The International Seismological Summary.

1945 October, November, December.

INTERNATIONAL GEODETIC AND GEOPHYSICAL UNION.
ASSOCIATION OF SEISMOLOGY.
FORMERLY THE BULLETIN OF
THE BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

The Director of the I.S.S. wishes to express his thanks to U.N.E.S.C.O. and H.M. Treasury for financial support, which has covered the cost and preparation of this volume.

The last quarter of 1945 contains 93 epicentres, 63 of which are repetitions from previous determinations.

Cases of abnormal focal depth are noted below :—

Oct.	2d.	22h.	13·9S.	70·0W.	0·010
	5d.	14h.	38.4S.	176·5E.	0·030
	9d.	10h.	34·2N.	136·8E.	0·050
	9d.	14h.	43·8N.	147·0E.	0·010
	11d.	16h.	18·3N.	97·6W.	0·010
	14d.	4h.(7m.)	15·3S.	172·5W.	0·005
	14d.	4h.(16m.)	15·3S.	172·5W.	0·005
	16d.	16h.	0·1S.	123·8E.	0·005
	18d.	23h.	37·0N.	70·5E.	0·030
	21d.	7h.(4m.)	27·4N.	138·9E.	0·070
	21d.	7h.(26m.)	27·4N.	138·9E.	0·070
	24d.	5h.	36·2N.	139·9E.	0·005
	27d.	11h.	15·1N.	91·2W.	0·025
	28d.	5h.	13·3S.	167·0E.	0·020
	28d.	20h.	42·3N.	142·0E.	0·015
	29d.	4h.	22·5S.	176·2W.	0·005
Nov.	1d.	14h.	36·1N.	141·2E.	0·005
	3d.	22h.	59·3N.	151·1W.	Suggested Deep.
	17d.	16h.	43·2N.	139·5E.	0·040
	23d.	4h.	Undetermined shock.		Suggested Deep.
	26d.	1h.	9·0S.	71·0W.	0·090
	26d.	5h.	22·3S.	179·2W.	0·090
	28d.	8h.	19·0S.	169·2E.	0·005

Dec.	1d.	5h.	Undetermined shock.		Suggested Deep.
	1d.	12h.	38·5N.	139·0E.	0·005
	1d.	18h.	38·3N.	74·0E.	0·015
	9d.	6h.	45·7N.	26·8E.	0·005
	14d.	17h.	3·0S.	76·9W.	0·015
	23d.	8h.	10·2N.	61·7W.	0·005

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.

August, 1954.

KEW OBSERVATORY,
RICHMOND,
SURREY.

1945 OCTOBER, NOVEMBER, DECEMBER.

Oct. 1d. 5h. 16m. 37s. Epicentre 28°·8N. 67°·2E.

A = +3401, B = +·8091, C = +·4793; δ = +4; h = +2;
D = +·922, E = −·388; G = +·186, H = +·442, K = −·878.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
New Delhi		8·8	89	e 2 13	+ 2	i 3 45	− 8	4 33	S*	—
Dehra Dun	N.	9·6	78	(e 2 22)	+ 1	(e 4 0)	−12	—	—	(e 5·1)
Samarkand		10·8	359	2 45	+ 6	—	—	—	—	—
Bombay		11·1	151	e 2 43	0	i 5 19	+30	—	—	6·4
Andijan		12·6	18	3 2	− 1	i 5 44	+18	—	—	—
Tashkent		12·6	6	e 2 59	− 4	5 34	+ 8	—	—	—
Hyderabad	E.	15·3	135	3 42	+ 3	7 32	SSS	—	—	—
	N.	15·3	135	3 38	− 1	6 47	+17	—	—	8·1
Calcutta		20·0	104	e 4 43	+ 6	i 8 8	− 9	i 8 43	SS	—
Kodaikanal	E.	20·8	152	i 4 33	−12	i 8 18	−15	4 57	PP	10·3
Colombo	E.	24·8	150	5 31	+ 6	10 2	+16	—	—	13·4
Ksara		27·2	288	e 5 59?	+12	e 11 36	+71	—	—	—
Sverdlovsk		28·4	352	i 5 56	− 2	i 10 44	− 1	—	—	—
Helwan		31·2	281	6 23	0	11 29	0	7 28	PP	—
Moscow		34·2	330	6 48	− 1	12 11	− 5	—	—	—
Irkutsk		36·1	39	e 7 5	0	—	—	—	—	—
Belgrade		40·1	306	e 7 37a	− 2	e 13 49	+ 3	e 9 1	PP	e 26·8
Prague		44·9	314	e 8 23	+ 5	e 14 52	− 4	—	—	e 21·4
Triest		44·9	307	i 8 19	+ 1	e 18 17	SS	i 9 2	pP	—
Upsala		45·5	327	e 10 5	PP	e 14 58	− 7	(e 18 1)	SS	e 18·0
Collmberg	Z.	45·9	315	i 8 26	0	e 15 13	+ 2	i 10 19	PP	e 30·9
Jena		46·8	313	e 9 2	+29	e 15 56	+32	—	—	—
Copenhagen		47·0	321	i 8 33	− 2	e 15 17	− 9	i 10 23	PP	—
Strashourg		49·1	311	e 8·57	+ 6	—	—	e 24 36	?	33·4
Basle		49·2	310	e 8 50	− 2	e 18 46	S_cS	—	—	—
De Bilt		50·9	316	e 9 8?	+ 3	e 16 23	+ 2	e 19 53	SS	e 30·9
Uccle		51·3	314	e 9 7a	− 1	e 16 31	+ 5	e 18 57	S_cS	—
Bergen		51·6	327	e 15 11	?	—	—	—	—	e 26·9
Paris		52·6	311	i 9 19	+ 1	e 16 23?	−21	—	—	—
Vladivostok		53·0	56	e 9 18	− 3	e 17 7	+17	—	—	—
Tortosa		54·9	302	i 9 33	− 2	17 4	−12	—	—	e 28·4
Aberdeen	N.	55·2	322	—	—	i 18 16	+56	—	—	i 27·4
Edinburgh		55·8	320	9 38	− 3	17 26	− 2	10 40	P_cP	—
Toledo		58·4	301	i 9 58	− 2	e 18 2	0	—	—	—
Granada		58·7	298	e 9 53a	− 9	17 3	−63	10 9	pP	33·7
Malaga	Z.	59·5	298	i 10 21	+14	e 17 58	−18	i 10 41	pP	27·9
San Fernando	E.	60·9	298	—	—	e 18 28	− 6	e 19 6	PPS	e 31·9
Seven Falls		95·5	333	—	—	e 24 4	[0]	—	—	48·4
Ottawa		98·8	334	—	—	e 24 23	[+ 2]	—	—	54·4
Philadelphia		103·2	331	—	—	e 24 41	[− 1]	e 25 46	S	e 58·4
Florissant		109·6	341	e 19 29	PP	e 25 42	[+31]	e 26 36	S	—
St. Louis	N.	109·7	341	—	—	e 25 11	[0]	e 26 6	SKKS	—
Tinemaha	Z.	114·3	4	e 19 37	PP	—	—	—	—	—
San Juan		114·7	310	e 19 40	PP	e 25 28	[− 3]	e 29 25	PS	e 40·5
Haiwee	Z.	115·2	4	e 19 41	PP	—	—	—	—	—
Boulder City		115·5	1	e 19 32	PP	—	—	—	—	—
Mount Wilson	Z.	117·1	4	e 19 56	PP	—	—	—	—	—
Pasadena	Z.	117·2	4	e 19 59	PP	—	—	—	—	e 38·0
Palomar	Z.	118·1	3	e 20 5	PP	—	—	—	—	—
Tucson		119·3	357	e 20 9	PP	—	—	e 20 53	?	—

Additional readings :—
New Delhi iN = 3m.7s.
Dehra Dun readings decreased by 2 minutes.
Kodaikanal SSE = 8m.45s.
Belgrade e = 11m.0s., eSS = 17m.3s.
Triest eSSSE = 22m.37s.
Upsala iE = 10m.12s., eN = 14m.46s., iE = 15m.15s., eN = 15m.58s.

Continued on next page.

Collmberg iZ = 8m.32s. and 8m.46s., eZ = 9m.3s., 9m.17s., 9m.49s., and 10m.2s., iZ = 10m.29s., ePPPZ = 11m.3s., eZ = 11m.35s., 12m.55s., 13m.58s., 14m.34s., and 14m.46s., eSSZ = 18m.53s.
Jena eP?N = 9m.5s., eZ = 16m.0s.
Copenhagen i = 15m.29s. and 18m.8s., 18m.53s.
Uccle eE = 20m.21s.
Edinburgh PP = 11m.43s., PPP = 12m.55s.
Granada SS = 22m.1s.
Malaga PPPZ = 13m.59s., eS_cPZ = 19m.42s.
Philadelphia e = 33m.12s.
Florissant ePSN = 28m.57s., ePPS?N = 30m.6s.
St. Louis ePSN = 28m.28s., ePPSN = 29m.21s.
Long waves were also recorded at Bozeman, Huancayo, La Paz, and Riverview.

Oct. 1d. Readings also at 1h. (near Mizusawa), 2h. (Riverview), 3h. (Collmberg), 8h. (near Andijan), 10h. (Tinemaha, Mount Wilson, Riverside, Palomar, and Tucson), 14h. (Arapuni and Yalta (3)), 17h. (near Lick, Branner, San Francisco, and Berkeley), 18h. (Riverview, Wellington, and Auckland).

Oct. 2d. 0h. Undetermined shock :—
Pehpei P = 39m.53s., S = 43m.15s., L = 44m.45s.
Mizusawa ePE = 40m.50s., PN = 40m.55s., SE = 45m.55s., SN = 46m.8s.
Irkutsk iP = 41m.30s., S = 44m.50s.
Frunse eP = 44m.18s.
Tashkent eP = 44m.34s.?
Andijan eP = 44m.37s.
Sverdlovsk P = 45m.22s., S = 51m.45s.
Copenhagen iP = 48m.21s., L = 70m.
Jena eN = 48m.50s.
Zürich eP = 49m.2s.
Basle eP = 49m.4s.
Helwan eZ = 49m.5s. and 49m.30s.
Grand Coulee eP = 49m.15s.
Shasta Dam iP = 49m.34s., i = 49m.58s.
Toledo ePZ = 50m.5s., L = 87m.0s.
Pasadena iZ = 50m.10s. and 50m.36s.
Pierce Ferry eP = 50m.11s.
Boulder City iP = 50m.13s., i = 50m.37s.
Palomar eZ = 50m.16s., iZ = 50m.48s.
Tinemaha iZ = 50m.23s.
Riverside ePZ = 50m.25s., eZ = 50m.37s. and 50m.50s.
Haiwee iNZ = 50m.26s.
Mount Wilson iZ = 50m.35s.
Tucson e = 50m.49s., 52m.4s., and 54m.41s.
Bombay eEN = 53m.28s.
Baku eS = 54m.20s.
College eS = 54m.36s., eL = 63m.18s.
Long waves were also recorded at Sitka, Bozeman, Philadelphia, and other European stations.

Oct. 2d. 22h. 40m. 43s. Epicentre 13°·9S. 70°·0W. Depth of focus 0·010.
(as on 1944, Feb. 29d.).

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

		△	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 0 49½	− 1	1 23	− 4	—	—	1·5
Huancayo		5·5	289	e 1 57	?	e 2 17	− 6	—	—	e 2·5
Bogota		18·8	349	e 4 24	+10	e 10 58	L	—	—	(e 11·0)
St. Louis	z.	55·6	341	i 9 29	+ 1	—	—	—	—	—
Florissant	z.	55·8	341	e 9 56	+27	—	—	—	—	—
Tucson		60·3	323	i 10 1	0	—	—	e 12 31	PP	—
Palomar	z.	64·8	318	i 10 30a	− 1	—	—	—	—	—
Pierce Ferry		64·8	322	i 10 31	0	—	—	—	—	—
Boulder City		65·2	321	e 10 25	− 8	—	—	—	—	—
Riverside	z.	65·6	318	i 10 35a	− 1	—	—	—	—	—
Mount Wilson	z.	66·2	318	i 10 39a	− 1	—	—	—	—	—
Pasadena	z.	66·2	318	i 10 39	− 1	—	—	—	—	—
Haiwee	z.	67·3	320	i 10 47	+ 1	—	—	—	—	—
Tinemaha		68·1	320	i 10 51	0	—	—	i 11 16	pP	—

For Notes see next page

NOTES TO OCTOBER 2d. 22h. 40m. 43s.

Additional readings :—
Bogota e =4m.51s. and 5m.8s.
Palomar eZ =11m.25s.
Riverside iZ =11m.27s.
Tinemaha iZ =11m.43s.

Oct. 2d. Readings also at 0h. (near Samarkand), 1h. (Granada), 2h. and 5h. (near Samarkand), 7h. (Auckland), 8h. (near Irkutsk), 10h. (near Samarkand), 12h. (Riverview), 16h. (Copenhagen), 21h. (near Mizusawa).

Oct. 3d. 6h. 19m. 21s. Epicentre 12°·0N. 90°·7W. (as on 1942, Aug. 7d.).

$A = -\cdot0120$, $B = -\cdot9783$, $C = +\cdot2066$; $\delta = -10$; $h = +7$;
$D = -1\cdot000$, $E = +\cdot012$; $G = -\cdot003$, $H = -\cdot207$, $K = -\cdot978$.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Bogota		18·0	113	e 4 20	+ 7	—	—	—
St. Louis		26·5	2	i 5 42	+ 1	e 10 15	+ 1	—
Florissant		26·7	2	e 6 31	?	e 11 20	?	e 18·8
Tucson		27·4	322	e 5 49	0	—	—	e 14·6
Pierce Ferry		31·9	324	i 6 29	0	—	—	—
La Jolla		32·0	315	e 6 29	− 1	—	—	—
Palomar		32·0	317	i 6 31k	+ 1	—	—	—
Boulder City		32·3	323	i 6 34	+ 1	—	—	—
Overton		32·5	324	e 6 35	+ 1	—	—	—
Riverside	z.	32·7	317	e 6 37	+ 1	—	—	—
Mount Wilson	z.	33·3	317	i 6 41k	0	—	—	—
Pasadena		33·3	317	i 6 42	+ 1	—	—	—
Haiwee		34·4	320	e 6 51	0	—	—	—
Tinemaha		35·2	320	i 6 57	− 1	—	—	—
Grand Coulee		42·9	333	e 8 1	− 1	—	—	—

Additional readings :—
Palomar iZ =7m.47s.
Riverside eZ =9m.26s.
Mount Wilson eZ =6m.52s.
Pasadena eZ =7m.40s.
Tinemaha iZ =7m.8s., 7m.33s., and 9m.32s.
Long waves were also recorded at San Juan.

Oct. 3d. Readings also at 1h. (near Branner), 3h. (near Balboa Heights), 4h. (Tucson, Overton, Pierce Ferry, and near Boulder City), 7h. (La Jolla, Mount Wilson, Palomar, Riverside, Tucson, Tinemaha, near Andijan, Frunse, Samarkand, and Stalinabad), 8h. (near Stalinabad), 15h. (Alicante (2)), 17h. (Brisbane), 18h. (Christchurch, Wellington, Riverview, Sverdlovsk, and La Paz), 22h. (near Seven Falls).

Oct. 4d. 1h. Two shocks. Turkestan.

I.
Samarkand P =42m.13s., S =43m.13s.
Andijan eP =42m.16s., S =43m.28s.
New Delhi ePN =42m.28s., eSN =43m.48s., S_gN =44m.27s.
Stalinabad P =42m.37s.
Tashkent eP =42m.43s.
Frunse eP =42m.36s., S =44m.5s.
Leninakan eP =46m.22s.
Erevan e =46m.27s.
Bombay eE =48m.52s.
Kodaikanal ePE =49m.44s., iSE =53m.24s., SSE =54m.40s., LE =56m.14s.
Hyderabad SN =49m.58s.
Irkutsk S =50m.48s.
Long waves recorded at Copenhagen, Paris, De Bilt, Uccle, and Kew.

II.
Andijan eP =55m.41s., S_g =57m.21s.
Stalinabad P =55m.47s., S =57m.32s.
Frunse eP =55m.52s. ?
New Delhi eN =55m.58s.
Tashkent eP =56m.14s., S =57m.34s., eS_g =58m.28s.
Samarkand P =56m.30s., P_g =56m.58s., S_g =57m.20s., S =57m.30s.
Sverdlovsk eS =63m.34s.

Oct. 4d. Readings also at 1h. (Sverdlovsk), 6h. (Palomar), 7h. (near Bogota), 8h. (New Delhi and near Andijan), 9h. (Lick, near Andijan, Tashkent, and Stalinabad), 10h. (Bogota), 12h. (near Malaga), 13h. (near San Francisco), 18h. (Tashkent, near Andijan, and Stalinabad), 20h. (near Andijan).

Oct. 5d. 2h. North Pacific.

Mizusawa iPE = 29m.53s., SE = 30m.35s.
Vladivostok eP = 31m.34s., eS = 33m.37s.
Andiian eS = 38m.32s.
Sverdlovsk iP = 38m.53s., eS = 46m.38s.
Tashkent P = 38m.56s.
Leninakan eP = 40m.48s.
Haiwee iPZ = 41m.8s.
Riverside iPZ = 41m.13s.
Mount Wilson iPZ = 41m.14s.
Tucson iP = 41m.48s.
Long waves recorded at De Bilt and Uccle.

Oct. 5d. 3h. 9m. 36s. Epicentre 22°·3N. 142°·5E. (as on 1938, July 7d.).

A = −·7347, B = +·5638, C = +·3773; δ = +1; h = +4;
D = +·609, E = +·793; G = −·299, H = +·230, K = −·926.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa	N.	16·8	357	e 3 57	− 1	e 7 4	− 1	—	—	—
Vladivostok		22·6	340	e 5 5	+ 2	i 9 4	− 3	—	—	—
Andijan		61·0	306	—	—	i 18 42	+ 7	—	—	—
Tashkent		63·3	307	e 10 35	+ 2	e 19 10	+ 6	—	—	—
Stalinabad		64·0	304	e 10 40	+ 2	—	—	—	—	—
Sverdlovsk		67·2	325	i 10 57	− 1	i 19 48	− 4	—	—	—
Baku		77·8	309	—	—	e 21 55	+ 2	—	—	—
Grand Coulee		79·2	43	e 12 6	− 2	—	—	—	—	—
Shasta Dam		79·5	51	i 12 8	− 2	—	—	i 12 23	pP	—
Moscow		79·8	326	e 12 17	+ 5	e 22 21	+ 7	—	—	—
Leninakan		82·0	311	e 12 38	+15	—	—	—	—	—
Santa Barbara	Z.	83·8	55	i 12 32	0	—	—	i 12 47	pP	—
Tinemaha		83·8	52	e 12 32	0	—	—	—	—	—
Haiwee		84·4	53	i 12 35	− 1	—	—	—	—	—
Pasadena		85·1	55	i 12 37	− 2	—	—	i 12 52	pP	e 39·0
Mount Wilson	Z.	85·1	55	i 12 38	− 1	—	—	—	—	—
Riverside	Z.	85·7	55	i 12 41	− 1	—	—	—	—	—
La Jolla		86·3	56	e 12 42	− 3	—	—	—	—	—
Palomar		86·4	55	i 12 45	0	—	—	i 13 0	pP	—
Boulder City		86·8	53	i 12 47	0	—	—	—	—	—
Pierce Ferry		87·3	52	i 12 50	0	—	—	—	—	—
Tucson		91·4	54	i 13 10	+ 1	e 24 53	PS	i 13 23	pP	e 43·2
La Paz	Z.	150·6	84	20 7	[+19]	—	—	—	—	—

Additional readings:—
Mount Wilson iZ = 13m.2s.
Long waves also recorded at Riverview, Copenhagen, De Bilt, Uccle, and Kew.

Oct. 5d. 14h. 56m. 10s. Epicentre 38°·4S. 176°·5E. Depth of focus 0·030.

A = −·7842, B = +·0480, C = −·6186; δ = −6; h = −1;
D = +·061, E = +·998; G = +·617, H = −·038, K = −·786.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Tuai	0·6	128	0 32	+ 2	0 52	− 2
New Plymouth	2·0	251	0 39	− 2	1 6	− 6
Wellington	3·2	205	0 53	− 1	1 32	− 3
Kaimata	5·6	221	1 26?	+ 3	2 23	− 5
Christchurch	5·9	209	1 27?	0	2 29	− 6

Oct. 5d. Readings also at 0h. (near Stalinabad), 1h. (Berkeley and Tucson), 11h. (Grand Coulee), 12h. (Andijan, Stalinabad, Tashkent, and near Calcutta), 13h. (Tashkent, near Andijan, and Stalinabad), 14h. (near Shasta Dam), 15h. (St. Louis, Christchurch, and Riverview), 16h. (near Mizusawa), 18h. (Branner, Tashkent, near Andijan, and near Mizusawa), 20h. (near Berkeley and Lick (3)), 23h. (Uccle, Boulder City, Pierce Ferry, Tucson, Palomar, Riverside, St. Louis, La Paz, San Juan, Bogota, and Balboa Heights).

Oct. 6d. 9h. 12m. 33s. Epicentre 2°·2S. 139°·3E. (as on 1940, May 28d.).

$A = -\cdot7576$, $B = +\cdot6516$, $C = -\cdot0382$; $\delta = 0$; $h = +7$;
$D = +\cdot652$, $E = +\cdot758$; $G = +\cdot029$, $H = -\cdot025$, $K = -\cdot999$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		28·4	154	e 5 54	− 4	e 12 32	Q	—	—	—
Riverview		33·4	162	i 6 43k	+ 1	i 12 5	+ 2	—	—	e 16·8
Perth		36·9	214	—	—	i 13 0	+ 2	—	—	i 18·5
Vladivostok		45·6	353	i 8 25	+ 1	e 15 10	+ 4	—	—	—
Wellington	Z.	50·3	146	8 57	− 3	16 57	+47	11 52	PPP	25·0
Irkutsk		61·8	337	10 25	+ 2	18 49	+ 3	—	—	—
New Delhi	N.	66·9	303	—	—	e 19 41	− 8	—	—	—
Frunse		73·3	316	e 11 36	+ 1	—	—	—	—	—
Andijan		74·2	313	11 43	+ 3	e 21 16	+ 2	—	—	—
Stalinabad		76·3	311	11 55	+ 3	21 32	− 5	—	—	—
Tashkent		76·6	313	11 54	0	e 21 35	− 5	—	—	—
Sverdlovsk		85·6	327	i 12 42	+ 1	23 10	− 3	24 30	PPS	—
Baku		91·0	310	16 56	PP	e 24 12	+ 9	—	—	—
Shasta Dam		97·7	49	i 13 40	+ 2	—	—	i 17 5	PP	—
Grand Coulee		99·5	42	e 13 47	+ 1	—	—	—	—	—
Tinemaha	Z.	101·3	53	i 14 3	+ 9	—	—	—	—	—
Pasadena	Z.	101·6	56	i 13 58	+ 2	—	—	—	—	e 47·8
Mount Wilson	Z.	101·7	56	i 13 59	+ 3	—	—	—	—	—
Riverside	Z.	102·3	56	e 14 0	+ 1	—	—	e 18 11	PP	—
Palomar	Z.	102·8	57	e 14 2	+ 1	—	—	e 18 16	PP	—
Tucson		107·9	57	e 18 55	PP	—	—	—	—	e 51·0
St. Louis		122·1	45	i 18 57	[0]	e 30 41	PS	e 31 52	PPS	—
Ottawa		127·6	30	e 19 7	[0]	—	—	—	—	65·4
Toledo		129·9	323	i 19 14	[+ 2]	—	—	21 25	PP	—
Bogota		146·6	85	e 19 35	[− 7]	—	—	—	—	—
La Paz	Z.	147·2	126	19 50	[+ 7]	—	—	—	—	—
San Juan		150·3	55	e 19 51	[+ 3]	e 30 39	{+19}	—	—	e 76·9

Additional readings :—
Brisbane ePZ = 5m.58s.
Perth i = 15m.52s.
Wellington iZ = 9m.15s., Q = 22m.27s.
Christchurch (△ = 50°·7) record is wrongly interpreted; the readings given are P = 9h.10m.30s., PPZ = 14m.26s., SZ = 20m.36s., PSEZ = 21m.38s., eEZ = 23m.30s., SS = 29m.7s., QEN = 32m.30s., RE = 37m.
New Delhi iN = 20m.2s. and 20m.44s.
Long waves were also recorded at Auckland, De Bilt, Uccle, Kew, and other American stations.

Oct. 6d. Readings also at 0h. (Berkeley and Kew), 4h. (near Logan), 7h. (near Andijan), 9h. (near Samarkand), 11h. (Andijan), 15h. (Jena), 18h. (La Paz), 19h. (St. Louis, Haiwee, Palomar, Pasadena, Riverside, Tinemaha, and Tucson), 20h. (Tucson and Palomar), 21h. (Auckland and Wellington), 22h. (Christchurch, Riverview, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Boulder City, Pierce Ferry, Shasta Dam, Rapid City, Grand Coulee, College, San Juan, Helwan, Kew, Strasbourg, and Zürich).

Oct. 7d. 13h. 23m. 25s. Epicentre 12°·5N. 89°·1W.

A = +·0153, B = −·9765, C = +·2151 ; δ = +5 ; h = +6 ;
D = −1·000, E = −·016 ; G = +·003, H = −·215, K = −·977.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vera Cruz	z.	9·5	316	2 30	+10	4 34	+24	—	—	—
Balboa Heights		10·0	109	e 2 27	0	—	—	—	—	—
Tacubaya	e.	11·9	307	i 2 55	+ 1	i 5 15	+ 6	i 2 59	PP	6·1
Bogota		16·8	116	e 4 3	+ 5	e 7 19	+14	i 4 15	PP	—
Mobile		18·1	2	4 21	+ 7	7 54	+19	—	—	—
Columbia		22·6	18	i 5 6	+ 3	e 9 15	+ 8	i 5 24	PP	e 10·8
San Juan		22·9	73	i 5 9	+ 3	i 10 4	SS	i 5 52	PPP	e 11·0
Cape Girardeau	e.	24·7	359	i 5 27	+ 3	e 9 48	+ 4	—	—	—
St. Louis		26·1	358	i 5 36	− 1	i 10 13	+ 6	i 5 45	pP	e 13·4
Cincinnati		26·8	9	i 5 46	+ 2	i 10 18	− 1	i 6 33	PP	—
Fort de France		27·2	84	e 6 6	+19	—	—	—	—	—
Huancayo		27·9	150	e 5 58	+ 4	i 10 43	+ 6	i 6 42	PP	i 12·3
Tucson		28·0	319	i 5 54	− 1	i 10 51	+13	e 6 45	PP	e 11·6
Georgetown		28·4	21	e 5 59	+ 1	i 10 47	+ 2	—	—	i 14·6
Pittsburgh		29·1	15	i 5 58	− 6	i 10 50	− 6	i 9 18	P_cP	—
Chicago		29·2	2	i 6 13	+ 8	i 10 53	− 5	e 6 49	PP	e 13·7
Pennsylvania		29·9	17	e 6 3	− 9	i 11 6	− 3	—	—	—
Philadelphia		30·0	23	i 6 13	+ 1	i 11 11	+ 1	e 7 7	PP	e 14·1
Fordham		31·2	23	i 6 24	+ 1	i 11 30	+ 1	—	—	—
Pierce Ferry		32·5	322	i 6 33	− 1	—	—	i 7 50	PP	e 16·1
Palomar		32·7	315	i 6 36	0	i 11 58	+ 6	i 7 56	PP	—
La Jolla		32·8	314	i 6 36	− 1	—	—	—	—	—
Boulder City		32·9	320	i 6 37	− 1	—	—	i 7 41	PP	e 9·4
Riverside		33·5	315	i 6 41k	− 2	i 13 14	S_cP	i 9 22	P_cP	—
Harvard		33·6	25	i 6 39	− 5	—	—	i 7 54	PP	e 18·6
Rapid City		33·7	343	i 6 47	+ 2	e 12 10	+ 2	e 8 12	PP	e 14·6
Mount Wilson		34·1	315	i 6 47k	− 1	i 13 18	S_cP	i 9 23	P_cP	—
Pasadena		34·1	315	i 6 47k	− 1	i 12 15	+ 1	e 8 7	PP	e 15·7
Salt Lake City		34·5	330	e 6 48	− 4	e 13 1	S_cP	—	—	e 18·2
Ottawa		34·7	17	6 52	− 2	12 23	− 1	8 15	PP	16·6
Haiwee	N.	35·0	318	e 6 56	0	e 13 14	S_cP	—	—	—
Logan		35·2	331	e 6 57	− 1	e 12 31	0	e 8 33	PPP	e 14·9
Santa Barbara		35·3	314	i 6 55	− 4	—	—	i 7 5	?	—
La Paz		35·5	144	i 7 1a	+ 1	e 12 35	− 1	i 8 46	PPP	16·3
Tinemaha		35·8	319	i 7 1k	− 2	i 13 23	S_cP	i 8 51	PPP	—
Fresno	N.	36·6	318	e 7 9	− 1	—	—	e 7 33	?	—
Shawinigan Falls		36·6	20	7 9	− 1	12 52	− 1	8 29	PP	20·6
Seven Falls		37·8	21	7 21	+ 1	13 41	+30	8 55	PP	19·6
Bozeman		38·0	336	e 7 18	− 3	e 13 0	−14	e 8 53	PP	e 17·6
Lick	E.	38·2	317	e 7 25	+ 2	—	—	—	—	—
Santa Clara		38·4	317	i 6 39	−46	e 12 42	−38	—	—	—
Branner	E.	38·6	317	e 7 27	+ 1	—	—	—	—	—
Halifax		38·7	31	7 28	+ 1	13 29	+ 4	—	—	20·6
Berkeley		38·9	317	7 27	− 2	i 13 27	− 1	i 7 38	pP	19·3
Butte		38·9	335	e 7 27	− 2	e 13 45	+17	e 9 3	PP	e 17·7
San Francisco	E.	38·9	317	e 7 29	0	—	—	—	—	—
Mineral	E.	39·8	321	e 7 36	0	—	—	—	—	—
Ukiah		40·2	318	e 7 37	− 3	e 13 42	− 6	e 9 20	PP	e 18·8
Shasta Dam		40·5	321	i 7 39	− 3	i 13 35	−17	i 9 25	PP	e 17·7
Saskatoon		42·0	345	e 7 56	+ 2	e 14 21	+ 7	—	—	26·6
Grand Coulee		43·2	332	e 8 1	− 3	e 14 35	+ 3	i 9 44	PP	—
Victoria		45·8	329	8 21	− 4	15 12	+ 3	—	—	23·6
Ivigtut		56·9	23	9 45a	− 4	17 51	+ 9	13 17	PPP	27·6
Sitka		56·9	333	e 9 46	− 3	e 17 46	+ 4	e 13 26	PPP	e 23·3
College		65·7	337	e 10 47	− 1	e 19 24	−10	e 20 33	S.S	e 33·7
Honolulu		65·9	289	e 27 40	?	—	—	—	—	—
Lisbon		74·5	53	11 41	− 1	—	—	—	—	31·5
San Fernando	z.	77·0	55	i 11 58	+ 2	—	—	—	—	—
Edinburgh		77·5	36	—	—	e 21 35	+15	—	—	—
Toledo		78·3	52	e 12 2	− 1	e 21 57	− 2	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Malaga	Z.	78·4	55	i 12 5	+ 1	e 22 6	+ 6	—	—	—
Granada		79·0	55	e 11 31a	−36	i 21 19	−47	—	—	38·0
Kew		79·6	40	i 12 10a	0	e 22 0	−12	e 15 10	PP	e 36·6
Bergen		81·4	30	e 21 40	?	e 22 35?	+ 4	—	—	40·6
Tortosa	E.	81·6	50	i 12 19	− 2	i 22 45	+12	23 29	PS	e 37·6
Paris		81·8	42	i 12 20	− 2	e 22 37	+ 2	e 15 33	PP	—
Uccle		82·6	40	e 12 26?	0	e 22 39?	− 4	e 15 37	PP	e 38·6
Clermont-Ferrand		82·7	46	e 12 25	− 2	e 22 48	+ 4	e 15 33	PP	e 39·0
De Bilt		82·9	39	i 12 30a	+ 2	e 22 35	−11	i 15 44	PP	e 39·6
Strasbourg		85·2	42	e 12 41	+ 2	—	—	—	—	e 45·6
Copenhagen		86·2	34	i 12 45	+ 1	23 11	− 8	16 8	PP	—
Upsala		87·5	29	—	—	e 23 14	[− 3]	e 23 35?	S	e 41·6
Cheb		87·7	40	e 12 58	+ 6	—	—	—	—	e 43·6
Prague		89·0	39	—	—	e 23 31	{− 3}	—	—	e 36·6
Triest		90·0	43	i 12 58?	− 5	i 23 38	{− 4}	—	—	—
Belgrade		94·7	43	e 12 59	−25	i 24 2	[+ 2]	e 17 21	PP	e 49·4
Moscow		98·8	27	e 13 41	− 2	24 21	[0]	—	—	—
Wellington		102·7	231	17 40	PP	24 40	[0]	32 35?	SS	47·6
Christchurch		104·5	227	—	—	e 27 45	PS	e 33 29	SS	48·6
Sverdlovsk		106·5	17	e 14 13	P	e 24 43	[−14]	28 3	PS	—
Helwan		108·9	52	—	—	e 25 11	[+ 3]	—	—	—
Vladivostok		113·2	328	e 19 33	PP	e 29 16	PS	e 30 25	PPS	—
Irkutsk		114·5	350	19 36	PP	e 25 26	[− 4]	28 52	PS	—
Baku		115·1	34	—	—	e 26 41	{ 0}	—	—	—
Riverview	Z.	121·5	238	—	—	e 30 27	PS	—	—	e 56·5
New Delhi	N.	137·3	18	e 19 31	[+ 5]	i 22 56	PKS	e 22 8	PP	—
Bombay		144·1	30	i 20 37	[+59]	—	—	—	—	—

Additional readings ;—
Tacubaya iPPZ = 3m.12s., iSS?Z = 5m.51s.
Columbia e = 6m.2s., i = 9m.57s.
St. Louis isSN = 10m.31s.
Huancayo i = 7m.35s.
Tucson i = 6m.14s., ePcP = 8m.29s., e = 11m.11s.
Pittsburgh e = 10m.5s., i = 12m.4s.
Chicago e = 9m.20s. and 11m.12s.
Pennsylvania i = 6m.15s., e = 8m.7s., i = 11m.35s.
Philadelphia e = 6m.29s., i = 11m.22s.
Palomar iNZ = 6m.48s., iPcPZ = 9m.21s., iScPZ = 13m.21s.
Boulder City i = 7m.6s., iPcP = 9m.20s.
Mount Wilson iZ = 6m.56s.
Pasadena iZ = 6m.56s. and 7m.5s., iPcPNZ = 9m.22s., iScPEN = 13m.13s., iScPZ = 13m.18s., iScSE = 17m.18s.
Ottawa iZ = 9m.26s., SS = 14m.35s.?.
Logan e = 7m.38s. and 10m.56s.
La Paz iSZ = 12m.57s.
Tinemaha iZ = 7m.32s., iPcPZ = 9m.28s.
Seven Falls SS = 16m.23s.
Bozeman e = 7m.54s.
Berkeley ePPP?Z = 9m.37s., eSZ = 13m.31s., iE = 13m.50s.
Grand Coulee iP = 8m.5s.
Ivigtut 22m.11s.
College eSSS = 27m.17s.
Kew ePPPEZ = 16m.50s.?, eSKSE = 22m.26s., ePPSE = 23m.5s., eSSZ = 26m.50s.?, eSSS = 30m.40s.
Tortosa PPE = 14m.56s.
Paris e = 27m.33s.
Uccle i = 22m.48s., eSS = 28m.5s.
Clermont-Ferrand ePS = 23m.35s., eSS? = 28m.38s.
De Bilt eSS = 28m.35s., eSSS = 32m.15s.
Copenhagen 12m.59s., 24m.45s., and 29m.11s.
Belgrade eSS = 30m.48s.
Wellington e = 34m.35s., SSS?Z = 37m.55s., Q = 42·6m.
Christchurch eEN = 37m.20s., e = 41m.4s., QE = 43m.46s.
Irkutsk SS = 35m.35s., eSSS = 40m.11s.
Long waves were also recorded at Seattle and Aberdeen.

Oct. 7d. Readings also at 0h. (near San Francisco and Berkeley and near Mizusawa), 3h. (Grand Coulee, Tinemaha, Santa Barbara, Pasadena, Mount Wilson, Palomar, Boulder City, Shasta Dam, and Tucson), 5h. (near Bogota), 7h. (Tucson, near Tacubaya and Oaxaca), 10h. (Tucson), 20h. (Tucson, Palomar, Mount Wilson, Pasadena, Tinemaha, and Copenhagen), 22h. (near La Paz).

Oct. 8d. Readings at 1h. (Tinemaha, Mount Wilson, Riverside, and Tucson), 3h. (Bogota), 4h. (Pierce Ferry and Boulder City), 5h. (Tucson, Pierce Ferry, Boulder City, Palomar, Riverside, Pasadena, Mount Wilson, Haiwee, and Tinemaha), 14h. (near Stalinabad and near Samarkand), 18h. (San Francisco), 19h. (near Stalinabad (2)), 21h. (Alicante (2)), 23h. (Riverside and Tucson).

Oct. 9d. 3h. Undetermined shock.

Sofia ePEN = 15m.37s., iSEN = 16m.51s.
Belgrade eP = 15m.53s., e = 16m.19s. and 16m.59s., eP_gS_g = 17m.8s., iS_gS_g = 18m.9s.
Bucharest eN = 16m.52s., eE = 16m.59s., eN = 17m.24s., eE = 17m.38s. and 18m.37s.
Helwan eZ = 17m.16s. and 19m.15s.
Zürich eP? = 17m.18s., eS_g? = 19m.18s.
Basle eP? = 17m.31s., e = 22m.15s.
Triest eP_g = 18m.2s.?, eS_g = 18m.48s.
Strasbourg e = 18m.5s., 20m.20s., and 22m.27s.
Prague e = 19m.55s.
Neuchatel e = 19m.16s.
Uccle e = 21m.29s., eL = 24m.
De Bilt e = 21m.45s., eL = 24m.
Copenhagen iS = 27m.0s., 29m.47s.
Long waves were also recorded at Kew and Paris.

Oct. 9d. 10h. 56m. 37s. Epicentre 34°·2N. 136°·8E. Depth of focus 0·050.
(as on 1943 Sept 2d.).

Scale IV at Tu : II-III at Tokyo and Hukusima. Epicentre 34°·1N. 137°·0E.
Seismo. Bull. Cent. Met. Obs., Japan, 1945, p. 41.

A = −·6042, B = +·5674, C = +·5595 ; δ = +4 ; h = 0 ;
D = +·685, E = +·729 ; G = −·408, H = +·383, K = −·829.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Owase		0·5	255	0 49a	+ 5	1 25	+ 6	—	—
Hikone		1·1	337	0 45k	− 1	1 23	0	—	—
Kyoto		1·2	313	0 45a	− 2	1 22	− 2	—	—
Shizuoka		1·5	60	0 45k	− 3	1 23	− 3	—	—
Sumoto		1·6	275	0 54 .	+ 5	1 23	− 4	—	—
Toyooka		2·1	309	0 50	− 2	1 32	− 1	—	—
Toyama		2·5	7	0 55	0	1 41	+ 2	—	—
Mera		2·6	74	0 49k	− 7	1 33	− 7	—	—
Kôti		2·8	257	1 18	?	2 6	?	—	—
Tokyo		2·9	59	1 2k	+ 3	1 49	+ 4	—	—
Wazima		3·2	1	1 1	− 1	1 50	0	—	—
Onahama		4·3	51	1 9	− 4	2 7	− 3	—	—
Hukusima		4·6	39	1 11	− 5	2 11	− 4	—	—
Sendai		5·2	40	1 25	+ 3	2 29	+ 2	—	—
Hukuoka		5·3	265	1 23	− 1	2 34	+ 5	—	—
Mizusawa	E.	6·0	33	1 38	+ 7	2 49	+ 6	—	—
Miyako		6·8	35	1 38	− 3	2 54	− 6	—	—
Sapporo		9·5	21	2 20	+ 7	—	—	—	—
Grand Coulee		73·9	43	i 11 2	+ 3	—	—	—	—
Shasta Dam		75·8	51	i 11 15	+ 5	—	—	i 14 9	PP
Berkeley	Z.	77·4	53	i 11 23	+ 5	—	—	—	—
Tinemaha		80·5	52	i 11 40a	+ 5	—	—	—	—
Mount Wilson	Z.	82·3	54	i 11 48a	+ 4	—	—	e 13 12	pP
Pasadena		82·3	54	i 11 48a	+ 4	—	—	—	—
Riverside		82·9	54	i 11 50a	+ 3	—	—	—	—
Boulder City		83·4	51	i 11 54	+ 4	—	—	—	—
Palomar		83·6	54	i 11 56a	+ 5	—	—	—	—
Pierce Ferry		83·8	51	i 11 56	+ 4	—	—	—	—
Tucson		88·3	52	i 12 18	+ 4	—	—	e 15 47	PP

Additional readings ;—
Mount Wilson iZ = 11m.57s.
Pasadena ipPZ = 11m.58s., iNZ = 12m.9s.
Boulder City i = 12m.5s.
Palomar iZ = 12m.3s., iEN = 12m.13s.
Tucson e = 16m.19s.

Oct. 9d. 14h. 36m. 35s. Epicentre 43°·8N. 147°·0E. Depth of focus 0·010.

Intensity VI at Nemuro ; V at Urakawa, Hatinohe, and Miyako ; IV at Mito, Mizusawa, Onahama, and Tukubasan ; II-III at Tokyo, Sendai, and Utunomiya.
Epicentre as adopted suggested focal depth 300km.
Seismo. Bull. Cent. Met. Obs., Japan, 1945, Tokyo, 1951, p. 42, with chart of intensities.

$A = -\cdot6073$, $B = +\cdot3944$, $C = +\cdot6897$; $\delta = +5$; $h = -3$;
$D = +\cdot545$, $E = +\cdot839$; $G = -\cdot578$, $H = +\cdot376$, $K = -\cdot724$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro		1·1	246	1 7	?	1 27	?	—	—	—
Sapporo		4·2	261	1 7	+ 4	1 50	− 1	—	—	—
Mori		5·0	252	1 8a	− 6	2 9	− 2	—	—	—
Hatinohe		5·2	233	1 15	− 2	2 12	− 4	—	—	—
Miyako		5·6	224	1 17a	− 5	2 18	− 8	—	—	—
Mizusawa	E.	6·4	225	1 37	+ 4	2 44	− 2	—	—	—
Akita		6·6	234	2 16	+40	3 18	+28	—	—	—
Sendai		7·2	222	1 44	0	3 0	− 5	—	—	—
Hukusima		7·8	221	1 40	−12	2 56	−24	—	—	—
Onahama		8·3	216	1 57	− 2	3 21	−11	—	—	—
Mito		8·9	216	1 19	−48	—	—	—	—	—
Utunomiya		9·1	219	2 18	+ 8	—	—	—	—	—
Tukubasan		9·2	217	2 10	− 1	—	—	—	—	—
Wazima		10·0	233	2 16	− 6	3 55	−18	—	—	—
Yokohama		10·1	216	2 33	+ 9	—	—	—	—	—
Toyama		10·3	230	2 20	− 6	—	—	—	—	—
Hunatu		10·4	220	1 59	−29	3 51	−32	—	—	—
Mera		10·4	214	2 55	+27	4 14	− 9	—	—	—
Shizuoka		11·0	220	2 28	− 8	4 26	−11	—	—	—
Vladivostok		11·0	272	i 2 42	+ 6	i 4 48	+11	—	—	—
Hikone		11·9	228	2 41	− 7	4 52	− 7	—	—	—
Kyoto		12·4	228	2 47	− 7	—	—	—	—	—
Toyooka		12·5	233	1 59	−57	—	—	—	—	—
Owase		12·8	224	3 4	+ 4	—	—	—	—	—
Sumoto		13·3	229	3 9	+ 3	5 34	+ 2	—	—	—
Kôti		14·6	230	3 50	+27	6 47	+45	—	—	—
Hukuoka		16·4	237	3 50	+ 4	7 2	+18	—	—	—
Irkutsk		29·4	302	5 57	+ 1	10 48	+ 6	i 6 16	pP	—
College		41·1	36	e 7 33	− 3	i 13 39	− 2	e 9 15	PP	e 16·8
Sitka		48·4	45	i 8 33	− 1	i 15 35	+ 9	i 10 30	PP	e 23·4
Honolulu		50·6	97	e 8 53	+ 2	e 15 55	− 2	i 9 32	sP	e 20·8
Frunse		51·1	295	e 8 59	+ 4	e 16 15	+11	—	—	—
Calcutta	N.	52·3	266	e 9 5	+ 1	i 16 31	+11	—	—	—
Sverdlovsk		53·0	316	i 9 7	− 2	i 16 27	− 2	—	—	—
Andijan		53·5	294	i 9 17	+ 4	i 16 49	+13	—	—	—
Tashkent		55·3	296	i 9 29	+ 3	i 17 8	+ 8	—	—	—
New Delhi		56·8	279	i 9 40	+ 4	i 17 23	+ 3	10 34	PcP	—
Stalinabad		57·0	293	i 9 41	+ 3	i 17 28	+ 5	—	—	—
Samarkand		57·6	275	—	—	e 17 27	− 4	—	—	—
Victoria		58·8	51	9 49	− 1	17 59	+13	23 25?	?	—
Grand Coulee		61·6	49	10 7	− 3	e 18 19	− 3	i 12 23	PP	—
Hyderabad	N.	62·7	268	10 5	−12	18 30	− 6	12 27	PP	29·5
Shasta Dam		63·8	57	i 10 21	− 3	i 18 51	+ 1	e 10 45	pP	—
Ukiah		64·2	59	e 10 24	− 3	e 18 53	− 2	e 12 50	PP	e 26·0
Moscow		64·3	323	10 26	− 1	e 18 57	+ 1	10 46	pP	—
Mineral	E.	64·5	57	e 10 30	+ 1	—	—	e 10 43	pP	—
Saskatoon		65·3	40	—	—	i 19 11	+ 3	—	—	28·4
Berkeley		65·5	60	10 34	− 1	19 11	0	e 26 26	SSS	28·5
San Francisco	E.	65·5	60	e 10 33	− 2	—	—	—	—	—
Branner		65·9	60	e 10 36	− 2	e 19 16	0	e 11 0	pP	—
Bombay		65·9	273	i 10 40	+ 2	i 19 26	+10	—	—	30·3
Santa Clara		66·0	60	i 10 42	+ 4	e 19 24	+ 7	—	—	—
Butte		66·2	47	e 10 46	+ 6	e 19 21	+ 2	e 20 25	SeS	e 33·9
Lick		66·2	60	e 10 40	0	—	—	e 11 2	pP	—
Bozeman		67·3	47	e 10 46	0	i 19 32	0	e 13 37	pPP	e 29·1

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fresno	N.	67·8	59	e 10 49	− 1	e 19 41	+ 3	e 11 11	pP	—
Tinemaha		68·5	59	i 10 53	− 1	e 19 47	0	i 11 16	pP	—
Upsala	E.	68·7	335	e 10 45	−10	19 43	− 6	13 34	PP	e 32·4
Colombo	E.	68·8	258	11 3	+ 7	19 58	+ 8	—	—	—
Santa Barbara		69·3	61	i 10 56	− 3	—	—	i 11 22	pP	—
Logan		69·4	50	i 11 1	+ 1	i 19 59	+ 2	i 11 20	pP	e 29·3
Salt Lake City		70·0	52	e 10 57	− 6	i 20 6	+ 2	e 11 33	pP	e 28·2
Pasadena		70·4	61	i 11 4a	− 2	i 20 9	0	i 11 27	pP	e 27·9
Mount Wilson		70·5	61	i 11 4	− 2	—	—	i 11 27	pP	—
Riverside		71·0	61	i 11 7	− 2	—	—	i 11 35	pP	—
Brisbane		71·1	174	i 11 12k	+ 2	i 20 28	+11	e 20 50	PS	e 34·0
Erevan		71·1	307	e 11 15	+ 5	e 20 30	+13	—	—	—
Leninakan		71·1	308	e 11 14	+ 4	e 20 30	+13	—	—	—
Boulder City		71·3	57	i 11 10	− 1	e 20 19	0	i 11 31	pP	—
Bergen		71·5	341	i 11 25	+13	20 29?	+ 7	25 25?	SS	—
Palomar		71·8	61	i 11 12	− 2	i 20 20	− 5	i 11 33	pP	—
Pierce Ferry		71·8	57	i 11 13	− 1	e 20 25	0	—	—	—
La Jolla	Z.	71·9	62	e 11 13	− 1	—	—	—	—	—
Rapid City		72·5	45	i 11 23	+ 5	i 20 33	0	e 14 13	PP	e 28·8
Copenhagen		73·7	335	i 11 25	0	i 20 46	0	16 15	PPP	—
Yalta		73·7	316	e 11 27	+ 2	—	—	—	—	—
Ivigtut		74·6	8	i 11 28k	− 2	i 20 59	+ 3	21 35	PS	31·4
Aberdeen		76·1	343	i 11 40	+ 1	i 21 14	+ 1	—	—	35·8
Tucson		76·3	58	i 11 39	− 1	e 21 18	+ 3	i 12 2	pP	e 31·9
Collmberg		77·2	332	e 11 49	+ 4	e 21 32	+ 7	i 12 13	pP	e 36·4
Riverview		77·3	176	i 11 51a	+ 5	i 21 41	+15	i 12 8	pP	e 36·4
Edinburgh		77·5	343	—	—	21 28	0	21 48	S_cS	—
Bucharest		77·6	320	e 11 51	+ 4	e 21 31	+ 2	—	—	—
Prague		77·8	331	11 53	+ 5	i 21 35	+ 4	12 24	pP	e 35·4
Jena	N.	78·0	332	i 12 32	+43	i 22 16	+42	—	—	—
	Z.	78·0	332	i 12 28	+39	i 22 10	+36	—	—	—
Cheb		78·5	332	e 11 52	0	e 21 45	+ 6	—	—	e 38·4
De Bilt		78·9	337	i 11 56	+ 2	i 21 46	+ 3	i 12 18	pP	e 37·4
Belgrade		79·8	324	e 12 1k	+ 2	i 21 56	+ 3	i 12 25	pP	e 43·1
Sofia		80·2	320	i 12 6	+ 5	e 22 3	+ 6	31 25?	sSSS	e 42·1
Uccle		80·3	337	i 12 3a	+ 1	e 21 58	0	12 23	pP	e 35·4
Ksara		80·5	307	e 12 8	+ 5	e 22 13	+13	—	—	—
Kew		81·0	340	i 12 5	− 1	i 22 9	+ 4	i 12 25	pP	e 26·8
Chicago		81·7	38	e 12 18	+ 9	i 22 9	− 3	e 16 59	PPP	e 33·3
Strasbourg		81·8	333	e 12 7	− 3	i 22 17	+ 4	e 12 30	pP	32·4
Triest		81·8	328	i 12 13	+ 3	i 22 15	+ 2	i 12 33	pP	e 36·8
Zürich		82·1	332	e 12 12a	+ 1	e 22 17	+ 1	e 15 21	PP	—
Chur		82·2	331	e 12 13	+ 1	e 22 23	+ 6	—	—	e 41·6
Basle		82·3	332	e 12 14a	+ 2	e 22 22	+ 4	—	—	—
Paris		82·7	336	e 12 15	+ 1	i 22 26	+ 4	—	—	e 39·4
Neuchatel		82·9	332	e 12 16	+ 1	e 22 27	+ 3	—	—	—
Besançon		83·0	333	i 12 23	+ 7	e 22 29	+ 4	—	—	—
St. Louis		83·0	41	i 12 14	− 2	i 22 27	+ 2	i 12 34	pP	i 38·0
Ottawa		83·4	28	12 17	− 1	22 25	− 4	15 25	PP	37·4
Shawinigan Falls		83·4	25	12 18	0	22 30	+ 1	—	—	—
Seven Falls		83·5	24	12 18	0	22 28	− 2	—	—	42·4
Auckland		84·2	158	13 29	+67	23 48	+71	17 5	pPP	40·4
Cincinnati		85·2	37	i 12 30	+ 3	i 22 46	− 1	i 12 58	pP	—
Clermont-Ferrand		85·2	335	i 12 28	+ 1	i 22 50	+ 3	i 12 52	pP	40·5
Arapuni		85·5	158	—	—	23 55?	PS	—	—	42·4
Helwan		86·0	308	i 12 34k	+ 3	22 51	− 4	15 40	PP	—
Pittsburgh		86·1	34	i 12 36	+ 5	i 24 1	PS	—	—	—
Pennsylvania		86·6	32	e 12 37	+ 3	i 22 55	− 6	i 23 37	sS	—
Harvard		87·4	27	e 12 38	+ 1	e 24 8	PS	—	—	e 43·4
Fordham		88·1	29	i 12 44	+ 3	i 23 5	−10	i 24 14	PS	43·4
Wellington		88·3	159	12 42	0	22 57	[− 3]	13 11	pP	40·4

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Philadelphia		88·4	31	i 12 44	+ 2	i 23 3	[+ 3]	e 23 51	sS	e 38·4
Georgetown		88·5	33	e 12 43	0	i 23 20	+ 2	e 16 9	PP	39·4
Barcelona		89·5	334	e 13 10	pP	e 23 10	[+ 3]	—	—	e 42·5
Christchurch		89·9	161	12 54	+ 5	23 16	[+ 7]	13 16	pP	41·0
Tortosa		90·5	334	i 12 57	+ 5	i 23 17	[+ 4]	13 46	pP	42·6
Coimbra		91·1	38	—	—	e 23 48	+ 6	e 30 3	SS	e 43·0
Toledo		92·7	337	i 13 4	+ 2	i 24 6	+10	—	—	—
Granada		95·1	336	i 13 27	+14	i 23 47	[+ 8]	17 7	PP	44·4
Lisbon		95·1	341	21 4	?	24 12	− 5	25 41	PS	38·3
Malaga		95·7	337	(i 12 59)	−17	(23 5)	[−37]	(26 29)	PPS	(61·0)
San Fernando	E.	96·5	338	e 26 25?	PS	e 33 25?	?	—	—	e 49·6
San Juan		111·1	33	e 19 1	PP	e 24 56	[+ 3]	e 28 29	PS	e 51·0
Fort de France		116·3	30	e 19 11	pPKP	—	—	—	—	—
Bogota		119·3	48	e 20 1	PP	—	—	—	—	—
Huancayo		131·8	61	e 19 25	[+22]	e 32 3	PS	e 22 25	pPP	e 54·3
La Paz		139·7	57	19 23	[+ 6]	29 11	SKKS	i 20 25	pPKP	67·4

Additional Readings ;—
Miznsawa SN =2m.47s.
College e =8m.36s.
Hyderabad S_cSN =19m.51s.
New Delhi iE =17m.40s., iN =18m.2s., iE =19m.22s., S_cSN =19m.27s., SSN =21m.12s., SSSN =22m.26s.
Ukiah eSS =23m.16s.
Berkeley eSZ =19m.15s., eN =26m.20s., eZ =26m.40s.
Branner eSE =19m.19s.
Butte e =21m.3s. and 25m.49s.
Bozeman esS =20m.7s., eSS =24m.1s., eSSS =27m.5s.
Fresno eN =11m.31s. and 18m.20s.
Tinemaha isPZ =11m.27s., ePKP,PKPZ =38m.44s., iZ =39m.9s.
Upsala ePN =10m.48s., eN =12m.59s., ePPP? =15m.17s.?, iS_cSN =20m.42s., eE =21m.29s., eSS?E =24m.10s., eSS?N =24m.48s., eSSS?N =28m.8s., eSSS?E =28m.16s.
Santa Barbara iZ =11m.29s., ePKP,PKPZ =39m.34s.
Logan i =21m,2s., eSS =24m.32s.
Salt Lake City e =13m.30s., i =20m.57s., eSS =23m.55s.
Pasadena iZ =11m.9s., isPZ =11m.38s., ipP_cPZ =11m.49s., i =19m.43s., eSSEN =24m.37s., iPKP,PKPZ =39m.3s.
Mount Wilson isPZ =11m.37s., iZ =11m.53s. and 12m.13s., iPKP,PKPZ =39m.6s.
Riverside iZ =11m.22s., ePKP,PKPZ =39m.3s.
Brisbane eZ =11m.37s., eN =21m.45s., iSSN =25m.41s.
Bergen eN =29m.10s.
Palomar iZ =11m.46s., iPKP,PKPZ =39m.23s.
Rapid City i =21m.7s., eSS =25m.0s.
Copenhagen 17m.7s., 21m.25s., 26m.25s., and 29m.34s.
Tucson iPP =14m.15s., e =14m.50s., ePPP =16m.30s., isS =21m.51s., eS_cS =22m.24s., e =22m.56s., eSS =25m.59s., eSSS =29m.45s.
Collmberg ePP? =15m.1s., ePPP =16m.37s., ePPS =22m.31s., eSS =26m.40s., eSSS =30m.7s.
Riverview iZ =11m.55s., iPPZ =14m.58s., iS_cS?N =22m.4s., iE =22m.13s., isSN =22m.25s., iPSN =22m.34s., iEZ =32m.29s.
Prague ePS =22m.7s., eSS =26m.55s., eSSS =30m.7s.
Jena iN =12m.36s.
De Bilt i =12m.31s., ePP =14m.45s., eSS =28m.5s.
Belgrade i =12m.6s., e =18m.56s. and 25m.53s.
Sofia iSN =22m.7s.
Uccle ePP =15m.5s., eN =18m.25s., iSE =22m.0s.
Kew iZ =12m.53s., eEZ =13m.10s.?, eNZ =15m.6s., eZ =17m.10s.?, i =22m.18s., iN =22m.31s.
Chicago e =27m.0s.
Strasbourg sP =12m.49s., isS =23m.1s.
Triest iPSN =22m.55s., eSS =27m.41s.
St. Louis isSN =23m.1s., iSSN =27m.52s., iSSSN =31m.12s., iN =34m.0s.
Ottawa PSN =23m.7s., SSN =27m.55s.
Auckland i =14m.54s., 17m.25s., e =24m.47s., Q =36m.40s.
Cincinnati i =12m.39s., ePP =15m.57s., iS =22m.49s., i =23m.22s. and 23m.40s.
Helwan PPPZ =17m.34s.
Pennsylvania e =13m.19s., eSS =28m.23s.
Fordham e =13m.46s. and 32m.32s.
Wellington sPZ =13m.35s., PP?Z =16m.18s., pPPPZ =18m.38s., iZ =19m.43s., sPS =25m.1s., SS =28m.38s., Q =36m.38s.
Philadelphia i =12m.54s., e =15m.57s., eSS =29m.4s., eSSS =32m.42s.
Georgetown iSN =23m.3s., iSZ =23m.9s.

Continued on next page.

Christchurch PP = 16m.27s., PPPZ = 18m.57s., sS = 24m.20s., PPSEZ = 25m.24s., SSEN = 29m.25s., SSSE = 32m.39s., QN = 35m.28s.
Tortosa P_cPN = 13m.6s., sPN? = 14m.52s., PPN = 16m.36s., S_cSN = 23m.42s., PSN = 25m.1s., SSE = 29m.51s.
Granada SSS = 35m.15s.
Lisbon SE = 24m.1s., PSE = 25m.49s.
Malaga PP = (16m.9s.), SKS = (20m.8s.), PKKP = (22m.11s.), SS = (34m.31s.), PKP,PKP = (38m.5s.), readings have been increased by 10 minutes.
San Fernando ePPPE = 28m.25s.?, eSSSE = 42m.25s.?
San Juan iSS = 34m.25s., e = 38m.25s.
Huancayo e = 28m.52s., eSS = 39m.2s.
La Paz $iPKP_2Z$ = 19m.27s.a, isPKP = 21m.19s., iPP = 21m.45s., SKP = 22m.51s., iZ = 24m.13s.

Oct. 9d. Readings also at 1h. (near Mizusawa), 5h. (near Tananarive), 13h. (near Seven Falls, Shawinigan Falls, Ottawa, and Harvard), 15h. (Grand Coulee, Shasta Dam, Pierce Ferry, Boulder City, and near Granada), 22h. (Riverview and Bombay), 23h. (Tucson, near Pierce Ferry (2) and Boulder City (2)).

Oct. 10d. Readings at 0h. (Samarkand), 5h. (San Juan and Bogota), 6h. (Alicante), 8h. (near Stalinabad and Andijan), 9h. (near Stalinabad and near Mizusawa), 10h. (near Mizusawa), 12h. (Malaga, near Tashkent, Frunse, Stalinabad and Andijan), 14h. (Kalossa), 16h. (Tinemaha, Pasadena, Palomar, Mount Wilson, Riverside, Tucson, and near La Paz), 18h. (Tucson, Pierce Ferry, Boulder City, Tinemaha, Andijan, Vladivostok, and near Mizusawa), 19h. (Uccle and Copenhagen), 21h. (Brisbane), 22h. (near Andijan).

Oct. 11d. 16h. 53m. 2s. Epicentre 18°·3N. 97°·6W. Depth of focus 0·010.

Felt in Oaxaca State.

Epicentre 18°N. 97°·7W. Depth 100kms. (U.S.C.G.S.).
17°·5N. 98°·5W. Depth 90kms. (Pasadena).

Annales de l'Institut de Physique du Globe de Strasbourg, 2ème partie, Séismologie, Tome X, Strasbourg, 1951, p. 35.

$A = -\cdot1257$, $B = -\cdot9417$, $C = +\cdot3121$; $\delta = +1$; $h = +5$;
$D = -\cdot991$, $E = +\cdot132$; $G = -\cdot041$, $H = -\cdot309$, $K = -\cdot950$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Puebla		0·9	322	0 15	− 4	(0 31)	− 3	—	—	0·5
Tacubaya		1·9	306	(0 26)	− 6	(i 0 43)	−12	—	—	—
Guadalajara	E.	5·9	294	1 22	− 4	—	—	—	—	2·8
Tucson		18·3	323	i 4 8	− 1	e 7 36	+10	i 4 27	pP	e 9·1
Balboa Heights		19·8	115	e 4 26	+ 1	—	—	—	—	—
Cape Girardeau		20·2	19	e 4 29	0	e 8 15	+10	—	—	—
St. Louis	N.	21·3	16	e 4 39	− 1	i 8 34	+ 8	i 4 50	pP	e 11·2
Columbia		21·5	39	e 4 37	− 5	e 8 45	+15	e 5 9	PP	e 14·7
La Jolla		22·8	314	i 4 56	+ 1	—	—	i 5 16	pP	—
Pierce Ferry		22·9	325	i 4 56	0	—	—	i 5 16	pP	e 12·1
Boulder City		23·3	324	i 5 0	0	e 7 57	−65	i 5 22	pP	e 12·9
Riverside		23·6	316	i 5 2k	− 1	i 9 3	− 4	i 5 24	pP	—
Mount Wilson		24·2	316	i 5 8k	0	i 9 5	−12	i 5 31	pP	—
Pasadena		24·2	316	i 5 9k	+ 1	i 9 5	−12	i 5 30	pP	13·3
Chicago		24·9	17	i 5 16	+ 1	(9 34)	+ 5	i 5 36	pP	e 9·6
Santa Barbara		25·4	314	i 5 20	0	—	—	i 5 43	pP	—
Salt Lake City		25·5	335	e 5 23	+ 2	e 10 14	sS	e 5 45	pP	e 13·5
Rapid City		26·1	352	e 5 31	+ 5	e 10 17	sS	i 5 51	pP	e 13·0
Tinemaha		26·1	320	i 5 26k	0	i 9 9	−40	i 5 47	pP	—
Logan		26·3	337	e 5 28	0	e 10 3	+11	e 6 22	PP	e 13·8
Bogota		26·7	118	i 5 32	0	—	—	i 5 38	?	—
Fresno	N.	26·8	319	e 5 35	+ 2	—	—	—	—	—
Pittsburgh		26·8	31	i 5 32	− 1	e 10 22	+22	i 5 51	pP	—
Pennsylvania		28·1	33	e 5 42	− 3	i 10 32	+11	e 6 40	PP	—
Lick		28·4	318	e 5 46	− 1	—	—	e 6 8	pP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Berkeley	Z.	29·1	318	e 5 52	− 2	—	—	e 6 14	pP	—
Bozeman		29·5	341	e 6 17	pP	e 10 47	+ 4	e 11 29	sS	e 14·6
San Juan		29·9	85	e 6 1	0	i 11 21	sS	e 6 23	pP	e 12·1
Fordham		30·3	37	e 6 5	+ 1	e 11 7	+11	—	—	—
Shasta Dam		30·9	322	i 6 6	− 4	—	—	i 6 28	pP	e 16·4
Ottawa		32·6	29	6 23	− 1	11 38	+ 6	—	—	18·0
Harvard		32·7	38	e 6 24	− 1	e 11 43	+10	—	—	—
Grand Coulee		34·3	335	i 6 38	− 1	—	—	i 6 54	pP	16·7
Shawinigan Falls		34·8	31	6 43	0	12 14	+ 8	—	—	—
Fort de France		35·1	91	e 6 39	− 7	—	—	—	—	—
Seven Falls		36·2	32	6 54	− 1	12 34	+ 7	—	—	22·0
Huancayo		37·3	143	e 7 7	+ 3	e 12 49	+ 5	e 13 19	sS	e 15·7
La Paz	Z.	45·1	138	i 8 6	− 2	—	—	—	—	—
Toledo	Z.	81·1	51	i 12 6	0	—	—	e 16 58	PPP	—
Granada		82·3	54	12 29k	+17	22 55	+37	i 23 0	PS	—
Uccle		83·3	39	e 12 20	+ 3	—	—	e 12 42	pP	—
Copenhagen		85·8	32	e 12 31	+ 1	i 23 3	+10	e 12 51	pP	—
Strasbourg		86·2	40	e 12 53	pP	—	—	—	—	—
Neuchatel		86·3	42	e 12 33	+ 1	—	—	—	—	—
Basle		86·5	41	e 12 35	+ 2	—	—	—	—	—
Zürich		87·2	41	e 12 36	0	—	—	—	—	—
Jena	E.	87·5	37	e 13 28	+50	—	—	—	—	—

Additional readings :—
Tacubaya readings decreased by 4 minutes.
Tucson i = 4m.41s., 4m.53s., and 8m.7s.
San Juan e = 7m.21s.
Grand Coulee i = 7m.1s., iP_cP = 9m.12s.
St. Louis iPPN = 5m.3s., isSN = 8m.56s., iSSN = 9m.10s.
Riverside iZ = 8m.44s., eZ = 12m.42s.
Mount Wilson iZ = 8m.47s., eZ = 12m.54s.
Pasadena iZ = 8m.47s.
Chicago i = 5m.53s., eP_cP = 8m.57s.
Santa Barbara iZ = 8m.49s.
Rapid City e = 6m.11s.
Tinemaha iEZ = 5m.51s., iZ = 8m.51s.
Uccle e = 13m.9s.
Copenhagen eN = 23m.34s.

Oct. 11d. Readings also at 0h. (near Berkeley), 5h. (Tinemaha, Riverside, and Tucson), 6h. (Tinemaha, Pasadena, Riverside, Tucson, and near Mizusawa), 9h. (Bogota, Tucson, Riverside, Pasadena, Mount Wilson, Tinemaha, Tashkent, Christchurch, Riverview, and Brisbane), 12h. (Tucson, Riverside, Tinemaha, Pasadena, Mount Wilson, Bozeman, Grand Coulee, Sitka, and College), 20h. (Tucson, Tinemaha, Riverside, near Lick, Branner, San Francisco, and Berkeley), 23h. (near Tananarive).

Oct. 12d. 20h. Undetermined shock.

Bogota iP = 51m.46s., i = 51m.54s., iP = 52m.2s., iS = 52m.54s. and 53m.15s., iS_E = 53m.32s.
San Juan e = 55m.8s., eS = 59m.5s., eL = 61m.52s.
La Paz P?Z = 55m.17s., S?Z = 62m.32s., LZ = 67m.0s.
Fort de France eP = 55m.18s., eS? = 59m.29s.
Tucson iP = 58m.10s.
Pierce Ferry eP = 58m.36s., i = 58m.43s.
Boulder City e = 58m.43s.
Riverside iPZ = 58m.54s.
Pasadena ePZ = 58m.57s.
Mount Wilson ePZ = 58m.59s.
Long waves were also recorded at Huancayo.

Oct. 12d. Readings also at 0h. (near San Francisco and Berkeley, and near Lick and Branner), 1h. (San Juan and Bogota), 7h. (near Samarkand), 14h. (La Paz and near Lick), 18h. (Brisbane and Riverview), 19h. (near Andijan), 22h. (near Tananarive, and near Berkeley), 23h. (near Berkeley).

Oct. 13d. 0h. Undetermined shock.

La Paz PZ = 37m.51s., S?Z = 47m.16s., LZ = 63m.0s.
Helwan PZ = 39m.6s., S?EN = 49m.42s.
Kew eZ = 44m.50s.?, eL = 80m.
Tucson eP = 45m.52s., i = 45m.59s.
Riverside ePZ = 45m.59s.
St. Louis ePZ = 46m.1s.
Mount Wilson ePZ = 46m.3s.
Pasadena iPZ = 46m.3s.
Shasta Dam eP = 46m.13s., i = 46m.21s.
Grand Coulee eP = 46m.22s.
New Delhi iN = 50m.35s.
Triest eE = 51m.54s., eS?N = 58m.26s.
De Bilt eZ = 54m., eL = 82m.
Paris e = 54m.26s., eL = 76m.
Auckland e = 62m.40s., i = 65m.25s., Q = 73m.?, R = 76m.?
Wellington i = 67m.56s. and 72m.30s., LZ = 75m.27s.
Christchurch 68m.
Long waves were also recorded at Clermont-Ferrand, Uccle, and Aberdeen.

Oct. 13d. Readings also at 0h. (near Zürich and Chur and near Belgrade), 2h. (Uccle), 3h. (Pasadena, Mount Wilson, Riverside, Palomar, Tucson, and near Stalinabad), 6h. (Florissant, St. Louis, Tinemaha, Mount Wilson. Riverside, Palomar, and Tucson), 11h. (near Samarkand), 13h. (near Frunse, Tashkent, and Andijan), 17h. (near San Francisco and Berkeley), 21h. (De Bilt), 22h. (near San Francisco and Berkeley), 23h. (near Malaga).

Oct. 14d. (I) 4h. 7m. 16s. (II) 4h. 16m. 32s. Epicentre 15°·3S. 172°·5W. Depth of focus 0·005 (as on 1944, October 11d.).

A = −·9567, B = −·1260, C = −·2622; δ = −10; h = +6;
D = −·131, E = +·991; G = +·260, H = +·034, K = −·965.

		△	Az.	P. m.	s.	O−C. s.	S. m.	s.	O−C. s.	Supp. m.	s.	L. m.
I	Apia	1·6	19	i 0	27	0	i 0	39	− 8	—	—	—
II		1·6	19	i 0	35	+ 8	i 0	56	+ 9	—	—	—
I	Auckland	24·3	206		4	9		8	5	−79	—	—	10·2
I	New Plymouth	26·5	203		5	37	+	4	10	20	+19	—	—	—
I	Wellington	28·2	202		5	37	−12		9	51	−37	5	54	PPP	18·7
I	Brisbane z.	34·2	244	i 6	41k	0	—			—	e 6	58	pP	—
I	Riverview	37·6	234	i 7	9k	− 1	i 13	2	+ 8	i 13	18	sS	c 17·6
I	Santa Barbara z.	70·4	45	e 11	10	+ 1	—		—	—	—	—	—
II	z.	70·4	45	e 11	9	0	—		—	—	—	—	—
I	Berkeley	70·8	41	i 11	12	0	—		—	e 11	26	pP	c 32·2
I	La Jolla	71·3	47	e 11	15	0	—		—	—	—	—	—
I	Pasadena	71·3	46	i 11	14	− 1	—		—	i 11	50	sP	c 32·1
II	z.	71·3	46	i 11	14	− 1	—		—	—	—	—	—
I	Mount Wilson	71·4	46	i 11	14	− 1	—		—	e 11	33	pP	—
II	z.	71·4	46	i 11	14	− 1	—		—	—	—	—	—
I	Palomar	71·8	47	i 11	16a	− 2	—		—	i 11	33	pP	—
II		71·8	47	i 11	17k	− 1	—		—	—	—	—	—
I	Riverside	71·8	46	e 11	16	− 2	—		—	—	—	—	—
II	z.	71·8	46	i 11	16	− 2	—		—	—	—	—	—
I	Shasta Dam	72·5	38	i 11	21	− 1	—		—	—	—	—	—
II		72·5	38	i 11	22	0	—		—	—	—	—	—
I	Haiwee	72·6	44	e 11	25	+ 3	—		—	—	—	—	—
II		72·6	44	e 11	23	+ 1	—		—	—	—	—	—
I	Tinemaha	72·9	43	i 11	24	0	—		—	—	i 11	43	pP	—
II		72·9	43	i 11	24k	0	—		—	—	—	—	—
I	Boulder City	74·6	46	e 11	33	− 1	—		—	—	—	—	—
II		74·6	46	i 11	33	− 1	—		—	—	—	—	—
I	Overton	75·2	45	e 11	37	0	—		—	—	—	—	—
II		75·2	45	i 11	37	0	—		—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
I	Pierce Ferry	75·3	46	i 9 52	?	—	—	i 10 58	?	—
II		75·3	46	i 11 37	− 1	—	—	—	—	—
I	Tucson	75·6	50	i 11 39	− 1	—	—	i 11 56	pP	e 35·3
II		75·6	50	i 11 39	− 1	—	—	i 11 56	pP	—
I	Grand Coulee	78·9	34	e 11 59	+ 1	—	—	i 12 29	pP	—
II		78·9	34	i 11 58	0	—	—	—	—	—
I	Logan	79·7	42	i 12 5	+ 3	e 22 16	+18	e 27 14	SS	e 36·3
I	Bozeman	82·2	39	—	—	e 23 0	+36	—	—	e 38·3
I	Rapid City	86·3	41	—	—	e 23 32	+28	—	—	e 41·7
I	Florissant	93·5	51	e 13 7	− 3	e 24 36	+26	e 23 44	SKS	e 40·7
I	St. Louis	93·5	51	e 13 9	− 1	e 24 39	+29	e 13 20	pP	e 34·7
II	San Juan	109·9	76	e 19 49	pPP	e 26 4	S	e 29 15	PPS	e 41·9
I	De Bilt	143·4	1	e 19 29	[+ 2]	—	—	e 22 44?	PP	e 70·7
I	Kew	143·4	7	e 19 28	[+ 1]	—	—	—	—	e 71·7
I	Uccle	144·5	4	e 19 31a	[+ 2]	—	—	e 19 55	pPKP	e 69·7
II		144·5	4	e 19 29	[0]	—	—	—	—	—
I	Strasbourg	146·8	358	e 19 41	[+ 7]	—	—	—	—	—
I	Zürich	148·0	359	e 19 41	[+ 6]	—	—	—	—	—
I	Ksara	148·4	311	e 19 49	[+13]	—	—	e 23 17	PP	—
I	Belgrade	148·6	341	e 19 43a	[+ 7]	—	—	i 19 54	pPKP	—
I	Triest	149·3	351	i 19 41	[+ 4]	—	—	i 19 58	pPKP	—
I	Clermont-Ferrand	149·4	6	e 19 47	[+10]	—	—	—	—	e 72·7
I	Helwan Z.	153·7	308	e 19 49	[+ 5]	—	—	e 23 54	PP	—

Additional readings :—
Auckland I i = 6m.24s. and 6m.44s.
Wellington I i = 10m.39s., 10m.51s., and 10m.58s., Q = 14m.16s.
Riverview I iPPE = 8m.36s., iZ = 8m.40s., iE = 9m.31s., eZ = 15m.51s., eSSS?N = 16m.7s.
Pasadena I i = 11m.58s.
Mount Wilson I iZ = 11m.45s., iNZ = 11m.59s.
Palomar I iZ = 11m.48s., 12m.3s., and 12m.11s.
Tinemaha I iZ = 11m.56s.
Tucson I ePP = 14m.22s., e = 16m.32s. ; II i = 11m.47s.
Florissant I eSKKSE = 24m.4s., ePS?E = 25m.44s.
St. Louis I eSKSE = 23m.43s., eSKKSE = 24m.5s.
Uccle I e = 19m.43s., ePP = 22m.44s.
Belgrade I e = 20m.30s. and 22m.23s.
Long waves were also recorded at Huancayo, La Paz, Chicago, and Harvard.

Oct. 14d. Readings also at 2h. (Tucson, La Paz, near Tashkent, Andijan, and Frunse), 4h. (Tucson, Palomar, Tinemaha, and near Apia), 7h. (near Tananarive), 10h. (near Balboa Heights), 14h. (Tinemaha, Palomar, Mount Wilson, Riverside, Tucson, and near Andijan), 23h. (Kew).

Oct. 15d. 8h. 1m. 16s. Epicentre 59°·0N. 139°·0W. (as on 1941, August 10d.).

Felt at Sitka. Epicentre 59°N. 138°W. (U.S.C.G.S.).

Annales de l'Institut de Physique du Globe de Strasbourg, 2 ème partie—Séismologie, Tome X, Strasbourg, 1951, p. 35.

$A = -\cdot3906$, $B = -\cdot3396$, $C = +\cdot8556$; $\delta = -5$; $h = -9$;
$D = -\cdot656$, $E = +\cdot755$; $G = -\cdot646$, $H = -\cdot561$, $K = -\cdot518$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sitka	2·4	127	i 0 38	− 3	—	—	—	—	—
College	7·2	329	e 2 48	?	e 3 29	S•	—	—	e 3·8
Grand Coulee	16·2	124	i 3 46	− 4	e 7 9	SS	—	—	e 7·6
Saskatoon	19·4	96	e 5 14	PPP	e 7 58	− 6	—	—	9·7
Butte	20·5	117	e 4 35	− 7	e 8 22	− 5	—	—	e 10·2
Shasta Dam	21·1	143	e 4 47	− 1	—	—	—	—	e 11·0
Bozeman	21·5	116	e 4 50	− 2	e 8 44	− 3	—	—	10·9
Berkeley	23·8	145	e 5 15	0	e 9 29	+ 1	—	—	e 12·4
Logan	24·2	124	e 5 21	+ 2	e 9 40	+ 5	e 6 2	PP	e 11·7
Salt Lake City	25·0	125	e 5 57	+30	e 10 22	+33	—	—	e 12·7
Tinemaha	25·7	139	i 5 36	+ 3	—	—	i 5 54	PP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rapid City		26·4	109	e 5 44	+ 4	e 10 22	+10	—	—	i 13·5
Overton		27·6	134	e 5 52	+ 1	—	—	—	—	—
Santa Barbara	z.	27·7	144	e 5 56	+ 4	—	—	—	—	—
Boulder City		27·9	135	i 5 55	+ 1	—	—	—	—	e 14·9
Pierce Ferry		28·1	133	i 5 57	+ 2	—	—	—	—	—
Mount Wilson		28·4	141	i 6 0	+ 2	—	—	—	—	—
Pasadena		28·4	141	i 5 59	+ 1	—	—	i 6 3	?	e 13·9
Riverside		28·8	141	i 6 2	0	—	—	—	—	—
Palomar		29·6	140	i 6 10a	+ 1	—	—	—	—	—
Tucson		32·8	132	e 6 36	− 1	—	—	i 7 19	PP	e 13·8
Chicago		35·9	96	—	—	e 12 51	+ 9	—	—	e 15·6
St. Louis		36·9	101	e 7 12	0	e 12 52	− 6	e 8 21	PP	e 17·6
Ottawa		39·5	81	e 11 41	?	—	—	—	—	18·7
Shawinigan Falls		40·3	77	e 10 38	?	—	—	—	—	19·3
Seven Falls		40·9	76	—	—	e 16 32	SS	—	—	21·3
Philadelphia		43·7	87	—	—	e 18 6	SSS	—	—	e 19·8

Additional readings :—
Grand Coulee i = 5m.5s, eS? = 5m.39s.
Berkeley eZ = 5m.30s., eSN = 9m.32s.
Tucson i = 7m.3s., eP_cP = 8m.47s.
Long waves were also recorded at Ivigtut, San Juan, and at other American and European stations.

Oct. 15d. 18h. 24m. 42s. Epicentre 72°·5N. 2°·5E.

$A = +·3023$, $B = +·0132$, $C = +·9531$; $\delta = -4$; $h = -12$;
$D = +·044$, $E = -·999$; $G = +·952$, $H = +·042$, $K = -·303$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Upsala		14·0	147	e 3 25	+ 3	e 5 47	−12	—	—	e 7·0
Copenhagen		17·4	163	i 4 4a	− 2	e 7 23	+ 4	—	—	9·2
De Bilt		20·5	176	i 4 42	0	e 8 31	+ 4	—	—	e 10·3
Kew		21·1	186	i 4 50a	+ 2	e 8 49	+10	—	—	e 11·8
Uccle		21·8	178	e 4 56k	0	e 8 58	+ 6	e 9 7	P_cP	e 10·3
Jena	N.	22·0	165	e 5 43	PPP	—	—	—	—	—
Moscow		22·2	122	4 59	− 1	9 7	+ 7	—	—	—
Prague		23·1	161	5 16	+ 8	e 9 27	+11	—	—	e 12·8
Paris		23·8	180	i 5 16	+ 1	—	—	—	—	e 11·3
Strasbourg		24·1	172	e 5 20	+ 2	e 9 49	+15	e 5 54	PP	e 12·1
Zürich		25·4	172	e 5 30k	− 1	—	—	—	—	—
Neuchatel		25·7	173	e 5 50	+17	—	—	—	—	—
Clermont-Ferrand		26·8	179	e 5 47	+ 3	—	—	—	—	e 14·3
Triest	N.	27·5	164	e 5 51	+ 1	e 10 32	+ 2	—	—	—
Malaga	z.	36·0	190	e 7 3	− 2	e 12 32	−12	e 8 31	PP	19·0
Leninakan		37·5	125	e 7 38	+21	—	—	—	—	—
Erevan		38·3	125	e 7 26	+ 2	—	—	—	—	—
Tashkent		44·2	98	e 8 11	− 1	e 14 36	−10	—	—	—
Irkutsk		44·5	61	8 14	− 1	e 14 49	− 2	—	—	—
Helwan	z.	45·4	145	i 8 23k	+ 1	—	—	e 9 45	PP	—
Shasta Dam		60·8	315	i 10 14	− 2	—	—	—	—	—
Overton		63·0	307	i 10 32	+ 1	—	—	—	—	—
Pierce Ferry		63·3	306	i 10 34	+ 1	—	—	—	—	—
Tinemaha		63·3	310	i 10 33	0	—	—	—	—	—
Boulder City		63·6	307	i 10 34	− 1	—	—	—	—	—
Haiwee		64·2	310	e 10 39	0	—	—	—	—	—
Mount Wilson	z.	66·0	309	i 10 50	0	—	—	i 11 3	?	—
Pasadena		66·1	309	i 10 51	0	—	—	i 11 3	pP	—
Riverside	z.	66·1	309	i 10 50	− 1	—	—	—	—	—
Tucson		66·1	302	i 10 51	0	—	—	—	—	—
Santa Barbara	z.	66·2	310	e 10 46	− 6	—	—	—	—	—
Palomar		66·6	308	i 10 55a	+ 1	—	—	e 11 36	P_cP	—

Additional readings :—
Paris e = 5m.33s. and 7m.55s.
Malaga eP_cPZ = 8m.53s., iS_cSZ = 16m.56s.
Helwan eZ = 8m.52s.
Palomar iNZ = 11m.8s.
Long waves were also recorded at Bergen and San Juan.

Oct. 15d. 21h. Undetermined shock.

Intensity V at Bourgneuf in Retz ; III in Vendée, in the lower Loire, and on the Isle of Yeu.

Epicentre 46°·5N. 2°·5W. (Strasbourg).

Annales de l'Institut de Physique du Globe de Strasbourg, 2 ème partie, Séismologie, Tome X, p. 36, Strasbourg, 1951.

Paris ePg? =49m.23s., eSg? =50m.21s.
Tortosa ePN =49m.24s., PgN =49m.44s., PgEN =49m.52s., PgSgE =50m.13s. and 50m.23s., PgSgN =50m.27s., 50m.37s., 50m.52s., and 50m.59s., SgN =51m.4s., and 51m.9s., SgEN =51m.18s.
Neuchatel eP =49m.33s., eSg? =51m.6s.
Clermont-Ferrand iS? =49m.56s., iSg? =50m.17s.
Zurich eP =49m.56s., ePg =50m.20s., eSg =52m.0s.
Basle ePg =50m.11s.
Besançon e =50m.15s., eSg =51m.8s.
Strasbourg eS? =51m.4s., iSg? =51m.52s.

Oct. 15d. Readings also at 13h. (near Leninakan and Erevan), 18h. (Tucson (2), Palomar, and near Shasta Dam), 21h. (New Delhi, Leninakan, near Frunse, Tashkent, and Andijan, and near San Francisco and Berkeley), 22h. (Samarkand).

Oct. 16d. 2h. Undetermined shock.

Huancayo e =23m.3s., eS =28m.38s., eL =32m.0s.
La Paz iPZ =23m.18s.a, SZ =29m.0s., LZ =33m.30s.
Bogota e =23m.55s.
Tucson eP =27m.15s., i =27m.39s.
Riverside eZ =27m.35s., 27m.45s., and 28m.5s.
Boulder City eP =27m.41s.
Palomar iPZ =27m.42s., iZ =27m.52s.
Pierce Ferry e =27m.47s.
Mount Wilson iZ =27m.51s.
Overton e =27m.57s.
Tinemaha iZ =28m.7s.
Shasta Dam e =28m.16s.
San Juan e =35m.2s. and 35m.23s., eL =50m.6s.
Long waves were also recorded at Uccle, Kew, and Triest.

Oct. 16d. 16h. 3m. 2s. Epicentre 0°·1S. 123°·8E. Depth of focus 0·005 (as on 1942, May 28d.).

A = −·5563, B = +·8310, C = −·0017 ; δ = +3 ; h = +7 ;
D = +·831, E = +·556 : G = +·001, H = −·001, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Perth		32·6	193	6 40	+12	11 43	+ 6	7 28	PP	15·2
Miyazaki		32·7	14	7 30	+62	12 42	+63	—	—	—
Hukuoka		34·1	11	7 42	+62	11 50	−11	—	—	14·8
Pehpei		34·1	333	6 34	− 6	12 2	+ 1	—	—	—
Kôti		34·7	15	e 7 9	+23	12 32	+22	—	—	—
Hikone		37·1	19	7 7	+ 1	12 45	− 2	7 14	pP	17·3
Misima		37·8	21	7 12	0	e 12 56	− 1	e 16 3	SSS	—
Mera		37·9	22	e 7 11	− 2	—	—	—	—	e 16·6
Yokohama		38·3	21	7 45	+29	—	—	e 14 52	?	—
Tokyo		38·6	21	e 5 58?	−80	11 47	−83	—	—	—
Brisbane	E.	39·1	136	i 7 18	− 5	e 13 15	− 2	i 7 33	pP	—
	N.	39·1	136	e 7 21	− 2	i 13 7	−10	e 8 53	PP	—
Utunomiya		39·4	21	i 7 28	+ 3	i 13 18	− 4	i 17 28	SeS	—
Mito		39·5	22	e 7 25	− 1	13 33	+10	7 54	pP	e 18·1
Hukusima		40·7	20	7 37	+ 1	13 39	− 2	—	—	—
Sendai		41·3	22	7 42	+ 1	13 50	0	9 0	PP	—
Mizusawa	E.	42·2	21	7 51	+ 3	14 10	+ 7	—	—	—
	N.	42·2	21	7 48	0	14 5	+ 2	—	—	—
Riverview		42·2	146	i 7 48a	0	i 14 4	+ 1	i 8 6	pP	e 21·2
Miyako		42·9	22	7 53	− 1	14 13	0	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	44·4	280	8 4	− 2	14 35	0	—	—	23·0
Mori		44·7	18	e 8 3	− 5	14 39	0	—	—	—
Sapporo		45·8	18	8 18	+ 1	14 56	+ 1	e 18 1	SS	—
Kodaikanal	E.	47·2	285	i 7 18	−70	14 4	−71	9 4	PP	22·0
Hyderabad	N.	47·9	294	8 34	0	15 26	+ 1	10 24	PP	23·0
New Delhi	N.	52·9	307	i 9 10k	− 2	i 16 34	0	10 21	PcP	25·7
Dehra Dun	N.	53·0	309	e 9 20	+ 8	e 16 49	+13	—	—	e 22·9
Bombay		53·5	294	i 9 17	+ 1	i 16 44	+ 2	i 11 9	PP	26·1
Irkutsk		54·7	346	i 9 24	− 1	17 0	+ 2	—	—	—
Auckland		59·7	134	10 53	+53	18 58	+54	12 13	sP	26·6
Christchurch		61·3	142	10 8	− 3	18 24	− 1	10 34	pP	30·1
Frunse		61·4	321	e 10 12	0	18 33	+ 7	—	—	—
Wellington		61·6	138	10 9	− 4	18 21	− 7	10 28	pP	25·5
Andijan		61·8	318	e 10 17	+ 3	e 18 38	+ 7	—	—	—
Tashkent		64·1	318	i 10 29	− 1	i 19 5	+ 5	—	—	—
Tananarive		76·9	250	e 11 51	+ 4	e 21 32	+ 4	12 0	pP	e 37·0
Honolulu		79·3	69	e 12 5	+ 5	i 21 57	+ 3	e 22 23	sS	e 29·6
Erevan		81·9	311	e 11 24?	−50	e 21 28?	−53	—	—	—
Leninakan		82·5	312	e 12 22	+ 5	22 33	+ 6	—	—	—
Moscow		87·9	326	i 12 41	− 3	23 19	− 1	13 1	pP	—
Ksara		88·2	303	e 12 44	− 1	e 23 31	+ 9	—	—	—
College		89·4	26	e 12 51	0	e 23 36	+ 2	e 15 54	PP	e 36·0
Helwan		92·2	300	e 13 10	+ 6	24 4	+ 6	23 31	SKS	—
Bucharest		95·5	315	e 13 28	+ 9	i 23 52	[+ 5]	—	—	43·0
Sitka		96·0	33	e 13 23	+ 2	e 24 38	+ 7	e 17 12	PP	e 38·1
Sofia		97·7	313	e 13 28?	− 1	24 3	[+ 3]	e 18 20	pPP	e 52·0
Upsala		98·2	330	e 17 28	PP	i 23 56?	[− 6]	e 19 36	PPP	e 47·5
Belgrade		99·5	315	e 13 37a	0	i 24 10	[+ 1]	e 17 40	PP	e 53·7
Copenhagen		102·0	328	e 13 50	+ 2	i 24 24	[+ 3]	14 21	pP	—
Prague		102·5	322	e 18 10	PP	i 24 26	[+ 3]	e 26 38	PS	e 49·0
Bergen		102·8	333	e 23 53	?	e 24 33	[+ 9]	e 26 41	PS	e 51·0
Collmberg		103·0	323	e 13 54	+ 1	e 25 16	−14	e 17 59	PP	e 53·0
Cheb		103·7	322	e 13 59	+ 3	i 24 34	[+ 5]	e 20 5	PPP	e 59·0
Triest		103·9	317	i 18 17	PP	i 24 33	[+ 3]	i 18 42	pPP	e 55·3
Jena		104·0	323	e 17 59	PP	—	—	e 26 46	PS	—
Victoria		105·1	40	18 16	PP	24 34	[− 1]	27 58	PPS	47·0
Zürich		106·9	320	e 18 21	PP	24 44	[+ 1]	—	—	—
Strasbourg		107·0	322	e 18 44	PP	e 24 58	[+15]	e 28 6	PS	—
De Bilt		107·3	326	i 14 13a	P	i 24 51	[+ 6]	i 18 43	PP	e 52·0
Basle		107·5	320	e 18 25	PP	e 24 42	[− 4]	—	—	—
Ukiah		107·7	49	—	—	e 24 52	[+ 5]	e 34 15	SSP	e 54·9
Shasta Dam		107·9	47	e 14 14	P	e 24 50	[+ 2]	i 18 42	PP	—
Grand Coulee		108·0	38	e 14 15	P	i 24 48	[0]	i 18 35	PP	—
Uccle		108·3	326	e 14 18a	P	e 24 49	[0]	e 18 48	PP	e 52·0
Besançon		108·6	319	18 58?	PP	—	—	—	—	—
Aberdeen		108·7	332	i 21 9	PPP	i 24 53	[+ 2]	i 28 12	PS	53·2
Santa Clara	Z.	109·1	50	e 18 54	PP	—	—	—	—	—
Edinburgh		109·9	331	e 20 58	PPP	—	—	—	—	—
Paris		110·2	323	e 14 25	P	e 24 47	[−10]	i 19 3	PP	e 54·0
Kew		110·7	326	e 14 28	P	e 28 46?	PS	e 19 4	PP	e 46·0
Santa Barbara	Z.	111·7	53	i 18 39	[+12]	—	—	e 19 11	PP	—
Tinemaha		112·0	50	e 18 32	[+ 4]	e 25 9	[+ 5]	i 19 13	PP	—
Haiwee		112·6	51	i 18 34	[+ 5]	e 25 11	[+ 5]	e 18 51	pPKP	—
Butte		113·0	39	e 19 13	PP	e 28 53	PS	e 34 47	SS	e 46·8
Mount Wilson		113·0	53	i 18 34	[+ 4]	e 25 14	[+ 6]	i 19 11	PP	—
Pasadena		113·0	53	i 18 34	[+ 4]	i 25 14	[+ 6]	i 19 10	PP	e 45·9
Barcelona		113·3	316	e 15 31	?	29 8	PS	—	—	—
Riverside		113·7	53	e 18 33	[+ 2]	e 25 14	[+ 3]	i 19 20	PP	—
Bozeman		113·9	39	e 19 24	PP	e 25 12	[0]	e 29 1	PS	e 46·0
La Jolla		114·1	54	e 19 28	PP	e 25 20	[+ 8]	—	—	—

Continued on next page.

		Δ	Az.	P.	O – C.	S.	O – C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palomar		114·3	53	18 35	[+ 2]	i 25 20	[+ 7]	i 19 24	PP	—
Tortosa		114·7	315	18 42	[+ 9]	25 17	[+ 2]	19 39	PP	60·2
Boulder City		115·0	50	e 18 36	[+ 2]	—	—	—	—	—
Overton		115·1	49	e 18 34	[0]	—	—	—	—	—
Salt Lake City		115·4	44	e 19 13	PP	e 25 23	[+ 5]	e 29 20	PS	e 46·4
Pierce Ferry		115·6	49	e 15 3	P	—	—	e 18 41	PKP	—
Toledo	z.	118·2	316	e 18 43	[+ 4]	25 33	[+ 5]	i 20 30	pPP	—
Ivigtut		118·8	356	19 4	pPKP	24 32	[−58]	—	—	51·0
Granada		119·0	313	—	—	e 25 56	[+25]	40 42	SSS	63·5
Tucson		119·4	52	i 18 44	[+ 2]	e 25 40	[+ 8]	i 20 4	PP	e 46·6
Rapid City		119·5	37	e 18 45	[+ 3]	i 25 37	[+ 4]	e 29 47	PS	e 50·5
Malaga		119·9	313	i 18 37	[− 6]	25 27	[− 7]	20 11	PP	46·0
San Fernando	E.	121·2	314	(e 18 38)	[− 7]	(e 25 22)	[−16]	(e 19 44)	PP	(e 53·7)
Lisbon		122·3	317	—	—	27 31	S	51 0?	Q	63·7
Chicago		129·8	31	e 21 13	PP	e 31 16	PS	e 38 20	SS	e 58·1
St. Louis		130·6	35	e 19 6	[+ 2]	i 28 11	SKKS	i 21 17	PP	—
Seven Falls		131·5	13	19 13	[+ 7]	22 29	SKP	21 25	PP	62·0
Shawinigan Falls		131·5	15	19 4	[− 2]	28 15	SKKS	22 26	SKP	—
Ottawa		131·7	18	19 8	[+ 2]	22 27	SKP	21 10	PP	62·0
Tacubaya		133·7	63	i 19 19	[+10]	i 22 40	SKP	—	—	—
Pittsburgh	z.	134·4	25	e 19 3	[− 8]	i 22 39	SKP	—	—	—
Harvard		135·6	16	e 19 13	[0]	i 22 41	SKP	c 21 38	PP	e 72·0
Philadelphia		136·7	22	i 21 57	PP	i 28 43	SKKS	e 25 15	PPP	e 60·0
La Plata		145·3	178	28 50	SKKS	—	—	28 53	?	83·4
Huancayo		157·5	124	e 19 58	[+ 9]	e 37 30	PPS	e 24 36	pPP	e 64·0
San Juan		159·4	27	i 19 54	[+ 3]	e 37 42	PPS	e 20 28	pPKP	e 72·8
La Paz		159·7	147	i 19 56a	[+ 4]	i 26 42	[− 7]	i 20 56	pPKP	76·3
Bogota		161·6	75	e 19 59	[+ 5]	i 31 16	SKKS	i 20 47	pPKP	—
Fort de France		165·7	17	e 19 59	[+ 1]	—	—	e 31 21	?	—

Additional readings :—
Perth PPP =7m.53s., SS =13m.10s.
Hikone PP =8m.4s., PPP =8m.22s., SS =14m.18s., SSS =15m.24s.
Brisbane iZ =13m.19s.
Mito PPP =8m.37s.
Sendai PPP =9m.28s.
Riverview iPPN =9m.30s., iPPE =9m.33s., iP$_c$PNZ =9m.47s., iEN =14m.4s., eE = 14m.22s. isSN =14m.39s., iE =14m.44s., iSSN =17m.0s., iE =17m.12s. and 17m.27s., iZ =17m.34s., iS$_c$SE =17m.42s., iSSSN =17m.56s.
Kodaikanal P$_c$PE =8m.33s., S$_c$SE =16m.32s., SSE =17m.18s.
Hyderabad S$_c$SN =18m.23s., SSN =18m.53s.
New Delhi ePE =9m.13s., PPN =11m.0s., PPPN =12m.0s., PPPPN =12m.43s., iN = 18m.33s., SSN =20m.0s., SSSEN =21m.32s.
Bombay iSSE =18m.59s.
Auckland sS =19m.23s., S$_c$S =20m.45s., i =22m.45s., SS =22m.58s., sSS =23m.21s., i =24m.33s., SSS =25m.50s.
Christchurch PPEZ =12m.38s., PPPEZ =14m.3s., EN =16m.1s., sSEN =19m.3s., S$_c$SEZ =19m.58s., SSEZ =23m.2s., SSS =25m.34s.
Wellington i =10m.14s., pP$_c$P =11m.17s., sP$_c$PZ =11m.58s., PPZ =12m.35s., pPP?Z = 13m.34s., P$_c$SZ =14m.50s., sP$_c$S?Z =16m.45s., S$_c$S?Z =19m.33s., e =20m.10s., SS =22m.48s., sSS =23m.58s., SSS =25m.23s.
Tananarive E =12m.25s., N =22m.0s., EN =22m.41s.
Moscow iSKS =23m.4s., sS =23m.51s.
College eS =23m.9s., e =24m.51s.
Helwan PPSN =25m.31s.
Sitka i =23m.55s., eSS =30m.48s.
Upsala eE =20m.48s. and 21m.8s., eN =23m.47s. and 25m.7s., PS?N =25m.34s., ePPSE =26m.28s., eN =33m.56s.?, eE =35m.20s.
Belgrade e =17m.44s.
Copenhagen i =18m.4s., 25m.2s., 27m.58s., 33m.2s., and 37m.22s.
Prague eSKKS =25m.0s., e =28m.4s., eSS =31m.58s., eSSS =36m.28s.
Bergen eEN =27m.47s., eE =28m.33s. and 37m.40s.
Collmberg ePPP =20m.7s., eSKS =24m.28s., ePSZ =26m.34s., ePKKPZ =30m.16s., eSS =32m.4s., eSSS =36m.16s., and numerous other readings given without phase.
Cheb ePKP? =17m.8s.
Triest iPKP =22m.10s.?, iPPZ =22m.21s., ipPPPE =25m.9s., iSKSE =28m.43s., eSSE = 39m.35s. ; readings wrongly identified.
Jena eN =18m.4s. and 19m.36s.
Strasbourg iPPS =28m.59s., e =43m.58s.
De Bilt iSKKS? =25m.34s., ePS =28m.8s.

Continued on next page.

Ukiah ePP =28m.21s. ; readings wrongly identified.
Shasta Dam e =25m.35s., iPKKP =29m.38s.
Grand Coulee e =25m.37s., ePS =27m.56s.
Uccle ePSE =28m.12s.
Aberdeen iE =24m.10s., iN =28m.21s.
Paris e =17m.59s., i =20m.1s., e =21m.7s., SKKS? =25m.34s., e =27m.58s.
Kew iEZ =20m.3s., iPPP =21m.23s., ePPSZ =29m.24s., eZ =32m.52s., eSSE =34m.52s., eQEZ =37m.18s.?, eSSSE =38m.58s.
Haiwee eE =19m.2s.
Butte e =26m.0s., eSSS =38m.52s.
Mount Wilson iZ =19m.22s. and 20m.9s., eZ =21m.34s., ePKKPZ =29m.33s., eSKKPZ =34m.21s.
Pasadena iEZ =19m.20s., iZ =20m.10s., eEN =26m.17s., eSSN =35m.4s.
Riverside i =18m.41s., iPKKPZ =29m.19s.
Bozeman eS =27m.5s., eSS? =35m.10s., eSSS =39m.24s.
Palomar iZ =19m.12s., iN =20m.9s., 22m.4s., and 26m.25s., iPKKP =29m.23s.
Tortosa SKKSN =26m.31s., PSEN =29m.25s., PPSE =30m.35s., SSSN? =41m.16s., eE =49m.18s., iN =49m.23s.
Salt Lake City eSS =35m.30s., e =36m.30s., and 39m.56s.
Tucson i =21m.6s., e =28m.14s., ePS =29m.58s., eSS =36m.15s.
Rapid City iS =27m.0s., eSS =35m.44s.
Malaga PP =23m.11s., SS =37m.35s.
San Fernando iPPPE =(22m.2s.), iSKKSE =(26m.14s.), iSE =(27m.26s.), iPPSE =(30m.14s.), iSSE =(35m.14s.) ; readings decreased by 15 minutes.
Chicago i =22m.22s. and 28m.4s., eSSS =43m.21s.
St. Louis iSKPZ =22m.22s., eE =28m.35s., ePSE =31m.23s., e =34m.39s.
Seven Falls SS =38m.58s.
Ottawa PS =31m.40s., PPS =33m.34s., SS =38m.34s.
Harvard e =20m.28s., i =21m.52s., eSSP =39m.43s.
Philadelphia e =32m.1s., iSS =39m.51s.
Huancayo e =30m.56s., eSS =44m.18s., eSSS =49m.58s.
San Juan iPP =24m.12s., i =30m.51s., e =43m.47s., eSS =43m.58s.
La Paz isPKPZ =21m.28s., iPPZ =24m.12s., iZ =25m.10s. and 32m.10s., iPSKS =35m.10s., SSZ =45m.2s., SSS =50m.34s.
Bogota i =21m.6s., e =24m.31s.

Oct. 16d. Readings also at 0h. (near Berkeley), 5h. (near Mineral (2)), 11h. (near Andijan), 17h. (Leninakan, Andijan, and Mizusawa), 18h. (near Boulder City, Overton, and Pierce Ferry), 19h. (near Malaga), 20h. (near Granada), 21h. (near Sofia), 22h. (Ksara, near San Francisco, Berkeley, Branner, and Lick).

Oct. 17d. Readings at 0h. (near Berkeley, San Francisco, Lick, and Branner), 3h. (Copenhagen, Strasbourg, Triest, Collmberg (2), Belgrade, and near Samarkand), 6h. (Tinemaha, Mount Wilson, Riverside, Tucson, and St. Louis), 8h. (near Bogota), 17h. (near Samarkand (2)), 20h. (Riverside, Mount Wilson, and near Berkeley), 21h. (Tucson), 23h. (Mount Wilson, Riverside, Palomar, Boulder City, and Tucson).

Oct. 18d. 23h. 39m. 16s. Epicentre 37°·0N. 70°·5E. Depth of focus 0·030.
(as on 1941, November 28d.).

Epicentre 36°40′N. 70°25′E. Depth 200km. (U.S.S.R.).

$A = +\cdot2672$, $B = +\cdot7547$, $C = +\cdot5992$; $\delta = +1$; $h = +1$;
$D = +\cdot943$, $E = -\cdot334$; $G = +\cdot200$, $H = +\cdot565$, $K = -\cdot801$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Stalinabad	2·1	318	0 42	0	1 15	+ 1	—	—
Andijan	4·0	20	1 2	− 1	i 1 53	+ 1	—	—
Tashkent	4·4	351	i 1 10	+ 2	e 2 5	+ 4	—	—
Frunse	6·7	27	e 1 34	− 3	e 2 52	− 1	—	—
Baku	16·4	288	—	—	e 6 43	+ 9	—	—
Sverdlovsk	20·9	345	4 26	0	8 12	+12	5 26	sP
Leninakan	21·0	289	e 4 48	+21	—	—	—	—
Moscow	29·0	321	—	—	e 11 10?	+56	—	—

Oct. 18d. Readings also at 9h. (Tucson, Collmberg, and near Tananarive), 11h. (Collmberg, Helwan and Ksara), 14h. (Collmberg, Tucson, Pierce Ferry, Overton, Boulder City, Riverside, Mount Wilson, Palomar, and Haiwee), 16h. (Collmberg), 18h. (Collmberg, Pasadena, Palomar, Mount Wilson, Riverside, and Tucson).

Oct. 19d. 16h. Californian shock.

La Jolla iPEZ = 58m.26s.
Tucson iP = 58m.30s., i = 58m.40s., iS? = 59m.20s., eL = 60m.8s.
Palomar iPZ = 58m.31s., iSN = 59m.7s.
Boulder City iP = 58m.52s., e = 59m.42s., eS = 59m.58s.
Pierce Ferry iP = 58m.53s., i = 59m.3s. and 59m.42s.
Riverside iPZ = 58m.53s.
Overton iP = 58m.59s.
Pasadena iPZ = 59m.2s., iS = 59m.51s.
Mount Wilson iPZ = 59m.4s.

Oct. 19d. Readings also at 3h. and 4h. (Tucson), 5h. (near Mineral), 6h. (Riverview), 9h. (Ksara), 10h. (near Lick), 12h. (Tucson), 13h. (Tucson, Palomar, and Mount Wilson), 16h. (near Tashkent, Andijan, and Stalinabad), 17h. (San Francisco), 23h. (Tucson, Frunse, near Andijan, and Stalinabad).

Oct. 20d. 0h. 32m. 43s. Epicentre 49°·2N. 130°·5W. (as on 1941, Oct. 1d.).

$A = -\cdot4251$, $B = -\cdot4978$, $C = +\cdot7559$; $\delta = -10$; $h = -6$;
$D = -\cdot760$, $E = +\cdot649$; $G = -\cdot491$, $H = -\cdot575$, $K = -\cdot655$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		4·7	96	1 4	−10	1 38	P_g	—	—	—
Grand Coulee		7·8	96	e 1 48	−10	e 3 31	+ 3	—	—	e 5·3
Shasta Dam		10·3	143	e 2 30	− 2	—	—	—	—	—
Berkeley		12·9	150	e 3 6	− 1	i 5 28	− 5	—	—	—
Branner		13·3	150	e 3 16	+ 3	e 5 45	+ 3	—	—	e 7·6
Santa Clara		13·5	149	e 3 14	− 1	e 5 43	− 4	—	—	e 6·4
Lick		13·6	149	e 3 15	− 2	—	—	—	—	—
Logan		15·1	113	i 3 34	− 2	e 6 20	− 5	e 4 0	PP	e 7·6
Tinemaha		15·1	140	i 3 36	0	c 6 39	+14	—	—	—
Saskatoon		15·4	70	—	—	c 6 17	−15	—	—	7·3
Salt Lake City		15·7	116	e 3 38	− 6	c 6 34	− 5	—	—	c 7·4
Haiwee		16·0	140	e 3 49	+ 1	—	—	—	—	—
Santa Barbara		16·8	148	i 4 0	+ 2	e 7 13	+ 8	—	—	—
Overton		17·3	133	e 4 2	− 2	—	—	—	—	—
Boulder City		17·6	134	i 4 9	+ 1	—	—	—	—	—
Mount Wilson		17·7	144	e 4 8	− 2	—	—	—	—	—
Pasadena		17·7	144	e 4 8	− 2	(e 7 27)	+ 1	—	—	e 7·4
Pierce Ferry		17·8	132	i 4 8	− 3	—	—	—	—	—
Riverside		18·1	144	i 4 15	+ 1	—	—	—	—	—
Palomar		18·9	142	i 4 24k	0	i 7 55	+ 2	—	—	—
La Jolla	z.	19·2	144	e 4 28	0	—	—	—	—	—
Rapid City		19·4	95	i 4 27	− 3	i 8 19	+15	—	—	e 10·5
Tucson		22·5	131	i 5 3	+ 1	e 9 6	+ 1	—	—	e 10·9
St. Louis		30·5	95	i 6 17	0	e 11 14	− 4	i 7 7	PP	e 14·8
Chicago		30·6	89	—	—	e 11 19	− 1	—	—	e 15·5
Ottawa		36·6	74	7 11	+ 1	12 55	+ 2	—	—	18·3
Shawinigan Falls		38·0	71	e 7 33	+12	—	—	—	—	19·3
San Juan		59·6	96	—	—	e 18 20	+ 3	—	—	e 34·3
Collmberg	z.	75·0	23	e 11 56	+11	—	—	—	—	—

Additional readings :—
Berkeley eZ = 3m.34s.
Pasadena e = 6m.59s.
Rapid City e = 6m.19s.
Tucson i = 5m.8s.
St. Louis iZ = 6m.25s., iSSE = 12m.56s.
Long waves were also recorded at Honolulu and other American and European stations.

Oct. 20d. 1h. 43m. 33s. Epicentre 49°·2N. 130°·5W. (as at 0h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grand Coulee		7·8	96	e 1 47	−11	—	—	—	—	e 4·4
Shasta Dam		10·3	143	e 2 28	− 4	—	—	—	—	—
Logan		15·1	113	e 3 30	− 6	—	—	—	—	e 8·6
Tinemaha		15·1	140	e 3 41	+ 5	—	—	—	—	—
Santa Barbara	z.	16·8	148	e 4 1	+ 3	—	—	—	—	—
Overton		17·3	133	i 4 8	+ 4	—	—	—	—	—
Boulder City		17·6	134	e 4 8	0	—	—	—	—	—
Mount Wilson	z.	17·7	144	e 4 7	− 3	—	—	—	—	—
Pasadena		17·7	144	e 4 7	− 3	i 7 23	− 3	—	—	e 9·2
Pierce Ferry		17·8	132	i 4 10	− 1	—	—	—	—	—
Riverside	z.	18·1	144	e 4 13	− 1	—	—	—	—	—
Palomar		18·9	142	i 4 25	+ 1	—	—	—	—	i 14·5
Rapid City		19·4	95	i 4 33	+ 3	e 8 42	+38	—	—	e 10·3
Tucson		22·5	131	e 5 0	− 2	—	—	—	—	—
St. Louis		30·5	95	e 6 14	− 3	—	—	—	—	e 16·6
Collmberg	z.	75·0	23	e 11 58	+13	—	—	—	—	—

Additional readings :—
Tinemaha iZ = 3m.46s.
Long waves were also recorded at Salt Lake City, Bozeman, Butte, and Seattle.

Oct. 20d. 14h. 14m. 38s. Epicentre 49°·2N. 130°·5W. (as at 1h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grand Coulee		7·8	96	e 1 48	−10	2 47	P_g	—	—	e 4·2
Shasta Dam		10·3	143	e 2 27	− 5	—	—	—	—	—
Tinemaha		15·1	140	i 3 44	+ 8	—	—	—	—	—
Haiwee	E.	16·0	140	e 3 49	+ 1	—	—	—	—	—
Santa Barbara	z.	16·8	148	i 4 3	+ 5	—	—	—	—	—
Overton		17·3	133	i 4 7	+ 3	—	—	—	—	—
Boulder City		17·6	134	i 4 8	0	—	—	—	—	—
Mount Wilson		17·7	144	e 4 9	− 1	—	—	—	—	—
Pasadena		17·7	144	i 4 11	+ 1	—	—	—	—	—
Pierce Ferry		17·8	132	i 4 9	− 2	—	—	—	—	—
Riverside		18·1	144	i 4 16	+ 2	—	—	—	—	—
Palomar		18·9	142	i 4 24k	0	—	—	—	—	—
Rapid City		19·4	95	e 4 41	+11	—	—	—	—	e 10·7
Collmberg	z.	75·0	23	e 11 57	+12	—	—	—	—	—

Additional readings :—
Shasta Dam iP = 2m.32s.
Mount Wilson iZ = 4m.18s.
Pasadena eEN = 4m.17s., iZ = 4m.24s. and 5m.4s.
Riverside iZ = 4m.24s.
Long waves were also recorded at La Paz, Bozeman, and Salt Lake City.

Oct. 20d. 22h. 41m. 20s. Epicentre 30°·0N. 114°·0W. (as on 1944, Jan. 24d.).

Rough.

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

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson	3·5	50	e 0 59	+ 2	(e 1 50)	+10	1 14	P_g	e 1·8
La Jolla	4·0	317	e 1 1	− 3	e 1 46	− 6	—	—	—
Palomar	4·1	326	e 1 3	− 2	i 1 51	− 4	—	—	—
Riverside	4·9	325	e 1 14	− 3	i 2 15	0	—	—	—
Mount Wilson	5·4	323	i 1 28	+ 4	i 2 33	+ 5	—	—	—
Pasadena	5·4	321	—	—	e 2 28	0	—	—	—
Boulder City	6·0	354	i 3 26	S_g	—	—	—	—	—
Pierce Ferry	6·1	1	e 3 30	S_g	—	—	—	—	—
Overton	6·5	357	e 3 23	S_g	—	—	—	—	—

Additional readings :—
Tucson eS? = 1m.26s.
Pasadena iEZ = 2m.40s.

Oct. 20d. Readings also at 2h. (near Bogota), 4h. (Balboa Heights and near Bogota), 7h. (Mount Wilson, Palomar, and Tucson (2)), 11h. (Brisbane), 12h. (Riverview, Andijan, Frunse, Stalinabad, Tashkent, Mount Wilson, and Tucson), 13h. (Apia), 14h. (Riverview, Tucson, Riverside, and La Paz), 15h. (Riverside, Tucson, and near Stalinabad).

Oct. 21d. 0h. 29m. 56s. Epicentre 49°·6N. 126°·5W.

$A = -\cdot3870$, $B = -\cdot5231$, $C = +\cdot7593$; $\delta = -6$; $h = -5$;
$D = -\cdot804$, $E = +\cdot595$; $G = -\cdot452$, $H = -\cdot610$, $K = -\cdot651$.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Victoria		2·3	118	0 45	+ 5	1 19	S_g	—	—	1·5
Grand Coulee		5·2	105	e 1 19	− 2	e 2 50	S_g	—	—	—
Shasta Dam		9·4	160	e 2 19	+ 1	—	—	—	—	—
Tinemaha		13·9	151	e 3 35	+14	—	—	—	—	—
Overton		15·7	141	e 3 59	+15	—	—	—	—	—
Boulder City		16·1	144	i 4 8	+19	—	—	—	—	—
Pierce Ferry		16·3	141	i 4 21	+29	—	—	—	—	—
Mount Wilson	z.	16·6	155	e 3 55	− 1	—	—	—	—	—
Pasadena	z.	16·6	155	e 3 55	− 1	—	—	—	—	—
Rapid City		16·8	100	e 3 58	0	e 7 42	+37	—	—	e 9·1
Riverside	z.	17·0	155	e 4 4	+ 3	—	—	—	—	—
Palomar		17·7	153	i 4 10a	0	—	—	—	—	—
La Jolla		18·1	155	e 4 14	0	—	—	—	—	—
Tucson		20·9	141	i 4 46	0	—	—	—	—	—
St. Louis		28·0	100	e 5 51	− 4	—	—	—	—	e 15·0

Additional readings :—
Grand Coulee iP = 1m.28s.
Shasta Dam i = 2m.43s.
Mount Wilson i = 4m.7s.
Pasadena iNZ = 3m.59s. and 4m.7s.
Palomar iZ = 4m.18s.
Tucson i = 5m.14s.
Long waves were also recorded at College, Butte, and Chicago.

Oct. 21d. 3h. 21m. 3s. Epicentre 23°·7N. 120°·5E. (as on 1939, June 18d.).

$A = -\cdot4652$, $B = +\cdot7898$, $C = +\cdot3996$; $\delta = -12$; $h = +4$;
$D = +\cdot862$, $E = +\cdot508$; $G = -\cdot203$, $H = +\cdot344$, $K = -\cdot917$.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Hukuoka		13·2	39	i 3 9	− 2	7 27	L	—	—	(7·4)
Pehpei		14·0	299	3 22	0	6 20	+21	—	—	6·9
Hamada		15·0	39	e 3 33	− 2	6 24	+ 1	—	—	—
Kôti		15·1	46	e 3 56	+20	7 11	+46	—	—	—
Sumoto		16·5	47	e 3 55	+ 1	7 42	+44	—	—	—
Vladivostok		21·6	23	e 4 48	− 6	i 8 46	− 3	—	—	—
Sendai		22·7	47	e 5 2	− 2	9 39	+30	—	—	—
Mizusawa	E.	23·3	45	e 5 14	+ 4	10 51	SSS	—	—	—
	N.	23·3	45	e 5 20	+10	e 10 47	SSS	—	—	—
Miyako		24·1	45	e 5 4	−14	9 17	−17	—	—	—
Sapporo		25·9	37	e 5 41	+ 6	—	—	—	—	—
Calcutta	N.	29·6	274	—	—	i 9 59	−65	i 13 51	SSS	—
Irkutsk		31·1	340	6 21	− 1	—	—	—	—	—
New Delhi	N.	39·0	287	e 7 12	−18	i 13 33	+ 4	16 22	SS	19·8
Hyderabad		39·8	270	7 40	+ 4	13 41	− 1	9 23	PP	18·4
Kodaikanal	E.	43·1	261	i 8 24	+20	i 14 54	+24	10 9	PP	21·9
Bombay		44·5	274	i 8 17	+ 2	i 14 57	+ 6	—	—	21·0
Sverdlovsk		54·1	324	—	—	17 0	− 5	—	—	—
Brisbane	N.	59·8	147	—	—	e 18 11	− 9	—	—	—
Baku		60·6	305	e 10 22	+ 7	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverview		64·2	152	e 10 36	− 3	e 19 14	− 2	i 20 42	PS	e 28·6
Erevan		64·7	305	e 10 43	+ 1	—	—	—	—	—
Moscow		66·8	322	10 56	0	19 47	− 1	—	—	—
College		69·5	28	e 11 23	+11	e 20 16	− 4	e 24 38	SS	e 31·0
Ksara		73·0	299	e 11 39	+ 6	e 21 11	+11	—	—	—
Upsala		76·0	330	e 11 44	− 7	e 21 27	− 7	—	—	e 36·0
Bucharest		76·8	314	e 11 59	+ 4	e 21 45	+ 3	—	—	34·0
Helwan		77·9	298	i 12 2a	+ 1	21 57	+ 3	15 0	PP	—
Sofia		79·3	313	e 12 6?	− 3	e 22 12	+ 3	—	—	—
Copenhagen		80·3	327	i 12 17	+ 3	i 22 20	0	—	—	34·0
Bergen		81·2	334	e 12 7	−12	e 22 7	−22	—	—	41·0
Prague		81·8	322	—	—	e 22 39	+ 4	e 27 57	SS	e 38·0
Collmberg	Z.	82·1	324	e 12 22	− 2	e 22 41	+ 3	e 15 29	PP	e 45·0
Cheb		83·0	323	e 12 35	+ 7	e 22 59	+12	—	—	e 45·0
Jena		83·0	323	e 13 24	+56	e 23 44	PS	—	—	—
Aberdeen		86·2	333	—	—	i 23 17	− 2	e 33 59	SSS	43·4
Strasbourg		86·4	323	e 12 48	+ 3	e 23 21	0	—	—	e 49·0
Zürich		86·5	322	e 12 45k	− 1	e 23 22	0	e 16 6	PP	—
Basle		87·0	322	e 12 47	− 1	e 23 25	− 2	—	—	—
Uccle		87·0	326	i 12 57	+ 9	e 23 16	−11	—	—	e 45·0
Neuchatel		87·7	322	e 12 54	+ 2	e 23 36	+ 3	—	—	—
Victoria		88·3	37	—	—	e 23 27	[+ 5]	—	—	48·0
Kew		89·0	328	—	—	e 23 48	+ 3	—	—	e 42·0
Paris		89·1	325	e 13 0	+ 2	e 23 47	+ 1	e 16 34	PP	—
Shasta Dam		93·3	42	e 13 13	− 5	—	—	—	—	—
Berkeley		95·0	45	e 13 32	+ 6	e 24 35	− 3	e 30 58	SS	e 44·2
Tinemaha		98·1	44	i 13 48	+ 8	—	—	—	—	—
Toledo	Z.	98·3	320	e 13 48	+ 7	—	—	i 17 44	PP	—
Haiwee	E.	98·8	44	e 13 46	+ 3	—	—	—	—	—
Mount Wilson		99·9	46	e 13 51	+ 3	—	—	i 17 46	PP	—
Pasadena		99·9	46	e 13 53	+ 5	—	—	i 17 58	PP	e 46·2
Riverside	Z.	100·5	46	e 13 56	+ 5	—	—	e 17 50	PP	—
Malaga		100·6	318	i 17 30	PKP	—	—	i 18 18	PP	55·6
Overton		100·8	42	e 14 5	+13	—	—	—	—	—
Boulder City		100·9	43	i 13 58	+ 6	—	—	—	—	—
Pierce Ferry		101·3	42	e 14 30	+36	—	—	—	—	—
Palomar		101·3	46	i 14 0	+ 6	—	—	i 17 55	PP	—
Rapid City		101·6	30	—	—	e 24 33	[− 2]	—	—	e 50·6
Tucson		105·8	44	e 14 20	+ 5	—	—	i 18 26	PP	e 49·5
Seven Falls		108·8	8	—	—	e 34 15	SS	—	—	53·0
St. Louis		111·6	26	e 18 42	[+ 6]	e 28 48	PS	e 19 21	PP	e 39·0
San Juan		137·7	9	e 22 13	PP	e 26 34	[− 1]	e 42 10	SS	e 63·0
Fort de France		141·8	2	e 19 28	[− 6]	—	—	—	—	—
Bogota		148·5	29	e 19 42	[− 3]	—	—	i 19 54	pPKP	—
La Paz		169·2	50	i 20 11	[+ 2]	i 29 33	PPP	i 21 17	PKP,	86·0

Additional readings :—
New Delhi S_eSN =17m.13s., SSSN =18m.1s.
Kodaikanal SSE =17m.56s.
Riverview iEN =19m.25s.
Upsala eN =20m.47s., iN =21m.32s.
Bergen iZ =12m.37s., eE =32m.37s.
Collmberg ePPP =17m.28s., ePSZ =23m.19s., eSS =28m.27s., eSSS? =32m.21s., and many other unidentified eZ and iZ readings.
Jena eN =13m.27s. and 14m.30s.
Basle e =12m.57s.
Shasta Dam iP =13m.23s.
Berkeley eN =24m.50s., eE =30m.42s.
Pasadena iZ =17m.12s.
Malaga iPP =19m.26s., PPP =21m.36s.
St. Louis iPPSE =29m.46s.
Bogota i =19m.45s., e =20m.42s.
La Paz PSKS =35m.57s.
Long waves were also recorded at Honolulu, Ivigtut, Huancayo, and other American, European, and New Zealand stations.

Oct. 21d. 6h. 43m. 52s. Epicentre 36°·0N. 77°·0E.

Rough.

A = +·1824, B = +·7901, C = +·5852; δ = −1; h = 0;
D = +·974, E = −·225; G = +·132, H = +·570, K = −·811.

		△	Az.	P.	O−C	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		6·0	324	e 1 34	+ 2	e 2 46	+ 3	—	—	—
Stalinabad		7·0	294	1 41	− 5	—	—	—	—	—
Frunse		7·1	345	e 1 52	+ 4	e 3 9	− 1	—	—	—
New Delhi	N.	7·4	179	e 1 47	− 5	i 3 15	− 3	—	—	i 3·9
Tashkent		8·0	313	e 1 54	− 6	—	—	—	—	—
Samarkand		8·7	298	2 58	P_g	—	—	—	—	—
Bombay		17·4	194	—	—	e 7 13	− 6	—	—	—
Hyderabad	N.	18·5	176	e 5 42	?	9 27	?	—	—	—
Sverdlovsk		23·6	337	5 15	+ 2	e 9 27	+ 2	—	—	—
Irkutsk		25·3	41	e 5 26?	− 4	10 2?	+ 8	—	—	—

Oct. 21d. 7h. 4m. 23s. Epicentre 27°·4N. 138°·9E. Depth of focus 0·070.

A = −·6700, B = +·5845, C = +·4577; δ = +3; h = +3;
D = +·657, E = +·754; G = −·345, H = +·301, K = −·889.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		
		°	°	m. s.	s.	m. s.	s.	m. s.		
Mizusawa		11·9	8	e 2 38	− 1	4 39	− 7	—		—
Vladivostok		16·7	342	i 3 28	0	i 6 14	− 3	—		—
Andijan		55·5	302	e 8 56	+ 5	i 16 5	+ 7	—		—
Tashkent		57·7	304	e 9 5	− 1	e 16 33	+ 6	—		—
Sverdlovsk		61·2	322	i 9 30	+ 1	—	—	—		—
Apia		63·0	124	—	—	24 7?	?	—		—
Grand Coulee		77·7	42	i 11 6	− 2	—	—	—		—
Shasta Dam		78·8	50	i 11 13	− 1	—	—	i 13 5		pP
Tinemaha		83·3	52	i 11 37a	0	—	—	—		—
Haiwee	E.	84·0	53	i 11 40	0	—	—	—		—
Mount Wilson		84·8	54	i 11 44a	0	—	—	e 15 12		PP
Pasadena		84·8	54	i 11 44	0	—	—	e 13 28		pP
Riverside		85·4	54	i 11 47a	0	—	—	e 13 36		pP
La Jolla		86·1	55	i 11 51	+ 1	—	—	—		—
Palomar		86·1	55	i 11 51a	+ 1	—	—	i 13 46		pP
Boulder City		86·2	51	i 11 51	0	—	—	—		—
Pierce Ferry		86·7	51	i 12 23	+30	—	—	—		—
Collmberg	Z.	88·3	329	i 12 2	+ 1	—	—	e 14 1		pP
Tucson		91·0	53	i 12 14	+ 1	—	—	e 14 2		pP

Additional readings
Pasadena iZ = 11m.51s. and 13m.38s.
Riverside iZ = 11m.52s.
Palomar iZ = 11m.57s., iNZ = 12m.5s., iZ = 15m.16s.
Tucson i = 15m.54s.

Oct. 21d. 7h. 26m. 40s. Epicentre 27°·4N. 138°·9E. Depth of focus 0·070.
(as at 7h. 4m.).

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Mizusawa	E.	11·9	8	e 2 26	−13	4 39	− 7
Vladivostok		16·7	342	e 3 28	0	e 6 14	− 3
Shasta Dam		78·8	50	i 11 13	− 1	—	—
Haiwee	E.	84·0	53	e 11 40	0	—	—
Pasadena	Z.	84·8	54	i 11 44	0	—	—
Riverside	Z.	85·4	54	i 11 47	0	—	—
Collmberg	Z.	88·3	329	e 17 37	PP	—	—
Tucson		91·0	53	i 12 15	+ 2	—	—

Oct. 21d. Readings also at 2h. (Brisbane, Riverside, Tucson, Boulder City, Overton, and Pierce Ferry), 3h. (Andijan (2), Frunse, Stalinabad, Tananarive, and Collmberg), 4h. (Pehpei, near Samarkand, and near Mizusawa (2)), 5h. (Edinburgh, Kew, and near Mizusawa), 9h. (Collmberg), 11h. (near Tananarive), 12h. (Mount Wilson, Pasadena, Palomar, Riverside, Tucson, Grand Coulee, Butte, Bozeman, and St. Louis), 13h. (Philadelphia), 14h. (Collmberg and near Bogota), 15h. (Palomar, Tucson, St. Louis, near Tacubaya, Puebla, and near Mizusawa), 16h. (Mount Wilson, Pasadena, Palomar, Riverside (2), Tucson (2), and De Bilt), 18h. (near Andijan), 19h. (near Shasta Dam), 23h. (Lick).

Oct. 22d. 19h. 26m. 4s. Epicentre 40°·6N. 124°·6W. (as on 1944, July 9d.).

$A = -\cdot4324$, $B = -\cdot6268$, $C = +\cdot6482$; $\delta = +1$; $h = -2$;
$D = -\cdot823$, $E = +\cdot568$; $G = -\cdot368$, $H = -\cdot534$, $K = -\cdot762$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ferndale	E.	0·2	98	i 0 4	P_g	i 0 9	S*	i 0 7	S_g	—
Ukiah		1·8	144	e 0 38	P_g	—	—	—	—	e 1·2
Mineral	E.	2·3	96	i 0 40	0	i 1 6	− 3	i 1 2	S*	—
Berkeley		3·3	145	i 0 52	− 1	i 1 26	− 9	e 1 8	P_g	—
San Francisco		3·3	147	e 0 54	+ 1	e 1 34	− 1	e 1 4	P_g	—
Branner		3·7	148	e 0 59	− 1	i 1 42	− 3	i 1 18	P_g	—
Lick		4·0	143	e 1 3	− 1	e 1 47	− 5	i 1 22	P_g	—
Fresno	N.	5·4	134	e 1 26	+ 2	e 2 29	+ 1	e 2 50	S*	—
Tinemaha		6·0	125	i 1 40	+ 8	i 2 52	+ 9	—	—	—
Haiwee		6·9	128	e 1 50	+ 5	—	—	—	—	—
Mount Wilson		8·2	138	i 2 2	− 1	—	—	—	—	—
Pasadena		8·2	138	i 2 2	− 1	i 3 32	− 6	—	—	e 4·7
Riverside		8·7	136	i 2 9	− 1	i 3 44	− 6	—	—	—
Palomar	Z.	9·5	137	i 2 20	0	—	—	—	—	—
Tucson		13·9	123	e 3 21	0	—	—	—	—	—

Additional readings :—
Berkeley eN = 1m.21s., eEN = 1m.32s. and 1m.36s., eN = 1m.43s., iN = 2m.5s.
San Francisco eN = 1m.20s., eE = 1m.23s., iSE = 1m.28s., eE = 1m.43s. and 1m.50s., eEN = 2m.12s.
Branner iEN = 1m.6s., eE = 1m.39s.
Lick iEN = 1m.8s., 1m.14s., 1m.50s., and 1m.56s., iN = 1m.59s., iE = 2m.17s.
Fresno eN = 2m.36s.

Oct. 22d. Readings also at 0h. (near Andijan), 3h. (Tucson), 7h. (Riverview and near Andijan), 8h. (Andijan, Sverdlovsk, Leninakan, Mount Wilson, Palomar, Riverside, Shasta Dam, and Tucson), 9h. (Tucson and Palomar), 10h. (near Mizusawa), 11h. (Collmberg, Mount Wilson, and Riverside), 13h. (Tortosa and near Barcelona), 14h. (Riverside, Palomar, and Tashkent).

Oct. 23d. Readings at 2h. (Alicante), 5h. (near Bogota), 7h. (near Bucharest), 8h. (Collmberg, Tucson, Palomar, Riverside, Pasadena, Mount Wilson, Santa Barbara, and Mizusawa), 17h. (near Tananarive), 20h. (La Plata and Collmberg), 21h. (Christchurch).

Oct. 24d. 5h. 15m. 33s. Epicentre 36°·2N. 139°·9E. Depth of focus 0·005.
(as on 1943, July 1d.).

Intensity VI Yuki, Shimodate, (Ibaragi Pref.), Mikuriya, Awano, (Tochigi Pref.); V at Tukubasan, Mito, Utunomiya, and Onahama; IV at Yokohama, Tokyo, Hukusima, Matumoto, and Titibu; II-III at Misima, Shizuoka, and Tu.
Epicentre 36°·3N. 139°·8E. Focal depth 40km.
The Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1945, Tokyo, 1951, p. 43.

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

	△	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Tukubasan	0·2	84	0 2a	− 9	0 8	−11	—	—
Mito	0·5	68	0 11a	− 2	0 20	− 3	—	—
Tokyo	0·5	192	0 12	− 1	0 22	− 1	—	—
Yokohama	0·8	195	0 7	−10	0 18	−11	—	—
Onahama	1·1	48	0 22a	+ 2	0 35	− 1	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Mera		1·3	182	0 19k	− 4	0 29	−11	—	—
Misima		1·3	215	0 20	− 3	0 37	− 3	—	—
Nagano		1·4	289	1 25	+61	—	—	—	—
Hukusima		1·6	16	0 29	+ 2	0 50	+ 3	—	—
Shizuoka		1·7	225	0 29a	+ 1	0 49	− 1	—	—
Sendai		2·2	21	0 35	0	1 4	+ 2	—	—
Toyama		2·2	283	0 37	+ 2	0 48	−14	—	—
Hikone		3·1	253	0 56k	+ 8	1 37	+13	—	—
Mizusawa	N.	3·1	18	0 49	+ 1	1 25	+ 1	—	—
Akita		3·5	3	1 4	+10	—	—	—	—
Kyoto		3·6	251	0 51	− 4	1 15	−22	—	—
Oiwase		3·7	237	0 58	+ 2	1 48	+ 9	—	—
Miyako		3·8	24	1 0	+ 2	1 45	+ 3	—	—
Toyooka		4·2	261	0 57	− 6	1 58	+ 6	—	—
Hatinohe		4·5	16	1 48	+41	2 48	+49	—	—
Sumoto		4·5	247	1 7	0	—	—	—	—
Kôti		5·9	245	1 54	+27	3 18	+44	—	—
Sapporo		6·9	8	1 43	+ 2	3 23	+24	—	—
Hukuoka		8·3	254	1 58	− 2	4 56	L	—	—
Andijan		51·9	296	e 9 3	− 1	16 24	+ 3	—	—
Sverdlovsk		55·0	319	i 9 26	− 1	e 17 2	0	—	—
Stalinabad		55·2	295	i 9 29	+ 1	—	—	—	—
Grand Coulee		70·7	44	e 11 10	− 1	—	—	—	—
Leninakan		71·5	307	e 11 27	+11	—	—	—	—
Shasta Dam		72·6	52	i 11 21	− 1	—	—	—	—
Haiwee		78·0	53	e 11 53	0	—	—	—	—
Mount Wilson		79·1	55	i 12 0	+ 1	—	—	—	—
Pasadena		79·1	55	i 12 0	+ 1	—	—	—	—
Riverside	z.	79·7	55	i 12 2	0	—	—	—	—
Boulder City		80·2	53	i 12 35	+30	—	—	—	—
Palomar	z.	80·4	55	i 12 8	+ 2	—	—	—	—
Pierce Ferry		80·6	52	i 12 38	+31	—	—	—	—
Colimberg	z.	81·2	329	i 12 10	0	—	—	i 12 23	pP
Tucson		85·1	53	i 12 31	+ 1	—	—	i 12 39	pP
St. Louis	z.	92·3	37	i 13 5	+ 1	—	—	i 13 24	pP

Additional readings :—
Riverside eZ = 12m.50s.
Collmberg iZ = 15m.16s.
Tucson i = 12m.52s. and 13m.25s.
St. Louis iZ = 13m.33s.

Oct. 24d. Readings also at 0h. (Palomar, Tucson, and La Paz), 1h. (Collmberg, Sverdlovsk, Tashkent, Andijan, Hyderabad, Bombay, New Delhi, Calcutta, and Pehpei), 2h. (Copenhagen, Collmberg, Ksara, Tucson, Tinemaha, Palomar, Riverside, Mount Wilson, Riverview, and Christchurch), 3h. (La Paz), 4h. (near Frunse, Stalinabad, Tashkent, Andijan, and near La Paz), 5h. (Tucson, Mount Wilson, Pasadena, Riverside, Palomar, Tinemaha, and Fort de France), 7h. (near Harvard), 8h. (near La Paz), 9h. (Christchurch, Riverview, Mount Wilson, Pasadena, Riverside, Tucson, near Tashkent, Andijan, and near La Paz), 12h. (Tucson, Riverside, Mount Wilson, and Palomar), 17h. (near Ksara), 23h. (near Tacubaya).

Oct. 25d. 3h. Undetermined shock.

Auckland P = 3m.16s., S = 3m.54s., L = 4m.25s.
Christchurch PZ = 4m.17s., SEZ = 7m.0s., eZ = 7m.52s., QEN = 8m.31s., RZ = 9m.2s.
Wellington P = 5m.9s., iZ = 5m.16s., 5m.31s., 5m.41s., and 5m.55s., S?Z = 6m.10s., i = 7m.18s., L = 7m.50s.
Brisbane eZ = 6m.16s.
Riverview eZ = 6m.18s., eE = 6m.24s. and 11m.6s., iN = 11m.52s.
Palomar ePZ = 13m.36s.
Mount Wilson ePZ = 13m.37s.
Pasadena ePZ = 13m.27s., eLZ = 45·2m.
Riverside ePZ = 13m.39s.
Tinemaha ePZ = 13m.43s.
Haiwee ePEN = 13m.45s.
Boulder City iP = 13m.50s.
Tucson eP = 13m.54s., e = 14m.21s., eL = 45m.8s.
Long waves were also recorded at Arapuni and Huancayo.

Oct. 25d. 8h. Undetermined shock.

San Juan e =48m.27s., eS =53m.49s., eL =58m.6s.
La Paz iPZ =50m.32s., L =63m.48s.
Tucson iP =52m.55s., i =54m.49s.
Tinemaha ePZ =53m.5s., eZ =54m.59s.
St. Louis eZ =53m.15s., iZ =53m.19s., iN =61m.50s., eLN =67·0m.
Palomar iPZ =53m.24s., i =55m.15s.
Riverside ePZ =53m.26s., iZ =55m.18s.
Mount Wilson ePZ =53m.28s., eZ =55m.21s.
Boulder City e =55m.3s., i =55m.9s.
Overton eP =55m.5s.
Pierce Ferry eP =55m.9s.
Pasadena eZ =55m.13s., eLZ =84·9m.
Haiwee eE =55m.36s.
Huancayo e =58m.7s., eL =66m.0s.

Oct. 25d. 14h. 58m. 41s. Epicentre 57°·2N. 163°·8E. (as on 1945, April 15d.).

A = −·5227, B = +·1519, C = +·8389 ; δ = +4 ; h = −8 ;
D = +·279, E = +·960 ; G = −·806, H = +·234, K = −·544.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo		20·0	236	(4 40)	+ 3	(9 49)	?	—	—	(13·3)
Mizusawa	E.	23·4	229	e 5 10	− 1	e 9 16	− 5	—	—	—
	N.	23·4	229	5 7	− 4	e 10 6	SS	—	—	—
College		24·1	52	i 5 20	+ 2	e 9 31	− 3	e 5 54	PP	e 11·8
Sendai		24·2	227	e 5 21	+ 2	9 50	+15	—	—	—
Vladivostok		24·5	248	e 5 21	− 1	i 9 35	− 5	—	—	—
Tokyo		26·9	227	e 5 32	−13	11 13	+53	—	—	—
Yokohama		27·2	227	4 58	−49	10 28	+ 3	—	—	—
Mera		27·5	227	e 6 25	PP	12 35	PcS	—	—	—
Hamada		30·9	237	e 7 7	+47	—	—	—	—	—
Kôti		31·3	234	e 6 57	+33	12 25	+54	—	—	—
Sitka		31·9	64	i 6 31	+ 2	—	—	i 7 56	PPP	—
Hukuoka		32·7	237	e 8 10	PPP	—	—	—	—	e 15·0
Irkutsk		33·7	288	e 6 46	+ 1	12 6	− 2	—	—	—
Victoria		42·8	69	7 47	−14	14 18	− 8	9 43	PP	20·3
Seattle		43·9	69	e 7 58	−12	e 14 1	−41	—	—	e 20·8
Grand Coulee		45·4	67	i 8 21	− 1	e 14 50	−14	e 18 7	SS	—
Honolulu		45·5	125	—	—	e 15 12	+ 7	—	—	e 18·8
Pehpei		47·9	260	(e 8 48)	+ 6	—	—	(e 12 25)	?	—
Shasta Dam		48·7	76	i 8 47	− 1	e 15 57	+ 7	i 10 14	PcP	e 19·5
Ukiah		49·4	78	e 8 55	+ 2	e 15 58	− 2	—	—	e 19·7
Butte		49·9	64	e 8 55	− 2	e 16 2	− 5	e 11 57	PPP	e 22·0
Berkeley		50·8	79	9 3	− 1	16 29	+ 9	i 11 8	PP	—
Bozeman		50·9	64	e 9 3	− 2	e 16 19	− 2	e 12 2	PPP	e 23·3
Sverdlovsk		51·0	316	9 5	− 1	i 16 19	− 3	—	—	—
Santa Clara		51·4	79	e 9 8	− 1	e 16 52	+24	—	—	—
Lick		51·5	79	(e 9 8)	− 1	e 9 8	P	—	—	—
Logan		53·4	68	i 9 25	+ 1	e 17 18	+23	e 10 31	PcP	e 23·1
Tinemaha		53·5	76	i 9 25a	+ 1	—	—	i 9 36	?	—
Salt Lake City		54·1	68	e 9 30	+ 1	e 17 0	− 5	e 11 39	PP	e 24·7
Haiwee		54·4	76	e 9 30	− 1	—	—	i 9 42	?	—
Santa Barbara		54·7	80	i 9 32a	− 1	—	—	—	—	—
Mount Wilson		55·8	78	i 9 40a	− 1	—	—	i 9 53	?	—
Pasadena		55·8	78	i 9 39	− 2	i 17 24	− 4	e 11 38	PP	e 23·7
Overton		55·9	74	e 9 42	0	—	—	i 10 15	?	—
Rapid City		55·9	60	i 9 41	− 1	e 17 26	− 3	i 12 47	PPP	e 25·4
Boulder City		56·2	75	i 9 43	− 1	e 17 37	+ 4	i 13 5	PPP	—
Riverside		56·3	78	i 9 43a	− 2	—	—	e 39 40	P′P′	—
Pierce Ferry		56·5	74	i 9 46	0	—	—	i 13 9	PPP	—
Palomar		57·1	78	i 9 50a	0	i 17 50	+ 5	i 9 55	?	—
La Jolla		57·3	79	e 9 51	− 1	—	—	—	—	—
Andijan		57·6	296	e 9 57	+ 3	—	—	—	—	—
Tashkent		58·7	298	e 10 1	− 1	e 18 13?	+ 7	—	—	—
Ivigtut		59·3	18	14 0	PPP	18 19	+ 5	22 13	SS	28·3
Moscow		59·3	328	10 10	+ 4	18 16	+ 2	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Upsala		60·3	342	e 10 10	− 3	e 21 58	SS	e 13 30	PPP	e 31·3
Stalinabad		61·1	297	i 10 17	− 1	—	—	—	—	—
Tucson		61·1	74	i 10 17	− 1	e 18 48	+11	e 13 49	PPP	e 27·1
Calcutta	N.	63·5	271	e 10 39	+ 5	i 19 9	+ 2	i 21 29	?	—
Chicago		64·7	52	e 10 41	− 1	i 19 19	− 3	e 23 41	SS	e 29·7
New Delhi	N.	64·7	284	i 10 43	+ 1	i 19 13	− 9	11 13	P_cP	31·1
Copenhagen		65·1	343	i 10 44	− 1	i 19 37	+10	—	—	—
St. Louis		66·1	55	i 10 49	− 2	i 19 39	0	i 11 16	P_cP	—
Ottawa		66·4	42	10 50	− 3	19 37	− 6	13 25	PP	31·3
Seven Falls		66·6	37	10 52	− 2	19 39	− 6	15 1	PPP	32·3
Cape Girardeau	E.	67·6	55	e 11 58	+57	—	—	e 12 3	?	—
Baku		68·1	311	i 11 7	+ 3	i 20 9?	+ 6	—	—	—
Cincinnati		68·2	51	i 11 2	− 2	20 30	sS	e 13 37	PP	e 32·3
Pittsburgh	Z.	69·0	47	i 11 8	− 1	—	—	—	—	—
De Bilt		69·7	346	i 11 16	+ 2	e 20 29?	+ 2	—	—	e 33·3
Jena	E.	69·8	341	(i 11 13)	− 1	—	—	(e 14 47)	PPP	(e 36·2)
	N.	69·8	341	(i 11 10)	− 4	—	—	(e 13 33)	PP	(e 36·9)
Prague		70·1	340	—	—	e 20 27	0	e 25 1	SS	e 31·3
Leninakan		70·2	316	e 10 49	−28	—	—	—	—	—
Erevan		70·4	314	e 11 22	+ 4	e 20 33	+ 3	—	—	—
Harvard		70·4	40	e 11 19	+ 1	e 21 23	PPS	—	—	e 36·3
Kew		70·9	350	—	—	e 20 35?	− 1	e 25 15?	SS	e 33·3
Fordham		71·0	43	i 11 19	− 3	e 20 41	+ 4	e 15 49	PPP	—
Uccle		71·0	347	e 11 33?	+11	e 20 40	+ 3	e 12 23	pP	e 30·3
Strasbourg		72·7	343	e 11 30	− 2	e 21 27	PS	i 21 42	PPS	e 44·3
Hyderabad		73·0	276	11 31	− 2	21 0	0	14 1	PP	36·2
Paris		73·2	348	i 11 38	+ 3	e 21 4	+ 2	—	—	e 32·3
Basle		73·8	344	e 11 38	0	—	—	—	—	—
Belgrade		73·8	334	e 11 38	0	e 21 13	+ 4	e 15 2	PP	e 42·1
Zürich		73·8	343	e 11 37a	− 1	—	—	—	—	—
Columbia		74·1	52	e 11 36	− 4	e 21 11	− 1	e 14 30	PP	e 34·8
Neuchatel		74·4	344	e 11 41	− 1	—	—	e 15 58	PPP	—
Bombay		74·9	281	i 11 44	0	i 21 20	− 2	—	—	32·7
Sofia		75·1	331	e 11 48	+ 2	e 21 28	+ 4	e 22 4	PS	e 39·3
Ksara		79·3	318	e 12 14	+ 5	e 22 27	+18	—	—	—
Kodaikanal	E.	79·5	272	e 13 3	+53	e 22 48	+37	15 53	PP	38·7
Tortosa		81·3	347	12 28	+ 8	22 26	− 4	12 35	P_cP	e 42·3
Toledo		82·7	351	i 12 28	+ 1	i 22 48	+ 4	—	—	—
Lisbon		84·3	355	12 34	− 1	23 1	+ 1	15 58	PP	36·0
Helwan		84·5	320	i 12 37k	+ 1	23 22	+20	i 12 43	P_cP	—
Brisbane		84·8	189	i 12 38	+ 1	e 23 7	+ 2	i 23 26	S_cS	—
Granada		85·4	350	i 12 44	+ 4	—	—	i 16 8	PP	—
Malaga		85·9	351	i 12 44	+ 1	e 23 18	+ 2	i 13 17	pP	43·7
San Fernando	E.	86·3	352	e 14 59	?	i 23 23	+ 3	i 24 9	PS	i 52·0
Riverview		91·3	190	i 13 10k	+ 1	i 24 11	+ 5	e 16 29	PP	e 42·4
San Juan		94·0	47	e 13 21	0	i 30 55	SS	i 17 6	PP	e 48·3
Auckland		94·2	171	24 4	SKS	(24 4)	[+ 7]	48 53	Q	67·3
Wellington		98·6	172	e 23 3	?	e 24 21	[+ 1]	i 26 39	PS	45·9
Fort de France		99·2	43	e 17 39	PP	—	—	—	—	—
Christchurch		100·6	174	—	—	e 25 30	+ 5	e 26 43	PS	46·8
Huancayo		116·6	70	e 20 9	PP	e 29 37	PS	e 36 11	SS	e 50·9
La Paz		124·0	65	e 19 44	[+43]	—	—	—	—	64·3

Additional readings :—
Sapporo readings increased by 4 minutes.
College e = 6m.21s. and 7m.12s.
Victoria SSS = 17m.44s.
Pehpei readings increased by 4 minutes.
Butte eSS = 19m.35s.
Bozeman e = 9m.35s., eSS = 20m.1s.
Berkeley i = 8m.9s., eZ = 19m.3s., eE = 20m.13s.
Lick eE = 9m.40s. and 12m.34s., eEN = 13m.24s.
Logan eSS = 20m.48s.
Salt Lake City ePPP = 12m.32s., e = 21m.3s.
Pasadena iZ = 9m.44s. and 9m.59s., eZ = 12m.7s., eSSN = 21m.19s., ePKP,PKPZ = 39m.45s., ePKP,PKP,PKPZ = 53m.13s.
Rapid City eSSS = 21m.33s.

Continued on next page.

Boulder City i =9m.48s.
Riverside iZ =9m.55s.
Upsala eE =22m.49s.
Tucson i =10m.29s., e =14m.7s., eSS =22m.38s., e =24m.28s., e =39m.43s.
Chicago eS =19m.5s., e =26m.19s., eSSS =26m.39s.
New Delhi PPPPN =15m.28s., PSN =19m.33s., S_cSN =20m.17s., SKSN =20m.39s., SSN =22m.24s., SSSSN =27m.10s.
St. Louis iZ =11m.25s.
Ottawa PPPZ =15m.5s., SSSN =24m.7s.
Seven Falls SS =23m.43s., SSS =26m.43s.
Cincinnati e =14m.16s.
Jena eZ =(13m.47s.), eNZ =(14m.35s.) readings decreased by 1 minute.
Prague eSSS =28m.19s.
Kew eSSSNZ =28m.39s.?
Fordham eSP =21m.15s., iS? =25m.13s.
Uccle eE =24m.8s., eSSSE =28m.46s.
Strasbourg eSS =25m.31s.
Hyderabad SN =20m.57s., PSN =21m.20s., SSN =25m.48s.
Columbia eSS =26m.1s., eSSS =29m.16s.
Neuchatel e =15m.5s.
Sofia eE =13m.48s., eN =29m.31s.
Kodaikanal PSE =23m.33s., SSE =27m.37s.
Tortosa S_cSEN =22m.54s.
Helwan PPZ =16m.1s., SKSN =22m.55s.
Brisbane eSSN =28m.45s.
Malaga iPP =16m.6s., PPP =18m.9s., esS =23m.40s., iPS =24m.14s., eSS =28m.48s.
San Fernando eSKSE =22m.7s., ePSE =26m.3s., iPPSE =26m.59s., eSSE =32m.19s., eSSSE =36m.59s.
Riverview eZ =16m.26s., iSKSN =23m.41s., iS_cSN =24m.16s., eN =25m.18s., iN =27m.16s., eN =29m.55s., eQE =39m.1s.
Auckland e =43m.49s.
Wellington i =24m.29s., iZ =41m.49s. and 43m.14s.
Christchurch e =32m.3s., eEN =35m.49s., Q?EN =41m.50s.
Huancayo e =40m.51s.
Long waves were also recorded at Arapuni and Barcelona.

Oct. 25d. Readings also at 0h. (near Tacubaya), 1h. (Branner, Christchurch, Auckland, Arapuni, near Wellington, and near Tacubaya), 5h. and 9h. (near Tacubaya), 10h. (Riverview and near Andijan), 14h. (near Tacubaya), 15h. (Arapuni, Toledo, St. Louis (3), Tucson (3), Palomar (3), La Jolla (2), Riverside (2), Mount Wilson (4), Pasadena (2), Haiwee, Santa Barbara, Tinemaha (4), near Lick, and near Tacubaya), 16h. (Neuchatel, Zürich, St. Louis, Tucson, Overton, Pierce Ferry, Boulder City, La Jolla, Palomar, Riverside, Mount Wilson, Pasadena, Santa Barbara, Haiwee, Tinemaha, near Tashkent, Stalinabad, Andijan, and near Mineral (2)), 17h. (St. Louis, Tucson, Overton, Pierce Ferry, Boulder City, Palomar, Riverside, Mount Wilson, Pasadena, Santa Barbara, Haiwee, Tinemaha, and near Andijan), 18h. (near Tacubaya).

Oct. 26d. 13h. 56m. 44s. Epicentre 41°·7N. 33°·2E.

Felt at Ankara, Samsun, Corum, and Cankiri.
Bulletin Mét. et Séism. de l'Observatoire d'Istanbul-Kandilli, 1945. Istanbul, 1950, p. 148. Epicentre adopted from Strasbourg.

A = +·6266, B = +·4100, C = +·6627 ; δ = −10 ; h = −2 ;
D = +·548, E = −·837 ; G = +·555, H = +·363, K = −·749.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Yalta	2·9	14	0 51	+ 3	i 1 36	S_g	i 0 54	P*	—
Bucharest	5·8	300	e 1 32	+ 3	i 2 52	S*	i 1 51	P_g	—
Sofia	7·4	281	e 1 55	+ 3	i 3 39	S*	i 3 49	S_g	—
Leninakan	8·0	93	e 2 0	0	—	—	—	—	—
Ksara	8·1	164	e 1 52	−10	i 3 26	− 9	—	—	—
Erevan	8·7	96	2 10	0	4 3	+13	—	—	—
Belgrade	9·8	293	e 2 26a	+ 2	i 4 7	−10	e 3 3	PP	—
Kalossa	11·3	300	e 3 20	+34	—	—	—	—	e 6·0
Helwan	11·9	188	2 37	−17	5 25	+16	2 58	PP	—
Baku	12·7	90	i 3 7	+ 2	—	—	—	—	—
Moscow	14·4	10	3 27	0	6 6	− 3	—	—	—
Prague	15·5	309	3 51	+ 9	e 7 12	+37	—	—	e 8·3
Cheb	16·7	307	e 5 16?	?	—	—	—	—	e 10·3
Collmberg	16·9	312	e 3 46	−13	i 7 16	+ 9	i 4 3	PP	e 9·7
Jena	17·5	308	i 5 7	+60	—	—	—	—	e 8·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Basle		19·1	297	e 4 23	− 4	—	—	—	—	e 13·3
Strasbourg		19·2	301	e 4 30	+ 2	e 7 53	− 6	—	—	e 11·6
Copenhagen		19·5	324	e 4 26	− 5	i 8 20	+14	—	—	—
Neuchatel		19·5	296	e 4 30	− 1	—	—	—	—	—
Besançon		20·2	294	e 4 39	0	e 8 40	+19	—	—	—
Upsala	E.	20·6	337	e 4 53	+10	e 8 33	+ 4	i 8 56	SS	e 10·6
	N.	20·6	337	e 4 44	+ 1	e 8 26	− 3	i 5 2	PP	e 10·7
De Bilt		21·7	309	—	—	e 9 6	+15	—	—	—
Uccle		21·8	305	e 5 3	+ 7	e 8 58	+ 6	—	—	e 11·3
Paris		22·7	300	e 5 16?	+12	e 9 16	+ 7	—	—	e 11·3
Barcelona		23·2	281	—	—	e 9 28	+10	—	—	i 11·5
Sverdlovsk		23·2	41	e 5 11	+ 2	i 9 16	− 2	—	—	—
Tortosa	N.	24·5	279	i 5 26	+ 4	9 56	+16	5 56	PP	e 12·3
Kew		24·8	305	—	—	e 9 56	+10	e 13 32?	L	e 17·0
Tashkent		26·9	80	e 6 55	PP	e 10 38	+18	—	—	—
Stalinabad		27·3	85	i 5 46	− 2	10 36	+ 9	—	—	—
Aberdeen		27·3	318	—	—	e 10 39	+12	—	—	—
Toledo		28·1	279	i 5 54	− 1	i 10 40	0	—	—	—
Granada		28·6	274	i 6 17k	+17	e 10 52	+ 4	7 22	PP	15·1
Andijan		29·3	80	e 5 56	−10	—	—	—	—	—
Malaga		29·4	274	i 6 6	− 1	e 10 26	−35	9 44	PcP	15·1
Lisbon		32·3	280	—	—	—	—	14 46	Q	16·4
Dehra Dun	N.	37·6	94	—	—	—	—	e 15 25	SS	e 23·2
New Delhi	N.	37·9	97	e 7 18	− 2	i 13 12	− 1	8 47	PP	18·6
Bombay		40·6	113	e 7 38	− 5	i 13 46	− 8	—	—	20·4
Hyderabad		45·5	110	8 18	− 5	14 59	− 6	10 10	PP	21·9
Irkutsk		47·8	53	8 43	+ 2	15 42?	+ 4	—	—	—
Calcutta	N.	49·6	95	—	—	e 15 59	− 4	—	—	—
Kodaikanal	E.	49·9	117	e 9 21	+24	i 16 13	+ 6	18 33	ScS	24·2
Colombo	E.	53·9	118	9 22	− 5	16 54	− 8	—	—	30·4
Vladivostok		68·4	51	—	—	i 19 50	−17	—	—	—
Ottawa		72·6	316	11 31	0	21 4	+ 8	27 52	SSS	33·3
College		73·8	2	—	—	e 21 15	+ 6	e 28 38	SSS	e 35·2
Philadelphia		76·0	312	—	—	e 21 39	+ 5	—	—	e 38·7
Saskatoon		80·3	337	15 16	PP	—	—	—	—	45·3
San Juan		84·7	290	—	—	e 23 0	− 4	—	—	e 37·3
St. Louis		84·9	319	e 12 32	− 6	e 23 3	− 3	—	—	—
Bozeman		87·3	336	—	—	e 23 23	− 6	e 29 6	SS	e 35·8
Victoria		87·8	345	—	—	e 23 40	+ 6	—	—	38·3
Salt Lake City		91·5	335	—	—	e 25 49	PPS	—	—	e 43·2
Berkeley	E.	97·7	341	—	—	e 30 58	PKKP	e 40 13	Q	e 45·5
Mount Wilson	Z.	100·0	336	e 17 59	PP	—	—	—	—	—
Pasadena	Z.	100·1	336	e 18 0	PP	—	—	—	—	e 55·2
Huancayo		111·7	274	—	—	e 33 56	SS	—	—	e 47·8
Riverview		131·3	103	e 22 28	PKS	e 40 10	SSP	e 54 34	Q	e 64·9

Additional readings :—
Bucharest iEN = 1m.39s., iP*N = 1m.48s., iS*?N = 3m.24s., iS_gEN = 3m.38s.
Sofia eE = 2m.44s.
Belgrade i = 2m.34s., P_gS_g = 5m.15s., i = 5m.26s. and 5m.58s.
Kalossa ePN = 3m.29s.
Helwan SSE = 5m.41s.
Collmberg iPPPZ = 4m.10s., eSS = 7m.54s. and many other iZ and e readings.
Jena e = 5m.10s., eEN = 5m.18s., eN = 6m.45s., eE = 8m.13s.
Copenhagen i = 4m.35s. and 7m.44s.
Upsala iE = 8m.38s., iN = 8m.43s., iSS = 8m.50s.
Tortosa PPPN = 6m.8s.
Malaga esS = 11m.0s.
New Delhi SSN = 15m.40s.
Hyderabad PSN = 15m.9s., SSE = 18m.25s.
Calcutta iN = 16m.21s.
Kodaikanal SSE = 19m.33s.
Pasadena eZ = 19m.14s.
Long waves were also recorded at San Fernando, Ivigtut, La Paz, and other American stations.

Oct. 26d. Readings also at 2h. (Boulder City, Overton, Pierce Ferry, Shasta Dam, Tucson, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, and near Apia), 3h. (Arapuni, Wellington, and near Tacubaya), 6h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, La Paz, and near Montezuma), 7h. (Angra do Heroismo), 9h. (St. Louis, Boulder City, Grand Coulee, Overton, Pierce Ferry, Shasta Dam, Tucson, Haiwee, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Santa Barbara, Tinemaha, Collmberg, Christchurch, Riverview, and near Apia), 12h. (Alicante), 13h. (Belgrade and near Sofia), 14h. (Mount Wilson, Palomar, and Christchurch), 15h. (Arapuni, Auckland, Wellington, and Collmberg), 18h. (near Andijan, Stalinabad, near Malaga, and near Ottawa), 19h. (Belgrade, Sofia, Collmberg, near Granada, and Malaga), 22h. (St. Louis, Tucson, Mount Wilson, and Riverside), 23h. (Arapuni (2), Auckland, Christchurch, Wellington (2), Riverview, Palomar, Tinemaha, Tucson, and Collmberg).

Oct. 27d. 11h. 24m. 38s. Epicentre 15°·1N. 91°·2W. Depth of focus 0·025.

A = −·0202, B = −·9657, C = +·2589; δ = +1; h = +6;
D = −1·000, E = +·021; G = −·005, H = −·259, K = −·966.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	Z.	5·7	291	1 17	− 7	(2 18)	−11	—	—	2·3
Puebla		7·7	301	1 50	0	3 10	− 6	—	—	—
Tacubaya		8·7	300	i 2 4	+ 1	i 3 35	− 5	i 3 41	S	i 3·9
Guadalajara		12·8	297	e 2 58	+ 2	e 5 17	+ 2	—	—	e 5·9
Balboa Heights		12·9	117	e 2 52	− 5	—	—	—	—	—
Mobile		15·8	10	3 35	+ 2	6 36	+13	—	—	—
Bogota		19·8	120	i 4 15	− 2	e 8 22	+37	i 4 46	pP	—
Columbia		20·9	23	i 4 30	+ 2	i 8 14	+ 9	i 5 8	PP	e 12·5
Cape Girardeau	E.	22·2	3	e 4 42	+ 1	i 8 30	+ 2	i 8 56	sS	—
St. Louis		23·5	1	i 4 53	− 1	i 8 49	− 1	i 5 19	pP	e 13·6
San Juan		24·2	78	i 5 2	+ 2	i 9 7	+ 5	i 5 32	pP	i 10·4
Cincinnati		24·7	13	i 5 5	0	i 9 5	− 5	i 5 42	pP	—
Tucson		24·7	317	e 5 3	− 2	i 9 12	+ 2	i 5 50	PP	—
Chicago		26·8	5	i 5 23	− 1	e 9 42	− 2	i 6 6	pP	i 12·1
Pittsburgh		27·1	19	i 5 28	+ 1	i 9 52	+ 3	i 6 13	pP	—
Philadelphia		28·5	27	i 5 40	0	i 10 5	− 7	i 6 27	pP	e 12·3
Fort de France		29·0	87	e 5 43	− 1	e 10 19	− 1	—	—	—
Pierce Ferry		29·2	320	i 5 46	0	—	—	i 6 29	pP	—
La Jolla		29·5	312	i 5 50a	+ 2	e 10 33	+ 6	i 8 51	P_cP	—
Boulder City		29·6	319	i 5 50	+ 1	e 10 33	+ 4	i 6 33	pP	—
Fordham		29·7	27	i 5 51	+ 1	i 10 33	+ 2	i 6 45	PP	—
Overton		29·7	320	i 6 22	pP	—	—	i 6 48	PP	—
Riverside		30·2	313	i 5 54a	− 1	e 10 43	+ 5	i 8 49	P_cP	—
Rapid City		30·6	343	i 6 0	+ 2	i 10 51	+ 6	i 7 11	PP	i 12·4
Mount Wilson		30·8	313	i 6 0a	0	e 10 49	+ 1	i 8 53	P_cP	—
Pasadena		30·8	313	i 6 1a	+ 1	e 10 48	0	i 8 53	P_cP	e 13·6
Huancayo		31·2	148	i 6 10	+ 7	i 10 58	+ 4	e 7 22	PP	i 13·4
Salt Lake City		31·3	329	i 6 6	+ 2	i 10 58	+ 2	e 6 41	pP	e 12·8
Haiwee		31·8	317	e 6 9	0	e 11 9	+ 6	i 12 19	S_cP	—
Logan		32·0	330	e 6 9	− 1	i 11 8	+ 1	i 7 33	PP	i 12·5
Harvard		32·1	28	i 6 11	0	i 11 10	+ 2	i 6 30	pP	—
Santa Barbara		32·1	312	i 6 11	0	e 11 11	+ 3	i 8 56	P_cP	—
Tinemaha		32·5	317	i 6 16a	+ 1	i 11 20	+ 6	i 8 58	P_cP	—
Ottawa		32·9	20	6 17	− 1	11 20	− 1	12 28	S_cP	13·4
Fresno	N.	33·3	316	e 6 23	+ 2	e 11 28	+ 1	e 6 47	pP	—
Bozeman		34·8	336	e 6 34	0	i 11 46	− 4	e 7 4	pP	e 15·1
Lick		34·9	315	e 6 36	+ 1	e 11 49	− 2	e 12 59	sS	—
Shawinigan Falls		34·9	23	6 35	0	11 53	+ 2	8 2	PP	16·4
Santa Clara		35·1	315	i 6 41	+ 4	i 12 0	+ 6	—	—	—
Branner		35·3	315	e 6 40	+ 2	i 12 3	+ 6	e 7 25	pP	—
Berkeley		35·6	315	i 6 42	+ 1	i 12 6	+ 4	i 7 28	pP	—
Butte		35·7	335	e 6 45	+ 3	e 12 1	− 3	e 7 26	pP	e 15·4
San Francisco		35·7	315	e 6 43	+ 1	e 12 4	0	e 16 41	S_cS	—
Seven Falls		36·2	24	6 42	− 4	12 9	− 2	—	—	14·4
Mineral	E.	36·5	320	e 6 50	+ 1	e 12 17	+ 1	e 13 33	sS	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ukiah		36·9	317	e 6 54	+ 2	e 12 29	+ 7	e 13 49	sS	e 16·9
Shasta Dam		37·2	320	i 6 52	− 2	e 12 26	0	i 9 10	PcP	—
Halifax		37·6	33	6 15	−43	11 48	−44	—	—	15·4
La Paz	Z.	38·8	142	i 7 9a	+ 1	i 12 44	− 7	i 14 10	sS	19·4
Saskatoon		38·9	345	7 12	+ 4	12 50	− 2	i 14 10	sS	15·4
Grand Coulee		40·0	331	e 7 16	− 2	i 13 8	0	i 7 57	pP	e 16·4
Seattle		41·4	328	—	—	e 14 27	sS	—	—	e 17·9
Victoria		42·5	328	7 39	+ 1	13 49	+ 4	18 4	SSS	24·4
Sitka		53·7	332	i 9 1	− 3	i 17 16	+55	e 12 16	PPP	e 25·5
Ivigtut		55·4	24	i 9 14a	− 2	16 55	+11	11 24	PP	—
College		62·5	336	e 10 5	0	e 18 11	− 5	e 10 54	pP	e 25·8
Honolulu		63·2	286	—	—	e 18 12	−12	e 19 25	sS	e 25·7
San Fernando	E.	77·2	55	11 47	+13	i 21 3	− 3	i 21 38	SP	33·9
Toledo		78·3	52	i 11 40	0	i 21 16	− 2	14 6	PP	—
Malaga		78·6	54	i 11 57	+15	i 21 33	+12	i 14 43	PP	34·1
Kew		78·9	39	i 11 42	− 1	i 21 22	− 2	e 14 48	PP	—
Granada		79·2	54	i 11 49a	+ 4	i 21 24	− 3	14 49	PP	—
Bergen	N.	80·2	29	e 17 22?	pPPP	—	—	—	—	—
Paris		81·2	41	e 11 52	− 4	e 21 28	−20	i 15 6	PP	e 36·4
Tortosa	E.	81·5	50	e 12 5	+ 8	i 21 51	0	15 19	PP	e 39·4
Uccle		81·9	39	—	—	i 21 51	− 4	—	—	e 33·4
De Bilt		82·1	37	i 11 59	− 1	i 21 57	0	—	—	e 34·4
Strasbourg		84·6	41	i 12 13	0	e 22 29	+ 7	e 15 27	PP	—
Basle		84·8	42	e 12 15e	+ 1	—	—	e 15 56	PP	—
Copenhagen		85·2	33	i 12 16	0	i 22 30	+ 2	i 15 35	PP	—
Zürich		85·5	42	e 12 15	− 2	—	—	e 13 2	pP	—
Upsala		86·2	28	e 15 44	PP	i 22 37	0	e 22 16	SKS	e 32·4
Collmberg		87·0	37	i 12 24	− 1	e 22 43	− 2	i 13 16	pP	—
Prague		88·3	38	e 12 34	+ 3	23 0	+ 3	16 5	PP	—
Kalossa		92·5	39	e 12 47	− 3	—	—	e 13 25	pP	—
Belgrade		94·1	42	e 12 58k	0	i 23 53	+ 5	i 16 50	PP	e 54·2
Sofia		96·9	43	e 12 48	−22	e 24 16	+ 4	e 13 14	P	—
Moscow		97·4	27	e 13 14	+ 1	e 24 19	+ 3	—	—	—
Arapuni		101·6	233	e 21 22?	?	(24 22)	−30	—	—	24·4
Auckland		102·1	235	—	—	24 22?	−32	—	—	—
Wellington		102·8	230	17 51	PP	i 24 0	[+ 4]	i 18 35	pPP	48·4
Sverdlovsk		104·6	15	i 18 6	PP	27 25	PS	i 20 52	pPPP	—
Christchurch		104·7	228	17 50	PP	25 40	+23	19 52	PPP	49·5
Helwan		108·8	51	e 18 34	PP	e 28 7	PS	—	—	—
Ksara		110·0	45	e 18 46	PP	e 28 18	PS	—	—	—
Leninakan		110·5	35	e 17 52	[−17]	—	—	—	—	—
Irkutsk		111·6	349	i 18 58	PP	e 28 46	pPS	—	—	—
Baku		114·0	32	e 19 10	PP	e 26 36	S	28 55	PS	—
Brisbane	E.	119·5	246	—	—	i 25 8	[+ 4]	e 29 56	PS	—
Tashkent		121·0	17	e 18 32	[+ 2]	e 25 11	[+ 2]	20 3	PP	—
Riverview		121·1	238	i 20 6k	PP	e 25 13	[+ 4]	i 20 52	pPP	—
Andijan		122·4	14	e 18 58	[+25]	e 30 14	PS	e 20 22	PP	—
New Delhi	N.	135·1	14	i 21 33	PP	i 33 58	PPS	i 22 30	pPP	—
Bombay		142·7	26	e 19 6	[− 4]	—	—	—	—	—
Hyderabad	N.	146·1	18	(19 15)	[− 1]	19 15	PKP	—	—	—
Kodaikanal	E.	152·4	25	e 19 43	[+17]	—	—	—	—	—
Colombo	E.	156·4	23	e 19 22?	[− 9]	—	—	—	—	—

Additional readings :—
Bogota i = 4m.20s., eS_cP = 11m.41s.?, S_cS = 15m.25s.?
St. Louis ePPZ = 5m.32s., ipPPZ = 5m.42s., iZ = 8m.59s., isSZ = 9m.33s.
San Juan i = 6m.2s.
Cincinnati i = 9m.28s., iSS? = 10m.31s., i = 11m.52s.
Tucson i = 5m.20s., iPPP = 6m.12s., e = 6m.48s., iP_cP = 8m.38s., i = 10m.14s., iS_cP = 11m.55s., iS_cS = 15m.47s.
Chicago eP_cP = 8m.56s., eS = 9m.38s., i = 10m.22s.
Philadelphia i = 11m.24s.
La Jolla iS_cP = 12m.12s., iS_cSN = 16m.9s.
Boulder City iP_cP = 8m.50s., iP_cS = 12m.10s., iS_cP = 16m.8s.
Fordham i = 11m.0s., iSS = 12m.29s.

Continued on next page.

Riverside iS_cPZ =12m.13s., iS_cSEN =16m.9s.
Rapid City i =11m.58s.
Mount Wilson iZ =6m.12s., eSEN =10m.52s., iS_cP =12m.15s., eS_cSEN =16m.13s.
Pasadena iZ =6m.13s., iS =10m.53s., iS_cP =12m.15s., eEN =13m.10s., iS_cS =16m.14s.
Huancayo e =7m.2s. and 7m.50s.
Salt Lake City eS =10m.51s., i =12m.11s.
Haiwee eS_cS?EN =16m.19s.
Logan i =6m.13s.
Harvard isP =6m.46s., iPP =7m.17s., ipPP =7m.37s., e =13m.22s., i =13m.51s., e = 14m.36s., i =15m.18s., e =17m.20s.
Santa Barbara iS_cPNZ =12m.19s., iS_cSNZ =16m.19s.
Tinemaha iZ =6m.24s., iS_cP =12m.21s., iS_cS =16m.23s.
Fresno 12m.28s., 12m.43s., and 13m.50s., eS_cSN =16m.25s., eN =17m.30s. and 21m.26s.
Bozeman ePP =7m.46s., e =8m.4s., isS =12m.50s., i =13m.7s.
Lick iEN =6m.39s., eSE =11m.56s., eN =12m.31s., eS_cSEN =16m.34s.
Branner eS_cSEN =16m.37s.
Berkeley i =6m.45s., iP_cPZ =9m.7s., iEZ =11m.30s., iEN =13m.28s., iN =15m.6s., iS_cS, 16m.40s., eEZ =19m.6s., eNZ =22m.27s.
Butte ePP =7m.45s., ePPP =8m.24s., esS =12m.53s., i =13m.22s.
San Francisco ePE =6m.46s.
Mineral eE =12m.40s. and 15m.16s.
Shasta Dam i =16m.35s., iS_cS =16m.45s.
La Paz PPZ =8m.14s., iP_cP =9m.48s., SS =14m.38s., S_cS =17m.0s.
Grand Coulee iPP =8m.59s., iS_cP =12m.46s.
Sitka e =21m.30s.
College ePP =13m.4s., e =19m.8s., eSS =22m.22s.
San Fernando eSSE =25m.33s., eSSSE =28m.29s.
Malaga PPP =16m.47s.
Kew iNZ =20m.56s., iZ =22m.5s., eE =23m.1s., eZ =26m.52s.?, eN =27m.58s., eE = 28m.42s.?, eEN =32m.52s.?, eZ =36m.52s.? and 45m.22s.?
Paris i =11m.56s.
Copenhagen iPS =23m.48s., SS =28m.8s., 32m.22s.?
Zürich ePP =15m.42s.
Upsala eN =24m.3s. and 27m.28s.?
Collmberg i =13m.30s. and 13m.37s., ePP =15m.50s., e =16m.40s., ePPPZ =17m.29s., ePS =23m.22s., e =23m.34s., 24m.46s., and 25m.52s., eZ =26m.58s., eSS =28m.28s.
Prague ePPS =24m.46s.
Kalossa eE =16m.42s., eN =17m.2s.
Belgrade e =29m.21s.
Sofia eEN =17m.8s.
Wellington PP?Z =19m.52s., S? =23m.45s., iZ =26m.14s. and 26m.39s.
Sverdlovsk iPPS =28m.5s.
Christchurch SKS =24m.8s., SKKS =24m.52s., PS =27m.5s., PPSNZ =27m.38s., SSEN =33m.12s., SSSEN =36m.34s., QEN =43m.33s.
Tashkent eS =27m.28s., SS =36m.16s.
Riverview iSKSE =25m.17s., iSKKSN =26m.44s., iSKKSE =26m.48s., iPSE = 29m.48s., iPSZ =29m.51s., iPPSE =31m.24s., eSSN =36m.21s., iEN =36m.34s., eE =40m.0s. and 41m.19s.
New Delhi iN =23m.27s.

Oct. 27d. Readings also at 0h. (Pasadena and St. Louis), 1h. (Tucson, Tinemaha, Palomar, Mount Wilson, and Riverside), 2h. (near Stalinabad and Andijan), 4h. (Collmberg, Tucson (2), La Jolla, Palomar (2), Pierce Ferry (2), Overton (2), Boulder City (2), Riverside (2), Pasadena (2), Mount Wilson (2), Santa Barbara, Haiwee (2), Tinemaha (2), and Shasta Dam), 6h. (St. Louis, Tucson, La Jolla, Palomar, Pierce Ferry, Overton, Boulder City, Riverside, Pasadena, Mount Wilson, Santa Barbara, Haiwee, Tinemaha, Shasta Dam, and Grand Coulee), 10h. (Tucson, near St. Louis, and Cape Girardeau), 12h. (Collmberg, Tucson, Palomar, Riverside, and Tinemaha).

Oct. 28d. 0h. 17m. 10s. Epicentre 11°·2N. 42°·7E.

$A = +\cdot7211$, $B = +\cdot6654$, $C = +\cdot1930$; $\delta = -1$; $h = +6$;
$D = +\cdot678$, $E = -\cdot735$; $G = +\cdot142$, $H = +\cdot131$, $K = -\cdot981$.

	Δ	Az.	P.	O−C.	S.	O−C.	Snpp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan	21·4	332	4 50	− 1	8 54	+ 9	5 20	PP	—
Ksara	23·4	345	e 5 14	+ 3	e 9 36	+15	—	—	—
Leninakan	29·4	2	e 6 31	+24	—	—	—	—	—
Baku	29·8	11	e 6 13	+ 2	i 11 8	+ 1	—	—	—
Bombay	30·0	72	i 6 14	+ 2	i 11 16	+ 6	—	—	—

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Kodaikanal	E.	34·2	88	e 8 56	?	e 13 18	+62	—	—	16·1
Sofia		35·6	335	e 7 2	+ 1	e 12 37	− 1	—	—	e 16·3
Stalinabad		35·8	36	i 7 0	− 3	—	—	—	—	—
New Delhi	N.	36·6	57	—	—	i 15 17	SS	i 16 49	Q	i 20·3
Tashkent		38·0	33	e 7 5?	−16	e 13 12?	− 2	—	—	—
Belgrade		38·6	334	e 7 24k	− 2	e 16 42	SSS	e 8 57	PP	e 24·8
Andijan		39·3	37	e 7 32	0	e 13 35	+ 1	—	—	—
Moscow		44·6	356	8 18	+ 2	14 51	− 1	—	—	—
Prague		45·2	335	—	—	e 15 2	+ 1	—	—	e 24·4
Collmberg		46·7	335	e 8 30	− 2	—	—	e 10 6	PP	e 27·8
Alicante		47·0	313	—	—	19 32	SS	—	—	—
Strasbourg		47·3	330	—	—	e 15 35	+ 4	e 19 14	SS	—
Sverdlovsk		47·6	13	i 8 41	+ 2	i 15 30	− 5	—	—	—
Granada		48·9	310	8 25k	−25	e 16 4	+11	10 34	PP	24·5
Malaga		49·4	310	i 9 30	+37	i 15 29	−31	i 9 39	pP	24·1
Paris		50·2	326	—	—	e 14 50?	?	—	—	—
Toledo		50·2	313	i 9 0	0	i 16 17	+ 6	—	—	—
Copenhagen		50·3	339	—	—	i 16 13	0	i 19 54	SS	—
Uccle		50·4	330	—	—	e 16 15?	+ 1	e 19 50?	SS	e 25·8
De Bilt		50·8	332	—	—	e 16 30	+10	—	—	—
Upsala		52·0	344	—	—	e 16 30	− 6	—	—	e 24·8
San Juan		103·9	292	—	—	e 24 57	[+11]	e 27 37	PS	e 47·8
Riverview	Z.	111·4	122	—	—	e 41 56	?	—	—	e 55·2
St. Louis	N.	113·8	321	—	—	(e 34 20)	SS	—	—	e 34·3
Tucson		129·9	330	e 19 12	[0]	—	—	—	—	e 70·7
Mount Wilson	Z.	131·3	338	e 19 22	[+ 8]	—	—	—	—	—

Additional readings :—
Helwan PPPZ = 5m.32s.
Belgrade e = 11m.17s. and 14m.26s.
Collmberg i = 8m.34s., eZ = 8m.44s., e = 11m.15s., 14m.20s., and 16m.14s., eZ = 17m.12s., e = 18m.50s., 22m.2s., and 25m.14s.
Malaga PP = 10m.55s., PPP = 11m.47s., iS_cP = 15m.5s., esS = 16m.2s.
Copenhagen i = 18m.24s.
Upsala eN = 16m.36s., 18m.50s.?, and 22m.50s.?, eE = 23m.6s.
San Juan e = 31m.27s.
Long waves were also recorded at Bozeman, Pasadena, La Paz, Tananarive, and a few other European stations.

Oct. 28d. 5h. 37m. 42s. Epicentre 13°·3S. 167°·0E. Depth of focus 0·020.
(as on 1941, August 19d.).

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

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Brisbane	19·2	221	i 4 18	+ 4	e 7 43	+ 5	i 5 9	pP	—
Auckland	24·5	166	e 5 5	− 1	9 18	+ 6	—	—	10·5
Riverview	25·0	213	i 5 14a	+ 4	i 9 25	+ 5	i 5 58	pP	e 12·2
Wellington	28·7	168	5 43	− 1	10 22	+ 2	6 18	pP	—
Christchurch	30·5	171	5 57	− 3	10 48	0	6 42	pP	—
Perth	50·3	240	15 43	S	(15 43)	+ 2	16 38	PS	25·0
Vladivostok	64·7	333	i 10 23	0	i 18 48	− 1	—	—	—
Branner	83·3	49	—	—	—	—	e 12 57	pP	—
Berkeley	Z. 83·4	49	i 12 10	0	—	—	e 12 55	pP	e 43·4
Lick	83·7	49	—	—	—	—	e 12 57	pP	—
Santa Barbara	84·1	53	—	—	—	—	i 12 59	pP	—
Shasta Dam	84·4	47	i 12 15	0	—	—	i 13 0	pP	—
Irkutsk	84·6	327	e 12 16	0	22 23	− 5	—	—	—
Sitka	84·7	28	e 13 1	pP	i 22 26	− 3	e 15 55	PP	e 34·8
Mineral	E. 84·8	47	—	—	—	—	e 13 3	pP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Fresno	N.	84·9	50	—	—	—	—	c 13 5	pP		—
College		85·0	18	—	—	e 22 35	+ 3	e 29 17	SS		e 34·4
Pasadena		85·2	54	e 12 18	− 1	—	—	i 13 5	pP		e 39·0
Mount Wilson		85·3	54	i 12 19	− 1	—	—	i 13 5	pP		—
La Jolla		85·5	55	—	—	—	—	i 13 7	pP		—
Riverside		85·8	54	i 12 22	0	—	—	i 13 7	pP		—
Haiwee		86·0	51	e 12 25	+ 2	—	—	e 13 10	pP		—
Tinemaha		86·1	51	e 12 25	+ 1	—	—	i 13 10	pP		—
Boulder City		88·4	53	i 12 34	− 1	e 22 36	[−10]	i 13 19	pP		—
Overton		88·8	53	e 13 6	+29	—	—	e 13 55	pP		—
Pierce Ferry		89·1	53	i 12 38	0	—	—	i 13 23	pP		—
Grand Coulee		89·4	40	e 12 36	− 4	e 23 6	− 8	i 13 24	pP		—
Tucson		90·5	57	i 12 45	0	e 22 31	[−27]	i 13 29	pP		e 41·5
Kodaikanal	E.	91·9	280	e 13 54	pP	—	—	—	—		—
Bozeman		93·9	44	—	—	e 23 16	[− 1]	—	—		e 47·2
Bombay		97·6	287	e 13 21	+ 4	e 23 37	[− 1]	—	—		—
Andijan		102·0	310	e 16 43	PP	e 24 3	[+ 3]	18 51	PPP		—
St. Louis		108·1	54	e 14 11	P	i 24 24	[− 3]	i 19 20	pPKP		e 29·9
Sverdlovsk		110·0	326	—	—	24 35	[0]	27 14	PS		—
Moscow		122·6	328	18 39	[+ 2]	e 25 51	[+30]	—	—		—
San Juan		128·8	77	c 21 34	PP	e 30 18	PS	—	—		e 65·6
Ksara		131·3	303	c 19 8	[+14]	e 22 26	PKS	—	—		—
Copenhagen		133·3	341	e 18 59	[+ 1]	31 47	PS	e 22 10	PKS		—
Fort de France		133·3	83	—	—	—	—	e 22 7	PKS		—
Helwan		135·9	299	i 19 3k	[+ 1]	—	—	i 21 45	PP		—
Collmberg	Z.	136·6	337	e 18 56	[− 7]	—	—	i 22 22	PKS		—
Belgrade		137·6	325	c 19 7a	[+ 2]	e 26 12	[+15]	—	—		—

Additional readings :—
Riverview iPP = 6m.10s., iN = 9m.40s. and 10m.8s., iEN = 10m.28s., iE = 10m.39s., isSN = 10m.43s., iSSE = 10m.55s., iN = 11m.6s.
Wellington iZ = 6m.39s., P_cP = 8m.19s., pP_cP? = 8m.49s., i = 9m.25s., sS = 11m.35s., i = 13m.20s. and 14m.2s., S_cS = 15m.58s., sS_cS = 17m.13s.
Christchurch eZ = 8m.56s., sSEN = 11m.47s., S_cSEZ = 15m.18s.
Perth SS = 22m.33s.
Berkeley eZ = 41m.21s.
Lick eEN = 13m.1s.
Shasta Dam i = 16m.14s.
Sitka eSS = 27m.50s.
Pasadena iZ = 12m.29s. and 12m.36s., eZ = 17m.12s.
Riverside iEZ = 13m.11s.
Tucson i = 15m.47s., e = 16m.51s., esS = 24m.33s., e = 25m.28s.
St. Louis eE = 27m.44s., ePPSE = 28m.36s.
Sverdlovsk eS = 25m.37s., eSS = 33m.51s.
Copenhagen e = 22m.22s., isPP = 22m.34s.
Helwan iZ = 19m.50s.
Collmberg iZ = 19m.7s., eZ = 19m.52s.
Belgrade e = 23m.56s. and 33m.59s.
Long waves were also recorded at Chicago.

Oct. 28d. 20h. 23m. 24s. Epicentre 42°·3N. 142°·0E. Depth of focus 0·015.

A = −·5846, B = +·4567, C = +·6706 ; δ = +4 ; h = − 3;
D = +·616, E = +·788 ; G = −·528, H = +·413, K = −·742.

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Sapporo		0·9	328	0 22	0	0 36	− 3
Hatinohe		1·8	191	0 34	+ 2	0 58	+ 2
Miyako		2·7	180	0 40	− 4	1 12	− 5
Mizusawa	N.	3·2	192	e 0 51	+ 1	1 32	+ 4
Sendai		4·1	192	1 3	+ 1	1 52	+ 2

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Hukusima		4·7	195	1 36	+26	2 24	+20
Mito		6·0	191	2 5	?	—	—
Tukubasan		6·3	194	1 30	− 2	2 34	− 9
Wazima		6·3	220	2 40	S	(2 40)	− 3
Yokohama		7·1	196	1 44	+ 1	—	—
Mera		7·6	193	3 13	S	(3 13)	− 2
Copenhagen		73·4	334	i 11 23	+ 3	—	—
Mount Wilson	z.	74·4	59	e 11 25	− 1	—	—
Riverside	z.	75·0	59	e 11 27	− 2	—	—
Overton		75·1	55	e 11 30	0	—	—
Boulder City		75·2	56	e 11 29	− 1	—	—
Pierce Ferry		75·6	55	e 11 12	−20	—	—
Collmberg	z.	76·8	331	e 11 41	+ 2	e 14 18	PP
Tucson		80·2	56	e 12 15	+17	—	—
St. Louis	z.	86·5	38	e 12 28	− 1	—	—

Collmberg gives also iZ = 11m.46s., eZ = 12m.5s.

Oct. 28d. Readings also at 0h. (near Branner and Lick), 1h. (near Mizusawa), 2h. (Tucson), 5h. (Brisbane), 8h. (Mount Wilson, Tucson, Tinemaha, St. Louis, Ivigtut, Reykjavik, Bozeman, Copenhagen, Collmberg, Strasbourg, Paris, and Kew), 9h. (Haiwee, Mount Wilson, Pasadena, and Tinemaha), 10h. (Mount Wilson, and Tucson), 19h. (near Tananarive).

Oct. 29d. 4h. 59m. 0s. Epicentre 22°·5S. 176°·2W. Depth of focus 0·005.
(as on 1943, March 26d.).

Felt at Nukualofa (Tonga) according to Apia.

A = −·9228, B = −·0613, C = −·3805; δ = +10; h = +4;
D = −·066, E = +·998; G = +·380, H = +·025, K = −·925.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		16·3	207	5 6	+80	8 19	L	—	—	8·7
Arapuni		17·0	202	e 5 6	+71	—	—	—	—	8·5
Wellington		20·2	199	4 34	+ 2	8 10	0	—	—	11·3
Christchurch		22·9	200	e 4 50	− 9	9 9	+ 9	10 20	Q	12·6
Brisbane		28·3	253	i 5 57	+ 7	—	—	—	—	e 12·4
Riverview	N.	30·8	240	—	—	e 11 53	+44	—	—	e 13·8
Santa Barbara		78·0	45	e 11 53	0	—	—	—	—	—
La Jolla		78·7	47	e 11 57	0	—	—	e 12 9	pP	—
Pasadena		78·8	45	i 11 56	− 1	—	—	i 12 10	pP	e 39·2
Mount Wilson		79·0	45	i 11 56	− 3	—	—	i 12 11	pP	—
Palomar		79·2	47	i 12 0	0	—	—	i 12 14	pP	—
Riverside		79·3	45	i 11 58	− 2	—	—	i 12 12	pP	—
Haiwee		80·2	44	e 12 5	0	—	—	—	—	—
Shasta Dam		80·3	38	i 12 3	− 2	—	—	—	—	—
Tinemaha		80·6	43	i 12 6	− 1	—	—	i 12 20	pP	—
Boulder City		82·1	46	i 12 13	− 2	—	—	i 12 27	pP	—
Overton		82·7	45	e 12 19	+ 1	—	—	—	—	—
Pierce Ferry		82·8	46	i 12 18	0	—	—	i 12 31	pP	—
Tucson		82·8	50	i 12 18	0	—	—	i 12 31	pP	e 49·0
Grand Coulee		86·8	34	e 12 38	0	—	—	—	—	—
Bozeman		89·9	39	—	—	(e 21 0)	?	—	—	e 21·0
Copenhagen		146·2	350	i 19 35	[+ 3]	—	—	19 53	pPKP	—
Collmberg	z.	150·4	347	i 19 48	[+ 9]	e 23 40	PP	—	—	—
Helwan		154·3	291	e 19 51	[+ 6]	—	—	20 12	pPKP	—

Additional readings:—
Wellington i = 8m.31s. and 8m.34s.
Brisbane eE = 6m.51s.
Pasadena iZ = 12m.20s.
Palomar iZ = 12m.22s.
Tucson i = 12m.44s.
Collmberg iZ = 20m.1s., 20m.25s., 20m.33s., 20m.45s., and 20m.54s.
Long waves were also recorded at Kodaikanal, St. Louis, and Huancayo.

Oct. 29d. 10h. 54m. 16s. Epicentre 51°·6N. 131°·2W.

A = −·4108, B = −·4693, C = +·7817; δ = +5; h = −6;
D = −·752, E = +·659; G = −·515, H = −·588, K = −·624.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		5·9	118	1 26	− 5	2 41	+ 1	—	—	2·7
Sitka		6·4	340	i 1 28	−10	i 2 43	−10	—	—	—
Seattle		7·0	121	—	—	e 3 9	+ 1	—	—	e 4·4
Grand Coulee		8·7	110	e 2 7	− 3	—	—	—	—	—
Ferndale	E.	12·0	154	e 3 6	+11	e 5 29	+18	—	—	—
Shasta Dam		12·5	147	i 3 2	0	e 5 40	+17	—	—	e 5·9
Mineral	E.	13·1	146	e 3 19	+ 9	e 6 8	+30	—	—	—
Butte		13·5	107	e 3 20	+ 5	e 5 28	−19	—	—	e 6·1
Ukiah		13·6	153	e 3 18	+ 1	e 5 55	+ 5	—	—	e 6·6
Bozeman		14·6	106	e 3 27	− 3	e 6 13	0	—	—	7·4
Berkeley		15·1	152	i 3 36	0	e 6 35	+10	—	—	e 8·3
San Francisco	N.	15·1	152	e 3 38	+ 2	e 6 45	+20	—	—	—
Saskatoon		15·2	78	3 43	+ 5	6 23	− 5	—	—	7·7
Branner		15·5	152	e 3 49	+ 7	e 6 52	+17	—	—	e 8·1
Santa Clara		15·7	152	i 3 45	+ 1	e 7 11	+32	—	—	—
College		15·8	333	e 3 42	− 3	e 6 45	+ 3	—	—	e 7·7
Logan		16·5	119	i 3 56	+ 2	i 7 2	+ 4	i 4 18	PP	i 8·4
Fresno	N.	16·9	147	e 4 0	+ 1	e 6 49	−18	—	—	—
Salt Lake City		17·2	121	i 4 3	0	e 7 21	+ 7	i 4 29	PP	e 8·3
Tinemaha		17·2	143	i 4 4a	+ 1	—	—	—	—	—
Haiwee		18·1	143	i 4 17	+ 3	e 7 56	SS	—	—	—
Santa Barbara		19·0	149	i 4 26a	0	e 8 8	+13	—	—	—
Overton		19·2	135	e 4 27	− 1	—	—	—	—	—
Boulder City		19·5	136	i 4 30	− 1	e 8 25	+19	—	—	—
Pierce Ferry		19·7	135	i 4 33	− 1	—	—	—	—	—
Mount Wilson		19·8	146	i 4 32a	− 3	i 8 27	+14	—	—	—
Pasadena		19·8	146	i 4 34a	− 1	i 8 20	+ 7	—	—	e 8·5
Rapid City		20·2	101	i 4 37	− 2	i 8 25	+ 4	—	—	i 10·5
Riverside		20·3	146	i 4 38a	− 2	e 8 26	+ 3	—	—	—
Palomar		21·0	144	i 4 47	0	e 8 42	+ 5	—	—	—
La Jolla		21·3	146	e 4 51	+ 1	e 9 0	+17	—	—	—
Tucson		24·4	134	i 5 21	0	i 9 47	+ 8	e 5 46	PP	e 13·0
Chicago		31·1	91	—	—	e 11 27	− 1	—	—	e 12·9
St. Louis		31·3	98	i 6 22	− 2	i 11 32	+ 1	i 6 32	pP	e 14·3
Ottawa		36·5	77	7 8	− 1	12 56	+ 5	14 44	SS	17·7
Shawinigan Falls		37·7	73	e 7 20	+ 1	—	—	e 15 50	SS	19·7
Seven Falls		38·6	71	7 25	− 1	13 29	+ 6	15 57	SS	19·7
Philadelphia		39·8	84	e 8 27	+51	e 13 42	0	i 16 27	SS	i 19·6
Columbia		39·9	96	e 9 9	PP	e 13 36	− 7	—	—	e 16·7
Fordham		40·1	82	i 7 39	0	i 13 49	+ 3	i 9 18	PP	e 19·5
Harvard		40·6	78	e 7 44	+ 1	—	—	—	—	e 18·7
Tacubaya	N.	40·8	130	e 7 39	− 6	e 14 0	+ 4	—	—	e 21·9
San Juan		60·3	97	e 9 57	−16	i 18 29	+ 3	e 23 2	SS	e 27·9
Vladivostok		61·5	304	e 10 21	0	e 18 39	− 3	—	—	—
Bergen		62·7	23	—	—	e 25 24?	SSS	—	—	—
Upsala		66·1	17	—	—	e 19 42	+ 3	e 27 27	SSS	e 31·7
Fort de France		66·2	96	e 10 40	−12	—	—	—	—	—
Irkutsk		66·4	327	e 10 52	− 1	19 46	+ 3	—	—	—
Copenhagen		68·9	22	i 11 9	0	i 20 24	+11	24 50	SS	29·2
Kew		69·2	31	—	—	—	—	(23 44?)	SS	e 23·7
De Bilt		70·3	27	—	—	—	—	e 24 44?	SS	e 34·7
Sverdlovsk		71·5	353	i 11 26	+ 2	i 20 45	+ 2	—	—	—
Moscow		72·6	7	e 11 32	+ 1	e 20 57	+ 1	—	—	—
Collmberg		73·1	23	i 11 34	0	e 21 18	+17	e 14 22	PP	e 42·7
Cheb		74·1	24	e 15 44?	PP	—	—	—	—	e 41·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Strasbourg		74·2	27	e 11 44	+ 4	—	—	e 26 11	SS	35·7
Prague		74·6	22	—	—	e 21 20	+ 2	e 26 14	SS	e 35·7
Toledo		77·9	39	i 12 3	+ 2	i 22 0	+ 6	—	—	—
Huancayo		79·6	125	e 12 47?	+37	e 22 21?	+ 9	—	—	e 37·1
Belgrade		80·9	20	e 12 24	+ 7	i 22 40	+14	e 15 27	PP	e 46·9
Sofia		83·5	19	e 12 50	+19	e 22 56	+ 4	—	—	e 45·7
Tashkent		85·7	345	e 12 40	− 2	e 24 18	PS	—	—	—
Andijan		85·8	342	e 12 51	+ 9	e 23 22	+ 7	e 18 31	PPP	—
La Paz		87·1	120	12 46	− 3	23 32	+ 4	16 20	PP	e 44·4
Baku		88·4	359	e 13 9	+14	e 23 44	+ 4	—	—	—
Ksara		94·2	11	e 19 50	PPP	e 29 40	?	—	—	—
New Delhi	N.	96·3	335	—	—	e 24 14	[+ 6]	i 39 15	Q	e 55·5
Helwan		97·4	15	—	—	e 24 20	[+ 6]	e 25 5	S	—
Bombay		106·7	336	e 18 43	PP	e 26 28	+12	—	—	—

Additional readings :—
Sitka i = 1m.44s.
Grand Coulee i = 2m.37s., e = 3m.36s. and 4m.2s.
Butte e = 3m.49s.
Ukiah e = 3m.46s., i = 6m.19s.
Bozeman i = 3m.59s., e = 6m.35s.
San Francisco eSE = 6m.52s.
Berkeley eSN = 6m.38s.
College e = 4m.24s.
Tinemaha i = 4m.13s.
Boulder City i = 4m.44s.
Rapid City i = 5m.32s. and 7m.8s.
Riverside i = 4m.43s.
Palomar i = 4m.53s.
Tucson e = 6m.11s., i = 11m.0s., 11m.53s., and 12m.9s.
St. Louis iPPZ = 7m.19s., eSSN = 12m.54s., esSS = 13m.21s.
Seven Falls SSS = 18m.3s.
Fordham eSS = 16m.35s.
Collmberg ePP = 16m.8s. and other eZ readings.
Sofia eN = 23m.43s.
La Paz PS = 24m.24s.
Long waves were also recorded at Honolulu, Mobile, Auckland, Christchurch, Wellington, Ivigtut, Reykjavik, Colombo, Kodaikanal, and other European stations.

Oct. 29d. Readings also at 0h. (Branner, Lick, San Francisco, and near Berkeley), 3h. (Tashkent, near Andijan, and Stalinabad), 5h. (Pehpei and Calcutta), 6h. (St. Louis, Rapid City, Salt Lake City, Logan, Bozeman, Butte, Grand Coulee, Tucson, Mount Wilson, Pasadena, Riverside, Palomar, Sitka, College, Hyderabad, Bombay, New Delhi, De Bilt, and Collmberg (2)), 7h. (Mount Wilson, Riverside, Tinemaha, Palomar, and Tucson), 9h. (Palomar, Riverside, Tinemaha, and Tucson), 10h. (Haiwee, Mount Wilson, Pasadena, Palomar, Grand Coulee, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, and Shasta Dam), 11h. (Haiwee, La Jolla, Mount Wilson (2), Pasadena (2), Palomar (2), Riverside (2), Santa Barbara, Tinemaha (2), Tucson (2), Berkeley, Boulder City, Overton, Pierce Ferry, Shasta Dam, St. Louis, and Tacubaya), 13h. (Helwan, Ksara, and Kew), 15h. (Boulder City, Overton, Pierce Ferry, Shasta Dam, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 16h. (near Mizusawa), 18h. (near Tacubaya), 22h. (Frunse, near Andijan, Stalinabad, and Tashkent).

Oct. 30d. Readings at 1h. (Christchurch, Riverview, and Brisbane), 3h. (Tucson), 7h. (Riverview, Wellington, and Kalossa), 12h. (near Oaxaca), 13h. (St. Louis, Mount Wilson, Riverside, Tucson, Puebla, Oaxaca (2), near Tacubaya (3), near Mizusawa, and near Andijan), 14h. (Riverside, Tucson, Puebla, near Tacubaya (2), and near Andijan), 17h. (Malaga), 21h. (near Tashkent, Stalinabad, and Andijan), 23h. (near Yalta).

Oct. 31d. Readings at 7h. (Mount Wilson, Bogota, and Riverview), 10h. (Bogota and near Tacubaya), 14h. (Riverside, Mount Wilson, and Tinemaha), 20h. (near Tucson, Pierce Ferry, and Overton), 21h. (Tucson, Tinemaha, Mount Wilson, Pasadena, Riverside, and near Andijan), 22h. (near Stalinabad), 23h. (near Stalinabad and near Ksara).

Nov. 1d. 14h. 36m. 37s. Epicentre 36°·1N. 141°·2E. Depth of focus 0·005.
(as on 1941, November 4d.).

Intensity V at Onahama, Mito, and Tukubasan; IV at Utunomiya and Yokohama; II-III at Tokyo and Titibu.

Epicentre 36°·1N. 141°·0E. Focal depth 40km.

A = −·6312, B = +·5075, C = +·5866; δ = +7; h = 0;
D = +·627, E = +·779; G = −·457, H = +·368, K = −·810

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Mito		0·7	296	−0 30a	?	−0 16	?
Onahama		0·9	344	0 11a	− 7	0 22	− 9
Tukubasan		0·9	277	0 14k	− 4	0 23	− 8
Tokyo		1·2	251	0 23	+ 1	0 37	− 1
Utunomiya		1·2	293	−0 22	?	−0 14	?
Yokohama		1·4	242	0 5k	−19	0 22	−21
Mera		1·6	223	0 23	− 4	0 37	−10
Hukusima		1·8	340	0 40k	+10	0 55	+ 3
Hunatu		2·0	253	0 27a	− 5	0 47	−10
Misima		2·1	242	0 6	−28	0 18	−41
Sendai		2·2	354	0 27	− 8	0 54	− 8
Nagano		2·5	283	0 35k	− 4	0 52	−17
Shizuoka		2·6	244	0 44	+ 3	1 13	+ 1
Omaesaki		2·9	239	0 10	−35	0 51	−28
Mizusawa	E.	3·0	359	0 46	− 1	1 15	− 7
Toyama		3·3	280	0 49	− 2	1 11	−18
Miyako		3·6	11	0 56	+ 1	1 33	− 4
Akita		3·7	347	1 55	+59	—	—
Wazima		3·7	292	1 0	+ 4	—	—
Hikone		4·1	260	1 2	0	1 47	− 2
Kameyama		4·1	253	1 2	0	1 46	− 3
Hatinohe		4·4	4	0 59	− 7	1 53	− 4
Kyoto		4·6	258	1 17	+ 8	2 1	− 1
Owase		4·6	245	1 10	+ 1	2 3	+ 1
Toyooka		5·2	266	1 19	+ 2	2 16	− 1
Sumoto		5·5	253	1 24	+ 3	1 57	−27
Sapporo		7·0	1	2 2	+20	3 5	+ 4
Hukuoka		9·2	257	4 19	S	(4 19)	+24
Collmberg	z.	81·8	330	i 12 15	+ 2	—	—

Nov. 1d. Readings also at 1h. (New Delhi), 10h. (Tucson, Riverside, and Pasadena), 11h. (Tucson, near Boulder City, Pierce Ferry, and Overton), 16h. (near Tananarive), 19h. (San Juan and near Tucson (2)), 20h. (Uccle and Tucson (3)), 22h. (Collmberg).

Nov. 2d. 17h. Mexican shock.
Oaxaca PE = 43m.23s., LE = 43m.31s.
Puebla PE = 44m.52s., LE = 45m.27s.
Tacubaya PE = 45m.2s., LEN = 45m.48s.
Tucson iP = 48m.32s., e = 49m.32s. and 54m.44s., eL = 55m.10s.
St. Louis iPZ = 49m.1s., ipP?Z = 49m.9s.
Palomar iP = 49m.16s.
Pierce Ferry iP = 49m.19s.
Boulder City eP = 49m.21s., eL = 57m.33s.
Riverside iPZ = 49m.23s.
Mount Wilson iPZ = 49m.29s.
Pasadena ePZ = 49m.29s.
Grand Coulee eP = 51m.0s.

Nov. 2d. 18h. 57m. 55s. Epicentre 4°·0S. 128°·5E. (as on 1937, February 12d.).

$A = -\cdot6210$, $B = +\cdot7807$, $C = -\cdot0693$; $\delta = -6$; $h = +7$;
$D = +\cdot783$, $E = +\cdot623$; $G = +\cdot043$, $H = -\cdot054$, $K = -\cdot998$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		33·1	138	e 6 42	+ 2	e 12 8	+ 9	—	—	e 17·5
Riverview		36·4	148	i 7 10	+ 2	i 12 56	+ 6	i 15 34	SSS	e 19·5
Mizusawa	E.	44·5	14	e 6 7	?	e 8 40	?	—	—	—
Colombo	E.	49·7	282	e 8 5?	−51	—	—	—	—	—
Kodaikanal	E.	52·8	286	e 8 31	−48	—	—	e 12 21	PPP	—
Auckland		53·5	134	2 5?	?	—	—	—	—	—
Hyderabad	N.	53·8	295	9 20	− 6	16 59	− 2	—	—	—
Christchurch		55·4	142	10 23	+45	17 27	+ 5	21 5	Q	23·7
Wellington		55·6	139	16 48	S	(16 48)	−37	i 19 15	S_eS	34·7
New Delhi	N.	59·0	307	i 9 58	− 6	i 18 0	−10	12 10	PP	—
Bombay	E.	59·3	295	i 10 4	− 2	—	—	—	—	—
Irkutsk		59·7	343	10 10	+ 1	18 16	− 3	—	—	—
Andijan		67·8	316	e 11 3	+ 1	—	—	—	—	—
Tashkent		70·2	316	i 11 13	− 4	20 23	− 5	—	—	—
Sverdlovsk		81·4	329	i 12 20	0	e 22 30	− 1	—	—	—
Erevan		88·0	310	e 12 54	+ 1	—	—	—	—	—
Triest		110·0	317	e 17 55	[−38]	e 29 49	PPS	e 19 15	PP	—
Pasadena	Z.	111·5	55	e 18 19	[−17]	—	—	e 19 23	PP	e 53·3
Mount Wilson	Z.	111·6	55	e 19 22	PP	—	—	—	—	—
Riverside	Z.	112·2	55	e 19 25	PP	—	—	—	—	—
Palomar	Z.	112·7	56	e 19 32	PP	—	—	—	—	—
De Bilt		113·1	326	i 19 35	PP	—	—	—	—	e 59·1
Tucson		117·9	55	i 18 54	[+ 5]	—	—	e 21 11	?	e 57·5
St. Louis		130·7	40	i 23 25	?	—	—	e 24 39	PPP	—
Huancayo		151·4	124	e 19 55	[+ 5]	—	—	e 26 18	PPP	e 78·8
La Paz		153·8	141	i 19 58a	[+ 5]	23 13	SKP	i 21 7	pPKP	80·1
San Juan		159·8	43	e 20 59	[+58]	e 27 20	[+15]	—	—	e 60·5

Additional readings :—
Riverview iS_eS =17m.20s.
Kodaikanal eE =8m.41s., 12m.53s., and 14m.23s.
Hyderabad P given as S, S given as L.
Wellington i =21m.48s. and 27m.7s., S? =28m.25s., i =31m.5s.
New Delhi PSN =18m.8s., SSN =21m.42s.
Triest iPKP =21m.32s., epPKP =22m.58s., eSKS =27m.22s. : readings wrongly identified.
Long waves were also recorded at Copenhagen, Strasbourg, and Kew.

Nov. 2d. Readings also at 0h. (Collmberg), 1h. (New Delhi and near La Paz), 3h. and 4h. (Collmberg), 8h. (Riverview), 11h. (Collmberg), 17h. (La Paz), 22h. (near Belgrade), 23h. (Tucson, Palomar, Riverside, Mount Wilson, and Pasadena).

Nov. 3d. 14h. Undetermined shock.

Helwan ePNZ =56m.3s., SEN =56m.54s., S*E =57m.6s.
Ksara e =56m.20s., eS? =57m.18s.
Sofia ePEN =57m.6s., eEN =60m.48s. and 69m.12s.
Belgrade eP =57m.49s., e =60m.55s., 62m.51s., and 65m.2s.
Triest eP =58m.58s., eS? =63m.25s.
Chur eP =59m.13s.
Zürich iP =59m.19s.
Collmberg iZ =59m.27s., 59m.32s., 59m.39s., 59m.44s., and 60m.1s.
Basle eP =59m.28s.
Neuchatel eP =59m.29s.
Strasbourg iP =59m.34s., eS? =63m.32s.
Bucharest EN =60m.? and 63m.
Uccle eP =60m.18s.

Nov. 3d. 15h. 50m. 20s. Epicentre 36°·6N. 121°·3W. (as on 1944, June 7d.).

Intensity V 7½ miles north of Hollister. Epicentre 36°38′N. 121°15′W. (Berkeley).

A = −·4181, B = −·6876, C = +·5936 ; δ = −4 ; h = 0 ;
D = −·855, E = +·519 ; G = −·308, H = −·507, K = −·805.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Lick		0·8	339	i 0 17	− 1	i 0 28	− 3	i 0 21	S_g
Branner		1·1	319	i 0 22	0	i 0 36	− 3	—	—
Fresno	N.	1·2	84	e 0 24	0	i 0 39	− 2	—	—
Berkeley		1·5	329	i 0 27	− 1	i 0 46	− 3	e 0 34	P_g
San Francisco		1·5	322	e 0 31	+ 3	i 0 47	− 2	e 0 37	P_g

Additional readings :—
Berkeley iS_gEN = 0m.51s., iEN = 0m.57s.
San Francisco iS_gEN = 0m.50s.

Nov. 3d. 22h. 9m. 0s. Epicentre 59°·3N. 151°·1W.

Pasadena suggests deep focus.

A = −·4492, B = −·2480, C = +·8583 ; δ = −4 ; h = −9 ;
D = −·483, E = +·875 ; G = −·751, H = −·415, K = −·513.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		5·8	14	i 1 31	+ 2	e 2 31	− 7	i 1 41	P*	i 3·1
Sitka		8·5	97	i 2 4	− 3	—	—	i 2 32	P*	i 4·0
Victoria		19·4	111	4 28	− 2	i 8 18	+14	—	—	9·4
Grand Coulee		21·9	107	i 4 57	0	e 8 47	− 7	i 5 7	pP	e 11·1
Saskatoon		25·6	87	5 30	− 2	10 4	+ 5	—	—	13·0
Shasta Dam		25·9	123	i 5 35	0	e 10 6	+ 2	i 5 49	?	i 12·7
Butte		26·5	102	e 5 40	− 1	i 10 10	− 4	i 6 12	PP	e 13·0
Mineral	E.	26·5	122	e 5 42	+ 1	e 10 30	+16	e 5 56	pP	—
Ukiah		26·8	126	e 5 40	− 4	—	—	e 6 36	PP	e 11·6
Bozeman		27·5	101	e 6 5	+15	e 10 20	−10	e 9 38	?	e 12·1
Berkeley		28·3	126	e 5 57	0	10 46	+ 3	6 12	pP	13·4
Branner		28·7	126	e 6 0	− 1	e 10 46	− 4	—	—	e 12·5
Santa Clara		28·9	126	i 6 5	+ 2	i 11 52	+59	i 7 9	PPP	e 14·2
Lick		29·0	126	e 6 5	+ 1	—	—	e 6 28	pP	—
Fresno	N.	30·3	123	e 6 18	+ 3	—	—	e 6 32	pP	—
Salt Lake City		30·7	109	e 6 44	+25	e 11 17	− 4	i 7 1	PP	e 15·8
Tinemaha		30·7	121	i 6 20	+ 1	e 13 17	SSS	i 6 32	pP	—
Haiwee		31·6	121	e 6 28	+ 2	e 11 43	+ 8	—	—	—
Santa Barbara	Z.	32·3	125	i 6 33	0	—	—	i 9 22	P_cP	—
Rapid City		32·6	95	i 6 36	+ 1	e 11 50	− 1	i 7 29	PP	e 17·8
Overton		32·8	117	i 6 38	+ 1	e 13 3	+69	i 6 54	pP	—
Boulder City		33·1	118	i 6 40	0	e 12 1	+ 2	i 6 51	pP	—
Mount Wilson		33·2	124	i 6 40k	0	e 12 3	+ 3	i 6 54	pP	—
Pasadena		33·2	124	i 6 39k	− 1	i 12 1	+ 1	i 6 53	pP	e 14·6
Pierce Ferry		33·4	117	i 6 42	0	—	—	i 6 55	pP	—
Riverside		33·7	124	i 6 43k	− 2	e 12 8	0	i 6 55	pP	—
Palomar		34·4	123	i 6 51k	0	i 12 17	− 2	i 7 2	pP	—
La Jolla		34·7	124	i 6 54	0	i 12 28	+ 4	i 9 28	P_cP	—
Tucson		38·0	117	e 7 22	+ 1	e 13 7	− 7	i 7 38	pP	e 16·1
Honolulu		38·3	189	—	—	e 13 18	− 1	e 16 10	SS	e 17·6
Chicago		42·2	85	e 7 57	+ 1	e 13 47	−30	i 9 42	PP	e 17·5
Florissant		43·0	90	e 7 59	− 4	e 14 19	−10	i 9 53	PP	i 21·1
St. Louis	N.	43·2	90	i 8 1	− 3	i 14 21	−11	e 8 17	pP	i 21·8
Cape Girardcau	E.	44·5	91	e 8 12	− 3	—	—	i 10 9	PP	—
Ottawa		45·6	72	8 21	− 3	15 2	− 4	10 2	PP	22·0
Cincinnati		45·7	85	e 8 20	− 4	—	—	i 8 38	pP	—
Ivigtut		45·9	41	—	—	15 18	+ 7	19 5	SSS	23·0
Shawinigan Falls		46·2	69	8 25	− 3	15 12	− 3	—	—	23·0
Seven Falls		46·7	67	8 30	− 2	15 15	− 7	10 35	PP	22·0
Vladivostok		48·0	286	e 8 40	− 3	i 15 56	PPS	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Georgetown		49·7	79	i 8 53	− 3	e 16 20	PPS	11 6	PP	—
Fordham		49·8	75	i 8 55	− 1	i 16 0	− 6	i 10 52	PP	25·5
Philadelphia		49·8	77	e 9 6	+10	i 16 3	− 3	e 11 5	PP	e 24·7
Mobile		50·4	96	8 58	− 3	16 14	0	—	—	—
Columbia		51·5	87	e 9 9	0	e 16 22	− 7	e 11 23	PP	e 24·4
Halifax		51·9	65	—	—	e 16 6	−29	—	—	26·0
Irkutsk		53·3	312	e 9 13?	−10	16 52	− 2	—	—	—
Bergen		59·2	13	e 10 10	+ 5	—	—	e 19 50	S_cS	—
Upsala		60·9	7	e 10 17	0	e 18 26	− 8	e 12 45	PP	e 30·0
Aberdeen	N.	61·3	19	—	—	e 21 6	?	—	—	—
Sverdlovsk		61·5	341	i 10 19	− 2	i 18 38	− 4	—	—	—
Copenhagen		64·6	10	i 10 41	0	i 19 19	− 2	19 35	PS	30·5
Moscow		65·1	355	e 10 46	+ 1	19 21	− 6	—	—	—
Kew		67·1	19	e 11 14?	+17	e 19 46	− 5	e 13 40	PP	e 31·0
De Bilt		67·3	15	i 11 6	+ 7	e 19 50	− 4	i 13 27	PP	e 33·0
Uccle		68·5	17	e 11 7a	+ 1	e 20 5	− 3	e 11 18	pP	e 34·0
Collmberg	Z.	69·0	10	e 11 10	+ 1	—	—	e 13 25	PP	—
Jena		69·2	11	e 11 52	+42	—	—	e 12 4	?	—
Paris		70·1	18	e 11 17	+ 1	e 21 8	PPS	i 11 34	?	e 35·0
Prague		70·4	9	e 14 2	PP	e 20 37	+ 7	e 25 18	SS	—
Strasbourg		71·1	15	e 11 23	+ 1	i 20 36	− 2	e 14 10	PP	e 35·1
San Juan		71·8	84	e 11 21	− 5	e 20 41	− 5	i 21 44	S_cS	e 29·8
Basle		72·1	15	e 11 29	+ 1	—	—	—	—	—
Zürich		72·4	14	e 11 28	− 2	e 20 50	− 3	—	—	—
Neuchatel		72·5	15	e 11 29	− 1	—	—	—	—	—
Chur		73·0	13	e 11 34	+ 1	e 21 0	0	—	—	—
Andijan		74·0	326	e 11 41	+ 2	—	—	—	—	—
Tashkent		74·3	330	e 11 45	+ 4	e 21 13	− 2	—	—	—
Triest		74·7	11	i 11 47?	+ 4	e 21 11	− 8	e 12 17	pP	—
Belgrade		76·0	6	e 11 52	+ 1	e 21 30	− 4	25 50	SS	e 41·4
Bucharest		76·6	2	12 0?	+ 6	—	—	16 0?	?	—
Toledo		77·5	25	i 11 59	0	i 22 13	+23	—	—	—
Tortosa	N.	77·5	22	e 12 15	+16	e 22 59	PPS	—	—	—
Sofia		78·3	4	e 12 15	+12	e 21 57	− 2	—	—	e 46·0
Bogota		79·4	98	e 12 9	0	—	—	e 12 27	?	—
Erevan		80·0	347	e 12 21	+ 8	e 22 17	0	—	—	—
Granada		80·2	26	i 12 10a	− 4	i 22 18	− 1	23 0	sS	—
San Fernando	E.	80·2	28	e 17 20	PPP	e 22 20	+ 1	? 23 24	PPS	—
Malaga		80·4	26	i 12 16	+ 1	22 19	− 2	i 12 27	pP	43·1
New Delhi	N.	83·8	318	—	—	i 22 48	− 7	—	—	e 49·9
Ksara		87·1	354	e 12 56	+ 7	e 23 15	[0]	—	—	—
Helwan		91·2	358	e 13 9	+ 1	24 22	+17	16 51	PP	—
Huancayo		93·1	108	e 13 35	+18	e 24 10	−12	e 17 15	PP	e 39·8
Hyderabad	N.	93·6	313	e 16 43	PP	e 23 42	[−11]	e 25 44	PS	—
Bombay		94·2	318	—	—	e 23 57	[0]	—	—	—
Kodaikanal	E.	100·5	311	—	—	e 23 39	[−50]	e 32 35	SSP	45·7
La Paz	Z.	100·5	103	18 18k	PP	—	—	—	—	54·0
Riverview	E.	104·3	226	—	—	i 26 6	+10	e 33 18	SS	—

Additional readings :—
College iS? =2m.13s.
Butte e =5m.55s., 9m.2s., and 11m.45s.
Ukiah i =6m.5s.
Berkeley i =7m.1s., eN =12m.19s.
Fresno eN =7m.28s. and 9m.8s.
Rapid City eS =11m.36s., e =12m.33s.
Boulder City e =13m.24s.
Mount Wilson iP_cPZ =9m.22s., eZ =13m.1s., iS_cPZ =13m.25s.
Pasadena iPP =8m.10s., iP_cPZ =9m.23s., iZ =13m.4s., iS_cPZ =13m.24s., iS_cSNZ =17m.27s.
Riverside iP_cPZ =9m.24s., iZ =9m.34s., eZ =13m.4s., eS_cPZ =13m.25s.
Palomar eN =11m.10s., iS_cPZ =13m.29s., iS_cSN =17m.34s.
La Jolla iZ =7m.13s., eS_cPZ =13m.29s.
Tucson iPP =8m.58s., e =13m.21s.
Chicago i =8m.14s.
Florissant iPZ =8m.19s., eSSN =17m.47s.
St. Louis iPPN =9m.51s., iSSN =17m.48s.

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Cape Girardeau ePE =8m.27s.
Ottawa SS =18m.15s.
Cincinnati e =10m.14s., iPPP =10m.26s.
Seven Falls SS =18m.36s.
Fordham iPP? =10m.28s., i =16m.20s.
Philadelphia eS_cS =18m.39s., e =20m.17s.
Columbia e =9m.22s., eS_cS =19m.11s.
Upsala eE =17m.24s., eN =18m.10s.? and 19m.56s.
Copenhagen i =10m.53s., 19m.25s., SS =23m.36s.
Kew ePS? =19m.51s., ePPS?E =20m.7s., eS_cS?EN =20m.50s., eSS?N =24m.15s.?
De Bilt eSS =27m.0s.
Uccle esP =11m.23s., epPP =13m.51s., eSS?N =23m.59s., eSSSE =27m.55s.
Collmberg iZ =11m.22s., 11m.44s., 12m.5s., and 12m.24s., eZ =15m.33s.
Prague e =21m.23s.
Strasbourg isS? =21m.0s., eSS =25m.10s.
San Juan i =11m.42s.
Triest ePP =14m.39s., iS =21m.32s., esS =22m.28s.
Belgrade i =12m.4s.
Granada P_cP =12m.28s.
San Fernando iSE =22m.37s.
Malaga iP =12m.19s., i =12m.33s., iS =22m.42s.
Helwan SKSN =23m.36s., PSN =25m.27s.
Huancayo ePS =25m.50s.
Kodaikanal eE =26m.9s.
Riverview iN =26m.14s.
Long waves were also recorded at Seattle and Christchurch.

Nov. 3d. Readings also at 1h. (New Delhi), 2h. (Copenhagen), 4h. (Salt Lake City, St. Louis, Boulder City, Mount Wilson, Pierce Ferry, Pasadena, Riverside, Palomar, near Tucson, near Fort de France and near La Paz), 5h. (near San Juan and Bogota), 6h. (Overton and Pierce Ferry), 8h. (Pasadena, Palomar, Riverside, Pierce Ferry, Overton, Tucson (2), La Plata, and La Paz), 13h. (near Basle, Zürich, and Neuchatel), 17h. (near Andijan), 22h. (Collmberg, Bucharest, and near Mizusawa).

Nov. 4d. Readings at 0h. (near Berkeley, Fresno, Branner, Lick, San Francisco, and near Triest), 3h. (Tinemaha, Pasadena, Mount Wilson, Riverside, Palomar, Tucson, La Plata, Huancayo, and La Paz), 5h. (Bucharest), 11h. (Tucson, Palomar, Mount Wilson, Pasadena, and Tinemaha), 12h. (Tucson), 13h. (Frunse, near Tashkent, Andijan, and Stalinabad), 16h. (Pierce Ferry and Boulder City), 18h. (Tucson, La Paz, and near Balboa Heights), 22h. (near Tananarive).

Nov. 5d. Readings at 2h. (Sverdlovsk), 3h. (Uccle, De Bilt, Strasbourg, and Ksara), 4h. (Pehpei), 7h. (near Mizusawa), 11h. (near Andijan and Stalinabad), 13h. (near Sofia), 17h. (near Pierce Ferry, Overton, Boulder City, and near Tananarive), 20h. (Branner), 21h. (Huancayo, Mount Wilson, and Tinemaha).

Nov. 6d. Readings at 11h. (near Bogota), 18h. (Riverview), 19h. (Riverview and Uccle), 20h. (Christchurch), 21h. (near Zürich, Neuchatel, and near Ottawa).

Nov. 7d. 8h. Undetermined shock.

Brisbane eN =3m.4s. and 7m.24s.
Andijan eP =4m.41s., eS =13m.8s.
Stalinabad iP =4m.48s.
Tashkent eP =4m.52s., ePPP =8m.49s.
Sverdlovsk iP =5m.55s., iS =15m.30s.
Riverview eN =8m.28s., eZ =11m.47s., eLE =16·8m.
Moscow eS =17m.39s.
Long waves were also recorded at Copenhagen, Uccle, and Kew.

Nov. 7d. Readings also at 0h. (near Berkeley), 10h. (near Mizusawa), 13h. (near Tashkent, Andijan, and Stalinabad), 16h. (De Bilt and Uccle), 20h. (Collmberg, St. Louis, Tucson, Palomar, Riverside, Mount Wilson, Pasadena, Shasta Dam, Grand Coulee, and Mizusawa), 21h. (near Tacubaya), 23h. (Tucson, Palomar, Riverside, Ksara, and Helwan).

Nov. 8d. 9h. 5m. 25s. Epicentre 81°·5N. 15°·0W.

$A = +·1437$, $B = -·0385$, $C = +·9889$; $\delta = +6$; $h = -14$;
$D = -·259$, $H = -·966$; $G = +·955$, $H = -·256$, $K = -·149$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Reykjavik		17·5	192	e 3 35?	−32	i 7 5	−16	—	—	e 8·9
Bergen	N.	21·9	152	—	—	e 8 12	−42	—	—	—
Ivigtut		22·3	225	i 4 59a	− 2	9 6	+ 4	—	—	11·6
Upsala	E.	23·5	137	e 6 14	+62	e 10 26	+63	i 10 37	SS	—
	N.	23·5	137	e 6 10	+58	e 10 22	+59	i 10 58	SSS	e 12·7
Aberdeen		24·7	163	—	—	i 9 52	+ 8	—	—	13·5
Edinburgh		25·9	164	—	—	e 10 5	+ 1	—	—	—
Copenhagen		27·1	145	5 47	+ 1	10 22	− 2	12 5	SS	14·6
Moscow		29·9	115	e 6 11	− 1	e 11 9	0	—	—	—
De Bilt		30·2	154	—	—	e 11 35?	+22	—	—	—
Kew		30·5	161	i 6 16a	− 1	e 11 13	− 5	e 7 13	PP	e 14·4
Uccle		31·4	157	e 6 26	+ 1	e 11 41	+ 9	e 7 36	PP	e 18·6
Collmberg	Z.	31·6	146	e 6 28	+ 2	(e 11 53)	+18	—	—	—
College		31·7	325	e 6 30	+ 3	e 11 41	+ 4	—	—	e 18·1
Sverdlovsk		32·2	91	i 6 33	+ 1	i 11 48	+ 3	—	—	—
Prague		32·9	144	e 6 39	+ 1	e 12 1	+ 5	e 16 29	Q	e 19·6
Paris		33·3	159	e 6 43	+ 2	e 12 48	+46	e 8 13	PPP	e 15·4
Strasbourg		33·9	152	e 6 49	+ 2	e 12 10	− 1	e 7 46	PP	e 18·0
Basle		34·9	151	e 6 57	+ 2	e 13 1	+34	—	—	—
Zürich		35·1	152	e 6 57a	0	—	—	—	—	—
Triest		37·2	146	i 7 15	0	13 2	0	i 8 15?	PP	—
Sitka		37·6	310	—	—	e 13 23	+15	—	—	e 16·3
Belgrade		38·7	138	e 7 37	+10	e 16 20	SS	e 8 51	PP	e 24·0
Seven Falls		38·8	245	7 27	− 1	13 29	+ 3	17 21	SSS	20·6
Saskatoon		39·1	283	—	—	e 13 35	+ 4	—	—	19·6
Bucharest		39·6	132	—	—	16 35?	SS	—	—	—
Shawinigan Falls		39·6	246	7 33	− 2	13 45	+ 7	8 53	PP	21·6
Ottawa	N.	41·2	250	7 46	− 2	13 59	− 3	9 8	PP	20·6
Tortosa		41·2	161	—	—	e 14 21	+19	—	—	e 18·6
Toledo		41·9	167	i 7 56	+ 2	i 14 17	+ 4	—	—	—
Irkutsk		42·7	52	8 0	0	14 14?	−10	—	—	—
Lisbon	N.	43·0	173	—	—	14 11	−18	—	—	18·1
Harvard		43·4	244	i 8 4	− 2	—	—	—	—	e 24·6
Weston		43·5	244	i 8 8	+ 1	e 14 36	0	—	—	—
Granada		44·6	167	8 14k	− 2	14 54	+ 2	8 49	pP	25·7
Grand Coulee		44·9	294	e 8 16	− 2	i 14 56	0	e 17 59	SS	e 20·4
Victoria		45·0	297	—	—	e 15 5	+ 7	e 18 11	SS	22·6
Malaga	Z.	45·1	167	i 8 21	+ 1	e 15 22	+23	i 10 17	PP	21·2
San Fernando	E.	45·3	170	—	—	i 15 6	+ 4	i 17 46	SS	—
Fordham		45·4	246	i 8 22	0	e 15 1	− 3	i 18 27	ScS	e 22·6
Butte		45·9	287	—	—	e 15 29	+18	e 18 40	SS	e 23·5
Bozeman		46·0	284	e 15 16	S	(e 15 16)	+ 4	e 18 28	ScS	e 21·2
Erevan		46·1	113	e 8 31	+ 3	—	—	—	—	—
Chicago		46·4	261	—	—	i 15 24	+ 6	i 18 36	ScS	e 22·0
Philadelphia		46·4	247	—	—	i 15 22	+ 4	i 18 42	SS	e 24·0
Rapid City		46·5	277	e 8 45	+14	—	—	e 18 23	SS	i 21·0
Georgetown		47·7	249	i 8 41	+ 1	—	—	—	—	—
Cincinnati		48·5	257	i 8 44	− 2	e 16 15	+27	i 10 37	PP	—
Tashkent		48·6	88	e 8 35	−12	—	—	—	—	—
Lincoln		48·7	270	—	—	—	—	e 19 2	SS	e 21·7
Andijan		49·6	85	e 8 58	+ 3	—	—	—	—	—
Florissant		49·7	263	i 8 53	− 3	i 15 56	− 8	i 10 48	PP	e 23·8
St. Louis		49·9	263	e 8 56	− 1	e 15 59	− 8	i 10 48	PP	e 24·1
Logan		50·0	284	—	—	e 16 17	+ 8	e 18 43	SS	e 24·2
Ksara		51·2	124	e 9 11	+ 4	e 16 15	−10	—	—	—
Shasta Dam		52·5	295	e 9 14	− 3	—	—	—	—	e 27·4
Columbia		53·1	252	—	—	e 16 50	− 1	e 20 35	SS	e 23·2
Helwan		54·6	130	e 10 35	+63	e 19 25	?	—	—	—
Tinemaha		55·5	289	i 9 40	+ 1	—	—	—	—	—
Pierce Ferry		55·8	285	e 9 41	0	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Boulder City		56·1	286	e 10 1	+18	—	—	—	—	e 28·9
Haiwee		56·4	290	e 9 45	0	—	—	—	—	—
Mount Wilson		58·3	289	i 9 57	− 2	—	—	—	—	—
Pasadena		58·4	289	e 9 57	− 3	—	—	—	—	e 30·2
Riverside	Z.	58·4	289	i 10 7	+ 7	—	—	—	—	—
Palomar	Z.	59·0	287	i 10 4	0	—	—	—	—	—
Tucson		59·2	281	i 10 3	− 2	e 18 23	+11	e 12 27	PP	e 26·3
New Delhi	N.	62·2	83	—	—	i 18 50	− 1	—	—	—
Tacubaya	E.	70·1	267	e 11 15	− 1	—	—	—	—	e 37·1
Bombay	N.	71·1	89	e 11 27	+ 5	e 20 51	+13	—	—	—
Hyderabad	N.	73·4	83	11 30	− 6	21 1	− 4	14 17	PP	—
Bogota		81·1	240	e 12 18	0	—	—	e 15 19	PP	—
Huancayo		97·6	239	—	—	e 24 21	[+ 6]	e 31 25	SS	e 45·2
La Paz	Z.	101·2	231	i 17 59a	PP	—	—	—	—	52·6

Additional readings :—
Upsala iN =10m.29s., eE =11m.47s., eN =12m.20s.
Kew eSSZ =12m.39s., iE =13m.5s., eSSSEZ =13m.29s., eE =13m.55s.
Uccle e =8m.1s.
Collmberg iZ =6m.31s., 6m.35s., 6m.41s., and 6m.55s., eZ =7m.53s., 8m.44s., and 9m.17s., ePPZ =9m.43s., eZ =9m.53s. and 10m.4s., eSKSZ =16m.54s., eZ = 17m.8s., ePSZ =17m.52s., eZ =18m.8s., ePPSZ =18m.49s., eZ =22m.41s., eSSZ = 23m.57s., eSSS?Z =27m.35s., ePKP,PKPZ =32m.9s.; phases wrongly identified ; true S is given as PPP.
Paris eSS =13m.47s.
Strasbourg ePPP =8m.16s., eSS =14m.24s., eSSS? =15m.35s.
Triest iP_cP? =9m.27s.
Belgrade e =11m.13s., eP_cS =13m.40s., e =19m.38s.
Ottawa SSSN =17m.5s.
Malaga P_cPZ =9m.43s., PPPZ =11m.0s., S_cPZ =13m.30s., PSZ =15m.51s.
San Fernando eSSSE =19m.4s.
Cincinnati iSS =19m.17s.
Florissant iSSN =19m.31s.
St. Louis eSSN =19m.30s.
Shasta Dam iP =9m.24s.
Helwan eZ =11m.38s., eE =17m.13s.
Tucson e =12m.9s., eS_cS =20m.1s.
Tacubaya iPN =11m.19s.
Hyderabad PSN =21m.27s.
Long waves were also recorded at Kodaikanal, San Juan, Riverview, and other American stations.

Nov. 8d. 10h. 2m. 38s. Epicentre 81°·5N. 15°·0W. (as at 9h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Reykjavik	N.	17·5	192	e 3 22?	−45	i 6 16	−65	—	—	6·7
Ivigtut		22·3	225	5 2	+ 1	9 8	+ 6	—	—	11·4
Upsala		23·5	137	e 6 15	+63	i 10 31	+68	e 10 50	SS	e 13·4
Edinburgh		25·9	164	—	—	e 9 50	−14	—	—	—
Copenhagen		27·1	145	5 44	− 2	10 24	− 1	12 36	Q	15·9
Moscow		29·9	115	e 6 30	+18	e 11 29	+20	—	—	—
De Bilt		30·2	154	—	—	(e 12 22?)	+69	—	—	e 12·4
Kew		30·5	161	i 8 23	?	e 11 19	+ 1	—	—	e 17·5
Collmberg	Z.	31·6	146	i 6 29	+ 3	e 11 32	− 3	e 7 36	PP	e 17·8
College		31·7	325	e 6 28	+ 1	e 11 42	+ 5	e 7 31	PP	e 19·1
Sverdlovsk		32·2	91	i 6 34	+ 2	i 11 49	+ 4	—	—	—
Prague		32·9	144	e 6 39	+ 1	e 13 16	SS	—	—	e 15·4
Paris		33·3	159	—	—	e 13 32?	SS	—	—	—
Strasbourg		33·9	152	e 7 22	+35	e 12 0	−11	—	—	17·2
Triest		37·2	146	i 7 16	+ 1	—	—	e 7 37	pP	e 16·4
Sitka		37·6	310	—	—	—	—	e 8 54	PP	e 17·8
Belgrade		38·7	138	e 7 28k	+ 1	e 13 43	+18	e 16 15	SS	e 25·9
Seven Falls		38·8	245	7 27	− 1	—	—	e 16 4	SS	20·4
Saskatoon		39·1	283	—	—	e 13 34	+ 3	—	—	19·4
Shawinigan Falls		39·6	246	7 33	− 2	—	—	e 8 52	PP	21·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ottawa		41·2	250	7 46	− 2	14 6	+ 4	9 10	PP	20·4
Toledo		41·9	167	e 7 55	+ 1	—	—	9 23	PP	24·4
Irkutsk		42·7	52	7 59	− 1	—	—	—	—	—
Harvard		43·4	244	e 8 5	− 1	—	—	e 9 53	PP	e 24·4
Weston		43·5	244	e 8 6	− 1	e 14 37	+ 1	—	—	—
Granada		44·6	167	e 10 44 k	?	e 18 1	?	—	—	—
Grand Coulee		44·9	294	e 8 17	− 1	e 15 1	+ 5	e 9 53	PP	e 24·5
Victoria		45·0	297	—	—	e 15 4	+ 6	e 18 52	SS	23·4
Malaga	Z.	45·1	167	i 8 21	+ 1	e 15 32	+33	10 15	PP	24·0
San Fernando	E.	45·3	170	—	—	i 15 26	+24	i 20 7	SSS	e 22·9
Fordham		45·4	246	i 8 20	− 2	e 15 3	− 1	e 10 9	PP	e 22·9
Bozeman		46·0	284	—	—	e 15 12	0	e 18 25	S_cS	e 21·0
Erevan		46·1	113	e 8 33	+ 5	—	—	—	—	—
Chicago		46·4	261	i 8 29	− 1	e 15 16	− 2	e 18 24	S_cS	e 21·2
Philadelphia		46·4	247	e 8 34	+ 4	i 15 25	+ 7	(e 18 37)	S_cS	e 18·6
Rapid City		46·5	277	e 8 42	+11	—	—	(e 18 47)	S_cS	e 18·8
Georgetown		47·7	249	i 8 40	0	i 15 48	+12	—	—	—
Tashkent		48·6	88	e 8 50	+ 3	—	—	—	—	—
Andijan		49·6	85	e 8 58	+ 3	—	—	—	—	—
Florissant		49·7	263	e 8 55	− 1	i 16 14	+10	i 10 48	PP	e 23·4
St. Louis		49·9	263	e 9 3	+ 6	e 16 0	− 7	i 10 51	PP	e 24·5
Logan		50·0	284	e 11 1	PP	e 19 1	S_cS	—	—	e 24·5
Ksara		51·2	124	e 9 10	+ 3	e 16 18	− 7	—		—
Shasta Dam		52·5	295	e 9 14	− 3	—	—	—	—	e 27·4
Columbia		53·1	252	—	—	e 16 42	− 9	—	—	e 22·3
Vladivostok		54·4	30	i 9 37	+ 6	e 17 10	+ 1	—	—	—
Helwan		54·6	130	e 9 33	+ 1	e 17 14	+ 3	e 12 27	PPP	—
Tinemaha		55·5	289	i 9 38	− 1	—	—	—	—	—
Overton		55·5	286	e 9 43	+ 4	—	—	—	—	—
Pierce Ferry		55·8	285	i 9 41	0	—	—	—	—	—
Boulder City		56·1	286	e 9 42	− 1	e 17 28	− 4	i 12 33	PP	—
Haiwee	E.	56·4	290	e 9 45	0	—	—	—	—	—
Mount Wilson		58·3	289	i 10 7	+ 8	—	—	—	—	—
Pasadena		58·4	289	i 9 58	− 2	—	—	—	—	e 30·5
Riverside	Z.	58·4	289	i 10 2	+ 2	—	—	—	—	—
Palomar	Z.	59·0	287	i 10 1	− 3	—	—	—	—	—
Tucson		59·2	281	i 10 3	− 2	e 18 2	−10	i 12 14	PP	e 29·9
New Delhi	N.	62·2	83	—	—	i 18 53	+ 2	i 26 13	SSS	—
Tacubaya		70·1	267	e 11 11	− 5	i 20 30	+ 3	i 14 12	PP	e 37·1
Bombay	N.	71·1	89	e 11 33	+11	e 20 51	+13	—	—	—
Bogota		81·1	240	i 12 17	− 1	—	—	i 15 11	PP	—
Huancayo		97·6	239	—	—	e 24 24	[+ 9]	—	—	e 43·7
La Paz	Z.	101·2	231	18 0	PP	—	—	—	—	57·4

Additional readings :—
Upsala eSSSE =11m.55s., iE =12m.5s.
Kew eS?Z =13m.36s.
Collmberg iZ =6m.32s. and 6m.46s., eZ =8m.8s., iZ =9m.24s., eZ =9m.38s.
Belgrade e =10m.20s.
Seven Falls e =16m.55s.
Ottawa SSN =17m.4s.
Grand Coulee e =11m.0s.
Victoria eN =20m.16s.
Malaga P_cPZ =9m.38s., PPPZ =11m.15s., PSZ =15m.57s., S_cS =17m.45s., SSZ = 18m.51s.
Fordham iSS =18m.23s.
Florissant iSSN =19m.28s.
St. Louis eSSN =19m.15s.
Shasta Dam iP =9m.17s.
Pasadena iZ =10m.7s. and 10m.24s.
Riverside iZ =10m.20s.
Palomar iZ =10m.32s. and 10m.41s.
Tucson ePPP =13m.37s., e =20m.44s.
Tacubaya eN =12m.44s., eE =12m.50s.
Long waves were also recorded at Lisbon, San Juan, Riverview, Wellington, and other American stations.

Nov. 8d. 20h. 9m. 16s. Epicentre 37°·3N. 121°·7W. (as on 1945 Aug. 27d.).

A = −·4190, B = −·6784, C = +·6034; δ = −12; h = −1;
D = −·851, E = +·525; G = −·317, H = −·513, K = −·797.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lick		0·0	—	i 0 6	− 1	i 0 9	− 2	—	—	—
Santa Clara		0·2	284	i 0 9	− 1	i 0 19	+ 3	—	—	—
Branner		0·4	287	i 0 13	0	—	—	—	—	—
Berkeley		0·7	321	i 0 18	+ 1	i 0 31	+ 3	—	—	—
San Francisco		0·7	308	i 0 18	+ 1	i 0 32	+ 4	—	—	—
Fresno	N.	1·6	110	i 0 26	− 4	i 0 43	− 8	—	—	—
Tinemaha		2·7	94	i 0 47	+ 2	i 1 21	+ 2	—	—	—
Mineral	E.	3·1	2	e 0 58	P*	e 1 28	S*	—	—	—
Haiwee		3·2	111	e 0 52	0	i 1 37	+ 5	—	—	—
Shasta Dam		3·4	351	e 0 58	+ 3	e 1 37	0	—	—	e 2·1
Mount Wilson	z.	4·2	136	i 1 7	0	i 2 4	S*	—	—	—
Pasadena	z.	4·2	137	i 1 15	P*	i 2 3	S*	—	—	—
Riverside	z.	4·9	133	i 1 14	− 3	—	—	—	—	—
Boulder City		5·7	102	e 1 43	P*	e 3 2	S_g	—	—	—
Overton		5·9	96	e 1 35	P*	2 34	− 6	i 1 50	P_g	—
Pierce Ferry		6·3	99	e 1 32	− 4	e 1 56	P*	—	—	e 3·7
Tucson		10·3	117	—	—	e 5 25	S_g	—	—	—

Fresno gives also iN = 29s. and 46s., eN = 2m.20s. and 3m.3s.

Nov. 8d. Readings also at 0h. (Irkutsk, Vladivostok, Zi-ka-wei, Fresno, near Berkeley, Branner, Lick, and San Francisco), 1h. (Christchurch, Bombay, New Delhi, Sverdlovsk, Copenhagen, Collmberg, De Bilt, Uccle, Paris, Strasbourg, Tucson, and La Paz), 2h. (Mount Wilson, Pasadena, Riverside, Palomar, Tinemaha, Tucson, Overton, Pierce Ferry, Shasta Dam, St. Louis, La Paz (2), and La Plata), 3h. (Tacubaya and near Erevan), 4h. (Ksara), 6h. (near Mizusawa), 7h. (Christchurch and Riverview), 8h. (Collmberg and Santa Clara), 10h. (Pasadena, Riverside, Tinemaha, and Tucson), 11h. (Boulder City, Overton, Pierce Ferry, Tucson, and Collmberg), 13h. (Boulder City, Overton, Pierce Ferry, Tucson, and Tacubaya), 14h. (near Malaga (2)), 17h. (Tucson and near Stalinabad), 19h. (Andijan and Stalinabad), 21h. (Tucson, near Balboa Heights, near Ottawa and near Erevan), 22h. (Belgrade), 23h. (Harvard, Tucson, Fort de France, and near San Juan).

Nov. 9d. Readings at 0h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, and near Bogota), 4h. (Irkutsk, Vladivostok, Tashkent, Zi-ka-wei, Pehpei, and Uccle), 10h. (Ksara), 12h. (La Paz), 13h. (Palomar, Tinemaha, St. Louis, Tucson), 18h. (near Bogota), 20h. (Christchurch, Brisbane, Riverview, Kodaikanal, and New Delhi), 23h. (near Huancayo).

Nov. 10d. 6h. 40m. 17s. Epicentre 46°·3N. 7°·4E (as on 1942 Oct.30d.).

Intensity 5—6·5 at Montana, Sierra, and Sion in Central Valais.

Frederick Montandon.
"Les Trois récents séismes du Valais Central." Extract from La Revue pour l'étude des Calamities, tome IX, fasc. 24, pp. 50-66. Geneva, 1946.

E. Wanner.
Jahresbericht des Erdbebendienstes der Schweiz im Jahre, 1945. Zürich, 1946, p. 2. Isoseismic chart, plate 4, page 16. Forerunner of shocks in 1946.

A = +·6875, B = +·0893, C = +·7206; δ = −10; h = −4;
D = +·129, E = −·992; G = +·715, H = +·093, K = −·693.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Neuchatel		0·7	336	i 0 15	− 2	e 0 27	− 1	—	—
Besançon		1·3	314	e 0 28	+ 3	e 0 46	+ 2	—	—
Basle		1·3	6	e 0 24	− 1	i 0 41	− 3	—	—
Zurich		1·3	37	i 0 25$_s$	0	e 0 44	0	—	—
Chur		1·6	69	e 0 29	− 1	e 0 51	0	—	—
Strasbourg		2·3	6	e 0 48	P_g	e 1 11	+ 2	e 1 15	S*
Uccle		4·9	337	—	—	e 2 23	+ 8	e 2 48	S_g
Collmberg	z.	6·2	34	e 1 51	P*	i 3 26	S_g	e 2 4	P_g

For Notes see next page.

NOTES TO NOVEMBER 10d. 6h. 40m. 17s.

Additional readings :—
Neuchatel e =0m.18s.
Strasbourg iS_g =1m.19s.
Collmberg iZ =2m.11s., 3m.21s., and 3m.36s.

Nov. 10d. Readings also at 0h. (Bogota, La Paz, Pierce Ferry, St. Louis, Mount Wilson, Pasadena, Palomar, Tucson, and Riverside), 1h. (Mount Wilson, Palomar, Tucson, and near Andijan), 2h. (Collmberg), 5h. (La Paz), 8h. (near Andijan), 9h. (St. Louis and near Andijan (2)), 10h. (Triest (2)), 12h. (Tucson), 14h. (Triest), 16h. (near La Paz), 17h. (Arapuni, Christchurch, Wellington, Riverview, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 19h. (Collmberg, Paris, Strasbourg, Uccle, Haiwee, La Jolla, Mount Wilson (2), Pasadena (2), Palomar (2), Riverside (2), Tinemaha (2), Tucson (2), Boulder City, Pierce Ferry, Grand Coulee, Shasta Dam, Florissant, St. Louis, Arapuni, Christchurch, Wellington, Riverview, and near Apia), 20h. (Riverview, Wellington, and Kew), 21h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Boulder City, Pierce Ferry, Shasta Dam, and Grand Coulee), 22h. (Wellington (3), Riverview, Huancayo, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Sitka, Florissant, St. Louis, and Collmberg), 23h. Haiwee, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Boulder City, Pierce Ferry, Grand Coulee, Shasta Dam, Florissant, St. Louis, Collmberg, and Paris).

Nov. 11d. 9h. 22m. 12s. Epicentre 6°·2S. 151°·5E. (as on 1944, December 27d.).

A = −·8738, B = +·4744, C = −·1073 ; δ = +10 ; h = +7 ;
D = +·477, E = +·879 ; G = +·094, H = −·051, K = −·994.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	21·2	176	i 4 54	+ 5	i 8 54	+13	—	—	i 11·5
Riverview		27·4	180	i 6 6a	+17	e 10 26	− 2	—	—	e 14·3
Wellington		40·6	153	13 37	S	(13 37)	−17	16 44	SS	20·7
Christchurch		41·6	157	8 3	+12	14 12	+ 4	17 15	SS	20·8
Perth		42·0	228	—	—	—	—	i 17 22	SS	i 22·3
Hyderabad	N.	75·8	290	—	—	13 47	PP	—	—	—
New Delhi	N.	79·3	301	—	—	e 21 52	−17	—	—	—
Bombay		81·4	290	e 11 35	−45	—	—	e 15 29	PP	—
Sitka		86·3	32	—	—	i 23 24	+ 4	—	—	e 38·8
Tashkent		88·2	312	e 12 50	− 4	e 23 48	+10	—	—	—
Shasta Dam		91·1	50	e 12 5	−63	—	—	—	—	—
Victoria		91·3	42	—	—	33 48	SSS	—	—	44·8
Pasadena		93·7	56	i 13 18	− 2	—	—	—	—	e 43·1
Mount Wilson	z.	93·8	56	i 13 18	− 2	—	—	—	—	—
Tinemaha	z.	93·9	53	i 13 18	− 3	—	—	—	—	—
La Jolla	z.	94·4	57	e 13 43	+20	—	—	—	—	—
Riverside	z.	94·4	56	e 13 20	− 3	—	—	—	—	—
Palomar		94·7	57	e 13 23	− 1	—	—	—	—	—
Tucson		99·7	58	e 13 55	+ 8	—	—	—	—	e 45·5
Strasbourg		127·8	330	—	—	—	—	e 39 9	SSS	—

Additional readings :—
Riverview iN =10m.39s. and 11m.5s.
Wellington i =17m.21s., iZ =17m.34s., S =18m.29s. ; phases wrongly identified.
Christchurch e?N =5m.22s.
Pasadena iZ =13m.41s.
Mount Wilson iZ =13m.37s.
Tinemaha iZ =13m.41s.
Riverside iZ =13m.33s.
Palomar eZ =13m.40s.
Long waves were also recorded at Auckland, College, Ukiah, and other European stations.

Nov. 11d. Readings also at 0h. (Mizusawa), 2h. and 4h. (near La Paz), 7h. (Bucharest), 8h. (Tucson (2) and Collmberg), 12h. (Pasadena, Palomar, Riverside, Haiwee, Tinemaha, and Tucson), 13h. (near Tortosa), 14h. (Toledo), 15h. (De Bilt, Uccle, Copenhagen, Strasbourg, Irkutsk, Vladivostok, Tashkent, near Andijan (2), and Frunse), 18h. (Bucharest and near Andijan), 19h. (Triest and Basle), 20h. (Bogota), 23h. (Bucharest).

Nov. 12d. 7h. 18m. 14s. Epicentre 42°·8N. 17°·9E. (as on 1942 May 18d.).

Intensity V at Majkovic with several aftershocks.

J. Mihailovic
"Annuaire de l'Institut séismologique de Beograd microséismique et macroséismique, 1945." Belgrade 1950, pp. 28 and 38. Epicentre adopted.

$A = +·7004$, $B = +·2262$, $C = +·6770$; $\delta = +6$; $h = -3$;
$D = +·307$, $E = -952$; $G = +·644$, $H = +·208$, $K = -·736$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Belgrade		2·8	42	e 0 42	− 5	—	—	i 0 51	P*
Sofia		4·0	89	1 28	P_g	i 2 11	S_g	—	—
Triest		4·1	316	e 1 31	P_g	e 2 23	S_g	—	—
Zürich		8·0	308	e 2 13	P*	e 3 25	− 8	—	—
Basle		8·7	307	e 2 13	+ 3	—	—	—	—
Collmberg	z.	9·1	340	e 2 17	+ 3	e 4 6	+ 6	i 5 7	S_g

Additional readings:—
Belgrade i = 1m1s.., iS_g = 1m.5s.
Triest iP_g = 1m.37s.
Collmberg iZ = 4m.41s.

Nov. 12d. Readings also at 5h. (near Balboa Heights (2)), 6h. (Mount Wilson, Riverside and Tinemaha), 8h. (near Stalinabad), 9h. (near Sitka), 11h. (Edinburgh and near Collmberg (2)), 15h. (near Tacubaya and near Huancayo), 16h. (Granada, near Berkeley and Lick), 18h. (near Sofia and near Granada), 19h. (near Tacubaya), 20h. (Mount Wilson, Riverside and Tucson), 21h. (Riverview, Mount Wilson, Riverside, Palomar and Tucson), 23h. (Sofia).

Nov. 13d. 1h. 12m. 4s. Epicentre 37°·6N. 121°·9W. (as on 1943 April 15d.).

Epicentre 37°38′N. 121°49′W. (Berkeley).

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

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Branner	0·3	231	i 0 11	0	i 0 16	− 2	—	—	—
Lick	0·3	138	i 0 10	− 1	i 0 16	− 2	i 0 14	S*	—
Santa Clara	0·3	189	i 0 13	+ 2	i 0 18	0	—	—	—
Berkeley	0·4	313	i 0 12	− 1	i 0 20	− 1	i 0 17	S*	—
San Francisco	0·4	291	e 0 13	0	i 0 22	+ 1	i 0 17	S*	—
Shasta Dam	3·1	353	i 0 55	+ 4	e 1 34	+ 5	—	—	—
Overton	6·1	100	e 1 33	− 1	—	—	—	—	—
Pierce Ferry	6·5	101	i 1 44	+ 5	—	—	—	—	—
Tucson	10·5	117	e 2 30	− 5	—	—	—	—	e 5·9

Berkeley gives also iEN = 0m.26s., eE = 1m.4s.

Nov. 13d. 2h. 46m. 36s. Epicentre 8°·3S. 79°·8W. (as on 1937 June 21d.).

Maximum intensity IV at Cutervo. Felt over 57000 sq. kms. Epicentre about 7°·5S. 79°·0W.

E. Silgado.
Datos sismológicas del Perú, 1944—1945.
Instituto geológico del Perú, Bol. 3, Lima 1946, p. 23.

$A = +·1753$, $B = -·9740$, $C = -·1434$; $\delta = -3$; $h = +7$;
$D = -·984$, $E = -·177$; $G = -·025$, $H = +·141$, $K = -·990$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		5·8	131	e 1 25	− 4	e 1 56	P_g	e 1 42	P*	i 2·3
La Paz	z.	14·0	127	3 21	− 1	6 17	+18	—	—	7·4
Bogota		14·1	24	i 3 28	+ 5	i 6 23	+21	i 3 38	PP	—
St. Louis		47·7	350	i 8 40	0	e 15 35	− 1	e 8 59	pP	—
Tucson		50·0	326	i 9 0	+ 2	—	—	—	—	e 26·0
La Jolla	z.	54·3	321	e 9 45	+15	—	—	—	—	—
Palomar	z.	54·4	322	i 9 33	+ 2	—	—	—	—	—
Pierce Ferry		54·7	326	i 9 35	+ 2	—	—	—	—	—
Boulder City		55·0	325	e 9 38	+ 3	—	—	—	—	—
Riverside	z.	55·1	322	i 9 37	+ 1	—	—	e 10 50	P_cP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mount Wilson	z.	55·7	322	i 9 42	+ 2	—	—	—	—	—
Pasadena		55·7	322	i 9 42	+ 2	—	—	e 9 55	pP	—
Shasta Dam		62·6	324	i 10 26	− 2	—	—	—	—	—
Grand Coulee		65·8	333	e 10 46	− 3	—	—	i 10 51	?	—
Malaga	z.	83·4	52	i 12 28	− 2	—	—	e 12 41	P_cP	—
Toledo	z.	84·5	49	i 12 33	− 3	—	—	—	—	—

Additional readings—:
Huancayo i=1m.31s. and 2m.0s.
Bogota i=4m.11s., iSS=6m.37s., i=7m.15s.
St. Louis esSN=16m.4s.
Tucson i=9m.12s., and 9m.31s.
Palomar iZ=9m.47s., and 9m.56s.
Riverside eZ=9m.49s., iZ=10m.6s., eZ=13m.1s.
Pasadena iZ=10m.6s.

Nov. 13d. 21h. 28m. 20s. Epicentre 42°·8N. 17°·9E. (as on 12d.).

Intensity V at Metkovic.
Epicentre 43°3′N. 17°37′E. Macroseismic radius 21km.

Prof. J. Mihailovic.
Annuaire de l'Institut séismologique de Beograd, microséismique et macroséismique, 1945, Beograd 1950, p. 39 and p. 28.

A = +·7004, B = +·2262, C = +·6770; δ = +6; λ = −3;
D = +·307, E = −·952; G = +·644, H = +·208, K = −·736.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Belgrade		2·8	42	e 0 44k	− 3	i 1 22	0	e 0 50	P*
Sofia		4·0	89	e 1 13	P*	—	—	—	—
Triest		4·1	316	e 1 5	0	e 1 46	− 9	e 1 32	P_g
Chur		7·2	307	—	—	e 3 12	− 1	—	—
Zürich		8·0	308	e 1 56	− 4	e 3 31	− 2	—	—
Basle		8·7	307	e 2 1	− 9	e 3 52	+ 2	—	—
Neuchatel		8·8	302	—	—	e 3 33	−20	—	—
Collmberg	z.	9·1	340	e 2 19	+ 5	e 3 50	−10	i 4 42	S*
Strasbourg		9·1	313	—	—	e 3 53	− 7	—	—

Additional readings:—
Belgrade eSS=1m.4s., iSS=1m.27s.
Collmberg eZ=3m.12s., and 3m.30s., iZ=4m.17s.

Nov. 13d. Readings also at 2h. (Saskatoon), 7h. (Riverview, La Paz and La Plata), 9h. (St. Louis, Florissant, Bozeman, Butte and Grand Coulee), 11h. (Bucharest), 13h. (near Tacubaya), 14h. (Mizusawa), 19h. (Tucson, Riverside, Riverview, Auckland, Wellington and Christchurch), 20h. (Collmberg, Tucson, Riverside, Palomar and Mount Wilson), 21h. (Tucson (2), near Cape Girardeau, St. Louis, Florissant, near Basle, Zürich and Neuchatel),

Nov. 14d. Readings at 0h. (Helwan, Ksara, and Tashkent), 1h. (Sofia), 3h. (Tucson), 4h. (Mizusawa), 10h. (Mount Wilson, Palomar, Riverside, Tucson, Grand Coulee, Chicago and near Sitka), 12h. (Sverdlovsk), 14h. (Tuscon, near Boulder City, Overton, and Pierce Ferry), 15h. (near Oaxaca), 16h. (near Andijan), 18h. (near Granada and Malaga), 22h. (near Almeria and Malaga).

Nov. 15d. 1h. Epicentre between Fiji and New Zealand.

Auckland P=39m.9s., S=42m.20s., L=43m.0s.
Wellington PZ=40m.17s., iZ=40m.52s., i=43m.37s., iZ=43m.57s., S?Z=45m.43s., L=47m.43s.
Brisbane iPEZ=40m.37s., iSE=44m.37s.
Christchurch PZ=40m.49s., SEN=44m.38s., LZ=46m.32s.
Riverview iPZ=41m.6s.a, iPPZ=41m.58s., eSN=45m.43s., iE=46m.14s., eLN=47·4m.
Riverside eZ=48m.1s.
Palomar eZ=48m.8s.
Tucson e=48m.12s., and 48m.20s., eS=60m.18s., eL=75m.52s.
Collmberg eZ=55m.22s.
Long waves were also recorded at Arapuni and Pasadena.

Nov. 15d. 15h. 58m. 19s. I } Epicentre 3°·5N. 83°·0W.
21h. 51m. 49s. II }

Rough.

A = +·1216, B = −·9908, C = +·0606; δ = +14; h = +7;
D = −·993, E = −·122; G = +·007, H = −·060, K = −·998.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
I	Balboa Heights	6·4	32	i 1 31	− 7	e 2 38	−15	—	—	—
II		6·4	32	i 1 32	− 6	—	—	—	—	—
II	Bogota	9·0	83	e 2 9	− 4	e 4 9	+11	—	—	—
I	Huancayo	17·2	154	e 4 10	+ 7	e 7 52	SS	—	—	e 8·8
II		17·2	154	i 4 8	+ 5	i 7 37	SS	—	—	i 8·6
I	San Juan	22·2	47	e 4 56	− 4	e 8 44	−16	—	—	e 9·0
II		22·2	47	e 4 47	−13	e 9 3	+ 3	—	—	e 12·5
I	La Paz	24·7	143	i 5 26	+ 2	11 3	SSS	—	—	15·7
II		24·7	143	i 5 28k	+ 4	i 10 31	SS	—	—	14·7
II	St. Louis	35·6	350	e 7 2	+ 1	—	—	—	—	e 14·8
I	Tucson	38·7	321	e 7 26	− 1	—	—	—	—	e 21·2
II		38·7	321	i 7 26	− 1	—	—	—	—	e 20·9
I	Palomar	43·4	317	e 8 6	0	—	—	—	—	—
II		43·4	317	i 8 6	0	—	—	—	—	—
I	Riverside z.	44·1	317	e 8 10	− 2	—	—	—	—	—
II	z.	44·1	317	e 8 11	− 1	—	—	—	—	—
I	Mount Wilson z.	44·7	317	i 8 16	0	—	—	—	—	—
II	z.	44·7	317	i 8 16	0	—	—	—	—	—
I	Pasadena z.	44·7	317	e 8 17	+ 1	—	—	—	—	—
II		44·7	317	e 8 15	− 1	—	—	—	—	—

Additional readings :—
Huancayo I e = 5m.40s.
San Juan II iP = 4m.58s.
Tucson II e = 7m.59s.
Palomar I iZ = 8m.27s.
Long waves to shock II were also recorded at Uccle and Wellington.

Nov. 15d. Readings also at 0h. (Andijan, Tashkent, and near Stalinabad), 2h. (Tucson), 3h. (Collmberg), 12h. (Riverview, Bombay, Hyderabad, Kodaikanal, Kew, and Fort de France), 13h. (De Bilt, Copenhagen, Uccle, Strasbourg, and Tucson), 15h. (near Granada), 22h. (Huancayo, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Tucson, and Shasta Dam), 23h. (Andijan, Stalinabad, Frunse, Tashkent, and Uccle).

Nov. 16d. 18h. 2m. 17s. Epicentre 58°·4N. 137°·4W.

Felt at Sitka. Annales de l'Institut de Physique du Globe de Strasbourg 2e partie. Seismology, tome X, Strasbourg, 1951, p. 37.
Epicentre 57°·7N. 135°·8W. (U.S.C.G.S.). 58°N. 136°·5W. (Gutenberg).

A = −·3876, B = −·3564, C = +·8501; δ = −8; h = −8;
D = −·677, E = +·736; G = −·626, H = −·575, K = −·527.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m,
Sitka	1·4	127	i 0 27	0	i 0 45	− 1	—	—	—
College	8·2	327	e 2 16	+13	e 3 40	+ 2	—	—	e 4·1
Victoria	12·9	134	e 3 5	− 2	(5 43?)	+10	—	—	5·7
Seattle	14·0	133	—	—	e 5 58	− 1	—	—	e 6·6
Grand Coulee	15·2	126	i 3 37	− 1	e 6 57	+29	—	—	i 7·7
Spokane	16·1	123	e 3 48	− 1	e 6 50	+ 1	—	—	—
Saskatoon	18·5	97	4 29	+10	e 7 52	+ 8	—	—	9·2
Butte	19·5	119	i 4 31	0	e 8 2	− 4	—	—	e 9·8
Shasta Dam	20·1	146	i 4 36	− 2	i 8 36	+17	—	—	—
Bozeman	20·5	118	i 4 42	0	i 8 33	+ 6	—	—	e 9·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mineral	E.	20·7	145	e 4 43	− 1	e 8 37	+ 6	—	—	—
Ukiah		21·3	148	—	—	e 8 54	+11	—	—	e 10·8
Berkeley		22·8	147	e 5 5	0	e 8 25	−46	—	—	e 9·4
Logan		23·2	125	i 5 14	+ 5	e 9 33	+15	e 6 9	PP	e 11·3
Lick		23·5	147	e 5 13	+ 1	—	—	—	—	—
Salt Lake City		24·0	126	i 5 16	− 1	i 9 43	+11	—	—	e 11·4
Fresno	N.	24·5	144	e 5 25	+ 3	—	—	e 6 53	PP	—
Tinemaha		24·7	142	e 5 24	0	—	—	—	—	—
Rapid City		25·4	109	i 5 33	+ 2	e 10 8	+12	i 6 11	PP	i 12·7
Haiwee		25·7	142	e 5 34	+ 1	—	—	—	—	—
Overton		26·6	136	(i 5 43)	+ 1	i 5 43	P	—	—	e 14·2
Santa Barbara	N.	26·7	145	e 5 51	+ 8	—	—	—	—	—
Boulder City		26·9	136	i 5 44	− 1	—	—	—	—	—
Pierce Ferry		27·1	135	i 5 46	0	—	—	—	—	—
Mount Wilson		27·4	144	i 5 49	0	—	—	i 6 50	PP	i 15·7
Pasadena		27·5	144	e 5 47	− 3	—	—	i 7 11	PP	i 15·9
Riverside	Z.	27·9	144	i 5 52	− 2	—	—	i 7 9	PP	—
Palomar		28·6	143	i 5 57	− 3	—	—	i 6 46	PP	—
La Jolla		28·9	144	e 5 56	− 7	—	—	e 6 54	PP	—
Tucson		31·7	134	i 6 26	− 1	e 11 26	−11	e 7 37	PP	e 12·5
Florissant		35·8	102	i 7 2	− 1	e 12 45	+ 4	i 8 17	PP	i 18·1
St Louis		36·0	102	i 7 3	− 2	e 12 45	+ 1	i 8 18	PP	e 18·1
Cincinnati		38·6	96	—	—	—	—	16 11	SS	i 19·9
Ottawa		38·8	82	7 28	0	13 31	+ 5	—	—	17·7
Shawinigan Falls		39·6	78	e 8 13	+38	—	—	—	—	18·7
Fordham		42·9	85	—	—	e 14 10	−17	e 17 47	SS	i 22·2
Columbia		44·3	98	—	—	e 14 48	0	—	—	e 18·0
Irkutsk		58·8	321	e 10 11	+ 9	i 18 16	+ 9	—	—	—
Upsala		60·5	15	e 12 19	PP	e 19 49	+80	e 27 37	Q	e 32·7
Copenhagen		63·7	19	e 10 30	− 6	19 12	+ 2	23 13	SS	31·7
Sverdlovsk		64·2	349	i 10 38	− 1	i 19 22	+ 6	—	—	—
San Juan		64·7	96	—	—	e 19 20	− 2	—	—	e 27·2
De Bilt		65·7	24	—	—	—	—	e 23 43?	SS	e 29·7
Moscow		66·2	4	i 10 53	+ 1	—	—	—	—	—
Uccle		66·8	26	—	—	e 19 43?	− 5	e 23 43?	SS	e 31·7
Collmberg	Z.	68·0	20	e 11 13	+10	—	—	—	—	e 39·5
Paris		68·2	28	—	—	—	—	e 28 43?	SSS	—
Strasbourg		69·6	24	—	—	—	—	e 29 1	SSS	e 36·0
Toledo	Z.	74·6	36	i 10 46	−57	—	—	—	—	—
Granada		77·3	37	12 2k	+ 4	21 50	+ 2	—	—	34·6
Malaga	Z.	77·4	37	e 11 52	− 6	e 23 12	PPS	—	—	e 38·2
Tashkent		78·2	340	e 15 13	PP	22 3	+ 6	e 16 48	PPP	—

Additional readings :—
Grand Coulee i = 3m.50s.
Saskatoon e = 7m.6s.
Logan i = 5m.43s.
Rapid City e = 8m.7s. and 11m.3s.
Pasadena iZ = 6m.21s.
Riverside iZ = 6m.26s.
Palomar iNZ = 6m.5s.
La Jolla eZ = 6m.21s.
St Louis iPPPZ = 8m.34s.
Cincinnati e = 16m.41s., i = 18m.34s.
Columbia e = 16m.26s.
Copenhagen 21m.47s.
Collmberg eZ = 11m.54s.
Long waves were also recorded at Ivigtut, Honolulu, Huancayo, La Paz, Prague, and other American stations.

Nov. 16d. Readings also at 2h. (Bozeman), 8h. (near Sitka), 11h. (Boulder City, Pierce Ferry, Tinemaha, Tucson, Mount Wilson, Pasadena, Riverside, Palomar, and Balboa Heights), 12h. (Tucson), 13h. (Collmberg and near Tananarive), 15h. (near Malaga), 17h. (Mount Wilson, Pasadena, Palomar, Riverside, Tucson, Overton, Kew, and near Apia), 18h. (Bogota, Copenhagen, Kodaikanal, and near Stalinabad), 19h. (near Berkeley, Branner, Lick, and San Francisco), 20h. (Brisbane), 21h. (Auckland, Christchurch, Wellington, Riverview, and Alicante (2)), 22h. (Alicante), 23h. (Balboa Heights and near Mizusawa).

Nov. 17d. 16h. 8m. 19s. Epicentre 43°·2N. 139°·5E. Depth of focus 0·040.

Intensity IV at Miyako; II-III at Tukubasan and Onahama.
Epicentre as adopted. Focal depth 240km.

$A = -·5561$, $B = +·4749$, $C = +·6821$; $\delta = +4$; $h = -3$;
$D = +·649$, $E = +·760$; $G = -·519$, $H = +·443$, $K = -·731$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo		1·3	96	0 35k	− 6	1 5	− 8	—		—
Mori		1·4	144	−1 3	?	−0 29	?	—		—
Hatinohe		3·1	151	0 52	− 4	1 35	− 5	—		—
Akita		3·5	174	0 5	−55	0 57	−51	—		—
Miyako		4·0	153	1 3k	− 3	1 52	− 6	—		—
Mizusawa	E.	4·2	163	1 9	+ 1	1 59	− 3	—		—
Sendai		5·0	169	1 17	− 1	2 14	− 4	—		—
Hukusima		5·5	172	1 4	−20	2 11	−18	—		—
Vladivostok		5·6	272	i 1 20	− 5	i 2 25	− 6	—		—
Onahama		6·4	171	1 57	+23	2 45	− 3	—		—
Nagano		6·6	190	1 40	+ 3	2 59	+ 6	—		—
Utunomiya		6·6	178	1 39	+ 2	—	—	—		—
Mito		6·8	175	1 36	− 3	2 52	− 5	—		—
Tukubasan		7·0	177	1 52	+10	—	—	—		—
Tokyo		7·5	179	1 55	+ 7	3 16	+ 3	—		—
Hunatu		7·7	184	1 14	−36	2 42	−35	—		—
Misima		8·1	184	1 57	+ 2	—	—	—		—
Hikone		8·3	199	1 59	+ 1	3 35	+ 4	—		—
Shizuoka		8·3	185	2 0	+ 2	3 32	+ 1	—		—
Toyooka		8·5	207	2 0	0	—	—	—		—
Kobe		9·1	203	2 9	+ 1	4 37	+49	—		—
Hukuoka		11·9	220	2 45	+ 2	—	—	—		—
Kumamoto		12·5	217	2 56	+ 6	—	—	—		—
Sverdlovsk		49·7	315	i 8 23	− 2	e 15 9	− 2	—		—
Copenhagen		71·8	332	i 10 52	− 1	—	—	—		—
Mount Wilson	z.	75·4	57	i 11 15	+ 1	—	—	i 12 16	pP	—
Pasadena	z.	75·4	57	i 11 14	0	—	—	—		—
Riverside	z.	76·0	57	11 18	+ 1	—	—	—		—
Palomar	z.	76·8	57	i 11 22	0	—	—	—		—
Tucson		81·2	54	i 11 47	+ 2	—	—	e 12 43	pP	—
St. Louis	z.	86·9	37	i 12 14	0	—	—	—		—

Nov. 17d. 22h. 19m. 1s. Epicentre 58°·4N. 137°·4W. (as on 16d.).

$A = -·3876$, $B = -·3564$, $C = +·8501$; $\delta = -8$; $h = -8$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sitka		1·4	127	i 0 27	0	i 0 44	− 2	—	—	—
College		8·2	327	e 2 32	P_g	e 3 59	S^*	—	—	e 4·1
Grand Coulee		15·2	126	i 3 36	− 2	—	—	—	—	e 7·4
Butte		19·5	119	e 4 32	+ 1	—	—	e 5 11	PPP	e 10·2
Shasta Dam		20·1	146	e 4 37	− 1	—	—	—	—	—
Bozeman		20·5	118	e 6 20	?	e 8 41	+14	—	—	e 10·9
Salt Lake City		24·0	126	—	—	e 9 45	+13	—	—	e 12·3
Tinemaha		24·7	142	e 5 16	− 8	—	—	—	—	—
Haiwee		25·7	142	e 5 30	− 3	—	—	—	—	—
Overton		26·6	136	e 5 44	+ 2	—	—	—	—	—
Boulder City		26·9	136	e 5 44	− 1	—	—	—	—	—
Pierce Ferry		27·1	135	i 5 47	+ 1	—	—	—	—	—
Mount Wilson	z.	27·4	144	i 5 52	+ 3	—	—	—	—	—
Pasadena		27·5	144	e 5 50	0	—	—	—	—	e 13·0
Riverside	z.	27·9	144	e 5 52	− 2	—	—	—	—	—
Palomar		28·6	143	i 6 0	0	—	—	—	—	—
Tucson		31·7	134	i 6 27	0	—	—	e 7 39	PPP	e 16·5
St. Louis		36·0	102	e 7 3	− 2	—	—	e 8 15	PP	e 18·8
Sverdlovsk		64·2	349	10 39	0	19 20	+ 4	—	—	—

Tucson gives also i = 7m.2s.
Long waves were also recorded at San Juan, and at other American and European stations.

Nov. 17d. Readings also at 3h. (near Berkeley, San Francisco, Branner, Lick, and near Mineral), 4h. (Tucson, Grand Coulee, and near College), 6h. (near Bogota), 10h. (near Tashkent), 17h. (Columbia and near Andijan), 20h. (Tucson, Mount Wilson, and near Apia), 21h. (near Irkutsk), 22h. (Tucson, Riverside, Mount Wilson, Grand Coulee, and near Sitka).

Nov. 18d. 1h. 7m. 39s. Epicentre 38°·5N. 112°·0W.

Intensity VI at Richfield and Glenwood; IV at Monroe. Epicentre as adopted.
United States Earthquakes, 1945. U.S.C.G.S., Washington, 1947, p. 11, Chart Plate IV.

$A = -\cdot2939$, $B = -\cdot7275$, $C = +\cdot6199$; $\delta = -9$; $h = -1$;
$D = -\cdot927$, $E = +\cdot375$; $G = -\cdot232$, $H = -\cdot575$, $K = -\cdot785$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Overton		2·8	225	e 0 47	0	i 1 31	S_g	i 0 53	P*	—
Pierce Ferry		2·9	214	i 0 49	+ 1	i 1 33	S_g	i 0 53	P*	—
Boulder City		3·4	223	i 0 55	0	i 1 49	S_g	i 1 3	P*	—
Tinemaha		5·1	256	e 1 16	− 4	i 2 30	S*	—	—	—
Haiwee		5·3	245	e 1 41	P_g	—	—	—	—	—
Riverside		6·2	226	i 1 35	0	i 3 21	S_g	—	—	—
Tucson		6·3	171	i 1 36	0	i 2 31	−19	i 1 53	P*	i 3·7
Mount Wilson	z.	6·5	231	i 1 40a	+ 1	i 3 31	S_g	—	—	—
Palomar		6·5	219	e 1 37	− 2	i 3 21	S*	—	—	—
Pasadena		6·6	231	i 1 41	0	i 3 32	S_g	—	—	—
St. Louis	z.	17·0	83	i 4 3	+ 2	e 7 25	+15	e 4 17	PP	i 8·5

Additional readings :—
Tucson i = 1m.57s., 2m.59s. and 3m.16s.
Mount Wilson iZ = 3m.5s.
Palomar iZ = 1m.47s.

Nov. 18d. Readings also at 0h. (Tucson), 3h. (Collmberg, Grand Coulee, Tucson, and near Bogota), 5h. (Collmberg, Copenhagen, De Bilt, Uccle, Strasbourg, Prague, Chur, Neuchatel, Zürich, Toledo, Ksara, and near Helwan), 6h. (Christchurch), 7h. (Helwan, Ksara, Collmberg, Zürich, and near Mizusawa), 13h. (Tucson), 18h. (Harvard), 19h. (Tucson).

Nov. 19d. Readings at 0h (near Mizusawa and near Tananarive), 2h. (La Paz and La Plata), 4h. (near Stalinabad and near Tucson), 8h. (near Bogota), 11h. (Mount Wilson, Palomar, and Tucson), 12h. (Bucharest and near Tacubaya), 15h. (near Tacubaya), 16h. (Collmberg), 17h. (near Frunse, Stalinabad, and Tchimkent), 18h. (Harvard, Saskatoon, and Shawinigan Falls), 19h. (Brisbane, Riverview, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tucson, Grand Coulee, Boulder City, Overton, Pierce Ferry, and Shasta Dam), 20h. (near Stalinabad), 23h. (Shasta Dam, Tucson, near Grand Coulee and Victoria).

Nov. 20d. 6h. 27m. 53s. Epicentre 38°·0N. 43°·0E. (as on 1945, July 29d.).

Epicentre in the region of Van (Eskivan), 38°N. 43°E. (Strasbourg).

Dr. E. Lahn.
Note sur les tremblements de terre dans la région de Van. M.T.A. senesi 1/35, 1946, Ankara, pp. 126-129.

Cevat E. Tasman.
Varto ve van Depremleri. M.T.A., Sene 11; Sayi; 2/36, Ankara 1946, pp. 287-290 résumé in English p. 291. Map.

$A = +\cdot5778$, $B = +\cdot5388$, $C = +\cdot6131$; $\delta = +5$; $h = -1$;
$D = +\cdot682$, $E = -\cdot731$; $G = +\cdot448$, $H = +\cdot418$, $K = -\cdot790$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Erevan	2·5	28	e 0 35	− 8	1 5	− 9	—	—	—
Ksara	7·1	237	e 2 2?	P*	4 10	S_g	—	—	—
Helwan	12·6	233	3 7	+ 4	5 49	SS	3 18	PP	i 6·9
Bucharest	14·2	302	2 7?	?	—	—	—	—	7·1
Sofia	15·7	293	e 3 47	+ 3	i 7 4	SS	—	—	8·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Moscow		18·1	351	i 4 6	− 8	i 7 34	− 1	—	—	—
Belgrade		18·2	299	e 4 15a	− 1	e 7 48	+11	e 4 36	PP	e 12·0
Stalinabad		20·2	79	e 4 36	− 3	—	—	—	—	—
Tchimkent		20·7	70	4 40	− 4	—	—	—	—	—
Sverdlovsk		22·2	27	i 4 52	− 8	i 8 47	−13	—	—	—
Triest		23·0	300	i 5 7?	0	i 9 30	+16	i 5 42	PP	—
Prague		23·7	311	e 5 32	+18	9 37	+10	—	—	e 13·1
Frunse		24·5	69	5 21	− 1	—	—	—	—	—
Cheb		24·9	309	e 5 30	+ 4	e 10 3	+16	—	—	e 16·1
Collmberg	Z.	24·9	311	i 5 12	−14	e 9 13	−34	i 6 27	PPP	—
Jena	N.	25·7	310	e 6 20	PP	e 11 14	SS	—	—	—
Zürich		26·8	303	e 5 41	− 3	—	—	—	—	—
Copenhagen		27·0	321	i 5 45	0	10 23	+ 1	10 40	SS	13·7
Upsala		27·2	332	e 5 46	− 1	e 10 26	+ 1	e 11 24	SS	e 14·1
Strasbourg		27·5	306	e 5 48	− 2	e 10 59	+29	—	—	e 16·3
Neuchatel		27·8	301	e 5 50	− 3	—	—	—	—	—
De Bilt		29·8	312	e 6 12	+ 1	e 11 43	+36	—	—	e 18·1
Uccle		30·1	308	e 6 18	+ 5	e 11 8?	− 4	—	—	e 15·1
Paris		31·0	304	—	—	e 13 14?	SS	—	—	—
Bombay		32·2	118	e 6 42	+10	—	—	—	—	—
Bergen	N.	32·6	327	e 6 23	−12	e 11 50	− 1	—	—	—
Kew		33·1	309	e 7 53	PP	e 11 47	−12	—	—	e 14·1
Aberdeen	N.	35·1	319	—	—	e 15 19	SSS	—	—	e 19·3
Toledo		36·3	288	e 7 4	− 3	14 40	SS	—	—	—
Granada		36·6	284	i 7 17k	+ 7	12 59	+ 6	7 39	pP	16·8
Hyderabad	E.	37·2	114	—	—	e 13 6	+ 4	—	—	—
Malaga	Z.	37·4	284	i 7 19	+ 3	i 14 2	+57	8 52	PP	22·1
Kodaikanal	E.	41·5	123	—	—	e 14 47	+40	e 18 39	S_cS	20·7
Irkutsk		44·2	50	e 8 9	− 3	e 14 41?	− 5	—	—	—
Vladivostok		64·6	55	e 10 38	− 3	19 1	−20	—	—	—
St. Louis		92·4	325	i 13 14	0	—	—	i 13 28	?	e 37·9
Tucson		106·0	337	e 17 31	?	—	—	—	—	e 58·8

Additional readings :—
Helwan SSN = 6m.17s.
Triest iPPP = 5m.49s.
Collmberg iZ = 5m.37s. and 5m.41s., eZ = 6m.54s., 7m.33s., 7m.44s., and 8m.37s.
Jena eN = 7m.37s. and 9m.18s.
Upsala eN = 10m.2s., eSE = 10m.35s.
Granada PP = 9m.2s., P_cP = 9m.22s., eP_cS = 13m.19s.
Malaga PPZ = 9m.8s., S_cPZ = 12m.36s., S_cSZ = 16m.52s., SSZ = 17m.16s.
Long waves were also recorded at Barcelona.

Nov. 20d. 12h. Undetermined shock.

Tananarive eEN = 0m.28s., eN = 2m.40s., eLN = 3m.34s.
Stalinabad iP = 7m.55s.
Sverdlovsk P = 9m.29s., SKS = 20m.3s.
Moscow iP = 9m.31s.
Granada iP = 9m.34s.k, S = 20m.30s., L = 43·7m.
Collmberg eZ = 9m.58s.
Kodaikanal eE = 11m.31s.
Tucson eP = 16m.49s., e = 22m.9s.
Haiwee ePZ = 16m.50s.
Mount Wilson ePZ = 16m.50s.
Riverside ePZ = 16m.50s.
Palomar iPZ = 16m.52s.
Pasadena iPZ = 16m.52s.
Long waves were also recorded at Riverview and Malaga.

Nov. 20d. 18h. 7m. 14s. Epicentre 16°·0N. 98°·4W. (as on 1945, May 19d.).

A = −·1405, B = −·9515, C = +·2739 ; δ = +11 ; h = +6 ;
D = −·989, E = +·146 ; G = −·040, H = −·271, K = −·962.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca		1·9	57	0 32	− 2	(0 58)	− 1	—	—	1·0
Puebla		3·0	4	0 44	− 6	(1 23)	− 4	—	—	1·4
Tacubaya		3·5	347	0 59	+ 2	—	—	1 9	P_g	2·0
Tucson		19·7	328	i 4 34	0	—	—	e 5 21	?	e 10·2
St. Louis		23·7	15	e 5 13	− 1	e 9 38	+11	e 10 33	SSS	e 14·9
Florissant	N.	23·8	15	e 5 13	− 2	e 9 40	+12	e 11 37	?	e 14·3
Palomar		24·0	319	i 5 20 a	+ 3	—	—	—	—	—
Pierce Ferry		24·4	328	i 5 22	+ 1	—	—	—	—	—
Boulder City		24·7	327	i 5 27	+ 3	—	—	—	—	—
Riverside	Z.	24·8	320	i 5 25	0	—	—	—	—	—
Overton		24·9	328	e 5 29	+ 3	—	—	—	—	—
Mount Wilson	Z.	25·3	320	i 5 31	+ 1	—	—	—	—	—
Pasadena	Z.	25·4	320	i 5 31	0	—	—	—	—	—
Grand Coulee		36·1	337	i 7 5	0	—	—	—	—	—

Long waves were also recorded at Guadalajara, Rapid City, and Bozeman.

Nov. 20d. Readings also at 0h. (Tucson, Palomar, Riverside, Mount Wilson, and Shasta Dam), 2h. (near San Juan), 3h. (Harvard, and near San Juan), 4h. (St. Louis), 5h. (Collmberg and Tucson), 6h. (Tucson and Palomar), 7h. (Ksara and near Erevan), 9h. (Tucson, Palomar, and Riverside), 13h. (Tucson and near Andijan), 14h. (near Huancayo), 18h. (Tacubaya), 19h. (Tucson, near Tacubaya, Oaxaca, and Puebla), 21h. (near La Paz).

Nov. 21d. Readings at 2h. (near Tucson (2)), 4h. (Brisbane, Riverview, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, and Tucson), 5h. (Toledo), 6h. (near Mizusawa), 7h. (Collmberg), 8h. (La Paz, Collmberg, Bucharest, Sofia, and near Yalta), 13h. (near Tucson), 15h. (La Paz, Brisbane, Riverview, and Collmberg), 18h. (near Huancayo), 21h. (near Tacubaya and near La Paz), 22h. (near Berkeley, Branner, Lick, and San Francisco), 23h. (Collmberg, Tucson, and near Bogota).

Nov. 22d. 6h. Undetermined shock.

Wellington S? =40m.2s., i =44m.2s., L =45m.4s.
Riverview eP?E =41m.17s., eS?E =45m.37s., eLZ =48·2m.
Christchurch SZ =43m.43s., QEN =44m.50s., RZ =46m.38s.
Brisbane iS?N =44m.28s., eLN =48m.25s.
Pasadena ePZ =45m.23s.
Mount Wilson iPZ =45m.24s.
Palomar iPZ =45m.24s.
Riverside ePZ =45m.26s.
Haiwee ePZ =45m.30s.
Tinemaha ePE =45m.37s.
Tucson eP =45m.42s., i =45m.47s., e =46m.3s.
Huancayo i =56m.37s., e =56m.54s. and 58m.0s., eL =58m.1s.
Long waves were also recorded at Auckland, Arapuni, and Kew.

Nov. 22d. 15h. 19m. 22s. Epicentre 19°·4N. 70°·4W.

A = +·3166, B = −·8892, C = +·3302 ; δ = −6 ; h = +5 ;
D = −·942, E = −·335 ; G = +·111, H = −·311, K = −·944.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan	4·2	103	e 1 1	− 6	i 1 52	− 5	—	—	i 2·4
Fort de France	10·0	116	e 2 31	+ 4	—	—	—	—	—
Bogota	15·1	194	i 3 42	+ 6	e 6 34	+ 9	i 3 54	PP	—
Philadelphia	20·9	351	e 4 49	+ 3	—	—	—	—	e 9·1
Harvard	23·1	359	i 5 16	+ 8	i 9 13	− 3	—	—	e 14·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
St. Louis		25·8	322	e 5 31	− 3	e 10 7	+ 5	e 6 31	PPP	e 12·8
Florissant		25·9	322	e 5 36	+ 1	e 10 24	+20	e 6 14	PP	e 13·6
Ottawa		26·3	352	e 5 38	− 1	(10 38?)	+27	—	—	10·6
Huancayo		31·6	189	—	—	e 11 48	+13	e 13 27	SS	e 15·2
Tucson		38·4	298	i 7 25	0	—	—	e 9 5	PP	e 20·3
Palomar	z.	43·5	299	i 8 8	+ 1	—	—	—	—	—
Riverside	z.	44·0	300	e 8 11	0	—	—	—	—	—
Mount Wilson	z.	44·6	300	i 8 17	+ 1	—	—	i 8 42	pP	—
Pasadena		44·7	300	i 8 17	+ 1	—	—	i 9 30	PP	—
Haiwee	z.	44·8	302	e 8 18	+ 1	—	—	—	—	—
Tinemaha		45·2	303	e 8 22	+ 2	—	—	—	—	—
Toledo	z.	59·9	54	i 10 7	− 3	—	—	—	—	—
Granada		60·3	58	i 10 44a	+31	—	—	—	—	—

Additional readings :—
San Juan iP = 1m.5s., i = 1m.12s. and 2m.5s.
Bogota eSS? = 6m.58s.
St. Louis iPZ = 5m.35s.
Tucson i = 7m.51s.
Palomar iZ = 9m.8s. and 10m.32s.
Long waves were also recorded at Bermuda and other American and European stations.

Nov. 22d. 20h. 50m. 40s. Epicentre 9°·3S. 119°·2E. (as on 1939, July 12d.).

A = −·4815, B = +·8616, C = −·1605 ; δ = −4 ; h = +7 ;
D = +·873, E = +·488 ; G = +·078, H = −·140, K = −·987.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		36·7	124	i 7 9a	− 1	i 13 50	+56	i 8 27	PP	e 16·4
Riverview		38·2	135	i 7 23	0	i 13 15	− 2	i 8 48	PP	e 18·8
Colombo	E.	42·4	290	—	—	14 16	− 4	—	—	—
Kodaikanal	E.	45·8	295	e 8 42	+17	i 15 22	+13	e 18 10	SS	e 22·8
Hyderabad	N.	48·2	303	· 8 34	−10	15 33	−10	10 16	PP	23·4
Bombay		53·0	302	e 9 22	+ 1	i 16 51	+ 1	—	—	—
Vladivostok		53·4	12	—	—	i 16 56	+ 1	—	—	—
New Delhi	N.	55·3	315	e 9 36	− 2	i 17 11	−10	19 24	S_cS	—
Irkutsk		62·6	350	e 10 29	+ 1	18 58	+ 2	—	—	—
Frunse		64·5	326	e 10 50?	+ 9	—	—	—	—	—
Andijan		65·9	323	e 10 49	− 1	e 19 34	− 3	—	—	—
Tchimkent		68·5	323	—	—	i 20 6	− 2	—	—	—
Samarkand		68·6	319	10 43	−24	—	—	—	—	—
Sverdlovsk		81·3	332	i 12 20	0	i 22 26	− 4	—	—	—
Ksara		89·6	306	e 13 5?	+ 4	e 23 59	+ 8	—	—	—
Helwan		92·7	300	13 14	− 1	24 20	+ 2	25 56	PPS	—
Moscow		92·9	326	e 13 24	+ 8	—	—	—	—	—
Copenhagen		107·1	326	—	—	25 0	[0]	28 6	PS	53·3
Collmberg	z.	107·3	321	e 17 38	[−50]	—	—	—	—	—
Cheb		107·9	320	—	—	e 25 20?	[+17]	—	—	—
Strasbourg		111·1	320	—	—	e 33 42	?	—	—	63·5
Paris		114·4	320	—	—	e 28 20?	?	—	—	—
Santa Barbara	z.	120·8	56	e 18 58	[+ 4]	—	—	—	—	—
Tinemaha		121·4	52	e 18 58	[+ 3]	—	—	—	—	—
Haiwee		121·8	53	i 19 0	[+ 4]	—	—	e 19 18	?	—
Mount Wilson	z.	122·0	55	i 18 59k	[+ 2]	—	—	i 19 9	?	—
Pasadena		122·1	55	i 18 59k	[+ 2]	—	—	i 19 8	?	—
Riverside	z.	122·8	55	i 19 1	[+ 3]	—	—	—	—	—
Palomar		123·3	56	i 19 2k	[+ 3]	—	—	i 20 52	PP	—
Boulder City		124·3	53	i 19 3	[+ 2]	—	—	—	—	—
Overton		124·5	52	i 19 7	[+ 6]	—	—	—	—	—
Pierce Ferry		125·0	53	e 19 4	[+ 2]	—	—	—	—	—
Tucson		128·5	56	e 19 12	[+ 3]	—	—	e 21 45	PP	e 60·8
San Juan		169·6	29	e 20 23	[+14]	e 46 11	SS	e 25 45	PP	e 86·5

For Notes see next page.

NOTES TO NOVEMBER 22d. 20h. 50m. 40s.

Additional readings :—
Brisbane eSE =13m.53s., iN =13m.59s.
Riverview iEZ =8m.59s., iSE =13m.18s., eSSZ =15m.51s., iZ =16m.6s.
Kodaikanal eE =18m.30s.
Hyderabad SSN =18m.33s.
Helwan eZ =13m.26s., SKSE =23m.47s.
Copenhagen 25m.44s. and 34m.44s.
Palomar i =19m.9s., iEZ =19m.19s., eZ =22m.55s.
Tucson i =19m.22s.
San Juan e =33m.34s.
Long waves were also recorded at Wellington, Arapuni, Christchurch, Auckland, Uccle, De Bilt, Kew, Huancayo, and La Paz.

Nov. 22d. Readings also at 0h. and 2h. (Ksara and Helwan), 9h. (Tucson and near Tacubaya (2)), 10h. (near Malaga), 11h. (near Andijan), 13h. (Collmberg and Riverview), 15h. (near Harvard), 16h. (near Samarkand), 20h. (La Paz, Bucharest, and near Samarkand), 23h. (Samarkand).

Nov. 23d. 4h. Undetermined shock.

Pasadena suggests deep focus.

Brisbane iPEZ =54m.5s. a, iSE =57m.38s.
Riverview ePZ =55m.12s., eSE =59m.37s., eRZ =61·6m.
Shasta Dam iP =62m.28s., ipP =62m.44s.
Pasadena iP =62m.35s. a, ipP =62m.51s.
Mount Wilson iPZ =62m.36s. a, iZ =62m.52s. and 63m.3s.
La Jolla ePZ =62m.38s., epPEZ =62m.54s.
Riverside iPZ =62m.38s. a, ipPZ =62m.54s.
Haiwee ePZ =62m.39s., epPEZ =62m.55s.
Tinemaha ePEN =62m.39s.
Palomar iP =62m.40s. a, ipP =62m.56s., iNZ =63m.40s.
Grand Coulee iP =62m.45s., ipP =63m.4s.
Boulder City eP =62m.50s., epP =63m.6s.
Overton eP =62m.53s., epP =63m.17s.
Pierce Ferry iP =62m.54s., ipP =63m.11s.
Tucson eP =63m.2s., epP =63m.18s.

Nov. 23d. 12h. Undetermined shock.

Vladivostok eP =52m.45s., eS =55m.40s.
Irkutsk eS =60m.0s. ?
Mount Wilson ePZ =62m.24s.
Riverside iPZ =62m.29s.
Palomar iPNZ =62m.33s.
Tucson eP =62m.53s.
New Delhi eN =64m.2s. and 74m.10s.
Bombay eE =71m., eN =75m.
Strasbourg e =74m.53s., eL =95m.
Long waves were also recorded at Riverview and at other European stations.

Nov. 23d. Readings also at 0h. (De Bilt, Strasbourg and New Delhi), 1h. (Ksara, Copenhagen and Uccle), 3h. (near La Paz (2)), 4h. (Near Mizusawa), 7h. (Palomar and Tucson), 9h. (Tucson), 15h. (Tananarive), 19h. (Riverside, Pasadena and Mount Wilson), 21h. (Berkeley), 22h. (Ksara, San Juan and near Ottawa), 23h. (Berkeley).

Nov. 24d. Readings at 2h. (Collmberg, Overton, Tucson, Pierce Ferry, Boulder City, Tinemaha, Haiwee, Shasta Dam, Riverside, Palomar, Pasadena, Mount Wilson, Riverview, Christchurch, Auckland, near Andijan, Samarkand and Stalinabad), 3h. (St. Louis), 5h. (Mount Wilson, Palomar and Tucson), 6h. (near Mizusawa), 7h. (Balboa Heights and near Malaga), 12h. (near Grand Coulee), 14h. (Riverview), 16h. (Sofia and Vladivostok), 17h. (Paris, Strasbourg, Uccle, De Bilt, Copenhagen, Irkutsk and Vladivostok), 18h. (Copenhagen, De Bilt, Uccle, Strasbourg and Paris), 21h. (Tucson, Riverside, Mount Wilson and near Bucharest),

Nov. 25d. 19h. 12m. 34s. Epicentre 30°·0N. 114°·0W. (as on 1945 October 20d.)..

$A = -\cdot3528$, $B = -\cdot7925$, $C = +\cdot4975$; $\delta = +3$; $h = +2$;
$D = -\cdot914$, $E = +\cdot407$; $G = -\cdot202$, $H = -\cdot454$, $K = -\cdot868$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		3·5	50	i 1 13	P_g	i 1 48	S*	—	—	e 2·8
La Jolla		4·0	317	e 1 2	− 2	i 1 42	−10	—	—	—
Palomar	Z.	4·1	326	i 1 2	− 3	—	—	—	—	—
Riverside		4·9	325	e 1 13	− 4	i 2 9	− 6	—	—	—
Mount Wilson		5·4	323	i 1 24	0	i 2 24	− 4	—	—	—
Pasadena		5·4	321	i 1 24	0	i 2 23	− 5	—	—	—
Boulder City		6·0	354	i 1 33	+ 1	e 2 42	− 1	i 1 38	P*	—
Pierce Ferry		6·1	1	i 1 36	+ 2	—	—	i 2 22	?	—
Overton		6·5	357	e 1 41	+ 2	—	—	i 1 59	P*	—
Santa Barbara	Z.	6·6	315	i 1 58	P*	—	—	—	—	—
Tinamaha		7·9	335	e 2 21	P*	—	—	—	—	—
Fresno	N.	8·3	326	e 2 26	P*	—	—	e 2 47	P_g	—

Additional readings:—
Tucson i = 1m.18s., and 1m.33s.
Boulder City i = 1m.57s.
Fresno eN = 2m.55s.

Nov. 25d. Readings also at 0h. (near Stalinabad), 1h. (Tucson), 3h. (Riverside, Pasadena, Mount Wilson, Florissant, St. Louis, Harvard, Tucson, Sverdlovsk and Stalinabad), 8h. (Tucson, Riverside, Mount Wilson and Grand Coulee), 10h. (near Mizusawa), 13h. (Tucson), 19h. (San Juan and Samarkand), 20h. (Berkeley), 21h. (Tucson), 22h. (near Fresno, San Francisco, Berkeley, Branner and Lick).

Nov. 26d. 1h. 4m. 13s. Epicentre 9°·0S. 71°·0W. Depth of focus 0·090 (as on 1944 June 8d.).

$A = +\cdot3216$, $B = -\cdot9341$, $C = -\cdot1554$; $\delta = +12$; $h = +7$;
$D = -\cdot945$, $E = -\cdot326$; $G = -\cdot050$, $H = +\cdot147$, $K = -\cdot988$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		5·2	235	e 1 34	− 1	e 2 47	− 4	i 2 16	SS	e 2·9
La Paz	Z.	8·0	160	i 2 1k	+ 1	i 3 37	+ 1	—	—	4·0
Bogota		13·9	347	i 3 1	+ 4	e 5 31	+ 11	i 8 17	?	—
Fort de France		25·5	24	e 4 25	−19	—	—	—	—	—
San Juan		27·6	10	e 5 4	+ 2	i 9 1	− 3	e 7 53	PcP	e 19·8
La Plata	E.	28·4	157	5 5	− 4	9 7	− 9	14 35	ScS	—
	N.	28·4	157	5 8	− 1	9 8	− 8	7 59	PcP	—
Florissant	N.	50·9	341	i 8 14	+ 5	i 14 34	− 7	e 16 51	ScS	—
Tucson		55·9	319	i 8 42	− 2	e 15 44	− 3	i 10 40	pP	—
Pierce Ferry		60·4	321	i 9 14	0	—	—	i 11 14	pP	—
Palomar		60·6	317	e 9 15	0	i 16 47	+ 1	e 11 13	pP	—
Boulder City		60·8	320	i 9 17	0	—	—	i 11 17	pP	—
Overton		60·9	321	e 9 18	+ 1	—	—	e 11 20	pP	—
Riverside	Z.	61·3	317	i 9 20	0	—	—	e 11 18	pP	—
Mount Wilson	Z.	61·9	317	e 9 23	− 1	—	—	e 11 22	pP	—
Pasadena	Z.	62·0	317	i 9 23	− 1	—	—	i 11 25	pP	—
Haiwee	Z.	63·0	319	i 9 30	− 1	—	—	—	—	—
Tinemaha		63·7	319	e 9 32	− 3	—	—	—	—	—
Grand Coulee		70·8	328	(i 10 21)	+ 3	—	—	(i 12 23)	pP	—
Malaga	Z.	77·1	49	i 10 56	+ 2	(e 21 47?)	PS	14 3	pP	e 21·8
Granada		77·9	49	11 2a	+ 4	21 11	+68	—	—	—
Toledo		78·6	46	e 11 0	− 2	e 20 57	+47	—	—	—

Additional readings:—
San Juan eS? = 11m.13s., i = 12m.10s. and 14m.32s.
La Plata N = 12m.17s.
Tucson iPP = 11m.3s., i = 11m.40s. and 12m.32s., e = 16m.17s.
Pasadena iZ = 12m.13s.
Grand Coulee readings reduced by 2 minutes.

Nov. 26d. 4h. 37m. 33s. Epicentre 16°·0N. 98°·4W. (as on 20d.).

$A = -\cdot1405$, $B = -\cdot9515$, $C = +\cdot2739$; $\delta = +11$; $h = +6$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca		1·9	57	0 43	+ 9	—	—	—	—	1·2
Tacubaya	z.	3·5	347	0 58	+ 1	(1 42)	+ 2	—	—	1·7
Vera Cruz		3·8	33	1 7	+ 6	1 57	+10	—	—	2·1
Tucson		19·7	328	e 4 29	− 5	—	—	e 4 58	PPP	e 10·2
St. Louis		23·7	15	e 5 20	+ 6	e 9 43	+16	—	—	—
Palomar	z.	24·0	319	i 5 15k	− 2	—	—	—	—	—
Riverside	z.	24·8	320	i 5 22	− 3	—	—	—	—	—
Mount Wilson	z.	25·3	320	i 5 28	− 2	—	—	—	—	—
Pasadena	z.	25·3	320	i 5 28	− 2	—	—	—	—	—
Grand Coulee		36·1	337	e 7 2	− 3	—	—	—	—	—

Tucson gives also e = 6m.5s.
Long waves were also recorded at Bozeman and San Juan.

Nov. 26d. 5h. 13m. 11s. Epicentre 22°.3S. 179°·2W. Depth of focus 0·090.
(as on 1943, March 24d.).

$A = -\cdot9260$, $B = -\cdot0129$, $C = -\cdot3773$; $\delta = 0$; $h = +4$;
$D = -\cdot014$, $E = +1\cdot000$; $G = +\cdot377$, $H = +\cdot005$, $K = -\cdot926$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland		15·4	198	3 9	− 3	6 43	+57	—	—	14·8
Arapuni		16·3	194	—	—	(6 49?)	SS	—	—	6·8
Wellington		19·6	174	3 50	− 1	6 54	− 3	6 26	sP	—
Christchurch		22·2	175	6 24	?	7 42	+ 3	14 11	S_cS	—
Brisbane		25·7	253	i 4 45	− 1	i 8 30	− 4	—	—	—
Riverview		28·5	239	i 5 10k	0	i 9 16	− 2	i 6 40	pP	—
Misima		69·5	324	10 8	− 3	18 29	− 3	—	—	—
Tokyo		69·5	326	e 10 11	0	—	—	—	—	—
Sendai		70·9	328	10 17	− 2	18 46	− 1	—	—	—
Kôti		71·5	319	e 11 30	+68	20 11	+77	—	—	—
Mizusawa	N.	71·5	330	10 23	+ 1	e 18 50	− 4	—	—	—
Miyazaki		71·7	317	10 21	− 3	—	—	—	—	—
Mori		74·1	330	10 39	+ 2	i 19 30	+ 8	—	—	—
Sapporo		74·5	332	e 10 39	0	—	—	—	—	—
Vladivostok		79·1	326	i 11 4	0	i 20 15	0	—	—	—
Santa Barbara		79·9	47	i 11 9a	+ 1	e 20 30	+ 7	e 13 18	pP	—
Branner		80·0	43	i 11 11	+ 2	e 20 19	− 5	e 17 37	?	—
San Francisco		80·1	43	e 11 7	− 2	—	—	—	—	—
Berkeley		80·3	43	i 11 12	+ 2	e 20 31	+ 4	e 13 17	pP	—
Lick		80·3	43	i 11 12	+ 2	—	—	—	—	—
La Jolla		80·6	49	i 11 14	+ 2	i 20 37	+ 7	e 13 19	pP	—
Pasadena		80·7	48	i 11 14a	+ 2	e 20 34	+ 3	e 13 18	pP	—
Mount Wilson		80·9	48	i 11 14a	+ 1	e 20 38	+ 5	e 13 17	pP	—
Fresno	N.	81·2	45	e 11 17	+ 2	e 20 41	+ 5	e 13 25	pP	—
Palomar		81·2	49	i 11 17a	+ 2	i 20 42	+ 6	i 13 21	pP	—
Riverside		81·2	48	i 11 16a	+ 1	e 20 40	+ 4	i 13 20	pP	—
Shasta Dam		81·9	40	i 11 19	+ 1	e 22 3	SKS	i 13 26	pP	—
Haiwee		82·0	46	i 11 21	+ 2	e 20 51	+ 7	e 12 57	pP	—
Mineral	E.	82·2	41	e 11 15	− 5	—	—	—	—	—
Tinemaha		82·4	45	i 11 22a	+ 1	e 21 16	+28	—	—	—
Boulder City		84·0	48	i 11 31	+ 2	i 21 2	− 1	e 13 38	pP	—
Overton		84·6	47	i 11 34	+ 2	e 21 4	− 5	—	—	—
Pierce Ferry		84·7	48	i 11 34	+ 2	e 21 14	+ 4	—	—	—
Tucson		84·9	52	i 11 35	+ 2	e 21 5	− 7	i 13 41	pP	e 63·2
Grand Coulee		88·3	36	i 11 49	0	i 21 47	+ 4	i 13 57	pP	—
Pehpei		88·3	303	i 11 44	− 5	—	—	—	—	—
Tacubaya		88·4	69	e 11 53	+ 3	e 21 55	+11	i 21 27	SKS	—
Logan		89·1	44	i 11 51	− 2	i 21 26	−24	e 13 59	pP	—
College		89·8	13	—	—	e 21 52	− 4	e 25 37	sS	—
Butte		90·8	40	e 21 37	SKS	i 22 13	+ 8	e 26 0	sS	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vera Cruz	N.	91·0	70	e 11 57	− 5	—	—	e 20 30	?	—
Bozeman		91·6	41	—	—	i 21 44	[+ 4]	e 26 10	sS	—
Huancayo		98·0	106	e 12 41	+ 7	e 22 58	− 8	e 26 16	sS	e 40·3
La Plata	E.	100·4	134	17 4	PP	22 27	[+ 2]	17 31	pPP	—
	N.	100·4	134	16 57	PP	22 23	[− 2]	17 31	pPP	—
La Paz		102·3	114	i 12 49a	P	23 54	+12	i 15 8	pP	52·8
Florissant		102·8	53	i 17 16	PP	e 23 54	+ 8	e 27 52	sS	—
St. Louis		102·8	53	e 12 55	P	e 23 55	+ 9	i 27 54	sS	e 38·8
Bogota		105·7	91	e 13 17	P	—	—	e 17 40	PP	—
Chicago		105·7	50	—	—	e 22 51	[+ 1]	e 24 22	S	—
Kodaikanal	E.	106·1	275	e 15 38	?	i 22 50	[− 1]	e 17 38	PP	31·5
Hyderabad	N.	107·5	282	—	—	i 22 58	[0]	—	—	—
New Delhi	N.	111·8	293	e 18 59	PP	i 23 14	[0]	—	—	—
Bombay		113·1	281	i 18 27	PP	i 23 22	[+ 2]	—	—	—
Ottawa		114·8	48	e 17 33	[0]	e 23 27	[0]	e 18 40	PP	36·8
Fordham		115·4	53	i 17 34	[0]	i 23 29	[0]	i 18 44	PP	—
San Juan		117·6	79	e 19 2	PP	i 23 32	[− 5]	e 27 59	SP	e 49·1
Weston		117·7	52	e 17 39	[+ 1]	e 26 2	S	e 18 59	PP	—
Fort de France		121·9	86	e 17 48	[+ 1]	—	—	—	—	—
Upsala	N.	140·6	347	—	—	e 37 49?	SS	—	—	—
Yalta		144·8	317	i 18 33	[+ 3]	—	—	—	—	—
Copenhagen		145·5	349	i 18 32	[+ 1]	—	—	—	—	—
Ksara		147·1	297	e 18 39	[+ 5]	—	—	e 21 30	?	—
Collmberg	Z.	149·5	345	i 18 45	[+ 7]	—	—	i 22 23	PP	—
De Bilt		150·0	355	i 18 46	[+ 8]	e 40 49?	SS	i 21 3	pPKP	—
Jena		150·2	345	e 19 19	[+41]	—	—	e 20 50	pPKP	—
Cheb		150·8	345	—	—	e 26 49?	?	—	—	—
Kew		150·9	1	(17 49?)	[−50]	—	—	—	—	e 17·8
Uccle		151·4	357	e 18 48k	[+ 9]	—	—	e 20 53	pPKP	—
Helwan	Z.	151·6	292	i 18 40k	[0]	—	—	18 58	PKP_2	—
Belgrade		152·3	328	e 18 42	[+ 2]	—	—	i 19 2	PKP_2	—
Strasbourg		153·2	349	e 18 51	[+ 9]	—	—	e 20 57	pPKP	—
Paris		153·5	357	e 18 44?	[+ 1]	—	—	e 22 34?	PP	—
Basle		154·2	349	e 18 45	[+ 2]	—	—	e 28 38	?	—
Zürich		154·2	348	e 18 44	[+ 1]	—	—	e 21 9	pPKP	—
Chur		154·5	346	e 18 45	[+ 1]	—	—	e 21 18	pPKP	—
Toledo		162·0	12	i 19 45	[+52]	—	—	22 56	PP	—
Granada		164·7	13	i 19 19k	[+23]	e 29 18	SKKS	22 5	pPKP	75·5
Malaga	Z.	164·9	17	i 18 57	[+ 1]	e 27 11	S	i 21 18	pPKP	38·6

Additional readings :—
Wellington PP? =4m.21s., iZ =7m.34s., P_cP? =8m.8s., SS? =9m.3s., pP_cPZ =10m.5s., S_cPZ =10m.19s., sP_cP?Z =11m.2s., P_cS =11m.24s., pP_cS?Z =13m.24s., S_cSZ =14m.4s., sS_cPZ =14m.53s., sS_cSZ =18m.8s.
Christchurch e =10m.27s., P_cSE =12m.35s., e =13m.29s., iE =15m.42s., SS?Z =17m.19s., iE =18m.25s. Readings wrongly identified.
Riverview ipPE =6m.45s., iP_cP?Z =7m.55s., iE =10m.29s., iZ =10m.49s., isSEN =12m.22s., iEN =12m.31s., iS_cSN =14m.45s.
Mizusawa eSE =18m.53s.
Berkeley eE =11m.27s., eN =12m.7s., epPZ =14m.23s.
La Jolla esPZ =14m.25s.
Pasadena esPZ =14m.20s., eZ =16m.44s., iZ =17m.27s., iSEN =20m.37s., iN =20m.57s., iPKKPZ =29m.48s., eZ =37m.57s. and 40m.20s.
Mount Wilson esPZ =14m.18s., ePKKPZ =29m.49s., ePKP,PKPZ =40m.13s.
Fresno eN =12m.4s. and 15m.44s.
Palomar iZ =11m.37s., isPZ =14m.30s., iPKKPZ =29m.48s., iZ =40m.26s.
Riverside isPZ =14m.29s., iPKKPZ =29m.48s., eZ =40m.10s.
Shasta Dam i =11m.38s., iPP =14m.39s.
Boulder City iPKP,PKP =37m.49s.
Tucson isP =14m.1s., iPP =15m.1s., eSP =21m.39s., isSS =29m.39s., iPKP,PKP =37m.45s., eSKPPKP =40m.14s.
Grand Coulee i =12m.5s., ePP =14m.49s., e =15m.3s., eSKS =21m.14s., eSP =23m.8s.
Logan iPP =15m.30s.
Bozeman eSS =28m.41s.
Huancayo ePP =16m.52s., e =19m.6s., iSKS =22m.26s.
La Plata PZ =17m.1s., N =22m.49s. and 23m.0s., E =24m.1s., N =39m.5s.
La Paz iPP =17m.19s., pSZ =25m.30s., sSZ =26m.7s., iZ =27m.55s.
Florissant iSKSE =22m.38s., iSKKSE =23m.22s., isSKSE =26m.38s., eSSN =31m.14s.

Continued on next page.

St. Louis iPPZ = 17m.17s., iSKSE = 22m.36s., iSKKSN = 23m.23s., esSKSE = 26m.37s., iSSN = 31m.16s.
Chicago e = 23m.42s., eSP = 26m.13s., esS = 28m.13s., e = 30m.28s.
Kodaikanal eE = 25m.10s. and 26m.20s.
Ottawa eN = 25m.41s. and 33m.54s.
Fordham i = 24m.45s.
San Juan i = 24m.59s., e = 29m.34s. and 29m.59s., eSS = 34m.40s.
Collmberg iZ = 18m.50s., 19m.9s., 19m.16s., 19m.23s., 19m.33s., 21m.7s., and 21m.42s., eZ = 23m.15s., 25m.51s., 26m.21s., 28m.38s., 29m.6s., 29m.34s., 30m.14s., 31m.56s., 32m.21s., and 33m,6s.
Jena iNZ = 19m.26s., eZ = 21m.48s., eN = 22m.33s., eZ = 22m.57s.
Uccle i = 18m.58s., ePKP$_2$ = 19m.14s., epPKP$_2$ = 21m.17s.
Helwan PPNZ = 22m.31s., PPPZ = 26m.3s., eZ = 27m.7s., 27m.51s., 28m.52s., and 31m.51s., eN = 41m.49s.
Belgrade i = 21m.12s., e = 22m.34s. and 32m.27s.
Strasbourg i = 19m.4s.
Zürich e = 18m.53s. and 19m.9s.
Chur e = 19m.11s.
Granada PKP$_2$ = 19m.52s., iPP = 23m.43s., pPP = 25m.53s., eSKSP = 34m.26s., iSS = 43m.26s., SSP = 45m.38s., iSSS = 49m.39s., sSSS = 51m.55s.
Malaga PPPZ = 22m.34s., iS$_c$PZ = 23m.49s., isSZ = 27m.38s., SSZ = 31m.6s.

Nov. 26d. Readings also at 0h. (Riverside, Tucson, San Juan, La Paz, Bogota, and near Huancayo), 4h. (near Mizusawa), 5h. (Pehpei and Tacubaya), 6h. (Tucson, Riverview, Collmberg (2), Belgrade, Bucharest, and near Sofia), 7h. (Tucson), 10h. (near Tacubaya), 11h. (Tucson), 12h. (Harvard, near Tananarive, and near Samarkand), 13h. (near Andijan), 14h. (near Sofia), 15h. (near Malaga (3)), 18h. (near San Juan), 21h. (Tucson and near La Paz).

Nov. 27d. 5h. 31m. 0s. Epicentre 54°·0N. 166°·0E.

$A = -\cdot5729$, $B = +\cdot1428$, $C = +\cdot8071$; $\delta = +2$; $h = -7$;
$D = +\cdot242$, $E = +\cdot970$; $G = -\cdot783$, $H = +\cdot195$, $K = -\cdot590$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vladivostok		24·8	259	—	—	10 1	+15	—	—	—
College		25·3	46	e 5 27	− 3	e 9 42	−12	—	—	e 12·6
Grand Coulee		45·6	65	e 8 21	− 3	—	—	—	—	—
Shasta Dam		48·2	75	e 8 44	0	—	—	—	—	—
Tinemaha	E.	53·1	76	e 9 25	+ 4	—	—	—	—	—
Haiwee		53·9	76	e 9 28	+ 1	—	—	—	—	—
Sverdlovsk		54·0	320	e 9 25	− 3	e 16 54	− 9	—	—	—
Mount Wilson	Z.	55·2	78	i 9 36	− 1	—	—	—	—	—
Pasadena		55·2	78	i 9 37	0	—	—	—	—	—
Overton		55·6	73	e 9 44	+ 4	—	—	—	—	—
Boulder City		55·8	74	i 9 42	+ 1	—	—	—	—	—
Riverside	Z.	55·8	78	e 9 40	− 1	—	—	—	—	—
Pierce Ferry		56·2	73	e 9 46	+ 2	—	—	—	—	—
Palomar	Z.	56·5	78	i 9 47	+ 1	—	—	—	—	—
Tucson		60·8	74	i 10 17	+ 1	—	—	i 10 33	?	—
Tashkent		61·4	302	e 5 15	?	e 16 17	?	—	—	—
New Delhi	N.	66·7	287	—	—	e 19 40	− 6	—	—	e 37·1
Florissant	E.	66·7	56	—	—	e 19 39	− 7	—	—	e 34·4
St. Louis		66·9	56	e 10 53	− 3	e 19 41	− 8	e 23 58	SS	e 32·4
Strasbourg		76·1	346	—	—	e 28 13	?	—	—	e 43·0
Ksara		82·5	320	e 11 23	−63	—	—	e 15 23	PP	—
Helwan	Z.	87·7	322	e 12 53	+ 1	—	—	—	—	—

Helwan gives also iZ = 13m.21s., eZ = 14m.3s.
Long waves were also recorded at Sitka, Cheb, Uccle, Riverview, and San Juan.

Nov. 27d. 10h. 42m. 8s. Epicentre 16°·2N. 100°·6W. (as on 1945, Sept. 17d.).

A = −·1767, B = −·9444, C = +·2773; δ = +1; h = +6;
D = −·983, E = +·184; G = −·051, H = −·273, K = −·961.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya		3·5	23	1 3	P*	i 1 38	− 2	i 1 45	S*	1·9
Vera Cruz	N.	5·2	54	1 9	−12	(2 3)	−19	—	—	2·1
Tucson		18·5	332	e 4 17	− 2	e 8 38	SSS	e 4 31	PP	e 10·6
Pierce Ferry		23·1	332	e 5 9	+ 1	e 12 27	L	—	—	(12·5)
Riverside	Z.	23·3	323	e 5 10	0	—	—	—	—	—
Boulder City		23·4	331	e 5 11	0	—	—	—	—	—
Overton		23·7	332	e 5 16	+ 2	—	—	—	—	—
Mount Wilson	Z.	23·8	323	e 5 15	0	—	—	—	—	—
Pasadena	Z.	23·9	323	e 5 17	+ 1	—	—	—	—	—
St. Louis		24·1	21	e 5 19	+ 1	e 9 35	+ 1	e 10 31	SS	—
Tinemaha		26·0	326	e 5 41	+ 5	—	—	—	—	—

Tucson gives also e = 5m.21s.

Nov. 27d. 11h. 54m. 11s. Epicentre 4°·0S. 128°·5E. (as on Nov. 2d.).

A = −·6210, B = +·7807, C = −·0693; δ = −6; h = +7.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Perth		30·2	201	6 17	+ 3	i 11 14	+ 1	—	—	i 14·4
Brisbane		33·1	138	e 6 34	− 6	12 7	+ 8	e 4 40	P	i 18·0
Miyazaki		35·8	5	e 7 17	+14	—	—	—	—	—
Riverview		36·4	148	i 7 13k	+ 5	i 12 59	+ 9	i 8 10	PP	i 19·5
Hukuoka		37·4	3	e 7 27	+11	—	—	—	—	—
Kôti		37·7	7	e 8 41	+82	14 33	+83	—	—	—
Nagano		41·5	11	e 7 55	+ 5	—	—	—	—	—
Mizusawa	E.	44·5	14	e 8 18	+ 3	14 53	+ 2	—	—	—
	N.	44·5	14	e 8 9	− 6	14 55	+ 4	—	—	—
Vladivostok		47·0	4	e 8 45	+10	—	—	—	—	—
Calcutta	N.	47·3	306	e 8 30	− 7	i 15 28	− 3	—	—	—
Sapporo		48·3	12	e 8 50	+ 5	—	—	—	—	—
Colombo	E.	49·7	282	9 49?	+53	—	—	—	—	—
Kodaikanal	E.	52·8	286	1 8 50	−29	e 15 22	−85	10 30	PP	22·7
Auckland		53·5	134	9 45	+21	e 16 59	+ 2	12 21	PPP	29·5
Hyderabad	N.	53·8	295	e 9 9	−17	16 36	−25	10 31	P_cP	—
Arapuni		54·7	135	6 31	?	17 37	+24	—	—	29·0
Christchurch		55·4	142	9 42	+ 4	17 22	0	12 16	PP	31·2
Wellington		55·6	139	9 43	+ 3	16 59	−26	12 57	PPP	—
Dehra Dun	N.	59·0	309	e 13 43	PPP	—	—	—	—	—
New Delhi	N.	59·0	307	e 9 44	−20	i 17 44	−26	21 39	SS	—
Bombay		59·3	295	e 9 59	− 7	e 18 8	− 6	—	—	31·3
Frunse		67·4	320	e 10 58	− 1	—	—	—	—	—
Andijan		67·8	316	e 10 54	− 8	—	—	—	—	—
Tashkent		70·2	316	e 11 6	−11	—	—	—	—	—
Sverdlovsk		81·4	329	e 12 9	−11	22 18	−13	—	—	—
Baku		83·9	311	—	—	22 31	−25	—	—	—
College		90·9	25	—	—	e 23 7	[−31]	e 24 3	S	e 37·3
Moscow		93·8	325	e 13 25	+ 5	23 55	[0]	—	—	—
Ksara		94·4	303	e 13 42	+19	e 24 2	[+ 4]	—	—	—
Sitka		96·7	33	—	—	e 24 14	[+ 4]	—	—	e 48·8
Helwan	Z.	98·2	299	e 13 40	0	—	—	e 17 10	PP	—
Shasta Dam		107·1	49	e 18 38	PP	—	—	—	—	—
Prague		108·4	322	e 22 19	PPP	e 26 1	{+ 7}	e 29 19	PPS	42·8
Collmberg	Z.	108·9	323	e 18 6	[−25]	—	—	—	—	—
Cheb		109·6	322	e 18 49?	[+17]	e 26 49?	{+47}	e 23 49?	?	—
Triest		110·0	317	e 19 37	PP	e 26 7	{+ 2}	e 20 23	pPP	—
Haiwee	Z.	111·3	53	e 18 36	[0]	—	—	—	—	—
Pasadena	Z.	111·5	55	e 18 37	[+ 1]	—	—	—	—	e 51·5
Mount Wilson	Z.	111·6	55	e 18 37	[+ 1]	—	—	i 19 30	PP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverside	Z.	112·2	55	i 19 26	PP	—	—	—	—	—
Palomar	Z.	112·7	56	i 18 48	[+ 9]	—	—	e 19 29	PP	—
Strasbourg		113·0	322	—	—	e 22 2	PPP	e 30 1	PPS	e 60·5
De Bilt	Z.	113·1	326	e 19 26	PP	—	—	—	—	—
Uccle		114·1	325	—	—	e 26 49?	{+15}	—	—	—
Logan		114·6	45	e 17 53	[−49]	e 27 12	{+35}	e 21 49	PPP	i 45·1
Paris		116·1	323	e 19 41?	PP	—	—	—	—	—
Kew		116·4	327	(e 19 19?)	PP	—	—	—	—	e 19·8
Tucson		117·9	55	e 18 40	[− 9]	e 30 31	PPS	e 20 11	PP	e 54·1
Malaga	Z.	125·9	314	e 21 7	PP	e 32 35	PPS	e 23 17	PPP	—
Chicago		130·4	35	e 22 32	SKP	e 31 38	PS	e 39 7	SS	e 62·5
St. Louis		130·7	40	e 19 13	[0]	e 26 1	[−21]	e 21 37	PP	—
Tacubaya	N.	131·0	68	e 22 39	SKP	—	—	—	—	—
Ottawa		133·6	23	e 19 14	[− 5]	e 31 49?	PS	e 22 49	SKP	63·8
Seven Falls		133·9	18	e 22 55	SKP	—	—	—	—	63·8
Weston		137·9	21	19 25	[− 2]	—	—	—	—	—
Philadelphia		138·3	27	e 21 41	PP	e 29 28	{+17}	e 23 1	SKP	e 70·1
Columbia		139·4	39	e 22 56	PP	—	—	—	—	e 62·3
Bermuda		149·2	22	e 19 36	[−10]	—	—	e 23 6	PP	e 67·1
Huancayo		151·4	124	e 19 51	[+ 1]	e 29 22	{−64}	e 23 56	PP	—
La Paz		153·8	141	i 19 52	[− 1]	i 26 40	[−18]	i 20 54	pPKP	—
Bogota		157·5	87	e 20 18	[+20]	—	—	i 20 40	pPKP	—
San Juan		159·8	43	—	—	e 33 31	?	—	—	e 73·4

Additional readings :—
Brisbane eS?N =12m.11s., eN =14m.38s., iN =15m.46s.
Riverview iEN =7m.18s., iE =8m.42s., iEZ =8m.54s., iEN =9m.36s., iSSE =15m.13s.
Kodaikanal SSE =18m.32s.
Auckland e =10m.29s., PPP =14m.19s., S? =19m.4s., e =21m.19s., SS? =24m.0s., SSS? =27m.5s.
Hyderabad iPN =9m.17s., PPN =11m.14s., SSN =19m.53s.
Christchurch SSSE =21m.28s., eEN =23m.20s., QEN =24m.53s.. Readings wrongly identified.
Wellington i =13m.22s., iZ =13m.56s., PPP?Z =15m.13s., pPPPZ =15m.58s., S? =19m.18s., SPZ =20m.38s., SS =22m.48s., SSS =25m.18s., Readings wrongly identified.
College e =29m.49s.
Sitka i =29m.49s., eSS =41m.14s.
Helwan eZ =18m.31s.
Prague e =34m.19s.
Triest eSKP =23m.3s., PPE =24m.32s., ePPP =28m.35s., eSKKS =31m.14s., PPE =31m.14s., ePSKS =34m.52s., eSS =45m.17s. Readings wrongly identified.
Logan i =22m.24s. and 23m.13s., e =28m.23s., eSSS =39m.9s.
Tucson e =18m.56s.
Chicago e =25m.23s.
St. Louis eSKP =22m.38s.
Philadelphia e =32m.33s., 33m.14s.
Huancayo e =43m.58s.
La Paz iZ =20m.0s.
Long waves were also recorded at Bucharest, Bozeman, and Salt Lake City.

Nov. 27d. 12h. 23m. 17s. Epicentre 4°·0S. 128°·5E. (as at 11h.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	Z.	33·1	138	e 6 43	+ 3	—	—	—	—	—
Miyazaki		35·8	5	e 7 1	− 2	13 37	+56	—	—	—
Riverview		36·4	148	7 17	+ 9	i 13 6	+16	i 8 15	PP	—
Hukuoka		37·4	3	e 7 35	+19	—	—	—	—	—
Kôti		37·7	7	e 8 37	+78	14 27	+77	—	—	—
Sumoto		38·6	10	e 7 17	− 9	—	—	—	—	—
Nagano		41·5	11	e 7 49	− 1	—	—	—	—	—
Mizusawa	N.	44·5	14	e 8 16	+ 1	14 43	− 8	—	—	—
Calcutta	N.	47·3	306	i 8 25	−12	i 15 8	−23	—	—	—
Sapporo		48·3	12	e 8 48	+ 3	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hyderabad	N.	53·8	295	9 17	− 9	16 40	−21	11 7	PP	—
New Delhi	N.	59·0	307	—	—	i 17 46	−24	—	—	—
Frunse		67·4	320	e 10 55	− 4	—	—	—	—	—
Andijan		67·8	316	e 10 56	− 6	—	—	—	—	—
Stalinabad		69·4	314	e 10 37	−35	—	—	—	—	—
Tashkent		70·2	316	e 11 11	− 6	—	—	—	—	—
Samarkand		71·1	314	11 19	− 3	—	—	—	—	—
Sverdlovsk		81·4	329	12 17	− 3	i 22 21	−10	—	—	—
Moscow		93·8	325	e 13 14	− 6	e 24 7	−21	—	—	—
Ksara		94·4	303	e 13 22	− 1	e 23 59	[+ 1]	—	—	—
Helwan	Z.	98·2	299	e 13 35	− 5	—	—	e 17 57	PP	—
Shasta Dam		107·1	49	e 18 48	PP	—	—	—	—	—
Prague		108·4	322	—	—	e 25 1	[− 4]	—	—	—
Collmberg	Z.	108·9	323	e 17 43	?	—	—	e 18 37	PKP	—
Tinemaha	E.	110·9	52	e 19 30	PP	—	—	—	—	—
Haiwee	Z.	111·3	53	e 18 37	[+ 1]	—	—	e 19 8	PP	—
Pasadena	Z.	111·5	55	e 18 37	[+ 1]	—	—	—	—	e 51·0
Mount Wilson	Z.	111·6	55	e 18 37	[+ 1]	—	—	e 19 21	PP	—
Riverside	Z.	112·2	55	i 19 27	PP	—	—	—	—	—
Palomar	Z.	112·7	56	e 19 19	PP	—	—	—	—	—
Boulder City		113·8	52	e 18 41	[0]	—	—	—	—	—
Aberdeen		114·3	333	—	—	i 30 11	PPS	—	—	—
Paris		116·1	323	e 19 45	PP	—	—	—	—	—
Tucson		117·9	55	i 18 49	[0]	e 22 25	PKS	i 20 10	PP	e 54·7
Toledo		124·3	317	e 20 41	PP	—	—	—	—	56·7
Malaga		125·9	314	e 21 3	PP	e 33 3	PPS	—	—	e 51·7
Chicago		130·4	35	e 22 26	PKS	e 26 16	[− 5]	—	—	—
St. Louis		130·7	40	e 19 16	[+ 3]	e 22 39	PKS	e 21 36	PP	—
Tacubaya	N.	131·0	68	e 22 55	PKS	—	—	—	—	—
Ottawa		133·6	23	e 22 49	PKS	—	—	—	—	—
Weston		137·9	21	19 26	[− 1]	—	—	—	—	—
Philadelphia		138·3	27	e 22 8	PP	—	—	e 22 39	PKS	—
Columbia		139·4	39	e 22 43	PKS	—	—	—	—	—
Bermuda		149·2	22	—	—	e 26 2	[−51]	e 31 45	?	—
Huancayo		151·4	124	e 19 57	[+ 7]	e 42 23	SS	e 22 49	PP	e 63·9
La Paz		153·8	141	i 19 58k	[+ 5]	i 26 39	[−19]	i 20 38	PKP_2	57·7
Bogota		157·5	87	e 20 14	[+16]	—	—	i 20 41	PKP_2	—
San Juan		159·8	43	i 20 0	[− 1]	—	—	—	—	—
Fort de France		165·7	39	e 19 4	[−62]	—	—	—	—	—

Additional readings :—
Riverview iE =9m.4s., iSS?E =15m.41s., iN =15m.45s.
Helwan eZ =16m.58s. and 19m.43s.
Collmberg eZ =19m.1s.
Huancayo e =34m.3s.
La Paz isPKP =21m.12s., iPP =22m.20s., iSKPZ =23m.10s.
Long waves were also recorded at Granada.

Nov. 27d. 21h. 56m. 49s. Epicentre 24°·9N. 63°·5E.

Felt as far as Dera Ismail Khan and Montgomery.
Area of maximum intensity >X (R.F.) 11500 sq. miles.
Intensity >V (R.F.) 440,000 sq. miles.
Destruction of the towns of Pasni and Ormara. Large tsunami; damage in the port and on the coast of Karachi; damage and casualties in the vicinity of Bombay. Appearance of four islands on an anticline partly submarine, which extends into the mud volcanoes of Hinglaij.
Epicentre: 25°N. 62°·2E. (Strasbourg).
24°·5N. 63°·0E. Mag. 8¼ (Pasadena).
24°·2N. 62°·6E. (C. G. Pendse).

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"Seismic Sea-Wave of November 27d, 1945," Nature, No. 4002, vol. 158, p. 63, London, July, 13, 1946.
Earthquake Notes, Eastern Section, Seismological Society of America, Vol. XVII, Nos. 1 and 2, p. 10, Dec., 1945.

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The Mekran Earthquake, 28th November, 1945. The Appearance of New Islands. Indian Minerals, Vol. 1, No. 3.

J. P. Rothé.
Le séisme du 27 novembre 1945 et l'hypothèse de Suess sur la Cause du "Déluge," C.R., Académie des Sciences, tome 222, Paris, 1946, pp. 301-302.

Anonymous.
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$A = +\cdot4052,\ B = +\cdot8127,\ C = +\cdot4187;\quad \delta = -2;\quad h = +3;$
$D = +\cdot895,\ E = -\cdot446;\quad G = +\cdot187,\ H = +\cdot375,\ K = -\cdot908.$

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay	N.	10·5	123	e 2 30	− 5	—	—	—	—	—
New Delhi		12·8	70	i 3 5	− 1	i 5 51	+21	i 3 17	PP	—
Dehra Dun	N.	14·0	64	e 3 44	+22	e 6 56	+57	e 5 20	?	—
Stalinabad		14·3	17	i 3 25	− 1	—	—	—	—	—
Samarkand		15·0	10	4 31?	+56	—	—	—	—	—
Hyderabad	N.	15·8	115	3 43	− 2	6 30	−12	5 16	?	—
Tashkent		17·1	15	i 3 54	− 8	—	—	—	—	—
Andijan		17·4	23	i 4 6	0	i 10 50?	?	—	—	—
Tchimkent		18·1	15	i 4 36	+22	—	—	—	—	—
Baku		19·2	327	i 4 28	0	—	—	—	—	—
Kodaikanal	E.	19·7	135	e 4 26	− 8	—	—	—	—	—
Frunse		20·1	24	i 4 39	+ 1	8 51	+32	—	—	—
Erevan		22·0	319	e 4 57	− 1	9 16	+20	—	—	—
Calcutta	E.	22·9	90	e 5 12	+ 6	9 13	0	5 52	PPP	—
Colombo	E.	23·8	137	5 18	+ 3	10 11?	+43	—	—	—
Ksara		25·6	297	e 5 35	+ 3	i 10 34	+35	—	—	—
Helwan		28·9	288	i 6 2a	− 1	11 2	+ 9	7 5	PPP	—
Yalta		30·8	317	e 6 18	− 2	i 11 40	+17	—	—	—
Sverdlovsk		32·0	357	i 6 29	− 1	i 11 51	+ 9	—	—	—
Bucharest		36·0	313	e 7 6?	+ 1	i 12 57	+13	9 13	P_cP	18·5
Moscow		36·2	336	i 7 6	0	12 59	+12	—	—	—
Campulung		37·0	314	e 7 14	+ 1	—	—	—	—	19·2
Sofia		37·4	309	e 7 17	+ 1	i 13 36	+31	i 9 1	PPP	e 18·8
Pehpei		38·3	72	8 14	+50	14 22	+63	10 6	PP	—
Belgrade		40·0	311	e 7 36a	− 2	i 17 7	SSS	9 14	PP	e 19·2
Irkutsk		41·2	38	i 7 47	− 1	—	—	—	—	—
Kalossa	E.	41·4	313	7 46	− 4	—	—	—	—	15·2
Triest		44·8	311	i 8 15	− 2	15 14	+19	i 8 38	pP	e 22·9
Prague		45·3	318	e 7 22	−59	e 13 56	−66	e 17 23	SS	—
Tananarive		46·2	202	e 8 32	+ 4	e 15 23	+ 8	10 8	PP	23·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Collmberg		46·5	319	e 8 32	+ 1	i 15 54	+35	i 10 27	PP	i 29·0
Cheb		46·6	317	i 8 33	+ 1	e 15 23	+ 2	e 10 27	PP	e 27·2
Upsala		47·1	330	8 35	0	i 15 23	− 5	i 10 28	PP	e 22·2
Jena		47·3	318	i 9 14	+37	i 16 3	+32	i 10 47	PP	—
Chur		47·8	312	e 8 38	− 3	e 15 18	−20	—	—	—
Copenhagen		48·1	324	i 8 45	+ 2	i 15 46	+ 4	10 51	PP	—
Zürich		48·6	313	e 8 42	− 5	e 15 43	− 6	—	—	—
Basle		49·3	313	e 8 48	− 5	e 15 58	− 1	—	—	—
Strasbourg		49·3	315	i 8 50	− 3	i 15 56	− 3	e 10 48	PP	e 23·4
Neuchatel		49·6	312	e 8 52	− 3	e 16 1	− 2	—	—	—
De Bilt		51·4	319	e 9 13a	+ 4	i 16 38	+10	—	—	—
Uccle		51·7	317	i 9 11a	0	i 16 32	0	i 9 42	pP	e 23·2
Paris		52·8	314	i 9 17	− 2	i 16 33	−14	12 3	PPP	e 26·2
Barcelona		52·9	305	i 9 23	+ 3	i 16 53	+ 5	10 19	pP	24·2
Bergen		53·1	329	9 22	+ 1	16 14	−37	e 11 27	PP	23·1
Tortosa		54·1	303	e 9 30	+ 1	i 17 6	+ 1	10 8	pP	e 25·2
Kew		54·7	317	i 9 33a	0	i 17 12	− 1	i 11 33	PP	e 26·2
Aberdeen		56·3	324	i 9 42	− 3	i 17 34	0	i 17 48	PS	i 36·1
Edinburgh		56·8	322	9 44	− 4	17 21	−20	11 47	PP	—
Granada		57·7	300	i 9 56k	+ 1	i 17 59	+ 6	10 31	P_cP	30·1
Toledo	z.	57·7	302	e 9 52	− 3	i 18 51	+58	i 9 55	P	—
Hukuoka		58·1	65	i 9 59	+ 1	18 18	+20	22 26	?	30·5
Malaga	z.	58·4	300	i 10 1	+ 1	e 17 57	− 5	i 10 12	pP	27·3
Miyazaki		59·3	67	10 6	0	—	—	—	—	—
Kôti		60·7	64	i 11 42	+87	20 1	+89	—	—	—
Johannesburg		61·2	217	e 10 23	+ 4	e 18 53	+15	e 26 11?	Q	e 30·7
Kobe		61·8	62	10 24	+ 1	18 55	+ 9	—	—	—
Lisbon		61·8	302	i 10 24k	+ 1	i 18 48	+ 2	i 10 59	pP	31·9
Wazima		62·6	59	e 10 21	− 7	19 13	+17	—	—	—
Owase		62·8	63	10 32	+ 2	19 3	+ 5	—	—	—
Nagano		63·8	60	10 39	+ 3	19 7	− 4	—	—	—
Shizuoka		64·3	62	e 10 27	−12	19 17	0	—	—	—
Mori		64·5	53	10 40	− 1	19 20	+ 1	—	—	34·1
Misima		64·7	62	10 45	+ 3	19 25	+ 3	—	—	—
Sapporo		64·9	52	10 45	+ 2	19 44	+20	—	—	e 32·2
Tokyo		65·2	61	10 53	+ 8	19 34	+ 6	—	—	27·6
Mizusawa	E.	65·5	57	10 51	+ 4	e 19 50	+18	—	—	e 26·9
	N.	65·5	57	10 55	+ 8	e 19 45	+13	—	—	e 26·9
Sendai		65·5	58	10 44	− 3	19 33	+ 1	—	—	—
Reykjavik		65·9	332	e 9 53	−57	e 19 59	+22	e 24 5	SS	—
Angra do Heroismo		75·4	306	e 11 31	−16	e 21 11	−16	—	—	—
Perth		75·5	136	12 11	+23	21 1	−27	14 56	PP	32·1
Ivigtut		78·2	333	12 5k	+ 2	22 23	+26	15 34	PP	—
College		87·3	13	e 12 52	+ 2	i 23 16	−13	e 16 24	PP	e 41·8
Halifax		95·6	325	15 2	?	24 27	{+ 5}	17 35	PP	44·2
Sitka		96·4	10	i 13 49	+17	i 24 39	{+11}	e 17 46	PP	i 44·4
Seven Falls		97·3	330	13 39	+ 3	c 24 39	{+ 4}	17 51	PP	—
Shawinigan Falls		98·6	331	13 47	+ 5	24 11	[− 9]	17 41	PP	—
Brisbane		100·7	115	e 14 15	+23	i 25 20	− 6	i 18 21	PP	e 52·7
Ottawa		100·8	332	13 53	+ 1	24 29	[− 2]	18 13	PP	49·2
Weston		101·1	327	e 13 56	+ 3	24 56	{− 6}	18 13	PP	—
Harvard		101·2	327	e 13 55	+ 1	i 24 32	[− 1]	i 18 23	PP	e 33·5
Riverview		101·6	122	e 14 14	+18	i 25 31	− 3	i 18 33	PP	e 45·7
Saskatoon		102·8	353	14 23	+22	27 11	PS	18 20	PP	49·2
Fordham		103·5	328	e 14 4	0	i 24 48	[+ 4]	i 18 33	PP	60·2
Bermuda		104·6	316	e 14 45	+36	i 25 57	− 2	i 18 27	PP	e 57·1
Philadelphia		104·9	328	e 14 16	+ 6	i 25 8	[+18]	i 18 29	PP	e 42·4
Georgetown		106·6	328	e 14 18	P	i 25 24	[+26]	i 18 47	PP	e 41·5
Victoria		106·7	4	14 50	P	25 19	[+21]	18 41	PP	52·2
Grand Coulee		107·5	2	e 14 25	P	—	—	—	—	e 43·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Scattle		107·6	3	e 15 40	?	e 25 3	[+ 1]	—	—	e 49·3
Chicago		108·5	338	e 14 33	P	i 25 15	[+ 9]	i 18 43	PP	e 51·3
Butte		109·3	357	e 14 42	P	i 25 43	[+34]	e 18 59	PP	i 55·4
Bozeman		109·6	355	e 14 42	P	i 25 35	[+24]	e 19 2	PP	i 54·9
Cincinnati		109·6	334	e 14 33	P	e 25 11	[0]	i 19 1	PP	—
Rapid City		110·3	349	e 15 10	P	e 25 31	[+17]	e 28 55	PS	e 48·4
Lincoln		112·0	344	e 19 22	PP	e 25 29	[+ 9]	e 28 54	PS	e 45·5
St. Louis		112·2	338	e 14 45	P	i 25 47	[+26]	i 19 23	PP	e 54·9
Columbia		112·4	329	e 14 51	P	i 25 51	[+29]	i 29 26	PS	e 53·0
Cape Girardeau		113·1	327	e 19 33	PP	—	—	(e 39 11?)	SSS	e 39·2
Fort de France		113·2	299	e 19 8	PP	e 27 38	?	e 29 41	PS	—
Ferndale		114·5	6	e 20 11	PP	e 26 11	{−26}	e 29 11	PS	e 46·2
Shasta Dam		114·5	4	e 15 24	P	e 29 1	PS	e 19 54	PP	—
Salt Lake City		114·5	355	i 19 39	PP	i 25 53	[+23]	i 29 13	PS	e 48·4
San Juan		114·7	306	e 14 58	P	i 29 25	PS	e 19 40	PP	e 49·1
Mineral	E.	114·9	4	e 19 55	PP	e 29 25	PS	e 35 52	SS	e 51·5
Ukiah		116·0	5	e 19 51	PP	e 26 8	[+32]	e 29 47	PS	e 54·8
Berkeley		117·3	5	15 26	P	e 29 56	PS	e 18 36	PKP	59·5
San Francisco		117·4	5	e 20 31	PP	e 26 32	{−24}	e 29 55	PS	e 54·3
Branner		117·8	5	e 20 10	PP	e 25 45	[+ 3]	e 29 45	PS	—
Lick		117·9	5	e 18 59	[+10]	e 25 56	[+13]	e 20 11	PP	e 51·0
Santa Clara		117·9	5	e 19 54	PP	e 30 26	PS	e 41 29	SSS	e 56·2
Tinemaha		118·3	1	e 18 49	[0]	e 30 0	PS	—	—	—
Mobile		118·4	332	20 14	PP	26 23	{−40}	38 32	?	—
Fresno	N.	118·6	3	e 21 6	?	e 26 52	{−12}	e 30 55	PPS	e 58·7
Overton		118·9	358	e 18 55	[+ 4]	—	—	—	—	—
Honolulu		119·0	44	e 20 24	PP	e 25 46	[0]	i 30 27	PS	e 47·9
Pierce Ferry		119·3	357	e 18 52	[+ 1]	—	—	—	—	—
Haiwee		119·3	1	e 18 52	[+ 1]	—	—	e 20 9	PP	—
Boulder City		119·4	358	e 15 45	P	—	—	i 18 56	PKP	—
Christchurch		120·2	127	15 38	P	26 26	[+35]	19 14	PKP	57·7
Wellington		120·6	125	15 32	P	25 52	[0]	19 0	PKP	54·7
Santa Barbara	Z.	120·9	3	e 19 0	[+ 5]	—	—	—	—	—
Auckland		121·0	120	17 51	[−64]	—	—	20 42	PP	—
Mount Wilson	Z.	121·2	1	e 19 0	[+ 5]	—	—	e 29 2	PKKP	—
Pasadena		121·3	1	e 15 31	P	e 30 42	PS	e 19 0	PKP	—
Riverside	Z.	121·4	1	e 18 55	[0]	—	—	e 29 28	PKKP	—
Arapuni		121·8	120	e 10 11?	?	21 35	?	(31 23?)	PPS	31·4
Palomar		122·1	0	i 19 2	[+ 5]	—	—	e 20 29	PP	—
La Jolla	Z.	122·6	0	e 19 3	[+ 5]	—	—	—	—	—
Tucson		122·9	353	e 15 42	P	e 38 12	SSP	e 18 58	PKP	e 47·4
Chihuahua		125·8	349	e 17 13	?	e 30 53	PS	e 19 16	PKP	i 61·3
Merida		127·5	327	e 20 33	PP	i 27 21	{−43}	i 23 11	PPP	—
La Plata	E.	128·9	244	19 47	[+37]	28 17	{+ 5}	21 23	PP	56·2
	N.	128·9	244	15 53	P	26 59	[+42]	19 52	PKP	49·8
	Z.	128·9	244	19 59	[+49]	—	—	21 23	PP	64·2
Bogota		129·4	299	e 19 16	[+ 5]	—	—	i 23 45	PPP	91·5
Balboa Heights		130·7	308	e 18 11	[−62]	—	—	—	—	—
Mazatlan		131·2	347	e 20 15	[+61]	e 33 30	PPS	e 21 39	PP	68·8
Vera Cruz		131·9	333	e 18 23	[−53]	e 26 24	[− 1]	e 19 12	PKP	—
Guadalajara	N.	132·9	343	e 20 47	?	e 26 27	[− 0]	e 21 47	PP	e 63·0
Tacubaya		132·9	337	e 19 32	[+14]	e 28 39	{+ 2}	i 21 55	PP	e 62·9
Oaxaca		134·1	333	e 20 41	?	e 32 45	PS	e 33 57	PPS	—
La Paz		134·2	270	i 19 26a	[+ 6]	26 16	[−13]	i 22 23	PP	56·2
Manzanillo	E.	134·7	344	e 21 56	PP	i 26 23	[− 7]	i 24 53	PPP	e 67·3
Huancayo		139·1	280	e 19 29	[0]	—	—	i 22 19	PP	e 55·4

Additional readings :—
Calcutta iE =6m.13s. and 6m.38s.
Bucharest iE =7m.42s., 13m.14s., and 13m.40s., iS?E =16m.4s.
Sofia iEN =7m.55s., iSN =13m.46s.
Pehpei i =8m.54s., SS? =16m.23s. and 16m.44s., i =18m.3s.
Belgrade i =7m.41s., 8m.1s., 8m.15s., and 10m.16s., iSS =15m.20s.
Kalossa iE =7m.54s. and 8m.44s.
Triest iPZ =8m.19s., isP =8m.48s., iP_cP =9m.23s., ipP_cP =9m.51s., iPP =10m.10s.?, ipPP =10m.29s., iPPP =10m.41s., iS_cP =13m.6s., iSS =19m.15s.

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Tananarive iPPN =9m.21s., iEN =9m.29s., SSE =15m.51s., E =19m.14s., N =19m.49s.
Collmberg iP$_c$P =9m.29s., iPPP =11m.32s., iS$_c$S =18m.23s., iSS =19m.26s., iQ = 26m.38s., and many other readings without phase.
Cheb e =9m.9s., eSS =18m.56s., e =23m.11s.
Upsala iPPP =11m.2s., eS?E =15m.39s., iN =18m.23s., iSSE =18m.55s., iSS?N = 19m.57s., iSSS?N =19m.58s.
Jena iP =9m.20s., iZ =9m.36s., iN =9m.39s., iE =9m.54s., iSN =16m.6s., iSE = 16m.16s., iSZ =16m.24s., iPSN =17m.20s., iPSN =17m.23s., iPSE =17m.32s.
Copenhagen 14m.46s.
Strasbourg i =9m.22s. and 16m.32s., iSS =20m.52s., eSSS =21m.40s.
Uccle isP? =9m.50s., iSS? =20m.57s.
Paris e =9m.55s., iSS =19m.38s., i =21m.45s., eQ =24·2m.
Barcelona sPP =13m.45s., PS =17m.31s., SS =20m.8s., SSS =21m.53s.
Bergen iZ =9m.43s., eZ =10m.50s., SSN =18m.56s.
Tortosa iE =9m.46s., P$_c$PE? =10m.35s., pP$_c$PEN =11m.5s., PPE =12m.8s., PPPEN = 12m.56s., pPPPEN =13m.29s., P$_c$SE =14m.21s., pP$_c$SN =15m.26s., sP$_c$SE = 16m.18s., iN =16m.43s., iE =17m.18s., PSN =17m.38s., PPSE =18m.0s., S$_c$SN = 19m.3s., pS$_c$SE =20m.23s., SSE =22m.39s., SSSEN =25m.52s.
Kew iP$_c$P?NZ =10m.25s., iPPPN =12m.24s., iP$_c$SN =14m.35s., eSSZ =21m.11s.?, eSSSZ =23m.21s.?
Aberdeen iEN =12m.27s., iSSE =21m.54s.
Edinburgh S$_c$S =19m.30s., SS =21m.3s.
Granada P$_c$S =14m.11s., SP =19m.2s., Q =26m.59s.
Malaga P$_c$PZ =10m.39s., PPZ =12m.10s., PPPZ =13m.29s., SSZ =21m.37s., QZ = 24m.49s.
Lisbon iPPE =13m.7s., pPPZ =13m.42s.?, PPP?Z =14m.53s., PPP?E =14m.57s., N = 16m.58s., E =17m.2s., N =18m.32s., SE =19m.12s., iSN =19m.20s., iSE =19m.36s., N =20m.40s. and 22m.46s., Z =24m.5s., QN =26m.48s.
Reykjavik eN =27m.17s.
Perth PPP =16m.11s., i =18m.59s., PS =21m.51s., SS =25m.31s., SSS =28m.6s.
Ivigtut 17m.11s., SS =27m.41s.
College iPP =16m.33s., i =20m.19s. and 24m.1s., e =29m.14s., iSS =29m.35s., iSSS = 33m.30s.
Halifax SS =31m.41s.
Sitka i =20m.0s., iPS =26m.11s., iSS =31m.26s., i =37m.21s.
Seven Falls e =23m.33s., PS =26m.17s., e =29m.35s., SS =32m.11s.
Shawinigan Falls SKKS =24m.47s., SS =31m.28s.
Brisbane eP =14m.32s., iN =19m.29s., iPSE =27m.44s., iSSE =33m.39s., iSSSE = 38m.2s., iQE =47m.8s.
Ottawa PPPE =20m.55s., PS =27m.20s., SS =32m.29s., SSS =37m.35s.
Weston 20m.47s., SKS =24m.7s.
Harvard e =17m.13s., i =17m.44s., iPPP =20m.12s., i =20m.49s., iS =25m.2s., e = 26m.8s., iPS =27m.3s., i =27m.27s. and 28m.44s., e =32m.18s.
Riverview iPEZ =14m.21s.a, eEZ =14m.30s., iEZ =15m.19s., iZ =18m.7s., iEZ = 20m.37s. and 21m.3s., iSKSE =24m.53s., eN =25m.2s., iE =25m.8s., iSKKS?N = 25m.28s., iSN =26m.5s., iPSN =27m.45s., iE =28m.52s., iN =30m.8s., 33m.3s., and 35m.36s., iE =36m.8s. and 37m.15s., iEN =37m.58s., eQN =41m.59s., eQE = 42m.47s.
Saskatoon e =23m.59s., SS =33m.41s.
Fordham i =14m.43s. and 25m.11s.
Bermuda e =17m.57s., i =23m.5s., iSS =33m.8s., eSSS =36m.35s., i =44m.0s.
Philadelphia ePS =27m.49s., i =30m.56s., eSS =33m.16s.
Georgetown i =16m.18s., e =18m.1s., i =21m.47s., e =23m.20s., ePS =27m.49s., ePPS = 28m.20s.
Victoria e =27m.20s., PPS =28m.41s., SS =34m.11s.?, SSS =39m.11s.?
Grand Coulee iPKP =17m.47s. and 18m.9s., ePP =19m.31s., eSS =33m.11s.
Seattle e =17m.16s. and 21m.53s.
Chicago e =17m.51s., ePS =28m.11s., eSS =34m.1s., eSS =38m.31s.
Butte iPP =19m.27s., e =23m.42s., iPS =28m.40s., iSS =34m.12s.
Bozeman i =23m.43s., iPS =28m.48s., i =30m.11s., iSS =34m.34s.
Cincinnati ePKP =18m.8s., e =19m.39s., eS =27m.16s.
Rapid City e =18m.5s. and 18m.51s., i =21m.29s. and 36m.19s.
Lincoln eSS =35m.3s.
St. Louis iPPPZ =22m.25s., iPSZ =28m.48s.
Columbia e =18m.51s., eS =26m.53s., i =29m.26s., iSS =35m.45s., eSSS =39m.20s.
Ferndale ePSN =29m.29s., eE =36m.29s., eEN =41m.11s., eSKP,PKPE =42m.43s.
Shasta Dam iPKP =18m.46s., iPKKP =29m.39s.
Salt Lake City eSS =34m.49s.
San Juan iSS =35m.26s.
Ukiah eSS =35m.56s.
Berkeley ePN =15m.30s., ePP =19m.36s., eN =20m.13s. and 20m.32s., eSKKSN = 26m.14s., ePSPSN =35m.13s., eN =36m.35s., eSSSN =37m.13s., eSKP,PKPN = 42m.28s., eQN =47m.28s.
Branner eE =31m.56s., eSSSN =37m.5s.
Lick eE =20m.17s., eN =26m.19s., ePPSN =29m.59s., eSSSEN =37m.11s., eEN = 41m.41s.
Santa Clara eSKKSE =37m.41s.
Fresno eN =24m.19s., 27m.16s., and 36m.17s., eSSSN =38m.41s.

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Honolulu i = 30m.39s., iSS = 36m.46s., iSSS = 40m.15s.
Haiwee ePKKPZ = 29m.33s.
Boulder City e = 29m.41s.
Christchurch PP = 20m.32s., PS = 30m.29s., SS = 36m.53s., SSSEN = 41m.46s., SSSSEN = 45m.38s., QEN = 49m.51s.
Wellington iZ = 15m.45s., PPZ = 20m.47s., SKKS = 27m.42s., SKKKS?Z = 28m.38s., PS = 30m.17s., SS = 37m.46s., SSS = 42m.14s., Q = 48m.6s.
Auckland e = 21m.29s., i = 28m.51s. and 32m.46s.
Pasadena eNZ = 20m.20s., iN = 20m.46s., iPKKP = 29m.1s., eSSN = 38m.17s., eSSSN = 41m.59s.
Tucson iPP = 20m.36s., e = 26m.44s., i = 29m.50s.
Chihuahua iPPZ = 20m.51s., iSKPZ = 22m.23s., eZ = 29m.36s.
Merida ePPN = 20m.37s., iSKPN = 21m.59s., iPSN = 30m.25s., ePPSE = 31m.41s., eN = 33m.57s., eE = 34m.9s., eN = 40m.13s., eSSS? = 41m.21s.
La Plata PPN = 21m.35s., E = 22m.53s., N = 23m.5s., SKKSN = 28m.29s., N = 30m.35s., PSE = 31m.23s., PPSEN = 33m.17s., N = 34m.53s., SSN = 38m.47s., SS?E = 39m.47s., N = 41m.35s., E = 41m.53s., SSSN = 43m.41s., N = 46m.35s.
Bogota e = 20m.0s. and 37m.10s.
Vera Cruz iPPN = 21m.35s., eSKP = 22m.42s., iSN = 29m.59s., eZ = 32m.4s., ePPSZ = 33m.22s., iPPSN = 33m.26s., eSSN = 39m.11s., eSSSN = 44m.8s.
Guadalajara eSKP?N = 22m.31s., iSKKSN = 28m.23s., ePPSN = 33m.27s., eSSN = 39m.18s., eSSSN = 44m.13s.
Tacubaya eSKPE = 22m.53s., iSKPZ = 22m.59s., eSKPN = 23m.5s., ePPPN = 24m.53s., iPPPE = 24m.59s. and 25m.6s., eSKKSN = 28m.28s.?, eSE = 30m.2s., ePSE = 30m.55s., ePSN = 30m.59s., ePSE = 31m.8s., ePPSE = 34m.9s., ePPSN = 34m.19s., eSSE = 40m.15s., eSSSE = 44m.41s., eSSSN = 44m.44s. and 44m.59s., also many other readings without phase.
Oaxaca eSKP = 22m.45s., eSSN = 40m.5s., eSS = 40m.11s.
La Paz iPPN = 22m.27s., SKP = 23m.13s., SKKS = 28m.53s., SN = 30m.6s., PPSN = 34m.11s., SSN = 39m.47s., iN = 40m.26s., iSSSN = 45m.26s.
Manzanillo iE = 25m.17s., eSKKSE = 28m.41s., eSE = 30m.17s., eE = 31m.27s., ePPSE = 34m.3s., iSSE = 39m.51s.
Huancayo e = 20m.26s., i = 23m.35s. and 31m.48s., e = 35m.42s., eSS = 39m.30s.
This is not a deep focus earthquake, but in several cases PcP phase has been recorded as pP.

Nov. 27d. Readings also at 1h. (Tucson and Mount Wilson), 5h. (Huancayo and near Mizusawa), 7h. (San Juan), 8h. (Tucson and St. Louis), 9h. (Palomar), 10h. (Collmberg, St. Louis, Salt Lake City, Tinemaha, Pasadena, Mount Wilson, Riverside, Palomar, Tucson, Shasta Dam, La Paz, and near Mizusawa), 11h. (near Mineral), 12h. (Logan, Tucson (3), Palomar (2), Riverside (2), Mount Wilson (2), Auckland, Wellington, Arapuni, Collmberg, and near Malaga), 13h. (Collmberg), 15h. (Tucson and Riverview), 17h. (Christchurch, Riverview, and near Malaga), 18h. (Mount Wilson, Riverside, Palomar, Tucson, Huancayo, La Paz, San Juan, and Balboa Heights), 19h. (Tucson, Palomar, Riverside, Mount Wilson, Collmberg, Frunse, Samarkand, Tashkent, near Andijan, and Stalinabad).

Nov. 28d. 8h. 35m. 30s. Epicentre 19°·0S. 169°·2E. Depth of focus 0·005.
(as on 1944 Nov. 29d.).

$A = -\cdot9294$, $B = +\cdot1773$, $C = -\cdot3236$; $\delta = -6$; $h = +5$;
$D = +\cdot187$, $E = +\cdot982$; $G = +\cdot318$, $H = -\cdot061$, $K = -\cdot946$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Brisbane		17·1	237	i 3 59	+ 3	i 7 8	+ 5	—	—
Auckland		18·5	166	4 15	+ 2	7 40	+ 6	i 5 6	PP
Riverview		21·8	223	i 4 50k	+ 2	i 8 40	0	i 9 9	sS
Wellington	z.	22·7	169	4 55	− 2	8 50	− 6	5 9	pP
Christchurch		24·6	174	5 14	− 1	9 22	− 7	6 4	PS
Santa Barbara		85·9	52	i 12 34	0	—	—	—	—
Pasadena		86·9	53	i 12 38a	− 1	—	—	—	—
Mount Wilson		87·1	53	i 12 40	0	—	—	e 16 5	PP
Riverside		87·5	53	i 12 41a	− 1	—	—	—	—
Palomar		87·6	54	i 12 42a	0	—	—	—	—
Haiwee		87·9	51	i 12 44	0	—	—	—	—
Tinemaha		88·1	51	i 12 47	+ 2	—	—	—	—
Boulder City		90·2	52	i 12 54	− 1	e 23 11	[− 7]	—	—
Overton		90·7	52	i 12 59	+ 2	—	—	—	—
Pierce Ferry		90·9	52	e 12 59	+ 1	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.
		°	°	m. s.	s.	m. s.	s.	m. s.
Tucson		91·8	57	i 13 2	0	—	—	i 13 19 pP
Grand Coulee		92·4	40	e 13 2	− 3	—	—	e 14 30 ?
Bombay	E.	101·8	286	—	—	i 24 8	[−12]	— —
Helwan	Z.	140·3	294	i 22 42	PP	—	—	e 22 57 PKS
Collmberg	Z.	142·7	335	i 19 27	[+ 1]	—	—	i 22 52 PKS
Zürich		147·6	335	e 20 23	[+48]	—	—	— —
Neuchatel		148·5	336	e 19 35	[− 1]	—	—	— —

Additional readings :—
Brisbane iPE = 4m.2s.
Riverview iP_cPZ = 8m.44s., iE = 8m.54s., iN = 8m.59s., isSN = 9m.13s., iSSSEN = 9m.32s., iZ = 9m.35s., iS_cSE = 15m.53s.
Wellington PPZ = 5m.54s., iZ = 6m.13s., 6m.49s., 7m.5s., 8m.15s., and 9m.12s., sSZ = 9m.46s., SSZ = 10m.6s., iZ = 10m.48s., S_cS = 15m.50s., sS_cS = 16m.35s.
Christchurch P_cPN = 9m.8s., sS = 9m.49s., eEN = 10m.34s.
Tucson ePP = 16m.43s.
Long waves were recorded at Arapuni.

Nov. 28d. Readings also at 0h. (Upsala), 1h. (Bucharest, Belgrade, and Collmberg), 2h. (Dehra Dun and near Mineral), 3h. (Collmberg, Bombay, Hyderabad, Kodaikanal, New Delhi, and near Andijan), 4h. (Bombay, Hyderabad, New Delhi (2), Samarkand, and near Tashkent), 7h. (Bogota, La Paz, Mount Wilson (2), Pasadena, Palomar (2), Riverside (2), and Tucson (2)), 8h. (near Mineral) 9h. (Dehra Dun and Tucson), 10h. (Bombay, Colombo, Hyderabad, Kodaikanal, New Delhi, Frunse, Stalinabad, Tashkent, and near Andijan (2)), 11h. (Collmberg and near Malaga), 14h. (Grand Coulee), 17h. (near Andijan (2)), 18h. (Dehra Dun and San Francisco), 19h. (Bombay, Calcutta, Colombo, Hyderabad, New Delhi, Stalinabad, Frunse, Tashkent, De Bilt, and Kew), 21h. (near Sofia), 22h. (Balboa Heights, Palomar, Tucson (2), Samarkand, and Stalinabad), 23h. (Bombay, Dehra Dun, Calcutta, Frunse, New Delhi, Andijan, Stalinabad, and Tashkent).

Nov. 29d. 12h. 2m. 56s. Epicentre 42°·0N. 38°·0E.

A = +·5874, B = +·4589, C = +·6666 ; δ = −2 ; h = −2 ;
D = +·616, E = −·788 ; G = +·525, H = +·410, K = −·745.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Yalta		3·7	313	e 0 59	− 1	—	—	—	—	—
Erevan		5·2	109	e 1 22	+ 1	—	—	—	—	—
Ksara		8·3	192	e 2 6	+ 2	e 3 32	− 8	—	—	—
Bucharest		9·0	289	e 3 27	?	i 3 56	− 2	i 4 11	SS	i 4·5
Sofia		10·9	278	e 4 30	S	(e 4 30)	−14	—	—	e 7·4
Helwan	Z.	13·2	206	3 4	− 7	6 43	+63	3 24	PP	—
Moscow		13·8	359	e 3 18	− 1	e 6 9	+15		—	—
Collmberg		19·4	307	i 4 37	+ 7	—	—	—	—	—
Sverdlovsk		20·8	36	4 42	− 3	e 8 34	+ 1	—	—	—
Zürich		21·5	295	e 4 53	+ 1	e 8 55	+ 8	—	—	—
Tashkent		23·3	81	e 4 46	−24	—	—	—	—	—
Stalinabad		23·7	87	e 5 9	− 5	—	—	—	—	—
Toledo	Z.	31·6	280	i 6 27	+ 1	—	—	—	—	—
Tucson		100·7	333	i 13 52	0	—	—	i 16 18	PP	—

Additional readings :—
Helwan SS?Z = 7m.25s.
Collmberg iZ = 4m.45s. and 5m.26s.
Long waves were also recorded at Copenhagen, Cheb, De Bilt, Paris, and Uccle.

Nov. 29d. Readings also at 1h. (Sverdlovsk and near Stalinabad), 2h. (Bombay, Hyderabad, New Delhi, Frunse, Samarkand, and Stalinabad), 5h. (Hyderabad, Collmberg, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, and St. Louis), 6h. (Helwan, Ksara, and Collmberg), 8h. (San Juan and near Mizusawa), 10h. (Bombay), 12h. (Auckland, Christchurch, Wellington, Riverview, Haiwee, Mount Wilson, Palomar, Riverside, Tinemaha, and Tucson), 13h. (Collmberg), 15h. (Auckland, Riverview, and Tucson), 16h. (Tucson and near Samarkand), 17h. (near Andijan, Samarkand, Tashkent, and near Malaga), 18h. (Tucson), 19h. (Auckland, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Santa Barbara, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, and near Mizusawa).

Nov. 30d. 12h. 9m. 18s. Epicentre 5°·0N. 126°·8E. (as on 1939 June 2d.).

$A = -·5967$, $B = +·7977$, $C = +·0866$; $\delta = -12$; $h = +7$;
$D = +·801$, $E = +·599$; $G = -·052$, $H = +·069$, $K = -·996$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	41·0	299	e 10 28	PPP	—	—	—	—	—
Riverview		45·0	150	e 8 29	+10	i 15 13	+15	e 10 21	PP	e 23·0
Colombo	E.	46·7	275	8 31	− 1	15 26	+ 4	—	—	—
Irkutsk		50·7	342	e 9 1	− 2	i 16 17	− 1	—	—	—
Bombay		54·4	289	e 9 34	+ 3	—	—	—	—	—
Andijan		60·2	314	e 10 13	+ 1	—	—	—	—	—
Auckland		61·1	137	17 42?	?	18 47	+10	—	—	23·7
Tashkent		62·6	315	10 27	− 1	e 18 50	− 6	—	—	—
Christchurch		63·5	144	—	—	19 18	+11	23 21	SS	33·9
Sverdlovsk		72·9	329	e 11 33	0	i 20 54	− 5	—	—	—
Helwan		92·3	300	e 12 7	−66	22 48	[−58]	e 13 0	P	—
Collmberg	Z.	100·7	325	13 57	+ 5	—	—	e 17 57	PP	—
De Bilt		104·7	327	—	—	e 24 42?	[− 7]	—	—	e 50·7
Strasbourg		104·9	323	—	—	e 26 7	+ 6	e 28 45	PPS	51·5
Uccle		105·8	326	—	—	e 24 42?	[−12]	e33 42?	SS	e 49·7
Pierce Ferry		110·0	49	e 18 37	[+ 4]	—	—	—	—	—
Tucson		114·0	51	e 18 51	[+10]	e 30 12	PPS	—	—	e 54·0

Additional readings :—
Riverview PSE =15m.24s., iSSE =18m.30s., iN =18m.36s.
Christchurch SSSEN =27m.15s., QEN =29m.49s.
Tucson i =29m.37s., e =30m.57s.
Long waves were also recorded at New Delhi, Wellington, Arapuni, and at other European stations.

Nov. 30d. Readings also at 0h. (Mount Wilson, Palomar, Tucson, San Juan, near Balboa Heights, near Mizusawa, and near Samarkand), 1h. (Tucson, near Stalinabad, Samarkand, and Tashkent), 2h. (near Frunse), 4h. (Tucson and near Andijan), 5h. (Tucson (2) and Pierce Ferry), 6h. (Tucson and near Balboa Heights), 7h. (Tucson), 8h. (La Plata, near Frunse, Andijan, Stalinabad, and Samarkand), 10h. (Tucson and Samarkand), 11h. (Hyderabad, New Delhi, near Tashkent Stalinabad, and Andijan), 12h. (Kew), 16h. (Tucson), 21h. (Tucson and Palomar), 22h. (Tucson, Riverside, Palomar, Mount Wilson, Pasadena, Collmberg (2), Calcutta, Hyderabad, New Delhi, Bombay, Andijan, Tashkent, and near Piatigorsk).

December 1d. 5h. Undetermined shock. Pasadena suggests the Tonga region with depth 400-500km.

Wellington P =53m.46s., S =57m.13s.
Auckland i =54m.54s., S =56m.4s., L =56m.50s.
Riverview eZ =55m.8s., iZ =57m.20s., iS?E =59m.36s.
Christchurch S =56m.3s., QEN =57m.56s., R =59m.53s.
Santa Barbara iPZ =60m.36s.
Mount Wilson iPZ =60m.38s., iZ =62m.14s.
Pasadena iP =60m.38s., ipPZ =62m.13s.
Palomar iPNZ =60m.41s., ipP =62m.14s., iSE =70m.9s.
Riverside iPZ =60m.41s., iZ =61m.2s., epPZ =62m.16s., eZ =63m.44s.
Shasta Dam eP =60m.44s., ipP =62m.20s., iS =70m.11s., eSS =74m.54s.
Haiwee ePEZ =60m.46s., epPEZ =62m.19s.
Tinemaha ePEN =60m.50s., epPEN =62m.22s., eSN =70m.19s.
Boulder City iP =60m.56s., ipP =61m.10s., i =62m.32s., eS =70m.33s., e =70m.51s.
Pierce Ferry iP =60m.59s.
Overton eP =61m.1s.
Tucson iP =61m.1s., epP =62m.39s., i =79m.24s., e =87m.33s., eL =91m.4s.
Grand Coulee iP =61m.16s., ipP =62m.53s.
Collmberg eZ =68m.15s., iZ =68m.18s., 68m.37s., and 70m.3s., eZ =71m.17s. and 71m.45s.
Zürich eP =68m.20s.k, e =70m.15s.
Basle eP =68m.29s.
Malaga iPZ =68m.34s., ePZ =68m.48s., iSZ =69m.28s., eSSZ =69m.41s., eZ =69m.57s., LZ =70m.19s.
Toledo iP?Z =69m.34s.
De Bilt eZ =70m.4s.

December 1d. 12h. 10m. 38s. Epicentre 38°·5N. 139°·0E. Depth of focus 0·005.

Intensity IV at Miyako ; II-III at Onahama, Utunomiya, Tukubasan, and Mito.
Epicentre as adopted. Focal depth 40km.
The Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1945, Tokyo, 1951, p.46.

A = −·5922, B = +·5147, C = +·6199 ; δ = −11 ; h = −1 ;
D = +·656, E = +·755 ; G = −·468, H = +·407, K = −·785.

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Akita		1·5	35	−0 34	?	−0 7	?
Sendai		1·5	99	−0 13	?	0 10	?
Mizusawa	E.	1·8	69	0 31	+ 1	0 55	+ 3
Nagano		1·9	199	0 35	+ 4	1 1	+ 7
Wazima		2·0	236	0 34	+ 2	—	—
Onahama		2·2	136	0 31k	− 4	0 58	− 4
Toyama		2·3	219	1 2	S	(1 2)	− 2
Mito		2·4	151	0 34	− 4	1 4	− 3
Tukubasan		2·4	159	0 36	− 2	1 7	0
Miyako		2·6	64	0 39	− 2	1 9	− 3
Hatinohe		2·8	44	0 7	−37	0 42	−35
Tokyo		2·9	168	0 42	− 3	1 20	+ 1
Yokohama		3·1	170	0 56	+ 8	1 18	− 6
Misima		3·3	181	0 53	+ 2	1 31	+ 2
Mera		3·6	169	0 48	− 7	1 40	+ 3
Shizuoka		3·6	185	0 58	+ 3	1 32	− 5
Hikone		3·9	215	1 0	+ 1	1 47	+ 3

December 1d. 18h. 5m. 30s. Epicentre 38°·3N. 74°·0E. Depth of focus 0·015.

Epicentre 38°17′N. 74°00′E. Focal depth 100kms. (stations of the U.S.S.R.).

A = +·2169, B = +·7563, C = +·6172 ; δ = −3 ; h = −1 ;
D = +·961, E = −·276 ; G = +·170, H = +·593, K = −·787.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Andijan	2·7	334	0 46	+ 2	i 1 16	− 1
Stalinabad	4·1	276	i 1 0	− 2	i 1 48	− 2
Frunse	4·6	6	1 10	+ 1	e 2 2	0
Tashkent	4·7	312	e 1 10	0	e 2 3	− 1
Tchimkent	5·2	322	i 1 20	+ 3	i 2 19	+ 3
Samarkand	5·6	286	1 18	− 4	—	—

December 1d. Readings also at 0h. (near Sofia), 2h. (near Stalinabad, Tchimkent, Samarkand, and Andijan), 5h. (Christchurch, Riverview, Tucson, Palomar, Mount Wilson, and Shasta Dam), 9h. (near Irkutsk), 8h. (Helwan), 10h. (near Tortosa),11h. (San Juan), 12h. (near Samarkand), 13h. (Hyderabad, New Delhi, and Bombay), 14h. (Bucharest and near Sofia), 17h. (San Juan and near Mizusawa), 18h. (New Delhi, Riverview, Vladivostok, Tashkent, Samarkand, near Tchimkent, and Andijan (2)), 19h. (Copenhagen, De Bilt, and Uccle), 21h. (near Balboa Heights), 22h. (near Branner), 23h. (near Berkeley).

Dec. 2d. Readings at 0h. (Mount Wilson, Pasadena, Palomar, Riverside, Tucson (2), Boulder City, Overton, Pierce Ferry, and Grand Coulee), 1h. (near Tacubaya), 2h. (New Delhi and Shasta Dam), 4h. (near Mineral), 5h. (near Andijan), 8h. (Balboa Heights), 12h. (Sofia, Samarkand, near Andijan, and Tashkent), 13h. (near Tacubaya), 14h. (New Delhi), 15h. (near Ottawa), 18h. (Bombay, Hyderabad, and New Delhi), 19h. (near Berkeley), 20h. (Bombay and La Paz), 21h. (New Delhi and Tashkent), 23h. (Bombay, Colombo, Hyderabad, New Delhi, Riverview, and near Mizusawa).

Dec. 3d. 22h. Turkey.

Erevan eP = 55m.3s., eS* = 56m.8s., eS_g = 56m.26s.
Ksara e = 55m.48s., S_g = 57m.48s.
Helwan eZ = 56m.45s., 61m.17s., 62m.35s., and 64m.45s.
Moscow eP = 56m.49s., eS = 59m.13s.
Baku eP = 57m.36s.
Collmberg eZ = 58m.3s., 58m.11s., 58m.27s., and 58m.52s.
Tashkent eP = 58m.37s., eS = 62m.26s.
Andijan eP = 59m.2s.
Copenhagen 62m.36s., L = 71m.
Cheb e = 66m.42s. and 70m.

Dec. 3d. Readings also at 1h. (St. Louis and New Delhi), 2h. (near Granada (2)), 4h. (near Berkeley, Branner (2), and Lick (2)), 8h. (near Tacubaya), 9h. (Alicante and near Malaga), 17h. (near Malaga), 18h. (near Sofia), 19h. (Riverside, Palomar (2), Tucson (2), Huancayo, and New Delhi), 20h. (near Ottawa), 22h. (La Paz and Tucson), 23h. (Andijan, Tashkent, Stalinabad, Samarkand, Frunse, Irkutsk, Ksara, and Collmberg).

Dec. 4d. Readings at 0h. (Collmberg, New Delhi, near Andijan, Frunse, Tashkent, and near Berkeley), 3h. (Tashkent near Andijan and Frunse), 4h. (near Mizusawa), 5h. (Harvard and San Juan), 6h. (Harvard and San Juan), 7h. (Alicante), 16h. (near Andijan), 17h. (near Andijan and near Mizusawa), 19h. and 20h. (Alicante), 21h. (Boulder City, Overton, Pierce Ferry, Tucson, Mineral (2), near Berkeley, and Lick), 22h. (Bombay, Calcutta, Hyderabad, New Delhi, Stalinabad, Tashkent, Helwan, Ksara, Cheb, and Collmberg).

Dec. 5d. 8h. 42m. 0s. Epicentre 25°·0N. 64°·0E. (as on 1940, Jan. 7d.).
Doubtful identification.

$A = +\cdot3978$, $B = +\cdot8156$, $C = +\cdot4203$; $\delta = +10$; $h = +3$;
$D = +\cdot899$, $E = -\cdot438$; $G = +\cdot184$, $H = +\cdot378$, $K = -\cdot907$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Bombay		10·2	125	e 2 56	+25	—	—	—	—
Stalinabad		14·1	16	i 3 25	+ 2	e 6 44	+42	—	—
Hyderabad	N.	15·4	117	—	—	6 56	+24	—	—
Tashkent		16·9	14	e 3 58	− 1	e 7 29	+22	e 4 9	PP
Andijan		17·2	22	e 4 6	+ 3	—	—	—	—
Tchimkent		17·8	13	4 1	−10	—	—	—	—
Baku		19·3	326	e 4 27	− 2	e 8 18	+16	—	—
Almata		21·1	26	e 4 50	+ 2	—	—	—	—
Erevan		22·3	318	e 4 50	−11	e 9 4	+ 2	—	—
Collmberg	Z.	46·7	318	e 8 22	−10	—	—	—	—

Collmberg gives eZ = 8m.30s.
Long waves were recorded at New Delhi.

Dec. 5d. Readings also at 0h. (near Andijan), 1h. (New Delhi), 5h. (near Mineral), 6h. (Bombay, Hyderabad, and New Delhi), 8h. (Collmberg), 10h. (Mount Wilson, Pasadena, Palomar, Riverside, Tucson, and Mineral (2)), 11h. (near Berkeley), 12h. (Bombay and La Paz), 13h. (Bombay and New Delhi), 16h. (near Andijan), 18h. (Alicante and near Mizusawa), 22h. (Brisbane, Riverview, Mount Wilson, Tucson, Boulder City, and Shasta Dam).

Dec. 6d. 16h. 12m. 5s. Epicentre 25°·0N. 64°·0E. (as on 5d.).

A = +·3978, B = +·8156, C = +·4203; δ = +10; h = +3;

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Bombay	N.	10·2	125	e 2 32	+ 1	i 4 26	− 1	—
New Delhi	N.	12·3	70	—	—	i 5 8	−10	i 6·5
Stalinabad		14·1	16	i 3 21	− 2	—	—	—
Hyderabad	N.	15·4	117	—	—	6 49	+17	—
Tashkent		16·9	14	e 3 55	− 4	7 0	− 7	—
Andijan		17·2	22	e 3 59	− 4	—	—	—
Tchimkent		17·8	13	e 4 11	0	—	—	—
Baku		19·3	326	4 35	+ 6	8 11	+ 9	—
Kodaikanal	E.	19·5	137	e 3 4	?	—	—	—
Collmberg	Z.	46·7	318	i 8 32	0	—	—	—

Additional readings:—
Bombay iE = 2m.56s.
Collmberg iZ = 8m.42s.
Long waves were also recorded at Copenhagen.

Dec. 6d. Readings also at 1h. (near Andijan, Samarkand, Stalinabad, and Tashkent), 3h. (Ksara and Mineral), 4h. (near Stalinabad), 6h. (near Mineral (2)), 7h. (Berkeley, Branner, Mineral, near Lick, and near Triest), 8h. (Pasadena, Palomar, Tucson, St. Louis, and near Balboa Heights), 9h. (Mount Wilson, Pasadena, Palomar, Tinemaha, Mineral, Boulder City, and Pierce Ferry), 14h. (near Andijan, Tashkent, and Stalinabad), 15h. (Calcutta, Collmberg, and Tucson), 21h. (Mount Wilson, Palomar, and Tucson).

Dec. 7d. Readings at 4h. (Tucson, Huancayo, La Paz (2), near Andijan, Samarkand, Stalinabad, and Tashkent), 5h. (De Bilt, Tucson, near Seven Falls, and near Granada), 6h. (near Granada), 7h. (near Andijan, Samarkand, Stalinabad, and Tashkent), 8h. (Tucson (2), near Andijan, Samarkand, Stalinabad, Tashkent, Toledo, near Almeria, and Malaga), 9h. (near Almeria), 11h. (near Stalinabad), 13h. (Paris), 20h. (Calcutta, Mount Wilson, and Pasadena), 21h. (Frunse, near Andijan (2), Stalinabad (2), Tashkent (2), Tchimkent, and near Sofia), 22h. (Palomar and Tucson), 23h. (near Stalinabad).

Dec. 8d. 1h. 4m. 2s. Epicentre 6°·1S. 150°·5E. (as on 1943, Dec. 30d.).

A = −·8655, B = +·4897, C = −·1055; δ = +3; h = +7;
D = +·492, E = +·870; G = +·092, H = −·052, K = −·994.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	21·4	174	e 4 50	− 1	i 8 49	+ 4	i 9 17	SS	—
Riverview		27·6	178	i 5 47k	− 4	i 10 36	+ 4	i 6 6	pP	13·7
Auckland		37·8	147	7 28	+ 8	13 5	− 6	8 43	PP	15·9
Arapuni		39·2	148	7 58?	+27	13 58?	+26	—	—	17·0
Wellington		41·2	152	7 52	+ 4	14 3	+ 1	8 15	pP	—
Perth		41·3	227	i 9 42	PP	14 3	− 1	16 58	SS	—
Miyazaki		41·9	336	8 47	+53	15 2	+49	—	—	—
Christchurch		42·1	156	7 55	0	14 20	+ 4	9 11	PP	20·5
Misima		42·4	347	e 8 1	+ 3	14 8	−12	—	—	—
Kôti		42·6	338	e 7 46	−13	14 4	−19	—	—	—
Sumoto		42·8	342	e 8 5	+ 4	14 26	0	—	—	—
Osaka		42·9	342	8 8	+ 6	—	—	—	—	—
Hikone		43·3	344	8 8	+ 3	14 24	− 9	—	—	—
Hukuoka		43·8	336	8 12	+ 3	15 2	+22	—	—	—
Nagano		44·1	346	e 8 9	− 3	—	—	—	—	—
Sendai		45·0	350	8 10	− 9	—	—	—	—	—
Mizusawa		45·8	350	8 29	+ 4	15 13	+ 4	—	—	23·3
Vladivostok		51·8	343	i 9 11	− 1	i 16 37	+ 4	—	—	—
Pehpei		55·4	313	e 9 19	−19	—	—	—	—	27·0
Honolulu		57·5	60	9 55	+ 2	e 17 56	+ 6	e 11 43	PP	e 24·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	67·1	297	e 14 59	PPP	i 19 18	−33	—	—	27·3
Irkutsk		70·1	332	11 17	+ 1	25 27	SS	15 49	PPP	—
Colombo		71·6	279	11 28?	+ 3	—	—	—	—	—
Hyderabad		74·9	290	11 49	+ 5	21 15	− 7	21 48	PS	36·1
New Delhi	N.	78·4	301	12 2	− 2	21 48	−12	26 48	SS	35·8
Bombay		80·4	290	12 6	− 9	22 8	−13	—	—	35·6
College		83·9	32	12 28	− 5	e 22 48	− 8	e 32 0	SSS	e 41·6
Frunse		83·9	314	12 33	0	e 22 49	− 7	—	—	—
Andijan		85·0	312	12 41	+ 3	i 23 2	− 5	e 24 18	PPS	—
Sitka		86·7	32	—	—	i 23 7	[− 5]	e 23 25	S	e 36·1
Stalinabad		87·3	309	i 12 56	+ 6	i 24 46	PPS	—	—	—
Tashkent		87·4	312	e 12 45	− 5	23 10	[− 7]	23 34	S	—
Ukiah		90·9	51	—	—	e 23 58	− 5	e 25 17	PS	e 37·7
Berkeley		91·5	52	i 12 59	−11	i 24 4	− 4	i 13 14	P	41·9
Santa Clara		91·7	53	e 13 13	+ 3	e 25 24	PS	—	—	e 42·3
Shasta Dam		91·7	49	e 13 10	0	e 23 48	[+ 5]	e 24 5	S	e 46·0
Victoria		92·0	42	16 46	PP	23 40	[− 4]	25 25	PS	39·0
Seattle		92·6	43	—	—	e 23 28	[−20]	e 26 6	PPS	e 41·0
Pasadena		94·5	56	i 13 22	− 1	e 23 59	[+ 1]	18 0	PKP	e 38·3
Mount Wilson		94·6	56	13 24	0	e 24 1	[+ 2]	—	—	—
Tinemaha		94·6	54	i 13 25	+ 1	e 24 15	{ 0}	—	—	—
Grand Coulee		94·8	42	e 13 24	− 1	—	—	—	—	—
Haiwee		94·8	54	i 13 24	− 1	e 24 4	[+ 4]	—	—	—
Sverdlovsk		95·0	326	e 13 23	− 3	—	—	17 16	PP	—
Palomar		95·5	57	i 13 29	+ 1	e 24 10	[+ 6]	24 22	SKKS	i 52·2
Boulder City		97·3	54	e 13 37	+ 1	e 24 16	[+ 3]	e 17 36	PP	—
Overton		97·7	54	e 13 46	+ 8	e 24 22	[+ 7]	—	—	—
Pierce Ferry		98·0	54	e 13 44	+ 5	e 24 23	[+ 6]	—	—	—
Salt Lake City		99·7	49	e 18 3	PP	e 24 53	{+ 1}	e 26 55	PS	e 41·3
Bozeman		100·2	45	—	—	e 24 32	[+ 4]	e 35 39	SSS	e 46·3
Tananarive		100·2	249	—	—	e 24 29	[+ 1]	32 39	SSP	41·5
Tucson		100·6	58	e 13 54	+ 3	e 25 29	+ 4	i 18 2	PP	e 42·0
Saskatoon		102·7	38	—	—	26 58	PS	32 58	SS	43·0
Rapid City		105·9	45	—	—	e 26 5	− 5	e 27 58	PS	46·9
Moscow		107·8	327	e 14 24	P	24 45	[−18]	18 53	PP	—
Tacubaya		111·1	72	e 16 22	?	—	—	i 19 17	PP	—
Ksara		113·8	303	e 18 36	[− 5]	e 29 8	PS	—	—	—
Upsala	N.	115·6	335	e 19 42	PP	e 29 18	PS	e 22 9	PPP	e 48·4
Florissant		116·4	49	e 19 55	PP	i 26 0	[+23]	e 26 46	SKKS	—
St. Louis		116·5	50	e 15 0	P	e 26 0	[+22]	e 18 46	PKP	—
Chicago		117·6	45	e 19 40	PP	e 26 4	[+22]	e 29 23	PS	e 47·9
Helwan	Z.	118·2	300	e 18 49	[0]	25 43	[− 1]	20 7	PP	—
Bergen		119·8	341	20 14	PP	25 43	[− 6]	29 40	PS	53·0
Copenhagen		120·4	334	i 20 21	PP	27 41	{+25}	29 58	PS	—
Cincinnati		120·7	47	e 20 20	PP	e 30 10	PS	e 31 37	PPS	e 56·6
Sofia		120·9	317	—	—	e 29 58?	PS	e 37 58?	SSP	e 50·0
Belgrade		122·0	319	e 23 51	PPP	e 30 24	PS	—	—	e 64·9
Collmberg		122·8	330	i 18 53	[− 5]	e 25 30	[−29]	e 20 44	PP	e 65·0
Prague		122·8	328	e 20 37	PP	e 30 28	PS	37 28	SS	55·0
Ivigtut		123·3	10	—	—	30 54	PS	32 10	PPS	—
Jena		123·8	330	e 21 0	PP	e 30 57	PS	—	—	—
Cheb		123·9	329	e 20 49	PP	e 30 40	PS	e 33 58	?	e 62·0
Ottawa		124·0	37	19 0	[− 1]	30 40	PS	20 46	PP	e 52·0
Aberdeen	N.	124·7	343	—	—	e 30 40	PS	—	—	e 58·7
Columbia		124·9	52	e 20 56	PP	e 26 10	[+ 4]	e 30 44	PS	e 48·6
Shawinigan Falls		125·2	35	e 20 5	[+62]	—	—	—	—	68·0
De Bilt		126·0	334	e 19 8	[+ 4]	e 30 58	PS	i 20 59	PP	e 59·0
Seven Falls		126·0	33	21 4	PP	32 40	PPS	38 4	SS	52·0
Strasbourg		127·2	329	e 21 7	PP	29 22	S	e 23 46	PPP	58·7
Uccle		127·3	333	e 19 11	[+ 4]	e 26 19	[+ 6]	e 21 3	PP	e 54·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chur		127·4	328	e 19 5	[− 2]	—	—	—	—	e 61·0
Fordham		127·4	41	e 19 6	[− 1]	i 22 32	SKP	—	—	e 54·0
Zürich		127·6	328	e 19 5	[− 2]	—	—	e 22 16	SKP	—
Basle		128·0	329	e 19 0	[− 8]	—	—	—	—	—
Weston		128·3	38	e 21 19	PP	—	—	—	—	e 53·0
Neuchatel		128·6	329	e 19 3	[− 6]	—	—	—	—	—
Kew		128·7	337	i 21 13	PP	e 28 23	{+12}	e 22 27	SKP	e 57·0
Besançon		129·0	329	—	—	e 38 15	SS	—	—	63·0
Paris		129·5	333	19 19	[+ 8]	e 31 58?	PS	21 23	PP	e 66·0
Balboa Heights		130·3	83	e 19 12	[− 1]	—	—	—	—	—
Huancayo		131·0	111	e 19 21	[+ 7]	e 39 23	SSP	e 21 48	PP	e 54·3
La Plata		131·2	149	22 46	SKP	39 10	SS	39 28	SSP	58·5
Clermont-Ferrand		131·4	329	e 19 15	[0]	i 33 28	PPS	e 21 37	PP	e 63·5
Bogota		135·6	89	e 19 20	[− 2]	e 22 59	SKP	e 22 1	PP	—
La Paz	z.	135·7	121	19 25k	[+ 2]	26 15	[−17]	i 22 8	PP	64·5
Bermuda		138·0	47	e 36 26?	?	e 41 42	SSP	e 49 3	?	e 57·9
Toledo		139·4	329	19 28	[− 1]	—	—	—	—	56·0
Almeria		140·7	325	18 48	[−44]	25 55	[−45]	21 26	PP	71·0
Granada		141·1	326	e 18 47a	[−45]	32 17	PS	i 19 57	PKP	75·7
Malaga		141·8	327	18 41	[−53]	—	—	19 36	PKP	78·3
San Juan		142·3	67	e 19 31	[− 4]	e 26 36	[− 7]	e 22 46	PP	e 57·2
Lisbon		142·7	334	19 35a	[0]	46 34	SSS	22 59	PP	66·9
Fort de France		147·7	72	i 19 46	[+ 2]	—	—	—	—	—

Additional readings :—
Riverview iZ = 5m.53s. and 6m.10s., iN = 6m.36s., iZ = 6m.59s. and 10m.44s., iE = 11m.7s. and 13m.31s.
Auckland PPP = 8m.56s., i = 11m.8s. and 11m.53s., SS = 14m.29s., i = 15m.22s.
Wellington sPZ = 8m.33s., P_cPZ = 9m.29s., i = 11m.46s., iZ = 12m.20s., S_cPZ = 12m.48s., P_cSZ = 12m.56s., iZ = 15m.31s., S_cSZ = 17m.10s.
Christchurch i = 8m.17s., e = 11m.28s., iN = 13m.2s., P_cSEZ = 13m.17s., N = 15m.26s., SS = 17m.22s., S_cSN = 18m.27s.
Mizusawa SN = 15m.16s.
Honolulu ePPP = 13m.16s., eS_cS? = 20m.9s., e = 21m.46s.
Hyderabad P_cP?N = 12m.55s.
New Delhi iN = 23m.56s.
College e = 20m.38s., eSKS = 23m.45s.
Sitka e = 29m.26s., eSSS = 33m.28s.
Ukiah iS = 24m.3s., eSS = 30m.16s.
Berkeley iPPE = 16m.48s., iSKS = 23m.17s., iSKKSN = 23m.46s., iPPSE = 25m.22s., iN = 25m.32s., iZ = 26m.3s., eSSE = 30m.18s., eQN = 37m.40s., eQE = 37m.58s.
Shasta Dam eS = 24m.24s.
Victoria SS = 30m.40s.
Pasadena iZ = 13m.32s., eE = 24m.19s., ePKKPZ = 30m.34s.
Palomar iPKKPZ = 31m.26s.
Boulder City e = 24m.18s. and 24m.28s.
Salt Lake City eSSS = 35m.51s.
Tucson e = 19m.40s., eSKS = 24m.31s., ePS = 26m.49s., ePKKP = 30m.15s., eSS = 32m.29s., eSSS? = 36m.44s.
Saskatoon SSS = 36m.40s.
Rapid City eSS = 33m.45s., eSSS = 37m.14s.
Moscow PS = 28m.8s.
Tacubaya eE = 16m.35s., iPP = 19m.20s.
Upsala eN = 20m.26s., ePS?N = 29m.0s.?, ePPSN = 30m.45s.?, eSSE = 35m.34s., eSSN = 35m.52s., eSSSN = 39m.52s., eSSSE = 44m.16s.
Florissant iE = 25m.0s. and 28m.36s., eSS = 35m.56s., iSSS?E = 39m.50s.
St. Louis ePPE = 19m.52s., eSKKSE = 26m.51s., iSE = 27m.28s., iPSE = 29m.32s., ePPSE = 31m.2s., eSSE = 35m.46s., eSSSE = 40m.21s.
Chicago eSS = 35m.49s., eSSS = 40m.24s.
Helwan PPPZ = 22m.42s., SKKSZ = 27m.6s., PSE = 30m.2s.
Bergen eZ = 31m.46s., SS = 37m.3s., eEN = 41m.26s., QE = 47m.6s.
Copenhagen 22m.36s., SS = 37m.34s., SSS = 40m.58s.
Collmberg ePP = 22m.55s., ePPP = 25m.0s., eSKS = 29m.28s., eS = 30m.17s., ePS? = 31m.46s., ePPS = 32m.35s., eSS = 36m.58s.?, eSSS? = 41m.34s., eQ = 60·0m., and many other readings without phase.
Prague ePPS = 31m.46s., eSSS = 42m.16s., eSSSS = 46m.34s.
Cheb e = 38m.28s.
Ottawa PPS = 32m.30s., SS = 37m.26s., SSS = 42m.8s.
Aberdeen eE = 30m.47s.
De Bilt eSS = 37m.58s.?, eSSS = 42m.58s.?.
Strasbourg eSKP = 22m.11s., iPS = 31m.11s., iPPS = 32m.44s., iSS = 38m.58s.

Continued on next page.

Uccle eSKPE =22m.29s., ePPP =23m.55s., eSKKSE =28m.16s., ePSE =30m.56s., ePPSN =32m.50s., eSSEN =38m.10s., ePSSE =39m.16s., eSSSE =42m.58s.?.
Kew ePPPN =25m.3s.?, ePKKP?EZ =31m.3s.?, ePPS? =33m.3s.?, eE =37m.15s., eSSEN =38m.58s.?, eQZ =52.0m.
Paris e =23m.58s.?, iPPS =33m.10s., e =34m.26s. and 37m.58s.?, eQ =60·0m.
Huancayo iPKS =22m.51s., e =23m.4s., eSSS =44m.17s.
La Plata PE =22m.52s.
Clermont-Ferrand iSKP =22m.39s.
Bogota i =19m.25s.
La Paz iPKPZ =19m.30s., iSKP =23m.1s., SKKSZ =29m.8s., PPSZ =33m.58s., SSZ =40m.14s.
Almeria i =23m.6s., PPP =24m.26s., SKKS =28m.13s., PS =31m.42s., PPS =33m.28s., SS =39m.18s.
Granada pPKP =20m.36s., iPP =22m.28s., pPP =22m.55s., PPP =25m.7s., pPPP = 25m.56s., PPS =34m.45s., SS =40m.36s., pSS =41m.38s., SSS =45m.29s., Q = 65m.40s.
Malaga i =19m.53s., PP =23m.3s., Q =47m.45s.
San Juan ePKS =23m.20s., e =32m.51s., eSS =40m.38s.
Lisbon N =46m.40s., Z =46m.46s.
Fort de France e =20m.21s., 20m.34s., and 24m.22s.
Long waves were also recorded at Butte, Harvard, Lincoln, Vera Cruz, Bucharest, Edinburgh, Barcelona, and Tortosa.

Dec. 8d. 21h. 54m. 58s. Epicentre 38°·2N. 118°·2W. (as on 1943, Aug. 9d.).

U.S.C.G.S. quotes Pasadena 38°09′N. 118°03′W.

$A = -·3723$, $B = -·6943$, $C = +·6159$; $\delta = -1$; $h = -1$;
$D = -·881$, $E = +·473$; $G = -·291$, $H = -·543$, $K = -·788$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Fresno	N.	1·9	221	i 0 32	− 2	e 0 56	− 3	—	—
Berkeley	N.	3·2	264	—	—	e 1 40	+ 8	—	—
Overton		3·4	117	i 0 59	+ 4	e 1 45	+ 8	—	—
Boulder City		3·5	128	i 0 57	0	e 1 36	− 4	e 1 31	?
Pierce Ferry		4·0	120	e 0 56	− 8	e 1 55	+ 3	i 1 6	?

Long waves were also recorded at Tucson.

Dec. 8d. Readings also at 0h. (Pehpei, Helwan, Ksara, near Tashkent, Andijan (2), and Stalinabad (2)), 1h. (Bogota, near Andijan and Stalinabad), 3h. (Tananarive and La Plata), 7h. (Palomar and Tucson), 8h. (Collmberg, Riverview, and Christchurch), 13h. (Bucharest), 14h. (near Andijan and Stalinabad (2)), 18h. (Ksara and near Erevan), 19h. (Riverview, Christchurch, Bombay, Ksara, and near Erevan), 20h. (Andijan, Tashkent, Stalinabad, Calcutta, New Delhi, and Bombay), 21h. (near Samarkand), 22h. (Overton and Tucson).

Dec. 9d. 6h. 8m. 43s. Epicentre 45°·7N. 26°·8E. Depth of focus 0·005.
(as on 1945, Sept. 7d.).

Intensity VI at Bucharest.
Bulletin séismique de l'Observatoire de Bucharest, 1945, p.29. Suggested depth 100km.

$A = +·6255$, $B = +·3160$, $C = +·7133$; $\delta = -10$; $h = -4$;
$D = +·451$, $E = -·893$; $G = +·637$, $H = +·322$, $K = -·701$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Campulung		1·3	254	i 0 27	+ 4	i 0 44	+ 4	—	—	—
Bucharest	N.	1·4	198	i 0 26	+ 2	0 41	− 2	—	—	—
Sofia		3·9	221	i 1 0	+ 1	i 1 30	−14		—	—
Belgrade		4·5	262	e 1 7a	0	i 1 58	− 1	—	—	—
Kalossa		5·5	281	1 23	+ 2	—	—	—	—	3·3
Triest		9·1	275	i 2 13	+ 2	i 4 5	+12	—	—	—
Prague		9·4	303	e 2 13	− 2	e 4 4	+ 4	—	—	—
Collmberg	Z.	10·8	306	i 2 28	− 6	i 4 26	− 8	i 2 38	PP	1 5·7
Piatigorsk		11·7	91	e 2 46	0	—	—	—	—	—
Chur		12·0	282	e 2 51	+ 1	e 5 11	+ 8	—	—	—

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		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Moscow		12·1	30	2 54	+ 2	i 4 57	− 9	—	—	—
Zürich		12·7	284	e 2 57	− 3	e 5 37	+17	i 3 8	pP	—
Strasbourg		13·3	290	e 3 6	− 2	i 5 55	+21	—	—	—
Basle		13·4	285	e 3 8	− 1	e 5 55	+18	—	—	—
Copenhagen		13·5	323	i 3 6a	− 4	e 5 44	+ 5	—	—	6·6
Ksara		13·8	146	e 3 13?	− 1	e 6 7?	+21	—	—	—
Neuchatel		13·8	283	e 3 11	− 3	e 6 1	+15	—	—	—
Erevan		14·1	107	3 24	+ 6	—	—	—	—	—
Besançon		14·4	284	i 3 28	+ 6	e 6 18	+18	—	—	—
Upsala		15·2	342	e 3 28	− 4	i 6 5	−14	—	—	e 7·1
De Bilt		15·6	304	i 3 41k	+ 4	i 6 41	+13	—	—	e 8·3
Uccle		15·8	297	e 3 41	+ 1	e 6 43	+10	i 4 0	PP	7·5
Helwan		16·2	166	e 3 41	− 4	i 6 50	+ 8	—	—	—
Clermont-Ferrand		16·6	279	i 3 51	+ 1	i 7 0	+ 9	e 7 41	SS	e 8·4
Paris		16·8	289	e 3 52	0	i 6 50	− 6	—	—	—
Baku		17·7	100	4 6	+ 3	7 26	+10	—	—	—
Kew		18·8	298	i 4 18k	+ 1	i 7 48	+ 7	i 4 43	pP	—
Bergen		19·4	329	3 42	−41	e 6 53	−60	—	—	e 10·6
Toledo		23·3	267	i 5 4	+ 1	i 9 11	+ 4	i 5 22	PP	—
Almeria		23·6	258	5 4	− 2	i 9 20	+ 8	5 38	PP	13·9
Granada		24·2	261	i 5 12k	+ 1	i 9 33	+11	5 22	PP	11·8
Malaga		25·0	261	i 5 16	− 3	e 9 42	+ 6	5 43	sP	13·0
Samarkand		29·9	88	e 6 17	+13	—	—	—	—	—
Tashkent		30·9	82	e 6 13	0	e 11 12	+ 1	e 6 42	sP	—
Stalinabad		31·7	87	i 11 37	S	(i 11 37)	+14	—	—	—
Andijan		33·2	83	e 6 35	+ 2	—	—	—	—	—
Frunse		33·9	77	e 6 44	+ 5	—	—	—	—	—
Vladivostok		69·4	49	11 3	0	—	—	—	—	—
St. Louis	z.	78·8	314	e 11 55	− 2	—	—	i 12 18	pP	—
Grand Coulee		82·0	337	i 12 14	0	—	—	i 12 37	pP	—
Shasta Dam		89·7	336	e 12 51	− 1	—	—	e 13 4	pP	—
Pierce Ferry		91·2	328	i 13 0	+ 1	—	—	—	—	—
Boulder City		91·6	329	i 13 1	0	—	—	i 13 26	pP	—
Tinemaha	z.	91·8	332	e 13 2	0	—	—	—	—	—
Haiwee	z.	92·6	332	i 13 7	+ 1	—	—	—	—	—
Tucson		93·4	325	i 13 10	+ 1	e 16 22	PP	i 13 35	pP	e 50·9
Riverside	z.	94·3	331	i 13 12	− 1	—	—	—	—	—
Mount Wilson	z.	94·3	331	i 13 14	+ 1	e 17 2	PP	i 13 39	pP	—
Pasadena	z.	94·4	331	i 13 13	− 1	e 17 4	PP	e 13 36	pP	—
Palomar		94·7	329	i 13 15	0	—	—	i 13 36	pP	—

Additional readings :—
Bucharest E = 0m.46s.
Sofia iEN = 1m.25s., iS*EN = 1m.37s., iS_gEN = 1m.41s.
Belgrade i = 1m.17s. and 1m.31s., iP_gS_g = 1m.35s., iS = 1m.46s., i = 1m.52s.
Kalossa e = 1m.30s., i = 1m.54s.
Collmberg iZ = 3m.26s., 3m.54s., 4m.9s., 4m.56s., and 5m.15s.
Upsala iPPPE = 3m.40s., iN = 3m.51s., 4m.8s., and 6m.28s.
Helwan iN = 4m.11s. and 4m.20s.
Kew isP?EZ = 4m.56s., epS?E = 8m.8s., isS?Z = 8m.16s.
Almeria PPP = 5m.50s., P_cP = 8m.38s., SS = 10m.30s., P_cS = 12m.18s., S_cS = 17m.2s.
Granada PP = 6m.18s., pPP = 6m.31s., sS = 9m.50s.
Malaga i = 5m.19s., sS = 10m.1s.
Grand Coulee i = 13m.16s.
Tucson i = 13m.42s.

Dec. 9d. 20h. 45m. 46s. Epicentre 14°·0N. 92°·2W.

$A = -·0373$, $B = -·9700$, $C = +·2404$; $\delta = +8$; $h = +6$;
$D = -·999$, $E = +·038$; $G = -·009$, $H = -·240$, $K = -·971$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	5·3	305	1 16	− 6	—	—	—	—	2·5
Vera Cruz		6·4	324	1 19	−19	2 31	−22	—	—	2·8
Merida		7·3	19	1 38	−12	3 0	−15	—	—	3·3
Tacubaya		8·6	310	2 10	+ 1	—	—	—	—	i 4·1
Mobile		17·0	12	4 10	+ 9	7 33	SS	—	—	—
Bogota		20·2	116	e 4 44	+ 5	e 8 53	SS	—	—	—
Columbia		22·3	25	e 5 0	− 1	e 9 18	+16	—	—	e 13·3
St. Louis		24·6	4	e 5 22	− 1	i 9 54	+12	i 11 4	SS	e 12·8
Florissant	N.	24·8	4	e 5 25	0	—	—	e 11 8	SS	—
Tucson		24·9	320	e 5 27	+ 1	e 10 2	+15	i 6 23	PP	e 12·0
San Juan		25·4	77	e 5 34	+ 3	e 10 32	SS	e 6 1	PP	e 13·0
Chicago		28·0	7	—	—	e 11 2	+24	—	—	e 15·5
Pierce Ferry		29·4	323	e 6 9	+ 2	—	—	—	—	—
La Jolla	Z.	29·5	315	e 6 9	+ 1	—	—	—	—	—
Palomar		29·5	316	i 6 9k	+ 1	—	—	—	—	—
Boulder City		29·8	322	i 5 58	−13	—	—	i 6 23	pP	—
Overton		30·0	323	e 6 13	+ 1	—	—	—	—	—
Riverside	Z.	30·3	316	e 6 16	+ 1	—	—	—	—	—
Huancayo		30·8	147	e 6 14	− 6	i 11 33	+10	—	—	e 13·4
Mount Wilson		30·9	316	i 6 21	+ 1	—	—	—	—	—
Pasadena		30·9	316	i 6 20	0	e 11 44	+20	—	—	e 15·5
Bermuda		31·1	49	e 6 18	− 4	—	—	—	—	e 15·0
Fordham		31·2	28	e 6 58	PP	e 11 37	+ 8	—	—	—
Rapid City		31·4	345	e 7 26	PP	e 12 33	+61	—	—	e 15·1
Salt Lake City		31·7	332	—	—	e 11 44	+ 7	—	—	e 13·5
Haiwee	Z.	31·9	319	i 6 28	− 1	—	—	—	—	—
Santa Barbara	Z.	32·1	315	e 6 35	+ 4	—	—	—	—	—
Tinemaha	Z.	32·7	320	i 6 39	+ 3	—	—	—	—	—
Ottawa		34·3	21	6 49	− 1	12 30	+13	—	—	17·2
Bozeman		35·4	338	—	—	e 12 38	+ 4	—	—	e 15·9
Berkeley		35·7	318	7 2	0	e 12 46	+ 7	i 8 20	PP	e 17·5
Shasta Dam		37·4	321	e 7 13	− 3	—	—	—	—	—
La Paz		38·5	141	7 26	0	13 24	+ 2	—	—	20·9
Grand Coulee		40·5	333	e 7 42	0	—	—	i 9 51	PP	—
College		63·2	337	—	—	e 19 10	+ 7	—	—	e 35·5
Uccle		83·4	39	—	—	e 22 14?	−37	—	—	e 40·2

Additional readings :—
Oaxaca PE = 1m.19s.
Bogota i = 4m.49s.
St. Louis eN = 7m.25s., iSPN = 10m.18s., iE = 10m.33s., iE = 11m.32s.
Florissant eSPN = 10m.21s., iE = 10m.37s., eSSSN = 11m.21s.
Tucson i = 5m.37s., 5m.49s., and 7m.8s., iS = 10m.8s.
Palomar iZ = 6m.16s.
Riverside iZ = 6m.24s.
Mount Wilson iZ = 6m.29s.
Pasadena iNZ = 6m.28s.
Haiwee eNZ = 6m.37s.
Tinemaha iZ = 6m.46s.
Berkeley iSE = 12m.50s.
La Paz S?Z = 13m.38s.
Grand Coulee e = 10m.15s.
Long waves were also recorded at Puebla, Santa Clara, Ukiah, Sitka, Harvard, Riverview, De Bilt, and Strasbourg.

Dec. 9d. Readings also at 2h. (Tucson), 3h. (Zi-ka-wei), 4h. (Andijan and near Stalinabad), 6h. (Auckland, Christchurch, Wellington, and Riverview), 23h. (Palomar and Tucson).

Dec. 10d. Readings at 0h. (near Berkeley), 1h. (Riverview), 3h. (Tucson (2), near Andijan, and Stalinabad), 4h. (Uccle), 7h. (Bombay, Calcutta, and New Delhi), 9h. (La Paz), 13h. (Collmberg, near Granada, and Malaga), 14h. (Mount Wilson, Palomar, Riverside, Tinemaha, Haiwee, Tucson, Collmberg, Bombay, Calcutta, and New Delhi (2)), 17h. (Apia, Andijan, and near Stalinabad), 21h. (near Ottawa), 23h. (near Granada).

Dec. 11d. 10h. 21m. 52s. Epicentre 25°·0N. 64°·0E. (as on 6d.).

$A = +·3978$, $B = +·8156$, $C = +·4203$; $\delta = +10$; $h = +3$;

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		10·2	125	e 2 41	+10	e 5 11	L	—	—	(e 5·2)
Stalinabad		14·1	16	i 3 29	+ 6	—	—	—	—	—
Samarkand		14·8	9	3 38	+ 6	—	—	—	—	—
Hyderabad	N.	15·4	117	e 3 43	+ 3	7 31	+59	4 26	PP	—
Tashkent		16·9	14	e 3 47	−12	e 7 1	− 6	—	—	—
Andijan		17·2	22	e 4 6	+ 3	—	—	—	—	—
Tchimkent		17·8	13	i 4 4	− 7	i 7 22	− 6	—	—	—
Kodaikanal		19·5	137	e 4 15	−16	e 8 50	SS	—	—	11·9
Frunse		19·9	22	e 4 36	0	e 8 20	+ 5	—	—	—
Calcutta	N.	22·4	91	e 5 36	PP	i 9 1	− 3	—	—	—
Colombo	E.	23·5	138	—	—	e 8 8?	−75	—	—	—
Ksara		26·0	294	e 5 35	− 1	e 10 12	+ 6	—	—	—
Helwan		29·3	286	6 4	− 2	11 12	+13	—	—	—
Collmberg	Z.	46·7	318	e 8 23	− 9	—	—	—	—	—

Additional readings and notes :—
Kodaikanal readings decreased by 4m.
Calcutta iN = 8m.1s.
Helwan eZ = 6m.32s. and 7m.30s., eE = 10m.57s.
Collmberg eZ = 8m.47s.
Long waves were also recorded at Dehra Dun, New Delhi, La Paz, Riverview, and other European stations.

Dec. 11d. Readings also at 5h. (Tananarive), 10h. (near Andijan, Stalinabad, Tashkent, and Tchimkent), 16h. (Alicante), 19h. (Erevan), 21h. (near Granada).

Dec. 12d. 5h. Undetermined shock. Felt at Apia.

Apia iP = 46m.21s., eS = 47m.0s.
Christchurch PN = 48m.45s., SEZ = 54m.19s., QE = 56m.47s., R = 59m.50s.
Riverview eE = 54m.59s., eS?E = 58m.49s., eLZ = 65·6m.
Auckland P_cP? = 55m.18s.?, S? = 57m.18s.?, R = 59m.
Wellington P_cP?Z = 56m.3s., S?Z = 58m.2s., RZ = 60·7m.
Santa Barbara ePZ = 57m.4s.
Pasadena iPZ = 57m.10s.
Mount Wilson iPZ = 57m.11s.
Palomar iPZ = 57m.12s., iZ = 57m.59s.
Riverside ePZ = 57m.12s.
Haiwee iPZ = 57m.18s.
Shasta Dam iPZ = 57m.18s.
Tinemaha eP = 57m.22s.k.
Boulder City iP = 57m.30s.
Pierce Ferry iP = 57m.34s.
Overton eP = 57m.35s.
Tucson iP = 57m.35s., i = 58m.25s., eL = 83m.31s.
Grand Coulee eP = 57m.53s.
Collmberg e = 65m.18s.
Long waves were also recorded at Sitka.

Dec. 12d. Readings also at 0h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Boulder City, Overton, Pierce Ferry, and Shasta Dam), 1h. (Arapuni, Auckland, Christchurch, Wellington, and Tucson), 4h. (near Granada and Malaga), 7h. (Riverview), 8h. (Tashkent), 14h. (near Andijan), 15h. (near Mizusawa), 20h. (near Almata, Andijan, Tchimkent, and Frunse), 21h. (near Oaxaca, near Berkeley, and near Tananarive).

Dec. 13d. Readings at 0h. (near Berkeley), 1h. (Helwan), 3h. (near Malaga), 4h. (Overton, Pierce Ferry, Frunse, Tchimkent, Samarkand, and near Andijan), 7h. (near Andijan, Tashkent, Samarkand, and Tchimkent), 11h. (Triest), 12h. (Bucharest, Tucson, Palomar, Riverside, Mount Wilson, Pasadena, Haiwee, Grand Coulee, and Shasta Dam), 14h. (Palomar, Mount Wilson, and near Tucson), 15h. (Uccle, Tucson, Palomar, Riverside, Pasadena, Mount Wilson, and Haiwee), 22h. (Boulder City, Pierce Ferry, La Paz, Huancayo, San Juan, Balboa Heights, and Bogota), 23h. (Grand Coulee, and La Paz).

Dec. 14d. 17h. 26m. 49s. Epicentre 3°·0S. 76°·9W. Depth of focus 0·015.
(as on 1943, Dec. 22d.).

A = +·2263, B = −·9726, C = −·0520; δ = −13; h = +7;
D = −·974, E = −·227; G = −·012, H = +·051, K = −·999.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bogota		8·2	20	(i 2 0)	+ 3	(i 3 55)	SSS	—	—	—
Huancayo		9·1	172	e 2 14	+ 5	i 3 53	+ 2	i 2 30	pP	e 4·5
Balboa Heights		12·2	347	e 2 48	− 3	—	—	—	—	—
La Paz	Z.	16·0	150	3 43s	+ 4	i 6 41	+ 9	4 1	pP	8·6
Montezuma		21·0	159	e 5 1?	PP	—	—	—	—	e 9·0
Fort de France		23·5	42	e 5 1	+ 2	e 9 51	+51	—	—	—
San Juan		23·8	27	i 4 59	− 3	i 9 3	− 2	i 5 19	pP	e 9·9
La Plata	E.	36·3	154	6 44	− 9	12 17	− 7	13 5	PcS	17·6
	N.	36·3	154	6 43	−10	12 11	−13	7 12	pP	16·3
Bermuda		37·0	17	e 6 58	− 1	e 12 36	+ 2	—	—	e 14·9
Columbia		37·0	354	e 7 21	pP	e 12 29	− 5	e 13 23	sS	e 16·7
St. Louis		43·2	344	i 7 48	− 2	i 14 2	− 4	i 8 18	pP	—
Florissant	N.	43·4	344	i 7 50	− 1	e 14 4	− 5	i 8 19	pP	—
Fordham		43·7	4	i 7 54	0	i 14 10	− 4	i 8 23	pP	—
Weston		45·5	7	e 8 7	− 1	e 14 40	+ 1	e 8 35	pP	—
Chicago		45·6	348	e 8 30	pP	e 14 30	−11	e 15 22	sS	e 17·8
Harvard		45·6	7	i 8 9	0	—	—	i 8 38	pP	—
Tucson		47·6	320	i 8 25	0	e 15 14	+ 5	i 8 54	pP	e 18·9
Ottawa		48·2	2	8 28	− 1	15 11	− 7	19 11	SS	24·2
Pierce Ferry		52·1	322	i 9 0	+ 1	e 16 16	+ 5	i 9 30	pP	—
La Jolla		52·2	316	e 8 59	− 1	e 16 19	+ 6	e 9 31	pP	—
Palomar	Z.	52·3	317	i 9 1k	+ 1	—	—	i 9 29	pP	—
Boulder City		52·5	321	i 9 3	+ 1	e 16 22	+ 5	i 9 29	pP	—
Rapid City		52·5	337	e 8 3	−59	e 15 21	−56	i 8 35	pP	e 25·8
Overton		52·6	322	e 9 35	pP	—	—	—	—	—
Riverside		53·0	317	i 9 6	0	e 16 19	− 5	i 9 33	pP	—
Mount Wilson		53·6	317	i 9 11	+ 1	e 16 37	+ 5	i 9 37	pP	—
Pasadena		53·6	317	i 9 11	+ 1	i 16 36	+ 4	i 9 38	pP	e 26·7
Haiwee		54·6	319	i 9 17	0	—	—	i 9 48	pP	—
Santa Barbara	Z.	54·8	316	e 9 20	+ 1	—	—	e 9 50	pP	—
Tinemaha		55·4	319	i 9 20	− 3	e 16 51	− 5	i 9 51	pP	—
Shasta Dam		60·1	322	i 9 54	− 2	i 17 56	− 1	i 10 25	pP	—
Grand Coulee		62·6	330	i 10 13	0	i 18 32	+ 3	i 10 44	pP	—
Kew		84·0	38	—	—	i 22 31	+ 2	e 23 53	PS	e 26·2
Clermont-Ferrand		85·2	44	e 11 55	−28	e 21 46	−55	—	—	—
Uccle		86·8	38	e 13 9	+38	e 23 46	+50	—	—	—
De Bilt	E.	87·5	37	—	—	i 23 5	+ 2	—	—	—
Strasbourg		88·7	42	—	—	i 22 58	[+ 3]	i 24 48	PS	—
Cheb		91·8	40	e 21 11?	?	(e 23 24)	[+11]	—	—	e 23·4
Copenhagen		92·1	34	i 23 25	SKS	i 23 52	+ 8	—	—	—
Collmberg	Z.	92·3	39	e 12 58	+ 1	—	—	e 13 26	pP	—
Riverview		121·8	226	e 20 38	PP	i 28 9	?	e 31 3	PPS	e 59·3
Tchimkent		130·7	32	e 19 5	[+ 9]	—	—	—	—	—
Tashkent		131·2	34	e 19 26	[+29]	—	—	—	—	—
Stalinabad		132·8	37	e 19 5	[+ 5]	i 22 23	PKS	—	—	—

Additional readings and notes :—
Bogota readings have been increased by 3 minutes.
Huancayo i = 2m.48s.
La Paz sPZ = 4m.23s.
San Juan e = 6m.3s.
St. Louis isSE = 14m.54s., eSS?E = 17m.12s., iE = 17m.37s.
Florissant eN = 18m.36s.
Fordham i = 15m.12s.
Tucson iPP = 10m.23s., epPP = 10m.46s., e = 11m.23s. and 14m.40s.
Palomar iZ = 9m.39s.
Boulder City i = 9m.33s.
Rapid City esS = 16m.11s.
Riverside iZ = 9m.24s. and 9m.37s.
Mount Wilson i = 9m.41s.
Pasadena iZ = 9m.46s., eN = 18m.48s.

Continued on next page.

Tinemaha iZ = 10m.6s.
Uccle eE = 22m.47s., e = 28m.11s.?.
Strasbourg eSS = 29m.11s.
Collmberg eZ = 16m.17s.
Riverview eSSEN = 37m.48s.

Dec. 14d. Readings also at 3h. (near Berkeley, Branner, and Lick), 6h. (near Tacubaya), 9h. (near Tacubaya and near Balboa Heights), 12h. (Collmberg, near Tchimkent, Tashkent, Samarkand, and Andijan), 18h. (Tucson, Tinemaha, Haiwee, Palomar, Riverside, Pasadena, and Mount Wilson), 19h. (Tucson, Tinemaha, Palomar, Riverview, Wellington, Christchurch, and Auckland), 21h. (Kew).

Dec. 15d. 5h. 27m. 54s. Epicentre 45°·0N. 8°·8E.

Felt at Varzi, Ponte Nizza, San Sebastiano, Tortosa, Ivrea, Torino, and Genoa.

A. Boni.
I terremoti dell'Appennino Vogherese Tortonese e la Geologia a della regione.
Geofis. pura e appl. 1947, Vol. 10, No. 3-4, pp. 114-143. Epicentre 44°58′N. 8°48′E.

$A = +\cdot7011$, $B = +\cdot1085$, $C = +\cdot7047$; $\delta = -8$; $h = -4$;
$D = +\cdot153$, $E = -\cdot988$; $G = +\cdot696$, $H = +\cdot108$, $K = -\cdot710$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chur		1·9	15	e 0 34	0	e 0 57	− 2	c 0 37	P_g	—
Neuchatel		2·4	327	i 0 41	0	e 1 22	P_g	c 0 49	P_g	—
Zürich		2·4	356	e 0 41	0	e 1 10	− 2	c 0 44	P*	—
Basle		2·7	342	e 0 45	0	e 1 22	+ 3	c 1 36	S_g	—
Besançon		3·0	319	e 1 8	P_g	i 1 39	S_g	—	—	—
Triest		3·6	77	e 0 57	− 1	i 1 48	+ 6	—	—	—
Strasbourg		3·7	349	e 1 0	0	i 1 43	− 2	c 1 59	S_g	—
Paris		5·7	314	e 1 30	+ 2	e 2 55	S*	—	—	—
Jena		6·2	16	—	—	e 2 23	−25	c 3 4	S*	—
Uccle		6·5	335	e 2 15?	P_g	e 3 30	S_g	c 4 26	?	—
Collmberg	z.	6·9	22	e 1 38	− 7	i 3 36	S*	i 2 10	P_g	i 3·9

Additional readings :—
Paris i = 3m.33s.
Jena e = 2m.33s., eE = 3m.23s.
Collmberg eZ = 1m.54s., iZ = 2m.31s., 2m.49s., 2m.58s., 3m.14s., and 3m.20s., iS* = 3m.24s.
Long waves were also recorded at De Bilt.

Dec. 15d. 22h. Undetermined shock.

Sofia ePEN = 11m.34s., iS?EN = 12m.7s., iS_gEN = 12m.15s.
Belgrade iP = 11m.35s., iP_g = 11m.45s., iP_gS_g = 12m.13s., i = 12m.27s. and 12m.35s.
Bucharest eEN = 12m.12s., eE = 12m.55s., eN = 13m.18s., iE = 13m.51s., L?N = 14m.0s.
Triest eP = 12m.19s., eP_g = 12m.33s., iS = 13m.14s., eS_g = 13m.40s., eQ? = 13m.46s.
Chur eP = 12m.52s.
Zürich eP = 13m.11s., eS? = 15m.18s.
Collmberg eZ = 13m.16s., 13m.26s., 14m.55s., 15m.44s., 15m.57s., and 16m.8s.
Basle eP = 13m.22s., e = 15m.51s.
Jena eN = 16m.1s., eE = 16m.6s. and 17m.1s., eN = 17m.12s., eE = 17m.18s.
Strasbourg eS = 15m.26s., e = 16m.0s.

Dec. 15d. Readings also at 0h. (Ksara near Erevan and near Stalinabad), 1h. (Stalinabad), 7h. (Haiwee (2), Mount Wilson (2), Pasadena (2), Palomar (2), Riverside (2), Tinemaha (2), Tucson (2), near Andijan and Tchimkent), 9h. (near Apia), 10h. (Haiwee, Mount Wilson, Pasadena, Tucson, Palomar, San Juan, near Bogota, near Andijan, Samarkand, Stalinabad, and Tashkent), 11h. (Palomar, Tucson, San Juan, Mount Wilson, Tinemaha, Boulder City, Grand Coulee, Overton, Pierce Ferry, and La Paz), 13h. (Shasta Dam), 15h. (near Malaga), 17h. (Auckland, Christchurch, Wellington, Riverview, Mount Wilson, Palomar, Tucson, and near Andijan), 18h. (near Malaga and near Mizusawa), 20h. (Andijan, Frunse, Tchimkent, Samarkand, Stalinabad, Tashkent, and Kodaikanal), 21h. (near Andijan), 23h. (near Tacubaya).

Dec. 16d. Readings at 6h. (near Tacubaya), 7h. (Samarkand, Stalinabad, Tashkent, Tchimkent, and near Andijan), 11h. (Haiwee, Mount Wilson, Pasadena, Palomar, Tinemaha, Tucson, Bombay, New Delhi, Stalinabad, Tashkent, Collmberg, and Helwan), 12h. (Hyderabad, Kodaikanal, and Copenhagen), 13h. (Tucson and near La Paz), 16h. (Riverview, Christchurch, Tucson, and near Apia), 20h. (Boulder City, Tucson, Mount Wilson, Palomar, and Tinemaha), 21h. (La Paz), 22h. (near Tananarive), 23h. (Bombay, Calcutta, Kodaikanal, New Delhi, and Stalinabad).

Dec. 17d. Readings at 2h. (near Andijan and Stalinabad), 3h. (Tucson and Bogota), 6h. (La Paz), 7h. (near Andijan and Stalinabad), 8h. (Riverview), 10h. (Tucson), 14h. (Collmberg and near Tananarive), 15h. (Riverside, Palomar, Tinemaha, Mount Wilson, Tucson, and near Mizusawa), 17h. (Tinemaha, Mount Wilson, Riverside, Palomar, Tucson, St. Louis, San Juan, Huancayo, and La Paz), 22h. (near Bucharest).

Dec. 18d. 3h. 23m. 30s. Epicentre 25°·0N. 64°·0E. (as on 11d.).

$A = +·3978$, $B = +·8156$, $C = +·4203$; $\delta = +10$; $h = +3$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		10·2	125	e 2 46	+15	e 4 55	+28	—	—	5·9
New Delhi	N.	12·3	70	e 2 26	−33	i 5 21	+ 3	—	—	—
Stalinabad		14·1	16	i 3 22	− 1	i 8 6	L	—	—	(i 8·1)
Hyderabad	N.	15·4	117	—	—	7 11	+39	—	—	—
Tashkent		16·9	14	e 3 53	− 6	—	—	—	—	—
Andijan		17·2	22	e 4 7	+ 4	—	—	—	—	—
Tchimkent		17·8	13	e 4 9	− 2	—	—	—	—	—
Kodaikanal	E.	19·5	137	e 4 51	+20	i 8 31	+25	—	—	10·5
Calcutta	N.	22·4	91	(5 2)	0	(8 1)	−63	(i 8 41)	P_cP	—
Ksara		26·0	294	e 5 39	+ 3	—	—	e 11 17	SS	—
Helwan		29·3	286	e 6 4	− 2	11 12	+13	6 58	PP	—

Additional readings and note :—
Calcutta P_cPN = (10m.4s.) readings decreased by 4 minutes.
Helwan eZ = 6m.43s.
Long waves were also recorded at Riverview, Tucson, Samarkand, and La Paz.

Dec. 18d. Readings also at 2h. (Sitka, Shasta Dam, Grand Coulee, Santa Barbara, Haiwee, Mount Wilson, Pasadena, Tinemaha, Riverside, La Jolla, Palomar, Boulder City, Overton, Pierce Ferry, Tucson, Riverview, and Collmberg), 3h. (Bermuda), 6h. (near Tashkent, Tchimkent, Andijan, and Frunse), 7h. (near Samarkand), 11h. (near Andijan), 12h. (Tucson and Collmberg), 13h. (Ksara), 16h. (Haiwee, Tinemaha, Pasadena, Mount Wilson, Riverside, Palomar, Tucson, La Paz (2), and La Plata), 20h. (St. Louis, Tinemaha, Haiwee, Mount Wilson, Pasadena, Boulder City, Pierce Ferry, Riverside, Palomar, Tucson, Tacubaya, near Guadalajara, and Manzanillo), 21h. (near Tucson, Boulder City, and Overton), 22h. (Ksara), 23h. (Haiwee, Riverside, Collmberg, Belgrade, Bucharest, Sofia, Ksara, and Helwan).

Dec. 19d. Readings at 0h. (St. Louis and Riverview), 4h. (Aberdeen and near Andijan), 6h. (near Ksara), 12h. (Malaga), 13h. (Fort de France), 17h. (Riverview, Wellington, Christchurch), 18h. (Tucson and Pehpei), 22h. (Calcutta, Bombay, Hyderabad, and Stalinabad), 23h. (near Mizusawa and near La Paz).

Dec. 20d. 3h. 59m. 10s. Epicentre 8°·7N. 126°·8E.

$A = -·5922$, $B = +·7916$, $C = +·1503$; $\delta = -8$; $h = +7$;
$D = +·801$, $E = +·599$; $G = -·090$, $H = +·120$, $K = -·989$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyasaki	23·5	10	4 14	−58	(8 50)	−33	8 26?	?	8·8
Hukuoka	25·0	7	6 18	+51	e 9 47	− 2	—	—	13·1
Ituhara	25·5	5	5 36	+ 4	10 23	+26	—	—	—
Koti	25·5	13	e 5 28	− 4	9 54	− 3	—	—	—
Kobe	27·0	16	5 49	+ 4	11 8	+44	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Shizuoka		28·2	21	5 56	0	11 50	+69	—	—	—
Pehpei		28·4	321	5 54	− 4	10 42	− 3	—	—	—
Tokyo		29·4	22	6 17	+10	7 30	PPP	—	—	—
Toyama		29·4	16	6 7	0	11 32	+31	—	—	—
Mizusawa	N.	32·9	21	e 6 38	0	e 11 57	+ 1	—	—	—
Miyako		33·7	21	6 43	− 2	—	—	—	—	—
Vladivostok		34·6	7	e 6 58	+ 5	12 26	+ 4	—	—	—
Mori	E.	35·4	18	e 6 55	− 5	—	—	—	—	—
Sapporo		36·5	18	e 7 10	+ 1	e 12 56	+ 5	—	—	—
Calcutta	N.	39·4	296	e 7 36	+ 3	i 13 55	+20	7 59	pP	—
Perth		41·8	194	i 7 55	+ 2	i 14 10	− 1	i 9 50	PPP	i 18·9
Brisbane		44·0	146	e 8 11	0	e 14 35	− 8	e 17 50	S	e 21·2
Colombo	E.	46·5	272	8 29	− 2	15 11	− 8	—	—	i 21·3
Irkutsk		47·2	342	i 8 36	0	15 28	− 1	—	—	—
Hyderabad	N.	47·8	286	e 8 43	+ 2	15 42	+ 4	18 44	S_cS	23·2
Riverview		48·2	153	i 8 42$_a$	− 2	i 15 33	−10	i 10 40	PP	e 21·7
Kodaikanal	E.	48·6	277	i 8 48	+ 1	i 15 18	−31	10 28	PP	22·2
New Delhi	E.	50·6	301	e 9 3	+ 1	i 20 16	SS	11 2	PP	—
Bombay	E.	53·2	287	i 9 19	− 3	i 17 4	+12	i 11 19	PP	26·5
Frunse		56·8	316	e 9 54	+ 6	—	—	—	—	—
Andijan		57·7	313	e 9 56	+ 1	—	—	—	—	—
Stalinabad		59·8	310	e 10 10	+ 1	—	—	—	—	—
Tashkent		60·1	313	e 10 4	− 7	e 18 22	− 2	—	—	—
Samarkand		61·4	311	10 18	− 2	—	—	—	—	—
Auckland		63·8	139	19 55	PPS	27 45	?	i 24 32	?	30·8
Arapuni		65·1	140	20 56?	S_cS	25 50?	SSS	—	—	33·2
Wellington		66·4	143	(11 8)	+15	(19 31)	−12	(11 47)	pP_cP	—
Christchurch		66·5	146	10 52	− 2	19 34	−10	11 23	P_cP	31·1
Honolulu		73·3	70	e 11 42	+ 7	i 21 12	+ 8	e 14 18	PP	e 33·3
Baku		74·4	310	11 38	− 4	21 15	− 1	—	—	—
College		80·2	26	e 12 6?	− 8	e 22 17?	− 2	e 15 9?	PP	e 34·2
Moscow		82·4	325	12 28	+ 3	i 22 51	+10	i 23 42	PS	—
Tananarive		82·8	250	e 12 25	− 2	22 52	+ 7	15 42	PP	39·8
Ksara		86·0	303	e 12 44	+ 1	e 23 16	− 1	—	—	—
Sitka		86·9	32	i 12 48	0	i 23 18	− 8	i 16 34	PP	e 41·6
Helwan		90·4	300	i 13 5k	+ 1	i 23 50	− 8	16 35	PP	—
Bucharest		91·5	315	e 13 56	+46	e 23 57	−11	e 16 58	PP	36·8
Upsala		92·0	331	e 14 25	+73	e 24 8	− 4	e 24 24	S_cS	e 39·8
Copenhagen		96·1	329	e 13 34	+ 3	i 24 8	[+ 1]	27 20	PPS	38·0
Victoria		96·3	40	—	—	e 24 18	[+10]	—	—	44·8
Bergen		97·2	335	—	—	e 24 35	{+ 1}	—	—	e 49·8
Prague		97·3	323	—	—	e 24 13	[0]	e 24 30	SKKS	e 46·8
Cheb		98·5	324	e 17 33	PP	e 24 34	[+14]	e 32 47	SS	e 51·8
Grand Coulee		99·3	38	e 13 48	+ 3	e 24 7	[−17]	e 17 51	PP	—
Triest		99·5	319	—	—	i 24 38	[+13]	i 27 36	PPS	e 47·5
Ukiah		99·7	48	e 17 57	PP	e 26 58	PS	—	—	e 46·2
Shasta Dam		99·8	46	e 13 48	+ 1	e 24 22	[− 4]	i 17 55	PP	—
Berkeley		100·8	49	12 56	−56	i 24 32	[+ 1]	e 17 59	PP	43·8
Santa Clara		101·2	49	e 18 5	PP	e 32 40	SS	—	—	e 47·3
De Bilt		101·6	328	—	—	e 26 50?	PS	(e 29 50)	PPS	e 29·8
Uccle		102·7	327	—	—	e 24 50?	[+10]	e 26 50?	PS	e 50·8
Tinemaha	z.	104·1	49	e 14 12	+ 5	—	—	—	—	—
Saskatoon		104·2	31	—	—	e 27 38	PS	—	—	45·8
Kew		104·8	329	—	—	e 25 10	[+20]	e 28 45	PPS	e 41·8
Paris		104·8	326	—	—	28 50?	PS	—	—	—
Bozeman		105·2	37	—	—	e 24 50	[− 1]	e 28 7	PS	e 49·7
Pasadena	z.	105·2	51	e 14 14	+ 3	e 24 48	[− 3]	e 18 36	PP	e 43·4
Mount Wilson	z.	105·3	51	e 14 14	+ 2	—	—	e 18 28	PP	—
Riverside	z.	105·9	51	e 14 10	− 4	—	—	—	—	—
Palomar	z.	106·5	52	e 14 44	+27	—	—	i 18 50	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Boulder City		107·0	49	e 14 35	+16	—	—	e 18 30	PKP	—
Salt Lake City		107·0	43	e 18 53	PP	e 25 2	[+ 3]	e 28 29	PS	e 45·0
Pierce Ferry		107·6	48	e 14 23	P	—	—	—	—	—
Rapid City		110·7	36	—	—	e 34 55	SSP	—	—	e 53·0
Tucson		111·6	50	e 18 35	[− 1]	e 26 59	S	i 19 21	PP	e 46·5
Almeria		114·3	317	e 24 51	SKS	(e 24 51)	[−38]	—	—	68·8
Chicago		120·7	29	e 20 17	PP	e 30 5	PS	e 36 59	SS	e 50·4
St. Louis		121·6	34	i 19 1	[+ 5]	e 28 0	{+36}	i 20 32	PP	—
Seven Falls		122·2	13	—	—	e 30 38	PS	—	—	52·8
Ottawa		122·5	18	19 1	[+ 3]	30 32	PS	20 38	PP	57·8
Fordham		127·1	19	e 21 16	PP	i 31 17	PS	—	—	—
Columbia		130·0	30	e 21 28	PP	e 25 32	[−48]	e 33 20	PPS	—
Bermuda		137·7	14	e 22 9	PP	e 26 42	[+ 7]	e 34 20	PPS	e 53·5
Balboa Heights		148·4	56	e 19 50	[+ 5]	—	—	—	—	—
San Juan		150·2	25	e 19 52	[+ 4]	e 36 17	PPS	i 23 31	PP	e 60·1
Bogota		155·3	58	e 19 53	[− 2]	—	—	e 24 7	?	—
Huancayo		158·0	101	e 20 2	[+ 3]	e 44 54	SSP	e 50 58	SSS	e 64·5
La Paz	z.	163·5	120	i 20 7a	[+ 3]	26 58	[− 9]	i 21 4	pPKP	e 77·8

Additional readings :—
Pehpei P =5m.57s.
Mizusawa PE =6m.44s.
Calcutta isSN =14m.18s., SSN =16m.42s., S_cSN =17m.47s.
Brisbane iSN =14m.30s., eSS?E =17m.56s.
Riverview i =8m.47s., iPPS?N =15m.55s., iE =15m.58s., iSSE =19m.7s.
Kodaikanal SSE =18m.13s.
Bombay ePPN =11m.23s., iSSE =20m.50s., SSN =21m.4s.
Wellington PPZ =(13m.41s.), PPP =(15m.35s.), iZ =(17m.37s.), pS =(20m.42s.), SPS?Z =(23m.0s.), iZ =(23m.46s.), SS =(24m.20s.), iZ =(24m.49s.), SSS =(26m.45s.), readings decreased by 7·5 minutes.
Christchurch SSEZ =24m.12s., QEN =27m.40s.
Honolulu eSS =26m.26s.
College e =23m.23s.?.
Tananarive PPP =16m.54s., eS =22m.30s., E =23m.54s., SS =28m.0s.
Sitka ePPP? =18m.21s., iPPS =24m.57s., eSS =29m.9s., eSSS =35m.54s.
Helwan iZ =13m.41s., PSZ =25m.5s., PPSZ =25m.38s.
Upsala eS?E =23m.50s., eE =33m.50s.?
Prague ePS =26m.16s., e =27m.38s., eSS =31m.50s., eSSS =36m.20s.
Cheb ePPP? =21m.14s.
Triest eSSS =37m.7s.?
Shasta Dam ePS =27m.9s., ePKKP =30m.5s., iPKKP =30m.16s.
Berkeley ePPE =18m.6s., eN =24m.50s., iPPSE =26m.51s., ePPSZ =27m.0s., iN =27m.51s., eSSEN =31m.14s., ePKP,PKPN =38m.44s., eQEN =42m.37s.
Bozeman e =34m.40s.
Pasadena eSS =33m.12s.
Palomar eZ =17m.58s.
Boulder City e =17m.42s.
Salt Lake City e =25m.22s., eSS =33m.13s., eSSS =38m.5s.
Tucson ePS =28m.47s., i =29m.9s., eSS =35m.14s., eSSS =39m.11s.
St. Louis iN =29m.25s., iSSE =37m.5s.
Ottawa SSN =37m.50s.?
Bermuda ePP =23m.4s., eSS =41m.7s., e =45m.18s.
San Juan e =20m.42s. and 33m.35s., eSS =43m.20s.
Huancayo e =23m.30s.?, 32m.37s., 38m.26s., and 39m.9s.
La Paz isPKPZ =21m.39s., iPP =24m.46s., iZ =30m.1s., iSKKS? =30m.59s., iZ =32m.13s., PSKS =35m.5s., SSZ =45m.23s.
Long waves were also recorded at Collmberg, Lisbon, and Toledo.

Dec. 20d. 8h. 3m. 24s. Epicentre 38°·8N. 69°·7E. (as on 1943, November 2d.).

A = +·2711, B = +·7328, C = +·6240 ; δ = −13 ; h = −1 ;
D = +·938, E = −·347 ; G = +·217, H = +·585, K = −·781.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Stalinabad	0·8	251	i 0 0	−18	i 0 12	−19
Samarkand	2·3	292	0 13?	−27	0 56?	−13
Tashkent	2·5	353	e 0 43	0	e 1 27	+13
Andijan	2·8	46	e 0 47	0	i 1 32	+10
Tchimkent	3·5	359	e 0 58	+ 1	—	—
Frunse	5·5	41	e 1 38	+13	e 2 44	+14

Dec. 20d. Readings also at 0h. (Christchurch, Riverview, Bombay, Tananarive, Frunse, Andijan, and Almata), 2h. (Toledo, near Granada, Malaga, and Lisbon), 4h. (La Paz), 7h. (Mineral), 8h. (Alicante), 11h. (near Frunse), 17h. (Samarkand), 21h. (near Ottawa).

Dec. 21d. 18h. Undetermined shock.

Sverdlovsk eP =37m.2s., S =41m.2s.
Ksara e =39m.46s. and 43m.21s.
Sofia ePEN =39m.51s., eN =40m.42s., iEN =41m.7s. and 41m.22s., iS?EN =43m.39s.?
Bucharest eEN =40m.6s., eE =41m.18s., iN =41m.37s., eEN =43m.6s., iE =44m.13s.
Copenhagen eP =41m.10s., e =49m.10s., 52m.48s.
Helwan PZ =41m.21s. iNZ =42m.27s., i =43m.57s.
Yalta eP =41m.27s.
Belgrade eP =42m.36s., e =42m.55s., 43m.31s., 45m.12s., and 45m.15s., i =45m.26s.
Erevan eP =43m.29s.
Cheb e =44m.13s. and 47m.24s., eL =49m.54s.
Prague e =45m.46s., eL =48m.
Upsala eN =49m.44s., eL =52·3m.
Long waves were also recorded at Uccle, De Bilt, and Kew.

Dec. 21d. Readings also at 4h. (Malaga), 8h. (near La Paz), 14h. (near Balboa Heights), 22h. (near Andijan).

Dec. 22d. Readings at 0h. (Tucson), 1h. (near Andijan), 2h. (Boulder City, Pierce Ferry, Tinemaha, Tucson, and Samarkand), 19h. (Bombay, Calcutta, Kodaikanal, and New Delhi), 20h. (Collmberg), 21h. (St. Louis, Tucson, Collmberg (2), Copenhagen, Cheb, Kew, Strasbourg, Chur, Basle, Neuchatel, Zürich, and near Triest), 22h. (Bozeman, Columbia, and Sitka).

Dec. 23d. 8h. 9m. 59s. Epicentre 10°·2N. 61°·7W. Depth of focus 0·005.

Felt at Pedernales.
Annales de l'Institut de Physique du Globe de Strasbourg. 2e partie Séismologie, Tome X, Strasbourg, 1951, p. 39. Epicentre as adopted, depth 100km.

$A = +\cdot4667$, $B = -\cdot8667$, $C = +\cdot1760$; $\delta = -5$; $h = +7$;
$D = -\cdot880$, $E = -\cdot474$; $G = +\cdot083$, $H = -\cdot155$, $K = -\cdot984$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fort de France		4·5	6	e 1 7	0	—	—	—	—	—
San Juan		9·2	333	i 2 8	− 4	i 3 16	−39	—	—	e 4·1
Bogota		13·5	246	i 3 3	− 7	i 6 13	+34	—	—	i 7·4
Balboa Heights		17·7	268	e 3 59	− 4	—	—	—	—	—
Bermuda		22·2	354	i 4 54	+ 2	e 8 48	+ 1	i 5 22	PP	i 9·4
Huancayo		25·9	212	e 5 30	+ 2	e 9 54	+ 3	i 6 0	pP	e 11·7
La Paz	z.	27·3	194	i 5 42k	+ 1	i 10 54	+40	i 6 10	pP	i 16·0
Columbia		29·6	327	e 6 1	0	e 10 39	−11	e 6 57	PP	e 12·2
Fordham		32·4	343	i 6 26	0	i 11 36	+ 2	—	—	15·5
Weston		33·1	348	e 6 31	− 1	e 11 37	− 8	—	—	—
Pittsburgh	z.	34·2	336	i 6 44	+ 3	—	—	—	—	—
Cape Girardeau		36·8	322	i 7 3	0	e 12 42	0	i 7 16	pP	e 16·3
Ottawa		37·1	344	7 7	+ 1	12 50	+ 3	8 29	PPP	16·0
Tacubaya	N.	37·3	288	e 7 8	0	e 12 54	+ 4	—	—	—
Shawinigan Falls		37·4	348	7 7	− 1	12 52	+ 1	—	—	17·0
Seven Falls		37·6	350	7 13	+ 3	13 3	+ 9	—	—	16·0
St. Louis		38·1	323	i 7 12	− 2	i 12 58	− 4	i 7 26	pP	e 18·0
Chicago		38·8	328	e 7 22	+ 2	e 12 42	−31	e 8 42	PP	e 16·4
Lincoln		43·4	321	—	—	e 14 25	+ 4	e 9 49	PP	e 17·8
La Plata		45·0	175	8 6	− 5	14 49	+ 5	10 7	PP	21·9
Rapid City		49·2	322	e 8 45	+ 1	e 15 28	−15	e 10 47	PP	e 22·8
Tucson		50·3	304	i 8 52	0	e 15 59	+ 1	i 9 23	pP	e 21·6
Salt Lake City		53·6	314	e 9 19	+ 2	e 16 29	−15	e 11 21	PP	e 25·1
Pierce Ferry		53·8	308	i 9 18	0	—	—	—	—	—
Overton		54·2	308	e 9 22	+ 1	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Boulder City		54·4	397	e 9 22	− 1	e 16 58	+ 4	e 17 24	sS	—
Bozeman		54·9	320	e 9 47	+21	e 17 0	− 1	—	—	e 25·7
Saskatoon		55·4	328	9 30	0	17 5	− 3	—	—	26·0
Palomar	z.	55·5	304	i 9 31	0	—	—	i 9 40	pP	—
Riverside	z.	56·0	305	i 9 34	0	—	—	i 9 54	pP	—
Mount Wilson		56·6	305	i 9 38	− 1	—	—	—	—	—
Pasadena		56·7	305	i 9 38	− 1	i 17 26	+ 1	i 10 5	pP	e 23·6
Haiwee	z.	56·9	307	e 9 41	0	—	—	—	—	—
Tinemaha		57·4	308	i 9 45	+ 1	i 17 39	+ 5	—	—	—
Santa Barbara	z.	58·0	304	e 9 48	0	—	—	—	—	—
Granada		58·6	53	i 9 36a	+ 3	22 30	SS	12 36	PP	33·4
Almeria		59·4	54	10 31	+33	18 50	+50	12 48	PP	33·0
Santa Clara	z.	60·3	308	e 9 53	−11	—	—	—	—	—
Berkeley		60·6	308	i 10 7	+ 1	e 19 29	+73	i 12 29	PP	e 29·0
Grand Coulee		60·8	320	e 10 6	− 2	e 18 13	− 5	e 12 22	PP	—
Shasta Dam		61·3	311	e 10 1	−10	—	—	e 14 0	PPP	—
Ukiah		61·6	309	e 10 18	+ 5	e 18 29	+ 1	—	—	e 25·6
Uccle	E.	67·1	39	—	—	(e 19 1?)	−35	—	—	e 19·0
Basle		68·6	43	e 11 1	+ 3	—	—	—	—	—
Strasbourg		68·8	42	e 12 8	+69	—	—	—	—	—
Cheb		72·0	40	—	—	e 20 48	+14	—	—	e 35·0
Collmberg	z.	72·5	39	e 11 22	0	—	—	—	—	—
Copenhagen		72·7	34	i 11 40	+17	20 52	+10	—	—	35·5
Sitka		72·7	327	i 11 29	+ 6	e 20 46	+ 4	e 16 7	PPP	e 33·4
Prague		73·3	41	e 11 52?	+26	e 21 16	+27	e 26 49	SS	e 35·0
Upsala		75·9	31	—	—	e 21 8	− 9	—	—	e 36·0
College		79·2	335	e 14 59	PP	e 21 43	−10	e 22 35	PS	e 30·8
Moscow		86·9	34	12 46	+ 7	23 8	− 2	—	—	—
Helwan		87·6	61	12 52	+10	23 15	− 2	16 28	PP	—
Ksara		90·6	56	e 13 16	+20	e 23 36	− 8	—	—	—
Irkutsk		116·6	10	e 15 5	P	25 31	[+ 9]	19 49	PP	—
Wellington		121·7	227	—	—	28 27	?	i 30 5	PS	60·9
Christchurch		122·6	225	—	—	37 6	SS	27 27	SKKS	57·4
New Delhi	N.	124·6	45	—	—	e 26 0	[+11]	i 27 41	SKKS	—
Bombay		126·6	58	—	—	e 27 54	SKKS	—	—	—
Hyderabad	N.	132·0	55	22 56	PKS	—	—	—	—	—
Riverview		141·8	226	e 19 40	[+15]	e 27 22	[+56]	i 23 6	PKS	e 63·1

Additional readings :—
San Juan i = 2m.29s.
Bogota i = 3m.11s. and 5m.41s.
Huancayo iP = 5m.34s., iS = 10m.1s., i = 10m.45s.
La Paz sPZ = 6m.34s., PP = 6m.40s., P_cPZ = 8m.39s., iSS = 12m.30s.
Cape Girardeau eE = 13m.4s.
St. Louis esSN = 13m.32s., iSSN = 15m.44s.
Chicago eSS = 15m.42s.
La Plata SE = 14m.31s., E = 15m.13s., N = 18m.1s., E = 18m.43s.
Rapid City e = 10m.24s.
Tucson eP_cP = 10m.13s., ePP = 10m.41s., i = 11m.1s., ePPP = 11m.51s., e = 19m.55s. and 20m.21s.
Salt Lake City eSS = 20m.57s.
Pasadena isPZ = 10m.30s.
Granada S_cS = 19m.22s.
Almeria P_cP = 11m.17s., PPP = 14m.24s., P_cS = 15m.6s., SS = 22m.58s.
Berkeley e = 13m.56s., eEN = 18m.1s., eN = 19m.41s., eEN = 25m.19s., eZ = 25m.35s.
Grand Coulee iP = 10m.19s., iP_cP = 11m.13s., esS = 18m.50s.
Shasta Dam iP = 10m.9s.
Ukiah e = 14m.25s.
Cheb e = 29m.11s.
Collmberg iZ = 11m.26s., 11m.40s., and 11m.49s.
Sitka isS = 21m.25s., e = 25m.54s. and 29m.8s.
Prague ePS = 21m.55s., eSSS = 29m.43s.
Upsala eE = 21m.25s., eN = 21m.50s. and 31m.1s.?
Helwan P_cPZ = 12m.58s., PSE = 24m.55s.
Irkutsk SKKS = 26m.43s., eSS = 35m.13s.
Wellington S? = 30m.30s., eZ = 37m.8s.
Christchurch EN = 28m.41s., PPEN = 31m.38s., PPSEN = 40m.1s., SSN = 44m.55s., SSSN = 48m.40s., QN = 51m.31s., record wrongly interpreted.
Riverview eN = 28m.2s., eSKKSE = 29m.10s., eEN = 29m.54s., ePSZ = 32m.48s., eSSN = 41m.6s., eSSSN = 46m.19s., eE = 46m.59s.
Long waves were also recorded at Montezuma, Harvard, Seattle, Bergen, Kew, Arapuni, Auckland, and Kodaikanal.

Dec. 23d. Readings also at 1h. (near Samarkand), 2h. (near La Paz), 8h. (Copenhagen and Harvard), 13h. (near Balboa Heights), 15h. (near Andijan, Samarkand, Stalinabad, and Tchimkent), 17h. (Tashkent, Almata, Andijan, and Frunse), 18h. (Belgrade, Bucharest, and Sofia).

Dec. 24d. Readings at 1h. (Merida, Oaxaca, Tacubaya, Balboa Heights, Tucson, and Pierce Ferry), 2h. (La Paz and San Juan), 3h. (near Tacubaya), 4h. (Bogota, La Paz (2), and near Fort de France), 7h. (Riverview), 11h. (near Ksara and near Mizusawa), 16h. (La Paz and Tucson), 18h. (La Paz, La Plata, Mount Wilson, Riverside, Tinemaha, and Tucson).

Dec. 25d. 1h. 25m. 45s. Epicentre 52°·2N. 173°·9E. (as on 1940, July 19d.).

$A = -·6119$, $B = +·0654$, $C = +·7882$; $\delta = -4$; $h = -6$;
$D = +·106$, $E = +·994$; $G = -·784$, $H = +·084$, $K = -·615$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		23·2	42	e 5 9	0	e 9 17	− 1	i 5 23	PP	e 12·2
Sitka		29·1	60	i 6 3	− 1	i 10 50	− 6	i 6 51	PP	e 12·6
Vladivostok		29·4	268	i 6 16	+ 9	i 11 12	+11	—	—	—
Honolulu		37·8	133	e 7 42	+22	e 13 20	+ 9	e 15 41	SS	e 17·2
Victoria		39·1	69	7 25	− 6	—	—	—	—	16·2
Seattle		40·1	70	e 6 28	−71	—	—	—	—	e 18·4
Irkutsk		41·1	299	i 7 51	+ 4	14 5	+ 4	—	—	—
Grand Coulee		41·9	67	i 7 52	− 2	e 13 59	−14	—	—	—
Shasta Dam		44·0	78	i 8 9	− 2	—	—	i 9 58	PP	—
Ukiah		44·5	81	—	—	e 14 39	−12	—	—	e 18·6
Berkeley		45·9	82	e 7 25	−61	—	—	e 18 57	SSS	—
Saskatoon		46·4	57	e 8 45	+15	e 14 57	−21	—	—	22·2
Butte		46·6	65	e 8 29	− 3	—	—	e 18 27	S_eS	e 23·2
Bozeman		47·7	66	e 8 39	− 1	e 15 25	−11	e 18 35	S_eS	e 24·6
Tinemaha	Z.	48·8	80	i 8 49	0	—	—	i 11 19	pP	—
Haiwee	N.	49·6	80	e 8 54	− 1	—	—	—	—	—
Santa Barbara	Z.	49·6	83	e 8 55	0	—	—	—	—	—
Salt Lake City		50·2	72	i 8 59	− 1	e 15 8	−63	e 21 16	SSS	e 24·7
Mount Wilson		50·8	82	i 9 2	− 2	—	—	—	—	—
Pasadena		50·8	82	i 9 2	− 2	—	—	i 10 25	PP	e 23·3
Boulder City		51·6	78	i 9 9	− 1	—	—	—	—	—
Pierce Ferry		52·0	77	i 9 11	− 2	—	—	e 19 3	S_eS	—
Palomar		52·1	82	i 9 11 a	− 3	—	—	—	—	—
La Jolla	E.	52·2	83	e 9 14	− 1	—	—	—	—	—
Rapid City		53·0	63	i 9 21	0	e 16 41	− 9	—	—	e 27·8
Tucson		56·5	78	i 9 45	− 1	e 17 55	+18	e 11 39	PP	e 23·7
Sverdlovsk		58·4	323	i 10 1	+ 1	i 18 1	− 1	—	—	—
Lincoln		58·8	62	e 10 5	+ 3	e 17 59	− 8	—	—	e 29·9
Chicago		62·9	57	e 10 28	− 2	e 18 50	−10	e 13 10	PP	e 25·6
Florissant		63·6	60	i 10 32	− 3	i 19 1	− 7	i 12 51	PP	e 30·7
St. Louis		63·8	60	i 10 33	− 3	i 19 4	− 7	i 13 1	PP	i 30·8
Cape Girardeau	E.	65·2	61	e 10 41	− 4	—	—	—	—	—
Andijan		65·2	304	10 50	+ 5	—	—	—	—	—
Ottawa		65·9	46	10 47	− 3	19 57	+20	e 24 5	SS	35·2
Tashkent		66·3	307	e 10 50	− 2	e 24 3	SS	e 21 2	?	—
Moscow		66·6	334	10 55	+ 1	e 19 44	− 1	—	—	—
Seven Falls		66·6	42	—	—	i 20 45	+60	—	—	34·2
Upsala	N.	66·7	347	—	—	e 20 45	+59	—	—	e 35·2
Pittsburgh	Z.	67·7	51	i 11 3	+ 2	—	—	—	—	—
Samarkand		68·7	307	11 13	+ 6	—	—	—	—	—
Stalinabad		68·7	305	i 11 11	+ 4	—	—	—	—	—
Harvard		70·0	45	i 11 13	− 2	—	—	—	—	e 39·2
Weston		70·2	45	i 11 15	− 2	i 20 53	+25	—	—	—
Fordham		70·3	48	i 11 14	− 3	e 20 35	+ 6	e 15 51	PPP	39·8
Collmberg	Z.	75·6	347	i 11 49	+ 1	—	—	—	—	—
Cheb		76·9	348	e 12 15?	+19	e 21 15?	−28	—	—	e 47·2
Yalta		77·6	331	i 12 2	+ 2	—	—	—	—	—
Erevan		78·0	322	e 12 8	+ 6	—	—	—	—	—
Hyderabad	N.	79·7	284	12 17	+ 6	22 21	+ 8	15 20	PP	—
Bermuda		81·4	47	e 12 25	+ 5	(e 22 47)	+16	—	—	e 22·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		81·9	290	i 12 28	+ 5	i 22 41	+ 5	—	—	—
Sofia		82·1	338	e 12 30	+ 6	e 22 45	+ 7	—	—	47·2
Kodaikanal	E.	85·9	281	—	—	23 4	[− 3]	—	—	—
Colombo	E.	87·1	277	23 15?	SKS	(23 15?)	[0]	—	—	—
Riverview		88·0	198	i 13 4a	+11	i 23 40	+ 4	i 24 54	PS	—
Helwan		91·9	328	e 13 15	+ 4	23 51	[+ 7]	16 53	PP	—
San Juan		92·6	55	e 13 21	+ 6	e 24 12	− 6	e 16 47	PP	i 47·8
Wellington		93·1	180	i 7 34	?	23 52	[+ 1]	—	—	46·1
Christchurch		95·4	181	12 35	−53	24 21	[+18]	—	—	46·6
Bogota		99·6	69	e 17 49	PP	—	—	—	—	—
Huancayo		112·1	80	—	—	e 29 15	PS	e 34 53	SS	e 54·0
La Paz		120·0	77	i 20 18	PP	25 2	[−48]	31 15	PPS	74·0

Additional readings :—
College e =5m.45s., iS =9m.21s.
Seattle e =7m.15s., 8m.17s., and 12m.5s.
Grand Coulee i =8m.31s.
Berkeley eZ =9m.18s.
Boulder City i =9m.52s.
Tucson i =11m.9s. and 13m.44s.
Florissant iSPN =19m.37s., eSSN =23m.47s.
St. Louis ePPPPE =15m.23s., iSPE =19m.37s., iSSE =23m.57s.
Ottawa iN =20m.51s., SSE =27m.15s.?, SSSN =30m.15s.?
Collmberg iZ =11m.59s., eZ =13m.15s.
Hyderabad SSN =27m.48s.
Bermuda e =19m.22s.
Riverview eN =13m.7s., eZ =14m.28s., iSKSN =23m.30s., iSSN =29m.9s., eE =30m.10s.
Helwan eN =24m.25s. and 25m.31s.
San Juan eS =24m.27s., eSS =30m.37s.
Christchurch SKS =23m.10s.
Long waves were also recorded at Arapuni, Auckland, Santa Clara, Uccle, Triest, Kew, and Granada.

Dec. 25d. 20h. 24m. 59s. Epicentre 47°·3N. 11°·3E. (as on 1944, Jan. 11d.).

Felt widely south of Innsbruck, Scale V-VI. Macroseismic Epicentre 47°·2N. 11°·4E.

E. Trapp.
Makros. Beobachtungen in den Jahren, 1941-1945 Anhang 8 zum Jahrbuch für 1947 der Zentralanstalt für Meteorologie und Geodynamik. Neue Folge. 84. Band, Vienna, 1948, with Macroseismic chart p. D-50.

A = +·6674, B = +·1334, C = +·7326 ; δ = −8 ; h = −4 ;
D = +·196, E = −·981 ; G = +·718, H = +·144, K = −·681.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chur		1·3	249	e 0 26	+ 1	e 0 48	+ 4	e 0 50	S_g	—
Zürich		1·9	272	e 0 34	0	e 1 4	+ 5	—	—	—
Triest		2·4	134	e 0 42	+ 1	i 1 7	− 5	—	—	—
Basle		2·5	275	e 0 44	+ 1	e 1 27	S_g	—	—	—
Strasbourg		2·7	298	e 1 2	P_g	i 1 20	+ 1	i 1 35	S_g	—
Neuchatel		3·0	264	i 0 50	0	e 1 40	S_g	—	—	—
Jena		3·6	1	e 1 21	P_g	e 1 34	− 8	—	—	—
Collmberg	z.	4·1	15	i 1 1	− 4	i 1 52	− 3	i 1 25	P_g	i 2·1
Uccle		5·7	310	e 2 19	?	i 3 11	S_g	—	—	—

Additional readings :—
Triest i =1m.11s.
Strasbourg iS* =1m.32s.
Jena eN =2m.16s., eE =2m.23s.
Collmberg iZ =1m.6s., iP*Z =1m.10s., iP_gZ =1m.16s., iZ =1m.38s., iS*Z =1m.58s., iS_gZ =2m.5s.

Dec. 25d. Readings also at 0h. (Mount Wilson, Palomar, Tinemaha, and Tucson), 1h. (near Mizusawa), 2h. (Mount Wilson, Pasadena, Palomar, Tinemaha, Tucson, Shasta Dam, and Grand Coulee), 3h. (Riverview), 4h. (Mount Wilson, Pasadena, Palomar, Riverside, Tucson (2), Boulder City, Pierce Ferry, Grand Coulee, and near Mizusawa), 8h. (Bombay, Colombo, Hyderabad, Kodaikanal, and near New Delhi), 9h. (Riverview), 15h. (Christchurch, Wellington, Riverview, and Tucson), 17h. (La Paz, La Plata, St. Louis, Tucson, Mount Wilson, Palomar, Riverside, Tinemaha, and Shasta Dam), 20h. (Samarkand, Tashkent, near Frunse, Stalinabad, and Tchimkent).

Dec. 26d. Readings at 6h. (Tucson and Sofia), 7h. (Toledo, Collmberg, Cheb, and near Triest), 11h. (near Frunse), 14h. (near Tucson), 18h. (near Andijan, Samarkand, and Stalinabad), 22h. (Tinemaha, Tucson, Riverview, and Auckland).

Dec. 27d. 4h. 41m. 0s. Epicentre 6°·1S. 150°·5E. (as on 8d.).

$A = -\cdot8655$, $B = +\cdot4897$, $C = -\cdot1055$; $\delta = +3$; $h = +7$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverview		27·6	178	i 5 50k	− 1	i 10 33	+ 1	i 6 19	pP	e 13·5
Auckland		37·8	147	8 31	+71	14 38	+87	10 0	PP	20·0
Arapuni		39·2	148	8 0?	+29	13 48?	+16	16 48?	SSS	17·6
Wellington		41·2	152	7 53	+ 5	13 44	−18	8 34	pP	20·5
Perth		41·3	227	8 3	+14	14 2	− 2	9 30	PP	19·8
Miyazaki		41·9	336	7 54	0	—	—	—	—	—
Mera		42·0	347	7 55	+ 1	14 43	+29	—	—	—
Christchurch		42·1	156	8 0	+ 5	14 17	+ 1	17 17	SS	20·4
Kôti		42·6	338	e 7 54	− 5	12 52	−91	—	—	—
Yokohama		42·6	347	e 7 58	− 1	—	—	—	—	—
Kumamoto		43·0	336	6 48	−75	13 14	−75	—	—	—
Kobe		43·1	342	i 8 3	− 1	14 38	+ 8	—	—	—
Hukuoka		43·8	336	8 4	− 5	14 21	−19	—	—	21·0
Nagano		44·1	346	e 9 18	+66	—	—	—	—	—
Sendai		45·0	350	e 8 12	− 7	—	—	—	—	—
Mizusawa	E.	45·8	350	8 43	+18	14 17	−52	—	—	—
	N.	45·8	350	8 26	+ 1	14 27	−42	—	—	—
Sapporo		49·6	352	e 9 25	+30	16 15	+12	—	—	e 22·4
Vladivostok		51·8	343	i 9 12	0	i 16 35	+ 2	—	—	—
Honolulu		57·5	60	e 9 58	+ 5	i 17 55	+ 5	e 20 25	?	e 24·4
Calcutta	N.	67·1	297	(e 10 52)	− 5	(19 38)	−13	—	—	—
Irkutsk		70·1	332	i 11 16	0	20 26	− 1	—	—	—
Colombo	E.	71·6	279	11 30?	+ 5	—	—	—	—	—
Kodaikanal	E.	74·5	283	i 11 45	+ 3	i 21 13	− 4	14 25	PP	36·1
Hyderabad	N.	74·9	290	11 49	+ 5	21 10	−12	21 54	PS	—
New Delhi	N.	78·4	301	e 12 0	− 4	i 21 48	−12	26 54	SS	35·8
Bombay		80·4	290	i 12 18	+ 3	e 22 14	− 7	27 49	SS	38·1
College		83·9	32	e 12 22	−11	e 23 6	+10	e 15 20	PP	e 33·4
Andijan		85·0	312	e 12 44	+ 6	e 23 2	− 5	—	—	—
Sitka		86·7	32	—	—	i 23 16	− 8	—	—	e 35·3
Stalinabad		87·3	309	e 12 53	+ 3	—	—	—	—	—
Tashkent		87·4	312	i 12 47?	− 3	23 28?	− 2	e 16 17	PP	—
Ukiah		90·9	51	—	—	e 23 54	− 9	—	—	e 41·2
Berkeley		91·5	52	13 12	+ 2	24 14	+ 6	23 37	SKS	42·4
Santa Clara		91·7	53	i 13 18	+ 8	e 24 1	− 9	—	—	e 42·3
Shasta Dam		91·7	49	e 13 11	+ 1	e 23 42	[− 1]	e 24 21	S	—
Victoria		92·0	42	e 13 12	0	e 23 46	[+ 2]	—	—	38·0
Santa Barbara	Z.	93·2	56	e 13 7	−10	—	—	—	—	—
Pasadena		94·5	56	e 13 23	0	e 24 11	{− 4}	e 17 10	PP	e 38·6
Mount Wilson	Z.	94·6	56	i 13 23	− 1	—	—	—	—	—
Tinemaha		94·6	54	i 13 41	+17	—	—	i 13 57	?	—
Grand Coulee		94·8	42	e 13 25	0	—	—	—	—	—
Haiwee	Z.	94·8	54	e 13 31	+ 6	—	—	—	—	—
Riverside	Z.	95·1	56	i 13 25	− 1	—	—	—	—	—
La Jolla	E.	95·2	57	e 13 34	+ 7	—	—	—	—	—
Palomar	Z.	95·5	57	i 13 32	+ 4	—	—	—	—	—
Boulder City		97·3	54	e 13 35	− 1	—	—	e 17 30	PP	—
Pierce Ferry		98·0	54	e 14 9	+30	e 25 9	+ 5	e 18 11	PP	—
Salt Lake City		99·7	49	—	—	e 24 46	{− 6}	e 26 54	PS	e 41·3
Bozeman		100·2	45	—	—	e 24 32	[+ 4]	e 25 37	S	e 41·9
Tucson		100·6	58	e 13 53	+ 2	e 24 48	{−10}	e 17 59	PP	e 41·6
Saskatoon		102·7	38	—	—	24 42	[+ 2]	27 12	PS	43·0
Moscow		107·8	327	e 18 46	PP	e 28 0	PS	—	—	—
Ksara		113·8	303	—	—	e 24 6	?	—	—	57·0
Upsala		115·6	335	e 19 45	PP	e 25 30	[− 4]	e 29 24	PS	e 47·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Florissant		116·4	49	e 19 46	PP	e 25 39	[+ 2]	i 27 9 SKKS	e 49·5
St. Louis		116·5	50	e 19 4	[+18]	e 25 56	[+18]	e 19 48 PP	e 49·5
Chicago		117·6	45	—	—	e 29 51	PS	e 36 12 SS	e 50·0
Helwan		118·2	300	e 18 48	[− 1]	28 0	S	20 3 PP	—
Bergen		119·8	341	20 17	PP	26 0?	[+11]	29 51 PS	53·0
Copenhagen		120·4	334	i 20 20	PP	26 8	[+17]	22 56 PPP	—
Sofia		120·9	317	—	—	e 30 0?	PS	e 37 0? SS	e 52·0
Collmberg		122·8	330	e 20 42	PP	e 30 30	PS	e 38 0? SSP	61·0
Prague		122·8	328	e 20 43	PP	e 30 6	PS	e 38 0 SSP	e 50·0
Cheb		123·9	329	e 20 48	PP	e 26 22	[+19]	e 30 42 PS	e 69·0
Ottawa		124·0	37	19 1	[0]	22 0?	SKP	32 30 PPS	59·0
Aberdeen		124·7	343	i 22 3	SKP	i 30 43	PS	i 38 16 SSP	62·3
Columbia		124·9	52	e 22 20	SKP	e 26 11	[+ 5]	e 37 41 SS	e 52·7
Triest		125·3	324	e 20 53	PP	e 26 8	[+ 1]	e 22 14 SKP	e 57·3
De Bilt		126·0	334	i 19 10	[+ 6]	e 31 0?	PS	i 20 59 PP	e 59·0
Seven Falls		126·0	33	22 6	SKP	32 30	PPS	37 42 SS	53·0
Strasbourg		127·2	329	e 21 3	PP	i 22 32	SKP	e 23 56 PPP	e 61·0
Uccle		127·3	333	e 21 7	PP	e 22 24	SKP	e 31 0? PS	e 60·0
Fordham		127·4	41	e 34 15	?	e 37 42	SS	— —	55·3
Stonyhurst		127·6	340	23 55	PPP	32 58	PPS	38 56 SSP	—
Basle		128·0	329	e 19 23	[+15]	—	—	— —	—
Weston		128·3	38	—	—	e 38 6	SS	— —	e 53·1
Neuchatel		128·6	329	—	—	e 43 52	SSS	— —	—
Kew		128·7	337	20 46	PP	28 30	{+19}	22 30 SKP	e 58·0
Paris		129·5	333	e 19 20	[+ 9]	i 22 49	SKP	i 21 0? PP	e 65·0
Huancayo		131·0	111	e 21 32	PP	i 22 52	SKP	e 33 37 PPS	e 54·2
La Plata		131·2	149	22 42	SKP	39 6	SS	55 54 Q	62·9
Clermont-Ferrand		131·4	329	e 21 37	PP	e 22 39	SKP	i 24 28 PPP	e 67·6
Barcelona		134·9	326	e 22 41	SKP	e 44 52	SSS	— —	—
Bogota		135·6	89	e 19 28	[+ 6]	—	—	e 22 6 PP	—
La Paz		135·7	121	i 21 29k	?	28 56	{+ 1}	i 22 5 PP	65·0
Tortosa	N.	136·2	326	17 5	?	23 9	SKP	32 26 PS	e 63·0
Bermuda		138·0	47	e 22 6	PP	e 27 30	[+54]	i 23 0 SKP	e 57·1
Toledo		139·4	329	e 19 28	[− 1]	32 50	PS	41 41 SSP	68·0
Almeria		140·7	325	19 31	[− 1]	26 36	[− 4]	22 32 PP	71·0
Granada		141·1	326	i 19 39a	[+ 7]	26 10	[−31]	22 37 PP	76·2
Malaga		141·8	327	e 19 46	[+12]	29 29	{− 3}	e 22 44 PP	e 69·6
San Juan		142·3	67	e 19 33	[− 2]	e 23 25	SKP	e 41 34 SS	e 56·5
Lisbon		142·7	334	19 18	[−17]	—	—	22 54 PP	72·6
Fort de France		147·7	72	e 19 47	[+ 3]	—	—	— —	—

Additional readings :—
Riverview iNZ =6m.35s., iPPNZ =6m.47s., iZ =10m.49s., iN =10m.52s., isS?N = 11m.15s., iN =12m.1s., and 12m.29s., iE =13m.4s.
Auckland P_cP =10m.57s., P_cS =15m.3s., SS =16m.53s., i =17m.44s., SSS =18m.49s.
Wellington sPZ =8m.57s., PP?Z =9m.26s., pPPZ =9m.52s., sPPZ =10m.17s., P_cS?Z = 13m.52s., SS =15m.57s., QZ =17m.26s.
Perth PPP =9m.50s., SSS =16m.58s.
Christchurch P_cS? =14m.5s., S_cS =18m.6s.
Calcutta readings increased by 3 minutes.
Kodaikanal SSE =25m.53s.
New Delhi iN =23m.55s. and 27m.35s.
College eSS =28m.32s., eSSS =32m.32s.
Tashkent SKS =23m.13s., ePS =24m.41s., eSS =29m.12s.
Berkeley iPPSE =26m.20s., eN =26m.25s., eZ =26m.33s., iSSE =30m.25s., eQEN = 37m.43s.
Pasadena ePSE =25m.56s., eSSN =31m.14s.
Salt Lake City eSS? =31m.20s., eSSS? =36m.9s.
Bozeman ePS =26m.58s., eSS =32m.57s., eSSS =36m.24s.
Tucson eS =25m.40s., ePS =27m.3s., ePKKP =30m.29s., eSS =32m.31s., eSSS = 36m.42s.
Saskatoon SS =33m.0s.?, SSS =36m.42s.
Upsala eSKSN =25m.24s., ePSE =29m.0s., ePPSE =30m.42s., eSSE =35m.30s., eSSN =36m.0s., eSSSN =40m.0s., eSSSE =40m.6s.
Florissant iSKSE =25m.54s., ePSE =29m.38s., ePPSE =30m.56s.
St. Louis eSKKSE =27m.12s., ePSE =29m.42s., iPPSE =30m.57s., eSSE =35m.58s.
Chicago eSSS =41m.5s.
Helwan SSN =36m.26s.
Bergen PSE =29m.55s., eE =33m.20s., SSN =36m.4s., eN =40m.5s., eEN =41m.30s.

Continued on next page.

Copenhagen 29m.58s., 31m.42s., 37m.6s., 41m.48s., and 50m.42s.
Prague e =31m.57s., eSSS =42m.0s.
Cheb eSS =38m.35s.
Ottawa SS =37m.30s., SSS =42m.30s.
Columbia e =28m.6s.
Triest ePPP =28m.6s., eSKS =30m.50s., eSKKS? =32m.27s., ePS? =33m.13s., eSS = 42m.56s.?, eSSS =46m.50s. Readings wrongly identified.
De Bilt ePPP =24m.0s., ePPS =32m.30s., eSS =38m.0s.?
Strasbourg eS? =29m.32s., iPS =31m.5s., iPPS =32m.40s., eSS =37m.30s.
Kew NZ =22m.43s., eN =30m.38s., eZ =31m.0s.?,PSEZ =33m.0s.?, SSEN =39m.0s.?
Paris iPPP =32m.0s.?, e =34m.10s. and 42m.25s.?, eQ =61·0m.
Huancayo eSS =39m.19s., eSSS =44m.18s.
La Plata N =41m.18s., E =41m.30s.
Clermont-Ferrand ePPS =33m.23s.
La Paz iSKPZ =22m.58s., PPSZ =34m.0s., SSZ =40m.12s., SSSZ =45m.0s.
Tortosa PPSN =34m.29s., SSPN =40m.15s.
Bermuda eSS =41m.13s.
Almeria PKS =23m.6s., SKKS =29m.24s., PPS =34m.47s., SS =40m.58s., SSS = 46m.10s.
Granada pPP =23m.5s., SKKS =29m.59s., SKSP =33m.5s., SS =40m.2s., iSSS = 46m.47s., Q =66m.42s.
Malaga e =20m.44s., P_cP,PKP =27m.36s.
San Juan eS? =30m.54s., e =36m.42s.
Lisbon PP?Z =22m.18s., PP?N =22m.36s., QE =66·8m.
Long waves were also recorded at New Plymouth, Tananarive, Ivigtut, and other American and European stations.

Dec. 27d. Readings also at 0h. (New Delhi), 1h. (Stalinabad and Tananarive (2)), 2h. (Granada), 3h. (near Andijan), 4h. (Christchurch and near Stalinabad), 5h. (Pasadena, Mount Wilson, and Riverside), 6h. (Tananarive), 8h. (near Yalta), 11h. (near Frunse), 14h. (Pasadena, Riverside, Tinemaha, Tucson, and St. Louis), 20h. (near Ottawa).

Dec. 28d. 17h. 48m. 46s. Epicentre 6°·1S. 150°·5E. (as on Dec. 27d.).

$A = -·8655$, $B = +·4897$, $C = -·1055$; $\delta = +3$; $h = +7$;

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverview		27·6	178	i 5 53k	+ 2	i 10 36	+ 4	i 6 44	PP	e 13·7
Auckland		37·8	147	8 20	+60	14 11	+60	9 48	PP	16·4
New Plymouth		39·1	150	7 44	+13	14 8?	+37	i 9 16	PP	16·2
Arapuni		39·2	148	8 14?	+43	13 44?	+12	—	—	—
Kaimata		40·7	156	8 11	+27	14 1	+ 6	—	—	17·5
Wellington		41·2	152	7 47	− 1	14 9	+ 7	8 42	pP	18·2
Perth		41·3	227	(7 54)	+ 5	i 14 4	0	i 16 54	SS	—
Miyazaki		41·9	336	7 49	− 5	14 1	−12	—	—	—
Christchurch		42·1	156	7 56	+ 1	14 12	− 4	—	—	—
Kôti		42·6	338	i 7 58	− 1	14 13	−10	—	—	e 17·1
Yokohama		42·6	347	7 55	− 4	e 14 58	+35	—	—	e 19·1
Tokyo		42·8	348	e 8 8	+ 7	—	—	—	—	—
Kobe		43·1	342	8 6	+ 2	14 49	+19	—	—	—
Hukuoka		43·8	336	i 8 10	+ 1	14 52	+12	18 18	SS	21·2
Nagano		44·1	346	e 8 10	− 2	15 7	+22	—	—	21·6
Sendai		45·0	350	8 21	+ 2	15 12	+14	18 36	SS	21·2
Mizusawa	E.	45·8	350	e 8 31	+ 6	15 18	+ 9	—	—	22·2
	N.	45·8	350	e 8 24	− 1	15 19	+10	—	—	22·3
Miyako		46·2	352	e 8 25	− 3	15 10	− 5	—	—	—
Mori	E.	48·8	350	e 8 52	+ 3	16 0	+ 8	—	—	e 21·8
Sapporo		49·6	352	8 58	+ 3	e 15 56	− 7	—	—	21·1
Pehpei		55·4	313	e 9 46	+ 8	17 35	+13	e 17 49	PPS	—
Honolulu		57·5	60	e 9 54	+ 1	e 17 51	+ 1	e 12 10	PP	e 23·2
Calcutta	N.	67·1	297	e 9 55	−62	i 18 38	−73	19 3	PS	29·9
Irkutsk		70·1	332	i 11 6	−10	i 20 39	+12	—	—	—
Colombo	E.	71·6	279	11 14?	−11	21 44	+60	—	—	36·2
Kodaikanal	E.	74·5	283	i 11 32	−10	i 20 57	−20	14 11	PP	35·8
Hyderabad	N.	74·9	290	11 42	− 2	21 13	− 9	21 56	PS	35·6
Dehra Dun	N.	78·1	302	e 12 16	+14	e 20 46	−70	—	—	e 36·4
New Delhi		78·4	301	i 12 3k	− 1	i 21 50	−10	14 46	PP	35·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay	E.	80·4	290	i 12 15	0	i 22 14	− 7	27 19	SS	39·8
College		83·9	32	e 12 33	0	e 22 35	−21	e 24 3	PS	e 35·0
Frunse		83·9	314	e 12 25	− 8	e 22 48	− 8	—	—	—
Andijan		85·0	312	e 12 42	+ 4	e 23 19	+12	—	—	—
Sitka		86·7	32	i 12 46	− 1	e 23 2	−22	i 16 21	PP	e 32·9
Stalinabad		87·3	309	i 12 53	+ 3	i 23 36	+ 7	—	—	—
Tashkent		87·4	312	e 12 51	+ 1	e 23 26	− 4	e 24 48	PS	—
Samarkand		88·9	310	13 0	+ 2	e 23 19	[− 7]	—	—	—
Ferndale		90·3	49	e 11 44	−80	e 23 54	− 3	e 16 14	PP	e 39·9
Ukiah		90·9	51	—	—	e 23 55	− 8	e 17 44	PP	i 36·9
Berkeley		91·5	52	13 9	− 1	e 23 42	[0]	e 25 32	PS	38·2
Branner		91·5	52	—	—	e 23 49	[+ 7]	e 25 19	PS	e 37·7
Santa Clara		91·7	53	i 13 13	+ 3	e 23 33	[−10]	e 39 15	P'P'	e 41·5
Shasta Dam		91·7	49	e 13 7	− 3	i 23 42	[− 1]	i 16 57	PP	—
Lick		92·0	52	e 13 16	+ 4	e 23 44	[0]	e 16 52	PP	e 41·6
Victoria		92·0	42	12 56	−16	23 42	[− 2]	e 17 19	PP	42·2
Seattle		92·6	43	e 13 17	+ 2	e 24 15	− 3	e 27 1	PPS	e 38·6
Santa Barbara	Z.	93·2	56	i 13 22	+ 5	—	—	—	—	—
Fresno	N.	93·4	53	e 13 22	+ 4	e 24 48	+24	e 17 33	PP	e 42·8
Pasadena		94·5	56	i 13 24	+ 1	e 24 34	0	i 17 8	PP	i 41·6
Mount Wilson		94·6	56	i 13 25	+ 1	—	—	—	—	—
Tinemaha		94·6	54	i 13 25	+ 1	e 24 4	[+ 5]	—	—	—
Grand Coulee		94·8	42	e 13 24	− 1	e 23 59	[− 1]	i 17 37	PP	—
Haiwee		94·8	54	i 13 24	− 1	—	—	—	—	—
Riverside		95·1	56	i 13 27	+ 1	—	—	—	—	—
La Jolla		95·2	57	i 13 29	+ 2	—	—	—	—	—
Palomar		95·5	57	i 13 28	0	e 24 12	[+ 8]	—	—	—
Boulder City		97·3	54	e 13 38	+ 2	i 24 15	[+ 2]	e 17 50	PP	—
Overton		97·7	54	e 13 14	−24	—	—	—	—	—
Pierce Ferry		98·0	54	i 13 40	+ 1	e 24 22	[+ 5]	e 17 44	PP	—
Butte		99·2	44	—	—	e 24 26	[+ 3]	e 31 30	SS	e 41·6
Salt Lake City		99·7	49	e 13 51	+ 4	e 25 34	+16	e 17 50	PP	e 40·7
Bozeman		100·2	45	e 13 39	−10	e 25 37	+15	e 17 47	PP	e 40·4
Tananarive		100·2	249	—	—	e 25 25	+ 3	32 32	SSP	44·5
Tucson		100·6	58	e 13 53	+ 2	e 25 44	+19	i 17 53	PP	e 43·0
Saskatoon		102·7	38	17 50	PP	24 52	[+12]	33 9	SS	47·2
Chihuahua	Z.	104·7	62	e 18 30	PP	—	—	e 28 29	PPS	—
Erevan		106·1	310	e 15 37	?	—	—	—	—	—
Leninakan		106·6	311	e 14 19?	P	—	—	—	—	—
Moscow		107·8	327	e 14 18	P	e 24 26	[−37]	e 18 39	PP	—
Tacubaya		111·1	72	e 19 21	PP	e 26 43	{+30}	e 28 59	PS	e 54·0
Lincoln		111·2	48	—	—	e 35 13	SS	e 39 14	SSS	e 46·0
Oaxaca		113·5	73	—	—	e 28 18	PS	e 33 34	SS	—
Ksara		113·8	303	e 19 40	PP	e 29 11	PS	—	—	—
Vera Cruz	N.	114·0	72	i 19 17	PP	i 25 14	[−14]	i 28 58	PS	e 53·6
Upsala		115·6	335	e 19 47	PP	e 25 26	[− 8]	29 22	PS	e 49·8
Florissant		116·4	49	e 18 47	[+ 1]	e 25 52	[+15]	e 19 56	PP	—
St. Louis		116·5	50	i 18 48	[+ 2]	e 25 53	[+15]	e 19 56	PP	—
Cape Girardeau		117·4	51	e 20 24	?	e 25 56	[+15]	—	—	—
Chicago		117·6	45	e 19 56	PP	e 25 52	[+10]	e 29 44	PS	e 48·2
Helwan		118·2	300	20 10	PP	28 6	?	30 5	PS	—
Bucharest		118·4	318	19 20	?	i 25 56	[+12]	e 29 36	PS	—
Bergen		119·8	341	20 14?	PP	26 3	[+14]	29 53	PS	52·5
Merida	E.	120·0	69	e 20 7	PP	e 25 50	[0]	29 56	PS	e 56·5
Mobile		120·0	58	—	—	25 30	[−20]	40 14	SSS	59·4
Copenhagen		120·4	334	i 20 19	PP	26 5	[+14]	29 56	PS	—
Sofia		120·9	317	e 19 7	[+12]	e 30 15	PS	e 20 37	PP	—
Reykjavik		121·8	356	—	—	e 31 56	PPS	e 38 2	SSP	e 63·7
Belgrade		122·0	319	e 20 34	PP	e 26 5	[+ 8]	e 37 4	SS	e 63·7
Collmberg		122·8	330	e 19 3	[+ 5]	e 29 38	PS	e 22 36	PKS	e 51·2
Prague		122·8	328	e 20 37	PP	e 26 8	[+ 9]	e 23 9	PPP	e 50·2
Ivigtut		123·3	10	20 41	PP	26 11	[+10]	30 42	PS	—
Jena		123·8	330	e 19 19	[+19]	e 31 5	PS	e 20 39	PP	—
Cheb		123·9	329	e 20 47	PP	e 26 14	[+11]	e 30 46	PS	e 61·2
Ottawa		124·0	37	19 0	[0]	e 26 18	[+15]	20 42	PP	e 51·7

Continued on next page.

		△	Az.	P.		O−C.	S.		O−C.	Supp.			L.
		°	°	m.	s.	s.	m.	s.	s.	m.	s.		m.
Aberdeen		124·7	343	i 20	37	PP	i 27	58	{+13}	i 30	48	PS	57·9
Columbia		124·9	52	e 20	50	PP	e 26	22	[+16]	e 30	58	PS	e 53·2
Shawinigan Falls		125·2	35	19	5	[+ 2]	38	20	SSP	52	14?	Q	60·2
Triest		125·3	324	e 19	33	[+30]	i 29	35?	?	i 32	37	PPS	—
De Bilt		126·0	334	i 20	43	PP	e 38	14?	SS	e 42	14?	SSS	—
Seven Falls		126·0	33	19	8	[+ 4]	38	2	SS	22	22	PKS	59·2
Edinburgh		126·1	342	21	18	PP	26	22	[+13]	22	44	PKS	—
Strasbourg		127·2	329	e 19	14	[+ 7]	i 25	36	[−36]	e 21	4	PP	e 58·2
Uccle		127·3	333	e 19	35	[+28]	i 22	30	PKS	e 20	5	pPKP	e 59·2
Chur		127·4	328	e 19	8a	[+ 1]	e 30	47	PS	—		—	—
Fordham		127·4	41	i 19	9	[+ 2]	i 27	49	{−14}	i 21	2	PP	54·6
Stonyhurst		127·6	340	e 21	10	PP	i 32	12	PS	—		—	56·2
Zürich		127·6	328	e 18	57	[−10]	—		—	e 21	36	PP	—
Basle		128·0	329	e 19	10	[+ 2]	e 27	39	{−28}	—		—	—
Harvard		128·1	38	i 19	15	[+ 7]	e 27	57	{−11}	i 21	14?	PP	e 53·2
Weston		128·3	38	e 19	10	[+ 1]	—		—	e 21	13	PP	—
Neuchatel		128·6	329	e 19	13	[+ 4]	—		—	—			—
Kew		128·7	337	i 19	14?k	[+ 5]	e 27	7?	[+51]	i 21	14?	PP	e 60·7
Paris		129·5	333	19	15	[+ 4]	26	17	[− 2]	i 21	23	PP	e 69·2
Balboa Heights		130·3	83	e 19	4	[− 9]	—		—	e 22	40	PKS	e 60·2
Huancayo		131·0	111	e 19	20	[+ 6]	e 27	2	[+40]	e 21	39	PP	e 50·0
La Plata	E.	131·2	149	20	2	[+48]	26	14	[− 9]	22	39	PKS	52·9
	N.	131·2	149	19	38	[+24]	26	26	[+ 3]	22	43	PKS	53·5
	Z.	131·2	149	19	26	[+12]	—		—	22	56	PKS	64·7
Clermont-Ferrand		131·4	329	e 19	16	[+ 1]	i 22	40	PKS	i 21	37	PP	e 63·2
Halifax		131·4	32	22	41	PKS	33	20	PPP	39	26	SS	54·2
Montezuma		132·1	128	e 23	10	PKS	—		—	e 39	32	SS	e 61·4
Barcelona		134·9	326	e 22	55	PKS	—		—	e 40	40	SSP	—
Bogota		135·6	89	e 19	24	[+ 2]	—		—	e 22	56	PKS	—
La Paz		135·7	121	e 19	21a	[− 2]	27	14	[+42]	i 22	3	PP	64·2
Tortosa		136·2	326	e 19	30	[+ 7]	26	33	[0]	22	8	PP	57·2
Bermuda		138·0	47	e 19	15	[−12]	e 25	19	PPP	e 22	8	PP	e 55·2
Toledo		139·4	329	i 19	26	[− 3]	26	30	[− 8]	i 23	11	PKS	69·2
Almeria		140·7	325	i 19	27	[− 5]	26	36	[− 4]	i 22	36	PP	72·2
Granada		141·1	326	i 19	32k	[0]	29	32	{+ 4}	i 22	58	PP	71·2
Malaga		141·8	327	i 19	23	[−11]	i 29	51	{+19}	i 23	19	PP	67·8
San Juan		142·3	67	e 19	32	[− 3]	e 26	36	[− 7]	e 23	18	PP	e 59·4
Lisbon		142·7	334	e 19	23k	[−12]	29	0	{−37}	22	48	PP	63·4
Fort de France		147·7	72	i 19	48	[+ 4]	e 32	24	PS	e 23	34	PP	—

Additional readings and notes :—
Riverview iN =10m.56s. and 11m.18s.
Auckland P_cP =11m.33s., P_cS =15m.8s., SS =15m.51s., S_cS =20m.26s.
Wellington P_cPZ =9m.54s., SS? =16m.9s.
Perth P =17h.47m.45s. ; true P is given as S.
Calcutta SSSN =25m.42s.
Kodaikanal PSE =21m.27s., SSE =25m.35s.
New Delhi PPPN =16m.31s., S_cSE =22m.29s., PPSE =22m.54s., SSN =26m.27s., SSE =26m.49s., iN =27m.27s., SSSN =29m.40s., SSSE =30m.26s.
Bombay iSN =22m.23s., SSN =27m.34s.
College eSS =28m.27s., e =31m.49s.
Sitka i =24m.4s.
Tashkent ePPS =25m.9s.
Ferndale eE =15m.44s., ePSE =25m.14s., eSSE =30m.14s., eN =33m.8s., eE =34m.44s., eQEN =37m.2s.
Ukiah e =25m.24s., eSS =29m.54s.
Berkeley eZ =14m.18s., eSE =23m.37s., ePPSN =26m.27s., eSSEN =30m.26s., ePSPSEN =32m.26s., eSSSEN =34m.26s., eQEN =36m.56s.
Shasta Dam iP =13m.11s., iPKKP =31m.42s., iPKP,PKP =38m.43s., e =40m.44s., iPKP,PKP,PKP =61m.53s.
Lick eE =23m.20s., eEN =25m.6s., ePSE =25m.26s., eQN =38m.8s.
Victoria SKSN =23m.18s., PPS =25m.30s., SS =30m.38s., SSS =35m.14s.?
Seattle e =20m.30s. and 27m.45s., eSSS =34m.9s.
Fresno eN =16m.13s., 19m.43s., and 24m.18s., eQN =38m.26s.
Pasadena iZ =13m.41s., eSKSE =24m.0s., iSNZ =24m.42s., iPSEZ =26m.0s., eSSNZ =30m.50s., eSSSN =34m.50s., eQN =38m.14s.
Grand Coulee eS =24m.54s., ePS =25m.58s., ePKP,PKP =38m.47s., e =39m.14s.
Palomar iNZ =13m.32s.
Boulder City e =24m.39s.
Butte eSSS =35m.34s.

Continued on next page.

Salt Lake City eSKS =24m.42s., ePS =26m.53s., eSS =32m.29s., eSSS =35m.43s.
Bozeman iSKS =24m.31s., ePS =26m.56s., e =31m.19s., eSSS =36m.9s.
Tucson ePPP =20m.12s., e =24m.6s., eSKS? =24m.39s., iPS =27m.4s., ePKKP = 30m.18s., eSS =32m.22s., e =32m.42s.
Saskatoon PPS =27m.24s., SSS =36m.56s.
Moscow PS =27m.58s.
Tacubaya ePPEN =19m.24s., ePPN =20m.23s., eN =23m.57s., ePSN =29m.5s., ePPSN =29m.55s., ePPSE =29m.59s., ePPSZ =30m.2s., eSSN =34m.57s., eSSE = 35m.14s., eN =46m.57s., eE =47m.2s., eZ =47m.5s.
Vera Cruz ePPSN =30m.1s., eSSN =35m.26s.?, eN =41m.46s.
Upsala eE =21m.33s., e =22m.8s., eSKSE =25m.30s., eE =25m.44s., eSKSPN = 26m.54s., eSKSPE =27m.0s., eN =28m.56s., PSN =29m.32s., eE =33m.2s., eSSE = 35m.46s., eSSN =35m.52s., eN =35m.59s., eSSSN =40m.4s., eE =43m.29s. and 47m.14s., eN =47m.53s.
Florissant iSKPN =21m.12s., ePPPN =23m.3s., iSKKSN =27m.2s., eSN =27m.53s., iPSN =29m.36s., ePSN =29m.46s., ePPPSN =31m.36s.
St. Louis eSKPN =21m.13s., ePPPN =23m.6s., iSKKSN =27m.11s., ePSN =29m.37s., iPSN =29m.45s., iPPSN =30m.28s., iPPPSN =31m.36s.
Cape Girardeau eE =27m.26s., eSE =27m.50s., eE =28m.12s.
Chicago eS =27m.57s., eSS =36m.12s.
Helwan SSN =35m.38s.
Bucharest eN =23m.28s., iE =27m.25s., iPS?E =30m.8s.
Bergen eN =21m.17s. and 23m.19s., SKKSN =27m.8s., eZ =31m.59s., eN =32m.26s., eE =37m.8s., eN =37m.59s., eE =41m.14s., eN =42m.36s. and 46m.14s.?
Merida ePPSN =31m.8s., eSSSN =36m.32s., eN =50m.6s.
Mobile (Q) =50m.38s.
Copenhagen 22m.51s., SS =37m.32s.
Sofia eE =32m.41s.
Reykjavik eE =55m.20s.
Belgrade e =23m.7s. and 30m.22s., eSSS =42m.9s.
Collmberg ePP =23m.12s., ePPP =25m.22s., eS =30m.38s., eSS =37m.44s., eSSS = 41m.44s., and several other unidentified i and e readings.
Prague eSKKS =27m.19s., e =29m.2s., ePS =30m.31s., eSS =37m.44s., eSSS =42m.14s.
Ivigtut SKKS =27m.41s. and 29m.26s., PPS =32m.20s., SS =37m.32s.
Jena eZ =19m.27s., eN =20m.3s. and 21m.2s., eZ =21m.9s.
Cheb ePPP? =23m.24s., eSS =37m.33s., eQ =59·2m.
Ottawa e =27m.52s., SN =28m.45s., e =31m.30s., PPS =32m.26s., SS =37m.38s., SSS =42m.34s.
Aberdeen iE =37m.47s., iN =38m.32s.
Columbia eSS =37m.28s., eSSS =42m.54s.
Triest iSKKS =30m.50s., iSS =38m.54s., iSSS =42m.59s.
Seven Falls PP =20m.58s., e =29m.54s., PPS =32m.14s.
Edinburgh PS =31m.3s., SS =38m.29s.
Strasbourg eSKP =22m.29s., iPS =31m.7s., iPPS =33m.44s., eSS =38m.6s.
Uccle iPP =21m.6s., iSKP =22m.39s., iPPP =23m.42s., eSKKS?E =27m.9s., ePSE = 31m.19s., iPS =31m.27s., ePPSEN =32m.40s., i =33m.47s., eSSN =37m.44s., iE =38m.49s. and 39m.8s., i =39m.29s.
Fordham iSKP =22m.30s.
Stonyhurst i =22m.27s. and 31m.26s., iPS? =33m.19s., iSS =38m.49s., iSSS =42m.47s., Q? =52m.14s.
Harvard i =22m.32s., iPKS =22m.45s., ePPP =23m.48s., e =24m.57s., ePKKP = 28m.58s., iPKKP =29m.17s., eS_cSP =30m.29s., e =31m.33s., ePPS =32m.43s., iPPS =32m.49s., i =33m.8s., e =34m.11s., i =34m.14s. and 34m.47s., e =36m.5s., iSKKS =36m.25s., i =36m.48s., e =37m.19s., eSSP =38m.47s., e =39m.35s., 41m.8s., and 42m.23s., eSSS =42m.49s., eSSSS? =46m.19s., eSSSSS? =49m.46s.
Weston eP? =15m.54s.
Kew iEN =22m.32s., iPKSEZ =22m.48s., iE =25m.53s., eSKKSEN =28m.24s., eS_cSP?N =30m.42s?, ePSEZ =31m.9s.?, eSSEN =38m.42s.?
Paris iPKS =22m.37s., SKKS =28m.32s., e =32m.53s. and 34m.26s., SS =39m.5s., SSS =43m.35s., e =44m.38s.?, eQ =57·2m.
Huancayo ePKS =22m.42s., e =31m.32s. and 33m.47s., iSS =39m.14s., eSSS =43m.11s.
La Plata E. 24m.50s., SS =38m.26s., 42m.8s.
La Plata N. 21m.32s., 24m.26s., 28m.20s., and 33m.26s., SS =39m.2s., SSS =43m.14s.
Clermont-Ferrand iPPP =24m.0s.
La Paz iPKPZ =19m.27s., iSKP=23m.1s., SSN=40m.14s., SSSN=45m.14s., QN=56·2m.
Tortosa iPKPEN =19m.47s., SKPEN =22m.57s., iE =23m.19s., PPPN =24m.47s., PSN =32m.11s., PPSN =33m.49s., SSN =40m.18s., SSPE =41m.3s., eSSSE = 45m.14s.?
Bermuda i =23m.3s., e =32m.20s. and 35m.5s., eSS =41m.0s., e =48m.45s.
Toledo SS =42m.19s.
Almeria PKS =23m.4s., PPP =25m.52s., SKKS =29m.32s., PS =33m.4s., PPS = 35m.4s., SS =41m.12s., SSS =46m.41s., Q =57m.24s.
Granada PKP_1 =19m.40s., sPKP =20m.14s., pPP =23m.28s., sPP =23m.48s., SKSP = 32m.56s., SS =41m.16s., Q =58·2m.
Malaga PKP_1 =20m.23s., Q =61·2m.
San Juan eSKKS =29m.45s., e =33m.5s. and 35m.32s., eSS =40m.45s., eSSS =46m.45s.
Lisbon iPKPZ =19m.34s.a, E =21m.26s.?, N =21m.32s.?, E =21m.58s.?, and 23m11s., SKPZ =23m.36s., E =27m.21s., PPS?N =35m.9s., SSN =42m.2s., SSEZ =42m.14s., SSSE =46m.32s., SSSN =46m.50s.
Long waves were also recorded at Guadalajara.

Dec. 28d. Readings also at 2h. (near Andijan, Samarkand, and Frunse), 4h. (Riverview), 7h. (near Alicante, Toledo, and Tortosa), 9h. (Boulder City, Pierce Ferry, and Tucson), 10h. (Tucson), 12h. (Tucson and Collmberg (3)), 14h. (Boulder City, Pierce Ferry, Tucson, Pasadena, Riverside, Palomar, Haiwee, Tinemaha, Arapuni, Auckland, Christchurch, Wellington, and Riverview), 15h. (Copenhagen), 19h. (Tananarive), 22h. (Riverview), 23h. (Christchurch (2) and Riverview).

Dec. 29d. 9h. 50m. 38s. Epicentre 6°·1S. 150°·5E. (as on 28d.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverview		27·6	178	i 5 59a	+ 8	i 10 33	+ 1	i 6 49	PP	—
Auckland		37·8	147	4 16	?	13 19	+ 8	8 51	PP	19·4
Arapuni		39·2	148	—	—	16 22?	SS	—	—	21·4
Wellington		41·2	152	9 18	PP	17 22	SS	—	—	22·4
Christchurch		42·1	156	6 42	−73	13 43	−33	—	—	21·0
Irkutsk		70·1	332	e 10 55	−21	e 20 7	−20	—	—	—
New Delhi	N.	78·4	301	e 18 4	?	—	—	—	—	—
Bombay	E.	80·4	290	i 12 17	+ 2	—	—	—	—	—
Andijan		85·0	312	e 12 45	+ 7	e 23 2	[+ 1]	—	—	—
Stalinabad		87·3	309	e 12 49	− 1	e 23 53	S_cS	e 16 27	PP	—
Tashkent		87·4	312	e 12 54	+ 4	e 23 33	+ 3	18 7	PPP	—
Shasta Dam		91·7	49	e 13 9	− 1	—	—	—	—	—
Santa Barbara	z.	93·2	56	e 13 17	0	—	—	—	—	—
Pasadena		94·5	56	i 13 22	− 1	—	—	—	—	—
Mount Wilson		94·6	56	i 13 22	− 2	—	—	—	—	—
Tinemaha		94·6	54	i 13 24	0	—	—	—	—	—
Haiwee	z.	94·8	54	i 13 25	0	—	—	—	—	—
Riverside	z.	95·1	56	i 13 25	− 1	—	—	—	—	—
La Jolla	z.	95·2	57	i 13 27	0	—	—	—	—	—
Palomar		95·5	57	i 13 27k	− 1	—	—	—	—	—
Boulder City		97·3	54	e 13 36	0	—	—	e 17 29	PP	—
Pierce Ferry		98·0	54	e 13 38	− 1	—	—	e 17 36	PP	—
Tucson		100·6	58	e 13 51	0	e 30 31	PKKP	e 17 53	PP	—
Leninakan		106·6	311	e 18 52	PP	—	—	—	—	—
Moscow		107·8	327	e 18 52	PP	—	—	—	—	—
St. Louis		116·5	50	i 29 20	PS	—	—	—	—	e 52·7
Collmberg	z.	122·8	330	e 18 58	PP	—	—	—	—	—
Cheb		123·9	329	—	—	e 30 43	PS	e 41 22?	SSS	e 68·4
Ottawa		124·0	37	e 19 0	[0]	—	—	—	—	64·4
Huancayo		131·0	111	e 22 43	PKS	—	—	—	—	e 66·8
Bogota		135·6	89	e 19 16	[− 6]	—	—	e 22 58	PKS	—
La Paz	z.	135·7	121	i 19 25k	[+ 2]	22 55	PKS	22 24	PP	65·4
Fort de France		147·7	72	e 19 46	[+ 2]	—	—	—	—	—

Additional readings :—
Riverview iPZ = 6m.3s., iN = 10m.51s.
Auckland PPP = 9m.7s., SS = 16m.4s., Q = 18m.10s.
Wellington pP = 9m.59s., pP_cPZ = 10m.41s., P_cS = 13m.57s., SPZ = 17m.58s., SSZ = 21m.3s.
Tashkent eSKS = 23m.14s., ePS = 24m.48s.
Long waves were also recorded at College, Sitka, Florissant, and other European stations.

Dec. 29d. 12h. 26m. 50s. Epicentre 6°·1S. 150°·5E. (as at 9h.).

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverview	27·6	178	e 5 50	− 1	e 10 29	− 3	—	—	e 14·7
Auckland	37·8	147	7 50	+30	13 19	+ 8	8 54	PP	16·2
Wellington	41·2	152	7 55	+ 7	13 50	−12	9 43	P_cP	21·2
Christchurch	42·1	156	7 45	−10	14 19	+ 3	17 38	Q	20·9
Irkutsk	70·1	332	e 11 17	+ 1	e 20 20	− 7	—	—	—
Bombay	80·4	290	e 12 30	+15	e 22 21	0	—	—	—
Stalinabad	87·3	309	e 12 56?	+ 6	—	—	—	—	—
Tashkent	87·4	312	e 12 47	− 3	e 23 9	[− 8]	—	—	—
Shasta Dam	91·7	49	i 13 10	0	—	—	i 16 55	PP	—
Santa Barbara	93·2	56	i 13 17	0	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena		94·5	56	i 13 23	0	—	—	i 17 7	PP	—
Mount Wilson		94·6	56	i 13 23	− 1	—	—	e 17 7	PP	—
Tinemaha		94·6	54	i 13 23	− 1	e 24 9	[+10]	—	—	—
Haiwee	z.	94·8	54	i 13 25	0	—	—	—	—	—
Grand Coulee		94·8	42	i 13 24	− 1	—	—	—	—	—
Riverside	z.	95·1	56	i 13 24	− 2	—	—	—	—	—
La Jolla	z.	95·2	57	i 13 24	− 3	—	—	—	—	—
Palomar		95·5	57	i 13 29a	+ 1	e 24 42	0	—	—	—
Boulder City		97·3	54	i 13 36	0	e 24 15	[+ 2]	i 17 31	PP	—
Pierce Ferry		98·0	54	i 13 40	+ 1	—	—	i 17 35	PP	—
Tucson		100·6	58	e 13 52	+ 1	e 30 27	PKKP	e 17 52	PP	—
St. Louis	z.	116·5	50	i 19 49	PP	—	—	—	—	—
Collmberg	z.	122·8	330	e 19 0	[+ 2]	—	—	—	—	—
Ottawa		124·0	37	e 19 1	[0]	—	—	—	—	65·2
Ucole		127·3	333	e 19 11	[+ 4]	—	—	—	—	e 58·2
Chur		127·4	328	e 19 10	[+ 3]	—	—	—	—	—
Zürich		127·6	328	e 19 8	[+ 1]	—	—	—	—	—
Basle		128·0	329	e 18 11	[−57]	—	—	—	—	—
Neuchatel		128·6	329	e 18 12	[−57]	—	—	—	—	—
Huancayo		131·0	111	e 22 35	PKS	—	—	—	—	e 63·6
La Paz	z.	135·7	121	i 19 27k	[+ 4]	22 54	PKS	22 29	PP	68·2
Fort de France		147·7	72	e 19 47	[+ 3]	—	—	—	—	—

Additional readings :—
Riverview eN = 5m.56s.
Wellington eZ = 12m.21s., P_cSZ = 13m.38s., eZ = 17m.1s., SS?Z = 17m.32s., S_cSZ = 18m.29s.
Shasta Dam i = 16m.50s.
Pasadena iZ = 17m.15s.
Boulder City eS = 24m.32s.
St. Louis iZ = 20m.12s.
Collmberg iZ = 19m.3s. and 19m.11s.
Long waves were also recorded at College, Ukiah, Florissant, Copenhagen, De Bilt, Kew, Cheb, and Malaga.

Dec. 29d. Readings also at 5h. (Kodaikanal and Riverview), 6h. (Riverview), 9h. (Riverview, Mount Wilson, Pasadena, Riverside, Tinemaha, Collmberg, and near Mizusawa), 11h. (Riverview), 13h. (Riverview, Auckland, Arapuni, Christchurch, Wellington, Bombay, New Delhi, Collmberg, Leninakan, Stalinabad, Tashkent, Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinamaha, Tucson, and Shasta Dam, not all one shock), 14h. (Riverview (2), Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Boulder City, Pierce Ferry, Shasta Dam, and New Delhi), 15h. (Riverview, Mount Wilson, Pasadena, Riverside, Tinemaha, Collmberg, and near Leninakan), 16h. (Haiwee, Mount Wilson, Pasadena, Tinemaha, Tucson, and La Plata), 18h. (Palomar and Tucson), 22h. (Tucson), 23h. (Riverview).

Dec. 30d. 0h. 48m. 34s. Epicentre 6°·1S. 150°·5E. (as on 29d.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverview		27·6	178	i 5 50k	− 1	i 10 32	0	i 6 18	pP	e 14·8
Auckland		37·8	147	7 19	− 1	12 49	−22	8 50	PP	—
Arapuni		39·2	148	6 2	?	14 8	+36	—	—	17·3
Wellington		41·2	152	7 42	− 6	13 54	− 8	9 20	PP	19·4
Perth		41·3	227	9 56	PP	14 16	+12	17 11	SS	21·2
Christchurch		42·1	156	7 57a	+ 2	14 6	−10	i 9 42	PP	19·8
Vladivostok		51·8	343	i 9 15	+ 3	i 16 45	+12	—	—	—
Honolulu		57·5	60	e 9 47	− 6	e 17 56	+ 6	—	—	e 26·4
Irkutsk		70·1	332	11 19	+ 3	20 30	+ 3	—	—	—
Colombo	N.	71·6	279	15 33	PPP	—	—	—	—	—
Kodaikanal	E.	74·5	283	i 11 55	+13	i 21 25	+ 8	14 35	PP	36·4
Hyderabad	N.	74·9	290	e 11 39	− 5	e 21 19	− 3	14 20	PP	36·2
New Delhi	N.	78·4	301	e 12 7	+ 3	26 37	SS	—	—	—
Bombay		80·4	290	i 12 23	+ 8	i 22 33	+12	—	—	39·1
College		83·9	32	—	—	e 22 55	− 1	—	—	e 38·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		85·0	312	12 47	+ 9	23 7	0	—	—	—
Sitka		86·7	32	i 15 29	PP	i 23 21	− 3	—	—	e 36·0
Stalinabad		87·3	309	i 12 58	+ 8	i 23 34	+ 5	e 16 27	PP	—
Tashkent		87·4	312	e 12 49	− 1	e 23 20	[+ 3]	e 24 47	PS	—
Samarkand		88·9	310	13 1	+ 3	23 26	[0]	—	—	—
Santa Clara	E.	91·7	53	—	—	—	—	e 33 34	SSS	e 43·4
Shasta Dam		91·7	49	e 13 9	− 1	e 23 48	[+ 5]	i 17 6	PP	—
Santa Barbara	Z.	93·2	56	e 13 20	+ 3	—	—	—	—	—
Pasadena		94·5	56	i 13 24	+ 1	—	—	—	—	—
Mount Wilson		94·6	56	i 13 22	− 2	—	—	—	—	—
Tinemaha		94·6	54	i 13 22	− 2	—	—	—	—	—
Haiwee	Z.	94·8	54	i 13 26	+ 1	—	—	—	—	—
Grand Coulee		94·8	42	e 13 22	− 3	—	—	—	—	—
Riverside	Z.	95·1	56	i 13 24	− 2	—	—	—	—	—
La Jolla	Z.	95·2	57	i 13 21	− 5	—	—	—	—	—
Palomar		95·5	57	i 13 29	+ 1	—	—	i 17 5	PP	—
Boulder City		97·3	54	e 13 33	− 3	—	—	e 17 28	PP	—
Pierce Ferry		98·0	54	e 13 37	− 2	—	—	e 17 38	PP	—
Bozeman		100·2	45	—	—	—	—	e 36 30	SSS	e 46·8
Tucson		100·6	58	i 13 55	+ 4	e 27 10	PS	i 17 56	PP	e 42·1
Saskatoon		102·7	38	—	—	e 25 8	{− 6}	—	—	46·4
Leninakan		106·6	311	—	—	25 7	[+ 9]	—	—	—
Moscow		107·8	327	14 26	P	25 4	[+ 1]	27 57	PS	—
Upsala	N.	115·6	335	e 19 26?	PP	e 25 2	[−32]	—	—	e 56·4
Florissant		116·4	49	i 19 51	PP	i 26 43	{− 7}	i 29 37	PS	e 48·3
St. Louis		116·5	50	i 19 53	PP	e 27 46	{+55}	e 29 39	PS	e 49·3
Helwan		118·2	300	18 56	[+ 7]	31 34	PPS	i 20 8	PP	—
Copenhagen		120·4	334	i 20 29	PP	25 52	[+ 1]	37 14	SS	—
Collmberg	Z.	122·8	330	i 19 0	[+ 2]	e 22 56	PKS	e 20 36	PP	56·4
Prague		122·8	328	e 20 43	PP	e 30 29	PS	e 42 8	SSS	—
Cheb		123·9	229	e 20 47	PP	e 30 50	PS	e 38 23	SS	e 64·4
Ottawa		124·0	37	e 19 1	[0]	e 37 41	SS	—	—	52·4
Aberdeen		124·7	343	—	—	—	—	i 30 45	PS	67·4
Triest		125·3	324	e 21 1	PP	i 31 1	PS	i 33 36	PPS	—
Seven Falls		126·0	33	—	—	e 32 2	PS	—	—	55·4
De Bilt		126·0	334	e 19 11	[+ 7]	e 31 6	PS	i 21 6	PP	e 58·4
Strasbourg		127·2	329	e 22 26	PKS	e 28 3	{+ 2}	e 31 22	PS	62·4
Uccle		127·3	333	e 19 15	[+ 8]	e 28 9?	{+ 7}	e 21 14?	PP	e 60·4
Fordham		127·4	41	—	—	—	—	e 38 25	SS	55·9
Chur		127·4	328	e 19 8k	[+ 1]	—	—	—	—	—
Zürich		127·6	328	e 19 7	[0]	—	—	—	—	—
Basle		128·0	329	e 19 10	[+ 2]	—	—	—	—	—
Neuchatel		128·6	329	e 19 11	[+ 2]	—	—	—	—	—
Kew		128·7	337	e 19 16	[+ 7]	i 26 34?	[+18]	e 21 26?	PP	e 61·4
Paris		129·5	333	i 21 21	PP	i 22 39	PKS	e 23 59	PPP	64·4
Huancayo		131·0	111	e 22 42	PKS	e 33 40	PPS	e 39 31	SSP	e 54·6
Clermont-Ferrand		131·4	329	e 22 43	PKS	e 26 26	[+ 3]	e 34 43	PPS	e 63·4
Bogota		135·6	89	e 19 27	[+ 5]	e 23 5	PKS	—	—	—
La Paz	Z.	135·7	121	i 19 29k	[+ 6]	28 30	{−25}	22 41	PP	67·4
Bermuda		138·0	47	e 22 12	PP	e 40 24	SS	i 23 6	PKS	e 57·0
Toledo		139·4	329	i 19 35	[+ 6]	—	—	i 23 24	PKS	—
Almeria		140·7	325	i 19 38	[+ 6]	26 50	[+10]	i 23 12	PKS	76·4
Granada		141·1	326	i 19 29k	[− 3]	30 31	{+63}	i 23 12	PKS	75·1
Malaga		141·8	327	i 19 32	[− 2]	e 29 46	{+14}	i 22 45	PP	46·6
San Juan		142·3	67	e 19 33	[− 2]	i 26 27	[−16]	i 23 19	PKS	e 64·6
Lisbon		142·7	334	i 19 37a	[+ 2]	—	—	—	—	71·2
Fort de France		147·7	72	e 19 46	[+ 2]	—	—	—	—	—

Additional readings :—
Riverview iNZ =5m.57s., iN =10m.54s., iZ =10m.58s., iN =14m.19s.
Auckland P_cP =10m.8s., P_cS =14m.9s., SS =15m.58s., SSS =16m.52s., S_cS =18m.53s.
Wellington pPPZ =9m.48s., PPP?Z =10m.26s., sSZ =15m.10s., SSS =17m.58s.
Kodaikanal SSE =26m.13s.
Hyderabad PSN =21m.59s.
Bombay ePN =12m.26s.
College e =26m.49s.

Continued on next page.

Stalinabad ePPP =18m.47s.
Tashkent eSS =29m.47s., eSSS =33m.20s.
Shasta Dam iP =13m.13s., eS =24m.33s.
Santa Barbara eZ =13m.31s.
Tinemaha i =13m.39s.
Grand Coulee i =14m.3s.
Riverside iZ =13m.38s.
Palomar iZ =14m.3s.
Boulder City iP =13m.39s., e =19m.34s., i =21m.27s.
Pierce Ferry iP =13m.43s.
Tucson i =14m.8s., e =20m.44s., ePKKP =30m.28s., e =32m.28s.
Moscow PPS =28m.44s.
Upsala eN =34m.26s.?, eE =35m.26s.?
Florissant eSSN =35m.57s., eSSSN =40m.14s.
St. Louis iSSN =35m.57s., iSSSN =40m.17s.
Helwan iZ =19m.50s., SKPZ =21m.43s.
Copenhagen SKKS =27m.28s., PS =30m.14s. and 31m.35s., SSS =41m.20s.
Collmberg iZ =19m.4s. and 19m.15s.
Prague e =32m.56s.
Triest epPP? =22m.27s., eSSS =44m.0s.
De Bilt eSS =38m.41s.
Strasbourg ePPS =33m.2s., eSS =38m.56s., iSSS =43m.38s.
Uccle eSKPEN =22m.32s., ePPSN =32m.52s., eSSN =38m.44s., eSSSEN =43m.26s.
Kew iPKS =22m.40s., ePSZ =31m.34s.?, ePPSN =33m.24s.?
Paris e =34m.18s., eQ =60·4m.
Huancayo 44m.13s.
La Paz iSKPZ =23m.1s., PPSZ =35m.26s., SSZ =41m.59s.
Bermuda e =33m.11s. and 42m.57s.
Almeria PKP_2 =19m.46s., SKKS =30m.4s., PPS =36m.1s., SS =42m.17s., SSP =43m.8s., SSS =47m.57s.
Granada PKP_2 =19m.38s., SS =42m.22s.
Malaga PPPZ =24m.35s., iZ =25m.42s., SSZ =35m.0s., QZ =42m.3s.
San Juan e =31m.47s., i =37m.9s., e =54m.15s.
Lisbon N =37m.14s. and 50m.26s.
Long waves were also recorded at Edinburgh and other American stations.

Dec. 30d. Readings also at 0h. (Riverview and near Tananarive), 4h. (Riverview, Tucson, Palomar, and Riverside), 7h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Riverview, Christchurch, Kaimata, near New Plymouth, Tuai, and Wellington), 8h. (Christchurch), 10h. (Bombay, Boulder City, Pierce Ferry, Tucson, and Palomar), 17h. (Christchurch and Wellington), 18h. (Auckland, Christchurch, Wellington, Riverview, Mount Wilson (2), Pasadena, Riverside, Tinemaha, Tucson, Salt Lake City, and near Mizusawa), 19h. (Bergen and Mizusawa).

Dec. 31d. 17h. 26m. 0s. Epicentre 6°·1S. 150°·5E. (as on 30d.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverview		27·6	178	i 5 52	+ 1	i 10 33	+ 1	—	—	e 12·8
Auckland		37·8	147	9 2	PP	16 31	SSS	—	—	23·0
Wellington		41·2	152	9 14	PP	(13 55)	− 7	9 45	PcP	26·0
Perth		41·3	227	—	—	i 14 10	+ 6	i 17 5	SS	—
Christchurch		42·1	156	7 54	− 1	14 6	−10	—	—	19·6
Calcutta		67·1	297	—	—	e 19 54	+ 3	—	—	—
Irkutsk		70·1	332	e 11 18	+ 2	20 22	− 5	—	—	—
Kodaikanal	E.	74·5	283	e 11 41	− 1	e 21 16	− 1	14 26	PP	36·4
Hyderabad	N.	74·9	290	—	—	21 22	0	23 24	?	—
New Delhi	N.	78·4	301	—	—	e 22 50	PPS	i 24 12	?	—
Bombay	E.	80·4	290	e 12 7	− 8	—	—	—	—	—
Andijan		85·0	312	e 12 55	+17	e 23 4	− 3	—	—	—
Sitka		86·7	32	—	—	e 23 12	[0]	—	—	e 35·7
Tashkent		87·4	312	e 12 52	+ 2	e 23 18	[+ 1]	e 18 19	PPP	—
Shasta Dam		91·7	49	i 13 6	− 4	—	—	e 16 31	PP	—
Santa Barbara	z.	93·2	56	e 13 17	0	—	—	—	—	—
Pasadena		94·5	56	i 13 23	0	—	—	—	—	—
Mount Wilson		94·6	56	i 13 24	0	—	—	—	—	—
Tinemaha		94·6	54	i 13 23	− 1	—	—	—	—	—
Haiwee	z.	94·8	54	i 13 21	− 4	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sverdlovsk		95·0	326	17 18	PP	23 54	[− 7]	—	—	—
Riverside	z.	95·1	56	i 13 25	− 1	—	—	—	—	—
Palomar	z.	95·5	57	i 13 27	− 1	—	—	—	—	—
Boulder City		97·3	54	i 13 35	− 1	e 24 9	[− 4]	e 17 31	PP	—
Pierce Ferry		98·0	54	e 13 40	+ 1	—	—	e 17 50	PP	—
Tucson		100·6	58	e 13 49	− 2	—	—	e 17 56	PP	e 44·3
St. Louis		116·5	50	—	—	e 29 42	PS	e 35 57	SS	e 52·6
Ottawa		124·0	37	e 19 0	[0]	—	—	—	—	61·0
De Bilt		126·0	334	e 40 0?	?	—	—	—	—	e 59·0
Strasbourg		127·2	329	—	—	e 38 34	SS	e 43 20	SSS	62·8
Paris		129·5	333	e 21 27	PP	—	—	e 22 35	PKS	e 67·0
Huancayo		131·0	111	e 22 44	PKS	—	—	e 40 46	SS	e 64·5
Clermont-Ferrand		131·4	329	e 22 40	PKS	—	—	—	—	—
La Paz	z.	135·7	121	i 19 29k	[+ 6]	—	—	23 33	?	76·0
San Juan		142·3	67	e 19 3	[−32]	e 27 7	[+24]	e 22 39	PP	e 66·2
Fort de France		147·7	72	e 19 48	[+ 4]	—	—	—	—	—

Additional readings :—
Riverview iN =10m.56s., iE =11m.41s.
Auckland P_cP =10m.17s., P_cS =14m.29s., SS =19m.20s.
Wellington PP =11m.37s., sPP =12m.28s., SZ =17m.25s., S_cS =19m.15s., SS =21m.18s., Q =23m., S is given as P_cS, the records for these last two stations being wrongly identified.
Kodaikanal SSE =25m.56s.
Tashkent eSS =28m.54s.
Shasta Dam e =17m.10s.
Boulder City i =14m.8s.
Pierce Ferry i =13m.43s.
San Juan e =42m.34s.
Long waves were also recorded at Apia, Arapuni, Honolulu, and other American and European stations.

Dec. 31d. Readings also at 0h. (Riverview), 1h. (Tucson), 4h. (Arapuni, Christchurch, Wellington, and Riverview), 7h. (Tucson), 9h. (Mount Wilson, Riverside, Tucson, Tacubaya, Huancayo, and La Paz), 10h. (Bucharest and Sofia), 11h. (near Bogota), 14h. (Riverview, Mount Wilson, Pasadena, Palomar, Riverside, and Santa Barbara), 18h. (Mount Wilson (2), Pasadena, and Riverside (2)), 22h. (Andijan and Samarkand), 23h. (near Berkeley).

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.