The International Seismological Summary.

1950 April, May, June.

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 second quarter for 1950 contains 159 epicentres, 107 of which are repetitions from previously adopted epicentres.

Cases of abnormal focal depth are noted below :—

April	3d. 6h.	18·5S.	169·1E.	0·020
	4d. 3h.	29·4N.	130·6E.	0·010
	8d. 11h.	26·5N.	139·9E.	0·080
	10d. 16h.	4·6N.	75·4W.	0·015
	12d. 14h.	38·4S.	176·5E.	0·020
	13d. 11h.	38·3N.	26·5W.	Base of Superficial Layers.
	16d. 16h.	35·8N.	140·8E.	Base of Superficial Layers.
	19d. 16h.	18·5S.	178·0W.	0·080
	20d. 9h.	43·5N.	151·0E.	0·010
	23d. 10h.	Undetermined shock.		Very Deep
	26d. 7h.	33·7N.	135·8E.	Base of Superficial Layers.
	26d. 12h.	52·5N.	170·0W.	0·005
	26d. 18h.	44·5N.	151·0E.	Suggested Deep
	29d. 20h.	15·5S.	167·1E.	0·010

May	1d.	13h.	6·2S. 105·7E.	0·005
	8d.	19h.	Undetermined shock.	Suggested Deep
	14d.	19h.	38·6N. 142·5E.	0·005
	16d.	15h.	25·5S. 178·5E.	0·080
	17d.	11h.	39·4N. 130·3E.	0·080
	17d.	13h.	41·6N. 142·0E.	0·010
	17d.	19h.	36·5N. 71·0E.	0·030
	20d.	18h.	37·1N. 71·2E.	0·015
	25d.	18h.	12·6N. 143·3E.	0·010
	26d.	14h.	18·3N. 145·2E.	0·070
	27d.	14h.	18·5S. 178·0W.	0·090
	28d.	16h.	32·0N. 138·6E.	0·040
	30d.	15h.	19·9S. 179·0W.	0·080
	31d.	9h.	8·5S. 74·0W.	0·030
June	4d.	15h.	21·8S. 170·8E.	0·005
	5d.	22h.	22·5N. 143·5E.	0·030
	7d.	16h.	4·5S. 77·0W.	0·010
	9d.	9h.	Undetermined shock.	Deep
	11d	13h.	22·1S. 68·7W.	0·015
	14d.	7h.	14·5S. 70·0W.	0·040
	15d.	23h.	20·5S. 179·0W.	0·080
	17d.	15h.	38·9S. 175·2E.	0·025
	17d.	22h.	25·5S. 67·0W.	0·020
	17d.	22h.	36·3N. 141·5E.	Suggested Deep
	22d.	20h.	1·2S. 78·5W.	0·010
	23d.	3h.	13·8N. 93·1W.	Suggested Deep
	25d.	11h.	5·5N. 126·0E.	Suggested Deep
	26d.	12h.	38·3N. 74·0E.	0·015
	27d.	4h.	37·8N. 141·4E.	0·010
	29d.	0h.	24·7S. 70·2W.	0·005
	30d.	10h.	6·2S. 75·3W.	0·010

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

KEW OBSERVATORY,
Richmond,
SURREY.

February, 1958.

1950 APRIL, MAY, JUNE.

April 1d. 12h. 28m. 1s. Epicentre 43°·3N. 46°·2E. (as on 1950, March 31d.).

$A = +·5053$, $B = +·5270$, $C = +·6834$; $\delta = +9$; $h = -3$;
$D = +·722$, $E = -·692$; $G = +·473$, $H = +·493$, $K = -·730$.

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Grozny		0·3	273	i 0 5	− 6	i 0 13	− 5
Tiflis		1·9	213	i 0 33	− 1	i 0 59	0
Gori		2·0	229	i 0 33?	− 2	1 8	S_g
Piatigorsk		2·4	288	e 0 10?	−31	—	—
Borzhomi		2·6	235	0 39	− 5	1 25	S_g
Abastumanj		2·9	238	e 0 52?	+ 4	e 1 42?	S_g
Leninakan		3·1	215	e 0 58	+ 7	1 47	S_g
Shemakla		3·2	146	0 59	+ 7	1 52	S_g
Erevan		3·3	202	e 1 3	P_g	1 59	S_g
Baku		4·0	135	e 1 15	P_g	—	—
Sotchi		4·7	276	e 1 39	P_g	—	—
Ashkabad		10·7	116	2 43	+51	—	—
Ksara		12·4	224	2 3	?	—	—
Moscow		13·6	339	e 3 24	+ 7	e 5 52	+ 2
Sverdlovsk		16·3	29	e 3 47	− 5	6 40	−13
Stalinabad		17·7	97	e 4 13	+ 3	—	—
Pulkovo		19·1	335	—	—	e 7 51	− 6
Andijan		19·6	89	e 4 27	− 5	—	—
Tamanrasset	z.	39·3	252	i 7 27k	− 5	—	—
College		71·6	7	e 11 18	− 7	—	—

Tamanrasset gives also iZ = 7m.35s.

April 1d. 21h. 54m. 23s. Epicentre 43°·5N. 10°·3E.

Intensity VII at Rossignano Marittimo (Livorno); VI at Livorno, Ribbona Lorenzana, and Santa Luce Orciano; V at Cecina, Cascina, and Crespina, S. Croce sull' Arno.
Suggested epicentre 43°32′5N. 10°15′5E.

Monthly Bulletin of National Geophysical Institute of Rome, p. 2.

$A = +·7160$, $B = +·1301$, $C = +·6859$; $\delta = +4$; $h = -3$;
$D = +·179$, $E = -·984$; $G = +·675$, $H = +·123$, $K = -·728$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Prato	0·7	57	i 0 15	− 2	i 0 22	− 6	—	—	—
Florence Arc.	0·7	70	i 0 15a	− 2	i 0 29	+ 1	i 0 27	S_g	—
Florence Xim	0·7	67	i 0 15	− 2	i 0 25	− 3	—	—	—
Bologna	1·2	32	i 0 27a	+ 3	i 0 45	+ 4	—	—	—
Padova	1·3	23	i 0 43	S	(i 0 43)	− 1	—	—	—
Pavia	1·9	334	i 0 37k	+ 3	e 1 5	S_g	—	—	—
Salo	2·1	6	i 0 42	P_g	i 1 9	S_g	—	—	—
Rome	2·3	135	e 0 38a	− 2	i 1 7	− 2	i 1 15	S_g	—
Rocca di Papa	2·5	135	e 0 43	0	e 1 14	0	—	—	—
Triest	3·3	49	e 0 58	+ 5	i 1 52	S_g	i 1 10	P_g	—
Chur	3·4	351	e 0 57	+ 2	—	—	e 1 12	P_g	—
Zürich	4·1	343	e 1 5a	0	e 1 54	− 1	—	—	—
Neuchatel	4·2	327	e 1 8	+ 1	e 1 59	+ 2	—	—	—
Ravensburg	4·3	354	e 1 17?	P*	e 2 27	S_g	e 1 29	P_g	—
Basle	4·5	336	e 1 11	0	e 2 3	− 2	e 1 29	P_g	—
Zagreb	4·7	58	e 1 22	P*	e 1 48	P_g	—	—	—
Besançon	4·8	323	e 1 8	− 7	i 2 5	− 7	e 1 34	P_g	—
Ebingen	4·8	349	e 1 36	P_g	e 2 15	+ 3	e 2 45	S_g	—
Stuttgart	5·3	352	e 1 21	− 1	e 2 17	− 8	e 1 44	P_g	e 3·5
Strasbourg	5·4	342	e 1 23	− 1	i 2 25	− 3	i 1 45	P_g	—

Continued on next page.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Clermont-Ferrand		5·6	296	e 1 29	+ 2	e 2 25	− 8	e 1 46	P_g	e 2·8
Karlsruhe		5·6	347	e 1 26	− 1	e 2 32	− 1	—	—	e 2·6
Cheb		6·7	11	e 1 44	+ 2	e 3 8	+ 8	e 3 40	S_g	e 3·8
Ogyalla		7·1	49	—	—	e 3 16	+ 6	e 3 20	S*	—
Prague		7·2	22	e 1 38	−11	e 3 7	− 6	e 2 14	P_g	e 3·9
Jena	N.	7·5	6	e 1 53?	0	e 3 23	+ 3	e 2 30	P_g	—
Paris		7·6	317	e 2 31	P_g	e 3 38	+15	e 4 5	S_g	—
Collmberg		8·0	12	e 2 0	0	e 3 38	+ 5	e 4 23	S_g	e 4·7
Alicante		9·6	242	—	—	e 4 17	+ 5	—	—	e 5·7
Warsaw		11·3	36	e 1 39	−67	—	—	—	—	e 4·6
Tamanrasset	Z.	21·0	192	i 4 48k	+ 1	e 8 20	−17	e 5 5	PP	—
Hungry Horse		76·3	325	e 11 52	0	—	—	—	—	—
Pierce Ferry		86·0	318	e 12 44	+ 1	—	—	—	—	—

Additional readings :—
Bologna iZ = 29s., eE = 32s., i = 35s., iN = 39s., iZ = 48s.
Padova e = 47s., i = 1m.9s., iS_g = 1m.17s.
Pavia e = 1m.12s.
Salo iZ = 45s., iN = 58s., iEN = 1m.13s., iN = 1m.26s., iE = 1m.43s.
Rome iP_gN = 1m.3s.
Besançon e = 1m.16s., eP* = 1m.21s., e = 1m.46s. and 1m.55s.
Ebingen e = 2m.36s.
Stuttgart eP*Z = 1m.34s., eZ = 1m.39s., 1m.48s., 2m.1s., and 2m.7s., eSZ = 2m.20s., eZ = 2m.23s. and 2m.33s., eS*Z = 2m.44s., eS_gZ = 2m.56s. and eS_gZ = 3m.1s.
Strasbourg i = 1m.27s., iP* = 1m.34s., i = 2m.10s., eS* = 2m.40s., iS_g = 2m.53s.
Cheb eS* = 3m.16s.
Prague eP*Z = 2m.2s., e = 2m.19s., 2m.43s., and 2m.49s., iS = 3m.3s., eS* = 3m.19s., iS_g = 3m.48s.
Jena eN = 2m.0s. and 2m.16s., eE = 2m.26s., eS_g?E = 4m.6s.
Paris e = 3m.55s., 4m.29s., 4m.47s., and 4m.58s.
Collmberg eZ = 2m.28s., eS*Z = 4m.0s., eZ = 4m.8s.?, eS_gZ = 4m.16s.?
Tamanrasset ePPPZ = 5m.14s.
Long waves were also recorded at Helsinki, Potsdam, and Copenhagen.

April 1d. Readings also at 0h. (Rome, Kew, and College), 1h. (Clermont-Ferrand, Stuttgart, Besançon, Tamanrasset, Istanbul, Ksara, and College), 2h. (Bombay, Andijan, Stalinabad, Tashkent, Tchimkent, Sverdlovsk, Abastumanj, Gori, Tiflis, Vladivostok, Moscow, Kew, Strasbourg, Stuttgart, Tamanrasset, Nanking (2), Zi-ka-wei, Hungry Horse (3), Shasta Dam (2), and College (2)), 3h. (Bombay, Nanking (2), Zi-ka-wei, Copenhagen (2), De Bilt, Cheb (2), Potsdam (2), Stuttgart, Kew, Strasbourg, Clermont-Ferrand, Rome, Alicante, Ksara (2), Lick, Shasta Dam (2), Hungry Horse, and College (2)), 4h. (Clermont-Ferrand, Istanbul, and Tamanrasset), 7h. (College), 8h. (Christchurch, Cobb River, Kaimata, New Plymouth, Wellington, and Riverview), 9h. (Fergana, Tashkent, Tchimkent, near Andijan (3), Kulyab, Obi-garm, and Stalinabad), 11h. (China Lake, Tinemaha, Tucson, Overton, Pierce Ferry, Reno, Shasta Dam, Hungry Horse, College, and Logan), 13h. (Mount Wilson, China Lake, Tinemaha, Tucson, Overton, Pierce Ferry, Mineral, Shasta Dam, Hungry Horse, College, and near Lwow), 15h. (Fergana, Obi-garm, Tchimkent, near Andijan, Stalinabad, Garm, and near Alicante), 18h. (Kizyl-Arvat and near Ashkabad), 19h. (Tucson, Boulder City, and Pierce Ferry), 20h. (Overton, Pierce Ferry, Shasta Dam, Hungry Horse (2), near College, Durham, near Rome, near Grozny, and near Apia), 21h. (Pierce Ferry, College, Tamanrasset, near Algiers Univ. (2), and near Grozny), 22h. (Pierce Ferry, College, near Apia, and near Florence Arc.), 23h. (La Paz).

April 2d. 15h. 2m. 44s. Epicentre 43°·5N. 10°·3E. (as on 1d.).

Intensity IV at Lorenzana (Pisa) : III at Livorno. Monthly Bulletin, Rome, p. 4.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		
	°	°	m. s.	s.	m. s.	s.	m. s.		
Florence Arc.	0·7	70	e 0 9	P_g	0 20	S_g	—	—	
Bologna	1·2	32	e 0 22	− 2	—	—	—	—	
Padova	1·3	23	e 0 41	S	(e 0 41)	− 3	—	—	
Pavia	1·9	334	e 0 37	+ 3	0 56	− 3	—	—	
Salo	2·1	6	e 0 39	+ 2	i 1 8	+ 4	i 0 48	P_g	
Rome	2·3	135	e 0 42	+ 2	e 1 11	+ 2	—	—	
Triest	3·3	49	e 1 2	P*	i 1 24	−11	—	—	
Chur	3·4	351	e 0 56	+ 1	—	—	—	—	
Zürich	4·1	343	e 1 0	− 5	e 1 49	− 6	—	—	
Basle	4·5	336	e 1 9	− 2	e 1 51	−14	—	—	

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Stuttgart	z.	5·3	352	e 1 23?	+ 1	e 2 18	− 7	1 46	P_g
Strasbourg		5·4	342	e 2 1?	P_g	e 2 19	− 9	e 2 27	S
Prague		7·2	22	e 2 22	P_g	e 3 19	+ 6	e 3 41	S*
Jena		7·5	6	—	—	e 3 21	+ 1	e 4 3	S_g

Additional readings :—
Florence Arc. i = 23s.
Bologna e = 27s. and 30s.
Padova S = 1m.7s., S_g = 1m.13s.
Salo iE = 1m.2s. and 1m.12s., iN = 1m.19s.
Stuttgart eZ = 1m.42s. and 2m.55s., eS_g?Z = 3m.6s.
Prague eS? = 2m.47s., e = 2m.57s., eS_g? = 3m.32s.
Long waves were recorded at Besançon.

April 2d. 18h. 25m. 11s. Epicentre 34°·0S. 112°·0W. (as on 1949, July 25d.).
A = −·3179, B = −·7676, C = −·5566 ; δ = +7 ; h = 0 ;
D = −·924, E = +·383 ; G = +·213, H = +·514, K = −·831.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		40·3	66	e 7 40	0	e 13 51	+ 2	—	—	e 16·6
La Paz		43·4	77	i 8 3	− 3	i 14 35	0	i 9 49	PP	19·9
Bogota		52·8	51	e 9 50	+31	e 16 38	− 9	—	—	—
Tucson		65·9	1	e 10 52	+ 2	—	—	—	—	e 32·2
Riverside	z.	67·8	355	e 11 5	+ 3	—	—	—	—	—
Pasadena		68·0	355	e 11 9	+ 6	—	—	—	—	e 32·1
China Lake	z.	69·6	356	i 11 16	+ 3	—	—	—	—	—
Boulder City		69·6	358	e 11 16	+ 3	—	—	—	—	—
Pierce Ferry		69·8	359	e 11 16	+ 2	—	—	—	—	—
Tinemaha	z.	70·9	355	e 11 25	+ 4	—	—	—	—	—
Lick	z.	71·5	352	e 11 45	+21	—	—	—	—	—
Reno	z.	73·5	354	e 11 45	+ 9	—	—	—	—	—
Shasta Dam		74·9	352	e 11 49	+ 5	—	—	—	—	—
Hungry Horse		82·0	359	e 12 26	+ 3	—	—	—	—	—

Additional readings :—
Tucson i = 11m.9s.
Riverside eZ = 11m.21s.
Pasadena i = 11m.25s.
China Lake iZ = 11m.35s.
Tinemaha eZ = 11m.44s.
Reno eP?Z = 10m.31s., eN = 12m.1s., eE = 12m.5s.
Shasta Dam e = 12m.4s.
Long waves were also recorded at Berkeley.

April 2d. Readings also at 0h. (near Borzhomi), 1h. (Pasadena, Riverside, China Lake, Tinemaha, Tucson, Boulder City, Pierce Ferry, Mineral, Shasta Dam, Hungry Horse, College, Apia, and Ksara), 2h. (Mount Wilson, Riverside, China Lake, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Mineral, Shasta Dam, Hungry Horse, College, Ottawa, and Weston), 3h. (De Bilt, Florence Arc., Grozny, Naryn, Tchimkent, near Andijan, Fergana, Garm, and Stalinabad), 4h. (Garm, near Stalinabad, near Rocca di Papa, and Rome), 5h. (near Grozny), 6h. (near Messina and near Apia), 7h. (Djakarta, Bombay, New Delhi, Poona, Pretoria, Tamanrasset, Tucson, Boulder City, Pierce Ferry, College (2), and near Messina), 8h. (Nanking, Riverside, China Lake, Tinemaha, Tucson (2), Overton, Pierce Ferry, Lick, Shasta Dam, Hungry Horse, Ksara, College, Grahamstown, Pietermaritzburg, Pretoria, and Tamanrasset), 11h. (Bombay), 12h. (Pretoria and near Tucson), 13h. (Shasta Dam and Tamanrasset), 14h. (Florence Arc.), 15h. (Florence Arc., near Garm, and Obi-garm), 16h. (Florence Arc.) 17h. (Zürich, Florence Arc., Pavia, Algiers Univ., and near Istanbul), 18h. (Collmberg, Stuttgart, Florence Arc., Pavia, and near Zürich), 19h. (Huancayo and Seven Falls), 20h. (Brisbane, Riverview, Pasadena, Riverside, China Lake, Tinemaha, Pierce Ferry, Shasta Dam, Hungry Horse, College, and Tamanrasset), 21h. (Overton, Pierce Ferry, Hungry Horse, College, Stuttgart (2), near Mizusawa, near Grozny, and near Ashkabad), 22h. (near Istanbul and near Andijan), 23h. (Mount Wilson, Pasadena, Riverside, China Lake, Tinemaha, Tucson (2), Boulder City, Overton (2), Pierce Ferry (2), Lick, Reno, Shasta Dam, Hungry Horse (2), College, Ottawa, near Tortosa, near Grozny, and near Tacubaya).

April 3d. 6h. 32m. 32s. Epicentre 18°·5S. 169°·1E. Depth of focus 0·020.
(as on 1949, March 4d.).

A = −·9319, B = +·1795, C = −·3154; δ = +14; h = +5;
D = +·189, E = +·982; G = +·310, H = −·060, K = −·949.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		17·3	236	i 3 51k	− 2	i 7 1	+ 3	e 4 35	sP	—
Auckland	N.	19·0	164	e 4 10	− 2	e 7 36	+ 2	—	—	—
Arapuni		20·3	166	e 4 25	0	—	—	—	—	—
New Plymouth	E.	20·9	169	e 4 32	+ 1	—	—	—	—	—
Riverview		22·1	222	i 4 44a	+ 1	e 8 26	− 5	i 5 19	pP	e 11·1
Cobb River	E.	22·7	173	4 49	+ 1	—	—	—	—	—
Wellington		23·2	170	e 4 53	0	e 7 28?	?	—	—	—
Kaimata		24·0	177	e 5 0	− 1	—	—	—	—	—
Lick	Z.	85·6	49	i 12 21a	0	—	—	i 13 9	sP	—
Fresno	Z.	86·6	50	e 12 26	0	—	—	e 13 20	sP	—
Shasta Dam		86·6	45	i 12 25	− 1	—	—	e 13 18	sP	—
Mount Wilson	Z.	86·8	53	i 12 25	− 2	—	—	—	—	—
Mineral	Z.	87·0	46	i 12 27a	− 1	—	—	—	—	—
Riverside	Z.	87·2	54	i 12 28	− 1	—	—	e 13 22	sP	—
China Lake	Z.	87·8	51	i 12 31	− 1	—	—	i 13 25	sP	—
Reno		87·8	47	e 12 32	0	—	—	i 15 26	PP	—
Tinemaha	Z.	87·9	51	i 12 31	− 2	—	—	—	—	—
Boulder City		89·3	52	e 12 42	+ 3	—	—	—	—	—
College		89·4	17	i 12 34	− 6	e 22 44	[− 9]	e 13 18	pP	—
Seattle		89·9	40	i 12 42a	0	—	—	e 13 35	pP	—
Pierce Ferry		90·6	52	e 12 44	− 1	—	—	e 13 39	pP	—
Tucson		91·6	57	i 12 50	0	—	—	e 13 41	pP	—
Salt Lake City		93·9	48	e 17 47	PP	e 23 53	0	—	—	—
Hungry Horse		95·2	41	e 13 4	− 2	—	—	e 16 58	PP	—
Ksara		136·5	299	i 22 15	PKS	e 34 43	PPS	—	—	—
Collmberg	Z.	142·2	335	e 18 59	[−14]	—	—	e 22 30	PP	—
Stuttgart	Z.	145·7	336	e 19 18	[− 1]	—	—	e 22 38	PP	—
Strasbourg		146·4	338	i 19 22k	[+ 1]	—	—	—	—	—
Besançon		148·2	339	e 19 26	[+ 2]	—	—	—	—	—
Tamanrasset	Z.	164·1	292	e 19 42	[− 2]	e 22 49	PKS	i 20 38	PKP_3	—

Additional readings :—
Brisbane ePN = 3m.54s. iE = 4m.52s., iN = 7m.49s., eE = 7m.53s.
Riverview iE = 5m.39s. and 8m.35s., iP_cPN = 8m.38s., isSE = 9m.30s., iNZ = 9m.41s., iE = 9m.47s., iS_cSN = 15m.42s.
Lick iZ = 12m.25s. and 12m.35s.
Shasta Dam e = 12m.41s.
Mineral eZ = 13m.58s.
Reno eZ = 12m.46s. and 13m.26s., eE = 13m.45s.
College ePP = 16m.5s., eS_cS = 23m.7s.
Hungry Horse e = 13m.21s.
Collmberg eZ = 20m.32s.
Stuttgart eZ = 19m.53s., 20m.9s., and 20m.21s.
Tamanrasset iZ = 21m.27s., eZ = 23m.38s., 23m.59s., and 25m.11s.

April 3d. Readings also at 0h. (Hungry Horse, College (2), and near Mizusawa), 1h. (Stuttgart, Zürich, near Basle and Chur), 4h. (China Lake, Tinemaha, Boulder City, Pierce Ferry, Hungry Horse, College, Paris, Apia, Riverview, near Bandong and Djakarta), 5h. (Riverside, China Lake, Tucson, Overton, and Pierce Ferry), 7h. (Hungry Horse, College, and near Andijan), 10h. (Overton, Pierce Ferry, Hungry Horse (2), College (2), Harvard, Weston, Tamanrasset, Baku, Shemakla, and near Grozny), 11h. (Wellington, Seven Falls, Kizyl-Arvat, and near Ashkabad (4)), 13h. (Balboa Heights, Riverside, China Lake, Tinemaha, Tucson, Overton, Pierce Ferry, Hungry Horse, College, Tamanrasset, and near Andijan), 14h. (Hungry Horse), 15h. (College, Tamanrasset, and near Garm), 17h. (Pierce Ferry, Tucson, College, and near Huancayo), 18h. (near Andijan), 19h. (La Paz (2), Bogota, Chinchina, Tucson, Boulder City, Pierce Ferry, Hungry Horse, College, Weston, Tamanrasset, and near Huancayo), 20h. (near Grozny), 21h. (College).

April 4d. 2h. 21m. 7s. I
2h. 24m. 45s. II } Epicentre 51°·5N. 173°·5W. (as on 1946, Aug. 7d.).

A = −·6211, B = −·0708, C = +·7806; δ = +11; h = −6;
D = −·113, E = +·994; G = −·776, H = −·088, K = −·625.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
II	Adak	2·0	281	e 0 39	+ 4	e 1 8	+ 6	—	—	—
I	College	18·8	35	e 4 21	− 2	—	—	—	—	—
II		18·8	35	e 4 20	− 3	—	—	—	—	e 7·7
I	Victoria	31·8	75	e 6 31	+ 3	—	—	—	—	—
II		31·8	75	i 6 29	+ 1	—	—	—	—	—
II	Seattle	32·9	76	e 6 40	+ 2	—	—	—	—	—
I	Shasta Dam	36·3	87	i 7 9	+ 2	—	—	—	—	—
II		36·3	87	i 7 8	+ 1	—	—	—	—	—
I	Mineral z.	37·0	86	i 7 5k	− 8	—	—	—	—	—
II	z.	37·0	86	i 7 18a	+ 5	—	—	—	—	—
I	Vladivostok	37·2	280	7 16	+ 1	—	—	—	—	—
II		37·2	280	7 15	0	—	—	—	—	—
I	Hungry Horse	37·5	70	i 7 18	+ 1	—	—	—	—	—
II		37·5	70	i 7 17	0	e 13 0	− 7	—	—	—
II	Berkeley	38·1	91	e 7 22a	0	—	—	e 17 39	Q	e 22·6
II	Reno	38·6	85	i 7 28a	+ 2	—	—	—	—	—
I	Lick z.	38·8	91	i 7 30k	+ 2	—	—	—	—	—
II	z.	38·8	91	i 7 29a	+ 1	—	—	—	—	—
I	Tinemaha z.	41·1	89	i 7 50	+ 3	—	—	—	—	—
II	z.	41·1	89	i 7 49a	+ 2	—	—	—	—	—
I	China Lake z.	42·3	88	i 7 58	+ 1	—	—	—	—	—
II	z.	42·3	88	i 7 58	+ 1	—	—	—	—	—
II	Logan	42·3	77	e 7 55	− 2	—	—	—	—	—
I	Mount Wilson z.	43·0	92	i 8 3	0	—	—	—	—	—
II	Pasadena	43·0	92	i 8 2	− 1	—	—	—	—	—
I	Riverside z.	43·6	92	i 8 8	0	—	—	—	—	—
II	z.	43·6	92	i 8 7	− 1	—	—	—	—	—
I	Overton z.	43·8	86	i 8 10	+ 1	—	—	—	—	—
II	z.	43·8	86	i 8 9	0	—	—	—	—	—
I	Boulder City	43·9	87	i 8 11	+ 1	—	—	—	—	—
II		43·9	87	i 8 11	+ 1	—	—	—	—	—
I	Pierce Ferry	44·4	86	i 8 15	+ 1	—	—	—	—	—
II		44·4	86	i 8 14	0	—	—	—	—	—
I	Tucson	48·9	88	i 8 50	0	—	—	—	—	—
II		48·9	88	i 8 50	0	—	—	—	—	—
I	St. Louis	57·1	68	i 9 49	− 1	e 17 40	− 5	—	—	—
II		57·1	68	i 9 49	− 1	e 17 41	− 4	—	—	—
I	Ottawa	60·4	54	e 10 12	− 1	—	—	—	—	—
II		60·4	54	e 10 12	− 1	—	—	—	—	—
I	Sverdlovsk	63·2	331	e 10 30	− 2	—	—	—	—	—
II		63·2	331	i 10 32	0	—	—	—	—	—
I	Harvard	64·5	53	i 10 41	0	—	—	—	—	—
II		64·5	53	i 10 40	− 1	—	—	—	—	e 35·0
I	Fordham	64·6	55	i 10 41	0	—	—	—	—	—
II		64·6	55	i 10 40	− 1	—	—	—	—	—
I	Weston	64·8	53	i 10 43	0	—	—	—	—	—
II		64·8	53	i 10 41	− 2	—	—	—	—	—
I	Andijan	71·7	314	e 11 27	+ 1	—	—	—	—	—
II		71·7	314	e 11 26	0	—	—	—	—	—
I	Tchimkent	71·7	316	i 11 26	0	—	—	—	—	—
II		71·7	316	i 11 25	− 1	—	—	—	—	—
II	Rathfarnham C.	75·0	8	e 11 43	− 2	e 21 10	−13	e 14 6	PP	—
I	Stalinabad	75·1	314	i 11 46	0	—	—	—	—	—
II		75·1	314	i 11 36	−10	—	—	—	—	—
I	Collmberg z.	77·4	356	e 11 58	0	—	—	—	—	—
II	z.	77·4	356	e 11 57	− 1	—	—	—	—	—
I	Stuttgart z.	80·1	358	e 12 12	− 1	—	—	—	—	—
II	z.	80·1	358	e 12 13a	0	—	—	—	—	—
I	Strasburg	80·3	359	e 12 15	+ 1	—	—	—	—	—
II		80·3	359	e 12 12?	− 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
I Shemakla		81·2	329	e 12 29	+10	—	—	—	—	—
II		81·2	329	12 27	+ 8	—	—	—	—	—
I Tiflis		81·4	332	e 12 21	+ 1	—	—	—	—	—
I Besançon		81·6	0	e 12 18	− 3	—	—	—	—	—
I Abastumanj		81·9	333	e 12 28	+ 5	—	—	—	—	—
II		81·9	333	e 12 26	+ 3	—	—	—	—	—
II Alicante		90·3	6	16 59	PP	e 24 17	+20	—	—	e 44·7
II Ksara		91·2	336	e 13 23?	+15	—	—	—	—	—
I Pretoria	z.	149·5	319	i 19 52	[+ 5]	—	—	—	—	—
II	z.	149·5	319	i 19 51	[+ 4]	—	—	—	—	—
I Pietermaritzburg	z.	151·8	312	e 20 8	[+18]	—	—	—	—	—
II	z.	151·8	312	e 19 57	[+ 7]	—	—	—	—	—

Additional readings :—
College II iP = 4m.23s., e = 5m.44s.
Seattle II e = 7m.20s., 7m.42s., and 7m.56s.
Mineral I iZ = 7m.43s., II iZ = 7m.42s.
Hungry Horse I i = 7m.25s.
Berkeley II eZ = 7m.30s., iZ = 7m.35s., eZ = 7m.48s.
Reno II iZ = 7m.45s., eE = 8m.9s., iN = 8m.25s., iE = 10m.42s.
Lick I iZ = 7m.55s., II iZ = 7m.40s.
Tinemaha I iZ = 8m.16s., II iZ = 8m.1s. and 8m.17s.
China Lake II iZ = 8m.12s.
Pasadena II iZ = 8m.13s. and 8m.43s.
Riverside II iZ = 8m.19s., eZ = 8m.31s., iZ = 8m.36s.
Overton I iZ = 8m.42s.
Tucson I i = 9m.12s., e = 9m.27s., II e = 9m.22s.
Harvard II i = 10m.53s.
Rathfarnham Castle II eEN = 20m.52s. and 27m.45s.
Strasbourg II e = 12m.55s.
Long waves were also recorded at Sitka, Philadelphia, and City College, New York.

April 4d. 3h. 42m. 55s. Epicentre 29°·4N. 130°·6E. Depth of focus 0·010.
(as on 1943, Dec. 17d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nanking	z.	10·5	287	i 2 26	− 3	e 4 19	− 6	i 2 40	PP	4·6
Vladivostok		13·7	4	e 3 13	+ 2	5 42	+ 1	—	—	—
Semipalatinsk		43·0	305	e 7 45	− 6	—	—	—	—	—
Andijan		48·2	301	8 32	0	—	—	—	—	—
Stalinabad		51·2	298	e 8 54	− 2	—	—	—	—	—
Samarkand		52·6	300	e 9 9	+ 3	—	—	—	—	—
Bombay		53·3	273	—	—	e 15 5?	?	—	—	e 23·1
Sverdlovsk		55·1	322	i 9 22	− 2	—	—	—	—	—
College		60·3	29	i 9 58	− 3	—	—	e 12 3	PP	—
Shemakla		65·8	305	10 42	+ 5	—	—	—	—	—
Moscow		67·8	323	i 10 47	− 3	—	—	—	—	—
Tiflis		68·2	307	e 10 51	− 1	—	—	—	—	—
Leninakan		69·2	307	e 11 11	+13	—	—	—	—	—
Ksara		77·8	301	e 11 3	−45	—	—	—	—	—
Victoria		78·2	41	i 11 51	+ 1	—	—	—	—	—
Seattle		79·3	42	e 11 58k	+ 2	—	—	e 12 17	pP	—
Potsdam	z.	82·0	328	e 12 11	0	—	—	—	—	e 47·1
Collmberg	z.	82·7	326	e 12 14	0	—	—	—	—	e 52·8
Prague		82·9	325	12 15	0	e 21 34?	−50	—	—	e 46·1
Shasta Dam		82·9	48	i 12 15	0	—	—	—	—	—
Hungry Horse		83·4	38	i 12 19	+ 1	—	—	—	—	—
Mineral	z.	83·6	48	e 12 19a	0	—	—	e 12 54	pP	—
Jena		83·7	326	e 12 19	0	—	—	e 12 38	pP	—
Lick	z.	85·2	50	i 12 28k	+ 1	—	—	—	—	—
Reno	z.	85·2	47	i 12 29	+ 2	e 17 46	PPP	e 12 43	pP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stuttgart	z.	86·2	326	e 12 31	− 1	—	—	e 12 48	PcP	e 47·1
Tinemaha	z.	87·6	49	i 12 40	+ 2	—	—	e 13 0	pP	—
China Lake	z.	88·8	50	i 12 45	+ 1	—	—	—	—	—
Logan		88·8	41	e 12 45	+ 1	—	—	—	—	—
Overton	z.	90·4	48	i 12 52	0	—	—	—	—	—
Boulder City		90·5	48	e 12 53	+ 1	—	—	—	—	—
Pierce Ferry		90·9	48	e 12 56	+ 2	—	—	—	—	—
Tucson		95·4	49	i 13 16	+ 1	—	—	—	—	—
Tamanrasset	z.	105·9	309	e 18 3	[− 9]	—	—	e 18 25	PP	—
Huancayo		150·3	60	i 19 44	[+10]	—	—	—	—	—

Additional readinga :—
College i = 10m.18s., e = 10m.51s. and 12m.56s.
Lick eZ = 12m.36s., iZ = 13m.19s.
Long waves were also recorded at Harvard, Philadelphia, and other European stations.

April 4d. 18h. 44m. 10s. Epicentre 52°·0N. 101°·4E.

$A = -\cdot1222$, $B = +\cdot6060$, $C = +\cdot7860$; $\delta = -4$; $h = -6$;
$D = +\cdot980$, $E = +\cdot198$; $G = -\cdot155$, $H = +\cdot770$, $K = -\cdot618$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Irkutsk		1·8	82	i 0 31	− 1	—	—	—	—	—
Semipalatinsk		13·4	272	i 3 9	− 5	e 5 36	− 9	—	—	—
Almata		18·6	253	4 16	− 5	7 39	− 7	—	—	—
Frunse		20·2	255	e 4 36	− 3	8 20	− 1	—	—	—
Naryn		20·3	250	e 4 34	− 6	8 18	− 5	—	—	—
Vladivostok		22·3	102	5 3	+ 2	e 9 3	+ 1	—	—	—
Andijan		22·8	253	e 5 3	− 2	i 9 20	+ 9	—	—	—
Fergana		23·4	253	i 5 14?	+ 3	i 9 21?	0	—	—	—
Tchimkent		23·5	259	e 5 10	− 2	e 9 19	− 4	—	—	—
Nanking	z.	23·7	142	e 5 0	−14	i 9 29	+ 2	i 5 18	P	e 10·5
Sverdlovsk		23·9	299	i 5 10	− 6	—	—	—	—	—
Tashkent		24·3	258	i 5 15	− 5	i 9 39?	+ 2	—	—	—
Garm		25·2	253	i 6 25	+56	i 10 53	+61	—	—	—
Obi-garm		25·7	253	e 5 59	+26	i 10 29	+28	—	—	—
Stalinabad		26·4	254	i 5 41?	+ 1	i 10 11?	− 1	—	—	—
Samarkand		26·7	257	e 5 39	− 4	—	—	—	—	—
Dehra Dun	N.	27·7	228	e 7 47	PPP	e 12 44	SSS	—	—	17·3
Hamada		27·8	117	5 56	+ 3	11 5	+30	—	—	13·7
Hukuoka		27·9	120	e 5 47	− 7	e 10 41	+ 4	—	—	e 13·3
Hirosima		28·4	117	e 8 52	PcP	e 12 9	SSS	—	—	e 15·8
Ooita		28·8	119	e 6 19	+17	e 10 58	+ 7	e 11 45	SS	e 14·0
New Delhi		29·5	228	6 5	− 3	i 10 58	− 4	13 12	SSS	14·2
Kôti		29·6	117	e 6 9	0	e 13 14	SS	e 7 8	PP	14·6
Miyazaki		29·7	121	e 6 12	+ 2	e 11 18	+12	e 14 17	SSS	15·1
Sumoto		29·8	112	e 6 14	+ 3	e 12 26	SSS	—	—	e 15·3
Osaka		29·9	112	e 6 14	+ 2	e 11 15	+ 6	e 9 33	PcP	e 17·4
Matusiro		30·2	106	e 7 15	PP	—	—	—	—	14·5
Mizusawa	E.	30·2	99	—	—	14 14	SSS	—	—	—
Hukusima		30·7	104	e 7 46	PPP	—	—	—	—	e 15·9
Calcutta	E.	31·1	205	e 6 29	+ 7	i 11 31	+ 3	e 13 14	SS	—
Hunatu		31·2	107	7 31	PP	—	—	—	—	15·9
Shizuoka		31·4	108	e 7 56	PPP	e 12 16	+44	—	—	15·7
Tokyo		31·7	106	e 7 5	PP	e 13 20	SS	e 12 59	PcS	—
Kizyl-Arvat		33·6	266	i 6 46	+ 2	—	—	—	—	—
Moscow		36·6	303	e 7 8	− 2	12 50	− 3	—	—	—
Baku		36·8	273	—	—	i 12 48	− 8	—	—	—
Shemakla		37·4	275	7 14	− 2	—	—	—	—	—
Grozny		37·6	280	e 7 21	+ 3	i 13 9	+ 1	i 8 51	PP	—
Pulkovo		38·8	311	e 7 27	− 1	13 25	− 1	—	—	—
Tiflis		39·1	279	e 7 30	− 1	e 13 33	+ 2	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Gori		39·4	280	e 7 32	− 1	13 34	− 1	—	—	—
Poona	N.	39·8	224	i 7 35	− 1	i 13 38	− 4	16 28	SS	18·8
Bombay		39·9	226	i 7 37	0	e 13 48	+ 5	i 9 13	PP	19·2
Borzhomi		39·9	281	7 34	− 3	e 13 44	+ 1	—	—	—
Erevan		40·2	277	e 7 46?	+ 6	13 55	+ 7	—	—	—
Leninakan		40·2	278	e 7 42	+ 2	e 13 50	+ 2	e 9 39	PPP	—
Zugdidi		40·4	282	e 7 45?	+ 4	—	—	—	—	—
Helsinki		41·1	314	e 7 50?	+ 3	e 14 2	+ 1	e 9 26	PP	18·8
Theodosia		42·9	289	e 8 4	+ 2	e 14 30	+ 3	—	—	—
Yalta		43·9	289	e 8 9	− 1	14 40	− 2	i 17 47	SS	—
Upsala		44·6	315	i 8 18	+ 2	14 52?	0	i 10 5	PP	e 20·7
Kishinev		45·6	297	8 23	− 1	15 5	− 1	—	—	—
Kodaikanal	E.	46·0	214	e 8 24	− 3	e 14 59	−13	—	—	20·8
Lwow		46·7	301	i 10 31	PP	15 31	PS	e 20 9	SSS	—
Warsaw		46·9	305	e 8 32k	− 2	15 23	− 2	e 10 25	PP	e 21·8
Colombo	E.	48·3	210	8 50?	+ 5	15 50?	+ 5	—	—	27·3
Bucharest		48·7	294	e 8 48	0	e 15 55	+ 5	e 10 47	PP	21·8
Lund		48·8	312	8 55	+ 6	15 56	+ 4	—	—	—
Istanbul		49·0	288	e 8 50?	0	e 15 51	− 4	—	—	—
Skalnate Pleso		49·0	302	i 8 58	+ 8	e 16 5	+10	e 19 37	SS	23·3
Copenhagen		49·1	312	i 8 52	+ 1	e 15 59	+ 3	i 19 32	SS	22·8
Bergen		49·4	320	8 48?	− 5	16 2	+ 2	19 38	SS	21·7
Ksara		49·6	277	i 8 53a	− 2	16 8	+ 5	—	—	—
Raciborzu		49·6	304	e 8 53	− 2	e 21 38	SSS	e 11 10	PP	e 24·3
Budapest	E.	50·7	300	9 10	+ 7	16 31	+13	20 15	SS	24·8
	N.	50·7	300	9 7	+ 4	16 20	+ 2	10 47	PP	24·8
Potsdam		50·8	309	i 9 4a	0	e 16 12	− 8	e 11 12	PP	22·8
Ogyalla		50·9	302	e 9 3	− 2	e 16 12	− 9	e 20 8	SS	e 23·8
Scoresby Sund		51·2	340	16 35	PS	—	—	—	—	20·1
Kalossa	E.	51·3	300	e 9 19	+11	e 16 9	−17	e 21 7	SSS	e 24·8
	N.	51·3	300	e 9 29	+21	e 20 13	SS	e 22 5	SSS	24·9
Sofia		51·3	293	e 9 17	+ 9	e 16 9	−17	i 21 34	SSS	—
Collmberg		51·5	307	—	—	(e 20 6)	SS	—	—	e 20·1
Prague		51·5	306	9 9	0	e 16 30	+ 1	e 12 20	PPP	e 24·8
Vienna		51·7	303	e 9 12	+ 1	—	—	e 10 21	PcP	e 27·2
College		51·9	31	e 9 8	− 4	e 16 42	+ 7	e 14 4	PcS	e 22·0
Jena	E.	52·4	307	e 9 15	− 1	e 16 39	− 3	e 20 24	SS	e 26·3
Cheb		52·6	307	e 9 18	0	i 16 42	− 2	e 20 30	SS	e 24·3
Zagreb		53·4	300	e 9 28	+ 4	e 21 10	SS	—	—	e 28·5
Athens		54·1	288	i 17 9	PS	e 20 35	SS	e 17 15	PPS	—
Aberdeen		54·5	320	i 17 15	PS	i 20 49	SS	i 26 5	Q	29·0
De Bilt		54·7	312	e 9 34	+ 1	e 17 16	+ 3	—	—	e 25·8
Triest		54·7	302	i 9 38	+ 5	i 17 16	+ 3	i 21 2	SS	e 24·8
Stuttgart		55·0	307	e 9 30?	− 5	e 17 16	− 1	e 11 37	PP	e 27·8
Helwan		55·1	276	e 9 38	+ 2	i 17 14	− 4	11 41	PP	—
Karlsruhe		55·2	308	e 9 37	0	e 17 25	+ 5	—	—	e 27·8
Strasbourg		55·8	308	i 9 41	0	i 17 38	PS	e 21 25	SS	28·2
Edinburgh	E.	55·8	319	e 17 19	PS	e 19 29	ScS	—	—	—
Durham		55·9	318	i 17 38	PS	i 24 4	SSS	—	—	i 24·7
Chur		56·1	305	e 9 41	− 2	—	—	—	—	e 29·8
Zürich		56·2	307	e 9 41a	− 3	e 17 34	+ 1	e 13 11	PPP	—
Taranto		56·2	295	9 5	−39	e 17 23	−10	e 21 15	SS	e 26·1
Padova		56·4	302	e 9 56	+11	18 1	PPS	e 13 45	PPP	—
Salo		56·4	304	e 10 32	+47	e 22 57	SSS	e 13 18	PPP	e 30·4
Basle		56·6	307	e 9 47	0	e 17 53	+15	e 13 3	PPP	—
Bologna		56·7	303	(e 9 17)	−31	(e 17 39)	− 1	(e 11 48)	PP	—
Florence Arc.		57·3	301	e 9 49	− 3	e 17 59	+12	e 23 41	SSS	—
Florence Xim		57·3	301	i 9 41	−11	e 17 27	−20	—	—	—
Prato		57·3	301	e 9 56	+ 4	i 17 50	+ 3	—	—	—
Neuchatel		57·3	307	e 9 51	− 1	—	—	—	—	—
Besançon		57·6	308	i 9 53	− 1	—	—	—	—	—
Kew		57·7	315	i 9 57	+ 2	e 17 54	+ 1	e 21 43	SS	e 24·8
Rocca di Papa		57·9	299	e 9 56	0	—	—	—	—	—
Rome		57·9	299	e 9 55	− 1	i 17 56	+ 1	i 21 32	SS	—
Paris		58·2	311	i 9 57	− 1	i 18 10	+11	e 22 1	SS	e 27·8
Messina		58·7	294	e 10 4	+ 2	e 18 33	PPS	e 12 51	PP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Rathfarnham Castle		58·9	319	i 10 7	+ 4	e 18 18	+10	e 22 0		SS	e 26·8
Clermont-Ferrand		60·1	308	e 10 11	0	e 18 34	+10	e 22 37		SS	29·3
Jersey	E.	60·1	313	—	—	e 18 29	+ 5	e 25 50		SSS	29·0
Sitka		61·4	31	e 18 58	PS	—	—	—		—	e 23·6
Barcelona		63·7	305	—	—	e 26 22	SSS	—		—	e 33·4
Ivigtut		64·6	345	e 10 31	−10	19 20	− 1	—		—	29·8
Tortosa		65·0	305	—	—	i 19 21	− 5	—		—	e 32·6
Algiers Univ.	Z.	66·6	301	i 10 50k	− 4	e 19 36	− 9	e 13 24		PP	—
Alicante		67·3	304	e 11 4	+ 5	20 7	+13	27 29		SSS	e 31·3
Toledo		68·0	307	i 11 5	+ 2	i 20 11	+ 9	13 40		PP	32·4
Granada		69·8	306	i 11 14k	0	i 20 23	0	27 57		SSS	i 34·7
Malaga	Z.	70·6	306	i 11 19	0	e 20 54	+21	14 14		PP	35·4
Lisbon		71·3	310	11 22a	− 1	20 45	+ 4	21 31		PPS	35·6
Victoria		72·8	29	e 11 38	+ 6	—	—	e 21 14		PS	33·8
Saskatoon		73·6	18	—	—	i 21 12	+ 5	e 26 4		SS	31·3
Seattle		73·9	29	i 11 41a	+ 2	e 21 22	+12	i 11 58		pP	e 32·8
Hungry Horse		75·6	24	i 11 44	− 4	—	—	i 11 59		PcP	—
Tamanrasset	Z.	75·9	290	i 11 49a	− 1	e 21 32	0	e 14 43		PP	—
Butte	N.	78·1	24	e 12 8	+ 6	e 21 58	+ 2	e 26 57		SS	e 39·5
Bozeman		78·8	23	e 12 23	+17	e 22 2	− 2	e 27 20		SS	e 35·7
Shasta Dam		80·1	33	e 11 58	−15	—	—	i 12 22		P	—
Mineral	Z.	80·7	33	e 12 16k	0	—	—	i 12 29		PcP	—
Seven Falls	E.	81·0	356	12 30	+12	22 28	+ 1	—		—	32·8
Ukiah		81·3	34	—	—	e 22 34	+ 4	e 28 0		SS	e 38·5
Reno		82·0	31	e 12 23	0	e 22 46	+ 9	e 15 16		PP	e 40·7
Logan		82·3	25	e 12 25	0	e 22 46	+ 6	e 28 20		SS	e 37·4
Berkeley		82·7	34	e 12 32a	+ 5	i 22 58	+14	e 28 8		SS	e 43·7
Halifax		82·9	350	—	—	e 22 50	+ 4	—		—	35·3
Ottawa		83·0	359	e 12 28	0	22 44	− 3	15 27		PP	36·3
Salt Lake City		83·2	25	—	—	e 22 55	+ 6	e 27 33		SS	e 33·7
Santa Clara		83·3	34	—	—	e 23 0	+10	—		—	e 46·1
Lick	Z.	83·4	34	e 12 37a	+ 7	—	—	—		—	—
Perth		84·5	168	e 13 5	+29	23 12	+10	e 28 39		SS	—
Fresno		84·6	33	e 12 38	+ 2	—	—	e 15 36		PP	—
Tinemaha	Z.	84·8	31	e 12 35	− 2	—	—	—		—	—
Harvard		85·7	355	i 12 50	+ 8	e 23 17	+ 3	e 28 25		SS	e 35·3
Weston		85·8	355	e 12 49	+ 7	e 23 18	+ 3	—		—	—
China Lake	Z.	86·1	31	e 12 41	− 3	—	—	i 12 50		PcP	—
Overton	Z.	86·4	28	e 12 53	+ 8	e 23 53	PS	—		—	—
Boulder City		86·8	29	e 12 44	− 3	—	—	i 13 0		PcP	—
Pierce Ferry		86·9	28	e 12 48	0	e 23 20	− 6	e 16 28		PP	—
Cleveland		86·9	3	i 12 50	+ 2	e 23 24	− 2	e 29 17		SS	38·7
Fordham		87·4	357	e 12 55	+ 5	i 23 37	+ 7	e 23 24		SKS	41·8
City College, N.Y.		87·5	357	—	—	e 23 15	[− 2]	e 32 58		SS	e 34·9
Pasadena		87·5	32	e 12 47	− 4	i 23 48	+17	e 29 20		SS	e 36·2
Pennsylvania		87·6	0	—	—	i 23 22	[+ 4]	i 29 29		SS	e 36·4
New Kensington	E.	87·8	2	e 16 30	PP	e 23 34	0	e 28 32		SS	e 35·9
Riverside	Z.	87·9	32	e 12 52	− 1	—	—	—		—	—
Philadelphia		88·4	358	e 23 29	SKS	(e 23 29)	[+ 6]	e 29 29		SS	35·6
St. Louis		89·2	11	i 13 6	+ 7	i 23 48	+ 1	13 28		pP	—
Washington		89·5	359	e 13 9	+ 9	e 23 27	[− 3]	—		—	e 44·5
Brisbane	Z.	91·1	135	e 13 7	− 1	—	—	e 16 32		PP	—
Tucson		91·5	27	e 16 56	PP	e 24 16	+ 8	e 30 34		SSP	e 45·2
Bermuda		95·1	348	—	—	e 25 20	+41	e 32 6		SSP	e 44·6
Riverview		95·9	140	e 26 20	PS	e 24 12	[+ 6]	e 31 31		SS	e 42·9
Pretoria	Z.	100·3	241	e 16 56	PP	—	—	—		—	—
San Juan		109·1	347	e 28 36	PS	e 34 56	SSP	—		—	e 47·3
Bogota		123·5	354	—	—	e 22 25	PKS	—		—	e 61·8
Huancayo		140·1	354	e 19 37	[+ 6]	e 45 38	SSS	e 22 30		PP	e 63·8
La Paz		143·6	342	19 39	[+ 2]	i 41 50	SS	i 26 10		SKS	69·9
La Plata	E.	157·4	311	—	—	45 38	SSP	49 56		SSS	73·8

Additional readings :—
Nanking iPZ = 5m.9s., iZ = 10m.25s.
Ooita ePP? = 6m.47s.
New Delhi PPEN = 6m.57s., P_cPN = 8m.58s.
Kôti eS = 11m.31s.

Continued on next page.

Miyazaki i =6m.22s.
Osaka e =14m.52s.
Mizusawa SN =14m.18s.
Grozny iSS =15m.53s.
Poona PPN =9m.8s., SSSN =17m.5s.
Bombay QN =17m.16s.
Yalta iPP =9m.54s.
Upsala i =8m.23s., iE =8m.34s., i =10m.20s. and 11m.36s., eN =15m.25s., eSS?E = 17m.41s., iSSN =17m.48s., eQE =18m.49s.
Lwow iPPP =11m.9s.
Warsaw eZ =8m.39s., ePE =8m.43s., eN =9m.7s., ePPPEN =10m.50s., eE =12m.9s., eZ =12m.24s., P_cS =14m.4s., PS =15m.33s., eEN =16m.52s., SS =18m.52s.
Bucharest eP?E =8m.55s., eN =15m.27s.
Skalnate Pleso e =10m.9s. and 10m.42s., ePP =11m.9s., ePPP =11m.47s., e =14m.23s., 21m.7s. and 22m.12s.
Copenhagen i =8m.58s.
Bergen eE =16m.25s., eN =19m.48s.?
Raciborzu ePEN =8m.58s.
Budapest E. e =15m.22s., PPS =17m.7s., SSS =22m.3s., e =22m.50s.? ; N. PPS = 16m.53s., SS =19m.59s., e =20m.15s., eSSS =20m.56s., e =22m.20s.
Potsdam iZ =9m.13s., eN =11m.57s., ePPPN =12m.12s., eE =13m.50s. and 16m.8s., iSN =16m.32s., iPSZ =16m.50s.?, iEN =17m.30s., iE =18m.24s., iS_cSN =19m.5s., eL?E =20m.4s., iSSN =20m.12s., iSSEZ =20m.22s., iN =20m.26s., iE =21m.35s., iSSSN =21m.43s., iN =22m.12s.
Ogyalla e =9m.15s., ePP =10m.58s., ePS? =16m.34s., eSSS =21m.32s.
Kalossa eN =12m.47s., eE =13m.3s., and 15m.8s.: eN =15m.27s., eSSE =19m.51s.
Sofia i =20m.25s.
Prague eZ =9m.15s., eE =9m.25s., e =9m.33s., ePP =11m.16s., eE =11m.25s., ePPPZ = 12m.12s., eE =12m.45s., eSSN =20m.6s., eSSE =20m.12s., eSSS =21m.56s.
Vienna ePP =11m.19s., ePPP =12m.21s.
Jena ePN =9m.18s., iPZ =9m.22s., ePP?E =11m.20s., ePPP?E =12m.29s., eSN = 16m.42s., eSSN =20m.28s., eSSS?E =22m.28s., eE =23m.46s.
Cheb ePP =11m.17s., ePPPE =12m.13s., ePPPN =12m.17s.
Triest iPPP =12m.34s., iPS =17m.50s.
Stuttgart eP =9m.33s., eZ =9m.44s. and 10m.6s., eP_cPZ =10m.16s., ePPP =13m.14s., eSS =21m.9s.
Helwan PPSEN =17m.32s.
Strasbourg iP_cP? =10m.11s., iP_cP =10m.50s., iPP =11m.42s., ePP =11m.50s., e = 12m.53s., ePPP =13m.5s., iPPP =13m.15s., eP_cS =14m.33s., ePS =18m.3s., e = 19m.2s., 21m.50s., 23m.10s., eSSS =23m.55s., i =26m.35s. and 27m.18s.
Durham iE =20m.19s., 20m.52s., and 24m.14s.
Zürich ePP =11m.36s., eSS =21m.21s.
Padova e =10m.42s. and 12m.24s.
Salo eE =11m.56s., ePP? =12m.45s., eE =13m.23s., eSN =19m.3s.
Basle e =15m.53s.
Bologna ePPP =(12m.36s.). Readings reduced by 1m.
Florence Arc. eZ =12m.2s., PS =18m.31s.
Kew ePPNZ =12m.15s., eSSS =24m.0s.
Rome ePPE =12m.10s., iPPPE =13m.21s., iZ =13m.39s., eN =17m.50s., iPSN = 18m.38s.
Paris i =10m.28s. and 11m.24s., e =11m.55s., iPP =12m.19s., iPPP =13m.26s., and 13m.37s., i =15m.19s., 22m.33s., and 24m.25s., iSSS =24m.40s.
Rathfarnham Castle iZ =10m.11s. and 10m.41s., eZ =11m.5s., ePPEN =12m.41s.
Clermont-Ferrand ePP =12m.26s., eP_cP? =13m.37s., ePPP =13m.57s.
Algiers Univ. eZ =11m.0s., iP_cPZ =11m.18s., eZ =11m.53s., and 15m.37s.
Alicante PP =13m.43s., PPP =15m.11s., P_cS =15m.29s., PS =20m.33s., PPS =20m.47s., S_cS =21m.9s., SS =24m.19s., Q =28m.9s.
Toledo iZ =11m.56s., SKS =21m.6s., SS?N =24m.25s., SSS?N =27m.37s.
Granada PP =13m.36s., PPP =15m.30s., iSS =24m.36s.
Malaga PPPZ =16m.8s.
Lisbon QE =30m.2s.
Seattle iP_cP =11m.53s., ipP_cP =12m.17s., i =12m.30s. and 12m.59s., ePS =21m.38s., ePPS =22m.4s., eSS =26m.20s.
Tamanrasset iZ =11m.52s., iP_cPZ =11m.57s., iZ =13m.33s., eZ =14m.0s., ePPPZ = 16m.47s., eZ =17m.29s., iZ =18m.37s., eZ =19m.35s., eSKKSZ =22m.29s., eZ = 23m.44s., eSSZ =25m.57s., iSSSZ =29m.6s., PKP,PKPZ =39m.1s.
Butte eN =33m.17s.
Bozeman eSSS =30m.4s.
Reno eZ =12m.28s., eE =12m.37s., eN =12m.42s., eZ =15m.28s., and 23m.43s.
Berkeley eZ =12m.40s., eE =26m.34s., and 31m.38s., eN =38m.44s., eE =40m.38s., eEN =42m.50s.
Ottawa i =12m.35s.
Lick iZ =13m.2s. and 14m.9s.
Perth e =16m.22s. and 32m.5s.
Fresno eZ =16m.38s., eN =19m.43s.
Tinemaha eZ =12m.45s.
Harvard i =13m.8s., e =22m.50s.
China Lake iZ =12m.45s. and 12m.57s.

Continued on next page.

Pierce Ferry e =18m.27s.
Cleveland ePZ =12m.55s., eZ =13m.0s., eE =13m.4s., eSKKSE =23m.33s.
City College, N.Y. e =28m.29s.
Pasadena iZ =12m.53s., iEZ =12m.58s., iZ =13m.3s.
Pennsylvania iSNZ =23m.41s., iE =24m.26s., eE =26m.46s., iZ =27m.5s., iN =29m.20s., iN =29m.50s., iE =31m.33s. and 34m.5s., eN =34m.22s.
Riverside iZ =12m.58s.
Philadelphia i =23m.44s., eSSS =32m.44s.
St. Louis iZ =14m.19s., eSKSN =23m.25s., esSN =24m.40s., eSSN =30m.34s.
Riverview eN =24m.40s.
San Juan e =39m.22s.
Huancayo e =23m.24s., ePPPS =36m.32s., eSS =37m.50s., eQ =58m.28s.
La Paz PP =23m.12s., iZ =27m.46s. and 39m.50s.
Long waves were also recorded at Bandong, Djakarta, Columbia, Galerazamba, Tananarive, and Fort de France.

April 4d. Readings also at 0h. (Tamanrasset), 3h. (near Toledo), 4h. (Hungry Horse, Tamanrasset, near La Paz, and near Istanbul), 6h. (Mineral, Sofia, Naryn, Frunse, Samarkand, near Andijan, Fergana, Garm, Obi-garm, Stalinabad, Tashkent, Tchimkent, and near Istanbul), 7h. (Tiflis, and near Shemakla), 9h. (near Andijan), 10h. (Brisbane and Tamanrasset), 11h. (China Lake, Tinemaha, Tucson, Overton, Pierce Ferry, Hungry Horse, College, Fergana, near Andijan (2), Garm, and near Apia), 12h. (near Andijan), 15h. (Fergana, near Andijan and Naryn), 17h. (Granada, Andijan, Fergana, near Obi-garm, and Stalinabad), 19h. (Irkutsk, and near Grozny), 20h. (Lick, Reno, and near Irkutsk (2)), 21h. (near Irkutsk), 22h. (Prague, Stuttgart, Tamanrasset, Bologna, Pavia, near Florence Arc., Padova, and Salo), 23h. (Andijan, Obi-garm, near Stalinabad, and near Irkutsk (2).

April 5d. 1h. 17m. 13s. Epicentre 52°·1N. 177°·5W.

A = −·6162, B = −·0269, C = +·7871 ; δ = −5 ; h = −6 ;
D = −·044, E = +·999 ; G = −·786, H = −·034, K = −·617.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Adak		0·6	113	e 0 16	+ 1	i 0 26	0	—	—	—
College		19·9	37	e 4 32	− 4	e 8 20	+ 5	e 8 39	SS	e 12·8
Victoria		34·1	74	e 6 52	+ 4	—	—	—	—	—
Vladivostok		34·6	276	6 52	− 1	12 21	− 1	—	—	—
Seattle		35·1	74	e 7 23	+26	e 12 41?	+11	e 8 20	PP	e 15·8
Shasta Dam		38·8	84	i 7 28	0	e 13 29	+ 3	e 9 41	PcP	—
Mineral	Z.	39·5	84	e 7 34a	0	—	—	—	—	—
Hungry Horse		39·6	69	e 7 32	− 3	e 13 29	− 9	—	—	—
Berkeley		40·6	88	i 7 43k	0	e 14 3	+ 9	—	—	e 19·3
Reno		41·1	84	e 7 48k	+ 1	e 14 3	+ 2	i 9 39	PcP	e 25·4
Santa Clara		41·1	88	e 7 55	+ 8	e 14 8	+ 7	—	—	e 17·6
Lick	Z.	41·3	88	e 7 49a	0	e 13 39	PcS	e 9 51	PcP	—
Saskatoon		41·9	61	—	—	e 14 16	+ 3	—	—	19·3
Bozeman		42·8	71	e 8 17	+16	e 13 57	−29	—	—	e 18·9
Fresno		42·8	87	e 8 3k	+ 2	e 14 24	− 2	e 10 23	PPP	—
Tinemaha		43·6	86	e 8 8	0	e 14 42	+ 4	i 9 58	PcP	—
Logan		44·6	76	e 8 25	+ 9	e 13 52	PcS	—	—	e 18·2
China Lake	Z.	44·8	87	i 8 16	− 1	i 15 3	+ 8	i 9 59	PcP	—
Salt Lake City		45·2	77	e 8 24	+ 4	e 15 2	+ 1	—	—	e 18·3
Pasadena		45·5	88	e 8 24	+ 1	i 15 15	+10	e 13 52	PcS	e 18·8
Riverside	Z.	46·1	88	e 8 27	− 1	—	—	—	—	—
Overton	Z.	46·2	83	i 8 28	0	—	—	i 8 33	P	—
Boulder City		46·4	84	e 8 30	0	e 14 32	−46	e 14 1	PcS	—
Pierce Ferry		46·8	83	e 8 32	− 1	e 15 26	+ 2	i 8 36	P	e 18·4
Tucson		51·3	85	e 9 7	− 1	i 16 40	+14	e 10 18	PcP	e 27·4
St. Louis		59·2	66	e 10 3	− 2	e 18 9	− 3	—	—	—
Sverdlovsk		61·4	328	e 10 21	+ 1	—	—	—	—	—
Cleveland		61·9	58	—	—	e 22 29	?	e 22 40	SS	31·2
Ottawa		62·0	51	—	—	e 18 47	− 1	—	—	28·8
Seven Falls	E.	63·0	47	e 20 11	?	—	—	—	—	e 33·2

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pennsylvania		64·3	56	—	—	i 19 18	+ 1	i 19 47	PPS	e 35·2
Pulkovo		66·2	345	e 10 55	+ 3	e 19 51	+11	—	—	—
Fordham		66·3	53	—	—	e 20 3	PS	—	—	—
Philadelphia		66·3	55	—	—	e 19 43	+ 1	—	—	e 29·4
Weston		66·3	51	e 10 51	− 1	—	—	—	—	e 30·1
Moscow		68·7	340	e 11 9	+ 2	—	—	—	—	—
Andijan		69·5	311	e 11 10	− 2	—	—	—	—	—
Tchimkent		69·5	313	e 11 10	− 2	—	—	—	—	—
Tashkent		70·5	313	—	—	e 20 24?	− 8	—	—	—
Stalinabad		72·9	312	e 11 31?	− 2	—	—	—	—	—
Rathfarnham Castle		74·7	6	i 11 40	− 3	—	—	—	—	e 36·8
Warsaw		74·9	348	—	—	e 26 22	SS	e 29 52	SSS	e 38·8
Kew		76·8	2	e 11 39?	−16	e 21 57	+15	e 26 53	SS	e 38·8
Bermuda		77·5	53	e 23 5	PPS	—	—	—	—	e 31·9
Prague		77·7	353	e 11 54	− 6	—	—	—	—	—
Stuttgart		79·3	356	e 12 10	+ 1	—	—	—	—	e 44·8
Strasbourg		79·6	357	i 12 14k	+ 4	e 22 20	+ 8	e 12 39	?	—
Tiflis		79·6	330	e 12 14	+ 4	—	—	—	—	—
Paris		80·0	0	—	—	—	—	e 36 58	Q	e 47·8
Yalta		80·0	338	—	—	e 22 18	+ 1	—	—	—
Istanbul		84·4	340	e 12 43	+ 7	e 23 11	+10	—	—	—
Bombay		86·8	297	—	—	e 23 17	[+ 4]	e 23 56	S	—
San Juan		88·1	62	—	—	e 24 18	PS	e 30 59	?	e 43·3
Ksara		89·6	333	e 13 3	+ 2	25 7	PS	—	—	—
Alicante		89·8	2	13 3	+ 1	25 6	PS	30 29	SSP	e 52·7
Riverview		89·9	206	—	—	e 23 30	[− 2]	e 23 49	S	e 41·8
Granada		90·9	6	12 24k	−43	23 27	[−11]	25 12	PS	i 48·6
Tamanrasset	z.	105·4	357	18 33	PP	—	—	—	—	—
Pretoria	z.	147·3	313	e 19 43	[0]	—	—	—	—	—
Pietermaritzburg	z.	149·5	307	e 19 51	[+ 4]	—	—	—	—	—

Additional readings :—
Seattle e = 7m.27s., eSS = 14m.51s.?
Shasta Dam e = 7m.53s.
Mineral iZ = 7m.37s. and 7m.44s.
Berkeley iZ = 7m.49s., eEN = 17m.5s., iN = 17m.12s., iSSN = 17m.27s.
Reno iZ = 7m.51s., iE = 8m.42s., eEZ = 13m.40s., eEZ = 14m.7s.
Lick iZ = 7m.55s., 8m.21s., and 8m.29s.
Fresno eE = 8m.21s., eN = 10m.5s., 15m.11s., and 16m.46s.
Tinemaha i = 8m.13s.
China Lake iP_cSZ = 13m.52s.
Pasadena iZ = 8m.45s., eP_cPE = 9m.44s.
Boulder City i = 8m.36s.
Tucson iP = 9m.10s., c = 9m.28s.
Pennsylvania iEN = 21m.9s., iE = 21m.43s., iN = 22m.24s., iE = 22m.50s.
Rathfarnham Castle eZ = 12m.39s., iNZ = 17m.59s.
Granada SS = 30m.25s.
Long waves were also recorded at Sitka, Honolulu, Bogota, La Paz, Huancayo, Fort de France, Scoresby Sund, and at numerous other North American and European stations.

April 5d. 9h. 26m. 13s. Epicentre 11°·0N. 92°·0E. (as on 1945, Aug. 8d.).

A = −·0343, B = +·9813, C = +·1896 ; δ = +7 ; h = +6 ;
D = +·999, E = +·035 ; G = −·007, H = +·189, K = −·982.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	12·6	254	2 56	− 7	—	—	—	—	—
Kodaikanal	E.	14·3	269	i 3 16	−10	e 6 54	+48	—	—	8·0
Poona	E.	19·1	296	i 4 22	− 5	7 56	− 1	8 22	SS	—
Bombay		20·1	295	e 4 38	0	e 8 30	+11	9 2	SSS	—
New Delhi		22·3	324	i 5 0	− 1	i 9 3	+ 1	9 0	P_cP	10·3
Bandong		23·6	137	3 47?	?	—	—	—	—	—
Naryn		33·4	339	e 6 48	+ 6	—	—	—	—	—
Obi-garm		34·0	329	e 6 59	+11	—	—	—	—	—
Andijan		34·3	334	e 6 50	0	12 23	+ 6	—	—	—
Fergana		34·3	332	e 7 0	+10	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stalinabad		34·4	327	e 6 52	+ 1	i 12 24	+ 5	—	—	—
Almata		34·7	342	e 6 56	+ 2	i 12 31	+ 7	—	—	—
Frunse		35·2	337	e 7 2	+ 4	—	—	—	—	—
Samarkand		36·2	326	e 7 7	+ 1	—	—	—	—	—
Tashkent		36·2	331	—	—	i 12 47	0	—	—	—
Tchimkent		36·8	332	e 7 11	0	—	—	—	—	—
Semipalatinsk		40·5	349	e 7 36	− 6	—	—	—	—	—
Irkutsk		42·4	10	e 8 1	+ 3	e 14 27	+ 7	—	—	—
Vladivostok		47·1	40	8 41	+ 6	15 42	+14	—	—	—
Baku		47·2	317	—	—	e 15 38	+ 9	—	—	—
Tiflis		51·3	315	e 9 9	+ 1	16 29	+ 3	—	—	—
Sverdlovsk		51·7	340	i 9 11	0	16 35	+ 3	—	—	—
Gori		51·9	316	e 9 14	+ 2	—	—	—	—	—
Borzhomi		52·3	316	e 9 16	+ 1	—	—	—	—	—
Abastumanj		52·7	315	e 9 19	+ 1	—	—	—	—	—
Zugdidi		53·6	316	e 9 19	− 6	e 17 0	+ 2	—	—	—
Ksara		55·9	303	e 9 43	+ 1	e 19 10	S_cS	—	—	—
Helwan		59·2	298	e 10 5	0	e 18 17	+ 5	e 12 17	PP	—
Moscow		61·3	329	e 10 19	− 1	18 39	0	—	—	—
Pulkovo		66·5	331	e 10 54	0	e 19 48	+ 4	—	—	—
Pretoria	z.	72·0	239	e 16 23	PPP	—	—	—	—	—
Tamanrasset	z.	82·6	292	i 12 25a	− 1	—	—	i 15 41	PP	—
College		92·3	22	e 13 13	0	—	—	e 16 26	PP	—
Hungry Horse		116·6	19	e 18 37	[− 9]	—	—	e 20 12	PP	—
Shasta Dam		119·5	30	e 18 59	[+ 7]	—	—	—	—	—
Lick	z.	122·5	31	e 19 3a	[+ 5]	—	—	—	—	—
Tinemaha	z.	124·4	30	e 19 4	[+ 3]	—	—	e 19 10	?	—
China Lake	z.	125·7	29	e 19 5	[+ 1]	—	—	e 14 30	P	—
Overton	z.	126·6	26	i 19 7	[+ 2]	—	—	e 20 58	PP	—
Pasadena	z.	126·7	32	e 19 9	[+ 3]	—	—	—	—	—
Pierce Ferry		127·1	27	e 19 8	[+ 2]	—	—	—	—	—
Riverside	z.	127·3	32	e 19 8	[+ 1]	—	—	e 19 15	?	—
Tucson		131·8	26	e 19 16	[0]	e 22 44	PKS	—	—	—

Additional readings :—
Colombo SE =12m.21s., LE =22m.51s.
Poona SSSE =8m.33s.
New Delhi PPN =5m.30s.
Helwan eZ =10m.15s.
China Lake eZ =19m.12s.
Long waves were also recorded at Nanking and Upsala.

April 5d. 10h. Undetermined shock.

Tuai ePN =14m.58s., iSN =16m.0s.
Arapuni eP =15m.25s., eS =16m.40s.
Auckland eN =15m.32s., iS?N =15m.48s.
Wellington eP =15m.39s., S =17m.36s.
Christchurch P =16m.28s., S =18m.43s.
Ap'a eP =17m.2s., eS =20m.5s.
Cobb River iSE =18m.0s.
Lick ePZ =25m.32s.k, eZ =25m.57s.
Pasadena iPZ =25m.32s., iZ =25m.56s.
Riverside iPZ =25m.34s.
China Lake iPZ =25m.39s.a, iZ =26m.1s.
Shasta Dam eP =25m.41s.
Tinemaha ePZ =25m.41s.
Tucson iP =25m.50s., e =26m.52s.
Overton iPZ =25m.51s., eZ =27m.40s.
Pierce Ferry iP =25m.52s.
College eP =26m.28s.
Tamanrasset iPKPZ =33m.0s.k, ePKP$_2$Z =34m.19s., ePPZ =37m.49s.

April 5d. 18h. North Atlantic, near Greenland.

Paris eP = 19m.5s., ePP = 19m.34s., eL = 25m.
Clermont-Ferrand eP = 19m.27s.
Jena eE = 19m.40s., eN = 19m.44s.
Alicante P = 19m.58s., PP = 20m.46s., PPP = 21m.2s., S = 24m.30s., SS = 25m.58s., eL = 27m.58s.
Strasbourg eP = 19m.39s., e = 19m.49s. and 21m.41s.
Granada P = 19m.58s.k, PP = 20m.56s., S = 24m.22s., L = 29·9m.
Ksara e = 20m.1s. and 21m.59s.
Aberdeen iN = 21m.36s., eN = 24m.38s.
Tamanrasset iPZ = 21m.57s.a, ePPZ = 23m.46s., eSZ = 28m.22s.
Hungry Horse eP = 22m.27s.
Kew eEN = 22m.37s., eL? = 24m.
College eP = 22m.50s.
Overton ePZ = 23m.27s.
Pierce Ferry eP = 23m.27s.
Lick ePZ = 23m.48s., eZ = 24m.12s.
Ottawa e = 28m.5s., L = 29·2m.
Long waves were also recorded at Ivigtut, Copenhagen, De Bilt, Harvard, Philadelphia, and Berkeley.

April 5d. Readings also at 0h. (Prague), 1h. (near Irkutsk), 2h. (Istanbul and College), 3h. (Stuttgart and Tamanrasset), 5h. (Tacubaya, Mount Wilson, Riverside, China Lake, Tinemaha, Boulder City, Overton, Pierce Ferry, Tucson, Lick, Reno, and Mineral), 6h. (near Irkutsk), 8h. (Malaga, College, Hungry Horse, Pierce Ferry, and Florence Arc.), 9h. (College, Shasta Dam, Overton, Pierce Ferry, and near Mizusawa), 10h. (Hungry Horse, Frunse, near Garm, Obi-garm, Stalinabad, Andijan (2), Tashkent, Samarkand, and Tchimkent), 11h. (near Semipalatinsk, and near Naryn), 12h. (La Paz, Pasadena, Riverside, China Lake, Tinemaha, Hungry Horse, Shasta Dam, Overton, Pierce Ferry, Tucson, Tamanrasset, Florence Arc., and near Andijan), 13h. (Huancayo, La Paz, Lick, Hungry Horse, Pierce Ferry, and Durham), 14h. (Florence Arc. and Huancayo), 17h. (near Tiflis), 18h. (near Irkutsk), 19h. (Brisbane, Samarkand, near Stalinabad, Garm, Andijan, and near Obi-garm), 20h. (Obi-garm, near Garm, Stalinabad, and Andijan), 22h. (Tamanrasset)

April 6d. 2h. 43m. 27s. Epicentre 37°·9N. 58°·6E. (as on 1948, October 17d.).

$A = +·4122$, $B = +·6752$, $C = +·6117$; $\delta = -2$; $h = -1$;
$D = +·854$, $E = -·521$; $G = +·319$, $H = +·522$, $K = -·791$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ashkabad	0·2	—	0 6	− 4	—	—	—	—	—
Kizyl-Arvat	2·2	302	0 36	− 2	—	—	—	—	—
Samarkand	6·8	72	e 1 42	− 2	—	—	—	—	—
Stalinabad	8·0	82	e 2 2	+ 2	i 3 39	+ 6	—	—	—
Shemakla	8·2	292	2 5	+ 2	—	—	—	—	—
Obi-garm	8·8	81	e 2 16	+ 5	—	—	—	—	—
Tashkent	8·9	64	e 2 8?	− 4	e 3 44?	−11	—	—	—
Tchimkent	9·5	59	i 2 17	− 3	—	—	—	—	—
Andijan	11·0	71	e 2 42	0	e 4 51	+ 4	—	—	—
Erevan	11·2	286	e 2 49	+ 5	4 48	− 4	—	—	—
Grozny	11·2	303	e 2 43?	− 1	4 39?	−13	—	—	—
Tiflis	11·3	294	e 2 40	− 6	e 4 41	−13	—	—	—
Gori	11·8	295	e 2 45	− 8	i 4 51	−15	—	—	—
Leninakan	11·8	289	e 2 57?	+ 4	—	—	—	—	—
Borzhomi	12·3	293	2 55	− 4	e 5 9	− 9	—	—	—
Abastumanj	12·7	292	e 3 6	+ 1	e 5 22	− 6	—	—	—
Frunse	13·2	63	e 3 15	+ 4	—	—	—	—	—
Piatigorsk	13·2	302	e 3 9?	− 2	5 22	−18	—	—	—
Zugdidi	13·6	295	e 3 7	−10	—	—	—	—	—
Naryn	13·9	70	e 3 17	− 4	5 53	− 4	—	—	—
Almata	14·9	63	e 3 37	+ 3	6 30	+10	—	—	—
Przhevalsk	15·8	67	3 53	+ 8	—	—	—	—	—
New Delhi	18·1	114	i 4 16	+ 2	i 7 42	+ 7	4 31	PP	e 9·8
Theodosia	18·7	300	e 4 23	+ 1	e 7 53	+ 5	—	—	—
Ksara	18·8	263	i 3 38	−45	i 8 10	+20	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sverdlovsk		19·0	4	4 24	− 2	7 55	0	—	—	—
Yalta		19·5	297	4 33	+ 2	8 7	+ 1	—	—	—
Semipalatinsk		19·9	43	e 4 27	− 9	—	—	—	—	—
Bombay		22·6	143	e 4 33	−30	e 9 26	+19	—	—	—
Moscow		22·7	329	e 5 7	+ 3	9 8	− 1	—	—	—
Istanbul		23·0	287	e 5 8	+ 1	e 9 17	+ 3	—	—	—
Kishinev		23·7	302	5 16	+ 2	9 0	−27	—	—	—
Helwan		24·0	258	5 17	0	9 51	+19	e 5 37	PP	e 14·0
Bucharest		25·2	296	e 5 30	+ 1	i 9 58	+ 6	—	—	—
Skalnate Pleso		29·7	305	—	—	e 11 46	+40	—	—	e 15·4
Warsaw		29·8	311	e 7 23	+72	12 3	+56	e 8 40	PPP	e 18·6
Prague		33·5	307	e 6 41?	− 2	e 12 9?	+ 4	e 7 57	PP	e 20·2
Upsala		33·9	324	e 5 49	−58	e 12 33?	+22	e 14 3	SS	e 20·3
Triest		34·0	298	e 8 15	PP	e 13 12	+59	—	—	—
Potsdam		34·6	310	—	—	e 14 27	SS	—	—	e 23·6
Irkutsk		34·7	50	—	—	e 14 3	SS	—	—	—
Cheb		34·9	307	e 6 52	− 3	e 12 58	+31	e 13 59	SS	e 19·0
Rome		35·3	292	e 3 33	?	e 12 28	− 5	—	—	—
Jena		35·4	307	e 6 59?	− 1	e 12 36	+ 2	e 8 14	PP	e 15·8
Copenhagen		35·5	316	i 6 59	− 1	16 28	Q	i 8 18	PP	17·6
Stuttgart		36·9	304	e 7 11	− 1	e 12 59	+ 1	—	—	e 23·6
Zürich		37·4	301	e 7 33	+17	—	—	—	—	—
Strasbourg		37·9	304	e 7 23	+ 3	—	—	e 8 54	PP	—
Besançon		39·2	302	e 7 30	− 1	—	—	e 8 50	PP	—
Paris		41·4	304	e 7 49	− 1	—	—	—	—	e 22·6
Kew		42·9	308	—	—	e 17 40	SS	—	—	e 27·6
Tamanrasset	z.	47·6	268	i 8 39k	0	—	—	—	—	—
Granada		48·5	289	—	—	i 19 55	SS	—	—	29·0
Pretoria	z.	69·5	209	e 11 12	0	—	—	—	—	—
College		75·5	12	e 11 47	− 1	—	—	—	—	—
Hungry Horse		93·9	355	e 13 24	+ 3	—	—	—	—	—

Additional readings :—
New Delhi PPPE =4m.41s., SSN =8m.4s., SSSN =8m.23s.
Helwan eZ =7m.10s.
Bucharest eN =7m.49s.
Skalnate Pleso e =12m.19s. and 12m.45s.
Warsaw ePE =7m.26s., eE =11m.31s., eZ =11m.34s., eN =11m.37s., eZ =12m.57s., eSSN =13m.15s., eSSEZ =13m.19s., eSSSZ =13m.32s., eSSSN =13m.35s., eP_eSEN =13m.47s.
Prague ePPP =8m.11s., e =10m.10s. and 10m.28s., eSS =14m.19s., eSSS =14m.41s., e =17m.3s.
Upsala eE =13m.51s., iN =17m.2s., eE =18m.9s., eN =18m.13s., iN =19m.29s., eE = 19m.33s.?
Potsdam eE =14m.33s., eN =19m.33s.
Jena eN =9m.3s., eSS?N =14m.45s.
Besançon e =10m.5s.
Tamanrasset iZ =9m.0s.
Long waves were also recorded at Scoresby Sund, Harvard, Philadelphia, and other European stations.

April 6d. 6h.-7h.

Repetition of shocks at 1d. and 2d. The readings cannot be fitted to this epicentre.
Intensity V at Rossignano.

Florence Arc. eZ =58m.57s., i =59m.5s., iS_g =59m.8s.
Salo eP_g =58m.45s., iS_gE =59m.13s.
Padova P_g? =58m.48s., S_g? =59m.16s.
Bologna eZ =59m.6s., eE =59m.15s.
Zürich eP? =59m.46s., eS =60m.31s.
Rome eZ =59m.59s.
Stuttgart eZ =60m.27s. and 61m.44s.
Basle e =60m.44s. and 61m.28s.
Tamanrasset eZ =61m.31s. and 64m.27s.

April 6d. 22h. 43m. 47s. Epicentre 43°·5N. 10°·3E. (as on 2d.).

Intensity V at Luce, Orciano, and Rossignano Marittimo. See monthly bulletin. Rome, April, 1950, p. 9.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Florence Arc.		0·7	70	i 0 9?	− 8	i 0 21?	− 7	—	—
Bologna		1·2	32	e 0 19	− 5	—	—	e 0 27	P
Padova		1·3	23	0 37	+12	0 59	+15	—	—
Pavia		1·9	334	e 0 36	+ 2	e 0 58	− 1	—	—
Salo	E.	2·1	6	e 0 37	0	i 0 56	− 8	i 1 25	S_g
Rome		2·3	135	e 0 53	P_g	e 1 17	S_g	—	—
Triest		3·3	49	—	—	e 1 57	S_g	—	—
Chur		3·4	351	e 0 49	− 6	e 1 31	− 6	—	—
Zürich		4·1	343	e 0 55	−10	e 1 44	−11	—	—
Basle		4·5	336	e 1 3	− 8	e 2 12	+ 7	—	—
Zagreb		4·7	58	e 1 19	+ 5	e 2 24	+14	—	—
Besançon		4·8	323	—	—	e 2 23	S*	e 2 40	S_g
Stuttgart	z.	5·3	352	e 1 23?	+ 1	e 2 55	S_g	e 1 39	P*
Prague		7·2	22	—	—	e 2 58	?	i 3 42	S*
Jena		7·5	6	—	—	e 3 16	− 4	e 3 57	S*
Collmberg	z.	8·0	12	e 1 49	−11	e 3 31	− 2	—	—

Additional readings :—
Florence Arc. i = 17s.?
Padova S_g = 1m.5s.
Rome eN = 59s., iN = 1m.21s.
Besançon e = 2m.47s.
Prague eS* = 3m.19s., e = 3m.55s., 4m.3s., and 4m.15s.
Jena eE = 3m.38s.

April 6d. Readings also at 0h. (near Huancayo), 1h. (Hungry Horse (2), College, and Tamanrasset), 2h. (Pierce Ferry and Ashkabad), 3h. (Riverside, China Lake, Tinemaha, Tucson, Overton, Pierce Ferry, Mineral, Shasta Dam, Hungry Horse (2), College, Ksara, Tamanrasset (2), near Ashkabad (2), near Irkutsk (2), near Prague, near Basle, and Zürich), 5h. (near Andijan and near La Paz), 6h. (Overton, Pierce Ferry, Shasta Dam, Hungry Horse, Tamanrasset, and near Irkutsk), 7h. (Tamanrasset), 8h. (Ashkabad and Stuttgart), 9h. (Andijan, Samarkand, Tchimkent, near Fergana, and Obi-garm), 10h. (near Andijan), 11h. (College, Hungry Horse, and near Andijan), 12h. (Tortosa, Andijan, Fergana, Frunse, Przhevalsk, Tashkent, near Almata, and Naryn), 13h. (College), 14h. (Mount Wilson, China Lake, Tinemaha, Tucson, Overton, Pierce Ferry, Hungry Horse, and College), 15h. (near Tortosa (2)), 16h. and 18h. (near Ashkabad), 19h. (Fergana, near Kulyab, Obigarm, and Stalinabad), 20h. (Grahamstown, Pietermaritzburg, Pretoria, Tamanrasset, College, near Mizusawa, and near Irkutsk), 21h. (Ksara, Paris, Alicante. Granada, and College), 22h. (Ashkabad), 23h. (Klyuchi and near Garm).

April 7d. 4h. 16m. 50s. Epicentre 43°·5N. 10°·3E. (as on 6d.).

Intensity VI at Rossignano Marittimo ; V at Livorno, Santa Croce Sull'Arno, and Santa Luce Orciano.
Monthly Seismo. Bulletin, Rome, April, 1950, p. 10.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florence Arc.		0·7	70	i 0 16?	− 1	i 0 26	− 2	—	—	—
Bologna	z.	1·2	32	i 0 26	+ 2	i 0 38	− 3	—	—	—
Padova		1·3	23	i 0 44	S	(i 0 44)	0	—	—	—
Pavia		1·9	334	i 0 38k	+ 4	e 1 0	+ 1	—	—	—
Salo		2·1	6	i 0 43	P_g	i 1 9	S_g	—	—	—
Rome		2·3	135	e 0 38	− 2	i 1 7	− 2	i 1 16	S_g	—
Triest		3·3	49	e 0 53	0	i 1 29	− 6	i 1 7	P*	e 2·0
Chur		3·4	351	e 0 56	+ 1	—	—	—	—	—
Zürich		4·1	343	e 1 4	− 1	e 1 52	− 3	—	—	—
Neuchatel		4·2	327	e 1 8	+ 1	e 1 58	+ 1	—	—	—
Ravensburg		4·3	354	e 1 19?	P*	e 2 27	S_g	e 1 25	P_g	—
Basle		4·5	336	e 1 11	0	e 2 2	− 3	—	—	—
Zagreb		4·7	58	e 1 30	P_g	e 2 17	+ 7	—	—	—
Besançon		4·8	323	1 18	+ 3	e 2 7	− 5	e 1 38	P_g	—
Stuttgart	z.	5·3	352	e 1 22	0	e 2 24	− 1	e 1 42	P_g	e 3·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Strasbourg		5·4	342	e 1 22	− 2	i 2 22	− 6	i 1 48	P_g	—
Clermont-Ferrand		5·6	296	e 1 52	P_g	—	—	—	—	3·4
Karlsruhe		5·6	347	e 1 35	P*	e 2 33	0	—	—	e 3·4
Prague		7·2	22	e 2 13	P*	e 2 59	−14	e 3 34	S*	—
Jena	N.	7·5	6	e 2 22	P_g	e 3 24	+ 4	e 4 17	S_g	—
Paris		7·6	317	e 1 50	− 5	i 3 5	−18	i 2 36	P_g	—
Collmberg	Z.	8·0	12	e 1 56	− 4	e 3 38	+ 5	e 2 34	P_g	e 4·5
Tamanrasset	Z.	21·0	192	e 4 47	0	—	—	—	—	—
College		70·6	351	e 10 36	−43	—	—	—	—	—
Hungry Horse		76·3	325	e 11 48	− 4	—	—	—	—	—

Additional readings :—
Florence Arc. i = 22s.?
Bologna iN = 34s.
Padova iS = 1m.6s., iS_g = 1m.13s., i = 1m.17s.
Salo iS_gE = 1m.13s.
Besançon eP* = 1m.24s., iS_g = 2m.41s.
Stuttgart eZ = 1m.28s., eP*Z = 1m.34s., eZ = 1m.46s. and 1m.50s., eSZ = 2m.18s., eS*Z = 2m.44s., eS_gZ = 2m.56s., eS_gZ = 3m.2s.
Strasbourg e = 1m.26s. and 2m.14s., iS* = 2m.32s., iS_g = 2m.51s.
Prague eS* = 3m.17s., e = 3m.29s.
Jena eE = 3m.50s., eN = 4m.1s.
Paris ePP = 2m.1s., i = 2m.5s. and 2m.24s.
Tamanrasset eZ = 6m.36s.
Hungry Horse i = 12m.26s.
Long waves were also recorded at Cheb and Potsdam.

April 7d. 7h. 33m. 6s. Epicentre 47°·4N. 8°·5E. (as on 1937, Oct. 3d.).

Intensity III-IV in cantons of Argovie, Lucerne, Soleure, Basle, and Zürich. Epicentres 47°18′N. 8°18′E. Depth 15-20km. Macroseismic radius 35km.

E. Wanner.
Jahresbericht des Erdbebendienstes der Schweiz im Jahre, 1950, Zürich, 1951, pp. 2, 6, with macroseismic chart, fig. 6.

A = +·6719, B = +·1004, C = +·7338 ; δ = −1 ; h = −4 ;
D = +·148, E = −·989 ; G = +·726, H = +·108, K = −·679.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Zürich	0·0	—	i 0 8	+ 1	i 0 14	+ 3	—	—
Basle	0·6	282	i 0 12	− 3	i 0 20	− 6	—	—
Ravensburg	0·8	63	e 0 22	+ 4	e 0 38	+ 7	—	—
Chur	0·9	128	e 0 19	− 1	e 0 32	− 2	—	—
Neuchatel	1·1	249	e 0 16	− 6	e 0 29	−10	—	—
Strasbourg	1·3	337	i 0 28k	+ 3	e 0 40?	− 4	i 0 50	S_g
Stuttgart	1·5	19	e 0 27	− 1	e 0 55	+ 6	e 0 34	P_g
Besançon	1·7	265	i 0 32	+ 1	e 0 48	− 6	—	—
Jena	4·1	29	—	—	e 2 8?	S*	e 2 20	S_g

Additional readings :—
Ravensburg eZ = 26m. and 42s., e = 46s.
Stuttgart eZ = 40s., eS_gZ = 1m.0s.
Besançon e = 1m.18s. and 1m.30s.
Jena eEN = 2m.23s.

April 7d. 13h. 59m. 8s. Epicentre 39°·9S. 176°·9E. (as on 1945, Jan. 2d.).

Intensity VI round the epicentre. Suggested epicentre 39°·8S. 177°·0E.

R. C. Hayes.
Earthquake origins in New Zealand during 1950. New Zealand Journal of Science and Technology, Sect. B., Vol. 33, No. 4., Jan., 1952, p. 307.

A = −·7682, B = +·0416, C = −·6389 ; δ = +6 ; h = −2 ;
D = +·054, E = +·999 ; G = +·638, H = −·035, K = −·769.

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Tuai	N.	1·1	10	i 0 12?	−10	i 0 24	−15
Arapuni		2·1	332	0 35	− 2	1 0	− 4
Wellington		2·1	230	0 37	0	1 1 5	+ 1
New Plymouth	E.	2·3	290	i 0 41	+ 1	1 1 8	− 1
Cobb River	E.	3·4	248	e 0 56	+ 1	1 34	− 3
Christchurch		4·8	220	—	—	i 2 8	− 4

April 7d. Readings also at 1h. (College and Istanbul), 2h. (Mount Wilson, Riverside, Tinemaha, Tucson, Hungry Horse, Obi-garm, Przhevalsk, Samarkand, Stalinabad, Tchimkent, near Andijan, Fergana, Frunse, Garm, Kulyab, Naryn, Tashkent, and near Istanbul), 3h. (Florence Arc. and Stuttgart), 4h. (Florence Arc. (5), Salo, Padova, Stuttgart (2), Bogota, Chinchina, Huancayo, Riverside, Tinemaha, and Tucson), 5h. (Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Lick, Shasta Dam, Hungry Horse, Seattle, Victoria, and near Tacubaya), 6h. (Hungry Horse), 8h. (Stalinabad, near Andijan (2), Fergana, Kulyab, and Obi-garm), 9h. (Ashkabad), 11h. (near Ashkabad and near Shemakla), 17h. (Leninakan, and near Tiflis), 18h. (La Plata, Andijan, Fergana, Garm, near Kulyab, Obi-garm, Samarkand, and Stalinabad), 19h. (Tucson), 20h. (Tamanrasset, and near Ashkabad), 21h. (near Tacubaya), 23h. (Riverview, La Paz, Przhevalsk, Tashkent, near Andijan, Fergana, Kulyab, Naryn, Obi-garm, Stalinabad, and Tchimkent).

April 8d. 11h. 28m. 55s. Epicentre 26°·5N. 139°·9E. Depth of focus 0·080.

A = −·6854, B = +·5772, C = +·4438 ; δ = −11 ; h = +3 ;
D = +·644, E = +·765 ; G = −·339, H = +·286, K = −·896.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Mizusawa	E.	12·6	4	2 50	+ 5	5 4	+ 6	—	—
Vladivostok		17·8	341	2 37	−59	4 51	?	—	—
Nanking	Z.	19·2	292	3 51	+ 1	i 7 4	+ 9	—	—
Irkutsk		37·1	324	6 25	− 1	—	—	—	—
Almata		53·1	307	e 8 29	0	15 18	0	—	—
Naryn		53·9	305	e 8 33	− 1	—	—	—	—
Frunse		54·8	306	—	—	e 15 40	− 1	—	—
Brisbane	Z.	55·1	166	i 8 44a	+ 1	—	—	i 9 36	pP
Andijan		56·7	303	e 8 54	0	16 4	− 1	—	—
College		58·8	28	i 9 5	− 3	e 16 28	− 4	e 9 43	P_cP
Stalinabad		59·8	302	e 9 16	+ 1	16 44	0	—	—
Samarkand		61·0	303	—	—	e 16 55	− 4	—	—
Sverdlovsk		62·5	323	9 31	− 1	17 13	− 5	—	—
Baku		73·4	308	—	—	e 19 27	+ 3	—	—
Shemakla		74·2	308	—	—	e 19 29	− 4	—	—
Moscow		75·0	326	e 10 47	0	—	—	—	—
Shasta Dam		78·6	50	e 11 6	− 1	—	—	e 13 3	pP
Hungry Horse		80·5	40	i 11 16	− 1	—	—	—	—
Tinemaha	Z.	83·2	52	i 11 29	− 1	—	—	—	—
Pasadena	Z.	84·6	55	i 11 36	− 1	—	—	—	—
Riverside	Z.	85·2	55	i 11 39	− 1	—	—	—	—
Palomar	Z.	85·9	55	i 11 43	− 1	—	—	—	—
Tucson		90·9	53	e 12 6	− 1	—	—	—	—
Tamanrasset	Z.	114·0	314	e 18 1	[+24]	—	—	e 18 38	PP

Additional readings :—
College ePP? = 11m.4s.
Tamanrasset eZ = 20m.40s. and 22m.43s.

April 8d. Readings also at 0h. (Tamanrasset, Tucson, Hungry Horse, and College), 2h. (near Andijan), 3h. (near Bogota and Chinchina), 6h. (Mizusawa), 8h. (Rome, near Messina, near Andijan, and near Huancayo), 9h. (Copenhagen, Hungry Horse, Andijan, near Kulyab, Obi-garm, Stalinabad, and near Prague), 11h. (near Prague), 12h. (Brisbane, Mount Wilson, Palomar, Riverside, Tinemaha, Tucson, Boulder City, Pierce Ferry, Shasta Dam, Hungry Horse, College (2), near Andijan and near Alicante), 15h. (Chur), 18h. (Tamanrasset), 22h. (near Garm).

April 9d. Readings at 0h. (Fergana, Samarkand, Tchimkent, near Andijan, Garm, Kulyab, Obi-garm, and Stalinabad), 4h. (Hungry Horse), 6h. (Hungry Horse, College, and near Tacubaya), 7h. (Brisbane, Stuttgart (2), near Andijan, and near Alicante), 9h. (College, Tashkent, Samarkand, near Andijan, Fergana, Garm, Kulyab, Obi-garm, Stalinabad, and near Klyuchi), 10h. (Tortosa), 12h. (near Shasta Dam, and near Tacubaya), 14h. (Hungry Horse, Tamanrasset, near Algiers Univ., and Alicante), 15h. (Hungry Horse and Tortosa), 16h. (Frunse, Kulyab, Naryn, near Andijan, Fergana, Obi-garm, Samarkand, Stalinabad, and Tchimkent), 18h. (Messina (2), Fergana, Naryn, near Andijan, Obi-garm, and near Klyuchi), 20h. (Brisbane and Chur), 21h. (Ksara, Shasta Dam, Hungry Horse, and College), 23h. (College).

April 10d. 6h. S.W. Pacific.

Christchurch iP = 11m.50s., e = 12m.22s., iS?EN = 15m.20s., e = 16m.5s., eL = 17m.10s.
Wellington iPZ = 11m.59s., eZ = 14m.3s., eS = 15m.30s., SS? = 17m.45s., L = 18m.10s.
Auckland eN = 12m.28s. and 17m.20s., eLN = 19m.25s.
Brisbane iPZ = 14m.4s., iSEN = 21m.45s.
Riverview iPEZ = 14m.28s.k, eSN = 20m.39s., iE = 20m.45s., iN = 20m.49s. and 21m.1s., eRZ = 26·1m.
La Paz eP = 18m.35s., eS = 29m.3s., L = 43m.
Huancayo eP = 18m.38s., eS? = 28m.3s.
Tucson eP? = 20m.26s., eL = 54m.20s.
Overton ePZ = 21m.58s., ePPZ = 24m.55s.
Pierce Ferry ePP = 24m.45s.
Boulder City ePP = 24m.52s.
Shasta Dam ePP? = 24m.58s.
Hungry Horse eP? = 25m.8s., e = 25m.20s.
College iP = 25m.39s.
Tamanrasset ePKPZ = 26m.12s., ePP?Z = 29m.16s.
Ksara iPKP = 26m.33s.k, PP = 30m.21s.
Algiers Univ. iPKPZ = 26m.35s.k, eZ = 26m.54s. and 27m.29s.
Stuttgart ePKPZ = 26m.47s., eZ = 27m.54s.
Helwan PKPZ = 36m.27s., iPKP$_2$Z = 36m.36s., eZ = 37m.21s. and 38m.12s., PPZ = 40m.4s., eZ = 42m.23s., PPPZ = 43m.32s.
Long waves were also recorded at Berkeley, Pasadena, Butte, Sitka, and Kew.

April 10d. 16h. 48m. 48s. Epicentre 4°·6N. 75°·4W. Depth of focus 0·015.
(as on 1938, Feb. 5d.).

Felt throughout the Central Cordilleras of Columbia, especially at Manizales. Depth 175km. Monthly Seismo., Bull., Bogota, April, 1950, p. 1.

$A = +·2513$, $B = -·9646$, $C = +·0796$; $\delta = -6$; $h = +7$;
$D = -·968$, $E = -·252$; $G = +·020$, $H = -·077$, $K = -·997$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chinchina		0·4	330	i 0 33	+14	i 0 46	+13	—	—	—
Bogota		1·3	90	i 0 38	+12	i 0 59	+13	—	—	—
Balboa Heights		6·0	317	i 1 22	− 6	i 2 23	−13	—	—	—
San Juan		16·4	32	e 3 51	+ 7	i 6 57	+16	—	—	e 8·8
Huancayo		16·5	180	e 3 50	+ 5	e 6 59	+16	e 4 10	pP	—
Fort de France		17·3	55	e 3 54	− 1	e 7 24	+23	—	—	—
La Paz		22·2	159	4 48	+ 2	i 8 49	+12	i 5 32	PP	11·2
Tacubaya		27·5	304	i 5 35a	− 1	—	—	e 11 32	SS	—
St. Louis		36·5	341	i 6 51	− 4	i 12 21	− 6	i 9 15	P_cP	—
Cleveland		37·1	352	i 7 0k	0	e 12 38	+ 2	—	—	e 17·0
Weston		37·8	6	i 8 7	+62	—	—	—	—	—
Harvard		37·9	6	i 7 8	+ 2	—	—	i 7 37	pP	—
Tucson		43·1	314	i 7 45	− 4	e 12 48	P_cS	e 8 17	pP	—
Pierce Ferry		47·4	317	i 8 20	− 3	—	—	e 9 45	P_cP	—
Boulder City		47·8	316	i 8 23	− 3	e 13 34	P_cS	e 9 52	P_cP	—
Overton	z.	47·9	317	i 8 24	− 3	—	—	—	—	—
Palomar		48·0	312	i 8 23k	− 5	i 9 41	P_cP	i 8 54	pP	—
Riverside		48·7	312	i 8 30k	− 3	i 9 56	P_cP	e 9 5	pP	—
Pasadena		49·4	312	i 8 34k	− 5	i 9 56	P_cP	i 9 4	pP	—
Haiwee	z.	50·1	315	i 8 40k	− 4	—	—	i 10 0	P_cP	—
Tinemaha	z.	50·8	315	i 8 47k	− 2	—	—	i 10 3	P_cP	—
Fresno	z.	51·7	315	i 8 51k	− 5	—	—	e 9 21	pP	—
Reno		53·0	318	i 8 54k	−12	—	—	e 10 50	PP	—
Branner	z.	53·7	314	i 9 8k	− 3	—	—	e 9 50	pP	—
Berkeley		54·0	314	i 9 10k	− 3	—	—	e 10 12	P_cP	—
Saskatoon		54·0	337	—	—	(16 36)	− 1	—	—	16·6
Hungry Horse		54·6	329	i 9 15	− 2	—	—	e 10 0	pP	—
Mineral	z.	54·6	317	i 9 18k	+ 1	—	—	i 11 19	PP	—
Shasta Dam		55·3	317	i 9 18	− 4	—	—	—	—	—
Seattle		58·7	325	e 9 43k	− 3	—	—	e 10 50	P_cP	—
Victoria		59·7	325	i 9 52k	− 1	—	—	—	—	—
Alicante		75·3	51	e 11 23	− 8	e 20 56	− 2	—	—	e 36·5
Kew		77·2	38	—	—	e 22 12?	+53	—	—	—
Algiers Univ.	z.	78·0	54	e 11 48	+ 2	—	—	e 12 19	pP	—
Clermont-Ferrand		78·7	44	e 12 22	pP	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		79·4	335	i 11 46	− 7	e 14 40	PP	i 12 27	pP	—
Tamanrasset	z.	79·9	67	i 12 3a	+ 7	e 15 10	PP	e 12 34	pP	—
Strasbourg		82·0	41	e 11 46	−21	—	—	e 12 37	pP	—
Stuttgart	z.	83·0	41	e 12 15	+ 3	—	—	—	—	—
Prague		86·4	40	e 12 32	+ 3	e 23 12?	+20	e 13 33	pP	—

Additional readings :—
Bogota iS = 1m.7s.
Huancayo e = 4m.27s.
La Paz iSS = 9m.58s.
St. Louis iS_cS = 16m.54s.
Tucson e = 10m.25s. and 13m.36s.
Tinemaha iZ = 8m.54s.
Reno iZ = 9m.13s., iNZ = 9m.36s., eN = 10m.33s.
Branner eZ = 9m.20s. and 10m.15s.
Hungry Horse e = 9m.27s., i = 10m.16s.
Mineral iZ = 9m.21s., 9m.34s., and 9m.59s.
Seattle i = 9m.50s., 10m.4s., 10m.17s., and 10m.27s., e = 10m.37s. and 11m.0s.
Algiers Univ. esP?Z = 12m.55s., eZ = 13m.20s., ePPZ = 14m.47s.
Tamanrasset eP_cPZ = 12m.11s., eZ = 14m.21s.

April 10d. Readings also at 3h. (Messina), 4h. (Samarkand, near Garm, Kulyab, Obi-garm, and Stalinabad), 5h. (Tacubaya, near Garm, Kulyab, Obi-garm, and Stalinabad), 6h. (Tucson and Hungry Horse), 9h. (Istanbul), 11h. (Wellington, Shasta Dam, Hungry Horse, and College), 14h. (Tamanrasset, Ksara, Istanbul, College, Abastumanj, Baku, Gori, Zugdidi, near Borzhomi, Erevan, Grozny, Leninakan, Piatigorsk, Shemakla, and Tiflis), 15h. (Ksara), 17h. (Fergana, Frunse, Naryn, near Andijan, Obi-garm, Stalinabad, and Tchimkent), 18h. (New Delhi, Grozny, Zugdidi, near Abastumanj, Borzhomi, Gori, and Tiflis), 20h. (near Andijan, and near Grozny), 22h. (Boulder City, Overton, Pierce Ferry, Shasta Dam, and near Obi-garm), 23h. (Istanbul).

April 11d. Readings at 0h. (Tucson, and near Taranto), 1h. (Almata, Andijan, Fergana, Frunse, Naryn, Obi-garm, Przhevalsk, Stalinabad, Tashkent, Tchimkent, and College), 3h. (Riverview, Hungry Horse, College, Andijan, and near Obi-garm) 4h. (Huancayo) 5h. (near Basle), 6h. (Istanbul), 7h. (Algiers Univ., Tamanrasset, and Pretoria), 9h. (Andijan, near Obi-garm, and Stalinabad), 10h. (near Tacubaya), 11h. (Cleveland), 12h. (Overton (2), Pierce Ferry (2), and College (2), 13h. (Shasta Dam), 14h. (Overton, Pierce Ferry, Hungry Horse, and College), 15h., (Tortosa), 17h. (Victoria, and near Malaga), 18h. (near Mizusawa), 19h. (near Granada), 22h. (Pavia, Stuttgart, near Basle and Zürich), 23h. (Apia and Tucson).

April 12d. 0h. 52m. 8s. Epicentre 7°·5N. 126°·7E. (as on 1949, March 11d.).

A = −·5926, B = +·7950, C = +·1297 ; δ = +2 ; h = +7 ;
D = +·802, E = +·598 ; G = −·078, H = +·104, K = −·992.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Djakarta	24·0	237	e 5 17	0	e 9 23	− 9
Almata	56·2	319	9 44	0	—	—
Andijan	58·4	313	e 10 1	+ 1	e 18 4	+ 2
Kulyab	59·5	310	e 10 8	+ 1	—	—
Stalinabad	60·4	311	e 10 15	+ 2	e 18 29	+ 1
Tashkent	60·8	313	i 10 16	0	—	—
Samarkand	62·1	311	e 10 26?	+ 1	—	—
Sverdlovsk	70·8	328	e 11 19	− 1	20 31	− 4
Tiflis	79·0	311	e 12 7	0	—	—
Gori	79·5	312	e 12 19?	+ 9	—	—
Bozhomi	80·1	312	e 12 13	0	—	—
Abastumanj	80·5	312	e 12 25	+10	—	—
College	81·3	26	e 12 19	− 1	—	—
Moscow	83·4	326	e 12 30	0	—	—

Long waves were recorded at Granada.

April 12d. 14h. 47m. 5s. Epicentre 38°·4S. 176°·5E. Depth of focus 0·020 (as on 1949, Dec. 7d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Tuai	N.	0·6	128	0 25?	+ 2	0 45?	+ 4
Arapuni		0·7	295	i 0 24	0	i 0 43	+ 1
New Plymouth	E.	2·0	251	i 0 35	− 1	i 1 3	− 1
Wellington		3·2	205	i 0 49	− 2	i 1 27	− 3
Cobb River		3·9	226	e 1 14	+14	i 1 42	− 4
Kaimata		5·6	221	e 1 53	+31	i 2 21	− 5
Christchurch		5·9	208	e 2 24	+58	e 2 27	− 6

April 12d. Readings also at 1h. (Overton), 2h. (near Chinchina and near Bogota), 3h. (near Andijan), 4h. (Huancayo, Tinemaha, Tucson, Overton, Pierce Ferry, Lick, Mineral, Shasta Dam, Hungry Horse, near Borzhomi, and near Ashkabad), 5h. (Harvard, and Rathfarnham Castle), 7h. (College), 8h. (Haiwee, Palomar, Pasadena, Riverside, Tinemaha, Boulder City, Overton, Pierce Ferry, Lick, Shasta Dam, Hungry Horse, Tamanrasset, Pretoria, Kew, and near Garm), 9h. (Tacubaya and Tamanrasset), 10h. (near Andijan, Garm, Kulyab, Obi-garm, and Stalinabad), 11h. (Hungry Horse), 14h. (Palomar, Pasadena, Riverside, Tinemaha, Overton, Pierce Ferry, Shasta Dam, College, and Kew), 16h. (Durham and Lick), 17h. (Tiflis and near Borzhomi), 18h. (Seattle (2) and near Victoria (2)), 20h. (Victoria, and near Messina), 23h. (Pierce Ferry and near Garm).

April 13d. 0h. 23m. 25s. Epicentre 41°·5N. 52°·0E. (as on 1950, Feb. 26d.).

$A = +·4625$, $B = +·5920$, $C = +·6601$; $\delta = +10$; $h = -2$;
$D = +·788$, $E = -·616$; $G = +·406$, $H = +·520$, $K = -·751$.

	Δ	Az.	P.	O−C.	S.	O−C
	°	°	m. s.	s.	m. s.	s.
Baku	1·9	235	e 0 43	+ 9	—	—
Shemakla	2·7	251	0 47?	+ 2	i 1 30?	S_g
Kizyl-Arvat	4·1	125	e 1 1?	− 4	—	—
Grozny	5·0	294	1 23	+ 5	2 21	+ 3
Tiflis	5·4	275	1 36?	+12	—	—
Gori	5·9	277	e 1 49?	P*	i 2 43	+ 3
Ashkabad	6·0	124	1 31	− 1	—	—
Leninakan	6·2	266	e 2 2	P_g	e 3 9	S*
Borzhomi	6·4	276	e 1 42?	+ 4	e 2 51?	− 2
Abastumanj	6·9	275	e 1 46	+ 1	—	—
Samarkand	11·5	94	e 3 5	+17	—	—
Tashkent	13·0	85	e 3 8?	− 1	e 5 33?	− 2
Tchimkent	13·1	81	i 3 7	− 3	—	—
Stalinabad	13·2	97	3 10	− 1	i 5 29	−11
Obi-garm	13·8	96	e 3 18	− 1	i 5 46	− 8
Kulyab	14·1	99	e 3 29?	+ 6	i 5 53	− 9
Ksara	14·9	244	e 3 23	−11	e 6 28	+ 8
Fergana	15·0	88	3 35	0	—	—
Andijan	15·4	85	3 38	− 2	e 6 24	− 8
Sverdlovsk	16·3	17	3 59	+ 7	6 56	+ 3
Frunse	16·8	78	e 3 59?	+ 1	—	—
Moscow	17·1	332	e 4 5	+ 3	7 11	− 1
Almata	18·5	75	e 4 21	+ 2	—	—
Semipalitinsk	21·5	56	e 4 56	+ 4	—	—
Pulkovo	22·7	332	e 5 8	+ 4	e 9 10	+ 1
Stuttgart	30·7	299	e 6 17a	− 2	—	—
Strasbourg	31·7	299	e 6 26	− 1	—	—
Tamanrasset	43·0	260	e 7 59	− 4	—	—
College	72·8	10	i 11 31	− 1	—	—
Hungry Horse	89·7	351	i 12 59	− 2	—	—

Tamanrasset gives also iZ = 8m.7s.

April 13d. 11h. 51m. 19s. Epicentre 38°·3N. 26°·5W. Focus at base of Superficial layers. (as on 1943, Oct. 3d.).

Intensity V-VI at Porto Judeu ; V at Angra ; IV-V at Praia da Vitoria. Felt also at Terceira. Suggested origin 38°14′N. 26°39′W.

Observacóes macrosseismicas. Annuario sismologico de Portugal, 1950, No. 4, p. 3.

$A = +·7041$, $B = -·3511$, $C = +·6172$; $\delta = -4$; $h = -1$;
$D = -·446$, $E = -·895$; $G = +·552$, $H = -·275$, $K = -·787$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toledo		17·5	78	e 4 2	− 1	e 7 12	− 3	e 4 10	pP	9·0
Malaga	z.	17·6	89	i 4 7k	+ 3	e 7 37	+20	—	—	i 9·6
Granada		18·5	85	e 4 17k	+ 2	e 7 50	+13	—	—	8·8
Alicante		20·4	82	e 4 41	+ 4	8 31	+13	—	—	e 9·9
Rathfarnham Castle		20·5	36	e 4 48	+10	9 4	P_cP	i 5 5	pP	e 10·7
Tortosa		20·9	74	e 4 49	+ 7	—	—	—	—	10·0
Kew		22·6	46	e 5 4	+ 5	e 9 16	+16	—	—	e 10·7
Clermont-Ferrand		23·1	62	e 5 3	− 1	e 9 28	+19	—	—	11·2
Paris		23·4	54	i 5 7	0	e 9 31	+17	e 5 42	PP	e 11·7
Algiers Univ.	z.	23·5	86	e 5 8	0	e 7 3	?	—	—	—
Besançon		25·3	59	e 5 24	− 1	—	—	e 5 42	PP	—
De Bilt		26·0	47	—	—	e 10 11	+13	—	—	e 12·7
Strasbourg		26·7	56	i 5 41	+ 3	e 10 23	+14	e 6 28	PP	e 12·7
Stuttgart		27·7	56	e 5 46	− 1	e 9 59	−27	—	—	e 13·7
Rome	E.	29·9	71	—	—	e 11 4?	+ 3	—	—	—
Triest		30·6	62	e 6 25	+12	i 11 43	+31	—	—	e 15·5
Prague		31·2	54	e 6 18	0	e 11 30	+ 9	—	—	—
Tamanrasset	z.	31·4	110	i 6 23a	+ 3	e 11 44	+20	e 7 32	PP	—
Warsaw		35·6	51	(e 8 41?)	PPP	—	—	—	—	e 8·7
Istanbul		42·2	68	e 7 53	+ 2	—	—	—	—	—
Ksara		49·8	76	e 8 53?	+ 1	—	—	e 2 30	?	—
Sverdlovsk		57·5	40	e 9 48	0	e 17 51	+ 9	—	—	—
Hungry Horse		61·2	311	e 10 7	− 7	—	—	—	—	—
Tucson		66·8	294	e 10 46	− 4	—	—	—	—	—
Pierce Ferry		67·0	308	e 10 46	− 6	—	—	—	—	—
Overton	z.	67·1	309	e 10 50	− 2	—	—	—	—	—
College		67·5	337	e 10 51	− 4	—	—	—	—	—
Stalinabad		71·0	56	10 13	−63	—	—	—	—	—
Obi-garm		71·5	55	10 0	−79	—	—	—	—	—
Andijan		72·0	52	e 9 52	?	—	—	—	—	—
Almata		73·3	47	11 30	0	—	—	—	—	—

Additional readings :—
Toledo eE = 7m.4s.
Malaga S_cSZ = 15m.21s.
Paris iPPP = 5m.48s.
Strasbourg e = 5m.58s. and 6m.7s.
Tamanrasset eZ = 7m.12s., eP_cPZ = 9m.15s.
Long waves are also recorded at Scoresby Sund and other European stations.

April 13d. 13h. 36m. 34s. Epicentre 49°·3N. 2°·3W.

Epicentre given by Strasbourg.

$A = +·6541$, $B = -·0263$, $C = +·7559$; $\delta = -8$; $h = -5$;
$D = -·040$, $E = -·999$; $G = +·755$, $H = -·030$, $K = -·655$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Jersey	E.	0·2	132	e 0 9	− 1	e 0 11	− 5	e 0 12	P
Paris		3·2	99	e 0 56	+ 4	e 1 30	− 2	e 0 59	P•
Clermont-Ferrand		5·1	132	e 1 29	P•	e 2 57	S_g	e 1 52	P_g
Besançon		5·9	107	—	—	e 2 44	+ 4	e 3 21	S_g
Strasbourg		6·7	92	—	—	e 2 50?	−10	i 3 36	S_g

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Basle	6·8	101	—	—	e 2 43	−20	e 3 28	S*
Karlsruhe	7·0	88	e 2 26?	P_g	e 3 45	S_g	—	—
Zürich	7·5	101	e 1 51	− 2	e 3 28	+ 8	—	—
Stuttgart	7·6	89	e 2 14	P*	e 3 44	S*	e 3 58	S_g
Jena	9·1	74	—	—	e 4 21?	+21	e 4 45	S*

Additional readings :—
Paris e = 1m.25s., 1m.35s. and 1m.44s., eS = 1m.47s., eS_g = 1m.52s.
Clermont-Ferrand eS? = 2m.28s., eS* = 2m.45s.
Besançon i = 2m.58s.
Strasbourg e? = 3m.10s., e = 3m.20s., iS = 3m.25s., i = 3m.28s. and 3m.33s.
Stuttgart eSZ = 2m.52s.
Jena eN = 5m.12s.

April 13d. Readings also at 2h. (Boulder City, near Ashkabad and near Messina), 3h. (Algiers Univ., Tamanrasset, Tucson, Overton, and Pierce Ferry), 4h. (College), 5h. (Huancayo, Tamanrasset, Algiers Univ., and near Irkutsk), 6h. (Tamanrasset, Harvard, Weston, Haiwee, Palomar, Pasadena, Riverside, Tinemaha, Boulder City, Overton (2), Pierce Ferry, Lick, Reno, Shasta Dam, Hungry Horse (2), and College), 7h. (Tamanrasset), 8h. (Boulder City), 9h. (Istanbul), 10h. (Mary, Samarkand, and Tashkent), 11h. (Fergana, Naryn, Samarkand, near Andijan, Kulyab, and Obi-garm), 12h. (near Ebingen, Stuttgart, and Zürich), 13h. (near Naryn), 14h. (Ottawa), 15h. (College (2), New Delhi, Ksara, Tamanrasset, Alicante, Granada, Malaga, Tortosa, De Bilt, Paris, Rome, Clermont-Ferrand, Stuttgart, Potsdam, and near Algiers Univ.), 16h. (Tacubaya), 17h. (Alicante (3), Riverview and near Shasta Dam), 18h. (Tacubaya, Palomar, Riverside, Tucson, Pierce Ferry, and near Klyuchi), 20h. (Istanbul, Tamanrasset, near Kulyab, Obi-garm, and Stalinabad), 21h. (Seattle, Victoria, and near Hungry Horse).

April 14d. 11h. 3m. 49s. Epicentre 48°·0N. 122°·5W.

Intensity VI at Coupeville, Langley, Port Townsend ; V at Bellingham, Concrete, East Sound, Everett, and Port Angeles. Epicentre as adopted. Macroseismic area 7000 sq.m.

L. M. Murphy and F. P. Ulrich.
United States Earthquakes, 1950, Serial No. 755, Washington, 1952, pp. 16, 17, with macroseismic chart.

$A = -·3609$, $B = -·5664$, $C = +·7409$; $\delta = -1$; $h = -5$;
$D = -·843$, $E = +·537$; $G = -·398$, $H = -·625$, $K = -·672$.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Seattle		0·4	159	i 0 11k	− 2	i 0 19	− 2	—
Victoria		0·8	311	i 0 13k	− 5	i 0 25	− 6	—
Hungry Horse		5·7	83	i 1 24	− 4	e 2 31	− 4	e 2·7
Shasta Dam		7·3	179	e 1 50	0	—	—	—
Mineral	z.	7·7	175	e 1 57k	+ 1	—	—	—
Reno		8·7	166	e 2 13k	+ 3	e 3 55	+ 5	e 4·9
Lick	z.	10·7	176	e 2 37	− 1	—	—	—
China Lake	z.	12·7	162	i 3 16	+11	—	—	—
Overton	z.	12·9	150	e 3 12	+ 5	e 5 46	+13	e 7·2
Pierce Ferry		13·4	149	e 3 15	+ 1	—	—	—
Riverside	z.	14·5	163	i 3 35	+ 7	—	—	—
Tucson		18·0	146	i 4 14	+ 1	—	—	—
College		21·7	330	i 4 50	− 5	e 5 0	PP	e 11·3

Additional readings :—
Shasta Dam e = 2m.15s.
Mineral iZ = 2m.14s.
Reno eZ = 2m.44s. and 2m.51s.

April 14d. 19h. 59m. 55s. Epicentre 35°·9S. 102°·4W.

A = −·1743, B = −·7930, C = −·5838 ; δ = +5 ; h = 0 ;
D = −·977, E = +·215 ; G = +·125, H = +·570, K = −·812.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		34·1	53	i 6 51	+ 3	i 12 29	+15	—	—	i 14·7
Buenos Aires		35·7	101	7 2	0	12 38	− 1	—	—	—
La Plata	E.	36·0	101	7 5	0	12 47	+ 3	8 25	PP	18·3
	N.	36·0	101	7 19	+14	12 47	+ 3	8 3	PP	16·8
La Paz		36·1	66	i 7 7	+ 2	i 12 53	+ 8	i 8 41	PP	18·1
Chinchina		47·8	38	e 9 25	+44	i 16 24	+46	e 11 32	PP	21·1
Bogota		48·3	39	e 8 47	+ 2	e 15 54	+ 9	i 10 39	PP	e 23·1
Galerazamba		53·0	34	i 9 44	+23	i 17 1	+11	i 17 13	PS	25·1
Tacubaya		55·1	4	i 10 6k	+30	i 18 3	+45	—	—	i 27·4
Vera Cruz		55·1	8	e 9 43	+ 7	—	—	—	—	e 24·5
Wellington		62·6	237	—	—	i 19 1	+ 5	—	—	28·6
Christchurch		63·1	234	10 30	− 2	e 18 59	− 3	e 22 57	SS	28·8
Fort de France		63·7	46	e 10 33	− 3	e 21 9	?	—	—	—
San Juan		64·0	39	e 10 35	− 3	e 19 15	+ 2	e 12 57	PP	e 26·8
Tucson		68·2	353	i 11 5	+ 1	e 19 48	−16	e 13 14	PP	e 34·4
Lubbock		69·1	1	11 12	+ 2	—	—	—	—	—
Riverside		70·9	347	e 11 21	0	—	—	—	—	—
Pasadena		71·2	347	i 11 24	+ 1	—	—	—	—	e 33·7
Boulder City		72·4	350	e 11 31	+ 1	e 20 52	− 1	e 14 12	PP	—
Pierce Ferry		72·5	351	i 11 30	0	—	—	—	—	—
China Lake	z.	72·7	348	i 11 32	0	—	—	—	—	—
Overton	z.	72·9	350	i 11 33	0	—	—	—	—	—
Haiwee	z.	73·1	348	i 11 34	0	—	—	—	—	—
Fresno	z.	74·1	346	e 11 40a	0	—	—	—	—	—
Lick	z.	75·0	345	i 11 47a	+ 2	—	—	—	—	—
St. Louis		75·0	10	i 11 45	0	i 12 1	?	—	—	—
Berkeley		75·7	345	i 11 49a	0	e 26 37	SS	—	—	e 36·0
Bermuda		76·6	32	e 12 7	+13	e 21 45	+ 5	e 25 40	SS	e 31·2
Reno		76·8	347	e 11 57a	+ 2	e 22 5	+23	e 14 1	PP	—
Mineral	z.	77·9	345	e 12 1a	0	—	—	—	—	—
Washington		78·0	21	i 12 3	+ 1	e 21 44	−11	e 15 26	PP	e 39·4
Shasta Dam		78·4	345	i 12 3	− 1	—	—	—	—	—
Chicago		78·5	10	e 12 2	− 2	e 22 0	− 1	e 26 50	SS	e 34·9
Cleveland		79·4	16	e 12 9	0	e 22 9	− 1	e 22 54	PS	—
Philadelphia		79·5	22	e 12 8	− 2	e 22 10	− 1	e 27 36	SS	e 31·8
Pennsylvania		79·6	18	—	—	i 22 10	− 2	i 27 48	SS	e 32·1
Rapid City	E.	79·6	0	e 12 15	+ 5	e 22 17	+ 5	—	—	e 33·7
City College, N.Y.		80·7	22	—	—	e 22 22	− 2	e 28 12	SS	—
Fordham		80·7	22	e 12 24	PcP	e 22 29	+ 5	e 27 54	SS	39·1
Riverview		82·4	234	i 12 26a	+ 1	e 22 46	+ 5	e 15 40	PP	e 37·6
Weston		82·9	23	e 12 15	−13	—	—	—	—	—
Ottawa		84·4	18	e 12 38	+ 2	e 23 8	+ 7	—	—	36·1
Hungry Horse		84·5	353	i 12 37	+ 1	—	—	e 15 59	PP	—
Brisbane		85·0	239	e 21 21	?	e 23 17	+10	e 28 40	SS	—
Victoria		86·1	347	e 12 46	+ 2	—	—	—	—	—
Seven Falls	E.	87·4	20	—	—	e 23 27	− 3	—	—	36·1
Saskatoon		87·7	357	—	—	e 23 38	+ 5	—	—	36·6
College		106·5	342	e 19 19	?	—	—	—	—	—
Lisbon		113·6	58	19 34a	PP	—	—	—	—	55·1
Malaga	z.	116·0	62	i 19 42k	PP	—	—	e 23 4	PPP	56·8
Tamanrasset	z.	117·1	81	i 18 49k	[+ 2]	i 25 40	[0]	i 20 5	PP	—
Toledo	z.	117·6	59	e 20 5	PP	e 29 31	PS	e 22 31	PPP	—
Alicante		119·5	62	18 49	[− 3]	—	—	20 21	PP	e 57·2
Rathfarnham Castle		121·3	44	e 20 3	PP	e 25 25	[−29]	e 28 5	SKKS	e 46·6
Algiers Univ.	z.	121·4	65	e 18 56	[+ 1]	e 22 25	PKS	e 20 23	PP	—
Jersey	E.	122·4	50	—	—	22 45	SKP	—	—	—
Kew		124·2	48	i 20 47	PP	e 30 11	PS	e 38 1	SS	e 55·1
Clermont-Ferrand		124·7	55	e 19 10	[+ 8]	e 30 50	PS	e 20 47	PP	—
Paris		125·2	51	e 19 3	[0]	e 30 58	PS	i 20 56	PP	e 59·1
Besançon		127·0	54	e 18 59	[− 7]	—	—	e 21 32	PP	—

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		127·6	48	e 21	5	PP	e 31	5	PS	e 38	47	SS	e 60·1
Basle		128·1	54	e 19	5	[− 3]	—		—	e 21	22	PP	—
Strasbourg		128·5	53	e 18	58?	[−11]	e 27	45	{−25}	e 21	12	PP	—
Chur		129·3	55	e 21	18	PP	—		—	—		—	—
Stuttgart		129·5	52	e 19	11	[0]	e 25	53	[−26]	e 21	18	PP	e 63·1
Bologna		129·9	58	—		—	e 22	15	PKS	—		—	—
Rome		130·0	62	e 21	9	PP	e 22	43	PKS	e 39	4	SS	—
Padova		130·3	58	e 21	47	PP	26	45	[+24]	—		—	—
Jena	N.	131·4	51	e 19	29	[+14]	e 22	42	PKS	e 21	28	PP	—
Cheb		131·7	51	e 19	9	[− 6]	e 28	22	{− 8}	i 22	45	PKS	e 64·1
Triest		131·8	57	e 21	44	PP	e 22	29	PKS	i 24	39	PPP	e 72·1
Copenhagen		132·4	43	e 19	11	[− 6]	39	47	SS	e 21	41	PP	62·1
Potsdam	Z.	132·5	48	e 19	21	[+ 4]	i 22	52	PKS	e 21	40	PP	e 63·1
Prague		133·0	51	i 19	27	[+ 9]	e 26	31	[+ 4]	e 21	50	PP	e 64·1
Warsaw		137·3	49	e 22	14	PP	e 29	6	{+ 1}	e 23	11	PKS	e 73·1
Helwan		141·0	86	e 19	33	[+ 1]	e 22	56	PKS	20	16	PKP_2	—
Istanbul		142·1	67	e 18	56	[−38]	e 32	57	PS	—		—	—
Nanking	Z.	145·8	276	i 19	43	[+ 2]	e 25	31	PPP	i 20	10	PKP_2	—
Ksara		145·9	81	i 19	42	[+ 1]	—		—	23	10	PP	—
Yalta		146·0	62	i 19	43	[+ 2]	—		—	—		—	—
Moscow		146·4	41	i 19	45	[+ 3]	e 30	5	{+ 7}	—		—	—
Theodosia		146·9	61	e 19	42	[0]	—		—	—		—	—
Zugdidi		151·7	65	e 20	6	[+16]	—		—	—		—	—
Borzhomi		152·8	67	e 20	6	[+14]	—		—	—		—	—
Leninakan		153·2	69	e 20	16	[+24]	—		—	—		—	—
Gori		153·4	66	e 20	3	[+11]	—		—	—		—	—
Tiflis		153·9	67	e 19	57	[+ 4]	—		—	—		—	—
Grozny		154·5	63	e 20	2	[+ 8]	—		—	—		—	—
Sverdlovsk		156·1	23	e 19	56	[0]	e 23	47	PKS	e 20	25	PKP_2	—
Bombay	N.	162·5	165	—		—	e 26	3	[−64]	—		—	—
Ashkabad		164·8	77	e 20	17	[+11]	—		—	—		—	—
Samarkand		170·8	65	e 20	27	[+17]	—		—	—		—	—
Tchimkent		171·1	42	e 20	11	[+ 1]	—		—	—		—	—
Tashkent		171·6	—	e 20	1	[− 9]	e 31	50	{−21}	i 21	30	PKP_2	—
Stalinabad		172·5	—	i 20	13	[+ 2]	—		—	—		—	—
Almata		172·6	—	e 20	12	[+ 1]	—		—	—		—	—
Frunse		172·7	—	e 20	20	[+ 9]	—		—	—		—	—
New Delhi	N.	172·7	—	e 21	36	PKP_2	e 48	41	SSP	e 54	6	SSS	e 82·3
Obi-garm		173·1	—	e 20	15	[+ 4]	—		—	—		—	—
Kulyab		173·4	—	e 20	26	[+15]	—		—	—		—	—
Andijan		173·6	—	e 20	12	[+ 1]	—		—	—		—	—
Naryn		174·3	—	e 20	18	[+ 7]	—		—	—		—	—

Additional readings :—
La Plata N =13m.11s., E =14m.23s., QN =14m.9s., E =15m.41s., QE =16·5m.
La Paz iP_cP =9m.29s., iSS =15m.37s., S_cS =17m.27s.
Christchurch eQEN =25m.35s.
San Juan eSS =23m.44s.
Tucson ePPP =15m.0s.
Pasadena iZ =12m.0s.
Lick iZ =11m.55s., 12m.6s., and 12m.19s., eZ =13m.6s.
Berkeley iZ =12m.0s., eE =32m.29s.
Reno eN =12m.5s., eNZ =12m.27s., eE =13m.1s., eN =13m.27s., eE =19m.7s.
Mineral iZ =12m.5s. and 12m.35s.
Chicago e =20m.42s.
Cleveland ePN =12m.12s., iSE =22m.16s., eN =23m.24s.
Pennsylvania iN =23m.7s., 24m.22s., and 28m.48s.
City College, N.Y. e =24m.16s.
Riverview iZ =12m.38s., ePSN =23m.40s., eSSE =28m.8s., eSSN =28m.16s.
Hungry Horse ePKKP =31m.3s.
Tamanrasset i =19m.52s., eZ =21m.48s., ePPPZ =22m.39s., eZ =23m.59s., eSKKSZ = 26m.48s., eZ =27m.18s.
Toledo eE =23m.58s.
Alicante PPP =23m.1s.
Rathfarnham Castle eEN =34m.45s.
Algiers Univ. ePPP =22m.56s.
Kew eZ =21m.31s., e =30m.55s. and 33m.49s.
Clermont-Ferrand ePPP =23m.33s., eSS =37m.39s., eSSP =37m.58s., eSSS =42m.39s.

Continued on next page.

Paris e =19m.15s., 19m.36s., and 20m.38s., i =20m.59s., 21m.5s., 21m.57s., and 22m.15s., ePPP =23m.20s., ePPS =32m.23s., e =33m.16s., eSS =37m.46s., iSSS =42m.38s.
Besançon ePKP =19m.11s., e =20m.19s.
Strasbourg e =21m.33s.?, 23m.17s., and 25m.5s., e =30m.0s., ePPS =33m.13s., e? = 39m.47s., e =40m.53s., eSSS =42m.59s.
Stuttgart eZ =19m.26s., eSKP =22m.41s., ePPP =24m.5s., eS =29m.23s., ePS = 31m.29s., ePPS =33m.11s., eSS =39m.11s., eSSS =43m.41s.
Rome iE =25m.34s.
Jena ePP?E =21m.31s., eE =22m.35s., ePPP?N =24m.22s., eN =29m.35s?.
Cheb e =24m.14s., 25m.16s., 25m.37s., and 27m.20s., eSKSP =32m.5s., ePS =32m.37s., eSS =39m.32s., eSSS =44m.37s.
Triest iPSP =33m.33s., eSSS =44m.25s.
Copenhagen i =22m.52s., PPP =24m.34s., PPS =33m.23s., SSS =44m.17s.
Potsdam eZ =20m.40s., ePPPZ =24m.32s., eZ =24m.50s.
Prague iE =21m.8s., eZ =21m.41s. and 21m.57s., e =22m.14s., eSKP =22m.49s., e = 23m.54s., ePPP =24m.25s., e =25m.22s., 25m.53s., and 28m.5s., ePS =32m.1s., eSS =39m.23s., eSSS =44m.29s.
Warsaw ePPE =22m.35s., eEN =24m.13s., ePPPZ =25m.17s., ePPPE =25m.25s., eN =27m.33s., eE =28m.15s., eZ =30m.2s., e =30m.31s., ePSE =32m.21s., eSSE =40m.43s., eSSSE =45m.14s.
Helwan pPKPZ =20m.35s., eZ =22m.33s. and 23m.23s., PPZ =23m.42s., eZ =25m.23s., eN =41m.5s.
Nanking iZ =20m.21s., eZ =21m.47s.
Sverdlovsk PPP =28m.13s., eSS =45m.11s., eSSS =50m.5s.
Tashkent ePKS =23m.38s.
New Delhi iN =33m.41s. and 36m.16s.
Long waves were also recorded at Apia, Sitka, Santa Clara, Harvard, Tortosa, Granada, Aberdeen, and Upsala.

April 14d. 22h. 58m. 12s. Epicentre 23°·0N. 125°·0E.

$A = -\cdot5285$, $B = +\cdot7548$, $C = +\cdot3885$;, $\delta = -3$; $h = +4$;
$D = +\cdot819$, $E = +\cdot574$; $G = -\cdot223$, $H = +\cdot318$, $K = -\cdot921$.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Nanking	z.	10·6	330	e 3 0	PPP	—	—	e 6·8
Vladivostok		20·9	13	—	—	e 8 41	+ 6	—
Almata		44·4	310	e 8 18	+ 4	—	—	—
Naryn		44·7	306	e 8 14	− 2	e 14 55	+ 1	—
Frunse		46·0	308	e 8 46	+19	—	—	—
Andijan		47·4	305	e 8 41	+ 3	e 15 42	+10	—
Samarkand		51·4	303	e 9 14	+ 5	—	—	—
Sverdlovsk		57·1	324	9 51	+ 1	17 44	− 1	—
College		68·2	27	e 11 5	+ 1	—	—	—
Gori		68·4	308	e 11 0	− 6	—	—	—
Borzhomi		69·0	308	e 11 13	+ 4	—	—	—
Moscow		69·9	323	e 11 17	+ 2	e 20 27	+ 3	—
Istanbul		79·5	310	e 12 14	+ 4	—	—	—
Stuttgart		88·5	324	e 12 58	+ 2	—	—	e 56·8
Shasta Dam		91·0	45	e 13 4	− 3	—	—	—
Hungry Horse		91·5	35	i 14 13	+63	—	—	—

Nanking gives also e =5m.6s., eS? =6m.3s.
Long waves were also recorded at Copenhagen, De Bilt, Kew, and Potsdam.

April 14d. Readings also at 0h. (College, Hungry Horse, Tamanrasset, Ksara, Rathfarnham Castle, Frunse, Naryn, Tashkent, near Andijan, Fergana, Garm, Kulyab, Obi-garm, and Tchimkent), 1h. (near Santa Clara), 2h. (Fergana, Frunse, Kulyab, Obi-garm, Przhevalsk, Tashkent, near Almata, Andijan, and Naryn), 3h. (Tamanrasset), 5h. (College, and near Mizusawa), 6h. (Lick, Strasbourg (2), Istanbul, and Tamanrasset), 7h. (Istanbul, Tucson, and Berkeley), 8h. (near Apia), 9h. (Port au Prince), 10h. (Istanbul), 12h. (near Misusawa), 13h. (Apia, Tucson, Overton, Mineral, Shasta Dam (2), Hungry Horse (2), College (2), and Tamanrasset), 15h. (College), 16h. (Nanking), 17h. (near Obi-garm), 18h. (near Ottawa, Seven Falls, and Shawinigan Falls), 19h. (Kodaikanal), 20h. (Boulder City, Copenhagen, and near Athens), 21h. (Helwan), 23h. (Hungry Horse, College, and near Zugdidi).

April 15d. 11h. 56m. 32s. Epicentre 35°·8N. 119°·6W. Given by Pasadena.

A = −·4016, B = −·7068, C = +·5823; δ = −8; h = 0;
D = −·869, E = +·494; G = −·288, H = −·506, K = −·813.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Haiwee		1·4	76	i 0 27	0	i 0 46	0	—	—	—
Santa Barbara		1·4	184	i 0 26	− 1	i 0 47	+ 1	—	—	—
China Lake	z.	1·6	89	i 0 31	+ 1	—	—	—	—	—
Tinemaha	z.	1·7	41	i 0 30	− 1	i 0 52	− 2	—	—	—
Pasadena		2·0	145	i 0 36	+ 1	i 1 2	0	—	—	—
Santa Clara		2·4	309	e 0 59	P_g	i 1 27	S_g	—	—	—
Riverside		2·6	135	i 0 43	− 1	—	—	—	—	—
Palomar	z.	3·3	137	i 0 53	0	—	—	—	—	—
Boulder City		3·9	86	e 1 1	− 1	i 1 46	− 4	i 1 21	P_g	—
Overton	z.	4·2	78	i 1 7	0	i 2 14	S_g	i 1 21	P_g	—
Pierce Ferry		4·5	84	i 1 12	+ 1	—	—	—	—	—
Shasta Dam		5·3	337	e 1 23	+ 1	i 2 41	S*	—	—	e 3·1
Tucson		8·1	113	i 1 59	− 3	i 3 37	+ 2	i 2 44	P_g	i 4·7
Hungry Horse		13·2	17	e 4 9	+58	—	—	—	—	—

Tucson also gives i = 2m.6s., iS = 3m.50s., i = 4m.17s.
Long waves were also recorded at Logan.

April 15d. 14h. 51m. 18s. Epicentre 13°·9N. 90°·8W. (as on 1950, Feb. 17d.).

A = −·0136, B = −·9710, C = +·2387; δ = 0; h = +6;
D = −1·000, E = +·014; G = −·003, H = −·239, K = −·971.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Merida		7·1	9	e 2 6k	P*	i 3 27	+17	—	—	i 3·7
Vera Cruz		7·3	316	e 1 59	+ 9	i 3 18	+ 3	—	—	—
Puebla		8·7	306	2 16k	+ 6	i 3 45	− 5	—	—	—
Tacubaya		9·7	305	e 2 26k	+ 4	i 4 13	− 2	—	—	—
Balboa Heights		12·1	113	e 3 3	+ 6	—	—	—	—	—
Guadalajara		13·8	301	e 3 18	− 1	e 5 52	− 2	—	—	—
Galerazamba		15·5	100	e 3 12	−30	e 6 16	−19	e 7 9	SS	—
Chinchina		17·4	116	i 4 12	+ 6	i 7 41	+22	i 4 29	pP	9·7
Bogota		18·3	116	i 4 32	+15	i 8 14	+35	i 4 51	pP	—
Little Rock		20·8	356	i 4 46	+ 1	e 8 39	+ 6	i 5 5	pP	—
Columbia		21·9	22	e 5 0	+ 3	(e 9 12)	+18	—	—	e 9·2
Lubbock		22·0	336	4 56	− 2	—	—	—	—	—
San Juan		24·1	76	e 5 50	+32	e 9 58	+24	—	—	e 12·8
St. Louis		24·6	0	i 5 25	+ 2	e 9 48	+ 6	i 5 47	PP	13·4
Florissant		24·8	0	i 5 24	− 1	e 9 48	+ 2	i 5 41	pP	—
Tucson		25·9	319	i 5 34	− 1	e 10 20	+16	e 6 3	PP	e 11·0
Lincoln	E.	27·3	354	e 6 26	+38	(e 9 52)	−35	—	—	e 9·9
Washington		27·7	24	i 5 53	+ 1	e 10 53	+20	—	—	e 12·8
Chicago		27·9	4	e 5 54	0	e 10 17	−20	—	—	e 11·0
Cleveland		28·7	15	e 6 0k	− 1	e 10 48	− 2	e 6 14	pP	16·3
Fort de France		28·9	85	e 6 51	PP	e 12 14	PcS	—	—	e 16·1
Pennsylvania	N.	29·1	20	i 7 43	PPP	e 11 7	+11	—	—	—
Philadelphia		29·4	25	e 6 8	+ 1	e 10 57	− 4	—	—	e 12·6
Huancayo		30·0	149	i 6 15	+ 3	i 11 18	+ 8	i 6 29	pP	—
Bermuda		30·1	48	e 6 12	− 1	(e 11 7)	− 5	—	—	e 11·1
Pierce Ferry		30·4	322	i 6 14	− 2	—	—	—	—	e 18·7
City College, N.Y.		30·6	26	e 6 19	+ 1	e 11 33	+13	e 13 1	PcS	—
Fordham		30·6	26	e 6 21	+ 3	e 11 34	+14	—	—	17·7
Palomar	z.	30·6	315	i 6 17	− 1	—	—	—	—	—
Boulder City		30·8	321	i 6 18	− 2	e 11 26	+ 3	i 7 28	PP	—
Overton	z.	30·9	322	i 6 20	0	—	—	—	—	—
Riverside	z.	31·3	315	i 6 21	− 3	—	—	e 9 16	PcP	—
Pasadena		31·9	315	i 6 27	− 2	—	—	i 9 19	PcP	e 15·2
Rapid City	E.	32·0	344	e 6 44	+14	—	—	—	—	e 13·0
Salt Lake City		32·5	329	e 6 31	− 3	—	—	—	—	e 13·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
China Lake		32·5	319	i 6 33	− 1	e 13 7	SS	i 6 46	pP	—
Harvard		33·0	26	i 6 40	+ 1	e 12 29	+32	—	—	e 19·9
Weston		33·0	26	i 6 42	+ 3	e 12 14	+17	e 7 4	pP	—
Logan		33·2	331	e 6 41	+ 1	e 12 50	+50	i 7 2	pP	e 15·6
Tinemaha	z.	33·7	318	i 6 41	− 4	—	—	—	—	—
Ottawa		33·9	18	6 47	0	12 14	+ 3	e 7 10	pP	14·7
Rolphton		34·1	17	e 6 49	+ 1	—	—	—	—	—
Fresno	z.	34·5	317	i 6 49a	− 3	—	—	i 8 17	PP	—
Lick	z.	36·0	316	e 7 4a	− 1	—	—	—	—	—
Berkeley		36·7	316	e 7 6	− 4	e 12 55	+ 1	e 17 42	Q	e 20·4
Seven Falls	E.	37·1	22	7 15	+ 1	12 58	− 3	e 16 18	SSS	21·2
La Paz		37·6	142	i 7 18	0	i 13 12	+ 4	i 16 2	SS	18·9
Mineral	z.	38·0	321	i 7 18k	− 3	e 13 27	+13	i 7 39	pP	—
Shasta Dam		38·4	321	e 6 49	−36	—	—	i 9 36	P_cP	—
Hungry Horse		39·4	337	e 8 32	+59	—	—	—	—	—
Saskatoon		40·2	345	—	—	e 17 8	ScS	—	—	24·2
Seattle		42·6	329	e 8 11	+12	(e 17 42?)	SS	—	—	e 17·7
Victoria		43·8	329	i 8 9a	0	—	—	—	—	26·3
College		63·8	337	i 10 32	− 4	—	—	i 11 9	pP	—
Scoresby Sund		70·0	19	11 12	− 3	20 42	+16	25 12	SS	34·7
Rathfarnham Castle		75·7	38	i 11 46	− 3	e 21 15	−15	i 12 17	pP	e 34·7
Jersey	E.	78·8	42	e 12 23	+17	—	—	—	—	—
Kew		79·6	39	i 12 9	− 1	e 20 50	?	e 15 10	PP	e 36·7
Alicante		81·8	53	e 12 6	−16	e 22 2	−33	26 54	SS	37·8
Paris		81·8	42	e 12 22	0	e 23 47?	PPS	e 12 51	pP	e 37·7
De Bilt		82·8	38	e 12 26	− 1	—	—	—	—	e 35·7
Clermont-Ferrand		82·9	45	e 12 23	− 5	e 28 53	SS	e 23 50	PS	40·7
Besançon		84·5	43	e 12 55	pP	—	—	—	—	—
Strasbourg		85·3	41	e 12 40	0	e 23 4	[+ 1]	e 13 6	pP	42·7
Copenhagen		85·9	33	e 12 44	+ 1	i 23 17	+ 1	16 3	PP	—
Stuttgart		86·1	40	e 12 43	− 1	e 24 36	PS	e 32 48	SSS	43·7
Jena		87·0	38	e 12 48?	0	—	—	e 13 29	sP	—
Potsdam	z.	87·4	37	e 12 47	− 3	—	—	—	—	e 40·7
Cheb		87·7	39	e 12 52	0	e 23 22	[+ 3]	e 33 30	SSS	—
Prague		89·0	38	e 12 50	− 8	e 23 42	− 3	e 13 18	pP	—
Rome		90·4	47	e 13 3	− 1	—	—	—	—	e 44·9
Tamanrasset	z.	90·4	66	e 13 4	0	—	—	i 13 28	pP	e 53·3
Yalta		103·4	36	—	—	24 42	[− 1]	—	—	—
Christchurch		104·2	228	—	—	e 33 12	SS	e 43 17	Q	48·9
Sverdlovsk		105·6	16	e 18 36	PP	e 24 52	[− 1]	e 27 56	PS	—
Ksara		110·5	46	e 19 10	PP	—	—	e 28 49	PS	—
Tashkent		122·1	18	e 18 42	[−15]	—	—	e 20 15	PP	—
Andijan		123·4	15	e 19 1	[+ 2]	—	—	e 20 42	PP	—
Stalinabad		124·4	18	e 19 3	[+ 2]	e 30 52	PS	e 20 48	PP	—

Additional readings and note :—
Merida i = 2m.14s.
Galerazamba iS_cSEN = 18m.10s.
Bogota isS = 8m.48s.
Little Rock i = 4m.52s., e = 5m.13s., isP = 5m.19s., e = 5m.36s., esS? = 8m.53s., S is given as P_cP?.
St. Louis i = 5m.40s., esP = 5m.55s., iPP = 6m.11s., isS = 11m.17s., eP_cS = 12m.31s.
Florissant i = 5m.33s., esP = 5m.57s., esS = 10m.21s., eS_cP = 12m.24s., iP_cS? = 12m.36s.
Tucson i = 5m.49s. and 8m.59s.
Cleveland esPN = 6m.21s., eN = 6m.30s., eSE = 10m.51s., esSE = 11m.15s.
Pennsylvania eP_cP?N = 10m.8s.
City College, N.Y. e = 9m.49s.
Pasadena iZ = 6m.43s.
Harvard e = 16m.16s. and 17m.5s.
Ottawa e = 12m.40s.
Fresno iZ = 6m.59s., 7m.33s., and 8m.31s.
Lick iZ = 7m.12s., 7m.19s., and 7m.47s.
Hungry Horse e = 10m.20s., 10m.40s., and 14m.31s.
Rathfarnham Castle iZ = 12m.31s., eEN = 23m.4s. and 24m.5s., eSSEN = 25m.12s.
Kew eSS?EN = 26m.29s., e = 33m.18s.
Paris e = 22m.7s., e = 32m.42s.
Clermont-Ferrand eSSS? = 32m.26s.
Strasbourg e = 12m.56s., 13m.27s., and 13m.57s., ePPS = 24m.42s.?, eSSS = 32m.42s., e = 37m.48s.

Continued on next page.

Copenhagen SS = 29m.17s., SSS = 33m.12s.
Stuttgart eZ = 20m.12s., eQ = 37·7m.
Cheb e = 23m.58s. and 24m.47s.
Prague e = 14m.2s. and 15m.29s.
Tamanrasset ePPZ = 16m.35s.
Sverdlovsk eSS = 33m.52s.
Tashkent ePPP = 22m.45s.
Long waves were also recorded at Oaxaca, Santa Clara, Ukiah, Sitka, Halifax, Ivigtut, Wellington, and other European stations.

April 15d. Readings also at 0h. (La Plata and Paris), 1h. (Huancayo, La Paz, China Lake, Tucson (2), Boulder City, Overton (2), Pirece Ferry (2), Shasta Dam, Mineral, Hungry Horse (2), College (3), Grahamstown, Pretoria, Tamanrasset (2), Ksara, Prague, and Rome), 2h. (Grahamstown, Pietermaritzburg and Paris), 3h. (Tiflis, near Borzhomi, Gori, Piatigorsk, and Sotchi), 4h. (Andijan, Fergana, and near Obi-garm), 6h. (Apia), 7h. (Haiwee, Mount Wilson, Tucson (2), Boulder City, Overton (2), Pierce Ferry, Lick, Mineral, Shasta Dam, Hungry Horse, College (2), and near Andijan), 8h. (Huancayo, La Paz, Tucson, Lick, Shasta Dam, Mineral, Hungry Horse, College, and Tamanrasset), 9h. (Huancayo), 10h. (Merida, Tacubaya, Vera Cruz, Galerazamba, Fort de France, San Juan, Cleveland, Pennsylvania, Washington, Philadelphia, Tucson, Hungry Horse, College, and near Andijan), 12h. (Pennsylvania), 13h. (China Lake, Tucson, Pierce Ferry, Shasta Dam, College, Copenhagen, Tamanrasset, and near Andijan), 14h. (Huancayo), 15h. (near Athens, and near Istanbul (2)), 16h. (Messina, Paris, Stuttgart, and Tamanrasset), 18h. (Messina), 21h. (Shasta Dam, Tucson, College, and near Ottawa), 22h. (China Lake, Pierce Ferry, Shasta Dam, Hungry Horse, and near La Paz), 23h. (Huancayo, Hungry Horse, College, and Tamanrasset).

April 16d. 16h. 19m. 4s. Epicentre 35°·8N. 140°·8E. Focus at base of Superficial Layers. (as on 1949, December 30d.).

Intensity VI at Tyosi; IV at Tukubasan, Mito, Tokyo, Yokohama, and Kakioka; II-III at Ajiro, Shirakawa, Osima, Kumagaya, Maebasi, Hukusima, and Onahama.
Macroseismic radius 200-300km. Epicentre 35°·8N. 140°·9E. Depth 40km.
The Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1950, Tokyo, 1952, pp. 16-17, with macroseismic chart.

$A = -·6300$, $B = +·5138$, $C = +·5823$; $\delta = -4$; $h = 0$;
$D = +·632$, $E = +·775$; $G = -·451$, $H = +·368$, $K = -·813$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
	°	°	m. s.	s.	m. s.	s.	m. s.	m.
Kakioka	0·7	311	0 12	− 1	—	—	—	—
Mito	0·7	335	0 14k	+ 1	0 24	+ 1	—	—
Tukubasan	0·7	306	0 13k	0	0 22	− 1	—	—
Tokyo	0·8	263	0 15k	0	0 26	0	—	—
Yokohama	1·0	249	0 20k	+ 2	0 32	+ 1	—	—
Onahama	1·1	4	0 22	+ 3	0 36	+ 3	—	—
Utunomiya	1·1	315	0 19	0	0 38	+ 5	—	—
Kumagaya	1·2	287	0 24k	+ 4	0 44	+ 8	—	—
Mera	1·2	222	0 19	− 1	0 34	− 2	—	—
Maebasi	1·5	293	0 25k	+ 1	0 47	+ 3	—	—
Osima	1·5	228	0 24	0	—	—	—	—
Hunatu	1·7	260	0 44k	+16	1 7	+18	—	—
Hukusima	2·0	352	0 32k	0	0 56	0	—	—
Shizuoka	2·1	247	0 33k	0	1 1	+ 2	—	—
Matusiro	2·2	291	0 35	0	1 3	+ 2	—	—
Nagano	2·3	292	0 33	− 3	1 1	− 3	—	—
Omaesaki	2·4	240	0 37	− 1	—	—	—	—
Sendai	2·5	2	0 40	+ 1	1 12	+ 3	—	—
Aikawa	3·0	317	0 47	+ 1	1 29	+ 7	—	—
Toyama	3·0	287	0 52k	+ 6	1 27	+ 5	—	—
Nagoya	3·2	259	0 52	+ 3	1 40	+13	—	—
Gihu	3·3	263	0 48	− 3	1 39	+10	—	—
Mizusawa	3·3	5	0 57	+ 6	1 36	+ 7	—	—
Wazima	3·5	298	0 56	+ 3	1 32	− 2	—	—
Kameyama	3·7	257	1 1	+ 5	1 32	− 7	—	—
Hikone	3·8	264	1 2	+ 4	2 2	+20	—	—
Akita	3·9	252	1 2	+ 3	2 3	+19	—	—
Morioka	3·9	4	1 3	+ 4	1 46	+ 2	—	—
Kyoto	4·2	262	1 5	+ 2	—	—	—	—
Owase	4·2	247	1 1	− 2	2 0	+ 8	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Osaka		4·5	257	1 7	− 1	2 4	+ 4	—	—	—
Kobe		4·7	258	1 10	0	2 15	+10	—	—	—
Siomisaki		4·8	242	1 9	− 3	3 1	+54	—	—	—
Aomori		5·0	0	1 17	+ 2	2 31	+19	—	—	—
Sumoto		5·1	255	1 13	− 3	2 18	+ 3	—	—	—
Muroto		6·0	247	1 35	+ 6	2 43	+ 6	—	—	—
Mori		6·3	358	1 31	− 2	3 8	+23	—	—	—
Matuyama		6·9	256	1 27	−14	3 0	0	—	—	—
Hirosima		7·0	261	1 44	+ 1	3 29	+27	—	—	—
Simidu		7·1	247	1 20	−24	2 49	−16	—	—	—
Hamada		7·2	265	1 49	+ 3	3 19	+12	—	—	—
Sapporo		7·3	3	1 52	+ 5	3 18	+ 8	—	—	—
Ooita		8·0	254	2 4	+ 7	4 3	+36	—	—	—
Nemuro		8·4	25	2 5	+ 3	3 25	−12	—	—	—
Hukuoka		8·8	259	2 8	0	4 23	+36	—	—	—
Kagosima		9·5	247	2 18	0	5 0	+56	—	—	—
Vladivostok		10·1	319	2 24	− 2	4 30	+11	—	—	—
Nanking	z.	18·6	266	i 4 18	+ 1	e 7 52	+12	e 4 4	?	e 8·4
Almata		48·8	300	8 45	+ 1	—	—	—	—	—
College		50·4	31	i 8 53	− 3	—	—	e 9 10?	pP	—
Frunse		50·5	300	e 8 54	− 3	—	—	—	—	—
Andijan		52·7	298	e 9 11	− 2	e 16 39	+ 2	—	—	—
Fergana		53·3	298	9 15	− 3	—	—	—	—	—
Tchimkent		54·2	301	e 9 22	− 2	—	—	—	—	—
Tashkent		54·7	299	e 9 24?	− 4	—	—	—	—	—
Sverdlovsk		55·8	320	i 9 33	− 3	e 17 36	+17	—	—	—
Stalinabad		56·1	297	e 9 36	− 2	—	—	—	—	—
Victoria		67·6	46	e 10 55	0	—	—	—	—	—
Moscow		68·0	324	e 10 54	− 4	—	—	—	—	—
Grozny		69·8	310	e 11 5	− 4	—	—	—	—	—
Shasta Dam		72·2	53	i 11 23	0	—	—	—	—	—
Leninakan		72·3	308	e 11 24	0	—	—	—	—	—
Mineral	z.	72·9	53	e 11 27a	− 1	—	—	—	—	—
Hungry Horse		73·0	42	e 11 27	− 1	—	—	—	—	—
Berkeley	z.	73·8	55	e 11 32a	− 1	—	—	—	—	—
Lick	z.	74·5	55	i 11 40a	+ 3	—	—	i 11 56	PcP	—
Reno	z.	74·5	52	e 11 37k	0	—	—	—	—	—
China Lake	z.	78·1	54	i 11 56	− 1	—	—	—	—	—
Pasadena	z.	78·7	56	e 11 58	− 2	—	—	e 12 16	pP	—
Copenhagen		78·8	334	i 11 59	− 2	—	—	—	—	—
Riverside	z.	79·3	56	i 12 3	− 1	—	—	—	—	—
Overton	z.	79·7	52	e 12 6	0	—	—	i 12 59	?	—
Boulder City		79·8	53	e 12 6	0	—	—	e 14 11	?	—
Palomar	z.	80·0	56	e 12 7	− 1	—	—	—	—	—
Pierce Ferry		80·3	52	i 12 10	+ 1	—	—	—	—	—
Istanbul		81·2	315	e 12 11	− 3	—	—	—	—	—
Ksara		81·5	306	e 12 14	− 2	e 23 22?	PS	—	—	—
Prague		82·3	329	e 12 15	− 5	—	—	—	—	—
Tucson		84·7	54	i 12 31	− 1	—	—	e 12 47	pP	—
Stuttgart		85·4	330	e 12 32	− 3	—	—	e 12 47	pP	e 46·9
Strasbourg		86·2	331	i 12 37a	− 2	—	—	e 12 50	pP	—
Paris		88·0	334	i 12 46	− 2	—	—	i 13 0	pP	e 45·9
Rome		89·4	325	e 11 34	?	—	—	—	—	—
Harvard		96·6	23	e 13 32	+ 4	—	—	—	—	—
Weston		96·8	23	e 13 25	− 4	—	—	—	—	—
Alicante		98·0	330	13 12	−22	—	—	17 4	PP	e 48·0
Tamanrasset	z.	108·0	317	e 18 33	[+ 9]	—	—	e 18 45	pPKP	—
La Paz		147·9	61	e 19 40	[+ 1]	—	—	—	—	—

Additional readings :—
Berkeley iZ =11m.36s. and 12m.56s.
Reno eN =11m.56s.
Strasbourg e =13m.7s.
Alicante PPP =19m.12s.
Long waves were also recorded at Bucharest, Potsdam, and Granada.

April 16d. 21h. 48m. 1s. Epicentre 49°·0N. 129°·0W. (as on 1946, November 12d.).

$A = -·4145$, $B = -·5118$, $C = +·7525$; $\delta = +1$; $h = -5$;
$D = -·777$, $E = +·629$; $G = -·474$, $H = -·585$, $K = -·659$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria		3·7	97	i 0 58a	− 2	i 1 47	+ 2	i 1 14	P_g	—
Seattle		4·7	104	e 1 24	P*	e 2 29	S*	e 1 36	P_g	i 2·9
Shasta Dam		9·5	148	i 2 22	+ 2	e 4 32	S*	e 2 54	?	e 6·0
Hungry Horse		9·9	88	e 2 26	+ 1	e 4 7	−13	—	—	—
Mineral	Z.	10·1	146	i 2 31a	+ 3	—	—	—	—	—
Butte	N.	11·5	99	e 3 1	PP	—	—	—	—	e 5·2
Reno	Z.	11·6	142	e 2 50a	0	—	—	e 3 0	PP	—
Berkeley		12·1	154	i 2 57a	0	i 5 22	+ 8	—	—	—
Bozeman		12·6	98	e 3 3	0	—	—	—	—	e 6·2
Santa Clara	E.	12·7	154	e 3 51	+46	e 5 38	+10	—	—	—
Lick	Z.	12·8	153	e 3 7a	+ 1	—	—	—	—	—
Fresno		14·0	148	i 3 22k	0	e 5 19	−40	i 3 37	PP	—
Tinemaha		14·2	143	i 3 27	+ 3	—	—	i 3 39	PP	—
Saskatoon		14·5	69	—	—	i 6 33	SS	—	—	8·0
Salt Lake City		14·6	118	e 3 30	0	e 6 12	− 1	—	—	e 8·3
China Lake	Z.	15·6	143	i 3 43	0	—	—	i 3 58	PP	—
Overton	Z.	16·4	134	i 3 54	+ 1	e 7 3	+ 7	i 4 47	?	—
Boulder City		16·7	136	e 3 59	+ 2	—	—	—	—	—
Pasadena		16·9	148	i 3 59	0	—	—	—	—	—
Pierce Ferry		16·9	134	i 4 1	+ 2	e 7 12	+ 5	—	—	—
Riverside		17·3	146	i 4 4	0	—	—	i 4 39	?	—
Palomar		18·1	146	i 4 14	0	—	—	i 5 5	?	—
Rapid City	E.	18·4	96	i 4 19	+ 1	e 7 31	−10	—	—	e 10·7
College		18·8	336	i 4 22	− 1	—	—	—	—	—
Tucson		21·6	134	i 4 54	0	e 9 4	+15	e 5 15	PP	e 12·2
Lubbock		25·4	117	5 31	0	—	—	—	—	—
St. Louis		29·6	95	e 6 7	− 2	e 11 8	+ 4	e 7 9	PP	—
Cleveland		33·8	85	e 6 45k	− 1	e 14 45	SSS	e 13 33	P_cS	—
Ottawa		35·8	75	e 7 3	0	—	—	—	—	15·0
City College, N.Y.		39·1	80	i 7 30	− 1	e 13 13	−18	—	—	e 17·1
Harvard		39·8	77	e 7 34	− 2	—	—	—	—	e 22·6
Weston		40·0	77	e 7 41	+ 3	—	—	—	—	—
Kew		70·8	32	—	—	e 26 59?	?	—	—	—
Paris		74·0	32	i 11 0	−39	—	—	—	—	e 37·0
Stuttgart		76·1	27	e 11 51	0	—	—	—	—	e 40·0
Besançon		76·5	30	e 10 57	−57	—	—	i 11 0	?	—
Granada		81·5	42	—	—	e 21 57	−35	—	—	e 37·1
Alicante		81·6	39	—	—	e 22 5	−28	—	—	e 39·1
Algiers Univ.	Z.	84·6	37	e 12 41	+ 5	—	—	—	—	—
Tamanrasset	Z.	97·8	42	e 18 55	?	—	—	e 19 23	PPP	—

Additional readings :—
Victoria i = 1m.5s., S = 1m.35s., i = 1m.41s. and 1m.55s.
Seattle eP_g = 1m.51s.
Mineral iZ = 2m.49s., eZ = 6m.27s.
Reno eN = 3m.6s., eZ = 3m.15s., eE = 3m.21s. and 3m.29s., eZ = 4m.34s. and 6m.50s., eN = 7m.23s. and 9m.9s.
Berkeley iEZ = 3m.2s., iZ = 3m.29s., eN = 5m.37s., eEZ = 6m.37s., iNZ = 8m.3s.
Lick iZ = 3m.24s. and 3m.46s.
Fresno iN = 3m.28s., eN = 3m.55s., iZ = 4m.21s., eN = 4m.31s., eZ = 5m.4s.
Tucson iS = 9m.12s.
St. Louis ePP = 6m.52s.
Algiers Univ. eZ = 12m.49s., 13m.24s., and 14m.33s.
Tamanrasset iZ = 18m.58s.
Long waves were also recorded at Sitka, Honolulu, Ukiah, Philadelphia, Seven Falls, Halifax, Ivigtut, Scoresby Sund, De Bilt, Clermont-Ferrand, and Rome.

April 16d. Readings also at 0h. (Ksara and near La Paz), 2h. (near Borzhomi and Abastumanj), 3h. (Strasbourg, College, Hungry Horse, Shasta Dam, Overton, and Stuttgart), 4h. (Obi-garm, near Kulyab, and Andijan), 5h. (College, near Istanbul, and near Kulyab), 6h. (Rome, near Ashkabad, and near La Paz), 9h. (Mizusawa, Bogota, Huancayo, College, and near Andijan), 11h. (Tamanrasset (2)), 13h. (near Obigarm), 14h. (College), 15h. (College, Pierce Ferry, Istanbul, and Stuttgart), 18h. (Shasta Dam, and near Santa Clara), 19h. (near Kizyl-Arvat and Ashkabad), 21h. (Mineral), 22h. (Fergana, Andijan, Samarkand, Tchimkent, near Kulyab, and Obigarm), 23h. (Boulder City and near Tacubaya).

April 17d. Readings at 0h. (Andijan, Fergana, Tashkent, Tchimkent, near Kulyab, Obi-garm, and Stalinabad), 3h. (Palomar, China Lake, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Mineral, and Hungry Horse), 4h. (Nanking and Stuttgart), 6h. (College), 8h. (Kulyab and near Obi-garm), 9h. (near Istanbul), 12h. (Mineral), 13h. (Mineral, Fergana, Samarkand, near Andijan, Kulyab, Obi-garm, Stalinabad, and Tchimkent), 14h. (Istanbul), 17h. (Fergana, Kulyab, near Andijan, Obi-garm, Stalinabad, Huancayo, Boulder City, and near Victoria (3)), 18h. (near Victoria), 19h. (near Kulyab).

April 18d. 14h. 31m. 42s. Epicentre 5°·0S. 106°·0W. (as on 1947, Aug. 18d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya		25·2	16	i 5 45k	+16	i 10 20	+28	—	—	i 12·3
Huancayo		31·1	104	e 6 26	+ 4	e 11 35	+ 7	e 12 54	SS	e 14·5
Bogota		33·3	73	e 6 50	+ 9	e 12 10	+ 8	—	—	e 14·3
Tucson		37·3	354	e 7 14	− 2	e 8 56	PP	i 15 57	SS	i 17·9
Lubbock		38·6	6	7 26	0	—	—	—	—	19·4
La Paz		38·8	109	e 7 32	+ 4	e 13 32	+ 6	i 16 27	SS	18·3
Palomar		39·5	346	i 7 33	− 1	—	—	—	—	—
Riverside		40·3	345	i 7 39	− 1	—	—	—	—	—
Pasadena		40·6	345	e 7 42	− 1	i 13 57	+ 3	—	—	i 17·0
Boulder City		41·6	350	e 7 51	0	—	—	—	—	—
Pierce Ferry		41·6	351	i 7 53	+ 2	—	—	i 9 8	PP	—
China Lake	z.	42·0	347	i 7 54	0	—	—	—	—	—
Overton	z.	42·1	351	i 7 55	0	e 14 39	+23	i 9 35	P_cP	—
Haiwee		42·4	346	i 7 57	− 1	—	—	—	—	—
Fresno		43·5	345	e 8 6k	− 1	—	—	e 9 17	PP	e 25·8
Lick	z.	44·6	342	e 8 15a	− 1	—	—	—	—	e 24·0
Berkeley		45·3	342	e 8 21k	0	e 15 7	+ 5	—	—	e 23·6
St. Louis		45·8	17	e 8 23	− 2	e 15 7	− 2	10 15	PP	e 22·3
Salt Lake City		45·9	355	e 8 35	+ 9	e 15 11	0	—	—	e 21·6
Reno		46·1	346	e 8 29k	+ 1	e 15 14	0	—	—	e 23·1
Ukiah		46·7	342	—	—	e 15 29	+ 7	—	—	e 20·1
Mineral	z.	47·4	344	e 8 36a	− 2	—	—	—	—	e 23·8
Shasta Dam		47·9	342	e 8 39	− 3	—	—	—	—	—
Cleveland		51·4	24	e 16 13	?	e 16 25	− 3	—	—	—
Pennsylvania		52·4	27	—	—	i 16 35	− 7	i 19 34	S_cS	—
Philadelphia		53·0	30	—	—	e 16 48	− 2	e 20 27	SS	e 22·6
Hungry Horse		53·6	355	e 9 22	− 3	e 15 21?	?	e 10 59	PP	—
City College, N.Y.		54·2	30	—	—	e 17 4	− 2	—	—	e 20·8
Seattle		54·4	347	e 9 47	+16	e 17 8	− 1	e 12 24	PPP	e 24·3
Victoria		55·4	347	e 9 37	− 1	—	—	—	—	—
College		76·2	343	e 11 49	− 3	—	—	—	—	—
Scoresby Sund		92·7	19	—	—	24 24	+ 6	30 36	SS	47·3
Riverview		97·8	235	e 13 51	+13	i 25 29	+27	e 26 42	PS	e 45·7
Alicante		105·2	51	14 39	+27	25 16	{−15}	27 55	PS	e 51·6
Copenhagen		109·9	31	—	—	e 34 36	SS	—	—	54·3
Prague		113·0	36	e 14 53	?	e 25 54	[+30]	e 18 29	PKP	—
Istanbul		126·2	41	e 20 54	PP	—	—	—	—	65·3
Ksara		134·5	46	e 17 49	?	e 31 5	PS	—	—	—

Additional readings :—
La Paz S_cS =17m.30s.
Pierce Ferry iPPP? =9m.38s.
Lick iZ =8m.18s., 8m.34s., and 8m.54s.
Berkeley eZ =8m.42s. and 8m.52s., eN =18m.36s., eE =19m.36s., eNZ =20m.36s.
St. Louis i =8m.31s. and 8m.44s., eSP? =15m.53s., eS_cS =18m.39s., eSSS =19m.33s., i =21m.19s.
Reno eEN =8m.35s., e =8m.48s., eE =9m.0s., eZ =15m.20s.
Cleveland eE =18m.51s.
Pennsylvania iS?E =16m.42s.
Seattle e =17m.35s.
Scoresby Sund 37m.30s.
Riverview eSSE =32m.3s.
Alicante PPS =28m.55s.
Prague ePPP =22m.58s., eSKKS? =26m.6s., ePS =29m.6s., eSS? =35m.18s., eSSS? =39m.36s.
Long waves were also recorded at Apia, Auckland, Christchurch, Wellington, Honolulu, Galerazamba, Bombay, Nanking, and other American and European stations.

April 18d. Readings also at 2h. (Bogota, Huancayo, La Paz, Chinchina, Mount Wilson, Riverside, China Lake, Tinemaha, Tucson, Pierce Ferry, Hungry Horse, Tamanrasset, and Rome), 3h. (Overton, Pierce Ferry and Hungry Horse), 4h. (near Istanbul (3)), 6h. (near Ashkabad), 7h. (near Andijan), 9h. (Boulder City), 10h. (near Andijan), 11h. (Triest), 12h. (Tucson, Overton, Hungry Horse, Istanbul, near Bandong and Djakarta), 13h. (Tacubaya, Mineral, Hungry Horse (2), and College), 14h. (La Paz), 15h. (near Andijan, Fergana, Kulyab, Obi-garm, Stalinabad, and Tchimkent), 19h. (Fergana, Frunse, Kulyab, Naryn, Samarkand, Tchimkent, near Andijan, Obi-garm, and Stalinabad), 21h. (Mount Wilson, Palomar, Riverside, China Lake, Pierce Ferry, College, Tamanrasset, and near Algiers Univ.), 22h. (Scoresby Sund).

April 19d. 16h. 8m. 22s. Epicentre 18°·5S. 178°·0W. Depth of focus 0·080.
(as on 1950, March 16d.).

$A = -\cdot 9484$, $B = -\cdot 0331$, $C = -\cdot 3154$; $\delta = +4$; $h = +5$;
$D = -\cdot 035$, $E = +\cdot 999$; $G = +\cdot 315$, $H = +\cdot 011$, $K = -\cdot 949$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		7·6	53	(e 1 53)	− 1	e 1 53	P	—	—	—
Arapuni		20·3	195	—	—	e 7 34	+21	—	—	—
Wellington		23·5	194	—	—	e 8 9	+ 4	—	—	—
Cobb River	E.	23·9	198	—	—	e 8 23	+11	—	—	—
Kaimata		25·6	199	e 4 49	+ 1	e 8 41	+ 3	—	—	—
Brisbane		28·1	246	i 5 7a	− 3	i 10 58	SS	—	—	e 12·9
Riverview		31·5	235	i 5 39a	0	i 10 7	− 3	i 7 10	pP	—
Berkeley		76·7	42	i 10 57k	0	—	—	e 12 58	pP	e 47·5
Lick	Z.	76·8	42	i 10 58k	+ 1	—	—	e 12 53	pP	—
Pasadena		77·3	47	i 11 0k	0	—	—	e 12 57	pP	—
Fresno	Z.	77·7	44	i 11 2k	0	—	—	—	—	—
Palomar		77·8	48	i 11 3k	0	—	—	—	—	—
Riverside		77·8	47	i 11 3k	0	—	—	e 12 49	pP	—
Shasta Dam		78·3	40	i 11 5	0	—	—	e 13 3	pP	—
China Lake	Z.	78·6	45	i 11 7k	0	—	—	i 13 6	pP	—
Mineral	Z.	78·6	41	e 11 7k	0	—	—	—	—	—
Tinemaha		78·9	45	i 11 9k	+ 1	—	—	—	—	—
Reno		79·2	42	e 11 11k	+ 1	—	—	e 13 10	pP	—
Boulder City		80·6	47	i 11 18	+ 1	—	—	—	—	—
Overton	Z.	81·2	47	i 11 22	+ 2	—	—	—	—	—
Pierce Ferry		81·3	47	e 11 23	+ 2	—	—	—	—	—
Tucson		81·7	52	i 11 25	+ 2	e 21 6	+15	e 13 25	pP	—
Victoria		82·5	33	e 11 27k	0	—	—	—	—	—
Seattle		82·6	34	i 11 28k	+ 1	—	—	—	—	—
College		86·3	12	i 11 42	− 3	—	—	e 27 57	SS	—
Hungry Horse		87·5	37	i 11 50	− 1	—	—	—	—	—
Rathfarnham C.	Z.	144·7	8	i 18 32	[− 4]	—	—	—	—	—
Potsdam	Z.	145·1	348	i 18 35k	[− 1]	—	—	—	—	—
Ksara		146·2	303	i 18 41	[+ 3]	—	—	20 48	pPKP	—
Jena		146·8	347	e 18 41	[+ 2]	—	—	—	—	—
Prague		147·0	345	i 18 42	[+ 3]	e 21 50	sPKP	e 22 20	PP	—
Istanbul		147·7	320	e 18 38?	[− 2]	—	—	—	—	—
Stuttgart	Z.	149·2	350	e 18 43	[+ 1]	—	—	—	—	—
Strasbourg		149·6	352	i 18 49a	[+ 6]	—	—	—	—	—
Paris		149·8	359	i 18 48	[+ 5]	—	—	—	—	—
Besançon		151·1	354	e 18 52	[+ 7]	—	—	—	—	—
Triest		151·2	342	e 18 47	[+ 2]	e 28 54	SKKS	e 32 55	SKSP	—
Clermont-Ferrand		152·8	358	e 18 56	[+ 9]	—	—	—	—	—
Tamanrasset	Z.	174·6	323	i 19 9k	[+ 2]	e 28 23	SKKS	e 21 35	pPKP	—

Additional readings :—
Riverview iS_eSE = 15m.10s.
Berkeley iZ = 11m.6s., eZ = 12m.10s.
Lick iZ = 11m.1s. and 11m.9s.
Palomar iZ = 11m.24s.
Riverside eZ = 11m.31s.
Mineral eZ = 11m.20s.
Tinemaha iZ = 11m.35s.

Continued on next page.

Reno eZ =11m.26s., eN =12m.6s., eE =13m.4s. and 13m.20s.
Tucson e =11m.42s.
Seattle i =12m.16s. and 13m.0s.
College i =12m.0s.
Rathfarnham Castle eZ =18m.58s.
Jena eN =19m.58s.
Prague e =19m.5s. and 19m.18s.
Stuttgart iPKPZ =18m.48s., ePKPZ =18m.52s.
Strasbourg i =18m.55s.
Paris i =18m.55s.
Besançon e =19m.1s.
Triest ePPS =36m.14s., eSS =42m.10s.
Tamanrasset ePKP$_2$Z =20m.44s., esPKPZ =22m.22s., epPKP$_2$Z =22m.52s., ePPZ =24m.38s., epPPZ =26m.41s., esPPZ =27m.50s., epPPPZ =30m.35s.

April 19d. Readings also at 0h. (Scoresby Sund, Fergana, near Kulyab, Obi-garm, and Stalinabad), 1h. (Scoresby Sund), 3h. (Huancayo and Scoresby Sund), 7h. (Hungry Horse (2), near College (2), and near Messina), 10h. (Alicante), 12h. (Ksara), 13h. (Sverdlovsk, Frunse, Mary, Naryn, Samarkand, Tchimkent, near Andijan, Fergana, Kulyab, Obi-garm, Stalinabad, and Tashkent), 14h. (Brisbane and College). 17h. (Copenhagen), 18h. (near Irkutsk), 19h. (near Prague), 23h. (College).

April 20d. 9h. 50m. 55s. Epicentre 43°·5N. 151°·0E. Depth of focus 0·010.

Intensity II-III at Kusiro. Depth 150km. Macroseismic radius >300km. Epicentre as adopted.

Seismo. Bull., Cent. Met. Observatory, Japan, 1950. Tokyo, 1952, p. 17.

$A = -·6365$, $B = +·3528$, $C = +·6859$; $\delta = +6$; $h = -3$;
$D = +·485$, $E = +·875$; $G = -·600$, $H = +·333$, $K = -·728$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro	3·9	269	0 57	− 2	—	—	—	—	—
Sapporo	7·1	270	i 1 42k	− 1	2 59	− 4	—	—	—
Hatinohe	7·6	250	1 51	+ 1	3 13	− 2	—	—	—
Miyako	7·8	243	1 59	+ 7	3 21	+ 1	—	—	—
Aomori	8·0	254	1 57	+ 2	3 47	SS	—	—	—
Morioka	8·3	246	2 2	+ 3	3 4	SS	—	—	—
Mizusawa	8·6	243	2 10	+ 7	3 42	+ 3	—	—	—
Akita	9·0	249	2 12	+ 3	—	—	—	—	—
Sendai	9·2	239	e 2 23	+12	e 4 1	+ 7	—	—	—
Hukusima	9·8	238	2 33	PP	4 14	+ 6	—	—	—
Onahama	10·1	233	2 45	PPP	4 41	SSS	—	—	—
Kakioka	11·0	232	2 45	PP	—	—	—	—	—
Tukubasan	11·1	233	2 43	PP	4 44	+ 4	—	—	—
Kumagaya	11·6	235	2 58	PP	4 57	+ 5	—	—	—
Maebasi	11·6	236	2 53	PP	5 1	SS	—	—	—
Tokyo	11·7	232	2 56	PP	5 1	SS	—	—	—
Nagano	11·9	239	3 0	PP	5 13	SS	—	—	—
Wazima	12·3	245	2 57	+ 4	—	—	—	—	—
Hunatu	12·4	234	3 1	PP	5 22	SS	—	—	—
Toyama	12·6	242	3 1	+ 4	—	—	—	—	—
Gihu	13·6	238	3 14	+ 4	6 11	SS	—	—	—
Nagoya	13·7	237	2 38	−33	—	—	—	—	—
Vladivostok	13·9	275	3 9	− 5	5 46	0	—	—	—
Hikone	14·0	239	3 23	+ 8	—	—	—	—	—
Kameyama	14·2	237	4 10	PPP	7 2	SSS	—	—	—
Klyuchi	14·3	23	e 3 36	PP	—	—	—	—	—
Kyoto	14·5	239	3 29	+ 7	—	—	—	—	—
Osaka	14·9	239	3 42	PP	e 5 41	−29	—	—	—
Owase	14·9	236	3 40	PP	—	—	—	—	—
Kobe	15·1	240	3 43	+14	—	—	—	—	—
Hamada	17·0	245	3 58	+ 5	7 16	+19	—	—	—
Matuyama	17·2	242	4 1	+ 6	7 22	+20	—	—	—
Hukuoka	18·9	244	4 19a	+ 4	8 8	SS	—	—	—
Kumamoto	19·1	243	4 25	+ 7	—	—	—	—	—
Miyazaki	19·3	238	4 28	+ 8	8 12	+24	—	—	—

Continued on next page.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kagosima		20·1	240	4 37	+ 9	—	—	—	—	—
Nanking	z.	27·7	257	i 4 43	−58	10 23	+ 9	—	—	14·2
Irkutsk		32·0	303	e 6 7	−12	—	—	—	—	—
College		39·6	36	i 7 18	− 5	e 13 12	− 7	e 7 34	pP	—
Semipalitinsk		47·1	305	e 8 19	− 5	—	—	—	—	—
Naryn		53·6	296	i 9 8	− 5	16 30	− 8	—	—	—
Frunse		53·8	298	e 9 22	+ 7	—	—	—	—	—
Sverdlovsk		55·2	318	e 9 15	−10	e 19 0	S_cS	11 26	PP	—
Andijan		56·3	296	e 9 26	− 7	17 8	− 6	—	—	—
Victoria		56·7	52	e 9 35	− 1	—	—	—	—	—
Fergana		56·9	296	9 26	−11	—	—	—	—	—
Tchimkent		57·3	300	e 9 32	− 8	—	—	—	—	—
Seattle		57·7	53	i 9 55a	+12	e 17 52	+20	—	—	—
Tashkent		58·0	299	i 9 35	−10	i 17 21	−15	—	—	—
Kulyab		59·5	295	e 9 55	0	i 17 53	− 2	—	—	—
New Delhi		59·7	282	i 9 51	− 6	i 17 53	− 5	i 10 44	P_cP	>
Stalinabad		59·8	296	i 9 51	− 6	i 17 51	− 8	—	—	—
Samarkand		60·3	298	e 9 59	− 2	—	—	—	—	—
Shasta Dam		61·4	59	i 10 9	+ 1	e 18 26	+ 6	i 10 21	pP	—
Hungry Horse		62·0	48	i 10 10	− 2	e 19 8	sS	i 10 25	pP	—
Mineral	z.	62·1	59	e 10 13k	0	—	—	i 11 28	P_cP	—
Berkeley		63·1	62	e 10 21k	+ 1	e 18 49	+ 8	e 19 15	PS	e 30·0
Santa Clara		63·6	62	e 10 37	+14	e 18 55	+ 8	—	—	e 22·3
Saskatoon		63·6	42	—	—	e 18 50	+ 3	e 20 5	S_cS	31·6
Reno		63·7	59	e 10 25k	+ 2	e 18 54	+ 6	e 10 59	P_cP	—
Lick	z.	63·8	62	i 10 26	+ 2	—	—	i 10 50	pP	—
Fresno	z.	65·4	61	e 10 36a	+ 2	—	—	e 10 59	P_cP	—
Hyderabad	n.	65·6	271	e 10 31	− 5	19 8	− 4	19 26	PS	—
Scoresby Sund		66·2	358	—	—	e 19 2	−17	—	—	32·1
Tinemaha		66·2	61	e 10 41	+ 1	—	—	i 11 4	pP	—
Moscow		66·3	326	e 10 32	− 8	—	—	—	—	—
Ashkabad		66·8	301	10 40	− 3	—	—	—	—	—
Haiwee		66·9	61	i 10 45	+ 1	—	—	i 10 58	pP	—
Pasadena		68·0	63	i 10 52	+ 1	i 19 46	+ 5	i 11 4	pP	e 27·7
Riverside	z.	68·6	63	i 10 56	+ 2	—	—	i 11 8	pP	—
Bombay		68·8	276	e 10 56	0	e 19 48	− 2	—	—	—
Overton	z.	68·9	59	i 10 58	+ 2	—	—	—	—	—
Boulder City		69·0	60	e 10 58	+ 1	—	—	i 11 11	pP	—
Palomar	z.	69·4	63	i 11 0	0	—	—	i 11 14	pP	—
Pierce Ferry		69·4	59	i 11 2	+ 2	—	—	—	—	—
Upsala		70·1	337	e 20 46	PS	—	—	—	—	e 36·1
Baku		70·4	307	e 11 4	− 2	e 20 6	− 3	—	—	—
Grozny		70·8	312	e 11 0	− 8	—	—	—	—	—
Colombo	e.	71·6	262	11 16	+ 3	20 46	+23	—	—	42·4
Tiflis		72·4	311	i 11 11	− 6	20 22	−10	—	—	—
Borzhomi		73·1	312	11 18	− 4	—	—	—	—	—
Zugdidi		73·4	313	e 11 20	− 3	—	—	—	—	—
Leninakan		73·5	311	e 11 33	+ 9	—	—	—	—	—
Sotchi		73·8	315	e 11 28	+ 2	—	—	—	—	—
Tucson		73·9	60	e 11 27	+ 1	e 20 36	−13	i 11 41	pP	e 28·9
Copenhagen		75·1	337	i 11 26	− 7	e 20 50	−12	16 0	PPP	34·1
Warsaw		75·3	331	e 12 28	+54	e 20 57	− 7	e 16 11	PPP	e 38·1
Yalta		75·9	318	i 11 29	− 9	—	—	e 16 1	PPP	—
Kishinev		76·4	325	11 34	− 6	—	—	—	—	—
Riverview		77·0	180	e 12 2	+18	i 21 58	+35	i 12 10	P_cP	e 36·8
Potsdam	z.	77·8	335	i 11 42k	− 6	—	—	i 11 58	P_cP	—
Lubbock		78·6	54	12 5	+12	21 34	− 6	—	—	—
Prague		79·4	333	e 11 52	− 5	e 21 48?	0	e 22 27	PS	—
Jena	n.	79·6	334	e 11 52	− 6	—	—	e 14 53	PP	—
Cheb		80·1	334	—	—	e 30 5	SS	—	—	—
De Bilt		80·3	339	i 11 57a	− 5	e 21 47	−11	e 31 5?	SSS	e 35·1
Istanbul		80·9	320	e 12 1	− 4	e 21 56	− 8	—	—	—
St. Louis		81·2	44	e 12 5	− 1	i 22 7	0	—	—	—
Rathfarnham Castle		81·6	346	i 12 3	− 6	e 22 4	− 7	e 15 3	PP	e 38·1
Karlsruhe	z.	82·2	336	e 12 4	− 8	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kew		82·2	342	i 12 5	− 7	e 22 6	−11	e 28 15	SS	e 38·1
Ottawa		82·2	31	12 8	− 4	22 9	− 8	—	—	45·1
Stuttgart		82·2	335	e 12 4a	− 8	e 22 6	−11	e 12 21	pP	45·1
Shawinigan Falls	N.	82·3	28	e 12 9	− 3	—	—	—	—	—
Seven Falls	E.	82·5	27	—	—	e 22 13	− 7	—	—	40·1
Strasbourg		82·8	336	e 12 10	− 5	e 22 10	−13	e 12 26	pP	38·1
Ksara		82·9	311	i 12 11	− 4	22 25?	+ 1	—	—	—
Cleveland		83·1	37	e 12 16	0	e 22 23	− 3	e 28 23	SS	—
Triest		83·5	331	i 13 16	+58	i 22 24	− 6	e 15 21	PP	e 37·1
Zürich		83·7	336	e 12 13	− 6	—	—	—	—	—
Basle		83·8	336	e 12 25	+ 5	—	—	—	—	—
Paris		84·0	340	i 12 15	− 6	e 22 27	− 8	i 28 25	SS	e 38·1
Besançon		84·5	337	i 12 20	− 3	—	—	e 12 35	pP	—
Pennsylvania		85·2	35	i 12 24	− 3	i 22 43	− 4	i 28 42	SS	e 38·1
Harvard		86·3	29	i 12 31	− 1	—	—	e 12 54	pP	e 44·1
Weston		86·4	29	i 12 30	− 3	e 22 51	− 8	—	—	e 44·2
Clermont-Ferrand		86·7	338	i 12 32	− 2	e 22 35	−27	e 23 27	ScS	41·1
City College		86·8	32	i 12 33	− 2	e 22 50	−12	e 28 48	SS	e 34·5
Fordham		86·8	32	i 12 34	− 1	—	—	—	—	—
Philadelphia		87·1	33	—	—	e 22 50	−15	—	—	e 34·0
Rome		87·2	330	—	—	e 23 20	S_cS	—	—	e 42·4
Helwan		88·5	311	i 12 39k	− 4	23 11	− 7	e 23 23	S_cS	—
Tortosa		92·0	338	—	—	i 23 41	S_cS	—	—	e 48·1
Alicante		94·6	338	—	—	e 23 47	[+ 1]	—	—	e 43·2
Tamanrasset	z.	106·8	327	e 14 4	P	e 21 56	PKS	—	—	—
Pretoria	z.	130·7	272	e 19 5	[+ 5]	—	—	—	—	—

Additional readings :—
Nanking iZ = 4m.58s., 5m.5s., 5m.34s., 10m.57s., and 11m.28s.
College e = 7m.53s., i = 8m.10s.
Sverdlovsk eP_cP = 10m.23s., PPP = 12m.28s.
Shasta Dam e = 11m.2s., eS_cS? = 19m.50s.
Hungry Horse ePKP,PKP = 39m.21s.
Mineral iZ = 10m.26s.
Berkeley eEN = 10m.29s., iZ = 10m.33s., eEZ = 10m.43s., eZ = 13m.17s., eN = 26m.11s. and 28m.35s., eZ = 29m.5s.
Saskatoon e = 26m.20s.
Reno eZ = 10m.47s., eE = 11m.38s.
Lick iZ = 10m.30s., eZ = 10m.38s., iP_cPZ = 11m.32s.
Fresno eEZ = 10m.47s.
Tinemaha ipPZ = 10m.53s.
Pasadena iZ = 11m.15s., ePKP,PKPZ = 39m.12s.
Riverside ePKP,PKPZ = 39m.13s.
Palomar iPKP,PKPZ = 39m.12s., iZ = 39m.32s.
Upsala eE = 29m.50s., 32m.46s., and 34m.23s.
Tucson ePP = 13m.40s., e = 16m.20s. and 19m.46s.
Copenhagen 29m.20s.
Warsaw eSE = 21m.21s., eSN = 21m.24s., eN = 21m.52s., eSSE = 26m.10s., eSSN = 26m.22s., eSSSEN = 29m.22s.
Riverview eSKSE = 22m.10s., eN = 22m.18s., iS_cSE = 22m.22s.
Prague e = 12m.11s., eP_cP?Z = 12m.26s., e = 12m.33s. and 14m.12s., ePP = 14m.53s., eSS? = 26m.47s.
Jena eP?N = 11m.55s., eN = 13m.10s.
Rathfarnham Castle eEN = 16m.10s., ePS = 22m.33s.
Kew ePSEN = 22m.30s., ePPS?NZ = 23m.23s.
Stuttgart eZ = 13m.24s., e = 18m.23s., eS = 21m.50s., ePS = 22m.35s., SSSS? = 33m.5s., eQ = 42·1m.
Strasbourg ePP = 15m.30s., eS_cS = 22m.25s., eSSS = 31m.18s.
Cleveland eZ = 12m.33s., eSKKSE = 22m.40s., eN = 22m.43s.
Triest eSKS = 22m.42s., ePPS = 23m.30s., iSS = 27m.37s.
Paris i = 12m.18s., 12m.32s., 12m.47s., 12m.52s., and 13m.27s., e = 19m.16s., ePS = 23m.39s.
Besançon e = 12m.52s.
Pennsylvania iN = 22m.24s., iS_cS = 23m.15s., iPPSEN = 23m.50s., iN = 24m.23s., eEN = 32m.54s.
Harvard e = 19m.47s.
Rome eZ = 35m.22s.
Helwan eZ = 12m.56s., PPSN = 24m.35s.
Tamanrasset eZ = 17m.18s., ePPZ = 18m.32s., eZ = 24m.4s.
Long waves were also recorded at Honolulu, Wellington, Auckland, Helsinki, Bergen, Malaga, and Collmberg.

April 20d. 17h. 19m. 13s. Epicentre 33°·9N. 2°·1E.

Intensity VI-VII at El Gheicha ; V at Tadjmout ; IV-V at Aflou ; II-III at Geryville, Guelta, and El-Beida. Epicentre as adopted.

A. Grandjean.
Séismes d'Algérie de 1940-1950 inclus. Annales de l'Institut de Physique du Globe de Strasbourg, 3e partie, Géophysique, Nouvelle Série, Tome VII, Le Puy, 1954, pp. 76-83, with macroseismic chart.

$A = +\cdot8312$, $B = +\cdot0305$, $C = +\cdot5552$; $\delta = +7$; $h = +1$;
$D = +\cdot037$, $E = -\cdot999$; $G = +\cdot555$, $H = +\cdot020$, $K = -\cdot832$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Algiers Univ.	z.	3·0	15	e 0 44	− 6	i 1 23	− 4	i 0 58	P_g	—
Alicante		4·9	335	1 5	−12	2 18	+ 3	1 13	P	2·9
Granada		5·7	307	i 1 40a	P*	i 3 47	S_g	2 11	P_g	—
Malaga		6·0	300	i 1 38	+ 6	i 3 8	S*	—	—	4·3
Tortosa		7·0	350	i 1 48	+ 2	i 3 9	+ 1	—	—	—
Barcelona		7·5	0	—	—	e 3 4	−16	—	—	e 3·8
Toledo	z.	7·7	322	i 1 56	0	i 3 21	− 4	e 2 8	PP	4·0
Lisbon		10·3	301	2 34	+ 2	5 4	S*	2 45	PP	5·4
Rome		11·4	43	e 2 46	− 1	e 4 59	+ 3	—	—	e 6·4
Tamanrasset	z.	11·5	164	e 2 45	− 3	e 5 4	+ 5	i 2 53	PP	5·6
Clermont-Ferrand		11·9	3	e 2 54	0	—	—	—	—	6·3
Florence Xim		12·2	33	e 3 10	+12	e 5 36	+20	—	—	—
Besançon		13·7	11	i 3 18	0	—	—	—	—	—
Basle		14·2	15	e 3 24	0	—	—	—	—	e 9·3
Zürich		14·3	18	e 3 23a	− 3	e 6 11	+ 5	—	—	e 8·2
Triest		14·7	34	i 3 37	+ 6	i 6 28	+12	i 8 23	SS	e 9·0
Paris		14·9	1	i 3 33	− 1	e 6 30	+10	e 6 37	SS	e 7·3
Strasbourg		15·3	15	i 3 37	− 2	e 6 21	− 9	1 3 49	PP	e 7·3
Jersey	E.	15·6	350	e 3 46	+ 3	e 6 50	+13	—	—	—
Karlsruhe		15·8	15	e 3 43	− 2	e 5 47?	−55	—	—	e 7·8
Stuttgart		15·8	17	e 3 41	− 4	e 6 17	−25	—	—	e 7·8
Zagreb		15·9	38	e 3 45	− 2	e 6 51	+ 7	—	—	—
Kew		17·6	355	i 4 8	0	e 7 31	+ 8	—	—	e 8·8
Cheb		17·8	20	e 4 5	− 6	—	—	—	—	e 8·3
De Bilt		18·3	7	i 4 17k	0	e 7 59	+20	—	—	e 9·8
Jena		18·4	20	e 4 13	− 5	e 7 54	+13	e 5 41	PP	e 10·5
Prague		18·5	25	e 4 16	− 3	e 7 48	+ 4	e 8 13	SS	e 9·8
Collmberg	z.	19·1	22	e 4 22	− 5	—	—	e 5 11	PP	—
Potsdam		20·1	19	e 4 35	− 3	i 8 22	+ 3	—	—	e 10·8
Rathfarnham Castle		20·3	346	i 4 39	− 1	e 8 15	− 8	i 5 37	PP	e 11·8
Durham	N.	21·0	355	—	—	i 8 53	+16	—	—	—
Edinburgh	E.	22·3	353	8 55	PcP	9 8	+ 6	9 47	SS	—
Istanbul		22·5	63	e 5 19	+17	e 9 5	0	—	—	—
Warsaw		22·8	30	e 7 4	PP	e 9 10	− 1	e 9 51	SS	e 10·8
Copenhagen		22·9	15	e 5 4	− 2	e 9 12	− 1	—	—	11·3
Helwan		25·1	92	5 29	+ 1	9 59	+ 8	—	—	e 14·5
Yalta		26·8	57	e 5 41	− 3	10 18	− 1	—	—	—
Ksara		28·0	81	i 5 56	+ 1	e 11 1	+23	—	—	—
Zugdidi		32·2	62	6 42?	+10	—	—	—	—	—
Moscow		32·8	37	e 6 36	− 1	—	—	—	—	—
Piatigorsk		33·1	59	e 7 28?	PP	—	—	—	—	—
Borzhomi		33·3	63	6 41	0	—	—	—	—	—
Leninakan		33·7	65	e 7 6?	+21	—	—	—	—	—
Tiflis		34·3	64	6 50	0	12 18?	+ 1	—	—	—
Grozny		35·0	61	e 6 56	0	—	—	—	—	—
Sverdlovsk		45·4	41	i 8 20	− 2	14 58	− 6	—	—	—
Samarkand		51·3	63	e 9 8	0	—	—	—	—	—
Tchimkent		52·5	59	e 9 14	− 3	—	—	—	—	—
Fergana		54·6	61	e 9 31	− 1	—	—	—	—	—
Andijan		54·9	61	e 9 33	− 2	e 17 15	− 1	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Frunse		55·9	58	e 9 43	+ 1	e 17 28	− 1	—	—	—
Shawinigan Falls	N.	56·5	308	e 9 48	+ 2	—	—	—	—	—
Weston		56·7	303	i 9 47	− 1	—	—	—	—	—
Harvard		56·9	303	i 9 47	− 2	—	—	—	—	—
Naryn		57·4	58	e 9 50	− 3	—	—	—	—	—
Ottawa		58·8	307	e 10 1	− 1	—	—	—	—	—
Pretoria	z.	64·3	153	e 10 39	0	—	—	—	—	—
St. Louis		71·4	305	i 11 23	− 1	—	—	—	—	—
College		78·8	348	e 12 4	− 2	—	—	—	—	—
Hungry Horse		80·3	323	e 12 12	− 2	—	—	—	—	—
Victoria		84·6	327	e 12 37	+ 1	—	—	—	—	—
Pierce Ferry		88·3	314	e 12 56	+ 1	—	—	e 16 21	PP	—
Tucson		88·8	309	i 12 58	+ 1	—	—	e 16 26	PP	—
Boulder City		88·9	314	e 12 59	+ 1	—	—	e 16 24	PP	—
Reno	z.	89·3	319	e 13 0a	+ 1	—	—	—	—	—
Mineral	z.	89·7	321	e 13 1a	0	—	—	—	—	—
Shasta Dam		89·9	321	e 13 1	− 1	—	—	—	—	—
Tinemaha	z.	90·2	317	i 13 5	+ 1	—	—	—	—	—
Haiwee	z.	90·7	316	i 13 7	+ 1	—	—	—	—	—
Fresno	z.	91·3	318	e 13 9a	0	—	—	—	—	—
Berkeley	z.	91·8	319	e 13 12	+ 1	—	—	—	—	—
Riverside	z.	91·8	315	e 13 11	0	—	—	—	—	—
Palomar	z.	91·9	313	e 13 13	+ 2	—	—	—	—	—
Lick	z.	91·9	319	i 13 12	+ 1	—	—	e 16 51	PP	—
Pasadena	z.	92·2	315	i 13 12	− 1	—	—	—	—	—

Additional readings :—
Algiers Univ. iP*Z = 54s., eZ = 1m.3s., iS*Z = 1m.30s., iS_gZ = 1m.37s.
Alicante P* = 1m.15s., PPP = 1m.20s., SS = 2m.31s., S* = 2m.35s., SSS = 2m.43s., P_cP = 8m.6s., P_cS = 12m.20s., S_cS = 16m.46s.
Granada P = 2m.20s., S = 4m.17s.
Toledo iPPP?Z = 2m.20s., iE = 3m.38s.
Lisbon SS?E = 5m.12s.
Tamanrasset iPPPZ = 3m.4s., iZ = 3m.17s., 3m.44s., and 4m.29s.
Paris i = 3m.37s.
Strasbourg iPPP = 3m.55s., i = 4m.38s., e = 5m.27s., eS = 6m.25s.
Stuttgart eZ = 4m.20s., e = 4m.51s.
Cheb e = 5m.7s. and 7m.0s.
Jena eE = 5m.53s.
Prague e = 5m.17s. and 5m.30s.
Collmberg eZ = 4m.25s.
Rathfarnham Castle e = 10m.8s. and 10m.28s.
Warsaw eZ = 8m.22s.
Copenhagen i = 5m.8s.
Helwan eZ = 5m.38s.
College e = 12m.23s.
Tucson e = 13m.55s. and 16m.51s.
Reno eN = 13m.14s. and 13m.19s.
Mineral iZ = 13m.9s.
Palomar eZ = 13m.38s.
Lick iZ = 13m.17s.
Long waves were also recorded at Aberdeen and Taranto.

April 20d. Readings also at 0h. (near Seattle), 1h. (Auckland, Wellington, Palomar, Pasadena, Riverside, Tinemaha, Tucson, Boulder City, Pierce Ferry, Lick, Shasta Dam, Strasbourg, Stuttgart, and Tamanrasset), 2h. (Besançon, Stuttgart, Ksara, and Tamanrasset), 3h. (College), 6h. (Rome), 7h. (Andijan, Tchimkent near Kulyab, Obi-garm, and Stalinabad), 8h. (near Tortosa), 10h. (Santa Clara), 11h. (near Andijan, Kulyab, Obi-garm, and Stalinabad), 12h. (near La Paz), 14h. (Tortosa), 15h. (Tamanrasset, and near Algiers Univ.), 16h. (Auckland, Wellington, Huancayo, and Tamanrasset), 17h. (Overton and Harvard), 18h. (Harvard, Tamanrasset (2), and near Algiers), 19h. (Apia, College (2), Pierce Ferry, Tucson, Kulyab, Moscow, Shemakla, Stalinabad, Sverdlovsk, Tchimkent, and Tamanrasset), 20h. (Tamanrasset), 21h. (Bombay, Poona, Andijan, Fergana, Frunse, Kulyab, Obi-garm, Tchimkent, Tiflis, Ksara, Stuttgart, and Tamanrasset), 22h. (Mary).

April 21d. Readings at 2h. (Palomar, Pasadena, Riverside, Tinemaha, China Lake, Tucson, Boulder City, Overton, Pierce Ferry, Shasta Dam, Hungry Horse, Tamanrasset, La Paz, and Ashkabad), 3h. (Tamanrasset), 5h. (Prague), 6h. (near Kulyab), 7h. (Mount Wilson, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Samarkand, Tchimkent, near Fergana, Kuiyab, Obi-garm, Stalinabad, and near Tacubaya), 8h. (Algiers Univ., College, and near Andijan), 10h. (Honolulu, Andijan, Almata, Tiflis, Frunse, near Leninakan, near Naryn and Przhevalsk), 13h. (Overton, and near Pierce Ferry), 14h. (near La Paz), 16h. (near College), 17h. (Tamanrasset, Ravensburg, Stuttgart, near Chur, Zürich, and near Malaga), 18h. (Andijan, Fergana, Kulyab, Samarkand, Tchimkent, near Garm, Obi-garm, Stalinabad, and near Istanbul), 19h. and 21h. (Tamanrasset), 22h. (near Andijan).

April 22d. Readings at 0h. (near Zürich), 3h. (near Reykjavik), 4h. (Tamanrasset), 5h. (near Reykjavik), 6h. (La Paz), 7h. (near Istanbul), 8h. (Mineral), 9h. (near Obi-garm and near Tacubaya), 10h. (Mineral, College, La Paz, and near Tacubaya), 11h. (Tacubaya, College, and near Kulyab), 12h. (Apia, Auckland, Christchurch, Wellington, Palomar, Pasadena, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Lick, Shasta Dam, Hungry Horse, College, Besançon, Strasbourg, Stuttgart, and near Reykjavik), 15h. (Stuttgart, Almata, Kulyab, Obi-garm, Przhevalsk, Stalinabad, near Andijan, Fergana, Frunse, Naryn, Tashkent, and Tchimkent), 16h. (Pierce Ferry and College), 17h. (Triest, and near Przhevalsk), 18h. (Palomar, Riverside, China Lake, Shasta Dam, Hungry Horse, College (3), and near Apia), 19h. (Stuttgart, Pasadena, Tinemaha, Tucson, Overton, Samarkand, near Andijan, Garm, Obi-garm, and Stalinabad), 21h. (Apia, Auckland, Christchurch, Wellington, Mount Wilson (2), Palomar (2), Pasadena, Riverside (2), Tinemaha (2), Tucson (2), Shasta Dam (2), Hungry Horse, College, and Ksara), 22h. (Paris, Strasbourg, Stuttgart, Granada, and Harvard).

April 23d. 10h. S.W. Pacific. Very deep.

Apia eP =18m.50s., eS =20m.21s.
Lick iPZ =27m.53s.a, iZ =27m.56s. and 28m.2s.
Pasadena iP =27m.56s., epPZ =29m.52s.
Riverside iPZ =27m.58s.a, epPZ =29m.55s.
Palomar iP =28m.0s.a, ipPZ =29m.56s.
Shasta Dam iP =28m.1s., epP =30m.2s.
Tinemaha iPZ =28m.6s.a, epPZ =30m.4s.
Boulder City iP =28m.14s.
Overton iPZ =28m.18s., ipPZ =30m.14s.
Tucson iP =28m.21s., e =28m.33s., epP =30m.20s.
Pierce Ferry iP =28m.21s., epP =30m.18s.
Victoria e =28m.23s.
College iP =28m.36s., e =28m.51s., i =29m.31s., epP =30m.36s.
Hungry Horse iP =28m.46s.
Prague ePKP =35m.26s., e =35m.39s. and 36m.27s.
Rathfarnham Castle iPKP?Z =35m.30s.
Collmberg eZ =35m.33s.
Jena ePKP?N =35m.35s., ePKPE =35m.38s.
Ksara iPKP? =35m.36s., e =39m.33s.
Stuttgart ePKPZ =35m.38s.?, iPKPZ =35m.42s.
Strasbourg ePKP =35m.43s.a, i =35m.49s.
Paris iPKP =35m.44s., i =35m.50s.
Zürich iZ =35m.45s.a.
Chur ePKP =35m.46s.a.
Besançon ePKP =35m.48s., e =35m.55s.
Basle ePKP =35m.53s.
Tamanrasset ePKPZ =36m.5s., iPKP$_2$Z =37m.39s., iZ =40m.44s., ePPZ =41m.32s.
Messina e =57m.28s.

April 23d. Readings also at 1h. (Tucson, Hungry Horse, near Shasta Dam, and near Obi-garm), 3h. (near La Paz), 7h. (near Messina), 8h. (Harvard, Weston, Overton, Pierce Ferry, Hungry Horse (2), College (2), Tamanrasset, Ksara, Alicante (2), Bombay, New Delhi, Andijan, near Obi-garm, Stalinabad, and near San Juan), 11h. (near Messina, near Fort de France, and near Shemakla), 12h. (near Naryn), 13h. (Overton), 14h. (Rome), 15h. (near Tacubaya), 20h. (College, Frunse, Przhevalsk, near Almata, Andijan, Fergana, Garm, Obi-garm, Naryn, Samarkand, Stalinabad, Tashkent, and Tchimkent), 21h. (College, Hungry Horse (2), near Bogota and Chinchina).

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

April 24d. 20h. 37m. 21s. Epicentre 2°·6N. 84°·3W. (as on 1937, July 8d.).

A = +·0992, B = −·9941, C = +·0450; δ = +10; h = +7;
D = −·995, E = −·099; G = +·004, H = −·045, K = −·999.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chinchina		9·0	75	i 2 17	+ 4	e 4 13	+15	—		5·6
Bogota		10·3	79	i 2 35	+ 3	i 4 38	+ 8	i 8 13	PcP	5·2
Galerazamba		12·1	47	—	—	e 5 46	+32	—	—	—
Huancayo		17·1	149	i 4 4	+ 2	e 7 23	+11	—	—	—
La Paz		24·8	140	i 5 25	0	i 9 55	+ 9	—	—	14·6
Tucson		38·6	323	e 7 26	0	—	—	—	—	e 20·6
Palomar	z.	43·2	319	i 8 4	0	—	—	—	—	—
Overton	z.	43·7	324	e 8 9	+ 1	—	—	—	—	—
Riverside	z.	43·9	319	i 8 9	− 1	—	—	—	—	—
Pasadena	z.	44·5	319	i 8 14	− 1	—	—	—	—	—
Hungry Horse		52·2	335	i 9 13	− 2	—	—	—	—	—
College		76·6	337	e 11 52	− 2	—	—	—	—	—
Tamanrasset	z.	88·8	67	i 12 59k	+ 2	—	—	e 16 28	PP	—

Additional readings :—
Bogota e = 3m.9s.
Palomar iZ = 8m.12s.
Hungry Horse e = 9m.20s.

April 24d. Readings also at 0h. and 1h. (Tamanrasset), 3h. (Andijan, Fergana, near Garm, Obi-garm, Stalinabad, Tamanrasset, near Alicante, Granada, Malaga, and Toledo), 5h. (near Alicante), 6h. (near La Paz), 8h. (near Istanbul), 9h. (Palomar, Riverside, Tucson, Boulder City, Pierce Ferry, Hungry Horse, College, and near Tacubaya), 10h. and 11h. (Tamanrasset), 15h. (Collmberg, Stuttgart, Ksara, Tucson, Pierce Ferry, Hungry Horse, College, Shasta Dam, Nanking, and near Mizusawa), 17h. (near La Paz), 18h. (near Tacubaya), 21h. (near Prague), 23h. (near Istanbul).

April 25d. 22h. Region of Vancouver.

Arcata ePE = 39m.14s., eZ = 39m.38s. and 40m.9s., eN = 40m.18s., eE = 40m.22s., eN = 40m.45s., eNZ = 41m.6s., eZ = 44m.12s.
Shasta Dam eP = 39m.22s., eS? = 40m.16s. and 40m.23s., eL = 41m.6s.
Mineral iPZ = 39m.29s., iZ = 39m.41s., eS? = 40m.52s.
Seattle iPZ = 39m.30s.k, iZ = 39m.36s., iP* = 39m.42s., i = 39m.52s. and 40m.13s., iZ = 40m.19s., eS = 40m.36s., i = 40m.42s., 40m.51s., and 41m.9s., iL = 41m.20s.
Victoria e = 39m.32s., 39m.40s., 39m.50s., and 40m.38s.
Reno ePZ = 39m.52s., eN = 40m.7s., eZ = 40m.13s., eNZ = 40m.34s., eE = 40m.44s., eN = 42m.12s.
Lick ePZ = 39m.57s.a, iZ = 40m.4s.
Fresno ePZ = 40m.17s.a.
Tinemaha ePZ = 40m.31s.
Hungry Horse iP = 40m.37s., i = 40m.42s., and 40m.53s.
Pasadena ePZ = 40m.55s.
Crest Line ePZ = 41m.0s.
Riverside ePZ = 41m.2s.
Overton iPZ = 41m.4s.
Boulder City eP = 41m.5s.
Pierce Ferry eP? = 41m.9s.
Berkeley SNZ = 41m.14s., eZ = 41m.54s., eN = 43m.0s., eZ = 44m.6s.
Tucson iP = 42m.10s., e = 42m.30s. and 43m.20s., eL? = 49m.35s.
College eP = 43m.25s.
Long waves were also recorded at Butte, Santa Clara, Salt Lake City, Ukiah, Ottawa, Philadelphia, and Scoresby Sund.

April 25d. Readings also at 1h. (Brisbane, Mount Wilson, Riverside, Tinemaha, Tucson, Pierce Ferry, Shasta Dam, Hungry Horse, College, Tamanrasset, near Andijan, Obi-garm, Samarkand, Stalinabad), 4h. (Hungry Horse, College, Tamanrasset, Ksara, near Abastumanj, Borzhomi, Erevan, Gori, Grozny, Leninakan, Piatigorsk, Shemakla, Tiflis, and Zugdidi), 5h. (Rome and near Tortosa), 7h. (Triest), 8h. (Rome), 9h. (College, Samarkand, near Andijan, Frunse, Fergana, Naryn, Obi-garm, Stalinabad, Tashkent, and Tchimkent), 12h. (Budapest), 13h. (near Bandong, Djakarta, and near Messina), 15h. (Bogota, Chinchina, Huancayo, La Paz, and near Istanbul), 16h. (Tucson, Pierce Ferry, Overton, Lick, College, Tamanrasset, Obi-garm, Tashkent, near Fergana, Frunse, Garm, Stalinabad, Tchimkent, near Messina, and near Tananarive), 17h. (near Hungry Horse, Istanbul, Tamanrasset, near Stuttgart, Neuchatel, Basle, Zürich, and Chur), 18h. (Prague, and near Algiers Univ.), 19h. (La Paz, Collmberg, Prague, Stuttgart, Zagreb, and near Triest), 22h. (Crest Line, Pasadena, Riverside, Tinemaha, Tucson, Boulder City, Pierce Ferry, Shasta Dam, Hungry Horse, and College (2)), 23h. (Tananarive and Wellington).

April 26d. 7h. 4m. 55s. Epicentre 33°·7N. 135°·8E. Focus at Base of Superficial Layers.
(as on 1948, June 15d.).

Intensity VI at Siomisaki, Owase, and Kyoto ; V at Osaka, Sumoto, Irako, Tu, Kobe, Hikone, Nagoya, Gihu, Turuga, Koti, and Tottori ; IV at Iida, Hukui, Hunatu, Kohu, Matsue, Takamatsu, and Yonago ; II-III at Simidu, Hirosima, Toyama, Osima, Saigo, Hamada, Tokyo, Kakioka, and Yokohama. Macroseismic radius >300km.

Epicentre 33°·8N. 135°·8E. Depth 40km.

The Seismoligical Bulletin of the C.M.O., Japan, for the year 1950, Tokyo, 1952, pp. 18-19, with macroseismic chart.

$A = -\cdot5977$, $B = +\cdot5812$, $C = +\cdot5523$; $\delta = +7$; $h = +1$;
$D = +\cdot697$, $E = +\cdot717$; $G = -\cdot396$, $H = +\cdot385$, $K = -\cdot834$.

	△	Az.	P.	O−C.	S.	O−C	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Siomisaki	0·3	186	0 9a	+ 1	0 16	+ 1	—	—	—
Owase	0·5	36	0 12k	+ 2	0 19	+ 1	—	—	—
Osaka	1·0	344	0 19k	+ 1	0 30	− 1	—	—	—
Sumoto	1·0	310	0 20k	+ 2	0 32	+ 1	—	—	—
Kobe	1·1	328	0 21k	+ 2	0 33	0	—	—	—
Kameyama	1·3	26	0 22a	0	—	—	—	—	—
Kyoto	1·3	357	0 23a	+ 1	0 35	− 3	—	—	—
Muroto	1·4	252	0 34	+11	—	—	—	—	—
Nagoya	1·8	33	0 29a	0	0 51	0	—	—	—
Gihu	1·9	24	0 31a	0	0 47	− 7	—	—	—
Hikone	1·9	13	0 28a	− 3	0 43	−11	—	—	—
Koti	1·9	268	0 36a	+ 5	0 57	+ 3	—	—	—
Toyooka	2·0	336	0 33a	+ 1	0 54	− 2	—	—	—
Matuyama	2·5	273	0 44a	+ 5	1 3	− 6	—	—	—
Shizuoka	2·5	57	0 42a	+ 3	1 7	− 2	—	—	—
Simidu	2·6	249	0 44a	+ 3	1 14	+ 3	—	—	—
Hirosima	2·9	283	0 45a	0	1 17	− 2	—	—	—
Hunatu	3·0	53	0 47a	+ 1	1 9	−13	—	—	—
Kohu	3·0	49	0 49a	+ 3	1 41	+19	—	—	—
Misima	3·0	61	0 45	− 1	1 37	+15	—	—	—
Osima	3·1	69	0 49a	+ 1	1 22	− 2	—	—	—
Toyama	3·2	21	0 49a	0	1 39	+12	—	—	—
Hamada	3·3	298	0 52a	+ 1	1 30	+ 1	—	—	—
Matusiro	3·5	34	0 53a	0	1 44	+10	—	—	—
Ooita	3·5	264	0 58a	+ 5	2 7	+33	—	—	—
Nagano	3·6	33	0 57	+ 2	—	—	—	—	—
Yokohama	3·6	61	0 58a	+ 3	1 30	− 7	—	—	—
Kumagaya	3·8	48	0 59a	+ 1	1 57	+15	—	—	—
Maebasi	3·8	43	0 59a	+ 1	1 57	+15	—	—	—
Tokyo	3·8	58	0 59a	+ 1	1 55	+13	—	—	—
Wazima	3·8	13	0 56a	− 2	1 51	+ 9	—	—	—
Miyazaki	4·1	245	1 5a	+ 3	1 47	− 2	—	—	—
Tukubasan	4·3	53	1 6	+ 1	2 3	+ 9	—	—	—
Kakioka	4·4	53	1 7a	+ 1	—	—	—	—	—
Kumamoto	4·4	260	1 11a	+ 5	2 29	+32	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Utunomiya		4·4	48	1 6a	0	2 19	+22	—	—	—
Hukuoka		4·5	272	1 13a	+ 5	2 26	+26	—	—	—
Mito		4·7	54	1 9	− 1	2 27	+22	—	—	—
Aikawa		4·8	24	1 11	− 1	2 14	+ 7	—	—	—
Nagasaki		5·1	261	1 18a	+ 2	2 26	+11	—	—	—
Onahama		5·2	51	1 18a	0	2 44	+27	—	—	—
Hukusima		5·5	42	1 21a	− 1	2 35	+10	—	—	—
Tomie		6·0	262	1 41	+12	3 30	+53	—	—	—
Sendai		6·1	41	1 30a	0	2 51	+11	—	—	—
Akita		6·9	29	1 41a	0	3 12	+12	—	—	—
Mizusawa	N.	6·9	37	1 41	0	3 5	+ 5	—	—	—
Morioka		7·4	34	1 47a	− 1	3 20	+ 8	—	—	—
Miyako		7·7	39	1 52a	− 1	3 29	+ 9	—	—	—
Aomori		8·1	28	1 59	+ 1	3 55	+25	—	—	—
Hatinohe		8·2	32	1 59a	− 1	3 49	+17	—	—	—
Mori		9·2	23	2 14	+ 1	4 14	+17	—	—	—
Vladivostok		9·9	343	i 2 19	− 4	4 1	−13	—	—	—
Sapporo		10·3	23	2 27	− 1	4 41	+17	—	—	—
Nemuro		12·3	36	2 54	− 2	—	—	—	—	—
Zi-ka-wei		12·4	262	e 3 21	PPP	—	—	i 3 31	?	6·6
Nanking	Z.	14·4	268	i 3 23	0	i 6 11	+ 8	i 3 41	PP	6·9
Guam		21·7	157	4 51	+ 1	8 55	+12	—	—	—
Klyuchi		28·4	30	e 5 55	+ 1	—	—	—	—	—
Irkutsk		29·2	320	6 0	− 1	10 50	0	—	—	—
Semipalatinsk		43·4	311	8 0	− 1	—	—	—	—	—
Przhevalsk		45·3	300	i 8 15	− 1	e 14 52	− 2	—	—	—
Almata		46·2	301	i 8 24	0	i 15 7	0	—	—	—
Naryn		47·2	299	i 8 30	− 1	i 15 20	− 1	—	—	—
Frunse		48·0	300	e 8 38	0	i 15 34	+ 2	—	—	—
Djakarta		48·2	221	e 8 28	−11	i 15 26	− 9	—	—	—
Bandong		48·4	220	e 8 30	−11	i 15 31	− 7	—	—	—
New Delhi		49·8	282	i 8 51	− 1	i 15 55	− 3	18 36	S_eS	—
Andijan		50·0	298	8 52	− 1	16 0	0	—	—	—
Fergana		50·6	298	8 56	− 2	16 7	− 2	—	—	—
Tchimkent		51·7	301	9 5	− 1	—	—	—	—	—
Tashkent		52·2	300	e 9 9	− 1	i 16 28	− 3	—	—	—
Obi-garm		52·6	296	i 9 14	+ 1	i 16 35	− 1	—	—	—
Stalinabad		53·3	297	i 9 16	− 2	i 16 43	− 3	—	—	—
Hyderabad	N.	53·6	268	e 9 18	− 2	i 16 45	− 5	19 2	S_eS	25·8
College		54·3	31	i 9 23	− 2	e 16 57	− 2	i 9 37	pP	—
Samarkand		54·3	298	i 9 23	− 2	e 16 57	− 2	—	—	—
Sverdlovsk		54·6	320	i 9 26	− 2	17 0	− 3	—	—	—
Poona		56·9	272	i 9 41	− 3	17 30	− 4	19 22	S_eS	—
Bombay		57·6	273	e 9 50	+ 1	i 17 43	0	21 21	SS	25·0
Colombo	E.	58·0	256	e 9 55	+ 3	(17 45)	− 3	13 25	PPP	17·8
Kodaikanal	E.	58·1	262	9 55	+ 3	i 17 47	− 3	—	—	26·4
Mary		58·7	299	9 59	+ 2	—	—	—	—	—
Honolulu		59·3	83	—	—	e 18 7	+ 2	—	—	e 24·7
Ashkabad		61·3	299	e 10 17	+ 3	18 32	+ 1	—	—	—
Sitka		61·7	39	e 10 19	+ 2	e 18 39	+ 3	i 19 9	sS	e 25·8
Brisbane		63·0	163	i 10 27k	+ 1	e 19 8	+16	i 12 36	PP	—
Baku		66·3	305	e 10 50	+ 3	19 35	+ 2	—	—	—
Shemakha		67·1	306	i 10 53?	+ 1	19 49?	+ 7	—	—	—
Grozny		67·8	309	e 10 58	+ 1	e 19 48	− 3	—	—	—
Pulkovo		68·7	299	e 11 2	0	19 57	− 5	—	—	—
Riverview		68·7	167	i 11 7a	+ 5	i 20 31	+29	i 20 48	sS	e 33·6
Tiflis		69·2	307	i 11 4	− 1	—	—	—	—	—
Piatigorsk		69·3	310	e 11 35?	+29	—	—	—	—	—
Gori		69·5	308	e 11 7	0	—	—	—	—	—
Borzhomi		70·1	308	e 11 9	− 2	—	—	—	—	—
Leninakan		70·3	307	e 11 24?	+12	e 20 30?	+10	—	—	—
Abastumanj		70·5	308	e 11 14	+ 1	—	—	—	—	—
Helsinki		70·7	332	—	—	i 20 21	− 4	—	—	e 35·1
Zugdidi		70·7	310	e 11 15	+ 1	20 20	− 5	—	—	—
Sotchi		71·6	311	e 11 16	− 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		72·0	44	11 23k	+ 1	20 43	+ 3	i 11 36	pP	—
Seattle		73·1	44	i 11 30k	+ 1	i 20 55	+ 2	i 11 44	pP	—
Theodosia		73·6	313	e 11 31	− 1	e 20 55	− 3	—	—	—
Upsala		73·9	333	—	—	i 20 53	− 9	i 21 31	S_eS	e 31·8
Yalta		74·6	313	11 35	− 3	21 4	− 6	—	—	—
Scoresby Sund		74·9	353	i 11 39	0	i 21 11	− 2	i 11 53	pP	36·1
Shasta Dam		76·8	50	i 11 50	0	i 21 34	0	i 12 5	pP	—
Ukiah		77·1	52	—	—	e 21 37	0	e 27 0	SS	e 32·3
Hungry Horse		77·3	40	i 11 54	+ 1	e 21 34	− 5	i 12 8	pP	—
Warsaw		77·3	326	e 11 53	0	21 37	− 2	e 12 9	pP	e 35·1
Mineral	z.	77·5	50	e 11 51a	− 3	e 21 53	+12	i 12 8	pP	—
Berkeley		78·4	53	i 11 59a	0	i 21 51	0	i 12 12	pP	—
Saskatoon		78·6	35	12 16	pP	21 54	+ 1	27 7	SS	34·1
Copenhagen		78·7	332	i 12 1	+ 1	i 21 53	− 1	i 12 14	pP	35·6
Santa Clara		78·9	53	—	—	(e 21 53)	− 3	—	—	e 21·9
Lick	z.	79·1	53	i 12 4a	+ 1	—	—	i 12 17	pP	—
Reno		79·1	49	i 12 5a	+ 2	i 22 1	+ 3	i 12 17	pP	—
Ksara		79·3	304	i 12 3k	− 1	e 22 1	+ 1	12 21	pP	—
Bucharest		79·4	318	e 11 41	−23	e 21 59	− 3	e 21 50	?	—
Butte	N.	79·5	41	—	—	e 22 1	− 2	—	—	—
Istanbul		79·6	313	e 12 5?	0	e 22 2	− 2	—	—	—
Skalnate Pleso		79·6	323	e 12 11	+ 6	e 22 0	− 4	e 12 22	pP	—
Bozeman		80·6	41	e 12 27	pP	e 22 13	− 1	—	—	—
Fresno		80·7	53	i 12 12a	+ 1	e 21 59	−16	i 12 25	pP	—
Potsdam	z.	80·8	330	i 12 10k	− 2	i 22 17	+ 1	i 12 25	pP	e 40·1
Budapest	N.	81·3	323	e 12 29	pP	22 21	0	—	—	42·1
Ogyalla		81·5	323	e 12 18	+ 2	e 22 24	+ 1	e 12 31	pP	e 38·1
Tinemaha		81·5	51	i 12 17	+ 1	e 22 26	+ 3	i 12 31	pP	—
Collmberg		81·6	328	e 12 29	pP	e 22 20	− 4	e 15 21	PP	e 42·4
Prague		81·8	327	e 12 12	− 5	i 22 24	− 2	i 12 25?	pP	e 39·1
Haiwee		82·2	52	i 12 20	+ 1	e 22 32	+ 1	i 12 33	pP	—
Jena		82·5	327	e 12 20	− 1	e 22 28	− 6	e 12 34	pP	—
Cheb		82·7	327	e 12 20	− 2	e 22 27	− 9	e 12 36	pP	e 38·6
Pasadena		83·2	54	i 12 24	0	i 22 36	− 5	i 12 38	pP	e 34·1
Salt Lake City		83·2	46	—	—	e 22 38	− 3	—	—	—
Crest Line	z.	83·8	54	i 12 29	+ 2	i 12 50	sP	i 12 42	pP	—
Riverside		83·9	54	i 12 27	− 1	—	—	i 12 42	pP	—
Zagreb		84·0	323	e 12 24	− 4	e 22 44	− 5	e 12 46	pP	—
Overton	z.	84·2	50	i 12 30	+ 1	i 22 54	+ 3	i 12 45	pP	—
Boulder City		84·3	51	i 12 30	0	e 22 55	+ 3	e 12 46	pP	—
De Bilt		84·3	332	i 12 29k	− 1	e 22 48	− 4	i 12 43	pP	e 36·1
Helwan		84·7	302	i 12 29a	− 3	22 48	− 8	i 12 44	pP	—
Pierce Ferry		84·8	50	i 12 33	+ 1	—	—	i 12 47	pP	—
Stuttgart		85·1	328	e 12 32	− 2	e 22 55	− 4	i 12 47	pP	e 43·1
Triest		85·2	323	e 12 35	+ 1	i 22 51	[− 2]	e 12 53	pP	e 44·1
Karlsruhe		85·3	329	i 12 35	0	e 22 54	[0]	—	—	e 50·1
Ivigtut		85·4	2	e 12 34	− 1	23 3	+ 1	22 51	SKS	43·1
Rapid City	E.	85·8	38	e 12 41	+ 4	e 22 58	[+ 1]	e 27 47	?	—
Strasbourg		85·9	328	e 12 36	− 2	i 23 6	− 1	i 12 48	pP	40·6
Chur		86·4	326	e 12 39k	− 1	e 22 59	[− 2]	—	—	—
Zürich		86·4	328	e 12 39	− 1	e 22 56	[− 5]	e 12 53	pP	—
Basle		86·7	328	e 12 42	0	e 23 14	− 1	e 12 55	pP	—
Kew		86·8	334	i 12 41	− 1	e 23 1	[− 2]	e 12 56	pP	e 34·1
Salo		86·8	325	e 12 45	+ 3	e 23 14	− 2	e 24 15	SP	—
Padova		87·0	324	12 40	− 3	23 0	[− 5]	24 37	SPP	—
Bologna		87·2	324	e 12 56k	pP	e 23 23	+ 3	—	—	—
Rathfarnham Castle		87·3	338	e 12 30?	−15	e 22 35	[−31]	—	—	e 33·1
Besançon		87·7	329	e 12 47	0	—	—	e 12 59	pP	—
Florence Arc.		87·8	323	e 12 43	− 4	23 22	− 4	e 16 11	PP	—
Florence Xim		87·8	323	e 12 42	− 5	i 23 24	− 2	—	—	—
Paris		87·9	332	i 12 47	0	i 23 9	[− 1]	i 13 1	pP	e 43·1
Rome		88·5	322	e 12 50	0	e 23 30	− 2	e 13 3	pP	e 43·8
Tucson		89·2	51	i 12 55	+ 1	e 23 21	[+ 2]	i 13 9	pP	i 42·2
Jersey	E.	89·4	335	e 15 20	?	e 23 38	− 2	—	—	—
Clermont-Ferrand		90·1	329	e 12 56	− 2	e 23 23	[− 1]	i 13 11	pP	44·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tortosa		95·2	327	—	—	e 24 2	[+ 9]	—	—	e 47·1
Seven Falls	E.	96·1	17	—	—	e 23 50	[− 8]	—	—	44·7
Shawinigan Falls	N.	96·1	18	e 13 31	+ 6	e 23 56	[− 2]	—	—	—
Ottawa		96·3	21	e 13 25	− 1	i 24 39	− 1	i 13 39	pP	39·1
St. Louis		96·3	35	e 13 27	+ 1	i 23 57	[− 2]	i 13 40	pP	—
Algiers Univ.	z.	97·2	323	e 13 39	+ 9	—	—	i 17 28	PP	—
Alicante		97·6	327	—	—	(e 31 18)	SS	—	—	e 31·3
Cleveland		97·7	28	e 13 53k	pP	i 24 4	[− 2]	i 24 56	S	49·0
Pennsylvania		99·6	25	i 13 41	0	i 24 9	[− 7]	i 26 44	PS	—
Harvard		100·1	20	i 13 51	+ 7	i 24 18	[0]	e 17 55	PP	e 53·4
Weston		100·1	20	e 13 51	+ 7	i 24 16	[− 2]	e 32 17	SS	—
Fordham		100·9	22	e 17 48	PP	i 24 22	[0]	e 25 24	S	54·9
Lisbon		100·9	332	—	—	24 20	[− 2]	—	—	—
Philadelphia		101·3	24	e 20 5	PPP	e 32 0	SS	—	—	e 41·5
Tamanrasset	z.	106·5	312	e 14 2	−10	e 24 54	[+ 6]	e 14 22	pP	—
Bermuda		111·5	18	e 19 35	PP	e 25 12	[+ 3]	e 28 30	PS	e 44·2
Pietermaritzburg	z.	117·7	251	e 18 44	[+ 1]	—	—	e 19 0	pPKP	—
Pretoria	z.	117·8	256	e 18 44	[+ 1]	—	—	e 19 0	pPKP	—
San Juan		124·1	25	—	—	e 25 50	[− 4]	—	—	e 50·4
Chinchina		131·4	42	—	—	e 22 32	SKP	e 39 19	SS	67·1
Bogota		132·6	41	—	—	i 22 44	PKS	e 39 45	SSP	72·1
Huancayo		144·3	59	i 19 31	[− 2]	e 41 38	SS	—	—	e 68·3
La Paz		152·5	55	i 19 50	[+ 4]	i 30 25	SKKS	i 20 17	PKP_3	75·6

Additional readings :—
Nanking iZ =3m.33s., 4m.2s., and 6m.20s.
New Delhi iN =16m.19s. and 17m.18s.
Hyderabad SSN =20m.50s.
College ePP =11m.25s., ePPP =12m.29s., e =13m.35s., ePKP,PKP =39m.25s.
Poona PPPE =13m.12s., PSN =17m.41s., PPSEN =17m.52s., SSEN =21m.14s., SSSN = 23m.17s.
Sitka eS_cS =20m.9s., eSS =22m.32s.
Brisbane iZ =10m.43s. and 11m.44s.
Riverview iP_cPZ =11m.23s., iE =21m.37s., eQE =30m.11s.
Victoria i =21m.27s.
Seattle i =11m.52s. and 12m.20s., ipP? =12m.31s., i =12m.39s. and 12m.50s., iS_cS = 21m.25s., iPS =21m.41s., i =22m.1s.
Upsala iSE =20m.56s., iPSN =21m.23s., eSS =25m.5s.?, eQN =30m.35s.
Scoresby Sund 14m.15s., 16m.9s., i =21m.41s., SS =25m.48s., and 29m.41s.
Shasta Dam ePP =14m.43s., eS? =21m.23s.
Hungry Horse ePP =14m.49s., esS =22m.2s., ePKP,PKP =38m.30s.
Warsaw SN =21m.33s., PS =22m.3s., eSSN =26m.46s., eSSE =26m.49s.
Mineral iZ =11m.55s. and 12m.27s., ePPZ =15m.0s.
Berkeley eZ =12m.23s. and 13m.13s., ePPE =15m.5s., eS_cS?N =22m.18s., eE =22m.36s.
Saskatoon e =18m.21s.
Lick iZ =12m.25s., 12m.42s., and 13m.11s.
Reno eEN =12m.31s., eZ =12m.42s., 12m.57s., and 13m.21s., eN =21m.4s., eZ = 21m.7s. and 21m.22s., eSEN =21m.45s., eEZ =22m.10s.
Skalnate Pleso e =12m.19s., esP =12m.36s., e =22m.22s.,
Fresno iZ =12m.50s., eZ =14m.33s., and 19m.27s., eE =19m.39s.
Potsdam ePPZ =15m.17s.
Ogyalla esP =12m.45s., e =22m.40s. and 23m.33s.
Collmberg eE =21m.6s., eSSS?N =32m.28s., eSKP,PKP?EN =41m.20s.
Prague i =12m.20s.? and 12m.46s.?, ePS? =22m.45s., eSS =27m.17s., eSSS =31m.59s.
Jena eE =14m,59s., eN =15m.3s., eSKS?E =22m.14s., eSKS?N =22m.17s.?
Cheb e =22m.14s., eSE =22m.24s., ePS =23m.3s., e =26m.10s.
Pasadena ePPZ =15m.27s.
Overton ePPZ =15m.17s., ePPP?Z =17m.27s.
Boulder City e =15m.4s.
De Bilt esS =23m.4s., eSS =28m.23s.
Pierce Ferry iPP =16m.8s.
Stuttgart eZ =12m.59s., e =13m.9s., ePPZ =16m.5s., ePS =23m.44s., eSSS? =33m.53s.
Triest eP_cP =12m.59s., iS_cS =23m.0s., iPS =23m.48s., iPPS =24m.25s., iSS =28m.41s.
Ivigtut 28m.18s.
Strasbourg e =12m.44s., ePP =16m.13s., eSKS =22m.57s., ePS =23m.53s., ePPS = 24m.29s.?
Zürich eS =23m.12s.
Kew ePPEN =16m.18s., eSKSNZ =23m.12s., ePS =24m.12s., eSS =29m.4s.
Salo eE =13m.33s., eN =23m.23s.
Padova e =14m.6s. and 23m.56s.
Bologna eE =13m.9s., eS =23m.41s.
Besançon e =12m.55s. and 13m.12s.

Continued on next page.

Florence Arc. SS =29m.9s.?
Paris i =13m.5s., PP =16m.4s., iPPP =18m.8s. and 18m.14s., e =20m.6s., iS =23m.21s.
Rome ePP =16m.19s., eSKSE =23m.10s., SS =29m.26s.
Tucson e =14m.3s., iPP? =16m.24s., epPP =16m.46s., ePPP? =18m.15s., e =22m.51s., iSKS =23m.24s., iS =23m.43s., ePS =24m.47s., e =26m.29s., ePKP,PKP =38m.30s.
Clermont-Ferrand iPP =16m.45s., iS =23m.49s., e =24m.14s., iPS =24m.49s., ePPS = 25m.16s., eSS =29m.39s., eSSS =33m.20s.
Ottawa iS =23m.52s., PS =25m.52s., SS =30m.41s.
St. Louis ePP =17m.18s.
Algiers Univ. eZ =17m.40s., ePPPZ =19m.34s.
Cleveland eN =22m.22s., eSKKSE =24m.51s., ePPSE =26m.22s., ePPSN =22m.25s., eN =31m.23s., eSSE =31m.38s.
Pennsylvania iEZ =19m.20s., eEN =21m.36s., iZ =25m.41s., eSSEN =31m.46s.
Harvard e =16m.28s. and 23m.42s., ePS =26m.38s., ePPS =27m.35s., eSS =32m.13s., eQ =49m.0s.
Fordham i =26m.49s.
Tamanrasset eZ =16m.47s., iPP?Z =18m.22s., iPPZ =18m.38s., eSKKSZ =25m.29s., iPKKP?Z =30m.1s.
San Juan ePS =29m.36s., eSS =35m.48s.
La Paz iPP =23m.13s., iSS =43m.5s., SKSP =44m.8s.
Long waves were also recorded at Auckland, Christchurch, and Wellington.

April 26d. 12h. 18m. 31s. Epicentre 52°·5N. 170°·0W. Depth of focus 0·005.

$A = -\cdot6020$, $B = -\cdot1062$, $C = +\cdot7914$; $\delta = 0$; $h = -6$;
$D = -\cdot174$, $E = +\cdot985$; $G = -\cdot779$, $H = -\cdot137$, $K = -\cdot611$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		16·8	34	e 3 52	0	e 7 9	+13	i 4 27	pP	e 9·0
Sitka		20·4	63	e 4 37	+ 3	e 8 31	+17	—	—	e 10·2
Victoria		29·5	79	e 6 2	+ 2	—	—	—	—	—
Seattle		30·5	80	e 6 13k	+ 4	—	—	—	—	—
Shasta Dam		34·2	91	i 6 43	+ 2	—	—	e 7 0	pP	—
Mineral	z.	34·9	91	e 6 48a	+ 1	e 12 57	+44	i 7 5	pP	—
Hungry Horse		35·1	74	i 6 51	+ 2	i 13 0	P_cS	i 7 4	pP	—
Berkeley		36·0	95	i 7 11a	pP	—	—	—	—	e 17·5
Reno		36·5	90	e 7 1a	0	e 12 49	+11	e 7 19	pP	—
Lick	z.	36·7	95	i 6 54k	− 8	—	—	i 7 9	pP	—
Fresno	z.	38·2	94	e 7 16a	+ 1	e 13 11	+ 7	e 7 29	pP	—
Tinemaha		39·0	93	i 7 24	+ 2	—	—	i 7 40	pP	—
Haiwee	z.	39·7	93	i 7 29	+ 1	—	—	i 7 46	pP	—
Pasadena		40·9	95	i 7 37	0	—	—	i 7 49	pP	e 17·7
Crest Line	z.	41·4	95	i 7 42	+ 1	—	—	i 7 56	pP	—
Riverside	z.	41·5	95	i 7 42	0	—	—	i 7 56	pP	—
Overton	z.	41·6	90	i 7 45	+ 2	i 13 24	P_cS	i 8 3	pP	—
Boulder City		41·8	91	i 7 46	+ 1	—	—	—	—	—
Pierce Ferry		42·2	90	i 7 48	0	e 13 25	P_cS	—	—	—
Tucson		46·7	92	i 8 25	+ 1	—	—	e 8 42	pP	e 24·8
Ottawa		58·0	56	e 9 47	− 1	—	—	—	—	—
Shawinigan Falls	N.	58·7	53	e 9 52	− 1	—	—	—	—	—
Harvard		62·2	56	i 10 16	− 1	—	—	—	—	—
Weston		62·4	56	i 10 17	− 1	—	—	i 10 53	P_cP	—
Prague		77·7	357	e 11 52	+ 1	e 21 26	−11	e 12 51	?	—
Paris		78·9	7	i 11 55	− 3	—	—	—	—	—
Stuttgart		79·1	1	e 11 55	− 4	—	—	—	—	—
Strasbourg		79·3	2	i 11 57	− 3	—	—	—	—	—
Istanbul		85·4	346	e 12 29?	− 3	—	—	—	—	—
Tamanrasset	z.	104·9	4	13 56	− 5	—	—	—	—	—
Pretoria	z.	150·0	326	i 19 40	[+ 2]	—	—	—	—	—
Pietermaritzburg	z.	152·6	319	i 19 45	[+ 3]	—	—	—	—	—

Additional readings :—
College e =6m.1s., eS? =7m.15s.
Shasta Dam eP_cP? =9m.12s.
Hungry Horse iP_cP =9m.17s.
Berkeley eN =10m.38s., eZ =10m.58s., eNZ =13m.59s., eN =16m.11s.
Reno eEZ =13m.3s.
Lick iP_cPZ =9m.21s.
Fresno eZ =8m.11s.
Tucson eP_cP =9m.53s., ePPP =11m.8s.
Long waves were also recorded at Seven Falls and Scoresby Sund.

April 26d. 18h. 56m. 35s. Epicentre 44°·5N. 151°·0E (as given by Strasbourg).

Suggested depth 200km. (U.S.C.G.S.).

$A = -·6259$, $B = +·3469$, $C = +·6985$; $\delta = -1$; $h = -3$;
$D = +·485$, $E = +·875$; $G = -·611$, $H = +·339$, $K = -·716$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa		9·1	237	2 27	+13	e 3 45	−15	3 42	?	—
Vladivostok		13·9	271	e 3 15	− 6	5 53	− 4	—	—	—
Nanking	z.	28·0	256	e 5 51	− 4	11 9	+31	—	—	e 14·4
College		38·8	37	i 7 31	+ 3	—	—	e 8 33	pP	—
Naryn		53·2	297	e 9 21	− 1	—	—	—	—	—
Frunse		53·3	298	e 9 22	− 1	—	—	—	—	—
Sverdlovsk		54·5	319	e 9 30	− 2	e 17 5	− 5	—	—	—
Andijan		55·9	297	9 39	− 3	—	—	—	—	—
Fergana		56·4	297	e 9 43	− 2	e 17 32	− 4	—	—	—
Tchimkent		56·8	300	e 9 45	− 3	—	—	—	—	—
Tashkent		57·5	299	e 9 52	− 1	e 17 45	− 5	—	—	—
Garm		58·1	296	e 9 54	− 4	—	—	—	—	—
Obi-garm		58·7	296	i 10 4	+ 2	—	—	—	—	—
Stalinabad		59·4	296	i 10 3	− 3	18 10	− 5	—	—	—
Samarkand		59·9	298	e 10 9	− 1	—	—	—	—	—
Shasta Dam		60·9	61	e 10 33	+16	—	—	—	—	—
Hungry Horse		61·4	50	e 10 21	+ 1	—	—	i 10 33	pP	—
Pasadena	z.	67·6	64	e 11 15	P_cP	—	—	—	—	—
Riverside	z.	68·2	64	e 11 19	P_cP	—	—	—	—	—
Overton	z.	68·4	60	e 11 9	+ 3	—	—	—	—	—
Boulder City		68·5	61	e 11 11	+ 5	—	—	—	—	—
Pierce Ferry		68·9	60	e 11 12	+ 3	—	—	—	—	—
Baku		69·8	308	e 11 16	+ 2	—	—	—	—	—
Grozny		70·1	313	e 11 17	+ 1	—	—	—	—	—
Shemakla		70·3	309	e 11 25	+ 8	—	—	—	—	—
Tiflis		71·7	312	e 11 26	0	e 20 44	− 1	—	—	—
Gori		71·9	313	e 11 17	−10	—	—	—	—	—
Abastumanj		72·8	314	e 11 32	0	—	—	—	—	—
Leninakan		72·9	312	e 11 35	+ 2	—	—	—	—	—
Tucson		73·5	61	e 11 43	+ 7	—	—	e 12 32	pP	—
Potsdam	z.	76·9	337	i 11 57k	+ 1	—	—	—	—	47·4
Prague		78·5	334	e 12 16	P_cP	—	—	—	—	—
Stuttgart		81·3	336	e 12 17	− 3	—	—	—	—	e 46·4
Ksara		82·3	311	e 12 27	+ 2	23 53	PPS	—	—	—

Additional readings:—
College i = 7m.43s.
Pasadena iZ = 11m.20s.
Tucson e = 11m.51s.
Stuttgart eZ = 12m.33s.
Long waves were also recorded at Harvard and at other European stations.

April 26d. Readings also at 6h. (La Paz, near Huancayo and near Messina), 7h. (near Messina (3)), 9h. (near Istanbul), 10h. (Alicante), 11h. (Pierce Ferry and Tucson), 12h. (near Mizusawa, College, and Shasta Dam), 13h. (near Mizusawa), 14h. (College, Hungry Horse, Overton, Pierce Ferry, Shasta Dam, and near Apia), 15h. (Istanbul), 16h. (Alicante), 17h. (near Alicante and near Andijan), 18h. (College and Bucharest), 20h. (Apia, College, Overton, Pierce Ferry, and near Obi-garm), 21h. (College).

April 27d. 14h. 18m. 38s. Epicentre 46°·5N. 149°·5E. (as on 1948, Dec. 15d.).

$A = -\cdot5952$, $B = +\cdot3506$, $C = +\cdot7231$; $\delta = +6$; $h = -4$;
$D = +\cdot508$, $E = +\cdot862$; $G = -\cdot623$, $H = +\cdot367$, $K = -\cdot691$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Mizusawa	E.	9·6	223	—	—	4 11	− 1	—	—
Vladivostok		13·0	260	e 3 10	+ 1	e 5 43	+ 8	—	—
College		37·9	38	i 7 22	+ 2	—	—	—	—
Victoria		55·7	54	e 9 40	0	—	—	—	—
Hungry Horse		60·9	49	i 10 16	− 1	—	—	i 10 50	pP
Shasta Dam		60·9	61	e 10 17	0	—	—	—	—
Mineral	z.	61·6	61	e 10 21 a	− 1	—	—	—	—
Tinemaha	z.	65·6	61	i 10 48	0	—	—	—	—
Haiwee	z.	66·4	62	i 10 53	0	—	—	—	—
Pasadena	z.	67·6	63	i 11 0	− 1	—	—	—	—
Crest Line	z.	68·1	63	i 11 3	− 1	—	—	e 12 5	pP
Riverside	z.	68·2	63	i 11 3	− 1	—	—	e 12 5	pP
Overton	z.	68·3	59	i 11 5	0	—	—	—	—
Boulder City		68·4	60	e 11 6	0	—	—	—	—
Pierce Ferry		68·8	60	i 11 9	+ 1	—	—	—	—
Tucson		73·4	61	i 11 35	− 1	—	—	e 12 8	pP
Harvard		84·2	29	i 12 30	− 4	—	—	—	—

Hungry Horse gives also i = 11m.15s.

April 27d. Readings also at 0h. (Pietermaritzburg, Pretoria, and near Obi-garm), 3h. (Bucharest and Istanbul), 4h. (near Obi-garm), 6h. (near Zürich), 7h. (Andijan), 9h. (Auckland, Christchurch, Kaimata, near Arapuni, New Plymouth, Tuai, and Wellington), 10h. (Tucson, Shasta Dam, College, and near Apia), 11h. (Ashkabad), 13h. (Crest Line, Pasadena, Riverside, Tucson, Overton, Pierce Ferry, Shasta Dam, Hungry Horse, College, near Apia, and near Zürich), 14h. (Garm, and near Obi-garm), 16h. (near Tiflis), 20h. (Istanbul and near Alicante), 21h. (College), 22h. (Tamanrasset).

April 28d. Readings at 0h. (College), 1h. (near Zagreb), 2h. (Obi-garm, Samarkand, near Andijan, Fergana, Stalinabad, Tchimkent, and near Huancayo), 3h. (near Malaga), 5h. (near Apia), 6h. (College, Tucson, Stalinabad, near Andijan and Obi-garm (2)), 7h. (Stalinabad, and near Obi-garm), 11h. (Tamanrasset, Fergana, Tchimkent, near Andijan, Obi-garm, and Stalinabad), 12h. (near Obi-garm), 17h. (Crest Line, Mount Wilson (2), Riverside (2), Tucson (2), Overton (2), Pierce Ferry (2), Lick, Shasta Dam (2), Hungry Horse (2), College (2), Tashkent, Sverdlovsk, Istanbul (2), and Tamanrasset (2)), 18h. (Hungry Horse, College, and near Alicante), 20h. (near Victoria (6), near Andijan, and near Shemakla), 21h. (Istanbul, Hungry Horse, and College), 22h. (Pierce Ferry, Hungry Horse, and College), 23h. (Samarkand, near Andijan, Fergana, Garm, Obi-garm, and Stalinabad).

April 29d. 20h. 22m. 3s. Epicentre 15°·5S. 167°·1E. Depth of focus 0·010.
(as on 1946, December 7d.).

$A = -\cdot9398$, $B = +\cdot2152$, $C = -\cdot2656$; $\delta = +8$; $h = +6$;
$D = +\cdot223$, $E = +\cdot975$; $G = +\cdot259$, $H = -\cdot059$, $K = -\cdot964$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		17·7	225	i 3 56	− 6	e 7 18	+ 5	—	—	—
Apia		20·5	89	e 4 33	+ 1	—	—	—	—	—
Riverview		23·2	216	i 5 4	+ 5	i 9 11	+11	—	—	e 11·0
Wellington		26·5	168	—	—	e 10 33	+38	—	—	e 15·0
Lick	z.	85·0	50	e 12 27 k	+ 1	—	—	e 12 40	pP	—
Shasta Dam		85·9	46	e 12 30	0	—	—	i 12 49	pP	—
Fresno	z.	86·2	51	e 12 39 a	+ 7	—	—	e 12 49	pP	—
Mineral	z.	86·3	47	e 12 31 k	− 1	—	—	e 12 50	pP	—
Mount Wilson	z.	86·5	54	e 12 32	− 1	—	—	i 12 51	pP	—
Riverside	z.	87·0	54	e 12 35	− 1	—	—	i 12 53	pP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		87·1	18	i 12 34	− 2	—	—	—	—	—
Reno	z.	87·2	48	e 12 47k	+11	—	—	e 13 0	pP	—
Haiwee	z.	87·3	52	e 12 56	pP	—	—	—	—	—
Tinemaha	z.	87·4	51	e 12 39	+ 2	—	—	i 12 54	pP	—
Victoria		88·5	39	e 12 40	− 3	—	—	e 13 0	pP	—
Boulder City		89·6	53	e 12 41	− 7	—	—	i 13 7	pP	—
Overton	z.	90·1	52	i 12 51	+ 1	—	—	i 13 9	pP	—
Pierce Ferry		90·3	53	i 12 51	0	—	—	i 13 10	pP	—
Tucson		91·6	57	e 12 55	− 2	—	—	e 13 16	pP	—
Hungry Horse		94·2	42	e 13 28	+19	—	—	—	—	—
Collmberg	z.	138·7	336	e 19 12?	[− 3]	—	—	—	—	—
Stuttgart	z.	142·2	336	e 19 15?	[− 6]	—	—	—	—	—
Strasbourg		142·9	338	i 19 24	[+ 2]	—	—	—	—	—
Paris		144·5	343	i 19 26	[+ 1]	—	—	—	—	e 84·0
Besançon		144·7	337	i 19 26	[+ 1]	—	—	—	—	—
Tamanrasset	z.	161·2	295	e 19 51	[+ 2]	—	—	—	—	—

Additional readings :—
Shasta Dam e =13m.14s.
Fresno eZ =13m.53s.
Tinemaha iZ =13m.2s.
Overton eZ =13m.39s.
Collmberg Z =19m.16s. and 19m.19s.
Stuttgart ePKPZ =19m.22s.
Paris i =19m.36s.
Besançon i =19m.34s., e =20m.57s.
Tamanrasset iZ =20m.0s., eZ =20m.26s.
Long waves were also recorded at Auckland and Christchurch.

April 29d. Readings also at 2h. (near Bogota), 3h. (Pretoria and near Chinchina), 7h. (Andijan, Fergana, Garm, near Obi-garm, and Stalinabad), 8h. (Huancayo), 9h. (near Apia), 10h. (Tucson, Overton, Pierce Ferry, and College), 12h. (near Andijan), 13h. (Pretoria), 14h. (Collmberg and Stuttgart), 15h. (Pasadena, Tucson, Overton, Pierce Ferry, Shasta Dam, Hungry Horse, College, Pretoria, and Warsaw), 16h. (Tucson), 17h. (near Alicante (2)), 18h. (Rome), 22h. (Almata, Samarkand, near Andijan, Fergana, Frunse, Garm, Obi-garm, Stalinabad, Tashkent, and Tchimkent).

April 30d. 10h. 29m. 1s. Epicentre 25°·0S. 112°·5W.

A = −·3472, B = −·8383, C = −·4203 ; δ = −5 ; h = +3 ;
D = −·924, E = +·383 ; G = +·161, H = +·388, K = −·907.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		37·4	76	e 7 15	− 1	i 13 11	+ 6	e 8 47	PP	i 15·8
La Paz		42·2	88	i 8 1	+ 5	i 14 17	0	8 25	PP	20·8
Tacubaya		46·0	18	e 8 31	+ 4	e 15 20	+ 8	—	—	22·1
Bogota	z.	47·6	57	i 8 39	0	—	—	—	—	—
Galerazamba		50·8	50	—	—	e 17 24	+64	—	—	21·0
Tucson		56·9	2	e 9 48	− 1	e 17 40	− 2	e 12 18	PP	e 28·1
Riverside	z.	58·9	355	e 10 0	− 3	—	—	—	—	—
Crest Line	z.	59·1	355	e 10 2	− 2	—	—	—	—	—
Pasadena		59·1	355	e 10 3	− 1	i 18 11	0	—	—	e 24·8
Boulder City		60·7	358	e 10 15	0	—	—	—	—	—
Pierce Ferry		60·8	359	e 10 15	− 1	—	—	—	—	—
Haiwee	z.	61·0	355	e 10 19	+ 1	—	—	—	—	—
Overton	z.	61·2	358	i 10 18	− 1	—	—	i 11 39	PcP	—
Wellington		61·4	235	10 38	+18	18 47	+ 7	20 19	ScS	26·0
Fresno		61·8	354	e 10 22a	− 1	—	—	e 14 3	PPP	e 30·6
Tinemaha		62·0	355	e 10 24	0	—	—	—	—	—
Auckland	N.	62·1	240	—	—	18 58	+ 9	—	—	26·1
San Juan		62·4	50	e 10 27	0	e 18 47	− 6	e 22 39	SS	e 25·8
Christchurch		62·6	232	—	—	19 3	+ 7	e 23 9	SS	e 29·0
Lick	z.	62·6	352	e 10 28k	0	—	—	e 12 35	PP	e 37·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Clara		62·7	352	e 10 54	+25	e 19 5	+ 8	—	—	e 28·8
Berkeley		63·2	352	e 10 35a	+ 3	e 19 7	+ 4	e 15 44	PcS	e 32·7
Honolulu		63·7	313	—	—	e 19 53	+43	—	—	e 29·9
Fort de France		63·8	58	e 10 39	+ 3	e 19 11	0	—	—	e 26·4
Reno		64·6	354	e 10 46a	+ 5	e 19 32	+11	—	—	e 32·1
Salt Lake City		65·4	1	—	—	e 19 31	+ 1	—	—	e 27·2
Mineral	Z.	65·6	353	e 10 48k	0	—	—	—	—	—
Shasta Dam		66·0	352	e 10 49	− 1	—	—	—	—	—
Logan		66·4	1	e 11 21	+28	e 23 48	SS	—	—	e 29·0
St. Louis		66·7	18	e 10 53	− 2	i 19 46	0	i 20 25	PPS	—
Rapid City	E.	69·3	8	e 11 12	+ 1	e 20 18	+ 1	—	—	e 28·6
Chicago		70·3	19	e 10 51	−26	e 20 23	− 6	e 24 51	SS	e 31·0
Washington		71·7	28	e 11 28	+ 2	—	—	—	—	e 35·0
Cleveland		72·1	24	e 11 30	+ 2	e 20 47	− 3	e 21 37	PS	—
Seattle		72·9	353	e 11 35	+ 2	—	—	e 11 51	PcP	—
Hungry Horse		73·0	359	e 11 31	− 2	—	—	—	—	—
Bermuda		73·0	41	—	—	e 21 9	+ 9	—	—	e 29·4
Pennsylvania		73·0	27	i 11 32	− 1	i 20 56	− 4	i 21 46	SeS	—
Philadelphia		73·4	29	e 11 37	+ 1	e 21 1	− 4	e 25 55	SS	e 29·4
Victoria		73·8	353	e 11 36	− 2	—	—	—	—	—
City College, N.Y.		74·6	29	e 11 44	+ 1	e 21 14	− 4	e 25 37	SS	e 31·2
Fordham		74·7	29	e 11 43	0	e 21 21	+ 2	e 26 19	SS	40·5
Saskatoon		77·0	4	—	—	e 21 39	− 6	—	—	33·0
Harvard		77·1	29	e 11 56	− 1	e 21 46	0	—	—	e 34·8
Weston		77·1	29	e 11 53	− 4	e 21 45	− 1	e 26 43	SS	—
Ottawa		77·7	26	12 3	+ 3	21 55	+ 3	e 26 49	SS	38·0
Seven Falls	E.	81·0	27	e 12 28	+10	i 22 28	+ 1	—	—	39·0
Riverview		81·4	237	i 12 34a	+14	e 22 37	+ 6	e 27 55	SS	e 38·1
Sitka		84·4	348	—	—	e 22 59	− 2	—	—	e 35·1
College		93·7	346	e 13 20	0	—	—	—	—	—
Scoresby Sund		113·5	21	—	—	34 59	SS	—	—	55·0
Granada		119·2	59	—	—	27 13	{+ 5}	36 3	SS	50·6
Aberdeen	E.	121·6	36	—	—	i 35 59	SS	i 44 55	Q	e 57·7
Kew		122·8	43	—	—	e 30 30	PS	e 37 25	SS	e 58·0
Tamanrasset	Z.	123·7	78	e 19 1	[+ 1]	—	—	e 20 47	PP	—
Paris		124·7	46	—	—	e 30 47	PS	e 37 53	SS	e 58·0
Clermont-Ferrand		125·1	50	—	—	e 37 57	SS	e 38 11	SSP	59·5
Strasbourg		128·2	46	e 20 2	?	e 22 16	PKS	e 30 59?	PS	71·7
Stuttgart		129·1	46	e 19 14	[+ 4]	e 28 59	{+45}	e 54 59?	Q	61·0
Djakarta		130·8	237	e 24 58	PPP	—	—	—	—	—
Florence Xim		130·9	52	e 24 35	PPP	—	—	—	—	—
Potsdam	Z.	131·0	41	e 22 40	PKS	i 29 16	{+50}	—	—	62·0
Collmberg		131·1	43	e 19 20	[+ 6]	(e 28 59?)	{+32}	—	—	e 29·0
Rome		131·9	55	e 22 9	PKS	e 32 27	PPS	e 39 16	SS	e 68·0
Prague		132·3	44	e 21 40	PP	e 25 28	?	—	—	e 57·0
Triest		132·5	50	e 21 44	PP	e 31 43	PSKS	e 39 18	SS	—
Istanbul		144·3	53	e 19 32	[− 6]	e 33 15	PS	—	—	—
Helwan		147·6	73	e 19 50	[+ 6]	e 42 23	SS	e 23 47	PP	—
Ksara		151·2	65	e 20 9?	PKP,	33 53	PSKS	—	—	—
Kodaikanal	E.	162·5	215	e 21 27	PKP,	—	—	—	—	—
Bombay		172·2	—	e 20 59	PKP,	e 30 23	PPP	—	—	—

Additional readings :—
Huancayo i =9m.29s.
La Paz SS =17m.59s.
Tacubaya e =8m.52s. and 16m.54s.
Tucson i =9m.59s., ePPP =13m.34s., eSS? =21m.19s.
Wellington SS =22m.21s., eSSS =24m.54s.
Fresno eEN =10m.33s., eZ =11m.36s.
Christchurch QEN =25m.49s., eSSSZ =26m.9s.
Lick iZ =10m.33s. and 10m.51s.
Berkeley iE =26m.33s., eE =27m.22s., eNZ =28m.59s., iN =30m.59s.
Reno eN =11m.3s. and 11m.53s.
St. Louis iP =10m.58s., iSS =24m.7s.
Cleveland iPNZ =11m.33s., eSE =20m.50s., iSSE =25m.39s.
Seattle e =12m.3s., 12m.47s., and 13m.22s.
Pennsylvania iSSN =25m.43s.

Continued on next page.

City College, New York eS? =20m.42s.
Riverview eQE =34·0m.
Granada PPS =30m.24s.
Kew eZ =37m.50s., eN =39m.20s., eEN =40m.22s., eQEN =51·0m.
Tamanrasset ePPP?Z =23m.14s.
Paris SSS? =43m.59s.?
Clermont-Ferrand Q =52·5m.
Strasbourg eSS =38m.41s., e =48m.59s. and 55m.35s., Q =59·0m.
Stuttgart eZ =19m.33s., e =48m.59s.
Rome eSSS? =43m.21s.
Triest e =23m.45s.
Helwan eZ =20m.8s., 21m.18s., 21m.50s., 22m.8s., 22m.28s., 22m.47s., 23m.59s., 27m.36s., and 28m.8s.
Long waves were also recorded at Brisbane, Ukiah, Grahamstown, Alicante, Tortosa, Copenhagen, Upsala, and Warsaw.

April 30d. 18h. 21m. 37s. Epicentre 10°·3S. 75°·4W. (as on 1939, September 20d.).

Intensity V at Oventeni; IV-V at Satipo; IV at Cerro de Pasco and Tarma. Epicentre 10°·5S. 75°·5W. (U.S.C.G.S.).

E. Silgado.
Datos sismológicos del Perú, 1949, 1950. Bol. No. 4, Lima, 1952, p. 19.

$A = +·2481$, $B = -·9523$, $C = -·1776$; $\delta = -3$; $h = +6$;
$D = -·968$, $E = -·252$; $G = -·045$, $H = +·172$, $K = -·984$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		1·8	178	i 0 25	− 7	—	—	—	—	—
La Paz		9·4	132	e 2 17	− 1	4 39	+32	2 31	PP	5·4
Bogota		14·9	5	i 3 30	− 4	e 6 37	+17	—	—	i 8·9
Chinchina		15·2	359	i 3 48	+10	e 6 23	− 5	i 4 11	PP	8·3
Fort de France		28·6	31	—	—	e 12 21	SS	—	—	—
San Juan		29·9	17	e 6 9	− 3	e 11 17	+ 8	8 33	P_cP	e 13·4
Tacubaya		37·7	321	7 32	+13	13 32	+22	—	—	—
Bermuda		43·7	14	e 8 8	0	—	—	e 9 58	PP	e 25·4
Washington		49·0	359	e 8 51	+ 1	—	—	—	—	—
Philadelphia		50·0	2	e 8 58	0	e 16 13	+ 4	e 11 0	PP	e 25·2
St. Louis		50·6	345	i 9 4	+ 2	e 16 35	+18	i 11 7	PP	—
Florissant		50·8	345	e 9 5	+ 1	—	—	—	—	—
City College, N.Y.		50·9	2	e 9 3	− 2	—	—	—	—	—
Fordham		50·9	2	i 9 7	+ 2	e 16 19	− 2	—	—	26·9
Weston		52·6	5	i 9 18	0	—	—	e 11 19	PP	—
Harvard		52·7	5	i 9 19	+ 1	—	—	e 11 28	PP	e 24·8
Tucson		54·2	323	i 9 32	+ 3	e 17 41	+35	—	—	e 29·4
Ottawa		55·4	0	9 39	+ 1	17 25	+ 3	—	—	31·4
Pierce Ferry		58·8	325	i 10 5	+ 3	—	—	—	—	—
Boulder City		59·2	324	e 10 7	+ 2	—	—	—	—	—
Overton	z.	59·3	325	i 10 9	+ 3	—	—	i 11 12	P_cP	—
Riverside	z.	59·4	320	e 10 8	+ 2	—	—	—	—	—
Rapid City	E.	59·7	338	i 10 10	+ 1	e 18 25	+ 6	—	—	—
Pasadena	z.	60·0	320	e 10 13	+ 2	—	—	—	—	—
Tinemaha	z.	62·0	322	e 9 53	−31	—	—	—	—	—
Fresno	z.	62·7	321	e 10 29a	0	—	—	—	—	—
Lick	z.	64·2	321	i 10 41a	+ 2	—	—	i 11 16	P_cP	—
Reno	z.	64·5	324	e 10 47	+ 6	—	—	e 13 27	PP	—
Mineral	z.	66·0	324	e 10 55	+ 5	—	—	—	—	—
Shasta Dam		66·7	324	e 10 56	+ 1	—	—	—	—	—
Hungry Horse		67·6	334	i 11 2	+ 1	—	—	i 11 11	pP	—
Seattle		71·1	330	e 11 25a	+ 3	—	—	—	—	—
Malaga	z.	81·3	50	i 12 18k	− 2	e 22 16	−14	—	—	43·8
Granada		82·0	50	11 49a	−34	21 58	−39	—	—	41·6
Toledo	z.	82·6	47	i 12 25	− 1	—	—	e 15 13	PP	—
Tamanrasset	z.	85·7	66	i 12 40a	− 2	e 23 13	− 1	i 12 47	P_cP	—
Rathfarnham Castle		86·1	34	i 12 52	+ 8	e 27 12	SS	e 13 48	?	e 47·4
Tortosa		86·2	48	e 12 47	+ 3	23 19	0	—	—	—
Paris		89·8	40	e 12 59	− 3	e 23 23	[− 9]	—	—	e 42·4
Besançon		91·7	43	e 13 7	− 3	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		91·9	336	i 13 12	+ 1	—	—	—	—	—
Strasbourg		93·2	41	e 13 16	− 1	—	—	—	—	49·4
Stuttgart		94·1	41	e 13 19	− 3	—	—	—	—	e 53·4
Rome		95·2	48	—	—	e 26 35	PPS	—	—	e 45·7
Collmberg	z.	96·9	40	e 13 33	− 1	—	—	—	—	—
Ksara		113·3	58	e 14 43	P	e 28 24	PS	—	—	—

Additional readings :—
La Paz SS =4m.59s.
San Juan e =11m.45s.
St. Louis i =9m.13s., e =11m.14s., 16m.5s., and 18m.51s.
Tucson e =10m.44s.
Fresno eE =10m.45s., eN =11m.21s.
Lick iZ =10m.49s. and 11m.53s.
Reno eN =11m.0s. and 11m.25s., eZ =11m.47s., eN =11m.56s.
Seattle e =11m.30s., 11m.38s., and 12m.34s.
Toledo eZ =13m.9s. and 13m.48s.
Tamanrasset ePPZ =16m.16s., ePPPZ =18m.12s., eZ =22m.35s.
Paris i =13m.7s.
Besançon e =13m.16s.
Strasbourg e =13m.23s., i =14m.17s.
Stuttgart eZ =13m.26s.
Collmberg eZ =13m.41s.
Long waves were also recorded at Columbia, Alicante, Clermont-Ferrand, Kew, Potsdam, Warsaw, Bandong, and Wellington.

April 30d. 23h. 49m. 26s. Epicentre 6°·7N. 82°·5W.

$A = +\cdot1296$, $B = -\cdot9848$, $C = +\cdot1159$; $\delta = +6$; $h = +7$;
$D = -\cdot991$, $E = -\cdot131$; $G = +\cdot015$, $H = -\cdot115$, $K = -\cdot993$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		3·7	52	i 1 11	P_g	i 1 56	S^*	—	—	—
Chinchina		7·1	104	i 1 49	+ 1	i 3 52	S_g	—	—	—
Galerazamba		8·2	60	i 2 13	+10	i 3 57	S^*	i 4 28	S_g	—
Bogota		8·6	104	i 2 4	− 5	i 3 43	− 5	—	—	—
San Juan		19·8	51	i 4 35	0	e 8 20	+ 7	e 4 57	PP	e 9·3
Huancayo		20·0	159	i 4 38	+ 1	i 8 26	+ 9	e 5 7	PP	—
Tacubaya		20·6	310	i 4 45a	+ 2	e 8 53	+24	—	—	—
Fort de France		22·4	68	i 5 8?	+ 6	i 9 20?	+16	—	—	—
La Paz		27·1	147	i 5 43	− 3	i 10 35	+11	i 6 34	PP	i 12·7
Bermuda		30·5	30	e 6 24	+ 7	e 11 30	+12	—	—	e 14·8
Lubbock		32·2	329	6 33	+ 1	—	—	—	—	—
Washington		32·4	9	e 6 38	+ 4	—	—	—	—	e 16·9
St. Louis		32·6	349	e 6 30	− 5	e 11 53	+ 2	e 6 39	pP	e 15·8
Philadelphia		33·8	12	e 6 49	+ 3	e 12 3	− 7	—	—	e 14·6
Pennsylvania		34·2	7	i 6 52	+ 3	e 11 59	−17	—	—	—
Cleveland		34·7	2	i 6 56	+ 2	e 12 27	+ 3	—	—	—
City College, N.Y.		34·8	13	i 6 56	+ 2	e 12 39	+14	—	—	—
Fordham		34·9	13	i 7 1	+ 6	e 12 32	+ 5	—	—	17·0
Tucson		36·6	318	i 7 8	− 2	e 13 1	+ 8	i 8 39	PP	e 19·8
Weston		36·9	15	i 7 16	+ 4	e 13 7	+ 9	e 8 43	PP	—
Harvard		37·0	15	e 7 13	0	e 13 6	+ 7	e 8 35	PP	e 17·5
Ottawa		39·0	8	e 7 26	− 4	e 13 34	+ 5	i 9 10	PP	19·1
Pierce Ferry		41·1	321	e 7 46	− 1	—	—	e 9 33	PP	—
Rapid City	E.	41·4	338	i 7 45	− 5	e 13 57	− 8	e 9 31	PP	e 16·6
Boulder City		41·5	320	e 7 49	− 1	—	—	—	—	—
Seven Falls	E.	41·5	13	—	—	e 14 16	+ 9	(16 58)	SS	17·0
Overton	Z.	41·6	321	i 7 51	0	—	—	—	—	—
Riverside	Z.	42·1	315	e 7 54	− 1	—	—	—	—	—
Pasadena		42·8	315	i 7 59	− 2	e 14 27	+ 1	e 17 33	SS	—
Logan		43·5	328	e 8 6	− 1	—	—	—	—	e 23·3
Tinemaha	Z.	44·4	319	e 8 12	− 2	—	—	—	—	—
Fresno		45·3	318	e 8 21k	0	—	—	e 10 12	PP	—
Reno		46·8	321	e 8 35k	+ 2	—	—	e 9 58	PP	—
Lick	Z.	46·8	317	e 8 32k	− 1	—	—	—	—	—
Berkeley		47·5	317	e 8 38a	0	e 15 41	+ 7	e 19 16	SS	e 24·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mineral	z.	48·4	320	e 8 43k	− 3	—	—	—	—	—
Shasta Dam		49·1	320	e 9 3	+12	—	—	—	—	—
Hungry Horse		49·4	333	i 8 51	− 2	—	—	—	—	—
Saskatoon		49·5	341	—	—	e 16 4	+ 2	—	—	20·1
Arcata	z.	50·3	320	e 8 58a	− 2	—	—	—	—	—
Seattle		53·0	328	e 8 43	−38	—	—	—	—	e 27·6
Victoria		54·2	328	e 9 24	− 5	—	—	—	—	—
College		73·6	337	e 11 36	− 1	—	—	—	—	—
Rathfarnham C.	z.	76·4	37	e 16 14	PPP	e 24 54	?	—	—	—
Malaga	z.	76·5	54	i 12 0	+ 6	e 20 10	?	—	—	—
Kew		79·9	39	—	—	e 23 6	+50	—	—	e 32·6
Tortosa		80·4	50	—	—	i 22 29	+ 8	—	—	e 34·6
Paris		81·7	42	12 26	+ 4	e 23 22	PS	—	—	e 37·6
Besançon		84·1	43	e 12 37	+ 3	—	—	—	—	—
Strasbourg		85·2	42	e 12 39	0	e 23 9	0	e 28 58	SS	e 40·6
Tamanrasset	z.	85·6	68	e 12 41	0	e 23 13	0	i 12 48	PcP	—
Stuttgart		86·1	42	e 12 42	− 2	e 23 22	+ 4	e 24 22	PS	e 40·6
Jena		87·4	39	e 12 38	−12	—	—	e 12 53	PcP	—
Potsdam	z.	88·1	37	e 12 52	− 2	e 23 34	− 3	—	—	e 42·6
Collmberg	z.	88·3	39	e 12 53	− 2	—	—	12 58	PcP	—
Prague		89·3	39	e 13 2	+ 3	e 23 59	+11	—	—	—
Rome		89·3	48	—	—	e 23 29	[0]	—	—	e 43·8
Ksara		109·2	52	e 15 42	P	e 29 52	PPS	e 19 22	PP	—

Additional readings :—
Galerazamba iP_g =3m.9s.
Bogota iEN =4m.6s.
La Paz iSE =10m.50s., iSS =12m.4s.
St. Louis eSS =13m.1s.
Cleveland eSN =12m.37s.
Tucson e =7m.22s., i =7m.30s.
Harvard eQ =15m.19s.
Overton iZ =8m.5s. and 8m.27s.
Fresno eEZ =8m.57s.
Reno eE =8m.48s.
Lick iZ =8m.45s. and 9m.6s.
Berkeley eZ =8m.50s. and 9m.37s.
Shasta Dam e =9m.14s.
Paris e =12m.41s. and 12m.51s.
Strasbourg e =12m.43s.
Tamanrasset iZ =13m.4s., ePPZ =15m.46s.
Stuttgart eZ =12m.48s.
Long waves were also recorded at Scoresby Sund and Warsaw.

April 30d. Readings also at 4h. (Riverside, Tucson, Boulder City, Overton, and Pierce Ferry), 5h. (Tucson, Pierce Ferry, and near Istanbul), 6h. (Collmberg, Jena, Stuttgart, Zürich, Rome, near Triest, Zagreb, and near Ashkabad), 9h. (near Alicante (4)), 11h. (near Alicante), 12h. (near Seattle), 13h. (La Plata, Seattle, and near Alicante), 14h. (Ksara), 15h. (near Boulder City, Overton, and Pierce Ferry), 16h. (Huancayo, La Plata, Crest Line, Haiwee, Pasadena, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Lick, Shasta Dam, Hungry Horse, College, and Tamanrasset), 17h. (Tinemaha, Tucson (2), Overton (2), Pierce Ferry (2), Shasta Dam, College, Harvard, Tamanrasset, Strasbourg, Stuttgart, Auckland, Christchurch, and near Apia), 18h. (La Plata, and near Istanbul), 19h. (near Istanbul and Sofia), 21h. (near Apia).

May 1d. 8h. 14m.54s. Epicentre 38°·5N. 45°·0E. (as on 1940, October 18d.).
A = +·5548, B = +·5548, C = +·6199 ; δ = −12 ; h = −1 ;
D = +·707, E = −·707 ; G = +·438, H = +·438, K = −·785.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Erevan	1·7	347	0 29	− 2	0 46	− 8	—
Leninakan	2·4	339	i 0 44	+ 3	i 1 12	0	—
Tiflis	3·1	357	0 50	− 1	i 1 29	0	—
Borzhomi	3·5	340	1 2	+ 5	e 1 51	S*	—
Shemakha	3·5	52	0 59?	+ 2	1 51?	S*	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Abastumanj		3·6	334	1 6?	+ 8	i 1 49?	S*	—
Gori		3·6	349	1 0	+ 2	i 1 44	+ 2	—
Baku		4·2	61	e 1 33	P_g	2 42	S_g	—
Zugdidi		4·7	331	1 26?	P*	i 2 33?	S_g	—
Grozny		4·9	3	e 1 20	+ 3	—	—	—
Piatigorsk		5·7	347	e 1 23?	− 5	—	—	—
Sotchi		6·4	324	e 1 52?	P*	—	—	—
Ksara		8·7	241	e 2 42	P*	e 5 2	S_g	—
Yalta		10·1	310	e 2 24	− 4	—	—	—
Ashkabad		10·5	89	e 2 37?	+ 2	—	—	—
Istanbul		12·5	286	—	—	e 4 18	−65	—
Mary		13·3	89	e 3 29	+16	—	—	—
Helwan		14·2	235	e 3 39	+15	—	—	e 8·3
Samarkand		17·1	79	e 4 10	+ 8	—	—	—
Stalinabad		18·6	81	e 4 24	+ 3	—	—	—
Tashkent		18·9	74	e 4 21	− 3	—	—	—
Tchimkent		19·1	70	e 4 25	− 2	—	—	—
Sverdlovsk		21·1	24	i 4 44	− 4	8 31	− 8	—
Andijan		21·2	75	e 4 49?	0	e 8 36?	− 5	—
Collmberg	z.	25·8	310	e 5 37	+ 3	—	—	—
Stuttgart	z.	27·7	304	e 5 53	+ 1	—	—	—
College		76·5	6	i 11 53	− 1	—	—	—

Additional readings :—
Helwan cZ = 3m.54s.
Long waves were also recorded at Tamanrasset.

May 1d. 13h. 21m. 0s. Epicentre 6°·2S. 105°·7E. Depth of focus 0·005.
(as on 1949, June 24d.).

A = −·2690, B = +·9571, C = −·1073 ; δ = −9 ; h = +7 ;
D = +·963, E = +·271 ; G = +·029, H = −·103, K = −·994.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Djakarta		1·1	90	i 0 26k	+ 6	i 0 48	+12	—	—	—
Bandong		2·1	110	i 0 36	+ 2	—	—	—	—	—
Colombo	E.	28·9	296	5 55	0	10 45	+ 6	—	—	—
Kodaikanal	E.	32·5	300	e 6 28	+ 1	i 11 38	+ 2	—	—	15·0
Poona		39·9	309	e 7 27	− 2	e 13 22	− 7	7 53	pP	17·5
Bombay		40·9	308	e 7 40	+ 3	e 13 43	− 1	—	—	e 17·2
New Delhi		44·2	323	e 8 5	+ 1	i 14 24	− 8	9 46	PP	—
Brisbane	z.	49·6	120	i 8 47k	0	—	—	—	—	—
Riverview		50·2	129	i 8 51a	0	i 15 58	+ 1	—	—	e 25·6
Vladivostok		54·5	24	e 9 24?	+ 1	e 17 2?	+ 6	e 9 42?	pP	—
Naryn		54·6	333	e 9 27	+ 3	i 16 58	+ 1	—	—	—
Almata		55·7	335	—	—	i 17 12	0	—	—	—
Garm		55·7	327	e 9 18?	−14	i 16 49?	−23	—	—	—
Obi-garm		55·8	326	e 9 30	− 3	i 17 6	− 7	—	—	—
Andijan		55·9	329	e 9 33	− 1	e 17 13	− 1	—	—	—
Fergana		55·9	329	e 9 31	− 3	—	—	—	—	—
Stalinabad		56·2	325	i 9 34	− 2	i 17 11	− 7	—	—	—
Frunse		56·4	332	e 9 53	+16	—	—	—	—	—
Tashkent		57·9	328	e 9 46?	− 2	e 17 38?	− 3	e 18 5?	PS	—
Samarkand		58·0	324	e 9 47?	− 1	e 17 36?	− 6	—	—	—
Irkutsk		58·3	358	—	—	17 49?	+ 3	—	—	—
Tchimkent		58·4	329	i 9 51	0	—	—	—	—	—
Mary		59·7	321	10 0	0	i 18 2	− 2	e 10 40	P_cP	—
Semipalatinsk		60·5	342	e 10 7	+ 1	—	—	—	—	—
Ashkabad		62·2	319	e 10 20?	+ 3	18 35?	− 1	—	—	—
Baku		69·0	317	e 11 7	+ 6	e 20 6	+ 7	—	—	—
Shemalka		70·0	317	11 9	+ 2	20 12	+ 1	—	—	—
Sverdlovsk		73·0	336	i 11 23	− 2	i 20 41	− 4	e 21 15	PS	—
Tiflis		73·1	317	11 24	− 1	i 20 46	0	—	—	—
Leninakan		73·4	315	11 32	+ 5	20 52	+ 2	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Gori		73·7	317	11 30?	+ 1	20 54?	+ 1	—	—	—
Borzhomi		74·1	316	11 31?	0	20 57?	0	—	—	—
Pietermaritzburg	z.	74·2	241	i 11 30	− 2	—	—	—	—	—
Zugdidi		75·4	317	11 40	+ 2	i 21 17	+ 5	—	—	—
Pretoria	z.	76·1	245	i 11 40	− 2	—	—	—	—	—
Ksara		76·9	306	i 11 48	+ 1	21 34	+ 6	12 10	pP	—
Grahamstown		77·5	238	i 11 50	0	—	—	—	—	—
Helwan		79·6	301	e 12 0	− 2	e 22 12	+15	e 22 42	PS	—
Yalta		81·4	316	e 12 10	− 1	22 11	− 5	—	—	—
Moscow		83·0	328	12 19	− 1	22 32	0	e 12 45	pP	—
Istanbul		84·1	312	e 12 26	+ 1	e 23 41	PS	—	—	—
Pulkovo		88·0	331	12 47	+ 3	23 22	+ 1	—	—	—
Warsaw		91·6	323	—	—	e 23 24	[− 2]	—	—	—
Messina	z.	93·9	308	—	—	e 24 11	− 2	e 33 14	SSS	—
Prague		95·5	320	e 17 7	PP	e 23 44	[− 4]	e 24 19	SKKS	—
Collmberg	z.	96·5	321	e 17 11?	PP	—	—	—	—	—
Rome		96·5	311	—	—	e 23 39	[−14]	i 24 43	S	—
Stuttgart	z.	98·9	318	e 17 1	PP	—	—	e 18 17	PKP	—
Tamanrasset	z.	101·7	292	e 13 48	+ 1	—	—	e 17 58	PP	—
College		102·6	25	e 18 8	PKP	—	—	—	—	—
Victoria	z.	120·9	36	e 18 47	[+ 2]	—	—	—	—	—
Shasta Dam		125·1	44	i 18 55	[+ 2]	—	—	—	—	—
Mineral	z.	125·8	43	e 18 56	[+ 1]	—	—	—	—	—
Hungry Horse		126·2	32	i 18 57	[+ 2]	—	—	i 19 16	pPKP	—
Lick	z.	127·0	47	i 19 0	[+ 3]	—	—	i 19 19	pPKP	—
Tinemaha	z.	129·5	46	i 19 5	[+ 3]	i 22 19	SKP	—	—	—
Haiwee	z.	130·3	46	i 19 6	[+ 3]	i 22 21	SKP	—	—	—
Pasadena		130·9	49	i 19 6	[+ 2]	i 22 24	SKP	—	—	—
Riverside	z.	131·5	49	i 19 8	[+ 3]	i 22 25	SKP	—	—	—
Crest Line	z.	131·5	49	i 19 8	[+ 3]	i 22 26	SKP	—	—	—
Boulder City		132·5	45	e 19 10	[+ 3]	e 22 31	SKP	—	—	—
Overton	z.	132·5	44	i 19 11	[+ 4]	i 22 32	SKP	—	—	—
Pierce Ferry		133·0	45	i 19 11	[+ 3]	i 22 33	SKP	—	—	—
Tucson		137·2	47	e 19 8	[− 8]	i 22 46	SKP	—	—	—
Harvard		143·8	356	i 19 27	[− 1]	i 24 2	?	—	—	—
Weston		143·9	356	i 19 27	[− 1]	—	—	—	—	—
Tacubaya		152·5	59	e 19 53	[+11]	e 30 14	SKKS	—	—	—
La Paz		156·6	196	19 55	[+ 8]	—	—	—	—	—

Additional readings :—
Poona sPEN =8m.3s., PPEN =9m.3s., PPPEN =9m.36s., sSEN =14m.1s., SSSEN = 16m.58s.
New Delhi PPPE =10m.17s.
Tashkent eSeS =19m.10s.
Messina eZ =24m.33s.
Prague e =17m.46s., 18m.7s., and 24m.48s., ePS? =25m.34s.
Collmberg eZ =17m.28s.
Rome iE =23m.52s., eZ =26m.36s.
Tamanrasset iZ =17m.7s.
Pasadena iZ =22m.59s.
Tacubaya e =21m.6s., i =25m.14s.
Long waves were also recorded at Christchurch and Copenhagen.

May 1d. 20h. South-west Pacific.
Apia eP =8m.13s., eS =10m.16s.
Kaimata ePNE =9m.40s., eSNE =12m.50s.
Tuai eSN =11m.14s.
Arapuni eS =11m.27s.
Lick iPZ =17m.8s.a, iZ =17m.12s.
Pasadena iPZ =17m.8s., epPZ =19m.6s.
Crest Line iPZ =17m.10s., epPZ =19m.3s.
Riverside iPZ =17m.10s., epPZ =19m.3s.
Shasta Dam iP =17m.15s., e =19m.13s.
Tinemaha iPZ =17m.17s.
Tucson iP =17m.29s., ipP? =17m.36s., ePP? =19m.21s.
Victoria eZ =17m.35s.
College eP? =19m.51s.
Hungry Horse eP =21m.27s.
Stuttgart eZ =24m.31s. and 43m.21s.
Collmberg eZ =24m.35s., 24m.44s., 26m.40s., and 26m.45s.
Tamanrasset iPKPZ =24m.52s.k, ipPKPZ =26m.32s., iZ =28m.32s.

May 1d. Readings also at 0h. (Tucson, Overton, Pierce Ferry, Lick, Hungry Horse, College, Tamanrasset, near Huancayo, and La Paz), 1h. (Philadelphia), 2h. (Hungry Horse), 3h. (Samarkand, near Andijan, Fergana, Garm, Obi-garm, and Stalinabad), 4h. (Andijan, near Fergana, Obi-garm, and Stalinabad), 5h. (near Ashkabad), 6h. (near College), 8h. (College and Tucson), 9h. (Weston, Crest Line, Mount Wilson, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Lick, Mineral, Shasta Dam, Hungry Horse, near College, La Paz, near Huancayo, near Alicante (2), and near Apia), 10h. (La Paz, La Plata, Overton (2), Pierce Ferry, Hungry Horse, Istanbul, and Ksara), 11h. (Collmberg, Copenhagen, Prague, Stuttgart, and Tamanrasset), 12h. (Messina), 13h. (Overton, College, and near Obi-garm), 14h. (College), 16h. (Copenhagen, near Alicante (4), and near Garm), 17h. (near Andijan and near Prague), 19h. (Collmberg, near Baku, Shemakla, and near Istanbul), 20h. (College, Fergana, near Andijan, and Garm), 21h. (near Tacubaya), 22h. (Almata, near Andijan, Frunse, and Naryn), 23h. (Fergana, near Andijan, Garm, Obi-garm, Stalinabad, near Shemakla, near Fort de France, and near Tucson).

May 2d. 4h. 41m. 35s. Epicentre 17°·6N. 101°·3W. (as on 1943, February 24d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya		2·7	48	e 0 54 a	P_g	i 1 28	S_g	—	—	—
Manzanillo		3·2	297	0 49	− 3	—	—	—	—	1·4
Puebla		3·3	64	e 1 5	P_g	—	—	—	—	1·9
Guadalajara		3·6	328	0 54	− 4	—	—	—	—	1·5
Oaxaca		4·4	97	—	—	e 1 55	− 7	—	—	2·6
Lubbock		15·9	358	3 47	0	—	—	—	—	—
Tucson		16·9	331	i 4 0	+ 1	e 7 8	+ 1	—	—	e 8·2
Pierce Ferry		21·6	333	i 4 54	0	—	—	—	—	e 11·3
Riverside	z.	21·8	322	i 4 56	0	—	—	—	—	—
Boulder City		21·9	332	e 4 57	0	—	—	—	—	e 12·3
Crest Line	z.	21·9	322	e 4 57	0	—	—	—	—	—
Overton	z.	22·1	332	e 5 0	+ 1	—	—	—	—	e 11·6
Pasadena	z.	22·4	322	i 5 2	0	—	—	—	—	—
St. Louis		23·1	23	i 5 6	− 2	e 9 13	− 3	i 5 32	pP	—
Tinemaha	z.	24·5	326	i 5 24	+ 2	—	—	—	—	—
Fresno	z.	25·1	325	i 5 29 a	+ 1	—	—	—	—	—
Lick	z.	26·6	323	i 5 43 a	+ 1	—	—	—	—	—
Mineral	z.	28·7	327	i 6 2 k	+ 1	—	—	—	—	—
Hungry Horse		32·4	346	i 6 32	− 2	—	—	e 9 20	PP	—
Weston		35·5	39	e 7 0	0	—	—	—	—	—
College		56·5	338	e 9 46	0	—	—	i 10 46	P_cP	—
Paris		85·7	41	i 12 46	+ 4	—	—	—	—	—
Tamanrasset	z.	98·0	63	i 13 47 k	+ 8	—	—	—	—	—

Additional readings :—
Tucson i = 4m.14s. and 4m.44s., e = 6m.0s.
Riverside eZ = 5m.11s., iZ = 5m.25s.
Crest Line eZ = 5m.43s.
Pasadena iZ = 5m.13s. and 5m.22s.
St. Louis iPP? = 5m.51s., esS? = 9m.55s., eS_cP? = 12m.16s., eS_cS? = 15m.34s.
Tinemaha iZ = 5m.41s.
Lick iZ = 5m.57s.
Mineral iZ = 6m.6s.
Paris i = 13m.10s.
Long waves were also recorded at Salt Lake City.

May 2d. 7h. 37m. 42s. Epicentre 38°·2N. 1°·7W. (as on 1948, June 23rd.).

Intensity VI at Ulea and Blanca; V at Ricote, Abaran, and Ceuti; IV at Molina de Segura, Fortuna, and Cieza; III at Murcia, Abanilla, and Albudeite. Epicentre 38°10′N. 1°20′W. Macroseismic radius 37km.

A. Rey Pastor.
Estudio Sismotectonico de la Region Sureste de España, Madrid, 1951. Macroseismic chart Fig. 10a.

$A = +·7875$, $B = -·0234$, $C = +·6159$; $\delta = +4$; $h = -1$;
$D = -·030$, $E = -1·000$; $G = +·616$, $H = -·018$, $K = -·788$.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.
Alicante		1·0	81	0 16	P_g	0 26	S_g
Granada		1·8	236	0 45k	P_g	1 15	?
Toledo	Z.	2·5	313	i 0 54	P_g	i 1 27	S_g
Malaga		2·6	236	e 1 5	P_g	i 1 43	S_g
Tortosa		3·1	33	e 0 51	0	i 1 35	S*

Additional readings :—
Alicante i = 18s. and 36s.
Granada S = 1m.33s.
Toledo iP^*Z = 58s., iP_gZ = 1m.2s., $iS_g?Z$ = 1m.36s.

May 2d. 14h. Undetermined shock.

Mizusawa ePN = 38m.15s., SE = 38m.59s., eSN = 39m.3s.
College iP = 42m.35s.
Victoria e = 44m.52s.
Shasta Dam iP = 45m.26s.
Hungry Horse iP = 45m.28s.
Mineral iPZ = 45m.32s.k, iZ = 45m.39s.
Lick iPZ = 45m.43s.k, eZ = 45m.53s.
Tinemaha iPZ = 45m.58s., iZ = 46m.9s.
Pasadena ePZ = 46m.10s., iZ = 46m.20s.
Riverside iPZ = 46m.12s., iZ = 46m.22s.
Crest Line iPZ = 46m.12s., iZ = 46m.24s.
Overton iPZ = 46m.16s.
Boulder City iP = 46m.16s., i = 46m.23s.
Tucson iP = 46m.45s., e = 46m.54s.
Collmberg eZ = 47m.3s. and 47m.36s.
Stuttgart ePZ = 47m.23s.a, eZ = 47m.34s.
Paris iP = 47m.34s., e = 47m.42s., eL = 80m.
Harvard iP = 47m.47s.
Weston iP = 47m.48s.
Long waves were also recorded at Ksara, Copenhagen, Alicante, and Granada.

May 2d. 16h. 43m. 2s. Epicentre 38°·0N. 58°·5E.

$A = +·4128$, $B = +·6736$, $C = +·6131$; $\delta = +3$; $h = -1$;
$D = +·853$, $E = -·522$; $G = +·320$, $H = +·523$, $K = -·790$.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Mary	2·7	99	e 0 44	− 1	1 24	S*	—	—	—
Samarkand	6·8	73	e 1 39	− 5	—	—	—	—	—
Shemakla	8·1	292	e 3 25	S	(e 3 25)	−10	—	—	—
Stalinabad	8·1	83	e 2 3	+ 1	i 3 42	+ 7	—	—	—
Obi-garm	8·8	82	e 2 14?	+ 3	—	—	—	—	—
Tashkent	9·0	65	e 2 13	0	e 3 53	− 5	—	—	—
Fergana	10·6	73	e 2 33	− 3	—	—	—	—	—
Grozny	11·0	303	e 2 54	+12	5 10	+23	—	—	—
Andijan	11·1	71	e 2 50	+ 7	—	—	—	—	—
Tiflis	11·2	294	2 43?	− 1	e 5 23?	+31	—	—	—
Leninakan	11·7	288	3 40	+49	—	—	—	—	—
Gori	11·7	294	e 2 50?	− 1	e 4 57?	− 7	—	—	—
Borzhomi	12·2	293	e 3 3?	+ 5	5 9?	− 7	—	—	—
Abastumanj	12·6	292	e 3 10?	+ 7	—	—	—	—	—
Piatigorsk	13·2	302	e 3 21	+10	e 5 51	+11	—	—	e 7·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zugdidi		13·4	295	3 34?	+20	—	—	—	—	—
Naryn		13·9	70	e 3 12?	− 9	—	—	—	—	—
Almata		15·0	64	e 3 33	− 2	—	—	—	—	—
Sotchi		15·3	297	e 3 45	+ 6	e 6 52	+22	—	—	—
New Delhi		18·2	115	e 4 12	− 4	e 7 51	+14	—	—	—
Theodosia		18·6	299	e 3 16	−65	—	—	—	—	—
Ksara		18·8	264	e 4 20	− 3	e 8 19?	+29	—	—	—
Sverdlovsk		18·9	3	e 4 22?	− 2	8 3?	+10	—	—	—
Yalta		19·4	297	e 4 30	0	e 8 10	+ 6	—	—	—
Moscow		22·6	328	e 5 4	+ 1	e 9 13	+ 6	—	—	—
Bombay		22·8	142	—	—	e 8 7	−64	—	—	e 12·8
Istanbul		22·9	287	e 5 9	+ 3	e 9 20	+ 7	—	—	—
Poona	E.	23·6	140	e 6 15	+62	—	—	—	—	e 14·2
Pulkovo		28·2	329	6 24	+28	11 20	+39	—	—	—
Warsaw		29·6	311	—	—	e 11 50	+46	—	—	e 17·0
Collmberg	Z.	34·4	308	e 6 57?	+ 6	—	—	e 8 14	PP	—
Jena	E.	35·3	306	e 7 6	+ 7	—	—	e 8 19	PP	—
Stuttgart		36·8	303	e 7 13	+ 2	e 12 16	−40	—	—	—
Tamanrasset	Z.	47·5	267	i 8 39k	+ 1	—	—	—	—	—
College		75·4	12	e 11 49	+ 2	—	—	—	—	—

Additional readings :—
Grozny e =3m.10s.
Piatigorsk e =4m.41s.
Warsaw e =12m.24s., eN =12m.39s., eEZ =13m.22s., eN =13m.27s., eZ =13m.58s., eE =14m.14s., eZ =14m.39s., e =15m.1s.
Collmberg eZ =6m.59s.
Stuttgart e =7m.19s.
Tamanrasset iZ =8m.46s., eZ =9m.18s.
Long waves were also recorded at Copenhagen, Potsdam, and Scoresby Sund.

May 2d. Readings also at 0h. (Kew and Rathfarnham Castle), 1h. (near Athens), 3h. (Tamanrasset, Frunse, Sverdlovsk, near Andijan (2), Obi-garm (4), Samarkand, Shemakla, Garm (4), Stalinabad (3), Tashkent, Tchimkent (2), Tamanrasset, and near Balboa Heights), 6h. (Stuttgart, near Andijan, Fergana, Frunse, Garm, Obi-garm, Samarkand, Stalinabad, Tashkent, and Tchimkent), 7h. (Naryn), 9h. (Ashkabad, and near Messina), 10h. (College and Huancayo), 11h. (near Garm), 12h. (College), 14h. (Auckland, Christchurch, Wellington, and near Obi-garm), 16h. (Copenhagen, near Ashkabad (2), and near Alicante), 17h. (near La Paz), 20h. (near Ashkabad), 23h. (Tananarive).

May 3d. 2h. 15m. 13s. Epicentre 4°·8N. 61°·6E. (as on 1948, November 2d.).

A = +·4740, B = +·8766, C = +·0831 ; δ = +1 ; h = +7 ;
D = +·880, E = −·476 ; G = +·040, H = +·073, K = −·997.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Kodaikanal	E.	16·6	68	i 4 19	+23	e 7 49	+49	8·6
Bombay		17·8	37	e 4 16	+ 5	—	—	—
Poona	E.	18·1	39	e 4 19	+ 5	e 7 53	+18	e 9·1
Tashkent		37·0	10	e 7 14	+ 1	i 12 56	− 3	—
Shemakla		37·5	344	e 7 3	−14	—	—	—
Ksara		37·5	323	e 8 47	PP	—	—	—
Sverdlovsk		51·9	359	—	—	16 28	− 7	—
Tamanrasset	Z.	57·0	294	i 9 47	− 3	—	—	—
Collmberg	Z.	61·4	328	e 10 13	− 7	—	—	—
Algiers Univ.	Z.	62·2	309	10 27	+ 1	—	—	—

Ksara also gives e =1m.22s.

May 3d. 7h. 13m. 42s. Epicentre 38°·6N. 27°·0E. (given by Istanbul).

A = +·6981, B = +·3557, C = +·6213; δ = −12; h = −1;
D = +·454, E = −·891; G = +·554, H = +·282, K = −·784.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Athens		2·7	256	e 0 52	P_g	i 1 21	+ 2	i 1 36	S_g	—
Istanbul		2·9	33	i 0 44	− 4	i 1 28	S*	—	—	—
Sofia		5·0	327	e 1 20	+ 2	e 2 16	− 2	2 51	S_g	—
Bucharest	N.	5·8	354	e 1 30	+ 1	—	—	e 1 39	P*	2·5
Yalta		8·0	40	e 1 58	− 2	e 3 17	−16	—	—	—
Kishinev		8·5	8	—	—	4 27	S*	—	—	—
Ksara		8·6	121	2 7	− 2	e 4 59	S_g	—	—	—
Theodosia		9·0	42	e 2 7?	− 6	—	—	—	—	—
Helwan	Z.	9·4	157	e 3 48	?	e 4 24	+17	e 5 6	S_g	—
Zugdidi		12·0	66	(e 3 29?)	+34	e 3 29?	P	—	—	—
Triest		12·1	310	e 5 54	?	e 6 25	?	—	—	e 6·5
Gori		13·5	70	e 3 20	+ 5	—	—	—	—	—
Tiflis		14·0	71	e 3 24?	+ 2	—	—	—	—	—
Warsaw		14·3	345	e 3 8	−18	e 6 8	+ 2	—	—	e 7·3
Prague		14·5	326	e 3 25?	− 3	e 6 12	+ 1	—	—	e 6·7
Collmberg		16·1	327	e 3 52	+ 3	—	—	—	—	e 9·2
Stuttgart		16·4	314	e 3 50	− 3	—	—	e 3 56	PP	e 8·3
Shemakla		16·8	76	e 3 7?	−51	—	—	—	—	—
Strasbourg		17·1	313	e 4 5k	+ 3	—	—	e 4 25	PP	e 9·5
Besançon		17·6	308	e 4 8	0	—	—	4 27	PP	—
Algiers Univ.	Z.	19·0	271	i 4 23k	− 3	—	—	e 4 41	PP	—
Clermont-Ferrand		19·1	300	e 4 28	+ 1	—	—	—	—	—
De Bilt		20·3	320	e 4 30	−10	e 8 30	+ 7	—	—	e 10·3
Paris		20·4	309	i 4 39	− 2	—	—	i 5 9	PP	e 11·3
Pulkovo		21·3	6	—	—	e 8 44	+ 1	—	—	—
Upsala		22·1	347	—	—	i 7 58	−60	—	—	e 11·9
Kew		23·0	314	—	—	e 7 19	?	—	—	e 11·3
Tamanrasset	Z.	24·2	236	i 5 18k	− 1	—	—	—	—	—
Rathfarnham Castle		27·1	315	i 5 55	+ 9	e 11 56	SS	—	—	—
Sverdlovsk		28·6	39	e 6 15	+15	e 10 55	+ 7	—	—	—
Weston		70·5	309	i 11 18	0	—	—	—	—	—
College		76·8	358	e 11 52	− 3	—	—	—	—	—
Hungry Horse		86·8	335	i 12 43	− 4	—	—	—	—	—

Additional readings :—
Sofia e = 2m.26s.
Bucharest iN = 2m.6s.
Helwan eZ = 4m.39s.
Warsaw eSE = 6m.11s.
Prague e = 5m.40s.
Collmberg eZ = 3m.56s.
Strasbourg e = 4m.45s.
Algiers Univ. eZ = 5m.12s.
Paris i = 4m.45s.
Tamanrasset iZ = 5m.22s., 5m.31s., and 6m.23s.
Rathfarnham Castle eEN = 7m.46s.
Long waves were also recorded at Rome, Zagreb, Potsdam, and Copenhagen.

May 3d. Readings also at 0h. (Rome), 2h. (Auckland, Christchurch, Wellington, Tucson, Lick, Mineral, College, Stuttgart, Granada, Mary, Naryn, near Andijan, Fergana, Frunse, Obi-garm, Samarkand, Stalinabad, Tashkent, and Tchimkent), 4h. (Leninakan, Tiflis, near Abastumanj, Borzhomi, Gori, and Grozny), 5h. (Gori, Leninakan, Tiflis, near Abastumanj, Borzhomi, Andijan, near Fergana, Garm, Obi-garm, and Stalinabad), 7h. (near Tananarive), 8h. (near Istanbul), 9h. (near Ashkabad), 11h. (Apia, Auckland, Christchurch, Wellington, Mount Wilson, Riverside, Tinemaha, Tucson, Overton, Pierce Ferry, Lick, Fresno, Reno, Shasta Dam, Hungry Horse, and Victoria), 12h. (Hungry Horse, near Balboa Heights, Obi-garm, near Garm and Stalinabad), 13h. (Alicante and Hungry Horse), 15h. (College), 16h. (Pierce Ferry and near Ashkabad), 19h. (Ashkabad and near Tacubaya), 20h. (Collmberg), 21h. (Collmberg, near Athens, and near Tacubaya), 22h. (Samarkand, Stalinabad, near Garm, and Obi-garm), 23h. (Prague).

May 1d. Readings at 2h. (China Lake, Tucson, Overton, Reno, College, and near Apia), 3h. (Prague and near Shemakla), 4h. (near Victoria), 5h. (Balboa Heights, Tamanrasset, and near Algiers Univ.), 6h. (Collmberg), 7h. (Tashkent and near Andijan), 8h. (Shasta Dam, Hungry Horse (2), College (2), Mizusawa, Almata, Frunse (2), Tchimkent, near Fergana, Garm, Obi-garm, Samarkand, and Stalinabad), 9h. (Ksara, Andijan, near Fergana, Garm, Obi-garm, and Stalinabad), 10h. (China Lake, Tucson, Overton, Pierce Ferry, Shasta Dam, Hungry Horse, Collmberg, College, near Apia, and near Alicante), 11h. (Ashkabad, Christchurch, Kaimata, near Arapuni, New Plymouth, Tuai, and Wellington), 12h. (Fergana and near Andijan), 13h. (Almata, Frunse, Naryn, near Andijan, Fergana, Garm, Obi-garm, Samarkand, Stalinabad, Tashkent, and Tchimkent), 15h. (Durham, Jena, Stuttgart, Zürich, Collmberg, near Prague, Raciborzu, and Skalnate Pleso), 17h. (near Obi-garm), 20h. (La Plata, Collmberg, and near Ashkabad), 21h. (near Grozny), 22h. (near Huancayo and La Paz), 23h. (Huancayo and near Tacubaya).

May 5d. 1h. 4m. 59s. Epicentre 4°·5S. 104°·5W.

A = −·2496, B = −·9652, C = −·0779; δ = −2; h = +7;
D = −·968, E = +·250; G = +·020, H = +·075, K = −·997.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya		24·3	12	e 5 20	0	e 9 48	+11	e 10 49	SSS	—
Huancayo		29·8	105	e 6 11	0	—	—	e 7 6	PP	e 12·3
Chinchina		30·3	70	e 6 14	− 1	e 11 12	− 3	—	—	13·0
Bogota		31·7	72	e 6 27	0	e 11 41	+ 4	—	—	e 13·7
Tucson		37·0	351	i 7 12	− 1	e 12 48	−11	e 8 44	PP	e 15·4
La Paz		37·6	110	e 7 22	+ 4	13 13	+ 5	16 1	SS	16·1
Riverside	z.	40·2	344	i 7 40	0	—	—	—	—	—
Crest Line	z.	40·4	344	i 7 41	0	—	—	—	—	—
Mount Wilson	z.	40·6	344	i 7 42	− 1	—	—	—	—	—
Boulder City		41·4	348	e 7 49	− 1	—	—	—	—	—
Pierce Ferry		41·4	350	e 7 49	− 1	—	—	e 9 33	PP	—
Overton	z.	41·9	349	i 7 53	− 1	—	—	—	—	—
China Lake		41·9	345	i 7 53	− 1	—	—	—	—	—
Tinemaha	z.	43·3	345	i 8 5	0	—	—	—	—	—
San Juan		44·1	57	—	—	e 14 32	−13	—	—	e 19·2
Lick	z.	44·6	341	e 8 13k	− 3	—	—	—	—	—
Berkeley		45·3	341	e 8 19	− 2	i 15 11	+ 9	e 18 43	SS	e 21·5
Reno		46·0	345	e 8 28k	+ 1	—	—	—	—	—
Mineral	z.	47·3	343	e 8 36a	− 1	—	—	—	—	—
Shasta Dam		47·9	342	e 8 39	− 3	—	—	—	—	—
Hungry Horse		53·3	353	i 9 20	− 3	—	—	—	—	—
College		76·1	342	e 11 50	− 1	—	—	—	—	—
Algiers Univ.	z.	106·7	53	e 15 12	?	—	—	—	—	—
Tamanrasset	z.	110·2	68	e 18 56	PP	—	—	—	—	—

Additional readings:—
Lick iZ = 8m.16s. and 8m.22s.
Berkeley eE = 12m.32s.
Reno eEN = 8m.35s., eN = 9m.51s.
Mineral eZ = 9m.7s.
Hungry Horse e = 9m.30s.
Algiers Univ. eZ = 16m.0s.
Long waves were also recorded at Pasadena, Harvard, Scoresby Sund, and Granada.

May 5d. 20h. 53m. 43s. Epicentre 46°·3N. 12°·8E. (as on 1948, Nov. 19d.).

A = +·6761, B = +·1536, C = +·7206; δ = −3; h = −4;
D = +·222, E = −·975; G = +·703, H = +·160, K = −·693.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		0·9	124	e 0 25	+ 5	i 0 40	+ 6	—	—	—
Chur		2·3	284	e 0 42k	+ 2	e 1 12	S*	—	—	—
Zürich		3·1	291	e 0 48	− 3	e 1 38	S*	e 0 56	P*	—
Stuttgart	z.	3·5	316	e 0 55?	− 2	e 1 28	−12	e 1 55	S_e	—
Basle		3·8	291	e 1 12	P_e	e 2 0	S*	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Prague		3·9	15	e 1 9	P*	i 1 45	− 5	i 2 7	S_g	—
Strasbourg		4·1	305	e 1 21?	P_g	e 2 0	+ 5	i 2 23	S_g	i 2·6
Jena	N.	4·7	350	e 1 30?	P_g	e 2 2	− 8	e 2 24	S*	—
Besançon		4·8	284	e 1 17	+ 2	e 2 34	S_g	—	—	—
Collmberg	z.	5·0	1	e 1 16	− 2	e 2 20	+ 2	e 2 33	S*	—

Additional readings :—
Triest iS_gS_g = 57s.
Stuttgart eP_gZ = 1m.5s., eZ = 1m.49s., eS_gZ = 1m.51s.
Prague iP_g = 1m.15s., e = 1m.40s., iS* = 1m.56s., i = 2m.1s.
Strasbourg e = 2m.10s.
Jena eEN = 2m.32s.
Collmberg eP_gZ = 1m.54s., $eS_g?Z$ = 3m.5s.

May 5d. Readings also at 0h. (Collmberg), 2h. (near Alicante), 5h. (Naryn, Stalinabad, Frunse, Samarkand, near Fergana, Andijan, Garm, Obi-garm, Tchimkent, Tashkent, and near Mizusawa), 7h. (Huancayo), 8h. (Tchimkent, near Andijan, Fergana, Garm, Naryn, Obi-garm, Frunse, Stalinabad, and near Tashkent), 9h. (La Paz), 10h. (near Ashkabad and near Garm), 11h. (Overton), 15h. (Stuttgart), 16h. (College, Hungry Horse, Overton, Pierce Ferry, and Seven Falls), 17h. (Collmberg and Stuttgart), 19h. (Pietermaritzburg, Borzhomi, Tiflis, Abastumanj, near Gori, and near Leninakan), 20h. (Prague), 21h. (College, Overton, Pierce Ferry, Garm, near Kulyab, and near Obi-garm), 22h. (Washington, Garm, Naryn, Frunse, Almata, near Obi-garm, Stalinabad, Kulyab, Tchimkent, Fergana, Andijan, Tashkent, and Samarkand), 23h. (Collmberg).

May 6d. 3h. 43m. 41s. Epicentre 44°·9N. 10°·6E.

Intensity III-IV at Reggio Emilia, S. Martino in Rio, Cadelbosco Sopra, and Bagnolo in Piano. Epicentre as adopted.
Bull. Mens. de Rome. National Institute of Geophysics, May, 1950, p. 3.

A = +·6986, B = +·1307, C = +·7035 ; δ = +4 ; h = −3 ;
D = +·184, E = −·983 ; G = +·691, H = +·129, K = −·711.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pavia		1·0	286	e 0 26	+ 5	e 0 41	+ 5	—	—	—
Prato		1·1	161	i 0 21	− 1	i 0 30	− 9	—	—	—
Florence Xim.		1·2	157	i 0 20	− 4	i 0 36	− 5	—	—	—
Chur		2·1	339	e 0 37k	0	e 1 4	0	—	—	—
Zürich		2·8	330	e 0 46	− 1	e 1 34	S_g	e 0 56	P_g	—
Neuchatel		3·3	310	e 0 53	0	e 1 35	0	—	—	—
Rome		3·3	155	e 1 4	P_g	e 1 35	0	1 55	S_g	—
Basle		3·4	323	e 1 5	P_g	e 1 32	− 5	e 1 52	S_g	—
Besançon		4·0	308	e 1 19	P_g	i 2 8	S*	—	—	—
Stuttgart	z.	4·0	347	e 1 2	− 2	e 1 47	− 5	e 1 20	P_g	—
Strasbourg		4·2	333	e 1 20	P_g	i 1 53	− 4	i 2 31	S_g	—
Karlsruhe		4·4	341	—	—	e 2 36	S_g	—	—	—
Clermont-Ferrand		5·4	282	—	—	e 2 25	− 3	—	—	e 3·3
Prague		5·8	25	e 1 25	− 4	i 2 32	− 6	e 3 5	S_g	—
Jena		6·1	6	e 2 1	P_g	e 2 57	+12	e 3 29	S_g	—
Collmberg	z.	6·6	13	e 1 36	− 5	e 3 0	+ 2	e 2 5	P_g	—
Paris		6·8	308	e 1 54	P*	e 3 21	S*	e 2 19	P_g	—

Additional readings :—
Besançon eS = 1m.45s., iS_g = 3m.10s.
Stuttgart eP*Z = 1m.15s., eP_gZ = 1m.24s., eS*?Z = 2m.17s., eS_gZ = 2m.25s. and 2m.29s., eZ = 2m.35s.
Strasbourg i = 1m.28s. and 1m.36s., e = 1m.44s. and 2m.7s., eS = 2m.15s.
Prague e = 2m.26s., i = 2m.47s., eS* = 2m.53s., e = 2m.59s.
Jena eE = 2m.22s., eN = 2m.25s., eE = 3m.0s.
Collmberg eS*Z = 3m.26s.
Paris e = 4m.10s.
Long waves were also recorded at Potsdam.

May 6d. Readings also at 1h. (near Garm), 3h. (Collmberg, Prague, Stuttgart, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, and near Ashkabad), 6h. (Tucson, Boulder City, and Overton), 8h. (Obi-garm, near Garm, and near Istanbul), 11h. (China Lake, Tucson, Overton, Pierce Ferry, Mineral, Shasta Dam, and College), 12h. (Nanking, near Mizusawa, Samarkand, near Garm, Kulyab, Obi-garm, Stalinabad, and near Collmberg), 13h. (Rome, College, and near Apia), 14h. (Apia, Tucson, Overton, Pierce Ferry, Hungry Horse, College, near Granada, and Malaga), 15h. (Istanbul, Tamanrasset, Collmberg, Potsdam, Prague, Besançon, Paris, Strasbourg, Stuttgart, Rathfarnham Castle, Tashkent, and near Leninakan), 16h. (New Delhi and near Istanbul), 18h. (Triest), 19h. (Almata, Frunse, Kulyab, Samarkand Tchimkent, near Andijan, and Fergana), 20h. (Mount Wilson, Riverside, Tinemaha, China Lake, Tucson, Boulder City, Pierce Ferry (2), Hungry Horse, Victoria, College, Harvard, Pennsylvania, Philadelphia, Washington, Bogota, and Tacubaya), 21h. (near Shemakla), 23h. (near Ashkabad).

May 7d. 6h. 36m. 2s. Epicentre 56°·9S. 148°·5E.

$A = -\cdot4678$, $B = +\cdot2867$, $C = -\cdot8360$; $\delta = -7$; $h = -8$;
$D = +\cdot532$, $E = +\cdot853$; $G = +\cdot713$, $H = -\cdot437$, $K = -\cdot549$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Christchurch		20·3	60	e 4 28	−12	8 55	SS	—	—	e 10·3
Kaimata	N.E.	20·6	55	e 4 47	+ 4	—	—	—	—	—
Wellington		23·0	58	i 5 13	+ 6	i 9 28	+14	e 9 52	SS	e 11·1
Riverview		23·1	6	i 5 9a	+ 1	i 9 16	0	i 10 4	SS	e 10·8
New Plymouth	E.	24·5	55	e 12 23	PcS	—	—	—	—	—
Tuai	N.	26·1	58	e 7 46	PPP	e 11 58	SS	—	—	—
Auckland	N.	26·6	52	e 5 42	0	10 38	+22	11 32	SS	13·1
Brisbane		29·6	9	i 6 9k	0	e 11 8	+ 4	i 6 59	PP	i 13·8
Perth		33·6	305	i 7 23	+39	i 11 43	−23	i 14 6	SS	—
Djakarta		60·2	311	e 10 10	− 2	e 18 25	0	—	—	—
Grahamstown		77·6	227	e 12 2	+ 2	—	—	—	—	e 36·0
Pietermaritzburg	Z.	79·3	233	e 12 10	+ 1	—	—	—	—	—
Pretoria	Z.	83·6	232	e 12 32	+ 1	—	—	—	—	—
Kodaikanal	E.	88·4	292	—	—	e 23 24	[+ 1]	—	—	—
Poona	N.	97·3	293	—	—	e 24 10	[− 3]	e 24 55	S	—
Bombay		98·1	292	—	—	e 21 13	?	e 24 18	SKS	—
Bogota		118·0	130	—	—	e 30 15	PS	e 36 40	SSP	—
Tucson		122·0	79	e 19 3	[+ 6]	—	—	(e 19 18)	?	e 19·3
Mineral	Z.	122·6	65	e 19 2	[+ 4]	—	—	—	—	—
Sitka		129·3	43	—	—	e 39 3	SSP	—	—	e 59·0
Ksara		129·7	273	e 22 40	?	e 32 24	PPS	—	—	—
College		130·7	30	e 19 13	[0]	—	—	—	—	—
Hungry Horse		132·1	63	e 19 18	[+ 2]	—	—	e 21 58	PP	—
Tamanrasset	Z.	136·6	235	e 19 26	[+ 2]	e 23 8	PKS	e 24 53	PPP	—
Istanbul		138·7	275	e 18 18	[−70]	(e 25 7)	SKS	e 25 7	PPP	—
Cleveland	Z.	144·8	94	e 19 41k	[+ 2]	—	—	—	—	—
Washington		145·3	102	i 19 46	[+ 6]	—	—	—	—	—
Pennsylvania	E.	146·2	98	i 19 57	[+16]	i 26 43	[− 6]	i 23 28	PP	—
Bermuda		146·5	123	e 19 58	[+16]	e 43 18	SSP	—	—	e 65·8
Philadelphia		147·1	103	e 19 57	[+14]	—	—	—	—	e 71·5
Rome		148·3	262	e 19 49	[+ 4]	e 42 22	SS	—	—	e 73·0
Algiers Univ.	Z.	149·5	245	i 19 33k	[−14]	—	—	e 20 23	PKP_2	—
Warsaw		149·8	285	e 19 53	[+ 6]	33 34	PS	e 23 35	PP	—
Florence Xim		150·2	263	i 21 27	PKP_2	—	—	—	—	—
Padova		150·4	266	e 20 46	[+58]	—	—	—	—	—
Ottawa		150·5	93	e 19 56	[+ 8]	—	—	—	—	—
Bologna	Z.	150·7	265	e 19 58	[+10]	—	—	—	—	—
Harvard		150·9	102	e 19 58	[+ 9]	—	—	—	—	e 73·9
Weston		150·9	102	e 19 32	[−17]	—	—	—	—	e 73·6
Salo	N.	151·8	266	e 20 7	[+17]	—	—	—	—	—
Prague		152·3	277	e 20 5	[+14]	e 30 31	{ 0}	e 24 9	PP	—
Alicante		152·4	242	20 10	[+19]	27 18	[+21]	—	—	e 77·0
Granada		152·9	236	18 56k	[−56]	44 19	SSP	23 39	PP	79·6
Malaga	N.	152·9	235	e 20 12	[+20]	e 27 14	[+17]	—	—	e 82·0
Collmberg	Z.	153·7	279	e 20 0	[+ 7]	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Potsdam		154·2	280	e 20 23	[+29]	e 26 53	[− 6]	e 23 52	PP	e 74·0
Jena	N.	154·3	276	e 20 9	[+15]	—	—	—	—	—
Stuttgart		154·4	270	e 20 2	[+ 8]	e 44 28	SSP	e 31 10	SKKS	91·0
Strasbourg		155·1	269	e 20 0	[+ 5]	e 43 40	SS	e 20 19	PKP_2	—
Besançon		155·3	264	e 19 58	[+ 3]	—	—	e 20 21	PKP_2	—
Toledo	Z.	155·3	239	e 20 6	[+11]	—	—	e 20 39	PKP_2	—
Clermont-Ferrand		156·0	258	e 19 50	[− 6]	—	—	—	—	—
De Bilt		158·4	275	e 19 58	[− 1]	e 43 58?	SS	e 24 26	PP	e 80·0
Kew		161·1	268	—	—	e 30 42	{−36}	e 44 42	SS	e 75·0
Scoresby Sund		165·8	348	20 4	[− 2]	—	—	—	—	78·0

Additional readings :—
Wellington eZ =7m.2s. and 10m.3s.
Riverview iNZ =5m.32s., iE =5m.45s., iN =9m.26s., iE =9m.46s., iN =10m.24s.
Tuai S_cSN =18m.16s.
Auckland ePP?N =6m.21s.
Poona eN =31m.21s.
Hungry Horse e =23m.46s.
Tamanrasset ePPZ =21m.58s.
Cleveland ePKPN =19m.44s.
Pennsylvania iPPP? =25m.38s.
Rome $ePKP_2$? =20m.26s., e =22m.6s., 39m.8s., and 61m.12s.?
Algiers Univ. eZ =19m.38s.
Warsaw eSKPZ =23m.41s., ePPNZ =24m.4s., ePPE =24m.7s., ePKKPE =28m.1s., ePKKPNZ =28m.7s., and other unidentified e readings.
Padova e =22m.32s.
Bologna eZ =22m.43s.
Salo eE =22m.37s.
Prague e =20m.21s., $ePKP_2$ =20m.41s., e =21m.18s., 21m.47s., 22m.28s., 22m.43s., and 26m.48s.
Alicante PP =24m.50s., PPP =29m.12s., SS =45m.18s., SSS =52m.10s.
Granada eSKKS =31m.24s., PPS =37m.19s.
Malaga $ePKP_2N$ =21m.29s.
Collmberg eZ =20m.14s.
Potsdam $ePKP_2Z$ =20m.59s., eZ =22m.33s., ePPN =24m.52s.
Jena eN =21m.32s. and 22m.17s.
Stuttgart ePKPZ =20m.17s., $ePKP_2Z$ =20m.59s., eZ =22m.41s., e =43m.0s. and 43m.28s., eQ =81·0m.
Strasbourg e =20m.5s. and 20m.39s., ePP? =21m.41s.
Besançon e =20m.54s.
Toledo ePP?Z =25m.14s.
Long waves were also recorded at Pasadena, Berkeley, Paris, Rathfarnham Castle, Huancayo, Triest, Chicago, and La Paz.

May 7d. Readings also at 0h. (Hungry Horse), 1h. (College, Tashkent, near Andijan, Fergana, Kulyab, Garm, and Obi-garm), 4h. (Apia, Auckland, Wellington, Tucson, Boulder City, Overton, Pierce Ferry, Shasta Dam, Berkeley, Mineral, Hungry Horse, College, Harvard, Potsdam, De Bilt, Stuttgart, Warsaw, Ksara, near Collmberg, and near Kulyab), 5h. (Philadelphia, Sitka, Scoresby Sund, Kew, Paris, and Rome), 6h. (China Lake, Crest Line, Pasadena, Riverside, and Tinemaha), 8h. (Tacubaya), 10h. (Hungry Horse, College (2), Kew, De Bilt, Sverdlovsk, and Tashkent), 11h. (Mineral, and near Alicante (2)), 16h. (near Irkutsk and near Przhevalsk), 17h. (Tamanrasset, near Algiers Univ. and Alicante), 19h. (near La Paz), 20h. (Shemakla, near Erevan, Tiflis, and Leninakan), 22h. (Kulyab, near Obi-garm and Stalinabad), 23h. (Tucson, Overton, and Hungry Horse).

May 8d. 14h. 1m. 37s. Epicentre 51°·5N. 173°·5W. (as on April 4d.).

A = −·6211, B = −·0708, C = +·7806 ; δ = +11 ; h = −6 ;
D = −113, E = +·994 ; G = −·776, H = −·088, K = −·625.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
College		18·8	35	e 4 20	− 3	e 8 6	SS	i 4 44	PP
Victoria		31·8	75	e 6 29	+ 1	—	—	—	—
Shasta Dam		36·3	87	i 7 9	+ 2	—	—	—	—
Mineral	Z.	37·0	86	e 7 14 a	+ 1	—	—	—	—
Hungry Horse		37·5	70	i 7 16	− 1	—	—	e 8 41	PP

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Reno	z.	38·6	85	i 7 28k	+ 2	—	—	—	—
Lick	z.	38·8	91	i 7 29a	+ 1	—	—	—	—
Tinemaha		41·1	89	i 7 47	0	—	—	—	—
China Lake	z.	42·3	88	i 7 57	0	—	—	—	—
Crest Line	z.	43·5	92	i 8 8	+ 1	—	—	—	—
Riverside	z.	43·6	92	e 8 3	− 5	—	—	—	—
Overton	z.	43·8	86	i 8 10	+ 1	—	—	—	—
Boulder City		43·9	87	e 8 11	+ 1	—	—	—	—
Pierce Ferry		44·4	86	i 8 14	0	—	—	—	—
Tucson		48·9	88	i 8 49	− 1	—	—	—	—
Pretoria	z.	149·5	319	e 19 50	[+ 3]	—	—	—	—

Additional readings :—
College e =4m.55s.
Mineral iZ =7m.20s., eZ =7m.27s.
Hungry Horse i =7m.36s., iP_cP? =9m.34s.
Reno eEN =7m.43s.
Lick iZ =7m.55s.
Crest Line iZ =8m.23s.
Riverside iZ =8m.19s.
Overton iPPZ =8m.34s.
Tucson e =9m.39s.

May 8d. 19h. Bolivia, probably deep.

La Paz iPZ =41m.44s., iP_g =41m.52s., iS =42m.17s., iS_g =42m.26s.
Huancayo eP =43m.12s.
Harvard iP =50m.55s., ipP? =51m.23s.
Tucson eP =51m.19s.
Shasta Dam eP =51m.36s.
Boulder City eP? =51m.51s., epP =52m.19s.
Riverside iPZ =51m.52s., ipPZ =52m.19s.
Mount Wilson iPZ =15m.54s., ipPZ =52m.22s.
China Lake iPZ =51m.59s., ipPZ =52m.27s., iZ =52m.43s.
Tinemaha iPZ =52m.8s., ipPZ =52m.35s., iZ =52m.51s.
Hungry Horse eP =52m.38s.
Tamanrasset iPZ =53m.2s.k, ipP?Z =53m.37s., iPP?Z =53m.52s.

May 8d. Readings also at 0h. (Rome and Tamanrasset), 1h. (near Garm and near Obi-garm), 2h. (near Grozny), 4h. (Kulyab, and near Garm), 5h. (Tamanrasset, near Algiers Univ., and near Istanbul), 6h. (College, Hungry Horse, Shasta Dam, Overton, Pierce Ferry, and Tucson), 9h. (near Triest, and near Ashkabad), 10h. (near Tortosa), 11h. (Pretoria, near Irkutsk, near Obi-garm and near Tananarive), 12h. (Garm (2), Stalinabad, Samarkand, near Obi-garm (2), Kulyab, and Fergana), 13h. (College, Hungry Horse, Shasta Dam, China Lake, Tinemaha, Overton, Pierce Ferry, Tucson, near Apia, Tamanrasset, near Algiers Univ., and near Granada), 14h. (near Grozny), 17h. (near Klyuchi, near Obi-garm and Garm), 18h. (Andijan, and near Tchimkent), 19h. (near Mizusawa), 20h. (Tamanrasset), 21h. (Prague, and near Garm), 22h. (near Abastumanj, Leninakan, Borzhomi, Zugdidi, Gori, and Tiflis), 23h. (near Istanbul).

May 9d. 6h. 10m. 30s. Epicentre 12°·0N. 47°·3E.

A = +·6635, B = +·7190, C = +·2066 ; δ = −12 ; h = +6 ;
D = +·735, E = −·678 ; G = +·140, H = +·152, K = −·978.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan		23·2	323	i 5 9k	0	9 28	+10	5 46	PP	—
Ksara		24·1	335	i 5 19a	+ 1	9 53	+19	—	—	—
Bombay		25·5	70	e 5 31	− 1	e 10 5	+ 8	—	—	11·9
Poona	E.	26·4	71	i 5 41	+ 1	10 10	− 2	6 22	PP	13·3
Ashkabad		27·7	18	5 53	+ 1	10 36	+ 3	—	—	—
Erevan		28·2	355	5 59	+ 3	—	—	—	—	—
Shemakla		28·5	2	e 6 4?	+ 5	—	—	—	—	—
Mary		28·6	24	e 5 58	− 2	—	—	—	—	—
Leninakan		28·8	355	6 5	+ 3	—	—	—	—	—
Tiflis		29·7	357	i 6 10	0	11 8	+ 2	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kodaikanal	E.	29·7	87	e 6 9	− 1	e 11 4	− 2	—	—	13·4
Abastumanj		29·9	354	6 13	+ 1	—	—	—	—	—
Gori		30·0	356	6 17	+ 5	—	—	—	—	—
Tananarive		30·7	180	e 9 2	P_cP	—	—	e 14 48	Q	16·0
Zugdidi		30·8	353	e 6 17	− 3	—	—	—	—	—
Grozny		31·2	358	e 6 29	+ 6	e 11 39	+10	—	—	—
Piatigorsk		32·1	355	e 6 32	+ 1	—	—	—	—	—
New Delhi	N.	32·4	54	e 6 34	0	i 11 50	+ 2	i 14 6	SS	—
Kulyab		32·7	33	e 6 35	− 1	i 11 52	0	—	—	—
Stalinabad		32·7	31	i 6 34	− 2	i 11 52	0	—	—	—
Istanbul		33·1	334	e 7 39	+59	e 12 56	+57	—	—	—
Obi-garm		33·2	32	i 6 40	0	i 12 2	+ 2	—	—	—
Garm		33·8	32	i 6 46	0	i 12 11	+ 1	—	—	—
Yalta		34·3	343	e 6 47	− 3	—	—	i 8 5	PP	—
Theodosia		34·4	346	e 6 54	+ 3	—	—	—	—	—
Tashkent		35·0	28	i 6 55	− 1	i 12 28	0	—	—	—
Fergana		35·6	33	7 0	− 1	12 37	− 1	—	—	—
Sofia		37·0	330	7 14	+ 1	13 1	+ 2	e 9 44	P_cP	—
Bucharest		37·1	335	e 7 19	+ 5	i 13 4	+ 3	—	—	23·5
Kishinev		38·2	340	7 23	0	13 17	0	—	—	—
Messina		38·5	318	e 7 25	− 1	e 13 24	+ 2	—	—	—
Taranto		38·8	322	7 31	+ 3	13 31	+ 5	—	—	18·5
Frunse		38·8	33	e 7 28	0	i 13 29	+ 3	—	—	—
Almata		40·3	34	e 7 39	− 1	i 13 50	+ 1	—	—	—
Tamanrasset	Z.	41·2	292	7 50k	+ 2	e 14 11	+ 9	i 9 18	PP	—
Kalossa		41·9	331	e 8 1	+ 7	—	—	—	—	—
Rome		42·5	321	7 58	− 1	i 14 22	0	17 3	SS	20·4
Budapest		42·6	332	8 1	+ 2	14 26	+ 3	17 36	SS	e 25·5
Ogyalla		43·3	332	e 8 8	+ 3	e 14 35	+ 2	e 17 48	SS	—
Skalnate Pleso		43·3	334	e 8 5	0	e 14 33	0	e 9 49	PP	—
Triest		44·0	326	e 8 9	− 2	i 14 44	+ 1	e 9 57	PP	—
Florence Xim.		44·3	323	e 8 0	−13	e 14 46	− 2	—	—	—
Moscow		44·3	353	8 12	− 1	14 46	− 2	—	—	—
Padova		44·4	324	e 8 19	+ 5	—	—	e 9 47	PP	—
Prato		44·5	323	e 8 16	+ 1	—	—	—	—	—
Pietermaritzburg	Z.	44·5	200	e 8 11	− 4	—	—	—	—	—
Bologna		44·7	324	e 8 22	+ 6	—	—	e 10 48	PPP	—
Raciborzu	N.	44·9	334	e 8 20a	+ 2	e 14 57	+ 1	—	—	—
Warsaw		45·4	338	e 8 20	− 2	e 15 1	− 3	10 7	PP	e 21·5
Salo		45·8	325	e 8 21	− 4	—	—	e 10 19	PP	—
Sverdlovsk		45·9	11	i 8 23	− 3	i 15 9	− 2	—	—	—
Pavia		46·3	323	e 8 23	− 6	—	—	—	—	—
Prague		46·6	332	8 29	− 3	15 18	− 3	e 10 24	PP	e 22·5
Algiers Univ.	Z.	46·7	310	i 8 33a	+ 1	—	—	e 10 18	PP	—
Chur		47·1	325	e 8 37	+ 2	—	—	—	—	—
Cheb		47·6	330	e 10 32	PP	e 15 32	− 3	e 11 21	PPP	—
Zürich		47·9	326	e 8 39a	− 3	e 15 36	− 3	e 10 37	PP	—
Collmberg		48·1	333	e 8 37?	− 6	(e 15 42)	0	e 10 10	PP	e 15·7
Stuttgart		48·4	328	e 8 43	− 3	e 15 43	− 3	e 10 38	PP	e 25·3
Jena		48·5	331	e 8 46	0	e 15 49	+ 1	e 10 55	PP	—
Basle		48·6	325	e 8 57	+10	e 15 47	− 2	e 10 53	PP	—
Potsdam		48·8	333	e 8 42	− 7	e 15 49	− 3	e 10 46	PP	e 23·5
Karlsruhe		48·9	328	e 8 54	+ 4	e 15 55	+ 2	—	—	—
Strasbourg		49·0	327	i 8 49a	− 1	e 15 52	− 3	e 9 50	P_cP	e 24·0
Grahamstown		49·2	203	e 8 57	+ 5	—	—	—	—	—
Besançon		49·3	324	i 8 51	− 2	—	—	i 10 47	PP	—
Pulkovo		49·3	349	e 8 50	− 3	15 55	− 4	—	—	—
Alicante		49·9	311	e 9 34	+37	i 17 10	+63	10 12	pP	e 26·5
Tortosa		50·0	314	e 8 57	− 1	16 5	− 4	—	—	—
Clermont-Ferrand		50·3	321	i 9 4	+ 4	e 16 18	+ 5	e 11 3	PP	21·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Copenhagen		51·3	336	e 9 7	− 1	i 16 26	0	20 9	SS	26·3
Granada		51·9	308	i 9 10k	− 2	i 16 37	+ 2	i 10 58	PP	28·8
Paris		52·1	324	e 9 12	− 2	e 16 38	0	e 20 22	SS	25·5
De Bilt		52·4	330	i 9 20k	+ 4	e 16 42	0	—	—	e 24·5
Malaga	N.	52·4	308	e 9 19	+ 3	e 16 46	+ 4	—	—	26·5
Upsala		52·6	342	e 8 26a	−52	e 16 34?	−10	e 18 56	S_cS	e 26·5
Toledo		53·0	312	i 9 22	+ 1	i 16 55	+ 5	—	—	—
Kew		55·0	327	i 9 37	+ 2	i 17 15	− 2	e 13 8	PPP	e 24·5
Durham		57·2	329	e 10 21	+30	—	—	i 13 26	PPP	—
Aberdeen		58·7	332	e 13 41	PPP	e 16 54	−72	—	—	e 24·9
Rathfarnham Castle		59·1	326	e 10 16	+12	i 17 7	−64	e 11 44	PP	e 25·5
Irkutsk		60·6	36	e 10 15	0	18 29	− 1	—	—	—
Vladivostok		78·0	48	—	—	21 52	− 3	—	—	—
College		102·5	7	e 18 2	PP	—	—	—	—	—
Hungry Horse		117·7	346	e 15 5	P	—	—	i 18 49	PKP	—
Mineral	z.	126·9	349	e 19 8a	[+ 2]	—	—	e 20 59	PP	—
Tinemaha	z.	129·3	345	e 19 15	[+ 4]	—	—	—	—	—
Lick	z.	129·8	349	i 19 14a	[+ 2]	—	—	—	—	—
China Lake	z.	130·3	344	e 19 15	[+ 2]	—	—	—	—	—
Tucson		131·3	336	e 19 18	[+ 4]	—	—	e 22 43	PKS	—
Crest Line	z.	131·7	343	e 19 19	[+ 4]	—	—	—	—	—

Additional readings :—
Helwan eZ =5m.27s.
Bombay eN =5m.36s.
Poona PPPE =6m.34s.
Shemakla i =6m.18s.? and 6m.41s.?
New Delhi iN =12m.21s.
Tamanrasset eP_cPZ =9m.32s., ePPPZ =9m.47s., eSSZ =16m.38s.
Rome 14m.28s., i =17m.25s.
Budapest eN =14m.19s., SN =14m.30s., eSSE =17m.42s., S_cSN =17m.59s., SSSE = 18m.30s., eSSSN =18m.37s.
Ogyalla e =10m.56s.
Skalnate Pleso ePPP =10m.12s., e =14m.50s., eSS =17m.41s., e =18m.13s.
Triest iP =8m.13s., ipP =9m.3s., isP =9m.15s., eP_cP =9m.39s., ePPP =10m.58s., eS_cP =13m.3s., ePS$_c$P =14m.15s., iSP =14m.59s., epS? =15m.51s., esS =16m.10s., eS_cS =17m.41s., iSS =18m.14s.
Bologna e =8m.42s.
Warsaw eZ =8m.25s., PPE =10m.11s., eN =14m.57s., SZ =15m.11s., eNZ =16m.16s., eE =16m.23s., eN =17m.19s., eZ =17m.42s., eS_cSN =18m.3s., eS_cSE =18m.8s., SSN =18m.34s., SSE =18m.38s., SSZ =18m.54s.
Salo e =8m.58s.
Prague i =8m.36s., e =9m.1s. and 9m.40s., eN =10m.7s., ePPP =10m.59s., e =15m.53s. and 17m.6s., eSS? =18m.24s.
Algiers Univ. iZ =8m.38s.
Cheb ePSE =15m.43s., e =18m.37s., eSS =19m.10s.
Collmberg eZ =8m.40s.
Stuttgart eP =8m.46s., eZ =9m.4s. and 9m.19s., e =17m.42s., eSSS =19m.30s.
Jena ePE =8m.49s.
Basle e =11m.39s.
Potsdam eZ =8m.51s., 9m.24s., and 15m.38s.
Strasbourg ePP =10m.49s., e =11m.6s., ePS =15m.59s., e? =17m.30s., eSS? =19m.54s.
Besançon i =9m.19s., e =10m.29s.
Alicante P_cP =10m.22s., PP =11m.54s., PPP =13m.6s., S_cP =14m.20s., PS =17m.16s., PPS =17m.30s., S_cS =19m.4s., SS =21m.0s. ; phases wrongly identified.
Clermont-Ferrand eSS =19m.49s.
Copenhagen 11m.9s. and 16m.4s.
Granada PPP =12m.4s., SS =20m.24s.
Paris e =9m.16s., eS =16m.42s.
Upsala eN =21m.56s.
Kew eSP =17m.28s., eSS =21m.4s.
Rathfarnham Castle ePPPZ =12m.56s., iEN =17m.47s.
College e =18m.10s.
Hungry Horse e =15m.13s.
Lick iZ =19m.20s.
Tucson e =19m.44s.
Long waves were also recorded at Bergen, Helsinki, Scoresby Sund, and Harvard.

May 9d. 9h. 20m. 3s. Epicentre 38°·2N. 38°·0E.

$A = +\cdot6208$, $B = +\cdot4850$, $C = +\cdot6159$; $\delta = -5$; $h = -1$;
$D = +\cdot616$, $E = -\cdot788$; $G = +\cdot485$, $H = +\cdot379$, $K = -\cdot788$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		4·7	202	i 1 12k	− 2	2 42?	S_g	—	—	—
Leninakan		5·2	58	1 18	− 3	—	—	—	—	—
Zugdidi		5·2	33	e 1 20	− 1	e 2 32	+10	—	—	—
Erevan		5·4	66	1 21	− 3	2 43	S*	—	—	—
Borzhomi		5·5	47	e 1 16?	− 9	i 2 42?	S*	—	—	—
Gori		6·0	49	e 1 27?	− 5	i 3 6?	S*	—	—	—
Tiflis		6·3	54	e 1 25	−11	—	—	—	—	—
Yalta		6·9	336	e 1 48	+ 3	—	—	—	—	—
Piatigorsk		7·0	32	e 1 45	− 1	e 3 23	S*	—	—	—
Theodosia		7·1	345	e 1 39	− 9	—	—	—	—	—
Istanbul		7·4	296	i 2 54	+62	i 5 48	?	—	—	—
Grozny		7·8	46	e 1 56	− 2	—	—	—	—	—
Shemakla		8·6	70	2 5	− 4	—	—	—	—	—
Helwan		10·0	216	e 2 30	+ 3	—	—	—	—	e 5·1
Bucharest		10·9	309	e 2 46	+ 6	e 5 3	+19	—	—	e 6·0
Athens		11·3	273	e 2 51	+ 5	—	—	—	—	—
Sofia		12·0	297	e 2 55	0	—	—	—	—	e 7·0
Kiszyl-Arvat		14·3	81	e 3 31	+ 5	—	—	—	—	—
Ashkabad		16·0	85	3 38	−10	6 48	+ 2	—	—	—
Taranto		16·2	285	3 55	+ 5	7 40	+49	—	—	—
Kalossa		16·3	307	e 4 8	+16	—	—	—	—	—
Budapest		16·7	310	3 59	+ 2	e 7 29	+26	—	—	e 12·1
Skalnate Pleso		16·8	316	e 3 58	0	e 7 21	+16	e 4 28	PPP	e 8·8
Ogyalla		17·4	311	e 4 13	+ 7	e 7 17	− 2	—	—	—
Moscow		17·6	359	e 4 3	− 5	e 7 24	+ 1	—	—	—
Messina		17·7	278	e 4 13	+ 3	e 8 2	+36	—	—	—
Zagreb		18·0	302	e 4 16	+ 3	e 7 42	+10	—	—	e 10·6
Warsaw		18·4	326	e 4 15a	− 3	7 52	+11	e 4 26	pP	e 11·0
Triest		19·5	301	i 4 33	+ 2	i 8 18	+12	i 6 44	PPP	—
Rome		19·9	289	e 4 34	− 2	i 8 35	+20	e 4 37	pP	—
Florence Xim		20·0	295	e 4 49	+12	i 8 31	+14	—	—	—
Padova		20·6	298	e 4 46	+ 3	—	—	—	—	—
Prague		20·6	314	i 4 41	− 2	i 8 37	+ 8	e 4 48	pP	—
Bologna		20·9	299	e 4 35	−11	—	—	e 5 10	PP	—
Prato		21·0	294	e 4 47	0	e 8 33	− 4	—	—	—
Cheb		21·8	312	e 4 55	− 1	e 9 3	+11	—	—	—
Collmberg	Z.	21·9	314	e 4 56	− 1	—	—	e 5 28	PP	—
Pulkovo		22·1	351	4 55	− 4	9 0	+ 2	—	—	—
Potsdam		22·4	318	e 4 57	− 5	—	—	e 5 25	PP	14·0
Chur		22·6	302	e 5 13	+10	—	—	—	—	—
Jena	E.	22·6	313	e 5 3	0	e 9 18	+11	—	—	—
Pavia		22·6	298	e 5 4	+ 1	—	—	—	—	—
Stuttgart		23·3	307	e 5 9k	− 1	e 9 25	+ 5	e 5 31	PP	e 14·0
Zürich		23·3	304	e 5 9k	− 1	e 9 20	0	—	—	—
Karlsruhe		23·9	308	e 5 17	+ 1	e 9 35	+ 5	—	—	e 16·0
Sverdlovsk		23·9	32	i 5 9	− 7	i 9 30	0	—	—	—
Basle		24·0	304	e 5 18	+ 1	e 9 39	+ 7	—	—	—
Stalinabad		24·1	79	i 5 9	− 9	i 9 32	− 2	—	—	—
Tashkent		24·2	73	i 5 11?	− 8	i 9 31?	− 4	—	—	—
Strasbourg		24·2	306	i 5 18a	− 1	e 9 34	− 1	i 6 12	PPP	13·4
Copenhagen		24·5	325	i 5 22	0	i 9 49	+ 9	—	—	13·0
Kulyab		25·0	81	e 5 24	− 3	e 9 50	+ 1	—	—	—
Besançon		25·1	303	e 5 26	− 2	—	—	e 6 3	PP	—
Upsala		25·3	336	e 5 32	+ 2	e 10 4?	+10	—	—	e 15·0
Fergana		26·1	75	e 5 27	−10	—	—	—	—	—
Andijan		26·5	75	5 42	+ 1	—	—	—	—	—
De Bilt		26·7	313	e 5 39	− 4	e 10 27	+10	—	—	e 14·0
Clermont-Ferrand		26·8	298	e 5 43	− 1	e 10 28	+ 9	—	—	e 12·3
Paris		27·6	305	e 5 49	− 2	e 10 39	+ 7	e 6 37	PP	e 14·0
Algiers Univ.	Z.	27·7	278	e 5 50	− 2	—	—	e 6 41	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tortosa		28·9	287	e 6 8	+ 5	e 11 2	+ 9	—	—	—
Naryn		29·2	72	e 5 58	− 7	—	—	—	—	—
Almata		29·8	77	e 6 1	−10	—	—	—	—	—
Alicante		30·1	283	e 6 13	0	i 11 19	+ 7	—	—	e 15·6
Tamanrasset	z.	31·7	251	i 6 28	+ 1	i 11 35	− 2	i 7 29	PP	—
Toledo	z.	32·5	287	i 6 35	+ 1	e 11 24	−25	—	—	—
Granada		32·7	282	i 6 55 a	+19	12 0	+ 8	7 52	PP	18·2
Malaga		33·5	282	e 6 35	− 8	e 11 53	−12	—	—	17·6
Irkutsk		47·1	50	8 31	− 4	e 15 21	− 7	—	—	—
Pretoria	z.	64·3	190	e 10 34	− 5	—	—	—	—	—
College		77·2	4	e 11 52	− 5	—	—	—	—	—
Weston		77·3	314	e 11 33	−25	—	—	—	—	—
Hungry Horse		90·3	343	i 13 0	− 4	—	—	—	—	—

Additional readings :—
Helwan eZ = 4m.6s.
Budapest PN = 4m.3s.
Skalnate Pleso e = 4m.3s., 4m.7s., 4m.44s., and 5m.2s., eN = 7m.25s.
Ogyalla e = 4m.39s. and 5m.31s.
Messina e = 4m.43s.
Warsaw ePEN = 4m.21s., ePPP = 4m.54s., eZ = 7m.40s., eN = 7m.44s., eE = 7m.50s., eZ = 9m.4s., eEN = 9m.12s.
Triest i = 5m.20s. and 5m.44s., iP_cP = 8m.47s., iP_cS = 12m.50s.
Rome PP = 4m.59s., e = 8m.2s.
Padova e = 5m.40s. and 6m.8s.
Prague e = 5m.2s., i = 5m.13s., e = 5m.30s., i = 6m.8s.
Bologna e = 4m.49s.
Cheb eS = 9m.8s.
Collmberg eZ = 5m.6s., 5m.40s., 6m.22s., and 6m.43s.
Stuttgart e = 6m.32s., eS = 9m.34s., eSS = 10m.57s.
Zürich e = 6m.48s.
Strasbourg e = 6m.44s., i = 6m.47s. and 7m.18s., e = 9m.44s., 9m.51s., 11m.8s., and 11m.12s.
Besançon i = 5m.56s. and 6m.20s.
Upsala eE = 11m.51s.
Paris i = 5m.51s., e = 6m.13s., $ePcP$ = 9m.5s., e = 11m.1s.
Tamanrasset iZ = 6m.32s., ePPPZ = 7m.48s., iZ = 8m.8s., 8m.46s., and 10m.44s.
Granada PPP = 8m.11s.
Long waves are also recorded at Bergen, Helsinki, Jersey, Kew, and Rathfarnham Castle.

May 9d. 11h. 16m. 56s. Epicentre 38°·4N. 58°·4E. (given by the station of U.S.S.R.).

A = +·4117, B = +·6692, C = +·6186 ; δ = −1 ; h = −1 ;
D = +·852, E = −·524 ; G = +·324, H = +·527, K = −·786.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ashkabad	0·4	185	i 0 12	− 1	—	—	—	—	—
Kizyl-Arvat	1·8	291	i 0 34	+ 2	—	—	—	—	—
Mary	2·8	106	i 0 49	+ 2	—	—	—	—	—
Samarkand	6·8	77	e 1 44?	0	i 2 4?	−59	—	—	—
Baku	6·9	290	e 1 46?	+ 1	—	—	—	—	—
Shemakla	7·9	290	i 1 59	0	—	—	—	—	—
Stalinabad	8·1	86	1 59	− 3	—	—	—	—	—
Obi-garm	8·8	84	i 2 12	+ 1	—	—	—	—	—
Tashkent	8·9	67	e 2 10	− 2	i 3 47	− 8	—	—	—
Fergana	10·6	75	e 2 32	− 4	—	—	—	—	—
Grozny	10·8	301	e 2 36	− 3	4 48?	+ 6	—	—	—
Erevan	10·9	284	2 39	− 1	4 42	− 2	—	—	—
Tiflis	10·9	292	i 2 37	− 3	i 4 34	−10	—	—	—
Andijan	11·0	73	2 40	− 2	4 47	0	—	—	—
Gori	11·5	293	i 2 49?	+ 1	4 51?	− 8	—	—	—
Leninakan	11·5	287	e 2 55?	+ 7	5 0?	+ 1	—	—	—
Borzhomi	12·0	291	2 52?	− 3	5 3?	− 8	—	—	—
Abastumanj	12·4	291	2 58	− 3	e 5 18	− 3	—	—	—
Piatigorsk	12·8	301	e 3 2?	− 4	5 19?	−11	—	—	—
Frunse	13·1	65	e 3 8	− 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zugdidi		13·2	293	e 3 12	+ 1	i 5 54	+14	—	—	—
Naryn		13·9	72	—	—	7 5	?	—	—	—
Almata		14·8	65	i 3 30	− 2	i 6 17	− 1	—	—	—
Przhevalsk		15·8	69	e 3 45	0	i 6 39?	− 3	—	—	—
Dehra Dun	N.	18·1	110	e 4 54	+40	e 8 22	+47	—	—	10·4
New Delhi		18·4	116	i 4 17	− 1	i 7 29	−12	4 39	PPP	—
Theodosia		18·4	299	e 4 15	− 3	7 45?	+ 4	—	—	—
Sverdlovsk		18·5	5	i 4 14	− 5	i 7 27	−17	—	—	—
Ksara		18·7	263	i 4 22a	0	7 53?	+ 5	—	—	—
Yalta		19·1	297	i 4 24	− 3	i 7 58	+ 1	—	—	—
Semipalatinsk		19·6	45	e 4 36?	+ 4	—	—	—	—	—
Moscow		22·2	329	i 4 59	− 1	e 8 59	− 1	—	—	—
Istanbul		22·7	287	e 6 4?	+60	e 10 23	+74	—	—	—
Bombay	E.	23·1	143	e 4 42	−26	e 9 18	+ 2	—	—	—
Poona	E.	23·9	141	4 19	−57	8 46	−44	4 55	?	—
Helwan		23·9	258	i 5 14k	− 2	9 34	+ 4	5 50	PP	—
Bucharest		24·9	296	i 5 28	+ 2	e 9 43	− 4	e 9 8	PcP	12·1
Sofia		26·9	291	5 54	+ 9	10 17	− 3	11 50	SSS	—
Lwow		27·0	307	e 5 45?	0	10 56	+34	i 12 37	SSS	—
Athens		27·2	280	5 49	+ 2	i 10 26?	+ 1	e 6 40	PP	—
Pulkovo		27·8	330	e 4 55?	−58	10 34?	− 1	—	—	—
Skalnate Pleso		29·3	305	e 6 9	+ 3	e 11 9	+10	e 6 46	pP	—
Warsaw		29·3	312	e 6 7	+ 1	11 1	+ 2	e 7 11	PP	e 17·1
Budapest		29·9	302	6 13	+ 1	11 10	+ 1	7 13	PP	—
Kalossa		29·9	300	e 6 22	+10	e 11 21	+12	e 7 0	PP	e 23·1
Calcutta	E.	30·1	113	e 5 59	−14	e 11 31	+19	—	—	—
Helsinki		30·3	328	e 6 13?	− 2	e 11 4	−11	e 7 5	PP	e 14·1
Ogyalla		30·5	303	e 6 59	+42	e 12 15	+57	e 7 32	PP	—
Raciborzu		30·7	307	e 6 20	+ 1	e 12 0	+39	e 7 44	PP	e 17·1
Taranto		31·6	288	6 36	+10	11 42	+ 7	—	—	—
Vienna		31·8	303	e 6 28	0	e 13 45	SS	e 7 46	PP	e 17·7
Zagreb		32·0	298	e 6 30	0	—	—	e 7 39	PP	e 24·1
Kodaikanal	E.	32·9	144	e 6 35	− 3	e 11 50	− 6	—	—	15·3
Prague		33·1	307	i 6 40	0	e 11 47	−12	e 7 22	pP	e 20·1
Messina		33·4	284	e 6 42	0	e 11 59	− 4	e 8 12	PPP	—
Upsala		33·5	324	i 6 41	− 2	i 12 0	− 5	i 7 40	PP	e 16·1
Triest		33·6	298	i 6 43	− 1	i 12 9	+ 3	i 7 40	PP	—
Collmberg		34·1	308	e 6 48	0	e 12 32	+18	e 8 4	PP	e 16·6
Potsdam		34·2	311	e 6 46	− 3	i 12 16	0	e 6 57	pP	e 15·1
Cheb		34·4	307	e 6 50	− 1	e 12 23	+ 4	e 7 24	pP	e 16·9
Irkutsk		34·5	51	e 6 56	+ 4	—	—	—	—	—
Copenhagen		35·0	316	i 6 56	0	i 12 27	− 1	8 24	PP	17·4
Jena		35·0	308	e 6 56	0	e 12 24	− 4	e 8 10	PP	—
Rome		35·0	292	e 6 53	− 3	i 12 26	− 2	i 7 55	PP	—
Bologna		35·4	297	e 7 5	+ 5	e 12 58	+24	e 8 11	PP	—
Florence Xim.		35·6	295	e 6 37	−24	i 12 12	−26	—	—	—
Prato		35·6	295	e 6 58	− 3	i 12 39	+ 1	—	—	—
Chur		36·4	300	e 7 6k	− 2	e 13 2	+12	—	—	—
Stuttgart		36·5	304	i 7 9	0	e 12 50	− 1	e 8 29	PP	e 20 1
Pavia		36·8	298	e 7 1i	0	—	—	—	—	—
Karlsruhe		37·0	305	e 7 14	+ 1	e 12 52	− 7	—	—	e 20·1
Zürich		37·0	302	e 7 11k	− 2	e 12 53	− 6	e 8 31	PP	—
Strasbourg		37·5	304	i 7 15k	− 2	e 13 4	− 3	e 8 38	PP	e 19·2
Basle		37·7	302	e 7 16	− 3	e 13 19	+ 9	—	—	—
Neuchatel		38·2	301	e 7 22	− 1	—	—	—	—	e 18·8
Besançon		38·8	301	e 7 27	− 1	—	—	e 9 1	PP	—
De Bilt		39·0	310	i 7 31	+ 1	e 13 30	+ 1	i 8 59	PP	e 19·1
Bergen		39·5	323	—	—	e 13 49	+12	e 16 15?	SS	19·7
Clermont-Ferrand		41·0	300	e 7 47	+ 1	i 13 59	0	i 9 20	PP	—
Paris		41·0	304	i 7 45	− 1	i 14 4	+ 5	i 9 22	PP	e 22·1
Durham	E.	42·3	314	i 9 45	PP	i 14 23	+ 4	—	—	—
Kew		42·3	309	i 7 58	+ 1	e 14 19	0	i 9 44	PP	e 22·1
Aberdeen	E.	43·2	317	i 8 7	+ 3	i 14 44	+12	i 9 51	PP	i 26·6
Edinburgh	E.	43·8	315	e 8 4	− 5	e 14 38	− 2	e 18 4	SS	—
Jersey	E.	43·9	306	e 8 21	+11	—	—	e 9 55	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tortosa		44·0	293	i 8 17	+ 6	14 54	+11	—	—	—
Alicante		45·5	291	8 30	+ 7	15 2	− 3	10 20	PP	e 22·2
Rathfarnham Castle		45·9	312	i 8 24	− 2	e 14 37	−34	i 9 17	PcP	e 23·1
Tamanrasset	Z.	47·5	268	i 8 39a	+ 1	e 15 47	+13	9 47	PcP	—
Toledo	Z.	47·6	293	i 8 38	− 1	—	—	i 10 24	PP	—
Granada		48·2	290	i 8 50a	+ 6	i 15 38	− 5	10 8	PcP	29·4
Malaga	N.	49·0	290	e 8 52	+ 2	e 15 46	− 9	—	—	24·1
Nanking		49·0	79	e 8 56	+ 6	e 15 49	− 6	11 8	PP	25·1
Scoresby Sund		51.2	336	e 9 9	+ 2	e 16 17	− 8	10 58	PP	24·1
Lisbon	N.	51·7	294	—	—	16 32	0	—	—	35·8
Vladivostok		54·2	60	9 36	+ 7	—	—	—	—	—
Pretoria	Z.	69·8	209	i 11 12	− 2	—	—	—	—	—
Pietermaritzburg	Z.	72·5	206	e 11 30	0	—	—	—	—	—
College		75·0	13	e 11 42	− 3	e 21 19	− 4	e 14 47	PP	—
Grahamstown		77·2	208	i 11 56	− 1	—	—	—	—	e 43·4
Seven Falls	E.	83·5	329	—	—	e 22 47	− 5	—	—	38·7
Sitka		83·7	8	—	—	e 23 18	+24	—	—	e 37·7
Vermont		86·6	328	—	—	e 23 24	+ 1	—	—	e 37·1
Ottawa		86·9	330	e 12 48	0	i 23 26	0	—	—	42·1
Harvard		87·5	326	i 13 21	+30	—	—	—	—	e 45·3
Weston		87·5	326	e 12 50	− 1	—	—	e 15 6	PP	e 43·4
Saskatoon		88·9	352	—	—	e 23 28	[+ 2]	—	—	41·6
City College, N.Y.		89·9	326	—	—	e 22 10	?	—	—	e 36·6
Philadelphia		91·2	326	—	—	e 23 36	[− 4]	e 25 15	PS	e 34·6
Pennsylvania	N.	91·6	329	—	—	i 24 16	+ 7	i 25 16	PS	—
Cleveland		92·5	332	—	—	e 23 45	[− 2]	i 24 16	S	45·2
Hungry Horse		93·4	355	i 13 19	+ 1	—	—	—	—	—
Victoria		93·4	1	e 13 26	+ 8	—	—	—	—	51·1
Seattle		94·3	0	i 13 31a	+ 8	—	—	e 17 44	PP	e 54·1
St. Louis		98·1	336	—	—	e 25 3	− 1	—	—	—
Shasta Dam		101·3	1	e 16 9	?	—	—	—	—	—
Mineral	Z.	101·6	0	e 14 7	+11	—	—	—	—	—
Santa Clara		104·6	0	—	—	e 32 33	SS	e 43 20	?	e 58·2
Tucson		109·0	351	e 16 32	?	—	—	e 18 21	PKP	e 56·7
La Paz		128·6	281	e 19 49	[+40]	—	—	—	—	63·7
Huancayo		131·3	291	e 19 18	[+ 3]	—	—	—	—	—

Additional readings :—
New Delhi SSN =7m.51s., SSSN =8m.2s.
Bucharest eS?E =9m.51s., iE =9m.57s., eSSN =10m.40s.
Athens iSS =11m.32s.?
Skalnate Pleso esP =7m.9s., ePP =7m.28s., esPP =8m.16s., ePcP =8m.52s., epPcP = 9m.43s., esS =12m.21s., eSS? =13m.39s., esSS? =14m.42s., iScS =16m.3s., and many other unidentified readings.
Warsaw ePPPN =7m.35s., ePPPE =7m.40s., PcP =9m.3s., iE =11m.48s., iN =11m.53s., SSE =12m.19s., SSN =12m.23s., SSSE =12m.59s., SSSN =13m.6s., iN =15m.11s., iE =15m.30s., ScSN =16m.27s., ScSE =16m.37s.
Budapest eN =6m.31s., SE =11m.16s., eE =11m.26s., SSN =12m.36s., SSSN =13m.0s., ScSN =17m.6s.
Kalossa eN =6m.29s. and 7m.12s., eSN =11m.26s., eE =12m.27s.
Ogyalla e =12m.30s. and 13m.9s., eSS =14m.22s.
Raciborzu ePPE =7m.58s., ePcPN =8m.52s., eSE =12m.3s., eSSE =15m.5s., eSSN = 15m.12s.
Prague esP =7m.46s., ePP =8m.16s., epPPE =8m.49s., ePcP =9m.12s., eScP =12m.47s., eSS =15m.4s., esSS? =15m.47s., eScS =16m.25s. and 16m.33s., epScS =17m.41s., esScS =18m.15s., and other unidentified e readings.
Upsala iPPPN =7m.58s., iPcPN =9m.23s., SE =11m.53s., iSSN =13m.36s., eSSSE = 13m.58s., and other unidentified phases.
Triest isP =7m.55s., iPP =7m.59s., iPcP =8m.46s., iPcS? =13m.20s., isS =13m.45s., iSS =14m.29s.
Collmberg ePPPZ =8m.27s., ePcPZ =8m.56s., eSSZ =14m.35s., and many other e readings.
Potsdam iPZ =6m.49s., ePN =6m.52s., iZ =7m.50s., ePPEN =8m.4s., eSSN =14m.34s., iSSSE =14m.53s., iSSZ =14m.57s.
Cheb esP =7m.48s., e =10m.1s., 13m.10s., 14m.27s., and 15m.49s.
Copenhagen 12m.49s., SS =14m.17s.
Jena eE =7m.21s.
Rome iZ =7m.1s., PPP =8m.18s., i =12m.47s.
Bologna e =13m.11s.
Stuttgart i =7m.17s., eZ =7m.36s., e =7m.48s., eZ =8m.35s., e =8m.44s. and 9m.40s., eSS =15m.28s., e =16m.23s.

Continued on next page.

Strasbourg e =7m.25s. and 7m.42s., iP_cP =9m.21s., eP_cS =13m.21s., e =13m.27s., 14m.21s., 15m.18s., and 15m.25s., iSS =15m.45s., eS_cS =17m.19s., and 17m.27s.
Besançon e =7m.37s. and 8m.34s., ePPP =9m.24s., e =10m.24s.
De Bilt eSS =15m.58s.
Clermont-Ferrand eP =7m.54s., i =9m.27s., 14m.12s., and 14m.18s.
Paris iSS =16m.50s., iS_cS =18m.12s., e =19m.23s., and other unidentified i readings.
Kew i =8m.6s., eSSEN =17m.8s., i =17m.26s.
Aberdeen iSSE =17m.58s.
Alicante PS =15m.12s., PPS =15m.22s., SS =18m.32s.
Rathfarnham Castle iZ =8m.53s., e =10m.7s. and 10m.37s., eEN =12m.31s.
Tamanrasset iZ =9m.21s., ePPZ =10m.36s., ePPPZ =11m.41s., eS_cSZ =18m.25s., eSSZ =19m.2s.
Granada iPP =10m.45s., PPP =11m.38s., SS =19m.20s.
Nanking iEZ =10m.51s., SEZ =16m.18s., SS?EZ =19m.37s., iQ?EZ =21m.40s.
Scoresby Sund 11m.58s., 16m.51s., SS =20m.12s., 20m.43s., SSS =21m.22s.
Lisbon SE =16m.35s.
College i =12m.9s., e =12m.37s. and 16m.43s., eS? =21m.32s.
Seattle e =13m.51s. and 51m.34s.
Tucson ePP =19m.7s., e =21m.54s.
Long waves were also recorded at Ivigtut and other American stations.

May 9d. Readings also at 0h. (Tamanrasset, Istanbul, Triest, near Taranto, and near Athens), 2h. (Pasadena, China Lake, Tinemaha, Tucson, Boulder City, St. Louis, Hungry Horse, College, Tacubaya, Tamanrasset, and near Alicante), 3h. (near Bogota), 4h. (near Tananarive), 6h. (Hungry Horse and Rathfarnham Castle), 8h. (Budapest, Triest, Algiers Univ., Tamanrasset, and College), 10h. (Algiers Univ. (2)), 12h. (Crest Line, Pasadena, Riverside, China Lake, Tinemaha, Tucson, Hungry Horse, Bogota, Chinchina, Tacubaya, and La Paz), 13h. (near Ashkabad), 15h. (Besançon), 16h. (Obi-garm, near Andijan and Fergana), 19h. (Andijan, near Fergana, and near Bandong), 20h. (near Apia), 21h. (near Huancayo), 23h. (Galera-zamba, Tucson, and near Tacubaya).

May 10d. 2h. 8m. 45s. Epicentre 47°·5N. 26°·7E.

Epicentre given by the U.S.S.R. network bulletin.

$A = +\cdot6058$, $B = +\cdot3047$, $C = +\cdot7350$; $\delta = +6$; $h = -4$;
$D = +\cdot449$, $E = -\cdot893$; $G = +\cdot657$, $H = +\cdot330$, $K = -\cdot678$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lwow		2·9	323	i 0 45	− 3	i 1 24	0	—	—	—
Bucharest		3·1	188	e 1 1	P_g	i 1 28	− 1	i 1 50	S_g	2·2
Skalnate Pleso		4·6	294	e 1 2	−10	e 2 12	+ 5	e 1 31	P_g	—
Ogyalla		5·8	277	e 1 52	P_g	e 2 51	S*	e 3 20	S_g	—
Warsaw		6·0	324	e 1 44	P*	3 13	S_g	e 2 2	P_g	e 4·2
Yalta		6·0	117	e 1 35	+ 3	—	—	—	—	—
Theodosia		6·5	109	e 1 53	P*	—	—	—	—	—
Istanbul		6·6	164	e 2 38	+57	e 6 9	?	—	—	—
Prague		8·5	292	e 1 56	−11	e 3 48	+ 3	i 4 13	S*	—
Triest		9·1	263	—	—	e 4 48	S_g	—	—	—
Collmberg	z.	9·7	298	e 2 20	− 2	e 5 19	S_g	e 2 13	?	—
Cheb		9·8	291	e 2 36	+12	—	—	—	—	—
Jena		10·5	295	e 2 38	+ 3	e 4 18	−17	e 4 55	SSS	e 5·5
Moscow		10·7	35	e 2 37	− 1	e 4 33	− 6	—	—	—
Rome		11·5	246	—	—	e 5 36	SSS	—	—	e 6·0
Stuttgart		11·8	283	e 2 38?	−15	—	—	e 2 43	P	e 6·0
Copenhagen		12·0	318	i 2 44	−11	—	—	—	—	6·6
Karlsruhe		12·3	284	e 2 59	0	—	—	—	—	e 7·1
Pulkovo		12·5	9	2 57	− 5	e 5 11	−12	—	—	—
Upsala		13·5	340	—	—	i 5 36	−11	i 5 43	S	i 7·1
Grozny		14·0	100	—	—	e 5 56	− 3	—	—	—
Ksara		15·3	150	e 3 38	− 1	—	—	—	—	—
Rathfarnham Castle		21·7	298	e 4 51	− 4	—	—	—	—	e 16·2
Tamanrasset	z.	30·0	222	6 11	− 1	—	—	—	—	—

Additional readings :—
Skalnate Pleso i =1m.5s., eP_g =1m.22s., e =1m.26s., and 1m.51s., S_g =2m.22s.
Ogyalla eN =2m.7s., e =3m.3s., 3m.24s., and 3m.33s.
Warsaw ePN =1m.55s., eZ =1m.58s. and 2m.12s., eE =2m.21s., e =2m.58s., S?EN =3m.10s.
Prague e =2m.6s., 3m.37s., and 4m.7s.
Upsala i =6m.13s., iS?E =7m.1s.
Long waves were also recorded at Potsdam, Strasbourg, Besançon, Kew, and De Bilt.

May 10d. 10h. 19m. 51s. Epicentre 6°·1S. 150°·5E. (as on 1948, July 8d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Brisbane		21·4	174	i 4 53k	+ 2	i 8 59	+14	i 5 31	PPP
Riverview		27·6	178	i 5 23a	−28	e 10 45	+13	—	—
Vladivostok		51·8	343	e 9 9	− 3	e 16 35	+ 2	—	—
College		83·9	32	e 12 28	− 5	e 22 46	−10	—	—
Andijan		85·0	312	e 12 45	+ 7	23 11	+ 4	—	—
Obi-garm		86·6	310	—	—	e 23 20	− 3	—	—
Stalinabad		87·3	309	—	—	e 23 25	− 4	—	—
Tashkent		87·4	312	i 12 55	+ 5	—	—	—	—
Shasta Dam		91·7	49	e 13 9	− 1	—	—	e 13 19	?
Lick	z.	92·0	52	e 13 16k	+ 4	—	—	e 13 25	?
Victoria		92·0	42	e 13 11	− 1	—	—	—	—
Mineral	z.	92·3	50	e 13 13	0	—	—	—	—
Pasadena	z.	94·5	56	e 13 21	− 2	—	—	—	—
Tinemaha	z.	94·6	54	e 13 21	− 3	—	—	—	—
Sverdlovsk		95·0	326	e 13 29	+ 3	e 24 4	[+ 3]	—	—
China Lake		95·1	54	e 13 23	− 3	—	—	—	—
Riverside	z.	95·1	56	e 13 23	− 3	—	—	—	—
Crest Line	z.	95·2	56	e 13 26	− 1	—	—	—	—
Boulder City		97·3	54	e 13 34	− 2	—	—	—	—
Hungry Horse		98·2	42	e 13 36	− 4	—	—	—	—
Yalta		112·9	316	e 19 37	PP	—	—	—	—
Stuttgart	z.	126·4	329	e 19 22?	[+17]	—	—	—	—
Tamanrasset	z.	142·4	300	i 19 38k	[+ 3]	—	—	—	—

Tamanrasset gives also iZ = 20m.13s. and 20m.30s.
Long waves were also recorded at Christchurch, Wellington, Berkeley, and Ksara.

May 10d. 22h. 30m. 28s. Epicentre 32°·2N. 5°·4W.

Maximum macroseismic intensity VII. Epicentre as adopted to the S.W. of Midelt (Strasbourg). Macroseismic area 80,000 sq. km.

J. Debrach.
Tremblements de terre Marocaines, Notes Marocaines, Bull. d'information et de liaison, Soc. de géographic dú Maroc, No. 1, Rabat 1952, p. 11-13, with isoseismic chart.

J. Debrach.
Premières observations relatives au tremblement de terre, Marocain du 10 Mai., 1950, Société des Sciences Naturelles du Maroc, Comptes rendus des séances mensuelles, 1950, No. 5, pp. 77-78.

A = +·8440, B = −·0798, C = +·5303; δ = −8; h = +1;
D = −·094, E = −·996; G = +·528, H = −·050, K = −·848.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Malaga	z.	4·6	10	e 1 10	− 2	i 2 6	− 1	i 1 26	P_g	—
Granada		5·2	16	1 43a	P_g	2 24	+ 2	—	—	—
Lisbon		7·2	336	1 48	− 1	3 12	− 1	—	—	3·8
Alicante		7·3	32	1 27	−23	2 37	−38	—	—	—
Toledo	z.	7·7	8	e 1 49	− 7	i 3 13	−12	i 4 3	S_g	—
Algiers Univ.	z.	8·3	54	i 2 12a	+ 8	i 3 56	+16	e 4 28	S_g	—
Tortosa		9·8	27	2 39	+15	5 7	S*	—	—	—
Tamanrasset	z.	13·5	131	i 3 16a	+ 1	i 5 50	+ 3	i 3 28	PP	6·6
Rome		17·2	51	e 4 6	+ 3	—	—	e 5 42	?	8·8
Besançon		17·4	27	e 4 14	PP	—	—	e 4 22	PPP	—
Paris		17·6	17	i 4 13	+ 5	(e 7 32?)	+ 9	—	—	e 7·5
Strasbourg		19·2	27	e 4 43	PP	—	—	—	—	—
Stuttgart		19·9	29	e 4 34	− 2	e 8 14	− 1	e 4 41	PP	e 10·5
Triest		20·0	42	—	—	e 8 19	+ 2	i 9 10	SSS	—
Rathfarnham Castle		21·1	359	e 5 5	PP	e 8 41	+ 2	—	—	e 11·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
De Bilt		21·3	18	e 4 37?	−13	(e 9 32?)	SSS	—	—	e 9·5
Jena		22·5	29	e 5 7	+ 5	—	—	e 5 26	PP	—
Prague		23·2	33	i 5 14	+ 5	e 9 26	+ 8	e 5 54	PPP	—
Collmberg	z.	23·4	30	e 5 14	+ 3	—	—	—	—	—
Potsdam	z.	24·2	27	—	—	e 9 58	+23	—	—	e 13·5
Ksara		34·5	76	e 3 37	?	—	—	e 8 26	PPP	—
Overton	z.	84·7	311	e 12 49	P_cP	—	—	—	—	—
Tucson		84·8	305	e 12 49	P_cP	—	—	—	—	—

Additional readings :—
Malaga iPZ = 1m.18s., iSZ = 1m.58s. and 2m.13s.
Granada S_g = 3m.14s., S = 3m.32s.
Lisbon P = 1m.52s., E = 3m.22s.
Toledo eZ = 1m.58s., iP*Z = 2m.5s.
Algiers Univ. eP*Z = 2m.38s., iZ = 2m.54s., iP_gZ = 3m.0s., iZ = 4m.12s. and 4m.43s., iS_gZ = 5m.2s.
Tamanrasset ePPPZ = 3m.37s., iZ = 5m.56s., iSSZ = 6m.3s., iSSSZ = 6m.13s.
Strasbourg e = 5m.10s. and 5m.21s.
Prague e = 6m.16s., 6m.47s., and 7m.52s.
Collmberg eZ = 5m.20s.
Long waves were always recorded at Clermont-Ferrand, Kew, Warsaw, and Copenhagen.

May 10d. 23h. 39m. 22s. Epicentre 16°·6S. 42°·0E.

Intensity IV in Anjouan Island (Mozambique Channel). Epicentre 16°·5S. 41°·75E. (Strasbourg).
Bulletin Séismique Mensuel de Tananarive.

A = +·7125, B = +·6416, C = −·2839 ; δ = −9 ; h = +5 ;
D = +·669, E = −·743 ; G = −·211, H = −·190, K = −·959.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tananarive		5·8	114	i 1 29	0	i 2 48	+10	i 3 15	S_g	4·1
Pretoria	z.	15·8	232	i 3 40	− 5	i 6 29	−13	i 6 52	SS	—
Johannesburg		16·1	231	e 3 50	+ 1	e 6 56	+ 7	—	—	e 9·5
Pietermaritzburg	z.	16·8	217	i 3 58	0	e 7 5	0	—	—	—
Grahamstown		21·7	217	i 4 56	+ 1	e 9 1	+10	—	—	e 10·1
Kodaikanal	E.	44·1	54	e 8 8	− 4	i 14 32	−13	17 36	SS	20·3
Bombay		46·5	42	e 8 36	+ 5	i 15 16	− 3	18 22	SS	21·2
Poona		46·9	43	e 8 33	− 1	15 18	− 7	10 22	PP	20·8
Helwan		47·3	348	e 8 35	− 2	15 26	− 5	10 32	PP	—
Ksara		50·5	354	e 9 0	− 2	16 47?	+31	—	—	—
Tamanrasset	Z.	53·0	317	i 9 19k	− 2	e 16 50	0	i 10 30	P_cP	22·0
Ashkabad		56·4	16	e 9 47	+ 2	17 33	− 3	—	—	—
New Delhi		56·4	38	e 9 43	− 2	i 17 1	−35	23 8	SSS	26·7
Leninakan		57·1	2	e 9 52	+ 2	—	—	—	—	—
Mary		57·1	19	e 9 46	− 4	—	—	—	—	—
Baku		57·2	7	e 9 53	+ 2	e 17 49?	+ 3	—	—	—
Shemakla		57·3	5	9 58	+ 6	—	—	—	—	—
Abastumanj		58·1	1	e 9 57	− 1	—	—	—	—	—
Tiflis		58·1	3	i 9 56	− 2	17 56	− 2	—	—	—
Dehra Dun	N.	58·2	37	e 19 26	S_cS	—	—	—	—	e 29·6
Gori		58·3	2	e 10 2	+ 3	—	—	—	—	—
Istanbul		58·6	349	e 11 1	+60	e 19 4	+60	—	—	—
Zugdidi		58·8	0	e 10 2	0	e 18 10	+ 3	—	—	—
Calcutta	E.	59·7	51	e 10 10	+ 1	e 18 17	− 2	e 10 54	P_cP	—
Grozny		59·7	4	e 10 11	+ 2	—	—	—	—	—
Messina		59·9	337	e 10 18	+ 8	—	—	—	—	—
Kulyab		60·2	26	e 10 9	− 3	e 18 18	− 7	—	—	—
Stalinabad		60·3	24	i 10 10	− 3	i 18 24	− 2	—	—	—
Obi-garm		60·8	25	e 10 13	− 3	i 18 27	− 6	—	—	—
Taranto		61·2	339	9 30	−49	17 49	−49	—	—	e 31·0
Yalta		61·2	354	e 10 17	− 2	18 32	− 6	—	—	—
Garm		61·3	25	i 10 16?	− 4	i 18 35?	− 4	—	—	—
Theodosia		61·6	355	e 10 20	− 2	—	—	—	—	—
Bucharest		62·4	348	10 27	0	18 46	− 7	22 37	SS	29·6
Tashkent		62·9	23	i 10 28	− 2	i 18 55	− 5	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fergana		63·1	25	e 10 32	0	—	—	—	—	—
Andijan		63·6	25	i 10 32	− 3	19 4	− 4	—	—	—
Rome		64·3	337	e 10 37	− 2	i 19 15	− 2	23 27	SS	29·6
Algiers Univ.	Z.	64·6	327	e 11 6	PcP	—	—	—	—	—
Naryn		65·8	28	e 10 49	0	e 19 26?	− 9	—	—	—
Frunse		66·3	26	e 10 49	− 3	—	—	—	—	—
Florence Xim		66·3	337	e 11 14	PcP	i 19 42	0	—	—	—
Zagreb		66·4	341	e 10 59	+ 6	—	—	—	—	e 27·6
Prato		66·5	337	e 11 6	+12	—	—	—	—	—
Padova		66·7	338	e 11 15	PcP	e 19 55	+ 9	e 12 28	?	—
Bologna	Z.	66·9	337	e 11 1	+ 5	—	—	—	—	—
Budapest	E.	67·0	344	10 56	− 1	19 47	− 3	—	—	e 31·6
Triest		67·0	340	e 11 0	+ 3	i 19 48	− 2	e 13 31	PP	e 32·0
Alicante		67·6	326	e 11 6	+ 5	e 19 58	+ 1	11 18	PcP	e 31·7
Ogyalla		67·6	344	e 11 8	+ 7	e 19 57	0	e 24 49	SS	—
Almata		67·7	27	e 10 58	− 3	e 19 53	− 5	—	—	—
Przhevalsk		67·7	29	e 11 7	+ 6	—	—	—	—	—
Salo		68·2	338	e 11 13	+ 9	—	—	e 12 35	?	—
Pavia		68·3	337	e 11 3	− 2	—	—	—	—	—
Skalnate Pleso		68·3	346	e 11 12	+ 7	e 20 11	+ 5	e 14 5	PP	—
Granada		68·6	323	i 11 13a	+ 6	i 20 10	+ 1	21 7	ScS	i 31·0
Malaga		68·8	322	e 11 10	+ 2	i 20 42	PPS	—	—	35·6
Tortosa		68·9	328	e 11 15	+ 6	20 10	− 3	—	—	—
Raciborzu		69·6	345	e 11 7	− 6	e 20 18	− 3	e 13 49	PP	—
Chur		69·6	338	e 11 11	− 2	—	—	—	—	e 39·6
Zürich		70·4	337	e 11 16	− 2	e 20 36	+ 6	e 13 56	PP	—
Neuchatel		70·7	337	e 11 19	− 1	—	—	—	—	—
Prague		70·7	343	i 11 18	− 2	e 20 33	− 1	e 14 1	PP	e 28·6
Toledo		70·7	325	e 11 18	− 2	e 20 37	+ 3	—	—	34·1
Basle		70·9	337	e 11 20	− 1	e 20 37	+ 1	—	—	—
Warsaw		70·9	347	e 11 19	− 2	e 20 33	− 3	e 20 59	PS	e 30·6
Besançon		71·3	335	e 11 20	− 3	—	—	e 11 44	PcP	—
Cheb		71·3	341	e 11 24	+ 1	e 20 35	− 6	e 14 5	PP	e 28·6
Stuttgart		71·3	339	i 11 22	− 1	e 20 46	+ 5	e 14 0	PP	e 32·6
Clermont-Ferrand		71·4	333	e 11 24	0	e 20 45	+ 3	i 11 43	PcP	34·6
Strasbourg		71·7	338	e 11 25	− 1	e 20 42	− 3	i 11 46	PcP	e 32·6
Karlsruhe		71·8	339	e 11 27	+ 1	e 20 46	0	—	—	e 40·6
Moscow		72·1	358	i 11 27	− 1	i 20 43	− 7	—	—	—
Collmberg	Z.	72·2	342	e 11 26	− 3	—	—	11 48	PcP	—
Jena		72·3	341	e 11 29	0	e 20 50	− 2	e 11 49	PcP	—
Lisbon		72·9	321	11 39a	+ 6	—	—	34 38	Q	e 37·4
Potsdam		73·1	342	e 11 32	− 2	—	—	i 11 46	PcP	e 31·6
Paris		74·0	334	e 11 38	− 1	e 21 12	+ 1	i 11 54	PcP	e 36·6
Sverdlovsk		74·8	11	11 41	− 3	21 13	− 7	11 56	PcP	—
De Bilt		75·5	338	e 11 50	+ 2	e 21 29	+ 1	e 14 43	PP	e 33·6
Copenhagen		76·2	344	i 11 51	− 1	e 21 35	− 1	—	—	37·1
Jersey	E.	76·3	333	e 11 55	+ 3	e 22 26	PPS	e 15 58	PPP	—
Pulkovo		76·7	355	11 53	− 2	21 36	− 5	12 8	PcP	—
Kew		77·2	335	e 12 1	+ 4	e 21 46	− 1	e 14 56	PP	e 33·6
Helsinki		77·7	352	—	—	e 21 42	−10	—	—	e 45·6
Upsala		78·7	348	i 12 11	+ 5	21 57	− 6	e 15 15	PP	e 40·6
Durham		80·2	337	e 12 26	PcP	i 22 17	− 2	—	—	—
Rathfarnham Castle		81·0	334	e 12 22	+ 4	e 22 28	+ 1	e 15 4	PP	e 36·1
Edinburgh	E.	81·6	337	—	—	e 22 38	+ 5	—	—	—
Aberdeen		82·1	338	e 12 33	PcP	e 22 43	+ 5	e 15 34	PP	e 42·2
Irkutsk		87·1	33	12 49	0	23 28?	0	—	—	—
Nanking		87·9	56	e 12 54	+ 1	i 23 35	0	29 22	PKKP	46·4
La Plata	E.	88·5	234	—	—	23 50	+ 9	—	—	43·8
Scoresby Sund		97·2	342	17 39	PP	24 16	[+ 3]	24 32	SKKS	41·1
Vladivostok		101·0	48	e 17 42?	PP	e 32 32	SS	—	—	—
La Paz		103·7	249	e 23 32	?	—	—	48 32	Q	54·9
Wellington		107·7	145	—	—	—	—	e 53 23	Q	e 59·1
Huancayo		111·8	250	—	—	—	—	e 47 22?	Q	e 50·9
San Juan		111·9	284	e 18 28	[− 9]	e 27 14	S	e 29 22	PS	e 44·8
Bermuda		112·6	299	—	—	e 28 18	?	—	—	e 49·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bogota		116·3	268	—	—	e 27 58	{+69}	—	—	e 58·2
Seven Falls	E.	117·5	315	—	—	e 29 45	PS	—	—	52·7
Chinchina		117·9	268	—	—	e 28 2	{+63}	—	—	55·6
Weston		118·2	310	e 18 50	[+ 1]	—	—	i 20 21	PP	e 62·6
Harvard		118·3	310	e 20 0	PP	e 31 3	PPPS	e 44 50	Q	e 54·3
Fordham		120·2	308	e 20 28	PP	e 30 15	PS	—	—	58·1
Philadelphia		121·2	307	e 30 37	PS	—	—	—	—	e 52·9
Washington		122·8	307	e 20 45	PP	—	—	—	—	e 62·2
Pennsylvania		123·2	309	i 20 47	PP	e 32 35	PPS	—	—	e 53·1
Cleveland		125·8	310	i 21 4k	PP	e 37 54	SS	—	—	—
Chicago		130·2	312	e 15 38	P	—	—	e 20 57	PP	e 64·8
College		131·2	6	e 19 12	[− 2]	—	—	e 21 32	PP	—
St. Louis		132·9	308	e 19 13	[− 5]	e 22 55	SKP	i 21 48	PP	—
Sitka		139·1	357	—	—	e 40 48	SS	—	—	e 70·8
Rapid City	E.	139·8	321	e 22 16	PP	—	—	—	—	e 68·8
Hungry Horse		142·7	333	i 19 31	[− 4]	—	—	e 22 52	PP	—
Victoria		146·0	342	e 19 42	[+ 1]	—	—	—	—	70·6
Logan		146·3	324	e 19 41	[0]	—	—	—	—	e 70·1
Seattle		146·4	340	i 19 45k	[+ 3]	—	—	—	—	—
Salt Lake City		147·0	322	e 20 6	[+23]	—	—	—	—	e 66·1
Tucson		150·9	308	i 19 51	[+ 2]	e 26 43	[−12]	e 23 21	PP	e 71·4
Overton	z.	151·2	318	e 19 52	[+ 3]	—	—	e 24 15	PP	—
Boulder City		151·8	317	e 19 54	[+ 4]	—	—	i 19 59	PKP_2	—
Reno	z.	152·2	328	e 19 52k	[+ 1]	—	—	e 20 4	PKP_2	—
Mineral	z.	152·4	332	e 19 51	[0]	—	—	e 23 43	PP	—
Shasta Dam		152·4	334	e 19 57	[+ 6]	—	—	e 21 45	?	—
Tinemaha		153·2	323	e 19 54	[+ 2]	—	—	i 20 0	PKP_2	—
Haiwee	z.	153·6	321	e 20 2	[+ 9]	—	—	—	—	—
Fresno	z.	154·3	325	e 20 1k	[+ 7]	—	—	e 23 56	PP	—
Crest Line	z.	154·4	318	e 19 56	[+ 2]	—	—	—	—	—
Berkeley	z.	154·7	330	i 20 4k	[+10]	e 30 3	{−41}	i 24 4	PP	—
Lick	z.	154·8	330	e 19 56	[+ 2]	—	—	i 20 20	PKP_2	—
Santa Clara		154·9	330	—	—	—	—	e 71 3	Q	e 85·0
Pasadena		155·1	318	e 19 50	[− 5]	—	—	—	—	e 68·0

Additional readings :—
Tananarive iP =1m.46s., iP* =1m.52s., iP_g =2m.1s., i =2m.57s. and 3m.32s.
Kodaikanal QE =18m.3s., SSSE =18m.26s.
Bombay SSSE =19m.19s.
Poona PPPEN =11m.9s., PSEN =15m.28s., PPSEN =15m.38s., SSEN =18m.34s., QEN =18m.40s., SSSEN =18m.54s.
Helwan iZ =8m.42s., eZ =9m.43s., PPPZ =11m.21s.
Tamanrasset iPPZ =11m.33s., iPPPZ =12m.37s., eSSZ =20m.29s.
Calcutta eP_cSE =14m.50s.
Bucharest eE =10m.29s.
Rome eSSSN =25m.54s.
Algiers Univ. iZ =11m.14s. and 11m.49s.
Budapest eSN =19m.56s., iN =21m.11s., eN =28m.8s.
Triest iPPP =15m.5s., iS_cS =21m.2s., eSS =24m.16s.
Alicante PP =13m.42s., PS =20m.22s., SS =24m.18s., Q =28m.24s.
Ogyalla e =11m.13s. and 11m.45s., ePP =14m.4s., e =14m.25s. and 20m.57s.
Skalnate Pleso e =11m.41s., 12m.51s., and 13m.47s., ePPP? =15m.9s., e =21m.11s., 21m.46s., 22m.31s., and 25m.56s., eSSS =26m.56s.
Granada ePP =14m.10s.. i =22m.19s., SSS =26m.31s.
Malaga iPSE =11m.16s., iPPEZ =14m.12s., PPPSE =15m.56s., PSSE =21m.34s,
Raciborzu ePN =11m.11s., eN =11m.14s., eP_cPN =12m.28s., eP_cPE =11m.32s., eE = 15m.32s., ePPPZ =15m.40s., ePPPN =15m.43s., eSN =20m.12s., eN =22m.22s. and 23m.34s.
Zürich e =11m.20s.
Prague ePPP =15m.44s., ePS =20m.55s., ePPS? =21m.22s., and other unidentified e readings.
Toledo P_cPZ =11m.28s., ePPZ =14m.32s.
Warsaw ePPE =14m.26s., ePPP =15m.36s., eP_cS =19m.17s., ePSN =20m.54s., eN = 22m.51s., eE =22m.54s., eSS =24m.46s., eSSSE =28m.18s.
Besançon e =11m.32s., 11m.54s., 12m.43s., and 13m.7s., ePP =14m.10s.
Cheb eP =11m.27s., e =13m.6s., ePPP =15m.55s., e =16m.47s.
Stuttgart i =11m.28s., eP_cPZ =11m.56s., eZ =12m.3s., e =12m.36s., ePPP =15m.44s., eS_cS =21m.28s., e =23m.50s., eSSS =28m.38s.?
Clermont-Ferrand i =11m.31s., ePS =21m.11s., eSS =25m.9s., Q =29·6m.

Continued on next page.

Strasbourg ePP =14m.8s., ePPP =15m.50s., ePS =21m.15s., eS$_c$S =21m.30s., eSS = 25m.23s., eSSS? =27m.51s., and other readings without phase.
Collmberg Z =11m.37s., 11m.52s., 12m.19s., and 15m.11s.
Jena ePE =11m.35s., eEN =12m.25s., ePP?N =14m.12s.
Lisbon PEN =11m.44s.
Potsdam iPZ =11m.35s?, ePN =11m.38s., iZ =12m.4s., iPPPZ =16m.9s.
Paris i =11m.43s., 11m.47s., 12m.21s., 12m.30s., and 12m.44s., ePP =14m.32s., ePPP = 16m.14s., eSS? =26m.38s., eQ =33·6m.
Sverdlovsk ePP =14m.36s., PS =22m.1s., SS =25m.56s.
De Bilt ePPP =16m.38s.
Pulkovo PP =14m.47s., PPP =17m.1s.
Kew ePSEN =22m.2s.
Upsala eE =12m.21s., eSSN =27m.1s., eSSSN =30m.28s., eQE =32·6m.
Rathfarnham Castle eZ =12m.44s., i =13m.5s., ePSEN =23m.3s., eEN =23m.38s. and 26m.42s.
Aberdeen eSN =22m.5s., eN =30m.51s.
Nanking PPNZ =17m.3s., iNZ =17m.32s., PPPNZ =19m.2s., PSNZ =25m.51s., PPS?NZ =27m.1s., SSNZ =31m.23s., iQNZ =41m.11s.
San Juan e =24m.5s., eSSS =38m.48s.
Pennsylvania eE =40m.17s., iZ =44m.18s.
St. Louis e =19m.16s.
Seattle i =19m.55s., 20m.0s., 20m.31s., 20m.35s., and 21m.35s.
Tucson e =23m.48s., 25m.10s., and 41m.23s.
Reno e =19m.58s., eN =20m.14s., eEN =20m.43s., eN =21m.8s., ePKS?E =24m.25s.
Mineral iZ =19m.58s.
Berkeley iZ =20m.11s. and 20m.19s., eE =35m.46s., eEN =37m.2s., eZ =38m.14s., eN =45m.32s.
Lick iZ =20m.6s.
Pasadena iZ =20m.6s., eZ =21m.55s. and 22m.37s.
Long waves were also recorded at Barcelona, Ivigtut, and at other North American stations.

May 10d. Readings also at 4h. (near Mizusawa, near Stalinabad, and Obi-garm), 8h. (College), 9h. (near Tacubaya), 11h. (Tucson, Washington, and near Huancayo), 13h. (Tucson), 14h. (Helwan, Tamanrasset, and near Obi-garm), 15h. (College, and near Ashkabad), 16h. (Ashkabad), 17h. (College and Hungry Horse), 19h. (Andijan, Garm, and near Obi-garm), 20h. (La Paz and La Plata), 21h. (Garm, near Fergana and Andijan), 23h. (Djakarta).

May 11d. Readings at 0h. (Bandong, Berkeley, Stuttgart, near Abastumanj, Borzhomi, Gori, Leninakan, Tiflis, and Zugdidi), 1h. (La Plata), 3h. (near Huancayo (2)), 6h. (near Istanbul), 7h. (Djakarta, and near Bandong), 8h. (Santa Clara, near Prague, near Istanbul, and near Garm), 9h. (Andijan, Fergana, Frunse, Garm, near Obi-garm, and Stalinabad), 10h. (near Mizusawa), 13h. (Crest Line, Mount Wilson, Riverside, Tinemaha, Tucson, Boulder City, Overton, Lick, Mineral, Shasta Dam, Hungry Horse, College, Weston, and Scoresby Sund), 14h. (La Paz, Boulder City, Harvard, and Ksara), 15h. (La Paz), 17h. (near Zagreb), 19h. (near Tortosa, near Bogota and Chinchina).

May 12d. 21h. 21m. 27s. Epicentre 5°·0S. 146°·0E. (as on 1942, June 6d.).

$A = -·8259$, $B = +·5571$, $C = -·0866$; $\delta = -3$; $h = +7$;
$D = +·559$, $E = +·829$; $G = +·072$, $H = -·048$, $K = -·996$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		23·3	163	e 5 13	+ 3	i 9 29	+ 9	i 10 7	SS	i 12·6
Riverview		29·1	171	i 7 44	PPP	—	—	—	—	e 14·8
Vladivostok		49·6	347	e 8 54?	− 1	i 16 2	− 1	—	—	—
Almata		78·4	316	e 12 6	+ 2	e 22 3	+ 3	—	—	—
Frunse		79·9	315	e 12 18	+ 6	—	—	—	—	—
Andijan		81·0	313	e 12 15	− 3	22 24	− 3	—	—	—
Fergana		81·3	312	e 12 17	− 3	—	—	—	—	—
Garm		82·1	311	e 12 19	− 5	—	—	—	—	—
Stalinabad		83·2	310	e 12 30	+ 1	e 22 48	− 1	—	—	—
College		84·6	23	i 12 34	− 2	—	—	—	—	—
Samarkand		84·7	310	e 12 37	0	—	—	—	—	—
Sverdlovsk		91·6	327	e 13 10	0	24 7	− 2	—	—	—
Shasta Dam		94·4	50	e 13 24	+ 1	—	—	—	—	—
Lick	z.	94·9	53	e 13 24	− 1	—	—	—	—	—
Pasadena	z.	97·6	56	e 13 38	0	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
China Lake	z.	98·1	55	e 13 40	0	—	—	—	—	—
Riverside	z.	98·3	56	e 13 40	− 1	—	—	—	—	—
Palomar	z.	98·7	57	e 13 38	− 4	—	—	—	—	—
Overton	z.	100·6	54	e 18 5	PP	—	—	—	—	—
Pierce Ferry		101·0	54	e 13 55	+ 2	—	—	—	—	—
Ksara		109·5	303	e 19 10	PP	—	—	—	—	—
Istanbul		113·4	313	e 9 27	?	—	—	—	—	—
Rome		124·7	319	e 21 8	PP	e 28 55	{+70}	e 40 30?	SSP	—
Tamanrasset	z.	138·0	299	e 19 44	[+17]	—	—	—	—	—

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

May 12d. 23h. 30m. 4s. Epicentre 1°·9S. 80°·4W. (as on 1943, Jan. 30d.).

A = +·1667, B = −·9855, C = −·0330 ; δ = +9 ; h = +7 ;
D = −·986, E = −·167 ; G = −·005, H = +·032, K = −·999.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Chinchina		8·3	35	e 2 3	− 1	e 3 34	− 6	—	—
Bogota		9·0	44	e 2 13	0	e 3 49	− 9	i 4 49	S_g
Huancayo		11·3	154	e 2 41	− 5	e 4 38	−16	—	—
La Paz		18·9	141	4 30	+ 6	—	—	—	—
Tucson		44·5	323	i 8 15	0	—	—	—	—
Harvard		44·9	10	i 8 16	− 2	—	—	—	—
Pierce Ferry		49·1	324	i 8 51	0	—	—	—	—
Palomar	z.	49·1	320	i 8 52	+ 1	—	—	—	—
Boulder City		49·5	324	e 8 54	0	—	—	—	—
Overton	z.	49·6	324	e 8 56	+ 1	—	—	—	—
Riverside	z.	49·8	319	e 8 57	+ 1	—	—	—	—
Mount Wilson	z.	50·4	319	i 9 3	+ 2	—	—	—	—
China Lake	z.	51·1	321	i 9 7	+ 1	—	—	—	—
Tinemaha	z.	52·3	322	e 9 16	+ 1	—	—	—	—
Lick	z.	54·6	320	i 9 33k	+ 1	—	—	—	—
Shasta Dam		57·1	324	e 9 48	− 2	—	—	—	—
Hungry Horse		58·0	335	e 9 56	− 1	—	—	—	—
College		82·3	337	e 12 21	− 4	—	—	—	—
Tamanrasset	z.	87·0	67	e 12 46	− 2	—	—	—	—

Additional readings :—
Bogota iSEN = 4m.24s.
Lick iZ = 9m.48s.
Tamanrasset iZ = 13m.2s.

May 12d. Readings also at 0h. (near Mizusawa), 3h. (Bogota, Chinchina, Huancayo, La Paz, and Istanbul), 4h. (Bogota, La Paz, near Huancayo (2), Harvard, Leninakan, Zugdidi, near Abastumanj, Borzhomi, Gori, and Tiflis), 5h. (near Alicante), 6h. (Bologna, Padova, Rome, and near Obi-garm), 9h. (Wellington), 10h. (Tucson, Overton, and College), 13h. (College), 16h. (Brisbane and Rome), 17h. (Brisbane, Collmberg, Rome, Stuttgart, Tamanrasset, Palomar, Pasadena, Riverside, Tinemaha, Tucson, Boulder City, Overton (2), Pierce Ferry, Shasta Dam, College (2), and near Mizusawa), 18h. (Obi-garm, and near Garm), 19h. (Istanbul, near Messina, and near Ashkabad).

May 13d. 8h. 46m. 10s. Epicentre 40°·5N. 127°·5W.

Given by the Seismo. Bull. of Northern California.

A = −·4642, B = −·6050, C = +·6469 ; δ = −1 ; h = −2 ;
D = −·793, E = +·609 ; G = −·394, H = −·513, K = −·763.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Shasta Dam		3·9	85	i 1 1	− 1	e 1 40	−10	—	—	e 2·0
Mineral	z.	4·5	90	i 1 8k	− 3	i 1 56	− 9	—	—	—
Berkeley	z.	4·8	121	i 1 12k	− 3	—	—	—	—	—
Branner		5·2	125	i 1 17k	− 4	e 2 12	−10	—	—	—
Lick		5·5	123	i 1 23k	− 2	i 2 22	− 8	i 1 49	P_g	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Reno		6·0	97	e 1 35	+ 3	—	—	e 1 55	P_g	—
Tinemaha	z.	8·0	112	i 2 1	+ 1	—	—	—	—	—
Haiwee	z.	8·7	117	i 2 9	− 1	—	—	—	—	—
China Lake	z.	9·1	118	i 2 13	− 1	—	—	—	—	—
Mount Wilson	z.	9·8	127	i 2 24	0	i 4 14	− 3	—	—	—
Riverside	z.	10·4	126	e 2 34	0	e 4 22	−10	—	—	—
Boulder City		10·9	110	e 2 42	+ 2	—	—	—	—	—
Overton	z.	11·0	107	i 2 43	+ 1	—	—	—	—	—
Pierce Ferry		11·5	108	i 2 49	+ 1	—	—	—	—	—
Hungry Horse		12·5	46	e 3 2	0	—	—	—	—	—
Tucson		15·7	116	e 3 52	+ 8	—	—	—	—	—

Additional readings :—
Mineral iZ =1m.13s.
Branner iZ =1m.24s.

May 13d. Readings also at 0h. (Tamanrasset), 1h. (Kew, and near Garm), 2h. (Tucson, Overton, Pierce Ferry, Hungry Horse, and College), 4h. (Overton), 5h. (Apia, Brisbane, Bogota, Huancayo (2), La Paz, Mount Wilson, Pasadena, Palomar (2), Riverside (2), China Lake (2), Tinemaha (2), Tucson (2), Boulder City, Overton (2), Pierce Ferry (2), Lick, Mineral, Shasta Dam, College, and Tamanrasset), 6h. (Wellington), 8h. (near Istanbul), 9h. (Fergana, Frunse, Mary, Tchimkent, near Andijan, Obi-garm, Samarkand, Tashkent, and Stalinabad), 10h. (Overton, Pierce Ferry, Harvard, and near Istanbul (2)), 12h. (Overton, and near Apia), 13h. (near Kizyl-Arvat), 14h. (Brisbane), 15h. (Palomar, Pasadena, Riverside, China Lake, Tinemaha, and Pierce Ferry), 16h. (Tamanrasset, Garm, near Andijan, and Obi-garm), 17h. (near Alicante), 18h. (La Paz, La Plata, Huancayo, Bogota, Galerazamba, Harvard, Tucson, College, Tamanrasset, Rome, Paris, Kew, and Ksara), 19h. (Clermont-Ferrand, De Bilt, Potsdam, Copenhagem, Stuttgart, Strasbourg, Scoresby Sund, Huancayo, and near Ottawa), 20h. (Tananarive, Fergana, Obi-garm, near Andijan, and Garm), 21h. (Tortosa, near Obi-garm), 22h. (Fergana, and near Andijan).

May 14d. 19h. 17m. 23s. Epicentre 38°·6N. 142°·5E. Depth of focus 0·005.
(as on 1946, Dec. 22d.).

Intensity V at Kamaichi, Sakari, Ichinoseki, Yonesato, Senmaya (Iwate Pref.), Onagawa, Kesennuma (Miyagi Pref.) ; IV at Sendai, Mizusawa, Miyako, Morioka ; II-III at Isinomaki, Hukusima, and Hatinohe. Epicentre 38°·5N. 142°·3E. Macroseismic radius 200-300km. Depth 40km.

Seismo. Bull. Cent. Met. Obs., Japan, for 1950. Tokyo, 1952, pp.19-20, with macroseismic chart.

$A = -·6216$, $B = +·4770$, $C = +·6213$; $\delta = -7$; $h = -1$;
$D = +·609$, $E = +·793$; $G = -·493$, $H = +·378$, $K = -·784$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyako		1·1	339	0 20k	0	0 34	− 2	—	—	—
Mizusawa	N.	1·2	297	0 16	− 6	e 0 44	+ 6	—	—	—
Sendai		1·3	255	0 17k	− 6	0 28	?	—	—	—
Morioka		1·5	317	0 25	− 1	0 44	− 1	—	—	—
Hukusima		1·8	242	0 26	− 4	0 46	− 6	—	—	—
Hatinohe		2·1	339	0 34	0	1 0	+ 1	—	—	—
Onahama		2·1	217	0 33	− 1	0 51	− 8	—	—	—
Akita		2·2	300	0 36	+ 1	—	—	—	—	—
Aomori		2·6	329	0 46	+ 5	1 26	+14	—	—	—
Mito		2·8	216	0 41	− 3	1 8	− 9	—	—	—
Kakioka		3·0	218	0 43	− 4	1 16	− 6	—	—	—
Tukubasan		3·1	219	0 53	+ 5	1 29	+ 5	—	—	—
Aikawa		3·4	262	0 49	− 3	1 33	+ 1	—	—	—
Kumagaya		3·5	227	0 53	− 1	1 31	− 3	—	—	—
Maebasi		3·5	233	0 52	− 2	1 30	− 4	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Tokyo		3·6	219	0 53	− 2	1 31	− 6	—	—	—
Mori		3·8	338	1 9	+11	—	—	—	—	—
Nagano		3·9	242	3 30	?	4 22	?	—	—	—
Matusiro		4·0	240	0 59	− 2	1 46	− 1	—	—	—
Hunatu		4·3	225	1 5	0	1 54	0	—	—	—
Misima		4·5	221	1 9	+ 2	1 57	− 2	—	—	—
Sapporo		4·5	349	1 45	?	—	—	—	—	—
Osima		4·6	214	1 3	− 6	1 53	− 9	—	—	—
Toyama		4·6	248	1 17	+ 8	2 8	+ 6	—	—	—
Wazima		4·6	257	1 2	− 7	1 57	− 5	—	—	—
Shizuoka		4·9	223	1 12	− 1	2 4	− 5	—	—	—
Nemuro		5·3	25	1 26	+ 7	—	—	—	—	—
Omaesaki		5·3	222	2 39	S	(2 39)	+20	—	—	—
Gihu		5·6	238	1 22	− 1	2 30	+ 3	—	—	—
Nagoya		5·6	234	1 25	+ 2	2 29	+ 2	—	—	—
Kameyama		6·1	234	1 35	+ 5	2 50	+11	—	—	—
Osaka		6·8	237	1 44	+ 5	—	—	—	—	—
Owase		6·8	231	1 46	+ 7	—	—	—	—	—
Sumoto		7·5	237	1 56	+ 7	—	—	—	—	—
Vladivostok		9·2	303	e 2 12	0	e 4 1	+ 6	—	—	—
Nanking		20·4	259	e 6 55	?	—	—	—	—	e 10·9
College		47·3	32	e 8 34	+ 5	—	—	—	—	—
Almata		48·6	298	e 8 42	+ 3	—	—	—	—	—
Andijan		52·7	296	e 9 10	0	—	—	—	—	—
Sverdlovsk		54·6	318	9 27	+ 3	—	—	—	—	—
Garm		54·8	296	e 9 26	0	—	—	—	—	—
Obi-garm		55·4	295	e 9 30	0	—	—	—	—	—
Stalinabad		56·1	295	e 9 35	0	—	—	—	—	—
Moscow		66·5	323	e 10 47	+ 2	—	—	—	—	—
Shasta Dam		69·5	53	e 11 9	+ 5	—	—	—	—	—
Hungry Horse		70·1	43	i 11 11	+ 4	—	—	—	—	—
Tinemaha	z.	74·2	54	i 11 37	+ 5	—	—	i 11 51	pP	—
China Lake	z.	75·4	55	i 11 55	pP	—	—	—	—	—
Mount Wilson	z.	76·0	57	e 12 0	pP	—	—	—	—	—
Overton	z.	77·0	53	e 11 54	+ 6	—	—	—	—	—
Pierce Ferry		77·5	53	e 11 56	+ 6	—	—	—	—	—
Collmberg	z.	80·2	331	e 12 7	+ 2	—	—	e 12 19	pP	—
Prague		80·9	329	e 11 56	−13	—	—	—	—	—
Jena	N.	81·0	331	e 12 11	+ 2	—	—	—	—	—
Tucson		82·0	54	e 12 21	+ 7	—	—	—	—	—
Stuttgart		83·7	330	e 12 25	+ 2	—	—	—	—	e 46·6
Strasbourg		84·4	331	e 12 28	+ 1	—	—	—	—	e 45·6
Besançon		86·1	332	e 12 38	+ 3	—	—	—	—	—
Tamanrasset	z.	106·8	318	e 18 20	[+ 2]	—	—	e 18 39	PP	—

Additional readings :—
Mizusawa SE =56s.
Omaesaki S =3m.37s.
Collmberg eZ =12m.45s.
Jena eP?E =12m.14s.
Long waves were also recorded at De Bilt, Paris, and Rome.

May 14d. Readings also at 2h. (Almata, Fergana, near Andijan, Frunse, Tchimkent, and near Raciborzu), 3h. (Collmberg, Jena, Prague, and Stuttgart), 4h. (Kew and near Obi-garm), 5h. (Hungry Horse, College, and Tamanrasset), 7h. (Istanbul), 8h. (Tamanrasset, Fergana, Tchimkent, near Andijan, Obi-garm, and Stalinabad), 10h. (Hungry Horse), 12h. (Istanbul), 13h. (Tamanrasset, Raciborzu, Garm, Tchimkent near Andijan and Fergana), 14h. (Istanbul and College), 16h. (Algiers Univ., Tamanrasset, Bucharest, near Istanbul, and Sofia), 17h. (near Istanbul), 18h. (Tamanrasset), 19h. (College), 20h. (Raciborzu and near Istanbul), 21h. (La Plata), 22h. (near Tacubaya), 23h. (Huancayo, Stalinabad, near Almata, Andijan, Fergana, Frunse, Garm, Obi-garm, Samarkand, Tashkent, Tchimkent, and near Tucson).

May 15d. 3h. 32m. 44s. Epicentre 25°·1N. 109°·7W. (as on 1950, January 1d.).

$A = -·3056$, $B = -·8536$, $C = +·4219$; $\delta = +2$; $h = +3$;
$D = -·941$, $E = +·337$; $G = -·142$, $H = -·397$, $K = -·907$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		7·1	354	e 1 45	− 3	i 3 14	+ 4	i 2 24	PP	i 3·8
Palomar		10·3	325	i 2 32	0	—	—	i 2 48	PP	—
Riverside	z.	11·1	325	e 2 42	− 1	—	—	i 2 57	PP	—
Tacubaya		11·3	118	e 2 42	− 4	e 3 33	?	—	—	e 5·5
Pasadena		11·6	325	e 2 49	− 1	—	—	i 3 12	PP	e 5·6
Pierce Ferry		11·6	342	e 2 51	+ 1	—	—	—	—	e 6·3
Boulder City		11·7	339	e 2 51	0	—	—	—	—	e 6·6
Overton	z.	12·1	342	e 2 53	− 4	—	—	—	—	e 6·4
China Lake	z.	12·6	330	i 3 4	+ 1	—	—	i 3 14	PP	—
Tinemaha	z.	14·0	331	e 3 21	− 1	—	—	—	—	—
Fresno	z.	14·5	326	e 3 29k	+ 1	e 5 46	−25	—	—	—
Salt Lake City		15·7	355	i 3 44	0	—	—	—	—	e 8·6
Lick	z.	15·9	325	e 3 48	+ 1	—	—	e 4 16	PP	—
Berkeley		16·6	323	e 3 54	− 2	—	—	—	—	e 8·6
Reno		16·7	332	e 3 58a	+ 1	—	—	e 4 24	PP	—
Mineral	z.	18·2	330	e 4 14a	− 2	—	—	e 4 47	PP	—
Shasta Dam		18·8	330	e 4 24	+ 1	—	—	—	—	—
Hungry Horse		23·5	354	e 5 6	− 6	—	—	i 5 13	pP	—
Pennsylvania	E.	30·8	52	i 7 54	PPP	—	—	—	—	—
College		46·7	339	e 8 33	+ 1	—	—	—	—	—

Additional readings :—
Overton iZ = 4m.1s.
Reno eZ = 4m.34s.
Long waves were also recorded at Scoresby Sund and other American stations.

May 15d. Readings also at 3h. (Tamanrasset), 4h. (Scoresby Sund and Tamanrasset), 5h. (De Bilt, Paris, Clermont-Ferrand, Potsdam, Strasbourg, Stuttgart, and Algiers Univ.), 6h. (Lick and near Prague), 7h. (Grozny, Leninakan, Tiflis, Zugdidi, near Abastumanj, Bozhomi, Gori, Stalinabad, and near Obi-garm; two shocks), 8h. (Neuchatel and Stuttgart), 9h. (near Huancayo), 11h. (near Istanbul), 13h. (Fergana, Garm, near Obi-garm, and Stalinabad), 14h. (Tamanrasset (2) and near Istanbul), 15h. (Brisbane, Lick, New Delhi, Tamanrasset, near Obi-garm, and near Ottawa), 16h. (Brisbane, Huancayo, La Paz, and near Garm), 17h. (Bogota and near Tacubaya), 18h. (Palomar, Pasadena, Riverside, China Lake, Tinemaha, Tucson (2), Overton, Pierce Ferry, College, Harvard, Weston, Huancayo, Galerazamba, Scoresby Sund, and near Garm), 19h. (near Garm), 20h. (Fergana (2), Samarkand, Stalinabad (2), Tchimkent, near Andijan (2), Garm (2), and Obi-garm (3)), 21h. (College).

May 16d. 15h. 31m. 44s. Epicentre 25°·5S. 178°·5E. Depth of focus 0·080.
(as on 1946, October 8d.).

$A = -·9034$, $B = +·0237$, $C = -·4281$; $\delta = -4$; $h = +3$;
$D = +·026$, $E = +1·000$; $G = +·428$, $H = -·011$, $K = -·904$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland	N.	11·8	195	e 4 11	?	e 4 42	− 1	—	—	—
Arapuni		12·8	190	e 2 43	− 4	e 5 6	+ 4	—	—	—
Tuai	N.	13·3	185	—	—	e 5 5	− 6	—	—	—
New Plymouth	E.	14·0	194	3 4	+ 5	—	—	—	—	—
Apia		14·8	40	—	—	e 5 37	− 1	—	—	—
Wellington		16·1	190	3 20	0	e 5 59	− 3	—	—	—
Cobb River	E.	16·3	196	e 3 22	0	e 5 58	− 7	—	—	—
Kaimata	N.E.	18·0	199	e 3 38	0	e 6 28	− 6	—	—	—
Christchurch		18·6	194	e 3 44	0	—	—	—	—	—
Brisbane		22·9	260	i 4 22k	− 2	—	—	i 6 54	sP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena		84·4	48	i 11 36	0	—	—	e 13 44	pP	—
Palomar		84·8	50	i 11 39k	+ 1	—	—	i 13 47	pP	—
Riverside	z.	84·9	49	i 11 38k	− 1	—	—	i 13 46	pP	—
Shasta Dam		85·7	42	i 11 43	0	—	—	e 13 49	pP	—
China Lake	z.	85·8	47	i 11 42k	− 1	—	—	i 13 46	pP	—
Mineral	z.	86·0	42	i 11 44a	0	—	—	e 13 52	pP	—
Tinemaha	z.	86·1	46	i 11 45	+ 1	—	—	—	—	—
Reno	z.	86·6	43	e 11 48k	+ 1	—	—	e 13 56	pP	—
Boulder City		87·7	48	i 11 53	+ 1	—	—	e 13 59	pP	—
Overton	z.	88·3	48	i 11 56	+ 1	—	—	i 14 4	pP	—
Pierce Ferry		88·4	49	i 11 58	+ 3	—	—	e 14 4	pP	—
Tucson		88·5	54	i 11 57	+ 1	—	—	e 14 5	pP	—
College		93·8	14	e 12 18	− 2	—	—	e 14 24	pP	—
Hungry Horse		95·0	38	e 12 25	− 1	—	—	—	—	—
Copenhagen		148·2	345	i 18 44	[+ 3]	—	—	—	—	—
Prague		152·5	338	e 19 32	pPKP	—	—	e 20 30	?	—
Stuttgart	z.	155·3	343	e 18 49	[− 2]	—	—	e 19 20	PKP_2	—
Tortosa		164·6	354	i 16 41	?	—	—	—	—	—
Tamanrasset	z.	173·0	—	e 19 8	[+ 2]	e 22 45	PKS	e 21 24	pPKP	—

Additional readings :—
Reno eE = 12m.8s., 12m.29s., and 14m.10s.
Copenhagen i = 18m.49s.

May 16d. 17h. 21m. 47s. Epicentre 5°·6S. 153°·6E. (as on 1949, November 1d.).

$A = -·8915$, $B = +·4426$, $C = -·0969$; $\delta = +6$; $h = +7$;
$D = +·445$, $E = +·896$; $G = +·087$, $H = -·043$, $K = -·995$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		21·8	182	i 4 50a	− 6	i 8 49	− 3	i 5 32	sP	—
Riverview		28·2	184	e 5 58	+ 2	i 10 40	− 1	i 10 56	sS	—
Auckland	N.	36·7	152	e 8 23	PP	e 13 1	+ 7	—	—	e 19·2
Wellington		40·3	156	—	—	e 9 38	P_cP	e 18 34	Q	21·2
Christchurch		41·3	159	—	—	e 14 8	+ 4	e 16 53	SS	e 18·5
Nanking		50·0	321	i 8 57	− 1	i 16 13	+ 4	10 57	PP	e 21·3
Vladivostok		52·3	340	i 9 19	+ 4	i 16 46	+ 6	—	—	—
Irkutsk		71·2	330	11 24	+ 1	—	—	—	—	—
Kodaikanal	E.	77·4	282	e 11 59	+ 1	i 21 46	− 3	22 40	PPS	35·9
New Delhi		80·8	300	e 12 15	− 2	i 22 17	− 8	23 5	PS	—
Poona	E.	82·1	290	i 12 21	− 3	i 22 31	− 7	—	—	—
College		82·3	21	i 12 28	+ 3	e 22 28	−12	—	—	—
Bombay		83·1	290	e 12 31	+ 2	22 47	− 1	—	—	—
Almata		83·8	315	i 12 35	+ 3	—	—	—	—	—
Sitka		84·7	31	—	—	e 23 13	+ 9	—	—	e 40·4
Frunse		85·8	313	e 12 41	− 1	e 23 13	− 2	—	—	—
Andijan		87·0	311	e 12 49	+ 1	i 23 28	+ 1	—	—	—
Fergana		87·4	310	e 12 50	0	23 28	− 2	—	—	—
Garm		88·3	309	i 12 53	− 2	i 23 37	− 2	—	—	—
Obi-garm		88·7	308	i 12 56	− 1	—	—	—	—	—
Shasta Dam		89·1	49	e 13 6	+ 8	—	—	e 16 36	PP	—
Tchimkent		89·3	313	e 12 59	0	i 23 50	+ 2	—	—	—
Stalinabad		89·4	309	12 59	− 1	i 23 48	− 1	—	—	—
Tashkent		89·4	311	e 13 1?	+ 1	i 23 45?	− 4	—	—	—
Mineral	z.	89·6	49	e 13 8a	+ 7	—	—	—	—	—
Seattle		90·1	43	—	—	e 23 49	− 6	e 25 27	PS	e 48·2
Reno	z.	90·9	51	e 13 14k	+ 7	—	—	e 16 51	PP	—
Pasadena		91·6	56	i 13 18	+ 8	—	—	—	—	—
Tinemaha	z.	91·9	53	i 13 18	+ 7	—	—	—	—	—
China Lake	z.	92·3	54	i 13 19	+ 6	—	—	—	—	—

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.	92·3	56	i 13 19	+ 6	—	—	—	—	—
Palomar	z.	92·6	57	i 13 21	+ 6	—	—	—	—	—
Boulder City		94·6	54	e 13 30	+ 6	—	—	e 17 12	PP	—
Overton	z.	94·6	54	e 13 32	+ 8	—	—	e 17 23	PP	—
Pierce Ferry		95·2	54	e 13 33	+ 6	—	—	e 17 23	PP	—
Hungry Horse		95·7	42	e 13 34	+ 5	—	—	—	—	—
Sverdlovsk		96·3	327	e 13 31	− 1	e 24 46	− 3	—	—	—
Tucson		97·7	59	e 17 43	PP	—	—	—	—	—
Baku		104·0	310	—	—	e 24 38	[− 8]	—	—	—
Tiflis		107·7	312	e 18 50	PP	e 26 28	+ 3	—	—	—
Moscow		109·0	328	e 19 4	PP	e 28 28	PS	—	—	—
Yalta		114·7	317	e 19 38	PP	e 29 20	PS	—	—	—
Scoresby Sund		115·1	359	e 19 52	PP	e 25 44	[+12]	e 29 29	PS	54·2
Ksara		116·0	305	e 19 54	PP	29 34	PS	—	—	—
Istanbul		119·3	315	e 20 17	PP	e 29 14	PS	—	—	—
Potsdam	z.	123·2	333	i 20 43	PP	e 31 13	PPS	—	—	e 65·2
Prague		124·0	330	e 18 55	[− 5]	e 21 36	?	—	—	—
Jena		124·9	332	e 20 54	PP	—	—	—	—	—
Harvard		125·7	40	e 47 45?	Q	—	—	—	—	e 73·0
De Bilt		126·8	337	e 21 4	PP	e 32 43	PPS	—	—	—
Stuttgart		127·5	331	e 19 9	[+ 2]	e 22 25	PKS	e 21 12	PP	—
Strasbourg		128·3	332	e 19 11	[+ 2]	e 22 33	PKS	e 21 18	PP	—
Huancayo		128·3	110	e 19 16	[+ 7]	—	—	—	—	—
Rome		130·0	323	e 21 22	PP	e 22 36	PKS	—	—	—
Besançon		130·1	331	e 19 15	[+ 3]	—	—	—	—	—
Paris		130·4	335	e 19 16	[+ 3]	e 22 46	PKS	e 21 24	PP	e 71·2
Chinchina		131·0	88	i 19 8	[− 6]	e 22 35	PKS	—	—	—
Galerazamba		131·4	80	—	—	e 22 44	PKS	—	—	—
Bogota		132·5	89	—	—	e 22 52	PKS	—	—	—
Clermont-Ferrand		132·5	332	e 19 20	[+ 3]	e 22 48	PKS	e 21 45	PP	—
La Paz		133·3	119	i 19 24	[+ 6]	22 53	PKS	—	—	—
Algiers Univ.	z.	138·9	322	e 19 30	[+ 1]	—	—	e 22 21	PP	—
San Juan		139·2	68	—	—	e 38 50	SS	—	—	e 45·8
Alicante		139·8	328	19 26	[− 4]	23 36	PKS	22 38	PP	e 72·3
Granada		142·3	330	19 42a	[+ 7]	26 24	[−19]	e 23 12	PP	72·5
Fort de France		144·7	73	e 19 41	[+ 2]	—	—	—	—	—
Tamanrasset	z.	144·8	304	i 19 41k	[+ 2]	e 27 4	[+17]	i 22 55	PP	—

Additional readings :—
Brisbane iNZ =4m.55s. and 5m.7s., iE =5m.11s., iZ =5m.42s., iN =6m.18s., iE = 9m.11s., esSN =9m.37s.
Nanking eNZ =9m.17s., ipP?NZ =9m.36s., eNZ =10m.4s., PPPNZ =11m.11s., eNZ = 14m.53s., S_cSNZ =18m.57s., SSNZ =19m.41s.
Kodaikanal SSE =26m.43s.
College e =12m.46s. and 22m.53s.
Seattle e =24m.35s. and 26m.8s.
Reno eE =13m.38s. and 17m.15s., ePPPZ =18m.29s.
Scoresby Sund ePPS =30m.50s., SS =35m.19s.
Stuttgart ePKPZ =19m.21s., e =23m.31s., eSS =38m.19s., eZ =46m.13s.
Strasbourg ePPS? =32m.21s.
Paris e =18m.57s., ePP =21m.30s., eP_cP =31m.34s., ePPS =33m.20s.
Galerazamba eEN =23m.40s.
Bogota eEN =23m.54s.
Clermont-Ferrand ePS =31m.51s.
Granada SS =41m.30s.
Tamanrasset iZ =20m.8s., eSKKSZ =30m.25s.

May 16d. Readings also at 0h. (Riverview, Auckland, and Istanbul), 2h. (Algiers Univ. and near Garm), 4h. (Bucharest and Harvard), 5h. (Istanbul and Seattle), 6h. (Riverside, China Lake, Tinemaha, Tucson, Overton, Pierce Ferry, Mineral, Hungry Horse, Seattle (2), and College), 8h. (Istanbul and near Obi-garm), 12h. (College and near Apia (2)), 13h. (Boulder City, Overton, Pierce Ferry, and Seattle), 14h. (Tortosa), 18h. (near Prague), 19h. (College), 20h. (Palomar, China Lake, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Seattle, Tortosa, and Bucharest), 22h. (Tamanrasset, Pierce Ferry, Shasta Dam, Hungry Horse, College (2), near Athens, and near Shemakla), 23h. (Nanking, Shasta Dam, and College).

May 17d. 5h. 8m. 4s. Epicentre 7°·5N. 126°·7E. (as on 1950, April 12d.).

$A = -\cdot5926$, $B = +\cdot7950$, $C = +\cdot1297$; $\delta = +2$; $h = +7$;
$D = +\cdot802$, $E = +\cdot598$; $G = -\cdot078$, $H = +\cdot104$, $K = -\cdot992$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bandong		23·8	235	e 5 20	+ 5	e 9 58	+30	—	—	—
Djakarta		24·0	237	e 5 15	− 2	e 9 48	+16	—	—	—
Nanking		25·5	344	i 5 34	+ 2	i 10 17	+20	6 39	PP	—
Vladivostok		35·8	6	i 7 4	+ 1	e 12 40	− 1	—	—	—
Almata		56·2	319	e 9 37	− 7	—	—	—	—	—
Frunse		57·6	317	e 10 9	+15	e 18 8?	+17	—	—	—
Andijan		58·4	313	e 10 1	+ 1	—	—	—	—	—
Garm		59·4	312	e 10 8	+ 2	—	—	—	—	—
Obi-garm		59·8	311	i 10 7	− 2	e 18 21	+ 1	—	—	—
Tashkent		60·8	313	—	—	e 18 37?	+ 4	—	—	—
Sverdlovsk		70·8	328	11 19	− 1	e 20 33	− 2	—	—	—
College		81·3	26	e 12 18	− 2	—	—	—	—	—
Moscow		83·3	326	e 12 31	+ 1	e 22 49	− 1	—	—	—
Ksara		86·6	303	e 12 48	+ 2	e 23 45	+22	—	—	—
Istanbul		90·8	311	e 13 4	− 2	e 24 6	+ 4	—	—	—
Scoresby Sund		99·4	351	e 13 52	+ 6	24 15	[− 9]	17 52	PP	50·9
Rome		102·6	316	—	—	e 24 30	[−10]	e 37 56	SSS	e 52·9
Kew		105·8	329	—	—	e 36 29	SSS	e 41 19	Q	e 54·9
Pierce Ferry		108·5	48	e 19 4	PP	—	—	—	—	—
Tamanrasset	z.	115·1	300	e 18 46	[+ 3]	—	—	—	—	—
Granada		115·7	317	—	—	(24 8)	?	—	—	24·1

Additional readings :—
Nanking eNZ = 10m.7s.
Scoresby Sund 27m.37s.
Long waves were also recorded at Warsaw, Potsdam, De Bilt, Paris, Strasbourg, and Clermont-Ferrand.

May 17d. 11h. 46m. 48s. Epicentre 39°·4N. 130°·3E. Depth of focus 0·080.
Intensity II-III at Kakioka, Urakawa, and Inawashiro. Epicentre as adopted.
Depth 600km. Macroseismic radius 300km.

Seismo. Bull. Cent. Met. Soc., Japan, for 1950, Tokyo, 1952, pp. 20, 21.

$A = -\cdot5012$, $B = +\cdot5909$, $C = +\cdot6322$; $\delta = +4$; $h = -1$;
$D = +\cdot763$, $E = +\cdot647$; $G = -\cdot409$, $H = +\cdot482$, $K = -\cdot775$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vladivostok	3·9	17	i 1 25	+ 4	i 2 33	+ 8	—	—	—
Hamada	4·7	162	1 29k	+ 2	2 38	+ 1	—	—	—
Hirosima	5·3	161	1 33	+ 1	2 47	+ 1	—	—	—
Toyooka	5·3	136	1 34k	+ 2	2 48	+ 2	—	—	—
Wazima	5·5	109	1 36	+ 2	2 53	+ 4	—	—	—
Hukuoka	5·8	179	1 40k	+ 3	2 56	+ 2	—	—	—
Matuyama	5·9	160	1 38k	0	2 54	− 2	—	—	—
Kobe	6·1	139	1 40	0	3 4	+ 5	—	—	—
Kyoto	6·2	134	1 40k	− 1	3 1	0	—	—	—
Ooita	6·2	170	1 38k	− 3	3 6	+ 5	—	—	—
Sumoto	6·2	142	1 42k	+ 1	3 4	+ 3	—	—	—
Hikone	6·3	129	1 42	0	3 4	+ 2	—	—	—
Osaka	6·3	137	1 43	+ 1	3 7	+ 5	—	—	—
Aikawa	6·4	100	1 42k	− 1	3 1	− 3	—	—	—
Kôti	6·4	155	1 43k	0	3 0	− 4	—	—	—
Kumamoto	6·6	177	1 47k	+ 2	3 0	− 8	—	—	—
Kameyama	6·7	131	1 48k	+ 2	—	—	—	—	—
Nagano	6·8	111	1 47	+ 1	2 49	−22	—	—	—
Nagoya	6·8	126	1 46k	0	3 11	0	—	—	—
Matusiro	6·9	112	1 47k	0	3 11	− 2	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tomie		6·9	191	4 8a	?	5 38	?	—	—	—
Simidu		7·0	161	1 53k	+ 5	3 18	+ 3	—	—	—
Owase		7·1	136	1 50k	+ 1	3 16	0	—	—	—
Siomisaki		7·4	142	1 52	0	3 19	− 3	—	—	—
Miyazaki		7·5	173	1 55k	+ 2	3 27	+ 3	—	—	—
Akita		7·6	84	1 53k	− 1	3 21	− 4	—	—	—
Maebasi		7·6	111	1 52k	− 2	3 23	− 2	—	—	—
Hunatu		7·8	117	1 54k	− 2	3 24	− 5	—	—	—
Kagosima		7·8	178	2 21k	+25	3 37	+ 8	—	—	—
Shizuoka		7·8	122	1 56k	0	3 32	+ 3	—	—	—
Kumagaya		7·9	111	1 53	− 4	3 32	+ 1	—	—	—
Omaesaki		7·9	125	1 59k	+ 2	3 32	+ 1	—	—	—
Hukusima		8·1	98	1 57k	− 2	3 32	− 2	—	—	—
Utunomiya		8·1	108	1 56	− 3	3 25	− 9	—	—	—
Aomori		8·2	77	1 59k	− 1	3 37	+ 1	—	—	—
Sendai		8·3	94	1 59	− 2	3 31	− 7	—	—	—
Kakioka		8·4	109	2 0	− 2	3 10	−30	—	—	—
Mizusawa		8·4	88	2 1	− 1	3 35	− 5	—	—	—
Morioka		8·4	84	2 0k	− 2	3 33	− 7	—	—	—
Tokyo		8·4	113	1 59k	− 3	3 31	− 9	—	—	—
Tukubasan		8·4	109	1 58k	− 4	3 30	−10	—	—	—
Yokohama		8·4	115	2 2k	0	3 48	+ 8	—	—	—
Mito		8·6	107	2 1	− 3	3 33	−10	—	—	—
Osima		8·6	120	2 0	− 4	3 38	− 5	—	—	—
Hatinohe		8·7	79	2 2	− 3	3 36	− 9	—	—	—
Onahama		8·7	103	2 3k	− 2	3 40	− 5	—	—	—
Mera		8·8	117	2 5	− 1	4 7	+20	—	—	—
Miyako		9·0	85	2 7k	− 1	3 44	− 7	—	—	—
Sapporo		9·1	63	2 8	− 1	—	—	—	—	—
Nanking		11·9	235	i 2 41	+ 3	i 4 44	− 1	—	—	—
Nemuro		12·1	66	2 40	0	4 43	− 6	—	—	—
Irkutsk		22·1	315	i 4 19	+ 2	7 46	+ 3	—	—	—
Klyuchi		26·2	39	e 4 55	+ 2	e 8 44	− 4	—	—	—
Semipalatinsk		36·5	306	i 6 21	0	e 11 23?	− 3	—	—	—
Calcutta	E.	39·3	258	e 6 45	+ 2	i 12 12	+ 5	8 27	pP	—
Almata		39·7	295	i 6 49	+ 2	e 12 17	+ 4	—	—	—
Naryn		40·8	292	6 21	−35	15 0	sS	—	—	—
Frunse		41·5	294	i 7 4	+ 3	i 16 0	S_cS	8 44	pP	—
Andijan		43·6	292	i 7 20	+ 2	13 11	+ 3	16 12	S_cS	—
Fergana		44·2	292	i 7 22	0	13 18	+ 1	e 16 13	S_cS	—
New Delhi	N.	44·8	274	i 7 27	0	i 13 24	− 1	9 11	pP	—
Tchimkent		45·2	295	i 7 31	+ 1	i 16 22	S_cS	—	—	—
Garm		45·7	291	i 7 34?	0	i 13 40?	+ 2	i 16 24	S_cS	—
Tashkent		45·7	294	i 7 35	+ 1	i 16 52	S_cS	—	—	—
Obi-garm		46·3	290	i 7 39	0	13 46	0	e 9 21	pP	—
Stalinabad		47·0	290	i 7 44	0	i 13 57	+ 1	i 9 28	pP	—
Sverdlovsk		47·5	317	7 47	− 1	16 35	S_cS	i 9 33	pP	—
Samarkand		47·9	293	i 7 52	+ 1	i 16 37	S_cS	—	—	—
Djakarta		50·3	211	e 8 9	0	e 14 42	+ 1	—	—	—
Bandong		50·6	210	—	—	e 14 45	0	—	—	—
College		51·8	33	i 8 18	− 2	i 14 53	− 8	e 10 2	pP	—
Mary		52·4	293	i 8 24	0	—	—	—	—	—
Poona	E.	52·7	265	i 8 23	− 3	—	—	i 10 32	pP	—
Bombay		53·3	266	i 8 29	− 1	i 15 20	− 1	10 24	pP	—
Ashkabad		54·8	294	i 8 42	+ 1	—	—	—	—	—
Kodaikanal	E.	55·1	255	i 8 44	+ 1	i 15 52	+ 8	10 36	pP	—
Colombo	E.	55·6	249	8 47	+ 1	15 52	+ 1	—	—	25·2
Baku		59·6	301	i 9 15	+ 1	e 16 45	+ 3	—	—	—
Moscow		59·9	321	i 9 15	− 1	i 16 44	− 2	i 11 8	pP	—
Sitka		60·0	39	i 9 17	+ 1	i 16 48	+ 1	e 20 4	sS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Shemakha		60·3	302	i 9 29	+11	—	—	i 11 25	pP	—
Grozny		60·9	305	e 9 23	+ 1	e 16 57	− 1	—	—	—
Pulkovo		61·5	327	i 9 25	− 1	i 17 2	− 4	e 11 19	pP	—
Piatigorsk		62·3	307	9 32	+ 1	17 14	− 1	—	—	—
Tiflis		62·3	304	i 9 31	0	i 17 15	0	—	—	—
Gori		62·6	304	9 31	− 2	i 17 19	0	—	—	—
Honolulu		63·1	84	e 9 32	− 4	—	—	—	—	—
Borzhomi		63·2	304	9 37	0	e 17 27	+ 1	—	—	—
Erevan		63·3	302	9 40	+ 2	—	—	—	—	—
Leninakan		63·4	303	9 40	+ 2	—	—	—	—	—
Abastumanj		63·6	304	9 35?	− 5	17 27?	− 4	—	—	—
Helsinki		63·6	329	i 9 39	− 1	e 17 26	− 5	—	—	—
Zugdidi		63·8	306	i 9 15?	−26	e 17 8?	−26	—	—	—
Theodosia		66·5	311	e 9 58	0	18 2	− 4	—	—	—
Upsala		66·7	330	i 9 56k	− 3	i 18 3	− 5	e 11 50	pP	e 25·2
Yalta		67·5	310	i 10 3	− 1	18 14	− 4	i 11 58	pP	—
Scoresby Sund		68·6	351	i 10 10	0	i 18 29	− 1	i 19 13	S_cS	—
Kishinev		69·2	316	10 12	− 2	—	—	—	—	—
Brisbane	z.	69·8	159	i 10 17a	− 1	—	—	i 12 50	pP	—
Cernauti		70·0	317	10 18	− 1	18 39	− 7	—	—	—
Warsaw		70·1	323	10 19k	0	i 18 45	− 2	12 18	pP	e 34·2
Bergen	z.	70·9	336	10 19	− 5	—	—	—	—	—
Victoria		70·9	43	i 10 23	− 1	i 18 56	0	e 12 23	pP	—
Copenhagen		71·6	330	i 10 27	− 1	i 19 0	− 4	22 33	sS	—
Seattle		72·0	43	i 10 32k	+ 2	e 19 10	+ 1	i 12 34	pP	—
Bucharest		72·3	314	i 10 32	0	—	—	i 12 31	pP	—
Skalnate Pleso		72·4	321	i 10 37	+ 4	19 12?	− 1	i 12 33	pP	—
Ksara		72·5	300	i 10 33k	0	19 24	+10	12 31	pP	—
Istanbul		72·6	310	i 10 33	− 1	e 19 13	− 2	—	—	—
Raciborzu		72·8	323	i 10 35	0	e 19 17	0	i 12 34	pP	—
Potsdam		73·6	327	i 10 39k	− 1	i 19 23	− 3	i 12 36	pP	—
Budapest		74·1	320	10 43	+ 1	i 19 30	− 2	e 12 43	pP	—
Ogyalla		74·3	321	e 11 2	+19	e 19 35	+ 1	e 12 45	pP	—
Collmberg		74·4	325	e 10 44	0	e 19 32	− 3	e 12 43	pP	—
Prague		74·6	324	i 10 45	0	i 19 34	− 3	e 12 44	pP	—
Kalossa		74·8	319	e 10 47	+ 1	e 19 39	0	e 12 48	pP	—
Sofia		74·9	314	e 10 47	0	i 19 40	0	—	—	—
Vienna		74·9	322	i 10 47	0	e 19 53	+13	i 12 47	pP	—
Arcata		75·3	49	i 10 49a	0	i 19 44	0	i 12 52	pP	—
Jena		75·3	326	i 10 48	− 1	i 19 41	− 3	i 12 48	pP	—
Riverview	z.	75·4	163	i 10 50a	0	—	—	—	—	—
Cheb		75·5	325	e 10 51	+ 1	i 19 45	− 2	e 12 59	pP	—
Hungry Horse		75·7	38	i 10 51	0	i 19 46	− 3	e 12 50	pP	—
Saskatoon		76·3	33	i 18 54	?	e 23 31	?	—	—	—
Shasta Dam		76·4	48	i 10 54	− 1	e 19 51	− 5	i 12 51	pP	—
Zagreb		76·8	320	e 10 58	+ 1	e 19 58	− 2	e 12 58	pP	—
De Bilt		77·1	330	i 10 59k	0	i 20 2	− 2	i 12 58	pP	—
Mineral	z.	77·1	48	i 10 48a	−11	e 20 21	SP	i 12 41	pP	—
Athens		77·7	310	e 11 0	− 2	—	—	—	—	—
Stuttgart		77·9	325	i 11 2k	− 1	i 20 10	− 2	i 13 3	pP	—
Helwan		78·0	299	i 11 3a	− 1	20 9	− 4	i 13 3	pP	—
Triest		78·0	321	i 11 2	− 2	i 20 11	− 2	i 13 6	pP	—
Butte	N.	78·1	39	i 11 2	− 2	e 20 12	− 2	e 25 52	SS	—
Karlsruhe		78·1	326	i 11 4	0	i 20 12	− 2	—	—	—
Berkeley		78·3	51	i 11 4a	− 1	e 20 12	− 4	i 13 4	pP	—
Reno		78·6	48	i 11 7a	0	i 21 19	SP	i 13 11	pP	—
Strasbourg		78·7	326	i 11 7k	0	i 20 19	− 1	e 13 5	pP	—
Santa Clara	E.	78·8	51	i 20 11	S	(i 20 11)	−10	—	—	—
Bozeman		79·0	39	e 11 3	− 6	i 20 23	0	e 13 25	pP	—
Lick		79·0	51	i 11 8a	− 1	e 20 22	− 1	i 13 8	pP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chur		79·2	324	e 11 10	0	e 20 22	− 3	e 13 11	pP	—
Zürich		79·2	325	e 11 9k	− 1	e 20 21	− 4	e 13 8	pP	—
Basle		79·6	325	e 11 12k	0	e 20 27	− 3	e 13 13	pP	—
Salo		79·6	323	i 11 12k	0	i 20 27	− 3	i 13 14	pP	—
Ivigtut		79·7	359	i 11 11	− 2	i 20 27	− 4	24 2	SS	—
Kew		79·8	332	i 11 12a	− 1	i 20 23	− 9	i 13 12	pP	e 41·2
Taranto		79·8	316	11 13	0	20 30	− 2	e 29 12	SSS	—
Bologna		80·0	322	i 11 16k	+ 2	i 20 35	+ 1	i 13 17	pP	—
Neuchatel		80·3	325	e 11 13	− 3	e 20 44	+ 7	—	—	—
Rathfarnham Castle		80·3	336	i 11 15	− 1	e 20 42	+ 5	i 13 15	pP	—
Besançon		80·5	326	i 11 16	− 1	—	—	i 13 18	pP	—
Fresno		80·5	50	i 11 16a	− 1	e 20 36	− 3	e 13 20	pP	—
Florence Xim.		80·6	321	i 11 18	+ 1	i 20 38	− 2	—	—	—
Pavia		80·6	323	e 11 17	0	—	—	—	—	—
Prato		80·6	321	i 11 19	+ 2	i 20 38	− 2	—	—	—
Paris		80·8	329	i 11 18	0	e 20 31	−11	i 13 20	pP	e 38·2
Tinemaha		81·2	49	i 11 20a	0	i 20 47	+ 1	i 13 25	pP	—
Rome		81·3	319	i 11 20k	− 1	i 20 45	− 2	i 13 22	pP	—
Logan		81·5	42	i 11 21	− 1	i 20 47	− 2	e 13 23	pP	—
Jersey	E.	82·3	332	e 11 30	+ 4	e 20 50	− 7	—	—	—
Messina		82·3	315	i 11 25	− 1	e 20 56	− 1	i 13 27	pP	—
China Lake		82·5	49	i 11 26a	− 1	i 20 55	− 4	i 13 32	pP	—
Clermont-Ferrand		82·9	326	i 11 28	− 1	e 20 55	− 7	i 13 33	pP	—
Pasadena		83·3	51	i 11 30a	− 1	i 20 57	− 9	i 13 36	pP	—
Overton	Z.	83·8	47	i 11 34	+ 1	e 21 4	− 7	i 13 40	pP	—
Riverside		83·8	51	i 11 32a	− 1	i 21 0	−11	i 13 37	pP	—
Boulder City		84·0	48	i 11 35	+ 1	e 21 5	− 8	i 13 41	pP	—
Pierce Ferry		84·3	47	i 11 36	0	e 21 5	−11	i 13 43	pP	—
Palomar		84·6	51	i 11 37a	0	i 21 8	−11	i 13 43	pP	—
Tortosa		88·0	325	e 11 36	−17	21 23	[− 7]	—	—	—
Tucson		88·9	48	i 11 58	0	e 21 37	[+ 2]	e 13 49	pP	—
Algiers Univ.	Z.	90·0	320	i 12 0a	− 3	—	—	i 14 8	pP	—
Alicante		90·4	324	12 7	+ 3	e 23 9	?	15 47	PP	e 42·6
Toledo	Z.	90·8	327	i 12 5	− 1	—	—	e 14 11	pP	—
Shawinigan Falls	N.	92·0	15	—	—	e 21 47	[− 6]	—	—	—
Chicago		92·2	28	—	—	e 21 46	[− 8]	e 26 2	SS	—
Ottawa		92·4	18	e 14 21	pP	i 21 50	[− 5]	i 22 26	S	—
Granada		92·8	325	i 12 14k	− 2	e 21 27	[−30]	13 51	pP	44·8
Malaga		93·5	325	e 12 7	−12	e 22 19	[+18]	—	—	e 42·2
St. Louis		93·9	31	i 12 20	− 1	i 22 41	− 1	i 14 29	pP	—
Cleveland		94·4	24	i 12 23k	0	i 22 47	+ 1	i 14 32	pP	—
Harvard		96·1	15	i 14 39	pP	—	—	—	—	—
Weston		96·3	15	e 13 34	+62	—	—	—	—	—
Fordham		97·1	18	—	—	e 23 7	− 2	e 22 19	SKS	—
Pennsylvania		97·2	21	—	—	i 22 11	[−10]	i 22 54	S	—
Tamanrasset	Z.	99·5	310	e 12 44	− 2	e 23 39	+10	i 14 53	pP	—
Pretoria	Z.	114·8	257	i 17 39	[0]	—	—	i 20 19	pPKP	—
Pietermaritzburg	Z.	115·3	252	e 18 30	PP	—	—	—	—	—
Grahamstown		120·0	250	e 20 0	SKP	—	—	—	—	—
Chinchina		129·8	33	e 17 54	[−14]	—	—	e 20 17	SKP	—
Bogota		130·8	33	e 18 8	[− 2]	e 26 25	SKKS	e 21 38	PP	—
Huancayo		144·5	47	i 18 36	[+ 1]	e 40 7?	SS	e 20 49	SKP	—
La Paz		152·1	40	i 18 48	[+ 2]	i 28 32	SKKS	i 22 48	PP	—

Additional readings :—
Calcutta sSE =15m.17s., SS?E =15m.32s., S_cSE? =16m.2s.
Frunse PP =8m.56s.
Andijan eSS =17m.8s.?
Fergana esPP =11m.49s.
New Delhi iS_cSN =16m.21s., sS?N =16m.44s., SSN =17m.17s., SSSN =17m.42s.
Obi-garm isS =16m.27s., SS =17m.48s.
Stalinabad iPP =9m.42s., iSS =16m.32s.
Sverdlovsk iP_cP =9m.5s., isP =10m.35s., sS =17m.14s., iSS =17m.34s.
College e =12m.44s., iS_cS =17m.5s., esS =18m.4s.
Poona iE =9m.22s. and 12m.1s.
Bombay iS_cSEN =17m.20s., sSEN =18m.45s.

Continued on next page.

Kodaikanal PPE =10m.59s., iS_cSE =17m.37s., SSE =19m.19s., SSSE =20m.7s.
Moscow iPP =11m.38s., sP =12m.10s., PPP =13m.18s., sPP =14m.20s., esS =20m.8s.
Sitka i =18m.9s., eSS =22m.0s.
Pulkovo PP =11m.50s., iS_cS =18m.14s., isS =20m.36s.
Upsala iP_cPE =10m.24s., iN =11m.3s., eN =11m.24s., iPPE =12m.33s., iS_cS =18m.53s., eN =20m.7s., esS =21m.30s.
Yalta ePPP =14m.31s., esS =21m.44s.
Scoresby Sund i =12m.6s., 12m.46s., sS =22m.0s., 22m.51s.
Brisbane iZ =12m.11s.
Warsaw P_cP =10m.49s., eE =12m.38s., epP_cP =12m.47s., esP$_c$PEN =13m.47s., eN =14m.32s., eE =14m.38s. and 16m.21s., eN =16m.49s., eEN =19m.24s., eSPPE =19m.40s., eSPPN =19m.49s., sS =22m.18s., eSS =23m.34s.
Victoria e =11m.0s., i =16m.20s., isS =19m.39s., e =23m.19s.
Copenhagen i =12m.25s. and 13m.16s., 19m.35s., SS =23m.52s.
Seattle i =10m.37s., 10m.46s., 10m.51s., and 11m.31s., e =19m.48s., 20m.22s., and 22m.18s.
Bucharest iE =11m.10s. and 12m.0s.
Skalnate Pleso eP_cP =10m.46s., e =10m.57s., epP_cP =12m.55s., esP =13m.25s., eSP =19m.51s., esS =22m.50s.
Raciborzu eP_cPZ =10m.41s., epPN =12m.39s.?, epP_cP? =13m.17s., ePP?N =13m.53s., ePP?Z =13m.56s. and other unidentified readings.
Potsdam ipPEN =12m.41s., iPPZ =13m.30s., esPPE =16m.30s., iZ =17m.58s., iS_cSEN =19m.54s., iSPE? =20m.14s.?, iSSPN =20m.25s., isSN =23m.14s.?
Budapest ePPN =13m.12s.?, iE =19m.41s.
Ogyalla e =12m.29s., 13m.32s., 13m.42s., 14m.26s., 20m.0s., and 23m.14s.
Collmberg esPEN =13m.42s., eSPPN =16m.43s., eS_cSN =19m.57s., eS_cSE =20m.0s., esPSN =23m.59s., eSSSN =28m.47s.
Prague iP_cP =10m.54s., ipP_cP =13m.0s., esP =13m.43s., ePP =13m.57s., eSP =20m.22s. esS =23m.6s. and other unidentified e readings.
Kalossa eN =10m.50s.
Vienna ePP =13m.42s.
Jena ePP?N =13m.50s., eN =20m.6s., eE =23m.20s.
Cheb eP_cP =10m.57s., e =12m.7s., epP_cP =13m.12s., esP =14m.0s., ePP =14m.3s., e =20m.6s., esS =23m.20s.
Hungry Horse ePP =13m.48s., eS_cS? =20m.3s., ePKP,PKP =40m.19s.
Saskatoon i =19m.8s.
Shasta Dam i =11m.36s., 15m.59s., 20m.10s., and 20m.19s.
De Bilt iPP =14m.7s., esS =23m.38s.
Mineral iZ =12m.2s., iPPZ =14m.8s., iPPP?Z =16m.0s., eSKP,PKPZ =40m.9s.
Stuttgart eZ =11m.13s. and 11m.42s., esP?Z =13m.28s., ePP =14m.7s., e =16m.52s., 18m.36s., and 20m.49s., esS =23m.37s., eSS =25m.24s., e =28m.48s., 31m.42s., 34m.12s., and 41m.30s.
Helwan eZ =11m.42s., 14m.0s., and 15m.8s., PPPZ =16m.4s.
Triest iP_cP =11m.14s., isP? =13m.38s., iPP =14m.10s., iSP =20m.53s., isS =23m.46s.
Berkeley iZ =13m.8s., ipPP?Z =15m.50s., esSN =23m.48s.
Reno iE =11m.21s.
Strasbourg e =11m.22s., ipP =13m.8s., e =13m.23s., ePP =14m.12s., e =16m.14s., esS =23m.58s., e =32m.9s.
Santa Clara iPNZ =20m.22s.
Lick iZ =11m.51s., 12m.19s., and 13m.12s., isPZ =14m.18s., iZ =15m.0s. and 15m.51s., eZ =19m.40s.
Zürich ePP =14m.14s.
Salo iN =11m.16s.
Kew esSE =24m.1s.
Rathfarnham Castle eEN =12m.54s., ePPEN =14m.6s., eZ =23m.23s., eEN =28m.17s.
Besançon e =11m.48s.
Fresno iE =11m.30s., eZ =15m.54s. and 20m.39s.
Paris i =11m.29s., 11m.38s., 12m.2s., and 13m.38s., iPP =14m.31s., epPP =16m.13s., eSKS =20m.52s., e =23m.12s.
Tinemaha ePPZ =14m.40s., iZ =16m.0s., eSKP,PKPZ =39m.37s.
Logan esS =24m.8s.
Messina e =14m.43s.
China Lake iZ =13m.43s., iPPZ =14m.49s., iZ =16m.0s., and 21m.10s., eSKP,PKPZ =40m.3s.
Clermont-Ferrand i =11m.37s., e =14m.33s., iPP =14m.52s., ePPP =16m.33s., esS =24m.41s.
Pasadena iP_cP?Z =11m.42s., ePPZ =14m.56s., iZ =15m.52s., iE =22m.19s., isSE =24m.53s., iSKP,PKPZ =40m.16s.
Overton iPPZ =15m.0s., ePPP?Z =16m.40s., iZ =19m.18s., ePKP,PKPZ =40m.7s.
Riverside iZ =15m.53s., iSKP,PKPZ =40m.14s.
Boulder City iPP =14m.59s.
Pierce Ferry iPP =14m.54s., iPPP =16m.12s., ePKP,PKP =39m.52s.
Palomar iE =11m.51s., iPPEZ =15m.1s., iEZ =15m.55s., iE =21m.16s., iSKP,PKPZ =40m.12s.
Tucson ePP =15m.33s., iPP =15m.40s., iPPP =16m.14s., e =16m.34s., ePS? =23m.29s., e =25m.34s.
Algiers Univ. iPPZ =15m.46s., epPPZ =17m.37s., ePPPZ =18m.1s.
Alicante PPP =17m.57s.

Continued on next page.

Toledo ePPZ =15m.53s.
Chicago iS =22m.23s., i =22m.26s., e =28m.52s.
Granada iPP =16m.12s., pPP =17m.48s., PS =24m.45s., SS =29m.6s., SSS =31m.42s.
St. Louis i =14m.12s., iSKS =21m.57s., i =22m.56s., isS =26m.22s., iSS =29m20s.
Cleveland eSKSN =21m.59s., iSKKSEN =22m.41s., iN =22m.44s., iSN =22m.50s., esSE =26m.27s., eSSE =29m.25s.
Fordham esS =26m.53s.
Pennsylvania isSE =26m.45s., eSSE =29m.56s., eSSSE =34m.13s.
Tamanrasset isP?Z =15m.37s., iZ =16m.12s., eZ =16m.43s., iPPZ =16m.55s., eZ = 17m.30s. and 18m.40s., ipPPZ =18m.45s., eSKSZ =22m.34s., eSPZ =24m.43s., epSKSZ =25m.34s.
Pretoria epPKPZ =18m.15s.
La Paz i =21m.24s.

May 17d. 13h. 23m. 3s. Epicentre 41°·6N. 142°·0E. Depth of focus 0·010.
(as on 1946, May 26d.).

Intensity V at Oma (Aomori Pref.), Esanmisaki (Hokkaido); IV at Hatinohe; II-III at Urakawa, Muroran, and Miyako.
Epicentre 41°·5N. 142°·3E. Depth 75km. Macroseismic radius 200-300km.

Seismo. Bull. Cent. Met. Obs., Japan, 1950, Tokyo, 1952, pp. 21, 22, with macroseismic chart.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Hatinohe		1·1	198	0 14a	− 8	0 28	−10	—	—
Aomori		1·2	229	0 18	− 5	0 35	− 5	—	—
Mori		1·2	295	0 18	− 5	0 35	− 5	—	—
Sapporo		1·6	342	0 20k	− 8	0 39	−10	—	—
Miyako		1·8	180	0 27	− 3	0 48	− 5	—	—
Morioka		2·0	198	0 29	− 4	0 51	− 6	—	—
Akita		2·4	229	0 34	− 4	0 57	−10	—	—
Mizusawa	E.	2·6	195	0 43	+ 2	1 12	0	—	—
Nemuro		3·2	57	0 44	− 6	1 15	−12	—	—
Sendai		3·4	194	0 47	− 5	1 25	− 7	—	—
Hukusima		4·0	198	1 9	+ 9	1 48	+ 2	—	—
Onahama		4·8	192	1 25	+14	2 6	0	—	—
Mito		5·4	195	1 45	+25	2 27	+ 6	—	—
Utunomiya		5·4	200	1 23	+ 3	2 22	+ 1	—	—
Kakioka		5·5	194	1 14	− 7	—	—	—	—
Tukubasan		5·6	196	2 18	+56	(2 18)	− 8	—	—
Maebasi		5·7	205	1 29	+ 5	2 31	+ 3	—	—
Kumagaya		5·8	201	1 37	+12	2 41	+10	—	—
Nagano		5·8	213	1 26	+ 1	2 52	+21	—	—
Tokyo		6·2	198	2 33	S	(2 33)	− 8	—	—
Hunatu		6·6	203	1 51	+15	3 1	+11	—	—
Mera		6·9	195	3 12	S	(3 12)	+14	—	—
Osima		7·1	198	2 47	+64	—	—	—	—
Shizuoka		7·2	204	3 12	S	(3 12)	+ 7	—	—
Nagoya		7·5	213	1 54	+ 6	—	—	—	—
College		45·0	34	i 8 5	− 2	—	—	—	—
Shasta Dam		68·0	55	e 10 49	− 2	—	—	—	—
Hungry Horse		68·2	44	i 10 49	− 3	—	—	—	—
Mineral	z.	68·7	55	e 10 53	− 2	—	—	e 11 12	pP
Tinemaha	z.	72·8	56	i 11 38	pP	—	—	—	—
China Lake	z.	74·0	56	e 11 25	− 2	—	—	i 11 45	pP
Pasadena	z.	74·7	58	i 11 47	pP	—	—	—	—
Riverside	z.	75·3	58	e 11 31	− 3	—	—	e 11 50	pP
Overton	z.	75·5	54	e 11 33	− 2	—	—	i 11 54	pP
Boulder City		75·6	54	i 11 53	pP	—	—	—	—
Pierce Ferry		76·0	54	e 11 37	− 1	—	—	i 11 56	pP
Tucson		80·6	56	e 12 21	pP	—	—	—	—
Stuttgart	z.	80·9	330	e 12 2	− 3	—	—	—	—
Weston		91·2	24	e 12 54	− 1	—	—	—	—

May 17d. 17h. 46m. 31s. Epicentre 37°·8N. 142°·6E. (as on 1948, July 7d.).

Intensity V at Inawashiro ; IV at Hukusima ; II-III at Sendai, Morioka, and Kakioka. Epicentre 37°·6N. 142°·5E. Macroseismic radius 200-300km.

Seismo. Bull. Cent. Met. Obs., Japan, for 1950, Tokyo, 1952, pp. 22-23, with macroseismic chart.

$A = -\cdot6293$, $B = +\cdot4811$, $C = +\cdot6103$; $\delta = -6$; $h = -1$;
$D = +\cdot607$, $E = +\cdot794$; $G = -\cdot485$, $H = +\cdot371$, $K = -\cdot792$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Sendai		1·4	289	0 27 a	0	0 45	− 1	—	—
Onahama		1·6	237	0 27	− 3	0 47	− 4	—	—
Hukusima		1·7	268	0 29 a	− 2	0 50	− 4	—	—
Mizusawa	E.	1·7	286	0 31	0	1 7	+13	—	—
Miyako		1·9	345	0 33	− 1	1 1	+ 2	—	—
Mito		2·2	230	0 41	+ 3	1 8	+ 2	—	—
Morioka		2·2	330	0 37 a	− 1	1 7	+ 1	—	—
Kakioka		2·5	231	0 39	− 4	1 13	− 1	—	—
Utunomiya		2·5	240	0 42	− 1	1 17	+ 3	—	—
Tukubasan		2·6	232	0 50	+ 6	1 19	+ 2	—	—
Hatinohe		2·8	343	0 48	+ 1	1 25	+ 3	—	—
Kumagaya		3·1	237	0 48	− 3	1 30	+ 1	—	—
Tokyo		3·1	227	0 50	− 1	1 38	+ 9	—	—
Maebasi		3·2	244	0 51	− 1	1 32	0	—	—
Aomori		3·3	335	1 6	P_g	2 13	S_g	—	—
Yokohama		3·4	223	0 57 a	+ 2	1 45	+ 8	—	—
Aikawa		3·5	272	0 55	− 2	1 45	+ 5	—	—
Mera		3·6	219	1 3	+ 5	1 54	S*	—	—
Matusiro		3·7	251	0 56	− 4	1 54	S*	—	—
Nagano		3·7	254	2 1	S_g	3 16	?	—	—
Hunatu		3·8	235	1 1 a	0	1 53	+ 6	—	—
Osima		4·0	222	1 1	− 3	1 45	− 7	—	—
Shizuoka		4·4	232	1 10	0	2 2	0	—	—
Toyama		4·5	255	1 11	0	3 18	?	—	—
Wazima		4·5	264	1 15	+ 4	—	—	—	—
Mori		4·6	340	1 14	+ 2	2 24	S*	—	—
Omaesaki		4·8	229	1 32	P_g	2 30	S*	—	—
Nagoya		5·2	242	1 22	+ 1	2 34	S*	—	—
Gihu		5·3	245	1 18	− 4	2 14	−11	—	—
Sapporo		5·3	349	0 39	−43	1 53	−32	—	—
Hikone		5·7	246	1 30	+ 2	—	—	—	—
Kameyama		5·8	241	1 25	− 4	2 47	+ 9	—	—
Nemuro		6·0	22	1 39	+ 7	2 30	−13	—	—
Kyoto		6·2	246	1 34	− 1	2 45	− 3	—	—
Osaka		6·2	244	1 53	P*	2 39	− 9	—	—
Owase		6·4	237	1 36	− 2	2 40	−13	—	—
Toyooka		6·6	253	1 43	+ 2	2 57	− 1	—	—
Kobe		6·7	245	1 56	P*	—	—	—	—
Siomisaki		7·0	234	2 8	P*	—	—	—	—
Sumoto		7·1	244	1 49	+ 1	—	—	—	—
Kôti		8·5	243	2 55	P_g	3 56	+11	—	—
Hamada		9·0	254	3 13	P_g	—	—	—	—
Vladivostok		9·7	306	e 2 20	− 2	e 4 36	+21	—	—
Hukuoka		10·8	251	2 42	+ 3	—	—	—	—
Nanking		20·2	261	—	—	e 8 30	+ 9	—	—
College		47·9	32	e 8 47	+ 5	—	—	—	—
Sverdlovsk		55·2	319	e 9 32	− 5	—	—	—	—
Hungry Horse		70·6	44	e 11 17	− 2	—	—	—	—
Pierce Ferry		77·9	54	e 12 2	+ 1	—	—	—	—
Stuttgart	z.	84·4	331	e 12 31	− 5	—	—	—	—
Pennsylvania		93·5	30	i 13 30	+11	i 24 41	+16	i 17 51	PP

Hungry Horse gives also iP = 11m.34s.

May 17d. 18h. 13m. 12s. Epicentre 20°·2S. 169°·5E. (as on 1949, October 30d.).

$A = -·9235$, $B = +·1712$, $C = -·3432$; $\delta = -5$; $h = +5$;
$D = +·182$, $E = +·983$; $G = +·337$, $H = -·063$, $K = -·939$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·7	241	e 3 53	− 4	i 7 7	+ 4	i 4 7	PP	8·5
Auckland	N.	17·2	165	4 2	− 1	i 7 3	−11	i 7 38	SS	8·3
Arapuni		18·6	165	e 4 20	− 1	e 7 59	+13	—	—	—
Apia	E.	19·0	73	i 4 27	+ 1	e 7 54	− 1	i 4 43	PP	e 9·8
New Plymouth	E.	19·3	168	4 28	− 1	8 5	+ 3	—	—	—
Tuai	N.	19·7	163	4 33	− 1	8 17	+ 7	—	—	—
Cobb River	E.	21·0	174	4 46	− 1	e 8 43	+ 6	—	—	—
Riverview		21·2	227	i 4 47k	− 2	i 8 41	0	i 4 57	pP	e 10·1
Wellington		21·5	170	i 4 48	− 4	i 8 42	− 5	i 5 17	PP	10·3
Kaimata	N.E.	22·3	177	i 5 2	+ 1	i 9 3	+ 1	i 5 16	PP	—
Christchurch		23·4	174	e 5 8	− 3	e 9 0	−21	i 9 22	SS	11·1
Guam		41·4	322	7 51	+ 1	—	—	—	—	—
Perth		49·2	246	i 11 23	PPP	i 15 53	− 5	i 19 16	SS	23·3
Honolulu		52·2	40	e 9 18	+ 3	e 16 40	+ 1	e 19 54	SS	e 22·0
Bandong		61·3	275	e 10 16	− 4	e 18 37	− 2	—	—	—
Djakarta		62·3	275	e 10 27	+ 1	i 18 52	0	—	—	26·3
Shizuoka		62·3	333	10 29	+ 3	18 42	−10	11 26	PcP	28·8
Tokyo		62·3	334	10 31	+ 5	18 46	− 6	26 1	Q	27·9
Hunatu		62·6	334	10 30	+ 2	e 18 57	+ 1	—	—	—
Utunomiya		63·0	335	e 10 31	0	—	—	—	—	27·2
Nagoya		63·1	332	e 9 53	−39	e 18 55	− 7	—	—	—
Gihu		63·4	332	10 34	0	19 1	− 5	—	—	27·0
Miyazaki		63·4	325	i 10 35a	+ 1	i 19 11	+ 5	i 11 3	PcP	—
Kôti		63·6	327	e 10 36	+ 1	e 19 10	+ 2	—	—	—
Matusiro		63·7	333	10 31	− 5	18 47	−23	—	—	29·7
Hukusima		63·8	336	10 44	+ 8	19 19	+ 8	—	—	—
Sendai		64·1	337	e 10 39	+ 1	19 18	+ 4	—	—	—
Mizusawa	E.	64·7	337	10 45	+ 3	19 27	+ 5	—	—	—
Miyako		64·8	338	e 10 43?	0	e 19 28?	+ 5	—	—	—
Hukuoka		65·2	326	10 47	+ 2	19 30	+ 2	—	—	e 26·7
Morioka		65·2	337	i 10 47	+ 2	e 19 32	+ 4	—	—	e 32·2
Hamada		65·3	327	e 10 46	0	e 19 31	+ 2	—	—	—
Akita		65·6	337	10 50	+ 2	i 19 36	+ 3	—	—	—
Sapporo		68·1	340	(e 11 4)	0	(e 20 3)	0	—	—	(e 34·4)
Nanking		71·1	317	i 11 24	+ 2	i 20 41	+ 3	i 11 45	PcP	e 30·4
Vladivostok		71·9	333	i 11 27	0	i 20 50	+ 2	i 11 40	PcP	—
Klyuchi		76·6	356	e 11 50	− 4	—	—	—	—	—
Berkeley		86·2	48	i 12 46a	+ 2	e 22 58	[−11]	i 15 23	PP	i 36·2
Santa Clara		86·2	48	i 12 47	+ 3	e 23 23	+ 4	e 24 34	PS	e 40·1
Ukiah		86·2	46	e 12 14	−30	e 23 5	[− 4]	e 24 34	PS	e 38·8
Lick	Z.	86·4	48	i 12 48	+ 3	—	—	—	—	e 42·6
Arcata	Z.	86·5	45	i 12 49a	+ 3	—	—	e 16 31	PP	—
Fresno	Z.	87·4	49	i 12 52a	+ 2	—	—	—	—	e 40·6
Shasta Dam		87·5	45	i 12 52	+ 1	e 23 33	+ 2	e 16 33	PP	e 40·8
Pasadena		87·6	53	i 12 51a	0	e 23 34	+ 2	e 16 36	PP	i 39·7
Mineral	Z.	87·9	46	e 12 54a	+ 1	—	—	e 16 20	PP	—
Riverside		88·0	53	i 12 54a	+ 1	e 23 51	+15	e 16 26	PP	—
Palomar		88·1	54	i 12 55a	+ 1	e 23 41	+ 4	i 16 18	PP	—
China Lake	Z.	88·6	50	i 12 59a	+ 3	i 23 10	[−14]	i 16 46	PP	—
Reno		88·7	48	e 12 59a	+ 2	e 23 48	+ 5	—	—	e 41·1
Tinemaha		88·7	50	i 12 59a	+ 2	e 23 48	+ 5	i 16 40	PP	—
Sitka		89·7	27	e 13 2	+ 1	e 23 54	+ 2	e 25 2	PS	e 36·6
Calcutta	E.	89·8	294	e 12 53	− 9	e 23 30	[− 2]	e 17 4	PP	—
Boulder City		90·7	52	e 13 8	+ 2	e 23 39	[+ 2]	i 13 24	pP	—
Victoria		90·8	39	e 13 8	+ 2	23 36	[− 2]	25 36	PPS	41·9
College		90·9	17	e 13 5	− 2	e 23 34	[− 4]	e 16 19	PP	e 45·6
Seattle		91·0	40	i 13 11a	+ 4	e 24 12	+ 9	e 17 3	PP	e 36·8
Overton	Z.	91·2	51	i 13 10	+ 2	—	—	i 17 46	PP	—
Pierce Ferry		91·4	53	i 13 11	+ 2	e 24 15	+ 8	e 16 33	PP	e 43·4
Irkutsk		91·6	327	i 13 10	0	24 10	+ 1	23 41	SKS	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	92·0	277	13 8	− 4	23 48	[+ 4]	—	—	42·1
Tucson		92·2	57	i 13 15	+ 2	e 24 22	+ 8	e 17 25	PP	e 38·0
Salt Lake City		94·8	49	e 13 27	+ 2	e 24 44	+ 8	i 26 18	PS	e 40·3
Logan		95·2	48	e 13 27	0	e 24 45	+ 5	e 17 9	PP	e 42·2
Kodaikanal	E.	95·4	279	e 13 30	+ 2	i 24 9	[+ 6]	27 0	PPS	46·6
Hungry Horse		96·3	42	e 13 32	0	e 23 48	[−20]	e 17 31	PP	—
Butte	N.	96·3	43	e 17 29	PP	e 24 27	{ 0}	e 26 27	PS	e 39·4
Bozeman		97·1	44	e 13 18	−17	e 23 55	[−17]	e 17 34	PP	e 45·6
Tacubaya		97·7	72	i 17 52	PP	e 25 52	?	e 26 41	PS	e 44·8
New Delhi	N.	101·3	297	e 13 49	− 5	i 24 26	[− 7]	i 27 23	PS	—
Poona	E.	101·3	287	e 13 55	+ 1	i 25 22	− 9	18 7	PP	—
Rapid City	E.	101·9	48	e 14 25	+28	e 24 34	[− 2]	e 27 20	PS	e 48·2
Bombay		102·4	286	e 14 1	+ 2	25 47	+ 7	e 18 16	PP	43·2
Almata		105·4	311	14 14	+ 1	26 12	+ 7	27 50	PS	—
Lincoln	E.	105·8	52	e 18 38	PP	28 12	PS	—	—	e 48·9
Andijan		108·2	307	e 14 33	P	e 25 9	[+ 4]	e 18 58	PP	—
Fergana		108·5	308	e 18 34	[+ 4]	—	—	—	—	—
Huancayo		108·6	111	18 31	[+ 1]	e 25 6	[0]	e 19 4	PP	e 49·1
Obi-garm		109·8	306	e 18 9	[−24]	28 30	PS	—	—	—
St. Louis		110·2	54	i 19 10	PP	e 25 6	[− 7]	e 21 12	PPP	—
Stalinabad		110·5	306	e 18 37	[+ 3]	i 26 54	S	19 18	PP	—
Tchimkent		110·5	310	e 18 20	[−14]	—	—	—	—	—
Tashkent		110·6	308	e 14 36	P	e 25 16	[+ 1]	e 19 4	PP	—
Tananarive		111·1	239	—	—	e 29 9	PS	34 40	SS	53·6
Samarkand		112·0	306	e 18 16?	[−21]	—	—	—	—	—
La Paz		112·7	118	e 18 28	[−10]	i 29 4	PS	i 19 24	PP	52·8
Chicago		112·8	51	e 19 18	PP	e 26 41	{+16}	e 28 55	PS	e 45·9
Chinchina		115·0	94	e 18 31	[−12]	e 29 10	PS	e 19 33	PP	—
Mary		115·8	304	e 18 45	[0]	i 22 9	PKS	e 19 54	PP	—
Grahamstown		116·1	215	e 18 49	[+ 4]	—	—	—	—	—
Bogota		116·4	96	e 19 53	PP	i 29 39	PS	e 36 51	SSP	e 55·6
Pietermaritzburg z.		116·7	221	e 18 50	[+ 4]	—	—	—	—	—
Columbia		116·8	60	—	—	e 29 38	PS	e 36 42	SSP	e 48·1
Sverdlovsk		117·0	325	e 15 19?	P	i 25 40	[+ 1]	e 18 47	PKP	—
Cleveland		117·1	53	i 16 0k	P	e 25 34	[− 6]	i 19 18	PKP	—
Galerazamba		117·2	88	e 20 15	PP	e 30 5	PS	—	—	e 55·1
Ashkabad		118·6	304	e 18 58	[+ 8]	—	—	—	—	—
Pennsylvania		119·9	54	e 19 28	[+35]	i 27 5	{− 8}	i 20 48	PP	e 60·8
Pretoria	Z.	120·9	222	e 18 58	[+ 3]	—	—	e 20 8	PP	—
Ottawa		121·4	47	i 18 55	[0]	e 25 50	[− 5]	e 30 6	PS	40·3
Fordham		122·9	53	e 18 59	[+ 1]	e 25 56	[− 3]	e 20 40	PP	—
Vermont		123·2	49	—	—	e 26 23	[+23]	e 37 49	SS	e 51·7
Seven Falls	E.	124·6	45	e 20 51	PP	e 30 46	PS	e 38 16	SSP	57·8
Harvard		124·6	51	i 18 59	[− 3]	e 30 17	SKSP	e 20 55	PP	e 59·7
Weston		124·7	51	i 19 3	[+ 1]	e 38 19	SSP	i 20 55	PP	—
Baku		125·2	306	19 11	[+ 8]	—	—	15 48	P	—
Shemakla		126·1	307	e 19 17?	[+13]	—	—	i 21 17	PP	—
San Juan		127·7	81	e 18 59	[− 9]	e 26 13	[− 1]	e 21 3	PP	e 50·0
Grozny		128·0	309	e 19 12	[+ 4]	—	—	—	—	—
Tiflis		128·9	307	19 11	[+ 1]	—	—	—	—	—
Scoresby Sund		129·2	5	i 19 10	[0]	e 26 20	[+ 2]	i 21 20	PP	—
Gori		129·4	308	e 19 13	[+ 2]	—	—	—	—	—
Moscow		129·6	326	e 19 12	[+ 1]	28 18	{+ 1}	21 26	PP	—
Leninakan		129·7	307	e 19 23	[+12]	—	—	—	—	—
Piatigorsk		129·8	311	e 19 29	[+17]	—	—	e 21 54	PP	—
Borzhomi		129·9	308	e 19 13	[+ 1]	—	—	—	—	—
Halifax		130·0	48	22 36	PKS	—	—	—	—	47·8
Abastumanj		130·3	308	e 19 15	[+ 2]	e 22 37	PKS	—	—	—
Bermuda		130·4	65	e 21 18	PP	e 32 58	PPS	e 39 53	SS	—
Zugdidi		130·9	310	e 19 20	[+ 6]	i 22 45	PKS	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Pulkovo		131·0	334	e 19 14	[0]	e 31 31	PS	i 22 38 PKS	—
Ivigtut		131·3	23	i 19 13	[− 1]	39 18	SS	21 29 PP	—
Fort de France		131·5	88	e 19 18	[+ 3]	—	—	e 22 38 PKS	—
Helsinki		132·8	338	—	—	—	—	e 22 46 PKS	e 58·8
Upsala		135·6	340	e 22 12	PP	e 29 13	(+18)	i 22 51? PKS	e 57·8
Yalta		135·9	314	e 19 23	[0]	—	—	e 22 4 PP	—
Ksara		136·8	298	i 19 26a	[+ 1]	—	—	22 14 PP	—
Bergen	N.	138·3	349	23 3	PKS	e 35 55?	?	e 46 5 SSS	64·8
Kishinev		138·4	321	e 22 19	PP	—	—	— —	—
Cernauti		139·5	323	e 19 40	[+10]	e 23 8	PKS	e 22 46 PP	—
Warsaw		139·7	331	e 19 33	[+ 3]	e 26 17	[−22]	e 22 27 PP	e 61·8
Copenhagen		140·6	340	i 19 27	[− 5]	41 6	SS	22 30 PP	64·8
Istanbul		140·6	311	e 19 24	[− 8]	e 32 45	PS	— —	—
Helwan		141·1	293	e 19 26	[− 6]	e 26 18	[−23]	e 22 36 PP	—
Bucharest		141·2	317	e 19 42	[+ 9]	—	—	i 22 24 PP	—
Skalnate Pleso		142·1	328	i 19 37	[+ 3]	e 26 40	[− 3]	e 22 43 PP	—
Raciborzu	Z.	142·5	331	e 19 20	[−15]	—	—	e 22 42 PP	—
Aberdeen	N.	142·6	352	i 22 47	PP	e 32 55	SKSP	— —	e 70·0
Potsdam		143·0	336	i 19 32a	[− 4]	i 23 2	PKS	i 19 42 PKP_2	e 60·8
Budapest		143·7	325	19 37	[0]	—	—	e 20 2 PKP_2	e 40·8
Sofia		143·8	316	i 19 38	[+ 1]	—	—	— —	—
Collmberg		143·9	334	e 19 37	[0]	e 32 9	?	e 22 56 PP	e 74·3
Edinburgh	E.	143·9	353	e 19 51	[+14]	—	—	e 23 17 PP	—
Ogyalla		144·0	326	e 19 40	[+ 3]	e 26 54	[+ 9]	e 19 54 PKP_2	—
Prague		144·2	332	i 19 37	[− 1]	e 26 48	[+ 2]	e 19 48 PKP_2	e 62·8
Kalossa		144·4	326	19 42	[+ 4]	—	—	— —	—
Vienna		144·6	329	i 19 38	[0]	—	—	e 22 57 PP	—
Jena		144·7	335	e 19 38	[− 1]	e 30 9	(+21)	e 23 8 PP	e 72·8
Durham		144·8	351	i 19 41	[+ 2]	—	—	— —	—
Cheb		145·1	335	e 19 42	[+ 3]	e 29 33	(−18)	e 19 57 PKP_2	—
Athens		145·5	309	e 19 40	[0]	—	—	i 18 54 ?	—
De Bilt		145·9	343	i 19 42a	[+ 1]	e 41 18	SS	i 23 6 PP	e 61·8
Zagreb		146·4	327	e 19 44	[+ 2]	—	—	— —	e 74·8
Rathfarnham Castle		146·8	356	i 19 42	[0]	e 23 14	SKP	— —	e 76·8
Stuttgart		147·4	336	i 19 44a	[+ 1]	e 27 3	[+13]	e 23 14 PP	71·8
Karlsruhe		147·5	337	i 19 51	[+ 8]	—	—	— —	e 76·8
Triest		147·7	327	e 19 44	[0]	e 26 46	[− 5]	e 20 10 PKP_1	e 65·8
Kew		147·8	348	i 19 45	[+ 1]	e 43 21	SSP	— —	e 62·8
Strasbourg		148·1	337	e 19 45	[+ 1]	e 29 55	(−13)	e 23 13 PP	71·8
Zürich		148·8	335	i 19 46a	[+ 1]	e 30 3	(− 9)	e 23 17 PP	—
Taranto		148·9	318	19 52	[+ 6]	42 32	SS	e 35 42 PPS	—
Basle		149·0	336	e 19 46	[0]	—	—	— —	—
Salo		149·3	332	e 19 47a	[+ 1]	e 23 34	PKS	i 20 3 PKP_2	—
Paris		149·6	343	i 19 47k	[0]	i 23 14	PKS	i 19 52 PKP_2	e 72·8
Bologna		149·7	330	e 19 48a	[+ 1]	—	—	e 23 56 PP	—
Neuchatel		149·7	336	e 19 48	[+ 1]	—	—	— —	—
Besançon		149·8	337	e 19 48	[+ 1]	—	—	e 23 28 PP	—
Chur		149·8	334	e 19 51a	[+ 4]	—	—	— —	—
Pavia		150·2	333	e 19 49	[+ 1]	—	—	— —	—
Florence Xim.		150·3	327	i 19 49	[+ 1]	—	—	i 23 3 PKS	—
Prato		150·3	327	e 19 48	[0]	—	—	— —	—
Jersey	E.	150·3	350	e 20 0	[+12]	—	—	— —	—
Rome		150·9	324	i 19 49	[0]	e 23 23	PKS	i 20 10 pPKP	—
Messina		151·2	316	e 19 59	[+10]	—	—	e 23 6 PP	—
Clermont-Ferrand		152·2	339	i 19 51	[0]	e 30 24	(− 6)	i 20 10 PKP_2	72·8
Tortosa		157·4	339	i 19 57	[− 1]	—	—	i 24 9 PP	—
Toledo		159·6	346	e 20 0	[0]	e 27 3	[− 1]	e 20 43 PKP_2	78·2
Algiers Univ.	Z.	159·7	326	i 20 1k	[+ 1]	e 30 9	(−61)	i 20 40 PKP_2	—
Alicante		159·9	337	20 5	[+ 4]	27 23	[+18]	21 1 PKP_2	e 78·0
Lisbon		161·5	358	20 3a	[+ 1]	37 48	PPS	20 50 PKP_2	77·8
Granada		162·0	343	i 20 3a	[0]	i 30 15	(−68)	20 47 PKP_2	i 79·3
Malaga		162·7	343	i 20 11	[+ 8]	i 27 11	[+ 4]	i 24 25 PP	82·6
Tamanrasset	Z.	164·9	283	i 20 7a	[+ 1]	e 27 3	[− 5]	i 21 5 PKP_2	—

For Notes see next page.

NOTES TO MAY 17d. 18h. 13m. 12s.

Additional readings :—
Brisbane iZ =7m.13s., iSSE =7m.34s., iP$_c$S?E =12m.12s.
Auckland S$_c$SN =16m.12s.
Apia e =8m.30s.
Riverview i =4m.52s., iEZ =5m.5s., iPPEN =5m.9s., iPPPEN =5m.18s., iEN = 5m.33s., iNZ =8m.44s., iP$_c$PE =8m.47s., isSE =8m.59s., iN =9m.3s.
Honolulu e =14m.5s.
Shizuoka PP? =12m.21s.
Miyazaki iZ =10m.47s., iE =10m.57s.
Sapporo readings have been increased by 1m.
Nanking iNZ =11m.54s. and 13m.16s., iPPNZ =14m.3s., iNZ =19m.10s., SS?NZ = 25m.12s.
Vladivostok ePP =14m.2s., ePPP =15m.58s., iSKS =26m.11s.
Berkeley iZ =13m.1s. and 14m.1s., eZ =16m.9s., eN =16m.17s., eEZ =23m.2s., i = 24m.41s.
Ukiah eS? =22m.50s.
Lick eZ =14m.2s.
Fresno iZ =13m.8s. and 14m.7s., eZ =38m.48s.
Shasta Dam e =17m.58s., ePPP =18m.28s., ePKP,PKP =38m.46s.
Pasadena iZ =12m.54s. and 13m.7s., iSEN =23m.52s., ePSEN =24m.36s., iPPSE = 24m.52s., iQEN =36·3m., ePKP,PKPZ =38m.48s.
Mineral iZ =13m.8s.
Riverside iZ =13m.9s., ePKP,PKPZ =38m.50s.
Palomar iZ =13m.10s., eSE =24m.0s., ePKP,PKPZ =38m.49s., iZ =39m.5s.
China Lake iZ =13m.11s., ePKP,PKPZ =38m.45s.
Reno eNZ =13m.12s., eZ =23m.52s.
Tinemaha iZ =13m.2s. and 13m.12s., ePKP,PKPZ =38m.43s.
Sitka eSS =29m.48s., eSSS =33m.18s.
Calcutta ePPPE =19m.10s., iPSE =25m.58s.
Boulder City i =14m.50s., ePKP,PKP? =38m.41s.
Victoria i =13m.11s., SS =30m.32s.
College e =14m.57s.
Seattle eSKS =23m.33s., eS =23m.38s., ePPS =25m.38s., eSS =30m.11s., eSSP = 30m.28s., ePKKS =31m.58s., and other unidentified readings.
Overton eZ =15m.34s.
Pierce Ferry i =17m.8s., eSS? =31m.11s., iPKP,PKP =38m.41s.
Irkutsk PS =25m.27s., eSS =30m.19s.
Tucson e =18m.18s., eS? =24m.46s., ePS =25m.50s., eSS? =30m.12s., eSSS =34m.8s., ePKP,PKP =38m.46s.
Salt Lake City e =29m.38s.
Logan eSKS =23m.52s., iPS =26m.20s.
Kodaikanal iSE =25m.15s., SSE =32m.15s., SSSE =36m.18s., QE =41m.37s.
Hungry Horse e =16m.43s., ePKKP =30m.11s., ePKP,PKP =38m.30s.
Butte eSSN =30m.39s.
Bozeman ePS =26m.28s., eSSS? =35m.48s.
New Delhi iN =24m.48s., SKKSN =25m.3s., iSN =25m.30s., PPSN =28m.17s., SSN = 32m.32s., SSSN =36m.37s.
Poona iE =16m.55s., PPPE =20m.14s., SKSE =24m.30s., SKKSE =24m.48s., PPSE = 27m.33s.
Rapid City eE =24m.56s., eSSE =32m.14s.
Bombay SKSEN =24m.38s., SSN =32m.56s., QN =36m.43s.
Almata iPP =18m.39s., PPP =19m.56s.
Andijan iPS =28m.25s.
Huancayo ePS =28m.0s., eSS =33m.54s.
St. Louis e =19m.25s., iSP =28m.41s., i =28m.59s., eSS? =35m.7s.
Stalinabad ePS =29m.4s., SS =34m.48s., SSS =39m.0s.
Tashkent iPS =28m.47s.
La Paz iPPS =30m.4s., iSS =35m.3s.
Chicago e =33m.35s.
Columbia eSSS =40m.34s.
Sverdlovsk iPP =19m.57s., eSKKS =26m.51s., eSKSP =29m.36s., iPS =29m.45s., SSS =40m.18s.
Cleveland iPPN =19m.52s., eSKSN =25m.42s., ePSE =29m.42s., iSSE =40m.13s.
Galerazamba eSSS? =34m.5s., eEN =37m.0s.
Pennsylvania iE =20m.15s., iN =21m.1s., iE =26m.8s., iN =29m.47s., iPSE =30m.33s., iE =31m.9s., iPPSE =31m.50s., iE =38m.54s. and 45m.36s.
Vermont ePPS? =32m.47s., eSSS =42m.33s.
Seven Falls eE =22m.15s.
Harvard ePPS =32m.12s., e =36m.1s., eSS =38m.3s., ePSPS =38m.22s., eSSS = 42m.15s., e =46m.30s.
San Juan i =22m.24s., ePS? =31m.15s., eSS =38m.48s., eSSS =43m.48s.
Scoresby Sund i =22m.25s. and 22m.40s., 28m.36s., and 31m.27s., i =35m.39s.
Moscow PKS =22m.35s.
Bermuda i =22m.38s., e =34m.53s., eSSS? =43m.58s.
Pulkovo eSS =38m.48s.
Ivigtut i =22m.34s.

Continued on next page.

Upsala eE =24m.41s., ePcP,PKP?N =27m.48s.?, eE =28m.13s. and 31m.48s.?, eN = 32m.0s., e =33m.48s.?, eE =37m.48s.,? eN =38m.18s., eSSN =40m.12s., eN = 44m.48s.?, eSSSE =45m.18s., eQ =53·8m.
Skalnate Pleso e =19m.56s., 21m.4s., 22m.7s., and 22m.59s., eSKP =23m.20s., e = 24m.10s., 24m.56s., and 27m.58s., eSKKS =29m.27s., eSKSP =33m.0s., ePPS? = 35m.30s., eSS =41m.18s., eSSS =46m.24s.
Warsaw ePKP$_2$?Z =19m.44s., ePPEN =22m.34s., eSKPEN =23m.10s., eE =24m.35s. and 24m.52s., ePPPZ =25m.33s., ePPPEN =25m.37s., eSKSE =26m.21s., ePSEN = 32m.48s., ePSZ =32m.52s., ePPSZ =34m.35s., ePPSE =34m.42s., ePPSN = 34m.47s., eSSN =40m.59s., eSSE =41m.5s., eN =42m.53s., eSSSN =46m.13s., eSSSE =46m.19s.
Copenhagen 23m.11s., SSS =45m.48s.?
Helwan eZ =21m.5s., 23m.15s., and 32m.50s., eE =37m.8s. and 42m.48s.
Bucharest eE =19m.54s., iN =21m.44s.
Raciborzu ePKP$_2$NZ =19m.44s., eN =20m.44s., eZ =20m.47s., and 21m.11s., eN = 22m.29s., 23m.4s., and 23m.48s.
Aberdeen eE =31m.15s.
Potsdam ePKPEN =19m.36s., iZ =19m.59s., iE =21m.29s., iPPZ =22m.50s.?, ePPPZ =26m.16s., ePSKSZ =32m.48s.
Budapest eN =21m.0s., eE =25m.8s., eN =27m.48s.?
Collmberg eEN =19m.52s., eN =22m.59s., eE =23m.15s., eN =23m.59s., eSKSPN = 35m.23s.
Ogyalla ePP =22m.58s., ePPP =26m.12s., eSKSP =33m.12s., eSS =41m.18s., and other unidentified e readings.
Prague ePP =22m.48s., eSKP =23m.12s., ePPP? =25m.13s., eSKKS =29m.27s., ePS =34m.18s., ePPS =35m.18s., eSS =41m.48s., eSSS =47m.18s. and many other unidentified readings.
Kalossa iE =19m.56s., iN =19m.59s., eN =20m.3s.
Jena iPKPE =19m.41s., iZ =19m.54s., iN =20m.8s., eN =22m.51s., ePP?N =23m.11s., ePP?E =23m.16s.
Durham iN =19m.54s.
Cheb e =21m.48s., ePP =23m.7s., eE =25m.29s., e =27m.35s. and 31m.7s., eSKSP = 33m.18s., ePPS =35m.45s., eSS =42m.18s., eSSS =47m.12s.
De Bilt iZ =19m.57s., ePPP =26m.18s.
Rathfarnham Castle iZ =20m.52s. and 21m.27s., eEN =24m.49s. and 32m.18s.
Stuttgart iPKP =19m.48s., i =19m.51s. and 20m.3s., iZ =20m.50s., e =21m.11s., ePPP = 26m.23s., eSKKS =30m.4s., ePSKS =33m.3s., ePS =35m.0s., ePPS =36m.6s., eSS =42m.24s., eSSS =47m.48s., eQ =64·8m.
Karlsruhe iEN =20m.8s. and 21m.31s.
Triest iSKP =20m.35s., iPP =20m.45s., iPPP =27m.13s., eSKKS =29m.58s.?, ePSKS = 33m.32s., ePPS =36m.27s., ePSKS$_2$ =38m.46s., eSS =42m.21s., ePSS =43m.7s., eSSS =48m.17s.
Kew iZ =20m.1s., 20m.30s., and 21m.24s.
Strasbourg i =19m.49s., ePP =23m.18s., ePPP? =26m.48s., e =30m.10s. and 33m.36s., eSS =42m.48s., eSSS? =48m.28s.
Zürich i =19m.50s.
Basle e =19m.52s. and 22m.8s.
Salo ePKPN =19m.50s., iE =20m.12s., iN =20m.46s., eN =24m.49s. and 27m.39s.
Paris iPP =23m.26s., iPPP =26m.37s., ePS =33m.45s., iPPS =35m.45s., eSS =41m.45s., iSSS =47m.48s.? and other i readings.
Bologna iZ =20m.8s. and 20m.27s., e =22m.2s.
Besançon i =19m.54s.
Chur i =20m.2s.
Jersey eE =21m.18s. and 24m.43s.
Rome eSS =38m.48s., eSSS =43m.18s.
Messina i =20m.22s.
Clermont-Ferrand iPP =23m.41s., i =23m.56s., ePPP =27m.27s., eSKKS(Δ >180°) = 34m.26s., ePPS =36m.41s., eSS =43m.36s.
Toledo iZ =20m.56s., iPPZ =24m.23s., PPP?Z =28m.0s., SSPN =45m.20s.
Algiers Univ. iZ =20m.15s., eZ =20m.55s., ePPZ =24m.22s., ePPPZ =27m.57s.
Alicante PP =24m.29s., Q =70m.3s.
Lisbon PKPNZ =20m.18s., PP?NZ =24m.34s., Z =45m.36s.
Granada iPP =24m.36s., PPP =28m.15s., SKSP =35m.6s., PPS =39m.6s., iSS = 45m.12s., SSS =53m.36s.
Malaga PPPEN =28m.31s.
Tamanrasset iZ =20m.22s., 21m.19s., 22m.26s., and 23m.9s., iPPZ =24m.51s., iZ = 25m.48s., ePPPZ =28m.35s., iZ =29m.59s., eSKKS?Z =31m.11s., eSKKKSZ = 31m.45s., eZ =35m.51s.
Long waves were also recorded at Saskatoon.

May 17d. 19h. 30m. 37s. Epicentre 36°·5N. 71°·0E. Depth of focus 0·030.
(as on 1948, January 9d.).

$A = +·2623$, $B = +·7619$, $C = +·5922$; $\delta = -1$; $h = 0$;
$D = +·946$, $E = -·326$; $G = +·193$, $H = +·560$, $K = -·806$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m.	s.
Obi-garm		2·4	335	i 0 45	0	i 1 16	− 3	—	—
Garm		2·6	348	i 0 46	− 1	i 1 18	− 5	—	—
Stalinabad		2·7	319	i 0 46	− 2	i 1 21	− 4	—	—
Fergana		3·9	9	i 1 2	0	1 47	− 3	—	—
Andijan		4·4	15	1 8	0	i 1 57	− 4	—	—
Samarkand		4·5	317	e 1 13	+ 4	—	—	—	—
Tashkent		5·0	347	i 1 16	0	i 2 9	− 5	—	—
Tchimkent		5·9	349	i 1 26	− 1	i 2 29	− 6	—	—
Naryn		6·3	37	e 1 28	− 4	2 35	− 9	—	—
Mary		7·4	281	e 1 43?	− 3	i 3 25	+16	—	—
Almata		8·2	33	e 1 58	+ 1	3 28	0	—	—
New Delhi		9·4	145	i 2 14	+ 2	i 3 53	− 2	—	—
Shemakla		18·0	290	e 4 8	+11	—	—	—	—
Tamanrasset	z.	57·5	276	e 9 29	+ 1	—	—	e 10 19	PeP
College		74·5	16	i 11 17	+ 1	—	—	e 12 14	pP

Tamanrasset gives also ePPZ = 11m.43s.

May 17d. Readings also at 0h. (Potsdam), 1h. (Tortosa), 3h. (Tortosa and near Istanbul), 4h. (Stuttgart), 5h. (Bandong, College, and near Pierce Ferry), 6h. (Jena, Strasbourg, Tamanrasset, near Bandong, and Djakarta), 7h. (Hungry Horse, Victoria, and near Seattle), 9h. (College, Ashkabad, Kizyl-Arvat, Almata, Frunse, Garm, Mary, Naryn, Obi-garm, near Andijan, Fergana, Samarkand, Stalinabad, Tashkent, and Tchimkent), 10h. (College, Ashkabad, Kizyl-Arvat, Mary, Andijan, Frunse, near Fergana, Garm, Obi-garm, Samarkand, Stalinabad, and Tchimkent), 11h. (near Garm, near Obi-garm, and near Ashkabad; separate shocks), 12h. (Mizusawa, College, Boulder City, Shasta Dam, and Scoresby Sund), 13h. (near Bandong and Djakarta), 14h. (near Obi-garm), 15h. (Stalinabad, near Andijan, and Garm), 16h. (Shasta Dam, Pierce Ferry, and Granada), 17h. (Fergana, Stalinabad, near Garm, and Obi-garm), 19h. (College), 20h. (Mizusawa, Pretoria, La Plata, Triest, near Shemakla, and near Ashkabad), 22h. (Tamanrasset, near Istanbul, near Ashkabad, and Kizyl-Arvat), 23h. (Auckland, Wellington, Mount Wilson, Palomar, Riverside, China Lake, Tinemaha, Besançon, Strasbourg, Stuttgart, and Tamanrasset).

May 18d. Readings at 0h. (Ksara), 1h. (Palomar, Riverside, China Lake, Tinemaha, Mount Wilson, Tucson, Overton, Pierce Ferry, Shasta Dam, Hungry Horse (2), College (2), and near Alicante), 2h. (Pierce Ferry), 3h. (Ksara), 6h. (near San Juan), 7h. (Pierce Ferry, near San Juan, and near Klyuchi), 8h. (Apia, Pietermaritzburg, Pretoria, Tamanrasset, Algiers Univ., Tucson, Pierce Ferry (2), Shasta Dam, Hungry Horse (2), and College), 9h. (Grahamstown, Pietermaritzburg, Pretoria, Tamanrasset, Algiers Univ., and Ksara), 10h. (Clermont-Ferrand, Prague, Strasbourg, Stuttgart, Pasadena, Riverside, China Lake, Tucson, Boulder City, Overton, Pierce Ferry, Hungry Horse, and College), 12h. (Frunse, Garm, near Andijan, Fergana, and Tchimkent), 14h. (La Paz, near Huancayo, and near Obi-garm), 15h. (College and near Obi-garm), 17h. (Collmberg, Prague, Stuttgart, Palomar, Riverside, China Lake, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Mineral, Shasta Dam, Hungry Horse, Seattle, and College), 18h. (Prague), 19h. (Pasadena, Riverside, China Lake, Tinemaha, La Paz, Tamanrasset, and near Grozny), 20h. (near Malaga), 21h. (near Obi-garm and near Tucson), 23h. (Hungry Horse, La Paz, and Tamanrasset).

May 19d. 2h. 38m. 11s. Epicentre 20°·6S. 169°·0E.

$A = -·9196$, $B = +·1788$, $C = -·3498$; $\delta = -1$; $h = +5$;
$D = +·191$, $E = +·982$; $G = +·343$, $H = -·067$, $K = -·937$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·1	242	e 3 49	0	i 7 1	+12	i 7 11	SS	—
Auckland	N.	17·0	164	4 0	− 1	7 9	− 1	7 32	SS	8·3
Arapuni		18·3	164	4 18	+ 1	e 7 51	+12	—	—	—
New Plymouth	E.	18·9	167	4 21	− 3	7 53	0	—	—	—
Tuai	N.	19·5	162	4 31	0	8 10	+ 4	—	—	—
Apia		19·6	73	e 4 34	+ 2	e 8 2	− 6	e 8 29	SS	e 10·8
Riverview		20·6	227	i 4 42k	− 1	i 8 31	+ 2	i 5 3	PP	—
Cobb River	E.	20·7	173	4 42	− 2	8 28	− 3	5 3	PP	—
Wellington		21·2	169	i 4 46	− 3	i 8 29	−12	5 15	PP	10·8
Kaimata	N.E.	22·0	176	e 5 7	+ 9	e 9 13	+17	—	—	—
Guam		41·4	322	7 49	− 1	10 16	PPP	—	—	—
Perth		48·6	246	8 34	−13	16 51	+62	11 54	PPP	i 25·8
Honolulu		52·8	40	e 9 22	+ 3	e 16 52	+ 5	e 11 7	PP	e 21·9
Djakarta		61·9	275	e 10 21	− 3	e 18 45	− 2	—	—	—
Nanking		71·1	317	i 11 25	+ 3	i 20 42	+ 4	i 14 5	PP	e 35·7
Vladivostok		72·0	333	e 11 28	0	i 20 52	+ 3	e 14 9	PP	—
Berkeley		86·8	48	e 12 47a	0	e 23 19	[+ 6]	e 16 22	PP	e 35·2
Santa Clara		86·8	48	e 12 50	+ 3	e 23 17	[+ 4]	e 24 39	PS	e 40·4
Ukiah		86·8	46	—	—	e 23 6	[− 7]	e 24 40	PS	e 37·3
Lick	Z.	87·0	48	i 12 48	0	—	—	—	—	—
Fresno	Z.	88·1	49	i 12 53a	− 1	—	—	—	—	—
Pasadena		88·1	53	i 12 52	− 2	i 23 40	+ 3	i 12 56	PcP	e 36·2
Shasta Dam		88·1	45	e 12 51	− 3	e 23 40	+ 3	e 23 9	SKS	—
Mineral	Z.	88·5	46	e 12 55a	− 1	—	—	—	—	—
Palomar	Z.	88·7	54	i 12 55	− 2	—	—	—	—	—
Riverside		88·7	53	i 12 54	− 3	—	—	—	—	—
China Lake	Z.	89·2	51	i 12 57	− 2	—	—	—	—	e 50·5
Reno		89·3	48	e 13 2k	+ 3	e 23 50	+ 2	e 16 49	PP	e 42·7
Tinemaha	Z.	89·3	50	e 12 58	− 1	—	—	—	—	—
Calcutta	E.	89·6	294	e 12 57	− 4	i 23 32	[+ 2]	e 16 36	PP	—
Sitka		90·6	27	e 12 59	− 6	e 23 29	[− 7]	e 24 7	S	e 37·0
Boulder City		91·3	52	e 13 7	− 2	—	—	—	—	—
College		91·4	17	e 13 6	− 3	e 23 37	[− 4]	i 13 10	P	e 51·8
Victoria		91·4	39	13 9	0	23 46	[+ 5]	24 16	S	44·8
Colombo	E.	91·6	277	13 5	− 5	23 42	[0]	(30 37)	SSP	30·6
Seattle		91·6	40	e 13 16	+ 6	e 23 47	[+ 5]	e 24 19	S	e 37·8
Irkutsk		91·7	327	13 12	+ 2	e 23 44	[+ 1]	24 13	S	—
Overton	Z.	91·8	51	i 13 10	− 1	e 24 20	+ 9	—	—	—
Pierce Ferry		92·0	53	i 13 6	− 6	e 23 44	[0]	i 13 10	P	—
Tucson		92·9	57	e 13 14	− 2	e 24 19	− 1	e 16 57	PP	e 38·0
Kodaikanal	E.	95·0	279	e 13 41	+15	i 24 40	+ 2	26 19	PS	—
Salt Lake City		95·4	49	e 13 31	+ 3	i 24 6	[+ 3]	e 24 52	S	e 41·0
Logan		95·8	48	e 13 30	+ 1	i 24 4	[− 1]	e 24 48	S	e 43·1
Butte	N.	96·9	43	e 22 58	?	e 26 30	PS	—	—	e 40·1
Hungry Horse		96·9	44	e 13 36	+ 2	e 24 3	[− 8]	e 17 31	PP	—
Bozeman		97·8	44	—	—	e 24 15	[− 1]	e 25 10	S	e 45·5
Poona	N.	101·0	287	—	—	i 24 27	[− 5]	i 25 27	S	—
New Delhi	N.	101·1	297	e 13 55	+ 2	i 24 34	[+ 2]	i 25 36	S	48·9
Bombay		102·0	286	e 14 14	+17	i 24 47	[+10]	e 17 48	PP	—
Rapid City	E.	102·5	48	e 17 9	?	i 24 39	[0]	e 27 21	PS	e 48·6
Naryn		105·5	310	—	—	i 24 54	[+ 1]	—	—	—
Andijan		108·0	307	—	—	i 25 9	[+ 5]	—	—	—
Huancayo		108·9	111	e 18 52	PP	e 25 9	[+ 1]	e 28 25	PS	e 49·2
La Plata	E.	109·2	141	26 19	SKKS	(26 19)	{+20}	34 13	SS	50·8
Obi-garm		109·6	306	e 18 19	[−13]	—	—	—	—	—
Stalinabad		110·3	306	e 14 38	P	i 25 16	[+ 3]	e 19 25	PP	—
Tashkent		110·4	310	e 14 36	P	e 25 16	[+ 2]	e 21 55?	PPP	—
Tananarive		110·5	239	28 34	PS	e 25 19	[+ 5]	34 55	SSP	e 53·6
La Paz		112·9	118	i 14 49k	P	i 28 59	PS	i 19 29	P	54·0
Chicago		113·2	51	e 19 25	PP	e 25 21	[− 4]	e 28 55	PS	e 49·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mary		115·6	304	18 51	[+ 7]	—	—	—	—	—
Bogota		116·8	96	e 19 59	PP	e 25 23	[−16]	e 29 41	PS	—
Sverdlovsk		117·1	325	e 18 49	[+ 2]	26 56	{+ 1}	e 15 6	P	—
Columbia		117·4	60	—	—	e 25 35	[− 6]	e 29 47	PS	e 46·0
Cleveland		117·7	53	e 20 1a	PP	e 25 38	[− 4]	e 29 41	PS	—
Galerazamba		117·7	88	e 20 13	PP	e 25 9	[−33]	e 30 6	PS	—
Ashkabad		118·4	304	e 20 22	PP	e 25 51	[+ 7]	—	—	—
Pittsburgh		118·9	54	e 21 15	?	e 25 50	[+ 4]	e 29 54	PS	—
Pennsylvania		120·5	54	i 20 21	PP	i 25 49	[− 3]	e 30 13	PS	—
Ottawa		122·0	47	i 18 56	[− 1]	e 25 54	[− 3]	e 20 30	PP	55·8
Fordham		123·5	53	e 19 2	[+ 2]	e 26 1	[0]	e 20 41	PP	—
Baku		125·0	306	e 19 25	[+23]	—	—	—	—	—
Seven Falls	E.	125·2	45	e 20 50	PP	e 30 51	PS	e 38 5	SS	60·8
Harvard		125·2	51	e 19 2	[− 1]	i 32 26	PPS	i 20 54	PP	—
Weston		125·4	51	e 19 1	[− 2]	i 37 49	SS	e 20 51	PP	—
Grozny		127·9	309	e 19 8	[0]	—	—	—	—	—
San Juan		128·2	81	e 19 11	[+ 2]	e 26 15	[0]	e 21 6	PP	e 49·2
Tiflis		128·8	307	19 11	[+ 1]	—	—	—	—	—
Gori		129·2	318	e 19 15?	[+ 5]	e 22 37	PKS	—	—	—
Leninakan		129·6	307	e 19 27?	[+16]	—	—	—	—	—
Moscow		129·7	326	i 19 13	[+ 2]	i 22 33	PKS	21 21	PP	—
Scoresby Sund		129·7	5	i 19 13	[+ 2]	i 22 34	PKS	21 23	PP	64·8
Borzhomi		129·8	318	e 19 19	[+ 7]	e 22 37	PKS	—	—	—
Abastumanj		130·2	318	e 19 29?	[+17]	—	—	—	—	—
Halifax		130·6	48	e 22 37	PKS	—	—	—	—	63·0
Bermuda		131·0	65	e 19 24	[+10]	e 26 7	[−15]	e 21 37	PP	e 51·2
Pulkovo		131·1	334	19 15	[+ 1]	e 28 10	{−17}	e 21 29	PP	—
Ivigtut		131·9	23	i 19 12	[− 4]	22 37	PKS	21 32	PP	—
Fort de France		132·0	88	e 21 44	PP	—	—	—	—	—
Helsinki		133·0	338	e 22 46	PKS	—	—	—	—	e 61·8
Upsala		135·8	340	e 18 41	[−42]	e 22 56	PKS	e 21 56?	PP	e 61·8
Yalta		135·8	314	19 26	[+ 3]	i 23 0	PKS	—	—	—
Ksara		136·6	298	i 19 28k	[+ 4]	23 2	PKS	36 10	?	—
Bergen	E.	138·6	349	e 18 55?	[−33]	—	—	—	—	—
Warsaw		139·8	331	e 19 24	[− 6]	29 26	{+ 6}	e 22 45	PP	e 63·8
Istanbul		140·4	311	e 19 28	[− 3]	e 27 18	[+38]	—	—	—
Copenhagen		140·8	340	i 19 26	[− 6]	23 12	PKS	22 35	PP	69·8
Helwan		140·8	293	e 19 28	[− 4]	29 28	{+ 2}	22 33	PP	—
Bucharest		141·2	317	e 19 30	[− 3]	i 23 16	PKS	i 22 36	PP	76·8
Skalnate Pleso		142·1	328	—	—	e 30 57	?	e 41 7	SS	—
Raciborzu		142·6	331	e 19 37	[+ 2]	e 23 19	PKS	e 22 45	PP	—
Aberdeen		142·9	352	i 19 31	[− 5]	i 23 19	PKS	e 72 16	Q	e 77·8
Potsdam		143·2	336	i 19 34k	[− 2]	e 23 21	PKS	i 22 49	PP	e 69·8
Budapest	N.	143·8	325	19 46	[+ 9]	—	—	e 28 54	PKKP	e 67·8
Sofia		143·8	316	19 38	[+ 1]	—	—	—	—	—
Ogyalla		144·0	326	e 19 38	[+ 1]	e 23 25	PKS	e 22 42	PP	—
Collmberg		144·1	334	e 19 33	[− 5]	e 41 33	SS	—	—	e 65·8
Edinburgh	E.	144·2	353	e 19 49	[+11]	e 23 15	PKS	e 42 17	SSP	—
Kalossa	E.	144·4	326	e 19 42	[+ 4]	—	—	e 21 7	?	—
Prague		144·4	332	e 19 32a	[− 6]	e 29 49	{+ 3}	e 22 55	PP	e 64·8
Jena	E.	144·9	335	e 19 40	[+ 1]	e 23 18?	PKS	—	—	—
Durham		145·1	351	i 19 42	[+ 3]	—	—	—	—	—
Cheb		145·2	335	i 19 42	[+ 2]	e 26 56	[+ 9]	i 23 3	PP	—
Athens		145·4	309	e 19 38	[− 2]	—	—	i 19 44	PKP_2	—
De Bilt		146·1	343	i 19 43	[+ 2]	e 42 1	SS	i 23 6	PP	e 71·8
Zagreb		146·5	327	e 19 41	[− 1]	—	—	—	—	e 72·8
Rathfarnham Castle		147·2	356	i 19 43	[0]	e 23 15	PKS	i 19 48	PKP_2	—
Karlsruhe		147·6	337	e 19 51	PKP_2	—	—	—	—	—
Stuttgart		147·6	336	i 19 45a	[+ 1]	e 42 25	SS	e 23 15	PP	e 66·8
Triest		147·8	327	i 19 49	[+ 5]	e 29 13	{−53}	i 42 15	SS	e 68·8
Kew		148·1	348	i 19 45	[+ 1]	e 42 38	SS	e 23 22	PP	e 68·8
Strasbourg		148·3	337	e 19 46	[+ 1]	e 30 4	{− 5}	e 23 20	PP	68·8
Taranto		148·8	318	e 19 51	[+ 6]	—	—	e 49 54	Q	—
Chur		148·9	334	e 19 48	[+ 2]	—	—	—	—	—
Zürich		148·9	335	e 19 46	[0]	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Basle		149·2	336	e 19 52	[+ 6]	—	—	e 23 58	PP	—
Salo	z.	149·4	332	e 19 52a	[+ 6]	—	—	—	—	—
Bologna		149·8	330	e 19 55a	[+ 8]	—	—	e 25 19	?	—
Paris		149·8	343	i 19 51k	[+ 4]	—	—	i 23 26	PP	e 79·8
Neuchatel		149·9	336	e 19 51	[+ 4]	—	—	—	—	—
Besançon		150·0	337	e 19 48	[+ 1]	—	—	e 23 28	PP	—
Florence Xim		150·4	327	e 19 49	[+ 1]	i 43 3	SS	—	—	—
Pavia		150·4	333	e 19 54	[+ 6]	—	—	—	—	—
Prato		150·4	327	e 19 45	[− 3]	—	—	—	—	—
Rome		150·9	324	e 19 50	[+ 1]	e 43 6	SS	e 23 46	PP	—
Messina		151·1	316	e 20 4	PKP_2	—	—	—	—	—
Clermont-Ferrand		152·4	339	e 19 52	[+ 1]	e 26 52	[− 5]	e 20 10	PKP_2	77·8
Tortosa		157·6	339	e 20 11	PKP_2	—	—	i 24 14	PP	—
Algiers Univ.	z.	159·7	326	e 20 1	[+ 1]	—	—	e 20 41	PKP_2	—
Toledo		159·9	346	e 20 3	[+ 2]	e 44 28	SS	e 20 39	PKP_2	84·2
Alicante		160·1	337	20 6	[+ 5]	26 48	[−17]	24 30	PP	e 73·3
Granada		162·3	343	20 51a	PKP_2	28 6	[+59]	i 45 1	SS	i 82·9
Malaga	z.	162·9	343	i 20 8a	[+ 4]	i 27 2	[− 5]	i 20 58	PKP_2	90·0
Tamanrasset	z.	164·5	281	e 20 5	[0]	e 27 14	[+ 6]	i 21 3	PKP_2	—

Additional readings :—
Riverview i=4m.46s., iN=5m.9s., iPPPE=5m.12s., iZ=5m.23s., iSE=8m.34s., iP_cPEN=8m.47s., iSSZ=9m.4s., iSSSE=9m.18s.
Wellington iPPP?Z=5m.28s.
Perth i=18m.33s. and 21m.21s., SS=22m.44s.
Nanking iP_cP?NZ=11m.47s., iPPP=15m.50s., i=16m.49s., e=20m.17s., PS?NZ=21m.5s., iS_cS?N=21m.20s., PPS?NZ=21m.29s., iSSN=25m.20s.
Vladivostok iP_cP=11m.45s., ePPP=15m.55s.
Berkeley iZ=13m.43s., eE=24m.31s.
Lick iZ=12m.56s. and 13m.23s., eZ=13m.42s. and 14m.33s.
Fresno iZ=13m.48s.
Pasadena iZ=13m.48s. and 14m.29s., eSKSEN=23m.13s., iPSEN=24m.30s., eSSEN=28m.49s., eSSSZ=33m.13s.
Shasta Dam ePP?=15m.49s., e=19m.34s.
Mineral iZ=13m.7s. and 13m.48s.
China Lake iZ=14m.5s.
Reno eE=13m.16s., eZ=42m.7s.
Calcutta ePPPE=18m.37s.
Sitka ePS?=24m.59s., eSS=29m.5s., eSSS?=33m.37s.
Victoria SS=30m.43s.
Seattle e=13m.37s., 14m.3s., 14m.24s., and 15m.12s., ePP=16m.34s., e=20m.1s., ePPS=25m.29s., e=27m.19s., ePKKP=30m.45s., e=32m.5s.
Irkutsk ePS=25m.32s.
Pierce Ferry i=13m.53s., ePKP,PKP=48m.56s.
Tucson iP=13m.18s., eSKS?=23m.51s., ePS=25m.39s., eSS=30m.14s., eSSS=34m.17s.
Kodaikanal SE=24m.34s.?, SSE=31m.34s.?, SSSE=35m.34s.
Salt Lake City e=16m.19s., ePS=26m.6s.
Logan e=16m.20s., iPS=26m.7s., eSS=30m.5s.
Hungry Horse eS=24m.27s., ePKP,PKP=38m.24s.
Bozeman ePS=26m.29s., eSS=41m.47s.
Poona SSN=32m.26s.
New Delhi SKKSN=24m.57s., PPSN=28m.7s., iSS?N=32m.55s., iN=33m.20s., SSSN=36m.51s., QN=42m.36s.
Rapid City eSS?E=31m.44s.
Huancayo e=33m.22s.
La Plata PSSE=39m.19s.
Stalinabad iS=26m.56s., iPS=28m.42s.
La Paz iPPS=30m.17s., SS=35m.15s.
Chicago eS=26m.32s., ePS=32m.59s., eSS=34m.27s., eSSS?=39m.15s.
Sverdlovsk iPP=19m.57s., SKSP=29m.34s., iPS=29m.49s., SS=36m.13s.
Columbia eSS?=36m.19s., eSSS=39m.49s.
Cleveland eSKKSE=26m.40s., ePPSE=31m.10s., eSSE=36m.0s., eN=36m.32s.
Galerazamba eSKKSEN=26m.32s., eSSEN=35m.58s., eSSSEN=40m.46s.
Pennsylvania eE=20m.58s., iEN=21m.18s., iSKS?E=22m.58s., eN=27m.13s.
Ottawa eSKKS=27m.27s., ePS=30m.7s., eSS=37m.31s.
Seven Falls eE=21m.58s.
Harvard i=27m.17s., e=29m.31s., iPS=31m.37s., i=33m.17s. and 34m.21s., e=36m.42s., eSS=38m.5s., ePSPS=38m.42s., eS_cSS_cS=40m.35s., eSSS=42m.10s.
San Juan iPKS=22m.28s., ePS=31m.12s.
Scoresby Sund 24m.4s., SS=38m.45s.
Bermuda i=22m.45s., eS?=28m.19s., ePS?=31m.34s., e=33m.21s.
Pulkovo iPKS=22m.41s., ePS=31m.30s., SS=39m.1s.
Upsala eP_cP,PKPE=27m.17s., eN=30m.19s., 33m.19s., and 35m.24s., eSS=39m.49s.?, eQ?N=49·8m.

Continued on next page.

Warsaw ePKP?E =19m.28s., ePKP$_2$?Z =19m.33s., ePKP?N =19m.38s., ePPZ = 22m.51s., SKPEN =23m.11s., SKPZ =23m.15s., ePKKPEN =28m.34s., ePKKS = 31m.11s., PSN =32m.53s., PSE =32m.57s., PPSEN =34m.44s., eSSE =40m.47s., eSSN =40m.55s., eSSSEN =46m.3s., and many other unidentified e readings.
Copenhagen SS =40m.55s., SSS =46m.13s.
Helwan PPPZ =26m.7s., eN =40m.51s. and 42m.49s.
Bucharest iN =22m.24s.
Skalnate Pleso e =36m.16s. and 37m.27s.
Raciborzu eN =20m.30s. and 23m.56s.
Aberdeen iN =31m.24s. and 43m.57s.
Potsdam iZ =19m.58s., eE =20m.19s., eN =20m.25s., iZ =20m.44s., eE =20m.47s., ePKS?N =23m.49s.
Budapest PE =19m.49s., eN =20m.49s.?, eE =29m.27s., eEN =32m.49s.?, eN = 41m.49s.?
Ogyalla ePPP =26m.7s., ePPS? =35m.16s., eSS =41m.13s., eSSS =47m.13s., and other unidentified e readings.
Collmberg i =19m.38s., eZ =19m.49s., 20m.6s., 20m.18s., and 20m.58s., eN =22m.15s., ePKSN =23m.39s., eN =30m.11s., ePPPSZ =36m.49s.?
Prague iPKP$_2$ =19m.39s., eSKP =23m.10s., ePPP? =26m.6s., ePS? =35m.16s., ePPS = 36m.25s., eSS =41m.13s., eSSS =46m.19s. and 47m.13s., and other unidentified e readings.
Jena iPKPEN =19m.54s., ePP?N =23m.24s.
Cheb iPKPE =19m.45s., ePPP =26m.30s., eSKKS =29m.50s., eSKSP =33m.16s., ePS =34m.38s., eSS =42m.4s., eSSS? =46m.40s., and other unidentified e readings.
De Bilt eSSS =47m.19s.
Rathfarnham Castle iZ =19m.57s. and 21m.10s.
Stuttgart iPKP =19m.49s., iZ =20m.3s., eZ =20m.17s., 20m.36s., and 20m.43s., e = 21m.21s., eS? =32m.13s.
Triest iPKP$_2$ =20m.6s., iPP =23m.45s., iPKS =23m.47s., iPPP =27m.8s., ePSKS = 33m.9s., ePPS =35m.11s.
Kew i =19m.51s., eNZ =20m.59s., eSP?Z =33m.51s.
Strasbourg i =19m.50s., e =27m.50s., 34m.40s. and 41m.49s., eSS =42m.37s.
Taranto e =24m.59s., 38m.24s., and 45m.33s.
Salo eZ =20m.17s., eN =21m.21s.
Paris i =19m.54s., e =20m.5s., 20m.42s., and 20m.58s., ePPP =26m.25s.
Besançon i =19m.54s. and 20m.12s.
Rome eSSS =48m.49s.
Clermont-Ferrand ePP =23m.43s., eSKKS =30m.32s., ePKKS =31m.58s., eSSP = 43m.52s.
Algiers Univ. ePPZ =24m.22s.
Toledo ePPZ =24m.26s., SSSE =50m.30s.
Alicante PKP$_2$ =20m.47s., PKS =23m.40s.
Granada PKP$_2$ =21m.39s., SKP =24m.40s., iPP =25m.4s., PPP =28m.58s., SKSP = 35m.10s., PPS =39m.28s., SSS =51m.24s.
Malaga iPPZ =24m.44s., SKKSZ =31m.28s.
Tamanrasset iZ =20m.9s., eZ =23m.3s., ePPZ =24m.53s., ePPPZ =28m.53s.
Long waves were also recorded at Tacubaya, Saskatoon, Lincoln, and Lisbon.

May 19d. 7h. 5m. 32s. Epicentre 20°·6S. 169°·0E. (as at 2h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·1	242	i 3 45	− 4	e 6 56	+ 7	i 4 4	PP	i 7·8
Auckland	N.	17·0	164	4 2	+ 1	7 8	− 2	—	—	8·5
Arapuni		18·3	164	e 4 25	+ 8	—	—	—	—	—
Tuai	N.	19·5	162	e 4 35	+ 4	e 7 38	−28	—	—	—
Apia		19·6	73	e 4 33	+ 1	e 7 47	−21	—	—	e 9·7
Riverview		20·6	227	i 4 42k	− 1	i 8 32	+ 3	i 5 18	PPP	e 10·1
Cobb River	E.	20·7	173	e 4 47	+ 3	e 8 34	+ 3	e 14 22	?	—
Wellington		21·2	169	i 4 50	+ 1	i 8 46	+ 5	5 38	PPP	11·0
Kaimata	N.E.	22·0	176	e 5 2	+ 4	—	—	—	—	—
Christchurch		23·1	173	e 5 4	− 4	9 12	− 4	5 43	PP	11·6
Guam		41·4	322	7 45	− 5	—	—	9 33	PP	—
Perth		48·6	246	—	—	i 17 58	S_cS	i 21 40	Q	i 25·0
Honolulu		52·8	40	—	—	e 16 54	+ 7	—	—	e 22·9
Bandong		60·8	275	e 10 15	− 1	e 18 35	+ 2	—	—	—
Djakarta		61·9	275	e 10 19	− 5	e 18 43	− 4	—	—	—
Nanking		71·1	317	i 11 23	+ 1	i 20 40	+ 2	11 41	PcP	e 30·0
Vladivostok		72·0	333	i 11 29	+ 1	i 20 53	+ 4	i 11 47	PcP	—
Berkeley		86·8	48	e 12 48k	+ 1	e 23 20	− 5	i 24 37	PS	e 38·3
Santa Clara	E.	86·8	48	—	—	e 24 52	PPS	—	—	e 47·2
Ukiah		86·8	46	—	—	e 23 5	[− 8]	e 24 37	PS	e 39·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lick	Z.	87·0	48	e 12 49k	+ 1	—	—	—	—	—
Fresno	Z.	88·1	49	e 12 52a	− 2	—	—	—	—	—
Pasadena		88·1	53	e 12 52	− 2	i 23 21	[0]	i 23 44	S	e 40·3
Shasta Dam		88·1	45	i 12 53	− 1	—	—	—	—	—
Mineral	Z.	88·5	46	e 13 14a	+18	—	—	—	—	—
Palomar	Z.	88·7	54	i 12 55	− 2	—	—	—	—	—
Riverside	Z.	88·7	53	i 12 55	− 2	—	—	—	—	—
China Lake	Z.	89·2	51	i 12 58	− 1	—	—	—	—	—
Reno		89·3	48	e 12 58a	− 1	e 23 56	+ 8	—	—	—
Tinemaha	Z.	89·3	50	e 12 59	0	—	—	—	—	—
Sitka		90·6	27	—	—	e 23 33	[− 3]	e 24 5	S	e 37·8
Boulder City		91·3	52	e 13 8	− 1	—	—	—	—	—
College		91·4	17	e 13 6	− 3	—	—	—	—	—
Victoria		91·4	39	13 10	+ 1	e 23 41	[0]	e 24 15	S	e 45·6
Colombo	E.	91·6	277	—	—	23 46	[+ 4]	—	—	46·9
Seattle		91·6	40	e 13 19	+ 9	e 23 49	[+ 7]	e 24 24	S	e 38·5
Irkutsk		91·7	327	13 9	− 1	24 10	0	e 25 30	PS	—
Overton	Z.	91·8	51	e 13 13	+ 2	—	—	—	—	—
Pierce Ferry		92·0	53	e 13 11	− 1	—	—	—	—	—
Tucson		92·9	57	e 13 14	− 2	e 25 46	PS	e 16 58	PP	e 42·6
Kodaikanal	E.	95·0	279	e 14 16	+50	24 14	{− 4}	25 44	PS	—
Salt Lake City		95·4	49	—	—	e 24 2	[− 1]	—	—	e 45·3
Logan		95·8	48	—	—	e 24 3	[− 2]	e 24 54	S	e 44·8
Butte	N.	96·9	43	—	—	e 25 3	+ 9	—	—	e 47·7
Bozeman		97·8	44	—	—	e 24 15	[− 1]	e 25 26	S	e 45·5
Tacubaya		98·2	72	e 15 8	?	e 25 47	+42	e 28 56	?	e 49·0
Poona	N.	101·0	287	—	—	i 24 28	[− 4]	i 25 29	S	—
New Delhi	N.	101·1	297	—	—	e 24 31	[− 1]	e 27 20	PS	—
Bombay		102·0	286	e 14 13	+16	e 24 38	[+ 1]	e 17 28	?	—
Rapid City	E.	102·5	48	e 27 21	PS	e 24 34	[− 5]	e 25 46	S	e 47·8
Saskatoon		102·6	39	—	—	e 24 43	[+ 3]	e 27 18	PS	51·0
Lincoln	E.	106·4	52	—	—	e 28 1	PS	—	—	e 52·9
Andijan		108·0	307	e 14 28	P	26 32	S	e 18 48	PP	—
Huancayo		108·9	111	—	—	e 25 22?	[+14]	—	—	—
Obi-garm		109·6	306	—	—	25 32	[+21]	—	—	—
Stalinabad		110·3	306	e 19 14	PP	i 26 51	S	28 43	PS	—
Tashkent		110·4	310	e 18 49?	[+15]	—	—	e 21 13	PPP	—
St. Louis		110·8	54	—	—	e 26 17	{+ 6}	e 28 41	PS	—
La Paz		112·9	118	i 19 28	PP	i 29 32	PS	—	—	62·9
Chicago		113·2	51	e 19 29	PP	e 26 28	{+ 1}	e 29 6	PS	e 47·0
Bogota		116·8	96	—	—	e 25 46	[+ 7]	e 31 9	PPS	e 62·5
Sverdlovsk		117·1	325	e 19 54	PP	29 43	PS	—	—	—
Columbia		117·4	60	e 29 48	PS	e 25 38	[− 3]	e 39 42	SSS	e 58·6
Cleveland	E.	117·7	53	e 20 0a	PP	e 25 42	[0]	e 26 59	SKKS	—
Ashkabad		118·4	304	e 20 25	PP	—	—	—	—	—
Baku		125·0	306	e 20 58	PP	—	—	—	—	—
Seven Falls	E.	125·2	45	e 20 52	PP	e 30 49	PS	—	—	60·5
Harvard		125·2	51	e 20 52	PP	e 30 46	PS	e 32 29	PPS	e 60·3
Weston		125·4	51	e 20 47	PP	—	—	—	—	e 58·4
San Juan		128·2	81	e 19 14	[+ 5]	e 26 24	[+ 9]	e 21 11	PP	e 47·7
Scoresby Sund		129·7	5	e 19 14	[+ 3]	e 26 12	[− 7]	21 20	PP	61·5
Moscow		129·7	326	19 11	[0]	26 22	[+ 3]	21 22	PP	—
Halifax		130·6	48	e 22 36	PKS	—	—	—	—	66·5
Bermuda		131·0	65	e 18 47	[−27]	e 22 46	PKS	e 33 46	PPS	e 58·4
Ivigtut		131·9	23	21 37	PP	22 40	PKS	—	—	66·5
Fort de France		132·0	88	—	—	e 22 24	SKP	—	—	—
Helsinki		133·0	338	—	—	e 22 45	PKS	—	—	e 62·5
Upsala		135·8	340	e 21 58	PP	e 22 51	PKS	e 40 4	SS	e 62·5
Yalta		135·8	314	e 19 25	[+ 2]	—	—	—	—	—
Ksara		136·6	298	i 19 28k	[+ 4]	23 5	PKS	36 20	?	—
Warsaw		139·8	331	e 19 18	[−12]	e 26 7	[−32]	22 24	PP	e 80·5
Istanbul		140·4	311	e 19 25	[− 6]	e 33 1	PS	—	—	—
Copenhagen		140·8	340	e 19 24	[− 8]	e 23 14	PKS	22 33	PP	—
Helwan		140·8	293	e 19 32	[0]	e 40 58	SS	22 36	PP	—
Potsdam	Z.	143·2	336	e 19 33k	[− 3]	i 23 35	PKS	i 22 45	PP	79·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		143·8	316	19 38	[+ 1]	—	—	—	—	—
Ogyalla		144·0	326	e 19 56	[+19]	e 26 49	[+ 4]	e 22 45	PP	—
Collmberg	z.	144·1	334	e 19 35	[− 3]	—	—	—	—	—
Edinburgh	E.	144·2	353	e 19 49	[+11]	e 23 15	PKS	42 17	SSP	—
Prague		144·4	332	e 19 36a	[− 2]	e 26 40	[− 6]	e 23 6	PP	—
Jena		144·9	335	e 19 39	[0]	—	—	e 19 43	PKP_2	—
Cheb		145·2	335	i 19 42	[+ 2]	e 29 55	{+ 4}	e 42 19	SSP	—
De Bilt		146·1	343	e 19 41a	[0]	e 42 18	SS	e 22 55	PP	e 69·5
Rathfarnham Castle		147·2	356	e 19 44	[+ 1]	—	—	—	—	e 80·5
Stuttgart		147·6	336	e 19 45	[+ 1]	e 42 22	SS	i 19 49	PKP_2	—
Triest		147·8	327	e 20 1	[+17]	—	—	e 18 6	?	—
Kew		148·1	348	e 19 46	[+ 2]	e 42 31	SS	e 23 21	PP	e 70·5
Strasbourg		148·3	337	e 19 47	[+ 2]	—	—	i 19 52	PKP_2	—
Taranto		148·8	318	19 51	[+ 6]	e 36 3	PPS	23 21	PP	—
Zürich		148·9	334	e 19 48	[+ 2]	—	—	—	—	—
Salo	z.	149·4	332	e 19 56	[+10]	—	—	—	—	—
Bologna	z.	149·8	330	e 19 53	[+ 6]	—	—	—	—	—
Besançon		150·0	337	e 19 51	[+ 4]	—	—	—	—	—
Florence Xim		150·4	327	e 19 49	[+ 1]	—	—	e 23 24	PP	—
Prato		150·4	327	e 19 51	[+ 3]	—	—	—	—	—
Rome		150·9	324	e 19 47	[− 2]	—	—	23 32	PP	—
Clermont-Ferrand		152·4	339	e 19 49	[− 2]	e 26 58	[+ 1]	e 20 11	PKP_2	80·5
Tortosa		157·6	339	20 41	PKP_2	—	—	e 24 3	PP	—
Alicante		160·1	337	20 1	[0]	23 35	PKS	20 45	PKP_2	e 74·5
Granada		162·3	343	(19 47)	[−16]	(46 10)	SSP	(e 24 50)	PP	(95·6)
Malaga	z.	162·9	343	i 20 3a	[− 1]	i 26 49	[−18]	i 20 53	PKP_2	89·7
Tamanrasset	z.	164·5	281	e 24 42	PP	e 27 6	[− 2]	e 28 34	PPP	—

Additional readings and note :—
Brisbane iSSE =7m.6s.
Riverview iN =5m.50s. and 6m.9s., iZ =7m.0s., iE =8m.42s., iP_cPZ =8m.49s., iZ = 9m.13s., iSSSE =9m.22s.
Christchurch iP =5m.11s., eZ =7m.22s., QEN =10m.8s.
Nanking e =11m.54s., i =12m.17s., ePP?Z =14m.5s., eNZ =20m.25s., ePS?NZ = 21m.3s., eS_cS? =21m.16s., ePPS? =21m.30s., e =24m.18s., iSS? =25m.1s.
Vladivostok ePPP =16m.1s., iPS =21m.24s., iSS =26m.22s.
Berkeley eN =26m.22s.
Fresno eZ =13m.4s.
Pasadena eZ =13m.49s., ePPZ =16m.16s., ePSEN =24m.40s.
Mineral eZ =13m.28s.
Palomar iZ =13m.7s.
Tinemaha iZ =13m.8s.
Sitka ePS? =25m.10s., eSS =29m.54s., eSSS? =34m.4s.
Seattle e =13m.32s., 14m.4s., 22m.52s., 24m.58s., and 33m.8s.
Tucson e =14m.5s. and 20m.11s., eSKS? =23m.13s., eSS? =29m.47s.
Kodaikanal SKSE =23m.39s., SSE =31m.18s., SSSE =35m.14s.
Logan ePS =26m.8s., eSS =31m.14s.
Poona SSN =32m.13s., SSPN =32m.43s.
Andijan ePKS =22m.8s.
St. Louis e =30m.17s., eSS =35m.6s.
Chicago eSS =34m.42s., eSSS =39m.36s.
Cleveland ePSE =29m.43s., ePSN =29m.46s., eSSE =35m.56s.
Harvard e =35m.59s., eSS =38m.27s., e =39m.50s., eSSS =42m.22s., e =46m.11s.
San Juan i =22m.28s.
Scoresby Sund i =22m.38s., PS =31m.34s., 33m.4s., i =36m.16s., SS =38m.48s.
Bermuda e =28m.28s., eSS? =34m.38s.
Upsala eN =26m.4s., eE =32m.28s.?, e =41m.28s.?
Warsaw $ePKP_2$?Z =19m.33s., SKPZ =23m.3s., SKPEN =23m.9s., PKKP =28m.15s., SKKSN =29m.8s., SKKSE =29m.14s., PPS =34m.31s., eSSN =40m.57s., eSSE = 41m.2s., and other unidentified e readings.
Helwan eZ =20m.19s., 23m.39s., 25m.25s., and 27m.43s., PSKSN =42m.46s.
Potsdam eZ =20m.52s., iZ =23m.50s., iPPPZ =26m.2s., eZ =28m.39s., iSSPZ =42m.17s.
Ogyalla e =20m.48s. and 21m.47s., ePPP =26m.10s., eSS =41m.28s., e =42m.40s.
Collmberg eZ =20m.16s.
Prague $ePKP_2$ =19m.48s., e =21m.16s., 21m.58s., and 22m.19s., ePPP? =26m.28s., eSKKS =29m.46s., eSS =42m.28s., eSSS =48m.58s.
Cheb $ePKP_2$ =19m.55s., e =27m.38s., 29m.13s., and 30m.32s., eSKSP =33m.13s., e =43m.35s. and 48m.42s.
De Bilt eZ =21m.5s.
Rathfarnham Castle iEN =20m.10s.
Stuttgart e =21m.4s.

Continued on next page.

Triest ePKP$_2$? =21m.13s., iPP =23m.53s.
Kew i =19m.50s., eZ =21m.10s., eN =59m.49s.
Zürich e =20m.36s.
Salo eE =20m.49s.
Clermont-Ferrand ePP =23m.40s.
Alicante PP =24m.29s.
Granada SKKS =(30m.3s.), SKSP =(35m.49s.), PPS =(40m.4s.); readings have been increased by 6m.
Malaga iPPZ =24m.37s., PPPZ =28m.21s.
Long waves were also recorded at New Plymouth, Tananarive, Pennsylvania, Ottawa, and Paris.

May 19d. Readings also at 0h. (College, Hungry Horse, and Shasta Dam), 1h. (College, Samarkand, Fergana, Tashkent, Andijan, Tchimkent, near Obi-garm, and Stalinabad), 2h. (near Obi-garm), 3h. (Tamanrasset), 4h. (Tamanrasset, Tananarive, Mineral, Tucson, near Boulder City, Overton, Pierce Ferry, and near La Paz), 6h. (Samarkand, Tashkent, Naryn, near Garm, Obi-garm, Fergana, Stalinabad, Andijan, Tchimkent, and near Prague), 8h. (Brisbane, College, Mount Wilson, Riverside, Palomar, China Lake, Tinemaha, Overton, Pierce Ferry, Tucson, Collmberg, Stuttgart, and Tamanrasset), 9h. (College, Victoria, Hungry Horse, Shasta Dam, Mineral, Lick, Pasadena, Riverside, Palomar, China Lake, Tinemaha, Boulder City, Overton, Pierce Ferry, Tucson, Istanbul, and near Garm; several shocks), 10h. (Tamanrasset and near Garm (2)), 11h. (College and Pierce Ferry), 13h. (Hungry Horse, Shasta Dam, Overton, Pierce Ferry, La Paz, and Tamanrasset), 14h. (La Paz, Pennsylvania, and near Garm (2)), 17h. (Alicante (2) and Tamanrasset), 18h. (Garm, near Andijan and Tchimkent), 19h. (Brisbane, Collmberg, Stuttgart, near Kizyl-Arvat, and near Irkutsk), 20h. (Obi-garm, Samarkand, near Stalinabad, Garm, and Andijan (2)), 21h. (Brisbane, Riverside, Palomar, China Lake, Overton (2), Pierce Ferry (2), Tucson, Collmberg, and Stuttgart), 22h. (Bucharest, Istanbul, and near Garm), 23h. (near Collmberg).

May 20d. 3h. Gulf of California, but no position suggested by the U.S. stations.

Tucson iP? =11m.27s., e =11m.37s., eS? =12m.55s., e =13m.20s., eL =13m.53s.
Riverside ePZ =12m.32s.
Pierce Ferry eP =12m.32s., e =16m.7s., eL =16m.34s.
Boulder City eP =12m.34s.
Overton ePZ =12m.40s., iZ =13m.10s., eLZ =16m.54s.
Mount Wilson ePZ =12m.43s., iZ =12m.49s.
China Lake ePZ =12m.47s., iZ =13m.0s.
Tinemaha ePZ =13m.9s., iZ =13m.15s.
Mineral ePZ =13m.57s.a, iZ =14m.6s.
Shasta Dam eP =14m.1s.
Hungry Horse eP =14m.47s.
Tacubaya eP =14m.58s.
Ottawa e =25m.30s.
Long waves were also recorded at Pasadena, Seattle, Chicago, and Scoresby Sund.

May 20d. 9h. 37m. 25s. Epicentre 28°·7N. 43°·6W. (as on 1949, January 28d.).

$A = +\cdot6362$, $B = -\cdot6058$, $C = +\cdot4777$; $\delta = -6$; $h = +2$;
$D = -\cdot690$, $E = -\cdot724$; $G = +\cdot346$, $H = -\cdot329$, $K = -\cdot879$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bermuda		18·5	287	e 4 23	+ 4	e 7 45	+ 1	—	—	e 8·6
Fort de France		21·4	231	—	—	e 8 29	−16	—	—	—
San Juan		23·0	248	i 5 9	+ 2	e 9 22	+ 8	—	—	e 10·9
Weston		26·2	309	i 5 45	+ 7	—	—	—	—	e 12·1
Harvard		26·4	309	i 5 45	+ 5	—	—	—	—	e 12·4
Seven Falls	E.	28·1	319	e 6 2	+ 7	(10 23)	−17	—	—	10·4
Shawinigan Falls	N.	28·9	307	e 6 3	0	—	—	—	—	—
Washington		29·5	300	e 6 13	+ 5	—	—	—	—	e 14·6
Ottawa		30·3	313	—	—	e 11 21	+ 6	—	—	15·6
Pennsylvania	N.	30·4	303	—	—	i 11 15	− 1	(i 12 16)	SS	i 12·3
Cleveland		33·3	303	e 6 42	+ 1	e 12 8	+ 6	—	—	—
Malaga	Z.	33·8	65	i 6 49a	+ 3	i 12 16	+ 6	i 8 7	PP	16·4
Toledo	Z.	34·3	60	e 6 48	− 2	—	—	—	—	—
Granada		34·4	64	6 56a	+ 5	12 20	+ 1	—	—	16·1
Rathfarnham Castle		36·7	37	e 7 10	0	e 13 1	+ 7	e 15 57	SSS	e 19·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Alicante		36·9	63	e 6 50	−22	12 18	−40	9 18	PcP	e 17·4
Chicago		37·8	303	e 7 14	− 6	e 12 56	−15	—	—	e 17·7
Tortosa		37·8	59	e 7 0	−20	e 13 12	+ 1	—	—	—
Kew		39·4	42	e 7 33	0	e 13 38	+ 3	e 16 29	SS	e 19·0
Clermont-Ferrand		40·3	52	e 7 40	0	e 13 53	+ 4	e 9 48	PcP	19·4
Paris		40·4	46	i 7 42	+ 1	i 13 58	+ 8	e 16 2	SS	e 18·6
Besançon		42·5	50	e 7 58	− 1	—	—	—	—	—
De Bilt		42·9	42	—	—	e 15 35?	?	—	—	e 17·6
Scoresby Sund		43·6	11	8 11	+ 3	e 14 42	− 4	—	—	16·6
Strasbourg		43·8	48	e 8 8	− 1	—	—	e 12 35	?	—
Tamanrasset	z.	44·4	85	i 8 15a	+ 1	—	—	e 10 0	PP	—
Lincoln	E.	44·6	301	—	—	e 14 55	+ 3	—	—	e 18·2
Stuttgart		44·8	48	e 8 16	− 1	e 14 55	0	e 9 59	PcP	22·6
Cheb		47·0	46	e 14 41	?	e 15 32	+ 6	—	—	—
Collmberg	z.	47·5	45	e 8 38	0	—	—	e 9 1	?	—
Triest		47·7	52	e 7 57	−43	i 15 37	+ 1	e 10 13	PcP	—
Copenhagen		47·8	39	i 8 41	0	e 15 41	+ 3	—	—	23·6
Prague		48·3	46	e 8 44	− 1	e 15 46?	+ 1	e 15 53	PS	—
Huancayo		50·8	222	i 9 3	− 1	—	—	—	—	—
La Paz		50·8	211	e 12 3	PPP	—	—	—	—	—
Warsaw		52·5	45	—	—	(e 17 35?)	PPS	—	—	e 16·7
Hungry Horse		56·5	311	i 9 45	− 1	—	—	e 9 51	pP	—
Tucson		57·2	292	i 9 52	+ 1	e 17 44	− 2	e 12 20	PP	e 27·7
Pierce Ferry		58·7	297	e 10 2	0	e 18 52	PPS	—	—	—
Overton	z.	59·0	298	i 10 5	+ 1	—	—	e 12 11	PP	—
Istanbul		59·3	56	e 10 5	− 1	—	—	—	—	—
Boulder City		59·4	297	e 10 8	+ 2	—	—	—	—	—
China Lake	z.	61·6	298	i 10 22	0	—	—	i 10 28	pP	—
Palomar	z.	61·8	295	i 10 22	− 1	—	—	i 10 29	pP	—
Tinemaha	z.	61·8	299	i 10 23	0	—	—	i 10 29	pP	—
Riverside	z.	62·0	296	i 10 23	− 1	—	—	i 10 29	pP	—
Reno	z.	62·3	302	e 10 27	+ 1	—	—	e 10 32	pP	—
Pasadena		62·6	296	i 10 27	− 1	—	—	i 10 34	pP	e 32·2
Mineral	z.	63·4	303	e 10 32k	− 2	—	—	i 10 39	pP	—
Shasta Dam		63·9	304	e 10 34	− 3	—	—	—	—	—
Lick	z.	64·3	301	e 10 40a	+ 1	—	—	e 10 46	pP	—
Berkeley		64·6	301	i 10 43a	+ 2	—	—	i 10 49	pP	e 33·5
Ksara		66·5	63	e 10 56	+ 2	—	—	e 14 40	PPP	—
College		70·1	335	i 11 15	− 1	—	—	—	—	—
Tiflis		70·4	52	e 11 17?	− 1	—	—	—	—	—
Tashkent		86·7	44	e 12 48	+ 1	e 23 30	+ 6	—	—	—
Pretoria	z.	87·6	120	e 12 50	− 1	—	—	—	—	—

Additional readings and notes :—
Malaga P_cPZ =9m.21s.
Rathfarnham Castle eZ =11m.37s.
Alicante PP =8m.14s.
Kew eZ =8m.3s., eSSEN =26m.15s., eSSSE =30m.13s., eL =34·6m. ; all phases after P wrongly identified.
Tamanrasset eZ =8m.42s.
Stuttgart eQ =21·6m.
Prague e =9m.2s. and 9m.55s., eN =11m.57s., e =12m.53s.
Tucson e =10m.9s. and 12m.47s.
Boulder City iP =10m.14s. e =11m.20s.
Reno eN =10m.50s. and 12m.28s.
Lick iP_cPZ =10m.56s.
Berkeley eZ =11m.7s. and 11m.22s.
Long waves were also recorded at Bogota.

May 20d. 18h. 53m. 54s. Epicentre 37°·1N. 71°·2E. Depth of focus 0·015.
(as on 1948, June 8d.).

$A = +·2577$, $B = +·7569$, $C = +·6006$; $\delta = +3$; $h = -1$;
$D = +·947$, $E = -·322$; $G = +·194$, $H = +·569$, $K = -·800$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Garm		2·0	340	i 0 46?	+12	i 1 13?	+13	—	—	—
Obi-garm		2·0	324	i 0 35	+ 1	e 1 1	+ 1	—	—	—
Stalinabad		2·4	307	i 0 39	− 1	1 9	− 1	—	—	—
Fergana		3·3	7	0 51	− 1	1 32	+ 1	—	—	—
Andijan		3·8	13	i 0 58	0	1 39	− 4	—	—	—
Samarkand		4·2	309	i 1 1	− 2	i 1 47	− 5	—	—	—
Tashkent		4·5	341	i 1 7	− 1	e 1 58?	− 1	—	—	—
Tchimkent		5·3	347	i 1 18	0	2 18	− 1	—	—	—
Naryn		5·7	39	i 1 20	− 4	—	—	—	—	—
Frunse		6·3	22	i 1 31	− 1	2 45	+ 2	—	—	—
Mary		7·4	277	e 1 45	− 2	—	—	—	—	—
Almata		7·5	34	i 1 47	− 1	3 15	+ 3	—	—	—
Przhevalsk		7·7	44	i 1 51	0	—	—	—	—	—
Dehra Dun	N.	8·9	138	e 3 22	?	e 4 7	+21	—	—	—
New Delhi		9·9	148	e 2 13	− 7	i 3 54	−16	—	—	—
Semipalatinsk		14·8	23	e 3 21	− 3	—	—	—	—	—
Baku		16·9	287	e 3 57	+ 7	e 6 58?	+ 6	—	—	—
Bombay		18·2	176	e 4 6	+ 1	i 7 23	+ 2	i 4 34	PPP	—
Poona	E.	18·6	172	—	—	e 7 21	− 8	7 50	SS	8·6
Grozny		20·3	296	e 4 33	+ 5	8 16	+13	—	—	—
Tiflis		20·9	292	i 4 37	+ 3	e 8 29	+15	—	—	—
Gori		21·4	293	e 4 43?	+ 4	—	—	—	—	—
Leninakan		21·6	289	e 4 41?	0	—	—	e 4 59	PP	—
Abastumanj		22·3	292	e 5 2	PP	—	—	—	—	—
Ksara		28·8	274	e 5 55	+ 7	12 11	SS	—	—	—
Moscow		29·3	321	5 55	+ 3	e 10 41	+ 6	6 19	?	—
Istanbul		32·7	291	e 6 26	+ 4	e 14 43	SSS	—	—	—
Pulkovo		34·5	325	e 6 26	−12	e 11 46	−10	e 6 50	pP	—
Warsaw		37·9	311	e 7 9	+ 3	e 12 42	− 6	e 4 42	?	e 16·1
Skalnate Pleso		38·4	306	e 7 42	pP	—	—	e 9 14	PPP	—
Raciborzu		39·7	307	e 7 49	pP	—	—	—	—	—
Upsala		40·7	322	e 7 56	pP	e 16 16	SS	e 9 42	PPP	e 21·1
Prague		42·1	307	i 7 44	+ 3	e 13 51?	+ 1	i 8 9	pP	—
Potsdam		42·8	311	i 7 50	+ 3	e 17 12	SS	i 8 17	pP	—
Collmberg	z.	42·9	311	e 7 50	+ 3	—	—	e 8 16	pP	—
Copenhagen		43·1	316	i 7 52	+ 3	i 8 31	sP	i 8 18	pP	—
Jena		43·9	308	e 7 59	+ 4	—	—	e 8 24	pP	—
Stuttgart		45·7	305	e 8 12	+ 2	e 18 46	SSS	e 8 38	pP	—
Strasbourg		46·6	306	e 8 46	pP	—	—	—	—	—
Clermont-Ferrand		50·4	303	e 8 47	+ 1	—	—	e 9 37	pP	—
Scoresby Sund		56·6	337	—	—	e 17 31	+19	—	—	29·1
Tamanrasset	z.	57·6	276	e 9 41	+ 2	—	—	—	—	—
College		73·9	17	i 11 22	− 1	—	—	—	—	—
Pretoria	z.	74·5	220	e 11 24	− 2	—	—	—	—	—
Pietermaritzburg	z.	76·6	216	e 12 12	pP	—	—	—	—	—
Grahamstown		81·5	217	e 12 30	pP	—	—	—	—	—
Hungry Horse		94·8	3	i 12 30	−38	—	—	—	—	—
Pierce Ferry		107·0	3	e 17 51	[−19]	—	—	—	—	—

Additional readings :—
Poona QE =7m.32s.
Pulkovo esS =12m.28s.
Warsaw ePN =6m.45s., eE =7m.30s., eZ =7m.35s. and 7m.47s., eN =7m.52s., P_gPZ = 8m.49s., P_gPN =8m.53s., P_gPE =8m.59s., eE =10m.45s., eN =10m.52s., eS?E = 12m.33s., eN =13m.40s., eE =13m.50s.
Skalnate Pleso e =7m.53s.
Raciborzu ePPEZ =8m.10s., eZ =10m.55s., eS?Z =11m.34s.?
Upsala eN =12m.51s., eS?E =14m.27s.
Prague eN =8m.36s., e =8m.54s., ePP =9m.28s., ePPP =10m.4s., eN =10m.39s., e =11m.28s. and 12m.51s.

Continued on next page.

Potsdam iPPPZ =8m.28s., iZ =9m.37s.
Collmberg eZ =9m.32s., 9m.42s., and 10m.12s.
Jena eE =10m.12s., eN =11m.24s.
Clermont-Ferrand e =9m.13s.
Tamanrasset eZ =10m.5s. and 10m.20s.

May 20d. Readings also at 0h. (near Obi-garm), 1h. (Berkeley), 2h. (College), 3h. (Harvard, Garm, near Obi-garm, and Stalinabad), 4h. (La Paz, Tacubaya, and Pierce Ferry (2)), 5h. (Pierce Ferry and La Paz), 6h. (near Obi-garm), 7h. (Christchurch, Wellington, Ashkabad, Overton, and Pierce Ferry (2)), 8h. (Tashkent, Tchimkent, Mary, Frunse, near Stalinabad, Garm, Obi-garm, Samarkand, Fergana, and near Malaga), 9h. (near Malaga), 10h. (Bogota, Granada, near Malaga (2), and near Garm), 11h. (Algiers Univ., Tacubaya, Tucson, Boulder City, Overton, Pierce Ferry, Pasadena, Riverside, Palomar, China Lake, Lick, Hungry Horse, and College), 12h. (Overton, Pierce Ferry, and Tucson), 13h. (Tamanrasset, near Istanbul, near Obi-garm, near Ashkabad, and Kizyl-Arvat), 14h. (Brisbane), 15h. (near Klyuchi and near Fergana), 17h. (Brisbane and Boulder City), 18h. (Alicante (5), College, China Lake, Tinemaha, Boulder City, Overton, Pierce Ferry, Tucson, and near Apia), 21h. (Bogota, Huancayo, and Grahamstown), 22h. (Tamanrasset, College (2), Hungry Horse (2), Pasadena, Riverside, China Lake, Boulder City, Overton, Pierce Ferry, and Tucson).

May 21d. 8h. Undetermined shock.

Brisbane ePZ =55m.23s.
Przhevalsk iP =55m.31s.
Andijan eP =55m.41s., eS =63m.8s.
Almata eP =55m.46s.
Fergana eP =56m.0s.
Garm eP =56m.4s.?
Frunse eP =56m.7s.?
Tchimkent eP =56m.14s.
Stalinabad eP =56m.16s.
Sverdlovsk P =57m.17s., S =66m.4s.
College iP =58m.25s.
Moscow eP =58m.33s.
Long waves were also recorded at Nanking, Potsdam, and Scoresby Sund.

May 21d. 18h. 37m. 40s. Epicentre 13°·5S. 72°·0W.

Destructive at Cuzco and San Sebastian, with 80 dead and 200 hurt. Destruction of Cuzco cathedral, the convent at Santa Catalina, the bell towers of the churches at Santa Domingo and Belem, and several Inca monuments (press reports). Intensity VI at Paruro; IV at Calca and Urcos. Macroseismic area 16,000 sq. km. Epicentre 13°32′S. 71°58′W.

E. Silgado.
Datos sismológicos del Perú, 1949-1950, Bol. No. 4, Lima, 1952, p. 20.

El Silgado, J. F. Concha, G. E. Erickson.
El Terremoto del Cusco del 21 de Mayo de 1950 ; Datos sismológicos del Perú, 1949-1950, Bol. No. 4, Lima, 1950, pp. 27-46, with macroseismic chart, p. 30.

G. E. Erickson, J. F. Concha, E. Silgado.
The Cuzco, Peru, earthquake of May 21, 1950 ; Bull. of the Seismological Society of America, Vol. 44, No. 2A, April, 1954, pp. 97-112, with 9 figures, including a macroseismic chart.

$A = +\cdot3006,\ B = -\cdot9251,\ C = -\cdot2320\ ;\quad \delta = -1\ ;\quad h = +6\ ;$
$D = -\cdot951,\ E = -\cdot309\ ;\quad G = -\cdot072,\ H = +\cdot221,\ K = -\cdot973.$

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Huancayo		3·6	294	i 0 58	0	—	—	— —	—
La Paz		4·8	129	i 1 20k	+ 5	i 2 20	+ 8	i 1 43 P_g	—
Bogota		18·1	353	e 4 14	0	e 7 35	0	i 4 29 PP	e 9·2
Chinchina		18·7	351	e 4 20	− 2	i 7 58	+10	— —	9·0
Balboa Heights		23·5	342	e 5 22	+10	—	—	— —	—
San Juan		32·2	10	e 7 4	+32	e 11 43	− 2	e 7 41 PP	e 14·0
St. Louis		54·6	343	e 9 28	− 4	e 17 13	+ 2	— —	—
Weston		55·6	1	e 9 41	+ 1	—	—	— —	—
Harvard		55·7	1	e 9 40	0	—	—	— —	e 30·1
Palomar	z.	63·2	319	i 10 34	+ 2	—	—	— —	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pierce Ferry		63·3	323	e 10 33	0	—	—	—	—	—
Boulder City		63·7	322	e 10 38	+ 2	—	—	e 10 56	PcP	—
Overton	z.	63·9	323	i 10 40	+ 3	—	—	i 11 25	PcP	—
Riverside	z.	64·0	319	e 10 39	+ 1	—	—	—	—	—
Pasadena	z.	64·6	319	e 10 43	+ 2	—	—	—	—	—
China Lake	z.	65·3	320	e 10 43	− 3	—	—	—	—	—
Tinemaha	z.	66·5	321	e 10 45	− 9	—	—	—	—	—
Lick	z.	68·8	319	e 11 13k	+ 5	—	—	—	—	—
Reno	z.	69·0	322	e 11 13a	+ 4	—	—	—	—	—
Berkeley	z.	69·5	319	e 11 10k	− 2	—	—	—	—	—
Mineral	z.	70·6	311	e 11 21k	+ 2	—	—	—	—	—
Shasta Dam		71·3	311	e 11 41	PcP	—	—	—	—	—
Hungry Horse		72·0	332	e 11 24	− 4	—	—	—	—	—
Tamanrasset	z.	84·0	64	i 12 34a	+ 1	—	—	e 12 41	PcP	—
Scoresby Sund		90·5	15	—	—	e 24 6	+ 7	—	—	47·3
College		96·2	335	e 13 29	− 2	—	—	—	—	—

Additional readings :—
La Paz iP* = 1m.32s., iS* = 2m.36s., iS_e = 2m.48s.
Bogota eSSEN = 8m.16s.
Overton iZ = 12m.44s.
Lick iZ = 11m.26s.
Tamanrasset eZ = 13m.35s., ePPZ = 15m.49s.
Long waves were also recorded at Granada, Kew, and De Bilt.

May 21d. 21h. 42m. 46s. Epicentre 20°·6S. 169°·0E. (as on 19d.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·1	242	i 3 51	+ 2	i 7 5	+16	—	—	—
Tuai	N.	19·5	162	e 0 26	?	—	—	—	—	—
Riverview		20·6	227	i 4 46k	+ 3	e 8 39	+10	i 5 22	PP	e 9·4
Wellington		21·2	169	e 5 1	+12	e 8 57	+16	—	—	11·4
Kaimata	N.E.	22·0	176	e 2 29	?	—	—	—	—	—
Lick	z.	87·0	48	i 12 43	− 5	—	—	—	—	—
Shasta Dam		88·1	45	e 12 53	− 1	—	—	—	—	—
Riverside	z.	88·7	53	e 12 54	− 3	—	—	—	—	—
China Lake	z.	89·2	51	i 12 59	0	—	—	—	—	—
Tinemaha	z.	89·3	50	i 12 59	0	—	—	—	—	—
Boulder City		91·3	52	e 13 9	0	—	—	—	—	—
College		91·4	17	e 13 6	− 3	—	—	—	—	—
Overton	z.	91·8	51	e 13 12	+ 1	—	—	—	—	—
Pierce Ferry		92·0	53	e 13 12	0	—	—	—	—	—
Tucson		92·9	57	e 13 17	+ 1	—	—	—	—	e 49·1
Hungry Horse		96·9	44	e 13 31	− 3	—	—	—	—	—
Collmberg	z.	144·1	334	e 19 37	[− 1]	—	—	—	—	—
Jena		144·9	335	e 19 40	[+ 1]	—	—	—	—	—
De Bilt		146·1	343	e 19 42	[+ 1]	e 68 14?	L	—	—	(e 68·2)
Stuttgart	z.	147·6	336	e 19 46	[+ 2]	—	—	—	—	—
Strasbourg		148·3	337	e 19 52	[+ 7]	—	—	—	—	—
Paris		149·8	343	e 19 53?	[+ 6]	—	—	—	—	—
Tamanrasset	z.	164·5	281	e 21 2	PKP_2	—	—	e 25 19	PP	—

Additional readings :—
Riverview iP_cP = 8m.46s., iN = 8m.56s., iZ = 9m.3s.
Collmberg eZ = 19m.50s.
Jena eN = 19m.51s.
Stuttgart eZ = 19m.58s.
Strasbourg e = 20m.1s.
Long waves were also recorded at Auckland, Berkeley, Harvard, Granada, Kew, and Ksara.

May 21d. 23h. 14m. 38s. Epicentre 20°·6S. 169°·0E. (as at 21h.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·1	242	i 3 49a	0	i 7 3	+14	—	—	—
Auckland	N.	17·0	164	3 57	− 4	e 7 15	+ 5	—	—	e 7·9
Tuai	N.	19·5	162	4 31	0	—	—	—	—	—
Apia		19·6	73	e 4 35	+ 3	—	—	—	—	e 9·4
Riverview		20·6	227	i 4 46k	+ 3	e 8 39	+10	i 5 22	PPP	e 10·0
Wellington		21·2	169	e 4 52	+ 3	e 8 54	+13	i 6 19	PPP	12·1
Kaimata	N.E.	22·0	176	—	—	e 6 7	?	—	—	—
Berkeley		86·8	48	i 12 47a	0	e 24 31	PS	—	—	e 41·7
Lick	Z.	87·0	48	i 12 48a	0	—	—	—	—	—
Fresno	Z.	88·1	49	e 12 52a	− 2	—	—	—	—	—
Shasta Dam		88·1	53	i 12 53	− 1	—	—	—	—	—
Pasadena	Z.	88·1	45	i 12 51	− 3	—	—	—	—	—
Mineral	Z.	88·5	46	e 12 54k	− 2	—	—	—	—	—
Riverside	Z.	88·7	53	i 12 54	− 3	—	—	—	—	—
Palomar	E.	88·7	54	e 12 55	− 2	—	—	—	—	—
China Lake	Z.	89·2	51	i 12 59	0	—	—	—	—	—
Tinemaha	Z.	89·3	50	i 12 58	− 1	—	—	—	—	—
Reno	Z.	89·3	48	e 12 58a	− 1	—	—	—	—	—
Boulder City		91·3	52	e 13 8	− 1	—	—	—	—	—
College		91·4	17	e 13 5	− 4	—	—	—	—	—
Overton	Z.	91·8	51	e 13 10	− 1	—	—	—	—	—
Pierce Ferry		92·0	53	i 13 11	− 1	—	—	—	—	—
Tucson		92·9	57	e 13 16	0	e 26 4	PS	—	—	e 44·4
Hungry Horse		96·9	44	e 13 31	− 3	—	—	—	—	—
Scoresby Sund		129·7	5	e 19 15	[+ 4]	—	—	i 22 35	PKS	67·4
Ksara		136·6	298	e 19 23	[− 1]	—	—	23 7	PP	—
Istanbul		140·4	311	e 19 29	[− 2]	—	—	—	—	—
Potsdam		143·2	336	i 19 34	[− 2]	—	—	—	—	e 79·4
Collmberg	Z.	144·1	334	e 19 34	[− 4]	—	—	—	—	—
Prague		144·4	332	e 19 36	[− 2]	e 29 52	{+ 6}	e 22 25	PP	—
Jena		144·9	335	e 19 38	[− 1]	—	—	—	—	—
De Bilt		146·1	343	i 19 41	[0]	—	—	—	—	—
Zagreb		146·5	327	e 19 44	[+ 2]	—	—	—	—	—
Rathfarnh'm Cas.	Z.	147·2	356	e 19 44	[+ 1]	e 32 32	?	e 22 24	PP	—
Stuttgart		147·6	336	e 19 46a	[+ 2]	—	—	—	—	e 88·4
Kew		148·1	348	e 19 47	[+ 3]	—	—	e 20 26	PKP_2	e 81·4
Strasbourg		148·3	337	e 19 48	[+ 3]	—	—	—	—	—
Paris		149·8	343	i 19 52	[+ 5]	—	—	e 23 28	PP	e 85·4
Besançon		150·0	337	e 19 52	[+ 5]	—	—	—	—	—
Florence Xim		150·4	327	i 19 43	[− 5]	—	—	—	—	—
Prato		150·4	327	e 19 52	[+ 4]	—	—	—	—	—
Rome	Z.	150·9	324	e 19 51	[+ 2]	—	—	e 23 26	PP	—
Clermont-Ferrand		152·4	339	e 19 51	[0]	—	—	—	—	90·4
Barcelona		156·4	336	—	—	27 44	[+43]	—	—	72·0
Alicante		160·1	337	—	—	—	—	(e 22 24)	PP	e 22·4
Tamanrasset	Z.	164·5	281	i 20 7k	[+ 2]	—	—	i 21 2	PKP_2	—

Additional readings :—
Riverview iEZ =4m.50s., iSE =8m.42s., iP_cP =8m.46s., iE =8m.54s., iSSSN =9m.31s.
Wellington i =6m.23s.
Berkeley iZ =13m.46s.
Lick iZ =12m.54s. and 13m.12s.
Reno eZ =13m.12s. and 13m.31s., iE =13m.48s.
Tucson e =13m.32s.
Potsdam iZ =19m.45s.
Collmberg eZ =19m.40s. and 19m.48s.
Prague e =20m.11s., 20m.26s., 20m.37s., and 21m.16s., eN =21m.39s., e =23m.38s.
Jena eN =20m.2s.
Rathfarnham Castle eZ =22m.53s.
Stuttgart e =19m.52s., eZ =20m.4s., e =21m.27s.
Strasbourg e =20m.7s.
Paris i =19m.58s. and 20m.12s.
Besançon e =20m.3s. and 20m.41s.
Clermont-Ferrand e =20m.6s.
Tamanrasset eZ =24m.30s., ePPZ =24m.55s.
Long waves were also recorded at Honolulu, Sitka, Harvard, Copenhagen, and Granada.

May 21d. Readings also at 1h. (Pierce Ferry and near Tucson), 3h. (Mizusawa, College, Victoria, Hungry Horse, Shasta Dam, Pasadena, Riverside, China Lake, Tinemaha, Boulder City, Overton, and Pierce Ferry), 6h. (College, Hungry Horse, China Lake, Tinemaha, Pierce Ferry, Tucson, and Stuttgart), 7h. (Hungry Horse, Boulder City, and near Prague), 8h. (near Alicante (2), and near Victoria), 10h. (College, Tiflis, Ashkabad, Stalinabad, Almata, Przhevalsk, Samarkand, near Andijan, Fergana, Garm, Naryn, Obi-garm, Frunse, Tashkent, Tamanrasset, near Algiers Univ., Granada, and Alicante), 11h. (Collmberg and Raciborzu), 12h. (College, Alicante (3) and near Mizusawa), 13h. (Hungry Horse, Overton, Pierce Ferry, near College, Grahamstown, Pietermaritzburg, Pretoria, Tananarive, Tamanrasset, Ksara (2), Istanbul, Brisbane, Almata, and near Przhevalsk; several shocks), 16h. (Hungry Horse, and near Istanbul), 19h. (near Bogota), 21h. (Wellington, Brisbane, China Lake, Pierce Ferry, Tucson, and Rathfarnham Castle), 23h. (Wellington).

May 22d. Readings at 2h. (Garm, Stalinabad, Fergana, near Obi-garm, and Tchimkent), 4h. (Seattle), 5h. (Stalinabad, near Obi-garm, near Istanbul, near Zagreb (2), near Fort de France, and near Mizusawa), 7h. (Seattle, Apia, Brisbane, College, Shasta Dam, Mineral, Lick, Pasadena, Riverside, Palomar, China Lake, Tinemaha, Overton, Pierce Ferry (2), Tucson (2), Collmberg, and Stuttgart), 10h. (Pierce Ferry), 11h. (Algiers Univ., Mount Wilson, China Lake, and Tinemaha), 12h. (La Paz, College, Hungry Horse, Tamanrasset, Alicante, Tortosa, Obi-garm, Samarkand, Frunse, Mary, near Garm, Fergana, Stalinabad, Andijan, and Tashkent), 17h. (Ashkabad, Mary, Tashkent, Samarkand (2), Frunse (2), Przhevalsk, near Obi-garm (2), Stalinabad (2), Garm (2), Fergana (2), Andijan (2), Tchimkent (2), Naryn, Almata (2), and near Alicante), 18h. (near Ashkabad (2)), 19h. (Victoria, Seattle, College, Hungry Horse, Shasta Dam, Mineral, Reno, Lick, Fresno, Pasadena, China Lake, Riverside, Tinemaha, Boulder City, Overton, Pierce Ferry, and Tucson), 20h. (Chicago, Ottawa, Pennsylvania, Scoresby Sund, Brisbane, Riverview, Overton, and Pierce Ferry), 21h. (near Huancayo), 22h. (Tucson and Pierce Ferry).

May 23d. 8h. 6m. 1s. Epicentre 0°·1S. 123°·8E. (as on 1945, October 16d.).

$A = -\cdot5563$, $B = +\cdot8310$, $C = -\cdot0017$; $\delta = +3$; $h = +7$;
$D = +\cdot831$, $E = +\cdot556$; $G = +\cdot001$, $H = -\cdot001$, $K = -1\cdot000$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bandong		17·5	248	e 4 10	+ 3	e 7 33	+12	—	—	—
Djakarta		18·0	250	e 4 17	+ 4	e 7 46	+14	—	—	—
Riverview		42·2	146	i 12 2	?	i 14 11	− 6	i 17 21	S_eS	e 23·1
Przhevalsk		58·8	323	i 10 3	+ 1	—	—	—	—	—
Andijan		61·8	318	e 10 22	− 1	e 18 50	+ 4	—	—	—
Fergana		62·0	317	e 10 23	− 1	—	—	—	—	—
Garm		62·5	315	e 10 29	+ 1	e 18 53?	− 1	—	—	—
Stalinabad		63·4	315	10 34	0	e 19 9	+ 3	—	—	—
Tashkent		64·1	318	e 10 37?	− 1	e 19 16?	+ 2	—	—	—
Tchimkent		64·4	319	i 10 38	− 2	—	—	—	—	—
Sverdlovsk		75·8	330	11 48	− 2	e 21 28	− 3	—	—	—
Moscow		87·9	326	e 12 51	− 2	e 23 15	[− 5]	—	—	—
Ksara		88·2	303	e 27 9	?	e 38 35	Q	—	—	—
College		89·4	26	i 12 53	− 7	—	—	e 29 45	PKKP	—
Pietermaritzburg	z.	92·9	242	e 19 16	PPP	—	—	—	—	—
Pretoria	z.	95·0	245	e 18 31	?	—	—	—	—	—
Scoresby Sund		106·2	349	—	—	e 33 14	SS	—	—	54·0
Mineral	z.	108·6	47	i 29 45a	PKKP	—	—	—	—	—
Lick	z.	109·4	50	i 29 40	PKKP	—	—	—	—	—
Hungry Horse		110·9	37	e 29 46	PKKP	—	—	—	—	—
Tinemaha	z.	112·0	50	i 29 38	PKKP	—	—	—	—	—
China Lake	z.	113·0	51	i 29 34	PKKP	—	—	—	—	—
Pasadena	E.	113·0	53	e 29 31	PKKP	—	—	—	—	—
Riverside	z.	113·7	53	i 29 30	PKKP	—	—	—	—	—
Boulder City		115·0	50	e 29 32	PKKP	—	—	—	—	—
Overton	z.	115·1	49	e 18 41	[− 2]	—	—	e 29 26	PKKP	—
Pierce Ferry		115·6	49	e 18 42	[− 2]	—	—	e 29 22	PKKP	—
Tamanrasset	z.	116·0	296	23 17a	?	—	—	e 29 24	PKKP	—
Tucson		119·4	52	e 18 49	[− 3]	—	—	e 29 23	PKKP	—
Harvard		135·6	16	i 19 19	[− 3]	—	—	i 22 40	PKS	e 63·2

Additional readings :—
Riverview iE = 14m.6s.
Mineral iZ = 30m.14s.
Lick iZ = 29m.55s.
Tamanrasset eZ = 23m.28s., iZ = 23m.53s.
Long waves were also recorded at Grahamstown, Paris, Strasbourg, and Clermont-Ferrand.

May 23d. 23h. 56m. 0s. Epicentre 19°·5N. 124°·5E.

$A = -\cdot5343$, $B = +\cdot7774$, $C = +\cdot3318$; $\delta = -8$; $h = +5$;
$D = +\cdot824$, $E = +\cdot566$; $G = -\cdot188$, $H = +\cdot273$, $K = -\cdot943$.

		△	Az.	P.	O−C.	S.	O−C.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Nanking		13·5	339	e 3 12	− 3	e 4 56	−51	e 5·5	
Vladivostok		24·4	12	e 5 20	− 1	e 9 32	− 7	—	
Almata		46·2	312	8 46	+18	—	—	—	
Andijan		49·0	307	8 50	0	—	—	—	
Fergana		49·4	306	e 8 49	− 4	—	—	—	
Garm		50·4	305	e 9 2	+ 1	—	—	—	
Obi-garm		50·8	305	e 9 7	+ 3	—	—	—	
Tchimkent		51·3	309	e 9 8	0	—	—	—	
Stalinabad		51·5	304	9 7	− 2	e 16 29	0	—	
Samarkand		53·0	305	e 9 25	+ 4	—	—	—	
Sverdlovsk		59·6	325	e 10 5	− 3	e 18 11	− 6	—	
College		71·6	26	e 11 27	+ 8	—	—	—	
Istanbul		81·4	310	e 12 23	+ 3	—	—	—	
Collmberg		87·6	324	e 12 54	+ 3	—	—	e 54·0	
Victoria		89·3	38	e 13 6	+ 7	—	—	—	
Stuttgart	z.	91·0	323	e 13 10	+ 3	—	—	—	
Shasta Dam		93·8	44	e 13 35	+15	—	—	—	
Hungry Horse		94·7	35	e 13 31	+ 7	—	—	—	

May 23d. Readings also at 0h. (Collmberg and Tamanrasset), 1h. (Scoresby Sund and near Huancayo), 2h. (Sofia, near Istanbul, and near Ashkabad (2)), 4h. (Collmberg), 5h. (Mizusawa and Nanking), 7h. (Nanking, Hungry Horse, College, and Pierece Ferry), 8h. (Mineral and near Stalinabad), 12h. (Paris, Mount Wilson, China Lake, Tinemaha, Tucson, Overton (2), Pierce Ferry (2), Hungry Horse (2), Huancayo, Grahamstown, Pietermaritzburg, Pretoria, Tamanrasset (2), and near Alicante (2)), 13h. (Auckland, Christchurch, Wellington, Mount Wilson, Riverside, China Lake, Tinemaha, Boulder City, Overton, Pierce Ferry, Mineral, Hungry Horse, College (2), Scoresby Sund, De Bilt, Paris, Kew, Strasbourg, Clermont-Ferrand, Stuttgart, Tortosa, Ksara, Tamanrasset, Fergana, Obi-garm, and near Stalinabad), 14h. (Mount Wilson, Riverside, China Lake, Tinemaha, Hungry Horse, College, Mizusawa, Collmberg, Sofia, and Tamanrasset), 15h. (Andijan, Garm, Samarkand, near Fergana, Obi-garm, and Stalinabad), 16h. (College, New Delhi, Almata, Frunse, Mary, Naryn, near Andijan, Fergana, Garm, Obi-garm, Samarkand, Stalinabad, Tashkent, and Tchimkent), 17h. (Tacubaya and near Seattle (2)), 18h. (near Tacubaya), 19h. (Mount Wilson, Palomar, Riverside, China Lake, Tinemaha, Tucson, Boulder City, Overton, Hungry Horse, Seattle, and near Tacubaya), 22h. (Harvard, Weston, and Hungry Horse).

May 24d. 3h. 55m. 56s. Epicentre 20·6S. 169°·0E. (as on 21d.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·1	242	i 3 55	+ 6	i 7 7	+18	i 4 4	PP	—
Auckland	N.	17·0	164	4 4	+ 3	7 15	+ 5	—	—	—
Tuai	N.	19·5	162	i 4 29	− 2	e 8 11	+ 5	—	—	—
Apia		19·6	73	e 4 29	− 3	—	—	—	—	—
Riverview		20·6	227	i 4 52a	+ 9	e 8 42	+13	i 5 8	PP	e 9·9
Wellington		21·2	169	i 4 47	− 2	i 8 41	0	5 15	PP	11·1
Kaimata	N.E.	22·0	176	—	—	e 8 4?	−52	—	—	—
Christchurch		23·1	173	i 5 7	− 1	9 4	−12	e 10 4	Q	e 11·4
Berkeley		86·8	48	i 12 45a	− 2	e 24 45	PS	—	—	e 41·7
Lick	Z.	87·0	48	i 12 46a	− 2	—	—	i 15 26	PP	—
Fresno	Z.	88·1	49	i 12 50a	− 4	—	—	—	—	—
Pasadena		88·1	53	i 12 49a	− 5	—	—	—	—	e 40·9
Shasta Dam		88·1	45	i 12 51	− 3	—	—	—	—	—
Riverside	Z.	88·7	53	i 12 53a	− 4	—	—	—	—	—
Haiwee	Z.	89·1	51	i 12 56a	− 2	—	—	—	—	—
Tinemaha		89·3	50	i 12 56a	− 3	—	—	—	—	—
Reno	Z.	89·3	48	e 12 56k	− 3	—	—	—	—	—
Boulder City		91·3	52	i 13 5	− 4	—	—	—	—	—
Victoria		91·4	39	e 13 6	− 3	—	—	—	—	—
College		91·4	17	i 13 4	− 5	e 25 12	PS	e 31 54	SSP	e 41·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Overton	z.	91·8	51	i 13 9	− 2	—	—	—	—	—
Pierce Ferry		92·0	53	i 13 10	− 2	—	—	—	—	—
Tucson		92·9	57	i 13 13	− 3	—	—	e 17 34	PP	e 43·8
Hungry Horse		96·9	44	i 13 30	− 4	—	—	—	—	—
Grahamstown		115·5	215	e 29 43	PKKP	—	—	—	—	e 45·3
Pietermaritzburg	z.	116·1	221	e 30 25	PKKP	—	—	—	—	—
Bogota		116·8	96	—	—	e 42 9	?	—	—	—
Pretoria	z.	120·2	222	e 30 33	PKKP	—	—	—	—	—
Ottawa		122·0	47	e 18 53	[− 4]	—	—	—	—	60·1
Harvard		125·2	51	i 18 59	[− 4]	—	—	—	—	e 61·2
Weston		125·4	51	i 19 0	[− 3]	—	—	—	—	e 61·6
Pulkovo		131·1	334	22 36	PKS	27 40	(−47)	—	—	—
Ksara		136·6	298	e 19 26	[+ 2]	e 22 16	PKS	—	—	—
Istanbul		140·4	311	e 19 26	[− 5]	—	—	—	—	—
Copenhagen		140·8	340	i 19 25	[− 7]	—	—	—	—	—
Raciborzu	z.	142·6	331	e 16 34	?	—	—	—	—	—
Potsdam	z.	143·2	336	i 19 31	[− 5]	—	—	—	—	e 74·1
Sofia		143·8	316	e 19 36	[− 1]	—	—	—	—	—
Collmberg	z.	144·1	334	i 19 34	[− 4]	—	—	e 23 11	PP	—
Prague		144·4	332	i 19 35	[− 3]	e 23 14	PKS	e 22 49	PP	—
Jena	n.	144·9	335	e 19 38	[− 1]	—	—	—	—	—
De Bilt		146·1	343	i 19 40	[− 1]	—	—	—	—	e 74·1
Zagreb		146·5	327	e 19 45	[+ 3]	—	—	—	—	—
Rathfarnham Castle		147·2	356	i 19 43	[0]	e 30 17	PKKP	—	—	e 56·1
Stuttgart	z.	147·6	336	i 19 41	[− 3]	—	—	e 23 14	PP	—
Triest		147·8	327	e 19 43	[− 1]	e 43 48	SS	e 19 55	PKP_2	e 67·1
Kew		148·1	348	i 19 46	[+ 1]	e 30 46	PKKP	e 20 17	PKP_2	e 75·1
Strasbourg		148·3	337	i 19 47a	[+ 2]	—	—	—	—	—
Chur		148·9	334	i 19 49a	[+ 3]	—	—	—	—	—
Zürich		148·9	335	e 19 43a	[− 3]	—	—	—	—	—
Basle		149·2	336	e 19 50	[+ 4]	e 27 31	[+38]	—	—	—
Paris		149·8	343	i 19 51	[+ 4]	—	—	i 20 10	PKP_2	e 79·1
Besançon		150·0	337	e 19 46	[− 1]	—	—	—	—	—
Prato		150·4	327	e 19 52	[+ 4]	—	—	—	—	—
Clermont-Ferrand		152·3	339	e 19 50	[− 1]	—	—	—	—	81·1
Algiers Univ.	z.	159·7	326	e 19 59	[− 1]	—	—	e 20 40	PKP_2	—
Tamanrasset	z.	164·5	281	i 20 6a	[+ 1]	i 31 15	{−20}	i 21 4	PKP_2	—

Additional readings :—
Riverview iP_cPN =8m.45s., iZ =8m.53s., iN =8m.58s., iE =9m.6s., iS_cSE =16m.9s.
Wellington Q =10m.24s., eS_cS?Z =16m.37s.
Berkeley iZ =12m.56s., eZ =13m.13s.
Lick iZ =12m.52s., 13m.2s., and 15m.34s.
Fresno eZ =13m.25s. and 14m.41s.
Reno eZ =13m.4s., eE =13m.18s.
Overton eZ =13m.21s.
Tucson i =13m.25s.
Bogota e =55m.57s., eSSSNZ =62m.34s.
Potsdam iZ =19m.43s.
Collmberg eZ =19m.46s., 20m.0s., and 20m.55s.
Prague e =19m.39s., $iPKP_2N$ =19m.44s., eZ =19m.47s., e =20m.0s., 20m.8s., 20m.25s., 20m.51s., and 21m.22s.
Jena iPKPE =19m.42s., eN =19m.50s.
De Bilt iZ =19m.51s.
Rathfarnham Castle iZ =20m.38s.
Stuttgart iPKPZ =19m.45s. and 19m.48s., eZ =19m.57s. and 20m.12s., ePPP =26m.34s.
Strasbourg i =19m.52s., e =20m.0s., i =20m.13s.
Zürich i =19m.48s.
Basle e =19m.55s.
Paris i =19m.58s., ePP =23m.30s.
Besançon iPKP =19m.52s., i =19m.58s., e =20m.17s.
Tamanrasset eZ =20m.16s. and 21m.13s., ePPZ =24m.49s., ePPPZ =28m.27s., eZ = 32m.30s. and 33m.5s., iZ =34m.7s., iZ =34m.49s.
Long waves were also recorded at Sitka, Seven Falls, Scoresby Sund, and Alicante.

May 24d. 12h. 54m. 50s. Epicentre 17°·4N. 60°·2W.

$A = +·4745$, $B = -·8286$, $C = +·2972$; $\delta = +6$; $h = +5$;
$D = -·868$, $E = -·497$; $G = +·148$, $H = -·258$, $K = -·955$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fort de France		2·8	194	i 0 41	− 6	i 1 7	−15	—	—	—
San Juan		5·7	281	e 2 28	S	(e 2 28)	− 7	—	—	e 2·8
Galerazamba		16·0	248	e 4 35	+47	e 7 7	+21	—	—	—
Weston		26·7	342	e 5 47	+ 4	—	—	—	—	e 18·0
Harvard		26·8	342	i 5 49	+ 5	e 11 0	SS	—	—	e 17·9
Ottawa		30·8	339	e 6 16	− 4	—	—	—	—	—
Shawinigan Falls N.		30·9	344	e 6 23	+ 3	—	—	—	—	—
La Paz		34·6	192	e 6 53	0	e 12 24	+ 2	—	—	16·4
Tucson		47·8	298	e 8 42	+ 1	e 15 48	+10	i 8 56	pP	e 19·2
Pierce Ferry		50·9	303	i 9 6	+ 1	e 17 6	+45	e 9 20	pP	—
Overton	z.	51·3	304	i 9 9	+ 1	—	—	i 9 23	pP	—
Boulder City		51·5	303	e 9 11	+ 2	—	—	—	—	—
Riverside	z.	53·5	300	e 9 24	0	—	—	e 9 38	pP	—
Haiwee	z.	54·1	303	e 9 28	− 1	—	—	—	—	—
Pasadena	z.	54·1	300	e 9 29	0	—	—	e 9 42	pP	—
Tortosa		56·8	53	e 21 41	SS	—	—	i 22 6	?	—
Lick	z.	57·1	304	e 9 50a	0	—	—	i 10 5	pP	—
Shasta Dam		57·9	308	i 9 54	− 2	—	—	i 10 8	pP	—
Victoria		59·5	317	e 10 6	− 1	—	—	—	—	—
Tamanrasset		61·5	73	i 10 22k	+ 1	—	—	i 12 41	PP	—
Stuttgart	z.	63·6	44	e 10 34	− 1	e 10 48	P_cP	—	—	—
Collmberg	z.	66·1	41	e 10 52	+ 1	—	—	—	—	—
College		73·4	334	i 11 36	0	—	—	i 11 50	pP	—

Additional readings :—
Fort de France $eP^* = 44s.$, $P_g = 49s.$
San Juan $eS = 2m.38s.$
Tucson $ePP = 10m.37s.$
Overton $iZ = 10m.26s.$
Lick $iZ = 10m.19s.$
Tamanrasset $iZ = 10m.36s.$
Collmberg $eZ = 11m.0s.$ and $11m.6s.$
Long waves were also recorded at Kew, De Bilt, and Strasbourg.

May 24d. Readings also at 4h. (Huancayo, La Paz, Shasta Dam, Hungry Horse, and College), 5h. (near Prague), 7h. (near Prague and Raciborzu), 9h. (Mount Wilson, Tinemaha, Riverside, Overton (2), Pierce Ferry (2), Boulder City (2), Victoria, Sitka, College (2), Weston, Pretoria, Samarkand, Tchimkent, near Andijan, Fergana, Garm, Obi-garm, and Stalinabad), 10h. (near Stalinabad), 11h. (Fergana, Samarkand, near Garm, Obi-garm, and Stalinabad), 12h. (Alicante and Huancayo), 13h. (La Paz, near Ashkabad (3), and Shemakla), 14h. (Bermuda, near Ebingen, and Stuttgart), 16h. (Tamanrasset and near Garm), 17h. (Alicante (2)), 20h. (Tortosa).

May 25d. 8h. 34m. 37s. Epicentre 65°·0N. 150°·0W.

Felt at College. Suggested epicentre 65°·5N. 151°·5W., but the adopted position was independently determined and is not approximate.

L. M. Murphy and F. P. Ulrich.
United States Earthquakes in 1950, Serial No. 755, Washington, 1952, p. 17.

$A = -·3681$, $B = -·2125$, $C = +·9052$; $\delta = +4$; $h = +8$;
$D = -·500$, $E = +·866$; $G = -·784$, $H = -·453$, $K = -·425$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
College	0·9	98	e 0 23	+ 3	—	—	—	—	e 2·4
Victoria	21·8	126	4 55k	− 1	9 5	SS	—	—	11·6
Seattle	22·9	125	i 5 9k	+ 3	i 9 50	SS	i 5 36	PP	e 11·4
Hungry Horse	25·3	113	i 5 29	− 1	—	—	—	—	—
Saskatoon	25·4	99	—	—	e 10 13	+17	—	—	12·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Butte	N.	27·8	113	e 6 26	PP	e 10 52	+17	—	—	e 12·8
Bozeman		28·7	112	e 5 59	− 2	e 10 55	+ 5	e 11 31	SS	e 15·2
Shasta Dam		29·0	132	i 6 3	− 1	—	—	—	—	—
Mineral	Z.	29·6	132	i 6 7k	− 2	—	—	i 7 27	PPP	e 18·4
Reno		30·9	130	e 6 20k	0	e 17 5	S_cS	—	—	e 19·1
Berkeley		31·7	135	i 6 27k	0	e 11 43	+ 6	—	—	e 15·1
Logan		31·7	117	—	—	e 13 3	SS	—	—	e 15·9
Santa Clara		32·3	135	—	—	e 12 11	+25	e 16 48	S_cS	e 19·2
Lick	Z.	32·4	135	i 6 32k	− 2	—	—	i 7 45	PP	—
Rapid City	E.	33·2	105	e 6 53	+13	e 12 4	+ 4	—	—	e 14·5
Fresno	Z.	33·5	132	e 6 42k	− 1	e 12 19	+14	i 7 57	PP	—
Tinemaha		33·6	130	i 6 44k	0	—	—	—	—	—
Haiwee	Z.	34·6	130	i 7 53	PP	—	—	—	—	—
Overton	Z.	35·4	125	i 7 0	0	—	—	i 8 21	PP	e 19·3
Boulder City		35·8	126	i 7 3	0	—	—	—	—	e 19·8
Pierce Ferry		35·9	125	e 7 3	− 1	—	—	—	—	e 19·7
Pasadena		36·4	131	i 7 6k	− 2	i 12 51	+ 1	—	—	e 18·5
Riverside	Z.	36·8	131	i 7 10k	− 1	—	—	—	—	—
Palomar	Z.	37·5	130	i 7 16k	− 1	—	—	—	—	—
Scoresby Sund		40·1	25	9 17	PP	13 41	− 6	—	—	21·4
Tucson		40·5	124	e 7 42	0	e 14 0	+ 8	e 9 15	PP	e 17·1
St. Louis		43·1	97	e 8 0	− 4	e 14 40	+10	i 8 6	P	—
Ottawa		43·7	79	i 8 6k	− 2	e 14 41	+ 2	e 17 53	SS	22·9
Shawinigan Falls	N.	44·0	75	e 8 7	− 4	—	—	—	—	—
Seven Falls	E.	44·3	74	8 17	+ 4	18 11	SS	—	—	23·3
Cleveland		44·4	87	i 8 18k	+ 4	e 18 9	SS	—	—	i 23·5
Pennsylvania	N.	46·5	84	—	—	i 15 17	− 2	—	—	i 19·0
Vladivostok		47·1	282	—	—	e 18 13	S_cS	—	—	—
Harvard		47·7	78	i 8 48	+ 8	—	—	—	—	e 23·5
Weston		48·0	78	e 8 41?	− 2	e 19 37	SS	—	—	e 23·9
Fordham		48·2	80	—	—	e 19 35	SS	—	—	—
Pulkovo		55·5	359	9 41?	+ 2	—	—	—	—	—
Sverdlovsk		56·3	341	9 40	− 5	e 17 31	− 3	—	—	—
Moscow		59·5	356	e 10 10	+ 3	e 18 22?	+ 8	—	—	—
Collmberg	Z.	63·3	13	e 10 30	− 3	—	—	—	—	—
Stuttgart	Z.	65·4	16	e 10 44	− 3	—	—	—	—	—
Andijan		69·5	327	e 11 9	− 3	e 20 16	− 4	—	—	—
Borzhomi		73·0	351	e 11 36	+ 3	—	—	—	—	—
Tiflis		73·0	350	e 11 32	− 1	—	—	—	—	—
Algiers Univ.	Z.	76·4	22	e 11 48	− 5	—	—	—	—	—
Ksara		81·4	356	e 17 27	PPP	e 23 21	PS	—	—	—
Tamanrasset	Z.	90·5	23	e 13 5	0	—	—	—	—	—
Grahamstown		148·2	5	e 19 41	[− 4]	—	—	—	—	—

Additional readings :—
Seattle i = 5m.16s., 5m.25s. and 5m.44s., e = 5m.53s., ePP = 6m.13s., eP_cP = 7m.58s. iS = 9m.38s.
Mineral iZ = 6m.10s., iPP?Z = 6m.43s., iZ = 6m.53s.
Reno eSEZ = 11m.59s., eZ = 17m.29s.
Berkeley i = 6m.33s., iZ = 6m.40s.
Lick iZ = 6m.35s., 6m.39s., and 7m.2s., eZ = 9m.2s.
Tinemaha iZ = 6m.53s. and 7m.1s.
Overton ePPPZ = 8m.59s., iP_cPZ = 9m.32s., iZ = 10m.40s.
Pasadena iZ = 7m.13s. and 7m.24s.
Riverside iZ = 7m.17s. and 7m.23s.
Palomar iZ = 7m.24s.
Tucson e = 10m.4s.
Seven Falls PS = 17m.23s.
Cleveland iPZ = 8m.26s., eN = 12m.38s., eSSE = 18m.13s., eN = 18m.19s.
Tamanrasset Z = 12m.42s., eZ = 15m.0s.
Long waves were also recorded at Honolulu, Nanking, Ivigtut, Bermuda, San Juan, Tortosa, and at other American stations.

May 25d. 18h. 35m. 6s. Epicentre 12°·6N. 143°·3E. Depth of focus 0·010.

$A = -\cdot7827$, $B = +\cdot5834$, $C = +\cdot2168$; $\delta = -2$; $h = +6$;
$D = +\cdot598$, $E = +\cdot802$; $G = -\cdot174$, $H = +\cdot130$, $K = -\cdot976$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Guam		1·6	58	0 26	− 2	—	—	—	—	—
Miyazaki		22·1	332	4 55	+ 7	—	—	—	—	9·5
Muroto		22·2	340	e 4 52	+ 3	9 31	?	—	—	—
Simidu		22·2	336	4 56	+ 7	9 22	?	—	—	—
Owase		22·3	344	e 4 50	0	9 35	?	5 11	PP	—
Koti		22·7	338	e 4 55	+ 1	e 8 57	+ 6	e 5 15	PP	9·4
Shizuoka		22·7	350	e 4 54	0	9 35	?	15 59	S_eS	13·1
Kameyama		23·0	347	4 58	+ 1	10 1	?	—	—	11·7
Sumoto		23·0	343	i 4 57k	0	8 58	+ 2	—	—	9·8
Osaka		23·1	344	e 4 59	+ 1	e 9 8	+10	—	—	—
Hunatu		23·2	351	4 58	− 1	i 9 54	?	—	—	i 16·0
Kobe		23·2	344	e 4 59	0	e 9 8	+ 8	—	—	e 9·9
Matuyama		23·2	338	e 5 0	+ 1	e 9 1	+ 1	e 5 24	PP	—
Nagoya		23·2	348	e 5 1	+ 2	—	—	—	—	e 12·1
Tokyo		23·2	352	4 58	− 1	9 24	+24	5 55	PP	10·3
Kyoto		23·3	345	e 5 1	+ 1	e 9 47	?	—	—	e 12·7
Kumagaya		23·7	352	5 3	− 1	10 0	?	—	—	—
Tukubasan		23·7	353	5 3	− 1	9 11	+ 3	—	—	10·3
Hirosima		23·8	335	e 5 4	− 1	e 9 38	+28	e 7 36	P_cP	—
Mito		23·8	355	5 4	− 1	9 17	+ 7	i 5 37	pP	—
Hukuoka		24·0	333	e 5 8	+ 2	e 9 34	+20	i 5 40	pP	—
Maebasi		24·0	352	e 5 6	0	e 9 6	− 8	—	—	—
Utunomiya		24·0	353	i 5 7	+ 1	e 9 18	+ 4	—	—	—
Matusiro		24·3	350	i 5 9	0	9 46	?	i 5 42	PP	12·8
Hamada		24·4	337	5 12	+ 2	9 21	+ 1	5 33	pP	11·1
Toyama		24·6	348	e 5 24	+12	e 9 43	+19	5 46	pP	e 17·4
Hukusima		25·2	356	5 21	+ 3	i 9 43	+ 9	—	—	i 10·5
Wazima		25·3	348	e 5 18	− 1	e 10 27	?	—	—	—
Sendai		25·6	357	5 16	− 6	9 50	+10	—	—	12·2
Mizusawa	E.	26·5	357	5 28	− 2	10 4	+ 9	—	—	—
	N.	26·5	357	e 5 32	+ 2	e 10 11	+16	—	—	—
Morioka		27·1	357	e 5 38	+ 2	e 10 16	+11	e 5 54	pP	—
Akita		27·2	355	e 5 33	− 3	e 10 55	?	—	—	e 20·5
Nanking		29·7	314	i 6 0	+ 1	i 10 37	− 9	i 6 29	pP	i 12·5
Sapporo		30·4	357	e 6 18	+13	e 13 6	?	e 6 35	pP	e 15·4
Nemuro		30·7	3	e 6 6	− 2	e 11 38	+36	—	—	12·8
Vladivostok		32·0	344	i 6 18	− 1	i 11 22	0	i 6 38	pP	—
Bandong		40·4	243	e 7 19	−11	e 13 19	−12	—	—	—
Djakarta		40·8	245	e 7 31	− 2	i 13 39	+ 2	—	—	—
Brisbane		41·0	166	i 7 39	+ 4	i 13 44	+ 4	e 8 2	pP	—
Klyuchi		45·7	13	e 8 33	+20	15 10	+22	—	—	—
Riverview		46·8	170	i 8 23a	+ 1	i 15 7	+ 3	i 9 53	P_cP	e 21·1
Irkutsk		50·4	330	8 50	+ 1	15 56	+ 2	9 11	pP	—
Perth		51·5	209	—	—	i 16 17	+ 8	—	—	—
Apia		51·7	118	e 9 1	+ 2	i 16 16	+ 4	—	—	e 20·9
Calcutta	E.	53·1	289	i 9 35	+25	i 16 33	+ 2	—	—	—
Honolulu		56·7	72	e 9 33	− 3	e 17 17	− 2	—	—	e 23·6
Auckland	N.	57·5	150	i 9 44	+ 3	i 17 40	+11	i 10 18	pP	—
New Plymouth	E.	58·9	152	e 9 49	− 2	—	—	—	—	—
Tuai	N.	60·1	150	9 58	− 1	e 18 3	0	—	—	—
Wellington		61·0	153	i 10 4	− 2	i 18 13	− 2	12 19	PP	27·9
Dehra Dun	N.	62·5	298	e 10 18	+ 2	e 18 0	−34	—	—	24·4
Colombo	E.	62·7	271	10 45	pP	18 40	+ 4	—	—	—
Przhevalsk		63·1	311	i 10 21	+ 1	e 18 47?	+ 6	—	—	—
New Delhi		63·2	296	e 10 21	+ 1	i 18 40	− 2	19 2	PS	29·1
Semipalatinsk		63·3	321	—	—	e 18 42	− 2	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Almata		64·3	313	i 10 30	+ 3	i 19 4	+ 8	i 19 42		sS	—
Kodaikanal	E.	64·4	276	e 10 52	pP	i 19 12	+15	13 7		PP	33·8
Naryn		64·8	311	i 10 32	+ 1	i 19 5	+ 3	i 10 52		pP	—
Frunse		66·0	311	e 10 41	+ 3	e 19 21	+ 4	20 3		sS	—
Poona	E.	66·8	285	i 10 43	0	i 19 20	− 6	11 9		PcP	30·5
Andijan		67·5	309	10 49	+ 1	i 19 37	+ 2	11 12		pP	—
Bombay	N.	67·8	285	e 10 24	−26	e 19 40	+ 2	20 20		PS	28·2
Fergana		67·9	308	i 10 52	+ 2	19 42	+ 2	e 11 15		pP	—
Garm		69·0	307	i 10 58	+ 1	i 19 53	0	i 11 23		pP	—
Obi-garm		69·5	307	i 11 1	+ 1	i 19 58	− 1	i 11 22		pP	—
Tchimkent		69·6	311	i 11 0	− 1	i 19 59	− 1	—		—	—
College		69·7	24	e 10 56	− 5	e 19 54	− 7	e 13 23		PP	i 39·0
Tashkent		69·8	310	i 11 2?	0	i 19 54?	− 8	i 11 24?		pP	—
Stalinabad		70·2	307	e 11 9	+ 5	i 20 11	+ 4	11 29		pP	—
Samarkand		71·6	307	e 11 15	+ 2	i 20 24	+ 1	—		—	—
Sitka		74·8	33	e 11 34	+ 3	i 20 54	− 5	e 26 24		SS	e 31·0
Sverdlovsk		75·6	326	i 11 37	+ 1	i 21 6	− 2	i 11 59		pP	—
Mary		75·7	306	i 11 39	+ 3	—	—	12 3		pP	—
Ashkabad		78·4	306	11 55	+ 3	21 40	+ 2	—		—	—
Kizyl-Arvat		79·9	308	e 12 2	+ 2	21 58	+ 4	—		—	—
Victoria		82·8	42	i 12 14a	− 1	i 22 22	− 1	e 12 40		pP	33·9
Seattle		83·7	42	i 12 21a	+ 2	i 22 34	+ 2	i 12 59		pP	e 33·9
Arcata		83·8	49	i 12 21a	+ 1	e 22 33	0	i 15 33		PP	—
Baku		84·5	310	e 12 32?	+ 9	i 22 46?	+ 6	e 12 52		pP	—
Ukiah		84·8	51	e 12 14	−11	e 22 33	−10	e 15 26		PP	e 34·4
Shasta Dam		85·1	49	i 12 26	0	i 22 37	[− 1]	e 15 34		PP	—
Shemakla		85·4	310	e 12 15	−13	i 22 26	[−14]	i 12 36		pP	—
Berkeley		85·8	52	i 12 30a	0	i 22 42	[− 1]	i 15 47		PP	e 35·4
Mineral	Z.	85·8	50	i 12 29a	− 1	—	—	e 15 46		PP	—
Santa Clara		86·2	52	e 12 35	+ 3	e 22 59	+ 2	—		—	e 53·0
Lick		86·4	52	i 12 33a	0	e 22 47	[0]	i 15 50		PP	—
Grozny		86·9	314	e 12 37	+ 2	23 47	sS	—		—	—
Reno		87·3	49	i 12 38a	+ 1	e 22 53	[0]	i 16 1		PP	—
Fresno		88·0	52	i 12 40a	0	e 22 50	[− 8]	e 13 4		pP	—
Tiflis		88·0	312	e 12 55	+15	—	—	—		—	—
Moscow		88·3	327	e 12 46	+ 4	23 2	[+ 2]	i 13 10		pP	—
Piatigorsk		88·6	315	e 12 42	− 1	23 1	[0]	—		—	—
Hungry Horse		88·9	40	i 12 29	−16	i 23 21	− 1	e 16 7		PP	—
Tinemaha		89·1	52	i 12 46a	0	e 23 24	0	i 16 18		PP	—
Haiwee		89·6	53	i 12 48a	0	e 23 26	− 3	e 23 8		SKS	—
Zugdidi		89·8	313	e 12 53?	+ 4	i 23 13?	[+ 4]	—		—	—
Pasadena		89·9	55	i 12 50a	+ 1	i 23 30	− 1	e 13 11		pP	e 35·8
Pulkovo		90·3	332	12 51	0	23 31	− 4	e 13 14		pP	—
Butte	N.	90·6	42	e 12 53	0	i 23 9	[− 5]	e 16 7		PP	e 36·8
Riverside		90·6	55	i 12 53a	0	e 23 37	− 1	e 23 12		SKS	—
Sotchi		91·0	315	e 13 3	+ 9	—	—	—		—	—
Palomar		91·2	55	i 12 56a	+ 1	i 23 44	+ 1	i 13 17		pP	—
Bozeman		91·7	42	e 12 58	0	i 23 19	[0]	e 16 30		PP	e 36·9
Boulder City		92·1	53	i 13 0	0	e 23 24	[+ 3]	e 16 39		PP	—
Saskatoon		92·1	36	—	—	i 23 46	− 5	i 23 21		SKS	35·9
Overton	Z.	92·2	52	i 13 1	+ 1	e 23 29	[+ 7]	i 16 34		PP	—
Logan		92·5	46	i 13 1	0	i 23 50	− 4	e 14 28		pP	—
Pierce Ferry		92·7	53	i 13 3	+ 1	e 24 3	+ 7	i 16 43		PP	—
Salt Lake City		92·8	47	e 13 2	− 1	e 23 52	− 5	i 23 26		SKS	e 36·4
Yalta		94·5	317	e 13 35?	+25	i 24 17	+ 5	—		—	—
Upsala		95·8	336	e 15 39	?	i 24 25	+ 3	e 17 7		PP	e 41·9
Tucson		96·4	55	i 13 20	+ 1	i 24 32	+ 4	e 17 10		PP	e 38·6
Scoresby Sund		96·5	355	i 13 39	+19	i 24 28	0	17 12		PP	—
Kishinev		96·8	322	—	—	i 24 47	+16	—		—	—
Ksara		97·1	308	i 13 47a	pP	—	—	14 15		pP	—
Rapid City	E.	97·5	42	e 13 29	+ 5	i 23 51	[0]	e 17 19		PP	e 41·3
Warsaw		98·6	329	e 17 20	PP	24 39	− 7	e 17 57		pPP	e 44·9
Istanbul		99·3	317	e 13 32	0	e 24 1	[+ 1]	—		—	—
Tananarive		99·4	254	—	—	e 24 6	[+ 5]	26 27		SP	37·5
Bucharest		99·7	320	e 17 5	PP	—	—	—		—	47·9

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Copenhagen		100·5	335	e 17 49	PP	24 8	[+ 2]	18 12	pPP	47·9
Skalnate Pleso		100·7	326	e 13 23	−16	e 24 6	[− 1]	e 17 27	PP	—
Helwan		102·1	305	e 14 10	pP	i 24 15	[+ 1]	e 18 3	PKP	—
Budapest	N.	102·3	325	24 17	SKS	(24 17)	[+ 2]	e 32 51	SS	50·4
Potsdam		102·4	332	e 14 8	+22	i 24 16	[+ 1]	i 18 23	PP	e 50·9
Ogyalla		102·6	326	e 17 6	?	e 32 24	SS	e 18 14	PP	—
Collmberg		103·2	331	e 14 13	+23	e 24 19	[0]	e 18 27	PP	e 49·9
Prague		103·2	330	e 13 33	−17	e 24 19	[0]	e 17 31	PP	e 45·9
Jena		104·1	331	e 13 58	+ 5	e 24 22	[− 1]	e 14 18	pP	e 51·9
Cheb		104·3	331	e 17 41	?	e 24 54	SKKS	e 18 15	PP	—
Aberdeen		104·8	342	i 18 35	PP	i 24 27	[0]	e 33 30	SS	e 49·0
Zagreb		105·0	325	e 18 54?	PP	e 24 28	[0]	e 42 54?	Q	e 42·9
Ivigtut		105·9	6	18 19	PP	i 24 29	[− 2]	25 15	S	48·9
De Bilt		106·1	335	e 14 27	P	e 24 36	[+ 4]	e 14 40	pP	e 46·9
Edinburgh	E.	106·2	341	e 19 54	PPP	e 25 16	SKKS	—	—	—
Triest		106·4	326	e 18 7	PP	i 24 32	[− 1]	e 18 35	pPP	—
Durham		106·6	340	i 18 54	pPP	i 24 38	[+ 4]	i 25 22	SKKS	—
Stuttgart		106·7	331	e 14 26	P	e 24 35	[0]	e 18 28	PKP	51·9
Karlsruhe		106·9	332	e 13 54?	?	—	—	—	—	e 54·9
Taranto		107·3	320	14 9	P	28 21	PS	18 26	PP	48·6
Strasbourg		107·5	332	e 18 40	PP	e 24 41	[+ 3]	e 19 2	pPP	e 49·9
Zürich		107·9	330	e 14 23	P	—	—	e 18 58	PP	—
Padova		108·1	326	e 18 45	PP	e 25 32	SKKS	—	—	—
Chicago		108·5	38	—	—	e 24 37	[− 6]	e 25 57	S	e 43·9
St. Louis		108·6	42	e 14 51	P	i 24 41	[− 2]	e 18 40	PP	—
Kew		108·8	337	e 19 4	PP	(i 24 34)	[−10]	(e 29 46)	PPS	e 47·9
Florence Xim		108·9	325	e 19 14	PP	e 25 29	SKKS	—	—	—
Prato		108·9	325	e 19 17	PP	i 25 36	SKKS	—	—	—
Besançon		109·3	331	e 18 46	pPKP	—	—	e 18 59	PP	—
Rathfarnham Castle		109·4	342	e 19 34	PP	e 28 41	PS	e 33 3	SS	—
Rome		109·4	324	e 14 41	P	e 24 46	[0]	e 18 54	PP	e 46·9
Paris		109·7	334	e 18 58	PP	e 26 31	S	i 19 22	pPP	e 53·9
Tacubaya		110·7	83	e 19 7	PP	e 24 40	[−12]	21 1	PPP	e 52·5
Jersey	E.	111·3	337	—	—	e 25 58	SKKS	e 30 39	PPS?	e 50·9
Clermont-Ferrand		111·7	331	e 19 2	PP	e 25 48	SKKS	e 29 8	PPS	55·9
Cleveland		112·2	35	e 19 5	PP	e 24 55	[− 3]	e 28 27	PS	e 50·7
Ottawa		112·4	28	e 18 27	[+ 2]	e 24 56	[− 2]	e 28 31	PS	49·9
Seven Falls	E.	113·2	24	—	—	e 29 36	PPS	e 39 30	SSS	49·9
New Kensington	E.	113·8	35	—	—	e 26 6	SKKS	e 28 40	PS	e 55·2
Vermont		114·2	28	e 19 20	PP	e 25 11	[+ 5]	e 26 11	SKKS	e 44·0
Pennsylvania		114·6	33	i 19 27	PP	i 25 4	[− 3]	i 19 43	pPP	—
Barcelona		115·4	329	—	—	—	—	e 47 14	Q	e 57·9
Harvard		116·5	28	i 18 35	[+ 2]	e 26 27	SKKS	e 19 38	PP	e 53·8
Fordham		116·7	31	—	—	e 25 16	[+ 1]	e 26 28	SKKS	86·9
Tortosa		116·7	329	20 15	pPP	—	—	—	—	e 55·9
Weston		116·7	28	e 18 35	[+ 2]	e 35 44	SS	e 19 38	PP	—
Pretoria	Z.	117·9	248	i 18 34	[− 2]	—	—	—	—	—
Halifax		118·0	21	—	—	e 25 19	[− 1]	—	—	53·9
Algiers Univ.	Z.	118·3	324	e 19 49	PP	e 22 6	PKS	e 20 19	pPP	—
Alicante		119·0	329	20 32	pPP	30 24	PS	21 12	PPP	e 54·1
Grahamstown		119·1	240	i 18 41	[+ 3]	e 28 24	SKKS	—	—	e 53·9
Toledo		119·6	332	e 20 18	PP	e 30 18	PPS	e 20 33	pPP	57·3
Granada		121·5	330	i 20 31	PP	e 26 42	[+71]	i 21 46	PPP	i 60·7
Malaga	Z.	122·3	330	i 20 44k	PP	—	—	i 21 56	PPP	46·7
Tamanrasset	Z.	125·7	311	e 18 54	[+ 4]	—	—	i 19 9	pPKP	—
Bermuda		127·9	30	e 20 59	PP	e 27 54	SKKS	e 22 54	PKS	e 51·4
San Juan		137·7	44	e 20 44	PP	e 28 41	SKKS	e 22 37	PKS	e 55·9
Bogota		139·1	67	e 19 35	[+20]	i 23 30	?	i 22 35	PKS	46·9
Huancayo		142·3	94	i 19 24	[+ 3]	i 41 36	SS	i 22 58	PKS	e 64·0
Fort de France		143·6	42	e 19 14	[−10]	—	—	—	—	—
La Paz		149·4	102	i 19 40	[+ 7]	i 26 28	[− 2]	i 23 4	PP	71·9

For Notes see next page.

NOTES TO MAY 25d. 18h. 35m. 6s.

Additional readings :—
Miyazaki i =5m.1s.
Owase P_cP =8m.48s.
Kôti e =6m.57s.
Shizuoka e =5m.24s.
Osaka eN =5m.20s., eZ =5m.25s., eN =5m.32s., iE =6m.35s.
Kobe eE =5m.26s.
Matuyama iPPPN =5m.32s., iSS?N =9m.44s.
Nagoya eE =6m.31s.
Tokyo PPP =6m.4s., P_cP =8m.12s.
Hukuoka iSS =10m.1s.
Matusiro SS =11m.10s.
Toyama esS =10m.12s.
Nanking iPP =6m.59s., PPP? =7m.19s., iP_cPN =8m.59s., iN =9m.59s.
Brisbane iPPEN =9m.15s., iN =14m.15s.
Riverview iN =8m.38s., iZ =9m.26s., iN =9m.42s., iZ =10m.11s., iPPNZ =10m.16s., iN =15m.3s., iEN =16m.2s., iN =17m.44s. and 18m.13s.
Irkutsk ePP =10m.45s., sS =16m.36s.?
Perth i =16m.54s., 17m.47s., 18m.41s., and 19m.54s.
Auckland iS_cSN =19m.32s.
Wellington PPP =13m.15s., iS_cS =19m.47s., eSS =22m.9s., Q =25·9m.
New Delhi PPSN =19m.14s., S_cSN =19m.59s., iN =20m.48s., SSN =23m.17s.?, QN =26·8m.
Kodaikanal SSE =23m.2s.
Poona PPE =13m.10s., PPPE =14m.44s., P_cSE =15m.7s., PSE =19m.45s., PPSE =19m.54s.?, S_cSE =20m.21s., SSE =23m.25s., SSSE =26m.19s., QE =27m.17s.
Andijan isS =20m.15s., iSS =24m.36s.
Bombay eN =11m.25s.
Fergana PP =13m.23s., S_cS =20m.25s.
College e =14m.35s.
Tashkent ePP =13m.42s.?, iS_cS =20m.46s.?, eSSS =27m.30s.
Stalinabad sS =20m.50s.
Sitka i =21m.28s., eSSS =30m.14s.
Sverdlovsk isS =21m.41s.
Seattle iPP =15m.40s., iPPP =17m.34s., eSKS =22m.27s., ePPS =24m.24s., and many other e and i readings.
Arcata iZ =12m.35s., eZ =12m.59s., eN =14m.22s. and 15m.47s., iN =22m.35s.
Ukiah e =23m.40s.
Shasta Dam i =13m.14s. and 13m.47s., ePPP? =17m.31s.
Shemakla iP_cP =12m.22s.
Berkeley iZ =12m.40s. and 13m.26s., eE =19m.34s.
Lick iZ =12m.38s., 13m.32s., and 14m.5s.
Reno eE =22m.30s.
Fresno eN =13m.28s., iE =13m.45s., eEN =22m.56s.
Hungry Horse e =15m.39s., eSKS =22m.55s., esS =24m.3s., ePS =24m.42s., ePKP, PKP =38m.32s.
Tinemaha eSKSE =23m.2s.
Haiwee iZ =12m.58s.
Pasadena iZ =13m.15s. and 15m.52s., ePPE =16m.5s., iZ =16m.20s., iSKS =23m.8s., isSN =24m.8s.
Pulkovo PP =16m.23s., SKKS =23m.8s., esS =24m.8s., SS =29m.40s., SSS =34m.0s.
Butte iN =23m.31s., ePSN =24m.13s., eSSN =29m.37s., eSSS?N =33m.21s.
Riverside iZ =13m.1s., 13m.19s., and 13m.26s.
Palomar iZ =13m.28s., iPPZ =16m.34s., iSKSEN =23m.19s.
Bozeman e =23m.46s. and 28m.8s.
Overton iZ =19m.31s.
Logan ePP =16m.27s., iS =23m.24s., e =28m.29s. and 39m.37s.
Pierce Ferry iPPP =18m.24s., eSKS =23m.28s., ePPS? =25m.10s.
Salt Lake City ePS? =24m.36s., e =25m.17s.
Upsala eE =17m.43s., SKS =23m.37s., SKKS =24m.14s., PPS =26m.14s., eE =29m.54s. and 33m.54s.?, eSSSN =35m.8s., eQE =39·9m.
Tucson i =13m.46s., eSKS =23m.44s., ePS =25m.18s., e =26m.21s., eSS =31m.4s., e =33m.11s.
Scoresby Sund 13m.54s., pPP =17m.37s., PPP =19m.48s., SKS =23m.46s., PS =25m.59s., SS =31m.0s.
Ksara PP =17m.4s.
Rapid City isSE =24m.33s., eSSE =30m.44s.
Warsaw ePPE =17m.29s., esPPEZ =18m.8s., ePPPZ =19m.28s., eE =21m.35s., eZ =22m.25s., SKS =23m.56s., sSE =24m.47s., eN =25m.32s., eE =25m.39s., PSZ =26m.12s., PSE =26m.17s., eSPPN =26m.31s., ePPSE =26m.56s., ePPSNZ =27m.9s., eZ =30m.11s., eE =30m.32s., eSSN =31m.12s., eSSE =31m.21s., eSSSN =34m.50s., eSSSE =35m.3s.
Tananarive SS =31m.47s.
Copenhagen 24m.54s. and 27m.9s., SS =32m.4s., SSS =35m.24s.
Skalnate Pleso epPP =17m.49s., e =18m.24s., 20m.0s., 24m.56s., and 25m.39s., ePS =26m.29s., eSS =31m.18s.

Continued on next page.

Helwan eZ =15m.48s. and 16m.59s., PPZ =18m.49s., SN =26m.0s., eN =31m.54s. and 33m.18s.
Budapest eSS?N =37m.17s., eN =42m.59s. Phases wrongly identified.
Potsdam eZ =14m.22s. and 17m.18s., ePPPZ =20m.36s., iPSZ =27m.25s., iPPSZ = 28m.20s., eZ =28m.53s.
Ogyalla e =19m.4s. and 20m.4s., eSSS =36m.42s.
Collmberg eZ =17m.29s., eE =18m.30s., ePPPZ =20m.27s., eZ =21m.22s., eN =21m.38s., eS?N =26m.2s., eE =27m.29s., eZ =30m.7s., eSSEN =31m.22s., eEN =39m.5s.
Prague epPP =17m.57s., esPPN =18m.10s., eN =18m.36s., e =18m.50s. and 19m.41s., ePPP =19m.54s., epPPP =20m.23s., e =21m.6s., eN =23m.15s., e =24m.56s., eSP =26m.20s., e =26m.59s., ePPS =27m.29s., eSS =31m.54s., esSS? =33m.12s., eSSS =35m.54s.
Jena ePE =14m.21s., ePKPE =17m.33s., ePKPN =17m.36s., ePP?EN =18m.13s., eN =25m.6s. and 26m.18s.
Cheb ePKP =17m.54s., e =18m.38s. and 26m.40s., ePS =27m.15s., e =27m.42s., 28m.37s. and 30m.53s., eSS =33m.18s., e =36m.3s., eSSS =37m.12s.
De Bilt iPP =18m.51s., epPP =19m.2s., eSKKS =25m.18s., iPS =27m.31s., eZ = 28m.4s., eSS =33m.54s.?
Triest iSKKS =24m.49s., isSKS =25m.15s., i =25m.52s., iSP =26m.37s., isSP? = 27m.35s.
Durham iEN =19m.5s.
Stuttgart ePP =18m.54s., eSKKS =25m.23s., e =26m.34s., ePS =27m.38s., e =28m.10s., ePKKPZ =29m.51s., eQ =43·9m.
Taranto SS =34m.9s.
Strasbourg ePPP =20m.59s., epPPP =21m.22s., eSKKS =25m.32s., e =26m.50s., eSP =27m.51s., ePS =28m.10s., i =28m.28s. and 29m.43s., e =34m.24s., eSSS = 38m.0s., e =44m.24s.
Zürich eZ =14m.44s.
Chicago ePS? =26m.49s.
St. Louis iSKKS? =25m.28s., i =29m.18s.
Kew i =19m.20s., e =21m.32s., ePPS =34m.38s., eSSEN =38m.54s., eSSS =44m.30s., SKS and PPS are given as PP and SKS respectively.
Besançon e =19m.47s.
Rathfarnham Castle eEN =21m.9s.
Rome eS =27m.2s., ePS =28m.0s., eSS =33m.40s., eSSS =38m.0s.
Paris e =19m.2s., i =19m.15s. and 19m.27s., e =20m.4s., and 20m.54s., iSKP =21m.44s., iPS =28m.6s., i =28m.44s., iPPS =29m.37s., i =29m.49s., e =29m.58s., iSS = 34m.16s., ePSS =34m.46s.
Clermont-Ferrand e =19m.41s. and 20m.7s., ePPS =30m.10s., eQ =47m.22s., e = 49m.23s.
Cleveland eSKSN =24m.58s., eSKKSEN =25m.53s., ePPSN =29m.22s., eN =29m.48s. and 30m.8s.
Ottawa e =34m.36s.
Pennsylvania isPPNZ =20m.6s., iZ =23m.34s., iE =25m.10s., iN =26m.11s., iSEN = 26m.56s., ipS =27m.35s., eSKSP =28m.52s., esPSE =29m.39s., iEN =31m.12s.
Harvard epPP =19m.57s., iPPP =22m.11s., epPPP? =23m.1s., e =24m.43s. and 27m.43s., esS =29m.6s., ePKKP? =29m.46s., ePS =30m.25s., esPS =30m.57s., ePPS =31m.42s., e =33m.2s. and 35m.49s., iSS =36m.35s., esSS =37m.9s., ePKP,PKP =38m.57s.
Fordham e =29m.14s.
Algiers Univ. ePSZ =29m.1s., eZ =32m.52s.
Alicante PKP =23m.20s., SS =36m.2s., SSS =40m.8s.
Grahamstown i =28m.53s.
Granada SKP =22m.52s., SKKS =28m.40s., PS =31m.10s., PPS =32m.39s., iSS = 37m.11s., SSS =41m.57s.
Malaga PPPZ =23m.56s.
Tamanrasset eZ =19m.32s., ePPZ =20m.53s.
Bermuda ePPS =32m.9s., eSS =37m.44s., eSSS =42m.4s.
Bogota iPPSEN =29m.10s.
Huancayo ePSPS =42m.6s.
La Paz i =20m.56s., SKKS =30m.0s., iSS =42m.26s., iSSS =43m.6s., Q =69·9m.
Long waves were also recorded at Chur and Helsinki.

May 25d. Readings also at 0h. (Pasadena, Riverside, Overton, Pierce Ferry, Lick, Shasta Dam, Hungry Horse, College, Weston, and near Garm), 1h. (La Paz, Collmberg, Strasbourg, Stuttgart, Besançon, near Basle, Chur, Zürich, and near Prague), 2h. (Naryn, Samarkand, near Andijan, Fergana, Garm, Obi-garm, Stalinabad, and Tchimkent), 3h. (Lick), 4h. (Wellington), 5h. (San Juan, and near Fort de France), 8h. (near Ashkabad), 14h. (Nanking and Tamanrasset), 17h. (Zürich, Mount Wilson, Riverside, Tinemaha, Tucson, Overton, Pierce Ferry, Lick, and near Tacubaya), 18h. (Huancayo and Tamanrasset), 20h. (Brisbane, Pasadena, Riverside, Tinemaha, Boulder City, Overton, Pierce Ferry, and Lick), 21h. (Fergana, Frunse, Mary, Naryn, Samarkand, Tashkent, Tchimkent, near Andijan, Garm, Obi-garm, and Stalinabad), 22h. (Lick), 23h. (near Seattle).

May 26d. 1h. 17m. 7s. I } Epicentre 20°·2S. 169°·5E.
1h. 17m. 23s. II } (as on 17d.).

$A = -\cdot9235$, $B = +\cdot1712$, $C = -\cdot3432$; $\delta = -5$; $h = +5$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
I Brisbane	Z.	16·7	241	i 3 57 a	0	—	—	—	—	—
I Auckland	N.	17·2	165	i 4 6	+ 3	—	—	—	—	—
II	N.	17·2	165	—	—	i 7 12	− 2	—	—	9·6
I Arapuni		18·6	165	e 3 18	−63	—	—	—	—	—
II		18·6	165	e 3 21	−60	e 6 41	−65	—	—	—
I Apia		19·0	73	4 30	+ 4	—	—	—	—	—
II		19·0	73	e 4 25	− 1	e 8 7	+12	—	—	e 9·6
II New Plymouth	E.	19·3	168	e 4 27	− 2	e 8 11	+ 9	—	—	—
I Tuai	N.	19·7	163	i 4 2	−32	—	—	—	—	—
II	N.	19·7	163	—	—	e 8 11	+ 1	—	—	—
I Riverview		21·2	227	i 4 49k	0	i 8 42	+ 1	i 4 59	pP	e 10·3
I Wellington		21·5	170	i 4 51?	− 1	8 50	+ 3	5 14	PP	9·9
I Kaimata	N.E.	22·3	177	i 6 53?	?	i 10 56	L	—	—	(i 10·9)
I Christchurch		23·4	174	i 5 9	− 2	e 9 18	− 3	i 5 40	PP	11·7
II		23·4	174	i 5 9	− 2	i 9 14	− 7	—	—	—
I Guam		41·4	322	e 7 56	+ 6	—	—	7 17	P	—
II Perth		49·2	246	9 19	+27	16 49	+51	11 12	PP	25·8
I Honolulu		52·2	40	e 9 11	− 4	e 16 23	−16	i 17 22	PPS	e 21·0
I Bandong		61·3	275	—	—	i 18 42	+ 3	—	—	—
I Djakarta		62·3	275	e 10 26	0	i 18 54	+ 2	—	—	—
I Tokyo		62·3	334	e 10 10	−16	18 38	−14	22 58	SS	26·2
I Hunatu		62·6	334	10 27	− 1	—	—	—	—	—
II		62·6	334	—	—	e 18 53	− 3	—	—	—
I Owase		62·6	330	e 10 26 a	− 2	—	—	—	—	—
II		62·6	330	—	—	18 52	− 4	18 56	S	—
I Utunomiya		63·0	335	e 10 31	0	—	—	—	—	26·6
II		63·0	335	—	—	e 18 59	− 2	20 23	S_cS	—
I Nagoya		63·1	332	e 10 34	+ 2	e 18 53	− 9	—	—	—
I Maebasi		63·2	333	e 10 33	+ 1	—	—	—	—	e 27·0
II		63·2	333	—	—	e 19 2	− 1	—	—	—
I Gihu		63·4	332	10 30	− 4	—	—	(21 59)	?	22·0
II		63·4	332	—	—	19 6	0	—	—	—
I Osaka		63·4	330	e 10 32	− 2	—	—	e 10 35	P	—
II		63·4	330	—	—	e 19 18	+12	—	—	—
I Kobe		63·6	330	e 10 34	− 1	—	—	—	—	—
II		63·6	330	e 10 36	+ 1	e 19 37?	+29	—	—	—
I Kôti		63·6	327	e 10 42	+ 7	e 19 10	+ 2	e 12 51	PP	—
II		63·6	327	—	—	19 8	0	e 23 46	SS	—
I Matusiro		63·7	333	i 10 33	− 3	i 19 6	− 4	—	—	29·5
II		63·7	333	i 10 34	− 2	e 20 33	S_cS	e 13 1	PP	—
I Hukusima		63·8	336	10 25	−11	—	—	—	—	e 26·7
II		63·8	336	—	—	19 11	0	—	—	—
I Nagano		63·8	333	10 35	− 1	—	—	11 37	pP	—
II		63·8	333	—	—	19 8	− 3	—	—	—
I Sendai		64·1	337	10 38	0	—	—	—	—	27·2
II		64·1	337	—	—	19 15	+ 1	—	—	—
I Toyama		64·3	332	e 9 58	−41	e 18 36	−41	—	—	e 27·1
I Mizusawa		64·7	337	10 40	− 2	—	—	e 10 43	P	—
II		64·7	337	—	—	19 17	− 5	—	—	—
I Miyako		64·8	338	e 10 41	− 2	—	—	—	—	—
II		64·8	338	—	—	e 19 17	− 6	—	—	e 32·7
I Hukuoka		65·2	326	e 10 45 a	0	—	—	—	—	28·1
II		65·2	326	—	—	e 19 28	0	—	—	—
I Morioka		65·2	337	e 10 45	0	—	—	—	—	e 27·6
II		65·2	337	e 10 39	− 6	e 19 29	+ 1	—	—	—
I Akita		65·6	337	e 10 49	+ 1	—	—	—	—	e 27·8
II		65·6	337	e 10 43	− 5	i 19 33	0	—	—	—
II Nemuro		66·9	342	e 10 56	0	e 19 52	+ 3	—	—	e 30·0

Continued on next page.

			△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
			°	°	m. s.	s.	m. s.	s.	m. s.		m.
I	Mori		67·5	339	e 10 40	−20	—	—	—	—	—
II			67·5	339	—	—	19 57	+ 1	—	—	33·8
I	Sapporo		68·1	340	e 11 10	+ 6	—	—	—	—	e 27·2
II			68·1	340	—	—	e 19 59	− 4	—	—	—
I	Nanking		71·1	317	i 11 20	− 2	—	—	i 14 2	PP	i 30·5
II			71·1	317	i 11 21	− 1	i 20 36	− 2	i 21 7	PS	—
I	Vladivostok		71·9	333	i 12 24	+57	i 21 59	+71	—	—	—
II			71·9	333	—	—	i 22 1	+73	—	—	—
II	Ferndale		86·2	45	e 12 50	+ 6	e 23 37	+18	—	—	e 39·9
I	Berkeley		86·2	48	i 12 44a	0	e 24 46	PPS	—	—	e 36·4
II			86·2	48	i 12 41	− 3	e 23 14	− 5	e 16 17	PP	—
I	Santa Clara		86·2	48	e 12 49	+ 5	—	—	e 12 59	pP	e 39·6
II			86·2	48	—	—	e 23 35	+16	e 25 25	sS	—
I	Ukiah		86·2	46	e 12 44	0	e 23 6	[− 3]	e 28 54	SS	e 36·0
II			86·2	46	e 12 43	− 1	e 24 26	PS	e 16 10	PP	—
I	Lick		86·4	48	e 12 45a	0	e 24 42	PPS	i 12 49	PcP	e 39·9
II			86·4	48	—	—	e 23 23	+ 2	i 16 9	PP	—
I	Fresno		87·4	49	e 12 49a	− 1	e 23 31	+ 1	—	—	e 40·7
II			87·4	49	e 12 51	+ 1	e 24 32	PS	e 25 1	PPS	—
I	Shasta Dam		87·5	45	e 12 49	− 2	—	—	—	—	e 40·9
II			87·5	45	i 13 1	+10	e 23 14	[− 3]	e 16 10	PP	—
I	Pasadena		87·6	53	i 12 49a	− 2	i 23 17	[− 1]	i 13 2	pP	e 35·0
II			87·6	53	i 12 51a	0	—	—	i 16 14	PP	i 36·4
I	Mineral		87·9	46	e 12 51a	− 2	—	—	—	—	e 40·8
II			87·9	46	i 12 48a	− 5	e 23 37	+ 2	e 25 45	PPS	—
I	Riverside		88·0	53	i 12 53a	0	—	—	i 13 5	pP	e 39·0
II		z.	88·0	53	i 12 54	+ 1	—	—	e 38 32	P'P'	—
I	Haiwee		88·5	51	i 12 55	− 1	—	—	—	—	—
I	Reno		88·7	48	e 12 56a	− 1	e 23 39	− 4	e 16 7	PP	e 40·6
II			88·7	48	e 12 53	− 4	e 23 29	[+ 4]	e 25 9	PPS	—
I	Tinemaha		88·7	50	i 12 57	0	—	—	i 13 9	pP	—
II		z.	88·7	50	i 12 59	+ 2	—	—	—	—	—
I	Sitka		89·7	27	e 12 36	−25	i 23 45	− 7	e 29 43	SS	e 37·0
II			89·7	27	i 12 59	− 2	i 24 58	PS	e 16 41	PP	—
I	Calcutta	E.	89·8	294	—	—	i 23 53	0	—	—	—
II		E.	89·8	294	i 13 3	+ 1	—	—	—	—	—
I	Boulder City		90·7	52	e 13 7	+ 1	—	—	—	—	e 42·9
II			90·7	52	i 13 12	+ 6	e 23 39	[+ 2]	e 38 47	P'P'	—
I	Victoria		90·8	39	13 4	− 2	e 23 57	− 5	16 30	PP	42·2
II			90·8	39	i 13 10	+ 4	e 24 16	+14	25 14	PS	—
I	College		90·9	17	i 13 3	− 4	e 23 43	[+ 5]	e 16 29	PP	e 36·8
II			90·9	17	i 13 9	+ 2	i 25 17	PS	—	—	—
I	Seattle		91·0	40	i 13 9k	+ 2	i 24 9	+ 6	i 13 38	pP	e 36·9
II			91·0	40	i 13 5	− 2	e 24 25	+22	i 16 53	PP	—
I	Overton	z.	91·2	51	i 13 12	+ 4	e 24 11	+ 6	i 16 40	PP	e 43·4
II		z.	91·2	51	i 13 18	+10	e 24 17	+12	e 16 48	PP	—
I	Pierce Ferry		91·4	53	e 13 10	+ 1	—	—	i 16 42	PP	e 43·0
II			91·4	53	i 13 15	+ 6	e 24 6	− 1	e 18 46	PPP	—
I	Irkutsk		91·6	327	—	—	—	—	16 53	PP	—
II			91·6	327	i 13 7	− 3	24 7	− 2	18 53	PPP	—
II	Colombo	E.	92·0	277	13 10	− 2	23 43	[− 1]	—	—	41·0
I	Tucson		92·2	57	i 13 13	0	—	—	e 16 56	PP	e 38·3
II			92·2	57	i 13 10	− 3	e 23 44	[− 2]	e 24 17	S	—
I	Salt Lake City		94·8	49	e 17 19	PP	—	—	—	—	e 40·4
II			94·8	49	e 13 25	0	e 24 1	[+ 1]	i 24 47	S	—
I	Logan		95·2	48	—	—	i 24 6	[+ 4]	—	—	e 41·0
II			95·2	48	e 13 27	0	i 26 7	PS	—	—	—
II	Kodaikanal	E.	95·4	279	i 13 24	− 4	—	—	—	—	—
I	Butte	N.	96·3	43	e 13 35	+ 4	—	—	—	—	e 35·2
II		N.	96·3	43	e 17 23	PP	e 24 15	[+ 7]	e 25 3	S	—
I	Hungry Horse		96·3	42	e 13 29	− 3	e 24 1	[− 7]	e 17 19	PP	—
II			96·3	42	e 13 25	− 7	i 24 3	[− 5]	—	—	—

Continued on next page.

			△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
			°	°	m. s.	s.	m. s.	s.	m. s.		m.
I	Bozeman		97·1	44	—	—	e 26 37	PS	—	—	—
II			97·1	44	e 13 41	+ 6	e 24 9	[− 3]	e 17 44	PP	e 35·7
I	Tacubaya		97·7	72	e 13 36	− 2	e 24 9	[− 6]	e 17 48	PP	e 46·0
II	Dehra Dun	N.	101·1	298	e 22 48	?	e 30 53	?	—	—	e 60·0
I	New Delhi		101·3	297	—	—	i 24 39	[+ 6]	—	—	49·3
II			101·3	297	e 13 48	− 6	i 25 28	− 3	27 7	PS	—
I	Poona	E.	101·3	287	13 50	− 4	32 19	SS	—	—	—
II		E.	101·3	287	—	—	24 31	[− 2]	e 25 31	S	—
I	Rapid City	E.	101·9	48	e 18 18	PP	e 36 35	SSS	—	—	e 40·6
II		E.	101·9	48	e 13 56	− 1	i 24 30	[− 6]	—	—	—
II	Saskatoon		102·0	39	13 59	+ 2	24 39	[+ 2]	18 19	PP	47·6
I	Bombay	E.	102·4	286	—	—	32 55	SS	44 28	Q	50·0
II		N.	102·4	286	—	—	32 45	SS	36 43	SSS	44·4
II	Przhevalsk		104·1	310	18 39	PP	i 25 56	+ 1	—	—	—
II	Semipalatinsk		104·7	319	e 18 35	PP	—	—	—	—	—
I	Naryn		105·6	310	e 14 20	P	e 25 6	[+13]	—	—	—
II			105·6	310	e 18 35	PP	—	—	—	—	—
I	Lincoln	E.	105·8	52	e 17 59	[−26]	e 25 6	[+12]	—	—	e 49·0
II		E.	105·8	52	—	—	e 28 59	PS	e 33 55	SSP	—
II	Frunse		107·0	310	e 18 54	PP	—	—	—	—	—
I	Andijan		108·2	307	e 18 49	PP	25 10	[+ 5]	—	—	—
II			108·2	307	i 14 23	P	—	—	—	—	—
I	Fergana		108·5	308	e 18 56	PP	—	—	—	—	—
II			108·5	308	e 14 26	P	—	—	—	—	—
I	Huancayo		108·6	111	e 19 5	PP	e 25 35	(−20)	e 27 3	pS	—
II			108·6	111	—	—	e 28 31	PS	e 34 13	SS	—
I	La Plata	E.	109·1	141	—	—	28 23	PS	—	—	50·7
II		E.	109·1	141	18 37	[+ 6]	—	—	—	—	—
II	Garm		109·4	305	e 14 30?	P	—	—	—	—	—
II	Obi-garm		109·8	306	i 14 30	P	—	—	—	—	—
II	St. Louis		110·2	54	i 19 7	PP	i 26 46	S	—	—	—
I	Stalinabad		110·5	306	21 31	PP	—	—	—	—	—
II			110·5	306	14 37	PP	25 15	[+ 1]	19 7	PP	—
II	Tchimkent		110·5	310	i 19 2	PP	—	—	—	—	—
I	Tashkent		110·6	308	14 33?	P	—	—	—	—	—
II	Tananarive		111·1	239	—	—	e 25 20	[+ 3]	26 15	SKKS	53·5
I	La Paz		112·7	118	e 18 13	[−25]	—	—	i 19 29	PP	52·9
II			112·7	118	i 14 49a	P	i 25 27	[+ 4]	i 26 31	SKKS	—
I	Chicago		112·8	51	—	—	e 25 18	[− 5]	e 29 2	PS	e 46·4
II			112·8	51	e 19 50	PP	e 26 36	(+11)	—	—	—
II	Mary		115·8	304	e 18 41	[− 4]	—	—	—	—	—
I	Grahamstown		116·1	215	e 18 44	[− 1]	(e 29 41)	PS	e 20 5	PP	e 29·7
II			116·1	215	e 18 43	[− 2]	—	—	—	—	—
I	Bogota		116·4	96	e 19 46	PP	e 31 8	PPS	—	—	54·9
II			116·4	96	e 19 38	PP	e 25 40	[+ 3]	i 29 40	PS	—
I	Pietermaritzburg	z.	116·7	221	e 19 58	PP	—	—	—	—	—
I	Columbia		116·8	60	e 20 3	PP	—	—	—	—	e 46·0
II			116·8	60	—	—	e 25 39	[0]	e 29 43	PS	—
I	Sverdlovsk		117·0	325	i 20 5	PP	i 29 41	PS	i 36 16	SS	—
II			117·0	325	15 1	P	26 53	(− 1)	—	—	—
I	Cleveland		117·1	53	e 19 56	PP	e 25 48	[+ 8]	i 29 54	PS	—
II			117·1	53	i 18 51	[+ 4]	e 29 42	PS	e 14 54	P	—
I	New Kensington	E.	118·5	53	e 20 14	PP	e 25 27	[−18]	e 36 39	SS	e 48·6
II			118·5	53	e 22 38	PPP	—	—	—	—	—
II	Ashkabad		118·6	304	19 6	[+16]	—	—	—	—	—
II	Pennsylvania	E.	119·9	54	e 19 1	[+ 8]	i 31 28	PPS	e 20 35	PP	—
II	Washington		120·4	55	e 18 48	[− 6]	e 30 7	PS	i 20 20	PP	e 55·0
I	Pretoria	z.	120·9	222	e 18 50	[− 4]	—	—	e 28 56	PKKP	—
II		z.	120·9	222	e 18 49	[− 5]	—	—	—	—	—
I	Ottawa		121·4	47	e 18 53	[− 2]	30 3	PS	20 17	PP	50·9
II			121·4	47	—	—	25 59	[+ 4]	37 25	SSP	—
I	Fordham		122·9	53	e 18 58	[0]	—	—	—	—	—
II			122·9	53	e 18 58	[0]	—	—	i 20 37	PP	62·8
I	Vermont		123·2	49	e 22 24	PKS	e 30 35	PS	e 33 27	?	e 52·2
II			123·2	49	—	—	e 37 48	SSP	e 41 58	SSS	—

Continued on next page.

			Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
			°	°	m. s.	s.	m. s.	s.	m. s.		m.
II	Shawinigan Falls	N.	123·4	46	e 18 53	[− 6]	—	—	—	—	—
I	Seven Falls	E.	124·6	45	—	—	32 20	PPS	—	—	60·9
II			124·6	45	19 4	[+ 2]	37 53	SS	20 47	PP	—
I	Harvard		124·6	51	i 19 1	[− 1]	e 27 16	{−29}	e 15 48	P	e 58·9
I	Weston		124·7	51	e 19 1	[− 1]	—	—	i 19 23	pPKP	—
II	Baku		125·2	306	e 19 8	[+ 5]	—	—	e 20 59	PP	—
I	San Juan		127·7	81	—	—	e 26 12	[− 2]	e 38 28	SS	e 52·2
II			127·7	81	e 19 5	[− 3]	e 31 20	PS	e 21 8	PP	—
I	Grozny		128·0	309	e 19 9	[+ 1]	e 22 19	PKS	—	—	—
I	Tiflis		128·9	307	e 19 8	[− 2]	—	—	—	—	—
I	Scoresby Sund		129·2	5	i 19 9	[− 1]	i 22 49	PKS	e 16 16	?	53·9
II			129·2	5	i 19 8	[− 2]	31 25	PS	i 21 17	PP	—
I	Moscow		129·6	326	19 8	[− 3]	28 14	{− 3}	e 21 18	PP	—
II			129·6	326	19 10	[− 1]	38 53	SS	—	—	—
I	Piatigorsk		129·8	311	i 22 48	PKS	—	—	—	—	—
II			129·8	311	e 19 7	[− 5]	—	—	—	—	—
I	Halifax		130·0	48	22 52	PKS	—	—	—	—	55·4
II			130·0	48	19 12	[0]	28 18	{− 2}	31 32	PS	—
I	Bermuda		130·4	65	—	—	e 38 53	SS	—	—	—
II			130·4	65	e 19 27	[+14]	e 26 25	[+ 4]	e 21 35	PP	e 56·0
I	Zugdidi		130·9	310	e 22 54	PKS	—	—	—	—	—
II			130·9	310	e 19 13	[− 1]	—	—	—	—	—
I	Pulkovo		131·0	334	e 21 34	PP	i 22 32	PKS	e 39 5	SS	—
II			131·0	334	19 7	[− 7]	26 24	[+ 2]	—	—	—
II	Ivigtut		131·3	23	e 21 29	PP	39 7	SS	—	—	53·6
I	Fort de France		131·5	88	i 22 43	SKP	—	—	—	—	—
II			131·5	88	e 19 11	[− 4]	—	—	—	—	—
II	Sotchi		132·3	311	e 23 12	PKS	—	—	—	—	—
I	Helsinki		132·8	338	e 23 1	PKS	—	—	—	—	e 57·9
I	Theodosia		134·9	314	e 21 53	PP	e 28 49	{− 1}	—	—	—
II			134·9	314	e 22 50	PKS	—	—	—	—	—
I	Upsala		135·6	340	e 19 20	[− 2]	i 23 6	PKS	e 22 10	PP	e 59·9
II			135·6	340	e 19 20	[− 2]	—	—	e 24 59	PPP	—
I	Yalta		135·9	314	e 19 23	[0]	—	—	—	—	—
I	Ksara		136·8	298	e 19 23	[− 2]	—	—	—	—	66·9
II			136·8	298	22 15	PP	—	—	—	—	—
I	Bergen		138·3	349	22 13	PP	—	—	—	—	—
II			138·3	349	19 25	[− 2]	29 7	{− 4}	23 5	PKS	79·6
I	Kishinev		138·4	321	i 19 27	[− 1]	—	—	e 22 31	PP	—
I	Warsaw		139·7	331	e 19 29	[− 1]	e 26 40	[+ 1]	e 20 11	pPKP	e 62·9
II			139·7	331	e 19 29	[− 1]	e 23 7	PKS	22 19	PP	—
I	Copenhagen		140·6	340	i 19 26	[− 6]	—	—	—	—	60·9
II			140·6	340	22 30	PP	23 20	PKS	—	—	—
I	Istanbul		140·6	311	e 19 25	[− 7]	—	—	—	—	—
II			140·6	311	—	—	e 26 40	[0]	—	—	—
I	Helwan	Z.	141·1	293	i 19 26a	[− 6]	—	—	19 59	pPKP	—
II		E.	141·1	293	23 1	PKS	—	—	—	—	—
I	Bucharest		141·2	317	e 19 26	[− 7]	—	—	—	—	59·9
II			141·2	317	e 19 25	[− 8]	i 29 32	{+ 4}	i 22 36	PP	—
II	Skalnate Pleso		142·1	328	e 19 24	[−10]	e 23 11	PKS	e 19 52	pPKP	e 57·6
I	Raciborzu		142·5	331	e 19 30?	[− 5]	e 23 9	PKS	e 20 14	pPKP	—
II			142·5	331	e 22 43	PP	—	—	—	—	—
I	Aberdeen		142·6	352	19 29	[− 6]	i 29 19	{−18}	i 46 34	SSS	e 67·0
II			142·6	352	i 22 47	PP	—	—	—	—	—
I	Potsdam		143·0	336	i 19 29a	[− 7]	i 23 14	PKS	i 26 6	PPP	e 61·9
II			143·0	336	i 19 31k	[− 5]	i 23 14	PKS	i 22 43?	PP	—
I	Budapest	N.	143·7	325	19 37	0	—	—	e 22 42	PP	—
II		N.	143·7	325	e 19 47	[+10]	e 29 39	{− 3}	41 37?	SS	—
I	Collmberg		143·9	334	e 19 33	[− 4]	—	—	—	—	e 52·9
II			143·9	334	i 19 33	[− 4]	e 41 42	SS	e 22 48	PP	—
I	Edinburgh	E.	143·9	353	—	—	26 30	[−15]	—	—	—
II		E.	143·9	353	19 37	[0]	—	—	—	—	—
I	Ogyalla		144·0	326	e 19 37	[0]	e 29 11	{−33}	e 19 58	pPKP	e 64·4
II			144·0	326	e 19 37?	[0]	e 26 42	[− 3]	e 22 50	PP	—
I	Prague		144·2	332	e 19 34a	[− 4]	e 26 53	[+ 7]	e 20 5	pPKP	e 59·9
II			144·2	332	e 19 29	[− 9]	e 35 25	PPS	e 20 1	pPKP	—

Continued on next page.

			△	Az.	P.		O − C.	S.		O − C.	Supp.			L.
			°	°	m.	s.	s.	m.	s.	s.	m.	s.		m.
I	Kalossa		144·4	326	19	41	[+ 3]	e 29	57	{+11}	—		—	e 42·4
II			144·4	326	19	40	[+ 2]	e 29	59	{+13}	—		—	—
I	Vienna		144·6	329	i 19	36	[− 2]	—		—	e 22	31	PP	—
II			144·6	329	i 19	33	[− 5]	e 23	20	SKP	—		—	—
I	Jena	E.	144·7	335	e 19	36?	[− 3]	—		—	—		—	e 65·9
II			144·7	335	i 19	44	[+ 5]	—		—	e 23	1	PP	—
I	Durham		144·8	351	e 19	38	[− 1]	—		—	—		—	—
II			144·8	351	i 19	39	[0]	—		—	—		—	—
I	Cheb		145·1	335	19	38	[− 1]	e 35	53	PPS	e 20	9	pPKP	e 58·4
II			145·1	335	e 19	35	[− 4]	e 26	51	[+ 4]	e 20	1	pPKP	—
I	Athens		145·5	309	e 19	33?	[− 7]	—		—	i 19	41	PKP	—
II			145·5	309	i 19	46	[+ 6]	—		—	i 23	19	PKS	—
I	De Bilt		145·9	343	i 19	41a	[0]	—		—	i 20	13	pPKP	e 59·9
II			145·9	343	i 19	37	[− 4]	e 42	7	SS	i 23	3	PP	—
I	Zagreb		146·4	327	i 19	44	[+ 3]	i 23	15	PKS	i 20	0	pPKP	e 62·9
II			146·4	327	i 19	38	[− 3]	i 23	7	PKS	—		—	—
I	Rathfarnham C.		146·8	356	i 19	44	[+ 2]	—		—	—		—	e 68·9
II			146·8	356	i 19	47	[+ 5]	e 23	27	PKS	—		—	—
I	Stuttgart		147·4	336	i 19	41a	[− 2]	e 32	53	PSKS	i 20	3	pPKP	e 64·9
II			147·4	336	e 23	12	PP	e 42	19	SS	—		—	—
I	Karlsruhe		147·5	337	i 19	43	[0]	—		—	—		—	e 62·9
I	Triest		147·7	327	e 19	45	[+ 1]	—		—	—		—	e 65·9
II			147·7	327	i 23	53	PP	e 30	7	{+ 1}	—		—	—
I	Kew		147·8	348	i 19	47a	[+ 3]	e 31	11	{+65}	e 33	26	PPS	e 60·9
II			147·8	348	i 19	49	[+ 5]	i 42	17	SS	e 23	15	PP	—
I	Strasbourg		148·1	337	i 19	43a	[− 1]	—		—	i 23	10	PP	e 65·9
II			148·1	337	i 19	43a	[− 1]	e 30	7	{− 1}	i 23	11	PP	—
I	Chur		148·8	334	e 19	48	[+ 3]	—		—	—		—	e 68·2
I	Zürich		148·8	335	e 19	44k	[− 1]	e 30	11	{− 1}	e 23	28	PP	—
I	Taranto		148·9	318	19	49	[+ 3]	—		—	—		—	—
II			148·9	318	e 24	4	PP	—		—	—		—	—
I	Basle		149·0	336	e 19	48	[+ 2]	—		—	—		—	—
II			149·0	336	e 23	22	PP	—		—	—		—	—
I	Salo	z.	149·3	332	e 19	51a	[+ 5]	—		—	—		—	—
II			149·3	332	i 19	47k	[+ 1]	—		—	e 23	20	PP	—
I	Padova		149·5	329	e 19	49	[+ 2]	30	21	{+ 5}	23	29	PP	—
I	Paris		149·6	343	e 19	47k	[0]	e 23	22	PKS	—		—	e 66·9
II			149·6	343	e 19	49	[+ 2]	e 30	36	{+20}	i 23	26	PP	—
I	Bologna	z.	149·7	330	e 19	47a	[0]	—		—	e 19	53	PKP_2	—
II			149·7	330	e 19	49k	[+ 2]	—		—	e 23	24	PP	—
I	Neuchatel		149·7	336	e 19	51	[+ 4]	—		—	—		—	—
I	Besançon		149·8	337	e 19	47	[0]	—		—	i 19	52	PKP_2	—
I	Pavia		150·2	333	e 19	49	[+ 1]	—		—	—		—	—
II			150·2	333	e 19	52	[+ 4]	—		—	—		—	—
II	Jersey	E.	150·3	350	e 20	10	PKP_2	e 42	57	SS	—		—	62·6
I	Florence Xim		150·3	327	e 23	35	PP	—		—	—		—	—
II			150·3	327	e 19	46	[− 2]	—		—	—		—	—
I	Prato		150·3	327	e 19	55	[+ 7]	—		—	—		—	—
II			150·3	327	—		—	e 42	44	SS	—		—	—
I	Rocca di Papa		150·9	324	e 19	54	[+ 5]	—		—	—		—	—
I	Rome		150·9	324	i 19	46a	[− 3]	e 42·58		SS	e 23	38	PP	—
II			150·9	324	i 19	49	[0]	—		—	—		—	—
I	Messina		151·2	316	e 19	54	[+ 5]	—		—	23	40	PP	—
II			151·2	316	e 19	54	[+ 5]	—		—	e 20	2	PKP_2	—
I	Clermont-Ferrand		152·2	339	e 19	51	[0]	e 43	39	SSP	—		—	66·9
II			152·2	339	i 19	52	[+ 1]	e 43	51	SSP	i 23	41	PP	—
II	Barcelona		156·3	336	e 20	1	[+ 5]	—		—	23	58	PP	—
II	Tortosa		157·4	339	19	58	[0]	—		—	24	6	PP	—
II	Toledo		159·6	346	e 20	1	[+ 1]	26	56	[− 8]	i 24	21	PP	74·5
I	Algiers Univ.	z.	159·7	326	e 19	59	[− 1]	—		—	e 24	31	PP	—
II		z.	159·7	326	i 20	1k	[+ 1]	e 30	13	{−57}	e 20	35	PKP_2	—

Continued on next page.

			△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
			°	°	m. s.	s.	m. s.	s.	m. s.		m.
II	Alicante		159·9	337	20 2	[+ 1]	44 48	SS	20 42	PKP_2 e	72·5
I	Lisbon		161·5	358	20 1	[− 1]	44 53?	SS	20 55	PKP_2	67·6
II			161·5	358	19 59	[− 3]	—	—	20 46	PKP_2	—
I	Granada		162·0	343	—	—	27 9	[+ 3]	i 24 45	PP	i 79·2
II			162·0	343	i 19 59k	[− 4]	i 31 23	{ 0}	20 46	PKP_2	—
I	Malaga	z.	162·7	343	i 20 6	[+ 2]	27 12	[+ 5]	—	—	69·9
II		z.	162·7	343	i 20 56	PKP_2	—	—	i 24 36	PP	—
I	Tamanrasset	z.	164·9	283	i 20 7s	[+ 1]	e 31 25	{−13}	i 21 3	PKP_2	—
II		z.	164·9	283	e 20 1	[− 5]	—	—	—	—	—

Additional readings referred to the T_0 of quake I.
Riverview iPPEN =5m.13s., iPPPE =5m.24s., iE =6m.9s., iZ =6m.13s., iE =8m.45s., iP_cPN =8m.48s., iSSEN =9m.22s.
Kaimata iPPNE =7m.3s., iNE =7m.52s.
Christchurch eNZ =6m.23s., eEN =7m.38s.
Perth PS =17m.43s., SS =19m.58s., i =22m.48s.
Tokyo iP_cP? =10m.40s., S_cS =19m.15s.
Kobe eP?N =10m.47s., eN =12m.15s. and 18m.53s.?
Kôti e =13m.41s. and 20m.59s.
Nanking PPPEN =15m.31s., i =22m.42s., SS? =25m.39s.
Vladivostok iP_eP =12m.36s., iPP =16m.15s., iSS =26m.54s.
Ferndale eE =13m.10s. and 13m.41s.
Berkeley eSS?EN =30m.41s.
Lick eZ =14m.5s. and 15m.1s.
Fresno eZ =13m.2s.
Pasadena iP_cP?Z =13m.12s., iZ =14m.1s., i =20m.44s., iZ =25m.4s., eSSEN =28m.53s.?, iPKP,PKPZ =39m.5s.
Shasta Dam i =13m.47s., e =15m.15s. and 24m.7s., ePKP,PKP =39m.2s.
Reno eN =13m.16s., eE =13m.25s., eN =13m.59s., eZ =23m.48s.
Victoria SS =30m.35s., SSS =37m.11s.
College e =20m.27s., iSS =29m.47s., eSSS =33m.27s.
Seattle isP =13m.47s. and other unidentified readings.
Overton iZ =14m.50s., 15m.23s., 16m.40s., and 19m.39s.
Pierce Ferry eS =25m.37s.
Irkutsk PS =25m.43s.?, eSS =30m.29s.
Tucson ePPP =19m.29s., ePS =25m.56s., eSS =30m.17s., e =31m.20s., eSSS =34m.34s., ePKP,PKP =38m.58s.
Salt Lake City ePS =26m.19s., e =29m.23s.
Logan ePP =16m.43s., iSKS =23m.25s.
Butte ePSN =26m.27s., eSSN =30m.33s.
Hungry Horse ePS? =26m.31s., iPKKP =30m.15s., ePKP,PKP? =38m.32s.
Bozeman eS? =25m.25s., eSS =30m.43s., eSSS =32m.13s.
Tacubaya e =15m.47s., ipPP =18m.10s., esPP =18m.27s., esS =25m.47s., e =26m.3s., epPS =26m.53s., esSS =32m.24s., eSSS =35m.59s.
New Delhi iSKSEN =15m.41s., SKKSEN =25m.15s., PPSEN =28m.25s., iEN =31m.45s., SSEN =32m.56s., iEN =33m.48s., SSSEN =37m.10s., QEN =44m.5s.
Poona PPE =17m.0s., PSE =27m.25s.
Rapid City eE =27m.32s., eSSE =32m.8s.
Saskatoon PS =27m.31s., SS =33m.8s., SSS =36m.58s.
La Plata E =33m.35s., SS?E =37m.41s.
Tananarive PS =29m.8s., SS =35m.3s., SSS =39m.8s.
La Paz iPKS =22m.15s., iPS =29m.19s., iPPS =30m.33s., SS =35m.39s., SSS =39m.5s.
Chicago eSS =35m.8s., eSSS =38m.53s.
Grahamstown e =19m.6s., ePKKP? =29m.15s.
Columbia eSS =35m.19s., e =39m.7s.
Cleveland epPPE =20m.21s., esPPN =20m.35s., eEN =26m.5s.
New Kensington ePSE =29m.37s., eSSSE =39m.59s.
Pennsylvania iE =21m.38s., eE =22m.9s., iEN =29m.32s., iE =29m.38s., eE =38m.40s., iE =40m.53s. and 41m.40s.
Washington e =29m.16s., eSS =36m.28s.
Ottawa PPP =23m.31s., e =32m.48s.
Seven Falls eE =22m.21s. and 31m.17s., PSE =31m.41s.
Harvard ipPKP =19m.14s., ePP =20m.45s., ipPP =21m.5s., ePKS? =22m.30s., ePPP =23m.22s., ipPPP =24m.11s., e =25m.31s. and 29m.58s., eSKSP? =30m.49s., e =31m.43s., ePPS =32m.18s., eSKKP =32m.40s., e =33m.32s. and 33m.54s., isSS =38m.58s., ePKP,PKP =40m.19s., iSSS =43m.13s.
Weston iPP =20m.48s., iSS =32m.57s.
San Juan i =22m.43s., e =28m.52s., eS =29m.28s., eSSS =43m.3s.
Scoresby Sund ipPP =22m.4s., PPP =24m.20s., i =25m.34s., PPS =33m.26s., and 34m.58s., i =35m.49s., SS =39m.55s., SSS =43m.59s.
Moscow ePKS =22m.30s., PS =31m.19s.
Halifax e =22m.34s., PPS =33m.34s., SS =39m.6s.
Bermuda i =22m.58s., eSKKS =28m.45s., iPS =31m.53s., e =33m.33s., eSSS? =44m.53s.

Continued on next page.

Ivigtut 22m.14s., i=22m.53s.
Upsala iE=23m.46s., eN=28m.22s. and 30m.53s.?, ePPS?E=33m.53s.?, ePPSN=34m.11s., eN=35m.24s. and 38m.59s., eSSE=39m.41s., eSSSN=44m.53s.?, eQE=53·9m.
Bergen SKP,PKPN=42m.18s.
Skalnate Pleso e=22m.4s. and 22m.30s., ePP=22m.53s., epPKS?=23m.38s., e=26m.4s., ePPP=26m.53s., e=29m.16s., eSKSP=32m.43s., ePPS=35m.35s., eSS=41m.5s.
Warsaw ePKP$_2$?EN=19m.37s., PPN=22m.23s., PPE=22m.29s., epPKSZ=23m.26s., ePPPZ=25m.55s., eSKSE=26m.29s., eSKKSEN=29m.43s., ePKKS=31m.1s., ePS=33m.11s., ePPS=34m.47s., SSN=41m.5s., SSE=41m.8s., and many unidentified e readings.
Copenhagen 31m.56s. and 35m.11s.
Helwan eZ=21m.57s., PPZ=22m.47s., eZ=24m.13s. and 29m.41s., eE=33m.7s. and 35m.19s., eN=40m.29s. and 42m.53s.
Bucharest iE=20m.6s., iN=21m.31s., iZ=22m.49s., iS?E=30m.10s.
Raciborzu ePKP$_2$=19m.38s.
Aberdeen iN=22m.32s., iEN=42m.44s., eN=59m.14s., eE=60m.24s.
Potsdam iZ=20m.59s.?, 23m.48s., and 34m.24s.
Budapest eN=21m.3s. and 24m.32s., S$_c$S,PKPN=34m.55s.
Collmberg ePPSE=36m.16s. and many other unidentified readings.
Ogyalla e=19m.44s., 20m.34s., 20m.45s., and 21m.17s., eN=25m.25s., ePPP=26m.23s., eSKSPE=33m.26s., eN=33m.47s. and 34m.22s., ePPS?=35m.13s., eSS=41m.59s., eSSS=47m.35s.
Prague isPKP=20m.33s., eSKP?=23m.8s., ePPP=26m.24s., eSKKS?=29m.11s., eSKSP?=33m.23s., ePS?=34m.35s., eSS=41m.53s., eSSS=47m.53s., and other unidentified readings.
Kalossa iE=20m.22s., eN=21m.5s. and 21m.46s., eE=21m.58s.
Jena iPKPE=19m.39s., iN=20m.6s. and 20m.12s., eE=22m.16s., ePP?Z=23m.21s., eE=26m.14s., eN=33m.21s., eE=33m.25s., eSKS?N=37m.17s., eSKSE=37m.37s.
Durham iN=19m.50s. and 20m.5s., iE=20m.11s. and 20m.16s.
Cheb esPKP=20m.24s., ePP=23m.17s., epPP=23m.45s., eSKSP=32m.53s., eSS?=42m.16s., eSSS=47m.11s., and other unidentified e readings.
De Bilt eN=31m.3s.
Zagreb iE=20m.18s., i=20m.26s. and 21m.0s., eZ=21m..1s., i=21m.26s., e=42m.23s., ePKP,PKP,PKP=58m.11s.
Rathfarnham Castle iZ=20m.49s., i=21m.44s., eEN=29m.23s., iEN=34m.0s., eSKS=35m.2s., eSSEN=44m.53s., eEN=48m.43s.
Stuttgart iPKP=19m.45s., i=20m.18s., iZ=20m.34s., e=20m.58s., 43m.53s., 53m.53s., and 58m.59s.
Triest iPKP$_3$=20m.33s., iPPP=28m.2s., PSKS=33m.57s.?, iSS=43m.49s., iSSS=49m.48s., iSSS($\triangle>180°$)=59m.5s.
Kew i=20m.19s., e=20m.59s. and 21m.55s., i=52m.47s.
Strasbourg ePKP$_2$=19m.52s., i=20m.4s., 21m.2s., and 23m.3s., iPPP=26m.17s. and 26m.33s., i=34m.56s., iSS=42m.49s., eSSS=48m.23s.
Padova i=20m.30s.
Zürich i=19m.48s.
Taranto SS?=44m.34s.
Salo iEZ=20m.8s., iZ=20m.35s., eE=22m.28s.
Paris iPPP($\triangle>180°$)=34m.11s., iPPS=36m.42s., eSS=42m.57s., iSSS=48m.42s., iSS($\triangle>180°$)=51m.46s., eQ=63m.52s. and other unidentified readings.
Rome e=24m.48s., ePSKS?=33m.14s
Clermont-Ferrand iPKP=20m.24s., ePPP=27m.19s., Q=62·9m.
Toledo iPKP$_2$Z=20m.58s., PPP?=28m.21s., SKKSN=31m.31s., SKKKSN=32m.20s., SSN=44m.50s., SSPN=45m.34s., SSS?E=50m.37s., QN=67m.17s.
Algiers Univ. iZ=20m.40s., ePPPZ=28m.15s., iP$_c$P,PKSZ=32m.43s.
Alicante PP=24m.40s., PPP=28m.12s., PPS=37m.30s., SS=44m.14s., SSS=50m.14s., Q=65m.34s.
Lisbon PP=24m.46s., PPS?NZ=38m.17s., N=41m.53s.?, SSSEZ=50m.44s.
Granada SKP=23m.30s., PPP=28m.27s., SKSP=35m.9s., PPS=38m.27s., iSS=45m.27s., SSS=51m.21s., Q=65·4m.
Tamanrasset eSKPZ=23m.27s., ePPZ=24m.48s., ePPPZ=28m.40s., eZ=30m.19s and 34m.45s., ePPSZ=38m.33s.

May 26d. 1h. 55m. 35s. Epicentre 20°·2S. 169°·5E. (as at 1h.17m.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.
		°	°	m. s.	s.	m. s.	s.	m. s.
Brisbane	z.	16·7	241	i 3 53k	− 4	—	—	—
Lick	z.	86·4	48	i 12 47a	+ 2	—	—	—
Fresno	z.	87·4	49	e 12 51	+ 1	—	—	—
Shasta Dam		87·5	45	i 12 51	0	—	—	—
Pasadena	z.	87·6	53	i 12 51	0	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Mineral	z.	87·9	46	i 12 53k	0	—	—	—	—
Riverside	z.	88·0	53	i 12 53	0	—	—	—	—
Haiwee	z.	88·5	51	i 12 56	0	—	—	—	—
Reno		88·7	48	e 12 58a	+ 1	—	—	—	—
Tinemaha	z.	88·7	50	i 13 14	+17	—	—	—	—
Boulder City		90·7	52	i 13 7	+ 1	—	—	—	—
Victoria		90·8	39	e 13 7	+ 1	—	—	—	—
College		90·9	17	i 13 3	− 4	—	—	—	—
Overton	z.	91·2	51	i 13 10	+ 2	—	—	—	—
Pierce Ferry		91·4	53	i 13 10	+ 1	—	—	—	—
Tucson		92·2	57	i 13 15	+ 2	—	—	—	—
Hungry Horse		96·3	42	e 13 29	− 3	—	—	—	—
Weston		124·7	51	e 18 59	[− 3]	—	—	—	—
Collmberg	z.	143·9	334	e 19 33	[− 4]	—	—	e 20 0	PKP$_2$
Prague		144·2	332	i 19 34	[− 4]	e 23 39	PKS	e 19 41	PKP$_2$
Stuttgart	z.	147·4	336	e 19 42	[− 1]	—	—	e 19 51	PKP$_2$
Strasbourg		148·1	337	i 19 47a	[+ 3]	—	—	i 19 54	PKP$_2$
Zürich		148·8	335	e 19 48	[+ 3]	—	—	—	—
Paris		149·6	343	i 19 52	[+ 5]	—	—	i 19 57	PKP$_2$
Besançon		149·8	337	e 19 51	[+ 4]	—	—	e 20 4	PKP$_2$
Clermont-Ferrand		152·2	339	e 20 4	PKP$_2$	—	—	—	—
Algiers Univ.	z.	159·7	326	20 35	PKP$_2$	—	—	—	—
Tamanrasset	z.	164·9	283	i 20 7k	[+ 1]	—	—	i 21 14	PKP$_2$

Additional readings :—
Brisbane iZ = 4m.50s. and 5m.12s.
Lick iZ = 13m.10s.
Mineral iZ = 13m.43s.
Overton iZ = 13m.38s.
Prague e = 20m.32s., 21m.3s. and 21m.47s.
Stuttgart iPKPZ = 19m.45s., eZ = 20m.16s.
Algiers Univ. Z = 21m.30s.
Tamanrasset eZ = 22m.20s. and 23m.15s., ePPZ = 24m.42s.
Long waves were recorded at Sofia.

May 26d. 9h. 53m. 9s. Epicentre 20°·2S. 169°·5E. (as at 1h.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	z.	16·7	241	i 3 49k	− 8	—	—	—	—	—
Riverview	E.	21·2	227	—	—	i 8 44	+ 3	—	—	e 10·4
Wellington		21·5	170	—	—	e 10 29	Q	—	—	13·4
Christchurch		23·4	174	—	—	e 9 16	− 5	—	—	—
Berkeley	z.	86·2	48	e 12 46a	+ 2	—	—	—	—	—
Lick	z.	86·4	48	i 12 47k	+ 2	—	—	—	—	—
Fresno	z.	87·4	49	e 12 52a	+ 2	—	—	—	—	—
Shasta Dam		87·5	45	e 12 53	+ 2	—	—	—	—	—
Pasadena	z.	87·6	53	e 12 52	+ 1	—	—	e 13 2	pP	—
Mineral	z.	87·9	46	e 12 54k	+ 1	—	—	—	—	—
Riverside	z.	88·0	53	e 12 54	+ 1	—	—	e 13 4	pP	—
Tinemaha	z.	88·7	50	e 12 59	+ 2	—	—	—	—	—
Boulder City		90·7	52	e 13 8	+ 2	—	—	—	—	—
College		90·9	17	e 13 6	− 1	—	—	—	—	e 48·0
Overton	z.	91·2	51	i 13 11	+ 3	—	—	—	—	—
Pierce Ferry		91·4	53	e 13 10	+ 1	—	—	—	—	—
Tucson		92·2	57	e 13 15	+ 2	—	—	—	—	—
Collmberg	z.	143·9	334	e 19 35	[− 2]	—	—	—	—	—
Stuttgart	z.	147·4	336	e 19 46	[+ 3]	—	—	—	—	—
Tamanrasset	z.	164·9	283	e 20 21	[+15]	—	—	e 21 2	PKP$_2$	—

Additional readings :—
Fresno eZ = 13m.1s.
Shasta Dam e = 13m.3s.
Mineral eZ = 13m.3s.
Long waves were also recorded at Auckland.

May 26d. 14h. 33m. 56s. Epicentre 18°·3N. 145°·2E. Depth of focus 0·070.
(as on 1948, May 10d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Guam		4·8	185	0 29?	−56	1 30?	−60	—	—
Vladivostok		27·2	338	i 5 6	0	e 9 9	− 1	—	—
Nanking		27·4	305	6 31	pP	i 11 50	sS	—	—
Brisbane	z.	46·1	170	i 7 44k	+ 2	—	—	i 9 11	pP
Irkutsk		46·7	327	e 7 46	0	i 13 58	− 2	—	—
Przhevalsk		60·9	310	i 9 29	+ 2	i 17 11	+ 4	—	—
New Delhi		62·5	293	e 9 39	+ 1	i 17 26	− 1	i 18 6	SPP
Naryn		62·6	309	i 9 40	+ 2	i 17 30	+ 2	i 11 21	pP
Frunse		63·7	310	e 9 46	+ 1	i 17 43	+ 1	—	—
College		63·8	26	i 9 43	− 3	—	—	i 10 14	pP
Andijan		65·4	308	i 9 57	+ 1	i 18 3	+ 1	11 39	pP
Fergana		65·9	308	e 9 59	0	18 7	− 1	e 11 41	pP
Garm		67·1	306	e 10 7	0	i 18 21	− 1	—	—
Tchimkent		67·4	310	e 10 9	+ 1	i 18 24	− 2	—	—
Obi-garm		67·6	306	i 10 11	+ 1	i 18 28	0	11 54	pP
Tashkent		67·7	309	i 10 11	+ 1	i 18 28	− 1	i 11 54	pP
Stalinabad		68·4	306	i 10 15	+ 1	i 18 37	0	11 59	pP
Samarkand		69·6	306	e 10 23	+ 1	e 18 50	− 1	—	—
Sverdlovsk		71·9	326	i 10 35	0	i 19 13	− 4	—	—
Ashkabad		76·6	306	e 11 4	+ 2	—	—	—	—
Victoria		77·4	43	e 11 6	0	—	—	—	—
Seattle		78·3	43	i 11 12k	+ 1	—	—	i 11 42	pP
Shasta Dam		80·1	51	i 11 20	0	e 20 41	− 4	—	—
Mineral	z.	80·8	51	i 11 22k	− 2	—	—	i 11 28	P_cP
Berkeley		80·9	54	i 11 24k	0	—	—	—	—
Lick	z.	81·6	54	i 11 27k	− 1	—	—	e 13 7	pP
Baku		82·3	310	—	—	21 14	+ 7	—	—
Reno	z.	82·3	50	i 11 32k	0	e 21 4	− 3	e 14 34	PP
Fresno	z.	83·1	55	e 11 35k	− 1	—	—	—	—
Shemakla		83·1	311	11 30	− 6	—	—	i 11 43	P_cP
Hungry Horse		83·4	41	i 11 37	0	—	—	—	—
Tinemaha		84·2	53	i 11 41k	0	—	—	—	—
Grozny		84·3	314	11 43	+ 1	—	—	—	—
Moscow		84·5	328	11 42	− 1	21 18	−10	13 31	pP
Haiwee		84·7	54	i 11 43a	− 1	—	—	—	—
Pasadena		85·2	56	i 11 45k	− 1	—	—	—	—
Tiflis		85·5	312	e 11 47	0	21 35	− 3	—	—
Riverside		85·9	56	i 11 48	− 1	—	—	—	—
Boulder City		87·2	53	i 11 56	0	—	—	—	—
Zugdidi		87·2	313	e 11 59	+ 3	e 21 36	[0]	—	—
Overton	z.	87·3	52	i 11 56	0	—	—	i 13 55	pP
Pierce Ferry		87·8	53	i 11 58	0	—	—	—	—
Sotchi		88·3	316	e 11 47	−14	—	—	—	—
Tucson		91·6	55	i 12 16	0	—	—	e 16 1	PP
Collmberg	z.	99·1	331	e 16 57	PP	—	—	—	—
Pretoria	z.	121·6	251	i 17 56	[− 3]	—	—	—	—
Tamanrasset	z.	122·3	314	i 18 4k	[+ 4]	e 27 55	?	i 19 51	pPKP
Grahamstown		123·5	242	i 18 5	[+ 3]	—	—	—	—
La Paz		148·2	93	i 18 50	[+ 3]	i 28 32	SKKS	i 21 47	PP

Additional readings :—
Nanking P_cP = 9m.12s.
College e = 12m.7s.
Andijan esS = 21m.6s.
Reno eSE = 20m.58s., eN = 21m.34s.
Fresno eZ = 12m.16s.
La Paz PPS = 34m.34s.

May 26d. 17h. 39m. 15s. Epicentre 20°·2S. 169°·5E. (as at 9h.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·7	241	i 3 55a	− 2	i 7 30	SS	—	—	—
Auckland	N.	17·2	165	—	—	e 7 45?	SSS	—	—	—
Riverview		21·2	227	i 4 50a	+ 1	i 8 45	+ 4	i 5 5	pP	e 10·2
Christchurch		23·4	174	—	—	e 9 17	− 4	—	—	e 11·8
Berkeley		86·2	48	e 12 46k	+ 2	—	—	—	—	e 41·8
Lick	Z.	86·4	48	i 12 46	+ 1	—	—	—	—	—
Fresno	Z.	87·4	49	e 12 52k	+ 2	—	—	—	—	—
Shasta Dam		87·5	45	e 12 52	+ 1	—	—	—	—	—
Pasadena	Z.	87·6	53	i 12 51	0	—	—	—	—	—
Mineral	Z.	87·9	46	e 12 53k	0	—	—	—	—	—
Riverside	Z.	88·0	53	e 12 54	+ 1	—	—	—	—	—
Reno	Z.	88·7	48	e 12 59k	+ 2	—	—	—	—	—
Tinemaha	Z.	88·7	50	i 12 57	0	—	—	—	—	—
Boulder City		90·7	52	e 13 6	0	—	—	—	—	—
College		90·9	17	e 13 4	− 3	—	—	—	—	—
Overton	Z.	91·2	51	e 13 10	+ 2	—	—	—	—	—
Pierce Ferry		91·4	53	e 13 6	− 3	—	—	—	—	—
Tucson		92·2	57	i 13 15	+ 2	e 24 25	+11	—	—	e 43·1
Hungry Horse		96·3	42	e 14 1	+29	—	—	—	—	—
La Paz		112·7	118	e 18 9	[−29]	i 23 45?	?	e 19 15	PP	—
Collmberg	Z.	143·9	334	e 19 34	[− 3]	—	—	e 19 56	PKP_2	—
Jena	E.	144·7	335	e 19 39	[0]	—	—	e 19 56	PKP_2	—
De Bilt		145·9	343	e 19 41	[0]	—	—	—	—	e 80·8
Rathfarnham C.		146·8	356	e 19 47	[+ 5]	—	—	—	—	e 70·8
Stuttgart	Z.	147·4	336	e 19 46	[+ 3]	—	—	e 19 57	PKP_2	—
Kew		147·8	348	e 19 49	[+ 5]	—	—	—	—	e 74·8
Paris		149·6	343	i 19 52	[+ 5]	—	—	—	—	e 83·8
Tamanrasset	Z.	164·9	283	e 20 8	[+ 2]	—	—	i 21 3	PKP_2	—

Additional readings :—
Riverview ePPE =5m.16s., iEZ =9m.1s., iN =9m.10s.
Berkeley eZ =13m.3s., iZ =13m.17s., eZ =13m.25s.
Lick iZ =13m.14s. and 13m.27s.
Reno eEZ =13m.14s.
Tucson e =13m.38s.
Rathfarnham Castle eZ =20m.28s.
Stuttgart eZ =20m.6s. and 20m.28s.
Kew eZ =20m.55s.
Tamanrasset ePPZ =24m.54s.
Long waves were also recorded at Wellington, Harvard, and Ksara.

May 26d. Readings also at 0h. (Washington), 1h. (Brisbane, Fresno, Lick (3), Reno, Stuttgart, and near Ashkabad), 2h. (Brisbane, College, Shasta Dam, Mineral, Lick, Mount Wilson, Riverside, Overton, Tucson, Collmberg, Jena, Stuttgart, Strasbourg, Paris, and Tamanrasset), 3h. (Brisbane, Bandong, Djarkarta, Grahamstown, Hungry Horse, and Istanbul), 4h. (Wellington and Brisbane), 5h. (Auckland, Wellington, College, Shasta Dam, Mineral (2), Lick (2), Mount Wilson, Riverside, Tinemaha, Tucson, Collmberg, and Stuttgart (3)), 6h. (Brisbane, Lick, Collmberg, and Stuttgart), 7h. (Brisbane, Auckland, Christchurch, Wellington, Shasta Dam, Lick, Stalinabad, Garm, near Fergana, Andijan, Obi-garm, and near Messina), 8h. (Collmberg, Stuttgart, and Hungry Horse), 11h. (College, Hungry Horse, and near Sitka), 12h. (Strasbourg), 14h. (near Obi-garm), 15h. (near Messina), 16h. (Boulder City), 17h. (Brisbane), 18h. (Frunse, Andijan, near Przhevalsk, Naryn, near Ashkabad, and near Huancayo), 21h. (Tacubaya), 22h. (Lick, Reno, Mount Wilson, China Lake, Hungry Horse, Boulder City, Overton, and Pierce Ferry), 23h. (China Lake, Tinemaha, Boulder City, Overton, Pierce Ferry, Shasta Dam, and near Shemakla).

May 27d. 10h. 46m. 30s. Epicentre 19°·8S. 168°·5E. (as on 1946, April 13d.).

$A = -\cdot9227$, $B = +\cdot1877$, $C = -\cdot3367$; $\delta = -3$; $h = +5$;
$D = +\cdot199$, $E = +\cdot980$; $G = +\cdot330$, $H = -\cdot067$, $K = -\cdot942$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	z.	16·1	239	i 3 47 a	− 2	—	—	—	—	—
Tuai	N.	20·4	162	e 4 30?	−11	—	—	—	—	—
Riverview		20·8	224	i 4 47	+ 2	e 8 38	+ 5	i 5 9	PP	e 10·4
Christchurch		23·9	174	—	—	e 9 20	−10	—	—	e 12·0
Lick	z.	86·8	48	e 12 31 a	−16	—	—	—	—	—
Pasadena	z.	87·9	53	i 12 52	− 1	—	—	—	—	—
Shasta Dam		87·9	46	e 12 53	0	—	—	—	—	—
Mineral	z.	88·3	47	e 12 55k	0	—	—	—	—	—
Palomar	z.	88·6	54	i 12 55	− 1	—	—	—	—	—
China Lake	z.	89·1	51	e 12 58	0	—	—	—	—	—
Tinemaha	z.	89·1	50	e 12 59	+ 1	—	—	—	—	—
College		90·8	17	e 13 6	0	—	—	—	—	e 48·5
Boulder City		91·2	52	e 13 9	+ 1	—	—	—	—	—
Overton	z.	91·7	52	e 13 12	+ 2	—	—	—	—	—
Pierce Ferry		91·9	53	e 13 12	+ 1	—	—	—	—	—
Tucson		92·8	57	e 13 15	− 1	—	—	—	—	—
Potsdam	z.	142·3	336	i 20 2	[+27]	—	—	—	—	—
Collmberg	z.	143·1	334	e 19 35	[− 1]	—	—	—	—	—
Prague	N.	143·4	332	e 15 48	?	—	—	—	—	—
De Bilt		145·2	342	i 19 47	[+ 7]	—	—	—	—	—
Stuttgart	z.	146·6	336	e 19 45	[+ 3]	—	—	—	—	—
Strasbourg		147·4	336	e 19 52	[+ 9]	—	—	—	—	—
Paris		148·9	342	19 57?	[+11]	—	—	—	—	—
Besançon		149·1	337	e 19 58	[+12]	—	—	—	—	—
Tamanrasset	z.	163·9	283	19 49?	[−16]	—	—	i 20 51?	PKP_2	—

Additional readings :—
Riverview iZ = 5m.1s., iEN = 8m.47s., iN = 9m.4s., iE = 9m.7s., iS_cSN = 16m.8s.
Prague i? = 16m.7s.
Stuttgart eZ = 19m.56s.
Paris i = 20m.8s.
Tamanrasset eZ = 21m.1s.? and 21m.40s.?, ePPZ = 24m.40s.?
Long waves were also recorded at Auckland, Wellington, and Harvard.

May 27d. 11h. 44m. 51s. Epicentre 19°·8S. 168°·5E. (as at 10h.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·1	239	i 3 48 a	− 1	e 7 24	+35	i 4 0	PP	—
Riverview		20·8	224	4 45	0	i 8 39	+ 6	i 5 9	PP	e 10·4
Christchurch		23·9	174	5 27	+11	9 29	− 1	—	—	e 12·8
Pasadena	z.	87·9	53	i 12 52	− 1	—	—	—	—	—
Fresno	z.	87·9	50	e 12 53 a	0	—	—	—	—	—
Shasta Dam		87·9	46	e 12 53	0	—	—	—	—	—
Mineral	z.	88·3	47	e 12 55 a	0	—	—	—	—	—
Palomar	z.	88·6	54	i 12 57	+ 1	—	—	—	—	—
China Lake	z.	89·1	51	i 12 59	+ 1	—	—	—	—	—
Tinemaha	z.	89·1	50	i 12 58	0	—	—	—	—	—
Reno	z.	89·1	49	i 12 57k	− 1	—	—	—	—	—
College		90·8	18	e 13 4	− 2	—	—	—	—	e 36·6
Boulder City		91·2	52	e 13 9	+ 1	—	—	—	—	—
Overton	z.	91·7	52	e 13 11	+ 1	—	—	—	—	—
Pierce Ferry		91·9	53	e 13 12	+ 1	—	—	—	—	—
Tucson		92·8	57	e 13 16	0	—	—	—	—	—
Collmberg	z.	143·1	334	e 19 35	[− 1]	—	—	19 46	PKP_2	—
Jena	N.	144·0	335	e 19 37	[0]	—	—	—	—	—
De Bilt		145·2	342	i 19 43	[+ 3]	—	—	—	—	—
Stuttgart	z.	146·6	336	e 19 46	[+ 4]	—	—	—	—	—
Strasbourg		147·4	336	e 19 47	[+ 4]	—	—	—	—	—
Paris		148·9	342	i 19 52	[+ 6]	—	—	—	—	—
Besançon		149·1	337	e 19 53	[+ 7]	—	—	—	—	—
Algiers Univ.	E.	158·8	326	20 39	PKP_2	—	—	—	—	—
Tamanrasset		163·9	283	e 20 7	[+ 2]	—	—	i 21 7	PKP_2	—

For Notes see next page.

NOTES TO MAY 27d. 11h. 44m. 51s.

Additional readings :—
Riverview iZ = 4m.50s. and 5m.1s., iP$_c$PN = 8m.45s.
Reno eN = 13m.37s.
Jena eEN = 19m.48s., eE = 20m.13s.
Stuttgart eZ = 19m.57s. and 20m.13s.
Paris i = 19m.57s.
Besançon e = 19m.57s. and 20m.19s.
Tamanrasset iZ = 21m.13s., eZ = 23m.11s. and 24m.29s., iPPZ = 24m.56s., ePPPZ = 28m.37s.
Long waves were also recorded at Auckland, Wellington, and Harvard.

May 27d. 12h. 39m. 21s. Epicentre 19°·8S. 168°·5E. (as at 11h.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	Z.	16·1	239	e 3 50	+ 1	i 7 8	+19	—	—	—
Auckland	N.	17·9	163	e 4 7	− 5	e 7 28	− 2	—	—	9·2
Arapuni		19·2	163	e 4 24	− 4	—	—	—	—	—
Apia		19·8	74	—	—	e 8 33	+20	—	—	e 10·6
New Plymouth	E.	19·8	166	—	—	e 8 9	− 4	—	—	—
Tuai	N.	20·4	162	e 4 49	+ 8	e 8 7	−18	—	—	—
Riverview		20·8	224	i 4 47	+ 2	i 8 26	− 7	i 5 27	pP	e 10·2
Wellington		22·1	169	i 4 58	− 1	i 8 45	−13	—	—	9·6
Christchurch		23·9	174	i 5 18	+ 2	i 9 26	− 4	5 51	PP	e 11·9
Perth		48·5	245	—	—	22 7	Q	—	—	i 25·9
Nanking		70·2	317	11 21	+ 4	i 20 40	+12	e 13 55	PP	—
Vladivostok		71·1	333	i 11 27	+ 5	i 20 51	+13	—	—	—
Berkeley		86·7	48	e 12 46a	− 1	e 23 19	− 5	e 13 44	pP	e 41·0
Lick	Z.	86·8	48	i 12 50a	+ 3	—	—	—	—	—
Fresno	Z.	87·9	50	e 12 55k	+ 2	—	—	—	—	—
Pasadena	Z.	87·9	53	i 12 53	0	—	—	i 13 46	pP	—
Shasta Dam		87·9	46	i 12 55	+ 2	—	—	i 13 48	pP	—
Mineral	Z.	88·3	47	i 12 55a	0	—	—	i 13 49	pP	—
Palomar		88·6	54	i 12 58	+ 2	—	—	i 13 53	pP	—
China Lake	Z.	89·1	51	i 12 58	0	—	—	i 13 52	pP	—
Reno	Z.	89·1	49	e 12 58a	0	—	—	—	—	—
Tinemaha	Z.	89·1	50	i 13 0	+ 2	—	—	—	—	—
Sitka		89·7	28	—	—	e 23 45	− 7	e 30 18	SS	e 37·8
College		90·8	17	e 13 6	0	e 23 38	[0]	e 14 0	pP	e 51·2
Irkutsk		90·8	327	19 16	?	—	—	—	—	—
Boulder City		91·2	52	e 13 10	+ 2	—	—	i 14 5	pP	—
Seattle		91·3	41	e 16 1	PP	e 24 9	+ 3	e 25 19	PS	e 46·6
Overton	Z.	91·7	52	i 13 12	+ 2	—	—	—	—	—
Pierce Ferry		91·9	53	e 13 11	0	—	—	—	—	—
Tucson		92·8	57	e 13 15	− 1	e 23 2	{−60}	e 17 11	PP	e 42·1
Kodaikanal	E.	94·4	279	—	—	e 23 56	[− 2]	—	—	—
Salt Lake City		95·2	50	—	—	e 24 11	[+ 9]	e 26 9	PS	e 44·5
Logan		95·6	49	—	—	e 24 52	+ 9	—	—	e 45·2
Butte	N.	96·6	44	e 21 27	?	—	—	—	—	e 42·8
Hungry Horse		96·6	43	e 13 34	+ 1	—	—	—	—	—
Bozeman		97·5	45	—	—	e 24 6	[− 8]	e 25 6	S	e 45·2
Bombay		101·3	286	e 13 11	−43	—	—	e 17 22	PP	—
Chicago		113·1	52	—	—	e 29 2	PS	—	—	e 49·2
La Paz		113·7	118	e 15 15	P	i 30 49	PPS	e 20 7	PP	54·6
Bogota		117·3	96	e 23 37	?	e 31 22	PPS	—	—	e 51·6
Harvard		125·0	51	i 19 4	[+ 2]	—	—	—	—	—
Weston		125·2	51	e 13 4	?	—	—	—	—	—
San Juan		128·6	81	e 22 30	PKS	—	—	—	—	e 58·9
Scoresby Sund		128·9	6	e 21 22	PP	31 57	PS	e 22 37	PKS	—
Helsinki		132·1	338	—	—	e 22 45	PKS	—	—	e 70·6
Upsala		134·9	340	e 18 39?	?	e 22 39?	PKS	e 31 3	PS	e 72·6
Yalta		134·9	314	e 19 28	[+ 7]	—	—	—	—	—
Ksara		135·8	298	i 19 29k	[+ 6]	—	—	23 12	PP	—
Warsaw		138·9	331	19 15	[−14]	26 3	[−34]	e 22 15	PP	e 78·6
Istanbul		139·6	311	e 19 25	[− 5]	e 33 1	PS	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Copenhagen		139·9	340	e 19 29	[− 1]	23 9	PKS	22 31	PP	74·6
Helwan	z.	140·0	293	e 19 6	[−24]	—	—	e 22 34	PP	—
Potsdam	z.	142·3	336	i 19 34	[− 1]	—	—	i 20 26	PKP_2	e 75·6
Collmberg		143·1	334	e 19 34	[− 2]	—	—	e 20 29	pPKP	—
Prague		143·4	332	i 19 44	[+ 8]	—	—	e 19 54	PKP_2	—
Jena	N.	144·0	335	e 19 41	[+ 4]	—	—	—	—	—
De Bilt		145·2	342	i 19 43a	[+ 3]	—	—	i 20 39	pPKP	e 64·6
Zagreb		145·6	325	e 19 48	[+ 8]	—	—	—	—	—
Rathfarnham Castle		146·3	356	e 19 47	[+ 6]	—	—	—	—	e 51·2
Stuttgart		146·6	336	e 19 46	[+ 4]	e 28 12	?	e 20 42	pPKP	e 80·6
Triest		146·9	327	i 19 47	[+ 5]	e 27 4	[+14]	i 20 31	PKP_2	—
Kew		147·2	348	e 19 51	[+ 8]	—	—	e 20 45	PKP_2	e 50·6
Strasbourg		147·4	336	e 19 49	[+ 6]	e 36 2	PPS	i 20 47	pPKP	e 77·6
Taranto		147·9	318	—	—	e 27 39	[+48]	—	—	—
Chur		148·0	333	e 19 52k	[+ 8]	—	—	—	—	—
Zürich		148·0	335	e 19 51	[+ 7]	—	—	—	—	—
Salo		148·5	332	e 19 53a	[+ 8]	—	—	e 22 45	PKS	—
Padova		148·6	329	e 19 54	[+ 9]	e 31 24	{+73}	23 34	PP	—
Bologna	z.	148·9	330	e 19 55	[+ 9]	—	—	—	—	—
Paris		148·9	342	i 19 48a	[+ 2]	—	—	i 23 28	PP	e 75·6
Besançon		149·1	337	e 19 53	[+ 7]	—	—	i 20 48	pPKP	—
Rome		150·0	324	i 19 52k	[+ 5]	e 42 42	SS	e 48 2	SSS	—
Clermont-Ferrand		151·4	338	e 19 55	[+ 5]	e 36 28	PPS	e 23 43	PP	81·6
Tortosa		156·7	339	e 18 13	?	—	—	—	—	99·6
Algiers Univ.	z.	158·8	326	e 20 22	?	—	—	e 20 40	PKP_2	—
Alicante		159·2	337	20 5	[+ 5]	—	—	24 19	PP	e 83·2
Granada		161·3	343	20 2k	[0]	35 12	SKSP	21 12	PKP_2	82·6
Malaga	z.	162·0	343	i 20 8a	[+ 5]	—	—	i 20 56	PKP_2	93·5
Tamanrasset	z.	163·9	283	i 20 9	[+ 4]	—	—	i 21 1	pPKP	—

Additional readings :—
Brisbane iZ = 5m.1s.
Riverview iP = 4m.50s.a, i = 5m.5s., iPPN = 5m.24s., iZ = 5m.41s., iEN = 8m.44s., iP_cP = 8m.47s., isSEN = 9m.34s., iSSSEN = 9m.43s.
Christchurch eNZ = 6m.19s., iNZ = 6m.53s., e = 7m.45s., SSEZ = 10m.17s.
Perth 22m.44s.
Nanking iPPSN = S_cS?N = 21m.28s.
Berkeley iZ = 12m.49s., eZ = 14m.47s. and 19m.53s., eN = 20m.4s. and 21m.50s., iEN = 24m.33s.
Lick iZ = 13m.12s., 13m.58s., and 14m.5s.
Fresno eZ = 13m.57s.
Reno eEZ = 13m.1s., eN = 13m.7s., eE = 13m.14s. and 14m.21s.
Tinemaha iZ = 13m.52s.
Irkutsk S = 19m.38s.? ; given as a local shock.
Tucson e = 13m.30s., ePPP = 18m.49s., ePS? = 24m.42s.
Bozeman ePS = 26m.30s., eSS? = 31m.10s., e = 36m.0s.
La Paz SS = 36m.15s.
Upsala eN = 22m.51s.
Warsaw PKPN = 19m.19s., e = 20m.17s., eE = 21m.9s., e = 21m.20s., eZ = 22m.8s., SKP = 23m.5s., eEN = 24m.7s., PPPEN = 25m.2s., ePPSN = 34m.5s., ePPSE = 34m.11s.
Copenhagen 38m.51s.
Helwan eZ = 19m.39s., PPZ = 21m.0s., PPPZ = 23m.45s.
Collmberg esPKPZ = 20m.59s., eZ = 21m.52s., ePPZ = 22m.49s.
Prague e = 20m.12s., esPKP = 20m.47s., e = 21m.12s., 21m.25s., and 21m.45s., ePP = 22m.25s., e = 24m.3s.
Jena eE = 19m.44s. and 19m.51s., eN = 19m.54s. and 20m.37s.
Rathfarnham Castle iZ = 20m.1s., eZ = 20m.27s., e = 21m.5s.
Stuttgart iPKP = 19m.49s., ePKPZ = 19m.57s., e = 20m.11s.
Triest iSKKS (Δ > 180°) = 34m.59s., i = 45m.10s.
Strasbourg $iPKP_2$? = 19m.55s., e = 20m.15s., ePP = 23m.19s., epPP = 24m.15s., e = 31m.11s., 34m.48s., and 35m.9s., eSS = 42m.34s.
Chur e = 20m.3s.
Salo e = 21m.2s.
Paris i = 19m.53s. and 19m.59s., $iPKP_2$ = 20m.3s., e = 20m.16s., ipPP = 24m.18s., iPPP? = 27m.22s., e = 34m.48s.
Clermont-Ferrand $iPKP_2$ = 20m.13s., ePPP = 27m.5s., eSS = 43m.3s.
Algiers Univ. $epPKP_2Z$ = 21m.33s., epPPZ = 25m.14s.
Granada iPP = 24m.22s.
Malaga iPPZ = 24m.40s., PPPZ = 28m.36s.
Tamanrasset iZ = 20m.35s., $ePKP_2Z$ = 21m.23s., $epPKP_2$?Z = 22m.2s., eZ = 22m.40s., ePPZ = 24m.53s., epPP?Z = 25m.53s., ePPPZ = 28m.46s.
Long waves were also recorded at Honolulu, Tacubaya, Seven Falls, Bermuda, Ivigtut, Toledo, and Jersey.

May 27d. 14h. 27m. 13s. Epicentre 18°·5S. 178°·0W. Depth of focus 0·090.
(as on 1950, April 19d.).

$A = -\cdot 9484$, $B = -\cdot 0331$, $C = -\cdot 3154$; $\delta = +4$; $h = +5$;
$D = -\cdot 035$, $E = +\cdot 999$; $G = +\cdot 315$, $H = +\cdot 011$, $K = -\cdot 949$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		7·6	53	1 53	− 3	e 3 21	− 8	—	—	—
Auckland	N.	19·4	198	—	—	e 6 47?	− 7	—	—	—
Arapuni		20·3	195	e 4 1	+ 3	—	—	—	—	—
Tuai	N.	20·7	192	e 3 58	− 3	i 7 5	−10	i 13 59	S_eS	—
Wellington		23·5	194	i 4 27	+ 1	e 7 56	− 4	i 14 19	S_eS	—
Christchurch		26·2	196	e 5 7	+17	—	—	—	—	—
Brisbane		28·1	246	i 5 4	− 3	i 9 7	− 5	—	—	—
Riverview		31·5	235	i 5 35k	− 1	i 10 2	− 2	i 7 11	pP	—
Honolulu		44·2	28	i 7 14	− 4	—	—	—	—	—
Bandong		73·0	270	e 10 29	− 2	e 19 35	+25	—	—	—
Djakarta		74·0	270	i 10 33	− 3	e 19 12	− 9	e 12 36	pP	—
Vladivostok		76·7	325	i 10 48	− 3	i 19 48	− 2	—	—	—
Berkeley		76·7	42	e 10 51k	0	i 19 53	+ 3	—	—	—
Lick	Z.	76·8	42	i 10 53a	+ 1	—	—	i 10 59	P_eP	—
Pasadena		77·3	47	i 10 55a	0	i 20 0	+ 3	i 12 57	pP	—
Fresno	Z.	77·7	44	i 10 57a	0	e 19 58	− 3	—	—	—
Palomar		77·8	48	i 10 59	+ 2	i 20 7	+ 5	e 20 23	S_eS	—
Riverside		77·8	47	i 11 3	+ 6	e 20 5	+ 3	e 20 18	S_eS	—
Shasta Dam		78·3	40	i 11 0	0	e 20 10	+ 3	e 13 4	pP	—
China Lake	Z.	78·6	45	i 11 2a	0	i 20 1	− 9	i 13 4	pP	—
Mineral	Z.	78·6	41	i 11 1a	− 1	e 20 12	+ 2	—	—	—
Nanking		78·6	309	11 0	− 2	i 20 8	− 2	13 54	PP	—
Tinemaha		78·9	45	i 11 4a	+ 1	e 20 17	+ 4	—	—	—
Reno		79·2	42	i 11 5a	0	e 20 16	0	e 13 11	pP	—
Boulder City		80·6	47	i 11 13	+ 1	e 20 36	+ 6	—	—	—
Overton	Z.	81·2	47	i 11 16	+ 1	—	—	i 13 33	pP	—
Pierce Ferry		81·3	47	i 11 17	+ 2	e 20 39	+ 2	i 14 21	PP	—
Tucson		81·7	52	i 11 19	+ 2	e 20 47	+ 6	e 13 11	pP	e 34·3
Victoria		82·5	33	e 11 21	0	—	—	—	—	—
Seattle		82·6	34	i 11 23a	+ 1	i 20 50	0	e 13 30	pP	—
Sitka		83·7	22	i 11 23	− 4	e 20 49	−11	—	—	—
Salt Lake City		85·1	44	e 11 31	− 3	i 21 7	− 7	—	—	—
Logan		85·6	43	i 11 37	0	i 21 9	[+ 5]	i 15 5	PP	e 34·8
Tacubaya		86·0	68	i 11 46a	+ 7	e 21 37	+15	i 14 0	pP	—
College		86·3	12	i 11 35	− 5	i 21 16	− 9	i 13 44	pP	—
Hungry Horse		87·5	37	i 11 44	− 2	i 21 16	[0]	—	—	—
Bozeman		88·0	40	e 11 49	+ 1	e 21 24	[+ 5]	e 15 22	PP	—
Irkutsk		97·2	322	e 16 47	PP	—	—	—	—	—
St. Louis		99·6	52	i 12 42	+ 1	e 22 22	[+ 1]	14 48	pP	—
La Paz		102·7	111	e 13 7	+13	i 23 43	− 2	i 17 33	PP	—
Harvard		114·3	50	e 15 37	pP	e 23 29	[+ 5]	i 18 38	PP	—
Weston		114·4	50	i 17 35	[+ 3]	e 33 45	SS	e 18 37	PP	—
Frunse		115·0	309	e 18 17?	PP	—	—	—	—	—
San Juan		115·8	77	e 18 53	PP	i 23 35	[+ 5]	—	—	—
Andijan		116·6	307	e 17 56	[+20]	—	—	—	—	—
Fergana		117·0	310	e 17 55	[+18]	—	—	—	—	—
Tchimkent		118·7	309	i 17 40	[0]	—	—	—	—	—
Tashkent		118·9	308	i 19 5?	PP	i 23 41	[0]	—	—	—
Stalinabad		119·3	305	e 18 57	PP	—	—	—	—	—
Samarkand		120·7	306	e 19 9	PP	—	—	—	—	—
Sverdlovsk		122·3	326	e 18 47?	[+60]	26 30	pSKS	e 28 36	PS	—
Grahamstown		123·4	205	i 17 52	[+ 2]	—	—	—	—	—
Scoresby Sund		126·0	10	i 19 53	PP	—	—	—	—	—
Ashkabad		127·5	304	e 19 58	PP	—	—	—	—	—
Grozny		135·7	314	e 20 50	PP	—	—	—	—	—
Tiflis		136·9	312	e 20 58	PP	—	—	—	—	—
Yalta		142·7	321	18 27	[0]	—	—	e 21 12	PP	—
Rathfarnham C.	Z.	144·7	8	i 18 29	[0]	—	—	—	—	—
Potsdam	Z.	145·1	348	i 18 31	[+ 1]	—	—	—	—	—
Collmberg		146·1	347	e 18 31	[0]	—	—	e 21 18	PP	e 40·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		146·2	303	e 18 34k	[+ 3]	—	—	e 21 53	PP	—
Jena	N.	146·8	347	e 18 36	[+ 3]	—	—	—	—	—
Praguc		147·0	345	e 18 31	[− 2]	e 21 17	PKS	e 21 36	sPKP	—
Istanbul		147·7	320	e 18 34	[0]	e 26 36	SKKS	—	—	—
Stuttgart	Z.	149·2	350	e 18 36	[0]	—	—	—	—	—
Strasbourg		149·6	352	e 18 43	[+ 6]	—	—	e 21 1	pPKP	—
Paris		149·8	359	e 18 39	[+ 2]	—	—	i 22 26	PP	—
Helwan	Z.	151·0	298	18 38	[− 1]	—	—	22 29	PP	—
Besançon		151·1	354	e 18 46	[+ 7]	—	—	—	—	—
Athens		152·9	320	e 18 49	[+ 7]	—	—	—	—	—
Toledo	Z.	158·1	13	i 19 26	[+38]	—	—	e 21 31	pPKP	—
Alicante		160·1	6	(23 11)	PP	—	—	—	—	e 48·9
Granada		160·7	13	19 10a	[+19]	—	—	i 23 30	PP	48·3
Malaga	Z.	161·0	14	i 19 40	PKP_2	25 34	[+35]	i 23 26	PP	—
Algiers Univ.	Z.	161·8	357	i 19 41k	PKP_2	—	—	e 23 25	PP	—
Tamanrasset	Z.	174·6	323	e 19 4	[+ 3]	—	—	i 21 30	pPKP	—

Additional readings and notes :—
Apia e =3m.26s.
Tuai eN =4m.22s.
Brisbane iZ =8m.1s. and 8m.41s.
Riverview iE =10m.11s., iS_cPZ =11m.0s., isSN =13m.16s., iE =13m.22s., iS_cSE =15m.3s.
Berkeley eZ =11m.55s., eNZ =12m.7s.
Lick isPZ =13m.51s., iPPZ =13m.59s.
Pasadena iP_cPZ =11m.5s., isPZ =13m.54s., iPPZ =13m.59s., iS_cSEN =20m.12s.
Fresno eZ =13m.36s., eE =20m.4s.
Shasta Dam iPP? =14m.7s., eS_cS =20m.35s.
China Lake eZ =13m.52s., ePKP,PKPZ =40m.30s.
Nanking eEN =20m.41s., e =21m.4s., eSS? =25m.4s.
Tinemaha iZ =11m.28s. and 14m.12s.
Reno eE =11m.44s. and 13m.21s., i =20m.21s.
Boulder City i =14m.24s.
Overton iPPZ =14m.26s., iZ =15m.26s.
Tucson i =11m.35s., ePP =14m.22s., e =14m.47s., ePPP =16m.6s.
Seattle i =11m.30s., 11m.50s., 12m.3s., and 12m.53s., esP =14m.32s., eSKS =21m.12s.
Sitka iS =20m.53s.
Tacubaya ePP =15m.19s.
College esP? =14m.36s., e =19m.16s., iSKS =21m.6s.
St. Louis e =22m.57s., eS =23m.31s.
Harvard ipPP =20m.15s., eSP =27m.30s., ePS =27m.57s.
Sverdlovsk eS =35m.19s.
Collmberg eZ =18m.40s., 18m.58s., 19m.33s., and 22m.3s.
Jena eE =19m.4s., eN =19m.26s.
Prague $iPKP_2$ =18m.35s., e =18m.56s., 19m.34s., and 20m.2s., ePP =21m.59s., esPP = 25m.8s.
Stuttgart eZ =18m.42s., 18m.47s., and 18m.57s.
Strasbourg ePP? =21m.59s.
Paris i =18m.42s. and 18m.50s.
Helwan iZ =18m.46s. and 18m.56s.
Besançon i =18m.55s.
Toledo eZ =23m.6s.
Alicante P reading has been increased by 30m.
Malaga $iPKP_2Z$ =20m.0s., PPPZ =26m.58s.
Tamanrasset iZ =19m.15s., $iPKP_2Z$ =20m.39s., iZ =21m.41s., iPPZ =24m.35s., iZ = 24m.53s., ePPPZ =28m.41s., eZ =30m.26s., ipPPPZ =30m.29s., iZ =31m.10s.

May 27d. Readings also at 0h. (Tortosa), 1h. (Lick, and near Ashkabad), 4h. (Santa Clara), 5h. (Port au Prince, Grozny, and near Shemakla), 6h. (Tacubaya, and near Shemakla (2)), 7h. (Mount Wilson, China Lake, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Mineral, Shasta Dam, Hungry Horse, College, Tamanrasset (2), Grahamstown, Pietermaritzbirg, Ksara, Vladivostok, Askhabad, Erevan, Grozny, Zugdidi, near Baku, Shemakla, near Messina, and near Mizusawa ; several shocks), 8h. (La Paz, and Vladivostok), 10h. (near Shemakla), 12h. (Brisbane, China Lake, Overton, and Pierce Ferry), 13h. (La Paz, Mount Wilson, China Lake, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Shasta Dam, Harvard, Fergana, Samarkand, near Andijan, Garm, Obi-garm, Stalinabad, and near Shemakla), 14h. (Brisbane, and near Athens), 16h. (Shemakla and Stuttgart), 17h. and 18h. (near Shemakla), 19h. (Mizusawa), 20h. (Apia, Mount Wilson, China Lake, Tinemaha, Tucson, Boulder City, Pierce Ferry, Shasta Dam, College, and Collmberg), 21h. (near Malaga), 22h. (near Stalinabad).

May 28d. 1h. 36m. 45s. Epicentre 20°·6S. 169°·0E. (as on 24d.).

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·1	242	i 3 51	+ 2	i 7 5	+16	i 4 11	PP	i 9·2
Auckland	N.	17·0	164	4 5	+ 4	7 13	+ 3	—	—	8·8
New Plymouth	E.	18·9	167	e 4 27	+ 3	e 8 15	+22	—	—	—
Tuai	N.	19·5	162	e 4 32	+ 1	e 8 11	+ 5	—	—	—
Apia		19·6	73	e 4 32	0	e 8 26	+18	—	—	e 9·8
Riverview		20·6	227	i 4 46a	+ 3	i 8 42	+13	i 5 12	PP	e 10·2
Wellington		21·2	169	i 4 50	+ 1	i 8 47	+ 6	—	—	10·8
Christchurch		23·1	173	i 5 9	+ 1	9 22	+ 6	6 1	PP	11·7
Perth		48·6	246	—	—	i 16 3	+14	i 19 27	SS	i 26·0
Honolulu		52·8	40	e 23 25	SSS	—	—	—	—	—
Bandong		60·8	275	—	—	e 18 30	− 3	—	—	—
Djakarta		61·9	275	e 10 16	− 8	e 18 40	− 7	—	—	—
Nanking		71·1	317	i 11 22	0	i 20 38	0	11 42	PcP	—
Vladivostok		72·0	333	i 11 28	0	i 20 50	+ 1	e 15 55	PPP	—
Berkeley		86·8	48	i 12 47k	0	i 23 6	[− 7]	e 24 33	PPS	e 40·6
Santa Clara		86·8	48	—	—	e 24 42	PPS	—	—	e 41·3
Lick	Z.	87·0	48	i 12 48k	0	—	—	i 12 56	PcP	—
Fresno	Z.	88·1	49	e 12 53k	− 1	—	—	—	—	e 43·8
Pasadena		88·1	53	e 12 51	− 3	e 23 21	[0]	e 16 59	PP	e 40·2
Shasta Dam		88·1	45	i 12 53	− 1	e 23 13	[− 8]	e 16 2	PP	—
Mineral	Z.	88·5	46	e 12 54k	− 2	—	—	—	—	—
Riverside		88·7	53	i 12 56	− 1	—	—	—	—	—
China Lake	Z.	89·2	51	i 12 58	− 1	—	—	—	—	—
Reno	E.	89·3	48	i 12 58	− 1	—	—	—	—	—
Tinemaha		89·3	50	i 12 59	0	—	—	—	—	—
Sitka		90·6	27	—	—	e 23 25	[−11]	e 25 1	PS	e 37·4
Boulder City		91·3	52	i 13 9	0	e 23 41	[+ 1]	—	—	—
College		91·4	17	e 13 5	− 4	e 23 36	[− 5]	e 16 33	PP	e 38·8
Victoria		91·4	39	i 13 7	− 2	e 24 8	+ 1	—	—	45·2
Seattle		91·6	40	e 13 21	+11	e 23 54	[+12]	e 24 37	S	e 39·2
Irkutsk		91·7	327	13 9	− 1	e 24 10	0	e 23 42	SKS	—
Pierce Ferry		92·0	53	i 13 12	0	e 22 55	[−49]	—	—	—
Tucson		92·9	57	e 13 16	0	e 24 28	+ 8	e 16 55	PP	e 38·4
Kodaikanal	E.	95·0	279	e 23 57	SKS	(e 23 57)	[− 4]	—	—	—
Salt Lake City		95·4	49	—	—	e 23 59	[− 4]	e 24 45	S	e 41·8
Logan		95·8	48	e 13 27	− 2	e 24 41	− 4	e 17 28	PP	e 42·5
Hungry Horse		96·9	43	e 13 31	− 3	—	—	e 38 35	P′P′	—
Bozeman		97·8	44	—	—	e 24 18	[+ 2]	e 26 24	PS	e 43·3
New Delhi	N.	101·1	297	—	—	i 24 32	[0]	i 25 31	S	—
Bombay		102·0	286	—	—	e 24 38	[+ 1]	—	—	—
Rapid City	E.	102·5	48	e 13 36	−24	e 24 37	[− 2]	e 27 14	PS	e 48·6
Saskatoon		102·6	39	—	—	e 27 17	PS	—	—	46·2
Naryn		105·5	310	e 14 21	+ 8	i 24 50	[− 3]	i 18 31	PP	—
Frunse		106·9	310	e 18 55	PP	—	—	—	—	—
Andijan		108·0	307	e 19 0	PP	e 28 39	PS	—	—	—
Huancayo		108·9	111	—	—	e 25 53	{− 4}	e 34 9	SS	—
Garm		109·2	305	18 59	PP	—	—	—	—	—
Stalinabad		110·3	306	14 33	P	—	—	—	—	—
Tashkent		110·4	310	e 14 35	P	—	—	18 43	PKP	—
St. Louis		110·8	54	e 19 7	PP	e 25 15	[0]	e 26 16	SKKS	—
Samarkand		111·9	305	e 20 16	PP	—	—	—	—	—
La Paz		112·9	118	19 31	PP	i 29 15	PS	30 41	PPS	55·4
Chicago		113·2	51	i 18 26	[−14]	e 25 17	[− 8]	e 28 53	PS	e 42·6
Sverdlovsk		117·1	325	e 15 4	P	25 38	[− 2]	18 44	PKP	—
Cleveland	E.	117·7	53	—	—	e 25 39	[− 3]	e 36 9	SS	—
Galerazamba		117·7	88	e 25 43	SKS	(e 25 43)	[+ 1]	e 31 24	PPS	e 56·6
New Kensington	E.	119·1	53	—	—	e 29 43	PS	—	—	e 59·7
Ottawa		122·0	47	e 18 55	[− 2]	e 22 29	PKS	—	—	58·2
Fordham		123·5	53	e 20 39	PP	e 26 2	[+ 1]	e 22 10	PKS	63·2
Harvard		125·2	51	i 19 1	[− 2]	e 31 39	PS	e 20 50	PP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Weston		125·4	51	e 19 2	[− 1]	e 38 45	SS	e 20 52	PP	—
Grozny		127·9	309	e 19 15	[+ 7]	—	—	—	—	—
San Juan		128·2	81	e 21 19	PP	i 22 30	PKS	—	—	e 57·5
Tiflis		128·8	307	e 19 18	[+ 8]	—	—	—	—	—
Moscow		129·7	326	19 12	[+ 1]	28 20	{+ 2}	21 22	PP	—
Scoresby Sund		129·7	5	18 51	[−20]	31 32	PS	38 51	SS	—
Halifax		130·6	48	—	—	e 22 35	PKS	—	—	66·8
Zugdidi		130·8	310	—	—	i 22 42	PKS	—	—	—
Pulkovo		131·1	334	e 19 15	[+ 1]	i 22 39	PKS	e 21 26	PP	—
Ivigtut		131·9	23	e 21 45	PP	22 40	PKS	—	—	65·2
Helsinki		133·0	338	—	—	e 22 44	PKS	—	—	e 69·2
Upsala		135·8	340	e 21 51	PP	e 22 53	PKS	e 39 57	SS	e 61·2
Yalta		135·8	314	e 19 24	[+ 1]	i 23 0	PKS	i 22 3	PP	—
Ksara		136·6	298	i 19 31a	[+ 7]	—	—	23 1	PKS	—
Kishinev		138·4	321	19 30	[+ 2]	—	—	i 22 57	PKS	—
Warsaw		139·8	331	e 19 32	[+ 2]	e 26 39	[0]	e 22 35	PP	e 68·2
Istanbul		140·4	311	e 19 28	[− 3]	e 26 33	[− 7]	—	—	—
Copenhagen		140·8	340	22 35	PP	—	—	23 9	PKS	—
Helwan		140·8	293	e 19 30	[− 2]	e 29 30	{+ 4}	22 35	PP	—
Bucharest		141·2	317	e 19 27	[− 6]	i 23 11	PKS	i 22 20	PP	68·2
Skalnate Pleso		142·1	328	e 19 33	[− 1]	e 23 15	PKS	e 22 45	PP	—
Potsdam	Z.	143·2	336	i 19 32a	[− 4]	i 23 5	PKS	i 19 44	PKP_2	e 72·2
Budapest		143·8	325	19 37	[0]	—	—	—	—	e 82·2
Sofia		143·8	316	e 19 37	[0]	—	—	—	—	—
Ogyalla		144·0	326	e 19 33	[− 4]	e 26 45	[0]	e 22 45	PP	—
Collmberg		144·1	334	e 19 35	[− 3]	e 27 8	[+22]	e 22 40	PP	e 70·8
Kalossa	E.	144·4	326	e 19 42	[+ 4]	—	—	e 20 28	PKP_2	—
Prague		144·4	332	i 19 33k	[− 5]	e 26 45	[− 1]	e 22 31	PP	e 70·2
Jena	N.	144·9	335	e 19 39	[0]	e 23 20	PKS	e 22 58	PP	—
Cheb		145·2	335	e 19 40	[0]	e 23 20	PKS	e 34 21	PS	—
Athens		145·4	309	e 19 40	[0]	—	—	i 19 49	PKP_2	—
De Bilt		146·1	343	i 19 43k	[+ 2]	—	—	i 23 10	PP	e 73·2
Zagreb		146·5	327	e 19 46	[+ 4]	—	—	—	—	e 80·2
Rathfarnham Castle		147·2	356	i 19 42	[− 1]	e 48 56	SSS	e 23 58	PP	—
Karlsruhe		147·6	337	e 19 51	[+ 7]	—	—	—	—	—
Stuttgart		147·6	336	e 19 44	[0]	e 29 19	{−46}	e 23 17	PKS	79·2
Triest		147·8	327	i 19 49	[+ 5]	e 29 30	{−36}	i 23 19	PP	e 66·2
Kew		148·1	348	e 19 46	[+ 2]	e 29 17	{−51}	e 23 29	PP	e 73·2
Strasbourg		148·3	337	e 19 46	[+ 1]	e 42 39	SS	e 23 15?	PP	65·2
Taranto		148·8	318	19 50	[+ 5]	e 41 15	PS	23 15	PP	e 64·2
Chur		148·9	334	e 19 47	[+ 1]	—	—	—	—	—
Zürich		148·9	335	e 19 49k	[+ 3]	—	—	e 21 52	PKP_2	—
Basle		149·2	336	e 19 50	[+ 4]	—	—	e 21 42	PKP_2	—
Salo		149·4	332	e 19 51	[+ 5]	—	—	e 23 52	PP	—
Padova		149·5	328	e 19 52	[+ 5]	—	—	—	—	—
Bologna	Z.	149·8	330	e 19 51	[+ 4]	—	—	—	—	—
Paris		149·8	343	e 19 45a	[− 2]	e 46 56	SSS	i 23 28	PP	e 75·2
Besançon		150·0	337	e 19 52	[+ 5]	—	—	e 23 19	PP	—
Florence Xim.		150·4	327	e 19 49	[+ 1]	—	—	e 23 23	PP	—
Pavia		150·4	333	e 19 48	[0]	—	—	—	—	—
Prato		150·4	327	e 20 7	PKP_2	—	—	—	—	—
Rome		150·9	324	e 19 48	[− 1]	e 43 15	SSP	e 23 22	PP	—
Clermont-Ferrand		152·4	339	e 19 52	[+ 1]	e 43 13	SS	e 20 5	PKP_2	77·2
Tortosa		157·6	339	e 20 33	PKP_2	—	—	—	—	e 84·2
Algiers Univ.	Z.	159·7	326	e 20 4	[+ 4]	—	—	e 20 40	PKP_2	—
Toledo		159·9	346	e 19 59	[− 2]	44 39	SS	i 20 39	PKP_2	86·6
Alicante		160·1	337	20 9	[+ 8]	44 51	SS	24 25	PP	e 80·5
Granada		162·3	343	18 32a	[−91]	32 39	?	i 23 0	PKS	78·8
Malaga	Z.	162·9	343	i 20 5k	[+ 1]	—	—	i 20 52	PKP_2	83·1
Tamanrasset	Z.	164·5	281	i 20 4	[− 1]	e 27 9	[+ 1]	e 23 56	PKS	—

Additional readings :—
Brisbane iZ = 4m.32s. and 4m.50s., iSZ = 7m.10s.
New Plymouth eE = 6m.44s.
Apia eEN = 4m.42s.

Continued on next page.

1950 **336**

Riverview i = 5m.0s., iN = 5m.4s., iPPPN = 5m.21s., iN = 5m.35s., iNZ = 5m.57s., iZ = 6m.26s., iP_cPN = 8m.48s., iP_cPE = 8m.51s., isSN = 8m.55s., iE = 9m.0s., iSSN 9m.20s., iZ = 9m.26s.
Wellington e = 7m.42s.
Christchurch e = 7m.11s., i = 9m.31s., eSSZ = 10m.5s.
Perth i = 22m.5s.
Nanking iN = 11m.33s., iEN = 21m.8s., i = 21m.20s.
Vladivostok iS_cS = 21m.26s., eSS = 25m.20s., eSSS = 28m.39s.
Berkeley iZ = 12m.51s., iN = 36m.15s., eE = 37m.27s. and 39m.45s., eZ = 40m.9s.
Lick iZ = 13m.21s., 13m.40s., 13m.49s., and 15m.3s.
Fresno eN = 13m.43s. and 14m.49s.
Pasadena iZ = 13m.2s., iEN = 24m.23s., eSSEN = 29m.9s.
Shasta Dam e = 13m.21s. and 14m.48s.
Mineral iZ = 13m.28s., eZ = 14m.19s.
College e = 13m.32s., 14m.38s., and 17m.57s., ePS = 25m.15s., eSS = 30m.18s.
Seattle e = 13m.47s., 14m.23s., and 25m.32s.
Irkutsk ePS = 25m.25s., eSS = 29m.51s.?
Tucson e = 19m.58s., eSKS = 23m.35s., ePS? = 25m.48s.
Salt Lake City ePS? = 26m.3s.
Logan eSKS = 24m.2s., ePS = 26m.5s., eSS = 31m.29s.
New Delhi iN = 27m.19s.
St. Louis iPPS = 29m.37s.
Chicago eSS = 35m.17s., eSSS? = 39m.29s.
Sverdlovsk iPP = 19m.55s., PKS = 22m.18s., iPS = 29m.32s.
Cleveland eN = 25m.25s., eE = 34m.45s., eN = 36m.45s., eSSE = 41m.0s.
Harvard iPPS = 32m.40s., e = 33m.48s. and 36m.34s., eSS = 38m.18s., e = 38m.48s., 40m.7s., 43m.37s., and 45m.38s.
Moscow PKS = 22m.33s.
Scoresby Sund i = 21m.19s. and 22m.34s.
Pulkovo SKSP = 31m.20s., SS = 39m.3s.
Upsala PKS = 23m.2s., ePPPN = 24m.59s., eSSSN = 44m.15s.?
Warsaw $ePKP_2Z$ = 19m.44s., ePPNZ = 22m.45s., SKP = 23m.8s., epPKS = 23m.34s., ePPPEN = 25m.12s., eSKSE = 26m.44s., ePS = 32m.50s., ePPS = 34m.45s., eSSEN = 40m.49s., SSSEN = 45m.51s., and other e readings.
Helwan eZ = 23m.39s. and 24m.57s., eN = 40m.57s. and 42m.51s.
Bucharest eN = 21m.24s., iE = 22m.25s.
Skalnate Pleso eSKSP = 32m.39s., eSS = 41m.27s., e = 44m.27s., eSSS = 46m.39s.
Potsdam iPPZ = 22m.46s.
Budapest ePN = 19m.48s.
Ogyalla ePKP = 19m.41s., e = 20m.30s. and 21m.45s., eSKPN = 23m.14s., ePS = 34m.33s.
Collmberg e = 19m.45s., 19m.54s., and 20m.19s., eN = 20m.28s., eZ = 21m.30s., eEN = 22m.19s., eE = 22m.49s., eZ = 23m.28s., eN = 23m.59s., eZ = 24m.47s., eN = 24m.53s., eSKKKS?E = 29m.59s., eE = 33m.43s., ePPSN = 35m.22s.
Prague $iPKP_2$ = 19m.43s., e = 20m.23s., 20m.51s., and 23m.6s., eSKP = 23m.38s., ePPP = 26m.3s., ePS = 34m.15s., ePPS = 35m.35s., eSS = 41m.21s., eSSS = 47m.3s.
Jena eN = 19m.48s., eEN = 19m.59s.
Cheb e = 19m.52s., 36m.43s., and 38m.43s., eSS? = 42m.5s., eSSS = 47m.5s.
Rathfarnham Castle iZ = 21m.10s., eEN = 61m.15s.
Stuttgart iPKPZ = 19m.47s. and 19m.57s., eZ = 20m.18s., 21m.1s., 21m.21s., and 24m.45s., ePS? = 34m.3s., eSS = 42m.21s., eQ = 67·2m.
Triest ePSKS = 33m.29s., eSS = 42m.26s., ePSS = 43m.30s.
Kew ePPS?EN = 38m.13s.
Strasbourg i = 19m.51s.
Salo eZ = 20m.3s. and 20m.23s., eE = 22m.6s.
Bologna iZ = 19m.55s.
Paris PKP_3 = 19m.53s., i = 19m.56s., e = 20m.16s., i = 20m.35s., e = 20m.41s., i = 23m.44s., iPPP = 26m.43s., i = 38m.50s.
Besançon i = 19m.57s., e = 20m.23s.
Rome $ePKP_2$ = 20m.1s., eSSS? = 47m.15s.?
Clermont-Ferrand iPP = 23m.34s., ePPP = 27m.4s., eSSS = 48m.59s.
Algiers Univ. eZ = 23m.5s., ePPZ = 24m.31s.
Toledo iPPNZ = 24m.24s.
Granada PKP_2 = 19m.12s., SS = 44m.51s.
Malaga iPPZ = 24m.38s., PPPZ = 29m.30s.
Tamanrasset iZ = 20m.19s., $iPKP_2Z$ = 21m.3s., iPPZ = 24m.49s., ePPPZ = 28m.48s., eZ = 32m.35s. and 34m.32s., ePPS?Z = 38m.50s.
Long waves were also recorded at Columbia, Bermuda, Seven Falls, Grahamstown, and Aberdeen.

May 28d. 5h. 6m. 26s. Epicentre 0°·5S. 80°·8W. (as on 1945, February 6d.).

A = +·1599, B = −·9871, C = −·0087 ; δ = +1 ; h = +7 ;
D = −·987, E = −·160 ; G = −·001, H = +·009, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chinchina		7·5	43	e 1 56	+ 3	e 3 14	− 6	—	—	—
Bogota	z.	8·4	53	i 2 12	+ 6	i 3 54	+11	i 2 29	P*	—
Balboa Heights		9·5	7	e 1 48	−32	—	—	—	—	—
Huancayo		12·7	155	i 3 7	+ 2	i 5 28	0	—	—	—
La Paz		20·2	142	i 4 42	+ 3	i 8 35	+14	i 5 6	PP	10·0
San Juan		23·7	37	e 5 11	− 3	e 9 28	+ 1	—	—	e 10·6
Fort de France		24·6	52	e 5 23	0	e 9 53	+ 9	—	—	—
Cleveland		41·8	359	i 7 51k	− 2	i 14 2	− 9	—	—	—
Chicago		42·6	352	—	—	e 14 12	−11	—	—	e 17·7
Tucson		43·2	322	e 8 1	− 3	—	—	—	—	e 23·0
Weston		43·5	10	e 8 8	+ 1	—	—	—	—	—
Pierce Ferry		47·7	324	e 8 39	− 1	—	—	—	—	—
Boulder City		48·2	323	e 8 42	− 2	—	—	—	—	—
Riverside	z.	48·5	319	e 8 43	− 3	—	—	—	—	—
Pasadena	z.	49·1	319	e 8 50	− 1	—	—	—	—	—
China Lake	z.	49·8	321	i 8 55	− 1	—	—	—	—	—
Tinemaha	z.	51·0	321	e 9 4	− 2	—	—	—	—	—
Lick	z.	53·3	320	i 9 25a	+ 2	—	—	—	—	—
Reno	z.	53·5	323	e 9 25k	+ 1	—	—	—	—	—
Mineral	z.	55·0	323	i 9 36k	+ 1	—	—	—	—	—
Hungry Horse		56·5	335	e 9 44	− 2	—	—	—	—	—
Malaga	z.	79·4	53	i 11 49a	−20	—	—	—	—	—
College		80·9	337	e 12 15	− 2	—	—	—	—	—
Tamanrasset	z.	86·8	67	i 12 48	+ 1	—	—	e 16 10	PP	—

Additional readings :—
Huancayo i = 3m.15s.
La Paz iSS = 9m.9s.
Tamanrasset eZ = 15m.43s.

May 28d. 10h. 19m. 27s. Epicentre 46°·6N. 7°·4E. (as on 1950, February 26d.).

Intensity V between Wimmis and Erlenbach. Epicentre 46°·7N. 7°·6E. Macroseismic radius 8km.

E. Wanner.
Jahresbericht des Erdbebendienstes der Schweiz im Jahre, 1950, Zürich, 1951, page 2, with macroseismic chart, p. 3.

A = +·6838, B = +·0888, C = +·7243 ; δ = +8 ; h = −4 ;
D = +·129, E = −·992 ; G = +·718, H = +·093, K = −·690.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Neuchatel		0·5	323	i 0 13	− 1	e 0 27	+ 4	—	—	—
Basle		0·9	8	e 0 21	+ 1	e 0 33	− 1	—	—	—
Zürich		1·1	46	e 0 22k	0	e 0 36	− 3	—	—	—
Besançon		1·2	304	e 0 24	0	e 0 42	+ 1	—	—	e 1·0
Ravensburg		1·9	51	e 0 37	+ 3	e 1 2	+ 3	—	—	—
Strasbourg		2·0	7	—	—	e 0 56	− 6	e 1 5	S_g	—
Stuttgart	z.	2·5	30	0 49	P_g	e 1 16	+ 2	e 1 21	S_g	—
Clermont-Ferrand		3·1	256	e 1 12	P_g	e 1 50	S_g	—	—	e 2·0
Prague		5·8	51	—	—	e 3 10	S_g	—	—	—
Collmberg	z.	6·0	36	—	—	e 3 11	S*	e 3 23	S_g	—

Stuttgart also records eP_g?Z = 57s.

May 28d. 16h. 12m. 21s. Epicentre 32°·0N. 138°·6E. Depth of focus 0·040.
(as on 1948, March 15d.).

Intensity II-III at Tokyo. Epicentre 31°·8N. 139°·0E. Depth of focus 220km.
Macroseismic radius 300km.

Seismo. Bull. Cent. Met. Obs., Japan, for 1950, Tokyo, 1952, pp. 23, 24.

$A = -\cdot6373$, $B = +\cdot5619$, $C = +\cdot5273$; $\delta = -7$; $h = +1$;
$D = +\cdot661$, $E = +\cdot750$; $G = -\cdot396$, $H = +\cdot349$, $K = -\cdot850$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Omaesaki		2·6	353	0 52a	+ 1	1 33	+ 2	—	—
Osima		2·8	13	0 50	− 3	1 31	− 4	—	—
Owase		2·9	316	0 55k	+ 1	1 38	+ 2	—	—
Shizuoka		3·0	357	0 56	+ 1	1 39	+ 1	—	—
Mera		3·1	19	0 54	− 2	1 37	− 3	—	—
Misima		3·1	5	0 57	+ 1	1 40	0	—	—
Kameyama		3·4	328	1 2	+ 3	1 29	−17	—	—
Hunatu		3·5	2	1 0k	0	1 46	− 2	—	—
Nagoya		3·5	337	1 2k	+ 2	1 49	+ 1	—	—
Yokohama		3·5	14	1 9	+ 9	1 44	− 4	—	—
Gihu		3·7	336	1 5	+ 2	1 55	+ 3	—	—
Osaka		3·7	317	1 7k	+ 4	1 56	+ 4	—	—
Hikone		3·8	329	1 6k	+ 2	1 55	+ 1	—	—
Kyoto		3·8	322	1 4k	0	1 58	+ 4	—	—
Tokyo		3·8	15	1 3	− 1	1 49	− 5	—	—
Kobe		4·0	314	1 7	+ 1	1 59	+ 1	—	—
Sumoto		4·0	308	1 6	0	1 58	0	—	—
Kumagaya		4·2	8	1 8	0	1 57	− 5	—	—
Maebasi		4·4	5	1 9	− 2	2 10	+ 4	—	—
Tukubasan		4·4	16	1 8	− 3	1 57	− 9	—	—
Kakioka		4·5	17	1 9	− 3	1 58	−10	—	—
Kôti		4·6	291	1 26	+13	2 13	+ 3	—	—
Matusiro		4·6	356	1 11	− 2	—	—	—	—
Nagano		4·7	356	1 14	0	2 11	− 1	—	—
Utunomiya		4·7	13	1 10	− 4	2 4	− 8	—	—
Toyama		4·8	346	1 19a	+ 4	2 17	+ 3	—	—
Toyooka		4·8	319	1 15k	0	2 14	0	—	—
Matuyama		5·3	292	1 22	+ 1	2 26	+ 1	—	—
Wazima		5·6	346	1 25	0	—	—	—	—
Hukusima		5·9	15	1 26	− 2	2 32	− 6	—	—
Ooita		6·0	284	1 36	+ 6	2 47	+ 7	—	—
Sendai		6·6	16	1 33	− 4	2 44	− 9	—	—
Kagosima		6·9	268	1 50	+ 9	—	—	—	—
Hukuoka		7·1	285	1 45k	+ 2	3 9	+ 5	—	—
Mizusawa	E.	7·4	15	1 42	− 5	3 0	−11	—	—
Akita		7·8	9	1 51	− 1	2 48	−32	—	—
Morioka		8·0	15	1 52	− 2	3 15	− 9	—	—
Miyako		8·1	19	1 51	− 4	3 17	− 9	—	—
Sapporo		11·3	10	2 36	+ 1	4 32	− 6	—	—
Vladivostok		12·3	336	i 2 47	− 1	e 5 6	+ 6	—	—
Nemuro		12·6	24	2 56	+ 5	—	—	—	—
Victoria		71·6	44	e 10 43a	− 9	—	—	—	—
Shasta Dam		76·0	51	i 11 17	0	—	—	—	—
Hungry Horse		77·2	41	i 11 23	− 1	—	—	—	—
Berkeley	z.	77·6	53	i 11 26a	0	—	—	—	—
Lick	z.	78·2	53	i 11 29a	0	—	—	—	—
Reno	z.	78·3	51	e 11 30a	0	—	—	—	—
Tinemaha	z.	80·7	52	i 11 42	− 1	—	—	—	—
China Lake	z.	81·8	53	i 11 48	0	—	—	—	—
Pasadena	z.	82·3	54	i 11 50	− 1	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Riverside	z.	83·0	54	i 11 53	− 1	—	—	—	—
Overton	z.	83·5	51	i 11 58	+ 1	—	—	i 15 12	PP
Boulder City		83·6	52	e 11 58	+ 1	—	—	—	—
Pierce Ferry		84·0	51	i 12 0	+ 1	—	—	—	—
Collmberg	z.	84·3	329	e 12 0	− 1	—	—	e 13 10	pP
Tucson		88·6	53	e 12 21	− 1	—	—	e 15 52	PP
Tamanrasset	z.	109·4	314	e 18 19	[+23]	—	—	e 18 36	PP

Additional readings :—
Mizusawa eSN = 3m.7s.
Lick iZ = 11m.36s.
Overton iZ = 12m.12s.
Long waves were recorded at Nanking.

May 28d. Readings also at 0h. (Pierce Ferry, Shemakla, Almata, Fergana, Frunse, Naryn, Samarkand, Tchimkent, near Garm, Obi-garm, Stalinabad (2), Andijan, and near Tashkent), 1h. (Shasta Dam, College (2), Tamanrasset, near Garm (2), Obi-garm, Stalinabad, and near Istanbul), 2h. (Tamanrasset near Istanbul (2), and near Shemakla), 3h. (Tamanrasset, Almata, near Przhevalsk, near Obi-garm, and near Fergana), 4h. (Fergana, Samarkand, Stalinabad, near Garm, Obi-garm, and Shemakla), 5h. (La Paz, Tucson, Boulder City, near Pierce Ferry, and near Istanbul), 6h. (Fergana, near Andijan, and Garm), 8h. (Apia, New Delhi, Ksara, College (2), Bogota, Chinchina, and Huancayo), 9h. (Hungry Horse, La Paz, and San Juan), 11h. (Boulder City and Pierce Ferry), 13h. (Collmberg), 14h. (near Frunse), 15h. (Bandong (2) and Tortosa), 16h. (near Mizusawa), 18h. (Jena, Stuttgart, Collmberg, Skalnate Pleso, near Prague, and Raciborzu), 22h. (Overton, Hungry Horse, Harvard, Tamanrasset, and near La Paz), 23h. (Tacubaya).

May 29d. Readings at 0h. (near Nanking), 2h. (Grozny), 4h. (Grahamstown and Huancayo), 5h. (New Delhi, Andijan, Samarkand, near Garm, Obi-garm, and Stalinabad), 6h. (Sofia), 9h. (Apia, Brisbane, Christchurch, Wellington, Pasadena, Riverside, China Lake, Tinemaha, Tucson, Overton, Pierce Ferry, Mineral, Shasta Dam, and College), 10h. (Collmberg, Jena, Paris, Strasbourg, Stuttgart, Tamanrasset, Overton, and near Shasta Dam), 11h. (Lick and Weston), 12h. (near Istanbul), 13h. (Hungry Horse, College, Bucharest, Potsdam, Warsaw, Sofia, Ksara, Tamanrasset, Istanbul, and near Athens), 15h. (College, Sofia, and near Istanbul), 16h. (College (2)), 17h. (near Mizusawa), 18h. (Prague), 19h. and 22h. (near Garm).

May 30d. 1h. 16m. 5s. Epicentre 18°·4N. 156°·6W.

Intensity VI along the coast of Kona, with slight damage.

L. M. Murphy and F. P. Ulrich.
United States Earthquakes, 1950, Serial No. 755, Washington, 1952, p. 18.

$A = -·8714$, $B = -·3771$, $C = +·3137$; $\delta = -5$; $h = +5$;
$D = -·397$, $E = +·918$; $G = -·288$, $H = -·125$, $K = -·950$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Honolulu		3·1	338	i 0 51	0	i 1 21	− 8	—	—	i 1·6
Berkeley		35·7	50	i 7 1a	− 1	e 12 31	− 8	e 8 7	PP	e 17·3
Lick	z.	35·9	50	i 7 4a	0	—	—	i 8 41	PP	—
Shasta Dam		36·8	45	i 7 11	0	—	—	e 8 25	PP	e 15·3
Fresno		37·1	53	e 7 13	− 1	—	—	—	—	—
Mineral	z.	37·2	46	e 7 14a	− 1	—	—	e 8 34	PP	—
Pasadena		37·6	57	i 7 18a	0	—	—	—	—	e 15·9
Reno	z.	38·1	49	i 7 23a	+ 1	—	—	—	—	—
Riverside	z.	38·2	57	i 7 22a	− 1	—	—	—	—	—
Haiwee	E.	38·3	54	e 7 25	+ 1	—	—	—	—	—
Tinemaha		38·4	53	i 7 25a	0	—	—	—	—	—
Palomar		38·5	59	i 7 25	− 1	—	—	—	—	—
Victoria		40·3	35	e 7 41	+ 1	e 13 55?	+ 6	—	—	—
Boulder City		40·7	56	i 7 45	+ 1	—	—	—	—	e 19·9
Overton	z.	41·2	55	i 7 49	+ 1	—	—	i 9 15	PP	e 18·9

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Pierce Ferry		41·4	56	i 7 50	0	—	—	—	—	e 20·9
Tucson		43·3	62	i 8 6	+ 1	e 13 59	−34	e 9 38	PP	e 20·0
Logan		44·6	48	e 8 17	+ 1	—	—	—	—	e 22·7
Hungry Horse		45·6	39	i 8 23	− 1	—	—	—	—	—
College		46·8	5	i 8 33	0	e 15 19	− 5	e 10 14	PP	—
Tacubaya		54·1	79	e 9 49	+20	e 18 4	+59	i 10 50	PP	—
Chicago		62·4	51	e 10 24	− 3	e 18 48	− 5	—	—	e 26·0
Cleveland		67·0	52	i 10 57k	0	e 19 51	+ 1	—	—	—
Harvard		74·2	50	i 11 42	+ 2	—	—	—	—	e 39·3
Weston		74·4	50	e 11 43	+ 1	—	—	—	—	—
Scoresby Sund		85·9	14	—	—	e 23 17	+ 1	—	—	39·9
Tamanrasset	z.	135·5	24	e 19 32	[+10]	—	—	e 21 50	PP	—

Additional readings :—
Berkeley iZ = 7m.27s., eZ = 11m.28s., iZ = 12m.11s., iSSN = 14m.46s.
Lick iZ = 7m.13s., 7m.17s., 7m.32s., and 7m.40s., eZ = 13m.51s.
Reno iE = 7m.40s.
Tucson e = 9m.44s., eSS = 18m.1s.
Long waves were also recorded at Santa Clara and Ferndale.

May 30d. 9h. 52m. 32s. Epicentre 35°·5N. 27°·2E. (as on 1949, July 7d.).

Intensity IV-V at Mesochoria; IV at Pigadia, Karapathos, and Emponas in Rhodes. Epicentre about 35°·5N. 27°·5E.

A. Galanopoulos.
Seismological Institute Bulletin, 1950, Athens, 1951, p. 17.

$A = +·7258$, $B = +·3730$, $C = +·5781$; $\delta = +11$; $h = 0$;
$D = +·457$, $E = -·889$; $G = +·514$, $H = +·264$, $K = -·816$.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Athens		3·7	313	e 1 6	+ 6	e 1 50	+ 5	e 1 14	P_g	—
Istanbul		5·8	14	e 1 27	− 2	i 2 55	+17	—	—	—
Ksara		7·4	101	e 1 40	−12	e 3 8	−10	—	—	—
Sofia		7·8	339	e 1 31	−27	—	—	—	—	—
Yalta		10·4	28	2 34	0	—	—	—	—	—
Zagreb		13·4	324	e 3 28?	+14	—	—	—	—	—
Triest		14·4	319	e 3 32	+ 5	e 6 7	− 2	i 7 14	PS	e 8·5
Prague		17·3	333	e 4 5	+ 1	e 7 26	+10	e 4 19	PP	—
Warsaw		17·3	348	e 4 48	+44	e 7 19	+ 3	e 7 41	SS	e 10·5
Shemakla		17·6	67	e 5 13	+65	—	—	—	—	—
Baku		18·5	68	e 4 30?	+11	e 8 31?	+47	—	—	—
Stuttgart	z.	18·7	322	e 4 24	+ 2	—	—	—	—	—
Collmberg	z.	19·1	331	e 4 24	− 3	—	—	—	—	—
Jena	n.	19·1	330	e 4 23?	− 4	—	—	—	—	—
Strasbourg		19·4	320	i 4 32	+ 2	—	—	—	—	e 11·9
Algiers Univ.	z.	19·6	281	e 4 28	− 4	—	—	i 4 40	PP	—
Potsdam		19·6	334	e 4 34	+ 2	—	—	—	—	e 12·6
Besançon		19·8	313	e 4 34	− 1	—	—	e 4 52	PP	—
Moscow		21·5	16	e 4 51	− 1	—	—	—	—	—
Paris		22·5	314	e 5 4	+ 2	—	—	—	—	—
Tamanrasset	z.	22·7	242	i 5 10k	+ 6	e 9 31	+22	e 5 50	PP	—
Granada		24·8	284	6 5k	PP	—	—	—	—	—
Kew		25·3	319	—	—	e 10 43	SS	—	—	e 16·5
College		79·9	358	e 12 12	0	—	—	—	—	—
Hungry Horse		89·6	335	i 13 1	0	—	—	—	—	—

Additional readings :—
Athens iS* = 2m.7s.
Triest $eS_gS_gS_g$ = 8m.7s.
Prague e = 4m.36s.
Warsaw eN = 5m.8s. and 5m.50s., eSSS = 7m.50s.
Collmberg eZ = 4m.27s. and 4m.35s.
Jena eEN = 4m.29s.
Strasbourg e = 4m.54s.
Algiers Univ. ePPPZ = 4m.56s., eZ = 5m.31s.
Tamanrasset iZ = 5m.27s., ePPPZ = 6m.6s.
Long waves were also recorded at Clermont-Ferrand and De Bilt.

May 30d. 15h. 4m. 3s. Epicentre 19°·9S. 179°·0W. Depth of focus 0·080.

A = −·9409, B = −·0164, C = −·3384 ; δ = +8 ; h = +5 ;
D = −·017, E = +·1·000 ; G = +·338, H = +·006, K = −·941.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		9·2	50	2 13	+ 3	3 55	+ 1	—	—	—
Arapuni		18·7	195	e 3 46	+ 1	e 6 49	+ 3	14 0	S_eS	—
New Plymouth	E.	20·0	197	e 3 58	+ 1	e 7 23	+15	—	—	—
Wellington		22·0	195	i 4 9	− 7	i 7 23	−18	i 14 12	S_eS	—
Kaimata	N.E.	24·0	199	e 4 33?	− 1	e 8 7?	− 6	e 14 26?	S_eS	—
Christchurch		24·6	196	e 4 36	− 3	e 8 11	−12	—	—	—
Brisbane		26·7	248	e 4 57	− 1	i 8 55	− 1	i 6 35	PP	—
Riverview		29·9	236	i 5 26k	+ 1	i 9 46	0	i 7 4	pP	—
Honolulu		45·9	27	e 7 35	− 1	—	—	—	—	—
Guam		48·7	309	7 46	−11	15 1	+42	—	—	—
Mizusawa	E.	69·6	328	(e 10 18)	+ 2	e 10 18	P	—	—	—
Bandong		72·1	269	e 10 31	0	e 19 8	− 2	—	—	—
Vladivostok		77·3	325	i 11 1	+ 1	i 20 11	+ 5	i 13 10	pP	—
Berkeley		78·4	43	i 11 4a	− 2	i 20 15	− 2	—	—	—
Lick		78·5	43	i 11 5a	− 1	e 20 39	+21	13 13	pP	—
Nanking		78·8	310	11 8	0	i 20 30	+ 9	13 22	pP	—
Pasadena		79·0	47	i 11 6a	− 3	i 20 22	− 1	i 13 12	pP	—
Fresno		79·3	44	e 11 11	+ 1	e 20 25	− 1	—	—	—
Riverside		79·4	47	i 11 9a	− 2	e 20 28	0	e 13 15	pP	—
Palomar		79·5	49	i 11 11	− 1	i 20 28	− 1	—	—	—
Shasta Dam		80·0	40	i 11 13	− 1	i 20 32	− 2	i 13 24	pP	—
Haiwee		80·2	46	i 11 15	0	—	—	—	—	—
Mineral	z.	80·3	41	i 11 13a	− 3	e 20 36	− 1	i 13 24	pP	—
Tinemaha		80·5	45	i 11 15a	− 2	e 20 39	0	—	—	—
Boulder City		82·3	47	i 11 24	− 2	e 20 49	− 8	e 13 26	pP	—
Overton	z.	82·8	47	i 11 27	− 1	e 20 57	− 4	i 13 33	pP	—
Pierce Ferry		82·9	47	i 11 27	− 2	e 21 17	+15	i 13 38	pP	—
Tucson		83·3	52	i 11 29	− 2	e 20 59	− 7	e 13 34	pP	—
Victoria		84·2	34	e 11 35	0	e 21 3	−12	—	—	—
Seattle		84·3	35	i 11 37k	+ 1	e 21 16	0	i 14 2	pP	—
Tacubaya		87·4	68	i 11 55k	+ 4	e 21 47	+ 2	e 14 6	pP	—
College		87·8	12	i 11 49	− 3	i 21 46	− 2	i 14 0	pP	—
Hungry Horse		89·2	37	i 11 57	− 2	e 21 33	[− 4]	e 14 5	pP	—
Irkutsk		97·7	323	e 16 45?	PP	e 22 17	[− 6]	—	—	—
Huancayo		98·5	106	e 16 50	PP	i 22 24	[− 3]	e 30 33	SS	—
La Paz		103·1	113	e 13 3	+ 2	i 24 37	+38	18 15	PP	—
Chicago		104·0	49	—	—	e 24 6	0	e 25 53	SP	—
Kodaikanal	E.	106·0	276	—	—	e 29 57	?	—	—	—
Cleveland		108·4	52	i 18 1k	PP	e 24 46	?	e 26 38	SP	—
Almata		113·5	310	18 38	PP	—	—	—	—	—
Naryn		114·0	308	e 17 36	[− 1]	i 23 29	[− 5]	i 18 46	PP	—
Frunse		115·1	309	e 17 41	[+ 2]	e 23 35	[− 3]	e 19 17	PP	—
Harvard		115·9	51	i 17 40	[− 1]	e 27 33	SP	i 18 58	PP	—
Weston		116·0	51	e 17 38	[− 3]	i 28 19	PKKP	e 18 47	PP	—
Andijan		116·6	306	e 17 42	[0]	e 23 41	[− 3]	e 19 5	PP	—
Seven Falls	E.	116·6	46	—	—	e 23 36	[− 8]	—	—	39·4
San Juan		117·0	78	—	—	i 23 36	[− 9]	e 27 42	SP	—
Fergana		117·1	306	e 17 41	[− 2]	23 42	[− 4]	19 6	PP	—
Obi-garm		118·6	305	e 19 14	PP	i 23 32	[−19]	—	—	—
Tashkent		119·0	307	e 17 48	[+ 1]	i 23 47	[− 5]	e 25 15	SKKS	—
Stalinabad		119·3	304	17 47	[− 1]	23 48	[− 5]	—	—	—
Samarkand		120·7	305	e 17 53	[+ 3]	—	—	—	—	—
Grahamstown		121·7	206	i 17 50	[− 2]	—	—	—	—	—
Sverdlovsk		123·0	326	i 17 53	[− 2]	i 24 1	[− 4]	e 19 43	PP	—
Pietermaritzburg	z.	123·2	212	e 17 53	[− 2]	—	—	—	—	—
Mary		124·7	303	e 17 57	[− 1]	—	—	—	—	—
Ashkabad		127·5	303	e 18 6	[+ 2]	—	—	i 20 17	PP	—
Scoresby Sund		127·6	10	e 18 1	[− 3]	30 21	PS	e 20 13	PP	—
Baku		133·7	308	e 18 23	[+ 8]	—	—	i 20 56	PP	—
Shemakla		134·6	309	i 20 28	PP	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Grozny		136·0	313	e 18 22	[+ 2]	—	—	—	—
Tiflis		137·1	311	e 18 22	[+ 1]	—	—	i 21 4 PP	—
Zugdidi		138·9	312	e 18 37	[+12]	—	—	e 21 18 PP	—
Sotchi		140·0	315	e 18 22	[− 5]	—	—	e 21 34 PP	—
Theodosia		142·1	320	e 18 28	[− 4]	—	—	—	—
Yalta		143·1	319	i 18 28	[− 5]	—	—	e 20 55 pPKP	—
Copenhagen		143·2	350	i 18 28	[− 5]	—	—	—	—
Warsaw		144·2	339	18 34	[− 1]	e 21 16 SKP		18 40 PKP_2	—
Ksara		146·1	302	i 18 37	[− 1]	—	—	20 57 pPKP	—
Potsdam		146·2	347	e 18 33	[− 5]	e 21 57 PP		i 20 56 pPKP	—
Rathfarnham Castle		146·2	8	i 18 34	[− 4]	e 44 47 SSS		e 21 1 ePP	—
Raciborzu	z.	146·9	340	i 18 38	[− 1]	—	—	i 18 44? PKP_2	—
Skalnate Pleso		147·0	337	e 18 42	[+ 3]	e 25 21	[+27]	e 21 22 PP	—
Collmberg	z.	147·3	346	e 18 37	[− 2]	e 29 4	?	e 21 1 pPKP	—
De Bilt		147·7	355	e 18 45	[+ 5]	e 40 27	SS	i 21 5 pPKP	—
Jena		147·9	347	e 18 43	[+ 3]	—	—	e 21 1 pPKP	—
Istanbul		148·1	318	e 18 39	[− 2]	e 25 40	[+44]	—	—
Prague		148·1	344	i 18 40a	[− 1]	e 24 53	[− 3]	e 20 53 pPKP	—
Kew		148·5	2	i 18 38	[− 3]	e 22 4	PKS	e 21 2 pPKP	e 64·0
Cheb		148·6	347	e 18 48	[+ 7]	e 19 53	?	—	—
Ogyalla		148·8	338	e 18 48	[+ 6]	e 25 19	[+22]	e 22 26 PP	—
Stuttgart	z.	150·5	349	e 18 42k	[− 2]	e 25 38	[+39]	e 21 12 pPKP	—
Strasbourg		150·9	350	i 18 45	[0]	e 41 9	SS	i 21 17 pPKP	—
Paris		151·1	358	i 18 44	[− 1]	e 31 57	SKSP	i 21 19 pPKP	—
Zagreb		151·4	338	e 18 45	[0]	—	—	e 21 14 pPKP	—
Basle		151·9	351	e 18 52	[+ 6]	—	—	—	—
Zürich		151·9	350	e 18 42	[− 4]	—	—	e 21 15 pPKP	—
Chur		152·2	348	e 18 46	[− 1]	—	—	—	—
Triest		152·2	342	e 18 44	[− 3]	e 28 16	SKKS	e 20 58 pPKP	—
Besançon		152·4	353	e 18 47	[0]	—	—	e 21 11 pPKP	—
Salo		153·2	345	e 18 47	[− 1]	—	—	e 22 24 PP	—
Padova		153·9	343	e 19 0	[+11]	—	—	—	—
Bologna	z.	154·0	343	e 18 49a	[0]	—	—	—	—
Clermont-Ferrand		154·2	357	e 18 49	[0]	e 28 0	SKKS	e 21 9 pPKP	37·0
Florence Xim		154·7	343	e 18 51	[+ 1]	—	—	—	—
Taranto		155·2	330	—	—	i 26 57	?	—	—
Rome		156·0	339	e 18 50	[− 2]	49 57	SSS	e 21 12 pPKP	—
Messina		157·8	329	e 18 45	[− 9]	—	—	e 20 34 pPKP	—
Toledo	z.	159·6	12	i 18 55	[− 1]	—	—	e 22 0 PP	—
Alicante		161·6	4	(e 39 27)	P′P′	—	—	—	39·4
Granada		162·3	13	(36 58)	PPS	—	—	—	37·0
Algiers Univ.	z.	163·1	354	e 18 58	[− 2]	—	—	e 19 55 PKP_2	—
Tamanrasset	z.	174·9	—	i 19 6k	[− 1]	e 30 32	SKKS	i 21 30 pPKP	—

Additional readings :—
Apia i =2m.25s.
Brisbane iSE =7m.40s. and 7m.44s.
Riverview iZ =8m.15s., isSE =12m.54s., iSSSN =12m.59s., iSSSEZ =13m.2s., iS_eSEN = 14m.56s.
Berkeley iZ =11m.17s., eZ =12m.4s., iN =22m.24s., eEZ =24m.21s.
Lick iZ =11m.14s. and 11m.30s., iPPZ =14m.21s., e =20m.39s.
Nanking iPPEN =14m.19s., e =20m.25s., eEN =24m.15s., SS? =24m.47s.
Pasadena iZ =11m.28s., ePKP,PKPZ =38m.5s.
Riverside ePKP,PKPZ =37m.58s.
Shasta Dam ePP? =14m.25s.
Mineral iZ =11m.30s.
Boulder City ePKP,PKP =38m.13s.
Overton iZ =12m.25s. and 12m.40s., iPPZ =14m.46s., epPP?Z =17m.17s., esPP?Z = 18m.17s., eSPZ =21m.47s., ePKP,PKP?Z =37m.52s.
Pierce Ferry ePP =14m.32s.
Tucson i =11m.48s., e =22m.2s., ePKKP =29m.44s., ePKP,PKP =37m.50s., e =40m.21s.
Seattle i =12m.19s., eSP =22m.8s., e =22m.17s.
Tacubaya eSKS =21m.23s., iSP =22m.49s., eSS =27m.48s.
College iPP =15m.26s., eS? =21m.30s., e =24m.20s. and 25m.23s., eSSS =31m.25s.
Hungry Horse ePP =15m.26s., eSKS =21m.26s.
La Paz iS =25m.33s.
Chicago e =30m.58s.
Cleveland esSN =28m.46s., eSSN =32m.30s.
Harvard ipPP =20m.48s., isPP =21m.29s., eSPP =28m.57s., esSP =31m.51s.
Andijan epPP =21m.2s.

Continued on next page.

Sverdlovsk SKKS =25m.41s.
Scoresby Sund 21m.27s., 31m.21s., and 32m.11s., SS =36m.36s.
Warsaw eZ =19m.12s., eE =19m.18s., eN =19m.42s., epPKPZ =20m.51s., eN = 22m.34s., eE =22m.48s., e =32m.6s.
Potsdam iPKPZ =18m.38s.
Rathfarnham Castle eZ =18m.50s., 19m.13s., and 22m.5s., eEN =37m.57s.
Raciborzu eNZ =19m.33s.
Skalnate Pleso e =32m.27s.
Collmberg iZ =18m.40s., eZ =18m.59s., 19m.29s., 20m.3s., and 21m.12s., esPKPZ = 22m.11s.
De Bilt ePP =22m.3s., ePPP =25m.22s.
Jena iPKPE =18m.46s., eN =19m.32s. and 20m.0s., epPKP?E =21m.4s., ePP?E = 22m.52s.
Prague iPKP$_2$ =18m.46s., epPKP$_2$ =21m.5s., eSKP =21m.32s., esPKP =21m.43s., esPKP$_2$ =21m.54s., ePP =22m.15s., epPP =24m.20s., eSKKS =27m.35s. and unidentified e readings.
Ogyalla eN =19m.36s. and 19m.48s., e =24m.13s.
Stuttgart iPKPZ =18m.49s., eZ =19m.0s., ePP =22m.13s.
Strasbourg i =18m.51s. and 19m.3s., ePP =22m.4s., ePPP =25m.28s., e =32m.27s., eSSS =44m.57s.
Paris i =18m.51s. and 19m.3s., esPKP =22m.5s., iPP =22m.27s., e =22m.39s., eSPP = 34m.31s., e =38m.25s., eSS =41m.17s.
Zagreb eEZ =19m.9s.
Triest ePKP$_2$ =19m.10s., epPKP$_2$ =21m.32s., ePP =22m.40s., esSKKS =31m.35s., ePSKS =32m.31s., eSS =42m.27s.
Besançon e =18m.55s., 19m.9s., and 21m.45s.
Salo ePPZ =22m.30s.
Padova eZ =19m.9s.
Bologna eZ =19m.17s.
Clermont-Ferrand e =19m.18s., ePP =22m.34s.
Rome ePKP$_2$ =19m.22s., PP =22m.36s.
Toledo iZ =19m.39s., eZ =21m.22s. and 23m.15s.
Algiers Univ. eZ =20m.0s.
Tamanrasset iPKP$_2$Z =20m.50s., esPKPZ =22m.37s., ipPKP$_2$Z =23m.5s., eZ =23m.39s. and 24m.14s., iPPZ =24m.42s., epPPZ =26m.47s., isPPZ =27m.50s., ePPPZ = 28m.57s., iZ =31m.7s.

May 30d. Readings also at 1h. (Algiers Univ. and Tamanrasset), 2h. (Pierce Ferry), 4h. (Lick), 12h. (Sofia, Andijan, Samarkand, near Garm, and near Istanbul), 13h. (Auckland and Tortosa), 14h. (Borzhomi, Erevan, Piatigorsk, near Grozny, Shemakla, and Tiflis), 15h. (Grahamstown, Brisbane, Harvard, Messina, Bandong, and near Djakarta), 16h. (Tamanrasset), 17h. (Tortosa), 18h. (Brisbane and Stuttgart), 20h. (Auckland, near Cobb River, Christchurch, New Plymouth, and Wellington), 21h. (near Mizusawa), 22h. (Brisbane).

May 31d. 9h. 21m. 53s. Epicentre 8°·5S. 74°·0W. Depth of focus 0·030.
(as on 1950, March 14d.).

Felt at Pucallpa, Cerro de Pasco, and Tarma. Suggested depth 150km.

E. Silgado.
Datos Sismológicos del Perú, 1949, 1950. Bol. No. 4, Lima, 1952, p. 20.

A = +·2727, B = −·9509, C = −·1468 ; δ = +13 ; h = +7 ;
D = −·961, E = −·276 ; G = −·040, H = +·141, K = −·989.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo	3·8	201	i 0 55	− 6	i 1 52	+ 4	—	—	—
La Paz	9·8	145	i 2 17	0	i 4 10	+ 5	2 29	PP	4·9
Bogota	13·0	0	e 2 58	0	i 5 11	− 7	i 3 30	pP	—
Chinchina	13·5	353	e 3 4	0	e 5 36	+ 7	i 3 41	pP	—
San Juan	27·8	16	e 5 19	−11	i 9 46	− 9	—	—	e 11·4
Tacubaya	37·2	319	e 6 50	− 1	e 15 15	SS	e 7 28	pP	—
Weston	50·7	4	i 8 38	− 1	—	—	i 9 12	pP	—
Harvard	50·8	4	i 8 39	0	—	—	e 9 12	pP	—
Chicago	51·6	347	e 8 57	+12	e 15 56	+ 8	e 13 28	P$_e$S	—
Tucson	53·6	321	i 8 59	− 1	—	—	e 9 25	pP	—
Ottawa	53·7	359	i 9 0k	− 1	—	—	—	—	—
Shawinigan Falls N.	54·8	3	e 9 8	− 1	—	—	—	—	—
Palomar	58·2	318	i 9 33	0	—	—	—	—	—
Pierce Ferry	58·2	322	i 9 32	− 1	—	—	—	—	—
Boulder City	58·6	322	e 9 34	− 2	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Overton	z.	58·7	323	i 9 37	+ 1	—	—	e 11 36	PP	—
Riverside	z.	59·0	318	i 9 36k	− 2	—	—	e 10 15	pP	—
Pasadena		59·6	318	i 9 41k	− 1	—	—	e 10 19	pP	—
China Lake	z.	60·2	321	i 9 46k	0	—	—	i 10 23	pP	—
Tinemaha		61·4	321	i 9 54k	0	—	—	e 10 33	pP	—
Lick	z.	63·7	319	i 10 10k	0	—	—	e 10 47	pP	—
Reno		63·9	323	e 10 11k	0	—	—	e 10 57	pP	—
Berkeley	z.	64·4	319	i 10 15k	+ 1	—	—	e 10 53	pP	—
Mineral	z.	65·5	321	e 10 20k	− 1	—	—	i 10 39	pP	—
Shasta Dam		66·2	322	i 10 24	− 2	—	—	e 10 57	pP	—
Hungry Horse		66·7	333	i 10 29	0	—	—	i 10 57	pP	—
Seattle		70·3	328	i 10 51k	0	—	—	—	—	—
Victoria		71·4	328	e 10 59	+ 1	—	—	—	—	—
Malaga	z.	79·1	49	i 11 45	+ 4	e 21 29	+ 9	—	—	—
Granada		79·8	49	—	—	21 41	+14	—	—	—
Toledo	z.	80·4	47	i 11 56	+ 8	—	—	—	—	—
Tamanrasset	z.	83·7	66	i 12 10k	+ 5	—	—	i 12 47	pP	—
Algiers Univ.	z.	84·8	52	e 12 14	+ 4	—	—	—	—	—
Aberdeen	E.	87·5	31	e 19 42	?	—	—	—	—	—
Basle		90·6	42	e 12 39	+ 1	—	—	—	—	—
College		90·9	336	i 12 39	0	—	—	i 13 21	pP	—
Stuttgart	z.	91·9	41	e 12 45	+ 1	—	—	—	—	—
Collmberg	z.	94·7	39	e 13 0	+ 3	—	—	—	—	—

Additional readings :—
Huancayo i = 1m.26s., 1m.31s., and 1m.40s.
Bogota isS = 5m.29s., iP_cP = 8m.17s.
Chinchina esS = 6m.1s., iP_cP = 8m.19s.
Tacubaya e = 7m.3s. and 7m.43s.
Tucson ePP = 10m.47s., e = 11m.40s. and 11m.52s.
Lick eZ = 12m.14s.
Shasta Dam e = 12m.17s.
Hungry Horse ePKP,PKP? = 38m.44s.
Seattle i = 10m.58s., 11m.14s., 11m.48s., and 11m.54s.
Tamanrasset ePPZ = 15m.26s.
Algiers e?Z = 11m.39s.
College e = 16m.15s.

May 31d. 13h. 13m. 5s. Epicentre 29°·4N. 130°·6E. (as on 1950, April 4d.).

Intensity IV at Yakusima; II-III at Kagosima and Miyazaki. Suggested origin 30°·5N. 132°·4E. Macroseismic radius 200-300km.

Seismo. Bull. Cent. Met. Obs., Japan, 1950. Tokyo, 1952, pp. 24, 25, with macroseismic chart.

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

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kagosima	2·2	359	0 37	− 1	1 4	− 2	—	—	—
Miyazaki	2·6	16	0 41a	− 3	1 9	− 8	—	—	—
Unzendake	3·3	355	1 40	+47	2 40	+65	—	—	—
Kumamoto	3·4	1	0 55	0	1 31	− 6	—	—	—
Nagasaki	3·4	349	1 4	P_g	1 26	−11	—	—	—
Tomie	3·6	334	0 43	−15	1 31	−11	—	—	—
Ooita	3·9	12	1 0k	− 2	1 38	−12	—	—	—
Simidu	3·9	30	1 4	+ 2	—	—	—	—	—
Hukuoka	4·2	357	1 4a	− 3	1 51	− 6	—	—	—
Kôti	4·8	30	1 23	+ 8	2 26	+14	—	—	—
Matuyama	4·8	22	1 14	− 1	2 22	+10	—	—	—
Muroto	4·9	37	1 23	+ 6	2 52	S_g	—	—	—
Hirosima	5·2	17	1 30	P*	2 37	S*	—	—	—
Siomisaki	6·0	46	1 31	− 1	2 31	−12	—	—	—
Sumoto	6·1	35	1 35	+ 1	2 32	−13	—	—	—
Kobe	6·5	35	1 42	+ 3	3 32	S_g	—	—	—
Owase	6·6	44	1 41	0	3 56	S_g	—	—	—
Osaka	6·7	37	1 49	+ 7	3 39	S_g	—	—	—
Kyoto	7·1	36	1 42	− 6	3 47	S_g	—	—	—
Toyooka	7·1	29	1 49	+ 1	3 35	S*	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Kameyama		7·4	41	2 2	+10	4 26	S_g	—	—	—
Hikone		7·5	37	1 54	+ 1	3 7	−13	—	—	—
Gihu		7·9	39	2 2	+ 3	4 22	S_g	—	—	—
Nagoya		7·9	41	1 59	0	4 25	S_g	—	—	—
Omaesaki		8·3	49	1 20	?	—	—	—	—	—
Shizuoka		8·6	48	2 14	+ 5	4 54	S_g	—	—	—
Toyama		9·1	35	2 11	− 3	4 14	+14	—	—	—
Hunatu		9·2	46	2 14a	− 2	5 21	S_g	—	—	—
Osima		9·2	52	2 16	0	—	—	—	—	—
Wazima		9·5	32	2 22	+ 2	5 14	S_g	—	—	—
Matusiro		9·6	40	2 18	− 3	—	—	—	—	—
Mera		9·6	52	2 45	P*	—	—	—	—	—
Nagano		9·6	39	2 31	+10	5 26	S_g	—	—	—
Yokohama		9·7	49	2 30	+ 8	5 15	S_g	—	—	—
Kumagaya		10·0	45	2 28	+ 1	5 30	S_g	—	—	—
Maebasi		10·0	43	2 31	+ 4	5 26	S_g	—	—	—
Tokyo		10·0	48	2 28	+ 1	4 7	−15	—	—	—
Nanking		10·5	287	i 2 36	+ 1	i 4 39	+ 4	—	—	i 6·0
Utunomiya		10·6	45	2 31	− 5	6 10	L	—	—	(6·2)
Mito		10·8	47	2 22	−17	—	—	—	—	—
Onahama		11·4	46	2 50	+ 3	4 55	− 1	—	—	—
Sendai		12·3	41	3 6	+ 7	—	—	—	—	—
Akita		12·9	34	3 17	+10	—	—	—	—	—
Mizusawa	E.	13·0	39	3 17	+ 8	5 39	+ 4	—	—	—
Vladivostok		13·7	4	e 3 16	− 2	e 5 55	+ 3	—	—	—
Aomori		14·1	33	3 39	+16	—	—	—	—	—
Sapporo		16·2	29	3 54	+ 4	7 50	+59	—	—	—
Guam		20·6	138	e 6 8	?	9 36	SS	—	—	—
Irkutsk		30·0	327	e 6 9	− 3	e 11 30	+20	—	—	—
Almata		44·7	304	e 8 16	0	—	—	—	—	—
Naryn		45·4	302	e 8 50?	+28	—	—	—	—	—
New Delhi		46·4	284	e 8 29	− 1	e 15 34	+16	—	—	e 23·7
Andijan		48·2	301	e 8 48	+ 4	e 16 3	+20	—	—	—
Fergana		48·7	301	e 8 40	− 8	—	—	—	—	—
Tchimkent		50·1	303	i 8 58	− 1	—	—	—	—	—
Tashkent		50·4	301	e 9 1	0	—	—	—	—	—
Obi-garm		50·5	299	e 9 9	+ 7	—	—	—	—	—
Kodaikanal	E.	53·0	262	—	—	e 18 25	ScS	—	—	—
Bombay	E.	53·3	273	—	—	e 17 18	+24	—	—	—
Sverdlovsk		55·1	322	i 9 33	− 3	17 23	+ 5	—	—	—
Ashkabad		59·4	300	e 9 56	−10	—	—	—	—	—
College		60·3	29	i 10 10	− 3	i 18 20	− 6	i 10 26	pP	e 26·8
Brisbane	Z.	60·5	157	e 10 17	+ 3	—	—	—	—	—
Riverview		65·8	162	e 11 1	+12	e 19 44	+ 9	e 20 55	PPS	e 32·1
Moscow		67·8	323	e 10 59	− 3	—	—	—	—	—
Gori		68·6	308	e 11 8	+ 1	—	—	—	—	—
Yalta		74·3	313	e 11 37	− 4	—	—	—	—	—
Upsala		75·5	332	—	—	e 30 55?	SSS	—	—	e 41·9
Ksara		77·8	301	e 12 1	0	—	—	15 17?	PP	—
Warsaw		78·2	325	e 17 25	PPP	e 20 9	?	—	—	e39·9
Victoria		78·2	41	e 12 4	+ 1	e 21 19	−38	—	—	—
Scoresby Sund		78·5	352	12 1	− 3	22 7	+ 6	27 19	SS	38·9
Istanbul		79·2	312	(e 12 8)	0	e 12 8	P	—	—	—
Skalnate Pleso		80·2	322	e 12 13	− 1	—	—	—	—	—
Potsdam		82·0	328	e 12 23	0	—	—	—	—	e 40·9
Collmberg	Z.	82·7	326	e 12 24	− 3	—	—	e 15 33	PP	e 43·4
Prague		82·9	325	e 12 23	− 5	e 22 27?	−21	—	—	e 43·9
Shasta Dam		82·9	48	i 12 30	+ 2	—	—	i 12 42	pP	—
Hungry Horse		83·4	38	e 12 29	− 1	—	—	i 12 45	pP	—
Mineral	Z.	83·6	48	e 12 43	+12	—	—	—	—	—
Jena	N.	83·7	326	e 12 33	+ 1	—	—	—	—	—
Cheb		83·8	326	—	—	e 23 16	+21	—	—	—
Lick	Z.	85·2	50	e 12 41k	+ 2	—	—	e 12 53	pP	—
Reno		85·2	47	e 12 41	+ 2	—	—	e 15 23	PP	—
De Bilt		85·8	330	e 12 37	− 5	e 23 25	+10	—	—	e 41·9

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		85·9	322	e 12 40	− 3	e 23 9	[+ 2]	e 15 26	PP	e 40·9
Stuttgart		86·2	326	e 12 44	0	e 23 8	[− 1]	e 16 7	PP	e 38·9
Strasbourg		87·1	327	e 12 46	− 3	—	—	—	—	e 44·9
Tinemaha	z.	87·6	49	i 12 52	+ 1	—	—	—	—	—
Kew		88·6	332	e 12 56	0	e 23 24	[0]	e 24 58	PS	e 41·9
China Lake	z.	88·8	50	e 12 59	+ 2	—	—	i 13 12	pP	—
Rome		89·0	319	e 12 57	− 1	e 23 40	− 5	e 16 25	PP	e 44·7
Paris		89·4	329	e 13 1	+ 1	e 25 7	PS	e 16 30	PP	e 47·9
Pasadena	z.	89·4	50	e 12 59	− 1	—	—	e 13 9	pP	—
Riverside	z.	90·0	50	e 13 3	0	—	—	—	—	—
Overton	z.	90·4	48	e 13 6	+ 2	—	—	e 13 17	pP	—
Boulder City		90·5	48	e 13 5	0	—	—	—	—	—
Pierce Ferry		90·9	48	e 13 6	− 1	—	—	—	—	—
Clermont-Ferrand		91·3	326	e 13 19	+10	e 23 58	− 8	e 16 50	PP	50·9
Tucson		95·4	49	e 13 29	+ 1	—	—	e 13 41	pP	—
Tamanrasset	z.	105·9	309	18 26	[+ 1]	—	—	i 18 42	PP	—

Additional readings :—
Mizusawa SN =5m.43s.
Bombay eN =17m.24s.
College eSS =22m.39s., eSSS? =24m.25s.
Riverview eSSS?E =27m.13s., eQE =29·5m.
Upsala eE =37m.27s., eN =39m.19s., eE =41m.16s.
Istanbul ePKP =1m.3s.
Collmberg eZ =12m.27s., 12m.44s., and 12m.59s.
Reno e =12m.53s., eE =13m.20s.
Triest ePPS? =24m.30s.
Stuttgart ePZ =12m.47s., eS =24m.7s.
Rome eSS =29m.53s., eSSS =33m.40s.
Paris eSS =30m.5s., e =30m.55s., eQ =36m.45s.
Overton ePPZ =16m.35s.
Clermont-Ferrand ePS =25m.31s., eSS =30m.33s.
Tucson ePP =17m.14s.
Tamanrasset eZ =20m.30s.
Long waves were also recorded at Sitka, Seattle, Harvard, Bermuda, and other European stations.

May 31d. 20h. 30m. 4s. Epicentre 47°·2N. 14°·5E.

Intensity IV-V at Unzmarkt (Steiermark). Epicentre as adopted. Macroseismic area 4000 sq.km.

Makroseismische Beobachtungen, 1950, Jahrbücher der Zentralanstalt für Meteorologie und Geodynamik, Jahrgang 1950, Neue Folge, 87 Band, Wien, 1951, p. E1-E2, with macroseismic chart.

$A = +\cdot6602$, $B = +\cdot1707$, $C = +\cdot7314$; $\delta = -5$; $h = -4$;
$D = +\cdot250$, $E = -\cdot968$; $G = +\cdot708$, $H = +\cdot183$, $K = -\cdot682$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Triest		1·6	198	—	—	i 0 50	− 1	e 1 24	S_gS_g
Prague		2·9	359	e 0 49	+ 1	e 1 23	− 1	e 1 28	S^*
Cheb		3·2	334	e 0 57	+ 5	e 1 34	+ 2	—	—
Stuttgart	z.	3·9	296	0 57	− 5	e 1 48	− 2	e 1 14	P_g
Jena		4·2	334	—	—	e 1 53?	− 4	e 2 11	S^*
Collmberg	z.	4·2	347	e 1 5	− 2	e 1 48	− 9	e 2 25	S_g
Strasbourg		4·7	290	—	—	e 2 42	S_g	—	—

Additional readings :—
Prague i =53s., e =1m.7s., eS? =1m.16s., e =1m.31s.
Stuttgart eZ =1m.54s. and 1m.58s., eS_gZ =2m.9s.
Jena eE =2m.4s.
Collmberg eZ =1m.15s., 2m.6s., and 2m.10s., eSZ =2m.16s., e =3m.7s.

May 31d. Readings also at 0h. (near Garm and near Huancayo), 3h. (Brisbane), 4h. (Overton, Pierce Ferry, Collmberg, Upsala, Stuttgart, Andijan, Obi-garm, Samarkand, Tashkent, Tchimkent, near Ashkabad, Kizyl-Arvat, and Mary), 7h. (Overton, Pierce Ferry, Hungry Horse, near Fort de France and near Naryn), 8h. (Istanbul, Garm, and near Obi-garm), 9h. (Toledo, Tortosa, near Lisbon, and Malaga, Naryn, and near Frunse), 10h. (Overton, Prague, Upsala, and La Paz), 11h. (Brisbane, Pierce Ferry, Collmberg, and Stuttgart), 12h. (Upsala), 14h. (near Gori), 16h. (near Ashkabad and near Triest), 18h. (near Alicante), 19h. (Brisbane and Wellington), 20h. (Brisbane and Prague), 21h. (near Seven Falls), 22h. (Pierce Ferry), 23h. (near Garm),

June 1d. Readings at 0h. (College), 1h. (Pierce Ferry), 3h. (near Obi-garm and Shemakla), 5h. (Stalinabad, near Obi-garm, and near Mizusawa), 6h. (Strasbourg and near Garm (2)), 8h. (Pierce Ferry), 9h. (near Mary and near Ashkabad), 10h. (near Huancayo), 11h. (near Granada and near Garm), 12h. (near Obi-garm and near Istanbul), 13h. (College, Clermont-Ferrand, and near Apia), 14h. (College), 16h. (Collmberg), 18h. (near Istanbul), 19h. (Overton, Seattle, and Victoria), 20h. (Collmberg), 21h. (Cleveland), 22h. (near Overton), 23h. (near Andijan, Fergana, Kulyab (2), Obi-garm (2), and Stalinabad (2)).

June 2d. Readings at 0h. (Collmberg, near Bucharest, Sofia, Istanbul, and near Fergana), 1h. (Kulyab, Stalinabad, and near Obi-garm), 2h. (Sofia and Istanbul), 3h. (Collmberg, Mount Wilson, Pasadena, Tinemaha, Tucson (2), and Pierce Ferry), 4h. (Tamanrasset), 5h. (near Athens, Bucharest, Sofia, and Istanbul), 6h. (Bucharest, Rome, near Athens, and Istanbul), 9h. (Harvard, near Athens, and near Fergana), 10h. (Pierce Ferry, Messina, Fergana, near Obi-garm, and near Tacubaya), 11h. (near Fort de France), 12h. (Brisbane, Overton, Pierce Ferry, Hungry Horse, College, near Alicante, and near Tortosa), 14h. (near Andijan), 15h. (near Prague), 16h. (Alicante), 17h. (near Santa Clara), 18h. (near La Paz), 19h. (Tamanrasset, Victoria (2), near Hungry Horse, and near Nanking), 20h. (Hungry Horse, College, and Tortosa), 21h. (Tucson, Overton (2), Pierce Ferry, and near Boulder City), 22h. (near Oaxaca, Tacubaya, and near Overton), 23h. (Shasta Dam, Hungry Horse, Victoria, College, Nanking, Irkutsk, near Istanbul, and near Tashkent).

June 3d. Readings at 0h. (De Bilt, Potsdam, Strasbourg, and Granada), 1h. (Auckland), 2h. (Wellington, Mount Wilson, Pasadena, Palomar, Riverside (2), Tinemaha (2), Tucson (2), Overton, Lick (2), Hungry Horse, College, Collmberg (2), and Stuttgart), 3h. (Bombay, Poona, New Delhi, Collmberg, Tamanrasset, Pretoria, Pierce Ferry (2), Berkeley, Lick, Shasta Dam, Mineral, and Hungry Horse), 5h. (near Shasta Dam), 7h. (Nanking), 8h. (Nanking, Hungry Horse, and Tamanrasset), 9h. (Pretoria, near Garm, near Kulyab, Obi-garm, and Stalinabad), 10h. (near Naryn), 11h. (near Obi-garm), 13h. (Crest Line, Haiwee, Pasadena, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Lick, Shasta Dam, Hungry Horse, Seattle, Victoria, Tamanrasset, Huancayo, and near La Paz), 14h. (Rome), 15h. (Auckland and Tuai), 16h. (Mount Wilson, Riverside, Tucson, Overton, Lick, and near Ashkabad), 19h. (Andijan, Mary, Tashkent, near Fergana (2), Kulyab (2), Garm (2), Obi-garm (2), Samarkand, and Stalinabad (2)), 21h. (Brisbane, Boulder City, Overton, Pierce Ferry, Shasta Dam, and College), 22h. (Collmberg, Pierce Ferry, Hungry Horse, and College).

June 4d. 6h. 37m. 8s. Epicentre 36°·0S. 178°·0W. (as on 1947, Dec. 5d.).

$A = -·8104$, $B = -·0283$, $C = -·5852$; $\delta = +1$; $h = 0$;
$D = -·035$, $E = +·999$; $G = +·585$, $H = +·020$, $K = -·811$.

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Tuai	N.	4·8	233	i 1 19	+ 4	i 2 15	+ 3
Arapuni		5·4	248	e 1 25	+ 1	i 2 28	0
Wellington		7·7	225	e 2 19	P*	e 4 4	S_g
Cobb River	E.	8·9	232	—	—	e 4 13	+18
Christchurch		10·4	221	—	—	e 4 31	− 1
Brisbane	Z.	26·0	281	e 5 25 a	−11	—	—
Lick	Z.	89·7	41	e 13 2 k	+ 1	—	—
Riverside	Z.	89·7	46	e 13 1	0	—	—
China Lake	Z.	90·9	45	e 13 7	0	—	—
Tucson		92·5	51	e 13 17	+ 3	—	—
Tamanrasset	Z.	166·5	194	e 20 14	[+ 7]	—	—

Additional readings :—
Lick eZ = 13m.17s.
Riverside eZ = 13m.17s.
China Lake eZ = 13m.28s.
Tamanrasset eZ = 20m.25s.

June 4d. 7h. 29m. 49s. Epicentre 7°·2N. 126°·3E. (as on 1943, March 22d.).

$A = -·5874$, $B = +·7997$, $C = +·1245$; $\delta = +6$; $h = +7$;
$D = +·806$, $E = +·592$,; $G = -·074$, $H = +·100$, $K = -·992$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Guam		19·2	69	4 27	− 1	7 21	−38	—	—	—
Djakarta		23·6	236	e 5 8	− 5	e 9 24	− 1	—	—	—
Nanking		25·7	344	—	—	e 10 11	+10	—	—	e 15·4
Vladivostok		36·1	8	e 7 3	− 2	e 12 44	− 1	—	—	—
Brisbane		43·1	144	i 8 2	− 2	i 14 22	− 8	—	—	—
Riverview		47·1	151	e 8 35	0	e 15 25	− 3	e 18 43	SS	e 21·5
Irkutsk		48·4	342	e 8 47	+ 1	—	—	—	—	—
Bombay	E.	53·2	288	e 5 44	?	—	—	—	—	—
Przhevalsk		54·8	319	e 9 33	− 1	—	—	—	—	—
Almata		56·2	318	e 9 46	+ 2	—	—	—	—	—
Andijan		58·4	314	e 10 0	0	e 18 16	+14	—	—	—
Fergana		58·6	314	e 10 1	0	—	—	—	—	—
Obi-garm		59·7	312	e 10 10	+ 1	—	—	—	—	—
Stalinabad		60·3	311	e 10 17	+ 4	18 43	+17	—	—	—
Tashkent		60·7	313	e 10 17?	+ 2	e 18 40?	+ 8	—	—	—
Samarkand		62·0	311	e 10 27	+ 3	—	—	—	—	—
Ashkabad		68·2	309	e 11 9	+ 5	—	—	—	—	—
Sverdlovsk		70·8	328	e 11 17	− 3	e 20 35	0	—	—	—
Tiflis		78·9	311	e 12 10	+ 3	—	—	—	—	—
Gori		79·4	312	e 12 8	− 1	—	—	—	—	—
Abastumanj		80·4	311	e 12 23	+ 8	—	—	—	—	—
College		81·8	26	i 12 19	− 3	e 22 25	−10	e 27 41	SS	e 37·4
Moscow		83·4	326	e 12 30	0	e 22 56	+ 5	—	—	—
Ksara		86·4	303	i 12 48	+ 3	e 24 37	PS	—	—	—
Yalta		86·5	314	e 12 51	+ 5	e 23 20	− 2	—	—	—
Pulkovo		86·8	330	—	—	i 23 32	+ 7	—	—	—
Warsaw		93·6	324	—	—	e 24 7	[+14]	e 24 33	S	e 55·2
Potsdam	Z.	98·1	325	—	—	e 26 17	PS	—	—	e 52·2
Prague		98·8	323	—	—	e 25 50	+40	—	—	—
Cheb		99·4	324	—	—	e 24 42	[+18]	e 29 30	PKKP	—
Shasta Dam		101·1	46	e 13 54	+ 1	—	—	e 17 13	PP	—
Stuttgart		101·9	323	—	—	e 25 47	+11	—	—	e 54·2
De Bilt		102·6	327	e 18 11	PP	e 24 41	[+ 1]	—	—	e 48·2
Rome		102·7	316	—	—	e 25 57	+14	—	—	e 52·0
Hungry Horse		103·6	36	e 14 0	− 4	—	—	e 17 18	PP	—
Kew		105·8	328	e 30 25	?	e 35 8	?	e 43 21	Q	e 47·2
China Lake	Z.	106·5	49	e 18 30	PP	—	—	—	—	—
Clermont-Ferrand		106·9	322	—	—	e 26 18	0	—	—	57·2
Tamanrasset	Z.	114·9	299	i 18 41	[− 2]	—	—	e 19 45	PP	—
Weston		128·1	16	e 21 14	PP	—	—	—	—	e 59·4
Chinchina	Z.	155·0	59	i 19 48	[− 6]	—	—	i 20 14	PKP_2	—

Additional readings :—
Riverview eSSE = 18m.47s.
College e = 14m.27s.
Warsaw eN = 24m.42s., eE = 25m.45s., 28m.25s., and 30m.53s.
Long waves were also recorded at Berkeley, Pasadena, Tucson, and other European stations.

June 4d. 7h. 58m. 7s. Epicentre 7°·2N. 126°·3E. (as at 7h. 29m.).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Djakarta		23·6	236	e 5 11	− 2	e 9 29	+ 4	—	—	—
Vladivostok		36·1	8	i 7 3	− 2	—	—	—	—	—
Brisbane	Z.	43·1	144	e 8 1	− 3	—	—	—	—	—
Riverview		47·1	151	—	—	e 15 48	+20	e 18 39	SS	e 22·4
Przhevalsk		54·8	319	e 9 35	+ 1	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Almata		56·2	318	e 9 49	+ 5	—	—	—	—	—
Andijan		58·4	314	e 9 59	− 1	e 18 13	+11	—	—	—
Obi-garm		59·7	312	e 10 8	− 1	—	—	—	—	—
Stalinabad		60·3	311	i 10 12	− 1	e 18 40?	+14	—	—	—
Samarkand		62·0	311	e 10 23	− 1	—	—	—	—	—
Ashkabad		68·2	309	e 11 5	+ 1	—	—	—	—	—
Tiflis		78·9	311	e 12 10	+ 3	—	—	—	—	—
College		81·8	26	e 12 18	− 4	—	—	—	—	—
Moscow		83·4	326	e 12 30	0	e 22 55	+ 4	—	—	—
Ksara		86·4	303	e 12 47	+ 2	e 24 41	PS	—	—	—
Shasta Dam		101·1	46	e 13 51	− 2	—	—	—	—	—
Stuttgart		101·9	323	e 31 18	PKKP	—	—	—	—	e 55·9
Hungry Horse		103·6	36	e 14 1	− 3	—	—	—	—	—
Pierce Ferry		109·0	47	e 14 32	P	—	—	—	—	—
Tamanrasset	z.	114·9	299	e 18 34	[− 9]	—	—	19 40	PP	—
Harvard		127·9	16	e 19 0	[− 8]	—	—	e 23 17	PPP	e 46·0
Chinchina	z.	155·0	59	i 19 48	[− 6]	—	—	—	—	—

Long waves were also recorded at Potsdam.

June 4d. 14h. 11m. 2s. Epicentre 36°·9N. 28°·8E. (as on 1948, Aug. 10d,).

Intensity IV at Rhodes and Koskinou.

A. Galanopoulos.
Seismo. Bull., 1950, Athens, 1951, p.17.

$A = +·7025$, $B = +·3862$, $C = +·5978$; $\delta = +2$; $h = -2$;
$D = +·482$, $E = -·876$; $G = +·524$, $H = +·288$, $K = -·802$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Athens		4·2	286	e 1 8	+ 1	e 2 6	+ 9	—	—	—
Istanbul		4·2	2	e 1 9	+ 2	i 2 39	S_g	—	—	—
Ksara		6·6	116	e 1 34	− 7	—	—	—	—	e 4·1
Sofia		7·2	326	e 1 54	+ 5	e 3 53	S_g	—	—	—
Helwan	z.	7·3	162	e 1 48	− 2	3 8	− 7	—	—	—
Bucharest		7·8	346	—	—	e 3 15	−13	—	—	4·1
Messina		10·6	281	—	—	e 4 32	− 5	—	—	—
Rome		13·6	297	e 3 37	+20	—	—	—	—	e 9·8
Triest		14·3	312	e 3 22	− 4	e 5 59	− 7	e 4 34	P_gP_g	i 8·2
Prague		16·7	326	e 3 58	+ 1	e 7 4	+ 1	—	—	—
Chur		17·4	309	e 4 11	+ 5	—	—	—	—	—
Collmberg		18·2	326	e 4 19	+ 3	—	—	—	—	—
Zürich		18·2	312	e 4 15	− 1	—	—	—	—	—
Stuttgart		18·6	316	e 4 20	− 1	—	—	—	—	e 10·0
Basle		18·9	312	e 4 11	−13	—	—	—	—	—
Strasbourg		19·3	315	e 4 41	PP	—	—	—	—	e 10·9
Copenhagen		21·8	335	e 5 3	+ 7	—	—	—	—	12·0
Paris		22·5	310	e 5 13	+11	—	—	e 5 18	PP	e 13·0
Tamanrasset	z.	24·5	240	e 5 17	− 5	—	—	e 5 59	PP	—
Pretoria	z.	62·3	181	e 10 19	− 7	—	—	—	—	—

Additional readings :—
Helwan SEZ = 2m.52s., iEZ = 2m.57s.
Messina e = 4m.45s. and 5m.8s.
Triest ePS? = 6m.58s., $eS_gS_gS_g$ = 7m.45s.
Prague e = 4m.11s., 4m.18s., 5m.12s., and 5m.24s.
Collmberg eP*Z = 4m.28s., eS?Z = 4m.58s., eS*?Z = 5m.8s.
Stuttgart ePZ = 4m.28s., e = 4m.33s.
Basle e = 4m.39s.
Paris e = 5m.46s.
Long waves were also recorded at Potsdam, Zagreb, Cheb, Budapest, De Bilt, and Granada.

June 4d. 15h. 18m. 20s. Epicentre 21°·8S. 170°·8E. Depth of focus 0·005.
(as on 1948, Oct. 16d.).

$A = -·9173$, $B = +·1486$, $C = -·3693$; $\delta = -10$; $h = +4$;
$D = +·160$, $E = +·987$; $G = +·365$, $H = -·059$, $K = -·929$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Auckland	N.	15·4	168	i 3 40	+ 5	i 6 38	+14	e 15 12	S_cS	—
Brisbane		17·1	247	i 3 56	0	i 7 5	+ 2	—	—	i 7·9
Tuai	N.	17·8	165	e 4 10	+ 5	e 7 22	+ 4	—	—	—
Apia		18·4	68	4 11a	− 1	e 8 11	+39	—	—	—
Cobb River	E.	19·3	176	e 4 25	+ 3	—	—	—	—	—
Wellington		19·7	172	e 4 28	+ 1	e 8 14	+14	e 4 40	pP	e 12·0
Kaimata	N.E.	20·7	180	e 5 40?	?	—	—	—	—	—
Riverview		21·0	230	i 4 42a	+ 2	i 8 31	+ 6	i 4 59	pP	e 10·2
Guam		43·5	321	7 55	− 4	—	—	—	—	—
Djakarta		63·6	275	e 10 22	− 4	e 18 47	− 7	e 10 47	pP	—
Vladivostok		73·9	332	i 11 26	− 4	e 20 47	− 8	e 12 1?	pP	—
Berkeley		86·4	47	e 12 36a	0	e 23 9	+ 4	i 13 3	pP	e 36·1
Lick	Z.	86·6	47	e 12 37a	0	—	—	e 13 5	pP	—
Pasadena	Z.	87·5	52	e 12 40	− 2	—	—	e 13 1	pP	—
Fresno	E.	87·6	49	e 12 45	+ 3	—	—	—	—	—
Shasta Dam		87·8	44	i 12 42	− 1	—	—	i 13 10	pP	—
Riverside	Z.	88·0	52	e 12 42	− 2	—	—	e 13 1	pP	—
Palomar		88·1	53	e 13 13	pP	—	—	—	—	—
Mineral	Z.	88·2	45	e 12 45k	0	—	—	e 13 11	pP	—
China Lake	Z.	88·7	51	i 12 46	− 1	—	—	i 13 5	pP	—
Tinemaha	Z.	88·8	50	i 12 48	0	—	—	i 13 6	pP	—
Reno		88·9	47	e 12 48a	0	e 23 10	[0]	e 13 16	pP	—
Boulder City		90·7	51	e 12 57	0	—	—	—	—	—
Overton	Z.	91·3	51	i 12 59	− 1	—	—	e 15 36	PP	—
Pierce Ferry		91·4	52	e 13 0	0	—	—	—	—	—
Seattle		91·5	38	e 13 27	pP	e 24 50	PS	—	—	—
College		92·1	17	i 12 58	− 5	e 23 16	[−13]	i 13 18	pP	e 44·0
Tucson		92·1	56	e 13 4	+ 1	e 22 50	[−39]	e 13 28	sP	e 42·8
Irkutsk		93·6	326	13 6	− 4	e 24 5	− 6	23 13	SKS	—
Hungry Horse		96·7	40	—	—	—	—	e 38 18	P'P'	—
Frunse		108·9	309	e 19 2	PP	—	—	—	—	—
Andijan		110·1	307	e 18 51	PP	e 28 18	PS	—	—	—
Garm		111·3	305	e 18 34	[+ 7]	—	—	—	—	—
Stalinabad		112·4	304	e 18 43	[+14]	—	—	—	—	—
Tashkent		112·5	308	e 18 6	[−23]	—	—	e 19 7	PP	—
Sverdlovsk		119·0	324	i 18 37	[− 4]	e 25 26	[− 4]	i 19 55	PP	—
Tiflis		130·8	307	e 19 6	[+ 2]	—	—	—	—	—
Moscow		131·7	327	e 19 4	[− 2]	e 22 30	PKS	e 21 20	PP	—
Yalta		137·9	313	e 22 0	PP	—	—	—	—	—
Ksara		138·7	297	e 19 20k	[+ 1]	—	—	i 22 11	PP	—
Copenhagen		142·5	341	e 19 20	[− 6]	—	—	e 22 23	PP	—
Helwan	Z.	142·8	292	19 20	[− 6]	—	—	22 23	PP	—
Raciborzu	Z.	144·5	330	i 19 26	[− 3]	—	—	—	—	—
Potsdam		145·0	338	i 19 8a	[−22]	—	—	e 19 29	PKP	—
Budapest	N.	145·7	326	19 32	[+ 1]	—	—	20 0	PKP_2	—
Collmberg	Z.	145·8	335	e 19 29	[− 2]	—	—	e 22 46	PP	—
Sofia		145·8	316	e 19 28	[− 3]	—	—	—	—	—
Prague		146·2	333	i 19 30a	[− 2]	e 26 30	[− 2]	e 20 2	pPKP	—
Jena	N.	146·7	335	e 19 31	[− 2]	—	—	—	—	—
De Bilt		147·8	344	i 19 36	[+ 1]	e 42 10	SS	e 23 7	PP	e 71·7
Zagreb		148·4	326	e 19 38?	[+ 2]	—	—	—	—	—
Rathfarnham Castle		148·5	356	i 19 37	[+ 1]	e 23 5	PP	i 20 16	pPKP	—
Stuttgart	Z.	149·4	337	e 19 34	[− 3]	—	—	e 20 11	pPKP	—
Karlsruhe		149·5	338	e 19 41	[+ 4]	—	—	—	—	—
Kew		149·6	350	e 19 35	[− 2]	e 27 48	SKKS	e 21 54	PP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Triest		149·7	328	e 19 42	[+ 4]	e 29 53?	SKKS	i 20 12 pPKP	—
Strasbourg		150·0	338	i 19 41	[+ 3]	—	—	e 23 15 PP	—
Zürich		150·7	336	e 19 36k	[− 3]	—	—	e 22 48 PP	—
Chur		150·8	335	e 19 43	[+ 4]	—	—	— —	—
Basle		151·0	337	e 19 41	[+ 1]	—	—	— —	—
Paris		151·5	345	e 19 40	[0]	—	—	i 20 4 pPKP	e 78·7
Rome		152·9	332	e 19 40a	[− 2]	—	—	i 23 32 PP	e 56·8
Messina		153·2	314	e 20 9	pPKP	—	—	— —	—
Clermont-Ferrand		154·1	340	e 19 51	[+ 7]	e 25 0	?	e 20 5 pPKP	—
Toledo	z.	161·5	348	i 20 36	pPKP	e 29 32	SKKS	e 24 38 PP	—
Alicante		161·9	338	20 11	[+18]	—	—	24 29 PP	e 72·8
Granada		163·9	344	20 46k	PKP_2	45 0	SS	24 28 PP	91·5
Malaga	z.	164·5	346	i 19 53a	[− 3]	—	—	i 20 42 PKP_2	81·1
Tamanrasset	z.	166·3	277	i 20 29	pPKP	—	—	e 21 17 PKP_2	—

Additional readings :—
Brisbane iE =4m.20s.
Riverview iPPEZ =5m.5s., iPPPN =5m.15s., iZ =5m.45s., iEZ =8m.38s., iZ =9m.3s.
Vladivostok isS =21m.30s.
Berkeley isPZ =13m.15s., eSKSEN =22m.51s., isSEN =23m.52s.
Lick eZ =12m.47s., esPZ =13m.19s.
Pasadena isPZ =13m.6s.
Riverside isPZ =13m.12s.
China Lake isPZ =13m.14s.
Tinemaha isPZ =13m.14s.
Reno eN =13m.20s., eE =13m.34s., eZ =16m.59s.
Overton ePPPZ =18m.30s.
Seattle e =14m.28s.
College e =13m.41s., ePP? =16m.11s., e =28m.8s.
Potsdam epPKPZ =20m.4s., iPPZ =22m.47s.
Budapest PKPE =19m.39s., eN =20m.20s. and 20m.50s.
Collmberg eZ =19m.38s., 20m.9s., 20m.18s., 20m.51s., 21m.15s., 21m.39s., 22m.20s., and 22m.59s.
Prague $ePKP_2$ =19m.37s., i =19m.41s., e =19m.53s., isPKP =20m.7s., $epPKP_2$ = 20m.15s., $esPKP_2$ =20m.22s., e =20m.30s. and 20m.45s., eN =20m.51s., e = 20m.59s., eE =21m.31s., eN =21m.56s., e =22m.4s. and 22m.19s., ePP =23m.0s., eSKP =23m.7s., epPP =23m.19s., esPP =23m.30s., ePPP =26m.21s., eSKSP = 32m.51s., ePPS =35m.34s., eSS? =35m.52s.
Jena $ePKP_2$ =19m.59s., eN =21m.18s.
De Bilt eZ =20m.12s.
Rathfarnham Castle eEN =39m.35s. and 47m.42s., iEN =50m.55s.
Stuttgart iPKPZ =19m.40s. and 19m.44s., eZ =21m.47s.
Triest $ePKP_2$ =20m.3s., $ipPKP_2$ =20m.34s., ePP =23m.23s.
Zürich iPKP =19m.41s.
Paris $iPKP_2$ =19m.54s., i =20m.20s., 20m.23s., and 21m.0s., e =21m.19s., ePP = 23m.25s., e =24m.5s.
Messina e =20m.52s.
Clermont-Ferrand e =20m.52s.
Granada PPP =27m.49s.
Malaga iPPZ =24m.38s., PPPZ =28m.24s.
Tamanrasset $epPKP_2Z$ =21m.46s., ePPZ =24m.46s., epPPZ =25m.12s., ePPPZ = 28m.47s., epPPPZ =29m.5s.
Long waves were also recorded at Harvard.

June 4d. Readings also at 0h. (Brisbane (2), China Lake, Tinemaha, and near La Paz), 1h. (Brisbane, Riverside, China Lake, Tinemaha, Tucson, Pierce Ferry, Lick, Shasta Dam (2), Hungry Horse, College, Ksara, Jena, Paris, Strasbourg, Stuttgart, and Tamanrasset), 2h. (Kew, Potsdam, and Rome), 3h. (Brisbane, Lick, Hungry Horse, Stuttgart, Kulyab, Naryn, Samarkand, near Andijan, Fergana, Garm, Stalinabad, and near Obi-garm), 4h. (Harvard, Weston, Pierce Ferry, Tamanrasset, and near San Juan), 5h. (near Garm), 7h. (Garm and near Kulyab), 8h. (Tucson, Istanbul, Alicante (2), near Prague, and near Tacubaya), 9h. (Mary, near Ashkabad, and Kizyl-Arvat), 10h. (Brisbane, Lick, and Granada), 11h. (Alicante and near Chur), 12h. (Alicante, Obi-garm, near Kulyab, and Stalinabad), 13h. (near Garm), 14h. (Auckland, Wellington, Brisbane, Hungry Horse, and College), 15h. (Tamanrasset and near Malaga), 17h. (Granada, Stalinabad, and near Obi-garm), 18h. (Lick), 22h. (near Tacubaya).

June 5d. 11h. 16m. 10s. Epicentre 87°·0N. 50°·0E.

Epicentre as given by the J.S.A.

$A = +·0339$, $B = +·0404$, $C = +·9986$; $\delta = -2$; $h = -14$;
$D = +·766$, $E = -·643$; $G = +·642$, $H = +·765$, $K = -·053$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Scoresby Sund		18·9	262	i 4 26	+ 2	—	—	—	—	9·5
Pulkovo		27·6	201	i 5 56	+ 5	e 10 30	− 2	—	—	—
Upsala		27·8	216	e 6 21	PP	e 10 34	− 1	—	—	e 11·8
College		28·2	18	i 5 54	− 2	e 10 40	− 1	e 6 32	PP	e 13·3
Sverdlovsk		30·4	168	e 6 12	− 4	e 11 15?	− 1	—	—	—
Moscow		31·5	193	e 6 23	− 3	e 11 27	− 7	—	—	—
Copenhagen		32·1	221	i 6 31	0	e 11 40	− 3	—	—	16·8
Rathfarnham Castle		35·3	240	e 7 13	+14	e 14 23	SS	e 8 43	PPP	e 18·2
Warsaw		35·3	212	e 7 1	+ 2	e 12 38	+ 5	e 15 2	SS	e 16·8
Potsdam	z.	35·4	221	i 7 0	0	—	—	e 8 26	PP	e 17·8
De Bilt		36·0	228	e 7 5	0	e 12 50	+ 6	e 8 35	PP	e 16·8
Sitka		36·1	6	e 7 4	− 1	i 12 50	+ 5	e 8 12	PP	e 17·5
Collmberg	z.	36·5	219	e 7 8	− 1	—	—	e 8 40	PP	—
Jena	N.	36·9	221	e 7 12	0	—	—	e 8 40	PP	—
Kew		36·9	234	e 7 14	+ 2	—	—	e 9 5	PPP	e 23·8
Stuttgart		39·2	223	e 7 32a	+ 1	e 13 35	+ 3	e 9 3	PP	e 18·8
Paris		39·4	231	i 7 34	+ 1	e 13 40	+ 5	i 9 2	PP	e 18·8
Strasbourg		39·6	225	e 7 35	0	e 13 39	+ 1	e 9 12	PP	e 20·8
Kishinev		40·4	205	e 7 43	+ 2	e 13 55	+ 5	—	—	—
Saskatoon		40·8	339	e 9 12	PP	i 14 2	+ 6	—	—	19·9
Triest		42·1	218	e 7 51	− 4	e 14 8	− 8	e 9 29	PP	—
Clermont-Ferrand		42·4	230	e 7 58	0	e 14 28	+ 8	e 9 42	PP	20·3
Yalta		42·8	197	e 8 2	+ 1	i 14 29	+ 3	9 35	PP	—
Bucharest		43·0	206	—	—	e 14 34	+ 5	—	—	28·8
Grozny		43·9	185	e 8 15	+ 5	—	—	e 9 52	PP	—
Almata		44·2	152	e 8 10	− 2	e 14 36	−10	—	—	—
Hungry Horse		44·8	346	i 8 16	− 1	—	—	i 9 58	PP	—
Seattle		45·5	354	e 8 31	+ 8	e 15 11	+ 6	e 9 56	PcP	e 24·8
Tiflis		45·5	186	e 8 30	+ 7	e 15 8	+ 3	e 10 14	PP	—
Rome		45·9	220	e 8 23k	− 3	e 15 8	− 3	e 10 28	PP	e 23·8
Tashkent		46·0	160	—	—	e 15 9	− 3	—	—	—
Naryn		46·1	152	e 8 29	+ 1	e 18 20	ScS	—	—	—
Istanbul		46·3	202	e 8 29	0	e 15 19	+ 3	—	—	—
Shemakla		46·5	182	e 8 31	0	—	—	—	—	—
Ottawa		46·6	309	e 8 31	− 1	e 15 20	− 1	—	—	19·0
Andijan		46·7	157	e 8 34	+ 2	15 20	− 2	10 20	PP	—
Vladivostok		46·7	95	e 8 29	− 3	e 18 1	ScS	—	—	—
Fergana		47·0	158	e 8 35	0	—	—	—	—	—
Butte	N.	47·1	344	e 8 35	0	e 15 35	+ 7	—	—	—
Bozeman		47·4	343	i 8 34	− 4	e 15 28	− 4	—	—	e 18·9
Tortosa		47·4	232	—	—	15 38	+ 6	19 11	SS	e 23·8
Samarkand		47·6	163	e 9 3?	+24	—	—	—	—	—
Garm		48·4	159	e 8 50	+ 4	e 15 50	+ 4	—	—	—
Toledo	z.	48·6	237	e 8 49	+ 2	—	—	e 11 18	PPP	—
Stalinabad		48·8	161	e 8 52	+ 3	15 56	+ 4	—	—	—
Weston		49·4	305	e 9 0	+ 7	—	—	—	—	—
Alicante		49·9	233	8 58	+ 1	e 16 14	+ 7	10 45	PP	e 24·0
Chicago		50·7	321	—	—	e 16 17	− 1	—	—	e 23·9
Cleveland		50·7	315	i 8 57a	− 6	—	—	i 9 6	P	—
Granada		51·2	236	9 7a	0	16 43	+18	10 58	PP	24·2
Pennsylvania		51·3	311	i 9 10	+ 2	e 16 17	− 9	i 10 59	PP	—
Philadelphia		52·0	308	—	—	e 16 10	−26	—	—	e 20·8
Shasta Dam		52·5	354	i 9 15	− 2	—	—	i 10 24	PcP	—
Mineral	z.	52·8	353	i 9 18k	− 1	—	—	i 10 26	PcP	—
Ksara		53·4	196	i 9 23a	− 1	17 2	+ 7	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Reno	Z.	53·6	351	e 9 25a	0	—	—	—	—	—
St. Louis		53·9	323	e 9 25	− 2	e 17 0	− 2	e 20 43	SS	e 27·6
Berkeley		55·3	353	i 9 37a	− 1	e 17 22	+ 1	e 10 52	PcP	e 29·8
Lick	Z.	55·8	353	i 9 40	− 1	—	—	i 10 39	PcP	—
Tinemaha	Z.	56·1	350	i 9 43	0	—	—	—	—	—
Overton	Z.	56·6	346	i 9 46	− 1	—	—	e 12 39	?	—
Haiwee	Z.	57·0	349	i 9 49	− 1	—	—	—	—	—
Pierce Ferry		57·0	345	i 9 48	− 2	e 14 39	PcS	—	—	e 27·0
Boulder City		57·1	346	e 9 50	0	—	—	—	—	—
Pasadena		59·0	349	i 10 1	− 3	—	—	—	—	e 28·9
Riverside	Z.	59·1	349	i 10 2	− 2	—	—	—	—	—
Palomar	N.	59·8	348	i 10 9	0	—	—	—	—	—
Tucson		60·8	343	i 10 15	− 1	—	—	—	—	e 31·5
Tamanrasset	Z.	65·2	225	e 10 44	− 1	e 19 25	− 3	e 13 13	PP	—
La Paz		107·8	297	e 13 52	P	e 25 4	[+ 1]	i 33 58	SS	50·8
Pretoria	Z.	112·8	202	e 30 40	PKKP	—	—	—	—	—

Additional readings :—
Upsala eE =9m.32s.
Warsaw ePN =7m.6s.
Collmberg eZ =7m.21s
Jena eN =7m 17s.
Stuttgart eSS =16m.20s.
Paris e =7m.42s. and 8m.12s., i =8m.28s., eSS =16m.29s., eQ =16m.35s.
Strasbourg i =8m.39s., eSS =16m.43s.
Triest iP_cP =9m.42s., eSS =17m.21s.
Yalta SS =17m.40s.
Bucharest eE =14m.38s.
Seattle e =8m.37s. and 9m.2s., ePP =10m.26s., e =15m.38s. and 16m.1s., eSS =18m.6s.
e =20m.6s. and 23m.0s.
Rome eSS =17m.17s.
Granada PPP =11m.40s., SSS =20m.52s.
Pennsylvania iN =12m.59s.
Mineral iZ =9m.27s.
Reno eE =9m.59s., eZ =10m.4s. and 11m.4s.
Berkeley eZ =9m.45s. and 9m.58s., eNZ =13m.25s., eSE =17m.15s., eN =17m.27s.
La Paz eSKKS =25m.54s., PS =26m.10s.
Long waves were also recorded at Ivigtut, Helsinki, Malaga, Bombay, Harvard, Victoria, Santa Clara, and Salt Lake City.

June 5d. 22h. 29m. 20s. Epicentre 22°·5N. 143°·5E. Depth of focus 0·030.
(as on 1945, Aug. 27d.).

A = −·7434, B = +·5501, C = +·3805 ; δ = +3 ; h = +4 ;
D = +·595, E = +·804 ; G = −·306, H = +·226, K = −·925.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Guam		9·1	172	2 1	− 7	3 40	− 8	—	—
Mizusawa	E.	16·7	354	3 51	+ 9	6 58	+18	—	—
Vladivostok		22·7	338	e 4 47	+ 4	i 8 40	+ 8	e 5 39	pP
Irkutsk		42·2	326	e 7 34	+ 2	13 37	+ 2	—	—
Przhevalsk		57·0	308	i 9 24	0	—	—	—	—
Almata		58·1	309	e 9 34	+ 2	e 17 12	− 2	e 10 32	pP
Frunse		59·8	308	—	—	e 17 34	− 2	—	—
College		60·8	27	e 9 49	− 2	—	—	e 10 59	pP
Andijan		61·7	305	—	—	17 56	− 4	—	—
Garm		63·5	305	—	—	e 18 18	− 4	—	—
Tashkent		63·9	307	—	—	18 24	− 3	—	—
Obi-garm		64·0	304	e 10 14	+ 2	e 18 24	− 4	e 11 14	pP
Stalinabad		64·7	304	10 14	− 2	e 18 26	−11	e 11 16	pP
Samarkand		65·9	305	—	—	e 18 49	− 2	—	—
Sverdlovsk		67·6	325	i 10 32	− 2	e 19 6	− 6	e 11 34	pP
Seattle		76·4	44	—	—	e 20 50	− 2	—	—
Shasta Dam		78·7	51	i 11 37	− 2	—	—	e 12 47	pP
Moscow		80·2	327	e 11 44	− 3	e 21 24	− 8	e 12 48	pP
Lick	Z.	80·4	53	i 11 46a	− 2	—	—	e 12 53	pP
Reno	Z.	80·9	51	e 11 49k	− 1	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Tiflis		81·5	312	—	—	e 21 40	− 5	—	—
Tinemaha	z.	83·0	53	i 12 0	− 1	—	—	—	—
Haiwee	z.	83·6	54	i 12 4	0	—	—	—	—
Mount Wilson	z.	84·2	56	i 12 6	− 1	—	—	—	—
Riverside	z.	84·8	56	i 12 7	− 3	—	—	—	—
Boulder City		85·9	53	e 12 14	− 2	—	—	—	—
Overton	z.	86·0	53	i 12 15	− 1	—	—	i 13 35	pP
Pierce Ferry		86·5	53	i 12 17	− 2	—	—	—	—
Tucson		90·5	55	e 12 37	− 1	—	—	—	—
Rome		101·5	325	—	—	c 23 35	[− 8]	c 26 15	SP
Tamanrasset	z.	119·2	315	e 18 20	[− 2]	—	—	c 19 47	pPKP

Additional readings :—
Obi-garm esS =20m.22s.
Rome e =52m.40s.?.

June 5d. Readings also at 0h. (Shasta Dam, Pierce Ferry, Overton, near College, near Tiflis, and Borzhomi), 2h. (College), 3h. (College, Overton, Pierce Ferry, Tucson, Tinemaha, and Collmberg), 4h. (Lick, Ksara, Tamanrasset, College, and near Malaga), 5h. (Nanking), 7h. (Alicante and near Malaga), 8h. (Overton, Pierce Ferry, Tucson, and Tamanrasset), 9h. (College (2), Hungry Horse, Shasta Dam, Overton, Pierce Ferry, and Nanking), 10h. (College), 11h. (College, Stuttgart, Tamanrasset, near Alicante, and near Tacubaya (2)), 12h. (Frunse, Samarkand, Naryn, Almata, near Garm, Fergana, Obi-garm, Kulyab, Andijan, Stalinabad, and Tashkent), 13h. (Lick, Pasadena, Riverside, Tinemaha, Hungry Horse, Shasta Dam, Boulder City, Overton, Pierce Ferry, Tucson, near Honolulu, and near Garm), 15h. (College, Pierce Ferry, Shasta Dam, Stalinabad, Fergana, Tashkent, Frunse, near Obi-garm, Garm, and Andijan), 16h. (Tortosa), 18h. (Tacubaya and near Ksara), 19h. (Overton, Pierce Ferry, near Istanbul, near Honolulu, and near La Paz), 20h. (Pierce Ferry (2)), 23h. (near Garm and Obi-garm).

June 6d. Readings at 1h. (Lick, Tucson, and near Grozny), 3h. (Jena), 5h. (near Honolulu and near Huancayo), 7h. (Triest and near Grozny), 10h. (Huancayo and Tamanrasset), 12h. (near Alicante), 13h. (College and near Ashkabad), 15h. (Rathfarnham Castle), 16h. (Tamanrasset), 17h. (Garm, Obi-garm, Samarkand, Stalinabad, near Andijan, and Fergana), 18h. (Pretoria, Messina, Rome, Stuttgart, Obi-garm, and near Garm), 19h. (Haiwee, Palomar, Pasadena, Tinemaha, Tucson, Overton, Lick, Shasta Dam, Victoria, College, Ksara, Strasbourg, Paris, Stuttgart, Clermont-Ferrand, Tamanrasset, near Puebla, Tacubaya, near Apia, near Garm (2), and near Shemakha), 21h. (Victoria, Andijan, near Fergana, Garm, Obi-garn, Kulyab, and Stalinabad).

June 7d. 16h. 52m. 34s. Epicentre 4°·5S. 77°·0W. Depth of focus 0·010.

Intensity VI at Chachapoyas (6°·2S. 77°·9W.) ; V at San Ignacio (Jaen) ; IV-V at Rioja ; IV at Nauta, Jaen ; III-IV at Bolivar. Suggested epicentre 4°S. 76·5W. Depth 110km.

E. Silgado.
Datos sismológicos del Perú, 1949-1950, Bol. No. 4, Lima, 1952, p.21.

$A = +\cdot2243$, $B = -\cdot9714$, $C = -\cdot0779$; $\delta = 0$; $h = +7$;
$D = -\cdot974$, $E = -\cdot225$; $G = -\cdot018$, $H = +\cdot076$, $K = -\cdot997$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		7·7	168	i 1 54	+ 3	i 3 19	+ 2	c 2 11	pP	—
Bogota		9·5	18	i 2 16	0	i 3 56	− 5	i 2 59	pP	—
Chinchina		9·5	8	i 2 15	− 1	i 3 56	− 5	i 9 34	P_eP	—
Balboa Heights		13·6	349	i 3 13	+ 3	i 6 0	+21	—	—	—
La Paz		14·8	145	i 3 27	+ 2	c 6 9	+ 2	i 3 45	pP	—
Galerazamba		15·3	6	i 3 39	+ 7	i 6 31	+12	i 3 50	pP	i 8·0
Port au Prince		23·4	12	i 5 5	+ 4	e 9 16	+13	5 30	PP	11·1
Fort de France		24·7	40	e 5 12	− 1	i 9 52	+27	5 47	PP	e 13·5
San Juan		25·1	25	i 5 16	− 1	i 9 28	− 4	e 5 51	pP	e 12·2
Merida		28·2	335	i 5 50 a	+ 4	i 10 30	+ 7	i 6 18	pP	—
Vera Cruz		30·2	323	i 6 12 a	+ 9	i 11 6	+12	i 7 8	PP	—
Tacubaya		32·3	319	i 6 24 a	+ 2	i 11 31	+ 4	i 6 50	pP	e 17·7
Buenos Aires		34·5	151	6 36	− 5	—	—	—	—	—
La Plata	E.	35·0	151	6 20	−25	11 56	−13	12 50	SS	14·2
	N.	35·0	151	i 6 45	0	i 12 11	+ 2	7 12	PP	16·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bermuda		38·5	17	i 7 26	+12	(e 13 1)	− 1	e 12 26	PcS	e 13·0
Columbia		38·5	355	e 7 11	− 3	e 13 1	− 1	e 7 48	pP	e 15·6
Washington		43·2	1	i 7 51	− 2	e 14 9	− 3	i 8 27	pP	e 20·4
Philadelphia		44·3	3	i 8 0	− 2	e 14 6	−22	i 9 18	pP	e 17·8
Lubbock		44·6	331	8 3	− 1	—	—	—	—	—
St. Louis		44·6	346	i 8 1	− 3	i 14 10	−22	e 8 28	pP	—
Pittsburgh		44·8	357	i 8 5	− 1	i 14 34	− 1	—	—	—
New Kensington	E.	44·9	357	e 8 8	+ 1	e 15 0	+23	—	—	—
Pennsylvania		45·1	359	i 8 7	− 1	i 14 33	− 6	i 9 44	PP	—
City College, N.Y.		45·2	5	i 8 8	− 1	e 14 14	−27	—	—	—
Fordham		45·2	5	i 8 8	− 1	i 14 40	− 1	i 8 40	pP	—
Cleveland		46·0	355	i 8 14	− 1	i 14 48	− 4	i 8 42	pP	—
Weston		46·9	7	i 8 22	0	i 15 7	+ 2	i 8 46	pP	—
Harvard		47·0	7	i 8 24	+ 1	i 15 5	− 1	i 8 47	pP	e 23·8
Chicago		47·1	349	i 8 20	− 4	e 14 53	−15	i 8 49	pP	e 18·6
Tucson		48·7	322	e 8 36	0	e 15 33	+ 3	e 10 37	PP	e 19·2
Ottawa		49·7	2	i 8 43k	− 1	15 39	− 5	e 10 34	PP	19·3
Shawinigan Falls	N.	51·0	5	i 8 53	− 1	16 2	0	e 11 55	PPP	—
Seven Falls	E.	51·7	6	8 58	− 1	16 11	− 1	17 2	sS	—
Pierce Ferry		53·2	323	i 9 11	+ 1	e 16 11	−21	i 9 32	pP	—
Palomar		53·3	318	i 9 12k	+ 1	i 17 8	+34	i 9 48	sP	—
Boulder City		53·6	323	i 9 14	+ 1	e 16 44	+ 6	i 9 33	pP	—
Riverside		54·0	318	i 9 16k	0	e 17 7	+24	i 9 51	sP	—
Pasadena		54·6	318	i 9 21k	0	i 16 53	+ 2	i 9 49	pP	e 27·4
Salt Lake City		55·2	329	i 9 23	− 2	i 17 1	+ 2	i 9 52	pP	e 25·9
Haiwee		55·7	321	i 9 29k	0	e 17 10	+ 4	—	—	—
Logan		55·9	330	i 9 27	− 3	i 17 7	− 1	i 9 47	pP	e 31·6
Tinemaha		56·4	321	i 9 34k	0	e 17 19	+ 4	i 10 4	pP	—
Fresno		57·2	320	e 9 40	+ 1	e 17 28	+ 3	e 12 8	PP	—
Lick	Z.	58·8	320	e 9 50k	0	—	—	i 10 25	pP	—
Reno	Z.	58·9	323	i 9 52k	+ 1	e 17 48	0	e 11 29	PP	—
Santa Clara		59·0	320	i 9 54	+ 2	e 17 54	+ 5	i 10 23	pP	e 31·8
Berkeley		59·5	320	i 9 55k	0	i 17 56	+ 1	i 10 24	pP	—
Mineral	Z.	60·5	322	i 10 1k	− 1	—	—	i 10 30	pP	—
Ukiah		60·8	320	e 9 59	− 5	e 18 14	+ 2	e 22 38	SS	—
Shasta Dam		61·2	322	i 10 4	− 3	e 18 16	− 1	i 10 46	pP	—
Saskatoon		61·8	340	—	—	i 18 25	0	i 19 15	sS	—
Arcata	Z.	62·4	322	i 10 10k	− 5	—	—	e 10 39	pP	—
Seattle		65·4	328	i 10 35k	+ 1	e 19 10	+ 1	i 11 0	pP	—
Victoria		66·5	328	10 51k	+10	19 28	+ 5	20 21	sS	32·4
Ivigtut		69·2	15	i 10 56	− 2	19 53	− 2	e 11 18	pP	33·4
Lisbon		75·8	48	11 36k	− 1	21 9	− 1	12 8	pP	—
Sitka		77·5	332	i 11 45	− 2	i 21 26	− 2	e 12 14	pP	e 31·9
Malaga	Z.	78·9	51	i 11 52a	− 2	i 21 42	− 1	i 12 22	pP	37·8
Granada		79·6	51	i 11 57a	− 1	i 21 51	0	12 21	pP	41·8
Toledo	Z.	79·9	48	i 11 59	− 1	e 21 51	− 3	i 12 32	pP	—
Rathfarnham Castle		82·2	35	i 12 13	+ 1	i 22 13	− 4	i 12 47	pP	e 36·4
Alicante		82·3	50	12 5	− 7	i 22 35	+17	12 11	PcP	e 41·0
Scoresby Sund		83·2	16	i 12 16	− 1	i 22 26	− 1	i 12 47	pP	38·4
Tortosa		83·5	48	i 12 20	+ 2	i 22 32	+ 2	12 26	PcP	35·3
Algiers Univ.	Z.	84·7	53	i 12 23k	− 1	—	—	e 12 52	pP	—
Edinburgh	E.	84·7	33	12 26	+ 2	22 37	− 5	23 37	sS	—
Tamanrasset	Z.	84·8	66	12 26	+ 1	e 22 49	+ 6	i 12 57	pP	—
Barcelona		84·9	48	e 12 23	− 2	22 39	− 5	—	—	—
Kew		85·2	38	i 12 26k	− 1	i 22 39	[0]	i 12 56	pP	e 32·4
Durham		85·3	34	i 12 29	+ 2	i 22 48	0	i 12 3	pP	—
Aberdeen		85·6	32	i 12 30	+ 1	i 22 50	− 1	i 23 36	PS	—
College		86·0	336	i 12 29	− 2	i 22 52	− 3	i 13 1	pP	e 32·8
Clermont-Ferrand		86·3	44	i 12 32	0	i 23 4	+ 6	i 13 4	pP	39·4
Paris		86·5	40	i 12 32	− 1	i 22 56	− 4	e 13 2	pP	e 40·4
De Bilt		88·7	38	i 12 44k	0	i 23 22	+ 2	i 13 16	pP	—
Neuchatel		89·1	43	e 12 45	− 1	e 23 6	[+ 2]	—	—	—
Basle		89·6	43	i 12 48k	0	e 23 28	− 1	e 24 31	PS	—
Strasbourg		89·9	42	i 12 49k	0	e 23 29	− 2	i 13 23	pP	42·4
Bergen		90·1	28	12 51	+ 1	23 30	− 1	13 20?	pP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zürich		90·3	43	e 12 50k	− 1	e 23 35	0	e 13 21	pP	—
Karlsruhe		90·4	41	i 12 52	0	e 23 34	− 2	—	—	—
Pavia	z.	90·4	45	e 12 51	− 1	—	—	—	—	—
Stuttgart		90·8	42	i 12 54k	0	e 23 34	− 5	i 13 26	pP	e 36·4
Chur		90·9	43	i 12 54k	0	e 23 44	+ 4	—	—	—
Salo		91·4	44	e 12 59	+ 3	e 23 58	+13	e 24 35	PS	—
Prato		91·7	47	i 12 56	− 2	i 24 42	PS	—	—	—
Florence Xim		91·8	47	e 13 2	+ 4	i 24 16	+28	—	—	—
Bologna		91·9	46	e 12 57a	− 2	e 23 52	+ 3	e 13 26	pP	—
Padova		92·3	45	e 13 2	+ 2	23 57	+ 5	13 33	pP	—
Rome		92·6	48	i 13 3k	+ 1	i 23 26	[+ 2]	i 13 34	pP	—
Jena		92·6	39	e 13 0	− 2	e 23 51	− 4	e 13 30	pP	—
Cheb		93·0	40	e 13 7	+ 3	e 24 1	+ 2	e 13 40	pP	—
Copenhagen		93·4	34	i 13 6	0	24 6	+ 4	i 13 38	pP	—
Collmberg		93·5	39	e 13 7	+ 1	e 23 32	[+ 2]	e 13 55	pP	e 37·4
Potsdam		93·6	38	i 13 8k	+ 2	e 24 9	+ 5	i 13 38	pP	e 40·4
Triest		93·7	45	i 13 7	0	i 23 32	[+ 1]	i 13 56	sP	—
Prague		94·3	40	i 13 9k	− 1	e 24 7	− 3	i 13 40	pP	—
Messina		94·8	53	e 13 20	+ 8	e 24 23	+ 9	e 14 4	sP	—
Zagreb		95·3	45	e 13 14k	0	e 24 39	+21	—	—	—
Taranto		96·1	50	12 42	−36	23 42	[− 2]	32 52	SS	e 39·2
Upsala	E.	96·2	30	e 13 10	− 8	e 24 26	0	i 17 15	pPP	—
	N.	96·2	30	e 13 24	+ 6	e 24 37	+11	i 16 49	PP	—
Ogyalla		96·8	43	e 14 35	?	e 24 30	− 1	e 17 17	PP	—
Raciborzu	z.	96·8	40	i 13 21	0	—	—	—	—	—
Budapest	E.	97·4	43	13 24	0	i 24 51	+15	17 16	PP	—
	N.	97·4	43	e 14 16	sP	24 48	+12	31 54	SS	—
Skalnate Pleso		98·1	41	e 13 31	+ 4	e 24 49	+ 7	e 14 10	pP	—
Warsaw		98·5	38	e 13 32	+ 3	24 57	+12	e 14 3	pP	e 38·4
Grahamstown		98·8	125	i 13 30	0	—	—	e 13 58	pP	—
Pretoria	z.	101·6	117	e 13 43	0	—	—	—	—	—
Bucharest		102·5	46	e 13 56	+ 9	i 25 16	− 3	—	—	—
Pulkovo		102·6	30	13 51	+ 4	25 14	− 6	i 26 17	sS	—
Kishinev		104·1	43	i 13 52	− 1	e 25 18	−14	18 6	PKP	—
Istanbul		105·0	49	e 18 34	PP	e 28 38	PPS	—	—	—
Moscow		107·4	33	14 10	P	25 27	SKKS	14 42	pP	—
Helwan		108·1	61	e 14 14	P	e 25 34	SKKS	18 41	PP	—
Yalta		108·2	45	14 12	P	25 13?	SKKS	18 41	PP	—
Ksara		111·5	56	e 14 30	P	29 14	PS	15 2	pP	—
Zugdidi		114·1	46	e 18 56	[+28]	—	—	—	—	—
Abastumanj		115·0	46	e 18 59	[+29]	—	—	—	—	—
Tiflis		116·4	45	e 18 59	[+26]	e 26 18?	SKKS	—	—	—
Grozny		116·5	43	e 19 47	PP	—	—	—	—	—
Sverdlovsk		118·0	24	i 18 34	[− 2]	29 26	PS	e 14 56	P	—
Ashkabad		127·5	44	e 18 55	[+ 1]	—	—	—	—	—
Samarkand		132·2	38	e 19 9	[+ 6]	e 22 37?	PKS	—	—	—
Irkutsk		132·4	359	i 19 5	[+ 2]	i 22 32	PKS	19 37	pPKP	—
Tashkent		132·5	34	i 19 5	[+ 2]	i 22 34	PKS	19 37	pPKP	—
Vladivostok		133·8	330	i 19 6	[0]	—	—	i 19 38	pPKP	—
Stalinabad		134·0	37	i 19 9	[+ 3]	i 22 39	PKS	i 19 41	pPKP	—
Frunse		134·2	29	e 19 10	[+ 4]	—	—	—	—	—
Fergana		134·5	34	i 19 9	[+ 2]	e 22 40	PKS	19 43	pPKP	—
Obi-garm		134·5	37	i 19 9	[+ 2]	—	—	19 42	pPKP	—
Andijan		134·6	33	19 10	[+ 3]	i 22 42	PKS	—	—	—
Garm		134·6	35	i 18 35?	[−32]	—	—	i 22 1?	PP	—
Almata		135·0	27	i 19 11	[+ 3]	i 22 45	PKS	—	—	—
Naryn		136·0	28	i 19 13	[+ 3]	—	—	19 39?	pPKP	—
Przhevalsk		136·3	26	i 19 14	[+ 4]	i 22 47	PKS	i 19 45	pPKP	—
New Delhi		145·7	43	i 19 30	[+ 3]	e 26 57	SKKS	21 39	PP	—
Bombay		147·2	62	i 19 35	[+ 5]	—	—	—	—	—
Poona	N.	148·3	62	19 33	[+ 2]	30 36	?	—	—	—
Nanking		148·8	334	i 19 36	[+ 4]	i 23 9	PKS	i 20 8	pPKP	—

For Notes see next page.

NOTES TO JUNE 7d. 16h. 52m. 34s.

Additional readings :—
Huancayo i =2m.27s.
Bogota iS_g =4m.42s., iS_cPEN =11m.55s.
Chinchina iP_g? =2m.56s., i =3m.24s., iEN =4m.46s.
La Paz iPPP =3m.52s., iS =6m.26s., i =6m.32s., S_cS =14m.56s.
Galerazamba iSS =7m.0s.
Port au Prince PPP =6m.0s., i =6m.21s., SS? =10m.11s.
San Juan ePP =6m.16s., ePPP =6m.36s., isS =9m.57s.
Merida i =6m.28s. and 11m.15s.
Vera Cruz i =11m.55s.
Tacubaya i =9m.21s., isS? =11m.53s., eS_cP? =12m.41s., iS_cS =16m.39s.
La Plata N =9m.2s., SSN =13m.2s.
Bermuda e =11m.4s.
Columbia e =13m.48s.
Philadelphia iPP =9m.52s., e =10m.37s., i =13m.36s. and 14m.27s.
Pittsburg iNW =13m.29s. and 18m.26s.
Pennsylvania iE =10m.55s., iN =13m.38s., i =14m.11s.
Fordham eS =14m.28s., i =15m.36s.
Cleveland eE =8m.23s., iZ =9m.50s., isPN =10m.5s., iN =13m.43s., eN =14m.18s., esSN =15m.37s., eSSE =17m.57s., esSSEN =18m.55s.
Weston iPP =10m.14s., isS =15m.54s.
Harvard isP =9m.1s., iP_cP =9m.54s., iPP =10m.15s., isPP =10m.48s., iPPP =11m.2s., iS_cP =13m.28s., iP_cS =13m.42s., isS =15m.54s., iS_cS =17m.53s., iSS =18m.44s., ipSS? =18m.58s., isSS =19m.9s., and other unidentified phases.
Chicago ePP =10m.11s., esS =15m.49s., eSS =17m.55s.
Tucson e =14m.41s., i =16m.21s.
Ottawa e =16m.32s.
Shawinigan Falls eN =14m.4s.
Boulder City i =10m.16s., ePP =10m.56s.
Riverside iZ =9m.34s.
Pasadena isPZ =9m.57s., iZ =10m.4s., eE =10m.28s., iZ =10m.54s., isSNZ =17m.45s., eS_cS?N =18m.50s., eSSN =21m.54s., ePKP,PKPZ =39m.43s.
Salt Lake City ePP? =11m.17s., e =12m.20s., isS =17m.49s., eSS =21m.25s.
Logan e =11m.21s., isS =17m.58s., eSS =22m.3s.
Tinemaha iZ =9m.50s., isPZ =10m.9s.
Fresno eN =9m.53s., eE =10m.2s. and 10m.21s.
Reno eE =14m.24s., eEN =17m.53s.
Santa Clara esSE =18m.48s.
Berkeley iZ =10m.14s., iE =10m.54s., iZ =11m.8s. and 11m.13s.
Mineral iZ =10m.13s., isPZ =10m.48s.
Ukiah eSSS =25m.44s.
Shasta Dam iP_cP? =11m.2s., ePKP,PKP =39m.23s.
Seattle iP_cP =11m.7s., isP =11m.11s., ipP_cP =12m.30s., iPP =13m.1s., iPPP =13m.46s. and other unidentified phases.
Ivigtut i =11m.25s., 20m.46s., 21m.44s.
Lisbon PSEN =22m.0s., SSE =26m.2s.
Sitka ePP =14m.46s., esS =22m.7s., ePS =23m.2s., eSS =26m.26s., eSSS =30m.6s.
Malaga PPZ =15m.2s., PPPZ =17m.0s., isSZ =22m.38s.
Granada P_cP =12m.8s., sP =13m.6s., iPP =15m.18s., pPP =15m.48s., PPP =17m.22s., pPPP =17m.33s., sS =22m.44s., PS =23m.51s., iSS =27m.33s., SSS =30m.39s.
Toledo isPZ =12m.44s., ePPZ =15m.14s., sSZ =22m.43s., SSZ =27m.4s.
Rathfarnham Castle isP?EN =13m.14s., eEN =15m.52s. and 16m.58s., iEN =22m.39s., ePSEN =23m.13s., iEN =26m.18s.
Alicante PP =15m.29s., PPP =17m.17s., S_cS =22m.47s., PS =23m.13s., PPS =23m.39s., SS =28m.41s., SSS =32m.35s., Q =35m.45s.?.
Scoresby Sund 22m.37s., PS =23m.10s., PPS =23m.35s., iE =24m.14s., SS =27m.50s.
Algiers Univ. iZ =12m.33s., eZ =13m.33s.
Tortosa PP?E =15m.55s., S_cSE =22m.52s., iEN =23m.15s., PSEN =23m.26s., SSN =28m.11s.
Tamanrasset iPPZ =15m.46s., epPPZ =16m.9s., ePPPZ =17m.40s., eZ =17m.53s., eSPZ =23m.33s., eZ =24m.28s., eSSZ =27m.52s., eSSS?Z =31m.28s.
Kew iPPZ =15m.50s., iPS =23m.36s., ePPS =24m.34s., eSS =28m.22s.
Durham iSEN =23m.42s., iE =23m.52s.
College e =12m.45s., ePP =15m.42s., isS =23m.40s., eSS =27m.48s.
Clermont-Ferrand iPP =15m.55s., eSKS =22m.52s., iPS =23m.56s.
Paris iPP =15m.54s., iPS =23m.52s., iPPS =24m.31s., iSS =29m.4s., eSSS =32m.29s., and many other e and i readings.
De Bilt ePP =16m.1s., e =23m.2s., i =24m.4s., isS =24m.11s., e =25m.26s.
Basle e =14m.28s.
Strasbourg i =13m.2s., esP =13m.32s., ePP =16m.38s., iPS =24m.29s., eSS =29m.39s.
Bergen eE =24m.22s., PSN =24m.30s., eE =25m.0s.
Zürich ePP =15m.58s., eSKS =23m.13s.
Stuttgart e =13m.59s., ePP =16m.0s., epPP =16m.29s., eSKS =23m.14s., esSKS =24m.12s., ePS =24m.35s., ePPS =25m.34s., eSS =29m.56s.
Salo e =13m.8s.
Bologna eZ =24m.42s., ePSEN =24m.48s.

Continued on next page.

Padova PS =24m.53s., e =26m.13s.
Rome e =14m.33s., i =17m.15s., e =19m.34s., i =23m.43s., iS =24m.17s., i =25m.10s., iSS =29m.32s., eSSS =33m.34s.
Jena epPNZ =13m.34s., eN =14m.28s., ePP?E =16m.12s., epPP?E =16m.43s., eSKSE = 23m.30s., eSN =23m.54s., eSP?E =24m.28s., eEN =24m.54s.
Cheb ePP =16m.47s., e =23m.31s., 24m.10s. and 24m.27s., epS =24m.33s., esS =25m.3s., e =26m.0s. and 26m.23s., eSS =30m.30s., e =32m.32s.
Copenhagen 23m.34s., 24m.27s. and 24m.56s., iSP =25m.4s.
Collmberg eEN =13m.29s., ePPE =16m.50s., eSEN =24m.29s., eEN =25m.2s., eN = 25m.43s., eE =26m.5s., eN =27m.1s.
Potsdam iZ =16m.50s., eE =23m.58s., and 24m.21s., ipSE =24m.56s., iZ =25m.5s., iPSZ =26m.6s., eN =26m.20s.
Triest sP =14m.12s., iPKP? =16m.50s., ePP =17m.9s., epPP =18m.0s., iS =24m.21s., isSKS =25m.4s., iPS =26m.6s., i =29m.26s., iSS =30m.34s.
Prague esP =13m.55s., ePP =16m.55s., epPP =17m.20s., ePPP =19m.9s., epS = 24m.35s., esS =25m.7s., eSP =25m.21s., ePS =25m.37s., epPS =25m.51s., esPS = 26m.0s., eSS? =30m.38s., eSSS? =35m.56s., and other unidentified e readings.
Messina e =17m 39s , 23m.29s., and 30m.10s.
Upsala esSE =25m.19s., eE =26m.43s., iN =26m.48s., eSSN =30m.26s.?.
Ogyalla esPP =17m.54s., e =18m.42s., eSKSN =23m.55s., e =24m.48s., eE =25m.32s., esPS?E =26m.30s., e =27m.32s. and 30m.5s., eSSS? =33m.2s.
Budapest eN =25m.16s., eE =25m.26s.?, eSSE =31m.56s., eSSSE =36m.16s., eSSSN = 36m.46s.
Skalnate Pleso e =13m.49s., 14m.46s., 15m.45s., and 17m.15s., ePP =17m.26s., epPP = 18m.1s., eSKS =23m.57s., eS =24m.54s., esS =25m.42s., e =26m.55s., eSSN = 31m.26s., e =32m.37s.
Warsaw esP =14m.12s., ePP =17m.29s., epPPN =17m.53s., ePPPZ =19m.53s., ePPPE = 20m.1s., eSKSE =23m.58s., eSKKSEZ =24m.30s., PS =25m.47s., ePPS =25m.56s., SSN =31m.23s., SSE =31m.32s., eSSSEN =35m.3s., and other e readings.
Bucharest eE =24m.51s., eN =24m.59s.
Pulkovo eSKKS =24m.49s.
Kishinev eSKKS =24m.47s.
Moscow PP =18m.34s., pPP =19m.6s.
Helwan eZ =18m.5s. and 19m.12s., PSZ =27m.56s.
Ksara PP =19m.6s.
Sverdlovsk iPP =19m.47s., SS =35m.58s.
Tashkent ePP =21m.24s.
Vladivostok iPP =21m.37s., ipPP =22m.7s., iPPP =24m.33s., epPPP =25m.1s.
Stalinabad ePP =21m.24s.
Obi-garm iPP =21m.32s.
Naryn PP =22m.37s.
Przhevalsk iPP =23m.20s.
New Delhi PPPN =22m.44s., iSSEN =30m.27s.
Nanking i =23m.33s.

June 7d. Readings also at 1h. (Tucson, Andijan, Garm, Fergana, Kulyab, Obi-garm, Stalinabad, near Honolulu, near Prague, and near Bogota), 2h. (near Chinchina), 5h. (Andijan, Fergana, Kulyab, Samarkand, near Obi-garm, Stalinabad, Erevan, and near Leninakan), 7h. (near Granada), 8h. (Huancayo, near Andijan, Fergana, Garm, Kulyab, Obi-garm, Samarkand, and Stalinabad), 9h. (Huancayo and Wellington), 10h. (near Garm), 11h. (Tamanrasset), 12h. (Kizyl-Arvat, near Ashkabad, and Mary), 14h. (Harvard, Abastumanj, Borzhonui, Tamanrasset, Huancayo, near La Paz, near Fergana, and near Leninakan), 15h. (College, Ivigtut, near Scoresby Sund, Tamanrasset, and near Huancayo), 17h. (Rome, Alicante, and near Garm), 19h. (Andijan, Kulyab, near Garm, Obi-garm, and Stalinabad), 22h. (near Garm).

June 8d. 16h. 7m. 28s. Epicentre 47°·0S. 14°·5W.

$A = +\cdot6626$, $B = -\cdot1714$, $C = -\cdot7291$; $\delta = 0$; $h = -4$;
$D = -\cdot250$, $E = -\cdot968$; $G = -\cdot706$, $H = +\cdot183$, $K = -\cdot684$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grahamstown		33·8	81	i 6 47	+ 1	—	—	i 7 23	pP	—
La Plata	E.	34·5	276	i 6 52	0	i 12 20	0	7 50	PP	13·9
	N.	34·5	276	i 6 57	+ 5	i 12 21	+ 1	7 56	PP	14·0
Buenos Aires		35·1	276	6 58	+ 1	—	—	—	—	14·9
Pietermaritzburg	z.	38·7	80	i 7 29	+ 2	—	—	e 8 11	pP	—
Johannesburg		39·4	74	i 7 32	− 1	e 13 41	+ 6	e 8 59	PP	18·5
Pretoria	z.	39·8	73	i 7 37	+ 1	e 13 54	+12	e 8 20	pP	—
La Paz		53·5	287	i 9 24	0	i 16 58	+ 1	i 10 38	PcP	24·5
Lome		54·7	20	i 9 30	− 3	e 16 54	−19	e 10 49	PcP	24·1
Tananarive		57·4	83	e 9 57	+ 4	e 17 59	+10	18 15	PS	e 25·0

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		61·5	284	i 10 22	+ 1	i 18 48	+ 6	e 11 8	PcP	i 29·1
Tamanrasset	z.	71·8	20	i 11 24 a	− 2	e 20 42	− 4	e 11 40	PcP	e 29·6
Bogota		73·3	297	i 11 33	− 2	i 21 1	− 3	i 14 19	PP	—
Fort de France		74·3	314	e 11 40	− 1	e 21 10	− 5	—	—	—
Galerazamba		78·9	300	i 12 11	+ 4	i 22 6	+ 1	i 12 26	pP	e 37·8
San Juan		79·9	312	i 12 8	− 4	i 22 11	− 5	e 15 21	PP	e 32·3
Balboa Heights		80·1	296	e 12 17	+ 4	—	—	—	—	—
Malaga	z.	83·8	9	i 12 29 k	− 3	i 22 53	− 2	15 57	PP	39·5
Granada		84·4	9	i 12 39 k	+ 3	i 22 57	− 4	i 16 0	PP	—
Algiers Univ.	z.	84·9	15	i 12 36 a	− 2	—	—	e 15 44	PP	—
Lisbon		85·4	5	i 12 40 a	0	23 9	− 2	24 0	PS	39·5
Alicante		85·9	11	12 43	0	23 8	[+ 1]	16 3	PP	e 42·0
Helwan		87·0	39	i 12 49 k	+ 1	23 17	[+ 3]	16 11	PP	—
Toledo		87·0	8	i 12 49	+ 1	e 23 19	[+ 5]	13 10	pP	35·7
Tortosa		88·5	12	i 12 56	0	i 23 24	[0]	13 2	PcP	e 35·5
Messina		89·0	24	e 12 58	0	e 23 47	+ 2	e 24 20	PS	—
Barcelona		89·3	13	e 13 1	+ 2	23 48	0	—	—	e 43·1
Bermuda		91·0	319	e 13 17	+10	e 23 38	[− 1]	e 16 47	PP	e 36·7
Athens		91·2	29	e 13 8 k	0	i 24 11	+ 6	—	—	—
Taranto		91·6	23	e 13 30	+20	e 24 3	− 6	—	—	e 41·0
Rome		91·7	19	e 13 9 a	− 1	i 24 11	+ 1	e 16 26	PP	e 40·7
Wellington		91·7	187	—	—	e 23 50	[+ 7]	e 25 37	PS	e 47·5
Ksara		92·3	39	e 13 14	+ 1	25 40	PS	—	—	—
Florence Xim		93·2	17	e 13 18	+ 1	e 24 22	− 1	—	—	—
Prato		93·3	17	e 13 20	+ 2	—	—	—	—	—
Clermont-Ferrand		93·7	12	i 13 20	0	i 24 34	+ 7	e 17 1	PP	44·5
Bologna		93·9	17	e 13 19	− 2	e 24 48	+19	—	—	—
Padova		94·0	18	13 24	+ 3	24 41	+11	17 8	PP	—
Pavia	z.	94·1	16	e 13 21	− 1	—	—	—	—	—
Salo	z.	94·8	17	e 13 24	− 1	—	—	—	—	—
Sofia		95·4	26	e 13 28	0	—	—	—	—	—
Neuchatel		95·5	14	e 13 28	0	e 24 48	+ 6	—	—	—
Triest		95·6	19	i 13 30	+ 2	i 24 46	+ 3	e 14 13	pP	—
Chur		95·8	16	e 13 31 a	+ 2	e 24 4	[− 1]	—	—	e 51·5
Auckland	N.	96·1	188	—	—	e 31 47	SS	—	—	e 50·5
Basle		96·1	14	e 13 34	+ 3	e 24 52	+ 4	—	—	—
Zürich		96·1	14	e 13 29 a	− 2	e 24 49	+ 1	e 17 12	PP	—
Zagreb		96·2	20	e 13 31 a	0	e 24 50	+ 2	e 17 19	PP	e 45·5
Paris		96·6	11	i 13 32	− 1	i 24 55	+ 3	i 17 21	PP	e 42·5
Strasbourg		97·2	14	i 13 34 a	− 2	e 24 57	0	e 17 26	PP	e 47·8
Stuttgart		97·6	15	e 13 36 a	− 2	e 25 2	+ 2	e 17 27	PP	43·5
Karsruhe		97·7	14	e 13 40	+ 2	e 25 3	+ 2	—	—	e 47·5
Bucharest		97·8	28	e 13 44	+ 6	e 24 20	[+ 4]	e 17 36	PP	47·5
Colombo	E.	98·0	88	—	—	24 32?	[+15]	—	—	—
Riverview		98·5	168	—	—	i 24 30	[+10]	e 32 10	SS	e 43·4
Budapest	E.	98·6	22	13 44	+ 2	24 22	[+ 2]	19 40	PPP	e 47·5
	N.	98·6	22	13 39	− 3	25 11	+ 2	17 39	PP	49·5
Kodaikanal	E.	98·7	83	17 53	PP	25 27	+17	20 2	PPP	44·5
Ogyalla		98·7	21	e 15 2	?	e 25 7	− 3	e 17 40	PP	—
Kew		98·8	8	i 13 41 a	− 2	i 25 18	+ 8	e 17 30	PP	e 39·5
Cheb		99·5	16	e 15 48	?	e 24 29	[+ 4]	e 19 35	PPP	—
Prague		99·9	18	e 13 45 a?	− 3	e 24 24	[− 3]	e 18 2	PP	e 38·5
Jena		100·1	16	e 13 46?	− 3	e 24 54	{− 1}	e 17 54	PP	—
De Bilt		100·2	12	i 13 49	0	e 25 32	+10	e 17 45	PP	e 44·5
Rathfarnham Castle		100·2	4	e 23 52	?	e 25 6	{+11}	—	—	e 48·5
Columbia		100·3	309	e 17 52	PP	e 26 50	PS	e 32 12	SS	e 40·1
Tacubaya		100·4	287	e 14 24	+34	e 24 37	[+ 8]	e 17 55	PP	—
Skalnate Pleso		100·4	22	e 13 48	− 2	e 25 27	+ 3	e 17 48	PP	—
Collmberg	E.	100·7	17	e 17 59	PP	e 25 58	+32	—	—	e 41·5
Yalta		100·7	33	13 51	− 1	25 35	+ 9	17 59	PP	—
Raciborzu		100·8	20	e 13 53	+ 1	—	—	e 18 3	PP	—
Halifax		101·0	326	17 59	PP	24 32	[0]	26 52	PS	e 46·0
Kishinev		101·0	28	e 13 52	− 1	25 35	+ 6	e 17 52	PP	—
Erevan		101·5	42	18 11	PP	—	—	—	—	—
Leninakan		101·6	41	e 14 9	+13	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		101·8	74	e 18 14	PP	25 45	+10	e 24 42	SKS	—
Potsdam		101·8	16	i 13 54	− 2	—	—	i 18 5	PP	e 47·5
Durham	E.	102·0	7	—	—	i 25 37	0	—	—	—
Philadelphia		102·1	316	e 13 57	− 1	e 25 35	− 3	i 18 4	PP	e 40·8
Sotchi		102·1	37	e 18 6	PP	e 24 38	[+ 1]	—	—	—
Washington		102·1	315	e 13 58	0	—	—	i 18 7	PP	—
Fordham		102·2	318	e 13 56	− 2	e 24 35	[− 3]	i 18 6	PP	e 48·0
Poona	N.	102·2	75	e 14 19	+21	e 27 12	PS	32 22	SS	47·4
Zugdidi		102·2	38	e 14 2	+ 4	—	—	e 18 4	PP	—
Weston		102·3	321	e 13 56	− 3	e 24 27	[−11]	i 18 7	PP	—
Harvard		102·5	321	e 13 56	− 4	e 25 46	+ 5	i 18 10	PP	e 48·1
Gori		102·7	40	e 14 8	+ 8	—	—	e 18 10	PP	—
Tiflis		102·8	41	e 14 3	+ 2	e 24 44	[+ 4]	i 18 12	PP	—
Edinburgh	E.	103·0	6	—	—	e 26 2	+16	—	—	—
Warsaw		103·4	21	e 14 4	0	e 25 57	+ 8	e 18 16	PP	e 41·5
Pennsylvania		104·0	315	i 18 22	PP	i 24 44	[− 2]	i 27 28	PS	—
Baku		104·2	45	e 18 28	PP	—	—	—	—	—
Aberdeen		104·3	6	i 18 22	PP	i 26 5	+ 9	e 20 36	PPP	e 48·7
Grozny		104·5	40	e 14 13	+ 5	—	—	18 29	PP	—
New Kensington	E.	104·7	314	e 18 30	PP	e 24 50	[+ 1]	e 27 38	PS	—
Pittsburg	N.W.	104·7	314	e 18 27	PP	i 24 48	[− 1]	—	—	—
Copenhagen		104·8	14	—	—	i 24 51	[+ 1]	33 8	SS	—
Seven Falls	E.	105·9	324	18 33	PP	24 56	[+ 1]	—	—	48·5
Cleveland		106·3	313	e 14 15k	− 1	e 24 54	[− 2]	e 18 26	PKP	—
Ottawa		106·6	319	i 18 41	PP	i 24 56	[− 2]	i 27 54	PS	50·5
Bergen		108·2	9	18 46	PP	e 26 40	S	28 18	PS	48·5
St. Louis		108·7	307	e 17 49	PKP	e 24 57	[−10]	e 28 15	PS	—
Chicago		109·6	310	e 18 34	[+ 2]	25 7	[− 4]	—	—	—
Upsala		109·7	16	e 19 10	PP	e 25 10	[− 1]	e 28 24	PS	e 48·5
Ivigtut		111·2	355	e 14 40	P	28 38	PS	34 22	SS	50·5
Moscow		111·3	28	e 14 38?	P	25 46	[+28]	18 12	PKP	—
New Delhi	N.	111·4	71	19 21	PP	28 42	PS	e 22 2	PPP	52·5
Helsinki		111·6	19	—	—	e 27 6	{+50}	—	—	e 45·5
Pulkovo		112·5	22	e 19 23	PP	e 29 9	PS	34 50	SS	—
Samarkand		112·7	55	e 18 59?	[+20]	e 29 1?	PS	—	—	—
Stalinabad		112·9	57	18 46	[+ 7]	—	—	19 32	PP	—
Tashkent		115·1	55	i 19 45	PP	i 29 20	PS	i 35 51	SS	—
Fergana		115·9	58	e 19 47	PP	e 29 23	PS	e 22 21	PPP	—
Andijan		116·5	58	e 18 49	[+ 3]	29 39	PS	—	—	—
Tucson		116·8	289	e 18 48	[+ 2]	25 46	[+ 7]	i 19 55	PP	e 47·4
Scoresby Sund		117·3	356	e 15 7	P	i 25 44	[+ 4]	e 18 51	PKP	—
Naryn		119·0	59	e 20 12	PP	—	—	—	—	—
Frunse		119·1	56	e 20 15	PP	—	—	—	—	—
Almata		120·7	57	e 18 54	[0]	—	—	e 20 25	PP	—
Sverdlovsk		120·8	38	e 15 24	P	i 30 23	PS	i 18 54	PKP	—
Przhevalsk		121·1	58	e 19 0	[+ 5]	—	—	—	—	—
Pierce Ferry		121·3	291	e 18 56	[+ 1]	—	—	e 20 25	PP	—
Boulder City		121·7	290	e 18 59	[+ 3]	—	—	e 20 21	PP	—
Overton	z.	121·8	291	e 18 59	[+ 3]	e 29 1	PKKP	i 20 30	PP	—
Riverside	z.	122·2	287	i 19 0	[+ 3]	—	—	e 20 26	PP	—
Salt Lake City		122·7	297	i 20 17	PP	e 26 3	[+ 4]	e 27 31	SKKS	e 65·1
Pasadena		122·8	287	i 18 59	[+ 1]	e 26 3	[+ 4]	i 20 35	PP	e 51·5
Logan		123·3	298	e 20 25	PP	e 30 31	PS	e 36 45	SS	e 54·8
Haiwee	z.	123·9	289	e 19 2	[+ 2]	—	—	e 20 40	PP	—
Tinemaha	z.	124·6	289	i 19 7	[+ 5]	—	—	e 20 44	PP	—
Bozeman		125·1	302	e 19 3	[0]	e 26 7	[+ 1]	e 20 47	PP	e 51·7
Fresno		125·4	288	e 19 14	[+11]	—	—	e 20 53	PP	—
Butte	N.	126·1	302	e 20 47	PP	e 26 14	[+ 5]	e 30 44	PS	e 52·0
Lick	z.	127·0	288	e 19 8a	[+ 2]	—	—	e 20 57	PP	—
Reno	z.	127·0	291	e 19 9a	[+ 3]	e 31 6	PS	e 21 8	PP	—
Santa Clara		127·2	288	e 20 57	PP	e 32 45	PPS	—	—	e 70·1
Berkeley		127·7	288	i 19 9a	[+ 1]	e 22 42	PKS	i 20 54	PP	e 68·9
Mineral	z.	128·6	291	e 19 10a	[+ 1]	—	—	e 21 11	PP	—
Ukiah		129·0	289	e 21 22	PP	—	—	—	—	e 50·0
Shasta Dam		129·3	291	e 19 11	[0]	e 31 30	SKSP	e 32 10	PS	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
	°	°	m. s.	s.	m. s.	s.	m. s.	m.
Seattle	132·7	299	e 19 20k	[+ 3]	e 26 36	[+ 9]	i 22 47 PKS	e 70·5
Victoria	133·8	300	e 19 23	[+ 4]	22 59	PKS	e 21 49 PP	59·5
Nanking	141·6	95	i 22 35	PP	i 27 42	[+60]	— —	e 72·6
Honolulu	140·8	242	e 20 24	[+52]	—	—	— —	e 66·1
Irkutsk	141·1	58	e 19 27	[− 5]	e 29 20?	{− 8}	e 25 4? PPP	—
Sitka	143·8	308	e 19 36	[− 1]	e 27 44	[+59]	e 22 42 PP	e 59·7
College	149·3	323	e 19 42	[− 4]	e 29 10	{−64}	e 23 20 PP	e 58·6
Vladivstok	156·1	87	i 19 58	[+ 2]	e 27 5	[+ 4]	e 23 21 PKS	—

Additional readings :—
Grahamstown ePPP =8m.29s.
La Plata E =7m.8s., N =7m.25s., P_cPN =8m.44s., N =10m.20s., E =11m.44s.
La Paz i =9m.56s., iPP =11m.19s., iPS =17m.8s., SSS =17m.15s., i =22m.42s.
Lome PP =11m.34s., ePPP =12m.19s., eP_cS =14m.40s., S_cS =19m.19s., eSS? =20m.4s.
Tananarive S_cS =20m.0s., SSS? =23m.45s.
Huancayo ePP =12m.48s., i =13m.30s., ePPP =14m.5s., iQ =25m.32s.
Tamanrasset eZ =13m.18s., iPPZ =13m.59s., eZ =15m.21s., iPPPZ =15m.46s., eZ =16m.12s., eSSZ =25m.10s.
Bogota iEN =25m.17s.
San Juan e =28m.10s.
Malaga PPPZ =17m.49s., PSZ =23m.49s., SSZ =28m.25s.
Granada S =23m.18s., PS =24m.12s., SS =29m.14s., SSS =30m.48s.
Algiers Univ. iZ =12m 54s., eZ =13m.31s., 14m.6s., and 17m.11s., ePPPZ =17m.51s.
Lisbon Z =14m.12s., N =14m.17s., PPS?EN =24m.41s., QE =35m.6s.
Alicante PPP =17m.49s., PS =24m.9s., PPS =24m.33s., SS =29m.1s.
Helwan PPSNZ =24m.38s., SSN =28m.54s.
Toledo ePPE =16m 9s.
Tortosa PPN =16m.15s., PPPEN =18m.11s., S_cSE =23m.41s., PS?N =24m.45s., SSN =29m.12s.
Bermuda eS =23m.51s., iS_cS =24m.19s., ePS =24m.34s., e =25m.17s., eSS =29m.53s.
Taranto e =15m.8s.
Rome e =17m.44s., eSKS =23m.45s., ePS =25m.14s., iSS =30m.24s.
Clermont-Ferrand eSKS =24m.0s., iPS =25m.49s., eSS =30m.41s.
Bologna e =24m.14s.
Padova SKS? =24m.2s., PS =25m.51s.
Salo eZ =13m.50s.
Triest iPP =17m.17s., iSKKS =24m.5s., iSP =26m.2s., iSS =31m.22s., eSSS =35m.26s.
Zürich eSKS =23m.58s.
Paris i =17m.57s. and 23m.44s., ePS? =26m.1s., ePPS? =26m.35s., i =28m.42s., e =29m.47s., eSSS? =35m.45s.?.
Strasbourg e =18m.2s. and 18m.52s., ePPP =19m.41s., e =20m.8s., eSKS =24m.1s., ePS =26m.7s., ePPS =27m.9s., eSS =31m.29s., eSSS? =36m.0s.
Stuttgart e =15m.32s. and 18m.53s., ePPP =19m.43s., ePS =26m.26s., ePPS =27m.5s. eSS =31m.38s., eQ =40·5m.
Bucharest eE =14m.47s. and 17m.53s., eS?E =23m.58s.
Riverview iN =32m.33s., eSSSN =36m.4s., eQE =41·8m.
Budapest E. e =21m.32s., PPS =27m.0s., SS =31m.22s., eSSS =35m.52s.
Budapest N. e =21m.55s., SS =31m.52s., SSS =35m.22s.
Kodaikanal iSKSE =24m.29s., SSE =32m.7s., SSPE =32m.22s., QE =40m.14s.
Ogyalla e =17m.17s. and 19m.11s., eSKKSN =24m.50s., eSE =25m.16s., e =25m.56s. and 27m.41s., ePPS? =28m.15s., eSS =32m.2s.
Kew eSKSEN =24m.20s., ePPS =27m 10s , eSS =31m.44s., eSSSEN =35m.0s.
Cheb e =22m.35s., eSKS =24m.5s., e =25m.22s., eSP =26m.28s., ePPS =27m.34s., eSS =31m.56s.
Prague ePPP =20m.48s., eSKKS =25m.24s., ePS =26m.53s., ePPS =27m.32s., eSS =32m.14s., eSSS =36m.32s., and many other e readings.
Jena eN =17m.29s., eS?N =25m.12s., eN =26m.46s., eE =26m.50s.
De Bilt eSKS =24m.32s., eSS =32m.2s.
Rathfarnham Castle e =28m.21s.
Tacubaya e =15m.20s., i =15m.40s., e =17m.32s. and 18m.42s., ePPP? =19m.46s., eSKKS? =25m.0s., eSS =32m.26s., eSSS? =36m.56s.
Skalnate Pleso e =13m.54s., 14m.44s., 19m.41s. and 23m.35s., eSKKS? =24m.48s., e =25m.53s., ePS =26m.37s., ePPS =27m.32s., eN =27m.45s., e =29m.40s., eSS =32m.7s., eSSS =35m.56s.
Collmberg eE =29m.10s.
Yalta SKS =24m.31s., PS =26m.58s., SS =31m.50s.,
Raciborzu ePE =13m.57s.?.
Kishinev eSKS =24m.26s., i =26m.59s., SS =32m.40s.
Bombay SSEN =32m.52s.
Potsdam eE =16m.2s., eN =16m.32s.
Philadelphia iSKS =24m.33s., ePS =26m.43s., eSS =32m.38s.
Poona SSSN =36m.22s., QN =42m.22s.
Weston eSS =32m.28s.
Harvard ePPP =20m.23s., e =23m.57s., eSKS =24m.32s., eSKKS =25m,10s., ePS =27m.7s., ePPS? =28m.0s., i =29m.19s., eSS =32m.58s.

Continued on next page.

Tiflis iSS =32m.37s.
Warsaw esPPE =18m.51s., esPPNZ =19m.1s., ePPPZ =20m.4s., ePPPEN =20m.9s., esPPPZ =21m.0s., esPPPEN =21m.4s., SKKS =24m.42s., ePS =27m.25s., ePPS =28m.12s., eSS =31m.50s., and other e readings.
Pennsylvania i =19m.19s.
Aberdeen iN =24m.48s., iPSN =27m.32s., iSSN =33m.17s., eE =42m.56s.
New Kensington eSSE =33m.8s.
Copenhagen i =26m.10s., 27m.39s.
Cleveland ePPE =18m.38s., ePSE =27m.49s., iPSE =27m.54s., ePPSN =28m.32s., eSS?N =33m.30s., eSSE =33m.40s., eN =33m.57s., eSSSE =37m.40s.
Bergen SSE =33m.54s.
Upsala eN =24m.10s. and 24m.47s., iE =26m.51s., eN =28m.51s., eSSN =34m.11s., eN =44m.7s.
Moscow ePP =19m.2s., S =27m.5s., PS =28m.45s., SS =34m.56s.
New Delhi iPPSN =30m.7s., SSN =34m.55s., SSPN =35m.10s., QN =47·0m.
Tucson i =25m.15s., eSKKS =26m.50s., eS =27m.42s., ePS =29m.46s., eSS =36m.2s.
Scoresby Sund 19m.55s., SKKS =26m.49s., SP =29m.17s., PS =29m.48s., SS =36m.8s., SSS =39m.56s.
Sverdlovsk iPP =20m.17s., i =32m.26s.
Pierce Ferry ePPP =23m.2s.
Boulder City ePKKP =28m.52s.
Overton eZ =20m.12s., iZ =21m.14s.
Riverside ePKKPZ =32m.32s.
Salt Lake City ePP =20m.35s., e =25m.41s., ePS =30m.7s.
Pasadena ipPP?Z =20m.52s., ePPPZ =23m.7s., eEN =27m.4s., ePSEN =30m.41s., ePPSEN =31m.35s., ePKKPZ =32m.42s., eSSEN =37m.8s., eSSSEN =41m.50s.
Logan e =23m.31s. and 32m.59s.
Bozeman ePS =30m.54s., eSS =37m.45s.
Fresno eN =20m.45s.
Butte eSSN =37m.38s.
Lick iPKP,PKP?Z =38m.45s., iZ =38m.51s. and 38m.55s.
Reno eE =29m.8s., eN =32m.4s.
Berkeley ipPP?Z =21m.12s., eE =21m.38s., 22m.36s., and 23m.32s., ePSN =31m.23s. ePPS?Z =32m.0s., eN =34m.46s., eSSS?N =43m.14s., eN =58m.14s.
Mineral eZ =19m.24s.
Seattle epPKP =19m.54s., iPKS =22m.59s., i =23m.52s., and 24m.2s., eSS =38m.29s., and many other e readings.
Victoria SKP =24m.2s., SS =39m.26s.
Irkutsk ePKS =22m.44s.?.
Sitka eSS =41m.18s.
College iPKP =19m.50s., i =21m.57s.
Vladivostok iPKP$_2$ =20m.21s., iPPP =27m.46s., eSKKS =30m.49s., PS =35m.14s., iPPS =37m.42s.
Long waves were also recorded at Apia and Dehra Dun.

June 8d. Readings also at 1h. (Lick), 2h. (Zagreb), 4h. (Stuttgart, Tucson, Boulder City, Pierce Ferry, College, and near Apia), 5h. (Apia, Boulder City, Pierce Ferry, and College), 7h. (College and near Ashkabad), 9h. (Prague, Frunse, Naryn, Samarkand (2), near Andijan (2), Fergana (2), Garm (2), Kulyab (2), Obi-garm (2), Stalinabad (2), Tashkent (2), Tucson, near Boulder City, and Pierce Ferry), 13h. (Pierce Ferry, Shasta Dam (2), College, and near Apia), 15h. (near Garm (2), Obi-garm, and Stalinabad), 16h. (Andijan, Frunse, Naryn, Przhevalsk, Samarkand, Stalinabad, near Fergana, Garm, and Tashkent), 17h. (near Balboa Heights), 18h. (Apia, Riverside, Tucson, Pierce Ferry, and Shasta Dam), 19h. (Haiwee, Palomar, Pasadena, Riverside, Crest Line, Tinemaha, Boulder City, Overton, Pierce Ferry, Berkeley, Shasta Dam, and College), 21h. (Przhevalsk and near Naryn), 22h. (Mount Wilson, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, and near Malaga (2)), 23h. (Andijan, Frunse, Kizyl-Arvat, Naryn, near Fergana, Garm, Kulyab, Samarkand, and Stalinabad).

June 9d. 9h. Undetermined shock. Deep.

Merida iP =23m.57s.k, eS =25m.18s.
Tacubaya eP =23m.57s., iS =25m.18s.
Tucson eP =26m.50s., epP =27m.25s.
Pierce Ferry eP =27m.31s., epP =28m.5s.
Boulder City eP =27m.35s., epP =28m.2s., esP =28m.12s.
Overton iPZ =27m.36s.
Crest Line ePZ =27m.39s., epPZ =28m.16s.
Riverside ePZ =27m.45s., epPZ =28m.22s.
Tinemaha ePZ =27m.59s., epPZ =28m.35s.
Lick iPZ =28m.20s.k.
Victoria eZ =29m.23s. and 30m.2s.

June 9d. 11h. 42m. 17s. Epicentre 27°·0S. 71°·0W. (as on 1938, April 14d.).

Intensity III between 27° and 28°S. latitudes. Epicentre near that adopted (Strasbourg).

F. Greve.
Boletin del año 1950, Instituto Sismologico, Santiago, 1951, p.6.

$A = +·2905$, $B = -·8436$, $C = -·4516$; $\delta = -1$; $h = +3$;
$D = -·946$, $E = -·326$; $G = -·147$, $H = +·427$, $K = -·892$.

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
La Paz		10·8	14	e 2 39	0	i 4 43	+ 1
Tucson		70·1	325	i 11 14	− 2	—	—
Palomar	z.	74·2	321	i 11 39	− 1	—	—
Pierce Ferry		74·7	325	i 11 43	0	—	—
Riverside	z.	74·9	321	i 11 43	− 1	—	—
Boulder City		75·0	324	e 11 45	0	—	—
Crest Line	z.	75·0	321	i 11 44	− 1	—	—
Overton	z.	75·3	325	i 11 45	− 2	—	—
Pasadena	z.	75·5	321	i 11 47	− 1	—	—
Haiwee	z.	76·8	323	e 11 53	− 2	—	—
Tinemaha	z.	77·7	323	i 12 0	0	—	—
Mineral	z.	81·9	323	e 12 21k	− 2	—	—
Shasta Dam		82·5	323	i 12 25	− 1	—	—
Tamanrasset	z.	89·0	63	e 13 0	+ 2	—	—

La Paz also gives iS? = 4m.18s.

June 9d. 13h. 7m. 47s. Epicentre 41°·2N. 125°·2W. (as on 1949, Feb. 27d.).

$A = -·4350$, $B = -·6166$, $C = +·6561$; $\delta = -11$; $h = -2$;
$D = -·817$, $E = +·576$; $G = -·378$, $H = -·536$, $K = -·755$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Arcata		0·9	110	i 0 20a	0	i 0 33	− 1	i 0 37 S	—
Ferndale		1·0	132	i 0 22	+ 1	i 0 39	+ 3	— —	—
Shasta Dam		2·2	103	i 0 39	+ 1	e 1 8	+ 2	— —	e 1·2
Ukiah		2·6	143	e 0 53	P_g	e 1 15	− 2	— —	e 1·4
Mineral		2·9	107	i 0 47a	− 1	i 1 24	0	i 0 53 P*	—
Berkeley		4·0	145	e 1 2k	− 2	e 1 48	− 4	— —	—
Branner		4·4	147	i 1 8k	− 2	e 1 59	− 3	— —	—
Santa Clara		4·6	146	e 2 9	+57	e 2 31	S_g	— —	e 3·3
Lick	z.	4·7	143	i 1 12k	− 2	i 2 5	− 5	i 1 23 P*	—
Fresno		6·1	135	e 1 34	0	e 2 48	+ 3	— —	—
Seattle		6·8	17	e 1 39	− 5	e 2 54	− 9	e 1 56 P*	—
Tinemaha	z.	6·8	125	i 1 47	+ 3	i 3 16	+13	— —	—
Victoria	z.	7·4	9	e 1 45	− 7	—	—	e 2 1 P*	—
Haiwee	z.	7·6	129	i 1 58	+ 3	—	—	— —	—
Pasadena		9·0	139	i 2 12	− 1	e 3 55	− 3	— —	e 4·6
Riverside	z.	9·5	137	i 2 20	0	—	—	— —	—
Overton	z.	9·6	115	e 2 22	+ 1	—	—	— —	—
Boulder City		9·7	119	e 2 19	− 3	—	—	— —	—
Pierce Ferry		10·1	116	e 2 31	+ 3	—	—	— —	—
Tucson		14·6	123	i 3 32	+ 2	—	—	— —	—
Tamanrasset	z.	101·6	46	17 22	?	—	—	— —	—

Additional readings :—
Ferndale iN = 31s.
Mineral iSN = 1m.27s.
Fresno eEN = 1m.40s.
Seattle e = 1m.47s., eP_g = 2m.9s., eS_g = 3m.33s.
Long waves were also recorded at Bozeman and Butte,

June 9d. Readings also at 1h. (Scoresby Sund and Lick), 2h. and 4h. (Huancayo), 6h. (near Garm), 8h. (College, Victoria, Shasta Dam, Mineral, Lick, Mount Wilson, Riverside, Tinemaha, Overton, Pierce Ferry, Guam, and near Garm), 9h. (Alicante (2)), 10h. (College, Overton, Pierce Ferry, Shasta Dam, and near Ashkabad), 14h. (Warsaw), 16h. (Tamanraeset), 17h. (Alicante, Ksara, Stuttgart, Strasbourg, Paris, and Tamanrasset), 18h. (Harvard, Rome, Stuttgart, Budapest, Bucharest, Timisoara (2), Prague (2), and near Sofia), 19h. (Lick and near Prague), 20h. (Lick, Ksara, Istanbul, Grozny, and near Leninakan), 21h. (near Prague), 23h. (Lick).

June 10d. 10h. Quarry explosion. Epicentre 49°·7N. 8°·0E.

Karlsruhe (Δ =0°·7) ePN =1m.19s., eS =1m.28s.
Strasbourg (Δ =1°·1) eP_g =1m.24s., iP_g =1m.27s., iS_g =1m.39s.
Stuttgart (Δ =1°·2) ePZ =1m.25s., eP*Z =1m.26s., iP_gZ =1m.27s., eZ =1m.30s. and 1m.33s., eSZ =1m.40s., eS*Z =1m.42s., iS_gZ =1m.43s.
Basle (Δ =2°·2) eP_g =1m.43s., eS_g =2m.12s.
Ravensburg (Δ =2°·2) eP_gZ =1m.46s ?, eS_g? =2m 12s and 2m.16s.
Zürich (Δ =2°·4) eP_g =1m.47s., eS_g =2m.19s.
Jena (Δ =2°·6) eP*?E =1m.54s., eP_gE =1m.59s., eS?E =2m.3s., eS*?E =2m.8s., iE =2m.15s., iS_gE =2m.26s., iE =2m.44s.
Prague (Δ =4°·1) iP =2m.29s., eS =3m.1s., eS* =3m.15s., e =3m.19s., eS_g =3m.25s.

June 10d. Readings also at 2h. (near Naryn), 3h. (Timisoara (2) and near Obi-garm), 4h. (Alicante, Brisbane, Riverview, College, Lick, Mount Wilson, Riverside, Palomar, Crest Line, Tinemaha, Boulder City, Overton, Pierce Ferry, Tamanrasset, Andijan (2), Naryn, near Stalinabad, Obi-garm, Fergana, and Garm (2)), 6h. (Nanking and College),, 7h. (Huancayo and near Tacubaya), 8h. (Lick, Pierce Ferry, near Honolulu, near Garm, Obi-garm, Fergana, Andijan, Kulyab, and Samarkand), 10h. (Tacubaya (2), Puebla (2), Tucson (2), Boulder City, Overton, Pierce Ferry, Lick, College, and near Garm), 11h. (La Paz, Chinchina, and near Bogota), 12h. (Kulyab, near Obi-garm, Garm, and Stalinabad), 13h. (Tamanrasset and Ashkabad), 16h. (Fergana, Tashkent, Frunse, Naryn, near Garm, Kulyab, and Stalinabad), 18h. (Bogota, Chinchina, Fergana, near Garm, Kulyab, and near Stalinabad), 19h. (near Fergana), 20h. (Tamanrasset and Lick), 23h. (La Plata).

June 11d. 3h. Undetermined shock.

Zi-ka-wei eN =39m.38s.
Nanking eP =39m.51s., iSE =41m.46s., iLE =41m.59s.
Vladivostok eP =41m.52s., iS =45m.16s.
Przhevalsk eP =45m.36s.
Andijan eP =46m.16s., SS =56m.35s., e =65m.9s.
Tashkent eP =46m.32s., ePP =48m.22s., eSS =57m.16s.
Stalinabad P =46m.38s.?, S =54m.2s.?.
Sverdlovsk P =47m.15s., eS =55m.11s., SS =59m.19s.
College eP? =48m.30s., eL =63m.2s.
Moscow eP =48m.51s.
Victoria eZ =50m.29s.
Shasta Dam eP? =50m.43s.
New Delhi eN =50m.56s., iN =61m.37s.
Stuttgart ePZ =50m.56s., eQ =85m.
Ksara e =74m.18s.? and 79m.44s.
Upsala eN =75m.29s., e =80m.24s., eL =84m.
Long waves were also recorded at other European stations and at Scoresby Sund.

June 11d. 13h. 34m. 50s. Epicentre 22°·1S. 68°·7W. Depth of focus 0·015.
(as on March 5d.).
Intensity IV between 22° and 23°S. latitudes. Epicentre 21°·5S. 69°W.(U.S.C.G.S.)
Depth 100km.

F. Greve.
Boletin del año 1950, Instituto sismologico, Santiago, 1951, p. 6.

$A = +·3369$, $B = -·8641$, $C = -·3740$; $\delta = +5$; $h = +4$;
$D = -·932$, $E = -·363$; $G = -·136$, $H = +·348$, $K = -·927$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		5·6	6	i 1 15	− 7	i 2 11	−15	—	—	—
Huancayo		11·8	327	e 2 40	− 5	i 5 4	+ 9	e 2 53	pP	—
Buenos Aires		15·3	146	e 3 34	+ 4	—	—	—	—	—
La Plata		15·9	146	3 51	+13	7 4	+34	—	—	8·0
Bogota		27·1	349	i 5 30	− 3	i 9 53	− 7	—	—	12·7
San Juan		40·3	5	e 7 19	− 7	e 13 0	−24	—	—	e 16·1
Tacubaya		50·9	322	e 8 51	+ 1	e 15 46	− 9	e 16 42	sS	—
Washington		61·2	354	i 10 1	− 2	—	—	—	—	—
St. Louis		63·7	342	i 10 15	− 5	i 18 36	− 6	—	—	—
Weston		64·2	358	i 10 20	− 3	—	—	—	—	—
Harvard		64·3	358	i 10 20	− 4	—	—	i 10 50	pP	—
Tucson		67·4	323	i 10 43	− 1	—	—	—	—	—
Shawinigan Falls	N.	68·4	358	e 10 46	− 4	—	—	—	—	—
Palomar		71·8	320	i 11 11k	+ 1	—	—	i 11 26	PcP	—
Pierce Ferry		72·0	323	i 11 13	+ 1	e 19 57	−24	i 13 53	PP	—
Boulder City		72·4	322	i 11 15	+ 1	—	—	—	—	—
Riverside		72·5	319	i 11 15k	+ 1	i 11 57	sP	i 11 45	pP	—
Overton	Z.	72·6	323	i 11 16	+ 1	—	—	i 11 37	pP	—
Pasadena		73·1	319	i 11 19k	+ 1	i 12 0	sP	i 11 49	pP	—
Haiwee		74·3	321	i 11 26k	+ 1	—	—	i 11 42	PcP	—
Tinemaha		75·1	321	i 11 30k	0	—	—	i 11 44	PcP	—
Fresno		75·8	321	e 11 34	+ 1	—	—	—	—	—
Lick	Z.	77·3	320	i 11 43k	+ 1	—	—	i 12 14	pP	—
Berkeley	Z.	78·0	320	i 11 47k	+ 1	—	—	e 12 17	pP	—
Mineral	Z.	79·3	322	e 11 53k	0	—	—	—	—	—
Shasta Dam		79·9	322	i 11 56	0	—	—	—	—	—
Arcata		81·1	322	e 12 3k	+ 1	—	—	e 12 33	pP	—
Grahamstown		82·4	122	i 12 16	+ 7	—	—	—	—	—
Seattle		84·5	327	i 12 21k	+ 1	e 23 28	SP	i 12 37	pP	—
Granada		85·0	47	i 13 16k	+54	23 31	[+60]	16 43	PP	—
Tamanrasset	Z.	85·0	63	i 12 24k	+ 2	22 37	− 2	i 12 53	pP	—
Victoria		85·6	327	e 12 25	0	e 22 40	− 5	e 12 56	pP	—
Pretoria	Z.	86·5	116	i 12 36	+ 6	—	—	—	—	—
Alicante		87·7	47	e 12 23	−12	22 57	− 7	15 53	PP	e 41·1
Algiers Univ.	Z.	89·4	50	i 12 45a	+ 2	—	—	e 13 18	pP	—
Tortosa		89·6	46	17 40	?	i 23 24	+ 2	i 23 8	SKS	—
Kew		94·5	36	—	—	e 25 18	SP	—	—	—
De Bilt		97·8	37	—	—	e 26 10?	PS	—	—	—
Stuttgart	Z.	98·7	41	e 13 26	0	—	—	—	—	—
College		105·3	334	e 13 54	− 1	—	—	e 17 50	PP	—
Ksara		113·7	61	e 18 22	[− 1]	e 28 51	PS	—	—	—

Additional readings :—
La Paz $iP^* = 1m.29s.$, $iP_c = 1m.46s.$, $i = 2m.4s.$, $iS^* = 2m.36s.$, $iS_c = 2m.51s.$
La Plata P?E = 4m.10s., SE = 7m.10s.
San Juan iS = 13m.6s., e = 13m.58s.
Tacubaya e = 11m.0s.
Tucson i = 11m.24s., e = 12m.2s.
Palomar iZ = 11m.30s.
Riverside $iP_cPZ = 11m.32s.$
Overton iZ = 12m.46s., eZ = 14m.31s.
Pasadena $iP_cPZ = 11m.36s.$
Fresno eE = 13m.38s., eN = 17m.8s.
Lick $iP_cPZ = 12m.1s.$
Mineral eZ = 13m.54s.
Seattle i = 12m.27s. and 13m.17s.
Tamanrasset iZ = 12m.39s., 13m.49s., and 14m.55s., ePPZ = 15m.41s., ePPPZ = 17m.35s., eSPZ = 23m.31s.
Alicante $S_cS = 22m.37s.$, PS = 24m.7s., PPS = 24m.29s.
Algiers Univ. eZ = 12m.51s., iZ = 13m.40s.
Tortosa PSE = 24m.50s.

June 11d. 17h. 19m. 46s. Epicentre 32°·5N. 139°·0E. (as on 1940, Jan. 27d.).

A = −·6377, B = +·5544, C = +·5347; δ = −8; h = +1;
D = +·656, E = +·755; G = −·404, H = +·351, K = −·845.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa	N.	6·8	14	e 1 50	+ 6	e 3 22	+19	—	—	—
Vladivostok		12·0	336	i 3 0	+ 5	i 5 28	+17	—	—	—
Nanking		17·1	274	i 3 57	− 5	e 7 20	+ 8	—	—	e 8·3
Przhevalsk		48·2	301	e 8 42	− 2	—	—	—	—	—
Fergana		53·5	299	e 9 21	− 3	—	—	—	—	—
College		54·0	30	e 9 27	− 1	—	—	—	—	—
Obi-garm		55·5	298	e 9 39	0	e 17 18	− 6	—	—	—
Sverdlovsk		57·3	320	i 9 55	+ 3	—	—	—	—	—
Moscow		69·7	323	e 11 7	− 7	—	—	—	—	—
Victoria	Z.	71·0	44	e 11 22	0	—	—	—	—	—
Seattle		72·1	45	e 11 35	+ 7	—	—	—	—	—
Gori		72·4	309	e 11 8	−22	—	—	—	—	—
Shasta Dam		75·5	51	i 11 47	− 1	—	—	e 14 42	PP	—
Mineral	Z.	76·2	51	i 11 51k	− 1	—	—	i 12 0	PcP	—
Berkeley		77·0	53	e 11 56a	0	—	—	i 12 3	PcP	—
Lick	Z.	77·7	53	i 11 59a	− 1	—	—	i 12 11	PcP	—
Tinemaha	Z.	80·1	53	i 12 14	+ 1	—	—	i 12 22	PcP	—
Pasadena	Z.	81·8	54	i 12 21	− 1	—	—	i 12 29	PcP	—
Ksara		82·1	304	e 16 27	?	e 27 2	?	—	—	—
Riverside	Z.	82·4	54	i 12 23	− 2	—	—	i 12 30	PcP	—
Overton	Z.	82·9	51	i 12 29	+ 1	—	—	i 15 47	PP	—
Boulder City		83·0	52	e 12 28	0	—	—	—	—	—
Palomar	Z.	83·1	54	i 12 28	− 1	—	—	i 12 35	PcP	—
Pierce Ferry		83·5	51	i 12 31	0	—	—	—	—	—
Prague		84·3	328	e 12 48	+13	—	—	e 13 39	?	—
Stuttgart		87·5	330	e 12 49?	− 2	—	—	—	—	e 46·2
Tucson		87·9	53	e 12 52	− 1	—	—	—	—	—
Rome	Z.	91·1	323	e 6 2	?	—	—	—	—	—
Tamanrasset	Z.	109·3	315	14 14	P	—	—	—	—	—

Additional readings :—
Mizusawa SE = 3m.32s.
Lick iZ = 12m.7s.
Overton iZ = 12m.53s. and 14m.4s.
Long waves were also recorded at other European stations.

June 11d. 20h. 15m. 54s. Epicentre 28°·5S. 72°·0W.

Intensity IV between 27° and 28° S. latitudes. Epicentre 28°·5S., 72°W. (U.S.C.G.S. and Strasbourg).

F. Greve.
Boletín del año, 1950. Instituto sismológico, Santiago, 1951, p. 6.

A = +·2720, B = −·8371, C = −·4747; δ = +6; h = +2;
D = −·951, E = −·309; G = −·147, H = +·451, K = −·880.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
LaPaz	12·5	17	i 2 25	−37	i 5 33	+10	3 22	PP	6·7
Buenos Aires	13·0	121	3 7	− 2	6 54	+79	—	—	8·1
La Plata	13·6	122	3 18	+ 1	5 54	+ 4	6 6	SS	6·9
Huancayo	16·7	348	e 3 57	0	i 7 8	+ 5	e 4 23	PPP	e 8·4
Bogota	33·0	356	e 6 41	+ 2	e 12 5	+ 8	—	—	16·1
Chinchina	33·5	354	i 6 47	+ 4	e 12 14	+ 9	—	—	18·1
San Juan	47·0	8	—	—	e 15 12	−14	—	—	e 18·9
Tacubaya	54·4	329	e 9 31	0	—	—	—	—	—
St. Louis	68·9	345	i 11 4	− 5	—	—	—	—	—
Weston	70·5	2	i 11 18	0	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Harvard		70·7	2	i 11 18	− 2	—	—	—	—	—
Tucson		70·8	327	e 11 18	− 2	—	—	—	—	e 36·2
Palomar	z.	74·8	323	i 11 42	− 2	—	—	—	—	—
Pierce Ferry		75·6	326	i 11 46	− 2	—	—	—	—	—
Riverside	z.	75·6	322	i 11 46	− 2	—	—	i 11 57	PcP	—
Boulder City		75·8	325	e 11 48	− 2	—	—	—	—	—
Overton	z.	76·0	326	i 11 50	− 1	—	—	i 12 7	PcP	—
Pasadena		76·1	322	i 11 50	− 1	—	—	—	—	e 39·1
Haiwee	z.	77·5	324	i 12 0	+ 1	—	—	—	—	—
Tinemaha	z.	78·3	324	i 12 3	0	—	—	—	—	—
Lick	z.	80·4	323	e 12 13k	− 2	—	—	i 12 24	PcP	—
Berkeley		81·1	323	e 12 17a	− 1	e 22 26	− 2	—	—	e 40·3
Grahamstown		81·4	123	e 12 21	+ 1	—	—	—	—	—
Shasta Dam		83·2	324	i 12 26	− 3	—	—	—	—	—
Pretoria	z.	86·3	117	e 12 45	0	—	—	—	—	—
Seattle		88·3	329	e 12 46	− 9	e 24 21	PS	—	—	e 46·1
Victoria	z.	89·4	329	e 12 49	−11	—	—	—	—	—
Tamanrasset	z.	90·4	64	e 13 6	+ 2	—	—	e 16 49	PP	—
College		109·7	334	e 14 30	P	—	—	—	—	e 58·8
Istanbul		116·0	56	e 19 54	PP	—	—	—	—	73·1
Ksara		119·2	65	e 9 48	?	—	—	e 20 19	PP	—

Additional readings :—
La Paz iPcP =8m.30s., ScS =17m.36s.
La Plata PE =3m.24s., N =6m.24s. and 6m.30s.
Tinemaha iZ =12m.24s.
Lick iZ =12m.17s.
Berkeley iZ =12m.22s.
Seattle e =13m.9s. and 13m.29s.
Tamanrasset eZ =13m.19s.
Long waves were also recorded at Sitka, Salt Lake City, Kew, Potsdam, and Nanking.

June 11d. 22h. 11m. 6s. Epicentre 57°·5S. 148°·0E.

A = −·4579, B = +·2861, C = −·8417 ; δ = −2 ; h = −8 ;
D = +·530, E = +·848 ; G = +·714, H = −·446, K = −·540.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kaimata	N.E.	21·1	53	i 3 54?	−54	—	—	—	—	—
Cobb River	E.	22·8	53	e 5 5	0	—	—	—	—	—
Wellington		23·6	56	i 5 14	+ 1	e 9 28	+ 3	i 5 54	PPP	15·9
Riverview		23·8	5	e 5 16	+ 1	e 9 11	−17	i 5 26	pP	e 11·0
Tuai	N.	26·7	57	—	—	e 9 55	−22	—	—	—
Brisbane		30·2	8	e 6 12k	− 2	i 11 23	+10	e 7 8	PP	i 14·2
Perth		33·7	305	—	—	i 12 21	+13	—	—	i 15·1
Apia	N.	53·1	52	—	—	e 17 0	+ 9	—	—	—
Grahamstown		77·0	227	e 11 56	0	—	—	—	—	—
Pietermaritzburg	z.	78·7	232	e 12 6	0	—	—	—	—	—
Pretoria	z.	83·0	232	e 12 27	− 1	—	—	—	—	—
Kodaikanal	E.	88·4	291	—	—	e 22 54	?	—	—	—
Nanking		92·5	335	e 18 27	PPP	—	—	—	—	—
Poona	N.	97·2	293	—	—	e 24 10	[− 3]	e 32 1	SSP	—
Bombay		98·1	292	e 24 16	SKS	(e 24 16)	[− 2]	e 25 59	PS	—
La Paz		100·4	145	e 18 30	PP	i 22 34	PKS	—	—	47·2
Vladivostok		101·2	348	19 6	?	25 39	+ 9	—	—	—
Huancayo		102·1	136	e 27 13	PS	—	—	—	—	i 47·3
Andijan		116·5	304	18 56	[+10]	29 31	PS	20 0	PP	—
Chinchina		117·5	129	e 29 35	PS	—	—	—	—	56·6
Bogota		117·8	131	e 20 53	PP	e 36 35	SSP	—	—	47·9
Tashkent		118·3	303	e 19 2	[+13]	e 25 52	[+ 8]	e 20 7	PP	—
Santa Clara	E.	120·6	73	—	—	e 37 7	SSP	—	—	e 53·6
Berkeley		120·8	73	—	—	e 37 1	SS	—	—	e 50·0
Ukiah		121·3	65	—	—	e 36 4	SS	—	—	e 50·5

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Shasta Dam		122·9	64	e 19 17	[+19]	—	—	—	—	—
Baku		127·0	289	—	—	e 22 37	PKS	—	—	—
Shemakla		127·8	288	e 19 15	[+ 7]	e 22 52	PKS	—	—	—
Seattle		128·2	59	e 22 44	PKS	e 26 8	[− 7]	e 38 34	SS	e 66·9
Helwan	z.	128·9	265	e 19 17	[+ 7]	e 26 6	[−11]	21 21	PP	—
Ksara		129·5	273	e 21 40	PP	32 40	PPS	—	—	—
Sitka		129·6	43	—	—	e 26 0	[−19]	e 39 13	SSP	e 58·3
Leninakan		130·4	285	e 19 39?	[+26]	e 23 17?	PKS	—	—	—
Tiflis		130·6	286	e 19 23	[+10]	—	—	—	—	—
Gori		131·1	286	e 19 52	[+38]	e 22 46	PKS	—	—	—
Grozny		131·2	289	e 19 17	[+ 3]	e 22 33	PKS	—	—	—
College		131·3	30	e 19 13	[− 1]	e 33 8	PPS	e 21 34	PP	e 61·0
Zugdidi		132·7	285	e 19 34	[+17]	—	—	—	—	—
San Juan		133·5	132	—	—	e 22 45	PKS	e 40 9	SSP	e 56·7
Sverdlovsk		133·6	311	e 19 23	[+ 4]	e 22 52	PKS	e 40 28?	SSP	—
Tamanrasset	z.	136·0	234	e 19 19	[− 4]	—	—	15 46	?	—
Yalta		138·1	282	e 19 36	[+ 9]	e 40 20	SS	—	—	—
Istanbul		138·4	274	e 19 30	[+ 2]	e 26 37	[0]	—	—	—
Moscow		143·2	298	19 41	[+ 5]	29 27	{−13}	22 37	PP	—
Taranto		144·4	263	18 50	[−48]	e 38 40	?	—	—	e 75·2
Cleveland		145·0	95	i 19 37a	[− 2]	e 26 38	[− 9]	i 19 45	PKP_2	—
Washington		145·5	102	e 19 42	[+ 2]	—	—	—	—	e 84·0
Bermuda		146·4	124	e 19 50	[+ 8]	e 30 3	{+ 5}	e 42 44	SSP	e 68·1
Pennsylvania	N.	146·4	99	e 21 6	?	—	—	—	—	—
Philadelphia		147·2	103	e 19 50	[+ 7]	e 30 2	{− 1}	e 42 19	SS	e 60·9
Rome		148·0	261	e 19 50k	[+ 6]	e 26 22	[−29]	e 23 3	PP	e 61·9
Pulkovo		148·5	301	19 56	[+11]	—	—	23 24	PP	—
Skalnate Pleso		148·5	278	e 23 5	PP	—	—	e 25 5	?	—
Zagreb		148·7	269	e 20 0	PKP_2	—	—	—	—	—
Ogyalla		148·8	274	e 20 37	?	e 42 24	SS	e 23 0	PP	—
Warsaw		149·7	283	e 19 54	[+ 7]	e 30 9	{− 7}	e 23 27	PP	e 79·9
Triest		149·8	268	e 20 2	[+15]	e 30 7	{−10}	e 23 40	PP	e 70·9
Florence Arc.		149·9	262	e 19 36	[−11]	e 22 45	PKS	e 61 28?	Q	e 79·4
Ottawa		150·7	94	i 19 54	[+ 6]	—	—	—	—	73·9
Harvard		151·0	104	e 19 54	[+ 5]	e 43 9	SS	e 23 15	PP	e 67·5
Weston		151·0	104	e 19 44	[− 5]	—	—	—	—	—
Alicante		151·9	241	20 1	[+11]	26 41	[−15]	23 40	PP	e 67·9
Pavia		152·0	263	e 20 24?	PKP_2	—	—	—	—	—
Prague		152·1	276	e 20 1	[+10]	e 26 56	[0]	e 20 11	PKP_2	e 74·9
Malaga	z.	152·3	234	i 19 50	[− 1]	27 10	[+13]	i 24 0	PP	74·1
Granada		152·4	235	i 20 8a	PKP_2	27 3	[+ 6]	20 48	pPKP	i 77·2
Chur		152·8	265	e 19 55	[+ 3]	—	—	—	—	—
Cheb		153·2	274	—	—	e 30 1	{−36}	e 43 23	SS	—
Tortosa	N.	153·3	246	e 20 17	PKP_2	30 44	{+ 7}	27 42	PPP	e 72·9
Zürich		153·6	265	e 20 1	[+ 8]	—	—	—	—	—
Potsdam	z.	154·0	278	e 20 0	[+ 7]	—	—	e 20 21	PKP_2	e 78·9
Jena	N.	154·1	275	e 20 4?	[+11]	—	—	e 24 14	PP	—
Stuttgart		154·2	269	e 20 0	[+ 7]	e 30 18	{−23}	e 20 19	PKP_2	84·9
Strasbourg		154·8	267	e 19 57	[+ 3]	e 30 33	{−12}	e 20 25	PKP_2	e 74·9
Toledo		154·8	238	e 20 15	PKP_2	—	—	24 25	PP	69·2
Clermont-Ferrand		155·5	257	e 20 36	PKP_2	e 44 44	SSP	e 24 49	PP	81·9
Copenhagen		155·8	286	—	—	43 48	SS	49 54	SSS	72·9
Lisbon	z.	156·0	229	20 20k	PKP_2	—	—	—	—	78·2
Paris		157·8	263	e 19 48	[−10]	e 37 7	PPS	e 20 5	PKP	e 77·9
De Bilt		158·1	273	e 19 59	[0]	e 43 54?	SS	—	—	e 80·9
Kew		160·7	267	e 20 3	[+ 1]	e 30 15	{−61}	e 45 47	SSP	—
Durham	E.	162·9	274	—	—	e 31 36	{+ 8}	i 45 46	SSP	—
Rathfarnham C.	z.	164·8	266	—	—	e 34 50	SKSP	e 46 54	SSP	—
Scoresby Sund		166·3	346	24 40	PP	45 38	SS	28 39	PPP	76·9

Additional readings :—
Riverview iZ =5m.21s. and 5m.46s., iSSZ =9m.46s., iSSE =9m.49s., iN =9m.56s., iSSSE =10m.2s.
Brisbane eN =6m.18s.
Nanking e =21m.28s., and 22m.56s.

Continued on next page.

Bombay SN =32m.26s.
Andijan SS =35m.30s., SSS =39m.48s.
Tashkent eSKKS =27m.8s., PS =29m.50s.
Seattle e =23m.19s., 24m.59s., 27m.6s., 28m.24s., and 31m.19s.
Helwan SKPZ =22m.30s., eNZ =23m.57s., eZ =25m.24s.
Sitka e =39m.18s.
College e =22m.44s., eSS =39m.30s.
Tamanrasset ePZ =16m.9s., iZ =19m.36s., ePPZ =22m.0s., eZ =22m.17s. and 24m.42s., ePPPZ =25m.17s.
Moscow PKS =23m.24s., PPP =25m.40s., SS =41m.30s.
Cleveland eE =23m.56s., eSKKSE =28m.47s.
Washington i =20m.5s., 20m.45s., and 21m.3s.
Rome eSKKS =29m.38s., eSS =42m.28s.
Ogyalla eE =21m.6s., e =24m.57s. and 26m.23s.
Warsaw ePKPEN =20m.9s., ePPEZ =23m.32s., ePPP =27m.7s., ePPS?EZ =37m.12s., SS =42m.55s., and other unidentified e readings.
Triest ePSKS =34m.1s., eSS =42m.48s.
Harvard ePPP =26m.4s.
Alicante PKS =23m.17s.
Prague ePP? =23m.6s., eSKP =23m.32s., eSKKS =30m.42s., ePPS =37m.24s., eSS? =43m.12s., eSSS? =49m.6s., and other unidentified e readings.
Malaga PPPZ =27m.56s., QZ =68m.2s.
Granada PKP_2 =20m.40s., sPKP =21m.2s., $sPKP_2$ =21m.24s., iPP =23m.36s., pPP =24m.24s., SKKS =30m.15s., SKSP =33m.39s., PPS =36m.51s., iSS =42m.27s., SSS =49m.9s., Q =69·7m.
Cheb e =36m.55s. and 50m.36s.
Tortosa SKS?N =26m.31s.
Potsdam eZ =22m.2s., and 25m.2s.
Jena eE =20m.31s.? and 21m.7s.
Stuttgart eZ =21m.54s., ePP =24m.13s., eSS =43m.29s., eQ =78·9m.
Strasbourg e =20m.5s. and 21m.1s., ePP =24m.10s., e =28m.12s. and 38m.42s., eSS? =43m.36s., iSS =43m.43s.
Clermont-Ferrand e =21m.17s., eSSS? =51m.4s., Q =65·9m.
Paris $iPKP_2$ =20m.52s., e =22m.12s., i =22m.47s., ePP =24m.4s., i =24m.34s., e =25m.2s., ePPP? =27m.26s., iSKSP =34m.28s., e =34m.40s. and 42m.10s., eSS? =44m.58s.
Kew e =32m.4s., ePSEN =34m.54s.
Long waves were also recorded at Auckland, Ivigtut, and at other North American and European Stations.

June 11d. Readings also at 0h. (near Prague), 6h. (Bogota, Chinchina, Huancayo, La Paz, Tucson, Tacubaya, and near Andijan), 7h. (Alicante (3), Ashkabad, Mary, Andijan, Frunse, near Obi-garm (2), Kulyab, Stalinabad, Garm, Fergana, and Samarkand), 8h. (Granada), 9h. (Huancayo, Mary, Ashkabad, Tashkent, Frunse, near Stalinabad, Kulyab, Obi-garm, Garm, Fergana, Andijan, and Naryn), 10h. (La Paz), 11h. (Brisbane), 12h. (Budapest, College, and near Mizusawa (2)), 13h. (Brisbane, and near Tortosa), 14h. (College, Shasta Dam, Pierce Ferry, Tucson, Tamanrasset, Strasbourg, and Stuttgart), 15h. (Pierce Ferry and near Tucson), 16h., 17h., and 19h. (College), 20h. (near Przhevalsk), 22h. (Weston, College, Shasta Dam, Overton, Tucson, Obi-garm, Kulyab, and near Garm), 23h. (Tamanrasset).

June 12d. 14h. 9m. 40s. Epicentre 9°·5S. 156°·5E.

A = −·9047, B = +·3934, C = −·1640 ; δ = +14 ; h = +7 ;
D = +·399, E = +·917 ; G = +·150, H = −·065, K = −·986.

		△	Az.	P.	O−C.	S.	O−C	Supp		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		18·2	190	i 4 12k	− 4	e 7 51	+14	e 4 43	PPP	—
Riverview		24·7	190	i 5 24a	0	i 9 46	+ 2	i 6 3	PPP	e 12·1
Guam		25·6	332	5 39	+ 7	10 4	+ 5	—	—	—
Auckland	N.	31·9	152	—	—	e 10 58	?	—	—	e 18·3
Nanking		54·8	321	i 9 21	−13	e 17 8	− 6	11 40	PP	e 23·3
Vladivostok		57·0	339	e 9 51	+ 1	e 17 50	+ 7	—	—	—
Irkutsk		76·0	330	e 11 52	+ 1	e 21 38	+ 4	—	—	—
College		84·9	20	i 12 48	+10	—	—	—	—	—
Przhevalsk		87·7	314	i 12 51	− 1	—	—	—	—	—
Almata		88·9	315	i 12 58	0	—	—	—	—	—
Berkeley	z.	88·9	52	i 13 14a	+16	—	—	i 13 22	P_cP	—
Naryn		89·2	313	i 13 3	+ 4	—	—	—	—	—
Lick	z.	89·3	52	e 13 15k	+16	—	—	e 13 27	P_cP	—
Shasta Dam		89·5	49	e 13 16	+16	—	—	e 16 52	PP	—
Mineral	z.	89·9	49	e 13 17k	+15	—	—	e 16 46	PP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Frunse		90·5	313	e 13 5	0	—	—	—	—	—
Pasadena	z.	91·4	56	e 13 9	0	—	—	—	—	—
Andijan		91·7	311	e 13 11	+ 1	—	—	—	—	—
Fergana		92·1	311	e 13 9	− 3	—	—	—	—	—
Riverside	z.	92·1	56	i 13 27	+15	—	—	—	—	—
Garm		93·0	310	e 13 15	− 2	—	—	—	—	—
Obi-garm		93·4	309	e 13 16	− 2	—	—	—	—	—
Stalinabad		94·1	308	e 13 19	− 3	e 24 24	− 7	—	—	—
Tashkent		94·1	311	e 13 20	− 2	e 25 37	PS	e 19 8	PPP	—
Boulder City		94·4	54	e 13 34	+11	—	—	e 17 31	PP	—
Overton	z.	94·8	53	e 13 43	+18	—	—	e 17 34	PP	—
Pierce Ferry		95·1	54	e 13 46	+20	—	—	e 17 37	PP	—
Sverdlovsk		101·1	326	e 13 57	+ 4	e 24 32	[0]	e 18 0	PP	—
Leninakan		113·3	310	e 19 35	PP	—	—	—	—	—
Ksara		120·6	303	e 20 21	PP	e 35 10	SS	e 23 42	PPP	—
Istanbul		124·1	313	e 20 38	PP	e 25 36	[−27]	—	—	—
La Paz		128·8	120	i 19 20	[+10]	i 22 54	PKS	i 28 50	SKKS	—
Prague		128·8	330	e 19 6	[− 4]	—	—	e 22 29	PP	—
Stuttgart		132·2	331	e 19 20	[+ 4]	e 22 55	PKS	e 21 57	PP	e 70·3
Strasbourg		133·0	332	e 19 23	[+ 5]	—	—	e 21 45	PP	—
Rome		134·8	322	e 22 48	PKS	—	—	—	—	—
Paris		135·2	336	i 19 27	[+ 5]	—	—	e 21 59	PP	e 73·3
Granada		147·1	330	i 19 52k	[+ 9]	—	—	i 20 10	PKP_2	—
Malaga	z.	147·9	330	i 19 51	[+ 7]	e 26 43	[− 8]	19 59	PKP_2	—
Tamanrasset	z.	149·2	299	i 19 52a	[+ 6]	e 26 46	[− 7]	e 23 20	PP	—

Additional readings :—
Riverview iN = 7m.57s.
Nanking i = 9m.59s.
Berkeley eZ = 13m.28s.
Mineral eZ = 13m.32s.
Pasadena iZ = 13m.26s.
Overton eZ = 16m.53s.
Strasbourg e = 24m.15s.
Tamanrasset ePKP_2Z = 20m.15s., iZ = 20m.49s.
Long waves were also recorded at Perth, Wellington, Potsdam, De Bilt, Durham, and Kew.

June 12d. Readings also at 0h. (Seattle and near Obi-garm), 1h. (Honolulu and Tacubaya), 2h. (Tucson (2), Lick, Shasta Dam, College, and Tamanrasset), 4h. (La Paz, Bandong and near Djakarta), 5h. (Brisbane (2), Mount Wilson, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Lick, Mineral, Shasta Dam (2), College (2), Tacubaya, Pretoria, Ksara, Stuttgart, Bandong, and Djakarta), 8h. (Overton and Shasta Dam), 9h. (Overton, Fergana, Obi-garm, Samarkand, near Andijan, and Kulyab (2)), 10h. (La Paz and Shasta Dam), 13h. (Lick), 14h. (near Huancayo, near Ashakbad, and Kizyl-Arvat), 15h. (Boulder City, Berkeley, Lick, Shasta Dam, Tacubaya, near Messina, near Zürich, Tortosa, near Alicante, Granada, Malaga, and Toledo), 17h. (near Istanbul), 19h. (near Athens), 20h. (Lick), 21h. (Lick, Tucson, Andijan, Stalinabad, near Garm, Kulyab, and Obi-garm), 23h. (Galerazamba, Puebla, Tacubaya, La Paz, Philadelphia, Mount Wilson, Palomar, Tucson, Boulder City, Overton, Pierce Ferry, Berkeley, Shasta Dam, Seattle, College, Ksara (2), Almata, Andijan, Garm, Kulyab, Obi-garm, Naryn, Przhevalsk, Stalinabad, and Grozny).

June 13d. Readings at 0h. (Tamanrasset), 1h. (Overton and near Przhevalsk), 2h. (near Grozny (2)), 4h. (Mount Wilson, Tinemaha, Tucson (2), Overton, Pierce Ferry (2), College, Chicago, and Philadelphia), 5h. (College, Tamanrasset, Andijan, near Garm, Kulyab, and Obi-garm), 7h. (Haiwee, Palomar, Pasadena, Riverside, Tinemaha, Tucson (2), Boulder City, Overton (2), Pierce Ferry (2), Lick, Mineral, Shasta Dam, Harvard, Bogota, Huancayo, La Paz (2), Grahamstown, Pretoria, Tamanrasset (2), Timisoara, and near Honolulu), 8h. (Palomar, Tucson, Boulder City, Overton, Tacubaya, and near Shasta Dam), 12h. (near Tacubaya), 14h. Naryn, near Andijan, Garm (2), Kulyab, Obi-garm, Stalinabad, and Tashkent), 18h. (Victoria (2)), 20h. (La Paz and Lick), 21h. (Collmberg), 23h. (Tamanrasset, Toledo, near Granada, and Malaga).

June 14d. 3h. 44m. 9s. Epicentre 19°·0S. 174°·2W. (as on 1950, March 5d.).

A = −·9414, B = −·0956, C = −·3236; δ = +9; h = +5;
D = −·101, E = +·995; G = +·322, H = +·033, K = −·946.

		Δ	Az.	S.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		5·7	25	e 1 27	− 1	e 2 19	−16	—	—	e 2·8
Auckland	N.	20·2	207	e 4 41	+ 2	e 8 28	+ 7	—		10·8
Tuai	N.	21·1	200	—	—	8 35	− 4	—	—	—
Wellington		24·1	202	e 5 14	− 4	e 9 23	−11	—	—	e 13·8
Kaimata	N.E.	26·4	205	e 5 51?	+11	—	—	—	—	—
Brisbane	Z.	31·2	248	e 6 20	− 3	—	—	—	—	—
Riverview		34·2	237	i 8 7	PP	e 12 44	+28	—	—	e 15·0
Santa Clara		74·6	41	—	—	e 33 34	Q	—	—	e 38·6
Berkeley		74·7	41	i 11 49k	+ 6	e 21 22	+ 3	e 22 13	PPS	e 31·0
Lick	Z.	74·8	41	i 11 49k	+ 5	—	—	—	—	—
Pasadena		75·1	46	i 11 50	+ 4	—	—	—	—	e 34·0
Mount Wilson	Z.	75·2	46	e 11 44	− 2	—	—	—	—	—
Riverside	Z.	75·5	46	e 11 45	− 3	—	—	—	—	—
Shasta Dam		76·4	38	e 11 51	− 2	—	—	—	—	—
Mineral	Z.	76·7	39	e 11 53k	− 2	—	—	—	—	—
Tinemaha	Z.	76·7	43	e 11 51	− 4	—	—	—	—	—
Reno	Z.	77·2	41	e 11 58k	+ 1	—	—	—	—	—
Boulder City		78·4	46	e 12 3	− 1	—	—	—	—	—
Overton	Z.	78·9	46	i 12 7	0	—	—	—	—	—
Pierce Ferry		79·0	46	e 12 6	− 1	—	—	—	—	—
Tucson		79·2	50	e 12 7	− 1	—	—	—	—	e 36·2
Vladivostok		79·2	322	e 12 9	+ 1	e 22 31	+23	—	—	—
Seattle		81·0	33	e 12 40	+22	e 22 32	+ 5	—	—	e 41·8
Victoria	Z.	81·0	32	e 12 17	− 1	—	—	—	—	—
Sitka		82·9	20	—	—	e 22 45	− 1	e 28 11	SS	e 36·5
Hungry Horse		85·8	36	e 12 46	+ 4	—	—	—	—	—
College		86·0	11	e 12 41	− 2	i 23 17	0	e 24 17	PPS	e 35·9
Scoresby Sund		125·9	12	31 9	PS	38 3	SS	41 3	SSS	—
Rathfarnham Castle		144·5	12	e 21 12	?	—	—	e 23 21	PP	e 65·8
Warsaw		144·8	343	e 19 27	[−12]	e 33 4	PS	e 23 7	PP	e 68·8
Potsdam	Z.	146·2	352	i 19 43k	[+ 2]	—	—	—	—	85·8
De Bilt		147·0	1	i 19 48	[+ 5]	—	—	e 22 41	PP	e 73·8
Kew		147·2	7	e 19 44	[+ 1]	e 48 57	SSS	e 23 9	PP	e 62·8
Collmberg	Z.	147·3	351	e 19 46	[+ 3]	—	—	—	—	—
Jena		147·8	353	e 19 49	[+ 5]	—	—	—	—	—
Prague		148·3	349	e 19 39	[− 6]	—	—	e 23 21	PP	—
Ksara		149·4	305	e 19 52	[+ 6]	—	—	23 31	PP	—
Paris		150·1	5	e 19 49	[+ 1]	—	—	i 20 5	PKP_2	e 72·8
Stuttgart		150·2	356	e 19 49	[+ 1]	e 29 57	(−22)	e 20 1	PKP_2	—
Istanbul		150·4	323	e 19 55	[+ 7]	—	—	e 23 37	PP	—
Strasbourg		150·4	358	i 19 54	[+ 6]	—	—	e 24 18	PP	72·8
Clermont-Ferrand		153·2	5	e 20 12	PKP_2	—	—	—	—	—
Helwan	Z.	154·4	300	e 19 55	[+ 1]	—	—	—	—	—
Taranto		156·4	339	e 21 51	?	—	—	—	—	—
Rome		156·5	348	e 19 57	[+ 1]	e 34 24	PSKS	e 43 54	SS	—
Toledo	Z.	157·5	22	e 20 31	PKP_2	—	—	—	—	—
Alicante		160·0	16	19 55	[− 6]	—	—	—	—	e 71·8
Granada		160·1	24	21 0k	PKP_2	—	—	44 45	SS	76·4
Malaga	Z.	160·2	25	i 20 2k	[+ 1]	—	—	i 20 46	PKP_2	91·2
Tamanrasset	Z.	176·2	—	e 20 6	[− 6]	e 29 11	PKKP	e 21 52	PKP_2	—

Additional readings :—
Mineral iZ = 12m.36s.
Boulder City e = 13m.36s.
Overton iZ = 12m.58s.
Tucson e = 12m.42s.
Sitka e = 22m.56s.
College i = 12m.54s., e = 13m.35s.
Warsaw eZ = 19m.39s., eNZ = 19m.49s., eZ = 21m.4s., eEN = 21m.23s., e = 22m.2s. and 23m.48s., ePPS = 35m.2s.
Kew e = 20m.0s. and 20m.51s., eZ = 49m.45s.

Continued on next page.

Collmberg eZ =19m.55s., ePKPZ =19m.58s., eZ =20m.5s. and 20m.28s.
Jena eN =20m.42s., eE =21m.23s.
Prague e =20m.53s., 21m.11s., 21m.22s., 21m.40s., 21m.49s., and 22m.19s.
Paris i =19m.55s. and 20m.28s., iPP =23m.41s.
Stuttgart ePP =23m.27s., ePSKS =33m.39s.
Strasbourg ePPP =27m.10s., e =34m.51s.
Helwan eZ =20m.6s. and 20m.18s.
Rome e =25m.3s. and 38m.54s.
Toledo eZ =21m.50s.
Malaga iPPZ =24m.28s., QZ =80·9m.
Tamanrasset iZ =20m.26s. and 22m.11s., ePPZ =25m.47s.
Long waves were also recorded at Chinchina, Salt Lake City, Washington, Harvard, Weston, and Tortosa.

June 14d. 4h. 24m. 16s. Epicentre 24°·5N. 69°·0E.
Felt slightly at Bhuj (Kutch). Epicentre as adopted.
Seismo. Bull., June, 1950, Gov. of India, p. 3.

$A = +\cdot3265$, $B = +\cdot8505$, $C = +\cdot4124$; $\delta = +3$; $h = +3$;
$D = +\cdot934$, $E = -\cdot358$; $G = +\cdot148$, $H = +\cdot385$, $K = -\cdot911$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Bombay		6·6	147	1 44	+ 3	2 43	−15	—	—
Poona	E.	7·5	142	1 54	+ 1	3 22	+ 2	2 20	P_g
New Delhi		8·4	59	e 2 8	+ 2	i 3 30	−13	4 15	S*
Kulyab		13·4	3	e 3 8	− 6	i 5 40	− 5	—	—
Obi-garm		14·2	2	e 3 22	− 2	i 5 55	− 9	—	—
Mary		14·4	337	i 3 37	+10	—	—	—	—
Samarkand		15·2	354	e 3 46	+ 8	—	—	—	—
Fergana		16·0	8	3 46	− 2	e 6 43	− 3	—	—
Kodaikanal	E.	16·3	149	—	—	7 4	SS	—	—
Andijan		16·4	9	e 3 55	+ 2	6 56	0	—	—
Tashkent		16·8	0	e 4 0	+ 2	—	—	—	—
Calcutta	E.	17·8	92	i 4 4	− 7	i 6 56	−32	—	—
Naryn		17·9	18	e 4 12	0	e 7 26	− 4	—	—
Frunse		18·9	12	e 4 27	+ 3	—	—	—	—
Almata		19·8	18	i 4 36	+ 1	e 8 14	+ 1	—	—
Colombo	E.	20·4	148	—	—	8 16	− 9	—	—
Baku		22·5	319	—	—	e 9 18	+13	—	—
Tiflis		26·4	316	e 5 43	+ 3	—	—	—	—
Grozny		26·8	321	5 48	+ 4	—	—	—	—
Moscow		38·7	332	e 7 28	+ 1	e 13 19	− 6	—	—
Collmberg	Z.	50·1	317	e 8 58	− 1	—	—	—	—
Potsdam	Z.	50·3	319	e 9 0	0	—	—	—	—
Stuttgart	Z.	52·2	314	e 9 12	− 3	—	—	—	—
Tamanrasset	Z.	57·7	283	e 9 53	− 2	—	—	e 10 48	P_cP
Pretoria	Z.	63·7	221	i 10 32	− 4	—	—	—	—
Pietermaritzburg	Z.	65·3	216	e 10 43	− 3	—	—	—	—
College		86·5	16	e 12 45	− 1	—	—	—	—
Seven Falls	E.	100·0	334	e 14 44?	+56	—	—	—	—

Additional readings :—
Poona QE =2m.57s., SE =3m.4s., S_gE =3m.39s.; true S is given as S*.
New Delhi S*EN =3m.54s., iEN =4m.26s.
Tamanrasset iZ =11m.4s., ePPZ =12m.2s., ePPPZ =13m.13s.
Long waves were also recorded at Ashkabad, Copenhagen, Upsala, and Helsinki.

June 14d. 4h. 42m. 0s. Epicentre 16°·4S. 167°·5E. (as on 1946, Jan. 20d.).

$A = -·9371$, $B = +·2077$, $C = -·2806$; $\delta = +3$; $h = +5$;
$D = +·216$, $E = +·976$; $G = +·274$, $H = -·061$, $K = -·960$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		17·4	228	i 4 8k	+ 2	e 7 36	+17	e 4 19	PP	—
Auckland	N.	21·4	165	e 5 38	PPP	e 8 42	− 3	—	—	e 12·0
Riverview		22·8	217	i 5 7k	+ 2	i 9 26	+15	i 9 34	SS	e 11·2
Wellington		25·6	169	—	—	e 10 20	+21	e 13 22	Q	e 14·0
Kaimata	N.E.	26·3	173	e 5 0?	−39	—	—	—	—	—
Lick	Z.	85·3	49	e 12 38k	− 2	—	—	—	—	—
Shasta Dam		86·2	46	e 12 42	− 2	—	—	—	—	—
Mineral	Z.	86·6	47	e 12 43a	− 3	—	—	—	—	—
Pasadena		86·7	53	e 12 42	− 5	—	—	—	—	e 39·0
Riverside	Z.	87·2	53	e 12 45	− 4	—	—	—	—	—
Reno	Z.	87·5	48	e 12 47a	− 4	—	—	—	—	—
Haiwee	Z.	87·6	52	e 12 53	+ 2	—	—	—	—	—
Tinemaha	Z.	87·7	50	e 12 49	− 3	—	—	—	—	—
College		87·8	17	e 12 50	− 2	—	—	—	—	—
Victoria	Z.	89·0	39	e 12 53	− 5	—	—	—	—	—
Seattle		89·2	40	e 12 58	− 1	—	—	—	—	—
Boulder City		89·9	52	e 12 59	− 3	—	—	—	—	—
Overton	Z.	90·4	52	e 13 1	− 3	—	—	—	—	—
Pierce Ferry		90·6	53	i 13 2	− 3	—	—	—	—	—
Tucson		91·8	57	e 13 8	− 3	—	—	—	—	—
Hungry Horse		94·7	41	e 13 21	− 3	—	—	—	—	—
Ksara		133·3	302	e 19 18	[0]	—	—	—	—	—
Collmberg	Z.	139·7	336	e 19 33	[+ 3]	—	—	—	—	—
Prague		140·0	334	e 21 44	PP	—	—	—	—	—
Rathfarnham C.	Z.	142·9	354	e 19 37	[+ 1]	e 39 27	P′P′	e 22 47	PP	e 81·0
Stuttgart	Z.	143·2	336	e 19 35	[− 1]	—	—	—	—	—
Strasbourg		143·9	338	e 19 38	[+ 1]	—	—	—	—	—
Zürich		144·5	336	e 19 37a	[− 1]	—	—	—	—	—
Basle		144·8	337	e 19 39	[0]	e 30 28	{+39}	—	—	—
Paris		145·4	343	i 19 42	[+ 2]	—	—	—	—	e 74·0
Rome	Z.	146·7	326	i 19 48a	[+ 6]	—	—	—	—	—
Clermont-Ferrand		148·0	340	e 19 46	[+ 2]	—	—	—	—	—
Tamanrasset	Z.	161·9	295	e 20 6	[+ 3]	—	—	e 21 6	PKP_2	—

Additional readings :—
Brisbane iZ = 4m.46s.
Riverview iN = 9m.53s.
Pasadena eZ = 12m.48s.
Riverside eZ = 12m.52s.
Tucson e = 13m.18s.
Rathfarnham Castle e = 32m.25s.
Strasbourg e = 19m.41s., 21m.1s. and 22m.9s.
Paris i = 19m.46s.

June 14d. 7h. 59m. 23s. Epicentre 14°·5S. 70°·0W. Depth of focus 0·040.

Intensity III at Tacna. Epicentre 14°·5S., 70°W. (U.S.C.G.S. and Strasbourg). Depth 300km. ca.

E. Silgado.
Datos sismológicos del Perú, 1949-1950, Bol. No. 4, Lima, Peru, 1952, p. 21.

$A = +·3313$, $B = -·9102$, $C = -·2488$; $\delta = +13$; $h = +6$;
$D = -·940$, $E = -·342$; $G = -·085$, $H = +·234$, $K = -·969$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz	2·7	138	i 0 53	+ 1	i 1 33	0	—	—	—
Huancayo	5·7	294	i 1 25	− 1	i 2 26	− 7	—	—	—
Chinchina	20·1	346	e 4 10	− 3	e 7 39	+ 1	e 5 23	PPP	—
Fort de France	30·3	20	e 5 43	− 4	—	—	—	—	—
San Juan	32·9	8	e 6 9	0	i 11 1	− 4	e 7 31	PP	e 12·7

Continued on next page,

		△	Az.	P.	O − C.	S.	O − C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya		44·3	320	i 7 46k	+ 3	e 14 4	+ 9	i 8 43	pP	—
Washington		53·5	354	e 8 52	− 1	—	—	—	—	—
Weston		56·6	359	i 9 14	− 1	—	—	—	—	—
Ottawa	z.	59·8	356	e 9 37	0	—	—	—	—	—
Tucson		60·7	321	i 9 44	+ 1	—	—	i 10 44	pP	—
Pierce Ferry		65·3	322	i 10 14	+ 1	—	—	—	—	—
Boulder City		65·7	322	i 10 16	0	—	—	i 12 40	PP	—
Overton	z.	65·8	322	i 10 18	+ 2	—	—	i 10 36	P_cP	—
Riverside		66·0	318	i 10 17a	− 1	—	—	e 11 19	pP	—
Pasadena		66·6	318	i 10 22a	+ 1	i 18 53	+ 5	i 11 25	pP	—
Haiwee		67·7	320	i 10 29a	+ 1	—	—	i 10 54	P_cP	—
Tinemaha		68·5	320	i 10 34a	+ 1	—	—	i 11 36	pP	—
Fresno		69·3	320	e 10 38	0	—	—	—	—	—
Lick	z.	70·8	319	i 10 48a	+ 1	—	—	—	—	—
Reno		71·0	322	i 10 49a	+ 1	e 19 41	+ 1	—	—	—
Berkeley	z.	71·5	319	i 10 52a	+ 1	—	—	—	—	—
Mineral	z.	72·6	322	e 10 57a	− 1	—	—	i 11 55	pP	—
Shasta Dam		73·3	322	i 11 1	− 1	—	—	—	—	—
Hungry Horse		73·8	332	i 11 5	0	e 20 13	+ 2	—	—	—
Seattle		77·5	328	i 11 26a	0	—	—	—	—	—
Victoria	z.	78·6	328	i 11 32	0	—	—	e 14 33	PP	—
Malaga	z.	80·0	48	i 11 42k	+ 3	e 21 17	− 1	—	—	35·0
Granada		80·8	48	i 14 57a	PP	21 37	+11	—	—	—
Toledo	z.	81·7	46	i 11 50	+ 2	—	—	e 13 57	pP	—
Tamanrasset	z.	82·7	64	i 11 55k	+ 2	—	—	i 13 0	pP	—
Grahamstown		87·5	124	i 12 18	+ 2	—	—	—	—	—
Pretoria	z.	91·0	117	i 12 34	+ 1	—	—	i 13 41	pP	—
Stuttgart	z.	93·8	41	e 12 46	0	—	—	—	—	—
College		97·9	335	i 13 4	0	—	—	i 14 13	pP	—

Additional readings :—
La Paz iZ = 1m.0s. and 1m.3s., i = 1m.42s.
Tacubaya e = 11m.45s.
Tucson iP_cP = 10m.17s., ePKP,PKP = 38m.15s.
Pasadena iZ = 10m.38s., iP_cPZ = 10m.53s., iE = 19m.51s.
Haiwee iZ = 10m.35s.
Tinemaha iP_cPZ = 10m.57s.
Lick iZ = 11m.30s.
Mineral iZ = 11m.50s. and 13m.32s., iPPZ = 13m.47s.
Seattle i = 11m.32s.
Toledo eZ = 12m.4s.
Tamanrasset eZ = 12m.53s., ePPZ = 15m.12s.
College e = 16m.24s., ePP = 17m.1s.

June 14d. Readings also at 0h. (Hungry Horse (2), Tuai, Arapuni, Christchurch, near Cobb River, New Plymouth, Wellington, and near Honolulu), 1h. (Samarkand, Tashkent, Kulyab, near Almata, Andijan (2), Fergana, Frunse (2), Naryn (2), Obi-garm, and Przhevalsk (2)), 3h. (Pennsylvania, Stuttgart, and near Balboa Heights), 4h. (Harvard, Weston, Stuttgart, Ksara, and near Garm), 5h. (Pasadena, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Lick, Shasta Dam, Reno, Mineral, Hungry Horse, Victoria, College, and near Honolulu), 6h. (Auckland, Kaimata, Wellington, Brisbane, Riverview, Bandong, Djakarta, Nanking, Mount Wilson, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Mineral, Reno, Shasta Dam, Lick, Seattle, Sitka, College, Ksara, and Alicante), 7h. (Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Mineral, Shasta Dam, Hungry Horse, College, Bogota, Kew, Paris, Strasbourg, Stuttgart (2), Tamanrasset (2), New Delhi, near Mizusawa, and near Garm), 8h. (Auckland, Kaimata, Wellington, Brisbane (2), Riverview, Mount Wilson (2), Pasadena, Riverside (2), Tinemaha (2), Tucson, Boulder City (2), Overton (2), Pierce Ferry (2), Shasta Dam (2), Lick (2), Mineral (2), College (2), Tamanrasset (2), Paris, Strasbourg, Stuttgart, near Alicante (2), near Shemakla, and near La Paz), 9h. (Brisbane, Mineral (3), Bogota, Scoresby Sund, near Istanbul (2), and near Reykjavik), 10h. (Mineral, near Istanbul, and near Shemakla), 11h. (College and near Istanbul), 12h. (Pasadena, Riverside, Tinemaha, Tucson, Boulder City, Overton (2), Pierce Ferry (2), Lick, Reno, Mineral (2), Shasta Dam (3), Hungry Horse (2), College (2), Logan, Pretoria, near Andijan (2), near Obi-garm, and near Mizusawa), 13h. (Timisoara (2)), 15h. (Victoria (2) and Seattle), 16h. (La Plata, Victoria (2), and Seattle), 17h. (Victoria (2) and Seattle), 18h. (near Huancayo), 22h. and 23h. (near Grozny).

June 15d. 7h. 21m. 6s. Epicentre 11°·5N. 43°·5W.

A = +·7110, B = −·6747, C = +·1981 ; δ = −2 ; h = +6 ;
D = −·688, E = −·725 ; G = +·144, H = −·136, K = −·980.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fort de France		17·5	281	e 3 50	−17	—	—	—	—	—
San Juan		22·9	290	e 5 3	− 3	e 9 2	−11	—	—	e 11·0
Bogota		31·0	260	e 6 30	+ 9	e 11 42	+16	e 13 34	SS	16·4
Philadelphia		39·8	321	e 8 49	PP	e 13 23	−19	e 13 49	PS	e 16·0
Pennsylvania		42·0	321	e 9 33	PP	e 13 57	−17	—	—	e 16·8
Malaga	z.	43·2	47	e 8 2	− 2	e 14 44	+12	—	—	20·1
Granada		44·0	47	i 8 15k	+ 4	i 14 57	+14	—	—	19·1
Alicante		46·7	47	8 26	− 6	15 9	−13	10 21	PP	e 21·9
Tamanrasset	z.	48·0	69	e 9 1	+18	—	—	—	—	—
Stuttgart	z.	57·2	38	e 10 0	+ 9	—	—	—	—	—
Prague		60·9	38	i 10 24	+ 7	e 18 17	−17	—	—	—
Tucson		64·8	301	e 10 45	+ 2	—	—	—	—	e 32·1
Pierce Ferry		67·6	305	e 11 2	+ 1	—	—	—	—	—
Overton	z.	68·0	305	e 11 4	+ 1	—	—	—	—	—
Boulder City		68·3	305	e 11 6	+ 1	—	—	—	—	—
Hungry Horse		68·6	318	e 11 5	− 2	—	—	—	—	—
Palomar	z.	69·9	302	e 11 16	+ 1	—	—	—	—	—
Riverside	z.	70·3	303	e 11 19	+ 2	—	—	—	—	—
Haiwee	z.	70·8	305	e 11 23	+ 3	—	—	—	—	—
Pasadena		71·0	303	e 11 23	+ 1	—	—	—	—	e 37·3
Tinemaha	z.	71·0	305	e 11 22	0	—	—	—	—	—
Mineral	z.	73·6	309	e 11 38a	+ 1	—	—	—	—	—
Lick	z.	73·7	306	e 11 42a	+ 4	—	—	—	—	—
College		85·7	335	e 12 44	+ 2	—	—	—	—	—

Additional readings :—
Tamanrasset eZ = 9m.45s.
Mineral eZ = 12m.4s.
Long waves were also recorded at Harvard, Bermuda, Scoresby Sund, Tortosa, De Bilt, Kew, Paris, and Potsdam.

June 15d. 7h. 54m. 57s. Epicentre 1°·1N. 126°·4E. (as on 1949, Sept. 16d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		
		°	°	m. s.	s.	m. s.	s.	m. s.		
Vladivostok		42·1	6	e 7 53	− 2	e 14 18	+ 2	—	—	
Almata		60·8	321	e 10 17	+ 1	—	—	—	—	
Andijan		62·7	315	e 10 29	0	e 18 54	− 3	—	—	
Fergana		63·0	315	e 10 31	0	—	—	—	—	
Stalinabad		64·4	313	e 10 41	+ 1	e 19 15	− 3	—	—	
Samarkand		66·1	313	e 10 52	+ 1	—	—	—	—	
Sverdlovsk		76·0	329	i 11 50	− 1	—	—	—	—	
Tiflis		83·0	312	e 12 14	−14	—	—	—	—	
Zugdidi		85·2	312	e 12 13	−26	—	—	—	—	
College		87·2	25	e 12 44	− 5	—	—	—	—	
Moscow		88·4	326	e 12 55	0	e 23 35	− 5	—	—	
Hungry Horse		108·4	37	e 18 53	PP	—	—	—	—	
Overton	z.	112·4	50	e 19 27	PP	—	—	—	—	
Pierce Ferry		112·9	50	e 19 27	PP	—	—	—	—	
Tamanrasset	z.	117·8	297	27 31	?	e 31 14	PPS	e 29 43	PS	

Long waves were recorded at Paris,

June 15d. 23h. 47m. 18s. Epicentre 20°·5S. 179°·0W. Depth of focus 0.080.
(as on 1949, Oct. 28d.).

A = −·9373, B = −·0164, C = −·3481 ; δ = −3 ; h = +5 ;
D = −·017, E = +1·000 ; G = +·348, H = +·006, K = −·937.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Apia		9·6	47	2 17a	+ 2	e 4 0	− 2	—	—
New Plymouth	E.	19·5	195	e 3 57	+ 4	—	—	—	—
Wellington		21·4	193	e 4 7	− 3	e 7 19	−12	—	—
Cobb River	E.	21·7	197	e 4 9	− 4	—	—	—	—
Kaimata	N.E.	23·4	198	e 3 42?	−46	e 7 10	−54	—	—
Lick	Z.	78·9	43	e 11 9k	+ 1	—	—	—	—
Pasadena		79·4	47	i 11 10	− 1	e 20 23	− 5	—	—
Palomar		79·8	48	i 11 14	+ 1	i 20 36	+ 4	i 13 20	pP
Riverside	Z.	79·8	47	i 11 13	0	—	—	e 13 21	pP
Haiwee	Z.	80·6	46	i 11 18	+ 1	—	—	—	—
Mineral	Z.	80·7	40	i 11 19k	+ 1	—	—	e 13 24	pP
Tinemaha		80·9	48	i 11 20	+ 1	e 20 46	+ 3	—	—
Reno		81·3	42	e 11 22k	+ 1	e 20 48	+ 1	e 13 30	pP
Boulder City		82·7	47	e 11 28	0	—	—	—	—
Overton	Z.	83·2	47	i 11 31	+ 1	—	—	i 13 39	pP
Pierce Ferry		83·3	47	i 11 32	+ 1	—	—	e 13 40	pP
Tucson		83·6	52	i 11 34	+ 2	e 21 17	+ 8	e 13 40	pP
Seattle		84·7	35	e 11 40	+ 2	i 21 21	+ 1	—	—
Victoria		84·7	33	e 11 37	− 1	i 21 20	0	—	—
College		88·4	13	i 11 54	− 1	e 21 50	− 4	e 14 5	pP
Hungry Horse		89·7	37	i 12 0	− 1	—	—	—	—
Copenhagen		143·8	351	i 18 33	[− 1]	—	—	—	—
Warsaw	Z.	144·7	340	18 38	[+ 2]	—	—	—	—
Ksara		146·4	301	i 18 42	[+ 4]	—	—	i 21 1	pPKP
Potsdam	Z.	146·8	347	e 18 42	[+ 3]	—	—	i 20 58	pPKP
Collmberg	Z.	147·8	347	e 18 41	[+ 1]	—	—	e 21 0	pPKP
Jena		148·5	347	e 18 42	[+ 1]	—	—	—	—
Istanbul		148·6	317	e 18 46	[+ 5]	—	—	e 22 24	?
Prague		148·6	343	e 18 50	[+ 9]	—	—	e 21 42	PP
Stuttgart	Z.	151·0	350	e 18 44	[− 1]	—	—	e 21 4	pPKP
Helwan	Z.	151·1	295	i 18 53	[+ 8]	—	—	i 21 9	pPKP
Strasbourg		151·4	351	i 18 53k	[+ 8]	—	—	—	—
Granada		162·9	13	19 30a	[+31]	22 36	SKP	23 45	PP
Tamanrasset	Z.	175·2	—	19 8k	[+ 1]	e 27 51	SKKS	e 21 29	pPKP

Additional readings :—
Lick iZ = 11m.15s.
Mineral iZ = 11m.32s.
Overton iZ = 11m.44s.
College i = 12m.16s.
Ksara i = 22m.12s.
Collmberg iPKPZ = 18m.44s., eZ = 18m.50s. and 19m.21s.
Jena eEN = 18m.47s., eN = 18m.55s.
Prague e = 19m.2s., 20m.4s., 20m.27s., and 21m.17s.
Stuttgart iPKPZ = 18m.52s.
Helwan iZ = 19m.3s.
Strasbourg i = 19m.5s.
Tamanrasset ePKP$_1$Z = 20m.51s., epPKP$_2$Z = 23m.14s., ePPZ = 24m.44s., eZ = 28m.12s.

June 15d. Readings also at 0h. (Victoria, College, Vladivostok, Istanbul, Ksara, Nanking, Sverdlovsk, Erevan, Grozny, and near Leninakan), 1h. (Hungry Horse, Mineral, Potsdam and near Athens), 3h. (Warsaw), 5h. (Tamanrasset and near Istanbul), 6h. (Pierce Ferry, College, Tamanrasset, and near Kizyl-Arvat), 9h. (Overtou, Pierce Ferry, Fort de France and near San Juan), 10h. (near Athens), 11h. (Przhevalsk, Stalinabad, near Andijan, Fergana, Garm, Kulyab, Obi-garm, and Naryn), 12h. (Almata, Samarkand, and Weston), 13h. (Hungry Horse), 15h. (Istanbul and near Ashkabad), 16h. (College, near Prague, and near Mizusawa), 17h. (Almata, near Andijan, Fergana, Frunse (2), Garm, Kulyab, Naryn, Obi-garm, Stalinabad, Tashkent, and near San Juan), 18h. (Boulder City, Overton, Pierce Ferry, Hungry Horse, College, Harvard, and Weston), 20h. (Garm and Lick), 21h. (Balboa Heights, Seattle, and Brisbane), 22h. (Copenhagen and near Istanbul), 23h. (Lick),

June 16d. 5h. 37m. 53s. Epicentre 20°·5S. 70°·5W. (as on 1950, Jan. 14d.).

$A = +·3129$, $B = -·8837$, $C = -·3481$; $\delta = +1$; $h = +5$;
$D = -·943$, $E = -·334$; $G = -·116$, $H = +·328$, $K = -·937$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		4·6	30	i 1 19k	+ 7	i 2 19	S*	i 1 29	P_g	—
Huancayo		9·6	330	e 2 21	0	e 3 49	−23	—	—	i 5·3
Bogota		25·2	353	i 5 28	− 1	e 9 59	+ 7	—	—	13·6
Chinchina		25·8	348	i 5 34	0	e 10 7	+ 5	—	—	14·0
Weston		62·6	0	e 10 25	− 3	—	—	—	—	—
Harvard		62·7	0	i 10 27	− 2	—	—	—	—	—
Tucson		65·1	324	e 10 43	− 2	—	—	—	—	—
Palomar	z.	69·5	321	e 11 12	0	—	—	—	—	—
Pierce Ferry		69·7	325	e 10 13	−61	—	—	—	—	—
Boulder City		70·1	323	e 11 15	− 1	—	—	—	—	—
Riverside	z.	70·2	321	e 11 15	− 2	—	—	—	—	—
Overton	z.	70·3	325	i 11 17	0	—	—	—	—	—
Pasadena	z.	70·8	321	e 11 19	− 1	—	—	—	—	—
Tinemaha	z.	72·9	322	e 11 32	− 1	—	—	—	—	—
Lick	z.	75·0	320	e 11 45k	0	—	—	—	—	—
Mineral	z.	77·0	323	e 12 0k	+ 4	—	—	—	—	—
Hungry Horse		78·8	333	e 12 5	− 1	—	—	—	—	—
Tamanrasset	z.	85·7	65	i 12 46a	+ 4	—	—	e 16 11	PP	—
Ksara		114·4	62	e 19 41	PP	e 24 43	[−47]	—	—	—

Additional readings :—
La Paz $iP_g = 1m.43s.$, $iS_g = 2m.50s.$
Overton $eZ = 12m.35s.$
Lick $iZ = 12m.12s.$
Tamanrasset $iZ = 13m.17s.$
Long waves were also recorded at Paris.

June 16d. Readings also at 0h. (near Obi-garm, 4h. (Huancayo), 5h. (Overton and Lick), 6h. (Tamanrasset and Paris), 7h. (Mount Wilson, Palomar, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Lick, Mineral, and Stuttgart), 8h. (Huancayo, La Paz, Overton, Pierce Ferry, Harvard, and Tamanrasset), 10h. (La Paz), 11h. (near Vladivostok), 13h. (Tucson, Overton, Pierce Ferry, Lick, Mineral, College, Collmberg, Paris, Strasbourg, Stuttgart (2), and near Apia), 14h. (Timisoara), 15h. (Tamanrasset), 16h. (near Istanbul), 17h. (Huancayo and near Granada), 18h. (La Paz), 20h. (Boulder City, Overton, Pierce Ferry, Hungry Horse, Bogota, Huancayo, La Paz, Tamanrasset, near Arapuni, Christchurch, Cobb River, New Plymouth, and Wellington), 21h. (Prague), 22h. (Tamanrasset, Riverview, Auckland, Wellington, and Shasta Dam), 23h. (near Messina, near Naryn, and Obi-garm).

June 17d. 9h. 38m. 23s. Epicentre 43°·0N. 143°·0E. (as given by U.S.C.G.S.).

$A = -·5859$, $B = +·4415$, $C = +·6795$; $\delta = -8$; $h = -3$;
$D = +·602$, $E = +·799$; $G = -·543$, $H = +·409$, $K = -·734$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Mizusawa		4·1	201	1 0	− 5	1 41	−14	—	—
Vladivostok		8·1	275	i 2 5	+ 3	e 3 37	+ 2	—	—
College		43·5	36	e 8 8	+ 1	—	—	—	—
Sverdlovsk		51·6	317	(9 10)	0	—	—	—	—
Hungry Horse		66·6	45	i 10 55	+ 1	—	—	—	—
Shasta Dam		66·6	56	e 10 55	+ 1	—	—	—	—
Mineral	z.	67·3	56	i 10 56a	− 3	—	—	—	—
Tinemaha	z.	71·4	57	i 11 25	+ 1	—	—	—	—
Haiwee	z.	72·2	57	i 11 28	− 1	—	—	—	—
Mount Wilson	z.	73·4	59	i 11 34	− 2	—	—	—	—
Riverside	z.	74·0	59	i 11 38	− 1	—	—	—	—
Overton	z.	74·1	55	i 11 40	0	—	—	—	—
Boulder City		74·2	55	e 11 40	0	—	—	—	—
Pierce Ferry		74·6	55	e 11 33	−10	—	—	e 11 43	P
Collmberg	z.	76·6	55	e 11 53	− 1	—	—	e 12 15	P_cP

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.
		°	°	m. s.	s.	m. s.	s.	m. s.
Tucson		79·2	56	e 12 7	− 1	—	—	—
Stuttgart	z.	80·0	331	e 12 13	0	—	—	—
Weston		89·6	25	i 13 0	− 1	—	—	—
Tamanrasset	z.	103·7	320	e 18 24	PP	—	—	—

Additional readings and note :—
Mizusawa SN = 1m.38s.
College e = 8m.20s.
Sverdlovsk readings are increased by 2 minutes.
Shasta Dam e = 11m.7s.
Mineral iZ = 11m.11s.

June 17d. 15h. 56m. 33s. Epicentre 38°·9S. 175°·2E. Depth of focus 0·025.

Felt widely in North and South Islands. Intensity V in the epicentral region. Epicentre as adopted.

R. C. Hayes.
Earthquake origins in New Zealand during the year 1950; New Zealand Journal of Science and Technology, Section B, Vol. 33, No. 4, January, 1952, p. 307, with isoseismic chart.

A = −·7775, B = +·0653, C = −·6254 ; δ = −10 ; h = −1 ;
D = +·084, E = +·996 ; G = +·623, H = −·052, K = −·780.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Arapuni		0·9	23	i 0 28	0	i 0 48	− 3	—	—
New Plymouth	E.	0·9	259	i 0 29	+ 1	—	—	—	—
Tuai	N.	1·5	86	i 0 32	− 1	—	—	—	—
Auckland	N.	2·1	351	i 0 37	− 2	i 1 11	+ 1	—	—
Wellington		2·4	188	i 0 45	+ 2	i 1 17	+ 1	—	—
Cobb River	E.	2·9	220	i 0 48	− 1	i 1 26	0	—	—
Kaimata	N.E.	4·6	217	i 1 10	0	i 2 3	− 1	—	—
Christchurch		5·0	202	i 1 15	0	i 2 12	− 1	—	—
Riverview	E.	20·0	276	—	—	i 9 23	?	—	—
Brisbane		21·7	295	i 4 41 a	+ 5	e 9 47	?	—	—
Pasadena	z.	95·3	50	e 16 52	PP	—	—	—	—
Riverside	z.	95·7	50	e 16 56	PP	—	—	—	—
Shasta Dam		97·6	43	e 13 12	− 2	—	—	—	—
Boulder City		98·6	51	e 17 20	PP	—	—	—	—
Tucson		98·6	56	e 17 16	PP	—	—	—	—
Overton	z.	99·2	51	e 16 56	?	—	—	i 17 23	PP
Pierce Ferry		99·2	52	e 13 21	0	—	—	e 17 20	PP
Ottawa	z.	128·6	58	i 18 41	[− 3]	—	—	—	—
Tamanrasset	z.	161·7	212	i 19 38 k	[+ 1]	—	—	e 24 12	PP

Tamanrasset gives also eZ = 20m.26s. and 21m.14s.

June 17d. 22h. 16m. 3s. Epicentre 25°·5S. 67°·0W. Depth of focus 0·020.
(as on 1946, November 5d.).

A = +·3531, B = −·8319, C = −·4281 ; δ = +1 ; h = +3 ;
D = −·921, E = −·391 ; G = −·167, H = +·394, K = −·904.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		9·0	353	2 1	− 7	i 3 43	− 4	—	—	4·0
La Plata	E.	12·2	142	e 3 7	+18	5 27	+25	—	—	6·0
	N.	12·2	142	3 10	+21	5 21	+19	—	—	5·8
	Z.	12·2	142	3 8	+19	—	—	—	—	6·4
Huancayo		15·5	328	i 3 27	− 4	i 6 17	− 1	i 3 44	pP	—
Bogota		30·7	345	i 5 59	− 3	i 10 58	+ 7	—	—	e 15·3
San Juan		43·6	1	e 7 42	− 8	e 17 12	SS	—	—	—
Tacubaya		54·5	321	e 9 22	+ 9	—	—	—	—	—
Washington		64·8	352	e 10 20	− 4	—	—	—	—	—
Harvard		67·8	357	i 10 40	− 3	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		71·0	322	i 11 2	0	—	—	e 13 38	PP	—
Palomar		75·3	319	i 11 28k	+ 1	—	—	—	—	—
Pierce Ferry		75·7	322	i 11 30	+ 1	e 20 58	+ 2	i 11 43	P_cP	—
Boulder City		76·0	321	i 11 32	+ 1	—	—	—	—	—
Riverside		76·1	318	i 11 31k	− 1	—	—	—	—	—
Overton	z.	76·2	322	i 11 33	+ 1	e 22 5	PS	i 12 33	pP	—
Pasadena		76·7	318	i 11 35k	0	—	—	i 12 14	pP	—
Haiwee	z.	77·9	320	i 11 41k	− 1	—	—	—	—	—
Tinemaha		78·7	320	i 11 46k	0	—	—	i 11 56	P_cP	—
Grahamstown		79·2	122	i 11 59	P_cP	—	—	—	—	—
Fresno	z.	79·4	320	e 11 49k	− 1	—	—	e 12 35	pP	—
Lick	z.	80·9	319	i 11 59k	+ 1	—	—	—	—	—
Reno		81·3	322	i 12 1	+ 1	—	—	—	—	—
Berkeley	z.	81·6	319	e 12 1k	0	—	—	e 12 9	P_cP	—
Shasta Dam		83·6	321	i 12 11	0	—	—	—	—	—
Pietermaritzburg	z.	83·7	120	i 12 58	?	—	—	—	—	—
Arcata	z.	84·6	321	e 17 50a	PPP	—	—	—	—	—
Hungry Horse		84·7	331	i 12 18	+ 1	—	—	—	—	—
Tamanrasset	z.	85·1	62	i 12 23a	+ 4	—	—	e13 11	pP	—
Malaga	z.	85·4	46	i 11 28a	−52	22 41	+ 5	i 18 25	?	—
Granada		86·2	46	e 13 16a	+52	22 35	[+ 3]	—	—	—
Toledo		87·5	43	e 12 32	+ 1	e 22 57	+ 1	e 13 19	pP	—
Seattle		88·1	327	e 12 40	+ 6	—	—	—	—	—
Alicante		88·9	46	e 12 51	+14	i 23 7	− 2	15 2	?	e 40·9
Victoria	z.	89·3	327	e 12 40k	+ 1	—	—	—	—	—
Tortosa		90·9	45	—	—	i 23 5	[+ 4]	23 31	S	e 64·0
Stuttgart	z.	100·3	41	e 13 30	+ 1	—	—	—	—	—
Timisoara		106·6	48	e 29 36	PKKP	—	—	—	—	—
College		109·0	333	e 14 8	P	—	—	—	—	—
Bucharest	N.	109·5	50	—	—	e 28 15	PS	—	—	—

Additional readings and note :—
La Paz iZ = 2m.53s., iS = 3m.23s.
Overton iZ = 11m.57s. and 13m.22s.
Pasadena iP_cPZ = 11m.52s.
Tinemaha iZ = 12m.15s.
Fresno eN = 14m.25s. and 15m.15s.
Berkeley iZ = 13m.9s.
Tamanrasset eZ = 12m.45s., ePPZ = 15m.40s., epPPZ = 16m.31s.
Seattle e = 13m.23s.
Tortosa PSE = 24m.41s.
Stuttgart eZ = 13m.36s.
Bucharest eE = 28m.32s., eN = 28m.40s., eE = 28m.48s.

June 17d. 22h. 37m. 27s. Epicentre 36°·3N. 141°·5E. (as on 1947, March 25d.).

Intensity V at Onahama, Mito, Tyosi, and Inawasiro; IV at Tukubasan, Utunomiya, Tokyo, Hukusima, Yokohama, and Titibu; II-III at Sirakawa, Kamagaya, Sendai, Maebasi, and Kohu. Macroseismic radius 200-300km. Epicentre 36°·4N. 141°·4E. Depth 40km.

Seismological Bulletin of the C.M.O., Japan, for the year 1950. Tokyo, 1952, pp. 26-27, with macroseismic chart.

$A = -·6322$, $B = +·5029$, $C = +·5894$; $\delta = -2$; $h = 0$;
$D = +·623$, $E = +·783$; $G = -·461$, $H = +·367$, $K = -·808$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Onahama	0·8	323	0 20k	+ 2	0 29	− 2	—	—	—
Mito	0·9	276	0 15	− 5	0 26	− 8	—	—	—
Kakioka	1·1	266	0 21	− 1	0 32	− 7	—	—	—
Tukubasan	1·1	266	0 24	+ 2	0 33	− 6	—	—	—
Utunomiya	1·4	281	0 26k	− 1	0 44	− 2	—	—	—
Tokyo	1·5	247	0 31k	+ 3	0 45	− 4	—	—	—
Hukusima	1·7	330	0 33k	+ 2	0 51	− 3	—	—	—
Kumagaya	1·7	265	0 32k	+ 1	0 50	− 4	—	—	—
Yokohama	1·7	240	0 37a	+ 6	1 4	+10	—	—	—
Mera	1·9	224	0 37	+ 3	1 2	+ 3	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		l.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Maebasi		2·0	273	0 38k	+ 3	0 58	− 4	—	—	—
Sendai		2·0	346	0 36k	+ 1	1 1	− 1	—	—	—
Osima		2·3	228	0 44	+ 4	1 14	+ 5	—	—	—
Hunatu		2·4	250	0 43a	+ 2	1 22	S_g	—	—	—
Misima		2·4	240	0 48	P_g	—	—	—	—	—
Matusiro		2·7	275	0 46	+ 1	1 16	− 3	—	—	—
Nagano		2·7	278	0 48	+ 3	1 28	S_g	—	—	—
Mizusawa		2·8	354	0 48	+ 1	1 19	− 3	0 51	P*	—
Shizuoka		2·8	242	0 51	+ 4	1 22	0	—	—	—
Aikawa		3·1	304	0 51	0	—	—	—	—	—
Omaesaki		3·2	238	0 52	0	1 35	+ 3	—	—	—
Morioka		3·4	356	0 56	+ 1	1 35	− 2	—	—	—
Miyako		3·4	6	0 54	− 1	1 32	− 5	—	—	—
Toyama		3·5	279	1 2	+ 5	1 46	S*	—	—	—
Nagoya		3·8	254	1 7	P*	2 2	S_g	—	—	—
Wazima		3·8	289	1 3	+ 2	1 56	S*	—	—	—
Hatinohe		4·2	0	1 7	0	1 53	− 4	—	—	—
Hikone		4·4	258	1 13a	+ 3	2 10	S*	—	—	—
Kameyama		4·4	251	1 11	+ 1	2 13	S*	—	—	—
Aomori		4·6	354	1 15	+ 3	2 9	+ 2	—	—	—
Kyoto		4·9	256	1 19	+ 2	2 22	+ 7	—	—	—
Owase		4·9	245	1 19	+ 2	2 42	S_g	—	—	—
Osaka		5·2	251	1 26	+ 5	2 34	S*	2 41	S_g	—
Kobe		5·4	254	1 35	P*	2 37	S*	—	—	—
Sumoto		5·7	252	1 36	+ 8	2 44	+ 9	—	—	—
Muroto		6·7	245	1 53	P*	3 2	+ 2	—	—	—
Sapporo		6·8	359	1 47	+ 3	3 2	− 1	—	—	—
Matuyama		7·6	253	1 57	+ 2	3 49	S*	—	—	—
Nemuro		7·6	21	1 54	− 1	3 11	−12	—	—	—
Hirosima		7·7	257	1 54	− 2	3 26	+ 1	—	—	—
Ooita		8·7	251	2 25	P*	4 12	S*	—	—	—
Miyazaki		9·4	245	2 21	+ 3	5 21	S_g	—	—	—
Hukuoka		9·5	257	2 24k	+ 4	4 54	S*	—	—	—
Vladivostok		10·1	316	i 2 29	+ 1	i 4 36	+11	—	—	—
Kagosima		10·2	246	2 35	+ 4	5 16	S*	—	—	—
Nagasaki		10·2	253	2 14	−17	—	—	—	—	—
Nanking		19·3	265	e 4 23	− 6	8 6	+ 4	i 4 27	P	i 8·6
Guam		22·9	173	e 5 46	PPP	9 16	+ 3	—	—	—
Irkutsk		30·6	314	e 5 49?	−29	—	—	—	—	—
Almata		49·0	300	i 8 49	− 1	—	—	—	—	—
College		49·7	32	e 8 56	0	i 16 1	− 3	e 18 43	S_eS	e 24·2
Naryn		50·2	298	i 8 57	− 3	i 16 12	+ 1	—	—	—
Frunse		50·8	300	e 8 55	− 9	—	—	—	—	—
Andijan		53·0	297	i 9 19	− 2	16 51	+ 1	—	—	—
Fergana		53·5	297	i 9 23	− 1	e 16 57	0	—	—	—
Garm		55·0	297	i 9 11?	−24	—	—	—	—	—
Tashkent		55·0	298	i 9 35	0	i 17 15	− 2	—	—	—
Obi-garm		55·6	297	e 9 37	− 3	e 17 24	− 1	—	—	—
Sverdlovsk		55·7	319	i 9 39	− 1	e 17 24	− 2	—	—	—
Kulyab		55·9	296	i 9 37?	− 5	e 17 29?	0	—	—	—
Stalinabad		56·4	297	i 9 45	0	17 35	− 1	—	—	—
Samarkand		57·2	298	e 9 48	− 3	—	—	—	—	—
Mary		61·7	299	e 10 35	+13	—	—	—	—	—
Bombay	E.	62·1	274	e 19 7	PS	—	—	—	—	—
Ashkabad		64·1	300	e 10 59	+21	—	—	—	—	—
Victoria	Z.	66·9	47	e 11 1	+ 5	—	—	—	—	—
Moscow		67·9	323	e 11 0	− 2	19 55	− 6	—	—	—
Seattle		68·0	47	e 11 37	P_eP	e 20 3	+ 1	—	—	—
Baku		68·7	306	e 11 8	+ 1	—	—	—	—	—
Pulkovo		68·9	330	e 11 7	− 2	e 20 10	− 3	—	—	—

Continued on next page.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tiflis		71·3	309	i 11 21	− 2	—	—	—	—	—
Shasta Dam		71·5	53	e 11 25	+ 1	—	—	—	—	—
Gori		71·6	310	e 11 30	+ 5	—	—	—	—	—
Hungry Horse		72·3	43	i 10 59	−30	—	—	—	—	—
Leninakan		72·4	308	e 11 31	+ 1	—	—	—	—	—
Abastumanj		72·5	309	e 11 41	+11	—	—	—	—	—
Scoresby Sund		72·8	355	—	—	i 20 56	− 2	—	—	e 36·6
Berkeley		73·1	56	e 11 34a	0	e 20 59	− 2	e 11 57	P_cP	e 33·4
Upsala		73·6	335	e 11 33?	− 4	e 21 0	− 7	e 12 0	P_cP	e 36·6
Lick	z.	73·8	56	e 11 41	+ 3	—	—	—	—	—
Reno	z.	73·8	53	e 11 38k	0	—	—	—	—	—
Fresno		75·4	55	e 11 51k	+ 4	—	—	e 13 6	?	—
Tinemaha	z.	76·2	55	e 11 52	0	—	—	—	—	—
Yalta		76·2	315	e 11 49	− 3	e 21 29	− 7	—	—	—
Kishinev		77·5	321	i 11 57	− 2	21 44	− 6	—	—	—
Warsaw		77·7	328	(e 11 59)	− 1	(21 51)	− 1	(e 12 14)	P_cP	(e 41·6)
Pasadena		77·9	56	e 12 0	− 1	e 21 58	+ 4	—	—	e 35·6
Riverside	z.	78·6	56	e 12 9	+ 4	—	—	—	—	—
Copenhagen		78·6	333	i 12 4	− 1	i 21 56	− 6	—	—	40·6
Overton	z.	79·0	53	i 12 13	+ 6	—	—	e 14 51	PP	—
Boulder City		79·1	54	e 12 7	− 1	—	—	—	—	—
Palomar	z.	79·3	57	e 12 8	− 1	—	—	—	—	—
Pierce Ferry		79·5	53	e 12 11	+ 1	—	—	—	—	—
Potsdam		80·9	330	i 12 16	− 1	e 22 23	− 3	i 12 31	P_cP	e 38·6
Istanbul		81·2	316	e 12 17	− 2	e 22 25	− 4	—	—	—
Ksara		81·6	305	e 12 22	+ 1	24 19	PPS	—	—	—
Collmberg	z.	81·8	330	e 12 20	− 2	—	—	e 12 34	P_cP	—
Prague		82·1	329	e 12 9	−15	e 22 27	−11	—	—	e 34·6
Jena		82·6	331	e 12 25?	− 1	—	—	e 12 36	P_cP	—
Tucson		84·0	54	e 12 33	0	—	—	—	—	e 49·6
De Bilt		84·1	335	e 12 27	− 7	e 22 54	− 4	—	—	e 42·6
Stuttgart		85·3	331	e 12 39	− 1	e 23 3	[0]	e 15 58	PP	e 43·6
Triest		85·8	327	—	—	e 21 23	?	—	—	e 45·6
Strasbourg		86·0	332	e 12 42	− 1	e 23 2	[− 5]	e 23 8	S	42·0
Kew		86·4	337	i 12 43a	− 2	i 23 29	+ 8	—	—	e 37·6
Rathfarnham C.	z.	86·5	342	i 12 46	0	—	—	e 16 49	PP	e 38·6
Helwan		87·1	305	e 12 45	− 4	e 23 27	− 1	e 16 11	PP	—
Paris		87·8	334	i 12 51	− 1	e 23 37	+ 3	i 16 17	PP	e 42·6
Taranto		88·0	321	e 22 29	?	—	—	—	—	e 46·8
Rome		89·3	325	—	—	e 23 44	− 4	e 29 48	SS	e 42·6
Clermont-Ferrand		90·1	333	e 13 19	+16	e 23 55	0	—	—	53·6
Tamanrasset	z.	108·0	317	e 18 21	[− 8]	—	—	e 19 2	PP	—
La Paz		147·1	61	i 19 18	[+ 5]	—	—	—	—	—

Additional readings and note :—
Nanking iPPE =5m.2s., iE =5m.18s. and 5m.58s.
Seattle e =11m.51s.
Hungry Horse i =11m.4s.
Berkeley eN =30m.33s.
Upsala eSSSN =28m.33s.?
Lick eZ =12m.10s.
Warsaw PPZ =(14m.51s.), SS =(26m.46s.); readings increased by 2 minutes.
Pasadena eZ =12m.7s.
Overton iZ =12m.25s. and 12m.57s.
Palomar iZ =12m.16s.
Potsdam ePN =12m.21s., eP_cPE =12m.34s., iSKSEN =22m.43s., iPSN =23m.3s.
Collmberg eZ =12m.47s., 12m.59s., and 13m.42s.
Jena eN =12m.32s.
Stuttgart eZ =12m.54s., ePS =24m.3s.
Strasbourg e =13m.54s.
Kew iZ =12m.59s., eSKS =22m.56s., iS_cS? =23m.38s., eS =24m.33s., eSS =30m.52s., eSSS =35m.54s.
Helwan eZ =14m.2s.
Paris i =13m.3s., ePS =24m.39s., e =28m.13s., eSS =29m.33s., e =31m.49s.
Rome e =34m.18s.
Tamanrasset eZ =18m.50s., ePPPZ =21m.0s., eZ =29m.52s.
Long waves were also recorded at Bergen, Helsinki, Skalnate Pleso, Granada, Ukiah, Santa Clara, Philadelphia, and Harvard.

June 17d. Readings also at 0h. (Obi-garm, Almata, Kulyab, Stalinabad, near Andijan, Fergana, and Frunse), 1h. (La Paz, Huancayo, Overton, and Tamanrasset), 22h. (Nanking, Vladivostok, Istanbul, and near Ashkabad), 3h. (Copenhagen, Potsdam, Stuttgart, Strasbourg, Paris, and Clermont-Ferrand), 5h. (near College), 7h. (near Istanbul (2)), 8h. (Granada), 9h. (near Apia), 11h. (Seattle, Victoria, Arcata (2), Berkeley (2), Branner (2), Lick (2), Santa Clara, Fresno (2), Reno (2), Mineral (2), Shasta Dam, Hungry Horse, Ukiah (2), Tinemaha (2), Boulder City, Overton (2), Pierce Ferry, and Tucson (2)), 12h. (Seattle, Victoria, Arcata, Berkeley, Branner, Lick, Fresno, Reno, Mineral (2), Shasta Dam, Hungry Horse, Ukiah, Tinemaha, Overton, Pierce Ferry, and Tucson), 13h. (Shasta Dam), 14h. (Lick, near Alicante, and near Granada), 15h. (Ashkabad and Alicante), 17h. (Mary, Fergana, near Garm, Obi-garm, Stalinabad, and Andijan), 19h. (Bandong and near Djakarta), 20h. (near Apia), 21h. (Huancayo), 22h. and 23h. (near Istanbul).

June 18d. 12h. 46m. 13s. Epicentre 34°·5N. 101°·0E.

A = −·1576, B = +·8107, C = +·5638 ; $\delta = -6$; $h = 0$;
D = +·982, E = +·191 ; G = −·108, H = +·553, K = −·826.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nanking		15·1	94	e 4 12	+36	i 8 18	?	—	—	i 9·3
Irkutsk		17·9	5	4 15	+ 3	7 33	+ 3	—	—	—
Przhevalsk		19·4	302	i 4 19?	−11	i 7 31?	−33	—	—	—
Almata		20·6	304	i 4 37	− 6	i 8 10	−19	—	—	—
New Delhi		21·1	261	e 4 47	− 1	i 8 25	−14	—	—	—
Frunse		22·2	300	e 4 57	− 3	—	—	—	—	—
Andijan		23·5	294	5 9	− 3	9 18	− 5	—	—	—
Fergana		23·9	294	i 5 12	− 4	e 9 22	− 8	—	—	—
Garm		24·9	290	i 5 27?	+ 1	i 9 45?	− 2	—	—	—
Kulyab		25·4	287	i 5 30?	− 1	i 9 54?	− 2	—	—	—
Obi-garm		25·4	290	i 5 30?	− 1	i 9 54?	− 2	—	—	—
Vladivostok		25·5	61	e 5 36?	+ 4	i 11 6	SS	e 6 30	PPP	—
Tashkent		25·8	295	e 5 33	− 1	i 9 52	−10	—	—	—
Stalinabad		26·1	290	i 5 36	− 1	i 10 0	− 7	—	—	—
Samarkand		27·5	291	i 5 46	− 4	—	—	—	—	—
Bombay	E.	29·5	246	—	—	e 10 35	−27	—	—	—
Ashkabad		34·4	289	e 6 51	0	—	—	—	—	—
Sverdlovsk		35·2	322	i 6 56	− 2	e 12 20	−11	i 9 7	PP	—
Shemakha		41·5	295	7 51	+ 1	—	—	—	—	—
Grozny		43·2	299	e 8 4	0	—	—	—	—	—
Tiflis		44·1	297	e 8 14	+ 2	—	—	—	—	—
Leninakan		45·0	296	e 8 27?	+ 8	—	—	—	—	—
Abastumanj		45·6	298	e 8 23	− 1	—	—	—	—	—
Zugdidi		46·1	300	e 8 34?	+ 6	—	—	—	—	—
Moscow		47·6	318	i 8 38	− 1	e 15 22	−13	—	—	—
Yalta		51·2	303	9 7	0	16 19	− 6	—	—	—
Pulkovo		51·3	323	i 9 9	+ 1	16 19	− 7	—	—	—
Ksara		53·0	289	i 9 23	+ 2	17 15	+25	9 51	pP	—
Kishinev		54·3	307	e 9 29	− 1	e 21 9	SS	—	—	—
Istanbul		55·8	300	e 9 40	− 1	—	—	—	—	48·8
Upsala		57·7	325	—	—	e 17 36	−17	—	—	e 30·3
Warsaw		57·8	315	—	—	e 17 48	− 6	e 22 6	SS	e 29·8
Skalnate Pleso		59·2	312	—	—	e 23 47	SS	—	—	—
Copenhagen		61·5	321	i 10 22	+ 1	18 38	− 4	—	—	25·8
Potsdam		62·4	317	e 10 27	0	e 18 53	0	e 24 17	SSP	e 28·8
Prague		62·4	315	e 10 27	0	—	—	e 12 32	PP	—
Collmberg	Z.	62·8	316	e 10 29	− 1	—	—	—	—	—
Jena	E.	63·8	316	e 10 36	0	—	—	—	—	—
Stuttgart		66·1	314	e 10 51 a	0	e 28 5	SSS	e 11 3	P_cP	e 34·3
Strasbourg		67·0	314	e 10 57	0	e 25 59	SSP	—	—	—
College		67·5	26	i 11 9	+ 9	e 20 5	+ 9	i 11 35	P_cP	e 32·2
Paris		70·0	317	e 11 17	+ 2	—	—	e 14 59	PPP	e 35·8
Kew		70·2	320	—	—	e 20 47	+19	—	—	e 33·8
Clermont-Ferrand		71·1	313	e 11 25	+ 3	—	—	—	—	40·8
Rathfarnham Castle		72·3	324	e 19 11	?	e 21 54	S_cS	e 31 37	Q	e 38·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tamanrasset	z.	81·7	292	e 12 26	+ 4	—	—	—	—	—
Hungry Horse		91·8	23	i 13 21	+10	—	—	—	—	—
Overton	z.	102·4	29	e 18 6	PP	—	—	—	—	—
Pierce Ferry		102·5	29	e 18 24	PP	—	—	—	—	—
Chicago		103·7	7	e 14 4	− 1	e 24 56	[+11]	e 18 4	PP	—

Additional readings :—
Nanking ePP? =5m.4s.
Upsala eN =22m.47s.? and 27m.17s.
Warsaw eE =23m.43s.
Prague e =10m.34s., 10m.53s., 11m.16s., 11m.25s., 11m.52s., and 13m.47s.
Collmberg eZ =11m.24s.
Jena eN =10m.51s.
Strasbourg e =12m.1s.
College i =12m.0s.
Paris eQ =28m.18s.
Kew eEN =22m.2s. and 26m.2s.
Tamanrasset eZ =13m.2s. and 13m.20s.
Chicago eSKS? =23m.58s., eSS =31m.58s.. e =34m.4s.
Long waves were also recorded at Seattle, Scoresby Sund, and other European stations.

June 18d. Readings also at 0h. (Stuttgart), 2h. (Haiwee, Pasadena, Palomar, Riverside, Tinemaha, Boulder City, Lick, Reno, Shasta Dam, Hungry Horse, Overton, Pierce Ferry, Tucson, La Paz, Grahamstown, and Tamanrasset), 3h. (Pierce Ferry, Helwan, Ksara, Potsdam, Stuttgart, Paris, Clermont-Ferrand, Rome, Tortosa, Alicante, Toledo, Granada, Malaga, Tamanrasset (2), Grahamstown, and Pietermaritzburg), 4h. (Seattle, near Andijan, Fergana, Garm, Kulyab, Obi-garm, and Stalinabad), 5h. (Almata, Frunse, Mary, Samarkand, Tashkent, near Naryn, and near Bogota), 7h. (Alicante (2), Potsdam, and Nanking), 9h. (Seattle, College, Overton, Pierce Ferry, Tucson, and near Tacubaya), 10h. (Brisbane, La Paz, Pretoria, College, Shasta Dam, Hungry Horse, Overton, Pierce Ferry, Tucson, Ksara, and Tamanrasset), 11h. (Kew and Alicante (3)), 12h. (Overton, Pierce Ferry, near Tacubaya, and near Prague), 14h. (Andijan, near Garm, Obi-garm, and Stalinabad), 15h. (near Andijan), 20h. (Bogota, Huancayo, and La Paz), 21h. (near Garm (2)), 22h. (Ashkabad, near Garm, near Sofia, near Istanbul, and near Mizusawa), 23h. (Ashkabad).

June 19d. 12h. 36m. 57s. Epicentre 6°·8S. 112°·0E. (as on 1947, November 10d.).
Destructive earthquake. Casualties and much damage, especially at Grissee, N.W. of Sourabaya.
Annales de l'Institut de Physique du Globe de Strasbourg, 2e partie, Séismologie, 1950, New Series, Tome XV, Strasbourg, 1954, p.38. Suggested epicentre 6°·25S. 112°E. (Gutenberg).

$A = -·3720$, $B = +·9208$, $C = -·1176$; $\delta = +9$; $h = +7$;
$D = +·927$, $E = +·375$; $G = +·044$, $H = -·109$, $K = -·993$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bandong		4·3	268	e 1 11	+ 3	—	—	—	—	—
Djakarta		5·2	276	e 1 21	0	e 2 23	+ 1	—	—	—
Perth		25·3	172	5 48	+18	10 15	+21	6 17	PP	i 13·0
Colombo	E.	34·8	292	7 29	PP	12 39	+14	—	—	21·4
Kodaikanal	E.	38·3	297	e 7 26	+ 2	i 13 23	+ 4	—	—	17·0
Miyazaki		42·7	25	i 8 2	+ 2	e 14 4	−20	e 17 40	SS	e 21·7
Kumamoto		43·2	23	e 8 3	− 1	14 27	− 5	—	—	e 19·5
Hukuoka		43·8	23	e 8 7	− 2	14 40	0	e 18 22	SSS	e 19·0
Brisbane	N.	44·0	123	i 8 6a	− 5	i 14 41	− 2	i 17 2	SS	—
Ooita		44·0	24	e 8 16	+ 5	e 15 1	+18	e 18 39	SSS	—
Matuyama		44·9	25	e 8 17	− 1	e 14 55	− 1	—	—	—
Koti		45·0	26	e 8 17	− 2	e 15 0	+ 2	e 10 18	PP	18·3
Riverview		45·1	132	i 8 19a	− 1	i 15 0	+ 1	i 8 30	pP	e 21·4
Poona		45·3	305	8 20	− 1	i 15 1	− 1	10 18	PP	21·0
Bombay		46·3	304	e 8 25	− 4	i 15 15	− 1	18 9	SS	21·2
Sumoto		46·3	27	8 28	− 1	15 14	− 2	—	—	19·4
Kobe		46·7	27	e 8 28	− 4	e 15 31	+ 9	—	—	e 19·6
Owase		46·7	28	8 39	+ 7	—	—	—	—	e 20·6
Osaka		46·8	27	e 8 32	− 1	e 15 22	− 2	i 10 59	PPP	—
Kameyama		47·4	28	e 8 34	− 4	15 27	− 5	—	—	19·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Shizuoka		48·4	29	8 44	− 2	15 39	− 7	—	—	23·4
New Delhi		48·6	318	i 8 44	− 3	i 15 50	+ 1	10 40	PP	22·5
Hunatu		49·0	29	8 49	− 1	e 15 53	− 2	—	—	22·0
Dehra Dun	N.	49·2	321	e 16 45	S	e 19 48	SS	e 21 36	SSS	31·8
Matusiro		49·6	27	e 8 43	−12	15 51	−12	16 9	PS	23·5
Nagano		49·7	27	e 8 54	− 2	16 19	+15	10 39	PP	—
Tokyo		49·7	30	e 8 54	− 2	15 22	−42	10 58	PP	25·4
Kumagaya		49·9	29	e 8 54	− 3	e 16 10	+ 3	—	—	—
Maebasi		49·9	29	e 9 6	+ 9	e 15 48	−19	—	—	e 26·0
Utunomiya		50·4	29	e 8 58	− 3	e 16 3	−11	—	—	21·7
Hukusima		51·7	29	9 15	+ 4	16 28	− 4	—	—	e 19·6
Sendai	N.	52·3	29	e 9 14	− 1	16 28	−12	19 46	SS	24·2
Vladivostok		52·9	18	e 9 17	− 3	i 16 41	− 7	—	—	—
Mizusawa	E.	53·1	28	9 31	+10	16 59	+ 8	—	—	—
	N.	53·1	28	e 9 19	− 2	e 16 49	− 2	—	—	—
Morioka		53·5	28	e 9 16	− 8	e 16 55	− 2	—	—	e 24·0
Miyako		53·9	28	e 9 31	+ 4	e 16 54	− 8	—	—	—
Mori		55·2	25	e 9 41	+ 4	e 15 55	?	e 21 17	SS	—
Sapporo		56·3	25	e 9 51	+ 6	e 17 30	− 4	21 22	SS	33·6
Przhevalsk		57·8	332	i 9 54	− 1	i 18 3?	+ 9	—	—	—
Almata		59·1	332	i 10 3?	− 1	i 18 26?	+15	—	—	—
Irkutsk		59·2	355	10 4	− 1	e 18 14	+ 2	—	—	—
Andijan		59·7	326	e 10 8?	− 1	18 26?	+ 7	—	—	—
Garm		59·7	324	e 9 44	−25	i 17 52	−27	—	—	—
Frunse		60·0	330	e 10 18	+ 7	e 18 35	+12	—	—	—
Stalinabad		60·4	322	e 10 10	− 3	—	—	—	—	—
Tashkent		61·8	325	i 10 21	− 2	e 18 47	+ 1	—	—	—
Samarkand		62·2	321	e 10 16	−10	—	—	—	—	—
Kaimata		63·1	134	e 10 32	0	e 18 50	−12	—	—	—
Cobb River	E.	63·6	132	e 10 33	− 2	—	—	—	—	—
Tananarive		63·7	253	e 10 40	+ 4	e 19 30	+20	e 11 17	PcP	30·2
Christchurch		64·2	136	10 41	+ 2	e 18 57	−19	e 13 8	PP	e 30·3
New Plymouth	E.	64·2	130	10 47	+ 8	—	—	—	—	—
Auckland	N.	64·3	128	e 10 40	− 1	e 19 13	− 4	e 23 11	SS	e 28·0
Arapuni		65·2	129	e 10 55	+10	—	—	—	—	—
Wellington		65·2	132	i 10 51	+ 6	e 19 20	− 8	i 11 32	PcP	e 30·2
Tuai	N.	66·4	130	e 10 58	+ 5	—	—	—	—	—
Ashkabad		66·8	317	e 10 54	− 2	—	—	—	—	—
Baku		73·8	316	e 11 39	+ 1	e 21 4?	− 5	—	—	—
Shemakha		74·8	316	11 44	0	21 52	PS	i 11 59	PcP	—
Apia		75·1	102	—	—	e 21 3?	−21	—	—	e 33·6
Sverdlovsk		76·0	334	11 47	− 4	21 27	− 7	—	—	—
Grozny		77·8	317	e 12 1?	0	22 1	+ 8	—	—	—
Tiflis		77·9	315	12 0	− 1	i 21 58	+ 4	—	—	—
Leninakan		78·2	314	e 11 51	−12	—	—	—	—	—
Gori		78·4	315	e 12 2	− 2	e 22 28	PS	—	—	—
Borzhomi		78·9	315	e 12 6?	− 1	22 12?	+ 7	—	—	—
Abastumanj		79·3	315	12 15	+ 6	—	—	—	—	—
Pietermaritzburg	z.	79·4	241	e 11 40	−29	—	—	e 14 51	PP	—
Zugdidi		80·2	315	12 25	+11	e 22 42	ScS	—	—	—
Pretoria	z.	81·5	245	e 12 19	− 2	e 22 3	−29	—	—	—
Sotchi		82·0	316	12 24	+ 1	—	—	—	—	—
Ksara		82·3	305	i 12 26k	+ 1	23 5?	+25	—	—	—
Grahamstown		82·5	237	i 12 26	0	e 22 21	−21	i 12 41	PcP	—
Helwan		85·3	300	i 12 39a	− 1	23 15	+ 5	16 15	PP	—
Yalta		86·1	316	e 12 43	− 1	23 13	− 5	16 14	PP	—
Moscow		86·9	327	e 12 47	− 1	23 23	− 3	—	—	—
Istanbul		89·1	312	e 12 56	− 2	e 23 31	[+ 4]	—	—	—
Pulkovo		91·6	330	i 13 19	+ 9	24 21	+12	17 3	PP	—
Honolulu		92·6	69	e 16 37	PP	e 24 22	+ 4	—	—	e 38·5
Athens		92·8	307	e 13 24	+ 8	e 23 57	[+ 8]	—	—	—
Helsinki		94·4	330	e 13 30	+ 7	e 24 43	+10	e 17 28	PP	e 48·0
Timisoara	N.	95·4	314	e 17 19?	PP	e 23 20	?	—	—	—
Warsaw		95·9	322	e 13 25	− 5	23 40	[−26]	17 34	PP	e 43·0
Skalnate Pleso		96·2	319	e 17 35	PP	e 24 20	[+12]	e 24 52	SKKS	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ogyalla		97·5	317	e 17 38	PP	e 24 28	[+14]	e 26 24	PS	—
Raciborzu		97·6	320	e 13 52	+14	—	—	e 17 50	PP	—
Upsala		98·0	329	13 48k	+ 9	e 25 3	− 1	e 17 33	PP	e 49·0
Zagreb		99·0	315	e 16 51	?	e 24 20	[− 2]	—	—	e 46·0
Messina		99·2	307	e 17 58	PP	e 24 56	{+ 8}	e 22 9	PKS	—
Prague		100·0	320	e 13 52	+ 4	e 24 37	[+10]	e 18 3	PP	e 49·0
College		100·4	24	e 13 54	+ 4	e 25 41	+17	e 17 55	PP	e 43·1
Triest		100·6	315	e 13 41	−10	i 24 38	[+ 8]	e 17 56	PP	—
Potsdam		100·8	322	e 14 6	+14	e 24 39	[+ 8]	i 18 9	PP	e 52·0
Collmberg		100·9	320	e 17 9	?	e 24 41	[+10]	e 18 9	PP	e 45·0
Copenhagen		101·0	325	e 14 3	+10	e 26 5	+ 36	e 18 0	PP	48·0
Cheb		101·4	320	e 18 17	PP	e 24 39	[+ 5]	e 27 9	PS	e 48·6
Rome		101·6	311	e 14 1	+ 5	i 24 40	[+ 5]	e 18 6	PP	e 49·9
Jena	E.	101·8	320	e 14 6	+10	e 24 42	[+ 6]	e 18 17	PP	e 53·0
Padova		101·9	314	e 15 21	?	24 45	[+ 9]	e 18 3	PP	—
Bologna	Z.	102·3	313	e 13 21	?	e 15 38	?	—	—	—
Florence Arc.		102·4	313	e 18 12	PP	e 24 47	[+ 9]	—	—	—
Florence Xim.		102·4	313	e 13 59	0	e 24 37	[− 2]	—	—	—
Prato		102·5	313	e 18 13	PP	e 29 18	PPS	—	—	—
Salo		102·9	315	e 18 20	PP	e 24 53	[+12]	—	—	—
Stuttgart		103·5	318	e 14 11	+ 7	e 24 57	[+13]	e 18 16	PKP	55·0
Pavia		103·8	315	e 13 47?	−18	—	—	—	—	—
Karlsruhe		104·0	319	e 14 11	+ 5	—	—	—	—	—
Bergen		104·1	331	—	—	25 19	{− 5}	32 51	SS	47·0
Zürich		104·1	317	e 18 21	[0]	—	—	—	—	—
Strasbourg		104·5	318	e 14 17	+ 9	e 24 53	[+ 5]	e 18 30	PP	e 53·0
Basle		104·7	317	e 18 2	[−20]	—	—	—	—	e 61·0
De Bilt		105·7	322	e 14 27	P	e 24 51	[− 3]	e 28 3	PS	e 48·0
Tamanrasset	Z.	107·8	292	e 14 36	P	e 25 5	[+ 2]	e 18 13	PKP	—
Paris		107·9	319	i 18 53	PP	i 25 10	[+ 7]	i 22 20	PKS	53·0
Sitka		107·9	31	e 18 57	PP	e 25 9	[+ 6]	e 28 51	PPS	e 46·7
Clermont-Ferrand		108·0	315	e 18 51	PP	e 25 27	[+23]	e 21 31	PPP	—
Aberdeen		108·6	328	i 19 1	PP	i 25 20	[+14]	i 29 0	PPS	e 55·7
Durham	E.	109·0	325	e 19 9	PP	i 25 18	[+10]	—	—	—
Kew		109·1	322	e 19 0	PP	e 28 50	PS	e 21 29	PPP	e 53·0
Barcelona		109·3	311	—	—	e 24 57	[−12]	—	—	e 61·6
Edinburgh	E.	109·6	327	—	—	e 24 28	[−43]	—	—	—
Scoresby Sund		110·0	345	e 18 24	[− 9]	e 25 25	[+13]	e 26 16	SKKS	52·0
Tortosa		110·7	310	e 18 25	[−10]	25 28	[+13]	29 10	PS	e 57·0
Alicante		111·8	308	19 14	PP	25 56	{−22}	—	—	e 58·6
Rathfarnham Castle		112·1	325	i 18 46	[+ 9]	e 25 36	[+15]	e 19 41	PP	e 59·0
Toledo	E.	114·2	310	e 19 46	PP	e 25 43	[+14]	e 22 9	PPP	58·4
Granada		114·4	307	i 18 50k	[+ 8]	25 32	[+ 2]	19 6	pPKP	61·6
Malaga	Z.	115·1	307	i 19 3k	[+20]	29 31	PS	23 31	PPP	75·4
Victoria		117·6	37	18 46	[− 2]	25 44	[+ 2]	19 49	PP	54·4
Lisbon		118·4	310	20 21	PP	—	—	—	—	60·8
Seattle		118·6	38	e 19 8	[+18]	e 25 52	[+ 7]	e 22 13	PKS	e 50·0
Arcata	Z.	119·8	46	e 18 53a	[+ 1]	e 25 21	[−28]	e 20 23	PP	—
Ukiah		121·0	48	e 20 19	PP	e 30 31	PS	e 37 15	SS	e 50·2
Shasta Dam		121·1	45	e 30 9	PS	—	—	—	—	—
Mineral	Z.	121·8	46	e 19 5k	[+ 9]	—	—	—	—	—
Berkeley		122·1	49	i 19 9k	[+12]	e 30 17	PS	e 20 40	PP	e 52·0
Santa Clara	E.	122·5	49	—	—	e 32 13	PPS	e 37 36	SS	e 57·0
Lick	Z.	122·7	49	e 19 6a	[+ 8]	e 28 18	PKKP	e 20 13	PP	—
Hungry Horse		123·2	34	e 19 1	[+ 1]	e 28 47	PKKP	e 20 30	PP	—
Fresno		124·3	49	e 19 9	[+ 8]	e 32 31	PPS	e 21 25	PP	—
Saskatoon		124·8	27	—	—	e 25 40	[−25]	—	—	38·0
Butte	N.	125·3	36	e 21 2	PP	e 40 10	SS	e 22 46	PKS	e 56·5
Tinemaha	Z.	125·4	48	e 19 5	[+ 2]	—	—	—	—	—
Haiwee	Z.	125·9	49	e 19 13	[+ 9]	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena		126·4	51	e 19 3	[− 2]	e 26 58	[+48]	i 21 7	PP	e 55·0
Bozeman		126·4	36	e 19 18	[+13]	e 37 4	SS	e 21 7	PP	e 58·9
Riverside	z.	127·1	51	e 19 3	[− 3]	e 32 35	PPS	—	—	—
Logan		127·9	40	e 19 20	[+12]	e 26 30	[+16]	e 31 12	PS	e 59·8
Boulder City		128·3	48	i 19 8	[− 1]	—	—	e 21 9	PP	—
Overton	z.	128·4	47	e 19 8	[− 1]	e 26 41	[+25]	e 21 6	PP	—
Salt Lake City		128·4	42	e 19 21	[+12]	e 26 23	[+ 7]	e 38 25	P′P′	e 56·0
Pierce Ferry		128·9	47	e 19 10	[0]	e 23 26	PKS	e 21 21	PP	—
Tucson		132·8	50	e 19 7	[−10]	i 22 44	PKS	e 19 30	PKP_2	e 48·1
Seven Falls	E.	139·8	2	—	—	e 40 45	SS	—	—	65·0
Ottawa		141·0	8	19 42	[+10]	29 1	{−26}	i 22 41	PKS	—
St. Louis		142·5	29	e 19 29	[− 6]	i 29 47	{+11}	i 23 3	PKS	—
Cleveland		143·4	17	e 19 31	[− 5]	i 29 45	{+ 4}	i 22 50	PP	—
Harvard		144·3	3	i 19 34	[− 4]	e 29 31	{−15}	e 22 39	PP	—
Weston		144·3	3	i 19 36	[− 2]	e 24 37	?	e 51 9	SSS	—
Pittsburgh	z.	144·8	15	i 19 38	[− 1]	—	—	—	—	—
Pennsylvania		145·0	13	i 19 38	[− 1]	—	—	i 23 12	PP	—
Fordham		145·7	6	i 19 39	[− 1]	e 41 50	SS	—	—	68·0
Philadelphia		146·4	9	e 19 50	[+ 8]	e 30 5	{+ 7}	e 26 11	PPP	e 58·4
Washington		147·0	12	e 19 43	[0]	e 29 52	{−10}	e 23 16	PP	e 77·9
Tacubaya		147·2	64	i 19 47	[+ 4]	e 26 54	[+ 4]	e 26 12	PPP	—
Columbia		150·4	21	e 20 8	PKP_2	—	—	e 48 13	SSS	e 64·4
Bermuda		154·4	353	e 20 42	PKP_2	e 29 33	{−69}	e 24 15	PP	e 61·5
La Paz		156·9	180	e 20 5	[+ 8]	i 31 31	{+35}	24 37	PP	74·6
Huancayo		159·9	159	e 20 8	[+ 7]	e 35 9	SKSP	e 44 43	SS	e 67·2
San Juan		168·4	351	e 20 22	[+14]	e 28 8	[+57]	e 25 18	PP	e 60·0
Fort de France		169·6	320	e 20 11	[+ 2]	—	—	—	—	—
Bogota	z.	173·6	109	i 20 11	[0]	i 21 51	PKP_2	e 25 43	PP	—

Additional readings :—
Perth PPP =6m.35s.
Brisbane iN =17m.57s. and 18m.23s.
Kôti e =8m.30s.
Riverview iP_cPN =9m.55s., iPPE =10m.1s., iPPPE =10m.53s., iE =14m.4s., iPSN = 15m.12s., eQE =19·0m.
Poona PPP?EN =11m.3s., PSEN =15m.13s., PPSEN =15m.25s., SSEN =18m.25s., QEN =18m.49s., SSSEN =19m.20s.
Osaka i =9m.9s.
New Delhi PPPEN =11m.28s., SSEN =19m.8s., SSSEN =20m.11s.
Dehra Dun eN =28m.6s.
Matusiro SSN =18m.45s., SSS =20m.22s.
Nagano SS? =20m.33s.
Tokyo ePPP?E =11m.32s.
Sendai eN =16m.44s., Q?N =22m.1s.
Vladivostok iP =9m.30s., iS =16m.54s.
Sapporo e =26m.16s. and 27m.48s., Q =29m.51s.
Irkutsk iP =10m.17s., S =18m.28s.
Garm iP =9m.56s.
Tananarive PP =13m.16s., PS =19m.43s., S_cS? =19m.53s., SSS =26m.8s.
Christchurch eNZ =17m.23s., S_cSE =20m.43s., SSEN =23m.8s., eQN =25m.48s.
Auckland iN =19m.47s., eSSSN =25m.50s.
Wellington ePPZ =13m.3s., ePPPZ =15m.38s., S_cS =20m.23s., eSS =22m.53s., eSSS = 25m.15s., eQ =27m.51s.
Shamakla iPP =14m.35s.
Pietermaritzburg iZ =11m.53s.
Pretoria iZ =13m.48s.
Helwan eZ =13m.9s. and 14m.42s.
Yalta PPP =18m.1s., SS =28m.7s.
Moscow iP =13m.1s., S =23m.37s.
Pulkovo iSKS =23m.47s., ePS =25m.33s.
Helsinki e =24m.8s., 25m.2s., and 37m.34s.
Timisoara eN =17m.38s.
Warsaw ePZ =13m.38s., ePPP =19m.41s., eSN =24m.18s., SEZ =24m.30s., ePSEN = 25m.55s., PPSE =26m.33s., ePKKP =30m.20s. SS =30m.54s., eSSSEN = 34m.2s., and many other unidentified e readings.
Skalnate Pleso e =18m.16s., ePSN =26m.9s., ePSE =26m.25s., eSS =31m.39s., e = 34m.3s., eSSS =36m.3s.
Ogyalla e =17m.20s., and 20m.42s., eN =24m.38s., ePPSN =26m.59s., e =27m.29s., eN =28m.17s., e =29m.20s., eSS =31m.45s., eSSS =36m.27s.
Raciborzu eP?Z =14m.8s., eP?N =14m.13s., ePPP?EN =20m.15s.?

Continued on next page.

Upsala ePKP?E =16m.56s., ePPE =17m.40s., ePPPP?E =21m.39s., eN =22m.51s., eSKSE =24m.3s., ePSE =26m.34s., eN =28m.29s., eSSN =32m.3s.?, eSSE = 32m.33s., eSSSN =36m.39s., eQN =44·4m.
Prague e =17m.46s., 18m.28s., and 18m.57s., ePPP =20m.45s., e =24m.21s., eSKKS = 24m.58s., ePS? =27m.3s., ePPS =27m.39s., e =28m.13s., eSS =32m.36s., eSSS? = 36m.21s.
College iPP =17m.59s., e =19m.27s. and 22m.8s., eSKS =24m.23s., ePPS =27m.3s., i =30m.39s., eSS =31m.19s.
Triest ePKP? =17m.0s., eSKKS? =25m.2s., eS =26m.5s., ePPS =27m.20s., eSS = 31m.55s.
Potsdam eZ =17m.36s. and 17m.59s.?, eE =18m.3s., ePPN =18m.13s., ePPP?Z = 20m.45s., eZ =24m.9s., eSN =25m.39s., eN =26m.13s., iPPS?Z =28m.13s.
Collmberg eZ =18m.14s., eE =28m.19s., eN =28m.39s., ePPSEN =32m.47s.
Copenhagen 24m.33s.
Cheb e =24m.54s. and 26m.0s., ePPS =28m.1s., e =28m.29s.
Rome eSS =32m.39s., iSSS =37m.40s.
Jena eE =17m.52s., 18m.45s., and 20m.30s., eSKS?N =24m.52s.
Padova e =25m.41s.
Salo eN =18m.27s., e =18m.39s., eZ =20m.9s.
Stuttgart iPP =18m.33s., ePPP =20m.48s., eS =26m.27s., ePPS =29m.3s., eSS? = 33m.21s., eQ =51·0m., and other e readings.
Bergen eN =26m.18s. and 36m.31s.
Strasbourg e =19m.17s. and 24m.3s., eSKS =25m.9s., eS =26m.13s., e =41m.3s.
Tamanrasset eZ =17m.36s., iPPZ =18m.57s., eZ =20m.11s., iPPPZ =21m.20s., eSKPZ = 22m.11s., eSZ =27m.4s., ePSZ =28m.7s., ePKKPZ =29m.57s., eZ =30m.7s.,iZ = 33m.50s., iSSZ =34m.5s., eSSSZ =38m.15s.
Paris iPPP? =21m.34s., eSKKS? =26m.36s., iPS? =28m.20s., iPPS? =28m.48s., iSS? =33m.53s., eSSS? =39m.3s. ; Q =48·0m., and several other unidentified readings.
Sitka eSS? =34m.7s., eSSS? =38m.35s.
Aberdeen iE =28m.36s., iSSE =34m.0s.
Kew ePPSZ =30m.3s., eSSSEN =49m.6s.
Scoresby Sund 19m.37s., PS =28m.45s.
Tortosa PPP?E =21m.14s., SKS?N =24m.41s., iSSE =34m.21s., SSSN =37m.54s.
Rathfarnham Castle iZ =17m.30s. and 18m.7s., eSKKS?EN =26m.42s., eS?EN = 27m.16s., eEN =28m.41s., ePS?EN =29m.18s., eEN =31m.17s., eSS? =34m.36s., eSSS?EN =41m.33s.
Toledo SSE =35m.26s.
Granada iPP =19m.51s., PPP =22m.14s., pPPP =22m.59s., iSKKS =26m.50s., PS = 29m.32s., PPS =30m.32s., iSS =34m.50s., sSS =36m.56s., SSS =39m.14s.
Victoria eZ =18m.57s., SKKS =26m.23s., iPSE =29m.46s., SS =34m.33s.
Clermont-Ferrand e =19m.10s., ePPS =29m.38s., eSS =34m.3s.
Seattle e =19m.35s., ePP =20m.14s., e =21m.6s., 23m.23s., and 23m.43s., eSKS = 26m.13s., e =28m.23s. ePS =30m.33s., e =35m.46s., eSS =36m.43s., e =38m.19s., and 41m.53s., i =49m.46s.
Arcata eZ =19m.46s.
Mineral iZ =19m.16s., eZ =21m.38s.
Berkeley eZ =19m.23s. and 19m.45s., eE =21m.40s., eN =25m.9s., eE =25m.29s., eSSEN =37m.33s.
Santa Clara eE =35m.45s.
Lick eZ =19m.13s., iZ =19m.46s., eZ =32m.5s.
Hungry Horse i =29m.15s.
Tinemaha iZ =19m.13s.
Pasadena iZ =19m.13s., eZ =20m.37s. and 23m.22s., eSN =29m.27s., eSKKPZ = 32m.15s., eZ =32m.29s., iSSE =38m.33s.
Riverside iZ =19m.13s.
Logan e =22m.31s. and 35m.58s., eSSS? =42m.23s.
Boulder City ePKP =19m.17s.
Overton iPKPZ =19m.19s., iZ =19m.50s., iPKSZ =23m.28s., iPPPZ =24m.5s., eZ = 27m.29s.
Pierce Ferry e =19m.19s.
Tucson ePP =21m.46s., eSKSP =31m.26s., e =31m.55s., ePPS =33m.20s.
St. Louis i =19m.38s., e =46m.45s.
Cleveland iPKPZ =19m.40s., iPKPNZ =19m.44s., eSKPNZ =22m.59s., eSKKSN = 28m.54s., ePSKSE =32m.12s., ePPSN =34m.49s., eSSE =41m.41s. and other unidentified phases.
Harvard i =20m.47s., iPKS =23m.7s., iPPP =24m.37s., i =27m.2s., e =27m.48s. and 31m.40s., ePS? =33m.7s., eSS? =41m.49s.
Pennsylvania e =19m.51s., eZ =21m.7s. and 22m.23s., eE =23m.15s., i =24m.6s.
Philadelphia i =19m.56s., e =21m.36s., eSKSP =33m.31s., e =38m.28s., eSS =41m.56s., e =42m.8s., eSSS? =46m.32s.
Washington i =19m.54s., e =34m.4s.
Tacubaya i =19m.56s., 21m.36s., and 24m.30s., eSKS =27m.7s., e =29m.8s., ePPS = 36m.23s.
La Paz i =21m.11s. and 28m.39s., iSS =44m.21s., SSS =50m.41s.
Huancayo ePKP =20m.15s., e =20m.53s., 21m.10s., 21m.37s., and 25m.22s., eP_cS,PKP =32m.23s.
San Juan e =23m.42s., ePPPS =41m.3s., eSS =47m.13s.
Long waves were also recorded at Ivigtut and La Plata.

June 19d. 18h. 30m. 17s. Epicentre 43°·7N. 126°·7W. (as on 1949, August 24d.).

$A = -·4335$, $B = -·5815$, $C = +·6884$; $\delta = -4$; $h = -3$;
$D = -·802$, $E = +·598$; $G = -·411$, $H = -·552$, $K = -·725$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Arcata		3·4	144	e 0 55k	0	e 1 45	S*	—	—	—
Ferndale	E.	3·6	149	e 1 19	P_g	—	—	—	—	—
Shasta Dam		4·4	132	e 1 6	− 4	—	—	—	—	e 1·7
Seattle		5·0	36	i 1 25	+ 7	i 2 29	S*	i 1 35	P*	—
Mineral	z.	5·1	130	i 1 21a	+ 1	i 2 31	S*	i 1 33	P*	—
Ukiah		5·3	149	e 1 11	−11	(e 2 19)	− 6	—	—	e 2·3
Victoria		5·3	24	i 1 23k	+ 1	i 2 27	+ 2	i 1 43	P_g	—
Berkeley		6·7	148	e 1 38a	− 4	e 3 8	+ 8	e 3 37	S_g	—
Lick	z.	7·4	147	i 1 49k	− 3	—	—	—	—	—
Fresno	z.	8·7	140	e 2 10k	0	—	—	—	—	—
Tinemaha		9·2	133	e 2 19	+ 3	—	—	—	—	—
Hungry Horse		10·0	58	i 2 28	+ 1	—	—	—	—	—
Haiwee	z.	10·1	135	i 2 32	+ 4	—	—	—	—	—
Bozeman		11·3	75	e 2 48	+ 2	e 3 52	−62	—	—	e 5·9
Pasadena		11·6	142	i 2 48	− 2	—	—	—	—	e 6·0
Overton	z.	11·8	123	e 2 54	+ 1	e 4 54	−12	—	—	—
Boulder City		11·9	126	e 2 56	+ 2	—	—	—	—	—
Riverside	z.	12·1	140	i 2 54	− 3	—	—	—	—	—
Pierce Ferry		12·3	124	i 3 1	+ 2	—	—	—	—	—
Tucson		16·9	127	i 4 1	+ 2	e 7 27	+20	—	—	e 8·8
College		24·3	338	e 5 16	− 4	e 9 37	0	—	—	e 12·6

Additional readings :—
Seattle i = 2m.22s., iS* = 2m.46s.
Mineral eZ = 3m.37s.
Victoria iZ = 1m.36s., 1m.57s., 2m.46s., and 2m.57s.
Berkeley eEN = 3m.12s., eN = 4m.19s.
Lick iZ = 2m.2s. and 2m.21s.
Fresno eE = 2m.37s., eZ = 2m.43s.
Tinemaha iZ = 2m.41s.
Overton iZ = 3m.4s. and 4m.27s.
Pierce Ferry e = 4m.6s.
Long waves were also recorded at Santa Clara, Salt Lake City, Butte, and Philadelphia.

June 19d. Readings also at 1h. (near Garm), 2h. (Basle), 3h. (Lick, Almata, Kulyab, Samarkand, near Andijan, Fergana, Garm, Obi-garm, and Stalinabad), 4h. (Tucson, Boulder City, and Overton), 5h. (Pierce Ferry, Shasta Dam, Hungry Horse, College, and near Garm), 6h. (Pierce Ferry and Tacubaya), 7h. (near Malaga), 8h. (Athens and College), 9h. (Pierce Ferry, near College, and near Athens), 10h. (near Zürich), 11h. (La Paz and Tamanrasset), 12h. (Tamanrasset), 13h. (Harvard, College, Victoria, Overton, Pierce Ferry, and Shasta Dam), 15h. (Granada (2) and Ksara), 17h. (near Garm and near Ashkabad), 19h. (College), 20h. (Boulder City, Pierce Ferry, College, Bermuda, near Fort de France, San Juan, and near Djakarta), 21h. (Pierce Ferry).

June 20d. 1h. 18m. 41s. Epicentre 45°·2N. 25°·5E.

Intensity V near the epicentre.

J. P. Rothé.
Tableau de la séismicité du globe pendant les années, 1949, 1950. Revue pour l'étude des Calamités, Bulletin de l'Union Internationale de Secours, January, 1952, December, 1953, Nos. 30, 31, Geneva, p. 23. Epicentre adopted.

$A = +·6381$, $B = +·3044$, $C = +·7072$; $\delta = -4$; $h = -4$;
$D = +·431$, $E = -·903$; $G = +·638$, $H = +·304$, $K = -·707$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kishinev	3·0	52	0 49	− 1	1 15	−12	—	—	—
Sofia	3·0	212	1 3	P_g	1 44	S_g	—	—	—
Cernauti	3·1	5	0 56	P*	—	—	—	—	—
Timisoara	3·1	280	i 1 11	P_g	e 1 52	S_g	—	—	—
Lwow	4·7	348	i 1 19	+ 5	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		4·9	146	i 1 23	+ 6	i 2 18	+ 3	—	—	—
Skalnate Pleso		5·4	320	i 1 33	+ 9	e 2 28	0	e 1 47	P_g	—
Ogyalla		5·7	300	e 1 43	P*	e 2 43	+ 8	e 1 58	P_g	—
Yalta		6·2	95	i 1 32	− 3	2 30	−18	—	—	—
Zagreb		6·7	279	i 2 0	P*	—	—	—	—	—
Raciborzu		6·9	317	i 1 48?	+ 3	—	—	e 2 30	P_g	e 4·5
Vienna		7·0	299	i 1 58	P*	e 3 13	+ 5	e 2 12	P_g	—
Warsaw		7·6	339	e 1 59	+ 4	e 3 22	− 1	e 2 46	P_g	—
Triest		8·3	277	i 2 20	P*	i 4 0	S*	i 4 35	S_g	i 5·2
Prague		8·9	307	i 2 21k	+ 9	e 4 2	+ 7	e 2 57	P_g	—
Rome		10·0	256	e 3 37	?	e 4 39	+17	—	—	—
Collmberg	z.	10·3	311	e 2 38	+ 6	e 4 31	+ 1	—	—	e 5·0
Jena		10·9	307	e 2 48	+ 8	—	—	—	—	e 6·7
Potsdam		10·9	316	e 2 43	+ 3	—	—	e 2 52	PP	e 5·9
Stuttgart		11·7	294	i 2 59k	+ 8	e 5 19	+15	e 3 9	PP	—
Zürich		11·9	286	e 3 11	+17	e 5 45	+36	—	—	—
Basle		12·6	287	e 3 1k	− 2	e 5 22	− 4	—	—	—
Strasbourg		12·6	292	i 3 12	+ 9	e 5 41	+15	e 3 32	PP	—
Moscow		13·0	32	e 3 1	− 8	e 5 7	−28	—	—	—
Copenhagen		13·4	326	i 3 13	− 1	5 43	− 2	—	—	7·3
Borzhomi		13·4	98	e 3 8	− 6	—	—	—	—	—
Gori		13·9	97	e 2 59	−22	—	—	—	—	—
Ksara		13·9	141	i 3 25	+ 4	—	—	—	—	e 7·2
Leninakan		14·1	102	e 3 27	+ 4	—	—	—	—	—
Tiflis		14·4	97	e 3 25?	− 2	—	—	—	—	—
Grozny		14·6	90	e 3 27	− 3	—	—	—	—	—
Pulkovo		14·9	10	e 3 25	− 9	e 5 57	−23	—	—	—
Upsala		15·4	345	3 36	− 4	e 6 7	−25	i 3 50	PP	e 10·3
Clermont-Ferrand		15·7	280	e 3 53	+ 9	e 6 58	+19	—	—	—
Helwan	z.	16·0	161	i 3 53	+ 5	i 6 55	+ 9	—	—	—
Paris		16·1	291	i 4 33	+44	e 6 58	+ 9	—	—	—
Shemakla		17·5	96	e 4 2	− 5	—	—	—	—	—
Tortosa		18·8	264	—	—	i 7 59	+ 9	8 35	SSS	—
Rathfarnham Castle		22·1	303	i 4 57	− 2	—	—	—	—	e 11·8
Sverdlovsk		24·7	48	i 5 14	−10	e 9 18	−26	—	—	—
Ashkabad		25·5	94	e 5 27	− 5	—	—	—	—	—
Tamanrasset	z.	27·7	223	i 5 57k	+ 5	e 10 37	+ 4	e 6 48	PP	
Samarkand		30·9	85	e 6 13	− 7	—	—	—	—	—
Obi-garm		33·2	84	e 6 31	− 9	—	—	—	—	—
College		70·2	357	i 11 6	−11	—	—	—	—	—
Hungry Horse		80·3	334	i 12 6	− 8	—	—	—	—	—
Pierce Ferry		91·2	328	e 13 1	− 7	—	—	—	—	—
Boulder City		91·6	328	e 13 3	− 7	—	—	—	—	—
Huancayo		106·1	268	i 11 59	?	—	—	—	—	—

Additional readings :—
Sofia e = 1m.10s., S_g = 2m.0s.
Timisoara eP*N = 1m.16s., eP_gE = 1m.22s., eS*?E = 2m.2s.?
Skalnate Pleso eN = 1m.37s., eS = 2m.39s., eS_g = 3m.2s.
Ogyalla e = 2m.30s. and 3m.10s.
Raciborzu ePZ = 1m.53s., eP*Z = 2m.4s.
Vienna eS = 3m.53s.
Warsaw eN = 2m.55s., eE = 2m.58s., eZ = 3m.7s., eSZ? = 3m.18s.
Triest iPS? = 4m.8s.
Prague e = 2m.31s., eN = 2m.48s., e = 3m.9s., 3m.13s., 4m.13s., 4m.22s., and 4m.37s.
Collmberg eZ = 2m.59s. and 3m.31s.
Jena eN = 3m.12s., eEN = 4m.5s.
Strasbourg e = 5m.29s.
Upsala eE = 4m.9s., iN = 4m.14s., i = 6m.15s. and 6m.28s., eE = 7m.38s., iN = 8m.9s.
Helwan eZ = 4m.32s., iZ = 7m.10s.
Rathfarnham Castle eZ = 5m.9s., eEN = 7m.49s. and 9m.54s.
Tamanrasset iZ = 6m.29s., ePPPZ = 7m.0s., eZ = 9m.4s.
Long waves were also recorded at Taranto and Helsinki.

June 20d. 14h. 11m. 42s. Epicentre 75°·1N. 10°·3E. (as on 1940, March 7d.).

$A = +\cdot2540$, $B = +\cdot0462$, $C = +\cdot9661$; $\delta = 0$; $h = -13$;
$D = +\cdot179$, $E = -\cdot984$; $G = +\cdot950$, $H = +\cdot173$, $K = -\cdot258$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Scoresby Sund		10·5	259	e 2 34	− 1	e 4 18	−17	—	—	4·8
Upsala		15·6	166	e 3 36a	− 7	i 6 46	+ 9	e 7 8	SS	e 7·7
Helsinki		16·0	152	e 3 42	− 6	—	—	e 3 49	P	—
Pulkovo		17·0	144	i 4 0	− 1	e 7 19	+ 9	—	—	—
Aberdeen	E.	18·6	202	—	—	i 7 48	+ 2	—	—	—
Copenhagen		19·5	177	i 4 28	− 3	e 8 8	+ 2	—	—	11·3
Moscow		22·1	135	4 59	0	e 9 10	+12	—	—	—
Potsdam		22·9	177	e 5 3	− 3	—	—	e 5 12	PP	—
Rathfarnham C.	z.	22·9	206	i 5 5	− 1	—	—	—	—	—
Warsaw		23·4	162	e 5 11	0	e 9 24	+ 3	e 5 31	PP	e 12·3
Collmberg	z.	24·0	176	e 5 14	− 3	—	—	e 6 2	PP	—
Kew	z.	24·2	196	e 5 14	− 5	e 10 31	SS	—	—	—
Jena		24·3	178	e 5 19	− 1	—	—	e 5 47	PP	—
Prague		25·2	173	e 5 31	+ 2	e 9 57	+ 5	e 6 10	PP	e 10·3
Raciborzu		25·4	168	e 5 32?	+ 1	—	—	—	—	—
Sverdlovsk		26·2	106	i 5 42	+ 4	e 10 21	+12	—	—	—
Stuttgart		26·5	182	e 5 38k	− 3	e 10 19	+ 5	e 15 18	Q	16·5
Paris		26·6	192	i 5 39	− 3	—	—	e 6 0	pP	e 12·3
Strasbourg		26·7	184	e 5 52	+ 9	e 10 18	+ 1	—	—	—
Clermont-Ferrand		29·6	191	—	—	e 10 54	−10	e 13 30	SSS	—
Yalta		32·5	147	e 6 31	− 3	—	—	—	—	—
Grozny		35·5	133	e 7 6?	+ 6	—	—	—	—	—
Tiflis		36·9	135	i 6 58	−14	—	—	—	—	—
College		39·5	347	i 7 40	+ 6	—	—	e 9 43	PPP	—
Ksara		43·2	148	e 9 43	PP	e 13 51	P_cS	—	—	—
Samarkand		43·6	111	e 8 10	+ 2	—	—	—	—	—
Andijan		43·9	105	7 56	−14	—	—	—	—	—
Fergana		44·1	105	8 17	+ 5	—	—	—	—	—
Stalinabad		45·1	109	e 8 33	+13	—	—	—	—	—
Harvard		47·4	276	e 8 35	− 3	—	—	—	—	e 26·2
Weston		47·4	276	e 8 34	− 4	—	—	—	—	—
Hungry Horse		51·5	316	i 9 9	0	—	—	—	—	—
Tamanrasset	z.	52·4	186	e 9 18	+ 2	—	—	e 11 30	PP	—
Shasta Dam		60·4	321	e 10 14	+ 1	—	—	—	—	—
Mineral	z.	60·6	320	e 10 16a	+ 1	—	—	—	—	—
Overton	z.	63·0	313	i 10 33	+ 2	—	—	—	—	—
Tinemaha	z.	63·2	316	e 10 35	+ 3	—	—	—	—	—
Pierce Ferry		63·3	312	i 10 34	+ 1	—	—	e 12 56	PP	—
Lick	z.	63·5	320	e 10 34a	0	—	—	—	—	—
Boulder City		63·6	313	e 10 34	− 1	—	—	—	—	—
Haiwee	z.	64·0	315	e 10 40	+ 2	—	—	—	—	—
Pasadena	z.	66·0	315	e 10 52	+ 2	—	—	—	—	—
Riverside	z.	66·0	315	e 10 52	+ 2	—	—	—	—	—
Tucson		66·4	308	i 10 55	+ 2	—	—	—	—	—
La Paz		102·9	254	e 11 28	?	—	—	—	—	—

Additional readings :—
Upsala eE = 4m.42s. and 4m.59s.
Helsinki eN = 3m.51s.
Warsaw eN = 9m.29s.
Collmberg eZ = 5m.21s., 5m.36s., 5m.42s., and 6m.34s.
Prague e = 5m.43s., ePP = 5m.53s., e = 6m.29s., 6m.51s., 7m.18s., and 7m.43s.
Strasbourg eP = 5m.57s.
Tamanrasset iZ = 9m.22s., eP_cP?Z = 10m.17s., eZ = 11m.41s.
Lick eZ = 10m.43s.
Long waves were also recorded at Bergen and Ivigtut.

June 20d. Readings also at 0h. (Tamanrasset, Granada, Tortosa, near Lisbon, Malaga, and Toledo), 1h. (near Bucharest, near Bandong, and Djakarta), 2h. (La Paz), 3h. (Istanbul, Ksara, and near Andijan), 5h. (Mount Wilson, Riverside, Tinemaha, Tucson, Overton, Pierce Ferry, Shasta Dam, Mineral, Hungry Horse, Seattle, College, Ivigtut, and near Obi-garm), 6h. (near Ashkabad), 7h. (Mount Wilson, Riverside, Tucson, Pierce Ferry, Shasta Dam, College, near Oaxaca, Puebla, Tacubaya, and Vera Cruz), 8h. (near Tucson), 9h. (near Bandong and Djakarta), 10h. (La Paz), 11h. (Leninakan and near Gori), 12h. (near Athens), 13h. (Scoresby Sund and Triest), 14h. (Garm and near Obi-garm), 16h. (near Obi-garm), 18h. (near Puebla, Vera Cruz, and Tacubaya), 19h. (Pierce Ferry), 20h. (Ottawa, Tucson, Huancayo, near La Paz, and near Garm), 21h. (Branner, Pierce Ferry (2), Mineral, and near Athens).

June 21d. 6h. 55m. 39s. Epicentre 21°·0S. 169°·5E. (as on 1949, December 11d.).

$A = -\cdot9187$, $B = +\cdot1703$, $C = -\cdot3563$; $\delta = -4$; $h = +4$;
$D = +\cdot182$, $E = +\cdot983$; $G = +\cdot350$, $H = -\cdot065$, $K = -\cdot934$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·3	244	i 2 52	−60	i 6 6	−47	i 3 4	PP	i 7·6
Auckland	N.	16·4	165	i 3 49	− 4	i 6 49	− 7	i 4 1	PP	8·4
Arapuni		17·8	165	e 4 21?	+10	e 7 21?	− 7	—	—	—
New Plymouth	E.	18·4	169	e 4 21	+ 3	e 8 6	+25	—	—	—
Tuai	N.	18·9	163	e 4 29	+ 5	e 8 7	+14	—	—	—
Apia		19·2	72	e 4 22	− 6	e 8 25	+26	e 4 36	PP	e 9·9
Cobb River	E.	20·2	172	e 4 43	+ 4	e 8 34	+13	—	—	—
Riverview		20·6	228	i 4 46k	+ 3	i 8 39	+10	i 4 57	pP	e 10·0
Wellington		20·7	169	i 4 46	+ 2	i 8 44	+13	5 46	PP	10·4
Kaimata	N.E.	21·5	177	e 4 21?	−31	i 8 28?	−19	—	—	—
Christchurch		22·6	174	i 5 7	+ 4	e 8 58	− 9	i 5 40	PP	11·4
Guam		42·0	322	7 57	+ 3	—	—	—	—	—
Perth		48·8	246	e 7 49	−60	16 6	+14	19 51	SS	—
Honolulu		52·8	39	i 9 20	+ 1	e 16 31	−16	e 11 57	PP	e 24·2
Bandong		61·3	275	e 10 22	+ 2	—	—	—	—	—
Djakarta		62·3	275	e 10 25	− 1	e 18 49	− 3	—	—	—
Tokyo		63·0	334	10 29	− 2	19 9	+ 8	—	—	27·2
Kumagaya		63·6	334	e 10 44	+ 9	e 19 7	− 1	—	—	—
Utunomiya		63·7	335	e 10 34	− 2	e 19 3	− 7	19 21	S_eS	29·0
Kameyama		63·8	331	e 10 37	+ 1	e 19 8	− 3	—	—	—
Maebasi		63·9	331	e 10 36	− 1	e 19 11	− 1	—	—	—
Miyazaki		64·0	324	10 23	−15	e 19 10	− 3	—	—	—
Gihu		64·1	332	e 10 36	− 2	e 19 11	− 3	—	—	26·3
Osaka		64·1	329	10 38	0	e 19 7	− 7	—	—	e 27·8
Kagosima		64·2	323	e 10 37k	− 2	e 19 10	− 6	—	—	33·8
Kôti		64·2	327	e 10 38	− 1	e 19 15	− 1	e 13 12	PP	e 32·2
Matusiro		64·4	333	e 10 37	− 3	e 19 33	+15	—	—	e 31·6
Hukusima		64·5	335	10 39	− 2	19 15	− 4	—	—	—
Nagano		64·5	333	e 10 42	+ 1	e 19 36	+17	13 23	PP	—
Sendai	N.	64·8	337	10 41	− 2	e 19 13	−10	e 23 43	SS	27·4
Mizusawa	N.	65·5	338	10 43	− 4	19 27	− 5	—	—	—
Miyako		65·6	338	e 10 42	− 6	e 19 27	− 6	—	—	32·4
Hukuoka		65·8	325	10 48	− 1	19 33	− 2	—	—	28·8
Morioka		65·9	338	e 10 47	− 3	e 19 32	− 5	—	—	e 32·8
Akita		66·4	337	e 10 53	0	e 19 43	0	—	—	—
Sapporo		68·8	339	e 11 5	− 3	e 20 45	PS	e 32 20	Q	i 36·7
Nanking		71·7	317	i 11 23	− 3	i 20 41	− 4	i 12 5	P_eP	i 32·4
Vladivostok		72·6	333	i 11 30	− 1	i 21 11	+15	—	—	—
Santa Clara		86·7	48	e 12 51	+ 4	e 23 4	[− 8]	e 13 10	pP	e 40·0
Berkeley		86·8	48	e 12 46a	− 1	e 23 27	+ 2	e 23 6	SKS	e 36·4
Ukiah		86·8	47	e 12 44	− 3	e 23 25	0	e 23 1	SKS	e 36·0
Lick	z.	86·9	48	i 12 48a	0	—	—	—	—	e 41·4
Pasadena		87·9	53	i 12 52a	− 1	i 23 26	[+ 6]	e 16 45	PP	i 36·2
Fresno		88·0	50	e 12 53a	0	e 23 53	+17	e 16 21	PP	e 40·6
Shasta Dam		88·1	45	i 12 53	− 1	e 23 35	− 2	e 16 20	PP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mineral	Z.	88·4	46	e 12 55a	0	—	—	e 16 24	PP	—
Riverside		88·4	53	i 12 54a	− 1	—	—	—	—	—
Haiwee	Z.	89·0	51	i 12 57a	− 1	—	—	—	—	—
Tinemaha		89·2	50	i 12 59a	0	—	—	—	—	—
Calcutta	E.	90·2	294	i 13 3	− 1	23 55	− 1	i 23 33	SKS	—
Sitka		90·4	27	e 12 57	− 7	e 23 47	−11	e 16 37	PP	e 37·8
Boulder City		91·2	52	e 13 9	+ 1	—	—	e 18 23	PPP	—
Victoria		91·4	39	13 9	0	24 24	+17	23 38	SKS	41·4
Seattle		91·6	40	e 13 31	+21	i 23 39	[− 2]	e 16 51	PP	e 38·4
College		91·7	17	e 13 6	− 4	i 23 38	[− 5]	e 16 41	PP	e 38·4
Overton	Z.	91·7	51	i 13 11	+ 1	—	—	e 16 51	PP	i 44·4
Pierce Ferry		91·9	52	i 13 11	0	e 23 45	[+ 1]	e 16 51	PP	—
Colombo	E.	92·1	277	e 13 41	+29	—	—	—	—	47·4
Irkutsk		92·3	326	13 12	− 1	23 53	[+ 7]	e 16 47	PP	—
Tucson		92·7	57	i 13 15	0	e 24 32	+14	e 16 57	PP	e 38·6
Guadalajara		94·7	69	—	—	e 25 1	+25	e 30 17	SS	e 44·1
Salt Lake City		95·3	48	e 13 29	+ 2	e 24 3	[0]	e 17 17	PP	—
Kodaikanal	E.	95·5	280	e 13 26	− 2	24 39	− 3	17 17	PP	48·9
Logan		95·7	47	e 13 24	− 5	e 24 52	+ 8	e 24 2	SKS	—
Butte	N.	96·9	43	e 17 29	PP	e 25 8	+14	e 24 5	SKS	e 40·2
Hungry Horse		96·9	41	e 13 35	+ 1	e 25 5	+11	e 17 28	PP	—
Bozeman		97·7	44	e 13 37	− 1	e 24 9	[− 6]	e 17 36	PP	e 41·1
Tacubaya		97·9	73	e 17 28	PP	e 24 10	[− 6]	e 19 34	PPP	—
Vera Cruz		100·6	73	—	—	e 24 4	[−26]	e 27 39	PPS	e 45·2
Dehra Dun	N.	101·5	299	—	—	e 24 45	[+11]	—	—	e 63·8
Poona	N.	101·5	286	e 13 58	+ 3	24 28	[− 6]	18 24	PP	49·4
New Delhi	N.	101·7	296	—	—	24 29	[− 6]	i 25 32	S	48·4
Rapid City	E.	102·4	47	e 18 25	PP	e 24 38	[− 1]	e 27 29	PS	—
Bombay		102·6	285	e 13 57	− 3	e 25 50	+ 8	18 16	PP	44·0
Saskatoon		102·7	38	e 13 55	− 5	24 31	[− 9]	e 18 13	PP	47·8
Almata		105·9	311	e 14 15	0	—	—	—	—	—
Lincoln	E.	106·2	52	e 18 35	PP	e 24 51	[− 5]	e 27 55	PS	e 42·4
Huancayo		108·4	112	e 19 9	PP	e 26 32	+ 3	e 28 24	PS	e 44·8
Andijan		108·7	307	e 18 59	PP	e 25 10	[+ 3]	—	—	—
Fergana		109·0	307	e 14 23	P	—	—	—	—	—
Obi-garm		110·3	305	e 14 40?	P	e 28 56	PS	i 18 19	PKP	—
St. Louis		110·6	56	e 17 59	?	i 26 28	{+19}	e 19 12	PP	—
Tananarive		110·7	240	—	—	25 31	[+16]	28 53	PS	48·5
Stalinabad		110·9	305	e 14 36	P	e 29 6	PS	e 18 14	PKP	—
Tashkent		111·0	308	e 14 37	P	i 28 46	PS	e 19 11	PP	—
Milton		111·6	64	e 19 22	PP	—	—	—	—	—
La Paz		112·3	119	i 14 51k	P	25 25	[+ 3]	i 18 44	PKP	55·4
Chicago		113·1	52	e 19 31	PP	e 29 2	PS	e 34 26	SS	e 48·5
Columbia		117·2	62	—	—	e 25 37	[− 3]	e 29 45	PS	e 45·6
Cleveland	E.	117·6	53	e 20 0	PP	e 25 39	[− 3]	e 27 11	SKKS	—
Sverdlovsk		117·6	324	e 15 8	P	25 42	[0]	18 49	PKP	—
New Kensington	E.	118·9	54	e 22 46	PPP	e 26 1	[+15]	e 29 30	PS	e 53·4
Ashkabad		119·0	303	20 24	PP	—	—	—	—	—
Pennsylvania		120·3	54	17 21?	?	—	—	—	—	—
Washington		120·8	56	e 18 56	[+ 2]	—	—	e 20 26	PP	e 60·1
Ottawa		121·9	49	18 55	[− 1]	25 52	[− 4]	20 30	PP	57·4
City College, N.Y.		123·4	54	e 18 59	[0]	—	—	20 40	PP	—
Fordham		123·4	54	i 19 1	[+ 2]	i 26 15	[+14]	e 20 41	PP	62·8
Harvard		125·0	53	i 19 1	[− 1]	e 26 18	[+12]	i 21 52	PP	e 61·7
Weston		125·2	52	i 19 1	[− 2]	e 41 59	SSS	i 20 53	PP	i 51·0
Seven Falls	E.	125·2	47	20 48	PP	22 12	PKS	30 47	PS	60·4
Baku		125·6	306	e 19 7	[+ 3]	—	—	—	—	—
Shemakla		126·6	306	19 7	[+ 2]	—	—	—	—	—
San Juan		127·8	83	e 21 4	PP	e 26 14	[0]	e 22 24	PKS	e 51·4
Roosevelt Roads		128·2	82	e 18 46	[−23]	i 22 31	PKS	e 20 14	?	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L'
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grozny		128·5	309	e 19 11?	[+ 2]	—	—	—	—	—
Tiflis		129·4	307	i 19 13	[+ 2]	—	—	i 22 29	PKS	—
Gori		129·9	308	i 22 40	PKS	—	—	—	—	—
Scoresby Sund		130·0	5	e 19 13	[+ 1]	e 26 37	[+17]	23 49	PPP	64·4
Halifax		130·5	48	e 22 41	PKS	—	—	—	—	64·2
Bermuda		130·7	65	e 19 25	[+12]	e 31 46	SKSP	e 21 31	PP	e 53·6
Zugdidi		131·4	309	e 19 22?	[+ 7]	i 22 46	PKS	—	—	—
Fort de France		131·6	89	—	—	e 22 49	PKS	e 39 7	SS	—
Pulkovo		131·7	334	i 19 17	[+ 2]	i 22 39	PKS	21 23	PP	—
Ivigtut		132·1	24	e 19 14	[− 2]	i 22 42	PKS	21 38	PP	61·4
Helsinki		133·6	337	e 22 44	PKS	—	—	—	—	e 58·2
Upsala		136·3	340	e 22 21?	PP	e 33 51	PPS	e 40 21?	SS	e 61·4
Yalta		136·4	313	e 19 22	[− 2]	e 23 0	PKS	e 22 6	PP	—
Ksara		137·2	297	i 19 20	[− 5]	—	—	22 40	PP	—
Bergen		139·1	348	23 7?	PKS	e 32 27	PS	41 52	SS	60·4
Warsaw		140·4	330	e 19 32	[+ 1]	e 26 40	[0]	e 22 26	PP	e 63·4
Istanbul		141·1	311	e 19 21?	[−11]	e 23 53	?	—	—	—
Helwan		141·4	293	19 29	[− 4]	e 33 3	PS	22 38	PP	—
Copenhagen		141·4	341	e 19 28	[− 5]	23 16	PKS	41 15	SS	—
Bucharest		141·8	317	e 19 27	[− 7]	—	—	e 22 44	PP	68·4
Skalnate Pleso		142·7	327	e 19 35	[0]	e 32 46	SKSP	e 23 1	PKS	—
Aberdeen		143·4	354	i 19 36	[0]	i 33 2	SKSP	i 23 1	PP	e 68·8
Potsdam		143·8	335	e 19 33	[− 4]	i 24 2	SKP	i 22 39	PP	e 65·4
Timisoara	N.	144·2	321	e 19 39	[+ 1]	—	—	—	—	—
Budapest		144·4	325	19 37	[− 1]	29 41	{− 5}	23 11	PP	e 64·4
Sofia		144·4	315	i 19 40	[+ 2]	—	—	—	—	—
Collmberg	Z.	144·6	335	i 19 36	[− 2]	—	—	e 23 0	PP	e 72·4
Ogyalla		144·6	326	e 19 41	[+ 3]	e 26 54	[+ 8]	e 22 41	PP	—
Edinburgh	E.	144·7	354	e 19 43	[+ 4]	e 26 50	[+ 4]	e 23 16	PP	—
Prague		144·9	333	e 19 36a	[− 3]	e 26 45?	[− 2]	e 22 32	PP	e 62·4
Jena	E.	145·5	334	e 19 37?	[− 3]	e 31 33	PKKP	e 19 51	pKPP	—
Durham		145·6	352	i 19 41	[+ 1]	—	—	—	—	—
Cheb		145·8	334	e 19 39	[− 2]	e 33 27	SKSP	e 23 31	PKS	—
Athens		146·0	307	i 20 42	[+61]	e 21 13	?	—	—	—
De Bilt		146·7	343	i 19 42a	[0]	e 24 1	SKP	i 23 8	PP	e 74·4
Zagreb		147·1	325	e 19 44	[+ 1]	—	—	e 20 37	PKP_2	e 78·4
Rathfarnham Castle		147·6	356	i 19 44	[0]	e 41 39	SS	e 22 33	PP	e 48·0
Stuttgart		148·1	336	i 19 43a	[− 1]	e 33 27	PSKS	e 23 9	PP	75·4
Triest		148·1	328	e 19 42	[− 2]	e 29 38	{−30}	i 20 8	PKP_2	e 68·4
Karlsruhe		148·2	336	i 19 46	[+ 1]	—	—	—	—	e 79·4
Kew		148·6	348	i 19 45a	[0]	e 42 33	SS	e 23 17	PP	e 49·4
Strasbourg		148·8	337	i 19 45	[0]	e 33 35	SKSP	i 23 21	PP	e 67·4
Taranto		149·4	316	19 36	[−10]	23 26	SKP	—	—	e 65·5
Chur		149·5	335	e 19 44	[− 3]	—	—	—	—	—
Zürich		149·5	336	e 19 45a	[− 2]	—	—	e 20 44	PKP_2	—
Basle		149·8	336	e 24 31	PP	—	—	—	—	—
Salo	Z.	150·0	330	e 19 49	[+ 2]	—	—	e 20 1	PKP_2	—
Padova		150·1	328	19 54	[+ 6]	—	—	—	—	—
Bologna	Z.	150·4	327	e 19 49a	[+ 1]	—	—	—	—	—
Neuchatel		150·4	336	e 19 49	[+ 1]	—	—	—	—	—
Paris		150·4	342	i 19 47k	[− 1]	e 33 27	SKSP	i 23 23	PP	e 69·4
Florence Arc.		151·0	326	e 19 57	[+ 8]	e 34 51	PS	i 23 33	PP	—
Florence Xim.		151·0	326	e 19 47	[− 2]	—	—	e 23 34	PP	—
Pavia	Z.	151·0	331	e 19 51	[+ 2]	—	—	—	—	—
Prato		151·0	326	e 19 57	[+ 8]	—	—	—	—	—
Rome		151·6	322	e 19 49a	[− 1]	i 23 3	SKP	e 23 33	PP	e 53·0
Messina		151·7	313	e 19 59	[+ 9]	—	—	e 23 22	PP	—
Clermont-Ferrand		152·9	338	e 19 54	[+ 2]	e 43 30	PS	i 20 10	PKP_2	65·4
Tortosa		158·2	337	20 33	PKP_2	27 33	[+30]	24 11	PP	e 58·4
Algiers Univ.	Z.	160·4	324	e 20 2k	[+ 1]	i 26 19	[−46]	i 20 43	PKP_2	—
Toledo		160·4	345	e 20 2	[+ 1]	26 59	[− 6]	20 42	PKP_2	73·7
Alicante		160·7	336	20 10	[+ 8]	26 54	[−11]	21 0	PKP_2	e 74·4
Lisbon		162·3	356	20 1a	[− 2]	45 9	SS	20 51	PKP_2	81·0
Granada		162·8	342	i 20 5k	[+ 1]	i 31 6	{−21}	20 51	PKP_2	i 79·2
Malaga	Z.	163·5	342	i 20 6k	[+ 2]	27 4	[− 3]	i 21 1	PKP_2	93·6
Tamanrasset	Z.	165·1	280	i 20 7a	[+ 1]	e 35 21	SKSP	i 21 4	PKP_2	75·4

Continued on next page.

NOTES TO JUNE 21d. 6h. 55m. 39s.

Additional readings :—
Brisbane iPPPZ = 3m.18s., iSSZ = 6m.21s.
Riverview iPP = 5m.11s., iZ = 8m.42s., iP$_c$PE = 8m.48s., iZ = 8m.57s., iN = 9m.6s., iSSEN = 9m.17s.
Christchurch iSEN = 9m.16s.
Perth SSS = 21m.51s.
Honolulu eSS = 20m.38s., e = 21m.27s.
Miyazaki iS = 19m.16s.
Sendai eE = 20m.41s., QN = 24m.33s.
Mizusawa SE = 19m.32s.
Sapporo e = 25m.46s.
Nanking PP? = 13m.46s., PPP? = 14m.58s., P$_c$S? = 15m.48s., iS = 19m.51s., iSS = 24m.19s., iQ? = 29m.0s.
Santa Clara esSEZ = 24m.39s.
Berkeley eE = 13m.23s., eS$_c$SZ = 23m.45s., ePSEN = 24m.40s.
Ukiah ePPS = 24m.35s., eSS = 29m.30s.
Lick iZ = 13m.3s.
Pasadena eSKSEN = 23m.5s., iEN = 23m.49s., iPSE = 24m.43s., eSSN = 29m.55s.
Fresno eZ = 14m.51s.
Mineral iZ = 13m.13s. and 13m.41s., eZ = 17m.41s.
Sitka eSKS = 23m.25s., ePS = 25m.7s., eSS = 29m.49s.
Victoria PS = 25m.27s., SS = 30m.21s., Q = 37m.21s.
Seattle e = 13m.45s., 13m.54s., 14m.56s., and 17m.10s., ePPP = 18m.49s., iSKKS = 23m.57s., iS = 24m.21s., i = 24m.29s., iPS = 25m.32s., ePPS = 26m.19s., e = 27m.48s. and 29m.32s., eSS = 30m.47s., e = 32m.1s., eSSS = 35m.31s.
College iPS = 25m.17s., iSS = 30m.31s.
Overton ePKP,PKPZ = 38m.44s.
Pierce Ferry eS = 24m.32s.
Irkutsk ePPP = 19m.21s., eSKKS = 24m.14s.?, S = 24m.26s.
Tucson eSKS = 23m.49s., ePS = 25m.34s., i = 25m.49s., eSS = 30m.48s., eSSS = 34m.12s.
Salt Lake City ePS = 26m.9s., eSSS = 44m.37s.
Kodaikanal PPPE = 19m.22s., PSE = 26m.0s., PPSE = 26m.37s., SSE = 31m.7s., SSSE = 34m.49s., QE = 43m.56s.
Logan ePS = 26m.8s., eSS = 41m.32s.
Butte ePSN = 26m.14s., eSSSN = 31m.2s.
Hungry Horse eSKS = 24m.5s.
Bozeman ePS = 26m.27s., eSSS = 36m.11s.
Tacubaya epPS = 26m.47s., e = 29m.11s., esSS = 32m.21s.,
Vera Cruz e = 28m.1s., 30m.39s., and 40m.42s.
Poona PPPN = 20m.28s., SKS$_2$N = 25m.21s., PSN = 27m.21s., PPSN = 28m.11s., SSN = 32m.24s., SSSN = 36m.54s., QN = 43m.51s.
New Delhi PSN = 26m.36s., PPSN = 27m.56s., PKKSN = 32m.59s., iN = 34m.18s., SKKS$_2$ = 36m.53s., iN = 37m.18s., QN = 42m.37s.
Rapid City eSSE = 33m.15s.
Bombay PPN = 18m.19s., iSKSEN = 24m.38s., iPPSEN = 28m.20s., SSE = 32m.38s., SSPN = 32m.59s.
Saskatoon PS = 27m.21s., PPS = 28m.21s., e = 33m.36s., SSS = 36m.51s., Q = 43m.1s.
Lincoln eSSE = 33m.35s., eSSSE = 37m.11s.
Huancayo ePPS = 29m.23s., eSS = 34m.5s.
Obi-garm iPP = 19m.15s., ePPP = 21m.36s., ePPS = 29m.58s.
St. Louis e = 24m.52s., iPS? = 28m.54s.
Tananarive SS = 34m.43s., SSS? = 38m.13s.
Stalinabad PP = 19m.23s., PPP = 21m.42s.
Tashkent ePPP = 21m.20s., iSS = 34m.56s.
La Paz iPP = 19m.37s., SKKS = 26m.33s., iPS = 28m.58s., iSS = 35m.21s., Q = 53·4m.
Chicago ePPS = 30m.26s., eSSS = 38m.50s.
Columbia eSS = 35m.53s., eSSS = 40m.27s.
Cleveland iSKSEN = 25m.53s., ePSN = 29m.45s., iPSE = 29m.52s., ePPS?E = 31m.28s., eE = 34m.31s., iSSN = 36m.28s., iSSSE = 41m.1s.
Sverdlovsk iPP = 20m.14s., SKKS = 26m.58s., iPS = 29m.49s., iSS = 36m.42s., SSS = 40m.51s.
New Kensington eE = 34m.58s., eSSSE = 42m.4s.
Ottawa e = 26m.7s., PS = 29m.51s.
Harvard ePKS = 22m.25s., ePPP = 23m.21s., iSKKKS = 28m.1s., ePPS = 32m.31s., eSS = 38m.8s., ePSPS = 38m.24s., eS$_c$S,S$_c$S = 40m.56s., eSSS = 42m.32s., and many other unidentified readings.
Seven Falls PPSE = 31m.54s., SSE = 37m.58s.
San Juan eSKKS = 28m.10s., e = 29m.15s., ePS = 31m.27s.
Scoresby Sund i = 21m.21s., 22m.36s., and 22m.56s., eSKKS = 28m.29s., PS = 31m.36s., 34m.41s., and 35m.41s., SS = 38m.36s., SSS = 43m.33s.
Bermuda i = 22m.41s. and 22m.49s., ePPS = 33m.22s., ePPPS = 34m.46s., eSS = 39m.6s., ePSPS = 39m.43s.
Pulkovo ePPP = 23m.56s., ePS = 31m.37s.
Upsala eN = 28m.21s.?, eE = 30m.21s.?, eN = 41m.21s.?, eSSS? = 44m.21s.?, eQ = 56·4m.
Yalta eSKKS = 32m.16s.

Continued on next page.

Warsaw ePKP$_2$?Z =19m.45s., e =20m.10s., ePPEN =22m.34s., eSKP =23m.4s., eZ = 24m.40s., ePPPEN =25m.52s., eSKKSEN =29m.16s., e =31m.43s., ePPS = 34m.46s., eSS =41m.8s., eSSS =46m.9s.
Helwan eZ =21m.6s., iN =41m.3s.
Copenhagen e =19m.34s., 22m.31s.
Bucharest eN =20m.19s. and 20m.56s., eE =21m.26s. and 21m.31s.
Skalnate Pleso e =20m.5s. and 21m.32s., ePKS =23m.21s., eE =23m.29s., e =24m.44s., 27m.10s., 27m.50s., 31m.22s., 33m.21s., 36m.3s., and 38m.27s., eSS =41m.21s., eSSS =46m.51s.
Aberdeen iPPPE =26m.23s., eSSEN =41m.43s., eSSSN =47m.41s.
Budapest eN =21m.1s., 22m.48s., and 24m.43s., PPPE =26m.39s., ePPPN =27m.21s.?, SKKSN =30m.1s., eSSN =41m.51s., SSE =42m.1s., eSSSN =48m.21s.?
Collmberg eN =19m.39s., eE =19m.43s., eZ =19m.47s., 20m.2s., and 20m.40s., eN = 21m.36s., eZ =24m.18s. and 24m.31s.
Ogyalla e =19m.55s., 20m.42s., 21m.38s., 23m.41s., and 33m.57s., ePPS =35m.42s., eSS =41m.33s., e =45m.57s.,
Edinburgh PKKPE =28m.38s.
Prague iPKP =19m.38s., ePKP =19m.49s., eSKP =23m.31s., ePPP =26m.21s., eSKSP =33m.29s., ePPS =36m.21s., eSS =41m.57s., eSSS =48m.21s.?, and other unidentified e readings.
Jena eN =19m.40s. and 22m.22s.
Cheb iPKP =19m.43s., eE =22m.19s., ePPS =36m.22s., eSSN =41m.51s.
Zagreb iPZ =19m.48s.
Rathfarnham Castle iZ =20m.28s., eEN =34m.13s.
Stuttgart iPKPZ =19m.47s., eZ =20m.9s., e =20m.43s., 21m.19s., 24m.15s., and 28m.51s., eQ =65·4m.
Triest iPP =23m.20s., iPPP =26m.48s., ePSKS =33m.33s., iSS =42m.25s.
Kew iPKP$_2$ =19m.50s., e =20m.7s., iZ =21m.0s., ePPP =33m.51s.
Strasbourg i =19m.52s., e =20m.5s., ePPP =26m.51s., e =39m.14s., eSS =42m.39s. and 42m.45s.
Chur i =19m.48s.
Zürich ePP =23m.19s.
Salo eZ =21m.25s., eE =22m.21s.
Padova eN =21m.10s.
Paris iPKP$_2$ =19m.56s., iPPP =26m.52s., iPPP($\triangle$ >180°) =33m.55s., iSS =42m.40s., iSSP =43m.9s., iSSS =48m.53s., and other unidentified phases.
Rome e =28m.26s., ePSKS? =33m.49s., ePPS =36m.44s., iSS =43m.5s.
Messina e =22m.15s. and 25m.34s.
Clermont-Ferrand iPP =23m.36s., eSSP =44m.21s., eSSS =49m.1s.
Tortosa PP?N =24m.41s., PPPE =28m.45s., SKKSN =31m.49s., SS?E =44m.37s., SSPN =45m.45s.
Algiers Univ. iZ =20m.53s., ePPZ =24m.27s., ePPPZ =28m.26s.
Toledo ePPZ =24m.25s., SKKKSN =32m.0s., SSEN =44m.42s.
Alicante PKS =23m.36s., PP =24m.32s., SKKS =30m.38s., PS =37m.10s.
Lisbon PPZ =24m.35s., E =28m.11s. and 50m.9s.
Granada iPP =24m.42s., PPP =28m.5s., SKSP =34m.6s., iSS =45m.6s., SSS =50m.3s., Q =65·6m.
Malaga iPPZ =24m.44s.
Tamanrasset iPPZ =24m.52s., ePPPZ =28m.48s., eZ =29m.22s., 32m.43s., and 33m.48s.
Long waves were also recorded at Ferndale, Merida, and Puebla.

June 21d. 9h. 55m. 59s. Epicentre 3°·6S. 146°·0E. (as on 1948, July 23d.).

A = −·8275, B = +·5581, C = −·0623 ; δ = +11 ; h = +7 ;
D = +·559, E = +·829 ; G = +·052, H = −·035, K = −·998.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Guam		17·0	355	4 5	+ 4	7 57	SS	—	—	—
Brisbane		24·7	165	e 4 24k	−60	i 8 45	−59	—	—	—
Riverview		30·5	172	e 6 17	0	i 11 19	+ 1	i 9 28	P_cP	e 14·3
Miyazaki		37·9	340	e 7 19	− 1	e 13 9	− 4	—	—	—
Bandong		38·3	263	—	—	e 8 51	PP	—	—	—
Kôti		38·8	343	e 7 31	+ 3	e 15 58	SS	e 9 6	P_cP	e 21·4
Djakarta		39·1	265	e 0 30	?	e 8 55	PP	—	—	—
Osaka		39·3	347	e 7 37	+ 5	e 16 32	SS	—	—	—
Hunatu		39·5	351	7 28	− 6	13 33	− 4	—	—	—
Tokyo		39·5	352	7 30	− 4	13 25	−12	—	—	—
Hukuoka		39·8	340	e 7 32	− 4	e 13 33	− 9	16 43	SSS	18·9
Utunomiya		40·3	354	e 7 34	− 6	e 13 43	− 6	—	—	—
Perth		40·4	221	i 11 16	?	13 51	+ 1	15 46	SS	—
Matusiro		40·6	350	e 7 40	− 3	e 13 41	−13	—	—	e 19·4
Nagano	N.	40·7	351	e 7 41	− 3	—	—	—	—	—

Continued on next page.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sendai		41·9	355	7 53	− 1	(17 25)	ScS	—	—	17·4
Auckland	N.	42·4	145	e 7 59	+ 1	14 1	−19	—	—	17·0
Mizusawa	E.	42·8	355	7 5	−56	13 28	−58	—	—	—
	N.	42·8	355	e 7 18	−43	13 43	−43	—	—	—
Akita		43·4	354	e 8 8	+ 2	e 14 36	+ 1	—	—	—
Nanking		43·9	326	i 8 10	0	i 14 38	− 4	i 9 45	PP	19·5
Aomori		44·5	354	8 15	0	i 14 48	− 3	—	—	—
Wellington		45·5	150	e 6 19	?	14 56	− 9	e 8 34	P	25·0
Christchurch		46·3	153	8 36	+ 7	15 9	− 7	e 10 21	PP	22·0
Vladivostok		48·2	346	i 8 47	+ 3	i 15 47	+ 4	—	—	—
Irkutsk		65·9	333	e 10 46	− 4	19 34	− 3	—	—	—
Kodaikanal	E.	69·6	283	—	—	e 18 31	?	—	—	—
Bombay		75·3	290	e 11 51	+ 4	21 16	−10	14 22	PP	32·6
Przhevalsk		76·1	314	i 11 47	− 4	i 21 26	− 9	—	—	—
Almata		77·4	316	e 11 55	− 3	—	—	—	—	—
Andijan		80·0	312	e 12 19	+ 6	e 22 27	+10	—	—	—
Fergana		80·4	311	e 12 10	− 5	—	—	—	—	—
Kulyab		81·4	309	e 12 20?	0	—	—	e 15 38	PP	—
Obi-garm		81·6	310	e 12 19	− 2	i 22 32	− 1	—	—	—
Stalinabad		82·3	310	e 12 23	− 2	i 22 39	− 1	—	—	—
Tashkent		82·4	312	i 12 23	− 2	e 22 40	− 1	—	—	—
College		83·3	23	e 12 15	−15	e 22 21	−29	e 15 33	PP	e 34·2
Samarkand		83·8	310	e 12 29	− 3	—	—	—	—	—
Mary		87·5	307	e 13 2	+11	—	—	—	—	—
Sverdlovsk		90·4	327	i 13 5	+ 1	e 33 31	SSS	i 16 48	PP	—
Ukiah		92·9	51	—	—	32 21	?	—	—	e 42·1
Victoria	Z.	93·0	42	e 13 20	+ 3	—	—	—	—	—
Shasta Dam		93·5	49	e 13 17	− 2	e 23 49	[− 4]	—	—	—
Berkeley		93·6	52	—	—	e 31 9	SS	—	—	e 42·5
Seattle		93·8	43	—	—	e 24 40	+12	e 25 20	PS	—
Lick	Z.	94·0	52	i 13 26k	+ 5	—	—	—	—	—
Mineral	Z.	94·1	50	e 13 25	+ 3	—	—	—	—	—
Fresno	Z.	95·5	53	e 13 33	+ 5	—	—	e 17 27	PP	—
Pasadena	Z.	96·8	56	e 13 34	0	e 27 9	PPS	e 16 47	PP	e 43·9
Baku		97·0	310	e 17 37	PP	—	—	—	—	—
Riverside	Z.	97·5	56	e 13 35	− 2	—	—	—	—	—
Hungry Horse		99·3	41	i 13 43	− 2	—	—	—	—	—
Overton	Z.	99·8	54	e 13 51	+ 4	—	—	e 17 34	PP	—
Pierce Ferry		100·2	54	e 13 43	− 6	—	—	e 17 50	PP	—
Tiflis		100·8	312	e 13 31?	−21	e 24 53	{− 7}	i 18 3	PP	—
Gori		101·2	312	e 18 22	PP	—	—	—	—	—
Leninakan		101·5	310	e 18 8?	PP	—	—	—	—	—
Salt Lake City		101·5	49	—	—	e 24 35	[+ 1]	—	—	e 46·5
Bozeman		101·6	43	—	—	e 24 35	[0]	e 25 41	S	e 45·3
Zugdidi		102·8	312	—	—	i 24 54	[+14]	—	—	—
Tucson		103·0	57	e 18 6	PP	e 26 35	?	—	—	e 46·8
Moscow		103·3	326	e 18 21	PP	24 45	[+ 2]	27 22	PS	—
Saskatoon		103·5	36	—	—	e 27 21	PS	e 33 31	SS	43·5
Pulkovo		105·8	332	e 18 46	PP	e 25 2	[+ 8]	e 27 52	PS	—
Yalta		108·0	315	18 55	PP	e 28 16	PS	—	—	—
Helsinki		108·1	333	—	—	e 28 18	PS	—	—	e 54·0
Ksara		108·7	304	19 4	PP	28 28	PS	—	—	—
Upsala		111·5	335	e 19 1	PP	e 26 31	{+15}	e 28 41	PS	e 49·0
Istanbul		112·5	313	e 19 29	PP	e 28 59	PS	—	—	—
Scoresby Sund		112·8	356	e 19 23	PP	e 28 55	PS	35 1	SS	55·0
Lincoln	E.	112·9	46	—	—	e 26 13	{−12}	e 29 17	PS	e 49·5
Helwan	Z.	113·1	301	e 19 33	PP	—	—	e 20 26	?	—
Warsaw		113·6	326	e 19 22	PP	e 25 0	[−27]	e 21 54	PPP	e 56·0
Tacubaya		114·6	70	e 17 53	?	e 25 15	[−15]	e 18 30	PKP	—
Skalnate Pleso		115·5	324	e 19 53	PP	e 29 22	PS	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bergen		115·9	340	—	—	e 40 17	SSS	—	—	55·0
Copenhagen		116·2	333	e 19 48	PP	i 25 41	[+ 5]	29 30	PS	55·0
Budapest		116·9	322	e 20 5	PP	e 28 31	PS	—	—	e 60·8
Ogyalla		117·3	323	—	—	e 26 41	{−15}	e 33 7	?	—
Potsdam		117·8	329	i 20 7	PP	—	—	i 22 38	PPP	57·0
St. Louis		118·2	47	e 20 4?	PP	e 28 6	?	e 36 7	SS	—
Prague		118·3	327	e 19 58	PP	e 26 37	{−25}	e 29 34	PS	e 49·0
Collmberg	z.	118·4	328	e 20 7?	PP	—	—	—	—	—
Cheb		119·4	328	e 29 35	PS	—	—	—	—	—
Triest		121·0	323	e 20 22	PP	e 25 46	[− 7]	e 30 27	PS	—
Taranto		121·1	316	20 5	PP	e 24 17	?	e 36 47	SS	
De Bilt		121·7	333	e 20 34	PP	e 30 20	PS	e 23 9	PPP	e 57·0
Stuttgart		121·9	328	e 20 33	PP	e 30 23	PS	e 47 1?	Q	e 61·0
Strasbourg		122·7	328	e 20 37	PP	e 25 39	[−20]	e 22 53	PPP	e 59·5
Rome		123·7	320	e 20 23	PP	e 37 43	SS	—	—	—
Kew		124·6	335	e 20 56	PP	e 22 41	PKS	e 30 59	PKKP	e 51·0
Paris		125·3	331	e 20 51	PP	e 38 8	SS	i 23 39	PPP	59·5
Rathfarnham Castle		125·5	341	e 21 6	PP	e 34 4	PPS	e 23 9	PPP	—
Clermont-Ferrand		127·0	328	e 19 40	![+34]	e 23 10	PKS	e 21 28	PP	62·0
Harvard		128·8	35	e 21 42	PP	e 26 25	[+ 8]	e 23 41	PPP	e 60·5
Weston		129·0	35	e 19 18	[+ 8]	—	—	e 21 17	PP	e 59·8
Tortosa		131·7	324	i 21 41	PP	22 49	PKS	—	—	e 64·0
Alicante		133·9	323	19 26	[+ 7]	26 14	[−15]	22 2	PP	e 64·4
Granada		136·5	324	e 20 22k	[+58]	30 1	{+61}	34 16	PPS	65·8
Malaga	z.	137·3	325	i 19 38k	[+12]	e 28 12	{−53}	67 48	Q	74·3
Tamanrasset	z.	137·3	300	e 19 25	[− 1]	e 26 54	[+19]	e 22 8	PP	—
Lisbon	z.	138·4	331	22 12	PP	—	—	—	—	—
Bermuda		139·4	41	e 22 36	PP	e 29 21	{+ 4}	e 41 36	PSPS	e 62·5
La Paz		140·8	122	e 19 37	[+ 5]	—	—	—	—	67·0
San Juan		145·3	62	e 19 41	[+ 1]	—	—	e 22 8	PP	e 67·3

Additional readings :—
Brisbane iEN =4m.37s. and 9m.41s.
Perth SSS =17m.1s.
Nanking e =8m.6s., iPPP =10m.29s., i =15m.31s., iSS?N =18m.5s.
Wellington eSS =18m.57s., eSSS =21m.6s., Q =24·0m.
Christchurch SSEN =18m.43s.
Bombay SSE =26m.16s.
College eSS =22m.48s.
Sverdlovsk iPS =25m.7s., eSS =30m.19s.
Seattle e =26m.1s., ePS =26m.32s., ePPS =27m.1s., e =28m.29s., 29m.1s., and 32m.51s.
Pasadena eSSE =31m.10s.
Bozeman e =30m.5s.
Moscow SS =34m.19s.?.
Helsinki eEN =28m.40s.
Upsala ePPS?N =29m.31s., eE =30m.41s., eSSN =35m.15s., eN =37m.33s., eSSSE = 39m.38s., eN =45m.37s.
Warsaw eZ =19m.56s., eE =23m.8s., eSKKSE =26m.0s., eS? =27m.5s., ePKKPEZ = 29m.7s., ePPSEZ =30m.13s., eE =30m.25s. and 31m.4s., eSSZ =35m.8s., eZ = 37m.0s.
Tacubaya e =37m.57s.
Copenhagen 22m.21s., SS =35m.43s., SSS =39m.55s.
Prague e =20m.11s., 20m.59s., 21m.59s., 23m.2s., 23m.56s., 29m.5s., and 33m.43s.
Triest eSS =36m.46s.
De Bilt eSS =37m.1s.?, eSSS =41m.41s.
Strasbourg e =28m.41s., ePS =30m.37s., eSS =37m.37s., eSSS =42m.8s.
Kew ePPSEN =33m.7s., eSSSEN =44m.1s., eEZ =49m.13s.
Paris iPP =21m.1s., e =35m.12s. and 37m.47s.
Rathfarnham Castle eEN =43m.53s.
Clermont-Ferrand e =25m.23s., ePS =31m.13s., ePPS =32m.49s., e =37m.11s., eSS = 38m.22s., eSSP =38m.46s.
Harvard e =27m.13s., eSKKKS =28m.41s., e =29m.37s., ePPS? =34m.11s., eSS = 39m.6s.
Tortosa PPSN =34m.32s., SKKSN =37m.30s.
Alicante PKS =22m.58s., PPP =24m.48s., SKKS =28m.46s., SS =40m.20s., SSS = 45m.6s.
Granada SS =39m.58s., SSS =45m.16s.
Malaga e =24m.4s.
Tamanrasset ePKSZ =23m.8s., ePPP?Z =25m.3s., ePPSZ =34m.48s.
Long waves were also recorded at Santa Clara, Chicago, Ivigtut, Aberdeen, and Toledo.

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

June 21d. 19h. 21m. 58s. Epicentre 42°·9N. 0°·9E. (as on 1947, Dec. 13d.).

Felt at Capdella ; intensity V at Rialp ; VI at Boreu, with rock-falls in the surrounding mountains.

E. Fontseré.
Los tremblores de tierra catalanes del año 1950. R. Acad de Ciencias y Artes de Barcelona. Observatorio Fabra, Bol. No. 39, Barcelona, 1952, p. 345. Epicentre near 42°·5N. 1°·0E.

$A = +·7347$, $B = +·0115$, $C = +·6782$; $\delta = -13$; $h = -3$;
$D = +·016$, $E = -1·000$; $G = +·678$, $H = +·011$, $K = -·735$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Barcelona		1·7	148	0 31	0	i 0 50	− 4	—	—	e 0·9
Tortosa		2·1	188	i 0 36	− 1	1 4	0	0 42	P_g	—
Clermont-Ferrand		3·3	29	i 1 12	P_g	i 2 1	S_g	—	—	—
Alicante		4·6	194	1 37	P_g	2 32	S_g	2 37	S_g	—
Basle		6·6	43	—	—	e 3 52	S_g	—	—	—
Zürich		7·0	48	—	—	e 3 53	S_g	—	—	—
Stuttgart	z.	8·2	42	—	—	e 4 38	S_g	—	—	—

Additional readings :—
Clermont-Ferrand i = 1m.17s. and 1m.23s.
Tortosa P^*N = 0m.38s., iSEN = 1m.0s., P_gS_gN = 1m.6s., S_3N = 1m.11s., S_sE = 1m.35s.

June 21d. Readings also at 2h. (Merida, Tacubaya, Vera Cruz, Tucson, Boulder City, Overton, and Pierce Ferry), 4h. (Hungry Horse and Nanking), 5h. (near Collmberg and Prague), 6h. (near Obi-garm), 7h. (Pasadena, Riverside, Tinemaha, Stuttgart, and Prague), 9h. (Logan and Santa Clara), 10h. (Pasadena, Riverside, and Pierce Ferry), 11h. (Pierce Ferry, Shasta Dam, Nanking, Vladivostok, Prague, Strasbourg, Edinburgh (2), near Stuttgart, Basle, Neuchatel, and Zürich), 12h. (Boulder City, Overton, Pierce Ferry, Shasta Dam, Hungry Horse, College, Sverdlovsk, Upsala, Helsinki, Edinburgh, Kew, Potsdam, Warsaw, De Bilt, Strasbourg, Stuttgart, Clermont-Ferrand, Granada, Tortosa, near Basle, and Zürich), 14h. (Brisbane), 16h. (Tucson), 19h. (Ashakbad and near Mary), 20h. (Stuttgart (2) and Huancayo), 22h. (near Balboa Heights, near Bogota, and Galcrazamba).

June 22d. 1h. Region of Jan Mayen Island.

Scoresby Sund eP = 49m.54s., e = 50m.41s., L = 50m.56s.
Rathfarnham Castle e = 53m.2s. and 53m.27s.
Kew eE = 53m.22s., eL = 57m.
Collmberg eZ = 53m.43s.
Stuttgart ePZ = 54m.1s., eS = 58m.30s., eQ = 63·5m.
College eP = 56m.33s.?.
Tamanrasset ePZ = 57m.41s.
Hungry Horse eP = 57m.46s.
Tucson eP? = 58m.25s.
Shasta Dam eP = 58m.43s.
Long waves were also recorded at Copenhagen, Warsaw, Potsdam, Clermont-Ferrand, and Granada.

June 22d. 20h. 43m. 3s. Epicentre 1°·2S. 78°·5W. Depth of focus 0·010. (as on 1949, August 11d.).

Approximate.

$A = +·1993$, $B = -·9797$, $C = -·0208$; $\delta = -3$; $h = +7$;
$D = -·980$, $E = -·199$; $G = -·004$, $H = +·020$, $K = -1·000$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bogota	7·3	38	i 1 41	− 5	i 3 1	− 7	—	—	—
Balboa Heights	10·2	354	e 2 20	− 5	—	—	—	—	—
Huancayo	11·2	164	i 2 42	+ 4	i 4 54	+12	e 4 3	?	—
La Paz	18·3	145	i 4 17	+ 8	i 7 59	+33	4 45	pP	e 9·8
San Juan	23·0	31	e 4 54	− 3	e 9 7	+11	e 5 9	pP	e 11·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
St. Louis		41·1	346	i 8 32	?	—	—	—	—	—
Weston		43·9	8	e 6 57	−62	—	—	—	—	—
Tucson		45·2	321	e 8 5	− 4	—	—	e 8 37	pP	—
Palomar	z.	49·9	318	i 8 45	− 1	—	—	—	—	—
Overton	z.	50·2	322	e 8 48	0	—	—	—	—	—
Riverside	z.	50·6	317	i 8 50	− 1	—	—	—	—	—
Pasadena	z.	51·2	317	i 8 55	− 1	—	—	—	—	—
Tinemaha	z.	53·0	320	i 9 7	− 2	—	—	—	—	—
Lick	z.	55·3	318	i 9 26k	0	—	—	—	—	—
Berkeley	z.	56·0	318	i 9 31a	0	—	—	—	—	—
Mineral	z.	57·0	322	e 9 27k	−11	—	—	i 9 48	pP	—
Shasta Dam		57·7	322	i 9 40	− 3	—	—	—	—	—
Hungry Horse		58·2	333	i 9 45	− 1	—	—	—	—	—
Victoria	z.	62·9	329	e 10 19	+ 1	—	—	—	—	—
College		82·4	336	e 12 13	0	—	—	—	—	—
Tamanrasset	z.	84·9	67	i 12 30a	+ 5	—	—	e 15 49	PP	—
Paris		85·0	41	i 12 29	+ 3	—	—	—	—	—

Additional readings :—
Bogota e =2m.13s., iS_g =3m.54s., eN =4m.31s.
La Paz iSS =8m.37s.
Overton iPZ =8m.56s.
Lick iZ =9m.31s. and 9m.36s.
Paris i =12m.35s.
Long waves were also recorded at Granada.

June 22d. 22h. Undetermined shock.

La Paz iPZ =54m.20s., iZ =54m.31s., iP_g =54m.36s., iSZ =55m.10s., iS_g =55m.22s., iL =55m.32s.
Huancayo iP =55m.5s., eS? =56m.14s.
Bogota iPZ =58m.19s., eS? =62m.28s.
Washington eP =63m.2s.
Weston iP =63m.24s.
Harvard iP =63m.30s.
Tucson eP? =64m.37s.
Lick iPZ =64m.54s.k.
Hungry Horse iP =65m.5s.
Shasta Dam eP? =65m.7s.
Overton eP?Z =65m.8s., eZ =65m.17s.
Tamanrasset iPZ =65m.57s.a, iZ =66m.8s., ePPZ =69m.11s., eSZ =76m.25s.
Stuttgart ePZ =66m.50s.
Long waves were also recorded at Granada and Paris.

June 22d. Readings also at 0h. (Aberdeen and near Florence Arc.), 2h. (Auckland, Wellington, and near Ashkabad), 3h. (near Tacubaya), 5h. (Mount Wilson, Tinemaha, College, Tucson, and Wellington), 7h. (Samarkand, Frunse, near Obi-garm, Fergana, Kulyab, Stalinabad, Andijan, Tashkent, and near Nanking), 8h. (Edinburgh (2), Harvard, Weston, Chicago, College, Saskatoon, Seattle, Berkeley, Pasadena, Riverside, Tinemaha, Overton, Pierce Ferry, Tucson, Bozeman, Rapid City, Salt Lake City, Puebla, Vera Cruz, near Manzanillo, Guadalajara, and Tacubaya), 9h. (Scoresby Sund (2)), 10h. (Bucharest, Paris, and Istanbul (3)), 11h. (near Obi-garm), 12h. (Pierce Ferry and Shasta Dam), 14h. (Christchurch, Tamanrasset, Ksara, Strasbourg, Stuttgart, Triest, Warsaw, Bucharest, Timisoara, Istanbul, near Sofia, and Athens), 15h. (College, and near Athens), 16h. (Andijan, near Kulyab, Obi-garm, Stalinabad, and Feergana), 17h. (Samarkand, near Obi-garm, Stalinabad, Fergana, Andijan, Pierce Ferry, and near Shasta Dam), 19h. (near Tucson), 20h. (Mizusawa).

June 23d. 3h. 48m. 18s. Epicentre 13°·8N. 93°·1W. (as on 1948, Sept. 13d.).

Suggested depths : 60km. (N.S.C.G.S.) ; 100km. (J.S.A. and Tacubaya).

$A = -·0525$, $B = -·9701$, $C = +·2370$; $\delta = +2$; $h = +6$;
$D = -·999$, $E = +·054$; $G = -·013$, $H = -·237$, $K = -·972$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vera Cruz		6·1	333	e 1 32	− 2	i 2 56	+11	—	—	—
Merida		7·8	25	e 1 45	−13	i 3 23	− 5	—	—	—
Tacubaya		8·1	315	e 2 1	− 1	i 3 44	+ 9	—	—	—
Swan Island		9·5	67	i 1 52	−28	—	—	—	—	—
Miami		17·0	43	i 4 4	+ 3	—	—	—	—	e 12·9
Milton		17·6	17	i 7 31	S	(i 7 31)	+ 8	—	—	—
Bogota		20·9	114	i 4 53	+ 7	e 8 45	+10	—	—	—
Lubbock		21·2	341	e 4 46	− 3	—	—	—	—	—
Columbia		22·9	26	e 5 4	− 2	e 9 16	+ 3	—	—	e 14·0
Tucson		24·5	322	i 5 21	− 1	e 9 49	+ 9	i 9 0	P_cP	e 12·9
St. Louis		24·9	5	5 25	− 1	9 46	− 1	i 5 46	pP	—
San Juan		26·3	76	e 6 5	+26	e 10 36	+25	—	—	e 11·9
Washington		28·7	27	e 5 57	− 4	—	—	e 7 6	PP	—
Palomar	z.	29·1	316	i 6 4k	0	—	—	i 9 12	P_cP	—
Pierce Ferry		29·1	324	i 5 34	−30	—	—	—	—	—
Cleveland		29·4	18	i 5 59k	− 8	e 12 1	SS	—	—	—
Boulder City		29·5	325	i 6 8	0	—	—	—	—	—
Overton	z.	29·6	324	i 6 9	0	—	—	i 6 31	pP	—
Riverside	z.	29·8	317	i 6 9k	− 2	—	—	i 9 13	P_cP	—
Pasadena		30·4	317	i 6 15k	− 1	—	—	i 9 15	P_cP	e 19·1
Haiwee	z.	31·5	320	i 6 25	− 1	—	—	—	—	—
Fordham		31·7	29	i 6 26	− 1	—	—	—	—	19·2
Logan		32·2	334	e 6 31	− 1	—	—	—	—	—
Tinemaha	z.	32·3	320	i 6 32k	− 1	—	—	i 9 20	P_cP	—
Fresno	z.	33·0	320	e 6 38a	− 1	e 12 12	+15	e 8 5	PPP	—
Harvard		34·1	30	i 6 46	− 2	—	—	—	—	e 17·1
Weston		34·1	30	i 6 46	− 2	—	—	—	—	e 18·0
Lick	z.	34·6	318	i 6 51k	− 2	—	—	—	—	—
Mineral	z.	36·4	322	e 7 7k	− 1	—	—	i 8 59	PPP	—
Shasta Dam		37·0	323	i 7 11	− 2	—	—	i 9 33	P_cP	—
Seven Falls	E.	38·1	24	e 7 19	− 3	—	—	—	—	19·7
Hungry Horse		38·6	338	i 7 25	− 1	—	—	—	—	—
La Paz		38·9	139	e 8 4	+35	—	—	—	—	—
Victoria	z.	42·7	331	e 8 0	0	—	—	—	—	—
College		63·0	337	e 10 29	− 2	—	—	i 11 7	P_cP	e 35·6
Stuttgart	z.	87·7	40	e 12 52	0	—	—	—	—	—
Potsdam	z.	88·8	36	e 13 2	+ 5	—	—	—	—	e 51·7
Collmberg	z.	89·1	38	e 12 59	+ 1	—	—	—	—	—
Tamanrasset	z.	92·5	67	e 13 17	+ 3	—	—	—	—	—

Additional readings :—
Tucson i = 5m.33s.
St. Louis esS = 10m.22s.
Palomar iZ = 6m.15s. and 9m.22s.
Pierce Ferry i = 5m.45s.
Boulder City e = 6m.16s.
Riverside iZ = 9m.24s.
Pasadena iZ = 9m.25s.
Tinemaha iZ = 9m.30s.
Lick iZ = 7m.7s. and 10m.31s.
Shasta Dam i = 9m.42s.
College iP_cP? = 11m.13s.
Tamanrasset iZ = 13m.27s.
Long waves were also recorded at Pennsylvania, Philadelphia, City College N.Y., Seattle, Scoresby Sund, and Paris.

June 23d. Readings also at 0h. (near Tananarive), 1h. (Ottawa, near Kulyab, Stalinabad, Obi-garm, Samarkand, Fergana, and Andijan), 2h. (La Paz, Collmberg, Stuttgart, College, Mount Wilson, Riverside, Palomar, and near Mizusawa), 3h. (Paris and Ksara), 4h. (La Paz, Huancayo, Frunse, Stalinabad, Tashkent, Samarkand, Almata, Przhevalsk, near Andijan, Fergana, Kulyab, and Obi-garm), 5h. (Ksara, Tamanrasset, Przhevalsk (2), Almata (2), Stalinabad (2), Samarkand, near Andijan (2), Fergana (2), Obi-garm (2), Frunse (2), Tashkent (2), and Kulyab (2)), 6h. (College, Ksara, Stalinabad, Almata, Samarkand, near Andijan, Obi-garm, Kulyab, Fergana, Tashkent, Frunse, and Przhevalsk), 7h. (Istanbul, Vera Cruz, Tacubaya, Merida, Tucson, Pierce Ferry, Riverside, Palomar, Tinemaha, Lick, Mineral, and Shasta Dam), 8h. (near Basle, Chur, Zürich, and Stuttgart), 9h. (Fergana, Frunse, near Andijan, Obi-garm, Kulyab, Stalinabad, Samarkand, and Andijan), 11h. (Helwan, Ksara, Tamanrasset, Paris, and Stuttgart), 12h. (Pretoria and Andijan), 13h. Przhevalsk, near Almata, and near Tamanrasset (3)), 14h. (Upsala), 15h. (La Plata), 16h. (La Paz, Frunse, near Andijan, and near Istanbul), 18h. (near Tacubaya),, 19h. (Ashkabad (2)), 20h. (Pierce Ferry and Messina), 21h. (Shawinigan Falls near Istanbul (2), and near Andijan), 23h. (Fergana, Almata. near Andijan, Tashkent, Kulyab, Przhevalsk, Frunse, Obi-garm, and Stalinabad).

June 24d. 22h. 25m. 29s. Epicentre 20°·6S. 169°·0E. (as on 1950, May 28d.).

$A = -\cdot9196$, $B = +\cdot1788$, $C = -\cdot3498$; $\delta = -1$; $h = +5$;
$D = +\cdot191$, $E = +\cdot982$; $G = +\cdot343$, $H = -\cdot067$, $K = -\cdot937$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·1	242	i 2 52	−57	e 6 3	−46	i 6 13	SS	—
Auckland	N.	17·0	164	e 3 57	− 4	i 7 0	−10	—	—	8·5
New Plymouth	E.	18·9	167	4 28	+ 4	e 8 9	+16	—	—	—
Tuai	N.	19·5	162	—	—	e 8 31?	+25	—	—	—
Apia		19·6	73	e 4 28	− 4	e 8 37	+29	e 5 1	PP	e 10·0
Riverview		20·6	227	i 4 48k	+ 5	i 8 41	+12	i 5 12	PP	10·0
Wellington		21·2	169	i 4 48	− 1	i 8 48	+ 7	i 5 19	PP	11·2
Kaimata	N.E.	22·0	176	e 4 55	− 3	i 9 6	+10	—	—	—
Christchurch		23·1	173	i 5 7	− 1	i 9 18	+ 2	—	—	11·4
Perth		48·6	246	11 0	PP	17 53	SS	—	—	25·2
Honolulu		52·8	40	e 9 15	− 4	e 16 46	− 1	e 11 51	PP	e 21·4
Bandong		60·8	275	e 10 17	+ 1	i 18 39	+ 6	—	—	—
Mera		61·8	334	10 9	−14	—	—	—	—	—
Djakarta		61·9	275	e 10 23	− 1	i 18 50	+ 3	—	—	—
Tokyo		62·5	334	10 29	+ 1	18 48	− 6	e 11 46	P_cP	—
Kumagaya		63·0	334	e 10 35	+ 4	e 19 3	+ 2	—	—	—
Nagoya		63·2	332	e 10 1	−31	—	—	—	—	—
Utunomiya		63·2	335	e 10 32	0	e 19 6	+ 3	20 43	S_cS	34·0
Miyazaki		63·4	325	i 10 35	+ 1	e 19 0	− 6	—	—	—
Gihu		63·5	332	10 34	0	19 4	− 3	—	—	26·2
Osaka		63·5	330	e 10 39	+ 5	e 19 3	− 4	e 21 1	S_cS	—
Kagosima		63·6	324	10 37a	+ 2	19 14	+ 6	13 27	PP	34·2
Kôti		63·6	327	e 10 38	+ 3	e 19 13	+ 5	19 25	PS	—
Sumoto		63·6	329	i 10 36	+ 1	e 19 13	+ 5	—	—	—
Matusiro		63·8	333	e 10 38	+ 2	e 18 25	− 46	—	—	29·3
Hukusima		63·9	336	10 39	+ 2	19 16	+ 4	—	—	—
Nagano	E.	64·0	333	e 10 30	− 8	e 19 23	+10	—	—	—
Sendai		64·2	337	e 10 40	+ 1	19 17	+ 1	20 35	S_cS	27·6
Ocita		64·3	326	e 10 47	+ 8	e 19 21	+ 4	—	—	—
Mizusawa		64·9	337	10 44	+ 1	19 28	+ 4	—	—	28·6
Miyako		65·0	338	e 10 44	0	e 19 25	− 1	—	—	—
Hukuoka		65·2	326	10 47	+ 2	19 31	+ 3	—	—	28·8
Morioka		65·4	337	e 10 47	0	e 19 33	+ 3	—	—	e 27·6
Akita		65·8	337	e 10 54	+ 5	e 19 30	− 5	—	—	—
Aomori		66·5	337	11 15	+21	19 49	+ 5	—	—	—
Sapporo		68·3	340	e 11 7	+ 2	e 20 8	+ 2	e 24 53	SS	35·2
Nanking		71·1	317	i 11 24	+ 2	i 20 39	+ 1	i 11 42	P_cP	—
Vladivostok		72·0	333	i 11 29	+ 1	i 20 53	+ 4	—	—	—
Klyuchi		76·9	356	e 11 55	− 1	e 21 40	− 3	—	—	—
Berkeley		86·8	48	i 12 46a	− 1	i 23 21	− 4	i 15 43	PP	e 40·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Clara		86·8	48	i 12 51	+ 4	e 23 27	+ 2	e 24 35	PPS	e 40·2
Ukiah		86·8	46	e 12 45	− 2	e 23 4	[− 9]	e 24 34	PPS	e 35·7
Lick		87·0	48	i 12 48a	0	e 24 3	+36	i 13 29	PcP	e 41·2
Fresno		88·1	49	e 12 53a	− 1	e 24 53	PS	e 13 37	PcP	—
Pasadena		88·1	53	i 12 53a	− 1	i 23 51	+14	e 16 20	PP	e 36·2
Shasta Dam		88·1	45	i 12 54	0	e 23 31	− 6	e 15 58	PP	e 41·0
Mineral	z.	88·5	46	i 12 55a	− 1	e 23 41	0	e 24 59	PS	e 42·3
Palomar		88·7	54	i 12 56	− 1	—	—	i 38 48	P'P'	—
Riverside		88·7	53	i 12 54a	− 3	e 23 19	[− 6]	—	—	—
Haiwee	z.	89·1	51	i 12 58	0	—	—	—	—	—
Tinemaha	z.	89·3	50	i 12 59	0	—	—	—	—	—
Calcutta	E.	89·6	294	e 13 0	− 1	i 23 42	− 9	e 16 53	PP	41·0
Sitka		90·6	27	i 13 3	− 2	i 23 47	{+ 1}	e 16 27	PP	e 36·7
Boulder City		91·3	52	e 13 9	0	e 22 55	[−45]	—	—	e 51·5
College		91·4	17	i 13 6	− 3	i 23 33	[− 8]	e 16 27	PP	e 38·4
Victoria		91·4	39	13 9a	0	24 21	+14	16 47	PP	42·1
Colombo	E.	91·6	277	13 10	0	23 45	[+ 3]	—	—	46·3
Seattle		91·6	40	e 13 11a	+ 1	e 24 9	0	e 13 53	pP	e 38·5
Irkutsk		91·7	327	i 13 12	+ 2	24 12	+ 2	16 48?	PP	—
Overton	z.	91·8	51	i 13 12	+ 1	e 24 35	+24	i 15 59	PP	e 46·4
Pierce Ferry		92·0	53	e 13 11	− 1	e 24 1	{+ 5}	—	—	e 49·5
Tucson		92·9	57	i 13 17	+ 1	e 24 22	+ 2	e 16 56	PP	e 38·4
Guadalajara		95·0	69	—	—	e 23 58	[− 3]	e 26 4	PS	e 43·7
Kodaikanal	E.	95·0	279	e 13 23	− 3	i 24 32	− 6	23 56	SKS	41·5
Salt Lake City		95·4	49	e 13 27	− 1	e 23 58	[− 5]	e 17 3	PP	e 43·9
Logan		95·8	48	i 13 28	− 1	i 25 0	+15	i 24 5	SKS	e 43·8
Butte	N.	96·9	43	e 16 59	PP	e 24 51	− 3	e 26 12	PS	e 38·5
Hungry Horse		96·9	44	e 13 33	− 1	e 24 0	[−11]	e 17 20	PP	e 45·6
Tacubaya		98·2	72	e 16 22	?	e 24 17	[− 1]	e 17 39	PP	e 46·3
Puebla		99·0	72	e 13 56	+12	e 24 15	[− 7]	e 26 44	PS	e 46·4
Dehra Dun	N.	100·9	298	e 20 25	PPP	e 33 10	SS	e 47 52	Q	58·0
Vera Cruz		100·9	73	e 14 53	P	e 24 28	[− 3]	e 20 5	PPP	e 46·7
Poona	E.	101·0	287	18 1	PP	24 29	[− 3]	20 11	PPP	47·5
New Delhi		101·1	297	e 13 54	+ 1	i 24 31	[− 1]	17 52	PP	48·6
Bombay		102·0	286	e 14 1	+ 4	i 24 40	[+ 3]	18 19	PP	49·7
Rapid City	E.	102·5	48	e 17 33	PP	e 24 36	[− 3]	e 27 20	PS	—
Saskatoon		102·6	39	e 14 1	+ 1	24 46	[+ 6]	e 18 16	PP	48·0
Almata		105·3	311	e 14 13?	0	—	—	—	—	—
Naryn		105·5	310	e 14 11	− 3	—	—	—	—	—
Lincoln	E.	106·4	52	e 18 39	PP	e 24 43	[−14]	i 27 59	PS	e 47·4
Frunse		106·9	310	e 18 51	PP	e 25 40	{− 3}	—	—	—
Merida		107·3	73	—	—	e 24 54	[− 7]	e 27 50	PS	e 50·2
Andijan		108·0	307	e 14 26	P	25 11	[+ 7]	18 55	PP	—
Fergana		108·4	308	e 14 29?	P	—	—	e 18 12	PKP	—
Huancayo		108·9	111	e 14 49	P	e 25 19	[+11]	e 18 47	PKP	e 45·0
La Plata		109·2	141	—	—	28 7	PS	38 37	SSS	52·5
Kulyab		109·4	304	e 14 43	P	—	—	—	—	—
Obi-garm		109·6	306	i 14 36	P	e 25 5	[− 6]	i 19 13	PP	—
Stalinabad		110·3	306	e 14 36?	P	i 26 57	S	19 25	PP	—
Tashkent		110·4	310	e 14 38	P	e 27 9	S	i 18 56	PP	—
Tananarive		110·5	239	19 22	PP	25 20	[+ 6]	26 14	SKKS	54·8
St. Louis		110·8	54	i 19 6	PP	e 26 10	{− 1}	i 28 50	PS	—
Milton		111·9	63	i 20 11	PP	—	—	—	—	—
Samarkand		111·9	305	e 18 25	[−12]	—	—	—	—	—
La Paz		112·9	118	i 14 47a	P	i 25 11	[−13]	i 26 31	SKKS	53·8
Chicago		113·2	51	e 19 28	PP	e 25 34	[+ 9]	e 29 17	PS	e 51·2
Chinchina		115·5	93	i 19 45	PP	e 25 31	[− 3]	e 29 29	PS	e 55·0
Grahamstown		115·5	215	i 17 56	[−48]	e 27 21	{+37}	—	—	e 52·4
Mary		115·6	304	e 18 39	[− 5]	—	—	e 22 37	PPP	—
Bogota		116·8	96	e 20 3	PP	e 41 4	SSS	e 29 43	PS	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Sverdlovsk		117·1	325	15 5	P	i 26 58	{+ 3}	18 48	PKP		—
Columbia		117·4	60	e 19 57	PP	e 25 39	[− 2]	e 29 47	PS		e 53·3
Cleveland		117·7	53	e 18 52	[+ 4]	e 25 53	[+11]	e 20 0	PP		—
Galerazamba		117·7	88	—	—	e 25 6	[−36]	e 40 21	SSS		e 55·5
Ashkabad		118·4	304	e 19 34	PP	—	—	—	—		—
New Kensington	E.	119·1	53	e 20 13	PP	e 25 37	[−10]	e 22 43	PPP		e 46·0
Pennsylvania		120·5	54	e 20 11	PP	e 25 56	[+ 4]	e 30 6	PS		—
Washington		121·0	55	e 18 55	[0]	e 32 5	PPS	e 20 23	PP		e 59·8
Ottawa	Z.	122·0	47	e 18 55	[− 2]	25 49	[− 8]	20 29	PP		87·5
Philadelphia		122·5	54	e 20 31	PP	e 26 9	[+11]	e 29 58	PS		e 49·5
Fordham		123·5	53	e 18 59	[0]	i 26 14	[+13]	e 20 39	PP		33·1
Baku		125·0	306	e 19 10	[+ 8]	—	—	e 20 57	PP		—
Harvard		125·2	51	i 19 3	[0]	e 22 49	PKS	i 20 48	PP		e 58·9
Seven Falls	E.	125·2	45	20 47	PP	28 1	{+13}	22 15	PKS		60·5
Weston		125·4	51	i 19 3	[0]	e 26 1	[− 6]	i 20 50	PP		—
Shemakla		126·0	306	19 8	[+ 4]	—	—	i 21 14	PP		—
Grozny		127·9	309	19 10	[+ 2]	—	—	—	—		—
San Juan		128·2	81	e 19 0	[− 9]	e 26 30	[+15]	e 21 11	PP		e 51·4
Tiflis		128·8	307	i 19 12	[+ 2]	i 22 31	PKS	i 21 25	PP		—
Gori		129·2	318	e 19 18	[+ 8]	e 22 39	PKS	—	—		—
Leninakan		129·6	307	e 19 24?	[+13]	—	—	—	—		—
Moscow		129·7	326	19 13	[+ 2]	28 30	{+12}	21 25	PP		—
Piatigorsk		129·7	311	—	—	e 22 39	PKS	—	—		—
Scoresby Sund		129·7	5	e 16 9	P	22 35	PKS	e 19 12	PKP		63·5
Borzhomi		129·8	318	—	—	i 22 38	PKS	—	—		—
Abastumanj		130·2	318	e 19 19	[+ 7]	i 22 41	PKS	—	—		—
Zagdidi		130·6	310	e 19 19	[+ 6]	i 22 45	PKS	—	—		—
Halifax		130·6	48	—	—	e 22 44	PKS	—	—		62·5
Bermuda		131·0	65	e 19 25	[+11]	e 26 41	[+19]	e 21 37	PP		e 53·3
Pulkovo		131·1	334	19 15	[+ 1]	e 26 20	[− 3]	e 21 27	PP		—
Ivigtut		131·9	23	i 19 13	[− 3]	22 37	PKS	39 55	SSP		58·5
Fort de France		132·0	88	e 19 9	[− 7]	i 22 31	PKS	e 36 33	SS		—
Sotchi		132·2	311	e 19 37?	[+21]	22 52	PKS	—	—		—
Helsinki		133·0	338	e 22 45	PKS	e 28 44	{+ 6}	e 31 43	PS		e 59·5
Theodosia		134·8	314	21 56	PP	—	—	—	—		—
Yalta		135·8	314	19 25	[+ 2]	22 59	PKS	—	—		—
Upsala		135·8	340	i 22 2	PP	e 26 31	[− 1]	i 22 53	PKS		e 59·5
Reykjavik		135·9	7	—	—	e 45 49	SSS	—	—		e 66·6
Ksara		136·6	298	i 19 27a	[+ 3]	—	—	22 55?	PKS		—
Kishinev		138·4	321	19 29	[+ 1]	i 23 6	PKS	22 21	PP		—
Bergen		138·6	349	23 7	PKS	32 31	SKSP	e 41 55	SS		56·8
Warsaw		139·8	331	19 31a	[+ 1]	e 26 41	[+ 2]	22 35	PP		e 58·5
Istanbul		140·4	311	e 19 25	[− 6]	e 23 12	PKS	—	—		—
Copenhagen		140·8	340	i 19 28	[− 4]	34 47	PPS	41 7	SS		63·5
Helwan		140·8	293	i 19 28a	[− 4]	23 7	PKS	22 36	PP		—
Bucharest		141·2	317	e 19 29	[− 4]	i 27 5	[+24]	i 22 41	PP		64·5
Skalnate Pleso		142·1	328	e 19 31	[− 3]	e 28 54	{−40}	e 22 1	PP		—
Raciborzu	E.	142·6	331	e 19 29	[− 6]	—	—	—	—		—
Aberdeen		142·9	352	i 19 35	[− 1]	i 42 16	SS	i 22 59	PP		e 67·8
Potsdam		143·2	336	e 19 31	[− 5]	i 26 36	[− 8]	i 22 49	PP		e 66·5
Timisoara		143·6	320	e 19 39	[+ 2]	—	—	22 31?	PP		—
Budapest	E.	143·8	325	i 19 37	[0]	e 26 51	[+ 6]	23 49	PKS		e 68·5
	N.	143·8	325	e 19 41	[+ 4]	26 34	[−11]	23 31	PKS		e 67·5
Sofia		143·8	316	i 19 37	[0]	—	—	e 41 32	SS		e 67·4
Ogyalla		144·0	326	19 38	[+ 1]	e 26 52	[+ 7]	e 22 53	PP		e 63·1
Collmberg		144·1	334	i 19 37	[− 1]	e 26 11	[−35]	e 23 17	PKS		e 71·5
Edinburgh	E.	144·2	353	19 45	[+ 7]	27 1	[+15]	—	—		—
Kalossa	N.	144·4	326	19 40	[+ 2]	—	—	e 23 42	PKS		—
Prague		144·4	332	i 19 37a	[− 1]	e 27 5	[+19]	e 22 55	PP		e 59·5
Vienna		144·7	329	e 19 40	[+ 1]	—	—	e 22 59	PP		—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Jena		144·9	335	e 19 39	[0]	e 41 43	SS	e 20 32	pPKP	e 69·5
Durham		145·1	351	i 19 40	[+ 1]	—	—	—	—	—
Cheb		145·2	335	i 19 38	[− 2]	e 23 31	PKS	e 23 1	PP	e 59·0
Athens		145·4	309	e 19 42a	[+ 2]	—	—	i 20 1	pPKP	—
De Bilt		146·1	343	i 19 46a	[+ 5]	33 19	SKSP	i 23 7	PP	e 61·5
Zagreb		146·5	327	i 19 42	[0]	—	—	—	—	e 79·5
Rathfarnham Castle		147·2	356	i 19 43	[0]	e 27 11	[+21]	e 23 2	PP	e 73·5
Karlsruhe		147·6	337	i 19 43	[− 1]	—	—	—	—	e 64·5
Stuttgart		147·6	336	i 19 44a	[0]	e 27 10	[+19]	e 20 36	pPKP	74·5
Triest		147·8	327	i 19 47	[+ 3]	i 30 12	{+ 6}	i 20 23	PKP_2	e 66·8
Kew		148·1	348	i 19 45a	[+ 1]	e 29 57	{−11}	i 23 23	PP	e 59·5
Strasbourg		148·3	337	e 19 45a	[0]	i 27 4	[+13]	e 23 11	PKS	e 73·0
Taranto		148·8	318	19 45	[0]	e 30 45	{+33}	e 22 46	PP	e 77·2
Chur		148·9	334	e 19 46	[0]	—	—	e 23 24	PP	—
Zürich		148·9	335	e 19 47	[+ 1]	—	—	e 23 15	PP	—
Basle		149·2	336	e 19 47	[+ 1]	e 30 31	{+17}	e 23 25	PP	—
Salo		149·4	332	e 19 49	[+ 3]	—	—	e 23 49	PP	—
Padova		149·5	328	19 51	[+ 4]	e 24 47	?	—	—	—
Bologna		149·8	330	e 19 50a	[+ 3]	—	—	e 24 43	PP	—
Paris		149·8	343	i 19 47k	[0]	e 42 37	SS	i 20 5	PKP_2	77·5
Neuchatel		149·9	336	e 19 48	[+ 1]	—	—	—	—	—
Florence Arc.		150·4	327	19 48	[0]	e 29 45	{−35}	i 23 34	PP	—
Florence Xim.		150·4	327	i 19 48	[0]	—	—	i 23 6	PP	—
Pavia	z.	150·4	333	e 19 49	[+ 1]	—	—	—	—	—
Prato		150·4	327	e 19 47	[− 1]	—	—	i 23 39	PP	—
Rome		150·9	324	i 19 49a	[0]	e 30 19	{− 4}	20 10	PKP_2	—
Messina		151·1	316	e 19 55	[+ 6]	—	—	e 20 16	PKP_2	—
Clermont-Ferrand		152·4	339	e 19 52	[+ 1]	e 30 35	{+ 4}	i 20 11	PKP_2	65·5
Barcelona		156·4	336	e 20 6	PKP_2	(e 31 36)	{+43}	e 23 55	PP	e 31·6
Tortosa		157·6	339	i 20 2	[+ 4]	30 59	{− 1}	i 24 22	PP	e 72·5
Algiers Univ.	z.	159·7	326	e 20 1	[+ 1]	e 23 39	PKS	i 20 42	PKP_2	—
Toledo		159·9	346	e 20 1	[0]	44 25	SS	i 20 43	PKP_2	67·9
Alicante		160·1	337	20 1	[0]	26 43	[−22]	20 37	PKP_2	e 71·6
Lisbon		161·9	358	20 4a	[+ 1]	31 41	{+18}	20 51	PKP_2	—
Granada		162·3	343	i 19 59k	[− 4]	i 27 29	[+22]	20 23	pPKP	81·7
Malaga	z.	162·9	343	i 20 7k	[+ 3]	i 27 1	[− 6]	i 20 57	PKP_2	76·6
Tamanrasset	z.	164·5	281	i 20 8a	[+ 3]	e 27 12	[+ 4]	i 21 5	PKP_2	e 79·5

Additional readings :—
Brisbane iSE =6m.6s.
Riverview iPPPE =5m.20s., iZ =8m.44s., iP_cPE =8m.49s., iN =9m.10s., iSSE = 9m.17s., iSSSN =9m.32s.
Christchurch eSEN =8m.51s.
Perth i =12m.11s., PPP =13m.6s., i =21m.19s., SSS =21m.59s.
Honolulu e =13m.2s.
Tokyo i =21m.25s.
Miyazaki iS =19m.25s.
Kagosima PPP =14m.45s., P_cS =15m.49s.
Kôti e =11m.9s. and 16m.19s.
Sendai SSN =23m.27s., QN =25m.45s.
Mizusawa PE =10m.48s.
Sapporo e =31m.23s.
Nanking i =12m.35s., PP =14m.14s., PPP? =15m.42s., i =21m.20s., SS? =25m.20s , i =27m.43s.
Berkeley eE =14m.25s., eN =22m.55s., eE =23m.5s., iNZ =24m.11s., eN =36m.31s.
Ukiah e =22m.50s., eSS =29m.10s.
Lick iZ =13m.43s., eZ =14m.43s. and 24m.40s.
Fresno iN =14m.47s., eE =17m.55s.
Pasadena iSKSEN =23m.30s., iPSEN =24m.48s., eSSEZ =29m.31s., eSSSZ =33m.7s. ePKP,PKPZ =38m.50s.
Shasta Dam ePKP,PKP =38m.31s.
Mineral iZ =14m.12s.
Calcutta eSKSE =23m.28s., eSSSE =33m.4s.
Sitka iPS =25m.11s., iSS =29m.39s., eSSS =34m.5s.
College e =17m.44s., ePPP =18m.31s., eSKS =23m.23s., eS =23m.46s., i =25m.13s., eSS =29m.53s., eSSS =33m.51s.
Victoria SKS =23m.40s., PS =25m.22s., SS =30m.31s.

Continued on next page.

Seattle esP =14m.6s., ePP =16m.13s., ePPP =18m.22s., eSKS =23m.42s., ePS =24m.27s. ePPS =24m.39s., eSS =29m.21s., ePKKP =30m.47s., and other unidentified e readings.
Irkutsk eSKS =23m.50s.?, eScS =24m.25s., PS =25m.31s.
Overton ePKP,PKPZ =38m.36s.
Tucson ePPP =18m.49s., eSKS =23m.51s., i =25m.49s., e =30m.1s., eSS =30m.12s. eSSS =34m.24s.
Kodaikanal SKKSE =24m.11s., PSE =26m.1s., PPSE =26m.36s., QE =37m.9s.
Salt Lake City eS =24m.56s., ePS =26m.10s., eSS =30m.46s.
Logan e =19m.10s., iPS =26m.9s., eSS =30m.34s., eSSS =34m.57s.
Butte eSKSN =24m.21s., eSSN =31m.37s., eSSSN =35m.4s.
Hungry Horse ePS =26m.14s., ePKKP =30m.25s., ePKP,PKP =38m.30s.
Tacubaya ePS =26m.15s.
Puebla eSS =32m.14s.
Vera Cruz ePS =26m.52s., e =33m.25s.
Poona SE =25m.22s., PPSE =28m.1s., SSE =32m.9s., iSSPE =32m.31s., SSS?E = 36m.31s., QE =42m.46s.
New Delhi iSN =25m.34s., iPSN =27m.9s., SSSN =36m.54s., QN =42m.37s.
Bombay iSKKSE =24m.55s., SEN =25m.38s., PSEN =27m.16s., iPPSN =27m.40s., SSPE =32m.37s., SSSE =37m.18s., QN =41m.56s.
Rapid City eE =24m.50s., eSSE =33m.0s., eSSSE =36m.43s.
Saskatoon PS =27m.20s., PPS =28m.21s., SS =33m.16s., SSS =36m.55s., QEN =43m.1s.
Lincoln eE =21m.23s., eSSE =34m.5s.
Frunse ePP =19m.47s.
Merida e =28m.23s.
Andijan SKKS =25m.47s., eS =26m.41s., ePS =28m.9s.
Fergana PP =19m.8s.
Huancayo eS =26m.57s., ePS =28m.38s.
La Plata PSSE =28m.19s., E =34m.1s.
Obi-garm iPPP =21m.22s., S =26m.47s.
Tashkent iPPP =21m.36s., iPS =28m.47s., iPPS =30m.8s.
Tananarive PS =28m.40s., SS =34m.42s., SSS =38m.39s.
St. Louis e =24m.12s., 26m.24s., 29m.14s., and 30m.18s., eSS =35m.17s., eSSS = 38m.24s.
La Paz iPS =29m.1s., iPPS =29m.31s., i =30m.7s., iSS =35m.25s.
Chicago e =25m.16s. and 29m.1s., eSS =35m.16s., eSSS =39m.48s.
Chinchina eSSEN =36m.28s.
Sverdlovsk iPP =19m.58s., PPP =22m.31s., iSKSP =29m.31s., iSS =36m.43s., SSS = 40m.55s.
Columbia eSS =35m.48s., eSS =39m.52s.
Cleveland eE =20m.55s., iE =26m.19s., iPSE =29m.43s., iPPS?E =31m.31s., eSS?E = 36m.40s.
New Kensington ePSE =29m.39s., eE =33m.47s. and 41m.51s.
Pennsylvania iE =20m.20s. and 20m.52s., eN =21m.13s., iE =22m.59s., eE =25m.5s. and 27m.22s., eN =29m.30s.
Washington e =32m.59s. and 39m.39s.
Ottawa eZ =22m.28s., PSZ =30m.15s.
Philadelphia e =21m.0s. and 30m.36s., ePPS =31m.46s., eSS =37m.36s., eSSS =41m.34s.
Harvard ePS =30m.24s., ePPS =32m.31s., eSS =38m.11s., eSSS =42m.32s.
Seven Falls eE =29m.38s., PSE =30m.43s., PPSE =31m.59s., eE =33m.7s., SSE = 37m.56s.
Weston eSSS =42m.25s.
San Juan i =22m.28s. and 22m.42s., iSKKS =28m.11s., iPS =31m.30s., eSS =38m.17s.
Tiflis SS =39m.1s.
Moscow eP =16m.2s., iPKS =22m.36s., SS =39m.1s.
Scoresby Sund e =21m.17s., PPP =24m.6s., e =26m.53s. and 28m.30s., PS =31m.30s., PPP (Δ >180°) =35m.39s., SS =39m.1s., SSS =43m.37s.
Bermuda iPKS =22m.43s., eSKKS =28m.32s., eSKSP =31m.46s., ePPS =33m.37s., i =34m.59s., eSS =38m.39s.
Pulkovo iPKS =22m.40s., eSKKS =28m.24s., eSKSP =31m.13s.
Ivigtut 22m.47s. and 34m.54s.
Helsinki eE =36m.3s.
Upsala eSKKKS?N =29m.25s., ePPSE =34m.3s., eSSN =39m.49s., eSSPE =40m.31s.?, eSSS?N =44m.31s., eSSSE =44m.55s., eQN =55·5m. and other e readings.
Bergen eN =43m.15s.?, 46m.25s., and 51m.30s.
Warsaw PKP_3?Z =19m.44s., SKP =23m.11s., ePPPZ =25m.21s., ePKKSEZ =31m.30s., ePKKSN =31m.35s., PS =32m.51s., ePPS =34m.46s., eSS =40m.56s., eSSS = 45m.54s., and other unidentified e readings.
Copenhagen 22m.31s., 23m.12s., and 36m.15s., SS =42m.49s., SSS =46m.37s.
Helwan eZ =24m.45s., eE =31m.52s. and 32m.34s., PPSZ =35m.25s., iN =40m.34s. and 42m.55s.
Bucharest eN =19m.13s. and 19m.32s., iE =20m.1s. and 20m.15s., iN =20m.32s., iE =21m.23s., iN =21m.26s., 27m.21s., 29m.2s., and 41m.8s.
Skalnate Pleso e =21m.46s. and 25m.19s., ePSS =33m.37s., eSS =46m.1s.
Raciborzu ePKP?Z =19m.32s., ePKP?N =19m.37s.
Aberdeen iPPPEN =26m.25s., iEN =32m.13s., iSSSN =47m.42s.
Potsdam iPKPNZ =19m.34s., eN =20m.25s., iZ =20m.28s., ePKSN =23m.13s., eE = 23m.52s., iZ =23m.56s., eE =25m.4s., iZ =31m.11s., ePSKSN =33m.7s,

Continued on next page.

Timisoara eN =21m.1s.
Budapest PKP_2N =19m.51s., PKP_2E =19m.59s., PPPN =27m.20s., ePPPE =27m.31s., SKKSE =30m.31s., P_cSPKPN =31m.36s., PPSEN =36m.51s., eSSE =43m.31s.?, eSSPE =44m.31s.?, SSSE =48m.21s., eSSSN =53m.51s., and other unidentified readings.
Ogyalla $ePKP_2$ =19m.55s., e =20m.40s. and 21m.44s., eSKP =23m.14s., e =24m.50s. and 30m.40s., ePS =34m.36s., e =36m.57s., eSS =41m.43s., eSSS =47m.13s.
Collmberg $ePKP_2$ =19m.45s., $epPKP_2$ =20m.42s., esPKPZ =20m.53s., $esPKP_2Z$ = 21m.8s., eSKSPEN =33m.0s., epPSEN =35m.30s., ePPSEN =36m.35s., eSSEN = 42m.18s., and other unidentified e readings.
Kalossa PKP_2N =19m.52s., eN =20m.7s., ePPE =24m.3s., ePPPN =27m.31s.?.
Prague $iPKP_2$ =19m.50s., eSKP =23m.13s., ePPP? =25m.31s., eSKKS =28m.49s., eSKSP =32m.40s., ePS? =34m.8s., ePPS =35m.30s., eSS =41m.19s., eSSS = 46m.49s., and many other unidentified e readings.
Jena eE =19m.46s. and 19m.58s., eEN =22m.32s., ePPN =23m.5s., ePPE =23m.14s., eN =24m.36s. and 28m.1s., eE =34m.19s.
Cheb ePKPN =19m.42s., $ePKP_2?N$ =19m.50s., e =20m.1s. and 29m.36s., ePS? = 34m.57s., e =35m.39s., ePPS =35m.52s., e =37m.36s. and 40m.44s., eSS =41m.49s., e =43m.32s., eSSS? =47m.7s.
De Bilt eSS =42m.19s., eSSS =47m.31s.?
Rathfarnham Castle iZ =20m.0s. and 20m.26s., e =21m.27s. and 25m.6s., eEN = 26m.22s., 30m.21s., and 33m.29s., eSS?EN =43m.31s.
Stuttgart iPKP =19m.48s., i =20m.15s., e =20m.59s., ePP =23m.11s., eSKKS = 29m.51s., e =30m.57s. and 32m.37s., ePSKS =33m.31s., ePPS? =36m.55s., eSS = 42m.31s., eSSS? =47m.1s., eQ =65·5m.
Triest iPKS =23m.37s., iPP =24m.6s., iPPP =27m.45s., iSKSP =33m.59s., iSS = 43m.21s.
Kew i =19m.52s. and 20m.56s., eEN =24m.5s., eSKSPEN =33m.31s., eSS? =42m.27s., iSSS?Z =47m.9s.
Strasbourg ePP =23m.24s., ePPP =27m.15s., ePP (Δ >180°) =28m.7s., eSKKS = 30m.9s., ePPP? (Δ >180°) =33m.13s., ePSKS =33m.35s., eSS =42m.37s. and 42m.47s., eSSP =43m.39s., eQ? =65·5m., and many other i and e readings.
Taranto e =39m.45s., SS =42m.50s., SSS =49m.20s.
Chur i =19m.51s.
Salo eZ =19m.53s. and 21m.13s.
Padova iN =21m.5s. and 22m.7s.
Bologna eZ =20m.30s.
Paris iPP =23m.29s., iPPP =27m.11s., ePPS? =37m.17s., iSSP =43m.4s., eSSS = 48m.53s., and many other i and e readings.
Florence Arc. iZ =19m.55s.
Rome ePP =23m.36s., ePSKS =34m.1s., e =38m.51s., eSS =43m.30s.
Messina ePP =23m.46s.
Clermont-Ferrand iPP =23m.46s., ePKKP =28m.7s., eSKKS (Δ >180°) =34m.19s., eSS =43m.31s., eSSP =44m.28s., eSSS =49m.26s.
Tortosa PKP_2N =20m.38s., SKKSEN =34m.20s.
Algiers Univ. iZ =21m.44s., iPPZ =24m.27s., eZ =26m.36s. and 27m.45s., ePPPZ = 28m.10s.
Toledo iPPNZ =24m.25s., SSSN =50m.29s.
Alicante PKS =23m.21s., PP =24m.25s., PPP =27m.35s., SKKS =30m.27s., SS = 42m.47s., SSS =48m.39s.
Lisbon PPZ =24m.35s., PPSZ =38m.3s.
Granada sPKP =20m.50s., PKP_2 =21m.7s., $pPKP_2$ =21m.58s., iPP =24m.38s., pPP = 24m.59s., sPP =25m.23s., PPP =27m.59s., iSKKS =31m.23s., sSKKS =32m.23s., SKSP =35m.8s., sSKSP =36m.23s., PPS =39m.17s., iSS =45m.8s., SSS =51m.22s.
Malaga iPPZ =24m.39s.
Tamanrasset iPPZ =24m.51s., ePPPZ =28m.45s., eZ =32m.43s., iZ =33m.33s., eSKSPZ =35m.47s.

June 24d. Readings also at 1h. (Tucson), 4h. (Tamanrasset and near Istanbul), 6h. (Stalinabad and near Obi-garm), 7h. (Obi-garm, near Andijan, near Kulyab, near La Paz, and near Alicante), 8h. (Sverdlovsk), 9h. (Brisbane), 10h. (Yalta and near Obi-garm), 11h. (Apia, Shawinigan Falls, Palomar, Pasadena, Riverside, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Lick, Mineral, Shasta Dam, Hungry Horse, College, Collmberg, Strasbourg, Tamanrasset, Samarkand, Stalinabad, near Andijan, Fergana, Kulyab, Obi-garm, and near Tananarive), 14h. (Bandong and Djakarta), 15h. (Tucson, Harvard, Weston, Port au Prince, and San Juan), 18h. (College (2), Bandong, and near Klyuchi), 19h. (Ksara and Tamanrasset), 21h. (College, Almata, Przhevalsk, Samarkand, Tashkent, near Andijan, Fergana, Frunse, Kulyab, Naryn, Obi-garm, and Stalinabad), 22h. (Barcelona, Palomar, Pasadena, Riverside, Tinemaha, Tucson, Shasta Dam, and College), 23h. (Collmberg, Jena, Prague, Strasbourg, Stuttgart (2), Tucson, and Overton).

June 25d. 11h. 5m. 54s. Epicentre 5°·5N. 126°·0E. (as on 1949, July 18d.).

U.S.S.R. suggests a depth of 70km.

$A = -·5851$, $B = +·8054$, $C = +·0952$; $\delta = +7$; $h = +7$;
$D = +·809$, $E = +·588$; $G = -·056$, $H = +·077$, $K = -·996$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Guam		20·1	64	4 25	−13	8 23	+ 4	—	—	—
Djakarta		22·4	240	e 5 2a	0	i 9 15	+11	—	—	—
Miyazaki		26·8	10	e 5 54k	+10	i 10 13	− 6	i 16 31	S_cS	—
Nanking		27·2	346	5 48	+ 1	i 10 27	+ 2	i 9 8	P_cP	i 11·7
Nagasaki		27·3	7	e 6 39	+51	—	—	—	—	—
Ooita		28·1	10	e 6 16	+21	e 10 53	+13	e 6 44	PP	e 16·6
Hukuoka		28·2	8	e 6 1	+ 5	e 10 56	+15	6 47	PP	13·6
Kôti		28·8	12	e 6 14	+12	e 10 44	− 7	e 6 52	pP	—
Hirosima		29·3	10	e 5 59	− 7	e 11 14	+15	e 9 26	P_cP	—
Sumoto		29·9	16	6 6	− 6	i 10 58	−11	e 8 7	PP	e 18·5
Owase		30·0	17	e 6 7	− 5	11 26	+16	e 7 7	PP	—
Osaka		30·3	16	e 6 25	+10	—	—	i 7 34	PPP	—
Kyoto		30·7	16	e 6 34	+15	—	—	e 7 22	PP	—
Kameyama		30·8	17	e 6 18	− 2	—	—	i 7 32	PPP	—
Nagoya		31·2	18	e 6 14	− 9	e 11 48	+19	e 7 23	PP	—
Gihu		31·4	18	6 20	− 5	—	—	i 7 27	PP	—
Hunatu		32·1	20	7 22	PP	—	—	—	—	e 14·6
Yokohama		32·3	20	e 7 18	PP	—	—	—	—	—
Tokyo		32·6	20	e 7 37	PP	12 41	P_cS	—	—	—
Kumagaya		32·9	20	e 6 59	+21	—	—	—	—	—
Maebasi		33·0	19	e 6 43	+ 4	—	—	—	—	—
Nagano	E.	33·0	17	e 6 37	− 2	—	—	e 8 19	PPP	—
Utunomiya		33·4	19	e 6 34	− 8	e 11 43	−20	16 57	S_cS	—
Hukusima		34·7	20	6 48	− 6	12 9	−15	—	—	—
Sendai		35·3	20	6 50	− 9	12 22	−11	—	—	—
Vladivostok		37·8	7	i 7 17	− 3	i 12 58	−13	i 13 32	sS	—
Perth		38·5	193	9 4	PP	13 16	− 6	9 30	PPP	15·8
Mori		38·7	17	e 6 50	−37	e 13 8	−17	e 9 30	PPP	—
Calcutta	E.	40·1	299	7 44	+ 5	i 13 49	+ 3	9 48	PPP	18·4
Brisbane	E.	41·9	142	e 6 40a	−74	i 12 48	−85	—	—	—
Riverview		45·8	150	i 8 17a	− 8	i 14 51	−18	i 18 9	S_cS	e 22·8
Colombo	E.	45·9	274	7 55	−31	15 15?	+ 4	—	—	24·4
Kodaikanal	E.	48·3	279	e 8 46	+ 1	15 46	+ 1	—	—	22·2
Irkutsk		49·9	342	8 58	+ 1	i 16 9	+ 2	9 11	pP	—
Dehra Dun	N.	51·4	305	e 13 8	?	e 16 54	+26	—	—	—
New Delhi		51·6	302	e 9 13	+ 3	i 16 29	− 2	i 18 55	ScS	23·4
Poona	E.	52·4	289	i 9 21	+ 5	16 45	+ 3	11 35	PP	24·9
Bombay		53·5	290	e 9 28	+ 4	i 16 56	− 1	—	—	24·6
Prezhevalsk		55·9	319	i 9 47	+ 5	i 17 35	+ 6	—	—	—
Naryn		57·0	318	i 9 52	+ 2	i 17 46	+ 3	—	—	—
Almata		57·2	320	i 9 53	+ 2	i 17 52	+ 6	10 13	pP	—
Klyuchi		57·7	23	e 9 48	− 7	i 17 43	−10	—	—	—
Frunse		58·6	318	i 10 5	+ 4	—	—	—	—	—
Andijan		59·3	315	e 10 7	+ 1	i 18 17	+ 3	10 25	pP	—
Fergana		59·6	314	i 10 11	+ 3	e 18 20	+ 3	—	—	—
Kulyab		60·3	311	e 10 20?	+ 7	e 18 32?	+ 6	—	—	—
Obi-garm		60·6	312	i 10 17	+ 2	i 18 32	+ 2	i 10 37	pP	—
Stalinabad		61·2	312	i 10 19	0	i 18 39	+ 1	10 37	pP	—
Tashkent		61·7	315	i 10 23	+ 1	i 18 44	0	e 19 13?	sS	—
Auckland	N.	62·0	137	e 15 29	?	e 18 29	−19	i 20 6	S_cS	e 30·1
Samarkand		62·9	312	e 10 33	+ 3	i 19 3	+ 3	—	—	—
Cobb River	E.	63·0	141	e 9 54	−37	—	—	—	—	—
Kaimata	N.E.	63·1	143	e 10 9	−23	—	—	—	—	—
Christchurch		64·4	143	e 13 26	PP	18 54	−24	e 15 6	PPP	e 23·3
Wellington		64·4	141	i 10 27	−13	i 18 48	−30	20 18	S_cS	27·1

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mary		66·2	309	e 10 56	+ 4	e 19 47	+ 7	—	—	—
Ashkabad		69·1	308	11 14	+ 4	20 20	+ 5	—	—	—
Sverdlovsk		72·1	329	i 11 29	+ 1	i 20 47	− 3	21 23	S_eS	—
Baku		75·9	311	e 11 53	+ 3	e 21 35	+ 3	—	—	—
Shemakla		76·9	311	i 11 59	+ 3	i 21 47	+ 4	i 22 2	S_eS	—
Grozny		79·2	313	i 12 12	+ 4	i 22 8	0	—	—	—
Tiflis		79·8	312	i 12 15	+ 3	i 22 15	+ 1	i 12 32?	pP	—
Erevan		80·0	310	e 12 18	+ 5	e 22 20	+ 3	—	—	—
Gori		80·3	312	12 6?	− 8	e 22 12?	− 8	—	—	—
Leninakan		80·5	310	e 12 20	+ 5	e 22 30	+ 8	—	—	—
Borzhomi		80·9	311	i 12 20	+ 3	e 22 27	+ 1	—	—	—
Piatigorsk		81·1	313	e 12 18	0	e 22 26	− 2	—	—	—
Abastumanj		81·3	311	e 12 22	+ 2	e 22 32	+ 2	—	—	—
Zugdidi		82·0	311	i 12 29	+ 6	i 22 39	+ 2	—	—	—
College		83·4	25	i 12 23	− 7	i 22 36	−15	e 28 6	SS	e 35·5
Sotchi		83·6	313	12 35	+ 4	—	—	—	—	—
Moscow		84·6	325	i 12 37	+ 1	i 22 59	− 4	i 12 57	pP	—
Theodosia		86·6	315	i 12 51	+ 5	23 22	− 1	—	—	—
Ksara		87·1	303	i 12 53a	+ 4	24 36	PS	—	—	—
Yalta		87·5	314	12 51?	0	23 39?	+ 8	i 16 18	PP	—
Pulkovo		88·2	330	i 12 55	+ 1	i 23 33	− 5	—	—	—
Sitka		90·1	32	e 13 7	+ 4	i 23 23	[−10]	e 16 34	PP	e 36·4
Helsinki		90·7	331	—	—	e 23 28	[− 9]	e 24 0	S	e 47·1
Helwan		91·3	300	e 13 9	0	24 6	0	23 36	SKS	—
Istanbul		91·6	312	e 13 30	+20	—	—	e 16 59	PP	—
Bucharest		93·2	314	e 13 21	+ 4	i 23 48	[− 3]	i 24 24	S	40·1
Lwow		93·5	320	e 13 18	− 1	—	—	—	—	—
Upsala		94·4	331	e 17 9?	PP	i 24 29	− 4	i 23 49	SKS	e 45·1
Warsaw		94·8	323	e 13 51	+26	e 24 37	+ 1	e 24 3	SKS	e 48·1
Sofia		95·5	313	e 13 30	+ 2	e 24 41	− 1	—	—	—
Skalnate Pleso		96·1	320	e 13 32	+ 1	e 24 4	[− 3]	e 17 25	PP	e 49·1
Athens		96·3	309	e 13 32a	0	—	—	—	—	—
Timisoara		96·3	317	e 13 38	+ 6	e 24 7	[− 1]	e 24 53	S	—
Ogyalla		97·7	320	e 21 12	?	e 24 16	[+ 1]	e 26 22	PS	—
Copenhagen		98·4	329	e 13 54	+13	24 21	[+ 2]	26 30	PS	49·1
Prague		99·3	323	i 13 46a	+ 1	e 24 17	[− 7]	e 17 35	PP	e 44·1
Potsdam		99·4	325	i 13 46	0	i 25 21	+ 6	e 17 49	PP	e 53·1
Pretoria	z.	99·4	246	e 13 48	+ 2	—	—	—	—	—
Victoria		99·4	40	i 13 39	− 7	23 50	[−34]	—	—	40·1
Bergen		99·8	335	—	—	e 25 6?	−13	—	—	50·1
Collmberg	z.	99·8	323	e 13 46	− 1	e 24 17	[− 9]	e 17 58	PP	—
Zagreb		99·8	318	e 13 51	+ 4	i 24 21	[− 5]	—	—	—
Seattle		100·3	40	e 13 45	− 5	e 24 30	[+ 2]	e 27 43	PPS	e 46·1
Taranto		100·5	313	—	—	24 32	[+ 3]	27 57	PPS	e 46·0
Cheb		100·6	323	—	—	e 24 48	{−10}	e 26 0	?	—
Scoresby Sund		101·2	349	e 13 52	− 2	25 30	0	32 46	SSP	51·1
Triest		101·3	318	—	—	i 24 27	[− 6]	e 25 33	S	—
Ukiah		102·4	49	—	—	e 24 29	[−10]	—	—	e 45·7
Shasta Dam		102·5	47	e 13 53	− 7	e 24 27	[−12]	e 17 55	PP	—
Padova		103·0	318	—	—	e 24 36	[− 5]	e 30 48	?	—
Stuttgart		103·0	322	e 14 2	0	e 24 40	[− 1]	e 18 14	PP	e 51·1
Mineral	z.	103·2	47	e 13 56a	− 7	—	—	e 30 17	PKKP	—
Bologna		103·4	317	e 18 35	PP	e 24 41	[− 2]	—	—	—
Berkeley		103·5	49	—	—	e 24 32	[−12]	e 33 7	SS	e 43·4
Rome		103·5	315	e 14 18	+14	e 24 44	[0]	e 18 28	PP	—
Florence Arc.		103·7	318	e 14 25	+20	24 39	[− 6]	e 18 22	PP	—
Prato		103·7	318	e 18 32	PP	i 24 34	[−11]	—	—	—
De Bilt		103·9	328	e 14 18	+12	e 24 49	[+ 3]	e 18 41	PP	e 49·1
Santa Clara		103·9	49	—	—	e 24 36	[−10]	—	—	e 47·2
Strasbourg		104·0	323	e 14 7a	+ 1	e 24 48	[+ 2]	e 25 55	S	e 51·1
Zürich		104·0	321	e 17 14	PKP	e 25 47	− 7	e 18 17	PP	—
Lick	z.	104·1	49	e 14 0a	− 7	e 24 36	[−10]	e 18 44	PP	—
Basle		104·5	322	e 18 1	PKP	e 26 0	+ 2	e 24 56	SKS	—
Aberdeen		104·8	335	e 17 26	?	i 24 46	[− 4]	i 18 27	PP	e 46·1
Hungry Horse		105·1	37	i 14 4	− 7	e 24 42	[− 9]	e 17 30	?	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fresno		105·7	49	—	—	e 24 48	[− 6]	—	—	—
Tinemaha	Z.	106·8	49	i 30 1	PKKP	—	—	—	—	—
Paris		107·0	325	i 14 19	P	i 26 21	+ 2	i 18 51	PP	e 51·1
Kew		107·1	328	e 15 0	P	i 27 58	PS	e 18 57	PP	e 44·1
Saskatoon		107·3	31	—	—	e 24 49	[−11]	—	—	41·6
Pasadena		107·8	51	e 14 21	P	i 24 53	[−10]	e 18 37	PP	e 47·6
Riverside	Z.	108·5	51	e 14 24	P	—	—	e 18 34	PP	—
Clermont-Ferrand		108·7	322	e 17 45	[−45]	e 25 39	[+32]	e 19 16	PP	48·1
Rathfarnham Castle		109·0	332	e 19 2	PP	e 27 39	?	—	—	e 46·1
Logan		109·5	42	—	—	e 25 2	[− 8]	e 29 26	PPS	e 50·0
Boulder City		109·8	48	e 14 35	P	—	—	e 18 47	PKP	—
Overton	Z.	109·8	48	e 14 35	P	e 26 35	S	i 18 35	PKP	—
Pierce Ferry		110·3	49	e 14 26	P	—	—	e 19 8	PP	—
Tortosa	N.	112·1	318	e 19 25	PP	27 3	{+43}	—	—	e 56·1
Algiers Univ.	Z.	112·2	312	e 18 36	[− 2]	—	—	e 19 35	PP	—
Ivigtut		113·4	357	—	—	35 30	SS	—	—	57·1
Alicante		114·0	317	19 45	PP	26 34	{+ 1}	47 19	Q	e 54·0
Tucson		114·3	50	e 18 39	[− 3]	e 28 59	PS	e 19 51	PP	e 51·4
Tamanrasset	Z.	115·4	298	i 18 45a	[+ 1]	i 29 21	PS	e 19 47	PP	—
Toledo		115·6	318	e 18 43	[− 1]	—	—	e 19 48	PP	57·5
Granada		116·7	317	18 17a	[−29]	27 10	{+18}	20 9	PP	i 60·8
Malaga	Z.	117·5	317	e 18 47	[− 1]	—	—	—	—	58·6
Florissant		124·5	34	—	—	e 25 56	[− 8]	—	—	—
Ottawa		125·7	18	19 0	[− 4]	e 22 30	PKS	—	—	61·1
Cleveland		126·9	26	i 19 2a	[− 4]	e 26 1	[−11]	e 21 13	PP	—
Pennsylvania	N.	129·0	24	e 22 18	?	e 26 5	[−12]	e 22 38	PKS	—
Tacubaya		129·1	60	e 19 19	[+ 9]	e 26 23	[+ 5]	i 24 4	PPP	—
Harvard		129·6	15	i 19 8	[− 3]	i 22 25	PKS	e 21 30	PP	e 63·8
Weston		129·8	15	i 19 11	[0]	e 33 10	PPS	i 22 23	PKS	63·5
Fordham		130·4	20	e 19 8	[− 5]	i 22 26	PKS	—	—	—
Philadelphia		130·7	22	—	—	e 22 29	PKS	e 39 1	SS	e 52·5
Washington		130·9	24	i 19 11	[− 3]	i 22 30	PKS	—	—	—
Bermuda		141·0	15	e 23 16	PKS	e 29 24	{− 3}	e 41 12	SS	e 68·2
Balboa Heights		150·8	59	e 19 53	[+ 4]	—	—	—	—	—
San Juan		153·4	26	e 20 3	[+11]	—	—	e 23 46	PP	e 73·3
Chinchina		156·0	63	i 19 50	[− 6]	i 30 34	{−17}	e 43 50	SS	e 49·1
Bogota		157·6	64	e 20 3	[+ 5]	e 30 48	{−12}	e 50 28	SSS	—
Huancayo		157·9	110	i 19 53	[− 5]	e 30 48	{−14}	e 34 24	SKSP	—
Fort de France		158·7	20	e 19 46	[−13]	—	—	—	—	—
La Paz		162·4	129	e 20 4	[+ 1]	i 31 46	{+21}	i 24 32	PP	—

Additional readings :—
Miyazaki iEN =6m.29s., iSS?EN =11m.11s.
Nanking i =7m.2s.
Koti ePP =7m.19s., eSS =11m.27s.
Sumoto iEN =16m.42s.
Utunomiya e =12m.53s.
Sendai S_cS?E =12m.46s.
Perth SS =14m.11s.
Calcutta PSE =14m.4s., SSSE =17m.22s.
Brisbane iE =7m.11s., iN =13m.11s.
Riverview iPSN =15m.3s., iN =15m.17s.
Irkutsk eS =16m.37s.
New Delhi iSSEN =17m.0s., SSN =19m.26s., iN =21m.46s.
Poona P_cPE =9m.27s., PPPE =12m.29s., S_cPE =14m.6s., PSE =17m.0s., PPSE = 17m.15s., S_cSE =18m 22s., SSE =20m.2s., SSSE =22m.7s., QE =22m.22s.
Almata eS =18m.22s.
Andijan eS =18m.47s.
Obi-garm ieS =19m.0s.
Stalinabad eS =19m.10s.
Wellington PS =19m.14s.
College ePP =15m.14s., e =16m.20s., ePKKP =30m.44s., ePKP,PKP =38m.53s., eSKP,PKP =42m.3s.
Moscow eS =23m.26s.
Yalta iPPP =18m.14s., iPS =24m.31s.
Sitka eSKS =23m.19s., ePPS =25m.18s., eSS =29m.20s., eSSS =33m.15s.
Helsinki eN =23m.52s., eE =24m.23s., eN =24m.29s. and 28m.48s.
Istanbul iP =13m.33s.
Bucharest eSN =23m.37s.

Continued on next page.

Upsala eN =18m.28s., ePPP?E =19m.38s., eE =20m.48s., iS =24m.25s., eE =25m.32s., ePSN =25m.45s., ePPSN =26m.36s., eN =27m.44s., eE =29m.18s., eSSN = 31m.6s.?.
Warsaw eSKKS =24m.24s., PS =26m.37s., PPS =27m.17s., eSS =31m.16s., eSSS = 34m.55s., and other unidentified e readings.
Skalnate Pleso e =17m.46s. and 18m.21s., eSKKS =24m.25s., e =24m.46s. and 25m.22s., ePS?E =25m.38s., ePPS =26m.26s., eSS =31m.24s., eSSS =35m.18s.
Ogyalla eSKKSN =24m.49s., eN =25m.18s., ePPS =26m.46s., e =27m.12s., 29m.36s., and 30m.15s., eSSE =31m.24s.
Prague ePP =17m.21s., ePPP =20m.10s., eSKKS =24m.49s., ePS =26m.15s., ePPS = 26m.46s., eSS =31m.36s., eSSS =35m.30s., and other unidentified readings.
Potsdam iZ =14m.4s., iPSZ =26m.38s., iPPSZ =27m.47s.,
Collmberg eZ =14m.12s., 16m.28s., 16m.52s., 17m.26s., and 18m.13s., ePSZ =26m.45s.
Seattle eSKS =24m.22s.
Taranto e =34m.27s.
Scoresby Sund 18m.18s., e =24m.28s., iSKKS =25m.7s.
Triest iSKKS? =24m.51s., i =26m.1s., ePS? =26m.57s., ePPS? =27m.44s.
Shasta Dam e =17m.6s., ePKKP =29m.59s.
Stuttgart ePZ =14m.19s., ePKPZ =17m.51s., e =24m.57s., eS =25m.47s., e =26m.12s., ePPS =28m.14s.
Rome iSKKSN =25m.50s., eSS =33m.48s., eSSS =37m.58s.
Florence Arc SKKS =25m.52s.
De Bilt eS =25m.56s., ePS =27m.18s., eSS =33m.36s.
Strasbourg ePP =18m.16s., ePS =27m.34s. and 27m.44s., ePPS =28m.21s., eSS = 33m.19s., eSSS =37m.6s., and other unidentified e readings.
Zürich eSKS =24m.33s.
Lick ePKPZ =17m.23s.
Aberdeen iN =22m.30s., iSKKSEN =25m.46s., iSE =26m.28s., iPSE =27m.59s., iSSSE =37m.46s.
Paris i =18m.6s.?, and 25m.15s., e =26m.48s., iPS =27m.55s., iPPS =28m.25s., iPPS? = 28m.39s., i =29m.4s. and 29m.31s., e =30m.32s., eSS =33m.31s., eSSS =38m.6s.
Kew iPPSZ =28m.59s., eSSS?EN =39m.4s.
Pasadena ePSE =27m.41s., iPPSE =29m.6s., iPKKPZ =29m.57s., eSSEN =33m.54s.
Riverside eZ =29m.41s., ePKKPZ =29m.55s.
Clermont-Ferrand eS =26m.34s., ePS =28m.12s., eSS? =33m.36s.
Boulder City ePKKP =29m.48s.
Overton eZ =22m.0s., ePKKPZ =29m.38s.
Pierce Ferry e =17m.46s., iPKKP =29m.35s.
Algiers Univ. eZ =18m.58s.
Tucson iPKKP =29m.31s., e =33m.30s.
Tamanrasset ePPPZ =22m.15s., ePPSZ =30m.42s.
Granada PPP =22m.7s., PS =29m.47s., PPS =32m.2s., iSS =36m.23s., SSS =40m.2s.
Malaga ePPZ =21m.3s., PPPZ =23m.21s.
Cleveland iPKPZ =20m.5s., eSKKSN =27m.46s., ePSN =30m.59s., eSSE =37m.50s.
Pennsylvania eN =27m.59s., 28m.18s., and 39m.4s.
Tacubaya e =20m.9s., eSKP? =22m.16s., e =32m.23s., ePPS =32m.43s.
Harvard e =32m.51s., ePPS =33m.42s., eSS =40m.32s., eS_cS,S_cS =41m.30s.
Bogota eN =31m.10s.
La Paz iPKPZ =20m.18s., iSS =44m.46s.

June 25d. 20h. 57m. 30s. Epicentre 20°·6S. 169°·0E. (as on June 24d.).

$A = -·9196$, $B = +·1788$, $C = -·3498$; $\delta = -1$; $h = +5$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Brisbane	Z.	16·1	242	i 2 50a	−59	—	—	— —	—
Auckland	N.	17·0	164	—	—	e 7 30?	SS	— —	—
Riverview	E.	20·6	227	i 2 57	?	—	—	— —	e 10·3
Wellington		21·2	169	—	—	8 38	− 3	— —	e 12·5
Christchurch		23·1	173	e 9 0	P_cP	—	—	— —	e 11·5
Berkeley	Z.	86·8	48	i 12 48a	+ 1	—	—	— —	e 37·3
Lick	Z.	87·0	48	e 12 48a	0	—	—	— —	—
Fresno	Z.	88·1	49	e 12 53a	− 1	—	—	— —	—
Pasadena	Z.	88·1	53	i 12 52	− 2	—	—	— —	—
Shasta Dam		88·1	45	e 12 54	0	—	—	— —	—
Mineral	Z.	88·5	46	e 12 56k	0	—	—	— —	—
Palomar	Z.	88·7	54	i 12 56	− 1	—	—	— —	—
Riverside	Z.	88·7	53	i 12 55	− 2	—	—	— —	—
Tinemaha	Z.	89·3	50	i 12 59	0	—	—	— —	—
Boulder City		91·3	52	i 13 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.
College		91·4	17	e 13 8	− 1	—	—	— —	—
Victoria	z.	91·4	39	e 13 10	+ 1	—	—	— —	e 41·8
Overton	z.	91·8	51	i 13 12	+ 1	—	—	— —	—
Pierce Ferry		92·0	53	i 13 12	0	—	—	— —	—
Tucson		92·9	57	e 13 16	0	—	—	— —	—
Ksara		136·6	298	e 17 17	?	—	—	e 24 26 PPP	e 58·6
Collmberg	z.	144·1	334	e 19 37	[− 1]	—	—	— —	—
Stuttgart	z.	147·6	336	e 19 48	[+ 4]	—	—	— —	—
Strasbourg		148·3	337	e 19 50	[+ 5]	—	—	e 20 6 PKP_2	—
Tamanrasset	z.	164·5	281	i 20 6s	[+ 1]	—	—	i 21 4 PKP_2	—

Additional readings :—
Berkeley eZ = 13m.15s. and 13m.38s.
Riverside eZ = 13m.5s.
Overton iZ = 13m.40s.
Ksara e = 48m.40s.
Collmberg eZ = 20m.0s.
Tamanrasset ePPZ = 34m.50s.
Long waves were also recorded at Paris and Granada.

June 25d. Readings also at 3h. (Pretoria and Lick), 4h. (Kulyab, Stalinabad, Samarkand, near Fergana, Andijan (2), Obi-garm, Frunse, and Almata), 6h. (near Andijan), 7h. (Ashkabad, Ksara, Obi-garm, Samarkand, Frunse, near Fergana, Kulyab, Stalinabad, and Andijan), 9h. (Ksara and Ashkabad), 11h. (near Athens), 13h. (La Paz and near Ashkabad), 14h. (College), 15h. (Brisbane, College, Shasta Dam, Mineral, Lick, Pasadena, Riverside, Palomar, Haiwee, Tinemaha, Boulder City, Overton, Pierce Ferry, and Tucson), 16h. (Tamanrasset), 17h. (Strasbourg), 18h. (Shemakla, Ksara, Helwan, and Tamanrasset), 20h. (Shasta Dam and Ashkabad), 21h. (Hungry Horse), 22h. (Pittsburgh, Victoria, and near College). 23h. (College, Hungry Horse, Shasta Dam, Mineral, Boulder City, Overton, Pierce Ferry, Tucson, Basle, and Collmberg).

June 26d. 2h. 12m. 47s. Epicentre 9°·2S. 123°·0E. (as on 1942, Nov. 7d.).

$A = -·5377$, $B = +·8280$, $C = -·1589$; $\delta = -5$; $h = +7$;
$D = +·839$, $E = +·545$; $G = +·087$, $H = -·133$, $K = -·987$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.
	°	°	m. s.	s.	m. s.	s.	m. s.
Bandong	15·4	277	e 3 51	+11	e 6 18	−14	— —
Djakarta	16·3	280	e 3 50	− 2	e 6 13	−40	— —
Vladivostok	52·7	10	e 9 23	+ 5	e 16 46	0	— —
Irkutsk	63·3	347	e 10 37	+ 4	e 19 2	− 2	— —
Przhevalsk	65·4	325	e 10 48	+ 1	—	—	— —
Naryn	66·3	324	—	—	e 19 34	− 8	— —
Almata	66·9	325	e 10 57	+ 1	e 19 44	− 5	— —
Andijan	68·1	320	e 11 3	− 1	e 19 56	− 7	— —
Fergana	68·3	320	e 11 0	− 5	—	—	— —
Kulyab	68·3	317	e 11 8	+ 3	—	—	— —
Obi-garm	68·7	318	e 11 6	− 1	e 20 1	− 9	— —
Stalinabad	69·3	318	11 11	0	e 20 6	−11	— —
Tashkent	70·4	320	e 11 14	− 4	e 20 19	−11	— —
Samarkand	71·0	317	e 11 28	+ 6	—	—	— —
Mary	73·6	313	e 11 49	+12	—	—	— —
Sverdlovsk	83·2	331	—	—	22 40	− 9	— —
Shemakla	84·3	312	i 12 36	+ 1	i 22 55	− 5	— —
Grozny	87·1	314	12 50	+ 1	23 23	− 5	— —
Tiflis	87·4	312	i 12 50	0	—	—	— —
Leninakan	87·8	311	e 13 5?	+13	—	—	— —
Gori	87·9	312	e 12 45	− 8	e 23 21	[+ 1]	— —
Borzhomi	88·4	312	—	—	e 23 33	− 7	— —
Abastumanj	88·8	312	—	—	e 23 37	− 7	— —
Zugdidi	89·7	312	e 13 3	+ 2	e 23 45	− 7	— —
Grahamstown	90·3	236	i 13 1	− 3	—	—	— —
Ksara	92·7	303	e 13 21	+ 6	e 20 6	?	— —
Moscow	95·0	326	e 12 45	−41	—	—	— —
College	97·9	25	e 13 38	− 1	—	—	e 17 7 PP
Victoria z.	112·4	41	e 18 41	[+ 3]	—	—	— —
Shasta Dam	114·6	49	e 18 45	[+ 3]	—	—	e 18 59 pPKP

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Lick	z.	114·8	54	e 18 53a	[+10]	—	—	—	—
Mineral	z.	115·2	49	e 18 47a	[+ 4]	—	—	—	—
Tinemaha	z.	118·4	54	i 18 53	[+ 3]	—	—	i 19 12	pPKP
Hungry Horse		118·5	39	i 18 52	[+ 2]	—	—	—	—
Haiwee	z.	118·8	54	i 18 54	[+ 4]	—	—	i 19 14	pPKP
Tamanrasset	z.	118·8	291	i 18 52k	[+ 2]	i 22 34	PKS	i 29 14	PKKP
Pasadena	z.	118·9	56	i 18 54a	[+ 4]	—	—	i 19 14	pPKP
Riverside	z.	119·6	56	i 18 55	[+ 3]	—	—	i 19 14	pPKP
Palomar	z.	120·1	57	i 18 57	[+ 4]	—	—	i 19 16	pPKP
Boulder City		121·3	53	e 19 1	[+ 6]	—	—	e 22 30	PKS
Overton	z.	121·5	52	i 19 0	[+ 4]	e 29 1	PKKP	e 21 2	PP
Pierce Ferry		121·9	53	i 19 1	[+ 5]	—	—	—	—
Tucson		125·3	56	e 19 7	[+ 4]	—	—	e 20 7	PP
Ottawa	z.	140·5	20	e 19 31	[0]	—	—	i 23 5	PKS
Harvard		144·4	17	i 19 40	[+ 2]	—	—	i 23 16	PKS
Weston		144·6	17	i 19 41	[+ 3]	—	—	—	—
Washington		145·4	27	i 19 43	[+ 3]	i 23 15	PKS	i 20 2	pPKP
La Paz		152·2	158	19 59	[+ 8]	—	—	—	—

Additional readings :—
College e =13m.58s. and 17m.53s.
Tamanrasset ePKKSZ =32m.49s.
Boulder City e =19m.12s. and 19m.20s.
Overton iZ =19m.20s., eZ =32m.42s.
Long waves were recorded at Paris and Granada.

June 26d. 12h. 10m. 51s. Epicentre 38°·3N. 74°·0E. Depth of focus 0·015.
(as on 1945, Dec. 1d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Andijan		2·7	334	i 0 44	0	i 1 15	− 2	—	—
Fergana		2·7	321	i 0 42	− 2	e 1 12	− 5	—	—
Kulyab		3·4	265	i 0 52	− 1	i 1 34	+ 1	—	—
Obi-garm		3·4	279	i 0 51	− 2	i 1 31	− 2	—	—
Naryn		3·5	26	i 0 49?	− 5	i 1 27	− 9	—	—
Stalinabad		4·1	276	i 1 2	0	i 1 49	− 1	—	—
Frunse		4·6	6	—	—	i 1 56	− 6	—	—
Tashkent		4·7	312	e 1 7	− 3	1 59	− 5	—	—
Przhevalsk		5·4	37	i 1 18	− 2	—	—	—	—
Almata		5·5	23	i 1 19	− 2	i 2 19	− 5	—	—
Samarkand		5·6	286	e 1 23	+ 1	—	—	—	—
Dehra Dun	N.	8·6	156	i 3 21	S	(i 3 21)	−18	i 4 21?	SS
Mary		9·6	270	—	—	e 3 52	−10	—	—
New Delhi		10·0	164	e 2 22	+ 1	—	—	—	—
Ashkabad		12·3	273	e 2 50	− 2	5 2	− 5	—	—
Baku		18·7	285	—	—	e 7 40	+ 9	—	—
Shemakha		19·7	285	e 4 6?	−15	i 7 54	+ 3	i 4 47	PP
Sverdlovsk		20·6	339	i 4 32	+ 1	8 13	+ 5	—	—
Grozny		21·9	293	e 4 50	+ 6	8 41	+ 9	—	—
Tiflis		22·6	289	—	—	e 8 37?	− 7	—	—
Zugdidi		24·7	290	e 5 46	PP	—	—	—	—
Moscow		29·9	318	e 5 58	0	—	—	—	—
Collmberg	z.	44·0	309	e 7 57	+ 1	e 8 27	?	—	—
Stuttgart	z.	46·8	305	e 8 20	+ 2	—	—	—	—
College		72·1	18	i 11 13	+ 1	—	—	e 13 47	PP

Additional readings :—
Collmberg eP*Z =8m.2s., eS*Z =8m,37s,
Stuttgart eZ =8m.49s.
College e =11m,44s,

June 26d. Readings also at 0h. (Brisbane, Riverview, Tucson, Overton, Pierce Ferry, College, Collmberg, Jena, Stuttgart, and Tamanrasset), 1h. (Brisbane, and near Huancayo), 2h. (La Paz, Bogota, Chinchina, Weston, Tucson, Overton, Pierce Ferry, Shasta Dam, Hungry Horse, and College), 3h. (Mount Wilson, Riverside, Tucson, Boulder City, Overton, Pierce Ferry, Shasta Dam, Hungry Horse, College, Harvard, Weston, and near Ashkabad (2)), 4h. (near Klyuchi and near Tacubaya) 6h. (Fergana, Frunse, Obi-garm, and near Andijan), 11h. (Hungry Horse, College, Tamanrasset (2), Rome, Stuttgart, Collmberg, Bucharest, Sofia, Ksara, Warsaw, near Athens, Istanbul, and near Obi-garm), 13h. (near Zürich), 14h. (Collmberg, Prague, Stuttgart, Huancayo. near Zürich, and near Mizusawa), 15h. (Brisbane), 16h. (Pierce Ferry, College, and Sotchi), 17h. (near Seattle), 18h. (Alicante), 19h. (near Ashkabad and near Pierce Ferry), 20h. (Pierce Ferry, Ashkabad, and near Istanbul), 21h. (Brisbane, Palomar, Pasadena, Riverside, Tinemaha, Boulder City, Overton, Shasta Dam, Pierce Ferry, Lick, Victoria, College, Collmberg, Jena, Prague, Strasbourg, Stuttgart, Tamanrasset, Ksara, Istanbul, Sofia, and near Athens (2)), 23h. (Ashkabad).

June 27d. 1h. East Indies.
Bandong ePEN =40m.33s., eSEN =41m.43s.
Djakarta eP =40m.44s., eS =42m.4s.
Obi-garm iP =49m.26s.?, eS =50m.26s.?.
Andijan eP =49m.28s.
Shemakla eP =50m.25s.
Sverdlovsk P =51m.10s., eS =61m.1s.
Pretoria eZ =51m.41s.
Ksara eP? =51m.47s., eS? =62m.31s.?.
Grahamstown e =51m.55s.
Tamanrasset ePZ =57m.11s.
Hungry Horse eP =58m.15s.
Shasta Dam eP =58m.19s., e =59m.44s.
Overton ePZ =58m.32s., eZ =61m.7s.
Harvard iP =58m.58s.
Mount Wilson iPZ =63m.31s.
Riverside iPZ =63m.35s.
Tucson eP =63m.54s.
Collmberg eZ =70m.15s., 70m.26s., and 70m.41s.
Jena eEN =70m.19s.
Stuttgart ePZ =70m.26s., eQ =97m.
Strasbourg eP =70m.28s., L =98m.
Long waves were also recorded at Potsdam, Kew, and Paris.

June 27d. 4h. 31m. 48s. Epicentre 37°·8N. 141°·4E. Depth of focus 0·010.
(as on 1948, Feb. 6d.).

Intensity IV at Hukusima, Sendai, Mito, Tukubasan; II-III at Isinomaki, Onahama, Utunomiya, Morioka, Akita, Miyako, and Hatinohe. Epicentre 37°·6N. 141°·2E. Depth 90km., macroseismic radius >300km.

Seismo. Bull. Cent. Met. Obs., Japan, for 1950. Tokyo, 1952, pp. 27, 28, with macroseismic chart.

$A = -·6191$, $B = +·4942$, $C = +·6103$; $\delta = -2$; $h = -1$;
$D = +·624$, $E = +·782$; $G = -·477$, $H = +·381$, $K = -·792$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Sendai	0·6	320	0 21	+ 4	0 34	+ 5	—	—
Hukusima	0·7	266	0 17k	− 1	0 29	− 2	—	—
Onahama	0·9	205	0 22	+ 3	0 36	+ 2	—	—
Mizusawa	1·4	351	0 30	+ 5	0 50	+ 6	—	—
Mito	1·6	208	0 27	− 1	0 46	− 3	—	—
Kakioka	1·8	212	0 29	− 1	0 49	− 4	—	—
Utunomiya	1·8	224	0 28a	− 2	0 45	− 8	—	—
Miyako	1·9	14	0 37a	+ 5	1 2	+ 7	—	—
Morioka	1·9	355	0 35a	+ 3	1 0	+ 5	—	—
Tukubasan	1·9	213	0 29	− 3	0 49	− 6	—	—
Akita	2·2	332	0 36	0	1 2	0	—	—
Kumagaya	2·3	224	0 31a	− 6	0 57	− 8	—	—
Maebasi	2·3	233	0 33a	− 4	0 58	− 7	—	—
Afkawa	2·5	275	0 32	− 8	0 57	−13	—	—
Tokyo	2·5	212	0 37	− 3	1 0	−10	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Hatinohe		2·7	2	0 44	+ 1	1 15	+ 1	—	—
Yokohama		2·7	211	0 40k	− 3	1 12	− 2	—	—
Matusiro		2·8	244	0 39	− 5	1 4	−13	—	—
Nagano		2·8	246	0 38	− 6	1 13	− 4	—	—
Aomori		3·0	355	0 46	− 1	1 28	+ 6	—	—
Hunatu		3·1	223	0 50k	+ 2	1 20	− 4	—	—
Mera		3·1	204	0 47	− 1	1 25	+ 1	—	—
Osima		3·4	208	0 50	− 2	1 23	− 9	—	—
Toyama		3·5	253	0 50	− 4	1 22	−12	—	—
Wazima		3·6	265	0 50	− 5	1 24	−13	—	—
Shizuoka		3·7	221	0 53	− 3	1 31	− 8	—	—
Mori		4·3	352	0 45	−20	1 56	+ 2	—	—
Nagoya		4·4	235	1 1	− 5	1 41	−15	—	—
Hikone		4·9	240	1 7	− 6	—	—	—	—
Kameyama		5·0	235	1 9	− 5	1 50	−21	—	—
Sapporo		5·3	359	1 21	+ 3	2 13	− 5	—	—
Owase		5·6	230	1 14	− 8	2 9	−17	—	—
Osaka		5·7	238	1 0	−24	—	—	—	—
Sumoto		6·3	238	1 23	− 9	2 20	−23	—	—
Nemuro		6·4	29	1 46	+13	—	—	—	—
College		48·5	33	e 8 35	0	—	—	—	—
Victoria	z.	65·9	47	e 10 39	+ 1	—	—	—	—
Shasta Dam		70·7	53	e 11 8	+ 1	—	—	e 11 39	pP
Hungry Horse		71·2	43	i 11 11	+ 1	—	—	—	—
Mineral	z.	71·4	53	e 11 12a	0	—	—	e 11 55	pP
Tinemaha	z.	75·4	55	i 11 35	0	—	—	—	—
Mount Wilson	z.	77·2	57	e 11 45	0	—	—	e 12 17	pP
Riverside	z.	77·8	57	i 11 48	0	—	—	—	—
Overton	z.	78·1	53	i 11 52	+ 2	—	—	—	—
Pierce Ferry		78·7	53	i 11 55	+ 2	—	—	—	—
Collmberg	z.	80·4	330	e 12 27	pP	—	—	—	—
Tucson		83·1	55	e 12 18	+ 2	—	—	—	—
Stuttgart	z.	83·9	331	e 12 47	pP	—	—	—	—

June 27d. 15h. 41m. 41s. Epicentre 43°·5N. 139°·1E. (as on 1946, Dec. 10d.).
Intensity VI at Yoichi, Yagumo ; V at Suttu, Mori, Muroran ; IV at Aomori and Sapporo.
Suggested epicentre 42°·7N. 138°·7E. Depth 30-100km. Macroseismic radius 200-300km.

Seismo. Bull. Cent. Met. Obs., Japan for 1950, Tokyo, 1952, pp. 28, 29, with macroseismic chart.

$A = -\cdot5500$, $B = +\cdot4765$, $C = +\cdot6859$; $\delta = +1$; $h = -3$;
$D = +\cdot655$, $E = +\cdot756$: $G = -\cdot518$, $H = +\cdot449$, $K = -\cdot728$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo		1·7	105	0 28	− 3	0 50	− 4	—	—	—
Mori		1·8	142	0 24k	− 8	0 40	−16	—	—	—
Aomori		3·0	155	0 39	−11	0 57	−30	—	—	—
Hatinohe		3·5	147	0 48k	− 9	1 25	−15	—	—	—
Akita		3·9	169	0 48	−14	1 28	−22	—	—	—
Morioka		4·1	157	0 56	− 9	1 39	−16	—	—	—
Miyako		4·4	149	1 0	−10	1 46	−16	—	—	—
Mizusawa	E.	4·6	160	1 12	0	2 17	+10	—	—	—
	N.	4·6	160	1 9	− 3	e 2 29	+22	—	—	—
Nemuro		4·7	89	1 14	0	2 11	+ 1	—	—	—
Vladivostok		5·3	269	i 1 26	+ 4	i 2 31	+ 6	—	—	i 2·9
Sendai		5·4	165	1 19k	− 5	2 10	−18	—	—	—
Aikawa		5·5	187	1 30	+ 5	2 24	− 6	—	—	—
Hukusima		5·9	169	1 27	− 4	2 30	−10	—	—	—
Wazima		6·4	196	1 34	− 4	2 51	− 2	—	—	—
Onahama		6·7	167	1 34	− 8	2 59	− 1	—	—	—
Nagano		6·9	186	1 46	+ 1	2 58	− 7	—	—	—
Matusiro		7·0	186	1 45	− 1	3 0	− 8	—	—	—
Toyama		7·0	193	1 46	0	—	—	—	—	—
Utunomiya		7·0	175	1 40	− 6	2 52	−16	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Maebasi		7·1	180	1 46	− 2	2 58	−12	—	—	—
Mito		7·2	171	1 41	− 8	2 48	−25	—	—	—
Kumagaya		7·3	178	1 47	− 3	3 9	− 6	—	—	—
Tokyo		7·8	176	1 56	− 2	3 7	−21	—	—	—
Hunatu		8·0	182	2 53a	P_g	4 13	+40	—	—	—
Yokohama		8·0	177	2 6a	+ 6	4 26	+53	—	—	—
Nagoya		8·4	192	2 7	+ 1	3 49	+ 6	—	—	—
Shizuoka		8·5	184	2 6	− 1	3 37	− 8	—	—	—
Toyooka		8·6	204	2 5	− 4	3 57	+ 9	—	—	—
Osima		8·7	179	2 15	+ 5	—	—	—	—	—
Kameyama		8·9	194	2 12	0	3 57	+ 2	—	—	—
Kyoto		8·9	198	2 12	0	3 57	+ 2	—	—	—
Kobe		9·3	201	2 19k	+ 2	4 58	+53	—	—	—
Osaka		9·3	199	2 18	+ 1	4 9	+ 4	—	—	—
Owase		9·7	195	2 22	0	4 13	− 2	—	—	—
Sumoto		9·7	201	2 25k	+ 3	4 9	− 6	—	—	—
Hamada		10·2	215	2 32	+ 1	4 39	+12	—	—	—
Siomisaki		10·4	196	2 31	− 3	4 23	− 9	—	—	—
Hirosima		10·5	212	2 35	0	4 43	+ 8	—	—	—
Kôti		10·8	206	2 41	+ 2	4 45	+ 3	—	—	—
Matuyama		10·8	210	2 44	+ 5	5 20	+38	—	—	—
Muroto		10·9	202	2 44	+ 4	5 15	+31	—	—	—
Ooita		11·8	212	2 43	−10	5 11	+ 5	—	—	—
Hukuoka		12·0	218	2 54	− 1	5 5	− 6	—	—	—
Kumamoto		12·5	215	3 1	− 1	5 43	+20	—	—	—
Miyazaki		13·0	210	3 9	0	5 42	+ 7	—	—	—
Kagosima		13·7	213	3 20	+ 2	5 52	0	—	—	—
Klyuchi		18·9	40	4 32	+ 8	i 8 15	+22	—	—	—
Nanking		19·7	242	i 4 31	− 3	i 8 6	− 4	i 5 1	PP	i 10·2
Irkutsk		24·7	303	e 5 29	+ 5	i 9 55	+11	—	—	—
Guam		30·3	169	6 40	+25	—	—	—	—	15·0
Przhevalsk		43·5	290	i 8 10	+ 3	—	—	—	—	—
Almata		44·2	293	i 8 16	+ 4	e 14 51	+ 5	—	—	—
College		44·7	36	i 8 19	+ 3	e 14 47	− 7	i 9 53	PP	e 18·7
Naryn		45·6	291	i 8 26	+ 2	—	—	—	—	—
Frunse		46·0	293	e 8 31	+ 4	—	—	—	—	—
Calcutta	E.	46·6	260	e 8 49	+17	15 41	+20	10 31	P_cP	20·3
Audijan		48·4	290	e 8 49	+ 3	e 15 50	+ 4	—	—	—
Fergana		48·9	291	i 8 52	+ 2	e 15 55	+ 2	—	—	—
Sverdlovsk		49·2	315	i 8 57	+ 5	16 4	+ 6	—	—	—
Tashkent		50·2	293	e 8 58	− 2	e 16 15	+ 4	—	—	—
New Delhi		51·1	274	e 9 6	0	e 16 20	− 4	11 7	PP	22·6
Kulyab		51·5	289	e 9 12	+ 3	i 16 32	+ 3	—	—	—
Stalinabad		51·8	290	i 9 15	+ 3	i 16 35	+ 2	—	—	—
Samarkand		52·5	293	e 9 22	+ 5	—	—	—	—	—
Sitka		52·6	43	e 9 20	+ 2	i 16 54	+10	—	—	e 21·1
Mary		57·0	294	i 9 52	+ 2	—	—	—	—	—
Ashkabad		59·2	295	i 10 9	+ 4	e 18 19?	+ 7	—	—	—
Poona	E.	59·6	267	10 11	+ 3	18 27	+10	10 37	P_cP	29·2
Bombay		60·1	268	e 10 7	− 4	e 18 25	+ 1	14 7	PP	28·0
Moscow		61·1	321	i 10 23	+ 5	i 18 45	+ 8	—	—	—
Pulkovo		61·8	327	i 10 25	+ 2	18 52	+ 6	—	—	—
Kodaikanal	E.	62·5	258	e 10 19	− 9	—	—	—	—	—
Baku		63·2	302	e 10 38	+ 6	e 19 14?	+11	—	—	—
Victoria		63·3	47	i 10 34s	+ 1	19 6	+ 2	26 43	Q	38·2
Helsinki		63·6	330	e 10 38	+ 3	e 19 14	+ 6	—	—	e 32·3
Shemakla		63·9	303	i 10 41	+ 4	—	—	—	—	—
Grozny		64·0	306	i 10 44	+ 6	19 21	+ 8	—	—	—
Seattle		64·4	47	e 10 43k	+ 3	e 19 28	+10	e 31 16	Q	e 35·3
Piatigorsk		65·2	308	e 10 49	+ 4	—	—	—	—	—
Scoresby Sund		65·5	354	i 10 51	+ 4	e 19 40	+ 8	12 52	PP	32·3
Tiflis		65·6	305	i 10 51	+ 3	27 25	SSS	—	—	—
Borzhomi		66·3	306	10 56	+ 4	—	—	—	—	—
Upsala		66·4	333	i 10 56s	+ 3	e 19 39	− 4	i 11 35	P_cP	e 30·3
Abastumanj		66·7	306	11 3?	+ 8	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Erevan		66·7	304	e 11 0	+ 5	—	—	—	—	—
Leninakan		66·7	305	e 10 49?	− 6	—	—	—	—	—
Zugdidi		66·8	307	11 2	+ 6	—	—	—	—	—
Arcata	Z.	67·6	55	e 11 4	+ 3	—	—	—	—	—
Hungry Horse		68·3	43	i 11 6	+ 1	—	—	i 13 45	PP	—
Shasta Dam		68·7	54	e 11 8	+ 1	—	—	e 13 39	PP	—
Theodosia		68·8	313	11 13	+ 5	—	—	—	—	—
Saskatoon		69·2	37	—	—	e 20 21	+ 5	—	—	35·3
Ukiah		69·2	56	e 11 1	− 9	e 20 19	+ 3	e 15 29	PPP	e 29·7
Mineral	Z.	69·4	54	e 11 12	0	—	—	e 39 9	P′P′	—
Bergen	E.	69·8	339	—	—	e 20 32	+ 9	28 2?	SSS	e 32·3
Yalta		69·8	313	i 11 18	+ 4	20 29	+ 6	—	—	—
Berkeley		70·6	56	e 11 19a	0	e 20 29	− 4	e 28 43	SSS	—
Butte	N.	70·6	44	e 11 20	+ 1	e 20 38	+ 5	—	—	e 29·6
Warsaw		70·7	324	e 11 23a	+ 3	e 20 37	+ 3	e 11 43	P_cP	e 32·3
Kishinev		70·9	317	11 24	+ 3	20 44	+ 8	e 14 5	PP	—
Reno		71·0	53	e 10 29a	−53	e 20 51	+14	—	—	—
Santa Clara	E.	71·1	56	e 11 43	+21	e 20 41	+ 3	—	—	e 31·3
Lwow		71·2	321	—	—	e 20 55?	+15	—	—	—
Lick	Z.	71·3	56	i 11 25k	+ 2	—	—	e 14 7	PP	—
Copenhagen		71·4	332	i 11 28a	+ 4	i 20 50	+ 8	—	—	34·3
Fresno	Z.	72·8	55	e 11 34k	+ 2	—	—	—	—	—
Skalnate Pleso		73·3	323	e 11 41	+ 6	e 21 14	+10	e 14 6	PP	—
Raciborzu		73·5	325	e 11 40?	+ 4	—	—	—	—	—
Tinemaha		73·5	55	i 11 39	+ 3	—	—	—	—	—
Potsdam		73·8	330	i 11 41a	+ 3	e 21 13	+ 4	i 12 1	P_cP	39·3
Logan		73·9	47	e 11. 42	+ 3	e 21 13	+ 3	—	—	e 36·8
Bucharest		74·1	316	e 11 48	+ 8	e 21 25	+13	—	—	30·3
Haiwee		74·3	55	i 11 44	+ 3	—	—	—	—	—
Salt Lake City		74·6	48	e 11 46	+ 3	e 21 18	0	—	—	e 41·0
Collmberg		74·7	328	i 11 46	+ 3	21 26	+ 7	14 39	PP	40·9
Istanbul		74·9	313	e 11 49	+ 5	e 21 28	+ 6	—	—	—
Budapest		75·1	323	11 51	+ 5	e 21 31	+ 7	14 49	PP	41·3
Prague		75·1	327	i 11 50a	+ 4	e 21 30	+ 6	e 12 5	pP	e 34·3
Ogyalla		75·2	324	11 53	+ 7	e 21 39	+14	e 14 40	PP	—
Timisoara		75·4	320	e 11 54	+ 7	e 21 42	+15	—	—	e 30·3
Ivigtut		75·5	4	11 52	+ 4	21 35	+ 7	21 47	SKS	35·3
Jena		75·5	328	e 11 51	+ 3	e 21 32	+ 4	e 12 8	P_cP	e 37·3
Pasadena		75·5	57	i 11 49	+ 1	i 21 28	0	e 38 49	P′P′	e 31·8
Cheb		75·9	328	e 11 56	+ 6	e 21 43	+11	e 16 56	PPP	—
Edinburgh	E.	75·9	340	—	—	e 21 19	−13	—	—	—
Kalossa	E.	75·9	323	e 11 57	+ 7	—	—	—	—	e 41·8
Ksara		76·0	303	i 11 55	+ 4	22 22	PS	—	—	—
Overton	Z.	76·1	53	e 14 27	PP	e 21 56	+21	e 39 6	P′P′	—
Riverside		76·1	57	i 11 52	+ 1	—	—	e 39 0	P′P′	—
Boulder City		76·3	54	e 11 54	+ 2	e 21 41	+ 4	e 14 35	PP	—
Pierce Ferry		76·6	53	e 11 57	+ 3	e 21 46	+ 6	i 14 54	PP	—
Sofia		76·7	317	e 11 59	+ 4	e 21 48	+ 7	—	—	—
De Bilt		76·8	333	i 11 59a	+ 4	e 21 49	+ 7	e 30 19?	SSS	e 35·3
Zagreb		77·7	323	e 12 6	+ 6	e 22 0	+ 8	—	—	e 30·9
Stuttgart		78·1	329	e 12 7a	+ 5	e 22 4	+ 8	e 12 21	P_cP	e 41·3
Karlsruhe		78·2	329	i 12 7	+ 4	e 22 7	+10	—	—	e 42·3
Strasbourg		78·8	330	e 12 11a	+ 5	e 22 14	+10	e 15 19	PP	e 41·3
Triest		78·8	324	i 12 7	+ 1	i 22 14	+10	i 14 51	PP	e 42·3
Kew		79·1	335	i 12 12a	+ 4	i 22 14	+ 7	e 15 13	PP	e 36·3
Rathfarnham Castle		79·1	340	i 12 13	+ 5	e 22 21	+14	e 15 3	PP	e 38·3
Zürich		79·5	328	e 12 13a	+ 3	e 22 16	+ 5	e 14 54	PP	—
Chur		79·6	327	e 12 14a	+ 4	—	—	—	—	e 40·3
Basle		79·8	329	e 12 15	+ 3	e 22 20	+ 6	e 14 44	PP	—
Salo		80·2	326	i 12 20	+ 6	—	—	e 15 32	PP	—
Neuchatel		80·5	329	e 12 19	+ 4	—	—	—	—	—
Paris		80·5	333	i 12 19	+ 4	e 22 29	+ 7	e 15 26	PP	e 40·3
Padova		80·6	325	e 12 19	+ 3	e 22 34	+11	—	—	—
Bologna		80·8	326	e 12 21a	+ 4	e 23 12	PS	—	—	—
Pavia	Z.	81·1	327	e 12 19?	+ 1	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		81·2	54	i 12 22	+ 3	e 22 32	+ 3	e 15 31	PP	e 35·5
Taranto		81·3	319	12 31	+11	22 51	+21	15 31	PP	e 42·0
Florence Arc.		81·4	325	12 23	+ 3	e 22 43	+12	—	—	—
Florence Xim.		81·4	325	i 12 27	+ 7	i 22 48	+17	—	—	—
Prato		81·4	325	e 12 26	+ 6	e 22 52	+21	—	—	—
Helwan		81·5	303	i 12 22k	+ 1	22 37	+ 5	15 32	PP	—
Rome		82·4	323	e 12 28a	+ 3	i 22 51	+10	e 15 43	PP	e 39·8
Clermont-Ferrand		82·9	331	i 12 34	+ 6	e 23 1	+15	e 15 49	PP	45·3
Seven Falls	E.	86·0	20	12 47	+ 4	23 15	− 2	—	—	42·3
Shawinigan Falls	N.	86·0	21	e 12 46	+ 3	—	—	—	—	
Ottawa	Z.	86·2	24	12 47	+ 3	—	—	—	—	43·3
Auckland	N.	86·3	152	e 7 19?	?	—	—	—	—	—
St. Louis		86·8	37	i 12 49	+ 2	e 23 17	[+ 4]	i 24 30	PS	—
Cleveland		87·8	29	i 12 52a	0	i 23 36	+ 2	e 24 28	PS	42·7
Tortosa		88·1	330	13 3	+ 9	i 23 36	− 1	24 39	PS	e 41·3
Pennsylvania	E.	89·7	28	—	—	e 23 33	[+ 2]	e 24 30	PS	—
Harvard		90·1	22	i 13 5	+ 2	e 23 59	+ 4	e 25 5	PS	e 38·7
Weston		90·2	22	i 12 36	−28	i 24 3	+ 7	—	—	e 46·4
Wellington		90·3	155	e 5 19?	?	—	—	—	—	—
Kaimata	N.E.	90·4	157	e 13 8	+ 4	—	—	—	—	—
Toledo		90·6	332	i 13 8	+ 3	e 23 54	− 6	e 16 41	PP	41·7
Alicante		90·7	330	13 46	+40	—	—	16 53	PP	e 44·0
City College, N.Y.		90·9	24	e 13 9	+ 2	e 24 10	+ 7	e 25 12	PS	e 36·6
Fordham		90·9	24	e 13 8	+ 1	e 24 4	+ 1	e 23 42	SKS	49·8
Philadelphia		91·3	25	e 16 27	PP	e 23 44	[+ 4]	e 24 12	S	e 39·5
Washington		91·7	27	e 13 14	+ 4	—	—	—	—	e 55·4
Granada		92·8	331	i 13 18k	+ 2	24 9	−10	i 17 9	PP	i 44·0
Malaga	Z.	93·5	331	i 13 21a	+ 2	25 17	PS	16 53	PP	49·9
Bermuda		101·4	20	e 23 59	?	—	—	—	—	e 50·5
Tamanrasset	Z.	101·5	317	e 13 59	+ 4	—	—	e 18 6	PP	—
Galerazamba		117·6	38	—	—	(37 19)	SSP	—	—	37·3
Pretoria	Z.	122·1	264	e 19 33	[+36]	—	—	—	—	—
Pietermaritzburg	Z.	122·7	258	e 19 0	[+ 2]	—	—	—	—	—
Bogota		123·5	40	e 19 5	[+ 5]	e 26 16	[+15]	e 31 3	PS	—
La Paz		144·5	48	i 19 42	[+ 4]	29 39	{− 8}	i 22 51	PP	71·8

Additional readings :—
Nanking iPPPZ =5m.16s., iSZ =8m.20s., P_cP?Z =8m.43s., eQ =9m.26s.
College ePPP =10m.39s., iS =14m.53s., eSS =16m.39s., ePKP,PKP? =39m.22s.
Calcutta PPE =10m.43s., PPPE =11m.29s., P_cSE =14m.19s., QE =19m.8s.
New Delhi SSN =20m.0s., QN =20m.16s.
Poona PPE =12m.24s., PPPE =13m.54s., P_cPE =14m.32s., PSE =18m.46s., PPSE = 19m.1s., S_cSE =19m.50s., SSE =22m.32s., SSSE =25m.23s., QE =26m.11s.
Bombay SSE =22m.23s.
Seattle e =10m.56s., 11m.11s., 11m.44s., 22m.11s., and 28m,24s,
Scoresby Sund 15m.1s., S_cS =20m.49s., SS =24m.7s., SSS =27m.7s.
Upsala ePPE =13m.22s.?, iE =13m.42s., ePPP?N =14m.46s., ePPPE =14m.55s., eSE =19m.45s., eN =21m.43s., eSSE =23m.43s., eN =24m.57s., eSSSE =27m.7s., eSSS?N =27m.19s.
Arcata eEN =11m.21s.
Hungry Horse ePKP,PKP =38m.56s., iPKP,PKP =39m.16s.
Shasta Dam ePKP,PKP =38m.56s.
Mineral iZ =11m.23s.
Berkeley iZ =11m.35s. and 12m.15s.
Warsaw ePE =iPZ =11m.27s., eZ =11m.36s., ePP =13m.59s., ePPPEZ =15m.45s., eZ =17m.17s. and 18m.9s., P_cSZ =19m.30s., eSE =20m.43s., ePSZ =21m.5s., e = 24m.16s., eSSEZ =24m.38s.
Kishinev eSSS =28m.43s.
Lick iZ =12m.14s.
Fresno iNZ =11m.47s.
Skalnate Pleso eSN =21m.19s., e =25m.25s., eSSS =29m.43s.
Potsdam ePEN =11m.45s., eE =12m.13s., eZ =15m.5s., eSZ =21m.20s., ePSZ =21m.59s.
Haiwee iZ =11m.56s.
Collmberg PPPEN =15m.35s. and many other readigs without phase.
Budapest SN =21m.39s., eN =36m.49s.
Prague epPE =12m.9s., e =12m.24s., ePP =14m.36s., e =15m.17s., eSS =26m.31s.
Ogyalla e =15m.39s. and 16m.19s., eSS =26m.37s., eSSSE =29m.55s.
Jena ePPE =14m.44s., ePPN =14m.58s.
Pasadena iZ =12m.2s. and 12m.13s.
Cheb e =12m.19s., 12m.34s., and 14m.44s.

Continued on next page.

Riverside iZ =12m.11s.
Boulder City ePKP,PKP =38m.56s.
Pierce Ferry ePKP,PKP =38m.51s.
Zagreb eSE =18m.14s.
Stuttgart eZ =12m.49s., 13m.12s. and 13m.19s., ePPZ =15m.0s., ePPP =17m.2s., eSS =27m.35s., eSSS =30m.49s.
Strasbourg i =12m.52s., e =12m.55s., i =13m.23s., e =14m.5s., ePPP =16m.45s., e =18m.19s. and 21m.47s., ePS =23m.22s., e =24m.1s., eSS =27m.23s., e =28m.36s., eSSS =30m.41s., e =35m.51s. and 36m.7s.
Triest iPS =22m.52s., i =31m.26s.
Kew iNZ =12m.19s., ePPP? =18m.13s., iSKS =22m.54s., eEN =25m.1s., eSSEN =28m.11s.
Rathfarnham Castle iZ =12m.39s., e =18m.2s., eEN =25m.21s. and 29m.11s.
Basle e =13m.32s.
Salo eZ =12m.26s., 12m.47s., and 13m.17s., eE =13m.27s.
Paris i =12m.24s. and 18m.43s., ePS =23m.12s., eSSS =30m.58s., e =31m.46s., 34m.42s., and 38m.22s.
Padova eE =13m.26s., eEN =14m.9s.
Tucson i =12m.58s., eSSS =31m.20s.
Helwan eZ =12m.52s.
Rome ePS =23m.49s., eSS? =27m.51s., eSSS =31m.59s.
Clermont-Ferrand ePS =23m.57s., eSSS =31m.49s.
St. Louis i =13m.3s.
Cleveland iPZ =12m.55s., iPPSN =24m.41s.
Tortosa SS?N =28m.55s.
Pennsylvania ePPSE =25m.4s.
Harvard e =13m.33s.
Fordham e =25m.16s.
Philadelphia ePPS =25m.20s., e =35m.22s.
Granada PS =25m.56s., SS =30m.28s., SSS =32m.48s.
Malaga iZ =20m.41s.
Tamanrasset ePPPZ =20m.25s.
Pretoria eZ =17m.57s.
Bogota eSKPEN =21m.5s.
La Paz ePKPZ =19m.19s., iP$_c$SP? =31m.33s., iPPS =35m.43s., iSS =41m.54s., eSSS =46m.59s.
Long waves were also recorded at Aberdeen, Barcelona, Galerazamba, Halifax, Chicago, and Lincoln.

June 27d. Readings also at 0h. (near Istanbul), 3h. (Pierce Ferry), 5h. (Ashkabad (2)), 7h. (Alicante), 8h. (Pierce Ferry and near Fort de France), 9h. (Pasadena, Tinemaha, Tucson, Mineral, and near La Paz), 10h. (Pasadena, Riverside, Tucson, Boulder City, Overton, Pierce Ferry, Lick, Mineral, Shasta Dam, Hungry Horse, College, and near Fergana), 11h. (Tucson, Overton, Pierce Ferry, College, Alicante, and Ksara), 12h. (Huancayo (2)), 13h. (Warsaw, Chur, Pietermaritzburg, Pretoria, Shasta Dam, Hungry Horse (2), near Overton, and Pierce Ferry), 16h. (Guam, Pierce Ferry, Shasta Dam, Hungry Horse, College, and Tamanrasset), 17h. (Shemakla), 19h. (Tamanrasset, Overton, Pierce Ferry, Mineral, Logan, near Butte, and near Fort de France), 20h. (Athens), 21h. (Pierce Ferry, Shasta Dam, Victoria, and College), 23h. (Columbia, Overton, and near Boulder City),

June 28d. 4h. 31m. 0s. Epicentre 44°·8N. 110°·5W.

$A = -·2493$, $B = -·6668$, $C = +·7023$; $\delta = 0$; $h = -3$;
$D = -·937$, $E = +·350$: $G = -·246$, $H = -·658$, $K = -·712$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman	N.	1·0	337	e 0 21	0	—	—	—	—	e 0·6
Butte	N.	1·9	310	e 0 34	0	e 0 56	− 3	—	—	—
Logan		3·2	197	i 0 51	− 1	e 1 37	+ 5	—	—	e 2·0
Hungry Horse		4·3	327	i 1 9	+ 1	—	—	i 1 20	P*	e 2·0
Reno		8·7	236	e 2 42k	P*	e 4 32	S*	e 3 8	P$_g$	—
Overton	z.	8·8	201	e 2 9	− 2	—	—	—	—	e 4·3
Pierce Ferry		9·1	198	e 2 15	+ 1	—	—	—	—	e 6·4
Mineral	z.	9·3	245	e 2 28	+11	—	—	e 2 48	P*	—
Boulder City		9·4	202	e 2 7	−11	—	—	—	—	e 4·8
Victoria	z.	9·6	297	e 2 22	+ 1	—	—	e 4 58	S*	—
Shasta Dam		9·7	249	e 2 24	+ 2	—	—	e 2 52	P*	—
Tinemaha	z.	9·7	220	e 2 51	P*	—	—	—	—	—
Riverside	z.	12·0	208	e 2 55	0	—	—	—	—	—
Tucson		12·5	181	e 3 5	+ 3	—	—	—	—	e 6·2

Additional readings :—
Reno eE =4m.6s.
Long waves were also recorded at Berkeley and Seattle.

June 28d. 16h. 23m. 37s. Epicentre 1°·0N. 98°·5E. (as on 1946, April 3d.).

$A = -·1478$, $B = +·9889$, $C = +·0173$; $\delta = +7$; $h = +7$;
$D = +·989$, $E = +·148$; $G = -·003$, $H = +·017$, $K = -1·000$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Djakarta		11·0	131	e 2 49	+ 7	e 5 43	L	—	—	(e 5·7)
Bandong		12·0	131	—	—	e 5 34	+23	—	—	—
Bombay	E.	30·8	307	e 10 8	?	—	—	—	—	e 14·4
Nanking		36·3	29	7 8	+ 1	e 11 56	−52	—	—	—
Naryn		45·1	337	i 8 22	+ 2	—	—	—	—	—
Przhevalsk		45·1	341	i 8 22	+ 2	—	—	—	—	—
Obi-garm		45·9	330	i 8 25	− 1	i 15 6	− 5	i 8 39	pP	—
Andijan		46·1	332	e 8 29	+ 1	i 15 14	0	—	—	—
Fergana		46·1	332	i 8 28	0	—	—	—	—	—
Almata		46·3	339	8 30	+ 1	e 15 18	+ 2	e 8 45	pP	—
Stalinabad		46·3	328	i 8 29	0	i 15 12	− 4	e 8 45	pP	—
Frunse		46·9	337	i 8 36	+ 2	e 15 28	+ 3	—	—	—
Samarkand		48·0	327	e 8 43?	0	e 15 38?	− 3	—	—	—
Tashkent		48·0	331	i 8 41	− 2	i 15 41	0	e 8 59?	pP	—
Mary		49·6	322	e 8 57	+ 2	—	—	—	—	—
Vladivostok		51·5	32	i 9 8	− 1	e 16 25	− 4	i 9 23	pP	—
Ashkabad		52·1	321	e 9 13	− 1	—	—	—	—	—
Brisbane	z.	59·5	123	i 10 1	− 6	—	—	—	—	—
Shemakla		59·9	318	10 16	+ 6	—	—	—	—	—
Tiflis		63·0	317	i 10 29	− 2	e 18 57	− 4	—	—	—
Sverdlovsk		63·4	338	i 10 32	− 2	19 2	− 4	—	—	—
Zugdidi		65·3	318	e 10 46	0	—	—	—	—	—
Ksara		66·9	306	(e 10 56)	0	—	—	—	—	—
Sotchi		67·1	318	e 10 52	− 5	—	—	—	—	—
Yalta		71·2	317	e 11 22	− 1	—	—	—	—	—
Pretoria	z.	72·8	243	e 11 29	− 3	—	—	—	—	—
Moscow		73·2	330	e 11 34	− 1	e 20 58	− 4	—	—	—
Istanbul		73·9	313	i 11 38	− 1	e 21 6	− 4	—	—	—
Grahamstown		75·5	236	e 11 53	+ 5	—	—	—	—	—
Prague		85·4	320	i 12 39	− 1	—	—	e 12 51	pP	—
Collmberg	z.	86·4	321	e 12 44	− 1	—	—	e 12 58	pP	—
Potsdam	z.	86·4	323	e 12 44	− 1	—	—	—	—	—
Copenhagen		86·9	326	i 12 47	− 1	—	—	—	—	—
Jena		87·3	320	e 12 48	− 2	—	—	e 13 2	pP	—
Stuttgart	z.	88·8	319	e 12 56	− 1	—	—	—	—	—
Strasbourg		89·7	319	i 13 0	− 1	—	—	—	—	—
Tamanrasset		92·4	293	i 13 13a	− 1	—	—	i 13 24	pP	—
Clermont-Ferrand		93·1	316	e 13 17	0	—	—	—	—	—
College		99·0	23	e 13 41	− 3	—	—	e 17 38	PP	—
Hungry Horse		123·3	25	i 18 57	[− 2]	—	—	—	—	—
Shasta Dam		124·3	37	i 19 0	[− 1]	—	—	e 20 44	PP	—
Mineral	z.	125·0	36	i 19 1k	[− 1]	—	—	—	—	—
Berkeley	z.	126·1	39	i 19 3a	[− 1]	—	—	—	—	—
Lick	z.	126·8	39	e 19 5a	[− 1]	—	—	—	—	—
Tinemaha	z.	129·1	38	i 19 10	[0]	—	—	i 22 26	PKS	—
Haiwee	z.	129·8	38	i 19 12	[0]	—	—	—	—	—
Pasadena	z.	130·9	41	i 19 13	[− 1]	—	—	i 22 32	PKS	—
Riverside	z.	131·6	40	i 19 13	[− 2]	—	—	e 22 33	PKS	—
Overton	z.	131·7	35	i 19 16	[+ 1]	—	—	i 22 35	PKS	—
Boulder City		131·9	36	e 19 15	[− 1]	i 22 37	PKS	e 21 35	PP	—
Pierce Ferry		132·3	35	e 19 17	[+ 1]	—	—	e 22 39	PKS	—
Palomar	z.	132·3	40	i 19 16	[0]	i 22 38	PKS	e 21 17	PP	—
Harvard		135·8	349	i 19 23	[0]	—	—	—	—	—
Tucson		136·7	37	e 19 21	[− 3]	e 22 53	PKS	e 21 59	PP	—

Additional readings and note :—
Obi-garm isS = 15m.28s.
Almata ePP = 10m.18s., pPP = 10m.36s.
Ksara eP? = 7m.48s., true P is given as PP?.
Prague i = 13m.2s., e = 13m.9s., 13m.27s., 13m.40s., 14m.30s., and 15m.9s.
Strasbourg e = 14m.44s.
Tamanrasset eZ = 13m.55s.
College e = 17m.3s.
Palomar iZ = 22m.51s.

June 28d. 23h. 27m. 12s. Epicentre 43°·1N. 2°·6E.

Intensity VII at Lanet and Camplong d'Aude; VI-VII at Fabrezan, Tournisson, Fontcouverte, Taurize, and Puisserguier; VI at Viella, Rialp (Gerona province), Figueras, Gerona, and Lloret del Mar. Epicentre as adopted, macroseismic radius 150km.

E. Fontseré.
Los tremblores de tierra catalanes del año 1950. R. Acad. de Ciencias y Artes de Barcelona. Observatorio Fabra, Bol. No. 39, Barcelona, 1952, pp. 345, 346, with macroseismic chart for Spanish territory.

J. P. Rothé et N. Dechevoy.
La Séismicité de la France de 1940 à 1950. Annales de l'Institut de Physique du Globe de Strasbourg, 3e partie Geophysique. Nouvelle série tome VII, Le Puy, 1954, pp. 58, 59, with Isoseismic chart.

$A = +\cdot7317$, $B = +\cdot0332$, $C = +\cdot6808$; $\delta = -2$; $h = -3$;
$D = +\cdot045$, $E = -\cdot999$; $G = +\cdot680$, $H = +\cdot031$, $K = -\cdot732$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Barcelona		1·7	192	0 32	+ 1	0 54	0	—	—	1·0
Bagnères		1·8	269	e 0 46	P_g	i 1 8	S_g	—	—	—
Clermont-Ferrand		2·7	8	i 0 47	+ 2	i 1 22	+ 3	i 0 54	P_g	—
Tortosa		2·7	214	i 0 52	P_g	i 1 28	S*	1 33	S_g	1·8
Neuchatel		5·0	37	e 1 16	− 2	e 2 41	S_g	—	—	e 3·1
Alicante		5·3	207	1 8	−14	1 44	P_g	—	—	—
Paris		5·7	359	1 52	P_g	e 2 24	−11	i 3 6	S_g	—
Toledo	z.	5·9	239	i 1 30	− 1	i 2 34	− 6	i 2 1	P_g	3·2
Zürich		6·0	43	1 30	− 2	e 3 15	S_g	e 1 56	P_g	—
Chur		6·2	50	e 1 40	+ 5	e 3 29	S_g	—	—	—
Algiers Univ.	z.	6·3	177	i 1 34 a	− 2	—	—	e 1 52	P*	—
Strasbourg		6·6	32	i 2 7 k	P_g	i 3 22	S*	i 3 43	S_g	—
Ravensburg		6·8	44	e 2 16	P_g	e 3 24	S*	e 3 54	S_g	—
Karlsruhe		7·2	33	e 2 21	P_g	e 3 56?	S_g	—	—	—
Stuttgart	z.	7·3	37	e 2 10	P*	e 3 14	− 1	e 2 25	P_g	—
Granada		7·6	221	—	—	i 4 2	S_g	—	—	—
Malaga	z.	8·3	222	e 2 13	+ 9	e 3 47	+ 7	e 4 33	SS	5·3
Triest		8·4	69	—	—	e 3 58	+15	—	—	—
Kew		8·6	348	—	—	i 3 37	−11	i 4 40	S_g	i 4·8
Jena		10·0	35	e 3 11	P_g	e 4 26	+ 4	e 5 21	S_g	e 5·6
Prague		10·7	45	e 3 1	P_g	e 4 40	+ 1	e 5 16	S*	—
Collmberg	z.	10·8	37	e 3 26	P_g	e 4 58	S*	e 5 30	S_g	—
Taranto		11·2	99	—	—	e 5 13	S*	—	—	—
Rathfarnham Castle		11·8	333	i 4 2	?	i 5 14	+ 8	i 5 27	SS	e 6·2
Raciborzu		12·8	52	—	—	e 7 9	?	e 10 12	P_cP	—
Tamanrasset	z.	20·4	172	4 41	0	—	—	—	—	—

Additional readings :—
Clermont-Ferrand $iS_g = 1m.36s.$
Tortosa $P_g?E = 0m.58s.$, $SN = 1m.44s.$
Paris $e = 2m.17s.$ and $2m.57s.$
Toledo $iS_gZ = 3m.4s.$
Algiers Univ. $eZ = 1m.40s.$ and $1m.45s.$
Strasbourg $i = 2m.39s$ and $3m\ 14s.$, $e = 3m.18s.$ and $3m.31s.$, $i = 3m.36s.$ and $3m.40s.$
Ravensburg $e = 3m.44s.$ and $4m.1s.$
Stuttgart $eZ = 2m.20s.$ and $2m.36s.$, $eP_gZ = 2m.40s.$, $eZ = 3m.0s.$ and $3m.7s.$, $eSZ = 3m.26s.$, $eZ = 3m.30s.$ and $3m.38s.$, $eS^*?Z = 3m.42s.$, $eZ = 3m.54s.$, $iZ = 3m.57s.$, $e = 4m.0s.$, $iZ = 4m.4s.$, $iS_gZ = 4m.8s.$, $iZ = 4m.14s.$, $4m.20s.$, $4m.24s.$, and $4m.37s.$
Jena $eN = 3m.30s.$, $eE = 3m.33s.?$, $5m.42s.$, and $5m.51s.$
Prague $e = 4m.13s.$, $5m.33s.$, $5m.40s.$, and $5m.49s.$, $eS_g? = 5m.52s.$
Collmberg $eZ = 3m.39s.$, $4m.26s.$, $5m.41s.$, $5m.56s.$, and $6m.5s.$, $iS_g?Z = 6m.21s.$, $eZ = 6m.34s.$, $6m.55s.$, and $8m.32s.$
Raciborzu $eN = 7m.27s.$, $eZ = 8m.30s.$, $eS_cS?Z = 16m.6s.$
Long waves were also recorded at Rome, De Bilt, Potsdam, and Warsaw.

June 28d. 23h. 31m. 24s. Epicentre 46°·3N. 153°·8E. (as on 1945, June 20d.).

$A = -·6221$, $B = +·3061$, $C = +·7206$; $\delta = -3$; $h = -4$;
$D = +·442$, $E = +·897$; $G = -·647$, $H = +·318$, $K = -·693$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m.	s.	m.
Mizusawa	E.	11·7	237	5 5	S	(5 5)	+ 1	—	—	—
College		36·2	38	e 7 2	− 4	e 12 38	− 9	—	—	e 15·4
Victoria	Z.	53·4	56	e 9 26	+ 2	—	—	—	—	—
Shasta Dam		58·3	63	e 9 59	0	—	—	—	—	—
Hungry Horse		58·7	52	i 10 0	− 2	—	—	—	—	—
Mineral	Z.	59·0	63	e 10 5k	+ 1	—	—	—	—	—
Lick	Z.	60·8	66	e 9 47	−29	—	—	—	—	—
Tinemaha	Z.	63·1	64	e 10 32	0	—	—	—	—	—
Scoresby Sund		63·5	359	e 10 32	− 2	e 19 4	− 3	—	—	34·6
Haiwee	Z.	63·9	64	e 10 47	+10	—	—	—	—	—
Mount Wilson	Z.	65·0	67	e 10 45	+ 1	—	—	—	—	—
Riverside	Z.	65·6	67	e 10 46	− 2	—	—	—	—	—
Overton	Z.	65·8	62	i 10 51	+ 2	—	—	—	—	—
Boulder City		65·9	63	e 10 49	− 1	—	—	—	—	—
Pierce Ferry		66·3	62	e 10 52	0	—	—	—	—	—
Tucson		70·9	64	e 11 20	− 1	—	—	—	—	—
Copenhagen		73·3	339	i 11 35	0	—	—	—	—	40·6
Warsaw		73·8	333	e 11 38	0	e 17 57	?	—	—	e 41·6
Potsdam	Z.	76·1	338	i 11 50k	− 1	—	—	—	—	e 44·6
Collmberg	Z.	77·1	337	i 11 55	− 2	—	—	—	—	—
Jena	N.	77·8	337	e 11 59	− 2	—	—	—	—	—
Prague		77·8	336	e 12 0	− 1	e 21 54	+ 1	e 13 1	PP	e 41·6
De Bilt		78·3	342	e 12 2	− 1	—	—	—	—	e 43·6
Istanbul		80·0	322	e 12 14	+ 1	—	—	—	—	49·6
Stuttgart		80·4	338	e 12 14a	− 1	—	—	e 12 20	P_cP	e 41·6
Strasbourg		81·0	339	i 12 17	− 1	—	—	—	—	e 42·1
Paris		82·0	342	e 12 23	0	—	—	—	—	e 41·6
Ksara		82·6	312	e 12 9	−17	e 23 41	PS	—	—	—
Clermont-Ferrand		84·8	340	e 12 38	+ 1	—	—	—	—	45·6
Taranto		85·3	329	e 13 1	+21	—	—	—	—	—
Rome		85·7	333	e 12 43	+ 1	—	—	—	—	—
Tamanrasset	Z.	105·5	330	e 18 3	[−21]	—	—	—	—	—

Additional readings :—
Mizusawa SE =10m.24s.
Lick iZ =10m.25s., eZ =10m.48s., iZ =11m.15s.
Tinemaha eZ =10m.43s.
Mount Wilson eZ =10m.55s.
Riverside eZ =10m.56s.
Potsdam eZ =11m.55s.
Collmberg eZ =11m.59s. and 12m.7s.
Jena eN =12m.23s., eEN =12m.46s.
Prague e =12m.18s. and 12m.40s., ePPP =14m.45s., e =21m.19s.
Strasbourg i =12m.26s., 12m.59s., and 13m.9s.
Long waves were also recorded at Granada and Kew.

June 28d. Readings also at 0h. (Tacubaya), 4h. (near Ashkabad (2)), 6h. (Overton, College, and near La Paz), 7h. (College), 10h. (Bandong and Djakarta), 12h. (Tacubaya), 13h. (Pasadena, Riverside (2), Boulder City, Overton, Pierce Ferry, College, Tucson (2), near Oaxaca, Puebla, Tacubaya, and Vera Cruz), 14h. (Brisbane), 21h. (College and near Messina (2)), 23h. (Fergana and near Andijan).

June 29d. 0h. 15m. 35s. Epicentre 24°·7S., 70°·2W. Depth of focus 0·005.
(as on 1946, May 10d.).

Intensity IV between 27° and 28°S. latitudes.
Epicentre 25°S. 70°W. (Strasbourg). Depth 100km.

F. Greve.
Boletin del año 1950, Instituto sismologico, Santiago, 1951, p. 6.

$A = +·3081$, $B = -·8558$, $C = -·4155$; $\delta = -4$; $h = +3$;
$D = -·941$, $E = -·339$; $G = -·141$, $H = +·391$, $K = -·910$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		8·4	14	1 59	− 3	i 3 54	+18	i 2 17	pP	4·5
Huancayo		13·5	338	i 3 20	+10	e 6 1	sS	e 3 36	pP	—
La Plata		14·7	137	3 19	− 7	—	—	3 33	pP	6·1
Bogota		29·4	353	e 5 58	− 1	e 10 54	+ 7	e 12 11	SS	—
Chinchina		29·9	351	i 6 1	− 3	e 10 52	− 3	i 6 26	PP	—
Tacubaya		52·1	325	i 9 24a	pP	—	—	i 10 13	P_cP	—
Washington		63·6	355	e 10 40	pP	—	—	—	—	—
Weston		66·7	359	i 10 45	− 1	—	—	i 11 7	pP	—
Harvard		66·9	359	i 10 47	0	i 11 9	sP	i 11 3	pP	—
Tucson		68·6	324	i 10 59	+ 1	i 11 22	sP	i 11 14	pP	—
Ottawa	z.	69·9	357	e 11 5	− 1	—	—	—	—	—
Pierce Ferry		73·3	325	i 11 28	+ 2	—	—	i 11 43	pP	—
Boulder City		73·6	324	e 11 29	+ 1	—	—	i 11 45	pP	—
Riverside	z.	73·6	321	i 11 28a	0	i 11 50	sP	i 11 43	pP	—
Overton	z.	73·8	325	i 11 31	+ 2	—	—	i 11 47	pP	—
Pasadena		74·2	321	i 11 32a	0	i 11 55	sP	i 11 48	pP	—
Haiwee	z.	75·5	322	i 11 56	pP	i 12 3	sP	—	—	—
Tinemaha	z.	76·3	322	i 11 44	0	i 12 7	sP	i 12 0	pP	—
Logan		76·5	331	e 12 0	pP	—	—	—	—	—
Fresno		76·9	321	i 12 3a	pP	e 12 9	sP	—	—	—
Lick	z.	78·4	321	i 11 57k	+ 2	i 12 19	sP	i 12 13	pP	—
Berkeley	z.	79·1	321	e 12 16	pP	—	—	—	—	—
Mineral	z.	80·5	323	e 12 6a	− 1	i 12 29	sP	i 12 22	pP	—
Shasta Dam		81·1	323	i 12 9	− 1	—	—	i 12 25	pP	—
Grahamstown		82·1	123	i 12 27	pP	—	—	—	—	—
Hungry Horse		82·6	333	i 12 18	+ 1	—	—	i 12 34	pP	—
Pretoria	z.	86·6	117	e 12 37	0	—	—	—	—	—
Victoria	z.	86·9	328	e 12 41	+ 2	(17 25)	PPP	e 12 56	P_cP	17·4
Malaga	z.	87·0	48	i 12 42a	+ 3	23 12	+ 1	e 16 8	PP	39·7
Tamanrasset	z.	87·3	64	i 12 41a	0	—	—	e 13 3	pP	—
Algiers Univ.	z.	92·1	51	i 13 3a	0	—	—	e 13 32	pP	—

Additional readings :—
La Paz i = 4m.1s., iSS = 4m.11s.
Bogota eP_cPEN = 9m.28s., eS_cPEN = 14m.27s.
Ottawa eZ = 11m.10s., iZ = 12m.25s.?
Overton iZ = 12m.26s.
Fresno eZ = 12m.27s.
Lick iZ = 12m.35s.
Grahamstown i = 12m.57s.
Pretoria iZ = 13m.7s.
Tamanrasset iPPZ = 16m.4s., ipPPZ = 16m.26s.
Algiers Univ. ePPZ = 17m.0s.

June 29d. Readings also at 0h. (Grozny, near Shemakla, Frunse, Almata, Przhevalsk, Samarkand, Naryn, near Andijan, Fergana, Mary, and Ashkabad), 3h. (Tacubaya, Vera Cruz, Chinchina, Tucson (2), Boulder City, Pierce Ferry (2), Pasadena (2), Mount Wilson, Riverside (2), Tinemaha (2), Berkeley, Shasta Dam (2), Seattle, College, and Scoresby Sund), 4h. (College, Hungry Horse, Shasta Dam, Pasadena, Riverside, Tinemaha, Boulder City, Overton, Pierce Ferry, Scoresby Sund, Stuttgart, and Tamanrasset), 5h. (Scoresby Sund (3)), 6h. (Bucharest and Scoresby Sund), 7h. (Pierce Ferry and La Paz), 8h. (Pasadena, Riverside, Tinemaha, Hungry Horse, Overton, Pierce Ferry, Tucson, and near Obi-garm), 9h. (Seven Falls, Shawinigan Falls, Ottawa, and near Messina), 11h. (Theodosia), 12h. (Algiers Univ., Pierce Ferry, and Tucson), 14h. (near Yalta), 16h. (Lick, Frunse, Samarkand, near Andijan, Fergana, and Obi-garm), 17h. (Boulder City, Pierce Ferry, and Shasta Dam), 19h. (Pierce Ferry and near Abastumanj), 20h. (Rathfarnham Castle and Shasta Dam).

June 30d. 10h. 54m. 12s. Epicentre 6°·2S. 75°·3W. Depth of focus 0·010.
(as on 1942, November 11d.).

$A = +·2523$, $B = -·9617$, $C = -·1073$; $\delta = +4$; $h = +7$;
$D = -·967$, $E = -·254$: $G = -·027$, $H = +·104$, $K = -·994$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		5·8	175	i 1 26	+ 1	e 2 30	− 1	e 1 58	pP	—
Bogota		10·8	6	i 2 39	+ 6	e 4 52	+20	—	—	e 5·7
Chinchina		11·1	358	e 2 40	+ 3	e 5 6	+26	—	—	—
La Paz		12·4	145	2 51	− 3	i 5 26	+15	i 5 54	pS	7·1
Washington		44·9	358	e 8 8	+ 1	—	—	—	—	—
Weston		48·5	4	e 8 34	− 1	—	—	—	—	—
Harvard		48·6	4	i 8 34	− 2	—	—	i 9 8	pP	—
Tucson		51·0	321	i 8 55	+ 1	—	—	i 9 21	pP	—
Ottawa	z.	51·4	0	i 8 56	− 1	—	—	e 9 29	pP	—
Pierce Ferry		55·6	323	i 9 29	+ 1	—	—	i 10 24	sP	—
Palomar	z.	55·7	318	i 10 0	pP	—	—	—	—	—
Boulder City		56·0	322	e 9 31	0	—	—	e 9 49	pP	—
Overton	z.	56·1	323	i 9 33	+ 1	—	—	i 10 18	pP	—
Riverside	z.	56·4	318	i 9 32	− 2	—	—	e 10 6	pP	—
Pasadena		57·0	318	i 9 38	0	—	—	e 10 10	pP	—
China Lake	z.	57·6	321	i 9 43	+ 1	—	—	e 10 16	pP	—
Tinemaha		58·8	321	e 9 51	+ 1	—	—	—	—	—
Lick	z.	61·2	319	i 10 7k	0	—	—	i 10 36	pP	—
Reno	z.	61·3	323	e 10 24k	+16	—	—	—	—	—
Berkeley	z.	61·9	319	i 10 12k	0	—	—	—	—	—
Mineral	z.	62·9	322	i 10 12k	− 6	—	—	—	—	—
Shasta Dam		63·6	322	i 10 20	− 3	—	—	i 10 55	pP	—
Hungry Horse		64·1	333	i 10 26	0	—	—	—	—	—
Victoria	z.	68·8	328	e 10 56	0	—	—	—	—	—
Tamanrasset	z.	84·0	66	e 12 18	− 3	—	—	e 12 53	pP	—
College		88·2	336	i 12 40	− 1	—	—	e 13 17	pP	—

Additional readings :—
Pierce Ferry iPP = 11m.2s.
Boulder City e = 10m.27s.
Overton iZ = 10m.27s.
Pasadena eZ = 10m.24s.
Lick iZ = 10m.45s.
Tamanrasset eZ = 13m.41s.

June 30d. Readings also at 0h. (Brisbane, Pasadena, Riverside, China Lake, Tinemaha, Tucson, Boulder City, Overton, Pierce Ferry, Shasta Dam, Hungry Horse, College, Harvard, Weston, Tamanrasset, Collmberg, and Stuttgart), 1h. (Berkeley and Granada), 5h. (Hungry Horse, Pierce Ferry, and Ashkabad), 7h. (Bombay, New Delhi, and Ksara), 11h. (near Obi-garm), 13h. (Cobb River, Kaimata, Tuai, Wellington, Pierce Ferry, and Fort de France), 14h. (Strasbourg, Stuttgart, Fergana, Frunse, Samarkand, Stalinabad, near Obi-garm, Tashkent, and near Leninakan), 15h. (Ashkabad), 16h. (near Seven Falls), 17h. (Tamanrasset, Alicante, Tacubaya, Almata, Frunse, Kulyab, Obi-garm, Przhevalsk, Stalinabad, near Andijan, and Fergana), 18h. (Pasadena, Riverside, China Lake, Tinemaha, Overton, Pierce Ferry, Hungry Horse, College, and Collmberg), 20h. (near Victoria), 21h. (Pasadena, Riverside, China Lake, Tinemaha, Boulder City, Pierce Ferry, Lick, Hungry Horse, Harvard, Tacubaya, Tamanrasset, Huancayo, near La Paz, near Kulyab, Obi-garm, and Stalinabad), 22h. (Victoria, Andijan, Kulyab (3), Przhevalsk, Tashkent, near Fergana, Obi-garm (3), and Stalinabad (3)).

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

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

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

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

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