	− 1	—	—	—	—	—
Omaesaki	5·1	79	1 45	P_e	—	—	—	—	—
Toyama	5·1	53	1 22	+ 2	2 48	S_e	—	—	—
Shizuoka	5·4	73	1 7	−17	—	—	—	—	—
Keizyo	5·7	314	2 35	S	(2 35)	0	—	—	—
Kohu	5·7	68	1 27	− 1	3 5	S_e	—	—	—
Hunatu	5·8	70	1 21	− 8	2 19	−19	—	—	—
Misima	5·8	74	1 33	+ 4	2 51	S*	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nagano		5·8	57	1 32	+ 3	3 4	S_g	—	—	—
Zinsen		5·8	312	2 4	P_g	3 11	S_g	—	—	—
Osima		6·1	79	1 30	− 4	—	—	—	—	—
Kumagaya		6·5	65	1 37	− 2	3 2	+ 7	—	—	—
Yokohama		6·5	72	1 44	+ 5	—	—	—	—	—
Tokyo, Cen. Met. Ob.		6·6	70	1 44	+ 3	3 13	S*	—	—	—
Utunomiya		7·0	64	1 48	+ 2	—	—	—	—	—
Kakioka		7·1	67	1 49	+ 1	—	—	—	—	—
Mito		7·4	66	1 44	− 8	—	—	—	—	—
Sendai		8·4	55	2 6	0	—	—	—	—	—
Irkutsk		27·3	322	e 6 12	+24	i 14 28	L	—	—	(i 14·5)

Feb. 22d. Readings also at 2h. (Columbia), 6h. (Columbia), 8h. (Brisbane, near Lick, and Branner), 9h. (near Mizusawa, Bombay, Berkeley, Apia, Riverview, Riverside, San Juan, Tinemaha, Mount Wilson, Huancayo, Tucson, Pasadena, Honolulu, Ukiah, and near Lick), 10h. (Potsdam, Tananarive, Kodaikanal, La Paz, De Bilt, Bozeman, Scoresby Sund, College, and Chicago U.S.C.G.S.), 14h. (near Almata and Balboa Heights), 18h. (near Tchimkent, Tashkent), 19h. (Tacubaya and near Almata), 21h. (near Samarkand), 22h. (near Jena, Strasbourg (3), Ravensburg (2), Stuttgart (6), Ebingen, Neuchatel (3), and Zurich (6)), 23h. (Bermuda).

Feb. 23d. 2h. 43m. 41s. Epicentre 14°·0N. 89°·4W. (as on 1937, Dec. 5d.).

$A = +·0102$, $B = -·9706$, $C = +·2404$; $\delta = -4$; $h = +6$;
$D = -1·000$, $E = -·010$; $G = +·002$, $H = -·240$, $K = -·971$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Merida	N.	6·9	359	i 1 51	+ 6	—	—	—	—	—
Oaxaca	N.	7·7	294	i 1 7	−49	—	—	—	—	—
Vera Cruz	E.	8·3	310	e 2 7	+ 3	—	—	—	—	—
Puebla	E.	9·8	302	—	—	i 5 1	S*	—	—	—
Tacubaya	E.	10·8	301	e 2 29	−10	—	—	—	—	—
San Juan		22·6	76	e 6 22	?	—	—	—	—	e 10·6
St. Louis	N.	24·5	359	i 5 38	+16	e 10 4	+24	—	—	—
Tucson		26·7	317	e 5 43	0	10 19	+ 2	e 6 56	PPP	e 13·0
Chicago U.S.C.G.S.		27·7	2	e 4 44	?	—	—	—	—	e 11·2
Huancayo		29·4	151	—	—	e 11 41	SS	—	—	e 11·8
Palomar	Z.	31·5	313	i 6 26	0	—	—	—	—	—
Riverside	Z.	32·2	313	e 6 32	0	—	—	e 9 31	P_cP	—
Mount Wilson	Z.	32·8	313	i 6 37	0	—	—	e 9 37	P_cP	—
Pasadena		32·9	313	i 6 37	− 1	—	—	—	—	e 15·0
Ottawa		33·4	18	e 7 3	+21	—	—	—	—	e 16·3
Haiwee	Z.	33·8	317	e 6 46	0	—	—	—	—	—
Tinemaha	Z.	34·5	317	i 6 54	+ 2	—	—	9 39	P_cP	—

Tucson also gives e = 10m.15s.
Long waves were also recorded at La Paz, Ukiah, Bozeman, Scoresby Sund, Potsdam, and De Bilt.

Feb. 23d. 6h. 27m. 8s. Epicentre 14°·0N. 89°·4W. (as at 2h.).

$A = +·0102$, $B = -·9706$, $C = +·2404$; $\delta = -4$; $h = +6$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Merida	Z.	6·9	35	1 52	+ 7	—	—	—	—	—
Oaxaca	E.	7·7	294	i 1 7	−49	—	—	—	—	—
Vera Cruz	E.	8·3	310	2 5	+ 1	—	—	—	—	—
Tacubaya	N.	10·8	301	2 32	− 7	—	—	—	—	—
Tucson		26·7	317	e 5 43	0	e 10 16	− 1	e 6 57	PPP	e 13·6
Palomar	Z.	31·5	313	i 6 24	− 2	—	—	—	—	—
Riverside	Z.	32·2	313	e 6 31	− 1	—	—	—	—	—
Mount Wilson	Z.	32·8	313	e 6 37	0	—	—	—	—	—
Pasadena		32·9	313	i 6 38	0	—	—	—	—	e 15·0
Ottawa		33·4	18	e 7 2	+20	—	—	—	—	e 16·9
Tinemaha	Z.	34·5	317	i 6 53	+ 1	—	—	—	—	—

Tucson also gives e = 13m.22s.
Long waves were also recorded at Puebla, San Juan, St. Louis, Philadelphia, Bozeman, Huancayo, and Scoresby Sund.

Feb. 23d. 11h. 48m. 58s. Epicentre 41°·1N. 142°·2E. (as on 1940, March 11d.).

Intensity V at Aomori, Hatinohe ; IV at Urakawa, Hakodate ; II-III at Morioka, Sapporo, and Obihiro. Epicentre 41°·2N. 142°·3E. Macroseismic radius 200-m.
Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1942, Tokyo, 1950, pp. 13. Macroseismic chart p. 13.

$A = -\cdot5972$, $B = +\cdot4632$, $C = +\cdot6548$; $\delta = -3$; $h = -2$;
$D = +\cdot613$, $E = +\cdot790$; $G = -\cdot517$, $H = +\cdot401$, $K = -\cdot756$.

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Hatinohe		0·8	222	0 18	0	0 28	− 3
Aomori		1·1	255	0 24	+ 2	0 40	+ 1
Miyako		1·5	186	0 27	− 1	0 43	− 6
Sapporo		1·8	342	0 34	+ 2	0 55	− 1
Mizusawa		2·1	203	e 0 37	0	1 3	− 1
Akita		2·1	229	0 43	+ 6	1 12	+ 8
Sendai		3·0	199	0 50	0	1 18	− 9
Nemuro		3·3	48	0 49	− 4	1 24	−11
Hukusima		3·6	203	0 57	− 1	1 41	− 1
Onahama		4·3	194	0 37	−31	0 58	−62
Aikawa		4·4	226	1 8	− 2	2 20	S_g
Mito		4·9	207	1 18	+ 1	2 20	+ 5
Utunomiya		4·9	203	1 15	− 2	—	—
Kakioka		5·1	198	1 16	− 4	2 38	S*
Maebasi		5·3	209	1 22	0	2 32	+ 7
Kumagaya		5·4	205	1 31	+ 7	2 33	+ 5
Nagano		5·4	217	1 31	+ 7	3 1	S_g
Tokyo, Cen. Met. Ob.		5·7	200	1 27	− 1	2 43	+ 8
Toyama		5·9	223	1 31	0	2 56	+16
Yokohama		6·0	201	1 37	+ 5	2 53	+10
Hunatu		6·2	207	1 47	+12	2 53	+ 5
Kohu		6·2	209	1 36	+ 1	3 2	S*
Mera		6·4	198	1 49	+11	—	—
Misima		6·5	205	1 46	+ 7	3 12	+17
Nagoya		7·2	217	1 50	+ 1	3 0	−13
Hikone		7·5	221	1 48	− 5	3 4	−16
Kameyama		7·7	219	2 0	+ 4	—	—
Osaka		8·2	219	2 30	+27	3 40	+ 2
Irkutsk		28·0	307	e 5 44	−11	e 10 29	− 9
Sverdlovsk		52·6	317	e 9 10	− 8	e 16 31	−13
Tashkent		53·3	296	9 15	− 8	—	—
Tinemaha	z.	73·0	55	e 11 28	− 5	—	—
Copenhagen		74·6	334	e 11 35	− 8	—	—
Mount Wilson	z.	74·9	58	i 11 53	+ 9	—	—
Pasadena	z.	74·9	58	i 11 51	+ 7	—	—
Riverside	z.	75·5	58	i 11 48	0	—	—
Tucson		80·7	55	e 12 9	− 7	—	—

Additional readings :—
Tinemaha iZ = 11m.45s.
Tucson i = 12m.26s.
Long waves were recorded at Tananarive and other European stations.

Feb. 23d. Readings also at 2h. (Tucson, Palomar, Tacubaya, Puebla, Vera Cruz, Oaxaca, and Merida), 4h. (Huancayo and La Paz), 5h. (Philadelphia and Cheb), 6h. Puebla, Tacubaya, and near Lick), 7h. (Frunse (2), near Tchimkent (2), Stalinabad, Tashkent, and near Lick), 8h. (Mizusawa), 13h. (Almata, Tashkent, Frunse, near Tchimkent, and Stalinabad), 14h. (near Spokane), 18h. (Helwan), 20h. (Tucson (2), Pasadena (2), Mount Wilson (2), Riverside (2), Tinemaha, Palomar, and Mizusawa), 21h. (Tucson, Palomar, Riverside, near Balboa Heights, and near Almata), 22h. (Stuttgart and near Branner).

Feb. 24d. 11h. 22m. 24s. Epicentre 31°·8S. 67°·8W. (as on 1941, July 3d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata		8·8	113	i 2 6k	− 5	3 24	−29	—	—	3·9
La Paz		15·1	359	3 36	0	i 6 31	+ 6	—	—	7·2
Huancayo		20·9	339	i 4 54	+ 8	e 8 37	+ 2	—	—	e 9·1
Rio de Janeiro	E.	23·5	74	i 5 47	PP	—	—	—	—	—
Fort de France		46·7	9	e 8 21	−11	—	—	—	—	—
Tucson		75·6	323	i 11 50	+ 2	e 21 40	+11	e 14·49	PP	—
La Jolla	Z.	79·5	319	i 12 13	+ 3	—	—	—	—	—
Palomar	Z.	79·6	320	i 12 12a	+ 2	—	—	—	—	—
Riverside		80·4	320	i 12 17a	+ 2	—	—	—	—	—
Mount Wilson		80·9	320	i 12 20a	+ 3	—	—	—	—	—
Pasadena		80·9	320	i 12 20a	+ 3	—	—	—	—	—
Santa Barbara	Z.	82·0	319	i 12 24	+ 1	—	—	—	—	—
Haiwee		82·3	321	i 12 27	+ 2	—	—	—	—	—
Tinemaha	Z.	83·2	321	i 12 33a	+ 4	—	—	—	—	—

Additional readings :—
La Paz iPZ = 3m.40s.
Huancayo i = 5m.33s. and 5m.45s.
Tucson i = 12m.51s.

Feb. 24d. Readings also at 0h. (near Chur, Neuchatel, Zurich, and Stuttgart), 1h. (Ksara), 2h. (near Tashkent), 3h. (Tacubaya), 4h. (Merida, Tacubaya, and Tucson), 11h. (near Andijan), 15h. (near Balboa Heights and near Samarkand), 16h. and 18h. (near Andijan), 19h. (Auckland, Wellington, and near Andijan), 21h. (Auckland and Wellington), 23h. (Neuchatel, near Zurich, and Stuttgart).

Feb. 25d. Readings at 1h. (near Tashkent and Andijan), 2h. (near Berkeley), 8h. (New Plymouth, Christchurch, Wellington, and near Andijan), 9h. (Auckland), 10h. (near Mizusawa), 12h. (near Andijan), 16h. (near Branner (2), Lick (2), and Berkeley (2)), 19h. (near La Paz), 21h. (Stuttgart, De Bilt, and Lisbon), 22h. (near Berkeley and near La Paz), 23h. (Riverview, Tinemaha, Riverside, Pasadena, and Mount Wilson).

Feb. 26d. Readings at 1h. (near Andijan), 2h. (near Mizusawa), 7h. (Potsdam, Cheb, Uccle, Sverdlovsk, Irkutsk, and Warsaw), 8h. (Lick and De Bilt), 9h. (Balboa Heights), 17h. (Huancayo), 18h. (near Branner).

Feb. 27d. 8h. 22m. 55s. Epicentre 17°·8N. 87°·1W.

Pasadena suggests deep.

A = +·0482, B = −·9515, C = +·3038; δ = −3; h = +5;
D = −·999, E = −·051; G = +·015, H = −·303, K = −·953.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Merida	N.	4·0	323	1 1	− 3	—	—	—	—	—
Cape Girardeau		19·6	355	e 4 27	− 5	e 8 14	+ 6	—	—	—
St. Louis		21·0	355	i 4 45	− 2	i 8 45	+ 8	i 5 5	PP	—
Fort de France		25·1	94	e 5 7	−21	e 11 30	SSS	—	—	—
Fordham		25·6	25	i 5 35	+ 3	—	—	—	—	e 14·3
Tucson		25·8	310	i 5 35	+ 1	e 10 16	+14	i 6 28	PPP	e 13·7
Palomar	Z.	30·9	308	i 6 20a	0	—	—	—	—	—
La Jolla	Z.	31·0	306	e 6 22	+ 1	—	—	—	—	—
Riverside	Z.	31·5	308	i 6 25a	− 1	—	—	—	—	—
Mount Wilson	Z.	32·1	308	i 6 31a	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	308	i 6 32a	0	—	—	—	—	—
Haiwee		32·8	311	e 6 38	+ 1	—	—	—	—	—
Tinemaha	z.	33·5	313	e 6 44	+ 1	—	—	—	—	—
Santa Barbara	z.	33·5	308	i 6 43	0	—	—	—	—	—
La Paz	z.	38·9	150	e 7 31	+ 2	—	—	—	—	21·1
Apia		89·2	255	e 18 12	PPP	—	—	—	—	—
Arapuni		106·3	234	—	—	e 26 5?	− 8	—	—	—
Auckland		106·8	237	i 21 45?	PKS	i 25 47?	−30	—	—	—
Riverview		125·8	241	—	—	e 28 25	(+32)	—	—	e 32·8

Additional readings :—
Cape Girardeau iN = 4m.34s., eE = 8m.1s.
Tucson e = 11m.51s.
Palomar iZ = 6m.36s.
Mount Wilson eZ = 6m.46s.
Apia e = 19m.0s., i = 19m.44s.
Long waves were also recorded at San Juan, Huancayo, Columbia, and Stuttgart.

Feb. 27d. Readings also at 1h. (Tucson, near Lick, Branner, and Ferndale), 5h. (near Stalinabad), 8h. (Helwan and Ksara), 12h. (Lick), 17h. (Stuttgart and near Triest), 21h. (near Branner), 22h. (near Triest, Jena, Chur, Zurich, and Stuttgart).

Feb. 28d. 4h. 54m. 51s. Epicentre 39°·2N. 70°·7E. (as on 1941 August 13d.).

A = +·2568, B = +·7334, C = +·6295 ; δ = +9 ; λ = −2 ;
D = +·944, E = −·331 ; G = +·208, H = +·594, K = −·777.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		2·0	39	i 0 39	+ 4	e 1 7	+ 5	—	—	—
Samakand		2·9	279	e 1 24	S	(e 1 24)	0	—	—	—
Almata		6·2	47	i 1 36	+ 1	2 41	− 7	—	—	—
Semipalatinsk		13·1	28	3 6	− 4	—	—	—	—	—
Sverdlovsk		18·9	343	i 4 23	− 1	i 8 59	SSS	—	—	—
Bombay	E.	20·3	175	e 4 39	− 1	i 8 16	− 7	8 55	PcP	10·0
Calcutta	N.	22·4	133	—	—	i 8 55	− 9	—	—	i 12·5
Hyderabad		22·7	161	e 5 2	− 2	9 5	− 4	9 35	SS	11·0
Irkutsk		26·6	49	e 5 39	− 3	—	—	—	—	—
Kodaikanal	E.	29·5	167	—	—	12 24	SS	—	—	e 14·2
Warsaw		36·3	309	e 8 34	PP	e 15 19	SS	e 15 50	SSS	e 22·1
Upsala		38·8	320	—	—	e 15 9?	?	e 16 9?	SS	—
Potsdam		41·2	309	i 9 33a	PP	e 17 15	SS	—	—	22·6
Copenhagen		41·4	314	i 7 50	0	—	—	—	—	22·1
Cheb		41·9	305	—	—	e 17 9?	SS	—	—	—
Jena		42·7	306	e 7 59	− 1	—	—	e 9 38	PP	—
Stuttgart		44·2	304	i 8 12	0	—	—	—	—	—

Additional readings :—
Calcutta iN = 9m.7s.
Warsaw eP?Z = 8m.40s., eE = 14m.33s., eZ = 15m.28s., 16m.39s., 17m.11s., 17m.17s., and 17m.49s., eSS?Z = 18m.38s., eSSSZ? = 19m.39s., eSSSE? = 20m.2s.
Potsdam iZ = 20m.27s.
Jena eE = 8m.3s., eN = 8m.47s., eE = 8m.57s., e = 9m.47s.
Stuttgart i = 8m.23s. and 8m.51s., e = 10m.28s.
Long waves were also recorded at De Bilt and Uccle.

Feb. 28d. Readings also at 0h. (Almeria, Tucson, Pasadena, Mount Wilson, Palomar, near Lisbon, Granada, Stuttgart, Riverside, and Tinemaha), 2h. (Tucson and near Berkeley), 3h. (near Berkeley), 4h. (near Andijan), 6h. (near Mizusawa, Almata, Tashkent, and near Andijan), 7h. (near Tananrive, near Andijan, and Tashkent), 8h. (near Andijan and Tashkent), 9h. (La Paz (2), Tucson, Riverside, Tinemaha, and Huancayo), 12h. (Huancayo), 13h. (near Zurich, Triest, Chur, Jena, Colombo, Ravensburg, and Stuttgart), 18h. (near Lick), 20h. (Wellington and Auckland), 21h. (near Florissant and St. Louis), 23h. (Lick).

March 1d. 9h. 52m. 7s. Epicentre 14°·3N. 91°·2W.

$A = -\cdot0203$, $B = -\cdot9692$, $C = +\cdot2454$; $\delta = -2$; $h = +5$;
$D = -1\cdot000$, $E = +\cdot021$; $G = -\cdot055$, $H = -\cdot245$, $K = -\cdot969$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	6·0	297	e 1 33	+ 1	—	—	—	—	—
Merida	N.	6·8	13	1 44	0	—	—	—	—	—
Vera Cruz	N.	6·8	317	1 45	+ 1	—	—	—	—	—
Puebla	N.	8·2	306	e 2 1	− 2	—	—	—	—	—
Tacubaya	N.	9·2	305	e 2 17	+ 1	—	—	—	—	—
Balboa Heights		12·6	114	i 3 0	− 3	e 5 26	0	—	—	e 7·9
Mobile		16·5	8	i 4 8	+14	i 7 35	+37	4 24	PP	—
Columbia		21·7	24	e 5 0	+ 5	e 9 5	+14	—	—	e 11·9
Cape Girardeau		23·0	4	i 5 9	+ 2	e 9 18	+ 4	5 22	PP	—
St. Louis		24·3	2	i 5 20	0	i 9 45	+ 8	i 5 52	PP	—
Florissant		24·4	2	i 5 21	0	9 47	+ 8	i 5 53	PP	—
San Juan		24·4	77	e 5 16	− 5	e 9 42	+ 3	e 6 1	PP	11·3
Tucson		25·3	319	i 5 29	− 1	e 9 59	+ 5	i 6 29	PP	e 12·3
Lincoln		26·9	353	—	—	e 11 8	SS	—	—	e 14·5
Chicago U.S.C.G.S.		27·6	6	e 6 0	+ 9	e 10 38	+ 6	6 30	PP	e 13·2
Philadelphia		29·2	27	—	—	e 11 1	+ 3	—	—	13·2
Palomar	Z.	30·0	315	i 6 12	0	—	—	—	—	—
Bermuda		30·1	49	e 6 22	+ 9	—	—	e 7 15	PP	e 12·3
Fordham		30·5	27	e 6 18	+ 1	i 11 28	+10	13 11	SSS	i 16·8
Huancayo		30·5	148	e 6 7	−10	i 11 13	− 5	e 7 29	PP	i 12·9
Riverside	Z.	30·8	314	e 6 18	− 2	—	—	e 9 13	PcP	—
Toronto		31·0	16	—	—	e 12 53?	SS	—	—	15·9
Mount Wilson		31·4	314	i 6 24	− 1	i 13 7	ScP	i 9 26	PcP	—
Pasadena		31·4	314	i 6 23	− 2	i 11 39	+ 7	i 9 14	PcP	e 14·7
Salt Lake City		31·9	329	e 6 31	+ 2	e 11 50	+10	e 7 15	PP	e 15·7
Haiwee		32·4	318	e 6 33	− 1	—	—	—	—	—
Santa Barbara	Z.	32·6	313	e 6 36	+ 1	—	—	—	—	—
Logan		32·7	331	i 6 35	− 1	i 12 7	+15	i 7 2	PP	i 14·2
Harvard		32·8	28	e 6 36	− 1	—	—	—	—	e 16·9
Ottawa		33·7	20	6 45	0	12 19	+11	—	—	e 17·9
Vermont		33·8	23	e 7 23	PP	e 12 21	+11	—	—	i 14·4
Bozeman		35·5	337	e 6 55	− 5	e 12 48	+12	e 8 24	PP	e 17·4
Lick		35·5	317	e 7 2	+ 2	—	—	—	—	—
Santa Clara		35·7	317	e 7 11	+ 9	e 12 46	+ 7	—	—	e 18·3
Shawinigan Falls		35·7	22	7 3	+ 1	—	—	—	—	21·9
Berkeley		36·2	317	i 7 16	+10	i 12 54	+ 7	—	—	e 17·4
Butte		36·4	337	e 8 41	PPP	—	—	—	—	e 17·4
East Machias		36·5	29	—	—	e 12 59	+ 8	—	—	e 17·9
Seven Falls		36·9	23	7 13	+ 1	12 59	+ 1	15 23	SS	19·9
Ukiah		37·5	318	—	—	e 13 12	+ 5	—	—	e 16·1
La Paz	Z.	38·2	142	i 7 17k	− 6	i 13 21	+ 4	15 52	SS	17·9
Seattle		42·1	329	—	—	e 12 38	?	—	—	e 19·9
Victoria		43·2	330	—	—	e 14 47	+15	e 18 5	SSS	e 24·4
Rio de Janeiro	N.	59·8	127	e 9 2	?	i 18 21	+ 1	—	—	i 29·9
College		63·3	337	—	—	e 19 4	0	e 20 22	ScS	e 32·9
Kew	Z.	79·5	40	i 14 10	?	—	—	—	—	e 40·9
Granada		79·6	55	11 54a	−16	i 22 35	+23	—	—	38·4
Almeria		80·6	55	14 40	PP	22 14	− 9	27 30	SS	39·1
Uccle	E.	82·5	40	—	—	e 22 47	+ 5	—	—	39·9
Copenhagen		85·8	33	e 12 44	+ 2	23 23?	+ 8	—	—	41·9
Stuttgart		86·1	41	e 12 45	+ 1	—	—	—	—	—
Cheb		87·6	39	—	—	e 22 53?	[−25]	—	—	e 43·9
Helwan		109·4	51	—	—	i 25 11	[+ 1]	e 28 32	PS	—
Riverview	Z.	120·7	239	e 30 17	PS	—	—	e 50 25	Q	e 55·6
Bombay		143·4	25	e 19 35	[− 1]	e 29 40	{− 1}	e 23 13	PP	—
Calcutta		143·4	1	e 20 3	[+27]	—	—	e 23 19	PP	—

For Notes see next page.

NOTES TO MARCH 1d. 9h. 52m. 7s.

Additional readings :—
Mobile SS = 8m.18s.
Cape Girardeau eSN = 9m.27s., iSSE = 9m.47s.
St. Louis eSSN = 10m.50s.
Florissant iZ = 10m.19s., iSSN = 10m.50s.
Tucson iS = 10m.17s.
Chicago U.S.C.G.S. e = 9m.30s. and 11m.23s.
Huancayo eS = 11m.10s.
Pasadena eZ = 9m.23s., iS_cPZ = 13m.6s.
Bozeman e = 9m.41s.
Berkeley ePE = 7m.34s., iSE = 13m.1s.
Almeria PPS = 23m.21s., SSS = 30m.41s.
Bombay eSKKSN = 29m.43s.
Long waves were also recorded at Fort de France, Scoresby Sund, Auckland, and other European stations.

March 1d. Readings also at 0h. (near Andijan, Tashkent, and Stalinabad), 1h. (Almeria, Pasadena, Mount Wilson, Riverside, Palomar, Tinemaha, Tucson, Tacubaya, Vera Cruz, and near Lick), 2h. (Huancayo, and near Mizusawa), 3h. (Jena), 4h. (Tucson, Vera Cruz (2), Merida (2), near Lick and Branner), 9h. (Tucson, and near Mizusawa), 11h. (near Algiers (2)), 12h. (Pasadena, Mount Wilson, Tucson, and near Lick), 13h. (Merida and Vera Cruz), 14h. (near Florissant, St. Louis, and Cape Girardeau), 17h. (Pasadena, Palomar, Mount Wilson, Riverside, Tinemaha, Tucson, Huancayo, La Paz, and San Juan), 19h. (Tucson), 20h. (near Stalinabad, Andijan, Tashkent, and Almata), 21h. (near Calcutta), 22h. (Pasadena, Mount Wilson, Riverside, Palomar, Tinemaha, Tucson, Huancayo, La Paz, and La Plata), 23h. (near Berkeley).

March 2d. Readings at 0h. (near La Paz), 1h. (near Berkeley), 2h. (Mount Wilson, Tucson, Riverside, Palomar, Copenhagen, and near Apia), 3h. (Mount Wilson, Riverside, Palomar, Pasadena, Tinemaha, Tucson, and Stuttgart), 8h. (near Balboa Heights), 9h. (near Algiers), 12h. (Huancayo and near Berkeley), 14h. (near Balboa Heights), 18h. (near La Paz), 19h. (Calcutta), 21h. (near Harvard (2)), 22h. (near Algiers), 23h. (Lick).

March 3d. 1h. 3m. 23s. Epicentre 34°·0N. 115°·8W. (as given by Pasadena).

A = −·3616, B = −·7480, C = +·5566 ; δ = +6 ; h = 0 ;
D = −·900, E = +435 ; G = −·242, H = −·501, K = −·831.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palomar	Z.	1·1	234	i 0 22	0	—	—	—	—	—
Riverside		1·3	270	i 0 26	+ 1	i 0 42	− 2	—	—	—
La Jolla	Z.	1·7	227	i 0 31	0	i 0 52	− 2	—	—	—
Mount Wilson		1·9	277	i 0 34	0	i 0 2	+ 3	—	—	—
Pasadena		2·0	274	i 0 35	0	i 1 3	+ 1	—	—	—
Haiwee	Z.	2·8	320	i 0 48	+ 1	—	—	—	—	—
Santa Barbara		3·3	280	i 0 54	+ 1	e 1 42	S*	—	—	—
Tinemaha		3·7	330	i 1 0	0	e 1 53	S*	—	—	—
Tucson		4·5	112	i 1 9	− 2	e 2 18	S*	i 1 28	P_g	i 2·4
Lick		5·8	306	e 1 32	+ 3	—	—	—	—	—
Branner		6·2	305	e 1 45	P*	e 2 25	−23	e 2 1	P_g	e 3·5
Berkeley	N.	6·5	308	i 1 44	+ 5	—	—	i 2 2	P_g	—

Additional readings :—
Tucson i = 1m.16s.
Branner eE = 3m.3s., eN = 3m.11s.

March 3d. Readings also at 0h. (near Lick), 1h. (near Almata), 4h. (La Paz), 7h. (Palomar, Riverside, Mount Wilson, Tinemaha and Tucson), 14h. (Balboa Heights), 16h. (Pasadena, Palomar, Riverside, Mount Wilson, Tinemaha, Tucson and La Paz), 17h. (near Ferndale), 18h. (near Almata), 20h. (Bermuda), 21h. (Copenhagen).

March 4d. 3h. 36m. 57s. Epicentre 6°·2S. 149°·1E. (as on 1940 August 20d.).

$A = -·8531$, $B = +·5106$, $C = -·1073$; $\delta = +1$; $h = +7$;
$D = +·514$, $E = +·858$; $G = +·092$, $H = -·055$, $K = -·994$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	21·5	170	e 4 49	− 3	i 8 49	+ 2	—	—	—
	N.	21·5	170	i 4 46a	− 6	i 8 43	− 4	—	—	—
Riverview		27·6	176	i 5 52a	+ 1	e 10 42	+10	—	—	e 13·6
Auckland		38·5	145	—	—	13 59	+37	—	—	16·0
Arapuni		39·9	147	—	—	14 3	+20	16 57	S_eS	21·0
Perth		40·3	226	—	—	i 17 0	SSS	—	—	i 20·6
Wellington		41·8	151	7 55	+ 2	14 5	− 6	9 33	PP	22·0
Christchurch		42·5	154	7 59	0	14 13	− 9	—	—	20·2
Honolulu		58·8	61	—	—	e 19 10	+63	—	—	e 28·6
Agra	E.	76·2	299	e 11 51	− 1	e 21 23	−13	—	—	—
Bombay		79·1	290	e 12 3	− 5	e 22 16	+ 9	e 16 15	PPP	e 42·6
Tashkent		86·4	312	12 44	− 1	23 9	[− 1]	—	—	—
Pasadena		95·7	56	e 13 29	0	—	—	—	—	e 44·7
Mount Wilson	Z.	95·8	56	e 13 30	+ 1	—	—	—	—	—
Riverside		96·4	56	e 13 33	+ 1	—	—	—	—	—
La Paz		136·8	122	19 33	[+ 9]	—	—	23 3	PP	71·0

Additional readings :—
Riverview iZ = 10m.45s.
Wellington iZ = 11m.10s., P_eS?Z = 13m.40s., S_eS? = 17m.23s.
Bombay eE = 12m.19s., e = 13m.17s., iSE = 22m.19s.
Long waves were also recorded at Granada, Warsaw, Uccle, Cheb, Kew, College, Bozeman, San Juan, Potsdam, Tucson, De Bilt, and Ukiah.

March 4d. Readings also at 0h. (near Sofia), 4h. (near Mizusawa), 11h. (near Tucson), 14h. (near Almata and Tashkent), 15h. (La Paz), 16h. (Tacubaya), 17h. (La Paz), 22h. (Berkeley).

March 5d. 19h. 48m. 16s. Epicentre 44°·5N. 141°·5E. Depth of focus 0·030.

Intensity VI at Hatinohe ; V at Urakawa, Kusiro, Mizusawa; IV at Hakodate, Nemuro, Morioka; II-III at Hukusima, Mito, Tokyo and Onahama.
Epicentre 43°·0N. 141°·7E. Deep focus.
Radius of macroseismic area greater than 300km.
See Seismological Bulletin of the Central Met. Obs., Japan for the year 1942, Tokyo 1950, pp. 14-15. Macroseismic chart p.14.

$A = -·5600$, $B = +·4455$, $C = +·6985$; $\delta = -3$; $h = -3$;
$D = +·623$, $E = +·783$; $G = -·547$, $H = +·435$, $K = -·716$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo		1·4	184	0 42	+ 7	—	—	—	—	—
Mori		2·5	196	0 49a	+ 3	1 24	+ 3	—	—	—
Nemuro		3·2	112	0 56	+ 2	1 35	0	—	—	—
Aomori		3·7	188	1 3a	+ 3	1 47	+ 1	—	—	—
Hatinohe		4·0	179	1 4a	+ 1	1 51	− 1	—	—	—
Akita		4·9	192	1 15	+ 1	2 13	+ 1	—	—	—
Miyako		4·9	175	1 13a	− 1	2 6	− 6	—	—	—
Mizusawa	N.	5·4	183	1 1 23	+ 2	2 23	0	—	—	—
Sendai		6·3	194	1 32a	0	2 42	− 2	—	—	—
Hukusima		6·8	186	1 39a	+ 1	2 53	− 3	—	—	—
Aikawa		6·9	202	1 42k	+ 2	2 59	+ 1	—	—	—
Wazima		7·9	207	1 55a	+ 2	—	—	—	—	—
Utunomiya		8·0	189	1 53	− 1	—	—	—	—	—
Mito		8·1	186	1 46a	− 9	3 10	−16	—	—	—
Nagano		8·2	199	1 59	+ 2	3 37	+ 9	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kakioka		8·3	187	1 57a	− 1	3 28	− 2	—	—	—
Maebasi		8·3	193	1 59a	+ 1	3 4	−26	—	—	—
Tukubasan		8·3	188	1 56a	− 2	3 24	− 6	—	—	—
Kumagaya		8·5	191	2 0a	0	3 35	0	—	—	—
Toyama		8·5	204	2 3a	+ 3	3 37	+ 2	—	—	—
Tokyo Cen. Met. Ob.		8·8	189	2 6	+ 2	3 41	− 1	—	—	—
Kohu		9·1	195	2 8a.	0	3 48	0	—	—	—
Yokohama		9·1	189	2 20	+12	3 54	+ 6	—	—	—
Hunatu		9·2	194	2 10	+ 1	3 50	− 1	—	—	—
Misima		9·6	193	2 14	− 1	4 1	+ 1	—	—	—
Mera		9·7	188	2 16a	0	3 47	−15	—	—	—
Gihu		9·8	203	2 22a	+ 5	4 10	+ 5	—	—	—
Shizuoka		9·8	195	2 26	+ 9	4 25	+20	—	—	—
Nagoya		9·9	202	2 28	+10	—	—	—	—	—
Osima		9·9	190	2 15	− 3	3 58	− 9	—	—	—
Hikone		10·1	206	2 20a	− 1	4 11	− 1	—	—	—
Hamamatu		10·2	198	2 25	+ 3	4 10	− 4	—	—	—
Toyooka		10·3	212	2 24	0	4 17	+ 1	—	—	—
Kameyama		10·4	203	2 24	− 1	4 28	+10	—	—	—
Kyoto		10·5	207	2 26	0	4 21	0	—	—	—
Kobe		10·9	209	2 32a	+ 1	4 19	−11	—	—	—
Osaka		10·9	207	2 31	0	4 16	−14	—	—	—
Wakayama		11·3	208	2 38	+ 2	4 40	+ 1	—	—	—
Hatidyozima		11·5	187	2 37	− 2	4 34	−10	—	—	—
Siomisaki		11·9	204	2 45	+ 1	4 52	− 1	—	—	—
Hamada		12·0	220	2 46a	+ 1	5 0	+ 5	—	—	—
Hirosima		12·3	218	2 50a	+ 1	5 4	+ 2	—	—	—
Koti		12·5	211	2 51	0	5 21	sS	—	—	—
Matuyama		12·6	215	2 47a	− 6	5 6	− 3	—	—	—
Keizyo		13·0	243	2 59	+ 1	5 21	+ 3	—	—	—
Taikyu		13·1	233	3 0a	+ 1	5 23	+ 3	—	—	—
Zinsen		13·2	243	3 1a	+ 1	5 24	+ 2	—	—	—
Husan		13·4	230	3 3	0	5 32	+ 5	—	—	—
Izuka		13·7	221	3 0	− 6	5 31	− 3	—	—	—
Hukuoka		13·9	222	3 10a	+ 1	5 38	0	—	—	—
Kumamoto		14·4	219	3 15	0	5 55	+ 6	—	—	—
Unzendake		14·7	221	3 21	+ 2	7 2	+66	—	—	—
Miyazaki		14·8	215	3 24	+ 4	6 7	+ 9	—	—	—
Nagasaki		14·8	222	3 20a	0	6 3	+ 5	—	—	—
Kagosima		15·5	217	3 27k	− 1	6 19	+ 5	—	—	—
Dairen		15·8	256	3 33a	+ 1	6 26	+ 6	—	—	—
Yakusima		16·5	215	3 46	+ 6	6 42	+ 6	—	—	—
Titizima		17·4	178	3 52k	+ 2	7 0	+ 5	—	—	—
Nake		18·7	214	4 8	+ 4	7 21	+ 1	—	—	—
Naha		21·4	216	3 50	−41	7 53	−16	—	—	—
Miyakozima		23·7	219	4 52k	− 1	—	—	—	—	—
Isigakizima		24·6	220	5 2	+ 1	—	—	—	—	—
Irkutsk		25·7	302	i 5 13	+ 2	i 9 22	+ 1	i 5 59	pP	—
Sintiku		25·8	226	5 15	+ 3	7 37	?	—	—	—
Taito		27·4	222	5 24	− 3	—	—	—	—	—
Takao		27·9	225	5 53	pP	7 44	?	—	—	—
Semipalatinsk		40·8	302	7 22	+ 1	13 13	− 2	—	—	—
College		42·9	36	e 7 36	− 2	e 13 37	− 8	e 8 14	pP	e 20·7
Almata		45·4	293	8 1	+ 3	—	—	—	—	—
Calcutta	N.	48·5	261	e 8 23	+ 1	i 15 7	+ 2	e 10 37	PP	—
Andijan		49·6	292	e 8 30	0	15 20	0	—	—	—
Sverdlovsk		49·8	316	i 8 29	− 3	i 15 18	− 5	i 9 21	pP	—
Sitka		50·7	44	e 9 38	pP	i 15 34	− 1	—	—	—
Tashkent		51·4	294	8 44	0	15 44	− 1	9 34	pP	—
Hyderabad		58·8	264	9 32	− 5	17 19	− 4	10 26	pP	27·1
Victoria		61·3	49	e 11 44?	PP	i 17 53	− 2	e 18 38	sS	—
Bombay		61·9	270	1 9 56	− 2	i 17 56	− 6	e 10 48	pP	—
Kodaikanal	E.	64·4	259	i 10 13k	− 1	i 18 35	+ 2	18 44	PS	29·7
Scoresby Sund		64·7	355	e 9 56	−20	e 18 27	−10	i 19 48	sS	e 26·1
Upsala	E.	66·3	333	10 26	0	i 18 50	− 6	e 26 30?	SSS	—
	N.	66·3	333	10 22	− 4	18 49	− 7	11 15	pP	e 31·7

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ukiah		67·2	57	e 10 27	− 5	e 19 6	− 1	—	—	e 27·1
Saskatoon		67·3	38	10 36	+ 4	19 4	− 4	—	—	—
Berkeley		68·6	58	e 10 36	− 5	i 19 21	− 3	—	—	e 26·8
Santa Clara	E.	69·1	58	e 10 57	+13	i 19 28	− 2	—	—	—
Lick		69·3	58	e 10 43	− 2	—	—	—	—	—
Bozeman		69·7	45	e 10 50	+ 3	e 19 37	+ 1	e 13 28	PP	e 30·2
Fresno	N.	70·8	58	e 10 54	0	i 19 48	− 1	—	—	—
Warsaw		70·9	327	e 10 52a	− 2	i 19 45	− 5	13 35	PP	e 28·7
Copenhagen		71·3	333	i 10 55a	− 2	i 19 50	− 5	11 52	pP	—
Tinemaha		71·5	56	i 10 57k	− 1	e 19 57	0	—	—	—
Logan		72·0	48	i 11 1	0	i 20 2	− 1	e 11 45	pP	—
Haiwee		72·3	56	i 11 2	− 1	e 20 6	0	e 13 49	PP	—
Santa Barbara		72·4	59	i 11 3k	0	e 20 7	0	—	—	—
Salt Lake City		73·0	50	e 11 5	− 2	e 20 8	− 6	e 11 53	pP	e 33·5
Mount Wilson		73·5	58	i 11 9k	− 1	e 20 16	− 4	i 12 11	pP	—
Pasadena		73·5	58	i 11 8k	− 2	i 20 17	− 3	i 12 4	pP	—
Potsdam		73·8	331	e 11 10	− 2	i 20 17	− 6	i 12 5	pP	e 28·7
Riverside		74·1	58	i 11 11k	− 2	e 20 22	− 4	i 14 7	PP	—
Aberdeen		74·2	340	—	—	i 20 11	−16	i 20 56	sS	—
Bucharest		74·5	318	e 11 19	+ 3	i 20 30	− 1	e 13 50	PP	32·7
Palomar	Z.	74·8	58	i 11 16k	− 1	e 20 33	− 1	i 12 21	pP	—
La Jolla		74·9	59	i 11 16	− 2	e 20 32	− 3	—	—	—
Prague		75·2	328	11 20	0	e 20 34	− 4	e 21 12?	PS	—
Jena		75·5	330	e 11 19	− 2	i 20 37	− 5	e 21 5	PS	e 32·7
Cheb		75·9	329	e 11 7	−17	e 20 50	+ 4	e 12 22	pP	—
De Bilt		76·7	334	i 11 29k	+ 1	i 20 52	− 3	—	—	—
Ksara		76·9	304	e 11 32?	+ 3	20 59	+ 2	e 12 29	pP	—
Sofia		77·1	318	e 11 31	+ 1	i 20 58	− 1	e 12 28	pP	—
Uccle		78·1	335	e 11 34a	− 2	i 21 4	− 6	i 12 32	pP	e 31·7
Stuttgart		78·2	330	e 11 34k	− 2	i 21 7	− 4	i 12 34	pP	e 41·6
Riverview		78·6	172	i 11 38k	0	e 21 20	+ 5	—	—	e 30·2
Oxford		78·8	338	—	—	i 21 16	− 1	—	—	—
Strasbourg		78·8	331	11 44	+ 5	i 21 16	− 1	e 22 52	sS	—
Kew		78·9	337	e 11 40a	0	i 21 20	+ 2	i 14 43	PP	e 31·2
Triest		79·0	326	e 11 40	0	i 21 14	− 5	—	—	—
Tucson		79·2	55	i 11 40	− 2	i 21 21	0	i 12 40	pP	e 33·8
Perth		79·6	202	11 49	+ 5	21 27	+ 2	14 49	PP	35·6
Zurich		79·6	330	e 11 42	− 2	e 21 23	− 2	—	—	—
Chur		79·7	329	e 11 41	− 3	e 21 22	− 4	—	—	—
Basle		79·8	330	i 11 44	− 1	e 21 24	− 3	e 12 42	pP	—
Paris		80·4	334	—	—	21 28	− 6	—	—	31·7
Neuchatel		80·5	330	e 11 46	− 2	e 21 31	− 4	—	—	—
Besançon		80·6	331	—	—	e 21 39	+ 3	—	—	—
Des Moines		81·1	38	16 54	PPP	21 35	− 6	—	—	—
Helwan		82·5	305	i 11 56a	− 3	21 50	− 5	12 56	pP	—
Clermont-Ferrand		82·9	332	i 12 0	− 1	i 21 56	− 3	i 15 16	PP	—
Chicago U.S.C.G.S.		83·5	35	e 12 7	+ 3	i 21 59	− 6	e 17 6	PPP	e 35·4
Seven Falls		84·4	21	12 7	− 1	i 22 3	−11	—	—	26·7
Shawinigan Falls		84·4	22	12 6	− 2	22 5	− 9	—	—	—
Ottawa		84·6	25	12 8	− 1	22 5	−11	—	—	e 34·7
Florissant		84·8	39	i 12 9	− 1	i 22 7	−11	i 13 10	pP	—
St. Louis		85·0	39	i 12 9	− 2	i 22 8	[− 3]	i 13 8	pP	—
Auckland		86·4	154	11 44	−34	22 26	− 7	—	—	—
Cape Girardeau		86·4	38	e 12 17	− 1	e 22 15	[− 5]	e 13 13	pP	—
Pittsburgh		87·6	30	i 12 21	− 3	i 22 22	[− 6]	i 13 21	pP	—
Arapuni		87·8	153	e 11 44?	−41	—	—	—	—	—
New Plymouth		88·2	155	11 51	−36	—	—	—	—	—
Harvard		88·5	23	i 12 26k	− 2	—	—	i 13 30	pP	e 27·7
Fordham		89·3	25	i 12 30	− 2	i 22 34	[− 5]	i 13 18	pP	—
Philadelphia		89·7	27	12 33	− 1	i 22 36	[− 5]	e 23 57	SP	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
	°	°	m. s.	s.	m. s.	s.	m. s.			m.
Algiers	90·3	327	12 40	+ 3	22 44	[− 1]	i 16 16	PP		36·7
Wellington	90·5	156	12 35	− 3	22 34	[−12]	i 13 37	pP		40·7
Christchurch	91·9	158	12 45k	+ 1	22 52	[− 1]	16 25	PP		37·7
Almeria	92·7	332	e 12 43	− 5	22 52	[− 6]	13 20	pP		46·7
Granada	92·8	334	13 44a	pP	i 22 57	[− 1]	i 16 34	PP		44·7
Lisbon	93·0	338	—	—	22 57	[− 3]	—	—		—
San Fernando	94·3	335	e 16 38	PP	e 23 8	[+ 1]	25 39	PS		49·7
Huancayo	134·8	56	e 18 50	[− 2]	e 27 57	SKKS	e 21 58	PP		e 55·4
La Paz	142·5	51	19 9	[+ 2]	i 25 37	[−15]	i 20 14	pPKP		76·2

Additional readings :—
Irkutsk isS =10m.51s.
College ePP =9m.20s., e =9m.52s., and 10m.1s., eSS =17m.1s.
Calcutta isSN =16m.37s., iSSN =18m.47s.
Sverdlovsk isS =16m.52s.
Sitka i =9m.48s.
Tashkent sS =17m.20s.
Hyderabad PP =11m.7s., S_cS =19m.2s., SS =20m.43s.
Bombay eN =10m.24s., P_cPE =10m.33s., pPE =10m.51s., eN =11m.25s., PPE = 12m.16s., iSN =18m.0s., sSE =19m.20s., sSN =19m.25s.
Kodaikanal SSE =22m.40s.
Scoresby Sund e =12m.49s., iS =18m.40s., e =24m.26s.
Upsala pPPPE =15m.5s., i =19m.9s., iS_cS?E =19m.52s., eE =20m.48s., eSSSN = 26m.34s., eN =28m.20s.
Ukiah e =10m.38s.
Berkeley iPZ =10m.40s.
Bozeman e =15m.3s., ePPP =15m.14s., eS_cS =20m.27s., eSS =24m.16s., eSSS = 27m.39s.
Warsaw iPZ =10m.56s., iZ =11m.47s., PPPZ =14m.20s., iZ =20m.8s., PSEZ =20m. 29s.
Copenhagen 14m.29s., i =20m.33s.
Salt Lake City ePP =13m.42s., eS =20m.3s., e =20m.54s., eSS? =24m.20s.
Mount Wilson ePKP, PKPZ =38m.24s.
Pasadena iZ =11m.32s., 12m.48s., and 14m.0s., iEZ =20m.53s., iPKP,PKPZ = 38m.26s., eSKPPKPZ =41m.32s.
Potsdam iP =11m.13s.a, eZ =16m.57s., iE =20m.6s., iSE =20m.20s., iZ =20m.47s.?, isSE =21m.55s.
Bucharest iPPPE =15m.26s., iSSN =25m.15s., iSSSE =27m.47s.
Palomar iZ =14m.12s.
Jena ePN =11m.22s., iPE =11m.25s., iPN =11m.28s., e =21m.8s.
De Bilt i =21m.26s.
Sofia eEN =15m.26s.?, eN =21m.19s., PSE =21m.28s., eN =22m.28s. and 22m.48s.
Uccle iPZ =11m.37s., ipS?N =21m.29s., iE =21m.35s., isPS?N =22m.22s.
Stuttgart i =11m.38s., esP =13m.7s., ePP =14m.52s., ePPP =16m.58s., iSE = 21m.26s., eSN =22m.26s., eSE =22m.41s.
Riverview iN =21m.29s.
Strasbourg i =21m.28s.
Kew ePPP?Z =16m.39s?, iS =21m.12s., iPSZ =21m.30s., iSKS =21m.42s., iS_cS?Z = 21m.57s., eEN =22m.30s., e =24m.5s., iZ =24m.12s., eSS? =26m.29s., eSSS? = 28m.14s.?.
Tucson iPP =14m.43s., i =15m.3s., ipPP =15m.37s., iSP =22m.12s., i =23m.51s., eSS =26m.16s., eSSS =30m.31s.
Perth SS =25m.48s., SSS =28m.52s.
Chur P =11m.47s.k.
Helwan sPZ =13m.26s., PPZ =15m.17s., SPEN =22m.47s., sSEN =23m.42s., SSN = 27m.20s.
Chicago U.S.C.G.S. e =14m.52s., 22m.51s., eSS =27m.25s., eSSS =31m.10s.
Florissant iPE =15m.19s., iSKSE =22m.14s., iSKKS =22m.40s., iSPE =23m.9s., isSN =23m.52s., isSPN =24m.42s.
St. Louis iPPZ =15m.19s., iSKSEN =22m.20s., iSKKSEN =22m.38s., iSPEN = 23m.9s., isSEN =23m.51s., eSSE =27m.26s.
Cape Girardeau iN =12m.22s., 22m.30s., eE =24m.19s.
Pittsburgh i =23m.39s.
Harvard i =15m.55s.
Fordham iP_cP =12m.34s., iPP =16m.3s., isS =23m.59s., SS =28m.44s.
Philadelphia i =24m.4s.
Algiers S =23m.13s.
Wellington iZ =12m.39s. and 13m.49s., PPP?Z =19m.46s., PS? =23m.19s., i =24m.54s.
Christchurch S =23m.33s., iN =24m.56s., iEN =31m.17s.
Almeria PP =16m.17s., pPP =17m.1s., PPP =18m.16s., is =23m.31s., PS =24m.43s., Q =38m.13s.
Granada pPP =17m.20s., sPP =17m.37s., PPP =18m.54s., pPPP =19m.19s., iS = 23m.36s., sS =24m.32s., sPS =26m.46s., iSS =29m.44s., SSS =33m.56s.
Lisbon SN =23m.36s.
Huancayo e =23m.23s., eSP =31m.39s., eSS =39m.10s., esSS =43m.12s., e =44m.20s.
La Paz iN =22m.22s., iPPN =23m.24s., iSKKS? =28m.50s., iSSN =42m.20s., SSS = 46m.56s.

March 5d. Readings also at 0h. (Bucharest), 1h. (Palomar, Mount Wilson, Tucson, Tinemaba, Tacubaya, and Merida), 2h. (near Ksara, near Berkeley, and San Juan), 4h. (near Andijan and Tashkent), 6h. (Tacubaya), 7h. (Tucson), 8h. (near Branner), 9h. (near Branner), 17h. (near Andijan), 18h. (Balboa Heights), 22h. (near Branner)

March 6d. 20h. 8m. 23s. Epicentre 9°·0S. 158°·5E. (as on 1940 April 17d.).

$A = -\cdot9191$, $B = +\cdot3621$, $C = -\cdot1554$; $\delta = +1$; $h = +7$;
$D = +\cdot367$, $E = +\cdot930$; $G = +\cdot145$, $H = -\cdot057$, $K = -\cdot988$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	19·1	195	i 4 22	− 5	i 7 54	− 3	—	—	—
	N.	19·1	195	i 4 20	− 7	i 7 47	−10	—	—	—
Riverview		25·6	194	i 5 33a	+ 1	e 9 54	− 5	i 11 6	SS	e 12·7
Apia		29·5	102	—	—	e 12 58	SSS	e 13 53	Q	e 15·8
Auckland		31·4	155	7 27	PP	e 11 12	−20	13 57	SSS	15·6
Arapuni		32·8	155	e 6 37?	0	—	—	—	—	15·6
Wellington		35·2	159	7 2?	+ 4	12 34	+ 3	8 27	PP	17·6
Christchurch		36·5	163	6 11	−58	12 54	+ 3	15 39	SSS	18·7
Perth		45·6	234	14 0	PcS	14 57	− 9	19 27	SSS	23·6
Honolulu		52·4	54	—	—	—	—	e 19 19	SS	e 23·5
Irkutsk		76·6	329	e 11 48	− 6	21 27	−13	—	—	—
Kodaikanal	E.	82·9	281	e 12 24	− 4	—	—	—	—	—
Hyderabad		83·3	288	12 24	− 6	22 39	−11	28 4	SS	37·3
College		83·7	20	—	—	22 46	− 8	e 28 10	SS	35·9
Ukiah		86·7	50	e 12 58	+11	e 23 19	− 5	29 44	SS	e 42·0
Berkeley		87·1	51	e 11 21	?	e 23 24	− 4	—	—	e 37·6
Santa Clara	E.	87·2	51	e 12 59	+10	—	—	24 44	PS	e 44·1
Santa Barbara	Z.	88·3	55	e 12 55a	0	—	—	—	—	—
Bombay		88·8	289	i 12 56	− 2	23 17	[− 9]	16 28	PP	—
Victoria		88·9	42	—	—	23 42	− 2	—	—	41·6
Pasadena		89·5	56	i 13 0a	0	i 23 37	[+ 7]	13 35	?	e 40·6
Mount Wilson		89·6	56	i 13 0a	− 1	—	—	—	—	—
La Jolla	Z.	90·0	57	e 13 3	0	—	—	—	—	—
Tinemaha		90·0	52	i 13 3a	0	—	—	—	—	—
Haiwee		90·1	54	e 13 4	+ 1	—	—	—	—	—
Riverside		90·2	56	i 13 2a	− 2	—	—	—	—	—
Tashkent		95·3	311	13 21	− 6	23 55	[− 7]	e 29 55?	?	—
Tucson		95·3	59	i 13 27	0	e 24 12	[+ 9]	e 17 11	PP	e 42·3
Salt Lake City		95·5	50	e 13 59	+31	e 24 45	+ 3	25 36	PS	42·1
Bozeman		96·7	45	e 13 4	−29	e 24 11	[0]	e 26 22	PS	e 43·2
Sverdlovsk		101·8	327	17 43	PP	24 27	[− 9]	—	—	—
Lincoln		107·1	50	—	—	e 26 32	+12	e 28 1	PS	55·3
Chicago U.S.C.G.S.		113·7	48	—	—	e 25 48	[+21]	—	—	e 53·3
Scoresby Sund		118·6	0	—	—	e 36 38	SS	—	—	e 50·3
Ottawa		121·2	42	e 30 19	PS	—	—	—	—	e 55·6
Ksara		122·0	303	e 20 9	PP	—	—	e 22 4	PKS	—
Huancayo		122·5	110	e 20 59	PP	e 25 34	[−24]	e 30 24	PS	51·9
Seven Falls		123·6	38	e 28 25	?	—	—	—	—	58·6
Copenhagen		126·3	338	e 19 1	[− 4]	—	—	—	—	57·6
Helwan		126·5	300	e 21 2	PP	e 37 55	SS	—	—	—
La Paz		127·4	119	·19 9	[+ 2]	—	—	—	—	—
Potsdam		128·4	334	e 21 7	PP	—	—	—	—	e 62·6
Cheb		130·3	332	e 22 37?	PKS	—	—	—	—	e 62·6
Triest		132·6	326	i 22 40	PKS	—	—	—	—	—
Stuttgart		132·7	332	e 19 15	[− 2]	—	—	e 22 40	PKS	—
Uccle		133·2	339	e 19 19	[+ 1]	—	—	e 22 46	PKS	—
Bermuda		133·8	53	e 22 46	PKS	—	—	e 32 56	PS	e 64·1
Kew		134·2	342	e 34 3	PPS	—	—	—	—	e 60·6
San Juan		135·8	72	e 21 59	PP	40 8	SS	22 49	PKS	e 64·4
Almeria		147·3	332	i 19 40	[− 3]	e 24 23	?	—	—	67·6
Granada		147·6	333	21 37?	?	e 24 37?	?	41 37?	?	75·6

For Notes see next page.

NOTES TO MARCH 6d. 20h. 8m. 23s.

Additional readings :—
Riverview iSEN = 10m.1s., iZ = 10m.6s., iN = 10m.9s., and 10m.16s., iZ = 10m.20s.
Apia e = 13m.53s.
Wellington iZ = 7m.57s., P_cP?Z = 8m.39s., iZ = 10m.14s., S = 13m.4s., S_cS? = 17m.0s., i = 17m.17s.
Christchurch iZ = 7m.7s., P_cS = 12m.38s., iZ = 14m.12s., Q = 15m.48s.
Perth PPP = 15m.27s., i = 16m.54s., SS = 20m.59s. Phases wrongly interpreted.
College e = 23m.38s. and 27m.22s.
Hyderabad SE = 22m.42s., PSE = 23m.37s.
Ukiah e = 22m.46s., and 25m.0s.
Berkeley ePZ = 11m.24s.
Bombay iE = 14m.3s. and 15m.0s., SKSN = 23m.21s., iSN = 23m.37s., sSE = 24m.33s., PSN = 24m.59s.
Tucson e = 14m.28s., 16m.58s., and 23m.4s., ePS = 25m.33s., e = 26m.9s.
Salt Lake City e = 26m.8s.
Bozeman e = 33m.7s.
Sverdlovsk S = 25m.7s., SS = 32m.25s.?.
Ksara, readings have been decreased by one hour.
Huancayo eSS = 35m.51s.
Stuttgart i = 19m.19s.
Bermuda e = 33m.56s. and 41m.49s.
Kew eZ = 38m.23s. and 48m.37s.?.
Long waves were also recorded at Sydney, Tananarive, De Bilt, Warsaw, Philadelphia, East Machias, and Columbia.

March 6d. Readings also at 2h. (Pasadena, Mount Wilson, Tinemaha, Haiwee, near Berkeley (2), Branner, Fresno, Lick, and Santa Clara), 4h. (near Berkeley), 5h. (near Mizusawa), 7h. (near Stalinabad, Tashkent, Tchimkent, Almata, and Frunse), 8h. (near La Paz), 9h. (La Paz), 10h. (Copenhagen, Stuttgart, and Tananarive), 12h. (La Paz and near Apia), 13h. (near Berkeley), 14h. (La Paz, and Huancayo), 16h. (near Apia), 22h. (near Almata), 23h. (near Tchimkent, Stalinabad, Frunse, Tashkent, and near Berkeley).

March 7d. Readings at 5h. (La Paz and La Plata), 6h. (near Stalinabad, Tashkent, Tchimkent, and Huancayo), 8h. (near Balboa Heights), 9h. (La Paz), 10h. (La Paz and Lick), 13h. (Berkeley), 17h. (near Balboa Heights), 22h. (Mizusawa, near La Paz, Copenhagen, Stuttgart, and Jena), 23h. (near Apia and Auckland.)

March 8d. 4h. 46m. 35s. Epicentre 1°·0S. 29°·0W.

A = +·8745, B = −·4847, C = −·0173 ; δ = −2 ; h = +7 ;
D = −·485, E = −·875 ; G = −·015, H = +008, K = −1·000.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rio de Janeiro	E.	25·8	212	e 5 57	+23	—	—	—	—	e 10·7
San Juan		41·3	300	e 7 53	+ 4	—	—	—	—	e 19·0
La Paz		41·5	246	7 51	+ 1	i 14 28	+21	17 15	SS	20·3
San Fernando		43·0	27	e 7 56	− 7	e 14 10	−19	—	—	20·4
Lisbon	E.	43·7	22	8 7	− 1	14 32	− 7	9 37	PP	19·7
Granada		44·7	29	i 8 20a	+ 4	i 14 55	+ 1	10 14	P_cP	21·5
Almeria		45·0	30	8 7	−12	14 33	−25	8 21	pP	20·4
Huancayo		47·3	254	e 9 6	+29	e 15 26	− 5	e 10 57	PP	e 18·7
Bermuda		47·4	318	—	—	e 15 14	−18	—	—	e 19·0
Algiers		47·9	35	e 8 40	− 2	e 15 42	+ 3	—	—	i 23·2
Clermont-Ferrand		54·5	27	e 9 26	− 6	e 17 13	+ 3	—	—	e 35·1
Paris		56·6	24	—	—	e 18 29	+51	—	—	24·4
Neuchatel		57·2	29	e 9 39	−12	—	—	—	—	—
Oxford		57·6	20	—	—	17 43	− 8	—	—	e 23·4
Basle		57·9	28	e 9 46	−10	—	—	—	—	—
Kew		58·3	21	i 10 0	+ 1	i 17 52	− 9	e 11 52?	PP	e 23·9
Zurich		58·3	29	e 9 40	−19	e 20 23	?	—	—	—
Chur		58·4	30	e 9 49	−11	—	—	—	—	—
Philadelphia		58·6	320	—	—	e 18 5	+ 1	—	—	e 23·9
Uccle		58·8	23	e 11 19	PP	i 18 11	+ 4	—	—	24·4

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stonyhurst		58·9	17	—	—	e 17 25?	−43	—	—	24·2
Stuttgart		59·5	28	e 10 0	− 7	e 18 23	+ 7	—	—	e 27·4
Triest		59·8	33	e 8 18?	?	i 18 26	+ 6	—	—	e 29·0
De Bilt		60·2	23	e 10 15	+ 3	i 18 31	+ 6	e 11 15	PcP	e 27·4
Aberdeen	E.	61·9	16	—	—	i 18 25?	−22	—	—	i 24·4
Ottawa		61·9	325	e 10 25	+ 1	e 18 43	− 4	—	—	e 25·4
Cheb		62·0	28	—	—	e 18 55	+ 7	e 25 48	SSS	e 31·4
Jena		62·2	28	e 10 25?	− 1	e 18 55?	+ 4	—	—	e 26·4
Prague		63·0	29	e 12 55?	?	e 19 7?	+ 6	—	—	e 29·4
Potsdam		63·8	26	e 10 33	− 3	e 19 19?	+ 8	e 12 32	PP	28·4
Sofia		64·0	40	—	—	e 19 18	+ 5	e 26 14	SSS	—
Helwan	N.	65·1	57	—	—	19 42	+15	26 43	SSS	—
Copenhagen		65·8	23	e 10 51	+ 2	19 37	+ 2	—	—	25·4
Bucharest		66·6	39	—	—	19 52	+ 7	—	—	—
Warsaw		67·6	30	e 12 55	PP	e 20 11	+14	—	—	e 31·4
Chicago		67·8	316	—	—	e 19 40	−20	—	—	e 27·8
Ksara		69·9	53	—	—	e 21 6	+42	—	—	—
Upsala		70·6	23	—	—	e 20 25?	− 8	—	—	e 28·4
Tananarive		77·0	109	e 15 31	PP	e 22 33	+48	—	—	e 38·6
Tucson		83·6	303	e 12 31	0	—	—	—	—	—
Mount Wilson	Z.	89·8	304	e 12 59	− 3	—	—	—	—	—
Pasadena		89·9	304	e 13 7	+ 5	—	—	—	—	e 40·4
Victoria		93·7	318	—	—	e 24 13	[+19]	—	—	41·4
Bombay	E.	101·5	71	18 22	PP	27 38	PS	e 30 29	?	—
Hyderabad		106·9	72	—	—	e 23 3	?	34 8	SS	54·0
Calcutta	N.	115·5	65	—	—	e 23 50	?	e 36 0	SS	—

Additional readings :—
San Fernando eSS = 16m.37s.
Lisbon PcP?N = 9m.19s., E = 16m.4s., SSE = 17m.45s.
Granada PcS = 13m.34s., SS = 18m.10s., ScS = 18m.40s.
Almeria sP = 8m.42s., PP = 9m.53s., pPP = 10m.12s.
Huancayo e = 11m.12s., ePPP = 11m.45s.
Bermuda eS? = 15m.25s.
Kew ePPP? = 12m.57s.?, iPS?Z = 18m.0s., eSS? = 21m.25s.?.
Stuttgart i = 10m.13s. and 10m.20s.
De Bilt eSS = 22m.25s., eSSS = 24m.55s.
Cheb e = 4h.51m.18s. and 4h.54m.18s.
Potsdam ePcP?N = 11m.21s.
Sofia eN = 22m.42s.
Helwan iN = 20m.55s.
Bucharest eE = 3m.55s., 7m.17s., and 17m.16s.
Warsaw eZ = 14m.44s., eN = 20m.14s.
Tananarive e = 23m.31s.
Tucson e = 13m.29s., and 13m.56s.
Calcutta iN = 45m.21s.
Long waves were also recorded at Bozeman, College, and Colombo.

March 8d. Readings also at 0h. (Haiwee, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, near Berkeley, Tacubaya, Wellington, Arapuni, and Stuttgart), 1h. (Uccle), 3h. (near Berkeley), 4h. (Andijan, Tashkent, Sverdlovsk, Irkutsk, Calcutta, Bombay, Warsaw, Potsdam, De Bilt, Stuttgart, near Fresno, and Lick), 5h. (near Mizusawa), 7h. (near Andijan), 8h. (Kodaikanal), 11h. (Huancayo, La Paz, Uccle, De Bilt, and Potsdam), 19h. (near Berkeley), 22h. (near Bucharest), 23h. (near Berkeley).

March 9d. 10h. 19m. 44s. Epicentre 19°·3N. 72°·9W.

Intensity IV-V at Port au Prince and throughout the Republic of Haiti. Epicentre 19°·0N. 73°·0W. (U.S.C.G.S.).

Observatoire Meteorologique du Séminaire de St. Martial, Port au Prince, Haiti. Relevé des Macroséismes de 1938 à 1946.

$A = +·2777$, $B = -·9027$, $C = +·3285$; $\delta = -10$; $h = +5$.
$D = -·956$, $E = -·294$; $G = +·097$, $H = -·314$, $K = -·945$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Port au Prince		0·9	144	i 0 10	−10	—	—	i 0 20	P	—
San Juan		6·5	97	i 1 36	− 3	i 2 40	−15	i 1 59	P*	i 3·0
Balboa Heights		12·1	213	e 2 47	−10	i 4 59	−15	—	—	—
Fort de France		12·1	110	e 2 48	− 9	—	—	—	—	—
Bermuda		14·8	27	e 3 30	− 2	e 6 20	+ 2	—	—	e 6·6
Philadelphia		20·7	357	e 4 43	− 1	e 8 48	+17	e 4 59	PP	e 13·7
Cape Girardeau	N.	23·1	326	e 6 10	PPP	—	—	—	—	—
St. Louis	N.	24·5	327	e 5 19	− 4	e 9 55	+13	—	—	—
Ottawa		26·1	356	i 5 38	+ 1	e 10 28	+21	—	—	16·3
Huancayo		31·2	184	e 6 31	+ 8	e 11 16	−13	—	—	e 17·4
La Paz	N.	35·9	172	i 7 6a	+ 2	i 12 34	− 8	i 15 2	SS	20·1
Tucson		36·3	299	e 7 7	0	—	—	e 8 23	PP	e 24·7
Palomar	Z.	41·5	299	i 7 52	+ 2	—	—	—	—	—
Riverside	Z.	42·0	300	e 7 56	+ 2	—	—	i 9 48	PP	—
Mount Wilson	Z.	42·6	300	e 8 1	+ 2	—	—	i 9 51	PP	—
Pasadena		42·7	300	e 8 1	+ 1	—	—	—	—	e 26·6
Tinemaha	Z.	43·3	304	i 8 7	+ 2	—	—	—	—	—

Additional readings:—
Philadelphia e = 5m.46s.
Huancayo e = 6m.44s.
Long waves were also recorded at Chicago U.S.C.G.S., Salt Lake City, Uccle, Bozeman, and De Bilt.

March 9d. Readings also at 2h. (Granada, Bozeman, Tinemaha, Riverside, Palomar, Tucson, Oaxaca, Puebla, Tacubaya, and Vera Cruz), 6h. (La Paz), 10h. (Harvard), 16h. (Granada), 18h. (La Paz), 22h. (near Berkeley (2)), 23h. (Tucson).

March 10d. Readings at 3h. (Berkeley), 9h. (Mount Wilson, Riverside, Palomar, and Tucson), 10h. (Brisbane, Sydney, Riverview, and near La Paz), 12h. (Helwan, Pasadena, Tinemaha (2), Tucson (2), Ksara, Mount Wilson, Riverside, Palomar (2), Stuttgart, Copenhagen, Mizusawa, and near Ksara), 13h. (Tinemaha, Tucson, and Palomar), 17h. (Stuttgart, Copenhagen, and near Mizusawa), 19h. (near Berkeley, and Warsaw), 23h. (near Berkeley).

March 11d. 10h. 47m. 34s. Epicentre 42°·0N. 142°·8E. (as on 1937 January 20d.).

Intensity V at Urakawa; IV at Hatinohe, Aomori, Miyako; II-III at Sapporo, Obihiro, Morioka, and Mizusawa. Epicentre 41°·9N. 143°·0E. Macroseismic radius greater than 300km.
See Seismological Bulletin of the Central Met. Obs., Japan for the year 1942, Tokyo 1950, pp. 15-16. Macroseismic chart p.15.

$A = -·5937$, $B = +·4507$, $C = +·6666$; $\delta = -3$; $h = -2$;
$D = +·605$, $E = +·797$; $G = -·531$, $H = +·403$, $K = -·745$.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Sapporo	1·5	315	0 10k	−18	0 32	−17
Hatinohe	1·7	213	0 34k	+ 3	0 54	0
Aomori	1·9	232	0 37k	+ 3	1 0	+ 1
Miyako	2·4	195	0 43	+ 2	1 10	− 2
Nemuro	2·4	57	0 44	+ 3	1 14	+ 2
Akita	3·1	221	0 53	+ 2	1 29	0
Mizusawa	3·1	204	e 0 56	+ 5	1 33	+ 4
Sendai	4·0	201	1 4	0	1 49	− 3
Hukusima	4·6	204	1 14	+ 2	2 3	− 4
Onahama	5·2	196	1 26	+ 5	—	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Aikawa	5·3	222	1 24	+ 2	—	—
Mito	5·9	198	1 38	+ 7	3 13	S_g
Kakioka	6·1	200	1 33	− 1	—	—
Tukubasan	6·1	200	1 31	− 3	2 41	− 4
Maebasi	6·3	208	1 34	− 2	2 37	−13
Kumagaya	6·4	205	1 43	+ 5	2 50	− 3
Nagano	6·4	215	2 36	+58	4 13	?
Tyosi	6·4	194	1 28	−10	2 51	− 2
Wazima	6·4	226	1 42	+ 4	—	—
Tokyo Cent. Met. Ob.	6·7	202	1 46	+ 4	2 56	− 4
Toyama	6·9	221	1 46	+ 1	—	—
Yokohama	7·0	201	1 47	+ 1	3 2	− 6
Hunatu	7·2	207	1 51	+ 2	3 10	− 3
Kohu	7·2	208	1 53	+ 4	3 23	+10
Mera	7·4	199	1 58	+ 6	—	—
Misima	7·5	205	1 57	+ 4	—	—
Shizuoka	7·8	207	2 3	+ 5	3 43	+15
Gihu	8·1	217	2 1	− 1	—	—
Hikone	8·4	219	2 6	0	3 42	− 1
Kameyama	8·7	217	2 1	− 9	—	—
Kyoto	8·9	220	2 13	+ 1	—	—
Osaka	9·3	220	2 4	−13	3 48	−17
Kobe	9·4	222	2 17	− 1	4 12	− 5
Hirosima	11·2	230	2 49	+ 5	—	—
Irkutsk	27·8	306	e 5 50	− 3	—	—
Sverdlovsk	52·2	317	9 11	− 4	16 33	− 6
Tashkent	53·3	297	9 17	− 6	e 16 42	−12
Tinemaha z.	72·1	57	e 11 26	− 2	—	—
Copenhagen	74·0	333	11 35	− 4	—	—
Pasadena z.	74·0	58	e 11 50	+11	—	—
Potsdam z.	76·4	331	e 11 49	− 4	—	—
Tucson	79·9	55	i 12 10	− 2	—	—
Stuttgart	80·8	331	i 12 14 a	− 3	—	—

Long waves were also recorded at Uccle and De Bilt,

March 11d. 22h. 33m. 54s. Epicentre 37°·8N. 22°·1E. (as on 1939 June 2d.).
A = +·7340, B = +·2980, C = +·6103; δ = +3; h = −1;
D = +·376, E = −·927; G = +·565, H = +·230, K = −·792.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	5·0	11	e 1 17	− 1	e 2 6	−12	—	—	—
Bucharest	7·2	24	e 1 53	+ 4	e 3 22	+ 9	—	—	6·1
Triest	10·0	324	e 2 20	− 7	i 4 6	−16	—	—	—
Helwan	11·0	133	e 2 45	+ 3	e 4 45	− 2	—	—	e 9·4
Ksara	11·9	105	e 3 2	PP	—	—	—	—	e 6·3
Chur	13·0	318	e 3 1	− 8	—	—	—	—	—
Prague	13·4	339	—	—	e 6 6?	SS	—	—	—
Zurich	13·8	318	e 3 25	+ 6	e 5 40	−14	—	—	—
Cheb	14·1	334	e 4 20	+57	e 6 26	SSS	—	—	e 7·9
Neuchatel	14·4	316	e 3 27	0	—	—	—	—	—
Basle	14·4	317	e 3 27	0	—	—	—	—	—
Stuttgart	14·4	324	e 3 15	−12	—	—	e 4 16	PPP	—
Warsaw	14·4	358	e 3 31	+ 4	e 6 32	SSS	—	—	e 8·1
Jena	15·1	334	e 3 41	+ 5	e 6 48	SS	—	—	e 7·1
Potsdam	15·9	340	e 3 44	− 3	e 6 48?	+ 4	e 4 24?	PPP	e 7·1
Uccle	18·1	322	e 4 18?	+ 4	e 7 37	+ 2	—	—	e 9·1
Almeria	19·6	275	e 5 0	PPP	—	—	—	—	—
Upsala	22·2	354	—	—	e 9 6?	+ 6	—	—	e 12·1

Additional readings :—
Bucharest eN = 2m.49s.
Helwan e = 3m.33s.
Stuttgart e = 3m.41s.
Warsaw eS?N = 6m.40s., eS?E = 6m.49s.
Almeria i = 5m.44s.
Long waves were also recorded at De Bilt and Aberdeen.

March 11d. Readings also at 1h. (near Sofia), 6h. (Stalinabad (2), near Tashkent (3), and Andijan), 8h. (near Irkutsk), 12h. (near Mizusawa), 13h. (La Paz, near Sofia, and Bucharest), 15h. (Riverview, Wellington, Auckland, and near Apia), 19h. (Florissant), 21h. (Kew).

March 12d. 13h. 24m. 6s. Epicentre 10°·3N. 126°·0E. (as on 1942 January 23d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Koti		24·2	15	5 22	+ 3	—	—	—	—	—
Kobe		25·7	17	e 5 33	0	12 20	L	—	—	(12·3)
Kameyana		26·2	19	e 5 44	+ 6	—	—	—	—	—
Nagano		28·5	19	e 7 37	PPP	—	—	—	—	—
Calcutta	N.	38·0	294	e 9 2	PP	e 12 51	−23	e 16 39	SSS	i 19·5
Irkutsk		45·4	342	e 8 23	+ 1	15 2	− 2	—	—	—
Colombo	E.	45·7	269	9 9	+45	15 39	+31	—	—	26·4
Hyderabad	E.	46·6	284	8 30	− 2	15 23	+ 2	—	—	23·7
Agra	E.	48·1	298	e 8 39	− 4	e 15 44	+ 2	e 10 34	PP	—
Riverview		50·0	152	—	—	e 15 54?	−15	i 19 45	SS	—
Bombay		52·0	285	e 9 15	+ 2	16 38	+ 2	11 13	PP	—
Tashkent		58·4	313	9 59	− 1	—	—	—	—	—
Sverdlovsk		68·0	328	e 11 2	− 1	19 57	− 5	—	—	—
Christchurch		68·3	146	19 59	S	(19 59)	− 7	(27 2)	SSS	34·9
Helwan		88·9	300	e 12 54	− 4	e 23 42	− 2	—	—	—
Copenhagen		94·4	329	12 7	?	—	—	—	—	—
Tinemaha	Z.	103·6	49	e 18 35	PP	—	—	—	—	—
Clermont-Ferrand		104·7	323	—	—	e 33 0	SS	—	—	—
Tucson		111·3	49	—	—	e 26 25	{+11}	—	—	—
La Paz		165·0	116	20 0	[− 6]	—	—	—	—	—

Additional readings :—
Riverview iN = 16m.7s.
Bombay PSN = 16m.51s., sSE = 17m.6s., S_eSEN = 18m.59s., SSE = 20m.58s.
Christchurch SSS given as S.
Helwan e = 13m.28s.
Long waves were also recorded at Warsaw, Potsdam, Cheb, Kew, Huancayo, Scoresby Sund, Uccle, De Bilt, and Auckland.

March 12d. Readings also at 0h. (near Stalinabad and La Paz), 1h. (Agra, Riverside, Pasadena, Mount Wilson, Tinemaha, Tuscon, Stuttgart, and near Zurich), 3h. (near Berkeley), 4h. (Agra), 6h. (Haiwee, Tucson, Tinemaha, Mount Wilson, Pasadena, Riverside, Riverview, and near Apia), 7h. (Agra (2)), 9h. (Apia, Arapuni, Auckland and near Agra,), 10h. (Agra), 13h. (Riverside, Pasadena, Mount Wilson, Tucson, and Tinemaha), 14h. (Mizusawa, Tucson, Riverside, Mount Wilson, Tinemaha, near Stalinabad, and Andijan), 17h. (Riverview and near Mizusawa), 22h. (Mount Wilson, Tucson, and Pasadena), 23h. (near Berkeley).

March 13d. 9h. Probably Arabian Sea.

Bombay iPE = 2m.56s., iE = 3m.27s., iSE = 6m.15s., L?E = 6m.56s., eE = 8m.56s.
Hyderabad PE = 3m.55s., iE = 6m.58s., SE = 8m.2s.
Kodaikanal ePE = 3m.55s., iSE = 7m.55s., LE = 10m.
Agra iPE = 4m.18s., eSE = 8m.37s.
Colombo PE = 4m.18s.
Helwan eZ = 5m.0s., and 5m.51s.
Tashkent P = 5m.11s., S = 10m.19s.
Ksara e = 5m.37s., eS? = 15m.7s.
Calcutta eN = 10m.7s., and 15m.56s.

March 13d. Readings also at 0h. (near Berkeley), 2h. (near Balboa Heights), 3h. (near Berkeley), 7h. (Port au Prince and Jena), 10h. (Agra and Calcutta), 11h. (Berkeley), 16h. (near Apia and near La Paz), 21h. (near La Paz), 22h. (Ksara).

March 14d. Readings at 0h. (Mizusawa), 1h. (near Berkeley), 6h. (La Paz and near Sofia), 10h. (Berkeley), 13h. (near Frunse), 23h. (near La Paz).

March 15d. Readings at 1h. (near Tananarive), 8h., 9h., and 11h. (near Lick), 16h. (near Neuchatel, Zurich, Basle and Stuttgart), 17h. (La Paz), 18h. (Huancayo), 21h. and 22h. (La Paz).

March 16d. Readings at 1h. (near Andijan), 3h. (Tacubaya), 12h. (near Andijan), 13h. (Tacubaya), 23h. (near Berkeley).

March 17d. Readings at 0h. (Auckland, Christchurch, Wellington, Riverview, La Paz, Tucson, near Bucharest and Sofia), 1h. (Kew and La Paz), 2h. (near Berkeley), 9h. (near Tchimkent), 19h. (Agra, Tchimkent, and near Stalinabad), 21h. (Balboa Heights), 22h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, and La Paz), 23h. (Branner).

March 18d. Readings at 4h. (Huancayo), 6h. (Frunse, Tashkent, and Tchimkent), 8h. (College, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and Tucson), 11h. (near Lisbon), 22h. (Neuchatel), 23h. (near Berkeley and Branner).

March 19d. 11h. 59m. 26s. Epicentre 51°·2N. 130°·0W.

$A = -\cdot4044$, $B = -\cdot4820$, $C = +\cdot7773$; $\delta = +6$; $h = -6$;
$D = -\cdot766$, $E = +\cdot643$; $G = -\cdot500$, $H = -\cdot595$, $K = -\cdot629$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		5·0	119	1 18	0	2 34	S*	—	—	2·8
Seattle		6·2	122	e 2 55	S	(e 2 55)	+ 7	e 3 22	S_g	e 5·5
Sitka		7·1	336	e 1 39	− 9	e 2 49	−21	—	—	i 3·4
Spokane	E.	9·0	108	e 2 15	+ 2	i 4 35	S*	—	—	e 7·5
Ferndale		11·4	157	e 2 51	+ 4	e 4 54	− 2	—	—	e 7·6
Butte		12·6	107	3 4	+ 1	e 5 28	+ 2	e 3 39	PPP	i 6·8
Ukiah		13·0	156	e 3 4	− 5	i 5 42	+ 7	e 3 28	PPP	e 6·8
Bozeman		13·7	106	e 3 16	− 2	e 6 11	SS	e 3 44	PPP	e 7·0
Berkeley		14·4	155	e 2 42	−45	i 6 24	+15	—	—	e 8·0
Saskatoon		14·5	78	e 3 28	0	—	—	e 3 49	PP	8·6
Branner	E.	14·8	155	e 3 48	PP	e 6 29	+11	—	—	e 8·8
	N.	14·8	155	e 3 43	PP	e 6 34	SS	—	—	e 9·1
Santa Clara		14·9	155	e 3 43	PP	i 6 31	+11	—	—	e 7·4
Lick		15·1	154	e 3 35	− 1	—	—	—	—	—
Logan		15·6	120	i 3 47	+ 4	i 7 1	SS	e 5 27	?	i 8·2
Fresno	N.	16·2	149	e 3 53	+ 3	e 6 42	− 9	—	—	e 8·4
Salt Lake City		16·3	123	i 3 54	+ 2	e 7 4	+11	e 4 31	PP	e 8·2
Tinemaha		16·4	145	i 3 57	+ 4	e 7 21	SS	—	—	—
College		16·5	332	e 3 49	− 5	e 6 53	− 5	—	—	e 7·9
Haiwee		17·4	146	i 4 8	+ 2	—	—	—	—	—
Mount Wilson		19·0	148	i 4 25a	− 1	e 8 9	+14	—	—	—
Santa Barbara	Z.	19·0	152	e 4 17	− 9	—	—	—	—	—
Pasadena		19·1	148	i 4 25a	− 2	i 8 8	+11	—	—	e 9·8
Riverside		19·5	148	i 4 29	− 2	—	—	—	—	—
Palomar	Z	20·2	147	i 4 37	− 2	—	—	—	—	—
La Jolla		20·6	148	e 4 41	− 2	—	—	—	—	—
Tucson		23·6	135	i 5 13	0	e 9 12	−13	e 5 52	PP	i 11·6
Lincoln		25·8	100	e 5 30	− 4	e 10 9	+ 7	e 6 26	PPP	e 13·4
Chicago U.S.C.G.S.		30·3	91	e 6 21	+ 6	e 11 17	+ 2	e 13 4	SS	e 15·8
Florissant		30·3	99	e 6 12	− 3	i 11 23	+ 8	i 6 30	pP	—
St. Louis		30·5	99	i 6 14	− 3	i 11 26	+ 8	i 6 30	pP	e 15·3
Cape Girardeau	E.	31·7	100	e 6 22	− 5	e 11 29	− 8	e 7 24	PP	i 17·4
Toronto		34·5	82	e 7 0	+ 8	e 12 23	+ 3	—	—	17·6
Ottawa		35·9	77	7 2	− 2	12 50	+ 8	—	—	18·1
Honolulu		36·9	226	e 5 34	?	—	—	e 8 49	PPP	e 15·1

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mobile		37·0	108	i 7 24	+11	i 13 7	+ 8	i 8 44	PPP	—
Shawinigan Falls		37·1	73	7 12	− 2	—	—	—	—	19·6
Vermont		37·9	77	—	—	e 13 19	+ 6	e 15 52	SS	e 17·9
Seven Falls		38·0	72	7 20	− 1	13 25	+11	e 18 6	?	e 19·6
Georgetown		38·5	87	i 7 30	+ 4	—	—	—	—	—
Columbia		39·1	97	e 8 58	PP	e 14 29	+58	—	—	i 18·9
Philadelphia		39·1	85	e 8 52	PP	e 13 29	− 2	e 15 43	?	e 19·4
Fordham		39·4	83	e 9 11	PP	e 13 47	+12	—	—	20·8
East Machias		41·3	74	—	—	e 13 47	−17	e 16 53	SSS	e 19·6
Halifax		43·6	71	—	—	e 16 10	SS	—	—	21·6
Ivigtut		43·7	44	e 8 9	+ 1	e 13 26	?	—	—	e 20·1
Scoresby Sund		48·2	25	e 8 43	− 1	e 15 41	− 2	e 10 32	PP	e 22·9
Bermuda		50·4	86	—	—	e 14 58	?	—	—	—
San Juan		59·5	98	—	—	e 18 27	+11	—	—	e 30·0
Aberdeen		63·8	29	—	—	e 26 50	SSS	—	—	e 30·3
Upsala		66·2	18	—	—	e 19 34?	− 6	e 31 34?	Q	e 36·4
Stonyhurst		66·5	31	—	—	e 19 34?	−10	—	—	e 30·6
Irkutsk		67·2	328	e 10 51	− 7	e 19 44	− 8	—	—	—
Copenhagen		69·0	21	—	—	20 19	+ 5	—	—	36·6
Kew		69·2	31	—	—	e 20 16	0	e 24 52	SS	e 32·6
De Bilt		70·3	28	—	—	i 20 39	+10	i 25 7	SS	e 32·6
Uccle		71·2	30	—	—	e 20 40	0	—	—	e 32·6
Sverdlovsk		72·0	355	e 11 29	+ 1	e 20 44	− 5	—	—	—
Potsdam		72·2	23	e 11 28	− 1	e 20 58	+ 7	e 25 22	SS	e 34·6
Cheb		74·1	24	—	—	e 21 42	PS	—	—	e 37·6
Warsaw		74·1	18	e 11 37	− 3	e 21 15	+ 3	21 39	PS	e 40·6
Stuttgart		74·5	27	e 11 44	+ 2	—	—	—	—	37·1
Triest		78·6	25	—	—	e 21 44?	−18	—	—	e 41·6
Granada		80·4	41	i 12 29k	+14	i 22 26	+ 5	15 11	PP	38·2
Almeria		81·0	41	12 29	+11	i 22 32	+ 5	12 55	pP	37·6
Bucharest		82·5	17	e 15 4	PP	e 23 28	PS	e 24 9	PPS	43·6
Sofia		83·6	20	—	—	e 22 56	+ 3	—	—	—
Andijan		86·3	344	e 13 6	+21	—	—	—	—	—
La Paz		86·3	122	i 12 48k	+ 3	i 23 22	+ 2	—	—	48·6
Tashkent		86·3	346	12 46	+ 1	23 12	[+ 2]	—	—	—
Agra	E.	97·0	335	e 16 25	PP	—	—	—	—	—
Helwan		97·6	16	—	—	i 25 4	[−11]	e 26 32	PS	i 44·1
Bombay		107·4	338	e 18 34?	PP	e 26 26	+ 4	—	—	—

Additional readings :—
Ferndale ePE = 2m.54s.
Butte e = 5m.50s.
Berkeley iPZ = 3m.23s., ePNZ = 3m.27s., iPE = 3m.32s.
Salt Lake City e = 5m.8s. and 7m.18s.
Riverside iZ = 4m.38s.
Pasadena i = 4m.30s.
La Jolla iZ = 4m.47s.
Tucson i = 5m.32s.
Florissant iPPZ = 6m.58s., isSN = 11m.53s.
St. Louis isSN = 11m.56s.
Cape Girardeau eE = 12m.13s.
Halifax eE = 18m.10s.
Scoresby Sund ePPP = 11m.48s., eSS = 19m.3s.
Bermuda e = 18m.34s., eS = 18m.42s., eSS = 23m.16s.
Kew eZ = 28m.15s.
Potsdam eSE = 21m.2s.
Warsaw eS?N = 21m.21s., eS?Z = 21m.27s., PSZ = 22m.1s., SS?N = 25m.44s., SSE = 25m.49s., SSZ = 26m.7s., SSSN = 29m.13s.
Granada SS = 27m.51s., Q = 33m.4s.
Almeria PP = 15m.38s., PPP = 17m.24s., SS = 27m.51s.
Bucharest eS?N = 23m.34s.
Long waves were also recorded at Calcutta, Jena, San Fernando, Harvard, Neuchatel, Prague, Clermont-Ferrand, Lisbon and Paris.

March 19d. 12h. 3m. 56s. Epicentre 51°·2N. 130°·0W. (as at 11h.).

$A = -\cdot4044$, $B = -\cdot4820$, $C = +\cdot7773$; $\delta = +6$; $h = -6$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lick		15·1	154	e 2 45	−51	—	—	—	—	—
Tinemaha	Z.	16·4	145	i 4 4	PP	—	—	—	—	—
Haiwee		17·4	146	e 4 10	+ 4	—	—	—	—	—
Mount Wilson		19·0	148	i 4 24	− 2	—	—	—	—	—
Santa Barbara	Z.	19·0	152	e 4 25	− 1	—	—	—	—	—
Pasadena		19·1	148	i 4 24	− 3	—	—	—	—	—
Riverside	Z.	19·5	148	i 4 29	− 2	—	—	—	—	—
Palomar	Z.	20·2	147	i 4 40	+ 1	—	—	—	—	—
La Jolla	Z.	20·6	148	e 4 42	− 1	—	—	—	—	—
Tucson		23·6	135	i 5 13	0	e 9 14	−11	i 5 40	PP	e 10·2

Lick also gives ePE = 2m.50s.
Long waves were also recorded at Seattle.

March 19d. Readings also at 0h. (near Berkeley), 1h. (near Berkeley), 6h. (near Chur), 7h. (near Balboa Heights), 8h. (Bombay), 9h. (Bombay, Helwan, Tashkent, and Sverdlovsk), 10h. (Granada, De Bilt, Warsaw, and Potsdam), 11h. (Balboa Heights), 14h. (Kew), 15h. (near Fresno), 16h. (Chicago U.S.C.G.S., Tucson, Palomar, Riverside, Pasadena, and Mount Wilson), 19h. (Huancayo).

March 20d. 1h. 12m. 59s. Epicentre 52°·8N. 168°·2W.

$A = -\cdot5943$, $B = -\cdot1242$, $C = +\cdot7945$; $\delta = -15$; $h = -6$;
$D = -\cdot204$, $E = +\cdot979$; $G = -\cdot778$, $H = -\cdot162$, $K = -\cdot607$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		15·9	33	e 3 50	+ 4	e 6 58	SS	—	—	e 8·3
Sitka		19·3	64	e 4 34	+ 5	i 8 24	SS	—	—	e 12·5
Victoria		28·4	80	6 4	+ 6	10 46	+ 1	—	—	13·0
Honolulu		32·5	162	e 7 30	PP	e 12 19	+30	—	—	e 13·6
Ukiah		33·5	95	e 6 45	+ 2	e 11 58	− 7	—	—	e 14·4
Berkeley		34·9	97	e 6 54	− 1	e 12 22	− 5	e 14 28	SS	e 16·5
Branner		35·3	97	e 6 59	0	—	—	—	—	—
Santa Clara	E.	35·4	97	e 7 53	+53	e 12 40	+ 6	—	—	e 25·2
Lick	N.	35·6	97	e 7 2	+ 1	—	—	—	—	—
Butte		36·0	77	e 6 58	− 7	e 12 45	+ 1	—	—	e 15·5
Saskatoon		36·5	66	7 19	+10	12 53	+ 2	—	—	17·0
Mizusawa		37·0	270	e 7 16	+ 3	—	—	—	—	—
Bozeman		37·1	78	e 7 18	+ 4	e 12 55	− 6	e 8 40	PP	e 15·9
Fresno	N.	37·2	96	e 7 18	+ 3	—	—	—	—	—
Sendai		37·7	268	7 17	− 2	13 4	− 6	—	—	—
Tinemaha		37·9	94	7 21	+ 1	—	—	—	—	—
Haiwee		38·6	94	i 7 27	+ 1	—	—	—	—	—
Santa Barbara	Z.	38·8	98	e 7 29	+ 1	—	—	—	—	—
Logan		38·9	82	e 7 29	0	e 13 26	− 2	e 9 33	PPP	e 16·5
Salt Lake City		39·4	85	e 7 40	+ 7	e 13 33	− 2	e 9 7	PP	e 16·6
Mount Wilson		39·9	97	i 7 36	− 1	—	—	—	—	—
Pasadena		39·9	97	i 7 36	− 1	e 13 38	− 5	—	—	e 16·5
Tokyo Cen. Met. Ob.		40·1	267	7 35	− 4	—	—	—	—	—
Nagano		40·3	270	e 7 44	+ 4	—	—	—	—	—
Riverside		40·5	97	i 7 40	− 2	—	—	—	—	—
La Jolla		41·3	98	e 7 49	0	—	—	—	—	—
Nagoya		42·1	268	8 10	+15	—	—	—	—	—
Kameyama		42·6	268	8 0	+ 1	—	—	—	—	—
Kobe		43·5	269	8 7	0	14 36	0	—	—	—
Tucson		45·6	93	i 8 24	0	e 14 51	−15	e 10 38	PPP	e 18·6
Kumamoto		47·5	272	8 41	+ 3	—	—	—	—	—
Lincoln		48·4	74	e 8 43	− 3	e 15 39	− 7	—	—	e 19·5
Irkutsk		50·0	308	8 56	− 2	16 27	+18	—	—	—
Chicago U.S.C.G.S.		53·0	67	e 8 58	−23	e 16 43	− 7	e 20 27	SS	e 24·9
Florissant	E.	53·4	72	i 9 21	− 3	i 16 50	− 5	i 9 51	pP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m.	s.		m.
St. Louis		53·6	72	i 9 22	− 3	i 16 52	− 6	i 10	1	pP	—
Scoresby Sund		54·6	14	e 9 32	0	e 17 14	+ 3	e 21	7	SS	e 23·6
Cape Girardeau		54·9	73	e 9 29	− 6	e 17 8	− 8	—		—	—
Toronto		56·2	61	—	—	e 17 22	−11	—		—	30·0
Ottawa		57·0	57	9 48	− 2	17 39	− 4	—		—	30·0
Shawinigan Falls		57·6	54	9 51	− 3	17 47	− 4	—		—	—
Seven Falls		58·2	53	9 59	+ 1	17 58	− 1	—		—	30·0
Vermont		58·3	57	—	—	e 18 1	0	—		—	e 24·0
Fordham		61·1	60	i 10 18	0	e 18 35	− 2	—		—	e 30·6
Philadelphia		61·1	62	e 10 16	− 2	i 18 31	− 6	e 14	23	PPP	e 30·1
Columbia		62·1	70	e 10 27	+ 2	e 18 44	− 5	—		—	e 30·2
Sverdlovsk		63·6	333	10 36	+ 1	19 53	PS	—		—	—
Upsala		67·6	358	—	—	e 21 1?	+64	—		—	e 32·0
Aberdeen		69·8	10	—	—	e 20 27	+ 4	—		—	e 34·8
Copenhagen		71·9	1	i 11 27a	0	20 54	+ 6	—		—	—
Andijan		73·1	317	11 36	+ 2	—	—	—		—	—
Stonyhurst		73·1	10	—	—	e 21 1	0	—		—	e 36·0
Warsaw	E.	75·1	354	e 12 1?	+15	e 21 30	+ 6	—		—	e 40·0
	N.	75·1	354	e 11 44	− 2	e 21 35	+11	22	7	PS	e 43·0
Potsdam		75·2	0	i 11 46a	0	e 21 37	+12	e 22	7?	sS	e 30·0
De Bilt		75·3	5	i 11 48a	+ 2	i 21 30	+ 4	e 26	21	SS	e 41·0
Kew		75·6	8	—	—	e 21 42	+13	e 30	31?	SSS	e 34·0
Jena	Z.	76·6	0	i 11 54	0	—	—	—		—	—
Uccle		76·6	6	i 11 54a	0	e 21 43	+ 3	27	1	SS	e 32·0
Cheb		77·5	0	e 12 1?	+ 2	e 22 1?	+11	—		—	e 41·0
Prague		77·5	358	e 11 56?	− 3	e 21 51	+ 1	—		—	e 46·0
Stuttgart		78·8	2	i 12 7a	+ 1	e 22 31	PS	—		—	—
Basle		80·0	3	e 12 12	− 1	e 22 32	+15	—		—	—
Calcutta	N.	80·1	295	e 12 17	+ 4	—	—	i 22	29	S_cS	—
Zurich		80·2	3	e 12 14a	0	e 22 32	+13	—		—	—
Neuchatel		80·5	4	e 12 17	+ 2	—	—	—		—	—
Chur		80·7	2	e 12 18	+ 2	—	—	—		—	—
Clermont-Ferrand		81·5	7	e 12 22	+ 1	—	—	—		—	e 49·9
Agra	E.	81·8	305	i 12 10k	−12	22 38	+ 3	—		—	—
Triest		81·9	359	i 12 24	+ 1	e 22 37	+ 1	—		—	e 40·0
Bucharest		82·4	350	e 12 25	0	e 22 48	+ 7	—		—	34·0
San Juan		82·6	70	e 12 33	+ 7	i 22 42	− 1	—		—	e 31·8
Sofia		84·4	352	e 12 39	+ 3	e 23 1	0	—		—	—
Lisbon		87·1	9	—	—	23 15	[0]	—		—	44·5
Granada		89·4	12	i 12 1k	−59	i 23 53	+ 4	e 16	8	PP	47·8
Hyderabad		89·6	299	23 24	SKS	(23 24)	[− 6]	e 30	33	SSP	38·6
Almeria		89·8	11	e 12 36	−26	i 23 43	−10	12	53	P_eP	45·0
Bombay		91·3	304	e 13 11	+ 2	23 38	[− 3]	16	54	PP	—
Helwan		95·9	343	13 31	+ 1	24 22	−24	17	16	PP	—
Huancayo		101·2	95	e 17 54	PP	e 24 30	[− 3]	e 32	0	SS	e 42·5

Additional readings :—
Berkeley PNZ = 7m.0s., eSZ = 12m.35s.
Bozeman e = 9m.44s.
Salt Lake City e = 10m.16s.
Tucson i = 9m.3s., eS = 15m.4s.
Chicago U.S.C.G.S. eS = 16m.31s., e = 19m.3s., and 21m.22s.
Florissant isSE = 18m.0s.
St. Louis iN = 17m.12s.
Scoresby Sund e = 19m.22s.
Vermont e = 19m.51s.
Fordham i = 18m.13s., e = 23m.29s.
Philadelphia e = 20m.6s. and 25m.22s.
Columbia e = 20m.14s.
Aberdeen eN = 28m.37s. and 35m.7s.
Warsaw ePZ = 11m.46s.a.
Potsdam ePN = 11m.49s., isSN = 22m.10s.
Kew eN = 27m.7s., eZ = 28m.35s.
Uccle eSN = 21m.47s.
Bucharest ePE = 12m.43s.
Lisbon SE = 23m.30s. and 23m.44s.
Granada PS = 25m.19s., iSS = 29m.48s., SSS = 36m.35s.

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Almeria PP = 16m.27s., PPP = 18m.33s., SKS = 22m.55s., PS = 24m.27s., PPS = 24m.48s., SS = 29m.11s., SSS = 33m.38s.
Bombay eN = 16m.47s., iSE = 24m.8s., iE = 24m.24s., eE = 24m.46s., eN = 27m.28s.
Helwan iZ = 13m.46s., iN = 24m.7s., sPSE = 26m.14s.
Long waves were also recorded at Colombo, Paris, San Fernando, La Paz, Auckland, and Harvard.

March 20d. 1h. 20m. 53s. Epicentre 52°·8N. 168°·2W. (as at 1h. 12m.).

A = −·5943, B = −·1242, C = +·7945; $\delta = -15$; $h = -6$.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Lick	N.	35·6	97	e 7 1	0	—	—	—	—	—
Bozeman		37·1	78	—	—	e 11 44	?	—	—	18·4
Tinemaha	z.	37·9	94	i 7 20	0	—	—	—	—	—
Haiwee	z.	38·6	94	i 7 27	+ 1	—	—	—	—	—
Santa Barbara	z.	38·8	98	e 7 28	0	—	—	—	—	—
Mount Wilson	z.	39·9	97	i 7 37	0	—	—	—	—	—
Pasadena	z.	39·9	97	i 7 37	0	—	—	—	—	—
Riverside	z.	40·5	97	i 7 40	− 2	—	—	—	—	—
La Jolla	z.	41·3	98	e 8 1	+12	—	—	—	—	—
Tucson		45·6	93	i 8 23	− 1	e 14 47	−19	e 12 57	?	e 19·2

Long waves were also recorded at Salt Lake City.

March 20d. Readings also at 1h. (near La Paz), 2h. (near Scoresby Sund), 3h. (Aberdeen and Scoresby Sund (3)), 4h. (Kew, near Bucharest, and Sofia), 5h. (Kew, Sofia, De Bilt, and near Scoresby Sund), 12h. (Tashkent, Sverdlovsk, near Fresno, and Branner), 13h. (Granada, Kew, De Bilt, and near La Paz), 17h. and 18h. (near Berkeley), 19h. (near Logan), 22h. (near Berkeley (2)).

March 21d. 23h. 20m. 48s. Epicentre 29°·4N. 130°·6E. Focus at the base of the Superficial layers.
Intensity V at Yakusima, Nake; IV at Kagosima, Oita; II-III at Takamatsu, Uwazima, Hirosima, and Matsue.
Epicentre 29°·4N. 130°·6E. Macroseismic radius over 300km. Shallow. Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1942, Tokyo 1950.

A = −·5679, B = +·6626, C = +·4884; $\delta = +8$; $h = +2$;
D = +·759, E = +·651; G = −·318, H = +·371, K = −·873.

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Yakusima	1·1	355	0 25k	+ 6	0 45	+12	—	—	—
Nake	1·4	223	0 28k	+ 5	0 39	− 2	—	—	—
Kagosima	2·2	359	0 41k	+ 6	0 58	− 3	—	—	—
Unzendake	3·3	355	0 47	− 4	—	—	—	—	—
Kumamoto	3·4	1	0 56k	+ 4	1 37	+ 5	—	—	—
Nagasaki	3·4	349	0 55	+ 3	1 36	+ 4	—	—	—
Simidu	3·9	30	0 57	− 2	1 38	− 6	—	—	—
Naha	4·1	220	1 59	+57	—	—	—	—	—
Hukuoka	4·2	357	1 15k	+12	2 2	+10	—	—	—
Izuka	4·2	1	1 12	+ 9	—	—	—	—	—
Koti	4·8	30	1 12a	0	2 4	− 3	—	—	—
Matuyama	4·8	22	1 14	+ 2	2 2	− 5	—	—	—
Muroto	4·9	37	1 14	+ 1	2 4	− 6	—	—	—
Hirosima	5·2	17	1 22	+ 4	2 18	+ 1	—	—	—
Hamada	5·6	12	1 25	+ 2	2 29	+ 2	—	—	—
Husan	5·8	347	1 28	+ 2	2 34	+ 2	—	—	—
Siomisaki	6·0	46	1 27	− 2	2 32	− 5	—	—	—
Kobe	6·5	35	1 36	0	2 37	−13	2 49	SS	—
Miyakozima	6·6	228	1 36	− 1	3 5	+13	—	—	—
Owase	6·6	44	1 39	+ 2	2 47	− 5	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Taikyu		6·6	346	1 43	+ 6	2 55	+ 3	—	—	—
Osaka		6·7	37	1 39	0	—	—	—	—	—
Toyooka		7·1	29	1 45a	+ 1	2 59	− 6	—	—	—
Kameyama		7·4	41	1 48	0	3 23	+11	—	—	—
Hikone		7·5	37	1 50a	0	—	—	—	—	—
Isigakizima		7·6	231	1 52	+ 1	—	—	—	—	—
Gihu		7·9	39	2 2	+ 7	—	—	—	—	—
Nagoya		7·9	41	1 58a	+ 3	3 20	− 5	—	—	—
Hamamatu		8·0	47	1 54a	− 3	3 24	− 3	—	—	—
Omaesaki		8·3	49	2 54	+53	5 11	?	—	—	—
Shizuoka		8·6	48	2 5	0	4 58	?	—	—	—
Hatidyozima		8·7	62	2 2	− 4	3 51	+ 6	—	—	—
Keizyo		8·7	339	2 4	− 2	4 12	+27	—	—	—
Zinsen		8·7	339	2 8k	+ 2	3 52	+ 7	—	—	—
Toyama		9·1	35	2 14	+ 2	3 56	+ 2	—	—	—
Hunatu		9·2	46	2 14	+ 1	—	—	—	—	—
Kohu		9·2	45	2 14	+ 1	3 54	− 3	—	—	—
Osima		9·2	52	2 10a	− 3	3 50	− 7	—	—	—
Wazima		9·5	32	2 22	+ 4	—	—	—	—	—
Mera		9·6	52	2 18	− 1	4 16	+ 9	—	—	—
Nagano		9·6	39	2 19a	0	3 4	?	—	—	—
Karenko		9·7	239	2 19	− 1	—	—	—	—	—
Sintiku		9·7	244	2 23	+ 3	4 46	+37	—	—	—
Yokohama		9·7	49	2 21a	+ 1	4 18	+ 9	—	—	—
Kumagaya		10·0	45	2 25a	+ 1	4 35	+18	—	—	—
Maebasi		10·0	43	2 25	+ 1	4 58	+41	—	—	—
Tokyo Cen. Met. Ob.		10·0	48	2 19	− 5	—	—	—	—	—
Titizima		10·5	100	2 29	− 2	4 8	−21	—	—	—
Tukubasan		10·5	47	2 28	− 3	4 54	+25	—	—	—
Kakioka		10·6	47	2 31	− 2	4 30	− 1	—	—	—
Utunomiya		10·6	45	2 31	− 2	—	—	—	—	—
Aikawa		10·7	34	2 34	0	4 55	+21	—	—	—
Mito		10·8	47	2 35	0	4 34	− 2	—	—	—
Taito		10·8	234	2 33	− 2	5 58	L	—	—	(6·0)
Takao		11·5	237	4 9	S	(4 9)	−44	—	—	—
Hukusima		11·7	42	2 47	− 1	5 2	+ 4	—	—	—
Dairen		12·0	324	2 59	+ 7	6 2	L	—	—	(6·0)
Sendai		12·3	41	2 54a	− 2	5 17	+ 5	—	—	—
Akita		12·9	34	3 7	+ 3	—	—	—	—	—
Mizusawa		13·0	39	3 3	− 2	e 5 28	− 1	—	—	6·8
Miyako		13·9	39	3 15	− 2	7 1	L	—	—	(7·0)
Aomori		14·1	33	3 20	+ 1	8 19	L	—	—	(8·3)
Sapporo		16·2	29	3 44	− 3	6 10	−35	—	—	—
Nemuro		18·4	36	4 9	− 5	—	—	—	—	—
Palau		22·3	172	4 53	− 3	8 57	+ 3	—	—	—
Irkutsk		30·0	327	i 6 10	+ 2	—	—	—	—	—
Calcutta	N.	38·4	271	i 7 23a	+ 3	i 13 13	+ 1	i 8 45	PP	18·1
Agra	E.	46·0	281	i 8 23k	+ 1	i 15 3	− 1	10 8	PP	—
Frunse		46·4	303	e 8 30	+ 5	15 24	+14	—	—	—
Hyderabad		49·0	269	14 42	?	—	—	—	—	21·8
Tchimkent		50·1	303	8 57	+ 3	—	—	—	—	—
Tashkent		50·4	320	8 59	+ 3	16 15	+ 9	—	—	—
Stalinabad		51·2	298	9 31	+29	—	—	—	—	—
Colombo	E.	52·7	255	9 16	+ 3	16 43	+ 6	—	—	27·1
Bombay		53·3	273	i 9 20	+ 2	16 47	+ 1	9 38	pP	25·2
Sverdlovsk		55·1	322	i 9 33	+ 2	i 17 9	− 1	—	—	—
College		60·3	29	e 10 7	− 1	e 18 14	− 4	e 12 13	PP	e 27·8
Honolulu		64·3	79	i 10 33	− 1	e 19 4	− 4	e 12 53	PP	e 29·4
Riverview		65·8	162	i 10 43a	− 1	i 19 27	0	i 13 1	PP	—
Sitka		67·8	36	e 10 51	− 6	e 19 52	+ 1	e 24 7	SS	e 33·3
Upsala		75·5	332	e 11 44	+ 1	21 18	− 2	e 14 36	PP	e 34·2
Ksara		77·8	301	e 12 2	+ 6	i 21 52	+ 7	—	—	—
Auckland		77·9	144	11 57	+ 1	21 57	+11	26 58	SS	36·2
Victoria		78·2	41	11 55	− 3	22 12	+23	—	—	38·2
Warsaw		78·2	325	e 11 58a	0	21 52	+ 3	e 14 48	PP	e 40·2

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Scoresby Sund		78·5	352	e 12 2	+ 3	i 21 54	+ 2	e 14 45	PP	e 32·5
Arapuni		79·2	145	e 17 12?	PPP	22 12?	+13	e 30 12	SSS	37·2
Bucharest		79·4	315	e 12 6	+ 2	e 22 4	+ 2	e 15 14	PP	41·2
Copenhagen		80·2	331	i 12 10a	+ 1	22 13	+ 3	i 12 28	pP	—
Wellington		81·3	147	12 7	− 7	22 16	− 5	15 5	PP	38·7
Potsdam		82·0	328	i 12 20a	+ 2	i 22 32	+ 3	i 15 32	PP	44·2
Sofia		82·0	315	e 12 23	+ 5	i 22 33	+ 4	i 12 41	pP	—
Christchurch		82·2	151	12 17	− 2	22 29	− 2	27 52	SS	39·3
Prague		82·9	325	i 12 25a	+ 2	i 22 37	− 1	e 23 12?	PS	e 33·2
Helwan		83·1	300	i 12 24k	0	22 40	0	i 15 42	PP	—
Ukiah		83·2	49	e 12 20	− 4	e 22 39	− 2	e 26 56	SS	e 34·8
Jena		83·7	326	e 12 27	0	i 22 46	0	i 12 40	pP	e 39·2
Cheb		83·8	326	e 12 29	+ 2	22 48	+ 1	e 15 48	PP	e 46·2
Berkeley		84·5	50	e 12 28	− 3	e 22 53	− 1	—	—	e 38·6
Branner		84·8	50	e 12 32	0	—	—	—	—	—
Aberdeen	E.	85·0	337	i 12 33	0	i 22 38	−20	i 16 1	PP	e 39·1
Santa Clara		85·0	50	i 12 31	− 2	e 23 21	+23	—	—	e 39·2
Lick	N.	85·2	50	e 12 33	− 1	—	—	—	—	—
Butte		85·7	39	i 12 35	− 2	23 4	− 1	e 15 44	PP	e 41·4
De Bilt		85·8	330	i 12 39a	+ 2	i 23 3	− 3	i 12 57	pP	e 42·2
Triest		85·9	322	i 12 39	+ 1	i 23 0	− 7	e 15 42	PP	e 40·5
Stuttgart		86·2	326	i 12 40a	+ 1	i 23 3	− 7	28 47	SS	45·0
Bozeman		86·7	39	i 12 40	− 2	23 11	− 4	e 15 50	PP	34·2
Strasbourg		87·1	327	e 12 47	+ 3	23 9	−10	e 16 39	PP	51·2
Uccle		87·1	330	i 12 44a	0	i 23 8	−11	i 13 2	pP	42·2
Chur		87·4	324	e 12 45	0	e 23 24	+ 2	e 23 8	SKS	e 48·5
Zurich		87·5	325	e 12 46	0	e 23 11	[+ 3]	e 16 10	PP	—
Tinemaha		87·6	49	i 12 46a	0	—	—	e 16 11	PP	—
Stonyhurst		87·7	335	e 12 47	0	i 23 10	[0]	13 15	pP	40·2
Basle		87·8	325	e 12 48	+ 1	e 23 31	+ 4	e 23 6	SKS	—
Santa Barbara		88·2	52	e 12 46	− 3	—	—	—	—	—
Haiwee		88·4	49	i 12 49	− 1	—	—	e 16 17	PP	—
Kew		88·6	332	i 12 50a	− 1	i 23 44?	+11	i 16 25	PP	e 42·2
Neuchatel		88·6	325	e 12 50	− 1	e 23 37	+ 4	—	—	—
Logan		88·8	41	i 12 52	0	i 23 37	+ 2	23 29	SKS	e 42·0
Oxford		88·8	333	12 47	− 5	i 23 17	[0]	—	—	e 41·2
Besançon		88·9	326	—	—	e 23 37	+ 1	—	—	—
Paris		89·4	329	e 12 58	+ 3	i 23 43	+ 3	e 16 31	PP	39·2
Mount Wilson	Z.	89·4	50	i 12 53	− 2	—	—	i 16 25	PP	—
Pasadena		89·4	50	i 12 52a	− 3	e 23 24?	[+ 4]	i 16 22	PP	36·7
Salt Lake City		89·4	43	e 12 48	− 7	e 23 37	− 3	29 18	SS	35·6
Riverside	Z.	90·0	50	i 12 54	− 3	—	—	i 16 28	PP	—
Palomar	Z.	90·7	51	i 13 0	− 1	—	—	i 16 36	PP	—
La Jolla		90·8	52	e 13 0	− 1	—	—	—	—	—
Clermont-Ferrand		91·3	326	e 13 4	0	23 36	[+ 5]	i 16 47	PP	50·1
Tananarive		93·3	252	e 13 27	+14	24 26	+11	23 47	SKS	e 46·1
Tucson		95·4	49	i 13 21	− 1	24 38	+ 5	i 17 7	PP	e 34·7
Lincoln		97·5	34	—	—	e 31 53	SS	—	—	e 45·7
Algiers		97·8	320	e 12 12?	?	25 36	+43	e 17 42	PP	49·2
Almeria		100·7	324	e 13 35	−11	24 23	[+ 2]	17 53	PP	49·2
Chicago U.S.C.G.S.		100·9	29	—	—	e 31 40	SS	—	—	e 40·9
Granada		101·1	325	e 14 14k	+26	e 26 18	PS	i 18 3	PP	50·6
Seven Falls		101·4	15	—	—	e 22 54	?	—	—	50·2
Ottawa		101·8	19	13 51	0	24 26	[− 1]	18 0	PP	e 46·2
Florissant		102·1	32	i 13 52	0	25 27	− 2	i 18 1	PP	—
St. Louis		102·3	32	e 13 50	− 3	e 24 20	[− 9]	i 18 2	PP	—
Toronto		102·3	22	—	—	e 24 23	[− 6]	—	—	54·2
Lisbon		102·5	329	14 17?	+23	24 34	[+ 4]	e 18 18	PP	50·0
San Fernando		102·9	326	e 18 36	PP	e 24 34	[+ 2]	i 27 20	PS	55·2
Fordham		106·5	19	e 18 33	PP	i 26 37	+31	i 27 53	PS	—
Philadelphia		106·9	20	e 18 39	PP	e 26 9	0	e 27 54	PS	e 52·3
Columbia		110·2	28	e 18 17	[−11]	e 34 18	SS	e 19 2	PP	42·7
Bermuda		116·9	15	e 19 14	PP	26 59	SKKS	34 42	SS	46·5
San Juan		129·8	21	e 19 1	[− 6]	—	—	38 13	SS	57·5
Fort de France		134·7	17	e 19 17	[+ 1]	—	—	e 22 42	?	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Huancayo		150·3	60	e 19 43	[0]	26 45	[0]	22 58 PP	50·7
La Paz		158·5	56	i 19 56a	[+ 1]	i 26 44	[−10]	i 21 0 pPKP	75·0
La Plata		171·0	129	20 5	[0]	26 56	[− 7]	25 12? PP	80·2
Rio de Janeiro	E.	171·5	318	e 25 31	PP	(e 46 12)	SS	— —	e 46·2

Additional readings :—
Calcutta iPPPN = 9m.5s., iP$_e$PN = 9m.46s., iSSN = 15m.38s., iSSSN = 16m.11s., iS$_e$SN = 17m.39s.
Agra PPPE = 10m.42s., iE = 15m.7s. and 15m.34s., iSSE = 18m.8s., iSSSE = 19m.18s.
Bombay pPN = 9m.42s., iE = 10m.3s., P$_e$PE = 10m.17s., P$_e$PN = 10m.21s., PPE = 11m.31s., iSE = 16m.50s., iN = 16m.54s., iE = 16m.58s., sSN = 17m.21s., sSE = 17m.27s., S$_e$SE = 19m.3s., S$_e$SN = 19m.6s., pS$_e$SEN = 19m.30s.
College e = 14m.39s., 19m.11s., 23m.19s., and 24m.16s.
Honolulu ePPP = +14m.36s., i = 24m.48s.
Riverview iZ = 13m.29s., iN = 19m.47s., iEN = 20m.46s., iE = 21m.7s., eQ?N = 26·8m.
Upsala ePPE = 14m.52s., ePPP?E = 16m.12s.?, ePPP?N = 16m.41s., ePSN = 21m.45s., eN = 22m.38s., eE = 25m.38s., eSSN = 26m.12s.?
Auckland PS? = 22m.33s., PPS? = 23m.12s.
Warsaw iPZ = 12m.14s., SZ = 21m.46s., PSZ = 22m.19s., eSS?E = 26m.45s., eN = 27m.9s., eZ = 29m.48s. and 30m.37s., eN = 31m.4s., eE = 31m.15s.
Scoresby Sund ePP = 15m.23s., e = 18m.14s., i = 22m.38s., eSS = 26m.57s.
Bucharest ePEN = 12m.10s., ePPPZ = 16m.53s., ePSN = 22m.49s., ePSE = 22m.53s.
Copenhagen 15m.18s.?
Wellington iZ = 12m.29s., 15m.18s., and 21m.57s., S$_e$S = 22m.37s., PS? = 23m.7s., SS = 27m.52s.
Potsdam iSEZ = 22m.35s., iPSN = 23m.32s., iSSE = 27m.58s., eZ = 34m.6s.?
Helwan iZ = 13m.42s., 14m.34s., and 17m.18s., SE = 23m.25s., PSE = 24m.25s.
Ukiah e = 15m.22s., ePPS = 23m.34s.
Jena iPN = 12m.30s., iS = 22m.49s.
Berkeley iSZ = 23m.43s.
Aberdeen iE = 23m.44s. and 28m.28s.
Butte e = 23m.25s., ePPS = 24m.27s.
De Bilt iPP = 16m.4s., iPPP = 18m.12s., ePPPP = 19m.29s., iPS = 24m.4s., eSS = 27m.39s., eSSS = 32m.52s.
Triest iPS? = 23m.34s.
Stuttgart i = 12m.44s. and 12m.56s., iSNE = 23m.16s., ePKP,PKP = 38m.42s.
Bozeman e = 17m.36s. and 23m.30s., ePS = 24m.20s., eSS = 28m.49s.
Strasbourg e = 13m.34s., iS = 23m.24s.
Uccle iPPZ = 16m.15s., ipSE = 23m.24s., iEN = 24m.19s., iSSE = 29m.8s.
Zurich eS = 23m.47s.
Stonyhurst iPS = 23m.26s., iPPS = 24m.33s.
Kew iPPPZ = 18m.58s.?, iSKS = 23m.18s., iSKKS = 23m.34s., iPS?EZ = 24m.31s.?, eN = 27m.10s., eSS = 19m.38s.?, eSSSZ = 32m.42s.?, eQ = 34m.42s.?
Logan i = 13m.18s.
Paris iSKS = 23m.21s., eSS = 29m.48s., SSS = 33m.12s.?
Mount Wilson ePKP,PKPZ = 38m.59s.
Pasadena iPKKPZ = 30m.50s., ePKP,PKPZ = 38m.59s.
Salt Lake City iP = 12m.53s., e = 15m.0s.
Riverside ePKKPZ = 30m.54s., ePKP,PKPZ = 38m.58s.
Palomar ePKKPZ = 30m.45s., ePKP,PKPZ = 39m.3s.
Clermont-Ferrand iPS = 25m.6s.
Tananarive PS = 25m.34s.
Tucson ePPP = 19m.10s., eSKS = 24m.9s., ePS = 25m.26s., e = 25m.55s. and 29m.41s.
Algiers ePS = 26m.30s., eSS = 31m.54s.
Almeria SKKS = 24m.56s., PS = 26m.49s., PPS = 27m.23s., SS = 32m.32s., SSS = 37m.54s.
Granada iPS = 27m.3s., SS = 32m.42s.
Seven Falls e = 25m.22s. and 31m.14s.
Ottawa SKKS = 25m.28s., PS = 27m.2s., SS = 32m.12s.?
Florissant iZ = 18m.31s., iN = 27m.7s.
St. Louis eSKKSE = 25m.22s.
Lisbon E = 23m.56s., SS = 32m.51s.?
San Fernando iSS = 32m.48s.
Philadelphia eSS = 33m.9s., e = 42m.42s.
Columbia e = 22m.24s. and 24m.4s., ePS = 28m.27s., e = 29m.0s.
Bermuda i = 19m.19s., e = 24m.34s., eS = 29m.0s., eSSS = 39m.9s.
San Juan e = 20m.14s., i = 22m.24s.
Huancayo iPKP = 19m.52s., i = 24m.0s.
La Paz iPKP$_2$ = 20m.36s., iPPZ = 24m.6s., iPPN = 24m.11s., iPPP = 27m.52s., iSKKS = 30m.16s., PSKS = 34m.46s., SSN = 44m.38s., SSSN = 50m.34s.
La Plata Z = 20m.24s., N = 21m.22s. and 22m.6s.?, PPN = 24m.48s.?, PPZ = 25m.24s., SKKSE = 31m.36s.?, SKKSN = 31m.42s.?, SKKS = 32m.12s.?, E = 33m.36s., PPSN = 39m.12s., PPS?E = 41m.30s.
Long waves were also recorded at Apia and Ivigtut.

March 21d. Readings also at 1h. (near Berkeley), 5h. (La Paz and near Mizusawa), 7h. (near Mizusawa), 9h. (Tinemaha, Pasadena, Riverside, Mount Wilson, Palomar, Tucson, Salt Lake City, Ukiah, and near Honolulu), 11h. (near Mizusawa), 12h. (Bombay), 20h. (near Berkeley (2)), 21h. (St. Louis), 22h. (Fordham, and near Berkeley (2)).

March 22d. 2h. 8m. 29s. Epicentre 36°·3N. 71°·0E. Depth of focus 0·020
(as on 1941, June 17d.).

Intensity VIII at Rawalpindi, Drosh, Srinagar ; VI at Cherat, Chakadra Fort, Peshawar, Kabul, Gilgit ; V at Lahore, Muzafferabad, Gurez.
Epicentre Hindu Kush 36°·2N. 70°·0E. (Bombay) ; depth 220km.

Government of India Seismological Bulletin, 1942, p. 23.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stalinabad		2·9	322	i 0 51	+ 4	—	—	—	—	—
Tashkent		5·2	347	1 18	+ 1	—	—	—	—	—
Tchimkent		6·1	351	i 1 29	0	—	—	—	—	—
Frunse		7·1	22	1 44	+ 2	i 3 2	0	—	—	—
Agra	E.	10·9	145	i 2 34k	+ 2	4 27	− 5	3 12	sP	—
Bombay		17·4	174	i 3 57a	+ 3	i 7 9	+ 8	i 4 48	PP	—
Calcutta	N.	20·4	127	i 4 29k	+ 3	i 8 7	+ 7	i 5 20	sP	—
Sverdlovsk		21·7	345	i 4 39	0	i 8 26	+ 2	—	—	—
Irkutsk		28·4	44	i 5 43	+ 1	10 15	0	—	—	—
Ksara		28·8	275	e 5 49	+ 4	e 11 43	SS	—	—	—
Colombo	E.	30·4	163	6 4	+ 5	12 5	sS	—	—	—
Helwan		33·7	270	i 6 27k	− 1	12 43	sS	7 12	pP	—
Bucharest		34·8	297	i 6 37a	0	12 46	sS	e 8 1	PP	19·5
Sofia		36·9	295	i 6 56	+ 1	e 13 44	sS	e 7 58	pP	—
Warsaw	E.	38·3	311	e 7 6	0	15 16	SS	e 8 1	pP	—
	Z.	38·3	311	i 7 5a	− 1	i 15 17	SS	i 8 10	pP	—
Upsala		41·2	322	e 7 26?	− 4	e 13 26?	− 5	i 8 13	pP	—
Prague		42·5	308	i 7 37a	− 4	e 13 31	−19	i 9 57	PP	e 22·0
Potsdam		43·2	311	i 7 45a	− 2	i 17 9	SS	i 8 30	pP	—
Triest		43·3	301	i 7 48	+ 1	—	—	—	—	—
Copenhagen		43·6	315	i 7 49a	− 1	i 14 5	− 1	i 8 33	pP	—
Cheb		43·8	308	e 7 53	+ 2	—	—	e 10 7	PPP	—
Jena		44·2	308	e 7 53	− 2	e 17 20	SS	i 8 39	pP	—
Stuttgart		46·0	306	i 8 8a	− 1	e 14 41	0	i 9 13	pP	—
Chur		46·1	304	e 8 7	− 3	—	—	e 10 3	PP	—
Zurich		46·6	304	e 8 12	− 2	e 18 36	SS	e 8 57	pP	—
Strasbourg		47·0	306	e 8 16a	− 1	e 16 11	sS	e 8 59	pP	—
Basle		47·3	304	e 8 17	− 2	e 14 6	−53	—	—	—
Neuchatel		47·8	304	e 8 22	− 1	—	—	—	—	—
De Bilt		48·1	312	i 8 25a	0	i 15 13	+ 3	i 9 10	pP	—
Kumamoto		48·6	76	8 32	+ 3	—	—	—	—	—
Uccle		48·8	310	i 8 29a	− 2	i 15 19	− 1	i 9 14	pP	—
Paris		50·4	307	8 39	− 4	—	—	—	—	19·5
Koti		50·5	74	8 45	+ 1	—	—	—	—	—
Clermont-Ferrand		50·7	303	i 8 44	− 1	—	—	—	—	—
Aberdeen	E.	51·5	319	i 8 52	+ 1	i 21 9	SSS	i 11 47	PPP	e 32·6
Kew		51·6	312	i 8 49	− 3	i 15 53	− 6	i 9 51	PP	e 25·5
Osaka		51·6	71	8 54	+ 2	—	—	10 3	PP	—
Oxford		52·1	312	i 8 50a	− 6	16 59	+53	i 11 35	PP	—
Kameyama		52·3	71	9 1	+ 4	—	—	—	—	—
Stonyhurst		52·3	315	i 8 55	− 2	i 17 16	sS	i 10 2	PP	—
Nagoya		52·6	70	8 58	− 1	—	—	10 33	PP	—
Mizusawa	E.	54·3	64	e 9 12	0	13 12	?	—	—	18·0
Sendai		54·4	65	9 12	0	—	—	—	—	—
Tokyo Cen. Met. Obs.		54·5	68	9 19	+ 6	—	—	—	—	—
Scoresby Sund		57·2	337	e 9 26	− 6	e 17 8	− 6	e 10 36	pP	e 32·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Almeria		57·6	294	i 9 32	− 3	i 18 32	PPS	10 17	pP	30·5
Granada		58·3	296	i 9 38k	− 2	17 48	+20	12 10	PP	28·2
San Fernando	E.	60·5	295	e 10 38	pP	—	—	—	—	—
Lisbon		61·6	299	i 10 2k	− 1	19 20?	sS	11 10	pP	—
Ottawa		93·3	336	12 58	0	23 13	[− 2]	16 40	PP	39·5
Fordham		96·7	333	—	—	e 24 55	+38	i 26 40	PPS	—
Philadelphia		98·0	334	—	—	e 23 31	[− 9]	e 27 13	PPS	—
Bermuda		100·2	323	e 17 19	PP	e 24 51	+ 5	—	—	e 43·4
Tinemaha	Z.	106·5	7	e 18 9	PP	—	—	e 18 23	pPP	—
Santa Barbara	Z.	108·9	8	e 18 43	PP	—	—	—	—	—
Mount Wilson	Z.	109·3	7	e 18 10	[0]	—	—	i 18 28	pPKP	—
Pasadena	Z.	109·4	7	i 18 26	PP	—	—	i 18 44	pPP	—
Riverside	Z.	109·6	7	e 18 11	[0]	—	—	i 18 38	pPKP	—
Palomar	Z.	110·5	6	e 17 57	[−16]	—	—	e 18 26	pPKP	—
Tucson		111·8	1	e 18 0	[−16]	—	—	e 18 47	PP	—
San Juan		112·2	315	e 19 2	PP	e 38 59	SSS	e 29 9	PPS	e 58·4
La Paz	Z.	138·8	288	i 19 14k	[+ 6]	—	—	i 22 4	PP	71·0
Huancayo		141·3	300	e 20 35	?	(e 32 1)	PS	e 22 8	PP	e 32·0

Additional readings :—
Agra sSE =4m.38s.
Bombay iE =4m.51s., iEN =5m.12s. and 6m.6s., iE =7m.5s., iN =7m.22s., P_cPE = 8m.17s., P_cPN =8m.22s., iN =8m.34s., iE =9m.4s., iN =9m.9s.
Calcutta iSSN =9m.0s.
Helwan sPZ =7m.34s., PPN =8m.15s., sSN =14m.1s., eEN =16m.31s.
Bucharest ePPN =8m.6s.
Sofia eN =8m.33s., eS =15m.19s.?
Warsaw iZ =7m.47s. and 8m.36s., eE =9m.9s., eZ =9m.20s., e =9m.34s., eN =9m.45s., 12m.42s., and 13m.57s., PSN =15m.36s., PSEZ =15m.46s., iZ =16m.14s., eN = 17m.11s., eZ =18m.15s., eN =18m.20s., eSS?Z =19m.8s., eSS?E =19m.12s., eSS?N =19m.22s., iE =19m.51s., eSSS?Z =20m.56s.
Upsala iPN =7m.31s.?, isPE =8m.30s., PPE =9m.2s., eN =9m.53s., isPPE =10m.4s., eS =13m.26s.?, eN =14m.31s., sS?E =14m.46s., eN =16m.7s.?, iSSE =16m.45s., iN =18m.17s.
Prague e =16m.31s.
Potsdam iPN =7m.50s., isPEZ =8m.52s., iPPP =10m.31s., iSPE =14m.23s., iZ = 17m.23s., iE =17m.27s., iSSS?EZ =18m.31s., iZ =19m.32s., iEN =19m.53s., iZ =19m.59s.
Copenhagen i =8m.52s., PP =9m.32s., pPP =10m.10s., 10m.28s., 10m.54s., 11m.34s., isS =15m.15s., eN =16m.54s., SS =17m.22s.
Cheb e =15m.19s., e =17m.31s.
Jena ePN =7m.56s., iPN =7m.59s., eE =10m.11s., e =17m.31s.
Stuttgart i =9m.54s., iE =10m.1s., i =11m.9s., 12m.26s., and 13m.15s., iE =13m.20s., iN =15m.53s., iE =18m.21s., iN =19m.31s.
Zurich ePP =9m.41s.
Strasbourg esP =9m.22s., iPP =10m.11s.
De Bilt iZ =8m.45s., iP_cP? =9m.31s., iPP =10m.20s., iPPP =11m.18s., iEZ = 11m.41s., isS =16m.9s., eSS =19m.1s.
Uccle isPZ =9m.35s., iPPEZ =10m.24s., iPPPZ =11m.23s., isS?E =16m.23s., iSSN = 19m.5s., isSSN =20m.2s., iEN =20m.27s.
Aberdeen iE =27m.7s.
Kew iPP?Z =10m.53s., iPPP? =11m.52s., iS?NZ =17m.4s., iPS?EZ =17m.25s., eSS? =20m.1s.?.
Oxford i =17m.18s.
Stonyhurst i =20m.17s. and 21m.24s.
Scoresby Sund ePPP =13m.43s., eS? =18m.34s., eSS =22m.40s.
Almeria sP =10m.38s., PP =12m.7s., PPP =14m.1s., S_cS =19m.9s., SS =22m.58s.
Granada P_cP =10m.19s., pP_cP =10m.42s., sPP =12m.55s., PPP =13m.28s., P_cS = 14m.17s., sS =18m.44s., S_cS =19m.7s., SS =21m.56s.
Lisbon PN =10m.7s.?, SN =19m.30s., sSN =21m.24s., sSE =21m.28s.
Ottawa PSN =24m.36s.
Philadelphia i =25m.3s.
Bermuda e =23m.35s., 25m.10s., and 31m.0s.
Pasadena iZ =19m.33s.
Palomar eZ =18m.50s.
San Juan ePS =29m.38s.
Tucson e =19m.44s.
Huancayo e =22m.55s.
Long waves were recorded at Hyderabad.

March 22d. Readings also at 1h. (Bombay and Riverview), 2h. (near Berkeley), 9h. (La Paz), 12h. (Palomar and Tucson), 14h. (Granada, Pasadena, Mount Wilson, Riverside, Palomar, Tinemaha, Tucson, Huancayo, and near La Paz), 15h. (Stuttgart), 18h. (near Berkeley (2), Lick (2), Branner, San Francicso and Fresno), 19h. (Tacubaya (2), and near Berkeley), 21h., 22h., and 23h. (near Berkeley).

March 23d. Readings at 0h. (Berkeley), 3h. (Agra), 4h. (near Mizusawa), 7h. (Tacubaya, and near Tashkent), 13h. (Triest, Zurich, Jena, Sofia, and Stuttgart), 14h. (Sofia, Oaxaca, and Tacubaya), 15h. (Tacubaya), 21h. (near Florissant, and St. Louis), 23h. (Branner, Mount Wilson, Tucson, Tinemaha, Stuttgart, near Lick and near Apia).

March 24d. Readings at 10h. (Agra, near Stalinabad, Tchimkent, and Almata), 14h. (near Granada, Almeria, and near Mizusawa), 18h. (La Paz), 21h. (near La Paz), 22h. (Tacubaya, La Paz, and near Berkeley), 23h. (Bombay, Stuttgart, Tashkent, and near Berkeley).

March 25d. 7h. 24m. 26s. Epicentre 0°·2N. 125°·2E. Depth of focus 0·030.
(as on 1941 June 18d.).

A = −·5764, B = +·8171, C = +·0035 ; $\delta = -10$; $h = +7$;
D = +·817, E = +·576 ; G = −·002, H = +·003, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Osaka		35·6	15	6 42	+ 4	12 52	+55	—	—	—
Kameyama		36·0	17	6 41	0	—	—	—	—	—
Nagoya		36·5	16	6 45	− 1	—	—	—	—	—
Nagano		38·2	17	6 59	− 1	—	—	—	—	—
Sendai		40·5	19	7 17	− 2	14 9	+59	—	—	—
Riverview		41·7	147	i 7 28k	0	i 13 45	+17	i 9 8	PP	e 23·4
Calcutta	N.	42·2	305	e 8 38	PP	i 15 23	SS	i 18 27	SS	22·7
Kodaikanal	E.	48·5	284	e 8 8	−14	i 14 25	−40	—	—	—
Hyderabad	E.	49·1	293	8 52	+26	15 41	+28	10 38	PP	23·8
Bombay		54·6	293	e 9 34	+27	i 17 1	+33	—	—	—
Irkutsk		54·8	345	e 9 33	+24	12 55	PP	—	—	—
Auckland		58·8	134	i 14 4	?	17 39	+16	—	—	23·6
Christchurch		60·7	142	9 48	− 2	17 56	+ 9	—	—	27·9
Wellington		60·9	140	—	—	18 29	+39	—	—	—
Frunse		62·0	320	e 10 6	+ 8	—	—	—	—	—
Tchimkent		65·1	318	i 10 14	− 5	i 14 20	PPP	—	—	—
Helwan		93·3	300	e 16 49	PP	e 23 4	[+ 2]	e 26 7	PPS	—
Uccle		108·8	325	—	—	e 24 21	[+ 5]	e 28 26	?	e 55·6
Pasadena	Z.	111·7	53	i 18 10	[+ 3]	—	—	—	—	—
Mount Wilson	Z.	111·8	53	i 18 6	[− 2]	—	—	—	—	—
Tucson		118·1	52	e 18 23	[+ 3]	—	—	—	—	—
San Juan		158·4	29	e 20 40	[+70]	e 24 1	PP	—	—	e 43·5
La Paz		159·1	139	e 19 34	[+ 3]	i 20 14	?	—	—	—

Additional readings :—
Riverview eE = 13m.41s., iEN = 14m.26s., eNZ = 16m.49s., eE = 17m.7s., iN = 20m.42s., eEN = 21m.37s.
Hyderabad eSeSE = 18m.45s., SSE = 19m.45s.
Bombay eN = 9m.43s., iN = 10m.7s., iEN = 16m.18s., iN = 18m.34s.
Auckland i = 19m.20s.
Tucson e = 18m.57s., eL = 20m.27s.
Long waves were also recorded at De Bilt and Kew.

March 25d. 19h. Local Japanese shock. Tokyo Imperial University gives epicentre 37°·2N. 139°·5E.
Komaba P = 26m.43s., S = 27m.7s.
Koyama P = 26m.43s., S = 27m.4s.
Mitaka P = 26m.43s., S = 27m.7s.
Titibu P = 26m.43s., S = 27m.3s.
Tokyo Imperial University P = 26m.50s., S = 27m.12s.

March 25d. Readings also at 1h. (near Berkeley), 2h. (Riverside, La Paz, Haiwee, Pasadena, Mount Wilson, Tucson, and San Juan), 8h. (near Berkeley), 9h. (Colombo), 10h. (near Andijan), 11h. (Mount Wilson, Riverside, and Tucson), 13h. (near Tashkent), 14h. (Auckland), 16h. (Riverview, Calcutta, Kodaikanal, Bombay, and Colombo), 17h. (Ksara), 18h. (Cape Girardeau, Stuttgart, and near Mizusawa), 19h. (near Harvard), 22h. (near Berkeley).

March 26d. 19h. Undetermined shock. Pasadena suggests Central America.
Tucson eP = 17m.47s., iP = 17m.50s., e = 19m.32s., eS = 22m.7s., eL = 24·5m.
La Jolla ePZ = 18m.22s.
Palomar iPZ = 18m.23s.
Pasadena ePZ = 18m.29s., eZ = 24m.50s., eL = 25m.
Mount Wilson iPZ = 18m.30s.
Ukiah eP? = 19m.10s., e = 25m.9s., eL = 28·7m.
St. Louis eN = 19m.38s., 23m.40s.
Ottawa PZ = 20m.40s., eS = 27m.6s., eL = 35m.
La Paz PZ = 20m.58s., SZ = 27m.28s., LZ = 35·5m.
Philadelphia e = 21m.35s., eS? = 26m.10s., eL = 29·0m.
Fordham e = 21m.54s. and 26m.37s., eL = 35m.
Salt Lake City eS = 24m.18s., eL = 26·6m.
San Juan eS = 25m.19s., eL = 28·9m.
Bozeman eS? = 25m.34s., eL = 29·9m.
Victoria e = 27m.6s., L = 33m.
Long waves were also recorded at Huancayo and Kew.

March 26d. Readings also at 1h. (Wellington, Riverview, Auckland, and Christchurch), 3h. (San Juan), 5h. (Tacubaya), 7h. (near Tchimkent and Frunse), 10h. (Auckland, Wellington, and Arapuni), 11h. (Mizusawa), 13h. (Auckland, Wellington, Arapuni, Christchurch, and Riverview), 14h. (Granada), 15h. (near Helwan and Ksara), 19h. (Christchurch), 22h. (near Berkeley).

March 27d. 18h. 38m. 4s. Epicentre 40°·8N. 53°·5E. (as on 1938 July 7d.).

$A = +\cdot4516$, $B = +\cdot6103$, $C = +\cdot6509$; $\delta = +8$; $h = -2$;
$D = +\cdot804$, $E = -\cdot595$; $G = +\cdot387$, $H = +\cdot523$, $K = -\cdot759$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tashkent		11·9	86	2 42	−12	4 46	−23	—	—	—
Stalinabad		12·0	96	e 3 3	+ 8	i 4 55	−16	—	—	—
Tchimkent		12·1	78	i 2 54	− 3	—	—	—	—	—
Andijan		14·3	84	e 3 19	− 7	—	—	—	—	—
Ksara		15·6	249	e 3 49?	+ 6	e 6 50	+13	—	—	—
Sverdlovsk		16·7	14	e 4 3	+ 6	7 6	+ 3	—	—	—
Helwan		21·1	245	4 41	− 7	8 32	− 7	5 5	PP	—
Agra	E.	24·4	116	i 5 6	−15	e 9 21	−18	—	—	—
Warsaw		24·9	308	—	—	e 10 2	+15	—	—	e 13·7
Bombay	E.	27·4	137	e 4 20	?	—	—	—	—	—
Potsdam		29·7	307	—	—	e 12 7	+61	—	—	19·9
Jena	N.	30·5	304	e 6 18	+ 1	e 12 43	?	—	—	e 14·6
Copenhagen		30·6	314	6 19	+ 1	—	—	—	—	—
Stuttgart		32·0	300	i 6 29	− 1	—	—	—	—	e 19·2

Additional readings:—
Warsaw eE = 10m.51s., eZ = 11m.45s.
Stuttgart i = 6m.40s. and 6m.44s.
Long waves were also recorded at Bombay, De Bilt, Uccle, Kew, and Granada.

March 27d. 21h. Local Japanese shock. Tokyo Imperial University gives epicentre 35°·88N. 139°·11E.
Komaba P = 19m.45s., S = 19m.52s.
Mitaka P = 19m.45s., S = 19m.51s.
Titibu P = 19m.45s., S = 19m.47s.
Tokyo Imperial University P = 19m.45s., S = 19m.53s.
Togane P = 19m.49s., S = 20m.4s.
Tukubasan P = 19m.49s.
Mizusawa PE = 20m.33s., SE = 21m.18s., eSN = 21m.21s.

March 27d. Readings also at 0h. (near Berkeley), 2h. (Apia, Auckland, and Wellington), 4h. (Granada), 5h. (Huancayo, La Paz, La Plata, and near Tananarive), 6h. (Agra and Bombay), 8h. (near Andijan and near La Paz), 9h. (near Berkeley), 12h. (near Tashkent), 13h. (La Paz and near Huancayo), 22h. (La Paz), 23h. (Mizusawa and Berkeley).

March 28d. Readings at 1h. and 3h. (near Berkeley), 5h. (Pasadena, Palomar, Logan, Salt Lake City, Chicago, Tchimkent, near Tucson, and near Andijan), 6h. (Fordham and near Berkeley), 7h. (near Sofia and Triest), 9h. (near Berkeley), 14h. (Pasadena, Mount Wilson, Tinemaha and near Tucson), 16h. (near Tucson), 19h. (Tashkent and Tchimkent), 20h. (Sofia and Warsaw), 21h. (Triest and Potsdam), 22h. (near San Francisco), 23h. (near Mizusawa and near Berkeley).

March 29d. 1h. 6m. 21s. Epicentre 18°·3N. 145°·2E. Depth of focus 0·010.
(as on 1941, June 13d.).

A = −·7802, B = +·5422, C = +·3121 ; δ = +10 ; h = +5 ;
D = +·571, E = +·821 ; G = −·256, H = +·178, K = −·950.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Osima		17·2	344	3 53	− 2	6 55	− 7	—	—	—
Yokohama		17·8	345	4 1	− 2	7 14	− 1	—	—	—
Tokyo, Cen. Met. Ob.		18·0	346	e 4 7	+ 2	7 14	− 5	—	—	—
Kameyama		18·2	339	4 10	+ 2	—	—	—	—	—
Nagoya		18·3	341	4 8	− 1	—	—	—	—	—
Osaka		18·4	335	4 7	− 3	7 6	−22	—	—	—
Matuyama		19·1	328	4 18	0	—	—	—	—	—
Nagano		19·3	344	4 17	− 3	7 43	− 5	—	—	—
Kumamoto		19·5	322	4 24	+ 2	—	—	—	—	—
Miyakozima		19·6	295	e 4 39	pP	—	—	—	—	—
Sendai		20·2	352	4 27	− 2	7 30	−35	—	—	—
Mizusawa		21·1	352	4 26	−12	8 20	− 2	4 35	P	—
Nemuro		24·9	1	e 5 21	+ 6	—	—	—	—	—
Sapporo		24·9	353	5 14	− 1	—	—	—	—	—
Irkutsk		46·7	327	e 8 52	pP	14 52	−10	—	—	—
Calcutta	N.	53·2	285	—	—	i 17 39	sS	—	—	—
Andijan		65·4	308	e 11 14	sP	e 19 10	+ 1	—	—	—
Tashkent		67·7	309	11 30	sP	19 33	− 4	—	—	—
Bombay		68·1	284	i 11 40	sP	i 20 50	PPS	e 12 50	PP	—
Sverdlovsk		71·9	326	e 11 58	sP	20 23	− 3	—	—	—
Tinemaha		84·2	53	i 12 22	0	e 22 31	− 6	i 12 58	pP	—
Haiwee		84·7	54	i 12 25	+ 1	—	—	—	—	—
Pasadena		85·2	56	i 12 26k	− 1	22 35	[− 4]	i 13 5	pP	—
Mount Wilson	Z.	85·3	56	i 12 28	+ 1	—	—	i 13 4	pP	—
Riverside	Z.	85·9	56	i 12 30	0	—	—	—	—	—
La Jolla	Z.	86·4	57	e 12 29	− 4	—	—	—	—	—
Palomar	Z.	86·5	56	i 12 33	0	—	—	i 15 26	PP	—
Tucson		91·6	55	e 12 58	+ 1	—	—	i 13 34	pP	—
Potsdam		98·3	332	e 17 27?	PP	—	—	e 18 3?	pPP	e 51·7
La Paz		148·2	93	i 19 39	[+ 8]	21 31	?	—	?	—

Additional readings :—
Bombay eE = 12m.8s., eN = 12m.40s. and 19m.43s., iE = 19m.46s., 20m.27s., and 20m.54s.
Pasadena iZ = 15m.43s.
Tucson i = 15m.30s.
Long waves were also recorded at Cheb, De Bilt, and Kew.

March 29d. Readings also at 0h. (near Berkeley), 1h. (near Tucson), 2h. (Riverview), 3h. (Wellington and Auckland), 4h. (near Tucson and near Mizusawa), 5h. (Auckland, Wellington, Arapuni, Honolulu, Apia, Riverview, Pasadena, Mount Wilson, Riverside, Tinemaha, Haiwee, Tucson, near Berkeley, and near Mizusawa), 7h. (Tucson, near Florissant and St. Louis), 8h. (Balboa Heights and near Algiers), 9h. (Chicago and near Stalinsbad), 11h. (near Tashkent), 12h. (near Lick), 13h. (La Paz and La Plata), 14h. (Pasadena, Mount Wilson, Riverside, Palomar, Tinemaha, Haiwee, Tucson, and Huancayo), 16h. (Pasadena, Mount Wilson, Riverside, Palomar, Tinemaha, Haiwee, Tucson, and La Paz), 17h. (Pasadena, Mount Wilson, Riverside, Palomar, Tinemaha, Tucson, Huancayo, Riverview, and Brisbane), 18h. (Pasadena, Mount Wilson, Riverside, Palomar, Tinemaha, Tucson, near Berkeley, and Wellington), 19h. (Kew).

March 30d. 0h. Undetermined shock.

Kodaikanal ePE = 30m.50s., eSE = 33m.38s.
Bombay ePEN = 31m.57s., pPEN = 32m.13s., PPP = 32m.34s., i = 33m.3s., iS = 35m.52s., sS = 36m.12s., SS = 36m.30s., S_cSE = 43m.15s.
Hyderabad ePE = 32m.4s., SE = 36m.5s., LE = 37·3m.
Tashkent P = 35m.13s., S = 41m.36s.
Agra eE = 35m.21s., eSE = 38m.19s., eE = 38m.58s.
Calcutta eSN = 38m.42s., iN = 40m.28s., iSSN = 41m.6s., iN = 41m.42s., LN = 42·7m.
Riverside eZ = 47m.4s.
Mount Wilson ePZ = 47m.5s., e = 47m.10s.
Palomar eZ = 47m.8s.
Tucson eP = 47m.8s., e = 47m.18s.
Pasadena eZ = 47m.11s.

March 30d. 9h. 8m. 48s. Epicentre 35°·3N. 34°·9W.

A = +·6708, B = −·4680, C = +·5752; δ = −15; h = 0;
D = −·572, E = −·820; G = +·472, H = −·329, K = −·818.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lisbon		20·8	73	4 46	+ 1	—	—	—	—	9·1
San Fernando		23·3	78	e 6 12	+62	e 10 55	?	—	—	—
Bermuda		25·0	277	e 5 21	− 6	(9 49)	0	—	—	9·8
Granada		25·3	75	e 5 35k	+ 5	i 10 35	SS	6 45	PPP	14·1
Almeria		26·2	77	e 5 41	+ 3	10 30	+21	6 20	PP	13·2
Seven Falls		29·2	306	e 6 6	+ 1	—	—	—	—	11·2
Kew		29·5	45	—	—	e 11 26	+24	e 12 37	sS	e 14·3
Clermont-Ferrand		30·4	58	e 6 15	− 1	—	—	—	—	—
Shawinigan Falls		30·5	304	e 6 27	+10	—	—	—	—	15·2
Vermont		30·5	300	e 11 12?	?	e 11 17	− 1	—	—	—
Aberdeen		31·0	35	—	—	i 11 49	+23	—	—	—
Fordham		31·0	292	i 6 30	+ 9	e 11 29	+ 3	i 7 8	PP	—
Fort de France		31·2	234	e 6 16	− 7	—	—	—	—	—
Philadelphia		32·0	290	—	—	e 11 45	+ 3	—	—	e 12·8
Uccle		32·2	48	e 6 32?	0	e 11 59	+14	e 7 53	PPP	e 14·5
Ottawa		32·4	301	6 37	+ 3	11 52	+ 4	13 12?	SS	15·2
San Juan		32·4	247	e 6 26	− 8	i 11 47	− 1	e 7 19	PP	e 13·3
De Bilt		33·0	46	—	—	i 12 17	+20	—	—	e 14·2
Basle		33·7	54	e 6 43	− 2	—	—	—	—	—
Stuttgart		34·9	53	e 6 55a	0	e 12 36	+ 9	i 8 15	PP	e 15·7
Scoresby Sund		35·9	7	—	—	e 14 20	SS	—	—	e 15·6
Triest		37·9	58	—	—	e 16 12	SSS	—	—	—
Copenhagen		38·0	42	7 23	+ 2	—	—	—	—	—
Upsala		41·6	37	—	—	e 17 12?	SS	—	—	—
Florissant		43·8	292	e 8 5	− 4	e 14 40	0	e 17 57	SS	—
St. Louis		43·8	292	i 8 11	+ 2	i 14 41	+ 1	—	—	—
Helwan		55·2	76	e 9 30	− 7	17 42	+22	—	—	—
Bozeman		56·8	306	—	—	e 17 39	− 2	e 21 29	SS	e 24·7
Butte		57·7	307	—	—	e 17 57	+ 4	—	—	e 25·8
Logan		58·7	302	—	—	e 18 10	+ 4	—	—	e 24·6
Salt Lake City		59·0	300	—	—	e 17 51	−19	—	—	e 27·6
La Paz		60·4	216	i 10 19	+ 6	i 18 32	+ 4	22 32	SS	e 28·7
Huancayo		60·7	227	—	—	e 18 27	− 5	—	—	e 25·3
Tucson		61·7	291	e 10 20	− 2	e 18 55	+11	e 12 10	PP	—
Victoria		63·7	312	—	—	e 19 12?	+ 2	—	—	30·2
Tinemaha		65·1	298	i 10 50	+ 5	—	—	—	—	—
Palomar		65·8	294	e 10 51	+ 2	—	—	—	—	—
Riverside	z.	65·8	295	e 10 51	+ 2	—	—	—	—	—
Mount Wilson	z.	66·2	295	e 10 53	+ 1	—	—	—	—	—
Pasadena		66·4	295	e 10 54	+ 1	e 27 12?	SSS	—	—	e 30·2
College		67·4	335	—	—	e 20 7	+12	—	—	e 32·4

Additional readings :—
Lisbon PE = 4m.49s.
Bermuda e = 7m.53s. and 8m.14s., iL = 9·7m.
Granada SS = 11m.58s.
Almeria PPP = 6m.39s., PcP = 8m.40s., SS = 11m.52s., SSS = 12m.17s.
Kew eN = 13m.2s.?, eE = 13m.42s.?
San Juan e = 7m.38s. and 8m.48s.
Helwan eZ = 9m.57s. and 10m.16s.
La Paz eN = 25m.12s.
Tucson i = 10m.30s., e = 14m.19s. and 55m.7s.
Palomar iZ = 11m.14s.
Mount Wilson iZ = 10m.57s. and 11m.29s.
Pasadena eZ = 11m.26s.
Long waves were also recorded at Warsaw, Potsdam, Riverview, Stonyhurst, and Cheb.

March 30d. Readings also at 0h. (Tucson), 1h. (near Berkeley), 2h. (La Paz), 4h. (near Tashkent), 6h. (La Paz), 7h. (Huancayo), 10h. (La Paz), 13h. (Tucson), 18h. (Helwan, Tchimkent, Tashkent, and Ksara), 21h. (Florissant).

March 31d. Readings at 3h. (near Berkeley), 4h. (near Harvard), 13h. (near Fresno and Lick), 14h. (near Berkeley, Branner, Lick, and Fresno), 18h. (Logan and Tucson).

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

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

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

Villaseñor, A., E.A. Bergman, T.M. Boyd, E.R. Engdahl, D.W. Frazier, M.M. Harden, J.L. Orth, R.L. Parkes, and K.M. Shedlock*, Toward a comprehensive catalog of global historical seismicity,* Eos Trans. AGU, vol. 78, no. 50, pp. 581, 583, 588, 1997.