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ASSOCIATION OF SEISMOLOGY.
FORMERLY THE BULLETIN OF
THE BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

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The number constitutes the beginning of the seventh 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. The travel-times used in making determinations are those contained in "Seismological Tables" by H. Jeffreys and K. E. Bullen, Brit. Ass. for Advancement of Science—London, 1950, and residuals derived accordingly.

Distances are 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 . . .

The refracted logitudinal 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, L, records the onset, if known, of Rayleigh waves.

(4) Readings for which space is not available in the tabular part, added at the foot. 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 1943 contains 87 epicentres, 58 of which are repetitions from previous epicentres.

Cases of abnormal focal depth are noted below :—

Jan.	8d.	19h.	21·5N.	142·8E.	0·050
	30d.	5h.	1·9S.	80·4W.	Suggested Deep.
	31d.	8h.	17·5N.	94·1W.	0·005
Feb.	6d.	9h.	36·3N.	71·0E.	0·030
	16d.	7h.	13·9S.	70·0W.	0·010
	16d.	16h.	5·6S.	150·5E.	0·030
	22d.	9h.	17·6N.	101·3W.	Suggested Deep.
	28d.	12h.	36·3N.	71·0E.	0·030
March	4d.	6h.	21·5S.	180	0·080
	4d.	10h.	35·6N.	134·2E.	Suggested Deep.
	4d.	10h.	35·6N.	134·2E.	" "
	11d.	9h.	21·5S.	170·2E.	" "
	12d.	15h.	35·6N.	134·2E.	" "
	12d.	22h.	36·3N.	141·5E.	" "
	14d.	18h.	19·5S.	69·4W.	0·005
	15d.	22h.	14·5S.	176·5W.	0·030
	16d.	23h.	19·0S.	170·0E.	0·020
	24d.	11h.	22·3S.	179·2W.	0·020
	26d.	17h.	22·5S.	176·2W.	Base of Superficial Layers.

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.

March, 1953.

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1943 JANUARY, FEBRUARY, MARCH.

Jan. 1d. Readings at 1h. (near Mizusawa), 2h. (Pasadena, Tinemaha, Haiwee, Mount Wilson, Riverside, Tucson, and Palomar), 8h. (Bacau and Bucharest), 12h. (near San Francisco), 18h. (Pasadena, Mount Wilson, Palomar, Riverside, Haiwee, Tinemaha, and Tucson), 20h. (Kew), 22h. (Fort de France, and near Lick, Branner, Berkeley, San Francisco, and Santa Clara), 23h. (Fort de France).

Jan. 2d. Readings at 2h. (Mount Wilson, Riverside, Palomar, Tucson, and Tinemaha), 3h. (Mount Wilson and Tucson), 4h. (New Delhi, Tashkent, Andijan, and Almata), 5h. (Merida, Oaxaca, Mount Wilson, Tucson, and Tinemaha), 6h. (Wellington and near Berkeley), 10h. (Berkeley), 11h. (La Paz, Huancayo, La Plata, Tucson, Pasadena, Palomar, Riverside, Mount Wilson, Haiwee, and Tinemaha), 12h. (La Paz, Almeria, Granada, Tortosa, Helwan, De Bilt, Kew, Stuttgart, near Tashkent and Andijan), 14h. (near Tucson), 16h. (near Apia), 17h. (Mount Wilson, Tucson, Pasadena, Tinemaha, and Haiwee), 18h. (Samarkand), 19h. (Apia, Auckland, Wellington, Riverview, Mount Wilson, Tucson, Pasadena, Riverside, Haiwee, and Tinemaha).

Jan. 3d. Readings at 2h. (Riverview, Auckland, Christchurch, Tuai, and Wellington), 3h. (Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, and near Mizusawa), 7h. (Ksara), 9h. (Haiwee, Mount Wilson, Pasadena, Tucson, Palomar, Tinemaha, and La Plata), 18h. (near San Juan).

Jan. 4d. Readings at 0h. (Ksara), 10h. (near Bacau and Bucharest), 11h. (near Fresno), 18h. (near Berkeley), 21h. (Istanbul), 22h. (near Branner), 23h. (Mizusawa, Basle, Zurich, Jena, Stuttgart, Uccle, Upsala, Granada, Haiwee, Mount Wilson, Pasadena, Tucson, Riverside, Santa Barbara, and Tinemaha).

Jan. 5d. 13h. Probably China, but no determination made :—
Taito eP =31m.26s., S =34m.13s.
Calcutta ePN =33m.38s., iSN =38m.46s.
Nagano P =33m.47s., S =38m.30s.
Tokyo, Cent. Met. Obs. P =33m.48s., S =38m.22s.
Sendai P =34m.10s., S =39m.8s.
Colombo P =34m.59s.
Irkutsk P =35m.47s.
Bombay iPEN =35m.56s., iPPE =37m.48s., iN =38m.56s., eN =39m.6s., iE =40m.43s., iSEN =42m.34s.
Kodaikanal iPE =36m.16s., PPE =38m.0s., iSE =42m.21s., SSE =45m.10s.
Almata P =36m.36s.
Andijan P =36m.45s., S =44m.3s.
Tashkent iP =36m.59s., S =44m.29s.
Koti eP =37m.26s.
Kameyama P =37m.57s.
Mizusawa ePE =39m.19s., PN =39m.24s., SE =43m.19s.
Helwan PZ =39m.42s., iZ =41m.49s., 42m.39s., and 43m.25s., iE =49m.15s. and 53m.27s.
Aomori eP =39m.44s.
Stuttgart eZ =40m.38s. and 44m.6s. ?, eQZ =45m.1s., e =51m.30s. ?
Riverside eZ? =41m.26s., eZ =45m.11s., iZ =47m.56s.
Riverview iEN =41m.37s.
New Delhi eSN =42m.7s., e =42m.53s. and 44m.18s.
Mount Wilson eZ =42m.36s. and 45m.37s., iZ =47m.55s., eZ =56m.29s.
Tinemaha eZ =45m.11s., iZ =46m.19s.
Pasadena eZ? =45m.23s., eZ =45m.48s., iZ =47m.56s. and 56m.30s.
Tucson e =46m.38s. and 47m.56s., i =56m.2s.
Uccle eE =50m.30s.
Huancayo eS =57m.6s., e =61m.17s., eL =70m.2s.
Clermont-Ferrand e =65m.24s.

Jan. 5d. Readings also at 0h. (Cheb and De Bilt), 2h. (near Lick), 8h. (Fort de France, New Delhi, Bombay, and Kodaikanal), 9h. (Bacau, Bucharest, and Uccle), 10h. (Fort de France), 11h. (Almata and Andijan), 12h. (Wellington), 13h. (near Almeria), 16h. (Granada), 20h. (near Balboa Heights), 23h. (Mount Wilson, Tucson, and Riverside).

Jan. 6d. 9h. 51m. 3s. Epicentre 5°·0S. 80°·7W.

A = +·1610, B = −·9831, C = −·0866; δ = −9; h = +7;
D = −·987, E = −·162; G = −·014, H = +·085, K = −·996.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		8·8	143	e 2 9	− 2	i 4 2	+ 9	i 2 32	PPP	i 4·7
La Paz		16·8	134	i 4 0	+ 2	i 7 16	+11	i 7 21	SS	9·8
San Juan		27·3	32	e 5 48	0	i 10 46	+19	—	—	e 11·7
Fort de France		27·6	46	e 6 12	+41	—	—	—	—	—
Rio de Janeiro	E.	40·3	120	e 6 9	?	e 14 2	+13	—	—	e 21·9
Tucson		46·8	325	i 8 35	+ 2	e 15 35	+11	—	—	e 23·9
Riverside	z.	52·0	321	e 9 13	0	—	—	—	—	—
Mount Wilson	z.	52·6	321	i 9 26	+ 8	—	—	—	—	—
Pasadena		52·6	321	e 9 14	− 4	i 16 50	+ 6	—	—	e 27·0
Tinemaha	z.	54·6	324	i 9 33	+ 1	—	—	—	—	—
Granada		82·8	52	i 12 40	+13	e 19 44	?	12 54	pP	21·7
Toledo		83·0	49	i 12 34	+ 6	—	—	—	—	—
Almeria		83·6	53	e 12 36	+ 5	22 43	[− 8]	13 3	sP	—
De Bilt		91·4	38	—	—	e 23 57?	{+ 5}	—	—	—
Stuttgart		93·7	42	e 13 24	+ 4	e 24 3?	{− 6}	e 25 57?	PS	e 52·0
Cheb		95·8	41	e 24 27	S	(e 24 27)	−18	—	—	e 56·0
Kodaikanal	E.	157·7	75	e 24 2	PP	—	—	—	—	—

Additional readings :—
Huancayo iP = 2m.12s.
Rio de Janeiro eSN = 14m.5s.
Pasadena iNZ = 9m.26s., iZ = 10m.34s.
Granada sP = 13m.21s., P_cP = 15m.33s.
Almeria i = 13m.23s., PP = 13m.39s., sPP = 14m.22s., P_cP = 15m.18s., S? = 17m.31s.
Stuttgart eSS = 31m.15s. ?
Long waves were also recorded at La Plata, Fordham, Salt Lake City, Clermont-Ferrand, Wellington, Riverview, and Sydney.

Jan. 6d. Readings also at 0h. (near Mizusawa), 2h. (Philadelphia), 6h. (La Paz, Fort de France, Fordham, Tucson, Mount Wilson, Pasadena, and Tinemaha), 11h. (Kodaikanal, near Andijan, and Tashkent), 14h. (San Fernando).

Jan. 7d. 11h. 14m. 31s. Epicentre 37°·3N. 20°·6E. (as on 1942, May 21d.).

A = +·7465, B = +·2806, C = +·6034; δ = +9; h = −1;
D = +·352, E = −·936; G = +·565, H = +·212, K = −·797.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		5·8	21	e 0 29?	−60	i 2 48	+10	i 2 58	S*	—
Belgrade		7·5	359	e 1 49	− 4	i 3 57	S*	i 2 24	P_g	i 4·0
Bucharest		8·2	28	e 2 3	0	i 3 53	S*	4 27	S_g	—
Florence		9·6	315	e 2 56	PPP	e 4 5	− 7	—	—	e 4·9
Triest		9·8	331	e 2 29	+ 5	i 4 9	− 8	—	—	e 4·4
Bacau		10·4	25	e 2 29?	− 5	—	—	—	—	5·5
Helwan	z.	11·6	127	e 2 56	+ 6	4 59	− 2	e 3 23	PPP	—
Milan	E.	11·8	317	e 2 56?	+ 3	4 13	?	—	—	5·2
Yalta		12·5	51	e 3 8	+ 6	—	—	—	—	—
Chur		12·6	323	e 3 1k	− 2	e 5 11	−15	—	—	—
Ksara		12·9	101	e 3 18?	PP	—	—	e 6 9	SSS	—
Zurich		13·4	322	e 3 13	− 1	e 5 43	− 2	—	—	—
Prague		13·5	343	e 3 14?	− 1	e 5 52?	+ 5	—	—	e 6·5
Basle		14·0	321	e 3 21	− 1	e 5 43	−16	—	—	—
Neuchatel		14·0	318	e 3 17	− 5	—	—	—	—	—
Cheb		14·1	338	e 5 53	S	(e 5 53)	− 9	—	—	8·0
Stuttgart		14·1	328	e 3 19?	− 4	e 6 7	+ 5	i 3 36	PP	e 8·2
Strasbourg		14·6	325	e 3 34	+ 4	e 6 14	+ 1	e 6 42	SS	—
Jena	N.	15·1	337	e 3 29?	− 7	e 6 21	− 4	e 3 59	PP	e 7·7
Clermont-Ferrand		15·5	308	e 3 35?	− 7	—	—	e 3 47?	PP	8·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Potsdam		16·0	343	e 3 52	+ 4	i 6 56	+10	—	—	—
Paris		17·5	317	e 4 12	+ 5	—	—	—	—	9·8
Uccle		17·8	324	e 4 13?	+ 2	7 23	− 5	—	—	e 9·9
Almeria		18·4	276	4 33	PP	e 11 13	L	—	—	(11·2)
De Bilt		18·4	330	e 4 19	+ 1	i 7 44	+ 3	—	—	e 9·5
Copenhagen		19·2	347	e 4 27	− 1	7 59	0	—	—	—
Granada		19·3	278	i 4 30	+ 1	10 56	L	4 44	pP	(10·9)
Toledo		19·4	285	i 4 30	0	11 29	L	—	—	(11·5)
Kew		20·5	321	—	—	e 8 14	−13	—	—	e 10·5
Moscow		21·7	28	4 54	− 1	8 53	+ 2	—	—	—
Upsala	E.	22·7	356	e 5 18?	+14	e 9 0	− 9	e 10 22	SSS	e 12·3
	N.	22·7	356	5 0	− 4	i 9 6	− 3	5 27	PP	—
Sverdlovsk		32·9	41	6 34	− 4	11 47	− 9	—	—	—
Tashkent		37·5	68	e 7 13	− 4	—	—	—	—	—

Additional readings :—
Belgrade i = 2m.48s. and 3m.3s.
Bucharest iSE = 4m.2s., S_g?E = 4m.51s.
Helwan eZ = 3m.50s.
Cheb i = 6m.9s.
Stuttgart eZ = 3m.56s., e = 4m.12s., eS = 6m.11s., e = 7m.10s.
Strasbourg e = 6m.23s.
Jena eN = 3m.37s., eZ = 3m.41s. ?, eN = 4m.45s., 4m.52s., and 6m.37s.
Granada sP = 5m.13s.
Upsala iE = 9m.13s.
Long waves were also recorded at Bergen.

Jan. 7d. 22h. 36m. 0s. Epicentre 37°·3N. 20°·6E. (as at 11h.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		5·8	21	e 1 19	−10	—	—	—	—	—
Bucharest		8·2	28	e 2 0?	− 3	—	—	—	—	4·5
Triest		9·8	331	e 2 25	+ 1	e 4 24	+ 7	—	—	e 6·0
Bacau		10·4	25	2 0?	−34	—	—	—	—	—
Helwan		11·6	127	e 2 17	−33	e 4 6	−55	e 3 18	PPP	5·6
Yalta		12·5	51	e 2 53	− 9	—	—	—	—	—
Chur		12·6	323	e 3 5a	+ 2	e 5 35	+ 9	—	—	—
Ksara		12·9	101	e 2 46	−21	e 4 46	?	—	—	—
Zurich		13·4	322	e 3 22k	+ 8	—	—	—	—	—
Basle		14·0	321	e 3 22	0	e 5 49	−10	—	—	—
Neuchatel		14·0	318	e 3 22	0	—	—	—	—	—
Cheb		14·1	338	e 4 32	?	e 6 35	SSS	e 5 28	?	e 8·8
Stuttgart		14·1	328	3 21	− 2	e 6 38	SSS	—	—	e 8·7
Jena	N.	15·1	337	e 3 24?	−12	—	—	e 3 38	P	e 9·2
Clermont-Ferrand		15·5	308	i 3 42	− 1	—	—	—	—	e 11·0
Potsdam		16·0	343	e 3 48	0	e 7 12?	SS	i 7 19?	SSS	e 10·0
Uccle		17·8	324	e 4 10	− 1	—	—	—	—	e 10·4
Almeria		18·4	327	4 20	+ 2	—	—	—	—	13·0
De Bilt		18·4	330	i 4 18	0	i 8 5	+24	—	—	e 12·0
Copenhagen		19·2	347	e 4 21	− 7	8 12	+13	—	—	21·0
Granada		19·3	278	i 4 45	+16	9 17	?	5 2	pPP	14·1
Toledo	Z.	19·4	285	i 4 28	− 2	—	—	—	—	—
Moscow		21·7	28	4 37	−18	11 43	L	—	—	(11·7)
Upsala		22·7	356	5 0	− 4	e 9 17	+ 8	e 9 27	SS	e 12·7
Sverdlovsk		32·9	41	e 6 15	−23	e 11 36	−20	—	—	—

Additional Readings :—
Granada pP_cP = 8m.24s.
Potsdam eN = 7m.42s.
Long waves were also recorded at Bergen, Aberdeen, Kew, and Paris.

Jan. 7d. Readings also at 2h. (Stuttgart and near Triest), 3h. (Pasadena, Mount Wilson, Tucson, Santa Barbara, and Tinemaha, Kodaikanal, New Delhi, Bombay, Calcutta, Dehra Dun, Helwan, Cheb, Stuttgart, Bucharest, Upsala, and Lisbon), 4h. (Huancayo, near La Paz, Kew, Granada, Almeria, Clermont-Ferrand, De Bilt, Uccle, Strasbourg, Potsdam, Stonyhurst, Aberdeen, Bergen, Paris, Prague, and Riverview), 5h. (Philadelphia, New Delhi, Bombay, and Calcutta), 6h. (Cheb, De Bilt, and Philadelphia), 7h. (Bombay), 8h. (De Bilt and New Delhi), 10h. (La Paz), 12h. (La Paz), 18h. (near Lick), 19h. (near Branner), 20h. (La Paz), 23h. (Tacubaya and near Samarkand).

Jan. 8d. 19h. 58m. 28s. Epicentre 21°·5N. 142°·8E. Depth of focus 0·050.

A = −·7418, B = +·5631, C = +·3644; δ = +14; h = +4;
D = +·605, E = +·797; G = −·290, H = +·220, K = −·931.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa	N.	17·6	356	e 3 44	0	6 51	+ 6	—	—	—
Irkutsk		42·7	326	7 27	+ 2	—	—	—	—	—
Calcutta	N.	50·3	281	—	—	i 15 8	0	e 18 21	SS	—
Riverview		55·6	172	—	—	i 16 27	+ 8	i 20 45	SS	—
New Delhi	N.	59·2	290	—	—	i 17 9	+ 3	i 19 11	sS	—
Tchimkent		63·6	308	i 9 58	+ 2	·i 18 10	+ 9	—	—	—
Tashkent		64·0	306	i 9 58	− 1	i 18 6	0	—	—	—
Bombay	E.	65·2	280	i 9 37	−29	i 18 24	+ 4	20 30	sS	—
Auckland		65·4	152	—	—	18 27	+ 4	—	—	—
Sverdlovsk		68·0	325	i 10 22	− 2	i 18 54	0	—	—	—
Wellington		69·1	156	—	—	19 17	+10	—	—	—
Moscow		80·7	326	11 35	− 1	21 14	+ 1	12 47	pP	—
Lick		81·5	54	e 11 41	+ 1	—	—	—	—	—
Santa Barbara		84·0	56	i 11 53a	0	—	—	—	—	—
Tinemaha		84·1	53	i 11 53a	0	i 21 50	+ 3	i 13 13	pP	—
Haiwee		84·7	53	i 11 58	+ 2	—	—	—	—	—
Mount Wilson	z.	85·3	56	i 11 59	0	—	—	e 15 23	PP	—
Pasadena		85·3	56	i 11 58a	− 1	i 21 50	− 8	i 13 11	pP	—
La Jolla		86·5	57	e 12 5	0	—	—	—	—	—
Tucson		91·7	54	i 12 27	− 2	—	—	(e 25 16)	PS	e 25·3
Stuttgart	z.	98·7	331	e 17 2	PP	—	—	—	—	—
La Paz	z.	150·4	85	i 19 9	[+ 5]	—	—	—	—	—

Additional readings :—
Riverview iEN = 18m.24s., eN = 22m.26s.
Bombay iPN = 10m.12s., ePcPN = 10m.51s., cEN = 11m.52s., iE = 19m.27s., sSN = 20m.33s.
Tinemaha eSZ = 21m.42s.
Tucson e = 15m.9s. and 16m.12s.

Jan. 8d. 23h. 56m. 21s. Epicentre 39°·8N. 29°·6E. (as on 1942, Nov. 15d.).

A = +·6698, B = +·3805, C = +·6376; δ = −5; h = −2;
D = +·494, E = −·869; G = +·554, H = +·315, K = −·770.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		1·3	342	(0 39)	Pg	(0 55)	Sg	—	—	—
Bucharest		5·3	330	e 1 21	− 1	i 2 23	− 2	i 1 50	Pg	—
Sofia		5·5	303	e 1 21	− 4	i 2 21	− 9	i 1 36	P*	—
Bacau		7·0	343	e 1 57?	P*	—	—	(3 51)	Sg	3·8
Ksara		7·8	138	e 2 53	Pg	—	—	—	—	e 5·4
Belgrade		8·4	309	i 1 59	− 7	e 3 38	− 5	i 4 5	S*	—
Triest	N.	13·0	302	e 4 36	?	—	—	—	—	—
Prague		14·8	319	e 6 9	S	(e 6 9)	− 9	—	—	—
Chur		16·2	302	e 3 50	0	e 8 24	L	—	—	(e 8·4)
Moscow		16·8	18	4 6	+ 8	7 23	SS	—	—	—
Zurich		17·0	303	e 3 57	− 4	—	—	—	—	—
Stuttgart		17·1	308	e 3 58	− 4	—	—	e 4 4	PP	e 9·2
Basle		17·7	304	e 4 20	+10	—	—	—	—	—

Additional readings :—
Istanbul readings decreased by 1m.
Bucharest eN = 1m.26s., eE = 1m.32s., iP*?Z = eP*?N = 1m.40s., iN = 2m.4s., iZ = 2m.29s. iS*E = 2m.42s.
Sofia iSEN = 2m.10s.
Belgrade i = 2m.7s., 2m.37s., and 3m.56s.
Long waves were also recorded at Helwan, Jena, Potsdam, Uccle, De Bilt, Copenhagen, Bergen, and Upsala.

Jan. 8d. Readings also at 0h. (La Paz, near Tucson, Calcutta, Kodaikanal, and near Tashkent), 9h. (near La Paz, La Plata, Huancayo, La Jolla, Tucson, Riverside, Pasadena, Santa Barbara, and Tinemaha), 10h. and 12h. (Bombay), 15h. (near Misusawa), 18h. (Belgrade), 19h. (Apia), 23h. (Mizusawa).

Jan. 9d. Readings at 0h. (Ebingen, near Stuttgart, Basle, and Zurich), 2h. (Auckland, Arapuni, Christchurch, Riverview, Wellington, La Paz, and Istanbul), 5h. (Brisbane and Riverview), 6h. (Pasadena, Tucson, Riverside, and Tinemaha, Calcutta, New Delhi, Bombay), 9h. (Stuttgart, Sofia, and near Istanbul (3)), 17h. (Brisbane and Riverview), 18h. (near Andijan, Tashkent, Auckland, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, Copenhagen, and Stuttgart), 21h. (near Mizusawa), 22h. (near Branner), 23h. (Yalta and near Andijan).

Jan. 10d. 9h. 49m. 52s. Epicentre 20°·4N. 108°·8W. (as on 1941 Aug. 4d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	N.	9·1	95	—	—	e 4 0	0	—	—	—
Tucson		11·9	352	i 2 56	+ 2	—	—	—	—	e 6·2
La Jolla	N.	14·5	330	e 3 30	+ 2	—	—	—	—	—
Riverside		15·5	333	e 3 45	+ 3	—	—	—	—	—
Mount Wilson		16·0	331	i 3 49	+ 1	—	—	—	—	—
Pasadena		16·0	331	i 3 51	+ 3	e 6 42	− 4	—	—	e 8·2
Haiwee	Z.	17·6	335	i 4 12	+ 4	—	—	—	—	—
Tinemaha	Z.	18·6	337	i 4 20	− 1	—	—	—	—	—
Santa Clara	N.	20·4	330	e 4 46	+ 5	—	—	—	—	—
Salt Lake City		20·5	352	e 4 38	− 4	e 8 30	+ 3	—	—	e 9·3
Branner		20·6	329	e 4 47	+ 4	—	—	—	—	—
Logan		21·4	354	e 5 4	+13	e 9 1	+16	—	—	e 11·2
St. Louis		24·2	38	e 5 13	− 6	e 9 34	− 1	—	—	e 11·7
Florissant	N.	24·3	38	—	—	i 9 50	+13	—	—	i 13·0
Bozeman		25·3	357	—	—	e 10 40	+46	—	—	e 12·7
Chicago		27·9	34	e 5 42	−12	e 11 25	+48	e 6 53	PP	e 15·0
Columbia		28·1	54	—	—	e 11 43	+63	—	—	e 16·2
Ottawa		36·9	39	e 7 4	− 8	e 15 38?	SS	—	—	20·1
Huancayo		46·1	131	—	—	e 15 4	−10	—	—	e 18·3

Additional readings :—
Tucson i = 3m.6s., 3m.9s., and 4m.34s., e = 5m.53s.
Salt Lake City e = 5m.19s. and 8m.3s.
Logan e = 5m.59s. and 6m.35s.
Long waves were also recorded at Vera Cruz and other American stations.

Jan. 10d. 15h. Shock for which determination of epicentre cannot be made.

Oaxaca PN = 26m.11s.
Puebla PN = 26m.26s.
Tacubaya PN = 26m.30s.
Vera Cruz PN = 26m.39s.
Guadalajara eN = 29m.29s.
Tucson iP = 30m.6s., i = 31m.17s., e = 31m.28s., 31m.55s., and 33m.48s., eL = 35m.53s.
St. Louis eZ = 30m.45s., eS?N = 35m.5s.
La Jolla ePN = 30m.53s.
Riverside ePZ = 30m.58s.
Mount Wilson iPZ = 31m.3s.
Pasadena eP = 31m.3s., eLEN = 39·5m.
Haiwee ePZ = 31m.16s.
Tinemaha iPZ = 31m.22s.
Florissant iN = 35m.5s., eN = 40m.27s.
Bozeman e = 40m.37s., eL = 42m.27s.
Butte e = 43m.41s.
Long waves were also recorded at Logan, Salt Lake City, and Huancayo.

Jan. 10d. Readings also at 1h. (Stuttgart and near Mizusawa), 2h. (near Florissant and St Louis), 8h. (Riverview and Wellington), 15h. (near Mizusawa), 17h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, near Almeria, Granada, and near Samarkand), 20h. (Copenhagen, Calcutta, Haiwee, Mount Wilson, Pasadena, Tucson, Riverside, Tinemaha, and near Mizusawa), 21h. (Mount Wilson, Pasadena, Tucson, Riverside, Tinemaha, and Zurich).

Jan. 11d. 11h. 56m. 16s. Epicentre 37°·2N. 28°·3E. (as on 1941 Dec. 13d.).

Felt at Istanbul. Slight damage.
Epicentre 37°·2N. 28°·3E.
Bulletin Météorologique, séismique, et magnétique de l'Observatoire d'Istanbul. Istanbul 1948.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		3·9	6	1 18	P_g	2 21	S_g	2 47	?	2·8
Sofia		6·6	327	0 44	?	e 3 15	S*	i 3 48	S_g	—
Ksara		7·0	116	e 1 49?	+ 3	e 3 10	+ 2	e 3 57	S_g	—
Bucharest		7·4	347	2 5	P*	e 2 14?	?	e 2 22	P_g	3·8
Helwan		7·7	160	1 49	− 7	3 14	−11	2 27	P_g	4·0
Bacau		9·4	354	e 2 32?	+18	—	—	—	—	e 4·7
Triest		13·8	312	e 3 4	−15	e 5 56	+ 2	—	—	e 7·3
Chur		16·9	311	e 3 56k	− 3	—	—	—	—	—
Zurich		17·7	311	e 4 5	− 5	—	—	—	—	—
Stuttgart		18·1	315	e 4 10	− 4	e 7 42	+ 7	—	—	11·9
Jena	Z.	18·2	326	e 4 14	− 2	—	—	—	—	—
Basle		18·4	312	e 4 13	− 5	—	—	—	—	—
Neuchatel		18·6	310	e 4 15	− 6	—	—	—	—	—
Potsdam		18·6	330	e 4 20?	− 1	e 7 47	+ 1	e 7 51	SS	10·7
Moscow		19·6	16	4 44	+12	8 23	+15	—	—	—
Copenhagen		21·4	335	—	—	8 47	+ 2	—	—	11·7
Uccle		21·8	316	e 5 2?	+ 6	i 8 52	0	—	—	e 10·7
Upsala	E.	23·7	345	—	—	e 9 29	+ 2	—	—	—
	N.	23·7	345	—	—	e 9 32	+ 5	—	—	—
Kew		24·7	315	—	—	e 9 48	+ 4	—	—	e 12·7
Bombay		41·9	103	e 8 3	+ 9	e 14 26	+13	e 10 8	PPP	—

Additional readings :—
Helwan S* = 3m.40s.
Bombay ePPEN = 9m.49s.
Long waves were also recorded at De Bilt.

Jan. 11d. 18h. 25m. 16s. Epicentre 42°·6N. 13°·5E.

Scale VI at Macerata; III-IV at Tolentino, Ancone.
R. P. Cesare Coppede.
Annuario Sismico 1943 del Osservatorio Ximeniano, Florence, p. 6.

$A = +\cdot7180$, $B = +\cdot1724$, $C = +\cdot6744$, $\delta = +6$; $h = -3$;
$D = +\cdot233$, $E = -\cdot972$; $G = +\cdot656$, $H = +\cdot157$, $K = -\cdot738$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		
		°	°	m. s.	s.	m. s.	s.	m. s.		
Florence		2·0	306	i 0 39a	P_g	i 1 7	S_g	1 14		?
Triest		3·1	3	e 0 59	P_g	e 1 24	− 5	—		—
Milan	Z.	4·2	314	e 1 25	P_g	e 2 5	S*	—		—
Zurich		5·9	325	e 1 29	− 2	e 2 29	−11	—		—
Neuchatel		6·4	315	1 36	− 2	e 2 44	− 9	—		—
Basle		6·5	321	e 1 46	+ 7	—	—	—		—
Stuttgart		6·9	335	1 54	+ 9	e 3 44?	S_g	e 2 4		P*

Stuttgart gives also e = 2m.49s.

Jan. 11d. 19h. 50m. 16s. Epicentre 38°·8N. 69°·7E. (as on 1937 May 15d.).

$A = +\cdot2711$, $B = +\cdot7328$, $C = +\cdot6240$; $\delta = -13$; $h = -1$;
$D = +\cdot938$, $E = -\cdot347$; $G = +\cdot217$, $H = +\cdot585$, $K = -\cdot781$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Samarkand		2·3	292	i 0 49	+ 9	—	—	—	—	—
Tashkent		2·5	353	i 0 47	+ 4	—	—	—	—	—
Frunse		5·5	41	1 32	+ 7	—	—	—	—	—
Dehra Dun		10·9	139	e 2 53?	PP	i 4 50	+ 6	—	—	i 6·0
New Delhi	N.	12·0	146	i 2 52a	− 3	i 5 6	− 5	9 7	PcP	—
Sverdlovsk		19·0	346	i 4 21	− 5	7 52	− 3	—	—	—
Bombay		20·0	170	i 4 35	− 2	i 8 15	− 2	4 53	PP	—
Calcutta	N.	22·7	128	i 5 24k	PP	i 9 33	SS	i 10 28	SSS	11·7
Yalta		27·0	294	e 5 47	+ 2	e 10 39	+17	—	—	—
Moscow		27·3	320	i 5 47	− 1	10 29	+ 2	—	—	—
Irkutsk		27·4	48	5 52	+ 3	10 31	+ 3	—	—	—
Ksara		27·6	270	5 56?	+ 5	e 11 20	SS	—	—	—
Bacau		32·1	298	e 6 44	+13	—	—	—	—	19·7
Helwan		32·7	266	i 6 33k	− 3	13 38	SS	8 5	PPP	—
Colombo		33·1	162	6 39	− 1	13 2	+63	—	—	17·3
Sofia		35·0	292	e 6 54	− 2	e 12 33	+ 5	—	—	—
Upsala	E.	38·6	321	7 23	− 3	i 13 21	− 2	e 8 35	PP	—
	N.	38·6	321	e 7 26	0	e 13 19	− 4	e 8 45	PP	—
Prague		40·2	305	e 8 15	+35	e 13 50?	+ 2	e 9 14	PP	—
Potsdam		40·8	309	e 7 44?	− 1	i 16 59	SS	i 17 22	SSS	22·7
Copenhagen		41·1	314	i 7 47	0	14 1	0	9 20	PP	—
Triest		41·3	298	i 7 49	0	e 13 49	−15	—	—	—
Cheb		41·5	306	e 7 50	0	e 14 14?	+ 7	—	—	e 24·7
Jena		41·9	306	i 7 53	− 1	16 44?	SS	e 9 36	PP	e 19·7
Stuttgart		43·7	304	e 8 6	− 2	14 44	+ 5	e 9 52	PP	e 21·6
Zurich		44·4	302	e 8 11	− 3	—	—	—	—	—
Strasbourg		44·7	304	8 6	−10	e 14 49	− 5	e 10 11	PP	21·7
Bergen		44·8	321	i 10 2	PP	—	—	—	—	e 19·0
Basle		45·0	302	e 8 16	− 3	—	—	—	—	—
Neuchatel		45·6	301	e 8 20	− 4	—	—	—	—	—
De Bilt		45·7	309	i 8 33	+ 9	i 15 14	+ 6	i 10 21	PP	e 23·2
Uccle		46·4	307	e 8 28	− 2	e 15 13	− 5	18 23	SS	e 32·7
Clermont-Ferrand		48·5	300	e 8 24	−22	—	—	e 8 50	P	e 26·7
Stonyhurst		49·9	313	—	—	e 19 44	SS	—	—	31·5
Scoresby Sund		54·5	336	e 9 32	0	e 17 14	+ 4	e 12 34	PPP	e 23·7
Toledo	Z.	55·9	296	i 9 35	− 7	—	—	—	—	—
Granada		56·3	293	i 11 21	PP	e 21 13	SS	13 7	PPP	31·5
College		72·6	16	—	—	e 29 9	SSS	—	—	e 42·5
Seven Falls		87·5	334	e 13 2?	+11	e 23 50?	+19	—	—	e 39·7
Ottawa		90·6	336	e 13 10	+ 5	e 23 44	[+ 7]	—	—	49·7
Fordham		94·0	332	—	—	e 24 3	[+ 7]	e 25 54	PS	—
Philadelphia		95·3	333	—	—	e 24 17	[+14]	e 26 15	PS	e 52·7
Tinemaha	Z.	104·1	6	e 14 14	+ 7	—	—	e 18 12	PP	—
Riverview		104·4	122	e 20 41	PPP	—	—	—	—	e 54·0
Mount Wilson	Z.	107·0	6	e 14 39	P	—	—	e 17 47	PP	—
Pasadena		107·1	6	e 17 48	?	—	—	i 18 48	PP	e 59·7
Riverside	Z.	107·3	6	e 18 53	PP	—	—	—	—	—
Tucson		109·3	0	e 18 37	[+ 5]	29 40	PPS	i 19 5	PP	e 59·2
La Paz		137·0	288	e 19 23	[− 2]	—	—	—	—	—

Additional readings :—
New Delhi iP* = 3m.29s., iP$_g$ = 3m.55s., i = 4m.33s., iS* = 5m.52s., iS$_g$ = 6m.21s.
Bombay iN = 4m.40s., PPPEN = 5m.6s., P$_c$PE = 8m.29s., SSSN = 8m.53s.
Calcutta iPPN = 5m.53s.
Helwan PPZ = 9m.24s.
Upsala iN = 9m.36s., eN = 11m.38s., eSSN = 15m.29s., iN = 16m.39s.
Prague e = 17m.14s.
Copenhagen 16m.41s.
Jena iN = 7m.56s., iE = 8m.0s., iN = 8m.3s., eN = 9m.26s.
Stuttgart iP = 8m.8s., ePPZ = 10m.1s., ePPP = 10m.27s., eSS = 17m.44s.
De Bilt iSS = 18m.44s.
Scoresby Sund e = 19m.43s.
Tucson e = 22m.12s.
Long waves were also recorded at other European and American stations.

Jan. 11d. Readings also at 2h. (La Paz), 10h. (Pasadena, Riverside, Mount Wilson, Tinemaha, Wellington, and Riverview), 13h. (Bucharest and Sofia), 15h. (near Bacau and Bucharest), 19h. (Salt Lake City), 21h. (Frunse, Samarkand, and near Tashkent), 23h. (Tucson, Pasadena, Mount Wilson, Riverside, Tinemaha, and Haiwee).

Jan. 12d. 9h. Undetermined shock.

Stalinabad iP_g =5m.14s.
Tashkent iP =5m.53s., iS_g =6m.35s.
Tchimkent iP =6m.7s., iS_g =7m.9s.
Frunse P =6m.35s.
New Delhi ePN =8m.0s., i =8m.27s. and 8m. 56s., iS =10m.8s., i =10m.24s.
Dehra Dun eS =9m.1s.?, e =10m.4s., eL =11m.3s.
Sverdlovsk P =9m.23s., S =12m.56s.
Bombay iPN =9m.38s., iN =9m.43s., PPPN =10m.7s., iE =10m.45s., iSE =13m.18s., eSN =13m.21s., iEN =13m.30s., SSSE =13m.54s.
Irkutsk iP =10m.56s., eS =15m.35s.
Helwan ePZ =11m.36s., eZ =13m.15s., and 17m.18s.
Jena iP =12m.54s.?.
Stuttgart iZ =13m.10s., eL =28m.0s.
Zurich eP =13m.14s.a.
Basle eP =13m.18s.
Neuchatel eP =13m.24s.
Upsala eP?E =13m.53s., eN =15m.29s. and 20m.35s., eE =20m.39s., eN =25m.51s.
Bergen e =18m.?
Colombo eP =18m.5s., S =22m.50s.
Riverside eZ? =22m.55s.
Tucson e =23m.2s. and 23m.47s.
Mount Wilson eZ? =23m.15s., 23m.38s., and 23m.50s.
Pasadena eZ =23m.31s. and 23m.45s.
Tinemaha eZ =23m.43s.
Long waves were also recorded at Cheb, Copenhagen, De Bilt, and Potsdam.

Jan. 12d. Readings also at 0h. (Triest), 4h. (New Delhi), 8h. (near Samarkand), 9h. (Mount Wilson, Tucson, Pasadena, Frunse, Tchimkent, and near Tashkent (2)), 10h. (Stuttgart, Sverdlovsk, near Samarkand, Frunse, Tashkent, Tchimkent, New Delhi, Bombay, and near Angra do Heroismo), 11h. (near Samarkand), 12h. (near Tashkent and Tchimkent), 14h. (Frunse, near Stalinabad (2), Tchimkent, and Tashkent), 18h. (near Harvard (2) and near Stalinabad), 19h. (Tashkent, near Stalinabad, and Fort de France), 20h. (Fort de France and Kew), 21h. and 22h. (near St. Louis), 23h. (near Berkeley and near Sofia).

Jan. 13d. Readings at 0h. (Auckland, Stuttgart, Triest, Wellington, Riverview, Sydney, and near Lick), 1h. (New Delhi and near Tashkent), 2h. (Pasadena, Mount Wilson, Riverside, Tucson, and Tinemaha), 3h. (Riverview, Sydney, and Kodaikanal), 4h. (Riverview, Sydney, Bombay, and Calcutta), 8h. (La Paz, Huancayo, Helwan, Uccle, and De Bilt), 10h. (Stuttgart and Auckland), 11h. (Calcutta), 13h. (near Stalinabad, Tashkent, and Andijan), 14h. (near Stuttgart, Florence, Milan, Chur, Zurich, Neuchatel, Basle, and near Stalinabad), 16h. (near Andijan and Tashkent), 17h. (La Paz), 19h. (La Paz, Brisbane, Riverview, Sydney, Perth, Wellington, Christchurch, Bombay, Calcutta, and New Delhi), 20h. (St. Louis, near Stalinabad, Andijan, and Tashkent), 22h. and 23h. (near Balboa Heights).

Jan. 14d. 19h. Undetermined shock.

Colombo P =15m.9s., S =19m.33s., L? =22m.32s.
Calcutta ePN =16m.12s., PP?N =16m.57s., i =17m.45s., iS =21m.15s., SS =22m.49s., i =23m.44s., L =25m.31s.
Perth i =16m.55s., 20m.50s., 22m.15s., and 23m.0s.
Bombay ePN =17m.8s., PPN =18m.32s., N =19m.5s., P_cPN =19m.22s., iN =19m.42s., SN =22m.54s., SSN =25m.24s., S_cSN =27m.0s., LN =29m.27s.
New Delhi ePN =17m.25s., e =18m.26s., iPP =19m.6s., e =20m.37s., iS =23m.37s., SS =26m.20s., i =28m.54s., and 39m.29s.
Irkutsk e =19m.10s., 27m.0s.
Tananarive eE =20m.32s., N =26m.30s., E =26m.44s. and 30m.53s., N =35m.42s., E =36m.35s. and 39m.29s.
Sverdlovsk eP =20m.56s., S =30m.16s.
Helwan eP?Z =21m.30s., S?N =31m.6s.
Cheb e =22m.17s. and 32m.44s.
Brisbane eN =25m.13s., iE =26m.21s., eN =26m.34s., iN =28m.45s.
Dehra Dun eSN =25m.54s.?, eN =34m.30s.?, eLN =42m.42s.?.
Riverview iN =26m.40s., iE =26m.46s.
Sydney e =27m.48s.?.

Continued on next page.

Tinemaha eZ = 29m.3s., 30m.45s., and 32m.21s., iZ = 46m.15s.
Mount Wilson eZ = 29m.4s. and 43m.20s.
Riverside eZ = 29m.14s.
Tucson e = 29m.14s., 32m.6s., and 43m.29s., i = 46m.28s.
St. Louis ePZ = 29m.17s., eZ = 44m.40s.
La Paz P = 30m.0s., S?Z = 36m.44s., LZ = 44m.
Wellington e = 30m.?, iZ = 36m.57s. and 50m.17s., L? = 52m.?.
Christchurch SS = 30m.29s., Q = 33m.59s., R = 38m.0s.
Auckland S? = 31m.43s., L = 47m.
Tuai S? = 40m.40s.
Stuttgart eZ = 53m.55s., eL = 72m.
Long waves were also recorded at Hukuoka, Keizyo, Zinsen, College, Huancayo, Kew, Bergen, Upsala, De Bilt, and Granada.

Jan. 14d. 21h. 32m. 35s. Epicentre 45°·3N. 69°·6W.
Scale V at Dover, Foxcroft, and Old Town (Maine).
Macroseismic area about 50,000 sq.m.
R. R. Bodle :
United States Earthquakes 1943, Washington 1945, p. 5, with isoseismic chart. Epicentre as adopted.

$A = +\cdot2460$, $B = -\cdot6615$, $C = +\cdot7084$; $\delta = -7$; $h = -4$;
$D = -\cdot937$, $E = -\cdot349$; $G = +\cdot247$, $H = -\cdot664$, $K = -\cdot706$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Seven Falls		2·0	335	0 36	+ 1	1 6	+ 4	—	—	—
Shawinigan Falls		2·5	300	0 45	+ 2	1 25	+11	0 49	P*	—
Vermont		2·7	252	(i 1 1)	P_g	i 1 1	P_g	—	—	—
Harvard		3·1	207	i 0 49	− 2	i 1 22	− 7	i 1 38	S*	—
Ottawa		4·3	273	1 9	+ 1	2 17	S_g	1 17	P*	—
Fordham		5·4	217	e 1 21	− 3	i 2 52	S_g	i 1 39	P*	—
Philadelphia		6·7	218	e 2 10	P_g	i 2 49	−11	—	—	i 3·7
New Kensington		8·8	241	—	—	e 4 13?	S*	—	—	e 5·1
Florissant	N.	16·7	255	—	—	i 7 15	+12	—	—	i 8·6
St. Louis		16·7	254	—	—	e 7 9	+ 6	—	—	e 9·8
Cape Girardeau	N.	16·9	249	—	—	e 6 40	−27	—	—	e 8·8

Additional readings :—
Halifax (△ = 4°·3), e = 21h. 31m. 34s., L = 21h. 31·7m., no clock correction.
Ottawa i = 1m.43s.
Fordham i = 1m.26s. and 2m.13s.
Philadelphia e = 3m.14s., i = 3m.34s.
St. Louis eZ = 7m.45s.

Jan. 14d. Readings also at 1h. (near Fresno and Lick), 2h. (Riverview, Wellington, Sofia, near Andijan, Tashkent, and near Berkeley), 3h. (near Andijan and Stalinabad), 8h. (Auckland), 9h. (Huancayo, La Paz, Mount Wilson, Pasadena, Tucson, Riverside, and Tinemaha), 10h. (La Paz and Riverview), 12h. (Mount Wilson, Tucson, Pasadena, Riverside, Tinemaha, and near Andijan), 14h. (Huancayo, Wellington (2), Auckland, and Riverview), 15h. (near St. Louis), 16h. (Riverview, Auckland, Christchurch, and Wellington), 17h. (Des Moines), 19h. (Almata, Andijan, and near Stalinabad), 20h. (La Paz, Mount Wilson, Pasadena, Tucson, Riverside, Tinemaha, near Branner, near Lick, and near Mizusawa), 23h. (Clermont-Ferrand, Stuttgart, Helwan, Almata, Andijan, Stalinabad, Kodaikanal, Dehra Dun, Bombay, Calcutta, and New Delhi).

Jan. 15d. Readings at 0h. (near Berkeley), 2h. (Mount Wilson, Riverside, Tucson, Tinemaha, Haiwee, and near Mizusawa), 3h. and 4h. (Pasadena, Mount Wilson, Riverside, Tucson, Tinemaha, and Haiwee), 7h. (Chur, Zurich, Potsdam, Triest, Cheb, Stuttgart, Sofia, and Bucharest), 8h. (Bombay), 9h. (Buffalo), 11h. (Bombay), 15h. (near Mizusawa), 17h. (Stuttgart, Almeria, and Granada), 18h. (Kew, Triest, and De Bilt), 22h. (near Florence), 23h. (Stuttgart, Uccle, De Bilt, Tashkent, New Delhi, Bombay, Calcutta, and near San Francisco).

Jan. 16d. 14h. 33m. 18s. Epicentre 42°·6N. 13°·5E. (as on 11d.).

Scale IV at Ascoli Piceno, Montalto ; II at Macerata.
R. P. Cesare Coppede.
Annuario Sismico, 1943, del Osservatorio Ximeniano, Florence, p. 6.

$A = +·7180$, $B = +·1724$, $C = +·6744$; $\delta = +6$; $h = -3$;
$D = +·233$, $E = -·972$; $G = +·656$, $H = +·157$, $K = -·738$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florence	2·0	306	e 0 36	+ 1	e 0 59	− 3	i 0 39	P_g	—
Triest	3·1	3	e 0 58	P_g	i 1 16	−13	—	—	—
Milan	4·2	314	e 1 30	P_g	e 2 35	S_g	—	—	—
Chur	5·1	328	e 1 18	− 2	—	—	—	—	—
Zurich	5·9	325	e 1 29	− 2	—	—	—	—	—
Neuchatel	6·4	315	e 1 35	− 3	e 2 27	−26	—	—	—
Basle	6·5	321	e 1 45	+ 6	e 3 19	S*	—	—	—
Stuttgart	6·9	335	e 1 53	+ 8	e 3 45	S_g	e 2 21	P_g	—
Strasbourg	7·2	328	—	—	e 3 3	−10	—	—	i 4·2

Additional readings :—
Florence iS_g = 1m.5s.
Stuttgart eZ = 2m.8s., e = 2m.47s.
Long waves were also recorded at De Bilt and Potsdam.

Jan. 16d. Readings at 0h. (Kew), 4h. (Mount Wilson, Riverside, Tucson, Tinemaha, and Stuttgart), 7h. (Mount Wilson, Riverside, Tinemaha, Tucson, Stuttgart, and near La Paz (2)), 11h. (Prague, near Yalta, near Tucson, Mount Wilson, Riverside, near Tinemaha, and Haiwee), 12h. (La Paz), 13h. (Stuttgart, Triest, Zurich, Neuchatel, and near Sofia (2), 14h. (Bombay), 16h. (La Paz), 17h. (near Ottawa), 19h. (Stuttgart, Zurich, Basle, Chur, and near Triest), 21h. (Riverview, Calcutta, and Bombay), 22h. (Kodaikanal), 23h. (New Delhi).

Jan. 17d. 17h. Undetermined shock, North America.

Tucson iP = 4m.13s., i = 4m.33s., e = 5m.38s., iS = 5m.40s.
Riverside iPZ = 4m.48s.
Pasadena iP = 4m.53s., iLE = 7·7m.
Mount Wilson iP = 4m.53s.
La Jolla eE = 5m.4s.
Santa Barbara iPNZ = 5m.5s.
Haiwee iP = 5m.17s., iZ = 5m.24s. and 6m.10s.
Tinemaha iP = 5m.30s.k, eN = 9m.45s.
Salt Lake City eP = 6m.9s., e = 10m.5s., eL = 11m.21s.
Logan eP = 6m.20s., eS = 8m.58s., eL = 11m.40s.
Ottawa eZ = 9m.23s., L = 20m.
St. Louis eSE = 11m.47s., eLN = 13m.59s.
Long waves were also recorded at other American stations.

Jan. 17d. Readings also at 2h. (near Focsani and Bucharest), 4h. (Mount Wilson, Riverside, Tinemaha, and Haiwee), 5h. (Tucson (2), Pasadena, Mount Wilson, Riverside, Tinemaha, Haiwee, La Jolla, and Santa Barbara), 9h. (near Andijan and Tashkent), 13h. (near Berkeley), 15h. and 18h. (near Tashkent).

Jan. 18d. Readings at 0h. (near Fort de France), 1h. (Pasadena, Tucson (2), Mount Wilson (2), Riverside (2), and Riverview), 3h. (Bergen), 11h. (Riverside, Tinemaha, Tucson, Stuttgart, and near Mizusawa), 12h. (Calcutta, Mount Wilson, and Riverside), 13h. (Bombay, Tinemaha, Tucson, near Branner, and San Francisco), 17h. (Stuttgart and near Mizusawa).

Jan. 19d. Readings at 5h. (Stuttgart, Cheb, Mount Wilson, Riverside, Tinemaha, Haiwee, and Tucson, near Mizusawa, and near Branner), 7h. (Mount Wilson, Riverside, Tinemaha, Tucson, Haiwee, near Tashkent, and Tchimkent), 8h. (Wellington), 11h. (Stuttgart, Riverview, Sydney, Wellington, Arapuni, Auckland, and Apia), 12h. (near Tashkent and Tchimkent), 16h. (La Paz (2)), 17h. (near Branner and near Istanbul), 20h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Haiwee, Brisbane, Riverview, and Mizusawa), 21h. (Mount Wilson, Riverside, Tinemaha, Tucson, Stuttgart, Copenhagen, near Granada, and Almeria, and near Mizusawa (2)), 22h. (San Fernando, near Toledo, and Tortosa), 23h. (La Paz).

Jan. 20d. 12h. 38m. 19s. Epicentre 43°·2N. 16°·4E. (as on 1940, July 23d.).

Intensity V at Stolac ; IV at Ljubuski and Trilj ; II at Mostar.
Epicentre 43°·1N. 17°·9E. Radius of Macroseismic area 70km.
J. Mihailovic :
Annuaire Microséismique et Macroséismique, Année 1943, Beograd, 1950, p. 41.

$A = +\cdot7015$, $B = +\cdot2065$, $C = +\cdot6821$; $\delta = 0$; $h = -3$;
$D = +\cdot282$, $E = -\cdot959$; $G = +\cdot654$, $H = +\cdot193$, $K = -\cdot731$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		3·1	322	e 0 52	+ 1	i 1 26	− 3	i 1 33	S*	—
Belgrade		3·3	61	e 0 45	− 8	i 1 25	−10	i 0 58	P*	—
Florence		3·8	278	i 1 10a	P*	i 1 56	S*	i 1 21	P_g	i 2·5
Ogyalla	E.	4·8	14	1 7	− 8	1 47	−25	—	—	2·2
	N.	4·8	14	1 1	−14	1 41	−31	—	—	2·2
Sofia		5·1	93	e 1 11	− 9	2 21	+ 1	i 1 27	P*	i 2·5
Milan	z.	5·7	296	e 1 41?	P*	e 2 41	+ 6	—	—	—
Chur		6·0	307	e 1 35a	+ 3	e 3 6	S*	—	—	—
Ravensburg		6·6	316	e 1 41?	0	e 3 2	+ 4	e 2 19	P_g	e 3·8
Zurich		6·9	309	e 1 46a	+ 1	e 3 25	S*	—	—	—
Prague		7·0	350	e 1 44a	− 2	i 3 40	S*	—	—	—
Bucharest		7·1	77	e 1 43	− 5	i 3 21	+11	i 2 45	?	—
Ebingen		7·2	316	e 1 47	− 2	e 3 20	+ 7	e 2 22	P_g	e 3·8
Cheb		7·4	339	e 2 51	+59	e 3 14	− 4	e 4 1	S_g	e 4·1
Stuttgart		7·5	320	i 1 52a	− 1	i 3 13	− 7	i 4 13	S_g	i 4·4
Basle		7·6	307	e 1 56a	+ 1	e 3 40	+17	—	—	—
Neuchatel		7·7	303	e 1 57	+ 1	e 3 25	0	—	—	—
Focsani		8·1	68	—	—	e 3 35?	0	—	—	4·3
Strasbourg		8·1	315	e 2 2	0	e 2 19	−16	—	—	3·5
Jena		8·4	338	2 3	− 3	i 3 35	− 8	i 2 54	P_g	—
Potsdam		9·5	347	e 3 11?	?	i 5 13	L	3 41?	?	(i 5·2)
Clermont-Ferrand		9·8	289	e 2 31	+ 7	i 4 20	+ 3	e 3 19	?	—
Uccle		11·2	317	e 2 59	+15	—	—	—	—	e 5·9
Copenhagen		12·7	350	3 1	− 4	—	—	—	—	6·7
Almeria		15·8	252	e 2 55	−50	i 5 46	−56	—	—	8·7
Granada		16·4	255	e 3 31	−22	—	—	—	—	—
Upsala		16·7	2	i 3 56	− 1	e 7 5	+ 2	e 7 11	?	e 9·3
Helwan	z.	17·9	133	i 4 11	− 1	c 7 56	SS	—	—	—
Bergen		18·5	342	4 18	− 1	—	—	—	—	e 10·2

Additional readings :—
Belgrade $iP_g = 0m.53s.$, $i = 1m.14s.$ and $1m.19s.$
Ravensburg $e = 2m.5s.$, $eP_g = 2m.13s.$, $e = 2m.46s.$ and $3m.33s.$
Ebingen $e = 3m.30s.$
Cheb $eE = 3m.40s.$
Stuttgart $iP^*Z = 1m.56s.$, $iP_gZ = 2m.27s.$, $e = 3m.34s.$, $3m.51s.$, and $4m.5s.$
Jena $iPE = 2m.7s.$, $iN = 3m.6s.$, $iE = 3m.13s.$, $iSE = 3m.17s.$, $iS = 3m.25s.$
Potsdam $eEN = 4m.47s.$
Long waves were also recorded at De Bilt and Kew.

Jan. 20d. Readings also at 0h. (Copenhagen), 3h. (Pasadena, Mount Wilson, Riverside, Santa Barbara, La Jolla, Tinemaha, Haiwee, Tucson, Stuttgart, and Riverview), 7h. (Huancayo and near La Paz), 8h. (Mount Wilson, Riverside, Tinemaha, Tucson, and Riverview), 9h. (near Tashkent and Tchimkent), 11h. (Fresno), 12h. (Paris, Fresno, Tashkent, and Tchimkent), 13h. (Stuttgart, Helwan, Ksara, Sofia, and near Granada), 14h. (near Granada and near Mizusawa), 15h. and 18h. (near Mizusawa), 19h. (Calcutta, Pasadena, Mount Wilson (2), Riverside (2), Tinemaha, Tucson (2), Stuttgart, and near Mizusawa).

Jan. 21d. Readings at 0h. (near Granada), 1h. (near Mizusawa), 2h. (Tacubaya), 4h. (Kew and near Mizusawa), 5h. (Tinemaha, Mount Wilson, Pasadena, Tucson, Riverside, Copenhagen, Stuttgart, and near Mizusawa), 6h. (Riverview), 8h. (near La Paz), 14h. (near Almeria and Toledo), 16h. (near Andijan), 17h. (near Mizusawa), 20h. (La Paz).

Jan. 22d. 6h. Undetermined shock.

Wellington e? =44m., eZ =50m., L =66m.
Brisbane iPE =45m.15s., iSE =50m.19s., iSS?E =52m.14s., eLE =54m.15s.
Riverview iPNZ =46m.11s.k, iSN =51m.35s., eL?N =55·6m., iS_cS?EN =56m.52s.
Andijan P =51m.9s., S =60m.38s.
Tashkent iP =51m.23s.
Sydney e =51m.36s., eL =57m.
Perth P =52m.25s., S =57m.0s., SS =58m.3s.
Tucson eP =58m.22s.
Riverside ePZ? =58m.30s.
La Paz iPZ =59m.14s.k, LZ =117m.
Christchurch S =59m.26s., Q =62m.38s., R =66m.22s.
Long waves were also recorded at Auckland, Arapuni, and Pasadena.

Jan. 22d. Readings also at 0h. and 12h. (near Tashkent and Andijan), 13h. (near Andijan, Tashkent, and Almata), 18h. (near St. Louis), 19h. (near Almata and Andijan), 20h. (La Paz), 23h. (near La Paz and Huancayo).

Jan. 23d. 13h. 30m. 1s. Epicentre 19°·0N. 61°·0W.

A = +·4587, B = −·8276, C = +·3236 ; δ = +4 ; h = +5 ;
D = −·875, E = −·485 ; G = +·157, H = −·283, K = −·946.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fort de France		4·3	181	1 9	+ 1	1 57	− 3	1 17	P*	—
San Juan		4·9	263	i 1 14	− 3	i 2 7	− 8	i 1 24	P*	i 2·4
Bermuda		13·8	346	e 3 21	+ 2	i 5 23	?	—	—	i 6·9
Philadelphia		24·2	335	i 5 19	0	e 9 32	− 3	—	—	e 12·9
Harvard		25·1	343	i 5 27	− 1	i 9 53	+ 2	(e 10 59?)	SSS	e 11·0
Seven Falls		29·2	348	e 6 5?	0	—	—	(11 59?)	SS	12·0
Ottawa		29·3	339	e 6 0	− 6	—	—	(11 59?)	SS	12·0
Cape Girardeau	E.	30·0	312	i 6 19	+ 7	—	—	—	—	—
St. Louis		32·0	314	e 6 29	− 1	—	—	e 13 14	SS	e 17·0
Chicago		32·1	321	e 10 35	?	—	—	—	—	e 15·4
Huancayo		33·9	206	e 6 47	0	i 12 13	+ 2	e 7 42	PP	e 14·8
La Paz	Z.	36·0	191	7 6	+ 1	i 12 48	+ 4	—	—	19·0
Tucson		46·5	298	i 8 31	0	—	—	e 10 17	PP	e 26·4
Salt Lake City		48·4	309	e 8 43	− 3	—	—	—	—	e 26·1
Haiwee		52·6	301	i 9 19	+ 1	—	—	—	—	—
Tinemaha		52·9	302	i 9 19	− 1	—	—	—	—	—
Toledo	Z.	52·9	55	i 9 15	− 5	—	—	—	—	—
Granada		53·0	58	i 9 18	− 3	i 16 40	−10	9 44	pP	27·0
Almeria		53·9	58	9 16	−11	16 47	−15	9 39	pP	27·0
Clermont-Ferrand		58·6	48	i 9 58	− 3	—	—	—	—	—
Basle		61·8	46	e 10 19	− 4	—	—	—	—	—
Zurich		62·5	46	e 10 23k	− 5	—	—	—	—	—
Stuttgart		63·0	44	e 10 25	− 6	—	—	—	—	e 36·0
Cheb		65·0	43	e 17 59?	?	—	—	—	—	—

Additional readings :—
Fort de France P_g =1m.21s., e =1m.37s., eS =2m.3s.
San Juan i =1m.58s.
Philadelphia iS =9m.38s.
Huancayo e =7m.4s.
Tucson e =11m.30s. and 14m.16s.
Salt Lake City e =12m.11s., i =21m.40s.
Granada PP =11m.37s., sS =17m.23s., iSS =21m.6s.
Almeria P_cP =10m.15s., sP_cP =10m.53s., PP =11m.25s., PPP =12m.37s., S_cS = 18m.41s., SS =20m.49s., SSS =23m.5s.
Long waves were also recorded at Logan, Bozeman, Sitka, Calcutta, and College.

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Jan. 23d. Readings also at 0h. (Arapuni, Auckland, near Christchurch, and Wellington), 4h. (near Mizusawa), 5h. (Tacubaya), 6h. (near Tashkent and Tchimkent), 9h. (La Paz and Huancayo). 10h. (near Mizusawa), 12h. (Fordham, Fort de France, and De Bilt), 15h. (near Tashkent and Tchimkent), 18h. and 19h. (Fort de France), 23h. (near Sofia).

Jan. 24d. 4h. Undetermined shock.

La Paz PZ =16m.49s., iS?Z =19m.14s., iLZ =20m.12s.
La Plata E iP =17m.16s., iS =19m.15s. and 19m.50s., L =20m.27s. ; N iP =17m.16s. and 18m.18s.?, S =19m.13s. and 20m.6s.?, L =20m.34s. ; Z iP =17m.14s., 18m.6s., and 20m.0s., L =20m.24s. ?
Huancayo eP =18m.23s., e =18m.53s., eS =21m.36s., eL =23m.26s.
Rio de Janeiro ePN =19m.0s., eSN =22m.56s., eSE =23m.0s., eL =25m.8s.
Fort de France eP =22m.3s.
Tucson iP =25m.56s.
Pasadena iPZ =26m.31s.
Mount Wilson iPZ =26m.32s.
Haiwee iPEZ =26m.38s.
Tinemaha iP =26m.40s.

Jan. 24d. 9h. 26m. 37s. Epicentre 13°·7N. 91°·0W. (as on 1942, August 16d.).

A = −·0170, B = −·9718, C = +·2354 ; δ = +10 ; h = +5 ;
D = −1·000, E = +·017 ; G = −·004, H = −·237, K = −·972.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Merida	Z.	7·3	10	i 2 3	P*	—	—	—	—	—
Vera Cruz	N.	7·3	318	e 2 2	P*	—	—	—	—	—
Tacubaya	N.	9·7	307	2 34	+12	—	—	—	—	—
Balboa Heights		12·1	111	e 3 7	+10	—	—	—	—	—
Mobile		17·1	9	i 4 4	+ 2	7 1	−11	—	—	—
Columbia		22·1	22	e 4 53	− 6	e 8 37	−21	e 5 29	PP	e 9·8
Cape Girardeau	E.	23·6	5	5 41	PP	e 8 58	−27	e 5 56	PPP	e 10·1
San Juan		24·3	76	e 5 25	+ 5	—	—	e 6 17	PPP	—
St. Louis		24·8	2	i 5 18	− 7	e 9 53	+ 7	e 5 55	PP	—
Florissant		25·0	2	i 6 1	PP	i 10 13	+24	i 6 24	PPP	—
Tucson		25·9	319	i 5 35	0	—	—	i 6 14	PP	e 10·9
Fort de France		28·9	85	e 6 5	+ 2	—	—	—	—	—
Philadelphia		29·6	26	i 6 6	− 3	e 10 39	−25	e 6 50	PP	e 14·0
Huancayo		29·9	149	e 6 24	+12	i 11 27	+18	e 7 6	PP	e 13·9
Bermuda		30·2	48	e 6 11	− 3	e 11 2	−11	e 6 58	PP	e 12·2
Fordham		30·9	25	(i 6 12)	− 8	—	—	—	—	—
Mount Wilson	Z.	31·9	315	i 6 29	0	—	—	—	—	—
Pasadena	Z.	31·9	315	i 6 27	− 2	—	—	—	—	—
Harvard		33·2	26	i 6 34	− 6	(e 11 53?)	− 7	—	—	—
Tinemaha		33·7	318	e 6 44	− 1	12 45	+37	—	—	—
Ottawa		34·1	18	6 42	− 6	11 45	−29	(e 14 23?)	SS	e 14·4
Shawinigan Falls		36·2	21	7 0	− 6	12 18	−29	—	—	—
Seven Falls		37·3	22	7 10	− 6	12 34	−30	—	—	—
La Paz	Z.	37·6	142	7 29a	+11	—	—	i 16 13	SSS	—
Granada		79·8	54	i 12 58	?	i 23 4	PS	23 22	PPS	—
Almeria		80·8	54	i 13 23	?	—	—	(27 23?)	SS	27·4
Stuttgart	Z.	86·4	40	e 12 40	− 5	—	—	e 15 59	PP	—
Cheb		88·0	38	e 21 23?	?	—	—	—	—	—

Additional readings :—
Cape Girardeau eE =8m.33s.
San Juan i =6m.24s.
St. Louis eS?E =9m.14s.
Florissant eE =9m.16s.
Tucson i =6m.35s., e =9m.1s.
Fort de France e =11m.55s.
Philadelphia e =12m.8s.
Fordham readings increased by 1 hour.
Harvard eS has been reduced by 10 minutes.
Tinemaha eEN =7m.22s., eZ =9m.21s.
Ottawa PP =7m.24s.
Granada P_gP =13m.15s.
Stuttgart eZ =13m.29s., iZ =13m.51s.

Jan. 24d. 17h. 8m. 32s. Epicentre 45°·8N. 10°·3E. (as on 1942, Feb. 7d.)

Intensity IV-V at Salò.
Epicentre to the south of Salò 45° 34·2′N. 10° 30.9′E.
Pietro Caloi.
Epicentro e profondita ipocentrale del terremoto de Salò de 24 Gennaio, 1943, Atti dell' Instituto Veneto di Scienze, Lettere ed Arti, Anno 1944-45, Tomo CIV, Parte Seconda, pp. 117-122 ; et Public. de l'Inst. Geophysique de Pavia.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Milan		0·9	247	i 0 19	− 1	i 0 37	+ 3	—	—	—
Chur		1·2	333	e 0 23	− 1	i 0 42	+ 1	—	—	—
Zurich		1·8	323	e 0 35	+ 3	e 1 10	S_g	e 0 39k	P_g	—
Ravensburg		2·1	347	e 0 49	P_g	e 1 8	+ 4	e 1 12	S_g	—
Triest		2·3	94	e 0 40	0	e 1 9	0	e 1 3	?	—
Basle		2·5	313	e 0 48	+ 5	e 1 28	S_g	—	—	—
Neuchatel		2·6	297	e 0 43	− 1	e 1 26	S_g	e 0 51	P_g	—
Stuttgart		3·1	346	e 0 52	+ 1	e 1 24	− 5	i 1 1	P_g	—
Strasbourg		3·3	330	e 0 54	+ 1	i 1 38	+ 3	1 49	S_g	—
Clermont-Ferrand		5·0	272	e 1 17	− 1	e 2 43	S_g	e 1 34	P*	—
Jena	N.	5·2	8	e 1 40	P_g	—	—	—	—	e 2·8

Additional readings :—
Ravensburg e = 1m.1s.
Stuttgart i = 1m.45s., iS_g = 1m.48s.
Strasbourg S_g = 2m.0s.
Clermont-Ferrand iPP = 1m.41s.
Jena eN = 1m.51s.

Jan. 24d. 20h. 41m. 43s. Epicentre 13°·7N. 91°·0W. (as at 9h.).

$A = -\cdot0170$, $B = -\cdot9718$, $C = +\cdot2354$; $\delta = +10$; $h = +5$;
$D = -1\cdot000$, $E = +\cdot017$; $G = -\cdot004$, $H = -\cdot237$, $K = -\cdot972$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	6·5	301	e 2 4	P*	—	—	—	—	—
Merida	Z.	7·3	10	e 2 4	P*	—	—	—	—	—
Vera Cruz	N.	7·3	318	e 2 4	P*	—	—	—	—	—
Puebla	N.	8·7	308	e 2 23	+13	—	—	—	—	—
Tacubaya	N.	9·7	307	e 2 15	− 7	—	—	—	—	—
Balboa Heights		12·1	111	e 2 52	− 5	—	—	—	—	—
Guadalajara		13·7	302	e 3 31	+13	—	—	—	—	—
Mobile		17·1	9	i 4 10	+ 8	—	—	—	—	—
Columbia		22·1	22	e 4 59	0	e 9 2	+ 4	e 5 44	PPP	e 10·7
Cape Girardeau	E.	23·6	5	e 5 15	+ 2	i 9 21	− 4	e 6 10	PPP	—
San Juan		24·3	76	e 5 20	0	e 9 49	+12	e 6 6	PPP	e 12·9
St. Louis		24·8	2	i 5 25	0	i 9 41	− 5	i 5 59	PP	11·8
Florissant		25·0	2	i 5 27	0	i 9 43	− 6	—	—	e 13·5
Tucson		25·9	319	i 5 34	− 1	i 9 50	−14	—	—	e 10·4
Lincoln		27·5	354	e 8 5	?	—	—	—	—	e 10·7
Chicago		28·1	4	e 5 55	0	e 10 32	− 8	—	—	e 11·9
New Kensington		28·5	17	e 6 11?	+12	e 10 35?	−11	e 6 53?	PP	e 12·7
Fort de France		28·9	85	e 9 21	?	—	—	—	—	—
Philadelphia		29·6	26	e 6 20	+11	e 10 58	− 6	e 6 23	PP	e 12·6
Huancayo		29·9	149	e 6 14	+ 2	e 11 23	+14	(e 12 56)	SS	e 12·9
Bermuda		30·2	48	e 6 14	0	e 11 14	+ 1	e 7 15	PP	12·5
La Jolla	E.	30·6	313	e 6 21	+ 3	—	—	—	—	—
Buffalo		30·9	18	i 6 32	+12	i 11 21	− 3	i 7 13	PP	—
Fordham		30·9	25	i 6 17	− 3	i 11 23	− 1	—	—	—
Riverside	Z.	31·3	315	i 6 23	− 1	i 11 21	−10	i 9 20	P_cP	—
Mount Wilson	Z.	31·9	315	6 28	− 1	—	—	i 9 34	P_cP	—
Pasadena		31·9	315	i 6 28	− 1	i 11 41	+ 1	—	—	e 14·3
Salt Lake City		32·5	329	e 6 35	+ 1	e 11 35	−14	—	—	e 16·0
Haiwee		32·9	318	i 6 39	+ 1	i 11 57	+ 1	i 9 18	P_cP	—
Harvard		33·2	26	i 6 44	+ 4	i 11 58	− 2	i 6 53	pP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara		33·2	313	e 6 39	− 1	i 11 30	−30	—	—	—
Logan		23·3	331	e 6 39	− 2	i 11 58	− 4	e 7 50	PP	e 13·8
Tinemaha		33·7	318	i 6 39	− 6	e 12 9	+ 1	e 8 5	PP	—
Ottawa		34·1	18	6 47	− 1	12 12	− 2	8 17	PPP	17·3
Vermont		24·2	23	i 7 0	+11	i 12 13	− 3	e 7 58	PP	14·4
Fresno	N.	34·5	317	e 6 47	− 5	—	—	—	—	e 24·4
Bozeman		36·1	337	e 8 27	PP	e 12 41	− 4	—	—	e 15·7
Santa Clara	E.	36·2	316	(e 7 20)	+14	(e 12 48)	+ 1	—	—	(e 18·7)
Shawinigan Falls		36·2	21	7 5	− 1	12 44	− 3	8 41?	PPP	19·3
Berkeley		36·7	316	i 7 12	+ 2	i 12 54	0	—	—	e 18·8
Butte		37·0	337	e 7 12	− 1	—	—	e 8 49	PP	e 16·2
Seven Falls		37·3	22	7 14	− 2	13 1	− 3	e 15 58	SSS	20·3
La Paz	Z.	37·6	142	i 7 21a	+ 3	i 13 50	?	i 8 51	PP	20·1
Ukiah		38·0	318	e 7 21	0	e 12 11	− 3	e 8 40	PP	e 16·1
Halifax		38·7	31	e 3 33?	?	e 8 17?	?	—	—	14·3
Saskatoon		40·3	344	9 17	PP	16 46	SS	e 13 42	S	25·3
Seattle		42·7	329	e 7 54	− 6	—	—	e 17 24	SS	e 21·9
Victoria		43·8	329	8 16	+ 7	14 40	0	—	—	24·3
Rio de Janeiro	N.	59·3	127	e 10 15	+ 9	e 17 26	?	—	—	e 29·2
Scoresby Sund		70·2	19	—	—	e 21 2	+34	e 28 20	SSS	e 34·3
Toledo		79·0	51	e 11 41	−26	e 21 53	−13	14 58	PP	38·9
Granada		79·8	54	i 12 12	0	i 22 25	+11	27 27	SS	i 37·4
Almeria		80·8	54	e 12 17	0	—	—	—	—	36·3
Uccle		82·9	40	—	—	e 22 35?	−11	—	—	e 34·3
Clermont-Ferrand		83·1	45	e 12 27	− 2	—	—	—	—	e 42·3
Stuttgart		86·4	40	e 12 45	0	e 23 17	{+ 2}	—	—	e 43·3
Upsala		87·3	28	—	—	e 23 17?	[+ 1]	—	—	e 42·3
Cheb		88·0	38	—	—	e 23 23	[+ 2]	—	—	e 49·3
Riverview		120·5	238	—	—	e 26 17	[+25]	e 30 21	PS	e 55·6
New Delhi	N.	136·4	15	e 19 28	[+ 4]	e 26 35	[+ 2]	—	—	—
Calcutta	N.	144·0	0	e 19 46	[+ 9]	—	—	e 23 11	PP	—

Additional readings :—
Mobile i = 6m.22s.
St. Louis iPPPZ = 6m.7s.
Tucson i = 8m.41s. and 10m.3s.
Chicago i = 6m.6s., e = 7m.50s., 10m.10s., and 10m.50s.
New Kensington e = 11m.35s. ?
Philadelphia iS = 11m.3s., e = 11m.47s.
Huancayo e = 10m.58s.
Buffalo iPPP = 7m.41s., e = 8m.51s., iSS = 12m.47s.
Riverside iZ = 9m.30s.
Mount Wilson iZ = 6m.40s.
Pasadena iEN = 6m.41s., iZ = 6m.52s.
Salt Lake City e = 13m.13s.
Haiwee iZ = 6m.50s., eS_cSEN = 17m.7s.
Harvard e = 12m.20s., 15m.8s., and 15m.47s., iS_cS? = 16m.49s.
Santa Barbara iZ = 6m.51s.
Logan e = 8m.26s. and 11m.44s.
Tinemaha iEZ = 6m.55s., iP_cPZ = 9m.26s., iZ = 9m.37s., eS_cPZ = 13m.10s., eZ = 13m.32s., eS_cSN = 17m.9s.
Ottawa i = 7m.0s.
Bozeman e = 9m.36s.
Santa Clara readings decreased by one hour.
Berkeley iPE = 7m.15s., eP_cPEN = 7m.41s., eP_cPZ = 7m.45s., iZ = 12m.59s., eE = 17m.59s.?
Butte e = 13m.20s.
Halifax no clock correction.
Seattle e = 17m.54s.
Scoresby Sund e = 22m.49s.
Stuttgart eZ = 12m.57s.
Riverview ePS?E = 30m.27s., eSS?E = 37m.5s., eN = 40m.50s.
New Delhi N. iPP = 22m.57s., iSKP = 23m.10s., ePPPP = 28m.56s., eSKKS = 29m.31s., eSKKS (△ >180°) = 34m.33s., PPS = 35m.36s., iSS = 41m.47s.
Calcutta N e = 31m.21s. and 39m.1s.
Long waves were also recorded at Sitka College, La Plata, Tananarive, and other European and New Zealand stations.

Jan. 24d. Readings also at 1h. (Tacubaya), 5h. (Tinemaha), 7h. (La Paz), 8h. (Tacubaya and near Yalta), 14h. (Istanbul), 21h. (Ferndale).

Jan. 25d. Readings at 2h. (Andijan and Tashkent), 3h. (New Delhi), 4h. (Tinemaha, Tucson, Huancayo, and near Balboa Heights), 5h. (Auckland), 6h. (Pasadena, Tucson, Mount Wilson, Riverside, and Tinemaha), 9h. (Harvard), 11h. (near Mizusawa), 14h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Santa Barbara, Tucson, and near La Paz), 15h. (Mount Wilson, Tinemaha, La Paz, and near Mizusawa (2)), 16h. (Fort de France), 17h. (Riverside, Tucson, Tinemaha, and College), 18h. (Pasadena (2), Mount Wilson (2), Riverside (2), Tinemaha (2), Tucson (2), Fort de France, La Plata, and near La Paz), 21h. (Tinemaha, Tucson, Riverside, near La Plata, and La Paz), 22h. (Huancayo), 23h. (Tucson, Pasadena, Mount Wilson, Riverside, near La Plata, and near La Paz).

Jan. 26d. Readings at 0h. (New Delhi, Mount Wilson, Tinemaha, Riverside, Tucson, near San Francisco, and near Andijan), 1h. (Auckland), 5h. (near Mizusawa), 11h. (near Ottawa), 15h. (Tucson, Chicago, Logan, Philadelphia, Fordham, and Vermont), 19h. (St. Louis, Tucson, and Tinemaha), 22h. (New Delhi, Bombay, Calcutta, Helwan, and Ksara).

Jan. 27d. 2h. 45m. 12s. Epicentre 51°·4N. 179°·2W.

$A = -·6264$, $B = -·0087$, $C = +·7795$; $\delta = +7$; $h = -6$;
$D = -·014$, $E = +1·000$; $G = -·779$, $H = -·011$, $K = -·626$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		21·1	38	e 4 51	+ 3	e 8 40	+ 1	e 5 0	PP	e 10·0
Sitka		25·9	60	e 5 36	+ 1	e 10 6	+ 2	(i 11 28)	SSS	i 11·5
Sapporo		27·8	270	i 6 5	+12	e 9 8	?	—	—	10·4
Mori		28·8	268	e 5 57	− 5	i 11 3	+12	—	—	—
Sendai		30·8	260	6 35	+15	11 23	0	—	—	—
Tokyo		33·1	258	e 11 22	?	—	—	(14 30)	SSS	14·5
Nagano		33·5	262	6 45	+ 2	—	—	—	—	—
Misima		34·0	259	6 51	+ 3	—	—	—	—	16·1
Honolulu		34·4	143	e 7 12	+21	i 12 20	+ 1	e 8 23	PPP	e 14·1
Nagoya		35·2	260	6 51	− 7	—	—	—	—	—
Victoria		35·3	73	—	—	e 12 36	+ 3	(14 48?)	SS	14·8
Seattle		36·3	74	e 7 32	+25	e 13 16	+28	—	—	e 16·3
Koti		38·4	262	7 22	− 3	13 27	+ 7	—	—	e 15·8
Hukuoka		40·3	264	7 46	+ 6	i 13 49	0	16 59	SSS	19·0
Ukiah		40·3	86	e 8 0	+20	e 13 52	+ 3	(e 17 3)	SSS	e 17·1
Miyazaki		40·8	260	7 44	− 1	13 58	+ 2	(17 0)	SS	17·0
Berkeley		41·7	87	e 7 31	−21	e 14 9	− 1	e 17 17	SS	e 19·0
Santa Clara		42·2	87	e 8 1	+ 5	e 14 23	+ 6	e 17 51	S_eS	e 20·4
Butte		42·9	70	e 8 15	+13	e 14 27	0	e 9 36	PP	e 18·1
Fresno	N.	43·9	86	e 8 16	+ 6	—	—	—	—	—
Bozeman		44·0	70	e 8 11	0	e 14 51	+ 8	e 10 18	PPP	e 19·5
Tinemaha		44·7	85	i 8 17	+ 1	e 15 0	+ 6	—	—	—
Irkutsk		45·2	303	e 8 19	− 1	15 18	+17	—	—	—
Santa Barbara		45·4	89	e 8 27	+ 5	i 15 8	+ 4	—	—	—
Logan		45·8	75	e 8 25	0	i 15 9	0	i 9 59	PP	e 21·3
Salt Lake City		46·3	76	e 8 29	0	e 15 17	+ 1	e 10 23	PP	e 20·6
Mount Wilson		46·6	88	i 8 31	− 1	i 15 25	+ 4	—	—	—
Pasadena		46·6	88	i 8 31	− 1	e 15 17	− 4	i 11 11	PPP	17·8
Riverside	Z.	47·2	88	i 8 35	− 1	e 15 36	+ 7	i 11 30	PPP	—
La Jolla	E.	48·0	89	8 54	+11	—	—	—	—	—
Tucson		52·4	84	i 9 16	0	e 16 41	− 1	i 11 2	PP	e 22·7
Lincoln		55·3	66	e 9 32	− 6	e 17 9	−12	—	—	e 22·3
Scoresby Sund		57·3	10	e 9 53	+ 1	i 18 0	+13	—	—	e 22·1
Chicago		59·7	61	e 10 8	− 1	e 18 12	− 7	e 12 27	PP	e 24·9
Florissant		60·2	65	i 10 11	− 1	i 18 24	− 1	—	—	e 28·5
St. Louis		60·4	65	i 10 11	− 2	i 18 25	− 3	—	—	27·3
Ivigtut		61·1	26	e 14 3	PPP	—	—	(e 25 17)	SSS	e 25·3
Sverdlovsk		61·4	328	e 10 20	0	e 18 42	+ 2	—	—	—
Cape Girardeau	N.	61·7	66	e 10 17	− 5	e 18 39	− 5	—	—	—
Ottawa		63·2	50	10 30	− 2	19 6	+ 3	25 54?	SSS	e 28·8
Buffalo		63·5	54	i 10 36	+ 2	—	—	—	—	—
Shawinigan Falls		63·8	47	10 35	− 1	—	—	—	—	30·8
Seven Falls		64·2	47	10 38	− 1	19 23	+ 7	23 50	SS	30·8
New Kensington		64·8	57	e 18 30?	?	—	—	e 19 48	PS	e 26·4
Vermont		65·1	50	e 11 1	+16	e 19 27	0	e 26 34	SSS	e 28·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Georgetown		67·4	56	e 10 58	− 1	i 19 50	− 5	—		—	—
Harvard		67·4	50	i 11 0	+ 1	e 19 48	− 7	e 30 48?		Q	e 33·8
Fordham		67·5	53	i 10 57	− 3	e 20 1	+ 5	i 20 57		PPS	e 31·8
Philadelphia		67·6	55	e 10 45	−16	i 19 50	− 7	e 24 36		SS	e 27·7
Upsala		68·3	352	e 11 6	+ 1	e 19 58	− 8	e 20 18		PS	e 33·8
Columbia		68·9	62	e 11 12	+ 3	e 20 11	− 2	e 24 25		SS	e 32·4
Moscow		69·0	339	11 8	− 1	20 8	− 6	—		—	—
Andijan		69·1	310	e 11 11	+ 1	—	—	—		—	—
Halifax		69·4	44	e 14 48?	?	—	—	—		—	28·8
Tashkent		70·1	312	e 11 17	+ 1	i 20 34	+ 7	—		—	—
Aberdeen		71·8	2	—	—	e 20 50	+ 4	e 21 0		PS	34·9
Copenhagen		72·8	354	e 11 32	0	21 7	+ 9	—		—	—
Calcutta	N.	74·2	285	e 11 42	+ 2	i 21 20	+ 6	e 16 23		PPP	—
Dehra Dun	N.	74·2	298	—	—	e 21 36?	+22	e 31 36		?	e 45·2
Stonyhurst		75·1	3	—	—	21 33	+ 9	26 13		SS	e 36·6
New Delhi	N.	76·0	298	i 11 55	+ 4	i 21 34	0	i 22 29		PS	37·6
De Bilt		76·8	358	i 12 2	+ 7	i 21 48	+ 6	i 26 58		SS	e 31·8
Kew		77·5	1	e 12 5	+ 6	e 22 1	+11	e 27 16		SS	e 37·8
Jena		77·6	353	i 12 0	0	e 22 38	PS	e 27 12?		SS	e 34·8
Uccle		78·1	358	e 12 3	+ 1	e 21 57	+ 1	27 24		SS	e 32·8
Prague		78·2	351	—	—	e 22 48?	PPS	e 27 48		SS	34·8
Cheb		78·4	353	e 15 48?	?	e 21 59	− 1	e 27 30?		SS	e 34·8
Bermuda		78·7	53	e 12 11	+ 5	e 22 2	− 1	e 15 20		PP	e 34·0
Stuttgart		79·9	355	e 12 12	0	e 22 18	+ 2	e 15 29		PP	41·8
Paris		80·2	359	e 12 13	− 1	e 22 27	+ 8	—		—	e 38·8
Strasbourg		80·2	355	e 12 15	+ 1	e 22 11	− 8	e 27 48		SS	40·8
Basle		81·3	356	e 12 20	0	—	—	—		—	—
Zurich		81·4	356	e 12 20a	0	e 22 40	+ 9	—		—	—
Neuchatel		81·8	356	e 12 22	0	—	—	—		—	—
Triest		82·7	351	—	—	e 22 46	+ 2	—		—	e 36·1
Clermont-Ferrand		83·2	358	i 12 31	+ 2	e 23 11	PS	—		—	e 37·4
Milan		83·2	355	e 12 31	+ 2	—	—	—		—	44·1
Hyderabad	E.	84·0	291	12 26	− 7	22 57	0	15 52		PP	40·0
Bombay		86·1	294	i 12 47	+ 3	i 23 24	+ 6	23 12		SKS	43·8
Auckland		88·1	185	—	—	23 33	− 4	23 13		SKS	—
Riverview		88·8	204	i 12 57	0	i 23 42	− 2	i 23 20		SKS	e 40·9
Sydney		88·8	204	e 14 18?	?	e 23 33	{ 0}	—		—	e 43·8
Toledo		89·0	4	16 34	PP	e 23 41	− 4	—		—	37·4
Arapuni		89·2	184	—	—	23 12	[−16]	—		—	40·8
San Juan		89·4	62	e 13 1	+ 1	e 23 24	[− 5]	e 25 26		PPS	e 35·6
Ksara		89·7	332	e 13 8	+ 7	e 24 15	+23	—		—	—
Lisbon		89·8	8	—	—	25 5	PS	—		—	39·0
Colombo		91·4	283	e 12 37	?	24 19	+12	—		—	53·8
Granada		91·7	4	i 12 18	?	23 43	[0]	38 6?		Q	i 44·0
Almeria		92·1	3	12 58	−14	24 33	+20	16 35		PP	36·8
Wellington		92·5	185	13 18	+ 4	23 38	[− 9]	13 31		pP	42·8
Helwan		94·7	333	13 27	+ 3	24 0	[+ 1]	i 17 3		PP	—
Christchurch		94·8	186	23 56	SKS	30 33	SS	i 25 46		PS	44·2
Fort de France		95·0	59	e 13 19	− 7	—	—	—		—	—
Huancayo		108·0	86	e 9 15	?	e 14 58	?	—		—	e 32·8
La Paz		115·9	83	19 43?	PP	i 29 41	PS	—		—	53·8
La Plata	N.	135·3	91	23 6?	?	—	—	—		—	62·1
Rio de Janeiro	E.	135·8	66	e 22 30	PP	—	—	—		—	—

Additional readings :—
College iS =9m.6s.
Sitka e =7m.1s., iS =10m.16s.
Seattle e =11m.42s.
Berkeley eSNZ =13m.51s., iE =14m.17s., iS_cSEN =17m.43s.
Bozeman iS =15m.4s., e =18m.10s.
Tinemaha iZ =8m.25s. and 8m.35s.
Logan i =8m.41s., e =11m.14s. and 18m.19s.
Salt Lake City e =8m.47s. and 18m.47s.
Pasadena iZ =8m.49s. and 9m.6s.
Riverside i =9m.1s.
Tucson i =9m.51s., e =20m.25s.

Continued on next page.

Scoresby Sund e =13m.58s.
Chicago e =10m.44s. and 19m.38s.
St. Louis iEN =20m.6s.
Ottawa e =20m.20s., SS =23m.48s.?
Buffalo e =10m.54s., 11m.32s., 11m.42s., and 12m.2s.
Seven Falls SSS =26m.24s.?
Vermont e =19m.12s., 20m.32s., and 24m.11s.
Harvard i =18m.29s., e =21m.11s.
Philadelphia e =10m.58s., 19m.35s., and 22m.34s.
Upsala eSSN =24m.48s.?, eSSSN =27m.12s. ?. eSSSE =27m.36s.?
Tashkent iP =11m.22s.
Aberdeen QEN =28m.5s.
Stonyhurst Q =32m.4s., i =33m.37s.
New Delhi N eP_cP =13m.4s., ePP =14m.36s., iPPP =16m.39s., iPPPP =17m.52s., i =21m.49s., iPS =22m.9s., eSS =27m.9s., eSSS =30m.37s.
De Bilt eSSS =29m.48s.
Kew eP_cPZ =12m.12s., ePPE =14m.49s.?, eSKS =22m.17s., ePS =22m.34s., eSSSEN =30m.48s. ?
Jena iZ =12m.9s., i =12m.12s., iN =12m.58s.
Uccle eSN =22m.5s.
Cheb e =25m.6s.
Bermuda e =26m.16s., eSS =27m.20s., e =31m.48s.
Stuttgart iPZ =12m.18s., ePPP =17m.28s., eSS =26m.53s., Q =38m.48s.
Basle e =21m.0s.
Hyderabad SSE =28m.51s.
Bombay P_cPN =12m.55s., iE =13m.0s., PPE =16m.9s., PPN =16m.13s., iE =17m.4s., PPPE =18m.5s., S_cSN =23m.31s., eN =24m.8s., PSE =24m.18s., PPSE =24m.46s., SSE =29m.6s., iE =36m.19s.
Auckland PPS =25m.38s., SS =29m.48s.
Riverview eE =36m.15s.
San Juan e =29m.13s.
Granada PP =16m.1s., PPP =18m.19s., PS =24m.10s.
Almeria PPP =18m.34s., PS =24m.51s., SS =29m.36s., SSS =33m.31s.
Wellington iZ =22m.18s., SKKS =24m.12s., sS =25m.18s.
Helwan PPZ =17m.12s., PPPZ =19m.30s., PSN =26m.6s.
Christchurch e =34m.51s., Q =39m.33s.
Huancayo ePS =18m.22s., e =28m.8s.
Long waves were also recorded at Keizyo, Bergen, Potsdam, Bucharest, Sofia, Barcelona, Tortosa, and Tananarive.

Jan. 27d. Readings also at 0h. (Tinemaha (2), Tucson, and Riverview), 1h. (near College, Tinemaha, Mount Wilson, Pasadena, and Riverside), 2h. (St. Louis, Fordham, Tucson, and Stuttgart), 3h. (Tinemaha (7), Santa Barbara, Tucson (7), Mount Wilson (6), Pasadena (3), Riverside (4), St. Louis (2), Fordham (3), Stuttgart (4), Zurich, Neuchatel, and Copenhagen), 4h. (Tinemaha (2), Tucson (2), Mount Wilson and Riverside), 5h. (Riverview and Tinemaha), 7h. and 8h. (Tinemaha and Tucson), 9h. (Riverside, Tucson, Tinemaha, and Barcelona), 10h. (Stuttgart, Tucson, Ottawa, Riverside, Tinemaha, College, and near San Francisco), 13h. (Riverview and Huancayo), 17h. (near Reykjavik), 18h. (Stuttgart, and near Reykjavik (3)), 19h. (near St. Louis), 20h. (La Plata), 21h. (Riverside, near Tashkent and Tchimkent), 22h. (Lick and near Berkeley), 23h. (Tinemaha, Tucson, and near Mizusawa).

Jan. 28d. 15h. 41m. 55s. Epicentre 35°·4N. 136°·6E. (as on 1939 Feb. 11d.).

Intensity V at Tsuruga, Miyadu ; IV at Gihu, Hukui, Kyoto, Hikone ; II-III at Nagoya, Tu, Hamamatu. Epicentre 35°·6N. 136°·6E. Radius of macroseismic radius 200-300 km ; shallow.
See Seismological Bulletin of the Central Meteorological Observatory of Japan for the year 1943, Tokyo 1950, pp. 5-6, macroseismic chart p.5.

$A = -\cdot5936$, $B = +\cdot5613$, $C = +\cdot5767$; $\delta = 0$; $h = 0$;
$D = +\cdot687$, $E = +\cdot727$; $G = -\cdot419$, $H = +\cdot396$, $K = -\cdot817$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Gihu	0·2	90	0 5	− 5	0 11	− 5
Hikone	0·3	245	0 6k	− 5	0 14	− 4
Nagoya	0·3	128	0 9	− 2	0 17	− 1
Kameyama	0·6	191	0 14k	− 1	0 25	− 1
Kyoto	0·8	242	0 15a	− 3	0 28	− 3
Hamamatu	1·1	127	0 23	− 1	0 42	+ 3
Kobe	1·3	238	0 25	0	0 44	0
Owase	1·4	194	0 29	+ 2	0 50	+ 4
Toyama	1·4	21	0 19	− 8	0 35	−11
Toyooka	1·5	275	0 24k	− 4	0 45	− 4

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Shizuoka	1·5	104	0 29	+ 1	0 50	+ 1
Kohu	1·6	82	0 26	− 4	0 48	− 3
Wakayama	1·7	225	0 31	0	1 3	+ 9
Hunatu	1·8	87	0 29	− 3	0 53	− 3
Nagano	1·8	46	0 29	− 3	0 52	− 4
Sumoto	1·8	233	0 34	+ 2	0 59	+ 3
Misima	2·0	98	0 33	− 2	0 57	− 5
Osima	2·4	106	0 41	0	1 6	− 6
Tokyo Cen. Met. Ob.	2·6	83	0 46	+ 2	1 12	− 5
Aikawa	2·9	27	0 59	+11	1 18	− 6
Kakioka	3·0	74	0 48	− 2	—	—
Muroto	3·0	223	0 53	+ 3	1 19	− 8
Koti	3·1	234	1 0	+ 9	1 42	S_g
Mito	3·3	73	0 59	+ 6	1 37	+ 2
Tyosi	3·5	82	1 5	+ 8	—	—
Hamada	3·8	264	1 7	+ 6	1 55	+ 8
Onahama	3·8	65	1 10	+ 9	1 54	+ 7
Hukusima	3·9	51	0 59	− 3	—	—
Sendai	4·5	49	1 10	− 1	1 59	− 6
Hukuoka	5·4	253	1 32	+ 8	2 51	S_g
Kumamoto	5·5	244	1 44	P_g	3 7	S_g
Kagosima	6·3	235	2 13a	P_g	3 16	S*

Jan. 28d. Readings also at 0h. (La Paz), 1h. (Pasadena, Mount Wilson, Tucson, Haiwee, and Tinemaha), 2h. (Riverview, Harvard, Triest, Cheb, and near Sofia), 3h. (Cheb, Jena, near Stuttgart, and near Mizusawa), 5h. (near La Paz), 7h. (Apia), 10h. (La Paz, Riverside, Tinemaha (2), Tucson (2), Mount Wilson, and Pasadena), 11h. (near Fort de France), 12h. (Istanbul), 15h. (Sofia), 17h. (Sofia and Triest), 22h. (Tinemaha, Haiwee, Tucson, Mount Wilson, and Istanbul), 23h. (Andijan).

Jan. 29d. 3h. 22m. 45s. Epicentre 42°·6N. 13°·5E. (as on 16d.).

Scale V-VI at Teramo, Cittareale, Aquata; IV at Foligno, Ascoli, l'Aquila; III at Ancona, Macerata.

D. Di Filippo:
"Il Terremoto di Teramo del 29 Gennaio 1943." Annali di Geofisica vol. 2, Rome 1949, pp. 243-250. Isoseismic chart fig. 1, p. 243. Epicentre as adopted.

$A = +·7180$, $B = +·1724$, $C = +·6744$; $\delta = +6$; $h = -3$;
$D = +·233$, $E = -·972$; $G = +·656$, $H = +·157$, $K = -·738$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florence		2·0	306	i 0 37	+ 2	i 1 1	− 1	i 0 42	P_g	—
Triest		3·1	3	0 57	P*	e 1 33	+ 4	—	—	—
Milan	z.	4·2	314	e 3 52	?	4 33	?	—	—	—
Chur		5·1	328	e 1 21	+ 1	e 2 18	− 2	—	—	—
Zurich		5·9	325	e 1 30	− 1	e 2 36	− 4	—	—	—
Neuchatel		6·4	315	e 1 37	− 1	e 2 46	− 7	—	—	—
Basle		6·5	321	1 40	+ 1	e 3 4	+ 9	—	—	—
Stuttgart		6·9	335	e 1 44	− 1	e 3 1	− 4	e 2 19	P_g	—
Strasbourg		7·2	328	e 2 8	P*	e 2 48	?	—	—	—
Jena		8·4	352	e 3 27	?	e 3 51	+ 8	—	—	e 4·4

Additional readings:—
Florence $iS_g = 1m.12s.$
Triest $i = 1m.18s.$
Stuttgart $eZ = 1m.55s.$, $e = 3m.25s.$, $eS_g? = 3m.50s.$
Jena $eE = 3m.54s.$

Jan. 29d. Readings also at 0h. (near Stuttgart), 2h. (Tinemaha, Haiwee, Tucson, Mount Wilson, Stuttgart, and near Sofia), 3h. (Tinemaha, Haiwee, Pasadena, Mount Wilson, Tucson, Riverside, near La Paz, and near Mizusawa), 5h. (Andijan), 8h. (Tinemaha, Riverside, Pasadena, Tucson, Mount Wilson, near Apia), 10h. (Huancayo), 11h. (near Andijan and near Huancayo), 13h. (Tinemaha, Mount Wilson, Riverside, Tucson, Pasadena, near Andijan, and Tashkent), 20h. (New Delhi and Bombay), 22h. (near San Francisco), 23h. (Tashkent).

Jan. 30d. 5h. 32m. 56s. Epicentre 1°·9S. 80°·4W.

Felt strongly in Guayaquil, Quito, Cuenca, Loja, and Manabi province.
Epicentre 80°·5W. 2°·0S. (U.S.C.G.S.).Depth 100km.
Seismological Notes, Bull, Seismolog Soc. of America, vol. 33, 1943, p. 122.

$A = +\cdot1667$, $B = -\cdot9855$, $C = -\cdot0330$; $\delta = +9$; $h = +7$;
$D = -\cdot986$, $E = -\cdot167$; $G = -\cdot005$, $H = +\cdot032$, $K = -\cdot999$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		10·8	5	e 2 42	+ 3	e 4 50	+ 8	e 2 45	PP	—
Huancayo		11·3	154	i 2 47	+ 1	e 4 48	− 6	—	—	e 5·4
La Paz		18·9	141	i 4 21a	− 3	i 7 55	+ 2	—	—	11·4
Montezuma		23·5	152	e 5 7	− 5	e 9 17	− 6	e 5 24	PP	e 11·1
San Juan		24·6	35	i 5 22	− 1	i 9 39	− 3	i 5 49	PP	i 11·1
Fort de France		25·2	50	i 5 26	− 3	e 9 48	− 4	5 56	PP	—
Tacubaya	N.	28·1	321	5 55	0	—	—	—	—	—
Mobile		33·2	348	i 6 45	+ 5	i 11 50	−10	—	—	—
Columbia		35·7	359	e 7 16	+14	e 12 30	− 9	e 8 30	PP	e 15·1
Bermuda		37·2	23	e 7 14	− 1	i 12 57	− 5	i 8 34	PP	e 15·4
La Plata	E.	38·9	150	7 41	+12	13 16?	−12	8 46	PP	17·3
	N.	38·9	150	7 40	+11	13 21	− 7	8 52	PP	17·3
	Z.	38·9	150	7 40	+11	13 16	−12	—	—	24·1
Cape Girardeau	E.	39·9	349	e 7 38	+ 1	e 13 37	− 6	—	—	—
St. Louis		41·4	348	i 7 49	− 1	i 13 53	−12	i 8 9	pP	—
Florissant		41·5	348	i 7 51	+ 1	i 13 49	−18	i 8 6	pP	—
Rio de Janeiro	E.	41·7	123	i 7 4	−48	i 14 0	−10	—	—	i 21·6
Philadelphia		41·9	6	i 7 56	+ 2	i 14 0	−13	i 8 11	pP	e 17·3
New Kensington		42·3	1	e 7 10?	−47	e 13 16?	−63	e 16 52?	SS	e 18·8
Fordham		43·0	7	i 8 3	0	i 14 27	− 2	i 8 18	pP	i 20·2
Chicago		44·0	352	e 8 9	− 2	e 14 34	− 9	e 9 55	PP	e 20·7
Tucson		44·5	323	i 8 16	+ 1	e 14 51	0	i 10 6	PP	e 20·6
Buffalo		44·6	2	i 8 15	− 1	e 14 49	− 3	e 8 29	pP	—
Des Moines		44·9	347	e 8 41	+23	e 14 51	− 5	e 11 1	PPP	e 18·4
Harvard		44·9	10	i 8 21	+ 3	i 14 56	0	i 8 34	pP	—
Vermont		46·6	8	i 8 33	+ 1	i 15 20	− 1	e 10 23	PP	e 21·8
Ottawa		47·3	5	8 36	− 1	15 24	− 7	10 36	PP	e 21·1
Halifax		48·7	17	e 9 14	+26	—	—	—	—	—
Shawinigan Falls		48·7	9	8 48	0	15 46	− 4	—	—	—
La Jolla	E.	49·1	318	e 8 53	+ 2	—	—	—	—	—
Seven Falls		49·5	10	8 54	0	15 59	− 3	19 46?	SS	24·1
Riverside		49·8	319	i 8 58	+ 2	e 16 19	+13	i 9 20	pP	—
Mount Wilson		50·4	319	i 9 2k	+ 1	e 16 16	+ 2	i 9 24	pP	—
Pasadena		50·4	319	i 9 2k	+ 1	e 16 16	+ 2	i 9 24	pP	e 20·3
Salt Lake City		51·2	330	e 9 6	− 1	e 16 25	0	i 9 29	pP	e 25·3
Santa Barbara		51·7	318	i 9 13	+ 2	—	—	—	—	—
Logan		51·9	332	e 9 14	+ 2	i 16 35	0	i 11 9	PP	e 24·2
Tinemaha	N.	52·3	322	i 8 15k	−60	e 16 42	+ 2	—	—	—
Fresno	N.	53·1	321	e 9 4?	−17	—	—	—	—	—
Bozeman		54·6	335	e 9 31	− 1	i 17 10	− 1	e 9 58	pP	e 22·6
Santa Clara		54·8	320	i 9 35	+ 1	e 17 18	+ 4	—	—	—
Berkeley		55·3	320	i 9 39	+ 1	i 17 25	+ 4	e 13 0	PPP	e 26·7
Butte		55·5	334	e 9 35	− 4	e 17 20	− 4	e 11 31	PP	e 25·7
Ukiah		56·7	321	e 9 41	− 7	e 17 41	+ 1	e 12 10	PP	e 28·2
Saskatoon		58·2	342	9 58	0	17 55	− 4	—	—	28·1
Victoria		62·5	330	10 26	− 2	18 58	+ 4	—	—	30·1
Sitka		73·6	333	e 11 32	− 5	i 21 4	− 3	e 14 27	PP	e 29·4
San Fernando		78·5	53	e 12 19	+15	22 0	− 1	15 29	PP	—
Granada		80·7	52	i 12 17a	+ 1	i 22 20	− 4	12 29	P_cP	38·4
Toledo		80·8	50	i 12 17	0	e 22 17	− 8	—	—	38·2
Almeria		81·5	53	e 12 20	− 1	22 22	−10	12 26	P_cP	37·1
Scoresby Sund		81·7	17	e 12 36	+14	e 22 26	− 8	e 27 25	SS	e 34·1
College		82·3	337	e 12 23	− 2	e 22 31	− 9	—	—	e 34·5
Stonyhurst		84·4	36	22 55	S	(22 55)	− 6	28 18	SS	41·8
Aberdeen		85·2	33	—	—	i 23 1	[− 1]	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kew		85·7	38	e 12 25	−17	i 23 4	[− 1]	e 17 23	PPP	—
Paris		86·7	42	—	—	e 23 21	− 3	—	—	45·1
Clermont-Ferrand		86·8	45	i 12 47	0	e 23 51	+26	i 23 10	SKS	e 42·1
Uccle		88·1	39	i 12 53	− 1	i 23 14	[− 7]	i 13 8	pP	e 42·1
De Bilt		88·8	38	i 12 56k	− 1	i 23 22	[− 3]	i 13 14	pP	e 38·1
Zurich		90·7	43	(e 13 5k)	− 1	(e 23 58)	− 3	—	—	—
Stuttgart		91·1	42	e 13 4	− 4	i 23 59	− 5	i 13 22	pP	e 43·1
Jena	E.	92·7	40	(e 13 15)	0	—	—	—	—	—
Copenhagen		93·2	35	23 46	SKS	24 18	− 5	24 47	sS	—
Cheb		93·3	40	e 13 32	+14	e 23 50	[− 2]	—	—	e 45·1
Potsdam	E.	93·6	38	—	—	i 24 27	+ 1	—	—	e 45·1
Triest		94·3	45	—	—	i 23 51	[− 6]	—	—	—
Christchurch		100·9	225	32 44	SSP	40 8	?	—	—	49·6
Helwan		109·8	59	—	—	e 25 4	[− 7]	e 26 4	SKKS	27·1
Riverview		120·0	228	e 20 21	PP	—	—	e 30 8	PS	e 55·8
New Delhi		145·9	37	i 19 43a	[+ 2]	e 26 28	[−20]	30 18	SKKS	—
Bombay		148·8	55	19 48	[+ 2]	30 32	{+21}	42 47	SS	80·1
Kodaikanal		156·5	68	e 21 30	?	44 50	SS	—	—	—
Calcutta		156·8	26	i 20 46	?	—	—	—	—	—

Additional readings :—
Balboa Heights iSN =4m.53s.
Montezuma e =9m.14s.
Fort de France PPP =6m.12s.
La Plata N =8m.16s. and 13m.34s.
Cape Girardeau e =7m.57s.
St. Louis epP?Z =9m.22s., eE =13m.20s., isS?N =16m.31s., iE =16m.56s.
Florissant ipPZ =9m.25s.
Philadelphia i =9m.53s., 13m.39s., and 15m.4s.
New Kensington e =8m.52s.?.
Fordham i =10m.5s., e =13m.45s., i =15m.17s., e =17m.52s.
Chicago e =13m.33s., esS =15m.1ɛs., e =17m.57s.
Tucson i =8m.39s., 9m.19s., and 11m.0s., esS =15m.28s., e =17m.18s., iSS =18m.9s.
Buffalo e =9m.1s., 9m.47s., and 10m.19s.
Des Moines e =11m.50s. and 12m.29s.
Harvard i =10m.25s., e =14m.10s., i =18m.3s., and 18m.34s.
Vermont e =13m.51s., eS =15m.10s., e =17m.56s., i =18m.17s., e =18m.45s.
Ottawa SS =18m.18s.
Halifax e =13m.4s.?.
Mount Wilson iZ =10m.18s.
Pasadena iZ =10m.19s., e =18m.46s.
Salt Lake City e =11m.18s., 16m.48s., and 20m.50s.
Logan i =12m.8s., e =20m.0s. and 20m.37s.
Bozeman ePP =11m.38s.
Butte e =17m.55s. and 21m.53s.
Ukiah e =10m.21s., eSS =21m.31s.
Sitka epPPP =16m.26s., eSS =25m.30s.
San Fernando PSE =22m.47s.
Granada pP =12m.40s., sPP =16m.0s., PS =23m.9s., SS =27m.23s.
Almeria PS =23m.5s., PPS =23m.28s., SS =27m.32s.
College e =15m.35s.
Kew eSKS =22m.55s., iSKKS =23m.17s., iPS =23m.30s., ePPS =23m.58s.
Clermont-Ferrand i =23m.18s.
Uccle ipS =23m.32s., isSEN =23m.58s., eE =24m.56s.
Zurich readings increased by 1 minute.
Stuttgart eSKS =23m.29s., ePS =25m.5s., eSS =30m.34s.?.
Jena readings increased by 1 minute.
Christchurch S_eS =42m.42s.
Riverview iSKSP?N =30m.18s., eSSN =36m.39s., iSSPE =37m.12s.
New Delhi N. PKPZ =19m.59s., i =20m.19s., ePP =23m.17s., ePPS =36m.56s., i =42m.14s., eS =43m.9s.
Bombay iE =20m.16s. and 20m.27s., eE =21m.29s., iN =21m.40s., PKSN =23m.23s., SSE =42m.52s., SSSE =48m.39s.
Kodaikanal PKSE =25m.28s., iSKKSE =32m.20s., SKSP =35m.50s.
Long waves were also recorded at Honolulu, Arapuni, Auckland, and Tananarive.

Jan. 30d. Readings also at 0h. (Riverview, New Delhi), 1h. (near La Paz), 2h. (Tinemaha, Tucson, Triest, near Istanbul, and Bucharest), 4h. (Bombay), 5h. (Tinemaha, Pasadena, Mount Wilson, Riverside, Tucson, La Plata, Rio de Janeiro, near Huancayo, and La Paz), 6h. (Kew), 11h. (near Tashkent), 12h. (Tinemaha (2), Riverside (2), Tucson (2), Arapuni, Wellington, Auckland, and Riverview), 13h. (Tinemaha and Tucson), 17h. (Huancayo and near La Paz), 18h. (Tinemaha and Tucson), 20h. (near Huancayo and La Paz), 21h. (Stuttgart, Basle, Zurich, and near Neuchatel).

Jan. 31d. 8h. 28m. 59s. Epicentre 17°·5N. 94°·1W. Depth of focus 0·005.
(as on 1938 Nov. 2d.).

Felt strongly at Tapanatepec (Oaxaca), and Coatzacoalcos (Vera Cruz).
Epicentre 17° 24′N., 94° 51′W.
Instituto de Geología "Catâlogo compendiado de temblores," years 1941-44, Mexico 1945, p. 39.

$A = -·0682$, $B = -·9519$, $C = +·2989$; $\delta = +11$; $h = +5$;
$D = -·997$, $E = +·071$; $G = -·021$, $H = -·298$, $K = -·954$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vera Cruz	E.	2·6	311	i 0 39	− 2	—	—	—	—	—
Puebla	N.	4·2	292	e 1 3	0	—	—	—	—	—
Tacubaya	E.	5·2	292	1 14	− 3	—	—	—	—	—
Merida	Z.	5·4	50	i 1 37	+17	—	—	—	—	—
Guadalajara	N.	9·3	291	e 2 14	0	—	—	—	—	—
Mobile		14·2	22	i 3 33	+14	i 6 8	+12	—	—	—
Balboa Heights		16·5	119	e 3 45	− 4	i 6 53	+ 4	—	—	—
Cape Girardeau	E.	20·1	10	e 4 35	+ 4	i 8 17	+ 9	—	—	—
Columbia		20·2	22	e 4 24	− 8	e 8 29	+19	e 5 5	PPP	e 11·6
Tucson		21·1	319	i 4 40	− 1	i 8 36	+ 9	i 5 43	PPP	e 9·5
St. Louis		21·3	9	i 4 46	+ 3	i 8 45	+14	i 5 3	pP	—
Florissant		21·5	9	i 4 46	+ 1	i 8 47	+12	i 5 2	pP	—
Lincoln		23·4	357	e 5 41	PP	(e 9 16)	+ 7	—	—	e 9·3
Des Moines		24·0	3	e 6 58	PPP	i 9 27	+ 8	—	—	—
Chicago		24·9	10	e 5 36	+18	e 9 40	+ 6	e 10 31	SS	14·9
La Jolla	E.	25·9	311	e 5 30	+ 2	—	—	e 6 10	PP	—
New Kensington		26·1	26	e 5 7?	−23	e 9 49?	− 5	—	—	e 11·8
Riverside	Z.	26·5	314	i 5 31	− 2	—	—	i 6 6	PP	—
San Juan		26·6	83	e 5 32	− 2	e 10 44	sS	i 6 18	PP	e 14·1
Mount Wilson		27·1	314	i 5 37	− 2	—	—	—	—	—
Pasadena		27·2	314	i 5 37	− 3	e 10 48	sS	i 6 41	PPP	e 12·4
Philadelphia		27·7	33	e 5 41	− 3	—	—	—	—	e 11·2
Salt Lake City		27·8	331	e 5 46	+ 1	e 10 58	sS	e 6 8	PP	13·7
Santa Barbara		28·4	312	e 6 12	pP	—	—	—	—	—
Buffalo		28·5	24	—	—	—	—	e 12 31	SSS	e 13·0
Tinemaha		28·9	318	i 5 53	− 2	e 10 2	−37	i 6 18	pP	—
Fordham		29·1	33	e 6 13	+16	e 12 3	SS	e 6 43	PP	—
Bermuda		30·2	56	e 6 59	PP	e 11 49	sS	—	—	e 13·9
Bozeman		31·4	337	e 6 38	pP	e 11 25	+ 6	e 7 29	PPP	e 19·1
Harvard		31·5	33	e 6 40	pP	e 12 29	?	e 13 58	?	e 21·0
Ottawa		31·8	24	i 6 21	0	e 11 31?	+ 6	i 6 45	pP	18·0
Butte		32·3	336	e 6 46	pP	e 11 38	+ 5	e 7 40	PPP	e 21·7
Ukiah		33·2	317	e 10 7	?	—	—	—	—	e 17·1
Shawinigan Falls		33·9	27	e 7 4	pP	e 15 31?	?	—	—	—
Huancayo		34·7	146	i 6 48	+ 2	i 12 8	− 2	e 7 25	sP	e 14·8
Seven Falls		35·2	28	e 7 14	pP	e 13 2	sS	e 15 43?	?	—
Saskatoon		35·9	347	e 8 12	PP	e 12 35	+ 7	—	—	e 17·3
La Paz	Z.	42·4	140	i 7 43	− 7	i 14 10	+ 4	—	—	20·8
Rio de Janeiro	E.	63·9	127	e 19 1	S	(e 19 1)	+ 4	—	—	—
Granada		80·0	54	i 12 9	+ 5	e 21 49	−12	—	—	—
Neuchatel	N.	84·7	42	e 12 28	0	—	—	—	—	—
Stuttgart	Z.	85·5	40	i 12 33a	+ 1	—	—	—	—	—
Zurich		85·6	42	e 12 33a	0	—	—	—	—	—
Jena		86·1	38	e 12 36	+ 1	—	—	—	—	—
Chur		86·4	42	e 12 37a	+ 1	—	—	—	—	—

Additional readings :—
Tucson i = 4m.55s. and 9m.8s.
St. Louis iE = 8m.59s.
Des Moines e = 7m.47s. and 8m.22s., i = 9m.56s.
Riverside iZ = 5m.41s. and 5m.57s.
San Juan i = 7m.55s. and 11m.56s.
Mount Wilson iNZ = 5m.45s.
Pasadena iZ = 5m.46s., 6m.0s., 7m.3s., and 8m.21s.
Ottawa eZ = 12m.59s., e = 14m.1s.?.
Huancayo e = 8m.17s.
Long waves were also recorded at Scoresby Sund and College.

Jan. 31d. Readings also at 4h. (near La Paz, Tashkent, and near Tchimkent), 13h. (near Fort de France), 17h. (near Tashkent and Tchimkent), 18h. (Riverview), 19h. (Tucson, Riverside, New Delhi, near La Paz, La Plata, near Tashkent, and Tchimkent), 20h. (Pasadena, Tucson, and Riverside), 21h. (near Sofia and near Mizusawa), 23h. (near Mizusawa).

Feb. 1d. Readings at 0h. (Riverside and Tucson), 1h. (Apia, Auckland, Christchurch Wellington, Riverview, San Francisco, and Ksara), 2h. (La Paz), 6h. (near Tashkent), 8h. (La Paz), 10h. (near Ksara), 14h. (near Tashkent and Tchimkent), 15h. (Frunse and New Delhi), 20h. (Mount Wilson, Pasadena, Riverside, Tucson, near Berkeley, and near Mizusawa).

Feb. 2d. 15h. 45m. 36s. Epicentre 42°·6N. 13°·5E. (as on Jan. 29d.).
Intensity V to VI at Montalto, III at Fermo. Epicentre 42°·9N. 12°·9E. (Strasbourg).
R. P. Cesare Coppede.
Annuario Sismico 1943, del Osservatario Ximeniano, Firenze, p. 9.

$A = +\cdot7180$, $B = +\cdot1724$, $C = +\cdot6744$; $\delta = +6$; $h = -3$;
$D = +\cdot233$, $E = -\cdot972$; $G = +\cdot656$, $H = +\cdot157$, $K = -\cdot738$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florence	2·0	306	0 37k	P*	i 1 3	+ 1	i 0 41k	P_g	i 1·2
Triest	3·1	3	e 0 47	− 4	e 1 9	P_g	—	—	—
Zurich	5·9	325	e 1 31	0	—	—	—	—	—
Neuchatel	6·4	315	e 1 35	− 3	e 2 39	−14	—	—	—
Basle	6·5	321	e 1 47	P*	—	—	—	—	e 4·9
Stuttgart	6·9	335	e 2 1	P*	e 3 16	+11	e 2 18	P_g	e 3·7
Strasbourg	7·2	328	—	—	3 37	S*	—	—	e 4·7

Long waves were also recorded at Potsdam and Jena.

Feb. 2d. Readings also at 0h. (near Reykjavik), 3h. (near Andijan (2) and Tashkent), 6h. (near Mizusawa), 9h. (La Paz and near Huancayo), 15h. (near Triest, Milan, and Florence).

Feb. 3d. Readings at 0h. (Cheb, Stuttgart, Triest, Prague, Focsani, De Bilt, Bucharest, and Sofia), 4h. (near Mizusawa), 6h. (Riverview), 7h. (near Andijan and Tashkent), 12h. (Stuttgart), 14h. (Arapuni and Wellington), 15h. (Bozeman, Tucson, Pasadena, Riverside, Tinemaha, near Logan, Salt Lake City, near Florissant and St. Louis), 18h. (Huancayo, Fort de France, Mount Wilson, Pasadena, Tucson, Stuttgart, Riverview (2), Auckland, Christchurch, and Wellington), 19h. (College), 23h. (Tacubaya, Mount Wilson, Riverside, Pasadena, Tucson, and near Berkeley).

Feb. 4d. Readings at 0h. (La Paz and La Plata), 4h. (Mount Wilson, Tucson, Riverside, and Tinemaha), 5h. (near Mizusawa), 7h. (Mount Wilson, Pasadena, Riverside, Tucson, and Tinemaha), 8h. (Kodaikanal), 9h. (Strasbourg, Stuttgart, near Basle, and Zurich), 10h. (near Strasbourg, Stuttgart, Basle, and Zurich), 11h. (near Tananarive), 15h. (near Huancayo and La Paz), 17h. (near Fort de France), 18h. (near Frunse), 19h. (Tashkent, New Delhi, and near Branner), 20h. (near Mizusawa), 21h. (near Fresno).

Feb. 5d. Readings at 3h. (La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and near Tucson), 8h. (La Paz), 9h. (Tashkent and Ukiah), 15h. (near Stuttgart and Triest), 19h. (near La Paz), 21h. (near St. Louis), 22h. (Tashkent, Kodaikanal, Calcutta, Bombay, near New Delhi, Dehra Dun, and near St. Louis), 23h. (near Branner).

Feb. 6d. 2h. 35m. 58s. Epicentre 25°·0N. 63°·0E.

This position has been deduced from 25°·3N. 63°·5E. of 1941 October 21d., and is not approximate. It is calculated to ± 0°·1 in latitude and longitude.

A = +·4120, B = +·8085, C = +·4203 ; δ = +7 ; h = +3 ;
D = +·891, E = −·454 ; G = +·191, H = +·374, K = −·907.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay	E.	10·9	122	i 2 32	− 8	i 4 34	−10	i 2 55	PPP	5·5
New Delhi		13·2	71	e 3 3	− 8	i 5 18	−22	i 5 53	SS	—
Dehra Dun	N.	14·3	65	e 3 35?	+ 9	i 6 8	+ 2	—	—	i 8·2
Tashkent		17·1	16	i 4 0	− 2	—	—	—	—	—
Kodaikanal	E.	20·1	135	—	—	i 8 10	− 9	—	—	—
Frunse		20·2	25	e 4 41	+ 2	e 8 32	+11	—	—	—
Almata		21·5	28	i 4 50	− 2	—	—	—	—	—
Calcutta		23·3	91	e 5 27	+17	i 9 23	+ 3	i 5 52	PPP	—
Colombo		24·2	136	i 5 16	− 3	9 48	+13	—	—	12·8
Ksara		25·1	296	e 5 34	+ 6	e 10 13	+22	—	—	—
Helwan		28·5	287	i 5 59k	0	11 14	+28	7 5	PPP	13·2
Sverdlovsk		31·8	358	i 6 30	+ 2	11 40	+ 2	—	—	—
Bucharest		35·6	313	e 6 56?	− 5	—	—	e 15 17	SS	i 17·8
Sofia		37·8	308	e 7 14	− 6	e 17 2	L	e 8 32	PP	(e 17·0)
Irkutsk		41·4	38	i 7 48	− 2	13 59	− 6	—	—	—
Triest		44·3	311	i 8 12	− 1	i 14 42	− 6	—	—	e 28·0
Cheb		46·2	318	e 8 56?	+28	e 19 32	SSS	e 16 2	PPS	e 33·0
Tananarive		46·2	201	8 28	0	15 21	+ 6	18 20	SS	22·4
Potsdam		46·4	320	i 8 31	+ 1	e 15 14?	− 4	i 9 54	PP	e 30·0
Upsala		46·8	331	e 10 19	PP	—	—	—	—	e 28·0
Jena		46·9	318	i 8 32	− 2	—	—	e 10 28	PP	e 25·0
Milan		47·5	310	i 8 39	+ 1	15 36	+ 2	—	—	—
Copenhagen		47·7	325	i 8 41a	+ 1	15 41	+ 5	10 35	PP	—
Stuttgart		48·0	315	i 8 41a	− 2	e 15 36	− 5	e 9 52	PcP	e 30·0
Zurich		48·2	312	e 8 43a	− 1	—	—	e 10 36	PP	—
Basle		48·8	313	e 8 48	− 1	—	—	—	—	—
Neuchatel		49·2	312	e 8 51	− 1	—	—	—	—	—
De Bilt		51·0	319	—	—	e 16 2?	−20	—	—	e 26·0
Uccle	Z.	51·4	317	e 9 8	− 1	—	—	—	—	—
Clermont-Ferrand		51·8	310	e 9 12k	0	e 16 40	+ 7	e 9 21	pP	e 35·5
Paris		52·4	314	e 9 12	− 4	e 17 12	PPS	—	—	36·0
Kew		54·3	317	e 6 42	?	e 17 10	+ 3	e 10 2?	?	e 29·0
Stonyhurst		55·8	320	5 13	?	15 53	?	11 21	PP	32·4
Almeria		56·4	299	9 45	0	17 53	+17	9 54	pP	30·0
Granada		57·3	300	i 9 56	+ 4	i 17 52	+ 5	i 10 29	pP	e 30·2
Toledo		57·3	303	i 9 50	− 2	e 19 40	?	—	—	36·0
San Fernando		59·4	299	e 10 5	− 1	—	—	—	—	—
Scoresby Sund		65·0	338	e 25 19	?	—	—	—	—	e 38·8
Riverview		102·0	121	—	—	i 24 34	[− 3]	—	—	e 45·2
Fordham		103·2	327	—	—	e 24 39	[− 3]	e 27 29	PS	—
Bermuda		104·2	316	e 18 24	PKP	e 24 57	[+10]	e 28 13	PPS	e 56·4
St. Louis		111·9	337	e 19 21	PP	e 25 21	[+ 1]	e 28 55	PS	—
Tinemaha	Z.	118·2	1	e 18 47	[− 2]	—	—	e 20 1	PP	—
Mount Wilson	Z.	121·1	1	e 18 56	[+ 1]	—	—	i 20 16	PP	—
Pasadena		121·2	1	e 18 54	[− 1]	—	—	i 20 19	PP	e 66·0
Riverside	Z.	121·3	1	e 18 57	[+ 2]	—	—	e 20 23	PP	—
Tucson		122·8	354	i 18 59	[+ 1]	—	—	e 20 44	PP	e 69·4
La Paz	Z.	133·7	271	19 21	[+ 2]	—	—	—	—	71·0
Huancayo		138·6	280	e 31 18	?	—	—	e 40 36	SS	e 53·8

Additional readings :—
Bombay iPPE = 2m.42s., iE = 4m.10s., iSSE = 4m.55s.
New Delhi eE = 4m.13s., iSN = 5m.13s., SSN = 5m.21s.
Helwan PPPZ = 7m.17s.
Bucharest eE = 11m.8s.?, eEN = 13m.0s., eN = 13m.52s.
Potsdam iE = 8m.56s.
Upsala eE = 10m.24s., eN = 23m.2s.?.
Jena iEZ = 8m.41s., iN = 10m.32s., iZ = 10m.36s., eE = 16m.2s.?.

Continued on next page.

Stuttgart iZ = 8m.49s., iPPZ = 10m.41s., eS$_c$S = 18m.34s., eSS = 19m.30s. and 19m.44s., eQ = 27m.2s.
Clermont-Ferrand ePS = 17m.41s.
Kew eS$_c$SEN = 17m.22s., eEN = 19m.18s., eSSSN = 26m.16s.
Stonyhurst PP = 8m.3s., i = 15m.33s., Q = 28m.2s.
Almeria P$_c$P = 10m.10s., PP = 11m.55s., PPP = 13m.41s., P$_c$S = 14m.13s., PS = 18m.19s., S$_c$S = 19m.13s.
Granada pP = 10m.35s., pP$_c$P = 11m.29s., iP$_c$S = 13m.24s., isS = 19m.54s., eSS = 21m.30s., isSS = 22m.50s.
Scoresby Sund e = 28m.5s.
Riverview eN = 24m.42s., eE = 33m.32s.
Bermuda e = 25m.53s., eSS? = 33m.25s.
Mount Wilson eZ = 32m.10s.
Pasadena eN = 30m.17s.
Tucson e = 19m.9s. and 23m.11s.
Long waves were also recorded at Bergen, Aberdeen, Christchurch, Wellington, Sydney, Auckland, Rio de Janeoro, San Juan, College, and other American stations.

Feb. 6d. 9h. 36m. 43s. Epicentre 36°·3N. 71°·0E. Depth of focus 0·030.
(as on 1942 Nov. 16d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Andijan		4·6	14	e 1 7	− 4	1 48	−17	—	—
Tashkent		5·2	347	i 1 9	− 9	1 53	−26	—	—
Frunse		7·1	22	1 49	+ 7	1 58	PPP	—	—
Almata		8·3	32	i 1 58	0	—	—	—	—
Dehra Dun	N.	8·4	133	e 2 29?	PPP	i 3 17	−15	—	—
New Delhi	E.	9·3	144	e 1 56	−15	i 3 42	−11	—	—
	N.	9·3	144	i 2 3	− 8	i 3 46	− 7	—	—
Bombay	E.	17·4	174	e 3 49	− 1	e 6 55	0	i 4 32	pP
	N.	17·4	174	i 3 47	− 3	e 6 57	+ 2	i 4 27	pP
Hyderabad	N.	19·9	159	e 3 46	−30	—	—	4 17	P
Calcutta	N.	20·4	127	e 4 27	+ 6	i 8 6	+14	—	—
Irkutsk		28·4	44	e 5 41	+ 5	e 10 22	+17	6 26	pP
Stuttgart	Z.	46·0	306	e 7 59	− 4	—	—	8 32	pP
Toledo		57·5	298	i 9 30	+ 2	—	—	i 9 58	pP

Additional readings :—
Bombay iE = 7m.3s., iN = 7m.7s. and 7m.21s., iE = 7m.26s., iEN = 7m.47s.
Irkutsk sS = 11m.39s.

Feb. 6d. Readings also at 2h. (Prague), 4h. (Mount Wilson, Pasadena, Tucson, and Riverside), 5h. (Tinemaha, Tucson, Mount Wilson, and Pasadena), 6h. (near Mizusawa), 7h. (New Delhi), 8h. (near Fresno (2), Berkeley (2), Lick (2), San Francisco (2), and Branner (2)), 9h. (Tinemaha, Mount Wilson, Pasadena, Riverside, Salt Lake City, and Tucson), 10h. (Pasadena, Tucson, Riverside, Mount Wilson, and Tashkent), 11h. (Stuttgart), 12h. (Tinemaha, Mount Wilson, Pasadena, Riverside, Tucson, and La Paz), 14h. (Riverview, Wellington, Christchurch, Auckland, and near Apia), 18h. (near Almeria), 20h. (Tinemaha, Mount Wilson, Tucson, and Riverside), 23h. (near San Francisco).

Feb. 7d. 4h. Although observations are plentiful it is not possible to determine an epicentre. The position should be somewhere between the Friendly Islands and New Zealand.
Apia eP = 27m.24s., iS = 30m.5s., i = 30m.13s.
Auckland P = 28m.32s., S = 31m.0s., R? = 31m.35s.?.
Tuai P = 28m.36s., S = 30m.57s.
Wellington P? = 29m.7s., S = 32m.5s., L = 33m.40s.
Christchurch P? = 31m.0s., S = 33m.28s., Q = 33m.41s., R = 34m.56s.
Brisbane eP?N = 31m.14s., iS?N = 37m.4s., i?N = 38m.4s., eSS?N = 40m.18s.
Arapuni S? = 31m.36s.?.
Sydney e = 31m.54s., eL = 39m.
Riverview ePE = 31m.58s., iE = 32m.2s., eSE = 37m.16s., eLN = 38·9m.
Santa Barbara ePZ = 36m.53s.
Fresno ePN = 36m.57s.
Pasadena iPZ = 36m.57s., eZ = 39m.3s., eLZ = 63m.
Mount Wilson iPZ = 36m.59s.

Continued on next page.

Riverside iPZ = 36m.59s.
La Jolla ePZ = 37m.1s.
Tinemaha iPEZ = 37m.6s.
Santa Clara ePE = 37m.18s., eSE = 47m.8s., eLE = 59m.12s.
Tucson iP = 37m.18s., e = 38m.3s. and 40m.14s., eS = 47m.48s., eL = 63m.42s.
Logan eP = 37m.39s., eS = 48m.29s., e = 49m.42s., eL = 65m.35s.
Salt Lake City e = 38m.6s., eS = 48m.15s., eL = 64m.15s.
Huancayo e = 39m.28s., eSKS = 48m.38s., eS? = 49m.30s., ePS = 50m.35s., eL = 71m.40s.
Honolulu e = 40m.22s., eS = 40m.49s., eL = 46m.9s.
La Paz eP?Z = 42m.23s., eS?Z = 53m.3s., LZ = 75m.30s.
San Juan e = 43m.14s., eSKS = 50m.21s., ePS? = 54m.6s., e = 57m.45s., eL = 86m.42s.
Bombay PPE = 44m.37s., SKSE = 50m.22s., SKSN = 50m.25s., SKKSN = 51m.45s., SKKSE = 51m.51s., PSE = 54m.23s.
Stuttgart eZ = 44m.41s.
Granada ePKP = 44m.45s., ePKP$_2$ = 45m.56s., iPP = 50m.29s., SKS = 51m.26s., PPP = 53m.42s., SKKS = 56m.45s., SS = 70m.40s., L = 115·1m.
Toledo ePZ = 44m.55s., i = 45m.3s.
Ksara e = 44m.55s. and 48m.0s.
Helwan iZ = 45m.9s., eZ = 45m.48s., iZ = 46m.13s., 46m.51s., and 49m.30s.
Almeria eP? = 45m.50s., L = 59m.
Ukiah e = 48m.45s., eL = 60m.6s.
College e = 49m.2s., eL = 66m.39s.
Bermuda e = 49m.32s., ePS? = 54m.32s., e = 60m.40s., eL = 88m.7s.
Perth i = 49m.55s., 57m.0s., and 63m.32s.
Ottawa eE = 54m.0s., eN = 77m., eL = 89m.
Cheb e = 64m.24s.
Long waves were also recorded at Harvard and Chicago.

Feb. 7d. 5h. Near Kermadec Islands.

Apia eP = 29m.8s.
Tuai P = 30m.0s., S = 32m.27s.
Auckland P? = 30m.5s.?, S = 32m.37s., L = 33·6m.
Wellington P? = 30m.35s.?, S = 33m.35s., L = 35m.0s.
Arapuni S? = 33m.0s.
Brisbane eP?N = 33m.17s., iS?N = 35m.29s., iSS?N = 38m.52s.
Riverview iE = 33m.39s. and 34m.3s., iN = 35m.35s., eS?N = 38m.52s., eLN = 40·5m.
Sydney e = 34m.24s.?, eL = 40·2m.
Mount Wilson ePZ = 38m.16s., eZ = 38m.25s.
Santa Barbara ePZ = 38m.20s.
Pasadena eZ = 38m.22s. and 40m.43s., iE = 48m.57s., eLZ = 63m.
Riverside ePZ = 38m.25s.
Tinemaha ePZ = 38m.33s., i = 38m.43s.
La Jolla ePE = 38m.35s.
Tucson iP = 38m.41s., i = 40m.34s., e = 42m.50s., eL = 65m.35s.
Santa Clara ePEZ = 38m.55s., eSE = 48m.35s., eE = 61m.41s., eLE = 105m.5s.
Logan eP = 38m.57s., e = 39m.19s. and 44m.8s., eS? = 49m.44s., eL = 75m.57s.
Huancayo e = 39m.44s., iSKS = 50m.28s., e = 51m.4s., eL = 69m.11s.
Honolulu e = 41m.21s., eL = 49m.47s.
La Paz iP?Z = 44m.1s., LZ = 76m.0s.
San Juan e = 45m.52s., eSKS? = 51m.49s., e = 55m.45s., eL = 87m.17s.
Bombay ePPE = 46m.0s., SKSE = 51m.47s., iEN = 52m.1s., SKKSN = 53m.6s., SKKSE = 53m.9s., PSEN = 56m.11s., eEN = 57m.46s. and 66m.
Stuttgart eZ = 46m.8s., eQ? = 79m. eP = 117·5m.
Helwan eZ = 46m.18s., iZ = 46m.45s. and 47m.18s., eZ = 50m.45s.
Ksara e = 46m.22s. and 49m.58s.
San Fernando e?EZ = 46m.24s., L?E = 117·0m.
Perth i = 46m.26s., 50m.35s., and 56m.32s.
Toledo ePZ = 46m.29s., i = 48m.7s.
Granada ePKP = 46m.30s., iPKP$_2$ = 47m.20s., SKKS = 58m.29s., SS = 72m.35s., L = 120·2m.
Almeria e = 48m.54s.
Ukiah e = 49m.33s. and 51m.33s., eL = 60m.52s.
Salt Lake City eS = 49m.50s., L = 68m.43s.
College eS = 50m.32s., eL = 74m.48s.
Bozeman eSKS = 50m.35s., eL = 66m.25s.
Bermuda e = 51m.28s. and 60m.35s., eL = 87m.32s.
Cheb e = 57m.22s. and 69m.52s.
Long waves were also recorded at Christchurch, Chicago, Harvard, De Bilt, Lisbon, and Uccle.

Feb. 7d. Readings also at 0h. (La Jolla, Mount Wilson, Pasadena, Riverside, Santa Barbara, Tinemaha, Tucson, Toledo, Clermont-Ferrand, near Stuttgart (2), Jena, Ravensburg, Basle (2), Neuchatel (2), Zurich (2), and near Milan), 7h. (Kew), 9h. (near Balboa Heights), 11h. (Fort de France, near Andijan, and Tashkent), 17h. 18h., and 19h. (near Mizusawa), 22h. (Mount Wilson, Pasadena, Palomar, Riverside, Tucson, and near St. Louis).

Feb. 8d. 20h. 10m. 33s. Epicentre 2°·5S. 81°·0W. (as on 1941 Dec. 31d.).

Felt at Guyaquil. Epicentre 2°·5S. 80°·0W. (U.S.C.G.S.).
Seismological Notes, Bulletin of Seismological Society of America, vol. 33, 1943, p. 122.

$A = +·1562$, $B = -·9868$, $C = -·0433$; $\delta = +5$; $h = +7$;
$D = -·988$, $E = -·156$; $G = -·007$, $H = +·043$, $K = -·999$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		11·0	149	e 2 35	− 7	—	—	—	—	i 5·2
La Paz		18·8	137	4 17	− 6	i 7 32	−18	i 8 13	SS	10·1
San Juan		25·4	35	e 5 25	− 6	—	—	e 6 15	PPP	e 11·8
Fort de France		26·1	50	e 5 36	− 1	—	—	—	—	—
Rio de Janeiro		41·9	121	e 9 27	PP	e 13 48	−25	—	—	e 21·3
Tucson		44·6	323	i 8 23k	+ 7	—	—	—	—	—
Palomar	z.	49·1	321	i 8 59	+ 8	—	—	—	—	—
Riverside	z.	49·9	320	i 9 3	+ 6	—	—	—	—	—
Mount Wilson	z.	50·5	320	i 9 8k	+ 6	—	—	—	—	—
Pasadena		50·5	320	i 9 7	+ 5	—	—	i 10 33	PP	—
Tinemaha	z.	52·4	322	i 9 21	+ 5	—	—	—	—	—
Toledo	z.	81·6	52	e 13 33	?	—	—	—	—	—

Additional readings :—
Huancayo i = 3m.31s. and 4m.17s.
Palomar eZ = 9m.11s., iZ = 9m.20s.
Riverside iZ = 9m.20s.
Tinemaha iZ = 9m.40s.

Feb. 8d. 21h. 5m. 24s. Epicentre 27°·0N. 92°·0E. (as on 1941 Sept. 6d.).

Felt slightly at Jalapahar, Dhubu. Epicentre 27°·0N. 90°·E. (Strasbourg).
Government of India, Seismological Bulletin, pp. 10 and 17.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	5·5	217	i 1 41k	P*	i 2 48	S*	—	—	—
Dehra Dun	N.	12·7	288	e 1 56?	?	e 3 21?	P	(e 4 48)	SS	e 4·8
New Delhi		13·2	280	e 3 7	− 4	e 5 7	−33	e 5 2	?	—
Hyderabad	N.	15·7	236	3 39	− 5	6 32	− 7	—	—	7·8
Bombay		19·4	250	e 4 15	−15	7 36	−28	8 13	SS	8·6
Frunse		21·2	323	4 53	+ 4	—	—	—	—	—
Kodaikanal	E.	21·6	224	e 4 56	+ 2	i 8 51	+ 2	—	—	—
Tashkent		23·5	313	i 5 10	− 2	9 8	−15	—	—	—
Tchimkent		23·8	316	e 5 18	+ 3	—	—	—	—	—
Irkutsk		26·9	17	e 6 7	+22	e 10 50	+30	—	—	—
Vladivostok		36·0	53	e 7 7	+ 2	i 13 0	+16	—	—	—
Stuttgart	z.	65·6	314	e 10 48	0	—	—	—	—	—
Clermont-Ferrand		70·5	312	e 11 19	+ 1	—	—	—	—	—
Toledo	z.	77·5	308	i 11 56	− 3	—	—	—	—	—

Additional readings :—
Bombay ePN = 4m.18s., PPEN = 4m.28s., iE = 4m.44s., eE = 7m.49s., SSN = 7m.56s., SSSN = 8m.8s.
Clermont-Ferrand e = 11m.26s.
Long waves were also recorded at Cheb, De Bilt, Granada, and Colombo.

Feb. 8d. Readings also at 0h. (near Mizusawa), 1h. (near Andijan), 3h. (near Mizusawa), 4h. (Vladivostok), 5h. (Fordham, New Delhi, and Vladivostok), 6h. (De Bilt, Kew, Stuttgart, Huancayo, La Paz, New Delhi, Riverview), 9h. (Riverside, Tucson, Tacubaya, Bacau, and near Bucharest), 10h. (Tacuabaya and near Tucson), 12h. (Tinemaha, Santa Barbara, Pasadena, Mount Wilson, Riverside, Tucson, and Palomar), 13h. (Tacubaya), 18h. (near Tananarive), 20h. (Pasadena, Tucson, and Mount Wilson), 22h. (near Mizusawa).

Feb. 9d. Readings at 1h. (La Paz and Tacubaya), 4h. (Riverview), 5h. (near Tashkent), 9h. (near Lick and near Miznsawa), 12h. (Riverview, La Plata, Palomar, Tucson, Toledo, and near La Paz), 13h, and 15h. (near La Paz).

Feb. 10d. 21h. Undetermined shock.

Balboa Heights e = 33m.?.
San Juan eP = 34m.27s., e = 35m.27s., eL = 40m.14s.
Huancayo eP = 35m.47s., eL = 41m.37s.
Tucson iP = 37m.32s., e = 42m.34s. and 45m.37s., eL = 51m.45s.
Ottawa eZ = 38m.10s., L = 49m.
Palomar iPZ = 38m.13s., iZ = 38m.19s., eZ = 39m.27s.
Riverside ePZ = 38m.17s., iZ = 38m.25s., eZ = 40m.45s.
La Paz ePZ = 38m.18s., LZ = 51m.12s.
Bermuda e = 38m.22s., eL = 43m.16s.
Mount Wilson iPZ = 38m.23s.
Pasadena iP = 38m.23s., iZ = 38m.30s., eZ = 38m.46s., 39m.50s., and 40m.46s., eLZ = 52·1m.
Tinemaha iP = 38m.38s., iZ = 38m.46s., eZ = 40m.51s.
Long waves were also recorded at Granada, De Bilt, Uccle, Kew, and Stuttgart.

Feb. 10d. Readings also at 7h. (near Fort de France), 8h. (Triest, Sofia, and Stuttgart), 10h. (near La Paz), 17h. (2) and 18h. (Tacubaya), 19h. (New Delhi and Wellington), 20h. and 23h. (near Fort de France).

Feb. 11d. Readings at 0h. (Pasadena, Riverside, Palomar, Mount Wilson, Tucson, and Tinemaha), 6h. (St. Louis), 7h. (Stuttgart and near Mizusawa), 8h. (near Balboa Heights), 9h. (near Andijan and Tashkent), 11h. (Tinemaha, Tucson, Mount Wilson, and Palomar), 12h. (near Stalinabad), 13h. (near Mizusawa), 15h. (Tinemaha, Riverside, Mount Wilson, Tucson, Salt Lake City, Ukiah, Santa Clara, and Mizusawa), 16h. (Ferndale), 18h. (Tacubaya (4), near Sofia, and Bucharest), 20h. (Pasadena, Mount Wilson, Palomar, Tucson, and Tinemaha), 21h. (near St. Louis).

Feb. 12d. Readings at 1h. (near Andijan, Stalinabad and Tashkent), 7h. (near Mizusawa), 12h. (New Delhi, Bombay, and Calcutta), 18h. (near Tashkent), 19h. (Tuai, Mount Wilson, Pasadena, Tucson, and Lincoln), 20h. (Tuai), 22h. and 23h. (Fresno).

Feb. 13d. Readings at 1h. (Fresno), 6h. (Fresno (2) and near Mizusawa), 8h. (Moscow), 10h. (Tuai), 11h. (San Francisco and Tacubaya), 13h. (near Lick), 23h. (near Almeria).

Feb. 14d. 7h. 28m. 14s. Epicentre 37°·3N. 20°·6E. (as on Jan. 7d.).

$A = +\cdot7465$, $B = +\cdot2806$, $C = +\cdot6034$; $\delta = +9$; $h = -1$;
$D = +\cdot352$, $E = -\cdot936$; $G = +\cdot565$, $H = +\cdot212$, $K = -\cdot797$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	N.	5·8	21	e 1 30	+ 1	i 3 1	S*	—	—	—
Belgrade		7·5	359	i 1 48	− 5	i 3 42	S*	i 2 8	P*	—
Istanbul		7·6	58	(e 1 46?)	− 9	(3 25)	+ 2	(4 7)	S_g	(5·1)
Bucharest		8·2	28	i 2 6	+ 3	i 4 48	S_g	—	—	i 5·0
Florence	E.	9·6	315	2 20k	− 1	e 4 2	−10	—	—	i 5·3
Focsani	N.	9·7	29	e 2 33	+11	—	—	e 5 8	S_g	6·0
Triest		9·8	331	e 2 18	− 6	i 3 58	−19	e 4 27	Q	—
Bacau		10·4	35	e 2 50	PPP	—	—	—	—	5·8
Helwan	Z.	11·6	127	3 3	+13	11 9	L	5 13	S	(11·1)
Milan	E.	11·8	317	e 3 3	+10	5 32	SSS	—	—	—
Yalta		12·5	51	e 3 14	+12	—	—	—	—	—
Ksara		12·9	101	e 3 28?	PPP	—	—	e 6 13	SSS	—
Zurich		13·4	322	e 3 0	−14	—	—	—	—	e 7·6
Basle		14·0	321	e 3 17	− 5	—	—	—	—	e 7·6
Cheb		14·1	338	e 3 14?	− 9	e 6 13	SS	—	—	e 7·9
Stuttgart		14·1	328	e 3 19	− 4	e 6 2	0	i 3 32	PP	e 7·9
Strasbourg		14·6	325	e 3 23	− 7	e 6 14	+ 1	e 6 34	SS	8·3
Besançon		14·7	317	e 5 23	?	—	—	—	—	—
Jena		15·1	337	e 3 31	− 5	e 7 26	L	i 4 12	PPP	(e 7·4)
Clermont-Ferrand		15·5	308	e 3 43	+ 1	—	—	i 7 41	SSS	e 8·3

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Potsdam		16·0	343	e 3 52f	+ 4	i 6 54	+ 8	i 6 57	SS	8·8
Tortosa	N.	16·0	286	—	—	6 56	+10	—	—	8·3
Paris		17·5	317	e 3 24	?	—	—	—	—	9·8
Uccle		17·8	324	e 4 12	+ 1	e 7 21	− 7	—	—	9·8
Almeria		18·4	276	4 17	− 1	7 43	+ 2	4 34	PP	10·8
De Bilt		18·4	330	i 4 16a	− 2	i 7 44	+ 3	—	—	e 9·8
Copenhagen		19·2	347	i 4 28k	0	8 0	+ 1	—	—	9·8
Granada		19·3	278	i 4 27	− 2	i 8 1	− 1	4 36	pP	10·8
Toledo		19·4	285	i 4 31	+ 1	i 7 59	− 5	—	—	—
Kew		20·5	321	—	—	e 8 26	− 1	—	—	e 11·3
San Fernando		21·4	276	4 55	+ 4	9 19	SS	5 34	PPP	—
Upsala		22·7	356	5 2	− 2	9 11	+ 2	—	—	11·8
Stonyhurst		23·0	324	—	—	i 9 6	− 8	—	—	12·9
Lisbon		23·4	283	5 19	+ 8	9 22	+ 1	—	—	14·7
Aberdeen		25·0	329	—	—	i 9 47	− 2	—	—	14·2
Sverdlovsk		32·9	41	e 6 42	+ 4	i 11 54	− 2	—	—	—
Tashkent		37·5	68	7 37	+20	—	—	—	—	—
Andijan		39·9	69	e 8 3	+26	e 13 50	+ 7	—	—	—
New Delhi	N.	47·7	84	—	—	i 15 40	+ 4	i 18 36	SS	i 24·5
Bombay	E.	48·9	97	10 57	PP	16 5	PS	16 11	PPS	—
Irkutsk		58·0	46	—	—	e 17 58	+ 1	—	—	—
Fordham		69·7	306	i 11 20	+ 6	—	—	—	—	—
Tinemaha	Z.	96·8	327	e 13 49	+15	—	—	—	—	—
Tucson		97·3	320	e 13 42	+ 6	—	—	e 17 39	PP	e 57·1
Pasadena		99·2	326	e 14 0	+15	—	—	e 17 47	PP	e 55·8

Additional readings :—
Belgrade i = 2m.20s., iS_z = 2m.35s., i = 2m.46s., 2m.52s., 3m.54s., and 4m.13s.
Istanbul readings increased by 3 minutes.
Bucharest iN = 2m.10s., iE = 4m.23s. and 4m.39s.
Helwan PPP?Z = 6m.28s.
Stuttgart i = 3m.22s., eS = 5m.46s.
Jena iPN = 3m.35s., eN = 5m.30s., eE = 6m.28s.?, eN = 6m.34s.
Paris e = 5m.50s.
Uccle iEN = 7m.31s.
Almeria PPP = 4m.42s., SS? = 8m.6s., SSS = 8m.36s.
Granada PP = 4m.52s., sS = 8m.22s.
San Fernando SS?E = 10m.10s.
Upsala eSN = 9m.5s.
New Delhi iS_cS = 19m.29s., i = 20m.33s.
Bombay S_cSE = 18m.48s., SSE = 19m.23s.
Long waves were also recorded at Bergen, Bozeman, Huancayo, and La Paz.

Feb. 14d. Readings also at 2h. (Riverview and Wellington), 3h. and 4h. (Huancayo), 6h. (Prague), 9h. (Tinemaha, Mount Wilson, Pasadena, Riverside, Tucson (2), Tacubaya (2), Guadalajara (2), also Granada, Basle, Zurich, Triest, Bucharest, and Sofia), 10h. (Tacubaya), 15h. (La Paz), 17h. (Mizusawa), 19h. (Tucson, Tacubaya, Stuttgart, New Delhi, near Andijan, Tashkent, and Stalinabad), 20h. (Wellington, Auckland, Christchurch, Riverview, and Stuttgart), 22h. (Triest, Sofia, and Bucharest).

Feb. 15d. Readings at 0h. (Tacubaya), 1h. (near Andijan), 5h. (near Tashkent, Andijan, and Stalinabad), 8h. (Riverside, Tucson, Pasadena, Mount Wilson, and Palomar), 11h. (Berkeley), 15h. (Tinemaha, Tucson, Mount Wilson, and Palomar), 22h. (near Andijan and Almata), 23h. (Tinemaha, Haiwee, Tucson, Mount Wilson, and Palomar).

Feb. 16d. 7h. 28m. 32s. Epicentre 13°·9S. 70°·0W. Depth of focus 0·010.

Intensity VI in Chile on 19°S. parallel. Epicentre 13°·9S. 70°·0W. Depth of focus 100kms.
Annales de l'Institut de Physique du Globe de Strasbourg, p. 23.
United States Earthquakes 1943, p. 31. U.S.C.G.S.

$A = +·3321$, $B = -·9126$, $C = -·2387$; $\delta = +11$; $h = +6$;
$D = -·940$, $E = -·342$; $G = -·082$, $H = +·224$, $K = -·971$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz	z.	3·2	146	i 1 2k	+12	—	—	—	—	i 1·5
Huancayo		5·5	289	i 1 20	− 1	—	—	—	—	—
Montezuma		8·7	173	e 1 55	−10	i 3 32	−10	—	—	—
La Plata		23·6	155	i 5 2	− 1	9 8	+ 1	i 5 34	PP	12·2
Balboa Heights		24·6	338	i 5 17	+ 5	i 9 32	+ 8	—	—	i 16·0
Rio de Janeiro	N.	26·9	113	e 5 50	+16	e 10 6	+ 4	e 6 8	PP	i 13·0
Fort de France		29·8	19	i 6 2	+ 2	e 10 51	+ 3	—	—	—
San Juan		32·3	8	e 6 28	+ 6	i 11 29	+ 2	i 7 34	PP	12·7
Tacubaya	E.	43·8	319	e 7 40	−18	—	—	—	—	—
Bermuda		46·3	7	e 9 18	?	i 15 3	+ 7	e 9 45	P_cP	e 23·1
Mobile		47·6	339	i 8 38	+10	i 14 41	−34	—	—	—
Philadelphia		53·8	356	e 10 59	PP	e 16 28	−12	e 20 18	SS	e 21·8
Cape Girardeau		54·2	342	i 9 18	0	e 16 40	− 6	e 18 49	sS	—
Fordham		54·6	358	i 9 21	0	i 16 51	0	i 10 21	pP	—
Pittsburgh		54·8	351	(i 9 25)	+ 3	(i 16 55)	+ 1	(e 19 0)	sS	—
New Kensington		54·9	351	—	—	(i 16 58?)	+ 3	(e 20 52)	SS	(e 23·6)
St. Louis		55·6	341	i 9 29	+ 1	i 17 2	− 2	i 10 27	pP	—
Florissant		55·8	341	i 9 28	− 1	i 17 3	− 4	i 10 26	pP	—
Harvard		56·1	359	i 9 36	+ 4	e 17 8	− 3	e 21 3	SS	e 23·0
Vermont		58·1	357	—	—	i 17 41	+ 4	i 19 26	S_cS	23·9
Halifax		58·5	6	8 47	?	—	—	—	—	15·5
Ottawa		59·2	356	9 56	+ 3	17 52	0	e 13 58	PPP	—
Lincoln		59·8	337	e 9 56	− 1	i 17 56	− 3	(e 24 50)	SSS	e 24·8
Shawinigan Falls		60·2	358	10 2	+ 2	18 4	0	—	—	—
Tucson		60·3	323	i 10 0	− 1	e 18 2	− 4	i 12 2	PP	e 25·1
Seven Falls		60·7	359	10 7	+ 4	18 13	+ 2	—	—	24·5
La Jolla	z.	64·8	317	10 29	− 2	—	—	—	—	—
Palomar	z.	64·8	318	i 10 30k	− 1	e 18 59	− 3	e 39 13	P′P′	—
Riverside		65·6	318	i 10 35k	− 1	i 19 6	− 6	e 20 15	PPS	—
Mount Wilson		66·2	318	i 10 39k	− 1	e 19 19	0	i 39 9	P′P′	—
Pasadena		66·2	318	i 10 38k	− 2	i 19 17	− 2	i 39 14	P′P′	e 27·5
Salt Lake City		66·8	327	e 10 43	0	i 19 26	0	e 20 23	PPS	e 26·8
Haiwee		67·3	320	i 10 46k	0	e 19 32	0	e 39 8	P′P′	—
Santa Barbara		67·4	317	i 10 45k	− 2	e 19 25	− 9	—	—	—
Logan		67·5	328	i 10 47	− 1	i 19 32	− 3	i 20 10	sS	e 28·5
Tinemaha		68·1	320	i 10 50	− 1	e 19 39	− 3	—	—	—
Fresno	N.	68·8	319	i 10 30	−26	—	—	—	—	—
Bozeman		69·9	331	e 11 2	0	i 20 2	− 1	e 11 21	P_cP	e 30·0
Lick	N.	70·4	318	e 11 5	− 1	e 20 8	− 1	—	—	—
Santa Clara		70·6	318	i 11 7	0	e 20 13	+ 2	—	—	—
Berkeley		71·1	318	e 11 9	− 1	e 20 16	− 1	—	—	—
Ukiah		72·4	320	e 11 18	+ 1	e 20 32	0	e 21 51	PPS	e 42·6
Saskatoon		73·0	338	—	—	i 20 37	− 2	—	—	29·5
Lisbon		77·2	45	11 52	+ 7	i 21 36	+11	i 12 34	pP	—
Victoria		78·1	327	11 51	+ 1	21 34	− 1	e 22 51	PPS	e 33·5
San Fernando		78·2	48	e 11 58	+ 8	21 47	+11	22 55	PPS	—
Granada		80·4	48	i 12 10	+ 8	i 22 10	+11	i 12 52	pP	37·0
Almeria		81·1	48	12 16	+10	22 3	− 3	12 46	pP	36·5
Toledo		81·3	46	i 12 7	0	i 22 16	+ 8	i 12 54	pP	39·5
Kew		88·6	36	i 25 20	PPS	e 23 2	[0]	i 24 25	PS	e 44·5
Sitka		89·0	330	e 12 45	0	i 22 58	[− 6]	i 23 16	S	e 30·2
Scoresby Sund		90·4	15	—	—	i 23 39	+ 3	i 23 16	SKS	e 36·7
Uccle		91·0	38	e 22 22?	?	i 23 16	[0]	i 24 59	sSKS	—
De Bilt		92·0	37	—	—	e 23 28?	[+ 7]	—	—	—
Stuttgart		93·4	41	e 13 10	+ 4	e 23 34	[+ 6]	e 13 52	pP	e 50·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		95·5	45	e 16 12	?	i 23 42	[+ 1]	—	—	—
Cheb		95·8	40	e 14 53	?	e 23 44	[+ 1]	—	—	e 46·5
Copenhagen		97·2	34	—	—	23 38	[−12]	27 3	PPS	—
College		97·4	335	e 23 46	SKS	e 24 26	−10	e 26 15	PS	e 40·2
Wellington		98·9	223	18 18?	PKP	26 28	PS	—	—	51·5
Christchurch		99·2	220	18 23	PKP	—	—	24 57	Q	27·7
Arapuni		99·8	227	—	—	e 23 58?	[− 5]	—	—	—
Upsala		100·7	31	e 26 28?	PS	—	—	—	—	—
Auckland		100·9	228	i 21 45	?	27 28	PPS	—	—	—
Helwan	Z.	106·5	63	e 18 22	PKP	i 24 28	[− 6]	i 18 44	PP	—
Ksara		110·7	59	e 19 19	PP	—	—	e 28 56	PS	—
Riverview		118·4	218	i 20 25k	PP	—	—	—	—	—
Sendai		143·4	317	e 19 22	[− 1]	22 46	PP	—	—	—
Bombay	E.	144·0	77	19 25	[+ 1]	29 52	SKKS	e 19 50	pPKP	—
Kumagaya		145·6	315	e 19 23	[− 4]	—	—	—	—	—
Nagano		146·1	317	i 19 31	[+ 3]	—	—	—	—	—
New Delhi	N.	146·3	59	i 19 37	[+ 8]	i 29 33	SKKS	e 34 3	PS	—
Nagoya		147·8	315	19 36	[+ 5]	—	—	—	—	—
Kodaikanal	E.	148·0	92	e 20 41	sPKP	i 30 45	?	—	—	—
Kobe		149·2	316	19 39	[+ 6]	—	—	—	—	—
Hyderabad	E.	149·5	79	19 44	[+10]	29 54	SKKS	—	—	—
Calcutta	N.	157·7	64	e 20 35	sPKP	—	—	i 34 50	SKSP	—

Additional readings :—
Huancayo i=1m.59s. and 2m.10s.
Montezuma e=2m.54s. and 3m.9s.
La Plata SE=8m.58s.?, SZ=9m.3s., Z=10m.2s., E=10m.4s.?.
San Juan i=7m.48s.
Bermuda iP_cS?=13m.40s., i=16m.37s. and 17m.20s.
Philadelphia i=16m.23s., eS=18m.28s., iS=18m.44s.
Fordham i=18m.53s.
Pittsburgh readings increased by 1 minute.
New Kensington eS_cS=18m.52s.?, readings have been decreased by 30 minutes.
St. Louis iP_cP?Z=10m.13s., ipS?N=18m.9s., isS?N=19m.1s.
Florissant iP_cP?Z=10m.12s., ipS?N=18m.8s., isSN=19m.1s.
Harvard iS=17m.13s., e=19m.4s.
Vermont e=18m.56s., eSS=21m.36s.
Ottawa i=19m.28s., SS=21m.55s., e=24m.28s.?.
Tucson i=10m.13s., iPP=10m.38s., ePPP=13m.34s., e=18m.24s., e=19m.4s., eS_cS=19m.31s.
Palomar iZ=11m.3s., epPKP,PKPZ=40m.7s.
Mount Wilson iZ=11m.58s.
Pasadena iZ=10m.54s., eZ=11m.54s., iZ=40m.1s.
Salt Lake City e=11m.46s., eSS=24m.7s., esSS?=24m.36s.
Santa Barbara eZ=12m.1s.
Logan i=11m.43s., e=13m.53s., ePPP=14m.51s., eS_cS?=20m.20s., e=24m.56s.
Tinemaha iPKP,PKPZ=41m.5s.
Bozeman e=21m.35s. and 24m.24s., eSS?=24m.42s., e=25m.32s.
Lick iPN=11m.10s.
Ukiah eSS=25m.4s., e=28m.56s.
Saskatoon SS=24m.50s.
San Fernando PP?EZ=12m.40s.
Granada P_cP=12m.30s., isP_cP=13m.58s., PP=15m.13s., pPPP=18m.28s., SKS=21m.23s., SS=27m.34s.
Almeria P_cP=12m.22s., sP=13m.10s., PP=15m.18s., PPP=17m.12s., S_cS=22m.16s., PS=23m.1s., PPS=23m.24s., SS=27m.25s.
Toledo isS=23m.17s.
Kew iPPSEN=25m.46s., eSS=30m.10s., eSSSN=36m.58s.?.
Sitka eSS=29m.20s.
Uccle isPS?E=26m.16s.
Stuttgart ePP?Z=17m.34s.?, eS?=25m.16s., eS?Z=25m.24s., esS?=26m.18s.
Cheb e=25m.11s.
College epPS=26m.22s., e=29m.40s.
Christchurch S_cS=26m.10s.
Arapuni SKS?=27m.28s.
Upsala eN=30m.28s.?.
Auckland i=22m.28s.
Helwan iZ=20m.52s., eE=29m.13s. and 29m.58s.
Riverview iE=30m.17s., iN=30m.31s.
Bombay iE=20m.12s. and 20m.50s.?, PPSE=37m.7s., SSE=42m.34s., SSSE=48m.26s.
New Delhi i=20m.22s., e=21m.34s.
Hyderabad PPE=22m.28s., eE=30m.31s.
Long waves were also recorded at Paris.

Feb. 16d. 14h. 8m. 24s. Epicentre 29°·5S. 71°·5W. (as on 1939 Jan. 18d.).

A = +·2766, B = −·8267, C = −·4899; δ = −6; h = +2;
D = −·948, E = −·317; G = −·155, H = +·465, K = −·871.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		7·2	19	e 2 45	+56	—	—	—	—	e 3·6
La Plata		12·7	119	3 0	− 5	5 30?	+ 2	—	—	6·2
La Paz		13·3	14	i 3 18	+ 5	i 6 4	+22	—	—	7·8
Huancayo		17·8	347	i 4 15	+ 4	i 7 34	+ 6	—	—	e 8·8
Rio de Janeiro		26·2	82	e 5 46	+ 8	i 10 24	+15	—	—	e 13·6
Fordham		70·0	0	—	—	e 18 40	?	—	—	e 45·1
St. Louis		70·0	345	e 10 48	−27	e 26 21	?	e 28 12	SSS	—
Palomar	z.	75·8	324	e 11 48	− 2	—	—	—	—	—
Riverside	z.	76·6	322	e 11 51	− 3	—	—	—	—	—
Pasadena		77·2	323	e 11 55	− 2	e 21 44	− 3	—	—	—
Haiwee	z.	78·6	324	e 12 6	+ 1	—	—	—	—	—
Tinemaha	z.	79·4	324	e 12 8	− 1	—	—	—	—	—
Bozeman		83·0	334	—	—	e 22 49	+ 2	—	—	e 47·2
Bombay	E.	145·9	100	i 19 44	[+ 3]	e 30 0	{+ 5}	20 9	PKP$_2$	—
Calcutta	N.	160·6	107	e 29 55	?	—	—	e 50 40	SSS	—

Additional readings :—
La Plata SE = 5m.48s.?.
Huancayo e = 4m.42s. and 5m.0s.
Rio de Janeiro eSN = 10m.32s.
Haiwee iZ = 12m.23s.
Tinemaha iZ = 12m.25s.
Bombay eE = 22m.54s. and 35m.48s.
Long waves were also recorded at San Juan.

Feb. 16d. 14h. 38m. 5s. Epicentre 10°·0S. 161°·1E. (as on 1941 September 30d.).

A = −·9319, B = +·3191, C = −·1725; δ = +2; h = +7;
D = +·324, E = +·946; G = +·163, H = −·056, K = −·985.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	19·0	202	i 4 33	+ 7	i 8 4	+ 9	i 4 39	PP	9·9
Riverview		25·4	199	i 5 37a	+ 6	i 10 2	+ 6	i 6 13	PP	e 11·9
Sydney		25·4	199	e 5 43	+12	e 10 13	+17	—	—	e 12·7
Auckland		29·5	159	—	—	10 8	?	—	—	13·9
Arapuni		30·9	157	—	—	10 55	−29	—	—	14·9
Tuai		32·1	156	i 6 34	+ 3	—	—	—	—	16·9
Wellington		33·4	162	6 43	+ 1	12 21	+18	14 55?	Q	15·9
Christchurch		34·9	165	8 52	PPP	12 34	+ 7	14 55	Q	17·6
Miyazaki		50·4	327	9 5	+ 4	16 13	− 1	—	—	—
Nagoya		50·4	335	8 59	− 2	—	—	—	—	—
Kôbe		50·8	333	8 48	−16	16 21	+ 1	—	—	—
Sendai		51·6	341	9 10	0	—	—	—	—	—
Mizusawa	E.	52·3	341	(9 24)	+ 9	9 24	P	—	—	—
Mori		55·2	342	9 38	+ 1	—	—	—	—	—
Zinsen		57·2	327	9 53	+ 2	—	—	—	—	—
Vladivostok		59·2	336	i 10 4	− 1	i 18 10	− 2	—	—	—
Irkutsk		78·7	329	12 6	0	22 1	− 2	—	—	—
College		83·8	19	—	—	e 22 47	− 8	e 23 13	S_cS	e 35·7
Sitka		84·5	29	e 22 2	?	e 22 33	−29	—	—	e 38·9
Ukiah		85·4	49	e 13 1	+21	e 23 14	+ 3	—	—	e 39·5
Berkeley		85·7	50	i 12 43	+ 1	—	—	—	—	e 39·4
Santa Clara		85·8	50	i 12 45	+ 3	e 23 8	[+ 2]	—	—	e 40·9
Santa Barbara	z.	86·8	54	i 12 48	+ 1	—	—	i 12 57	pP	—
Mount Wilson		88·0	54	i 12 52a	− 1	—	—	i 13 6	pP	—
Pasadena		88·0	54	i 12 52a	− 1	i 23 55	+19	i 13 6	pP	e 40·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		88·0	40	—	—	e 23 42	+ 6	—	—	40·9
La Jolla	E.	88·4	56	e 12 59	+ 4	—	—	—	—	—
Haiwee		88·6	52	e 12 56	0	—	—	i 13 9	pP	—
Riverside		88·6	54	i 12 55a	− 1	e 23 24	[0]	i 13 9	pP	—
Tinemaha		88·6	51	i 12 55	− 1	—	—	i 13 9	pP	—
Palomar	Z.	88·9	56	i 12 57a	− 1	—	—	i 13 11	pP	—
New Delhi	N.	89·4	299	e 13 45	?	i 23 45	− 4	—	—	—
Bombay	E.	91·6	289	i 13 13	+ 3	24 31	+22	23 58	SKS	—
Tucson		93·6	57	i 13 20	+ 1	—	—	e 17 18	PP	e 43·0
Salt Lake City		94·2	50	e 13 17	− 5	e 23 55	[− 2]	—	—	e 43·8
Bozeman		95·6	45	—	—	i 24 29	{+ 6}	—	—	e 45·3
Tananarive		108·5	247	—	—	—	—	e 33 7	SS	56·1
Ottawa		120·5	42	e 18 53	[− 1]	—	—	—	—	61·9
Harvard		123·9	45	i 17 5	?	—	—	—	—	e 69·9
Helwan	Z.	129·3	301	19 11	[0]	—	—	21 22	PP	—
Cheb		132·4	333	e 34 55?	?	—	—	—	—	e 69·9
Stuttgart		134·8	334	e 19 21	[0]	28 55?	{+ 5}	e 22 5	PP	—
Basle		136·4	334	e 19 27	[+ 3]	—	—	—	—	—
Toledo	Z.	147·4	339	i 19 47	[+ 4]	—	—	—	—	—
Almeria		149·4	334	19 42	[− 4]	22 22	?	—	—	—
Granada		149·6	336	19 51	[+ 4]	30 33	{+18}	i 23 47	PP	—
San Fernando		151·2	340	e 20 1	[+12]	—	—	—	—	—

Additional readings :—
Brisbane iSSN = 8m.34s.
Riverview iSSZ = 10m.58s.
Tuai i = 7m.0s.
Mount Wilson iZ = 16m.30s.
Pasadena iZ = 16m.29s., eZ = 18m.55s., eSKSE = 23m.33s.
Haiwee eZ = 16m.35s.
Tinemaha iZ = 16m.33s.
Palomar iZ = 16m.37s. and 16m.45s.
Bombay eE = 13m.58s. and 16m.36s., PSE = 25m.7s., eE = 25m.27s.
Tucson ePP = 17m.27s.
Helwan iZ = 21m.36s., eE = 22m.35s.
Stuttgart eZ = 19m.35s., e = 33m.43s.?.
Toledo i = 22m.22s.
Almeria PP = 19m.55s., PPP = 20m.4s., SS = 22m.50s., SSS = 22m.59s., P_cP = 24m.33s.
Granada PPP = 27m.0s.
Long waves were also recorded at Logan, Philadelphia, Kew, and Paris.

Feb. 16d. 16h. 50m. 53s. Epicentre 5°·6S. 150°·5E. Depth of focus 0·030.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	21·9	174	i 4 33	− 3	i 8 25	+ 7	i 4 44	PP	i 11·0
Riverview		28·1	179	i 5 32k	− 1	i 10 7	+ 7	i 6 25	PP	—
Sydney		28·1	179	e 5 55	+22	e 10 10	+10	i 11 40	SS	—
Auckland		38·2	147	7 2	+ 2	12 22	−14	8 37	PP	19·1
Nake		39·4	330	e 7 10	0	—	—	—	—	—
Arapuni		39·6	148	8 37?	PP	13 7	+10	(17 7?)	SSS	17·1
Karenko		40·7	316	e 7 10	−10	—	—	—	—	—
Tuai		40·9	158	7 24	+ 2	13 20	+ 4	—	—	—
Miyazaki		41·5	336	7 28	+ 1	13 29	+ 4	—	—	—
Muroto		41·6	340	i 7 24	− 4	—	—	—	—	—
Wellington		41·6	152	7 28	0	13 32	+ 6	8 22	pP	19·1
Kameyama		42·3	344	7 14	−19	—	—	—	—	—
Tokyo		42·3	348	e 7 33	0	9 49	PPP	—	—	—
Nagoya		42·5	345	13 32	S	(13 32)	− 8	—	—	—
Kobe		42·6	342	i 7 33	− 3	—	—	—	—	—
Kumagaya		42·8	347	13 33	S	17 58	SSS	—	—	—
Hukuoka		43·4	336	i 7 39	− 3	13 53	0	8 21	pP	—
Nagano		43·6	354	13 42	S	(13 42)	−14	—	—	—
Sendai		44·5	350	—	—	e 13 46	−22	—	—	—
Mori		48·3	351	e 8 20	0	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zinsen		48·3	334	8 18	− 2	—	—	—	—	—
Sapporo		49·1	352	e 8 33	+ 7	e 9 22	?	—	—	—
Vladivostok		51·3	344	i 8 40	− 3	15 48	+ 5	i 9 19	pP	—
Calcutta	N.	66·9	298	e 10 15	−15	i 20 0	pS	—	—	—
Irkutsk		69·7	332	i 10 44	− 3	19 40	+ 4	11 32	pP	—
Hyderabad	E.	74·7	290	e 11 16	− 1	20 35	+ 2	—	—	—
New Delhi		78·2	301	e 11 32	− 4	21 4	− 7	22 11	PS	—
Bombay	E.	80·2	290	i 11 44	− 3	i 21 30	− 2	i 12 29	pP	—
College		83·5	22	—	—	e 23 15	PS	e 28 16	SS	e 34·4
Tashkent		87·1	312	i 12 21	− 1	i 22 29	−11	13 5	pP	—
Santa Barbara		92·9	56	i 12 49	0	—	—	—	—	—
Pasadena		94·2	56	i 12 53	− 1	i 23 13	[+ 6]	i 13 38	pP	e 37·0
Mount Wilson		94·3	56	i 12 54	− 1	—	—	i 13 38	pP	—
Tinemaha		94·3	53	i 12 53	− 2	—	—	—	—	—
Haiwee	N.	94·5	54	e 12 52	− 4	—	—	—	—	—
La Jolla	E.	94·9	57	e 13 4	+ 6	—	—	—	—	—
Riverside		94·9	56	i 12 56	− 2	—	—	i 13 42	pP	—
Palomar	Z.	95·2	57	i 12 58	− 1	—	—	—	—	—
Tucson		100·3	58	e 13 24	+ 2	e 23 48	[+11]	e 17 28	PP	e 40·4
St. Louis		116·2	49	e 19 20	PP	—	—	e 28 46	PS	—
Helwan	Z.	118·0	300	e 19 36	PP	—	—	—	—	—
Jena	Z.	123·4	329	e 20 7	PP	—	—	e 20 17	?	—
Cheb		123·5	329	e 20 7?	PP	e 30 7	PS	—	—	e 60·1
Stuttgart		125·9	329	e 18 27	[− 8]	—	—	—	—	e 63·1
Zurich		127·1	328	e 18 38a	[+ 1]	—	—	—	—	—
Basle		127·5	329	e 18 39	[+ 1]	—	—	—	—	—
Huancayo		131·2	111	e 18 51	[+ 6]	—	—	e 32 27	PPS	e 50·2
La Paz		135·9	120	i 18 58k	[+ 4]	—	—	—	—	—
Granada		140·7	327	e 19 52	[+49]	—	—	i 22 13	PP	—
San Fernando	Z.	142·6	328	e 19 6	[− 1]	—	—	—	—	—
Fort de France		147·6	71	i 19 18	[+ 2]	—	—	—	—	—

Additional readings :—
Brisbane iN =5m.57s., iSSN =9m.27s.
Riverview iNZ =6m.31s., iN =11m.39s., iE =11m.45s., and 12m.54s.
Auckland i =13m.12s., e =14m.7s.?, S_cS? =15m.42s., SS? =16m.32s.
Wellington P_cP =9m.2s., PP =9m.15s., pP_cP? =9m.45s., S_cS =17m.3s., SS? =17m.7s.?, sSS =18m.12s.
Hukuoka PP =9m.58s.
Vladivostok sS =16m.52s.
Irkutsk sS =20m.58s.
New Delhi i =26m.56s.
Bombay isP =12m.49s., SKSE =21m.41s., PSE =22m.40s., sS =22m.51s., iE =23m.25s.
Tashkent sS =23m.32s.
Pasadena eN =30m.19s.?.
Riverside iZ =16m.53s.
Palomar iZ =13m.6s.
Tucson e =29m.34s.
Helwan iZ =20m.19s. and 20m.37s., eZ =21m.37s.
Stuttgart eZ =18m.35s.
Huancayo e =22m.7s. and 23m.1s., eSS =38m.41s.
Granada PPP =25m.41s., SS =41m.43s.
La Paz iZ =22m.13s.
Long waves were also recorded at Kew, Fordham, and Philadelphia.

Feb. 16d. Readings also at 1h. (Riverview), 2h. (Columbia), 3h. (Lincoln, Aberdeen, and near Granada), 8h. (Tacubaya), 16h. (San Fernando, Harvard, near Ottawa, Seven Falls, Shawinigan Falls, and near Mizusawa), 18h. (Palomar, Riverside, Mount Wilson, Pasadena, Haiwee, Tinemaha, Tucson, near Almeria), 20h. (Fordham).

Feb. 17d. 2h. Too few readings near the epicentre to afford a determination.

R. C. Hayes.
Earthquakes in New Zealand during the year 1943. Wellington 1944, " New Zealand Journal of Science and Technology," vol. XXV, No. 5B, p. 227.

Sydney iP = 18m.54s., eS = 22m.12s., eL = 23·5m.
Riverview iPEN = 18m.55s., iEN = 19m.3s., iN = 20m.58s., eLN = 22·1m.
Brisbane iPN = 19m.51s., iPE = 20m.3s., iSN = 23m.39s., iSE = 24m.46s.
La Plata E = 22m.0s., and 25m.18s.?, LE = 44m.36s.
Perth i = 29m.25s., 32m.22s., 35m.0s., and 38m.20s.
Bombay eE = 32m.40s., 33m.24s., 34m.30s., 36m.2s., and 39m.51s., iE = 40m.34s.
Tucson eP = 32m.52s., e = 43m.42s. and 56m.48s., eL = 64m.7s.
La Paz ePZ = 33m.1s., S?Z = 42m.13s., LZ = 62m.30s.
Huancayo e = 33m.9s., 39m.29s., and 41m.4s., eL = 42m.15s.
Palomar ePZ = 33m.21s.
Apia e = 33m.24s.
Mount Wilson iPZ = 33m.25s.
Pasadena ePZ = 33m.27s., eLE = 58·4m.
Haiwee ePZ = 33m.34s.
New Delhi eN = 34m.10s., iN = 43m.35s. and 44m.39s., eN = 53m.16s.
Tashkent ePKP = 34m.11s., iPP = 35m.32s., PS = 45m.31s.
Ottawa eZ = 34m.21s., e = 55m., L = 78m.
Bermuda eP? = 34m.23s., e = 49m.25s., eL = 72m.14s.
Helwan PZ = 34m.36s., iZ = 35m.42s., PKP?Z = 37m.39s., eZ = 38m.17s.
Honolulu e = 34m.50s. and 42m.30s., eL = 49m.0s.
Stuttgart ePKP?Z = 35m.7s., ePKP$_2$?Z = 36m.0s., ePP?Z = 39m.55s., ePPP?Z = 44m.55s., eSKKS?Z = 47m.5s., ePSKS? = 50m.0s., eSS? = 61m.36s.?, eSSS? = 66m.30s.?, eL = 104·5m.
Yalta ePKP = 35m.54s.
Uccle eP?NZ = 36m.17s., eS?E = 46m.49s., eE = 50m.52s., eL? = 67m.
Cheb e = 37m.?, e = 46m.25s., eL = 100m.
Kodaikanal eE = 37m.16s.
Calcutta eN = 38m.44s.
De Bilt iPKP? = 39m.55s., eSKS? = 46m.50s., eE = 50m.30s., eSS? = 60m., eSSS? = 66m.50s., eL = 90m.
Ukiah e = 43m.41s., eL = 63m.44s.
Bozeman e = 44m.27s., eL = 69m.46s.
San Juan e = 51m.31s. and 71m.5s., eL = 78m.5s.
Philadelphia e = 54m.42s.?, eL = 79·4m.
Vermont e = 55m.23s. and 62m.13s., eL = 71m.28s.
Seven Falls e = 55m.30s.?, L = 83m.
Granada PKP = 59m.35s., PP? = 64m.57s., eL = 104·8m.
Kew eSS?EN = 60m.50s., ePPSEN = 62m.20s., eSSS?E = 68m.30s.?, eL = 72m.
Berkeley e = 63m.18s.?, eNZ = 68m.6s.?.
Long waves were also recorded at Scoresby Sund and other American and European stations.

Feb. 17d. Readings also at 0h. (Oaxaca, Puebla, Tacubaya, Vera Cruz, St. Louis, Salt Lake City, Logan, Bozeman, Tucson, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 2h. (Oaxaca, Puebla, Tacubaya, Tucson, Haiwee, Mount Wilson, Palomar, Riverside, and Tinemaha), 3h. (Uccle), 4h. (Triest), 5h. (Auckland, Arapuni, Christchurch, Wellington, Brisbane, Riverview, Sydney, Perth, New Delhi, Bombay, Kodaikanal, Vladivostok, Ottawa, Tucson, Stuttgart, Fordham, and near Lick), 6h. (De Bilt, Uccle, Bozeman, Salt Lake City, Logan, Haiwee, Sitka, Tucson, Mount Wilson, Pasadena, Palomar, and near Lick), 7h. (Cheb, Kew, Tucson, and Palomar), 9h. (New Delhi), 11h. (near Stuttgart), 12h. (New Delhi, Bombay), 13h. (Riverview), 14h. (Sydney and Vermont), 18h. (near St. Louis), 19h. (Apia), 23h. (Fordham and Tacubaya).

Feb. 18d. Readings at 1h. (Riverview), 4h. (near La Paz), 5h. (Auckland, Haiwee, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 6h. (Mount Wilson, Palomar, Tucson, Haiwee, and Tinemaha), 8h. (Riverview), 11h. (La Paz), 13h. (near Mizusawa), 14h. (near Branner, Fresno, and Lick), 15h. (Fort de France, Haiwee, Mount Wilson, Palomar, Riverside, Tinemaha, Tucson, La Plata, Rio de Janeiro, and near La Paz), 19h. (Bombay, Kodaikanal, Tashkent, near Andijan, Dehra Dun, near Berkeley, and near Fresno), 21h. (La Paz and near La Plata), 23h. (Calcutta and near La Paz).

Feb. 19d. Readings at 0h. (Guadalajara, Tacubaya, Tucson, Mount Wilson, Haiwee, Palomar, Riverside, and Tinemaha), 1h. (Stuttgart), 4h. (near La Paz), 6h. (near Mizusawa), 8h. (Auckland, Arapuni, Christchurch, Wellington, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and Tucson), 12h. 14h., and 16h. (near La Paz), 23h. (near Fort de France).

Feb. 20d. Readings at 0h. (near Berkeley), 5h. (Oaxaca, Puebla, Tacubaya, Vera Cruz, Haiwee, Mount Wilson, Tucson, Palomar, Riverside, and Tinemaha), 12h. (near Stuttgart and Triest), 13h. (Tacubaya, Tucson, Palomar, and near Mizusawa, 15h. (near Mizusawa), 16h. (Logan), 18h. (Haiwee, Palomar, Riverside, Tucson, and Tinemaha), 19h. (near Tashkent and Tchimkent), 20h. (Tacubaya).

Feb. 21d. 0h. Undetermined shock probably in Pacific, off the coast of Mexico.

Scale IV at Oaxaca, III at Puebla.
El Paricutin, Estado de Michoacon.
Publication of the National University of Mexico Institute of Geologie, p. 47.

Oaxaca PZ =8m.32s.
Puebla PN =8m.42s.
Tacubaya PN =8m.45s.
Vera Cruz PZ =8m.56s.
Guadalajara eE =10m.11s.
Tucson iP =12m.24s., e =13m.35s., iS =17m.30s., iL =18m.59s.
Palomar iPZ =13m.10s.
St. Louis iPZ =13m.13s.
Riverside iP =13m.17s.a.
Mount Wilson iPZ =13m.22s.
Pasadena iP =13m.22s.a, eLE =19m.
Haiwee iP =13m.34s.a.
Tinemaha eP =13m.41s.
Clermont-Ferrand eP =20m.50s.
Salt Lake City e =21m.54s., eL =22m.39s.
Long waves were recorded at Bozeman.

Feb. 21d. 18h. 10m. 14s. Epicentre 7°·0S. 123°·0E. (as on 1942 Aug. 14d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.		Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Perth		25·7	194	(5 46)	+13	9 51	−10	11	21 SS	14·6
Brisbane	N.	35·0	130	e 6 9	−47	i 12 22	− 6	—	—	—
Riverview		37·3	140	e 7 12	− 4	i 13 7	+ 3	—	—	e 20·5
Sydney		37·3	140	—	—	e 13 4	0	—	—	e 20·7
Calcutta	N.	44·9	312	e 8 10	− 8	i 14 40	−16	—	—	—
Colombo		45·2	287	8 5	−15	14 55	− 6	—	—	21·9
Hyderabad	E.	50·3	300	9 9	+ 9	16 9	− 4	—	—	24·6
Vladivostok		50·5	9	e 9 3	+ 1	i 16 11	− 5	—	—	—
Bombay	E.	55·7	299	e 9 25	−15	i 17 5	−21	11	20 PP	24·8
Christchurch		56·6	139	—	—	21 57	SS	27	9 Q	30·8
New Delhi	N.	56·6	311	e 9 31	−16	i 17 14	−24	19	16 S_eS	26·7
Wellington		57·1	135	—	—	17 46	+ 1	27	46? Q	30·8
Tashkent		68·7	319	e 11 16	+ 9	19 56	−14	—	—	—
Helwan	Z.	94·9	299	e 13 21	− 4	23 46	[−14]	—	—	—
Stuttgart		110·8	319	e 18 58	[+23]	—	—	—	—	e 64·8
Uccle	E.	113·3	323	—	—	e 30 16?	PPS	—	—	e 53·8
Mount Wilson	Z.	117·8	54	e 19 16	[+28]	—	—	—	—	—
Tucson		124·1	54	i 18 58	[− 3]	—	—	—	—	—

Additional readings and notes:—
Perth records P as PPP.
Riverview iE =7m.19s.
Bombay iPE =9m.32s., iE =12m.17s. and 17m.36s., S_eSE =19m.1s., SSE =20m.40s.
New Delhi SSN =20m.57s., SSS?N =22m.14s.
Wellington e =23m.46s.?.
Long waves were also recorded at Auckland, Pasadena, De Bilt, and Upsala.

Feb. 21d. Readings also at 11h. (Haiwee, Palomar, Tucson, and near Mizusawa), 12h. (Berkeley (2), Haiwee, Pasadena, Palomar, Tucson, and Riverside), 13h. (near Neuchatel), 15h. (near Ferndale), 16h. (Palomar, Tucson, Riverside, and Tinemaha), 19h. (near Huancayo, La Paz, San Juan, Tucson, Pasadena, Palomar, Riverside, Tinemaha, and Mount Wilson).

Feb. 22d. 9h. 20m. 44s. Epicentre 17°·6N. 101°·3W.

Destructive in the state of Oaxaca, Intensity IX at Petatlan, Atoyac, Zihuatanejo, Chilpancingo, and Acapulco; VIII at Ciudad Altamirano, Ciudad de Catalan; VII in the Federal district.
Epicentre 16° 40′N., 101° 31′ W. (Tacubaya). Macroseismic area 430,000 sq. km., area of greatest intensity 29,000 sq. km.
El Paricutin, Estado de Michoacon vol I. Public de l'Université National de Mexico, Institut de Géologie, p. 48-49; isoseismic chart, plate I.
M. P. Collins et L. Don Leet, The Mexican Earthquakes of April 15th, 1941, and February 22nd, 1943. Transactions of the American Geophysical Union 1944, part 2, p. 315-316, Washington 1944. Epicentre 17° 55′ N., 101° 05′ W. Depth =50km.
Epicentre 17°·6N. 101°·3W. United States Coast and Geodetic Survey.

$A = -\cdot1869$, $B = -\cdot9353$, $C = +\cdot3005$; $\delta = +2$; $h = +5$;
$D = -\cdot981$, $E = +\cdot196$; $G = -\cdot059$, $H = -\cdot295$, $K = -\cdot954$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	Z.	2·7	48	0 49	+ 4	—	—	—	—	—
Manzanillo	N.	3·2	297	0 49	− 3	—	—	—	—	—
Puebla	N.	3·3	64	0 57	+ 4	—	—	—	—	—
Guadalajara	N.	3·6	328	1 1	+ 3	—	—	—	—	—
Oaxaca	Z.	4·4	97	1 6	− 4	—	—	—	—	—
Vera Cruz	Z.	5·2	71	1 21	0	—	—	—	—	—
Mazatlan	N.	7·3	320	1 52	+ 2	—	—	—	—	—
Chihuahua	Z.	11·8	339	i 2 58	+ 5	—	—	—	—	—
Tucson		16·9	331	i 4 2	+ 3	i 6 56	−11	—	—	e 7·4
Mobile		17·7	39	4 9	− 1	—	—	—	—	—
La Jolla		20·9	320	e 4 48	+ 2	—	—	—	—	—
Palomar	Z.	21·0	323	i 4 48	+ 1	—	—	—	—	—
Riverside		21·8	322	i 4 55a	− 1	e 9 8	+16	—	—	—
Boulder City		21·9	332	e 4 58	+ 1	e 9 20	SS	i 5 8	PP	i 11·7
Mount Wilson		22·3	322	i 5 39	+38	—	—	—	—	—
Pasadena		22·4	322	i 5 19	+17	i 9 2	− 2	—	—	—
Denver	N.	22·4	353	e 6 37	?	e 10 37	SSS	—	—	e 12·3
Balboa Heights		22·8	109	e 5 6	+ 1	e 9 40	SS	—	—	—
St. Louis		23·1	23	i 5 14	+ 6	i 9 44	SS	i 9 58	SSS	—
Lincoln		23·5	9	e 5 7	− 5	e 9 29	+ 6	—	—	e 11·1
Santa Barbara		23·5	320	i 5 14a	+ 2	—	—	—	—	—
Columbia		24·1	44	e 5 20	+ 2	e 9 46	+12	e 6 16	PPP	11·7
Tinemaha		24·5	326	i 5 24a	+ 2	—	—	—	—	—
Des Moines		24·8	15	i 5 31	+ 6	e 9 41	− 5	i 10 36	SS	e 12·9
Salt Lake City		24·8	342	i 5 24	− 1	i 9 52	+ 6	e 7 0	?	i 12·2
Chicago		26·8	22	i 5 43	− 1	e 10 35	+16	e 6 25	PP	e 12·1
Santa Clara		26·8	322	i 5 45	+ 1	i 10 48	+29	—	—	—
Berkeley		27·3	322	i 5 35	−13	—	—	—	—	—
Port au Prince		27·5	84	6 1	+11	e 10 57	+27	6 46	PP	e 14·9
Ukiah		28·7	324	e 5 59	− 2	e 10 58	+ 8	e 7 2	PPP	e 13·2
Bozeman		29·2	347	e 6 5	0	i 11 6	+ 8	e 7 16	PPP	i 12·9
Pittsburgh		29·3	35	i 6 6	0	i 11 9	+10	i 11 28	SS	i 17·0
New Kensington		29·5	35	e 6 4?	− 4	e 12 4?	SS	—	—	e 15·9
Butte		29·8	346	e 6 11	0	i 11 34	+27	e 7 22	PPP	i 14·6
Georgetown		29·9	40	i 6 10	− 2	—	—	—	—	—
Ferndale	E.	30·3	325	(i 6 16)	+ 1	(i 11 16)	+ 1	—	—	(i 14·1)
Buffalo		31·6	33	i 6 34	+ 8	e 11 56	+21	e 7 30	PP	—
Philadelphia		31·7	41	i 6 3	−24	i 11 42	+ 5	i 7 27	PP	i 14·2
Fordham		32·7	40	i 6 38	+ 2	i 12 9	+17	i 7 51	PP	i 18·3
Spokane		32·8	340	e 6 51	+14	e 12 31	+37	—	—	e 16·0
San Juan		33·4	82	e 6 40	− 2	i 12 18	+15	i 8 12	PPP	i 13·3
Seattle		34·6	335	e 7 13	+20	e 12 40	+18	—	—	e 15·3
Saskatoon		34·7	354	6 49	− 5	12 39	+15	8 29	PPP	18·3
Ottawa		35·0	32	6 54a	− 2	e 12 36	+ 8	8 18	PP	e 18·3
Harvard		35·4	39	i 7 0	0	e 12 33	− 1	i 7 7	pP	e 16·3
Vermont		35·7	35	i 7 4	+ 2	i 12 44	+ 5	i 8 26	PP	i 14·9
Victoria		35·7	335	7 5	+ 3	e 12 54	+15	8 32	PP	17·8
Bermuda		35·9	59	i 7 4?	0	i 12 36?	− 6	i 8 49?	PP	—
Shawinigan Falls		37·3	33	7 14	− 2	13 46	+42	8 46?	PP	21·3
Fort de France		38·6	89	e 7 25	− 1	—	—	e 8 8	PP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Seven Falls		38·7	34	7 25	− 2	i 14 5	?	9 5	PP	e 20·3
Huancayo		39·0	137	i 7 32	+ 2	e 13 34	+ 5	i 8 51	PP	e 16·3
Halifax		41·5	41	7 46	− 4	e 14 28?	+21	9 46	PPP	20·3
La Paz		47·1	134	i 8 35a	0	i 15 42	+14	i 10 31	PP	i 22·3
Sitka		47·2	336	e 8 34	− 2	e 15 25	− 4	e 10 24	PP	e 19·4
Montezuma		51·0	140	e 9 58	?	e 16 26	+ 4	—	—	e 28·4
Honolulu		53·2	284	i 9 40	+18	i 16 48	− 4	e 11 20	PP	i 21·0
College		56·5	338	e 9 47	+ 1	i 17 49	+12	e 13 17	PPP	e 24·3
Ivigtut		57·3	28	e 10 4	+12	—	—	—	—	e 25·3
La Plata	E.	66·5	142	10 58?	+ 4	19 38	− 6	23 46?	SS	32·0
	N.	66·5	142	10 53	− 1	19 42	− 2	23 58?	SS	34·0
	Z.	66·5	142	10 51	− 3	19 46?	+ 2	—	—	33·5
Rio de Janeiro	N.	69·6	123	i 11 18	+ 5	i 20 28	+ 7	—	—	i 28·5
Reykjavik		69·7	28	11 26	+12	20 23	+ 1	—	—	34·3
Scoresby Sund		70·0	21	e 11 13	− 2	i 20 53	PS	e 14 14	PP	i 29·1
Edinburgh		80·1	35	12 10	− 3	22 10	− 8	12 17	PcP	—
Aberdeen		80·3	33	i 12 23	+ 9	i 22 31	+11	i 27 56	SS	33·3
Lisbon		80·8	53	12 17k	0	22 42	+17	22 50	ScS	33·7
Stonyhurst		81·1	37	12 21	+ 3	22 47	+19	34 31	Q	38·8
Bergen		82·8	28	12 26	− 1	e 22 26	−19	e 23 1	PS	38·0
Kew		83·1	38	12 23a	− 6	e 23 10?	+23	e 15 33	PP	—
San Fernando	E.	83·7	55	i 12 32	0	23 4	+10	16 4	PP	40·3
Toledo		84·3	51	i 12 34	− 1	i 23 15	+15	—	—	42·1
Granada		85·5	53	i 12 43	+ 2	i 23 26	+14	12 51	PcP	i 40·8
Paris		85·7	41	e 12 44	+ 2	i 23 41	+27	i 16 22	PP	40·3
De Bilt		86·0	36	i 12 45a	+ 2	i 23 26	+ 9	e 16 26	PP	e 42·3
Uccle		86·1	38	i 12 44a	0	i 23 32	+14	i 16 28	PP	37·3
Almeria		86·5	53	i 12 50	+ 4	i 23 47	+25	13 15	PcP	41·3
Clermont-Ferrand		87·2	43	i 12 51a	+ 2	e 23 44	+16	i 13 11	PcP	e 34·3
Tortosa	E.	87·3	48	12 42	− 8	23 40	+11	16 26	PP	41·4
Barcelona		88·2	47	e 12 52	− 2	e 23 41	+ 3	—	—	e 37·2
Copenhagen		88·3	31	e 12 53	− 2	23 33	− 6	16 34?	PP	39·3
Besançon		88·5	41	e 15 30	?	—	—	—	—	42·3
Upsala		88·5	26	e 13 17	+21	e 23 32	{+ 1}	e 29 16	SS	e 38·3
Strasbourg		89·0	39	e 13 12	+14	e 24 12	+27	i 16 34	PP	38·3
Neuchatel		89·2	40	e 12 59	0	e 23 53	+ 6	—	—	—
Basle		89·3	40	e 13 2	+ 3	e 24 17	+29	—	—	—
Marseilles		89·7	45	i 12 46	−15	23 46?	− 6	23 16	SKS	44·3
Stuttgart		89·7	38	e 13 0a	− 1	e 24 21	+29	e 16 36	PP	e 42·5
Zurich		90·0	40	e 13 2a	− 1	e 24 6	+12	e 16 42	PP	—
Jena		90·1	36	i 13 2	− 1	e 24 1	+ 6	e 16 39	PP	e 38·3
Potsdam	E.	90·2	34	e 12 58?	− 6	e 23 58?	+ 2	—	—	e 29·3
Cheb		91·0	36	e 13 10	+ 3	e 24 1	− 2	e 16 46	PP	e 46·3
Milan		91·2	41	e 13 16	+ 8	i 24 55	PS	16 39	PP	e 47·3
Prague		92·1	35	e 12 56	−16	e 24 8	− 5	e 16 49	PP	e 38·3
Florence		93·3	42	e 13 42k	+24	e 24 6	{+ 1}	—	—	—
Triest		94·0	39	e 13 34	+13	i 23 40	[−16]	i 16 52	PP	e 42·3
Arapuni		95·4	231	—	—	24 16?	{− 5}	—	—	44·3
Auckland		95·6	233	i 18 41	?	24 26	{+ 4}	26 16	PS	44·3
Sapporo		96·7	319	13 50	+17	—	—	—	—	—
Wellington		97·0	228	13 52	+17	24 13	[+ 1]	17 36	PP	44·3
Belgrade		98·4	38	e 12 48	?	e 24 42	{− 1}	i 17 42	PP	e 47·1
Christchurch		99·1	227	13 49	+ 5	24 25	[+ 2]	17 59	PP	45·5
Sendai		99·5	314	e 13 52	+ 6	e 32 15	SSP	—	—	—
Bacau		100·9	34	—	—	24 16?	[−15]	—	—	49·4
Sofia		101·3	38	e 14 16	+22	24 49	[+16]	e 18 29	PP	—
Kumagaya		101·6	313	e 25 7	SKKS	(e 25 7)	{+ 1}	—	—	—
Bucharest		101·9	35	e 14 8	+11	24 51	[+15]	i 18 30	PP	47·3
Nagoya		103·8	313	19 7	?	—	—	—	—	—
Kobe		105·3	314	17 34	?	28 40	PPS	27 51	PS	43·8
Istanbul		105·7	37	e 19 16?	?	—	—	—	—	—
Koti		107·1	314	e 18 36	PP	—	—	—	—	—
Hamada		107·3	316	e 19 51	?	—	—	—	—	—
Hukuoka		109·1	315	e 18 31	[0]	28 30	PS	34 29	SS	58·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyazaki		109·5	313	19 13	PP	—	—	—	—	—
Brisbane		111·5	247	e 18 9	[−27]	e 26 36	{+20}	e 18 58	PP	—
Riverview		113·9	240	i 19 43k	PP	i 25 44	[+16]	e 21 46	PPP	e 52·5
Sydney		113·9	240	—	—	e 26 16?	{−16}	e 29 13	PS	e 51·7
Helwan		114·4	44	e 17 50	?	29 46	PS	i 19 36	PP	—
Ksara		114·6	39	e 19 20?	PP	e 29 50	PS	e 20 9	PP	57·3
Tashkent		120·7	7	15 39	?	25 59	[+ 7]	—	—	—
Andijan		121·7	5	20 4	PP	—	—	—	—	—
Dehra Dun	N.	132·4	0	e 20 41?	?	—	—	e 35 8	?	e 78·0
New Delhi		134·1	1	i 22 6	PP	29 6	{+20}	24 59	PPP	i 50·3
Calcutta	N.	139·0	345	e 20 6	?	i 32 36	PS	i 40 41	SS	e 60·3
Bombay	E.	143·3	9	19 56	[+20]	30 2	{+21}	23 0	PP	55·3
Perth		143·6	240	20 3	[+27]	33 21	PS	26 41	PPP	70·6
Hyderabad		145·2	1	20 1	[+21]	30 29	{+38}	23 19	PKS	—
Tananarive		150·4	97	20 12	[+24]	26 56	[+ 2]	23 27	PP	70·9
Kodaikanal	E.	152·3	2	e 20 55	[+63]	—	—	—	—	—
Colombo		155·6	357	20 7	[+12]	—	—	—	—	77·8

Additional readings :—
Denver eE =6m.41s., iN =7m.4s., iE =7m.34s., eE =10m.45s., iN =10m.49s., eSE = 11m.1s., iSS?N =11m.36s.
Lincoln iP =5m.19s.
Berkeley iPN =5m.38s.
Port au Prince PPP =7m.11s., SS =11m.52s.
Ukiah e =7m.58s.
Butte i =6m.26s. and 7m.42s.
Ferndale readings have been increased by 1 minute.
Buffalo PPP =7m.50s., SS =13m.48s.
Philadelphia iPP =6m.16s., i =13m.26s.
Fordham iS =12m.27s.
Saskatoon e =14m.37s., SSS =15m.22s., e =16m.40s.?.
Ottawa S =13m.6s., i =14m.32s., SS =16m.1s., SSS =16m.28s.
Harvard e =7m.21s., i =8m.7s., iS? =12m.55s., i =13m.19s.
Vermont i =7m.16s., e =10m.4s., i =13m.24s.
Victoria eE =7m.21s., S =13m.5s., SS =15m.27s., SSS =16m.29s.
Bermuda i =7m.27s.? and 8m.43s.?, e =14m.38s.?.
Shawinigan Falls SS =16m.40s.?.
Fort de France e =7m.56s. and 11m.48s.
Seven Falls e =13m.45s., SSS =17m.45s.
Halifax SSS =17m.28s.?.
La Paz iZ =8m.59s., iSE =15m.45s., iZ =17m.27s., SS?Z =18m.25s., SSN =18m.56s.
Sitka iP =8m.52s., iS =15m.41s.
Montezuma e =17m.23s.
Honolulu e =16m.24s. and 20m.40s.
College e =17m.26s., eSS =21m.37s.
Ivigtut e =18m.42s.
La Plata E. SKS =22m.6s., 25m.16s.?, SSS =27m.46s.?.
La Plata N SS =24m.58s., SSS =26m.58s., 29m.28s.?.
Scoresby Sund iP =11m.18s., e =25m.56s.
Edinburgh PP =15m.13s., e =21m.39s., SKS =22m.19s., S_cS =22m. 29s., PS =22m.59s., i =23m.36s. and 26m.16s., e =28m.16s.
Aberdeen iE =28m.41s.
Lisbon PN =12m.27s., E =14m.23s., N =21m.0s., SSZ =27m.53s., SSE =28m.11s.
Stonyhurst 12m.34s., SS =28m.47s., SSS =32m.7s.
Bergen iZ =12m.39s., eSS =28m.41s.
Kew eS_cSEN =23m.26s.
San Fernando SSE =28m.24s.
Toledo SSN =29m.16s.
Granada PP =16m.37s., eSKS =23m.3s., PS =24m.16s., SS =29m.3s.
Paris iP =12m.54s.
De Bilt eSS =29m.6s., eSSS =33m.16s.?.
Uccle iZ =12m.56s., 13m.14s., and 14m.57s., iPPEN =16m.33s., iZ =16m.46s., and 19m.13s., eE =22m.35s., eN =22m.42s., iSSE =29m.23s., iSSSE =33m.22s.
Almeria PP =16m.27s., PPP =18m.39s., SKS =23m.11s., SKKS =23m.43s., PS = 24m.37s., SS =29m.28s., SSS =33m.18s.
Clermont-Ferrand iPP =16m.21s.?, eSKKS =23m.39s., ePS? =24m.16s.?, ePPS = 25m.4s., eSS =29m.45s.
Tortosa PPPE =17m.58s., PSE =24m.5s., PPSE =24m.43s., SSPE =29m.40s., PKP,PKPE =33m.10s., QE =36m.35s.
Copenhagen 13m.5s., 25m.3s., and 30m.40s?.
Strasbourg eSKS =23m.53s., eSS =30m.16s.?.
Marseilles PP =15m.58s.?, SS =29m.46s.
Stuttgart eZ =15m.2s. and 15m.45s., ePPZ =16m.20s., eZ =17m.38s., ePPP = 19m.16s. and 19m.36s., eSKS =23m.45s., eSPZ =25m.7s., eSP =25m.28s., ePPS = 26m.24s., eSS =30m.36s., eSSS =35m.4s., eSSSS? =38m.56s.

Continued on next page.

Zurich e =30m.48s.
Jena iP =13m.7s., eEN =16m.45s., eS?N =24m.17s., e =30m.16s.?, eEN =34m.16s.
Cheb ePS =25m.22s.?, eSS =30m.40s., eSSS =34m.40s.?.
Prague ePS =25m.28s.?, eSS =31m.16s.?, eSSS =35m.16s.?.
Arapuni SS =32m.16s.?.
Auckland i =27m.50s., SS =31m.46s., Q =39m.16s.?.
Wellington iZ =19m.1s., PS? =25m.32s., PPS =26m.36s., SS? =31m.16s.?, SSS? = 35m.16s.?.
Belgrade i =14m.5s., ePPS =25m.52s.
Christchurch PS =26m.44s., PKKP =30m.21s., SSS =36m.4s., SSSS =39m.49s.
Bucharest SKKSN =25m.34s., PSE =27m.36s., PSN =27m.42s.
Kobe PPPP =25m.5s., SS =33m.22s., SSS =37m.32s.
Hukuoka Q =52m.7s.
Brisbane eN =34m.23s., eE =35m.13s.
Riverview eEZ =19m.52s., iPS?E =29m.20s., eSS?E =35m.39s., iSS?N =35m.42s., eQN =46m.28s.?.
Helwan iZ =20m.46s., 21m.13s., and 21m.46s., PP?Z =22m.5s., SKS?Z =28m.34s., PS?EN =31m.16s.
Andijan PP =22m.6s.
Bombay iE =20m.29s., PKSE =23m.34s., iE =24m.32s. and 31m.25s., SKSPE = 33m.16s., SSE =41m.33s., SSSE =46m.46s.
New Delhi PPKPEN =23m.9s., iEN =24m.29s., PPP =25m.58s., SKKSN =30m.39s., PS =33m.47s., PPS =35m.4s., iE =39m.34s., SSN =39m.54s., sSS =41m.56s., i =46m.0s.
Calcutta iSSSN =44m.51s.
Perth PP =23m.41s., i =27m.26s., PPS =36m.38s., SS =41m.41s.
Hyderabad PKP_2E =20m.27s., PPN =24m.5s., SSE =43m.34s.
Tananarive SS =43m.21s., SSS =48m.37s.
Long waves were also recorded at Apia, Yokohama, Keizyo, Aikawa, Nake, Taihoku, and Focsani.

Feb. 22d. 10h. 12m. 12s. Epicentre 17°·6N. 101°·3W. (as at 9h.).

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Manzanillo	N.	3·2	297	0 50	− 2	—	—	—
Guadalajara	Z.	3·6	328	e 1 8	P*	—	—	—
Vera Cruz	Z.	5·2	71	1 20	− 1	—	—	—
Tucson		16·9	331	e 4 3	+ 4	e 7 52	SSS	e 9·1
La Jolla	E.	20·9	320	e 4 54	+ 8	—	—	—
Palomar	Z.	21·0	323	e 4 47	0	—	—	—
Riverside		21·8	322	i 4 55	− 1	—	—	—
Pasadena		22·4	322	i 5 4	+ 2	—	—	—
St. Louis	Z.	23·1	23	e 5 17	+ 9	—	—	—
Santa Barbara	Z.	23·5	320	5 0	−12	—	—	—
Tinemaha		24·5	326	i 5 23	+ 1	—	—	—
Granada		85·5	53	i 12 31	−10	—	—	—

Feb. 22d. 10h. 54m. 49s. Epicentre 17°·6N. 101°·3W. (as at 10h. 12m.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manzanillo	E.	3·2	297	0 42	−10	—	—	—	—	—
Guadalajara	Z.	3·6	328	0 59	+ 1	—	—	—	—	—
Vera Cruz	Z.	5·2	71	1 23	+ 2	—	—	—	—	—
Mazatlan	N.	7·3	320	—	—	e 3 43	S*	—	—	—
Tucson		16·9	331	e 4 0	+ 1	—	—	e 7 22	SS	e 8·9
La Jolla	E.	20·9	321	e 4 48	+ 2	—	—	—	—	—
Palomar	Z.	21·0	323	i 4 46a	− 1	—	—	—	—	—
Riverside		21·8	322	i 4 54	− 2	—	—	—	—	—
Mount Wilson		22·3	322	i 5 0	− 1	—	—	—	—	—
Pasadena		22·4	322	i 5 0a	− 2	—	—	—	—	—
St. Louis	Z.	23·1	23	i 5 23	PP	—	—	—	—	—
Santa Barbara	N.	23·5	320	e 5 8	− 4	—	—	—	—	—
Tinemaha		24·5	326	i 5 23	+ 1	—	—	—	—	—
Des Moines		24·8	15	—	—	e 10 23	SS	—	—	e 13·5
Salt Lake City		24·8	342	e 5 11	−14	—	—	—	—	i 12·7
Butte		29·8	346	e 6 15	+ 4	—	—	—	—	e 16·0
Ottawa		35·0	32	e 6 54	− 2	—	—	—	—	20·2
La Paz		47·1	134	8 40	+ 5	—	—	—	—	—
Granada		85·5	53	i 12 41	0	—	—	—	—	—

Tucson also gives iP =4m.3s.
Long waves were also recorded at Lincoln and Denver.

Feb. 22d. 14h. 20m. 8s. Epicentre 41°·5N. 112°·3W. (as on 1942 April 18d.).

Intensity VI at Bingham, Canyon, Magna, and Salt Lake City ; V at Copperton, Draper, Midvale Murray, Sandy, Woods Cross.
Epicentre 40°·7N. 112°·0W.
R. R. Bodle.
United States Earthquakes 1943, Washington 1945, p.8, map of epicentres p.4.

$A = -\cdot2850$, $B = -\cdot6950$, $C = +\cdot6601$; $\delta = -2$; $h = -2$;
$D = -\cdot925$, $E = +\cdot379$; $G = -\cdot250$, $H = -\cdot611$, $K = -\cdot751$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Salt Lake City		0·8	155	i 0 13	− 5	—	—	—	—
Tinemaha		6·4	229	i 1 44	+ 6	i 3 20	S*	i 2 3	P_g
Haiwee		7·0	222	e 2 15	P_g	i 3 35	S*	—	—
Riverside	z.	8·5	211	e 2 10	+ 3	—	—	—	—
Pasadena		8·7	214	i 2 45	P_g	4 27	S*	—	—
Palomar	z.	8·9	205	i 2 7	− 5	i 4 30	S*	—	—
Tucson		9·3	173	e 2 18	+ 1	i 3 59	− 6	i 2 48	P_g

Feb. 22d. 17h. 7m. 57s. Epicentre 17°·6N. 101°·3W. (as at 10h.).

		△	Az.	P.	O−C.	L.
		°	°	m. s.	s.	m.
Tacubaya	N.	2·7	48	0 48	+ 3	—
Puebla	N.	3·3	64	e 1 5	P_g	—
Oaxaca	N.	4·4	97	e 1 32	P_g	—
Tucson		16·9	331	i 4 1	+ 2	e 8·9
Palomar	z.	21·0	323	i 4 47	0	—
Riverside	z.	21·8	322	i 4 53	− 3	—
Mount Wilson	z.	22·3	322	i 5 0	− 1	—
Haiwee	z.	23·6	326	e 5 14	+ 3	—
Tinemaha		24·5	326	i 5 21	− 1	—
Granada		85·5	53	i 12 41	0	—

Long waves were also recorded at Guadalajara, Salt Lake City, Bozeman, and Butte.

Feb. 22d. Readings also at 3h. (La Paz), 6h. (near Andijan and Tashkent), 8h. (La Paz, Palomar, Riverside, Tucson, and Tinemaha), 9h. (Manzanillo (2), Guadalajara (3), Vera Cruz (3). Palomar (4), Riverside (4), Tinemaha (4), La Jolla and Tucson (3)), 10h. (Hyderabad, Mizusawa, Tucson, and La Paz), 11h. (Tacubaya (5), Riverside, Palomar, Tucson, and near Fort de France), 12h. (3), 13h. (5), and 14h. (4) (Tacubaya), 16h. (Marseilles), 17h. (Puebla and Tacubaya (2)), 18h. (Tacubaya (4), and near Ksara), 19h. (near Fort de France), 20h., 21h. (2), and 22h. (Tacubaya).

Feb. 23d. 22h. Pacific shock.

Tacubaya eN = 58m.10s.
Tucson iP = 58m.12s., i = 58m.37s., eS = 60m.35s., iS = 60m.39s., eL = 61m.9s.
Palomar iPZ = 59m.0s., iZ = 59m.22s.
Riverside eP = 59m.3s.
Pasadena iP = 59m.12s., eL = 64m.
Mount Wilson iPNZ = 59m.13s.
Santa Barbara ePZ = 59m.16s.
Haiwee eP = 59m.26s.
Lincoln e = 59m.33s., eS = 64m.29s., eL = 67m.17s.
Tinemaha ePZ = 59m.36s.
Vera Cruz iN = 59m.40s.
Salt Lake City e = 59m.51s., eS = 64m.10s., eL = 66m.54s.
Logan eP = 60m.4s., e = 60m.42s., eS = 64m.25s., eL = 67m.33s.
Florissant iPZ = 60m.11s., iS?N = 64m.39s.
St. Louis ePZ = 60m.12s., eN = 64m.35s., eSN = 64m.44s., LN = 66m.47s.
Ottawa eZ = 62m., L = 75m.
Santa Clara ePZ = 62m.18s., eSE = 67m.27s., eLE = 70m.37s.
La Paz iP = 64m.26s., LZ = 82m.0s.
Columbia e = 65m.17s., eL = 71m.4s.
Bozeman eS? = 65m.56s., eL = 69m.12s.
Chicago e = 66m.30s., eL = 70m.19s.
Des Moines e = 67m.23s., eL = 68m.45s.
Long waves were also recorded at Honolulu, Ukiah, Fordham, Harvard, and Philadelphia.

Feb. 23d. 23h. 19m. 49s. Epicentre 22°·0N. 100°·5E. (as on 1942 Jan. 31d.).

$A = -\cdot1691$, $B = +\cdot9126$, $C = +\cdot3724$; $\delta = +12$; $h = +4$;
$D = +\cdot983$, $E = +\cdot182$; $G = -\cdot068$, $H = +\cdot366$, $K = -\cdot928$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	11·3	275	—	—	e 4 36	−18	—	—	5·5
Hyderabad	E.	21·2	262	4 46	− 3	8 34	− 7	—	—	10·8
Dehra Dun	N.	21·8	298	e 4 55?	− 1	e 8 47	− 5	—	—	e 12·7
New Delhi	N.	22·0	292	i 4 56	− 2	i 8 48	− 8	5 15	PP	—
Colombo		24·9	236	5 29	+ 3	9 59	+12	—	—	—
Kodaikanal	E.	25·0	246	e 5 21	− 6	—	—	—	—	—
Bombay	E.	26·1	269	e 5 41	+ 4	e 10 7	0	6 36	PPP	i 12·1
Nake		27·0	70	—	—	e 11 58	SS	—	—	15·7
Keizyo		27·6	50	—	—	e 12 27	SS	—	—	—
Irkutsk		30·4	4	e 8 11?	?	e 11 19?	+ 3	—	—	—
Tashkent		32·6	314	—	—	e 12 32	+41	—	—	—
Kôbe		32·9	60	e 14 10	?	17 33	L	—	—	(17·6)
Kumagaya		36·5	59	e 9 14	PPP	—	—	—	—	—
Sverdlovsk		45·4	331	10 13	PP	e 15 5	+ 1	—	—	—
Cheb		72·3	318	—	—	e 21 35	+43	—	—	e 40·2
Stuttgart		74·6	316	e 11 43	0	e 21 17?	− 1	e 29 59?	SSS	e 42·7
De Bilt		76·1	321	—	—	e 29 31	SSS	—	—	e 41·2
Uccle		77·0	320	—	—	e 21 35?	−10	e 30 29?	SSS	e 40·2
Granada		87·5	309	i 24 50	PPS	33 47	SSS	—	—	e 45·5

Additional readings :—
New Delhi PPPN = 5m.26s., P_cPN = 9m.2s., SSN = 9m.14s., SSSN = 9m.25s.
Bombay iE = 7m.37s., 10m.22s., and 10m.33s., SSSE = 11m.35s.
Stuttgart eQ = 40m.23s.
Long waves were also recorded at Koti, Hukuoka, Hamada, Zinsen, Vladivostok Riverview, Aberdeen, Kew, and Upsala.

Feb. 23d. Readings also at 0h. (Tacubaya and Triest), 1h. (Tacubaya), 3h. (Tacubaya and Butte), 4h. (Tacubaya, Butte, and College), 6h. (Tacubaya and near Mizusawa), 9h. (Bombay and near Mizusawa), 10h. (Tacubaya (2)), 12h. (Tacubaya, Guadalajara, Puebla, Oaxaca, Vera Cruz, Tucson, Haiwee, Tinemaha, Mount Wilson, and Riverside), 14h. (Marseilles), 19h. (La Paz and Wellington), 21h. (Tacubaya), 22h. (Riverview), 23h. (Tacubaya).

Feb. 24d. 4h. 24m. 2s. Epicentre 17°·6N. 101°·3W. (as on Feb. 22d.).

$A = -\cdot1869$, $B = -\cdot9353$, $C = +\cdot3005$; $\delta = +2$; $h = +5$;

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	Z.	2·7	48	0 46	+ 1	—	—	—	—	—
Puebla	N.	3·3	64	0 55	+ 2	—	—	—	—	—
Guadalajara	N.	3·6	328	e 1 11	P_g	—	—	—	—	—
Oaxaca	E.	4·4	97	e 1 4	− 6	—	—	—	—	—
Vera Cruz	N.	5·2	71	e 1 25	+ 4	—	—	—	—	—
Tucson		16·9	331	i 4 4	+ 5	e 7 26	SS	i 4 40	PPP	e 8·6
La Jolla	E.	20·9	320	e 4 50	+ 4	—	—	—	—	—
Palomar	Z.	21·0	323	e 4 48	+ 1	—	—	—	—	—
Riverside		21·8	322	i 4 56	0	—	—	—	—	—
Cape Girardeau	E.	22·2	26	e 4 57	− 3	e 9 10	+10	e 5 7	PP	e 12·9
Mount Wilson	Z.	22·3	322	i 5 3	+ 2	—	—	—	—	—
Pasadena		22·4	322	i 5 4	+ 2	—	—	e 9 21	SS	e 11·0
St. Louis		23·1	23	e 5 9	+ 1	e 9 20	+ 4	—	—	—
Florissant		23·2	23	e 5 8	− 1	—	—	—	—	i 13·3
Lincoln		23·5	9	—	—	e 9 18	− 5	—	—	e 11·6
Santa Barbara		23·5	320	e 5 15	+ 3	—	—	—	—	—
Haiwee		23·6	326	i 5 16	+ 3	—	—	—	—	—
Columbia		24·1	44	e 5 21	+ 3	e 9 45	+11	—	—	e 13·7
Tinemaha		24·5	326	i 5 25	+ 3	—	—	—	—	—
Salt Lake City		24·8	342	e 5 42	+17	e 9 21	−25	—	—	e 12·4

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Logan	25·7	343	e 6 7	PP	e 10 30	SS	—	—	e 12·5
Bozeman	29·2	347	—	—	e 11 17	+19	—	—	e 15·7
Philadelphia	31·7	41	e 7 13	PP	e 11 28	− 9	—	—	e 14·1
San Juan	33·4	82	e 8 18	PP	e 11 53	−10	e 8 28	PPP	e 15·1
Ottawa	35·0	32	e 6 54	− 2	—	—	e 15 24	SSS	21·0
Harvard	35·4	39	e 6 48	−12	—	—	—	—	e 24·0
Seven Falls	38·7	34	e 9 4	PP	—	—	—	—	25·0
Huancayo	39·0	137	—	—	e 13 45	+16	—	—	e 16·5
La Paz	47·1	134	e 8 32	− 3	—	—	—	—	25·0
Granada	85·5	53	i 12 31	−10	22 35	?	12 46	P_cP	—

Additional readings :—
St. Louis eN = 5m.12s.
Harvard e = 20m.47s.
Granada PS = 23m.17s.
Long waves were also recorded at Chihuahua, Santa Clara, Fordham, and Sitka.

Feb. 24d. Readings also at 0h. (Stuttgart), 2h. (near Andijan), 6h. (Tacubaya), 7h. (Tacubaya), 8h. (near La Paz), 9h. (near Fort de France), 10h. (Huancayo), 11h. (Tacubaya, Oaxaca, Vera Cruz, Tucson, Haiwee, Mount Wilson, Palomar, Riverside, Tinemaha, and Logan), 15h. (Bucharest, Cheb, Triest, Clermont-Ferrand, and Toledo), 17h. (Berkeley), 19h. (Haiwee, Mount Wilson, Riverside, Tinemaha, Tucson, Stuttgart, Kew, Bombay, Frunse, Tashkent, Irkutsk, Vladivostok, and near Mizusawa), 20h. (De Bilt, Granada, Uccle, Cheb, and near Mizusawa), 21h. (near Mizusawa (3)), 22h. (Frunse, Tashkent, and near New Delhi), 23h. (Tashkent, Tchimkent (2) near New Delhi, and near Mizusawa).

Feb. 25d. Readings at 0h. (Tacubaya and Philadelphia), 4h. (Cheb, Stuttgart, De Bilt, Riverview, La Paz, Fort de France, La Jolla, Palomar, Tucson, Riverside, Mount Wilson, Pasadena, Haiwee, and Tinemaha), 5h. (Stuttgart, Tinemaha, Haiwee, Riverside, Palomar, La Jolla, Pasadena, Tucson, Mount Wilson, Santa Barbara, Auckland, Wellington, and Tuai), 6h. (near Fort de France), 7h. (Wellington, Palomar, Riverside, Tucson, near Tashkent and Tchimkent), 10h. (La Paz), 11h. (Berkeley), 13h. (Riverview), 14h. (Tinemaha, Haiwee, Mount Wilson, Tucson, Palomar, and Riverview), 15h. (Riverview, Stuttgart, and Sofia), 16h. (Stonyhurst), 17h. (Fort de France), 19h. (Tacubaya), 20h. (Fresno), 21h. (Tacubaya), 22h. (Stuttgart, Tinemaha, Haiwee, Palomar, Tucson, Riverside, Mount Wilson, Pasadena, Santa Barbara, and near Cape Girardeau), 23h. (Fort de France).

Feb. 26d. Readings at 2h. (Tacubaya and near Fresno (2)), 3h. (near Tashkent), 7h. (Palomar, Riverside, Pasadena, Mount Wilson, Tucson, Haiwee, and Tinemaha), 9h. (Tacubaya), 12h. (Granada), 15h. (Palomar), 16h. (Stuttgart, Kew, Huancayo, La Paz, San Juan, and Fort de France), 17h. and 19h. (near Mizusawa), 22h. (Fort de France).

Feb. 27d. Readings at 3h. (Stuttgart, Bombay, New Delhi, Kodaikanal, and near Andijan), 11h. (near Lick, Fresno, Branner, and Berkeley), 13h. (Tinemaha, Haiwee, Tucson, Riverside, Palomar, Pasadena, Mount Wilsou, and Auckland), 20h. (Tuai).

Feb. 28d. 4h. Undetermined shock.

Sofia ePEN = 33m.24s., eSEN = 35m.0s.
Bucharest ePZ = 33m.58s., eSE = 36m.31s.
Triest eP = 34m.28s., iS = 35m.49s.
Zurich eP = 35m.10s.
Stuttgart eZ = 35m.12s. and 35m.24s., e = 40m.5s.
Basle eP = 35m.21s.
Toledo ePZ = 36m.24s.
De Bilt e = 42m.0s.?.
Long waves were recorded at Kew.

Feb. 28d. 12h. 54m. 33s. Epicentre 36°·3N. 71°·0E. Depth of focus 0·030. (as on 6d.).

**Moderate at Skardu, Peshawar, Rawalpindi, Srinigar, Drosh, and Kabul.
Epicentre 37°·0N. 70°·5E.
Government of India, Seismological Bulletin p. 12.**

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tashkent		5·2	347	i 1 16	− 2	—	—	—	—	—
Frunse		7·1	22	1 41	− 1	—	—	—	—	—
Dehra Dun	N.	8·4	133	e 2 27?	pP	e 3 39	+ 7	—	—	—
New Delhi		9·3	144	i 2 13	+ 2	i 3 53	0	2 39	pP	—
Bombay	E.	17·4	174	i 3 54	+ 4	i 7 6	+11	i 4 5	pP	—
Hyderabad	E.	19·9	159	4 21	PP	7 53	SS	—	—	9·4
Calcutta	N.	20·4	127	i 4 31a	+10	i 8 23	SS	—	—	—
Irkutsk		28·4	44	i 5 39	+ 3	10 2	− 3	6 30	pP	—
Ksara		28·8	275	e 5 42	+ 3	e 10 17	+ 6	i 6 24	pP	—
Yalta		29·0	297	e 5 40	− 1	10 16	+ 2	6 26	pP	—
Colombo		30·4	163	6 1	+ 8	10 43	+ 7	—	—	—
Helwan		33·7	270	6 21k	− 1	i 11 27	− 1	i 6 50	pP	—
Focsani		34·0	300	e 6 57?	pP	e 11 39	+ 7	e 7 33?	PP	—
Bacau		34·2	302	e 7 21?	PP	e 11 33	− 2	e 15 6	SSS	—
Bucharest		34·8	297	6 37	+ 6	i 11 48	+ 3	e 7 55	PP	—
Sofia	E.	36·9	295	e 6 50	+ 1	i 12 18	+ 1	e 8 27?	PP	—
Belgrade		38·8	298	e 7 50	?	i 13 30	?	e 8 32	PP	—
Upsala		41·2	322	i 7 23	− 1	i 13 19	− 2	e 14 30?	sS	—
Prague		42·5	308	i 7 35	0	13 41	+ 1	e 9 11	PP	—
Potsdam		43·2	311	i 7 43	+ 3	i 13 52	+ 2	i 17 3	SS	—
Triest		43·3	301	i 7 42	+ 1	i 13 52	+ 1	—	—	—
Copenhagen		43·6	315	i 7 44a	0	i 13 56	0	9 35	PP	—
Cheb		43·8	308	7 47	+ 2	i 14 2	+ 4	e 15 16	PPS	—
Zinsen		44·0	71	7 51	+ 4	—	—	—	—	—
Jena		44·2	308	i 7 49a	+ 1	i 14 3	− 1	i 9 36	PP	e 16·5
Florence		45·5	299	i 8 0a	+ 1	i 14 23	0	8 54	pP	—
Stuttgart		46·0	306	i 8 3a	0	i 14 32	+ 2	e 8 47	pP	—
Milan		46·6	302	i 8 3	− 4	i 14 39	+ 1	—	—	—
Zurich		46·6	304	e 8 7a	0	e 14 38	0	—	—	—
Strasbourg		47·0	306	i 8 10	0	i 14 43	− 1	i 10 3	PP	19·5
Basle		47·3	304	e 8 12	− 1	e 14 47	− 1	—	—	—
Bergen		47·4	323	i 8 13	− 1	—	—	e 17 47	SS	—
Neuchatel		47·8	304	e 8 16	− 1	e 14 54	− 1	—	—	—
De Bilt		48·1	312	i 8 19a	0	i 15 2	+ 3	i 16 19	sS	e 19·0
Hukuoka		48·1	75	i 8 23	+ 4	—	—	17 55	SS	—
Besançon		48·4	304	i 8 22	+ 1	i 15 25	+21	—	—	—
Uccle		48·8	310	i 8 24a	0	i 15 9	0	i 9 13	pP	—
Naha		48·9	86	8 30	+ 5	—	—	—	—	—
Nake		49·4	82	e 8 33	+ 4	—	—	—	—	—
Paris		50·4	307	i 8 35	− 1	i 14 57	?	i 10 35	PP	19·5
Clermont-Ferrand		50·7	303	i 8 39	0	i 14 37	?	i 16 55	PPS	22·5
Kôbe		51·1	71	(i 8 49)	+ 7	(15 53)	+12	—	—	—
Aberdeen		51·5	319	i 9 58	?	i 15 45	− 1	i 19 47	SS	—
Kew		51·6	312	i 8 37	− 8	i 15 39	− 9	e 19 37	SS	e 23·5
Stonyhurst		52·3	315	i 8 51	+ 1	i 16 2	+ 5	i 20 12	SS	—
Barcelona		52·6	299	8 54	+ 1	15 59	− 2	16 28	PS	e 20·9
Nagoya		52·6	70	(8 56)	+ 3	—	—	—	—	—
Nagano		53·0	68	(9 0)	+ 4	—	—	—	—	—
Tortosa	E.	54·0	298	e 8 59	− 4	16 19	− 1	9 59	P_cP	—
Mizusawa	E.	54·3	64	e 9 9	+ 4	e 16 30	+ 6	—	—	—
	N.	54·3	64	e 9 2	− 3	e 16 34	+10	—	—	—
Sendai		54·4	65	8 52	−14	16 30	+ 5	—	—	—
Yokohama		54·5	69	(e 9 8)	+ 1	—	—	—	—	—
Scoresby Sund		57·2	337	i 9 31	+ 5	i 17 13	+11	i 11 37	PP	e 23·0
Toledo		57·5	298	i 9 27	− 1	i 17 5	− 1	10 14	pP	—
Almeria		57·6	294	i 9 28	− 1	i 17 7	0	9 36	pP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Granada		58·3	295	i 9 33k	− 1	i 17 18	+ 2	18 48	sS	30·9
Tananarive		59·2	206	9 41	+ 1	i 17 36	+ 8	10 28	pP	—
Lisbon		61·6	299	9 56k	0	18 3	+ 5	10 41	pP	—
Ivigtut		71·0	334	e 10 58	+ 3	i 19 58	+ 6	i 20 47	PS	—
College		74·7	16	e 11 19	+ 2	e 20 38	+ 5	e 14 5	PP	e 29·6
Sitka		84·4	13	i 12 10	+ 2	e 22 14	0	e 15 29	PP	e 33·2
Halifax		89·6	329	—	—	e 22 26	[−15]	—	—	—
Seven Falls		90·2	335	12 41	+ 5	22 46	[+ 1]	e 16 12	PP	36·5
Saskatoon		91·9	359	—	—	e 22 57?	[+ 4]	—	—	40·5
Ottawa		93·3	336	12 52	+ 1	23 1	[− 1]	e 16 34	PP	37·5
Vermont		93·3	334	e 12 53	+ 2	23 0	[− 2]	e 16 38	PP	36·9
Harvard		94·5	333	e 20 27?	?	—	—	—	—	—
Victoria		94·7	9	13 5	+ 8	e 23 14	[+ 5]	e 16 46	PP	34·5
Butte		98·0	2	e 17 34	PP	e 24 26	+11	e 23 31	SKS	e 70·2
Philadelphia		98·0	334	e 16 20	?	e 24 38	+23	i 16 49	PP	—
Bozeman		98·4	1	e 17 4	PP	e 23 34	[+ 5]	e 27 13	PPS	e 36·6
Chicago		99·8	345	e 17 36	PP	i 24 38	+ 8	—	—	e 40·7
Bermuda		100·2	323	e 17 28	PP	i 24 45	+12	i 19 41	PPP	e 38·4
Riverview		102·2	122	e 17 39	PP	i 23 54	[+ 7]	i 24 54	S	e 34·0
Logan		102·3	3	e 17 25	PP	i 25 4	+13	e 19 30	PPP	e 39·6
Lincoln		102·4	350	—	—	e 24 54	+ 2	e 23 49	SKS	—
Salt Lake City		103·3	3	e 13 38	+ 2	e 25 15	+16	e 17 57	PP	e 36·8
St. Louis		103·4	345	e 13 38	+ 2	e 25 4	+ 4	e 17 56	PP	e 40·9
Ukiah		103·8	11	—	—	e 24 2	[+ 8]	e 27 24	PS	e 41·0
Berkeley		105·2	11	e 18 6	PP	e 24 3	[+ 2]	—	—	—
Santa Clara		105·7	10	e 18 4	PP	e 25 27	+ 8	—	—	—
Tinemaha	z.	106·5	7	e 13 53	P	—	—	i 18 5	PP	—
Haiwee	z.	107·5	7	i 13 58	P	—	—	i 18 6	PP	—
Mount Wilson	z.	109·3	7	e 14 10	P	—	—	e 17 18	PKP	—
Pasadena		109·4	7	e 14 5	P	i 24 27	[+ 9]	e 17 34	PKP	44·5
Riverside	z.	109·6	7	18 7	?	—	—	e 28 43	PKKP	—
Palomar		110·5	6	14 8	P	—	—	i 18 43	PP	—
La Jolla	E.	110·8	7	e 18 35	PP	—	—	—	—	—
Tucson		111·8	1	e 14 17	P	e 24 33	[+ 5]	i 18 39	PP	e 44·6
San Juan		112·2	315	e 18 59	PP	e 26 25	S	i 28 34	PS	e 45·6
Christchurch		121·5	123	i 30 59	PPS	—	—	i 36 23	SS	—
Wellington		122·2	120	—	—	26 29	S	30 27?	PS	40·5
La Paz		138·8	288	19 4	[+ 4]	25 47	[0]	i 21 53	PP	73·5
Huancayo		141·3	300	e 19 7	[+ 2]	—	—	e 22 28	PP	e 50·7

Additional readings :—
New Delhi P_gEN =3m.6s., S*EN =4m.21s., S_gEN =4m.49s., P_cPN =8m.43s., S_cSN = 14m.57s.
Bombay iE =5m.11s., 6m.19s., 6m.38s., 7m.59s., and 9m.27s.
Irkutsk sS =11m.30s.
Ksara sS =11m.32s.
Yalta PP =6m.59s., S_cS =16m.2s.
Helwan PPZ =7m.21s., PPPZ =7m.39s., P_cPZ =11m.13s.
Focsani eSS?N =13m.57s.
Bacau eSS?E =15m.10s.
Bucharest iN =11m.36s. and 14m.1s., iSSE =14m.9s., iE =14m.46s. and 16m.38s.
Sofia SSEN =13m.27s.?.
Belgrade e =13m.3s. and 14m.49s.
Upsala PPE =9m.9s., PPPE =10m.0s., esSE =14m.43s., eN =15m.27s.?, SS?N = 16m.11s., SS?E =16m.19s.
Prague e =9m.45s. and 14m.52s.
Potsdam ePN =7m.47s.
Copenhagen 10m.30s., 15m.3s., and 17m.10s.
Cheb eN =17m.16s., eE =17m.31s.
Jena iPPPN =9m.39s., eE =10m.39s., iSN =14m.7s., eN =14m.57s., eZ =15m.15s., eEN =15m.19s.
Florence isSN =15m.50s., iSS =17m.50s.
Stuttgart iZ =8m.17s., i =8m.22s., esPZ =9m.17s., iP_cPZ =9m.35s., iPPZ =9m.51s., and 9m.55s., epPPZ =10m.19s., epP_cPZ =10m.32s., esPP =10m.59s., iS_cPZ = 13m.9s., epSZ =15m.30s., isS =15m.47s., isSZ =16m.2s., eS_cS =17m.34s., iSS = 18m.1s., esSSZ =18m.53s., iSSS =19m.8s.
Strasbourg i =8m.33s., epPP =10m.45s.
De Bilt eZ =9m.27s., iZ =10m.15s., 10m.34s., 11m.19s., and 12m.3s.

Continued on next page.

Uccle isPZ =9m.29s., iPPEZ =10m.19s., ipPPZ =11m.11s., iPPPE =11m.25s., isPPEZ =11m.33s., isSEN =16m.26s., iS$_c$SNZ =17m.51s., iSSN =19m.6s., isSSN =19m.54s.
Kobe readings increased by one minute.
Aberdeen iN =13m.7s. and 20m.51s., iE =25m.8s., iN =29m.27s.
Kew iNZ =16m.39s., eE =16m.59s., eSSEN =18m.4s.
Stonyhurst i =17m.20s. and 21m.5s.
Nagoya reading increased by one minute.
Nagano reading increased by one minute.
Tortosa PPE =11m.2s., P$_c$SE =13m.59s., PSE =17m.37s.
Yokohama reading increased by one minute.
Scoresby Sund i =9m.48s. and 18m.30s.
Toledo PP =11m.40s., sS =18m.21s., SS =21m.6s.
Almeria sP =10m.36s., PP =11m.40s., pPP =12m.21s., sPP =12m.38s., sS =18m.30s., SS =21m.9s., sSS =22m.5s., SSS =23m.21s.
Granada P$_c$P =10m.20s., PP =11m.45s., PPP =13m.14s., S$_c$S =18m.52s., SS =21m.10s.
Tananarive sS =19m.2s., SS =21m.36s., SSS =24m.37s.
Lisbon Z =10m.45s.?, sSN =19m.26s.
Ivigtut i =21m.25s.
College ePPP? =15m.55s., eS$_c$S? =21m.32s.
Sitka e =23m.45s., eSS? =28m.4s.
Seven Falls e =14m.46s. and 24m.48s., SS =28m.27s.?.
Ottawa SS =28m.27s.?, SSS =31m.3s.?.
Vermont ePS =24m.35s., i =26m.23s., eSS =29m.53s., eSSS =32m.27s.
Butte e =39m.36s.
Philadelphia ePPP =18m.37s., iSKS =23m.2s., e =24m.22s.
Bozeman e =18m.33s., and 25m.5s., eSS =31m.8s.
Chicago ePS? =25m.37s.
Bermuda iSKS? =23m.41s., e =27m.36s., eSS =31m.15s.
Riverview eE =17m.44s., eEZ =26m.21s., iE =32m.21s.
Logan iPP =17m.48s., iSKS =23m.53s., i =24m.32s., e =27m.52s., eSS =32m.15s.
Lincoln e =37m.54s.
Salt Lake City eSKS? =24m.33s., e =28m.58s.
St. Louis eEN =23m.55s., eN =24m.37s., eE =26m.33s., eN =28m.3s.
Ukiah e =29m.12s.
Berkeley eE =18m.10s.
Haiwee ePNZ =17m.35s.
Mount Wilson eZ =18m.2s., iPPZ =18m.37s., eZ =22m.50s., ePSZ =27m.40s., iPKKPZ =29m.36s., iSKKPZ =32m.36s., iZ =37m.38s., eZ =40m.53s.
Pasadena eZ =18m.1s., iPP =18m.38s., iEN =25m.20s., ePSZ =27m.39s., ePKKPZ =29m.13s., eSKKPZ =32m.35s., i =39m.43s., eZ =40m.50s.
Riverside eZ =18m.43s., iZ =29m.23s. and 29m.58s.
Palomar eZ =14m.53s. and 17m.18s., iZ =18m.3s., ePSZ =28m.1s., iPKKPZ =29m.11s., iZ =29m.24s., iSKKPZ =32m.32s., eZ =38m.9s. and 40m.21s.
Tucson i =14m.39s., iP =18m.15s., ePP? =18m.52s., ePS =28m.11s., eSS =34m.4s.
San Juan i =29m.37s., eSS =34m.17s.
Christchurch e =37m.7s., i =40m.58s.
Wellington Q =36m.27s.?.
La Paz iZ =22m.43s.
Huancayo e =33m.19s. and 35m.3s., eSS =40m.20s.
Long waves were also recorded at Harvard and Arapuni.

Feb. 28d. Readings also at 1h. (Auckland and Apia), 2h. (Riverview and Wellington), 8h. (Basle), 10h. (near Mizusawa), 13h. (Santa Clara and La Paz), 15h. (Baku), 16h. (Seven Falls, Shawinigan Falls, and near Ottawa), 20h. (Wellington), 21h. (Stuttgart, Palomar, Pasadena, Tucson, Mount Wilson, Haiwee, Tinemaha, near Mizusawa).

March 1d. Readings at 2h. (Triest), 3h. and 4h. (Tacubaya), 6h. (Haiwee, Mount Wilson, Palomar, near Bombay, Kodaikanal, New Delhi, Riverside, Tinemaha, Tucson, Stalinabad, Tashkent, and near Tchimkent), 7h. (Riverview), 8h. (Tacubaya), 9h. (Tacubaya, Tucson, Haiwee, Riverside, and Tinemaha), 16h. (near Fort de France), 17h. (Auckland, Christchurch, Wellington, Brisbane, Riverview, Sydney, Perth, Colombo, New Delhi, Bombay, Calcutta, and near Mizusawa).

March 2d. 9h. 4m. 55s. Epicentre 33°·0N. 90°·1E. (as on 1938 Dec. 2d.).

$A = -·0015$, $B = +·8403$, $C = +·5421$; $\delta = -2$; $h = +1$;
$D = +1·000$, $E = +·002$; $G = -··001$, $H = +·542$, $K = -·840$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dehra Dun	N.	10·6	259	e 3 17	?	—	—	—	—	e 6·3
New Delhi	N.	12·0	252	e 2 51	− 4	i 5 10	− 1	—	—	—
Almata		14·6	319	e 3 29	− 1	—	—	—	—	—
Andijan		16·2	304	e 3 55	+ 5	7 8	+17	—	—	—
Stalinabad		18·2	295	4 16	0	7 45	+ 8	—	—	—
Tashkent		18·5	303	i 4 21	+ 2	8 0	+16	—	—	—
Hyderabad		18·7	218	4 22	0	7 58	+10	8 22	SS	10·0
Bombay	E.	20·9	233	i 4 50	+ 4	i 8 49	+14	—	—	11·4
Irkutsk		21·8	23	4 56	0	9 0	+ 8	—	—	—
Vladivostok		34·1	61	e 6 48	0	12 21	+ 7	—	—	—
Helwan		49·7	284	e 8 57	+ 1	e 16 11	+ 7	e 10 55	PP	—
Stuttgart		60·4	312	e 10 12	− 1	—	—	—	—	e 34·1
Chur		60·7	310	e 10 13	− 2	—	—	—	—	—

Stuttgart gives also ePZ = 10m.15s.
Long waves were also recorded at Paris, Cheb, De Bilt, Kew and Uccle.

March 2d. Readings also at 2h. (Auckland, Tuai, and Stuttgart), 3h. (Aberdeen), 15h. (near Andijan, Stalinabad, and Tashkent), 18h. (near Reykjavik), 19h. (Christchurch, Wellington, Riverview, and near San Francisco), 20h. (Tacubaya, Vera Cruz, Tucson, and Palomar), 22h. (Ksara and near Berkeley).

March 3d. Readings at 2h. (Brisbane, Riverview, Sydney, Auckland, Christchurch, and Wellington), 4h. (near Andijan), 10h. (Auckland, Christchurch, Wellington, and Riverview), 15h. (near Mizusawa), 18h. (near Reykjavik), 21h. (near Apia), 23h. (La Paz).

March 4d. 6h. 32m. 20s. Epicentre 21°·5S. 180°. Depth of focus 0·080. (as on 1939 July 6d.).

$A = -·9313$, $B = ·0000$, $C = -·3644$; $\delta = +11$; $h = +4$;
$D = ·000$, $E = +·1000$; $G = +·364$, $H = ·000$, $K = -·931$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Auckland		16·0	195	5 16?	?	5 57	− 3	—	—
Tuai		17·4	187	3 27	− 6	6 10	−14	13 58	S_cS
New Plymouth		18·2	193	3 44?	+ 4	6 41	+ 3	—	—
Wellington		20·2	193	3 55	− 4	7 5	− 7	14 6	S_cS
Christchurch		22·8	196	—	—	7 40?	−14	—	—
Riverview		28·2	238	i 5 11	0	i 9 19	0	i 12 16	sS
Santa Barbara	Z.	79·8	48	i 11 16	+ 3	—	—	—	—
La Jolla	E.	80·7	49	e 11 19	+ 1	—	—	—	—
Pasadena		80·7	48	i 11 19	+ 1	—	—	—	—
Mount Wilson	Z.	80·9	48	i 11 20a	+ 1	—	—	—	—
Palomar	Z.	81·2	50	i 11 22	+ 2	—	—	—	—
Riverside	Z.	81·2	48	i 11 21a	+ 1	—	—	—	—
Haiwee	Z.	82·0	46	i 11 26a	+ 2	—	—	e 13 32	pP
Tinemaha		82·3	45	i 11 27a	+ 1	—	—	i 13 36	pP
Tucson		85·0	53	i 11 42	+ 3	—	—	e 13 49	pP
Copenhagen		144·6	348	18 28	[− 8]	—	—	—	—
Helwan	Z.	150·6	296	i 18 46	[+ 2]	—	—	i 21 7	pPKP
Uccle	Z.	150·6	355	i 18 52	[+ 8]	—	—	—	—
Stuttgart	Z.	151·8	347	e 18 47	[+ 1]	—	—	e 21 8	pPKP
Chur		153·6	346	e 18 54	[+ 5]	—	—	—	—
Clermont-Ferrand		155·7	355	i 18 54	[+ 3]	—	—	—	—
Granada		164·1	11	19 7	[+ 6]	43 42	SS	23 53	PP
Almeria		164·6	7	e 22 25	?	28 40?	SKKS	e 22 45	?

Additional readings :—
Tucson ePP = 15m.5s.
Helwan iZ = 19m.5s.
Stuttgart eZ = 18m.56s., 19m.9s., and 21m.14s.
Chur e = 19m.17s.
Clermont-Ferrand $iPKP_2$ = 19m.26s.
Granada PKP_1 = 19m.58s., sPP = 27m.7s., PPP = 27m.40s., SKSP = 33m.10s.

March 4d. 10h. 13m. 44s. Epicentre 35°·6N. 134°·2E.

Scale VII-VIII at Tottori ; V at Toyooka, Matsue, Kobe, Kyoto, Sakai, Hukui, Matuyama, Gihu, Osaka ; IV at Saigo, Sumoto, Wakayama, Hikone, Tu, Kohu ; II-III at Hamada, Koti, Ooita, Saga, Mito, and Iida.
Radius of macroseismic area 300km., depth of focus 20km.
Seismological Bulletin of Central Met. Obs. Japan, 1943, Tokyo 1950, pp. 6-7, macroseismic charts p. 6.
H. Kawasumi :
" Seismology in Japan 1939-1947." Bulletin of Seismological Society of America, vol. 39, 1949, p. 161.

$A = -\cdot5682$, $B = +\cdot5843$, $C = +\cdot5795$; $\delta = +8$; $h = 0$;
$D = +\cdot717$, $E = +\cdot697$; $G = -\cdot404$, $H = +\cdot415$, $K = -\cdot815$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toyooka		0·5	98	0 13k	− 1	0 20	− 3	—	—	—
Kobe		1·2	139	0 22k	− 2	0 36	− 5	—	—	—
Kyoto		1·4	115	0 29k	+ 2	0 47	+ 1	—	—	—
Osaka		1·4	131	0 27	0	0 47	+ 1	—	—	—
Sumoto		1·4	156	0 27k	0	0 44	− 2	—	—	—
Wakayama		1·6	150	0 29k	− 1	0 48	− 3	—	—	—
Hikone		1·7	101	0 31k	0	0 55	+ 1	—	—	—
Hamada		1·9	248	0 27k	− 7	0 54	− 5	—	—	—
Hirosima		1·9	230	1 7	S	(1 7)	+ 8	—	—	—
Kameyama		2·0	112	0 36	+ 1	1 5	+ 3	—	—	—
Gihu		2·1	95	0 39k	+ 2	1 8	+ 4	—	—	—
Koti		2·1	195	0 37a	0	1 4	0	—	—	—
Matuyama		2·1	214	0 37	0	1 2	− 2	—	—	—
Nagoya		2·3	101	0 40	0	1 13	+ 4	—	—	—
Owase		2·3	133	0 39	− 1	1 12	+ 3	—	—	—
Muroto		2·4	180	0 37	− 4	1 5	− 7	—	—	—
Siomisaki		2·5	149	0 42k	− 1	1 12	− 2	—	—	—
Toyama		2·7	66	0 45a	0	1 26	+ 7	—	—	—
Hamamatu		3·0	107	1 6a	P_g	1 38	S_g	—	—	—
Simidu		3·0	200	0 47	− 3	1 24	− 3	—	—	—
Nagano		3·4	71	0 58	+ 3	1 46	+ 9	—	—	—
Kohu		3·5	88	1 0k	+ 3	1 53	S_g	—	—	—
Shizuoka		3·5	101	0 57	0	1 51	S_g	—	—	—
Hukuoka		3·7	238	1 4a	+ 4	1 59	S_g	—	—	—
Misima		3·9	96	1 2	0	2 3	S_g	—	—	—
Kumamoto		4·0	227	1 4a	0	2 5	S_g	—	—	—
Aikawa		4·1	52	1 6	+ 1	2 12	S_g	—	—	—
Miyazaki		4·3	213	1 16	+ 8	2 17	S_g	—	—	—
Osima		4·3	100	1 9	+ 1	2 11	S_g	—	—	—
Yokohama		4·4	91	1 22	P*	2 28	S_g	—	—	—
Tokyo Cen. Met. Ob.		4·5	87	1 21	P*	2 20	S_g	—	—	—
Utunomiya		4·7	77	1 26	P*	2 11	+ 1	—	—	—
Tukubasan		4·8	81	2 36	S_g	—	—	—	—	—
Kakioka		4·9	81	1 18	+ 1	2 35	S_g	—	—	—
Kagosima		5·0	218	1 39	P_g	2 43	S_g	—	—	—
Mito		5·1	79	1 31	P*	2 50	S_g	—	—	—
Hatidyozima		5·3	116	1 30	+ 8	3 28	?	—	—	—
Tomie		5·4	238	2 37	S	(2 37)	+ 9	—	—	—
Hukusima		5·5	65	1 31	+ 6	3 8	S_g	—	—	—
Onahama		5·6	74	1 31	+ 4	2 57	S*	—	—	—
Sendai		6·0	62	1 33	+ 1	2 51	+ 8	—	—	—
Keizyo		6·1	291	1 46	P*	3 14	S_g	—	—	—
Zinsen		6·4	289	2 16	P_g	3 37	S_g	—	—	—
Mizusawa	E.	6·5	55	e 1 43	+ 4	3 9	S*	—	—	—
Aomori		7·3	43	1 54	+ 4	—	—	—	—	—
Miyako		7·4	55	2 4	P*	2 46	−32	—	—	—
Hatinohe		7·6	48	1 56	+ 1	3 32	+ 9	—	—	—
Sapporo		9·3	34	2 25	+ 8	4 22	+17	—	—	—
Irkutsk		27·0	318	e 5 44	− 1	e 10 25	+ 3	—	—	—
Calcutta	N.	41·8	265	—	—	e 17 24	SS	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tashkent	50·1	297	e 9 26	+27	e 16 31	+21	—	—	—
Bombay	56·2	270	—	—	e 17 32	− 1	e 18 27	PPS	—
Riverview	70·9	165	e 9 49	?	—	—	—	—	e 32·2
Stuttgart	82·8	327	12 28	+ 1	e 26 41	?	e 31 46?	SSS	e 42·6
Almeria	97·4	326	—	—	e 33 50	?	—	—	53·3
Granada	97·7	327	e 26 16	PS	e 33 46	?	—	—	51·6

Tomie S = 3m.47s.
Bombay also gives eE = 19m.24s.
Long waves were also recorded at other European stations.

March 4d. 10h. 35m. 29s. Epicentre 35°·6N. 134°·2E. (as at 10h. 13m.).
Scale VI at Tottori ; V at Tadotu ; IV at Kyoto, Saigo, Kôbe, Tokusima, Hukui, Sakai ; II-III at Koti, Sumoto, Tu, Kohu, Mito, and Ôsaka.
Radius of macroseismic area 300km. Depth of focus 20km.
Seismological Bulletin of the Central Met. Obs. Japan for 1943, Tokyo 1950, p. 8, with macroseismic chart.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Toyooka	0·5	98	0 13	− 1	0 19	− 4
Kôbe	1·2	139	0 23k	− 1	0 37	− 4
Kyoto	1·4	115	0 16k	−11	0 34	−12
Osaka	1·4	131	0 27	0	0 46	0
Sumoto	1·4	156	0 27	0	0 44	− 2
Wakayama	1·6	150	0 27	− 3	0 47	− 4
Hikone	1·7	101	0 18	−13	0 41	−13
Hamada	1·9	248	0 33k	− 1	1 0	+ 1
Hirosima	1·9	230	1 10	S	(1 10)	+11
Kameyama	2·0	112	0 39a	+ 4	1 3	+ 1
Gihu	2·1	95	0 39	+ 2	1 7	+ 3
Koti	2·1	195	0 36a	− 1	1 4	0
Matuyama	2·1	214	0 38a	+ 1	1 3	− 1
Nagoya	2·3	101	0 43	+ 3	1 15	+ 6
Owase	2·3	133	0 41	+ 1	1 9	0
Muroto	2·4	180	0 41	0	1 9	− 3
Siomisaki	2·5	149	0 43	0	1 13	− 1
Toyama	2·7	66	0 45k	0	1 24	+ 5
Uwazima	2·7	210	0 48a	+ 3	1 41	+22
Simidu	3·0	200	0 49	− 1	1 34	+ 7
Nagano	3·4	71	0 58	+ 3	1 40	+ 3
Izuka	3·5	238	0 39	−18	1 25	−15
Kohu	3·5	88	1 3	+ 6	1 53	S_g
Shizuoka	3·5	101	0 57	0	1 51	S_g
Hukuoka	3·7	238	1 7k	+ 7	2 3	S_g
Misima	3·9	96	1 4	+ 2	2 6	S_g
Kumamoto	4·0	227	1 6	+ 2	2 8	S_g
Aikawa	4·1	52	1 21	P_g	2 2	+ 7
Miyazaki	4·3	213	1 18	+10	2 18	S_g
Unzendake	4·3	230	1 13	+ 5	2 18	S_g
Tokyo Cen. Met. Ob.	4·5	87	1 27	P_g	2 24	S_g
Utunomiya	4·7	77	1 44	P_g	2 33	S_g
Kakioka	4·9	81	1 19	+ 2	2 37	S_g
Kagosima	5·0	218	1 37	P_g	2 42	S_g
Mito	5·1	79	1 39	P_g	2 46	S_g
Tomie	5·4	238	2 45	S_g	3 48	?
Hukusima	5·5	65	1 30	+ 5	—	—
Onahama	5·6	74	1 29	+ 2	2 48	S_g
Sendai	6·0	62	1 33	+ 1	2 51	S_g
Keizyo	6·1	291	1 49	P*	3 53	?
Zinsen	6·4	289	1 59	P*	3 57	?
Mizusawa E.	6·5	55	e 1 44	+ 5	2 39	−16

March 4d. 19h. 50m. 8s. Epicentre 35°·6N. 134°·2E. (as at 10h.).

Epicentre off coast of Hamamura, Tottori Prefecture. Area affected same as for shock at 10h. 13m. Intensity nearly the same.

H. Kawasumi.
" Seismology in Japan 1939-1947." Bulletin of Seismo. Society of America, vol. 39, p. 161.
Syun' itiro Omote.
Provisional report on the Tottori Earthquakes on March 4th, 1943. " Zisin," the Journal of the Seismological Society of Japan, vol. 15, 1943.
" The Tottori Earthquakes of 1943 " (in Japanese). Bulletin of the Earthquake Research Institute, Tokyo, vol XXI, parts 3 and 4, 1943.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toyooka		0·5	98	0 11a	− 3	0 17	− 6	—	—	—
Kobe		1·2	139	0 21k	− 3	0 36	− 5	—	—	—
Osaka		1·4	131	0 26k	− 1	0 45	− 1	—	—	—
Sumoto		1·4	156	0 27k	0	0 44	− 2	—	—	—
Wakayama		1·6	150	0 28k	− 2	0 47	− 4	—	—	—
Hikone		1·7	101	0 15k	−16	0 37	−17	—	—	—
Hamada		1·9	248	0 33k	− 1	1 0	+ 1	—	—	—
Kameyama		2·0	112	0 34a	− 1	1 2	0	—	—	—
Gihu		2·1	95	0 37	0	1 5	+ 1	—	—	—
Koti		2·1	195	0 36a	− 1	1 3	− 1	—	—	—
Matuyama		2·1	214	0 35a	− 2	1 2	− 2	—	—	—
Nagoya		2·3	101	0 40	0	1 13	+ 4	—	—	—
Owase		2·3	133	0 36k	− 4	1 6	− 3	—	—	—
Muroto		2·4	180	0 36	− 5	1 0	−12	—	—	—
Siomisaki		2·5	149	0 39k	− 4	1 10	− 4	—	—	—
Toyama		2·7	66	0 42a	− 3	1 24	+ 5	—	—	—
Hamamatu		3·0	107	1 28a	P_g	2 8	S_g	—	—	—
Simidu		3·0	200	0 47	− 3	1 24	− 3	—	—	—
Nagano		3·4	71	0 57	+ 2	1 45	+ 8	—	—	—
Omaesaki		3·4	107	1 3	P*	1 52	S_g	—	—	—
Izuka		3·5	238	0 36	−21	1 27	−13	—	—	—
Kohu		3·5	88	1 0k	+ 3	1 51	+11	—	—	—
Shizuoka		3·5	101	0 55	− 2	1 49	+ 9	—	—	—
Hukuoka		3·7	238	0 54k	− 6	1 48	+ 3	—	—	—
Hunatu		3·7	90	1 2	+ 2	1 56	S_g	—	—	—
Misima		3·9	96	1 2	0	2 3	S_g	—	—	—
Kumamoto		4·0	227	1 4a	0	2 8	S_g	—	—	—
Aikawa		4·1	52	1 4	− 1	2 4	S_g	—	—	—
Miyazaki		4·3	213	1 12	+ 4	2 11	+11	—	—	—
Osima		4·3	100	1 12	+ 4	2 13	+13	—	—	—
Unzendake		4·3	230	1 16	+ 8	2 13	S_g	—	—	—
Tokyo Cen. Met. Ob.		4·5	87	1 19	+ 8	2 19	S_g	—	—	—
Kakioka		4·9	81	1 16k	− 1	2 21	S_g	—	—	—
Kagosima		5·0	218	1 22	+ 4	2 45	S_g	—	—	—
Mito		5·1	79	1 31	+11	2 49	S_g	—	—	—
Hatidyozima		5·3	116	1 31	+ 9	3 31	?	—	—	—
Tomie		5·4	238	1 29	+ 5	2 35	+ 7	—	—	—
Tyosi		5·4	87	0 49	?	1 46	?	—	—	—
Hukusima		5·5	65	1 22	− 3	3 4	S_g	—	—	—
Onahama		5·6	74	1 29	+ 2	3 6	S_g	—	—	—
Sendai		6·0	62	1 33	+ 1	2 53	+10	—	—	—
Yakusima		6·0	212	1 33	+ 1	—	—	—	—	—
Keizyo		6·1	291	1 44	+10	3 32	S_g	—	—	—
Akita		6·2	47	1 37	+ 2	3 0	S*	—	—	—
Zinsen		6·4	289	2 15	?	3 10	S_g	—	—	—
Mizusawa		6·5	55	e 1 41	+ 2	3 7	S_g	—	—	—
Aomori		7·3	43	1 53	+ 3	3 27	S_g	—	—	—
Miyako		7·4	55	1 52	0	3 20	+ 2	—	—	—
Hatinohe		7·6	48	1 55	0	3 30	+ 7	—	—	—
Mori		8·2	35	2 4	+ 1	3 56	S_g	—	—	—
Sapporo		9·3	34	2 21	+ 4	4 21	+16	—	—	—
Irkutsk		27·0	318	e 5 48	+ 3	e 10 28	+ 6	—	—	—
Calcutta	N.	41·8	268	e 14 25	S	(e 14 25)	+14	e 17 32	SS	e 21·6
New Delhi	N.	48·2	279	e 15 28	S	(e 15 28)	−15	19 8	SS	—
Tashkent		50·1	297	e 8 56	− 3	e 16 17	+ 7	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		56·2	270	—	—	e 17 29	− 4	—	—	30·9
Riverview	E.	70·9	165	—	—	e 22 4?	?	e 30 27	PKKP	—
Prague		79·5	326	e 29 23	?	37 44	L	—	—	(37·7)
Tinemaha	Z.	81·3	51	e 12 19	− 1	—	—	—	—	—
Haiwee	Z.	82·1	51	i 12 25	+ 1	—	—	—	—	—
Stuttgart		82·8	327	e 12 24	− 3	e 22 40	− 5	—	—	e 41·5
Pasadena		83·2	52	e 12 32	+ 3	—	—	—	—	e 39·9
Riverside		83·8	52	e 12 33	+ 1	—	—	—	—	—
Tucson		89·1	50	e 12 38	−20	—	—	—	—	—

Additional readings :—
New Delhi eSN =19m.41s., SSN =20m.23s.
Bombay eE =19m.39s. and 22m.14s.
Stuttgart eZ =12m.38s.
Riverside iZ =12m.42s.
Long waves were also recorded at other European stations.

March 4d. Readings also at 1h. (Wellington and Auckland), 10h. (San Juan, Tucson, Haiwee, Riverside, and Tinemaha), 15h. (La Paz), 17h. (near Triest), 18h. (Tacubaya), 19h. (Buffalo), 22h. (near Tashkent, Stalinabad, near Fresno, and Lick).

March 5d. 0h. 31m. 40s. Epicentre 5°·0N. 82°·5W. (as on 1940 July 30d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		4·9	35	e 1 5	−12	i 2 8	− 7	i 1 14	P	—
Oaxaca	Z.	18·4	314	e 4 0	−18	—	—	—	—	—
Huancayo		18·7	157	i 4 22	0	i 7 51	+ 3	—	—	i 8·9
Vera Cruz	N.	19·4	319	e 4 33	+ 3	—	—	—	—	—
San Juan		20·8	48	i 4 44	− 1	i 8 32	− 1	i 5 23	PP	i 9·8
Tacubaya	N.	21·7	314	4 55	0	—	—	—	—	—
Fort de France		23·1	65	i 5 9	+ 1	i 9 31	+15	5 40	PP	e 12·0
Guadalajara	E.	25·6	309	e 5 28	− 4	—	—	—	—	—
La Paz	Z.	25·7	146	i 5 35a	+ 2	i 10 20	+19	i 12 26	?	14·3
Mobile		26·1	349	i 5 43	+ 6	i 10 17	+10	—	—	—
Columbia		28·9	4	e 6 0	− 3	e 10 48	− 5	e 6 45	PP	e 13·4
Montezuma		30·5	155	e 7 0	PP	e 12 30	SS	—	—	e 17·2
Bermuda		31·8	31	e 6 57	+29	e 11 56	+18	e 7 57	PPP	e 13·6
Cape Girardeau	N.	32·8	351	e 6 32	− 5	e 11 44?	−10	—	—	—
Georgetown		34·1	8	i 6 46	− 2	i 12 12	− 2	—	—	—
St. Louis		34·2	350	i 6 46	− 3	i 12 16	0	i 7 58	PP	—
Florissant		34·4	350	i 6 48	− 3	i 12 17	− 2	i 7 57	PP	—
Philadelphia		35·4	9	i 6 28?	−32	i 11 54?	−40	i 7 45?	PP	e 14·3
Pittsburgh		35·4	4	i 7 2	+ 2	i 12 36	+ 2	—	—	—
New Kensington		35·5	4	e 8 8?	PP	e 12 38?	+ 2	—	—	e 15·1
Fordham		36·5	13	e 7 7	− 2	i 12 49	− 2	e 8 25	PP	e 18·1
Chicago		36·9	353	e 7 9	− 3	e 12 50	− 8	e 8 23	PP	e 15·9
Lincoln		37·9	343	e 7 21	+ 1	e 12 51	−22	e 8 48	PP	e 16·1
Tucson		37·9	319	i 7 22	+ 2	i 13 20	+ 7	i 8 46	PP	i 16·1
Harvard		38·6	14	i 7 27	+ 1	i 13 20	− 3	i 8 52	PP	e 17·3
Vermont		40·2	11	e 7 45	+ 5	e 13 47	− 1	i 9 7	PP	i 16·9
Ottawa		40·7	7	7 41	− 3	13 56	+ 1	9 11	PP	20·3
Shawinigan Falls		42·2	11	7 55	− 1	14 8?	− 9	9 41	PP	23·3
La Jolla	E.	42·6	315	e 8 4	+ 5	—	—	—	—	—
Palomar	Z.	42·6	316	i 7 59	0	—	—	i 9 43	PP	—
Halifax		42·8	20	e 9 50?	PP	e 14 2	−24	—	—	16·3
Seven Falls		43·2	13	8 4	0	14 34	+ 2	17 44?	SS	23·3
Riverside		43·3	316	e 8 4	− 1	i 14 39	+ 6	e 9 53	PP	—
Mount Wilson	Z.	43·9	316	i 8 10	0	—	—	—	—	—
Pasadena		44·0	316	i 8 11	0	i 14 41	− 2	e 9 54	PP	i 18·3

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Salt Lake City		44·3	328	e 8 15	+ 2	i 14 49	+ 1	e 10 5	PP	e 21·5
Haiwee	Z.	45·0	319	i 8 19	0	—	—	e 9 36	PP	—
Logan		45·0	330	e 8 19	0	e 14 51	− 7	i 10 10	PP	e 21·9
Santa Barbara		45·2	315	i 8 19	− 1	—	—	—	—	—
Tinemaha		45·7	319	i 8 25	+ 1	e 15 11	+ 3	i 10 3	PP	—
La Plata	E	45·9	152	—	—	15 14?	+ 3	18 50?	SS	20·7
	N.	45·9	152	—	—	15 8?	− 3	18 50?	SS	21·4
	Z.	45·9	152	8 20?	− 6	15 38?	+27	—	—	26·8
Fresno	N.	46·5	318	e 8 33	+ 2	—	—	—	—	e 26·3
Rio de Janeiro		47·3	127	e 7 39	−58	i 14 32	−59	—	—	i 22·4
Bozeman		47·5	333	e 8 41	+ 3	i 15 35	+ 1	i 10 38	PP	i 19·3
Lick		48·1	318	e 8 44	+ 1	(e 15 50)	+ 8	—	—	e 15·8
Santa Clara		48·3	318	e 8 50	+ 5	—	—	e 11 45	PPP	e 23·4
Butte		48·5	333	e 8 49	+ 3	e 15 56	+ 8	e 10 44	PP	e 22·7
Berkeley		48·8	318	i 8 49	0	i 15 53	+ 1	e 10 48	PP	e 23·5
Ukiah		50·1	319	e 9 2	+ 3	e 16 10	0	e 19 55	SS	e 22·8
Saskatoon		51·1	341	8 14?	−52	16 24	0	—	—	26·3
Ferndale	N.	51·5	320	—	—	e 15 27	−62	—	—	i 28·1
Seattle		54·5	328	e 10 30	+58	—	—	e 15 14	?	e 23·6
Victoria		55·6	328	9 39	− 1	17 31	+ 6	—	—	27·3
Ivigtut		61·7	18	—	—	e 18 46	+ 2	e 24 51	SS	e 27·1
Sitka		66·6	332	e 10 54	0	i 19 48	+ 3	e 13 22	PP	e 32·4
Lisbon		73·9	52	11 41a	+ 2	21 14	+ 4	21 55	PS	30·8
Honolulu		74·5	292	e 16 54	PPP	i 21 30	+13	e 26 11	SS	i 32·9
College		75·2	336	e 10 47	−59	e 21 28	+ 3	e 14 17	PP	e 35·5
Scoresby Sund		75·8	17	e 11 55	+ 5	e 21 28	− 3	—	—	e 30·5
Toledo		78·0	51	e 12 3	+ 1	i 22 0	+ 5	27 10	SS	33·8
Granada		78·2	54	i 12 7a	+ 4	i 22 2	+ 5	15 10	PP	36·2
Almeria		79·1	54	i 12 11	+ 3	i 22 9	+ 2	15 34	PP	—
Aberdeen	N.	80·6	33	—	—	i 22 19	− 4	i 26 31	SS	e 33·4
Kew		81·2	39	e 12 12	− 7	e 22 22	− 7	e 15 0?	PP	e 39·3
Tortosa	N.	81·5	50	e 13 2	+41	22 39	+ 2	15 42	PP	35·1
Paris		83·0	42	i 12 31	+ 3	e 22 49	+ 2	—	—	39·3
Clermont-Ferrand		83·4	46	e 12 30	0	e 23 1	+10	i 15 30	PP	e 36·3
Uccle		84·2	40	12 36	+ 2	i 22 57	− 2	28 28	SS	35·0
De Bilt		84·7	39	i 12 40k	+ 3	i 23 8	+ 4	28 20?	SS	e 43·3
Besancon		85·3	44	—	—	e 25 47	?	—	—	48·3
Neuchatel		86·0	43	e 12 43	0	—	—	—	—	—
Basle		86·4	43	e 12 48	+ 3	e 23 20	− 1	—	—	—
Strasbourg		86·5	42	e 12 49	+ 3	e 23 23	+ 1	—	—	—
Zurich		87·1	43	e 12 50	+ 1	e 23 30	+ 2	—	—	—
Stuttgart		87·4	42	e 12 50	0	e 23 24	− 6	e 29 26?	SS	44·0
Chur		87·8	43	e 12 55	+ 3	e 23 27	− 7	—	—	—
Copenhagen		88·7	34	e 13 0	+ 3	23 44	+ 1	24 27	PS	—
Jena		88·7	40	e 12 59	+ 2	e 23 44	+ 1	e 24 38?	PS	e 43·3
Potsdam		89·5	38	—	—	i 23 57	+ 7	—	—	e 36·3
Prague		90·6	40	e 12 38	−27	e 22 43	?	e 23 56	S	e 35·3
Triest		90·8	44	e 13 49	+43	i 24 4	+ 2	—	—	—
Upsala		90·8	30	—	—	e 24 0	− 2	e 24 20?	?	e 36·3
Wellington		102·8	229	18 30	PP	25 53	+ 9	33 7	SSP	49·3
Auckland		103·1	233	—	—	33 5	SSP	—	—	43·3
Christchurch		104·2	227	—	—	i 33 25	SSP	i 38 14	?	48·0
Helwan		107·9	57	e 17 30	?	26 38	+11	18 53	pP	—
Irkutsk		122·6	355	e 20 20	PP	25 46	[−13]	—	—	—
Riverview		122·6	232	e 20 43	PP	e 30 57	PS	e 37 23	SS	e 51·7
Vladivostok		122·9	331	e 20 40	PP	27 45	{+12}	30 42	PS	—
Tashkent		127·2	27	i 19 11	[+ 5]	e 25 51	[−21]	i 21 7	PP	—
New Delhi		141·3	30	e 19 51	[+18]	i 29 22	{− 7}	i 33 39	PS	—
Bombay		146·0	46	i 19 44	[+ 3]	30 4	{+ 8}	35 50	PPS	70·3
Hyderabad	E.	150·8	40	20 34	[+45]	—	—	40 37	?	—
Calcutta	N.	151·2	18	e 20 35	[+46]	i 30 54	{+29}	—	—	—
Colombo		158·8	57	20 38	[+39]	—	—	24 22	PP	—

For Notes see next page.

NOTES TO MARCH 5d. 0h. 31m. 40s.

Additional readings :—
Fort de France PPP =5m.52s., SS =10m.11s., SSS =10m.16s.
Bermuda iS =12m.5s.
Philadelphia e =7m.26s.? and 13m.34s.?.
Fordham iSS =14m.37s.
Tucson e =9m.29s., i =10m.5s.
Harvard iP_cP =9m.44s., iSS =15m.56s.
Vermont i =16m.36s.
Ottawa SSS =16m.56s.
Shawinigan Falls SSS =17m.31s.
Salt Lake City e =10m.21s. and 18m.21s.
Logan i =9m.15s., 10m.39s., 11m.9s., and 18m.23s.
La Plata N =16m.50s.?.
Bozeman i =17m.53s.
Butte e =19m.37s.
Berkeley eZ =10m.27s., eN =10m.54s., eSN =15m.41s., eSE =15m.49s., iE =19m.38s., eN =20m.32s.?, iE =21m.16s.
Sitka e =13m.5s. and 18m.43s., iSS =24m.13s.
Honolulu e =19m.27s.
College e =24m.42s.
Scoresby Sund e =13m.43s., 23m.36s., and 28m.30s.
Granada P_cP =12m.25s., PS =22m.29s., PPS =23m.44s., SS =27m.47s., Q =32m.20s.?.
Almeria P_cP =12m.32s., PPP =17m.24s., PS =22m.45s., SS =27m.37s., SSS = 36m.20s.
Kew eEZ =19m.20s.?, ePSN =23m.0s., eZ =25m.8s., eN =25m.25s., eSSN =27m.25s., eSSE =28m.0s.?, eSSSN =30m.50s., QEN =33m.20s.?.
Tortosa PPPN =17m.1s., PSN =23m.25s., SSN =27m.36s., SSSN =30m.42s., QN = 33m.6s., PKP,PKPN =40m.49s.
Clermont-Ferrand iP =12m.33s.k, i =16m.10s., e =19m.20s., ePS =23m.54s.
De Bilt e =35m.20s.?.
Stuttgart eZ =13m.7s., e =23m.34s., eSP =24m.32s., Q =36m.20s.?.
Copenhagen 25m.59s.
Jena eEN =16m.14s., eE =23m.30s., eN =24m.35s.
Wellington PPZ =18m.40s., Q =43m.20s.?.
Christchurch Q =45m.18s.
Helwan eZ =17m.56s., sS?Z =28m.52s.
Vladivostok iPPP =23m.9s.
Tashkent ePKS =22m.31s.
New Delhi N =22m.49s., iPKSN =23m.31s., iN =36m.59s.
Bombay SSEN =41m.52s., SSSE =47m.24s.
Long waves were also recorded at Bergen, Bucharest, Tananarive, and Sydney.

March 5d. Readings also at 1h. (near Reykjavik and near Fresno), 4h. (Tacubaya, Tucson, Mount Wilson, Haiwee, Riverside, Tinemaha, near Fresno, near Chur, Stuttgart, and near Mizusawa), 6h. (La Paz), 11h. (Tacubaya (2)), 13h. (near Fresno), 16h. (La Paz (3)), 17h. (near Mizusawa), 18h. (Tacubaya, Tucson, Guadalajara, Riverside, and Tinemaha), 20h. (near Tashkent and Tchimkent), 23h. (Basle, Zurich, near Stuttgart, Jena, and Potsdam).

March 6d. Readings at 6h. (near Lick), 12h. (Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tucson, and Tinemaha), 17h. (Calcutta), 19h. (Tashkent and near Stalinabad), 20h. (near St. Louis and Tucson), 22h. (Buffalo).

March 7d. 3h. 1m. 40s. Epicentre 59°·1N. 165°·6E.

$A = -·4999$, $B = +·1283$, $C = +·8565$; $\delta = -5$; $h = -9$;
$D = +·249$, $E = +·969$; $G = -·830$, $H = +·213$, $K = -·516$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Sapporo	21·9	234	4 54	− 3	9 10	+16	—	—	—
College	22·2	56	e 5 1	+ 1	i 9 1	+ 1	—	—	e 10·7
Mizusawa	25·3	228	e 5 29	− 1	9 45	− 9	—	—	—
Sendai	26·2	227	5 38	0	10 10	+ 1	—	—	—
Vladivostok	26·2	247	5 35	− 3	10 28	+19	—	—	—
Aikawa	27·5	232	5 51	+ 1	10 37	+ 7	—	—	—
Nagano	28·6	231	6 0	0	10 56	+ 8	—	—	—
Tokyo Cen. Met. Ob.	28·9	228	6 5	+ 2	10 30	−23	6 57	PP	—
Sitka	30·2	68	i 6 17	+ 3	i 11 20	+ 7	e 7 15	PP	e 12·9
Nagoya	30·4	231	e 6 16	0	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kobe		31·6	232	e 6 25	− 1	11 35	0	—	—	—
Hamada		32·7	237	6 37	+ 1	10 42	−70	—	—	—
Zinsen		33·1	246	e 6 35	− 5	11 50	− 9	—	—	—
Irkutsk		34·1	287	i 6 48	0	12 10	− 4	—	—	—
Dairen		34·4	254	—	—	e 15 0	SSS	—	—	—
Hukuoka		34·5	238	6 51	− 1	12 23	+ 3	—	—	—
Nake		39·4	234	7 33	0	—	—	—	—	—
Victoria		41·3	73	7 49	0	14 5	+ 1	9 28	PP	20·3
Naha		42·1	236	e 7 54	− 1	—	—	—	—	—
Seattle		42·4	73	e 7 58	0	e 15 2	+42	e 10 10	PPP	e 17·7
Honolulu		45·9	129	i 8 29	+ 3	i 15 12	+ 1	9 46	PP	e 19·2
Saskatoon		46·6	59	8 39	+ 7	15 24	+ 3	18 28	SS	22·3
Taityu		47·0	241	e 10 6	PP	—	—	—	—	—
Ukiah		48·1	81	e 8 41	− 2	i 15 50	+ 8	e 10 30	PP	e 19·9
Butte		48·3	67	i 8 48	+ 3	e 15 54	+ 9	e 18 46	SS	e 19·6
Bozeman		49·3	67	e 8 51	− 2	i 16 2	+ 3	e 18 44	SS	e 20·9
Berkeley		49·5	82	e 8 52	− 2	e 16 1	− 1	e 10 15	PP	e 24·0
Branner		49·9	82	e 8 59	+ 2	e 16 8	+ 1	—	—	—
Sverdlovsk		50·0	317	i 8 49	− 9	16 19	+10	—	—	—
Santa Clara		50·1	82	i 9 1	+ 2	i 16 18	+ 8	—	—	—
Lick		50·3	82	e 8 59	− 1	e 16 18	+ 5	—	—	—
Scoresby Sund		50·6	4	e 8 59	− 3	i 16 23	+ 6	e 11 8	PP	e 23·4
Fresno	N.	51·7	81	e 9 11	0	—	—	—	—	—
Logan		51·8	71	e 9 12	0	i 16 40	+ 7	e 11 9	PP	e 22·8
Tinemaha		52·2	79	i 9 13	− 2	e 16 51	+12	e 39 39	P′P′	—
Salt Lake City		52·6	72	e 9 17	− 1	e 16 38	− 6	e 11 19	PP	e 24·0
Haiwee		53·1	81	i 9 20	− 1	e 16 53	+ 2	i 10 26	?	—
Santa Barbara		53·5	83	i 9 22	− 2	e 16 53	− 4	i 11 21	PP	—
Almata		53·6	296	e 9 30	+ 5	—	—	—	—	—
Mount Wilson		54·5	82	i 9 30a	− 2	—	—	e 39 24	P′P′	—
Pasadena		54·5	82	i 9 29a	− 3	i 17 10	0	i 11 32	PP	e 23·3
Riverside		55·0	82	e 9 33a	− 2	—	—	e 39 42	P′P′	—
La Jolla		56·0	82	i 9 40	− 3	e 17 30	0	i 10 23	?	—
Ivigtut		57·2	20	—	—	e 17 51	+ 5	e 19 46	?	e 25·7
Andijan		57·7	297	e 9 54	− 1	e 18 3	+10	—	—	—
Tchimkent		57·7	300	9 54	− 1	—	—	—	—	—
Moscow		58·3	329	9 58	− 1	e 18 3	+ 2	—	—	—
Tashkent		58·6	299	i 10 1	0	18 14	+10	—	—	—
Upsala		58·8	343	10 2	0	18 4	− 3	e 13 44	PPP	e 28·3
Lincoln		59·7	61	10 9	0	e 18 16	− 3	(e 24 56)	SSS	e 24·9
Tucson		59·7	77	i 10 7	− 2	e 18 24	+ 5	i 13 36	PPP	e 25·9
Bergen		59·9	350	10 3	− 7	e 18 20	− 1	—	—	e 26·3
Stalinabad		61·1	298	e 10 17	− 1	e 18 47	+10	—	—	—
Chicago		62·8	55	e 10 25	− 5	e 18 55	− 3	e 20 22	?	e 26·0
Dehra Dun	N.	63·3	285	—	—	e 19 20?	+16	—	—	e 27·1
Copenhagen		63·6	344	e 10 33	− 2	19 6	− 2	13 4	PP	—
Aberdeen		63·7	354	i 10 39	+ 3	i 19 20	+10	e 15 44	?	30·7
Florissant		64·1	58	i 10 37	− 1	e 19 19	+ 5	—	—	—
Ottawa		64·3	44	10 36	− 3	19 14?	− 3	23 38?	SS	30·3
St. Louis		64·3	58	e 10 37	− 2	i 19 23	+ 6	—	—	—
Shawinigan Falls		64·3	41	10 36	− 3	19 21	+ 4	—	—	36·3
Calcutta		64·4	271	e 10 45	+ 5	i 19 20	+ 2	—	—	—
Seven Falls		64·5	39	10 41	0	19 23	+ 4	24 8?	SS	31·3
New Delhi	N.	65·1	284	i 10 41a	− 4	i 19 23	− 4	13 15	PP	i 26·9
Cape Girardeau	E.	65·7	58	e 10 47	− 1	e 19 32?	− 2	—	—	—
Vermont		66·0	43	e 10 48	− 2	e 19 33	− 5	e 20 49	PS	e 26·9
Potsdam		66·7	343	i 10 56	+ 1	e 19 55	+ 9	e 13 26?	PP	e 33·3
New Kensington		67·0	50	e 11 38?	+41	e 19 56?	+ 6	e 20 56?	PPS	e 27·1
Pittsburgh		67·0	50	i 10 54	− 3	i 19 56	+ 6	—	—	—
Stonyhurst		67·0	353	—	—	i 19 48	− 2	i 24 19	SS	31·3
De Bilt		68·0	348	i 11 3a	0	e 20 5	+ 3	e 13 30	PP	e 32·3
Jena		68·3	343	i 11 3	− 2	e 20 8	+ 2	e 24 38?	SS	e 32·3
Prague		68·7	341	e 11 4	− 3	e 20 12	+ 2	e 13 35	PP	e 33·3
Fordham		68·9	45	e 11 11	+ 2	i 20 20	+ 7	e 24 57	SS	e 34·8
Halifax		69·0	37	10 59	−10	19 58	−16	—	—	35·3

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kew		69·2	351	e 10 56a	−14	e 20 13	− 3	e 13 42	PP	e 33·3
Philadelphia		69·3	47	e 19 43?	?	e 20 41?	+24	e 24 15?	SS	e 29·2
Yalta		69·3	325	11 10	− 1	20 24	+ 7	—	—	—
Bacau		69·4	332	e 11 18	+ 6	20 29	+11	—	—	—
Uccle		69·4	349	i 11 9a	− 3	i 20 23	+ 5	e 13 41	PP	e 33·3
Georgetown		69·5	48	e 11 9	− 3	e 20 6	−14	i 20 22	S	31·3
Focsani		70·1	331	12 11	+55	20 46	+19	—	—	—
Stuttgart		70·8	344	i 11 19a	− 1	e 20 40	+ 5	e 14 1	PP	e 34·8
Campulung		71·0	332	e 11 25	+ 3	e 20 49	+12	—	—	—
Strasbourg		71·2	346	i 11 23	0	20 44	+ 4	—	—	36·3
Bucharest		71·6	331	e 11 22	− 3	20 52	+ 8	14 14	PP	35·3
Paris		71·6	349	i 11 24	− 1	i 20 55	+11	i 14 12	PP	35·3
Columbia		72·1	54	e 11 30	+ 2	e 20 47	− 3	—	—	e 29·5
Basle		72·2	346	e 11 27	− 2	—	—	—	—	—
Zurich		72·2	345	e 11 28a	− 1	e 20 54	+ 3	—	—	—
Belgrade		72·5	335	e 12 22	PcP	e 21 47	− 7	—	—	e 45·5
Chur		72·6	344	e 11 30	− 1	e 21 6	+10	—	—	—
Neuchatel		72·8	346	e 11 31	− 1	—	—	—	—	—
Triest		73·1	341	e 11 24	−10	i 21 30	+29	i 22 6	PPS	e 36·3
Hyderabad	E.	73·8	277	11 39	+ 1	—	—	—	—	—
Sofia		73·9	332	e 11 40	+ 1	e 21 20	+10	16 14?	PPP	41·3
Milan		74·1	343	i 11 41	+ 1	i 21 16	+ 4	—	—	43·5
Clermont-Ferrand		74·5	348	i 11 42a	0	e 21 28	+11	i 12 7	pP	e 35·3
Florence		75·3	341	i 11 49	+ 2	i 21 33	+ 7	i 12 26	pP	41·4
Bombay		75·4	283	i 11 44	− 3	i 21 34	+ 7	14 42	PP	37·3
Ksara		78·5	319	e 12 8	+ 4	e 22 16	+15	—	—	—
Barcelona		78·9	348	e 12 14	+ 7	e 22 0	− 5	—	—	e 39·7
Tortosa	N.	79·7	349	e 12 2	− 9	22 24	+11	15 24	PP	39·1
Bermuda		79·8	42	e 12 46	+34	e 22 38	+24	e 15 2	PP	e 33·8
Kodaikanal	E.	80·4	274	e 12 5	−10	i 22 10	−11	i 29 18	?	—
Toledo		81·0	353	i 12 17	− 1	i 22 28	+ 1	15 25	PP	35·1
Colombo		81·9	270	12 24	+ 1	22 37	+ 1	—	—	49·4
Lisbon		82·4	357	12 24k	− 1	e 22 40	− 1	15 32?	PP	36·9
Granada		83·6	352	i 12 32	+ 1	i 23 5	+12	23 35	PS	43·2
Helwan		83·6	321	i 12 31k	0	23 2	+ 9	15 50	PP	—
Almeria		83·9	351	i 12 32	− 1	e 22 57	+ 1	16 1	PP	40·3
San Fernando		84·5	354	i 12 32	− 4	23 3	+ 1	23 58	PS	42·3
San Juan		92·0	48	e 13 34	+22	i 24 7	− 5	e 17 6	PP	e 46·5
Riverview		93·4	193	i 13 28	+10	i 23 49	[− 3]	i 24 36	S	e 43·4
Sydney		93·4	193	e13 50?	+32	i 23 56	[+ 4]	i 24 32	S	—
Auckland		95·9	174	—	—	25 10	+24	26 10	PS	44·3
Arapuni		97·2	172	—	—	24 20?	[+ 7]	34 20?	SSS	43·3
Wellington		100·3	173	—	—	24 20	[− 8]	32 50	SS	46·3
Christchurch		102·4	175	18 17	PP	24 37	[− 2]	32 53	SS	47·8
Huancayo		115·0	71	e 19 27	PP	e 25 7	[−25]	e 35 34	SS	49·7
La Paz		122·3	65	e 18 2	[−55]	24 40	[−77]	20 46	PP	63·3

Additional readings :—
Mizusawa SE =9m.48s.
Tokyo PcP? =9m.18s., SS =12m.50s.
Sitka i =8m.6s. and 12m.18s.
Victoria SSS =17m.28s.
Ukiah e =18m.38s.
Berkeley eSN =14m.59s., eSE =15m.6s., eSE =16m.5s., eSZ =16m.10s.
Scoresby Sund e =9m.32s., 18m.57s., and 20m.10s.
Logan i =10m.4s., ePPP =12m.23s., i =17m.50s., eSS =20m.6s.
Salt Lake City e =19m.12s.
Pasadena iPcSZ =14m.38s., eSZ =16m.51s., iScSN =19m.28s., eP′P′Z =39m.23s.
Riverside iZ =10m.31s.
Upsala PPP?N =13m.47s., eSN =18m.10s., eN =19m.54s., eSS?E =21m.59s., eSS?N =22m.2s.?, eSSSE =24m.20s.?.
Tucson i =12m.27s., iS =18m.27s., eSS =22m.9s., e =22m.27s.
Copenhagen 23m.7s.
Aberdeen iEN =23m.40s.
Ottawa SSS =26m.20s.?.
Seven Falls SSS =26m.23s.
New Delhi i =15m.24s., SE =19m.33s., PSN =19m.55s., ScSN =20m.32s., ScSE = 20m.36s., iN =21m.0s., i =22m.20s., SSN =23m.55s.

Continued on next page.

Vermont ePPP =14m.49s., eS =19m.23s.
Potsdam eEN =23m.56s.?.
Stonyhurst iSSS =27m.35s.
De Bilt eSS =24m.50s.
Jena iP =11m.7s., eSEN =20m.11s.
Prague eSS =24m.44s.?.
Fordham i =21m.17s.
Kew iP_ePZ =11m.8s., ePPPNZ =15m.28s., eSS =24m.54s., eSSS =27m.50s.?.
Uccle iN =11m.15s., ePPPN =15m.36s., iSN =20m.25s., SSN =25m.7s.
Stuttgart eZ =13m.15s., and 13m.31s., ePPPZ =15m.43s., ePPP =15m.48s., eSPZ = 21m.13s., eSP =21m.16s., eSS =25m.25s.
Bucharest PPPE =15m.48s., PSN =21m.14s.
Paris eSSS =29m.16s.
Triest e =25m.49s., SSS =29m.45s.
Clermont-Ferrand i =11m.44s., ePP =14m.40s., ePS =22m.1s., ePS =22m.9s.
Florence iPP =14m.41s., iS =21m.38s., isS =22m.41s., iSS =27m.36s., iSSS =30m.4s.
Bombay PPPN =16m.34s., PSE =22m.6s., iE =23m.42s., SSE =26m.4s., SSN = 26m.20s., iE =30m.7s. and 30m.20s.
Tortosa PPPN =17m.25s., S_cSN =22m.50s., PSN =23m.37s., PPSN =24m.27s., SSN = 28m.25s., SSSN =32m.34s., QN =36m.59s.
Bermuda e =28m.3s.
Toledo iSN =22m.35s., SS =28m.16s.
Lisbon PE =12m.29s., iSE =22m.47s., iSN =22m.54s., SSN =28m.24s.
Granada iP_cP =12m.42s., SS =28m.30s., SSS =32m.18s.
Helwan PSEN =23m.54s.
Almeria P_cP =12m.54s., PPP =18m.2s., PPS =24m.1s., SS =28m.32s.
San Juan e =25m.31s. and 29m.54s.
Riverview iSKS?N =23m.59s., iN =25m.43s., iE =30m.41s.
Auckland PPS =27m.10s.
Wellington SKKS? =25m.27s., S_cSPZ =26m.56s., PPS? =27m.45s., PPPSZ =28m.10s., i =30m.56s., SSS =35m.50s.?.
Christchurch PS =27m.19s., SSS =36m.24s., i =39m.34s.
Huancayo e =27m.29s.
La Paz SKKS =27m.20s., SSZ =38m.38s.
Long waves were also recorded at Tananarive.

March 7d. Readings also at 2h. (Brisbane and Rio de Janeiro), 3h. (Mount Wilson, Riverside, Tinemaha, Tucson, and La Paz), 4h. (La Paz, Fort de France, and Ferndale), 5h. (Stuttgart, Uccle, and Kew), 7h. (near Mizusawa), 11h. (Pasadena, Mount Wilson, Riverside, Tucson, La Jolla, and Tinemaha), 15h. (near Reykjavik), 16h. (Wellington, Riverview, Pasadena, Mount Wilson, Riverside, Tinemaha, and Haiwee), 17h. (Riverview), 19h. (near Reykjavik), 20h. (Tucson and near Reykjavik), 23h. (Mount Wilson, Riverside, Tinemaha, Helwan, and Ksara).

March 8d. Readings at 0h. (Pasadena), 4h. (near Tashkent), 6h. (Balboa Heights), 7h. (near Fort de France), 9h. (Tucson, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Berkeley, Ukiah, Bozeman, Butte, Salt Lake City, Logan, Florissant, St. Louis, Lincoln, Chicago, and Philadelphia), 12h. (near Mizusawa), 13h. (Riverview (2)), 18h. (San Francisco), 20h. (near Fort de France), 22h. (Balboa Heights, Harvard, and Buffalo).

March 9d. 3h. 25m. 22s. Epicentre 42°·2N. 80°·9W.

Scale IV at Conneaut, Cleveland, Detroit, and Grosse Point (Michigan).
R. R. Bodle.
U.S. Earthquakes 1943, Washington 1945, p.7, with isoseismal chart. Epicentre as adopted.

$A = +·1175$, $B = -·7337$, $C = +·6692$; $\delta = -5$; $h = -2$;
$D = -·987$, $E = -·158$; $G = +·106$, $H = -·661$, $K = -·743$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Buffalo	1·7	65	i 1 10	?	—	—	—	—	—
Pittsburgh	1·9	158	i 0 31	− 3	i 0 53	− 6	—	—	—
Georgetown	4·4	136	—	—	i 2 12	S*	—	—	—
Philadelphia	4·9	115	e 1 39	P_g	—	—	—	—	e 2·2
Ottawa	4·9	48	1 28	P*	2 23	S*	1 37	P_g	2·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chicago		5·0	268	—	—	e 2 23	+ 5	—	—	i 2·5
Fordham		5·4	100	i 1 26	+ 2	i 2 30	+ 2	i 1 40	P*	—
Harvard		6·9	85	e 2 11	P_g	i 3 48	S_g	—	—	—
Shawinigan Falls		7·3	51	—	—	e 3 16	+ 1	e 3 58	S_g	—
Florissant	N.	8·0	248	e 1 52	− 8	i 3 17	−16	i 2 14	P*	e 3·8
St. Louis		8·0	246	e 2 12	+12	e 3 52	S*	—	—	—
Cape Girardeau	N.	8·2	237	e 2 15	+12	e 3 59	S*	—	—	—

Additional readings :—
Philadelphia e =1m.44s., i =2m.1s.
Fordham iS =2m.46s. and 2m.49s.
Florissant eN =1m.56s., 2m.2s., and 2m.25s., iN =3m.13s.
St. Louis eSE =3m.20s., eN =3m.57s.

March 9d. 9h. 48m. 54s. Epicentre 60°·3S. 27°·9W.

A = +·4401, B = −·2330, C = −·8672 ; δ = +1 ; h = −9 ;
D = −·468, E = −·884 ; G = −·766, H = +·406, K = −·498.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata	E.	32·0	310	6 29	− 1	11 30?	−12	7 30?	PP	14·7
	N.	32·0	310	6 31	+ 1	11 43	+ 1	7 30?	PP	14·9
	Z.	32·0	310	6 29	− 1	11 47	+ 5	7 42?	PP	14·7
Rio de Janeiro	E.	38·9	338	i 7 48	+19	i 13 1	−27	—	—	i 16·2
Montezuma		47·2	305	e 8 24	−12	e 15 46	+17	e 18 47	SS	24·3
La Paz		52·5	309	i 9 16a	− 1	i 16 52	+ 9	i 20 30	SS	26·8
Huancayo		59·4	303	i 10 6	0	i 18 17	+ 2	i 12 47	PP	e 25·7
Tananarive		66·6	86	e 10 55	+ 1	19 43	− 2	13 27	PP	31·2
Christchurch		75·2	194	11 49	+ 3	21 25	0	26 22	SS	36·3
Wellington		77·1	196	(11 57)	0	11 57	P	15 1	PP	40·1
Tuai		79·1	199	(12 21?)	+13	12 21?	P	—	—	—
New Plymouth		79·4	197	(12 6?)	− 3	12 6?	P	—	—	—
Arapuni		80·0	198	—	—	22 6?	−11	33 6?	Q	37·1
Auckland		81·4	197	e 16 6?	?	—	—	23 41	PPS	41·1
Perth		83·4	149	12 36	+ 6	22 48	− 3	23 51	PPS	39·9
San Juan		84·3	324	e 12 29	− 6	e 22 56	− 4	e 16 6	PP	e 34·2
Riverview		86·2	179	i 12 43	− 1	i 23 17	− 2	i 16 4	PP	i 35·1
Sydney		86·2	179	e 12 42	− 2	i 23 15	− 4	e 29 0?	SS	—
Brisbane		92·5	181	i 13 13	− 1	e 24 17	0	i 16 45	PP	i 45·2
Bermuda		97·2	329	e 13 54	+18	e 24 31	{− 3}	e 26 53	PPS	e 39·9
Almeria		99·0	20	13 53	+ 9	i 25 28	+16	25 45	sS	46·1
Granada		99·2	19	i 13 52	+ 7	i 25 21	+ 7	17 57	PP	44·7
Lisbon		99·9	14	19 4?	?	24 26	[0]	26 31?	PS	47·2
Toledo		101·7	18	e 14 5	+ 9	e 25 47	+12	24 39	SKS	—
Helwan		102·0	50	13 57	0	25 56	+19	18 0	PP	—
Tortosa	N.	103·4	22	—	—	e 24 30	[−13]	—	—	e 42·1
Columbia		103·6	317	e 17 24	?	—	—	e 27 26	PS	e 43·3
Barcelona		104·3	23	—	—	e 25 59	+ 3	—	—	e 49·0
Colombo		104·7	102	18 25	PP	27 43	PS	24 43	SKS	47·6
Kodaikanal	E.	106·4	97	18 26	PP	24 31	[−25]	27 36	PS	—
Georgetown		106·8	322	e 17 5	?	e 25 4	[+ 6]	e 18 31	PP	44·1
Philadelphia		107·2	323	e 17 43	?	—	—	e 33 49	SS	e 43·8
Ksara		107·3	51	e 14 19?	P	—	—	e 18 42	PP	—
Fordham		107·6	325	e 17 50	?	i 28 4	PS	e 18 48	PP	—
Harvard		108·5	327	i 18 52	PP	e 28 19	PS	e 21 17	PPP	e 44·1
Halifax		108·6	334	19 36?	?	25 40	{−15}	28 50	PS	—
Clermont-Ferrand		108·7	22	e 19 16?	PP	—	—	—	—	e 51·1
Pittsburgh		109·1	320	e 18 56	PP	e 25 12	[+ 4]	e 21 15	PPP	—
Milan	E.	109·7	27	e 25 2	SKS	(e 25 2)	[− 9]	i 34 17	SS	—
Neuchatel		110·6	24	e 28 1	PS	—	—	—	—	—
Vermont		110·8	327	e 19 19	PP	e 25 21	[+ 6]	e 21 47	PPP	e 45·4
Sofia		110·9	38	e 19 13	PP	e 27 6?	{+55}	e 34 45	SSP	—
Triest		110·9	29	—	—	e 25 6?	[−10]	i 34 39	SS	e 50·1
St. Louis		111·0	311	e 14 31	P	e 25 13	[− 3]	e 18 49	PKP	—
Chur		111·1	26	e 19 2	PP	e 26 11	{− 2}	—	—	e 55·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Basle		111·2	25	e 18 14?	[−22]	—	—	—	—	—
Florissant	N.	111·2	311	e 19 13	PP	e 25 12	[− 5]	e 21 30	PPP	—
Istanbul		111·2	42	e 27 6?	?	—	—	—	—	—
Zurich		111·3	25	e 19 24	PP	—	—	—	—	e 66·1
Paris		111·5	21	e 19 31	PP	—	—	—	—	57·1
Bombay	E.	111·5	89	e 14 41	?	25 9	[− 9]	19 19	PP	—
Belgrade		111·9	35	e 19 25	PP	e 27 18	?	e 35 4	SS	e 60·2
Ottawa		112·3	325	18 36	[− 2]	25 12?	[−10]	19 21	PP	58·1
Seven Falls		112·6	329	e 19 34	PP	—	—	e 29 7	PS	46·1
Chicago		112·8	315	e 19 33	PP	e 25 27	[+ 3]	e 29 6	PS	e 46·2
Stuttgart		112·8	25	e 15 34	?	e 26 39	{+14}	e 19 38	PP	e 56·8
Hyderabad	E.	113·1	95	18 29	[−10]	25 27	[+ 3]	19 29	PP	52·4
Kew		113·6	18	—	—	e 25 6	[−20]	e 28 56	PS	e 52·1
Uccle		113·8	21	e 18 48	[+ 7]	e 25 28	[+ 1]	e 19 42	PP	e 49·1
Tucson		114·1	292	e 15 4	?	—	—	e 18 42	PKP	e 52·2
De Bilt		115·2	22	i 19 43	PP	i 27 46	?	i 29 26	PS	e 49·1
Prague		115·2	28	—	—	e 25 18	[−14]	e 29 24?	PS	e 49·1
Lincoln		115·3	308	e 28 54	?	—	—	e 39 54	SSS	e 55·3
Jena		115·4	26	e 29 6	PS	—	—	—	—	e 52·1
Yalta		116·0	45	21 4	?	—	—	29 37	PS	—
Potsdam	E.	117·0	26	e 27 54	?	—	—	—	—	56·1
Edinburgh		117·5	15	18 49	[+ 1]	e 25 56	[+15]	20 5	PP	—
La Jolla	Z.	117·6	288	e 20 20	PP	—	—	—	—	—
Palomar	Z.	117·9	288	i 18 17	?	—	—	i 18 50	PKP	—
Riverside	Z.	118·6	288	e 18 30	[−19]	—	—	i 22 24	SKP	—
Aberdeen		118·9	15	e 28 10	?	—	—	i 30 0	PS	50·0
Mount Wilson	Z.	119·1	288	i 18 41	[−10]	—	—	e 20 7	PP	—
Pasadena		119·1	288	e 15 15	?	e 29 59	SP	e 18 40	PKP	e 51·1
Copenhagen		120·0	24	20 32	PP	27 22	{+ 8}	30 15	PS	—
Santa Barbara	Z.	120·1	287	e 18 54	[+ 1]	—	—	—	—	—
Salt Lake City		121·6	297	e 20 37	PP	e 26 0	[+ 5]	e 30 23	PS	e 60·6
New Delhi		121·8	88	i 20 30k	PP	25 57	[+ 1]	30 18	PS	—
Calcutta	N.	122·1	101	e 19 45	PP	25 53	[− 4]	i 37 41	SS	—
Logan		122·4	298	e 18 24	?	e 25 42	[−16]	e 20 47	PP	e 53·9
Bergen		123·1	18	e 32 21	PPS	—	—	—	—	e 56·1
Santa Clara		123·5	287	e 20 43	PP	—	—	e 32 27	PPS	—
Dehra Dun	N.	123·6	87	—	—	e 26 27?	[+25]	e 31 18	PS	e 63·5
Berkeley		124·1	287	e 20 46	PP	—	—	—	—	—
Upsala		124·9	25	e 32 6?	PPS	e 42 30	SSS	—	—	e 61·1
Bozeman		125·2	301	e 20 53	PP	e 25 41	[−26]	e 37 33	SS	e 56·5
Ukiah		125·5	288	20 22	?	e 26 17	[+10]	e 21 18	PP	e 62·3
Butte		126·1	301	e 22 23?	?	e 26 12?	[+ 3]	—	—	e 58·3
Honolulu		127·7	245	e 21 32	PP	e 28 23	{+18}	e 31 34	PS	e 61·1
Tashkent		128·1	72	e 15 57	?	31 19	PS	i 19 7	PKP	—
Saskatoon		128·5	309	e 22 42?	?	—	—	e 38 6	SS	56·1
Victoria		132·8	295	e 21 51	PP	—	—	—	—	63·1
Sverdlovsk		135·8	52	i 19 22	[0]	—	—	i 22 0	PP	—
Sitka		144·2	297	e 19 36	[− 2]	e 26 33	[−13]	e 22 47	PP	e 62·3
Kumamoto		149·1	143	19 46	[0]	—	—	—	—	—
Hukuoka		149·7	142	20 8	[+22]	30 6	{−11}	—	—	—
Koti		150·6	147	19 46	[− 2]	—	—	—	—	—
Hamada		151·5	144	20 10	[+21]	28 20	?	20 50	pP	74·8
Irkutsk		152·8	85	19 50	[− 1]	—	—	e 23 20	PP	—
College		152·9	306	e 20 10	[+18]	e 27 18	[+21]	e 44 13	SSP	e 67·8
Aomori		159·3	155	20 4	[+ 4]	—	—	—	—	—

Additional readings :—
La Plata P_cPN = 8m.54s.?, N = 13m.12s.?.
La Paz iSN = 16m.57s.
Huancayo iPPP = 13m.49s., i = 17m.54s. and 20m.58s., iSS = 22m.20s.
Tananarive PPP = 15m.0s., iPS = 19m.57s., SS = 24m.1s.
Christchurch Q = 31m.31s.
Wellington SS = 21m.41s., SSS = 25m.21s., S_cSS_cS? = 27m.2s., i = 30m.36s., Q = 32m.48s.?.
Perth PP = 14m.31s., SS = 28m.6s., SSS = 31m.46s.
San Juan ePPP = 17m.37s., e = 24m.3s., eSS = 28m.18s., eSSS = 31m.59s.

Continued on next page.

Riverview iZ =18m.51s., iN =18m.57s., iPSN =24m.26s., iSSEN =28m.50s., iZ = 29m.5s.
Brisbane iSKSN =23m.48s., iSKKSN =24m.7s., iSN =24m.25s., iPSN =25m.32s., eSSE =30m.22s., iSSN =30m.38s., iN =37m.25s.
Bermuda ePP =18m.5s.
Almeria PP =17m.56s., PPP =20m.7s., SKS =24m.24s., PS =27m.5s., SS =32m.8s., SSS =35m.54s., i =37m.48s., Q =41m.21s.
Granada SKS =24m.23s., PS =26m.31s., SS =31m.52s., SSS =36m.48s.
Lisbon E =19m.31s.?, PSE =27m.52s., PSN =27m.56s. and 28m.10s., SS?N =32m.29s., E =41m.48s.?.
Toledo iSE =25m.51s., SS =32m.47s.
Helwan iZ =18m.28s. and 19m.51s., PPPZ =20m.15s., SKSN =24m.31s., PSN = 27m.8s., SS?N =32m.41s.
Columbia eSSS? =37m.4s.
Kodaikanal SSE =33m.28s.
Georgetown e =18m.20s., PS =27m.52s., SS =33m.29s.
Philadelphia e =18m.15s., 20m.35s., and 24m.25s., ePS =27m.28s., e =31m.51s., eSSS =37m.57s., e =38m.15s.
Ksara ePS? =28m.11s.
Fordham iSS? =34m.42s.
Harvard i =19m.41s. and 24m.12s., eSSS =34m.21s.
Halifax SS =34m.6s.?.
Clermont-Ferrand e =32m.47s., eSS? =34m.44s.
Pittsburgh ePSNW =28m.25s.
Vermont ePS =28m.41s., eSS? =34m.38s., eSSS =39m.18s.
Triest i =27m.6s.
St. Louis ePPEN =19m.11s., ePPPEN =21m.31s., iPSEN =28m.41s., ePPSEN = 29m.20s.
Florissant iPSN =28m.42s.
Bombay iE =19m.34s., PSE =28m.49s., PPSE =30m.6s., SSE =34m.51s., SSPE = 35m.9s., SSS?E =38m.42s.
Belgrade e =19m.43s.
Ottawa PS =29m.1s., SS =35m.14s., SSS =39m.6s.?.
Seven Falls e =24m.42s. and 35m.16s.
Chicago e =35m.26s., eSS =35m.30s.
Stuttgart ePPPZ =21m.40s., eS =27m.11s., eSPZ =28m.49s., eZ =29m.24s., eSS = 34m.56s., eSSS =39m.14s.
Hyderabad SKKSE =26m.36s., PSE =28m.58s., SSE =35m.15s.
Kew eSKKSZN =26m.24s., eSEN =27m.25s., ePKKP?ZN =29m.26s., eSSEN = 35m.8s., e =39m.6s.?, eSSSEN =39m.42s., eQ =46m.6s.?.
Uccle iSE =27m.31s., iPSN =29m.18s., iSSE =35m.30s., iSSSE =39m.34s.
Tucson e =17m.32s., i =19m.36s., ePP =19m.50s., e =24m.27s., iPS =29m.20s., i =30m.38s., iSS =36m.10s., e =42m.12s.
De Bilt iPP =20m.5s., eSS =35m.36s., eSSS =38m.46s., e =39m.36s.
Prague e =27m.42s.?, 35m.24s.?, and 39m.0s.?.
Edinburgh PKS =22m.24s.
Palomar ePPZ =20m.2s., iSKPZ =22m.23s., eZ =29m.23s.
Riverside iPKPZ =18m.49s., ePKKPZ =28m.59s.
Aberdeen iE =36m.25s., iN =37m.20s.
Mount Wilson ePKKPZ =28m.41s.
Pasadena iPP =20m.12s., iSKPZ =22m.24s., eSKSEN =25m.53s., iPKKPZ = 29m.3s., iPPSEN =31m.23s., eSKKPZ =32m.30s., eSSNZ =37m.14s.
Copenhagen 28m.18s.
Salt Lake City eSSS =42m.13s.
New Delhi ePPE =20m.35s., iN =23m.50s., SKSN =25m.49s., SKKSN =27m.15s., SKKSE =27m.19s., PSE =30m.26s., PPSN =31m.40s., PPSE =31m.50s., iN = 32m.50s., SSEN =37m.10s., SSSEN =41m.21s.
Calcutta iSSSN =42m.1s.
Logan ePS =30m.39s., e =31m.44s., eSS =37m.33s., e =42m.23s.
Bergen eE =35m.26s.
Santa Clara eE =33m.41s.
Dehra Dun eN =51m.54s.
Berkeley eN =39m.35s.
Upsala eN =34m.6s.?, eN =44m.40s., e =53m.6s.?.
Bozeman e =33m.8s.
Ukiah e =28m.46s., ePPS? =32m.38s., eSS =38m.23s., e =43m.13s.
Butte e =33m.20s.?.
Tashkent iPP =21m.13s., SS =38m.37s.
Victoria e =22m.50s.
Sitka ePP =23m.17s., e =33m.17s., eSS =41m.40s., eSSS? =47m.58s.
Irkutsk PS =33m.37s., eSS =42m.6s.
College e =31m.17s.
Long waves were also recorded at Apia, Scoresby Sund, Stonyhurst, Bucharest, Strasbourg, and Besançon.

March 9d. 11h. 14m. 46s. Epicentre 60°·3S. 27°·9.W. (as at 9h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata	E.	32·0	310	6 32?	+ 2	11 28?	−14	7 56?	PP	16·2
	N.	32·0	310	6 34	+ 4	11 44	+ 2	7 44?	PP	15·4
	Z.	32·0	310	6 28	− 2	11 50?	+ 8	7 50?	PP	16·8
La Paz		52·5	309	i 9 19k	+ 2	i 16 41	− 2	i 16 54	PS	27·1
Huancayo		59·4	303	e 10 5	− 1	e 18 32	+17	i 18 46	PPS	e 28·8
Tananarive		66·6	86	19 41	PS	27 48	?	24 10	SS	e 31·5
Christchurch		75·2	194	—	—	e 21 28	+ 3	—	—	38·3
Riverview		86·2	179	i 12 57	+13	i 23 14	− 5	i 23 9	SKS	e 42·9
Almeria		99·0	20	—	—	e 24 55	−17	—	—	49·2
Helwan	Z.	102·0	50	e 28 8	PPS	—	—	—	—	—
Columbia		103·6	317	e 20 23	PPP	—	—	e 27 26	PS	e 47·5
Stuttgart		112·8	25	e 27 22	?	—	—	—	—	e 62·2
Chicago U.S.C.G.S.		112·8	315	—	—	e 25 16	[− 8]	e 28 33	PS	—
Tucson		114·1	292	e 18 41	[0]	—	—	e 19 40	PP	—
Palomar	Z.	117·9	288	e 18 48	[− 1]	—	—	e 20 0	PP	—
Riverside	Z.	118·6	288	18 49	[− 1]	—	—	e 20 8	PP	—
Mount Wilson	Z.	119·1	288	e 18 50	[− 1]	—	—	e 22 24	PPP	—
Pasadena	Z.	119·1	288	e 18 49	[− 2]	—	—	e 20 11	PP	—
Tinemaha	Z.	121·6	290	e 18 54	[− 2]	—	—	e 20 30	PP	—
Ukiah		125·5	288	e 20 51	PP	e 26 57	?	(e 38 28)	SSP	e 38·5
Honolulu		127·7	245	e 19 8	[0]	e 39 2	SSP	—	—	e 61·4

Additional readings :—
La Plata E =13m.26s.?.
Huancayo e =14m.46s., iSS? =22m.28s.
Christchurch eN =32m.30s.
Riverview S?E =23m.30s., iS?N =23m.33s., iPSN =24m.26s., iSSN =28m.46s., eE = 35m.15s.
Columbia e =31m.45s.
Chicago e =32m.28s.
Tucson ePS =29m.30s.
Riverside eZ =22m.22s.
Pasadena eZ =22m.24s.
Tinemaha eZ =22m.25s.
Ukiah e =28m.53s.
Long waves were also recorded at Sydney and other European stations.

March 9d. 19h. 42m. 18s. Epicentre 60°·3S. 27°·9W. (as at 11h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata	E.	32·0	310	6 24?	− 6	11 48?	+ 6	8 0?	PPP	16·0
	N.	32·0	310	6 36?	+ 6	12 18?	?	7 30?	PP	15·1
	Z.	32·0	310	7 36	+66	—	—	—	—	14·3
La Paz	Z.	52·5	309	i 9 19a	+ 2	i 17 0	+17	i 11 10	PP	26·1
Huancayo		59·4	303	e 10 8	+ 2	e 18 32	+17	e 13 27	PPP	e 24·3
Tananarive		66·6	86	10 53	− 1	19 51	+ 6	—	—	33·2
Christchurch		75·2	194	—	—	e 21 40	+15	—	—	38·5
Wellington		77·1	196	—	—	21 42?	− 4	—	—	33·7
Auckland		81·4	197	e 23 42?	PPS	—	—	—	—	39·7
San Juan		84·3	324	e 13 3	+28	e 24 28	PPS	e 17 48	PPP	e 40·0
Riverview		86·2	179	i 12 50	+ 6	i 23 18	− 1	i 24 57	PPS	e 43·8
Sydney		86·2	179	—	—	e 23 24	+ 5	e 28 54	SS	e 44·0
Almeria		99·0	20	—	—	24 37	{−10}	i 26 47	PS	45·7
Granada		99·2	19	—	—	i 24 28	[+ 5]	—	—	44·2
Helwan	Z.	102·0	50	e 18 2	PP	e 24 15	[−22]	—	—	—
Philadelphia		107·2	323	—	—	—	—	e 28 2	PS	e 35·3
Bombay	E.	111·5	89	e 19 27	PP	e 34 51	SS	i 28 59	PS	i 39·1
Ottawa		112·3	325	e 19 18?	PP	—	—	e 28 42?	PS	e 48·7
Seven Falls		112·6	329	e 35 19	SS	—	—	—	—	45·7
Stuttgart		112·8	25	e 30 0	PPS	—	—	—	—	e 56·7

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kew		113·6	18	e 35 52	SSP	—	—	—	—	e 48·7
Uccle		113·8	21	e 29 30	PS	—	—	e 35 59	SSP	e 48·7
Tucson		114·1	292	e 19 5	[+24]	—	—	—	—	e 46·8
Cheb		114·7	26	e 28 42	?	—	—	—	—	e 55·7
Riverside	Z.	118·6	288	e 20 14	PP	—	—	—	—	—
Mount Wilson	Z.	119·1	288	e 20 14	PP	—	—	—	—	—
Pasadena		119·1	288	e 20 27	PP	—	—	—	—	e 50·1
Calcutta	N.	122·1	101	e 20 35	PP	—	—	—	—	—
Tashkent		128·1	72	16 0	?	—	—	e 19 12	PKP	—
Irkutsk		152·8	85	e 19 42	[− 9]	—	—	42 42	SS	—

Additional readings :—
La Plata PPPN =7m.54s.?, Z =9m.48s.?, E =13m.54s.?.
La Paz SSZ =20m.42s.
Huancayo eP =10m.36s., e =11m.26s.
Tananarive EN =14m.24s. and 22m.36s.
Christchurch eE =32m.28s.
San Juan e =13m.21s.
Riverview eSSE =28m.53s., eE =35m.4s.
Almeria Q =40m.1s.
Helwan eZ =18m.33s.
Philadelphia e =30m.10s. and 33m.10s.
Bombay iE =21m.27s., 23m.20s., and 29m.59s., eE =30m.21s.
Tucson e =31m.12s. and 33m.23s.
Tashkent ePP =21m.21s., PPP =24m.31s.
Irkutsk PS =33m.42s.
Long waves were also recorded at Tuai, Sitka, College, and other American and European stations.

March 9d. Readings also at 2h. (near Mizusawa (3)), 3h. (Pasadena, Mount Wilson, Tinemaha, Palomar, Tucson, and near Mizusawa (2)), 6h. (Mizusawa and near Tashkent), 8h. (near Mizusawa), 9h. (Tucson), 10h. (La Paz), 14h. (near Tashkent), 15h. (Tinemaha, Haiwee, Santa Barbara, Mount Wilson, Pasadena, Riverside, Palomar, La Jolla, Tucson, La Paz, La Plata, Huancayo, and near St. Louis), 16h. (Calcutta and near Mizusawa), 19h. (Tacubaya and La Paz), 20h. (Logan, Tucson, Tinemaha, Haiwee, Palomar, Riverside, Mount Wilson, La Jolla, Pasadena, Santa Barbara, and Stuttgart), 21h. (near La Paz), 22h. (Rio de Janeiro), 23h. (La Paz and near Mizusawa).

March 10d. 8h. 15m. 24s. Epicentre 60°·3S. 27°·9W. (as on 9d.).

$A = +\cdot4401$, $B = -\cdot2330$, $C = -\cdot8672$; $\delta = +1$: $h = -9$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata	E.	32·0	310	6 42?	+12	11 41	− 1	7 30?	PP	13·7
	N.	32·0	310	6 26	− 4	11 36?	− 6	7 24?	PP	14·0
	Z.	32·0	310	6 24?	− 6	11 42?	0	—	—	15·5
Montezuma		47·2	305	—	—	—	—	e 18 56	SS	—
La Paz	Z.	52·5	309	9 8	− 9	i 16 48	+ 5	—	—	27·1
Huancayo		59·4	303	e 10 3	− 3	e 18 18	+ 3	e 13 43	PPP	e 29·5
Tananarive		66·6	86	10 56	+ 2	19 39	− 6	23 57	SS	31·7
Christchurch		75·2	194	—	—	i 21 5	−20	—	—	40·3
Wellington		77·1	196	(12 9)	+12	12 9	P	21 43	S	42·6
San Juan		84·3	324	e 12 42	+ 7	e 22 43	−17	e 23 47	PS	e 35·7
Riverview		86·2	179	e 12 45	+ 1	i 23 12	− 7	i 23 6	SKS	e 35·0
Sydney		86·2	179	e 13 48?	+64	i 23 12	− 7	e 28 48	SS	e 35·6
Brisbane	N.	92·5	181	e 13 11	− 3	i 24 10	− 7	e 16 45	PP	—
Bermuda		97·5	329	e 20 8	PPP	e 24 17	[+ 3]	—	—	e 40·2
Almeria		99·0	20	13 49	+ 5	i 24 15	[− 7]	14 3	pP	49·6
Granada		99·2	19	18 57	?	i 25 14	0	24 11	SKS	50·6
Toledo		101·7	18	17 48	PP	25 41	+ 6	26 54	PS	—
Helwan		102·0	50	18 12?	PP	25 48	+11	24 26	SKS	—
Columbia		103·6	317	19 55	?	e 24 31	[−13]	e 27 31	PS	e 48·9
Philadelphia		107·2	323	e 18 9	?	e 25 34	{−11}	e 18 24	PP	e 48·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		107·3	51	e 18 30	PP	—	—	—	—	—
Florence		108·5	28	e 9 1	?	—	—	—	—	—
Harvard		108·5	327	e 17 59	?	e 25 42	{−13}	i 19 7	PP	e 54·6
Triest		110·9	29	—	—	e 34 36	SS	—	—	—
Florissant	E.	111·2	311	i 28 39	PS	—	—	e 29 43	PPS	—
Bombay		111·5	89	18 58	[+22]	25 9	[− 9]	i 28 38	PS	52·6
Paris		111·5	21	e 19 59	?	—	—	—	—	61·6
Ottawa		112·3	325	e 19 21	PP	e 25 18?	[− 4]	e 28 36	PS	e 53·6
Seven Falls		112·6	329	—	—	e 25 0?	[−23]	—	—	46·6
Chicago		112·8	315	e 29 1	PS	—	—	e 30 22	PPS	e 51·7
Stuttgart		112·8	25	e 19 56	PP	—	—	e 28 56	SP	e 59·1
Kew		113·6	18	e 27 8	?	e 35 4	SS	e 29 10	PS	e 59·6
Uccle		113·8	21	e 27 20	?	—	—	i 29 12	PS	e 48·6
Tucson		114·1	292	e 18 28	[−13]	—	—	e 19 53	PP	e 55·2
Cheb		114·7	26	e 18 36?	[− 7]	—	—	—	—	e 59·6
De Bilt		115·2	22	—	—	e 25 36?	[+ 3]	e 35 36?	SS	e 49·6
Riverside		118·6	288	e 18 44	[− 6]	—	—	—	—	—
Pasadena		119·1	288	e 18 43	[− 8]	e 25 45	[− 2]	e 20 24	PP	e 57·9
New Delhi		121·8	88	e 20 31	PP	e 26 11	[+15]	30 18	PS	—
Calcutta	N.	122·1	101	e 20 39	PP	—	—	e 30 26	PS	—
Logan		122·4	298	—	—	e 25 41	[−17]	e 32 7	PPS	e 63·8
Santa Clara	Z.	123·5	287	e 19 43	?	—	—	—	—	—
Berkeley		124·1	287	e 20 41	PP	—	—	—	—	—
Bozeman		125·2	301	e 33 3	?	—	—	—	—	e 63·2
Ukiah		125·5	288	e 23 43	PPP	—	—	e 30 53	PS	e 67·4
Victoria		132·8	295	e 21 56	PP	—	—	—	—	e 67·6
Sitka		144·2	297	e 19 39	[+ 1]	e 26 24	[−22]	e 23 17	PP	e 62·7

Additional readings :—
La Plata P_cPN =9m.0s.?, N =10m.0s.?.
La Paz iPZ =9m.13s.
Huancayo e =24m.58s.
Tananarive E =17m.39s.
Wellington PPS =18m.1s., PPP =24m.31s., SSS =27m.36s.?.
San Juan e =16m.27s., 24m.25s., and 29m.52s.
Riverview ePSN =24m.13s., iSSE =28m.51s., iSSN =28m.55s.
Brisbane iSKSN =23m.43s., ePSN =25m.14s., eSSN =30m.29s.
Almeria PP =18m.0s., PPP =20m.11s., SKS =24m.11s., PS =26m.56s., PPS =27m.34s., SS =32m.21s., SSS =36m.5s., Q =41·6m.
Granada SS =31m.56s.
Helwan eZ =18m.51s. and 23m.27s., PSN =27m.16s., PPSN =28m.6s.
Philadelphia eSKS? =24m.22s., ePS =27m.28s., e =31m.50s., eSSS? =37m.7s.
Harvard i =19m.55s., e =24m.36s. and 27m.51s.
Florissant eE =34m.25s.
Bombay PPSE =29m.10s., SSE =34m.21s., SSSE =38m.35s.
Stuttgart eSS =34m.53s., eSSS =38m.48s.
Kew ePPPN =31m.36s., ePPS?E =39m.15s., eSSE =45m.1s., eSSSE =48m.36s.?, eE =53m.6s.?, eQEN =54m.36s.?.
Uccle eSSE =35m.19s., eSSSE =39m.19s.
Tucson ePS =29m.14s., e =33m.53s.
Pasadena eSKPZ =22m.17s., eSSEN =37m.24s.?.
New Delhi PPPN =23m.21s., SKKSN =27m.20s., SSN =41m.20s.
Logan e =28m.37s., eSSS =42m.24s.
Bozeman e =40m.59s.
Ukiah eSS =38m.46s., e =43m.19s.
Sitka e =33m.55s., eSS =42m.14s.
Long waves were also recorded at Auckland, Strasbourg, Lisbon, Upsala, Bucharest, Bergen, Potsdam, and Prague.

March 10d. Readings also at 0h. (Tortosa and La Paz), 3h. (Riverview, Stuttgart, Tananarive, Bombay, Huancayo, and La Paz), 4h. (Uccle, Kew, and De Bilt), 9h. (Tananarive), 10h. (Neuchatel and Basle), 11h. (Rio de Janeiro), 18h. (near Lick, Branner, Berkeley, San Francisco, and Fresno), 20h. (Apia), 22h. and 23h. (Tacubaya).

March 11d. 1h. 13m. 15s. Epicentre 39°·2N. 123°·4W.

$A = -·4277$, $B = -·6487$, $C = +·6295$; $\delta = +1$; $h = -1$;
$D = -·835$, $E = +·550$; $G = -·347$, $H = -·526$, $K = -·777$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ukiah		0·1	—	i 0 8	0	i 0 15	+ 2	—	—	i 0·5
Ferndale		1·5	334	(i 0 28)	0	(i 0 56)	+ 7	—	—	—
Berkeley		1·6	146	i 0 29	− 1	i 0 50	− 1	e 0 55	S_g	—
San Francisco		1·6	153	i 0 34	+ 4	i 0 54	+ 3	—	—	—
Branner	E.	2·0	152	e 0 36	+ 1	i 1 5	+ 3	—	—	—
Santa Clara		2·2	148	e 0 48	P_g	i 1 4	− 2	—	—	—
Lick		2·3	144	e 0 39	− 1	—	—	—	—	—
Fresno	N.	3·8	130	e 0 59	− 2	i 1 43	− 4	i 1 7	P*	—
Tinemaha		4·5	116	i 1 10	− 1	i 2 20	P*	—	—	—
Haiwee		5·3	124	i 1 23	+ 1	i 2 34	+ 9	—	—	—
Santa Barbara	z.	5·6	147	i 1 51	P_g	—	—	—	—	—
Mount Wilson		6·5	138	i 1 42	+ 3	i 3 3	+ 8	—	—	—
Pasadena		6·6	139	i 1 38	− 3	e 3 38	S_g	—	—	—
Riverside	z.	7·1	135	e 1 45	− 3	—	—	—	—	—
Palomar	z.	7·9	136	e 1 54	− 5	—	—	—	—	—
Salt Lake City		9·0	76	—	—	e 4 0	+ 2	—	—	e 4·6
Tucson		12·4	120	e 3 2	+ 1	—	—	—	—	e 6·4

Additional readings and note :—
Ferndale readings have been increased by 1m.
Berkeley iEN = 0m.34s.
Branner iS*E = 1m.9s., iE = 1m.25s.
Long waves were also recorded at Bozeman and Butte.

March 11d. 9h. 34m. 5s. Epicentre 21°·5S. 170°·2E.

$A = -·9177$, $B = +·1585$, $C = -·3644$; $\delta = +8$; $h = +4$;
$D = +·170$, $E = +·985$; $G = +·359$, $H = -·062$, $K = -·931$.

Pasadena suggests deep focus and quotes Wellington. Epicentre 22°S. 171°E., depth of focus 80km.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		15·8	167	3 47	+ 2	6 45	+ 3	—	—	7·4
Brisbane	N.	16·7	246	i 3 59	+ 2	i 7 7	+ 4	i 7 22	SS	i 8·4
Arapuni		17·2	167	2 55?	?	7 1?	−13	—	—	—
New Plymouth		17·8	171	i 5 27	?	7 45	+17	—	—	—
Tuai		18·2	165	4 18	+ 2	7 40	+ 3	—	—	—
Apia		18·8	70	e 4 24	+ 1	i 7 13	−37	—	—	—
Wellington		20·1	172	4 36	− 2	8 15	− 4	5 20	PP	10·3
Riverview		20·8	230	i 4 46	+ 1	i 8 40	+ 7	i 5 2	pP	e 10·1
Sydney		20·8	230	i 4 43	− 2	i 8 37	+ 4	—	—	e 10·9
Kaimata		21·0	178	4 47	0	9 42	+65	—	—	—
Christchurch		22·1	177	4 59	0	8 53	+ 5	9 25	Q	10·7
Perth		49·2	246	—	—	i 15 55	− 3	i 18 40	SS	i 23·1
Honolulu		52·8	38	e 11 18	PP	i 17 10	+23	e 20 21	SS	e 22·2
Osaka		64·8	328	10 41	− 2	—	—	—	—	—
Kobe		65·0	328	11 56	+72	19 30	+ 4	—	—	—
Kagosima		65·0	323	e 10 45	+ 1	—	—	—	—	—
Nagano		65·0	332	e 10 49	+ 5	—	—	—	—	—
Hukuoka		66·6	325	10 53	− 1	19 43	− 2	—	—	—
Berkeley		86·6	48	e 13 0	+14	e 23 19?	− 4	—	—	e 36·1
Santa Clara		86·6	48	e 13 4	+18	e 23 48	+25	e 24 48	PS	e 40·5
Santa Barbara	z.	86·7	52	e 13 1	+14	—	—	—	—	—
Pasadena		87·7	52	e 12 52	0	e 23 25?	[+ 6]	i 16 31	PP	e 36·1
Mount Wilson	z.	87·8	52	e 12 52	0	—	—	—	—	—
Riverside	z.	88·2	52	i 12 54	0	—	—	—	—	—
Palomar	z.	88·3	54	e 12 54	− 1	—	—	e 16 40	PP	—

Continued on next page,

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha	Z.	89·0	50	i 12 58	0	—	—	—	—	—
Tucson		92·4	56	i 13 14	0	e 24 12	− 4	i 17 10	PP	e 42·7
Salt Lake City		95·1	48	—	—	e 24 23	[+21]	e 24 37	S	e 40·4
Bozeman		97·6	44	—	—	e 26 25	PS	—	—	e 41·4
Hyderabad	E.	97·8	286	e 17 44	PP	24 14	[− 2]	—	—	—
New Delhi	N.	102·5	296	e 18 14	PP	i 25 42	+ 1	—	—	—
Bombay		103·4	285	e 18 19	PP	25 45	− 4	27 28	PS	43·9
Huancayo		107·6	111	e 20 16	PPP	e 28 28	PS	e 29 8	PPS	e 44·8
St. Louis	E.	110·4	55	—	—	e 25 23	[+ 9]	e 35 1	SS	—
La Paz	Z.	111·5	119	i 19 36	PP	29 14	PS	21 56	PPP	51·9
Tashkent		111·9	307	e 19 18	PP	e 28 57?	PS	—	—	—
Ottawa		121·8	48	e 18 55	[− 1]	—	—	e 41 25?	SSS	51·9
Philadelphia		122·1	55	—	—	e 29 47	PS	e 40 17	SSS	e 50·8
Seven Falls		125·0	46	—	—	—	—	e 41 25?	SSS	58·9
Ksara		138·0	296	e 20 26?	[+59]	—	—	e 23 49	PKS	—
Helwan		142·2	291	e 19 28	[− 6]	—	—	e 41 13	SS	—
Sofia		145·2	315	e 19 55?	[+15]	—	—	—	—	—
Belgrade		145·9	320	e 19 42	[+ 1]	—	—	—	—	—
Jena	Z.	146·2	335	e 19 42	[+ 1]	—	—	—	—	—
Uccle		148·7	344	e 19 52	[+ 7]	—	—	—	—	e 63·9
Stuttgart		148·9	336	i 19 50	[+ 4]	—	—	—	—	e 78·9
Zurich		150·2	335	e 19 51	[+ 3]	—	—	—	—	—
Basle		150·5	336	e 19 54	[+ 6]	—	—	—	—	—
Clermont-Ferrand		153·6	340	e 20 17	PKP_2	—	—	—	—	—
Toledo		161·0	347	i 21 8	PKP_2	—	—	24 59	PP	86·9
Almeria		163·4	339	e 21 18	PKP_2	—	—	—	—	87·9
Granada		163·5	343	21 16	PKP_2	32 8	{+37}	24 57	PP	87·3

Additional readings :—
Auckland sP =4m.17s., i =5m.2s.
Wellington i =4m.42s., SP =5m.4s., P_cP =8m.25s., sS =8m.49s., i =9m.14s., Q = 9m.45s.
Riverview iPPN =5m.19s., iE =5m.54s., iZ =5m.58s., iN =8m.58s., sSZ =9m.9s.
Perth i =20m.10s.
Pasadena iZ =13m.13s.
Mount Wilson iZ =13m.17s.
Riverside iZ =13m.17s.
Palomar eZ =13m.12s., iZ =13m.20s.
Tinemaha iZ =13m.18s.
Tucson ePPP =19m.8s., e =20m.24s., ePS? =25m.48s.
New Delhi SKSN =24m.32s., iN =26m.11s.
Bombay iEN =20m.22s., PPPE =20m.32s., SKSN =24m.38s., SKKSE =25m.5s., SN =25m.49s., PSN =27m.31s., PPSE =28m.15s., PPSN =28m.18s., SSE = 32m.45s.
St. Louis eE =25m.29s.
Helwan iZ =19m.46s. and 20m.1s., eZ =20m.43s. and 23m.51s.
Belgrade e =19m.59s., 20m.11s., and 20m.23s.
Jena ePEN =19m.46s., iZ =20m.4s., iE =20m.7s.?.
Stuttgart iZ =20m.7s., and 21m.8s.
Basle e =21m.18s.
Granada pPP =25m.13s., PPS =38m.34s., SS =44m.40s.
Long waves were also recorded at College and other American and European stations.

March 11d. Readings also at 3h. (Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, and Stuttgart), 5h. (Huancayo, La Paz, and Chur), 6h. (near Huancayo and La Paz), 7h. (Tacubaya, Mount Wilson, Pasadena, Palomar, Riverside, Tucson, La Plata, and near La Paz), 8h. (Mount Wilson, Pasadena, Palomar, Tucson, and Riverside), 9h. (Tacubaya), 11h. (near Mizusawa), 16h. (near Andijan), 22h. (near La Paz), 23h. (near Mizusawa).

March 12d. 15h. 24m. 40s. Epicentre 35°·6N. 134°·2E. (as on 4d.).

Intensity V at Miyadu ; IV at Toyooka, Tokusima, Matsue, Kobe, Kyoto, Hukui, Hikone, Yonago, Sakai ; II-III at Sumoto, Kashiwara, Hamada, Uwazima.
Epicentre 35°·6N. 134°·2E. Radius of macroseismic area 200-300km. Depth 20km.
Seismological Bulletin of the Central Meteorological Observatory, Japan for the Year 1943, Tokyo 1950, pp. 10-11, macroseismic chart p. 10.

$A = -\cdot5682$, $B = +\cdot5843$, $C = +\cdot5795$; $\delta = +8$; $h = 0$;
$D = +\cdot717$, $E = +\cdot697$; $G = -\cdot404$, $H = +\cdot415$, $K = -\cdot815$.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Toyooka	0·5	98	0 11k	− 3	0 18	− 5
Kobe	1·2	139	0 23k	− 1	0 38	− 3
Kyoto	1·4	115	0 25k	− 2	0 42	− 4
Osaka	1·4	131	0 27k	0	0 47	+ 1
Sumoto	1·4	156	0 24k	− 3	0 41	− 5
Wakayama	1·6	150	0 28	− 2	0 47	− 4
Hikone	1·7	101	0 31k	0	0 55	+ 1
Hamada	1·9	248	0 42k	+ 8	1 5	+ 6
Hirosima	1·9	230	0 42a	+ 8	1 7	+ 8
Kameyama	2·0	112	0 39	+ 4	1 4	+ 2
Gihu	2·1	95	0 37a	0	1 6	+ 2
Matuyama	2·1	214	0 34a	− 3	0 59	− 5
Nagoya	2·3	101	0 41	+ 1	1 17	+ 8
Owase	2·3	133	0 41k	+ 1	1 10	+ 1
Muroto	2·4	180	0 38a	− 3	1 7	− 5
Siomisaki	2·5	149	0 43a	0	1 14	0
Toyama	2·7	66	0 45	0	1 24	+ 5
Uwazima	2·7	210	0 48	+ 3	1 44	S_g
Hamamatu	3·0	107	1 0	P_g	1 46	S_g
Simidu	3·0	200	0 43	− 7	1 17	−10
Nagano	3·4	71	0 57	+ 2	1 39	+ 2
Izuka	3·5	238	0 56	− 1	1 47	+ 7
Shizuoka	3·5	101	0 58	+ 1	1 51	S*
Kohu	3·5	88	1 1k	+ 4	1 56	S_g
Hukuoka	3·7	238	1 1a	+ 1	1 57	S*
Hunatu	3·7	90	1 5	+ 5	2 0	S_g
Misima	3·9	96	1 3	+ 1	2 2	S*
Kumamoto	4·0	227	1 5a	+ 1	2 6	S_g
Aikawa	4·1	52	1 5	0	2 7	S*
Unzendake	4·3	230	2 10	S*	—	—
Tokyo Cen. Met. Obs.	4·5	87	1 28	P_g	2 24	S_g
Utunomiya	4·7	77	1 0	−14	2 54	S_g
Tukubasan	4·8	81	1 16	+ 1	2 20	+ 8
Kakioka	4·9	81	1 18	+ 1	—	—
Kagosima	5·0	218	2 22k	S	(2 22)	+ 4
Mito	5·1	79	1 41	P_g	2 42	S_g
Hatidyozima	5·3	116	2 19	S	(2 19)	− 6
Tomie	5·4	238	1 44	P_g	2 55	S_g
Tyosi	5·4	87	1 40	P*	2 55	S_g
Hukusima	5·5	65	1 29	+ 4	—	—
Sendai	6·0	62	1 32	0	2 41	− 2
Keizyo	6·1	291	2 31	S	(2 31)	−14
Akita	6·2	47	1 38	+ 3	2 25	−23
Zinsen	6·4	289	2 58	S	3 57	S_g
Mizusawa	6·5	55	e 0 36	?	2 2	P*
Aomori	7·3	43	1 53	+ 3	—	—
Sapporo	9·3	34	2 21	+ 4	—	—

March 12d. 22h. 32m. 14s. Epicentre 36°·3N. 141°·5E. (as on 1942 July 11d.).

Scale V at Tyosi; IV at Onahama, Kakioka, Mito, Shirakawa, and Hukusima; II-III at Utunomiya. Epicentre 36°·0N. 141°·8E., depth 20km. Radius of macroseismic area 200-300km.
Seismological Bulletin of the Central Meteorological Observatory Japan for 1943, Tokyo 1950, pp. 11, 12, with macroseismic chart.

$A = -\cdot6322$, $B = +\cdot5029$, $C = +\cdot5894$; $\delta = -2$; $h = 0$;
$D = +\cdot623$, $E = +\cdot783$; $G = -\cdot461$, $H = +\cdot367$, $K = -\cdot808$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Onahama		0·8	323	0 17k	− 1	0 33	+ 2	—	—	—
Tyosi		0·8	222	0 14	− 4	0 28	− 3	—	—	—
Mito		0·9	276	0 20	0	0 34	0	—	—	—
Kakioka		1·1	266	0 18	− 3	—	—	—	—	—
Tukubasan		1·1	266	0 21	− 1	0 39	0	—	—	—
Utunomiya		1·4	281	0 6	−21	0 35	−11	—	—	—
Tokyo Cen. Met. Ob.		1·5	247	0 32	+ 4	0 53	+ 4	—	—	—
Hukusima		1·7	330	0 29	− 2	0 54	0	—	—	—
Sendai		2·0	346	0 33	− 2	1 0	− 2	—	—	—
Osima		2·3	228	0 37	− 3	1 13	+ 4	—	—	—
Hunatu		2·4	250	0 41	0	1 19	+ 7	—	—	—
Misima		2·4	240	0 45	+ 4	1 27	Ss	—	—	—
Kohu		2·5	254	0 43	0	1 30	S_g	—	—	—
Nagano		2·7	278	0 44	− 1	1 14	− 5	—	—	—
Mizusawa	N.	2·8	354	1 13	+26	1 44	S_g	—	—	—
Shizuoka		2·8	242	0 46	− 1	1 24	+ 2	—	—	—
Aikawa		3·1	304	0 56	P*	1 41	S_g	—	—	—
Hamamatu		3·5	243	1 22	P_g	2 21	S_g	—	—	—
Hatidyozima		3·5	204	0 55	− 2	1 33	− 7	—	—	—
Toyama		3·5	279	0 59	+ 2	1 48	+ 8	—	—	—
Akita		3·6	343	1 0	+ 2	2 9	S_g	—	—	—
Nagoya		3·8	254	2 28	?	—	—	—	—	—
Hatinohe		4·2	0	1 10	+ 3	1 52	− 5	—	—	—
Hikone		4·4	258	1 18	+ 8	2 15	e S*	—	—	—
Kameyama		4·4	251	1 55	S	(1 55)	− 7	—	—	—
Aomori		4·6	354	1 16	+ 4	2 16	+ 9	—	—	—
Kyoto		4·9	256	1 20	+ 3	2 25	+10	—	—	—
Osaka		5·2	251	1 16	− 5	2 28	+ 6	—	—	—
Kobe		5·4	254	1 26	+ 2	—	—	—	—	—
Siomisaki		5·5	241	2 9	+44	—	—	—	—	—
Toyooka		5·5	265	1 37	+12	3 2	S_g	—	—	—
Sumoto		5·7	252	1 38	+10	3 5	S_g	—	—	—
Mori		5·9	351	1 39	+ 8	2 46	+ 6	—	—	—
Matuyama		7·6	253	2 18	P*	3 54	S*	—	—	—
Nemuro		7·6	21	2 44	P_g	—	—	—	—	—
Hamada		7·8	262	3 52	S*	—	—	—	—	—
Uwazima		8·0	250	1 7	−53	2 2	P	—	—	—
Hukuoka		9·5	257	3 21	+61	—	—	—	—	—
Unzendake		9·9	252	0 36	?	1 18	?	—	—	—
Dairen		16·0	286	2 48	−60	—	—	—	—	—
Calcutta	N.	47·8	268	e 10 47	PP	—	—	—	—	e 26·7
New Delhi		53·9	281	i 9 28	+ 1	—	—	i 12 39	PPP	—
Tashkent		55·0	298	9 30	− 5	e 17 13	− 4	—	—	—
Sverdlovsk		55·7	319	9 1	−39	—	—	—	—	—
Bombay		62·1	273	e 10 18	− 7	18 59	+10	e 23 0	SS	—
Riverview		70·3	172	—	—	e 20 26	− 3	—	—	—
Tinemaha	z.	76·2	55	e 11 56	+ 4	—	—	—	—	—
Haiwee	z.	76·9	54	e 12 0	+ 4	—	—	—	—	—
Pasadena		77·9	56	i 12 4	+ 3	e 31 46?	Q	—	—	—
Mount Wilson	z.	78·0	56	e 12 4	+ 2	—	—	—	—	—
Riverside	z.	78·6	56	e 12 7	+ 2	—	—	—	—	—
Cheb		83·0	330	—	—	e 28 46?	SS	—	—	e 44·8
Tucson		84·0	54	e 12 27	− 6	—	—	—	—	e 37·5
Stuttgart		85·3	331	e 12 34	− 6	—	—	—	—	e 42·8

For Notes see next page.

NOTES TO MARCH 12d. 22h. 32m. 14s.

Additional readings :—
Mori S = 2m.23s.
Pasadeana iZ = 12m.44s.
Bombay SEN = 14m.28s., PSE = 14m.51s., iE = 19m.23s. and 20m.6s., eE = 26m.26s. (Phases wrongly identified).
Long waves were also recorded at Wellington, Harvard, and other European stations.

March 12d. Readings also at 1h. (Zurich, Triest, Florence, Stuttgart, and near Sofia), 8h. (near Mizusawa), 10h. (near Strasbourg), 14h. (near Mizusawa), 15h. (Tacubaya), 17h. (Tacubaya), 18h. (Wellington, Sydney, Riverview, Christchurch, Brisbane, Clermont-Ferrand, near Stuttgart, Zurich, and Basle, and near Tchimkent, Tashkent, and Stalinabad), 22h. (Tucson, Riverside, Mount Wilson, Pasadena, Haiwee, Tinemaha, Stuttgart, Bombay, Tashkent, Tchimkent, and near Mizusawa (3)), 23h. (near Mizusawa (2)).

March 13d. Readings at 0h., 1h. (4), and 2h. (near Mizusawa), 3h. (near Lick, Branner, Berkeley, and Fresno, and near Mizusawa), 5h. (near Milan, Basle, Stuttgart, Jena, Zurich, and Triest, and near Mizusawa), 6h. (Palomar, Mount Wilson, Tucson, and near Mizusawa (4)), 8h. (near Mizusawa (3)), 9h. (Palomar, Mount Wilson, Tucson, and near Mizusawa), 10h. (near Mizusawa), 12h. (Stuttgart, Tashkent, Vladivostok, Pasadena, Riverside, Tucson, and near Mizusawa), 13h. (Granada, and De Bilt), 14h. (Christchurch, New Plymouth, Auckland, Arapuni, and Wellington), 15h. (Riverview, Tucson, Riverside, Palomar, and Mount Wilson), 16h. (Triest, Belgrade, Bucharest, and near Sofia), 20h. (near Mizusawa), 21h. (near Tortosa and Clermont-Ferrand), 22h. (St. Louis).

March 14d. 11h. 59m. 20s. Epicentre 36°·5N. 141°·6E. (as on 1942 Sept. 21d.).

Scale V at Mito and Shirakawa ; IV at Onahama, Kakioka, and Hukusima ; II-III at Kumagaya, Sendai, Kohu, and Morioka. Shallow.
Radius of macroseismic area 300km.
Seismological Bulletin of Central Meteorological Observatory Japan for 1943, Tokyo, 1950, pp. 12 and 13 with macroseismic chart.

$A = -\cdot 6315$, $B = +\cdot 5005$, $C = +\cdot 5922$; $\delta = -1$; $h = 0$;
$D = +\cdot 621$, $E = +\cdot 784$; $G = -\cdot 464$, $H = +\cdot 368$, $K = -\cdot 806$.

		△	Az.	P.	O−C.	S.	O−C.		Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.		m.
Onahama		0·7	308	0 18	+ 1	0 33	+ 5	—	—		—
Mito		0·9	263	0 21	+ 1	0 35	+ 1	—	—		—
Tyosi		1·0	218	0 5	?	0 7	?	—	—		—
Kakioka		1·2	257	0 24	0	0 39	− 2	—	—		—
Tukubasan		1·2	257	0 23	− 1	0 42	+ 1	—	—		—
Utunomiya		1·4	272	0 24	− 3	0 46	0	—	—		—
Hukusima		1·5	324	0 36	+ 8	0 55	+ 6	—	—		—
Tokyo Cen. Met. Obs.		1·7	242	0 32	+ 1	0 52	− 2	—	—		—
Sendai		1·8	343	0 34a	+ 2	1 2	+ 6	—	—		—
Kohu		2·4	251	0 50	+ 9	—	—	—	—		—
Hunatu		2·5	246	0 45	+ 2	1 20	+ 6	—	—		—
Misima		2·6	237	0 41	− 3	1 21	+ 4	—	—		—
Mizusawa	N.	2·6	352	0 48	+ 4	1 21	+ 4	—	—		—
Osima		2·6	266	0 40	− 4	1 6	−11	—	—		—
Nagano		2·7	273	0 48a	+ 3	1 15	− 4	—	—		—
Shizuoka		3·0	239	0 48	− 2	1 21	− 6	—	—		—
Aikawa		3·1	300	0 52	+ 1	1 37	S*	—	—		—
Miyako		3·1	6	0 49	− 2	1 24	− 5	—	—		—
Omaesaki		3·3	236	0 52	− 1	1 34	− 1	—	—		—
Akita		3·4	340	1 0	+ 5	1 52	S_g	—	—		—
Hamamatu		3·6	242	0 57	− 1	1 59	S_g	—	—		—
Toyama		3·6	275	1 0a	+ 2	2 1	S_g	—	—		—
Hatidyozima		3·7	205	0 56	− 4	1 34	−11	—	—		—
Hatinohe		4·0	359	1 0	− 4	1 58	+ 6	—	—		—
Nagoya		4·0	252	1 6	+ 2	1 57	+ 5	—	—		—
Gihu		4·1	256	1 6a	+ 1	1 50	− 5	2 2	S*		—
Aomori		4·4	352	1 14	+ 4	2 22	S_g	—	—		—
Hikone		4·5	256	1 12	+ 1	2 1	− 4	—	—		—
Kameyama		4·5	250	2 32	?	4 28	?	—	—		—
Kyoto		5·0	254	1 12	− 6	2 40	S_g	—	—		—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Owase		5·0	244	1 23	+ 5	—	—	—	—	—
Osaka		5·3	252	1 23	+ 1	2 53	S_g	—	—	—
Kobe		5·5	253	1 24a	− 1	2 28	− 2	—	—	—
Toyooka		5·6	262	1 30	+ 3	2 46	S*	—	—	—
Mori		5·7	352	1 29	+ 1	2 54	S*	—	—	—
Wakayama		5·7	248	1 30	+ 2	1 52	P_g	—	—	—
Siomisaki		5·7	242	1 33	+ 5	3 10	S_g	—	—	—
Sumoto		5·9	250	1 30	− 1	3 6	S*	—	—	—
Sapporo		6·6	358	1 40	− 1	2 53	− 5	—	—	—
Muroto		6·9	244	1 43	− 2	3 27	S*	—	—	—
Matuyama		7·7	253	1 53	− 3	4 17	?	—	—	—
Hirosima		7·8	257	5 29	?	7 32	?	—	—	—
Hamada		7·9	261	1 53	− 6	4 3	S*	—	—	—
Simidu		8·0	246	2 39	P_g	—	—	—	—	—
Uwazima		8·1	249	1 4	?	2 0	?	—	—	—
Hukuoka		9·6	256	2 23	+ 2	4 49	S*	—	—	—
Miyazaki		9·6	245	2 22	+ 1	4 13	+ 1	—	—	—
Kumamoto		9·7	251	5 11	?	—	—	—	—	—
Unzendake		10·1	251	2 46	+18	4 19	− 6	—	—	—
Kagosima		10·4	245	2 32	− 2	5 38	S_g	—	—	—
Keizyo		11·8	280	2 55	+ 2	—	—	—	—	—
Zinsen		12·0	279	2 56	+ 1	—	—	—	—	—
Nake		13·0	236	3 3	− 6	—	—	—	—	—
Dairen		16·0	284	2 18	?	—	—	—	—	—
Calcutta	N.	47·1	268	e 8 43	+ 8	i 15 37	+ 9	—	—	—
College		49·5	32	—	—	e 16 0	− 2	—	—	e 24·2
Andijan		53·0	297	e 9 29	+ 8	16 58	+ 8	—	—	—
New Delhi	N.	54·0	281	e 12 18	PP	—	—	—	—	—
Tashkent		55·0	300	i 9 33	− 2	—	—	—	—	—
Sitka		56·7	40	—	—	e 17 25	−15	—	—	e 23·2
Bombay	E.	62·2	273	i 10 24	− 2	i 19 9	+18	19 28	PS	—
Colombo		63·3	258	10 31	− 2	19 21	+17	—	—	—
Riverview		70·5	171	—	—	i 20 24	− 8	i 21 23	PS	e 38·5
Bozeman		75·3	44	—	—	e 21 25	− 1	—	—	e 36·9
Tinemaha	Z.	76·0	54	i 11 51	0	—	—	—	—	—
Santa Barbara	Z.	76·5	57	i 11 53	− 1	—	—	—	—	—
Haiwee		76·7	54	i 11 55	0	—	—	—	—	—
Pasadena		77·7	57	i 11 59	− 1	e 21 46	− 6	—	—	e 31·3
Mount Wilson	Z.	77·8	57	e 11 58	− 3	—	—	—	—	—
Riverside	Z.	78·4	57	e 12 2	− 2	—	—	—	—	—
Copenhagen		78·5	334	e 12 2	− 2	—	—	—	—	41·7
La Jolla	Z.	79·1	58	i 12 13	+ 5	—	—	—	—	—
Palomar	Z.	79·1	57	e 12 7	− 1	—	—	—	—	—
Jena	N.	82·5	331	i 12 26	0	—	—	—	—	e 44·7
Cheb		82·8	331	—	—	e 29 40?	SS	—	—	e 45·7
Tucson		83·8	54	e 12 30	− 2	—	—	—	—	e 40·1
Stuttgart		85·1	331	e 12 36	− 3	e 23 16?	+ 8	—	—	e 44·7
Uccle		85·3	335	e 12 38	− 2	—	—	—	—	e 44·7
Zurich		86·3	331	e 12 44	− 1	—	—	—	—	—
Basle		86·8	331	e 12 44	− 3	—	—	—	—	—
Helwan		87·1	305	e 12 49	0	e 23 45	+17	e 16 22	PP	—
Clermont-Ferrand		90·0	333	e 13 1	− 2	—	—	—	—	41·7
Ottawa		91·8	25	i 13 41?	− 7	—	—	—	—	45·7
Toledo		97·7	334	e 13 36	− 2	—	—	18 46	PP	56·7
Almeria		99·8	331	18 42	PP	e 20 10	PPP	—	—	56·7
Granada		99·9	332	e 18 45	PP	—	—	—	—	52·7
La Paz		147·0	61	19 47	[+ 4]	—	—	—	—	—

Additional readings :—
Bombay iE = 10m.35s., P_cPE = 10m.56s., PPE = 11m.53s., S_cSE = 20m.20s., SSE = 23m.13s.
Riverview eE = 32m.37s.
Stuttgart ePZ = 12m.50s.
Helwan eZ = 16m.10s., SKSE = 23m.13s.
Long waves were also recorded at Harvard, Philadelphia, Bermuda, Wellington, Christchurch, Huancayo, and other European stations.

March 14d. 12h. 42m. 50s. Epicentre 36°·3N. 141°·5E. (as on 12d.).

Scale V at Mito, Onahama, Kakioka, Shirakawa ; IV at Katuura, Hukusima, and Titibu ; II-III at Tokyo, Yokohama, Sendai, and Morioka. Shallow.
Macroseismic radius 300km. Epicentre 36°·1N. 141°·6E.
Seismological Bulletin of Central Meteorological Observatory, Japan, for 1943, Tokyo, 1950, pp. 14, 15, with macroseismic chart.

$A = -\cdot6322$, $B = +\cdot5029$, $C = +\cdot5894$; $\delta = -2$; $h = 0$;
$D = +\cdot623$, $E = +\cdot783$; $G = -\cdot461$, $H = +\cdot367$, $K = -\cdot808$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Onahama	0·8	323	0 18	0	0 29	− 2	—	—	—
Tyosi	0·8	222	0 46	+28	—	—	—	—	—
Mito	0·9	276	0 17k	− 3	0 32	− 2	—	—	—
Kakioka	1·1	266	0 20k	− 2	0 38	− 1	—	—	—
Tukubasan	1·1	266	0 22	0	0 40	+ 1	—	—	—
Utunomiya	1·4	281	0 26a	− 1	0 47	+ 1	—	—	—
Tokyo Cen. Met. Obs.	1·5	247	0 30	+ 2	0 50	+ 1	—	—	—
Hukusima	1·7	330	0 34	+ 3	0 56	+ 2	—	—	—
Yokohama	1·7	240	0 33a	+ 2	1 0	+ 6	—	—	—
Sendai	2·0	346	0 33a	− 2	1 4	+ 2	—	—	—
Osima	2·3	228	0 38a	− 2	—	—	—	—	—
Hunatu	2·4	250	0 43	+ 2	1 20	S_g	—	—	—
Misima	2·4	240	0 40	− 1	1 20	S_g	—	—	—
Kohu	2·5	254	0 44a	+ 1	1 29	S_g	—	—	—
Nagano	2·7	278	0 47a	+ 2	1 15	− 4	—	—	—
Mizusawa	2·8	354	0 45	− 2	1 22	0	—	—	—
Shizuoka	2·8	242	0 47	0	1 20	− 2	—	—	—
Aikawa	3·1	304	0 49	− 2	1 43	S_g	—	—	—
Omaesaki	3·2	238	0 55	+ 3	1 33	+ 1	—	—	—
Miyako	3·4	6	0 54	− 1	1 27	−10	—	—	—
Hamamatu	3·5	243	0 59	+ 2	1 58	S_g	—	—	—
Hatidyozima	3·5	204	0 58	+ 1	1 30	−10	—	—	—
Toyama	3·5	279	0 59	+ 2	1 32	− 8	—	—	—
Akita	3·6	343	1 4	+ 6	1 56	S_g	—	—	—
Nagoya	3·8	254	1 8	P•	—	—	—	—	—
Gihu	3·9	258	1 1	− 1	2 2	S•	—	—	—
Hatinohe	4·2	0	0 58	− 9	1 51	− 6	—	—	—
Hikone	4·4	258	1 9	− 1	1 51	−11	—	—	—
Kameyama	4·4	251	1 10	0	2 20	S_g	—	—	—
Aomori	4·6	354	1 14	+ 2	2 18	S•	—	—	—
Kyoto	4·9	256	1 24	+ 7	2 23	+ 8	—	—	—
Owase	4·9	245	1 22	+ 5	2 39	S_g	—	—	—
Osaka	5·2	251	1 24	+ 3	2 47	S_g	—	—	—
Kobe	5·4	254	1 22a	− 2	2 31	+ 3	—	—	—
Siomisaki	5·5	241	1 26	+ 1	3 3	S_g	—	—	—
Toyooka	5·5	265	1 32	+ 7	3 5	S_g	—	—	—
Wakayama	5·6	250	1 26	− 2	2 56	S•	—	—	—
Sumoto	5·7	252	1 30	+ 2	3 0	S•	—	—	—
Mori	5·9	351	1 23	− 8	2 48	+ 8	—	—	—
Muroto	6·7	245	1 39	− 3	3 12	+12	—	—	—
Sapporo	6·8	359	1 53	+ 9	3 12	+ 9	—	—	—
Matuyama	7·6	253	1 52	− 3	3 42	S•	—	—	—
Hamada	7·8	262	1 59	+ 1	4 2	S•	—	—	—
Simidu	7·8	246	1 58	0	3 58	S•	—	—	—
Uwazima	8·0	250	2 2a	+ 2	2 59	?	—	—	—
Ooita	8·7	251	2 5	− 5	4 26	S•	—	—	—
Miyazaki	9·4	245	2 21	+ 3	4 21	S•	—	—	—
Hukuoka	9·5	257	2 23a	+ 3	4 23	S•	—	—	—
Kumamoto	9·5	252	2 23	+ 3	—	—	—	—	—
Unzendake	9·9	252	2 40	+15	4 42	S•	—	—	—
Kagosima	10·2	246	2 28	− 3	4 59	S•	—	—	—
Keizyo	11·7	281	2 51	0	—	—	—	—	—
Zinsen	12·0	280	2 54	− 1	—	—	—	—	—
Naha	15·5	233	3 39	− 3	—	—	—	—	—
Dairen	16·0	286	3 58	+10	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Taito		22·2	238	3 58	−62	7 53	−67	—	—	—
Calcutta	N.	47·8	268	e 8 41	0	i 15 30	− 8	—	—	—
College		49·7	32	—	—	e 15 57	− 7	e 19 51	SS	e 23·3
Dehra Dun	N.	52·5	283	—	—	e 17 50?	?	—	—	e 25·9
Andijan		53·0	297	e 9 19	− 2	16 55	+ 5	e 11 13	PP	—
New Delhi	N.	53·9	281	e 9 37	+10	e 16 59	− 3	17 23	PPS	—
Tashkent		55·0	298	i 9 32	− 3	e 17 41	+24	—	—	—
Sitka		56·8	41	—	—	e 17 38	− 3	e 19 34	SS	e 27·0
Bombay	E.	62·1	273	i 10 22	− 3	i 19 4	+15	19 26	PS	—
Colombo		63·2	259	10 31	− 1	19 11	+ 8	—	—	—
Riverview		70·3	172	—	—	i 20 24	− 5	i 21 22	PS	e 32·5
Ukiah		71·8	55	—	—	e 20 43	− 3	—	—	e 33·4
Santa Clara	E.	73·6	56	—	—	e 21 3	− 4	e 34 43	?	e 40·2
Bozeman		75·5	44	—	—	e 21 16	−12	—	—	e 41·8
Tinemaha	Z.	76·2	55	e 11 48	− 4	—	—	—	—	—
Santa Barbara	Z.	76·7	58	e 11 55	0	—	—	—	—	—
Haiwee	Z.	76·9	54	i 11 52	− 4	—	—	—	—	—
Pasadena		77·9	56	i 12 1	0	i 21 46	− 8	e 16 33	PP	e 32·2
Mount Wilson	Z.	78·0	56	e 12 1	− 1	—	—	—	—	—
Riverside	Z.	78·6	56	i 12 0	− 5	—	—	—	—	—
Copenhagen		78·6	333	12 2	− 3	—	—	—	—	—
Auckland		79·1	154	—	—	e 22 10?	+ 3	—	—	41·2
La Jolla	Z.	79·3	58	e 12 12	+ 3	—	—	—	—	—
Palomar	Z.	79·3	57	i 12 12	+ 3	—	—	—	—	—
Arapuni		80·5	153	e 29 10?	?	—	—	—	—	—
Cheb		83·0	330	—	—	—	—	e 32 10?	?	e 46·2
Wellington		83·0	156	e 20 10?	?	—	—	39 10?	Q	43·2
Tucson		84·0	54	e 12 28	− 5	e 23 58	+61	—	—	e 39·1
Christchurch		84·3	158	22 55	S	(22 55)	− 5	28 30	SS	40·5
Stuttgart		85·3	331	e 12 36	− 4	—	—	—	—	e 45·2
Uccle		85·4	335	e 12 41	+ 1	—	—	—	—	e 42·2
Basle		86·9	331	e 12 45	− 3	—	—	—	—	—
Helwan		87·1	305	e 12 46	− 3	23 42	+14	16 13	PP	—
Clermont-Ferrand		90·1	333	e 13 40?	+37	—	—	—	—	—
Barcelona		94·2	331	e 12 38	−44	—	—	—	—	—
Toledo		97·8	334	e 13 47	+ 9	24 6	[−10]	18 14	PP	53·0
Almeria		99·9	331	e 11 40	?	—	—	17 56	PP	54·2
Granada		100·0	333	11 58	?	22 7	?	17 53	PP	50·7
La Paz		147·1	61	19 48	[+ 5]	—	—	—	—	—

Additional readings :—
Onahama S = 0m.32s.
Toyama S = 1m.43s.
Bombay iE = 10m.34s., PPE = 12m.34s., S_cSE = 20m.24s., iE = 22m.10s., SSE = 23m.18s.
Pasadena iZ = 12m.31s., eE = 18m.26s.
Tucson iP = 12m.43s.
Christchurch PP = 25m.7s., Q = 36m.11s. Phases wrongly identified.
Stuttgart eZ = 12m.48s. and 14m.3s.
Helwan eZ = 13m.22s., SKS?N = 23m.10s.
Long waves were also recorded at Honolulu, Scoresby Sund, and other European stations.

March 14d. 17h. 11m. 2s. Epicentre 22°·0S. 170°·3E.

A = −·9148, B = +·1564, C = −·3724 ; δ = 0 ; h = +4 ;
D = +·168, E = +·986 ; G = +·367, H = −·063, K = −·928.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		15·3	166	3 43	+ 4	6 53	+23	3 55	PP	8·0
Brisbane	N.	16·6	247	i 3 49	− 7	i 7 2	+ 2	—	—	—
Arapuni		16·7	165	3 58?	+ 1	6 58?	− 5	—	—	i 9·0
New Plymouth		17·3	171	i 4 1	− 3	7 34	+18	i 4 28	PP	9·0
Tuai		17·7	165	4 13	+ 3	7 33	+ 7	16 2	S_cS	9·3

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		18·9	70	i 4 25	+ 1	e 7 54	+ 1	—	—	—
Wellington		19·6	172	4 33	+ 1	8 8	0	4 49	PP	10·2
Kaimata		20·5	178	4 44	+ 2	8 36	+ 9	i 5 27	PPP	11·0
Riverview		20·7	230	i 4 43	− 1	i 8 41	+10	i 5 4	PP	e 10·5
Sydney		20·7	230	i 4 37	− 7	i 8 34	+ 3	—	—	e 10·5
Christchurch		21·6	177	4 49	− 5	8 53	+ 4	8 40	P_cP	11·1
Honolulu		53·1	38	e 9 26	+ 5	e 16 43	− 8	e 11 37	PP	e 21·9
Naha		63·4	317	e 10 34	0	—	—	—	—	—
Yokohama		64·0	333	e 10 49	+11	—	—	—	—	—
Tokyo Cen. Met. Obs.		64·3	334	e 10 20	−19	19 46	+29	14 33	PPP	33·3
Nagoya		65·1	332	10 45	0	16 42	?	—	—	—
Miyazaki		65·3	325	10 48	+ 2	19 35	+ 6	—	—	—
Kagosima		65·5	323	10 47	0	—	—	—	—	—
Kobe		65·5	328	10 46	− 1	18 34	?	—	—	—
Koti		65·5	327	e 10 47	0	19 32	0	—	—	—
Taito		65·5	311	e 10 38	− 9	—	—	—	—	—
Nagano		65·8	332	10 50	+ 1	20 1	+26	—	—	—
Sendai		66·0	337	10 48	− 2	19 40	+ 2	—	—	—
Mizusawa	E.	66·7	337	e 10 59	+ 4	19 47	+ 1	—	—	—
Hukuoka		67·1	325	10 57	0	19 53	+ 2	—	—	32·0
Hamada		67·3	327	e 10 57	− 2	—	—	—	—	—
Mori		69·5	338	e 11 3	− 9	—	—	—	—	—
Sapporo		70·0	339	12 7	+52	—	—	—	—	39·2
Zinsen		72·1	325	11 25	− 3	21 11	+21	—	—	—
Vladivostok		73·8	333	i 11 37	− 1	i 21 12	+ 3	—	—	—
Berkeley		86·9	48	e 12 49	+ 1	i 23 28	+ 2	i 24 41	PS	—
Santa Clara		86·9	48	i 12 51	+ 3	i 23 45	+19	—	—	e 40·0
Ukiah		86·9	46	e 12 45	− 3	e 23 38	+12	e 29 9	SS	e 36·6
Santa Barbara	Z.	87·0	52	i 12 48	0	—	—	—	—	—
Pasadena		88·0	52	i 12 52a	− 1	e 23 19	−17	—	—	e 36·1
La Jolla	Z.	88·1	54	e 12 52	− 2	—	—	—	—	—
Mount Wilson	Z.	88·1	52	i 12 54	0	—	—	—	—	—
Riverside	Z.	88·5	52	i 12 56	0	—	—	—	—	—
Palomar	Z.	88·6	54	i 12 56	0	—	—	—	—	—
Haiwee		89·1	49	i 12 59	+ 1	—	—	—	—	—
Tinemaha		89·3	49	i 12 59	0	—	—	—	—	—
Calcutta	N.	91·3	294	e 13 33	+24	i 24 12	+ 6	—	—	—
Sitka		91·3	27	e 13 5	− 4	e 23 49	−17	e 16 43	PP	e 37·1
Victoria		91·7	38	—	—	e 22 58?	[−45]	—	—	44·0
Seattle		91·9	39	e 19 48	?	—	—	e 25 7	PS	e 44·0
College		92·4	17	—	—	e 23 44	[− 2]	—	—	e 40·3
Tucson		92·7	56	e 13 16	+ 1	e 30 14	SS	e 17 17	PP	e 41·4
Colombo		92·9	276	13 19	+ 3	23 49	[− 1]	—	—	44·0
Salt Lake City		95·4	48	e 14 13	?	e 24 28	[+25]	e 35 11	SSS	e 44·4
Logan		95·8	47	e 13 46	?	e 24 20	[+15]	e 17 31	PP	e 41·7
Kodaikanal	E.	96·4	279	(e 13 33)	+ 1	(i 24 28)	[+19]	(e 17 48)	PP	—
Butte		97·0	44	—	—	e 24 40	[+28]	—	—	e 49·7
Bozeman		97·9	44	—	—	e 24 15	[− 1]	e 26 38	PS	e 36·2
New Delhi	N.	102·8	296	18 53	PP	i 25 46	[+66]	27 47	PS	—
Saskatoon		103·0	39	e 27 28	PS	—	—	—	—	49·0
Bombay		103·6	285	e 14 7	+ 3	24 28	[−16]	27 29	PS	—
Lincoln		106·3	52	—	—	e 27 55	PS	—	—	e 54·3
La Plata	E.	107·2	140	—	—	26 10	{+25}	29 28?	PPS	54·3
Huancayo		107·3	111	e 19 3	PP	e 25 14	[+13]	e 27 54	PS	e 45·0
Florissant		110·5	55	e 17 58	?	e 34 58	SS	e 27 58	PS	—
St. Louis		110·6	55	e 19 54	?	e 34 59	SS	e 28 47	PS	—
Tananarive		110·8	239	e 16 21	P	23 50	?	28 43	PS	55·6
La Paz		111·2	119	e 18 19?	[−17]	—	—	—	—	58·0
Chicago		113·1	53	e 19 17	PP	e 26 1	[+36]	e 34 57	SS	e 44·7
Columbia		117·0	62	e 21 12	?	e 26 10	[+31]	e 29 47	PS	e 56·7
Pittsburgh		118·7	55	—	—	e 26 13	[+28]	e 31 33	PPS	—
New Kensington		118·9	55	e 20 22?	PP	e 26 16?	[+30]	e 27 34?	SKKS	e 61·2
Buffalo		119·7	52	i 20 31	PP	—	—	—	—	—
Ottawa		122·0	48	e 18 56	[− 1]	e 25 58?	[+ 1]	e 20 22	PP	54·0
Philadelphia		122·3	55	e 19 56?	PP	e 25 32?	[−25]	e 36 56?	SS	e 53·4

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fordham		123·3	54	e 18 59	[0]	e 26 0	[0]	—	—	—
Vermont		123·8	50	e 20 40	PP	e 26 5	[+ 3]	e 30 40	PS	e 58·3
Rio de Janeiro	E.	124·7	142	e 20 58	PP	—	—	—	—	—
Harvard		125·1	53	i 19 3	[0]	i 32 25	PPS	i 20 58	PP	e 61·0
Seven Falls		125·3	46	e 20 50	PP	e 32 34	PPS	e 38 10	SSP	59·0
San Juan		127·2	83	e 20 57	PP	—	—	e 32 43	PPS	e 54·7
Bermuda		130·5	66	e 19 34	[+21]	—	—	e 21 28	PP	e 32·7
Scoresby Sund		131·0	6	e 22 44	PKS	—	—	—	—	e 66·6
Ivigtut		132·7	25	e 22 51	PKS	—	—	—	—	e 67·5
Upsala		137·5	341	—	—	—	—	e 45 58?	SSS	e 63·0
Ksara		138·3	296	e 19 59	[+32]	—	—	e 23 37	?	—
Helwan		142·4	291	i 19 32a	[− 3]	41 22	SS	23 4	PP	—
Copenhagen		142·5	340	e 19 34	[− 1]	46 28?	SSS	40 16	?	—
Aberdeen		144·4	353	e 27 58?	?	e 28 58?	?	—	—	e 83·0
Potsdam		145·0	337	e 19 43	[+ 4]	—	—	i 20 36	?	e 81·0
Sofia		145·6	315	e 19 43	[+ 3]	—	—	—	—	99·0
Prague		146·2	332	e 19 48	[+ 7]	—	—	e 52 58?	?	e 67·0
Belgrade		146·2	320	i 19 42	[+ 1]	—	—	—	—	—
Jena		146·7	335	i 19 45	[+ 3]	—	—	—	—	e 79·0
Cheb		147·0	335	e 19 49	[+ 6]	—	—	e 35 58	PPS	e 82·0
De Bilt		147·8	343	i 19 47a	[+ 3]	e 42 18	SS	e 47 28	SSS	e 70·0
Uccle		149·2	344	i 19 51a	[+ 5]	e 42 48	SS	e 23 24	PP	—
Stuttgart		149·3	336	e 19 47	[+ 1]	e 34 3	PS	e 23 27	PP	e 68·8
Triest		149·6	327	i 19 56	[+ 9]	—	—	—	—	e 71·0
Kew		149·7	349	e 19 38	[− 9]	e 42 58?	SS	e 23 8	PP	e 70·0
Strasbourg		150·0	337	i 19 54	[+ 7]	—	—	e 24 9	PP	92·0
Chur		150·7	334	e 19 48	[0]	—	—	—	—	—
Zürich		150·7	335	e 19 54a	[+ 6]	—	—	—	—	—
Basle		151·0	336	e 19 56	[+ 7]	—	—	—	—	—
Paris		151·5	344	i 19 53	[+ 3]	—	—	—	—	e 83·0
Milan		151·9	331	i 20 2	[+12]	—	—	e 24 3	PP	—
Florence	z.	152·2	327	i 20 9	[+18]	—	—	—	—	—
Clermont-Ferrand		154·1	340	19 52	[− 1]	—	—	—	—	e 82·0
Tortosa		159·3	337	30 47	?	—	—	e 39 58?	?	—
Toledo		161·5	347	e 20 3	[+ 1]	—	—	24 44	PP	79·0
Lisbon		163·3	358	20 6?	[+ 2]	—	—	—	—	78·1
Almeria		163·9	338	i 20 6	[+ 1]	44 37	SS	20 32	sPKP	86·0
Granada		164·0	342	i 20 5	[0]	45 16	SS	24 47	PP	84·0
San Fernando		165·3	349	e 20 14	[+ 8]	—	—	—	—	86·0

Additional readings :—
Auckland i =4m.18s., P_cS =7m.23s.
Wellington i =5m.44s. and 8m.38s., P_cP =9m.21s., P_cS =12m.41s., S_cS =16m.8s.
Riverview PPP =5m.18s., iEZ =5m.38s., iN =5m.56s., iE =7m.16s., iN =8m.13s., iZ =8m.46s., iSSEN =9m.30s.
Christchurch Q =9m.27s.
Honolulu iS =17m.6s.
Tokyo PPN =12m.47s., PS =20m.22s., SSSN =27m.32s.
Mizusawa eSN =19m.42s.
Berkeley iZ =20m.47s.
Ukiah e =16m.28s., 24m.35s., and 34m.30s.
Sitka eSKS =23m.42s., e =25m.38s., eSS =29m.41s.
Seattle e =24m.51s.
College e =37m.49s.
Tucson eS_cS =24m.35s., e =25m.43s., eSSS =34m.11s.
Logan e =18m.55s., 24m.33s., and 30m.17s., eSSS? =35m.24s.
Kodaikanal SKKS =27m.26s., all readings have been increased by 1 minute.
Bozeman e =30m.15s.
New Delhi PPPN =21m.18s., iSKKSN =26m.10s., iN =32m.13s.
Bombay eE =17m.8s., iE =17m.43s., PPN =18m.18s., PPE =18m.21s., iE =19m.4s., PPPEN =20m.44s., SKKSE =25m.9s., PPSEN =28m.40s., SSN =33m.40s., SSE =33m.44s., SSSE =37m.44s.
Lincoln e =33m.41s.
La Plata PPSN =29m.22s., E =32m.22s.
Huancayo eSS =34m.8s., eSSS =38m.13s.
Florissant eSSSE =38m.58s.?.
St. Louis eSSSEN =38m.59s.
Tananarive SS =34m.45s.
Chicago e =28m.44s.

Continued on next page.

Ottawa eN =22m.58s.?, e =30m.46s., e =37m.40s.?.
Philadelphia ePS =29m.29s.?, e =31m.4s.?, eSSS =40m.45s.?.
Vermont eSS =37m.10s., e =38m.10s. and 45m.28s.
Harvard e =20m.11s., i =35m.58s., 40m.28s., and 43m.38s., e =44m.38s. and 47m.15s.
San Juan ePS =31m.48s.
Bermuda e =22m.36s. and 24m.31s.
Scoresby Sund e =37m.39s.
Jena iZ =19m.56s., iN =20m.17s., iZ =20m.22s.
Helwan eEZ =20m.13s., eE =24m.0s.
Potsdam ePKPE =19m.46s.
Cheb e =31m.58s.?.
De Bilt iZ =20m.34s., e =60m.58s.?
Uccle iZ =20m.40s., iSKPZ =22m.51s., eZ =24m.10s., eEN =32m.4s.?, eE =33m.10s., eSSSN =48m.16s.?.
Stuttgart iPKP?Z =19m.52s., iPKP$_2$?=20m.40s., ePP?Z =22m.43s.
Kew eZ =20m.34s. and 22m.43s., ePSZ =34m.13s., eQE =59m.58s.?.
Strasbourg i =20m.53s., i =28m.53s.
Milan iPP =21m.1s., eE =33m.36s.
Clermont-Ferrand ePKP =19m.55s., e =20m.17s.
Toledo ePKP$_2$ =20m.50s.
Lisbon PKP$_2$Z =20m.51s.?, PKP$_2$E =21m.2s., N =22m.41s.?, and 28m.3s.?, E = 34m.13s., N =51m.58s.?.
Almeria sPKP =20m.40s., PKP$_2$ =21m.13s., sPKP$_2$ =21m.39s., PP =24m.44s., pPP = 25m.10s., sSKS =27m.39s., PPP =28m.30s., pPPP =28m.56s., pSKS =34m.40s., SPP =38m.7s., sSS =45m.27s., SSS =50m.59s.
Granada iPKP$_2$ =20m.56s., SKKS =30m.11s., PPS =38m.29s.
San Fernando PPSE =34m.31s., SSE =40m.21s.
Long waves also recorded at Bunnythorp and Sofia.

March 14d. 18h. 37m. 57s. Epicentre 19°·5S. 69°·4W. Depth of focus 0·005.

$A = +\cdot3319$, $B = -\cdot8830$, $C = -\cdot3318$; $\delta = -6$; $h = +4$;
$D = -\cdot936$, $E = -\cdot352$; $G = -\cdot117$, $H = +\cdot311$, $K = -\cdot943$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		3·1	169	e 0 50	+ 2	—	—	—	—	i 1·2
La Paz	N.	3·2	22	i 0 54	+ 5	i 1 24	− 3	—	—	—
Huancayo		9·4	321	i 2 21	+ 6	i 4 13	+13	i 3 24	?	—
La Plata		18·4	150	4 7	− 5	7 33?	+ 1	8 25	SSS	9·0
Rio de Janeiro	E.	24·7	103	(i 5 3)	−13	(i 9 33)	+ 2	—	—	—
Balboa Heights		30·0	341	i 6 8	+ 3	i 11 3	+ 6	17 27	?	i 16·6
San Juan		37·8	6	e 7 9	− 3	i 12 50	− 7	i 7 43	sP	e 15·5
Tacubaya	N.	48·5	322	e 8 43	+ 5	—	—	—	—	—
Bermuda		51·8	6	e 9 18	+15	i 18 27	S_cS	e 9 44	sP	e 23·6
Columbia		54·3	348	e 9 22	0	e 16 49	− 4	e 19 3	S_cS	e 26·6
Philadelphia		59·4	356	i 9 22?	?	i 18 3?	+ 3	i 17 19?	?	e 24·7
Cape Girardeau	N.	59·6	342	i 9 56	− 3	i 17 58	− 5	i 10 36	pP	—
Fordham		60·2	357	i 10 2	− 2	i 18 2	− 9	i 10 29	pP	—
Pittsburgh		60·4	352	i 10 4	− 1	i 18 8	− 5	i 10 32	pP	—
New Kensington		60·5	352	e 10 9?	+ 3	i 18 9?	− 5	e 10 45?	sP	e 24·2
St. Louis		61·0	342	i 10 7	− 2	e 18 15	− 6	i 10 36	pP	—
Florissant		61·2	342	e 10 8	− 2	e 18 12	−11	e 10 35	pP	—
Harvard		61·7	358	i 10 13	− 1	i 18 27	− 3	i 10 41	pP	e 22·6
Buffalo		62·7	353	i 10 24	+ 4	i 18 43	+ 1	i 10 42	pP	—
Chicago		63·4	344	e 10 22	− 3	i 18 41	−10	e 19 25	sS	e 26·5
Vermont		63·7	357	e 10 26	− 1	i 18 52	− 3	e 11 5	sP	e 40·4
Halifax		64·0	5	11 39?	+70	20 6	+67	e 20 51	sS	—
Ottawa		64·8	355	10 33	− 1	19 5	− 3	—	—	35·0
Tucson		64·9	322	i 10 35	0	e 19 10	0	i 10 54	pP	e 33·2
Lincoln		65·1	337	e 10 33	− 3	i 19 11	− 1	e 11 14	sP	e 34·2
Shawinigan Falls		65·8	358	10 39	− 2	19 18	− 3	20 3	PS	—
Seven Falls		66·3	359	10 42	− 2	19 22	− 5	20 8	PS	—
La Jolla		69·3	318	i 11 3	+ 1	20 6	+ 3	e 20 49	PS	—
Palomar	z.	69·4	319	i 11 4k	+ 1	—	—	e 20 53	PS	—
Riverside		70·1	319	i 11 8k	+ 1	e 20 14	+ 2	e 21 3	PS	—
Pasadena		70·7	319	i 11 9k	− 2	i 20 21	+ 2	i 21 1	PS	—
Mount Wilson		70·7	319	i 11 11k	0	i 20 21	+ 2	i 21 6	PS	—
Salt Lake City		71·7	328	e 11 18	+ 1	i 20 31	+ 1	i 21 15	sS	e 55·9
Santa Barbara	z.	71·9	318	i 11 18	0	—	—	—	—	—
Haiwee		71·9	321	i 11 20	+ 2	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Logan		72·5	329	e 11 22	0	i 20 39	− 1	e 13 51	PP	e 35·5
Tinemaha		72·7	321	i 11 24k	+ 1	e 20 45	+ 3	i 21 7	pS	—
Fresno	N.	73·4	320	i 11 27	0	—	—	—	—	—
Lick		74·9	319	e 11 38	+ 2	—	—	—	—	—
Santa Clara		75·1	319	i 11 41	+ 4	i 21 16	+ 7	i 12 19	sP	—
Bozeman		75·1	331	e 11 37	0	e 21 10	+ 1	e 12 11	sP	e 32·5
Berkeley		75·6	319	i 11 41	+ 1	i 21 13	− 1	i 12 9	sP	—
Butte		76·0	331	e 11 43	+ 1	—	—	i 12 22	sP	e 33·7
Ukiah		77·0	320	e 11 46	− 2	e 21 32	+ 3	e 22 8	sS	e 35·2
Saskatoon		78·3	338	11 53	− 2	21 41	− 2	—	—	35·0
Ferndale		78·5	321	15 3	PP	e 26 3	SS	e 28 3	?	—
Lisbon		80·8	44	12 7	− 1	22 11	+ 1	12 39	pP	—
San Fernando	Z.	81·6	47	e 12 21	+ 9	22 28	+10	—	—	—
Seattle		81·9	327	e 13 16	+62	e 22 49	+28	e 23 34	PS	—
Ivigtut		82·2	10	—	—	e 22 18	− 6	e 22 31	?	e 35·3
Granada		83·7	47	i 12 24	+ 1	i 22 37	− 2	12 53	pP	—
Almeria		84·4	48	e 12 30	+ 3	i 22 41	− 5	12 53	pP	46·0
Toledo		84·8	45	i 12 27	− 2	i 22 45	− 5	12 57	pP	—
Tortosa		88·3	46	(e 13 20)	+34	(23 16)	− 7	—	—	(33·0)
Clermont-Ferrand		92·2	42	i 13 4	0	—	—	e 26 21	PPS	e 42·0
Sitka		94·1	330	e 13 48	+36	i 23 41	[+ 1]	i 24 30	sSKS	e 57·3
Uccle	Z.	95·1	37	e 13 32	+15	i 23 46	[+ 2]	—	—	—
Basle		95·7	42	e 13 23	+ 3	.e 23 49	[+ 1]	—	—	—
Scoresby Sund		95·8	14	e 19 20	?	e 24 35	+ 6	e 25 9	sS	e 45·1
Zürich		96·3	42	e 13 21a	− 1	e 24 39	+ 5	e 23 49	SKS	—
Chur		96·7	42	e 13 21	− 3	—	—	—	—	—
Stuttgart	Z.	97·2	40	e 13 25	− 2	e 26 3	PS	e 13 54	sP	—
Copenhagen		101·4	35	13 47	+ 1	24 9?	[− 9]	17 53	PP	—
College		102·7	335	e 18 10	PP	e 24 40	[+16]	e 25 13	?	e 31·6
Sofia		104·9	49	—	—	e 23 35	[−58]	—	—	—
Tananarive	E.	107·1	118	27 51	PS	—	—	—	—	56·6
Helwan		108·5	64	18 39	PP	—	—	i 28 3	PS	—
Ksara		113·0	61	19 23	PP	—	—	29 42	PPS	—
Andijan		141·1	48	i 19 20	[− 3]	—	—	—	—	—
Bombay		144·4	84	19 28	[− 1]	29 30	SKKS	19 58	pPKP	—
Sapporo		145·1	320	19 33	[+ 3]	—	—	—	—	—
Mori		146·1	318	19 35	[+ 3]	—	—	—	—	—
Kodaikanal	E.	146·7	100	i 18 46	[+13]	i 28 48	SKKS	i 22 3	PP	—
Mizusawa	E.	147·2	313	19 39	[+ 5]	—	—	23 34	PP	—
Colombo		147·6	108	19 40	[+ 5]	29 46	SKKS	—	—	—
Sendai		147·7	312	19 39	[+ 4]	—	—	—	—	—
New Delhi	N.	148·3	67	i 20 18	[+42]	i 29 49	SKKS	i 42 0	SS	—
Yokohama		149·8	308	19 51	[+13]	—	—	—	—	—
Kumagaya		149·8	310	19 43	[+ 5]	—	—	23 18	PP	—
Nagano		150·4	311	e 19 47	[+ 8]	—	—	—	—	—
Nagoya		152·0	309	e 19 52	[+11]	—	—	—	—	—
Kôbe		153·5	310	19 45	[+ 2]	—	—	—	—	—
Koti		155·2	309	e 19 50	[+ 4]	—	—	—	—	—
Hukuoka		157·5	312	20 24	[+35]	—	—	—	—	—
Kagosima		158·2	307	e 20 1	[+11]	—	—	—	—	—

Additional readings :—
La Plata E = 4m.45s.?, SZ = 7m.29s.
Rio de Janeiro, iP and iS given as iS and iL respectively.
San Juan e = 9m.28s.
Bermuda i = 15m.16s.
Columbia esS = 17m.35s.
Philadelphia isP = 9m.58s.?, i = 19m.0s.?.
Cape Girardeau isSN = 18m.43s.
Fordham i = 10m.42s., 18m.42s., 19m.43s., 20m.35s.
Pittsburgh isSEN = 18m.57s.
New Kensington i = 18m.57s.?.
St. Louis esSE = 20m.0s.
Florissant esSE = 20m.1s.
Harvard esS = 19m.13s., iS_cS = 19m.51s., isS_cS = 20m.40s.
Buffalo 11m.2s., and 11m.28s., isS = 19m.28s.
Chicago e = 18m.37s., eSS = 23m.11s.

Continued on next page.

Vermont isS =19m.39s., i =20m.10s., esSS =24m.3s.
Tucson e =13m.36s., iPPP? =14m.36s., eS =19m.55s., eS_cS =20m.8s., e =21m.12s., eSSS =26m.52s.
Lincoln esS =19m.53s.
La Jolla ePKPPKPZ =39m.15s.
Palomar ePKPPKPZ =39m.7s.
Riverside iZ =11m.29s. and 11m.36s., ePKPPKPZ =39m.8s., iZ =39m.34s.
Pasadena iZ =11m.40s., i =11m.50s., iZ =21m.8s., ePKPPKPZ =39m.5s.
Mount Wilson iZ =11m.40s., iPKPPKPZ =39m.13s.
Logan eS =19m.34s., eSS? =25m.54s.
Tinemaha ePKPPKPZ =39m.2s.
Santa Clara isSE =23m.58s.
Berkeley eN =20m.49s., eZ =23m.18s.
Butte e =20m.15s.
Lisbon SN =22m.7s., sSN =22m.59s., sSE =23m.5s.
Granada sP =13m.13s.
Almeria PP =15m.50s., SP =23m.34s., i =24m.42s., SS =28m.8s., sSS =28m.48s.
Toledo sP =13m.16s., PS =23m.57s.
Tortosa PPE =(16m.22s.), PSE =(23m.32s.), SSE =(27m.11s.), readings reduced by 10 minutes.
Sitka ePKP =17m.25s., epPS? =27m.33s.
Scoresby Sund eSS =30m.38s.
Copenhagen 17m.34s. and 25m.6s.
Tananarive E =46m.19s.
Helwan eZ =19m.45s., iZ =29m.0s.
Bombay sPKPE =20m.11s., PPEN =22m.44s., PKSE =22m.54s., iEN =23m.7s., 23m.33s., and 30m.20s., iE =32m.49s., SPE =33m.15s., SPPE =35m.6s., SSE =41m.20s., SSPE =42m.33s., SSSE =47m.3s.
New Delhi iN =42m.59s.

March 14d. Readings also at 0h. (St. Louis), 1h. (near Mizusawa), 2h. (Stuttgart, Riverview and near Andijan), 3h. (near Mizusawa), 4h. (Mount Wilson, Palomar, Tucson, and Tinemaha), 5h. (Mount Wilson, Palomar, Pasadena, Riverside, Tinemaha, Tucson, and near Mizusawa), 8h. (Palomar, Tucson, Brisbane, Riverview, and Sydney), 9h. (Stuttgart, Granada, Pasadena, Huancayo, Andijan, Tashkent, and near Stalinabad), 10h. (near Andijan), 12h. (near Mizusawa (2)), 13h. (near Mizusawa (3)), 14h. (near Ottawa, near Granada, and near Mizusawa), 15h. (Mizusawa (2)), 16h. (Toledo and near Mizusawa), 17h. (Wellington), 18h. (Tacubaya, Barcelona, Prague, Stuttgart, Stonyhurst, Triest, and near Andijan), 19h. (Granada, Almeria, Toledo, Tortosa, and Stuttgart (2)), 21h. (near Berkeley), 22h. (near Riverview), 23h. (near Mizusawa).

March 15d. 0h. 51m. 42s. Epicentre 18°·5N. 146°·0E. (as on 1941 November 22d.).

$A = -·7868$, $B = +·5307$, $C = +·3154$; $\delta = +17$; $h = +5$;
$D = +·559$, $E = +·829$; $G = -·261$, $H = +·176$, $K = -·949$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Osima		17·2	342	4 7	+ 4	7 18	+ 4	—	—	—
Yokohama		17·8	347	e 4 10	− 1	—	—	—	—	—
Nagoya		18·4	337	4 22	+ 4	—	—	—	—	—
Kôbe		18·8	332	4 42	+ 1	7 56	+ 6	—	—	—
Nagano		19·3	343	4 31	+ 2	—	—	—	—	—
Sendai		20·2	349	4 41	+ 2	8 20	− 1	—	—	—
Hukuoka		20·5	321	4 56	PP	8 40	SS	—	—	—
Mizusawa		21·0	350	e 4 38	− 9	e 5 11	PP	—	—	—
Vladivostok		27·3	337	5 48	0	i 10 29	+ 2	—	—	—
Santa Barbara	z.	83·2	57	e 12 27	− 2	—	—	—	—	—
Mount Wilson	z.	84·5	56	i 12 33	− 3	—	—	—	—	—
Pasadena	z.	84·5	56	e 12 33	− 3	—	—	—	—	—
Riverside	z.	85·2	56	i 12 36	− 3	—	—	—	—	—
La Jolla	z.	85·6	57	i 12 37	− 4	—	—	—	—	—
Palomar	z.	85·8	57	i 12 40	− 2	—	—	e 12 54	P_cP	—
Tucson		90·9	56	e 13 6	− 1	—	—	—	—	e 19·6
Copenhagen		96·3	336	13 31	− 1	—	—	—	—	—
Stuttgart	z.	102·8	333	e 13 59	− 2	—	—	—	—	—
La Paz		147·4	91	19 9	[−34]	—	—	—	—	—

Mizusawa also gives SE =5m.14s.
Long waves were also recorded at Riverview.

March 15d. 1h. 22m. 26s. Epicentre 22°·0S. 170°·3E. (as on 14d.).

A = −·9148, B = +·1564, C = −·3724; δ = 0; h = +4.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		15·3	166	4 5	PPP	7 34?	SSS	—	—	—
Arapuni		16·7	165	2 34?	?	8 40?	L	—	—	(8·7)
Tuai		17·7	165	4 4?	− 6	—	—	—	—	—
Wellington		19·6	172	4 39?	+ 7	—	—	—	—	11·6
Riverview		20·7	230	i 4 37 a	− 7	e 8 31	0	i 4 49	PP	e 9·5
Sydney		20·7	230	—	—	—	—	e 9 22?	SSS	—
Christchurch		21·6	177	—	—	8 20	−29	30 40	Q	40·9
Pasadena	z.	88·0	52	e 12 55	+ 2	—	—	—	—	—
Mount Wilson	z.	88·1	52	e 12 53	− 1	—	—	e 13 5	P_cP	—
Riverside	z.	88·5	52	e 12 57	+ 1	—	—	e 13 8	P_cP	—
Palomar	z.	88·6	54	e 12 56	0	—	—	e 13 9	P_cP	—
Tucson		92·7	56	e 13 15	0	—	—	—	—	—
Stuttgart	z.	149·3	336	e 19 50	[+ 4]	—	—	—	—	—

Riverview also gives iN = 4m.41s., eS?N = 8m.8s., eN = 8m.21s.

March 15d. 2h. 24m. 30s. Epicentre 22°·0S. 170°·3E. (as at 1h.).

Pasadena quotes U.S.C.G.S. epicentre 21°·5S. 169°·5E. Wellington epicentre 21°S. 170°E.

A = −·9148, B = +·1564, C = −·3724; δ = 0; h = +4;

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		15·3	166	3 43	+ 4	i 6 35	+ 5	i 5 32	PP	7·5
Brisbane	E.	16·6	247	i 3 40	−16	e 7 4	+ 4	—	—	—
	N.	16·6	247	i 3 44	−12	i 6 47	−13	—	—	—
Arapuni		16·7	165	4 30?	PPP	—	—	8 18?	P_cP	8·5
New Plymouth		17·3	171	4 15	+11	7 51	SSS	—	—	8·8
Tuai		17·7	165	4 11	+ 1	7 32	+ 6	—	—	9·0
Apia		18·9	70	e 4 30	+ 6	i 8 40	SSS	e 4 58	PPP	10·2
Wellington		19·6	172	4 28	− 4	8 0	− 8	5 0	PPP	9·9
Kaimata		20·5	178	4 45	+ 3	8 30	+ 3	—	—	11·5
Riverview		20·7	230	i 4 37 a	− 7	i 8 29	− 2	4 58	PP	e 9·7
Sydney		20·7	230	e 4 30	−14	e 8 15	−16	—	—	e 9·9
Christchurch		21·6	177	4 53	− 1	8 49	0	9 19	Q	11·1
Perth		49·1	247	e 12 55	?	19 30	SS	—	—	(22·4)
Honolulu		53·1	38	e 8 36	−45	e 16 46	− 5	e 9 48	?	e 22·8
Yokohama		64·0	333	e 10 29	− 9	—	—	—	—	—
Hikone		65·5	331	10 51	+ 4	19 40	+ 8	—	—	—
Kôbe		65·5	328	10 44	− 3	19 30	− 2	—	—	—
Koti		65·5	327	e 10 44	− 3	19 31	− 1	—	—	—
Taito		65·5	311	e 10 41	− 6	—	—	—	—	—
Nagano		65·8	332	10 51	+ 2	—	—	—	—	—
Sendai		66·0	337	e 10 48	− 2	19 37	− 1	—	—	—
Mizusawa	N.	66·7	337	—	—	19 47	+ 1	—	—	—
Hukuoka		67·1	325	10 57	0	19 51	0	—	—	—
Vladivostok		73·8	333	i 11 53	P_cP	i 21 9	0	—	—	—
Berkeley		86·9	48	i 12 48	0	e 23 29	+ 3	e 24 40	PPS	e 40·3
Santa Clara		86·9	48	i 12 51	+ 3	e 23 48	+22	—	—	e 46·6
Ukiah		86·9	46	e 12 58	+10	e 23 15	[+ 2]	—	—	e 40·2
Santa Barbara	z.	87·0	52	e 12 48	0	—	—	—	—	—
Pasadena		88·0	52	i 12 53 k	0	23 23	[+ 2]	e 16 14	PP	e 40·6
Mount Wilson	z.	88·1	52	i 12 52	− 2	—	—	e 16 26	PP	—
La Jolla	z.	88·1	54	e 12 47	− 7	—	—	—	—	—
Riverside	z.	88·5	52	i 12 56 k	0	—	—	—	—	—
Palomar	z.	88·6	54	i 12 56 k	0	—	—	—	—	—
Haiwee	z.	89·1	49	e 12 59	+ 1	—	—	—	—	—
Tinemaha		89·3	49	i 12 59	0	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	91·3	294	e 13 37	+28	i 24 32	+26	—	—	—
Sitka		91·3	27	e 13 5	− 4	e 23 42	[+ 2]	e 25 18	PS	e 41·7
College		92·4	17	—	—	e 23 42	[− 5]	e 25 43	PPS	e 48·5
Tucson		92·7	56	i 13 16	+ 1	e 23 55	[+ 7]	e 16 36	PP	e 40·8
Colombo		92·9	276	12 51	−25	23 45	[− 5]	—	—	—
Irkutsk		93·5	326	e 13 16	− 3	23 46	[− 7]	—	—	—
Salt Lake City		95·4	48	e 13 40	+12	e 24 7	[+ 4]	e 17 47	PP	e 45·7
Logan		95·8	47	e 13 30	+ 1	e 24 0	[− 5]	e 17 28	PP	e 44·8
Kodaikanal	E.	96·4	279	(e 17 37)	PP	(i 24 20)	[+11]	(31 15)	SS	—
Butte		97·0	44	—	—	e 24 10	[− 2]	—	—	e 42·3
Bozeman		97·9	44	—	—	e 24 20	[+ 4]	e 26 33	PS	e 49·8
New Delhi		102·8	296	i 24 37	?	i 24 43	[+ 2]	—	—	—
Saskatoon		103·0	39	e 27 48?	PS	—	—	—	—	50·5
Bombay	E.	103·6	285	14 4	0	24 44	[0]	27 28	PS	—
Huancayo		107·3	111	e 18 55	PP	e 25 10	[+ 9]	e 28 34	PS	e 50·6
Florissant		110·5	55	e 14 40	P	—	—	—	—	e 45·9
St. Louis	E.	110·6	55	—	—	e 25 16	[+ 1]	e 28 40	PS	—
La Paz		111·2	119	19 30	PP	29 16	PS	—	—	56·5
Tashkent		112·2	307	18 47	[+10]	25 40	[+19]	19 35	PP	—
Chicago		113·1	53	e 19 45	PP	e 29 15	PS	e 35 14	SS	e 63·0
Columbia		117·0	62	e 20 58	PP	e 30 3	PS	e 44 46	?	e 56·7
Ottawa		122·0	48	e 19 6	[+ 9]	e 30 30?	PS	—	—	57·5
Philadelphia		122·3	55	e 19 58	[+61]	—	—	—	—	e 55·4
Fordham		123·3	54	e 18 57	[− 2]	e 26 6	[+ 5]	e 20 40	PP	—
Vermont		123·8	50	—	—	e 30 45	PS	e 37 55	SSP	e 56·5
Rio de Janeiro	E.	124·7	142	e 20 45	PP	—	—	—	—	—
Harvard		125·1	53	i 19 2	[− 1]	e 32 51	PPS	i 20 54	PP	e 60·5
Seven Falls		125·3	46	e 21 6?	PP	e 30 48	PS	—	—	61·5
San Juan		127·2	83	e 21 9	PP	e 31 11	PS	—	—	e 63·8
Bermuda		130·5	66	e 22 41	?	e 26 9	[−12]	e 32 4	PS	e 54·5
Scoresby Sund		131·0	6	e 23 16	?	—	—	—	—	e 69·4
Ksara		138·3	296	e 19 44?	[+17]	—	—	—	—	—
Helwan		142·4	291	19 30	[− 5]	—	—	e 22 42	PP	—
Copenhagen		142·5	340	19 32	[− 3]	—	—	—	—	—
Potsdam		145·0	338	e 19 42?	[+ 3]	—	—	—	—	—
Belgrade		146·2	320	e 19 39	[− 2]	—	—	—	—	—
Jena	N.	146·7	335	e 19 47	[+ 5]	—	—	—	—	—
Cheb		147·0	335	e 19 46	[+ 3]	e 26 47	[− 3]	e 23 19	PP	e 85·5
De Bilt		147·8	343	i 19 48a	[+ 5]	e 42 30	SS	i 23 18	PP	e 80·0
Uccle		149·2	344	i 19 46a	[0]	e 33 22	PSKS	e 23 36	PP	—
Stuttgart		149·3	336	e 19 45	[− 1]	—	—	e 23 19	PP	e 68·2
Triest		149·6	327	e 19 52	[+ 5]	—	—	—	—	—
Kew		149·7	349	e 19 37?	[−10]	i 26 45	[− 8]	e 20 2	PKP_2	e 76·5
Chur		150·7	334	e 19 48	[0]	—	—	—	—	—
Zürich		150·7	335	e 19 52k	[+ 4]	—	—	—	—	e 57·8
Basle		151·0	336	e 19 54	[+ 5]	—	—	—	—	—
Paris		151·5	344	i 19 51	[+ 1]	—	—	—	—	e 86·5
Milan		151·9	331	e 19 56	[+ 6]	—	—	—	—	—
Florence		152·2	327	e 19 40	[−11]	—	—	i 23 43	PP	e 70·3
Clermont-Ferrand		154·1	340	i 19 53	[0]	—	—	i 23 51	PP	—
Toledo		161·5	347	e 20 2	[0]	—	—	e 20 48	PKP_2	—
Almeria		163·9	338	20 4	[− 1]	27 4	[− 4]	20 57	PKP_2	78·5
Granada		164·0	342	i 20 3k	[− 2]	31 39	[+ 6]	i 20 57	PKP_2	89·5
San Fernando		165·3	349	e 19 56	[−10]	—	—	—	—	89·5

Additional readings :—
Auckland S = 6m.45s. and 7m.30s.
Wellington iZ = 5m.18s., P_cP?Z = 8m.52s., S_cS = 16m.15s.?.
Riverview i = 4m.48s., iEN = 5m.14s., iN = 8m.42s. and 9m.23s.
Perth L given as SS.
Honolulu iS = 17m.22s.
Berkeley eN = 28m.42s.?.
Ukiah e = 20m.41s.
Pasadena iE = 13m.24s., eZ = 23m.49s., eE = 24m.50s., iPPSZ = 25m.10s., eSSEN = 28m.24s.?.

Continued on next page.

Mount Wilson iEZ =13m.7s.
Sitka e =15m.54s., eS? =30m.50s.
Tucson ePPP? =19m.11s., ePS? =25m.42s., eSS =31m.2s.
Logan ePS =26m.12s., eSS =31m.13s.
Kodaikanal, all readings have been increased by 1 minute.
Bombay eE =17m.3s., PPE =18m.16s., PPPE =20m.28s., SKKSE =25m.23s., SE = 25m.52s., PPSE =28m.21s., SSE =33m.0s.
Huancayo e =29m.26s., eSS =34m.27s.
St. Louis eE =29m.3s.
Tashkent S =27m.15s.
Philadelphia e =26m.55s., 29m.50s., and 36m.30s., eSSS =39m.52s.
Fordham e =32m.33s.
Vermont eSSS =42m.30s.
Harvard i =21m.17s.
San Juan e =22m.24s.
Bermuda e =30m.58s., eSS =39m.24s.
Ksara e =23m.7s.
Helwan PKKP?Z =20m.3s., eZ =22m.15s., PP?E =23m.42s., eE =24m.42s.
Belgrade i =19m.57s., e =25m.39s. and 28m.18s.
Cheb e =54m.30s.?.
De Bilt eSSS =48m.0s.
Uccle iZ =21m.0s.
Kew ePPNZ =23m.30s.?, iPS?Z =36m.48s., eSSZ =40m.10s.?.
Toledo iPP =24m.34s.
Almeria PKS =23m.28s., iPP =24m.36s., PPP =28m.29s., PPS =38m.4s., SSP = 45m.33s.
Granada iPP =24m.44s., PPP =28m.33s., SKSP =35m.25s., PPS =39m.33s., SS = 43m.59s., SSS =50m.20s.
Long waves were also recorded at Tananarive, Pittsburgh, New Kensington, and other European stations.

March 15d. 4h. 47m. 56s. Epicentre 9°·7N. 141°·2E.

A = −·7683, B = +·6178, C = +·1674; δ = −2; h = +7;
D = +·627, E = +·779: G = −·130, H = +·105, K = −·986.

		Δ	Az.	P.	O−C.	S.	O−C.		Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.		m.
Naha		20·8	323	4 48	+ 3	—	—	—	—		—
Nake		21·6	332	e 4 54	0	6 59	?	—	—		—
Isigakizima		21·8	316	e 5 3	+ 7	—	—	—	—		—
Taito		23·2	307	e 4 55	−14	8 46	?	—	—		—
Hatidyozima		23·3	358	e 5 10	0	10 38	SSS	—	—		—
Kagosima		24·0	338	5 15	− 2	9 26	− 6	—	—		—
Koti		24·8	346	e 5 23	− 2	9 51	+ 5	—	—		—
Kôbe		25·5	350	e 5 27	− 5	10 1	+ 4	—	—		—
Nagoya		25·6	355	5 33	+ 1	—	—	—	—		—
Hukuoka		25·8	340	e 5 35	+ 1	—	—	—	—		—
Tokyo Cen. Met. Obs.		25·9	358	5 40	+ 5	11 30	SSS	—	—		—
Hamada		26·4	344	5 43	+ 3	9 45	−27	—	—		—
Nagano		27·0	356	5 44	− 1	10 8	−14	—	—		—
Sendai		28·4	0	e 5 55	− 3	10 53	+ 8	—	—		—
Mizusawa	E.	29·3	0	e 6 2	− 4	e 11 8	+ 9	—	—		—
	N.	29·3	0	e 6 12	+ 6	e 11 20	+21	—	—		—
Zinsen		30·6	337	e 6 16	− 2	—	—	—	—		—
Brisbane	N.	38·7	163	i 7 25	− 2	e 13 11	−14	i 8 52	PP		e 16·1
Riverview		44·3	169	i 8 15a	+ 2	i 14 31	−17	i 9 44	PP		e 19·6
Sydney		44·4	169	e 9 34?	PP	e 14 34	−15	—	—		e 20·6
Perth		48·0	210	—	—	i 15 49	+ 8	i 19 9	SS		i 22·1
Irkutsk		51·9	333	9 12	0	16 31	− 4	—	—		—
Calcutta	N.	52·1	292	—	—	i 17 10	+32	17 53	?		—
Auckland		56·0	148	—	—	17 34	+ 4	—	—		24·1
Arapuni		57·4	149	e 17 4?	?	18 4?	PS	—	—		25·1
Tuai		58·7	148	10 2	0	—	—	—	—		—
Wellington		59·4	152	10 6	0	18 14	− 1	i 14 9	PPP		29·1
Honolulu		59·6	71	i 10 9	+ 1	e 18 15	− 2	—	—		e 24·3
Christchurch		60·2	155	15 30	?	18 23	− 2	—	—		20·1
Colombo		60·7	273	10 20	+ 5	18 58	PPS	—	—		—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hyderabad	E.	61·3	285	10 31	+11	18 40	+ 1	22 59	SS	—
New Delhi	N.	62·6	298	—	—	18 54	− 2	22 57	SS	25·9
Kodaikanal	E.	62·7	277	e 9 44	−45	i 20 11	?	21 49	?	—
Bombay	E.	66·6	287	e 10 55	+ 1	i 19 44	− 1	11 15	PcP	—
Andijan		67·7	310	e 11 8	+ 7	20 16	PS	11 45	PcP	—
Tashkent		70·1	311	i 11 18	+ 2	i 20 26	− 1	—	—	—
College		73·2	25	—	—	e 20 51	−11	—	—	e 30·6
Sitka		78·4	34	i 11 34	−30	i 21 57	− 3	e 15 22	PP	e 32·7
Ukiah		88·2	51	e 12 53	− 1	e 23 38	0	e 15 59	PP	e 36·7
Berkeley		89·2	52	i 12 59	0	i 23 48	+ 1	e 13 27	PcP	e 36·9
Santa Clara		89·6	52	e 13 7	+ 6	e 23 54	+ 3	—	—	e 42·6
Tinemaha		92·5	52	i 13 15	+ 1	—	—	—	—	—
Haiwee		93·0	53	i 13 17	0	—	—	—	—	—
Pasadena		93·3	55	i 13 16	− 2	e 24 18	− 6	e 23 44	SKS	e 37·7
Mount Wilson	Z.	93·4	55	i 13 17	− 1	—	—	—	—	—
Riverside	Z.	94·0	55	i 13 19a	− 2	—	—	—	—	—
Butte		94·1	42	—	—	e 24 22?	− 9	e 30 37?	SS	e 39·6
La Jolla	Z.	94·3	56	e 13 21	− 2	—	—	—	—	—
Palomar	Z.	94·5	55	i 13 22	− 1	—	—	—	—	—
Bozeman		95·2	42	—	—	e 24 9	[+ 7]	e 24 45	S	e 45·8
Saskatoon		95·6	35	—	—	e 24 42	− 1	e 31 6	SS	42·1
Logan		96·0	46	e 13 32	+ 2	e 23 57	[−10]	e 26 8	PS	e 39·7
Tananarive		96·5	252	—	—	31 47	SSP	—	—	47·1
Upsala	E.	96·5	335	—	—	e 24 4?	[− 5]	—	—	e 47·1
Tucson		99·7	55	e 13 47	0	e 25 19	+ 1	e 17 48	PP	e 40·9
Helwan		102·0	303	e 17 19	?	e 25 44	+ 7	—	—	—
Cheb		105·7	329	e 19 4?	PP	—	—	—	—	e 51·1
Aberdeen	E.	106·9	340	—	—	—	—	e 34 18	SSP	e 46·5
Triest		107·5	324	—	—	e 26 4	{+16}	—	—	e 48·1
De Bilt		107·8	333	—	—	e 25 19	[+16]	e 28 9	PS	e 49·1
Stuttgart		108·1	329	—	—	—	—	e 28 11	PS	e 50·6
Uccle		109·1	333	e 19 3	PP	e 28 39	PS	e 29 40	PPS	51·1
Florence		110·1	324	e 29 6	PPS	—	—	—	—	e 48·1
Kew		110·6	335	—	—	e 28 29	PS	e 29 40	PPS	e 45·1
Paris		111·3	332	—	—	e 29 13	PS	—	—	e 58·1
Chicago		112·0	38	—	—	e 26 56	{+37}	e 28 48	PS	e 44·9
Florissant	E.	112·0	41	—	—	e 27 0	{+41}	—	—	e 48·0
St. Louis		112·2	41	e 19 40	PP	e 34 53	SS	—	—	—
Ottawa		115·9	27	e 18 40?	[− 5]	e 27 4?	{+18}	—	—	45·1
Vermont		117·7	27	—	—	e 36 32	SSP	e 40 31	SSS	47·1
Harvard		120·0	26	i 18 54	[+ 1]	—	—	e 20 41	PP	e 62·1
Fordham		120·2	30	e 30 10	PS	—	—	—	—	e 53·1
Philadelphia		120·2	31	e 29 35?	?	e 31 12?	PPS	—	—	e 48·7
Columbia		120·9	40	—	—	e 36 44	SS	—	—	e 56·7
Toledo		121·1	329	i 19 7	[+12]	24 31	?	35 57	?	55·4
Almeria		122·5	326	e 19 45	?	—	—	—	—	59·1
Granada		122·9	327	21 4	PP	26 11	[+11]	37 16	SS	61·5
Bermuda		131·4	29	e 23 31	?	—	—	e 39 8	SS	e 53·1
San Juan		141·2	43	e 23 33	?	e 26 27	[−14]	e 41 26	SSP	e 57·3
Huancayo		144·1	97	e 19 42	[+ 5]	e 33 34	PS	e 26 4	PPP	e 59·7
La Paz		150·7	106	20 0	[+12]	—	—	—	—	77·1
Rio de Janeiro	E.	166·2	162	e 34 4	?	—	—	—	—	—

Additional readings :—
Brisbane eN =10m.59s.
Riverview iN =14m.35s., iEN =17m.59s., iN =18m.22s.
Perth i =19m.54s.
Tuai i =10m.16s.
Wellington PcS =14m.52s., SS =22m.4s., Q =25m.14s.
New Delhi SSN =21m.35s.
Bombay PPE =13m.33s., PPPE =14m.12s., PSE =20m.6s., ScSE =20m.48s., iE = 21m.28s. and 24m.53s., SSSE =27m.18s.
College eSS? =25m.9s.
Sitka eSS =26m.58s., e =31m.54s.
Berkeley ePZ =13m.35s.
Pasadena eE =23m.9s.
Bozeman e =43m.45s.

Continued on next page.

Logan eSS =31m.13s.
Tananarive N =36m.38s.
Upsala eN =44m.4s.?.
Tucson e =20m.8s., eSKS =24m.29s.
Cheb e =25m.4s.?.
De Bilt iPS =28m.29s., eSS =34m.24s., eSSS =38m.4s.
Uccle iSSN =34m.37s., iSSE =34m.47s.
Kew eSS?EN =34m.4s.?.
Chicago eSS? =34m.23s.
Harvard e =19m.4s.
Philadelphia e =35m.32s.?.
Almeria e =21m.29s.
Huancayo eSS =42m.14s.
Long waves were also recorded at Scoresby Sund, Pittsburgh, and other European stations.

March 15d. 12h. 6m. 10s. Epicentre 22°·0S. 170°·3E. (as at 2h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	16·6	247	e 3 49	− 7	e 7 6	+ 6	—	—	—
	N.	16·6	247	e 3 55	− 1	e 7 2	+ 2	—	—	—
Arapnui		16·7	165	—	—	7 50?	SSS	—	—	—
Wellington		19·6	172	—	—	8 8	0	—	—	11·8
Riverview		20·7	230	i 4 40a	− 4	i 8 32	+ 1	—	—	e 9·8
La Jolla	Z.	88·1	54	e 13 3	+ 9	—	—	—	—	—
Riverside	Z.	88·5	52	e 12 52	− 4	—	—	e 13 11	P_cP	—
Palomar	Z.	88·6	54	e 13 0	+ 4	—	—	i 13 12	P_cP	—
Tinemaha	Z.	89·3	49	e 13 2	+ 3	—	—	—	—	—
Stuttgart	Z.	149·3	336	e 19 51	[+ 5]	—	—	—	—	—

Riverview also gives iPEN =4m.43s.
Long waves were also recorded at Christchurch, Auckland, Pasadena, and Tucson.

March 15d. 14h. 10m. 32s. I } Epicentre 22°·0S. 170°·3E.
14h. 47m. 27s. II } (as at 12h.).

Pasadena quotes Wellington epicentre 20°·5S. 169°·5E.

			Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
			°	°	m. s.	s.	m. s.	s.	m. s.		m.
I	Auckland		15·3	166	3 53	PP	6 45	SS	—	—	9·5
II			15·3	166	3 54	PP	7 55	L	—	—	(7·9)
I	Brisbane	E.	16·6	247	i 3 44	−12	e 7 6	+ 6	—	—	—
		N.	16·6	247	i 3 46	−10	i 6 55	− 5	—	—	—
II		E.	16·6	247	i 3 46	−10	e 7 6	+ 6	—	—	—
		N.	16·6	247	e 3 49	− 7	e 6 59	− 1	—	—	—
I	Arapuni		16·7	165	—	—	7 10?	+ 7	—	—	—
II			16·7	165	—	—	7 21?	SS	—	—	—
I	Tuai		17·7	165	4 25	PP	7 26	0	—	—	—
II			17·7	165	4 6	− 4	7 28?	+ 2	—	—	—
I	Wellington		19·6	172	4 38?	+ 6	8 6	− 2	4 58	PP	10·5
II			19·6	172	4 33?	+ 1	8 10	+ 2	4 53	PP	9·6
II	Kaimata		20·5	178	5 33?	PPP	—	—	—	—	—
I	Riverview		20·7	230	i 4 35a	− 9	i 8 28	− 3	i 5 12	PP	e 10·4
II			20·7	230	i 4 37k	− 7	i 8 26	− 5	i 9 15	SS	e 10·1
I	Sydney		20·7	230	e 4 52?	+ 8	e 8 28	− 3	—	—	e 10·4
I	Christchurch		21·6	177	4 54	0	8 54	+ 5	9 32	Q	11·4
I	Santa Barbara	Z.	87·0	52	e 12 50	+ 2	—	—	—	—	—
I	Pasadena	Z.	88·0	52	i 12 51	− 2	—	—	—	—	e 43·5
II		Z.	88·0	52	e 12 56	+ 3	—	—	—	—	—
I	Mount Wilson	Z.	88·1	52	i 12 51	− 3	—	—	e 13 4	P_cP	—
II		Z.	88·1	52	e 12 54	0	—	—	—	—	—
I	La Jolla	Z.	88·1	54	e 12 45	− 9	—	—	—	—	—
I	Riverside	Z.	88·5	52	i 12 53	− 3	—	—	e 13 4	P_cP	—
II		Z.	88·5	52	e 12 59	+ 3	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
I Palomar	Z.	88·6	54	i 12 54	− 2	—	—	—	—	—
II	Z.	88·6	54	i 12 59	+ 3	—	—	—	—	—
I Tinemaha	Z.	89·3	49	i 12 57	− 2	—	—	—	—	—
II	Z.	89·3	49	i 13 2	+ 3	—	—	—	—	—
II Tucson		92·7	56	e 13 10	− 5	—	—	—	—	e 48·9
II Ottawa		122·0	48	e 18 57	[0]	(27 33)	{+ 6}	—	—	27·5
I Stuttgart	Z.	149·3	336	e 19 48	[+ 2]	—	—	—	—	—
II	Z.	149·3	336	e 19 45	[− 1]	—	—	—	—	—
I Zurich		150·7	335	e 20 4	[+16]	—	—	—	—	—
I Basle		151·0	336	e 20 4	[+15]	—	—	—	—	—

Additional readings :—
Wellington I iZ = 5m.23s., II iZ = 5m.13s.
Riverview I iPP = 4m.41s., iZ = 8m.34s., II i = 4m.46s., iZ = 8m.32s., iN = 8m.39s. and 9m.29s.
Long waves were also recorded for the first shock at Tucson and Harvard.

March 15d. 22h. 59m. 12s. Epicentre 14°·5S. 176°·5W. Depth of focus 0·030.

Felt at Wallis Island.
Epicentre 14°·5S. 176°·5W., depth 300kms. (U.S.C.G.S.), 13°·5S. 176°·5W., depth 325km. (Wellington).
Annual Report for 1943, Apia Observatory, Wellington 1950.

$A = -\cdot 9668$, $B = -\cdot 0591$, $C = -\cdot 2488$; $\delta = +10$; $h = +6$;
$D = -\cdot 061$, $E = +\cdot 998$; $G = +\cdot 248$, $H = +\cdot 015$, $K = -\cdot 969$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia	4·6	82	i 1 18	+ 7	i 2 3	− 2	—	—	—
Auckland	23·6	197	4 58	+ 6	8 40	− 7	i 5 51	pP	—
Arapuni	24·5	195	4 48?	−12	8 54?	− 8	10 36?	SS	—
Tuai	24·8	192	4 58	− 5	8 53	−14	15 29	S_cS	—
New Plymouth	25·8	197	5 13	+ 1	8 36	P_cP	6 25	pP	—
Wellington	27·7	194	5 23	+12	8 33	P_cP	i 6 16	pP	11·8
Kaimata	29·8	198	5 45	− 3	9 58	?	12 48?	S_cP	—
Christchurch	30·4	196	5 50k	− 3	10 26	−10	6 56	pP	—
Brisbane E.	31·1	241	i 6 1	+ 1	i 10 41	− 6	i 7 39	PP	e 20·8
N.	31·1	241	i 6 0	0	i 10 41	− 6	i 12 32	SS	i 18·1
Riverview	35·0	230	i 6 34k	+ 1	i 11 43	− 5	i 7 35	pP	—
Sydney	35·0	230	e 6 33	0	e 11 51	+ 3	e 8 6	PP	e 15·4
Honolulu	40·0	28	i 7 16	+ 1	i 13 3	0	e 8 17	pP	i 16·6
Perth	63·6	241	—	—	i 18 18	− 5	i 19 38	PPS	—
Tokyo Cen. Met. Obs.	64·8	322	e 10 22	+ 5	18 40	+ 2	12 36	PP	—
Sendai	65·9	325	10 26	+ 2	18 51	0	—	—	—
Mizusawa	66·4	326	e 11 29	+62	18 58	0	—	—	—
Nagano	66·4	321	10 31	+ 4	19 1	+ 3	—	—	—
Muroto	66·8	316	10 30	+ 1	19 4	+ 2	—	—	—
Kôbe	67·1	318	10 34	+ 3	19 6	0	—	—	—
Miyazaki	67·9	313	10 41	+ 5	19 20	+ 5	—	—	—
Sapporo	69·1	329	e 10 48	+ 4	e 19 50	+20	—	—	—
Hukuoka	69·6	315	11 18	P_cP	18 52	?	—	—	27·7
Santa Barbara	72·6	47	i 11 3	− 2	i 20 8	− 2	i 12 12	pP	—
Santa Clara	72·7	43	i 11 5	0	i 20 11	0	e 12 11	pP	38·8
Berkeley	72·8	43	i 11 4	− 2	e 20 8	− 4	e 12 13	pP	—
Ukiah	72·9	42	e 11 4	− 2	i 20 10	− 3	e 13 40	PP	e 30·3
La Jolla	73·6	49	i 11 8	− 2	e 20 17	− 4	i 12 18	pP	—
Pasadena	73·6	48	i 11 8a	− 2	i 20 18	− 3	i 12 16	pP	e 30·8
Mount Wilson	73·7	48	i 11 8a	− 3	e 20 17	− 5	i 12 19	pP	—
Fresno N.	73·8	45	i 11 11	− 1	e 20 20	− 3	e 20 59	S_cS	—
Palomar Z.	74·1	49	i 11 12	− 1	i 20 24	− 2	i 12 19	pP	—
Riverside	74·1	48	i 11 11a	− 2	e 20 21	− 5	i 12 19	pP	—
Haiwee	74·7	46	i 11 16	− 1	e 20 28	− 5	i 12 25	pP	—
Tinemaha	75·0	45	i 11 18	0	e 20 35	− 1	i 12 27	pP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		78·1	52	i 11 35	− 1	i 21 8	− 2	i 12 41	pP	e 29·5
Victoria		78·4	34	11 43	+ 6	21 9	− 4	—	—	32·8
Seattle		78·5	35	e 12 57	?	e 22 41	PS	—	—	—
Sitka		79·4	22	e 11 39	− 4	i 21 16	− 7	e 14 43	PP	e 41·1
Salt Lake City		81·2	45	e 11 50	− 2	i 21 37	− 5	e 12 59	pP	e 33·0
Logan		81·7	44	i 11 53	− 2	i 21 42	− 5	e 15 6	PP	e 33·8
College		82·1	12	e 11 55	− 2	i 21 44	− 7	e 13 35	sP	e 35·3
Butte		83·2	40	e 12 1?	− 1	e 21 57?	− 5	e 14 57?	PP	e 36·1
Bozeman		84·0	40	e 12 8	+ 2	i 22 1	− 9	e 13 26	pP	e 35·6
Saskatoon		89·5	36	e 17 26	?	i 24 15	PS	e 30 18?	SS	—
Lincoln		91·9	48	e 16 45	PP	i 23 23	0	i 22 48	SKS	—
Irkutsk		94·9	323	14 3	?	23 5	[− 5]	—	—	—
Florissant		96·0	52	i 13 1	− 2	i 23 9	[− 7]	i 14 17	pP	—
St. Louis		96·0	52	e 13 0	− 3	i 23 10	[− 6]	e 14 15	pP	—
Cape Girardeau	E.	96·3	54	e 13 1	− 3	i 23 1	[−16]	e 14 13	pP	—
Huancayo		97·6	105	e 13 12	+ 2	i 24 18	+ 6	e 23 26	SKS	e 40·0
Chicago U.S.C.G.S.		98·7	49	(e 17 16)	PP	(e 24 17)	− 4	(i 23 23)	SKS	—
Calcutta	N.	100·1	291	e 18 19	PKP	i 25 14	?	27 29	PS	—
Columbia		102·4	58	—	—	e 23 43	[− 5]	e 31 56	SS	e 50·7
La Plata	E.	103·8	132	17 53	PP	23 43	[−11]	27 11	PS	—
Pittsburgh		104·2	51	—	—	i 23 52	[− 3]	i 25 3	S	—
New Kensington		104·4	51	—	—	e 23 48?	[− 9]	e 27 12?	PS	—
Ottawa		107·7	46	e 18 23	PP	e 24 6	[− 5]	e 27 53	PS	44·8
Philadelphia		107·8	53	e 17 51?	?	e 23 20?	[−52]	e 37 1?	SSS	e 38·8
Hyderabad	E.	108·3	283	—	—	24 12	[− 2]	—	—	—
Fordham		108·8	51	e 18 35	PP	i 24 11	[− 5]	i 28 1	PS	—
Kodaikanal	E.	108·9	276	e 13 13	P	—	—	—	—	—
Harvard		110·6	50	i 18 43	PP	i 24 18	[− 5]	i 27 48	SP	—
New Delhi	N.	111·0	295	—	—	i 24 21	[− 4]	28 23	PS	i 39·9
Seven Falls		111·1	44	e 18 50	PP	e 24 20	[− 5]	e 28 6	PS	—
San Juan		113·5	76	e 19 10	PP	e 24 30	[− 5]	e 34 14	SS	e 49·2
Bombay		113·8	284	19 0	PP	i 26 35	S	28 50	PS	—
Andijan		115·3	308	—	—	24 41	[− 1]	—	—	—
Bermuda		115·9	61	e 18 55	?	e 24 42	[− 2]	e 19 37	PP	e 46·8
Rio de Janeiro	E.	121·1	128	e 21 33	?	—	—	—	—	—
Scoresby Sund		121·9	10	e 19 39	?	e 25 4	[− 1]	e 29 53	PS	e 44·5
Tananarive		125·4	234	e 27 52	?	31 41	SPP	37 15	SS	47·8
Copenhagen		138·3	352	18 55	[− 4]	—	—	—	—	—
De Bilt		142·5	357	i 19 0a	[− 7]	—	—	i 20 30	pPKP	—
Kew		143·0	3	i 18 53	[−15]	e 26 20	[+27]	i 20 6	pPKP	—
Prague		143·4	347	e 31 18?	?	—	—	—	—	—
Cheb		143·8	350	e 22 19	PP	e 33 0	PS	—	—	e 60·8
Uccle		143·8	0	i 19 5a	[− 4]	i 28 50	SKKS	i 22 23	PP	—
Ksara		145·0	308	e 19 15	[+ 4]	e 35 30	PPS	20 31	pPKP	—
Stuttgart		145·5	353	e 19 11	[− 1]	e 28 55	SKKS	e 20 28	pPKP	—
Paris		145·8	2	i 19 14	[+ 1]	—	—	i 20 25	pPKP	—
Strasbourg		145·8	355	e 19 13	[0]	—	—	i 20 30	pPKP	—
Belgrade		146·5	338	e 19 15	[+ 1]	—	—	i 20 33	pPKP	—
Basle		146·9	355	e 19 16	[+ 1]	—	—	e 20 32	pPKP	—
Zurich		147·0	354	e 19 13a	[− 2]	—	—	e 20 32	pPKP	—
Sofia		147·1	332	e 19 20	[+ 5]	—	—	e 20 33	pPKP	—
Chur		147·4	353	e 19 14a	[− 1]	—	—	e 20 33	pPKP	—
Triest		147·8	347	e 20 48	pPKP	i 41 23	SS	—	—	—
Clermont-Ferrand		148·8	1	e 19 17	[− 1]	—	—	i 20 40	pPKP	—
Milan	Z.	148·8	353	19 21	[+ 3]	—	—	20 42	pPKP	—
Florence		150·1	348	e 20 51	pPKP	e 32 36	PS	e 36 7	PPS	e 64·6
Helwan		150·1	304	i 19 18a	[− 1]	i 42 4	SS	20 42	pPKP	—
Lisbon		153·4	22	19 23	[0]	—	—	19 44	PKP$_2$	—
Tortosa	N.	153·6	4	e 16 45	?	e 26 7	[0]	—	—	—
Toledo		153·9	13	i 19 24	[0]	i 29 47	SKKS	20 38	pPKP	—
Granada		156·5	14	i 19 28	[0]	32 27	PS	19 59	PKP$_2$	77·1
Almeria		157·1	12	19 29	[+ 1]	27 53	PPP	23 35	PP	41·8

For Notes see next page.

NOTES TO MARCH 15d. 22h. 59m. 12s.

Additional readings :—
Auckland pP? =6m.33s., P_cS =10m.21s., S_cP =10m.59s., S_cS =15m.9s.
Wellington iZ =6m.39s., pP? =7m.0s., iZ =7m.55s., P_cPZ =9m.41s., iZ =10m.18s.,? S_cP?Z =11m.53s., P_cS?Z =12m.46s., S_cS =15m.43s.
Christchurch sP =7m.29s., P_cS =12m.4s., sS =12m.25s., S_cS =15m.43s.
Brisbane iPPN =7m.35s., iE =13m.21s., iSSN =16m.2s.
Riverview iPP =8m.5s., iNZ =9m.17s., iE =9m.28s., iZ =9m.34s., and 12m.19s., isSN =13m.34s., iSSN =14m.39s., iZ =14m.41s., iSSS?E =14m.50s., iN = 15m.11s., iE =15m.19s., iN =16m.27s., iE =16m.31s., iS_cS?EN =18m.49s., iN =20m.7s.
Honolulu e =12m.41s. and 14m.3s.
Perth i =20m.23s.
Tokyo PPP =13m.45s., PS =19m.10s., eN =19m.51s., iSS? =22m.34s., SSS =24m.43s.
Mizusawa ePN =11m.37s.
Berkeley iEZ =13m.48s., iS =20m.5s.
Ukiah i =20m.54s., eSS? =24m.47s.
Pasadena iPPZ =13m.56s., iZ =15m.30s., ePKP,PKPZ =38m.41s., eSKP,PKPZ = 41m.58s.
Mount Wilson ePKP,PKPZ =38m.40s., eZ =41m.58s.
Palomar ePKP,PKPZ =38m.40s., eZ =41m.55s.
Riverside ePPZ =13m.48s., ePKP,PKPZ =38m.39s., eZ =41m.53s.
Tucson iPP =14m.36s., e =23m.15s.
Sitka i =14m.58s., eSP =22m.0s., epS =26m.38s., epPS? =27m.12s., e =32m.51s., eSSS =35m.18s.
Salt Lake City e =14m.51s. and 15m.52s., eSS =26m.54s.
Logan e =17m.19s., eSP =22m.30s.
College e =14m.58s., eSP =22m.34s., e =26m.41s.
Butte eSS =27m.31s.?.
Bozeman ePP =15m.26s., iSP =22m.57s., e =27m.9s.
Saskatoon e =23m.52s.
Lincoln eSSS =33m.43s.
Florissant eZ =16m.56s., esSN =25m.21s.
St. Louis eE =16m.52s. and 17m.58s., iN =23m.52s., iE =23m.57s., eE =24m.49s., isSE =25m.22s., eE =25m.52s., iE =26m.38s. and 26m.48s.
Cape Girardeau eE =17m.0s.
Huancayo i =26m.32s., eSS =31m.2s.
Chicago epS =25m.53s., iPS =26m.14s., eSS =31m.8s.
La Plata N =25m.0s.?, PPSN =27m.6s.?.
Pittsburgh isS =27m.15s.
Ottawa e =24m.56s. and 33m.18s.
Philadelphia eS =24m.56s.?, e =26m.41s.?, isS =27m.12s.?, e =28m.20s.?, eSS = 32m.36s?.
Fordham iSKKS =25m.5s., i =29m.1s.
Harvard iSPP =28m.48s.
New Delhi N iSKKS =25m.23s., S =26m.7s., SS =33m.56s., i =35m.57s., SSS = 36m.57s.
Seven Falls e =25m.21s. and 33m.48s.?.
Bombay iE =19m.24s., PPPE =20m.12s., sPPE =20m.48s., E =23m.23s., 23m.36s., 24m.31s., and 25m.46s., SSE =34m.28s., SSSE =38m.48s.
San Juan eS =26m.22s.
Bermuda e =25m.58s., epS? =28m.31s., eSS =35m.3s., e =38m.50s.
Scoresby Sund esPS =31m.40s.
De Bilt iPP? =22m.18s., eZ =24m.3s., eN =28m.43s., iZ =31m.55s.
Kew isPKP?Z =20m.28s., iPPNZ =22m.9s., eSKKS?N =28m.32s., eSP?Z =31m.54s., ipSP?Z =33m.44s., isSP?Z =34m.8s., eSS?EN =39m.48s.?, eSSS?E =45m.18s.?.
Uccle ePPS?N =34m.23s.
Ksara e =29m.2s.
Stuttgart esP? =20m.55s., iPP?Z =22m.22s., eZ =32m.20s.
Belgrade e =30m.32s.
Clermont-Ferrand i =19m.23s.
Florence ePE =24m.5s., ePPN =25m.51s., ePPPN =28m.34s., eSN =34m.13s., ePPSE =37m.31s., eSS =41m.51s., eSSSE =47m.49s.
Helwan PKKP?Z =19m.40s., sPKP?Z =21m.12s., PP?Z =23m.8s., iZ =24m.3s., sPP?Z =24m.54s., iEN =29m.28s., iN =30m.9s.
Lisbon PP?E =20m.24s.?, E =24m.44s.
Toledo pP =19m.50s., PP =22m.36s.
Granada sPKP =21m.15s., iPP =23m.42s., pPP =24m.17s., sPP =24m.51s., PPP = 27m.8s., iSS =44m.13s., iSSS =49m.32s.
Almeria P_cP =19m.44s., PP =21m.59s., P_cS =23m.56s., PS =28m.14s., PPS =28m.24s., S_cS =28m.46s., SS =32m.8s.

March 15d. Readings also at 0h. (Toledo, Jena, and near Mizusawa (2)), 1h. (Stuttgart and near Mizusawa (2)), 2h. (Tinemaha, Pasadena, Santa Barbara, Riverside, Palomar, Mount Wilson, Tucson, and near Mizusawa (2)), 3h. (Stuttgart (4) and Triest (2)), 4h. (Stuttgart (2), Jena, Tananarive, and near Mizusawa), 6h. (Riverview, Arapuni, Auckland, and near Mizusawa), 7h. (Riverside, Tucson, and Palomar) 11h. (Riverview and Tacubaya), 12h. (Mizusawa), 14h. (near Tucson), 18h. (La Paz), 19h. (near La Paz), 22h. (near Andijan).

March 16d. 9h. 47m. 25s. I } Epicentre 0·4N. 80·4W.
9h. 51m. 52s. II } (as on 1942 Dec. 16d.).

$A = +\cdot1668$, $B = -\cdot9860$, $C = +\cdot0070$; $\delta = +7$; $h = +7$;
$D = -\cdot986$, $E = -\cdot167$; $G = +\cdot001$, $H = -\cdot007$, $K = -1\cdot000$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
I	Huancayo	13·3	158	e 3 16	+ 3	e 6 22	+40	— —	e 7·2
II		13·3	158	i 3 19	+ 6	e 6 44	+62	— —	e 7·6
I	La Paz	20·7	146	4 49	+ 5	8 51	+20	— —	—
II		20·7	146	4 41	− 3	8 38	+ 7	— —	13·1
I	San Juan	22·7	37	e 5 12	+ 8	e 9 24	+15	— —	i 9·8
II		22·7	37	e 5 16	+12	i 9 28	+19	— —	e 10·2
I	Fort de France	23·8	55	e 4 59	−16	—	—	— —	—
II		23·8	55	e 5 22	+ 7	e 9 39	+11	— —	—
II	Columbia	33·4	358	e 6 40	− 2	(e 11 32)	−31	— —	e 11·5
II	Bermuda	35·0	23	e 6 44	−12	(e 11 52)	−36	— —	e 11·9
I	St. Louis	39·1	348	e 8 59	PP	e 13 22	− 9	e 9 15	pPP —
II	Florissant	39·3	348	i 7 29	− 3	e 13 27	− 7	i 9 3	PP i 17·2
II	Philadelphia	39·7	8	e 7 18	−18	e 12 56	−44	— —	— —
II	Fordham	40·7	9	e 7 40	− 4	—	—	— —	— —
I	Tucson	42·7	322	i 7 59	− 1	i 14 5	−19	— —	— —
II		42·7	322	i 7 57	− 3	i 14 26	+ 2	i 8 49	PP e 18·5
I	Rio de Janeiro N.	42·9	126	e 16 35	SS	—	—	— —	— —
II	Ottawa	45·0	5	e 8 12	− 7	e 14 56	− 2	— —	18·1
I	La Jolla Z.	47·4	317	e 8 46	+ 8	—	—	— —	— —
II	Z.	47·4	317	i 8 32	− 6	—	—	— —	— —
I	Palomar Z.	47·4	318	e 8 36	− 2	—	—	— —	— —
II	Z.	47·4	318	i 8 36	− 2	—	—	— —	— —
I	Riverside Z.	48·1	318	i 8 44	+ 1	—	—	— —	— —
II	Z.	48·1	318	i 8 39	− 4	—	—	— —	— —
I	Mount Wilson Z.	48·7	318	e 8 46	− 2	—	—	— —	— —
II		48·7	318	i 8 45	− 3	—	—	— —	— —
I	Pasadena	48·7	318	e 8 50	+ 2	e 15 9	−41	— —	e 24·0
II		48·7	318	i 8 45	− 3	e 15 30	−20	— —	e 24·1
I	Haiwee Z.	49·8	320	e 8 53	− 3	—	—	— —	— —
II	Z.	49·8	320	e 8 53	− 3	—	—	— —	— —
II	Logan	50·0	331	e 9 0	+ 2	e 16 8	− 1	— —	e 25·4
I	Tinemaha	50·5	321	i 9 4	+ 2	—	—	— —	— —
II		50·5	321	i 8 58	− 4	—	—	— —	— —
II	Victoria	60·6	329	e 10 18	+ 3	e 18 30	0	— —	34·1
II	Toledo Z.	79·3	50	e 12 7	− 2	—	—	— —	— —
II	Clermont-Ferrand	85·2	45	e 12 31	− 8	—	—	— —	— —

Additional readings :—
Huancayo I e = 4m.21s., II e = 6m.56s.
St. Louis I esSN = 13m.51s.
Riverside I iZ = 8m.51s., II iZ = 8m.45s. and 8m.50s.
Mount Wilson I iZ = 8m.53s., II iEZ = 8m.54s.
Haiwee I eZ = 9m.3s.
Logan II e = 9m.33s. and 18m.36s.
Tinemaha II iZ = 9m.4s.
Long waves to shock I were recorded at La Plata.

March 16d. 18h. 47m. 15s. Epicentre 0°·8N. 80°·5W. (as on 1942 July 29d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Balboa Heights		8·2	6	—	—	e 3 30	S_g	e 6·8
Huancayo		13·7	158	e 3 20	+ 2	e 6 21	+29	e 6·9
La Paz		21·1	146	4 56	+ 8	8 49	+10	12·2
Fort de France		23·6	56	e 5 14	+ 1	—	—	—
Tucson		42·4	322	i 7 57	− 1	—	—	e 22·9
Palomar	z.	47·0	318	i 8 36	+ 1	—	—	—
Riverside	z.	47·8	318	e 8 40	− 1	—	—	—
Mount Wilson	z.	48·4	318	i 8 45	− 1	—	—	—
Pasadena	z.	48·4	318	e 8 45	− 1	—	—	e 24·2

Additional readings :—
Huancayo e = 4m.10s.
Long waves were also recorded at Rio de Janeiro, San Juan, and Chicago.

March 16d. 23h. 3m. 22s. Epicentre 19°·0S. 170°·0E. Depth of focus 0·020. (as on 1939 Aug. 27d.).

$A = -·9318$, $B = +·1643$, $C = -·3236$; $\delta = -4$; $h = +5$;
$D = +·174$, $E = +·985$; $G = +·319$, $H = -·056$, $K = -·946$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		17·7	238	i 3 58	0	i 7 6	− 1	—	—	—
Auckland		18·3	168	5 13	+69	7 30	+10	—	—	9·6
Tuai		20·7	165	4 33	+ 4	8 11	+ 5	15 23	S_eS	—
Riverview		22·4	225	i 4 46k	0	i 8 33	− 3	i 5 27	pP	i 10·1
Wellington		22·6	172	5 43	+56	8 42	+ 3	—	—	10·1
Christchurch		24·6	175	i 6 23	?	—	—	—	—	i 10·6
Santa Barbara	z.	85·3	52	i 12 14	− 6	—	—	—	—	—
Pasadena		86·3	52	i 12 22	− 3	—	—	e 15 46	PP	—
La Jolla	z.	86·5	54	e 12 22	− 4	—	—	—	—	—
Mount Wilson	z.	86·5	52	i 12 24	− 2	—	—	i 15 48	PP	—
Riverside	z.	86·9	52	i 12 24	− 4	—	—	e 16 4	PP	—
Palomar	z.	87·0	54	i 12 27 s	− 1	—	—	—	—	—
Haiwee		87·4	50	i 12 30	0	—	—	—	—	—
Tinemaha	z.	87·6	50	i 12 28	− 3	—	—	—	—	—
Tucson		91·2	56	i 12 46	− 2	e 25 5	PS	i 16 30	PP	—
Stuttgart	z.	146·5	337	e 19 18	[− 3]	—	—	e 20 25	pPKP	—

Additional readings :—
Brisbane iSN = 7m.9s.
Riverview iEN = 5m.30s., and 8m.40s., iZ = 8m.44s., iE = 9m.28s., iZ = 10m.2s.
Santa Barbara iZ = 12m.21s.
Pasadena i = 12m.25s.
La Jolla i = 12m.25s.
Riverside iZ = 12m.27s.
Palomar iZ = 12m.30s.
Tinemaha i = 12m.32s., iZ = 12m.39s.
Long waves were also recorded at Arapuni.

March 16d. Readings also at 0h. (Ferndale), 4h. (Basle, Chur, Zürich, Stuttgart, Haiwee, La Jolla, Mount Wilson, Palomar, Pasadena, Riverside, Santa Barbara, Tinemaha, Tucson, and near Berkeley (2)), 5h. (Haiwee, Mount Wilson, Palomar, Riverside, Tucson, and Toledo), 6h. (near Tashkent), 10h. (Arapuni and Riverview), 14h. (near Tashkent and Tchimkent), 15h. (2) and 16h. (Tacubaya).

March 17d. 0h. 40m. 44s. Epicentre 32°·7N. 115°·4W.

Felt in Imperial Valley. Several aftershocks. Epicentre 32°44′N. 115°26′W. (Pasadena). Normal focus.

A = −·3620, B = −·7612, C = +·5382; δ = +13; h = +1;
D = −·903, E = +·429; G = −·231, H = −·486, K = −·843.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Palomar	Z.	1·3	298	i 0 25a	0	—	—	—	—
La Jolla		1·5	276	i 0 28a	0	i 0 48	− 1	—	—
Riverside		2·1	308	i 0 35	− 2	i 1 5	+ 1	i 0 42	P_g
Mount Wilson		2·7	305	e 0 45	0	i 1 25	+ 6	0 50	P*
Pasadena		2·7	302	e 0 48	+ 3	i 1 24	+ 5	i 0 50	P*
Tucson		3·9	96	i 1 1	− 1	i 2 5	S_g	i 1 15	P_g
Santa Barbara		4·0	296	e 1 16	P_g	i 1 59	S*	—	—
Haiwee	Z.	4·0	329	i 1 19	P_g	—	—	—	—
Tinemaha		5·0	332	e 1 28	P*	i 2 44	S_g	—	—
Fresno	N.	5·4	319	i 1 42	P_g	i 2 52	S_g	—	—

Tucson also gives i = 1m.7s. and 1m.21s.

March 17d. 22h. 57m. 39s. Epicentre 23°·9S. 69°·7W.

A = +·3176, B = −·8584, C = −·4029; δ = +5; h = +4;
D = −·938, E = −·347; G = −·140, H = +·378, K = −·915.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		1·5	32	i 0 31	+ 3	i 0 44	− 5	—	—	i 0·9
La Paz		7·5	12	i 1 58a	+ 5	i 3 39	+19	i 3 43	S*	i 4·3
Huancayo		13·0	334	e 3 17	+ 8	e 5 40	+ 5	i 3 23	PP	i 6·0
La Plata	E.	15·0	140	3 36a	+ 1	6 33	+10	—	—	8·0
	N.	15·0	140	3 35	0	6 21	− 2	7 8?	SSS	7·8
	Z.	15·0	140	3 35	0	6 27	+ 4	—	—	7·5
Rio de Janeiro		24·3	92	i 5 24	+ 4	i 9 33	− 4	—	—	i 12·4
Fort de France		39·3	14	e 7 44	+12	—	—	—	—	—
San Juan		42·2	5	e 7 53	− 3	i 14 4	−13	e 9 33	PP	e 21·2
Bermuda		56·1	6	e 9 48	+ 5	e 17 37	+ 5	13 10	PPP	e 23·7
Cape Girardeau	E.	63·7	343	e 10 34	− 2	e 18 59	−11	e 19 22	PS	—
Philadelphia		63·7	356	e 9 17?	−79	e 18 11?	−59	i 19 39?	PS	e 25·1
Fordham		64·5	358	e 10 39	− 2	e 19 18	− 1	—	—	—
St. Louis		65·1	343	i 10 43	− 2	i 19 19	− 8	i 20 35	sS	—
Florissant		65·3	343	i 10 45	− 1	i 19 21	− 8	i 20 31	PPS	e 37·2
Tucson		68·3	323	i 11 4	− 1	e 20 4	− 2	e 13 6	PP	e 28·2
Ottawa		69·2	356	11 10	0	20 11	− 5	—	—	32·4
Seven Falls		70·7	359	11 18	− 2	20 28	− 6	—	—	28·4
La Jolla	Z.	72·4	320	i 11 29	− 1	—	—	—	—	—
Palomar	Z.	72·5	320	i 11 30	0	e 20 55	+ 1	e 39 9	P′P′	—
Riverside		73·3	320	i 11 33	− 2	—	—	i 11 49	?	—
Mount Wilson		73·8	320	i 11 38	0	—	—	i 11 52	?	—
Pasadena		73·9	320	i 11 38	− 1	i 21 9	− 1	i 21 32	PS	e 35·7
Santa Barbara	Z.	75·0	319	e 11 50	+ 5	—	—	—	—	—
Haiwee	Z.	75·1	322	i 11 46	+ 1	—	—	i 12 0	?	—
Salt Lake City		75·3	329	e 12 52	+65	e 21 24	− 2	—	—	e 34·9
Tinemaha		76·0	322	i 11 51	0	i 21 29	− 5	i 12 8	?	—
Victoria		86·6	328	—	—	e 23 24	+ 1	—	—	46·4
Granada		86·9	47	i 12 43a	− 5	23 33	+ 7	13 44	P_cP	42·9
Almeria		87·5	47	i 12 50	− 1	e 23 7	[−10]	13 19	pP	44·4
Toledo		88·1	44	i 12 55	+ 1	23 43	+ 6	i 16 22	PP	43·7
Uccle		98·7	37	—	—	e 24 45?	[+24]	—	—	e 43·4
Basle		99·2	41	e 17 46	PP	—	—	—	—	—
Zurich		99·7	41	e 17 44	PP	—	—	—	—	—
Chur		100·1	42	17 52	PP	—	—	—	—	—
Stuttgart		100·7	40	e 13 51	− 1	—	—	—	—	e 53·4

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		102·4	45	e 18 21	PP	—	—	—	—	—
Cheb		103·1	40	—	—	e 24 47	[+ 5]	—	—	e 55·4
Helwan	z.	110·6	66	e 19 11	PP	—	—	e 21 39	PPP	—
Tashkent		141·7	52	19 30	[− 3]	26 29	[−13]	i 22 39	PP	—
Colombo		146·3	115	19 45	[+ 3]	—	—	—	—	—

Additional readings :—
San Juan e =14m.33s., i =17m.21s.
Bermuda e =19m.38s., eSS? =21m.9s.
St. Louis iZ =10m.57s., iE =19m.41s., eE =20m.56s.
Palomar iZ =11m.44s., and 11m.59s.
Pasadena eZ =11m.50s.
Granada SKS =22m.30s.
Almeria PP =16m.14s., PPP =18m.14s., sS =23m.50s., SS =29m.4s.
Helwan iZ =19m.33s.
Tashkent iPKS =23m.0s.
Long waves were also recorded at De Bilt and Kew.

March 17d. Readings also at 0h. (near Tucson (2)), 3h. (Stuttgart, Christchurch, Wellington, Auckland, and Riverview), 6h. (Almata, Tashkent, and Tchimkent), 8h. (near Tashkent and Tchimkent), 13h. (Palomar and Tucson), 16h. and 20h. (near Fort de France), 23h. (near Mizusawa).

March 18d. Readings at 0h. (near Andijan and near Balboa Heights), 3h. (Tacubaya, Palomar, Riverside, Mount Wilson, La Jolla, Pasadena, Haiwee, Tucson, and near Sofia), 7h. (near Andijan), 10h. (Sydney, Riverview, Brisbane, Christchurch, Wellington, Auckland, and Tuai), 11h. (Stuttgart), 12h. (Tacubaya, Puebla, Vera Cruz, and Oaxaca), 13h. (Tacubaya, Vera Cruz, Oaxaca, Salt Lake City, Tucson (2), Palomar, Riverside (2), Mount Wilson (2), and Pasadena), 16h. (near Tashkent and Andijan), 17h. (La Paz), 19h. (near Mizusawa), 21h. (near Tashkent, Andijan, and near Mizusawa), 23h. (Wellington and Riverview).

March 19d. Readings at 0h. (Basle, Chur, Zürich, Stuttgart, Triest, Belgrade, Bucharest, and near Sofia), 9h. (Riverview, Sydney, Wellington, Christchurch, Bombay, Andijan, Tashkent, Irkutsk, Pasadena, and Tucson), 10h. (De Bilt, Clermont-Ferrand, Paris, Stuttgart, Kew, and Uccle), 15h. (Fort de France and Reykjavik), 16h. (near Harvard), 17h. (Ottawa, Haiwee, Mount Wilson, Palomar, Riverside, Tinemaha, Tucson, Sitka, and College), 19h. (Mount Wilson, Haiwee, Pasadena, Palomar, Tucson, Riverside, Tinemaha, La Paz, La Plata, and near Mizusawa), 20h. (Haiwee, Palomar, Riverside, Tucson, La Paz, Toledo, and Clermont- Ferrand), 21h. (near Mizusawa), 22h. (Riverview, near Fresno, Berkeley, and Lick), 23h. (near Mizusawa).

March 20d. 4h. 50m. 35s. Epicentre 16°·5S. 175°·0E. as suggested by Wellington.

$A = -\cdot 9556$, $B = +\cdot 0836$, $C = -\cdot 2823$; $\delta = -15$; $h = +5$;
$D = +\cdot 087$, $E = +\cdot 996$; $G = +\cdot 281$, $H = -\cdot 025$, $K = -\cdot 959$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia	13·0	80	e 3 7	− 2	i 5 32	− 3	—	—	—
Auckland	20·3	181	4 42	+ 2	8 27	+ 4	5 12	PP	—
Arapuni	21·5	179	—	—	8 31?	−16	—	—	—
Tuai	22·3	177	4 54	− 7	8 55?	− 7	—	—	—
New Plymouth	22·5	182	5 3	+ 1	8 49	−16	—	—	10·4
Wellington	24·7	181	5 25	+ 1	9 45	+ 1	5 48	PP	10·4
Kaimata	26·1	187	5 42	+ 5	10 5	− 2	—	—	—
Christchurch	27·0	184	5 51	+ 6	10 15	− 7	10 58	Q	12·8
Riverview	27·5	227	e 5 46	− 4	i 10 32	+ 2	i 6 31	PP	e 13·1
Sydney	27·5	227	e 5 55	+ 5	e 10 31	+ 1	e 6 31	PP	e 13·5
Honolulu	46·1	37	e 10 43	PP	i 15 27	+13	—	—	e 19·5
Perth	55·5	243	17 25	S	(17 25)	+ 1	23 15	SS	28·8
Berkeley	79·9	47	e 12 17	+ 5	e 22 19	+ 3	—	—	e 36·7
Ukiah	79·9	45	e 13 45	?	e 22 37	+21	—	—	e 35·9
Santa Clara	79·9	47	e 12 25	+13	e 22 23	+ 7	e 23 16	PS	e 36·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena		81·1	51	e 12 17	− 1	e 22 33	+ 5	—	—	e 36·6
Mount Wilson	z.	81·2	51	i 12 18	− 1	—	—	—	—	—
Riverside	z.	81·6	51	e 12 20	− 1	—	—	—	—	—
Palomar	z.	81·7	52	i 12 21	− 1	—	—	—	—	—
Haiwee	z.	82·1	49	i 12 25	+ 1	—	—	—	—	—
Tinemaha	z.	82·3	49	i 12 24	− 1	—	—	—	—	—
Sitka		84·4	25	e 13 17	+41	e 22 59	− 2	e 17 37	PPP	e 34·5
Victoria		84·7	37	—	—	e 23 13?	+ 9	—	—	38·4
College		85·9	15	—	—	e 23 32	+16	—	—	e 36·3
Tucson		85·9	55	i 12 43	0	e 23 17	+ 1	—	—	e 38·6
Salt Lake City		88·4	47	e 12 57	+ 2	e 23 32	− 8	e 28 42	SS	e 41·4
Logan		88·8	46	i 13 2	+ 5	e 23 35	− 9	e 18 34	PPP	e 39·0
Butte		90·0	42	—	—	e 24 5?	+11	—	—	e 39·8
Bozeman		90·9	43	—	—	e 23 43	[+ 5]	e 29 56	SS	e 42·2
Irkutsk		91·6	324	e 11 15?	?	21 53	?	—	—	—
Saskatoon		95·9	37	—	—	e 26 13?	PS	e 31 49?	SS	44·4
St. Louis	E.	103·8	53	e 19 21	?	e 24 53	[+ 8]	—	—	—
New Delhi	N.	104·4	296	e 26 47	?	—	—	—	—	—
Huancayo		104·9	107	e 21 47	?	e 26 18	?	e 27 57	PS	e 48·6
Chicago U.S.C.G.S.		106·2	50	e 15 1	?	—	—	—	—	e 49·6
Bombay	E.	106·4	285	18 51	PP	24 40	[−17]	27 36	PS	—
La Paz		109·6	115	e 19 20	PP	28 32	PS	—	—	51·4
Columbia		110·5	59	—	—	e 28 37	PS	—	—	e 54·6
Ottawa		115·1	46	—	—	e 29 37?	PS	e 35 49	SS	52·4
Philadelphia		115·5	53	—	—	e 28 58?	PS	e 34 55?	SS	e 52·0
Vermont		116·9	47	—	—	e 29 46	PS	e 36 10	SS	e 55·9
Seven Falls		118·3	44	—	—	e 30 1?	PS	e 36 49?	SS	55·4
San Juan		121·9	78	—	—	e 26 29	[+33]	e 39 47	?	e 51·2
Bermuda		124·1	61	—	—	e 26 53	[+50]	e 30 27	PS	e 58·0
Rio de Janeiro	E.	125·9	134	e 31 25	PS	—	—	—	—	—
Copenhagen		138·7	345	22 55	PP	25 0	PPP	—	—	—
De Bilt		143·6	350	e 19 45	[+ 8]	e 41 25?	SS	e 46 55	SSS	e 59·4
Cheb		143·7	342	e 22 21	PP	—	—	—	—	e 68·4
Helwan	Z.	144·2	298	e 19 49	[+11]	i 22 47	PP	—	—	—
Belgrade		144·6	328	e 19 37	[− 2]	—	—	—	—	—
Kew		144·9	355	e 19 35	[− 4]	—	—	e 23 36	PKS	e 59·4
Uccle		145·0	352	e 19 41	[+ 2]	—	—	e 23 43?	PKS	e 60·4
Stuttgart		145·8	344	e 19 42	[+ 1]	—	—	—	—	e 72·5
Triest		147·0	337	19 57	[+14]	—	—	—	—	e 67·4
Paris		147·2	351	e 19 55	[+12]	—	—	—	—	78·4
Zurich		147·2	344	e 19 55	[+12]	—	—	—	—	—
Basle		147·3	345	e 19 49	[+ 6]	—	—	—	—	—
Chur		147·4	343	e 19 48	[+ 5]	—	—	—	—	—
Neuchatel		148·0	345	e 19 50	[+ 6]	—	—	—	—	—
Milan		148·8	341	i 19 56	[+11]	20 38	?	—	—	—
Clermont-Ferrand		150·1	349	i 19 53	[+ 5]	—	—	—	—	e 83·5
Toledo		156·7	357	e 20 2	[+ 5]	—	—	22 46	PP	—
Granada		159·3	357	e 22 50	PP	34 33	PS	—	—	85·5
Almeria		159·6	354	e 22 47	PP	e 26 59	PPP	i 37 4	PPS	82·4

Additional readings :—
Auckland i =4m.47s., 5m.23s., 6m.25s., and 8m.38s., P_cP =8m.57s., i =9m.40s. and 12m.10s., S_cP? =13m.20s., i =13m.42s. and 15m.35s.
Tuai i =7m.30s.
Wellington iZ =6m.17s., 6m.30s., and 7m.21s., S? =9m.9s., S_cP?Z =13m.45s.
Riverview iP =5m.51s.a, iNZ =8m.34s., iSSEN =11m.49s.
Honolulu e =11m.22s. and 18m.2s.
Perth SS =25m.35s., SSS =26m.10s., phases wrongly identified.
Berkeley eSN =22m.23s., eE =35m.43s.?.
Sitka e =24m.7s., eSS =28m.37s.
Tucson e =14m.55s. and 21m.43s.
Logan e =24m.53s., eSS =29m.48s.
Bozeman eS =23m.56s.
Irkutsk PS =23m.19s.
St. Louis eE =33m.21s. and 33m.31s.
Huancayo eSS =33m.23s., e =40m.50s.

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Bombay iE =19m.48s. and 20m.12s., SKKSE =25m.32s., SE =26m.8s., PPSE = 28m.53s., SSE =33m.39s.
Philadelphia e =39m.18s.?.
Bermuda eSS =38m.3s.
Heiwan iZ =23m.7s.
Belgrade e =19m.42s., 19m.48s., and 20m.13s.
Kew eZ =21m.13s.
Uccle iPKP$_2$?Z =19m.48s., eZ =21m.32s.
Stuttgart eZ =20m.46s. and 21m.32s.
Clermont-Ferrand iPKP$_2$ =19m.58s.
Granada SKP =29m.34s., SS =52m.37s.
Almeria i =23m.54s., e =41m.29s., SS? =58m.47s.
Long waves were also recorded at Tananarive, La Plata, Lincoln, Pittsburgh, San Fernando, and Upsala.

March 20d. Readings also at 0h. (Cheb and near Mizusawa), 1h. (near Mizusawa), 2h. (Stuttgart, Chur, Neuchatel, and near Zurich), 3h. (Christchurch and Riverview), 4h. (Stuttgart), 6h. (Toledo), 7h. (Huancayo, La Paz, Rio de Janeiro, Tucson, Palomar, Mount Wilson, Riverside, Toledo, and Clermont-Ferrand), 16h. (near Mizusawa and near St. Louis), 20h. (Berkeley, Pasadena (2), Riverside (2), Mount Wilson, Haiwee, La Jolla, Palomar, near Tucson, and Salt Lake City), 21h. (Florissant, Philadelphia, and Sofia).

March 21d. 20h. 35m. 40s. Epicentre 5°·6S. 150°·5E. (as on 1943 February 16d.).

$A = -\cdot8663$, $B = +\cdot4901$, $C = -\cdot0969$; $\delta = +6$; $h = +7$;
$D = +\cdot492$, $E = +\cdot870$; $G = +\cdot084$, $H = -\cdot048$, $K = -\cdot995$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	21·9	174	i 4 55	− 2	i 8 48	− 6	—	—	—
Riverview		28·1	179	i 5 56a	+ 1	i 10 46	+ 6	i 6 46	PP	e 14·0
Sydney		28·1	179	e 6 2	+ 7	e 10 50	+10	i 6 50	PP	e 14·4
Auckland		38·2	147	7 22	− 1	13 20	+ 3	8 52	PP	18·5
Isigakizima		39·3	321	e 7 40	+ 8	—	—	—	—	—
Nake		39·4	330	7 35	+ 2	13 47	+12	—	—	—
Arapuni		39·6	148	9 20?	PP	13 20?	−18	—	—	17·8
New Plymouth		39·6	151	7 33	− 2	13 55	+17	9 12	PP	18·3
Taito		40·2	316	7 41	+ 1	11 16	?	—	—	—
Tuai		40·9	148	7 45	− 1	13 50	− 8	9 25	PP	18·3
Kaimata		41·2	156	7 52	+ 4	14 5	+ 3	—	—	—
Miyazaki		41·5	336	7 56	+ 6	14 18	+11	—	—	—
Kagosima		41·6	334	e 7 57	+ 6	14 16	+ 8	—	—	19·5
Muroto		41·6	340	7 52	+ 1	14 13	+ 5	—	—	—
Wellington		41·6	152	7 49	− 2	14 6	− 2	8 4	pP	18·8
Perth		41·7	226	7 55	+ 3	14 10	0	9 20	PP	20·4
Yokohama	z.	42·1	347	7 58	+ 3	—	—	—	—	—
Tokyo, Cen. Met. Obs.		42·3	348	7 57	0	17 25	SS	—	—	23·7
Christchurch		42·5	156	7 56	− 3	14 15	− 7	9 37	PP	20·1
Kôbe		42·6	342	e 8 3	+ 4	14 33	+10	17 36	SS	e 20·1
Hukuoka		43·4	335	7 57	− 9	14 16	−19	17 50	SS	20·1
Nagano		43·6	354	e 8 9	+ 1	—	—	—	—	—
Hamada		43·9	338	8 11	+ 1	14 44	+ 2	—	—	21·1
Sendai		44·5	350	e 8 14	− 1	14 51	0	—	—	22·0
Mizusawa		45·3	350	e 8 20	− 1	15 44	+42	—	—	18·7
Mori		48·3	351	8 48	+ 3	i 15 57	PPS	—	—	—
Zinsen		48·3	334	8 47	+ 2	15 47	+ 2	—	—	—
Honolulu		57·3	60	e 9 53	+ 1	i 17 47	0	—	—	e 24·7
Calcutta	N.	66·9	297	e 11 6	+10	i 20 6	+17	i 24 41	SS	—
Irkutsk		69·7	332	i 11 15	+ 1	i 20 25	+ 3	—	—	—
Colombo		71·6	279	11 17	− 8	21 56	PPS	—	—	35·4
Kodaikanal	E.	74·4	282	i 11 39	− 3	i 21 41	+25	26 45	SS	—
Hyderabad	E.	74·7	290	11 46	+ 3	21 30	+11	14 22	PP	36·9
Dehra Dun	N.	77·8	303	e 12 43?	+42	e 21 38	−15	e 18 20	?	e 26·0
New Delhi		78·2	301	e 11 56	− 7	e 21 54	− 3	14 51	PP	35·7

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		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay	E.	80·2	290	12 20	+ 6	e 22 13	− 6	15 20	PP	38·2
College		83·5	22	—	—	e 22 42	−10	—	—	e 34·4
Sitka		86·3	32	—	—	e 23 5	[− 5]	—	—	35·0
Stalinabad		87·0	309	e 12 52	+ 4	e 24 33	PS	e 16 45	PP	—
Tchimkent		87·0	313	e 12 46	− 2	—	—	23 46	S_cS	—
Tashkent		87·1	312	i 12 50	+ 1	e 23 33	+ 5	23 18	SKS	—
Ukiah		90·5	50	e 13 5	0	e 23 35	[− 1]	e 18 53	PPP	e 37·7
Berkeley		91·1	52	e 13 5	− 3	e 23 35	[− 4]	—	—	—
Branner	E.	91·2	52	e 13 12	+ 4	e 23 12	[−28]	—	—	e 41·5
Santa Clara		91·4	52	i 13 10	+ 1	e 23 44	[+ 3]	e 25 38	PPS	e 41·6
Victoria		91·6	42	13 20	+10	24 10	+ 1	—	—	37·3
Seattle		92·2	42	e 17 2	PP	e 26 7	PPS	—	—	e 40·0
Santa Barbara	Z.	92·9	56	i 13 16	0	—	—	—	—	—
Pasadena		94·2	56	e 13 17	− 5	e 23 30	[−27]	—	—	e 38·6
Mount Wilson	Z.	94·3	56	13 19	− 4	—	—	—	—	—
Tinemaha	Z.	94·3	53	13 21	− 2	—	—	—	—	—
Haiwee	N.	94·5	54	e 13 27	+ 4	—	—	—	—	—
Sverdlovsk		94·6	326	i 13 23	− 1	—	—	—	—	—
La Jolla	Z.	94·9	57	e 13 25	0	—	—	—	—	—
Riverside	Z.	94·9	56	e 13 21	− 4	—	—	—	—	—
Palomar	Z.	95·2	57	e 13 22	− 5	—	—	e 30 41	SS	—
Butte		98·8	44	—	—	e 25 25?	+15	—	—	e 41·1
Logan		99·4	48	e 14 30	+44	e 25 41	+26	e 18 19	PP	e 41·4
Salt Lake City		99·4	49	e 14 14	+28	e 24 27	[+ 3]	e 27 29	PPS	e 46·1
Bozeman		99·9	45	e 17 57	PP	e 24 34	[+ 7]	—	—	e 45·4
Tucson		100·3	58	e 13 52	+ 2	e 24 33	[+ 5]	i 17 50	PP	e 41·8
Tananarive		100·4	250	—	—	e 24 37	[+ 8]	25 14	SKKS	e 47·9
Saskatoon		102·3	38	—	—	e 25 40	0	—	—	42·3
Buffalo		107·2	41	23 6	?	—	—	—	—	—
Moscow		107·5	327	e 14 17	P	24 52	[−10]	18 24	PKP	—
Lincoln		110·9	48	e 19 9	PP	—	—	e 29 5	PS	e 52·6
Des Moines		112·9	47	e 37 41	?	—	—	—	—	e 52·9
Ksara		113·5	304	e 19 54	PP	—	—	—	—	—
Scoresby Sund		115·0	357	e 19 57	PP	e 39 30	SSS	e 29 31	PS	e 50·0
Upsala		115·2	336	19 46	PP	e 25 49	[+16]	e 28 57	PS	e 51·3
Florissant		116·0	49	e 19 37	PP	i 26 48	{+ 1}	i 29 36	PS	—
St. Louis		116·2	49	e 20 15	PP	e 27 38	?	e 26 54	SKKS	—
Cape Girardeau	E.	117·1	51	e 27 29	?	—	—	—	—	—
Chicago U.S.C.G.S.		117·2	45	e 20 6	PP	e 36 14	SSP	e 29 46	PS	e 49·6
Helwan		118·0	300	e 20 16	PP	33 14	?	36 38	SSP	56·0
Bergen		119·3	341	e 20 5	PP	e 29 55	PS	e 22 52	PPP	e 53·3
Copenhagen		119·9	335	e 19 57	PP	31 52	PPS	30 18	PS	e 54·3
Sofia		120·6	316	—	—	e 26 20?	[+28]	—	—	e 57·3
Belgrade		121·6	320	e 28 25	?	—	—	e 31 43	PPS	e 77·9
Potsdam	E.	121·8	331	e 19 20?	?	—	—	—	—	e 57·3
Jena		122·4	330	e 20 34	PP	—	—	—	—	e 56·3
Prague		122·4	328	e 16 39	?	e 37 20?	SS	e 30 20?	PS	e 59·3
Ivigtut		122·8	11	e 25 22	?	—	—	—	—	e 49·6
Buffalo		122·8	41	23 6	PPP	41 34	SSS	30 34	PS	—
New Kensington		123·2	44	—	—	e 30 50?	PS	e 37 32?	SS	e 53·2
Pittsburgh		123·4	44	e 29 2	?	e 37 15	SS	—	—	—
Cheb		123·5	329	i 20 48k	PP	i 30 41	PS	—	—	e 59·3
Ottawa		123·6	37	18 59	[− 1]	28 44?	?	e 21 8	PP	e 51·3
Aberdeen		124·2	342	i 23 36	PPP	i 36 56	?	e 50 50	?	60·3
Columbia		124·6	52	e 21 55	?	e 26 31	[+27]	—	—	e 54·9
Triest		125·3	324	e 20 27	PP	e 29 47	?	i 38 4	SSP	e 57·3
De Bilt		125·5	334	i 20 58k	PP	e 42 0	SSS	e 32 20	PPS	e 58·3
Seven Falls		125·5	33	e 23 20?	PPP	—	—	e 31 26?	PS	52·3
Vermont		125·6	37	e 21 23	PP	e 32 37	PPS	e 38 3	SSP	e 52·5
Stuttgart		125·9	329	e 19 5	[+ 1]	e 26 20	[+11]	e 21 2	PP	e 57·3
Philadelphia		126·6	42	e 20 52?	PP	e 38 44?	SSP	e 33 12?	PPS	e 50·0
Strasbourg		126·8	330	e 31 41	PS	—	—	e 38 39	SSP	e 60·3
Uccle		126·8	334	e 19 20	[+14]	e 32 27	PPS	i 21 7	PP	56·3
Fordham		127·1	41	e 14 50?	?	—	—	—	—	—
Chur		127·1	327	19 38	?	—	—	—	—	e 65·0

Continued on next page.

		△	Az.	P.	P−C.	S.	O−C.	Sup.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stonyhurst		127·1	340	i 17 59	?	—	—	i 19 27	PKP	e 56·3
Zürich		127·1	328	e 19 8	[+ 2]	—	—	—	—	—
Basle		127·5	329	e 17 22	?	—	—	—	—	—
Harvard		127·7	38	e 20 55	PP	—	—	—	—	e 60·3
Florence		127·8	323	e 21 23	PP	i 28 30	[+24]	e 43 7	SSS	e 57·4
Milan	E.	128·0	326	e 23 23	?	—	—	32 23	PPS	61·9
Kew		128·2	337	e 15 20	?	e 25 3	?	e 38 50	SSP	—
Paris		129·1	333	e 21 20?	PP	—	—	—	—	61·3
Clermont-Ferrand		131·1	330	e 19 13	[− 1]	e 22 42	SKP	i 21 26	PP	e 62·9
Huancayo		131·2	111	e 19 20	[+ 6]	e 33 24	PPS	e 32 9	PS	53·0
La Plata	E.	131·6	148	19 38?	[+23]	38 51	SS	—	—	56·8
	N.	131·6	148	20 56?	?	38 44?	SS	—	—	59·9
Barcelona		134·5	327	e 19 54	[+34]	—	—	—	—	64·7
Tortosa	N.	135·9	326	e 19 52	[+29]	31 0	?	22 25	PP	67·4
La Paz		135·9	120	i 19 26	[+ 3]	26 25	[− 7]	i 22 4	PP	63·8
Bermuda		137·7	46	e 22 36	PP	—	—	—	—	e 52·9
Toledo		138·9	329	i 19 29	[+ 1]	41 26	SSP	i 22 35	PP	69·3
Almeria		140·3	325	i 19 28	[− 3]	26 33	[− 7]	20 6	sPKP	65·3
Granada		140·7	327	i 18 2	?	27 43	?	23 47	SKP	67·8
San Juan		142·1	67	e 19 31	[− 3]	e 29 47	{+13}	e 22 50	PP	e 58·7
Lisbon		142·2	333	19 35k	[+ 1]	29 55	{+21}	23 13	PP	70·8
San Fernando		142·6	328	19 38	[+ 3]	41 45	SSP	23 41	?	67·3
Fort de France		147·6	71	e 19 50	[+ 7]	—	—	—	—	—

Additional readings :—
Riverview iNZ =6m.1s., iPPPN =7m.4s., iP$_c$PN =9m.16s., iN =10m.57s., iE =12m.6s., 12m.51s., and 13m.29s.
Sydney iSS =11m.53s.
Auckland P$_c$P =9m.16s., i =10m.17s., sS =13m.56s., i =14m.40s. and 16m.10s., SS? = 17m.0s.
Wellington sP?Z =8m.29s., PPZ =9m.29s., P$_c$PZ =9m.47s., sPPZ =9m.56s., iZ = 10m.53s., sS =14m.37s., i =14m.54s., SS =17m.20s., S$_c$S =17m.50s.
Perth PPP =10m.10s., SS =17m.5s., SSS =18m.20s.
Christchurch Q =17m.1s., SS =17m.18s., S$_c$S =17m.43s.
Kôbe SSS =18m.11s.
Hamada eP =8m.24s.
Mizusawa ePE =8m.23s.
Hyderabad PSE =21m.59s., SSE =26m.33s.
New Delhi N. pP =12m.18s., PPP =16m.31s., PPPP =17m.51s., S =21m.47s., iPS = 22m.10s., e =22m.40s., i =23m.16s. and 24m.43s., SS =27m.15s., sSS =28m.6s., i =32m.14s.
Bombay iE =22m.23s., PSE =22m.56s., iE =23m.43s., 24m.50s., and 25m.39s., SSE = 27m.27s., iE =29m.20s., 30m.0s., 31m.49s., and 33m.23s., eE =35m.20s.?
Stalinabad ePPS =25m.9s.
Ukiah ePS? =24m.34s., e =25m.43s., eSS =30m.9s.
Pasadena iZ =23m.21s. and 25m.8s.
Tinemaha iNZ =13m.26s.
Butte e =29m.30s.?
Logan eSKS =24m.21s., ePS =26m.49s., e =30m.5s.
Tucson e =18m.30s. and 23m.28s., ePS =27m.2s., ePPS =27m.33s., e =30m.34s., eSS = 32m.37s., e =36m.32s. and 39m.23s.
Tananarive E =38m.3s. and 43m.21s.
Ksara e =29m.43s.
Upsala ePSE =28m.49s., eN =34m.20s.?, eSS?E =35m.40s., eSS?N =35m.45s., eSSSE = 39m.20s.?, eSSSN =40m.20s.?
Florissant iZ =20m.12s. and 21m.2s., iSSN =35m.46s.
St. Louis eE =21m.4s., eSKPE =21m.25s., eN =28m.4s., eE =28m.20s., e =28m.38s., ePSE =29m.30s., eE =30m.9s., ePPSN =30m.54s., eSSEN =35m.49s.
Chicago e =28m.3s.
Helwan eZ =21m.20s., PPZ =24m.21s.?, SKSZ =30m.30s.
Bergen eSKKSE =35m.28s., eE =40m.58s.
Copenhagen 20m.17s., 20m.46s., 36m.50s.?, and 41m.14s.?
Jena eE =20m.43s., eN =20m.48s.
Prague e =21m.20s. and 41m.20s.?
Ivigtut eSS? =38m.49s.
Buffalo SSS =42m.54s.
Ottawa PS =30m.38s.?, SS =37m.26s.?
Triest eSSS? =42m.33s.
De Bilt ePS =30m.20s., eSS =37m.20s.
Seven Falls e =39m.50s.?
Stuttgart ePPP =23m.58s., eS =28m.30s., ePPS =33m.28s., ePPSZ =33m.39s., eSS = 38m.20s., eSSS =42m.38s.?

Continued on next page.

Philadelphia e = 22m.33s.?, 28m.56s.?, and 37m.20s.?
Uccle ePPPE = 23m.22s., eSSE = 38m.17s., iSSSE = 43m.7s.
Harvard e = 21m.37s. and 22m.29s.
Milan e = 29m.48s.
Kew eZ = 15m.48s.?, ePKPZ = 18m.50s., ePP? = 20m.50s., ePSZ = 30m.0s., eSSSEZ = 41m.20s.?
Clermont-Ferrand ePKP$_2$ = 19m.16s., eSKP = 22m.35s., eSSS = 44m.8s.
Huancayo i = 22m.42s., eSS = 39m.8s.
La Plata PPN = 22m.32s.
Tortosa PPPN = 25m.37s., PSKSN = 32m.27s., SSN = 41m.29s., iSSSN = 46m.53s.
Bermuda e = 29m.48s., eSS = 36m.10s., e = 41m.36s.
Toledo iPPPE = 26m.8s.
Almeria PP = 22m.4s., pPP = 22m.20s., PKS = 23m.6s., PPP = 25m.7s., PS = 32m.21s., PPS = 34m.6s., SS = 40m.14s., SSS = 44m.34s.
Granada iPKP = 20m.31s., iPP = 23m.26s., ePPP = 26m.28s., SKKS = 30m.14s., SKSP = 32m.56s., PS = 36m.24s., SS = 41m.21s.
San Juan e = 28m.21s. and 34m.28s., eSS = 42m.4s.
Lisbon PKPE = 19m.56s., PPN = 23m.18s., SKP?Z = 23m.21s., PKS?N = 23m.29s., SSN = 45m.29s.
La Paz iSKPZ = 23m.2s., SKS = 26m.8s., iZ = 31m.12s. and 35m.52s., SSE = 41m.0s.
Long waves were also recorded at Besançon, Bucharest, Edinburgh, and Aberdeen.

March 21d. Readings also at 6h. (Tinemaha, Mount Wilson, La Plata, Riverside, Palomar, Tucson, and near Fort de France), 7h. (Haiwee, Tinemaha, Riverside, Palomar, Mount Wilson, and Pasadena), 10h. (Stuttgart), 11h. (Uccle and De Bilt), 13h. (Stuttgart), 14h. (near Stalinabad), 15h. (Buffalo), 21h. (Ferndale, Tananarive, and near Cape Girardeau).

March 22d. 8h. 24m. 0s. Epicentre 7°·2N. 126°·3E. (as on 1941 June 16d.).

$A = -\cdot5874$, $B = +\cdot7997$, $C = +\cdot1245$; $\delta = +6$; $h = +7$;
$D = +\cdot806$, $E = +\cdot592$; $G = -\cdot074$, $H = +\cdot100$, $K = -\cdot992$.

		△	Az.	P.	O−C.	S.	O−C.		Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Taito		16·2	343	e 3 53	+ 3	—	—	—	—	—
Nake		21·3	8	3 54	−56	6 52	?	—	—	—
Hukuoka		26·5	8	5 45	+ 4	10 18	+ 4	—	—	—
Osaka		28·7	16	6 36	+35	—	—	—	—	—
Kakioka		31·6	21	e 6 52	+26	—	—	—	—	—
Sendai		33·6	21	6 48	+ 4	—	—	—	—	—
Sapporo		38·1	18	7 28	+ 6	13 18	+ 2	—	—	—
Perth		40·2	193	—	—	i 13 30	−18	i 17 10	SSS	i 20·3
Brisbane	E.	43·1	144	i 8 2	− 2	i 14 22	− 8	i 17 46	SS	—
	N.	43·1	144	i 8 0	− 4	i 14 17	−13	i 17 45	SS	e 24·0
Colombo		46·1	273	8 21	− 7	(15 5)	− 9	10 18	PP	15·1
Riverview		47·1	151	i 8 34 a	− 1	i 15 21	− 7	i 10 24	PP	—
Sydney		47·1	151	—	—	e 15 18	−10	i 8 42	SS	—
Hyderabad	E.	47·7	287	8 4	−36	15 35	− 1	—	—	24·8
Kodaikanal	E.	48·3	278	i 8 39	− 6	i 15 33	−12	10 38	PP	—
Irkutsk		48·4	342	8 48	+ 2	i 15 51	+ 5	—	—	—
New Delhi	N.	50·9	302	e 9 0	− 5	e 16 11	−10	19 46	SS	23·7
Bombay	E.	53·2	288	9 18	− 4	i 16 39	−13	9 38	pP	26·0
Andijan		58·4	314	e 9 58	− 2	18 36	PPS	e 13 14	PPP	—
Tashkent		60·7	313	i 10 14	− 1	18 42	+10	12 30	PP	—
Auckland		63·1	138	—	—	20 26	?	—	—	32·0
Wellington		65·5	141	19 25	PS	20 35	+63	—	—	24·0
Christchurch		65·6	145	19 26	PS	27 36	?	32 55	Q	36·9
Tuai		65·7	139	10 46	− 2	20 37	+63	—	—	—
Sverdlovsk		70·8	328	i 11 18	− 2	e 20 25	−10	—	—	—
Moscow		83·4	326	e 12 27	− 3	e 22 43	− 8	—	—	—
Ksara		86·4	303	—	—	e 23 37	+16	—	—	—
Upsala		93·0	331	e 14 42?	?	e 24 0?	[+10]	—	—	—
Triest		100·3	318	—	—	e 27 0	PS	—	—	—
Stuttgart		101·9	323	e 14 8	+11	e 33 0	SS	e 18 10	PP	e 54·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
De Bilt		102·6	327	e 18 10	PP	—	—	—	—	e 51·0
Uccle		103·7	326	—	—	e 25 0	[+15]	e 32 54	SS	e 51·0
Tinemaha	z.	105·4	49	e 18 23	?	—	—	e18 37	PP	—
Paris		105·7	325	—	—	e 28 13	PS	—	—	58·0
Mount Wilson	z.	106·6	52	e 18 15	?	—	—	i 18 30	PP	—
Pasadena		106·6	52	i 18 29	PP	1 25 0	[+ 2]	—	—	e 48·8
Riverside	z.	107·2	52	e 18 0	?	—	—	e 18 59	PP	—
La Jolla	z.	107·7	51	e 19 10	PP	—	—	—	—	—
Palomar	z.	107·9	52	e 18 32	PP	—	—	—	—	—
Tucson		113·0	51	e 18 42	[+ 3]	e 29 3	PS	e 22 29	PPP	e 52·2
Almeria		115·1	316	—	—	e 30 33	PPS	e 39 35	SSS	—
Granada		115·7	318	e 26 25	?	36 14	SSP	e 39 30	SSS	67·0
Seven Falls		123·8	13	e 19 2	[+ 2]	—	—	—	—	61·0
Ottawa		124·0	17	e 19 0	[0]	—	—	38 0?	PPS	62·0
Fordham		128·7	19	e 19 8	[− 1]	—	—	e 22 32	?	—
Balboa Heights		149·6	57	e 19 51	[+ 4]	—	—	—	—	—
San Juan		151·8	24	e 20 6	[+16]	—	—	e 23 43	PP	—
Huancayo		158·1	104	e 20 4	[+ 6]	e 45 17	SSP	e 24 0	PP	—
La Paz	z.	163·1	125	i 20 6a	[+ 2]	—	—	i 24 40	PP	79·0

Additional readings :—
Riverview iNZ =9m.0s., iPPPZ =11m.4s., iE =18m.29s., iSSEN =18m.46s.
New Delhi N. PPP =11m.56s., PS =16m.44s.
Bombay sPE =9m.53s., PPE =11m.24s., sSE =17m.18s., S_cSE =18m.51s., eSSE = 20m.39s.
Andijan P_cP =10m.38s.
Christchurch P_cS? =24m.19s., S_cS =29m.41s.
Stuttgart eZ =17m.46s., e =24m.0s., ePS =27m.18s.?, ePPS =28m.32s.?.
Uccle eEN =27m.24s., eN =33m.18s., eEN =37m.30s.
Riverside eZ =18m.29s.
Granada iPKP =30m.26s., PS =40m.46s., SS =47m.54s., Q =60·3m.
Huancayo e =31m.5s. and 49m.38s.
Long waves were also recorded at Arapuni and other European stations.

March 22d. Readings also at 2h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Palomar, Tucson, and near Mizusawa), 6h. (Istanbul), 7h. (near Andijan), 12h. (Fort de France), 17h. (Tacubaya), 18h. (near Mizusawa), 20h. (Neuchatel and Apia), 21h. (Fort de France), 23h. (Pasadena, Mount Wilson, Riverside, Tucson, and Stuttgart).

March 23d. Readings at 1h. (Fort de France), 2h. (Riverview), 5h. (Triest, Sofia, Belgrade, and Bucharest), 7h. (La Paz), 8h. (Arapuni, Auckland, Wellington, Riverview, Brisbane, New Plymouth, and Tuai), 9h. (Christchurch, Arapuni, Palomar, Riverside, Tucson, Stuttgart, and near Zürich, Neuchatel and Basle), 10h. (Huancayo), 15h. (Fort de France, near Andijan, and Tashkent), 16h. (near Andijan and Tashkent), 17h. (near Fort de France), 19h. (Tacubaya).

March 24d. 11h. 11m. 5s. Epicentre 22°·3S. 179°·2W. Depth of focus 0·020.
(as on 1939 July 20d.).

$A = -·9260$, $B = -·0129$, $C = -·3773$; $\delta = 0$; $h = +4$;
$D = -·014$, $E = +1·000$; $G = +·377$, $H = +·005$, $K = -·926$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		15·4	198	3 32	+ 2	5 20	?	3 48	pP	—
Tuai		16·7	189	3 46	0	6 31	−14	—	—	—
New Plymouth		17·7	197	—	—	7 0	− 7	—	—	—
Wellington		19·6	174	4 14	− 4	7 20	−25	4 30	pP	—
Christchurch		22·2	175	e 6 26	?	i 8 5	−27	—	—	—
Riverview	E.	28·5	239	e 7 3	PPP	i 12 27	SSS	—	—	—
Santa Barbara	z.	79·9	47	i 11 52	0	—	—	i 13 25	pP	—
La Jolla	z.	80·6	49	i 11 57	+ 1	—	—	—	—	—
Pasadena	z.	80·7	48	i 11 55	− 2	—	—	i 13 32	pP	—
Mount Wilson	z.	80·9	48	i 11 57	− 1	—	—	i 13 33	pP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palomar	z.	81·2	49	i 11 59	0	—	—	i 13 37	pP	—
Riverside		81·2	48	i 12 1	+ 2	e 21 44	−10	i 13 36	pP	—
Haiwee	z.	82·0	46	i 12 3	0	—	—	e 13 41	pP	—
Tinemaha		82·4	45	i 12 5	0	e 21 45	−21	—	—	—
Tucson		84·9	52	i 12 18k	0	e 22 8	−23	i 14 0	pP	e 35·3

Additional readings :—
Auckland i =6m.16s. and 6m.26s.
Tuai i =3m.49s.
Wellington iZ =6m.30s.
Riverview iE =9m.59s., iN =12m.32s., iZ =12m.36s.
Pasadena i =11m.59s.
Mount Wilson i =12m.0s.
Palomar iZ =12m.2s.
Riverside iZ =12m.5s., i =12m.31s., iZ =13m.39s.
Tinemaha i =12m.9s., iPPNZ =13m.48s.

March 24d. Readings also at 0h. (Wellington, Arapuni, Auckland, and near Lick), 6h. (near La Paz (2)), 7h. (Wellington, Auckland, Christchurch, Riverview, Sverdlovsk, Tucson, Tchimkent, Tashkent, and near Mizusawa), 8h. (Pasadena, Christchurch, and near Apia), 9h. (Riverview, Wellington, Auckland, Stuttgart, Tucson, Tinemaha, Haiwee, Palomar, Riverside, Pasadena, and Mount Wilson), 10h. (Tacubaya), 11h. (Riverview, Palomar, Mount Wilson, Riverside, Pasadena, Haiwee, Tucson, and Tinemaha), 15h. (Tacubaya and near Apia), 16h. (Tacubaya), 20h. (La Paz).

March 25d. 2h. 50m. 28s. Epicentre 38°·0N. 21°·0E. (as on 1939 Sept. 20d.).

$A = +\cdot7375$, $B = +\cdot2831$, $C = +\cdot6131$; $\delta = -6$; $h = -1$;
$D = +\cdot358$, $E = -\cdot934$; $G = +\cdot572$, $H = +\cdot220$, $K = -\cdot790$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		5·1	21	e 1 5	−15	i 2 17	− 3	i 1 44	P_g	i 2·4
Belgrade		6·8	357	e 1 35	− 9	i 3 10	+ 7	i 1 58	P*	i 3·4
Bucharest		7·4	30	e 1 36	−16	e 3 5	−13	e 2 18	P*	—
Campulung		7·9	22	e 1 50?	− 9	e 3 54	S*	—	—	—
Focsani		9·0	28	e 2 20?	+ 7	e 3 50?	− 8	e 3 38?	?	—
Florence		9·4	311	e 2 28	+10	i 4 22	+15	—	—	i 5·4
Triest		9·4	327	e 2 32	+14	e 4 1	− 6	e 2 50	PPP	—
Bacau		9·6	25	e 2 14?	− 7	e 4 20	+ 8	—	—	—
Ogyalla	N.	10·1	348	—	—	e 4 2	−23	—	—	e 4·5
Milan		11·5	314	e 4 4	?	4 41	−18	—	—	5·8
Helwan	z.	11·8	130	2 47	− 6	i 5 11	+ 5	—	—	i 5·8
Chur		12·2	320	e 3 4	+ 6	e 5 16	0	—	—	—
Prague		13·0	341	e 3 4	− 5	e 6 5	SSS	—	—	—
Zurich		13·1	320	e 3 15	+ 5	e 5 33	− 5	—	—	—
Cheb		13·6	336	e 5 7	?	e 6 6	+16	—	—	e 6·7
Basle		13·7	319	e 3 23	+ 5	e 6 14	+22	—	—	—
Neuchatel		13·7	316	e 3 28	+10	e 7 28	L	—	—	(e 7·5)
Stuttgart		13·7	326	e 3 16	− 2	e 5 42	−20	e 3 35	PP	e 6·9
Jena		14·5	336	e 3 32	+ 4	e 6 26?	+15	e 6 29	SS	e 7·5
Clermont-Ferrand		15·4	306	e 3 54	+14	—	—	—	—	i 8·3
Uccle		17·4	323	e 4 26	+20	7 24	+ 5	—	—	e 9·5
De Bilt		17·9	327	e 4 16k	+ 4	i 7 45	+15	—	—	e 10·5
Copenhagen		18·6	345	4 15	− 6	7 40	− 6	—	—	· 9·5
Kew		20·2	320	e 4 40	+ 1	e 8 17	− 4	e 8 40	SS	e 11·0
Moscow		21·0	27	4 34	−13	8 7	−30	—	—	—
Upsala	E.	22·0	356	e 5 22	+24	e 8 44	−12	—	—	e 11·5
	N.	22·0	356	e 4 55	− 3	e 8 42	−14	—	—	—
Aberdeen		24·5	331	—	—	i 9 39	− 1	—	—	—
Bergen		24·5	343	—	—	e 9 32	− 8	—	—	—

Additional readings :—
Belgrade e =2m.18s., i =3m.18s.
Bucharest ePN =2m.3s., iEN =2m.49s., iE =3m.0s., iSEN =3m.8s. iS_eN =3m.57s.
Florence eZ =2m.53s., iZ =3m.8s.
Upsala e =6m.12s.
Long waves were also recorded at Strasbourg, Granada, Paris, and Potsdam.

March 25d. 15h. 40m. 8s. Epicentre 42°·6N. 13°·5E. (as on 1943 Jan. 29d.).

Intensity VI at Macerata and Montalto. Felt slightly at Ascoli-Piceno and Ancona.
Epicentre 42°·9N. 13°·1E. (Strasbourg).
R. P. Cesare Coppede.
Annuario Sismico 1943 del Observatorio, Ximeniano, Firenze, p. 10.

$A = +\cdot7180$, $B = +\cdot1724$, $C = +\cdot6744$; $\delta = +6$; $h = -3$;
$D = +\cdot233$, $E = +\cdot972$: $G = +\cdot656$, $H = +\cdot157$, $K = -\cdot738$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florence	z.	2·0	306	i 0 40	+ 5	i 1 8	+ 6	i 0 44	P_g	—
Triest		3·1	3	e 0 55	+ 4	—	—	e 1 14	P_g	—
Milan		4·2	314	e 1 9	+ 2	i 1 58	+ 1	—	—	2·7
Chur		5·1	328	e 1 18	− 2	e 2 17	− 3	—	—	—
Belgrade		5·5	65	e 2 46	S*	e 3 31	S_g	—	—	e 4·0
Ravensburg		5·9	332	e 1 46	+15	e 2 46	+ 6	e 2 7	P_g	e 3·2
Zürich		5·9	325	e 1 26	− 5	e 2 26	−14	—	—	—
Neuchatel		6·4	315	e 1 34	− 4	e 2 39	−14	—	—	—
Basle		6·5	321	e 1 36	− 3	e 2 37	−18	—	—	—
Stuttgart		6·9	335	e 1 45	0	e 3 0	− 5	e 2 9	P*	e 3·7
Sofia		7·2	86	—	—	e 2 52?	−21	—	—	—
Strasbourg		7·2	328	e 2 14	P*	e 3 37	S*	i 4 3	S_g	—
Prague		7·5	5	e 3 22	S	(e 3 22)	+ 2	e 3 52?	S*	—
Jena		8·4	352	e 2 42	P_g	e 4 0	+17	i 4 40	S_g	e 4·9

Additional readings :—
Florence iZ = 1m.4s., iS_gZ = 1m.14s.
Stuttgart eZ = 1m.56s.
Strasbourg e = 2m.59s.
Jena eN = 3m.22s.?, eE = 3m.25s., iN = 4m.48s.
Long waves were also recorded at other European stations.

March 25d. 18h. 27m. 14s. Epicentre 60°·3S. 27°·9W. (as on 10d.).

$A = +\cdot4401$, $B = -\cdot2330$, $C = -\cdot8672$; $\delta = +1$; $h = -9$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata	E.	32·0	310	6 28	− 2	11 46	+ 4	7 40	PP	14·4
Montezuma		47·2	305	e 10 54	PPP	—	—	e 15 38	PS	e 22·3
La Paz		52·5	309	i 9 17k	0	16 53	+10	i 17 1	PPS	26·8
Huancayo		59·4	303	e 10 9	+ 3	i 18 37	PPS	e 12 22	PP	e 24·8
Tananarive		66·6	86	e 10 53	− 1	e 19 47	+ 2	11 30	P_cP	28·6
Christchurch		75·2	194	11 47	+ 1	21 12	−13	15 0	PP	34·8
Wellington		77·1	196	11 58	+ 1	21 48	+ 2	12 21	pP	37·8
Fort de France		79·4	328	e 12 6	− 3	—	—	—	—	—
Arapuni		80·0	198	—	—	21 46?	−31	—	—	34·8
Auckland		81·4	197	13 21?	?	24 36	?	i 15 16	PP	38·8
Perth		83·4	149	i 15 11	PP	—	—	i 23 41	PS	39·8
San Juan		84·3	324	e 14 46	?	—	—	e 24 19	PPS	e 34·8
Riverview		86·2	179	i 12 43a	− 1	i 23 18	− 1	i 16 24	PP	e 34·7
Sydney		86·2	179	—	—	i 23 16	− 3	e 28 49	SS	—
Brisbane		92·5	181	i 13 18	+ 4	i 24 15	− 2	i 16 57	PP	i 35·8
Bermuda		97·2	329	e 15 2	?	—	—	e 27 0	PPS	e 48·1
Almeria		99·0	20	18 40	?	27 34	PPS	31 58	SS	40·8
Granada		99·2	19	e 18 37	?	i 27 43	PPS	—	—	41·7
Lisbon	z.	99·9	14	23 36	?	—	—	—	—	48·9
Helwan		102·0	50	18 11	PP	e 25 52	+15	e 24 38	SKS	—
Columbia		103·6	317	—	—	e 24 26	[−18]	—	—	e 45·2
Colombo		104·7	102	18 27	PP	—	—	—	—	49·5
Kodaikanal	E.	106·4	97	17 0	?	e 23 59	[−57]	31 22	?	—
Philadelphia		107·2	323	e 18 54	PP	—	—	e 27 38	PS	43·8
Ksara		107·3	51	e 18 26	PP	—	—	e 28 28	PS	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fordham		107·6	325	e 19 28	PP	—	—	—	—	—
Harvard		108·5	327	e 19 1	PP	—	—	—	—	e 55·8
Clermont-Ferrand		108·7	22	e 18 51	PP	—	—	i 28 18	PS	e 43·8
Pittsburgh		109·1	320	e 19 46	?	—	—	—	—	e 51·9
Sofia		110·9	38	e 19 21?	PP	—	—	e 27 10	?	—
Triest		110·9	29	e 18 46	[+11]	i 28 46	PS	—	—	e 48·8
Florissant		111·2	311	e 19 23	PP	—	—	e 28 38	PS	—
Bombay	E.	111·5	89	i 19 23	PP	e 25 7	[−11]	i 28 51	PS	51·8
Paris		111·5	21	e 17 46?	?	—	—	—	—	53·8
Ottawa		112·3	325	e 19 26	PP	—	—	e 30 22?	PPS	46·8
Strasbourg		112·3	24	e 29 16	PS	—	—	—	—	e 51·3
Seven Falls		112·6	329	e 20 20	?	—	—	e 35 10?	SS	45·8
Chicago		112·8	315	e 29 29	PS	—	—	—	—	e 51·5
Stuttgart		112·8	25	e 15 24	P	—	—	e 19 16	PP	59·5
Bucharest		113·3	38	e 19 39	PP	29 26	PS	—	—	53·8
Kew		113·6	18	e 16 46	?	e 29 1	PS	e 30 1	PPS	e 44·8
Uccle		113·8	21	—	—	e 25 29	[+ 1]	i 29 25	PS	48·8
Tucson		114·1	292	e 18 41	[0]	e 25 58	[+29]	e 19 29	PP	e 54·0
Cheb		114·7	26	e 20 46?	?	—	—	e 30 5	PPS	e 56·8
De Bilt		115·2	22	e 19 11	[+28]	e 29 26	PS	e 35 46?	SS	e 48·8
Prague		115·2	28	e 29 28?	PS	—	—	e 35 16?	SS	e 49·8
Stonyhurst		115·6	16	i 32 25	?	—	—	i 35 15	SS	e 47·8
Yalta		116·0	45	29 58	PS	—	—	—	—	—
Palomar	Z.	117·9	288	i 18 48	[0]	—	—	e 20 15	PP	—
Riverside	Z.	118·6	288	i 18 47	[− 3]	—	—	—	—	—
Aberdeen		118·9	15	—	—	e 27 9	{+ 3}	e 49 56	Q	58·8
Mount Wilson	Z.	119·1	288	e 18 51	[0]	—	—	e 29 1	PKKP	—
Pasadena		119·1	288	e 18 52	[+ 1]	—	—	i 20 41	PP	e 49·8
Copenhagen		120·0	24	e 19 19	[+26]	27 9	{− 5}	20 52	PP	—
Salt Lake City		121·6	297	e 20 59	PP	e 27 9	{−15}	—	—	e 58·3
Tinemaha	Z.	121·6	290	i 18 54	[− 2]	—	—	e 28 55	PKKP	—
New Delhi	N.	121·8	88	e 20 37	PP	26 31	[+35]	31 17	PPS	51·7
Calcutta	N.	122·1	101	e 20 38	PP	i 26 1	[+ 4]	i 37 31	SS	—
Ivigtut		122·2	348	e 30 26	PS	—	—	—	—	e 58·4
Logan		122·4	298	e 20 39	PP	e 27 51	{+21}	—	—	52·8
Bergen		123·1	18	e 21 16	PP	—	—	e 37 26	SS	e 52·8
Santa Clara		123·5	287	e 20 47	PP	—	—	—	—	e 65·1
Dehra Dun	N.	123·6	87	e 29 42?	PS	e 38 38	SSP	—	—	e 47·6
Berkeley		124·1	287	e 20 51	PP	—	—	—	—	—
Upsala		124·9	25	e 19 46?	?	—	—	e 37 46?	SS	e 51·8
Bozeman		125·2	301	—	—	e 26 34	[+27]	—	—	e 57·2
Ukiah		125·5	288	e 30 9	?	—	—	e 42 14	SSS	e 61·9
Butte		126·1	301	e 28 31?	?	—	—	—	—	e 62·2
Moscow		126·7	40	19 28	[+22]	27 51	{− 7}	21 10	PP	—
Tashkent		128·1	72	19 11?	[+ 3]	—	—	e 21 14	PP	—
Scoresby Sund		130·6	2	e 21 33	PP	—	—	e 39 5	SS	e 55·3
Victoria		132·8	295	e 21 53	PP	—	—	—	—	62·8
Sverdlovsk		135·8	52	19 13	[− 9]	—	—	i 22 0	PP	—
Sitka		144·2	297	e 34 6	?	—	—	—	—	68·9
College		152·9	306	e 23 58	PP	—	—	e 43 5	SS	e 67·3
Vladivostok		158·9	136	20 29	[+30]	—	—	—	—	—

Additional readings :—
La Plata E =6m.58s., PPPN =7m.34s., PPPE =7m.40s., Z =10m.16s., N =10m.22s., SSN =12m.46s., SSE =13m.16s., S_cSE =16m.34s.
Huancayo i =14m.14s. and 23m.40s.
Tananarive eE =19m.39s., PS =20m.1s., SS =22m.51s.
Christchurch SS =26m.10s., SSS =29m.18s., Q =31m.16s.
Wellington sPZ =12m.31s., iZ =13m.51s. and 14m.8s., sPS =23m.9s., S_cSP?Z = 24m.43s., SS?Z =26m.46s.?, e =32m.46s.?, Q? =35m.46s.?
Auckland PPP? =18m.56s., SS? =28m.46s.?, Q =35m.46s.?
Perth i =28m.1s. and 34m.41s.
San Juan e =22m.13s.
Riverview iN =18m.46s., iZ =18m.49s., iSKSN =23m.14s., iPSN =24m.11s., iN = 25m.2s. and 25m.59s., iSSE =28m.46s., iN =29m.2s.
Brisbane eSKSN =23m.44s., eSN =24m.25s., ePSEN =25m.49s., iSSN =30m.41s.
Bermuda e =18m.40s., eSS =39m.33s.

Continued on next page.

Almeria P_cP =19m.4s., PPP =22m.58s., S_cS =28m.26s., SSS =31m.48s.
Granada iP_cP =19m.5s., SS =33m.25s.
Helwan eZ =18m.57s., eN =27m.16s., eEN =32m.49s.
Philadelphia e =23m.23s., ePPS =28m.59s., eSS =33m.47s.
Harvard e =20m.22s., 24m.17s., and 30m.37s.
Pittsburgh e =27m.34s.
Florissant iZ =22m.7s., eZ =35m.43s.
Bombay eE =25m.29s., PPSE =29m.57s., SSE =34m.39s., SSPE =34m.58s., SSSE = 38m.58s.
Ottawa e =35m.16s.? and 38m.16s.?
Seven Falls e =30m.48s.
Stuttgart eZ =20m.9s., e =29m.1s., Q =50·3m.
Kew ePPZ =21m.4s., ePPPNZ =23m.18s., eSKS? =27m.16s.?, ePPS?EN =31m.12s., eSS =35m.10s., eSSS =38m.56s.?
Uccle eSE =27m.33s., eSSE =35m.17s., iN =35m.46s.
Tucson ePS? =29m.30s., eSS =35m.56s.
Prague e =39m.46s.?
Aberdeen eE =28m.34s.
Pasadena ePSZ =29m.52s., eSS =36m.58s.?
Copenhagen 30m.10s., 36m.46s. ?, and 40m.46s.?
Salt Lake City e =35m.1s. and 39m.49s.
New Delhi eN =32m.37s., SSN =35m.34s.
Logan e =40m.12s.
Upsala eN =20m.9s. and 27m.16s.?
Bozeman e =35m.13s.
Moscow PS =31m.32s.
Tashkent iSS =38m.34s.?
Scoresby Sund ePP =22m.10s., e =34m.24s.
Victoria eE =23m.59s., eN =40m.34s.?
Sverdlovsk ePS =32m.12s., ePPS =34m.34s.
College e =31m.14s. and 40m.13s.
Long waves were also recorded at Lincoln, Honolulu, and other European stations.

March 25d. Readings also at 2h. (Fort de France and Tacubaya), 7h. (Riverview and Christchurch), 8h. (Triest, Sofia, and Bucharest), 9h. (Tacubaya (5)), 10h. (La Paz), 11h. (Riverview, Wellington, Christchurch, De Bilt, Kew, Stuttgart, Huancayo, and La Plata), 12h. (near Stuttgart, Ravensburg, Chur, Zürich, Basle, and Neuchatel), 13h. (De Bilt, Kew, Triest, Stuttgart, Prague, Cheb, Belgrade, Tocsani, Bucharest, and near Sofia), 15h. (New Delhi, Bombay, Tacubaya (6), and near Fort de France), 17h. (Sitka), 19h. (Riverside, Tucson, and near La Paz), 20h. (Tinemaha, Haiwee, Mount Wilson, and Tacubaya), 23h. (near Tashkent, Stalinabad, and Tchimkent).

March 26d. 7h. 51m. 7s. Epicentre 41°·5N. 25°·2E. (as on 1939, August 9d.).

Scale IV at Ivailovgrad, Kronmovgrad, Tokatchka, and Haskovo. Epicentre 41°·5N. 25·5E.
Institute Meteorologique Central de Bulgarie, "Tremblements de terre en Bulgarie, 1941-1945," p. 18.

$A = +·6797$, $B = +·3198$, $C = +·6601$; $\delta = 0$; $h = -2$;
$D = +·426$, $E = -·905$; $G = +·597$, $H = +·281$, $K = -·751$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	1·8	311	0 36	+ 4	e 1 1	+ 5	0 41	P_g	—
Istanbul	2·9	98	e 0 43	− 5	—	—	—	—	—
Bucharest	3·0	13	e 0 52	+ 2	i 1 33	+ 6	i 1 7	P_g	i 2·1
Campulung	3·8	358	e 1 23?	P_g	—	—	—	—	—
Focsani	4·4	19	e 1 35?	P_g	—	—	—	—	—
Belgrade	4·8	316	e 1 34	P_g	e 2 34	S_g	—	—	—
Triest	9·3	301	e 4 38	S_g	—	—	—	—	e 5·3

Additional readings :—
Sofia iS_gEN =1m.12s.
Bucharest iN =1m.4s. and 1m.14s., S_gEN =1m.54s.
Belgrade i =2m.43s. and 2m.59s.
Long waves were also recorded at Stuttgart and Copenhagen.

March 26d. 17h. 38m. 12s. Epicentre 22°·5S. 176°·2W. Focus at base of superficial layers.

Felt at Nukualofa, Samoa.
Annual report for Apia Observatory, 1943; Wellington, 1950.
Epicentre 23°S 176°·5W. suggested depth 100km.

$A = -\cdot9228$, $B = -\cdot0613$, $C = -\cdot3805$; $\delta = +10$; $h = +4$;
$D = -\cdot066$, $E = +\cdot998$; $G = +\cdot380$, $H = +\cdot025$, $K = -\cdot925$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		9·6	27	e 2 20	+ 1	i 3 54	−13	e 2 34	pP	—
Auckland		16·3	207	3 44	− 4	6 46	− 1	14 48	S_cS	—
Arapuni		17·0	202	3 48?	− 9	7 24?	+21	—	—	—
Tuai		17·2	197	4 26?	+27	6 50	−18	15 48	S_cS	—
New Plymouth		18·5	203	4 16	+ 1	7 36	− 1	15 43	S_cS	—
Wellington		20·2	199	4 28	− 7	7 56	−18	15 59	S_cS	10·6
Kumata		22·5	204	5 5	+ 7	8 48	−10	16 0	S_cS	—
Christchurch		22·9	200	5 1	− 1	9 0	− 5	16 10	S_cS	11·7
Brisbane		28·3	253	i 5 52	− 1	i 11 53	SS	i 16 33	S_cS	—
Riverview		30·8	240	i 6 14k	− 1	i 11 9	− 6	i 16 45	S_cS	e 14·5
Honolulu		47·1	24	e 12 21	?	i 15 21	PS	e 18 25	SS	e 22·6
Tokyo Cen. Met. Obs.		71·3	323	11 17	− 1	20 31	− 1	—	—	—
Nagoya		72·5	321	e 11 17	− 8	—	—	—	—	—
Sendai		72·6	326	i 11 26	0	20 46	− 1	—	—	—
Nagano		72·9	323	e 11 29	+ 1	19 47	−63	—	—	—
Mizusawa	E.	73·1	327	e 11 28	− 1	e 20 50	− 3	—	—	—
Kôbe		73·2	320	i 11 31	+ 2	20 53	− 1	12 3	P_cP	—
Kagosima		74·1	314	e 11 34	− 1	—	—	—	—	—
Hukuoka		75·5	316	i 11 42	− 1	i 21 18	− 2	—	—	35·7
Mori		75·7	328	11 45	+ 1	i 21 46	+24	—	—	—
Sapporo		76·0	329	10 29	?	21 48	+23	—	—	—
Santa Barbara		78·0	45	i 11 56	− 1	e 21 47	0	i 12 23	pP	—
Branner		78·3	41	e 11 59	+ 1	e 21 52	+ 2	e 12 24	pP	—
Berkeley		78·6	41	i 11 59	− 1	i 21 54	+ 1	e 15 13	PP	—
Lick		78·6	41	e 11 39	−21	—	—	e 12 1	P	—
La Jolla		78·7	47	e 12 0	0	i 21 56	+ 2	i 12 26	pP	—
Ukiah		78·8	39	e 12 21	+20	e 21 56	+ 1	e 22 35	S_cS	e 34·0
Pasadena		78·8	45	i 12 1a	0	e 21 54	− 1	i 12 24	pP	e 34·9
Mount Wilson		79·0	45	i 12 1	− 1	e 21 54	− 3	i 12 28	pP	—
Palomar	Z.	79·2	47	i 12 2a	− 1	e 21 52	− 7	i 12 28	pP	—
Riverside		79·3	45	i 12 2	− 2	e 22 0	0	i 12 28	pP	—
Fresno	N.	79·4	42	e 12 6	+ 2	e 22 3	+ 1	—	—	—
Haiwee		80·2	44	i 12 9	0	e 22 12	+ 2	i 12 34	pP	—
Tinemaha		80·6	43	i 12 10	− 1	e 22 13	− 1	i 12 34	pP	—
Vladivostok		80·9	323	i 12 13	+ 1	i 22 18	+ 1	—	—	—
Tucson		82·8	50	i 12 22	0	e 22 39	+ 2	—	—	e 37·1
Victoria		85·0	32	e 12 35	•+ 2	22 54	− 4	e 13 14	pP	38·8
Tacubaya	N.	86·0	67	e 11 17	?	—	—	—	—	—
Salt Lake City		86·8	43	e 12 40	− 2	e 23 3	[0]	e 13 2	pP	e 40·2
Sitka		86·8	20	e 15 6	?	e 23 12	[+ 9]	—	—	—
Logan		87·3	42	i 12 44	− 1	i 23 6	[0]	e 16 20	PP	e 40·8
College		89·8	11	e 13 21	pP	i 23 41	− 3	e 24 20	PS	e 42·4
Bozeman		89·9	39	e 13 20	pP	i 23 23	[0]	e 18 21	PP	—
Huancayo		95·3	105	e 13 25	+ 3	i 23 55	[+ 2]	i 17 13	PP	e 40·3
Saskatoon		95·8	35	e 16 21	PP	e 23 50	[− 6]	e 24 33	S	44·8
La Plata		98·2	133	—	—	24 0	[− 9]	—	—	45·4
La Paz		99·7	112	i 13 41	− 1	25 0	− 9	i 17 43	PP	46·6
Florissant		100·7	53	i 14 10	pP	i 24 14	[− 7]	i 17 52	PP	e 47·1
St. Louis		100·7	53	e 13 47	+ 1	e 24 15	[− 6]	e 17 49	PP	—
Irkutsk		101·3	322	17 43	PP	24 24	[0]	25 1	SKKS	—
Calcutta	N.	103·1	289	e 18 23	PKP	i 24 26	[− 6]	—	—	—
Chicago		103·6	50	e 18 26	PKP	e 24 41	[+ 6]	e 27 35	PS	e 48·4
Colombo		105·5	271	17 37	?	—	—	—	—	—
Pittsburgh		108·8	53	e 19 25	PP	e 24 55	[− 3]	e 28 18	PS	—
Philadelphia		112·3	55	e 18 49?	[+16]	e 25 22?	[+10]	i 28 19?	PS	e 49·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ottawa		112·9	48	e 18 34	[0]	25 10	[− 5]	28 54	PS	e 51·8
Fordham		113·4	53	e 19 26	PP	i 25 14	[− 2]	e 29 2	PS	—
New Delhi	N.	114·4	292	e 19 23	PP	i 25 16	[− 4]	28 53	PS	—
San Juan		114·9	79	e 19 47	PP	i 25 11	[−12]	i 29 10	PS	e 56·1
Harvard		115·4	52	i 19 39	PP	i 25 21	[− 3]	e 29 17	PS	e 55·8
Rio de Janeiro	N.	115·7	132	e 19 48	PP	—	—	—	—	—
Bombay		115·9	281	e 19 22	PP	i 25 25	[− 2]	29 10	PS	—
Seven Falls		116·4	47	19 45	PP	25 24	[− 4]	29 26	PS	54·8
Bermuda		119·3	64	20 3	PP	e 25 33	[− 6]	e 29 55	PS	e 47·6
Andijan		120·3	305	e 18 52	[+ 3]	—	—	—	—	—
Tashkent		122·6	306	18 54	[+ 1]	i 25 49	[− 1]	20 33	PP	—
Sverdlovsk		126·6	325	19 0	[0]	30 53	PS	20 54	PP	—
Scoresby Sund		129·7	11	e 21 4	PP	e 28 9	SKKS	e 38 39	SS	e 63·4
Moscow		138·5	332	e 19 24	[+ 1]	e 28 55	SKKS	22 11	PP	—
Upsala		141·4	348	22 30	PP	i 29 14	SKKS	i 23 5	pPP	e 66·8
Bergen		142·1	358	e 22 58	PP	—	—	—	—	—
Copenhagen		146·2	351	i 19 37k	[+ 1]	31 26	?	41 50	SS	—
Yalta		146·8	318	i 19 40	[+ 3]	29 45	SKKS	—	—	—
Stonyhurst		148·3	6	—	—	e 47 48?	SSS	—	—	e 73·8
Potsdam		149·3	348	e 19 48?	[+ 7]	—	—	—	—	—
Ksara		149·7	298	e 18 58	[−44]	—	—	e 19 49	PKP	—
De Bilt		150·4	357	i 19 44	[+ 1]	e 30 8	SKKS	e 42 28	SS	e 60·8
Kew		150·9	4	i 19 31	[−13]	e 42 24	SS	i 23 11	PP	e 71·8
Jena	z.	151·0	347	i 19 44	[0]	—	—	—	—	—
Bucharest		151·5	324	e 19 54	[+ 9]	—	—	—	—	52·8
Cheb		151·7	349	—	—	e 30 21	SKKS	e 42 59	SS	—
Uccle		151·8	1	e 19 45	[0]	e 30 12	SKKS	e 42 48	SS	e 70·8
Stuttgart		153·4	352	e 19 48	[+ 1]	e 26 18	[−31]	e 23 28	PP	e 72·8
Paris		153·7	2	i 19 51	[+ 3]	—	—	e 23 47	PP	76·8
Strasbourg		153·8	354	e 19 53	[+ 5]	e 25 21	?	i 20 15	pPKP	—
Belgrade		153·9	332	e 19 48	[0]	—	—	—	—	—
Sofia		154·1	325	e 20 2	[+14]	e 29 53	SKKS	—	—	51·8
Helwan	z.	154·3	291	18 48	[−61]	—	—	i 23 57	PP	—
Basle		154·8	354	e 19 50	[0]	—	—	e 20 21	pPKP	—
Zürich		154·9	353	e 19 55	[+ 5]	e 31 10	SKKS	—	—	—
Chur		155·3	352	e 19 51	[+ 1]	—	—	—	—	—
Neuchatel		155·4	354	e 19 51	[+ 1]	—	—	—	—	—
Triest		155·5	343	i 20 18	[+27]	e 30 35	?	i 42 48?	SS	e 74·8
Clermont-Ferrand		156·8	0	i 19 53	[+ 1]	e 43 37	SS	24 3	PP	e 78·8
Florence		157·9	345	e 19 54a	[0]	e 30 1	SKKS	20 30	pPKP	e 50·1
Lisbon		160·4	30	20 39a	[+43]	31 48	SKKS	44 29	SS	—
Toledo		161·4	19	e 19 59	[+ 2]	—	—	21 9	PKP_1	81·8
Tortosa		161·5	6	e 24 12	PP	29 57	SKKS	—	—	—
San Fernando		163·6	29	e 21 16	PKP_2	—	—	—	—	—
Granada		164·0	22	i 20 9	[+ 9]	31 4	SKKS	20 32	pPKP	73·8
Almeria		164·7	19	e 20 26	pPKP	23 57	PKS	25 0	PP	75·8

Additional readings :—
Apia i = 4m.11s.
Auckland i = 4m.4s., 4m.42s., 5m.13s., and 5m.46s.
P_cP? = 7m.16s., i = 10m.46s., sS_cS? = 15m.44s.
Tuai sS_cS = 16m.30s.
Wellington iZ = 4m.33s., 5m.16s., 5m.23s., and 5m.53s., P_cP?Z = 8m.25s., Q = 9m.20s., sS_cS = 16m.41s.
Christchurch Q = 9m.35s.
Brisbane iN = 5m.57s., iEN = 6m.46s., iE = 13m.44s., iN = 16m.36s.
Riverview iPPEN = 7m.20s., iE = 11m.14s., iSSN = 13m.14s.
Mizusawa eSN = 20m.55s.
Kôbe PPP = 15m.44s., S_cS? = 21m.33s.
Branner eSE = 21m.56s.
Lick eEN = 12m.25s.
Pasadena iZ = 12m.47s., iPPZ = 14m.54s., eZ = 32m.15s., iPKP,PKPZ = 39m.4s., iSKP,PKPZ = 42m.22s.
Mount Wilson eZ = 14m.27s., iPPZ = 14m.54s., iPKP,PKPZ = 39m.2s., iSKP,PKPZ = 42m.25s.
Palomar eZ = 14m.36s., iPKP,PKPZ = 39m.3s., eSKP,PKPZ = 42m.25s.
Riverside iZ = 13m.5s., ePKP,PKPZ = 38m.57s., eSKP,PKPZ = 42m.24s.
Haiwee ePKP,PKPZ = 38m.57s., eSKP,PKPZ = 42m.14s.

Continued on next page.

Tinemaha iZ =12m.37s., ePKP,PKPZ =38m.58s., eSKP,PKPZ =42m.19s.
Tucson i =12m.46s., e =15m.20s., iS =22m.42s., e =23m.20s., i =23m.46s., e = 27m.46s., iPKP,PKP =38m.54s.
Logan i =13m.10s. and 13m.28s., eSS =28m.29s.
College e =30m.7s.
Huancayo iS =24m.40s., i =28m.1s., e =30m.18s.
La Paz iZ =24m.7s., 25m.32s., and 26m.36s.
St. Louis iZ =14m.37s., eE =17m.26s., 18m.37s., 19m.19s., and 24m.52s., eEN = 25m.21s., eE =25m.53s., 25m.57s., 26m.5s., and 26m.48s.
Irkutsk PS =27m.5s.
Chicago e =25m.22s.
Philadelphia iSKS =24m.39s.?, eS =26m.19s.?, eSS =34m.0s.?, e =38m.20s.?.
Ottawa PP =19m.21s., SN =27m.6s., SSN =35m.3s., SSSN =40m.36s.?.
Fordham e =25m.57s. and 27m.2s.
New Delhi PPPN =21m.41s., SKKSN =26m.0s., SSN =33m.49s.
San Juan e =30m.17s., eSSS? =39m.58s.
Harvard i =20m.5s.
Bombay iEN =19m.34s., iPPPE =21m.47s., iN =21m.59s., sPPPE =22m.23s., pSKSE =26m.3s., SKKSE =26m.31s., PSE =29m.29s., sPPE =30m.0s., SSE = 35m.33s., SSSSE =40m.18s.
Bermuda eSP =29m.47s.
Tashkent PS =29m.18s.
Sverdlovsk PPS =32m.34s.
Scoresby Sund e =22m.24s., 23m.7s., and 41m.4s.
Moscow SKKS =29m.26s.
Upsala i =29m.46s., eSSN? =32m.27s., eSSE? =32m.32s., eN =34m.48s.?, eE = 40m.48s.?.
Copenhagen 20m.3s.
Kew iPKP$_2$Z =20m.0s., ipPKP$_2$Z =20m.12s., iZ =25m.0s., ePPP?Z =27m.48s., eSKSPZ =33m.16s., epPSZ =34m.8s., ePPSZ =36m.19s., esSSN =42m.58s.?, eQE =60m.28s.?.
Jena ePN =19m.50s., iPEN =19m.53s., iZ =20m.13s., iEN =20m.16s.
Uccle iZ =19m.51s., iPKP$_2$Z =20m.2s., iZ =20m.26s., eN =30m.55s.
Stuttgart eZ =20m.37s., eSKKS =30m.28s., e =31m.9s., ePSKS =33m.57s., eSS = 43m.4s., eSSS =48m.52s.
Paris i =20m.30s.
Belgrade i =19m.57s. and 20m.10s., e =20m.24s.
Helwan iZ =19m.58s. and 20m.39s.
Triest e =50m.48s.?.
Clermont-Ferrand iPKP$_2$ =20m.24s., i =20m.48s. and 20m.53s., eSS =44m.6s.?, eSSS =49m.56s.
Florence iPP?Z =23m.29s., iPPP?Z =25m.31s., iS?N =30m.50s., ePS?N =31m.48s., ePPS?N =32m.23s.
Lisbon Z =21m.4s., E =21m.37s. and 22m.3s., Z =24m.47s.
Toledo PP? =25m.1s.
Granada iPKP$_2$ =21m.22s., pPKP$_2$ =21m.30s., iPP =24m.59s., pPP =25m.11s. sPP = 25m.33s., SKSP =34m.47s., iSS =45m.11s., SSS =52m.5s.
Almeria pPKP =20m.52s., PKP$_2$ =21m.18s., pPKP$_2$ =21m.39s., pPP =25m.30s., PPP = 28m.42s., PPS =38m.18s., SS =45m.2s., SSS =51m.10s.

March 26d. Readings also at 1h. (near Almeria), 2h. (Tacubaya), 3h. (near Fresno and Lick), 4h. (Andijan, Tashkent, New Delhi, Bombay, Moscow, Upsala, and De Bilt), 5h. (near Clermont-Ferrand, Toledo, near Barcelona, and Tortosa), 6h. (Fort de France), 10h. (Haiwee and Tinemaha), 11h. (Balboa Heights), 12h. (Ksara, near Andijan and Stalinabad), 13h. (Fort de France), 14h. (Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tucson, and Tinemaha), 15h. (Huancayo and near Sofia), 16h. (La Paz, Balboa Heights, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Ottawa, Tucson, Philadelphia, and Stuttgart), 17h. (Balboa Heights), 20h. (near St. Louis), 21h. (Sydney, near St. Louis, and near Stalinabad).

March 27d. Readings at 0h. (Pasadena, Mount Wilson, Riverside, Palomar, Tucson, and Tinemaha), 1h. (Sverdlovsk, Andijan, and Tashkent), 3h. (Stuttgart and Tacubaya), 5h. (Pasadena, Mount Wilson, Palomar, Tinemaha, Haiwee, Tucson, and La Paz), 6h. (near La Paz), 7h. (Pasadena, Mount Wilson, Riverside, Tucson, Palomar, Tinemaha, and Haiwee), 8h. (near Tananarive), 13h. (Cheb), 15h. (Bucharest, Sofia, and near Apia), 16h. (near Andijan), 18h. (Pasadena, Mount Wilson, Riverside, Palomar, Tinemaha, Haiwee, Santa Barbara, Tucson, and Mizusawa). 19h. (Tacubaya and Branner).

March 28d. Readings at 0h. (Pasadena, Mount Wilson, Riverside, Palomar, Tucson, and Tinemaha), 1h. (Tacubaya), 2h. (Triest (2) and near Stuttgart), 3h. (near Tashkent, Stalinabad, Ksara, and near Ravensburg), 4h. (near Mizusawa), 5h. (near Berkeley, Branner, and Lick), 6h. (Tacubaya and Lick), 7h. (La Paz), 10h. and 14h. (Stalinabad and Tashkent), 17h. (near Sofia), 18h. (Stuttgart), 19h. (Clermont-Ferrand), 21h. (Pasadena, (2), Mount Wilson, Riverside (2), San Juan, Palomar (2), Stalinabad Stuttgart (2), Riverview, Tucson (2), Wellington, and Auckland).

March 29d. 5h. 14m. 5s. Epicentre 18°·0S. 44°·4E.

Intensity VII at Mirandrivazo ; VI at Antsalova and at numerous localities on the west coast. Epicentre 18°·0S. 44°·0E. Mg. VI : (Gut.), 18°·0S. 44°·4E. (Strasbourg).
R. P. Poisson.
Tremblements de Terre malgaches en 1943 (Manuscript List pp. 2-4).

$A = +\cdot6800$, $B = +\cdot6659$, $C = -\cdot3071$; $\delta = +13$; $h = +5$;
$D = +\cdot700$, $E = -\cdot714$; $G = -\cdot219$, $H = -\cdot215$, $K = -\cdot952$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tananarive		3·1	107	i 0 51	0	i 1 37	+ 8	i 0 59	P*	3·6
Kodaikanal		43·1	51	e 6 50	−74	i 13 35	−55	—	—	—
Bombay		46·1	39	i 8 32	+ 4	i 15 24	+10	10 17	PP	20·9
Hyderabad	E.	48·6	45	—	—	17 45	?	—	—	—
Helwan	E.	49·2	345	e 16 9	PS	—	—	—	—	—
New Delhi	N.	56·1	35	i 17 35	PS	—	—	—	—	—
Calcutta	N.	58·9	48	—	—	e 18 23	+15	—	—	—
Tashkent		63·4	20	e 10 33	− 1	19 16	+10	—	—	—
Tchimkent		64·3	20	e 10 40	+ 1	—	—	—	—	—
Belgrade		66·2	341	e 10 53	+ 1	—	—	e 11 11	PcP	—
Triest		69·2	337	—	—	e 20 15	− 1	—	—	e 33·9
Almeria		70·2	321	—	—	e 28 43	SSS	—	—	35·9
Granada		71·1	321	i 20 45	S	(i 20 45)	+ 7	28 49	SSS	36·4
Chur		71·8	336	e 11 27a	+ 1	—	—	—	—	—
Zürich		72·6	335	e 11 31	0	—	—	—	—	—
Neuchatel		72·9	335	e 11 33	0	—	—	—	—	—
Basle		73·1	335	e 11 35	+ 1	—	—	—	—	—
Stuttgart		73·5	337	i 11 36	0	e 21 6	0	e 11 45	PcP	e 36·4
Clermont-Ferrand		73·7	331	i 11 38	0	—	—	—	—	e 35·9
Moscow		73·7	356	11 39	+ 1	—	—	—	—	—
Jena	N.	74·4	339	e 11 40	− 2	—	—	—	—	—
Sverdlovsk		75·8	10	11 50	0	—	—	—	—	—
Uccle		77·0	335	e 11 55?	− 1	—	—	—	—	e 35·9
De Bilt		77·7	337	e 12 4	+ 4	—	—	e 30 55	SSS	e 40·9
Copenhagen		78·2	342	12 5	+ 2	22 1	+ 4	—	—	—
Kew		79·4	334	—	—	e 21 55?	−15	—	—	e 37·9
Upsala		80·6	347	—	—	e 21 55?	−28	—	—	e 47·9
Huancayo		113·5	248	e 29 13	PS	—	—	—	—	e 51·2
Ottawa		123·7	313	e 18 59	[0]	—	—	—	—	63·9
Tucson		153·6	307	e 19 52	[0]	—	—	—	—	e 88·0
Tinemaha		155·6	323	e 20 15	[+20]	—	—	—	—	—
Haiwee	z.	156·1	322	i 19 56	[0]	—	—	—	—	—
Riverside	z.	157·2	318	i 20 0	[+ 3]	—	—	—	—	—
Palomar	z.	157·3	314	e 19 58	[0]	—	—	—	—	—
Mount Wilson	z.	157·5	318	i 19 59	[+ 1]	—	—	—	—	—
Pasadena		157·6	318	i 19 59	[+ 1]	—	—	—	—	e 78·9
La Jolla	z.	157·9	314	e 19 59	[+ 1]	—	—	—	—	—

Additional readings :—
Tananarive iP_g = 1m.6s., iS_g = 1m.58s.
Bombay eE = 9m.8s., 17m.23s., and 19m.16s.
Belgrade e = 11m.2s.
Stuttgart ePP?Z = 16m.11s., e = 29m.55s.?.
Jena eE = 11m.43s.?.
Tucson e = 25m.55s.
Haiwee iEZ = 20m.7s.
Riverside iZ = 20m.15s.
Mount Wilson iZ = 20m.10s.
Pasadena iZ = 20m.9s.
Long waves were also recorded at Christchurch, Wellington, Riverview, La Paz, Salt Lake City and other European stations.

March 29d. 11h. 45m. 51s. Epicentre 37°·6N. 121°·9W.

Bulletin of the Seismological stations in Northern California, vol. 13, No. 1.

A = −·4197, B = −·6743, C = +·6076 ; δ = +1 ; h = −1 ;
D = −·849, E = +·528 ; G = −·321, H = −·516, K = −·794.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Branner		0·3	231	i 0 11	0	—	—	—
Lick		0·3	138	i 0 10	− 1	i 0 15	− 3	—
Santa Clara		0·3	189	i 0 11	0	i 0 16	− 2	—
Berkeley		0·4	313	i 0 12	− 1	i 0 18	− 3	—
Ukiah		1·8	326	e 0 43	P_g	—	—	e 1·2
Fresno	N.	1·9	117	i 0 35	+ 1	i 0 58	− 1	—
Tinemaha		2·9	100	e 0 53	+ 5	i 1 32	S*	—
Haiwee		3·5	116	e 0 57	0	—	—	—
Mount Wilson	Z.	4·6	137	i 1 13	+ 1	—	—	—
Pasadena		4·6	138	i 1 13	+ 1	i 2 5	− 2	—
Riverside	Z.	5·1	133	e 1 20	0	—	—	—
Palomar	Z.	5·9	135	i 1 31	0	—	—	—
Tucson		10·5	117	e 2 41	+ 6	—	—	e 5·8

Fresno gives also iN = 51s., iS_gN = 1m.13s.
Long waves were also recorded at Salt Lake City.

March 29d. Readings also at 1h. (near Stuttgart, Zurich, and Basle), 3h. (near Sofia), 4h. (Colombo), 5h. (Toledo and near Tananarive (2)), 7h. (Cheb and Kew), 8h. (near Tananarive), 9h. (Riverview, Stalinabad, Tashkent, and near Tananarive), 10h. (Huancayo, Tucson, Haiwee, Palomar, Pasadena, Mount Wilson, and Riverside), 12h. (near Branner), 13h. (Jena, near Ravensburg, Stuttgart, Basle, Zurich, Chur, and Triest), 14h. (near Branner), 15h. (Granada), 17h. (Granada and Tacubaya), 21h. (Kew), 22h. (Tacubaya, Kew, New Delhi, and near Tashkent), 23h. (Mount Wilson, Pasadena, Palomar, Wellington, Auckland, Christchurch, and Riverview).

March 30d. 21h. 7m. 32s. Epicentre 39°·0N. 120°·5W.

Intensity V in the region of Central Lake Tahoe ; IV at Emigrant Gap, Homewood, Loyalton, Markleeville, Nevada City, and Portola, also in several parts of Nevada.
Epicentre 39°·0N. 120°·5W. (Pasadena).
Macroseismic area about 15,000 square miles.
Ralph R. Bodle.
United States Earthquakes 1943, Washington p. 10, isoseismic chart, p. 11.

A = −·3955, B = −·6714, C = +·6268 ; δ = +8 ; h = −1 ;
D = −·861, E = +·508 ; G = −·318, H = −·540, K = −·779.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Berkeley		1·8	231	i 0 31	− 1	i 0 59	+ 3	i 0 34	P*	—
Lick		1·9	208	e 0 34	0	i 1 4	+ 5	i 0 45	P_g	—
Branner		2·0	220	i 0 37	+ 2	i 1 7	+ 5	—	—	—
Santa Clara		2·0	215	e 0 47	P_g	i 1 14	S_g	—	—	—
Fresno	N.	2·3	166	e 0 39	− 1	i 1 13	+ 4	—	—	—
Tinemaha		2·6	137	i 0 46	+ 2	i 1 24	+ 7	—	—	—
Haiwee		3·5	144	i 1 1	+ 4	i 1 50	+10	—	—	—
Santa Barbara		4·6	172	i 1 13	+ 1	i 2 25	S*	—	—	—
Mount Wilson	Z.	5·2	156	e 1 18	− 3	—	—	—	—	—
Pasadena		5·2	158	i 1 18	− 3	i 2 35	S*	—	—	—
Riverside		5·6	152	e 1 23	− 4	i 2 50	S*	—	—	—
Palomar	Z.	6·4	151	i 1 34	− 4	—	—	—	—	—
Salt Lake City		6·9	72	e 1 59	P*	e 3 1	− 4	—	—	e 3·5
Logan		7·2	65	e 2 22	P_g	i 3 27	S*	—	—	i 4·4
Tucson		10·3	127	e 2 36	+ 4	—	—	—	—	e 5·4

Additional readings :—
Berkeley iN = 0m.46s.
Fresno iN = 1m.46s.

March 30d. Readings also at 0h. (near Lick, Berkeley, and Fresno), 7h. (near Tortosa, and near Tananarive), 13h. (Riverview and Christchurch), 14h. (La Paz), 17h. (Bombay), 19h. (Andijan).

March 31d. 21h. 48m. 19s. Epicentre 1°·4N. 85°·3W.

$A = +\cdot0819$, $B = -\cdot9963$, $C = +\cdot0243$; $\delta = -9$; $h = +7$;
$D = -\cdot997$. $E = -\cdot082$; $G = +\cdot002$, $H = -\cdot024$, $K = -1\cdot000$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		9·4	37	i 2 18	0	e 4 8	+ 1	—	—	—
Huancayo		16·6	144	i 3 55	− 1	i 7 13	+13	—	—	i 8·2
Tacubaya	N.	22·5	324	e 5 3	+ 1	—	—	—	—	—
La Paz	Z.	24·6	137	i 5 24a	+ 1	i 9 51	+ 9	—	—	14·5
San Juan		25·3	48	e 5 59	+29	e 9 58	+ 4	—	—	e 13·0
Fort de France		27·3	61	e 6 3	+15	e 10 30	+ 3	—	—	—
Bermuda		36·4	30	e 8 42	PP	e 12 57	+ 7	—	—	e 15·7
Florissant	E.	37·4	354	—	—	i 13 4	− 1	e 15 41	SS	e 19·5
Tucson		39·0	325	e 7 28	− 2	e 13 29	0	e 9 0	PP	e 19·4
Philadelphia		39·5	13	—	—	e 13 2	−35	(e 15 47)	SS	e 15·8
Fordham		40·6	14	—	—	e 13 41?	−13	—	—	—
Palomar	Z.	43·4	321	i 8 6	0	—	—	—	—	—
Riverside	Z.	44·2	321	i 8 11	− 1	—	—	—	—	—
Ottawa		44·6	10	e 8 13	− 3	e 14 48	− 4	—	—	e 19·7
Mount Wilson	Z.	44·8	321	i 8 17	0	—	—	—	—	—
Pasadena		44·8	321	e 8 17	0	e 14 53	− 2	—	—	e 21·7
Haiwee	Z.	45·9	323	e 8 26	0	—	—	—	—	—
Salt Lake City		46·0	333	—	—	e 15 8	− 4	—	—	e 25·4
Tinemaha	N.	46·7	324	e 8 39	− 7	—	—	—	—	—
Stuttgart		91·9	42	e 11 29?	?	—	—	e 17 23?	PP	e 45·7
Triest		93·6	44	e 11 50	?	—	—	—	—	—
Cheb		93·9	40	e 26 28?	PPS	—	—	—	—	—
Belgrade		100·1	45	e 9 57	?	—	—	—	—	—

Additional readings :—
Huancayo i = 4m.31s.
Haiwee eZ = 8m.36s.
Stuttgart eZ = 15m.59s.?.
Belgrade e = 10m.53s., i = 11m.17s. and 11m.37s., e = 11m.55s.
Long waves were also recorded at Honolulu and other American and European stations.

March 31d. Readings also at 3h. (New Delhi (2), Bombay (2), Haiwee, Mount Wilson, Pasadena, Tucson, and Riverside), 4h. (La Paz), 5h. (Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Stuttgart (2), New Delhi, Bombay, Kodaikanal, Colombo, and Hyderabad), 6h. (La Paz, Haiwee (3), Mount Wilson (2), Tinemaha (2), Pasadena (2), Palomar (2), Riverside (2), Tucson (3), Buffalo, Seven Falls, Shawinigan Falls, and near Ottawa, not all one shock), 7h. (near Berkeley, Branner, Fresno, Lick, and Santa Clara), 9h. (Haiwee, Tucson, and Mount Wilson), 10h. (Auckland, Triest, and near Sofia), 11h. (Haiwee, Mount Wilson, Riverside, Tucson, Stuttgart, Colombo (2), Bombay, Calcutta, Hyderabad, New Delhi, and Tashkent), 13h. (Bombay), 19h. (near Branner and Berkeley), 22h. (near Lick), 23h. (Bucharest).

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.

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

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

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

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.