The International Seismological Summary.

1947 July, August, September.

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

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

The third quarter for 1947 contains 122 epicentres, 86 of which are repetitions from previously adopted epicentres.

Cases of deep focus :—

July	6d. 12h.	14·7S.	167·3E.	0·005
	13d. 12h.	19·0S.	176·0W.	0·010
	16d. 11h.	21·0S.	67·5W.	0·025
	16d. 15h.	21·0S.	67·5W.	0·025
	21d. 0h.	Undetermined Shock		Suggested Deep
	25d. 1h.	17·5S.	179·5W.	0·080
	25d. 19h.	25·0S.	63·5W.	0·080
	26d. 11h.	47·5N.	152·1E.	0·005
	31d. 7h.	38·5N.	15·0E.	0·030
Aug.	1d. 0h.	28·0S.	66·5W.	0·015
	6d. 5h.	9·0S.	71·0W.	0·090
	6d. 6h.	Undetermined Shock		Suggested Deep
	23d. 4h.	36·7N.	70·5E.	0·030
	31d. 6h.	22·4S.	62·5W.	0·030
Sept.	1d. 22h.	39·0N.	15·2E.	0·040
	2d. 14h.	19·0S.	175·5W.	0·020
	3d. 15h.	47·7N.	153·0E.	0·005
	9d. 22h.	Undetermined Shock		Suggested Deep
	19d. 10h.	25·7S.	68·8W.	0·010
	26d. 16h.	24·7N.	123·2E.	0·010

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

KEW OBSERVATORY,
Richmond,
SURREY.

November, 1955.

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1947 JULY, AUGUST, SEPTEMBER.

July 1d. Readings at 1h. (near Mizusawa), 2h. (Tashkent, near Obi-garm, Stalinabad, and Tchimkent), 3h. (Tucson), 6h. (near Berkeley and near Apia), 7h. (near Reykjavik), 8h. (Reykjavik (2), Strasbourg, Ksara, Berkeley, Pierce Ferry, Boulder City, Obi-garm, near Stalinabad, Tchimkent, Frunse, Andijan, and Auckland; several shocks), 9h. (Strasbourg and Reykjavik), 12h. (Warsaw), 13h. (Pasadena, Mount Wilson, Riverside, Tinemaha, Tucson, Pierce Ferry, Strasbourg (3), Scoresby Sund, and near Reykjavik (2)), 14h. (Strasbourg (2), near Stuttgart, Basle, Zürich, Neuchatel, and Uccle), 17h. (Santa Lucia and near Obi-garm), 18h. (Shasta Dam), 20h. (Tinemaha), 21h. (De Bilt).

July 2d. Readings at 0h. (near Obi-garm), 1h. (Stuttgart, Riverside, Mount Wilson, Tinemaha, Tucson, and Shasta Dam), 2h. (Wellington), 6h. (Frunse, near Andijan, and Tchimkent), 7h. (near Almata), 8h. (Samarkand, near Stalinabad, and Tchimkent), 9h. (Strasbourg (2)), 12h. (near Antarctica), 13h. (Brisbane), 14h. (Strasbourg and Rome), 15h. (near Mizusawa), 17h. (Antarctica), 18h. (Fresno and Shasta Dam), 21h. (Mizusawa, Weston, Mount Wilson, Tinemaha, Tucson, Boulder City, Philadelphia, and near Balboa Heights).

July 3d. 2h. Undetermined shock.

Balboa Heights e =39m.44s.
Tucson iP =40m.27s., i =42m.32s., iP$_c$P? =44m.27s., eS? =46m.25s., i =47m.25s., eL = 48m.20s.
Bogota eZ =40m.57s.
La Jolla eP =41m.11s.
Pierce Ferry iP =41m.12s., eL =49m.13s.
Boulder City iP =41m.15s., eL =49m.59s.
Riverside iP =41m.15s., eP$_c$P =44m.37s.
Overton iP =41m.17s.
Mount Wilson eP =41m.19s.
Pasadena eP =41m.22s., eP$_c$P =44m.39s., eL =46m.12s.
Tinemaha iP =41m.41s., iP$_c$P =44m.44s.
Bozeman eP? =42m.13s., e =47m.36s. and 52m.33s.
Shasta Dam eP =42m.20s., e =43m.43s., i =44m.56s.
Ottawa P =42m.30s., S =48m.20s., SS =50m.36s., L =56m.0s.
Grand Coulee eP? =42m.53s.
Victoria P =43m.24s., S =49m.34s., SSS =53m.6s., L =57m.0s.
Salt Lake City e =46m.49s., eL =51m.21s.
Brisbane eS?EN =50m.37s.
Long waves were also recorded at Berkeley, Butte, Rapid City, Sitka, and Riverview.

July 3d. Readings at 1h. (Philadelphia and Tucson), 2h. (Stuttgart, Toledo, and near Malaga), 3h. (Ksara and near Helwan), 4h. (Rome and near Zagreb), 6h. (Riverside, Tinemaha, and Tucson), 7h. (Riverside, Tinemaha, Shasta Dam, Tucson, Fort de France, Bogota, Huancayo, and near La Paz), 8h. (Ksara, Riverside, Tinemaha, Shasta Dam, Tucson, Bogota, Huancayo, and near La Paz), 9h. (Durham), 11h. (Tucson), 12h. (Stuttgart and Antarctica), 14h. (Durham), 15h. (Jena), 17h. (Obi-garm (2)), 18h. (near Obi-garm and Stalinabad), 19h. (Stuttgart, Strasbourg, Paris, near Neuchatel, Zürich, and Basle), 20h. (Belgrade and near Malaga), 21h. (College), 22h. (Stuttgart), 23h. (Andijan, Obi-garm, Frunse, and Stalinabad).

July 4d. 20h. 8m. 27s. Epicentre 40°·9N. 15°·9E. (as on 1942, December 30d.).

$A = +\cdot7290$, $B = +\cdot2077$, $C = +\cdot6522$; $\delta = -5$; $h = -2$;
$D = +\cdot274$, $E = -\cdot962$; $G = +\cdot627$, $H = +\cdot179$, $K = -\cdot758$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rome	2·7	292	e 0 29	−16	i 1 7	−12	e 0 43	P*	i 1·4
Florence	4·5	311	e 1 11	0	e 2 16	S*	—	—	—
Zagreb	4·9	1	e 1 18	+ 1	—	—	—	—	e 2·4
Triest	5·0	343	e 1 26	P*	e 1 59	−19	—	—	—
Belgrade	5·1	39	e 2 35	S*	(e 2 35)	S*	e 2 57	S_g	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Pavia		6·5	313	e 1 33	− 6	—	—	—	—	—
Bucharest		8·3	62	—	—	3 33?	− 7	—	—	—
Zürich		8·3	323	e 3 1	+57	—	—	—	—	e 4·3
Prague		9·2	354	—	—	e 4 9	+ 6	—	—	e 4·8
Stuttgart		9·2	331	e 2 17	+ 1	e 3 28	−35	—	—	e 5·3
Cheb		9·5	346	—	—	e 4 4	− 6	—	—	e 5·0
Strasbourg		9·6	326	—	—	e 3 48	−24	—	—	e 4·9
Jena	E.	10·4	345	—	—	e 4 33	+ 1	—	—	—

Belgrade also gives e = 3m.21s. and 3m.41s.
Long waves were also recorded at other European stations.

July 4d. Readings also at 1h. (Sverdlovsk, Frunse, Obi-garm (2), Andijan (2), Stalinabad (2), New Delhi, Pierce Ferry, Weston, Berkeley, and near Lick ; several shocks), 2h. (Tchimkent, near Obi-garm, and Stalinabad), 5h. (Rome, Tashkent, Samarkand, near Obi-garm, Andijan, Tchimkent, and Stalinabad), 6h. and 8h. (Balboa Heights), 11h. (near Mizusawa), 12h. (near Piatigorsk), 13h. (Stuttgart and Strasbourg), 14h. (Frunse, Almata, Tchimkent, near Stalinabad, Samarkand, Tashkent, and Andijan), 15h. (Copenhagen), 16h. (Obi-garm), 17h. (Santa Lucia), 19h. (Istanbul, Ksara, and Sverdlovsk), 20h. (near Obi-garm), 22h. (Antarctica).

July 5d. Readings at 1h. (New Plymouth, Wellington, and Auckland), 2h. (near Mizusawa), 3h. (Copenhagen), 5h. (Basle, Stuttgart, and Zürich), 6h. (Shasta Dam, near Berkeley, Branner, and Lick), 7h. (Santa Lucia), 10h. (Pasadena, Mount Wilson, Riverside, Palomar, Haiwee, Tinemaha, Shasta Dam, and Brisbane), 11h. (Tucson), 14h. (Riverside, Tinemaha, Mount Wilson, and Shasta Dam), 15h. (near Apia), 16h. (Riverside, Mount Wilson, Pasadena, Palomar, Tinemaha, and Tucson), 21h. (Warsaw), 22h. (near Shasta Dam).

July 6d. 12h. 8m. 20s. Epicentre 14°·7S., 167°·3E. Depth of focus 0·005.
(as on 1943, September 17d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.		Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.		m.
Brisbane		18·4	224	i 4 11	− 1	i 7 32	0	e 4	23	PP	—
Auckland		23·1	164	4 59	− 2	9 12	+ 9		5 30	PP	—
Riverview		24·0	215	i 5 32k	pP	i 9 21	+ 2	i 9	48	sS	—
Wellington		27·3	168	6 0	pP	9 55	−19		6 38	PP	—
Wairiri		29·0	174	5 53	− 3	10 6	−35	i 6	14	pP	12·4
Shasta Dam		85·2	46	e 12 31	0	—	—	e 12	55	pP	—
Pasadena	z.	85·8	53	i 12 34	0	—	—	i 12	58	pP	—
Mount Wilson	z.	85·9	53	i 12 35	+ 1	—	—	i 12	59	pP	—
Riverside	z.	86·4	53	i 12 36	0	—	—	i 12	58	pP	—
Palomar		86·5	55	i 12 39a	+ 2	—	—	i 13	2	pP	—
Tinemaha	z.	86·8	51	e 12 38	0	—	—	e 12	55	pP	—
Boulder City		89·0	52	i 12 50	+ 1	—	—	i 13	14	pP	—
Overton		89·5	52	i 12 53	+ 2	—	—	i 13	17	pP	—
Pierce Ferry		89·7	52	i 12 52	0	—	—	e 13	17	pP	—
Tucson		91·0	57	e 12 59	+ 1	—	—	i 13	28	pP	—
Ksara		132·3	302	e 18 50	[−17]	e 22 11	PKS	—		—	—
Strasbourg		142·2	338	e 19 23	[− 2]	—	—	e 20	7	pPKP	—
Zürich		142·9	336	e 19 24a	[− 2]	—	—	—		—	—
Basle		143·2	337	e 19 24	[− 3]	—	—	—		—	—
Paris		143·8	343	i 19 28	[0]	—	—	e 22	44	PP	—
Pavia		144·4	333	i 19 30	[+ 1]	—	—	—		—	—
Rome	z.	145·3	325	i 19 31k	[0]	—	—	e 20	49	?	—

Additional readings :—
Brisbane iSSN = 7m.56s.
Auckland PP? = 5m.39s., sS = 9m.49s., S_cP? = 11m.28s.
Riverview iP_cPE = 9m.28s., eQE = 9m.52s., iSSN = 9m.57s., iE = 10m.0s. and 10m.31s.
Wairiri Z = 6m.48s., QEN = 10m.25s.
Riverside iZ = 13m.4s.
Tucson i = 13m.23s., e = 16m.6s.
Ksara e = 22m.28s.
Strasbourg e = 21m.57s.
Paris i = 19m.56s., ePP? = 22m.36s.
Pavia e = 19m.34s.

July 6d. Readings also at 4h. (near Lick), 11h. (Palomar, Tucson, Pierce Ferry, Grand Coulee, and Boulder City), 13h. (near Stalinabad), 15h. (near Ashkabad), 18h. (Riverside, Tinemaha, and Tucson), 23h. (Ottawa).

July 7d. 4h. 40m. 29s. Epicentre 36°·8N. 121°·4W. (as on 1945, June 14d.).

Intensity V at Hollister ; IV at Monterey, San Martin, San Francisco, etc.
Epicentre 36° 46′N., 121° 25′W.

L. M. Murphy : United States Earthquakes 1947, serial No. 730, Washington, 1950, p.23.

$A = -\cdot4182$, $B = -\cdot6851$, $C = +\cdot5964$; $\delta = -5$; $h = 0$;
$D = -\cdot854$, $E = +\cdot521$; $G = -\cdot311$, $H = -\cdot509$, $K = -\cdot803$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Clara		0·6	321	i 0 13	− 2	i 0 33	+ 7	—	—	—
Branner		0·9	314	i 0 18	− 2	i 0 30	− 4	—	—	—
Berkeley		1·3	327	i 0 23	− 2	i 0 43	− 1	i 0 26	P_g	—
Fresno	N.	1·3	93	e 0 27	+ 2	i 0 47	+ 3	i 0 31	P_g	i 1·9
Tinemaha		2·5	89	i 0 46	P*	i 1 22	S_g	—	—	—
Ukiah		2·7	328	e 0 46	+ 1	—	—	—	—	e 1·5
Haiwee		2·8	104	i 1 11	+24	i 1 28	S*	—	—	—
Mineral	E.	3·5	357	e 1 4	P*	—	—	—	—	—
Mount Wilson	Z.	3·7	132	i 1 0	0	—	—	—	—	—
Pasadena		3·7	134	i 1 0	0	i 1 50	+ 5	—	—	—
Shasta Dam		4·0	359	e 1 4	0	i 1 55	+ 3	e 1 18	P_g	e 2·8
Riverside	Z.	4·3	128	e 1 8	0	—	—	—	—	—
Palomar	Z.	5·1	131	e 1 18	− 2	—	—	—	—	—
Boulder City		5·3	96	e 1 25	+ 3	—	—	i 1 40	P_g	—
Overton		5·6	90	e 1 30	+ 3	—	—	—	—	—
Pierce Ferry		6·0	94	e 1 35	+ 3	i 3 16	S_g	—	—	—
Tucson		9·8	114	e 2 21	− 3	e 4 59	S*	—	—	i 5·6

Additional readings :—
Shasta Dam e = 1m.23s., iS = 1m.47s.
Boulder City i = 1m.45s.
Tucson e = 3m.55s. and 4m.7s.

July 7d. 22h. 35m. 38s. Epicentre 37°·2N. 20°·8E.

$A = +\cdot7465$, $B = +\cdot2836$, $C = +\cdot6020$; $\delta = +10$; $h = -1$;
$D = +\cdot355$, $E = -\cdot935$; $G = +\cdot563$, $H = +\cdot214$, $K = -\cdot798$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		7·5	56	2 5	P*	3 58	S_g	—	—	—
Belgrade		7·6	358	i 1 51 a	− 4	i 3 34	+11	i 2 7	P*	—
Rome		7·9	309	e 1 55	− 4	e 3 23	− 7	3 55	S*	4·4
Bucharest		8·3	28	e 2 3	− 1	—	—	—	—	3·9
Zagreb		9·3	339	e 2 13	− 4	e 4 7	+ 2	e 4 59	S_g	—
Kalossa	E.	9·4	353	e 2 29	+11	5 33	S_g	5 56	SS	e 6·5
	N.	9·4	353	e 2 32	+14	5 39	S_g	2 46	SS	e 6·5
Florence		9·8	315	e 2 20	− 4	i 4 42	SSS	—	—	—
Triest		10·0	330	e 2 23	− 4	e 4 11	−11	—	—	—
Budapest		10·4	353	e 2 28	− 6	5 38	+66	—	—	6·6
Helwan	Z.	11·4	127	2 43	− 4	5 1	+ 5	2 52	PP	i 5·7
Pavia		11·8	316	e 3 5	+12	e 5 2	− 4	—	—	—
Chur		12·7	323	e 3 6	+ 1	e 5 21	− 7	—	—	—
Ksara		12·7	100	e 3 16?	+11	e 5 49	SS	—	—	—
Theodosia		13·5	50	e 2 16	+ 1	—	—	—	—	—
Prague		13·6	343	e 3 44	PPP	e 6 32	SSS	—	—	e 7·4
Zürich		13·6	322	e 3 20	+ 3	e 5 52	+ 2	i 3 26	PP	—
Basle		14·2	321	e 3 23	− 1	e 6 9	+ 5	—	—	—
Cheb		14·2	337	—	—	e 5 41	−23	e 6 31	SSS	e 8·4
Neuchatel		14·2	318	e 3 22	− 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s	s	m. s.		m.
Stuttgart		14·3	328	i 3 25k	− 1	e 6 10	+ 4	e 3 45	PPP	e 8·2
Strasbourg		14·8	324	e 3 31	− 1	e 6 24	+ 6	i 6 35	SSS	e 8·5
Warsaw		15·0	1	e 3 39	+ 4	6 33	+10	e 3 47	PP	e 8·0
Jena		15·2	337	e 3 36	− 2	e 8 38	L	e 3 44	PP	(e 8·6)
Clermont-Ferrand		15·7	308	e 3 46	+ 2	e 6 46	+ 7	—	—	8·4
Sotchi		15·7	60	e 3 54	+10	—	—	—	—	—
Potsdam		16·1	343	e 3 54	+ 5	e 7 8	SS	—	—	e 9·4
Tortosa		16·2	289	3 55	+ 5	7 3	+12	4 14	PPP	e 9·4
Alicante		16·8	280	e 4 5	+ 7	i 7 16	+11	5 21	pP	e 8·4
Paris		17·7	317	i 4 11	+ 1	e 7 26	0	i 4 41	sP	e 9·4
Uccle		18·0	324	e 4 14k	+ 1	e 7 39	+ 7	—	—	e 9·9
Leninakan		18·3	73	e 4 16	− 1	—	—	—	—	—
De Bilt		18·5	329	i 4 22a	+ 3	e 7 55	+11	i 4 39	PP	e 9·4
Almeria		18·6	277	i 4 21	0	i 7 43	− 3	i 4 43	PP	—
Copenhagen		19·3	346	i 4 26	− 3	e 7 58	− 4	—	—	9·9
Granada		19·4	278	4 43	+13	i 8 10	+ 6	5 7	PPP	—
Toledo	z.	19·6	285	e 4 29	− 3	e 6 52	−76	—	—	—
Grozny		20·1	65	e 4 36	− 2	—	—	—	—	—
Malaga	z.	20·1	277	i 4 39	+ 1	—	—	i 4 46	pP	—
Kew		20·7	321	e 4 46k	+ 2	i 8 35	+ 4	i 8 45	P_cP	e 11·4
Upsala		22·8	356	5 2	− 3	e 8 57	−14	i 5 34	PP	e 10·4
Helsinki		23·1	6	e 5 9	+ 1	e 9 20	+ 4	e 5 34	PP	e 13·4
Durham	z.	23·3	327	—	—	9 17	− 3	—	—	—
Ashkabad		29·6	77	6 5	− 4	e 10 57	− 7	—	—	—
Sverdlovsk		32·9	41	i 6 34	− 4	e 11 44	−12	—	—	—
Samarkand		35·9	72	e 7 2	− 2	—	—	—	—	—
Tashkent		37·4	69	e 7 11	− 5	e 12 47	−18	—	—	—
Stalinabad		37·6	73	e 7 14	− 4	12 59	− 9	—	—	—
Obi-garm		38·2	73	e 7 20	− 3	—	—	—	—	—
Almata		42·6	64	e 7 47	−12	—	—	—	—	—
Irkutsk		58·0	46	e 9 54	− 3	17 48	− 9	—	—	—
Weston		67·5	308	e 11 0	0	—	—	—	—	—
St. Louis	z.	81·4	313	i 12 18	− 2	—	—	—	—	—
Shasta Dam		95·5	333	e 13 27	− 1	—	—	—	—	—
Tucson		97·5	320	e 13 37	0	—	—	e 17 31	PP	—

Additional readings and notes :—
Belgrade i = 2m.24s., iSN = 2m.54s.
Bucharest iE = 3m.0s., iN = 3m.8s.
Zagreb eP = 2m.16s., eNE = 2m.21s., eP_gNW = 3m.11s., eNW = 3m.25s., eNE = 3m.59s., ePPS = 4m.11s., eNE = 4m.19s., eNW = 4m.56s., eZ = 5m.20s., eSS_gNE = 5m.24s., eSS_gNW = 5m.27s.
Kaloassa SSN = 5m.47s., SSSN = 6m.2s.
Budapest ePN = 2m.37s., SSSN = 6m.2s.
Helwan eZ = 3m.33s., SSZ = 5m.15s.
Stuttgart ePP? = 3m.34s., eSS? = 6m.30s.
Strasbourg eS = 6m.28s.
Warsaw eE = 4m.45s., eN = 4m.49s.
Tortosa SSEN = 7m.25s.
Alicante PP = 5m.26s., sS = 7m.35s., SS = 7m.46s., SSS = 7m.58s.
Paris iPP = 4m.28s., iPPP = 4m.35s., i = 4m.57s. and 5m.24s., e = 7m.35s., eSS = 7m.47s., eSSS = 8m.7s.
Almeria P_cP = 8m.39s., P_cS = 12m.19s.
Granada P_cP = 8m.59s.
Malaga PPZ = 5m.57s., iSZ = 10m.51s., eSSZ = 13m.58s., LZ = 17m.48s. ; readings wrongly identified, except for P.
Kew ePPE = 5m.37s., eEZ = 6m.13s.?
Upsala iPP?E = 5m.44s., eN = 5m.56s.
Helsinki e = 5m.14s. and 5m.27s.
Long waves were also recorded at Aberdeen.

July 7d. Readings also at 2h. (Shasta Dam), 4h. (Riverview, Wairiri, Arapuni, Wellington, New Plymouth, Tuai, Auckland, and near Lick), 5h. (Rome), 10h. (Kew, Paris, Clermont-Ferrand, Strasbourg, and Stuttgart), 12h. (Samarkand, near Obi-garm, and Stalinabad), 13h. (Stuttgart, Shasta Dam, Tucson, Pasadena, Mount Wilson, Palomar, Riverside, and Tinemaha), 17h. (New Delhi, Mount Wilson, Palomar, Riverside, Tucson, near Obi-garm, and Stalinabad), 18h. (Granada, Toledo, Shasta Dam, Tucson, Mount Wilson, Palomar, Riverside, Tinemaha, and near Ksara), 19h. (New Delhi (2), Almata, Tashkent, Frunse, Obi-garm, and Stalinabad), 20h. (New Delhi, Frunse, Samarkand, Tashkent, Almata, Obi-garm, and Stalinabad), 21h. (Toledo and near Branner), 22h. (Mineral, Obi-garm, Tashkent, and near New Delhi).

July 8d. Readings at 0h. (Mineral), 1h. (Tucson, Mount Wilson, and near Mizusawa), 3h. (near Tananarive), 4h. (Obi-garm), 5h. (Tucson, Palomar, Riverside, Mount Wilson, Tinemaha, and St. Louis), 11h. (near Reykjavik (2), and near Stalinabad), 12h. (Auckland, Wairiri, Wellington, and Riverview), 15h. (Stalinabad), 17h. (Belgrade), 18h. (near Obi-garm), 20h. (near Mineral), 23h. (Huancayo).

July 9d. 17h. 57m. 38s. Epicentre 19°·2N. 121°·2E. (as on 1947, June 6d.).

$A = -\cdot4896$, $B = +\cdot8084$, $C = +\cdot3269$; $\delta = +8$; $h = +5$;
$D = +\cdot855$, $E = +\cdot518$; $G = -\cdot169$, $H = +\cdot280$, $K = -\cdot945$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vladivostok		25·5	19	e 5 25	− 7	—	—	—	—	—
Irkutsk		35·6	343	7 4	+ 3	12 32	− 6	—	—	—
New Delhi	N.	41·1	293	—	—	e 16 56	SS	—	—	—
Bombay		45·6	278	e 8 15	− 9	—	—	—	—	—
Andijan		46·7	308	e 8 42	+10	—	—	—	—	—
Obi-garm		48·4	306	e 8 41	− 5	e 15 44	− 2	—	—	—
Stalinabad		49·1	305	i 8 47	− 4	e 15 55	− 1	—	—	—
Tashkent		49·1	309	e 8 45	− 6	e 15 49	− 7	—	—	—
Samarkand		50·6	306	e 9 8	+ 6	—	—	—	—	—
Ashkabad		57·2	303	—	—	e 17 35	−11	—	—	—
Sverdlovsk		58·1	327	i 10 0	+ 2	i 17 51	− 7	—	—	—
Moscow		70·8	324	e 11 21	+ 1	e 20 25	−10	—	—	—
Ksara		75·8	300	e 11 52	+ 2	e 21 34	+ 3	—	—	—
Istanbul		79·2	310	e 12 28?	PcP	—	—	—	—	e 51·4
Helwan		80·6	298	e 12 0	−16	e 22 14	− 9	—	—	—
Warsaw		81·1	322	e 21 16	?	e 22 21	− 7	e 39 52	Q	e 42·4
Scoresby Sund		86·9	349	—	—	23 8	[− 5]	28 58	SS	—
De Bilt		89·9	326	—	—	e 23 26	[− 6]	—	—	e 43·4

Warsaw also gives eE = 22m.14s.
Long waves were also recorded at Kodaikanal, Weston, and at other European stations.

July 9d. Readings also at 1h. (near Malaga), 5h. (near Antarctica), 6h. (near Andijan), 7h. (near Granada), 8h. (Tucson), 9h. (Stuttgart), 10h. (near Apia), 12h. (Lick), 13h. (Strasbourg and Belgrade), 18h. (Tucson), 20h. (near Branner), 21h. (Brisbane, Shasta Dam, and Tucson), 22h. (Tucson), 23h. (Ksara).

July 10d. 10h. 19m. 20s. Epicentre 32°·6N. 75°·9E. (as on 1945, June 22d.).

Felt over a large area of Kashmir and the north and east of the Punjab, and as far as New Delhi. Serious material damage at Bhadarwah; intensity VI at Srinagar, Dalhousie, and Gulmarg. Followed by numerous aftershocks, of which 73 were felt at Bhadarwah.

Epicentres: 33°·2N. 75°·3E. (Bombay).
32°·7N. 76°·0E. (Strasbourg).

Seismological Bulletin, July-September, 1947, pp. 2 and 9 (Government of India, Meteorological Department).

$A = +\cdot2056$, $B = +\cdot8187$, $C = +\cdot5362$; $\delta = +5$; $h = +1$;
$D = +\cdot970$, $E = -\cdot244$; $G = +\cdot131$, $H = +\cdot520$, $K = -\cdot844$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dehra Dun	N.	2·9	141	i 2 17k	?	i 2 47	?	—	—	—
New Delhi		4·1	164	i 1 9_a	+ 4	i 2 5	+10	2 18	S_g	—
Obi-garm		7·9	322	i 1 57	− 2	—	—	—	—	—
Stalinabad		8·3	318	2 1	− 3	i 3 32	− 8	—	—	—
Andijan		8·6	342	i 2 5	− 4	i 3 39	− 9	—	—	—
Samarkand		10·1	317	i 2 28	0	i 4 16	− 9	—	—	—
Tashkent		10·2	331	2 22	− 9	e 4 7	−20	—	—	—
Frunse		10·3	355	i 2 29	− 3	—	—	—	—	—
Almata		10·7	4	i 2 34	− 4	—	—	—	—	—
Bombay		13·9	192	e 3 21	0	i 5 57	0	—	—	6·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	E.	14·9	129	e 4 31	+57	e 6 31	+11	—	—	—
Hyderabad	E.	15·3	171	—	—	6 20	−10	—	—	—
Baku		22·2	298	e 5 7	+ 7	e 9 4	+ 4	—	—	—
Kodaikanal	E.	22·3	177	e 4 17	−44	e 8 4	−58	—	—	10·1
Colombo	E.	25·8	172	6 0	PP	9 48	−14	—	—	—
Grozny		25·9	304	1 5 36	+ 1	e 10 11	+ 7	—	—	—
Erevan		26·3	296	e 5 48	+ 9	e 10 10	− 1	—	—	—
Leninakan		26·9	298	e 5 47	+ 2	—	—	—	—	—
Irkutsk		28·4	37	5 56	− 2	10 34	−11	—	—	—
Ksara		33·4	283	e 6 33?	− 9	e 12 1	− 2	—	—	—
Moscow		35·2	323	e 6 59	+ 1	e 12 18	−13	—	—	—
Helwan	Z.	38·0	278	e 7 24	+ 3	13 20	+ 6	7 48	pP	—
Istanbul		38·0	298	e 8 38	PP	e 13 26	+12	—	—	—
Helsinki		43·1	326	e 8 5	+ 1	e 14 19	−11	e 9 48	PP	e 21·7
Warsaw		43·8	314	e 8 10	+ 1	e 14 40	0	9 56	PP	e 20·2
Belgrade		44·2	303	e 8 22	+10	—	—	e 10 27	PPP	e 23·2
Vladivostok		44·7	60	e 8 19	+ 3	e 14 41	−13	—	—	—
Upsala		46·6	324	i 10 22	PP	i 15 10	−11	i 11 15	PPP	—
Zagreb		47·2	305	e 8 40	+ 4	e 15 18	−11	—	—	—
Prague		47·9	311	e 11 46	PPP	e 15 40	+ 1	—	—	—
Potsdam		48·7	314	e 8 58	+10	i 15 44	− 6	e 15 54	PS	e 29·7
Triest		48·8	305	e 10 50	PP	e 24 11	L	—	—	(e 24·2)
Copenhagen		49·0	319	i 8 47	− 3	e 15 44	−11	11 25	PPP	23·7
Jena		49·7	312	e 8 50	− 6	—	—	e 11 8	PP	—
Rome	Z.	50·3	300	e 9 2	+ 2	e 16 4	− 9	—	—	e 25·2
Florence		50·8	303	e 9 44	+40	—	—	—	—	—
Stuttgart		51·5	310	e 9 5	− 4	e 16 22	− 7	e 18 49	S_cS	e 27·7
Zürich		52·1	308	e 9 16	+ 2	e 16 30	− 8	e 18 49	S_cS	—
Strasbourg		52·4	310	e 9 12	− 4	—	—	—	—	28·7
Basle		52·7	308	e 9 16	− 2	—	—	—	—	—
Bergen	N.	52·8	325	—	—	e 17 16	PS	e 19 15	S_cS	—
De Bilt		53·6	314	e 9 29	+ 4	e 16 50	− 8	—	—	e 21·7
Paris		55·8	310	e 9 37	− 4	e 17 35?	+ 7	i 10 50	P_cP	e 28·7
Clermont-Ferrand		56·1	306	e 9 45	+ 2	—	—	—	—	—
Aberdeen		57·0	321	—	—	e 20 50	?	e 22 0	?	—
Kew		57·0	313	i 9 52	+ 2	—	—	—	—	e 24·2
Durham	N.	57·1	318	—	—	i 17 5	−40	—	—	i 29·3
Tortosa		59·3	301	10 6	0	18 7	− 7	11 11	P_cP	—
Scoresby Sund		62·2	338	10 24a	− 2	18 45	− 6	—	—	—
Almeria		62·8	298	e 10 31	+ 1	—	—	13 25	PP	30·7
Malaga	Z.	64·3	299	i 10 41k	+ 2	i 20 9	+52	20 43	sS	30·4
Ivigtut		76·1	335	11 50	− 1	21 28	− 7	—	—	—
Sitka		86·4	17	—	—	e 23 10	[0]	—	—	—
Riverview	E.	96·8	126	—	—	e 32 19	?	—	—	—
Butte		101·4	5	—	—	e 24 4	[−30]	—	—	—
Rapid City		103·7	358	—	—	e 24 47	[+ 2]	—	—	—
Shasta Dam		105·1	14	e 17 20	PKP	—	—	—	—	—
Tinemaha	Z.	109·4	12	e 18 54	PP	—	—	—	—	—
Mount Wilson	Z.	112·2	12	e 18 59	PP	—	—	—	—	—
Pasadena	Z.	112·3	12	e 19 20	PP	—	—	—	—	—
Palomar	Z.	113·3	11	e 19 11	PP	—	—	—	—	—
Tucson		115·2	6	e 19 53	PP	—	—	—	—	—
La Paz		143·8	287	11 58	?	—	—	—	—	66·2
Huancayo		146·6	301	e 19 50	[+ 8]	—	—	—	—	—

Additional readings :—
New Delhi P*E = 1m.18s., S_cE = 2m.28s.
Helwan PPNZ = 9m.0s., sSZ = 14m.4s.
Helsinki eSS = 17m.23s.
Warsaw eE = 10m.58s., eP_cSN = 14m.1s., eP_cSE = 14m.10s., SN = 14m.40s., SSN = 17m.47s., SSE = 18m.4s., SSSN = 18m.41s., SSSE = 18m.54s.
Belgrade e = 8m.52s.
Upsala eSS = 17m.52s.
Copenhagen 17m.12s. and 19m.22s.
Jena eP?N = 8m.53s., eE = 11m.14s.
Stuttgart eP = 9m.12s., eSS = 20m.4s.

Continued on next page.

Strasbourg e =13m.43s. and 18m.20s.
Paris i =9m.43s., 9m.48s., 9m.54s., and 13m.28s., eS_cS =19m.33s., eSS =21m.1s., eSSS = 23m.41s.
Tortosa PPPN =13m.33s., iN =17m.31s., PSE =18m.16s.
Almeria PPP =15m.9s., PS? =20m.53s.
Malaga PPZ =13m.47s., PPPZ =15m.21s., PSZ =21m.7s.

July 10d. 10h. 48m. 46s. Epicentre 73°·0N. 69°·6W. (as on 1945, January 1d.).

A = +·1025, B = −·2757, C = +·9558 ; δ = +7 ; h = −12 ;
D = −·937, E = −·349 ; G = +·333, H = −·896, K = −·294.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Scoresby Sund		14·8	76	3 26	− 6	—	—	—	—	—
Kirkland Lake		25·4	196	5 34	+ 3	10 8	+12	5 50	PP	13·2
Seven Falls		26·0	182	5 40	+ 4	10 23	+17	11 20	SSS	13·2
Saskatoon		26·2	238	5 39	+ 1	10 23	+14	—	—	13·3
Shawinigan Falls		26·6	185	5 39	− 3	10 32	+16	6 19	PP	13·5
College		27·1	294	e 5 40	− 6	e 10 32	+ 8	—	—	e 10·8
Ottawa		27·8	189	5 52	− 1	10 35	0	6 27	PP	14·2
Sitka		29·5	274	—	—	e 10 26	−36	—	—	e 12·8
Harvard		30·6	182	i 6 17	− 1	e 11 11?	− 9	e 12 45	SS	e 16·1
Weston		30·7	183	e 6 18	− 1	e 11 28	+ 7	—	—	—
Fordham		32·3	185	—	—	e 11 44	− 2	i 17 9	S_eS	i 16·6
Chicago		32·5	207	—	—	e 11 38	−11	—	—	e 16·7
Rapid City		33·0	227	e 6 46	+ 7	e 12 6	+ 9	—	—	e 13·4
Philadelphia		33·2	187	e 7 38	PP	e 12 2	+ 2	—	—	e 14·2
Bozeman		33·3	238	—	—	e 12 28	+26	—	—	e 17·0
Butte		33·3	240	e 7 2	+21	e 12 22	+20	—	—	—
Grand Coulee		33·3	249	e 6 41	0	e 13 27	?	—	—	—
St. Louis	z.	35·9	209	i 7 1	− 3	—	—	i 7 15	?	—
Salt Lake City		38·1	236	e 8 6	+44	e 13 47	+31	—	—	e 18·2
Paris		39·0	87	i 7 32	+ 2	—	—	i 7 39	?	—
Strasbourg		40·8	82	e 7 49	+ 4	—	—	—	—	—
Shasta Dam		40·9	247	i 7 44	− 2	—	—	e 9 44	PPP	—
Stuttgart		41·0	81	e 7 46	0	—	—	—	—	e 26·2
Overton		42·7	237	i 8 1	+ 1	—	—	—	—	—
Pierce Ferry		43·0	236	i 8 4	+ 1	—	—	—	—	—
Tinemaha		43·2	242	i 8 5a	+ 1	—	—	—	—	—
Boulder City		43·4	237	i 8 6	0	—	—	—	—	—
Berkeley		43·5	246	i 8 1	− 6	e 14 46	+10	e 22 32	Q	e 23·2
Fresno	N.	43·9	243	e 8 23	+13	—	—	—	—	e 23·1
Haiwee	z.	44·0	241	i 8 12	+ 1	—	—	—	—	—
Mount Wilson		45·8	240	i 8 27a	+ 2	—	—	—	—	—
Pasadena		45·9	240	i 8 27a	+ 1	—	—	e 10 10	PP	e 24·6
Riverside	z.	45·9	240	i 8 26	0	—	—	—	—	—
Tucson		46·0	231	i 8 26	− 1	e 15 10	− 2	e 10 19	PP	—
Palomar		46·4	238	i 8 29a	− 1	—	—	—	—	e 24·7
La Jolla		46·9	238	i 8 35	+ 1	—	—	—	—	—
Alicante		47·7	97	e 8 45	+ 5	—	—	10 52	PP	e 22·3
Malaga	z.	48·1	101	i 8 45a	+ 2	16 7	+25	14 15	P_eS	e 24·3
Almeria		48·5	99	e 8 53	+ 7	15 50	+ 2	10 21	P_eP	22·2
Helwan	z.	64·9	70	e 10 42	− 1	—	—	e 11 54	?	—
Huancayo		84·9	186	e 12 40	+ 2	e 27 40	SS	e 31 14	SSS	—
La Paz		89·3	178	e 12 28	−31	—	—	—	—	56·2

Additional readings and notes :—
Kirkland Lake SS =11m.45s.
Ottawa iZ =11m.24s., SS =11m.50s.
Harvard e =13m.23s., eQ =15m.40s.
Berkeley iN =8m.8s.
Tucson e =8m.46s.
Almeria PP =10m.47s., PPP =11m.35s., P_eS =14m.11s.
Long waves were also recorded at Helsinki, Ivigtut, Bermuda, and at other North American stations.

July 10d. 16h. 5m. 2s. Epicentre 13°·8N. 93°·1W. (as on 1944, July 2d.).

$A = -\cdot0525$, $B = -\cdot9701$, $C = +\cdot2370$; $\delta = +2$; $h = +6$;
$D = -\cdot999$, $E = +\cdot054$; $G = -\cdot013$, $H = -\cdot237$, $K = -\cdot972$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Columbia		22·9	26	e 5 6	0	e 9 20	+ 7	—	—	e 12·8
Tucson		24·5	322	e 5 20	− 2	e 9 48	+ 8	i 5 28	.pP	e 13·8
St. Louis		24·9	5	i 5 24	− 2	i 9 48	+ 1	i 5 41	pP	—
Chicago		28·4	7	e 6 10	+12	e 10 54	+ 9	—	—	e 14·1
New Kensington		29·1	21	—	—	e 10 59	sS	—	—	e 13·0
Palomar		29·1	316	e 6 1	− 3	—	—	i 6 7	?	—
Pierce Ferry		29·1	324	e 6 2	− 2	—	—	—	—	—
Boulder City		29·5	325	e 6 5	− 3	—	—	i 7 13	PPP	e 15·5
Overton		29·6	324	e 6 7	− 2	—	—	—	—	—
Riverside	z.	29·8	317	e 6 16	+ 5	—	—	—	—	—
Mount Wilson	z.	30·4	317	e 6 19	+ 3	—	—	—	—	—
Pasadena	z.	30·4	317	e 6 18	+ 2	—	—	—	—	e 14·9
Philadelphia		30·4	28	e 6 16	0	e 12 49	P_cS	—	—	e 14·8
Rapid City		31·4	346	e 6 26	+ 1	e 11 29	− 3	—	—	e 16·0
Haiwee	z.	31·5	320	e 6 28	+ 2	—	—	—	—	—
Salt Lake City		31·5	333	e 6 36	+10	e 11 59	+25	—	—	e 15·3
Fordham		31·7	29	e 6 28	+ 1	e 11 51	+14	—	—	—
Bermuda		31·9	50	e 6 20	− 9	—	—	e 10 6	?	e 13·6
Tinemaha	z.	32·3	320	e 6 32	− 1	—	—	i 6 38	?	—
Harvard		34·1	30	e 8 23	PPP	—	—	e 9 28	P_cP	e 15·5
Weston		34·1	30	e 6 52	+ 4	e 12 20	+ 6	—	—	—
Ottawa		34·8	21	e 7 46	PP	(11 58?)	−27	—	—	12·0
Santa Clara		34·8	318	e 6 55	+ 1	—	—	—	—	e 18·1
Berkeley		35·3	318	—	—	i 10 32	?	—	—	e 16·8
Kirkland Lake		35·9	15	e 7 58?	PP	—	—	—	—	—
Butte		36·1	338	e 7 5	0	e 11 38	−67	e 8 26	PP	—
Shawinigan Falls		36·9	24	e 8 35	PP	—	—	—	—	23·1
Shasta Dam		37·0	323	e 7 10	− 3	—	—	e 8 44	PP	—
Seven Falls		38·1	24	8 39	PP	13 28	+12	—	—	18·0
La Paz		38·9	139	e 7 42	+13	—	—	—	—	16·5
Grand Coulee		40·3	333	e 7 38	− 2	—	—	e 9 12	PP	—
Victoria		42·7	331	e 7 58	− 2	—	—	—	—	23·0
Sitka		54·0	334	e 9 22	− 6	e 17 4	+ 1	—	—	e 29·1
Scoresby Sund		70·8	19	11 22	+ 2	20 42	+ 7	—	—	37·0
Aberdeen	E.	79·1	33	—	—	e 22 17	+10	—	—	—
Kew		81·1	39	i 12 22	+ 4	e 22 44?	+ 6	e 27 43	SS	e 41·7
Paris		83·4	42	e 12 22	− 8	—	—	e 12 33	PP	e 42·0
Alicante		83·6	52	—	—	e 22 45	− 8	—	—	e 41·1
De Bilt		84·2	38	i 12 40	+ 6	—	—	—	—	e 40·0
Clermont-Ferrand		84·5	44	e 12 41	+ 5	e 24 46	PPS	—	—	42·0
Strasbourg		86·8	40	i 12 46	− 1	—	—	—	—	—
Copenhagen		87·3	33	16 16	PP	e 23 30	+ 1	—	—	43·0
Stuttgart		87·7	40	e 12 54a	+ 2	e 24 42	PS	—	—	e 45·0
Rome		92·1	46	e 13 17	+ 5	e 25 41	PS	—	—	e 43·5

Additional readings and note :—
Tucson iPP = 5m.59s., i = 6m.17s., 6m.34s., and 6m.55s., iS_cS? = 12m.1s., e = 12m.23s.
St. Louis isSN = 10m.18s.
Philadelphia e = 6m.56s. and 11m.50s.
Harvard e = 13m.43s.
Grand Coulee i = 7m.44s.
Rome ePS? = 24m.35s., eSS?E = 29m.29s.?
Long waves were also recorded at Ferndale, Ukiah, Helsinki, and Warsaw.

July 10d. 16h. 45m. 32s. Epicentre 32°·6N. 75°·9E. (as at 10h.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dehra Dun	N.	2·9	141	i 1 26k	+38	i 1 56	+32	—	—	—
New Delhi		4·1	164	i 1 9	+ 4	e 1 58	+ 3	i 1 24	P_g	—
Obi-garm		7·9	322	i 1 51	− 8	—	—	—	—	—
Stalinabad		8·3	318	i 2 1	− 3	—	—	—	—	—
Andijan		8·6	342	e 2 3	− 6	—	—	—	—	—
Samarkand		10·1	317	e 2 28	0	i 4 20	− 5	—	—	—
Frunse		10·3	355	i 2 30	− 2	—	—	—	—	—
Almata		10·7	4	2 32	− 6	4 49	+ 1	—	—	—
Hyderabad	E.	15·3	171	—	—	6 7	−23	—	—	—
Baku		22·2	298	e 5 5	+ 5	e 9 6	+ 6	—	—	—
Kodaikanal	E.	22·3	177	e 6 48	?	e 9 16	+14	—	—	10·3
Grozny		25·9	304	e 5 32	− 3	—	—	—	—	—
Erevan		26·3	296	e 5 53	+14	—	—	—	—	—
Leninakan		26·9	298	e 5 57	+12	—	—	—	—	—
Irkutsk		28·4	37	6 2	+ 4	10 51	+ 6	—	—	—
Ksara		33·4	283	e 6 45?	+ 3	e 12 47	P_cS	—	—	—
Moscow		35·2	323	e 6 51	− 7	e 12 22	− 9	—	—	—
Vladivostok		44·7	60	e 8 13	− 3	e 14 52	− 2	—	—	—
Stuttgart	z.	51·5	310	e 9 3	− 6	—	—	—	—	—

New Delhi also gives iP*N =1m.19s., eN =2m.6s., eE =2m.17s., eN =2m.24s.
Long waves were recorded at Upsala.

July 10d. Readings also at 1h. (Shasta Dam, near Grozny, Leninakan, Piatigorsk, and Erevan), 2h. (Tucson, Palomar, Pasadena, Mount Wilson, Riverside, Tinemaha, near Stalinabad, Obi-garm, Samarkand, Tashkent, Andijan, near Leninakan, and near Apia), 5h. (New Delhi (2), Bombay, Kodaikanal, Obi-garm, Stalinabad, Andijan, Samarkand, Frunse, Sverdlovsk (2), Irkutsk, Tashkent, and Ksara), 6h. (near Mizusawa), 8h. (La Paz, Bermuda, Fort de France, and near San Juan), 9h. (Riverview, Obi-garm, Stalinabad, Andijan, Tashkent, Samarkand, Frunse, Almata, Kodaikanal, Bombay, and near New Delhi), 10h. (Moscow and New Delhi), 11h. (New Delhi (2), Palomar, Riverside, Pasadena, Mount Wilson, Haiwee, Tinemaha, Tucson, Shasta Dam, Boulder City, Pierce Ferry, Overton, and Philadelphia), 12h. (Pasadena, Mount Wilson, Palomar, Tinemaha, Tucson, Shasta Dam, Obi-garm, Andijan, Tashkent, Stalinabad, Samarkand, Almata, Frunse, Kodaikanal, Calcutta, Hyderabad, Bombay, near Dehra Dun, New Delhi (2), and Stuttgart), 13h. (Kew, Obi-garm, Stalinabad, Tashkent, and near New Delhi), 16h. (Tucson (2), Bombay, Calcutta, and Colombo), 17h. (New Delhi, Obi-garm, Stalinabad, and Pierce Ferry), 18h. (Cheb, Stalinabad, Obi-garm, Almata, Frunse, New Delhi, Kodaikanal, Bombay, Calcutta, and near Dehra Dun), 19h. (Nanking), 20h. (Tinemaha, Pasadena, Mount Wilson, Riverside, Tucson, Shasta Dam, New Delhi, Stalinabad, and near Belgrade), 22h. (near Balboa Heights), 23h. (Rome, Stuttgart, and Shasta Dam).

July 11d. Readings at 0h. (Kew and near Reykjavik), 2h. (Palomar, Riverside, Tinemaha, Tucson, Overton, Pierce Ferry, and Shasta Dam), 4h. (Obi-garm and near Tashkent), 6h. (Stuttgart and near Almeria (2)), 14h. (Santa Lucia and near Mizusawa), 17h. (near Lick), 19h. (Mount Wilson, Riverside, Tinemaha, Tucson, Shasta Dam, and La Paz), 20h. (Mount Wilson, Palomar, Riverside, Tinemaha (2), Tucson (2), Pierce Ferry, Shasta Dam (2), Weston, Bogota, Huancayo (3), La Paz, Toledo, Ksara, Auckland, Riverview, and near Berkeley), 22h. (Tucson).

July 12d. 1h. 58m. 49s. Epicentre 45°·0N. 149°·5E.

A least square solution of these readings gives a position considerably less than 0°·1 West of that adopted. This is well within the probable error.

A = −·6113, B = +·3601, C = +·7047 ; δ = −4 ; h = −4 ;
D = +·508, E = +·862 ; G = −·607, H = +·358, K = −·710.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa	8·5	230	e 2 5	− 2	3 28	−17	—	—	—
Vladivostok	12·8	268	i 3 3	− 3	i 5 20	−10	—	—	—
Irkutsk	30·3	301	6 14	− 1	11 24	+ 9	—	—	—
College	39·1	37	e 7 34	+ 3	e 13 34	+ 3	e 8 7	pP	e 20·0
Sitka	46·3	47	e 8 30	+ 1	e 15 23	+ 7	e 15 42	sS	e 22·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sverdlovsk		53·4	318	e 9 22	− 2	—	—	12 36	PPP	—
Andijan		54·7	295	e 9 34	+ 1	e 17 14	+ 1	—	—	—
Tashkent		56·3	297	9 44	− 1	e 17 32	− 2	—	—	—
Victoria		56·6	53	—	—	e 18 41	+63	—	—	25·2
Obi-garm		57·5	295	i 9 52	− 1	i 17 47	− 3	—	—	—
Stalinabad		58·2	295	i 9 56	− 2	—	—	i 13 27	PPP	—
New Delhi	N.	58·3	281	i 9 59	0	i 17 56	− 5	—	—	—
Grand Coulee		59·4	52	e 10 7	+ 1	—	—	e 10 19	pP	—
Shasta Dam		61·6	60	e 10 21	− 1	e 18 45	+ 2	—	—	—
Saskatoon		63·3	42	10 34	+ 1	19 6	+ 2	—	—	30·9
Berkeley		63·4	62	e 10 32	− 2	i 19 5	− 1	—	—	e 30·1
Santa Clara	Z.	63·9	62	e 10 36	− 1	—	—	—	—	—
Scoresby Sund		64·7	358	10 42	0	19 21	− 1	—	—	29·2
Ashkabad		65·1	300	10 45	0	19 26	− 1	—	—	—
Helsinki		65·8	334	—	—	e 20 41	+66	—	—	e 34·2
Tinemaha	Z.	66·4	60	i 10 54	+ 1	—	—	i 11 6	pP	—
Haiwee	Z.	67·2	61	i 10 57	− 1	—	—	—	—	—
Bombay	E.	67·6	275	—	—	e 19 11?	?	—	—	—
Mount Wilson	Z.	68·3	63	i 11 6	+ 1	—	—	i 11 17	pP	—
Pasadena	Z.	68·3	63	i 11 4	− 1	—	—	i 11 14	pP	—
Upsala		68·3	337	—	—	e 21 0	+54	i 28 6	Q	e 37·0
Baku		68·6	306	e 11 10	+ 3	—	—	—	—	—
Riverside	Z.	68·9	63	i 11 8	− 1	—	—	—	—	—
Grozny		69·0	311	e 11 12	+ 3	—	—	—	—	—
Overton		69·1	59	i 11 9	− 1	—	—	—	—	—
Boulder City		69·2	60	i 11 10	0	—	—	—	—	—
Palomar	Z.	69·6	63	i 11 13	0	—	—	i 11 26	pP	—
Pierce Ferry		69·6	59	e 11 13	0	i 20 22	+ 1	i 11 31	pP	—
Bergen	N.	71·0	343	—	—	e 21 11?	+34	—	—	—
Erevan		71·8	309	e 11 29	+ 3	—	—	—	—	—
Sotchi		72·0	314	11 24	− 4	—	—	—	—	—
Ivigtut		73·2	9	11 34	− 1	20 59	− 3	—	—	—
Copenhagen		73·3	337	e 11 36	+ 1	e 20 59	− 5	21 55	PS	35·2
Warsaw		73·5	330	e 11 36	0	21 4	− 2	e 14 20	PP	e 38·2
Tucson		74·1	60	i 11 40	0	e 21 6	− 6	i 11 53	pP	e 34·7
Aberdeen	N.	75·5	344	—	—	i 21 23	− 5	—	—	e 45·7
Durham		77·6	343	—	—	i 21 50	− 1	i 32 57	?	—
Prague		77·6	333	e 11 58	− 2	e 21 48	− 3	—	—	e 36·2
Cheb		78·2	334	—	—	e 22 27	PS	e 31 30	SSS	e 42·2
De Bilt		78·5	338	i 12 4a	0	e 22 1	0	—	—	e 36·2
Riverview		78·5	178	12 11	+ 7	i 22 1	0	—	—	e 39·2
Istanbul		79·1	318	i 12 29	+21	e 22 25	+18	—	—	—
Uccle		79·9	339	e 12 12a	0	e 22 14	− 2	e 27 47	SS	e 37·2
Kew		80·4	342	i 12 15a	0	e 22 19	− 2	i 12 32	P_cP	e 43·2
Stuttgart		80·4	335	i 12 14a	− 1	e 22 17	− 4	e 12 31	P_cP	e 40·2
Florissant		80·7	43	e 12 17	+ 1	i 22 22	− 2	e 12 31	pP	—
Zagreb		80·7	329	e 12 17	+ 1	—	—	—	—	—
St. Louis		80·9	43	i 12 19	+ 2	e 22 25	− 1	i 12 33	pP	—
Strasbourg		81·0	336	e 12 18a	0	e 22 25	− 2	e 15 21	PP	39·2
Ksara		81·2	309	e 12 22?	+ 3	e 22 38	+ 9	—	—	—
Ottawa		81·5	30	12 20	− 1	22 27	− 5	—	—	44·2
Shawinigan Falls		81·5	28	e 12 22	+ 1	(23 20)	PS	—	—	23·3
Seven Falls		81·6	26	—	—	i 22 30	− 3	—	—	40·0
Zürich		81·8	335	e 12 21a	− 1	e 22 34	− 1	—	—	—
Basle		82·0	335	e 12 23a	0	—	—	—	—	—
Chur		82·0	334	e 12 23a	0	—	—	—	—	—
Paris		82·2	339	i 12 26a	+ 2	e 22 41	+ 2	e 23 41	PS	e 45·2
Pavia		83·6	333	e 13 0	+29	—	—	—	—	—
Florence		84·1	331	e 12 21	−13	e 23 13	+15	—	—	—
Clermont-Ferrand		84·9	337	i 12 39	+ 1	i 23 21	+15	—	—	41·2
Rome		85·3	329	i 12 40a	0	i 23 24	+14	e 22 58	SKS	e 41·7
Harvard		85·5	29	i 12 42	+ 1	—	—	—	—	e 53·2
Weston		85·7	29	e 12 41a	− 1	i 23 10	− 4	—	—	—
Fordham		86·1	31	e 12 44	0	i 23 21	+ 3	e 23 2	SKS	—
Philadelphia		86·4	33	e 12 46	+ 1	e 23 14	− 7	e 23 41	sS	e 33·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan		86·7	310	12 45	− 2	23 21	− 3	—	—	—
Tortosa	N.	90·2	336	—	—	e 23 54	− 2	—	—	e 51·2
Wairiri		90·3	164	—	—	e 23 15	[−19]	e 33 45	SSS	36·8
Toledo	Z.	92·2	340	e 13 14	+ 1	e 24 4	−10	—	—	—
Alicante		92·7	337	e 13 15	0	23 56	[+ 8]	16 55	PP	e 45·7
Almeria		94·7	337	e 13 17	− 7	24 25	−11	13 35	pP	45·2
Granada		94·7	339	13 30k	+ 6	25 5	+29	—	—	49·9
Malaga		95·3	339	e 13 24	− 3	i 24 23	−18	i 13 45	pP	e 44·8
La Paz		137·5	59	i 19 47	[+21]	—	—	i 22 45	PKS	69·2
Antarctica		150·1	153	e 19 51	[+ 3]	—	—	—	—	—

Additional readings :—
College ePcP? =9m.46s., esS =13m.55s.
Sitka eScP? =18m.5s.
Tinemaha iZ =11m.12s.
Upsala iN =34m.1s.
Warsaw ePcPN =12m.1s., eE =15m.7s., ePPPE =15m.59s., PSE =21m.31s., ePPSN = 21m.57s., ePPSE =22m.2s., eSSE =26m.42s., eSSSEN =29m.29s.
Tucson isP =11m.58s., e =12m.39s.
Riverview iS?N =21m.58s.
Uccle eSSSN =31m.17s.
Kew eSSSZ =32m.11s.?
Stuttgart eZ =18m.33s., ePS =22m.52s.
Florissant isSE =22m.43s.
St. Louis isSN =22m.49s.
Strasbourg i =12m.36s., eSS =28m.11s., eSSS =31m.21s.
Paris i =12m.51s.
Rome ePS? =24m.26s., eE =26m.30s., eSS =29m.32s.?, eSSS =33m.12s.?
Helwan iZ =13m.6s. and 13m.14s.
Alicante SKS =23m.19s., PS =25m.13s.
Almeria PP =17m.1s., PPP =19m.7s., SS =30m.51s.
Malaga ePPZ =17m.9s., iPPPZ =19m.5s., iSKSZ =23m.21s., isSZ =24m.47s., eSSZ = 30m.27s.
Long waves were also recorded at Honolulu.

July 12d. 12h. 29m. 38s. Epicentre 20°·5S. 174°·0W.

A = −·9323, B = −·0980, C = −·3481 ; δ = −4 ; h = +5 ;
D = −·105, E = +·995 ; G = +·346, H = +·036, K = −·937.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		7·0	18	e 1 47	+ 1	—	—	—	—	i 3·5
Auckland		19·0	209	4 2	−24	7 59	+ 4	4 50	PP	—
Arapuni		19·7	204	—	—	9 22	Q	—	—	11·4
New Plymouth		21·2	205	4 46	− 3	8 54	+13	—	—	10·8
Wellington		22·8	203	5 1	− 4	8 22	−49	6 0	PP	10·2
Wairiri		25·8	204	5 38	+ 4	9 54	− 8	10 37	SS	12·4
Brisbane	N.	30·9	250	e 6 24	+ 4	—	—	—	—	—
Riverview		33·6	239	i 6 44k	0	i 12 13	+ 7	i 8 8	PPP	e 14·7
Honolulu		44·5	22	—	—	e 14 42	− 9	—	—	—
Santa Barbara		75·1	45	i 11 48	+ 2	—	—	—	—	—
Branner		75·5	41	e 11 52	+ 4	—	—	—	—	e 36·1
Santa Clara	Z.	75·6	41	e 11 50	+ 2	—	—	—	—	—
Berkeley		75·7	41	e 11 48	− 1	e 21 30	0	—	—	i 33·0
La Jolla		75·8	47	i 11 52	+ 2	—	—	—	—	—
Pasadena		76·0	46	i 11 51	0	e 21 31	− 3	—	—	e 36·2
Ukiah		76·0	39	e 11 39	−12	e 21 28	− 6	e 29 37	SSS	—
Mount Wilson		76·1	46	i 11 52	+ 1	—	—	—	—	—
Palomar		76·4	47	i 11 52	− 1	e 21 38	0	—	—	—
Riverside	Z.	76·4	46	e 11 52	− 1	—	—	—	—	—
Fresno	N.	76·5	42	e 11 56	+ 2	e 21 33	− 6	—	—	—
Antarctica		77·3	159	i 11 59	+ 1	e 21 44	− 4	—	—	e 41·0
Haiwee		77·3	44	e 11 59	+ 1	—	—	—	—	—
Shasta Dam		77·5	38	e 11 56	− 3	—	—	—	—	—
Tinemaha		77·7	43	e 11 58	− 2	—	—	—	—	—
Boulder City		79·3	45	e 12 9	0	—	—	—	—	—

Continued on next page,

		Δ	Az.	P.	O − C.	S.	O − C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Overton		79·8	45	e 12 11	− 1	—	—	—	—	—
Pierce Ferry		79·9	46	i 12 10	− 2	e 21 59	−17	—	—	—
Tucson		80·0	50	e 12 12	− 1	e 22 23	+ 6	e 15 27	PP	e 34·9
Vladivostok		80·5	323	i 12 15	0	i 22 27	+ 5	i 15 15	PP	—
Victoria		82·2	32	13 22	+58	23 41	+62	—	—	41·4
Salt Lake City		83·9	43	e 13 7	+34	e 23 26	+30	—	—	e 36·4
Grand Coulee		84·0	34	e 12 36	+ 3	—	—	—	—	—
Sitka		84·2	20	e 12 30	− 4	e 22 52	− 7	—	—	e 34·2
Bozeman		87·1	39	e 12 51	+ 2	e 23 28	0	e 25 6	PPS	e 36·4
College		87·4	11	e 12 50	0	e 23 29	− 1	e 23 10	SKS	e 35·9
Rapid City		91·1	43	e 13 22	+14	e 23 50	−14	—	—	e 44·3
Saskatoon		93·0	35	—	—	24 24	+ 3	30 22?	SS	44·0
Florissant		97·8	52	e 13 40	+ 2	e 25 8	+ 6	24 12	SKS	—
St. Louis		97·9	52	i 13 39	0	i 25 6	+ 3	i 31 41	SS	—
La Paz		98·5	111	e 13 48	+ 6	25 22	+14	24 22	SKS	47·7
Chicago		100·8	49	—	—	e 25 27	0	e 24 10	SKS	e 45·0
Irkutsk		101·0	321	e 13 57	+ 4	24 33	[+ 1]	27 1	PS	—
Philadelphia		109·5	54	e 19 46	PP	e 25 1	[− 9]	e 25 43	SKKS	—
Fordham		110·6	53	e 19 11	PP	e 25 16	[+ 1]	e 26 55	S	—
Harvard		112·6	51	e 19 28	PP	e 29 5	PS	e 35 6	SS	e 59·0
Weston		112·7	51	e 14 44?	P	e 29 2	PS	e 19 27	PP	—
Seven Falls		113·6	46	19 34	PP	25 28	[+ 1]	29 4	PS	54·4
Bermuda		116·6	63	e 19 4	[+18]	e 25 40	[+ 2]	e 19 46	PP	e 56·6
Bombay	E.	117·5	281	—	—	e 25 40	[− 1]	—	—	—
Tashkent		123·1	307	19 2	[+ 3]	26 1	[+ 1]	i 20 39	PP	—
Stalinabad		123·5	303	i 19 3	[+ 3]	—	—	i 21 42	PP	—
Sverdlovsk		126·1	327	19 5	[+ 1]	26 13	[+ 4]	i 20 57	PP	—
Scoresby Sund		127·3	12	—	—	—	—	40 52	SSP	—
Ashkabad		131·7	303	22 48	PKS	—	—	—	—	—
Moscow		137·6	334	19 27	[+ 1]	—	—	21 58	PP	—
Baku		137·8	309	e 22 34	PKS	—	—	—	—	—
Helsinki		138·1	347	e 22 57	PKS	e 40 31	SS	—	—	—
Edinburgh		144·0	9	—	—	e 26 22	[−23]	—	—	—
Copenhagen		144·5	354	—	—	46 58	SSS	—	—	—
Warsaw	E.	146·2	343	e 19 46	[+ 5]	33 52	PS	22 39	PP	e 80·4
Potsdam	N.	147·7	353	e 19 49	[+ 5]	—	—	e 23 44	PKS	—
De Bilt		148·5	0	i 19 50a	[+ 5]	—	—	e 23 42	PKS	e 75·4
Kew		148·7	8	i 19 49k	[+ 4]	—	—	e 23 48?	PKS	e 80·4
Jena		149·3	352	e 19 55	[+ 9]	—	—	—	—	—
Prague		149·7	349	e 19 49	[+ 2]	e 36 22	PPS	e 22 40	PKS	e 76·4
Uccle		149·7	3	e 19 48	[+ 1]	e 25 33	?	e 42 38	SS	e 85·4
Cheb		150·0	352	e 20 22?	[+35]	—	—	e 32 22?	PS	—
Ksara		150·4	303	i 19 51	[+ 3]	—	—	23 34	PP	—
Bucharest		150·9	330	20 22?	[+33]	—	—	32 22?	PS	—
Istanbul		151·6	322	e 20 13	[+23]	27 1	[+ 5]	—	—	—
Paris		151·6	6	i 19 54	[+ 4]	—	—	—	—	e 83·4
Stuttgart		151·7	355	e 19 50	[0]	e 27 27	[+31]	e 43 1	SS	e 81·4
Strasbourg		151·9	357	i 19 53a	[+ 3]	e 30 35	{+ 6}	e 23 32	PP	e 80·4
Belgrade		152·9	337	e 21 0	?	—	—	e 24 24	PP	e 68·4
Basle		153·0	357	e 19 36	[−16]	e 25 52	?	—	—	—
Zürich		153·1	357	e 19 49k	[− 3]	—	—	e 23 51	PP	—
Triest		154·1	349	e 21 37	?	e 44 29	SS	e 23 26	PP	—
Clermont-Ferrand		154·7	5	e 19 58	[+ 4]	e 43 30	SS	e 23 57	PP	75·4
Helwan	Z.	155·3	297	i 19 57a	[+ 2]	—	—	i 20 25	pPKP	—
Florence		156·4	351	e 19 52	[− 4]	—	—	—	—	—
Rome		158·0	347	i 19 59k	[0]	e 30 39	{−23}	e 23 59	PP	e 74·9
Toledo	Z.	158·8	22	e 20 3	[+ 4]	28 6	[+62]	e 25 10	PP	51·3
Tortosa		159·2	11	20 7	[+ 7]	27 12	[+ 8]	30 55	SKKS	e 84·4
Granada		161·4	25	20 16	[+14]	34 38	PS	25 14	PP	—
Malaga		161·4	27	20 2a	[0]	e 27 8	[+ 2]	29 2	PPP	e 88·4
Almeria		162·1	23	20 7	[+ 4]	27 3	[− 3]	23 36	PKS	83·2

Additional readings :—
Apia eEN = 2m.6s.
Auckland i = 5m.4s.
New Plymouth i = 5m.20s. and 10m.2s.
Wellington iZ = 7m.27s., P_cP = 9m.14s., SS = 10m.1s.

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Brisbane iSN =7m.33s., iE =7m.41s.
Riverview eN =12m.5s.
Honolulu e =16m.50s.
Pasadena iZ =12m.3s. and 12m.16s.
Ukiah e =18m.28s.
Mount Wilson iZ =12m.2s.
Tinemaha i =12m.3s.
Pierce Ferry e =22m.16s.
Tucson i =12m.31s., ePPP =17m.46s., eS_cS =26m.0s., ePKKP =30m.33s.
Vladivostok ePPP =17m.18s., iS_cS =22m.56s.
Victoria SSS =33m.10s.
Bozeman e =13m.45s., eSS? =29m.43s.
Rapid City e =14m.31s., eS =24m.26s.
Florissant iSKKSE =24m.45s., iSN =25m.11s.
La Paz iPPS =27m.22s., SS =32m.46s.
Philadelphia eS =26m.49s., ePS =28m.20s.
Fordham ePS =28m.33s.
Seven Falls SKKS =26m.34s., PPS =30m.22s.
Bermuda eSKKS =26m.58s., eS =28m.16s., ePS =29m.28s., eSS =36m.10s., eSSS = 41m.21s.
Tashkent PPP =23m.36s., SKKS =27m.38s., PS =30m.10s., PPS =31m.48s., SS =37m.25s.
Sverdlovsk SKKS =27m.57s., PS =30m.57s.
Helsinki e =23m.32s.
Warsaw ePPPE =26m.39s., PKKSE =31m.38s., SSE =41m.35s., eE =43m.31s.
De Bilt iZ =20m.20s.
Kew ePKP_2 =20m.16s., eEZ =22m.4s.
Prague eSKS =23m.22s., e =47m.22s.
Uccle ePKP_2?N =20m.25s.
Paris iPKP =20m.10s., iPKP_2 =20m.36s. and 20m.44s., e =22m.11s.
Stuttgart e =20m.32s., eZ =22m.22s. and 25m.4s.
Strasbourg iPKP =20m.8s. and 20m.11s., ePKP_2 =20m.32s., e =26m.3s., ePPP ($\Delta > 180°$) =33m.45s., ePPS? =37m.22s., eSS =43m.41s.
Triest ePPS =38m.59s.
Helwan PKP_2Z =20m.51s., sPKP_2Z =21m.28s., iZ =23m.52s.
Rome ePKP_2Z =20m.25s., eZ =21m.1s., eSSE =43m.53s.?, e =45m.43s., eSSS?N = 49m.18s.
Toledo SSZ =45m.9s.
Tortosa SKSPE =34m.10s., SKKSE =35m.5s., SKSPE =38m.58s., SSE =43m.23s., SSS?E =50m.55s.
Granada PKP_2 =21m.32s., eSS =46m.44s., SSS =54m.38s.
Malaga iPKPZ =20m.26s., iPKP_2Z =20m.50s., ePPZ =22m.32s.
Almeria PKP_2 =20m.58s., PP =24m.41s., PPP =28m.31s., SKKS =31m.27s., PPS = 38m.3s., SS =44m.59s.
Long waves were also recorded at New Delhi, Ferndale, Aberdeen, Alicante, and Upsala.

July 12d. Readings also at 0h. (Bogota, Overton, Pierce Ferry, and Tucson), 1h. (near Mizusawa), 3h. (Upsala), 4h. (Bogota), 6h. (Shasta Dam, Philadelphia, and near Balboa Heights), 8h. (Brisbane, New Delhi (2), Obi-garm, Stalinabad (2), and Tashkent (2)), 9h. (Riverview), 13h. (near Ashkabad), 14h. (Huancayo, La Paz, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Shasta Dam, and Triest), 15h. (Antarctica), 21h. (Toledo), 22h. (near Balboa Heights).

July 13d. 6h. 20m. 56s. Epicentre 16°·2N. 100°·6W. (as on 1945, November 27d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Tucson		18·5	332	i 4 19	0	i 9 33	L	—	—	(i 9·6)
La Jolla	z.	22·4	322	e 5 4	+ 2	—	—	—	—	—
Palomar	z.	22·5	324	i 5 4	+ 2	—	—	—	—	—
Pierce Ferry		23·1	332	i 5 10	+ 2	e 11 49	L	—	—	(e 11·8)
Riverside	z.	23·3	323	e 5 11	+ 1	—	—	—	—	—
Overton		23·7	332	e 5 15	+ 1	e 11 42	L	—	—	(e 11·7)
Mount Wilson	z.	23·8	323	i 5 17	+ 2	—	—	—	—	—
Pasadena	z.	23·9	323	i 5 18	+ 2	—	—	—	—	e 13·9
St. Louis		24·1	21	i 5 14	− 4	e 9 27	− 7	—	—	—
Florissant		24·2	21	e 5 17	− 2	e 9 29	− 6	—	—	—
Haiwee	z.	25·2	326	e 5 29	0	—	—	—	—	—
Tinemaha	z.	26·0	326	i 5 38	+ 2	—	—	—	—	—
Salt Lake City		26·3	342	e 5 53	+14	e 11 16	+65	—	—	e 14·5
Rapid City		27·9	356	e 6 14	+20	e 12 28	Q	—	—	e 14·9
Chicago		27·9	20	—	—	e 10 47	+10	—	—	e 17·4

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman	30·7	346	—	—	e 12 46	SS	—	—	e 16·6
Shasta Dam	30·9	327	e 6 25	+ 5	—	—	—	—	—
Saskatoon	36·2	354	14 52	?	18 50	?	—	—	21·1

Additional readings :—
Tucson i = 4m.27s., 4m.34s., and 4m.56s.
St. Louis iZ = 5m.23s.
Rapid City e = 13m.8s.
Salt Lake City e = 12m.8s. and 13m.52s.
Long waves were also recorded at Berkeley, Butte, Sitka, College, Weston, Strasbourg, and Kew.

July 13d. 12h. 57m. 34s. Epicentre 19°·0S. 176°·0W. Depth of focus 0·010.

A = −·9439, B = −·0660, C = −·3236 ; δ = +2 ; h = +5 ;
D = −·070, E = +·998 ; G = +·323, H = +·023, K = −·946.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		6·6	39	e 1 35	− 1	i 2 42	− 8	—	—	—
Auckland		19·5	202	4 18	− 4	7 42	−10	8 51	SS	—
Arapuni		20·4	199	—	—	8 20	+11	—	—	—
New Plymouth		21·8	200	4 48	+ 3	8 35	0	—	—	—
Wellington		23·6	198	5 1	− 2	8 53	−14	12 7	S_cP	—
Wairiri		26·5	201	5 27	− 3	9 38	−17	—	—	11·9
Brisbane		29·6	247	i 5 56	− 2	i 10 42	− 3	i 11 37	SS	—
Riverview		32·7	236	i 6 25k	0	i 11 35	+ 2	i 13 55	SS	e 14·8
Santa Barbara	Z.	75·4	46	i 11 36	+ 1	—	—	i 12 8	pP	—
Branner	E.	75·6	41	e 11 36	0	—	—	—	—	—
Berkeley		75·8	41	i 11 37	0	i 21 12	+ 2	i 12 8	pP	—
Lick		75·9	41	e 11 40	+ 2	—	—	e 12 10	pP	—
La Jolla		76·2	48	e 11 39	0	—	—	i 12 11	pP	—
Pasadena		76·3	46	i 11 38	− 2	e 21 17	+ 2	i 12 10	pP	—
Mount Wilson	Z.	76·4	46	i 11 39	− 1	—	—	i 12 10	pP	—
Palomar		76·7	47	i 11 42	0	i 21 37	+17	i 12 12	pP	—
Fresno	N.	76·7	43	i 11 45	+ 3	e 21 24	+ 4	i 12 15	pP	—
Riverside	Z.	76·8	46	i 11 42	− 1	—	—	i 12 13	pP	—
Shasta Dam		77·5	39	e 11 46	− 1	e 21 31	+ 3	i 12 18	pP	—
Haiwee	Z.	77·6	44	i 11 47	0	—	—	i 12 18	pP	—
Tinemaha		77·9	44	i 11 48	− 1	—	—	i 12 20	pP	—
Vladivostok		78·2	323	e 11 54	+ 4	i 21 48	+12	—	—	—
Antarctica		79·3	158	i 11 50	− 6	i 21 38	− 9	i 12 21	pP	—
Boulder City		79·6	46	i 11 57	− 1	e 21 50	− 1	e 12 29	pP	—
Overton		80·1	46	i 12 2	+ 1	e 21 57	+ 1	i 12 32	pP	—
Pierce Ferry		80·2	47	i 12 1	0	e 21 58	+ 1	i 12 33	pP	—
Tucson		80·5	51	i 12 3	0	e 21 59	− 1	i 12 34	pP	e 39·4
Victoria		81·9	32	e 12 50	pP	—	—	(23 26?)	PS	23·4
Sitka		83·4	21	—	—	e 22 29	0	e 22 22	SKS	—
Grand Coulee		83·9	34	e 12 20	0	—	—	e 12 53	pP	—
College		86·4	12	—	—	e 22 58	− 1	23 47	sS	—
St. Louis		98·4	52	e 13 26	− 2	i 24 48	+ 4	e 13 56	pP	—
La Paz	Z.	100·8	112	18 6	PP	—	—	—	—	—
Philadelphia		110·1	53	e 24 26	SKS	(e 24 26)	[−23]	e 28 23	PKKP	—
Weston		113·3	51	—	—	e 26 56	?	e 28 45	PS	—
Tashkent		120·7	308	18 42	[+ 1]	25 33	[+ 4]	e 20 15	PP	—
Stalinabad		121·1	304	18 43	[+ 2]	—	—	e 20 23	PP	—
Sverdlovsk		123·8	327	i 18 47	[0]	25 43	[+ 4]	i 20 34	PP	—
Scoresby Sund		126·2	10	22 14	PKS	28 50	?	37 44	SS	—
Ashkabad		129·4	304	19 0	[+ 3]	—	—	—	—	—
Moscow		135·4	334	19 13	[+ 4]	i 23 2	PS	19 53	pPKP	—
Warsaw		144·3	342	e 19 30	[+ 5]	26 39	[+17]	e 21 39	PP	—
Kew		147·4	6	i 19 35	[+ 5]	—	—	i 20 13?	PKP_2	—
Jena	N.	147·6	352	e 19 35	[+ 5]	—	—	—	—	—
Ksara		148·0	304	e 19 34	[+ 3]	—	—	20 13	pPKP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Uccle	N.	148·3	2	e 19 37	[+ 5]	—	—	—	—	—
Istanbul		149·3	321	e 19 53ʔ	[+20]	—	—	e 21 45	PP	—
Stuttgart	Z.	150·0	353	e 19 35	[+ 1]	—	—	—	—	—
Paris		150·2	3	e 19 36	[+ 2]	—	—	i 20 16	pPKP	e 79·4
Strasbourg		150·3	356	e 19 36	[+ 2]	(e 48 26ʔ)	SSS	i 20 19	pPKP	e 48·4
Basle		151·4	355	e 19 33	[− 3]	—	—	—	—	—
Zürich		151·5	355	e 19 44k	[+ 8]	—	—	—	—	—
Helwan		152·9	299	e 19 44	[+ 6]	e 31 16	ʔ	e 20 50	PKP_1	—
Clermont-Ferrand		153·3	2	e 19 41	[+ 2]	42 26ʔ	SS	—	—	—
Rome		156·1	345	e 19 42	[− 1]	e 43 36	SSP	e 20 12	PKP_2	—
Toledo	Z.	158·1	17	e 19 47	[+ 2]	—	—	i 24 5	PP	—
Alicante		160·3	10	e 20 34	PKP_2	27 6	[+25]	24 56	PP	e 73·7
Granada		160·7	19	20 14k	[+26]	44 25	SS	21 8	PKP_2	—
Malaga		160·8	21	i 20 34k	PKP_2	e 27 44	[+62]	e 25 6	PP	—
Almeria		161·3	16	i 20 32	PKP_2	31 50	SKKS	25 10	PP	—

Additional readings :—
Auckland i =12m.21s., S_cS =15m.2s.
Wellington P_cS =12m.47s., S_cS =15m.55s.
Riverview iZ =7m.41s., iE =8m.8s., iN =14m.15s., Q?N =14m.32s.
Branner eN =11m.39s.
Pasadena eEN =21m.50s.
Tinemaha iZ =12m.39s
Antarctica ePP =14m.57s., ePPP =16m.17s.
Boulder City iSKS =22m.9s., epS =23m.1s.
Tucson ePKP,PKP =38m.53s.
Sitka esS =23m.18s.
St. Louis esSN =25m.43s., eN =28m.39s.
Philadelphia e =27m.7s., ePPP =31m.35s.
Tashkent epPP =21m.0s.?, SKKS =26m.23s., PS =30m.2s.
Sverdlovsk epPP =21m.18s.?, iPKS =22m.16s., SKKS =26m.41s., SP =30m.31s., SS =37m.23s.
Moscow PP =21m.50s., pPP =22m.32s.
Warsaw eE =32m.44s., 37m.26s., and 42m.19s.
Jena eE =20m.14s.
Ksara sPKP =20m.32s., PP =23m.8s.
Stuttgart eZ =19m.41s. and 20m.18s.
Paris i =19m.42s., ePPP =26m.56s.
Strasbourg iPKP =19m.42s., esPKP =20m.32s., esPP =24m.16s., ePPP =26m.42s., e =27m.48s., 31m.35s., 33m.37s., 39m.36s., and 42m.26s., esSS? =43m.36s.
Rome ePP?E =23m.41s., ePPP?E =27m.37s., e =33m.9s.
Alicante PPP =28m.42s., SS =44m.42s.
Granada iPP =24m.20s., sSKKS =31m.41s., e =49m.38s.
Malaga $iPKP_2$ =21m.6s., eZ =24m.16s.
Almeria $iPKP_2$ =21m.24s., PPP =28m.57s.
Long waves were also recorded at Honolulu and De Bilt.

July 13d. 14h. 51m. 21s. Epicentre 36°·2N. 58°·0E. (as on 1939, November 8d.).

Rough.

A = +·4286, B = +·6860, C = +·5880 ; δ = +4 ; h = 0 ;
D = +·848, E = −·530 ; G = +·312, H = +·499, K = −·809.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Baku		7·6	306	e 1 46	− 9	e 3 10	−13	—
Samarkand		7·9	61	e 2 11	+12	—	—	—
Stalinabad		8·9	72	1 2 15	+ 3	—	—	—
Tashkent		10·2	56	e 2 22	− 9	e 4 24	− 3	—
Erevan		11·3	295	e 2 55	+ 9	—	—	—
Andijan		12·1	64	e 3 13	+16	—	—	—
Leninakan		12·1	297	e 3 3	+ 6	—	—	—
Frunse		14·4	57	e 3 35	+ 8	—	—	—
Almata		16·2	58	e 3 43	− 7	—	—	—
Ksara		18·3	267	e 4 19	+ 2	e 8 3	+24	—
Sverdlovsk		20·7	5	4 37	− 7	—	—	—
Moscow		24·0	332	e 5 6	−11	e 9 17	−15	—
Warsaw	E.	30·6	313	—	—	e 11 43	+23	e 21·6
Stuttgart	Z.	37·5	305	e 7 9	− 8	—	—	—

Long waves were also recorded at New Delhi, De Bilt, and Strasbourg.

July 13d. Readings also at 0h. (Santa Lucia), 2h. (Bermuda), 5h. (Fresno, Berkeley, near Lick and Branner), 12h. (Mount Wilson, Pasadena, Palomar, Tinemaha, Tucson, and Grand Coulee), 13h. (near Andijan), 15h. (Grozny), 16h. (near Alicante), 20h. (Frunse, Obi-garm, Samarkand, Stalinabad, Almata, and near Andijan), 23h. (Ksara and near Bogota).

July 14d. 7h. 3m. 32s. Epicentre 38°·0N. 37°·0E. (rough).

A = +·6309, B = +·4754, C = +·6131 ; δ = −7 ; h = −1 ;
D = +·602, E = −·799 ; G = +·490, H = +·369, K = −·790.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Ksara	4·3	192	e 1 23	P_g	e 2 34	S_g
Sotchi	5·9	19	e 2 29	+58	—	—
Leninakan	6·0	60	e 1 33	+ 1	—	—
Erevan	6·2	68	e 1 38?	+ 3	e 2 52	+ 4
Istanbul	6·8	299	e 3 55	?	i 4 58	?
Grozny	8·5	49	e 2 10	+ 3	e 4 10	S*
Stuttgart	22·8	307	e 5 16	+11	e 9 36	+25
Sverdlovsk	24·5	32	e 5 18	− 4	e 9 33	− 7

Long waves were also recorded at Warsaw and Strasbourg.

July 14d. Readings also at 0h. (Samarkand, Stalinabad, Obi-garm (2), and near Andijan (2)), 5h. (near Obi-garm, Berkeley, near Branner, Lick (2), and near Shasta Dam), 6h. (Lick), 7h. (Bogota, Huancayo, Tinemaha, Tucson, Shasta Dam, La Paz, and near Lick), 9h. (Obi-garm and near Stalinabad), 10h. (Tucson), 12h. (Kew), 13h. (Stuttgart), 14h. (Stuttgart and near Zagreb), 18h. (Bozeman, Tucson, and near Branner), 20h. (near Mizusawa).

July 15d. 14h. Eastern Europe.

Stuttgart eP?Z =24m.50s.?, eZ =32m.36s., eQ? =37m.
Istanbul eP =29m.4s., e =30m.43s.
Ksara e =29m.38s. and 30m.53s.
Bucharest ePN =30m.12s., eE =30m.16s., iP_gN =30m.28s., iEN =30m.42s., iSEN = 30m.44s., iS*N =30m.50s., iS_gN =30m.58s.
Belgrade iP =30m.34s.a, iP_g =30m.57s., i =31m.2s., iS =31m.46s., i =32m.17s.
Budapest ePE =31m.30s., eN =33m.28s., SE =33m.35s., eL =34m.5s.
Zagreb e =32m.9s., eNE =33m.2s., e =33m.34s., eZ =33m.45s.
Kalossa eE =32m.31s., eN =32m.36s., eEN =33m.16s., eN =33m.22s., eE =33m.28s., eLEN =34m.
Warsaw eE =34m.17s., eN =35m.5s., eLN =35m.30s.
Rome e =35m.14s. and 36m.8s.
Upsala eE =36m. and 39m.40s., eN =42m.
De Bilt e =38m.

July 15d. Readings also at 3h. (Bogota), 4h. (Tucson), 9h. (Stuttgart), 13h. (Toledo), 14h. (Tinemaha, Haiwee, Mount Wilson, Pasadena, Riverside, Tucson, Shasta Dam, Obi-garm, Almata, and Stalinabad), 19h. (Santa Lucia and near Stalinabad).

July 16d. 11h. 20m. 4s. Epicentre 21°·0S., 67°·5W. Depth of focus 0·025.

A = +·3576, B = −·8633, C = −·3563 ; δ = +11 ; h = +4 ;
D = −·924, E = −·383 : G = −·136, H = +·329, K = −·934.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		2·0	217	e 0 25	−13	i 0 43	−25	—	—	e 1·0
La Paz	z.	4·5	351	i 1 6a	− 3	i 1 38	−24	—	—	1·8
Huancayo		11·6	319	e 2 42	+ 1	e 4 43	− 4	e 5 35	SSS	e 6·7
St. Louis	z.	63·3	340	i 10 7	− 4	—	—	e 10 18	?	—
Tucson		67·2	322	i 10 34	− 1	—	—	—	—	—
Palomar	z.	71·7	318	i 11 3	0	—	—	i 11 25	pP	—
Pierce Ferry		71·8	322	i 11 4	+ 1	—	—	—	—	—
Boulder City		72·2	321	i 11 6	0	—	—	i 11 33	pP	—
Overton		72·4	322	i 11 8	+ 1	—	—	i 11 36	pP	—
Riverside	z.	72·4	318	i 11 7k	0	—	—	i 11 34	pP	—
Pasadena	z.	73·0	318	i 11 11	+ 1	—	—	e 11 37	pP	—
Haiwee	z.	74·2	320	e 11 18	+ 1	—	—	—	—	—
Tinemaha	z.	75·0	320	i 11 23	+ 1	—	—	e 11 50	pP	—
Toledo		84·6	44	e 12 20	+ 7	—	—	—	—	—

July 16d. 15h. 27m. 0s. Epicentre 21°·0S. 67°·5W. Depth of focus 0·025. (as at 11h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		2·0	217	e 0 45	+ 7	e 1 17	+ 9	—	—	e 1·5
La Paz		4·5	351	i 1 10a	+ 1	i 2 0	− 2	i 1 18	pP	2·5
Huancayo		11·6	319	e 2 41	0	e 5 8	SS	—	—	e 5·5
La Plata		16·2	151	3 38	0	6 36	+ 4	—	—	8·5
Antarctica		47·2	181	i 8 19	+ 4	i 15 1	+ 9	e 9 10	pP	—
Florissant		63·2	340	e 11 53	?	i 18 19	− 5	—	—	—
St. Louis	z.	63·3	340	e 10 4	− 7	—	—	e 10 54	pP	—
Tucson		67·2	322	e 10 35	0	—	—	e 11 23	pP	—
Palomar	z.	71·7	318	i 11 52	pP	—	—	—	—	—
Pierce Ferry		71·8	322	i 11 4	+ 1	—	—	e 11 53	pP	—
Boulder City		72·2	321	i 11 6	0	—	—	i 11 54	pP	—
Overton		72·4	322	i 11 8	+ 1	—	—	i 11 56	pP	—
Riverside	z.	72·4	318	i 11 8k	+ 1	—	—	i 11 57	pP	—
Pasadena	z.	73·0	318	i 11 11	+ 1	—	—	i 11 59	pP	—
Haiwee	z.	74·2	320	e 11 17	0	—	—	e 12 7	pP	—
Tinemaha	z.	75·0	320	e 11 22	0	—	—	i 12 12	pP	—
Toledo	z.	84·6	44	e 12 12	− 1	—	—	—	—	—

Additional readings :—
La Paz iZ = 1m.31s., iN = 2m.6s.
Huancayo i = 2m.51s., e = 4m.57s.
La Plata N = 4m.30s., SZ = 6m.48s., SEN = 6m.54s., N = 7m.48s.
Antarctica i = 10m.43s.

July 16d. 19h. 20m. 36s. Epicentre 33°·0N. 135°·6E. (as on 1947, January 24d.).

Intensity VI at Katada (Shiga Pref.) and Tambaichi (Nara Pref.); V at Siomisaki and Owase; IV at Tokusima, Kôti, Sumoto, Gihu, Tottori, Takamatsu, and Ibukiyama; II-III at Tu, Kyoto, Nagoya, and Tsuruga. Macroseismic radius 200-300km.
Epicentre 33°·4N. 135°·7E. Very shallow.

The Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1947, Tokyo 1950, pp. 28-29, macroseismic chart p. 28.

$A = -·6004$, $B = +·5879$, $C = +·5421$; $\delta = -2$; $h = +1$;
$D = +·700$, $E = +·714$; $G = -·387$, $H = +·379$, $K = -·840$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Siomisaki	0·5	17	0 0k	−14	0 2	−21	—	—	—
Owase	1·2	25	0 18k	− 6	0 28	−13	—	—	—
Tokusima	1·4	321	0 24a	− 3	0 43	− 3	—	—	—
Sumoto	1·5	336	0 26k	− 2	0 40	− 9	—	—	—
Osaka	1·6	358	0 30	0	0 46	− 5	—	—	—
Kobe	1·7	348	0 27k	− 4	0 46	− 8	—	—	—
Kôti	1·8	288	0 34a	+ 2	0 53	− 3	—	—	—
Kyoto	2·0	3	0 28	− 7	0 44	−18	—	—	—
Hikone	2·3	13	0 38a	− 2	1 1	− 8	—	—	—
Nagoya	2·4	28	0 38	− 3	1 8	− 4	—	—	—
Gihu	2·6	22	0 40	− 4	1 10	− 7	—	—	—
Toyooka	2·6	346	0 43a	− 1	1 16	− 1	—	—	—
Omaesaki	2·7	53	0 44	− 1	1 6	−13	—	—	—
Hirosima	3·0	297	0 46a	− 4	1 24	− 3	—	—	—
Shizuoka	3·0	49	0 48	− 2	1 34	+ 7	—	—	—
Hamada	3·5	305	0 56	− 1	1 51	S*	—	—	—
Misima	3·5	52	0 49	− 8	1 40	0	—	—	—
Hunatu	3·6	46	0 54k	− 4	1 51	S*	—	—	—
Osima	3·6	60	1 56	+58	—	—	—	—	—
Toyama	3·9	20	1 10	P*	2 7	S_g	—	—	—
Mera	4·0	61	1 10	P*	—	—	—	—	—
Izuka	4·1	280	0 52	−13	—	—	—	—	—
Kumamoto	4·1	269	1 19a	P_g	2 13	S_g	—	—	—
Yokohama	4·1	54	1 13	P*	—	—	—	—	—
Nagano	4·2	30	1 13k	P*	1 59	+ 2	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hukuoka		4·4	279	1 51 a	+41	2 57	+55	—	—	—
Kumagaya		4·4	44	0 56	−14	1 51	−11	—	—	—
Maebasi		4·4	39	1 16	P*	2 12	+10	—	—	—
Tokyo		4·4	51	1 20	P*	2 10	+ 8	—	—	—
Kagosima		4·5	252	1 10	− 1	—	—	—	—	—
Wazima		4·5	14	1 3	− 8	—	—	—	—	—
Tukubasan		4·9	48	1 15	− 2	2 18	+ 3	—	—	—
Kakioka		5·0	48	1 20	+ 2	2 29	S*	—	—	—
Utunomiya		5·0	44	1 18	0	—	—	—	—	—
Ituhara		5·4	285	1 55	P_g	3 16	S_g	—	—	—
Aikawa		5·5	23	1 39	P*	2 48	S*	—	—	—
Hukusima		6·2	39	1 47	P*	—	—	—	—	—
Sendai		6·8	38	1 44	0	3 25	S*	—	—	—
Mizusawa		7·6	35	e 1 59	+ 4	3 41	S*	e 2 7	P*	—
Mori		9·9	22	2 29	+ 4	4 31	SS	—	—	—
Vladivostok		10·5	345	i 2 38	PP	e 5 13	+63	—	—	—
Sapporo		11·0	23	2 46	+ 4	—	—	—	—	—
Irkutsk		29·7	319	6 7	− 3	11 15	+ 9	—	—	—
Almata		46·4	301	i 8 30	0	—	—	—	—	—
Frunse		48·2	302	e 8 44	0	—	—	—	—	—
New Delhi	N.	49·8	281	—	—	e 19 47	SS	—	—	e 28·5
Andijan		50·2	297	e 9 7	+ 7	—	—	—	—	—
Tashkent		52·3	299	i 9 17	+ 2	e 16 32	− 8	—	—	—
Obi-garm		52·7	296	i 9 19	+ 1	—	—	—	—	—
Stalinabad		53·4	296	i 9 25	+ 1	—	—	—	—	—
Sverdlovsk		55·1	219	1 9 34	− 2	i 17 14	− 4	—	—	—
Bombay	E.	57·4	272	e 13 24?	PPP	—	—	—	—	—
Ashkabad		61·4	298	e 10 22	+ 2	—	—	—	—	—
Sitka		62·4	38	e 10 28	+ 1	e 18 52	− 1	—	—	e 25·5
Baku		66·5	304	e 10 56	+ 2	20 0	PS	—	—	—
Moscow		67·6	322	i 10 57	− 4	19 51	− 6	—	—	—
Grozny		68·2	308	e 11 2	− 2	—	—	—	—	—
Helsinki		71·3	331	—	—	e 20 43	+ 2	e 29 5	SSS	e 39·4
Grand Coulee		75·5	42	e 11 51	+ 3	—	—	—	—	—
Scoresby Sund		75·5	352	11 48	0	21 26	− 2	22 4	PS	39·4
Shasta Dam		77·3	49	e 11 57	− 1	—	—	—	—	—
Warsaw	E.	77·7	324	e 12 4	+ 4	e 21 42	−10	e 22 36	PS	e 41·4
Copenhagen		79·2	331	i 12 6	− 2	i 22 6	− 2	15 4	PP	41·4
Ksara		79·5	303	e 12 10	0	23 17	PPS	15 15	PP	—
Istanbul		80·0	312	e 11 32	−41	—	—	—	—	e 53·4
Potsdam		81·3	329	e 12 24	+ 4	—	—	—	—	e 45·4
Budapest		81·7	322	12 20	− 2	—	—	—	—	45·4
Tinemaha	Z.	82·0	51	i 12 24	+ 1	—	—	—	—	—
Prague		82·3	326	—	—	e 21 54	−46	—	—	e 41·4
Santa Barbara	Z.	82·6	54	i 12 30	+ 4	—	—	—	—	—
Jena	N.	83·0	327	e 12 27	− 1	—	—	e 12 45	P_cP	—
Cheb		83·2	327	—	—	e 22 24?	−25	—	—	e 45·4
Pasadena		83·8	53	i 12 33	+ 1	—	—	—	—	—
Riverside	Z.	84·4	53	e 12 34	− 2	—	—	—	—	—
Zagreb		84·4	322	e 12 34	− 2	—	—	e 19 21	?	—
De Bilt		84·8	332	i 12 37 a	0	e 23 4	− 1	e 24 4	PS	e 44·4
Overton		84·8	49	e 12 39	+ 2	—	—	—	—	—
Boulder City		84·9	50	e 12 37	− 1	—	—	—	—	—
Helwan		84·9	302	i 12 37 k	− 1	22 54	−12	e 24 12	PS	—
Palomar	Z.	85·1	53	i 12 40	+ 1	—	—	—	—	—
Pierce Ferry		85·3	49	e 12 39	− 1	e 23 4	[+ 1]	—	—	—
Stuttgart		85·6	327	i 12 41 a	0	e 23 4	[− 1]	e 24 9	PS	e 47·4
Triest		85·7	323	e 12 35	− 7	i 23 2	[− 3]	e 16 8	PP	e 46·4
Uccle		86·1	332	e 12 42 a	− 2	e 23 9	[+ 1]	—	—	e 45·4
Strasbourg		86·4	328	i 12 46 a	+ 1	e 23 6	[− 4]	e 24 22	PS	e 44·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zürich		86·9	327	e 12 46	− 2	e 23 16	[+ 3]	—	—	—
Basle		87·2	327	e 12 49	0	e 23 19	[+ 4]	—	—	—
Kew		87·4	334	e 12 51	+ 1	—	—	—	—	e 46·4
Florence		88·3	323	e 12 39	−16	—	—	—	—	—
Paris		88·4	331	e 12 54	− 1	—	—	—	—	e 49·4
Rome		89·0	322	e 12 49	− 9	e 23 21	[− 6]	e 24 47	PS	—
Tucson		89·8	51	e 13 1	− 1	—	—	e 13 49	?	—
Clermont-Ferrand		90·6	329	e 13 5	0	—	—	e 16 42	PP	—
Florissant		96·8	35	e 13 38	+ 4	e 24 52	− 2	e 17 27	PP	—
St. Louis		97·0	35	e 17 33	PP	e 24 33	{ 0}	—	—	—
Alicante		98·1	326	20 7	PPP	25 13	+ 9	—	—	e 56·2
Toledo	z.	98·4	330	e 13 40	− 1	—	—	—	—	—
Almeria		100·2	327	13 51	+ 2	24 16	[−12]	14 7	pP	52·8
Granada		100·5	328	17 50	PP	32 31	SS	e 28 9	PPS	56·4
Malaga	z.	101·2	328	i 17 59s	PP	e 28 24	PPS	—	—	51·5
Huancayo		144·8	61	e 19 45	[+ 6]	—	—	—	—	—
La Paz	N.	153·0	57	20 5	[+13]	—	—	—	—	87·4

Additional readings :—
Scoresby Sund 16m.30s.
Warsaw eE =14m.8s. and 22m.3s., ePPSN =22m.33s., eSS?N =25m.51s.
Stuttgart ePcP?Z =12m.46s., ePP =15m.52s., eSSS =32m.54s.
Strasbourg e =15m.4s., ePP =16m.5s., iS =23m.30s., eSS =29m.0s.
Rome ePP =16m.25s., eSS =29m.33s.
Alicante S =28m.47s., PS =29m.57s.
Almeria PP =17m.52s., PPP =19m.59s., SKKS =24m.45s., S =25m.13s., SS =32m.19s., SSS =36m.4s.
Granada PPP =19m.53s.
Long waves were also recorded at Weston, Upsala, Bergen, Aberdeen, Tortosa, and Barcelona.

July 16d. Readings also at 1h. (near Erevan), 4h. (Stuttgart, Santa Lucia, and La Plata), 6h. (Rome and near Florence), 7h. (Toledo and near Pierce Ferry), 14h. (Reykjavik), 15h. (Stuttgart), 16h. (Vladivostok, St. Louis, Tucson, Riverside, Pasadena, near La Paz, and near Mizusawa), 17h. (near La Paz), 18h. (Shasta Dam), 20h. (near Mizusawa), 21h. (Scoresby Sund, near Reykjavik, Ashkabad, Sverdlovsk, Frunse, near Obi-garm, Stalinabad, Andijan, Tashkent, and Samarkand), 22h. (near Antarctica), 23h. (Istanbul).

July 17d. 4h. 32m. 20s. Epicentre 4°·8S. 147°·9E.

A = −·8441, B = +·5296, C = −·0831 ; δ = −11 ; h = +7 ;
D = +·531, E = +·847 ; G = +·070, H = −·044, K = −·997.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	23·1	168	i 5 6	− 2	i 9 13	− 3	i 9 59	SS	—
Riverview		29·1	175	i 6 5s	+ 1	10 56	0	—	—	e 13·8
Perth		40·4	223	—	—	i 14 5	+15	i 16 52	SS	i 18·2
Wellington		43·6	150	6 57	−71	14 9	−29	—	—	20·7
Vladivostok		49·9	345	e 8 54	− 3	i 16 8	+ 1	—	—	—
Irkutsk		67·8	333	11 1	− 1	20 1	+ 1	—	—	—
Bombay	E.	77·5	291	—	—	e 20 40?	−70	—	—	—
Almata		79·6	316	e 12 12	+ 2	—	—	—	—	—
Obi-garm		83·8	310	i 12 33	+ 1	—	—	—	—	—
Stalinabad		84·5	310	i 12 37	+ 1	i 22 57	− 5	—	—	—
Tashkent		84·6	312	e 12 35	− 1	e 23 5	+ 2	e 15 44?	PP	—
Sitka		87·0	32	e 12 50	+ 2	e 23 25	− 2	e 23 8	SKS	e 34·8
Sverdlovsk		92·5	327	e 13 16	+ 2	23 40	[− 7]	16 52	PP	—
Victoria		92·7	42	—	—	e 25 28	PS	—	—	39·7
Berkeley		92·8	52	—	—	i 24 22	+ 3	e 30 29	SS	e 46·4
Shasta Dam		92·9	50	e 13 12	− 4	—	—	—	—	—
Pasadena		95·9	56	i 13 33	+ 3	—	—	—	—	e 77·7
Tinemaha	z.	95·9	53	e 13 28	− 2	—	—	—	—	—
Riverside	z.	96·6	56	e 13 34	+ 1	—	—	—	—	—
Palomar	z.	97·0	57	e 13 29	− 6	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		102·1	58	e 17 51	PP	—	—	—	—	e 46·9
Ksara		110·9	304	e 14 42	P	28 46	PS	e 19 18	PP	—
Istanbul		114·7	313	e 20 13	PP	—	—	—	—	—
Helwan	z.	115·3	301	e 19 49	PP	—	—	—	—	—
Warsaw		115·7	327	—	—	e 30 58	PPS	—	—	e 54·7
Prague		120·4	328	—	—	e 23 58	?	—	—	e 50·7
De Bilt		123·7	333	e 20 52	PP	e 37 40?	SS	e 42 40?	SSS	e 57·7
Stuttgart		123·9	329	e 19 1?	[+ 1]	e 33 16	PPS	—	—	e 58·7
Ottawa		124·6	35	e 19 6	[+ 4]	e 30 40?	PS	(37 40?)	SS	37·7
Strasbourg		124·7	330	e 23 22	PPP	e 25 47	[−18]	e 37 53	SS	e 61·7
Uccle		124·9	333	—	—	e 37 40?	SS	e 42 40?	SSS	e 57·7
Rome		125·8	320	e 21 21	PP	e 32 9	PPS	—	—	—
Philadelphia		127·8	41	—	—	e 26 23	[+ 9]	e 32 58	PPS	e 50·8
Weston		128·9	36	—	—	e 24 26	PPP	e 38 52	SS	—
Clermont-Ferrand		129·0	329	e 21 52	PP	—	—	—	—	63·7
Alicante		135·9	324	23 15	PKS	31 45	PS	—	—	e 63·3
Toledo	z.	136·9	328	19 22	[− 3]	—	—	—	—	—
Almeria		138·1	324	19 30	[+ 3]	23 4	PKS	22 29	PP	68·2
Granada		138·5	325	20 31	[+63]	e 31 10	?	22 54	PP	70·3
La Paz		138·6	121	e 18 46	[−42]	—	—	e 21 40	PP	67·4
Bermuda		139·0	44	—	—	e 34 52	PPS	—	—	e 67·1
Malaga		139·3	325	i 19 30	[+ 1]	i 30 1	{+44}	23 10	PP	33·8

Additional readings :—
Riverview eSN =11m.0s., iE =13m.40s.
Wellington iZ =11m.45s.
Tashkent ePS =23m.57s.
Sitka e =13m.0s., ePS =24m.12s.
Sverdlovsk PS =25m.23s.
Berkeley eN =27m.33s. and 30m.7s., eQE =42m.16s.
Ksara PKKP =29m.28s.
Helwan eZ =20m.19s. and 20m.49s.
Prague e =33m.10s.
Strasbourg e =26m.40s. and 29m.23s., SKKS(Δ >180°) =36m.52s., eSSS =42m.43s., e =51m.46s.
Philadelphia eSS =38m.13s.
Almeria PPP =25m.38s., SS =40m.49s., SSS =45m.58s.
Granada SS =41m.10s.
Malaga PPPZ =24m.48s.
Long waves were also recorded at Arapuni, Honolulu, and other American and European stations.

July 17d. Readings also at 6h. (Haiwee, Mount Wilson, Pasadena, La Jolla, Palomar, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Shasta Dam, Berkeley, Grand Coulee, and Brisbane), 7h. (Ksara, Obi-garm, Samarkand, Stalinabad, Paris, Stuttgart, Toledo, and near Istanbul), 8h. (Copenhagen), 9h. (Ksara and near Leninakan), 10h. (Palomar, Pasadena, Riverside, Tinemaha, Tucson, Boulder City, Shasta Dam, near Lick, Kew, De Bilt, Uccle, Paris, Strasbourg, Stuttgart, Helsinki, Warsaw, and Brisbane), 12h. (Stuttgart), 13h. (near Stalinabad), 14h. (Pasadena, Tinemaha, Tucson, and Riverview), 16h. (Balboa Heights and Bogota), 18h. (Toledo), 21h. (near Ottawa), 22h. (near Bogota).

July 18d. Readings at 0h. (Berkeley), 1h. (near Stalinabad), 2h. (Shasta Dam and Tucson), 5h. (Shasta Dam, Tucson, and Tinemaha), 6h. (near Santa Lucia), 8h. (near Lisbon), 9h. (Brisbane and Riverview), 12h. (Copenhagen), 14h. (near Mizusawa), 18h. (Shasta Dam, Tucson, Tinemaha, Ksara, and Antarctica).

July 19d. Readings at 2h. (Huancayo, Bogota, and La Paz), 8h. (near Malaga), 10h. (near Mizusawa), 11h. (Tinemaha, Pasadena, Riverside, Palomar, Tucson, Shasta Dam, Overton, and Pierce Ferry), 12h. (Paris, Riverview, Brisbane, Leninakan, and near Grozny), 13h. (Tinemaha, Pasadena, Riverside, and Palomar), 14h. (Tucson, Riverview, and Nanking), 16h. (near Mizusawa), 18h. (near Branner), 20h. (Sverdlovsk), 21h. (near Mizusawa), 22h. (Florence, Toledo, and Stuttgart).

July 20d. 8h. 29m. 51s. Epicentre 2°·5S. 142°·5E. (as given by U.S.S.R.).

$A = -·7926$, $B = +·6082$, $C = -·0433$; $\delta = 0$; $h = +7$;
$D = +·609$, $E = +·793$; $G = +·034$, $H = -·026$, $K = -·999$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	26·8	159	e 5 40	− 4	e 10 9	−10	—	—	i 10·7
Riverview		32·2	167	e 7 58	PPP	e 14 0	SSS	i 14 21	Q	e 17·5
Vladivostok		46·4	350	e 8 30	0	i 15 22	+ 4	—	—	—
Almata		74·2	317	e 11 43	+ 3	—	—	—	—	—
Andijan		76·7	313	e 12 6?	P_cP	—	—	—	—	—
Stalinabad		78·9	311	e 11 51	−16	—	—	—	—	—
Sverdlovsk		87·6	327	12 50	− 1	23 32	0	—	—	—
Shasta Dam		95·5	50	e 13 32	+ 4	—	—	—	—	—
Tucson		105·4	57	e 18 53	PP	—	—	—	—	—
Copenhagen		113·6	332	i 22 49	PKS	—	—	—	—	—
Bogota		143·4	85	e 16 22	?	34 9	PS	i 19 39	PKP	—
La Paz		144·3	123	19 42	[+ 4]	—	—	—	—	—

Long waves were also recorded at Wellington, Arapuni, Wairiri, Paris, and Stuttgart.

July 20d. 10h. Undetermined shock. Data inconsistent.

Antarctica e = 30m.38s., 38m.38s., and 41m.26s.
Wairiri eEN = 31m.12s., SE = 36m.2s., E = 37m.36s.
Arapuni e = 32m.0s. and 37m.7s., L = 40m.
Helwan PKPZ = 34m.10s., pPKP?Z = 34m.38s., PP?Z = 37m.50s., iZ = 44m.44s.
Ksara e = 34m.47s.
Huancayo eP? = 34m.37s., eS? = 40m.40s., eL = 43m.14s.
Grozny eP = 34m.48s.
La Paz iPZ = 34m.54s.k, S?Z = 40m.0s., LZ = 55m.24s.
Istanbul eP = 35m.47s., eS? = 46m.27s.?
Sverdlovsk iP = 35m.49s.
Rome e = 36m.12s. and 45m.58s.
Granada iP = 36m.27s.a, eS = 43m.50s., L = 52·3m.
Basle eP = 36m.38s., e = 36m.47s.
Chur eP = 36m.38s.k
Almeria e = 36m.42s.
Zürich eP = 36m.43s.k
Jena eEN = 36m.44s.
Stuttgart eZ = 36m.45s., 43m.55s., and 44m.40s., eL = 45m.
Alicante P? = 36m.47s., PP = 38m.53s., S = 44m.45s., L = 54m.53s.
Strasbourg e = 36m.50s., 37m.5s., 41m.31s.. 44m.40s., and 47m.36s.
Malaga iPZ = 37m.1s.k, pPZ = 37m.5s., PPZ = 40m.47s., ePPP?Z = 42m.47s., iSKSZ = 46m.57s., iSZ = 47m.55s., PSZ = 48m.53s., LZ = 66m.31s.
Tucson eP = 37m.3s.
Paris i = 37m.5s.k, 37m.19s., e = 49m., eL = 101m.
Uccle eP = 37m.5s.
Palomar ePZ = 37m.6s.
Toledo iPZ = 37m.6s., iSZ = 43m.57s.
Pasadena eZ = 37m.33s.
Tashkent eP = 37m.50s., eS = 46m.35s.
Riverview eEN = 40m.35s., eLE = 45·4m.
St. Louis ePZ = 44m.11s., eN = 57m.12s. and 57m.30s.
Long waves recorded at Weston, Berkeley, Clermont-Ferrand, and De Bilt.

July 20d. 12h. Samoa.

Apia iP = 20m.3s., iS = 21m.8s.
Pasadena iPZ = 29m.27s.
Palomar iP = 29m.32s.
Riverside ePZ = 29m.32s.
Haiwee ePE = 29m.35s.
Shasta Dam eP = 29m.36s.
Tinemaha iPZ = 29m.39s.
Boulder City eP = 29m.46s.
Brisbane eN = 29m.50s.
Pierce Ferry iP = 29m.50s.
Overton iP = 29m.51s.
Tucson iP = 29m.51s.
Honolulu eS? = 32m.10s., e = 33m.10s. and 35m.10s.
Stuttgart eZ = 37m.24s.
Florissant eE = 41m.31s., eS?N = 42m.31s.
St. Louis eS?N = 42m.33s., ePPS?N = 44m.32s., eN = 45m.18s., eSS?N = 49m.29s.
Long waves were also recorded at Riverview and Cheb.

July 20d. Readings also at 3h. (near Antarctica), 4h. (Brisbane), 5h. (near Stalinabad and Obi-garm), 6h. (Samarkand, near Obi-garm, and Stalinabad), 9h. (near Pierce Ferry and Overton), 10h. (Bombay, Riverside, Palomar, Pasadena, Tinemaha, Tucson, Grand Coulee, Shasta Dam, and Huancayo), 11h. (Sitka, Helsinki, and Tashkent), 12h. (near Stalinabad), 13h. (Brisbane), 14h. (near Obi-garm), 15h. (Santa Lucia and near Stalinabad), 19h. (Brisbane), 22h. (near Stalinabad), 23h. (Stuttgart).

July 21d. 0h. Undetermined shock. Deep.

U.S.S.R. gives 25°·0S., 177°·5E., and a depth of 350km., but this position does not fit the readings, which are inadequate for any further determination.

Wairiri i=31m.34s., e=38m.13s. and 41m.32s.
Auckland e=38m.2s., i=39m.15s., S?=40m.30s.
Riverview iZ=40m.51s., iEN=44m.5s., iZ=46m.37s.
Brisbane iPN=43m.20s., iSN=45m.35s.
Fresno ePN=44m.28s.
Santa Barbara iPZ=45m.20s.
Berkeley iPZ=45m.23s.
Vladivostok iP=45m.24s., epP=46m.47s., iS=54m.57s.
Pasadena iP=45m.25s.k, epPZ=46m.53s., iSN=54m.58s.
Riverside iPZ=45m.27s.k, epPZ=46m.54s.
Palomar iP=45m.27s.k, iN=46m.5s., epPNZ=46m.55s.
Mount Wilson ePN=45m.28s.
Shasta Dam iP=45m.31s., e=46m.58s., eS?=55m.8s.
Haiwee iPEN=45m.33s., eSN=55m.11s.
Tinemaha iP=45m.34s.k, epPZ=47m.3s., eSEN=55m.16s.
Boulder City iP=45m.42s., ipP=47m.10s., iS=55m.32s.
Pierce Ferry iP=45m.45s., ipP=47m.14s., iS=55m.37s.
Overton iP=45m.46s., ipP=47m.14s., iS=55m.38s.
Tucson iP=45m.46s., i=45m.54s. and 46m.3s., ipP=47m.15s., eS=55m.44s., e=56m.33s. and 64m.2s., iPKP,PKP=72m.12s., e=74m.58s.
Grand Coulee eP?=46m.2s., epP?=47m.29s.
Istanbul eP=50m.33s., eS=52m.13s.?
Sverdlovsk iPKP=52m.14s., iPP=54m.7s., pPP=55m.30s., SKS=58m.43s.
Ashkabad PKP=52m.25s.
Copenhagen iP=52m.52s. and 54m.32s.
Ksara ePKP=52m.58s., pPKP=54m.36s., sPKP=55m.18s., e=56m.4s., i=56m.35s.
De Bilt ePKP=53m.0s., eZ=54m.40s.
Kew iZ=53m.0s.? and 56m.40s.?
Uccle e=53m.1s. and 54m.25s.
Stuttgart eZ=53m.3s.k, 53m.11s., 53m.22s., and 56m.52s.
Basle eP=53m.4s.
Helwan PKPZ=53m.4s., iZ=53m.11s., iPKP$_2$Z=53m.24s., pPKPZ=54m.43s., PPZ=56m.54s.
Jena eN=53m.4s. and 54m.42s.
Paris iPKP=53m.4s., i=53m.12s., iPKP$_2$=53m.24s., i=53m.35s., ipPKP=54m.49s., isPKP=55m.32s., iPP=56m.57s., e=75m.12s., 82m.2s., and 85m.59s.
Strasbourg ePKP=53m.5s., i=53m.12s., iPKP=53m.25s., epPKP=54m.48s., e=56m.18s.
Rome eP?=53m.8s., e=53m.46s. and 57m.28s.
Zürich e=53m.12s. and 54m.4s.
Tashkent ePP=53m.14s.
Granada iPKP=53m.15s.a, pPKP=54m.11s., iPP=58m.0s., SKS=60m.33s., PPP=62m.0s., SKSP=68m.30s.
Almeria PKP=53m.16s., i=54m.1s. and 54m.50s., e=58m.5s. and 63m.57s.
Malaga iPZ=53m.17s.a, P$_c$PZ=54m.11s., PPZ=55m.27s., PPPZ=56m.43s., S$_c$PZ=57m.57s., eSZ=62m.7s., sSZ=62m.53s., SSZ=65m.10s., LZ=72m.59s.
Toledo iPKPZ=53m.15s., iZ=54m.1s.
Baku ePP=54m.32s.
Alicante S?=61m.6s., eL=71m.5s.

July 21d. 4h. Undetermined shock, possibly deep.

Mizusawa PE=5m.32s., SE=6m.56s.
Vladivostok eP=6m.36s., eS=9m.14s.
Shasta Dam eP=14m.1s., ipP=14m.15s.
Riverside iPZ=14m.47s., epPZ=15m.0s.
Boulder City iP=14m.50s., ipP=15m.3s.
Palomar ePZ=14m.53s., ipPZ=15m.7s., eZ=15m.14s.
Pierce Ferry iP=14m.53s., i=15m.1s., ipP=15m.7s., i=15m.16s.
Copenhagen iP=15m.13s.
Tucson eP=15m.19s., e=15m.27s., ipP=15m.33s., i=15m.40s.
St. Louis iPZ=16m.8s.

July 21d. 9h. 36m. 21s. Epicentre 36°·7N. 22°·5E. (as on 1944, July 30d.).

$A = +·7425$, $B = +·3076$, $C = +·5951$; $\delta = +7$; $h = 0$;
$D = +·383$, $E = -·924$; $G = +·550$, $H = +·228$, $K = -·804$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		6·7	48	i 2 15	P_g	e 3 28	S*	—	—	—
Bucharest		8·2	19	e 2 1	− 2	—	—	—	—	3·4
Belgrade		8·3	350	i 1 59	− 5	e 3 57	+17	i 2 24	P*	—
Rome		9·3	307	e 2 1	−16	e 2 47	?	—	—	—
Helwan		10·1	130	i 2 33k	+ 5	4 18	− 7	2 54	PPP	—
Zagreb		10·3	334	i 2 29	− 3	e 4 35	+ 5	i 2 38	PP	—
Florence		11·1	313	e 3 1	PPP	i 5 10	SSS	—	—	—
Triest		11·1	327	e 2 41	− 2	i 4 36	−13	—	—	—
Ksara		11·3	101	e 2 51	+ 5	e 5 18	SSS	—	—	—
Prague		14·5	340	—	—	i 6 15	SS	—	—	—
Zürich		14·8	320	e 3 33k	+ 1	e 6 5	−13	i 3 38	PP	—
Cheb		15·2	335	—	—	e 6 49	SS	—	—	i 8·4
Basle		15·4	319	e 3 42	+ 2	e 6 23	− 9	—	—	—
Neuchatel		15·4	317	e 3 42	+ 2	e 6 16	−16	—	—	—
Stuttgart		15·5	325	i 3 41k	− 1	e 6 29	− 6	—	—	e 8·9
Strasbourg		16·1	322	i 3 49	0	—	—	e 3 55	pP	e 7·4
Jena	N.	16·2	335	e 3 51	+ 1	e 6 52	+ 1	—	—	—
Potsdam		17·0	340	e 4 3	+ 2	e 7 9	− 1	—	—	—
Erevan		17·6	72	e 4 9	+ 1	—	—	—	—	—
Tortosa	E.	17·6	290	4 0	− 8	7 27	+ 4	4 12	PP	e 10·6
Alicante		18·3	284	4 32	PP	e 7 43	+ 4	—	—	e 9·3
Grozny		19·0	63	e 4 27	+ 1	—	—	—	—	—
Paris		19·0	315	i 4 26	0	e 7 55	0	i 4 39	PP	—
Uccle		19·2	322	e 4 26k	− 2	e 8 9	+10	—	—	e 10·6
De Bilt		19·7	327	i 4 34	0	e 8 9	− 1	—	—	e 9·7
Copenhagen		20·2	342	i 4 35	− 4	i 8 10	−11	—	—	—
Granada		20·8	280	i 5 9k	PP	i 8 44	+11	5 17	pP	10·8
Toledo	Z.	21·0	287	i 4 47	0	i 8 42	+ 5	i 5 10	PP	—
Malaga	Z.	21·6	279	i 5 0a	+ 6	8 49	0	5 13	PP	11·8
Baku		21·7	72	e 5 1	+ 6	—	—	—	—	—
Helsinki		23·5	2	e 5 13	+ 1	e 9 7	−16	—	—	e 11·7
Ashkabad		28·4	80	e 5 57	− 1	—	—	—	—	—
Sverdlovsk		32·4	40	i 6 28	− 6	i 11 27	−21	—	—	—
Stalinabad		36·4	72	e 7 6	− 2	—	—	—	—	—
St. Louis	Z.	82·7	313	e 12 48	P_cP	—	—	e 13 4	?	—

Additional readings and note :—
Belgrade ePS_g = 4m.51s.
Zagreb iP = 2m.32s., eZ = 2m.49s., e = 3m.48s. and 4m.9s.
Stuttgart e = 3m.46s., eS? = 6m.17s., e = 7m.27s.
Strasbourg ePP? = 4m.55s., e = 5m.11s.
Jena eEN = 3m.54s., eE = 6m.44s.
Potsdam eSE = 7m.13s.
Tortosa PPPE = 4m.28s., SSEN = 8m.0s.
Paris iPPP = 4m.54s., i = 5m.13s. and 8m.3s., iSSS = 8m.25s. and 8m.29s.
Granada PP = 6m.9s., sS = 9m.26s.
Long waves were also recorded at Kew and Almeria.

July 21d. 9h. 56m. 48s. Epicentre 10°·0S. 117°·0E. Rough.

$A = -·4472$, $B = +·8776$, $C = -·1725$; $\delta = -7$; $h = +7$;
$D = +·891$, $E = +·454$; $G = +·078$, $H = -·154$, $K = -·985$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Perth		21·9	183	i 4 55	− 2	i 8 54	0	—	—	i 13·1
Riverview		39·3	133	i 9 22	PP	i 13 27	− 7	e 16 19	SS	e 19·3
Hyderabad	N.	46·8	306	—	—	15 15	− 9	—	—	—
Bombay	E.	52·2	304	—	—	e 16 57	PPS	—	—	—
Vladivostok		54·6	14	e 9 29	− 3	e 17 7	− ·4	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stalinabad		66·0	322	i 10 47	− 3	—	—	—	—	—
Tashkent		67·3	324	e 11 2	+ 3	e 19 47	− 7	—	—	—
Ashkabad		72·6	314	e 11 32	+ 1	—	—	—	—	—
Sverdlovsk		81·0	333	i 12 16	− 2	22 18	− 9	—	—	—
Grozny		83·5	317	e 12 34	+ 3	—	—	—	—	—
Ksara		88·2	305	e 12 59	+ 5	e 23 51	+13	—	—	—
Stuttgart		109·2	318	e 18 43	PP	e 29 45	PPS	—	—	e 61·2
Tinemaha	z.	123·5	52	i 19 0	[0]	—	—	—	—	—
Pasadena	z.	124·3	55	i 19 1	[0]	—	—	—	—	—
Riverside	z.	124·9	55	i 19 2	[0]	—	—	—	—	—
Palomar	z.	125·5	56	e 19 4	[+ 1]	—	—	—	—	—
Boulder City		126·5	52	e 19 5	[0]	—	—	—	—	—
Pierce Ferry		127·1	52	e 19 6	[0]	—	—	—	—	—
Tucson		130·7	55	e 19 14	[+ 1]	—	—	e 24 23	PPP	—
St. Louis	z.	142·5	35	e 19 29	[− 6]	—	—	—	—	—
Weston		146·9	11	i 19 44	[+ 2]	—	—	—	—	—

Additional readings :—
Tucson i = 22m.36s.
St. Louis eZ = 19m.45s.
Long waves were also recorded at Malaga, Granada, and De Bilt.

July 21d. Readings also at 2h. (Shasta Dam, Tucson, Palomar, Riverside, and Tinemaha), 6h. (Shasta Dam, Tucson, Palomar, Tinemaha, near Obi-garm, and Stalinabad), 9h. (Copenhagen), 11h. (De Bilt, Rome, Ksara, Sverdlovsk, Tashkent, near Stalinabad, Brisbane, near Fresno, and near Pierce Ferry), 12h. (Granada, Rome, Riverview, and Brisbane), 13h. (near Stalinabad and near Santa Lucia), 16h. (Obi-garm, near Andijan, and Tashkent), 17h. (near Shasta Dam), 18h. (Strasbourg, Stuttgart, and Riverview), 21h. (Obi-garm, near Andijan, Tashkent, Scoresby Sund, and Lick), 22h. (near Obi-garm).

July 22d. 14h. 17m. 50s. Epicentre 1°·1N. 126°·4E. (as on 1947, June 30d.).

$A = -·5933$, $B = +·8047$, $C = +·0190$; $\delta = -9$; $h = +7$;
$D = +·805$, $E = +·593$; $G = -·011$, $H = +·015$, $K = -1·000$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Vladivostok	42·1	6	e 7 51	− 4	e 14 13	− 3
Irkutsk	54·3	343	9 29	− 1	17 6	− 1
Tashkent	65·1	315	e 10 45	0	—	—
Sverdlovsk	76·0	329	i 11 49	− 2	21 27	− 7
Baku	79·0	311	—	—	e 22 10	+ 4
Ksara	89·8	303	e 13 3	+ 1	e 23 57	+ 4

Long waves were also recorded at Riverview.

July 22d. Readings at 0h. (near Obi-garm), 3h. (near Obi-garm), 5h. (near Stalinabad and near Mizusawa), 9h. (near Stalinabad), 11h. (La Plata and near Lick), 12h. (Pasadena, Palomar, Riverside, Tinemaha, Tucson, Overton, Pierce Ferry, Shasta Dam, and near Santa Lucia), 15h. (Ksara (2) and Stuttgart), 17h. (near Branner and Lick), 20h. (near Obi-garm and Stalinabad), 21h. (near Andijan and Tashkent), 23h. (Ksara).

July 23d. 5h. 13m. 38s. Epicentre 18°·9N. 68°·9W. (as on 1946, December 28d,).

$A = +·3408$, $B = -·8833$, $C = +·3220$; $\delta = +5$; $h = +5$;
$D = -·933$, $E = -·360$; $G = +·116$, $H = -·300$, $K = -·947$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan	2·7	101	e 0 25	−20	i 0 49	−30	—	—	—
Port au Prince	3·3	264	e 0 32	−21	i 1 34	− 1	—	—	i 2·0
Balboa Heights	14·3	228	e 3 30	+ 4	e 6 13	+ 7	—	—	—
Philadelphia	21·7	348	e 4 52	− 3	e 8 44	− 7	—	—	e 10·7
Fordham	22·3	351	e 5 3	+ 2	i 9 1	− 1	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Weston		23·5	357	e 5 20	+ 8	e 9 13	−10	—	—	—
Harvard		23·6	357	i 5 19	+ 6	i 9 12	−13	—	—	—
Ottawa		27·0	350	—	—	e 10 48	+26	—	—	24·4
St. Louis		27·0	321	e 5 39	− 6	e 10 54	+32	—	—	e 13·9
Florissant		27·2	321	—	—	e 10 18	− 7	e 12 31	SSS	e 13·2
Tucson		39·8	298	e 7 35	− 1	—	—	e 9 15	PP	—
Pierce Ferry		43·1	303	e 8 0	− 4	—	—	—	—	—
Overton		43·5	304	e 8 0	− 7	—	—	—	—	—
Boulder City		43·7	303	e 8 6	− 2	—	—	—	—	—
Palomar		45·0	299	i 8 19	0	—	—	i 8 29	pP	—
Riverside	z.	45·5	300	i 8 21	− 2	—	—	i 8 34	pP	—
Mount Wilson	z.	46·1	300	i 8 25	− 3	—	—	i 8 35	pP	—
Pasadena	z.	46·2	300	i 8 25	− 3	—	—	i 8 36	pP	—
Tinemaha		46·7	304	i 8 31	− 1	—	—	—	—	—
Shasta Dam		50·4	308	i 8 55	− 6	—	—	—	—	—
Toledo	z.	59·0	55	i 9 48	−16	—	—	—	—	26·1

Additional readings :—
San Juan i = 0m.39s.
Port au Prince iS = 1m.17s.
Fordham e = 8m.47s.
Harvard i = 5m.22s.
Florissant eN = 10m.54s. and 11m.14s.
Tucson e = 8m.10s.
Overton iP = 8m.5s.
Long waves were also recorded at Alicante, Almeria, De Bilt, Bermuda, Kew, and Malaga.

July 23d. 17h. 13m. 22s. Epicentre 55°·5S. 29°·0W.

A = +·4977, B = −·2759, C = −·8223 ; δ = 0 ; h = −7 ;
D = −·485, E = −·875 ; G = −·719, H = +·399, K = −·569.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Antarctica		21·5	220	i 4 54	+ 2	i 8 56	+ 9	—	—	—
La Plata	z.	28·6	304	5 50	−10	—	—	6 40	PP	13·7
Santa Lucia	E.	36·3	290	e 6 22	−45	12 45	− 3	15 32	SSS	18·3
La Paz		49·0	308	i 8 49a	− 1	i 15 52	− 3	i 9 14	pP	24·2
Huancayo		56·4	302	i 9 45	0	i 17 31	− 5	—	—	e 27·9
Tananarive		67·0	90	19 53	PS	27 29	SSS	21 3	?	e 31·6
Wellington		81·5	198	12 14	− 7	22 27	− 5	15 33	PP	37·6
Auckland		85·8	199	—	—	24 13	PS	32 28	SSS	40·6
Riverview		91·0	180	e 13 7	0	e 24 5	+ 2	e 25 50	PPS	e 43·1
Bermuda		92·7	330	e 13 2	−13	e 24 2	{ 0}	e 29 18	SS	e 36·8
Malaga	z.	94·1	20	i 13 24k	+ 2	i 23 55	[− 1]	i 25 42	PS	50·3
Almeria		94·7	21	i 13 27	+ 3	i 24 40	+ 4	17 17	PP	44·1
Granada		94·8	20	i 13 25k	0	i 24 39	+ 3	13 51	pP	i 41·9
Lisbon		95·4	15	13 28	0	24 0	[− 3]	40 38?	Q	44·1
Alicante		96·6	22	e 14 13	+40	24 45	− 7	15 11	pP	45·4
Brisbane		97·3	182	(e 17 38)	PP	—	—	—	—	e 17·6
Toledo	z.	97·4	18	e 13 34	− 3	—	—	—	—	—
Tortosa		99·2	22	20 7	PPP	25 19	+ 5	24 21	SKS	e 49·6
Helwan		99·4	50	e 13 48	+ 2	25 17	+ 2	17 46	PP	—
Barcelona		100·1	23	—	—	e 24 24	[− 3]	—	—	e 50·5
Philadelphia		102·9	325	e 14 6	+ 5	e 25 41	− 4	e 18 19	PP	e 42·0
Rome		103·2	30	e 14 6	+ 3	e 24 38	[− 4]	e 18 10	PP	—
Fordham		103·3	327	e 14 5	+ 2	i 25 47	− 1	i 18 18	PP	55·5
Weston		103·9	329	e 14 6	0	i 25 50	− 3	e 18 23	PP	—
Halifax		104·0	335	18 29	PP	24 44	[− 2]	25 50	SKKS	51·6
Harvard		104·1	329	i 14 3	− 4	e 25 52	− 3	e 18 19	PP	e 54·6
Clermond-Ferrand		104·5	22	e 14 8	0	e 26 11	+13	e 18 26	PP	50·6
Florence		104·6	29	e 14 8	− 1	e 24 42	[− 7]	—	—	—
Ksara		104·7	51	e 14 7?	− 2	27 47	PS	18 27	PP	—
Triest		107·0	29	e 18 45?	PP	e 26 24	+ 5	e 21 8	PPP	e 55·5

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		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Paris		107·2	21	e 14 24	+ 3	i 26 24	+ 3	e 18 39	PP	e 50·6
Zürich		107·2	25	e 14 44	+23	e 28 51	PPS	e 18 41	PP	—
St. Louis		107·3	314	i 18 46	PP	i 26 15	− 6	e 28 16	PS	e 40·2
Florissant		107·5	314	e 14 22	− 1	e 24 56	[− 6]	i 18 44	PP	e 49·5
Zagreb		107·8	31	e 18 35	PP	—	—	—	—	e 53·6
Ottawa		108·0	328	18 53	PP	25 2	[−2]	34 2	SS	49·6
Istanbul		108·1	42	e 18 32?	PP	e 28 16?	PS	—	—	—
Seven Falls		108·1	332	21 2	PPP	24 44	[−20]	28 26	PS	45·6
Strasbourg		108·2	24	e 14 23	− 1	e 26 38	+10	e 18 53	PP	51·9
Belgrade		108·3	35	e 18 53	PP	e 24 20	[−45]	e 32 30	SS	56·6
Stuttgart		108·7	25	e 14 29	+ 2	e 26 38	+ 5	e 18 53	PP	51·6
Chicago		108·7	317	e 19 0	PP	e 26 27	− 6	e 25 1	SKS	e 47·2
Kew		109·3	18	e 18 38	PP	e 28 30	PS	—	—	e 45·6
Uccle		109·5	21	e 18 58	PP	e 25 6	[− 4]	e 34 29	SS	e 52·6
Budapest	E.	110·3	32	e 21 8	PPP	—	—	—	—	e 58·6
Cheb		110·7	27	e 19 38?	PP	e 25 14	[− 1]	e 26 12	SKKS	e 53·6
De Bilt		110·9	21	e 14 38	0	e 25 13	[− 3]	e 19 10	PP	e 51·6
Prague		111·3	28	e 20 16	PP	e 25 14	[− 4]	e 28 38	PS	e 52·6
Tucson		111·6	295	e 18 31	[− 5]	e 25 18	[− 1]	e 19 13	PP	e 45·7
Bombay		112·0	88	e 19·23	PP	—	—	—	—	—
Durham	E.	112·3	17	—	—	e 27 9	?	—	—	—
Hyderabad		114·1	93	e 19 36	PP	25 28	[− 1]	29 17	PS	—
Warsaw		115·1	31	e 18 56	[+13]	e 25 30	[− 2]	e 35 24	SS	e 56·6
Palomar	Z.	115·6	291	e 18 45	[+ 1]	—	—	e 19 50	PP	—
Copenhagen		115·9	24	e 19 42	PP	25 34	[− 1]	35 38	SS	54·6
Pierce Ferry		116·3	296	e 18 43	[− 3]	—	—	e 19 41	PP	—
Riverside	Z.	116·4	291	i 18 48	[+ 2]	—	—	e 19 47	PP	—
Baku		116·6	56	e 19 56	PP	25 42	[+ 4]	—	—	—
Mount Wilson	Z.	116·9	291	e 18 47	[0]	—	—	i 19 54	PP	—
Pasadena	Z.	116·9	291	i 18 46	[− 1]	—	—	i 19 55	PP	e 63·2
Boulder City		117·1	295	e 18 45	[− 2]	—	—	—	—	—
Ivigtut		117·3	348	20 14	PP	29 39	PS	—	—	—
Rapid City		117·3	309	e 19 58	PP	e 27 46	S	e 35 46	SS	e 52·1
Ashkabad		118·1	65	20 16	PP	25 40	[− 3]	—	—	—
Salt Lake City		118·8	301	e 20 40	PP	e 26 13	[+27]	e 36 29	SS	e 55·5
Tinemaha	Z.	119·2	293	e 18 50	[− 1]	—	—	—	—	—
Upsala		120·8	25	e 30 13	PS	e 25 53	[0]	e 36 38	SS	e 57·6
New Delhi	N.	122·1	85	e 20 38	PP	i 25 50	[− 7]	i 27 24	SKKS	—
Bozeman		122·1	305	e 20 27	PP	e 25 56	[− 1]	e 30 2	PS	46·3
Butte		123·0	305	—	—	—	—	e 40 42	SSS	e 55·3
Helsinki		123·0	28	—	—	e 25 52	[− 8]	e 27 28	SKKS	e 58·6
Moscow		123·4	38	20 34	PP	25 55	[− 6]	e 27 29	SKKS	—
Shasta Dam		124·0	294	e 18 56	[− 5]	—	—	—	—	—
Stalinabad		124·8	71	19 1	[− 1]	i 20 53	PP	—	—	—
Saskatoon		124·9	313	e 22 32	PPP	—	—	—	—	37·6
Obi-garm		125·4	71	19 5	[+ 2]	—	—	—	—	—
Scoresby Sund		125·8	2	19 5	[+ 1]	37 56	SS	20 52	PP	—
Tashkent		127·1	68	19 8	[+ 2]	26 3	[− 9]	21 6	PP	—
Grand Coulee		127·5	302	e 19 6	[− 1]	—	—	—	—	—
Almata		132·5	72	e 21 43	PP	—	—	—	—	—
Sverdlovsk		133·2	48	i 19 17	[− 1]	26 26	[− 2]	i 21 43	PP	—
Sitka		140·2	304	e 19 50	[+19]	e 40 58	SS	e 23 2	PP	e 54·4
College		149·4	313	e 19 45	[− 1]	e 42 13	SS	—	—	—
Irkutsk		152·7	76	19 51	[0]	27 12	[+15]	—	—	—
Vladivostok		162·5	127	20 29	[+26]	i 44 58	SS	i 30 51	SKKS	—

Additional readings :—
La Paz iPPPEN =11m.18s., iPSN =16m.28s.
Wellington PPP =17m.3s., S_cS =23m.18s., SS =28m.3s., SSS =31m.21s.
Auckland SS =29m.13s.
Riverview eSKSN =23m.38s., eSKKSE =23m.51s., eE =24m.1s., ePSN =25m.22s., eSS?N =29m.39s., eSS?E =29m.49s., eSSZ =30m.20s., eQEN =37m.56s.
Malaga iPPZ =18m.12s., iPPPZ =20m.16s., sSZ =26m.22s., PSZ =27m.46s., QZ = 43m.44s.
Almeria PPP =19m.15s., SKS =23m.55s., PS =25m.59s., PPS =26m.27s., SS =31m.5s.
Granada iPP =17m.13s., PPP =19m.12s., iSKS =23m.52s., PS =26m.1s., iSS =30m.57s.

Continued on next page.

Alicante PP =17m.9s., PPP =20m.10s., S_cS =24m.55s., PS =25m.24s., SS =31m.21s., Q =38m.19s.
Tortosa eQE =39·6m.
Helwan iN =25m.56s., PSN =26m.24s., SSN =31m.58s.
Philadelphia e =18m.49s., ePPP? =20m.0s., eSKS =24m.36s., eSS =32m.46s.
Rome ePPSN =27m.26s., eSSN =32m.56s.
Fordham e =17m.14s., iSS =32m.55s.
Weston iSS =33m.8s.
Halifax SS =33m.8s.
Harvard e =18m.56s., 19m.59s., and 21m.6s., ePS =27m.25s., eSS =33m.5s.
Clermont-Ferrand eSKS =24m.46s., ePS =27m.35s.
Triest eSKS =24m.57s., eSKKS =25m.48s., ePS =28m.1s., eSS =33m.48s., eSSS =38m.33s.
Paris ePKP =18m.30s., e =19m.7s., 22m.47s., and 24m.33s., iSKS =24m.55s., e =25m.18s., i =25m.46s., i =26m.31s., e =27m.28s., i =27m.56s., iPS =28m.15s., ePPS =29m.9s., e =31m.2s. and 33m.24s., eSSP =34m.13s., e =36m.10s.
St. Louis iSSN =33m.49s.
Florissant eZ =17m.47s., iSKKSE =25m.50s., eSSN =33m.47s., iSSN =33m.51s.
Ottawa PPS =28m.44s., e =44m.38s.?
Seven Falls SKKS =26m.26s., PPS =30m.14s., SS =34m.2s., SSS =38m.32s.
Strasbourg ePKP =17m.54s., ePP =18m.50s., eSKS =25m.0s., eSKKS =25m.44s., ePS =28m.10s., eSS =34m.25s.
Stuttgart e =19m.45s., eSKS =25m.2s., eSKKS =25m.57s., ePS =28m.12s., ePPS =29m.13s., eSS =34m.18s.
Chicago ePPP? =20m.48s., ePS =28m.12s., ePPS =29m.24s., eSS =34m.0s.
Uccle eSKKSEN =26m.6s., eSE =26m.47s., ePSEN =28m.34s., ePPSN =29m.36s., ePSSN =34m.40s., eSSSEN =38m.44s.
Cheb e =28m.44s., eSS =35m.8s., eSSS =38m.4s., e =40m.11s., e =42m.38s.
De Bilt ePKP =18m.53s., ePPP =21m.28s., eSKKS =26m.16s., eS =27m.3s., ePS =28m.38s., eSS =34m.58s.
Prague eSKKS =26m.2s., eSS =34m.56s.
Tucson eS? =26m.23s., e =29m.1s., ePPS =29m.33s., eSS =34m.59s., eSSS? =40m.24s.
Warsaw iP?Z =19m.42s.a, eP?E =19m.51s., SKPE =26m.43s., eE =27m.42s. and 29m.24s., iSKSZ =29m.41s., eSKKSE =30m.42s., eSKKSZ =30m.46s., eZ =35m.12s., eE =35m.24s., ePKKSE =37m.56s.
Copenhagen i =19m.47s., iSKKS =26m.49s., PS =29m.35s., SSS =40m.8s.
Pierce Ferry PKP =18m.36s.
Salt Lake City e =28m.28s., 28m.34s., 30m.33s., 38m.10s., and 43m.43s.
Upsala eN =25m.38s.?, ePSE =30m.17s., eE =40m.5s., eSSSN =40m.56s.
New Delhi iN =28m.32s. and 30m.25s.
Bozeman eSS =37m.4s., eSSS =40m.54s.
Helsinki e =40m.32s.
Moscow PS =30m.35s.
Scoresby Sund 29m.2s. and 40m.50s.
Tashkent PPP =24m.17s., SKKS =28m.1s., PS =31m.14s., SS =38m.16s.
Sverdlovsk iPKS =22m.43s., SS =39m.20s., SSS =44m.32s.
Sitka e =42m.26s.
College e =21m.13s.
Irkutsk PPP =24m.56s.
Vladivostok i =26m.33s. and 34m.58s.
Long waves were also recorded at Brisbane, Apia, and at other European stations.

July 23d. Readings also at 0h. (Alicante, near Obi-garm, Stalinabad, and Tashkent), 4h. (near Ashkabad), 13h. (Strasbourg), 14h. (near Stalinabad), 15h. (Stuttgart), 21h. (Shasta Dam, Tucson, Pierce Ferry, Mount Wilson, Pasadena, Stuttgart, and Copenhagen), 22h. (Florence and near Ottawa).

July 24d. 8h. 39m. 52s. Epicentre 55°·5S. 29°·0W. (as on 23d.).

$A = +·4977$, $B = -·2759$, $C = -·8223$; $\delta = 0$; $h = -7$;
$D = -·485$, $E = -·875$; $G = -·719$, $H = +·399$, $K = -·569$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Antarctica		21·5	220	i 4 54	+ 2	i 8 57	+10	e 5 45 PPP	—
La Paz		49·0	308	i 8 49a	− 1	i 15 54	− 1	i 10 32 PP	25·1
Huancayo		56·4	302	e 9 44	− 1	e 17 36	0	e 19 40 S_eS	e 24·4
Bogota	Z.	70·4	312	e 11 15	− 3	—	—	— —	—
Wairiri		79·8	196	e 15 8	PP	22 9	− 5	e 16 46 PPP	39·0
Wellington		81·5	198	12 18	− 3	22 23	− 9	15 34 PP	39·1
Riverview		91·0	180	—	—	—	—	e 30 38 SS	e 46·5
Malaga	Z.	94·1	20	i 13 25k	+ 3	i 24 43	+12	13 38 pP	44·3
Almeria		94·7	21	13 34	+10	24 30	− 6	17 20 PP	46·1
Granada		94·8	20	i 13 26a	+ 1	i 24 41	+ 5	13 48 pP	47·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Alicante		96·6	22	17 30	PP	24 10	[0]	31 25	SS	e 45·2
Tortosa		99·2	22	17 45	PP	25 21	+ 7	24 22	SKS	e 51·1
Helwan		99·4	50	e 13 44	− 2	25 32	+17	17 41	PP	—
Rome		103·2	30	e 14 0	− 3	e 24 30	[−12]	e 18 12	PP	—
Fordham		103·3	327	e 18 13	PP	e 25 27	{+ 9}	—	—	—
Weston		103·9	329	—	—	e 25 54	+ 1	e 42 53	Q	—
Florence		104·6	28	e 12 36	?	e 24 51	[+ 2]	—	—	—
Ksara		104·7	51	e 14 2	− 7	28 37	PPS	18 17	PP	—
Paris		107·2	21	e 18 38	PP	—	—	—	—	e 57·1
St. Louis		107·3	314	e 18 37	PP	e 26 20	+ 8	e 33 46	SS	e 50·4
Florissant		107·5	314	e 18 42	PP	e 25 34	{−13}	i 26 20	S	e 46·2
Ottawa		108·0	328	—	—	e 25 26	[+22]	e 33 56	SS	56·1
Seven Falls		108·1	332	—	—	e 26 26	S	—	—	45·1
Istanbul		108·1	42	e 18 13?	[−16]	e 28 12?	PS	—	—	—
Strasbourg		108·2	24	e 18 13	[−16]	e 25 6	[+ 2]	e 18 38	PP	e 51·9
Stuttgart		108·7	25	e 18 53?	PP	e 28 12	PS	—	—	e 52·1
Kew		109·3	18	—	—	(e 28 8?)	PS	—	—	e 28·1
Uccle		109·5	21	—	—	e 25 6	[− 4]	e 26 47	S	e 49·1
Cheb		110·7	27	—	—	e 28 8?	PS	—	—	e 54·1
De Bilt		110·9	21	e 19 6	PP	e 28 43	PS	e 34 58	SS	e 52·1
Tucson		111·6	295	e 18 35	[− 1]	—	—	e 19 37	PP	—
Warsaw	E.	115·1	31	—	—	e 25 15	[−17]	e 26 41	S	e 60·1
Riverside	Z.	116·4	291	e 18 45	[− 1]	—	—	—	—	—
Mount Wilson	Z.	116·9	291	e 18 45	[− 2]	—	—	—	—	—
Shasta Dam		124·0	294	e 18 57	[− 3]	—	—	—	—	—
Obi-garm		125·4	71	19 3	[0]	—	—	—	—	—
Tashkent		127·1	68	18 59	[− 7]	26 3	[− 9]	21 6	PP	—
Victoria		130·0	300	e 21 8?	PP	—	—	—	—	63·1
Sverdlovsk		133·2	48	i 19 18	[0]	26 36	[+ 8]	i 21 42	PP	—
Irkutsk		152·7	76	e 19 52	[+ 1]	—	—	—	—	—
Vladivostok		162·5	127	i 20 3	[0]	—	—	—	—	—

Additional readings :—
La Paz iPPP = 11m.14s., iPS = 16m.28s.
Huancayo e = 10m.28s., 18m.56s., and 22m.36s.
Wairiri SS? = 26m.13s., SSSNZ = 31m.23s., QE = 33m.28s.
Wellington S_cS = 23m.3s., SS = 28m.19s., SSS = 31m.39s.
Malaga PPZ = 17m.21s., PPPZ = 19m.51s., SKSZ = 23m.53s., PSZ = 26m.19s.
Almeria SKS = 24m.0s., PS = 25m.52s., SS = 30m.58s.
Granada iPP = 17m.35s., SKS = 23m.54s., PS = 25m.50s., SS = 30m.16s., SSS = 34m.28s.
Alicante PPP = 19m.16s., PS = 25m.25s., SSS = 34m.29s.
Tortosa PS?EN = 27m.14s.
Helwan SKS?EN = 24m.20s., PS?N = 26m.42s.
Rome ePPS = 27m.21s., eSS = 33m.6s.
St. Louis eSSS?E = 38m.22s.
Florissant iSSE = 33m.47s.
Strasbourg eSKKS = 25m.54s., eS = 26m.36s., ePS = 28m.11s., ePKKS = 33m.27s.
Uccle ePSN = 28m.32s., eSSEN = 34m.20s.
Warsaw eE = 29m.11s., 30m.17s., 35m.37s., and 36m.37s.
Tashkent SKKS = 27m.58s., SKSP = 31m.54s., PPS = 32m.56s.
Sverdlovsk iPKS = 22m.42s., SKKS = 28m.36s., SS = 39m.20s., SSS = 44m.38s.
Long waves were also recorded at Harvard, Helsinki, and Prague.

July 24d. 10h. 39m. 54s. Epicentre 19°·0S. 169°·5E. (as on 1945, January 11d.).

A = −·9304, B = +·1724, C = −·3236 ; δ = +8 ; h = +5 ;
D = +·182, E = +·983 ; G = +·318, H = −·059, K = −·946.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	17·3	238	i 4 7	+ 3	i 7 31	+15	i 8 2	SS	—
Auckland		18·4	168	4 1	−18	8 1	+20	4 36	pP	—
Apia		18·5	78	e 4 19	0	e 8 14	+30	—	—	—
Arapuni		19·7	167	—	—	8 18	+ 8	—	—	11·1
New Plymouth		20·4	169	e 5 29	+48	—	—	—	—	10·9
Riverview		22·0	225	e 5 2	+ 4	i 9 7	+11	i 5 13	pP	e 10·9
Wellington		22·7	171	5 3	− 1	9 56	+47	5 47	pP	12·1
Wairiri		24·5	176	5 8	−14	8 51	−49	—	—	11·3
Pasadena	Z.	86·7	53	i 12 47	0	—	—	—	—	—
Shasta Dam		86·7	46	e 12 46	− 1	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mount Wilson	Z.	86·8	53	i 12 49	+ 2	—	—	—	—	—
Riverside	Z.	87·2	53	i 12 48	− 1	—	—	—	—	—
Palomar	Z.	87·4	55	i 12 47	− 3	—	—	—	—	—
Tinemaha	Z.	87·9	51	i 12 53	0	—	—	—	—	—
Sitka		88·6	27	—	—	e 23 11	[−13]	—	—	—
Victoria		89·8	38	—	—	e 23 42	−11	—	—	41·1
Boulder City		89·9	53	e 13 2	0	—	—	—	—	—
Pierce Ferry		90·6	52	e 13 6	+ 1	e 22 38	?	—	—	—
Tucson		91·6	57	e 13 10	0	—	—	—	—	—
Salt Lake City		94·0	49	e 24 19	S	(e 24 19)	−11	—	—	e 39·4
Rapid City		101·1	47	e 24 37	SKS	(e 24 37)	[+ 5]	—	—	—
Dane		117·5	44	e 18 49	[+ 1]	—	—	—	—	—
Ottawa		120·6	47	e 18 52	[− 2]	e 27 18	{ 0}	—	—	57·1
Seven Falls		123·8	45	—	—	e 31 6?	PS	—	—	44·1
Weston		124·0	50	—	—	e 38 8	SS	—	—	e 59·1
Helsinki		131·7	338	e 22 43	PKS	—	—	—	—	—
Ksara		136·3	298	e 19 29	[+ 5]	34 35	PPS	22 15	PP	—
Warsaw	E.	138·7	330	e 22 23	PP	e 23 11	PKS	e 24 7	PPP	—
Istanbul		139·8	312	i 19 31?	[+ 1]	—	—	—	—	—
Helwan	Z.	140·6	294	e 19 39	[+ 7]	—	—	e 22 39	PP	—
De Bilt	Z.	144·8	343	e 19 38	[− 1]	—	—	—	—	—
Zagreb		145·5	326	e 19 42	[+ 2]	—	—	—	—	—
Uccle		146·2	344	e 19 32	[− 9]	—	—	—	—	—
Stuttgart	Z.	146·3	336	e 19 44	[+ 3]	e 28 52	?	e 34 28	PS	—
Kew		146·6	348	i 19 45	[+ 3]	—	—	e 23 6?	PP	—
Strasbourg		147·0	337	e 19 49	[+ 6]	e 31 12	PKKS	e 23 14	PP	73·1
Chur		147·7	335	e 19 47	[+ 3]	—	—	—	—	—
Zürich		147·7	336	e 19 45	[+ 1]	—	—	—	—	—
Basle		147·9	337	e 19 48	[+ 4]	—	—	—	—	—
Paris		148·5	343	e 19 50	[+ 5]	e 41 32	SS	e 23 17	PP	—
Neuchatel		148·6	337	e 19 50	[+ 5]	—	—	—	—	—
Rome		150·0	324	e 19 46	[− 1]	—	—	—	—	—
Clermont-Ferrand		151·0	340	e 19 54	[+ 5]	—	—	e 23 39	PP	—
Tortosa		156·3	338	20 31	[+35]	27 36	[+35]	24 8	PP	—
Toledo	Z.	158·5	346	20 47	[+48]	—	—	—	—	—
Alicante		158·7	338	20 45	[+46]	27 30	[+27]	24 27	PP	e 80·7
Almeria		160·9	340	20 7	[+ 5]	26 54	[−12]	24 32	PP	—
Granada		160·9	343	i 20 6k	[+ 4]	30 40	{−37}	20 47	pPKP	78·3
Malaga	Z.	161·6	344	i 20 9k	[+ 7]	26 53	[−13]	20 53	pPKP	—

Additional readings :—
Auckland PP = 5m.6s., P_cP = 7m.35s., SS = 8m.52s., P_cS? = 10m.44s.
New Plymouth i = 5m.54s.
Riverview iPPP = 5m.39s., iZ = 9m.18s., iE = 9m.30s., iN = 10m.10s.
Wellington PPZ = 6m.8s., P_cP? = 9m.26s., SS = 10m.37s., S_cS = 15m.11s.
Wairiri iZ = 7m.37s., QE = 9m.46s.
Helwan eZ = 21m.48s.
Stuttgart iP?Z = 19m.48s. a, eZ = 24m.38s.
Strasbourg e = 20m.48s., 21m.2s., and 22m.12s., PKKP = 29m.12s., e = 32m.18s.
Paris iPKP$_2$ = 20m.0s., e = 41m.5s. and 41m.12s.
Almeria iPKP$_2$ = 20m.51s., PPP = 28m.15s., SKKS = 31m.15s.
Granada sPKP = 20m.59s., PKP$_2$ = 21m.34s., PP = 24m.29s., pPP = 25m.15s., SKSP = 34m.58s., PS = 38m.11s., iSS = 44m.56s., SSS = 51m.50s.
Malaga P_cP?Z = 23m.19s., isSZ = 25m.19s., iS = 24m.39s., S_cS = 30m.37s.
Long waves were also recorded at Harvard.

July 24d. 11h. 1m. 7s. Epicentre 19°·0S. 169°·5E. (as at 10h.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	17·3	238	i 4 6	+ 2	—	—	—	—	—
Apia		18·5	78	e 4 20	+ 1	e 8 24	SS	—	—	—
New Plymouth		20·4	169	e 5 1	+20	8 45	+20	—	—	11·3
Riverview		22·0	225	i 5 5k	+ 7	19 8	+12	—	—	e 10·9
Wellington		22·7	171	—	—	e 9 8	− 1	—	—	10·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena	Z.	86·7	53	i 12 46	− 1	—	—	—	—	—
Shasta Dam		86·7	46	e 12 43	− 4	—	—	—	—	—
Mount Wilson	Z.	86·8	53	i 12 48	+ 1	—	—	—	—	—
Riverside	Z.	87·2	53	i 12 49	0	—	—	—	—	—
Palomar		87·4	55	i 12 50	0	—	—	—	—	—
Tinemaha	Z.	87·9	51	e 12 53	0	—	—	—	—	—
Boulder City		89·9	53	e 13 2	0	—	—	—	—	—
Pierce Ferry		90·6	52	i 13 6	+ 1	—	—	—	—	—
Tucson		91·6	57	i 13 10	0	—	—	—	—	—
Santa Lucia	N.	102·4	132	—	—	23 51	?	24 9	SKS	—
Helsinki		131·7	338	e 22 42	PKS	—	—	—	—	—
Ksara		136·3	298	e 22 10	PP	e 34 57	PPS	—	—	—
Helwan	Z.	140·6	294	e 19 35	[+ 3]	e 22 50	PP	e 23 29	PKS	—
De Bilt		144·8	343	e 19 38k	[− 1]	—	—	—	—	e 46·9
Zagreb		145·5	326	e 19 43	[+ 3]	—	—	—	—	—
Uccle		146·2	344	e 19 44	[+ 3]	—	—	—	—	e 50·9
Stuttgart		146·3	336	i 19 44k	[+ 3]	—	—	i 20 34	PKP_2	e 51·9
Kew		146·6	348	i 19 46	[+ 4]	—	—	—	—	e 43·9
Triest		146·7	328	e 19 45	[+ 3]	—	—	—	—	—
Strasbourg		147·0	337	i 19 46	[+ 3]	e 23 13	PKS	e 22 41	PP	—
Chur		147·7	335	e 19 47	[+ 3]	—	—	—	—	—
Zürich		147·7	336	e 19 52	[+ 8]	—	—	—	—	—
Basle		147·9	337	e 19 48	[+ 4]	—	—	—	—	—
Paris		148·5	343	e 19 50	[+ 5]	—	—	i 23 21	PP	—
Rome		150·0	324	e 19 49	[+ 2]	—	—	e 21 39	PKP_2	—
Clermont-Ferrand		151·0	340	e 19 57	[+ 8]	—	—	e 23 37	PP	52·9
Tortosa		156·3	338	20 26	PKP_2	27 20	[+19]	24 6	PP	—
Toledo		158·5	346	20 36	PKP_2	—	—	—	—	—
Alicante		158·7	338	20 38	PKP_2	—	—	24 30	PP	e 77·4
Almeria		160·9	340	20 9	[+ 7]	23 34	PKS	24 28	PP	70·9
Granada		160·9	343	20 18k	[+16]	31 22	{+ 5}	i 20 44	pPKP	76·8
Malaga	Z.	161·6	344	i 20 4k	[+ 2]	e 26 58	[− 8]	24 36	PP	52·9

Additional readings :—
Riverview iE = 9m.20s. and 9m.29s., iN = 10m.9s.
Shasta Dam e = 12m.46s.
Palomar iZ = 12m.57s.
Tucson i = 13m.17s.
Paris $iPKP_2$ = 20m.0s.
Almeria PPP = 28m.32s., SS = 45m.4s.
Granada SKP = 24m.12s., iPP = 24m.31s., pPP = 25m.10s., SKSP = 35m.25s., PS = 38m.8s., SS = 43m.55s., SSS = 49m.55s.
Malaga PPZ = 22m.8s., PPSZ = 33m.48s.
Long waves were also recorded at Cheb.

July 24d. 12h. 10m. 54s. Epicentre 19°·0S. 169°·5E. (as at 11h.).

A = −·9304, B = +·1724, C = −·3236 ; δ = +8 ; h = +5 ;

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	17·3	238	e 4 2	− 2	—	—	—	—	—
Auckland		18·4	168	4 26	+ 8	—	—	5 40	PP	—
New Plymouth		20·4	169	5 0	+19	—	—	—	—	—
Riverview		22·0	225	4 58	0	9 4	+ 8	—	—	—
Wellington		22·7	171	5 8	+ 4	11 0	Q	5 55	PPP	—
Shasta Dam		86·7	46	e 12 44	− 3	—	—	—	—	—
Mount Wilson	Z.	86·8	53	e 12 43	− 4	—	—	—	—	—
Riverside	Z.	87·2	53	e 12 48	− 1	—	—	—	—	—
Palomar	Z.	87·4	55	e 12 45	− 5	—	—	—	—	—
Tucson		91·6	57	e 13 9	− 1	—	—	—	—	—
Zagreb		145·5	326	e 19 40	[0]	—	—	—	—	—
Uccle		146·2	344	e 19 41	[0]	—	—	—	—	—
Stuttgart	Z.	146·3	336	e 19 41	[0]	—	—	e 20 31	PKP_2	—
Strasbourg		147·0	337	e 19 42	[− 1]	—	—	e 20 26	PKP_2	—
Rome		150·0	324	e 19 48	[+ 1]	—	—	—	—	—
Toledo	Z.	158·5	346	e 20 33	PKP_2	—	—	—	—	—

Additional readings :—
Wellington i = 5m.16s., PPPZ = 6m.52s., P_cPZ = 7m.40s., SS = 12m.31s,
Rome e = 17m.46s,

July 24d. 12h. 16m. 51s. Epicentre 19°·0S. 169°·5E. (as at 12h.10m.).

A = −·9304, B = +·1724, C = −·3236; δ = +8; h = +5;
D = +·182, E = +·983; G = +·318, H = −·059, K = −·946.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		17·3	238	i 4 4	0	7 1	−15	—	—	7·5
Auckland		18·4	168	4 5	−13	7 34	− 7	4 40	PP	—
Apia		18·5	78	i 4 19	0	i 8 21	+37	—	—	—
Arapuni		19·7	167	5 9	PP	i 8 27	+17	—	—	i 9·2
New Plymouth		20·4	169	4 46	+ 5	i 8 27	+ 2	—	—	9·7
Riverview		22·0	225	i 4 59a	+ 1	1 9 6	+10	i 5 28	PP	e 10·8
Kaimata		23·5	176	5 19	+ 7	9 39†	+16	—	—	—
Wairiri		24·5	176	5 24	+ 2	9 26	−14	—	—	11·6
Guam		40·4	321	i 7 30	−11	e 16 18	SS	i 9 44	PP	21·0
Perth		49·7	244	9 24	+28	16 22	+18	11 9	PP	—
Honolulu		51·3	40	e 8 49?	−19	e 16 10?	−16	e 9 59?	PP	e 21·0
Mizusawa	N.	63·6	336	10 40	+ 5	e 19 13	+ 5	—	—	—
Vladivostok		70·8	333	i 11 19	− 1	i 20 40	+ 5	—	—	—
Antarctica		84·0	161	i 12 35	+ 2	i 22 58	+ 1	—	—	e 40·6
Branner	N.	85·3	48	i 12 51	+11	—	—	—	—	e 39·6
Berkeley		85·4	48	e 12 41	+ 1	e 23 10	− 1	—	—	e 39·4
Ferndale		85·4	44	e 12 50	+10	e 23 17	+ 6	—	—	e 39·4
Santa Clara		85·4	48	e 12 40	0	e 24 21	PS	—	—	e 39·4
Ukiah		85·4	46	e 12 40	0	e 23 18	+ 7	—	—	e 37·5
Lick	E·	85·6	48	e 12 42	+ 1	e 22 54	[−11]	—	—	e 39·2
	N.	85·6	48	e 12 46	+ 5	e 23 16	+ 3	—	—	e 39·7
Fresno	N.	86·7	50	e 13 49	+62	—	—	—	—	e 40·0
Shasta Dam		86·7	46	i 12 45	− 2	e 23 19	− 5	—	—	—
Pasadena		86·7	53	e 12 45	− 2	i 23 17	− 7	1 16 6	PP	e 39·4
Mount Wilson		86·8	53	i 12 46	− 1	—	—	—	—	—
La Jolla		86·9	55	e 12 48	0	—	—	—	—	—
Riverside		87·2	53	i 12 47	− 2	e 23 21	− 7	—	—	—
Palomar		87·4	55	i 12 49k	− 1	i 23 23	− 7	e 16 14	PP	—
Haiwee		87·7	51	e 12 55	+ 3	—	—	—	—	—
Tinemaha		87·9	51	e 12 50	− 3	e 23 28	− 7	—	—	—
Sitka		88·6	27	e 12 53	− 3	e 23 27	[+ 3]	e 16 16	PP	e 35·4
Calcutta	E.	89·4	294	e 13 14	+14	i 23 29	[0]	—	—	—
College		89·7	17	e 13 2	+ 1	e 23 55	+ 3	e 16 29	PP	e 35·4
Victoria		89·8	38	13 3	+ 1	23 43	−10	24 59	PP	41·0
Boulder City		89·9	53	e 13 8	+ 6	e 23 40	[+ 8]	e 23 24	SKS	—
Irkutsk		90·6	326	13 8	+ 3	24 4	+ 4	e 23 48	SKS	—
Pierce Ferry		90·6	52	i 13 5	0	e 23 38	[+ 2]	—	—	e 38·8
Tucson		91·6	57	i 13 9	− 1	e 24 32	+23	i 16 47	PP	e 37·7
Colombo	E.	91·9	276	12 8	−63	23 46	[+ 2]	—	—	—
Grand Coulee		92·2	40	e 13 13	0	—	—	e 16 51	PP	—
Salt Lake City		94·0	49	e 13 43	+22	e 24 40	+10	e 17 49	PP	e 40·8
Butte		95·4	43	e 13 38	+10	e 24 38	− 4	e 17 19	PP	e 40·2
Bozeman		96·3	44	e 13 32	0	e 25 1	+12	e 17 27	PP	e 40·2
Hyderabad		96·5	286	17 42	PP	24 14	[+ 5]	—	—	—
Denver		98·6	51	17 58	PP	24 29	[+ 9]	26 42	PS	46·6
New Delhi	N.	100·8	297	e 18 8	PP	i 24 34	[+ 3]	i 25 31	S	—
Rapid City		101·1	47	e 14 13	+20	e 25 17	−13	e 18 17	PP	e 44·3
Saskatoon		101·1	38	18 9	PP	24 3	[−29]	32 9	SS	46·2
Bombay		102·0	286	e 14 7	+10	1 24 44	[+ 7]	e 17 9	PP	45·3
Almata		104·6	311	18 31	PP	—	—	—	—	—
Huancayo		109·1	111	e 19 5	PP	26 19	S	e 28 39	PS	—
Florissant		109·4	54	e 13 31	P	e 25 10	[0]	e 18 53	PP	e 50·0
St. Louis		109·5	54	e 19 3	PP	e 25 5	[− 5]	e 21 46	PPP	—
Tashkent		109·8	308	19 10	PP	25 26	[+15]	21 45	PPP	—
Chicago		111·9	51	e 18 11	[−26]	e 25 19	[− 1]	e 19 15	PP	e 49·5
La Paz		113·2	119	i 14 49a	P	25 35	[+10]	i 19 33	PP	e 53·2

Continued on next page,

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Sverdlovsk		116·0	325	e 15 1	P	29 36	PS	i 19 53	PP		—
Columbia		116·2	60	e 18 48	[+ 3]	e 25 37	[+ 1]	e 29 26	PS		e 47·5
Dane		117·5	44	18 53	[+ 5]	25 51	[+10]	20 9	PP		63·2
Kirkland Lake		117·5	44	e 16 3	PP	(26 21?)	{−36}	—	—		26·4
New Kensington		117·8	53	i 20 4	PP	e 25 46	[+ 4]	e 30 6	PS		e 58·2
Pennsylvania		119·1	53	e 20 11	PP	—	—	—	—		—
Ottawa		120·6	47	18 51	[− 3]	25 57	[+ 5]	20 17	PP		56·2
Philadelphia		121·2	55	e 20 7	PP	e 25 57	[+ 3]	i 30 17	PS		e 52·3
Fordham		122·2	54	i 18 58	[+ 1]	e 26 1	[+ 4]	i 20 32	PP		—
Harvard		123·8	50	e 18 59	[− 1]	e 26 6	[+ 4]	e 20 35	PP		e 88·2
Seven Falls		123·8	45	19 3	[+ 3]	26 9	[+ 7]	20 45	PP		58·2
Weston		124·0	50	e 19 7	[+ 6]	e 26 8	[+ 5]	i 20 43	PP		—
Baku		124·5	306	19 13	[+12]	—	—	e 21 7	PP		—
Grozny		127·2	310	19 12	[+ 5]	—	—	—	—		—
Scoresby Sund		128·1	4	19 10a	[+ 2]	33 5	PPS	38 3	SS		—
Moscow		128·6	327	19 10	[+ 1]	25 56	[−20]	21 12	PP		—
Leninakan		129·0	307	e 19 51?	[+41]	—	—	—	—		—
Halifax		129·2	47	e 22 35	PKS	—	—	—	—		59·2
Bermuda		129·7	64	e 19 27	[+16]	i 22 29	PKS	e 21 22	PP		e 59·3
Ivigtut		130·2	22	19 12	[0]	22 34	PKS	21 34	PP		61·2
Fort de France		131·5	87	e 19 8	[− 7]	—	—	e 22 42	PKS		—
Helsinki		131·7	338	e 21 45	PP	26 29	[+ 5]	e 24 9	PPP		e 57·2
Upsala		134·5	341	e 21 37	PP	e 22 48	PKS	e 33 40	PPS		e 59·2
Ksara		136·3	298	e 19 27	[+ 4]	34 24	PPS	22 17	PP		—
Bergen	Z.	137·1	349	e 19 28	[+ 3]	e 23 11	PKS	e 21 40	PKP_2		31·3
Copenhagen		139·5	341	i 19 27	[− 3]	23 17	PKS	22 32	?		63·2
Istanbul		139·8	312	e 19 25	[− 5]	29 16	{− 4}	—	—		—
Bucharest		140·4	318	e 19 33	[+ 2]	—	—	e 22 0	PP		—
Helwan		140·6	294	19 33	[+ 1]	41 3	SS	22 24	PP		—
Aberdeen	N.	141·4	353	i 19 37	[+ 4]	i 23 20	PKS	e 68 16	Q		77·0
Potsdam		142·0	337	e 19 43?	[+ 9]	—	—	e 23 9	PKS		—
Budapest		142·8	326	e 19 35	[0]	—	—	—	—		e 72·2
Prague		143·2	333	e 19 32	[− 4]	e 26 28	[−16]	e 23 9	PKS		e 62·2
Kalossa		143·4	326	e 19 40	[+ 4]	—	—	—	—		—
Belgrade		143·6	321	i 19 34	[− 3]	e 33 47	PS	47 36	SSS		—
Durham	E.	143·6	351	e 19 50	[+13]	—	—	—	—		—
Jena		143·7	335	e 19 37	[0]	—	—	e 22 41	PP		—
Cheb		144·0	335	e 19 45	[+ 8]	e 23 29	PKS	e 22 17	PP		e 65·2
De Bilt		144·8	343	i 19 37k	[− 2]	e 26 14	[−33]	e 41 54	SS		e 61·2
Zagreb		145·5	326	e 19 42	[+ 2]	—	—	e 22 59	PP		e 71·2
Uccle		146·2	344	i 19 42k	[+ 1]	e 42 15	SS	e 23 16	PKS		e 72·2
Stuttgart		146·3	336	i 19 42k	[+ 1]	e 27 27	[+38]	e 35 23	PPS		e 72·2
Kew		146·6	348	i 19 42	[0]	—	—	—	—		e 68·2
Triest		146·7	328	e 19 48	[+ 6]	e 29 35	{−25}	i 34 30	PS		e 67·2
Strasbourg		147·0	337	e 19 44k	[+ 1]	e 43 29	SSP	e 48 21	SSS		e 66·0
Chur		147·7	335	e 19 40	[− 4]	—	—	—	—		—
Zürich		147·7	336	e 19 48	[+ 4]	—	—	—	—		—
Basle		147·9	337	e 19 48k	[+ 4]	—	—	—	—		—
Paris		148·5	344	e 19 48	[+ 3]	i 43 43	SSP	i 23 27	PP		e 70·2
Neuchatel		148·6	337	e 19 49	[+ 4]	—	—	—	—		—
Pavia	Z.	149·2	333	e 19 51	[+ 5]	—	—	—	—		—
Florence		149·3	328	i 19 56	[+10]	—	—	—	—		—
Rome		150·0	324	i 19 49	[+ 2]	e 23 33	PKS	e 25 57	PPP		—
Barcelona		155·2	337	20 8	[+13]	—	—	24 7	PP		e 75·9
Tortosa		156·3	338	20 1	[+ 5]	23 38	PKS	24 4	PP		e 71·2
Toledo	Z.	158·5	346	e 20 2	[+ 3]	27 2	[− 1]	24 21	PP		79·1
Alicante		158·7	338	20 5	[+ 6]	27 6	[+ 3]	20 45	pPKP		76·8
Lisbon		160·3	356	20 3	[+ 2]	27 21	[+16]	24 37	PP		81·4
Almeria		160·9	340	i 20 1	[− 1]	26 58	[− 8]	i 24 30	PP		79·2
Granada		160·9	343	i 19 59k	[− 3]	i 26 44	[−22]	i 20 41	pPKP		i 76·8
Malaga	Z.	161·6	344	i 20 4k	[+ 2]	27 8	[+ 2]	i 24 30	PP		79·6

For Notes see next page.

NOTES TO JULY 24d. 12h. 16m. 51s.

Additional readings :—
Auckland S_cP? =4m.12s., SS =5m.57s., sS_cS =8m.33s., readings wrongly identified.
New Plymouth i =6m.26s.
Riverview iEN =5m.7s., i =5m.16s., iPPPEZ =5m.38s., iN =5m.42s., iZ =9m.12s., isSN =9m.25s., iE =9m.28s. and 9m.45s., iN =10m.4s.
Wairiri iEZ =6m.12s., iE =7m.7s.
Perth PPP =11m.57s., i =13m.41s. and 19m.3s., SS =20m.45s.
Honolulu iS =16m.18s.?
Antarctica e =12m.58s., 24m.37s., 25m.20s., and 25m.54s.
Berkeley eN =12m.47s. and 23m.20s.
Pasadena eN =21m.41s., eE =24m.11s.
Sitka e =17m.5s., ePS =24m.51s.
College ePPP =18m.51s., eSKS =23m.35s., ePS =24m.59s., eSS =29m.27s.
Victoria SS =30m.11s., SSSS =36m.33s.
Boulder City e =38m.46s.
Tucson i =13m.18s., e =18m.29s., eSKS =23m.54s., ePS =25m.17s., ePPS =26m.4s., eSS =30m.27s., e =30m.39s., eSSS? =34m.42s., ePKP,PKP =38m.48s.,
Salt Lake City eS =25m.13s., ePS =26m.23s., eSS =31m.30s.
Butte e =29m.45s., eSS =31m.57s.
Bozeman ePPP =19m.38s., eSKS =24m.21s., ePPS =27m.21s., eSS =31m.49s., eSSS = 35m.25s.
Denver SS =31m.31s.
Rapid City eSKS =24m.41s., ePS =26m.49s.
Saskatoon SSS =36m.57s.
Huancayo e =20m.33s., eSS =34m.21s., ePSPS =35m.7s., eSSS? =37m.16s.
Florissant iPPZ =19m.1s., iSKKSE =26m.11s., eSN =26m.51s., ePSE =28m.21s., eZ =31m.26s.
St. Louis eSKKS =26m.11s., eSN =26m.55s., iPSE =28m.25s., iSSN =34m.25s., iSSSE = 38m.31s.
Tashkent PS =28m.37s., SS =34m.28s.
Chicago eS =26m.15s., ePS =28m.42s., ePPS =29m.57s., eSS =34m.38s., eSSS =39m.29s.
La Paz SKKSN =26m.59s., PS =29m.1s., iPPS =30m.9s.
Sverdlovsk PKP =18m.45s., ePPS =30m.30s.?
Dane PPS =30m.57s.
Kirkland Lake e =17m.3s.
New Kensington e =27m.10s., eSS? =34m.54s.
Pennsylvania eE =21m.1s.
Ottawa SKKS =27m.25s., PS =30m.9s., SS =36m.51s.
Philadelphia i =20m.26s., eS? =27m.36s., eSS =36m.33s., eSSS? =40m.8s.
Fordham ePS =30m.17s., iSS? =37m.22s.
Harvard ePPE =20m.42s., e =32m.59s. and 36m.41s.
Seven Falls SKP =22m.15s., SKKS =27m.45s., PS =30m.39s., SS =37m.45s.
Weston iSS =37m.15s.
Scoresby Sund 21m.9s. and 22m.31s.
Moscow eS =28m.50s.?
Bermuda ePPS? =33m.22s., eSS =39m.17s.
Helsinki i =22m.42s., eSKKS =28m.5s., e =30m.42s., ePPP ($\Delta > 180°$) =36m.9s., eSS =39m.2s.
Upsala ePPN =21m,58s., PKSN =22m.52s., eN =29m.58s., eE =34m.9s., eSSN =40m.1s.
Helwan PPPZ =25m.42s., PSKSNZ = =32m.33s., PPSZ =35m.0s.
Budapest PE =19m.38s., eN =21m.39s., eE =22m.9s.?
Prague eSKSP =32m.51s., ePS =34m.21s., e =37m.39s. and 40m.9s.?, eSSS =46m.39s.
Kalossa eN =19m.43s. and 20m.53s., eE =21m.1s.
Belgrade i =23m.24s.
Cheb ePPP? =25m.15s., e =28m.12s., 34m.55s., 36m.48s., 45m.3s., and 47m.41s.
Zagreb i =19m.46s. and 21m.13s.
Uccle iEN =19m.46s., eE =42m.57s., eSSSN =47m.40s., e =59m.9s.?
Stuttgart iZ =19m.47s.k and 19m.51s., i =19m.55s. and 20m.37s., eSS =42m.11s., eQ? =65·2m.
Triest ePSKS =32m.32s.
Strasbourg ePKP =19m.48s., $iPKP_2$ =20m.9s., e =21m.49s., ePP =22m.57s., ePKKP = 28m.49s., e =32m.19s., eSS =43m.40s.
Chur i =19m.49s.a
Paris i =19m.53s., $iPKP_2$ =19m.57s., i =20m.2s., 20m.17s., 20m.24s., 20m.30s., 21m.21s., 21m.50s., and 23m.36s., iPPP? =26m.38s., i =28m.5s., 33m.1s., and 33m.8s., iSSS =48m.5s.
Pavia e =20m.3s.
Rome eSS =42m.9s.?, eSSS =48m.9s.?
Tortosa PKP_1N =20m.28s., PPPEN =27m.16s., SKKSN =30m.42s., PPP?E ($\Delta > 180°$) = 33m.25s., PKKS?E =34m.45s., PPSE =37m.12s., SSE =44m.4s., SSPE =44m.44s., SSSE =49m.48s.
Toledo $iPKP_2Z$ =20m.34s., SSZ =44m.9s.
Alicante PKP_2 =20m.54s., PPP =28m.22s., SKKS =31m.8s., PPS =37m.34s., SS = 44m.38s., Q =66m.9s.
Lisbon PKP_3NZ =20m.45s.
Almeria PKP_2 =20m.56s., PKS =23m.35s., PPP =28m.21s., SKKS =31m.15s., P_cS,PKP =31m.55s., SKSP =34m.53s., PPS =37m.51s., SS =44m.41s., SSS = 50m.46s.

Continued on next page.

Granada PKP_1 =21m.2s., sPKP =21m.11s., $pPKP_1$ =21m.21s., $sPKP_1$ =21m.36s., SKP =23m.37s., iPP =24m.32s., pPP =25m.16s., sPP =25m.36s., sSKS =27m.44s., PPP =28m.19s., pPPP =29m.8s., SKKS =30m.46s., sSKKS =32m.18s., SKSP = 34m.29s., sSKSP =36m.33s., PPS =38m.53s., iSS =44m.34s., sSS =44m.52s., SSP =47m.8s., SSS =49m.17s., sSSS =50m.42s., Q =69·2m.
Malaga $iPKP_1$ =20m.46s., iPPPZ =28m.8s.
Long waves were also recorded at Tananarive.

July 24d. 22h. 10m. 44s. Epicentre 34°·1N. 116°·3W. (as on 1947, May 11d.).

Intensity V at Aguanga, Fawnskin, Highland, Los Angeles, Mount Wilson, Palm Springs, and San Diego; IV at Acton, Claremont, Laguna Beach, Moreno, Palomar, Mountain, Pasadena, Riverside, and San Bernardino. Felt widely throughout Southern California including Los Angeles.

Epicentre 34°1′N. 116°30′W., macroseismic area 35,000 sq.m., with several aftershocks.

L. M. Murphy.
U.S. Earthquakes, serial 730, Washington, 1950, pp. 23-24, with map p. 23.

$A = -·3677$, $B = -·7439$, $C = +5580$; $\delta = -5$; $h = 0$;
$D = -·896$, $E = +·443$; $G = -·247$, $H = -·500$, $K = -·830$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palomar	Z.	0·9	212	i 0 17	− 3	—	—	—	—	—
Riverside		0·9	263	i 0 16a	− 4	i 0 27	− 7	—	—	—
La Jolla		1·5	213	i 0 26	− 2	i 0 42	− 7	—	—	—
Mount Wilson		1·5	275	i 0 26a	− 2	i 0 46	− 3	—	—	—
Pasadena		1·6	275	i 0 28a	− 2	i 0 48	− 3	—	—	—
Boulder City		2·2	47	e 0 41	+ 3	—	—	i 0 47	P_g	—
Haiwee		2·4	326	e 0 42	+ 1	i 1 19	+ 7	—	—	—
Santa Barbara	Z.	2·8	277	i 0 47a	0	—	—	—	—	—
Pierce Ferry		2·8	43	e 0 48	+ 1	—	—	—	—	—
Overton		2·9	32	i 0 49	+ 1	—	—	—	—	—
Tinemaha		3·4	332	i 0 56	+ 1	i 1 50	S_g	—	—	—
Fresno	N.	3·9	314	i 1 7	P*	i 2 4	S*	i 1 14	P_g	—
Tucson		4·9	110	e 1 17	0	i 2 4	−11	—	—	i 2·4
Lick		5·4	308	e 1 24	0	i 2 29	+ 1	1 2 44	S*	—
Santa Clara		5·6	307	e 1 37	P*	i 2 55	S*	—	—	—
Branner	N.	5·8	306	e 1 34	+ 5	i 2 53	+15	1 1 56	P_g	—
Salt Lake City		7·5	26	e 2 37	P_g	e 4 37	?	—	—	e 4·9
Ukiah		7·5	315	e 2 31	P_g	e 3 37	+17	—	—	e 4·2
Shasta Dam		8·2	326	e 2 0	− 3	e 3 35	− 3	—	—	—
Denver		10·7	54	—	—	5 28	S*	—	—	6·0
Bozeman		12·2	18	e 3 6	+ 8	e 6 31	L	—	—	i 7·2
Butte		12·2	12	e 3 6	+ 8	e 6 36	L	—	—	e 7·0
Grand Coulee		14·0	352	e 3 27	+ 5	—	—	—	—	e 7·4
Rapid City		14·2	42	e 3 32	+ 8	e 5 57	− 7	—	—	e 6·7
Victoria		15·4	342	3 43	+ 3	6 47	+15	e 7 43	Q	8·5
Saskatoon		19·3	18	—	—	e 8 17	+15	—	—	10·6
Florissant		21·4	69	e 4 53	+ 2	e 9 2	+17	—	—	i 11·2
St. Louis		21·5	69	e 4 54	+ 2	e 9 4	+17	—	—	i 11·4
Chicago		23·8	61	e 5 18	+ 3	e 9 38	+10	—	—	e 11·3
Sitka		26·8	337	e 5 39	− 5	e 10 16	− 3	—	—	e 11·6
Fordham		34·1	65	—	—	e 12 24	+10	—	—	e 17·9
Weston		35·9	63	—	—	e 12 58	+16	—	—	—
Scoresby Sund		59·7	23	—	—	e 18 29	+10	—	—	29·3
De Bilt		80·1	32	e 18 16	?	e 22 29	+11	—	—	e 42·3
Paris		81·1	36	e 12 22	+ 4	—	—	—	—	—
Strasbourg		83·8	34	e 12 39	+ 7	e 23 4	+ 9	—	—	e 43·3
Malaga		85·2	49	i 12 43a	+ 4	i 23 35	+26	i 13 11	pP	42·3
Granada		85·4	48	i 12 46a	+ 6	23 30	+19	16 12	PP	40·9
Alicante		86·5	45	—	—	e 23 28	+ 6	—	—	e 40·7

Additional readings :—
Boulder City i =55s.
Overton i =58s.
Lick iE =1m.33s., iN =1m.42s.
Branner iPN =1m.42s., iN =2m.10s.

Continued on next page.

Shasta Dam eP =2m.6s.
St. Louis iSE =9m.7s.
Strasbourg eP? =12m.57s.
Malaga PPZ =16m.17s., PPPZ =18m.25s., sSZ =24m.15s., PSZ =24m.49s., SSZ = 29m.19s.
Granada PS =24m.25s.
Long waves were also recorded at Honolulu and other American and European stations.

July 24d. 22h. Presumed repetition of the above, but there is inconsistency in the readings :
Boulder City iP =54m.20s., i =54m.27s., iS =54m.57s.
Ukiah e =54m.27s.
Pierce Ferry iP =54m.28s., i =54m.33s. and 54m.42s., e =55m.5s., iS =55m.12s.
Overton iP =54m.29s., i =54m.38s., 54m.48s., 54m.55s., and 55m.7s., eS =55m.11s., e =55m.21s.
Riverside iPEN =54m.40s., iSEN =54m.51s.
La Jolla iPZ =54m.50s.
Mount Wilson iPEN =54m.52s., iSEN =55m.12s.
Pasadena iPEN =54m.53s., iSN =55m.11s.
Fresno iPN =54m.53s., 55m.28s., and 55m.37s., iSN =56m.26s. and 56m.31s.
Tucson eP? =54m.54s., iS =55m.40s., iL =56m.3s.
Lick ePN =55m.14s., iE =55m.48s., iN =56m.15s., iSN =57m.19s.
Branner iPN =56m.0s., iN =57m.20s.
Shasta Dam iP =56m.31s.
Santa Clara e =57m.21s.
Salt Lake City eS? =58m.59s., eL =59m.7s.
Florissant ePE =59m.17s.
St. Louis iPZ =59m.19s., eLN =66m.14s.
Denver S =60m.5s., L =60m.31s.
Rapid City eP =62m.2s.

July 24d. Readings also at 1h. (Bucharest, Warsaw, Ksara, Copenhagen, Cheb, Kew, Basle, Zürich, Florence, Rome, Stuttgart, Triest, Uccle, Zagreb, Toledo, and near Istanbul), 3h. (near College), 5h. (Almata, Frunse, Stalinabad, Tashkent, near Andijan and Obi-garm), 6h. (Harvard and near Pierce Ferry), 7h. (Mizusawa and near Stalinabad), 8h. (near Grozny), 9h. (Bombay), 11h. (Palomar, Riverside, Shasta Dam, Tucson, and near Mizusawa), 14h. (near Shasta Dam), 15h. (Stuttgart and Stalinabad), 16h. (De Bilt, Paris, Kew, Rome, Strasbourg, Stuttgart, Uccle, Toledo, Ksara, Almata, Weston, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Lick, Tucson, Boulder City, Pierce Ferry (2), Shasta Dam, Brisbane, Riverview, Wairiri, and near Apia, several shocks involved), 17h. (Weston), 18h. (Zagreb and Fresno), 20h. (Strasbourg), 22h. (Riverview, Ferndale, Stuttgart, Almeria, Granada, Toledo, and near Malaga), 23h. (near Stalinabad).

July 25d. 0h. 46m. 27s. I
6h. 19m. 46s. II
} Epicentre 34°·1N. 116°·3W. (as on 24d.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
I Palomar	Z.	0·9	212	i 0 19	− 1	—	—	—	—	—
II		0·9	212	i 0 18	− 2	—	—	—	—	—
I Riverside		0·9	263	i 0 18a	− 2	i 0 29	− 5	—	—	—
II		0·9	263	i 0 18	− 2	i 0 28	− 6	—	—	—
I La Jolla		1·5	213	i 0 28k	0	i 0 46	− 3	—	—	—
II		1·5	213	i 0 28k	0	—	—	—	—	—
I Mount Wilson		1·5	275	i 0 28a	0	i 0 48	− 1	—	—	—
II		1·5	275	i 0 28a	0	i 0 47	− 2	—	—	—
I Pasadena		1·6	275	i 0 30a	0	i 0 49	− 2	—	—	—
II		1·6	275	i 0 29a	− 1	i 0 49	− 2	—	—	—
II Boulder City		2·2	47	i 0 42	+ 4	i 1 18	P_g	—	—	—
I Haiwee		2·4	326	i 0 44a	+ 3	i 1 21	S_g	—	—	—
II Pierce Ferry		2·8	43	i 0 50	+ 3	i 1 6	−16	i 0 56	P_g	—
I Tinemaha	Z.	3·4	332	i 0 57	+ 2	—	—	—	—	—
I Fresno	N.	3·9	314	i 1 5	+ 3	i 1 46	− 4	i 1 15	P_g	—
II	N.	3·9	314	i 1 4	+ 2	i 2 0	S*	i 1 15	P_g	—
I Tucson		4·9	110	e 1 19	+ 2	e 2 5	−10	—	—	i 2·3
II		4·9	110	i 1 19	+ 2	i 2 4	−11	—	—	i 2·2
I Lick		5·4	308	e 1 26	+ 2	i 2 53	S*	i 1 49	P_g	—
II		5·4	308	1 24	0	i 2 26	− 2	i 1 44	P_g	—
I Santa Clara		5·6	307	e 1 50	P_g	—	—	—	—	—
II		5·6	307	e 1 44	P*	i 2 55	S*	—	—	—

Continued on next page.

		Δ	Az.	P.	P−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
I Branner	N.	5·8	306	e 1 48	P*	i 2 49	S*	i 3 13	S_g	—
II	N.	5·8	306	e 1 32	+ 3	i 2 28	−10	i 1 56	P_g	—
II Berkeley	E.	6·1	309	e 1 34	0	i 2 48	+ 3	i 1 56	P_g	—
I Salt Lake City		7·5	26	—	—	e 4 24	S_g	—	—	e 5·0
II		7·5	26	—	—	e 2 59	−21	—	—	e 3·6
I Shasta Dam		8·2	326	e 2 10	+ 7	—	—	—	—	—
II		8·2	326	e 2 5	+ 2	—	—	—	—	—
II Rapid City		14·2	42	e 3 38	+14	e 5 38	−26	—	—	e 6·6
II Saskatoon		19·3	18	—	—	e 8 38	+36	—	—	10·2
I Florissant	E.	21·4	69	e 4 59	+ 8	—	—	—	—	—
II	E.	21·4	69	e 4 55	+ 4	—	—	—	—	e 11·1
I St. Louis		21·5	69	e 5 0	+ 8	—	—	—	—	e 11·8
II		21·5	69	e 4 56	+ 4	i 9 7	+20	—	—	e 11·8

Additional readings :—
Fresno I iSN = 2m.4s., II iSN = 2m.4s.
Lick I iE = 2m.59s., II iN = 1m.48s.
Branner II iN = 1m.45s. and 2m.14s.
Berkeley II iPE = 1m.39s., iE = 2m.59s. and 3m.28s.
Long waves for these shocks were recorded at Grand Coulee, Bozeman, Butte, Ukiah, Denver, Chicago, Dane, New Kensington, Weston, Kirkland Lake, and Kew.

July 25d. 1h. 0m. 32s. Epicentre 17°·5S. 179°·5W. Depth of focus 0·080.
(as on 1946, June 4d.).

A = −·9543, B = −·0083, C = −·2989 ; δ = +10 ; h = +5 ;
D = −·009, E = +1·000 ; G = +·299, H = +·003, K = −·954.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		8·3	65	i 1 51	−10	i 3 23	−15	—	—	—
Auckland		19·9	193	3 58	+ 2	7 3	− 3	6 3	?	—
Wellington		24·2	191	4 32	− 4	8 14	− 2	14 32	S_cS	—
Wairiri		26·9	193	4 55	PP	i 8 53	− 6	—	—	13·7
Brisbane		27·2	243	i 5 1	− 1	i 9 5	+ 1	i 6 23	PP	e 11·7
Riverview		30·9	232	i 5 36k	+ 2	i 10 5	+ 4	i 7 7	pP	e 17·6
Vladivostok		75·0	325	i 10 49	+ 2	e 19 45	+ 4	—	—	—
Pasadena	z.	77·7	48	i 10 55	− 7	—	—	e 12 57	pP	—
Mount Wilson	z.	77·8	48	i 11 1	− 2	—	—	i 12 57	pP	—
Palomar	z.	78·2	49	i 11 4	− 1	—	—	i 13 0	pP	—
Riverside	z.	78·2	48	e 12 59	pP	—	—	—	—	—
Shasta Dam		78·5	40	e 11 3	− 3	—	—	e 13 1	pP	—
Haiwee	z.	78·9	47	i 11 7	− 1	—	—	e 13 6	pP	—
Tinemaha	z.	79·2	46	i 11 8	− 2	—	—	e 13 7	pP	—
Boulder City		81·0	48	e 11 5	−14	—	—	e 13 17	pP	—
Overton		81·5	47	i 11 22	0	—	—	i 13 19	pP	—
Pierce Ferry		81·7	48	i 11 21	− 2	e 20 48	− 3	i 13 18	pP	—
Tucson		82·2	52	i 11 24	− 1	—	—	i 13 23	pP	—
Tashkent		117·2	308	e 19 2	PP	—	—	—	—	—
Sverdlovsk		120·7	327	17 50	[0]	24 0	[+ 2]	19 20	PP	—
Ashkabad		125·8	304	e 20 4	PP	—	—	—	—	—
Moscow		132·6	333	18 13	[0]	24 35	[+ 4]	e 20 44	PP	—
Copenhagen		140·8	350	e 18 20	[− 8]	31 8	SP	e 21 17	PP	—
Ksara		144·4	304	18 38	[+ 3]	—	—	22 2	PP	—
De Bilt		145·3	355	i 18 38a	[+ 2]	—	—	e 21 3	?	—
Istanbul		146·0	320	e 18 35	[− 3]	—	—	e 21 39	PP	—
Kew	z.	146·1	1	e 18 30	[− 8]	—	—	—	—	e 81·5
Uccle		146·6	357	e 18 39	[+ 1]	—	—	—	—	—
Stuttgart	z.	148·0	349	e 18 41	[0]	—	—	e 21 44	PP	—
Strasbourg		148·4	351	e 18 42	[+ 1]	—	—	21 4	pPKP	—
Paris		148·7	358	e 18 43	[+ 2]	—	—	e 20 59	pPKP	—
Zagreb		149·0	340	e 18 46	[+ 4]	—	—	—	—	—
Helwan	z.	149·3	300	e 18 43	[+ 1]	—	—	e 22 33	PP	—
Basle		149·5	351	e 18 44	[+ 1]	—	—	—	—	—
Zürich		149·5	350	e 18 49	[+ 6]	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chur		149·8	347	e 18 43	[0]	—	—	—	—	—
Rome		153·6	340	e 18 50	[+ 1]	e 28 52	SKKS	e 22 50	PP	—
Toledo	z.	157·4	9	i 19 30	[+36]	—	—	23 12	PP	—
Granada		160·1	10	18 42k	[−15]	i 23 24	PP	19 40	PKP_2	—
Malaga	z.	160·4	12	i 19 41k	[+44]	i 26 40	PPP	23 12	PP	—

Additional readings :—
Wellington e =8m.22s.
Wairiri PPP =8m.4s., SKS =11m.43s., phases wrongly identified.
Riverview iPPEZ =7m.13s., eSSN =12m.58s., iE =13m.5s., eE =15m.3s., iS_cSEN = 15m.9s.
Shasta Dam ipP =13m.4s.
Tucson ePKP,PKP =40m.34s.
Sverdlovsk SS =35m.18s.
Moscow sPKP =21m.43s., PPP =23m.12s., eS =26m.47s.
Copenhagen 31m.41s.
Stuttgart eZ =18m.46s.a.
Strasbourg i =18m.47s., esPKP =22m.18s., epPPP? =28m.22s.
Paris i =18m.48s., $iPKP_2$ =18m.53s., ePP =22m.26s.
Chur e =18m.49s.
Rome e =19m.14s. and 26m.20s.
Granada SKP =21m.47s.
Malaga P_cPZ =20m.32s., PPZ =21m.43s., S_cSZ =29m.0s., phases wrongly identified.

July 25d. 19h. 8m. 48s. Epicentre 25°·0S. 63°·5W. Depth of focus 0·080.

A = +·4049, B = −·8121, C = −·4203 ; δ = +10 ; h = +3 ;
D = −·895, E = −·446 ; G = −·188, H = +·376, K = −·907.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		5·4	294	e 1 40	+ 7	e 2 55	+ 7	—	—	e 3·4
La Paz	z.	9·5	332	i 2 17k	+ 3	i 4 6	+ 6	—	—	i 5·1
Santa Lucia	E.	10·5	215	2 59	+35	—	—	—	—	5·0
La Plata		11·0	155	2 28	− 1	i 4 28	0	—	—	4·7
Huancayo.		17·1	317	i 3 33	+ 3	i 6 26	+ 7	—	—	—
Bogota	z.	31·2	340	i 5 35	− 1	e 10 1	− 5	—	—	—
Balboa Heights		37·2	334	—	—	e 11 30	− 6	—	—	e 15·6
Antarctica		43·3	183	i 7 34	+19	i 13 0	− 4	—	—	e 17·6
Philadelphia		65·5	351	e 9 50	− 1	i 17 51	− 3	e 12 1	pP	—
Weston		67·4	355	i 10 3k	0	i 18 14	− 2	e 12 40	PP	—
Harvard		67·6	355	i 10 4	0	e 18 25	+ 6	i 12 1	pP	—
St. Louis		68·1	338	i 10 4	− 3	i 18 16	− 8	i 12 1	pP	—
Florissant		68·3	338	i 10 5	− 4	i 18 18	− 9	e 12 4	pP	—
Ottawa		70·9	351	10 23	− 1	18 54	− 2	23 12?	SS	32·2
Seven Falls		72·1	355	10 30	− 1	19 4	− 6	—	—	21·2
Tucson		72·7	320	i 10 34	0	i 19 16	0	i 12 34	pP	—
Dane		74·2	349	i 10 42	− 1	i 19 28	− 5	e 11 14	P_cP	—
Kirkland Lake		74·3	349	i 10 44	+ 1	—	—	e 12 44	pP	—
La Jolla		77·0	316	i 10 55	− 3	e 20 1	− 2	e 13 3	pP	—
Palomar	z.	77·1	317	i 10 59a	0	e 20 3	− 1	i 13 1	pP	—
Pierce Ferry		77·3	320	i 11 0	0	i 20 5	− 1	e 13 3	pP	—
Boulder City		77·6	320	i 11 2	0	i 20 10	+ 1	i 13 3	pP	—
Riverside		77·8	317	i 11 2a	− 1	e 20 12	+ 1	i 13 5	pP	—
Mount Wilson		78·4	317	i 11 6a	0	i 20 19	+ 2	i 13 8	pP	—
Pasadena		78·4	317	i 11 5a	− 1	i 20 17	0	i 13 8	pP	—
Salt Lake City		79·4	325	—	—	e 20 44	+16	—	—	—
Haiwee		79·6	318	i 11 12a	0	i 20 30	0	e 13 16	pP	—
Santa Barbara	z.	79·6	316	i 11 13	+ 1	—	—	e 13 17	pP	—
Tinemaha		80·4	318	i 11 17a	+ 1	i 20 42	+ 4	e 13 20	pP	—
Fresno	N.	81·1	318	—	—	e 20 41	− 4	—	—	—
Bozeman		82·5	329	—	—	e 20 57	− 2	e 24 34	sS	—
Lick		82·7	317	e 11 28	0	e 21 1	+ 1	e 13 36	pP	—
Malaga	z.	82·9	44	i 11 28k	− 1	20 59	− 3	13 33	pP	27·4
Granada		83·7	44	i 11 31a	− 2	20 56	−14	(13 36)	pP	40·9
Almeria		84·2	45	i 11 36	+ 1	21 38	+23	14 58	PP	39·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toledo	z.	85·0	42	i 11 38	− 1	i 21 7	[− 4]	12 55	pP	—
Shasta Dam		85·2	319	i 11 38	− 2	e 21 20	− 5	e 21 7	S_cS	—
Alicante		86·3	45	11 13	−32	21 15	[− 4]	—	—	e 35·2
Ivigtut		86·8	8	11 46	− 2	21 38	− 1	21 18	SKS	—
Grand Coulee		88·0	327	e 13 59	pP	—	—	—	—	—
Tortosa		88·4	43	i 11 55	0	i 21 28	[− 4]	15 24	PP	—
Clermont-Ferrand		92·7	40	i 12 15	0	i 21 57	[0]	i 14 21	pP	36·2
Kew		94·1	34	i 12 18	− 4	i 16 14	PP	i 14 25	pP	e 28·2
Paris		94·1	37	i 12 21	− 1	i 22 36	− 8	e 14 28	pP	—
Uccle		96·2	36	e 12 29	− 2	e 22 12	[− 3]	e 16 27?	PP	—
Rome		96·6	47	e 12 22	−11	e 22 18	[+ 1]	e 14 40	pP	—
Florence		96·7	45	e 12 20	−13	i 22 26	[+ 8]	—	—	—
Zürich		96·8	40	e 12 33	− 1	e 22 14	[− 4]	e 16 25	PP	—
Strasbourg		96·9	39	e 12 33	− 1	i 22 17	[− 2]	e 14 40	pP	—
De Bilt		97·3	36	i 12 35k	− 1	e 22 18	[− 3]	i 16 39	PP	—
Stuttgart		97·9	40	e 12 37k	− 2	e 22 21	[− 3]	e 14 42	pP	e 51·2
Triest		99·1	44	i 16 52	PP	i 22 27	[− 3]	—	—	—
Scoresby Sund		99·6	13	—	—	23 30	0	22 32	SKS	—
Jena		100·2	39	e 12 48	− 1	—	—	e 16 58	PP	—
Prague		101·5	40	e 17 0	PP	22 38	[− 4]	e 19 24	PPP	—
Potsdam	E.	101·7	37	—	—	e 22 41	[− 1]	—	—	—
Copenhagen		102·8	34	e 12 59	− 1	23 54	− 2	e 17 16	PP	—
Belgrade		103·1	47	e 17 16	PP	e 23 30	−29	e 27 20	PPS	—
Helwan		105·9	64	e 17 36	PP	i 22 58	[− 3]	e 19 30	PPP	—
Warsaw		106·2	40	15 45	?	23 0	[− 3]	e 16 41	PP	—
Upsala	E.	107·0	32	—	—	e 22 59	[− 7]	e 23 51	?	—
Istanbul		107·8	53	e 18 12?	PP	—	—	—	—	—
Ksara		110·9	61	e 18 19	PP	e 26 59	PS	20 9	pPP	—
Moscow		116·5	38	17 42	[0]	23 39	[− 5]	18 41	PP	—
Sverdlovsk		129·1	36	18 7	[0]	i 24 23	[0]	20 17	pPKP	—
Ashkabad		129·5	60	18 8	[+ 1]	—	—	20 26	pPKP	—
Stalinabad		137·7	59	18 12	[−11]	—	—	—	—	—
Tashkent		137·8	55	18 37	[+14]	—	—	21 8	PP	—
Obi-garm		138·4	58	18 15	[− 9]	—	—	—	—	—

Additional readings :—
La Plata E =3m.59s., S?E =4m.12s., iSZ =4m.31s., S_cS?E =13m.44s.
Huancayo e =5m.43s.
Philadelphia e =10m.5s. and 10m.8s., eS_cS =18m.48s., esS? =21m.9s., eSS =22m.40s.
Weston eSS =22m.48s.
Harvard ePP =12m.41s., ePS =19m.25s., eSS =22m.47s.
St. Louis iSPE =19m.8s., esSE =21m.45s., eSSE =23m.2s.
Florissant iSPE =19m.9s., esSE =21m.47s., iSSE =23m.3s.
Tucson iS_cS =19m.50s.
Pierce Ferry esS? =23m.23s.
Boulder City iP_cP =11m.16s.
Riverside iZ =13m.24s.
Pasadena eZ =14m.14s.
Bozeman e =23m.19s.
Lick eSE =21m.4s.
Malaga pPZ =11m.39s., P_cPZ =12m.35s., iSZ =18m.29s., phases wrongly identified.
Granada pP =12m.33s., pPP =16m.41s., pPPP =18m.27s., SS =26m.56s., SSS =30m.0s., true pP is recorded as sP.
Almeria pP =12m.2s., PPP =16m.49s., PS =23m.6s., SS =27m.43s.
Tortosa iN =12m.6s., PS?E =24m.19s., PPS?E =25m.27s., SSE =28m.16s.
Clermont-Ferrand iPPP =16m.7s., esS =25m.18s.
Kew i =20m.57s.
Paris e =12m.33s., ePP =16m.12s., i =16m.16s. and 16m.21s., epPP =18m.0s., esPP =19m.12s., iSKS =22m.0s., eSKKS =22m.11s., e =23m.14s., ePS =25m.8s., iSS =26m.4s.
Rome ePPZ =16m.36s., eSSN =26m.12s.?
Strasbourg ePP =16m.24s., iPP =16m.36s., epPP =17m.57s. and 18m.17s., esPP =19m.16s., e =25m.58s., 29m.42s., and 29m.48s.
Stuttgart ePP =16m.40s., ePPPZ =18m.26s.
Prague eSKKS =23m.47s., eSS =29m.24s., eSSS =34m.12s.
Copenhagen i =22m.48s.
Belgrade e =19m.42s.
Warsaw ePPPZ =17m.37s., ePPPE =17m.48s., eSKKSZ =23m.9s., eZ =24m.11s. and 25m.38s., eE =26m.54s. and 27m.12s.
Ksara e =36m.21s.
Moscow sPP =21m.35s., SP =27m.38s.?
Sverdlovsk PP =20m.2s.

July 25d. Readings also at 0h. (near Obi-garm), 1h. (Stuttgart, Riverview, Santa Clara, near Boulder City, Overton, Pierce Ferry, Fresno, and Shasta Dam (2)), 2h. (Branner and Weston), 3h. (near Balboa Heights and near Stalinabad), 4h. (Mount Wilson, Palomar, Tinemaha, Tucson, Pierce Ferry, and Shasta Dam), 5h. (near Fresno and Pierce Ferry), 6h. (near Ferndale, Zürich, and near Stalinabad), 7h. (near Boulder City, Pierce Ferry, Fresno, and near Santa Lucia), 9h. (Uccle and near Harvard), 10h. (Boulder City, Pierce Ferry, Tucson, and Stuttgart), 12h. (near Stalinabad), 13h. (Cheb and near Mizusawa), 14h. (Shasta Dam, Strasbourg, and near Stalinabad), 15h. (Uccle), 16h. (Salt Lake City, Lick, Santa Clara, Shasta Dam, near Fresno, Boulder City, and Pierce Ferry), 17h. (Strasbourg), 19h. (Shasta Dam and near Harvard), 20h. (Pavia, Rome, Triest, Stuttgart, Basle, Zürich, and Lick), 23h. (Riverview, Wellington, and Stuttgart).

July 26d. 2h. 49m. 40s. Epicentre 34°·1N. 116°·3W. (as at 25d.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palomar	z.	0·9	212	i 0 16$_a$	− 4	—	—	—	—	—
Riverside		0·9	263	i 0 16	− 4	i 0 27	− 7	—	—	—
La Jolla	z.	1·5	213	i 0 25	− 3	—	—	—	—	—
Mount Wilson		1·5	275	i 0 26$_a$	− 2	i 0 46	− 3	—	—	—
Pasadena		1·6	275	i 0 27	− 3	i 0 45	− 6	—	—	—
Boulder City		2·2	47	i 0 41	+ 3	i 1 17	S$_g$	—	—	—
Pierce Ferry		2·8	43	i 0 48	+ 1	—	—	—	—	—
Fresno	N.	3·9	314	e 1 2	0	i 1 43	− 7	i 1 12	P*	—
Tucson		4·9	110	e 1 18	+ 1	i 1 51	?	i 1 40	P$_g$	i 2·1
Lick		5·4	308	1 30	+ 6	2 30	+ 2	i 1 50	P$_g$	i 2·9
Santa Clara		5·6	307	e 1 58	P$_g$	e 2 50	S*	—	—	—
Branner	N.	5·8	306	e 1 35	+ 6	i 2 49	+11	—	—	—
Berkeley		6·1	309	i 1 33	− 1	i 2 56	+11	e 1 59	P$_g$	—
Salt Lake City		7·5	26	—	—	e 3 29	+ 9	—	—	e 4·8
Ukiah		7·5	315	—	—	e 3 25	+ 5	—	—	e 4·2
Shasta Dam		8·2	326	e 2 6	+ 3	—	—	—	—	—
Denver		10·7	54	—	—	5 32	S*	—	—	6·0
Rapid City		14·2	42	e 3 36	+12	e 7 20	L	—	—	e 7·7
Florissant		21·4	69	e 4 52	+ 1	i 9 3	+18	—	—	e 9·3
St. Louis		21·5	69	i 4 55	+ 3	e 9 5	+18	—	—	e 11·2
Chicago		23·8	61	e 5 13	− 2	e 9 42	+14	e 6 33	PP	e 12·2

Additional readings :—
Pierce Ferry i =57s.
Fresno iSN =2m.3s.
Lick iE =1m.54s.
Branner eE =1m.42s.
Berkeley eE =1m.36s., eZ =3m.2s.
Long waves were also recorded at Butte, Harvard, Weston, Philadelphia, and Granada.

July 26d. 11h. 55m. 31s. Epicentre 47°·5N. 152°·1E. Depth of focus 0·005.

A = −·5994, B = +·3173, C = +·7349 ; δ = +4 ; h = −4 ;
D = +·468, E = +·884 ; G = −·650, H = +·344, K = −·678.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa	N.	11·5	228	e 2 32	−12	e 4 22	−29	—	—	—
Vladivostok		14·9	260	i 3 24	− 4	i 6 7	− 5	—	—	—
Sitka		43·3	50	e 7 57	0	e 14 28	+ 9	9 45	PP	17·8
Sverdlovsk		52·8	317	i 9 13	+ 2	16 37	+ 4	—	—	—
Grand Coulee		56·5	54	e 9 37	− 1	—	—	—	—	—
Tashkent		56·8	297	e 9 41	+ 1	e 17 29	+ 3	—	—	—
Shasta Dam		58·8	63	e 9 54	0	—	—	—	—	—
Stalinabad		58·8	296	e 9 55	+ 1	17 56	+ 3	—	—	—
Scoresby Sund		62·3	358	10 22	+ 4	18 45	+ 8	—	—	—
Moscow		63·4	325	e 10 25	0	e 18 54	+ 3	—	—	—
Tinemaha	z.	63·6	63	i 10 27	+ 1	—	—	i 10 47	pP	—
Helsinki		64·4	334	—	—	e 20 20	PPS	—	—	38·5
Haiwee	z.	64·4	64	i 10 31	− 1	—	—	—	—	—
Pasadena	z.	65·6	66	i 10 38	− 1	—	—	i 10 53	pP	—
Riverside	z.	66·2	66	i 10 42$_a$	− 1	—	—	i 10 58	pP	—

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		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pierce Ferry		66·8	62	i 10 47	0	e 19 38	+ 5	—	—	—
Palomar	Z.	66·9	66	i 10 47a	0	—	—	i 11 6	pP	—
La Jolla	Z.	67·0	67	e 10 46	− 2	—	—	—	—	—
Rapid City		67·3	49	e 10 57	+ 7	e 19 53	+14	—	—	—
Tucson		71·4	62	i 11 15	0	—	—	i 11 37	pP	—
Leninakan		71·5	311	e 11 27	+11	—	—	—	—	—
Copenhagen		71·8	338	i 11 20	+ 2	i 20 39	+ 7	21 18	PPS	34·5
Warsaw	E.	72·2	331	e 13 3	?	e 20 45	+ 9	e 21 25	PPS	e 36·5
Brisbane	N.	74·6	179	i 11 22	−12	—	—	—	—	—
Jena		76·2	335	e 11 46	+ 3	—	—	—	—	—
De Bilt		76·8	340	e 11 49	+ 3	e 21 35	+ 8	—	—	e 41·5
St. Louis		77·9	45	e 11 52	0	i 21 44	+ 5	—	—	—
Florissant		78·0	45	e 11 50	− 3	i 21 39	− 1	—	—	e 34·5
Uccle		78·2	341	e 11 56	+ 2	e 21 47	+ 5	—	—	43·5
Kew		78·6	343	e 11 59	+ 3	—	—	—	—	e 42·5
Stuttgart		78·9	336	e 12 0	+ 2	e 21 52	+ 2	—	—	42·5
Strasbourg		79·4	337	e 12 3	+ 2	e 22 2	+ 7	i 12 35	pP	40·0
Triest		80·3	333	—	—	e 22 17	+13	—	—	—
Zürich		80·3	337	e 12 7k	+ 2	22 12	+ 8	—	—	—
Basle		80·4	337	e 12 8	+ 2	—	—	—	—	—
Paris		80·5	341	i 12 11	+ 4	e 22 15	+ 8	e 15 31	PP	e 42·5
Ksara		80·9	311	12 12	+ 3	22 27	+16	—	—	42·5
Weston		82·6	31	—	—	e 28 21	SS	—	—	—
Florence		82·8	333	e 11 5	−73	e 22 43	+13	—	—	—
Clermont-Ferrand		83·2	339	e 12 5	−16	—	—	—	—	39·5
Rome		84·1	332	e 12 25	0	e 22 44	+ 1	—	—	—
Helwan		86·4	312	i 12 37a	+ 1	23 9	+ 4	22 53	SKS	—
Tortosa		88·5	339	—	—	e 23 13	−12	24 6	PS	48·5
Toledo	Z.	90·5	342	e 12 46	−10	e 23 47	+ 4	—	—	—
Alicante		91·1	340	7 40	?	—	—	—	—	e 44·5
Granada		92·9	342	e 15 6	?	e 24 19	+14	27 49	PPS	52·2

Additional readings :—
Sitka esS? =14m.53s.
Tinemaha iZ =11m.3s.
Haiwee i =11m.1s.
Riverside iZ =11m.11s.
Palomar iZ =11m.11s.
Warsaw eE =24m.54s. and 29m.50s.
Jena eN =12m.49s.
Paris e =12m.38s. and 16m.7s., ePPS? =23m.29s.
Helwan iZ =13m.9s.
Tortosa eN =22m.29s., S_cS?EN =23m.35s.
Long waves were also recorded at Almeria, Malaga, Cheb, and Bombay.

July 26d. 15h. 57m. 52s. Epicentre 2°·2S. 139°·3E. (as on 1945, Oct. 6d.).

A = −·7576, B = +·6516, C = −·0382 ; δ = 0 ; h = +7 ;
D = +·652, E = +·758 ; G = +·029, H = −·025, K = −·999.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	28·4	154	e 5 46	−12	e 12 3	SS	—	—	12·8
Riverview		33·4	162	6 53	+11	e 12 22	+17	—	—	e 16·5
Vladivostok		45·6	353	e 8 26	+ 2	i 15 14	+ 8	—	—	—
Wairiri		50·3	150	e 10 23	P_cP	e 15 52	−21	19 54	SS	25·7
Almata		71·7	318	e 11 24	− 2	—	—	—	—	—
Andijan		74·2	313	e 11 37	− 3	—	—	—	—	—
Obi-garm		75·6	11	11 50	+ 2	—	—	—	—	—
Ashkabad		84·2	308	e 12 36	+ 2	—	—	—	—	—
Sverdlovsk		85·6	327	i 12 40	− 1	23 14	+ 1	23 48	S_cS	—
Ksara		102·4	303	e 17 15	?	e 29 51	?	—	—	58·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		107·9	57	e 19 12	PP	—	—	—	—	—
Scoresby Sund		110·7	353	19 26	PP	35 8	SSP	—	—	—
Stuttgart		117·0	325	e 18 58?	[+11]	—	—	—	—	e 65·1
De Bilt		117·3	330	e 20 2	PP	—	—	—	—	e 60·1
Florissant		122·0	45	e 20 41	PP	—	—	—	—	e 56·1
St. Louis		122·1	45	e 20 31	PP	—	—	i 20 42	?	e 50·1
Ottawa		127·6	30	e 21 15	PP	—	—	—	—	63·1
La Paz	z.	147·2	126	i 19 45	[+ 2]	—	—	—	—	76·1

Long waves were also recorded at Weston and at other European stations.

July 26d. 22h. 58m. 31s. Epicentre 50°·5S. 9°·5W.

A = +·6274, B = −·1050, C = −·7716; δ = +2; h = −6;
D = −·165, E = −·896; G = −·761, H = +·127, K = −·636.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Antarctica		32·5	215	i 7 1	+27	e 12 29	+40	—	—	e 18·0
La Paz		57·6	284	i 9 49	− 5	i 17 43	− 8	—	—	26·9
Huancayo		65·5	281	e 10 45	− 2	e 19 56	PS	—	—	e 31·2
Wairiri		86·2	181	13 21	?	23 53	+34	24 58	PS	42·5
Malaga	z.	87·2	4	i 12 50a	+ 1	24 9	PS	13 8	pP	41·7
Almeria		87·4	6	i 12 50	0	e 23 11	−19	16 3	PP	43·5
Granada		87·7	4	i 12 52a	0	i 23 27	− 6	12 59	pP	45·2
Helwan	z.	87·9	35	e 13 2	+ 9	—	—	—	—	—
Alicante		89·0	7	e 13 10	+12	e 23 47	+ 2	—	—	e 41·0
Toledo	z.	90·3	4	e 12 59	− 5	—	—	16 13	PP	—
Tortosa		91·5	8	13 23	+13	24 13	+ 5	13 31	PcP	e 45·5
Ksara		93·2	36	e 13 36	+19	24 54?	+31	17 23	PP	—
Rome		94·2	15	e 13 27	+ 5	e 24 32	+ 1	e 25 39	PS	—
Florence	z.	95·8	14	e 11 45	?	23 29	[−36]	—	—	—
Clermont-Ferrand		96·8	8	—	—	e 24 59	+ 5	—	—	44·5
Triest		98·0	15	—	—	e 25 8	+ 4	—	—	—
Paris		99·6	7	e 13 51	+ 5	e 24 48	{− 3}	i 17 48	PP	e 49·5
Bombay		99·7	72	—	—	e 23 42	?	—	—	—
Strasbourg		100·0	11	e 17 55	PP	e 24 35	[+ 8]	e 19 59	PPP	41·5
Stuttgart		100·4	12	e 13 54	+ 4	—	—	e 17 59	PP	e 49·5
De Bilt		103·2	9	e 14 19	+16	e 18 14	PP	—	—	46·5
Warsaw		105·7	18	18 44	PP	27 58	PS	e 20 1	PPP	e 57·5
St. Louis		113·6	302	e 17 46	?	28 51	PS	e 19 21	PP	—
Florissant	E.	113·7	302	e 14 56	P	—	—	e 19 7	PP	—
Shasta Dam		133·6	285	e 19 27	[+ 8]	—	—	—	—	—

Additional readings :—
La Paz iSEN = 17m.27s.
Huancayo eS? = 18m.1s.
Wairiri SSN = 30m.9s.
Malaga PPZ = 16m.1s., PPPZ = 18m.1s., eSZ = 22m.51s.
Almeria PPP = 17m.55s., PS = 25m.31s., SS = 28m.31s.
Granada P_cP = 13m.9s., PP = 16m.0s., pPP = 16m.12s., PS = 24m.24s.
Tortosa S_cS?N = 24m.25s.
Rome eSS = 30m.47s.
Paris e = 17m.55s. and 34m.0s.
Strasbourg e = 26m.41s. and 36m.5s.
Long waves were also recorded at Kew, Copenhagen, Cheb, Uccle, and New Delhi.

July 26d. Readings also at 0h. (Brisbane, Riverview, Granada, Warsaw, Pasadena, Riverside, Tinemaha, Tucson, and Shasta Dam), 1h. (Basle, De Bilt, Stuttgart, Strasbourg, Toledo, Tortosa, near Boulder City, Shasta Dam, Pierce Ferry, and Fresno), 4h. (near Boulder City and Pierce Ferry), 5h. (Lick, near Boulder City and Pierce Ferry, near Bogota, and near Reykjavik), 7h. (Rome), 10h. (Obi-garm and near Stalinabad), 13h. (near Rome (2)), 14h. (New Delhi), 17h. (Tucson), 18h. (Jena), 19h. (near Branner), 21h. (Grand Coulee), 22h. (Harvard, La Plata, San Juan, Weston (2), near Granada and Malaga, near Obi-garm and Stalinabad), 23h. (Granada, Weston, Shasta Dam, Pierce Ferry (2), Boulder City, Tucson, near Berkeley, Branner, Lick, and Fresno (2)).

July 27d. 20h. 9m. 4s. Epicentre 39°·3N. 41°·2E. (as on 1946, May 31d.).

$A = +·5838$, $B = +·5111$, $C = +·6308$; $\delta = -5$; $h = -1$;
$D = +·659$, $E = -·752$; $G = +·475$, $H = +·416$, $K = -·776$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Leninakan		2·6	54	0 45?	+ 1	1 40?	+23	—	—	—
Erevan		2·7	71	0 59	P_g	1 48	S_g	—	—	—
Sotchi		4·5	324	e 1 2	− 9	1 50	−15	—	—	—
Piatigorsk		4·9	15	1 19	+ 2	—	—	—	—	—
Grozny		5·3	39	1 30	+ 8	—	—	—	—	—
Baku		6·8	78	e 2 9	P_g	—	—	—	—	—
Istanbul		9·4	285	e 2 6	−12	5 4	SS	—	—	—
Helwan	z.	12·6	224	e 3 10	+ 7	—	—	—	—	e 7·6
Ashkabad		13·5	90	e 3 29	+14	—	—	—	—	—
Moscow		16·6	354	3 52	− 4	e 6 52	− 8	—	—	—
Warsaw		19·0	321	e 4 26	0	7 51	− 4	8 11	SS	10·9
Triest		21·2	298	e 4 52	+ 3	e 8 40	− 1	—	—	—
Tashkent		21·5	75	e 5 0	+ 8	—	—	—	—	—
Sverdlovsk		21·7	30	e 4 51	− 4	e 8 47	− 4	—	—	—
Rome		21·9	288	e 4 58	+ 1	e 9 6	+12	—	—	e 10·9
Obi-garm		22·1	82	e 5 8	+ 9	—	—	—	—	—
Cheb		23·0	308	—	—	e 9 17	+ 3	—	—	—
Helsinki		23·2	340	i 5 10	+ 1	e 9 17	− 1	—	—	e 11·9
Jena	E.	23·8	310	e 5 11	− 4	—	—	—	—	—
Stuttgart		24·7	305	e 5 21	− 3	e 9 40	− 4	—	—	e 15·9
Zürich		24·9	301	e 5 23	− 3	—	—	—	—	—
Copenhagen		25·2	321	—	—	9 36	−16	—	—	16·9
Basle		25·6	301	e 5 34	+ 2	—	—	—	—	—
Strasbourg		25·6	304	e 5 34	+ 2	e 10 3	+ 4	—	—	—
De Bilt	z.	27·9	310	—	—	e 10 56?	+19	—	—	—
Almeria		34·2	281	e 6 42	− 7	e 12 6	−10	6 54	pP	18·9
Toledo	z.	34·6	286	e 6 51	− 2	—	—	—	—	—

Additional readings :—
Jena eN = 5m.16s.
Stuttgart eP = 5m.26s.
Almeria PP = 8m.8s.
Long waves were also recorded at Uccle.

July 27d. Readings also 2h. (Stuttgart, near Alicante, Toledo, and near Rome), 3h. (Stuttgart and near Triest), 4h. (Rome, Salt Lake City and Santa Lucia), 6h. (near Alicante), 9h. (Ksara), 10h. (Brisbane, near Boulder City and Pierce Ferry), 11h. (Andijan, Stalinabad, Obi-garm, Grozny, Sverdlovsk, Moscow, Vladivostok, Ksara, Stuttgart, Toledo, near Boulder City and Pierce Ferry), 12h. (near Stalinabad), 16h. (Stuttgart), 19h. (Alicante, Granada, Malaga, Toledo, Stuttgart, and La Paz), 20h. (Weston, Istanbul, near Ksara, and near Rejykavik), 21h. (near Pierce Ferry).

July 28d. 3h. 48m. 52s. Epicentre 63°·4N. 147°·9W.

$A = -·3813$, $B = -·2392$, $C = +·8929$; $\delta = -12$; $h = -10$;
$D = -·531$, $E = +·847$; $G = -·756$, $H = -·474$, $K = -·450$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sitka		8·5	128	e 2 9	+ 2	e 4 0	+15	—	—	e 4·2
Victoria		20·1	126	4 43	+ 5	8 35	+16	—	—	11·1
Grand Coulee		22·2	120	e 5 2	+ 2	—	—	1 5 9	PP	e 11·6
Saskatoon		24·4	98	4 4	?	8 17	?	—	—	13·1
Shasta Dam		27·3	133	e 5 47	− 1	—	—	—	—	—
Berkeley		29·9	135	i 6 12	0	e 11 8	− 1	—	—	—
Rapid City		31·8	106	e 6 56	+28	—	—	e 7 29	PPP	e 15·0
Tinemaha	z.	31·9	131	e 6 29	0	—	—	—	—	—
Haiwee	z.	32·9	131	i 6 38	0	—	—	—	—	—
Boulder City		34·1	127	e 6 47	− 1	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pierce Ferry		34·3	126	e 6 48	− 2	—	—	—	—	—
Mount Wilson	z.	34·6	133	e 6 50	− 3	—	—	—	—	—
Pasadena	z.	34·6	133	i 6 56	+ 3	—	—	—	—	—
Riverside	z.	35·0	133	e 7 1	+ 5	—	—	—	—	—
Palomar	z.	35·8	132	i 7 2	− 1	—	—	—	—	—
Tucson		38·9	125	i 7 28	− 1	—	—	e 9 39	PPP	e 16·5
Kirkland Lake		39·0	80	i 7 30	0	—	—	e 17 0	SSS	20·1
Dane		39·1	80	i 7 31	0	e 14 7	+36	e 9 13	PP	20·1
Chicago		40·6	93	e 9 14	PP	e 13 50	− 4	—	—	e 19·3
Scoresby Sund		41·2	25	7 49	+ 1	14 4	+ 2	9 29	PP	—
Florissant		41·8	98	i 7 52	− 1	e 14 9	− 2	—	—	i 22·3
St. Louis		41·9	98	i 7 53	− 1	e 14 14	+ 1	e 9 43	PP	i 22·4
Ottawa		43·1	79	8 3	− 1	14 33	+ 3	9 48	PP	20·1
Shawinigan Falls		43·5	75	e 8 7	0	—	—	—	—	24·1
Seven Falls		43·9	73	e 8 9	− 1	—	—	—	—	17·6
Harvard		47·2	78	i 8 37	+ 1	—	—	e 10 27	PP	e 23·5
Weston		47·4	78	i 8 37k	− 1	—	—	e 10 30	PP	—
Philadelphia		47·6	83	e 8 39	0	e 15 39	+ 4	e 10 29	PP	e 18·7
Vladivostok		48·4	286	e 8 44	− 2	e 15 49	+ 3	—	—	—
Irkutsk		51·7	312	e 9 15	+ 4	e 16 42	+10	—	—	—
Helsinki		56·6	5	e 9 46	− 1	—	—	—	—	e 34·1
Sverdlovsk		58·1	342	i 9 57	− 1	17 58	0	—	—	—
Copenhagen		60·3	13	e 10 13	0	e 18 29	+ 3	—	—	31·1
Moscow		61·1	357	e 10 24	+ 6	e 18 41	+ 4	—	—	—
De Bilt		62·9	18	e 10 31a	+ 1	—	—	—	—	e 36·1
Warsaw	E.	64·4	7	—	—	e 19 21	+ 3	—	—	e 26·1
Paris		65·7	22	e 10 49	+ 1	e 19 37	+ 3	—	—	—
Strasbourg		66·7	17	e 10 56	+ 1	e 17 55	?	e 24 50	SS	—
Stuttgart		66·7	16	e 10 56a	+ 1	e 19 48	+ 2	—	—	e 34·1
Zürich		68·0	18	e 11 2	− 1	—	—	—	—	—
Clermont-Ferrand		68·8	22	e 11 8	0	e 20 19	+ 8	—	—	36·1
Tashkent		71·5	332	e 11 24	0	—	—	—	—	—
Toledo	z.	73·1	29	i 11 36	+ 2	i 21 6	+ 5	11 49	PcP	32·8
Rome		73·9	16	e 11 28	−11	e 21 12	+ 2	—	—	—
Alicante		75·3	27	—	—	e 21 10	−16	—	—	e 35·5
Granada		75·8	29	i 11 54	+ 4	i 21 39	+ 8	e 14 38	PP	33·8
Malaga	z.	76·1	30	i 11 53a	+ 2	e 22 46	PPS	12 0	pP	41·0
Almeria		76·4	28	e 12 56	?	—	—	—	—	—
Bogota	z.	78·7	103	e 11 56	−10	—	—	—	—	—
Ksara		83·1	358	e 12 31	+ 2	23 7	+19	15 45	PP	—
Helwan	z.	87·1	1	e 12 50	+ 1	—	—	e 16 14	PP	—

Additional readings :—
Berkeley iZ =6m.16s.
Haiwee iZ =6m.42s.
Mount Wilson iZ =6m.57s.
Tucson i =7m.33s. and 7m.46s.
Dane eE =17m.14s.
Scoresby Sund 17m.14s.
St. Louis eSSE =17m.18s.
Ottawa SS =17m.38s.
Malaga PPZ =15m.38s., PPPZ =17m.40s., PSZ =24m.0s., SSZ =28m.38s.
Long waves were also recorded at Honolulu, Denver, New Kensington, Bermuda, and Pennsylvania.

July 28d. Readings also at 0h. (Stuttgart, Boulder City, Shasta Dam, and Tucson), 1h. (Boulder City, Tucson, Pierce Ferry, Paris, Clermont-Ferrand, Strasbourg, and Stuttgart), 2h. (near Stalinabad), 5h. (near Leninakan), 6h. (near Pierce Ferry), 7h. (Ksara, Belgrade, Zagreb, Florence, Rome, Triest, Istanbul, Warsaw, Prague, Cheb, De Bilt, Kew, Copenhagen, Stuttgart, Clermont-Ferrand, and Toledo), 8h. (Mizusawa), 9h. (Harvard), 10h. (Stuttgart), 11h. (Rome and Warsaw), 13h. (Andijan, Tashkent, near Obi-garm, and Stalinabad), 18h. (near Boulder City and Pierce Ferry), 20h. (Boulder City), 21h. (Antarctica and near Apia),

July 29d. 2h. 37m. 54s. Epicentre 23°·5S. 71°·0W. (as on 1946, December 1d.).

$A = +·2989$, $B = -·8680$, $C = -·3965$; $\delta = -2$; $h = +4$;
$D = -·946$, $E = -·326$; $G = -·129$, $H = +·375$, $K = -·918$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		2·2	66	e 0 35	− 3	i 0 58	− 8	—	—	e 1·2
La Paz		7·5	22	i 1 50	− 3	i 3 15	− 5	i 2 28	P_g	4·0
Santa Lucia	N.	9·9	179	2 44	+19	—	—	—	—	—
Huancayo		12·1	340	i 3 21	+24	i 6 11	+57	—	—	i 6·9
La Plata	E.	16·1	138	3 54	+ 5	5 42	−67	—	—	6·9
St. Louis		64·4	344	i 10 35	− 5	e 19 12	− 6	—	—	—
Florissant		64·6	344	e 10 36	− 5	e 19 12	− 9	—	—	—
Harvard		65·7	0	i 10 39	− 9	—	—	—	—	—
Tucson		67·1	324	e 10 57	0	—	—	—	—	—
Palomar		71·5	320	i 11 25	+ 1	—	—	—	—	—
Dane		71·6	354	e 11 17	− 8	—	—	—	—	—
Kirkland Lake		71·8	354	e 11 17	− 9	—	—	—	—	—
Pierce Ferry		71·9	324	e 11 28	+ 1	—	—	—	—	—
Boulder City		72·2	323	i 11 29	0	—	—	—	—	—
Riverside	Z.	72·2	320	i 11 31	+ 2	—	—	—	—	—
Mount Wilson		72·8	320	i 11 32	0	—	—	—	—	—
Pasadena		72·8	320	i 11 33	+ 1	—	—	—	—	—
Santa Barbara	Z.	73·9	319	i 11 45	+ 6	—	—	—	—	—
Haiwee	Z.	74·1	322	i 11 40	0	—	—	—	—	—
Tinemaha	Z.	74·9	323	i 11 46	+ 2	—	—	—	—	—
Shasta Dam		79·7	323	i 12 8	− 3	—	—	—	—	—
Grand Coulee		83·1	331	e 12 26	− 3	—	—	—	—	—
Granada		87·5	48	e 14 53$_a$	+122	22 44	[−33]	e 16 50	PP	31·8
Toledo	Z.	88·7	46	12 36	−21	—	—	—	—	—
Tortosa		92·1	47	—	—	23 12	[−33]	24 39	S	—

Additional readings :—
Tucson e = 12m.2s.
Palomar iZ = 12m.16s.
Tortosa SKKSEN = 23m.37s.
Long waves were also recorded at Alicante.

July 29d. 6h. 25m. 20s. (I)
23h. 30m. 11s. (II)
Epicentre 0°·2N. 125°·2E. (as on 1946, October 14d.).

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

			Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
			°	°	m. s.	s.	m. s.	s.	m. s.		m.
I	Riverview	E.	41·7	147	—	—	17 10	SS	—	—	e 23·3
II		N.	41·7	147	—	—	e 14 3	− 7	—	—	e 24·9
I	Vladivostok		43·2	7	e 7 59	− 5	i 14 18	−14	—	—	—
II			43·2	7	e 8 2	− 2	i 14 24	− 8	—	—	—
I	Bombay		54·6	293	e 8 1	?	—	—	—	—	—
I	Irkutsk		54·8	345	e 9 31	− 3	e 17 5	− 9	—	—	—
II			54·8	345	e 9 34	0	e 17 14	0	—	—	—
I	Wairiri	Z.	60·2	143	—	—	e 18 20	− 5	e 24 40	SSS	e 32·3
I	Andijan		62·5	317	e 10 32	+ 4	—	—	—	—	—
I	Stalinabad		64·2	314	i 10 38	− 1	—	—	—	—	—
II			64·2	314	i 10 40	+ 1	—	—	—	—	—
I	Tashkent		64·9	317	e 10 41	− 2	e 19 20	− 4	—	—	—
II			64·9	317	e 10 41	− 2	e 19 23	− 1	—	—	—
I	Sverdlovsk		76·3	330	i 11 51	− 1	i 21 27	−10	—	—	—
II			76·3	330	i 11 52	0	e 21 29	− 8	—	—	—
II	Grozny		82·2	314	e 12 27	+ 3	—	—	—	—	—
I	Moscow		88·5	326	12 56	0	23 32	− 9	29 13	SS	—
I	Ksara		89·3	304	i 13 4	+ 5	23 56	+ 8	16 36	PP	—
II			89·3	304	e 13 1	+ 2	23 51	+ 3	—	—	—
I	Helwan		93·3	300	e 13 21	+ 3	e 23 52	[0]	—	—	—
II		Z.	93·3	300	e 13 19	+ 1	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
I Warsaw	E.	98·5	323	—	—	e 24 11	[− 9]	e 25 4	S		e 56·7
I Scoresby Sund		106·2	350	—	—	26 8	− 4	—	—		52·7
II		106·2	350	—	—	26 13	+ 1	—	—		—
I Rome		106·4	314	e 18 48	PP	e 24 52	[− 5]	—	—		—
II		106·4	314	—	—	e 24 55	[− 2]	—	—		—
I Stuttgart		106·7	322	e 18 40	PP	e 26 14	− 2	—	—		e 44·7
II		106·7	322	e 18 30	PP	—	—	—	—		e 57·8
I Shasta Dam		106·7	47	e 17 50	PKP	—	—	—	—		—
II		106·7	47	e 17 44	PKP	—	—	—	—		—
I Berkeley	E.	107·5	50	—	—	e 31 54	?	—	—		e 51·6
II Strasbourg		107·7	323	—	—	e 25 1	[− 1]	—	—		—
I Paris		110·8	324	e 19 19	PP	e 28 32	PS	e 34 14	SS		e 60·7
II		110·8	324	e 18 35	[0]	e 28 38	PS	e 19 18	PP		e 64·8
I Clermont-Ferrand		111·7	320	e 19 25	PP	e 28 40?	PS	39 40?	SSS		—
I Mount Wilson		111·8	53	e 19 56	PP	i 23 15	?	—	—		—
I Tortosa		115·5	316	21 51	PKS	25 34	[0]	30 21	PS		—
I Alicante		117·2	314	—	—	e 25 50	[+10]	—	—		e 55·7
II		117·2	314	—	—	e 36 21	SS	—	—		e 66·9
I Tucson		118·1	52	e 18 48	[− 1]	e 24 27	?	—	—		—
I Toledo	Z.	119·0	317	e 19 59	PP	26 0	[+14]	—	—		—
II	Z.	119·0	317	e 18 54	[+ 3]	—	—	20 3	PP		—
I Granada		119·9	314	e 19 27k	[+34]	25 56	[+ 6]	36 3	SS		57·6
II		119·9	314	25 30	SKS	(25 30)	[−20]	e 36 37	SS		e 67·1
II St. Louis		129·5	36	e 19 11	[0]	—	—	—	—		e 65·6

Additional readings :—
Riverview I iSS?N =17m.14s.
Wairiri I QEZ =27m.35s.
Shasta Dam I e =18m.36s.
Tortosa I SKKSE =27m.36s., PPSE =31m.46s.
Paris I i =19m.40s., ePPS =29m.32s., II e =18m.57s.
Granada I S =26m.46s., II PP =26m.15s., SS =42m.18s., SSS =46m.27s. ; for shock II the phases have been wrongly identified.
Long waves were also recorded for shock I at De Bilt, Cheb, Copenhagen, and Weston, and for shock II at De Bilt, Cheb, Kew, and Uccle.

July 29d. 13h. 43m. 20s. Epicentre 28°·8N. 93°·7E.

Epicentre near that of the major earthquake of Aug. 15th, 1950. Much damage was caused at Dibrugarh Yorhat and Tezpur. The shock was felt throughout the whole of Assam, in Bengal, as far as Calcutta, and in Bihar to Purnea.

Seismo. Bull. July-September, 1947. Government of India Meteorological Department, p. 11.

Suggested epicentres 28°·5N. 94°·0E. (Bombay).
28°·0N. 94°·3E. (Strasbourg).

A = −·0566, B = +·8759, C = +·4793 ; δ = +13 ; h = +2 ;
D = +·998, E = +·065 ; G = −·031, H = +·478, K = −·878.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Calcutta	E.	7·9	219	i 1 38	−21	i 3 19	−11	—	—		—
Dehra Dun	N.	13·7	280	e 3 2	−16	i 5 10	−42	i 3 55	PPP		e 7·1
New Delhi		14·5	273	i 3 31	+ 3	i 5 52	−19	3 43	PP		6·5
Hyderabad		18·0	235	4 18	+ 5	7 25	− 7	—	—		—
Almata		19·7	323	i 4 37	+ 3	8 18	+ 8	—	—		—
Andijan		21·1	311	i 4 51	+ 3	i 8 49	+10	—	—		—
Bombay		21·5	248	i 4 50	− 2	i 8 41	− 6	—	—		—
Nanking		21·9	75	i 5 5	+ 8	i 9 6	+12	—	—		i 11·3
Stalinabad		22·9	304	i 5 6	0	—	—	—	—		—
Tashkent		23·5	310	5 17	+ 5	9 27	+ 4	—	—		—
Kodaikanal	E.	23·9	225	i 5 12	− 4	—	—	—	—		—
Colombo	E.	25·4	214	5 28	− 3	—	—	—	—		—
Ashkabad		30·7	298	i 6 20	+ 1	e 11 28	+ 7	—	—		—
Hukuoka		31·6	72	e 6 25	− 1	11 34	− 1	—	—		e 13·6
Vladivostok		33·8	55	i 6 43	− 3	i 12 4	− 6	—	—		—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kôti		34·3	72	e 7 44	+54	11 10	−67	—	—	—
Osaka		35·9	70	7 6	+ 2	12 42	0	8 2	PP	17·3
Sverdlovsk		36·4	331	i 7 11	+ 3	i 12 53	+ 3	—	—	—
Nagoya		37·0	68	7 57	+44	13 37	+38	18 0	Q	21·3
Baku		37·5	302	i 7 19	+ 2	—	—	—	—	—
Nagano		38·0	66	i 7 21	0	—	—	—	—	23·0
Tokyo		39·3	68	7 37	+ 5	13 52	+18	9 15	PP	19·7
Sendai		40·1	64	e 7 41	+ 2	13 34	−12	—	—	16·8
Mizusawa	E.	40·3	63	7 39	− 1	e 13 44	− 5	—	—	—
	N.	40·3	63	e 7 42	+ 2	e 13 38	−11	—	—	e 23·1
Sapporo		40·6	56	e 7 44	+ 1	(13 47)	− 7	—	—	13·8
Grozny		40·8	305	e 7 47	+ 2	14 1	+ 5	—	—	—
Erevan		41·6	301	e 7 56	+ 5	i 14 15	+ 7	—	—	—
Piatigorsk		42·8	306	8 4	+ 3	—	—	—	—	—
Nemuro		43·7	56	8 6	− 2	14 46	+ 7	9 7	PP	22·0
Sotchi		45·2	305	8 27	+ 7	15 14	+13	—	—	—
Moscow		47·7	322	i 8 40	0	i 15 34	− 2	—	—	—
Ksara		49·1	292	i 8 52	+ 1	16 4	+ 8	—	—	—
Simferopol		49·2	307	9 13?	+21	—	—	—	—	—
Istanbul		53·3	303	i 9 14	− 9	e 16 7	−47	—	—	—
Helwan		53·8	288	i 9 23k	− 3	i 16 55	− 6	i 19 22	ScS	—
Bucharest	E.	55·0	307	e 9 38a	+ 3	i 17 22	+ 5	i 10 34	PcP	26·7
Helsinki		55·0	327	i 9 35	0	e 17 9	− 8	e 11 6	PcP	e 27·7
Warsaw	E.	57·4	317	i 9 52	− 1	i 17 59	+10	10 45	PcP	e 31·7
Upsala		58·6	326	e 9 58	− 3	i 17 59	− 5	i 11 56	PP	e 28·4
Belgrade		58·9	308	i 10 2?a	− 1	e 18 2	− 6	i 12 23	PP	e 32·7
Budapest		59·3	312	i 10 7	+ 1	18 13	− 1	12 13	PP	28·7
Kalossa		59·6	311	e 10 10	+ 2	17 50	−27	12 31	PP	e 28·7
Prague		61·8	315	10 24k	+ 1	e 18 43	− 3	e 12 46	PP	e 30·7
Zagreb		61·8	310	i 10 22	− 1	i 18 50	+ 4	i 12 48	PP	—
Copenhagen		61·9	322	i 10 23	− 1	i 18 48	+ 1	11 2	PcP	28·7
Potsdam		62·2	318	i 10 25	− 1	i 18 43	− 8	i 12 35	PP	e 31·7
Cheb		63·1	315	i 10 34	+ 2	e 19 6	+ 4	e 12 54	PP	e 32·7
Triest		63·3	310	i 10 30	− 3	i 19 26	+22	i 12 34	PP	—
Jena		63·4	316	e 10 16	−18	i 19 13	+ 7	e 12 6	PP	e 32·4
Perth		64·0	159	10 38	0	18 40	−33	13 5	PP	—
Bergen		64·6	328	i 10 41a	0	i 19 22	+ 1	13 12	PP	27·0
Tananarive		65·1	230	e 10 42	− 3	19 21	− 6	11 32	PcP	e 31·0
Rome		65·2	307	i 10 42	− 3	e 19 27	− 1	e 13 10	PP	e 31·8
Florence		65·5	309	i 10 43	− 4	i 19 28	− 4	—	—	—
Stuttgart		65·5	315	i 10 46a	− 1	i 19 26	− 6	i 11 5	PcP	e 33·7
Chur		65·8	312	e 10 46a	− 3	e 19 32	− 3	—	—	—
Zürich		66·3	314	e 10 50a	− 2	e 19 35	− 7	e 13 25	PP	—
Strasbourg		66·4	315	i 10 52a	− 1	i 19 44	+ 1	i 11 27	PcP	—
Pavia	Z.	66·5	311	i 10 53	− 1	—	—	—	—	—
Basle		66·9	314	e 10 54a	− 2	e 19 41	− 8	—	—	—
De Bilt		67·0	319	i 10 56a	− 1	e 19 50	0	e 13 40	PP	e 32·7
Neuchatel		67·4	313	e 10 58	− 1	e 19 41	−14	—	—	—
Uccle		67·9	318	e 11 1a	− 1	i 19 58	− 3	e 13 49	PP	e 33·7
Paris		69·7	316	e 11 17	+ 3	e 20 20	− 2	i 13 50	PP	37·7
Durham		69·9	323	i 11 12	− 3	i 20 23	− 1	i 29 43	Q	—
Edinburgh		70·3	324	11 17	0	20 18	−11	11 32	PcP	—
Clermont-Ferrand		70·4	313	i 11 17	− 1	i 20 30	0	i 13 22	PP	33·7
Kew		70·4	320	i 11 17a	− 1	i 20 28	− 2	i 14 4	PP	e 38·7
Scoresby Sund		71·1	343	i 11 23	+ 1	20 44	+ 6	15 40	PPP	—
Barcelona		72·7	309	11 29	− 3	i 20 55	− 2	i 15 7	PP	35·4
Tortosa		74·0	309	i 11 39	0	i 20 56	−15	11 50	PcP	36·9
Reykjavik		74·7	337	11 44	+ 1	21 22	+ 3	15 50	PP	e 32·1
College		75·3	24	e 11 44	− 3	e 21 21	− 5	e 14 32	PP	e 29·4
Alicante		75·8	307	i 11 57	+ 7	21 59	+28	12 2	PcP	43·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toledo	z.	77·6	309	i 11 58	− 2	i 21 50	− 1	12 9	PcP	—
Almeria		77·8	306	i 11 58	− 3	i 21 56	+ 3	i 12 8	PcP	34·9
Granada		78·5	307	i 12 3k	− 1	i 21 46	−15	12 23	PcP	i 37·3
Malaga		79·3	307	i 12 7k	− 2	i 22 1	− 8	i 15 29	PP	37·8
Brisbane		79·8	129	e 12 12	0	i 22 6	− 8	i 26 51	SS	—
Lisbon		81·6	310	e 12 21	0	i 22 23	0	15 29	PP	37·9
Riverview		83·3	136	e 12 24	− 6	i 22 41	− 9	i 15 36	PP	e 37·5
Johannesburg		83·4	236	i 12 40	+10	i 22 52	+ 1	e 27 58	SS	e 40·7
Sitka		84·6	25	i 12 39	+ 3	i 22 57	− 6	i 15 56	PP	e 32·6
Ivigtut		85·1	343	12 36a	− 3	23 2	− 6	16 4	PP	40·7
Honolulu		95·0	62	e 17 41?	PP	e 24 38?	0	e 23 48?	SKS	e 36·9
Victoria		96·2	24	13 31	0	24 19	[+11]	17 31	PP	45·7
Grand Coulee		98·2	21	e 13 42	+ 2	e 24 13	[− 5]	e 17 35	PP	—
Auckland		100·2	126	15 0	?	25 20	− 2	18 3	PP	36·7
Apia		100·4	100	—	—	e 25 33	+ 9	e 26 49	PS	e 41·5
New Plymouth		100·7	128	13 52	0	e 25 10	−16	—	—	41·7
Arapuni		101·4	127	18 40	PP	24 52	[+18]	e 27 28	PS	47·2
Wairiri		101·4	133	13 53	− 2	25 36	+ 4	18 1	PP	39·8
Butte		101·8	18	e 13 52	− 4	e 24 28	[− 8]	i 18 8	PP	e 39·3
Wellington		102·3	130	14 1	+ 2	25 36	− 4	24 26	SKS	42·7
Bozeman		102·5	17	e 14 1	+ 1	e 25 52	+11	e 18 12	PP	e 42·4
Ferndale		102·5	28	e 18 29	PP	e 24 48	[+ 9]	—	—	e 57·5
Tuai		102·8	127	e 18 10	PP	(32 40?)	SS	—	—	32·7
Seven Falls		103·1	349	14 6	+ 4	25 51	+ 5	18 31	PP	49·7
Kirkland Lake		103·2	355	14 9	+ 6	—	—	—	—	37·7
Shasta Dam		103·2	27	e 14 3	0	e 24 41	[− 1]	—	—	—
Dane		103·3	355	14 3	0	24 46	[+ 3]	e 18 18	PP	—
Halifax		104·0	343	18 28	PP	26 10	+16	24 40	SKS	48·7
Shawinigan Falls		104·0	350	14 8	+ 2	24 41	[− 5]	18 30	PP	—
Ukiah		104·2	28	e 18 18	PP	e 24 49	[+ 2]	e 27 32	PS	e 43·2
Ottawa		105·5	352	14 16	+ 3	26 12	+ 6	18 32	PP	52·7
Berkeley		105·6	28	e 14 15	+ 2	e 26 24	+17	i 24 51	SKS	e 38·1
Rapid City		105·8	12	e 14 20	+ 6	e 26 21	+12	e 18 40	PP	e 40·4
Branner		106·0	28	e 19 14	PP	e 24 56	[+ 1]	—	—	e 62·3
Santa Clara	z.	106·2	28	e 18 43	PP	—	—	—	—	—
Lick		106·3	28	e 18 45	PP	e 24 55	[− 1]	e 26 36	S	—
Salt Lake City		106·8	20	e 18 59	PP	e 25 20	[+21]	e 26 40	S	e 52·6
Fresno	N.	107·6	27	e 18 48	PP	e 30 20	?	—	—	—
Harvard		107·8	348	14 23	P	28 11	PS	20 26	PPP	e 56·4
Weston		107·8	348	e 14 24	P	i 25 2	[− 1]	i 18 55	PP	—
Tinemaha	z.	107·9	26	i 18 50	PP	—	—	i 29 51	PKKP	—
Denver		109·3	15	19 3	PP	25 9	[0]	34 31	SS	66·7
Santa Barbara	z.	109·6	28	i 19 9	PP	—	—	—	—	—
Chicago		109·8	1	e 18 5	[−27]	e 25 1	[−10]	e 21 1	PPP	e 44·4
Fordham		109·8	349	e 14 33	P	i 21 43	SKP	i 19 6	PP	62·2
Boulder City		110·2	24	e 14 46	P	e 19 9	PP	e 18 35	PKP	—
Pennsylvania		110·3	353	e 18 7	[−27]	e 25 9	[− 4]	e 28 39	PS	—
Pierce Ferry		110·4	23	e 14 33	P	e 19 12	PP	e 18 49	PKP	—
Mount Wilson	z.	110·5	27	e 14 39	P	i 29 34	PKKP	e 18 42	PKP	—
Pasadena		110·5	27	e 14 34	P	i 25 9	[− 5]	e 18 42	PKP	48·7
New Kensington		110·7	355	e 18 25	[−10]	e 25 19	[+ 4]	19 47	PP	e 45·6
Philadelphia		110·8	350	e 14 36	P	i 25 21	[+ 5]	e 18 33	PKP	e 47·0
Riverside	z.	111·0	27	e 18 38	[+ 3]	e 33 36	PKKS	e 29 38	PKKP	—
Palomar	z.	111·7	26	e 14 44	P	i 29 37	PKKP	e 18 40	PKP	—
Georgetown		112·1	352	e 14 50	P	25 16	[− 5]	18 29	PKP	—
Florissant		112·6	3	e 14 44	P	i 26 23	{ 0}	i 18 44	PKP	—
St. Louis		112·8	3	i 23 25	?	i 26 56	{+31}	i 34 56	SS	—
Tucson		115·0	22	e 14 55	P	e 25 16	[−16]	e 18 46	PKP	e 47·4
Bermuda		115·6	339	e 14 52	P	i 25 40	[+ 5]	i 19 47	PP	e 53·2
Columbia		117·3	355	e 19 52	PP	e 25 43	[+ 3]	e 29 36	PS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fort de France		130·4	326	e 19 26	[+13]	e 27 38	{−44}	e 22 39	PKS	—
Antarctica		138·9	191	19 33	[+ 4]	e 26 28	[− 9]	e 22 19	PP	e 64·1
Balboa Heights		141·9	348	e 19 34	[0]	—	—	—	—	—
Bogota		144·8	338	e 19 39	[0]	e 29 7	{−42}	—	—	44·5
Puntas Arenas		152·6	201	20 34	PKP_2	26 40	[−17]	30 40	SKKS	72·2
La Plata		155·2	249	20 4	[+ 9]	30 28	{−19}	24 1	PP	73·3
La Paz		159·3	302	i 20 0a	[0]	i 30 49	{−19}	i 24 33	PP	71·1
Huancayo		160·5	326	i 20 15	[+14]	i 44 40	SS	i 24 43	PP	e 65·6
Santa Lucia	E.	165·9	247	20 16	[+ 9]	31 48	{+ 6}	45 23	SS	82·7
	N.	165·9	247	20 23	[+16]	32 42	{+60}	22 43	PKS	73·3

Additional readings and notes :—
New Delhi iE = 3m.23s., PPN = 3m.36s., SSSE = 6m.14s., iE = 6m.24s.
Hyderabad SN = 7m.20s.
Nanking iPN = 5m.8s.
Tokyo PPP = 9m.56s., P_cS = 12m.30s., S_cS = 16m.7s.
Sapporo S = 11m.49s.
Bucharest iPPE = 11m.28s., iS_cSE = 19m.26s., iSSE = 20m.40s.
Helsinki ePP = 11m.40s., ePPP = 12m.46s., iPS = 17m.17s., e = 18m.46s., 19m.24s., 23m.4s., and 23m.43s.
Warsaw iPPE = 12m.0s., iPPPE = 13m.32s., iE = 14m.8s. and 15m.39s., iS_cSE = 19m.38s., iSSE = 22m.23s., iSSSE = 24m.20s.
Upsala PPE = 11m.59s., iPPPE = 13m.13s., iPPPP?E = 13m.52s., iSN = 18m.3s., iS_cS?N = 19m.33s., iS_cSE = 19m.46s., eSSE = 22m.16s., SSS?E = 24m.58s., iN = 25m.24s.
Belgrade iPPP = 13m.24s., eSS? = 22m.39s., eSSS? = 24m.47s.
Budapest ePPPN = 13m.25s., eE = 14m.0s. and 15m.43s., SN = 17m.54s., iE = 19m.33s., eSSN = 22m.17s., SSSN = 23m.25s.
Kalossa PN = 10m.13s., iN = 11m.28s., PPPE = 13m.22s., eE = 14m.12s., eN = 15m.16s., ePSE = 18m.14s., eN = 20m.20s.
Prague e = 11m.40s.?, 19m.52s., and 20m.40s., eSS = 22m.40s.
Zagreb iP_cP = 10m.40s., i = 11m.19s. and 11m.39s., iS_cS = 20m.14s., iSKS = 20m.25s. i = 21m.27s.
Copenhagen 12m.4s., iS_cS = 20m.17s.
Potsdam iE = 11m.35s., 14m.34s., and 19m.43s., iN = 19m.52s., iS_cS = 20m.6s., iEN = 21m.9s.
Cheb e = 11m.44s., ePPP = 14m.46s., e = 15m.37s., iPS = 19m.16s., eSS = 23m.40s., eSSS = 26m.23s., e = 27m.16s. and 29m.17s.
Triest i = 20m.32s.
Jena ePPE = 12m.20s., eSN = 18m.47s., iN = 20m.16s., eSS?E = 23m.6s., eSS?N = 23m.9s.
Perth PPP = 13m.50s., PS = 19m.8s.
Bergen e = 12m.15s., eZ = 12m.52s., PPPZ = 14m.52s., S_cSN = 20m.41s., eN = 22m.6s., e = 23m.21s., eSSN = 23m.34s.
Tananarive EN = 10m.47s., PP = 13m.3s., P_cS = 15m.24s., PS = 19m.41s., SS = 23m.30s.
Rome ePPP = 14m.26s., eSS? = 23m.46s., eSSS = 26m.6s.
Stuttgart iPZ = 10m.49s.a, iZ = 11m.56s., iPP = 13m.28s., iPPP = 14m.52s., iS_cS = 20m.48s., iSS = 23m.40s., iSSS? = 27m.34s.
Strasbourg e = 12m.56s., ePP = 13m.30s., ePPP? = 14m.3s., e = 16m.17s., eS_cS = 20m.55s., e = 22m.11s., iSS = 24m.8s.
Pavia e = 10m.59s.
De Bilt ePPP = 15m.10s., eSS = 24m.20s., eSSS = 27m.20s.
Uccle ePPPN = 15m.40s., eN = 22m.22s., eSSN = 24m.34s., eSSSN = 27m.40s.
Paris i = 11m.45s., 13m.11s., and 13m.42s., iPPP = 15m.30s., i = 15m.38s., 16m.38s., 16m.45s., and 20m.29s., iPS = 20m.42s., iS_cS = 21m.14s., iSS = 25m.29s., iSSS = 28m.23s., eQ = 34·7m.
Durham iN = 11m.15s., iPEN = 11m.23s., i = 21m.17s., iE = 21m.40s. and 22m.33s., iEN = 22m.58s.
Edinburgh e = 20m.40s. and 20m.53s., S_cS = 21m.10s.
Clermont-Ferrand iPPP = 16m.15s., iPS = 21m.0s., iSS = 26m.20s.
Kew iZ = 11m.33s., 12m.13s., and 13m.21s., ePPPEZ = 15m.46s.?, ePSE = 20m.46s.?, iSKSZ = 21m.24s., eSSN = 24m.44s., eSSSEN = 28m.2s., eQ = 30·2m.
Barcelona PPP? = 15m.54s., SS? = 25m.53s.
Tortosa PPE = 14m.17s., PPPN = 16m.7s., iE = 20m.9s., PSE = 21m.30s., S_cSN = 21m.39s., PPSE = 21m.56s., SSN = 25m.47s., SSSN = 28m.34s.
College ePPP? = 16m.20s., eS_cS? = 22m.6s., eSS = 26m.3s.
Alicante i = 12m.21s., PP = 14m.38s., PPP = 15m.54s., S = 22m.4s., SP = 22m.57s., eS = 24m.30s., SS = 26m.56s., SSS = 30m.6s., PKKS = 33m.4s., SKKS = 36m.52s., Q = 37m.8s.
Toledo PP = 14m.56s.
Almeria iPP = 15m.0s., iPPP = 16m.52s., S_cS = 22m.12s., SS = 26m.56s., SSS = 30m.24s., Q = 34m.4s.
Granada iPP = 15m.13s., PPP = 16m.24s., PS = 22m.25s., iSS = 26m.29s., SSS = 30m.37s.
Malaga iPPPN = 17m.37s., isSN = 22m.33s., iPSN = 22m.57s., iSSN = 27m.4s.
Lisbon Z = 12m.46s. and 22m.57s.

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Riverview iP =12m.32s. a, iE =13m.59s., iPPN =15m.43s., iE =22m.46s., iSSE = 28m.5s., eE =33m.52s.
Johannesburg iEN =22m.58s. and 23m.4s., eQEN =33·7m.
Sitka i =25m.4s., eSS? =29m.20s.
Ivigtut 24m.28s., 25m.50s., and 28m.16s.
Honolulu i =24m.48s.?, ePPS =25m.45s.?, eSS? =29m.27s.?, e =32m.5s.?
Victoria SKS =23m.35s., PS =24m.55s., PPS =26m.4s., SS =30m.16s., SSS =36m.40s.?
Grand Coulee i =17m.45s.
Auckland SS =30m.20s.
Apia eSS =32m.32s., eSSS =36m.6s.
Arapuni e =28m.58s., 32m.40s., and 40m.40s.
Wairiri SKSEN =24m.20s., PPS =27m.6s., SSEN =32m.5s., SSSEN =36m.10s.
Butte ePPP =19m.50s., ePPS =26m.58s., eSS? =32m.28s., eSSS? =37m.0s.
Wellington sPPZ =18m.6s., SKS =24m.15s., sSS =31m.24s., S_cS? =31m.40s., SSS? = 35m.45s.; phases wrongly identified.
Bozeman eSKS =24m.40s., ePS =27m.24s., ePPS =28m.16s., eSS =33m.2s., eSSS = 37m.14s.
Ferndale iN =26m.18s.
Seven Falls SKS =24m.50s., PS =27m.52s., PPS =28m.46s., e =30m.40s. and 32m.46s., SSS =40m.40s.?
Kirkland Lake, i =16m.59s., SKS =17m.46s., e =31m.4s.
Dane PPP =20m.22s., S =27m.52s.
Halifax PS =27m.6s., SS =32m.4s., SSS =36m.34s.
Shawinigan Falls SKKS =25m.40s.
Ukiah ePPS? =27m.58s., eSS =33m.15s.
Ottawa SKS =24m.49s., PS =27m.46s., PPS =28m.50s., SS =33m.40s., e =39m.40s.? and 48m.10s.
Berkeley iPPE =17m.44s., eN =18m.3s., eE =18m.12s., iZ =19m.0s., iE =24m.10s., eN =25m.4s.
Rapid City e =20m.1s., eSKS =24m.56s., ePPS =28m.29s., eSS =32m.54s., eSSS = 37m.28s., ePKP,PKP? =39m.23s.
Branner eN =25m.5s.
Lick eN =25m.4s.
Salt Lake City ePPS =28m.14s., e =40m.46s.
Harvard PKP =18m.54s., e =30m.27s. and 34m.4s.
Denver 22m.41s., 25m.43s., 28m.47s., and 31m.41s., SSS =38m.43s.
Chicago ePP =18m.57s., e =27m.27s., ePS =28m.21s., e =33m.29s., eSS =33m.49s.
Fordham i =20m.39s., e =29m.38s.
Boulder City e =18m.21s.
Pennsylvania eEN =23m.6s., ePSN =27m.6s., ePKKPEN =30m.22s., eSSN =31m.58s.
Pierce Ferry e =17m.58s.
Mount Wilson eZ =36m.26s.
Pasadena iPP =19m.9s., iSPN =28m.27s., iPKKPZ =29m.39s., ePPSZ =29m.56s., eSKKPZ =33m.34s., eSSN =34m.22s., eSSSN =35m.22s.
New Kensington ePS =28m.33s., ePKKP? =30m.28s., eSS? =35m.17s.
Philadelphia iPP =19m.16s., ePS =28m.21s., ePKKP? =30m.2s., eSS? =34m.55s., iSSS? =39m.34s., e =43m.16s.
Georgetown PP =19m.19s., S =28m.49s. and 28m.53s.
Florissant iN =24m.37s.
St. Louis iPPSN =30m.10s.
Tucson ePP =19m.46s., i =22m.7s., ePS =28m.23s., iPS? =29m.25s., eSS =35m.38s., eSSS =40m.10s.
Bermuda e =21m.40s., i =26m.26s., eSKKS =26m.51s., e =29m.10s., ePS =29m.30s., iPPS =30m.50s., iSS =35m.52s., ePKP,PKP? =38m.16s., eSSS =40m.34s.
Columbia e =44m.4s.
Antarctica ePKP =19m.42s., eSKP =22m.51s., e =23m.6s. and 24m.44s., SKKS = 29m.10s., ePSKS =32m.25s., ePPS =34m.35s., eSS =40m.32s., eSSS =45m.42s.
Puntas Arenas 21m.43s., 23m.40s., 37m.10s., 49m.49s., 53m.40s., and 58m.40s.
La Plata E =21m.15s. and 25m.52s., PPP?E =29m.28s., SKKSE =31m.22s., SKKSE ($\Delta > 180°$) =34m.29s., SKSPE =35m.28s., E =36m.40s., PPS?Z =38m.52s., PPS?E =40m.22s., SSE =43m.34s., PSSE =47m.28s., SSSE =50m.10s.
La Paz iPKP$_1$Z =21m.4s., iPKPZ =23m.50s., iZ =26m.8s., PPPZ =28m.15s., SKKSN = 31m.21s., iPSKSZ =35m.4s., PPSE =38m.0s., iSSN =44m.40s., iSSSN =50m.56s.
Huancayo i =34m.58s., e =35m.18s., eSSS? =50m.9s.
Santa Lucia PPPN =29m.47s., E =35m.43s., N =40m.52s., SSN =45m.28s.
Long waves were also recorded at Montezuma.

July 29d. Readings also at 6h. (Sverdlovsk), 8h. (La Paz), 9h. (near Reykjavik), 10h. (Haiwee, Mount Wilson, Pasadena, Palomar, Riverside, and Shasta Dam), 11h. (Berkeley and Ksara), 12h. (Balboa Heights, Bogota, La Paz, St. Louis, Boulder City, Pierce Ferry, Tucson, Mount Wilson, Pasadena, Palomar, Riverside, and Tinemaha), 13h. (Florissant), 14h. (Stuttgart, Berkeley, near Lick, near Almata, Andijan, and Tashkent), 15h. (near Obi-garm), 16h. (Stuttgart, Lick, and near Pierce Ferry (2)), 18h. (Stuttgart), 19h, (Cheb), 20h, (near Grozny), 21h. (Strasbourg), 23h. (Stuttgart).

July 30d. 1h. Undetermined shock.

Vladivostok eP =20m.3s., iS =26m.24s.
Stalinabad iP =22m.39s., iS =31m.19s.
Tashkent eP =22m.44s., eS =31m.23s.
Sverdlovsk iP =23m.51s., eS =33m.29s.
Grozny eP =24m.26s.
Ksara eP =25m.4s., eS? =35m.56s.
Tucson eP =30m.50s., e =32m.9s.
Paris ePS? =40m.35s., eL =77m.
Long waves were also recorded at Riverview and De Bilt

July 30d. 18h. Undetermined shock. U.S.S.R. gives 33°·5N. 75°·0E.

New Delhi iN =57m.9s. and 57m.15s., eE =57m.49s., iE =58m.7s., iN =58m.19s.
Obi-garm iP =57m.42s., iS =59m.2s.
Stalinabad iP =57m.50s., S =59m.16s.
Almata eP =58m.26s.
Frunse eP =58m.28s.
Tashkent eP =59m.5s., eS =60m.15s.?
Bombay eP?EN =59m.11s., eSEN =62m.35s.
Ksara e =62m.0s. and 69m.20s.
Hyderabad SE =63m.32s.
Calcutta eE =63m.34s., iE =64m.24s.
Stuttgart eP?Z =64m.57s., eL? =86m.
Long waves were also recorded at Paris, De Bilt, and Copenhagen.

July 30d. Readings also at 1h. (Vladivostok and Mizusawa (2)), 2h. (Sverdlovsk, Stalinabad, Tashkent, Stuttgart (2), De Bilt, Paris, Strasbourg, Shasta Dam, and near Bogota), 3h. (Paris, Stuttgart, Strasbourg, Mizusawa, Bogota, and near Pierce Ferry), 4h. (Shasta Dam, Harvard, Weston, Fordham, St. Louis, and near La Paz), 5h. (near Pierce Ferry), 6h. (near Shasta Dam and near Mizusawa), 7h. (Shasta Dam and La Paz), 8h. (Jena, Granada, Malaga, Paris, Stuttgart, Kew, and Ksara), 10h. (Paris and Tucson), 11h. (near Andijan), 13h. (Wellington, Wariri, Brisbane, Riverview, and Ksara), 14h. (Harvard, Stuttgart, Malaga, Almeria, Granada, Alicante, and Clermont-Ferrand), 15h. (Clermont-Ferrand and Stuttgart), 17h. (Alicante), 20h. (Paris and Stuttgart), 21h. (Kew), 22h. (Stuttgart, Paris, Kew, Scoresby Sund, and Ivigtut), 23h. (Alicante, near Almeria, Malaga, Granada, and Lisbon).

July 31d. 7h. 54m. 44s. Epicentre 38°·5N. 15°·0E. Depth of focus 0·030.
(as on 1937, August 2d.).

$A = +\cdot7579$, $B = +\cdot2031$, $C = +\cdot6199$; $\delta = -6$; $h = -1$;
$D = +\cdot259$, $E = -\cdot966$; $G = +\cdot599$, $H = +\cdot160$, $K = -\cdot785$.

Pasadena suggests 39°·5N. 15°·0E. Depth of focus 250-380 km.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rome	N.	3·9	332	i 1 7	+ 5	e 1 47	− 3	1 56	SS	2·1
Florence		6·0	333	i 1 30	+ 2	i 2 32	− 5	—	—	—
Triest		7·2	353	e 1 46	+ 2	e 2 58	− 7	—	—	3·8
Zagreb		7·3	6	i 1 44k	− 1	i 3 2	− 5	—	—	—
Belgrade		7·5	31	e 1 43	− 4	e 2 58	−14	e 3 19	SS	—
Pavia		8·0	329	e 1 57	+ 3	e 3 19	− 4	—	—	—
Chur		9·2	337	e 2 11k	+ 2	e 3 49	− 2	—	—	—
Zürich		10·0	334	e 2 21k	+ 1	e 4 9	0	—	—	—
Bucharest		10·2	51	e 2 16?	− 6	—	—	—	—	—
Neuchatel		10·3	328	e 2 23	− 1	e 4 13	− 3	—	—	—
Basle		10·6	331	e 2 26k	− 1	e 4 17	− 6	—	—	—
Istanbul		11·1	72	e 2 31	− 3	e 4 39	+ 4	—	—	—
Stuttgart		11·1	340	e 2 31k	− 3	e 4 25	−10	e 4 50	SS	—
Strasbourg		11·4	335	i 2 36	− 2	i 4 37	− 5	—	—	—
Clermont-Ferrand		11·4	313	e 2 39	+ 1	i 4 50	+ 8	i 2 57	PP	6·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tortosa		11·5	286	i 2 42	+ 3	4 51	+ 7	i 2 54	PP	9·3
Prague		11·6	358	2 34	− 6	e 4 38	− 8	—	—	—
Alicante		12·1	274	2 53	+ 7	5 12	+14	3 0	pP	6·0
Jena		12·7	350	e 2 52	− 2	e 5 9	− 2	—	—	—
Paris		13·7	323	i 3 5	− 1	i 5 29	− 5	i 4 5	pP	—
Almeria		13·9	269	i 3 26	+17	i 5 49	+11	3 45	PP	—
Potsdam		14·0	355	e 3 10	0	5 36	− 4	—	—	—
Toledo	z.	14·8	281	i 2 25	−55	6 1	+ 3	—	—	—
Granada		14·8	271	i 3 26a	+ 6	i 6 16	+18	3 33	pP	8·1
Malaga	z.	15·5	270	i 3 32k	+ 4	6 20	+ 6	3 48	PP	7·9
Helwan		16·0	117	i 3 37k	+ 3	i 6 34	+ 9	i 3 49	PP	—
Copenhagen		17·3	355	i 3 43	− 6	e 6 41	−12	7 30	SS	9·3
Ksara		17·5	102	e 3 1?	?	—	—	3 55	PP	—
Helsinki		22·6	12	i 4 38	− 4	e 8 21	− 9	—	—	—
Moscow		22·9	36	i 4 39	− 6	i 8 24	−11	—	—	—
Weston		63·0	305	i 10 2k	− 3	—	—	—	—	—
St. Louis		77·1	309	i 11 27	− 3	—	—	—	—	e 35·9
Grand Coulee		84·7	331	e 12 7	− 3	—	—	—	—	—
Pierce Ferry		92·1	321	i 12 34	−11	—	—	—	—	—
Shasta Dam		92·1	329	e 12 42	− 3	—	—	—	—	—
Tinemaha	z.	93·3	325	e 12 54	+ 3	—	—	—	—	—
Tucson		93·5	317	i 12 49	− 2	—	—	—	—	—
Santa Clara		94·7	327	—	—	23 20	[+11]	—	—	—
Riverside	z.	95·4	323	i 12 58	− 2	—	—	—	—	—
Mount Wilson	z.	95·6	323	i 13 0	− 1	—	—	—	—	—

Additional readings :—
Belgrade e =2m.18s.
Stuttgart ePZ =2m.34s., e =5m.32s.
Strasbourg eP =2m.39s.
Clermont-Ferrand i =2m.42s., 5m.25s., 5m.32s., and 5m.41s.
Tortosa PPPN =3m.1s., SS?E =5m.10s., SSS?E =5m.36s.
Alicante PP =4m.8s., SS =5m.19s., SSS =5m.33s.
Paris i =5m.18s., e =5m.25s., i =5m.34s., iSS? =5m.49s., iSSS? =6m.3s.
Almeria SSS =6m.19s.
Granada PP =3m.45s., pPP =3m.52s., sS =6m.34s., SSS =6m.47s.

July 31d. 14h. 13m. 14s. Epicentre 2°·2N. 83°·7W.

A = +·1096, B = −·9933, C = +·0384 ; δ = +13 ; h = +7 ;
D = −·994, E = −·110 ; G = +·004, H = −·038, K = −·999.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		7·8	31	e 2 0	+ 2	e 4 6	S*	—	—	—
Bogota		9·9	76	i 2 4	−21	i 4 13	− 7	—	—	—
Huancayo		16·4	150	i 3 48	− 5	e 7 3	+ 7	—	—	i 8·6
La Paz		24·1	139	i 5 19k	+ 1	i 9 36	+ 2	i 5 45	PP	12·9
Fort de France		25·5	61	e 5 29	− 3	e 9 53	− 4	—	—	—
Columbia		31·7	4	—	—	e 11 6	−31	—	—	e 13·0
Bermuda		34·9	29	i 6 58	+ 3	e 12 4	−23	—	—	e 15·9
St. Louis		36·7	352	i 7 10	0	i 12 55	+ 1	i 7 34	pP	—
Florissant		36·9	352	e 7 14	+ 2	e 12 58	0	e 15 30	SS	—
New Kensington		38·3	5	—	—	e 13 20	+ 1	—	—	e 17·3
Pennsylvania		38·8	7	—	—	e 13 28	+ 2	—	—	e 16·4
Tucson		39·3	323	i 7 34	+ 2	e 9 55	PcP	—	—	—
Fordham		39·5	13	e 7 33	− 1	i 13 40	+ 3	—	—	—
Weston		41·5	15	e 7 51	+ 1	i 14 8	+ 1	e 17 8	SS	e 17·4
Harvard		41·6	15	e 9 29	PP	—	—	—	—	e 20·2
Ottawa		43·6	9	8 6	− 2	14 36	− 2	18 6	SSS	21·8
Pierce Ferry		43·9	324	e 8 12	+ 2	—	—	—	—	—
Riverside	z.	44·6	319	e 8 19	+ 3	—	—	—	—	—
Pasadena	z.	45·2	319	e 8 23	+ 3	—	—	—	—	e 22·5
Mount Wilson	z.	45·2	319	e 8 23	+ 3	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dane		45·8	4	e 8 24	− 1	—	—	—	—	—
Kirkland Lake		45·9	4	e 8 26	0	—	—	—	—	—
Salt Lake City		46·0	331	—	—	e 15 58	PPS	—	—	e 22·4
Tinemaha	z.	47·1	322	e 8 36	+ 1	—	—	e 10 22	PP	—
Bozeman		49·5	336	—	—	e 16 7	+ 5	—	—	e 26·3
Berkeley	e.	50·1	320	i 9 2	+ 3	e 16 16	+ 6	—	—	e 25·1
Shasta Dam		51·8	323	e 9 12	0	—	—	—	—	—
Victoria		57·3	330	9 55	+ 3	17 56	+ 9	11 46	PP	28·8
Antarctica		71·2	174	e 11 30	+ 7	—	—	—	—	—
Scoresby Sund		78·9	17	—	—	22 0	− 5	—	—	34·8
Malaga	z.	80·1	53	i 12 13k	0	e 22 14	− 4	12 14	pP	38·2
Granada		80·8	53	12 34k	+17	22 46	+21	—	—	40·0
Almeria		81·7	53	i 12 17	− 5	e 22 30	− 4	15 27	PP	37·8
Paris		85·8	41	i 12 43	+ 1	e 23 18	+ 3	e 16 0	PP	e 42·8
Clermont-Ferrand		86·2	45	e 12 45	+ 1	e 23 14	− 5	—	—	—
De Bilt		87·6	38	e 12 52	+ 1	e 23 38	+ 6	e 16 50	PP	e 41·8
Strasbourg		89·3	41	e 12 59	0	23 46	− 2	—	—	—
Basle		89·3	42	e 8 51	?	—	—	e 14 12	?	—
Stuttgart		89·7	41	e 13 3	+ 2	e 23 52	0	—	—	e 41·8
Copenhagen		91·7	34	—	—	i 24 17	+ 7	—	—	—
Rome		93·2	48	—	—	e 24 21	− 3	—	—	—
Ksara		112·9	52	e 14 0	P	e 26 36	{+10)	—	—	—

Additional readings :—
La Paz PPPZ = 6m.0s., SSN = 10m.41s.
Columbia e = 11m.59s.
St. Louis iZ = 7m.23s., esSE = 13m.42s., iSSE = 15m.24s., eSSSN = 15m.45s.
Tucson i = 7m.55s.
Pasadena eZ = 8m.46s.
Victoria e = 19m.34s.
Malaga PPZ = 15m.12s., PPPZ = 17m.18s., PSZ = 23m.24s.
Almeria PPP = 17m.18s., PS = 23m.18s., SS = 27m.54s., SSS = 31m.18s.
Paris iPcP = 12m.48s., i = 12m.57s., 13m.9s., 13m.39s., and 14m.46s., e = 19m.15s., eSKS = 23m.6s., ePS = 24m.16s., eSSS = 32m.35s.
Strasbourg e = 20m.22s. and 22m.46s.?
Long waves were also recorded at Butte, Cheb, Kew, and Alicante.

July 31d. Readings also at 1h. (near Obi-garm), 2h. (near Boulder City and Pierce Ferry), 3h. (Ksara), 4h. (Berkeley), 5h. (Lick, Shasta Dam, and Stuttgart), 8h. (Shasta Dam, Tucson, Ukiah, near Berkeley, Branner, Ferndale, Lick, Mineral, and Santa Clara), 10h. (Boulder City, Haiwee, Mount Wilson, Pasadena, Pierce Ferry, Riverside, Shasta Dam, Tinemaha, Tucson, Alicante, Clermont-Ferrand, Copenhagen, De Bilt, Granada, Helsinki, Istanbul, Kew, Paris, Prague, Strasbourg, Stuttgart, Bombay, New Delhi, Hyderabad, Ksara, Obi-garm, and Tashkent), 11h. (Stuttgart and near Branner), 12h. (Grozny and near Leninakan), 14h. (near Shasta Dam), 15h. (Pierce Ferry and near Ottawa), 16h. (Dane and Warsaw), 17h. (Stuttgart), 18h. (near Branner and Antarctica), 19h. (Stuttgart (2)), 20h. (Stuttgart and Zürich).

August 1d. 0h. 49m. 30s. Epicentre 28°·0S. 66°·5W. Depth of focus 0·015.
(not an approximate determination).

A = +·3526, B = −·8110, C = −·4670 ; δ = +14 ; h = +2 ;
D = −·917, E = −·399 ; G = −·186, H = +·428, K = −·884.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		5·8	338	e 1 23	− 2	e 2 8	−23	—	—	e 2·7
Santa Lucia	N.	6·5	212	1 38	+ 3	2 32	−16	—	—	—
La Plata		10·0	136	i 2 25	+ 4	4 15	+ 3	4 41	SSS	5·0
La Paz		11·5	352	2 41	0	i 4 42	− 6	i 2 52	PP	i 5·7
Huancayo		17·9	331	e 4 4	+ 2	e 7 18	+ 4	e 5 20	?	e 8·1
Bogota	z.	33·2	346	e 6 25	− 2	e 13 54	SS	e 6 54	?	—
Antarctica		40·2	186	i 7 27	+ 2	i 13 26	+ 4	i 9 10	PP	—
Philadelphia		68·1	353	e 11 26	PcP	e 19 29	− 7	—	—	e 27·3
Harvard		70·3	357	i 10 50	−11	—	—	i 11 31	pP	—
Tucson		73·3	322	i 11 17	− 2	—	—	i 11 59	pP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ottawa		73·5	353	i 11 18	− 2	e 20 36	− 2	e 12 0	pP	29·5
Seven Falls		74·9	357	—	—	e 20 48	− 6	—	—	31·5
Kirkland Lake		76·8	351	i 11 36	− 3	—	—	e 12 19	pP	—
Palomar		77·5	318	i 11 42	− 1	—	—	i 12 25	pP	—
Pierce Ferry		77·9	322	e 11 44	− 1	e 21 22	− 4	i 12 26	pP	—
Boulder City		78·2	321	e 11 45	− 2	—	—	i 12 27	pP	—
Riverside	z.	78·2	318	i 11 46	− 1	—	—	i 12 27	pP	—
Overton		78·4	322	e 11 46	− 2	—	—	i 12 30	pP	—
Mount Wilson	z.	78·8	318	i 11 49k	− 1	—	—	i 12 31	pP	—
Pasadena	z.	78·8	318	i 11 50	0	—	—	i 12 31	pP	—
Santa Barbara	z.	79·9	317	e 12 34	pP	—	—	—	—	—
Tinamaha	z.	81·0	320	i 12 1	− 1	—	—	e 12 44	pP	—
Shasta Dam		85·8	321	e 12 22	− 4	—	—	e 13 5	pP	—
Malaga	z.	86·9	46	i 12 33	+ 2	i 22 53	− 3	15 55	PP	40·8
Granada		87·7	46	i 12 36k	+ 1	i 23 3	− 1	23 57	PS	43·8
Almeria		88·2	46	i 12 39	+ 1	i 23 8	− 1	15 56	PP	40·5
Grand Coulee		89·1	328	e 13 23	pP	—	—	—	—	—
Toledo	z.	89·1	43	i 12 43	+ 1	—	—	—	—	—
Ivigtut		90·1	8	—	—	22 59	[− 5]	—	—	—
Alicante		90·3	45	e 12 10	−38	23 31	+ 3	23 2	S_cS	—
Tortosa		92·4	44	19 20	PPP	i 23 17	[0]	24 54	PS	—
Paris		98·1	38	e 14 6	pP	e 23 45	[− 3]	e 17 53	PP	e 40·5
Kew		98·9	35	—	—	e 23 45	[− 7]	e 24 36	S	—
Rome		100·6	48	e 23 46	?	i 24 0	[0]	e 26 32	PS	—
Strasbourg		100·9	41	e 17 46	PP	e 24 2	[+ 1]	e 23 56	SKS	—
De Bilt		101·3	37	e 17 43	PP	e 24 2	[− 1]	e 26 30	PS	—
Stuttgart		101·9	41	e 17 47	PP	e 24 4	[− 2]	e 26 43	PS	e 58·5
Scoresby Sund		103·2	13	—	—	24 10	[− 2]	—	—	—
Triest		103·2	45	e 18 0	PP	i 24 9	[− 3]	i 25 22	S	—
Warsaw	E.	110·2	41	—	—	e 25 40	S	e 28 8	PS	—
Istanbul		111·7	54	—	—	e 26 30	SKKS	—	—	—
Ksara		114·6	63	e 20 12	PP	i 29 0	PS	—	—	—

Additional readings :—
La Plata N = 3m.30s., SZ = 4m.19s.
Antarctica i = 7m.45s. and 8m.6s.
Philadelphia e = 20m.12s. and 23m.36s.
Tucson i = 12m.16s., e = 15m.1s.
Pierce Ferry e = 21m.40s.
Malaga PPPZ = 17m.49s., PSZ = 23m.51s.
Granada SKS = 22m.45s., PPS = 24m.38s., SS = 28m.36s.
Almeria PPP = 17m.50s., SKS = 22m.56s., SS = 29m.2s.
Tortosa SEN = 23m.50s., PPS?E = 25m.55s., SS?N = 30m.1s.
Paris ePS = 25m.57s., e = 28m.19s.
Kew eL?NZ = 26m.
Rome eN = 23m.57s. and 25m.6s., eE = 30m.23s., eN = 40m.4s.

August 1d. 3h. North Atlantic.

Kew eEZ = 14m.46s., eL = 20m.
De Bilt eP = 15m.10s., eS = 19m.6s., eL = 21m.
Paris eP = 15m.16s., e = 17m.19s., eS? = 19m.27s., eL = 22m.
Strasbourg e = 15m.42s., and 17m.14s.
Stuttgart eZ = 15m.49s., 17m.18s., and 20m.30s., eL? = 35m.
Toledo eZ = 15m.56s.
Granada iP = 21m.9s.k, S = 23m.42s., L = 24·8m.
Alicante eP? = 21m.11s., eS = 23m.20s., eL = 24m.0s.
Long waves were also recorded at Scoresby Sund, Ivigtut, Rome, and Tortosa.

August 1d. 4h. 23m. 20s. Epicentre 17°·4S. 167°·9E. (as on 1945, Sept. 13).

$A = -·9336$, $B = +·2002$, $C = -·2972$; $\delta = +2$; $h = +5$;
$D = +·210$, $E = +·978$; $G = +·291$, $H = -·062$, $K = -·955$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		17·0	230	e 4 3	+ 2	i 7 56	SSS	i 4 10	PP	e 8·1
Auckland		20·3	164	4 40	0	8 34	+11	—	—	10·5
Arapuni		21·7	163	—	—	9 10?	+19	—	—	—
Riverview		22·2	218	i 5 8k	+ 8	i 9 20	+20	—	—	e 10·9
Wellington		24·5	167	5 25	+ 3	9 40	0	—	—	10·2
Wairiri		26·2	173	—	—	10 54	SS	—	—	12·9
Antarctica		86·0	162	e 12 42	− 1	—	—	—	—	—
Shasta Dam		86·6	46	e 12 44	− 2	—	—	—	—	—
Pasadena		87·0	53	e 12 47	− 1	—	—	i 12 52	P_cP	e 39·5
Mount Wilson	z.	87·1	53	e 12 49	0	—	—	i 12 53	P_cP	—
Riverside	z.	87·5	53	e 12 47	− 4	—	—	i 12 58	P_cP	—
Palomar	z.	87·6	54	e 12 49	− 2	—	—	i 12 54	P_cP	—
Haiwee	z.	87·7	51	e 12 51	− 1	—	—	i 12 57	P_cP	—
Tinemaha	z.	88·1	50	e 12 51	− 3	—	—	i 12 56	P_cP	—
Boulder City		90·2	52	e 12 59	− 5	—	—	—	—	—
Overton		90·6	52	e 13 5	0	—	—	—	—	—
Pierce Ferry		90·9	52	e 13 5	− 2	—	—	—	—	—
Grand Coulee		91·9	40	e 13 15	+ 4	—	—	—	—	—
Tucson		92·0	57	e 13 10	− 2	—	—	i 13 16	P_cP	—
Ksara		134·2	300	e 19 33	[+13]	e 23 7	PKS	—	—	—
Istanbul		137·6	313	e 17 40	?	—	—	—	—	—
Helwan	z.	138·5	295	e 19 43	[+15]	e 22 43	PKS	—	—	—
De Bilt		142·8	342	e 19 40	[+ 5]	—	—	—	—	e 66·7
Stuttgart		144·2	336	e 19 37	[− 1]	—	—	—	—	e 71·7
Kew	z.	144·7	347	(e 19 40?)	[+ 1]	—	—	—	—	e 19·7
Strasbourg		144·9	337	e 19 40	[+ 1]	—	—	—	—	e 74·7
Chur		145·6	334	e 19 44	[+ 4]	—	—	—	—	—
Basle		145·9	336	e 19 47	[+ 6]	—	—	—	—	—
Paris		146·5	342	e 19 47	[+ 5]	—	—	—	—	77·7
Rome		147·8	325	e 19 49	[+ 5]	e 43 14	SSP	e 61 14	Q	e 67·2
Toledo	z.	156·5	344	i 20 36	[+40]	—	—	—	—	—
Almeria		158·8	339	e 20 7	[+ 8]	26 54	[− 9]	28 5	PPP	—
Malaga	z.	159·6	341	e 20 53	[+53]	27 59	[+55]	38 13	PPS	55·8

Additional readings and note :—
Tucson e = 13m.46s.
Stuttgart eZ = 19m.46s.
Paris e = 20m.39s.
Rome eEN = 19m.53s.
Almeria ePKP_2 = 20m.48s., PKS = 23m.35s.
Malaga iPP?Z = 22m.1s., PPPZ = 24m.37s., SKKSZ = 28m.59s., PKKPZ = 31m.31s., PPSZ = 33m.9s., QZ = 48m.25s. Readings wrongly identified.
Long waves were also recorded at Bombay, Ukiah, and Harvard.

August 1d. 14h. 25m. 2s. Epicentre 26°·5N. 112°·0W. (as on 1947, Jan. 15d.).

$A = -·3357$, $B = -·8308$, $C = +·4438$; $\delta = -12$; $h = +3$;
$D = -·927$, $E = +·375$; $G = -·166$, $H = -·411$, $K = -·896$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Tucson		5·8	10	e 1 34	+ 5	e 2 20	−18	—	—	e 2·5
La Jolla		7·8	326	e 2 16	P*	i 3 34	+ 6	—	—	—
Palomar		8·0	329	e 1 55	− 5	i 3 50	SS	—	—	—
Riverside	z.	8·8	330	e 2 10	− 1	—	—	—	—	—
Mount Wilson	z.	9·3	327	e 2 19	+ 2	—	—	—	—	—
Pasadena		9·3	327	e 2 19	+ 2	e 3 52	−13	—	—	e 4·3
Boulder City		9·7	346	i 2 15	− 7	e 4 5	−10	e 4 30	SS	—
Pierce Ferry		9·8	351	i 2 15	− 9	e 4 18	+ 1	e 3 54	?	—
Haiwee		10·9	334	e 2 45	+ 5	—	—	—	—	—
Tinemaha		11·8	335	e 2 48	− 5	e 5 39	SSS	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Shasta Dam		16·6	331	e 3 52	− 4	—	—	—	—	—
Bozeman		19·2	2	e 4 26	− 2	e 8 0	+ 1	—	—	e 9·8
St. Louis		21·9	50	i 5 4	+ 7	e 8 58	+ 4	—	—	e 10·6
Grand Coulee		22·1	346	e 5 5	+ 6	—	—	—	—	—
Victoria		23·7	340	—	—	e 9 46	+19	—	—	12·0
Chicago		25·2	44	—	—	e 10 6	+14	—	—	e 13·0
New Kensington		30·2	53	e 5 53	−21	e 11 11	− 2	—	—	e 14·4

Long waves were also recorded at Bermuda and at many other North American and European stations.

August 1d. 16h. 26m. 10s. Epicentre 12°·0S. 63°·0E. (as given by Strasbourg).

A = +·4442, B = +·8718, C = −·2066; δ = +3; h = +6;
D = +·891, E = −·454; G = −·094, H = −·184, K = −·978.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tananarive	E.	16·4	243	e 3 57	+ 4	e 6 10	−46	—	—	—
Bombay		32·2	17	—	—	e 11 50	+ 5	—	—	—
Hyderabad	N.	33·0	28	e 12 2	S	(e 12 2)	+ 5	e 15 23	Q	16·6
Helwan	Z.	51·6	324	i 9 17	+ 7	—	—	i 9 26	?	—
Ksara		52·4°	331	e 9 21	+ 5	e 17 20	+38	—	—	—
Istanbul		61·4	331	e 10 18	− 2	—	—	—	—	—
Stuttgart	Z.	76·9	327	e 11 52	− 4	—	—	—	—	—
Alicante		77·5	314	e 12 7	+ 8	e 23 57	PPS	29 1	SS	e 41·8
Strasbourg		77·5	326	e 11 56a	− 3	—	—	—	—	—
Tortosa	E.	78·0	317	i 12 1	− 1	22 11	+16	24 25	?	—
Almeria		78·3	311	12 2	− 1	—	—	12 20	pP	—
Granada		79·3	311	i 12 5k	− 4	—	—	17 41	PPP	43·9
Malaga	Z.	79·7	311	i 12 9k	− 2	23 19	PPS	i 12 19	pP	50·9
Paris		80·6	324	e 12 13	− 3	—	—	—	—	—
Toledo	Z.	80·7	314	e 12 13	− 3	—	—	—	—	43·2
Grand Coulee		144·1	3	e 19 14	[−23]	—	—	—	—	—
Shasta Dam		151·0	9	e 19 23	[−26]	—	—	—	—	—
Tinemaha	Z.	155·0	2	i 20 4	[+ 9]	—	—	e 24 7	PP	—
Boulder City		156·1	356	e 19 33	[−23]	—	—	i 20 10	PKP	—
Mount Wilson	Z.	157·9	2	i 19 35	[−23]	—	—	i 23 55	PP	—
Pasadena	Z.	157·9	2	i 20 15	[+17]	—	—	e 23 55	PP	—
Riverside	Z.	158·1	1	e 19 36	[−23]	—	—	e 23 59	PP	—
Palomar	Z.	158·8	0	e 19 43	[−16]	—	—	i 24 0	PP	—
Tucson		159·1	345	i 19 38	[−22]	—	—	i 24 13	PP	—

Additional readings :—
Almeria PP = 15m.43s., PPP = 17m.36s., PKS = 20m.11s.
Malaga PPZ = 13m.50s., PPPZ = 16m.19s., PPSZ = 24m.57s., SSZ = 30m.19s., QZ = 44m.53s.
Mount Wilson iPKP_2Z = 20m.15s.
Riverside ePKP_2Z = 20m.15s.
Palomar iPKP_2Z = 20m.19s.
Tucson iPKP = 20m.27s.
Long waves were also recorded at New Delhi.

August 1d. Readings also at 0h. (Mount Wilson, Tinemaha, Tucson, near Boulder City and Pierce Ferry), 2h. (Tucson), 3h. (Tinemaha, Mount Wilson, Riverside, Palomar, Tucson, Shasta Dam, La Paz, Arapuni, Wellington, Auckland, Brisbane, Riverview, and Antarctica), 4h. (Granada, Tashkent, Sverdlovsk, and near Vladivostok), 5h. (Granada, Alicante, and Kew), 6h. (Ferndale, Tashkent, near Stalinabad, Andijan, and Tchimkent), 10h. (Reykjavik), 13h. (Pasadena, Mount Wilson, Palomar, La Jolla, Tucson, Boulder City, Pierce Ferry, Chicago, Logan, and Santa Clara), 14h. (Pasadena, Mount Wilson (2), Palomar (2), Riverside, Tinemaha, Tucson, Pierce Ferry, Shasta Dam, and Lick), 15h. (near Pierce Ferry, Boulder City, near Fresno, Branner, and Lick), 16h. (Stuttgart and La Paz), 19h. (Ksara, Grozny, near Leninakan, and Erevan), 20h. (near Santa Lucia), 23h. (Helwan and Ksara).

Aug. 2d. Readings at 0h. (Rome and Santa Lucia), 1h. (Copenhagen, De Bilt, Clermont-Ferrand, Kew, Paris, Rome, Scoresby Sund, Ivigtut, near Pierce Ferry, and near Andijan), 2h. (Copenhagen, De Bilt, Clermont-Ferrand, Kew, Paris, Rome, Strasbourg, Stuttgart, Toledo, Ksara, Scoresby Sund, Ivigtut, Baku, Erevan, and near Grozny), 3h. (Pierce Ferry, New Delhi, Granada, Ashkabad, Piatigorsk, and near Leninakan), 6h. (Kew), 16h. (Basle), 19h. (near Ottawa), 21h. (Pierce Ferry), 22h. (near Stalinabad).

Aug. 3d. Readings at 0h. (La Paz and near Mizusawa), 2h. (near Leninakan and near Mizusawa), 3h. (near Leninakan), 7h. (Erevan and near Leninakan), 14h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, Toledo, Florence, Rome, Stuttgart, and Istanbul), 17h. (Balboa Heights), 19h. (Palomar, Riverside, Tinemaha, and Tucson), 21h. (Stuttgart), 23h. (near Stalinabad).

Aug. 4d. 17h. 44m. 3s. Epicentre 22°·5N. 123°·5E. (as on 1943, April 12d.).

A = −·5104, B = +·7712, C = +·3805; δ = +4; h = +4;
D = +·834, E = +·552; G = −·210, H = +·317, K = −·925.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vladivostok		21·7	16	e 5 5	+10	i 8 53	+ 2	—	—	—
Mizusawa	E.	22·4	38	6 20	+78	9 3	− 1	—	—	—
Irkutsk		33·2	337	e 6 33	− 7	e 11 54	− 6	—	—	—
Bombay		47·4	275	e 10 16	PP	—	—	—	—	—
Tashkent		48·9	306	e 8 48	− 2	e 15 46	− 7	—	—	—
Stalinabad		49·1	302	i 8 49	− 2	i 16 3	+ 7	—	—	—
Sverdlovsk		56·7	324	i 9 43	− 5	17 29	−11	—	—	—
Ksara		75·9	300	e 12 2	+12	21 47	+15	15 17	PP	—
Scoresby Sund		84·1	349	—	—	23 3	+ 5	—	—	42·0
Stuttgart		88·1	323	e 12 52?	− 2	—	—	—	—	e 46·0
Strasbourg		89·0	323	e 12 57	− 1	e 25 38	PPS	e 16 21	PP	45·0
Rome		89·7	315	e 24 1	S	(e 24 1)	+ 9	—	—	e 44·5
Durham	E.	89·9	331	—	—	e 23 59	+ 5	—	—	—
Paris		91·7	325	16 57?	PP	—	—	—	—	e 47·0

Rome gives also eN = 24m.7s.
Long waves were also recorded at New Delhi and many other European stations.

Aug. 4d. Readings also at 0h. (Ksara), 8h. (near Ottawa), 10h. (Santa Lucia), 15h. (La Paz), 21h. (Strasbourg and near Lick).

Aug. 5d. 14h. 24m. 7s. Epicentre 24°·9N. 63°·5E. (as on 1945, November 27d.).

Intensity VIII at Pasni with landslides.

Epicentre 25°·1N. 63°·0E. (Strasbourg).
25°·3N. 63°·0E. (Bombay).

Seismological Bulletin July-September, 1947, Government of India Meteorological Department, p. 12.

A = +·4052, B = +·8127, C = +·4187; δ = −2; h = +3;
D = +·895, E = −·446; G = +·187, H = +·375, K = −·908.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		10·5	123	i 2 35	0	i 4 17	−18	—	—	6·6
New Delhi	E.	12·8	70	e 3 7	+ 1	i 5 26	− 4	—	—	—
Ashkabad		13·7	343	3 16	− 2	i 5 54	+ 2	—	—	—
Dehra Dun	N.	14·0	64	e 1 3?	?	e 3 33?	?	—	—	—
Stalinabad		14·3	17	i 3 24	− 2	i 6 11	+ 5	—	—	—
Samarkand		15·0	10	—	—	e 6 41	+18	—	—	—
Hyderabad		15·8	115	4 5	+20	7 7	+25	7 14	SSS	8·3
Tashkent		17·1	15	i 4 1	− 1	e 7 9	− 3	—	—	—
Tchimkent		18·1	15	i 4 12	− 2	—	—	—	—	—
Baku		19·2	327	4 33	+ 5	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Frunse		20·1	24	e 4 42	+ 4	8 21	+ 2	—	—	—
Almata		21·4	27	4 51	0	8 50	+ 5	—	—	—
Erevan		22·0	319	e 4 59	+ 1	—	—	—	—	—
Leninakan		22·8	319	e 5 10	+ 5	—	—	—	—	—
Calcutta	E.	22·9	90	e 5 14	+ 8	i 9 28	+15	i 10 24	SSS	13·7
Colombo	E.	23·8	137	5 18	+ 3	9 53	SS	—	—	—
Piatigorsk		25·3	324	e 5 35	+ 5	—	—	—	—	—
Ksara		25·6	297	i 5 37	+ 5	i 10 20	SS	—	—	—
Sotchi		26·9	320	e 6 3	+18	10 33	+13	—	—	—
Helwan		28·9	288	i 6 5k	+ 2	i 10 53	0	7 9	PPP	—
Theodosia		30·3	319	e 6 16	+ 1	11 16	+ 1	—	—	—
Yalta		30·8	317	e 6 22	+ 2	11 22	− 1	—	—	—
Simferopol		31·1	318	e 6 23	+ 1	11 28	0	—	—	—
Sverdlovsk		32·0	357	i 6 31	+ 1	i 11 37	− 5	—	—	—
Istanbul		32·8	308	i 6 39	+ 2	i 13 2	+68	—	—	—
Bucharest		36·0	313	e 7 7	+ 2	e 12 41	− 3	8 23	PP	17·9
Moscow		36·2	336	i 7 6	0	12 44	− 3	—	—	—
Belgrade		40·0	311	i 7 42a	+ 4	i 13 45	+ 1	i 9 15	PP	e 23·3
Irkutsk		41·2	38	i 7 51	+ 3	i 14 15?	+13	—	—	—
Kalossa		41·4	313	e 7 56	+ 6	14 3	− 2	e 9 21	PP	e 20·9
Budapest	E.	41·6	315	7 54	+ 3	14 18	+10	9 33	PP	20·1
	N.	41·6	315	7 57	+ 6	14 4	− 4	9 39	PP	20·6
Zagreb		43·3	312	e 8 6a	+ 1	i 14 33	0	i 9 47	PP	—
Helsinki		44·1	334	(i 8 12)	0	(e 14 41)	− 4	(e 9 56)	PP	(e 19·9)
Triest		44·8	311	i 8 17	0	i 14 59	+ 4	i 10 13	PP	—
Rome		45·2	306	i 8 19a	− 1	i 15 1	0	1 10 36	PPP	e 22·4
Prague		45·3	318	8 22	+ 1	e 15 6	+ 4	e 10 14	PP	e 20·9
Tananarive		46·2	202	e 8 31	+ 3	15 16	+ 1	10 21	PP	e 21·8
Florence		46·3	308	i 8 34	+ 5	i 15 9	− 7	—	—	—
Cheb		46·5	317	i 8 33	+ 2	i 15 24	+ 5	e 10 27	PP	i 22·5
Potsdam	E.	46·7	320	i 8 35	+ 3	e 15 19	− 3	i 10 27	PP	e 22·9
Upsala		47·1	330	e 8 34a	− 1	e 15 24	− 4	10 27	PP	e 22·3
Jena		47·3	318	e 8 37	0	e 15 29	− 2	i 10 37	PP	e 23·4
Chur		47·8	312	e 8 41	0	e 15 34	− 4	—	—	—
Pavia		47·9	310	e 8 44?	+ 2	i 15 44	+ 5	i 8 25	?	—
Copenhagen		48·1	324	i 8 44k	+ 1	15 36	− 6	i 10 44	PP	23·1
Stuttgart		48·4	315	i 8 44a	− 2	i 15 44	− 2	i 10 41	PP	i 24·4
Zürich		48·6	313	e 8 47a	0	e 15 41	− 8	e 10 44	PP	—
Basle		49·3	313	e 8 51	− 2	e 16 0	+ 1	e 10 52	PP	—
Strasbourg		49·3	315	i 8 53	0	i 15 54	− 5	i 10 55	PP	e 24·9
Neuchatel		49·6	312	e 8 55	0	e 16 0	− 3	—	—	—
Marseilles		50·5	307	i 9 21	+19	i 16 29	+13	i 11 21	PPP	—
De Bilt		51·4	319	i 9 9a	0	i 16 21	− 7	e 20 28	SS	e 24·9
Uccle		51·7	317	e 9 11a	0	e 16 33	+ 1	e 11 16	PP	e 25·9
Clermont-Ferrand		52·2	310	i 9 14	− 1	i 16 37	− 2	i 11 21	PP	25·9
Paris		52·8	314	i 9 18a	− 1	i 16 43	− 4	e 11 17	PP	26·9
Barcelona		52·9	305	9 4	−16	i 16 50	+ 2	—	—	e 25·4
Bergen		53·1	329	9 19	− 2	16 51	0	20 43	SS	23·0
Tortosa		54·1	303	i 9 29	0	i 17 8	+ 3	11 27	PP	31·8
Kew		54·7	317	i 9 34a	+ 1	i 17 10	− 3	i 11 53?	PP	25·4
Alicante		55·1	301	9 37	+ 1	17 15	− 3	9 54	pP	e 28·7
Durham		55·7	321	i 9 41	+ 1	i 17 23	− 3	i 11 53	PP	25·5
Jersey		55·8	315	i 9 41	0	i 17 29	+ 1	—	—	—
Aberdeen	E.	56·3	324	i 10 41	+56	i 17 57	+23	i 11 54	PP	31·4
Edinburgh		56·8	322	9 53	+ 5	17 38	− 3	e 12 57	PPP	—
Almeria		56·9	299	i 9 46	− 3	i 17 20	−22	i 9 58	pP	26·9
Toledo	Z.	57·7	302	i 9 55	0	i 18 16	+23	12 6	PP	21·7
Granada		57·7	300	i 9 55k	0	i 17 50	− 3	10 14	pP	i 30·5
Vladivostok		58·0	54	i 9 57	0	i 18 0	+ 3	—	—	—
Hukuoka		58·1	65	e 10 3	+ 5	17 44	−14	—	—	22·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Malaga	z.	58·4	300	i 9 58	− 2	i 17 59	− 3	i 10 16	pP	28·3
Hamada		59·2	63	e 10 10	+ 5	18 23	+11	—	—	—
Kôti		60·7	64	e 10 16	+ 1	18 38	+ 6	—	—	24·7
Johannesburg		61·2	217	i 10 23	+ 4	i 18 41	+ 3	e 22 53	SS	e 29·9
Lisbon		61·8	302	10 23a	0	18 40	− 6	12 35	PP	27·7
Osaka		62·1	62	10 28	+ 3	18 48	− 1	—	—	26·7
Nagano		63·8	60	e 10 42	+ 6	—	—	—	—	—
Sapporo		64·9	52	e 10 43	0	—	—	—	—	e 35·6
Tokyo		65·2	61	e 10 17	−28	19 32	+ 4	—	—	32·0
Scoresby Sund		65·3	339	i 10 47	+ 1	19 22	− 7	14 47	PPP	—
Mizusawa		65·5	57	10 49	+ 2	19 33	+ 1	—	—	e 27·3
Sendai		65·5	58	e 10 39	− 8	19 33	+ 1	—	—	32·2
Reykjavik	E.	65·9	332	e 10 23	−27	24 13	SS	e 13 10	PP	e 33·6
Ivigtut		78·2	333	12 2	− 1	21 57	0	26 57	SS	—
College		87·3	13	e 12 42	− 8	e 23 12	[− 4]	e 16 16	PP	e 34·4
Halifax		95·6	325	17 35	PP	24 11	[+ 7]	30 53	SS	—
Sitka		96·4	10	e 13 35	+ 3	e 24 7	[− 2]	e 17 27	PP	e 39·4
Seven Falls		97·3	330	13 43	+ 7	24 17	[+ 4]	17 44	PP	48·9
Shawinigan Falls		98·6	331	13 53	+11	24 11	[− 9]	18 0	PP	44·9
Dane		100·3	336	13 53	+ 3	24 29	[+ 1]	26 47	PS	42·9
Kirkland Lake		100·3	336	13 59	+ 9	—	—	17 53	PP	e 38·9
Brisbane		100·7	115	—	—	e 24 32	[+ 2]	e 32 43	SS	—
Ottawa		100·8	332	13 59	+ 7	24 28	[− 3]	18 1	PP	48·9
Weston		101·1	327	e 13 55	+ 2	e 24 32	[0]	e 18 3	PP	—
Harvard		101·2	327	e 13 55	+ 1	e 24 32	[− 1]	18 4	PP	—
Riverview		101·6	122	e 14 9	+13	i 24 39	[+ 4]	e 27 34	PS	e 45·0
Saskatoon		102·8	353	18 25	PP	24 45	[+ 5]	27 29	PS	46·9
Fordham		103·5	328	e 18 15	PP	e 24 48	[+ 4]	e 27 42	PS	61·4
Bermuda		104·6	316	e 14 18	+ 9	e 24 49	[0]	e 18 29	PP	e 43·1
Philadelphia		104·9	328	e 14 9	− 1	i 24 48	[− 2]	e 18 23	PP	e 42·2
Pennsylvania		105·4	331	e 18 34	PP	i 25 0	[+ 8]	e 27 48	PS	—
New Kensington		106·4	332	e 19 16	PP	e 24 57	[0]	e 27 57	PS	e 43·1
Georgetown		106·6	328	e 14 16	− 2	24 59	[+ 1]	18 22	PP	50·1
Victoria		106·7	4	e 14 29	P	24 58	[0]	27 29	PS	44·9
Grand Coulee		107·5	2	e 18 2	PKP	e 25 4	[+ 2]	e 18 53	PP	—
Chicago		108·5	338	e 18 53	PP	e 25 3	[− 3]	e 28 7	PS	e 44·3
Butte		109·3	357	e 19 6	PP	e 25 8	[− 1]	e 28 22	PS	e 44·5
Bozeman		109·6	355	e 19 10	PP	e 25 18	[+ 7]	e 28 36	PS	e 44·8
Rapid City		110·3	349	e 18 21	[−13]	e 25 24	[+11]	e 19 16	PP	e 44·5
St. Louis		112·2	338	e 19 26	PP	i 25 24	[+ 3]	i 28 50	PS	—
Columbia		112·4	329	e 15 7	P	e 25 21	[− 1]	e 28 37	PS	e 45·7
Fort de France		113·2	299	—	—	e 26 52	S	—	—	—
Logan		113·5	356	e 19 32	[+52]	e 25 18	[− 8]	e 29 13	PS	—
Shasta Dam		114·5	4	e 18 44	[+ 2]	—	—	e 19 50	PP	—
Denver		114·8	350	20 4	PP	25 40	[+ 9]	29 26	PS	68·7
Ukiah		116·0	5	e 19 57	PP	e 25 45	[+ 9]	e 29 39	PS	e 47·7
Berkeley		117·3	5	e 19 41	[+54]	i 25 51	[+11]	i 20 10	PP	e 51·0
Santa Clara		117·9	5	e 20 13	PP	e 30 3	PS	—	—	e 64·9
Tinemaha	z.	118·3	1	e 18 53	[+ 4]	e 29 15	PS	—	—	—
Honolulu		119·0	44	e 19 17	[+26]	e 25 57	[+11]	e 20 21	PP	e 48·4
Pierce Ferry		119·3	357	e 18 55	[+ 4]	e 20 20	PP	e 22 49	PPP	—
Haiwee	z.	119·3	1	e 18 56	[+ 5]	—	—	—	—	—
Boulder City		119·4	358	i 18 55	[+ 3]	e 20 20	PP	e 22 49	PPP	—
Wairiri	z.	119·7	128	20 24	PP	30 3	PS	36 45	SS	47·6
Wellington		120·6	125	—	—	36 33	SS	41 13	SSS	61·9
Auckland		121·0	120	—	—	e 36 53?	SS	e 40 53	SSS	63·9
Mount Wilson	z.	121·2	1	e 19 0	[+ 5]	i 30 7	PS	e 32 40	SKKP	—
Pasadena		121·3	1	e 19 0	[+ 5]	e 29 59	PS	i 20 26	PP	e 51·1
Riverside	z.	121·4	1	e 18 58	[+ 2]	—	—	—	—	—
Arapuni		121·8	120	—	—	e 30 53	PS	—	—	64·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		122·9	353	i 19 2	[+ 3]	e 25 57	[− 3]	e 20 17	PP	e 50·2
Antarctica		127·5	202	e 19 16	[+ 9]	e 28 23	(+19)	38 53	SS	—
La Paz		134·2	270	i 19 39	[+19]	i 39 41	SS	22 9	PP	66·1
Montezuma		136·5	264	e 16 54	?	—	—	—	—	—
Huancayo		139·1	280	i 19 34	[+ 5]	e 26 19	[−19]	i 40 47	SS	e 58·3
Santa Lucia	N.	139·4	248	—	—	(40 47)	SS	(45 37)	SSS	68·9

Additional readings :—
Bombay iP*E =3m.2s., P_gE =3m.23s., iS_gE =5m.50s.
Bucharest iE =7m.13s., eSE =12m.49s., iSSN =15m.23s., iS_cSN =17m.19s.
Belgrade i =8m.20s., iPPP? =10m.38s., eSS =17m.33s.
Kalossa eN =9m.49s., eE =9m.56s. and 10m.33s., eN =11m.36s. and 13m.40s.
Budapest SSN =16m.48s., SSSN =17m.33s., SSSE =17m.50s.
Zagreb eNE =8m.9s., i =8m.33s., iNE =8m.54s., e =9m.7s., iNW =9m.27s., i =9m.34s. and 9m.55s., iNW =10m.29s., 10m.45s., 10m.55s., and 12m.2s., iNE =12m.42s., eZ =14m.44s., eNW =14m.58s., e =18m.1s., 21m.41s., 22m.53s., and 25m.35s.
Helsinki e =(17m.8s.), (17m.53s.), and (19m.35s.); readings reduced by 10 minutes.
Triest iSS =18m.17s.
Rome ePPN =9m.48s., iSSE =18m.8s., iSSN =18m.23s.
Prague eSS =18m.31s.
Tananarive EN =8m.50s., P_cPN =10m.9s., SS =18m.30s., SSS =20m.2s.
Cheb e =13m.7s., i =14m.6s. and 16m.47s., iSS =19m.4s.
Potsdam ePN =8m.38s., iE =10m.46s., iPSN =15m.28s., iPPSE =15m.39s., eSSN =18m.42s., eE =19m.6s., iN =19m.10s.
Upsala iP =8m.41s.k, ePPPN =11m.20s., PPP?E =11m.35s., iN =16m.41s., e =17m.53s., eSSE =18m.40s., eSSN =18m.46s.
Jena eP =8m.41s., i =8m.53s., iN =10m.9s., eSN =15m.17s., ePS?Z =15m.37s., ePS?N =15m.40s., ePS?E =15m.43s., ePS?N =15m.49s., eE =19m.19s.
Copenhagen 19m.41s.
Stuttgart iP_cPZ =10m.6s., iPPP =11m.38s., iP_cSZ =14m.9s., i =17m.1s., iS_cS =18m.33s. iSS =18m.57s., iSSS =20m.23s.
Strasbourg eP_cP =10m.15s., ePPP =11m.54s., eP_cS =14m.17s., eS_cS =18m.42s., eSS =18m.57s.
De Bilt ePP =11m.11s., iPS =16m.36s.
Uccle ePPP =12m.17s., iSE =16m.40s., ePSZ =16m.55s., eS_cSN =19m.5s., eSSE =20m.18s., eSSS?N =22m.35s.
Paris iP =9m.25s. and 9m.31s., i =9m.41s. and 9m.51s., eP_cP =10m.31s., ePPP =12m.31s., eP_cS =13m.47s., e =16m.1s., iS =16m.52s., eS_cS? =19m.2s., e =21m.23s., eSSS =21m.41s., e =23m.21s., eQ =23m.53s.
Bergen eZ =9m.36s., ePPPZ =11m.15s., eS_cSN =19m.4s.
Tortosa iN =9m.35s., P_cPN =10m.31s., PPPEN =12m.48s., iE =14m.5s., P_cS?EN =14m.28s., PSE =17m.17s., PPSN =17m.28s., S_cSE =19m.10s., SSN =21m.14s., SSSEN =22m.50s.
Kew EN =10m.2s., iP_cPE =11m.9s.?, ePPPEN =12m.46s., eSSEN =20m.53s., eSSSEN =23m.23s.?
Alicante i =9m.42s. 10m.13s., P_cP =10m.36s., PP =11m.48s., PPP =13m.7s., P_cS =13m.29s., iS =17m.1s., PPS =17m.39s., S_cS =19m.3s., SS =21m.31s., SSS =24m.1s., Q =24m.51s.
Durham eN =9m.48s., iE =9m.57s., iP_cPEN =10m.19s., iE =11m.49s., iP_cSEN =14m.24s., iSSE =21m.41s.
Aberdeen iPPPE =13m.9s., iSSE =21m.48s.
Edinburgh S_cS =19m.43s., e =22m.38s.,
Almeria iP_cP =10m.44s., iPP =11m.50s., iPPP =13m.2s., P_cS =14m.40s., S_cS =19m.28s., SS =21m.8s., SSS =23m.10s.
Granada P_cP =10m.53s., iPP =12m.37s., P_eS =13m.32s., pPPP =13m.41s., S_cS =19m.44s., iSS =21m.26s., sSS =22m.11s., SSS =24m.11s.
Malaga iPPZ =12m.18s., iPPPZ =13m.40s., iSSZ =21m.58s.
Lisbon 10m.28s., PPP?EZ =13m.53s., E =16m.41s., PSE =18m.53s., PSN =19m.2s., S_cS?N =20m.21s., N =22m.36s., SSSN =25m.41s.
Scoresby Sund i =10m.53s., 19m.34s., SSS =26m.29s.
Mizusawa PN =10m.57s.
Reykjavik ePSE =20m.19s., eSSS?E =25m.17s.
Ivigtut iP =12m.8s., 14m.54s., 16m.53s., and 22m.41s.
College eS_cS =23m.34s., ePPS =24m.32s., eSS =29m.19s., eSSS =32m.2s.
Sitka ePPP =19m.35s., e =21m.34s., and 24m.45s., eS =25m.9s., ePS =26m.35s., ePPS =27m.12s., eSS =31m.21s., eSSS =35m.33s.
Seven Falls SKKS =24m.59s., PS =26m.29s., SS =31m.17s., SSS =35m.59s., SSSS =41m.29s.
Shawinigan Falls SS =32m.5s.
Dane PP =17m.23s., PPP =19m.47s.
Brisbane eSKKS?E =25m.8s., iPS?E =27m.43s.
Ottawa e =16m.53s., PPS =27m.13s., SS =32m.38s., SSS =36m.17s.
Weston ePPPS =32m.45s., eSS =37m.53s., eSSS =42m.58s.
Harvard e =14m.6s., 16m.42s. and 17m.7s., ePPP =20m.7s., ePS =26m.54s., ePKKS? =33m.4s., e =37m.34s. and 41m.16s.

Continued on next page.

Riverview iSN = 25m.39s., iN = 32m.33s., eSSN = 32m.47s., eSSPE = 33m.1s., eSSSE = 36m.53s., eQN = 42m.11s.
Saskatoon SS = 32m.11s.
Fordham ePPP = 20m.34s.
Bermuda eS = 25m.45s., ePS = 27m.29s., ePPS = 28m.27s., eSS = 32m.48s., eSSS = 37m.15s., e = 38m.3s.
Philadelphia e = 17m.20s. and 20m.31s., iPS = 27m.35s., eSS = 33m.25s., eSSS = 37m.28s.
Pennsylvania eSSEN = 33m.53s.
New Kensington ePPP = 21m.26s., eSS? = 33m.46s., eSSS = 37m.47s.
Georgetown e = 18m.12s., PS = 27m.43s., SS = 33m.17s.
Victoria PP = 17m.45s., e = 19m.5s., PPP = 20m.5s., SS = 32m.5s., SSSS = 38m.53s.,
Grand Coulee e = 19m.42s.
Chicago ePPS = 29m.27s., eSS = 33m.23s.
Butte ePKP? = 17m.42s., ePPP? = 21m.24s., eS = 26m.3s., ePPS = 29m.36s., eSS = 34m.3s., eSSS = 38m.22s., eSKPP = 43m.14s.
Bozeman ePKP? = 18m.6s., e = 23m.23s., eS = 27m.8s., ePPS = 29m.58s., eSS = 34m.30s., e = 34m.48s., eSSS = 38m.31s., ePKP,PKP = 39m.0s., e = 43m.28s.
Rapid City e = 25m.44s., eS? = 26m.32s., ePS = 28m.48s., e = 29m.4s., ePPS = 29m.48s., e = 31m.19s., eSS = 34m.27s.
St. Louis iSKKS = 26m.31s.
Columbia ePKP = 19m.21s., eSS = 35m.9s., ePKP,PKP = 38m.53s.
Logan i = 25m.47s., e = 26m.14s., ePPS = 30m.22s.
Ukiah eSKKS = 26m.56s., ePPS = 31m.5s., eSS = 35m.57s., ePSPS = 36m.45s., eSSS = 40m.45s., eSKKP = 43m.37s.
Berkeley eE = 19m.56s., iPPE = 20m.41s., iPPPN = 22m.22s., iE = 29m.31s., iN = 29m.53s. and 34m.23s., iE = 34m.33s.
Honolulu e = 20m.2s., eS = 27m.17s., ePS = 30m.1s., ePPS = 31m.43s., eSS = 36m.41s., eSSS = 41m.15s.
Wairiri PSZ = 31m.21s.
Wellington SS = 48m.13s., SSS = 51m.48s., readings wrongly identified.
Auckland e = 53m.11s.
Pasadena ePZ = 16m.23s., iPSN = 30m.17s., eSKKPZ = 32m.49s., eSSN = 37m.53s.
Arapuni e = 43m.23s. and 47m.23s.
Tucson e = 20m.36s., i = 23m.17s., eSKKS = 27m.16s., ePKKP = 28m.56s., ePS = 30m.37s. ePPS = 31m.59s., eSS = 36m.50s., eSSS? = 42m.26s.
Antarctica e = 33m.7s.
La Paz iPKP = 23m.5s., iPPP = 25m.21s., SSSN = 45m.3s., iSSZ = 40m.9s., iEN = 55m.33s.
Huancayo e = 20m.11s., iPKS = 23m.5s., i = 40m.54s.
Santa Lucia SS = (56m.35s.), SSS = (61m.47s.). Bracketed readings wrongly identified.
Long waves were also recorded at Auckland and La Plata.

Aug. 5d. Readings also at 3h. (Malaga), 4h. (Almata, near Andijan and Tashkent), 7h. (Boulder City, Dane, Grand Coulee, Kirkland Lake, Mount Wilson, Pasadena, Pierce Ferry, Riverside, Shasta Dam, Tinemaha, Tucson, Ottawa, and Sitka), 8h. (Philadelphia), 9h. (near Alicante), 12h. (near Leninakan), 16h. (near Almata, Andijan, Ashkabad, Frunse, Samarkand, Stalinabad, Tashkent, Tchimkent, Mount Wilson, Pasadena, Riverside, Shasta Dam, Brisbane, and Stuttgart (2)), 17h. (Upsala), 19h. (Warsaw), 21h. (La Paz and Ottawa), 23h. (Istanbul).

Aug. 6d. 5h. 47m. 2s. Epicentre 9°·0S. 71°·0W. Depth of focus 0·090.
(as on 1945, Nov. 26d.).

$A = +·3216$, $B = -·9341$, $C = -·1554$; $\delta = +12$; $h = +7$;
$D = -·945$, $E = -·326$; $G = -·050$, $H = +·147$, $K = -·988$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		5·2	235	i 1 30	− 5	i 2 40	−11	—	—	i 2·9
La Paz	z.	8·0	160	i 2 2k	+ 2	i 3 34	− 2	—	—	4·5
Montezuma		13·7	172	—	—	e 4 51	−25	—	—	e 6·0
Bogota	z.	13·9	347	i 3 0	+ 3	i 5 33	+13	i 3 45	pP	—
Fort de France		25·5	24	e 4 44	0	—	—	e 7 16	pP	—
San Juan		27·6	10	e 5 3	+ 1	i 9 1	− 3	i 7 46	sP	i 12·0
La Plata	E.	28·4	157	5 3	− 6	9 8	− 8	5 29	?	14·5
	N.	28·4	157	i 4 59	−10	9 3	−13	5 28	?	e 14·4
Tacubaya		39·6	315	i 6 47	+ 5	i 12 7	+ 3	e 8 32	PP	—
Bermuda		41·6	8	e 7 3	+ 5	i 12 35	+ 2	e 8 46	pP	e 16·5
Columbia		43·8	347	e 7 14	− 1	e 12 58	− 6	e 11 38	PPP	e 18·6
Georgetown		48·0	354	i 7 47	0	i 14 0	− 2	9 35	pP	20·6
Philadelphia		48·9	356	i 7 52	− 2	i 14 8	− 6	e 9 39	pP	e 20·2
Cincinnati		49·5	346	i 7 56	− 2	i 14 27	+ 5	9 7	pP	—
Fordham		49·7	357	i 7 58	− 2	i 14 22	− 3	i 9 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.
Pennsylvania		49·9	353	i 8 1	0	i 14 30	+ 2	e 17 49	sS	—
New Kensington		50·0	351	e 8 4	+ 2	i 14 31	+ 2	i 16 48	S_cS	—
St. Louis		50·7	341	i 8 5	− 2	i 14 34	− 5	—	—	—
Weston		51·1	0	i 8 9	− 1	i 14 40	− 4	i 10 1	pP	—
Harvard		51·3	0	i 8 10	− 2	e 14 39	− 8	i 10 1	pP	—
Chicago		52·8	344	e 8 16	− 6	e 14 52	−14	e 13 17	sPP	e 22·3
Ottawa		54·3	356	8 31	− 2	15 22	− 4	10 22	pP	—
Shawinigan Falls		55·3	359	8 39	− 1	15 36	− 3	10 32	pP	—
Seven Falls		55·9	0	8 44	0	15 48	+ 1	19 12	SS	23·0
Tucson		55·9	319	i 8 42	− 2	e 15 43	− 4	i 10 38	pP	e 23·3
Dane		57·4	353	8 54	0	16 1	− 5	—	—	—
Kirkland Lake		57·5	353	8 53	− 2	16 4	− 3	10 48	pP	—
Denver		57·9	329	—	—	16 13	+ 1	—	—	—
Antarctica		59·2	177	i 9 3	− 3	i 16 29	0	—	—	—
Rapid City		60·3	334	i 9 17	+ 4	e 16 42	0	e 11 10	pP	e 21·2
Pierce Ferry		60·4	321	i 9 13	− 1	i 16 42	− 2	i 11 11	pP	—
Palomar		60·6	317	i 9 15k	0	i 16 46	0	i 11 22	pP	—
La Jolla		60·7	316	i 9 15	− 1	e 16 34	−13	i 9 51	P_cP	—
Boulder City		60·8	320	i 9 16	− 1	i 16 48	− 1	i 11 13	pP	—
Overton		60·9	321	i 9 15	− 2	e 16 46	− 4	i 11 11	pP	—
Riverside		61·3	317	i 9 18k	− 2	e 16 52	− 3	i 11 17	pP	—
Mount Wilson		61·9	317	i 9 25k	+ 1	e 17 1	− 1	i 11 21	pP	—
Pasadena		62·0	317	i 9 23k	− 1	i 17 0	− 3	i 11 19	pP	—
Haiwee		63·0	319	i 9 31	0	i 17 17	+ 1	i 11 29	pP	—
Santa Barbara		63·2	316	i 9 31	− 1	e 17 12	− 6	i 10 1	P_cP	—
Tinemaha		63·7	319	i 9 35k	0	i 17 25	+ 1	i 11 40	pP	—
Fresno	N.	64·5	318	i 9 40	0	e 17 30	− 4	—	—	—
Bozeman		65·2	330	e 9 45	0	e 17 41	− 1	e 18 27	S_cS	e 22·3
Lick		66·1	318	e 9 50	0	e 17 53	+ 1	—	—	—
Butte		66·2	330	e 9 50	− 1	e 17 51	− 3	e 10 22	P_cP	e 23·3
Santa Clara		66·3	318	e 9 52	+ 1	i 17 57	+ 2	e 11 53	pP	—
Branner		66·5	318	e 9 54	+ 1	i 17 59	+ 2	—	—	—
Berkeley		66·8	318	e 9 53	− 1	e 18 0	− 1	i 11 56	pP	—
Saskatoon		68·1	337	—	—	18 11	− 5	14 30	PPP	21·0
Ukiah		68·1	319	e 9 51	−11	e 18 15	− 1	e 12 5	pP	—
Shasta Dam		68·4	320	e 10 2	− 2	i 18 14	− 5	—	—	—
Grand Coulee		70·8	328	e 10 17	− 1	i 18 46	0	e 12 20	pP	—
Ivigtut		72·2	11	i 10 26k	0	i 18 59	− 3	i 12 30	pP	—
Victoria		73·5	327	10 37	+ 3	19 21	+ 5	12 44	pP	—
Lisbon		74·5	46	10 41	+ 2	i 19 33	+ 6	—	—	—
Malaga		77·1	49	i 10 59	+ 5	e 20 39	+45	14 3	PP	33·9
Granada		77·9	49	11 1	+ 3	i 20 7	+ 4	12 55	pP	35·9
Almeria		78·6	50	i 11 2	0	i 20 52	+42	13 59	PP	36·0
Toledo	z.	78·6	46	i 11 5	+ 3	i 20 18	+ 8	13 14	pP	—
Alicante		80·6	48	i 11 16	+ 4	i 20 34	+ 4	13 1	pP	e 47·0
Tortosa		82·1	47	i 11 24	+ 5	i 20 50	+ 5	13 31	pP	—
Jersey		83·3	37	e 11 48	+23	—	—	—	—	—
Sitka		84·3	330	e 11 30	0	e 20 50	−16	e 22 8	pS	—
Kew		85·2	36	i 11 35k	0	i 21 15	0	i 13 43	pP	—
Clermont-Ferrand		85·5	43	i 11 37	+ 1	i 21 25	+ 7	i 13 47	pP	41·0
Scoresby Sund		85·9	14	i 11 39	+ 1	21 23	+ 2	13 47	pP	—
Paris		86·1	39	i 11 39	0	e 21 20	− 3	i 13 49	pP	e 41·0
Uccle		87·8	38	e 11 48k	+ 1	e 21 43	+ 4	e 13 59	pP	—
De Bilt		88·7	36	i 11 53k	+ 2	e 21 48	+ 1	e 14 0a	pP	—
Basle		89·0	42	e 11 54	+ 1	—	—	e 14 4	pP	—
Strasbourg		89·3	40	i 11 55	+ 1	e 21 28	[+ 1]	e 14 5	pP	—
Zürich		89·6	42	e 11 58k	+ 2	e 21 56	+ 1	e 14 8a	pP	—
Chur		90·1	43	e 11 59	+ 1	—	—	e 14 10	pP	—
Stuttgart		90·3	40	i 12 0k	+ 1	e 22 0	− 1	i 14 8a	pP	—
Rome		91·1	48	i 12 4k	+ 2	i 22 7	− 1	e 14 13	pP	—
College		92·5	335	—	—	e 21 44	[− 1]	e 22 18	S	—
Triest		92·7	44	i 12 12	+ 2	i 22 25	+ 3	—	—	—
Copenhagen		93·7	34	i 12 16	+ 2	i 22 34	+ 4	i 14 26	pP	—
Warsaw	E.	98·3	39	e 12 4	−31	e 22 13	[− 2]	e 30 48	SS	—
Helsinki		100·7	30	e 12 46	0	e 22 24	[− 3]	e 23 1	SKKS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Istanbul		103·4	50	e 13 3	P	e 25 48	SP	— —	—
Helwan	z.	105·1	62	e 13 6	P	22 43	[− 4]	e 15 19 pP	—
Moscow		107·9	34	e 17 55	PP	23 8	S	e 19 55 pPP	—
Theodosia		107·9	46	e 17 52	PP	—	—	— —	—
Ksara		109·0	58	e 13 27	P	23 15	S	18 6 PP	—
Sverdlovsk		119·4	28	e 17 44	[+ 2]	e 27 53	SP	e 19 13 PP	—
Tashkent		132·4	41	e 18 10	[+ 3]	—	—	20 27 pPKP	—
Stalinabad		133·5	44	i 18 12	[+ 3]	—	—	20 31 pPKP	—
Almata		135·9	33	e 18 13	[0]	—	—	— —	—
Irkutsk		136·7	5	e 18 16	[+ 2]	—	—	e 21 7 PP	—
Vladivostok		140·6	333	18 17	[− 5]	i 21 30	PP	20 42 pPKP	—
Bombay		143·6	71	i 18 28	[0]	—	—	— —	—

Additional readings :—
Bogota isSZ = 6m.34s., iS$_c$PZ = 13m.45s.
San Juan iP = 5m.8s., i = 5m.43s., iS$_c$P = 10m.6s.
La Plata N = 7m.16s., E = 8m.18s., N = 9m.40s., E = 14m.1s.
Tacubaya i = 12m.59s., iSS = 15m.41s.
Bermuda esP? = 10m.23s., eS$_c$P = 11m.20s., esS = 15m.23s.
Columbia esS = 16m.2s.
Georgetown iSS = 16m.32s.
Philadelphia eP$_c$P = 9m.5s., ePP? = 10m.46s., eS = 14m.1s., eS$_c$S = 16m.36s.
Cincinnati sS = 17m.51s.
Fordham isP = 9m.47s., isS = 16m.47s.
Pennsylvania eSEN = 13m.7s., eS$_c$SEN = 16m.41s.
New Kensington e = 8m.29s.
St. Louis i = 9m.14s., 12m.12s., 14m.59s., and 16m.51s., e = 17m.44s.
Weston i = 9m.15s., eSS = 18m.1s.
Harvard i = 8m.29s., 8m.38s., 8m.45s., and 8m.49s., iP$_c$P = 9m.15s., ePP = 10m.17s., esS = 17m.53s.
Chicago eS$_c$S = 16m.44s.
Ottawa eZ = 9m.27s., eN = 13m.30s., e = 17m.16s., SS = 18m.46s.
Tucson i = 9m.4s., iP$_c$P = 9m.32s., iS$_c$P = 12m.33s., i = 16m.13s., esS = 19m.16s., ePKP,PKP = 38m.1s.
Antarctica iPP = 9m.18s., i = 12m.48s., iSS = 16m.49s.
Rapid City i = 9m.26s. and 16m.57s., eSS? = 20m.37s.
Pierce Ferry i = 10m.40s., 16m.54s., and 18m.1s., esS = 20m.15s., ePKP,PKP = 38m.30s.
Palomar iZ = 9m.29s., iP$_c$PZ = 9m.52s., iS$_c$PNZ = 12m.53s., iS$_c$SEN = 18m.3s., ePKP, PKPZ = 38m.43s., iZ = 38m.56s.
La Jolla eS$_c$PZ = 12m.55s., eS$_c$SN = 18m.11s.
Boulder City ipS? = 18m.3s., esS = 20m.11s., ePKP,PKP = 38m.7s.
Overton i = 12m.46s., iPP = 12m.54s., ePKP,PKP = 38m.4s., i = 38m.28s.
Riverside iS$_c$PZ = 12m.57s.
Mount Wilson iZ = 9m.36s., iPPZ = 12m.12s., iS$_c$PNZ = 13m.2s., eS$_c$SE = 18m.13s., ePKP,PKPZ = 38m.15s.
Pasadena iP$_c$PZ = 9m.55s., iZ = 10m.42s., ePPZ = 12m.9s., iS$_c$PZ = 13m.0s., iS$_c$SE = 18m.11s., ePKP,PKPZ = 38m.17s., eZ = 38m.41s.
Haiwee iP$_c$PZ = 10m.2s., iS$_c$PZ = 13m.7s., ePKP,PKPZ = 38m.16s., iZ = 38m.30s.
Santa Barbara iS$_c$PZ = 13m.4s.
Tinemaha iS$_c$PZ = 13m.8s., eS$_c$SE = 18m.24s., ePKP,PKPZ = 38m.5s.
Bozeman e = 19m.43s., eSS = 21m.51s.
Butte e = 10m.50s., eS$_c$S = 18m.29s., e = 19m.5s.
Berkeley iN = 19m.28s. and 22m.36s.
Ukiah eS$_c$S = 18m.54s., esS? = 20m.58s., e = 21m.57s., esSS? = 25m.46s.
Shasta Dam i = 10m.20s. and 10m.29s.
Grand Coulee eP$_c$P = 10m.53s., e = 20m.17s., ePKP,PKP = 38m.5s.
Victoria SS = 23m.1s.
Malaga ipPZ = 11m.31s., PPP = 15m.57s.
Granada PP = 14m.8s., pPPP = 16m.47s., S$_c$S = 20m.27s., PS = 20m.46s., sS = 22m.10s., pPS = 23m.16s., sPS = 23m.49s., iSS = 25m.10s., SSS = 28m.52s.
Almeria pP = 11m.16s., PPP = 15m.50s., S$_c$S = 21m.18s., SS = 26m.4s., SSS = 29m.30s.
Toledo SSZ = 25m.45s., SSSZ = 29m.26s.
Alicante P$_c$P = 11m.19s., PP = 14m.22s., sP = 14m.32s., P$_c$S = 15m.26s., PPP = 16m.12s., S$_c$S = 20m.44s., PS = 21m.40s., PPS = 21m.44s., sS = 24m.10s., SS = 24m.44s., SSS = 29m.20s., Q = 33m.8s.
Tortosa P$_c$P?N = 13m.43s., PPN = 15m.18s., PPP?E = 18m.17s., iN = 22m.38s., sSN = 24m.41s., SSN = 29m.21s.
Sitka e = 12m.6s., i = 21m.2s., esS = 24m.52s.
Kew esP?Z = 14m.43s., ePPP?EZ = 17m.47s., iSKSE = 20m.59s.?, iSKSP?Z = 22m.16s., esS = 24m.58s.?, eSSS = 33m.28s.
Clermont-Ferrand e = 25m.12s.
Scoresby Sund i = 21m.8s., SP = 22m.24s., sS = 25m.4s.
Paris esP = 14m.48s., esPP = 18m.5s., eSKS = 21m.4s., eS = 21m.25s., ePS = 22m.24s.
Uccle eSKS = 21m.18s.
De Bilt esS = 25m.41s., e = 34m.38s.

Continued on next page.

Strasbourg esP =15m.6s., epPP =17m.12s., ePPP =17m.58s., iSP =23m.4s.
Zürich e =12m.17s.
Stuttgart ePPP =18m.37s., eSKS? =21m.30s., ePS? =23m.15s.
Rome eSKSEN =21m.31s., eSPE =22m.31s., ipS$_c$SE =24m.53s., isSE =26m.5s., iSSE = 28m.51s.
Copenhagen e =19m.5s., 21m.19s., SKS =21m.54s., also 25m.19s., 26m.32s., and 32m.33s.
Warsaw eE =18m.5s., 21m.15s., 24m.25s., 25m.3s., 25m.27s., 25m.59s., 28m.22s., and 29m.15s.
Helsinki e =25m.9s.
Helwan PPZ =17m.40s., pPPZ =19m.31s., sPPZ =20m.34s.
Moscow esPP =20m.55s., epPPP =22m.10s., eSKKS =23m.53s., SP =26m.20s., pSP = 27m.20s., sSP =30m.1s.
Ksara isPP? =21m.3s., SS =32m.51s.
Sverdlovsk esPP =22m.10s., esSP =31m.58s.
Tashkent i =21m.41s.
Irkutsk i =21m.54s., e =24m.4s.

Aug. 6d. 6h. Deep focus shock near Montezuma.
Montezuma eP =23m.29s., iS =24m.2s., iL =24m.14s.
La Paz iP =25m.24s., iS? =26m.53s., LE =27m.24s.
Tucson iP =34m.21s., ipP =34m.54s.
Palomar iPZ =34m.47s., epPZ =35m.25s.
Pasadena iPZ =34m.55s.
Mount Wilson iPZ =34m.57s., ipPZ =35m.34s.
Riverside iPZ =34m.51s., ipPZ =35m.28s.
Overton iP =34m.51s., ipP =35m.27s.
Boulder City iP =34m.53s., epP =35m.26s.
Haiwee iPZ =35m.4s., ipPZ =35m.39s.
Tinemaha iPZ =35m.8s., ipPZ =35m.44s.
Shasta Dam iP =35m.32s.

Aug. 6d. 9h. 46m. 33s. Epicentre 36°·3N. 6°·7E.

Destructive at Oued, Hamimine, intensity VIII-XI. Intensity VII at Constantine, le Kroube, Ain Smara, and Rouffach. Epicentre as adopted. Macroseismic radius 70kms.

J. P. Rothe.
"Les séismes de Kerrata et la séismicite de l'Algérie," Annales de l'Institut de Physique du Globe de Strasbourg, 3e partie, Géophysique, Nouvelle série, tome VI, 1950, pp. 34,35.

A = +·8023, B = +·0943, C = +·5894 ; δ = −3 ; λ =0 ;
D = +·117, E = −·993 ; G = +·585, H = +·069, K = −·808.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Alicante		6·1	292	1 38	+ 4	i 2 55	S*	2 0	P_g	e 3·3
Barcelona		6·2	328	i 1 47	P*	—	—	—	—	—
Tortosa		6·6	315	e 1 51	+10	3 59	S_g	2 11	P_g	1 4·7
Marseilles		7·1	352	e 2 5	P*	e 3 25	+15	—	—	—
Rome		7·2	37	e 1 40	− 9	(e 3 10)	− 3	e 2 15	P_g	e 3·2
Almeria		7·4	277	i 2 10	P*	i 3 38	S*	2 20	P_g	4·6
Granada		8·3	279	2 9k	+ 5	3 36	− 4	—	—	5·0
Malaga	z.	9·0	276	i 2 18k	+ 5	i 4 34	S*	—	—	4·9
Pavia		9·1	11	e 3 6	?	—	—	—	—	—
Toledo	z.	9·2	296	i 2 14	− 2	4 26	S*	—	—	5·4
Clermont-Ferrand		9·8	345	e 2 10	−14	—	—	—	—	4·4
Neuchatel		10·7	1	e 2 45	+ 7	e 4 55	+16	—	—	—
Chur		10·8	10	e 2 37	− 2	—	—	—	—	—
Basle		11·2	3	e 3 31	+47	—	—	—	—	e 6·6
Zürich		11·2	7	e 2 45	+ 1	e 4 43	− 9	—	—	—
Zagreb		11·8	33	e 2 52	− 1	—	—	—	—	e 6·2
Strasbourg		12·3	3	e 3 11	+12	e 5 32	+14	—	—	5·6
Stuttgart		12·6	7	e 2 59	− 4	(e 5 27?)	+ 1	—	—	e 5·4
Paris		12·9	348	e 3 2	− 5	e 5 27?	− 6	—	—	e 6·0
Belgrade		13·5	46	e 2 50	−25	—	—	—	—	e 8·9
Cheb		14·4	15	—	—	e 5 27?	?	—	—	e 7·4
Jersey		14·4	336	e 3 42	+15	—	—	—	—	8·0
Budapest	E.	14·5	35	e 3 37	+ 9	—	—	—	—	e 9·2
Prague		14·9	20	e 3 44	+10	e 6 44	+24	—	—	e 7·4
Jena		15·1	12	e 3 57	+21	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
De Bilt		15·8	356	i 4 5	+20	(e 6 27?)	−15	—	—	e 6·5
Potsdam	E.	16·7	14	e 4 15	+18	—	—	—	—	e 8·4
Bucharest		16·8	55	3 27?	−31	—	—	—	—	—
Istanbul		18·1	67	e 4 10	− 4	e 7 43	+ 8	—	—	—
Warsaw	E.	18·9	28	e 2 59	?	6 56	−57	—	—	9·4
Durham	E.	19·3	345	—	—	e 8 5	+ 3	—	—	—
Copenhagen		19·8	9	e 4 32	− 3	e 8 13	0	—	—	10·0
Helwan		21·6	100	4 48	− 6	e 9 3	+14	—	—	e 10·8
Yalta		22·4	60	e 4 58	− 4	—	—	—	—	—
Theodosia		23·4	58	e 5 10	− 1	—	—	—	—	—
Ksara		24·0	88	e 5 18	+ 1	e 9 46	+14	—	—	—
Bergen	N.	24·1	358	—	—	e 10 5	+31	—	—	e 13·4
Upsala		24·6	12	—	—	e 9 45	+ 3	—	—	e 14·4
Sotchi		26·2	63	e 5 35	− 3	—	—	—	—	—
Moscow		28·6	37	e 6 3	+ 3	e 11 4	+16	—	—	—
Sverdlovsk		41·1	42	e 7 41	− 6	13 54	− 7	—	—	—

Additional readings :—
Alicante P_g =1m.53s. and 1m.56s., P_gS_g =2m.18s., 2m.23s., 2m.30s., and 2m.37s., S_g =3m.0s.
Tortosa P_gEN =2m.14s., P_gS_gE =2m.40s., 3m.8s., and 3m.29s.
Almeria PPP =2m.29s., SS =3m.47s.
Paris e =3m.37s., 4m.18s., and 5m.15s.?
Budapest eN =3m.40s.
Warsaw ePPE =3m.26s., eSSE =7m.38s.(=S).
Durham eN =8m.13s.
Helwan eZ =7m.57s.
Upsala eN =9m.48s.
Long waves were also recorded at Harvard and at other European stations.

Aug. 6d. 10h. Perhaps a repetition of 9h. shock.

Rome ePN =17m.1s., iE =18m.5s., eE =20m.24s.
Tortosa ePE =18m.9s., P_gN =18m.35s., P_gS_gE =19m.15s., P_gS_gN =19m.26s., 19m.31s., and 19m.45s., PSN =19m.52s., iS_gEN =20m.4s., S_gE =20m.11s. and 20m.16s., LEN =20m.23s.
Alicante PN =18m.46s., P_g =19m.1s. and 19m.4s., P_gS_g =19m.26s., iS_g =20m.3s., eL =20m.14s.
Toledo iPZ =18m.58s., eS_gZ =21m.15s., LZ =22m.13s.
Granada P =19m.10s.a, S =21m.9s., L =21·4m.
Almeria P =19m.11s., iS =20m.39s., SS =20m.47s., L =22m.37s.
Malaga iPZ =19m.15s.k, iSZ =21m.21s., LZ =21m.41s.
Barcelona e =19m.33s.
Stuttgart ePZ =19m.43s.
Ksara eP? =22m.7s., e =26m.33s.
Long waves also at other European stations.

Aug. 6d. 20h. 6m. 13s. Epicentre 19°·4N. 75°·8W.

A = +·2315, B = −·9151, C = +·3302 ; δ = +3 ; h = +5 ;
D = −·969, E = −·245 ; G = +·081, H = −·320, K = −·944.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Port au Prince		3·4	103	i 1 37	S	(i 1 37)	0	i 2 10	S_g	—
Bermuda		16·3	35	—	—	e 6 28	−25	—	—	—
Georgetown		19·5	357	e 4 30	− 1	e 8 3	− 3	—	—	9·1
Philadelphia		20·5	2	e 4 40	− 2	e 8 20	− 7	—	—	e 9·8
Fordham		21·4	5	e 4 52	+ 1	e 8 23	−22	—	—	—
St. Louis		22·9	330	e 5 5	− 1	e 9 18	+ 5	—	—	—
Harvard		23·3	9	e 5 11	+ 1	i 9 9	−11	—	—	—
Ottawa		25·9	0	—	—	e 10 14	+10	—	—	12·8
Seven Falls		27·9	7	—	—	e 10 47	+10	—	—	15·8
Tucson		33·9	300	e 6 49	+ 2	—	—	—	—	—
La Paz		36·5	167	7 9	0	—	—	—	—	23·0
Boulder City		38·0	304	e 7 24	+ 3	—	—	—	—	—
Palomar	z.	39·1	299	e 7 30	− 1	—	—	—	—	—
Riverside	z.	39·6	300	e 7 31	− 4	—	—	—	—	—
Tinemaha	z.	41·0	305	e 7 45	− 1	—	—	—	—	—

For Notes see next page.

NOTES TO AUGUST 6d. 20h. 6m. 13s.

Additional readings :—
Port au Prince i = 1m.55s.
Philadelphia e = 5m.29s., iS = 8m.38s.
Harvard i = 9m.14s. and 9m.20s.
Long waves were also recorded at Chicago, Rapid City, and Berkeley.

Aug. 6d. Readings also at 0h. (Harvard), 1h. (Shasta Dam), 3h. (Istanbul), 7h. (Florence), 9h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Boulder City, Pierce Ferry, Shasta Dam, and Grand Coulee), 10h. (Paris, Rome, Toledo, Tortosa, and near Bogota), 13h. (near Pierce Ferry and near Triest), 14h. (Belgrade, Bucharest, Istanbul, and Cheb), 15h. (near Mizusawa), 16h. (Rome), 17h. (Stuttgart), 18h. (Bucharest), 20h. (Palomar, Riverside, Tinemaha, Tucson, Shasta Dam, Port au Prince, San Juan, Harvard, and Bermuda), 21h. (Tortosa), 23h. (Harvard, Ottawa, and Port au Prince).

Aug. 7d. 0h. 40m. 20s. Epicentre 19°·9N. 75°·3W.

Felt at Santiago (Cuba).

Epicentres Suggested : 19°·8N. 75°·8W. (U.S.C.G.S.)
19°·75N. 75°·25W. (Gutenberg).

Annales de l'Institut de Physique du Globe de Strasbourg, 2ème partie, Séismologie, Nouvelle Série, Tome XII, 1947, Strasbourg, 1952, p. 24.

$A = +·2388$, $B = -·9102$, $C = +·3384$; $\delta = 0$; $h = +5$;
$D = -·967$, $E = -·254$; $G = +·086$, $H = -·328$, $K = -·941$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Port au Prince		3·1	116	i 0 50	− 1	i 1 15	−14	i 1 3	P_g	—
San Juan		8·8	98	e 2 8	− 3	i 3 47	− 6	—	—	i 4·2
Balboa Heights		11·6	201	e 2 48	− 2	e 4 52	− 9	—	—	e 7·4
Fort de France		14·4	109	e 3 23	− 4	3 47	PP	3 56	PPP	e 7·4
Columbia		14·9	341	e 3 28	− 6	e 6 4	−16	—	—	i 6·7
Bogota		15·3	175	i 3 37	− 2	i 6 29	− 1	i 3 51	PP	—
Bermuda		15·6	35	e 3 49	+ 6	(i 6 7)	−30	i 4 3	PP	i 6·1
Georgetown		19·0	357	i 4 24	− 2	e 7 56	+ 1	—	—	e 9·0
Philadelphia		20·0	0	e 4 33	− 4	i 8 24	+ 7	—	—	i 9·3
Cincinnati		20·7	340	e 4 42	− 2	i 8 42	+11	i 5 7	PP	—
Pennsylvania	N.	20·9	354	i 4 45	− 1	i 8 39	+ 4	—	—	—
Fordham		20·9	4	e 4 45	− 1	i 8 25	−10	i 4 57	PP	—
Tacubaya		22·5	273	i 5 6	+ 4	i 9 12	+ 7	i 5 30	PP	—
Weston		22·6	8	i 5 4	+ 1	e 9 7	0	—	—	i 10·1
St. Louis		22·7	329	e 5 3	− 1	i 9 15	+ 6	i 6 5	PPP	i 10·7
Harvard		22·7	8	i 5 5	+ 1	i 9 11	+ 2	—	—	e 11·7
Chicago		24·2	335	i 5 13	− 6	i 9 33	− 2	e 7 17	?	—
Ottawa		25·4	359	5 30k	− 1	9 56	0	11 4	SS	12·5
Halifax		26·5	19	5 39	− 2	10 27	+13	11 34	SS	13·7
Shawinigan Falls		26·6	4	5 41	− 1	10 31	+15	7 6	PPP	14·7
Seven Falls		27·4	7	5 49	0	10 35	+ 7	11 40	SS	15·7
Dane		28·4	354	5 58	0	10 54	+ 9	—	—	15·7
Kirkland Lake		28·4	354	e 5 57	− 1	e 10 54	+ 9	—	—	—
Huancayo		31·8	180	i 6 27	− 1	i 11 40	+ 2	i 7 22	PP	e 12·6
Denver		32·3	314	6 37	+ 4	11 54	+ 8	—	—	16·0
Rapid City		33·5	323	i 6 45	+ 2	i 12 6	+ 1	i 8 48	P_cP	e 14·3
Tucson		34·0	300	i 6 46	− 2	e 11 52	−21	—	—	e 13·9
La Paz		36·9	168	i 7 9a	− 3	i 12 54	− 4	i 7 43	pP	19·7
Pierce Ferry		37·5	304	e 7 13	− 4	e 13 8	+ 1	—	—	—
Boulder City		38·1	304	e 7 20	− 2	—	—	—	—	e 21·0
Bozeman		39·0	320	i 7 35	+ 5	i 13 25	− 4	e 9 24	PP	e 16·8
Palomar		39·2	299	e 7 31	0	e 13 2	−30	i 9 12	PP	—
La Jolla		39·5	298	e 7 37	+ 3	—	—	—	—	—
Riverside	Z.	39·8	300	i 7 35	− 1	—	—	—	—	—
Butte		40·1	320	e 7 35	− 4	e 13 44	− 2	e 9 16	PP	e 18·4

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		40·4	300	e 7 43	+ 2	e 13 31	−19	—	—	—
Pasadena		40·4	300	e 7 42	+ 1	i 13 49	− 1	e 9 24	PP	17·6
Saskatoon		40·4	330	7 46	+ 5	13 54	+ 4	9 20	PP	18·7
Haiwee		40·6	303	i 7 44	+ 1	—	—	—	—	—
Tinemaha	Z.	41·1	304	e 7 45	− 2	—	—	—	—	—
Santa Barbara	Z.	41·7	300	i 7 52	0	—	—	—	—	—
Fresno	N.	42·2	304	e 7 53	− 3	e 15 1	+44	—	—	e 23·5
Lick		43·8	304	e 8 11	+ 2	e 14 47	+ 7	—	—	e 26·0
Santa Clara		44·0	304	i 8 15	+ 4	e 14 44	+ 1	e 18 53	SSS	—
Branner		44·2	304	e 8 24	+12	—	—	—	—	e 26·4
Berkeley		44·3	304	e 8 13	0	i 14 46	− 2	i 18 12	SS	e 22·3
Grand Coulee		44·9	319	e 8 15	− 3	—	—	e 12 4	?	—
Shasta Dam		45·0	308	e 8 14	− 5	—	—	—	—	—
Ukiah		45·3	306	e 8 25	+ 4	e 15 6	+ 4	e 10 16	PP	e 18·3
Ivigtut		45·4	18	8 28	+ 6	15 15	+11	—	—	21·7
Copiapo	N.	47·2	174	8 30	− 6	15 26	− 3	—	—	30·0
Victoria		47·9	318	8 42	0	15 40	+ 1	10 35	PP	23·7
Sitka		57·4	326	e 9 54	+ 1	e 17 44	− 5	13 9	PPP	e 21·6
La Plata	N.	57·6	162	9 45	− 9	17 35	−16	12 34	PP	32·9
Lisbon		59·6	56	e 10 6	− 2	18 18	+ 1	18 28	PS	—
Scoresby Sund		59·7	18	10 6	− 3	18 10	− 9	13 46	PPP	—
Toledo	Z.	63·3	55	i 10 34	+ 1	e 19 14	+10	—	—	30·4
Malaga	Z.	63·3	58	i 10 35k	+ 2	i 18 59	− 5	i 15 3	PPP	35·3
Edinburgh		63·7	37	10 40	+ 4	19 15	+ 5	20 31	ScS	—
Granada		63·9	57	i 10 37k	0	i 19 24	+12	13 22	pPP	28·7
Jersey		64·3	43	e 10 40	+ 1	19 21	+ 4	—	—	—
Durham		64·6	38	e 10 44	+ 3	i 19 23	+ 2	i 19 43	PS	—
College		64·7	334	e 10 52	+10	e 19 28	+ 6	e 23 49	SS	e 26·7
Almeria		64·9	58	i 10 42	− 1	i 19 24	0	13 12	PP	28·9
Kew		65·4	41	e 10 48	+ 1	i 19 34	+ 4	e 13 10	PP	e 29·7
Alicante		66·2	55	e 10 53	+ 1	i 19 46	+ 6	11 1	pP	e 31·4
Tortosa		66·7	53	10 56	+ 1	i 19 50	+ 4	13 20	PP	29·9
Paris		67·3	45	10 58	− 1	i 19 55	+ 1	e 13 29	PP	e 30·7
Barcelona		67·8	52	e 11 15	+13	e 20 4	+ 4	—	—	e 30·4
Clermont-Ferrand		68·0	48	i 11 3	0	i 20 8	+ 6	i 13 41	PP	31·2
Uccle		68·3	43	e 11 7	+ 2	e 20 10	+ 4	e 13 43	PP	e 32·7
De Bilt		68·7	41	e 11 10	+ 3	e 20 15	+ 5	e 13 46	PP	e 33·7
Neuchatel		70·5	46	e 11 18	0	e 20 39	+ 7	—	—	—
Basle		70·8	45	e 11 20	0	e 20 36	+ 1	—	—	—
Strasbourg		70·8	44	e 11 19	− 1	i 20 39	+ 4	e 14 3	PP	e 32·7
Zürich		71·5	45	e 11 25	+ 1	e 20 43	0	e 12 43	?	—
Stuttgart		71·7	44	e 11 25	− 1	i 20 47	+ 2	e 14 4	PP	e 32·7
Chur		72·3	46	e 11 28	− 1	e 20 55	+ 3	—	—	—
Copenhagen		72·5	36	i 11 31	+ 1	i 20 59	+ 5	28 58	SSS	31·7
Jena		72·9	41	e 11 32	− 1	e 21 0	+ 1	—	—	—
Puntas Arenas		72·9	177	10 40?	−53	—	—	—	—	41·7
Cheb		73·5	42	e 11 40	+ 4	e 21 15	+ 9	e 14 22	PP	e 36·7
Florence		74·2	48	e 11 50	+10	e 21 30	+16	—	—	—
Upsala		74·4	32	e 11 40	− 2	e 21 15	− 1	e 14 16	PP	e 32·7
Prague		74·8	42	e 11 24	−20	e 21 21	+ 1	e 21 40	PS	e 33·7
Rome		75·4	50	i 11 49a	+ 2	i 21 29	+ 2	i 12 10	pP	e 33·2
Triest		75·4	46	e 11 49	+ 2	i 21 29	+ 2	e 14 43	PP	—
Honolulu		76·3	288	e 11 58	+ 6	e 21 46	+ 9	e 26 54	SS	e 31·1
Zagreb		76·9	46	e 11 58	+ 2	e 21 46	+ 3	e 21 52	PS	e 37·7
Helsinki		77·9	30	e 12 1	0	e 21 54	0	e 26 40	SS	e 35·7
Warsaw	E.	78·3	39	e 12 8	+ 5	i 22 6	+ 7	e 15 29	PP	e 36·7
Budapest	E.	78·4	44	e 12 6	+ 2	22 3	+ 3	—	—	38·7
	N.	78·4	44	e 12 12	+ 8	e 22 0	0	—	—	e 36·5
Belgrade		80·2	46	e 12 9	− 5	e 22 32	+13	e 15 18	PP	e 37·8
Bucharest		84·1	45	e 12 38	+ 4	—	—	—	—	22·7
Moscow		85·9	32	12 44	+ 1	23 6	−10	—	—	—
Istanbul		87·4	48	e 12 50	0	e 23 40	+10	—	—	—
Yalta		89·3	43	e 13 0	+ 1	e 23 52	+ 4	—	—	—
Theodosia		89·8	42	e 13 4	+ 2	e 23 34	[+ 2]	—	—	—
Helwan		93·8	56	13 23	+ 3	24 30	+ 2	17 16	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sverdlovsk		95·1	23	13 26	0	i 23 58	[− 4]	e 17 30	PP	—
Ksara		95·5	52	13 32	+ 4	26 21	PS	17 27	PP	—
Baku		101·3	40	e 18 12	PP	—	—	—	—	—
Ashkabad		108·2	37	18 27	PKP	—	—	—	—	—
Tashkent		110·8	28	e 19 13	PP	24 55	[−20]	28 27	PS	—
Vladivostok		112·5	338	e 18 42	[+ 4]	25 16	[− 6]	i 19 28	PP	—
Andijan		112·6	26	e 19 47?	PP	—	—	—	—	—
Stalinabad		112·8	30	e 19 25	PP	i 26 33	{+ 8}	30 7	PPS	—
Bombay		130·3	41	e 20 54	PP	—	—	—	—	—
Hyderabad	N.	134·8	37	22 15	PP	—	—	—	—	—
Riverview		136·6	241	e 20 55	PKP,	e 29 1	{ 0}	i 40 23	SS	e 64·8

Additional readings :—
Port au Prince iPEN =0m.55s., iEN =1m.8s.
Bogota iSSEN =6m.43s., eScSZ =12m.29s.
Georgetown i =4m.27s., e =7m.43s.
Cincinnati iP =4m.47s., iS =8m.47s.
Tacubaya i =9m.37s.
Ottawa PPP =6m.13s.
Halifax PPP =6m.47s.
Kirkland Lake i =6m.0s. and 6m.11s.
Huancayo iS =10m.16s.
Rapid City i =10m.30s.
Tucson i =6m.59s. and 9m.14s.
La Paz isPZ =8m.6s., iPPNZ =8m.28s., PcP =9m.50s., SS =15m.0s., ScSZ =17m.22s.
Butte e =10m.57s., 15m.15s., and 16m.48s.
Pasadena eScPZ =13m.32s., eSSN =16m.46s.
Saskatoon SS =15m.58s.
Branner eN =18m.27s.
Berkeley iPEZ =8m.16s., eZ =8m.19s., eN =8m.52s., iZ =9m.0s., iPcPE =10m.5s., iPPPN =10m.30s., iPcSZ =13m.36s., iN =14m.54s., iSSN =18m.18s.
Ukiah e =15m.22s.
Victoria SS =18m.40s.
La Plata E. P =10m.10s., PcP =10m.52s., PPP =13m.10s., eS =17m.34s., SS =22m.10s., SSS =24m.4s., and 25m.4s., Q =29m.16s.
La Plata N. 10m.4s., PcP =10m.58s. and 16m.4s., PS =18m.58s., SSS? =26m.58s., Q =29m.58s.
Lisbon EZ =10m.19s.
Scoresby Sund 10m.14s., 10m.46s., PS =18m.22s. and 21m.16s., SSS =24m.52s.
Malaga iPPZ =13m.40s., PSZ =21m.11s., SSZ =25m.22s., QZ =29m.48s.
Granada PcP =11m.3s., iPP =13m.1s., PcS =14m.52s., iScS =20m.35s.
Durham iE =10m.49s., iPPSEN =20m.8s., iScSE =20m.40s., iN =20m.46s.
College ePP =13m.59s., ePPP =15m.6s., eScS? =21m.18s.
Almeria PcP =11m.14s., PPP =14m.44s., PcS =15m.17s., ScS =20m.35s., SS =23m.44s., SSS =26m.34s.
Kew ePPPZ =14m.42s.?, ePSZ =19m.40s., eSSE =23m.40s.?, eSSS =26m.40s.?
Alicante PcP =11m.19s., PP =13m.15s., PPP =14m.57s., PcS =15m.47s., PS =20m.11s., sS =20m.49s., ScS =21m.22s., SS =23m.55s., Q =27m.45s.
Tortosa PcPEN =11m.25s., PPPE =15m.2s., PcSEN =15m.21s., PSE =20m.7s., PPS?E =20m.23s., ScSN =20m.52s., SS?N =23m.50s., SSS?N =26m.21s., QN =27m.18s.
Paris i =11m.8s., e =11m.15s., 11m.22s., 11m.33s., 11m.50s., and 13m.55s., ePPP =15m.20s., iS =19m.51s., ePS =20m.18s., eSKS =20m.53s., e =21m.13s., eSS =24m.48s., eSSS =27m.38s., eQ =28m.40s.
Strasbourg e =12m.15s. and 20m.9s., eSS =25m.10s., eSSS =28m.40s.
Stuttgart iP =11m.28s.k, e =12m.20s., 16m.45s., and 21m.40s., eSS =25m.40s., eSSS =28m.34s.
Copenhagen 21m.41s. and 25m.58s.
Jena eN =12m.12s., eE =12m.21s., eS?E =21m.5s.
Cheb e =15m.16s., ePPP =16m.10s., e =19m.58s. and 20m.42s., ePS =22m.16s., eSS =25m.55s., eSSS =29m.20s.
Upsala eSSSN =29m.40s.
Prague eSS =26m.10s.
Rome esPEZ =12m.41s., iPPE =14m.46s., eNZ =15m.29s., eEN =15m.38s., iSE =21m.34s., iPSE =22m.22s., eN =24m.9s., iZ =24m.53s., eSSN =27m.10s., iSSE =27m.29s., eSSSE =29m.29s., eSSSN =29m.32s., eN =31m.28s., eE =31m.38s.
Triest eSS =26m.31s.
Honolulu ePP? =15m.17s.
Warsaw eE =12m.59s., ePPPE =17m.2s., ePcSE =19m.45s., iPSE =22m.46s., iPPSE =23m.17s., SSE =27m.12s., iE =27m.48s., eSSSE =30m.29s.
Belgrade ePS? =22m.40s., eSS? =26m.50s.
Helwan eZ =14m.58s., PPPZ =19m.16s., PSNZ =25m.50s.
Sverdlovsk ScS =24m.48s., PS =25m.58s., SS =31m.4s.
Tashkent SKKS =26m.1s., SSS =39m.21s.
Vladivostok iPS =28m.59s., SS =35m.4s.
Stalinabad PPP =22m.23s.
Riverview eE =21m.16s., iE =21m.27s., ePPZ =23m.4s., iE =29m.11s., eSKSPE =32m.30s., eSSSE =45m.18s., eE =50m.19s., eQE =56m.58s.

Aug. 7d. 6h. Undetermined Shock.

Intensity III at Port Blair. Epicentre 19°·0N. 90°·5E.

Annales de l'Institut de Physique de Globe de Strasbourg, 2ème partie, Séismologie, Nouvelle Série, Tome XII, 1947, Strasbourg, 1952, p. 24.

Hyderabad ePN =7m.59s., eSN =11m.3s.
Bombay iPEN =9m.18s., eSEN =13m.2s.
Tashkent eP =11m.14s., eS =17m.6s.
Stalinabad iP =11m.15s., iS =16m.37s.
Irkutsk eP =12m.42s.
Vladivostok eP =12m.52s.
Baku eP =13m.16s.
Sverdlovsk P =13m.33s., S =20m.49s.
Leninakan eP =13m.49s.
Ksara e =14m.11s., L =37m.
Moscow eP =14m.44s., epP =14m.55s., eS =22m.58s., esS =23m.18s.
Stuttgart eP?Z =16m.20s.
Strasbourg e =16m.30s., L =51m.0s.
Paris e =16m.43s., eL =53m.0s.
Toledo P?Z =17m.18s., S?Z =21m.0s., L?Z =22m.30s.

Aug. 7d. 12h. 29m. 28s. Epicentre 36°·3N. 6°·7E. (as on 6d.).

$A = +\cdot 8023$, $B = +\cdot 0943$, $C = +\cdot 5894$; $\delta = -3$; $h = 0$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Alicante		6·1	292	1 37	+ 3	2 54	+ 9	—	—	e 3·2
Barcelona		6·2	328	e 1 55	P•	—	—	—	—	—
Tortosa		6·6	315	1 40	− 1	3 0	+ 2	2 12	P_g	—
Marseilles		7·1	352	e 2 22	PPP	e 3 20	+10	—	—	—
Rome		7·2	37	e 1 44a	− 5	e 2 44	−29	e 1 48	PP	e 3·1
Almeria		7·4	277	e 2 4	+12	i 3 36	+18	—	—	6·3
Granada		8·3	279	2 2a	− 2	4 6	+26	2 11	PP	i 4·6
Florence		8·3	24	e 1 52	−12	—	—	—	—	—
Malaga	z.	9·0	276	i 1 53a	−20	i 4 13	+15	—	—	5·0
Pavia		9·1	11	e 2 22	+ 8	—	—	—	—	—
Toledo	z.	9·2	296	i 2 12	− 4	—	—	i 2 51	PPP	5·4
Clermont-Ferrand		9·8	345	e 2 28	+ 4	4 2	−15	—	—	—
Neuchatel		10·7	1	e 2 50	+12	e 5 21	+42	—	—	—
Triest		10·8	27	e 2 10	−29	e 4 1	−41	—	—	—
Basle		11·2	3	e 2 37	− 7	—	—	—	—	e 6·5
Zürich		11·2	7	e 2 50	+ 6	e 5 21	+29	—	—	—
Zagreb		11·8	33	e 2 50	− 3	—	—	—	—	—
Strasbourg		12·3	3	e 3 9	+10	—	—	—	—	e 5·5
Stuttgart		12·6	7	e 3 2	− 1	—	—	—	—	e 5·6
Paris		12·9	348	e 3 1	− 6	e 5 22?	−11	e 3 10	PP	e 6·0
Belgrade		13·5	46	e 2 12	−63	e 7 35	?	—	—	e 10·6
Cheb		14·4	15	—	—	e 5 32?	SS	—	—	e 6·5
Budapest		14·5	35	e 3 50	PP	—	—	—	—	e 8·3
Kew	z.	16·0	344	e 4 2	PP	—	—	e 4 54?	PPP	e 7·0
Potsdam	e.	16·7	14	e 4 2	PP	—	—	—	—	e 8·5
Bucharest		16·8	55	e 3 32	−26	—	—	—	—	—
Istanbul		18·1	67	e 4 6?	− 8	e 7 38?	SS	—	—	—
Durham		19·3	345	e 5 5	PPP	e 8 6	SS	i 8 55	SSS	i 9·2
Copenhagen		19·8	9	—	—	e 8 10	− 3	—	—	10·1
Edinburgh		20·8	344	e 4 32	−13	—	—	—	—	—
Helwan		21·6	100	4 53	− 1	e 8 50	+ 1	e 5 42	PPP	—
Aberdeen	e.	21·7	347	—	—	i 8 47	− 4	—	—	11·2
Ksara		24·0	88	e 5 19	+ 2	e 9 47	+15	—	—	—
Moscow		28·6	37	e 5 54	− 6	e 11 5	+17	—	—	—
Sverdlovsk		41·1	42	—	—	e 13 56	− 5	—	—	—

Additional readings :—
Alicante P_g =1m.52s. and 2m.15s., P_gS_g =2m.39s., S_g =2m.59s.
Tortosa P_gN =2m.15s., P_gS_gE =2m.33s., P_gS_gN =2m.53s., P_gS_gEN =3m.5s., P_gS_gN = 3m.12s., $P_gS_g?N$ =3m.20s., S_gN =3m.45s., and 3m.53s.
Paris e =3m.44s. and 4m.32s.
Durham eN =5m.53s., eE =6m.1s.
Helwan iZ =9m.58s.
Long waves were also recorded at Lisbon, De Bilt, Helsinki, Prague, and Uccle.

Aug. 7d. 22h. 17m. 1s. Épicentre 19°·9N. 75°·3W. (as at 0h.).

$A = +\cdot2388$, $B = -\cdot9102$, $C = +\cdot3384$; $\delta = 0$; $h = +5$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Port au Prince		3·1	116	e 0 57	+ 6	i 1 39	+10	—	—	—
San Juan		8·8	98	e 2 19	+ 8	i 3 50	− 3	—	—	e 4·1
Balboa Heights		11·6	201	e 2 50	0	e 4 53	− 8	—	—	—
Columbia		14·9	341	—	—	e 6 24	+ 4	—	—	—
Bogota	z.	15·3	175	e 3 41	+ 2	—	—	—	—	—
Bermuda		15·6	35	—	—	e 7 4	+27	—	—	e 9·4
Philadelphia		20·0	0	i 4 39	+ 2	e 8 18	+ 1	i 8 34	SS	e 11·2
Fordham		20·9	4	e 4 50	+ 4	i 8 29	− 6	—	—	—
St. Louis		22·7	329	e 5 5	+ 1	e 9 22	+13	—	—	—
Harvard		22·7	8	e 5 8	+ 4	i 9 13	+ 4	i 5 13	PP	—
Chicago		24·2	335	—	—	e 9 23	−12	—	—	e 10·3
Ottawa		25·4	359	5 32	+ 1	10 17	+21	—	—	16·0
Dane		28·3	354	e 6 4	+ 7	—	—	—	—	—
Kirkland Lake		28·4	354	e 5 55	− 3	—	—	e 6 5	P	e 14·7
Rapid City		33·5	323	e 7 26	PP	—	—	—	—	e 16·7
Tucson		34·0	300	e 6 46	− 2	—	—	—	—	—
La Paz		36·9	168	i 7 12	0	—	—	—	—	23·5
Pierce Ferry		37·5	304	e 7 18	+ 1	—	—	—	—	—
Boulder City		38·1	304	e 7 21	− 1	—	—	—	—	—
Palomar	z.	39·2	299	e 7 22	− 9	—	—	i 7 48	pP	—
Riverside	z.	39·8	300	e 7 31	− 5	—	—	i 7 48	pP	—
Tinemaha	z.	41·1	304	i 7 47	0	—	—	i 8 5	pP	—
Grand Coulee		44·9	319	e 8 17	− 1	—	—	—	—	—
Paris		67·3	45	e 10 59	0	—	—	—	—	e 35·0
Stuttgart	z.	71·7	44	e 11 25	− 1	—	—	—	—	—
Antarctica		87·5	177	i 12 54	+ 3	—	—	—	—	—

Additional readings :—
Port au Prince i = 2m.2s., iS? = 2m.37s., i = 3m.20s. and 3m.46s.
Philadelphia i = 4m.44s.
Fordham eS = 8m.25s.
Harvard e = 9m.8s.
Long waves were also recorded at Berkeley, Butte, Rome, Strasbourg, and Sitka.

Aug. 7d. Readings also at 0h.(Boulder City and Copiapo), 1h. (Wairiri), 2h. (Ksara and near Erevan), 3h. (Cheb and near Leninakan), 4h. (Copiapo and Tortosa), 6h. (Tucson), 8h. (Chicago, near Boulder City and Pierce Ferry), 11h. (Antarctica and Upsala), 12h. (La Paz and La Plata), 13h. (Pavia and near Andijan), 14h. (Antarctica), 15h. (Kew and Rome), 17h. (Shasta Dam, Antarctica, Paris, Strasbourg, and Stuttgart), 19h. (Harvard and Port au Prince), 20h. (near Stalinabad), 21h. (Granada), 22h. (near Branner), 23h. (Ksara, La Plata, and near Santa Lucia).

Aug. 8d. Readings at 1h. (near Frunse and Tashkent), 5h. (Dane, Kirkland Lake, Ottawa, Riverview, Kaimata, Wellington, New Plymouth, and near Monowai), 6h. (Kodaikanal, Ksara, La Paz, Bogota, Port au Prince, Ottawa, Berkeley, Bermuda, Palomar, Riverside, Tinemaha, Columbia, Rapid City, Chicago, Philadelphia, Tucson, near Pierce Ferry and Boulder City ; several shocks), 7h. (Pasadena, Rome, Paris, Strasbourg, Granada, and Malaga), 10h. (Rome, Tortosa, and near Ashkabad), 12h. (Jena and near Apia), 14h. (Stuttgart), 15h. (Rome, Paris, Granada, Alicante (2), and Tortosa (2)), 19h. (near Balboa Heights), 20h. (Ksara, Brisbane, Riverview, Tuai, Wellington, Kaimata, New Plymouth, near Monowai, and near Branner), 21h. (Berkeley, Almeria, Malaga, Granada, Alicante, Paris, Stuttgart, and Rome), 22h. (near Berkeley, Branner, and Lick), 23h. (La Paz and Wairiri).

Aug. 9d. 2h. 48m. 20s. Epicentre 1°·1N. 28°·4W.

$A = +·8795$, $B = -·4755$, $C = +·0190$; $\delta = -2$; $h = +7$;
$D = -·476$, $E = -·880$; $G = +·016$, $H = -·009$, $K = -1·000$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fort de France		35·1	294	e 6 50	− 7	—	—	—	—	—
Lisbon		41·4	23	i 7 49	− 1	—	—	—	—	20·0
Malaga	Z.	41·8	29	i 7 55k	+ 2	i 14 19	+ 8	9 43	PP	19·7
Granada		42·6	30	i 8 0k	+ 1	i 14 33	+10	8 8	pP	i 21·1
Almeria		42·9	31	i 7 58	− 4	i 14 22	− 5	9 42	PP	24·9
La Paz		42·9	244	i 8 2	0	i 14 30	+ 3	1 9 52	PcP	21·2
Toledo	Z.	44·5	27	i 8 16	+ 1	i 15 0	+ 9	i 10 0	PP	21·3
Alicante		45·1	31	e 8 25	+ 5	i 15 3	+ 4	8 29	pP	e 22·6
La Plata	E.	45·2	215	8 10	−10	15 0	− 1	10 4	PP	26·1
	N.	45·2	215	8 20	0	15 4	+ 3	9 58	PP	25·4
Bogota	Z.	45·7	275	e 8 26	+ 2	—	—	—	—	—
Bermuda		46·2	316	e 10 30	PP	e 15 17	+ 2	e 19 23	SSS	e 21·3
Tortosa		47·4	30	8 40	+ 2	15 37	+ 5	10 22	PP	20·8
Huancayo		48·4	253	i 8 44	− 2	i 15 44	− 2	i 19 23	SS	e 24·3
Barcelona		48·7	30	—	—	e 15 59	+ 9	—	—	e 24·2
Clermont-Ferrand		52·4	28	i 9 17	+ 1	i 16 55	+13	—	—	24·7
Paris		54·5	25	i 9 32a	0	e 17 11	+ 1	e 11 32	PP	23·7
Rome		54·8	37	i 9 34a	0	i 17 20	+ 6	i 9 46	pP	e 26·4
Florence		55·2	35	e 9 46	+ 9	e 17 42	+22	—	—	—
Kew		55·5	21	e 9 38	− 1	e 17 30	+ 6	e 13 2	PPP	e 25·7
Basle		55·8	29	e 9 41a	0	e 17 20	− 8	—	—	—
Zürich		56·2	29	e 9 42k	− 2	e 17 35	+ 2	—	—	—
Harvard		56·5	323	i 9 44	− 2	e 17 35	− 2	—	—	e 25·7
Strasbourg		56·6	28	i 9 47a	0	i 17 46	+ 8	e 11 56	PP	—
Uccle		56·8	24	e 9 44	− 4	e 17 40	− 1	e 13 8	PPP	e 26·7
Fordham		57·0	320	e 9 48	− 2	e 16 22	?	—	—	—
Philadelphia		57·4	318	e 9 51	− 2	e 17 49	0	e 11 45	PP	e 25·8
Stuttgart		57·4	28	i 9 52a	− 1	e 17 51	+ 2	e 11 56	PP	e 24·7
Durham		57·8	18	—	—	18 1	+ 7	—	—	i 27·5
Triest		57·8	34	i 9 58	+ 3	e 17 57	+ 3	e 12 3	PP	—
De Bilt		58·1	24	e 9 56a	− 2	e 18 0	+ 2	e 13 40	PPP	e 24·7
Seven Falls		58·8	328	—	—	e 18 10	+ 3	—	—	23·7
Zagreb		59·1	35	e 10 5a	+ 1	—	—	e 12 14	PP	—
Aberdeen	E.	59·7	16	—	—	e 17 44	?	—	—	25·6
Jena	N.	60·0	29	e 10 11	0	—	—	e 12 20	PP	—
Ottawa		60·6	323	10 12	− 3	18 32	+ 2	(22 40?)	SS	22·7
Helwan		63·4	57	i 10 32k	− 2	e 19 10	+ 4	12 58	PP	—
Copenhagen		63·6	24	i 10 35	0	i 19 15	+ 7	—	—	29·7
Dane		64·5	324	e 10 40	− 1	—	—	—	—	—
Kirkland Lake		64·6	324	e 10 40	− 1	—	—	—	—	—
Istanbul		65·2	45	e 10 40?	− 5	—	—	e 13 13	PP	—
Warsaw	E.	65·5	32	e 10 46	− 1	e 19 41	+ 9	e 23 30	SS	e 34·7
Chicago		66·7	316	e 12 48	PP	e 19 43	− 3	—	—	e 27·0
St. Louis		67·6	312	e 10 58	− 3	e 19 54	− 3	—	—	e 28·3
Ksara		68·2	54	i 11 5	+ 1	20 19?	+15	20 51	PS	—
Scoresby Sund		69·4	2	—	—	20 19	+ 1	—	—	27·7
Antarctica		74·1	194	i 11 38	− 2	e 21 14	+ 2	—	—	—
Moscow		75·8	32	i 11 49	− 1	21 35	+ 4	—	—	—
Grozny		77·7	46	e 11 55	− 5	—	—	—	—	—
Baku		80·4	49	e 12 30	+15	e 22 30	+ 9	—	—	—
Tucson		83·0	302	e 12 28	0	—	—	—	—	—
Ashkabad		86·8	53	e 12 51	+ 4	—	—	—	—	—
Palomar	Z.	88·1	304	e 12 55	+ 1	—	—	—	—	—
Riverside	Z.	88·5	304	e 12 54	− 2	—	—	—	—	—
Sverdlovsk		88·6	33	i 12 57	+ 1	23 47	+ 5	16 38	PP	—

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.	89·1	304	e 13 3	+ 5	—	—	—	—	—
Pasadena	z.	89·2	304	e 13 1	+ 2	—	—	—	—	—
Santa Barbara	z.	90·5	304	e 13 12	+ 7	—	—	—	—	—
Shasta Dam		92·3	311	e 13 18	+ 5	—	—	—	—	—
Berkeley		92·4	308	—	—	e 24 0	[+13]	e 25 29	PS	e 44·8
Tashkent		95·1	49	e 16 59	PP	24 44	+ 5	26 14	PS	—
Irkutsk		113·7	30	e 19 35	PP	—	—	—	—	—
Vladivostok		132·5	20	e 21 40	PP	—	—	22 48	PKS	—

Additional readings :—
Malaga PPPZ =11m.11s., sSZ =15m.1s., SSZ =17m.49s.
Granada P_cP =9m.43s., iPP =9m.52s., PPP =10m.12s., iSS =17m.25s.
Almeria PPP =10m.14s., P_cS =13m.30s., SS =17m.34s., S_cS =17m.52s.
La Paz iSSEN =17m.34s., S_cS =18m.2s.
Toledo SSZ =17m.53s.
Alicante P_cP =10m.3s., PP =10m.13s., S_cS =18m.37s., Q =18m.51s.
La Plata N =9m.4s., PPP?N =11m.10s., PPP?E =11m.28s., N =12m.46s., P_cSN = 13m.46s., SSE =18m.28s., SSSN =19m.34s., QE =22m.4s., QN =22m.28s.
Bermuda eS =17m.10s.
Tortosa PPPE =11m.22s., P_cSEN =14m.11s., PSN =15m.47s., SSN =18m.47s.
Paris e =9m.40s., ePPP =12m.34s., eS =17m.18s., eS_cS =19m.15s., e =19m.42s., and 20m.11s.
Rome ePPE =11m.36s., ePPPEN =11m.42s., eSSN =21m.1s.
Kew eP_cSZ =14m.47s.?, ePSNZ =17m.33s., eZ =18m.58s., eSSEN =21m.12s.?, eQEN = 23·7m.
Strasbourg eS_cS =19m.43s.
Uccle iSEN =17m.45s., eSSSN =23m.10s.
Philadelphia eSS =22m.6s.
Stuttgart ePPP =13m.28s.
Triest eSS =21m.58s.
De Bilt ePS =28m.12s.
Zagreb eNW =10m.14s., eNE =10m.19s., e =10m.26s. and 10m.42s.
Warsaw eE =15m.47s., 19m.2s., and 24m.40s.
Sverdlovsk SKS =23m.29s., PS =24m.49s.
Berkeley eE =25m.34s., iPSN =26m.12s., eZ =30m.48s., eN =32m.34s.
Tashkent SKS =22m.42s.
Long waves were also recorded at Prague, Bergen, Helsinki, Upsala, Ivigtut, and College.

Aug. 9d. Readings also at 0h. (Palomar and Tucson), 1h. (Mount Wilson, near Andijan, and near La Paz), 3h. (Bogota and near Ksara), 4h. (Harvard, Philadelphia, Ottawa, Dane, Kirkland Lake, Seven Falls, Chicago, Tucson, and Port au Prince), 5h. (Rome, Ksara, La Paz, Ottawa, Brisbane, Riverview, near Kaimata, Monowai, New Plymouth, and Wellington), 6h. (Alicante and Paris), 7h. (Kew and Malaga), 8h. (Bermuda), 11h. (Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Shasta Dam, and Rome), 16h. (Triest), 19h. (Stalinabad, Irkutsk, Vladivostok, Sverdlovsk, Moscow, and Rome), 20h. (Rome), 21h. (Tucson, Shasta Dam, Paris, Stuttgart, Ksara, Vladivostok, and near Mizusawa), 22h. (Stuttgart).

Aug. 10d. 2h. 46m. 38s. Epicentre 42°·0N. 85°·0W.

Intensity VI at Athens, Bronson, Coldwater, Colon, Matteson Lake, Sherwood, and Union City; V at Greenville, Hillsdale, etc.; IV at Grand Rapids, Lansing, Plymouth, etc. Epicentre as adopted.

L. M. Murphy.
United States Earthquakes, 1947, Serial No. 730, Washington, 1950, pp 6-7, map with epicentre p. 6.

J. T. Wilson.
The primary waves of the Michigan earthquake of August 9th, 1947; Earthquake Notes, Vol. 20, No. 1, p.4, 1948.

$A = +·0650$, $B = -·7426$, $C = +·6666$; $\delta = +4$; $h = -2$;
$D = -·996$, $E = -·087$; $G = +·058$, $H = -·664$, $K = -·745$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ann Arbor	1·1	75	e 0 22	0	i 0 39	0	i 0 42	?	—
Chicago	2·0	264	e 0 43	P_g	e 1 5	+ 3	i 1 12	S_g	i 1·3
Cincinnati	2·9	172	i 0 48	0	i 1 23	− 1	i 0 53	P*	—
New Kensington	4·3	108	i 2 16	S*	—	—	i 2 23	S_g	e 2·7
St. Louis	5·2	232	e 1 19	− 2	i 2 21	− 1	i 1 31	P*	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pennsylvania		5·5	100	—	—	e 2 54	S*	—	—	—
Dane		7·0	28	1 46	0	3 1	− 7	—	—	3·8
Kirkland Lake		7·1	28	1 47	− 1	3 2	− 8	—	—	3·5
Ottawa		7·5	60	1 52	− 1	i 3 22	+ 2	—	—	i 4·0
Philadelphia		7·7	102	e 2 56	+60	e 3 26	+ 1	—	—	e 3·9
Fordham		8·4	94	e 2 6	0	i 4 26	S_g	—	—	—
Shawinigan Falls		9·9	58	2 26	+ 1	4 17	− 3	—	—	5·2
Harvard		10·0	83	e 2 28	+ 1	e 4 8	−14	e 4 46	SSS	—
Weston		10·2	83	e 2 30	− 1	e 4 58	SSS	i 5 17	Q	i 5·4
Seven Falls		11·3	58	2 50	+ 4	4 51	− 3	5 24	SSS	5·9
Tucson		22·7	253	e 5 7	+ 3	—	—	—	—	—
Santa Lucia	N.	76·2	168	28 22	?	—	—	32 3	Q	—

Additional readings :—
Chicago e = 0m.50s.
Cincinnati i = 1m.9s. and 1m.18s., iS = 1m.30s., i = 1m.48s.
St. Louis i = 1m.22s. and 2m.4s., e = 2m.22s., i = 2m.35s.
Harvard e = 2m.58s., eP? = 3m.3s., e = 3m.46s., 4m.1s., and 4m.56s., eS = 5m.13s.
Long waves were recorded at Alicante.

Aug. 10d. 21h. 58m. 21s. Epicentre 36°·8N. 121°·4W. (as on 1947, July 7d.).

Intensity VI at Hollister; V at Glenwood, Los Baños Creek, and Tres Pinos; IV at Chualar, Monterey, etc.
Epicentre 36°53′N. 121°25′W. Macroseismic area 3500 sq. miles.

L. M. Murphy.
United States Earthquakes, 1947, serial No. 730, Washington, 1950, p. 25.

$A = -·4182$, $B = -·6851$, $C = +·5964$; $\delta = -5$; $h = 0$;
$D = -·854$, $E = +·521$; $G = -·311$, $H = -·509$, $K = -·803$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lick		0·6	339	i 0 13	− 2	i 0 23	− 3	—	—	—
Santa Clara		0·6	321	i 0 15	0	i 0 25	− 1	—	—	—
Branner		0·9	314	e 0 19	− 1	i 0 31	− 3	i 0 28	S*	—
Berkeley		1·3	327	i 0 24	− 1	i 0 43	− 1	i 0 27	P_g	—
Fresno	N.	1·3	93	i 0 25	0	i 0 42	− 2	—	—	—
San Franciso	E.	1·3	319	i −0 21?	?	—	—	—	—	—
Tinemaha		2·5	89	i 0 45a	+ 2	i 1 22	S_g	—	—	—
Santa Barbara		2·7	149	i 0 46	+ 1	i 1 11	− 8	—	—	—
Ukiah		2·7	328	e 1 10	?	e 3 11	?	—	—	e 3·4
Haiwee		2·8	104	i 0 49	+ 2	i 1 27	S*	—	—	—
Mineral	E.	3·5	357	e 0 24	−33	—	—	—	—	—
Mount Wilson	Z.	3·7	132	i 1 0	0	—	—	—	—	—
Pasadena		3·7	134	i 1 0	0	i 1 44	− 1	—	—	—
Shasta Dam		4·0	359	e 1 2	− 2	—	—	i 1 21	P_g	—
Riverside	Z.	4·3	128	i 1 7	− 1	—	—	—	—	—
Overton		5·6	90	e 2 28	S	(e 2 28)	+ 5	—	—	—
Pierce Ferry		6·0	94	i 1 29	− 3	i 3 5	S*	i 1 50	P*	—
Tucson		9·8	114	e 2 27	+ 3	e 3 2	−75	e 2 33	PP	e 5·3

Additional readings :
Berkeley iEZ = 0m.31s., iSE = 0m.38s.
Pierce Ferry eP = 1m.32s.

Aug. 10d. Readings also at 2h. (Grand Coulee, Pierce Ferry, and Tucson), 3h. (near Stalinabad), 4h. (Antarctica), 6h. (near Bogota), 7h. (near Mizusawa), 8h. (Zürich), 11h. (Rome), 13h. (Mount Wilson, Palomar, and Tucson), 14h. (near Ashkabad), 18h. (Mizusawa), 19h. (Huancayo), 21h. (near Almeria), 22h. (Malaga).

Aug. 11d. Readings at 6h. (near Stalinabad), 7h. (near Tananarive), 10h. (Rome), 11h. (Rome and Pavia), 14h. (New Delhi and near Triest), 15h. (Malaga), 17h. (Stalinabad, near Andijan, Almata, Tchimkent, and Tashkent), 19h. (near Tananarive), 20h. (Mount Wilson, Palomar, Shasta Dam (2), and Tucson).

Aug. 12d. 5h. Undetermined shock.

Shasta Dam eP =50m.47s.
Tinemaha iPZ =51m.25s.
Haiwee ePZ =51m.30s.
Pasadena iPZ =51m.39s.
Mount Wilson iPZ =51m.40s. a.
Boulder City iP =51m.43s.
Riverside iPZ =51m.43s.
Overton iP =51m.44s.
Palomar iPZ =51m.49s.
Pierce Ferry iP =51m.52s.
Tucson iP =52m.18s.
Ksara e =52m.49s., L? =91m.
Stuttgart eP?Z =53m.28s., eL? =88m.
Paris eP? =53m.35s., eL =89m.
Long waves were also recorded at Copenhagen, Rome, and De Bilt.

Aug. 12d. Readings also at 0h. (Shasta Dam, Tucson, and near Logan), 1h. (Tucson), 2h. (near Pierce Ferry), 3h. (near Andijan), 9h. (Rome, Malaga, Ksara, and Helwan), 13h. (Scoresby Sund, Erevan, and near Leninakan), 14h. (near Apia), 15h. (Tucson, near Reykjavik, Stuttgart, near Zürich, and Basle), 16h. (Scoresby Sund, Ivigtut, De Bilt, Clermont-Ferrand, Paris, Strasbourg, Stuttgart, Rome, Kew, Tortosa, Copenhagen, Tucson, and Shasta Dam), 21h. (Mount Wilson, Pasadena, Haiwee, Riverside, Tinemaha, Tucson, Shasta Dam, and La Paz).

Aug. 13d. 16h. 26m. 45s. Epicentre 15°·0N. 146°·4E. (as on 1944, December 4d.).

A = −·8049, B = +·5348, C = +·2572; δ = +3; h = +6;
D = +·554, E = +·883; G = −·214, H = +·142, K = −·966.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Mizusawa		24·5	351	e 5 27	+ 5	e 8 42	−58	—
Vladivostok		30·7	339	e 6 20	+ 1	i 11 22	+ 1	—
Brisbane	N.	42·7	171	i 8 1	+ 1	—	—	—
Irkutsk		49·9	328	—	—	e 16 15	+ 8	—
Almata		65·0	312	e 10 50	+ 6	—	—	—
Andijan		68·3	308	e 11 22	+17	—	—	—
Tashkent		70·6	309	e 11 20	+ 1	e 20 41	+ 8	—
Sverdlovsk		75·3	326	i 11 50	+ 3	e 21 26	0	—
Shasta Dam		81·3	50	i 12 17	− 3	—	—	—
Grand Coulee		82·1	43	e 12 21	− 3	—	—	—
Santa Barbara	Z.	84·8	56	i 12 34	− 3	—	—	—
Tinemaha	Z.	85·3	54	i 12 49	PcP	—	—	—
Haiwee	Z.	85·7	54	i 12 40	− 2	—	—	—
Pasadena	Z.	86·1	56	i 12 41	− 3	—	—	—
Mount Wilson	Z.	86·2	56	i 12 42k	− 2	—	—	—
Riverside	Z.	86·8	56	i 12 44	− 3	—	—	—
Boulder City		88·2	54	i 12 53	− 1	—	—	—
Pierce Ferry		88·8	53	i 12 57	0	—	—	—
Tucson		92·5	56	e 13 13	− 1	—	—	—
Paris		108·9	336	—	—	e 39 13	SSS	e 66·2
La Paz	Z.	146·8	97	i 19 49	[+ 7]	—	—	—

Shasta Dam gives also i =18m.32s.
Long waves were also recorded at Riverview.

Aug. 13d. 16h. 33m. 50s. Epicentre 35°·5N. 140°·4E. (as on 1946, December 1d.).

Intensity V at Narito (Chiba Pref.) and Ofuna (Kanagawa Pref.); IV at Yokohama, Kakioka, Osima, and Ajiro; II-III at Tokyo, Mito, Hunatu, Utunomiya, and Onahama. Macroseismic radius between 200 and 300km.

Epicentre 35°·6N. 140°·5E. Very shallow.

The Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1947 (Tokyo, 1950), pp. 29-30. Macroseismic chart p. 29.

$A = -\cdot 6287$, $B = +\cdot 5201$, $C = +\cdot 5781$; $\delta = -3$; $h = 0$;
$D = +\cdot 637$, $E = +\cdot 771$; $G = -\cdot 445$, $H = +\cdot 368$, $K = -\cdot 816$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tokyo		0·6	289	0 17	+ 2	0 26	0	—
Mera		0·7	219	0 21	+ 4	0 32	+ 4	—
Yokohama		0·7	264	0 18k	+ 1	0 27	− 1	—
Kakioka		0·8	346	0 19	+ 1	0 27	− 4	—
Tukubasan		0·8	341	0 19a	+ 1	0 28	− 3	—
Mito		0·9	3	0 20a	0	0 32	− 2	—
Kumagaya		1·0	309	0 22	+ 1	0 35	− 1	—
Osima		1·1	229	0 25k	+ 3	0 37	− 2	—
Utunomiya		1·1	338	0 30	+ 8	0 42	+ 3	—
Misima		1·2	252	0 23k	− 1	0 38	− 3	—
Hunatu		1·3	270	0 26	+ 1	0 41	− 3	—
Maebasi		1·3	313	0 26	+ 1	0 40	− 4	—
Onahama		1·5	16	0 32	+ 4	0 48	− 1	—
Shizuoka		1·7	252	0 33k	+ 2	0 53	− 1	—
Omaesaki		2·0	243	0 37	+ 2	1 3	+ 1	—
Nagano		2·2	203	0 34	− 4	—	—	—
Hukusima		2·3	1	0 41	+ 1	1 8	− 1	—
Nagoya		2·8	263	0 49	+ 2	1 28	S*	—
Sendai		2·8	8	0 48	+ 1	1 18	− 4	—
Gihu		3·0	268	0 50?	0	1 18?	− 9	—
Aikawa		3·1	325	0 42	− 9	—	—	—
Kameyama		3·3	261	0 54	+ 1	1 33	− 2	—
Hikone		3·4	269	0 56	+ 1	1 16	−21	—
Wazima		3·4	306	0 54	− 1	1 37	0	—
Owase		3·8	249	0 59	− 2	1 39	− 8	—
Kyoto		3·9	262	1 8	P*	2 0	S*	—
Morioka		4·2	6	1 8	+ 1	1 53	− 4	—
Siomisaki		4·3	244	1 26	P_g	—	—	—
Kobe		4·4	259	1 8	− 2	—	—	—
Toyooka		4·6	275	1 18	P*	2 21	S*	—
Sumoto		4·7	257	1 12	− 2	2 21	S*	—
Aomori		5·3	3	1 32	P*	—	—	—
Tinemaha	z.	77·4	54	i 11 56	− 2	—	—	—
Mount Wilson	z.	79·1	56	i 12 4	− 4	—	—	—
Riverside	z.	79·7	56	i 12 6	− 5	—	—	—
Tucson		85·2	54	i 12 36	− 3	—	—	—
Stuttgart		85·5	330	e 12 34	− 7	—	—	e 51·2
Rome	z.	89·4	324	e 21 20	PKS	—	—	—

Long waves were also recorded at Malaga, De Bilt, Wairiri, and Wellington.

Aug. 13d. Readings also at 2h. (near Belgrade), 3h. (Malaga), 5h. (Rome and Antarctica), 7h. (Fresno, near Berkeley, Branner, Lick, near Stalinabad, Obi-garm, and Andijan), 10h. (Malaga), 12h. (Bogota and La Paz (2)), 13h. (Ashkabad, Sverdlovsk, Almata, near Andijan, Obi-garm, Stalinabad, Tashkent, Frunse, Tchimkent, and Samarkand), 14h. (Mizusawa, Pasadena, Mount Wilson, Riverside, Haiwee, Tinemaha, Tucson, and Shasta Dam), 17h. (La Paz), 19h. (New Delhi, Sverdlovsk, Grozny, Frunse, Almata, near Stalinabad, Andijan, Samarkand, Tashkent, and Tchimkent), 20h. (Tucson, near Mount Wilson, Pasadena, Riverside, Haiwee, La Jolla, Tinemaha, Berkeley, Lick, Branner, and near Fresno), 22h. (near Andijan, Stalinabad, Tchimkent, Samarkand, and Almata), 23h. (Stuttgart).

Aug. 14d. Readings at 0h. (Branner), 1h. (Mount Wilson, Riverside, Tinemaha, Pasadena, and Tucson), 2h. (near Ottawa), 9h. (Boulder City, Fordham,, Pierce Ferry, St. Louis, Shasta Dam, Tucson, Vladivostok, and near Reykjavik), 11h. (Tucson), 14h. (Erevan and near Leninakan), 16h. (Wairiri, Wellington, Ashkabad, Tashkent, Ksara, and Zürich),19h. (Boulder City, Shasta Dam, Tucson, La Paz, and Rome). 20h. (La Paz and Malaga), 21h. (Boulder City, Mount Wilson, Pasadena, Pierce Ferry, Riverside, Shasta Dam, Tucson, Paris, and Stuttgart), 22h. (near Tashkent).

Aug. 15d. 4h. 11m. 6s. Epicentre 42°·9N. 44°·5E. (as on 1946, June 12d.).

$A = +\cdot5241$, $B = +\cdot5150$, $C = +\cdot6782$; $\delta = -14$; $h = -3$;
$D = +\cdot701$, $E = -\cdot713$; $G = +\cdot484$, $H = +\cdot475$, $K = -\cdot735$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grozny		1·0	66	i 0 19	− 2	—	—	—	—	—
Piatigorsk		1·5	317	0 38	+10	—	—	—	—	—
Leninakan		2·2	193	i 0 34	− 4	—	—	—	—	—
Erevan		2·7	180	i 0 40	− 5	i 1 15	S_g	i 0 44	P	—
Sotchi		3·5	281	i 1 15?	P_g	2 14?	+34	—	—	—
Theodosia		6·9	291	e 1 50	+ 5	—	—	—	—	—
Yalta		7·7	286	e 2 0	+ 4	—	—	—	—	—
Simferopol		7·8	289	—	—	e 3 44	+16	—	—	—
Ksara		11·3	220	i 2 44	− 2	4 59	+ 5	—	—	—
Istanbul		11·6	266	e 2 29?	−21	6 40	L	—	—	(6·7)
Ashkabad		11·7	110	e 2 39	−12	4 53	−11	—	—	—
Bucharest		13·4	282	e 3 24	+10	e 3 29	PP	e 3 36	PPP	8·9
Moscow		13·6	344	3 13	− 4	e 5 46	− 4	—	—	—
Helwan		16·8	223	e 3 54	− 4	e 7 12	+ 7	e 9 33	Q	e 10·0
Sverdlovsk		17·3	31	i 3 57	− 7	i 7 16	0	—	—	—
Belgrade		17·4	285	e 4 0	− 6	e 7 43	SS	e 4 30	PP	e 12·7
Tashkent		18·5	86	i 4 14	− 5	e 7 37?	− 7	—	—	—
Budapest		18·5	293	i 4 22	+ 3	8 2	+18	8 13	SSS	12·9
Tchimkent		18·5	82	i 4 14	− 5	—	—	—	—	—
Kalossa		18·5	293	e 4 26	+ 7	—	—	—	—	—
Warsaw	E.	18·7	308	i 4 18	− 4	7 55	+ 7	e 4 34	PP	e 9·9
Stalinabad		18·9	94	i 4 17	− 7	—	—	—	—	—
Obi-garm		19·5	92	i 4 25	− 6	—	—	—	—	—
Zagreb		20·6	289	e 4 43	0	e 8 40	+11	—	—	—
Andijan		20·8	87	e 4 39	− 6	—	—	—	—	—
Helsinki		21·0	332	i 4 47	0	e 8 44	+ 7	—	—	e 10·9
Prague		21·8	301	4 56	0	9 6	+14	e 6 10	PP?	—
Triest		22·1	288	i 3 0	?	i 9 12	+14	e 9 48	SS	—
Potsdam	E.	23·0	306	i 5 12	+ 5	e 9 29	+15	—	—	12·9
Cheb		23·1	300	i 5 12	+ 4	e 9 25	+ 9	e 10 24	SSS	e 12·9
Upsala		23·6	325	i 5 13a	0	e 9 31	+ 6	i 5 35	PP	e 12·1
Almata		23·6	76	5 15	+ 2	—	—	—	—	—
Rome		23·6	280	i 5 14a	+ 1	i 9 26	+ 1	i 5 38	pP	e 13·8
Jena		23·7	302	e 5 16	+ 2	e 9 43	+16	e 13 3	Q	e 13·5
Florence		24·1	284	i 5 25	+ 7	i 10 0	+26	—	—	—
Copenhagen		24·3	314	i 5 22	+ 2	e 9 47	+10	—	—	11·9
Chur		25·0	292	e 5 27	0	e 10 2	+13	—	—	—
Stuttgart		25·1	296	e 5 29a	+ 1	e 9 56	+ 5	e 10 36	SS	e 13·4
Pavia		25·4	293	i 5 31	0	—	—	e 6 38	PPP	—
Zürich		25·6	294	e 5 32a	0	—	—	—	—	e 14·9
Strasbourg		26·1	297	e 5 37	0	e 10 12	+ 5	e 6 44	PP	e 14·8
Basle		26·3	294	e 5 38	− 1	e 10 26	+15	—	—	—
Neuchatel		26·7	292	e 5 41	− 2	e 8 54	?	—	—	—
De Bilt		27·8	305	e 5 54a	+ 1	e 10 41	+ 6	—	—	e 15·2
Uccle		28·3	301	e 5 58a	+ 1	e 10 48	+ 5	—	—	e 14·9
Bergen	z.	29·4	321	—	—	e 10 54?	− 7	—	—	17·9
Clermont-Ferrand		29·5	290	i 6 8	0	i 11 8	+ 6	—	—	16·4
Paris		29·6	296	i 6 8	− 1	e 11 17	+13	e 7 16	PPP	e 15·9
Kew		31·2	302	i 6 23	0	e 11 31	+ 2	e 7 43	PPP	e 14·4
Jersey		32·5	299	e 6 34	0	—	—	—	—	e 20·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Aberdeen		32·5	313	e 7 53	PP	e 11 49	0	i 17 41	Q	21·3
Tortosa		32·6	282	6 34	− 1	11 52	+ 1	7 41	PP	16·4
Bombay	E.	33·8	125	e 7 38	PP	—	—	—	—	—
Alicante		34·1	278	6 39	− 9	12 11	− 3	6 47	P	e 17·5
Toledo	Z.	36·1	282	i 7 6	+ 1	e 12 48	+ 3	8 37	PP	17·4
Almeria		36·2	277	i 7 2	− 4	12 34	−13	8 20	PP	19·6
Granada		36·9	278	i 7 10k	− 2	i 12 52	− 6	7 26	pP	19·0
Malaga	Z.	37·6	288	i 7 5a	−13	i 13 21	+13	7 21	pP	17·1
Hyderabad	N.	38·4	120	e 7 22	− 3	e 13 20	0	—	—	—
Irkutsk		40·3	54	e 7 38	− 2	e 13 38	−11	—	—	—
Scoresby Sund		42·5	333	8 0	+ 1	14 34	+12	9 38	PP	21·9
Vladivostok		60·9	57	e 10 8	− 9	—	—	—	—	—
Seven Falls		73·7	320	e 11 36	− 2	e 21 12	+ 4	—	—	31·9
Kirkland Lake		77·0	325	e 11 59	+ 3	—	—	—	—	—
Dane		77·1	325	e 11 59	+ 2	—	—	—	—	—
Ottawa		77·2	321	e 11 57	0	21 54	+ 7	—	—	41·9
Philadelphia		81·1	317	—	—	e 22 31	+ 3	—	—	e 39·4
Shasta Dam		95·9	350	e 13 27	− 3	—	—	—	—	—
Tucson		101·9	339	e 18 4	PP	—	—	—	—	—

Additional readings :—
Budapest SE =8m.5s.
Kalossa eN =5m.1s., eE =5m.17s.
Warsaw SSE =8m.13s., SSSE =8m.35s.
Triest iPP =3m.21s.
Upsala eSE =9m.35s., iE =10m.6s., SS?N =10m.49s.
Rome iPPE =5m.41s., eN =6m.31s., eSN =9m.32s., eSSN =10m.26s.
Pavia e =6m.34s.
Strasbourg eS =10m.24s. and 10m.32s.
Paris eP =6m.16s., e =6m.30s., ePP =7m.19s., ePcP =9m.16s., eSSS =12m.55s., e = 14m.54s., eScS =16m.53s.
Kew eEZ =7m.11s.?, eSSS =14m.1s.
Tortosa iEN =6m.58s., PPPE =8m.1s., PcS?E =12m.53s., SSN =14m.0s., SSSN = 14m.28s., ScS?EN =17m.3s.
Alicante PP =7m.59s., PPP =8m.15s., PcP =9m.7s., PcS =13m.5s., SS =14m.49s.
Almeria PPP =8m.40s., PcP =9m.34s., PcS =13m.16s., SS =14m.48s., ScS =17m.16s.
Granada iPP =8m.36s., pPP =8m.49s., PPP =9m.6s., PcP =9m.31s., pPcP =9m.40s., sS =13m.12s., iSS =15m.46s., ScS =17m.12s.
Malaga PPZ =8m.48s.
Long waves were also recorded at Berkeley, Bozeman, Butte, Harvard, Edinburgh, and Ivigtut.

Aug. 15d. 4h. 58m. 42s. Epicentre 42°·9N. 44°·5E. (as at 4h. 11m.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grozny		1·0	66	i 0 21	0	—	—	—	—	—
Leninakan		2·2	193	0 29?	− 9	i 0 57?	Sg	i 0 33	P	—
Erevan		2·7	180	e 0 41	− 4	i 1 16	− 3	i 0 46	Pg	—
Sotchi		3·5	281	e 1 12?	Pg	—	—	—	—	—
Yalta		7·7	286	—	—	e 3 48?	+23	—	—	—
Simferopol		7·8	289	—	—	e 3 40	+12	—	—	—
Ksara		11·3	220	e 2 48	+ 2	e 5 2	+ 8	—	—	—
Ashkabad		11·7	110	2 41	−10	e 4 57	− 7	—	—	—
Bucharest		13·4	282	—	—	5 18	SS	—	—	—
Moscow		13·6	344	e 3 17	0	—	—	—	—	—
Sverdlovsk		17·3	31	i 4 2	− 2	e 7 8	− 8	—	—	—
Tashkent		18·5	86	e 4 14	− 5	e 7 32	−12	—	—	—
Warsaw	E.	18·7	308	e 4 24	+ 2	e 8 6	+18	e 8 58	SSS	e 10·3
Stalinabad		18·9	94	i 4 22	− 2	—	—	—	—	—
Zagreb		20·6	289	e 4 47	+ 4	—	—	—	—	—
Andijan		20·8	87	e 4 44	− 1	—	—	—	—	—
Helsinki		21·0	332	e 4 48	+ 1	e 8 52	+15	—	—	e 11·3
Upsala		23·6	325	i 5 17	+ 4	e 10 18?	SSS	—	—	e 15·3
Rome		23·6	280	i 5 14a	+ 1	e 9 41	+16	e 5 54	PP	—
Jena		23·7	302	e 5 18	+ 4	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chur		25·0	292	e 5 29	+ 2	—	—	—	—	—
Stuttgart		25·1	296	e 5 31	+ 3	e 9 58	+ 7	—	—	e 16·3
Zürich		25·6	294	e 5 35	+ 3	—	—	—	—	e 15·4
Strasbourg		26·1	297	e 5 38	+ 1	—	—	—	—	—
Basle		26·3	294	e 6 25	PP	—	—	—	—	—
De Bilt		27·8	305	i 5 54	+ 1	e 9 48?	−47	—	—	e 15·3
Paris		29·6	296	e 6 30	+21	e 7 31	PPP	e 9 14	P_cP	—
Toledo	z.	36·1	282	i 7 7	+ 2	e 12 35	−10	—	—	—

Additional readings :—
Warsaw eE = 8m.33s.
Upsala eN = 12m.2s.
Rome eE = 5m.17s., eSE = 9m.53s.
Long waves were also recorded at Bergen, Cheb, and Istanbul.

Aug. 15d. 9h. 14m. 38s. Epicentre 29°·0N. 142°·0E. (as on 1946, Jan. 26d.).

$A = -·6903$, $B = +·5393$, $C = +·4823$; $\delta = -3$; $h = +2$;
$D = +·616$, $E = +·788$; $G = -·380$, $H = +·297$, $K = -·876$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa	N.	10·1	357	e 2 32	+ 4	e 4 13	−12	—	—	—
Vladivostok		16·3	333	i 3 48	− 4	i 7 9	+16	—	—	—
Irkutsk		36·3	320	i 7 8	+ 1	13 0	+12	—	—	—
Almata		53·1	305	e 9 21	0	—	—	—	—	—
Andijan		57·0	302	e 9 52	+ 2	—	—	—	—	—
Tchimkent		58·7	304	e 10 1	− 1	—	—	—	—	—
Tashkent		59·1	303	i 10 5	+ 1	e 18 8	− 3	—	—	—
Stalinabad		60·2	301	i 10 13	+ 1	—	—	—	—	—
Sverdlovsk		61·6	323	i 10 20	− 2	e 18 43	0	—	—	—
Victoria		71·7	45	e 16 16	PPP	—	—	—	—	29·4
Moscow		74·1	326	e 11 42	+ 2	e 21 19	+ 7	—	—	—
Grand Coulee		74·7	44	e 11 44	+ 1	—	—	—	—	—
Shasta Dam		75·6	52	i 11 46	− 2	e 21 25	− 4	—	—	—
Berkeley		77·0	54	i 12 8	+12	e 21 39	− 6	e 26 42	SS	e 34·9
Leninakan		77·3	311	e 11 58	0	—	—	—	—	—
Tinemaha	z.	80·1	54	e 12 17	+ 4	—	—	—	—	—
Scoresby Sund		80·1	355	12 13a	0	22 20	+ 2	—	—	45·4
Santa Barbara	z.	80·4	56	i 12 16	+ 1	—	—	—	—	—
Haiwee	z.	80·8	54	e 12 18	+ 1	—	—	—	—	—
Pasadena	z.	81·6	56	i 12 22	+ 1	—	—	i 12 35	pP	—
Mount Wilson	z.	81·7	56	e 12 21	− 1	—	—	i 12 38	pP	—
Riverside	z.	82·3	56	i 12 25	0	—	—	i 12 38	pP	—
La Jolla	z.	82·9	57	e 12 29	+ 1	—	—	—	—	—
Boulder City		83·1	54	i 12 30	+ 1	—	—	—	—	—
Pierce Ferry		83·6	53	i 12 30	− 1	i 22 29	−24	i 12 33	?	—
Warsaw	E.	84·1	328	—	—	e 22 54	− 4	e 24 6	PPS	e 48·4
Copenhagen		85·3	334	e 12 34	− 6	—	—	—	—	—
Ksara		86·3	306	i 12 45	0	25 2	PPS	—	—	—
Istanbul		86·7	316	e 12 22	−25	—	—	e 15 22	PP	—
Tucson		87·9	54	i 12 53	0	—	—	i 13 8	pP	—
De Bilt		90·8	335	e 13 7	+ 1	e 23 37	[− 1]	e 16 39	PP	e 43·4
Stuttgart		91·8	331	e 13 10	− 1	e 23 42	[− 1]	e 16 44	PP	e 50·4
Triest		92·1	326	e 14 25	+73	e 23 42	[− 3]	—	—	—
Strasbourg		92·6	332	e 13 12	− 3	e 23 47	[− 1]	e 16 56	PP	48·4
Paris		94·5	335	13 24	+ 1	e 25 30	?	e 17 11	PP	e 51·4
Florence		94·7	326	i 13 38	+14	—	—	—	—	—
Rome		95·5	325	e 17 19a	PP	e 26 11	PS	e 34 47	SSS	—
Philadelphia		103·2	29	—	—	e 25 43	− 4	e 32 51	SS	e 50·0
Malaga	z.	107·4	332	i 18 53	PP	e 25 57	−25	i 21 11	PPP	e 59·4
La Paz	z.	149·6	72	i 19 54	[+ 7]	—	—	—	—	—

For Notes see next page,

NOTES TO AUGUST 15d. 9h. 14m. 38s.

Additional readings :—
Mizusawa SE =4m.16s.
Berkeley eSE =21m.36s.
Warsaw eE =28m.26s.
Strasbourg e =24m.20s., eSS =30m.22s.
Paris ePPP =19m.30s., eSSS =35m.26s., e =48m.0s.
Rome eN =17m.25s., eE =17m.37s.
Malaga PSZ =31m.8s.
Long waves were also recorded at Ukiah, Cheb, Clermont-Ferrand, Helsinki, Kew, Prague, Tortosa, and Uccle.

Aug. 15d. Readings also at 0h. (Berkeley and near Lick), 3h. (near Ashkabad and near Mizusawa), 6h. (Fresno and near Mizusawa), 14h. (Istanbul and Antarctica), 15h. (Stuttgart and Antarctica), 22h. (Auckland).

Aug. 16d. 5h. 53m. 5s. Epicentre 39°·5N. 77°·5E.

A = +·1675, B = +·7554, C = +·6335 ; δ = +1 ; h = −1 ;
D = −·976, E = −·216 ; G = +·137, H = +·618, K = −·774.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Almata		3·8	353	0 59	− 2	e 1 36	−11	—	—	—
Frunse		4·0	327	e 1 5	+ 1	2 9	S_g	—	—	—
Andijan		4·1	290	e 1 15	P*	2 26	S_g	—	—	—
Tashkent		6·5	289	e 1 40	+ 1	e 3 27	S_g	—	—	—
Tchimkent		6·6	298	e 2 4	P_g	i 3 39	S_g	—	—	—
Stalinabad		6·9	265	i 1 46	+ 1	i 3 29	S*	—	—	—
Samarkand		8·1	275	—	—	i 4 13	S*	—	—	—
Sverdlovsk		20·6	333	i 4 39	− 4	8 33	+ 4	—	—	—
Bombay		20·9	192	—	—	e 8 49	+14	e 10 54	Q	e 11·9
Baku		21·2	281	e 4 56	+ 7	—	—	—	—	—
Hyderabad	E.	22·0	177	—	—	e 9 14	+18	—	—	e 12·0
	N.	22·0	177	—	—	e 9 7	+11	—	—	i 12·4
Irkutsk		22·5	45	e 5 4	+ 2	e 9 0	− 5	—	—	—
Leninakan		25·7	284	e 5 38	+ 5	—	—	—	—	—
Moscow		30·9	315	e 6 14	− 6	e 11 34	+10	—	—	—
Ksara		33·6	273	e 6 44	0	e 13 11?	+65	—	—	—
Helwan		38·8	270	7 28	0	—	—	e 9 4	PP	e 19·2
Warsaw		40·3	307	i 7 39	− 1	e 13 38	−11	i 9 13	PP	e 18·9
Vladivostok		40·4	66	e 7 41	0	e 13 49	− 1	—	—	—
Upsala		42·0	319	—	—	e 13 14	−60	e 18 55?	Q	e 21·9
Prague		44·7	306	—	—	—	—	e 18 7	SS	e 23·7
Copenhagen		45·0	314	—	—	e 15 1	+ 3	—	—	23·9
Triest		46·2	300	e 8 26	− 2	—	—	—	—	—
Rome		48·3	295	e 8 42a	− 3	e 15 43	− 2	e 10 35	PP	e 23·8
Stuttgart		48·4	304	e 8 44	− 2	e 15 25	−21	e 10 37	PP	e 26·4
Strasbourg		49·3	305	e 8 52	− 1	e 16 0	+ 1	e 10 49	PP	e 27·4
De Bilt		49·9	310	e 8 55	− 2	—	—	—	—	e 26·9
Paris		52·6	306	e 9 16	− 2	e 17 16	PPS	e 11 9	PP	30·9
Clermont-Ferrand		53·3	303	e 9 21	− 2	—	—	—	—	e 26·9
Scoresby Sund		56·4	337	—	—	17 37	PS	—	—	30·9
Toledo	z.	60·5	299	i 10 12	− 2	—	—	—	—	—

Additional readings :—
Warsaw eE =12m.56s., eZ =14m.10s., eE =17m.32s., eZ =18m.32s.
Rome eN =8m.47s., eZ =15m.56s.
Stuttgart eSSS =19m.35s.
Strasbourg eSS =19m.55s.
Paris eS =17m.25s., eSSS =23m.25s.
Toledo eZ =11m.17s.
Long waves were also recorded at other European stations,

Aug. 16d. 18h. Undetermined shock.

Kirkland Lake e =46m.1s. and 52m.25s.
Tucson iP =50m.19s., i =50m.46s., e =54m.27s. and 56m.59s.
St. Louis eP =50m.42s., iS =55m.8s.
La Jolla ePZ =51m.0s.
Palomar iP =51m.1s.k.
Pierce Ferry iP =51m.3s., eS =59m.24s., e =59m.43s.
Boulder City iP =51m.7s., eS =59m.53s., e =60m.19s.
Riverside iPZ =51m.9s.
Mount Wilson iPZ =51m.13s.
Pasadena ePZ =51m.14s., eLN =61·4m.
Tinemaha ePZ =51m.32s.
Shasta Dam eP? =52m.12s.
Dana e =52m.24s.
Grand Coulee eP? =52m.43s., e =54m.16s.
Butte eP? =53m.33s., e =59m.12s., eL =63m.36s.
Alicante eP =56m.25s., eL =91m.35s.
Toledo iPZ =57m.48s.
Granada iP =57m.52s.k, S =69m.13s., SSS =80m.47s., L =91·4m.
Paris eP =58m.0s., eL =92m.
Stuttgart eP?Z =58m.20s.
Seven Falls e =58m.54s., L =67m.
Long waves were also recorded at Bozeman and Philadelphia.

Aug. 16d. Readings also at 0h. (Stuttgart, near Triest and Zagreb), 1h. (Stuttgart and near Zagreb), 4h. (Tucson and near Tashkent), 5h. (Istanbul), 6h. (Rome (2) and near Apia), 7h. (Ksara, Istanbul, Rome, Strasbourg, Suttgart, Paris, Malaga, Toledo, Haiwee, La Jolla, Mount Wilson, Pasadena, Palomar, Riverside, Santa Barbara, Tinemaha, Tucson, Pierce Ferry, Shasta Dam, Grand Coulee, and Antarctica, readings from several shocks), 9h. (La Paz), 10h. (Harvard), 11h. (Stuttgart), 15h. (Stuttgart), 16h. (Alicante, Berkeley, Lick, and near Branner), 17h. (Rome), 18h. (Rome, Uccle, and near Harvard), 19h. (Mizusawa, Palomar, Tucson, and Shasta Dam), 20h. (Ottawa, Stalinabad, near Almata, Andijan, Frunse, Tashkent, and Tchimkent), 22h. (Antarctica), 23h. (Tucson).

Aug. 17d. 9h. 4m. 40s. Epicentre 24°·3N. 122°·3E. (as on 1947 April 4d.).

A = −·4876, B = +·7713, C = +·4092; δ = +10; h = +4;
D = +·845, E = +·534; G = −·219, H = +·346, K = −·912.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vladivostok		20·4	22	i 4 43	+ 2	e 8 36	+11	—	—	—
Irkutsk		31·1	338	e 6 24	+ 2	—	—	—	—	—
Calcutta	E.	31·2	274	—	—	e 13 43	SSS	—	—	e 16·1
Andijan		44·6	304	e 8 21	+ 5	—	—	—	—	—
Bombay	E.	46·1	274	e 13 20	?	—	—	—	—	—
Tashkent		46·9	305	e 8 32	− 2	—	—	10 28	PP	—
Stalinabad		47·2	301	e 8 37	+ 1	i 15 29	0	—	—	—
Sverdlovsk		54·6	324	i 9 29	− 3	17 6	− 5	—	—	—
Ashkabad		55·4	300	i 8 38	−60	—	—	—	—	—
Riverview		64·0	153	e 10 42	+ 4	e 19 26	+13	—	—	—
Moscow		67·4	323	e 10 53	− 6	e 19 45	−10	—	—	—
Helsinki		72·8	330	—	—	e 20 50	− 8	—	—	e 38·3
Ksara		74·1	300	e 11 39?	− 1	21 19	+ 7	14 32	PP	—
Copenhagen		80·7	327	—	—	22 14	−10	—	—	40·3
Scoresby Sund		82·2	348	—	—	22 41	+ 2	—	—	—
Triest		85·0	319	—	—	e 22 59	− 8	—	—	e 45·0
Stuttgart		86·0	322	e 12 43	0	e 23 3	[− 4]	e 16 0	PP	e 41·3
De Bilt		86·2	327	e 12 44	0	e 23 10	− 9	e 16 3	PP	e 40·3
Strasbourg		86·9	323	e 12 46	− 2	23 10	[− 3]	e 16 10	PP	e 48·4
Florence		87·4	317	e 13 16	+26	i 23 30	0	—	—	—
Rome		87·6	316	e 12 49	− 2	e 23 29	− 3	e 16 19	PP	—
Kew		89·3	328	—	—	e 23 28?	[− 1]	e 41 58?	Q	e 44·3
Grand Coulee		89·5	37	e 13 2	+ 2	—	—	—	—	—
Paris		89·6	325	e 13 0	− 1	e 23 29	[− 1]	e 16 28	PP	e 47·3
Shasta Dam		91·8	44	i 13 14	+ 3	—	—	—	—	—
Bogota	E.	147·1	31	i 19 48	[+ 5]	—	—	—	—	—

For Notes see next page.

NOTES TO AUGUST 17d. 9h. 4m. 40s.

Additional readings :—
Tashkent ePPP = 11m.13s.
Strasbourg eSKS = 22m.50s., e = 27m.26s.
Rome eSE = 23m.13s., SS = 29m.9s.
Paris eSKS = 23m.17s., ePS = 24m.49s., e = 38m.11s.
Long waves were also recorded at Brisbane, Philadelphia, and at other European stations.

Aug. 17d. 15h. 4m. 14s. Epicentre 37°·4N. 20°·0E.

$A = +\cdot7484$, $B = +\cdot2724$, $C = +\cdot6048$; $\delta = +9$; $h = -1$;
$D = +\cdot342$, $E = -\cdot940$; $G = +\cdot568$, $H = +\cdot207$, $K = -\cdot796$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rome		7·3	310	e 1 47	− 3	i 3 3	−12	—	—	i 4·0
Belgrade		7·4	3	e 1 50	− 2	i 3 31	SS	i 4 7	SSS	—
Bucharest		8·4	32	e 2 10	+ 4	e 4 1	SS	e 2 15	PP	4·3
Zagreb		8·9	342	e 2 9	− 3	e 3 55	0	e 2 31	PPP	e 4·9
Florence		9·2	316	e 2 32	PPP	i 5 16	?	—	—	—
Kalossa	N.	9·2	355	e 3 36	?	e 5 41	?	e 4 41	?	6·3
Triest		9·5	332	i 2 22	+ 2	i 4 19	+ 9	—	—	i 5·3
Budapest		10·1	356	e 3 37	?	e 5 39	?	—	—	5·8
Pavia		11·3	317	e 3 22	PPP	—	—	—	—	—
Helwan		12·1	125	e 2 56	− 1	i 5 14	0	4 55	?	—
Zürich		13·1	323	e 3 10	0	e 5 41	+ 3	—	—	—
Prague		13·3	344	e 4 58	?	—	—	—	—	—
Ksara		13·4	101	e 3 15	+ 1	e 6 26	SSS	—	—	—
Basle		13·6	322	e 3 16	− 1	e 7 50	L	—	—	(e 7·8)
Cheb		13·8	339	—	—	e 5 0	−54	e 6 12	SS	—
Stuttgart		13·8	329	e 3 17	− 2	e 5 51	− 3	—	—	e 7·8
Theodosia		13·8	52	e 3 18	− 1	—	—	—	—	—
Strasbourg		14·3	325	e 3 30	+ 4	e 6 4	− 2	e 6 22	SS	e 8·1
Jena		14·8	338	e 3 40	+ 8	—	—	—	—	e 8·4
Clermont-Ferrand		15·1	309	e 3 36	0	e 6 53	SSS	—	—	8·3
Tortosa	N.	15·5	289	3 50	+ 8	6 47	SS	4 7	PPP	—
Potsdam	E.	15·7	344	e 3 46	+ 2	e 6 53	SS	—	—	e 8·8
Alicante		16·2	280	i 3 41	− 9	6 47	− 4	7 7	SS	e 8·2
Paris		17·1	317	e 4 2	0	e 7 19	+ 7	e 4 19	PP	e 8·8
Uccle		17·4	325	e 4 8	+ 2	e 7 18	− 1	—	—	e 9·8
Almeria		17·9	275	4 19	+ 7	7 42	+12	4 35	PPP	10·8
De Bilt		18·0	330	e 4 15a	+ 2	e 7 40	+ 8	—	—	e 9·8
Piatigorsk		18·7	62	e 4 23	+ 1	—	—	—	—	—
Granada		18·8	277	i 4 21a	− 2	15 52	S_eS	4 48	PPP	8·1
Leninakan		18·8	72	e 4 27	+ 4	—	—	—	—	—
Toledo	Z.	18·9	284	e 4 24	0	8 1	+ 8	i 4 37	PP	8·6
Copenhagen		19·0	347	e 4 26	0	e 7 56	+ 1	—	—	10·9
Erevan		19·3	74	e 4 43	PP	—	—	—	—	—
Kew		20·1	321	e 4 38	0	e 8 17	− 2	e 8 34	S	e 10·3
Grozny		20·5	65	e 4 45	+ 3	8 32	+ 5	—	—	—
Moscow		21·9	27	e 4 56	− 1	8 51	− 3	—	—	—
Upsala		22·5	356	e 4 46f	−16	e 8 46f	−19	—	—	—
Helsinki		23·0	5	e 4 4	−63	e 8 14	−60	—	—	e 10·8
Baku		23·4	73	—	—	e 9 21	0	—	—	—
Sverdlovsk		33·1	41	—	—	11 53	− 6	—	—	—

Additional readings :—
Bucharest eE = 2m.23s.
Zagreb eNW = 3m.41s.
Jena eE = 3m.43s.
Tortosa PPPN = 4m.16s., SSN = 7m.24s.
Alicante PP = 4m.57s., SSS = 7m.25s.
Paris iPP = 4m.10s., e = 4m.35s., 5m.5s., and 5m.44s., eSS = 7m.43s.
Almeria P_eP = 8m.53s.
Toledo eSZ = 7m.42s.

Aug. 17d. Readings also at 0h. (Antarctica), 1h. (Palomar, Riverside, Mount Wilson, Pasadena, Tucson, and Shasta Dam), 4h. (Dane, Frunse, Stalinabad, near Andijan, Tchimkent, and Tashkent), 5h. (Antarctica), 6h. (Ksara), 7h. (near Ashkabad), 10h. (Stuttgart), 11h. (La Paz), 14h. (near Mizusawa), 15h. (Istanbul, Paris, and Stuttgart), 18h. (Malaga), 20h. (near Ottawa).

Aug. 18d. 6h. 8m. 46s. Epicentre 5°·0S. 106°·0W.

$A = -·2746$, $B = -·9576$, $C = -·0866$; $\delta = -10$; $h = +7$;
$D = -·961$, $E = +·276$; $G = +·024$, $H = +·083$, $K = -·996$.

		Δ	Az.	P	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		31·1	104	e 6 24	+ 2	e 11 38	+10	—	—	e 13·7
Bogota	Z.	33·3	73	e 6 39	− 2	—	—	—	—	—
Tucson		37·3	354	e 7 15	− 1	e 13 0	− 4	—	—	e 15·7
La Paz		38·8	109	e 10 0	P_cP	i 16 24	SS	—	—	20·2
La Jolla	Z.	39·1	346	e 7 31	0	—	—	—	—	—
Palomar		39·5	346	e 7 32	− 2	e 13 43	+ 6	—	—	—
Riverside	Z.	40·3	345	e 7 39	− 1	—	—	—	—	—
Mount Wilson	Z.	40·6	345	e 7 43	0	—	—	—	—	—
Pasadena		40·6	345	i 7 43	0	i 13 57	P_cS	i 16 6	S_cP	e 19·0
Santa Barbara	Z.	41·1	343	i 7 56	+ 9	—	—	—	—	—
Boulder City		41·6	350	e 7 50	− 1	—	—	—	—	—
Pierce Ferry		41·6	351	e 7 49	− 2	—	—	—	—	—
Haiwee	Z.	42·4	346	e 8 0	+ 2	—	—	—	—	—
Tinemaha	Z.	43·4	346	e 8 6	0	—	—	—	—	—
Santa Clara	N.	44·7	342	—	—	e 14 58	+ 4	—	—	e 21·5
Berkeley		45·3	342	e 13 17	?	i 15 12	+10	—	—	e 18·8
St. Louis		45·8	17	e 8 24	− 1	e 15 6	− 3	e 18 28	SS	—
Ukiah		46·7	342	—	—	e 15 27	+ 5	—	—	e 19·3
Shasta Dam		47·9	343	e 8 39	− 3	—	—	e 11 34	PPP	—
Chicago		49·5	18	—	—	e 15 51	−11	—	—	e 23·4
Bozeman		50·7	356	—	—	e 16 18	0	—	—	—
Butte		51·1	356	e 8 58	− 8	e 16 34	+10	—	—	e 22·1
Philadelphia		53·0	30	e 9 25	+ 4	e 16 43	− 7	e 11 4	PP	e 22·6
Grand Coulee		53·9	350	e 9 31	+ 4	—	—	—	—	—
Bermuda		54·1	44	—	—	e 16 59	− 6	e 22 28	SSS	e 24·4
Fordham		54·3	30	—	—	e 17 2	− 5	—	—	—
Saskatoon		56·9	359	e 12 38	PPP	—	—	—	—	28·2
Ottawa		57·0	25	e 10 4	+14	e 17 44	+ 1	—	—	30·2
Honolulu		57·1	300	—	—	e 17 59	+14	(e 24 34)	SSS	e 24·6
Kirkland Lake		57·6	20	e 9 50	− 4	—	—	—	—	—
Seven Falls		60·5	27	—	—	e 18 38	+ 9	—	—	30·2
Riverview	E.	97·8	235	—	—	e 26 27	PS	—	—	e 46·4
Toledo	Z.	102·4	50	i 9 57	?	—	—	—	—	48·4
Granada		102·9	53	i 10 3	?	31 21	SS	14 45	P	i 48·4
Paris		105·9	41	—	—	—	—	e 43 8	Q	e 51·2
Strasbourg		109·3	40	—	—	e 28 14?	PS	—	—	e 52·2
Rome	Z.	114·4	46	e 23 19	?	—	—	—	—	—
Ksara		134·5	46	e 15 51	?	e 22 59	PKS	e 29 31	SKKS	—

Additional readings :—
Huancayo e = 9m.56s.
Pasadena iZ = 8m.6s.
Berkeley iE = 15m.17s.
St. Louis iS = 15m.10s.
Philadelphia e = 20m.30s.
Long waves were also recorded at Harvard, Wairiri, Sitka, and other European stations.

Aug. 18d. Readings also at 0h. (Samarkand, Obi-garm, Stalinabad, near Almata, Andijan, Frunse, Tashkent, and Tchimkent), 6h. (near Obi-garm), 7h. (Basle, Paris, near Strasbourg and Stuttgart), 10h. (near Lick), 15h. (Basle), 17h. (near Balboa Heights), 18h. (Antarctica, Apia, and near Stuttgart), 19h. (near Honolulu), 22h. (near Lick), 23h. (Ksara, Bucharest, Istanbul, Rome, Theodosia, near Simferopol and Yalta).

Aug. 19d. 10h. Undetermined shock.

Mizusawa ePE =9m.5s., SE =10m.29s.
Vladivostok iP =10m.12s., iS =12m.12s.
Shasta Dam iP =18m.56s., e =20m.45s. and 23m.15s.
Tinemaha iPEZ =19m.22s.
Haiwee iPZ =19m.25s.
Santa Barbara iPZ =19m.25s.
Pasadena iPZ =19m.29s.
Mount Wilson iPZ =19m.30s. a.
Riverside iPZ =19m.33s.
Boulder City iP =19m.36s.
Palomar iPZ =19m.36s. a.
Pierce Ferry iP =19m.39s.
Tucson eP =19m.59s., e =23m.30s.

Aug. 19d. 20h. 7m. 6s. Epicentre 31°·2N. 79°·9E.

A = +·1503, B = +·8436, C = +·5155 ; δ = −1 ; h = +2 ;
D = +·985, E = −·175 ; G = +·090, H = +·508, K = −·857.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dehra Dun		1·8	247	e 3 37	?	i 4 11	?	—	—	—
New Delhi		3·5	230	i 1 3k	+ 6	i 2 2	+22	—	—	—
Andijan		11·3	329	e 2 44	− 2	e 4 50	− 4	—	—	—
Obi-garm		11·3	315	i 2 44	− 2	i 4 47	− 7	—	—	—
Calcutta	E.	11·5	137	—	—	e 4 54	− 5	—	—	i 6·4
Stalinabad		11·7	312	e 2 49	− 2	i 4 57	− 7	—	—	—
Almata		12·3	350	e 2 52	− 7	—	—	—	—	—
Tashkent		13·2	323	e 3 11	0	e 5 33	− 7	—	—	—
Hyderabad		13·8	186	i 3 17	− 2	5 44	−10	—	—	7·6
Bombay		13·8	209	e 3 17	− 2	e 5 53	− 1	—	—	7·6
Ashkabad		19·0	297	e 4 26	0	e 7 55	0	—	—	—
Kodaikanal		21·0	188	—	—	(i 9 56)	SSS	—	—	(i 12·4)
Colombo	E.	24·2	181	9 45	S	(9 45)	+10	—	—	—
Baku		25·9	300	—	—	e 10 18?	+14	—	—	—
Irkutsk		27·6	34	e 5 52	+ 1	—	—	—	—	—
Sverdlovsk		28·9	339	i 6 3	0	10 55	+ 2	—	—	—
Leninakan		30·5	300	e 6 4	−13	—	—	—	—	—
Ksara		37·0	286	e 7 20	+ 7	13 12?	+13	8 40	PP	—
Moscow		38·4	323	e 7 26	+ 1	13 21	+ 1	—	—	—
Helwan		41·6	282	e 7 54	+ 3	i 14 14	+ 6	e 8 32	?	—
Vladivostok		42·5	59	e 7 59	0	i 14 16	− 6	—	—	—
Warsaw	E.	47·2	314	e 8 37	+ 1	e 15 35	+ 6	10 31	PP	e 24·9
Upsala		49·7	325	e 12 54?	?	—	—	—	—	—
Prague		51·4	312	—	—	e 19 54	SS	—	—	—
Copenhagen		52·3	320	—	—	e 17 11	+31	—	—	26·9
Triest		52·4	307	e 9 17	+ 1	e 16 46	+ 4	e 11 19	PP	—
Cheb		52·7	313	e 13 54?	?	e 16 52	+ 6	—	—	e 29·9
Jena	N.	53·2	314	e 9 24	+ 2	—	—	—	—	—
Rome		53·9	302	e 9 30	+ 3	e 17 2	0	—	—	—
Stuttgart		55·0	311	e 9 36	+ 1	e 17 17	0	e 10 34	P_cP	e 27·9
Zürich		55·6	310	e 9 40	0	—	—	e 12 45	PPP	—
Strasbourg		55·9	311	e 9 44	+ 2	e 17 36	+ 7	e 10 28	P_cP	—
Basle		56·3	309	e 10 0	+15	—	—	—	—	—
Paris		59·3	312	e 10 6	0	e 10 57	P_cP	e 12 19	PP	—
Tortosa		62·9	303	10 34	+ 4	19 0	0	19 25	PS	e 35·9
Alicante		64·5	301	e 11 10	+29	i 18 52	−27	13 6	PP	e 30·1
Almeria		66·5	300	e 10 57	+ 3	i 19 47	+ 3	11 25	P_cP	31·9
Granada		67·2	301	e 11 25k	+27	19 50	− 2	23 55	SS	33·6
Malaga	Z.	68·0	301	i 11 4k	+ 1	i 20 4	+ 2	13 41	PP	36·6

Additional readings :—
New Delhi P*EN =1m.12s., P_eN =1m.23s., S*N =2m.13s., S_eN =2m.33s.
Hyderabad Readings wrongly identified.
Bombay iPN =3m.21s.
Kodaikanal Readings wrongly identified.
Warsaw eSSE =19m.31s., eSSSE =20m.24s., eE =21m.6s.,
Paris e =10m.17s.
Alicante PPP =14m.40s.

Continued on next page.

Almeria PP = 13m.27s., PPP = 14m.59s., P_cS = 15m.25s., S_cS = 20m.49s., SS = 24m.9s. SSS = 27m.13s.
Malaga PPPZ = 15m.15s., sSZ = 20m.29s., SSZ = 24m.35s.
Long waves were also recorded at Clermont-Ferrand, De Bilt, Helsinki, Kew, and Uccle.

Aug. 19d. Readings also at 0h. (near Ashkabad), 2h. (Tucson, Riverside, and Shasta Dam), 4h. (Riverview, Brisbane, Kaimata, Wairiri, Arapuni, Auckland, and Wellington), 10h. (near Obi-garm), 13h. (Ashkabad, Obi-garm, Tashkent, Berkeley, Branner, Fresno, and near Lick (2)), 14h. (near Misuzawa), 16h. (near Ashkabad), 18h. (Lick, Palomar, Stuttgart, and Tucson), 20h. (near Dane, Kirkland Lake, and Ottawa), 21h. (near Ottawa), 22h. (Shasta Dam), 23h. (Granada).

Aug. 20d. Readings at 0h. (Lisbon), 1h. (Lisbon), 2h. (Tucson), 5h. (Malaga and near Tortosa), 8h. (Shasta Dam), 10h. (near La Paz and near Theodosia), 11h. (near (Ottawa), 12h. (near Obi-garm), 13h. (Santa Lucia), 14h. (near Andijan and near Harvard), 16h. (Boulder City and Pierce Ferry), 18h. (New Delhi), 19h. (near Ottawa), 23h. (Riverview).

Aug. 21d. Readings at 0h. (Riverview), 1h. (near Tananarive), 2h. (near Stalinabad, Obi-garm, and Andijan), 7h. (Fresno, Berkeley, and near Lick (2)), 8h. (Branner), 9h. (near Alicante and near Pierce Ferry), 11h. (Basle), 12h. (Tucson), 13h. (Stuttgart, near Stalinabad, Andijan, and Samarkand), 15h. (Stuttgart), 16h. (Samarkand, near Obi-garm, Stalinabad, and Andijan), 19h. and 20h. (near Andijan), 21h. (near Mizusawa), 22h. (Ashkabad and near Andijan).

Aug. 22d. 2h. 31m. 20s. Epicentre 10°·6S. 165°·5E. (as on 1942, Feb. 17d.).

$A = -\cdot9518$, $B = +\cdot2461$, $C = -\cdot1828$; $\delta = -10$; $h = +6$;
$D = +\cdot250$, $E = +\cdot968$; $G = +\cdot177$, $H = -\cdot046$, $K = -\cdot983$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	20·5	213	i 4 36	− 6	i 8 23	− 4	i 4 51	PP	i 9·1
Riverview		26·6	208	e 5 55	+13	e 10 28	+12	i 6 14	PP	e 13·0
Auckland		27·5	164	—	—	10 31	+ 1	—	—	12·7
Arapuni		28·8	164	—	—	11 4	+13	—	—	14·0
Wellington		31·6	167	7 40	PP	11 37	+ 2	13 40	Q	15·5
Wairiri		33·1	172	6 46	+ 6	11 58	− 1	8 15	PPP	16·1
Honolulu		48·0	50	—	—	e 15 30	−11	e 18 25	S_cS	e 23·0
Perth		50·4	238	i 15 37	?	i 16 30	PS	i 18 50	S_cS	—
Mizusawa	E.	54·4	338	e 9 32	+ 1	e 9 52	P	(e 9 52)	P	—
Vladivostok		61·6	333	i 10 18	− 4	i 18 48	+ 5	—	—	—
Berkeley	E.	82·8	51	—	—	i 22 48	+ 3	—	—	e 37·8
College		82·9	19	e 12 26	− 2	e 22 39	− 7	e 28 2	SS	e 34·4
Sitka		83·3	29	e 12 30	0	e 22 40	−10	e 23 54	PS	e 34·9
Shasta Dam		83·6	47	e 12 31	0	e 22 55	+ 2	e 15 48	PP	—
Pasadena	Z.	84·8	55	e 12 36	− 1	—	—	i 12 52	pP	—
Mount Wilson	Z.	84·9	55	i 12 39	+ 1	—	—	i 12 53	pP	—
Haiwee	Z.	85·5	53	i 12 41	0	—	—	—	—	—
Palomar		85·6	56	i 12 42	+ 1	—	—	i 12 58	pP	—
Tinemaha		85·6	52	e 12 41	0	—	—	—	—	—
Victoria		85·7	40	—	—	e 23 16	+ 2	—	—	35·7
Boulder City		87·9	53	e 12 51	− 2	—	—	—	—	—
Grand Coulee		88·3	41	e 12 56	+ 1	—	—	e 13 10	pP	—
Overton		88·4	52	i 12 55	0	—	—	—	—	—
Pierce Ferry		88·6	54	i 12 55	− 1	—	—	—	—	—
Tucson		90·3	57	e 13 4	0	—	—	e 13 21	pP	—
Salt Lake City		91·2	49	e 19 2	PPP	e 24 59	PS	—	—	e 37·8
Butte		92·0	44	—	—	e 24 11	− 1	e 29 57	SS	e 38·8
Antarctica		93·0	163	i 13 19	+ 2	—	—	—	—	—
Bombay	E.	95·9	288	e 12 28	−62	—	—	—	—	—
Obi-garm		101·1	308	e 13 32	−21	—	—	—	—	—
Tashkent		101·6	310	e 17 30	PP	e 24 50	[+15]	26 58	PPS	—
Sverdlovsk		106·9	327	e 14 16	P	i 24 52	[− 7]	i 18 45	PP	—
St. Louis		107·7	53	e 28 29	PS	e 25 2	[0]	e 25 56	SKKS	—
Baku		116·3	310	—	—	e 29 53?	PS	—	—	—
Ottawa		117·6	44	e 19 46	PP	e 35 40	SS	—	—	e 59·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Philadelphia		119·1	51	e 21 4	?	e 28 3	{+55}	—	—	e 48·9
Moscow		119·6	329	20 12	PP	25 44	[− 5]	29 50	PS	—
Fordham		119·9	49	—	—	e 36 48	SS	—	—	e 54·7
Scoresby Sund		120·0	3	20 16	PP	29 58	PS	36 46	SS	52·7
Seven Falls		120·4	41	—	—	e 31 16	PPS	—	—	60·7
Upsala		125·3	341	—	—	e 51 40?	?	e 56 40?	Q	e 64·7
Ksara		128·5	304	e 19 7	[− 2]	33 2	PPS	21 15	PP	—
Bermuda		128·9	57	e 22 17	PKS	e 31 57	PS	e 38 16	SS	e 53·9
Warsaw		129·5	333	e 19 11a	[0]	e 31 21	PS	21 19	PP	e 65·7
Copenhagen		130·3	341	21 23	PP	32 56	PPS	—	—	58·7
Istanbul		131·2	317	e 20 40	PP	—	—	—	—	—
Bucharest		131·5	322	20 40?	PP	30 40?	PS	—	—	—
Helwan	Z.	133·3	301	19 17	[− 1]	22 43	SKP	21 44	PP	—
Jena	N.	134·4	337	e 21 53	PP	—	—	—	—	—
Cheb		134·8	336	e 21 54	PP	e 22 54	PKS	e 31 55	PS	e 64·7
De Bilt		135·6	343	e 19 20	[− 2]	e 32 12	PS	e 21 59a	PP	e 67·7
Stuttgart		137·0	338	e 19 21a	[− 4]	e 22 54	PKS	i 22 8a	PP	e 70·7
Uccle		137·0	344	e 19 26	[+ 1]	e 34 13	PPS	e 22 5	PP	e 65·7
Triest		137·5	331	e 22 7	PP	e 40 0	SS	e 45 7	SSS	e 65·6
Kew		137·6	347	e 19 21?	[− 5]	i 23 1?	PKS	e 22 11?	PP	e 70·7
Strasbourg		137·8	338	e 22 12	PP	e 23 3	PKS	e 32 20	PS	e 62·7
Zürich		138·5	337	e 19 18	[−10]	—	—	e 22 15	PP	—
Basle		138·7	337	e 22 12a	PP	—	—	—	—	—
Paris		139·3	343	e 19 22	[− 7]	e 23 3	PKS	i 22 22	PP	e 77·7
Florence		140·1	331	e 23 0	PKS	—	—	—	—	—
Rome	Z.	140·9	328	e 19 20	[−12]	e 29 19	{− 7}	e 22 34	PP	—
Clermont-Ferrand		141·9	340	e 20 18	[+44]	—	—	e 31 48	?	68·7
Tortosa		147·1	339	i 19 44	[+ 1]	23 9	PKS	23 45	PP	e 76·7
Alicante		149·6	339	19 55	[+ 8]	26 41	[−12]	20 1	pPKP	e 70·7
Almeria		151·7	340	i 19 50	[0]	26 50	[− 6]	23 48	PP	70·7
Granada		151·8	342	i 19 53k	[+ 3]	i 30 50	{+22}	20 6	pPKP	84·5
Malaga	Z.	152·4	343	i 19 52a	[+ 1]	e 27 2	[+ 5]	20 0	pPKP	e 70·7

Additional readings and note :—
Brisbane iSSN = 8m.47s.
Riverview iP = 5m.58s.a, iE = 10m.42s., iN = 10m.52s. and 11m.11s., iE = 11m.17s.
Wairiri QN = 14m.20s., SSZ = 14m.26s.
College e = 22m.55s.
Sitka e = 23m.26s.
Shasta Dam e = 13m.39s.
Pasadena i = 12m.39s.
Tucson i = 13m.50s.
Tashkent SKS = 24m.6s.
Sverdlovsk PKP = 18m.28s., iSKKS = 25m.17s., PS = 27m.58s., SS = 33m.46s.
Philadelphia e = 30m.54s., 36m.27s., and 39m.39s.
Moscow SKKS = 27m.6s., PPS = 31m.30s.
Ksara PPP = 24m.3s.
Bermuda e = 24m.12s. and 38m.40s.
Warsaw eE = 21m.17s., eZ = 21m.37s., SKPE = 22m.34s., eE = 23m.31s., ePPSE = 33m.2s., eSSE = 38m.25s., eSSS?E = 42m.41s.
Copenhagen 22m.38s. and 41m.10s.
Helwan iEZ = 22m.0s., iZ = 23m.8s.
De Bilt ePPP = 25m.2s.
Stuttgart ePP?Z = 21m.53s., e = 22m.22s., ePS? = 34m.34s., eQ? = 63m.40s.?
Uccle ePSKS?EN = 32m.25s.
Triest ePP = 22m.58s.
Kew ePPPZ = 25m.23s., ePPSNZ = 34m.20s., eSSSE = 46m.10s.?
Strasbourg ePP = 22m.16s., e = 35m.58s., eSS = 40m.40s.
Paris iPKP = 19m.30s., ePKP = 19m.42s., e = 19m.55s., 20m.12s., and 22m.37s., ePKS = 23m.6s., e = 23m.27s., PPP = 25m.6s., e = 25m.38s., 25m.52s., and 27m.48s.
Rome eE = 32m.35s.
Tortosa PKP_2EN = 20m.11s., PPP?N = 32m.46s., SKKSE = 34m.18s.
Alicante PKP = 20m.13s., PP = 22m.41s., SSS = 47m.55s.
Almeria PKP_2 = 20m.10s., PKS = 23m.18s., PPP = 27m.20s., SKKS = 30m.30s., PPS = 36m.44s., SSP = 44m.6s.
Granada PKP_2 = 20m.17s., $pPKP_2$ = 20m.40s., iPP = 23m.58s., PPP = 27m.18s., eSKSP = 34m.7s., PPS = 37m.43s., iSS = 43m.43s., SSS = 49m.52s.
Malaga PKP_2Z = 20m.10s., iPPZ = 23m.42s., PPPZ = 27m.22s., SKKSZ = 30m.21s., SKSPZ = 33m.44s., PPSZ = 36m.23s., SSZ = 42m.55s.
Long waves were also recorded at La Paz, Chicago, Harvard, Helsinki, Aberdeen, and Prague.

Aug. 22d. 13h. 46m. 57s. Epicentre 38°·3S. 177°·8E.

Intensity V in the epicentral region. Epicentre as adopted.

R. C. Hayes.
Earthquakes in New Zealand during the year 1947. New Zealand Journal of Science and Technology, Vol. 30, No. 2, Sect. B, 1948, p. 103. Epicentral chart, p. 105.

$A = -·7862$, $B = +·0302$, $C = -·6172$; $\delta = -4$; $h = -1$;
$D = +·038$, $E = +·999$; $G = +·617$, $H = -·024$, $K = -·787$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Tuai	0·7	225	0 11	P_g	0 21	S_g
Bunnythorpe	2·6	220	—	—	1 5	−12
New Plymouth	3·0	254	0 51	+ 1	1 27	0
Wellington	3·8	218	—	—	1 49	+ 2
Kaimata	6·4	228	—	—	2 58	+ 5
Wairiri	6·9	219	—	—	2 35?	−30

Long waves were recorded at Riverview.

Aug. 22d. Readings also at 1h. (Brisbane, Wairiri, and near Lick), 3h. (Brisbane), 4h. (Brisbane, near Obi-garm, Stalinabad, and Andijan), 5h. (Brisbane), 10h. (near Bogota and near Pierce Ferry), 11h. (Tananarive), 12h. (Dane), 13h. (Brisbane and Riverview), 20h. (Stuttgart), 22h. (near Pierce Ferry), 23h. (near Obi-garm).

Aug. 23d. 4h. 17m. 46s. Epicentre 36°·7N. 70°·5E. Depth of focus 0·030. (as on 1947, April 9d.).

Epicentre as given by U.S.S.R. Suggested depth 200km.

$A = +·2683$, $B = +·7576$, $C = +·5951$; $\delta = +9$; $h = 0$;
$D = +·943$, $E = -·334$; $G = +·199$, $H = +·561$, $K = -·804$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Obi-garm	2·1	342	i 0 42	0	i 1 13	− 1
Stalinabad	2·3	323	i 0 44	0	i 1 17	0
Andijan	4·3	20	i 1 6	− 1	i 1 57	− 2
Tashkent	4·7	349	e 1 12	0	i 2 7	− 1
Tchimkent	5·6	354	i 1 22	− 1	i 2 26	− 2
Almata	8·2	35	1 55	− 2	3 26	− 2
Ashkabad	9·7	277	e 2 13	− 3	e 4 1	− 1
Grozny	20·0	297	e 4 23	+ 6	—	—
Sverdlovsk	21·2	345	i 4 29	0	i 8 15	+ 9

Aug. 23d. 4h. 34m. 14s. Epicentre 23°·8N. 94°·8E. (as on 1947, May 8d.).

$A = -·0766$, $B = +·9127$, $C = +·4013$; $\delta = -7$; $h = +4$;
$D = +·996$, $E = +·084$; $G = -·034$, $H = +·400$, $K = -·916$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	E.	6·1	259	e 1 19	−15	i 2 59	+ 4	—	—	—
New Delhi		16·5	290	i 4 1	+ 7	e 6 56	− 2	i 7 11	SS	8·2
Hyderabad		16·6	251	—	—	7 2	+ 2	—	—	—
Bombay	N.	21·1	261	e 4 48	0	e 8 38	− 1	—	—	—
Kodaikanal	E.	21·3	236	i 3 39	−71	i 7 40	−63	—	—	10·0
Almata		24·4	328	5 28	+ 7	—	—	—	—	—
Andijan		25·3	317	e 5 35	+ 5	—	—	—	—	—
Obi-garm		26·0	312	i 5 40	+ 4	—	—	—	—	—
Stalinabad		26·6	311	i 5 41	− 1	—	—	—	—	—
Tashkent		27·6	315	e 5 54	+ 3	e 10 35	+ 3	—	—	—
Samarkand		28·3	311	e 6 12	+15	—	—	—	—	—
Irkutsk		29·4	11	e 6 9	+ 2	e 10 42?	−19	—	—	—
Ashkabad		34·2	304	e 6 51	+ 2	—	—	—	—	—
Vladivostok		36·1	49	e 7 0	− 5	12 42	− 3	—	—	—
Sverdlovsk		41·3	332	e 7 48	− 1	i 14 4	0	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grozny		44·6	308	e 8 21	+ 5	14 55	+ 3	—	—	—
Leninakan		45·6	305	e 8 37	+13	—	—	—	—	—
Ksara		52·0	295	e 9 14	+ 1	e 17 14	+38	—	—	—
Moscow		52·3	323	e 9 19	+ 4	e 16 44	+ 4	—	—	—
Yalta		53·0	308	e 9 25	+ 4	—	—	—	—	—
Helwan		56·3	291	9 46	+ 1	e 17 34	0	e 18 32	?	—
Istanbul		56·8	305	e 8 46?	−62	e 16 46?	−55	—	—	—
Warsaw	E.	61·7	318	e 10 26	+ 4	e 18 45	+ 1	e 14 18	PPP	e 34·8
Upsala	N.	63·3	327	—	—	23 46?	SS	—	—	e 32·8
Copenhagen		66·4	323	—	—	19 55	PS	27 52	SSS	32·8
Cheb		67·4	306	—	—	19 57	+ 2	—	—	e 39·8
Jena	N.	67·7	307	e 11 3	+ 2	—	—	—	—	—
Rome		69·0	308	e 11 9a	0	e 20 57	PPS	e 26 3	?	34·7
Stuttgart		69·7	316	e 11 8	− 6	e 20 18	− 4	e 13 52	PP	e 35·8
Chur		69·9	313	e 11 9	− 6	—	—	—	—	—
Strasbourg		70·6	316	e 11 20	+ 1	e 21 16	+43	e 14 46	PP	e 37·4
Basle		71·0	315	e 11 21	− 1	—	—	—	—	—
Paris		73·9	317	e 11 34	− 5	e 21 7	− 3	e 29 36	SSS	38·8
Clermont-Ferrand		74·5	313	—	—	e 21 16	− 1	—	—	39·8
Scoresby Sund		76·1	342	—	—	21 34	0	—	—	37·8
Tortosa		77·9	309	15 25	PP	21 53	− 1	22 41	PS	e 43·8
Malaga	Z.	83·0	307	i 12 29	+ 1	24 10	PPS	15 48	PP	47·1
Bogota	Z.	149·7	338	e 19 50	[+ 3]	—	—	—	—	—

Additional readings :—
Warsaw eS_cSE =19m.22s., eE =23m.42s., eSSE =22m.38s.
Upsala eE =24m.46s.?
Rome eZ =29m.37s.
Stuttgart iP =11m.14s.a, ePS? =20m.56s., eSS? =25m.46s., eSSS? =29m.34s.
Strasbourg eSS =25m.46s.
Paris iP =11m.39s., eS =21m.18s.
Malaga iPPZ =13m.28s., SKS?Z =19m.20s., QZ =42m.8s.
Long waves were also recorded at Aberdeen, De Bilt, Helsinki, Kew, Potsdam, Prague, Uccle, and Harvard.

Aug. 23d. 14h. 1m. 22s. Epicentre 23°·8N. 94°·8E. (as at 4h. 34m.).

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	6·1	259	e 3 34	?	i 5 14	?	—	—	—
Bombay	21·1	261	e 5 30	PP	—	—	—	—	—
Andijan	25·3	317	e 5 25	− 5	—	—	—	—	—
Obi-garm	26·0	312	e 5 25	−11	—	—	—	—	—
Stalinabad	26·6	311	e 5 43	+ 1	—	—	—	—	—
Tashkent	27·6	315	e 5 52	+ 1	e 10 51	+19	—	—	—
Vladivostok	36·1	49	e 7 4	− 1	—	—	—	—	—
Sverdlovsk	41·3	332	i 7 51	+ 2	e 14 8	+ 4	—	—	—
Ksara	52·0	295	e 13 12	PPP	—	—	—	—	—
Copenhagen	66·4	323	e 10 41	−12	e 18 45	−58	12 59	PP	38·6
Stuttgart	69·7	316	e 11 13	− 1	—	—	—	—	e 38·6
Paris	73·9	317	e 11 38	− 1	—	—	—	—	e 43·6

Long waves were also recorded at De Bilt.

Aug. 23d. Readings also at 5h. (College), 6h. (Istanbul, Kew, Ksara, La Paz, Paris, Strasbourg, Stuttgart, Triest, and Warsaw), 9h. (Berkeley, Branner, Santa Clara, and near Lick), 15h. (near Apia), 16h. (near Ashkabad, near Berkeley, and Cheb), 21h. (Riverside and Tucson), 23h. (Ksara).

Aug. 24d. 9h. 20m.16s. Epicentre 19°·0N. 64°·5W.

A = +·4073, B = −·8540, C = +·3236; δ = −7; h = +5;
D = −·903, E = −·431; G = +·139, H = −·292, K = −·946.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		1·7	248	i 0 32	+ 1	i 0 52	− 2	—	—	—
Fort de France		5·3	142	e 1 20	− 2	i 2 26	+ 1	1 31	P*	—
Bermuda		13·3	359	—	—	(e 5 14)	−28	—	—	e 5·2
Bogota	z.	17·1	215	i 4 1	− 1	e 7 9	− 3	i 4 12	PP	—
Philadelphia		22·8	339	e 5 13	+ 8	e 8 34	−37	—	—	e 9·3
Harvard		24·2	348	i 5 21	+ 2	i 9 18	−17	—	—	—
Dane		31·6	340	e 7 26	PP	—	—	e 12 51	SS	—
Kirkland Lake		31·7	340	e 7 25	PP	—	—	e 12 52	SS	—
Tucson		43·5	298	i 8 7	0	—	—	i 8 18	pP	—
Pierce Ferry		46·6	303	i 9 33	+61	—	—	—	—	—
Overton		47·0	303	i 8 40	+ 5	—	—	—	—	—
Boulder City		47·2	302	i 8 37	+ 1	—	—	—	—	—
Palomar		48·6	298	i 8 49a	+ 2	—	—	i 9 7	pP	—
La Jolla		48·9	298	e 8 50	0	—	—	—	—	—
Riverside	z.	49·1	300	i 8 52a	+ 1	—	—	i 9 6	pP	—
Mount Wilson	z.	49·7	300	i 8 57a	+ 1	—	—	i 9 9	pP	—
Pasadena		49·8	300	i 8 56a	0	—	—	i 9 11	pP	—
Tinemaha		50·1	303	i 8 59a	0	—	—	—	—	—
Grand Coulee		52·5	317	e 9 15	− 2	—	—	—	—	—
Shasta Dam		53·7	307	e 9 23	− 3	—	—	—	—	—
Paris		60·8	44	e 10 14	− 2	—	—	—	—	—
Stuttgart	z.	65·3	44	e 10 47	+ 1	—	—	—	—	—

Additional readings :—
San Juan e = 38s.
Fort de France iS_g = 2m.20s.
Bogota eSSZ = 7m.34s., P_cPZ = 9m.15s.
Dane e = 13m.52s. and 14m.15s.
Kirkland Lake e = 13m.52s.
Tucson i = 8m.22s.
Shasta Dam i = 10m.30s.
Paris e = 10m.29s.

Aug. 24d. 11h. 37m. 1s. Epicentre 41°·6N. 81°·9E.

A = +·1057, B = +·7425, C = +·6614; δ = −7; h = −2;
D = +·990, E = −·141; G = +·093, H = +·655, K = −·750.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Almata		4·1	296	i 1 6	+ 1	i 1 54	− 1	—	—	—
Frunse		5·6	278	e 1 38	+11	e 2 39	+ 6	—	—	—
Andijan		7·3	264	e 1 49	− 1	e 3 1	−14	—	—	—
Semipalatinsk		8·9	354	2 39?	+27	e 4 19	+24	—	—	—
Tchimkent		9·2	279	2 16	0	3 54	− 9	—	—	—
Tashkent		9·5	275	e 2 17	− 3	e 4 59	+49	—	—	—
Obi-garm		9·8	256	i 2 21	− 3	e 3 57	−20	—	—	—
Stalinabad		10·6	256	i 2 32	− 4	—	—	—	—	—
Samarkand		11·5	266	i 3 1	+13	—	—	—	—	—
Dehra Dun	N.	11·7	197	e 3 15	PP	—	—	—	—	e 7·2
New Delhi		13·6	198	i 3 12a	− 5	i 5 43	− 7	—	—	—
Irkutsk		18·6	46	i 4 29	+ 8	8 1	+15	—	—	—
Sverdlovsk		20·6	325	i 4 43	0	i 8 24	− 5	—	—	—
Bombay		23·9	202	i 5 19	+ 3	e 9 29	− 1	—	—	12·1
Baku		24·1	278	5 22	+ 4	—	—	—	—	—
Hyderabad	E.	24·3	188	5 34	+14	9 57	+20	6 40	PP	13·1
Grozny		26·6	286	5 41	− 1	—	—	—	—	—
Erevan		28·2	280	e 6 7	+11	11 3	+22	16 39	S_eS	—
Platigorsk		28·4	289	—	—	10 41	− 4	—	—	—
Leninakan		28·5	282	e 6 4	+ 5	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sotchi		30·9	288	e 6 25	+ 5	—	—	—	—	—
Kodaikanal	E.	31·5	189	e 6 36	+10	e 11 57	+23	13 54	SSS	16·6
Moscow		31·9	312	i 6 29	0	i 11 37	− 3	—	—	—
Theodosia		33·7	292	i 6 43	− 2	12 5	− 3	—	—	—
Colombo	E.	34·6	183	—	—	12 5	−17	—	—	19·2
Vladivostok		36·5	70	e 6 56	−13	—	—	—	—	—
Ksara		36·9	273	i 7 12	0	13 2	+ 4	—	—	—
Helsinki		39·0	319	e 7 31	+ 1	i 13 27	− 2	e 9 6	PP	e 21·0
Istanbul		39·1	287	e 7 27?	− 4	—	—	—	—	e 24·0
Bucharest		40·2	293	e 7 45	+ 5	e 13 49	+ 1	e 17 6	SSS	e 19·0
Warsaw	E.	41·7	306	e 7 54	+ 2	e 14 9	− 1	9 31	PP	e 21·0
Helwan		42·1	270	i 7 56a	+ 1	i 14 14	− 2	9 50	PcP	—
Upsala		42·7	318	e 8 1	+ 1	14 20	− 4	9 50	PP	e 20·0
Copenhagen		46·0	313	i 8 28	+ 1	i 15 13	+ 1	i 18 30	SS	22·0
Prague		46·3	305	e 8 28?	− 1	e 15 14	− 2	e 10 20	PP	e 21·0
Potsdam		46·5	308	e 8 32	+ 1	i 15 18	− 1	—	—	e 22·0
Zagreb		46·6	298	e 8 34a	+ 2	—	—	e 10 32	PP	e 25·0
Cheb		47·6	305	e 15 57	PS	e 15 22	−13	e 19 1	SS	e 25·0
Jena	N.	47·8	306	e 8 43	+ 2	e 15 35	− 3	—	—	e 22·2
Triest		48·1	299	e 8 42	− 1	i 15 40	− 2	e 10 23	PP	—
Bergen	Z.	48·7	320	e 8 48	0	e 15 39	−11	—	—	e 22·8
Stuttgart		49·9	304	e 8 57	0	e 16 7	0	e 18 46	S_cS	e 25·1
Chur		50·4	302	e 8 57	− 4	e 16 2	−12	—	—	—
Rome		50·4	295	9 1a	0	i 16 13	− 1	10 59	PP	—
Florence		50·5	297	—	—	i 16 18	+ 2	i 20 48	SSS	—
Strasbourg		50·9	305	e 9 5	0	i 16 22	+ 1	e 11 7	PP	e 26·0
De Bilt		51·1	309	e 9 9a	+ 3	e 16 27	+ 3	e 19 4	S_cS	e 25·0
Pavia	Z.	51·3	300	e 9 12	+ 4	—	—	—	—	—
Basle		51·6	303	e 9 9	− 1	e 16 27	− 4	—	—	—
Neuchatel		52·0	303	e 9 13	0	—	—	—	—	—
Uccle		52·1	308	e 9 15	+ 1	e 16 37	+ 1	e 19 7	S_eS	e 26·0
Aberdeen	E.	53·3	317	—	—	(i 16 54)	0	(i 20 49)	SS	—
Durham		54·0	315	i 17 3	S	(i 17 3)	0	i 19 21	S_oS	—
Paris		54·0	307	9 28k	0	i 17 1	− 2	i 10 38	P_cP	e 27·0
Edinburgh		54·6	316	—	—	e 16 59	−12	—	—	—
Kew		54·6	310	i 9 31	− 1	i 17 11?	0	e 19 24	S_cS	e 25·5
Clermont-Ferrand		55·0	303	e 9 35	0	e 17 15	− 2	—	—	29·0
Scoresby Sund		55·8	337	9 47	+ 6	17 34	+ 6	12 50	PPP	—
Barcelona		57·6	299	e 9 49	− 5	e 17 50	− 1	—	—	e 31·1
Tortosa		59·0	298	10 7	+ 3	18 7	− 3	11 0	P_cP	e 30·0
Alicante		60·9	297	e 10 22	+ 5	i 18 35	+ 1	11 22	P_cP	e 29·1
Almeria		63·0	296	i 10 31	0	18 56	− 5	11 12	P_cP	30·0
Granada		63·6	297	i 10 35k	0	i 19 5	− 3	11 20	P_cP	30·5
Malaga	Z.	64·4	297	i 10 38	− 2	20 37	+79	i 11 51	pP	37·0
College		67·0	21	—	—	e 19 56	+ 6	e 20 59	S_cS	e 33·4
Ivigtut		69·8	337	—	—	20 28	+ 5	21 23	PPS	—
Sitka		76·4	19	e 11 51	− 2	e 21 47	+ 9	e 22 11	PS	e 40·7
Saskatoon		86·4	5	—	—	e 23 12	[+ 2]	—	—	49·0
Victoria		87·5	16	—	—	e 23 26	− 5	—	—	48·0
Seven Falls		88·4	342	—	—	e 24 29	PS	—	—	42·0
Grand Coulee		88·9	14	e 13 2	+ 4	—	—	—	—	—
Kirkland Lake		89·2	347	e 13 2	+ 3	—	—	—	—	—
Dane		89·3	347	e 13 4	+ 5	—	—	—	—	—
Ottawa		91·1	345	13 11	+ 3	23 45	[+ 6]	30 11	SS	52·0
Shasta Dam		95·2	18	e 13 30	+ 3	—	—	e 17 27	PP	—
Philadelphia		96·2	342	—	—	e 24 8	[0]	e 29 38	?	e 40·7
Tinemaha	Z.	99·5	16	e 17 53	PP	—	—	—	—	—
Mount Wilson	Z.	102·3	16	e 17 20	PP	—	—	—	—	—
Tucson		105·6	11	e 18 38	PP	—	—	—	—	—
La Paz		144·1	305	—	—	i 26 49	[+ 3]	i 28 35	SKKS	79·5
Antarctica		148·6	202	e 19 50	[+ 5]	—	—	—	—	—

For Notes see next page.

NOTES TO AUGUST 24d. 11h. 37m. 1s.

Additional readings :—
Helsinki eSS =16m.5s.
Warsaw SSE =16m.49s., SSSE =17m.30s.
Helwan PPZ =9m.36s., SSZ =17m.19s., S_cSN =17m.58s.
Upsala PPP?E =10m.34s., SS =17m.27s., eN =18m.44s.
Copenhagen 9m.41s.
Prague eSS =18m.29s.
Cheb e =16m.11s. and 17m.3s., eSSS =19m.16s.
Triest iZ =8m.47s., iSS =19m.22s.
Strasbourg ePPP =12m.9s., eS_cS =18m.59s., eSS =19m.59s.
De Bilt ePP =11m.9s., eSS =20m.19s.
Aberdeen iSE =28m.6s., PSE =29m.7s., iSSE =34m.33s. Phases wrongly identified.
Durham eS =21m.30s.
Paris ePP =11m.25s., eS =16m.57s., eS_cS =18m.51s., eSS =21m.1s., eSSS =22m.35s., e =24m.5s.
Kew eSS =21m.21s.?, eEZ =22m.15s.
Scoresby Sund 19m.35s.
Tortosa PPE =12m.14s., PS?E =18m.16s., PPSEN =18m.33s., S_cSN =19m.53s., SSSN =24m.11s.
Alicante PP =12m.44s., P_cS =15m.42s., PS =19m.3s., SS =22m.42s.
Almeria PP =12m.52s., PPP =14m.22s., P_cS =15m.12s., PS =19m.16s., S_cS =20m.12s., SS =22m.52s.
Granada iPP =13m.1s., PPP =14m.6s., PS =19m.33s., S_cS =20m.9s., SS =23m.21s.
Malaga iPPZ =14m.38s., PPPZ =16m.37s., eSZ =21m.41s., PSZ =23m.11s., SSZ =28m.21s., iPKP,PKPZ =35m.37s.
Ottawa PPS =24m.9s., SSS =41m.59s.
La Paz iE =27m.41s.
Long waves were also recorded at Berkeley.

Aug. 24d. Readings also at 3h. (near Tananarive), 4h. (Shasta Dam), 5h. (Saskatoon and La Paz), 8h. (Mount Wilson, Riverside, Palomar, Tinemaha, Tucson, and Shasta Dam), 9h. (Harvard), 10h. (Dane, Kirkland Lake, Bogota, Huancayo, La Paz, Mount Wilson, Palomar, Pasadena, Riverside, Tinemaha, and Tucson), 12h. (Granada, Mount Wilson, Palomar, Tinemaha, and Tucson), 15h. (Zagreb), 19h. (Rome), 20h. (Grand Coulee), 21h. (Pierce Ferry, near Berkeley (2), Branner (2), Fresno, and Lick (3)).

Aug. 25d. 13h. 28m. 50s. Epicentre 33°·8N. 134°·2E. (as on 1947, Jan. 16d.).

Intensity V at Muroto; IV at Tokusima, Takamatu, Sumoto, and Koti; II-III at Siomisaki, Kobe, Osaka, Kasiwara, Owase, Hirosima, Tottori, and Matuyama.
Epicentre 34°·1N. 134°·3E. Shallow. Macroseismic radius 200-300km.

Seismo. Bull. Cent. Met. Obs., Japan, for 1947. Tokyo, 1950, pp. 30-31.

A = −·5805, B = +·5970, C = +·5537; δ = −3; h = +1;
D = +·717, E = +·647; G = −·386, H = +·397, K = −·833.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Tokusima	0·4	50	0 13k	0	0 15	− 6
Muroto	0·6	181	0 20a	+ 5	0 30	+ 4
Kôti	0·6	246	0 15k	0	0 29	+ 3
Sumoto	0·8	46	0 14k	− 4	0 22	− 9
Kobe	1·2	43	0 22k	− 2	0 35	− 6
Matuyama	1·2	272	0 27k	+ 3	0 46	+ 5
Osaka	1·4	52	0 27a	0	0 44	− 2
Siomisaki	1·4	105	0 28	+ 1	0 45	− 1
Owase	1·7	81	0 30	− 1	0 48	− 6
Kyoto	1·8	46	0 32	0	0 52	− 4
Toyooka	1·8	16	1 7	?	1 30	?
Hamada	2·1	302	0 41	P_g	1 9	S_g
Hikone	2·2	49	0 38	0	1 2	− 4
Kameyama	2·2	61	0 35	− 3	1 4	− 2
Gihu	2·7	53	0 42	− 3	1 13	− 6
Nagoya	2·7	59	0 45	0	1 16	− 3
Miyazaki	3·0	231	1 8	P_g	1 41	+14
Hukuoka	3·2	266	1 8	P_g	1 54	S_g
Kagosima	3·8	235	1 12	P_g	2 8	S_g
Hunatu	4·1	64	1 8	+ 3	1 47	− 8

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Misima	4·1	70	1 1	− 4	1 58	+ 3
Wazima	4·2	31	1 10	+ 3	2 9	S*
Nagano	4·4	48	1 5	− 5	2 50	?
Osima	4·4	76	1 7	− 3	2 0	− 2
Maebasi	4·8	55	1 24	+ 9	3 14	?
Yokohama	4·8	68	2 13	S	(2 13)	+ 1
Kakioka	5·5	62	1 24	− 1	—	—
Sendai	7·0	49	2 21	P_e	—	—

Long waves were recorded at Lick.

Aug. 25d. Readings also at 0h. (Fresno, near Berkeley and Lick (2)), 5h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, Shasta Dam, Butte, Saskatoon, Dane, Kirkland Lake, Philadelphia, Rapid City, Grand Coulee, near Sitka, and near Mizusawa), 8h. (La Paz and Strasbourg), 9h. (Auckland and Strasbourg), 10h. (La Paz), 11h. (near Andijan, Obi-garm, and Stalinabad), 12h. (near Mizusawa), 16h. (Stuttgart), 18h. (Copenhagen, Warsaw, Sotchi, near Simferopol, Theodosia, and Yalta), 19h. (Stuttgart), 21h. (Copenhagen).

Aug. 26d. 4h. 42m. 9s. Epicentre 33°·5S. 57°·0E.

A = +·4551, B = +·7008, C = −·5493 ; δ = −3 ; h = +1 ;
D = +·839, E = −·545 ; G = −·299, H = −·461, K = −·836.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tananarive		16·8	328	3 58	0	6 52	−13	4 7	PP	7·4
Bombay	E.	54·2	19	e 9 51?	+22	—	—	—	—	—
Helwan		67·5	336	e 10 58	− 2	e 20 3	+ 7	—	—	—
Ksara		69·8	342	i 11 15	+ 1	21 6	PPS	—	—	—
Antarctica		70·4	199	e 11 16	− 2	e 24 38	SS	e 26 49	SSS	—
Obi-garm		72·8	11	i 11 33	+ 1	—	—	—	—	—
Tashkent		75·3	9	—	—	e 21 26	0	—	—	—
Grozny		77·1	352	e 11 57	0	—	—	—	—	—
Rome		85·4	328	e 12 40	0	e 23 12	+ 1	—	—	—
Sverdlovsk		90·0	3	i 13 4	+ 1	e 23 36	[+ 3]	24 3	S_cS	—
Granada		90·2	316	i 13 3k	− 1	i 23 40	[+ 6]	i 16 20	PP	45·0
Malaga	z.	90·3	316	i 13 3	− 1	24 0	+ 3	17 5	PP	49·1
Warsaw		91·0	338	e 12 51	−16	(e 23 51?)	−12	e 16 24	PP	e 23·8
Stuttgart		92·3	330	e 13 11	− 2	e 24 23	+ 8	—	—	e 47·8
Strasbourg		92·8	330	e 13 9	− 7	e 24 9	−10	e 16 57	PP	—
Paris		94·9	327	e 13 25	0	—	—	—	—	e 52·8
Tucson		169·7	266	e 20 10	[+ 1]	—	—	—	—	—
Pierce Ferry		172·2	—	e 20 10	[0]	—	—	e 25 22	PP	—
Boulder City		172·8	—	e 20 12	[+ 1]	—	—	—	—	—
Shasta Dam		172·8	—	e 21 38	PKP_2	—	—	—	—	—
Tinemaha		174·7	—	e 20 12	[+ 1]	—	—	—	—	—
Palomar	z.	174·9	—	e 20 14	[+ 3]	—	—	—	—	—
Riverside	z.	175·3	—	e 20 16	[+ 4]	—	—	—	—	—
Mount Wilson	z.	175·8	—	e 20 13	[+ 1]	—	—	—	—	—
Pasadena	z.	175·9	—	e 20 10	[− 2]	—	—	—	—	—

Additional readings :—
Tananarive SS = 7m.4s.
Antarctica ePPP = 14m.49s., e = 18m.43s.
Rome eZ = 21m.44s.
Sverdlovsk SS = 29m.39s.
Granada P_cP = 13m.10s., PPS = 25m.10s., iSS = 29m.57s., SSS = 33m.39s.
Malaga iPPZ = 14m.37s., SKSZ = 20m.3s., SSZ = 30m.29s., iPKP,PKPZ = 31m.47s., QZ = 43m.57s., phases wrongly identified.
Warsaw eE = 14m.44s. and 15m.32s.
Long waves were also recorded at Almeria, Alicante, De Bilt, and Wairiri.

Aug. 26d. 6h. Readings for undetermined shock, Mediterranean.

Florence e =0m.19s.
Zagreb eP =0m.42s.?, e =2m.37s.?
Istanbul e =1m.
Belgrade e? =1m.4s., i =2m.32s., e =4m.30s. ; given as for 4h.
Bucharest eN =1m.6s. and 1m.53s., eEN =2m.11s., LEN =3m.
Stuttgart ePZ =1m.12s.?, e =1m.50s., eS? =4m.14s., eL? =5·5m.
Chur eP =1m.28s., eS =3m.40s.
Rome eP =1m.31s., S =2m.13s., Q =2m.41s.
Triest eP? =1m.41s., iS? =2m.33s.
Paris eP? =2m.2s., e =2m.40s., eS? =5m.26s., eL =9m.
Zürich e =3m.
Ksara e =3m.7s. and 5m.10s.
Strasbourg eS? =4m.46s., e =6m.34s.
Prague e =5m.24s.
De Bilt e =5m.30s.
Cheb e =6m.
Jena eEN =7m.0s.
Long waves were also recorded at Kew.

Aug. 26d. Readings also at 4h. (Wellington), 5h. (Warsaw), 9h. (Wairiri), 13h. (near Mizusawa), 14h. (Brisbane, Ksara, and Stuttgart), 15h. (near Ksara), 16h. (Malaga, Almata, Tashkent, near Andijan, Obi-garm, Samarkand, Stalinabad, and Tchimkent), 17h. and 20h. (La Paz), 22h. (Shasta Dam, Andijan, Obi-garm, Stalinabad, Tashkent, and near Almata).

Aug. 27d. 13h. 37m. 42s. Epicentre 39°·4S. 178°·9E. (as on 1947, May 17d.).

Intensity VI in the epicentral region. Epicentre 39°·7S. 179°·2E.

R. C. Hayes.
Earthquakes during the year 1947 ; New Zealand Journal of Science and Technology, Vol. 30, No. 2 (Sect. B.), 1948, p. 103, epicentral chart p. 105.

$A = -\cdot7747$, $B = +\cdot0149$, $C = -\cdot6322$; $\delta = +6$; $h = -1$;
$D = +\cdot019$, $E = +\cdot1\cdot000$; $G = +\cdot632$, $H = -\cdot012$, $K = -\cdot775$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tuai		1·5	294	0 34	P_g	0 59	S_g	—	—	—
Bunnythorpe		2·7	251	0 56?	P_g	1 30?	S_g	—	—	—
Wellington		3·7	237	0 59	− 1	1 47	+ 2	—	—	—
New Plymouth		3·8	274	1 9	P*	1 57	S*	—	—	—
Kaimata		6·4	239	1 46	P*	2 58	+ 5	—	—	—
Wairiri		6·7	230	1 46	+ 4	3 0	0	—	—	—
Riverview		22·9	276	i 5 13a	+ 7	i 9 26	+13	i 5 36	PP	e 11·4
Brisbane		24·6	292	i 5 25	+ 2	i 9 52	+10	i 6 10	PPP	—
Apia		26·8	22	e 5 43	− 1	i 10 26	+ 7	e 11 18	SSS	i 12·3
Perth		50·9	258	9 43	+38	16 23	+ 2	i 13 23	?	—
Antarctica		62·1	157	—	—	e 19 52	+63	—	—	e 31·0
Honolulu		64·2	25	e 10 48	+ 9	e 19 16	0	e 13 2	PP	e 26·8
Santa Lucia	N.	83·0	128	12 45	+17	22 45	− 2	—	—	39·3
Mizusawa	E.	85·5	332	12 45	+ 4	—	—	—	—	—
La Plata	E.	89·3	137	13 0	+ 1	23 26	[− 3]	16 18	PP	53·5
	N.	89·3	137	12 59	0	23 30	[+ 1]	16 0	PP	46·9
Vladivostok		92·5	328	i 13 13	− 1	24 22	+ 5	e 16 35	PP	—
Santa Barbara	Z.	92·8	48	e 13 9	− 7	—	—	—	—	—
La Jolla		93·1	50	e 13 20	+ 3	—	—	—	—	—
Pasadena		93·5	48	i 13 17k	− 2	i 24 26	+ 1	e 16 55	PP	36·8
Mount Wilson		93·6	48	i 13 17k	− 2	e 24 17	− 8	i 13 29	P_cP	—
Palomar		93·7	50	i 13 17k	− 3	e 24 12	{+ 3}	—	—	—
Santa Clara		93·7	44	e 13 18	− 2	e 24 31	+ 4	e 17 24	PP	e 36·6
Riverside		93·8	48	i 13 18k	− 2	e 24 18	{+ 8}	—	—	—
Lick		93·9	44	e 13 21	0	e 24 32	+ 3	e 24 15	SKKS	e 38·8
Berkeley		94·0	44	e 12 58	−23	i 23 56	[0]	i 17 27	PP	i 38·6
Huancayo		94·3	109	i 13 22	− 1	i 23 54	[− 3]	e 17 7	PP	e 43·7
Ukiah		94·4	42	—	—	e 24 1	[+ 3]	e 25 24	PS	e 39·6
Fresno	N.	94·5	46	e 13 36	+13	e 22 38	−116	—	—	e 42·8
Ferndale		95·0	39	—	—	e 23 36	[−25]	—	—	e 40·3
Haiwee	Z.	95·0	47	e 13 24	− 2	—	—	—	—	—

Continued on next page,

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tinemaha		95·6	46	e 13 24	− 4	—	—	e 17 19	PP	—
Shasta Dam		96·0	41	e 13 27	− 3	—	—	—	—	—
La Paz		96·4	118	e 13 38	+ 6	i 24 8	[− 1]	13 55	pP	44·3
Tucson		96·5	54	i 13 29	− 3	e 24 51	0	e 17 33	PP	e 40·5
Boulder City		96·7	49	i 13 31	− 1	e 24 10	[0]	i 13 48	P_cP	—
Overton		97·3	48	i 13 35	− 1	—	—	—	—	—
Pierce Ferry		97·3	49	i 13 34	− 2	e 24 11	[− 2]	e 24 34	SKKS	—
Colombo	E.	101·3	270	e 16 6	?	24 38	[+ 5]	—	—	51·2
Victoria		101·3	36	14 12	+18	24 35	[+ 2]	18 18	PP	45·3
Salt Lake City		101·7	47	e 14 14	+18	e 24 33	[− 2]	e 18 14	PP	e 42·1
Grand Coulee		103·0	37	e 17 21	?	—	—	e 18 16	PP	—
Sitka		104·0	24	—	—	e 24 8	[−38]	e 27 38	PS	e 41·5
Calcutta	E.	104·4	288	e 21 21	?	e 23 34	?	i 32 37	SS	49·1
Butte		104·8	42	e 14 10	0	e 24 57	[+ 7]	e 18 36	PP	e 43·2
Kodaikanal	E.	105·2	272	e 18 39	PP	—	—	—	—	—
Bogota		106·1	98	—	—	e 24 55	[0]	e 33 39	SS	—
College		107·2	14	e 18 32	[+ 5]	e 24 57	[− 3]	e 28 14	PS	e 44·3
Rapid City		108·7	49	e 18 46	[+16]	e 25 32	[+25]	e 19 25	PP	e 46·0
Hyderabad		108·8	278	19 12	PP	e 29 48	PPS	35 7	PSS	46·4
Saskatoon		111·7	40	19 16	PP	29 6	PS	34 18?	SS	50·3
Irkutsk		111·8	321	19 28	PP	25 29	[+ 9]	29 13	PS	—
Bombay		114·0	276	e 18 33	[− 8]	29 33	PS	—	—	47·7
New Delhi	N.	116·0	287	e 19 52	PP	i 26 51	{+ 4}	i 29 31	PS	—
Chicago		117·1	57	e 18 5	[−42]	e 29 57	PS	e 20 1	PP	e 48·5
Columbia		117·7	67	e 14 30	P	e 30 2	PS	—	—	e 51·0
New Kensington		121·8	61	e 20 45	PP	e 26 3	[+ 7]	e 30 50	PS	e 55·4
Georgetown		122·8	64	e 20 42	PP	—	—	—	—	—
Pennsylvania	E.	123·1	62	—	—	e 30 55	PS	e 37 17	SS	—
Philadelphia		124·6	64	e 19 37	[+35]	e 27 28	{−17}	e 20 55	PP	e 50·5
Dane		124·7	53	i 18 59	[− 3]	—	—	—	—	—
Kirkland Lake		124·7	53	i 19 0	[− 2]	e 22 5	PKS	e 24 3	PPP	—
Andijan		125·4	297	e 19 4	[+ 1]	31 4	PS	20 41	PP	—
Fordham		125·9	64	e 19 2	[− 2]	e 37 58	SS	e 21 12	PP	52·3
Obi-garm		126·4	294	i 19 6	[+ 1]	—	—	20 57	PP	—
Ottawa		126·4	57	19 3	[− 2]	28 24	{+28}	21 6	PP	61·3
Stalinabad		127·0	294	i 19 6	[0]	28 5	{+ 5}	21 9	PP	—
Tashkent		127·7	297	e 19 0	[− 8]	28 16	{+11}	21 13	PP	—
Harvard		128·1	62	e 19 7	[− 1]	e 22 40	PKS	e 21 20	PP	e 60·8
Weston		128·1	62	e 19 30	[+22]	i 38 26	SS	i 21 28	PP	i 61·2
Bermuda		128·9	77	e 21 31	PP	e 22 55	PKS	e 32 55	PPS	e 53·1
Seven Falls		130·2	57	19 10	[− 2]	39 36	SSP	21 32	PP	66·3
Halifax		134·3	62	—	—	e 23 0	PKS	—	—	56·3
Sverdlovsk		136·9	316	19 13	[−12]	28 49	{−13}	21 55	PP	—
Ivigtut		144·0	38	19 42	[+ 5]	—	—	—	—	70·3
Grozny		144·7	293	19 41	[+ 2]	—	—	—	—	—
Erevan		145·3	288	e 19 44	[+ 4]	—	—	—	—	—
Scoresby Sund		147·0	13	i 19 43	[0]	42 12	SS	23 15	PP	—
Sotchi		149·4	293	e 19 52	[+ 6]	—	—	—	—	—
Moscow		149·7	316	19 57	[+10]	33 44	SKSP	23 30	PP	—
Ksara		149·9	272	e 19 49	[+ 2]	—	—	23 37	PP	—
Helwan	Z.	151·8	261	i 19 51a	[+ 1]	34 6	PSKS	23 45	PP	—
Theodosia		152·6	295	e 19 58	[+ 7]	—	—	—	—	—
Yalta		153·4	294	e 19 55	[+ 3]	—	—	—	—	—
Simferopol		153·5	295	e 20 8	[+16]	—	—	—	—	—
Helsinki		153·6	333	e 19 59	[+ 6]	e 23 29	PKS	e 31 18	SKKS	e 68·3
Upsala		156·4	337	e 19 55	[− 1]	e 30 31	{− 2}	e 24 5	PP	e 57·3
Istanbul		157·0	285	e 19 56	[− 1]	e 27 8	[+ 6]	—	—	—
Bucharest		159·2	294	e 20 24	[+24]	e 31 19	{+11}	—	—	44·3
Warsaw	E.	160·0	317	e 19 54	[− 7]	31 34	{+22}	24 17	PP	e 58·3
Copenhagen		161·4	337	i 20 2	[0]	26 55	[−11]	24 32	PP	67·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Aberdeen		162·2	2	—	—	e 22 57	PKS	i 45 52	SSP		94·2
Belgrade		163·1	296	e 20 2k	[− 2]	e 45 4	SS	—	—		e 70·3
Budapest		163·3	306	e 19 49	[−15]	e 45 18?	SS	e 25 18?	PP		e 83·5
Kalossa	N.	163·7	302	e 20 22	[+17]	e 23 42	PKS	e 21 13	PKP_3		—
Potsdam	E.	163·7	328	e 21 9	PKP_2	—	—	e 22 2	PKP_2		e 69·3
Durham	E.	164·6	1	e 19 46	[−19]	i 45 16	SS	i 24 55	PP		—
Prague		164·7	319	e 21 13	PKP_2	e 27 18	[+10]	e 24 59	PP		e 66·3
Jena	Z.	165·4	326	e 20 4	[− 2]	—	—	e 21 6	PKP_3		—
Cheb		165·7	323	e 20 18?	[+12]	e 45 38	SS	e 25 20	PP		e 70·3
Zagreb		165·9	303	e 20 5	[− 2]	—	—	e 21 9	PKP_2		e 78·3
De Bilt		166·6	343	i 20 6k	[− 1]	e 45 38	SS	i 24 54	PP		e 74·3
Triest		167·4	305	e 21 11	[+63]	e 46 38	SSP	e 25 7	PP		—
Kew		167·9	358	i 20 7k	[− 1]	—	—	i 21 14	PKP_2		e 68·3
Uccle		168·0	343	e 20 6	[− 2]	e 32 6	{+13}	e 25 0	PP		e 75·3
Stuttgart		168·1	325	e 20 6	[− 2]	e 45 56	SS	e 25 5	PP		e 81·3
Strasbourg		168·8	328	e 20 8	[0]	e 41 4	?	e 29 36	PPP		e 72·3
Chur		169·2	317	e 20 7	[− 2]	—	—	e 25 11	PP		—
Rome		169·4	288	i 20 6k	[− 3]	i 45 48	SS	i 25 22	PP		e 73·3
Zürich		169·4	322	e 20 6	[− 3]	—	—	e 25 19	PP		—
Basle		169·7	325	e 20 8	[− 1]	—	—	e 21 22	PKP_3		—
Florence		169·8	299	i 20 37	[+28]	—	—	—	—		—
Jersey		170·2	4	e 24 46	PP	—	—	—	—		—
Paris		170·2	346	i 20 9	[0]	e 27 24	[+12]	i 20 27	pPKP		81·3
Neuchatel		170·4	325	e 20 12	[+ 3]	—	—	—	—		—
Pavia		170·4	311	e 20 58	[+49]	—	—	—	—		—
Clermont-Ferrand		172·9	335	e 20 12	[+ 1]	i 46 58	SS	e 21 50	PKP_3		55·3
Lisbon		173·7	93	i 20 12	[+ 1]	27 16	[+ 3]	—	—		88·0
Malaga	Z.	176·3	134	i 20 16	[+ 4]	27 16	[+ 3]	20 30	pPKP		78·3
Barcelona		176·8	311	20 52	PKP_3	47 28	SS	26 2	PP		75·5
Granada		177·0	137	i 20 10s	[− 2]	27 19	[+ 6]	20 31	pPKP		83·5
Almeria		177·2	—	i 20 11	[− 1]	27 11	[− 2]	i 26 1	PP		73·6
Tortosa		178·1	—	e 20 17	[+ 5]	27 3	[−10]	26 8	PP		61·3
Alicante		178·8	—	20 20	[+ 8]	26 32	[−41]	20 38	pPKP		e 79·7

Additional readings :—
Riverview iE = 5m.33s., iPPE = 5m.50s., iSEZ = 9m.29s., iE = 9m.59s., iSSNZ = 10m.16s., iSSSN = 10m.34s.
Brisbane iSSN = 10m.52s.
Antarctica ePS = 20m.16s., eSS = 24m.34s.
Honolulu eSS = 24m.1s.
Mizusawa S?N = 18m.26s., S?E = 18m.35s.
La Plata E. 13m.48s., 14m.30s., PPP? = 20m.0s., SKKS = 23m.46s., PPS = 26m.18s., SS = 29m.18s., 32m.37s., SSS? = 35m.53s., Q = 40m.18s.
N. 13m.49s., 14m.12s., 14m.31s., PP = 17m.16s., 17m.36s., PPP = 19m.36s., 19m.43s., 21m.30s., SKKS = 24m.5s., SS = 30m.0s., SSS = 33m.32s., Q = 37m.42s.
Vladivostok eSKS = 23m.27s., PS = 25m.22s.
Pasadena iZ = 13m.31s., eSKSN = 23m.49s.
Berkeley ePE = 13m.19s., and 13m.31s., eN = 13m.36s., eSE = 23m.52s., iSN = 24m.4s.
Huancayo i = 24m.1s., iPS = 25m.37s., eSSS = 34m.17s.
Ukiah e = 27m.54s.
La Paz iPZ = 13m.43s., iPPE = 17m.8s., iSEN = 25m.6s., iPSEN = 26m.12s., PPSN = 26m.52s., SS = 31m.46s., iSSSZ = 35m.12s.
Tucson i = 13m.57s., eSKS = 24m.8s., ePS = 26m.36s., ePKKP = 30m.22s., eSS = 31m.18s.
Victoria PS = 27m.28s.
Salt Lake City eS = 25m.40s., ePS = 26m.50s., ePPS = 27m.58s., eSS = 32m.6s., eSSS = 36m.50s.
Sitka eSS? = 32m.27s., eSSS = 36m.48s.
Calcutta iE = 27m.59s.
Butte eS = 26m.21s., ePS = 27m.36s., ePPS = 28m.44s., eSS = 33m.24s., eSSS = 37m.44s.
College e = 25m.46s., eS = 26m.37s., ePPS = 28m.58s., eSS = 33m.58s., eSSS = 37m.49s.
Rapid City e = 19m.2s. and 26m.20s., ePS = 28m.24s., ePPS = 29m.50s., eSS = 34m.22s.
Hyderabad eN = 22m.43s.
Saskatoon S = 26m.57s.
Irkutsk PPP = 22m.2s., S = 27m.4s.
New Delhi iN = 30m.17s.
New Kensington ePKS = 22m.37s., eSSS = 41m.29s.
Philadelphia eSKS? = 26m.42s., ePS = 30m.45s., eSS = 37m.37s., e = 38m.6s.
Fordham eSS? = 42m.48s.
Ottawa PPP = 23m.36s., SS = 38m.4s., SSS = 42m.6s.

Continued on next page.

Stalinabad PPP =23m.57s., SKSP =31m.51s., PPS =32m.55s., eSS =37m.12s.
Tashkent PPP =24m.8s., PS =31m.19s., SKSP =32m.16s., SS =38m.42s.
Harvard eSS =38m.30s., eQ =52m.18s.
Weston e =33m.36s., 53m.28s., and 58m.20s.
Bermuda ePKP,PKP? =37m.6s., eSS =38m.40s., eSSS =43m.24s.
Seven Falls PPP =23m.32s.
Sverdlovsk iPPP =25m.0s., iPS =32m.23s., eSS =39m.30s., SSS =45m.18s.
Scoresby Sund i =20m.1s. and 24m.39s.
Helwan PKKPZ =20m.10s., PPPZ =27m.18s.
Helsinki ePPS =36m.8s., eSS =43m.18s.
Upsala ePKP?E =20m.6s., eSKKSN =30m.57s., eSKSP? =34m.18s.?, eN =43m.18s.?, eSSE =43m.48s., eSSSN =49m.18s.
Bucharest eE =20m.50s., eEN =23m.1s.
Warsaw PKPE =20m.49s., PPE =25m.30s., SKSE =27m.51s., PPPE =28m.56s., SKKS,?E =34m.53s., eE =36m.51s., PPSE =38m.1s., eE =41m.19s., 42m.28s., and 44m.8s., SSE =45m.25s.
Copenhagen i =20m.46s., 23m.47s., 32m.4s., and 44m.18s.,
Aberdeen iEN =32m.42s., iE =42m.57s., iEN =44m.52s., eE =66m.44s., eN =81m.18s.
Belgrade i =21m.7s., 21m.30s., 30m.30s., and 32m.54s.
Budapest ePN =20m.30s., eE =30m.21s.
Durham iE =25m.5s. and 35m.33s.
Prague e =30m.31s. and 32m.18s., SKSP =34m.48s., e =36m.54s., ePPS? =39m.6s., eSS =45m.0s., eSSS =51m.48s., e =55m.18s.
Jena eN =21m.3s., 28m.55s., and 29m.30s.
Cheb e =23m.8s., ePPP =29m.2s., eSKSP =35m.59s.
De Bilt iPKP$_2$ =21m.9s.a.
Triest ePKP$_2$ =21m.34s., PPPE =29m.18s.
Kew iPP? =25m.2s., eSKS?N =30m.2s.?, eZ =31m.32s., ePS?EN =35m.33s.
Uccle ePKP$_2$ =21m.25s., eSSE =45m.55s., eN =57m.12s.
Stuttgart iPKP$_2$?Z =20m.25s.a, iPKP$_2$? =21m.17s., iPKP$_2$ =21m.26s., and 21m.39s.a, ePP? =25m.34s., e =26m.46s., ePPP? =29m.24s., ePSKS? =36m.0s., ePPS? =39m.48s., e =41m.18s., 49m.34s., and 57m.24s., eQ? =70m.18s.
Strasbourg i =20m.26s., ePKP$_2$ =21m.36s., iPKP$_2$ =21m.46s., ePP =25m.42s.
Chur e =21m.21s.
Rome iZ =20m.26s. and 23m.40s., iE =33m.14s., iPSKS?E =35m.46s., iE =43m.36s. and 50m.50s.
Zürich e =21m.21s.
Paris i =20m.53s., iPKP$_2$ =21m.25s., 21m.34s., and 21m.37s., ipPKP$_2$? =21m.47s., ePKS? =23m.56s., iPP =25m.10s. and 25m.13s., ipPP? =25m.23s., ePP$_2$? =26m.30s., iPPP =29m.33s., e =29m.49s., eSKKS =32m.22s., e =34m.55s., ePPS =39m.3s., eSS =46m.26s., e =48m.48s. and 49m.8s., eSSS? =52m.8s.?, e =58m.18s., eQ =70m.18s.
Clermont-Ferrand i =32m.50s., iPP =36m.25s.
Malaga iPKP,Z =22m.1s., iPPZ =25m.44s., iPPPZ =29m.46s., SKKSZ =33m.14s., SKSPZ =36m.26s., iPPSZ =40m.30s., iSSZ =47m.18s., QZ =75m.4s.
Granada sPKP =20m.58s., iPKP$_2$ =21m.55s., pPKP$_2$ =22m.25s., sPKP$_2$ =22m.51s., iPP =25m.50s., pPP =26m.13s., sPP =26m.25s., SKS =26m.43s., iSKKS =32m.52s. sSKKS =33m.24s., SKSP =36m.25s., iSS =46m.25s., sSS =48m.7s., SSP =48m.45s., SSS =54m.19s., Q =77·3m.
Almeria PKP$_2$ =22m.10s., PKS =23m.41s., PPP =30m.31s., SKKS =32m.5s., SKSP 36m.27s., PPS =40m.26s., SSP =48m.53s.
Tortosa PKP$_2$EN =22m.5s., SKPEN =23m.38s., PPPEN =30m.56s., SKKSEN =32m.56s., SKKS?E =33m.8s., SKSPN =36m.29s., SKSPEN =36m.48s., PPS?EN =40m.3s., PPSE =40m.30s., SSEN =47m.32s., SSPE =48m.47s., SSSE =55m.12s., QN =57m.8s.
Alicante PKP$_2$ =21m.50s., pPKP$_2$ =22m.20s., PKS =23m.0s., PP =24m.56s., SKKS =31m.46s., SKKKS =33m.18s., SKSP =37m.6s., PPS =39m.32s., SSP =47m.44s., Q =63m.36s.
Long waves were also recorded at Tananarive, Dehra Dun, Fort de France, and Edinburgh.

Aug. 27d. Readings also 0h. (near Malaga), 1h. (near Balboa Heights), 5h. (Andijan and near Almata), 6h. (near Tananarive), 7h. (Stuttgart), 10h. (near Antarctica), 13h. (Tucson and near Lick), 15h. (near Andijan), 16h. (Stuttgart, La Paz, Kaimata, Wairiri, near Tuai and Wellington), 17h. (Malaga, New Plymouth, Kaimata, Wairiri, near Tuai, Wellington, and near Balboa Heights), 20h. (near Ottawa), 21h. (Bombay, Calcutta, New Delhi, Andijan, Stalinabad, Vladivostok, Ksara, Stuttgart, and near Mizusawa), 23h. (La Paz),

Aug. 28d. 6h. Spanish Earthquake.

Intensity IV-V at Elche and neighbourhood; IV at Monforte, Novelda, and Alicante; III at Monovar. Epicentre 38°17′N. 0°42′W.

A. Rey Pastor.
Estudio seismotectonico de la Region Sureste de Espana, Madrid, 1951, Macroseismic chart figure 5a.

Los Fenomenos sismicos de Elche, August-November, 1947. Publications del Instituto Geográfico y Catastral Observ. Sismológ. de Alicante, 1948.

Resumen de las Observaciones solares meteorológicas y Sismológicas efectuadas durante el año, 1947, Vol. 35, series A, Tortosa, 1945, p. 223.

Recorded at five Spanish Stations.

Alicante (0°·2) iP_g = 40m.21s., 40m.33s., and 40m.49s.
Almeria (2°·0) P = 40m.29s., P_g = 40m.32s., 40m.37s., and 40m.44s.
Granada (2°·6) iP = 40m.32s.k, P_g = 40m.39s., P = 40m.55s.
Tortosa (2°·7) iPN = 41m.2s., P_gE = 41m.8s., P_gN = 41m.25s.
Malaga (3°·3) iPZ = 41m.19s., P_gZ = 41m.34s., with associated S_g readings.

Aug. 28d. 6h. 50m. 17s. Epicentre 49°·5N. 155°·5E. (as on 1937, Oct. 25d.).

A = −·5933, B = +·2704, C = +·7582; δ = −1; h = −5;
D = +·418, E = +·910; G = −·690, H = +·314, K = −652.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro		9·2	231	e 2 14	− 2	3 54	− 9	—	—	—
Sapporo		11·7	241	2 54	+ 3	4 54	−10	—	—	e 5·5
Mizusawa	E.	14·6	230	3 32	+ 2	6 4	− 9	—	—	—
Sendai		15·4	228	3 45	+ 5	6 38	+ 6	—	—	9·2
Vladivostok		17·5	257	i 4 7	0	i 7 16	− 5	—	—	—
Nagano		17·9	230	i 4 8	− 4	7 43	+13	—	—	—
Tokyo		17·9	227	4 15	+ 3	7 21	− 9	7 53	SS	8·5
Nagoya		19·7	230	4 33	− 1	8 18	+ 8	16 30	S_cS	11·0
Osaka		20·9	233	4 46	0	8 57	+22	—	—	12·8
Hamada		22·6	238	5 3	0	9 10	+ 3	—	—	—
Kôti		22·8	234	e 4 59	− 6	—	—	—	—	—
Hukuoka		24·4	239	i 5 23	+ 2	9 41	+ 2	5 47	PP	12·5
Irkutsk		31·9	296	i 6 47	+18	i 12 13	+33	—	—	—
College		33·0	41	e 6 33	− 6	e 11 47	−10	e 6 53	pP	e 14·4
Sitka		40·2	52	e 7 39	− 1	i 13 56	+ 8	1 9 33	PP	e 17·0
Honolulu		46·3	110	e 8 37	+ 8	e 15 8	− 8	e 10 35	PP	e 18·8
Victoria		50·7	58	9 6	+ 3	16 19	+ 1	11 30	PP	24·7
Almata		52·2	296	e 9 14	− 1	—	—	—	—	—
Sverdlovsk		52·9	317	i 9 19	− 1	i 16 42	− 6	—	—	—
Grand Coulee		53·5	57	e 9 23	− 1	—	—	e 9 37	pP	—
Shasta Dam		55·9	66	i 9 41	− 1	e 17 30	+ 1	e 12 0	PP	—
Ukiah		56·4	58	e 10 1	+16	e 17 42	+ 6	e 10 15	pP	e 22·2
Andijan		56·5	296	9 47	+ 1	—	—	—	—	—
Saskatoon		57·2	47	9 48	− 3	17 45	− 1	21 37	SS	27·7
Berkeley		57·8	69	i 9 55	0	i 17 53	− 1	—	—	e 23·8
Tashkent		57·9	298	i 9 59	+ 3	e 17 50	− 5	—	—	—
Butte		58·1	55	e 9 50	− 8	e 18 3	+ 5	e 10 29	pP	e 23·6
Santa Clara		58·3	69	e 10 0	+ 1	e 18 2	+ 1	—	—	e 27·7
Calcutta	E.	58·5	269	i 10 10	+10	i 18 30	+27	—	—	—
Obi-garm		59·4	296	10 5	− 1	18 5	−10	—	—	—
Dehra Dun	N.	59·8	282	—	—	—	—	e 25 43	SSS	—
Fresno	N.	60·0	68	e 10 15	+ 4	e 18 52	+29	—	—	—
Stalinabad		60·0	296	i 10 10	− 1	e 18 12	−11	—	—	—
Samarkand		60·3	298	e 10 31?	+18	—	—	—	—	—
Scoresby Sund		60·3	359	10 14	+ 1	18 26	0	18 49	PS	—
Tinemaha		60·7	67	i 10 16a	+ 1	—	—	i 10 31	pP	—
New Delhi	N.	61·5	282	i 10 19	− 2	e 18 41	− 1	10 58	P_cP	—
Haiwee		61·5	67	e 10 20	− 1	—	—	—	—	—
Santa Barbara		61·6	70	e 10 21	− 1	—	—	—	—	—
Salt Lake City		61·9	60	e 10 24	0	i 18 46	− 1	e 13 14	PP	e 26·1

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		62·7	69	i 10 28a	− 1	—	—	i 10 39	pP	—
Pasadena		62·7	69	i 10 28a	− 1	i 18 56	− 1	i 10 39	pP	e 26·0
Moscow		63·1	327	i 10 31	− 1	e 18 57	− 5	—	—	—
Overton		63·3	65	i 10 34	+ 1	i 19 7	+ 3	i 10 48	pP	—
Riverside		63·3	69	e 10 31a	− 2	e 19 2	− 2	i 10 46	pP	—
Boulder City		63·5	65	i 10 34	0	e 19 7	0	i 10 48	pP	—
Helsinki		63·6	336	e 10 33	− 2	e 18 56	−12	e 10 58	PcP	e 27·7
Pierce Ferry		63·9	65	i 10 37	0	i 19 13	+ 1	i 10 52	pP	—
Palomar		64·1	69	i 10 37a	− 1	e 19 9	− 5	i 10 48	pP	—
La Jolla		64·2	70	e 10 42	+ 3	—	—	—	—	—
Rapid City		64·3	52	i 10 41	+ 2	i 19 18	+ 1	i 11 11	pP	e 27·0
Upsala		65·8	339	e 10 45?	− 4	e 19 21	−14	e 20 3	PPS	e 30·7
Denver		66·4	57	10 59	+ 6	19 51	+ 8	—	—	—
Bergen	z.	67·8	345	e 11 0	− 2	—	—	e 11 27	pP	e 18·2
Ivigtut		68·0	13	i 11 3	0	20 0	− 2	—	—	—
Tucson		68·5	65	i 11 5	− 1	e 20 9	+ 1	i 11 16	pP	e 28·2
Hyderabad	N.	68·6	272	11 5	− 2	20 2	− 7	21 23	ScS	—
Grozny		69·1	313	e 11 12	+ 2	20 12	− 3	—	—	—
Baku		69·2	309	11 14	+ 4	—	—	—	—	—
Copenhagen		70·7	340	i 11 20a	0	20 33	− 1	—	—	33·7
Bombay		71·2	278	i 11 22	− 1	e 20 40	0	25 44	SS	31·0
Warsaw		71·5	333	i 11 25a	+ 1	e 20 32	−11	11 45	PcP	e 34·7
Kirkland Lake		71·6	36	i 11 24	− 1	—	—	e 14 8	PP	—
Sotchi		71·7	316	e 11 26	0	—	—	—	—	—
Theodosia		72·4	321	e 11 30	0	—	—	—	—	—
Yalta		73·3	321	e 11 34	− 1	—	—	—	—	—
Chicago		73·6	45	e 11 31	− 6	e 20 59	− 8	e 16 11	PPP	e 39·1
Potsdam		73·6	338	e 11 39	+ 2	—	—	e 13 13?	?	e 33·7
Kodaikanal	E.	74·5	268	e 11 38	− 4	—	—	—	—	—
St. Louis		74·8	48	i 11 44	0	e 21 20	0	i 11 56	PcP	e 35·4
Jena	N.	75·3	337	e 11 47	0	e 21 21	− 5	—	—	—
Prague		75·4	336	11 44k	− 3	e 21 17	−10	—	—	e 31·7
Ottawa		75·5	35	11 47a	− 1	21 19	− 9	14 17	PP	36·7
Shawinigan Falls		75·6	32	11 46	− 2	21 24	− 5	21 47	PS	—
De Bilt		75·7	342	i 11 49a	0	e 21 26	− 4	e 14 37	PP	e 37·7
Seven Falls		75·7	31	11 48	− 1	21 25	− 5	26 25	SS	32·7
Cheb		75·9	337	e 11 52	+ 2	e 21 34	+ 2	—	—	e 36·7
Budapest		76·3	332	11 52	0	e 21 36	− 1	38 38	Q	43·7
Bucharest		76·6	325	e 11 56	+ 2	—	—	—	—	34·7
Brisbane		76·7	182	e 11 48	− 7	i 21 35	− 6	i 21 58	SKS	—
Uccle		77·1	342	i 11 43?a	−14	—	—	—	—	e 39·7
Kalossa		77·2	331	e 13 39	?	—	—	i 14 15	PP	—
Kew		77·3	345	i 11 58?	0	e 21 47	− 1	i 12 16?	PcP	e 39·7
Stuttgart		77·9	338	i 12 2a	+ 1	e 21 47	− 7	i 12 27k	PcP	40·7
New Kensington		78·0	40	e 12 4	+ 2	i 21 53	− 2	e 27 0	SS	e 34·9
Belgrade		78·2	329	i 12 5	+ 2	e 22 20	+23	e 15 17	PP	e 41·7
Strasbourg		78·4	339	i 12 5a	+ 1	i 21 58	− 2	e 12 29	PcP	e 36·2
Zagreb		78·8	333	i 12 7	+ 1	e 21 43?	−21	—	—	e 44·7
Paris		79·4	343	i 12 11a	+ 2	22 7	− 3	15 3	PP	41·7
Basle		79·4	339	e 12 10	+ 1	—	—	—	—	—
Zürich		79·4	339	i 12 9a	0	e 22 6	− 4	i 12 31	PcP	—
Harvard		79·5	34	i 12 10	0	e 22 8	− 3	e 15 6	PP	e 41·7
Chur		79·6	337	i 12 11a	+ 1	e 22 6	− 6	—	—	—
Triest		79·6	334	e 12 9	− 1	e 22 8	− 4	—	—	—
Weston		79·7	34	i 12 11	0	i 22 11	− 2	15 13	PP	—
Jersey		79·8	346	e 12 14	+ 2	22 33	+19	—	—	—
Neuchatel		80·1	338	e 12 14	+ 1	e 22 12	− 6	—	—	—
Fordham		80·1	36	12 13	0	i 22 15	− 3	i 15 17	PP	—
Halifax		80·2	28	12 13	− 1	22 15	− 4	—	—	41·7
Philadelphia		80·4	37	i 12 14	− 1	e 22 10	−11	i 12 32	pP	e 36·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Georgetown		80·5	39	i 12 16	+ 1	e 22 17	− 5	—	—	36·2
Pavia	z.	81·2	337	i 12 20	+ 1	—	—	—	—	—
Ksara		81·3	313	i 12 21	+ 1	22 31	+ 1	12 41	pP	—
Florence		82·0	335	i 12 30	+ 7	i 22 35	− 2	—	—	—
Clermont-Ferrand		82·1	341	i 12 26	+ 2	i 22 38	0	—	—	41·7
Columbia		82·9	45	e 12 25	− 3	e 22 40	− 6	e 15 36	PP	e 39·8
Riverview		83·0	184	i 12 28 a	0	i 22 45	− 2	i 12 40	pP	e 38·8
Rome		83·4	333	i 12 31 a	+ 1	i 22 57	+ 6	i 15 45	PP	39·8
Tacubaya		85·0	66	e 12 41	+ 3	i 23 4	− 3	i 12 50	P_cP	—
Helwan		86·7	314	i 12 46 k	− 1	23 7	[− 5]	16 5	PP	—
Tortosa		87·4	341	12 47	− 3	23 16	[− 1]	15 58	PP	—
Alicante		90·0	342	e 13 1	− 2	23 56	+ 2	16 41	PP	e 39·3
Bermuda		91·0	34	e 13 10	+ 3	e 24 6	+ 3	e 13 24	pP	e 40·3
Lisbon		91·1	348	i 13 7	− 1	23 38	[− 1]	—	—	47·2
Granada		91·7	343	i 13 9 k	− 1	i 23 41	[− 2]	13 38	P_cP	48·1
Almeria		91·8	343	i 13 7	− 4	33 35	SSS	16 43	PP	49·7
Wellington		92·0	166	—	—	23 32	[−12]	24 2	S	40·7
Malaga	z.	92·3	344	i 13 13	0	i 24 15	0	i 13 24	pP	41·9
Wairiri	N.	93·7	169	—	—	e 23 38	[−16]	25 37	PS	43·4
Bogota		111·1	55	e 19 9	PP	e 25 8	[− 9]	e 29 20	PPS	—
Huancayo		124·1	66	e 21 1	PP	e 26 39	[+36]	e 27 41	SKKS	58·9
La Paz		131·8	64	i 19 15	[0]	i 26 31	[+ 7]	i 21 39	PP	64·3
Antarctica		152·0	147	i 19 54	[+ 4]	i 30 20	{− 9}	e 23 47	PP	—

Additional readings :—
Mizusawa SN = 6m.7s.
Tokyo eS_cS? = 17m.4s.
College esP? = 7m.25s., esS = 12m.17s.
Victoria SS = 19m.0s.
Shasta Dam i = 9m.56s., ePPP = 13m.23s.
Ukiah esS? = 17m.44s., eSS = 21m.27s.
Berkeley eN = 9m.59s., eE = 10m.9s., iE = 17m.56s.
Butte eP_cP = 11m.15s., eS_cS = 19m.40s., eSS = 22m.3s.
Scoresby Sund 14m.3s.
New Delhi iN = 10m.42s., PSN = 19m.2s., iN = 20m.5s., S_cSN = 20m.27s., SSN = 22m.59s., iN = 24m.6s. and 26m.7s.
Salt Lake City isS = 19m.14s., eS_cS = 20m.12s.
Mount Wilson i = 10m.43s., ePKP,PKPZ = 39m.33s.
Pasadena eN = 20m.13s., eSSN = 23m.19s., ePKP,PKPZ = 39m.41s.
Overton ePKP,PKP = 39m.28s.
Riverside ePKP,PKPZ = 39m.12s., eZ = 39m.31s.
Boulder City esS = 19m.31s., ePKP,PKP = 39m.14s.
Helsinki ePPP = 14m.35s., ePPS = 19m.32s., eSS = 23m.21s.
Pierce Ferry isS = 19m.37s., iPKP,PKP = 39m.29s.
Palomar eZ = 12m.57s., i = 19m.14s., ePKP,PKPZ = 39m.19s.
Rapid City isP = 11m.30s., isS = 19m.41s., iS_cS? = 20m.57s., eSS = 23m.23s., e = 24m.55s.
Upsala eSE = 19m.26s., S_cS? = 20m.30s., iN = 21m.1s., eSSN = 23m.43s.?, eSSSE = 26m.43s.?, eSSS?N = 27m.13s.
Tucson ePP = 13m.53s., esS = 20m.24s., eS_cP = 21m.4s., iPKP,PKP = 39m.18s.
Copenhagen i = 11m.47s., also 21m.28s.
Bombay SSN = 25m.48s.
Warsaw eE = 12m.31s., ePPZ = 14m.13s., ePPPZ = 15m.45s., P_cSE = 19m.17s., PSE = 20m.42s., eZ = 21m.25s., ePPSZ = 21m.48s., ePPSE = 21m.51s., eSSSE = 27m.17s., eSSSZ = 27m.22s.
Chicago esS = 21m.23s., ePS = 21m.46s.
St. Louis ePP = 14m.32s., ePPP = 16m.15s., eS = 21m.11s., isS = 21m.45s., eSS = 25m.55s., eSSS? = 29m.35s. and 29m.58s.
Jena eN = 12m.12s.
Ottawa SS = 24m.31s., SSS = 26m.13s.
De Bilt ePS = 21m.49s.
Cheb e = 30m.43s.
Budapest eSE = 21m.56s.
Kew ePPP?EN = 17m.13s., ePS?E = 22m.7s., ePPS? = 22m.34s., eSS?N = 26m.58s.?
Stuttgart e = 18m.8s. and 22m.52s., eSS = 26m.43s., e ? = 36·7m.
New Kensington e = 16m.19s., eSSS? = 30m.7s.
Belgrade ePPP = 17m.5s., eSS = 27m.25s., eSSS? = 30m.45s.
Strasbourg ePP = 14m.46s., ePPP = 16m.55s., ePPPP? = 18m.9s., iS = 22m.3s., eSP = 22m.48s., eSS = 27m.5s., eSSS? = 30m.37s.
Paris i = 12m.31s. and 12m.34s., e = 18m.35s., eS_cS? = 22m.33s., ePS? = 23m.11s.
Weston i = 22m.35s. and 23m.0s., SS = 27m.23s.
Philadelphia ePP = 15m.16s., iS = 22m.17s., esS = 22m.45s., ePPS = 23m.12s., eSS = 27m.21s., eSSS = 30m.58s.

Continued on next page.

Georgetown i =22m.20s.
Ksara PP =15m.28s.
Columbia e =23m.10s., ePPS? =23m.36s., eSS =27m.42s., eSSS? =32m.49s.
Riverview isSN =23m.3s., iS$_c$SE =23m.10s., ePSN =23m.46s., eSSE =28m.5s., eQE = 33m.55s.
Rome iZ =12m.57s., iPPPEZ =17m.35s., eE =19m.35s., eSSE =28m.45s., eSSSE = 32m.3s.
Tacubaya i =13m.45s. and 23m.30s.
Helwan iZ =13m.12s., PSN =24m.7s.
Tortosa P$_c$PE =12m.52s., SN =23m.22s., S$_c$SEN =23m.41s., PSE =24m.24s., PPSN = 24m.54s., SSS?N =33m.39s.
Alicante P$_c$S =23m.33s., SS =28m.26s., Q =34m.9s.
Bermuda ePP =16m.48s., eSKS =23m.20s., ipS =24m.33s., ePS =25m.10s., epPS = 25m.30s., eSS =30m.3s., eSSS? =36m.20s.
Granada PP =16m.27s., pPP =16m.53s., iS =24m.5s., PS =24m.39s., PPS =26m.9s., SS =30m.6s.
Almeria PPP =18m.43s.
Wellington SS =29m.58s., SSS =33m.43s.
Malaga PPZ =16m.31s., PPPZ =18m.55s., SKSZ =23m.49s., PSZ =24m.37s.
Wairiri SSN =30m.32s., SSSN =34m.29s., QN =37m.23s.
Huancayo e =21m.37s., ePPPS =32m.45s.
La Paz iPKPN =22m.41s., iSKKSN =28m.30s., iSE =29m.43s., SSE =39m.20s.
Antarctica e =30m.46s.
Long waves were also recorded at Arapuni and Auckland.

Aug. 28d. 14h. 29m. 27s. Epicentre 52°·7N. 159°·4E.

A = −·5696, B = +·2141, C = +·7935; δ = −7; h = −6;
D = +·352, E = +·936; G = −·743, H = +·279, K = −·609.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo		15·4	239	e 3 42	+ 2	—	—	—	—	—
Mizusawa	N.	18·5	230	4 24	+ 5	e 7 50	+ 6	—	—	—
Sendai		19·3	228	4 29	0	8 5	+ 3	—	—	9·6
Vladivostok		20·7	253	i 4 40	− 4	i 8 25	− 6	—	—	—
Nagano		21·9	233	e 4 55	− 2	—	—	—	—	—
Tokyo		22·0	227	i 5 0	+ 2	9 2	+ 6	—	—	10·8
Nagoya		23·7	230	5 14	0	—	—	—	—	—
Osaka		24·8	233	i 5 26	+ 1	9 47	+ 1	—	—	—
Hamada		26·3	238	5 38	− 1	10 8	− 3	—	—	—
Hukuoka		28·2	238	5 57	+ 1	10 40	− 1	—	—	13·7
College		29·3	44	e 5 59	− 7	e 10 51	− 8	e 6 39	PP	e 13·1
Irkutsk		32·9	292	6 37	− 1	12 11?	+15	—	—	—
Sitka		36·3	56	e 7 9	+ 2	i 12 50	+ 2	i 9 1	PP	e 15·4
Honolulu		45·3	116	e 8 38	+17	e 14 56	− 6	—	—	e 20·2
Victoria		47·0	63	8 39	+ 4	15 20	− 6	10 43	PPP	23·6
Grand Coulee		49·7	60	e 8 54	− 2	e 16 1	− 3	e 9 7	pP	—
Sverdlovsk		52·3	317	i 9 15	0	i 16 33	− 7	—	—	—
Shasta Dam		52·4	70	i 9 15	− 1	e 16 41	− 1	—	—	—
Ukiah		53·0	72	—	—	e 16 55	+ 5	e 21 7	SS	—
Almata		53·1	295	e 9 19	− 2	—	—	—	—	—
Saskatoon		53·3	50	9 16	− 7	16 50	− 4	—	—	31·6
Butte		54·3	59	e 9 17	−13	—	—	—	—	—
Berkeley		54·4	73	e 9 37	+ 6	i 17 5	− 4	—	—	e 25·4
Santa Clara		54·9	73	e 9 37	+ 2	e 17 20	+ 4	—	—	—
Fresno	N.	56·6	72	e 9 50	+ 3	e 18 3	+25	—	—	—
Scoresby Sund		57·1	2	9 52	+ 2	17 47	+ 2	—	—	27·6
Tinemaha		57·2	71	i 9 51$_a$	0	e 17 49	+ 3	—	—	—
Andijan		57·3	295	e 9 47	− 5	—	—	—	—	—
Haiwee		58·1	71	e 9 58	0	—	—	—	—	—
Santa Barbara		58·2	74	e 9 58	0	—	—	—	—	—
Salt Lake City		58·2	63	e 9 58	0	e 17 58	− 1	e 19 45	S$_c$S	e 23·3
Tashkent		58·6	298	e 10 1	0	e 18 0	− 4	—	—	—
Pasadena		59·3	73	i 10 5$_a$	− 1	i 18 14	0	i 10 18	pP	e 24·8
Mount Wilson		59·4	73	i 10 5$_a$	− 1	—	—	e 39 35	P'P'	—
Overton		59·8	69	i 10 9	0	i 18 22	+ 2	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverside		59·9	73	i 10 7	− 3	e 18 18	− 3	e 39 37	P'P'	—
Boulder City		60·0	69	i 10 10	− 1	i 18 20	− 3	—	—	—
Obi-garm		60·2	296	i 10 11	− 1	—	—	—	—	—
Pierce Ferry		60·3	69	i 10 12	− 1	i 18 26	0	—	—	—
Rapid City		60·4	55	e 10 12	− 1	i 18 25	− 3	e 22 39	SS	e 25·4
Palomar		60·7	73	i 10 14	− 1	e 18 29	− 3	i 10 30	pP	—
La Jolla		60·8	74	e 10 16	0	—	—	—	—	—
Stalinabad		60·8	296	i 10 13	− 3	e 18 23	−10	—	—	—
Helsinki		61·7	336	e 10 21	− 1	e 18 36	− 8	e 23 4	SS	e 27·6
Moscow		61·8	327	i 10 22	− 1	i 18 40	− 6	—	—	—
Denver		62·6	60	10 29	+ 1	19 7	+11	—	—	—
New Delhi	N.	63·2	283	i 10 29	− 3	e 19 1	− 2	11 7	PcP	—
Upsala		63·7	340	10 35	− 1	19 1	− 9	19 22	PS	e 32·6
Ivigtut		64·3	15	10 29	−10	19 9	− 8	—	—	31·6
Tucson		64·9	69	i 10 43	0	e 19 26	+ 2	i 10 53	pP	—
Kirkland Lake		67·5	39	i 10 59	− 1	—	—	e 13 45	PP	—
Copenhagen		68·4	341	i 11 7a	+ 1	20 8	+ 1	24 45	SS	32·6
Grozny		68·6	314	e 11 4	− 3	—	—	—	—	—
Baku		69·1	310	—	—	e 21 0	ScS	—	—	—
Chicago		69·6	48	e 11 9	− 4	e 20 29	+ 8	e 21 9	sS	e 28·6
Warsaw	E.	69·8	334	e 11 15	+ 1	e 20 7	−16	14 31	PP	e 34·6
Hyderabad	N.	70·9	274	11 18	− 3	20 28	− 8	25 43	SS	—
St. Louis		70·9	51	i 11 19	− 2	i 20 33	− 3	i 11 28	pP	—
Sotchi		71·0	318	e 11 21	− 1	—	—	—	—	—
Ottawa		71·5	38	11 22a	− 2	20 36	− 7	14 1	PP	32·6
Potsdam		71·5	340	e 11 27	+ 3	i 20 43	0	i 21 3	PS	e 38·6
Theodosia		71·5	322	e 11 24	0	—	—	—	—	—
Durham		71·7	349	—	—	i 20 42	− 3	i 21 10	PS	—
Seven Falls		71·7	34	11 21	− 5	20 42	− 3	15 53	PPP	33·6
Simferopol		72·0	323	e 11 30	+ 2	—	—	—	—	—
Yalta		72·4	322	e 11 27	− 3	—	—	e 14 9	PP	—
Bombay	E.	73·2	279	e 11 31	− 4	e 20 52	−10	—	—	32·9
Jena	N.	73·2	339	e 11 35	0	e 21 1	− 1	—	—	—
De Bilt		73·3	344	i 11 36a	+ 1	e 21 3	− 1	e 12 3	PcP	e 35·6
Prague		73·4	337	e 11 33?	− 3	e 20 59	− 6	e 21 57	PS	e 33·6
Cheb		73·9	339	e 11 40	+ 1	e 21 10	0	—	—	e 40·6
New Kensington		74·0	43	e 11 38	− 1	i 21 9	− 2	e 14 54	PP	e 36·8
Budapest		74·6	333	11 43	0	i 21 16	− 2	—	—	e 43·6
Uccle		74·7	345	e 11 44a	+ 1	e 21 19	0	e 14 31	PP	e 37·6
Kew		74·8	347	i 11 44a	0	e 22 16	− 4	e 16 48?	PPP	e 38·6
Bucharest		75·3	327	e 12 17	+30	e 21 15	−11	—	—	45·6
Harvard		75·5	36	i 11 47	− 1	e 21 23	− 5	e 14 37	PP	e 40·6
Weston		75·7	36	i 11 48	− 1	i 21 23	− 7	14 40	PP	—
Stuttgart		75 8	340	i 11 50a	0	e 21 28	− 3	e 12 10	PcP	e 37·6
Fordham		76·1	38	i 11 50	− 1	i 21 28	− 7	—	—	—
Strasbourg		76·2	341	i 11 53a	+ 1	i 21 35	− 1	e 14 40	PP	39·4
Philadelphia		76·3	40	i 11 53	+ 1	e 21 30	− 7	e 14 44	PP	e 35·5
Georgetown		76·5	42	i 11 53	− 1	i 21 33	− 6	e 14 43	PP	—
Belgrade		76·6	331	i 11 53a	− 1	e 21 55	+15	e 14 50	PP	e 41·6
Paris		77·0	345	i 11 58a	+ 2	i 21 41	− 4	e 12 22	PcP	37·6
Zagreb		77·0	335	i 11 57a	+ 1	e 21 42	− 3	—	—	e 41·6
Kodaikanal	E.	77·1	270	—	—	e 21 34	−12	—	—	—
Istanbul		77·2	324	i 11 57	0	e 21 48	+ 1	—	—	—
Zürich		77·2	340	e 11 57a	0	e 21 43	− 4	—	—	—
Basle		77·3	341	e 12 2	+ 4	—	—	—	—	—
Chur		77·3	339	e 12 0a	+ 2	i 21 42	− 6	—	—	—
Jersey		77·3	349	e 12 1	+ 3	—	—	—	—	—
Triest		77·7	336	e 11 59	− 1	e 21 47	− 5	—	—	e 36·6
Neuchatel		77·9	341	e 12 2	+ 1	e 21 52	− 2	—	—	—
Columbia		78·9	47	—	—	e 22 2	− 3	e 36 2	Q	e 41·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pavia	Z.	79·2	339	i 12 9	+ 1	—	—	—	—	—
Clermont-Ferrand		79·8	343	i 12 13	+ 1	i 22 13	− 1	i 15 15	PP	40·6
Brisbane	E.	80·0	185	—	—	i 22 14	− 3	e 22 33	SKS	—
Florence		80·1	337	i 12 17	+ 4	i 22 26	+ 8	—	—	—
Ksara		80·8	315	i 12 18	+ 1	22 29	+ 4	15 25	PP	—
Rome		81·5	336	i 12 21 a	0	e 22 31	− 1	i 15 27	PP	e 38·6
Barcelona		84·2	343	15 42	PP	23 0	+ 1	—	—	e 42·8
Tortosa		85·1	344	12 40	+ 1	23 9	+ 1	12 45	PcP	42·2
Helwan		86·1	317	i 12 44 k	0	23 19	+ 1	16 3	PP	—
Riverview		86·5	187	i 12 45 a	− 1	i 23 21	− 1	i 23 6	SKS	e 40·2
Bermuda		87·0	37	e 12 50	+ 2	e 23 10	[− 4]	e 17 39	PPP	e 35·4
Alicante		87·6	345	e 12 53	+ 2	e 23 44	+12	16 21	PP	e 43·0
Lisbon		88·4	351	i 12 53	− 2	23 39	− 1	29 15	SS	47·2
Granada		89·3	347	i 12 57 k	− 2	25 5	PS	i 16 32	PP	45·6
Almeria		89·4	346	i 12 55	− 5	i 23 47	− 2	16 25	PP	40·6
Malaga	Z.	89·8	347	i 13 3	+ 1	25 3	PS	13 21	pP	42·6
Tuai		92·4	166	—	—	i 25 29	PS	i 25 43	PPS	—
Wellington		94·6	169	—	—	24 33	− 2	—	—	—
Bogota		107·3	57	i 14 44	P	e 24 45	[−16]	e 17 59	PP	54·6
La Paz		128·2	64	19 13	[+ 4]	—	—	—	—	63·6
Antarctica		153·2	143	e 20 0	[+ 8]	—	—	—	—	—

Additional readings :—
Victoria SSS =18m.33s.
Ukiah eS_cP =18m.49s.
Butte e =9m.47s.
Berkeley ePN =9m.40s.
Pasadena eSEN =18m.10s., eSSEN =22m.15s., ePKP,PKPZ =39m.33s.
Riverside iNZ =10m.23s.
Boulder City e =18m.54s.
Rapid City l =10m.53s.
Palomar iZ =10m.23s., ePKP,PKPZ =39m.27s.
Helsinki ePPS =19m.7s.
New Delhi iN =10m.41s. and 14m.29s., PSN =19m.21s.
Upsala eSSN =23m.33s., eN =27m.33s.
Tucson esS =19m.46s., eSS =23m.39s., iPKP,PKP =39m.28s.
Warsaw PSE =20m.21s., PPSE =20m.39s., eS_cSE =21m.7s., eSSE =24m.7s.
St. Louis iSS =25m.2s.
Ottawa PS =20m.57s., SS =24m.51s., SSS =28m.33s.?
Durham iE =21m.2s., iEN =21m.37s., iE =29m.42s. and 31m.47s.
Seven Falls SSS =29m.3s.
Yalta PPP =15m.51s.
De Bilt ePP =14m.21s., ePS =21m.39s., ePPS =22m.0s., eSS =25m.33s.
New Kensington eS =20m.41s., eSS =26m.25s., eSSS =30m.3s.
Budapest eE =35m.33s.?, eN =39m.23s.
Uccle ePSN =21m.39s., eSSE =27m.15s., eSSSN =31m.15s.
Kew ePPSE =23m.18s.?, eSSSE =31m.18s.?, eQEN =33·6m.
Harvard e =11m.55s., eSS =25m.55s.
Weston e =17m.56s., SS =26m.21s., eSSS =29m.35s.
Stuttgart ePPZ =14m.38s., e =22m.27s.
Fordham e =20m.24s.
Strasbourg ePPP =16m.39s., ePPPP =18m.3s., iSP =22m.38s., eSS =26m.49s. and 27m.1s., eQ =37·6m.
Philadelphia epS =21m.42s., esS =21m.52s., eSS =26m.37s., eSSS =30m.29s.
Belgrade e =22m.43s.
Paris iPP =14m.49s., eS =21m.45s., ePS =22m.23s., eSS =26m.35s., eSSS =30m.37s., e =32m.23s.?, eQ =36·6m.
Zürich e =12m.24s.
Pavia eN =12m.14s.
Rome ePSE =23m.15s., eSS?E =28m.9s.
Tortosa PPN =16m.0s., SKSN =22m.59s., S_cSE =23m.27s., PSEN =24m.2s., PPSEN =24m.27s., SSS?N =31m.43s.
Helwan SKSN =23m.3s., PSN =24m.21s.
Riverview iE =23m.48s., eQE =36m.27s.
Bermuda iPS? =23m.45s., eSS? =28m.50s.
Alicante PPP =18m.47s., PS =25m.1s.
Granada PPP =18m.25s., SS =29m.14s.
Almeria PPP =18m.24s., SKS =23m.23s., PS =24m.48s., PPS =25m.15s., SS =29m.33s., SSS =33m.3s.
Malaga PPZ =16m.37s., PPPZ =18m.57s., iZ =19m.17s., SSZ =29m.53s.
Bogota e =29m.7s., eSS =30m.5s.
Long waves were also recorded at Calcutta and Bergen.

Aug. 28d. 19h. 48m. 1s. Epicentre 29°·5S. 71°·5W. (as on 1947, January 10d.).

Intensity VII between latitudes 29°S. and 30°S.

F. Greve.
Lista de sismos sensibles al hombre obtenidos por el servicio de postales informativas, año 1947, Instituto sismológico de la Universidad de Chile, p. 13, Macroseismic radius 400km.

$A = +\cdot2766$, $B = -\cdot8267$, $C = -\cdot4899$; $\delta = -6$; $h = +2$;
$D = -\cdot948$, $E = -\cdot317$; $G = -\cdot155$, $H = +\cdot465$, $K = -\cdot871$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Lucia	E.	4·0	171	0 53	−11	—	—	1 9	P•	1·6
Montezuma		7·2	19	e 1 55	+ 6	e 3 24	+11	—	—	e 4·0
La Plata	E.	12·7	119	2 58	− 7	i 5 16	−12	—	—	i 5·9
	N.	12·7	119	2 58	− 7	5 16	−12	—	—	5·8
	Z.	12·7	119	3 2	− 3	5 17	−11	—	—	6·0
La Paz	Z.	13·3	14	i 3 18	+ 5	i 5 57	+15	—	—	7·7
Huancayo		17·8	347	i 4 17	+ 6	i 7 27	− 1	—	—	e 8·1
Bogota		34·0	357	i 6 51	+ 3	e 12 8	− 5	e 7 48	PP	—
Antarctica		38·8	178	i 7 26	− 2	i 13 18	− 8	e 15 19	SS	—
Fort de France		45·1	16	e 8 19	− 1	—	—	—	—	—
Bermuda		61·9	7	e 10 39	+15	e 18 45	− 2	e 20 14	ScS	e 25·8
Philadelphia		69·2	358	e 11 6	− 4	e 20 15	− 1	e 11 29	pP	e 28·1
Fordham		70·0	0	e 11 16	+ 1	i 20 25	− 1	—	—	—
St. Louis		70·0	345	i 11 16	+ 1	i 20 25	− 1	i 11 30	pP	—
Weston		71·5	1	i 11 24	0	i 20 44	+ 1	—	—	—
Harvard		71·7	1	i 11 25	− 1	e 20 43	− 2	e 21 9	ScS	—
Tucson		71·9	326	i 11 26	− 1	—	—	i 11 47	pP	—
Ottawa		74·6	358	11 42	− 1	21 16	− 2	21 39	PS	32·0
Palomar		75·8	324	i 11 52a	+ 2	e 21 36	+ 5	i 12 6	pP	—
La Jolla	N.	76·3	322	e 11 52	0	—	—	—	—	—
Pierce Ferry		76·5	327	i 11 54	0	—	—	—	—	—
Riverside		76·6	322	i 11 53a	− 1	—	—	i 12 9	pP	—
Boulder City		76·8	326	i 11 57	+ 2	—	—	i 12 12	pP	—
Overton		77·1	327	i 12 3	+ 6	—	—	—	—	—
Mount Wilson	Z.	77·1	323	i 11 58a	+ 1	—	—	i 12 12	pP	—
Pasadena		77·2	323	i 11 59	+ 2	e 21 47	0	i 12 19	pP	—
Kirkland Lake		77·7	355	i 11 59	− 1	—	—	—	—	—
Santa Barbara		78·2	321	e 12 5	+ 2	—	—	—	—	—
Haiwee	Z.	78·6	324	i 12 7	+ 2	—	—	—	—	—
Rapid City		78·8	338	e 12 11	+ 5	e 22 9	+ 5	—	—	—
Tinemaha		79·4	324	e 12 11a	+ 2	—	—	i 12 27	pP	—
Santa Clara		81·6	323	e 12 43	+22	e 22 40	+ 7	—	—	—
Berkeley		82·1	323	i 12 26a	+ 2	i 22 42	+ 4	i 15 49	PP	e 38·4
Shasta Dam		84·3	324	e 12 34	− 1	e 22 58	− 2	—	—	—
Grand Coulee		88·1	331	e 12 53	− 1	—	—	e 13 9	pP	—
Malaga	Z.	91·1	48	i 13 8	0	24 3	− 1	13 31	pP	44·8
Granada		91·9	48	i 13 18k	+ 7	24 40	+29	16 31	PP	i 46·9
Almeria		92·4	49	13 19	+ 5	24 0	(+ 1)	16 55	PP	44·0
Alicante		94·6	48	e 18 47	PPP	e 24 38	+ 3	e 25 39	PS	e 44·1
Tortosa		96·6	47	e 13 28	− 5	24 5	[− 5]	17 18	PP	50·0
Clermont-Ferrand		100·8	44	i 13 52	0	i 24 29	[− 2]	—	—	49·0
Paris		102·0	41	e 13 57	0	e 24 31	[− 6]	e 18 5	PP	e 53·0
Durham		103·0	34	24 38	SKS	(24 38)	[− 3]	36 27	SSS	—
Rome		104·9	50	e 14 13	+ 3	i 24 45	[− 5]	e 18 25	PP	—
Florence		105·0	49	e 24 45	SKS	(e 24 45)	[− 6]	i 33 38	SS	—
Strasbourg		105·0	43	e 14 29	+18	e 24 44	[− 7]	e 18 18	PP	51·0
De Bilt		105·2	38	e 18 29	PP	e 24 49	[− 2]	e 26 5	S	e 50·0
Scoresby Sund		105·7	16	—	—	26 11	+ 3	32 39	SS	58·0
Stuttgart		105·9	43	e 14 12	− 3	e 24 51	[− 4]	e 18 59	PP	e 52·0
Triest		107·4	47	e 18 5	PKP	e 24 58	[− 3]	—	—	—
Jena		108·2	42	e 18 59	PP	—	—	—	—	—
Cheb		108·3	42	e 20 59?	PPP	e 25 7	[+ 2]	—	—	e 53·0
Prague		109·6	43	e 17 59?	?	—	—	—	—	—
Warsaw	E.	114·2	43	—	—	e 25 27	[− 2]	e 29 31	PS	e 61·0
Helwan	Z.	114·8	68	e 19 36	PP	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		119·2	66	e 15 6	?	31 19	PPS	20 10	PP	—
Grozny		128·8	56	e 21 4	PP	—	—	—	—	—
Sverdlovsk		136·9	36	i 19 26	[+ 1]	e 40 11	SS	e 22 7	PP	—
Samarkand		144·6	62	e 20 1	[+22]	—	—	—	—	—
Bombay	E.	145·9	100	e 19 2	[−39]	—	—	—	—	—
Stalinabad		146·1	63	e 19 58	[+17]	—	—	—	—	—
Tashkent		146·2	58	i 19 45	[+ 4]	29 49	(− 8)	23 33	PKS	—
Obi-garm		146·8	63	i 19 44	[+ 2]	—	—	—	—	—
Andijan		148·6	60	e 19 49	[+ 4]	—	—	—	—	—
Almata		151·3	52	e 20 4	[+15]	—	—	—	—	—
Vladivostok		156·9	311	e 20 46	PKP_2	i 30 54	(− 2)	—	—	—

Additional readings :—
La Plata Z = 3m.12s., N = 3m.17s., E = 3m.30s. and 4m.1s., N = 4m.33s., S?E = 5m.6s., Z = 5m.9s., S?N = 5m.12s., EZ = 5m.32s.
Bogota eSSEN = 14m.13s., eS_eS?EN = 17m.12s.
Antarctica eSSS = 16m.11s.
Bermuda e = 22m.29s.
Philadelphia ePP = 13m.32s., ePPP = 15m.48s., isS = 20m.44s., esPS = 21m.33s., eSS = 24m.23s., eSSS = 27m.58s.
Fordham i = 20m.52s.
St. Louis isS = 20m.52s., iSS = 28m.40s.
Harvard i = 11m.44s. and 11m.49s.
Ottawa SS = 29m.11s.
Riverside i = 12m.14s.
Mount Wilson i = 12m.21s.
Berkeley eE = 12m.43s., iE = 27m.13s.
Malaga PPZ = 16m.43s., PPPZ = 18m.59s., iSZ = 24m.27s., SSZ = 25m.5s.
Granada P_cP = 14m.14s., iSKS = 23m.38s., PS = 25m.56s., SS = 30m.24s.
Almeria PPP = 18m.45s., SKS = 23m.40s., PS = 25m.14s., PPS = 25m.44s., SS = 30m.0s.
Alicante PPS = 26m.21s., SSS = 33m.53s.
Tortosa SKKSEN = 24m.27s., PSN = 26m.5s., SS?N = 31m.20s.
Paris ePS = 27m.16s., eQ = 51m.29s.
Rome eE = 27m.52s.
Strasbourg ePKP? = 19m.17s., eS = 26m.2s., e = 33m.7s., eSS = 33m.13s.
De Bilt ePS = 27m.51s.
Warsaw eE = 35m.37s.
Helwan eZ = 20m.5s.
Tashkent PS = 33m.1s., SS = 41m.47s.
Long waves were also recorded at Kodaikanal, Riverview, and other European stations.

Aug. 28d. Readings also at 0h. (Kaimata, Wairiri, near New Plymouth, Tuai, and Wellington), 1h. (Belgrade, Rome, Triest, and Stuttgart), 2h. (Mount Wilson, Riverside, Tinemaha, Tucson, Shasta Dam, Huancayo, La Paz, La Plata, and near Santa Lucia), 3h. (Granada, Paris, Kaimata, Wairiri, near New Plymouth, Tuai, and Wellington), 6h. (Tortosa), 14h. (Stuttgart, Mount Wilson, Riverside, Palomar, Tinemaha, Tucson, Shasta Dam, San Juan, and near Fort de France), 15h. (Boulder City, Wairiri, Kaimata, near New Plymouth, Tuai, and Wellington), 16h. (La Paz), 22h. (near Ottawa).

Aug. 29d. 21h. Undetermined shock.

Stuttgart eZ = 22m.25s. and 28m.5s.
De Bilt eZ = 22m.27s. and 28m.29s., eL = 52m.
Stalinabad iP = 22m.30s.
Paris eP = 22m.34s., ePP = 28m.40s.
Obi-garm iP = 22m.36s.
Samarkand eP = 22m.50s.?
Tashkent eP = 22m.56s., eS = 26m.6s.
Bombay eEN = 23m.5s.
Andijan eP = 23m.15s.?
Baku eP = 23m.51s.
Grozny eP = 24m.35s.
Leninakan eP = 24m.47s.
Ksara eP = 25m.5s., S? = 29m.58s.
Helwan ePZ = 25m.32s., eZ = 26m.33s., eN = 37m.0s.
Calcutta eE = 29m.31s. and 31m.43s.
Sverdlovsk eS = 30m.50s.
Istanbul e = 32m.
Long waves were recorded at Copenhagen, Kew, Helsinki, and Rome.

Aug. 29d. Readings at 5h. (near Apia), 6h. (Tucson), 8h. (La Paz), 14h. (Jena and Stuttgart), 16h. (Butte, Chicago, College, Dane (2)), Grand Coulee, Harvard, Mount Wilson, Philadelphia, Pierce Ferry, Shasta Dam, Sitka, Tinemaha, Tucson, Paris, and Stuttgart), 17h. (Clermont-Ferrand), 18h. (Pierce Ferry), 19h. (New Delhi, near Boulder City, and Pierce Ferry), 21h. (Boulder City, Mount Wilson, Palomar, Pasadena, Pierce Ferry, Riverside, Santa Barbara, Shasta Dam, Tinemaha, Tucson, and Brisbane).

Aug. 30d. 6h. 47m. 44s. Epicentre 45°·9N. 7°·3E. (as on 1938, Sept. 23d.).

Felt very strongly in Haute-Savoie. Intensity V at Passy and Sallanches.

J. P. Rothe and N. Dechevoy.
La séismicité de la France de 1940 à 1950. Annales de l'Institut de Physique du Globe de Strasbourg, 3ème partie, Géophysique, Tome VII, 1954 (sous presse).

Epicentre 45°57′N. 6°42′E. Macroseismic radius 20km.

A = +·6927, B = +·0887, C = +·7158 ; δ = +7 ; h = −4 ;
D = +·127, E = −·992 ; G = +·710, H = +·091, K = −·698.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Neuchatel		1·1	348	i 0 20	P_g	i 0 32	S_g	—	—	—
Basle		1·7	7	e 0 30k	− 1	e 0 56	S_g	e 0 33	P_g	—
Chur		1·8	58	e 0 41	P_g	e 1 10	S_g	—	—	—
Zürich		1·8	31	e 0 32	0	e 1 1	S_g	e 0 36	P_g	—
Strasbourg		2·7	7	e 0 52	P_g	e 1 35	S_g	—	—	—
Clermont-Ferrand		2·9	266	i 0 48	0	i 1 20	− 4	i 1 34	S_g	—
Stuttgart		3·2	24	e 1 2	+10	e 1 44	S_g	e 1 7	PPP	—
Paris		4·4	311	e 1 8	− 2	e 2 0	− 2	e 2 26	S_g	—

Additional readings :—
Stuttgart eP_g? = 1m.11s., iS_g? = 1m.49s., and 1m.54s.
Paris eP = 1m.17s., e = 1m.52s., iS_g = 2m.12s.

Aug. 30d. 22h. 21m. 31s. Epicentre 35°·1N. 23°·4E. (as on 1947, March 21d.).

A = +·7525, B = +·3257, C = +·5724 ; δ = −2 ; h = 0 ;
D = +·397, E = −·918 ; G = +·525, H = +·227, K = −·820.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		7·4	35	e 1 49	− 3	3 14	− 4	—	—	—
Helwan		8·5	125	i 2 11a	+ 4	i 3 41	− 4	—	—	—
Bucharest		9·5	12	e 2 22	+ 2	i 4 11	+ 1	i 2 45	PP	—
Belgrade		10·0	348	i 3 30	+63	i 5 28	+66	i 3 51	PP	—
Ksara		10·4	93	i 2 35	+ 1	4 28	− 4	—	—	—
Rome		10·9	312	i 2 39a	− 1	4 59	+15	i 2 53	PP	—
Kalossa	N.	11·9	346	e 2 59	+ 5	e 5 8	− 1	e 5 20	SS	e 6·9
Zagreb		12·1	335	e 2 53	− 4	i 5 19	+ 5	i 3 7	PP	—
Budapest		12·8	347	3 3	− 3	5 43	+13	i 3 39	PP	7·1
Florence	N.	12·8	316	i 3 7	+ 1	i 5 47	+17	—	—	—
Simferopol		12·8	37	e 3 4	− 2	—	—	—	—	—
Triest		12·8	328	i 3 4	− 2	i 5 16	−14	—	—	—
Pavia		14·8	317	e 2 42	−50	—	—	e 4 0	PP	—
Sotchi		15·2	51	e 3 38	0	—	—	—	—	—
Chur		15·7	323	e 3 45k	+ 1	e 6 33	− 6	—	—	—
Marseilles		16·2	306	e 3 55	+ 5	i 6 56	+ 5	—	—	—
Prague		16·3	339	i 3 54	+ 2	e 6 51	− 2	e 4 35	PPP	e 8·0
Zürich		16·5	322	e 3 54a	0	e 6 52	− 6	—	—	—
Leninakan		16·9	65	e 4 8	+ 9	i 7 23	+16	i 4 28	PP	—
Cheb		17·0	335	e 4 2	+ 1	e 7 20	+10	—	—	e 9·9
Neuchatel		17·1	319	e 4 1	− 1	e 7 1	−11	—	—	—
Basle		17·2	323	e 4 3a	0	e 7 13	− 1	—	—	—
Stuttgart		17·2	327	e 4 3k	0	i 7 17	+ 3	i 4 10	PP	i 9·5
Warsaw		17·2	355	4 2k	− 1	7 12	− 2	4 17	PP	e 8·5
Erevan		17·5	67	e 4 13	+ 6	i 7 34	+13	i 4 32	PPP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Strasbourg		17·8	326	e 4 9	− 2	i 7 32	+ 4	—	—	e 9·0
Barcelona		17·8	297	i 4 10	− 1	7 36	+ 8	—	—	10·8
Jena		18·0	337	e 4 13	0	i 7 36	+ 4	i 8 2	SS	e 9·4
Clermont-Ferrand		18·7	311	i 4 23	+ 1	i 7 45	− 3	—	—	8·5
Potsdam	N.	18·8	340	i 4 20	− 3	i 7 50	0	—	—	10·5
Tortosa		18·9	295	i 4 27	+ 3	i 7 56	+ 3	4 45	PP	9·7
Grozny		19·1	59	e 4 31	+ 4	i 8 18	+21	—	—	—
Alicante		19·4	288	i 4 38	+ 8	i 8 6	+ 2	4 42	pP	10·0
Paris		20·6	318	i 4 43a	0	i 8 25	− 4	i 5 4	PP	e 11·5
Uccle		20·9	325	e 4 47k	+ 1	e 8 32	− 3	e 5 17	PPP	e 11·0
Almeria		21·0	282	i 4 50	+ 3	i 8 40	+ 3	9 2	P_cP	11·8
De Bilt		21·4	330	i 4 53k	+ 2	e 8 47	+ 2	—	—	e 11·5
Baku		21·6	68	e 4 58	+ 4	i 8 53	+ 4	—	—	—
Granada		21·9	284	i 5 0a	+ 3	i 8 50	− 4	5 6	pP	11·2
Copenhagen		21·9	344	i 4 56k	− 1	i 8 51	− 3	—	—	11·5
Malaga	Z.	22·6	283	i 5 8	+ 5	i 9 6	− 1	i 5 32	pP	10·4
Moscow		22·9	21	i 5 7	+ 1	i 9 10	− 3	—	—	—
Jersey		23·4	317	i 4 13	−58	i 9 29	−52	—	—	—
Kew		23·6	322	i 5 16k	+ 3	i 9 27	+ 2	i 5 47	PP	e 10·5
Upsala		25·1	353	e 5 22k	− 6	i 9 45	− 6	6 4	PP	e 14·1
Helsinki		25·1	1	i 5 26k	− 2	i 9 42	− 9	—	—	e 12·5
Lisbon		26·2	289	i 5 44	+ 6	10 10	+ 1	6 25	PP	11·0
Durham		26·2	326	i 5 37	− 1	i 10 8	− 1	—	—	—
Edinburgh		27·7	328	5 51	− 1	10 29	− 4	i 6 29	PP	—
Bergen	Z.	27·9	342	i 5 55	+ 1	e 10 29f	− 8	11 57	SS	12·7
Aberdeen	E.	28·0	331	i 5 56	+ 1	i 10 34	− 4	i 6 34	PP	15·4
Sverdlovsk		33·2	37	i 6 39	− 1	i 11 54	− 6	—	—	—
Samarkand		34·7	69	i 6 57	+ 3	i 12 23	− 1	—	—	—
Stalinabad		36·2	70	i 7 9	+ 3	i 12 41	− 6	—	—	—
Tashkent		36·3	66	i 7 11	+ 4	e 12 49	+ 1	—	—	—
Tchimkent		36·4	64	i 7 10	+ 2	i 12 49	− 1	—	—	—
Andijan		38·6	66	7 30	+ 4	—	—	—	—	—
Almata		41·7	61	i 7 54	+ 2	—	—	—	—	—
Scoresby Sund		42·9	340	8 4	+ 2	14 26	− 1	9 45	PP	—
New Delhi	N.	45·7	82	i 8 29	+ 5	i 15 7	− 1	i 10 27	PP	—
Bombay		46·4	97	i 8 36	+ 6	i 15 28	+10	—	—	—
Ivigtut		51·2	324	—	—	16 0	−25	—	—	—
Hyderabad	N.	51·8	95	9 7	− 5	16 34	+ 1	11 18	PP	—
Kodaikanal	E.	54·9	103	i 9 49	+14	i 17 30	PS	11 55	PP	27·1
Calcutta	E.	57·4	83	e 9 49	− 4	i 16 49	0	—	—	—
Irkutsk		57·9	46	9 56	0	e 17 50	− 5	—	—	—
Tananarive		58·4	153	10 35	+35	25 5	?	—	—	e 29·9
Colombo	E.	58·8	104	10 4	+ 2	18 4	− 3	—	—	—
Seven Falls		67·9	313	11 3	+ 1	20 0	− 1	26 59	SSS	37·5
Weston		70·5	309	i 11 20	+ 2	i 20 33	+ 1	e 24 59	SS	—
Harvard		70·6	309	i 11 17	− 2	e 20 33	0	—	—	e 35·5
Bermuda		70·8	297	e 11 27	+ 7	e 20 39	+ 4	e 25 37	SS	e 29·8
Ottawa		71·7	313	11 28	+ 2	20 48	+ 3	21 35	PS	33·5
Dane		72·7	317	i 11 33	+ 1	i 20 59	+ 2	—	—	—
Philadelphia		74·2	308	e 11 44	+ 4	e 21 13	− 1	e 14 39	PP	e 30·8
New Kensington		76·8	311	e 11 59	+ 4	i 21 44	+ 2	e 14 43	PP	e 36·4
Fort de France		77·3	279	e 12 1	+ 3	—	—	—	—	—
Vladivostok		78·5	45	i 12 5	+ 1	—	—	—	—	—
College		80·1	357	e 12 14	+ 1	e 22 15	− 3	—	—	e 31·6
Chicago		80·8	316	e 12 15	− 2	e 22 11	−14	—	—	e 33·1
Saskatoon		82·8	332	12 28	+ 1	22 43	− 2	—	—	42·5
St. Louis		84·3	313	e 12 39	+ 4	e 22 59	− 1	i 23 2	S	—
Mizusawa	E.	86·4	44	12 51	+ 6	23 16	− 5	—	—	—
Rapid City		87·5	325	e 12 54	+ 3	e 23 11	[− 6]	e 23 34	SeS	—
Butte		90·0	331	e 15 46	?	e 23 55	+ 1	e 25 20	PPS	e 31·3
Grand Coulee		90·7	336	e 13 8	+ 2	e 13 45	?	e 15 27	?	—
Victoria		91·7	339	—	—	e 23 53	[+10]	—	—	41·5
Salt Lake City		94·0	328	—	—	e 23 52	[− 4]	e 25 47	PS	e 43·3
Shasta Dam		98·3	335	e 13 42	+ 1	—	—	—	—	—
Pierce Ferry		98·8	326	i 13 46	+ 3	—	—	—	—	—

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		99·3	327	i 13 48	+ 3	—	—	—	—	—
Tinemaha	Z.	99·8	329	i 13 51	+ 4	—	—	—	—	—
Tucson		100·4	322	e 13 52	+ 2	—	—	e 18 7	PP	—
La Paz		100·5	257	17 39	PP	—	—	—	—	52·5
Berkeley	E.	100·7	332	e 18 0	PP	i 25 35	+ 9	—	—	e 44·3
Riverside	Z.	102·1	328	e 14 1	+ 3	—	—	—	—	—
Mount Wilson	Z.	102·2	328	e 14 1	+ 3	e 27 14	PS	e 18 9	PP	—
Pasadena	Z.	102·3	328	e 18 11	PP	—	—	—	—	—
Palomar	Z.	102·4	326	e 14 4	+ 5	—	—	i 17 43	PP	—

Additional readings :—
Bucharest iN = 3m.12s., iS*E = 4m.49s., iS_gN = 5m.13s., iS_gE = 5m.20s.
Belgrade i = 6m.16s. and 6m.54s.
Kalossa ePE = 3m.8s., eN = 4m.28s., eE = 4m.31s., 4m.44s. and 5m.32s., SN = 5m.37s., eSE = 5m.47s.
Zagreb e = 2m.54s., iNW = 3m.34s., iZ = 3m.55s., iNE = 3m.59s., iNW = 4m.3s., iS = 5m.4s. and 5m.35s., i = 6m.27s.
Budapest ePE = 3m.9s., iE = 3m.19s., eN = 4m.55s., iE = 5m.4s., SE = 5m.49s.
Prague eSS = 7m.29s.
Warsaw PE = 4m.8s., PPE = 4m.22s., PPPZ = 4m.30s., PPPE = 4m.41s., SZ = 7m.16s., SSE = 7m.29s., SSSE = 7m.42s.
Stuttgart i = 5m.17s. and 5m.35s., iS = 7m.0s., i = 9m.11s.
Strasbourg iP = 4m.13s., iS = 7m.35s.
Jena iPNZ = 4m.16s.
Tortosa PPPE = 5m.1s., SSEN = 8m.19s., SSS?EN = 8m.38s.
Alicante PP = 4m.54s., PPP = 5m.30s., eS = 8m.10s., SS = 8m.40s., SSS = 8m.58s.
Paris i = 6m.7s. and 6m.22s., SS = 8m.59s., eP_cP = 9m.3s., SSS = 9m.19s., e = 11m.9s. and 11m.23s.
Uccle iE = 8m.44s.
Almeria PP = 5m.14s., PPP = 5m.26s., P_cS = 12m.38s.
Granada iPP = 5m.20s., pPP = 5m.31s., eS = 8m.59s., iSS = 9m.17s.
Malaga iPPZ = 6m.18s., iP_cPZ = 8m.50s., iS_cPZ = 11m.58s., S_cSZ = 15m.54s.
Kew iSNZ = 9m.35s.
Upsala SSSN = 11m.5s.
Lisbon S = 10m.24s.
Durham iEN = 10m.3s. and 10m.12s.
Edinburgh i = 8m.59s., 12m.10s. and 12m.59s., S_cS = 15m.41s.
Aberdeen iSSE = 11m.45s., iE = 13m.20s.
Scoresby Sund i = 8m.24s.
New Delhi PSN = 15m.16s., SSN = 18m.10s., S_cSN = 18m.42s.
Hyderabad PSN = 17m.4s., SSN = 21m.10s.
Kodaikanal SSE = 21m.24s.
Bermuda e = 21m.6s.
Ottawa SS = 25m.59s.
Philadelphia iS = 21m.18s., e = 23m.8s., eSS = 25m.43s.
New Kensington eS = 21m.38s., eSS = 26m.32s.
Mizusawa S?N = 23m.11s.
Rapid City e = 24m.33s.
Mount Wilson eZ = 17m.9s.
Berkeley iZ = 18m.3s.
Long waves were also recorded at Ukiah and Riverview.

Aug. 30d. Readings also at 1h. (Pierce Ferry), 3h. (near Bucharest), 6h. (near Lick), 15h. (Andijan, Samarkand, near Stalinabad, and Obi-garm, and near Zagreb), 16h. (Ksara, near Andijan, Obi-garm, Samarkand, Stalinabad, and near Bogota), 20h. (near Ottawa), 22h. (Mount Wilson, Riverside, Shasta Dam, Tucson, Paris, and Stuttgart (2)), 23h. (Ukiah, Stuttgart, Zürich, Zagreb, Wairiri, and Wellington).

Aug. 31d. 6h. 17m. 29s. Epicentre 22°·4S. 62°·5W. Depth of Focus 0·030.
(as on 1945, April 1d.).

A = +·4273, B = −·8208, C = −·3789 ; δ = −14 ; h = +4;
D = −·887, E = −·462 ; G = −·175, H = +·336, K = −·925.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma	5·9	265	e 1 31	+ 4	i 2 0	−35	—	—	e 2·2
La Paz	7·9	316	i 1 53	0	i 3 19	− 2	i 3 49	SS	—
La Plata	13·1	163	3 1	+ 2	5 25	+ 5	3 19	PP	6·0
Huancayo	16·0	308	e 3 23	−11	e 6 13	−12	—	—	—
Fort de France	36·9	3	e 7 12	+23	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		71·3	319	i 10 55	− 2	—	—	i 11 15	pP	—
La Jolla	z.	75·8	315	e 11 22	− 1	—	—	—	—	—
Palomar		75·9	316	i 11 23k	− 1	—	—	—	—	—
Pierce Ferry		75·9	319	i 11 24	0	—	—	—	—	—
Boulder City		76·3	319	i 11 26	0	—	—	—	—	—
Overton		76·4	319	i 11 25	− 1	—	—	—	—	—
Riverside	z.	76·6	316	i 11 25k	− 2	—	—	—	—	—
Pasadena		77·2	316	i 11 31k	0	—	—	e 12 39	P_cP	—
Mount Wilson		77·2	316	i 11 30k	− 1	—	—	—	—	—
Haiwee	z.	78·3	318	i 11 37	0	—	—	—	—	—
Santa Barbara	z.	78·4	315	i 11 36	− 1	—	—	—	—	—
Tinemaha		79·1	318	i 11 42a	+ 1	—	—	i 11 52	pP	—
Shasta Dam		83·9	319	i 12 5	− 1	—	—	—	—	—
Grand Coulee		86·4	326	e 12 21	+ 3	—	—	—	—	—

Additional readings :—
La Paz iZ = 2m.46s.
La Plata Z = 4m.49s., S?N = 5m.37s.
Long waves were also recorded at Riverview.

Aug. 31d. Readings also at 1h. (Belgrade, De Bilt, Istanbul (2), Paris (2), Stuttgart (2), Warsaw, Mount Wilson, Shasta Dam, Tinemaha, and Tucson), 2h. (Paris, Istanbul, Boulder City, and Pierce Ferry), 3h. (Sverdlovsk), 6h. (Paris and near Mizusawa), 7h. (Paris and Sverdlovsk), 8h. (Brisbane), 12h. (near Pierce Ferry), 13h. (near Leninakan), 14h. (Boulder City, Chicago, and Pierce Ferry), 15h. (Andijan, near Obi-garm, Samarkand, Stalinabad, and Riverview), 17h. (Tortosa), 19h. (Grozny, Helwan, Ksara, Stalinabad, and Tashkent), 20h. (Istanbul and Tortosa), 21h. (Alicante, Almeria, Granada, Malaga, Tortosa, near Erevan, Grozny, Leninakan, Helwan, Ksara (2), and Stuttgart), 22h. (Istanbul).

Sept. 1d. 22h. 18m. 51s. Epicentre 39°·0N. 15°·2E. Depth of focus 0·040. (as on 1947, Feb. 26d.).

A = +·7519, B = +·2043, C = +·6268 ; δ = −3 ; h = −1 ;
D = +·262, E = −·965 ; G = +·605, H = +·164, K = −·779.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Rome		3·6	326	e 1 19	+17	i 1 52	+ 2	—	—	—
Florence	N.	5·7	328	e 1 46	+20	i 3 4	+31	—	—	—
Zagreb		6·8	4	i 1 41	+ 2	e 2 51	− 6	i 2 54	SS	—
Belgrade		7·0	32	i 1 42	0	e 3 6	+ 4	e 2 9	PPP	—
Chur		8·9	334	e 2 6	+ 1	e 3 44	0	—	—	—
Zürich		9·7	332	e 2 15k	0	e 4 0	− 2	—	—	—
Bucharest		9·8	53	2 9?	− 7	—	—	—	—	—
Neuchatel		10·0	326	e 2 20	+ 1	e 4 5	− 4	—	—	—
Basle		10·2	330	e 2 22k	0	e 4 11	− 2	—	—	—
Stuttgart		10·7	338	e 2 28	0	e 4 21	− 3	e 4 40	SS	—
Istanbul		10·8	75	e 1 3	?	—	—	—	—	—
Strasbourg		11·0	333	e 2 32	+ 1	e 4 27	− 4	—	—	—
Prague		11·1	357	e 2 14?	−19	e 4 37	+ 4	—	—	—
Clermont-Ferrand		11·2	311	i 2 36	+ 2	—	—	—	—	—
Tortosa	E.	11·5	258	2 45	+ 7	i 4 53	+11	—	—	—
Jena		12·2	349	e 2 48	+ 2	e 5 2	+ 4	e 2 51	PP	—
Paris		13·4	321	i 3 1	0	e 5 28	+ 4	i 3 10	PP	—
Warsaw		13·8	15	5 36	S	(5 36)	+ 3	e 6 21	SS	e 9·2
Copenhagen		16·8	354	3 38	− 2	i 6 38	+ 2	—	—	—
Ksara		17·4	100	e 3 55	+ 9	e 7 16	+28	—	—	—
Grand Coulee		84·3	331	e 12 4	+ 3	—	—	—	—	—
Shasta Dam		91·7	329	e 12 37	+ 1	—	—	—	—	—
Tucson		93·2	317	i 12 46	+ 3	—	—	—	—	—
Riverside	z.	95·1	323	i 12 54	+ 2	—	—	—	—	—
Mount Wilson	z.	95·2	323	i 12 55	+ 3	—	—	—	—	—

Additional readings :—
Belgrade e = 4m.14s.
Paris i = 3m.4s., eSSS? = 6m.10s., eP_cS = 11m.19s.
Warsaw eZ = 5m.39s., ePPE = 5m.50s., ePPZ = 5m.57s., eE = 6m.38s., eZ = 7m.3s., eE = 7m.42s.

Sept. 1d. Readings also at 0h. (Istanbul), 1h. (Pierce Ferry and near Mizusawa), 2h. (Stuttgart (2) and Tortosa), 6h. (De Bilt, Helsinki, Strasbourg, Stuttgart, Uccle, Warsaw, Sverdlovsk, Vladivostok, and Shasta Dam), 7h. (Istanbul, Kew, Tortosa, and Malaga), 8h. (near Lick), 9h. (Istanbul and Tortosa), 10h. (Stuttgart), 13h. (Tortosa, near Dane and Ottawa, and near Andijan), 14h. (near Lick (2)), 15h. (Bogota and La Paz), 16h. (Jena), 17h. (near Andijan), 18h. (near Obi-garm).

Sept. 2d. 4h. 22m. 40s. Epicentre 33°·8N. 134°·5E. (as on 1941, Dec. 25d.).

Intensity V at Murotomisaki ; IV at Matsuyama, Sumoto, Kôti, Tokushima, and Siomisaki ; II-III at Kobe, Osaka, Takamatsu, and Hiroshima. Macroseismic radius 200-300km. Shallow.

The Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1947, Japan, Tokyo, 1950, pp. 31-32, macroseismic chart, p. 31.

Epicentre 33°·6N. 134°·9E.

A = −·5836, B = +·5939, C = +·5537 ; δ = −11 ; h = +1 ;
D = +·713, E = +·701 ; G = −·388, H = +·395, K = −·833.

	Δ	Az.	P.	O−C	S.	O−C
	°	°	m. s.	s.	m. s.	s.
Tokusima	0·3	15	0 22k	+11	0 30	+12
Muroto	0·6	206	0 36a	+21	0 44	+18
Sumoto	0·6	30	0 18	+ 3	0 26	0
Koti	0·8	253	0 22	+ 4	0 34	+ 3
Kobe	1·0	32	0 23	+ 2	0 37	+ 1
Siomisaki	1·1	108	0 29	+ 7	—	—
Osaka	1·2	45	0 24a	0	1 19	?
Owase	1·4	79	0 22	− 5	0 37	− 9
Matuyama	1·5	271	0 28a	0	—	—
Kyoto	1·6	40	0 26	− 4	0 54	+ 3
Toyooka	1·7	9	0 33	+ 2	0 55	+ 1
Hirosima	1·8	288	0 36	+ 4	1 1	+ 5
Kameyama	1·9	57	0 25	− 9	0 52	− 7
Hokone	2·1	45	0 35k	− 2	0 59	− 5
Hamada	2·3	299	0 42	+ 2	1 3	− 6
Nagoya	2·4	56	0 39	− 2	1 10	− 2
Izuka	3·1	267	0 52	+ 1	1 29	0
Miyazaki	3·1	234	0 52	+ 1	1 29	0
Omaesaki	3·1	75	1 1	P_e	1 39	S_e
Kumamoto	3·3	253	0 56	+ 3	1 34	− 1
Hukuoka	3·4	269	0 50	− 5	1 40	+ 3
Shizuoka	3·4	68	0 58	+ 3	1 39	+ 2
Hunatu	3·9	63	1 2	0	1 55	+ 5
Misima	3·9	68	1 4	+ 2	1 50	0
Kagosima	4·0	238	1 6	+ 2	—	—
Wazima	4·0	26	1 11	P•	1 54	+ 2
Nagano	4·1	45	1 13	P•	2 12	S_e
Maebasi	4·6	55	1 27	P•	2 14	+ 7
Tokyo	4·7	64	1 28	P•	2 23	S•
Utunomiya	5·2	56	1 35	P•	—	—
Kakioka	5·2	61	1 32	P•	—	—
Sendai	6·8	47	(3 7)	S	3 7	+ 4

Sept. 2d. 14h. 32m. 32s. Epicentre 19°·0S. 175°·5W. Depth of focus 0·020.
(as on 1946, April 13d.).

Apia Observatory, Western Samoa, Seimological Bulletin, July-September, 1947.
Depth 250km.

A = −·9433, B = −·0742, C = −·3236; δ = +4; h = +5;
D = −·078, E = +·997; G = +·323, H = +·025, K = ·946.

		Δ	Az.	P.	O−C	S.	O−C	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		6·3	35	i 1 39	+ 7	i 2 49	+ 6	—	—	—
Auckland		19·7	204	e 5 18?	PPP	7 50	+ 3	—	—	—
Arapuni		20·5	201	—	—	8 28?	+26	—	—	—
Tuai		20·7	197	4 27	− 2	7 56	−10	—	—	—
New Plymouth		21·9	202	4 33	− 8	8 26	− 1	9 8	SS	—
Wellington		23·7	199	4 56	− 2	8 51?	− 7	10 10	sS	—
Kaimata		26·0	203	—	—	e 9 38	+ 2	9 52	?	—
Wairiri		26·7	201	4 21	−65	—	—	—	—	—
Riverview		33·1	237	i 6 23a	0	i 11 20	− 9	i 7 15	pP	e 15·2
Honolulu		43·6	25	e 7 56	+ 6	e 14 5	− 1	e 15 41	sS	e 18·0
Perth		62·5	244	i 17 28	?	i 19 38	PPS	i 25 40	SSS	—
Mizusawa	E.	70·6	326	11 2	+ 2	20 2	+ 3	—	—	—
Santa Barbara		75·1	46	i 11 27	+ 1	—	—	12 29	pP	—
Santa Clara		75·4	42	e 11 30	+ 2	e 20 55	+ 2	—	—	—
Berkeley		75·5	42	e 11 30	+ 2	i 20 54	0	i 12 30	pP	—
Lick	N.	75·6	42	e 11 32	+ 3	e 20 58	+ 3	—	—	—
Ukiah		75·7	40	—	—	e 20 50	− 6	e 21 30	sS	e 31·2
La Jolla		75·9	49	e 11 31	+ 1	—	—	—	—	—
Pasadena		75·9	47	i 11 30	0	i 20 59	+ 1	i 12 31	pP	e 31·8
Mt. Wilson		76·1	47	i 11 31	− 1	e 20 59	− 1	i 12 31	pP	—
Fresno	N.	76·4	34	e 11 36	+ 3	i 21 8	+ 4	—	—	—
Riverside		76·4	47	i 11 32	− 1	e 21 2	− 2	i 12 34	pP	—
Palomar		76·4	48	i 11 34	+ 1	i 21 6	+ 2	i 12 32	pP	—
Shasta Dam		77·2	39	i 11 37	− 1	e 21 11	− 1	i 12 40	pP	—
Haiwee		77·2	45	i 11 38	0	e 21 14	+ 2	i 12 40	pP	—
Tinemaha		77·6	45	e 11 40	0	i 21 19	+ 2	i 12 43	pP	—
Vladivostok		78·4	324	e 11 43	− 1	i 21 21	− 4	i 12 46	pP	—
Antarctica		79·2	159	i 11 42	− 7	21 25	− 9	i 12 46	pP	—
Boulder City		79·2	46	i 11 48	− 1	e 21 33	− 1	i 12 50	pP	—
Pierce Ferry		79·9	47	i 11 52	0	e 21 41	0	i 12 53	pP	—
Tucson		80·1	51	i 11 54	+ 1	e 21 42	− 1	i 12 49	pP	—
Victoria		81·7	33	—	—	e 22 0	+ 1	—	—	33·5
Sitka		83·3	22	i 11 44	−26	i 22 6	− 9	i 22 55	sS	e 35·2
Grand Coulee		83·6	34	e 12 10	− 1	e 22 18	0	e 13 14	pP	—
Salt Lake City		83·8	44	e 12 9	− 3	i 22 18	− 2	e 24 3	sPS	e 34·9
Tacubaya		84·0	68	e 12 14	+ 1	i 22 25	+ 3	i 12 23	PcP	—
Butte		86·1	39	e 12 35	+11	e 22 35	[+ 4]	i 22 44	?	e 34·9
College		86·3	12	e 12 11	−14	e 22 20	−25	e 24 32	PPS	—
Huancayo		95·5	105	e 13 7	− 1	e 23 58	− 9	e 14 14	pP	e 39·1
St. Louis		98·1	52	e 13 18	− 1	i 24 29	0	i 14 21	pP	—
Irkutsk		99·0	322	e 13 27	+ 3	23 41	[− 4]	e 17 32	PP	—
La Paz		100·4	112	i 13 34	+ 4	i 23 50	[− 2]	i 17 37	PP	—
Chicago		100·9	50	—	—	e 24 52	0	e 23 52	SKS	e 29·2
Bogota	N.	102·3	89	e 17 59	PKP	e 24 0	[− 1]	e 25 50	S	e 50·5
Columbia		104·0	58	e 19 44	PPP	e 24 7	[− 2]	e 25 20	pS	—
Kirkland Lake		107·5	45	e 18 30	PP	—	—	—	—	—
Dane		107·5	45	e 18 29	PP	—	—	—	—	—
Ottawa		110·1	48	e 18 10	[− 2]	(24 28?)	[− 7]	—	—	24·5
Hyderabad	N.	110·2	282	e 18 9	[− 3]	24 28	[− 7]	—	—	—
Fordham		110·8	53	e 18 54	PP	i 26 18	SKKS	e 34 11	SS	50·5
Weston		112·9	51	—	—	34 40	SS	28 29	sS	—
New Delhi	N.	113·7	294	e 19 23	PP	i 25 50	S	—	—	—
Almata		115·4	310	e 19 31	PP	—	—	—	—	—
Bombay		115·8	282	e 19 28	PP	i 24 52	[− 6]	—	—	—
Bermuda		117·2	63	e 19 40	PP	e 24 54	[− 9]	e 29 40	PS	e 47·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		118·8	307	e 18 28	[− 2]	e 25 4	[− 4]	e 19 54	PP	—
Tashkent		121·1	307	e 18 38	[+ 4]	i 25 8	[− 8]	i 20 16	PP	—
Samarkand		122·9	305	e 18 42	[+ 5]	—	—	—	—	—
Sverdlovsk		124·1	326	e 18 40	[+ 1]	i 25 23	[− 2]	i 20 28	PP	—
Scoresby Sund		126·1	12	20 40	PP	37 22	SS	30 16	PS	—
Baku		135·5	309	21 46	PP	—	—	—	—	—
Moscow		135·6	334	i 21 43	PP	—	—	22 30	PKS	—
Helsinki		136·3	346	e 20 56	PP	e 25 0	[−55]	e 32 12	PS	—
Grozny		137·8	315	18 50	[−16]	—	—	e 21 58	PP	—
Upsala		138·1	350	e 21 56	PP	e 22 40	PKS	—	—	33·5
Erevan		139·8	310	22 23	PP	—	—	—	—	—
Sotchi		141·6	318	e 22 34	PP	—	—	—	—	—
Copenhagen		142·9	353	i 19 14k	[− 1]	32 38	PS	i 25 40	PPP	—
Theodosia		143·5	323	19 15	[0]	—	—	—	—	—
Durham		144·0	6	—	—	e 27 50	SKKS	29 7	SKKS	—
Warsaw		144·4	343	19 16	[− 1]	25 28	[−40]	22 30	PP	—
Yalta		144·5	322	i 19 16	[− 1]	—	—	22 34	PP	—
Potsdam		146·0	351	e 19 22	[+ 2]	—	—	—	—	—
De Bilt		147·0	358	i 19 26	[+ 4]	—	—	i 20 33k	pPKP	—
Jena	N.	147·6	350	e 19 25	[+ 2]	—	—	e 23 8	PP	—
Prague		148·0	348	e 19 32	[+ 9]	e 29 28	SKKS	—	—	—
Uccle		148·3	1	e 19 26	[+ 2]	e 41 37	SS	e 20 32	pPKP	e 60.5
Cheb		148·4	350	e 19 32	[+ 8]	e 26 38	[+24]	e 41 50	SS	e 51·5
Ksara		148·4	304	i 19 26	[+ 2]	—	—	i 20 34	pPKP	—
Bucharest		148·9	330	e 19 34	[+ 9]	(31 28?)	PKKS	—	—	31·5
Budapest		149·2	341	19 29	[+ 4]	—	—	e 23 8	PP	e 43·5
Jersey		149·4	10	e 19 38	[+13]	e 46 28	SSS	—	—	—
Istanbul		149·6	323	e 19 30	[+ 4]	—	—	33 16	SKSP	—
Stuttgart		150·1	354	e 19 24	[− 2]	e 27 55	SKKS	e 23 7	PP	—
Kalocsa	N.	150·1	341	e 19 38	[+12]	—	—	e 19 55	PKP_2	—
Paris		150·2	4	e 19 27	[+ 1]	41 58	SS	i 20 41	pPKP	—
Strasbourg		150·4	355	e 19 28	[+ 1]	e 26 28	[+11]	i 20 42	pPKP	—
Belgrade		151·0	336	e 19 29	[+ 1]	e 29 45	SKKS	e 23 10	PP	—
Basle		151·4	356	e 19 27	[− 1]	e 24 25	?	e 20 39	pPKP	—
Zürich		151·5	356	e 19 29	[0]	e 22 38	?	e 20 36	pPKP	—
Zagreb		151·6	343	—	—	e 29 31	SKKS	—	—	—
Chur		151·9	353	e 19 34	[+ 5]	—	—	i 19 39	PKP	—
Neuchatel		152·0	357	e 19 32	[+ 3]	—	—	—	—	—
Trieste		152·3	347	e 19 39	[+ 9]	e 29 51	SKKS	e 23 34	PP	—
Helwan	Z.	153·3	297	e 19 33	[+ 2]	—	—	20 30	pPKP	—
Clermont-Ferrand		153·3	2	e 19 31	[0]	e 42 48	SS	e 44 34	sSS	58·5
Florence		154·6	349	i 19 38	[+ 5]	e 29 58	SKKS	—	—	—
Rome		156·2	346	e 19 47	[+12]	e 30 13	SKKS	e 23 44	PP	—
Barcelona		157·6	6	—	—	e 33 38	SP	—	—	e 36·7
Tortosa	N.	158·0	8	23 56	PP	—	—	25 3	PPP	e 32·7
Alicante		160·2	13	19 44	[+ 4]	27 17	[+50]	23 47	PKS	e 73·2
Granada		160·5	21	i 19 40k	[0]	e 31 28	SKKS	21 31	pPKP	—
Malaga	Z.	160·7	22	i 19 39k	[− 1]	i 26 59	[+31]	24 11	PP	67·5
Almeria		161·2	18	19 46	[+ 5]	26 42	[+14]	23 11	PKS	69·5

Additional readings :—
Tuai i = 8m.16s. and 8m.33s.
New Plymouth i = 4m.48s., S_cS? = 13m.56s.
Wellington P_cPZ = 8m.2s., S_cP = 11m.22s., P_cS = 11m.59s., S_cS = 14m.51s., sS_cS = 16m.42s.
Riverview iPPEZ = 7m.46s., iP_cPZ = 8m.50s., iZ = 9m.11s. and 9m.19s., iP_cSZ = 12m.27s. eQN = 12m.55s., isSN = 13m.4s., eQ?N = 13m.58s., iSSS?N = 14m.27s., iS_cSEN = 16m.29s.
Honolulu eSS = 17m.23s.
Berkeley iPE = 11m.34s., isSE = 21m.26s.
Ukiah esPS = 22m.38s., eSS = 25m.43s.
Pasadena iP_cP = 11m.41s., esP = 12m.59s., ePP = 14m.28s., epPP = 15m.26s., iSPEN = 21m.34s.
Mount Wilson iP_cPEZ = 11m.44s., iZ = 12m.0s.
Riverside iP_cPZ = 11m.42s.
Palomar iE = 21m.37s.

Continued on next page.

Shasta Dam iP$_c$P =11m.54s., esP =13m.11s., epPP =15m.46s., e =16m.34s., e =21m.42s.
Tinemaha i =11m.47s., iZ =12m.9s., ePKP,PKPZ =39m.55s.
Vladivostok iPP =14m.43s., isS =23m.6s.
Antarctica eSS =22m.33s.
Pierce Ferry iS$_c$S =21m.44s.
Tucson iP$_c$P =12m.3s., isP =13m.14s., epPP =15m.37s., isS? =22m.32s., esPS = 23m.51s., ePKP,PKP =39m.45s.
Sitka iPS =23m.52s., eSSS =31m.22s.
Grand Coulee eSP? =23m.12s.
Salt Lake City eS$_c$S =22m.11s., eSS =27m.23s.
Tacubaya eS =22m.17s.
Huancayo iPP =17m.6s., iSKS =23m.27s., eSKKS =23m.34s., ePS =25m.38s., e = 26m.2s., ePPS =26m.19s., eSS? =29m.54s., esSS =30m.51s.
St. Louis isS =26m.17s.
La Paz iPPN =17m.43s., iSKSE =23m.44s., iSKKS =24m.56s., PPSN =27m.13s., iSSN = 32m.56s.
Bogota ePPN =19m.11s., eSKKSN =25m.10s., eN =31m.53s., eSSN =33m.21s.
Colombia esSS =32m.39s.
Fordham esS =28m.6s.
Weston iS =26m.37s., sSS =36m.36s., e =38m.28s.
Bermuda eSKKP =30m.46s., esSS =35m.38s.
Andijan ePKS =21m.27s., ePPP =22m.40s.
Tashkent isSKS =26m.40s., PS =31m.23s.
Sverdlovsk ipPP =21m.25s., isSKS =26m.58s., iSP =30m.5s., SPP =31m.41s., iSS = 37m.1s., isSS =38m.43s., SSS =41m.36s.
Scoresby Sund 39m.9s., 40m.9s., and 42m.4s.
Helsinki e =21m.46s., 22m.12s., 22m.24s., 23m.11s., and 23m.39s., eSKKS =30m.4s., ePPS =34m.36s., eSS =39m.28s., e =41m.1s.
Upsala eE =22m.1s.?, eN =23m.43s.,
Copenhagen i =22m.29s., 24m.4s., 28m.56s., and 30m.52s.
Durham iN =34m.36s., iEN =41m.3s., iEN =42m.46s.
Warsaw ePE =19m.20s., iZ =20m.21s., eE =20m.37s. and 21m. 47s., PPE =22m.44s. eZ =24m.2s. and 24m.28s., PPPZ =26m.54s., PKKSZ =31m.20s., PSZ =32m.18s., PPSZ =34m.47s., SSE =40m.56s., eE =42m.45s.,
Jena eN =19m.29s., eEN =20m.38s.
Uccle ePP?EN =22m.34s.
Cheb e =20m.54s. and 23m.47s., iSKKS =29m.32s., eSKSP? =34m.23s., ePPS = 37m.19s., eSSS? =48m.51s.
Ksara PP =22m.56s.?
Budapest eN =22m.58s.
Stuttgart iPKPZ =19m.35s.a, iPKP$_a$ =19m.41s.k, e =20m.35s., iZ =21m.17s., e = 24m.32s., ePPP =26m.28s., eSKKS =29m.40s., e =41m.58s., eSS =43m.28s., eSSS =47m.46s.
Kalossa eE =20m.1s., eN =21m.18s.
Paris iPKP =19m.32s., i =19m.41s., iPKP$_a$ =19m.50s., i =20m.13s., ipPKP$_a$ =20m.58s., isPKP? =21m.20s.?, e =22m.20s., esSS? =43m.53s., eSSS =47m.20s.
Strasbourg iPKP =19m.34s., isPKP =21m.17s., ePP =23m.12s., epPP =24m.18s., esPP =24m.58s., e =29m.37s.
Belgrade iPKP =19m.44s., e =20m.50s. and 33m.40s.
Trieste ePSKS =33m.36s.
Helwan iPKP$_a$EZ =19m.54s., pPKP$_a$Z =20m.44s., iZ =21m.22s., PPZ =23m.26s., iN = 27m.48s., iEN =29m.58s.
Rome ePKP$_a$Z =20m.7s., iPSKSE =34m.0s.
Alicante PKP$_a$ =22m.5s., PP =24m.53s., PPP =28m.27s., PKKS =32m.13s., SKSP = 34m.57s., PPS =38m.3s., SS =43m.55s., SSP =45m.1s., SSS =50m.2s.
Granada PKP$_a$ =20m.28s., sPKP =22m.7s., iPP =24m.13s., pPP =25m.34s., sPP = 26m.19s., pPPP =29m.13s.
Malaga iPKP$_a$Z =21m.27s., P$_c$PPKPZ =28m.9s.
Almeria PKP$_a$ =20m.32s., PP =24m.18s., PPP =28m.10s., SKKS =31m.2s., PPS = 37m.42s., SS =44m.26s., SSP =45m.18s., SSS =50m.38s.
Long waves were also recorded at Kew.

Sept. 2d. Readings also at 3h. (Antarctica and Barcelona), 4h. (near Andijan), 5h. (Malaga), 14h. (Lick), 16h. (near Ottawa), 17h. (near Obi-garm, Samarkand, Stalinabad, and Tashkent), 18h. (near Alicante), 22h. (La Paz and Shasta Dam).

Sept. 3d. 15h. 26m. 52s. Epicentre 47°·7N. 153°·0E. Depth of focus 0·005.

$A = -·6019$, $B = +·3067$, $C = +·7374$; $\delta = +11$; $h = -5$;
$D = +·454$, $E = +·819$; $G = -·657$, $H = +·335$, $K = -·675$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Misuzawa		12·2	229	2 54	+ 1	5 5	− 3	5 1	S	—
Vladivostok		15·5	260	i 3 37	+ 1	e 6 41	+15	—	—	—
Irkutsk		31·2	297	e 6 15	0	e 11 14	− 2	—	—	—
College		35·5	39	e 6 53	+ 1	e 12 23	+ 1	e 8 20	PP	e 15·2
Sverdlovsk		53·1	317	i 9 13	0	16 32	− 5	—	—	—
Grand Coulee		55·8	54	e 9 33	0	e 18 13	+60	e 10 2	pP	—
Tashkent		57·3	297	e 9 35	− 9	e 17 25	− 8	—	—	—
Shasta Dam		58·2	63	e 9 50	0	—	—	—	—	—
Obi-garm		58·6	295	i 9 52	− 1	17 46	− 4	—	—	—
Samarkand		59·7	297	e 10 0	0	—	—	—	—	—
Scoresby Sund		62·1	359	i 10 17	+ 1	19 18	+43	—	—	—
Tinemaha		63·0	65	i 10 23a	+ 1	—	—	i 10 48	pP	—
Moscow		63·6	326	i 10 27	+ 1	18 49	− 5	—	—	—
Haiwee	z.	63·8	65	i 10 28	0	—	—	e 10 57	pP	—
Santa Barbara	z.	63·8	67	i 10 28	0	—	—	—	—	—
Pasadena		64·9	66	i 10 36	+ 1	i 19 12	+ 2	i 11 3	pP	—
Mount Wilson		65·0	66	i 10 36a	+ 1	e 19 12	+ 1	i 11 2	pP	—
Riverside	z.	65·5	66	i 10 38a	− 1	—	—	i 11 7	pP	—
Boulder City		65·8	63	e 10 41	0	—	—	—	—	—
Pierce Ferry		66·2	62	i 10 44	+ 1	—	—	i 11 14	pP	—
Palomar		66·3	66	e 10 44	0	i 19 27	0	—	—	—
La Jolla	z.	66·4	67	e 10 43	− 1	—	—	—	—	—
Upsala	E.	66·8	337	e 10 31	−16	e 19 24	− 9	e 20 29	PS	—
Grozny		69·0	312	e 11 3	+ 2	—	—	—	—	—
Bergen	z.	69·1	344	i 11 3	+ 2	—	—	—	—	—
Tucson		70·7	63	i 11 11a	0	—	—	i 11 41	pP	—
Copenhagen		71·8	339	i 11 17	− 1	i 20 29	− 3	—	—	35·1
Sotchi		71·8	316	e 11 2	−16	—	—	—	—	—
Leninakan		71·9	311	e 11 22	+ 4	—	—	—	—	—
Warsaw		72·3	330	e 11 17a	− 3	e 20 52	+15	e 16 11	PPP	—
Theodosia		72·7	318	e 11 26	+ 3	—	—	—	—	—
Kirkland Lake		74·0	35	i 11 30	0	—	—	e 14 7	PP	—
Dane		74·1	35	i 11 29	− 2	—	—	e 14 7	PP	—
Potsdam	E.	74·6	336	e 11 37	+ 3	—	—	—	—	—
Jena		76·3	335	e 11 44	0	—	—	—	—	—
De Bilt		76·8	340	i 11 47a	+ 1	e 21 29	+ 2	—	—	e 33·1
Cheb		76·9	336	e 18 34	?	e 22 15	PS	—	—	e 40·1
Budapest		77·1	330	i 11 48	0	—	—	—	—	—
St. Louis		77·3	46	i 11 49	0	i 21 30	− 3	i 12 16	pP	—
Kalocsa	N.	77·9	330	e 11 57	+ 5	—	—	—	—	—
Uccle		78·2	341	e 11 54a	0	e 21 37	− 5	e 21 59	PS	e 32·1
Istanbul		78·6	320	e 12 12	+16	e 21 51?	+ 4	—	—	—
Belgrade		78·9	327	e 11 48	−10	e 21 24	−26	e 12 20	pP	—
Stuttgart		78·9	337	i 11 59a	+ 1	e 21 45	− 5	e 12 34	pP	e 40·1
Strasbourg		79·5	337	i 12 2a	+ 1	e 21 53	− 3	e 12 42	pP	e 38·9
Triest		80·4	333	e 12 7	+ 1	e 21 56	− 9	e 15 12	PP	—
Zürich		80·4	337	e 12 6a	0	e 21 53	−12	e 12 45	pP	—
Basle		80·5	337	e 12 7a	0	—	—	—	—	—
Paris		80·5	341	i 12 8a	+ 1	i 22 5	− 2	i 12 19	P_cP	—
Chur		80·6	335	e 12 8	+ 1	—	—	—	—	—
Besançon		81·2	338	e 12 13	+ 3	—	—	—	—	—
Ksara		81·2	311	i 12 11	+ 1	22 17	+ 3	12 52	pP	—
Florence		82·9	333	e 12 20	+ 1	e 20 15	−136	—	—	—
Clermont-Ferrand		83·3	339	e 12 22	+ 1	e 22 34	− 1	—	—	41·1
Rome		84·2	332	i 12 25a	− 1	e 22 42	− 2	e 23 28	PS	e 42·0
Helwan		86·7	312	i 12 38k	0	22 54	[− 2]	13 20	pP	—
Malaga	z.	93·6	342	i 13 9	− 1	23 53	SKKS	16 55	PP	48·6

For Notes see next page.

NOTES TO SEPTEMBER 3d. 15h. 26m. 52s.

Additional readings and note :—
College esS =13m.8s.
Grand Coulee ePP =11m.43s., e =20m.0s.
Upsala iN =10m.46s., and 11m.43s.
Warsaw ePZ =11m.21s., eE =11m.48s., eZ =11m.52s. and 12m.8s. eE =20m.35s., eZ = 21m.35s., eE =22m.9s.
St Louis esS =22m.23s.
Kalossa eE =12m.3s.
Stuttgart esS? =22m.48s.
Strasbourg e =12m.25s., ePP? =14m.54s., e =18m.47s., 21m.48s., and 31m.20s.
Triest ePPP =16m.45s.
Paris e =13m.29s.
Helwan PPZ =16m.4s., sSN =23m.58s.
Malaga SKSZ =19m.9s., SSZ =30m.31s., PKP,PKSZ =35m.57s., QZ =43m.33s., record wrongly interpreted.
Long waves were also recorded at Kew.

Sept. 3d. 18h. 56m. 20s. Epicentre 10°·5S. 161°·5E. (as on 1946, Nov. 1d.).

$A = -\cdot 9327$, $B = +\cdot 3121$, $C = -\cdot 1811$; $\delta = +13$; $h = +6$;
$D = +\cdot 317$, $E = +\cdot 948$; $G = +\cdot 172$, $H = -\cdot 057$, $K = -\cdot 984$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverview		25·1	199	i 5 27a	− 1	i 9 49	− 2	—	—	e 11·6
Apia		26·3	99	e 5 56	+17	e 9 54	−17	e 10 58	Q	e 13·1
Auckland		28·9	159	—	—	11 5	+12	—	—	12·7
Arapuni		30·2	157	—	—	12 34	SS	—	—	15·2
Tuai		31·5	156	6 16	−10	—	—	—	—	—
Wellington		32·8	161	6 35	− 2	12 10?	+16	7 50	pP	15·7
Perth		47·2	236	8 45	+ 9	15 32	+ 3	—	—	22·3
Honolulu		50·9	51	—	—	e 16 17	− 4	e 19 22	SS	e 20·8
Vladivostok		59·8	336	i 10 5	− 4	i 18 17	− 3	—	—	—
Calcutta	E.	78·8	295	e 18 16	?	22 4	0	—	—	—
Irkutsk		79·4	328	—	—	22 4	− 6	—	—	—
College		84·1	19	—	—	e 22 41	−17	—	—	—
Sitka		84·8	29	—	—	e 22 57	− 8	—	—	e 40·2
Ukiah		85·4	49	—	—	e 22 49	[−14]	—	—	e 38·1
Berkeley		85·7	51	i 12 42a	0	i 23 6	[+ 1]	i 24 11	PS	e 38·8
Santa Clara		85·8	51	i 12 45	+ 3	e 23 19	+ 4	—	—	e 39·4
Lick	N.	86·1	51	e 12 48	+ 4	—	—	—	—	—
Shasta Dam		86·5	48	e 12 41	− 5	e 23 11	[0]	e 15 46	PP	—
Santa Barbara	Z.	86·8	55	e 12 48	+ 1	—	—	—	—	—
Pasadena		87·9	55	i 12 52	− 1	i 23 34	− 1	—	—	e 39·7
Mount Wilson		88·1	55	i 12 53	− 1	—	—	—	—	—
Victoria		88·1	40	—	—	e 23 18	[− 3]	—	—	36·7
La Jolla	Z.	88·4	56	e 12 54	− 1	—	—	—	—	—
Haiwee	Z.	88·6	53	e 12 56	0	—	—	—	—	—
Riverside	Z.	88·6	55	i 12 54	− 2	—	—	—	—	—
Tinemaha		88·7	52	e 12 56	− 1	e 23 19	[− 6]	—	—	—
Palomar		88·8	56	i 12 58	+ 1	i 23 28	[+ 3]	—	—	—
New Delhi	N.	90·0	299	—	—	i 24 4	+10	e 37 11	Q	e 51·8
Grand Coulee		90·8	42	e 13 4	− 2	e 24 1	− 1	—	—	—
Boulder City		91·0	54	e 13 7	0	—	—	—	—	—
Pierce Ferry		91·7	54	e 12 40	−30	—	—	—	—	—
Bombay	E.	92·1	288	—	—	e 22 44	?	—	—	—
Tucson		93·6	58	e 13 18	− 1	e 24 30	+ 4	e 25 41	PS	e 38·2
Salt Lake City		94·3	49	—	—	e 23 59	[+ 2]	e 34 33	SSS	e 40·5
Antarctica		94·3	163	i 13 21	− 2	e 23 53	[− 4]	i 17 8	PP	e 45·7
Obi-garm		97·9	308	e 13 55	+16	24 10	[− 6]	—	—	—
Tashkent		98·5	310	e 17 16	PP	24 6	[−14]	17 10	PPS	—
Stalinabad		98·6	308	e 13 49	+ 7	e 25 7	− 2	—	—	—
Rapid City		101·0	47	e 13 57	+ 4	e 25 27	− 2	e 24 28	SKS	e 49·0
Sverdlovsk		104·7	326	e 14 6	− 3	24 43	[− 6]	e 18 5	PKP	—

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		110·7	53	e 19 3	PP	i 26 58	S	e 28 43	PS	—
New Kensington		118·6	49	e 30 52	PPS	e 35 55	SS	—	—	e 60·8
Scoresby Sund		120·0	1	—	—	30 22	PS	—	—	51·7
Ottawa		120·3	43	e 18 52	[− 1]	e 30 28	PS	(36 40?)	SS	36·7
Philadelphia		122·1	49	e 30 25	PS	e 36 11	SS	e 41 52	SSS	e 56·1
Fordham		122·8	48	—	—	e 30 19	PS	e 37 15	SS	61·7
Seven Falls		122·9	39	—	—	e 26 59	{−34}	e 37 22	SS	56·7
Upsala	E.	123·9	339	—	—	—	—	e 54 17	Q	e 63·3
La Paz	E.	124·1	118	e 18 49	[−12]	—	—	—	—	61·0
Weston		124·2	45	30 46	PS	i 38 26	SS	52 0	Q	59·3
Ksara		125·3	303	e 19 6?	[+ 3]	—	—	20 55	PP	51·2
Warsaw		127·5	330	19 7	[0]	—	—	21 8	PP	e 64·7
Istanbul		128·3	315	e 19 27?	[+18]	—	—	e 21 38?	PP	—
Copenhagen		128·8	338	21 16	PP	—	—	—	—	61·7
Helwan	Z.	129·8	300	e 19 10	[− 2]	22 31	PKS	21 25	PP	—
Budapest		131·4	326	e 22 40?	PKS	—	—	—	—	e 67·7
Prague		132·1	332	21 49	PP	e 39 4	SS	—	—	e 57·7
Bermuda		132·3	55	e 21 48	PP	e 39 20	SS	e 22 47	PKS	e 66·0
Jena		132·7	333	e 22 40	PKS	—	—	—	—	—
Cheb		133·0	333	e 21 44	PP	e 22 59	PKS	e 39 40?	SS	e 63·7
Durham		133·9	346	21 48	PP	22 48	PKS	—	—	—
De Bilt		134·3	340	e 19 20	[0]	e 22 52	PKS	e 21 47	PP	e 64·7
Stuttgart		135·4	324	e 19 21	[− 1]	e 22 50	PKS	e 22 6	PP	e 65·7
Triest		135·4	328	e 22 53	PKS	—	—	—	—	e 66·9
Uccle		135·7	340	e 22 10	PP	e 22 53	PKS	—	—	e 59·7
Strasbourg		136·1	335	e 19 21	[− 2]	e 28 52	{− 6}	e 22 16	PP	64·5
Kew		136·5	343	e 19 22	[− 2]	e 23 2?	PKS	i 22 17	PP	e 61·7
Florence		138·0	327	—	—	e 34 17	PPS	—	—	—
Paris		138·0	339	e 19 30	[+ 3]	e 23 9	PKS	e 22 17	PP	e 68·7
Rome		138·6	326	e 19 22	[− 6]	e 34 29	PPS	e 22 20	PP	—
Clermont-Ferrand		140·3	336	22 15	PP	e 23 17	PKS	—	—	60·7
Tortosa		145·5	334	19 40	[0]	30 19	{+26}	22 58	PP	e 79·7
Alicante		147·2	333	19 54	[+11]	29 56	{− 7}	23 28	PP	e 66·0
Almeria		150·0	333	i 19 49	[+ 2]	26 53	[− 1]	23 21	PKS	65·7
Granada		150·2	336	20 20	[+32]	—	—	43 8	SS	79·5
Malaga	Z.	151·0	336	i 19 48	[− 1]	e 26 33	[−22]	e 23 11	PP	e 76·9

Additional readings :—
Riverview iN =5m.30s., iNZ =5m.43s., iN =10m.2s., and 10m.37s., iE =10m.41s., eE =10m.47s.
Sitka i =23m.5s.
Ukiah e =23m.12s.
Berkeley eEZ =12m.45s., iSSSE =31m.58s.
Shasta Dam i =13m.1s.
Tucson i =13m.31s., eSS =30m.28s., eSSS? =34m.20s.
Antarctica e =24m.15s.
Sverdlovsk iPP =18m.39s., PS =27m.39s.?, SS =33m.16s.
St. Louis e =32m.8s.
New Kensington ePSPS? =36m.58s.
Philadelphia ePPS =31m.26s., ePSPS =36m.52s.
Warsaw PPE =21m.22s., eE =22m.37s., 23m.47s., and 34m.27s.
Copenhagen 22m.22s.
Helwan eSSN =38m.58s.
Prague e =22m.28s.
Bermuda ePPS =33m.55s., e =39m.43s.
Durham N =22m.3s., EN =23m.3s.
De Bilt ePPS =34m.0s.
Stuttgart ePPP =25m.0s., ePSKS =32m.10s., e =33m.55s., ePPS? =34m.56s.
Strasbourg eSKP =22m.52s., ePS =32m.8s. and 32m.17s., eSS =39m.40s., e =41m.58s., eSSS =45m.4s.
Kew eZ =19m.36s., eSKSP?N =32m.27s.?
Paris eP =17m.36s., Q =65·7m.
Tortosa iE =19m.50s., iN =19m.53s., PPP?E =26m.5s.
Alicante PKP_2 =20m.3s., PKS =23m.10s., SKS =26m.28s., SS =31m.56s., SSP =42m.40s.
Almeria PKP_2 =20m.5s., PP =23m.37s., PPP =27m.1s., SKKS =30m.21s., PPS =36m.16s., SS =42m.45s., SSP =43m.25s., SSS =48m.17s.
Malaga ePPPZ =26m.57s., eSSZ =42m.17s., eSSSZ =48m.16s.
Long waves were also recorded at Huancayo, Aberdeen, Helsinki, Potsdam, Harvard, and Tananarive.

Sept. 3d. Readings also at 2h. (Antarctica), 3h. (near Triest), 7h. (Rome, Tashkent, near Obi-garm, and Samarkand), 9h. (Auckland, Wellington, Riverview, and Shasta Dam), 12h. (Bergen, Istanbul, Ksara, and Obi-garm), 14h. (Strasbourg), 15h. (La Paz and near Santa Lucia), 21h. (Shasta Dam).

Sept. 4d. 0h. 30m. 11s. Epicentre 15°·3S. 172°·5W. (as on 1946, Feb. 16d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		1·6	19	i 0 29	− 1	i 0 52	+ 1	—	—	—
Arapuni		25·0	203	—	—	e 9 49	0	—	—	12·8
Wellington		28·2	202	—	—	e 12 37	SSS	—	—	14·9
Riverview		37·6	234	—	—	e 13 5	− 3	e 15 48	?	e 18·0
Honolulu		39·1	22	—	—	e 15 58	SS	e 18 53	Q	e 19·9
Berkeley		70·8	41	—	—	i 20 45	+10	i 21 13	S_cS	e 29·5
La Jolla		71·3	47	e 11 24	+ 1	—	—	—	—	—
Pasadena		71·3	46	e 11 26	+ 3	e 21 49	PPS	e 29 31	Q	e 31·6
Mount Wilson	z.	71·4	46	e 11 26	+ 2	—	—	—	—	—
Palomar		71·8	47	i 11 28	+ 2	—	—	i 12 34	?	—
Riverside	z.	71·8	46	e 11 27	+ 1	—	—	—	—	—
Shasta Dam		72·5	38	i 11 31	+ 1	—	—	—	—	—
Haiwee		72·6	44	i 11 33	+ 2	—	—	—	—	—
Tinemaha		72·9	43	i 11 36	+ 3	—	—	—	—	—
Boulder City		74·6	46	i 11 45	+ 2	—	—	—	—	—
Pierce Ferry		75·3	46	i 11 49	+ 2	—	—	—	—	—
Tucson		75·6	50	i 11 50	+ 2	—	—	i 12 4	P_cP	e 32·6
Vladivostok		77·3	321	e 11 59	+ 1	i 21 46	− 2	—	—	—
Grand Coulee		78·9	34	e 12 8	+ 1	—	—	—	—	—
Antarctica		81·6	158	i 12 24	+ 3	i 22 43	+10	e 15 31	PP	e 41·8
St. Louis		93·5	51	e 13 19	0	e 23 55	[+ 2]	e 30 45	SS	—
Huancayo		93·6	103	—	—	e 24 9	{+ 1}	—	—	e 44·5
La Paz		99·0	110	i 14 29	+45	—	—	i 15 51	?	52·3
Philadelphia		105·2	52	—	—	e 27 46	PS	e 34 1	SSP	e 47·8
Ottawa		105·4	46	—	—	e 25 7	[+15]	—	—	47·8
Fordham		106·3	51	—	—	e 25 4	[+ 8]	e 34 7	SSP	—
Weston		108·3	49	—	—	25 13	[+ 8]	e 28 17	PS	e 49·5
Seven Falls		109·0	45	—	—	e 25 12	[+ 4]	i 28 32	PS	49·8
Bermuda		112·9	61	—	—	e 29 1	PS	—	—	e 53·1
Scoresby Sund		122·0	12	—	—	26 14	[+17]	30 25	PS	53·8
Sverdlovsk		122·5	329	20 30	PP	26 2	[+ 4]	37 12	SS	—
Copenhagen		139·5	356	22 31	PP	—	—	—	—	65·8
Durham	N.	140·0	8	—	—	e 23 15	PKS	—	—	—
De Bilt		143·4	1	e 19 41	[+ 5]	e 33 4	PS	e 22 46	PP	—
Kew		143·4	7	e 22 56?	PP	—	—	—	—	e 67·8
Uccle		144·5	4	e 19 38	[0]	e 41 44	SS	—	—	e 60·2
Paris		146·3	6	i 19 44	[+ 3]	—	—	e 23 8	PP	74·8
Stuttgart		146·6	357	e 19 44k	[+ 2]	e 33 19	PSKS	e 26 43	PPP	e 76·8
Strasbourg		146·8	358	i 19 45	[+ 3]	e 30 11	{+10}	e 23 43	PP	e 73·8
Basle		147·8	0	e 19 45	[+ 1]	—	—	—	—	—
Zürich		148·0	359	e 19 46	[+ 2]	—	—	—	—	—
Istanbul		148·2	328	e 20 14	[+30]	e 31 19?	{+71}	—	—	—
Ksara		148·4	311	e 19 50	[+ 5]	36 25	PPS	43 3	SSP	—
Chur		148·5	357	e 19 50	[+ 5]	—	—	—	—	—
Triest		149·3	351	e 19 55	[+ 9]	e 42 32	SS	—	—	—
Clermont-Ferrand		149·4	6	e 19 53	[+ 7]	e 39 44	?	—	—	—
Rome		153·1	351	e 20 4	[+12]	e 43 27	SS	e 24 2	PP	—
Helwan	z.	153·7	308	e 20 1	[+ 8]	—	—	—	—	—
Alicante		156·0	15	19 37	[−19]	27 17	[+16]	23 44	PP	e 77·0
Granada		156·1	22	e 19 42	[−14]	—	—	24 2	PP	i 77·6
Malaga	z.	156·1	24	i 20 25	[+29]	27 28	[+27]	24 24	PP	e 79·8
Almeria		156·8	20	19 43	[−14]	26 42	[−20]	23 53	PP	74·8

For Notes see next page.

NOTES TO SEPTEMBER 4d. 0h. 30m. 11s.

Additional readings :—
Shasta Dam e =12m.12s. and 12m.28s.
Tucson i =12m.22s.
Grand Coulee e =13m.29s.
Antarctica e =13m.19s.
St. Louis e =24m.1s., eSKKS? =24m.33s., eS? =24m.42s., e =26m.54s.
Huancayo eSKS =24m.53s.
Philadelphia eSSS? =37m.51s., e =44m.7s.
Fordham ePS =27m.58s.
Weston eSS =34m.35s.
Paris iPKP =19m.50s., i =20m.3s. and 20m.22s., ePPP? =25m.53s., eQ =71m.49s.
Stuttgart iPKPZ =19m.51s.k, iPKP$_2$Z =20m.21s.k, eSSS =47m.25s.
Strasbourg iPKP =19m.52s., i =20m.20s., ePPP =33m.26s., eSS =42m.25s., eSSS = 47m.30s.
Rome eSSS =48m.2s.
Helwan PKP$_2$Z =20m.19s., eZ =21m.1s., PPZ =23m.52s.
Alicante PKP$_2$ =20m.5s., PKS =23m.4s., SKS =26m.29s., SS =43m.16s.
Malaga PKSZ =24m.4s., SKKSZ =31m.31s., SSZ =43m.58s.
Almeria PKP$_2$ =20m.13s., PKS =23m.9s., PPP =27m.25s., PPS =36m.55s., SS =43m.29s.
Long waves were also recorded at Auckland, Sitka, Salt Lake City, Harvard, Bogota, Bombay, Aberdeen, Prague, and Cheb.

Sept. 4d. 14h. Region of New Zealand.

Tuai P =5m.56s., S =6m.19s.
Wellington P =6m.22s., S =7m.7s.
New Plymouth P =6m.30s., S =7m.17s.
Kaimata S =8m.15s.
Riverview iPZ =10m.45s.a, iE =15m.1s., eN =15m.15s., eLZ =16·9m.
Stuttgart eZ =20m.35s.? and 26m.40s., eR? =100m.
Antarctica e =20m.38s., eL =36m.
Ksara ePKP? =22m.56s.?, PP? =25m.12s., PPS =37m.12s.
Malaga iPKPZ =31m.27s.a, ePPZ =35m.57s., eP$_c$P,PKPZ =41m.45s., ePPSZ =49m.0s., QZ =82m.1s., RZ =91m.9s.
Rome eZ =32m.32s.
Strasbourg e =33m.13s., eL? =90m.
Helwan eZ =35m.28s. and 35m.45s.
Istanbul e =36m.
Paris e =40m., eL =95m.
Long waves were also recorded at Huancayo, De Bilt, Uccle, and Kew.

Sept. 4d. Readings also at 5h. (Tucson, Shasta Dam, Ksara, Istanbul, Paris, Strasbourg, and Stuttgart), 6h. (Mount Wilson, Tinemaha, Tucson, Shasta Dam, Strasbourg, and Stuttgart), 7h. (Shasta Dam), 8h. (Boulder City, Pierce Ferry, and Stuttgart), 9h. (Stuttgart), 13h. (Istanbul), 15h. (Antarctica), 17h. (Istanbul), 18h. (Tortosa), 21h. (Istanbul), 22h. (Shasta Dam).

Sept. 5d. 5h. 41m. 30s. Epicentre 12°·0N. 90°·7W. (as on 1945, Oct. 3d.).

$A = -·0120$, $B = -·9783$, $C = +·2066$; $\delta = -10$; $h = +7$;
$D = -1·000$, $E = +·012$; $G = -·003$, $H = -·207$, $K = -·978$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya		11·0	313	e 2 43	+ 1	i 4 47	0	—	—	—
Bogota		18·0	113	i 4 47	+34	e 8 38	+66	i 5 7	PPP	—
St. Louis		26·5	2	i 5 38	− 3	e 10 30	+14	—	—	—
Tucson		27·4	322	i 5 47	− 2	—	—	i 6 1	pP	—
Pierce Ferry		31·9	324	i 6 29	0	—	—	—	—	—
Palomar		32·0	317	i 6 30	0	—	—	—	—	—
Boulder City		32·3	323	e 6 32	− 1	—	—	—	—	—
Riverside	z.	32·7	317	e 6 36	0	—	—	i 6 50	pP	—
Mount Wilson	z.	33·3	317	i 6 42	+ 1	—	—	i 6 54	pP	—
Pasadena	z.	33·3	317	e 6 44	+ 3	—	—	—	—	—
Harvard		34·7	25	i 6 54	0	—	—	—	—	—
Tinemaha	z.	35·2	320	i 6 58	0	—	—	—	—	—
Ottawa		35·7	17	i 7 1	− 1	—	—	—	—	13·0
Kirkland Lake		37·1	12	i 7 12	− 2	—	—	—	—	—
Dane		37·1	12	i 7 12	− 2	—	—	—	—	—
Shasta Dam		39·9	322	e 7 34	− 3	—	—	i 9 52	PPP	—
Grand Coulee		42·9	333	e 8 1	− 1	—	—	—	—	—

Long waves were also recorded at Philadelphia.

Sept. 5d. Readings also at 1h. (Istanbul), 2h. (near Malaga), 4h. (Tucson and Antarctica), 6h. (Bogota, Chicago, Mount Wilson, Palomar, Philadelphia, Riverside, Seven Falls, Shasta Dam, Tinemaha and Tucson), 7h. (Scoresby Sund), 9h. (Istanbul) 10h. (Paris, Rome, and Strasbourg), 11h. (Warsaw, Bucharest, Copenhagen, and Istanbul), 14h. (Antarctica, Istanbul, and near Apia). 15h. (Strasbourg), 16h. (near La Paz), 17h. (Bogota and near New Delhi), 20h. (Mount Wilson, Palomar, Pasadena, Riverside, Tinemaha, Tucson, Tacubaya, St. Louis, Kirkland Lake and near Ottawa, Istanbul, Leninakan, Andijan, near Grozny and near Obi-garm), 21h. (Strasbourg Mount Wilson, Palomar, Riverside, Tinemaha, Tucson, and near Ottawa).

Sept. 6d. Readings at 5h. (Perth, Riverview, and Shasta Dam), 6h. (Strasbourg, near Stuttgart, Zürich, and Basle), 17h. (near Ottawa), 19h. (Istanbul), 20h. (near Alicante (2), Malaga, and Tortosa), 21h. (Shasta Dam and near Ottawa), 22h. (Malaga), 23h. (near Obi-garm).

Sept. 7d. Readings at 0h. (Mizusawa, Andijan, Stalinabad, Samarkand, Sverdlovsk, Vladivostok, Grand Coulee, Haiwee, Mount Wilson, Palomar, Pasadena, Riverside Santa Barbara, Shasta Dam, Tinemaha, and Tucson), 5h. (Mount Wilson, Palomar, Pasadena, Riverside, Shasta Dam, Tinemaha, Tucson, near Almata, Andijan, Obi-garm, Samarkand, Stalinabad, and Tashkent), 6h. (Mount Wilson, Palomar, Riverside, Tinemaha, and Tucson), 7h. (near Mizusawa), 10h. (Mount Wilson and Tucson (2)), 11h. (San Juan, Tucson, near Almata, Andijan, Obi-garm, Samarkand, Stalinabad, and Tashkent), 12h. (Copiapo), 17h. (Upsala), 22h. (Mount Wilson, Pasadena, Riverside, Shasta Dam, Tinemaha, and Tucson).

Sept. 8d. Readings at 1h. (Samarkand, Andijan, near Stalinabad, and Obi-garm), 5h. (Riverview, Santa Clara, Santa Barbara, Riverside, Pasadena, Mount Wilson, Tucson, Pierce Ferry, near Shasta Dam, near Tinemaha, Haiwee, Berkeley (2), Lick, and Fresno (2)), 6h. (near Shasta Dam (3), near Berkeley (2), Lick (2), Fresno (2)), 7h. (Santa Clara, Tucson, Boulder City, Pierce Ferry, Santa Barbara, Riverside, Pasadena, Mount Wilson, near Shasta Dam, near Haiwee, Tinemaha, Berkeley, Fresno, and Lick), 8h. (Samarkand, near Obi-garm, and Stalinabad), 13h. (Huancayo, and La Paz), 17h. (Istanbul), 19h. (Sverdlovsk, Andijan, and near Mizusawa), 20h. (Shasta Dam (2), near Andijan, Samarkand, Stalinabad, and Obi-garm), 21h. (Andijan, Stalinabad, near Obi-garm, and near Balboa Heights), 22h. (La Paz, Copiapo, Pasadena, Mount Wilson, Riverside, Tinemaha, Tucson, near Tuai, Wellington, and New Plymouth ; two or more shocks), 23h. (Shasta Dam (2)).

Sept. 9d. 22h. Samoa. Deep.

Apia iP =31m.10s., iP =31m.14s., iSEN =31m.41s., iS =31m.45s.
Berkeley iPZ =41m.46s., ipPZ =42m.6s., eSE =51m.31s., iSKSN =51m.56s., eE = 59m.42s. and 65m.48s.
Mount Wilson iPZ =41m.48s., epPZ =42m.20s., iZ =42m.34s.
Pasadena iPZ =41m.48s., eZ =42m.28s., iZ =42m.39s.
Shasta Dam eP =41m.49s., e =42m.18s., ipP =42m.40s.
Riverside ePZ =41m.52s., epPZ =42m.24s., eZ =42m.38s.
Tinemaha ePZ =41m.58s., ipPZ =42m.29s., iZ =42m.39s.
Tucson eP =42m.12s., ipP =42m.44s., i =43m.19s.
Grand Coulee eP? =42m.26s., e =43m.10s.
Santa Barbara eZ =42m.36s.
Pierce Ferry eP? =42m.39s.
Haiwee eN =42m.44s.
Strasbourg ePKP =49m.56s., iPKP =50m.3s., epPKP =50m.35s., e =50m.42s., ePS? = 64m.10s.
Stuttgart iZ =50m.2s. a, eZ =50m.47s.
Ksara ePKP? =50m.3s., epPKP? =50m.39s., PP? =53m.29s.
Paris iPKP =50m.3s., epPKP =50m.38s., e =51m.56s., ePP =53m.26s., eL? =110m.
Zürich e =50m.3s. a
Basle e =50m.6s. a
Malaga eZ =50m.8s., iZ =50m.57s., LZ =58m.15s.
Clermont Ferrand ePKP =50m.12s., epPKP =50m.46s.
Helwan eZ =50m.16s. and 51m.31s.
Istanbul e =50m.21s.
Triest eP =55m.57s.?, iS =67m.49s.?
Harvard e =59m.30s., eL =88m.
Almeria e =75m.49s., eL =103m.30s.
Alicante e =76m.25s., eL =103m.47s.
Long waves were also recorded at College, Kew, and Granada.

Sept. 9d. 23h. 47m.59s. Epicentre 25°·9N. 96°·8E. (as on 1946, July 18d.).

$A = -\cdot1066$, $B = +\cdot8944$, $C = +\cdot4344$; $\delta = +2$; $h = +3$;
$D = +\cdot993$, $E = +\cdot118$; $G = -\cdot051$, $H = +\cdot431$, $K = -\cdot901$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	E.	8·4	246	e 2 7	+ 1	i 4 0	+17	i 4 32	S_g	—
Dehra Dun	N.	17·1	289	—	—	e 6 14	−58	—	—	e 8·4
Hyderabad	N.	19·0	246	4 14	−12	7 40	−15	—	—	9·7
Bombay		23·2	256	e 5 7	− 2	i 9 16	− 2	—	—	11·5
Almata		23·7	322	5 20	+ 6	9 42	+15	—	—	—
Kodaikanal	E.	24·0	233	i 4 46	−29	i 9 6	−26	—	—	11·8
Colombo	E.	24·9	222	5 22	− 4	9 48	+ 1	—	—	14·0
Andijan		25·1	310	e 5 30	+ 2	—	—	—	—	—
Obi-garm		26·1	306	5 37	0	i 10 24	+17	—	—	—
Irkutst		26·9	10	5 50	+ 5	—	—	—	—	—
Tashkent		27·4	310	i 5 50	+ 1	e 10 36	+ 8	—	—	—
Samarkand		28·4	304	e 6 3	+ 5	—	—	—	—	—
Vladivostok		33·3	50	6 44	+ 3	e 12 5	+ 3	—	—	—
Sverdlovsk		40·3	330	i 7 42	+ 2	13 53	+ 4	—	—	—
Grozny		44·7	306	i 8 18	+ 2	—	—	—	—	—
Erevan		45·5	301	e 8 34	+11	—	—	—	—	—
Leninakan		46·0	302	e 8 30	+ 3	—	—	—	—	—
Sotchi		49·1	306	e 8 34	−17	—	—	—	—	—
Moscow		51·8	321	e 9 7	− 5	e 16 27	− 6	—	—	—
Ksara		52·8	293	i 9 18	− 1	16 51	+ 4	11 19	PP	—
Istanbul		57·2	303	10 9	+18	—	—	e 13 40	PPP	—
Helwan		57·3	289	i 9 48k	− 4	17 47	0	11 52	PP	—
Upsala		62·6	326	—	—	e 22 1?	?	—	—	e 32·0
Zagreb		65·7	310	e 10 47	− 1	—	—	—	—	e 39·0
Prague		65·8	315	—	—	e 18 43	−52	e 27 1	SSS	e 32·0
Cheb		67·1	316	e 11 3	+ 6	e 20 14	+23	—	—	e 37·0
Jena	N.	67·4	316	e 11 0	+ 1	—	—	—	—	—
Rome		69·2	307	e 11 4	− 6	e 20 13	− 3	e 13 44	PP	e 38·2
Stuttgart		69·5	315	i 11 11a	− 1	e 20 22	+ 2	e 13 49	PP	e 36·0
Chur		69·8	313	e 11 12a	− 2	—	—	—	—	—
Strasbourg		70·3	315	e 11 11	− 6	e 20 31	+ 2	e 13 53	PP	e 35·5
Zürich		70·3	314	e 11 14a	− 3	e 20 35	+ 6	—	—	—
Basle		70·9	314	e 11 17	− 4	—	—	—	—	—
Uccle		71·9	318	e 11 50	P_cP	—	—	—	—	e 35·0
Paris		73·7	316	i 11 37	− 1	—	—	14 9	PP	e 37·0
Clermont Ferrand		74·4	313	e 11 41	− 1	—	—	i 11 47	P_cP	42·0
Kew		74·4	320	—	—	e 21 19?	PS	e 30 6	SSS	e 38·0
Alicante		79·7	307	—	—	e 22 21	+ 8	—	—	e 42·4
Almeria		81·8	306	—	—	e 22 22	−13	—	—	47·5
Granada		82·5	306	—	—	i 22 37	− 5	—	—	39·7
Malaga	z.	83·2	306	—	—	e 22 46	− 3	—	—	47·0
Bogota		148·4	342	e 19 50	[+ 5]	—	—	—	—	—

Additional readings :—
Calcutta $iP^*E = 2m.41s.$, $iP_gE = 3m.5s.$, $iS_gE = 5m.9s.$
Cheb ePP = 14m.23s., sSSS = 27m.55s.
Rome eSS = 24m.47s.
Stuttgart iZ = 11m.16s.a, eSS = 24m.55s.
Strasbourg e = 11m.21s., ePPP = 16m.7s., eSS = 25m.13s., eSSS = 28m.29s.
Paris i = 11m.42s., e = 11m.57s. and 12m.0s.
Kew eSS?NZ = 33m.39s.
Long waves were also recorded at New Delhi, Tortosa, Warsaw, Copenhagen, Helsinki, De Bilt, Aberdeen, Harvard, Philadelphia, Bermuda, and Sitka.

Sept. 9d. Readings also at 4h. and 6h. (Shasta Dam,) 7h. (Almata, near Obi-garm, Andijan, Stalinabad, Tashkent, and Samarkand), 8h. (Shasta Dam), 9h. (Kew), 10h. (Malaga, near Tortosa, and Granada), 12h. and 13h. (Shasta Dam and Istanbul), 14h. (Strasbourg), 16h. (Bogota, La Paz, and Tortosa), 18h. (Paris, Strasbourg, Stuttgart, Mount Wilson, Tinemaha, Tucson, and Shasta Dam), 22h. (near Grozny and near Andijan), 23h. (Almata, near Andijan, Obi-garm, Stalinbad, Samarkand, and Tashkent).

Sept. 10d. Readings at 2h. (near Copiapo), 3h. (Upsala), 4h. (Bogota), 5h. (Zagreb), 6h. (Florence, near Stuttgart, Basle, Zürich, and Chur), 7h. (Stalinabad), 11h. (Istanbul and near Huancayo), 12h. (Istanbul), 13h. (Strasbourg and Stuttgart), 14h. (Istanbul, Ksara, and Rome), 16h. (Mount Wilson, Riverside, Shasta Dam, Tinemaha, Tucson, and Jena), 19. (near Grozny and near Samarkand). 22h. (near Berkeley and Lick).

Sept. 11d. 7h. 22m. 57s. Epicentre 23°·9N. 96°·2E. (as on 1946, Dec. 21d.).

$A = -\cdot0988$, $B = +\cdot9099$, $C = +\cdot4029$; $\delta = +1$; $h = +4$;
$D = +\cdot994$, $E = +\cdot108$; $G = -\cdot044$, $H = +\cdot401$, $K = -\cdot915$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	E.	7·4	260	e 2 15	+23	i 4 57	SSS	i 5 21	?	—
New Delhi	N.	17·7	289	e 4 14	+ 4	e 7 6	−20	—	—	—
Hyderabad	N.	17·8	252	e 4 18	+ 7	7 41	+13	—	—	—
Bombay		22·3	262	e 5 11	+10	e 9 22	+20	—	—	—
Kodaikanal	E.	22·4	237	—	—	e 9 18	+14	—	—	—
Obi-garm		26·9	310	5 42	− 3	10 29	+ 9	—	—	—
Stalinabad		27·5	310	i 5 39	−11	—	—	—	—	—
Tashkent		28·4	315	—	—	10 41	− 4	e 12 6	SS	—
Vladivostok		35·1	48	—	—	e 12 14	−16	—	—	—
Sverdlovsk		41·8	332	7 47	− 6	14 0	−11	—	—	—
Ksara		53·1	295	e 8 32	?	—	—	—	—	—
Istanbul		57·8	305	—	—	17 3	−51	—	—	—
Stuttgart		70·5	315	e 11 15?	− 3	—	—	—	—	e 42·0
Paris		74·7	317	e 11 43	0	—	—	e 11 46	P	—

Long waves were also recorded at Kew.

Sept. 11d. 10h. 30m. 54s. Epicentre 23°·9N. 96°·2E. (as at 7h.).

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Calcutta	E.	7·4	260	e 2 36	+44	i 5 53	?
New Delhi	N.	17·7	289	—	—	i 7 32	+ 6
Hyderabad	N.	17·8	252	e 7 52	SSS	—	—
Bombay		22·3	262	e 5 41	PPP	e 9 24	+22
Almata		25·0	325	e 5 31	+ 4	—	—
Obi-garm		26·9	310	5 41	− 4	10 22	+ 2
Tashkent		28·4	315	e 5 58	0	e 10 50	+ 5
Vladivostok		35·1	48	—	—	e 12 20	−10
Sverdlovsk		41·8	332	e 7 53	0	e 14 5	− 6
Istanbul		57·8	305	(e 12 6)	PP	—	—
Stuttgart	z.	70·5	315	e 11 16?	− 2	—	—

New Delhi eSN = 7m.13s.
Istanbul reading has been increased by 10 minutes.
Long waves were recorded at De Bilt.

Sept. 11d. 19h. 42m. 25s. Epicentre 51°·5N. 174°·6W.

$A = -\cdot6223$, $B = -\cdot0588$, $C = +\cdot7806$; $\delta = +5$; $h = -6$;
$D = -\cdot094$, $E = +\cdot996$; $G = -\cdot777$, $H = -\cdot073$, $K = -\cdot625$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
College		19·2	35	e 4 31	+ 3	e 8 19	+20	—
Sitka		23·3	61	—	—	i 9 24	+ 4	e 13·4
Grand Coulee		35·4	73	e 6 58	− 2	—	—	—
Vladivostok		36·5	278	e 7 11	+ 2	i 12 54	+ 3	—
Shasta Dam		37·0	86	i 7 17	+ 4	—	—	—
Berkeley		38·8	90	—	—	e 17 11	Q	—
Tinemaha	z.	41·8	88	e 7 56	+ 3	—	—	—
Mount Wilson	z.	43·7	91	e 8 13	+ 5	—	—	—
Pasadena	z.	43·7	91	e 8 23	+15	—	—	—
Riverside	z.	44·3	91	e 8 16	+ 3	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Tucson		49·6	87	i 8 47	− 8	—	—	—
Ottawa		60·9	53	e 10 15	− 2	—	—	27·6
Sverdlovsk		62·9	330	e 10 30	0	e 19 5	+ 5	—
Harvard		65·1	53	i 10 44	− 1	—	—	—
Paris		80·0	3	e 12 13	0	—	—	—
Stuttgart	z.	80·1	358	e 12 12	− 1	—	—	—
Strasbourg		80·3	359	e 12 13	− 1	—	—	—
Istanbul		85·5	343	e 13 15?	+34	—	—	e 49·6
Bombay	E.	88·6	299	—	—	e 22 35?	?	—
Ksara		90·9	335	e 16 46	PP	—	—	—

Additional readings :—
Tinemaha iZ = 8m.3s.
Mount Wilson iZ = 8m.23s. and 8m.32s.
Tucson i = 9m.8s.
Long waves were also recorded at Rome.

Sept. 11d. Readings also at 0h. (near Mizusawa, near Berkeley, and near Pierce Ferry), 2h. (La Paz, La Plata, Santa Lucia, Mount Wilson, Riverside, Shasta Dam, Tinemaha, and Tucson), 5h. (Shasta Dam), 7h. (near Tashkent), 9h. (Shasta Dam and near Zagreb), 11h. (Antarctica), 15h. (Jena and near Samarkand), 17h. (Mount Wilson, Riverside, Shasta Dam, Tucson, and near Stalinabad), 18h. (Antarctica), 19h. (Almata, near Obi-garm, Samarkand, Stalinabad, and Tashkent), 22h. (Baku, Grozny, Leninakan, Stalinabad, Sverdlovsk, Tashkent, and near Bogota), 23h. (near Grozny).

Sept. 12d. 11h. 43m. 45s. Epicentre 12°·0N. 90°·7W. (as on 5d.).

$A = -\cdot0120$, $B = -\cdot9783$, $C = +\cdot2066$; $\delta = -10$; $h = +7$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya		11·0	313	2 48	+ 6	(i 4 45)	− 2	—	—	i 4·8
St. Louis		26·5	2	e 5 36	− 5	e 10 21	+ 7	—	—	—
Tucson		27·4	322	e 5 48	− 1	e 10 36	+ 8	i 6 6	pP	e 13·0
Chicago		29·8	3	—	—	e 11 5	− 2	—	—	e 18·5
Bermuda		31·3	46	e 6 45	+21	e 12 25	+54	—	—	—
Pierce Ferry		31·9	324	e 6 29	0	—	—	—	—	—
Palomar		32·0	317	i 6 35	+ 5	—	—	—	—	—
Boulder City		32·3	323	i 7 4	+31	—	—	—	—	—
Riverside	z.	32·7	317	e 6 35	− 1	—	—	e 9 29	P_cP	—
Mount Wilson	z.	33·3	317	e 6 42	+ 1	—	—	e 9 33	P_cP	—
Pasadena	z.	33·3	317	e 6 43	+ 2	—	—	e 9 30	P_cP	—
Tinemaha	z.	35·2	320	e 6 59	+ 1	—	—	i 9 38	P_cP	—
Ottawa		35·7	17	e 6 58	− 4	(12 15?)	−24	—	—	12·3
Kirkland Lake		37·1	12	e 7 21	+ 7	—	—	—	—	—
Berkeley	E.	38·2	318	—	—	i 12 28	?	—	—	e 18·4
Seven Falls		38·8	21	e 9 27	PPP	—	—	—	—	21·3
Shasta Dam		39·9	322	i 7 36	− 1	—	—	e 9 49	PPP	—
Grand Coulee		42·9	333	e 8 1	− 1	—	—	—	—	—

Additional readings :—
Tacubaya iS = 4m.24s.
Tucson e = 6m.44s., iP_cP = 7m.36s.
Pasadena eZ = 6m.51s.
Shasta Dam i = 7m.45s.
Long waves were also recorded at Philadelphia and Paris.

Sept. 12d. Readings also at 1h. (Stuttgart), 2h. (Antarctica), 5h. (Antarctica), 7h. (Antarctica, Samarkand, near Obi-garm and Stalinabad), 10h. (Antarctica, Ksara, Stuttgart, and near Triest, Bogota, La Paz, and near Santa Lucia), 11h. (Kew and Tucson), 13h. and 14h. (near Mizusawa), 15h. (near Obi-garm (2), Samarkand (2), and Stalinabad (2)), 20h. (New Delhi and Stalinabad), 21h. (Calcutta and Port au Prince), 23h. (Grozny, near Erevan and Leninakan).

Sept. 13d. 15h. 11m. 17s. Epicentre 37°·4N. 20°·0E. (as on Aug. 17d.).

$A = +\cdot7484$, $B = +\cdot2724$, $C = +\cdot6048$; $\delta = +9$; $h = -1$;
$D = +\cdot342$, $E = -\cdot940$; $G = +\cdot568$, $H = +\cdot207$, $K = -\cdot796$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rome		7·3	310	e 1 44a	− 6	e 3 6	− 9	—	—	i 4·0
Belgrade		7·4	3	e 1 45	− 7	e 2 53	−25	e 2 23	P_g	—
Istanbul		7·9	60	e 2 32	+33	e 4 10	+40	—	—	—
Bucharest		8·4	32	e 2 6	0	e 3 6	−37	e 2 38	PPP	3·9
Zagreb		8·9	342	e 2 7	− 5	e 3 38	−17	—	—	—
Florence		9·2	316	i 2 27	+11	i 4 3	0	—	—	i 5·2
Kalossa		9·2	355	e 3 9	+53	e 4 4	+ 1	—	—	—
Triest		9·5	332	e 2 35	+15	i 3 36	−34	—	—	—
Budapest		10·1	356	e 3 22	+54	i 4 13	−12	—	—	5·9
Helwan		12·1	125	2 51	− 6	i 5 13	− 1	—	—	—
Chur		12·2	324	e 2 57	− 1	e 4 57	−19	—	—	—
Zürich		13·1	323	e 3 6	− 4	e 5 37	− 1	—	—	—
Prague		13·3	344	e 3 1	−12	e 5 31	−11	—	—	—
Ksara		13·4	101	3 12	− 2	5 48	+ 3	—	—	—
Basle		13·6	322	e 3 18	+ 1	e 6 2	+12	—	—	—
Neuchatel		13·6	319	e 3 16	− 1	—	—	—	—	—
Cheb		13·8	339	e 4 38	?	e 6 5	+11	e 6 55	SSS	—
Stuttgart		13·8	329	e 3 14	− 5	e 5 49	− 5	e 3 26	PP	e 7·7
Strasbourg		14·3	325	e 3 28	+ 2	e 6 1	− 5	e 3 43	PPP	e 7·7
Barcelona		14·4	292	—	—	e 6 20	+11	—	—	—
Jena		14·8	338	e 3 37	+ 5	—	—	—	—	e 7·8
Clermont-Ferrand		15·1	309	e 3 35	− 1	i 6 50	SS	—	—	e 9·1
Tortosa		15·5	289	3 37	− 5	6 40	+ 5	3 52	pP	e 8·7
Potsdam		15·7	344	e 3 37	− 7	e 6 37	− 2	—	—	9·1
Alicante		16·2	280	i 3 52	+ 2	i 8 8	L	4 5	pP	(i 8·1)
Sotchi		16·2	62	3 49	− 1	—	—	—	—	—
Paris		17·1	317	3 33	−29	—	—	—	—	e 8·7
Uccle		17·4	325	e 4 8?	+ 2	e 7 8	−11	e 7 45?	SS	e 8·2
Almeria		17·9	275	i 4 11	− 1	8 5	SSS	8 26	P_cP	13·4
De Bilt		18·0	330	e 4 11	− 2	e 7 36	+ 4	—	—	e 9·2
Granada		18·8	277	i 4 19k	− 4	i 7 51	+ 1	i 4 45	PP	11·2
Leninakan		18·8	72	i 4 23	0	—	—	—	—	—
Copenhagen		19·0	347	i 4 23	− 3	i 7 57	+ 2	—	—	10·6
Malaga	z.	19·5	276	i 4 30k	− 1	i 8 15	+ 9	4 37	pP	13·3
Kew		20·1	321	e 4 50	+12	e 8 14	− 5	e 8 24	SS	e 9·7
Grozny		20·5	65	e 4 42	0	i 8 24	− 3	—	—	—
Moscow		21·9	27	4 57	0	i 8 54	0	—	—	—
Upsala		22·5	356	i 5 5k	+ 3	9 4	− 1	—	—	e 12·2
Helsinki		23·0	5	e 5 2	− 5	e 9 7	− 7	—	—	e 12·7
Edinburgh		24·2	327	—	—	i 9 33	− 2	—	—	—
Aberdeen	E.	24·6	330	—	—	i 9 42	0	—	—	i 14·7
Sverdlovsk		33·1	41	—	—	e 11 53	− 6	—	—	—

Additional readings :—
Belgrade i = 4m.13s.
Kalossa ePN = 3m.14s., eN = 5m.8s., eE = 5m.15s., eSN = 5m.37s.
Budapest ePE = 3m.28s., eSE = 5m.15s., eSN = 5m.19s.
Helwan eZ = 4m.18s., eSN = 4m.53s.
Stuttgart e = 5m.28s., eSS? = 6m.10s.
Strasbourg i = 3m.57s. and 5m.3s., e = 5m.7s., eS = 5m.43s., and 5m.56s.
Jena eEN = 4m.35s.
Tortosa PPE = 4m.1s., PPPE = 4m.10s., SSE = 7m.4s.
Alicante PP = 4m.35s., PPP = 7m.14s.
Almeria PP = 4m.41s., PPP = 4m.53s., SS = 8m.45s., P_cS = 11m.34s.
Granada SS = 8m.49s.
Malaga PPZ = 5m.3s., S_cPZ = 11m.45s., S_cSZ = 15m.7s.
Kew eSSS? = 8m.44s.

Sept. 13d. Readings also at 0h. (Ksara), 3h. (Zagreb), 4h. (Boulder City, Pierce Ferry, and Santa Lucia), 5h. (Boulder City, Shasta Dam, and Pierce Ferry), 6h. (near Mizusawa), 8h. (Berkeley, Boulder City, Mount Wilson, Pasadena, Riverside, Shasta Dam, Tinemaha, Ksara, Strasbourg, Stuttgart, and Riverview), 9h. (near Stuttgart and Zürich), 10h. (Santa Lucia), 12h. (Kew), 18h. (Copaipo, La Plata, and Uccle), 19h. (Copiapo, near Obi-garm, Samarkand, Stalinabad), 22h. (Istanbul, Ksara, Bucharest, Copenhagen, Stuttgart, Triest, Zagreb, Zürich, and near Rome), 23h. (Calcutta, Ksara, Erevan, near Ashkabad, Leninakan, Grozny, and near Alicante).

Sept. 14d. 20h. 5m. 18s. Epicentre 48°·2N. 9°·0E. (as on 1947, June 28d.).

Intensity IV-V at Messtetten, Frommern, Margrethausen, Balingen, Ebingen, etc.

Dr. W. Hiller.
Die Erdbebentätigkeit in Sudwestdeutchland im Jahre, 1947. Statistische Monatshefte Württemberg-Baden, Heft 6, Juin, 1949 ; with macroseismic chart.
Epicentre 48°13′1″N. 8°58′·6E. Depth 10-15kms. Macroseismic area 2000 sq.kms.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		
		°	°	m. s.	s.	m. s.	s.	m.	s.	
Ebingen		0·0	—	i 0 3	P_g	i 0 5	S_g	—		—
Stuttgart		0·6	13	e 0 12	P_g	i 0 20	S_g	—		—
Strasbourg		0·9	295	e 0 14	P_g	i 0 30	S_g	—		—
Zürich		0·9	198	e 0 18	P_g	e 0 31	S_g	—		—
Basle		1·2	235	e 0 23	P_g	e 0 40	S_g	—		—
Jena	N.	3·2	32	—	—	e 1 35	+ 3	1 38	S*	

Stuttgart also gives i = 0m.16s. and 0m.24s.

Sept. 14d. Readings also at 0h. (La Paz and near Alicante), 2h. (Antarctica), 3h. (Istanbul and near Bogota), 4h. (Fresno, La Paz, and near Huancayo), 5h. (Mount Wilson, Pierce Ferry, Riverside, Shasta Dam, Tinemaha, Tucson, and Riverview), 6h. (Granada), 10h. (Copenhagen and near Mizusawa), 12h. (Mizusawa and near Granada), 15h. (near Bogota), 17h. (College, Grand Coulee, Mount Wilson, Riverside, Shasta Dam, Sitka, Tinemaha, Tucson, and near Bogota), 18h. (Ksara, Sotchi, near Erevan, Grozny, Leninakan, and Piatigorsk), 19h. (Harvard, Riverside, Tucson, near Ottawa, Kirkland Lake, and Temiskaming).

Sept. 15d. 9h. 14m. 9s. Epicentre 41°·0S. 176°·2E.

Intensity VI near the epicentre.

R. C. Hayes.
Earthquakes in New Zealand during the year 1947. New Zealand journal of Science and Technology, Vol., 30 No. 2, Sect. B. 1948, p. 104. Map of epicentre loc. cit. p. 105.
Epicentre as adopted.

$A = -·7552$, $B = +·0502$, $C = -·6535$; $\delta = -9$; $h = -2$;
$D = +·066$, $E = +·998$; $G = +·652$, $H = -·043$, $K = -·757$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Bunnythorp		0·8	328	0 21?	+ 3	0 35?	+ 4	—	—	—
Wellington		1·1	255	0 20	− 2	0 33	− 6	—	—	—
Tuai		2·3	18	0 38	− 2	1 5	− 4	—	—	—
New Plymouth		2·5	320	0 43	0	1 21	+ 7	—	—	—
Kiamata		3·9	245	1 1	− 1	1 41?	− 9	—	—	—
Auckland		4·3	345	0 58?	− 10	1 51	− 9	—	—	—
Riverview		21·1	282	i 4 50k	+ 2	i 8 43	+ 4	i 4 58	pP	e 10·2
Pasadena	z.	96·1	49	e 13 40	+ 9	—	—	—	—	—
Mount Wilson	z.	96·2	49	e 13 40	+ 9	—	—	—	—	—
Palomar	z.	96·3	51	i 13 42	+10	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverside	z.	96·4	49	e 13 41	+ 9	—	—	—	—	—
Tinemaha	z.	98·2	48	e 14 1	+21	—	—	—	—	—
Tucson		99·2	55	e 13 54	+ 9	—	—	—	—	—
Ksara		147·9	270	e 19 46?	[+ 2]	—	—	23 20	PP	—
Helwan	z.	149·5	259	19 59	[+12]	—	—	e 23 21	PP	—
Paris		171·0	332	e 21 36	PKP_2	—	—	—	—	e 90·8
Almeria		175·7	—	25 16	PP	31 32	{−58}	—	—	86·8
Granada		176·2	—	25 38	PP	i 31 34	{−59}	—	—	87·6
Alicante		176·3	—	25 24	PP	32 49	{+16}	—	—	e 89·7

Additional readings :—
Riverview iN = 8m.46s.
Helwan eZ = 20m.18s.
Almeria PKP_2 = 26m.31s., PKS = 28m.36s., PP = 30m.20s., SKKS = 37m.0s. Readings wrongly identified.
Granada SKKS = 37m.58s., SSS = 56m.46s. Readings wrongly identified.
Alicante PKP_2 = 26m.28s., PKS = 29m.10s., PP = 30m.30s., PPP = 34m.20s., SKKS = 37m.28s. Readings wrongly identified.
Long waves were also recorded at Kodaikanal, Huancayo, Harvard, and other European stations.

Sept. 15d. 14h. 56m. 35s. Epicentre 7°·1N. 82°·4W. (as on 1945, Aug. 11d.).

A = +·1313, B = −·9839, C = +·1214 ; δ = +4 ; h = +7 ;
D = −·991, E = −·132 ; G = +·016, H = −·120, K = ·993.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		3·4	55	i 0 53	− 2	i 1 34	− 3	—	—	—
Bogota	E.	8·6	104	e 2 13	+ 4	i 4 51	S_e	—	—	—
Huancayo		20·2	161	e 4 40	+ 1	e 8 25	+ 4	—	—	e 8·8
Fort de France		22·2	69	e 4 54	− 6	—	—	—	—	—
La Paz		27·3	148	e 5 57	+ 9	—	—	—	—	15·4
Philadelphia		33·4	11	—	—	e 12 2	− 1	e 14 9	SSS	e 17·1
Tucson		36·5	317	i 7 7	− 2	—	—	i 9 4	PP	—
Ottawa		38·7	8	7 23	− 4	13 25	0	16 37	SSS	18·4
Kirkland Lake		41·0	3	e 7 43	− 3	—	—	—	—	—
La Jolla	z.	41·3	313	e 7 49	0	—	—	—	—	—
Palomar		41·3	314	i 7 48	− 1	—	—	—	—	—
Boulder City		41·4	319	e 7 49	− 1	—	—	—	—	—
Overton		41·4	320	e 7 49	− 1	—	—	—	—	—
Riverside	z.	42·0	314	e 7 54	0	—	—	—	—	—
Mount Wilson	z.	42·6	314	i 8 0k	+ 1	—	—	—	—	—
Pasadena		42·6	314	i 7 59k	0	—	—	—	—	—
Haiwee	z.	43·5	317	e 8 7	0	—	—	—	—	—
Santa Barbara	z.	43·9	313	e 8 12	+ 2	—	—	—	—	—
Tinemaha	z.	44·3	318	i 8 12	− 1	—	—	—	—	—
Shasta Dam		48·9	320	e 8 47	− 3	—	—	—	—	—
Grand Coulee		51·3	330	e 9 5	− 3	—	—	—	—	—
Ksara		108·9	51	e 12 29	?	e 21 44	PPP	—	—	—

Additional readings :—
Bogota eE = 4m.1s.
Tucson i = 7m.11s.
Tinemaha iEZ = 8m.20s.
Long waves were also recorded at Bermuda and Columbia.

Sept. 15d. Readings also at 0h. (near Overton and near Ksara), 1h. (La Paz), 3h. (Mount Wilson, Palomar, Riverside, Tinemaha, Tucson, and Shasta Dam), 6h. (Pierce Ferry), 8h. (near Alicante), 12h. (La Jolla (2), Mount Wilson (2), Pasadena (2), Palomar, Riverside (2), Boulder City (3), Pierce Ferry (3), Fresno, Berkeley, Ukiah (2), Salt Lake City, Butte, Logan, Chicago, Philadelphia, and near Tucson (2)), 13h. La Paz and La Plata), 16h. (Pierce Ferry), 18h. (New Delhi, Grozny, Tashkent, Tchimkent, near Obi-garm, Samarkand, and Stalinabad), 19h. (Bombay, Calcutta, Kodaikanal, and Pierce Ferry).

Sept. 16d. Readings also at 0h. (Samarkand, near Obi-garm, and Stalinabad), 1h. (Boulder City and Pierce Ferry), 4h. (Pierce Ferry, Shasta Dam, Zagreb, near Obi-garm, Samarkand, Stalinabad, and Tchimkent), 5h. (Mizusawa, near Obi-garm, Samarkand, Tashkent, Frunse, Almata, Ashkabad, and near Berkeley), 6h. (Boulder City and Pierce Ferry), 7h. (Strasbourg and near Stuttgart), 8h. (Pierce Ferry), 11h. (Pierce Ferry), 13h. (Pierce Ferry, Istanbul, Ksara, Strasbourg, near Alicante, and near Obi-garm, Samarkand, and Stalinabad), 18h. (Copiapo and Santa Lucia), 20h. (near Ottawa), 21h. (Columbia, Mount Wilson (2), Tinemaha (2), Riverside, Shasta Dam, Tucson (3), and Paris), 22h. (Obi-garm, Samarkand, Semipalatinsk, Almata, Stalinabad, Sverdlovsk, and Tashkent), 23h. (De Bilt and Kew).

Sept. 17d. 17h. 46m. 52s. Epicentre 4°·0S. 19°·5W.

$A = +\cdot9403$, $B = -\cdot3330$, $C = -\cdot0693$; $\delta = -14$; $h = +7$;
$D = -\cdot334$, $E = -\cdot943$; $G = -\cdot065$, $H = +\cdot023$, $K = -\cdot998$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Malaga	Z.	42·9	17	i 8 5	+ 3	e 14 25	− 2	8 11	pP	20·7
Granada		43·6	18	i 8 8k	0	i 14 42	+ 4	8 27	pP	i 21·5
Almeria		43·7	19	i 8 11	+ 3	14 36	− 3	10 0	P_cP	21·9
Alicante		45·7	20	9 1	+37	i 15 2	− 6	12 17	pP	e 21·4
Tortosa	N.	48·2	20	—	—	i 15 47	+ 4	19 8	SS	e 23·1
La Paz		49·3	252	i 8 52	− 1	i 15 30	−29	i 9 38	?	21·2
Barcelona		49·3	20	—	—	e 15 51	− 8	—	—	e 23·8
Clermont Ferraud		53·5	19	e 9 24	0	e 16 54	− 3	—	—	25·1
Rome		54·2	29	e 9 36	+ 7	17 16	+10	e 11 36	PP	e 24·7
Bogota	E.	55·2	279	e 9 43	+ 6	e 16 42	−38	e 15 3	S_cP	26·1
Paris		56·0	17	e 9 43	0	e 17 31	+ 1	e 21 16	SS	e 25·1
Basle		56·6	21	e 9 50	+ 3	e 18 41	PPS	—	—	—
Zürich		56·8	22	e 9 49	+ 1	e 17 46	+ 5	—	—	—
Triest		56·8	27	e 9 49	+ 1	e 17 50	+ 9	—	—	e 29·4
Strasbourg		57·5	21	e 9 53	0	i 17 48	− 2	e 11 57	PP	e 24·3
Kew		57·6	13	(e 11 8)	P_cP	—	—	—	—	e 11·1
Stuttgart		58·2	22	e 9 59	+ 1	e 18 2	+ 3	e 21 50	SS	e 27·1
Uccle		58·3	17	—	—	e 17 54	− 7	e 21 8?	SS	e 24·1
Helwan		59·1	51	e 10 29	+25	e 18 44	+33	e 12 35	PP	—
De Bilt		59·7	17	e 10 18	+ 9	e 18 17	− 2	e 13 38	PPP	e 25·6
Cheb		60·5	23	—	—	e 18 28	− 1	e 22 29	SS	e 29·1
Prague		61·3	24	—	—	e 18 40	+ 1	—	—	e 25·1
Aberdeen		62·6	10	—	—	e 18 50	− 6	e 25 21	SSS	—
Istanbul		63·0	39	e 11 17?	+46	e 19 46	+45	—	—	—
Ksara		64·3	49	e 11 7	+28	e 20 12	+55	—	—	—
Tucson		93·2	302	e 13 9	− 8	—	—	1 13 13	P	—
Bombay		93·5	71	—	—	e 24 8?	[+15]	—	—	—

Additional readings :—
Malaga PPZ = 9m.51s., PPPZ = 10m.26s., PSZ = 15m.3s., SSZ = 17m.29s.
Granada sP = 8m.45s., P_cP = 9m.46s., pP_cP = 9m.56s., iPP = 10m.1s., pPP = 10m.10s. PPP = 10m.52s., iSS = 17m.30s., SSS = 19m.13s.
Almeria PPP = 10m.32s., P_cS = 13m.44s., S_cS = 18m.8s.
Alicante PP = 12m.17s., PPP = 12m.48s., SS = 17m.53s., SSS = 18m.33s.
Bogota eSSE = 19m.19s., eSSSE = 22m.52s.
Paris iP = 9m.46s., e = 10m.0s., eS = 17m.27s., eSS = 20m.27s., and 20m.43s., eSSS = 22m.45s., e = 23m.44s. and 24m.18s.
Strasbourg eP = 10m.8s., ePPP = 12m.49s., iS = 17m.53s., eS = 17m.58s., eSSS = 21m.28s.
Stuttgart eQ? = 24·1m.
Helwan eZ = 11m.20s.
De Bilt eSSS = 24m.38s.
Cheb e = 20m.11s., eSSS = 25m.35s.
Long waves were also recorded at Copenhagen, Florence, Warsaw, and Huancayo.

Sept. 17d. Readings also at 0h. (near Basle and Zürich), 1h. (Mount Wilson, Palomar, Riverside, Shasta Dam, Tinemaha, and Tucson), 2h. (Riverview), 7h. (La Paz), 8h. (Mizusawa and near Obi-garm), 18h. (near Ottawa), 19h. (Bermuda), 21h. (Shasta Dam and near Bogota).

Sept. 18d. Readings at 0h. (Copiapo, La Plata, and Santa Lucia), 6h. (Shasta Dam, near Almata, Obi-garm, Samarkand, Tashkent, and Tokimkent), 7h. (Istanbul), 8h. (Strasbourg and near Lick), 9h. (Shasta Dam), 10h. (near Balboa Heights), 11h. (near Obi-garm), 13h. (La Paz, near Huancayo, near Almeria and Malaga, and near Obi-garm), 15h. (Mizusawa and Riverview), 19h. (near Mizusawa), 20h. (near Ottawa).

Sept. 19d. 7h. 35m. 49s. Epicentre 37°·4N. 20°·0E. (as on 1947, Sept. 13d.).

$A = +\cdot7484$, $B = +\cdot2724$, $C = +\cdot6048$; $\delta = +9$; $h = -1$;

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rome	7·3	310	e 2 5	P*	e 3 12	− 3	—	—	4·0
Belgrade	7·4	3	e 2 33	P_g	e 3 23	+ 5	—	—	—
Bucharest	8·4	32	e 2 17	+11	—	—	—	—	4·2
Zagreb	8·9	342	e 2 15	+ 3	e 3 49	− 6	—	—	e 5·2
Florence	9·2	316	e 3 15	+59	e 5 17	S_g	—	—	—
Kalossa	9·2	355	—	—	e 4 12	+ 9	e 4 57	S_g	e 5·5
Triest	9·5	332	e 2 38	PPP	i 3 41	−29	—	—	—
Budapest	10·1	356	e 5 31	?	—	—	—	—	6·5
Zürich	13·1	323	e 3 20	+10	—	—	—	—	—
Prague	13·3	344	e 2 38?	−35	e 5 31	−11	—	—	e 6·7
Ksara	13·4	101	e 3 10?	− 4	e 6 12	SSS	—	—	—
Cheb	13·8	339	—	—	e 6 41	?	—	—	e 7·2
Stuttgart	13·8	329	e 3 22	+ 3	e 6 56	?	e 3 34	PP	e 8·2
Strasbourg	14·3	325	e 3 28	+ 2	e 6 19	+13	—	—	—
Paris	17·1	317	e 3 36	−26	—	—	e 4 11	PP	e 11·2
De Bilt	18·0	330	e 4 11	− 2	e 7 41	+ 9	—	—	e 9·2

Budapest also gives ePN = 5m.36s., eE = 6m.11s.?, eN = 6m.24s.
Long waves were also recorded at Warsaw, Uccle, and Kew.

Sept. 19d. 10h. 23m. 25s. Epicentre 25°·7S. 68°·8W. Depth of focus 0·010.
(as on 1943, Oct. 15d.).

$A = +\cdot3263$, $B = -\cdot8412$, $C = -\cdot4313$; $\delta = +11$; $h = +3$;
$D = -\cdot932$, $E = -\cdot362$; $G = -\cdot156$, $H = +\cdot402$, $K = -\cdot902$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Copiapo	N.	2·2	220	i 0 39	+ 3	—	—	—	—	—
Montezuma		3·1	359	i 0 35	−13	i 0 51	−33	—	—	i 1·2
Santa Lucia	E.	7·9	192	2 35	+41	3 25	+ 3	—	—	—
La Paz		9·2	5	i 2 5	− 6	3 25	−29	i 2 27	PPP	3·9
La Plata	E.	13·1	137	3 29	PP	5 19	− 8	6 9	SSS	7·6
	N.	13·1	137	3 33	PP	6 23	SSS	—	—	7·6
	Z.	13·1	137	4 17	?	6 17	SSS	—	—	7·9
Huancayo		14·9	334	e 3 21	− 6	e 4 0	?	i 3 27	pP	i 6·1
Bogota		30·6	350	i 6 2	− 5	e 11 23	+23	i 6 39	pP	—
Fort de France		40·9	12	e 7 24	−10	—	—	—	—	—
Antarctica		42·5	179	i 7 13	−34	13 42	−20	7 33	pP	—
Harvard		67·9	359	i 10 48	− 2	—	—	i 11 14	pP	—
Tucson		70·2	323	i 11 5	+ 1	e 19 43	−24	i 11 29	pP	—
Kirkland Lake		74·2	353	i 11 27	− 1	—	—	i 11 44	pP	—
La Jolla	Z.	74·3	320	e 11 31	+ 3	—	—	—	—	—
Palomar		74·4	320	i 11 33k	+ 4	—	—	i 11 58	pP	—
Pierce Ferry		74·4	324	i 11 34	+ 5	—	—	—	—	—
Boulder City		75·2	323	i 11 36	+ 2	—	—	—	—	—
Riverside		75·2	320	i 11 36k	+ 2	i 12 13	sP	i 12 3	pP	—
Overton		75·4	324	i 11 37	+ 2	—	—	—	—	—
Mount Wilson		75·7	320	i 11 40k	+ 4	i 12 16	sP	i 12 6	pP	—
Pasadena		75·7	320	i 11 39k	+ 3	i 12 16	sP	i 12 5	pP	—
Rapid City		76·3	336	e 11 42	+ 2	—	—	e 12 10	pP	—
Santa Barbara	Z.	76·9	319	i 11 47k	+ 4	—	—	—	—	—
Haiwee		77·0	322	i 11 47k	+ 3	—	—	—	—	—
Tinemaha		77·9	322	i 11 52k	+ 3	—	—	i 12 19	pP	—
Fresno	N.	78·5	320	e 11 55	+ 3	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lick	N.	80·0	320	e 12 4	+ 4	—	—	—	—	—
Shasta Dam		82·7	322	i 12 15	+ 1	—	—	e 12 43	pP	—
Grand Coulee		86·0	329	e 12 33	+ 2	e 13 13	sP	e 13 1	pP	—
Helwan	Z.	110·6	65	—	—	i 29 22	SPP	—	—	—
Istanbul		112·1	54	e 18 35?	[+11]	—	—	—	—	—
Ksara		115·4	63	e 16 34	?	—	—	e 28 0	PS	—

Additional readings :—
La Plata E = 4m.7s., N = 4m.12s., Z = 4m.59s., E = 5m.43s. and 6m.58s., Z = 7m.17s.
Bogota esSE = 12m.26s
Antarctica pP = 8m.11s.
Tucson i = 11m.14s., isP = 11m.43s., i = 12m.42s., iPKP,PKP = 39m.17s.
Mount Wilson iZ = 12m.35s.
Tinemaha iZ = 12m.2s.
Fresno iN = 12m.1s.
Helwan eZ = 30m.13s.

Sept. 19d. 10h. 50m. 10s. Epicentre 46°·3N. 7°·5E. (as on 1946, July 16d.).

A = +·6874, B = +·0905, C = +·7206 ; δ = −3 ; h = −4 ;
D = +·131, E = −·991 ; G = +·714, H = +·094, K = −·693.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Besançon		1·4	312	e 0 29	+ 2	e 0 49	+ 3	—	—	—
Strasbourg		2·3	5	i 0 48	P_g	i 1 16	S_g	—	—	—
Stuttgart		2·7	24	e 0 45	0	i 1 22	+ 3	e 0 54	P_g	—
Clermont-Ferrand		3·1	260	i 1 1	P_g	i 1 44	S_g	—	—	1·8
Paris		4·2	308	i 1 8	+ 1	e 1 58	+ 1	e 1 24	P_g	—
Jena	N.	5·3	29	e 1 46	P_g	e 2 56	S_g	—	—	—

Additional readings :—
Strasbourg i = 0m.53s.
Stuttgart iP_g = 0m.59s., eS?Z = 1m.13s., iS_g = 1m.30s., i = 1m.39s. and 1m.46s.
Clermont-Ferrand iP_g? = 1m.12s.
Paris iP = 1m.17s., iP_g = 1m.30s., e = 2m.18s., eS_g = 2m.26s., e = 2m.31s., i = 2m.34s.

Sept. 19d. Readings also at 0h. (near Tananarive), 1h. (Fresno), 3h. (near Stalinabad), 8h. (Copenhagen), 10h. (near Malaga, Almeria, and Granada), 11h. (near Lick (5)), 16h. (Jena), 17h. (near Stalinabad).

Sept. 20d. 18h. 38m. 23s. Epicentre 2°·2N. 126°·0E. (as on 1937, Jan. 15d.).

A = −·5874, B = +·8084, C = +·0382 ; δ = +1 ; h = +7 ;
D = +·809, E = +·588 ; G = −·022, H = +·031, K = −·999.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vladivostok		41·1	7	e 7 46	− 1	i 14 3	+ 2	—	—	—
Riverview	E.	43·0	150	—	—	e 17 7	SSS	—	—	e 22·3
Bombay		54·6	292	—	—	e 17 37	+26	—	—	—
Stalinabad		63·4	313	i 10 34	0	—	—	—	—	—
Tashkent		64·0	316	e 10 36	− 2	—	—	—	—	—
Ashkabad		71·1	309	e 11 18	− 4	e 20 39	+ 1	—	—	—
Sverdlovsk		74·9	329	e 11 46	+ 2	e 21 24	+ 2	—	—	—
Grozny		81·4	314	e 12 24	+ 4	e 22 38?	+ 7	—	—	—
Leninakan		82·6	311	e 12 37	+11	e 22 54	+11	—	—	—
Moscow		87·3	325	e 13 25	+35	e 24 9	PS	—	—	—
Ksara		88·9	303	e 12 58	0	—	—	e 16 37	PP	—
Helwan	Z.	93·0	299	e 17 0	PP	—	—	—	—	—
Copenhagen		101·2	328	—	—	32 35	SS	—	—	39·6
Stuttgart		105·6	322	e 18 40	PP	e 37 7	SSS	—	—	e 44·6
Rome		105·8	314	e 18 52	PP	e 32 58	SS	e 28 17	PS	—
De Bilt		106·6	326	e 18 49	PP	—	—	—	—	e 41·6
Strasbourg		106·6	322	e 18 51	PP	e 33 25	SS	—	—	—
Paris		109·6	324	—	—	i 27 13	?	—	—	—

Rome also gives e = 43m.37s.?
Long waves were also recorded at Cheb, Clermont-Ferrand, Helsinki, Kew, and Uccle.

Sept. 20d. 18h. 56m. 29s. Epicentre 35°·3N. 69°·7E. (as on 1946, Dec. 4d.).

$A = +·2838$, $B = +·7671$, $C = +·5752$; $\delta = -16$; $h = 0$.
$D = +·938$, $E = -·347$; $G = +·200$, $H = +·539$, $K = -·818$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stalinabad		3·3	348	i 0 53	0	i 1 37	+ 2	—	—	—
Samarkand		4·9	334	i 1 9	− 8	i 1 44	−31	—	—	—
Tashkent		6·0	357	e 1 28	− 4	e 2 30	−13	—	—	—
New Dehli		9·3	134	e 2 36	+19	i 4 25	+20	—	—	—
Ashkabad		9·6	285	e 2 13	− 8	i 3 53	−19	—	—	—
Almata		9·8	33	e 2 32	+ 8	e 4 31	+14	—	—	—
Grozny		20·2	300	e 4 40	+ 1	i 8 12	− 9	—	—	—
Erevan		20·5	292	e 4 45	+ 3	—	—	—	—	—
Calcutta		20·7	122	—	—	e 8 56	SS	—	—	i 11·6
Leninakan		21·1	294	e 4 49	+ 1	—	—	—	—	—
Sverdlovsk		22·4	347	e 5 2	0	—	—	—	—	—
Ksara		27·8	276	e 5 50	− 3	—	—	—	—	—
Moscow		30·0	323	e 6 12	0	e 11 15	+ 5	—	—	—
Warsaw		38·2	311	(e 7 31?)	+ 8	—	—	—	—	e 7·5
Stuttgart	z.	45·8	307	e 8 26	+ 1	—	—	—	—	—

New Delhi also gives iSE = 4m.28s.
Long waves were also recorded at Kew and Kodaikanal.

Sept. 20d. Readings also at 2h. (Apia, Stuttgart, near Basle, and Zürich), 6h. (Mount Wilson, Palomar, Riverside, Shasta Dam, and Tucson), 8h. (near Almeria and Malaga), 9h. (La Paz), 11h. (Istanbul), 12h. (Kodaikanal and near Alicante), 13h. (Istanbul), 14h.(near Pierce Ferry), 17h. (San Francisco), 18h. (Branner, Fresno Shasta Dam, near Berkeley, Lick, and Santa Clara), 20h. (Copiapo and Fort de France), 21h. (near Berkeley and Lick), 22h. (near Samarkand and Stalinabad), 23h. (Boulder City, College, Grand Coulee, Haiwee, Mount Wilson, Palomar, Pasadena, Pierce Ferry, Riverside, Berkeley, Shasta Dam, Sitka, Tinemaha, Tucson, Ksara, Rome, and Vladivostok).

Sept. 21d. Readings at 0h. (Riverview), 2h. (Lick), 3h. (near Mizusawa), 4h. (Mount Wilson, Palomar, Pasadena, Riverside, Shasta Dam, Tinemaha, Tucson, Istanbul, Paris, Strasbourg, Stuttgart, Rome, and Riverview), 5h. (Berkeley, Mount Wilson, Palomar, Pasadena, Riverside, Shasta Dam, Tinemaha, Tucson, Helwan, Istanbul, Ksara, Paris, Strasbourg, Stuttgart, Rome, Auckland, Riverview, and Wellington), 9h. (Mount Wilson, Palomar, Pasadena, Riverside, Shasta Dam, and Tinemaha), 15h. (near Honolulu), 19h. (Antarctica and near Stalinabad).

Sept. 22d. 2h. 16m. 17s. Epicentre 43°·5N. 126°·5W. (as on 1942, Oct. 6d.).

$A = -·4329$, $B = -·5850$, $C = +·6859$; $\delta = +9$; $h = -3$;
$D = -·804$, $E = +·595$; $G = -·408$, $H = -·551$, $K = -·728$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Shasta Dam		4·1	131	e 1 3	− 2	i 1 52	− 3	—	—	—
Ukiah		5·0	149	e 1 16	− 2	e 2 29	S*	—	—	—
Berkeley		6·5	149	e 1 31	− 8	—	—	i 2 9	P_g	i 4·6
Grand Coulee		6·9	47	i 1 43	− 2	—	—	e 2 27	P_g	—
Santa Clara		7·1	149	e 1 57	+ 9	—	—	—	—	—
Fresno	N.	8·5	140	e 2 8	+ 1	—	—	—	—	—
Tinemaha		9·0	133	e 2 16	+ 3	—	—	—	—	—
Haiwee		9·8	135	e 2 28	+ 4	—	—	—	—	—
Santa Barbara	z.	10·5	147	e 2 33	− 2	—	—	—	—	—
Mount Wilson		11·3	142	i 2 45	− 1	—	—	—	—	—
Pasadena		11·4	142	i 2 45	− 2	—	—	—	—	—
Boulder City		11·7	126	e 2 53	+ 2	—	—	—	—	—
Riverside		11·9	140	i 2 52	− 2	—	—	—	—	—
Pierce Ferry		12·1	123	e 2 58	+ 1	—	—	—	—	—
Palomar		12·6	140	i 3 3	0	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Jolla	Z.	12·8	143	e 3 16	PP	—	—	—	—	—
Tucson		16·7	127	i 3 58	+ 1	—	—	i 4 19	PPP	—
St. Louis		27·6	88	e 5 57	+ 6	e 10 49	+17	—	—	—
Cleveland	E.	32·9	77	e 6 2	−36	e 10 45	−71	—	—	—

Additional readings :—
Grand Coulee e = 4m.8s., eS? = 5m.25s.
Tucson i = 4m.59s.
Cleveland iE = 13m.7s.
Long waves were also recorded at Butte and Philadelphia

Sept. 22d. 9h. 21m. 26s. Epicentre 47°·5N. 2°·0W.

Intensity V-VI at Pontchâteau ; V in Loire Inférieure (Quilly, Herbignac, Savenay, Bonayé, Bourgneuf en Retz, Paimboeuf, St. Père en Retz) ; in le Morbihan (Muzillac, Beganne, Questembert, and La Gacilly) ; and in le Maine et Loire (Montrevault).

Epicentre 47°28′N. 1°58′W. Macroseismic area 13,500 sq.km.

J. P. Rothé and N. Dechevoy.
La Séismicité de la France de 1940 a 1950 (Annales de l'Institut du Physique la Globe de Strasbourg, 3ème partié, Géophysique, Tome VII, 1954).

A = +·6777, B = −·0237, C = +·7350 ; δ = +6 ; h = −4 ;
D = −·035, E = −·999 ; G = +·735, H = −·026, K = −·678.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Jersey	1·7	358	0 27	− 4	e 0 43	−11	—	—	—
Paris	3·3	65	i 0 38	−15	i 1 35	0	i 1 42	S*	—
Clermont-Ferrand	3·9	115	e 0 51	−11	i 1 43	− 7	—	—	—
Besançon	5·4	90	—	—	e 2 36	+ 8	—	—	—
Neuchatel	6·1	91	e 1 45	+11	e 2 54	+ 9	—	—	—
Basle	6·5	87	e 1 48	+ 9	e 3 12	S*	—	—	—
Strasbourg	6·6	77	—	—	e 2 58	0	i 3 16	S*	—
Zürich	7·2	87	e 1 56	+ 7	e 3 19	+ 6	e 3 30	S*	—
Stuttgart	7·6	76	e 2 0	+ 5	e 3 39	S*	e 2 13	P*	—

Additional readings :—
Paris eP = 0m.43s., iP$_g$ = 0m.49s., S? = 1m.21s., e = 1m.30s.
Strasbourg e = 3m.12s., iS$_g$ = 3m. 25s.
Stuttgart e = 3m. 52s., eS$_g$? = 3m.59s.

Sept. 22d. Readings also at 0h. (Shasta Dam), 1h. (Paris), 2h. (Cheb), 3h. (Vladivostok, Riverview, Tucson, Pierce Ferry, Bogota, La Paz (2), and near Huancayo (2)), 4h. (Bogota, La Paz, Tucson (3), Shasta Dam (3), Mount Wilson (3), Palomar (3), Riverside (3), and Tinemaha (3)), 5h. (Jena), 6h. (Tananarive), 7h. (near Montezuma), 9h. (near La Paz), 11h. (near Lick), 17h. (near Mizusawa), 19h. (Antarctica and near Ottawa), 21h. (Tucson), 22h. (near Bogota), 23h. (La Paz, Tucson, Palomar, Riverside, Tinemaha, Ashkabad, Tchimkent, Tashkent, near Stalinabad, and Samarkand).

Sept. 23d. 7h. 41m. 34s. Epicentre 54°·2N. 164°·5W. (as on 1947, May 2d.).

A = −·5662, B = −·1570, C = +·8092 ; δ = +4 ; h = −7 ;
D = −·267, E = +·964 ; G = −·780, H = −·216, K = −·588.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		13·6	31	e 3 22	+ 5	e 6 10	SSS	e 7 19	?	e 7·9
Sitka		16·6	66	—	—	e 7 14	+14	e 9 32	?	—
Grand Coulee		28·9	83	e 6 1	− 2	—	—	e 6 10	pP	—
Shasta Dam		31·0	98	i 6 20	− 1	—	—	e 6 42	pP	—
Tinemaha		35·8	99	i 7 3k	0	—	—	i 7 11	pP	—
Haiwee	Z.	36·7	99	i 7 11	+ 1	—	—	i 7 20	pP	—
Pasadena		37·9	101	e 7 21	+ 1	—	—	i 7 30	pP	—
Mount Wilson	Z.	38·0	101	i 7 21k	0	—	—	i 7 29	pP	—
Overton		38·4	96	i 7 24	− 1	—	—	—	—	—
Riverside	Z.	38·5	101	e 7 23	− 3	—	—	e 7 34	pP	—

Continued on next page,

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Boulder City		38·6	97	i 7 27	+ 1	—	—	—	—	—
Pierce Ferry		39·0	96	i 7 30	0	—	—	—	—	—
Palomar		39·3	102	i 7 32k	0	—	—	i 7 41	pP	—
La Jolla	z.	39·4	103	e 7 33	0	—	—	—	—	—
Tucson		43·6	96	i 8 7	− 1	—	—	i 8 16	pP	—
Kirkland Lake		50·3	60	e 9 2	+ 2	—	—	—	—	—
St. Louis		51·1	75	i 9 7	+ 1	e 16 23	− 1	—	—	—
Ottawa		54·3	60	e 9 31	+ 1	—	—	—	—	26·4
Paris		76·8	10	i 12 2k	+ 7	e 29 8	SSS	—	—	e 52·4
Stuttgart	z.	77·3	5	e 12 5	+ 7	—	—	—	—	—
Basle		78·4	7	e 12 11k	+ 7	e 19 44	?	—	—	—
Istanbul		84·4	350	e 12 43?	+ 7	e 23 26	+25	—	—	—
Alicante		86·8	13	e 12 34	−13	e 22 34	−51	—	—	e 35·4
Ksara		90·6	343	e 12 24	−41	e 23 25	[−11]	—	—	—

Additoinal readings :—
Sitka eS = 12m.10s.
Grand Coulee i = 6m.50s.
Palomar iZ = 9m.50s.
Paris iP = 12m.10s., i = 12m.16s.
Long waves were also recorded at Chicago, Berkeley, and Philadelphia.

Sept. 23d. 12h. 28m. 10s. Epicentre 33°·3N. 58°·7E. (as on 1941, Feb. 16d.).

Destructive in the province of Charassan à Daoulatabad, near Birdjand, and at de Ghaen.

Annales de I'Institut de Physique du Globe de Strasbourg, 2ème partie, Séismologie, Nouvelle Série, Tome XII, 1947, Strasbourg 1952, p. 28. Epicentre 33°·7N. 59°·1E.

$A = +\cdot4351$, $B = +\cdot7156$, $C = +\cdot5464$; $\delta = -5$; $h = +1$;
$D = +\cdot854$, $E = -\cdot520$; $G = +\cdot284$, $H = +\cdot467$, $K = -\cdot838$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ashkabad		4·7	357	i 1 12	− 2	—	—	—	—	—
Samarkand		9·2	44	i 1 58	−18	i 3 42	−21	—	—	—
Stalinabad		9·7	54	i 2 21	− 1	i 4 16	+ 1	—	—	—
Baku		10·0	318	2 27	0	—	—	—	—	—
Tashkent		11·6	43	i 2 44	− 6	—	—	—	—	—
Erevan		13·3	305	e 3 16	+ 3	—	—	—	—	—
Leninakan		14·0	307	i 3 26	+ 4	—	—	—	—	—
Grozny		14·2	319	i 3 24	0	—	—	—	—	—
Piatigorsk		16·2	316	i 3 37	−13	e 6 37	−14	—	—	—
New Dehli	N.	16·5	101	i 3 55	+ 1	i 7 10	+12	4 9	PP	—
Dehra Dun	N.	16·7	95	e 2 28	−89	e 6 8	−55	—	—	e 8·0
Almata		17·4	50	i 4 2	− 4	—	—	—	—	—
Sotchi		18·0	312	4 41	+ 1	i 7 42	+10	—	—	—
Ksara		19·0	276	i 4 28	+ 2	8 15	SS	—	—	—
Bombay		19·1	134	i 4 32	+ 5	i 8 7	+10	i 4 55	PP	9·8
Theodosia		21·5	310	i 4 47	− 5	i 8 47	0	—	—	—
Semipalatinsk		23·3	36	i 5 13	+ 3	—	—	—	—	—
Helwan	N.	23·5	268	i 5 14k	+ 2	i 9 32	+ 9	5 50	PP	—
Sverdlovsk		23·6	3	i 5 12	− 1	i 9 22	− 3	—	—	—
Istanbul		24·8	297	5 28	+ 3	9 53	+ 7	—	—	—
Moscow		26·8	335	i 5 42	− 2	10 22	+ 3	—	—	—
Bucharest	E.	27·5	304	e 5 56	+ 6	i 10 38	+ 8	i 12 1	SSS	—
Calcutta	E.	28·2	103	e 5 50	− 6	i 11 18	SS	i 13 3	Q	—
Kodaikanal	E.	28·7	138	i 6 7	+ 6	e 10 44	− 6	—	—	—
Belgrade		31·6	302	e 6 26k	0	e 11 32	− 3	e 7 22	PP	e 18·4
Colombo	E.	32·8	138	6 42	+ 5	11 57	+ 3	—	—	20·1
Kalossa		32·8	306	6 41	+ 4	e 12 29	+35	e 7 22	PP	e 21·8
Budapest		33·0	307	6 51	+12	e 12 13	+16	e 7 50?	PP	15·3
Warsaw		33·0	316	6 40	+ 1	12 36	+39	9 21	PcP	e 18·8
Zagreb		34·8	304	e 6 55	+ 1	i 13 54	SS	i 8 24	PPP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helsinki		34·8	332	e 6 52	− 2	e 12 17	− 8	e 8 8	PP	e 15·8
Triest		36·4	304	i 7 9	+ 1	i 12 51	+ 1	e 8 16	PP	—
Prague		36·5	311	7 11	+ 2	e 12 59	+ 8	e 8 18	PP	e 16·8
Rome		37·2	297	i 7 13a	− 2	i 13 4	+ 2	i 8 43	PP	17·4
Irkutsk		37·7	46	7 20	+ 1	13 7	− 3	—	—	—
Upsala		37·8	327	7 20k	0	13 5	− 6	i 8 43	PP	e 18·8
Potsdam		37·8	315	i 7 23	+ 3	i 13 11	0	i 8 44	PP	e 21·8
Cheb		37·8	310	e 7 13	− 7	i 13 3	− 8	i 8 40	PP	e 22·8
Florence		38·1	300	i 7 24	+ 2	—	—	—	—	—
Jena		38·4	311	e 7 24	− 1	e 13 14	− 6	e 8 54	PP	e 22·8
Copenhagen		38·9	320	e 7 29	0	13 26	− 2	—	—	—
Chur		39·3	306	e 7 30	− 2	e 13 17	−17	—	—	—
Stuttgart		39·7	307	i 7 34a	− 2	e 14 39	+59	e 8 56	PP	e 22·8
Zürich		40·0	306	e 7 37	− 1	—	—	e 8 58	PP	—
Strasbourg		40·6	308	i 7 42a	− 1	i 13 56	+ 2	e 9 18	PP	e 22·1
Basle		40·7	307	e 7 44	0	e 16 31	SS	e 14 29	PPS	—
Neuchatel		41·1	306	e 7 45	− 2	e 13 32	−29	—	—	—
Besançon		41·8	306	e 7 53	0	e 14 14	+ 3	e 17 14	SS	e 24·3
De Bilt		42·5	313	e 7 58a	− 1	e 14 14	− 8	e 17 34	SS	e 21·8
Uccle		42·9	311	e 8 1	− 1	i 14 29	+ 2	e 9 41	PP	e 20·4
Clermont-Ferrand		43·8	303	e 8 3	− 6	e 14 33	− 7	e 10 1	PP	21·8
Paris		44·1	308	i 8 10	− 2	e 14 42	− 3	i 9 58	PP	e 22·8
Barcelona		45·0	298	e 10 49	PPP	e 13 49	−69	—	—	e 23·4
Kew		45·9	312	i 8 27	+ 1	e 15 8	− 3	i 10 6	PP	e 23·8
Bagnères		46·2	300	e 13 50	PcS	e 18 41	SS	—	—	e 23·8
Tortosa		46·3	297	8 29	0	15 9	− 7	10 26	PcP	22·8
Durham	N.	46·7	316	e 8 6	−26	15 18	− 4	10 26	PcP	—
Edinburgh		47·6	318	—	—	e 15 25	−10	e 18 44	SS	—
Aberdeen	E.	47·6	320	i 10 26	PP	i 15 25	−10	i 18 50	SS	i 23·4
Alicante		47·6	294	e 8 57	+18	—	—	9 36	pP	e 23·0
Almeria		49·4	292	i 8 50	− 3	i 15 54	− 6	8 58	pP	29·8
Nanking		50·0	74	e 8 41	−17	e 14 41	?	e 8 51	P	e 28·6
Granada		50·2	294	i 8 58k	− 2	i 16 7	− 4	9 37	pP	i 28·0
Malaga	Z.	51·0	294	i 9 4k	− 2	i 14 46	?	i 9 20	pP	24·5
Tananarive		53·0	193	9 45	PcP	16 52	+ 2	17 2	PS	26·5
Lisbon		54·0	297	9 26	− 2	16 56	− 7	10 20	PcP	23·8
Scoresby Sund		55·9	337	9 47	+ 5	17 34	+ 5	13 4	PPP	—
Reykjavik		56·6	349	—	—	e 23 33	SSS	e 25 46	Q	e 29·7
Vladivostok		56·7	57	e 9 46	− 2	i 17 38	− 2	—	—	—
Hukuoka		58·7	68	i 10 6	+ 4	19 35	+89	e 12 56	PP	33·3
Hamada		59·4	66	—	—	e 18 8	− 7	—	—	—
Koti		61·1	67	e 10 11	− 7	18 39	+ 2	—	—	e 34·4
Osaka		62·2	65	e 10 32	+ 6	19 16	+25	12 29	PP	e 34·7
Nagoya		63·1	63	e 10 33	+ 1	—	—	35 23	Q	38·7
Sapporo		63·2	54	e 10 36	+ 4	—	—	—	—	34·5
Nagano		63·4	62	10 41	+ 7	—	—	—	—	35·4
Mizusawa		64·6	58	10 47	+ 6	e 16 30	?	—	—	25·2
Sendai		64·8	59	e 10 40	− 3	19 22	− 1	23 10	SS	32·0
Tokyo		65·0	62	12 19	PP	19 15	−11	21 50	ScS	—
Johannesburg		65·9	210	i 10 50	0	e 19 44	+ 7	e 16 38	?	e 25·5
Ivigtut		68·9	330	11 13	+ 4	20 10	− 3	21 8	PPS	—
College		80·0	11	e 12 8	− 5	e 22 9	− 8	e 27 11	SS	e 33·4
Perth		84·3	133	—	—	23 15	+15	i 28 54	SS	i 42·8
Halifax		86·4	322	—	—	e 23 18	− 3	—	—	45·8
Seven Falls		88·0	328	16 14	PP	23 26	−10	29 12	SS	42·8
Sitka		88·7	8	—	—	23 52	+ 9	e 23 48	SKS	e 35·9
Kirkland Lake		90·9	333	i 13 11	+ 4	—	—	—	—	—
Ottawa		91·4	330	13 10	+ 1	23 40	[− 1]	29 14	SS	39·8
Temiskaming		91·8	332	i 13 9	− 2	—	—	—	—	—
Saskatoon		94·0	352	—	—	24 2	[+ 6]	30 42	SS	41·8
Fordham		94·2	326	e 17 15	PP	i 24 1	[+ 4]	i 25 55	PS	46·5
Philadelphia		95·5	326	—	—	i 24 4	[0]	e 25 53	PS	e 41·6
Bermuda		95·7	315	e 13 14	−15	e 24 50	+ 6	e 24 12	SKS	e 37·9
Cleveland	E.	97·1	331	—	—	i 24 13	[+ 1]	i 25 0	S	42·1
New Kensington		97·1	329	e 17 23	PP	—	—	e 27 1	PPS	e 44·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		98·5	2	—	—	e 26 50?	PS	e 40 50?	Q	43·8
Chicago		99·0	336	e 18 13	PP	e 24 11	[−11]	e 26 46	PS	e 39·9
Grand Coulee		99·1	358	e 13 47	+ 3	—	—	e 19 31	PPP	—
Butte		100·7	354	—	—	e 25 13	−13	—	—	e 44·0
St. Louis		102·8	336	e 14 5	+ 4	e 27 6	PS	e 18 21	PP	—
Columbia		103·1	327	—	—	e 23 43	[−59]	e 28 7	PPS	e 43·4
Logan		104·8	353	—	—	e 24 37	[−13]	—	—	e 45·1
Salt Lake City		105·8	353	—	—	e 25 1	[+ 7]	e 25 47	S	e 46·7
Shasta Dam		106·4	1	e 18 25	[− 1]	—	—	—	—	—
Ukiah		107·9	2	—	—	e 33 26	SS	—	—	e 47·1
Berkeley		109·2	1	e 18 57	PP	i 35 21	SSP	i 29 42	PPS	i 52·1
Riverview		109·4	118	e 16 34	?	34 24	SS	e 28 33	PS	e 52·5
Santa Clara	N.	109·7	1	—	—	e 32 52	?	e 40 53	?	e 59·4
Tinemaha	Z.	109·9	357	e 18 4	[−29]	e 24 45	[−27]	e 19 8	PP	—
Pasadena		112·8	357	e 18 41	[+ 2]	e 25 10	[−14]	e 19 24	PP	e 48·8
Mount Wilson	Z.	112·8	357	e 18 0	[−39]	e 25 12	[−12]	i 35 16	PKKP	—
Riverside	Z.	113·0	357	e 19 4	[+25]	—	—	e 35 15	PKKP	—
Palomar	Z.	113·6	356	e 18 26	[−14]	e 25 15	[−12]	e 19 20	PP	—
Tucson		114·1	350	e 18 45	[+ 4]	i 35 12	SS	e 19 40	PP	—
Bogota		121·5	301	e 21 3	PP	—	—	e 27 3	{−20}	—
La Plata	E.	128·3	250	29 14	?	38 38	SS	31 20	PS	67·3
	N.	128·3	250	29 44	?	38 53	SS	44 32	SSS	67·2
Auckland		128·5	114	—	—	e 45 50?	SSS	—	—	—
Arapuni		129·4	115	—	—	—	—	e 53 20	Q	71·2
La Paz		129·5	276	e 15 54	P	i 26 2	[−16]	27 48	SKKS	64·2
Wellington		129·5	119	—	—	e 47 50?	SSSS	61 50?	Q	67·8
Huancayo		133·1	286	e 19 26	[+ 8]	e 28 38	{− 1}	e 34 7	PPS	—
Antarctica		133·6	206	e 19 9	[− 9]	e 28 38	{− 4}	e 21 53	PP	e 67·8

Additional readings and notes :—
New Delhi ePE = 4m.2s., iSE = 7m.15s., iN = 9m.9s.
Bombay QEN = 8m.13s., SSEN = 8m.41s., SSSEN = 8m.57s.
Bucharest iE = 7m.5s. and 7m.44s., eS?N = 10m.48s., iS?E = 10m.52s., iSS?N = 12m.10s., iS_cS?N = 16m.42s.
Belgrade ePPP? = 7m.38s., i = 14m.32s.
Kalossa eE = 8m.17s., eN = 13m.14s.
Budapest PE = 6m.54s., eN = 7m.54s., eE = 8m.40s., SN = 13m.21s.
Warsaw PE = 6m.43s., PN = 6m.57s., PPE = 8m.2s., PPPE = 6m.31s.
Helsinki e = 7m.38s., eSS = 14m.10s., eSSS = 14m.50s., eS_cS = 17m.58s.
Triest iPPP = 8m.45s.
Prague ePPP = 9m.8s.
Rome iSS = 14m.58s.
Upsala PPP?E = 9m.17s., PPP?N = 9m.25s., iSS = 15m.21s.
Potsdam iEN = 14m.34s., iSSN = 15m.45s.,? iSSSEN = 16m.29s., iN = 17m.8s., iE = 17m.12s., iS_cS?E = 17m.46s.
Cheb eSSS = 15m.40s., e = 15m.57s.
Jena eZ = 7m.46s. and 13m.10s., eN = 18m.48s. and 18m.57s.
Stuttgart iP = 7m.38s.k, iPP? = 9m.13s., eP_cS? = 13m.20s., eS_cS? = 16m.35s.
Strasbourg iP = 7m.46s., i = 8m.2s., e = 8m.8s. and 8m.36s., i = 8m.40s. and 8m.53s., iPP = 9m.25s., iPPP = 9m.50s., i = 10m.22s., e = 10m.53s., iS = 12m.29s., i = 12m.50s., e = 13m.2s., and 13m.10s., eS = 13m.40s., e = 14m.22s. and 15m.8s., i = 15m.36s. and 16m.47s., iSS = 16m.52s., iS_cS = 17m.54s., e = 20m.8s., i = 21m.49s.
Besançon e = 15m.10s.
Uccle e = 13m.52s., i = 14m.38s., eSSSE = 17m.49s.
Clermont-Ferrand iP = 8m.9s., iSSS = 18m.6s., i = 20m.36s.
Paris i = 8m.35s., e = 8m.56s., i = 10m.26s., ePPP = 10m.42s., e = 12m.2s., iP_cS = 13m.57s., e = 15m.44s., iSS = 18m.0s., eSSS = 18m.37s., i = 19m.7s., 20m.52s., and 21m.7s.
Kew iP_cS = 14m.9s., eSS = 18m.42s., eSSSEZ = 20m.12s.?
Tortosa PPEN = 10m.21s., PPPN = 10m.55s., P_cSEN = 14m.19s., PSE = 15m.19s., SSN = 18m.16s., S_cSE = 18m.58s., SSSEN = 19m.12s.
Durham N = 8m.56s., iPN = 10m.6s., N = 16m.29s., SN = 18m.38s., PSN = 18m.44s.
Edinburgh ePS = 15m.31s., ePPS = 15m.38s., SSS = 19m.50s.
Aberdeen iPPE = 12m.52s., iE = 16m.45s., iSE = 19m.5s., iPSE = 19m.34s., iE = 21m.10s., readings wrongly identified.
Alicante P_cP = 10m.36s., PP = 10m.47s., PPP = 15m.24s., Q = 19m.12s.
Almeria PP = 10m.44s., PPP = 11m.30s., P_cS = 14m.34s., sS = 16m.10s., S_cS = 18m.36s., SS = 19m.19s., SSS = 20m.48s.
Nanking eE = 14m.34s.
Granada P_cP = 10m.10s., PP = 11m.9s., pPP = 11m.50s., P_cS = 12m.21s., PS = 16m.38s., S_cS = 17m.58s., SS = 20m.1s., sSS = 22m.51s., SSS = 23m.56s.
Malaga PPZ = 10m.36s., iS_cPZ = 11m.16s., sSZ = 15m.24s., S_cSZ = 18m.38s.

Continued on next page,

Tananarive SS = 20m.42s., SSS = 22m.42s.
Lisbon PZ = 9m.48s., Z = 15m.13s., eZ = 16m.10s., SSE = 20m.27s.
Scoresby Sund 17m.44s., 18m.17s., 21m.9s., 22m.17s., 23m.7s.
Hukuoka ePPP = 16m.24s., PS = 20m.10s., SS = 24m.2s., SSS = 27m.34s.
Osaka PS = 20m.3s., e = 20m.22s., SS = 24m.47s., SSS = 28m.11s.
Mizusawa PN = 10m.51s.
Tokyo PPP = 15m.39s., SSS = 23m.56s.
College ePS = 23m.4s., ePPS = 23m.25s.
Perth 1 = 34m.57s.
Seven Falls PS = 24m.16s., SSS = 34m.50s.?
Sitka iPS = 25m.3s., ePPS = 25m.36s., eSS = 29m.52s., eSSS = 33m.16s.
Saskatoon SKKS = 24m.42s.
Philadelphia ePPS = 26m.54s., ePKKP = 30m.40s., iSS = 31m.40s., eSSS = 35m.11s., eS_cS,S_cS = 37m.12s., ePKP,PKP? = 38m.36s.
Bermuda ePP = 17m.0s., ePS = 25m.57s., ePPS = 26m.46s., eSS = 30m.58s., eSSS = 35m.32s., eS_cS,S_cS = 36m.59s.
Cleveland ePSEN = 26m.17s., iE = 29m.6s. and 30m.0s., eEN = 30m.29s., iE = 33m.4s.
Chicago e = 24m.23s., ePPS = 27m.22s., eSS = 32m.25s., eSSS = 35m.49s.
Columbia e = 38m.4s.
Salt Lake City ePS = 27m.55s., eSS? = 34m.49s.
Berkeley eZ = 24m.29s., eE = 29m.52s.
Riverview eN = 16m.55s., eE = 48m.38s.
Tinemaha ePKKP?Z = 35m.27s.
Pasadena eZ = 21m.43s., eNZ = 29m.2s., eN = 34m.50s.?, ePKKP?Z = 35m.16s., iN = 36m.10s., eN = 41m.2s.
Mount Wilson eZ = 18m.40s.
Palomar iZ = 19m.39s., ePKKP?Z = 35m.14s.
La Plata E. PPS = 33m.20s., PPP (Δ > 180°) = 35m.14s., 41m.20s., SSS = 45m.2s. and 51m.16s.
La Plata N. PKKP? = 30m.56s., PPP (Δ > 180°) = 36m.56s., SKSP (Δ > 180°) = 38m.26s., 48m.8s., and 55m.20s., Q = 58m.33s.
La Paz iPKPE = 19m.17s., iPPEZ = 21m.0s., iSKPEN = 22m.38s., PPPZ = 24m.40s., PS = 31m.12s., iPPSEN = 33m.10s., SSNZ = 38m.18s.
Wellington SSS? = 55m.50s.?
Huancayo ePKS = 23m.51s., eSKS? = 27m.39s., eSKSP = 32m.32s.
Antarctica eSKP = 22m.44s., eSS = 39m.45s., eSSS = 44m.21s.
Long waves were also recorded at Denver, Harvard, Hirosima, Honolulu, and Rapid City.

Sept. 23d. 13h. 53m. 3s. Epicentre 40°·4N. 125°·1W. (as on 1946, May 7d.).

Intensity VII at Punta Gorda; VI at Bridgeville, Eureka, Ferndale, Fields Landing, Kneeland, Upper Mattole; V at Arcata, Blue Lake, Fort Bragg, etc.
Epicentre 40°·4N. 125°·2W. Macroseismic area 4000 sq. miles.

L. M. Murphy.
United States Earthquakes, Serial 730, Washington, 1950, pp. 25-26.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ferndale		0·6	75	i 0 16	+ 1	i 0 25	− 1	i 0 28	S_g	—
Ukiah		1·9	131	e 0 26	− 8	i 1 37	+38	—	—	—
Shasta Dam		2·1	82	i 0 36	− 1	e 0 54	−10	—	—	—
Berkeley		3·4	138	i 0 52	− 3	i 1 35	− 2	i 0 59	PP	—
San Francisco	E.	3·4	140	i 0 53	− 2	i 1 36	− 1	i 1 9	PPP	—
Branner	E.	3·8	141	e 1 57	S	(e 1 57)	+10	—	—	—
Santa Clara		3·9	139	e 1 0	− 2	i 2 11	+21	i 2 17	SSS	—
Lick	N.	4·1	137	e 1 3	− 2	i 1 55	0	i 1 7	P*	—
Tinemaha		6·3	120	i 1 39	+ 3	e 3 12	+22	—	—	—
Haiwee		7·0	125	i 1 50	+ 4	—	—	—	—	—
Santa Barbara		7·3	143	i 1 52	+ 2	i 3 20	+ 5	—	—	—
Mount Wilson	z.	8·4	134	i 2 5	− 1	i 3 53	+10	—	—	—
Pasadena		8·4	136	i 2 3	− 3	i 3 37	− 6	i 2 6	PP	—
Grand Coulee		8·7	28	e 2 9	− 1	e 3 42	− 8	—	—	e 3·8
Riverside	z.	8·9	133	i 2 10	− 2	—	—	—	—	—
Overton		9·2	111	e 2 21	+ 5	—	—	—	—	—
Boulder City		9·2	115	e 2 0	−16	—	—	—	—	—
Palomar	z.	9·6	134	e 2 22	+ 1	—	—	—	—	—
Pierce Ferry		9·7	112	e 2 26	+ 4	i 3 36	−39	—	—	—
Logan		10·1	78	i 2 30	+ 2	i 4 9	−16	i 2 40	PP	i 5·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Salt Lake City		10·1	83	e 2 28	0	e 5 19	SSS	—	—	e 5·7
Butte		10·7	54	e 2 38	0	i 5 18	SSS	—	—	i 6·1
Tucson		14·1	121	i 3 25	+ 2	e 6 30	+28	i 3 49	PPP	e 7·1
Rapid City		16·6	70	i 3 52	− 4	—	—	—	—	—
Saskatoon		17·3	41	4 3	− 1	7 33	+17	—	—	9·5
Sitka		17·9	342	e 4 11	− 1	e 7 31	+ 1	—	—	i 7·7
St. Louis		26·9	83	i 5 49	+ 4	—	—	—	—	—
College		27·8	339	—	—	e 10 34	− 1	—	—	—
Chicago		28·1	75	e 6 6	+11	e 10 39	− 1	—	—	e 11·9
Kirkland Lake		32·8	61	i 6 43	+ 6	—	—	—	—	—
Temiskaming		33·6	63	i 6 45	+ 1	—	—	—	—	21·0
Ottawa		36·1	65	i 7 4	− 1	—	—	—	—	19·0
Paris		79·8	33	12 13	+ 1	—	—	—	—	—
Malaga	z.	85·9	44	i 12 41k	− 2	i 23 7	[0]	15 55	PP	e 40·4

Additional readings and notes :—
Ukiah readings are given as 15h.
Berkeley eE = 1m.13s.
Santa Clara iN = 1m.33s.
Lick iN = 1m.38s.
Logan i = 3m.26s.
Tucson e = 4m.32s.
Malaga PPPZ = 17m.43s., PSZ = 24m.5s., PPSZ = 24m.27s., SSZ = 28m.37s., SSSZ = 31m.37s.
Long waves were also recorded at Reykjavik, Honolulu, and Philadelphia.

Sept. 23d. Readings also at 0h. (near Mizusawa and near Stalinabad), 1h. (Kew), 2h. (near Mizusawa and near Stalinabad), 6h. (Lick, Tucson (2), and Antarctica), 7h. (Antarctica), 12h. (Piatigorsk, Sotchi, Theodosia, Zürich, Kirkland Lake, and Temiskaming), 13h. (near Ashkabad (2)), 14h. (Copiapo, Stalinabad, Tashkent, Tchimkent, and near Almata), 15h. (Santa Lucia, Ksara, Tashkent, and near Ashkabad (2)), 17h. (Ashkabad and Taskhent), 19h. (Istanbul), 20h. (near Granada, Kodaikanal, Ksara, Stalinabad, and Tashkent), 22h. (Helwan, Ksara, Almata, Samarkand, Stalinabad, Tashkent, Tchimkent, and near Ashkabad), 23h. (Istanbul).

Sept. 24d. Readings at 1h. (Istanbul, Stuttgart, Paris, and Strasbourg), 3h. (Ashkabad, Ksara, Obi-garm, Stalinabad, and Tashkent), 4h. (Santa Lucia and near Ashkabad) 5h. (Ksara, Obi-garm, Stalinabad, and near Ashkabad), 6h. (Strasbourg), 7h. (Antarctica), 9h. (Mount Wilson, Palomar, Pasadena, Riverside, Shasta Dam, and Tinemaha), 11h. (Ashkabad and near Zagreb), 13h. (Copiapo), 15h. (Jena), 16h. (La Paz, Mount Wilson, Riverside, Shasta Dam, Tinemaha, and Tucson), 17h. (Rome), 18h. (Pierce Ferry), 19h. (Almata and near, Obi-garm, Samarkand, Stalinabad, Tashkent, and Tchimkent), 22h. (Palomar, Riverside, Shasta Dam, Tucson, Stuttgart, Helwan, and Ksara).

Sept. 25d. 1h. 34m. 29s. Epicentre 44°·7N. 115°·2W. (as on 1945, Feb. 14d.).

Intensity VI at Boise. Felt less strongly at Emmett and Horse Shoe Bend.
Epicentre 44°20 N. 115°25′W. About 100km. N.E. of Boise.

L. M. Murphy.
United States Earthquakes, 1947, Serial No. 730, Washington, 1950, p. 8.

$A = -·3037$, $B = -·6453$, $C = +·7010$; $\delta = +5$; $h = -3$;
$D = -·905$, $E = +·426$; $G = -·298$, $H = -·634$, $K = -·713$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Butte		2·3	55	e 0 38	− 2	i 1 8	− 1	—	—	i 1·3
Grand Coulee		4·2	322	i 1 4	− 3	i 2 15	S_g	—	—	—
Salt Lake City		4·6	147	(e 1 13)	+ 1	(e 2 56)	S_g	—	—	(e 3·1)
Shasta Dam		6·6	235	e 1 37	− 4	—	—	i 2 1	PPP	—
Tinemaha		7·9	198	e 1 57	− 2	e 4 4	SS	i 2 25	PPP	—
Pierce Ferry		8·6	174	e 2 9	0	—	—	—	—	—
Berkeley		8·6	220	—	—	i 4 54	S_g	—	—	e 5·7
Boulder City		8·7	178	e 2 12	+ 2	—	—	—	—	—
Fresno	N.	8·7	205	e 2 19	+ 9	e 4 38	S_g	—	—	—
Haiwee	z.	8·8	195	e 2 13	+ 2	e 4 36	S_g	e 2 42	PPP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mount Wilson	z.	10·7	193	e 2 37	− 1	e 5 33	S_g	—	—	—
Pasadena	z.	10·8	193	e 2 39	0	e 5 37	S_g	i 3 26	?	—
Riverside	z.	10·8	190	e 2 35	− 4	e 5 45	S_g	i 3 21	?	—
Palomar	z.	11·4	187	i 2 51	+ 4	e 5 58	S_g	i 3 31	?	—
Tucson		12·9	163	e 3 8	+ 1	e 5 22	−11	e 3 43	PPP	e 6·8

The readings for Salt Lake City were reduced by one minute.

Sept. 25d. 18h. 25m. 10s. Epicentre 33°·3N. 58°·7E. (as on Sept. 23d.).

$A = +·4351$, $B = +·7156$, $C = +·5464$; $\delta = -5$; $h = +1$.

	△	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Ashkabad	4·7	357	e 1 14	0	i 2 6	− 4
Samarkand	9·2	44	e 2 16	0	i 3 0	−63
Stalinabad	9·7	54	i 2 20	− 2	—	—
Obi-garm	10·4	56	2 30	− 4	4 25	− 7
Tashkent	11·6	43	e 3 37	+47	e 5 56	SSS
Tchimkent	12·4	41	i 3 23	+22	—	—
Ksara	19·0	276	e 4 29	+ 3	e 8 15	+20
Sverdlovsk	23·6	3	e 5 18	+ 5	e 9 33	+ 8

Sept. 25d. 23h. 31m. 5s. Epicentre 1°·0N. 128°·0E. (as on 1944, Oct 14d.).

$A = -·6155$, $B = +·7879$, $C = +·0173$; $\delta = -7$; $h = +7$;
$D = +·788$, $E = +·616$; $G = -·011$, $H = +·014$, $K = -1·000$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hukuoka		32·5	5	i 6 30	− 4	11 58	+ 9	7 47	PP	15·4
Koti		32·8	8	e 6 35	− 2	11 15	−39	—	—	13·1
Hamada		33·9	6	e 6 43	− 4	14 52	SSS	—	—	—
Osaka		34·2	11	6 48	− 1	12 30	+14	7 41	PP	e 15·3
Perth		34·7	198	6 57	+ 3	i 12 37	+13	i 8 15	PP	—
Nagoya		35·0	13	6 56	0	12 30	+ 2	8 23	PPP	15·1
Nagano		36·7	13	e 7 2	− 8	—	—	—	—	19·0
Sendai		38·9	17	e 7 31	+ 2	13 33	+ 5	—	—	e 18·7
Mizusawa	E.	39·8	17	7 41	+ 5	e 13 43	+ 1	—	—	—
Riverview		40·9	150	7 55	+ 9	i 14 11	+13	i 17 9	SS	e 20·1
Vladivostok		42·1	4	i 7 53	− 2	i 14 13	− 3	—	—	—
Sapporo		43·6	13	e 8 10	+ 2	14 36	− 2	—	—	—
Calcutta	E.	44·1	302	e 8 18	+ 6	e 14 5	−40	i 16 11	?	18·9
Colombo	E.	48·3	278	8 41	− 4	15 35	−10	—	—	—
Kodaikanal	E.	51·0	283	i 8 55	−11	i 16 25	+ 3	—	—	24·9
Irkutsk		54·8	342	i 9 32	− 2	17 10	− 4	—	—	—
Bombay		56·9	292	i 9 49	0	i 17 36	− 6	i 21 34	SS	25·9
Arapuni		58·6	137	—	—	18 43	+39	22 55	SS	33·1
Wellington		59·7	141	20 1	?	22 37	SS	25 15	SSS	29·4
Almata		61·9	320	i 10 23	− 1	—	—	—	—	—
Obi-garm		65·2	313	i 10 39	− 6	i 19 20	− 8	—	—	—
Stalinabad		65·7	312	i 10 45	− 3	i 19 30?	− 4	—	—	—
Tashkent		66·3	315	e 10 41	−11	—	—	—	—	—
Tchimkent		66·4	317	e 10 52	− 1	e 19 43	0	—	—	—
Samarkand		67·3	312	e 10 55	− 4	—	—	—	—	—
Ashkabad		73·4	309	e 11 37	+ 1	e 21 5?	0	—	—	—
Honolulu		74·9	68	—	—	e 21 15	− 7	—	—	e 30·8
Sverdlovsk		76·9	329	i 11 53	− 3	i 21 35	− 8	—	—	—
Baku		80·3	311	e 12 21	+ 7	e 22 21	+ 1	—	—	—
Tananarive		81·3	251	17 6	PPP	22 39	+ 9	27 36	SS	—
Grozny		83·7	313	e 12 37	+ 5	—	—	—	—	—
Erevan		84·4	310	e 12 37	+ 1	22 57	− 4	—	—	—
Leninakan		84·9	311	e 12 37	− 1	e 22 57	− 9	—	—	—
Piatigorsk		85·7	314	e 12 46	+ 4	—	—	—	—	—
College		86·6	25	e 15 12	?	e 23 8	[− 3]	e 24 30	PS	e 37·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		91·2	303	i 13 8	0	24 18	+13	25 20	PS	—
Sitka		92·8	33	—	—	e 24 27	+ 8	e 23 48	SKS	—
Helwan		95·3	300	i 13 30k	+ 3	e 24 43	+ 2	17 7	PP	—
Helsinki		95·6	331	—	—	e 31 3	SS	—	—	e 42·9
Istanbul		96·1	312	e 13 22	− 9	e 24 51	+ 3	—	—	—
Upsala		99·2	331	—	—	e 23 28	[−55]	e 26 24	PS	e 42·9
Warsaw		99·5	323	—	—	e 24 11	[−14]	e 24 15	SKS	e 41·9
Victoria		101·5	40	—	—	e 22 55?	?	—	—	31·9
Budapest		102·0	319	e 18 27	PP	e 24 33	[− 4]	e 36 55?	SSS	e 58·9
Kalossa	N.	102·3	318	e 18 24	PP	—	—	—	—	—
Copenhagen		103·3	328	e 18 22	PP	e 25 36	−12	33 23	SSP	39·9
Prague		104·1	322	—	—	e 25 55	0	—	—	e 43·9
Shasta Dam		104·1	47	e 14 9	+ 2	—	—	—	—	—
Grand Coulee		104·5	39	e 18 0	PKP	—	—	—	—	—
Santa Clara	N.	105·2	50	—	—	e 37 27	SSS	—	—	e 44·2
Cheb		105·4	323	—	—	e 24 59	[+ 7]	e 26 0	S	e 53·9
Jena	N.	105·5	324	e 18 37	PP	—	—	—	—	—
Berkeley		105·5	50	e 19 3	PP	i 24 49	[− 4]	i 25 54	S	e 47·8
Scoresby Sund		105·9	350	18 49	PP	25 54	−16	28 53	PPS	—
Triest		106·0	318	e 19 19	PP	e 25 13	[+18]	i 28 50	PS	e 46·9
Stuttgart		107·8	323	e 17 55	PKP	e 26 27	+ 1	e 18 51	PP	e 49·9
Rome		108·1	315	e 19 4	PP	e 28 55	PPS	—	—	—
Tinemaha	Z.	108·2	50	e 18 15	PKP	—	—	—	—	—
Florence		108·3	317	e 19 6	PP	e 29 38	PPS	—	—	—
Strasbourg		108·7	323	i 19 4	PP	e 25 15	[+ 8]	e 26 11	S	e 50·4
De Bilt		108·7	327	e 19 0	PP	e 25 25	[+18]	e 34 5	SS	e 48·9
Pasadena		109·0	53	e 19 4	PP	—	—	—	—	e 44·4
Mount Wilson	Z.	109·1	53	e 16 32	?	—	—	e 19 10	PP	—
Aberdeen	E.	109·6	334	—	—	e 26 0	[+49]	e 40 35	SSS	e 48·8
Riverside		109·7	53	e 18 32	[0]	—	—	e 19 15	PP	—
Uccle		109·8	327	—	—	e 25 19	[+ 8]	e 29 30	PPS	e 49·9
Saskatoon		110·1	32	—	—	e 26 31	{+25}	e 34 25	SS	48·9
Logan		111·4	44	—	—	—	—	e 28 52	PS	e 51·9
Salt Lake City		111·7	45	—	—	e 26 35	[+16]	—	—	e 46·0
Paris		111·8	325	e 18 37	[0]	e 28 45?	PS	19 18	PP	e 51·9
Kew		112·0	328	e 18 58?	[+21]	—	—	e 28 53	PS	68·9
Antarctica		112·1	174	i 19 27	PP	e 26 25	{+ 5}	—	—	e 45·4
Clermont-Ferrand		112·8	321	—	—	e 31 25	PPS	—	—	—
Tucson		115·4	53	e 18 47	[+ 3]	—	—	e 29 18	PS	e 46·6
Alicante		118·6	316	e 20 9	PP	25 33	[−12]	36 5	SS	e 49·5
Almeria		120·7	315	i 20 15	PP	35 43	SS	20 39	pP	52·9
Granada		121·3	316	(e 19 4k)	[+ 9]	(37 25)	SSP	—	—	(53·2)
Malaga	Z.	122·1	316	i 20 21a	PP	25 43	[−14]	20 37	pP	48·1
Kirkland Lake		125·3	22	e 18 49	[−14]	—	—	—	—	—
St. Louis		127·2	37	e 19 9	[+ 2]	e 37 51	SS	e 21 5	PP	—
Seven Falls		129·3	16	—	—	e 38 55	SS	—	—	51·9
Ottawa		129·3	21	e 19 11	[0]	—	—	e 22 31	PP	59·9
Harvard		133·2	19	i 21 49	PP	—	—	e 34 5	?	e 67·9
Philadelphia		134·1	24	e 19 27	[+ 7]	e 28 57	{+11]	—	—	e 38·2
Fordham		133·8	22	e 22 54	PKS	—	—	—	—	—
Bermuda		144·7	18	e 19 35	[− 4]	e 27 16	[+30]	e 42 23	SSP	—
La Plata	E.	145·8	171	19 43	[+ 2]	36 55?	PPS	23 43	PP	63·0
	N.	145·8	171	19 41	[0]	29 55	{ 0}	23 49	PP	50·3
	Z.	145·8	171	19 44	[+ 3]	—	—	—	—	—
Huancayo		154·4	116	e 20 4	[+10]	e 45 13	SSP	e 24 10	PP	e 49·2
La Paz		157·9	135	i 20 7	[+ 9]	i 33 43	PS	19 19	?	78·9
Fort de France		161·9	29	e 20 5	[+ 2]	—	—	—	—	—

Additional readings :—
Huokuoka PPP = 8m.55s.
Perth i = 11m.38s.
Nagoya PP = 7m.39s.
Riverview iSSE = 17m.12s., iNZ = 17m.25s. iE = 17m.29s., iEN = 17m.55s.
Wellington pP = 20m.26s., PP = 21m.10s., SS = 27m.27s., readings wrongly identified.
College ePPP = 19m.8s.
Ksara SS = 30m.50s.

Continued on next page.

Sitka e =25m.20s., 30m.59s., and 35m.5s.
Helsinki e =33m.53s.
Warsaw eE =24m.31s. and 25m.7s., eN =26m.12s. and 29m.27s.
Shasta Dam e =14m.27s., e =17m.6s.
Cheb e =26m.50s., 28m.5s., 29m.41s., 34m.44s., 36m.17s., 37m.32s., and 39m.29s.
Berkeley iS_eSN =25m.49s., eQN =43m.19s.
Triest eSKKS =26m.37s., ePPS =29m.59s., eSSS =39m.16s.
Stuttgart e =19m.29s., ePPP? =21m.35s., ePPS? =29m.16s., e =31m.10s., eSS? = 33m.57s., eSSS? =37m.55s.
Strasbourg ePPP =21m.34s. and 21m.37s., e =27m.1s., ePS =28m.8s., i =28m.25s., e =28m.43s., ePPS =29m.12s., i =29m.35s., and 31m.2s., e =33m.41s., eSS = 33m.49s. and 33m.52s., eSSS =37m.55s., e =38m.27s., 38m.50s., 41m.45s., 42m.41s.. and 43m.7s.
De Bilt ePPS =29m.23s.
Mount Wilson eZ =18m.6s.
Paris eSS =34m.52s., eSSS =38m.52s.
Kew ePKP?EZ =21m.48s.?, ePP?E =24m.33s.?, ePPP?E =27m.24s.?, ePPS?Z = 36m.26s.?, eSS?NZ =42m.18s.?, Q? =56m.55s.
Tucson e =20m.3s., 30m.3s., and 38m.47s.
Alicante PP =23m.43s., iS? =30m.47s., PS =31m.31s., PPS =31m.55s., SSS =39m.53s.,
Almeria PP =23m.20s., PPP =25m.16s., S =30m.20s., PS =31m.10s., SSS =39m.1s.
Granada eSKKS =(29m.0s.), SSS =(42m.9s.), readings reduced by 10 minutes.
Malaga PPZ =23m.47s., iSZ =30m.21s., PSZ =31m.33s., SSZ =35m.35s.
St. Louis eSKP =22m.23s., e =30m.4s. and 34m.41s.
Philadelphia readings were reduced by 10 minutes.
Bermuda ePP =20m.7s., ePS? =30m.2s., e =34m.18s., eSS? =37m.59s.
L Plata E. PP =20m.19s., SSS? =39m.55s.?
La Plata N. PP? =21m.55s., 25m.7s., SKKS =27m.49s., SSS =40m.55s.?
La Paz iN =25m.31s.
Long waves were also recorded at Auckland, Butte, Chicago, Columbia, Ukiah, Lisbon, Bergen, Potsdam, and Edinburgh.

Sept. 25d. Readings also at 1h. (near Obi-garm and Stalinabad), 4h. (near Ashkabad, near Obi-garm, and Stalinabad), 10h. (near Riverview), 12h. (Mizusawa, Branner, Fresno, near Berkeley, and Lick), 13h. (Santa Lucia), 17h. (Istanbul), 18h. (near Balboa Heights), 19h. (La Paz), 20h. (near Irkutsk), 21h. (near San Francisco), 22h. (Ashkabad), 23h. (Mount Wilson, Riverside, Tinemaha, Shasta Dam, Tucson, Bogota, La Paz, and near Huancayo).

Sept. 26d. 3h. 4m. 31s. Epicentre 33°·3N. 58°·7E. (as on Sept. 25d.).

$A = +\cdot4351$, $B = +\cdot7156$, $C = +\cdot5464$; $\delta = -5$; $h = +1$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ashkabad		4·7	357	i 1 13	− 1	i 2 8	− 2	e 2 21	S*	—
Samarkand		9·2	44	i 2 13	− 3	—	—	—	—	—
Stalinabad		9·7	54	i 2 23	+ 1	—	—	—	—	—
Baku		10·0	318	e 2 29	+ 2	—	—	—	—	—
Obi-garm		10·4	56	i 2 27	− 7	i 4 23	− 9	—	—	—
Tashkent		11·6	43	e 2 47	− 3	—	—	—	—	—
Tchimkent		12·4	41	i 2 57	− 4	—	—	—	—	—
Erevan		13·3	305	e 3 12?	− 1	—	—	—	—	—
Leninakan		14·0	307	e 3 22	0	—	—	—	—	—
Grozny		14·2	319	3 24	0	—	—	—	—	—
Piatigorsk		16·2	316	e 3 49	− 1	—	—	—	—	—
New Delhi		16·5	101	i 4 2	+ 8	i 7 11	+13	7 18	SS	8·7
Dehra Dun	N.	16·7	95	e 5 37	?	—	—	—	—	e 9·6
Almata		17·4	50	4 1	− 5	7 31	+12	—	—	—
Sotchi		18·0	312	e 4 16	+ 3	—	—	—	—	—
Ksara		19·0	276	i 4 28	+ 2	8 14	+19	—	—	—
Bombay		19·1	134	i 4 32	+ 5	i 8 16	+19	—	—	9·9
Theodosia		21·5	310	4 49	− 3	—	—	—	—	—
Helwan		23·5	268	i 5 14k	+ 2	9 29	+ 6	—	—	—
Sverdlovsk		23·6	3	i 5 10	− 3	i 9 27	+ 2	—	—	—
Istanbul		24·8	297	i 5 20	− 5	i 9 50	+ 4	—	—	—
Moscow		26·8	335	5 42	− 2	10 21	+ 2	—	—	—
Bucharest		27·5	304	e 6 5	+15	e 10 59	+29	—	—	16·5
Calcutta	E.	28·2	103	e 7 17	PPP	i 11 38	SS	i 12 38	SSS	13·7
Colombo	E.	32·8	138	—	—	12 5	+11	—	—	16·2

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kalossa	E.	32·8	306	e 6 44	+ 7	—	—	—	—	—
Budapest		33·0	307	e 8 0	PP	e 12 49	+52	e 13 29?	SS	e 21·0
Warsaw		33·0	316	e 6 54	+15	12 35	+38	14 41	SSS	e 19·5
Helsinki		34·8	332	—	—	e 14 5	SS	e 15 26	SSS	e 19·5
Triest		36·4	304	e 8 3	PP	e 15 47	SS	i 8 38	PPP	—
Prague		36·5	311	—	—	e 15 47	SS	—	—	e 20·5
Rome		37·2	297	e 9 31	PP	—	—	—	—	—
Irkutsk		37·7	46	e 7 24	+ 5	—	—	—	—	—
Cheb		37·8	310	—	—	e 14 12	+61	e 16 5	SSS	e 24·5
Potsdam		37·8	315	—	—	e 16 29	SSS	—	—	e 20·5
Upsala		37·8	327	e 8 44	PP	e 13 9	− 2	e 15 49	SS	e 20·5
Florence		38·1	300	e 15 44	SS	i 19 44	L	—	—	(i 19·7)
Jena	N.	38·4	311	e 7 28	+ 3	—	—	e 8 53	PP	—
Copenhagen		38·9	320	e 7 30	+ 1	e 13 27	− 1	16 12	SS	19·5
Stuttgart		39·7	307	e 7 34	− 2	e 16 29	SS	e 9 2	PP	e 23·0
Zürich		40·0	306	e 7 32	− 6	—	—	—	—	—
Strasbourg		40·6	308	e 7 44	+ 1	e 13 29	−25	e 16 39	SS	23·2
Basle		40·7	307	e 7 42	− 2	—	—	—	—	—
De Bilt		42·5	313	e 7 57	− 2	e 17 29	SS	—	—	e 22·5
Bergen		43·8	326	e 9 34	PP	e 17 54	SS	—	—	25·5
Clermont-Ferraud		43·8	303	e 8 13	+ 4	—	—	—	—	—
Kew		45·9	312	e 8 27	+ 1	e 18 28?	SS	e 20 12?	Q	e 25·5
Aberdeen	E.	47·1	320	—	—	e 17 40	?	i 19 9	SS	e 29·6
Alicante		47·6	294	e 8 59	+20	e 16 55	+80	9 49	PcP	e 27·4
Almeria		49·4	292	i 8 53	0	i 15 55	− 5	9 1	pP	30·5
Malaga	Z.	51·0	294	i 9 5	− 1	i 17 31	+69	9 44	PcP	28·8
Vladivostok		56·7	57	—	—	e 17 44	+ 4	22 6	SS	—
Kirkland Lake		90·9	333	e 13 7	0	—	—	—	—	—
Ottawa		91·4	330	e 13 11	+ 2	—	—	—	—	45·5
Tucson		114·1	350	e 19 8	PP	—	—	—	—	—

Additional readings :—
New Delhi SSN = 7m.33s.
Helwan iE = 6m.38s.
Kalossa eN = 7m.9s.
Budapest ePE = 8m.11s.
Warsaw eE = 14m.5s., SSE = 14m.44s., SSSEN = 15m.40s., eE = 15m.59s., S_cSN = 16m.40s., S_cSE = 16m.45s.
Helsinki e = 17m.29s.
Cheb e = 17m.53s.
Upsala eSS?E = 16m.47s.
Copenhagen 17m.0s.
Strasbourg eSS? = 16m.54s.
Bergen eSN = 18m.45s., eN = 20m.35s., SSN = 23m.49s.
Alicante PP = 10m.49s., PPP = 12m.35s., SS = 21m.2s., SSS = 23m.11s.
Almeria P_cP = 10m.19s., PP = 10m.49s., PPP = 11m.38s., sS = 16m.15s., S_cS = 18m.39s., SSS = 21m.1s.
Malaga PPZ = 11m.9s., PPPZ = 12m.53s., S_cPZ = 13m.29s., S_cSZ = 19m.27s., SSZ = 21m.41s.
Long waves were also recorded at Uccle and other American stations.

Sept. 26d. 16h. 1m. 59s. Epicentre 24°·7N. 123°·2E. Depth of focus 0·010.
(as on 1944, March 15d.).

Felt strongly on Isigaki Island, walls damaged and earth fissures appeared.

H. Kawasumi.
Seismology in Japan, 1939-1947. Bull. Seism. Soc. Amer., Vol. 39, No. 3, July, 1949, p. 162.

$A = -·4981$, $B = +·7611$, $C = +·4155$; $\delta = +2$; $h = +3$;
$D = +·837$, $E = +·547$; $G = -·227$, $H = +·348$, $K = -·910$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nanking		8·3	332	i 2 47	+48	4 33	L	—	—	(4·6)
Vladivostok		19·7	19	i 4 23	− 1	i 8 4	+ 8	—	—	—
Mizusawa	E.	20·9	43	4 34	− 2	8 24	+ 5	—	—	—
Irkutsk		31·1	337	i 6 10	− 1	i 11 6	− 2	—	—	—
Calcutta	E.	32·0	273	i 6 19a	0	i 11 26	+ 4	i 12 57	SS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Dehra Dun	N.	40·2	288	e 6 51	?	e 14 24	+56	e 9 53	PPP	e 20·1
New Delhi		41·1	286	e 7 38	+ 2	i 13 38	− 3	16 43	SS	—
Hyderabad	N.	42·2	269	7 43	− 2	13 55	− 2	9 39	PP	20·1
Colombo	E.	45·1	254	8 7	− 1	(14 40)	+ 1	—	—	14·7
Kodaikanal	E.	45·7	261	i 8 15	+ 2	i 14 51	+ 3	—	—	21·5
Bombay		46·9	273	i 8 19	− 3	i 15 3	− 2	i 10 12	PP	18·0
Obi-garm		47·0	302	i 8 24	+ 1	i 14 56	−10	—	—	—
Stalinabad		47·7	301	i 8 29	0	i 15 12	− 4	—	—	—
Samarkand		49·1	302	i 8 39	0	—	—	—	—	—
Sverdlovsk		54·7	323	i 9 23	0	i 16 49	− 3	—	—	—
Ashkabad		55·9	300	e 9 32	+ 2	e 17 12	+ 4	—	—	—
Perth		56·8	187	9 39	+ 3	17 36	+16	—	—	25·8
Baku		62·1	304	e 10 15	+ 2	e 18 27	− 1	—	—	—
Riverview		64·0	154	i 10 27k	+ 2	i 18 58	+ 6	i 10 53	pP	e 29·6
Grozny		64·6	308	10 29	0	i 18 59	− 1	—	—	—
Piatigorsk		66·4	309	e 10 45	+ 4	—	—	—	—	—
Leninakan		66·6	305	i 10 49	+ 7	—	—	—	—	—
College		67·5	27	e 10 46	− 2	e 19 32	− 3	e 11 26	sP	e 27·8
Moscow		67·5	323	i 10 46	− 2	i 19 30	− 5	11 16	pP	—
Sotchi		68·9	310	10 53	− 3	19 45	− 7	—	—	—
Theodosia		71·5	312	i 11 13	+ 1	i 20 20	− 2	—	—	—
Honolulu		71·8	74	e 11 10	− 4	i 20 27	+ 2	i 11 21	P_cP	e 29·6
Yalta		72·5	311	11 13	− 5	20 23	−10	—	—	—
Helsinki		72·9	330	i 11 18	− 2	i 20 32	− 6	i 11 48	P_cP	e 32·5
Ksara		74·6	300	i 11 31	+ 1	21 0	+ 4	12 15	pP	—
Sitka		75·4	33	i 11 35	0	i 21 7	+ 2	i 11 54	pP	e 31·4
Upsala		76·4	330	i 11 38a	− 2	i 21 10	− 6	14 26	PP	e 34·0
Istanbul		77·2	309	i 11 37	− 8	i 21 15	−10	—	—	—
Bucharest		77·9	313	e 11 57	+ 8	i 21 33	0	21 56	PS	35·0
Warsaw		77·9	322	i 11 49	0	i 21 29	− 4	i 12 18	P_cP	e 32·0
Auckland		78·2	140	11 37	−13	21 43	+ 7	16 18	P_cS	30·0
New Plymouth		79·3	141	12 1	+ 5	e 21 49	+ 2	—	—	—
Arapuni		79·5	140	15 31	PP	22 1	+11	—	—	—
Helwan		79·6	297	i 11 58k	0	i 21 49	− 2	12 27	pP	—
Kaimata		80·3	145	12 9	+ 7	—	—	—	—	—
Tuai		80·8	140	12 11	+ 7	—	—	—	—	—
Copenhagen		80·8	327	i 12 4	0	i 22 0	− 3	22 39	SP	35·0
Budapest		81·1	318	i 12 8	+ 2	i 22 2	− 4	15 29	PP	40·0
Wellington		81·2	143	12 8	+ 2	22 7	0	15 45	PP	33·9
Belgrade		81·4	315	i 12 7	− 1	i 22 4	− 5	i 12 39	pP	54·0
Bergen		81·4	334	i 12 8	0	i 22 8	− 1	e 15 15	PP	41·1
Kalossa		81·6	318	12 10	+ 1	22 12	+ 1	15 27	PP	e 38·0
Christchurch		81·6	146	12 13	+ 4	—	—	—	—	—
Scoresby Sund		81·7	349	12 9	0	22 16	+ 4	15 18	PP	—
Potsdam		82·2	325	i 12 11	− 1	i 22 14	− 3	i 15 43	PP	e 33·0
Prague		82·6	322	12 13	− 1	i 22 18	− 3	e 15 18	PP	e 33·0
Jena		83·7	323	e 12 18	− 1	e 22 30	− 2	—	—	e 38·5
Zagreb		83·8	317	i 12 17	− 3	i 22 30	− 3	i 12 36	P_cP	e 34·0
Triest		85·2	318	i 12 19a	− 8	i 22 38	[− 1]	i 12 41	pP	e 41·0
Tananarive		85·4	247	e 12 27	− 1	22 52	+ 3	13 1	pP	35·7
Victoria		86·0	38	12 31	0	22 43	[− 2]	15 49	PP	40·0
Stuttgart		86·2	323	i 12 31a	− 1	i 22 54	− 3	i 15 35	PP	e 41·0
Cheb		86·3	323	e 12 19	−13	i 22 31	[−15]	e 15 47	PP	e 36·0
De Bilt		86·4	327	i 12 32a	− 1	i 22 48	[+ 1]	e 15 55	PP	e 35·0
Aberdeen	E.	86·4	333	i 12 33	0	i 23 1	+ 2	i 16 4	PP	38·9
Chur		87·0	321	e 12 35a	− 1	e 22 43	[− 8]	—	—	—
Strasbourg		87·1	323	i 12 34	− 2	i 23 3	− 2	i 15 54	PP	e 40·0
Zürich		87·3	322	e 12 36a	− 1	e 23 10	+ 3	e 15 59	PP	—
Uccle		87·6	326	i 12 38a	0	e 23 8	− 2	e 16 3	PP	e 36·0
Florence		87·7	317	i 12 38	− 1	i 23 11	0	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Edinburgh		87·7	333	12 36	− 3	22 54	[− 1]	16 1	PP	—
Durham		87·8	331	i 12 39	0	22 51	[− 5]	i 16 19	PP	—
Basle		87·8	322	e 12 36	− 3	e 23 11	− 1	e 16 3	PP	—
Rome		87·9	316	i 12 37a	− 3	i 23 9	− 4	i 12 57	pP	41·5
Neuchatel		88·4	322	e 12 41	− 1	e 23 15	− 3	—	—	—
Grand Coulee		88·7	36	i 12 45	+ 1	e 23 27	+ 7	e 23 1	SKS	—
Besançon		88·8	322	e 12 46	+ 2	e 22 55	[− 7]	—	—	e 39·0
Kew		89·4	328	i 12 46a	− 1	i 23 24?	− 3	i 13 20	pP	e 38·0
Ferndale		89·8	45	e 13 2	+13	e 23 9	[0]	e 23 47	S	—
Shasta Dam		90·9	44	i 13 28	+34	i 23 14	[− 1]	i 23 45	SKKS	—
Ukiah		91·3	46	e 12 49	− 7	23 56	+12	e 23 16	SKS	e 38·4
Clermont-Ferrand		91·3	323	e 12 56	0	i 23 19	[+ 2]	—	—	40·5
Jersey		91·8	329	—	—	e 23 26	[+ 6]	—	—	41·5
Saskatoon		92·0	29	12 59	0	23 20	[− 1]	23 50	S	39·0
San Francisco	E.	92·5	47	e 13 3	+ 2	e 23 24	[0]	—	—	—
Berkeley		92·6	47	e 13 2	0	i 23 25	[+ 1]	i 13 12	pP	i 37·3
Santa Clara		93·1	47	i 13 5	+ 1	i 23 27	[0]	—	—	—
Lick	N.	93·3	47	e 13 7	+ 2	e 23 30	[+ 2]	—	—	e 36·6
Butte		93·4	35	e 13 7	+ 1	i 24 5	+ 3	e 13 46	pP	e 39·3
Ivigtut		94·1	356	i 13 6a	− 3	23 26	[− 5]	16 51	PP	39·0
Barcelona		94·5	320	e 13 17	+ 7	i 24 13	+ 1	—	—	e 36·9
Fresno	N.	94·8	46	e 13 15	+ 3	e 23 40	[+ 4]	—	—	—
Tinemaha		95·6	45	i 13 18	+ 2	i 23 45	[+ 4]	e 30 41	PKKP	—
Tortosa		95·9	320	i 13 17	0	i 23 39	[− 4]	13 54	pP	46·9
Haiwee		96·4	45	i 13 20	+ 1	i 23 48	[+ 2]	i 17 11	PP	—
Logan		96·6	38	i 13 22	+ 2	i 23 48	[+ 1]	i 14 2	pP	e 45·6
Salt Lake City		97·2	39	e 13 22	− 1	e 24 37	+ 3	e 23 47	SKS	e 39·1
Pasadena		97·4	47	i 13 24a	0	23 52	[+ 1]	i 13 53	pP	38·4
Mount Wilson		97·5	47	i 13 25a	+ 1	i 23 53	[+ 2]	17 22	PP	—
Riverside		98·0	47	i 13 26a	0	e 23 57	[+ 3]	i 17 52	PP	—
Alicante		98·0	319	e 13 16	−10	23 53	[− 1]	17 55	PP	e 41·0
Overton		98·4	43	i 13 28	0	—	—	—	—	—
Boulder City		98·5	44	i 13 30	+ 1	e 23 59	[+ 2]	i 17 21	PP	—
La Jolla		98·8	48	i 13 31	+ 1	i 24 2	[+ 3]	i 17 29	PP	—
Palomar		98·8	47	e 13 30	0	i 24 2	[+ 3]	i 17 34	PP	—
Pierce Ferry		98·9	43	i 13 32	+ 2	i 24 3	[+ 4]	i 17 20	PP	—
Rapid City		99·4	32	e 14 34	+61	e 24 46	− 7	i 15 14	pP	e 43·3
Almeria		100·2	319	13 40	+ 4	24 10	[+ 5]	17 26	PP	42·0
Granada		100·7	320	12 28a	−71	i 24 12	[+ 5]	16 17	PP	e 32·3
Malaga	Z.	101·5	320	13 37	− 5	i 23 53	[−18]	i 13 45	pP	43·6
Denver		101·7	36	16 49	PP	25 22	+10	24 50	SKKS	—
Lisbon		102·7	324	e 13 35	−13	24 17	[+ 1]	14 7	pP	42·5
Tucson		103·4	44	e 13 51a	+ 1	i 25 23	− 3	i 14 9	pP	e 42·4
Kirkland Lake		104·5	16	13 57	+ 2	26 19	?	18 13	PP	—
Temiskaming		106·2	16	15 22	?	25 43	− 7	18 32	PKP	—
Seven Falls		107·4	10	14 19	P	25 59	− 1	18 31	PP	46·0
Shawinigan Falls		107·6	11	13 55	P	24 36	[− 3]	27 44	PS	—
Chicago		108·0	24	e 14 9	P	i 24 37	[− 4]	e 18 16	PKP	e 48·1
Ottawa		108·1	13	14 14	P	24 41	[0]	18 41	PP	51·0
St. Louis		109·6	27	e 14 20	P	i 24 48	[+ 1]	i 18 53	PP	—
Cleveland		110·3	20	e 14 14	P	i 24 35	[−15]	e 15 11	pP	i 52·6
Halifax		110·7	5	—	—	e 35 1?	SS	—	—	51·0
New Kensington		111·7	18	e 15 9	pP	e 24 41	[−15]	e 18 48	PP	e 59·2
Harvard		111·8	12	e 18 45	[+21]	e 28 24	PS	e 19 4	PP	e 49·5
Weston		111·9	12	e 14 34	P	i 24 56	[0]	i 19 4	PP	—
Pennsylvania		112·0	18	e 19 6	PP	e 24 49	[− 8]	e 28 27	PS	—
Fordham		112·9	14	e 14 31	P	—	—	i 19 16	PP	54·0
Philadelphia		113·4	15	e 18 19	[− 8]	i 25 2	[0]	e 21 42	PPP	e 47·8
Columbia		117·2	22	e 20 33	sPP	e 25 17	[+ 1]	e 29 33	PS	e 47·5
Bermuda		122·7	8	e 15 36	pP	e 25 23	[−12]	e 20 8	PP	e 60·4
Antarctica		136·0	175	e 19 9	[− 1]	e 26 14	[+ 5]	21 51	PP	e 57·5
Balboa Heights		139·9	36	e 19 17	[+ 1]	—	—	e 22 26	PP	—
Fort de France		140·6	6	e 19 10	[− 8]	—	—	e 23 58	pPP	—
Bogota		146·4	32	i 19 33	[+ 5]	e 28 46	SKKS	e 35 58	PPS	63·0
Huancayo		158·4	57	e 19 50	[+ 4]	e 29 48	SKKS	i 20 2	pPKP	e 49·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Santa Lucia	E.	165·1	129	(20 22)	pPKP	(32 23)	?	(47 1?) SS	—
La Paz		166·6	54	i 19 58 a	[+ 4]	i 26 9	[−37]	i 20 33 pPKP	78·0
La Plata	E.	169·8	175	20 1	[+ 5]	27 1	[+13]	29 25 PPP	74·7
	N.	169·8	175	19 55	[− 1]	27 7	[+19]	24 49 PP	77·5
	Z.	169·8	175	19 56	[0]	—	—	24 55 PP	80·3

Additional readings and notes :—
Nanking iE =3m.52s., iN =4m.15s.
New Delhi ePN =7m.42s., iN =14m.18s., 14m.39s., and 17m.22s., S_cSN =17m.55s.
Hyderabad SSN =17m.26s.
Riverview iP_cP =11m.3s., iE =12m.7s., iPPZ =12m.51s., iN =19m.5s., eE =19m.13s., iN =19m.24s., isSE =19m.40s., iS_cSEN =19m.55s., eN =20m.13s., iE =20m.21s. and 21m.1s., iSSSE =26m.9s., eQE =26m.25s.
College ePPP =16m.7s., esS =20m.21s., eSS =24m.1s., esSS? =24m.27s., eSSS =27m.8s.
Moscow sS =20m.15s.
Honolulu ipP =11m.41s., isP =11m.56s., i =12m.14s., iPP =13m.43s., ipPP =14m.6s., iPPP =15m.27s., isS =21m.15s., isPS =21m.44s., iSS =24m.43s., isSS =25m.48s., eSSS =28m.38s.
Helsinki ipP =12m.6s., i =12m.17s. and 12m.48s., iPP =13m.58s., iPPP =15m.49s., i =16m.14s. and 16m.39s., ipS =21m.22s., iPKKP =29m.34s.
Sitka iP_cP =11m.49s., i =12m.11s., iPP =14m.25s., ipPP =14m.41s., iPPP =16m.7s., ipPPP =16m.41s., iS_cP =21m.23s., ipS =21m.45s., iPS =21m.51s., isPS =22m.21s., iSS =25m.32s., isSS =26m.19s., eSSS =29m.27s.
Upsala iP =11m.44s., eN =15m.6s., PPP?N =16m.33s., ePPPP?E =17m.44s., PS?N =22m.1s.?, PPS?E =22m.16s., eSSN =26m.12s.?, eSS?E =26m.37s., eSSS =29m.31s.,
Bucharest iEN =22m.45s., eSSEN =25m.53s.
Warsaw ePN =11m.57s., iP_cPE =12m.22s., eEN =14m.21s., eN =14m.24s., PPZ =14m.43s., PPE =15m.1s., eZ =15m.13s., PPP?Z =15m.53s., PPPE =16m.29s., PPPN =16m.48s., P_cSZ =19m.25s., eZ =19m.53s., S_cSE =21m.53s., PSZ =22m.7s., PPSE =22m.17s., eE =22m.53s., eZ =23m.53s. and 25m.7s., SSE =26m.7s., SSZ =26m.23s., SSN =26m.29s., eZ =27m.17s., SSSE =29m.30s., SSSZ =29m.33s.
Auckland S_cS =22m.10s.
New Plymouth i =12m.7s., S? =21m.2s.
Helwan P_cPE =12m.5s., sPN =12m.34s., PPE =15m.10s., sSEN =22m.30s., PSE =22m.53s.
Kaimata i =12m.18s.
Tuai i =12m.23s., 12m.34s., and 12m.51s.
Budapest PPPN =17m.17s., iE =22m.15s., ePSN =22m.31s., SSN =27m.13s., SSE =27m.37s., eSSSN =31m.41s.
Wellington i =13m.51s., S_cS =22m.52s., SS =27m.51s., SSS =31m.22s.
Belgrade ePP =15m.53s., PPP? =18m.11s., e =20m.13s., SS? =25m.11s., e =27m.13s.
Bergen SKSN =22m.18s., PPSN =22m.58s.?, SSN =27m.1s.?, Q =33m.28s.
Kalossa iN =12m.29s., eN =22m.38s.
Scoresby Sund 18m.33s.
Potsdam ePP?N =15m.47s., iN =18m.27s., iSKSE =22m.24s., isSN =22m.38s., iS_eSN =23m.8s., iN =24m.8s.
Prague ePPP =17m.19s., ePS =23m.7s., eSS =27m.1s.
Jena ePN =12m.21s., i =12m.26s.
Zagreb iNE =22m.33s., iNW =22m.39s., eNE =22m.56s., e =23m.29s.
Triest iPP =15m.51s., iPPP =18m.19s.
Tananarive sP =13m.10s., PP =15m.49s., SKS =22m.42s., sS =23m.36s., SP =23m.51s., SS =28m.39s., sSS =29m.7s.
Victoria SS =28m.25s.
Stuttgart i =12m.40s., 12m.48sk. and 19m.31s., iSZ =23m.5s., iPS =23m.51s., i =25m.1s., iSS =28m.19s., eQ? =35·0m.
Cheb e =12m.37s., 13m.4s., 19m.19s., and 24m.16s., eSS =28m.18s., eSSS =31m.54s., e =32m.47s., and 33m.25s.
De Bilt eSS =28m.39s.
Aberdeen iE =19m.54s. and 24m.9s., iSSE =28m.24s., QE =35m.29s.
Strasbourg i =14m.54s., e =16m.1s., ipPP =16m.36s., ePPP? =18m.26s., e =21m.6s. and 22m.27s., eSKS? =22m.32s., iS =22m.59s., ipS? =23m.23s., esS =23m.50s., iPS =23m.59s. and 24m.11s., e =25m.28s., 25m.47s., and 28m.14s., eSS =28m.29s., ePKKP =30m.41s., eSSS =32m.19s., e =34m.21s., 34m.33s., and 34m.45s.
Zürich eSKS =22m.48s.
Uccle ePPPEN =18m.19s., eSKSE =22m.55s., eSSN =29m.3s.?
Edinburgh PS =22m.50s., e =24m.31s.
Durham iPPEN =17m.3s., iPSEN =23m.13s., iPKKPN =29m.41s.
Basle eSKS =22m.47s.
Rome iPPZ =16m.12s., PPP? =18m.39s., SKS? =22m.33s., PS? =23m.49s., SS =29m.4s.
Kew iP_cPE =12m.55s., iPP =16m.18s., ipPP?E =16m.44s., eZ =18m.54s.?, iEN =22m.42s., iSKS? =23m.4s., eEN =23m.16s., eE =23m.36s., iPS?Z =24m.38s., eSSN =29m.24s.?, eQN =36·0m.
Ukiah ePS =25m.2s., eSS =30m.10s.
Berkeley iPPN =16m.25s., iPPE =16m.39s., iN =30m.8s.

Continued on next page,

Butte ePP =16m.54s., iSKS =23m.30s., iPS =25m.29s., i =26m.28s., e =29m.22s., eSS =30m.28s., esSS =31m.14s., e =37m.32s.
Ivigtut 24m.23s.
Tortosa P_cPN =13m.21s., PPEN =17m.3s., pPPEN =17m.47s., PPP?N =18m.46s., SKKSEN =23m.52s., iSEN =24m.22s., S_cSEN =24m.36s., PSE =25m.45s., PPSN =26m.19s., SSEN =30m.35s., SSSE =34m.7s., QEN =38m.1s.
Logan isP =14m.12s., iS =24m.51s.
Salt Lake City esP =25m.31s., ePS =26m.13s., esPS =26m.29s., ePKKP =30m.21s., eSSS =35m.16s.
Pasadena iP_cP?Z =13m.33s., eZ =14m.8s., iZ =16m.17s., iPPZ =17m.15s., iSKSZ =23m.21s., iZ =26m.5s., iPKKPZ =30m.30s., eSSN =31m.1s.
Mount Wilson iZ =13m.33s., and 16m.19s., iPKKPZ =30m.30s.
Riverside ePKKPZ =30m.28s.
Alicante PPP =18m.54s., iS =24m.1s., P_cS =24m.8s., PS =24m.48s., PPS =25m.38s., SS =29m.37s., SSS =33m.10s., Q =37m.8s.
Boulder City epPP? =17m.36s.
La Jolla eZ =16m.22s.
Rapid City ePP =18m.16s., iSKKS =25m.0s., iS =25m.53s., iPS =27m.9s., ePPS =28m.18s., eSS =33m.3s., eSSS =37m.14s.
Almeria PPP =19m.31s., iS =24m.46s., SS =31m.8s., SSS =34m.48s.
Granada PPP =18m.30s., PPS =26m.18s., SS =28m.3s.
Malaga PPZ =16m.57s., PPPZ =19m.5s., PSZ =24m.47s.
Denver 17m.46s. and 18m.30s., SKS =23m.14s.
Lisbon PPZ =17m.47s., SEN =25m.9s.
Tucson i =13m.59s., iPP =18m.3s., iSKS =24m.23s., iSKKS =24m.41s., iSP? =26m.39s., iPS =27m.9s., iPPS =28m.23s., eSS =32m.29s., eSSS =36m.31s., ePKP,PKP =37m.19s., eSKPPKP =42m.11s.
Temiskaming SKKS =26m.39s.
Seven Falls e =22m.57s., SKKS =25m.34s., PPS =27m.59s., SSS =37m.25s.
Shawinigan Falls e =23m.7s., SS =39m.25s.
Chicago iPP =18m.36s., ipPP =18m.53s., ePPP =21m.12s., ipS =26m.26s., ePS =27m.49s., eSPP =28m.59s., iPPS =29m.17s., iPKKP? =29m.56s., eSS =33m.30s., esSS =34m.53s., eSKP,PKP =42m.44s.
Ottawa PS =28m.9s., SS =33m.49s.
St. Louis isSKS =25m.35s., iSKKS =25m.58s., iPS =28m.10s., ipPS =28m.44s., iSS =34m.9s., isSS =35m.8s.
Cleveland, ePE =14m.31s., eN =17m.29s., ePKPN =18m.17s., eE =18m.31s., iPPN =18m.47s., iZ =18m.53s., ipPPE =19m.13s., iZ =19m.19s., isSKSN =25m.27s., iE =25m.35s., iPSN =28m.13s.
New Kensington iSKKS =25m.54s., eSP? =28m.22s., iPPS =30m.7s., eSS =35m.8s., ePKP,PKP =38m.1s.
Harvard esPS =29m.24s.
Weston ePS =28m.34s., iPPS =29m.51s.
Pennsylvania eS =26m.8s.
Philadelphia sPP =19m.20s., eS =26m.15s., isP =27m.33s., eSP =28m.39s., iPS =28m.55s., ipPS =29m.1s., eSS =34m.28s., esSS =35m.21s., iPKP,PKP? =39m.49s., eSKP,PKP =42m.40s.
Columbia eSPP =30m.27s., ePPS =30m.43s., eSS? =35m.45s., esSS =36m.15s., ePKP,PKP? =37m.18s., eSSS =40m.11s., eSKP,PKP =42m.11s.
Bermuda epPP =20m.48s., ePPP =23m.0s., iSKKS? =25m.54s., iS? =27m.25s., ePKKP =28m.15s., ipPS =30m.21s., iPPS =31m.18s., iSKKP =32m.7s., eSS =36m.21s., esSS =37m.11s., eSSS =41m.31s., eSKP,PKP =42m.23s.
Antarctica iPKP =19m.22s., i =23m.18s., e =23m.38s., 28m.36s., and 31m.2s., eS =32m.9s., i =40m.30s.
Bogota i =19m.44s.
Huancayo isPKP =20m.25s., i =21m.20s. and 21m.37s., iPP =24m.4s., ipPP =24m.48s., ePPP =27m.41s., eSKSP =33m.42s., ePPS =37m.36s., eSS =44m.1s.
Santa Lucia readings are given for 17h.
La Paz ipPKPE =20m.49s., iZ =21m.39s., iPPNZ =24m.43s., iZ =25m.19s., iSKKSE =30m.9s., iEN =31m.21s., PSKSE =34m.25s., i =35m.2s., iSS =45m.25s., SSSEN =52m.27s., Q =67m.13s.
La Plata E. 21m.10s., 21m.49s., and 30m.23s., PPP? =31m.24s., SKKS? =33m.31s., SKSP? =35m.49s., SKSP =37m.31s., SS =45m.41s., PSS? =49m.43s., SSS? =54m.25s., 57m.19s., and 71m.49s.
La Plata N. 21m.7s., PKS =23m.49s., 27m.55s., PPP =28m.49s., 29m.31s., PPP =31m.13s., SKKS =31m.33s., SKSP =35m.31s., and 37m.43s., SS =46m.9s., PSS =47m.51s., SSS =58m.41s.
La Plata Z. 21m.9s. and 21m.35s., PPP =29m.13s.

Sept. 26d. Readings also at 0h. (Antarctica and Lisbon), 1h. (Bombay, Colombo, Kodaikanal, Helwan, Ksara, and Edinburgh), 2h. (near Antarctica), 5h. (Helwan, Samarkand, near Ashkabad, Stalinabad (2), and Obi-garm (2)), 6h. (Ksara, Mount Wilson (2), Pasadena (2), Riverside (2), Tinemaha (2), Tucson (2), Overton, and Shasta Dam (2)), 7h. (Kew and Ksara), 8h. (Mount Wilson, Pasadena, Riverside, Tucson, Overton, Pierce Ferry, Shasta Dam, Mizusawa, and Stuttgart), 9h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, and Overton), 12h. (Stalinabad and near Ashkabad), 15h. (Berkeley and Jena), 16h. (Strasbourg, Stuttgart, and near Ksara), 17h. (Shasta Dam), 22h. (Samarkand, near Obi-garm (2), and Stalinabad (2)), 23h. (near Alicante and Almeria).

Sept. 27d. 7h. Readings for an undertermined shock attributed to the epicentre of the Eureka earthquake of Sept. 23d. The times of phases do not agree with those of the previous shock and the identification as an aftershock seems doubtful.

Shasta Dam eP =40m.20s., i =40m.23s., eS =40m.51s.
Mineral iPE =40m.40s.
Berkeley iPZ =40m.40s., iZ =40m.44s., iSE =41m.23s., iE =41m.28s.
Tinemaha ePZ =40m.40s., i =40m.51s.
Lick ePN =40m.45s., iN =40m.48s., iSN =41m.31s. and 41m.34s.
San Francisco ePE =40m.45s., iSE =41m.30s.
Fresno iPN =40m.53s., iSN =41m.39s.
Haiwee iPNZ =41m.8s., iSE =42m.13s.
Santa Barbara iP =41m.12s.
Pasadena eP =41m.21s., iSE =43m.2s.
Mount Wilson iPZ =41m.23s., eSEN =43m.6s.
Riverside iP =41m.27s., iSNZ =43m.21s.
Grand Coulee eP =42m.10s., eS =43m.46s.
Tucson eP =42m.21s., eS? =45m.25s., eL =45m.51s.

Sept. 27d. 8h. 16m. 10s. Epicentre 33°·3N. 58°·7E. (as on 26d.).

$A = +\cdot4351$, $B = +\cdot7156$, $C = +\cdot5464$; $\delta = -5$; $h = +1$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ashkabad	4·7	357	1 15	+ 1	—	—	—	—	—
Samarkand	9·2	44	e 2 14	− 2	—	—	—	—	—
Stalinabad	9·7	54	e 2 20	− 2	—	—	—	—	—
Obi-garm	10·4	56	e 2 29	− 5	—	—	—	—	—
Tashkent	11·6	43	e 2 15?	−35	—	—	—	—	—
Almata	17·4	50	e 4 10	+ 4	—	—	—	—	—
Ksara	19·0	276	i 4 30	+ 4	8 17	+22	—	—	—
Bombay	19·1	134	e 5 50	?	—	—	—	—	—
Helwan	23·5	268	i 5 16a	+ 4	e 6 38	?	—	—	e 13·6
Sverdlovsk	23·6	3	5 12	− 1	9 27	+ 2	—	—	—

Long waves were also recorded at Riverview and New Delhi.

Sept. 27d. 22h. 12m. 39s. Epicentre 8°·4N. 72°·0W. (as on 1945, April 7d.).

$A = +\cdot3058$, $B = -\cdot9410$, $C = +\cdot1451$; $\delta = +5$; $h = +7$;
$D = -\cdot951$, $E = -\cdot309$; $G = +\cdot045$, $H = -\cdot138$, $K = -\cdot989$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bogota		4·3	209	i 1 15	+ 7	i 2 21	S_g	i 1 29	P_g	—
Balboa Heights		7·5	274	e 1 55	+ 2	e 3 19	− 1	—	—	—
San Juan		11·4	29	e 2 41	− 6	—	—	e 2 53	PP	e 6·1
Fort de France		12·3	59	e 2 53	− 6	—	—	—	—	—
Huancayo		20·6	189	i 4 43	0	i 8 30	+ 1	—	—	i 10·4
La Paz		25·0	171	i 5 31	+ 4	i 9 57	+ 8	5 59	PP	12·6
Harvard		34·0	2	i 6 47	− 1	—	—	—	—	—
Temiskaming		38·6	353	i 7 25	− 1	—	—	—	—	—
Kirkland Lake		40·2	353	i 7 39	− 1	—	—	—	—	—
Tucson		43·1	309	i 9 4	+60	—	—	i 9 23	PP	—
Pierce Ferry		47·1	312	i 8 37	+ 2	—	—	—	—	—
Overton		47·6	313	e 8 41	+ 2	—	—	—	—	—
Boulder City		47·7	312	e 8 41	+ 1	—	—	—	—	—
Palomar	z.	48·2	308	e 8 45	+ 1	—	—	—	—	—
Riverside	z.	48·8	309	e 8 49	0	—	—	—	—	—
Mount Wilson	z.	49·4	309	e 9 1	+ 8	—	—	e 9 16	?	—
Pasadena	z.	49·5	309	e 9 0	+ 6	—	—	e 9 13	?	—
Tinemaha		50·6	312	e 9 3	+ 1	—	—	—	—	—
Shasta Dam		55·0	315	e 9 5	−30	—	—	e 9 33	P	—
Grand Coulee		55·9	324	e 9 41	− 1	—	—	e 9 51	?	—
Paris		73·5	42	e 11 33	− 3	—	—	—	—	—
Clermont-Ferrand		73·6	45	e 11 35	− 1	—	—	—	—	—
Stuttgart	z.	77·9	42	e 11 58	− 3	—	—	—	—	—

Additional readings :—
Bogota iP_gEZ =1m.47s., iS*EZ =2m.34s., iS_gEZ =2m.54s.
Tucson i =9m.11s.
Long waves were also recorded at Berkeley.

Sept. 27d. Readings also at 1h. (Haiwee, Mount Wilson, Pasadena, Riverside, Shasta Dam, Tinemaha, Tucson, Santa Lucia, and Stuttgart), 2h. (Ksara), 3h. (Pierce Ferry), 4h. (La Paz), 5h. (Antarctica), 8h. (La Paz), 14h. (Riverside, Tinemaha, and Tucson), 15h. (Tortosa), 22h. (near La Plata).

Sept. 28d. 3h. Undetermined shock.

Wellington P =14m.0s., pPZ =14m.26s., iZ =15m.48s., P_cP?Z =16m.39s., S? =18m.5s., iZ =18m.47s., sS? =19m.8s., S_cS?Z =19m.32s., i =20m.7s., L =21m.58s.
Riverview ePZ =15m.44s., ePPZ =17m.14s., eSEN =21m.31s., eQE =23m.42s., iSSE = 24m.9s., eRZ =25·6m.
Antarctica iP =15m.58s.
Auckland S =19m.40s., i =21m.39s., Q? =24m.
Arapuni S? =20m.?
Helwan ePKPZ =28m.15s., eZ =31m.3s. and 32m.0s.
Istanbul eP =28m.16s., eL? =86m.
Ksara ePKP =28m.16s., PP =31m.40s.
Rome eZ =29m.34s., eE =74m.28s.
La Paz eP?E =46m.20s.
Berkeley iE =48m.12s., eE =55m.42s. and 57m.24s., eN =57m.36s., eZ =60m.48s.
Bombay eEN =53m.
Long waves were also recorded at Sitka, Kew, Uccle, De Bilt, Malaga, Strasbourg, and Stuttgart.

Sept. 28d. 11h. Columbia.

Bogota iPEZ =48m.51s., iP*EZ =48m.54s., iP_gEZ =48m.58s., iSEZ =49m.15s., iS_gEZ = 49m.21s.
Balboa Heights eP =49m.35s., eS =50m.39s.
Huancayo eP =52m.10s.
La Paz P =53m.18s., iPP? =54m.0s., iS =59m.0s., L =60m.8s.
Temiskaming e =56m.7s. and 56m.21s., i =56m.29s.
Tucson iP =56m.8s., i =56m.24s. and 56m.28s.
Kirkland Lake e =56m.33s.
Shasta Dam eP =56m.33s., e =57m.42s.
Pierce Ferry eP =56m.46s.
Palomar ePZ =56m.47s., iZ =57m.2s.
Overton eP =56m.50s.
Riverside ePZ =56m.54s., iZ =57m.7s. and 57m.12s.
Pasadena ePZ =56m.59s., eZ =57m.11s.
Mount Wilson ePZ =57m.1s., eZ =57m.10s.
Tinemaha ePZ =57m.11s., iZ =57m.24s., and 57m.29s.
Grand Coulee eP? =58m.11s.
Paris eP =60m.14s., iP_cP =60m.42s.
Stuttgart eZ =60m.35s.?

Sept. 28d. Readings also at 0h. (Shasta Dam), 1h. (Copiapo, near Mizusawa, Jena, near Strasbourg, Stuttgart, Chur, Basle, Zurich, Triest, and Zagreb), 6h. (Mount Wilson (2), Pasadena, Palomar (2), Riverside (2), Tinemaha (2), Tucson, Shasta Dam, and near Balboa Heights), 9h. (La Paz), 10h. (Nanking and Riverview), 11h. (near Tananarive), 16h. (near Mizusawa), 17h. (Kirkland Lake, Temiskaming, Mount Wilson, Pasadena, Palomar, Riverside, Tinemaha, Tucson, Shasta Dam, Pierce Ferry, and near Balboa Heights), 20h. (Santa Lucia).

Sept. 29d. Readings at 0h. (De Bilt and Shasta Dam), 5h. (Bogota, Huancayo, La Paz, Stuttgart, near Zürich and Basle), 8h. (Antarctica), 9h. (near Overton and Pierce Ferry), 11h. (Rome), 14h. (Istanbul), 15h. (near Obi-garm), 16h. (Ksara and near Istanbul), 17h. (Tashkent, near Obi-garm, Samarkand, and Stalinabad), 18h. (Copiapo), 19h. (Bombay, Kodaikanal, Ksara, New Delhi, Tananarive, La Paz, Riverview, and Granada), 20h. (Istanbul, Copiapo, La Plata, Mizusawa, Riverview, and Rome), 22h. (Ksara).

Sept. 30d. Readings at 0h. (Bombay, Kodaikanal, New Delhi, Istanbul, Ksara, Granada, and Riverview), 1h. (Rome), 2h. (near Stalinabad), 3h. (Bogota), 7h. (Ksara), 10h. (Jena), 13h. (Strasbourg), 14h. (Mount Wilson, Palomar, Pasadena, Riverside, Shasta Dam, Tinemaha, and near Honolulu), 15h. (Jena), 18h. (Scoresby Sund, Stuttgart, and near Reykjavik), 19h. (Paris, near Stalinabad and Obi-garm), 21h. (near Lick).

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

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

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

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