The International Seismological Summary.

1939 July, August, September.

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. for financial support, which has covered the cost of the preparation of this volume.

The Third Quarter for 1939 contains 97 determined epicentres, of which 46 are repetitions from origins determined since the introduction of the use of geocentric co-ordinates.

Cases of abnormal focal depth are noticed as below :—

July	4d. 18h.	21·0°S.	65·5°W.	0·040
	5d. 22h.	21·5°S.	180	0·070
	6d. 1h.	21·5°S.	180	0·070
	20d. 2h.	22·3°S.	179·2°W.	0·080
Aug.	1d. 15h.	51·1°N.	156·5°E.	0·005
	12d. 2h.	16·1°S.	168·3°E.	0·020
	22d. 0h.	37·7°N.	141·8°E.	0·005
	27d. 11h.	19·0°S.	170·0°E.	0·020
Sept.	5d. 6h.	45·7°N.	26·8°E.	0·020

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

KEW OBSERVATORY,
RICHMOND,
SURREY.

October, 1950.

Original 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 have been scanned and collected by SGA Storia Geofisica Ambiente (Bologna) thanks to funding provided by the Istituto Nazionale di Geofisica e Vulcanologia (Rome), in the frame of the EUROSEISMOS project.

1939 JULY, AUGUST, SEPTEMBER.

July 1d. 13h. 21m. 30s. Epicentre 2°·8N. 95°·7E. (as on 1937 July 1d.).

$A = -\cdot0992$, $B = +\cdot9939$, $C = +\cdot0485$; $\delta = +3$; $h = +7$;
$D = +\cdot995$, $E = +\cdot099$; $G = -\cdot005$, $H = +\cdot048$, $K = -\cdot999$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	16·3	285	e 4 0	+ 8	—	—	—	—	—
Kodaikanal	E.	19·5	295	i 4 29	− 2	i 8 29	SS	i 4 49	PP	—
Calcutta	N.	20·9	341	—	—	e 8 39	+ 4	—	—	—
Bombay		27·5	308	e 4 26	?	e 11 0	+30	—	—	—
Manila		27·6	63	e 5 45	− 6	10 42	+10	—	—	—
Andijan		43·3	344	e 8 7	+ 2	—	—	—	—	—
Tashkent		45·1	332	i 8 21	+ 1	15 12	+13	—	—	e 27·5
Tiflis		59·8	317	e 10 9	0	—	—	—	—	e 35·5
Sverdlovsk		60·7	340	—	—	e 18 31	− 1	—	—	28·5
Ksara		63·6	307	e 10 35	0	e 19 4	− 4	e 12 56	PP	—
Helwan		66·4	302	i 10 50	− 3	e 19 54	+11	—	—	—
Moscow		70·2	331	e 11 15	− 2	—	—	—	—	—

Additional readings :—
Kodaikanal iE = +8m.57s.
Bombay iE = +4m.34s., eEN = +4m.55s.
Helwan eE = +9m.30s.
Long waves were also recorded at Irkutsk.

July 1d. 20h. Undetermined shock :—

Tucson iP = 32m.58s.k, i = 33m.31s., 33m.47s., and 33m.59s.
Riverside iPZ = 34m.15s., iS = 36m.14s.
Mount Wilson iPZ = 34m.18s., iS = 36m.35s.
Pasadena eZ = 34m.34s., eSEN = 36m.36s., iLE = 37·4m.
Haiwee iP = 35m.4s., eS = 36m.51s.
Salt Lake City e = 36m.16s.
Ukiah e = 38m.56s.
Chicago e = 40m.23s.
Florissant iN = 40m.39s., eZ = 41m.51s., eE = 41m.54s.
St. Louis e = 40m.39s., i = 42m.0s.
Fordham eZ = 49m.31s., iZ = 50m.37s.

July 1d. Readings also at 0h. (Calcutta, Tashkent, and Sverdlovsk), 3h. (Tiflis), 7h. (Tiflis (3), Calcutta, Tashkent, Sverdlovsk, Rome, Samarkand, Triest, Ksara (2), Moscow, Irkutsk, and Lincoln), 10h. (Honolulu), 11h. (Ksara, Sverdlovsk, Helwan, Tashkent, and Tiflis), 13h. (Chicago, Philadelphia, Columbia, and Tucson), 16h. (Harvard, Andijan, and Samarkand), 17h. (Stuttgart, Strasbourg, near Basle, Neuchatel, Chur, and Zurich), 19h. (Tashkent), 22h. (Triest and Rome), 23h. (Triest).

July 2d. 15h. 49m. 47s. Epicentre 44°·0N. 16°·8E. (as on 1939 February 28d.).

$A = +\cdot6909$, $B = +\cdot2086$, $C = +\cdot6922$; $\delta = 0$; $h = -3$;
$D = +\cdot289$, $E = -\cdot957$; $G = +\cdot663$, $H = +\cdot200$, $K = -\cdot722$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest	2·7	307	1 15	S	(1 15)	− 4	1 30	S_g	—
Rome	3·8	238	e 2 26	?	e 3 35	?	—	—	e 4·3
Chur	5·8	301	e 1 33	+ 4	—	—	e 2 1	P_g	—
Moncalieri	6·6	281	e 1 24	−17	e 2 41	−17	—	—	—
Zurich	6·6	303	e 1 42	+ 1	e 2 26	−32	e 1 49	P*	—
Stuttgart	7·1	315	e 1 49	+ 1	i 2 51	−19	i 2 0	P_g	e 2·9
Basle	7·4	303	e 1 47	− 5	e 2 52	−26	e 2 36	P_g	—
Neuchatel	7·5	297	e 1 56	+ 3	e 3 1	−19	—	—	—
Jena	7·8	334	e 2 7	+ 9	e 3 0	−28	e 2 33	P_g	e 3·1
Strasbourg	7·8	310	e 2 3	+ 5	i 3 26	− 2	i 2 20	P*	—
Besançon	8·3	298	—	—	e 3 25	−15	—	—	—
Clermont-Ferrand	9·9	285	e 2 40	PP	—	—	—	—	—
Hamburg N.	10·6	337	—	—	e 4 43	+ 6	—	—	—

For Notes see next page.

NOTES TO JULY 2d. 15h. 49m. 47s.

Additional readings :—
Stuttgart e = +1m.58s., i = +2m.3s., e = +2m.23s., eS = +2m.28s., eS* = +2m.41s., iS_g = +2m.46s.
Jena eN = +2m.11s. and +2m.27s.
Strasbourg iN = +2m.14s., +2m.23s., and +2m.45s., iS_gN = +2m.52s., iSSN = +3m.5s., iSSE = +3m.16s., iZ = +3m.39s.

July 2d. 16h. Undetermined shock :—

Riverview eN = 57m.13s., eE = 57m.42s., iN = 61m.21s., iE = 61m.24s., eLN = 62·1m.
Sydney e = 57m.30s. and 61m.27s., eL = 63·0m.
Adelaide e = 59m.23s., L = 65·6m.
Manila eP = 62m.14s., SEN = 70m.10s.
Melbourne e = 63m.17s., i = 64m.37s., L = 65·0m.
Mount Wilson iP = 65m.15s.
Pasadena iPZ = 65m.15s.
Riverside iPZ = 65m.16s.
Haiwee eP = 65m.20s.
Tucson eP = 65m.38s.
Ksara 74m.0s., e = 88m.45s.
Clermont-Ferrand e = 72m.0s.
Stuttgart ePKPZ = 72m.3s., eL = 134·0m.
Strasbourg eZ = 72m.6s., iPKPZ = 72m.12s., $iPKP_2Z$ = 72m.39s., ePP = 75m.30s., eL = 122·0m.
Zurich eP = 72m.6s., e = 72m.20s.
Chur eP = 72m.7s.
Basle eP = 72m.8s.
Triest e = 72m.10s.
Kew eZ = 72m.13s. and 72m.23s., eL = 138m.
Rome eZ = 72m.14s. and 73m.4s.
Uccle eZ = 72m.17s.
Paris e = 72m.21s., L = 137m.
Irkutsk e = 76m.0s.
Sverdlovsk e = 79m.49s., L = 99·0m.
Ukiah e = 91m.5s.
Long waves were also recorded at Moscow, Baku, Harvard, and Huancayo.

July 2d. 19h. 42m. 52s. Epicentre 51°·7N. 178°·5W. (as on 1939, May 12d.).

A = −·6221, B = −·0163, C = +·7828 ; δ = +5 ; h = −6 ;
D = −·026, E = +1·000 ; G = −·782, H = −·020, K = −·622.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		20·6	38	e 4 33	−10	e 8 30	+ 1	e 8 44	SS	9·0
Sitka		25·3	60	e 5 30	0	e 9 51	− 3	—	—	e 11·0
Nagano		33·9	263	6 48	+ 1	12 10	− 1	—	—	—
Vladivostok		34·1	276	e 7 47	+59	13 8	+54	—	—	e 18·5
Victoria		34·9	73	e 6 50	− 5	e 12 20	− 7	—	—	e 15·1
Osaka		37·0	262	e 5 34	?	9 5	?	—	—	—
Kobe		37·1	262	7 14	0	13 1	0	—	—	—
Ukiah		39·8	87	—	—	e 13 46	+ 4	—	—	e 17·5
Kumamoto		41·1	264	7 49	+ 2	—	—	—	—	—
Haiwee		45·0	85	8 21	+ 2	—	—	—	—	—
Salt Lake City		45·8	77	8 26	+ 1	15 9	0	—	—	e 18·8
Pasadena		46·1	87	i 8 28	0	—	—	—	—	—
Mount Wilson		46·2	87	i 8 28	0	—	—	—	—	—
Riverside	z.	46·7	87	i 8 32	0	—	—	—	—	—
Zi-ka-wei	z.	48·0	270	e 8 43	0	—	—	—	—	24·1
Tucson		52·0	84	i 9 13a	0	—	—	e 10 16	P_cP	—
Chicago		59·1	61	e 10 6	+ 2	e 18 8	− 3	e 20 0	S_cS	e 24·7
Florissant		59·7	65	i 10 7	− 2	i 18 16	− 3	—	—	—
Manila		60·5	256	i 10 14k	0	17 42	−47	—	—	—
Sverdlovsk		61·4	328	i 10 24	+ 4	e 18 41	+ 1	—	—	27·1
Pulkovo		66·4	345	10 56	+ 3	e 19 43	0	—	—	e 38·6
Fordham		67·0	53	i 10 57a	0	e 19 49	− 1	e 20 53	PPS	—
Philadelphia		67·0	55	—	—	e 19 47	− 3	—	—	e 31·9
Moscow		68·8	339	11 8	0	e 20 8	− 3	—	—	36·5
Tashkent		70·3	312	11 15	− 2	e 20 22	− 7	—	—	e 35·0

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Copenhagen	72·6	313	e 11 31	0	20 56	0	—	—	35·1
Hamburg	74·9	355	e 11 46	+ 2	—	—	—	—	e 42·1
Uccle	77·8	359	—	—	e 21 53	0	—	—	e 38·1
Baku	79·1	325	e 12 12	+ 4	22 5	− 2	—	—	42·1
Tiflis	79·6	329	12 10	0	e 22 10	− 2	e 27 8?	SS	e 41·1
Stuttgart	79·7	356	e 12 10	− 1	e 22 12	− 1	e 15 28	PP	e 40·1
Paris	79·9	0	e 12 13	+ 1	—	—	—	—	48·1
Strasbourg	79·9	356	e 12 13	+ 1	e 22 18	+ 2	e 15 22	PP	e 40·6
Rome	86·3	352	i 12 45$_a$	0	e 23 20	0	e 18 5	PPP	—
San Juan	88·8	61	e 12 50	− 7	e 23 22	[− 4]	—	—	e 35·7
Ksara	89·7	332	13 8?	+ 7	e 25 27	PPS	—	—	45·1

Additional readings :—
Osaka iE = +7m.30s., iZ = +7m.37s., iN = +7m.43s.
Tucson iP = +9m.16s.
Florissant eN = +18m.12s.
Fordham iZ = +11m.36s.
Philadelphia eS = +19m.51s.
Tiflis eE = +22m.4s., eZ = +32m.8s.?
Rome e = +35m.53s.
San Juan eS = +23m.41s.
Long waves were also recorded at Honolulu, Kew, De Bilt, Harvard, Williamstown, Upsala, and Edinburgh.

July 2d. 23h. 46m. 20s. Epicentre 44°·0N. 16°·8E. (as on 1939 July 2d. 15h.).

Intensity VI at Tesanj ; V at Stanari, Baraci, etc.

Epicentre 44° 39′N. 18° 08′E. (Belgrade).

J. Mihailovic.

Annuaire microseismique et macroseismique, année XIX, 1939, Beograd, 1940, p.101.

A = +·6909, B = +·2086, C = +·6922 ; δ = 0 ; h = −3 ;
D = +·289, E = −·957 ; G = +·663, H = +·200, K = −·722.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sarajevo		1·2	96	i 0 23	− 1	0 39	− 2	i 0 42	S_g	—
Laibach	z.	2·6	322	e 1 4$_a$	P_g	i 1 28	S_g	—	—	—
Belgrade		2·7	73	i 0 49$_a$	P*	i 1 12	− 7	i 0 53	P_g	—
Triest		2·7	307	0 49	P*	i 1 17	− 2	0 56	P_g	—
Szeged		3·3	44	e 1 2	P*	1 31	− 4	—	—	—
Kecskemet		3·5	32	e 1 2	P*	e 1 48	S*	—	—	—
Rome		3·8	238	i 1 9	P*	e 1 56	S*	i 2 13	S_g	e 2·3
Sofia		4·9	104	e 1 22	+ 5	e 2 40	S_g	—	—	—
Chur		5·8	301	e 1 28	− 1	e 3 4	S_g	—	—	—
Zurich		6·6	303	e 1 39	− 2	e 3 32	S_g	—	—	—
Bucharest		6·7	81	—	—	2 40?	−20	e 3 31	S*	5·0
Stuttgart		7·1	315	e 1 40	− 8	e 3 15	+ 5	e 3 52	S_g	e 4·0
Basle		7·4	303	e 1 48	− 4	e 4 0	S_g	—	—	—
Neuchatel		7·5	297	e 1 50	− 3	—	—	—	—	—
Jena		7·8	334	e 1 53	− 5	e 3 16	−12	—	—	e 3·5
Strasbourg		7·8	310	e 2 29	P_g	i 3 24	− 4	i 4 17	S_g	—
Clermont-Ferrand		9·9	285	e 2 38	PPP	—	—	—	—	—
Hamburg	N.	10·6	337	—	—	5 40	S_g	—	—	—
Uccle	z.	10·8	313	—	—	e 5 44	S_g	—	—	—

Additional readings :—
Sarajevo i = +29s.
Laibach iSZ = +1m.37s., iZ = +1m.44s.
Belgrade i = +1m.25s. and +1m.29s.
Triest eS = +1m.26s., S_g = +1m.30s.
Szeged e = +1m.18s.
Stuttgart e = +2m.22s., eSN = +3m.46s., eS = +3m.49s., iZ = +3m.59s.
Strasbourg i = +4m.22s.
Long waves were also recorded at Moscow, Paris, Kew, De Bilt, Sverdlovsk, and Bidston.

July 2d. Readings also at 0h. (Pasadena, Mount Wilson, near Branner, and Tinemaha), 6h. (Wellington and New Plymouth), 8h. (near Mizusawa), 9h. (Baku, Pulkovo, Upsala, near Istanbul, Ksara, Sofia, Stuttgart, Bucharest, Moscow, De Bilt, Sverdlovsk, Strasbourg, Rome, Triest, and Hamburg), 13h. (Lincoln and Fordham), 14h. (near Berkeley), 15h. (Balboa Heights, New Plymouth, and near Wellington), 17h. (Triest), 18h. (Mount Wilson, Pasadena, Riverside, and near La Paz), 19h. (near Granada, Almeria, and Toledo), 22h. (Riverview and near Tiflis).

July 3d. 7h. 37m. 2s. Epicentre 45°·0N. 150°·7E.

$A = -\cdot6187$, $B = +\cdot3472$, $C = +\cdot7047$; $\delta = -6$; $h = -4$;
$D = +\cdot489$, $E = +\cdot872$; $G = -\cdot615$, $H = +\cdot345$, $K = -\cdot705$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa		9·2	232	e 2 16	0	3 48	−15	—	—	—
Irkutsk		31·1	301	e 7 58?	PPP	e 14 58?	?	—	—	17·0
Frunse		52·9	297	e 7 52	?	—	—	—	—	—
Sverdlovsk		54·0	317	e 8 24	−64	e 16 22	−41	e 19 56	SS	27·0
Andijan		55·4	295	e 9 37	− 1	—	—	—	—	—
Tashkent		57·1	298	e 10 28	+38	17 41	− 4	e 24 9	SSS	e 28·3
Haiwee		66·4	62	e 11 4	+11	—	—	—	—	—
Mount Wilson	Z.	67·6	64	i 11 1	0	—	—	—	—	—
Pasadena	Z.	67·6	64	i 11 0	− 1	—	—	—	—	—
Tiflis		71·2	311	e 11 23	0	—	—	—	—	e 39·0
Tucson		73·4	61	11 36	0	—	—	—	—	—
Stuttgart		80·7	335	e 12 17	+ 1	e 22 35	+11	e 46 58	L_q	e 50·0
Strasbourg		81·3	336	e 12 28	+ 8	—	—	—	—	e 45·5
Ksara		81·8	310	e 12 40	+18	e 22 50	+15	—	—	49·0

Additional readings:—
Frunse e = +10m.20s.
Tashkent e = +14m.21s.
Mount Wilson iZ = +11m.11s.
Pasadena iZ = +11m.11s.
Tucson iP = +11m.47s.
Long waves were also recorded at Paris, Baku, Pulkovo, and Moscow.

July 3d. Readings also at 1h. (Tinemaha, Mount Wilson, and Pasadena), 4h. (La Paz), 5h. (Manila and near Mizusawa), 7h. (Tiflis), 10h. (Samarkand), 11h. (near Mizusawa), 12h. (near Osaka), 13h. (Tucson, Hastings, New Plymouth, Tuai, Bunnythorpe, and Wellington), 14h. (Bucharest, Tchimkent, Frunse, and Andijan), 15h. (Fordham, Pasadena, and Riverside), 17h. (Riverside, Frunse, and Andijan), 21h. (near Fort de France, Frunse, and Andijan).

July 4d. 18h. 26m. 12s. Epicentre 21°·0S. 65°·5W.

$A = +\cdot3875$, $B = -\cdot8502$, $C = -\cdot3563$; $\delta = -5$; $h = +4$;
$D = -\cdot910$, $E = -\cdot415$; $G = -\cdot148$, $H = +\cdot324$, $K = -\cdot934$.

A depth of focus 0·040 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		3·5	241	e 1 10	+10	e 1 44	− 4	1 55	sS	2·6
La Paz	N.	5·2	329	i 1 19a	− 1	i 2 16	− 6	—	—	2·4
Huancayo		13·0	312	i 2 58a	+ 2	i 5 10	− 5	i 4 15	pP	—
La Plata		15·4	156	3 19	− 6	6 6	− 2	—	—	7·5
Rio de Janeiro	E.	20·7	99	i 4 16	− 3	i 7 56	+ 8	—	—	i 9·7
	N.	20·7	99	i 4 20	+ 1	i 7 53	+ 5	—	—	i 9·7
Balboa Heights		32·8	335	e 7 20	pP	—	—	—	—	—
Fort de France		35·8	9	e 6 34	0	e 11 54	+ 4	e 7 34	pP	e 15·3
San Juan		39·2	0	e 7 3	+ 1	i 12 38	− 3	e 8 20	pP	i 15·7
Bermuda		53·0	2	8 52	+ 3	i 16 5	+ 9	11 51	pPP	—
Columbia		56·7	345	e 9 16	0	16 47	+ 3	e 10 22	pP	e 23·7
Philadelphia		61·3	353	i 9 48a	+ 1	e 17 35	− 9	e 10 43	pP	e 24·9
Fordham		62·0	354	i 9 52a	0	i 17 56	+ 4	e 10 58	pP	—
Cincinnati		63·1	344	i 9 54	− 5	e 17 56	−10	i 10 59	pP	—
Harvard		63·4	356	i 10 1k	0	e 18 11	+ 1	i 11 10	pP	—
St. Louis		63·7	339	i 10 1	− 2	e 18 4	− 9	e 11 3	pP	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Williamstown	63·8	355	i 10 4	0	i 18 13	− 1	i 11 13	pP	—
Florissant	63·9	339	i 10 2	− 2	e 18 9	− 7	e 11 4	pP	—
Halifax	65·3	2	e 11 18	pP	e 19 36	sS	—	—	e 26·8
East Machias	65·5	358	e 10 10	− 4	e 18 28	− 7	e 11 15	pP	e 27·5
Vermont	65·5	354	e 10 16	+ 2	i 18 42	+ 7	e 11 18	pP	—
Toronto	65·6	350	i 10 18	+ 3	i 18 36	0	e 11 48?	pP	26·8
Chicago	65·8	343	e 10 15	− 1	18 33	− 6	e 11 25	pP	e 28·9
Ottawa	66·7	353	i 10 22	0	i 18 51	+ 1	e 11 30	pP	26·8
Shawinigan Falls	67·6	355	10 30	+ 2	e 19 0	0	—	—	27·8
Lincoln	68·0	336	10 32	+ 2	e 18 58	− 7	e 11 39	pP	e 27·7
Tucson	68·4	321	i 10 33k	+ 1	e 19 4	− 6	i 11 43	pP	i 28·5
La Jolla	72·9	317	e 10 58	− 2	e 20 10	+ 9	e 12 12	pP	—
Riverside	73·7	318	i 11 4k	0	e 20 20	+10	i 12 17	pP	—
Cape Town	73·8	120	12 15	+70	i 20 14	+ 3	14 11	PP	—
Mount Wilson	74·3	318	e 11 8	0	e 20 21	+ 4	—	—	—
Pasadena	74·3	318	i 11 8k	0	i 20 20	+ 3	i 12 19	pP	—
Salt Lake City	75·0	326	e 11 13	+ 1	e 22 27	sS	e 12 24	pP	e 30·2
Haiwee	75·4	320	i 11 14k	0	e 20 36	+ 7	—	—	—
Fresno N.	76·9	319	e 11 23	+ 1	e 23 0	sS	—	—	—
Bozeman	78·2	330	e 11 31	+ 2	i 21 3	+ 4	e 12 41	pP	e 32·2
Lick	78·5	318	e 11 33	+ 2	—	—	—	—	—
Santa Clara	78·7	318	e 11 43	+11	i 21 22	+18	—	—	—
Branner	78·9	318	e 11 35	+ 2	—	—	—	—	—
Berkeley	79·2	318	i 11 35	0	e 21 9	0	i 13 11	pP	e 22·7
Butte	79·2	331	e 11 36	+ 1	e 21 13	+ 4	e 12 41	pP	e 32·4
San Francisco	79·3	318	i 11 49	+14	—	—	—	—	—
San Fernando	80·0	45	e 12 43	pP	i 21 23	+ 5	i 23 21	sS	32·3
Ukiah	80·6	319	e 11 41	− 1	21 29	+ 5	e 15 21	PP	e 32·7
Granada	82·1	46	e 11 50k	0	i 21 50	+11	13 4	pP	36·0
Almeria	82·7	46	13 6	pP	23 29	−16	16 25	PP	—
Ivigtut	83·1	9	11 57	+ 2	21 52	+ 3	23 50	sS	—
Toledo	83·3	43	e 11 59	+ 3	e 21 56	+ 5	e 13 6	pP	—
Victoria	86·2	326	12 12	+ 2	22 12	− 7	e 13 24	pP	e 35·8
Algiers	86·4	49	i 13 26	pP	22 18	− 3	14 4	pP	37·8
Clermont-Ferrand	90·9	41	e 12 38	+ 6	i 22 50	−12	—	—	—
Oxford	91·5	34	—	—	i 23 13	+ 6	e 29 47	SS	e 36·8
Kew	91·9	34	e 13 33	pP	e 23 10	0	e 24 57	sS	e 34·8
Stonyhurst	91·9	32	—	—	i 22 48	−22	—	—	e 31·3
Paris	92·1	38	i 12 43	+ 5	i 22 51	[+10]	13 52	pP	38·8
Edinburgh	92·9	30	e 17 48?	PP	i 22 57	[+11]	—	—	e 38·8
Neuchatel	93·8	41	e 12 48	+ 2	—	—	—	—	—
Aberdeen N.	94·1	29	—	—	i 22 59	[+ 6]	i 24 44	sS	e 39·0
Uccle	94·1	36	e 12 53	+ 6	i 22 58	[+ 5]	e 13 55	pP	—
Strasbourg	95·0	39	e 12 59	+ 8	i 23 8	[+11]	i 14 7	pP	i 39·1
Zurich	95·0	40	e 12 52	+ 1	e 23 7	[+10]	—	—	—
De Bilt	95·2	35	i 14 8k	pP	i 27 3	PS	e 17 45	PP	38·5
Rome	95·3	47	e 12 57a	+ 5	i 23 10	[+12]	e 14 2	pP	e 35·0
Chur	95·4	41	e 12 54	+ 1	e 23 8	[+ 9]	—	—	—
Stuttgart	96·0	39	e 13 1	+ 5	e 23 12	[+10]	e 14 10	pP	e 39·4
Sitka	97·0	328	e 14 10	pP	e 23 13	[+ 5]	e 17 2	PP	39·3
Triest	97·6	44	e 13 14	+11	i 23 22	[+11]	e 14 24	pP	e 38·6
Hamburg	98·4	35	e 12 30	−37	i 23 29	[+14]	e 17 48	PP	e 40·8
Bergen E.	99·0	27	—	—	e 23 8	[−10]	—	—	—
Prague	99·6	39	—	—	e 23 28	[+ 7]	—	—	—
Copenhagen	100·6	33	e 14 30	pP	23 34	[+ 8]	18 33	PP	—
Belgrade N.E.	101·7	46	—	—	i 23 42	[+11]	—	—	e 36·9
Upsala	104·5	30	—	—	e 24 32	−24	e 26 45	PS	e 37·8
College	105·6	333	e 14 50	pP	e 25 5	− 1	e 19 10	pPP	e 42·5
Helwan	105·8	63	e 19 12	PP	24 0	[+10]	34 41	SSP	—
Istanbul	106·8	51	e 17 48?	PP	—	—	—	—	—
Ksara	110·6	61	e 15 20	pP	e 28 18	PS	e 18 46	PP	—
Pulkovo	110·8	32	e 18 43	PP	e 24 16	[+ 5]	—	—	e 44·3
Moscow	114·4	36	e 18 13	PKP	e 24 34	[+ 9]	e 19 22	PP	—
Tiflis	118·6	53	e 18 13	PKP	e 24 58	[+18]	e 20 31	pPP	—
Grozny	119·4	51	e 18 24	PKP	—	—	e 20 50	pPP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku		122·4	55	e 21 18	pPP	e 25 6	[+13]	—	—	e 50·8
Sverdlovsk		126·9	33	e 18 33	PKP	e 25 16	[+10]	e 19 45	PP	—
Samarkand		135·5	54	e 20 48	PP	—	—	—	—	—
Tchimkent		136·9	50	e 19 11	[+22]	—	—	—	—	—
Tashkent		136·9	52	—	—	e 38 52	SS	—	—	—
Andijan		139·3	52	e 18 59	[+ 5]	e 24 40	?	e 22 39	PP	—
Frunse		140·2	47	e 19 11	[+16]	—	—	—	—	—
Bombay		140·8	85	i 22 21	PP	i 40 9	SS	i 23 8	pPP	—
Kodaikanal	E.	142·9	100	i 22 45	PP	—	—	—	—	—
Colombo	E.	143·7	108	e 18 18	[−43]	—	—	—	—	—
Hyderabad	E.	145·8	89	—	—	e 28 56	SKKS	e 33 54	PS	—
Agra		146·2	72	i 20 23	pPKP	i 28 44	SKKS	e 23 43	pPP	—
Irkutsk		147·8	12	e 19 14	[+ 6]	—	—	e 21 29	pPKP	41·8
Sapporo		148·6	322	18 22	[−47]	—	—	—	—	—
Mori		149·6	321	19 19	[+ 9]	—	—	—	—	—
Mizusawa		150·9	315	e 19 22	[+10]	—	—	—	—	—
Sendai		151·5	313	19 23	[+10]	—	—	—	—	—
Tokyo Cen. Met. Ob.		153·5	309	19 35	[+19]	—	—	—	—	—
Vladivostok		153·6	330	e 19 19	[+ 3]	—	—	e 21 29	pPKP	37·4
Calcutta	N.	155·7	81	e 21 40	pPKP	—	—	—	—	—
Nagoya		155·8	310	19 40	[+21]	—	—	—	—	—
Zi-ka-wei		168·1	330	e 19 36	[+ 4]	i 26 14	[+ 9]	i 20 54	pPKP	—
Manila		171·1	225	i 19 41a	[+ 8]	i 26 1	[− 6]	20 55	pPKP	86·8
Hong-Kong		178·7	—	21 37	pPKP	31 48	SKKS	25 30	PP	—

Additional readings :—
Huancayo isP = +4m.43s.
Fort de France e = +9m.26s., +13m.34s., and +14m.38s.
San Juan eP_cP = +9m.19s., esPP = +10m.16s., i = +11m.10s., isS = +14m.17s.
Bermuda isS = +17m.47s., isSS = +21m.34s.
Columbia epPP = +12m.34s., eS_cS = +18m.28s., esS = +18m.39s., eSS = +20m.44s.
Philadelphia i = +9m.52s., esP = +11m.22s., epPP = +13m.9s., ipPPP = +14m.40s., i = +15m.6s., iS = +17m.45s., eS_cS = +18m.56s.
Fordham isPZ = +11m.26s., iZ = +15m.15s., eN = +18m.52s., iE = +19m.16s., isSEN = +20m.0s., eSSSN = +25m.38s.
Cincinnati iP_cP = +10m.37s., ipP_cP = +11m.16s., e = +19m.20s., isS = +20m.0s., e = +21m.20s.
Harvard iPPZ = +12m.23s., iPPPZ = +14m.28s., epPPPE = +15m.23s., eS_cSN = +19m.22s., esSE = +20m.2s., ePKP,PKPZ = +40m.18s.
St. Louis iE = +11m.38s., iSE = +18m.9s., iE = +19m.34s., isSE = +20m.4s., eE = +21m.37s.
Williamstown iP_cP = +10m.40s., ipP_cP = +11m.39s., ePP = +13m.28s., i = +15m.28s., isS = +20m.28s., eSS = +22m.16s.
Florissant iP_cPZ = +10m.40s., ipP_cPZ = +11m.46s., iSEN = +18m.12s., iE = +19m.28s., isSE = +20m.7s., eE = +21m.33s.
East Machias eP = +10m.20s., epPPP = +15m.9s., iS = +18m.39s., S_cS = +19m.41s., sS = +20m.30s., eSS = +23m.3s., esSS = +24m.41s., SSS = +26m.18s.
Vermont epPP = +14m.1s., iS_cS = +19m.44s., i = +20m.29s., isS = +20m.36s., esSS = +24m.54s., eSSS = +26m.21s.
Toronto e = +19m.42s. and +20m.30s.
Chicago epPP = +13m.45s., epPPP = +15m.17s., S_cS = +19m.43s., sS = +20m.28s., sPS = +21m.47s., eSSS = +26m.17s.
Ottawa eN = +15m.18s.
Lincoln S = +19m.34s., eS_cS = +20m.4s., esS = +20m.59s.
Tucson iP_cP = +11m.0s., isP = +12m.8s., PP = +13m.14s., pPP = +14m.20s., sPP = +15m.5s., ePPP = +15m.8s., pPPP = +15m.52s., iS = +19m.12s., isS = +21m.13s., sPS = +21m.38s., eSS = +23m.55s., SS = +24m.7s., esSS = +25m.42s., SSS = +27m.14s., iSSS = +27m.29s.
Cape Town PPN = +14m.22s., PPPE = +15m.39s., iPS = +20m.48s., SSE = +25m.5s.
Pasadena ePKP,PKP = +38m.38s., epPKP,PKPZ = +39m.50s., eSKP,PKPZ = +41m.38s.
Salt Lake City esP = +12m.53s., epPP = +15m.27s., eSS = +25m.34s., eSSS = +29m.39s.
Bozeman epPPP = +17m.34s., pS = +22m.31s., sS = +22m.49s., eSS = +26m.23s.
Berkeley ePEN = +11m.39s., eZ = +15m.39s. and +22m.37s.
Butte esP = +13m.9s., ePPP = +17m.3s., sPS = +24m.11s.
San Francisco eE = +12m.8s.
Ukiah eP_cP = +11m.46s., ePPP = +16m.58s., pS = +22m.50s., SS = +27m.3s., esSS = +28m.53s., eSSS = +31m.23s.
Granada P_cP = +12m.15s., pP_cP = +13m.19s., PS = +22m.16s., pS = +22m.43s., pPPS = +23m.44s., iSS = +27m.24s.
Almeria P_cP = +13m.37s., PPP = +18m.37s., S_cS = +23m.55s.

Continued on next page.

Toledo i = +12m.4s., esS = +24m.2s.
Victoria e = +16m.30s. and +23m.48s.
Algiers eS = +24m.26s.
Oxford e = +26m.10s., iSKS = +22m.46s.
Kew eZ = +13m.52s., +14m.22s., +17m.26s., and +18m.6s., eEN = +22m.45s., e = +22m.51s., eN = +23m.17s., eNZ = +24m.24s., eN = +24m.38s. and +25m.21s., e = +26m.29s., eZ = +29m.26s., eN = +31m.24s.
Edinburgh e = +22m.26s., i = +26m.34s.
Aberdeen iN = +23m.34s., +26m.51s., and +31m.52s.
Uccle epPPE = +17m.35s., ipSN = +23m.38s., isSN = +25m.39s., isSSN = +31m.45s., iN = +38m.48s.
Strasbourg esPZ = +14m.39s., ipPP = +17m.48s., isPPZ = +18m.28s., eN = +23m.11s. iSE = +23m.44s., epSN = +25m.3s., isPSN = +25m.48s., eSSN = +30m.10s., eE = +31m.54s.
Rome ePP = +17m.46s., i?E = +23m.5s., iSN = +23m.48s., esS = +25m.49s., eSS = +29m.39s., eN = +31m.52s. and +33m.41s.
Stuttgart epPP = +17m.55s., eSEN = +23m.50s., eSPEZ = +25m.13s., esSEN = +25m.48s., e = +27m.12s., eSS = +30m.26s., esSSEN = +32m.10s., eEN = +36m.17s.
Sitka epPP = +18m.3s., eS = +23m.52s., eSP = +25m.19s., ePS = +26m.2s., eSS = +30m.42s.
Trieste eS = +24m.12s., sS = +26m.5s., e = +33m.3s., +36m.28s.
Hamburg eN = +30m.18s. and +32m.26s.
Prague e = +24m.23s. and +32m.48s.?
Copenhagen +24m.12s., +24m.31s., +26m.30s., and +28m.13s.
Belgrade iNE = +24m.48s.
Upsala iN = +25m.5s., eN = +34m.16s.
College esPP = +20m.9s., eSP = +27m.6s., eSPP = +27m.51s., eSSS = +37m.15s.
Helwan iN = +25m.18s.
Ksara ipPP = +19m.50s., e = +22m.7s.
Pulkovo e = +23m.24s.
Moscow e = +20m.14s., +20m.50s., +22m.30s., +25m.43s., +28m.23s., +30m.1s., and +34m.41s.
Tiflis iEZ = +20m.43s., eZ = +23m.7s. and +25m.19s., eE = +26m.11s., iZ = +28m.51s., iE = +30m.40s., iZ = +30m.47s., eZ = +35m.39s.
Sverdlovsk i = +18m.37s. and +21m.28s., e = +27m.3s., +28m.14s., +37m.20s., and +39m.8s.
Bombay iEN = +22m.29s., +24m.21s., and +28m.31s.
Hyderabad eE = +37m.0s.
Irkutsk i = +19m.18s.
Mizusawa SN = +19m.52s., SE = +19m.54s.
Vladivostok e = +19m.45s.
Zi-ka-wei iZ = +24m.36s. and +25m.50s.
Manila iE = +21m.1s., iN = +31m.10s., iSSEN = +45m.27s.
Hong Kong +22m.55s., SN = +31m.58s., SS = +35m.29s.

July 4d. Readings also at 5h. (Tashkent, Ksara, Huancayo, and near Branner), 6h. (Baku and Sverlovsk), 7h. (near Grozny, near Tiflis, near Erevan, Piatigorsk, Sotchi, Baku, and Sverdlovsk), 8h. (near Lick), 10h. (near Lick, Branner, Ukiah, San Francisco, Santa Clara, Berkeley, and Fresno), 13h. (Williamstown and near Harvard), 15h. (Baku), 21h. (Tucson, Frunse, and near Andijan).

July 5d. 22h. 40m. 55s. Epicentre 21°·5S. 180° (as on 1939, May 21d.).

$A = -\cdot 9313$, $B = \cdot 0000$, $C = -\cdot 3644$; $\delta = +11$; $h = +4$;
$D = \cdot 000$, $E = +1\cdot 000$; $G = +\cdot 364$, $H = \cdot 000$, $K = -\cdot 931$.

A depth of focus 0·070 has been assumed.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia	10·9	47	e 2 44	+16	i 4 41	+14	—	—	—
Arapuni	16·9	191	3 29	− 1	6 17	− 3	i 6 35	sS	—
New Plymouth	18·2	193	3 53	+10	6 32	−11	i 7 2	sS	—
Wellington	20·2	193	3 53	− 9	6 47	−30	i 7 13	sS	—
Brisbane	25·2	251	e 4 47	− 1	i 8 35	− 4	—	—	—
Riverview	28·2	238	e 5 18	+ 4	i 9 18	− 8	i 12 31	sS	—
Sydney	28·2	238	i 5 15	+ 1	i 9 17	− 9	e 8 2	?	12·1
Melbourne	34·3	233	i 6 8	+ 2	i 10 53	− 7	i 14 5	SS	21·6
Adelaide	38·6	239	e 6 45	+ 3	i 11 55	− 9	i 14 16	SS	—
Honolulu	47·7	28	e 8 1	+ 7	e 14 10	− 4	e 9 42	pP	i 20·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Perth		57·5	245	—	—	i 16 10	−14	i 17 52	sS	—
Titizima		60·6	321	9 10	−15	—	—	—	—	—
Manila		68·1	297	i 10 11k	− 2	i 18 53	+19	—	—	31·6
Tokyo, Cen. Met. Ob.		68·5	325	10 11	− 4	—	—	—	—	—
Nagano		70·0	325	10 24	0	18 47	− 9	—	—	—
Osaka		70·0	322	10 25	+ 1	18 51	− 5	11 13	P_cP	—
Yakusima		70·2	316	10 26	+ 1	—	—	—	—	—
Koti		70·4	320	10 26	0	18 56	− 4	—	—	—
Mizusawa		70·4	329	e 10 26	0	e 18 53	− 7	—	—	—
Miyazaki		70·6	318	10 27	− 1	18 55	− 8	—	—	—
Wazima		71·3	325	10 32	0	—	—	—	—	—
Hamada		72·2	319	10 36	− 1	19 12	− 8	—	—	—
Karenko		72·6	304	10 35	− 4	19 15	−10	—	—	—
Sapporo		73·4	332	10 44	0	19 30	− 4	—	—	—
Zi-ka-wei	Z.	76·8	311	i 11 3a	0	i 20 9	− 1	i 12 21	pP	29·0
Zinsen		77·2	318	11 6	+ 1	20 10	− 5	—	—	—
Hong Kong		77·5	299	11 8	+ 1	20 10	− 8	11 27	P_cP	—
Santa Barbara		79·8	48	e 11 21	+ 2	e 20 41	− 1	i 13 35	pP	—
Branner		80·0	43	e 11 21	+ 1	e 20 41	− 3	e 24 38	sS	—
San Francisco	N.	80·0	43	e 11 21	+ 1	e 21 41	+57	e 24 27	sS	—
Santa Clara		80·1	43	i 11 37	+17	i 20 48	+ 3	e 13 48	pP	—
Berkeley		80·2	43	i 11 19	− 2	e 20 37	− 9	13 38	pP	—
Ukiah		80·2	41	e 11 28	+ 7	20 43	− 3	e 13 40	pP	e 33·7
Lick	E.	80·3	43	i 11 22	+ 1	i 20 45	− 2	e 24 44	sS	—
Ferndale		80·6	39	—	—	e 20 45	− 5	e 24 45	sS	—
La Jolla		80·7	49	i 11 25	+ 2	e 20 50	− 1	e 13 39	pP	—
Pasadena		80·7	48	i 11 24k	+ 1	i 20 46	− 5	e 13 40	pP	—
Mount Wilson		80·9	48	11 24k	0	e 20 50	− 3	i 13 40	pP	—
Fresno	N.	81·1	45	i 11 26	0	e 20 52	− 3	22 59	PS	—
Riverside		81·2	48	i 11 25k	− 1	e 20 47	− 9	i 13 42	pP	—
Haiwee		82·0	46	i 11 31	+ 1	e 20 57	− 7	e 13 46	pP	—
Phu-Lien		83·1	296	e 11 34	− 2	e 20 58	−17	—	—	—
Tucson		85·0	53	e 11 45	0	i 21 39	+ 6	e 13 57	pP	e 36·5
Victoria		86·0	33	e 11 41	− 9	e 21 28	−14	e 14 5	pP	—
Sitka		86·7	23	e 11 53	0	i 21 43	− 6	e 14 8	pP	e 37·4
Salt Lake City		88·5	44	e 12 4	+ 2	22 4	− 1	e 14 23	pP	e 34·6
College		89·6	13	e 12 5	− 2	e 22 5	−10	e 14 23	pP	e 38·4
Butte		90·7	39	e 14 35	pP	e 22 19	− 6	26 25	sS	e 38·8
Bozeman		91·5	40	e 12 19	+ 3	e 26 16	sS	e 14 43	pP	e 44·5
Lincoln		98·9	49	e 14 22	pP	e 23 35	0	e 15 10	pP	e 40·0
Huancayo		98·9	106	e 12 55	+ 6	i 23 45	+10	e 15 5	pP	41·2
Calcutta	N.	99·4	291	e 16 53	PP	i 23 45	+ 6	e 18 15	PPP	—
La Plata		101·5	134	17 17	PP	22 35	[−18]	26 53	PS	—
Colombo	E.	101·9	272	e 17 24	PP	e 22 44	[−11]	—	—	—
Florissant		102·9	53	e 13 11	+ 4	i 24 7	− 1	e 15 28	pP	—
St. Louis		102·9	53	—	—	e 24 11	+ 3	e 28 13	sS	—
La Paz		103·3	113	i 13 13	P	i 22 50	[−12]	i 15 29	pP	27·1
Kodaikanal	E.	105·3	282	i 17 51	PP	i 22 58	[−12]	i 23 47	sSKS	—
Chicago		105·7	50	e 15 42	pP	e 22 57	[−14]	e 17 56	PP	e 43·6
Hyderabad	E.	106·6	283	17 49	PKP	e 22 59	[−16]	e 24 34	SKKS	27·2
Cincinnati		106·7	53	e 15 49	pP	e 23 3	[−13]	e 24 43	S	—
Irkutsk		108·4	323	i 12 47	P?	22 24	[−60]	15 3	pP	34·1
Columbia		108·9	59	e 15 14	P	e 23 13	[−12]	e 17 12	sP	e 44·3
Toronto		112·0	49	—	—	e 25 23	S	e 29 29	sS	—
Bombay		112·2	282	i 18 30	PP	i 23 25	[−14]	i 24 29	sSKS	—
Philadelphia		114·6	54	e 19 31	PP	e 23 33	[−15]	e 19 50	pPP	—
Ottawa		114·9	48	i 17 42	PP	i 28 23	PS	e 34 5	PS	—
Frunse		115·4	308	e 18 10	PP	—	—	—	—	—
Fordham		115·7	53	e 16 28	pP	i 25 27	S	e 19 6	PP	—
Williamstown		116·4	51	i 17 46	[− 3]	i 27 41	?	i 19 11	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vermont		116·6	49	e 19 13	PP	e 26 8	S	e 22 16	sPP	—
Harvard		117·6	51	i 17 47k	[− 4]	e 23 41	[−18]	e 27 49	PS	—
San Juan		118·2	79	e 15 22	P	23 52	[−10]	e 19 17	PP	—
Tananarive		118·5	233	—	—	26 14	S	30 7	PPS	—
Rio de Janeiro		119·0	133	i 19 28	PP	i 28 16	PS	—	—	—
Tchimkent		119·0	307	17 55	[+ 1]	—	—	e 21 11	PPP	—
Tashkent		119·2	306	i 14 18	P	28 12	PS	16 33	pP	e 43·1
Samarkand		120·8	304	e 18 23	[+26]	—	—	—	—	—
Fort de France		121·8	86	e 17 57	[− 2]	—	—	e 19 45	PP	—
Bermuda		121·9	64	e 19 41	PP	e 25 40	sSKS	—	—	—
Cape Town		122·1	198	19 45	PP	i 26 33	SKKS	e 21 57	PPP	—
Sverdlovsk		123·8	324	e 14 39	P	i 24 6	[−14]	e 16 58	pP	41·1
Ivigtut		128·3	27	20 25	PP	—	—	21 34	pPP	—
Scoresby Sund		129·3	9	i 20 32	PP	25 14	sSKS	i 21 39	pPP	—
Baku		133·9	306	18 23	[+ 1]	30 11	PS	20 55	PP	53·1
Moscow		135·9	329	18 14	[−11]	24 20	[−28]	20 56	PP	59·6
Pulkovo		136·2	338	e 18 14	[−12]	24 28	[−21]	21 0	PP	—
Grozny		136·3	311	e 18 17	[− 9]	—	—	i 20 51	PP	—
Tiflis		137·4	308	18 15	[−13]	e 24 44	[− 7]	i 21 3	pPKP	50·1
Erevan		138·0	306	e 18 32	[+ 2]	e 24 49	[− 4]	e 21 6	PP	—
Piatigorsk		138·0	313	e 21 2	PP	—	—	—	—	—
Upsala		139·7	347	e 20 53	PP	27 21	SKKS	e 21 8	pPKP	e 51·1
Sotchi		140·4	313	e 18 36	[+ 1]	—	—	—	—	—
Bergen		141·0	357	e 21 12	PP	e 39 25	SS	—	—	—
Aberdeen		144·4	1	i 18 41	[0]	i 27 51	SKKS	i 21 20	PP	e 48·1
Copenhagen		144·6	348	i 18 38k	[− 3]	—	—	i 21 19	PP	—
Edinburgh		145·5	3	e 18 49	[+ 6]	e 30 6	PS	i 40 11	SS	e 49·1
Heligoland		145·8	353	e 18 50	[+ 7]	e 28 5	SKKS	e 40 32	SS	e 44·4
Cernauti	N.	146·1	328	i 18 45	[+ 1]	28 5?	SKKS	—	—	45·1
Ksara		146·1	297	i 18 44	[0]	—	—	i 21 10	pPKP	—
Hamburg		147·1	350	e 18 47	[+ 1]	e 28 8	SKKS	e 21 11	pPKP	e 48·1
Stonyhurst		147·5	2	e 19 12	[+26]	i 40 45	SS	i 21 25	pPKP	e 50·1
Bucharest		148·6	322	e 18 53	[+ 5]	28 16	SKKS	—	—	46·1
Istanbul		148·6	315	18 57	[+ 9]	28 19	SKKS	21 19	pPKP	—
De Bilt		149·2	353	e 18 59	[+11]	i 28 25	SKKS	e 21 21	pPKP	49·7
Jena		149·3	345	e 18 46	[− 2]	—	—	e 21 16	pPKP	—
Prague		149·3	342	e 18 51	[+ 3]	e 28 22	SKKS	e 21 23	pPKP	—
Oxford		149·8	2	e 18 50	[+ 1]	i 28 20	SKKS	e 21 24	pPKP	—
Budapest		149·9	334	e 18 53	[+ 4]	—	—	—	—	—
Kecskemet	Z.	150·0	333	e 18 49	[− 1]	—	—	e 21 19	pPKP	—
Kew		150·1	0	e 18 49	[− 1]	e 24 54	[−17]	e 21 21	pPKP	e 58·1
Helwan		150·6	296	i 18 50a	[0]	28 26	SKKS	21 19	pPKP	—
Uccle		150·6	355	e 18 51	[+ 1]	e 28 25	SKKS	i 21 20	pPKP	—
Sofia		151·2	322	e 18 57	[+ 6]	i 28 31	SKKS	—	—	—
Belgrade		151·3	328	e 18 50a	[− 1]	—	—	i 22 45	PP	e 51·0
Stuttgart		151·8	347	e 18 49a	[− 3]	e 28 36	SKKS	e 21 14	pPKP	—
Strasbourg		152·3	348	e 18 46	[− 7]	i 41 26	SS	i 21 12	pPKP	—
Paris		152·7	356	i 18 55	[+ 2]	—	—	21 25	pPKP	44·1
Zurich		153·3	347	e 18 51	[− 4]	—	—	e 21 31	pPKP	—
Triest		153·4	338	e 18 58k	[+ 3]	i 41 38	SS	e 21 43	pPKP	—
Basle		153·5	346	e 18 51	[− 4]	—	—	—	—	—
Chur		153·6	346	e 18 51	[− 4]	—	—	e 21 20	pPKP	—
Clermont-Ferrand		155·7	355	e 18 54	[− 3]	—	—	—	—	—
Rome		157·1	335	e 18 59	[0]	i 25 31	[+12]	i 21 35	pPKP	—
Toledo		161·4	9	e 19 6	[+ 2]	e 25 53	[+29]	e 22 14	pPKP	—
Granada		164·1	11	i 19 5	[− 2]	e 46 7	SSP	e 22 7	SKP	71·1
San Fernando		164·2	18	e 19 13	[+ 6]	i 29 50	SKKS	e 22 34	pPKP	61·1
Algiers		164·5	351	e 19 5?	[− 2]	29 42	SKKS	e 21 35	pPKP	49·1
Almeria		164·6	7	19 11	[+ 4]	i 26 8	[+42]	e 22 3	pPKP	—

For Notes see next page.

NOTES TO JULY 5d. 22h. 40m. 55s.

Additional readings :—
Apia eN = +3m.18s., iE = +3m.43s.
Arapuni i = +7m.59s. and +12m.17s.
New Plymouth i = +6m.51s. and +8m.53s., S_cP = +10m.13s., P_cS = +11m.19s., S_cS? = +14m.3s.
Wellington i = +7m.4s., S_cP = +10m.32s., i = +10m. 40s., S_cS = +14m.10s.
Brisbane iPE = +4m.53s., iE = +6m.11s., iSE = +7m.47s., eSN = +7m.53s.
Riverview iSE = +9m.21s., iE = +12m.39s., iEN = +14m.52s., iE = +14m.56s.
Melbourne i = +6m.11s., +9m.22s., and +15m.18s.
Adelaide e = +10m.8s., i = +15m.17s.
Honolulu P = +8m.6s., ePP = +10m.3s., iS = +14m.17s., eS_cS = +16m.42s., iS_cS = +16m.53s.
Perth iSP = +16m.22s., i = +19m.55s., +23m.40s., +26m.30s., +29m.15s., +31m.30s., +33m.5s., and +34m.15s.
Manila iPN = +10m.14s.
Osaka PP = +12m.59s., S_cS = +19m.59s.
Mizusawa ePN = +10m.29s.
Zi-ka-wei iZ = +14m.9s., iN = +20m.33s.
Hong Kong PP = +13m.19s., PPP = +14m.14s., PS = +20m.25s., SS = +24m.32s.
Santa Barbara esSEN = +24m.42s.
Branner eSSN = +24m.41s.
Santa Clara isSE = +24m.50s.
Berkeley iN = +14m.35s., iS = +20m.43s., iSSEN = +24m.36s., eSSN = +24m.40s.
Ukiah esP = +14m.11s., esPP = +17m.15s., esPS = +24m.52s., sSS = +29m.17s.
La Jolla esSEN = +24m.48s.
Pasadena isSN = +24m.42s., eSKP,PKPZ = +40m.26s.
Mount Wilson esSEN = +24m.47s., eSKP,PKPZ = +40m.23s.
Riverside esSN = +24m.47s., eSKP,PKPZ = +40m.30s.
Haiwee esSEN = +24m.55s.
Tucson ipP = +14m.4s., sP = +14m.50s., PP = +15m.12s., epPP = +17m.20s., esPP = +17m.51s., eSKS = +21m.4s., SP = +22m.43s., esSP = +25m.30s.
Victoria e = +25m.29s.
Sitka epPP = +17m.17s., SKS = +21m.23s., eSP = +22m.55s., esS = +25m.35s., esSP = +25m.45s., eSS = +27m.17s.
Salt Lake City $ePcP$ = +12m.5s., PP = +15m.29s., epPP = +17m.33s., eSKS = +21m.35s., ePS = +23m.18s., sS = +25m.59s., sSP = +26m.5s., eSS = +28m.13s.
College ePP = +15m.56s., epPP = +17m.51s., eSKS = +21m.34s., SKKS = +22m.1s., S = +22m.13s., esS = +26m.0s., esSS = +31m.43s.
Butte epPP = +17m.52s., eSKS = +21m.47s., S = +22m.24s., eSP = +23m.33s., eSS = +28m.39s., esSS = +32m.7s.
Bozeman ePP = +16m.18s., eSKS = +21m.35s., eSKKS = +21m.50s., isS = +26m.31s., sSP = +27m.19s., esSS = +31m.37s.
Lincoln esPP = +20m.10s., eSKS = +22m.9s., ePS = +26m.52s., sS = +27m.51s.
Huancayo PP = +17m.8s., epPP = +18m.40s., iSKS = +22m.30s., S = +23m.6s., iSP = +25m.10s., ipS = +26m.31s., esS = +26m.55s., PKKP = +29m.16s., SS = +30m.49s., iSS = +30m.55s., PIP,PKP = +38m.2s.
Calcutta eN = +17m.28s., iN = +22m.37s.
La Plata SP = +25m.17s.
Florissant iSKSE = +22m.49s., iN = +27m.15s., isSN = +28m.15s.
St. Louis eEN = +23m.29s.
Chicago esPP = +21m.2s., S = +24m.31s., eSP = +26m.24s., ePS = +27m.22s., sS = +28m.39s., esSP = +30m.4s., eSS = +32m.9s., eSSS = +38m.9s.
Cincinnati e = +24m.3s., +27m.35s., and +28m.57s.
Irkutsk PP = +16m.56s., pPKP = +18m.44s., SP = +25m.3s., sS = +28m.5s.
Columbia epPP = +19m.24s., eS = +24m.58s., epS = +27m.38s., sS = +29m.11s., eSS = +32m.17s., eSSS = +36m.35s.
Toronto eN = +33m.29s.
Bombay eN = +20m.19s., iE = +20m.29s. and +23m.17s., iSEN = +25m.19s., iEN = +28m.19s., iSSN = +33m.19s., iEN = +35m.52s., iN = +37m.2s., +38m.58s., eE = +39m.18s., iE = +40m.59s.
Philadelphia esPP = +22m.0s., eS = +25m.40s. and +25m.46s., eSP = +27m.33s., isS = +29m.58s., esSP = +31m.38s., eSS = +34m.5s.
Ottawa eN = +30m.5s., +37m.47s., and +41m.53s.
Fordham eZ = +17m.9s., isSN = +30m.5s., SS = +34m.24s., SSS = +40m.5s.?
Williamstown e = +22m.16s., i = +32m.3s.
Vermont epPPP = +23m.43s., eSP = +28m.11s., isS = +30m.15s., esPS = +32m.3s., eSS = +34m.37s., esSS = +38m.3s.
Harvard eSE = +26m.13s., esS?N = +30m.21s.
San Juan esP = +17m.12s., SKKS = +25m.10s., eSP = +27m.55s., SP = +28m.19s., sSP = +32m.6s., eSS = +35m.7s.
Tananarive N = +26m.36s., SSEN = +34m.45s.
Rio de Janeiro iPN = +19m.31s.
Tashkent PKP = +17m.53s., PP = +19m.16s., pPKP = +20m.24s., PPP = +22m.8s., pS = +28m.57s., sPS = +32m.9s., SS = +35m.11s.

Continued on next page.

Cape Town E = +25m.31s., N = +25m.36s., iSKKSN = +26m.36s., E = +28m.16s., N = +28m.19s., PPSE = +30m.42s., iSSE = +35m.19s., iSSN = +35m.29s., SSSN = +40m.15s., SSSE = +40m.25s.
Sverdlovsk sP = +17m.58s., iPKP = +18m.5s., iPP = +19m.50s., ipPP = +21m.55s., PPP = +22m.47s., sPP = +23m.2s., S = +26m.57s., PPS = +31m.43s.
Ivigtut +27m.34s.
Scoresby Sund +26m.27s., SS = +37m.7s., sSS = +40m.55s.
Baku sPS = +34m.17s.
Moscow PKS = +21m.58s., eS = +27m.1s., sPS = +34m.33s., sSS = +42m.1s.
Pulkovo S = +27m.23s., SP = +30m.24s., PPS = +33m.23s., SS = +38m.23s.
Grozny e = +18m.28s.
Tiflis ePKP = +18m.20s., iNZ = +18m.27s., eE = +18m.32s., ePPZ = +20m.50s., iEZ = +21m.30s., eEZ = +22m.6s., eSKKSN = +26m.23s., iE = +27m.11s., iZ = +29m.39s., eSKSP = +30m.25s., iPSE = +31m.30s., eN = +33m.29s., eE = +33m.33s., eZ = +33m.42s., iZ = +37m.4s., SSEN = +38m.45s., iN = +40m.10s., eE = +40m.13s., eSSSEZ = +43m.16s., eSSSN = +44m.9s., eN = +47m.21s.
Piatigorsk e = +21m.17s.
Upsala eSKPE = +21m.35s., isPKPE = +22m.2s., iN = +22m.12s. and +22m.24s., eN = +23m.42s., epPKSE = +24m.33s., eE = +39m.10s., eSS = +40m.15s.
Aberdeen iE = +18m.58s., iN = +24m.10s. and +31m.17s., iE = +33m.25s., iN = +34m.15s., iE = +39m.55s. and +43m.45s., iN = +44m.48s.
Copenhagen i = +18m.45s., iZ = +21m.2s. and +21m.23s., e = +22m.5s., +24m.18s., and +25m.23s., eN = +27m.53s., e = +31m.23s., +33m.41s., and +34m.23s., eE = +40m.7s. and +44m.2s.
Edinburgh i = +44m.5s.
Heligoland eN = +18m.56s.
Ksara isPKP = +22m.10s., PP = +22m.39s., PPS = +35m.52s.
Hamburg iZ = +18m.50s., eZ = +22m.17s., eN = +22m.38s., eE = +35m.26s., iE = +40m.35s.
Stonyhurst e = +24m.55s. and +35m.50s., i = +44m.45s.
Bucharest eE = +19m.15s.
Istanbul PPP = +22m.21s.
Jena eZ = +18m.53s., eEN = +18m.56s., eN = +19m.19s., e = +22m.29s.
Oxford iP = +19m.5s., i = +22m.11s. and +22m.31s., e = +32m.40s., i = +34m.59s.
Budapest iE = +18m.56s. and +19m.46s.
Kecskemet eZ = +19m.40s., eS?Z = +22m.32s.
Kew iZ = +18m.53s., +18m.58s., and +19m.6s., eNZ = +21m.29s., eZ = +21m.36s. and +21m.41s., eEN = +21m.48s., eZ = +22m.27s., eN = +22m.54s., eN = +24m.35s. +26m.7s., and +28m.21s., eNZ = +29m.11s., eZ = +32m.23s., eEN = +32m.47s., eN = +35m.5s., eZ = +35m.55s., eE = +41m.3s., eEN = e = +46m.1s.
Helwan iPEZ = +18m.59s., PPZ = +22m.45s., pPPZ = +24m.37s., PPPZ = +25m.7s., sPPZ = +25m.59s., SN = +29m.27s., iE = +30m.15s., sSEZ = +32m.59s.
Uccle iZ = +19m.0s. and +19m.7s., ipPKP$_2$Z = +21m.28s., iNZ = +22m.33s., eZ = +23m.32s., eNZ = +24m.45s., eZ = +25m.52s. and +31m.48s., iN = +32m.59s., eN = +34m.57s., iN = +36m.10s., eN = +51m.2s.
Belgrade i = +18m.58s., iPPPNE = +26m.17s., iNE = +31m.51s. and +37m.40s.
Stuttgart iZ = +18m.56s., iPKPZ = +19m.3s., iPKP = +19m.14s. and +19m.24s., ePP = +22m.46s., eNZ = +23m.15s., esPP = +25m.5s., ePPP = +25m.46s., e = +29m.19s., eZ = +31m.50s., eEN = +32m.10s., e = +33m.7s., ePS = +34m.39s., e = +35m.14s. and +36m.11s., eEZ = +38m.23s., eSSEN = +41m.26s., e = +45m.46s., eEN = +55m.5s.
Strasbourg iZ = +19m.0s., +19m.10s., and +21m.22s., isPKPZ = +22m.35s., iPPZ = +22m.42s., PPPZ = +26m.23s., iSKKSZ = +28m.34s.
Paris e = +22m.49s., e = +32m.13s.
Triest ePKP$_2$ = +19m.14s., i = +28m.43s., epSKS = +33m.10s.
Basle e = +19m.20s.
Chur e = +21m.28s.
Rome iPKP$_2$Z = +19m.34s., iPP = +23m.16s., iN = +23m.25s., iSKS? = +24m.2s., iEZ = +26m.57s., i = +29m.1s., e = +32m.49s., i = +35m.38s., iSS = +37m.4s., e = +40m.21s., +46m.45s.?, and +50m.45s.?
Toledo i = +19m.51s., e = +23m.39s. and +29m.23s., i = +33m.43s. and +34m.5s.
Granada iPP = +23m.53s., SKKS = +31m.20s., ePPS = +39m.40s., eSSS = +50m.22s.
San Fernando iPS = +33m.52s., iSSN = +41m.1s.
Algiers SKSP? = +33m.49s.
Almeria i = +24m.3s., +31m.10s., and +33m.17s.

July 5d. Readings also at 2h. (Tchimkent, Frunse, Sverdlovsk, Baku, and Andijan), 3h. (Lincoln), 4h. (near Mizusawa), 5h. (Erevan and Grozny), 6h. (Fresno, near Lick, Branner and Berkeley), 7h. (Algiers, Vladivostok, Sverdlovsk, and Strasbourg), 8h. (Manila and Sverdlovsk), 9h. (Baku), 11h. (Harvard, Williamstown, Baku, and Sverdlovsk), 13h. (Ottawa and near Andijan), 18h. (Tucson), 19h. (Tiflis), 20h. (Huancayo, Tucson, and Riverside), 21h. (La Paz and Strasbourg), 22h. (Jersey (2) and Riverside), 23h. (Mount Wilson, Pasadena, Riverside, and Tucson).

July 6d. 1h. 5m. 47s. Epicentre 21°·5S. 180° (as on July 5d.).

$A = -\cdot 9313$, $B = \cdot 0000$, $C = -\cdot 3644$; $\delta = +11$; $h = +4$.

A depth of focus 0·070 has been assumed.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		25·2	251	—	—	i 8 31	− 8	e 10 49	SSS	—
Riverview	N.	28·2	238	—	—	i 9 16	−10	—	—	—
Sydney		28·2	238	—	—	i 9 13	−13	—	—	—
Adelaide		38·6	239	e 8 53	PP	i 11 45	−19	e 14 39	SS	—
Hatidyozima		66·5	325	10 4	+ 1	—	—	—	—	—
Mera		67·8	325	10 11	0	—	—	—	—	—
Manila		68·1	297	e 10 11	− 2	14 7	?	—	—	—
Mito		68·6	327	10 16	0	—	—	—	—	—
Gihu		69·9	324	10 22	− 2	—	—	—	—	—
Nagano		70·0	325	10 24	0	—	—	—	—	—
Kobe		70·2	322	10 24	− 1	18 47	−11	—	—	—
Kumamoto		71·6	318	10 33	− 1	—	—	—	—	—
Karenko		72·6	304	10 42	+ 3	—	—	—	—	—
Santa Barbara		79·8	48	11 20	+ 1	—	—	e 13 33	pP	—
Berkeley		80·2	43	e 11 20	− 1	—	—	—	—	—
La Jolla		80·7	49	i 11 24k	+ 1	—	—	—	—	—
Pasadena		80·7	48	i 11 24k	+ 1	e 20 44	− 7	i 13 38	pP	—
Mount Wilson		80·9	48	i 11 24k	0	—	—	i 13 36	pP	—
Riverside		81·2	48	i 11 25	− 1	e 20 38	−18	i 13 39	pP	—
Haiwee		82·0	46	i 11 30	0	—	—	e 13 33	pP	—
Tinemaha		82·3	45	i 11 30	− 2	—	—	—	—	—
Irkutsk		108·4	323	—	—	e 22 13?	[−71]	—	—	e 34·2
Williamstown		116·4	51	e 17 44	[− 5]	—	—	e 18 59	PP	—
Sverdlovsk		123·8	324	i 19 46	PP	e 25 42	S	—	—	35·2
Moscow		135·9	329	e 18 19	[− 6]	—	—	e 20 56	PP	e 23·3
Grozny		136·3	311	e 18 25	[− 2]	—	—	e 21 2	PP	—
Tiflis		137·4	308	e 18 28	[0]	e 20 56	PP	—	—	—
Erevan		138·0	306	e 21 6	PP	—	—	—	—	—
Copenhagen		144·6	348	i 18 38	[− 3]	—	—	i 21 21	PP	—
Ksara		146·1	297	i 18 44	[0]	e 35 54	PPS	e 21 15	PP	—
Hamburg	z.	147·1	350	e 18 40	[− 5]	—	—	—	—	—
Kew	z.	150·1	0	e 18 55	[+ 5]	—	—	e 21 23	PP	—
Uccle	z.	150·6	355	e 18 54	[+ 3]	—	—	—	—	—
Belgrade		151·3	328	i 18 55	[+ 4]	—	—	e 21 24	PP	—
Stuttgart		151·8	347	e 18 48	[− 4]	—	—	e 21 33	PP	—
Strasbourg	z.	152·3	348	e 18 44	[− 9]	—	—	e 22 14	pPKP	—
Triest		153·4	338	e 19 8	[+14]	e 28 39	SKKS	—	—	—
Rome		157·1	335	18 57	[− 2]	42 17	SS	e 22 20	PP	—
Toledo		161·4	9	19 2	[− 2]	—	—	—	—	—
Granada		164·1	11	21 25	pPKP	36 7	SKSP	—	—	—

Additional readings :—
Riverview iE = +9m.19s.
Pasadena esSE = +24m.39s.
Riverside eSPZ = +14m.35s.
Irkutsk e = +25m.13s.? and +29m.13s.?
Tiflis iSZ = +21m.3s.
Hamburg iZ = +18m.47s.
Stuttgart ePKPZ = +18m.57s.
Strasbourg ePPZ = +22m.42s.
Rome iZ = +22m.49s., iPPZ = +23m.9s., eZ = +26m.38s., eSS? = +48m.15s., e = +53m.15s.

July 6d. 3h. 51m. 58s. Epicentre 42°·5N. 82°·5E. (as on 1939, June 18d.).

$A = +\cdot0965$, $B = +\cdot7332$, $C = +\cdot6731$; $\delta = -4$; $h = -3$;
$D = +\cdot991$, $E = -\cdot131$; $G = +\cdot088$, $H = +\cdot667$, $K = -\cdot740$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Frunse		5·8	266	e 1 46	P*	2 56	S*	—	—	—
Andijan		7·8	260	e 1 58	0	e 3 29	+ 1	—	—	—
Semipalatinsk		8·1	351	2 5	+ 3	e 3 38	+ 3	—	—	—
Tchimkent		9·6	275	e 2 50	+29	e 4 10	− 2	e 4 58	S_E	—
Tashkent		9·9	265	e 2 54	+29	i 5 6	+46	—	—	i 5·3
Samarkand		12·0	263	e 2 55	0	—	—	—	—	—
Agra	E.	15·8	195	—	—	e 6 21	−21	—	—	—
Irkutsk		17·7	49	e 4 12	+ 2	e 7 42	SS	—	—	e 9·1
Sverdlovsk		20·0	325	4 35	− 2	8 19	+ 2	—	—	10·0
Calcutta	N.	20·5	164	—	—	i 8 22	− 5	—	—	—
Baku		24·5	277	e 5 20	− 2	e 10 9	+29	—	—	e 15·5
Grozny		26·8	285	5 26	−18	—	—	—	—	e 13·1
Tiflis		27·8	282	e 5 50	− 3	—	—	—	—	e 10·9
Moscow		31·6	311	6 25	− 1	e 11 48	+13	—	—	16·1
Pulkovo		35·9	318	e 9 45	?	—	—	—	—	e 16·4
Stuttgart		49·8	305	e 22 14	?	—	—	—	—	e 27·5
Rome		50·5	294	e 9 1	− 1	e 16 22	+ 6	—	—	e 27·2

Additional readings :—
Frunse e = +2m.22s.
Tchimkent e = +3m.39s.
Agra eE = +6m.34s.
Long waves were also recorded at Hamburg, Prague, Upsala, Ksara, Bombay, Edinburgh, De Bilt, and Kew.

July 6d. Readings also at 4h. (near Andijan), 5h. (Columbia), 6h. (Tiflis), 7h. (Mizusawa, Sverdlovsk, Tashkent, Pasadena, Mount Wilson, and Riverside), 8h. (Tiflis, Butte, Bozeman, Ksara, Pulkovo, Baku, and Irkutsk), 15h. (Christchurch, Wellington, New Plymouth, and Hastings), 18h. (Andijan and Frunse), 20h. (Rome), 21h. (Tucson, Pasadena, Mount Wilson, Haiwee, and Riverside), 23h. (Sitka).

July 7d. Readings at 0h. (Seattle), 2h. (Melbourne), 3h. (Copenhagen, Baku, Moscow, and Sverdlovsk), 4h. (near Tananarive, Pasadena, Tucson, and Mount Wilson), 6h. (Triest), 8h. (New Plymouth, Wellington, and Christchurch), 11h. (Haiwee, La Jolla, Riverside, Pasadena, Santa Barbara, Tucson, and Mount Wilson), 15h. (Tucson), 16h. (Tucson and Mount Wilson), 19h. (Strasbourg, Rome, Sverdlovsk, Moscow, and Stuttgart), 20h. (Stuttgart, Baku, Andijan, and Tashkent).

July 8d. 2h. Undetermined shock.

La Plata P = 40m.22s., S = 42m.12s., L = 43·1m.
La Paz PZ = 40m.55s., iSZ = 42m.50s.
Huancayo eP = 42m.11s.
Williamstown.i = 49m.0s., eL = 95·7m.
Tucson eP = 49m.17s.
La Jolla eP = 49m.41s.
Mount Wilson iPZ = 49m.49s.k, eZ = 50m.32s.
Pasadena iPZ = 49m.49s., eZ = 50m.30s.
Haiwee eP = 49m.56s., eZ = 50m.39s.
Tinemaha iP = 50m.0s., eZ = 50m.44s.
Sverdlovsk e = 60m.1s., L = 87·0m.
Ksara e = 70m.32s.
Strasbourg ePZ? = 78m.42s., eS?NZ = 83m.3s., eLZ = 85·6m.
Pulkovo e = 79m.16s., i = 82m.44s., eL = 83·8m.
Moscow e = 79m.23s., L = 85·5m.
Long waves were also recorded at European stations and Tashkent.

July 8d. 21h. 31m. 30s. Epicentre 12°·5N. 86°·8W. (as on 1938 May 6d.).

$A = +\cdot0545$, $B = -\cdot9751$, $C = +\cdot2151$; $\delta = +6$; $h = +6$;
$D = -\cdot998$, $E = -\cdot056$; $G = +\cdot011$, $H = -\cdot215$, $K = -\cdot977$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		20·8	70	e 4 58	+13	e 9 15	SSS	e 5 34	PPP	—
Huancayo		26·9	154	e 5 56	+11	—	—	e 8 36	P_cP	e 14·0
Bermuda		28·2	42	e 7 11	PPP	—	—	—	—	e 14·4
Philadelphia		29·2	19	e 6 16	+11	e 11 10	+12	e 13 6	P_cS	e 14·3
Tucson		29·5	314	e 6 5	− 3	e 16 50	S_cS	e 6 40	pP	—
Fordham		30·4	19	i 6 31k	+15	—	—	—	—	—
Williamstown		32·3	20	i 6 37	+ 4	i 12 37	+51	—	—	e 19·3
Harvard		32·7	21	i 6 51a	+15	e 12 8	+16	i 8 3	PPP	e 18·5
La Paz		34·2	145	7 18	+29	—	—	—	—	—
Riverside	z.	35·1	313	i 6 54	− 3	i 13 15	S_cP	i 9 33	P_cP	—
Mount Wilson		35·7	313	i 7 0k	− 2	—	—	e 13 18	S_cP	—
Pasadena		35·7	313	i 7 0k	− 2	e 13 45	+66	i 13 17	S_cP	—

Additional readings:—
San Juan $eS_cP = +11m.46s.$
Tucson $eP = +6m.10s.$, $eP_cP = +9m.34s.$
Fordham $i = +6m.46s.$
Harvard $eE = +12m.37s.$
Long waves were also recorded at Stuttgart and Rome.

July 8d. Readings also at 3h. (Tucson (2)), 6h. (Sofia), 9h. (Ksara and Bucharest), 10h. (near Apia, Pasadena, and Mount Wilson), 12h. (Sverdlovsk and Tashkent), 13h. (Huancayo, La Paz, Riverside, Tucson, and Mount Wilson), 15h. (near Fordham, near Harvard, and Williamstown), 16h. (New Plymouth and near Wellington), 17h. (near Christchurch, New Plymouth, Wellington, near Mizusawa, and Harvard), 18h. (Tucson), 19h. (Honolulu and near Mizusawa), 20h. (near Williamstown and Harvard), 22h. (Christchurch, near Branner, New Plymouth, and Wellington).

July 9d. Readings at 1h. (Belgrade, Sofia, Tiflis, Ksara, Rome, Stuttgart, and Bucharest), 2h. (Bucharest, Ksara, and Andijan), 4h. (near Lick, Wellington, and New Plymouth), 6h. (Ksara, Irkutsk, and Vladivostok), 7h. (Rome, Stuttgart, Sverdlovsk, near Berkeley, and Tashkent), 8h. (Rome, and Stuttgart), 9h. (Pulkovo, Semipalatinsk, Tashkent, Sverdlovsk, Irkutsk, Moscow, Andijan, Tiflis, and Frunse), 10h. (Moscow, Sverdlovsk, Tashkent, Pasadena, Tucson, and Mount Wilson), 12h. (near Hukuoka, Osaka, and Vladivostok), 13h. (Zi-ka-wei, Mount Wilson, Tucson, Pasadena, Tashkent, Sverdlovsk, Moscow, Tiflis, Irkutsk, Rome, and Stuttgart), 18h. (Tiflis), 19h. (Tananarive), 20h. (Tucson and near Andijan), 22h. (near Andijan and Frunse), 23h. (Andijan, Frunse, Tchimkent, Tucson, Sverdlovsk, and Tashkent).

July 10d. 2h. 17m. 25s. Epicentre 61°·5N. 151°·0W.

$A = -\cdot4195$, $B = -\cdot2325$, $C = +\cdot8775$; $\delta = +4$; $h = -9$;
$D = -\cdot485$, $E = +\cdot875$; $G = -\cdot767$, $H = -\cdot425$, $K = -\cdot480$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
College	3·6	21	i 0 54k	− 4	e 1 22	−20	—	—	e 1·6
Sitka	9·2	110	e 2 9	− 7	e 3 55	− 8	—	—	—
Butte	27·0	105	e 5 44	− 1	e 10 39	+17	e 8 34	P_cP	e 11·3
Bozeman	27·9	105	e 6 11	+17	e 10 59	+22	e 8 21	P_cP	e 15·1
Ukiah	28·2	129	e 6 9	+13	e 11 7	+26	e 6 47	PP	—
Salt Lake City	31·4	114	e 6 33	+ 8	e 11 53	+21	e 8 53	P_cP	—
Tinemaha	31·9	124	i 6 32k	+ 3	e 12 52	?	—	—	—
Haiwee	32·8	124	i 6 40	+ 3	—	—	—	—	—
Santa Barbara	33·6	128	i 6 46	+ 2	—	—	—	—	—
Mount Wilson	34·4	126	i 6 52k	+ 1	—	—	—	—	—
Pasadena	34·5	126	i 6 53k	+ 1	—	—	—	—	—
Riverside	34·9	126	i 6 56	+ 1	—	—	—	—	—
La Jolla	35·9	126	i 7 6	+ 2	—	—	—	—	—
Lincoln	38·4	96	e 7 48	+23	e 13 52	+32	e 9 10	PP	17·4
Tucson	39·1	119	i 7 32k	+ 1	—	—	—	—	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ottawa	44·9	74	i 8 13	− 5	—	—	—	—	e 23·6
Shawinigan Falls	45·4	71	e 8 20	− 2	—	—	—	—	e 23·3
Williamstown	48·1	75	i 8 38	− 5	—	—	—	—	—
East Machias	49·2	69	e 11 1	PP	e 16 12	+14	e 18 40	S_cS	e 20·3
Fordham	49·2	67	i 8 47a	− 5	—	—	—	—	—
Philadelphia	49·3	79	—	—	e 15 47	−12	—	—	e 20·0
Sverdlovsk	59·4	340	i 9 57	− 9	17 54	−21	—	—	27·6

Additional readings :—
Butte eP = +6m.9s.
Ukiah ePPP = +7m.13s., eP_cP = +8m.27s.
Salt Lake City eP = +7m.3s., eS = +12m.13s.
Santa Barbara eZ = +7m.16s.
Pasadena iZ = +7m.22s.
Tucson iP = +7m.53s. and +8m.8s., i = +8m.17s.
Ottawa e = +7m.59s.
East Machias eSS = +19m.35s.

July 10d. 16h. 27m. 53s. Epicentre 46°·0N. 12°·2E. (as on 1938, July 7d.).

Felt at Venice and Triest.

Epicentre 46°·1N. 12°·2E. (Strasbourg).

See Annales de l'Institut de Physique du Globe de Strasbourg, tome IV, 2e partie (1939), p. 56.

A = +·6814, B = +·1473, C = +·7170 ; δ = +9 ; h = −4 ;
D = +·211, E = −·977 ; G = +·701, H = +·152, K = −·697.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest	1·1	108	0 20k	− 2	0 35	− 4	i 0 23	P_g	—
Laibach	1·6	88	e 0 37	P_g	i 0 56	S_g	—	—	—
Chur	2·0	295	0 37	+ 2	e 1 9	S_g	—	—	—
Zurich	2·8	299	e 0 48	+ 1	e 1 34	S_g	e 0 55	P_g	—
Moncalieri	3·3	252	e 0 28	−25	—	—	—	—	—
Stuttgart	3·4	325	e 0 55	0	i 1 33	− 4	1 52	S_g	e 2·0
Basle	3·5	298	e 0 58	+ 1	e 1 56	S_g	e 1 9	P_g	—
Neuchatel	3·7	287	1 2	+ 2	e 1 47	+ 2	e 1 12	P_g	—
Strasbourg	4·0	313	e 0 54	−10	i 1 54	+ 2	e 1 6	P*	—
Rome	4·1	178	e 1 33	P_g	e 2 20	S_g	—	—	—
Jena	4·9	356	e 1 15	− 2	—	—	e 1 34	P_g	e 2·1
Paris z.	7·2	296	—	—	e 4 7?	S_g	—	—	—
Hamburg N.	7·7	351	—	—	e 3 31	+ 6	—	—	—

Additional readings :—
Stuttgart eP = +58s., eP_g = +1m.6s., i = +1m.36s. and +1m.40s.
Strasbourg eE = +1m.28s., iPSN = +1m.35s., eS_g = +1m.46s., iE = +1m.57s., iSSE = +2m.2s. and +2m.12s.

July 10d. Readings also at 0h. (near Andijan), 5h. (near Mizusawa), 6h. (Andijan, Grozny, Phu-Lien, Sverdlovsk, Tucson, Tashkent, Tiflis, and Manila), 7h. (Baku, Andijan, and Frunse), 10h. (Semipalatinsk, Irkutsk, Frunse, Tashkent, and Sverdlovsk), 11h. (Baku, Manila, Ksara, Tashkent, and Sverdlovsk), 12h. (Tucson), 13h. (Tashkent, Samarkand, Sverdlovsk, and Ksara), 14h. (Ksara, Jena, Tashkent, and Sverdlovsk), 16h. (Christchurch, Moscow, Sverdlovsk, and Tucson), 17h. (Tucson), 18h. (near Lick, Fresno, and Branner), 20h. (Belgrade and Fordham), 22h. (Ksara and Tiflis), 23h. (La Paz).

July 11d. Readings at 1h. (Tiflis and Tucson), 2h. (Tiflis), 3h. (near Rome (2) and Triest), 5h. (Triest and Tucson), 6h. (Osaka and near Hukuoka), 7h. (Andijan, Tchimkent, Frunse, and Tashkent), 11h. (Triest and Mount Wilson), 14h. (Erevan), 15h. (Tucson), 19h. (Tucson), 22h. (near Manila).

July 12d. 12h. 46m. 41s. Epicentre 9°·3S. 119°·2E. (as on 1938, August 24d.).

$A = -\cdot4815$, $B = +\cdot8616$, $C = -\cdot1605$; $\delta = -4$; $h = +7$;
$D = +\cdot873$, $E = +\cdot488$; $G = +\cdot078$, $H = -\cdot140$, $K = -\cdot987$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		23·8	6	e 5 18	+ 3	9 27	− 1	—	—	—
Hong Kong		31·8	352	7 31	+63	11 28	−10	—	—	—
Calcutta	N.	43·3	317	—	—	i 14 35	+ 2	—	—	—
Irkutsk		62·6	350	e 10 31	+ 3	e 18 47	− 9	—	—	e 38·3
Tashkent		68·1	322	e 11 3	− 1	i 20 1	− 2	—	—	—
Baku		80·6	314	e 12 31	+15	e 22 13	−10	e 32 49	?	e 47·3
Sverdlovsk		81·3	332	12 15	− 5	22 17	−13	—	—	40·3
Tiflis		84·7	314	e 12 31	− 6	—	—	—	—	—
Ksara		89·6	306	e 13 6	+ 5	e 24 12	+21	e 25 50	PPS	—
Rome		108·6	312	e 17 49	PKP	e 27 29	?	e 18 54	PP	—
Stuttgart		110·1	320	e 19 1	PP	e 29 25	PPS	e 21 23	PPP	e 69·3
Strasbourg	Z.	111·1	320	e 19 6	PP	—	—	e 21 32	PPP	e 65·3

Long waves were also recorded at Colombo and Brisbane.

July 12d. 20h. 8m. 20s. Epicentre 43°·7N. 147°·6E. (as on 1938, December 19d.).

Intensity I at Kusiro, Nemuro, and Shana.

Epicentre 42°·7N. 147°·3E. Shallow.

See Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1939, Tokyo 1949, p. 19.

$A = -\cdot6124$, $B = +\cdot3886$, $C = +\cdot6884$; $\delta = -6$; $h = -3$;
$D = +\cdot536$, $E = +\cdot844$; $G = -\cdot581$, $H = +\cdot369$, $K = -\cdot725$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro	1·4	256	0 30k	+ 3	0 40	− 6	—	—	—
Sapporo	4·6	264	1 15	+ 3	2 9	+ 2	—	—	—
Mori	5·4	253	1 21k	− 3	2 32	+ 4	—	—	—
Hatinohe	5·6	236	1 26	− 1	2 23	−10	—	—	—
Aomori	5·8	242	1 31	+ 2	2 35	− 3	—	—	—
Miyako	5·8	228	1 29	0	2 31	− 7	—	—	—
Mizusawa	6·7	229	1 42	0	i 2 51	− 9	—	—	—
Hukusima	8·0	225	2 0	0	3 25	− 8	—	—	—
Onahama	8·5	219	2 6	− 1	3 34	−11	—	—	—
Kakioka	9·4	220	2 12	− 6	3 58	− 9	—	—	—
Tyosi	9·5	215	2 22	+ 2	3 58	−12	—	—	—
Tokyo, Cen. Met. Ob.	10·0	220	2 27	0	4 16	− 6	—	—	—
Nagano	10·0	229	2 31	+ 4	—	—	—	—	—
Wazima	10·3	236	2 32	0	—	—	—	—	—
Yokohama	10·3	219	2 33	+ 1	4 22	− 8	—	—	—
Nagoya	11·8	227	2 55	+ 2	5 10	+ 4	—	—	—
Osaka	13·0	229	3 9	0	5 32	− 3	—	—	—
Kobe	13·2	231	3 11k	0	6 0	SS	—	—	—
Miyazaki	17·3	253	4 10	+ 6	7 21	+ 5	—	—	—
Zi-ka-wei	24·1	247	e 5 18	0	9 42	+ 8	i 5 38	PP	14·5
Irkutsk	29·8	303	e 6 10	− 1	e 11 7	0	—	—	16·7
Hong Kong	34·9	242	6 55	0	12 20	− 7	—	—	—
College	40·9	35	e 7 47	+ 1	e 13 56	− 2	—	—	e 16·9
Frunse	51·5	296	9 9	0	—	—	—	—	—
Sverdlovsk	53·4	318	i 9 18	− 6	16 50	− 5	27 16	L_q	31·1
Andijan	54·0	295	9 28	0	e 17 2	− 1	—	—	—
Tchimkent	55·0	297	9 34	− 1	—	—	—	—	—
Tashkent	55·7	297	i 9 40	0	i 17 17	− 9	—	—	e 28·2
Agra	E. 57·5	278	10 0	+ 7	17 45	− 5	21 46	SS	—
Samarkand	58·1	296	e 10 16	+18	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Moscow		64·7	324	i 10 40	− 2	19 17	− 5	—	—	e 37·2
Pulkovo		64·8	331	e 10 40	− 3	e 19 18	− 5	—	—	e 31·3
Butte		66·0	47	—	—	e 20 0	+22	e 20 44	ScS	—
Bozeman		67·0	48	—	—	e 20 5	+15	—	—	e 32·3
Tinemaha		68·2	59	i 11 6	+ 2	—	—	—	—	—
Baku		68·3	306	11 6	+ 1	e 20 7	+ 1	—	—	35·7
Grozny		68·8	309	11 11	+ 3	—	—	—	—	—
Haiwee		69·0	59	e 11 10	+ 1	—	—	—	—	—
Upsala	N.	69·0	335	e 9 40	?	e 31 43	?	—	—	e 39·7
Piatigorsk		69·8	312	e 11 13	− 1	—	—	—	—	—
Pasadena		70·1	61	e 11 16	0	e 20 25	− 2	i 11 32	PcP	—
Tiflis		70·4	309	i 11 17	− 1	20 30	0	i 11 28	PcP	36·7
Riverside		70·7	61	i 11 19	− 1	—	—	11 36	PcP	—
Erevan		71·5	308	e 11 28	+ 4	—	—	—	—	—
Copenhagen		74·0	335	i 11 38a	− 1	21 5	− 6	—	—	39·7
Tucson		76·0	58	e 11 52a	+ 1	e 26 32	SS	—	—	—
Aberdeen		76·3	343	—	—	i 21 33	− 4	—	—	e 46·7
Hamburg		76·5	335	e 11 53	− 1	e 21 40	+ 1	—	—	e 37·7
Edinburgh		77·7	344	—	—	e 21 5	−47	—	—	e 44·7
Bucharest		78·0	321	e 12 3	+ 1	e 21 54	− 1	e 22 41	PS	45·7
Jena		78·2	332	e 12 3	0	—	—	—	—	—
Istanbul		79·1	319	22 19	S	(22 19)	+12	—	—	—
De Bilt		79·2	337	i 12 8a	0	e 21 59	− 9	i 12 19	PcP	e 37·7
Bjdston		80·1	343	—	—	e 22 11	− 7	—	—	e 41·7
Belgrade		80·1	324	e 12 14	+ 1	e 22 31	+13	e 12 24	PcP	e 45·5
Sofia		80·6	322	e 12 17	+ 1	e 22 19	− 4	—	—	—
Uccle		80·6	338	i 12 15a	− 1	e 22 16	− 7	—	—	e 37·7
Ksara		80·9	307	i 12 18k	+ 1	e 23 13	PS	e 15 26	PP	—
Stuttgart		80·9	333	i 12 17a	0	e 22 16	−10	e 44 40	L_q	e 46·7
Kew		81·2	340	i 12 18	− 1	e 22 23	− 6	e 41 40	L_q	e 43·7
Strasbourg		81·6	334	i 12 21a	0	e 22 28	− 5	—	—	e 40·7
Triest		82·1	330	e 12 23	− 1	e 22 32	− 6	—	—	—
Zurich		82·4	333	e 12 25a	0	e 22 36	− 5	—	—	—
Basle		82·5	334	e 12 20	− 6	e 22 40	− 2	—	—	—
Chur		82·5	333	e 12 24	− 2	—	—	—	—	—
St. Louis	N.	82·8	41	e 12 27	0	e 22 40	− 5	—	—	—
Paris		82·9	337	e 12 27	− 1	—	—	—	—	45·7
Ottawa		83·3	29	i 12 30	0	e 22 40?	−10	—	—	e 45·7
Clermont-Ferrand		85·3	336	e 12 41	+ 1	—	—	—	—	e 40·8
Rome		85·7	327	i 12 40a	− 2	23 11	− 3	23 55	PS	41·8
Helwan		86·4	309	i 12 46k	+ 1	23 18	− 3	12 58	PcP	—
Williamstown		86·5	28	i 12 47	+ 1	—	—	—	—	—
Harvard		87·3	27	i 12 49a	− 1	—	—	—	—	e 49·7
Philadelphia		88·2	32	—	—	e 23 27	[+ 5]	e 33 48	SSS	e 41·8
Huancayo		131·5	62	—	—	e 45 45	SSS	—	—	e 55·0

Additional readings :—
Tiflis eEZ = +32m.40s. ?
Tucson P = +12m.11s.
Bucharest eEN = +12m.19s., eN = +12m.29s., eE = +12m.44s. and +22m.37s., eN = +23m.13s., eEN = +24m.4s.
Basle e = +12m.26s.
Helwan eZ = +13m.25s., iE = +23m.25s., SE = +24m.35s.
Long waves were also recorded at Bombay, Toledo, Prague, San Fernando, and Moncalieri.

July 12d. 22h. 58m. 18s. Epicentre 3°·3S. 139°·8E.

$A = -·7625$, $B = +·6444$, $C = -·0572$; $\delta = -7$; $h = +7$;
$D = +·645$, $E = +·764$; $G = +·044$, $H = -·037$, $K = -·998$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila	25·8	314	i 5 36k	+ 2	i 11 0	SS	—	—	15·5
Brisbane	27·2	153	i 5 48	+ 1	i 10 24	− 1	—	—	—
Adelaide	31·5	182	i 6 28	+ 2	i 11 32	− 2	e 7 32	PPP	i 13·9
Riverview	32·2	162	e 6 30	− 2	i 11 42	− 3	e 7 33	PP	e 15·7
Sydney	32·2	162	e 6 27	− 5	e 11 42	− 3	—	—	16·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Melbourne		34·7	173	e 7 13	+19	i 12 24	0	i 15 9	SSS	i 16·7
Yakusima		34·7	347	6 51	− 3	—	—	—	—	—
Hong Kong		35·7	317	7 3	+ 1	12 32	− 7	8 13	PP	—
Miyazaki		35·9	349	7 0	− 4	12 16	−26	—	—	—
Perth		36·3	215	i 7 34	+27	12 45	− 3	i 8 30	PP	17·2
Kumamoto		36·9	349	7 10	− 2	—	—	—	—	—
Koti		37·1	352	7 10	− 4	12 50	−11	—	—	—
Hukuoka		37·7	348	e 7 17	− 2	—	—	—	—	19·7
Osaka		38·0	355	7 15	− 6	13 8	− 6	—	—	—
Hirosima		38·1	351	7 16	− 6	13 7	− 9	—	—	—
Zi-ka-wei		38·5	335	e 7 16	−10	i 13 8	−14	i 8 56	PP	17·4
Gihu		38·6	358	7 22	− 4	12 59	−24	—	—	—
Tokyo, Cen. Met. Ob.		38·8	0	7 34	+ 6	—	—	—	—	—
Toyooka		38·9	355	7 28	− 1	—	—	—	—	—
Nagano		39·8	359	7 30	− 6	13 32	−10	—	—	—
Phu-Lien		40·4	308	e 7 40	− 1	13 42	− 8	—	—	—
Sendai		41·4	3	7 46	− 4	—	—	—	—	—
Mizusawa	E.	42·2	3	e 7 51	− 5	e 14 1	−16	—	—	—
	N.	42·2	3	e 7 49	− 7	e 13 56	−21	—	—	—
Zinsen		42·4	344	7 56	− 2	14 20	0	—	—	—
Akita		42·8	1	8 1	0	—	—	—	—	—
Sapporo		46·2	2	8 21	− 7	12 40	?	—	—	—
Arapuni		47·6	141	—	—	15 54	PS	18 30	SS	23·1
Apia		48·9	105	e 8 53	+ 3	15 54	+ 1	i 10 13	P_cP	—
Wellington		49·1	145	8 49	− 2	15 49	− 7	11 0	PP	23·7
Christchurch		49·5	149	i 8 52k	− 2	i 15 58	− 4	i 9 34	pP	e 24·0
Calcutta	N.	56·4	300	e 12 11	PP	i 17 36	0	22 38	SSS	—
Colombo		60·7	280	9 54	−21	e 18 39	+ 7	—	—	33·6
Irkutsk		63·0	337	e 10 24	− 7	i 18 58	− 3	—	—	30·7
Kodaikanal	E.	63·5	284	e 10 33	− 1	i 19 4	− 3	i 19 24	PS	i 30·2
Hyderabad		63·9	292	—	—	19 10	− 2	19 30	PS	29·8
Honolulu		65·7	65	e 10 54	+ 6	19 3	−31	e 11 3	pP	—
Agra	E.	66·8	302	10 59	+ 3	19 32	−16	13 36	PP	30·6
Bombay		69·4	292	i 13 54	PP	i 20 32	+14	e 24 58	SS	32·9
Frunse		74·4	317	e 11 49	+ 7	—	—	—	—	—
Andijan		75·3	314	11 48	+ 1	e 21 28	+ 2	—	—	—
Tashkent		77·7	314	e 11 48	−12	i 21 47	− 5	—	—	—
Tchimkent		77·7	315	e 12 4	+ 4	—	—	—	—	—
Samarkand		79·0	311	—	—	e 22 10	+ 4	—	—	—
College		85·6	24	e 12 44	+ 3	e 23 0	[− 5]	e 17 57	PPP	e 34·7
Sverdlovsk		86·8	328	e 12 40	− 7	23 16	[+ 3]	16 8	PP	44·7
Sitka		90·0	33	13 5	+ 2	e 23 24	[− 9]	24 21	PS	e 37·8
Tananarive		91·1	251	—	—	23 43	[+ 4]	25 22	PS	—
Baku		92·0	311	e 13 25	+13	i 24 19	+ 7	—	—	42·7
Grozny		95·2	314	e 13 36	+ 9	—	—	—	—	—
Tiflis		95·9	312	e 13 37	+ 7	e 24 10	[+ 4]	e 17 29	PP	e 40·7
Victoria		97·0	43	e 17 42	PP	e 24 54	− 1	e 24 0	SKS	—
Ukiah		97·5	52	e 14 27	sP	e 24 13	[− 1]	e 31 42	SS	e 39·2
Berkeley		98·3	53	i 13 45	+ 4	e 25 0	− 6	i 18 0	PP	—
Santa Clara		98·6	53	e 13 50	+ 8	(e 24 12)	[− 8]	e 18 1	PP	e 41·5
Moscow		99·6	327	e 13 51	+ 5	24 13	[−12]	17 55	PP	e 52·2
Pasadena		101·8	56	e 14 2	+ 6	i 24 32	[− 4]	i 18 10	PP	e 41·5
Mount Wilson	Z.	101·9	56	e 13 54	− 3	—	—	—	—	—
Riverside		102·5	56	e 13 55	− 5	—	—	—	—	—
Pulkovo		102·6	332	14 6	+ 6	25 32	−10	18 21	PP	—
Ksara		103·4	304	e 14 23	+19	—	—	e 18 13	PP	—
Butte		104·6	43	e 14 20	+11	e 24 47	[− 2]	e 33 12	SS	e 43·0
Bozeman		105·7	44	e 14 6	P	e 24 54	[0]	e 37 3	SSS	e 43·9
Salt Lake City		106·0	48	e 18 35	PP	e 24 54	[− 1]	e 33 22	SS	e 43·6
Helwan		107·6	301	—	—	e 25 7	[+ 5]	18 12	PP	—
Istanbul		107·7	313	19 7	PP	25 23	[+21]	29 15	PPS	—
Tucson		108·1	57	e 14 22	P	e 25 5	[+ 1]	e 14 45	pP	e 40·8
Upsala		108·5	333	i 19 0	PP	e 26 25	{+30}	e 33 15	SS	e 56·7
Bucharest		109·1	317	e 18 59	PP	e 33 58	SS	e 21 29	PPP	53·7
Sofia		111·5	315	e 19 42?	PP	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kecskemet	z.	112·6	321	e 19 8	PP	—	—	—	—	—
Belgrade		112·9	318	e 12 26	?	e 25 59	[+35]	—	—	e 63·0
Copenhagen		113·0	332	i 19 37	PP	29 0	PS	—	—	51·7
Bergen		113·4	338	e 19 42?	PP	e 29 24	PS	—	—	e 57·7
Budapest		113·5	321	e 19 42?	PP	—	—	—	—	e 61·7
Cape Town		113·6	231	—	—	e 26 34	{+ 4}	i 29 15	PS	58·7
Prague		114·6	325	e 16 26	P	e 29 24	PS	e 20 18	PP	e 47·7
Hamburg		115·3	331	e 19 47	PP	—	—	—	—	e 50·7
Heligoland		116·0	332	e 19 34	PP	—	—	—	—	e 53·0
Triest		116·9	321	e 20 3	PP	e 25 56	[+18]	i 29 37	PS	e 55·0
Lincoln		117·1	45	e 20 8	PP	e 29 56	PS	e 43 42	SSS	—
Stuttgart		118·2	326	e 18 42	[− 7]	e 29 54	PS	e 36 54	SSP	e 62·2
Aberdeen		118·4	338	—	—	i 25 35	[− 9]	i 29 33	PS	55·4
Rome		118·7	317	e 19 53	PP	i 30 7	PS	i 22 56	PPP	i 54·0
Chur		119·0	325	e 18 49	[− 2]	—	—	—	—	—
Strasbourg		119·1	327	—	—	e 30 23	PS	—	—	e 55·7
Edinburgh		119·7	337	—	—	i 31 20	PPS	—	—	e 54·7
Uccle		119·7	330	i 20 26	PP	e 30 12	PS	e 37 20	SSP	e 53·7
Basle		119·8	326	e 20 20	PP	—	—	—	—	—
Stonyhurst		120·9	336	—	—	e 30 22	PS	—	—	e 63·7
Moncalieri		121·0	323	—	—	31 37	PPS	—	—	—
Bidston		121·5	336	e 20 3	PP	e 29 52	PS	—	—	e 52·7
Kew		121·6	332	e 20 35	PP	e 29 59	PS	e 23 9	PPP	e 67·7
Oxford		121·8	333	—	—	35 42	SS	—	—	—
Paris		121·9	329	e 20 39	PP	—	—	—	—	58·7
Chicago		122·8	42	e 18 52	[− 6]	e 27 13	{−20}	e 37 9	SS	e 49·2
Rathfarnham Castle		122·9	337	—	—	e 30 51	PS	—	—	e 57·8
Jersey		124·0	333	—	—	e 30 42?	PS	—	—	e 57·7
Toronto		126·9	35	e 21 42?	PP	—	—	—	—	53·7
Ottawa		127·8	31	e 19 6	[− 2]	—	—	e 21 42?	PP	53·7
Williamstown		130·9	32	i 19 10	[− 4]	e 32 1	PS	e 23 47	PP	e 59·4
Toledo		131·1	323	e 19 24	[+10]	—	—	e 21 35	PP	—
Columbia		131·3	46	e 19 4	[−10]	e 39 51	SSP	e 19 44	pPKP	e 54·4
Philadelphia		131·6	35	e 17 8	P	e 38 57	SS	i 22 37	SKP	e 54·9
Almeria		131·9	319	e 21 49	PP	—	—	e 22 33	SKP	—
Fordham		131·9	34	i 19 37	[+21]	—	—	—	—	75·5
Harvard		132·0	31	i 19 12k	[− 4]	—	—	e 21 30	PP	e 48·7
East Machias		132·3	26	e 16 4	P	e 28 22	{−12}	22 45	SKP	e 53·8
Granada		132·4	320	22 7	PP	—	—	—	—	66·1
Huancayo		141·9	115	e 19 34	[− 0]	41 50	SS	e 19 43	pPKP	—
Bermuda		143·0	35	e 19 51	[+15]	e 29 15	{−24}	e 41 8	SS	—
La Paz	z.	146·1	127	i 19 42	[+ 1]	i 33 22	PS	—	—	70·7
San Juan		150·5	57	e 19 26	[−22]	e 42 35	SS	e 20 2	pPKP	—
Rio de Janeiro		153·8	175	e 20 22	[+30]	—	—	—	—	—
Fort de France		156·4	60	e 20 6	[+10]	—	—	—	—	—

Additional readings :—
Brisbane iE = +9m.12s.
Adelaide i = +7m.52s. and +8m.43s., e = +10m.28s., i = +13m.16s.
Sydney i = +12m.9s., e = +14m.45s.
Riverview iNZ = +6m.38s., iE = +6m.44s.
Melbourne i = +16m.22s.
Hong Kong SS = +14m.49s., S_cS = +17m.40s.'
Perth i = +5m.25s., +5m.32s., +8m.52s., and +10m.7s., PS = +12m.59s., SS = +14m.30s., i = +15m.24s., +16m.20s., and +16m.52s.
Zi-ka-wei iZ = +7m.32s. and +9m.8s., SZ = +12m.8s.
Apia i = +16m.12s., SSN = +19m.5s.
Wellington iZ = +9m.16s., +9m.44s., and +11m.55s., i = +16m.56s. and +17m.54s., SS = +18m.43s., L_q = +20m.42s.
Christchurch iE = +16m.10s., iZ = +16m.22s., isSEN = +17m.9s., eS_cSN = +18m.4s., SS = +19m.14s., iNZ = +20m.13s., L_q = +21m.3s.
Calcutta eN = +13m.34s., +14m.53s., and +19m.33s., eN = +24m.56s.
Kodaikanal SSE = +23m.20s.
Honolulu ePP = +13m.34s., eSSS = +27m.3s.
Agra sP?E = +11m.21s., P_cP?E = +11m.35s., sSE = +20m.2s., SSE = +24m.37s.
Bombay eE = +20m.16s., iE = +21m.5s., iN = +21m.29s., iEN = +21m.35s., eN = iE = +26m.21s., L_qN = +29m.12s.
College eS = +23m.15s., epS = +23m.24s., ePS = +24m.24s., eSS = +28m.27s.

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Sverdlovsk SS = +28m.45s., L_q = +35m.54s.
Sitka eSKKS = +23m.30s., S = +23m.47s., iS = +23m.50s., eSS = +29m.44s., eSSS = +35m.13s.
Tananarive S = +24m.28s., SSE = +30m.28s.
Tiflis eZ = +17m.1s., iPPZ = +17m.32s., ePPPZ = +20m.22s., iSKKSE = +24m.28s., eSE = +25m.3s., eZ = +25m.22s., eN = +29m.3s., eSSE = +31m.31s.
Victoria e = +31m.24s., +39m.42s., and +44m.42s.
Ukiah epPP = +18m.10s., eS = +25m.14s.
Berkeley eN = +31m.12s.
Santa Clara ePPPE = +32m.6s. ; the reading given as PKKP is SKS.
Moscow eS = +25m.13s., SS = +32m.6s.
Mount Wilson iZ = +14m.2s.
Pulkovo S = +25m.54s., SS = +32m.42s.
Ksara ePPS = +28m.53s., e = +34m.17s.
Butte eS = +25m.57s., esS = +27m.6s.
Bozeman eS = +25m.53s., epS = +26m.54s., esS = +27m.28s., epPS = +28m.25s.
Salt Lake City ePP = +19m.1s., epPP = +19m.9s., ePPP = +21m.21s., eS = +26m.5s., eSP = +27m.28s., eSSS = +38m.16s.
Helwan iE = +26m.12s., PSE = +27m.14s., SSE = +32m.55s.
Tucson esP = +14m.58s., ePKP = +18m.41s., PKP = +18m.57s., epPPP = +22m.12s., eSKKS = +25m.38s., S = +26m.25s., SP = +28m.15s., SS = +34m.35s., esSS = +35m.54s., eSSS = +37m.24s.
Upsala iPP?N = +19m.7s., eN = +28m.12s.
Bucharest eN = +27m.35s., eEN = +30m.23s., eN = +31m.44s. and +34m.27s.
Cape Town ePSKSE = +27m.5s., ePSKSN = +27m.18s., E = +35m.28s., N = +35m.33s. eSSE = +39m.31s.
Hamburg iZ = +19m.55s.
Triest e = +29m.6s.
Stuttgart eZ = +20m.14s., ePPP = +22m.48s., eSSS = +40m.42s., eL_qEN = +55m.42s.
Aberdeen iN = +36m.21s., iE = +36m.30s.
Rome i = +20m.26s., iEN = +20m.53s., e = +32m.56s., iEN = +36m.42s., iE = +39m.25s., iEN = +41m.21s., iZ = +50m.9s.
Bidston eSKSP = +23m.55s.
Kew eSKPEN = +24m.1s., eL_qEN = +53m.42s.
Paris e = +24m.42s.
Williamstown PKP_3 = +22m.36s., e = +32m.44s. and +34m.21s., eSS = +39m.56s.
Columbia ePP = +21m.35s., PKS = +22m.49s., pPPP = +25m.14s.
Philadelphia iPKS = +22m.48s., ePPP = +24m.26s., epPPP = +25m.27s.
Almeria e = +24m.7s.
Fordham iZ? = +18m.28s. and +20m.7s., iE = +20m.11s., eEN = +45m.3s.
Harvard iPKSEN = +22m.49s.
East Machias epPP = +22m.21s., eSKSP = +31m.38s., ePSKS = +31m.51s., eSS = +38m.51s., eSSS = +43m.20s.
Huancayo esPP = +23m.40s., ePPP = +25m.42s., ePKP,PKP = +39m.52s.
Bermuda eP = +18m.21s., eSSS = +48m.56s.
San Juan eSSS = +54m.34s.
Long waves were also recorded at De Bilt, Cernauti, La Plata, and San Fernando.

July 12d. 23h. 3m. 35s. Epicentre 43°·6N. 29°·2W. (as on 1939, April 28d.).

$A = +\cdot6342$, $B = -\cdot3544$, $C = +\cdot6872$; $\delta = +5$; $h = -3$;
$D = -\cdot488$, $E = -\cdot873$; $G = +\cdot600$, $H = -\cdot335$, $K = -\cdot726$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rathfarnham Castle	18·0	49	e 4 6	− 7	—	—	—	—	e 8·1
San Fernando	19·0	105	e 4 29	+ 3	—	—	—	—	—
Toledo	19·1	92	e 4 27	0	e 8 13	+16	—	—	—
Jersey	19·4	63	e 5 27	+57	—	—	—	—	e 10·4
Bidston	19·8	51	e 4 38	+ 3	e 8 9	− 4	—	—	e 9·8
Stonyhurst	20·3	50	i 4 35	− 5	e 8 35	+12	—	—	10·1
Oxford	20·4	57	e 4 40	− 1	i 8 23	− 2	—	—	—
Granada	20·5	100	4 48k	+ 6	8 40	+13	—	—	10·6
Edinburgh	20·7	45	e 4 43	− 1	i 8 31	0	e 3 1	?	i 10·6
Ivigtut	20·9	335	—	—	8 51	SS	—	—	—
Kew	20·9	58	e 4 44	− 2	e 8 29	− 6	e 9 54	SSS	e 10·7
Almeria	21·4	99	e 4 50	− 1	9 2	+17	5 18	PP	—
Aberdeen	21·8	43	i 6 16	?	i 8 52	0	—	—	i 11·3
Paris	22·4	66	e 5 1	− 1	e 9 25	+21	—	—	11·4
Clermont-Ferrand	23·0	73	e 5 5	− 2	e 9 15	+ 1	—	—	e 11·2

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		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Uccle		23·8	60	i 5 15	0	e 9 27	− 1	—	—	e 11·4
De Bilt		24·4	57	i 5 20a	− 1	e 9 41	+ 2	—	—	—
Basle		25·9	68	e 5 33	− 2	—	—	—	—	—
Strasbourg		25·9	65	e 5 36a	+ 1	e 9 56	− 8	e 6 10	PP	e 12·2
Moncalieri		26·3	73	5 57	+18	12 35	L	—	—	(12·6)
Zurich		26·6	68	e 5 55	+13	—	—	—	—	—
Stuttgart		26·9	65	e 5 43	− 2	e 10 30	+10	—	—	—
Hamburg	z.	27·4	54	e 5 51	+ 2	—	—	—	—	—
Rome		30·4	79	i 6 20	+ 4	—	—	—	—	—
Triest		30·4	71	e 6 36	+20	—	—	—	—	e 17·5
Belgrade		35·2	71	e 7 9a	+11	e 17 38	L	—	—	(e 17·6)
Istanbul		42·4	73	8 1	+ 3	—	—	—	—	—
Helwan	z.	49·4	85	8 55	+ 2	—	—	—	—	—
La Paz	z.	69·6	221	11 28	+15	—	—	—	—	—

Additional readings :—
Oxford eE = +8m.34s.
Kew ePPZ = +7m.36s., ePKSN = +8m.29s.
Long waves were also recorded at Bombay and Williamstown.

July 12d. Readings also at 0h. (Tiflis (2)), 1h. (Andijan), 3h. (Lincoln), 5h. (near Tchimkent, Andijan, near Samarkand, and Tucson), 11h. (Jena), 14h. (Rome, Stuttgart, Tiflis, Sverdlovsk, Baku, Bucharest, near Istanbul, Belgrade, Triest, Sofia, Harvard, and La Paz), 15h. (Fort de France (2), San Juan, Huancayo, La Paz, Harvard, Jena, and Tucson (2)), 16h. (Toledo), 17h. (Toledo and near Harvard), 21h. (La Paz and Mizusawa), 23h. (Samarkand).

July 13d. 17h. 5m. 10s. Epicentre 27°·0N. 143°·0E.

A = −·7125, B = +·5369, C = +·4516; δ = −14; h = +3;
D = +·602, E = +·799; G = −·361, H = +·272, K = −·892.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Osaka		10·0	322	e 1 56	PPP	3 39	−43	—	—	—
Mizusawa		12·2	353	e 3 2	+ 4	e 5 10	− 6	—	—	—
Hukuoka		12·8	304	2 50?	−16	—	—	—	—	7·3
Zi-ka-wei	z.	19·3	286	e 4 23	− 6	8 15	+13	—	—	i 8·8
Manila		24·0	244	i 5 21a	+ 4	10 12	SS	—	—	—
Hong Kong		26·6	267	10 10	S	(10 10)	− 6	—	—	14·0
Irkutsk		38·3	323	e 6 50?	−34	e 13 15	− 4	—	—	19·8
Frunse		56·8	306	e 9 41	− 7	—	—	—	—	—
Andijan		58·8	304	e 9 57	− 5	e 18 14	+ 7	—	—	—
Tashkent		60·9	305	i 10 13	− 4	e 18 33	− 1	—	—	e 30·7
Sverdlovsk		63·7	324	i 10 32	− 4	19 5	− 5	—	—	31·8
Baku		75·2	309	e 11 49	+ 3	e 21 29	+ 4	—	—	37·8
Moscow		76·2	327	e 11 50	− 2	e 21 32	− 4	—	—	e 35·3
Pulkovo		77·6	333	e 11 58	− 2	e 21 48	− 3	—	—	e 37·8
Tiflis		78·2	312	e 12 3	0	e 22 2	+ 5	e 29 31	SSS	e 38·8
Tinemaha		80·6	54	i 12 19	+ 3	—	—	—	—	—
Haiwee		81·3	54	12 21	+ 1	—	—	—	—	—
Pasadena	z.	82·0	56	e 12 21	− 2	—	—	—	—	—
Mount Wilson	z.	82·1	56	e 12 23	− 1	—	—	—	—	—
Upsala		82·6	336	e 12 25	− 1	e 22 40	− 3	—	—	e 42·8
Riverside	z.	82·7	56	i 12 27	0	—	—	—	—	—
Copenhagen		87·5	335	e 13 7k	+16	23 20	[+ 3]	—	—	44·8
Ksara		88·2	307	e 12 7?	−47	e 26 35	?	—	—	—
Tucson		88·3	55	e 12 48	− 7	e 23 43	+ 4	e 17 3	PP	e 42·1
Bucharest		88·5	321	—	—	e 23 32	− 9	—	—	51·8
Stuttgart		94·0	332	e 13 35	+14	e 23 50	[− 6]	e 17 8	PP	e 49·8
Uccle		94·4	336	e 17 9	PP	—	—	—	—	e 48·8
Strasbourg		94·8	333	e 13 39	+14	e 24 35	− 1	e 17 16	PP	e 48·8
Paris		96·7	335	e 17 41	PP	—	—	—	—	54·8
Rome	z.	97·6	325	e 17 16	PP	—	—	e 20 24	PPP	—

For Notes see next page.

NOTES TO JULY 13d. 17h. 5m. 10s.

Additional readings :—
Mizusawa eSN = +5m.14s.
Zi-ka-wei iZ = +5m.20s.
Tiflis ePN = +12m.10s., e = +12m.16s., eZ = +36m.12s.
Upsala ePN = +12m.29s.
Tucson eP = +12m.57s. and +13m.21s.
Stuttgart eSSEN = +30m.50s.
Strasbourg eSSE = +31m.2s.
Long waves were also recorded at Berkeley, Calcutta, Honolulu, Kew, Clermont-Ferrand, De Bilt, Edinburgh, Hamburg, Prague, Toledo, Santa Clara, Aberdeen, and Moncalieri.

July 13d. Readings also at 0h. (Andijan (2)), 1h. (Hamburg), 3h. (Butte, Bozeman, Philadelphia, Salt Lake City, St. Louis, Guadalajara, Haiwee, Pasadena, Tinemaha, Mount Wilson, Riverside, Tucson, Tacubaya, Vera Cruz, and Lincoln), 4h. (Baku, Sverdlovsk, Tashkent, Riverside, Tinemaha, and Tucson), 5h. (near Mizusawa), 6h. (Upsala), 7h. (Grozny, Tiflis, and Triest), 8h. (Bermuda, near Mizusawa, and Lincoln), 10h. (Tacubaya and Vera Cruz), 11h. (Tiflis and Erevan), 12h. (Tiflis), 13h. (Harvard), 14h. (Triest), 15h. (Tucson), 17h. (near Branner), 20h. (Tucson), 23h. (Huancayo, La Paz, Tucson, Riverside, and Mount Wilson).

July 14d. 8h. 31m. 35s. Epicentre 53°·9N. 169°·5E.

A = −·5819, B = +·1078, C = +·8061 ; δ = +3 ; h = −7 ;
D = +·182, E = +·983 ; G = −·793, H = +·147, K = −·592.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sapporo		21·5	251	4 52	0	—	—	—	—	—
College		23·9	45	e 5 16	0	e 9 28	− 2	e 9 3	PcP	e 10·3
Mizusawa		24·3	243	e 5 19	− 1	e 9 41	+ 4	—	—	—
Akita		24·4	244	5 19	− 2	—	—	—	—	—
Hukusima		25·6	243	5 31	− 1	—	—	—	—	—
Mito		26·7	242	5 41	− 2	—	—	—	—	—
Kohu		28·3	242	5 54	− 3	—	—	—	—	—
Misima		28·4	241	5 58	0	—	—	—	—	—
Nagoya		29·4	243	6 36	+29	—	—	—	—	—
Sitka		30·7	60	e 6 25	+ 6	e 11 21	0	e 13 5	PcS	—
Irkutsk		38·0	295	7 22	+ 1	e 13 14	0	—	—	19·4
Honolulu		40·9	128	—	—	—	—	e 13 34	PcS	e 16·7
Ukiah		46·7	78	—	—	e 15 22	0	e 18 28	ScS	e 19·7
Berkeley		48·2	79	e 8 46	+ 2	e 15 51	+ 8	e 10 39	PP	e 23·4
Butte		48·4	64	e 8 50	+ 4	e 15 40	− 6	e 18 32	ScS	—
Santa Clara	E.	48·7	79	e 8 53	+ 5	—	—	—	—	—
Lick		48·9	79	e 8 52	+ 2	—	—	—	—	—
Bozeman		49·4	64	e 8 52	− 1	e 16 5	+ 5	e 9 11	pP	e 20·8
Fresno	N.	50·4	79	e 9 8	+ 7	—	—	—	—	—
Tinemaha		51·1	77	e 9 6	0	i 18 23	ScS	e 14 14	ScP	—
Haiwee		51·9	77	e 9 11	− 1	e 18 28	ScS	—	—	—
Santa Barbara	Z.	52·1	81	i 9 17	+ 3	—	—	—	—	—
Salt Lake City		52·2	70	e 9 15	0	e 16 36	− 3	e 14 31	PcS	—
Mount Wilson		53·2	80	i 9 20	− 2	i 18 38	ScS	i 14 23	ScP	—
Pasadena		53·2	80	i 9 20	− 2	i 18 38	ScS	e 11 32	PP	e 22·4
Riverside		53·8	80	i 9 25	− 1	i 18 41	ScS	—	—	—
La Jolla		54·6	80	i 9 39	+ 7	—	—	—	—	—
Sverdlovsk		55·4	321	9 37	− 1	i 17 21	− 1	26 55	Lg	34·4
Tucson		58·8	76	i 10 1a	− 1	e 18 6	− 1	12 7	PP	—
Lincoln		60·3	59	e 10 8	− 5	e 18 35	+ 9	e 19 58	ScS	e 24·5
Ivigtut		61·4	19	i 10 18k	− 2	18 39	− 1	18 49	PS	—
Andijan		62·1	301	e 10 25	0	e 27 6	?	—	—	35·4
Pulkovo		62·1	338	i 10 25	0	e 18 45	− 4	—	—	e 30·0
Tashkent		63·2	304	i 10 28	− 4	e 18 52	−11	—	—	e 33·2
Moscow		63·8	331	i 10 36	0	e 19 12	+ 1	—	—	38·9
Chicago		64·0	54	e 10 37	− 1	e 19 10	− 3	e 20 24	ScS	e 31·8
Upsala		64·4	345	e 10 27	−13	e 19 18	0	i 19 31	PS	e 35·4
St. Louis		65·2	57	—	—	i 19 25	− 3	i 20 50	ScS	—
Samarkand		65·6	304	e 11 8	+20	—	—	—	—	—
Ottawa		66·4	43	—	—	e 19 43	0	—	—	34·4

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Copenhagen	69·2	346	i 11 11a	+ 1	20 17	+ 1	—	—	34·4
Williamstown	69·8	43	i 11 13	− 1	—	—	—	—	e 38·4
East Machias	70·4	38	—	—	e 20 26	− 4	e 25 33	SS	e 29·7
Edinburgh	70·4	355	e 10 55	−23	—	—	—	—	—
Harvard	70·7	42	i 11 18k	− 2	—	—	—	—	e 37·4
Fordham	71·1	44	i 11 19k	− 3	e 20 30	− 8	—	—	e 36·3
Philadelphia	71·3	47	e 11 20	− 3	e 20 24	−17	e 11 45	pP	e 33·1
Hamburg	71·4	347	e 11 24	0	—	—	—	—	e 42·4
Grozny	71·9	320	e 11 31	+ 4	—	—	—	—	46·1
Baku	72·7	315	11 34	+ 2	e 21 19	PS	e 21 51	PPS	36·4
Columbia	73·4	54	—	—	e 21 0	− 5	e 29 33	SSS	e 34·9
De Bilt	73·6	349	i 11 37a	0	21 10	+ 3	—	—	37·4
Tiflis	73·6	320	i 11 37	0	21 11	+ 4	14 13	PP	e 36·4
Kew	74·7	353	i 11 42	− 1	e 21 18	− 1	e 11 51	P_cP	e 38·4
Uccle	74·9	350	11 45	+ 1	—	—	e 14 39	PP	—
Stuttgart	76·4	346	e 11 53	0	e 21 35	− 3	e 14 46	PP	e 44·4
Strasbourg	76·7	347	e 11 54	− 1	e 21 45	+ 4	—	—	e 42·2
Jersey	77·0	355	—	—	e 21 45	0	—	—	—
Paris	77·1	351	—	—	e 22 2	+16	—	—	50·4
Bucharest	77·2	333	e 12 1	+ 4	—	—	—	—	—
Basle	77·8	347	e 11 59	− 2	—	—	—	—	—
Belgrade	78·2	337	e 12 3k	0	e 22 2	+ 5	e 12 14	P_cP	e 48·9
Triest	78·7	342	e 12 4	− 2	e 21 50	−13	e 22 26	PS	—
Clermont-Ferrand	80·0	350	e 12 15	+ 2	—	—	—	—	—
Moncalieri	80·3	347	e 11 23	−51	—	—	i 13 18	?	40·6
Rome	82·6	341	i 12 26	0	22 46	+ 3	15 37	PP	—
Ksara	83·9	322	i 12 35	+ 2	e 23 7	+11	e 15 53	PP	43·4
Toledo	86·4	355	e 12 45	0	e 23 20	− 1	e 12 55	P_cP	—
Granada	89·1	355	—	—	e 22 32	[−55]	—	—	—
Helwan	89·1	324	12 58	0	23 43	− 3	16 31	PP	—
San Juan	93·7	52	—	—	e 23 35	[−19]	e 30 36	SS	—
Huancayo	114·4	76	—	—	—	—	e 38 44	P′P′	e 47·1

Additional readings :—
Mizusawa ePE = +5m.22s.
Sitka S_cS = +16m.50s.
Berkeley eN = +18m.43s. and +21m.11s.
Butte esSS = +19m.44s.
Lick eN = +8m.56s.
Tinemaha i = +9m.15s.
Haiwee iEZ = +9m.18s., iP_cPZ = +10m.35s., iS_cPZ = +14m.14s.
Salt Lake City eS_cS = +19m.1s.
Pasadena i = +9m.28s., iS_cPZ = +14m.23s., iP_cSZ = +14m.39s.
Riverside iZ = +9m.32s.
Tucson iP = +10m.10s., isP = +10m.44s., iP_cP = +10m.59s., S = +18m.20s., isS = +19m.18s., iS_cS = +19m.28s., eSS = +21m.36s., esSS = +22m.33s., eSSS = +24m.59s.
Chicago eSSS = +26m.13s.
Upsala iPN = +10m.41s., ePPPN = +14m.13s.
St. Louis iE = +22m.28s.
East Machias S = +20m.39s., esS = +21m.15s., eSSS = +28m.38s.
Philadelphia esS = +20m.47s., eSS = +25m.9s., eSSS = +28m.54s.
Tiflis PPPZ = +15m.51s., ePPPN = +16m.15s., SN = +21m.15s., ePSZ = +21m.42s., ePSN = +21m.46s., ePSE = +21m.54s., eSSSE = +29m.25s., eSSSN = +29m.35s., eSSSZ = +30m.2s.
Kew eE = +21m.30s., eSSEN = +26m.25s.?, eL_qEN = +34m.25s.
Stuttgart eSNZ = +22m.3s.
Strasbourg eE = +12m.15s.
Ksara ePS = +24m.0s.
Helwan SE = +23m.55s.
San Juan eS = +24m.39s., eSSS = +36m.30s.
Long waves were also recorded at Christchurch, Bombay, Agra, and Prague.

July 14d. Readings also at 0h. (Tiflis), 3h. (Ksara, Sverdlovsk, and Baku), 4h. (Sofia), 6h. (Sverdlovsk and Irkutsk), 11h. (Tiflis), 12h. (St. Louis and near Mizusawa), 13h. (Sverdlovsk, Baku, and Tucson), 14h. (Tiflis and near Honolulu), 17h. (Tacubaya).

July 15d. Readings at 0h. (Triest), 3h. (Montezuma and La Paz), 4h. (Huancayo, Tinemaha, Mount Wilson, Riverside, and Tucson), 6h. (near Wellington), 7h. (near Andijan), 8h. (near Wellington), 9h. (Tucson), 11h. (near Andijan, Frunse, Rome, and Triest), 12h. (Tucson), 14h. (Tucson), 15h. (Ottawa), 17h. (Andijan), 19h. (Frunse), 20h. (Istanbul), 21h. (near Tananarive, Grozny, Erevan, Helwan, Pulkovo, Tchimkent, Andijan, Frunse, Rome (2), Tashkent (2), Sverdlovsk, Moscow (2), Tiflis, Baku, and Ksara), 22h. (near Mizusawa, Irkutsk, Stuttgart, and Calcutta), 23h. (San Juan, Sverdlovsk (2), Tashkent, Moscow, Tiflis, Baku, Ksara, Tinemaha, Mount Wilson, Riverside, and La Paz).

July 16d. 8h. Undetermined shock.

Brisbane iPN = 29m.36s., eSN = 33m.18s.
Adelaide e = 31m.0s., 33m.17s., and 35m.46s.
Riverview eN = 31m.0s., 35m.42s., eLN = 40·5m.
Christchurch P = 31m.35s.k, eS = 38m.19s., L_qE = 41m.34s., L_rNZ = 44m.55s.
Sydney e = 35m.24s.
Sitka e = 36m.18s.
Andijan e = 37m.4s.
Melbourne e = 37m.48s., i = 39m.5s., L = 40·3m.
Mount Wilson iPZ = 37m.57s.
Pasadena iPZ = 37m.57s.
Tashkent iP = 37m.57s., e = 41m.45s., 48m.48s., eL = 63·6m.
Riverside ePZ = 37m.58s.
Tinemaha ePZ = 37m.58s.
Salt Lake City e = 39m.32s.
Ottawa e = 43m.44s., L = 86·0m.
Williamstown i = 43m.50s., eL = 84·9m.
Ksara e = 45m.0s., 45m.56s., and 60m.3s., L = 93·0m.
San Juan e = 45m.28s.
Stuttgart eZ? = 46m.15s., eZ = 47m.20s., eL_qEN = 102·0m., eL_r = 104m.
Victoria e = 48m.0s., L = 63·0m.
Sverdlovsk e = 49m.2s., L = 66·0m.
Tiflis eZ = 52m.28s., eE = 53m.50s., eL = 81·0m.
Moscow e = 62m.9s., L = 85·0m.
Berkeley eEN = 62m.45s., eEZ = 68m.24s.
Ukiah e = 66m.0s.
Tucson e = 69m.29s.
Bozeman e = 71m.4s.
Philadelphia e = 82m.42s.
Long waves were also recorded at Wellington, East Machias, Harvard, Kew, and Baku.

July 16d. 12h. 21m. 28s. Epicentre 15°·5S. 64°·0E.

A = +·4226, B = +·8665, C = −·2656; δ = −4; h = +6;
D = +·899, E = −·438; G = −·116, H = −·239, K = −·964.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tananarive		16·1	255	3 49	0	e 6 48	− 1	7 14	SS	7·8
Colombo	E.	27·2	37	—	—	(11 28)	SS	—	—	11·5
Kodaikanal	E.	28·2	28	—	—	e 12 32?	SSS	—	—	—
Bombay	N.	35·3	15	i 7 45	+46	—	—	i 9 17	PPP	16·4
Calcutta	N.	44·7	33	—	—	e 18 0	SS	—	—	—
Helwan		55·7	325	9 48	+ 8	e 17 38	+12	24 14	SSS	—
Ksara		55·9	332	e 9 52	+10	e 17 52	+23	e 13 3	PPP	27·4
Andijan		56·5	9	e 9 58	+12	e 19 54	?	—	—	—
Tashkent		56·7	6	e 9 48	0	e 17 49	+ 9	—	—	e 24·5
Baku		57·1	348	e 10 15	+25	e 18 11	+26	—	—	27·5
Erevan		58·3	343	e 10 18	+19	—	—	—	—	—
Frunse		58·9	10	e 10 28	+25	—	—	—	—	—
Tiflis		59·6	344	e 10 10	+ 2	e 18 43	+26	e 11 58	PP	e 28·0
Grozny		60·9	346	e 10 5	−12	—	—	—	—	—
Istanbul		64·9	332	i 10 32?	−11	19 49	PS	—	—	—
Bucharest		68·9	333	e 10 26	−43	—	—	e 15 46	PPP	29·5
Sverdlovsk		72·1	358	e 11 25	− 3	e 20 57	+ 7	—	—	30·2
Rome	Z.	74·3	323	e 11 48	+ 7	e 21 32	+17	—	—	—
Moscow		74·4	346	11 43	+ 1	21 37	+21	—	—	—
Triest		75·9	326	e 12 16	+26	e 22 15	PS	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Irkutsk		76·0	25	e 11 32?	−19	e 30 32?	SSS	e 16 32?	PPP	34·5
Chur		79·0	326	e 12 6	− 1	—	—	—	—	—
Pulkovo		79·8	344	e 12 16	+ 4	e 22 29	+15	—	—	e 38·2
Zurich		79·8	326	e 12 21	+ 9	—	—	—	—	—
Stuttgart		80·3	327	e 12 19	+ 5	e 22 40	+20	—	—	e 36·5
Basle		80·5	325	e 12 27	+12	—	—	—	—	—
Strasbourg		81·0	327	e 12 36	+18	e 22 45	+18	—	—	—
Clermont-Ferrand		82·0	322	e 12 52	+29	e 22 47	+10	—	—	—
Hamburg		82·8	331	e 12 32	+ 5	e 23 12	PS	—	—	e 54·5
Toledo		83·8	314	e 12 44	+12	—	—	—	—	41·5
Upsala		83·9	339	—	—	e 23 8	+12	—	—	e 50·5
Paris		84·0	324	e 12 58	+25	—	—	—	—	49·5
Uccle		84·0	327	e 12 54	+21	23 23	+26	—	—	e 35·5
De Bilt		84·3	329	e 12 51	+16	—	—	e 16 11	PP	36·1
Kew		86·9	326	e 13 4	+16	e 23 40	+14	e 16 40	PP	e 39·5
Bidston		89·3	326	—	—	e 24 8	+20	e 30 24	SS	e 36·5
Edinburgh		90·5	329	—	—	e 24 32?	+33	—	—	e 51·5
Aberdeen		90·6	330	e 17 37	PP	e 24 17	+17	—	—	e 37·5
Rio de Janeiro		99·2	244	e 30 32	SS	—	—	—	—	e 46·5
Huancayo		131·3	238	e 22 35	?	—	—	—	—	—
San Juan		132·3	281	e 18 28	[−48]	—	—	—	—	—
Williamstown		134·5	316	e 22 18	PP	—	—	—	—	e 63·1
Fordham	z.	135·7	314	e 19 49	[+27]	—	—	—	—	—
Philadelphia		136·9	313	e 23 14	PP	—	—	—	—	—
Victoria		146·6	8	e 19 56	[+14]	—	—	—	—	e 69·5
St. Louis	E.	147·7	321	e 19 47	[+ 3]	e 27 10	[+19]	—	—	—
Mount Wilson	z.	161·3	5	e 20 4	[+ 2]	—	—	e 24 40	PP	—
Pasadena	z.	161·3	5	e 20 1	[− 1]	—	—	i 24 44	PP	—
Riverside	z.	161·5	5	e 20 8	[+ 6]	—	—	—	—	—
Tucson		162·7	345	e 19 54	[− 9]	—	—	—	—	—

Additional readings :—
Tananarive iE = +4m.13s., SE = +6m.52s.
Baku e = +22m.14s. and +24m.44s.
Tiflis e = +10m.38s. and +10m.42s., eZ = +12m.8s. and +20m.50s., eSSSZ = +24m.54s., eSSSEN = +25m.32s.
Bucharest eEN = +12m.8s. and +21m.37s.
Triest e = +12m.40s.
Stuttgart e = +12m.50s., eN = +25m.32s., eEN = +34m.32s.
Strasbourg e = +35m.2s.
Kew eZ = +15m.34s., eSSE = +29m.44s., eL$_q$EN = +36m.32s.
Bidston e = +27m.42s.
Mount Wilson ePKP$_2$Z = +20m.58s., eZ = +21m.51s. and +22m.25s.
Pasadena iPKP$_2$Z = +21m.8s.
Long waves were also recorded at Harvard, Stonyhurst, San Fernando, Granada, Almeria, Bozeman, and East Machias.

July 16d. Readings also at 0h. (Tashkent, Tinemaha, Mount Wilson, Tiflis, Baku, Philadelphia, Ksara, and Tucson), 2h. (Tiflis, La Paz, and Huancayo), 3h. (Baku and Sverdlovsk), 4h. (Moscow and Sverdlovsk), 5h. (La Paz, Mount Wilson, Tinemaha, Riverside, and Pasadena), 6h. (Andijan), 12h. (Rathfarnham Castle), 13h. (Berkeley), 14h. (Samarkand, Sverdlovsk, Tashkent, Andijan, Frunse, and Tchimkent), 17h. (Philadelphia), 19h. (Tashkent, Frunse (2), near Andijan (2), Tchimkent, near Berkeley, Moscow, Sverdlovsk (2), Baku, Grozny, Tiflis, Pulkovo, Irkutsk, Fresno, De Bilt, San Francisco, Lick, and near Branner), 21h. (Tiflis, Grozny, Baku, Sverdlovsk, Moscow, Tchimkent, Frunse, Andijan, Helwan, Erevan, Ksara, and Tashkent), 22h. (Ksara), 23h. (Ksara, Tashkent, Baku, and Tiflis).

July 17d. Readings at 0h. (Tiflis and Ksara), 2h. (Andijan), 3h. (Copenhagen, near Grozny, Piatigorsk, Tiflis, Tinemaha, Riverside, Mount Wilson, and Tucson), 4h. (Andijan, Frunse, and near Triest), 6h. (Tashkent, Frunse, near Tucson, and near Andijan), 7h. (Mount Wilson, Riverside, Samarkand, Pasadena, and Philadelphia), 8h. (near Samarkand), 9h. (Ukiah, near Santa Clara, Berkeley (2), Lick (2), Branner (2), Fresno (2) and Tucson), 11h. (Tucson, Mount Wilson, Riverside, Pasadena, Philadelphia, Tinemaha, Upsala, Williamstown, Oaxaca, and Tacubaya), 13h. (Upsala), 14h. (Andijan (2), and Frunse), 18h. (near Apia), 21h. (near Basle, Zurich, Tinemaha, Pasadena, Mount Wilson, Triest, and Riverside).

July 18d. 3h. 26m. 35s. Epicentre 49°·2N. 129°·9W. (as on 1939, Jan. 3d.).

$A = -\cdot4199$, $B = -\cdot5040$, $C = +\cdot7548$; $\delta = +6$; $h = -5$;
$D = -\cdot768$, $E = +\cdot640$; $G = -\cdot483$, $H = -\cdot580$, $K = -\cdot656$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Victoria	4·4	98	i 1 1	− 9	i 2 5	+ 3	i 1 25	P_g	2·6
Seattle	5·2	105	i 1 35	P*	i 2 29	+ 7	—	—	i 4·4
Sitka	8·6	339	i 2 9	0	i 3 45	− 3	e 2 35	P*	—
Ukiah	11·1	153	e 2 41	− 2	4 40	− 9	—	—	—
Butte	12·1	91	2 53	− 4	5 29	SS	5 43	SSS	i 6·4
Berkeley	12·6	152	i 3 0	− 3	e 5 19	− 7	—	—	—
San Francisco	12·6	152	e 3 25?	PPP	—	—	—	—	—
Branner	13·0	152	e 3 12	+ 3	e 5 36	+ 1	—	—	e 6·6
Santa Clara	13·1	151	e 3 11	+ 1	i 5 46	+ 8	—	—	—
Bozeman	13·2	100	i 3 11a	0	e 5 43	+ 3	6 7	SSS	i 7·2
Lick	13·2	151	e 3 11	0	e 5 41	+ 1	—	—	e 7·0
Tinemaha	14·7	141	e 3 31	0	—	—	—	—	—
Salt Lake City	15·2	117	i 3 37a	− 1	e 6 21	− 7	6 35	SS	e 8·0
Haiwee	15·7	142	i 3 44	0	—	—	—	—	—
Santa Barbara	16·5	148	e 3 56	+ 2	—	—	—	—	—
Mount Wilson	17·3	146	e 4 2	− 2	—	—	—	—	—
Pasadena	17·3	146	e 4 2	− 2	—	—	—	—	e 7·1
Riverside	17·8	144	e 4 8	− 3	—	—	—	—	—
College	18·4	336	e 4 23k	+ 5	i 7 51	+10	8 2	SS	i 8·7
La Jolla	18·8	145	e 4 21	− 2	—	—	—	—	—
Tucson	22·1	133	i 4 57a	− 2	i 8 57	− 1	i 5 28	PP	i 9·6
Lincoln	24·7	95	i 5 24	0	e 9 38	− 6	i 5 59	PP	—
Florissant	29·9	96	i 6 9	− 3	e 11 3	− 6	—	—	—
Chicago	30·1	89	e 6 14	+ 1	i 11 15	+ 3	e 8 59	P_cP	i 12·7
St. Louis	30·1	96	i 6 11	− 2	e 11 9	− 3	—	—	—
Cincinnati	33·6	90	i 6 43	− 1	—	—	—	—	e 16·7
Toronto	34·6	79	6 51	− 2	12 25	+ 3	14 25	SS	16·4
Honolulu	35·7	229	e 7 18	+16	e 12 43	+ 4	e 8 16	PP	e 14·2
Ottawa	36·2	75	i 7 7	+ 1	e 12 49	+ 2	8 49	PPP	e 17·9
Shawinigan Falls	37·6	72	e 7 19	+ 1	e 15 7	SS	i 8 47	PP	18·4
Vermont	38·2	75	e 7 40	+17	e 13 14	− 3	e 8 49	PP	e 19·3
Georgetown	38·5	84	i 7 26	0	13 23	+ 1	e 8 47	PP	—
Seven Falls	38·5	70	i 7 30	+ 4	e 13 31	+ 9	—	—	e 19·4
Tacubaya N.	38·5	129	i 7 35	+ 9	—	—	—	—	—
Columbia	38·9	94	e 7 27	− 2	e 13 25	− 3	e 8 46	PP	e 16·2
Williamstown	39·1	77	i 7 32	+ 1	e 13 41	+10	9 0	PP	e 20·6
Philadelphia	39·2	82	i 7 36k	+ 5	13 31	− 1	i 8 56	PP	i 15·9
Fordham	39·6	81	e 7 34	− 1	i 13 39	+ 1	i 9 4	PP	i 20·1
Harvard	40·2	77	i 7 39a	− 1	e 13 48	0	i 9 11	PP	e 18·4
East Machias	41·8	72	e 7 53	0	14 10	− 1	e 9 32	PP	i 17·3
Oaxaca N.	41·8	127	e 8 30	+37	—	—	—	—	—
Halifax	44·1	69	e 8 37	+25	i 14 55	+10	e 18 1	SS	e 21·4
Ivigtut	45·0	43	8 24	+ 5	15 4	+ 6	10 5	PP	—
Bermuda	50·5	84	e 9 12	+10	16 14	− 2	i 20 14	SS	i 21·8
Sapporo	58·4	301	10 1	+ 1	—	—	—	—	—
San Juan	59·1	98	e 10 1	− 3	e 18 11	0	e 13 39	PPP	e 23·7
Tokyo, Cen. Met. Ob.	64·3	296	10 37	− 2	—	—	—	—	—
Fort de France	65·0	96	e 10 43	− 1	e 19 23	− 3	—	—	e 30·9
Misima	65·1	295	10 47	+ 2	—	—	—	—	—
Aberdeen	65·5	29	e 11 8	+21	i 19 33	+ 1	i 15 23	PPP	e 30·9
Edinburgh	66·2	30	e 11 10	+18	i 19 49	+ 9	—	—	30·4
Rathfarnham Castle	67·3	34	e 10 57	− 2	e 19 57	+ 3	e 11 31	PP	e 31·0
Kobe	67·6	298	11 19	+18	19 59	+ 2	—	—	—
Stonyhurst	68·1	31	e 11 15	+11	e 21 7	+64	—	—	31·4
Upsala	68·1	17	i 11 12	+ 8	20 12	+ 9	e 27 40	SSS	e 30·4
Bidston	68·3	32	—	—	e 20 10	+ 4	e 23 55	SS	e 29·8
Irkutsk	68·9	329	e 11 17	+ 8	20 19	+ 6	—	—	36·4
Pulkovo	70·2	12	e 11 18	+ 1	i 20 32	+ 4	—	—	e 33·8
Copenhagen	70·8	22	e 11 26	+ 6	20 40	+ 5	—	—	30·4
Kew	70·9	31	e 11 21	0	e 20 41	+ 5	e 14 0	PP	e 32·4

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Heligoland		71·0	25	i 11 21	− 1	e 20 45	+ 8	—	—	e 30·4
De Bilt		72·1	28	i 11 33	+ 5	20 58	+ 8	—	—	30·2
Hamburg		72·1	24	e 11 32a	+ 4	i 21 4	+14	e 15 11	PPP	e 33·4
Jersey		72·2	33	—	—	e 22 13	?	—	—	e 34·8
Apia		72·9	222	—	—	e 29 41	SSS	—	—	e 37·1
Uccle		72·9	29	e 11 27	− 6	21 6	+ 7	e 14 11	PP	e 30·4
Sverdlovsk		74·0	355	e 11 38	− 1	i 21 16	+ 5	—	—	31·2
Paris		74·1	31	e 11 42	+ 2	e 21 21	+ 9	—	—	34·4
Jena		74·9	24	e 11 49	+ 5	e 21 31	+ 9	—	—	e 35·4
Moscow		74·9	9	11 45	+ 1	21 26	+ 4	—	—	42·9
Strasbourg		75·9	28	e 11 53	+ 3	e 21 42	+10	—	—	—
Stuttgart		76·2	27	e 11 55	+ 3	e 21 44	+ 8	e 26 37	SS	e 36·4
Prague		76·5	23	e 11 56	+ 2	e 21 43	+ 4	e 22 15	PS	e 36·4
Huancayo		77·5	125	e 12 0	+ 1	e 21 47	− 3	e 14 48	PP	e 32·1
Zi-ka-wei	Z.	78·0	304	e 12 7	+ 5	22 7	+12	—	—	38·6
Toledo		79·2	40	e 12 13	+ 5	i 22 20	+12	—	—	32·3
Budapest		80·0	21	—	—	e 34 55	?	—	—	e 43·4
Triest		80·3	25	e 12 16	+ 2	22 30	+10	23 4	PS	—
Cernauti	N.	80·6	16	e 13 25?	+69	—	—	—	—	48·4
San Fernando		81·1	43	e 12 37	+19	i 22 39	+11	i 27 0	SS	33·4
Granada		81·7	42	12 28k	+ 6	22 45	+11	i 15 53	PP	41·1
Almeria		82·4	40	e 12 17	− 8	e 22 38	− 3	12 50	P_eP	39·4
Belgrade		82·8	21	e 12 32k	+ 5	i 22 54	+ 9	e 15 54	PP	40·8
Rome		83·4	27	12 33k	+ 3	i 22 56	+ 5	i 15 49	PP	e 35·5
Bucharest		84·4	17	e 12 55	+19	22 46	−15	15 50	PP	40·4
Algiers		84·7	37	e 12 41	+ 4	e 23 0	− 4	—	—	e 40·4
La Paz		85·1	122	e 12 33	− 6	23 5	− 3	i 15 43	PP	44·4
Sofia		85·5	20	e 12 55	+14	e 22 55	[− 9]	—	—	—
Frunse		85·8	343	e 14 25	?	—	—	—	—	—
Grozny		87·8	4	e 13 3	+11	—	—	—	—	—
Istanbul		88·2	16	13 59	+65	25 55	PPS	24 49	PKS	e 36·1
Andijan		88·3	344	e 15 4	?	e 21 52	?	—	—	43·4
Tashkent		88·3	347	e 13 5	+10	i 23 26	[+ 4]	i 15 46	PP	e 41·4
Hong Kong		89·0	304	23 46	S	(23 46)	+ 1	29 57	SS	—
Tiflis		89·3	5	e 13 5	+ 6	e 23 33	[+ 4]	i 24 56	PPS	e 42·4
Baku		90·8	1	e 13 13	+ 7	23 20	[−18]	25 20	PS	44·4
Erevan		90·9	5	—	—	(24 19)	+16	—	—	24·3
Manila		91·2	294	e 13 13	+ 5	24 20	+15	i 26 7	PPS	—
Ksara		96·4	12	e 13 38	+ 6	e 26 19	PS	e 17 29	PP	47·4
Helwan		99·5	17	e 14 7	+21	e 26 43	PS	27 31	PPS	—
Agra	E.	100·1	335	—	—	e 25 23	+ 2	—	—	46·1
Calcutta	N.	100·9	325	i 18 51	?	e 26 44	PS	—	—	—
Rio de Janeiro		104·2	107	e 18 25	PP	—	—	—	—	e 48·4
Bombay		109·3	338	e 21 44	PPP	i 33 14	SS	—	—	i 45·2
Kodaikanal	E.	116·2	331	e 32 25?	PPS	—	—	—	—	—
Tananarive	E.	149·7	7	—	—	26 58	[+ 5]	—	—	—

Additional readings :—
Sitka iS = +3m.49s.
Ukiah iS = +4m.51s.
Butte P = +4m.15s., iS = +6m.1s.
Branner ePE = +3m.15s.
Bozeman S = +5m.49s.
Salt Lake City iS = +7m.18s.
Tucson iP = +5m.19s., iS = +9m.5s., i = +9m.19s.
Lincoln eP_eP = +7m.58s., iS = +9m.54s.
Chicago eP = +6m.30s.
Cincinnati i = +7m.9s. and +10m.53s.
Honolulu eP = +7m.27s., S = +12m.47s.
Ottawa SSN = +14m.55s.
Vermont S = +13m.28s., eSS = +15m.30s., eS_eS = +17m.44s.
Georgetown +13m.26s. and +13m.42s., iSS = +15m.47s.
Columbia S = +13m.33s.
Williamstown i = +9m.23s., SS = +16m.24s.
Philadelphia ePPP = +9m.54s., iS = +13m.35s.
Fordham eN = +13m.31s., iSSEN = +16m.24s.
Harvard eSSN = +16m.15s.

Continued on next page.

East Machias eSS = +16m.58s.
Ivigtut +15m.22s., SS = +18m.23s.
Bermuda eP = +9m.34s.
San Juan iS = +18m.16s.
Aberdeen iEN = +23m.56s. and +27m.8s.
Edinburgh i = +20m.58s., e = +24m.43s., i = +27m.31s.
Upsala eSSSE = +27m.44s.
Bidston eSSS = +28m.30s.
Copenhagen +20m.44s. and +21m.59s., e = +28m.59s.
Kew eP_cPZ = +12m.14s., ePPPZ = +16m.13s., ePSE = +21m.31s., eS_cSN = +21m.57s., eSSEN = +25m.7s., eSSSEN = +29m.2s., eL_qEN = +29m.25s.
Heligoland eE = +11m.32s.
Hamburg eSN = +20m.58s., eSSSN = +29m.25s.
Apia e = +35m.36s.
Uccle eSS = +25m.39s.
Stuttgart eS_cS = +22m.15s., eSSS = +30m.25s., e = +33m.43s.
Huancayo eP = +12m.8s., S = +21m.53s., eSS = +26m.53s.
Zi-ka-wei iZ = +12m.31s.
Budapest eE = +35m.55s.
Triest PS = +24m.20s., SS = +27m.43s., e = +35m.11s.
Granada P_cP = +12m.33s., PPP = +17m.41s., PS = +23m.27s., PPS = +24m.12s., SS = +28m.2s., SSS = +31m.37s., PKP,PKP = +38m.55s.
Almeria e = +13m.59s.
Belgrade iP_cP = +12m.40s., i = +12m.48s., iNW = +24m.48s.
Rome iZ = +12m.45s. and +12m.48s., iN = +16m.9s., iZ = +16m.18s., iN = +18m.15s., iPSN = +23m.47s., SSN = +28m.8s., iSSE = +28m.27s.
Bucharest eE = +16m.26s. and +17m.0s., PPPN = +17m.39s., eSSE? = +28m.42s.
La Paz iZ = +12m.57s., PS = +24m.19s.
Tashkent iS = +23m.47s., PS = +24m.49s., eSS = +29m.49s.
Tiflis eP = +13m.9s., eE = +13m.19s., eZ = +13m.29s., iE = +13m.43s., eSE = +23m.54s., ePPSE = +25m.7s., eSSSE = +34m.5s.
Baku S_cS = +24m.8s., SS = +30m.7s., SSS = +33m.25s.
Ksara ePPS = +26m.57s.
Helwan PPSE = +28m.25s.
Long waves were also recorded at La Plata, Colombo, Phu-Lien, Bagnères, and Bergen.

July 18d. 11h. 23m. 58s. Epicentre 6°·5N. 93°·5E.

$A = -\cdot0607$, $B = +\cdot9918$, $C = +\cdot1125$; $\delta = +1$; $h = +7$;
$D = +\cdot998$, $E = +\cdot061$; $G = -\cdot007$, $H = +\cdot112$, $K = -\cdot994$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	13·5	272	3 32	PPP	—	—	—	—	7·0
Kodaikanal	E.	16·3	284	i 3 50k	− 2	6 51	− 2	e 7 39	SSS	e 8·5
Calcutta	N.	16·7	343	e 4 2	+ 5	i 7 18	+15	—	—	i 9·1
Hyderabad	N.	18·3	308	—	—	7 58	SS	—	—	—
Phu-Lien		19·1	41	e 4 37	+10	e 8 7	+10	—	—	—
Bombay		23·6	303	e 5 14	+ 1	e 9 27	+ 2	i 10 17	SS	e 12·2
Agra	E.	25·3	328	5 24	− 6	9 58	+ 4	5 41	pP	—
Hong Kong		25·4	50	5 22	− 9	10 18	+22	—	—	—
Manila		28·1	72	e 6 16	+21	11 20	+40	—	—	15·6
Zi-ka-wei	Z.	35·9	43	e 7 48	+44	—	—	—	—	23·3
Andijan		39·0	334	e 9 34	PP	—	—	—	—	—
Frunse		39·9	339	7 50	+13	—	—	—	—	—
Tashkent		40·8	332	i 7 42	− 3	13 52	− 4	—	—	—
Tchimkent		41·5	333	e 7 48	− 2	—	—	—	—	—
Irkutsk		46·5	10	e 8 32	+ 1	e 15 2?	−17	e 11 2?	PPP	27·0
Baku		51·5	318	e 9 13	+ 4	e 17 23	PPS	—	—	30·0
Tiflis		55·6	317	e 9 38	− 2	e 17 18	− 7	11 48	PP	e 31·0
Sverdlovsk		56·4	339	9 42	− 3	17 25	−11	—	—	28·0
Ksara		59·6	305	e 10 12k	+ 4	e 19 42	?	—	—	35·0
Helwan		62·7	300	e 10 32	+ 3	e 18 56	− 1	e 19 44	PS	—
Moscow		65·9	330	10 50	0	19 23	−14	—	—	39·5
Pulkovo		71·1	332	e 11 20	− 2	20 30	− 8	—	—	37·6
Upsala		77·3	330	—	—	e 29 2?	SSS	—	—	e 37·0
Rome		79·0	312	e 12 10	+ 3	—	—	e 15 20	PP	—
Stuttgart		81·4	319	e 12 23	+ 3	e 22 28	− 3	e 23 9	PS	e·49·0

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Strasbourg		82·4	319	e 12 39	+14	—	—	—	—	—
De Bilt		83·9	322	e 12 33	0	—	—	—	—	e 48·0
Paris		85·8	318	e 13 2?	+20	—	—	—	—	56·0
Fort de France		147·2	309	e 19 54	[+11]	—	—	—	—	—
San Juan		148·1	321	e 19 42	[+ 2]	—	—	—	—	—
La Paz	z.	159·3	239	20 32	[+32]	—	—	—	—	79·0

Additional readings :—
Calcutta eN = +4m.58s., iN = +7m.2s.
Bombay eN = iE = +6m.34s., iE = +9m.41s., iN = +9m.46s. and +10m.7s., iEN = +10m.51s.
Agra iE = +10m.15s., sSE = +10m.30s.
Irkutsk e = +18m.2s.?
Tiflis ePN = +9m.42s., P_cPZ = +10m.42s., eEN = +18m.6s., eE = +19m.31s.
Helwan eE = +21m.8s.
Upsala eN = +29m.42s.
Stuttgart e = +13m.45s.
Strasbourg e = +13m.49s.
Long waves were also recorded at Tananarive, Kew, Edinburgh, Aberdeen, and Huancayo.

July 18d. Readings also at 0h. (Berkeley), 5h. (Tchimkent), 6h. (Moncalieri, near Hukuoka, and near Osaka), 7h. (near Mizusawa), 8h. (Tchimkent), 9h. (near Mizusawa, Tinemaha, Mount Wilson, Pasadena, and Riverside), 10h. (Tiflis, Moscow, Helwan, and Ksara), 11h. (Stuttgart), 13h. (La Paz, near Wellington, Christchurch, and Tiflis), 14h. (Tinemaha, Mount Wilson, Pasadena, and Riverside), 16h. (Huancayo), 18h. (near Fort de France), 19h. (Tananarive and San Juan), 20h. (Pasadena, Mount Wilson, and Riverside), 21h. (Samarkand, Grozny, Toledo, Sverdlovsk, near Tashkent, Andijan (2), La Paz, Tchimkent, and Frunse (2)), 22h. (Philadelphia and Chicago).

July 19d. 23h. Undetermined shock.

Adelaide eP? = 13m.38s., iS = 19m.1s., i = 19m.11s., L = 22·6m.
Sydney e = 17m.0s. and 21m.30s.
Riverview eN = 19m.0s., iN = 19m.7s., iZ = 19m.10s., eE = 19m.13s., eLE = 22·0m.
Christchurch iPZ = 19m.57s.a, i = 20m.6s., iSEN = 23m.27s., iSZ = 23m.33s., iP_cPZ = 24m.43s., LZ = 24m.57s.
Wellington P = 20m.0s., iZ = 20m.21s., 20m.29s., 21m.16s., S = 24m.6s., iEN = 24m.36s., L = 25·2m., S_cS? = 30m.50s.
Brisbane iPN = 20m.24s., iSE = 24m.6s., eSN = 24m.12s., iE = 27m.0s. and 29m.18s.
Arapuni e = 24m.0s., i = 27m.6s.
Kew eZ = 31m.23s., 35m.45s. 39m.51s., and 53m.11s., eN = 60m.11s., eLEN = 95·0m.
Andijan e = 34m.44s. and 41m.4s.
Ksara ePKP = 34m.51s., ePP = 37m.0s., ePPS = +48m.58s.
Belgrade ePZ = 35m.12s.a, iP = 35m.15s., e = 35m.23s.
Tashkent eP = 35m.17s., iS = 44m.23s.
Rome PKP = 35m.24s.k, iZ = 35m.41s., iE = 37m.9s., iN = 37m.54s., iSS = 58m.5s., eE = 63m.0s.
Ottawa e = 35m.26s., i = 35m.32s., eL = 94·0m.
San Juan e = 35m.28s.
Harvard eZ = 35m.30s. and 39m.18s., eLEZ = 95·0m.
Strasbourg ePKPZ = 35m.30s., e = 35m.47s., eL = 100·0m.
Triest e = 35m.30s. and 37m.20s.
Williamstown e = 35m.30s., i = 35m.36s. and 39m.12s.
Fordham eZ = 35m.32s.
Zurich eP = 35m.32s.
Uccle ePZ = 35m.34s.
Bermuda e = 35m.36s.
Neuchatel eP = 35m.39s., e = 41m.47s. and 42m.12s.
Basle eP = 35m.49s.
Paris e = 36m.0s., L = 105·0m.
Baku eP = 36m.20s., eS = 46m.17s., eL = 63·0m.
Tiflis eE = 36m.40s., eZ = 36m.43s., eN = 36m.50s., eE = 43m.40s., eZ = 46m.58s., eE = 48m.41s., eL = 84·0m.
Ukiah e = 39m.23s.
Agra eE = 39m.50s.
Irkutsk e = 44m.0s., eL = 68·0m.
Huancayo e = 44m.3s.
Colombo eE = 49m.0s.
Long waves were also recorded at Tananarive, Jersey, Philadelphia, Bombay, De Bilt, Stuttgart, San Fernando, Aberdeen, Edinburgh, Berkeley, and Tucson.

July 19d. Readings also at 1h. (Chicago, near Berkeley, San Francisco, Branner, and Lick), 3h. (near Fort de France), 4h. (La Paz), 5h. (near Christchurch), 6h. (Sverdlovsk, near Samarkand, Frunse (2), Andijan (2), and Tashkent), 7h. (Riverside, Mount Wilson, Tinemaha, and Pasadena), 9h. (Andijan), 10h. (near Mizusawa), 11h. (Baku, Ksara, Piatigorsk, Grozny, Andijan, Tashkent, Sverdlovsk, Samarkand, Frunse, and Tiflis), 12h. (Balboa Heights), 13h. (Melbourne, Tashkent, Sverdlovsk, near Andijan, Samarkand, Frunse, Tiflis, and Agra), 14h. (Brisbane, Fort de France, Andijan, Frunse, Samarkand, Sverdlovsk, and Tashkent), 15h. (Harvard and Fort de France), 17h. (Fresno), 18h. (Agra, Tchimkent, Frunse, and Andijan), 20h. (Sverdlovsk, and near Mizusawa), 21h. (Tiflis), 22h. (Andijan and Tchimkent).

July 20d. 2h. 22m. 56s. Epicentre 22°·3S. 179°·2W.

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

A depth of focus 0·080 has been assumed.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		11·0	41	e 2 30	+ 1	i 4 24	− 4	—	—	—
Wellington		19·6	174	6 29	?	i 6 49	−13	i 7 54	SS	—
Christchurch		22·2	175	i 7 19	S	(e 7 19)	−25	i 8 32	P_cP	—
Brisbane		25·7	253	—	—	e 8 46	+ 6	—	—	—
Sydney		28·4	239	8 22	?	i 9 40	+18	i 12 52	sSS	—
Riverview		28·5	239	—	—	i 9 39	+15	i 12 51	sSS	—
Melbourne		34·4	235	e 8 24	PPP	e 10 59	+ 5	e 14 14	SSS	—
Adelaide		38·9	241	i 12 12	S	(i 12 12)	+11	i 15 25	SS	—
Honolulu		48·1	28	e 7 50	− 2	—	—	i 9 39	pP	—
Palau		54·1	298	7 44	−52	—	—	—	—	—
Manila		69·1	297	e 10 5	− 8	18 34	− 2	—	—	—
Tokyo Cen. Met. Ob.		69·5	326	10 15	− 1	18 28	−12	—	—	—
Nagoya		70·7	324	10 23	0	—	—	—	—	—
Nagano		71·1	325	10 24	− 1	—	—	—	—	—
Kobe		71·3	323	10 26	0	18 50	−11	—	—	—
Mizusawa		71·5	330	10 24	− 4	18 52	−11	—	—	—
Miyazaki		71·7	317	10 32	+ 3	—	—	—	—	—
Matuyama		72·2	320	10 31	− 1	—	—	—	—	—
Wazima		72·3	326	10 31	− 1	—	—	—	—	—
Akita		72·5	329	10 34	+ 1	—	—	—	—	—
Kumamoto		72·7	318	10 35	+ 1	—	—	—	—	—
Hamada		73·3	320	10 39	+ 1	—	—	—	—	—
Hukuoka		73·4	318	e 10 39	+ 1	—	—	—	—	19·1
Sapporo		74·5	332	10 43	− 1	—	—	—	—	—
Zi-ka-wei	Z.	77·9	311	e 13 20	PP	i 20 52	sS	i 29 16	SSS	—
Zinsen		78·3	319	11 6	+ 1	—	—	—	—	—
Hong Kong		78·6	300	11 8	+ 1	16 7	PPP	—	—	20·2
Santa Barbara		79·9	47	11 23k	+ 9	e 20 27	− 6	—	—	—
Branner		80·0	43	i 11 14	0	e 20 26	− 8	—	—	—
Santa Clara		80·1	43	e 11 26	+11	i 20 29	− 6	—	—	—
Berkeley		80·3	43	i 11 12	− 4	i 20 26	−11	i 13 28	pP	—
Lick		80·3	43	e 11 16	0	e 20 29	− 8	—	—	—
Ukiah		80·5	41	e 11 21	+ 4	20 30	− 9	e 13 27	pP	e 31·7
La Jolla		80·6	49	i 11 17k	0	e 20 34	− 6	e 13 31	pP	—
Ferndale		80·7	40	—	—	e 20 24	−17	—	—	—
Pasadena		80·7	48	i 11 17k	− 1	i 20 35	− 6	e 13 27	pP	—
Mount Wilson		80·9	48	i 11 17k	− 2	i 20 36	− 7	e 37 58	P′P′	—
Fresno	N.	81·2	45	i 11 20a	0	e 20 37	− 9	e 14 3	PP	—
Riverside		81·2	48	e 11 19k	− 1	e 20 39	− 7	e 14 32	PP	—
Haiwee		82·0	46	i 11 23k	− 1	e 20 47	− 7	e 13 39	pP	—
Tinemaha		82·4	45	i 11 25k	− 1	i 20 52	− 6	e 38 2	P′P′	—
Tucson		84·9	52	i 11 39	0	i 21 19	− 3	13 54	pP	e 34·8
Victoria		86·3	34	i 11 42	− 3	i 21 20	−15	e 13 4?	pP	—
Sitka		87·2	22	e 11 47k	− 3	e 21 29	−14	e 14 4	pP	e 33·9
Salt Lake City		88·5	44	e 11 56k	0	i 21 49	− 6	e 14 13	pP	e 34·4

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		89·8	13	e 11 59	− 3	e 21 53	−13	e 14 30	pP	e 34·0
Butte		90·8	40	e 12 5	− 1	i 22 8	− 7	e 14 24	pP	e 36·4
Bozeman		91·6	41	e 12 13	+ 3	i 22 17	− 5	e 14 30	pP	—
Huancayo		98·0	106	e 13 7	+28	i 23 31	+15	i 16 58	PP	e 40·1
Lincoln		98·9	49	e 15 3	PP	e 23 20	− 4	e 16 51	PP	—
Irkutsk		99·5	322	e 12 44	− 2	22 22	[− 9]	e 15 5	pP	34·1
Calcutta	N.	100·4	290	—	—	i 22 33	[− 3]	e 26 31	PS	—
La Plata		100·4	134	17 4	PP	—	—	—	—	—
La Paz		102·3	114	16 12	?	i 22 41	[− 4]	i 17 27	PP	—
Colombo	E.	102·7	272	e 17 34	PP	—	—	—	—	—
Florissant		102·8	53	e 12 58	− 3	i 23 49	− 7	i 15 17	pP	—
St. Louis		102·8	53	e 15 16	pP	i 23 53	− 3	—	—	—
Chicago		105·7	50	e 13 13	P	e 22 51	[− 9]	e 17 40	PP	—
Columbia		108·6	59	—	—	e 23 4	[− 8]	e 26 32	PS	—
Agra	E.	110·7	292	i 18 14	PP	23 12	[− 8]	i 20 23	PPP	—
Bombay		113·1	281	e 14 11	P	i 25 30	S	e 15 7	pP	—
Philadelphia		114·5	55	e 21 49	sPP	e 23 29	[− 6]	e 27 19	PS	—
Ottawa		114·8	48	i 17 38	[− 1]	e 25 36	S	e 27 28	PS	—
Fordham		115·4	53	e 22 4	PPP	i 23 36	[− 2]	i 27 34	PS	—
Williamstown		116·3	52	i 17 42	[0]	e 23 33	[− 9]	e 18 57	PP	—
Harvard		117·5	52	i 17 43	[− 1]	e 23 38	[− 8]	i 19 2	PP	—
San Juan		117·6	79	e 19 5	PP	i 23 40	[− 6]	e 21 46	PPP	e 46·8
Andijan		117·9	305	e 17 46	[+ 1]	e 23 44	[− 3]	—	—	—
Rio de Janeiro		117·9	133	e 19 17	PP	e 23 44	[− 3]	(e 28 16)	PS	28·3
Seven Falls		118·4	47	e 22 4?	PPP	e 28 4?	PS	e 32 4?	?	—
Tashkent		120·3	306	19 4	PP	23 44	[−12]	19 30	pPKP	—
East Machias		120·7	50	e 16 33	pP	e 23 52	[− 5]	19 25	PP	e 48·8
Bermuda		121·6	64	e 19 32	PP	e 23 57	[− 3]	28 34	PS	—
Fort de France		121·9	86	e 17 52	[0]	—	—	—	—	—
Samarkand		121·9	303	—	—	30 41	PS	e 31 4	?	—
Sverdlovsk		124·8	325	e 14 36	P	24 4	[− 6]	21 53	pPP	—
Ivigtut		128·6	27	i 18 4k	[− 1]	—	—	20 27	PP	—
Baku		134·9	306	18 24	[+ 7]	31 2	PS	20 53	PP	52·1
Moscow		136·9	330	18 12	[− 9]	24 24	[−15]	20 55	PP	—
Pulkovo		137·2	339	18 11	[−10]	—	—	20 56	PP	—
Grozny		137·4	311	e 18 15	[− 7]	—	—	e 21 0	PP	—
Tiflis		138·5	308	e 18 17	[− 7]	e 24 30	[−12]	i 21 1	PP	—
Erevan		139·1	306	e 18 23	[− 2]	—	—	—	—	—
Piatigorsk		139·1	313	e 18 10	[−15]	—	—	e 20 55	pPKP	—
Upsala		140·6	347	e 20 40	pPKP	(24 42)	[− 3]	i 21 34	PP	e 47·1
Sotchi		141·5	313	e 18 30	[− 1]	—	—	—	—	—
Bergen	E.	141·8	357	e 18 24	[− 7]	—	—	e 22 4?	PP	—
Aberdeen		145·1	2	i 18 36	[0]	i 25 16	[+24]	i 32 9	PS	e 49·1
Copenhagen		145·5	349	i 18 37	[+ 1]	25 15	[+23]	e 21 54	PP	—
Edinburgh		146·3	4	e 18 40	[+ 3]	e 26 23	?	—	—	—
Ksara		147·1	297	i 18 42k	[+ 3]	—	—	21 16	pPKP	—
Cernauti		147·2	328	e 18 44	[+ 5]	—	—	—	—	—
Heligoland		147·7	353	e 18 43	[+ 3]	—	—	—	—	44·1
Hamburg		148·0	351	e 18 40	[0]	e 25 34	[+38]	e 22 4	PP	—
Stonyhurst		148·5	3	i 18 49	[+ 8]	e 40 34	SS	i 22 28	PP	—
Rathfarnham Castle		148·6	8	i 18 50	[+ 9]	e 25 30	[+34]	i 20 9	pPKP	—
Bidston		148·8	5	i 18 47	[+ 6]	—	—	—	—	e 62·1
Bucharest		149·7	323	e 18 51	[+ 8]	28 17	SKKS	—	—	45·1
Istanbul		149·7	314	18 56	[+13]	28 16	SKKS	22 24	PP	—
De Bilt		150·0	355	i 18 45k	[+ 2]	—	—	e 22 20	PP	—
Jena		150·2	345	i 18 45	[+ 2]	—	—	—	—	—
Prague		150·3	343	e 18 37	[− 6]	e 28 10	SKKS	—	—	—
Oxford		150·5	3	i 18 45	[+ 1]	—	—	—	—	—
Budapest		150·9	334	18 52	[+ 8]	—	—	i 19 30	pPKP	—
Kew		150·9	1	i 18 44	[0]	e 34 55	PPS	e 22 25	PP	e 62·1

Continued on next page.

		Δ	Az.	P.	O − C.	S.	O − C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Kecskemet	z.	151·1	333	i 18 48	[+ 3]	e 29 35	SKKS	i 22 21 PP	e 42·1
Uccle	z.	151·4	357	e 18 46	[+ 1]	e 25 48	[+48]	e 22 27 PP	—
Helwan		151·6	292	i 18 48$_a$	[+ 3]	—	—	i 19 10 P_cP	—
Belgrade		152·3	328	e 18 38$_a$	[− 9]	—	—	i 22 41 PP	e 59·1
Stuttgart		152·8	348	e 18 50	[+ 3]	—	—	22 42 PP	e 55·1
Strasbourg	z.	153·2	349	i 18 49k	[+ 1]	i 26 4	[+61]	e 21 19 pPKP	—
Paris		153·5	357	e 18 51	[+ 3]	—	—	22 36 PP	—
Basle		154·2	346	e 18 50	[+ 1]	—	—	e 19 16 pPKP	—
Zurich		154·2	348	e 18 51$_a$	[+ 2]	—	—	e 22 47 PP	—
Triest		154·4	339	e 18 53	[+ 4]	e 41 22	SS	e 22 51 PP	—
Clermont-Ferrand		156·5	356	i 18 44	[− 8]	—	—	e 22 34 PP	—
Moncalieri		156·7	349	19 34	[+42]	25 54	[+48]	— —	40·9
Rome		158·1	333	i 18 55k	[+ 1]	—	—	i 20 31 pPKP	—
Toledo		162·0	12	e 19 2	[+ 4]	—	—	i 19 50 pPKP	—
San Fernando		164·6	21	e 19 5	[+ 4]	—	—	e 22 23 PP	—
Granada		164·7	13	e 19 12	[+11]	—	—	20 6 pPKP	—
Almeria		165·2	11	e 18 44	[−18]	—	—	e 20 19 pPKP	—
Algiers		165·4	352	e 19 34	[+32]	e 27 4?	?	23 51 PP	—

Additional readings :—
Apia i = +4m.29s.
Wellington +9m.35s. and +10m.19s., S? = +13m.59s., i = +15m.14s. and +16m.49s.
Christchurch iZ = +9m.48s., P_cSNZ = +12m.33s., iSEN = +14m.23s., iN = +16m.56s., iE = +18m.48s.
Brisbane eE = +7m.52s., iE = +8m.52s., iN = +11m.34s.
Riverview iEN = +14m.52s.
Melbourne i = +11m.17s.
Adelaide i = +15m.51s.
Honolulu iP = +8m.20s. and +8m.42s., eP_cP = +8m.59s., esP = +10m.57s., iP_cS = +13m.13s.
Berkeley iP = +11m.15s., iPPZ = +14m.28s., eN = +19m.27s.
Ukiah ePP = +14m.34s., esP = +14m.59s., esS = +24m.29s., esSP = +25m.4s., esSS = +29m.18s.
Pasadena ePPZ = +14m.35s., iPKP,PKPZ = +38m.9s.
Haiwee ePKP,PKPZ = +38m.4s.
Tucson sP = +15m.2s., eSKS = +21m.6s., esS = +25m.41s., iPKP,PKP = +37m.57s.
Victoria eE = +15m.4s.?, i = +25m.25s., e = +27m.4s.?
Sitka esP = +15m.14s., esPP = +18m.20s., eSKS = +21m.13s., esS = +25m.33s., eSS = +27m.32s.
Salt Lake City esP = +15m.21s., eS = +21m.29s., eSP = +22m.37s., esS = +25m.59s., eSS = +27m.46s.
College esP = +15m.33s., eSKS = +21m.28s., sS = +25m.52s., eSSS = +32m.24s.
Butte esP = +15m.40s., epPP = +18m.18s., esPP = +19m.22s., eSP = +23m.18s., esS = +26m.11s., eSS = +28m.20s.
Bozeman esP = +15m.31s., epPP = +17m.55s., eSP = +22m.55s., esS = +26m.8s., esSP = +27m.33s., eSS = +28m.39s., esSS = +31m.32s.
Huancayo iSKS = +22m.26s., S = +22m.58s., epS = +24m.44s., eSS = +30m.17s., ePKP,PKP = +37m.12s.
Lincoln eSKS = +22m.18s., eSP = +24m.49s., esS = +27m.43s., eSS = +30m.23s.
Irkutsk esP = +16m.12s., PP = +17m.13s., SS = +30m.10s.
La Paz iZ = +25m.40s. and +26m.20s.
Florissant esSN = +27m.59s.
St. Louis epPE = +15m.20s., iEN = +23m.21s., esSN = +28m.0s.
Chicago esPP = +20m.44s., S = +24m.19s., eSP = +26m.7s., esS = +28m.37s., eSS = +31m.55s., esSS = +35m.2s., eSSS = +36m.29s.
Columbia eS = +24m.44s., eSS = +32m.26s.
Agra iE = +24m.12s.
Philadelphia iS = +25m.33s., esS = +29m.25s., esSP = +31m.19s., eSS = +33m.43s.
Ottawa iZ = +18m.44s., eE = +28m.40s., eN = +29m.46s. and +33m.46s.
Fordham iSKKSE = +25m.42s., isSN = +29m.54s., iSSEN = +34m.4s.
Williamstown i = +22m.4s., iS = +27m.32s., e = +28m.45s., +32m.39s., and +38m.47s.
Harvard eZ = +22m.16s., eSEN? = +25m.59s., eN = +31m.13s., eE = +31m.46s., eN = +34m.26s.
San Juan iSKKS = +24m.58s., eSP = +27m.44s.
Tashkent PPP = +21m.48s., SP = +27m.53s., SS = +34m.58s., sSS = +38m.4s.
East Machias esP = +17m.49s., ePPP = +22m.35s., S = +26m.28s., epS = +29m.15s., ePS = +29m.55s., esS = +30m.35s., esPS = +32m.22s., SS = +35m.10s., eSSS = +42m.3s.
Bermuda esPP = +22m.42s., eS = +26m.30s., esSP = +32m.29s., eSS = +35m.19s., esSS = +38m.3s.
Sverdlovsk sP = +17m.57s., sPP = +22m.58s., PPS = +31m.40s.
Ivigtut +21m.27s.
Baku pPPP = +25m.17s.

Continued on next page.

Moscow PKS = +21m.56s., PPS = +33m.24s., sPS = +34m.24s.
Pulkovo PKS = +21m.56s., PPS = +33m.17s.
Grozny e = +18m.27s.
Erevan e = +18m.34s.
Tiflis iEZ = +18m.29s., eN = +18m.32s., iZ = +21m.4s. iEZ = +21m.22s., eEN = +21m.52s., iE = +22m.4s., eE = +23m.3s., eEZ = +25m.32s., eZ = +30m.20s., iE = +31m.31s., eN = +34m.42s., eNZ = +38m.27s., eZ = +39m.48s.
Upsala SKPN = +21m.10s., i = +22m.9s., PPPN = +24m.48s., esPKSN = +25m.34s., eN = +27m.15s., eE = +27m.21s., eN = +27m.48s., SKSPE = +30m.20s., e = +31m.42s., epPSE = +33m.58s., i = +36m.0s., eN = +38m.15s., eSSE = +39m.5s., esSSE = +42m.57s. ; the reading given as PPP is entered as SKS.
Sotchi e = +19m.14s. and +19m.37s.
Aberdeen iE = +18m.44s. and +18m.54s., iN = +27m.46s., iE = +43m.40s.
Copenhagen eZ = +21m.4s., i = +21m.17s. and +25m.58s., eN = +27m.49s., e = +32m.15s. and +35m.25s.
Edinburgh i = +18m.45s. and +19m.8s.
Ksara i = +18m.47s., isPKP = +22m.18s., PP = +22m.32s., i = +33m.8s., PPS = +35m.52s.
Hamburg iZ = +18m.45s., eZ = +22m.12s., eN = +28m.1s., eZ = +32m.25s., eN = +32m.31s., eE = +44m.4s.?
Stonyhurst e = +44m.24s.
Rathfarnham Castle iS = +22m.15s.
Bidston i = +18m.51s., +18m.54s., and +18m.59s.
Bucharest eN = +19m.0s., eE = +19m.5s., eN = +19m.13s., eE = +19m.20s. and +19m.51s., eN = +20m.5s., eE = +20m.21s., eN = +20m.33s., PS?N = +28m.48s., SSEN? = +32m.40s., E = +32m.15s., eEN = +36m.39s.
Istanbul PPP = +24m.4s.?, PS = +32m.48s.
Jena i = +18m.49s.
Prague iP = +18m.47s.
Oxford i = +19m.16s., e = +26m.25s., i = +32m.44s. and +35m.54s.
Budapest iN = +19m.3s., eN = +19m.21s.
Kew iZ = +18m.51s. and +18m.59s., eZ = +19m.3s., +21m.15s., and +26m.3s., eN = +28m.17s., eZ = +32m.12s., eN = +32m.45s. and +35m.59s., eE = +40m.55s., eN = +45m.39s., eZ = +52m.15s.
Kecskemet z. ePKP$_2$ = +19m.3s., e = +19m.39s. and +21m.21s., iPP = +22m.33s., e = +25m.57s. and +33m.11s.
Uccle iPKP$_2$Z = +18m.54s., iZ = +19m.3s., +21m.23s., +22m.44s., eZ = +28m.8s., iSKSPN = +32m.50s.
Helwan PPZ = +21m.23s., PPPEZ = +22m.37s., PSE = +28m.24s., iE = +29m.24s., SSZ = +32m.40s., SSSE = +34m.54s.
Belgrade iPZ = +18m.55s., iZ = +19m.8s., eZ = +21m.26s., iZ = +22m.44s., eNE = +26m.44s., iNE = +28m.32s. and +32m.58s., eNE = +37m.48s.
Stuttgart eEN = +19m.9s., eN = +22m.52s., e = +28m.34s., +36m.8s., +36m.23s., +37m.52s., +41m.32s., and +41m.58s.
Strasbourg iZ = +18m.59s., iPKP$_2$Z = +19m.12s., iZ = +19m.21s. and +20m.9s., iPPZ = +22m.41s.
Paris e = +19m.12s.
Zurich i = +19m.15s.
Triest i = +28m.40s., ePSKS = +33m.11s., e = +37m.49s.
Moncalieri S = +26m.9s.
Rome iPKP$_2$ = +19m.33s., iZ = +21m.29s., iPP = +22m.42s., i = +22m.58s., iEZ = +23m.12s., iN = +26m.39s., iZ = +26m.52s., iN = +27m.38s., i = +27m.57s., iN = +28m.49s., eN = +32m.54s. and +37m.1s., iEN = +46m.22s., +51m.14s., and +52m.24s.
Toledo e = +19m.47s. and +21m.36s., i = +33m.40s.
San Fernando iSSN = +33m.49s.
Granada iPP = +23m.49s., pPP = +24m.50s., PPP = +27m.47s.

July 20d. Readings also at 6h. (Tananarive and Sitka), 12h. (Neuchatel), 13h. (Tinemaha, Riverside, Mount Wilson, and Pasadena), 16h. (Mizusawa), 17h. (Baku, Moscow, Hamburg, Kew, Strasbourg, Paris, Clermont-Ferrand, Rome, Vladivostok, Rio de Janeiro, San Juan, Ksara, Aberdeen, Edinburgh, Huancayo, La Paz, Sverdlovsk, Pulkovo, Stuttgart, and Tiflis), 18h. (La Paz, Berkeley, Fresno, and Lick), 19h. (La Paz), 20h. (Williamstown), 22h. (Honolulu, Tucson, Sverdlovsk, and Huancayo), 23h. (La Paz, Tiflis, Stuttgart, and Pulkovo).

July 21d. 13h. 4m. 10s. Epicentre 50°·5N. 9°·7E.

Felt in the Rhineland. Epicentre 49°·9N. 6°·9E. (Strasbourg).

See Annales de l'Institut de Physique du Globe de Strasbourg, tome IV, 2e partie, 1939, p. 59.

$A = +\cdot6295$, $B = +\cdot1073$, $C = +\cdot7695$; $\delta = -9$; $h = -6$;
$D = +\cdot168$, $E = -\cdot986$; $G = +\cdot758$, $H = +\cdot130$, $K = -\cdot639$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Göttingen		1·1	9	i 0 31	+ 9	i 0 59	+20	i 0 34	P_g	—
Jena		1·3	70	e 0 25	0	e 0 45	+ 1	—	—	e 1·1
Stuttgart		1·8	191	e 0 35	+ 3	i 0 57	+ 1	i 0 40	P_g	e 1·1
Strasbourg		2·3	213	e 0 36	− 4	i 1 7	− 2	i 0 42	P*	—
Hamburg	E.	3·1	3	—	—	e 1 26	− 3	—	—	—
Zurich		3·2	193	e 0 52	0	e 1 30	− 2	—	—	—
Basle		3·3	205	e 0 50	− 3	e 1 32	− 3	—	—	—
De Bilt	Z.	3·3	300	e 0 54	+ 1	—	—	—	—	—
Uccle		3·4	278	e 0 45	−10	—	—	1 11	P_g	—
Heligoland	E.	3·9	344	—	—	e 2 8	S_g	—	—	—
Neuchatel		4·0	209	e 1 5	+ 1	e 1 51	− 1	—	—	—
Besançon		4·1	218	e 1 50?	S	(e 1 50?)	− 5	—	—	—
Paris		5·0	253	e 1 18	0	e 2 4	−14	—	—	—
Triest		5·6	148	—	—	e 3 28	S_g	—	—	—
Clermont-Ferrand		6·5	225	—	—	e 3 10	S*	—	—	—

Additional readings:—
Jena eN = +50s., iN = +54s. and +58s.
Stuttgart i = +43s., +47s., +1m.2s., and +1m.10s., iS_g = +1m.13s.
Strasbourg e = +39s., iS_g = +57s., iSSE = +1m.2s.
Uccle iN = +1m.16s.
Neuchatel i = +1m.8s.

July 21d. Readings also at 1h. (Andijan), 2h. (near Mizusawa), 3h. (Sverdlovsk and Vladivostok), 6h. (Andijan), 7h. (New Plymouth, near Wellington, Christchurch, and Lincoln), 9h. (La Paz and Triest), 10h. (Tiflis), 15h. (Göttingen), 18h. (Tchimkent and Andijan (2)), 19h. (near Mizusawa), 20h. (La Jolla, Mount Wilson, Riverside, and Tucson), 21h. (near Mizusawa), 22h. (Balboa Heights), 23h. (La Paz and Tucson).

July 22d. Readings at 1h. (Frunse and near Andijan), 4h. (near Ferndale), 6h. (Tucson), 7h. (near Wellington), 8h. (Edinburgh), 9h. (Riverside, Tinemaha, Tucson, and near Apia), 13h. (Huancayo, near Lick, Branner, and Berkeley), 14h. (near Harvard), 17h. (San Juan and near Balboa Heights), 19h. (La Paz).

July 23d. 15h. 7m. 27s. Epicentre 8°·5S. 108°·5W.

$A = -\cdot3139$, $B = -\cdot9381$, $C = -\cdot1468$; $\delta = +12$; $h = +7$;
$D = -\cdot948$, $E = +\cdot317$; $G = +\cdot047$, $H = +\cdot139$, $K = -\cdot989$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	N.	29·2	18	e 6 30	+25	e 11 23	+25	—	—	—
Huancayo		32·8	98	e 6 37	0	11 58	+ 4	e 7 38	PP	e 13·0
La Paz		40·1	104	i 7 37k	− 2	13 50	+ 4	—	—	17·9
Tucson		40·6	357	e 7 45	+ 2	e 13 37	−17	—	—	e 17·1
La Jolla	Z.	42·0	349	e 7 58	+ 4	—	—	—	—	—
Riverside		43·1	348	e 8 5	+ 1	—	—	i 9 54	P_cP	—
Mount Wilson		43·4	348	e 8 6	0	—	—	e 9 55	P_cP	—
Pasadena		43·4	348	e 8 7	+ 1	i 14 44	+ 9	i 9 56	P_cP	e 18·2
Santa Clara	E.	47·3	345	—	—	e 15 42	+11	—	—	e 20·8
Berkeley		47·9	345	—	—	e 15 53	+14	e 18 50	SS	—
Salt Lake City		49·1	356	e 8 41	−10	e 16 8	+12	—	—	i 19·7
Ukiah		49·3	344	e 10 8	P_cP	e 16 5	+ 6	e 18 51	S_cS	e 20·0
Columbia		49·6	29	—	—	e 16 8	+ 5	—	—	e 20·6
San Juan		49·6	56	e 8 49	− 6	15 59	− 4	—	—	e 20·2
St. Louis		49·9	18	e 8 57	0	i 16 9	+ 2	i 20 51	SS	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lincoln	50·3	11	e 9 44	+44	e 15 58	−15	e 10 45	PP	e 20·2
Cincinnati	52·4	23	i 9 14	− 2	i 16 43	+ 1	i 12 33	PP	—
La Plata	53·1	127	9 27?	+ 6	16 45	− 6	—	—	24·6
Bozeman	54·0	358	e 9 20	− 8	e 17 7	+ 4	—	—	e 21·2
Butte	54·4	357	e 11 44	PP	e 17 44	PPS	—	—	e 23·7
Honolulu	56·7	303	—	—	e 17 56	+16	—	—	e 24·4
Philadelphia	57·2	30	—	—	e 17 49	+ 3	e 22 0	SS	e 24·2
Bermuda	58·1	43	e 13 31	PPP	18 4	+ 6	e 19 49	S_eS	e 23·8
Victoria	58·2	349	e 10 33?	+35	e 18 3	+ 4	—	—	28·6
Fordham	58·5	30	—	—	e 18 5	+ 2	—	—	e 25·0
Williamstown	60·3	29	e 10 10	− 3	—	—	—	—	—
Ottawa	61·2	25	e 10 18	− 1	e 18 45	+ 7	—	—	34·6
Seven Falls	64·7	27	—	—	e 23 45	SS	—	—	30·6
Sitka	69·0	345	e 12 8	+59	e 20 21	+ 7	e 23 58	SS	29·7
Christchurch	76·1	227	—	—	e 22 45	+70	—	—	e 38·1
College	78·8	346	—	—	e 22 0	− 4	—	—	e 33·9
Edinburgh	105·6	35	—	—	e 37 51	SSS	—	—	55·6
Paris	110·1	42	—	—	e 28 33?	PS	—	—	53·6
Strasbourg	113·6	40	—	—	e 27 3	{+33}	e 29 21	PS	e 50·6
Stuttgart	114·5	40	—	—	e 29 3	PS	e 35 33?	SS	e 55·6
Rome	118·5	47	—	—	e 36 46	SS	e 41 21	SSS	e 58·6
Pulkovo	120·2	23	—	—	e 30 8	PS	—	—	—
Sverdlovsk	131·0	8	e 19 39	[+25]	—	—	e 39 9	SS	53·6
Ksara	138·7	48	e 19 17	[−11]	e 28 59	{−14}	—	—	—
Tiflis	139·4	31	e 19 54	[+25]	—	—	e 22 10	PP	e 63·6
Frunse	145·6	356	e 19 45	[+ 5]	—	—	—	—	—
Tchimkent	146·3	2	e 19 50	[+ 9]	—	—	—	—	—
Tashkent	147·3	3	e 20 19	[+36]	—	—	—	—	e 65·2
Andijan	147·9	359	19 39	[− 5]	—	—	e 22 51	PP	—

Additional readings :—
Berkeley eEN = +22m.3s., eZ = +22m.51s.
Cincinnati e = +22m.35s.
Bozeman eP = +9m.27s.
Christchurch eN = +32m.43s., e = +35m.3s.
College eS = +22m.9s.
Ksara e = +24m.36s.
Tashkent e = +21m.24s., +22m.16s., and +59m.15s.
Long waves were also recorded at Hamburg, Apia, De Bilt, Wellington, Harvard, Kew, Aberdeen, Jersey, Baku, Vladivostok, Irkutsk, and Bombay.

July 23d. Readings also at 0h. (Tiflis, La Paz, La Plata, Tinemaha, Pasadena, Haiwee, Mount Wilson, and Riverside), 1h. (near Andijan), 2h. (Grozny), 5h. (Grozny and Tucson), 6h. (Tashkent, Tchimkent, near Tananarive, near Samarkand, Andijan Frunse, and near Mizusawa), 8h. (Triest), 11h. (near Apia), 16h. (Riverside, Mount Wilson, Pasadena, and Christchurch), 17h. (Andijan), 18h. (Christchurch), 19h. (Frunse and Andijan (2)).

July 24d. 17h. 29m. 45s. Epicentre 27°·3N. 53°·2E. (as on 1938 April 23d.).

A = +·5330, B = +·7125, C = +·4562 ; δ = −14 ; h = +3 ;
D = +·801, E = −·599 ; G = +·273, H = +·365, K = −·890.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tiflis		16·0	338	3 52	+ 4	6 42	− 4	—	—	e 7·3
Ksara		16·3	298	e 4 0	+ 8	e 7 21	SS	7 55	SSS	9·6
Samarkand		16·8	39	3 48	−10	6 53	−12	—	—	—
Tashkent		19·3	39	i 4 24	− 5	e 7 44	−18	—	—	e 10·1
Helwan		19·4	284	e 4 43	+13	8 21	+17	5 21	PP	—
Andijan		20·7	45	e 4 43	− 1	e 8 33	+ 2	—	—	—
Agra	E.	22·1	84	e 4 58	− 1	e 8 59	+ 1	—	—	—
Frunse		23·3	43	e 5 25	+15	—	—	—	—	—
Istanbul		24·2	312	10 53	SSS	—	—	—	—	15·3
Sverdlovsk		30·0	9	e 6 17	+ 5	e 10 56	−14	—	—	14·3
Moscow		30·6	343	e 6 16	− 2	e 11 41	+21	—	—	—
Pulkovo		36·1	341	e 8 49	PPP	e 12 35	−10	—	—	e 13·9

Helwan gives also PPZ = +5m.33s., SSE = +9m.42s.
Long waves were also recorded at Calcutta, Baku, Irkutsk, Stuttgart, and Rome.

July 24d. 22h. 5m. 1s. Epicentre 37°·2N. 28°·3E.

Region of Mougla (37°·2N. 28°·3E.).

Bulletin meteorologique, seismique et magnetique de l'Observatoire d'Istanbul-Kandilli, Annee, 1939, Istanbul, 1945, p. 41.

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

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul	3·9	6	0 55	− 7	1 50	0	1 12	P*	—
Sofia	6·6	327	e 2 11	P_g	i 3 29	S*	—	—	—
Ksara	7·0	116	e 2 15	P_g	e 4 16	?	—	—	—
Bucharest	7·4	347	e 2 26	P_g	e 3 17	− 1	3 47	S*	4·3
Helwan	7·7	160	e 2 11	P*	e 3 38	+13	—	—	e 4·8
Stuttgart	18·1	315	e 4 21	+ 7	e 7 50	+15	e 10 5	L_q	e 11·0
Strasbourg	18·8	314	e 4 27a	+ 4	e 8 4	+14	—	—	—
Moscow	19·6	16	e 4 29	− 3	e 8 8	0	—	—	e 11·5
Copenhagen	21·4	335	i 4 52	+ 1	8 53	+ 8	—	—	12·0
Pulkovo	22·6	4	e 5 0	− 3	e 9 5	− 2	—	—	e 10·5
Upsala	23·7	345	—	—	e 10 12	SS	—	—	e 13·0
Sverdlovsk	29·1	37	e 6 26	+22	e 11 9	+13	—	—	14·0

Additional readings:—
Istanbul $SS_g = +2$m.25s.
Bucharest eN = +2m.59s., S?N = +3m.57s.
Long waves were also recorded at Edinburgh, Rome, Prague, Triest, Bidston, Tashkent, Baku, Tiflis, Kew, De Bilt, Hamburg, and Uccle.

July 24d. Readings also at 0h. (Fort de France), 1h. (Sofia and Tacubaya), 2h. (Fort de France and Balboa Heights), 3h. (Sotchi, Ksara, Tiflis, and Balboa Heights), 6h. (Frunse, Samarkand, and Andijan), 8h. (Triest), 9h. (Moncalieri, Triest, and Rome), 10h. (Tucson), 11h. (Triest and Fort de France), 13h. (Fort de France (3) and Ksara), 14h. (Rome), 15h. (Fort de France (2)), 16h. (Fort de France (3) and Tucson), 17h. (Fort de France (2) and near Tananarive), 18h. (La Paz, Fort de France (2), and Andijan), 19h. (Andijan and Fort de France), 20h. (Fort de France), 22h. (near La Paz and Fort de France).

July 25d. 3h. 40m. 22s. Epicentre 39°·8N. 29°·6E.

$A = +\cdot6698$, $B = +\cdot3805$, $C = +\cdot6376$; $\delta = -5$; $h = -2$;
$D = +\cdot494$, $E = -\cdot869$; $G = +\cdot554$, $H = +\cdot315$, $K = -\cdot770$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		1·3	342	0 24	− 1	0 48	+ 4	—	—	—
Bucharest		5·3	330	1 26a	+ 4	2 32	+ 7	1 32	P*	—
Sofia		5·5	303	e 1 26	+ 1	i 2 26	− 4	i 2 52	S*	—
Ksara		7·8	138	e 1 58	0	e 3 36	+ 8	—	—	4·6
Sotchi		8·5	60	e 3 11	P_g	—	—	—	—	—
Cernauti	N.	8·9	343	e 2 11	− 1	—	—	—	—	5·6
Helwan		10·0	172	i 2 24k	− 3	i 4 17	− 5	2 50	PP	—
Budapest		10·8	319	2 41	+ 2	e 5 43	L	—	—	(e 5·7)
Piatigorsk		10·9	63	e 2 41	+ 1	—	—	—	—	—
Erevan		11·4	83	e 2 49	+ 2	—	—	—	—	—
Tiflis		11·7	75	i 2 53	+ 2	e 5 11	+ 7	—	—	e 5·8
Grozny		12·6	68	e 3 10	+ 7	—	—	—	—	—
Triest		13·0	302	3 5	− 4	e 5 40	+ 5	—	—	(e 6·9)
Rome		13·1	284	3 18k	+ 8	e 5 44	+ 6	—	—	i 7·7
Prague		14·8	319	e 3 42	+10	e 7 13	+55	—	—	e 8·6
Baku		15·5	81	e 3 42	0	e 6 50	SS	—	—	e 8·8
Jena		16·8	317	e 4 0	+ 2	e 7 38	SS	—	—	e 8·6
Moscow		16·8	18	e 3 52	− 6	e 7 0	− 5	—	—	e 10·1
Zurich		17·0	303	e 4 2	+ 1	e 8 6	+56	—	—	—
Stuttgart		17·1	308	e 4 3k	+ 1	e 7 26	+14	e 9 14	L_q	e 10·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Basle		17·7	304	e 4 10	0	e 7 38	+12	—	—	—
Neuchatel		17·9	301	e 4 9	− 3	—	—	—	—	—
Strasbourg		17·9	309	i 4 11a	− 1	i 7 39	+ 9	i 7 46	SS	9·2
Hamburg		19·2	323	e 4 24	− 4	e 9 4	?	—	—	e 10·8
Copenhagen		19·5	331	i 4 29	− 2	8 6	0	—	—	10·6
Pulkovo		20·0	2	i 4 33	− 4	i 8 17	0	—	—	e 9·6
Clermont-Ferrand		20·3	296	i 4 39	− 1	i 8 34	+11	—	—	e 12·3
Heligoland		20·5	322	e 4 39	− 3	—	—	—	—	e 11·6
De Bilt		20·8	316	4 43	− 2	e 8 40	+ 7	—	—	i 11·9
Uccle		20·8	310	e 4 44	− 1	e 8 36	+ 3	—	—	e 10·6
Paris		21·3	304	i 4 48	− 2	e 8 47	+ 4	—	—	12·6
Upsala		21·4	344	5 1	+10	e 8 49	+ 4	—	—	e 10·6
Kew		23·8	310	e 5 15	0	e 9 35	+ 7	—	—	e 12·9
Jersey		23·9	305	—	—	e 9 41	+11	—	—	e 14·6
Oxford		24·4	310	—	—	e 9 40	+ 1	—	—	—
Almeria		25·2	274	5 27	− 2	—	—	e 6 55	?	—
Bergen	E.	25·6	333	—	—	e 10 18	+19	—	—	—
Toledo		25·7	281	e 5 31	− 2	e 10 13	+12	—	—	15·6
Stonyhurst		25·8	315	e 5 42	+ 8	e 10 15	+13	—	—	14·6
Granada		26·0	276	e 6 54	PPP	—	—	—	—	16·1
Sverdlovsk		26·4	39	i 5 39	− 1	10 10	− 2	—	—	12·6
Aberdeen		26·9	322	—	—	i 10 19	− 1	—	—	e 16·6
Edinburgh		26·9	318	e 5 46	+ 1	e 10 23	+ 3	—	—	—
Tashkent		30·0	73	i 6 8	− 4	e 11 31	+21	7 5	PPP	e 16·6
Andijan		32·4	74	e 6 32	− 2	e 14 10	SSS	—	—	—
Williamstown		72·2	311	i 11 27	− 2	—	—	—	—	—
St. Louis	N.	84·5	317	—	—	e 28 58	SS	e 31 58	SSS	—

Additional readings :—
Istanbul S_g = +34s.
Bucharest +1m.43s., SEN = +2m.52s.
Sofia iSEN = +3m.6s.
Helwan iE = +5m.38s., SE = +6m.32s.
Budapest ePN = +2m.45s.
Tiflis PN = +2m.55s.
Rome iN = +6m.42s. and +6m.53s., e = +6m.58s.
Stuttgart iP = +4m.8s.
Copenhagen +8m.10s.
Granada i = +8m.38s. and +9m.19s.
Edinburgh i = +10m.43s.
Tashkent eSSS = +12m.44s.
St. Louis iN = +34m.38s.
Long waves were also recorded at Bidston, Rathfarnham Castle, San Fernando, and Irkutsk.

July 25d. 7h. 17m. 17s. Epicentre 10°·5S. 103°·0E.

A = −·2212, B = +·9583, C = −·1811; δ = +7; h = +6;
D = +·974, E = +·225; G = +·041, H = −·176, K = −·984.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	28·8	306	—	—	e 11 13	+22	—	—	—
Manila		30·6	35	e 6 19	+ 1	11 29	+ 9	—	—	15·0
Kodaikanal	E.	32·7	309	—	—	i 12 18	+26	—	—	—
Bombay		41·7	314	—	—	i 15 21	+71	—	—	—
Andijan		58·3	333	9 53	− 6	17 49	−12	—	—	—
Tashkent		60·2	331	i 9 55	−17	e 18 7	−18	—	—	e 32·3
Irkutsk		62·5	1	—	—	e 18 16	−38	—	—	e 32·7
Baku		70·5	320	e 11 22	+ 4	i 20 35	+ 3	—	—	e 37·7
Tiflis		74·5	318	i 11 48	+ 6	i 21 19	+ 2	—	—	e 35·7
Sverdlovsk		75·6	338	i 11 41	− 7	i 21 13	−16	—	—	35·7
Ksara		77·4	307	i 12 6a	+ 8	i 22 6	+17	e 22 43	PS	38·7
Helwan		79·1	303	e 12 21	+13	22 23	+16	—	—	—
Moscow		85·3	329	i 12 37	− 3	i 23 1	[− 2]	—	—	—
Bucharest		88·1	316	e 13 1	+ 7	23 43	+ 6	—	—	—
Pulkovo		90·5	331	13 2	− 3	23 25	[−11]	24 50	PS	43·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Santa Barbara		134·4	51	i 19 11	[− 9]	—	—	— —	—
Tinemaha	z.	134·4	48	e 19 10	[−10]	—	—	e 22 33 SKP	—
Haiwee		135·0	49	i 19 14	[− 7]	—	—	— —	—
Mount Wilson	z.	135·7	51	i 19 13	[− 9]	—	—	i 21 34 PP	—
Pasadena		135·7	51	e 19 14	[− 8]	—	—	i 22 40 SKP	—
Riverside	z.	136·3	51	i 19 14	[− 9]	—	—	e 22 32 SKP	—
La Jolla		136·8	52	e 19 11	[−14]	—	—	e 22 45 SKP	—
Tucson		142·0	50	e 19 14	[−20]	—	—	e 21 58 PP	—
Williamstown		147·7	353	i 19 38	[− 5]	—	—	i 19 57 pPKP	—
Harvard		147·8	351	i 19 38a	[− 6]	—	—	— —	—
St. Louis		149·6	20	i 19 38	[− 9]	—	—	e 23 19 PP	—
Fordham		149·7	356	i 19 43a	[− 4]	—	—	— —	—

Additional readings :—
Ksara eSS = +27m.17s.
Helwan iZ = +12m.43s.
Pulkovo S = +23m.50s.

July 25d. Readings also at 0h. (Tiflis), 3h. (near Istanbul), 5h. (Sverdlovsk), 8h. (near New Plymouth and Wellington), 13h. (Sverdlovsk and Irkutsk), 15h. (Sverdlovsk, Stuttgart, Tchimkent, Andijan, Manila, Rathfarnham Castle, near Harvard, Bidston, Edinburgh, Kew, Uccle, Clermont-Ferrand, Hamburg, Strasbourg, and Rome), 17h. (Christchurch, New Plymouth, and Wellington), 19h. (near Basle), 20h. (Ottawa and Williamstown), 22h. (Frunse, Baku, Tashkent, Stuttgart, Tchimkent, Andijan, Manila, Sverdlovsk, and Irkutsk).

July 26d. Readings at 2h. (Tucson), 4h. (Huancayo), 5h. (Bucharest, Triest, Istanbul, Bidston, De Bilt, Uccle, Kew, Stuttgart, Tiflis, Ksara, Baku, and Sverdlovsk), 7h. (Tchimkent, near Frunse, Tashkent, Sverdlovsk, near Andijan, and Samarkand), 8h. (near Andijan and Samarkand), 10h. (Mizusawa), 11h. (La Paz), 12h. (La Paz), 14h. (Grozny, Tiflis (2), and near Erevan), 17h. (Sverdlovsk and Williamstown), 21h. (Tiflis, near Erevan, and near Mizusawa), 22h. (Tiflis and near Mizusawa), 23h. (Rome, Tiflis, Sverdlovsk, Baku, and Ksara).

July 27d. 5h. 9m. 26s. Epicentre 31°·5N. 140°·0E. (as on 1938 March 10d.).

A = −·6544, B = +·5491, C = +·5199; δ = +5; h = +1;
D = +·643, E = +·766; G = −·398, H = +·334, K = −·854.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Mizusawa	E.	7·6	5	e 2 7	P*	3 16	− 7	— —	—
Vladivostok		13·3	333	e 3 15	+ 2	—	—	— —	7·1
Zi-ka-wei	z.	15·9	274	e 3 56	+ 9	—	—	— —	—
Manila		24·2	230	e 5 51	PP	10 34	SS	— —	—
Tashkent		56·3	301	i 9 44	− 1	e 25 21	?	— —	e 27·6
Sverdlovsk		58·6	321	9 58	− 3	18 11	+ 7	— —	28·6
Baku		70·5	306	e 11 21	+ 3	e 20 41	+ 9	— —	e 37·6
Tiflis		73·3	309	e 11 37	+ 2	e 22 0	PPS	— —	e 32·6
Ksara		83·4	305	i 12 28	− 2	e 23 8	+17	e 24 6 PPS	—
Stuttgart		88·8	330	—	—	e 23 34?	−10	— —	e 50·6
Uccle		89·2	334	—	—	e 23 42	− 5	— —	e 46·6
Strasbourg		89·6	331	—	—	e 23 52	+ 1	— —	e 48·6
Kew		90·3	337	—	—	e 23 58	+ 1	— —	e 50·6
Rome		92·4	324	—	—	e 23 40	[− 7]	— —	—

Additional readings :—
Rome e = +21m.6s.
Long waves were also recorded at Pulkovo, Paris, Clermont-Ferrand, Edinburgh, De Bilt, Aberdeen, and Bidston.

July 27d. 23h. 27m. 8s. Epicentre 44°·1N. 146°·4E.

$A = -\cdot6001$, $B = +\cdot3987$, $C = +\cdot6935$; $\delta = +2$; $h = -3$;
$D = +\cdot553$, $E = +\cdot833$; $G = -\cdot578$, $H = +\cdot384$, $K = -\cdot720$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro		1·0	218	−0 6k	−27	0 6	−30	—	—	—
Sapporo		3·8	255	0 46	−15	1 54	S*	—	—	—
Mori		4·7	247	1 25	P*	2 42	S_g	—	—	—
Hatinohe		5·1	226	1 14	− 6	1 53	−27	—	—	—
Aomori		5·3	233	1 26	+ 4	2 31	+ 6	—	—	—
Mizusawa		6·3	220	1 30	− 6	2 32	−18	—	—	—
Akita		6·4	229	1 43	+ 5	2 51	− 2	—	—	—
Hukusima		7·8	217	1 29	−29	3 8	−20	—	—	—
Onahama		8·3	212	1 45	−19	3 20	−20	—	—	—
Mito		8·9	213	1 50	−22	2 51	−64	—	—	—
Wazima		9·8	230	2 22	− 2	—	—	—	—	—
Tokyo Cen. Met. Ob.		9·8	214	2 27	+ 3	3 56	−21	—	—	—
Vladivostok		10·6	270	e 2 40	+ 4	i 5 3	SSS	—	—	6·1
Nagoya		11·5	222	2 48	0	5 7	+ 8	—	—	—
Osaka		12·6	225	3 7	+ 4	5 40	SS	—	—	—
Irkutsk		28·9	303	e 6 52?	PP	e 11 52?	SS	—	—	e 15·9
Frunse		50·5	296	e 9 16	+14	—	—	—	—	—
Sverdlovsk		52·5	317	9 19	+ 2	16 49	+ 6	—	—	25·9
Andijan		53·0	294	e 9 19	− 2	17 2	+12	—	—	—
Tchimkent		54·1	297	e 9 31	+ 2	—	—	—	—	—
Tashkent		54·7	296	i 9 35	+ 2	e 17 10	− 3	e 21 40	SS	e 28·2
Moscow		63·9	323	10 38	+ 1	19 16	+ 4	—	—	38·4
Pulkovo		64·0	329	e 10 39	+ 1	e 19 17	+ 4	—	—	—
Baku		67·3	305	e 11 1	+ 2	e 20 0	+ 6	—	—	e 37·9
Tiflis		69·4	308	i 11 14	+ 2	20 23	+ 5	—	—	e 39·9
Haiwee		69·5	59	i 11 27	+15	—	—	—	—	—
Mount Wilson	z.	70·7	61	i 11 19	− 1	—	—	—	—	—
Pasadena	z.	70·7	61	e 11 18	− 2	—	—	—	—	—
Riverside	z.	71·3	61	e 11 22	− 1	—	—	—	—	—
Copenhagen		73·2	335	i 11 37	+ 2	—	—	—	—	38·9
Hamburg	z.	75·8	335	e 11 51a	+ 1	—	—	—	—	—
Tucson		76·5	58	e 11 54	0	e 21 30	− 9	—	—	e 31·5
Edinburgh		77·1	343	—	—	e 22 6	+20	—	—	—
Uccle		79·9	337	e 12 13	+ 1	e 22 16	0	—	—	e 37·9
Ksara		80·0	307	e 12 24	+11	e 23 30	PPS	e 15 24	PP	e 37·2
Stuttgart		80·2	333	e 12 16	+ 2	e 22 22	+ 3	—	—	e 45·9
Kew		80·5	340	—	—	e 22 25	+ 3	—	—	e 44·9
Strasbourg		80·8	334	e 12 19	+ 2	—	—	—	—	e 45·9
Basle		81·8	334	e 12 23	+ 1	—	—	—	—	—
Paris		82·2	337	e 12 26	+ 2	—	—	—	—	e 45·9
Rome		84·9	327	e 14 38	?	e 23 8	+ 2	—	—	—
Williamstown		86·6	28	e 12 45	− 1	—	—	—	—	—

Additional readings :—
Tashkent eSSS = +23m.40s.
Tiflis eSE = +20m.27s., eSZ = +20m.30s.
Mount Wilson iZ = +11m.33s.
Riverside iZ = +11m.36s.
Rome e = +32m.56s.?
Long waves were also recorded at Bidston and De Bilt.

July 27d. Readings also at 0h. (Tashkent), 3h. (Rome and Ksara), 5h. (near Fort de France), 10h. (Tchimkent, Samarkand, Frunse, Andijan, Tashkent, and Sverdlovsk), 11h. (La Paz, La Plata, Tinemaha, Williamstown, Riverside, Haiwee, Pasadena, and Mount Wilson), 12h. (near Almeria), 13h. (Tucson), 14h. (Harvard and near Fordham), 16h. (Tananarive), 17h. (Sverdlovsk and Tashkent), 19h. (Ottawa (2)), 20h. (Ottawa, Sverdlovsk, Tashkent, and Baku), 23h. (Andijan).

July 28d. 1h. 6m. 22s. Epicentre 37°·1N. 141°·8E. (as on 1939 Feb. 16d.).

Intensity II at Onahama, Hukusima, Mito, Tukubasan, Aidu, Shirakawa ; I at Yamagata, Kakioka, Utunomiya, Mizusawa, Miyako, and Morioka.

Epicentre 37°·3N. 141°·6E. Shallow.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1939, Tokyo, 1949, p. 20.

$A = -\cdot6283$, $B = +\cdot4944$, $C = +\cdot6006$; $\delta = -9$; $h = -1$;
$D = +\cdot618$, $E = +\cdot786$; $G = -\cdot471$, $H = +\cdot371$, $K = -\cdot800$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Onahama		0·8	257	0 19k	+ 1	0 29	− 2	—	—	—
Hukusima		1·2	302	0 23k	− 1	0 36	− 5	—	—	—
Mito		1·3	236	0 26k	+ 1	0 41	− 3	—	—	—
Kakioka		1·5	236	0 30k	+ 2	0 49	0	—	—	—
Tyosi		1·5	209	0 36	+ 8	0 55	+ 6	—	—	—
Tukubasan		1·6	237	0 31k	+ 1	0 48	− 3	—	—	—
Utunomiya		1·7	250	0 30k	− 1	0 50	− 4	—	—	—
Mizusawa		2·1	346	i 0 36	− 1	i 0 57	− 7	—	—	—
Tokyo Cen. Met. Ob.		2·1	229	0 42	P_g	1 6	+ 2	—	—	—
Maebasi		2·3	252	0 41	+ 1	1 8	− 1	—	—	—
Yokohama		2·4	226	0 44	+ 3	1 12	0	—	—	—
Miyako		2·6	3	0 37k	− 7	1 1	−16	—	—	—
Mera		2·7	216	0 50	P*	1 25	S*	—	—	—
Hunatu		2·9	237	0 52	P*	1 30	S*	—	—	—
Nagano		2·9	261	0 50	+ 2	1 24	0	—	—	—
Akita		3·0	334	0 49k	− 1	1 22	− 5	—	—	—
Osima		3·1	220	0 53	+ 2	1 29	0	—	—	—
Toyama		3·4	266	1 16	P_g	—	—	—	—	—
Hatinohe		3·5	356	0 53k	− 4	1 28	−12	—	—	—
Aomori		3·8	348	1 2	+ 1	1 55	S*	—	—	—
Omaesaki		3·8	231	1 11	P*	2 6	S_g	—	—	—
Wazima		3·9	277	1 2	0	—	—	—	—	—
Nagoya		4·4	245	1 14	+ 4	2 5	+ 3	—	—	—
Mori		5·1	349	1 25	+ 5	2 21	+ 1	—	—	—
Osaka		5·6	247	1 39	P*	2 56	S*	—	—	—
Sapporo		6·0	356	1 36	+ 4	2 48	+ 5	—	—	—
Vladivostok		9·7	312	—	—	e 4 20	+ 5	i 4 47	SSS	6·6
Hukuoka		9·9	253	e 2 38?	+13	4 38?	+18	—	—	—
Andijan		52·8	297	e 9 13	− 6	—	—	—	—	—
Tashkent		54·8	299	9 27	− 7	e 16 56	−18	—	—	e 25·8
Sverdlovsk		55·3	319	9 33	− 5	e 17 12	− 9	—	—	25·6
Tiflis		71·0	308	e 11 18	− 4	—	—	—	—	e 37·6
Tinemaha	z.	75·5	54	e 11 47	− 1	—	—	—	—	—
Haiwee	z.	76·3	54	e 12 4	+12	—	—	—	—	—
Mount Wilson	z.	77·3	57	i 12 9	+11	—	—	—	—	—
Pasadena	z.	77·3	57	i 12 9	+11	—	—	—	—	—
Riverside	z.	77·9	57	e 12 1	0	—	—	—	—	—
Ksara		81·4	305	e 12 18	− 2	e 22 22	− 9	e 23 6	PS	—

Additional readings :—
Vladivostok i = +4m.55s., eS = +6m.12s.
Tinemaha iZ = +11m.59s.
Riverside eZ = +12m.10s.
Long waves were also recorded at Kew, Uccle, Stuttgart, Baku, Pulkovo, and Irkutsk.

July 28d. 5h. 21m. 16s. Epicentre 37°·1N. 141°·8E. (as at 1h.).

Intensity III at Hukusima and Shirakawa; II at Sendai, Onahama, Mito, Kakioka, Tukubasan, and Utunomiya; I at Isinomaki, Mizusawa, Morioka, Miyako, Yokohama, Kohu, Hunatu, Osima, and Tokyo.

Epicentre 37°·4N. 141°·6E. Shallow.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1939, Tokyo, 1949, p. 21.

$A = -\cdot6283$, $B = +\cdot4944$, $C = +\cdot6006$; $\delta = -9$; $h = -1$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Onahama		0·8	257	0 19k	+ 1	0 29	− 2	—	—	—
Hukusima		1·2	302	0 22k	− 2	0 36	− 5	—	—	—
Mito		1·3	236	0 23k	− 2	0 40	− 4	—	—	—
Kakioka		1·5	236	0 28k	0	0 47	− 2	—	—	—
Tyosi		1·5	209	0 33	+ 5	0 56	+ 7	—	—	—
Tukubasan		1·6	237	0 30	0	0 49	− 2	—	—	—
Utunomiya		1·7	250	0 30k	− 1	0 50	− 4	—	—	—
Mizusawa	E.	2·1	346	i 0 35	− 2	i 0 55	− 9	—	—	—
	N.	2·1	346	i 0 38	+ 1	i 0 57	− 7	—	—	—
Tokyo Cen. Met. Ob.		2·1	229	0 37k	0	1 1	− 3	—	—	—
Maebasi		2·3	252	0 41k	+ 1	1 9	0	—	—	—
Yokohama		2·4	226	0 42	+ 1	1 9	− 3	—	—	—
Miyako		2·6	3	0 42k	− 2	1 6	−11	—	—	—
Mera		2·7	216	0 50	+ 1	1 27	S_g	—	—	—
Hunatu		2·9	237	0 51	+ 3	1 33	S*	—	—	—
Nagano		2·9	261	0 50k	+ 2	1 23	− 1	—	—	—
Akita		3·0	334	0 48k	− 2	1 24	− 3	—	—	—
Osima		3·1	220	0 52	+ 1	1 27	− 2	—	—	—
Toyama		3·4	266	1 3	P*	—	—	—	—	—
Hatinohe		3·5	356	0 53a	− 4	1 28	−12	—	—	—
Aomori		3·8	348	1 2	+ 1	1 46	− 1	—	—	—
Wazima		3·9	277	1 2	0	—	—	—	—	—
Hamamatu		4·1	235	1 6k	+ 1	1 53	− 2	—	—	—
Nagoya		4·4	245	1 12	+ 2	2 6	+ 4	—	—	—
Mori,		5·1	349	1 9	−11	2 5	−15	—	—	—
Osaka		5·6	247	1 36	P*	i 2 50	S*	—	—	—
Kobe		5·9	249	1 33	+ 2	2 42	+ 2	—	—	—
Sapporo		6·0	356	1 38	+ 6	2 44	+ 1	—	—	—
Nemuro		6·8	24	1 39	− 5	2 49	−14	—	—	—
Izuka		9·7	254	2 24	+ 2	4 23	+ 8	—	—	—
Vladivostok		9·7	312	e 2 20	− 2	e 4 28	+13	—	—	4·5
Hukuoka		9·9	253	e 2 27	+ 2	5 30	S_g	—	—	—
Irkutsk		30·2	312	—	—	e 11 44?	+31	—	—	e 17·7
Tashkent		54·8	299	—	—	e 17 1	−13	21 27	SS	27·4
Sverdlovsk		55·3	319	9 31	− 7	17 11	−10	—	—	26·7
Moscow		67·4	323	e 10 55	− 4	e 19 45	−10	—	—	39·2
Tinemaha	z.	75·5	54	i 11 46	− 2	—	—	—	—	—
Mount Wilson	z.	77·3	57	i 12 8	+10	—	—	—	—	—
Pasadena	z.	77·3	57	i 12 8	+10	—	—	—	—	—
Riverside	z.	77·9	57	e 12 1	0	—	—	—	—	—
Ksara		81·4	305	e 12 18	− 2	e 22 16	−15	e 23 5	PS	45·2

Additional readings:—
Tinemaha eZ = +11m.57s.
Long waves were also recorded at Pulkovo, De Bilt, Paris, Baku, and Tiflis.

July 28d. 10h. 12m. 33s. Epicentre 34°·3N. 25°·0E.

$A = +\cdot7503$, $B = +\cdot3499$, $C = +\cdot5609$; $\delta = -1$; $h = 0$;
$D = +\cdot423$, $E = -\cdot906$; $G = +\cdot508$, $H = +\cdot237$, $K = -\cdot828$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan		7·0	128	1 52	+ 6	3 15	S*	2 12	P_g	—
Istanbul		7·5	24	1 47	− 6	3 11	− 9	—	—	—
Sofia		8·5	352	e 2 8	+ 1	—	—	—	—	e 5·8
Ksara		9·1	90	e 2 25	PP	e 4 36	SSS	—	—	e 5·8
Bucharest		10·2	4	e 2 31	0	—	—	e 3 17	?	5·7
Belgrade	N.W.	11·1	342	—	—	e 5 27	SSS	—	—	e 5·9
Rome		12·5	311	e 2 4	−58	i 5 45	SS	e 5 54	SSS	i 7·2
Triest		14·2	326	—	—	e 6 22	SS	—	—	(7·2)
Chur		17·2	322	e 4 4	+ 1	e 7 9	− 5	—	—	—
Tiflis		17·3	59	4 7	+ 3	e 7 32	SS	e 7 46	SSS	—
Zurich		18·0	322	e 4 13	0	e 7 4	−28	—	—	—
Basle		18·6	322	e 4 25	+ 4	—	—	—	—	—
Stuttgart		18·6	326	e 4 22	+ 1	e 7 52	+ 6	e 4 31	PP	e 10·3
Strasbourg		19·2	325	e 4 32	+ 4	e 8 4	+ 5	—	—	—
Baku		20·7	65	e 4 50	+ 6	e 8 44	+13	—	—	e 20·4
Hamburg		22·0	336	e 4 58	0	—	—	—	—	e 11·8
Paris		22·1	318	e 5 11	+12	e 8 59	+ 1	—	—	12·4
Uccle		22·3	324	e 4 57	− 4	e 9 4	+ 2	—	—	e 11·4
De Bilt		22·8	329	e 5 10	+ 5	9 16	+ 5	—	—	—
Moscow		23·1	19	5 8	0	9 12	− 4	—	—	—
Kew		25·1	322	e 5 39	+11	e 9 51	0	—	—	e 13·4
Pulkovo		25·7	7	e 5 25	− 8	e 9 51	−10	—	—	e 12·5
Upsala		26·0	352	—	—	e 10 8	+ 2	—	—	e 15·1
Bidston		27·6	322	e 5 32	−19	—	—	—	—	e 12·5
Edinburgh		29·0	327	—	—	e 11 27?	+33	—	—	e 16·4
Sverdlovsk		33·0	36	e 6 39	0	—	—	—	—	12·4

Additional readings :—
Helwan iZ = +3m.51s., S_gEZ = +4m.1s.
Tiflis eE = +6m.32s.
Strasbourg iP = +4m.36s.a
Bidston e = +9m.24s.
Long waves were also recorded at Tashkent.

July 28d. 16h. 6m. 1s. Epicentre 34°·3N. 25°·0E. (as at 10h.).

$A = +\cdot7503$, $B = +\cdot3499$, $C = +\cdot5609$; $\delta = -1$; $h = 0$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan		7·0	128	1 50	+ 4	3 11	+ 3	2 8	P*	—
Istanbul		7·5	24	1 45	− 8	3 18	− 2	—	—	(7·6)
Sofia		8·5	352	e 2 5	− 2	e 4 14	S*	—	—	—
Ksara		9·1	90	e 2 16	+ 2	—	—	—	—	(e 5·7)
Bucharest		10·2	4	e 3 23	+52	—	—	—	—	5·5
Belgrade	N.W.	11·1	342	—	—	e 5 16	SSS	—	—	e 6·1
Rome		12·5	311	e 3 33	PPP	e 5 34	SS	—	—	i 7·1
Triest		14·2	326	—	—	e 6 3	− 1	—	—	(7·2)
Tiflis		17·3	59	4 6	+ 2	e 7 31	SS	e 7 41	SSS	e 10·6
Stuttgart		18·6	326	e 4 25	+ 4	e 7 44	− 2	—	—	e 10·2
Strasbourg		19·2	325	e 4 27	− 1	e 7 52	− 7	—	—	—
Baku		20·7	65	e 5 6	PP	e 8 41	+10	—	—	e 10·8
Hamburg	Z.	22·0	336	e 4 53	− 5	—	—	—	—	—
Paris		22·1	318	—	—	e 9 6	+ 8	—	—	14·0
Uccle		22·3	324	e 5 3	+ 2	e 9 1	− 1	—	—	e 12·0
De Bilt		22·8	329	—	—	e 9 14	+ 3	—	—	—
Moscow		23·1	19	5 9	+ 1	9 9	− 7	—	—	—
Kew		25·1	322	—	—	e 9 51	0	—	—	e 14·0
Pulkovo		25·7	7	e 5 29	− 4	e 9 49	−12	—	—	e 12·9
Upsala		26·0	352	e 5 35	− 1	—	—	—	—	e 14·0

For Notes see next page.

NOTES TO JULY 28d. 16h. 6m. 1s.

Additional readings :—
Helwan $S_gZ = +3m.57s.$, $iZ = +4m.3s.$, $iE = +4m.27s.$
Sofia $eE = +4m.28s.$
Triest $e = +5m.20s.$; L is given as SS_g.
Baku $e = +10m.49s.$
Long waves were also recorded at Clermont-Ferrand, Sverdlovsk, Bidston, and Edinburgh.

July 28d. Readings also at 0h. (Branner, Andijan, Sofia, and Tiflis), 3h. (Sverdlovsk, Balboa Heights, Samarkand, near Andijan, and Tashkent), 8h. (Cernauti and near Bucharest), 9h. (Bucharest), 10h. (Tainan), 11h. (Ksara, Riverside, Pasadena, Mount Wilson, Tinemaha, and Edinburgh), 12h. (Sitka and near Andijan), 13h. (Andijan and Ottawa), 14h. (Rome, Ottawa, Bucharest, Samarkand, and Tashkent), 16h. (St. Louis, Ottawa, and near Branner (2)), 18h. (Tinemaha, Mount Wilson, Pasadena, and Riverside), 19h. (Ottawa), 21h. (Ottawa and near Mizusawa (2)).

July 29d. Readings at 0h. (near Mizusawa and Tucson), 2h. (Wellington, Christchurch (2), and Monowai (2)), 3h. (Samarkand), 5h. (near Mizusawa), 11h. (Mount Wilson, Santa Barbara, Riverside, Pasadena, Tinemaha, and La Jolla), 12h. (near Berkeley), 13h. (Huancayo and La Paz), 16h. (Sverdlovsk, Tashkent and Andijan), 18h. (Mount Wilson, Tinemaha, and Riverside), 20h. (Sverdlovsk, Tashkent, Andijan, Tchimkent, and Bombay), 22h. (near Fort de France), 23h. (Fort de France).

July 30d. Readings at 1h. (Sitka, Rome, and Fort de France), 2h. (near Harvard), 5h. (Riverside, Mount Wilson, and Pasadena), 6h. (near Hukuoka), 12h. (near Tiflis, La Paz, near Osaka, and near Mizusawa), 16h. (Berkeley, Lick, Fresno, near Branner, San Francisco, and near Fort de France), 18h. (Puebla, Oaxaca, Vera Cruz, Tacubaya, Williamstown, and Tucson), 19h. (La Plata), 21h. (Zurich, Triest, and Rome), 23h. (near Mizusawa).

July 31d. 2h. 8m. 46s. Epicentre 16°·0N. 96°·5W. (as on 1937 Aug. 3d.).

Tacubaya gives Epicentre 15°·3N. 96°·8W.

$A = -\cdot1089$, $B = -\cdot9556$, $C = +\cdot2739$; $\delta = +5$; $h = +6$;
$D = -\cdot994$, $E = +\cdot113$; $G = -\cdot031$, $H = -\cdot272$, $K = -\cdot962$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	1·0	346	0 28	+ 7	—	—	—	—	—
Vera Cruz	N.	3·2	6	0 55	+ 3	—	—	—	—	—
Puebla	N.	3·4	332	0 59	+ 4	—	—	—	—	—
Tacubaya	N.	4·2	324	1 9	+ 2	—	—	—	—	—
Merida	N.	8·1	52	—	—	e 4 2	S*	—	—	—
Tucson		20·8	324	e 4 44	− 1	—	—	—	—	i 11·2
St. Louis		23·2	12	e 5 10	+ 1	e 9 26	+ 8	—	—	—
Lincoln		24·7	359	e 5 30	+ 6	—	—	—	—	—
Riverside	Z.	26·0	317	i 5 35	− 1	—	—	—	—	—
Mount Wilson	Z.	26·6	317	e 5 40	− 2	—	—	—	—	—
Pasadena		26·6	317	e 5 41	− 1	—	—	—	—	e 15·0
Chicago		26·9	13	e 5 46	+ 1	—	—	—	—	—
Salt Lake City		28·0	334	e 4 39	−76	—	—	—	—	—
Tinemaha		28·5	322	e 5 58	− 1	—	—	—	—	—
Bozeman		32·0	341	e 5 25	−65	—	—	—	—	—
Butte		32·8	340	e 5 38	−59	—	—	—	—	—
Ottawa		34·1	27	e 6 49	+ 1	e 12 14?	0	—	—	23·2

Long waves were also recorded at Berkeley, Harvard, Tiflis, and Ukiah.

July 31d. 13h. 32m. 45s. Epicentre 39·°8N. 29·°6E., (as on 1939 July 25d.).

$A = +·6698$, $B = +·3805$, $C = +·6376$; $\delta = -5$; $h = -2$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		1·3	342	0 26	+ 1	0 44	0	—	—	—
Bucharest	N.	5·3	330	e 1 24$_a$	+ 2	2 44	S*	1 44	P_g	—
Sofia		5·5	303	e 1 21	− 4	e 2 36	+6	i 2 58	S_g	—
Ksara		7·8	138	e 2 11	P*	e 4 13	S_g	—	—	—
Belgrade		8·4	309	—	—	e 4 15	S*	i 4 46	S_g	e 5·4
Helwan		10·0	172	2 26	− 1	e 4 20	− 2	—	—	e 5·6
Kecskemet	z.	10·1	318	e 4 38	S	(e 4 38)	+13	—	—	e 5·6
Tiflis		11·7	75	e 2 52	+ 1	—	—	—	—	e 6·4
Rome		13·1	284	3 21	PP	—	—	—	—	e 7·5
Moscow		16·8	18	e 3 55	− 3	7 11	+ 6	—	—	e 9·6
Stuttgart		17·1	308	e 4 2	0	e 7 25	+13	—	—	e 9·6
Strasbourg		17·9	309	i 4 17$_a$	+ 5	i 7 48	SS	—	—	—
Hamburg		19·2	323	e 4 15?	−13	—	—	—	—	—
Copenhagen		19·5	331	e 4 31	0	—	—	—	—	11·2
Pulkovo		20·0	2	4 56	PP	e 8 19	+ 2	—	—	e 10·9
Paris		21·3	304	—	—	e 9 15?	SS	—	—	25·2
Upsala	N.	21·4	344	—	—	e 8 54	+ 9	—	—	—
Sverdlovsk		26·4	39	5 39	− 1	10 10	− 2	—	—	14·2
Tashkent		30·0	73	—	—	e 12 1	+51	—	—	e 14·1

Additional readings :—
Istanbul $S_g = +1$m.28s.
Sofia iN = +3m.26s., iEN = +3m.34s.
Long waves were also recorded at Columbia, Edinburgh, Clermont-Ferrand, Kew, Bidston, Montezuma, De Bilt, Prague, Triest, and Budapest.

July 31d. 19h. Undetermined shock.

Mizusawa ePE = 10m.59s., SE = 11m.20s.
Ivigtut P = 19m.7s., L = 20·0m.
Ottawa e = 20m.42s., L = 26·0m.
East Machias e = 20m.50s.
Fordham eZ = 20m.56s., eE = 27m.58s., eZ = 31m.34s.
Bozeman e = 21m.18s.
Toledo eP = 21m.48s., e = 29m.48s., L = 35·0m.
Philadelphia e = 21m.52s.
Ksara e = 22m.8s., 25m.18s., and 32m.18s.
Williamstown e = 22m.17s. and 30m.40s.
Rome ePZ = 22m.25s., iSE = 28m.44s., e = 32m.2s., eLE = 34m.6s.
Mount Wilson iPZ = 23m.1s., iZ = 25m.8s.
Riverside iPZ = 23m.1s.
Tucson e = 23m.2s.
Pasadena iPZ = 23m.3s., eLE? = 42·7m.
Salt Lake City e = 23m.12s.
St. Louis eN = 23m.22s. and 27m.16s., eE = 29m.34s.
Aberdeen iEN = 24m.18s., eLEN = 27·0m.
Seven Falls e = 24m.30s., L = 26·0m.
Edinburgh e = 24m.36s., eL = 26·0m.
Pulkovo e = 25m.52s., eL = 28·6m.
Paris e = 27m.0s., L = 32·0m.
Butte e = 27m.11s.
Moscow e = 27m.21s., eL = 30·2m.
Harvard e = 27m.30s., eLNZ = 33·0m.
Ukiah eP = 27m.50s.
Sverdlovsk e = 28m.27s., L = 36·0m.
Chicago e = 28m.37s.
Hamburg eE = 29m.
Lincoln e = 29m.30s., i = 38m.46s.
Stuttgart e = 30m.0s., eL_q = 33·0m.
Sitka e = 31m.0s.
Tashkent i = 32m.10s., e = 36m.7s., eL = 43·2m.
Columbia e = 34m.0s.
Long waves were also recorded at Kew, Clermont-Ferrand, Strasbourg, Uccle, Bidston, Moncalieri, Prague, and De Bilt.

July 31d. Readings also at 1h. (Zurich, Chur, Moncalieri, Strasbourg, Triest, Rome, Stuttgart, and near Mizusawa), 3h. (Harvard), 4h. (Tucson), 6h. (Stuttgart, Rome, Christchurch, and La Paz), 7h. (Berkeley, Ksara, and Tiflis (2)), 8h. (Tucson), 9h. (near Mizusawa), 10h. (Baku, Tiflis, Ksara, Sverdlovsk, Helwan, and Tashkent), 11h. (near Mizusawa (2)), 12h. (near Mizusawa), 13h. (near Andijan), 14h. (Lincoln), 15h. (near Samarkand, Frunse, San Juan, Pasadena, Tinemaha, Riverside, Mount Wilson, Andijan, La Paz, Mizusawa, and Tchimkent), 17h. (near Wellington), 18h. (Moscow, Tashkent, Sverdlovsk, Ksara, and Tiflis), 21h. (La Paz), 22h. (near Fort de France, Erevan, Tchimkent, and Andijan).

August 1d. 15h. 55m. 51s. Epicentre 51°·1N. 156°·5E.

$A = -\cdot5782$, $B = +\cdot2514$, $C = +\cdot7762$; $\delta = 0$; $h = -6$;
$D = +\cdot399$, $E = +\cdot917$; $G = -\cdot712$, $H = +\cdot310$, $K = -\cdot631$.

Tables for depth of focus 0·005 have been used.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro		10·7	228	2 34	+ 1	—	—	—	—	—
Mizusawa		16·1	228	i 3 44	0	e 6 24	−16	—	—	—
Akita		16·2	231	3 48	+ 3	—	—	—	—	—
Hukusima		17·5	227	3 59	− 2	—	—	—	—	—
Vladivostok		18·5	253	e 4 10	− 3	—	—	i 4 55	PP	8·0
Mito		18·6	224	4 20	+ 6	—	—	—	—	—
Nagano		19·5	230	4 26	+ 2	8 4	+ 8	—	—	—
Tokyo		19·6	223	4 28	+ 3	—	—	—	—	—
Gihu		21·2	227	4 41	− 1	8 27	− 2	—	—	—
Osaka		22·4	230	e 4 46	− 8	8 7	−44	—	—	—
Kobe		22·5	230	4 54	− 1	8 49	− 4	—	—	—
Siomisaki		23·2	227	5 3	+ 1	9 3	− 2	—	—	—
Koti		24·3	232	5 17	+ 5	—	—	—	—	—
Irkutsk		31·8	293	e 6 21	0	e 11 20	− 5	e 6 40	pP	—
Sverdlovsk		52·2	316	i 9 3	− 3	e 16 19	− 6	9 40	pP	30·2
Tashkent		57·7	298	i 9 43	− 3	i 17 30	− 8	10 18	pP	28·8
Tinemaha		59·5	68	i 10 0	+ 1	—	—	i 10 31	pP	—
Samarkand		60·2	298	e 10 13	+ 9	—	—	—	—	—
Haiwee		60·3	68	i 10 6	+ 2	—	—	e 10 37	pP	—
Santa Barbara		60·4	71	i 10 6a	+ 1	—	—	i 10 37	pP	—
Pulkovo		61·2	332	e 10 10	0	e 18 19	− 4	10 51	pP	—
Mount Wilson		61·6	70	i 10 14a	+ 1	—	—	i 10 45	pP	—
Pasadena		61·6	70	i 10 13a	0	—	—	i 10 44	pP	—
Moscow		62·1	326	e 10 14	− 2	e 18 28	− 7	10 53	pP	e 29·6
Riverside		62·1	70	i 10 16	0	—	—	i 10 47	pP	—
La Jolla		63·0	71	i 10 23a	+ 1	—	—	i 10 54	pP	—
Ivigtut		66·3	13	i 10 44	0	—	—	—	—	—
Tucson		67·2	66	e 10 50	+ 1	e 19 37	− 1	e 11 21	pP	—
Grozny		68·4	313	e 11 2	+ 5	—	—	—	—	—
Baku		68·7	309	e 11 24	pP	e 20 6	+11	e 27 9	SSS	e 41·1
Copenhagen		69·5	340	e 11 3	− 1	—	—	—	—	31·1
Tiflis		70·1	313	i 11 7	0	i 20 53	PS	e 11 44	pP	e 29·1
De Bilt		74·3	342	i 11 33	+ 1	—	—	—	—	e 48·1
Bidston		74·5	348	e 11 34	+ 1	—	—	—	—	—
Uccle	z.	75·8	343	e 11 40	− 1	—	—	—	—	—
Kew		75·9	345	e 11 42	+ 1	—	—	e 12 16	pP	—
Stuttgart		76·6	338	i 11 45a	0	e 21 25	0	e 12 32	pP	e 34·5
Strasbourg		77·1	340	i 11 48	0	—	—	—	—	—
Williamstown		77·1	35	i 13 2	pP	—	—	—	—	—
Harvard		77·8	34	i 11 52a	0	—	—	—	—	—
Paris		78·0	343	i 11 53	0	—	—	—	—	e 32·1
Zurich		78·1	339	e 11 53	− 1	—	—	—	—	—
Basle		78·2	340	e 11 54	0	—	—	—	—	—
Fordham		78·4	36	i 11 55a	0	—	—	i 12 27	pP	—
Ksara		80·6	313	i 12 7	0	—	—	e 12 50	pP	—
Rome		82·2	334	i 12 15	0	e 21 36	−48	13 26	pP	—
Helwan		86·0	314	i 12 33	− 2	e 22 54	− 8	—	—	—

For Notes see next page.

NOTES TO AUGUST 1d. 15h. 55m. 51s.

Additional readings :—
Mizusawa eSN = +6m.28s.
Irkutsk e = +7m.21s., +10m.7s., and +12m.21s.
Sverdlovsk L_q = +24m.27s.
Tashkent pS = +18m.12s.
Pulkovo pS = +19m.1s.
Moscow pS = +19m.9s.
Tucson iPKP,PKP = +39m.11s.
Copenhagen i = +11m.6s.
Tiflis esPZ = +11m.59s., ePPPZ = +15m.20s., PPPNZ = +15m.30s., epPPPZ = +16m.2s.
Kew eZ = +14m.34s.
Stuttgart ePPZ = +14m.40s., eNZ = +27m.21s.
Ksara esP = +13m.6s., ePP = +15m.18s., iPP = +15m.43s.
Rome ePP = +15m.29s., e = +19m.16s., ePS = +23m.36s.
Long waves were also recorded at Hamburg and St. Louis.

August 1d. Readings also at 3h. (Haiwee, Tinemaha, Mount Wilson, Pasadena, Riverside, Tucson, Uccle, Strasbourg, Zurich, and Basle), 4h. (Mizusawa and Ksara), 5h. (near Branner and Berkeley), 10h. (Samarkand), 11h. (Andijan), 14h. (Tiflis, La Paz, La Plata, and Ksara), 15h. (Rome), 17h. (near Harvard), 19h. (near Bucharest), 23h. (Tchimkent, Frunse, Tashkent, and near Andijan).

August 2d. 0h. 46m. 29s. Epicentre 36°·0S. 17°·0W.

A = +·7755, B = −·2371, C = −·5852 ; δ = +8 ; h = 0 ;
D = −·292, E = −·956 ; G = −·560, H = +·171, K = −·811.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rio de Janeiro	N.	26·2	293	i 5 43	+ 5	i 10 31	+22	—	—	i 13·4
Cape Town		29·0	96	e 5 59	− 5	e 10 32	−22	6 37	PP	—
La Plata		33·2	260	6 43	+ 3	11 1	−59	—	—	13·9
Johannesburg		39·5	88	e 7 13	−21	e 13 19	−18	e 8 43	PP	e 17·3
La Paz		49·2	280	8 49	− 3	e 15 57	− 1	—	—	22·9
Huancayo		57·5	279	e 9 49	− 4	e 17 45	− 5	e 10 58	P_cP	e 23·9
Tananarive		58·8	91	e 9 53	− 9	18 7	0	—	—	e 24·0
Fort de France		65·5	312	e 10 46	− 1	—	—	—	—	e 31·0
San Juan		71·3	311	e 11 33	+10	e 20 28	−13	e 14 19	PP	29·1
San Fernando		72·8	9	—	—	e 20 47	−11	e 28 49	SSS	31·5
Almeria		73·7	12	11 36	− 2	—	—	21 46	S_cS	34·2
Granada		73·9	11	i 11 39	0	20 53	−17	i 12 20	P_cP	34·9
Algiers		74·8	17	e 11 46	+ 2	e 21 31	+11	e 26 4	SS	36·0
Toledo		76·4	10	e 11 44	− 9	—	—	e 13 46	PP	26·3
Helwan		79·7	41	12 3	− 8	22 6	− 7	12 16	P_cP	i 26·9
Bermuda		81·4	321	e 12 52	+32	e 27 19	SS	e 23 26	PPS	e 33·4
Rome		82·1	23	e 12 10	−14	i 22 26	−12	e 13 4	pP	e 35·2
Clermont-Ferrand		83·4	14	e 12 24	− 6	e 22 36	−15	—	—	e 33·9
Ksara		85·2	42	e 12 42	+ 3	22 54	[− 8]	e 24 8	PS	—
Triest		85·9	21	e 12 48	+ 5	23 5	[− 2]	16 5	PP	e 40·7
Basle		86·0	17	e 12 33	−10	e 22 57	[−11]	—	—	—
Zurich		86·1	17	e 12 34	−10	e 23 18	0	—	—	—
Paris		86·2	13	e 12 40	− 4	e 31 39	SSS	—	—	41·5
Strasbourg		87·1	16	e 12 41	− 8	e 23 16	[+ 1]	e 24 22	PS	e 41·5
Belgrade		87·3	26	e 12 54a	+ 4	e 23 19	[+ 4]	—	—	e 50·0
Stuttgart		87·6	17	e 12 40	−11	i 23 19	[+ 2]	e 24 19	PS	e 43·2
Kew		88·3	10	e 12 51	− 4	e 23 20	[− 2]	e 15 49	PP	e 42·5
Uccle		88·4	13	e 12 48	− 7	e 23 23	[+ 1]	24 35	PS	36·0
Oxford		88·5	9	—	—	i 23 22	[− 1]	i 29 14	SS	—
Bucharest		88·9	29	e 13 7	+ 9	23 31	[+ 5]	—	—	50·5
Bidston		89·9	8	—	—	e 23 30	[− 2]	e 29 16	SS	e 37·2
De Bilt		89·9	14	e 13 12	+10	e 23 30	[− 2]	i 29 41	SS	38·5
Prague		90·0	19	e 13 2	− 1	e 23 31	[− 2]	—	—	e 43·5
Stonyhurst		90·4	8	—	—	e 23 55	− 3	—	—	e 37·5
Columbia		91·8	312	—	—	e 23 32	[−11]	e 25 12	PS	e 36·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hamburg		92·2	15	e 13 12	− 1	e 24 25	+11	—	—	e 39·2
Edinburgh		92·3	8	—	—	e 24 1	[+15]	—	—	38·5
East Machias		92·4	326	—	—	e 24 6	−10	e 25 6	PS	e 37·4
Fordham		92·6	321	e 13 16	+ 1	e 24 18	0	—	—	e 38·6
Philadelphia		92·6	319	e 17 1	PP	e 24 0	−18	e 25 24	PS	e 37·2
Harvard		92·7	323	e 13 16	+ 1	e 23 42	[− 6]	e 16 31?	PP	e 38·5
Williamstown		93·6	322	e 14 28	+69	e 24 30	+ 4	e 18 15	PPP	e 41·4
Copenhagen		94·7	15	—	—	24 2	[+ 2]	—	—	—
Seven Falls		95·8	326	—	—	e 24 7	[+ 2]	e 31 7	SS	37·5
Tiflis		95·8	41	e 13 22	− 7	24 10	[+ 5]	e 16 58	PP	e 44·5
Ottawa		96·8	323	e 17 31?	PKP	—	—	e 21 31?	PPP	38·5
Grozny		97·4	40	e 13 39	+ 2	—	—	—	—	—
Toronto		97·5	319	—	—	e 26 13	PS	—	—	e 40·5
Baku		97·7	45	e 10 46	?	e 25 58	PS	—	—	42·5
Kodaikanal	E.	99·5	84	i 17 46	PP	—	—	—	—	—
Colombo	E.	99·6	89	—	—	e 24 1	[−24]	—	—	—
Upsala		99·7	17	e 16 31?	?	e 24 19	[− 6]	e 31 58	SS	e 43·0
Christchurch		100·4	187	e 13 39a	−11	24 13	[−16]	e 17 43	PP	48·6
St. Louis	N.	100·4	310	e 17 54	PP	e 24 25	[− 4]	i 31 58	SS	—
Bombay	E.	100·7	75	—	—	e 33 10	SSP	e 34 12	SSS	e 46·0
Chicago		100·9	314	e 14 13	+21	e 24 16	[−15]	e 18 7	PP	e 40·3
Wellington		102·3	189	e 13 48	−11	e 28 6	PPS	e 33 1	SSP	e 46·5
Moscow		102·5	28	e 13 58	− 2	e 27 46	PS	e 28 36	PPS	—
Lincoln		105·7	309	e 20 58	PPP	e 24 55	[+ 1]	e 33 10	SS	e 48·1
Tashkent		110·2	53	e 18 52	PP	e 25 55	{−11}	e 28 50	PS	46·4
Tucson		110·9	295	e 18 49	[+14]	e 34 49	SS	e 19 17	PP	e 47·2
Sverdlovsk		113·2	35	e 19 21	PP	e 28 53	PS	e 34 59	SS	45·5
Salt Lake City		115·6	303	—	—	e 26 8	{−36}	e 29 20	PS	e 49·3
Bozeman		117·2	308	e 19 47	PP	e 26 18	{−37}	e 29 42	PPS	e 49·0
Mount Wilson	Z.	117·2	294	e 20 4	PP	—	—	—	—	—
Pasadena		117·2	294	i 20 5	PP	—	—	—	—	e 60·2
Butte		118·3	309	—	—	e 30 1	PS	e 36 21	SS	e 49·5
Tinemaha		118·6	297	e 20 4	PP	—	—	—	—	—
Berkeley		121·8	296	e 21 12	PP	—	—	—	—	e 55·7
Ukiah		123·0	297	e 19 12	[+13]	e 30 6	PS	e 21 7	PP	e 51·6
Sitka		134·5	318	e 19 13	[− 7]	e 26 12	[−18]	e 40 16	SS	51·2
Irkutsk		136·1	48	e 21 31?	PP	e 25 31?	[−62]	—	—	69·5
College		139·1	331	e 24 46	PPP	e 40 57	SS	—	—	e 55·2
Zi-ka-wei	Z.	145·3	85	e 19 33	[− 7]	i 26 37	[−10]	i 22 41	PP	—

Additional readings :—
Cape Town eSE = +10m.36s., SSSN = +11m.41s., SSSE = +11m.47s.
Johannesburg eP?E = +7m.19s., e?N = +8m.19s., eSS?N = +16m.13s.
La Paz iPZ = +8m.57s., eSN = +15m.11s., iZ = +16m.17s.
Huancayo eP = +9m.54s., iS = +17m.54s., eS_cS = +19m.33s.
San Juan ePPP = +15m.33s., SS = +25m.9s.
Almeria i = +11m.45s.
Granada PP = +15m.9s.
Algiers e = +12m.39s. and +15m.56s., e = +25m.2s.
Toledo e = +12m.24s., ePPP = +14m.54s.
Helwan iZ = +13m.3s. and +14m.37s., PPZ = +15m.19s., PSE = +22m.41s.
Rome eN = +13m.14s., e = +16m.42s. and +18m.56s., iPS = +23m.12s., eSSE = +27m.37s., eSL = +27m.54s., i = +33m.38s.
Ksara +23m.14s.
Triest PS = +23m.58s., SS = +28m.39s.
Strasbourg eSS = +28m.40s.
Belgrade e = +13m.55s.
Stuttgart iZ = +13m.0s. and +13m.31s., eE = +15m.59s., iSSN = +28m.59s., iSSE = +29m.2s., eL_q = +36m.31s.
Kew eP_cPZ = +13m.7s., eZ = +14m.1s. and +22m.50s., eN = +24m.32s., eSSN = +29m.4s., eL_qEN = +36m.48s.
Uccle eZ = +13m.36s., SSN = +29m.6s.
Bucharest eN = +14m.3s. and +14m.37s.
Bidston e = +24m.46s.
Columbia eS = +24m.12s., eSS = +30m.25s.
Edinburgh i = +24m.10s. and +27m.55s.
East Machias eS = +24m.11s., ePPS = +26m.6s., eSS = +30m.10s.
Philadelphia eS = +24m.19s.
Harvard eZ = +14m.47s., eSN = +24m.16s.

Continued on next page.

Copenhagen +24m.28s., +24m.40s., and +30m.43s.
Tiflis eE = +13m.46s., eZ = +14m.10s., eN = +14m.14s., eZ = +17m.13s., eEZ = +18m.36s., eNZ = +20m.7s., SKSNZ = +23m.56s., SE = +24m.45s., SN = +24m.58s., PSZ = +25m.45s., PSE = +25m.51s., PSN = +25m.54s., eN = +26m.19s., SSN = +31m.15s., eSSSN = +34m.51s.
Upsala eN = +32m.11s.
Christchurch ePPP = +20m.9s., SKKS = +24m.53s., eS = +25m.35s., SS = +32m.51s., SSSN = +37m.7s., L_q = +42m.11s.
St. Louis iN = +26m.52s.
Chicago ePS = +26m.54s., eSS = +32m.16s.
Wellington iZ = +28m.16s.
Lincoln eS = +26m.35s.
Tashkent i = +19m.7s., e = +20m.8s., +21m.25s., +23m.33s., and +24m.19s.
Tucson eSSS = +39m.49s.
Salt Lake City eS = +27m.40s., eSS = +34m.54s., eSSS = +39m.26s.
Bozeman eSS = +36m.4s., eSSS = +40m.9s.
Tinemaha eZ = +20m.15s.
Ukiah ePPS = +31m.43s., eSS = +37m.37s., eSSS = +41m.35s.
Irkutsk e = +35m.31s.? and +38m.31s.?
Long waves were also recorded at Vladivostok, Honolulu, Hyderabad, Santa Clara, Melbourne, Phu-Lien, Brisbane, Riverview, and Adelaide.

August 2d. 9h. 25m. 17s. Epicentre 41°·5N. 25°·2E. (as given by Strasbourg).

Intensity III at Kalugerovo.

K. T. Kirof.

Tremblements de terre en Bulgarie, Liste des tremblements de terre ressentis pendant les annees, 1931-1940, Sofia, 1941, p. 84.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		1·8	311	0 31	− 1	i 1 6	S_g	i 0 37	P_g	—
Istanbul		2·9	98	1 12	+24	1 41	S_g	—	—	—
Bucharest		3·0	13	e 0 59	P_g	i 1 22	− 5	i 1 37	S_g	—
Belgrade		4·8	316	e 1 25a	P*	e 2 27	S*	e 1 43	P_g	—
Kecskemet	z.	6·7	326	e 3 16	S*	—	—	e 3 55	S_g	e 5·8
Cernauti		6·8	6	e 1 18	−26	2 22	P_g	—	—	6·7
Triest		9·3	301	e 2 15	− 2	3 50	−15	4 54	S_g	—
Rome		9·5	276	e 0 18	?	e 4 24	?	—	—	—
Ksara		11·4	129	e 3 40	+53	—	—	—	—	e 7·3
Moncalieri		13·2	291	e 3 34	PPP	—	—	—	—	e 8·9
Zurich		13·3	302	e 2 40	PPP	e 5 40	− 2	—	—	—
Stuttgart		13·4	308	—	—	e 6 11	SSS	—	—	i 7·3
Jena		13·6	320	e 3 18	+ 1	—	—	—	—	e 7·2
Basle		13·9	303	e 3 7	−14	e 7 41	L	—	—	(7·7)
Neuchatel		14·2	299	e 3 7	−17	e 7 33	L	—	—	(7·5)
Strasbourg	z.	14·2	306	e 3 24	0	—	—	—	—	—
Tiflis		14·7	83	e 3 43	PP	—	—	e 3 50	PPP	e 9·2
Grozny		15·3	76	e 3 48	PP	—	—	—	—	—
Moscow		16·4	26	e 3 54	+ 1	e 7 22	+26	—	—	10·2
Pulkovo		18·6	9	e 4 19	− 2	e 8 16	SS	—	—	e 11·2
Sverdlovsk		27·4	44	e 5 51	+ 2	e 11 5	+37	—	—	14·7

Additional readings :—
Istanbul SP_g = +2m.41s.
Bucharest eN = +1m.15s., iN = +1m.19s., iE = +1m.43s., iSEN = +1m.49s., iS_gE = +2m.19s.
Belgrade i = +2m.36s.
Kecskemet eZ = +4m.32s.
Stuttgart eNZ = +6m.21s.
Long waves were also recorded at Uccle, Prague, Kew, Baku, Clermont-Ferrand, Hamburg, Tashkent, Bidston, Paris, and Edinburgh.

August 2d. 13h. 6m. 10s. Epicentre 39°·8N. 29°·6E. (as on 1939, July 31d.).

District of Brousse (40°·2N. 29°·0E.), fore-shock of 'quake on August 3d. 12h. Epicentre 40°·1N. 29°·3E.

Meteorological, Seismological, and Magnetic Bulletin of the Observatory of Istanbul-Kandilli, 1939, Istanbul 1945, p.42.

$A = +\cdot6698$, $B = +\cdot3805$, $C = +\cdot6376$; $\delta = -5$; $h = -2$;
$D = +\cdot494$, $E = -\cdot869$; $G = +\cdot554$, $H = +\cdot315$, $K = -\cdot770$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		1·3	342	0 27	+ 2	0 43	− 1	0 50	S_g	—
Bucharest		5·3	330	e 1 26	+ 4	2 33	+ 8	1 43	P_g	—
Sofia		5·5	303	e 1 26	+ 1	i 2 31	+ 1	i 2 59	S_g	—
Ksara		7·8	138	e 1 57	− 1	e 3 49	S*	4 27	S_g	—
Belgrade		8·4	309	e 2 54	P_g	e 3 38	− 5	i 4 16	S*	—
Cernauti		8·9	343	e 2 10	− 2	—	—	—	—	5·8
Helwan		10·0	172	i 2 26k	− 1	i 4 17	− 5	2 48	PP	—
Kecskemet	z.	10·1	318	i 1 44	−44	e 4 37	SS	—	—	e 5·3
Tiflis		11·7	75	e 2 51	0	e 5 13	+ 9	e 2 59	PP	e 6·1
Grozny		12·6	68	e 3 7	+ 4	—	—	—	—	—
Triest		13·0	302	e 3 10	+ 1	e 5 38	+ 3	e 5 58	SSS	—
Rome		13·1	284	3 14	+ 4	e 5 45	+ 7	i 5 49	SS	i 8·0
Prague		14·8	319	e 3 30	− 2	e 6 32	SS	—	—	—
Baku		15·5	81	e 3 50	+ 8	e 7 26	+51	—	—	e 9·8
Moscow		16·8	18	e 3 54	− 4	e 7 3	− 2	—	—	9·5
Zurich		17·0	303	e 4 1	0	e 8 5	SSS	—	—	—
Stuttgart		17·1	308	e 4 2	0	e 7 22	+10	e 8 2	SSS	e 8·9
Basle		17·7	304	e 4 9	− 1	e 7 49	SS	—	—	—
Neuchatel		17·9	301	e 4 11	− 1	—	—	—	—	e 10·0
Strasbourg	z.	17·9	309	i 4 14a	+ 2	i 7 40	+10	i 7 49	SS	—
Hamburg		19·2	323	e 4 29	+ 1	e 8 2	+ 3	—	—	e 10·9
Copenhagen		19·5	331	e 4 32	+ 1	8 7	+ 1	—	—	10·8
Pulkovo		20·0	2	4 35	− 2	8 17	0	—	—	e 9·9
Clermont-Ferrand		20·3	296	i 4 35	− 5	i 8 33	+10	—	—	—
Uccle		20·8	316	e 4 44	− 1	8 39	+ 6	—	—	10·8
Algiers		21·0	271	e 3 3	?	e 6 24	?	—	—	—
Paris		21·3	304	e 4 48	− 2	e 8 48	+ 5	—	—	11·8
Upsala		21·4	344	4 56	+ 5	e 8 47	+ 2	—	—	e 10·8
Kew		23·8	310	e 5 13	− 2	e 9 26	− 2	e 13 50	L_q	e 14·8
Oxford		24·4	310	—	—	e 9 43	+ 4	—	—	e 14·8
Almeria		25·2	274	e 5 23	− 6	9 30	−22	—	—	—
Toledo		25·7	281	e 5 34	+ 1	—	—	—	—	—
Stonyhurst		25·8	315	—	—	e 10 9	+ 7	—	—	e 14·8
Bidston		26·0	313	—	—	e 9 53	−13	—	—	e 13·8
Granada		26·0	276	i 5 24	−12	—	—	—	—	14·6
Sverdlovsk		26·4	39	5 39	− 1	e 9 22	−50	—	—	11·8
Aberdeen		26·9	322	—	—	e 10 30	+10	—	—	e 17·1
Edinburgh		26·9	318	—	—	e 10 37	+17	—	—	e 15·9
Rathfarnham Castle		27·8	312	i 5 19	−34	—	—	—	—	—
Tashkent		30·0	73	—	—	e 11 17	+ 7	—	—	e 13·5

Additional readings :—
Bucharest $P^*E = +1m.39s.$, $P_gN = +1m.51s.$, $eE = +1m.57s.$, $iE = +2m.11s.$, $S^*EN = +2m.51s.$, $S_gE = +3m.12s.$
Sofia $iE = +2m.26s.$, $iN = +3m.2s.$
Belgrade $e = +4m.3s.$
Kecskemet $eZ = +3m.23s.$
Helwan $PPPZ = +2m.56s.$, $iEN = +4m.50s.$, $SE = +6m.20s.$
Triest $i = +7m.11s.$
Rome $eN = +5m.33s.$, $iN = +7m.18s.$, $iL_qN = +7m.40s.$
Stuttgart $iPZ = +4m.8s.$, $eSE = +7m.28s.$
Copenhagen $i = +4m.34s.$ and $+8m.10s.$, $eZ = +8m.15s.$
Upsala $eSN = +8m.53s.$
Kew $eNZ = +9m.45s.$, $eN = +12m.56s.$
Almeria $e = +9m.2s.$
Sverdlovsk $e = +9m.10s.$
Long waves were also recorded at Jena, Jersey, Erevan, San Fernando, and Tananarive.

August 2d. Readings also at 0h. (Irkutsk, Tiflis, Grozny, Pulkovo, Moscow, and Sverdlovsk), 1h. (Berkeley, near Branner and La Paz), 2h. (Tiflis and Baku), 4h. (Wellington and New Plymouth), 5h. (Riverview, near Apia, Riverside, La Jolla, Tinemaha, Santa Barbara, Mount Wilson, Pasadena, Tucson, Melbourne, Christchurch, Moscow, and Sverdlovsk), 6h. (Tiflis and Brisbane), 8h. (Ksara, Tashkent, and Tiflis), 9h. (Sverdlovsk and Edinburgh), 10h. (near Fort de France), 11h. (Tashkent), 12h. (near Rome, Tashkent, Frunse, near Andijan, and Samarkand), 14h. (Mizusawa, near Tuai, Hastings, New Plymouth, and Wellington), 15h. (Seattle and Fort de France), 16h. (Rome), 18h. (Tananarive), 23h. (Tananarive).

August 3d. 2h. 28m. 28s. Epicentre 20°·0S. 174°·0W. (as on 1939, March 22d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		6·5	19	e 1 47	+ 8	(i 3 42)	S_g	—	—	—
Wellington		23·3	202	e 4 30	−40	—	—	—	—	e 10·5
Christchurch		26·0	202	(5 36)	0	5 36	P	8 50	L_q	12·7
Brisbane	N.	31·0	249	—	—	i 13 20	SS	—	—	—
Sydney		33·8	238	—	—	e 13 26	SS	—	—	e 17·5
Melbourne		39·7	234	—	—	i 12 36	− 4	—	—	i 20·3
Honolulu		44·0	22	—	—	e 14 50	+ 7	e 18 2	SS	e 18·3
Santa Barbara		74·8	44	e 11 43	− 1	—	—	—	—	—
Santa Clara	E.	75·2	40	e 11 50	+ 4	e 21 41	+16	—	—	e 32·8
Berkeley		75·3	40	e 11 48	+ 1	e 21 33	+ 7	—	—	e 32·5
La Jolla	Z.	75·5	46	e 11 47	− 1	—	—	—	—	—
Pasadena		75·6	45	e 11 46	− 2	—	—	—	—	e 33·4
Ukiah		75·6	38	—	—	e 22 30	PPS	—	—	e 32·8
Mount Wilson		75·8	45	e 11 47	− 3	—	—	—	—	—
Riverside	Z.	76·1	45	e 11 49	− 2	—	—	—	—	—
Haiwee		77·0	43	e 11 56	0	—	—	—	—	—
Tinemaha		77·3	42	e 11 57	− 1	—	—	—	—	—
Tucson		79·7	49	e 12 10	− 1	e 22 6	− 7	e 15 36	PP	e 37·9
Vladivostok		80·1	323	e 12 16	+ 3	i 22 41	+23	—	—	39·3
Sitka		83·3	20	—	—	e 22 44	− 6	—	—	35·9
Salt Lake City		83·5	42	e 16 9	PP	e 22 42	−10	e 17 20	PPP	e 35·3
Butte		86·0	37	e 12 52	+ 9	e 23 19	+ 2	e 28 39	SS	e 37·1
Bozeman		86·7	38	e 13 17	+30	e 23 16	[+ 4]	e 17 58	PPP	e 36·8
College		87·0	10	e 13 5	+17	e 23 29	+ 2	e 28 45	SS	—
Huancayo		93·9	104	—	—	e 23 55	[0]	—	—	e 42·9
Chicago		100·5	49	e 13 46	− 5	e 25 18	− 7	e 31 34	SS	e 43·8
Irkutsk		100·6	321	e 16 32?	?	e 23 32?	[−58]	—	—	—
San Juan		112·4	77	e 19 47	PP	e 25 17	[− 5]	e 28 49	PS	e 46·4
Rio de Janeiro	N.	115·8	129	—	—	e 25 32	[− 3]	—	—	—
Tashkent		122·8	326	e 20 17	PP	e 25 57	[− 2]	—	—	—
Sverdlovsk		125·7	327	i 19 2	[− 2]	e 26 12	[+ 4]	—	—	61·5
Pulkovo		136·6	343	e 19 25	[+ 1]	—	—	e 22 8	PP	—
Moscow		137·3	334	e 19 24	[− 2]	—	—	e 22 8	PP	e 72·0
Baku		137·5	309	e 22 15	PP	e 32 15	PS	—	—	e 73·5
Upsala		139·3	352	23 6	PP	e 35 9	PPS	—	—	e 81·5
Tiflis		140·8	312	e 19 28	[− 4]	—	—	e 23 4	PP	e 66·5
Edinburgh		143·5	8	—	—	e 40 32?	SS	—	—	e 78·5
Copenhagen		144·0	353	19 35	[− 2]	—	—	—	—	79·5
Hamburg		146·3	357	e 19 42a	[+ 1]	—	—	—	—	e 89·5
De Bilt		148·0	1	i 19 48a	[+ 4]	—	—	—	—	e 80·5
Kew		148·2	6	e 19 44	[0]	—	—	—	—	e 81·5
Uccle		149·2	2	e 19 46	[0]	e 42 38	SS	—	—	e 79·5
Ksara		150·1	303	i 19 49	[+ 1]	e 36 51	PPS	e 23 31	PP	—
Paris		151·1	4	e 19 50	[+ 1]	—	—	—	—	83·5
Stuttgart		151·2	356	i 19 50k	[+ 1]	e 26 58	[+ 3]	e 23 50	PP	—
Strasbourg		151·4	356	e 19 48a	[− 1]	—	—	e 20 47	pPKP	e 83·5
Triest		153·6	343	e 20 16	[+24]	e 33 52	PS	e 24 9	PP	—
Helwan		155·0	298	e 20 5	[+11]	27 2	[+ 2]	23 57	PP	—
Rome		157·5	347	19 55a	[− 3]	e 44 8	SS	i 24 12	PP	—
Toledo		158·4	21	e 20 0	[+ 1]	—	—	—	—	—
Granada		160·9	23	e 20 27	[+25]	—	—	—	—	—
Almeria		161·6	20	e 19 41	[−21]	e 30 56	{−25}	e 29 14	PPP	—

For Notes see next page.

NOTES TO AUGUST 3d. 2h. 28m. 28s.

Additional readings :—
Apia iE = +5m.32s.?, eS?N = +9m.5s., iZ = +10m.2s. The reading entered as S_g is given as PP.
Wellington i = +7m.10s., +8m.15s., and +8m.40s.
Melbourne i = +13m.42s. and +17m.23s.
Tucson eP = +12m.25s., S = +22m.19s., ePS = +23m.0s.
Sitka eS = +22m.56s.
Salt Lake City eS = +22m.59s., ePS = +23m.56s., eSS = +28m.41s., eSSS = +31m.51s.
Bozeman eS = +23m.31s.
College ePPS = +24m.48s.
Chicago eSSS = +37m.10s.
San Juan eSKKS = +26m.17s., eS = +26m.57s., ePPS = +30m.36s., ePSPS = +35m.39s.
Tashkent e = +20m.29s., +20m.35s., +20m.43s., +21m.7s., and +28m.46s.
Sverdlovsk e = +20m.55s.
Pulkovo e = +22m.57s.
Upsala SKSPE = +38m.51s.
Tiflis e = +19m.32s. eEN = +23m.11s., eZ = +34m.9s., eE = +35m.3s.
Ksara SS = +43m.3s.
Stuttgart eZ = +21m.48s., eSSEN = +43m.2s.
Strasbourg ePPZ = +22m.40s., epPPZ = +23m.42s.
Helwan PKKPEZ = +20m.23s., eZ = +24m.47s., +25m.52s., SKKSE = +30m.37s., SSE = +43m.30s., eE = +43m.52s. and +44m.52s.
Rome iPKP$_2$Z = +20m.17s., iZ = +20m.31s., ePSKS = +34m.54s., e = +41m.39s. and +60m.28s.
Toledo e = +20m.36s.
Long waves were also recorded at Adelaide, Fordham, Williamstown, Bidston, Jersey, Moncalieri, Harvard, La Paz, Clermont-Ferrand, San Fernando, Stonyhurst, Rathfarnham Castle, Kodaikanal, Philadelphia, Riverview, and Bermuda.

August 3d. 12h. 32m. 47s. Epicentre 39°·8N. 29°·6E. (as on 1939, August 2d.).

Felt at Bursa, Erdek, Inegöl, Katahya, Uzak, Izmir.

Epicentre 40°·1N. 29°·3E. (Strasbourg).

Bulletin meteorologique, seismique et magnetique de l'Observatoire d'Istanbul-Kandilli, Annee 1939, Istanbul 1945, p.42.

A = +·6698, B = +·3805, C = +·6376 ; $\delta = -5$; $h = -2$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		1·3	342	0 26	+ 1	0 42	− 2	—	—	—
Bucharest		5·3	330	e 1 26$_a$	+ 4	2 26	+ 1	1 45	P_g	—
Sofia		5·5	303	e 1 28	+ 3	i 2 30	0	e 1 32	P*	—
Ksara		7·8	138	i 1 56	− 2	i 3 37	+ 9	4 46	S_g	—
Belgrade		8·4	309	e 2 19$_a$	+13	i 4 20	S*	i 4 38	S_g	—
Sotchi		8·5	60	e 2 10	+ 3	e 4 20	S*	—	—	—
Cernauti		8·9	343	e 3 18	+66	5 13?	S_g	—	—	7·2
Helwan		10·0	172	i 2 26$_a$	− 1	4 15	− 7	e 3 43	?	—
Kecskemet	z.	10·1	318	e 2 23	− 5	i 4 59	S*	e 3 53	?	e 5·8
Tiflis		11·7	75	i 2 52	+ 1	e 4 49	−15	—	—	i 5·7
Grozny		12·6	68	3 6	+ 3	e 5 37	+11	—	—	e 7·2
Laibach		12·7	305	e 3 11	+ 6	e 4 30	−58	—	—	i 7·1
Triest		13·0	302	3 11$_a$	+ 2	e 5 39	+ 4	i 3 19	PP	e 5·9
Rome		13·1	284	e 3 12	+ 2	e 5 50	+12	—	—	e 6·9
Prague		14·8	319	3 35	+ 3	e 6 25	+ 7	—	—	e 7·7
Baku		15·5	81	i 3 42	0	i 6 55	SS	—	—	8·9
Jena		16·8	317	e 3 57	− 1	e 7 23	SS	e 7 43	SSS	e 8·7
Moscow		16·8	18	3 55	− 3	6 58	− 7	—	—	7·4
Zurich		17·0	303	e 4 3$_a$	+ 2	e 7 30	SS	—	—	—
Stuttgart		17·1	308	e 4 2	0	i 7 28	SS	i 7 33	SS	e 8·9
Basle		17·7	304	e 4 10	0	e 7 45	SS	—	—	—
Neuchatel		17·9	301	e 4 13	+ 1	—	—	—	—	e 9·9
Strasbourg	z.	17·9	309	i 4 16$_a$	+ 4	i 7 14	−16	i 7 47	SS	—
Hamburg		19·2	323	e 4 26$_k$	− 2	e 8 7	+ 8	i 9 8	SSS	e 10·6
Copenhagen		19·5	331	e 4 30	− 1	8 13	+ 7	i 4 48	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pulkovo		20·0	2	e 4 35	− 2	i 8 7	−10	—	—	e 9·7
Clermont-Ferrand		20·3	296	i 4 41	+ 1	i 8 38	+15	—	—	e 27·2
Heligoland		20·5	322	e 4 41	− 1	e 8 29	+ 2	—	—	e 12·0
Uccle		20·8	310	i 4 46k	+ 1	i 8 39	+ 6	i 5 26	PPP	e 10·2
De Bilt		20·8	316	i 4 48	+ 3	8 42	+ 9	—	—	10·2
Algiers		21·0	271	e 4 50	+ 3	e 8 48	+11	5 11	PP	10·2
Paris		21·3	304	e 4 51	+ 1	e 8 51	+ 8	—	—	11·2
Upsala		21·4	344	e 4 53	+ 2	8 47	+ 2	—	—	—
Kew		23·8	310	i 5 15	0	e 9 37	+ 9	9 51	SS	e 14·2
Jersey		23·9	305	e 5 18	+ 2	e 9 49	+19	—	—	e 15·0
Oxford		24·4	310	—	—	i 9 49	+10	—	—	13·2
Almeria		25·2	274	e 5 20	− 9	9 55	+ 3	6 22	PPP	—
Bergen	E.	25·6	333	e 5 36	+ 4	e 10 18	+19	—	—	—
Toledo		25·7	281	i 5 36	+ 3	e 10 13	+12	e 6 28	PPP	—
Stonyhurst		25·8	315	i 5 33	− 1	e 10 13	+11	—	—	15·2
Bidston		26·0	313	—	—	e 10 8	+ 2	—	—	e 14·2
Granada		26·0	276	i 5 32a	− 4	—	—	e 8 33	P_cP	14·9
Sverdlovsk		26·4	39	i 5 39	− 1	i 10 12	0	14 31	L_q	17·6
Aberdeen		26·9	322	e 5 45	0	i 10 41	+21	—	—	e 14·6
Edinburgh		26·9	318	e 5 45	0	i 10 26	+ 6	—	—	—
Rathfarnham Castle		27·8	312	—	—	e 10 3	−32	—	—	—
San Fernando		28·3	274	e 6 16	PP	e 10 40	− 3	—	—	16·2
Samarkand		28·6	78	e 5 52	− 8	—	—	e 6 13	PP	—
Tashkent		30·0	73	i 5 18	−54	i 10 31	−39	—	—	e 14·7
Irkutsk		51·1	49	e 9 2	− 4	e 16 27	+ 3	—	—	e 32·2
Williamstown		72·2	311	i 12 46	?	—	—	—	—	—

Additional readings :—
Istanbul SS = +59s.
Bucharest eN = +1m.37s., iN = +1m.53s., iE = +2m.2s., S = +2m.34s., iEN = +2m.51s.
Sofia iN = +2m.24s., +2m.35s., +2m.40s., and +2m.45s., iE = +2m.56s., iEN = +3m.15s.
Belgrade i = +2m.58s. and +4m.51s.
Helwan S_gZ = +5m.20s.
Tiflis iE = +3m.40s., eSE = +4m.58s., eSZ = +5m.7s.
Triest e = +5m.15s.
Jena eP = +4m.1s.
Stuttgart iP = +4m.5s. and +7m.11s.
Copenhagen i = +4m.35s.
Heligoland eSE = +8m.36s.
Algiers SS = +9m.43s.
Upsala iPN = +4m.56s., eSN = +8m.53s.
Kew eN = +11m.19s. and +12m.47s.
Jersey e = +7m.36s.
Almeria i = +5m.28s., P_cP = +8m.32s., SS = +11m.15s.
Granada i = +5m.46s.
Edinburgh i = +10m.45s.
Long waves were also recorded at Besancon, Colombo, Vladivostok, Fordham, Tiflis, and St. Louis.

August 3d. 20h. 20m. 37s. Epicentre 39°·8N. 29°·6E. (as at 12h.).

District of Inegöl (40°·1N. 29°·5E.).

See Bulletin meteorologique, seismique et magnetique de l'Observatoire d'Istanbul-Kandilli, Annee, 1939, Istanbul 1945, p.42.

A = +·6698, B = +·3805, C = +·6376 ; $\delta = -5$; $h = -2$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		1·3	342	0 27	+ 2	0 53	+ 9	—	—	—
Bucharest		5·3	330	e 1 41	P_g	e 2 27	+ 2	e 2 55	S_g	—
Sofia		5·5	303	e 1 23?	− 2	—	—	—	—	—
Ksara		7·8	138	e 2 39	P_g	e 4 11	S_g	—	—	e 5·3
Strasbourg	z.	17·9	309	e 4 13	+ 1	—	—	—	—	—
Sverdlovsk		26·4	39	—	—	e 10 13	+ 1	—	—	13·4

Additional readings :—
Bucharest eEN = +2m.2s., iE = +3m.2s.
Long waves were also recorded at Rome, Triest, De Bilt, Tiflis, and Baku.

August 3d. Readings also at 0h. (Frunse, Tchimkent, near Andijan, Tashkent, and Samarkand), 1h. (near Wellington), 4h. (near Andijan), 5h. (Almata and Wellington), 6h. (Osaka, Mizusawa, and near Andijan), 7h. (Zi-ka-wei, Vladivostok, Stuttgart, Almata, Tashkent, Tiflis, Sverdlovsk, Baku, Triest, and Bucharest), 8h. (Samarkand), 11h. (Sverdlovsk, Tiflis, Tashkent, Helwan, and Ksara), 13h. (Tiflis, Sverdlovsk, Bucharest (2), near Istanbul, Ksara, and Sofia (3)), 14h. (Baku), 16h. (near Andijan), 19h. (Columbia), 22h. (Bucharest and Hukuoka).

August 4d. Readings at 2h. (Manila (2)), 3h. (Sverdlovsk, Irkutsk, and Mizusawa), 7h. (Mizusawa, La Paz, and Samarkand), 9h. (Christchurch, Wellington, and Tuai), 10h. (De Bilt and Stuttgart), 13h. (Rome and near Moncalieri), 15h. (near Andijan, Frunse, and Tchimkent), 17h. (Erevan), 19h. (near Fort de France), 21h. (La Paz).

August 5d. 9h. 29m. 5s. Epicentre 14°·3N. 91°·7W. (as on 1937, Sept. 28d.).

Tacubaya gives epicentre 14°·3N. 91°·3W.

$A = -\cdot0288$, $B = -\cdot9690$, $C = +\cdot2454$; $\delta = +1$; $h = +6$;
$D = -\cdot999$, $E = +\cdot030$; $G = -\cdot007$, $H = -\cdot245$, $K = -\cdot969$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	5·5	299	1 41	P*	—	—	—	—	—
Vera Cruz	N.	6·5	319	1 52	P*	—	—	—	—	—
Merida	N.	6·9	17	1 55	P*	—	—	—	—	—
Tacubaya	N.	8·8	306	2 24	+13	—	—	—	—	—
St. Louis		24·3	3	e 5 23	+ 3	e 9 31	− 6	—	—	e 11·9
Tucson		25·0	320	i 5 27a	0	i 9 11	−38	—	—	—
Philadelphia		29·4	28	—	—	e 10 31	−30	—	—	—
La Jolla		29·7	314	i 6 10	0	—	—	i 6 24	pP	—
Riverside		30·4	315	i 6 15	− 1	—	—	i 6 29	pP	—
Mount Wilson		31·1	315	i 6 21	− 1	—	—	i 6 35	pP	—
Pasadena		31·1	315	i 6 22a	0	—	—	i 6 35	pP	—
Haiwee		32·0	320	e 6 30	0	—	—	i 6 44	pP	—
Williamstown		32·4	26	e 7 41	PP	—	—	—	—	—
Tinemaha		32·8	320	e 6 36	− 1	—	—	i 6 50	pP	—
Ottawa		33·8	20	i 6 37	− 9	e 11 55?	−15	—	—	—
Ksara		110·9	46	e 8 31	?	e 25 21	[+ 5]	e 22 15	PPP	—

Additional readings :—
St. Louis iN = +5m.32s.
La Jolla eZ = +9m.10s.
Riverside iZ = +9m.7s. and +9m.23s.
Mount Wilson iZ = +9m.10s. and +9m.25s.
Pasadena eP_cPZ = +9m.9s., ipP_cPZ = +9m.26s.
Tinemaha iNZ = +6m.57s., iEZ = +9m.13s. and +9m.29s.
Long waves were also recorded at Fordham, Sverdlovsk, and Tashkent.

August 5d. 21h. Undetermined shock.

Istanbul P = 7m.53s., P_g = 7m.57s., PS = 8m.27s., S_g = 8m.43s.
Bucharest eN = 9m.40s., eE = 9m.54s., eN = 10m.4s., 10m.23s., eE = 10m.40s., 10m.50s., iS?E = 11m.2s., iS?N = 11m.10s., iE = 11m.18s., iN = 11m.23s.
Sofia eEN = 9m.42s., eN = 11m.21s.
Ksara eP = 10m.46s., eS = 12m.11s.
Tiflis ePNZ = 11m.3s., eSN = 13m.45s., eLNZ = 14·0m.
Moscow e = 11m.21s., 12m.11s., 14m.37s., and 15m.11s.
Edinburgh e = 12m.0s.
Strasbourg eZ = 12m.28s.
Pulkovo e = 12m.39s.
Belgrade e = 12m.56s., 13m.8s., and 14m.22s.
Sverdlovsk eP = 14m.14s., eS = 18m.37s., L = 24·0m.
Triest e = 15m.17s., i = 15m.42s., S_g = 16m.42s.
Rome e = 15m.43s., 16m.14s., 17m.4s., and 20m.17s.
Stuttgart e = 16m.0s.
Uccle e = 17m.0s., eL = 19m.24s.
De Bilt e = 19m.52s.
Long waves were also recorded at Rathfarnham Castle, Kew, Tashkent, Hamburg, and Baku.

August 5d. Readings also at 0h. (Rome, Ksara, Manila, Hong Kong, Tashkent, Sverdlovsk, Baku, and Pulkovo), 1h. (De Bilt, Uccle, Irkutsk, Mizusawa, Rome, and Stuttgart), 2h. (Samarkand (2)), 3h. (near La Paz), 6h. (Tinemaha, Pasadena, Mount Wilson, Riverside, and Tucson), 8h. (Ksara), 11h. (Rome (2)), 15h. (near Fordham, Ottawa, and Harvard), 16h. (near Triest), 17h. (Ksara, Sofia, and Bucharest), 18h. (Fort de France), 19h. (near Andijan, Adelaide, and Melbourne), 22h. (College), 23h. (Stuttgart).

August 6d. Readings at 2h. (La Paz), 3h. (Tinemaha, Riverside, Mount Wilson, Baku, Tashkent, Sverdlovsk, Istanbul, Sofia, Sitka, College, Bucharest, and Stuttgart), 4h. (Vladivostok, Zi-ka-wei, Irkutsk, Hong Kong, Manila, and Tashkent), 5h. (De Bilt, Pulkovo, Uccle, Karenko, Sverdlovsk, Baku, and Tiflis), 7h. (Almata), 8h. (La Paz), 11h. (Ksara, Baku, Tiflis, Tashkent, and near Samarkand), 12h. (La Paz), 13h. (near Samarkand, La Jolla, Mount Wilson, Riverside, Tinemaha, Tucson, and Pasadena), 14h. (near Samarkand (2)), 15h. (Hukuoka), 17h. (La Paz), 18h. (Harvard, Pasadena, Tucson, Tinemaha, Riverside, and Mount Wilson).

August 7d. 23h. 59m. 36s. Epicentre 4°·0N. 78°·0E.

$A = +\cdot2074$, $B = +\cdot9758$, $C = +\cdot0693$; $\delta = 0$; $h = +7$;
$D = +\cdot978$, $E = -\cdot208$; $G = +\cdot014$, $H = +\cdot068$, $K = -\cdot998$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	3·4	32	0 57	+ 2	1 32	− 5	—	—	—
Kodaikanal	E.	6·2	356	i 1 37	+ 2	i 2 44	− 4	—	—	—
Hyderabad	E.	13·4	3	3 8	− 6	5 52	+ 7	6 11	SS	6·4
Bombay	E.	15·8	141	e 3 44	− 1	i 6 38	− 4	i 6 46	SS	e 7·6
Calcutta	N.	21·0	29	i 4 56	+ 9	i 8 59	SS	e 5 16	PPP	—
Agra	E.	23·0	2	e 5 9	+ 2	9 21	+ 7	5 39	PP	—
Dehra Dun	N.	26·2	2	e 6 53	PPP	e 11 30	SSS	—	—	e 16·7
Samarkand		36·9	346	7 12	0	12 55	− 3	—	—	—
Tashkent		38·0	350	i 7 18	− 3	e 13 8	− 6	i 8 44	PP	e 21·4
Almata		39·1	0	e 7 32	+ 1	—	—	—	—	—
Baku		44·2	330	e 8 15	+ 3	e 14 47	+ 1	—	—	e 22·1
Tiflis		47·9	326	i 8 41	− 1	15 38	− 1	e 10 42	PP	e 24·4
Grozny		48·4	329	e 9 48	+62	—	—	—	—	—
Ksara		49·1	313	e 8 51	0	e 16 27	PS	e 10 52	PPP	—
Helwan		51·0	306	e 9 4	− 2	e 16 18	− 4	—	—	—
Sverdlovsk		54·5	349	i 9 30	− 2	17 6	− 4	—	—	27·4
Moscow		60·9	336	e 10 13	− 4	18 26	− 8	—	—	34·9
Pulkovo		66·4	337	e 10 59	+ 6	e 19 33	−10	e 14 55	PPP	35·9
Rome		69·2	314	e 11 7	− 3	i 20 10	− 6	e 14 9	PP	e 29·6
Upsala		72·0	333	—	—	e 20 24?	−25	—	—	e 40·4
Stuttgart		73·1	321	—	—	e 25 42	SS	—	—	31·4
Strasbourg	Z.	74·0	321	—	—	e 21 5	− 6	—	—	e 45·4
Uccle		76·6	321	—	—	e 21 38	− 2	—	—	—

Additional readings :—
Kodaikanal iSE = +2m.55s.
Bombay iE = +3m.50s. and +7m.6s.
Calcutta $ePcP?N$ = +8m.52s., eN = +9m.34s., iS_6SN = +16m.12s.
Dehra Dun e?N = +14m.11s.
Tashkent e = +13m.0s., +15m.43s., and +15m.52s., i = +15m.58s., +16m.34s., and +17m.22s.
Tiflis eN = +15m.49s., eSSN = +18m.37s., eSSSZ = +19m.40s.
Ksara eSS = +20m.9s.
Helwan eN = +16m.33s.
Pulkovo e = +16m.23s., +18m.55s., and +21m.1s.
Rome e = +24m.30s.
Long waves were also recorded at Tananarive, Vladivostok, De Bilt, Kew, and Edinburgh.

August 7d. Readings also at 1h. (College and Sitka), 2h. (Baku, Sverdlovsk, Philadelphia, Tashkent, and Mizusawa), 5h. (Fort de France, Pasadena, Haiwee, Tinemaha, Philadelphia, Sverlovsk, Baku, College, Sitka, Riverside, Tucson, and Mount Wilson), 7h. (Frunse, Almata, Andijan, Mount Wilson, Tucson, Riverside, Baku, Tashkent, and La Paz), 9h (Tacubaya), 10h. (Mizusawa), 12h. (Mizusawa), 17h. (Huancayo), 18h. (Mizusawa and La Paz), 20h. (Mizusawa), 21h. (Ksara and near Rome), 23h. (La Plata and La Paz).

August 8d. 19h. 54m. 18s. Epicentre 7°·8S. 156°·5E.

$A = -\cdot9087$, $B = +\cdot3951$, $C = -\cdot1348$; $\delta = +1$; $h = +7$;
$D = +\cdot399$, $E = +\cdot917$; $G = +\cdot124$, $H = -\cdot054$, $K = -\cdot991$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		19·9	170	i 4 36	0	i 8 24	+ 9	i 5 12	PP	—
Riverview		26·4	190	—	—	e 10 36	+24	e 11 12	SS	e 14·5
Sydney		26·4	190	—	—	e 10 30	+18	—	—	e 14·1
Adelaide		31·6	209	e 7 5	PP	i 12 25	+50	—	—	15·6
Christchurch		38·3	161	i 6 4a	?	e 13 26	+ 7	18 46	L_Q	e 22·0
Manila		41·7	303	i 7 52	0	i 13 40	−30	—	—	18·8
Perth		44·8	232	i 2 42	?	i 17 45	SS	—	—	—
Frunse		89·4	313	e 13 37	+37	—	—	—	—	—
Pasadena		90·5	56	i 13 6	+ 1	—	—	—	—	—
Andijan		90·6	311	13 12	+ 7	23 45	[+ 8]	—	—	—
Mount Wilson		90·6	56	i 13 5	0	—	—	—	—	—
Tinemaha		90·9	53	e 13 8	+ 1	—	—	—	—	—
Haiwee		91·0	54	e 13 10	+ 3	—	—	—	—	—
La Jolla	z.	91·0	57	e 13 9	+ 2	—	—	—	—	—
Riverside	z.	91·1	56	e 13 7	− 1	—	—	—	—	—
Sverdlovsk		99·7	326	e 17 34	PP	24 59	−19	—	—	40·7
Baku		107·6	310	—	—	e 34 12	SS	—	—	62·0
Tiflis	z.	111·3	312	e 19 12	PP	—	—	—	—	—
Ksara		119·7	304	e 18 56	[+ 4]	e 29 46	PS	e 20 4	PP	—
La Paz	z.	129·7	118	22 47	?	—	—	—	—	—
Rome		133·5	37	e 19 20	[+ 1]	—	—	e 24 33	PPP	—

Additional readings :—
Brisbane iPE = +4m.42s.
Pasadena iZ = +13m.15s.
Long waves were also recorded at Istanbul and Melbourne.

August 8d. Readings also at 0h. (Mizusawa (2), Samarkand, and Osaka), 1h. (near Wellington, Baku, Sverdlovsk, and Tashkent), 5h. (near Fort de France), 6h. (Triest, Sverdlovsk, near Frunse, Almata, and near Andijan), 7h. (Ksara, Tiflis, Baku, and Mizusawa), 9h. (near Andijan (2)), 11h. (Fort de France), 12h. (Tacubaya), 13h. (La Paz), 14h. (Samarkand, Istanbul, near Andijan, Frunse, Almata, and Tashkent), 16h. (near Balboa Heights), 19h. (La Paz and near Fort de France), 21h. (near Branner, near Berkeley, Fresno, and near Manila), 23h. (near Fort de France).

August 9d. 3h. 30m. 24s. Epicentre 40°·0N. 19°·0E.

$A = +\cdot7263$, $B = +\cdot2501$, $C = +\cdot6402$; $\delta = -8$; $h = -2$;
$D = +\cdot326$, $E = -\cdot946$; $G = +\cdot605$, $H = +\cdot208$, $K = -\cdot768$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		4·2	49	e 1 5	− 2	i 2 7	S*	i 1 14	P*	—
Belgrade		4·9	13	i 1 14a	− 3	i 2 17	+ 2	i 1 28	P*	—
Rome		5·3	293	1 31k	P*	2 41	S*	—	—	e 3·3
Bucharest		6·8	48	e 1 46	+ 2	e 3 6	+ 3	i 3 44	S_g	—
Triest		6·8	328	e 1 46	+ 2	i 3 1	− 2	3 48	S_g	—
Laibach		6·9	333	—	—	i 3 6	+ 1	i 3 31	S*	—
Kecskemet	z.	7·0	4	e 1 59	P*	e 2 58	−10	e 2 15	P_g	e 3·9
Budapest	E.	7·5	1	1 58	+ 5	3 32	+12	4 10	S_g	—
Istanbul		7·7	79	1 57	+ 1	4 43	?	—	—	—
Moncalieri		9·7	305	e 1 15	−67	—	—	—	—	—
Zurich		10·6	317	e 2 37	+ 1	e 4 32	− 5	—	—	—
Basle		11·2	316	e 2 42	− 2	e 5 11	SS	—	—	—
Stuttgart		11·2	325	e 2 46	+ 2	i 4 44	− 8	i 5 13	SS	e 5·8
Strasbourg		11·8	321	e 2 49	− 4	i 5 44	SSS	e 3 7	PPP	—
Jena		12·1	337	e 3 0	+ 3	—	—	—	—	e 5·8
Clermont-Ferrand		13·1	301	—	—	e 6 21	SSS	—	—	e 8·8
Helwan	z.	14·3	132	e 3 27	+ 1	e 6 5	− 1	—	—	—
Ksara		14·8	109	e 3 39	+ 7	e 7 6	+48	—	—	—
Toledo		17·7	278	e 4 23	PP	—	—	—	—	13·1
Tiflis		19·6	76	e 4 16	−16	e 8 32	SS	e 4 42	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.
Upsala	19·9	358	e 6 36	?	e 9 26	?	—	—	e 10·6
Moscow	20·0	33	e 4 35	− 2	e 8 11	− 6	—	—	e 10·1
Pulkovo	21·1	18	e 4 46	− 2	e 8 32	− 7	—	—	e 10·5
Sverdlovsk	31·7	44	—	—	e 11 42	+ 5	—	—	15·6

Additional readings :—
Sofia iEN = +1m.45s. and +2m.0s.
Belgrade iP_g = +1m.35s., i = +2m.22s.
Rome iN = +2m.0s.
Bucharest eN = +1m.49s., iS*N = +4m.23s., iS*E = +4m.28s.
Triest i = +3m.4s., e = +4m.2s.
Laibach i = +3m.15s. and +3m.34s.
Istanbul SP_g = +2m.51s.
Strasbourg i = +6m.5s., +6m.16s., and +6m.56s.
Long waves were also recorded at Baku, Tashkent, and European stations.

Aug. 9d. 12h. 29m. 41s. Epicentre 41°·5N. 25°·2E. (as on August 2d.).

Intensity VII at Tcherniagara and Borisovgrad. Radius of macroseismic area 80km. Epicentre 42°·2N. ±0°·1. 25°·3E. ±0°·1.

Kiro. T. Kirof " Tremblements de terre en Bulgarie," Liste des tremblements de terre ressentis pendant les années 1931-1940, Sofia, 1941, p. 84,

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		1·8	311	e 0 34	+ 2	i 0 57	+ 1	—	—	—
Istanbul		2·9	98	1 4	P_g	1 32	S*	—	—	—
Bucharest		3·0	13	e 0 50	0	1 19	− 8	0 59	P_g	—
Belgrade		4·8	316	e 1 15	0	i 2 24	S*	i 1 32	P_g	—
Kecskemet		6·7	326	e 2 21	P_g	e 2 58	− 2	—	—	—
Cernauti	N.	6·8	6	—	—	e 2 42	−21	—	—	6·3
Budapest		7·4	326	2 25	P_g	e 2 57	−21	—	—	4·1
Triest		9·3	301	—	—	e 4 2	− 3	4 55	S_g	e 5·5
Rome		9·5	276	e 5 9	S_g	—	—	—	—	e 7·1
Ksara		11·4	129	e 5 29	S*	e 6 51	S_g	—	—	—
Strasbourg		14·2	306	—	—	e 6 25	+21	—	—	—
Moscow		16·4	26	e 3 46	− 7	e 6 56	0	—	—	—
De Bilt		17·3	315	e 7 31	S	(e 7 31)	+15	—	—	—
Pulkovo		18·6	9	e 4 6	−15	e 7 34	−12	—	—	—
Sverdlovsk		27·4	44	5 53	+ 4	10 39	+11	—	—	13·3

Additional readings :—
Sofia iEN = +37s., +43s., and +54s.
Bucharest P* = +54s., S*EN = +1m.25s., S_gN = +1m.31s.
Belgrade iP* = +1m.23s., i = +1m.38s., iPS = +2m.27s.
Rome eZ = +5m.41s., eN = +5m.48s., i = +5m.59s., iSE = +6m.20s.
De Bilt eSZ = +11m.26s. .
Long waves were also recorded at Hamburg, Stuttgart, and Rathfarnham Castle.

August 9d. 23h. 43m. 44s. Epicentre 39°·8N. 29°·6E. (as on 1939 August 3d.).

District of Inegöl.

Epicentre 40°·0N. 29°·5E. (Strasbourg).

Bulletin meteorologique, seismique et magnetique de l'Observatoire d'Istanbul-Kandilli, Annee 1939, Istanbul 1945, p.43.

A = +·6698, B = +·3805, C = +·6376 ; $\delta = -5$; $h = -2$.

		△	Az. .	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		1·3	342	0 24	− 1	0 39	− 5	—	—	—
Bucharest		5·3	330	e 1 22a	0	i 2 48	S_g	e 1 43	P_g	—
Sofia		5·5	303	e 1 34	P*	i 3 15	S_g	—	—	—
Ksara		7·8	138	e 1 56	− 2	3 22	− 6	i 4 10	S_g	—
Belgrade		8·4	309	—	—	e 3 47	+ 4	e 4 32	S_g	—
Helwan		10·0	172	i 2 25a	− 2	4 16	− 6	e 4 52	S*	—
Kecskemet	z.	10·1	318	e 5 20	S	(e 5 20)	S_g	—	—	e 6·2
Budapest		10·8	319	—	—	e 5 16?	SSS	—	—	e 6·3
Erevan		11·4	83	e 3 4	PPP	—	—	—	—	—
Tiflis		11·7	75	i 2 50	− 1	e 5 9	+ 5	e 5 20	SS	6·8

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grozny	12·6	68	3 3	0	—	—	—	—	8·3
Triest	13·0	302	e 3 16	+ 7	e 5 46	SS	—	—	(7·4)
Rome	13·1	284	e 3 12	+ 2	i 6 7	SSS	—	—	e 8·3
Prague	14·8	319	e 3 34	+ 2	—	—	—	—	e 7·8
Baku	15·5	81	e 3 49	+ 7	e 6 46	SS	—	—	e 9·0
Moscow	16·8	18	3 51	− 7	7 12	+ 7	—	—	9·9
Stuttgart	17·1	308	e 4 7k	+ 5	e 7 26	SS	—	—	e 8·8
Strasbourg	17·9	309	i 3 17a	−55	i 6 46	−44	—	—	—
Hamburg	19·2	323	e 3 58	−30	—	—	—	—	e 11·3
Copenhagen	19·5	331	e 4 30	− 1	8 12	+ 6	—	—	10·3
Pulkovo	20·0	2	e 4 30	− 7	e 8 16	− 1	—	—	e 9·8
Clermont-Ferrand	20·3	296	e 4 40	0	—	—	—	—	—
De Bilt	20·8	316	4 45k	0	8 45	+12	—	—	i 13·9
Uccle	20·8	310	e 4 43	− 2	e 8 42	+ 9	—	—	e 10·3
Paris	21·3	304	e 4 49	− 1	e 8 58	+15	—	—	12·3
Upsala	21·4	344	e 4 51	0	8 47	+ 2	—	—	e 11·3
Kew	23·8	310	e 5 14	− 1	e 9 38	+10	e 13 46	L_q	e 14·3
Toledo	25·7	281	e 5 34	+ 1	—	—	—	—	15·1
Stonyhurst	25·8	315	—	—	e 10 16	+14	—	—	14·8
Bidston	26·0	313	—	—	e 10 10	+ 4	—	—	—
Sverdlovsk	26·4	39	i 5 33	− 7	e 10 10	− 2	—	—	14·3
Edinburgh	26·9	318	—	—	e 10 26	+ 6	—	—	—
Tashkent	30·0	73	e 6 5	− 7	e 11 18	+ 8	e 7 9	PP	17·9

Additional readings :—
Bucharest eEN = +2m.22s., iSN = +2m.56s., iN = +3m.9s.
Belgrade i = +4m.37s., +4m.50s., and +5m.18s.
Helwan eN = +4m.31s.
Budapest eN = +5m.46s.
Tiflis ePN = +2m.53s., eE = +6m.24s.
Rome eZ = +4m.8s., e = +6m.50s., eL_qN = +7m.43s.
Tashkent e = +7m.17s. and +12m.47s.

August 9d. Readings also at 0h. (Pasadena, Tinemaha, and Riverside), 1h. (Apia and Christchurch), 3h. (near Triest, De Bilt, Frunse, and Samarkand), 6h. (Fort de France and Andijan), 8h. (near Wellington and near Andijan), 10h. (Pasadena, Tinemaha, Mount Wilson, Riverside, and La Paz), 12h. (Apia, Mount Wilson, Riverside, Tinemaha, Pasadena, and La Paz), 13h. (Tchimkent, Almata, Tashkent, near La Paz, near Andijan, Fort de France, Frunse, and Samarkand), 14h. (Sverdlovsk), 16h. (near Manila), 17h. (La Paz), 22h. (near Manila and Sverdlovsk).

August 10d. Readings at 5h. (near Fort de France and near Mizusawa), 6h. (Manila, Tashkent, Sverdlovsk, Tiflis, Ksara, and Rome), 10h. (Tucson, Mount Wilson, Riverside, Tinemaha, and Sverdlovsk), 11h. (Tashkent), 14h. (Samarkand), 16h. (Manila), 22h. (Tacubaya).

August 11d. 6h. Undetermined shock.

Fort de France P = 2m.44s., P_g = 2m.51s., 2m.54s., PS = 3m.13s. and 3m.16s., S_g = 3m.30s., SS = 3m.38s.
San Juan eP = 3m.43s., S = 5m.35s., eL = 6·2m.
Bermuda ePP = 6m.50s., eS = 10m.15s.
La Paz PZ = 7m.23s., SZ? = 11m.56s., LN = 14·8m.
Huancayo eP = 7m.26s., eS = 11m.30s., iS = 12m.12s., L = 13·3m.
Philadelphia eP = 8m.7s., 8m.49s., eS = 12m.49s., eL = 14·4m.
Fordham eN = 8m.22s., eE = 12m.57s., e = 14m.51s.
St. Louis eN = 8m.44s., eEN = 14m.20s., eLEN = 18·7m.
Tucson eP = 10m.20s., eL = 22·1m.
Riverside eZ = 11m.3s.
Mount Wilson eZ = 11m.5s., iZ = 12m.4s.
Tinemaha e = 11m.12s.
Pasadena iZ = 12m.6s.
Santa Barbara iZ = 12m.10s.
Rio de Janeiro eN = 15m.35s.
Rome e = 21m.11s., i = 21m.56s.
Hamburg eE = 21m.59s.
Helwan iEN = 25m.0s.
Ksara i = 25m.33s., e = 27m.38s. and 35m.12s.

August 11d. Readings also at 3h. (Zurich, Grozny, Colombo, Ksara, Frunse, Andijan, Tashkent, and Sverdlovsk), 4h. (Frunse and Samarkand), 7h. (near Andijan and La Paz), 10h. (near Fort de France and La Paz), 11h. (Riverside and Mount Wilson), 14h. (Tiflis), 15h. (Tinemaha, Haiwee, Riverside, Mount Wilson, and Pasadena), 16h. (Riverside, Mount Wilson, and Pasadena), 17h. (near Fresno, Sverdlovsk, and Tashkent), 19h. (near St. Louis), 20h. (Irkutsk), 23h. (near Almata, Tashkent, Sverdlovsk, Andijan, Frunse, and Samarkand).

August 12d. 2h. 7m. 26s. Epicentre 16°·1S. 168°·3E.

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

Tables for depth of focus 0·020 have been used.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	18·1	229	i 4 4	+ 2	i 7 16	0	i 4 46	PP	—
Apia		19·4	86	e 4 18a	+ 2	i 7 47	+ 5	i 8 16	SS	—
Arapuni		22·8	165	e 7 34	?	9 4	+21	i 9 52	SSS	—
Riverview		23·5	217	i 4 57a	+ 1	8 57	+ 2	i 5 42	pP	—
Sydney		23·5	217	i 4 58	+ 2	i 9 1	+ 6	e 5 37	pP	—
Tuai		23·9	163	e 5 4	+ 4	9 7	+ 5	15 46	S_cS	—
Wellington		25·7	170	i 5 17a	0	i 9 33	+ 1	i 5 49	pP	—
Christchurch		27·6	173	i 5 35	+ 1	i 10 4	+ 2	i 11 40	SS	—
Adelaide		32·5	230	e 7 4	PP	i 11 14	− 6	i 13 21	SS	—
Palau		40·8	303	4 26	?	13 22	− 4	—	—	—
Honolulu		49·9	43	8 41	+ 2	i 15 41	+ 6	e 9 17	pP	20·7
Perth		50·0	242	9 58	pP	15 29	− 8	i 19 2	SS	24·8
Manila		55·8	301	i 9 23k	0	i 16 57	+ 2	—	—	—
Tokyo, Cen. Met. Ob.		58·2	333	9 39	− 1	—	—	—	—	—
Osaka		59·3	330	9 46	− 1	19 12	?	10 30	pP	—
Matuyama		60·1	327	9 52	− 1	—	—	—	—	—
Mizusawa		60·5	337	i 9 53	− 2	i 17 54	− 2	—	—	—
Hukuoka		61·2	325	9 58	− 2	18 4	− 1	—	—	—
Akita		61·4	336	10 3	+ 2	—	—	—	—	—
Hong Kong		65·3	305	10 26a	− 1	18 55	− 1	11 4	P_cP	—
Vladivostok		67·7	333	i 10 42	0	19 26	+ 1	11 23	pP	29·7
Phu-Lien		70·8	300	i 11 0	− 1	19 57	− 4	—	—	—
Branner	E.	84·2	49	e 12 8	− 6	i 22 15	− 9	—	—	—
Ukiah		84·2	47	e 12 17	+ 3	22 24	0	e 12 59	pP	e 33·9
Berkeley		84·3	49	e 12 16k	+ 1	e 22 19	− 6	i 12 59	pP	e 41·6
Santa Clara		84·3	49	i 12 20	+ 5	i 22 29	+ 4	i 13 4	pP	e 41·5
Santa Barbara	Z.	84·8	53	i 12 19	+ 2	—	—	i 13 3	pP	—
Fresno		85·7	50	e 12 24	+ 2	e 22 42	+ 3	i 15 41	PP	—
Pasadena		85·9	53	i 12 24	+ 1	i 22 34	[+ 4]	i 13 9	pP	—
Mount Wilson		86·0	53	i 12 25	+ 2	—	—	i 13 10	pP	—
La Jolla		86·1	54	i 12 26	+ 2	—	—	i 13 12	pP	—
Riverside		86·4	53	i 12 27	+ 2	e 22 37	[+ 4]	i 13 10	pP	—
Sitka		86·5	27	12 24	− 2	22 39	[+ 5]	13 9	pP	e 35·2
Haiwee		86·8	51	e 12 30	+ 3	—	—	—	—	—
Tinemaha		86·9	50	i 12 31	+ 3	e 22 41	[+ 5]	i 13 15	pP	—
Calcutta	N.	87·1	295	i 12 35	+ 6	i 22 41	[+ 4]	i 24 14	PS	—
College		87·3	17	e 12 31	+ 1	e 22 37	[− 2]	e 15 48	PP	e 34·7
Irkutsk		87·6	327	12 32	+ 1	i 22 42	[+ 1]	e 13 14	pP	—
Seattle		88·5	39	e 13 22	pP	e 29 6	SS	16 50	pPP	e 36·1
Colombo	E.	90·4	277	—	—	23 4	[+ 7]	—	—	—
Tucson		91·0	57	i 12 50k	+ 3	e 23 8	[+ 6]	i 13 37	pP	e 37·3
Salt Lake City		92·9	48	e 12 58	+ 2	23 18	[+ 6]	e 13 11	pP	e 36·3
Kodaikanal		93·6	280	—	—	i 23 19	[+ 3]	—	—	—
Butte		94·1	43	e 13 19	+18	e 23 21	[+ 3]	e 16 51	PP	e 38·3
Hyderabad	E.	94·5	287	e 14 21	pP	23 24	[+ 3]	—	—	36·1
Bozeman		95·0	44	e 12 49	−16	23 29	[+ 5]	e 13 47	pP	e 38·0
Agra	E.	97·4	296	—	—	i 23 54	[+17]	—	—	—
Bombay		100·1	286	e 16 34	PP	i 23 50	[0]	26 1	PS	—
Almata		101·8	312	e 13 30	− 6	—	—	—	—	—
Frunse		103·5	311	e 13 42	− 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		104·8	308	e 14 21	pP	—	—	—	—	—
Tashkent		107·1	309	e 16 10	?	24 11	[−11]	26 33	pS	e 42·2
St. Louis		108·7	54	—	—	i 24 31	[+ 2]	i 27 27	sS	—
Samarkand		108·7	307	e 17 36	PP	—	—	—	—	—
Chicago		111·0	50	e 18 45	PP	e 24 39	[0]	e 21 12	PPP	e 45·5
Huancayo		111·1	110	e 14 46	pP	e 24 39	[0]	e 18 57	PP	e 44·4
Sverdlovsk		113·0	325	i 14 28	P	24 48	[+ 1]	15 9	pP	51·6
Cincinnati		113·2	53	i 19 13	PP	i 24 47	[− 1]	e 28 5	sS	—
La Paz	Z.	115·6	118	e 15 39	P	i 30 24	PPS	19 30	PP	55·1
Columbia		115·8	59	e 19 24	PP	e 24 59	[+ 1]	e 35 21	SS	e 46·1
Toronto		117·0	48	—	—	e 24 58	[− 4]	e 28 34	PS	50·6
Ottawa		118·8	46	e 19 34?	PP	e 25 16	[+ 7]	—	—	58·6
Philadelphia		120·4	52	e 19 59	PP	i 25 13	[0]	e 36 21	SS	e 50·2
Fordham		121·3	51	e 18 36	[+ 2]	i 25 20	[+ 4]	i 20 8	PP	—
Baku		121·8	308	19 32	pPKP	25 27	[+ 9]	20 11	PP	52·6
Seven Falls		122·6	43	e 20 34?	PP	i 25 22	[+ 2]	i 30 12	PS	49·6
Harvard		122·9	49	e 20 18	PP	e 25 24	[+ 3]	e 29 25	sS	e 59·6
Scoresby Sund		125·3	4	18 43	[+ 2]	25 34	[+ 5]	20 31	PP	—
East Machias		125·4	46	e 15 29	P	e 25 18	[−11]	e 20 29	PP	e 49·7
Tiflis		125·5	310	e 18 45	[+ 3]	e 25 35	[+ 5]	e 20 36	PP	e 50·6
Moscow		125·6	328	18 42	[0]	25 28	[− 2]	19 26	pPKP	e 48·1
Pulkovo		126·8	335	18 45	[+ 1]	25 33	[0]	19 29	pPKP	e 57·2
Ivigtut		128·0	21	21 53	PPP	—	—	—	—	—
San Juan		128·1	78	e 20 36	PP	e 25 8	[−29]	e 23 50	PPP	—
Bermuda		129·4	60	e 21 4	PP	e 27 25	SKKS	38 3	SS	63·7
Rio de Janeiro	N.	130·5	140	e 21 8	PP	—	—	—	—	—
Upsala		131·4	341	e 21 8	PP	e 27 18	SKKS	23 1	PPP	e 58·6
Ksara		133·8	301	i 19 1k	[+ 3]	25 59	[+ 8]	19 45	pPKP	—
Bergen	E.	134·1	348	e 22 39	pPP	—	—	—	—	—
Copenhagen		136·4	341	i 19 5	[+ 3]	—	—	i 21 44	PP	—
Istanbul		137·0	314	e 18 54	[−10]	—	—	21 43	PP	—
Helwan		138·3	297	i 19 1a	[− 5]	28 34	SKKS	19 54	pPKP	—
Hamburg		138·9	341	e 19 8k	[+ 1]	i 25 6	[−53]	e 21 58	PP	e 63·6
Edinburgh		139·7	352	e 22 34	PP	—	—	—	—	—
Sofia		140·0	319	e 19 14	[+ 4]	—	—	i 22 10	PP	—
Prague		140·1	334	e 21 46	PP	—	—	—	—	—
Jena		140·5	336	e 19 10	[0]	—	—	e 22 4	PP	—
Belgrade		140·6	323	e 19 12k	[+ 2]	e 26 53	sSKS	i 22 33	PP	—
De Bilt		141·7	343	i 19 10a	[− 2]	—	—	i 22 19	PP	e 46·6
Stonyhurst		141·7	351	e 19 34?	[+22]	—	—	—	—	—
Bidston		142·2	352	e 22 21	PP	—	—	—	—	—
Uccle		143·1	344	e 19 12k	[− 3]	—	—	e 19 55	pPKP	—
Stuttgart		143·2	337	i 19 12a	[− 3]	e 26 10	[+ 3]	i 19 56	pPKP	e 66·6
Oxford		143·5	349	i 19 15	[0]	—	—	i 35 4	PPS	—
Kew		143·6	348	i 19 14	[− 1]	e 33 49	PPS	e 22 29	PP	—
Triest		143·6	330	e 19 14k	[− 1]	e 29 5	SKKS	i 22 4	PP	—
Strasbourg	Z.	143·9	338	i 19 16	[+ 1]	i 29 16	SKKS	i 19 58	pPKP	—
Zurich		144·6	336	e 19 16k	[− 1]	—	—	e 19 49	pPKP	—
Basle		144·8	337	e 19 19	[+ 2]	—	—	e 20 6	pPKP	—
Paris		145·4	334	i 19 20k	[+ 2]	—	—	20 3	pPKP	77·6
Jersey		146·1	350	e 19 22	[+ 2]	e 29 22	SKKS	—	—	—
Rome		146·9	325	i 19 22k	[0]	—	—	i 22 46	PP	—
Clermont-Ferrand		147·9	341	i 19 29	[+ 6]	e 28 15	?	—	—	—
Toledo		155·4	346	e 19 36	[+ 2]	—	—	i 20 3	pPKP	—
Algiers		155·6	330	i 20 4	pPKP	37 34	PPS	e 23 36	PP	46·6
Almeria		157·8	340	19 38	[+ 1]	—	—	23 15	PP	—
Granada		157·8	343	e 19 40	[+ 3]	e 45 44	SS	24 20	pPP	—
San Fernando	N.	159·2	348	e 20 3	[+24]	e 33 57	?	e 23 12	PP	51·6

Additional readings :—
Apia iN = +8m.56s. and +9m.9s., iE = +9m.41s. and +9m.48s.
Riverview iN = +5m.31s., iE = +10m.7s., isSN = +10m.23s., iS$_c$S? = +15m.48s., iN = +17m.12s.
Wellington iZ = +6m.10s. and +6m.47s., iEZ = +10m.17s., iP$_c$S? = +12m.7s., iEN = +13m.12s., S$_c$S = +15m.53s.

Continued on next page.

Christchurch iZ = +11m.44s., iNZ = +12m.8s., iE = +12m.30s., iNZ = +14m.18s., iN = +15m.4s.
Adelaide e = +8m.24s., i = +9m.42s., e = +12m.12s., i = +14m.40s. and +14m.54s.
Honolulu isS = +16m.58s.
Perth i = +16m.34s., sS = +18m.9s., i = +19m.30s., +20m.14s., +20m.34s., +21m.19s., +23m.14s., and +23m.49s.
Osaka PP = +12m.39s.
Mizusawa iPE = +9m.56s.
Hong Kong PP = +12m.51s., S_eS = +20m.7s.
Vladivostok PP = +13m.10s., pPP = +13m.47s.
Branner iSN = +22m.12s.
Ukiah eP_eP = +12m.23s., epPP = +16m.9s., esS = +23m.20s., eSS = +28m.3s., esSS = +29m.0s.
Berkeley ePNZ = +12m.19s., iPPZ = +15m.34s., eSEN = +22m.23s., ePSN = +23m.29s., ePSE = +23m.44s.
Santa Clara isSE = +23m.50s.
Santa Barbara ePPZ = +15m.40s.
Fresno eSSN = +24m.4s.
Pasadena iPPZ = +15m.47s., iSE = +22m.46s., eSPEZ = +23m.41s., iPSE = +24m.6s.
Mount Wilson iPP = +15m.47s.
La Jolla iPPEZ = +15m.51s.
Riverside iPP = +15m.51s.
Sitka ePP = +15m.50s., epS = +23m.36s., isS = +23m.59s., esSS = +29m.43s.
Tinemaha i = +15m.56s., iSEN = +22m.46s.
Calcutta eN = +22m.2s., iN = +22m.58s., eN = +23m.31s.
College epS = +23m.34s., esS = +23m.49s., esSP = +24m.49s., eSSS = +33m.30s.
Irkutsk S = +22m.57s., esS = +23m.56s.
Seattle epS = +23m.45s.
Tucson ePP = +16m.21s., ePPP = +18m.38s., eS = +23m.25s., iS = +23m.39s., esS = +24m.28s., iPS = +24m.58s., eSS = +29m.43s., eSSS = +33m.21s.
Salt Lake City esP = +13m.57s., ePP = +16m.43s., epPP = +16m.55s., eS = +23m.48s., esS = +24m.40s., ePS = +25m.7s., epPS = +28m.24s., eSS = +33m.17s.
Butte ePPP = +18m.56s., eS = +23m.59s., esS = +25m.18s., eSS = +29m.19s., eSSS = +35m.3s.
Bozeman ePP = +16m.59s., eS = +24m.7s., sS = +25m.27s., PS = +25m.46s., eSS = +30m.3s., eSSS = +34m.24s.
Bombay eE = +24m.41s., iE = +24m.45s.
Tashkent i = +17m.15s., PKP = +17m.48s., PP = +18m.33s., sPP = +19m.37s., SKKS = +24m.45s., eS = +25m.42s., sS = +26m.49s., SP = +27m.14s., PPS = +28m.38s., SS = +32m.16s., SSS = +37m.28s.
St. Louis iSKKSE = +25m.25s., iSN = +26m.7s., eSSN = +33m.38s., iSSSN = +38m.24s.
Chicago epPP = +19m.16s., eS = +26m.26s., eSP = +27m.39s., ePS = +28m.26s., eSS = +34m.14s., eSSS = +39m.41s.
Huancayo esP = +15m.19s., eSKKS = +25m.39s., eSP = +27m.58s., iPS = +28m.32s., epPS = +28m.41s., PPS = +29m.34s., eSS = +34m.12s., iSS = +34m.33s., eSSS = +37m.57s.
Sverdlovsk sP = +15m.27s., ePKP = +18m.19s., pPKP = +19m.3s., iS = +26m.34s., SP = +28m.25s., PS = +28m.43s., PPS = +29m.38s., sSS = +35m.17s.
Cincinnati ePS = +28m.36s., ePPS = +29m.51s.
La Paz iZ = +15m.59s., PPPZ = +21m.38s.
Columbia epPP = +19m.46s., ePPP = +22m.8s., eS = +27m.9s., epS = +27m.53s., eSSS = +40m.28s.
Toronto eN = +27m.16s.
Philadelphia epPP = +20m.51s., eSKKS = +26m.36s., eS = +27m.46s., esS = +29m.1s., ePS = +29m.47s., eSPP = +30m.34s., esSS = +37m.14s., eSSS = +39m.31s.
Fordham iSN = +27m.57s., isSN = +29m.14s., iSSN = +36m.32s., isSSN = +37m.44s.
Baku pPP = +20m.52s., PS = +30m.14s., sSS = +37m.45s., SSS = +41m.28s.
Seven Falls e = +26m.58s.
Harvard eSEN = +28m.9s.
Scoresby Sund +21m.34s., +27m.16s., +30m.18s., and +31m.13s.
East Machias ePKP = +18m.54s., ePPP = +24m.2s., eSKKS = +27m.14s., eS = +28m.27s., esS = +29m.48s., eSP = +30m.21s., esSS = +38m.39s., eSSS = +41m.29s.
Tiflis eE = +20m.23s., epPPN = +21m.19s., eN = +22m.49s., ePPPE = +23m.43s., iSKKSEN = +27m.16s., ePPSN = +31m.58s., SSN = +37m.8s., eSSE = +37m.16s., eE = +40m.21s., eSSSN = +42m.4s.
Moscow PP = +20m.29s., pPP = +21m.12s., PS = +30m.19s., SS = +37m.16s.
Pulkovo iPP = +20m.44s., PS = +30m.25s., SS = +38m.10s.
Ivigtut +22m.13s.
San Juan esPP = +21m.56s., sSP = +31m.48s.
Bermuda eS = +28m.57s., esP = +30m.26s., eSPP = +32m.28s., SSS = +42m.6s.
Upsala SKPN = +22m.4s., iPKSN = +22m.19s., SPKSE = +23m.19s., eSE = +27m.51s., eN = +30m.34s.?, eE = +33m.5s., SSSN = +40m.51s.
Ksara SPKP = +20m.5s., iPP = +21m.33s., ipPP = +22m.13s., SS = +39m.19s.
Copenhagen +19m.49s., i = +22m.20s., e = +22m.28s. and +23m.44s.
Istanbul SSS = +22m.21s.
Helwan P_ePZ = +19m.9s., SPZ = +20m.13s., PPEZ = +21m.54s., iEZ = +22m.43s., eE = +23m.39s., sSE = +30m.4s.

Continued on next page.

Hamburg iZ = +22m.27s., eN = +22m.44s. and +23m.53s., iE = +28m.40s.
Kew eZ = +20m.5s., +22m.33s., and +22m.39s., eNZ = +23m.21s., eZ = +24m.17s., eN = +29m.5s. and +36m.59s.
Prague e = +22m.8s., +28m.40s., and +35m.4s.
Jena eN = +19m.14s., +21m.7s., and +22m.7s., e = +22m.46s.
Belgrade eZ = +21m.52s. and +23m.52s., e = +33m.4s., ePPSNE = +34m.59s.
Bidston e = +23m.10s. and +28m.55s.
Uccle e = +20m.18s., iPPZ = +22m.23s., isPPN = +23m.26s., iN = +29m.5s.
Stuttgart isPKPZ = +20m.20s., iPPZ = +22m.26s., eSKSE = +26m.15s., iSKKSE = +29m.5s., ePPSEN = +34m.34s.
Oxford i = +29m.2s.
Triest e = +41m.40s. and +50m.52s.
Strasbourg isPKPZ = +20m.22s., iPPZ = +22m.27s.
Zurich ePP = +22m.16s., e = +23m.15s.
Basle e = +22m.37s.
Paris PP = +22m.36s.
Rome iPKPZ = +19m.25s., iPKP$_2$ = +20m.9s., iE = +20m.19s., iEZ = +20m.24s., iE? = +21m.4s. and +21m.44s., iEN = +41m.33s. and +42m.46s.
Toledo e = +19m.46s., i = +23m.40s.
Algiers e = +25m.7s. and +30m.8s., eSKKS = +34m.45s.
Almeria PPP = +26m.38s., PPS = +37m.3s.
Granada iE = +20m.15s., iN = +20m.18s., iE = +21m.20s., eSSS = +49m.44s.

August 12d. 9h. 49m. 53s. Epicentre 45°·5N. 150°·7E.

A = −·6133, B = +·3442, C = +·7109; $\delta = -1$; $h = -4$;
D = +·489, E = +·872; G = −·620, H = +·348, K = −·703.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro		4·2	242	1 7	0	1 56	− 1	—	—	—
Sapporo		7·1	254	1 51k	+ 3	3 16	+ 6	—	—	—
Mori		8·1	249	2 4	+ 2	3 43	+ 8	—	—	—
Hatinohe		8·3	237	2 3a	− 1	3 29	−11	—	—	—
Aomori		8·6	241	2 7	− 2	3 47	− 1	—	—	—
Miyako		8·7	231	2 7	− 3	3 39	−11	—	—	—
Mizusawa		9·5	231	2 17	− 3	i 3 55	−15	—	—	—
Akita		9·7	237	2 26	+ 4	4 12	− 3	—	—	—
Hukusima		10·9	228	2 36	− 4	4 32	−12	—	—	—
Mito		11·9	224	2 46a	− 8	3 50	?	—	—	—
Utunomiya		12·1	226	2 53	− 4	5 1	−13	—	—	—
Tokyo, Cen. Met. Ob.		12·8	224	3 5	− 1	5 16	−14	—	—	—
Nagano		12·9	231	3 5	− 2	—	—	—	—	—
Wazima		13·1	238	3 8k	− 2	—	—	—	—	—
Vladivostok		13·7	267	e 3 21	+ 3	e 6 11	SS	—	—	7·1
Nagoya		14·7	230	3 30	− 1	6 27	+11	—	—	—
Osaka		15·8	232	4 0	+15	7 43	+61	—	—	—
Hukuoka		19·6	240	4 40	+ 8	8 19	+11	—	—	11·2
Irkutsk		30·8	301	e 6 20	0	e 10 56	−27	e 7 13	PP	14·1
Hong Kong		37·7	246	7 17	− 2	13 7	− 3	—	—	—
College		38·2	38	e 7 21	− 2	e 13 13	− 4	e 7 43	pP	e 15·9
Manila		39·7	230	e 7 40a	+ 4	13 49	+ 9	—	—	19·7
Phu-Lien		43·6	251	e 8 27	+19	—	—	—	—	—
Sitka		45·5	47	e 8 22	− 1	i 15 4	− 1	e 17 53	S_cS	i 18·6
Semipalatinsk		45·8	304	—	—	e 13 4	?	—	—	—
Honolulu		48·3	102	e 8 54	+ 9	e 15 31	−14	e 10 13	P_cP	e 19·9
Almata		51·0	297	9 6	0	—	—	—	—	—
Frunse		52·7	297	9 23	+ 5	—	—	—	—	—
Sverdlovsk		53·6	318	i 9 24	− 1	16 54	− 4	25 31	L_q	32·2
Calcutta	N.	55·1	268	e 9 47	+11	e 17 12	− 6	e 20 40	SS	e 25·9
Andijan		55·2	296	9 39	+ 2	17 25	+ 5	—	—	28·4
Tashkent		56·9	299	i 9 47	− 2	i 16 26	?	—	—	e 24·1
Dehra Dun	N.	57·4	283	e 16 29	?	—	—	—	—	e 30·1
Agra	E.	59·4	279	10 5	− 1	i 18 10	− 5	10 17	pP	—
Ukiah		61·0	63	e 12 30	PP	e 18 25	−10	e 22 35	SS	e 24·7
Berkeley		62·4	63	e 10 37	+10	i 18 42	−11	—	—	e 27·1
Santa Clara		62·9	63	e 10 38	+ 8	e 18 59	− 1	—	—	e 26·4
Butte		63·1	50	e 10 52	+20	e 18 59	− 3	e 14 24	PPP	e 27·7
Bozeman		64·1	50	e 10 38	0	e 19 13	− 1	—	—	e 26·6
Scoresby Sund		64·2	359	10 36	− 3	i 19 18	+ 2	i 19 56	PS	27·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pulkovo		64·3	332	e 10 38	− 1	e 19 12	− 5	—	—	30·7
Moscow		64·5	325	10 37	− 4	19 12	− 7	—	—	34·6
Hyderabad	E.	65·4	271	e 11 3	+16	19 30	0	11 34	PcP	31·6
Tinemaha		65·4	62	e 10 43	− 4	—	—	i 10 57	pP	—
Santa Barbara	Z.	66·1	65	e 10 48	− 3	—	—	i 11 4	pP	—
Haiwee		66·2	62	e 11 0	+ 8	—	—	—	—	—
Salt Lake City		66·8	56	e 10 54	− 2	e 19 46	− 2	e 11 15	pP	e 29·5
Mount Wilson		67·3	64	i 10 56	− 3	—	—	i 11 12	pP	—
Pasadena		67·3	64	e 10 55	− 4	e 19 50	− 4	i 11 10	pP	e 27·5
Riverside		67·9	64	e 10 58	− 4	—	—	—	—	—
Upsala		68·2	338	11 5	+ 1	e 19 58	− 6	e 28 7?	SSS	e 33·1
Bombay		68·4	277	e 11 8	+ 2	i 20 8	+ 1	e 24 28	SS	e 35·4
La Jolla		68·7	65	i 11 5	− 2	—	—	—	—	—
Baku		69·0	308	i 11 11	+ 2	20 18	+ 4	—	—	33·6
Grozny		69·3	312	11 15	+ 4	20 23	+ 6	—	—	28·5
Bergen		70·8	344	i 11 27	+ 7	21 7?	PS	—	—	38·1
Tiflis		70·9	311	i 11 22	+ 1	e 20 37	+ 1	i 11 48	PcP	e 34·1
Kodaikanal	E.	71·0	267	—	—	i 20 37	0	—	—	—
Colombo	E.	71·7	262	—	—	20 26	−19	—	—	—
Sotchi		72·2	315	e 11 29	0	—	—	—	—	—
Ivigtut		72·6	10	—	—	20 54	− 2	—	—	34·1
Copenhagen		73·2	338	e 11 34	− 1	i 21 1	− 1	i 11 53	pP	37·1
Tucson		73·2	62	e 11 29	− 6	e 20 49	−13	e 14 14	PP	e 31·0
Cernauti	N.	74·8	326	e 10 37	−67	20 17	−63	—	—	37·1
Lincoln		75·1	47	e 11 37	− 9	e 21 17	− 7	e 16 32	PPP	e 32·7
Heligoland		75·8	340	—	—	e 21 7	−24	—	—	e 38·1
Edinburgh		76·6	346	—	—	21 41	+ 1	—	—	—
Prague		77·5	334	e 11 56	− 3	e 21 49	− 1	—	—	e 30·1
Jena		77·6	335	i 11 59	− 1	e 20 43	−68	e 22 7	PS	e 39·1
Budapest		78·1	330	12 2	0	e 21 58	+ 2	—	—	46·1
De Bilt		78·4	340	i 12 4a	0	i 22 1	+ 1	—	—	e 27·1
Stonyhurst		78·4	345	—	—	22 2	+ 2	—	—	45·1
Chicago		78·6	41	e 15 18	PP	e 21 55	− 7	e 26 42	SS	e 35·9
Bidston		79·0	346	—	—	e 22 5	− 1	—	—	—
Istanbul		79·3	320	12 7	− 2	22 8	− 1	—	—	e 43·1
Rathfarnham Castle		79·6	348	e 11 17	−53	e 21 47	−25	—	—	e 43·1
Uccle		79·8	341	i 12 11a	− 1	22 14	0	e 27 59	SS	e 38·1
Belgrade		79·9	327	i 12 12k	0	i 22 14	− 2	—	—	e 46·4
St. Louis		79·9	45	e 12 9	− 3	i 22 10	− 6	e 23 13	PS	—
Kew		80·2	343	i 12 14	0	e 22 18	− 1	e 37 7	L_q	e 40·1
Stuttgart		80·3	336	i 12 14a	0	e 22 15	− 5	e 12 58	pP	e 44·2
Sofia		80·5	324	e 12 17	+ 2	e 22 23	+ 1	—	—	40·6
Strasbourg		80·9	337	e 12 18	+ 1	e 22 23	− 3	—	—	e 44·6
Ksara		81·5	311	i 12 22a	+ 1	22 40	+ 8	23 26	PS	49·4
Triest		81·6	332	e 12 21	0	e 22 30	− 3	—	—	e 42·9
Zurich		81·7	336	e 12 22	0	e 22 33	− 1	—	—	—
Basle		81·8	327	e 12 20	− 2	e 22 43	+ 8	—	—	—
Paris		82·1	340	i 12 23	− 1	i 22 38	0	—	—	44·1
Cincinnati		82·3	40	i 12 23	− 2	e 22 35	− 5	—	—	44·1
Jersey		82·7	344	e 12 25	− 2	e 22 45	+ 1	—	—	45·1
East Machias		84·0	27	e 12 23	−10	e 22 52	− 5	e 15 45	PP	e 35·4
Harvard		84·6	30	i 12 32k	− 4	e 22 59	− 4	i 12 35	PcP	e 40·1
Fordham		85·2	32	i 12 36	− 3	e 23 0	[− 2]	—	—	—
Rome		85·3	331	i 12 39a	− 1	i 23 4	[+ 1]	i 12 51	PcP	e 38·5
Philadelphia		85·5	34	—	—	e 22 57	[− 7]	e 28 37	SS	e 35·3
Clermont-Ferrand		85·7	338	e 12 40	− 2	e 23 2	[− 4]	—	—	e 41·0
Helwan		87·0	311	i 12 49a	+ 1	23 17	[+ 3]	24 52	PS	—
Columbia		88·1	41	e 16 50	PP	e 22 58	[−23]	e 29 25	SS	e 35·8
Toledo		92·0	340	e 13 12	0	i 23 45	[+ 1]	e 25 31	PS	—
Algiers		93·0	334	e 13 21	+ 4	e 23 35	[−15]	16 36?	PP	41·1
Almeria		94·5	338	e 13 13	−10	23 52	[− 6]	13 30	PcP	42·9
San Fernando		95·8	341	—	—	i 24 10	[+ 5]	—	—	51·1
Bermuda		96·1	29	e 17 22	PP	e 24 35	−13	e 31 12	SS	e 43·1
San Juan		108·2	36	e 19 25	pPKP	e 24 56	[− 9]	e 28 17	PS	e 43·9
Huancayo		128·7	64	—	—	e 27 30	{−41}	e 38 32	SS	e 53·8
La Paz		136·6	60	19 40	[+ 6]	—	—	—	—	69·6
Rio de Janeiro	N.	154·8	31	e 22 7	?	—	—	—	—	—

For Notes see next page.

NOTES TO AUGUST 12d. 9h. 49m. 53s.

Additional readings :—
Irkutsk e = +11m.49s.
College pPP = +9m.14s.
Honolulu eS$_c$S = +17m.55s., esSS = +19m.34s.
Calcutta eN = +19m.41s.
Agra PPE = +13m.4s., sSE = +18m.35s., S$_c$SE = +19m.50s., SSE = +22m.4s.
Ukiah S = +18m.36s., esS = +18m.53s., eSS = +23m.24s.
Berkeley iSN = +18m.29s.
Butte pPP = +13m.22s., esS = +19m.24s., eS$_c$S = +20m.22s.
Hyderabad S$_c$SE = +20m.43s., SSE = +23m.46s.
Salt Lake City ePP = +13m.25s., epPP = +14m.2s., eS$_c$S = +20m.48s., eSS = +23m.49s., eSSS = +26m.59s.
Upsala eSE = +20m.3s.
Bombay eEN = +35m.25s.
Tiflis iNZ = +11m.39s., iP$_c$PZ = +11m.51s., eSN = +20m.40s., eEN = +21m.2s., ePSE = +21m.27s., eN = +21m.39s., eSSSN = +28m.31s.
Tucson eP$_c$P = +11m.47s., epPP = +14m.54s., eSS = +25m.38s., eSSS = +29m.22s.
Lincoln eSSS = +29m.33s.
Jena iN = +12m.37s.
Budapest iE = +12m.11s.
Chicago eSSS = +30m.37s.
Uccle eN = +31m.47s.
St. Louis iE = +22m.28s.
Stuttgart ePPZ = +15m.17s., eSN = +22m.19s., eSSE = +27m.34s.
Cincinnati i = +12m.35s. and +22m.57s.
East Machias eSS = +28m.19s., esSS = +29m.49s., eSSS = +32m.34s.
Harvard eN = +21m.54s.
Rome iZ = +13m.29s., e = +15m.19s., eN = +18m.46s. and +23m.12s., i = +24m.23s.
Helwan iZ = +13m.31s. and +15m.23s., SEN = +23m.42s.
Columbia eS = +23m.31s.
Toledo SS = +31m.18s.
Algiers eSS = +29m.19s.
Almeria PP = +16m.54s., PPP = +19m.37s., S = +24m.15s.
San Juan epPPP = +21m.55s., eSKKS = +25m.53s., eSS = +34m.0s.
Huancayo esSS = +39m.18s.
Long waves were also recorded at Cape Town and Granada.

August 12d. 19h. 40m. 57s. Epicentre 24°·7S. 70°·2W. (as on 1937, November 1d.).

A = +·3081, B = −·8558, C = −·4155 ; δ = −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.
Montezuma		2·4	31	0 33	− 8	—	—	—	—	—
La Paz		8·4	14	2 7	+ 1	i 3 59	+16	i 2 29	PPP	4·4
Huancayo		13·5	338	e 3 13	− 2	i 6 19	SSS	e 3 30	PP	—
La Plata		14·7	137	3 27	− 4	—	—	—	—	6·6
Rio de Janeiro	N.	24·7	92	e 9 34	S	(e 9 34)	−10	—	—	—
San Juan		43·0	6	e 10 37	PPP	e 14 12	−17	—	—	e 17·8
Harvard		66·9	359	i 10 58k	+ 2	—	—	—	—	—
Tucson		68·6	324	i 11 12k	+ 5	—	—	—	—	—
Riverside		73·6	321	i 11 41k	+ 4	—	—	—	—	—
Mount Wilson		74·2	321	i 11 45k	+ 5	—	—	—	—	—
Pasadena		74·2	321	i 11 45	+ 5	—	—	—	—	—
Haiwee		75·5	322	i 11 53	+ 5	—	—	—	—	—
Tinemaha		76·3	322	i 11 58k	+ 6	—	—	—	—	—
Rome		101·0	50	—	—	e 24 27	[− 5]	—	—	e 52·6
Ksara		116·1	64	e 20 20	PP	—	—	—	—	—
Sverdlovsk		132·4	34	i 19 40	[+24]	—	—	i 22 42	PP	—
Andijan		145·0	53	e 19 45	[+ 6]	—	—	—	—	—
Frunse		145·9	49	e 20 58	?	—	—	—	—	—
Almata		147·3	46	e 19 50	[+ 7]	—	—	—	—	—

Additional readings :—
Tucson iP = +11m.29s.
Mount Wilson iZ = +12m.3s.
Sverdlovsk i = +23m.17s.

August 12d. Readings also at 1h. (Istanbul), 2h. (Andijan), 3h. (near Fort de France), 6h. (near Mizusawa), 9h. (La Paz), 15h. (Fordham and near Mizusawa), 22h. (near Tuai).

August 13d. Readings at 0h. (near Samarkand and Tashkent), 1h. (Samarkand, Tashkent, Ksara, Tiflis, Baku, Haiwee, Pasadena, Mount Wilson, Riverside, Tinemaha, and Tacubaya), 4h. (Riverview, Sydney, Melbourne, Brisbane, Christchurch, Wellington, Manila, Vladivostok, Sverdlovsk, Ksara, De Bilt, Stuttgart, Rome, Jena, Paris, Triest, Uccle, Haiwee, Mount Wilson, Pasadena, Riverside, and Tinemaha), 5h. (La Paz, near Berkeley and Branner), 8h. (Balboa Heights), 12h. (Sverdlovsk and Tashkent), 13h. (Sverdlovsk, Moscow, Pulkovo, Uccle, Paris, Stuttgart, Baku, Ksara, Vladivostok, Mount Wilson, Pasadena, Riverside, and Tinemaha), 14h. (near Toledo), 18h. (Mount Wilson, Pasadena, and Riverside), 19h. (San Juan, near Fort de France), 20h. (Tucson), 21h. (Rome and San Juan).

August 14d. Readings at 3h. (Sverdlovsk, Manila, Fort de France, and near Mizusawa), 4h. (Andijan, Tashkent, Baku, Moscow, and Tiflis), 5h. (Andijan), 6h. (near Mizusawa), 7h. (near Fort de France), 8h. (Merida, Oaxaca, Tacubaya, and Tucson), 10h. (near Wellington), 13h. (Andijan, Tashkent, Frunse, near Fresno, Sverdlovsk, near Almata, near Berkeley, and Branner), 14h. (near Manila), 18h. (near Mizusawa and near Tuai), 22h. (Oaxaca and Tacubaya).

August 15d. 3h. 52m. 31s. Epicentre 22°·5N. 79°·0W.

$A = +\cdot1765$, $B = -\cdot9078$, $C = +\cdot3805$; $\delta = +3$; $h = +4$;
$D = -\cdot982$, $E = -\cdot191$; $G = +\cdot073$, $H = -\cdot374$, $K = -\cdot925$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Columbia		11·6	352	e 3 46	+56	e 5 44	+43	e 6·2
Balboa Heights		13·5	182	e 3 15	0	—	—	—
Cincinnati		17·2	346	e 4 1	− 2	e 8 15	+61	8·9
St. Louis		18·7	333	e 4 16	− 6	—	—	i 9·7
Fordham		18·8	12	i 4 26	+ 3	e 8 4	SS	—
Florissant		18·9	333	e 4 16	− 8	—	—	e 9·6
Chicago		20·7	341	e 4 39	− 5	e 8 28	− 3	e 9·7
Harvard		20·9	17	i 4 46	0	i 8 27	− 8	i 11·6
Ottawa		23·0	6	i 5 8	+ 1	—	—	e 12·5
Lincoln		23·6	329	e 5 18	+ 5	e 9 21	− 4	e 10·9
East Machias		24·2	21	e 5 29	+10	e 9 39	+ 4	e 12·9
Riverside	z.	35·5	297	i 7 0	0	—	—	—
Mount Wilson	z.	36·1	298	e 7 3	− 2	—	—	—
Pasadena	z.	36·2	298	e 7 6	0	—	—	—
La Paz	z.	40·2	163	7 16	−24	—	—	—

Additional readings :—
St. Louis iN = +4m.19s.
Florissant eZ = +4m.25s.
Long waves were also recorded at Bozeman, Butte, and Salt Lake City.

August 15d. Readings also at 1h. (San Juan, Tchimkent, Frunse, and Andijan), 3h. (La Paz), 6h. (La Paz (3), La Jolla, Huancayo, Apia, Riverside, Mount Wilson, and Pasadena), 7h. (Riverside, Mount Wilson, and Pasadena), 8h. (Tiflis, near Berkeley (2), near Ottawa, Fresno (2), and Branner (2)), 11h. (Tucson, Tacubaya, and Oaxaca), 12h. (Fort de France), 15h. (near Fresno), 18h. (near Branner), 19h. (Samarkand), 21h. (Pulkovo, Baku, Tashkent, Sverdlovsk, Frunse, and Andijan), 23h. (near Fort de France).

August 16d. 17h. 7m. 5s. Epicentre 13°·1N. 89°·5W. (as on 1939 January 29d.).

$A = +\cdot0085$, $B = -\cdot9743$, $C = +\cdot2252$; $\delta = +5$; $h = +6$;
$D = -1\cdot000$, $E = -\cdot009$; $G = +\cdot002$, $H = -\cdot225$, $K = -\cdot974$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Merida	N.	7·8	359	i 2 28	P_g	—	—	—	—	—
Oaxaca	N.	8·0	300	1 56	− 4	—	—	—	—	—
Puebla	N.	10·2	306	i 2 29	− 2	—	—	—	—	—
Tacubaya	N.	11·2	305	i 2 43	− 1	—	—	—	—	—
Guadalajara	N.	15·2	301	e 3 44	+ 6	—	—	—	—	—
Columbia		22·2	19	5 6a	+ 6	e 9 6	+ 6	—	—	12·0
San Juan		23·1	73	e 5 13	+ 5	9 37	+21	5 58	PP	i 10·3
Cincinnati		26·3	9	i 5 39	0	i 10 12	+ 1	i 6 32	PP	e 19·2
Tucson		27·3	319	i 5 45	− 3	10 42	+15	—	—	i 12·8
Fort de France		27·6	83	e 6 52	PPP	—	—	—	—	e 13·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Lincoln		28·3	348	5 56	− 1	e 10 29	−14	e 6 32	PP	11·4
Chicago		28·7	3	e 5 58	− 3	e 10 45	− 5	e 7 6	PPP	e 12·6
Huancayo		28·7	149	e 6 0	− 1	i 11 5	+15	—	—	e 12·8
Bermuda		29·6	46	6 16	+ 7	11 38	+34	—	—	12·3
Fordham		30·8	25	i 6 22	+ 2	i 11 49	+26	—	—	18·5
Toronto		31·7	14	6 27	0	11 43	+ 6	—	—	e 16·9
La Jolla		32·1	313	i 6 29	− 2	—	—	e 9 22	P_cP	—
Riverside		32·8	314	i 6 34	− 3	e 13 10	S_cP	i 9 22	P_cP	—
Harvard		33·2	25	i 6 42a	+ 2	e 12 2	+ 2	i 7 2	PP	e 17·9
Mount Wilson		33·4	314	i 6 39a	− 3	e 13 10	S_cP	i 9 22	P_cP	—
Pasadena		33·4	314	i 6 40	− 2	e 11 52	−11	i 9 25	P_cP	e 18·4
Ottawa		34·3	17	i 6 50	0	e 12 19	+ 2	8 25	PPP	16·9
Haiwee		34·4	317	i 6 49	− 2	—	—	—	—	—
Santa Barbara		34·6	313	i 6 51	− 2	—	—	i 9 28	P_cP	—
Fresno	N.	35·9	317	e 7 3	− 1	—	—	—	—	—
La Paz		36·2	142	7 15	+ 9	13 9	+22	—	—	17·4
Shawinigan Falls		36·2	20	e 7 8	+ 2	—	—	—	—	17·9
East Machias		36·8	26	e 7 14	+ 3	e 12 56	0	e 8 42	PP	e 16·0
Seven Falls		37·4	21	7 18	+ 2	13 4	− 1	8 50	PP	16·9
Lick		37·5	316	e 7 17	0	—	—	—	—	e 23·9
Santa Clara		37·7	316	i 7 20	+ 1	e 13 6	− 4	—	—	e 18·1
Berkeley		38·2	316	i 7 19a	− 4	—	—	—	—	e 21·4
Butte		38·2	335	e 7 19	− 4	e 13 0	−17	e 8 50	PP	e 17·6
Ukiah		39·5	318	e 8 13	+39	e 13 35	− 2	—	—	e 15·2
Seattle		44·0	329	e 9 2	+51	—	—	—	—	e 16·6
Sitka		56·0	332	e 9 32	−11	e 17 25	− 5	e 21 17	SS	e 21·8
Rio de Janeiro	N.	57·7	128	e 9 55	0	e 18 4	+11	—	—	—
College		65·0	337	e 10 54	+10	—	—	—	—	e 24·9
Honolulu		65·4	288	—	—	e 19 27	− 3	—	—	e 26·4
Scoresby Sund		70·3	19	11 17k	0	—	—	—	—	—
Toledo		78·3	52	e 12 5	+ 2	—	—	—	—	33·9
Granada		79·0	54	i 12 36k	+29	—	—	16 55	PPP	37·4
Almeria		79·9	55	e 12 14	+ 2	22 36	+20	15 45	PP	—
Paris		81·6	42	e 12 22	+ 1	—	—	—	—	40·9
Uccle		82·4	40	e 12 29	+ 4	e 22 55?	+14	e 28 25	SS	e 40·9
Clermont-Ferrand		82·5	45	—	—	e 23 32	+50	—	—	—
Strasbourg		85·0	41	e 12 42	+ 4	e 23 25	+18	e 24 25	PS	—
Hamburg		85·1	36	e 12 41	+ 2	—	—	—	—	e 47·9
Copenhagen		85·9	33	e 12 46	+ 3	23 19	+ 3	28 55	SS	—
Stuttgart		85·9	41	i 12 44a	+ 1	e 23 19	+ 3	e 16 11	PP	e 45·9
Upsala	E.	87·2	29	—	—	e 23 28	0	—	—	e 46·9
Triest		89·8	43	e 12 39	−23	e 23 36	[+ 4]	—	—	—
Rome		90·0	47	e 13 5	+ 2	i 23 54	0	e 16 39	PP	—
Sverdlovsk		106·0	16	e 18 39	PP	e 24 59	[+ 4]	e 28 2	PS	43·9
Helwan	E.	108·8	52	—	—	e 25 13	[+ 6]	—	—	—
Ksara		110·2	46	e 19 12	PP	e 28 51	PS	—	—	—
Tiflis		111·1	35	e 19 16	PP	e 25 20	[+ 3]	e 21 25	PPP	e 50·9
Baku		114·8	32	e 19 43	PP	e 29 35	PS	—	—	e 55·9
Tashkent		122·4	19	i 20 34	PP	e 26 48	[+50]	e 32 19	PPS	e 57·9

Additional readings :—
Cincinnati i = +5m.52s., iPPP = +6m.58s., e = +7m.24s., i = +9m.24s., e = +19m.12s.
Chicago eS = +11m.22s.
Huancayo eP = +6m.8s., iS = +11m.17s.
Harvard eN = +12m.25s.
Pasadena iS_cPZ = +13m.12s., eS_cSEN = +17m.9s.
Santa Clara iPEN = +7m.21s., eEN = +18m.13s.
Berkeley iP = +7m.22s., eEN = +18m.13s.
Sitka eP = +9m.42s., S = +17m.43s.
Toledo e = +12m.43s.
Almeria P_cP = +12m.39s., PPP = +17m.53s., PS = +23m.9s.
Uccle eSSS = +32m.7s.
Strasbourg eSSE = +29m.25s.
Stuttgart eSSE = +29m.43s., eL_qN = +37m.25s.
Upsala eN = +23m.55s.?
Rome e = +10m.9s., iPS = +24m.41s., eSS = +30m.9s., i = +37m.35s.
Tiflis eZ = +25m.0s., ePPSN = +29m.6s., ePPSEZ = +29m.9s.
Tashkent e = +38m.55s., +42m.21s., +46m.20s., +49m.55s., and +54m.40s.
Long waves were also recorded at Cape Town, Bidston, Jersey, La Plata, Stonyhurst, Edinburgh, Pulkovo, Prague, Vladivostok, De Bilt, and Kew.

Aug. 16d. Readings also at 0h. (near Fort de France), 1h. (Bagnères), 3h. (near Samarkand), 4h. (near Christchurch, Wellington, Tuai, and New Plymouth), 5h. (Tacubaya), 9h. (Ksara, Sverdlovsk, Helwan, Tiflis, and Tashkent), 10h. (Tiflis), 13h. (near Samarkand), 15h. (near Mizusawa), 16h. (near Mizusawa, Tashkent, Osaka, Andijan, and near Samarkand), 17h. (Sverdlovsk and Honolulu), 18h. (near Mizusawa), 19h. (near Tchimkent, Rome, and near Manila), 21h. (near Rome).

Aug. 17d. 15h. 45m. 32s. Epicentre 37°·6N. 141°·7E.

Intensity II at Hukusima; I at Onahama, Mizusawa, Kakioka, Tukubasan, Miyako, Morioka, Sendai, and Shirakawa.

Epicentre 37°·6N. 141°·7E. Shallow.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1939. Tokyo, 1949, p. 23.

$A = -\cdot 6233$, $B = +\cdot 4923$, $C = +\cdot 6076$; $\delta = +4$; $h = -1$;
$D = +\cdot 620$, $E = +\cdot 785$; $G = -\cdot 477$, $H = +\cdot 377$, $K = -\cdot 794$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Onahama		0·9	224	0 16k	− 4	0 28	S_g	—	—	—
Sendai		0·9	317	0 19k	− 1	0 31	− 3	—	—	—
Hukusima		1·0	279	0 22k	+ 1	0 36	0	—	—	—
Mito		1·5	219	0 28k	0	0 51	+ 2	—	—	—
Mizusawa		1·6	344	i 0 29	− 1	i 0 49	− 2	—	—	—
Kakioka		1·8	222	0 32k	0	0 49	− 7	—	—	—
Utunomiya		1·8	234	0 33	+ 1	0 55	− 1	—	—	—
Tyosi		2·0	200	0 32	− 3	0 47	−15	—	—	—
Miyako		2·1	6	0 34a	− 3	0 58	− 6	—	—	—
Kumagaya		2·4	232	0 41	0	1 13	+ 1	—	—	—
Maebasi		2·4	240	0 43	+ 2	1 16	+ 4	—	—	—
Tokyo		2·5	219	0 42	− 1	1 14	0	—	—	—
Akita		2·5	329	0 47	+ 4	1 13	− 1	—	—	—
Yokohama		2·7	217	0 47	+ 2	1 19	0	—	—	—
Hatinohe		3·0	357	0 46k	− 4	1 19	− 8	—	—	—
Nagano		3·0	252	0 52k	+ 2	1 38	S_g	—	—	—
Hunatu		3·1	228	0 53	+ 2	1 37	S*	—	—	—
Osima		3·4	214	0 48	− 7	1 34	− 3	—	—	—
Wazima		3·8	269	1 4	+ 3	2 9	S_g	—	—	—
Omaesaki		4·1	224	1 13	P*	2 23	S_g	—	—	—
Nagoya		4·5	239	1 14	+ 3	2 14	S*	—	—	—
Mori		4·5	349	0 51	−20	1 40	−25	—	—	—
Sapporo		5·5	357	1 25	0	2 33	+ 3	—	—	—
Osaka		5·8	242	1 26	− 3	2 40	+ 2	—	—	—
Kobe		6·0	244	1 38a	+ 6	2 44	+ 1	—	—	—
Nemuro		6·4	26	1 30	− 8	2 39	−14	—	—	—
Vladivostok		9·3	309	e 2 20	+ 3	e 4 16	+11	—	—	4·7
Zi-ka-wei	z.	17·9	255	e 4 10	− 2	7 52	SS	—	—	10·5
Andijan		52·5	296	e 8 46	−31	—	—	—	—	—
Tashkent		54·5	298	—	—	e 17 16	+ 6	e 21 18	SS	e 29·3
Pulkovo		67·8	330	—	—	e 20 0	0	—	—	—
Tiflis		70·6	308	e 11 16	− 3	—	—	—	—	e 36·5
Copenhagen		77·5	334	i 11 55	− 4	—	—	—	—	38·5
Ksara		81·0	306	e 12 17	− 1	e 22 29	+2	e 15 25	PP	—

Ksara also gives ePS = +23m.11s.
Long waves were also recorded at Kew, Stuttgart, Baku, Honolulu, Rome, Paris, and De Bilt.

Aug. 17d. Readings also at 3h. (Samarkand), 5h. (Tacubaya), 10h. (near Mizusawa), 11h. (Zurich), 13h. (near La Paz and near Tuai), 14h. (Fresno, near Christchurch, Hastings, Wellington, near Branner, Lick, Berkeley, Tacubaya, and near Tuai), 15h. (near Samarkand), 18h. (near Mizusawa), 20h. (near Mizusawa, Vladivostok, and Baku), 22h. (St. Louis).

Aug. 18d. 4h. 51m. 14s. Epicentre 6°·0N. 1°·0E.

Felt slightly at Parahoue, Togo (6°59′N. 1°39′E.). Microseismic epicentre 6°·0N. 1°·0E. approx. (Strasbourg).

See Annales de l'Institut de Physique du Globe de Strasbourg, Vol. IV, 2e partie, p. 65.

$A = +·9944$, $B = +·0174$, $C = +·1038$; $\delta = -9$; $h = +7$;
$D = +·017$, $E = -1·000$; $G = +·104$, $H = +·002$, $K = -·995$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Almeria		30·9	354	12 52	SS	—	—	(13 17)	SSS	i 16·4
Granada		31·3	353	i 6 26k	+ 2	e 16 58	L	—	—	(e 17·0)
Toledo		34·0	353	e 6 46	− 2	e 12 16	+ 3	e 8 3	PP	17·3
Rome		37·2	13	i 7 18	+ 3	e 13 4	+ 2	e 15 50	SSS	e 19·0
Triest		41·0	13	—	—	e 14 2	+ 3	—	—	—
Basle		41·8	6	e 7 53	0	—	—	—	—	—
Ksara		42·6	45	—	—	e 15 22	+59	e 20 14	?	—
Stuttgart		43·2	7	e 7 56	− 8	—	—	—	—	20·8
Jena	N.	45·7	9	e 8 24	0	—	—	—	—	—
Moscow		57·5	23	e 9 54	+ 1	—	—	—	—	—
Sverdlovsk		68·7	31	11 10	+ 3	e 20 20	+10	—	—	33·8

Additional readings:—
Almeria i = +14m.10s. and +15m.12s.; reading entered as SSS was given as PP.
Toledo e = +7m.4s.
Jena eN = +8m.54s.
Long waves were also recorded at Harvard, Tucson, Tashkent, Baku, Helwan, Pulkovo, and other European stations.

Aug. 18d. 22h. 15m. 57s. Epicentre 18·7S. 168°·4E.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·6	235	i 3 51	− 5	i 7 3	+ 3	i 4 15	PP	—
Apia		19·6	79	e 4 36	+ 4	e 8 8	0	i 4 45	PP	10·0
Arapuni		20·3	165	5 3	PP	8 39	+16	i 9 21	SSS	—
Riverview		21·5	223	i 4 56	+ 4	e 8 53	+ 6	—	—	e 10·2
Sydney		21·5	223	i 4 48	− 4	i 8 48	+ 1	—	—	e 10·2
Wellington		23·2	170	i 5 14	+ 5	i 9 23	+ 5	i 6 5	PPP	11·9
Christchurch		25·0	173	i 5 31a	+ 4	i 9 55	+ 6	9 2	P_cP	12·8
Melbourne		28·0	223	e 5 50?	− 5	10 38	0	—	—	13·9
Adelaide		31·0	233	i 7 13	PP	i 11 23	− 3	—	—	12·6
Palau		42·3	305	7 53	− 4	14 18	− 1	—	—	—
Perth		49·0	244	15 58	S	(15 58)	+ 3	20 33	SSS	27·5
Honolulu		51·2	42	e 9 8	+ 1	e 16 26	+ 1	e 10 18	P_cP	20·6
Manila		57·2	303	i 9 51a	0	17 49	+ 3	—	—	27·6
Nagoya		61·3	332	10 20	0	—	—	—	—	—
Maebasi		61·4	334	10 21	+ 1	—	—	—	—	—
Miyazaki		61·5	325	10 30	+ 9	19 1	+19	—	—	—
Kobe		61·8	332	10 23	0	18 44	− 2	—	—	—
Nagano		62·0	334	10 25	+ 1	18 59	+11	—	—	—
Mizusawa		62·9	337	10 31	+ 1	18 55	− 5	—	—	—
Hamada		63·5	327	10 34	0	19 7	0	—	—	—
Aomori		64·5	328	10 41	0	19 20	+ 1	—	—	—
Sapporo		66·3	340	10 53	+ 1	—	—	—	—	—
Hong Kong		66·9	306	10 56k	0	19 48	− 1	11 38	P_cP	—
Zi-ka-wei	Z.	67·0	318	10 55	− 2	i 19 53	+ 3	—	—	—
Zinsen		68·3	326	11 6	+ 1	—	—	—	—	—
Vladivostok		70·1	333	i 11 27	+11	i 20 29	+ 2	—	—	33·0
Phu-Lien		72·1	300	e 11 32	+ 4	20 50	0	—	—	—
Ukiah		85·9	47	e 12 48	+ 5	e 23 10	[+ 3]	e 24 13	PS	e 33·5
Berkeley		86·0	49	i 12 46a	+ 3	e 23 9	[+ 1]	—	—	e 38·8
Santa Clara		86·0	49	i 12 39	− 4	e 23 9	[+ 1]	—	—	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.
Santa Barbara		86·3	53	i 12 47	+ 2	—	—	—	—	—
Pasadena		87·4	53	e 12 49	− 1	e 23 31	+ 1	—	—	i 40·2
La Jolla		87·5	54	e 12 52	+ 1	—	—	—	—	—
Mount Wilson		87·5	53	i 12 50	− 1	—	—	e 16 17	PP	—
Riverside		87·9	53	e 12 51	− 2	—	—	—	—	—
Calcutta	N.	88·3	295	e 19 1	PPP	i 23 45	+ 6	i 24 21	PS	—
Haiwee		88·3	51	e 12 55	0	—	—	—	—	—
Tinemaha		88·5	50	e 12 55	− 1	—	—	—	—	—
Sitka		88·8	28	e 12 55	− 2	e 23 17	[− 8]	e 24 33	PS	e 36·1
College		89·8	17	e 13 2	0	e 23 25	[− 7]	e 24 51	PS	e 36·1
Seattle		90·5	39	e 16 9	PP	e 24 31	+32	e 28 52	SS	e 39·0
Colombo	E.	90·8	277	13 8	+ 2	e 23 39	[+ 2]	—	—	49·6
Tucson		92·3	56	e 13 13	0	e 23 40	[− 6]	e 16 57	PP	e 38·0
Kodaikanal	E.	94·1	280	—	—	e 23 49	[− 7]	i 26 57	PPS	51·5
Salt Lake City		94·5	47	e 13 18	− 5	e 23 42	[−16]	e 17 18	PP	e 38·1
Hyderabad	E.	95·4	287	—	—	24 9	[+ 6]	—	—	—
Butte		95·9	43	e 13 45	+15	e 24 1	[− 5]	e 17 26	PP	e 38·5
Bozeman		96·8	44	e 13 34	0	e 24 11	[0]	e 17 35	PP	e 40·3
Agra	E.	98·7	296	13 42	0	24 20	[0]	17 49	PP	—
Bombay		100·9	286	e 17 25	PP	i 24 31	[0]	e 32 57	SS	—
Lincoln		105·6	51	e 18 35	PP	e 24 53	[0]	e 27 50	PS	—
Andijan		106·4	308	e 19 1	PP	—	—	—	—	—
Tashkent		108·8	309	e 14 27	P	25 8	[+ 1]	18 11	PKP	—
Florissant		110·1	55	e 14 36	P	e 25 18	[+ 5]	i 19 9	PP	—
Huancayo		110·1	111	e 19 18	PP	e 25 21	[+ 8]	28 39	PS	e 45·4
St. Louis		110·2	55	e 19 9	PP	e 26 10	{+ 4}	i 28 40	PS	—
Chicago		112·5	51	e 19 27	PP	e 26 5	{−17}	e 28 54	PS	e 49·8
La Paz	Z.	114·3	119	i 19 42	PP	i 30 52	PPS	—	—	53·8
Cincinnati		114·7	55	e 19 40	PP	e 29 25	PS	e 22 17	PPP	e 56·1
Sverdlovsk		115·2	325	e 14 57	P	e 26 44	{+ 3}	29 24	PS	56·0
Columbia		117·0	60	e 19 55	PP	e 29 52	PS	e 40 19	SSS	e 56·3
Toronto		118·6	50	—	—	e 26 51	{−13}	e 29 57	PS	e 53·0
Ottawa		121·2	47	18 53	[− 2]	26 3	[+ 9]	20 27	PP	e 54·0
Fordham		122·8	53	i 20 37	PP	e 32 13	PPS	e 38 8	SS	—
Vermont		123·1	49	—	—	e 30 18	PS	e 38 3	SS	e 53·4
Baku		123·4	307	19 4	[+ 5]	e 27 18	{−19}	e 32 39	PPS	e 69·0
Seven Falls		124·3	45	e 20 21	PP	e 30 37	PS	e 38 21	SS	58·0
Harvard		124·4	50	e 19 3	[+ 2]	e 32 53	PPS	e 20 47	PP	e 44·0
Grozny		126·2	311	e 11 52	?	—	—	—	—	—
East Machias		127·1	47	e 15 37	P	e 26 4	[− 8]	e 21 3	PP	e 51·9
Tiflis		127·2	309	i 19 10	[+ 4]	26 20	[+ 8]	20 48	PP	e 60·0
Scoresby Sund		127·8	5	21 10	PP	—	—	—	—	—
Moscow		127·9	327	e 16 10	P	28 6	{ 0}	21 11	PP	64·6
Rio de Janeiro	E.	128·4	142	e 21 3	PP	—	—	—	—	e 35·0
San Juan		128·5	81	e 19 12	[+ 3]	e 43 31	SSS	e 21 17	PP	e 52·6
Pulkovo		129·2	335	21 23	PP	26 12	[− 6]	31 1	PS	—
Halifax		129·8	47	e 22 45	PKS	—	—	—	—	54·0
Ivigtut		130·3	22	i 19 14k	[+ 2]	—	—	22 36	PKS	—
Bermuda		130·5	63	e 19 22	[+ 9]	26 28	[+ 7]	21 31	PP	e 53·7
Fort de France		132·5	88	e 19 0	[−17]	e 32 3	PS	e 22 44	PKS	—
Upsala		133·8	341	21 47	PP	26 46	[+17]	e 22 45	PKS	e 61·0
Ksara		135·2	300	i 19 26a	[+ 4]	e 34 16	PPS	e 22 6	PP	—
Cernauti	N.	137·8	324	e 23 43	?	—	—	—	—	73·0
Copenhagen		138·8	341	e 19 20	[− 8]	—	—	i 22 25	PP	62·0
Istanbul		138·8	312	19 20	[− 8]	—	—	23 15	PKS	e 93·7
Bucharest		139·4	319	e 19 33	[+ 4]	—	—	22 27	PP	46·0
Helwan		139·4	295	i 19 31k	[+ 2]	32 53	PS	22 27	PP	—
Aberdeen	N.	140·9	352	e 22 42	PP	i 32 49	PS	i 23 10	PKS	e 69·6
Hamburg		141·4	341	e 19 29k	[− 4]	e 29 44	{+15}	e 22 35	PP	e 68·0
Heligoland		141·5	343	e 20 3	[+30]	—	—	e 23 13	PP	65·0
Budapest		141·9	326	19 47	[+13]	—	—	e 23 15	PP	e 77·0
Kecskemet	Z.	141·9	325	e 19 32	[− 2]	—	—	—	—	—
Sofia		142·0	317	e 19 48	[+14]	e 29 35	{+ 2}	23 16	PP	—
Prague		142·4	334	e 19 3?	[−32]	e 41 3?	SS	—	—	—
Belgrade		142·7	321	e 19 32k	[− 3]	—	—	i 25 38	PPP	e 69·5

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Jena	142·9	335	e 19 33	[− 3]	—	—	—	—	—
De Bilt	144·2	343	i 19 39a	[+ 1]	i 25 21	?	i 22 58	PP	76·1
Stonyhurst	144·2	351	e 24 3?	?	—	—	—	—	e 73·0
Bidston	144·7	352	i 19 40	[+ 2]	e 47 58	SSS	e 22 58	PP	—
Rathfarnham Castle	145·3	355	i 19 43	[+ 3]	42 11	SS	—	—	64·0
Stuttgart	145·6	336	i 19 39a	[− 1]	i 42 4	SS	i 23 3	PP	e 62·0
Uccle	145·6	344	e 19 39a	[− 1]	i 41 59	SS	i 23 4	PP	e 62·0
Triest	145·9	329	19 43	[+ 2]	e 32 3	?	e 22 20	PP	—
Kew	146·1	348	i 19 41	[0]	e 42 9	SS	e 23 5	PP	e 74·0
Strasbourg	146·3	337	e 19 43	[+ 2]	i 42 4	SS	i 23 9	PP	e 66·2
Zurich	147·0	336	e 19 43	[0]	—	—	e 23 9	PP	—
Basle	147·2	337	e 19 42	[− 1]	—	—	e 23 12	PP	—
Paris	147·9	344	e 19 43	[− 1]	—	—	23 12	PP	74·0
Jersey	148·6	351	e 19 3?	[−42]	—	—	—	—	80·0
Rome	149·1	323	i 19 48	[+ 2]	i 29 15	{−58}	i 23 34	PP	e 68·5
Clermont-Ferrand	150·4	340	i 19 55	[+ 7]	—	—	(e 23 30)	PP	—
Algiers	157·9	327	e 20 3	[+ 5]	—	—	e 24 19	PP	—
Toledo	157·9	345	e 20 2	[+ 4]	44 15	SS	24 14	PP	—
Almeria	160·2	339	20 4	[+ 3]	—	—	23 37	PP	74·0
Granada	160·4	341	i 20 6	[+ 5]	30 47	{−27}	e 24 32	PP	76·5
San Fernando N.	161·7	347	e 20 1	[− 1]	—	—	24 51	PP	—

Additional readings :—
Brisbane iSE = +7m.9s.
Riverview iSE = +8m.59s.
Wellington iZ = +5m.22s. and +6m.58s., i = +9m.37s. and +9m.50s.
Christchurch L_qE = +11m.19s.
Melbourne i = +5m.56s. and +8m.6s.
Adelaide e = +11m.6s.
Perth PPP = +16m.30s., PPPP = +16m.58s., PS = +20m.45s., SS = +24m.3s., i = +24m.48s., SSSS = +25m.26s.
Honolulu ePP = +11m.19s., eS_cS = +19m.11s.
Mizusawa SE = +18m.58s.
Hong Kong PS = +20m.2s., S_cS = +20m.43s., SS = +24m.13s.
Ukiah PPS = +24m.31s., eSS = +28m.33s., eSSS = +31m.30s.
Berkeley eEN = +35m.51s.
Pasadena iPEZ = +12m.52s.
Calcutta iN = +19m.21s. and +19m.36s.
Sitka eS = +23m.32s., PPS = +25m.0s., eSS = +29m.25s.
College ePPP = +18m.57s., eS = +24m.2s., eSS = +28m.58s., ePSPS = +30m.19s.
Tucson iP = +13m.18s., eS = +24m.9s., ePS = +25m.38s., eSS = +30m.34s.
Kodaikanal eE = +34m.19s., i = +35m.14s.
Salt Lake City eP = +13m.40s., eS = +24m.43s., ePS = +26m.3s., eSS = +31m.16s., eSSS = +35m.1s.
Butte eS = +24m.54s., ePS = +26m.19s., eSSS = +35m.25s.
Bozeman SKS = +24m.23s., eS = +25m.11s., PS = +26m.23s., eSS = +31m.15s., ePSPS = +32m.3s., eSSS = +35m.37s.
Agra iE = +24m.49s., SS?E = +31m.54s.
Bombay eSN = +25m.31s.
Lincoln eS = +26m.43s., ePPS = +28m.53s., eSS = +33m.58s., eSSS = +38m.48s.
Tashkent PPP = +20m.48s., eS = +25m.45s., PS = +27m.3s.
Florissant iSKKSE = +26m.10s., ePSE = +28m.34s.
Huancayo eSS = +34m.21s., SS = +34m.50s., iPSPS = +35m.24s.
St. Louis iSN = +27m.0s., iSSN = +34m.48s.
Chicago ePPP = +21m.44s., ePPS = +30m.16s., eSS = +35m.25s., eSSS = +40m.17s.
Sverdlovsk PKP = +18m.46s.
Toronto eE = +37m.3s.?
Ottawa SKKS = +27m.33s., PS = +30m.21s., SS = +37m.3s.?
Fordham ePPPEZ = +23m.25s.
Baku i = +20m.49s., e = +38m.27s.
Grozny e = +15m.16s.
East Machias ePKS = +22m.26s., ePPP = +23m.43s., ePS = +30m.53s., eSS = +38m.4s., ePSPS = +39m.3s.
Tiflis iZ = +19m.19s., e = +19m.28s., ePPN = +20m.52s., eEZ = +21m.8s., eN = +21m.11s., PKSE = +22m.16s., PKSZ = +22m.22s., ePKSN = +22m.31s., ePPPZ = +23m.15s., ePPPE = +23m.26s., eN = +24m.40s., eSKKS?Z = +27m.14s., eSKKSE = +27m.50s., iE = +28m.6s., eZ = +28m.38s., PSZ = +31m.4s., PSE = +31m.10s., ePSN = +31m.14s., ePPSZ = +32m.36s., eE = +33m.42s., eN = +35m.57s., SSN = +38m.10s.
Scoresby Sund +22m.26s.
Moscow PKP = +19m.49s., PPS = +22m.9s.
San Juan iPKS = +22m.30s., ePPS = +33m.16s., PSPS = +39m.15s.
Pulkovo PPP = +24m.20s., PPS = +33m.4s.

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Bermuda ePKS = +22m.39s., SS = +39m.15s.
Upsala SKPE = +22m.49s.
Copenhagen i = +19m.33s., iEN = +23m.8s.
Istanbul e = +53m.43s.
Bucharest eE = +19m.57s., SKSN = +23m.11s.
Helwan iZ = +19m.45s., SKPEZ = +23m.12s.
Aberdeen iN = +41m.52s.
Hamburg eE = +23m.13s., iN = +23m.17s.
Kecskemet eZ = +19m.50s. and +20m.45s.
Prague e = +22m.3s.?
Belgrade eZ = +19m.45s. and +21m.34s., eNW = +28m.29s.
Jena eE = +20m.3s.
De Bilt iPKPN = +19m.42s.a
Bidston e = +20m.4s. and +20m.29s., ePKS = +23m.25s., e = +24m.21s., +35m.9s., and +63m.41s.
Rathfarnham Castle i = +20m.25s.
Stuttgart iPKPZ = +19m.43s., i = +19m.51s., iSSE = +42m.8s.
Uccle iNZ = +19m.42s.
Triest e = +19m.55s. and +46m.29s.
Kew iZ = +19m.45s., eZ = +19m.57s., eNZ = +20m.19s. and +20m.33s., ePKSNZ = +23m.27s., eN = +24m.27s., eZ = +25m.2s. and +25m.25s., eN = +28m.11s. and +31m.15s., eSKSPZ = +34m.7s., eN = +35m.17s. and +45m.49s., eSSSN = +47m.59s., eN = +63m.45s., eL_g = +68m.3s.
Strasbourg iPKPZ = +19m.47s., iSKPN = +23m.14s., eSSE = +42m.11s.
Zurich e = +20m.27s.
Paris iPKP = +19m.47s.
Rome PPS = +36m.9s., SS = +42m.13s.
Algiers e = +28m.43s. and +40m.19s.
Toledo $iPKP_4$ = +20m.35s.
Granada PKP_3 = +20m.42s., SKS = +23m.36s., iSS = +41m.7s.
San Fernando eE = +20m.9s., eSSN = +41m.21s.
Long waves were also recorded at Cape Town, La Plata, Ferndale, Bergen, and Edinburgh.

Aug. 18d. 22h. 52m. 31s. Epicentre 27°·0N. 54°·5E.

$A = +\cdot5181$, $B = +\cdot7264$, $C = +\cdot4516$; $\delta = +3$; $h = +3$;
$D = +\cdot814$, $E = -\cdot581$; $G = +\cdot262$, $H = +\cdot368$, $K = -\cdot892$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Erevan	15·6	330	e 3 41	− 2	—	—	—	—	9·5
Samarkand	16·4	36	3 52	− 1	—	—	—	—	—
Tiflis	16·7	334	3 58	+ 1	—	—	—	—	—
Ksara	17·4	297	e 4 10	+ 4	e 7 36	SS	—	—	9·9
Tashkent	18·8	36	i 4 27	+ 4	i 7 54	+ 4	—	—	10·8
Piatigorsk	19·4	335	e 4 35	+ 5	—	—	—	—	—
Tchimkent	19·6	35	e 4 32	0	—	—	—	—	—
Andijan	20·1	42	e 4 42	+ 4	—	—	—	—	—
Helwan	20·6	283	4 39	− 4	8 35	+ 6	9 15	SS	i 9·9
Moscow	31·2	342	e 6 24	+ 1	e 11 29	0	e 14 14	SSS	—
Pulkovo	36·7	340	e 7 12	+ 2	e 12 47	− 7	e 8 37	PP	—
Jena	40·2	318	e 7 49	+ 9	—	—	—	—	e 30·5
Zurich	41·2	313	e 7 43	− 5	e 14 6	+ 4	—	—	—
Copenhagen	41·6	326	e 7 50	− 1	—	—	—	—	—
Basle	41·8	313	e 8 1	+ 8	—	—	—	—	—

Additional readings :—
Tiflis ePE = +4m.2s.
Moscow e = +9m.27s.
Copenhagen i = +7m.54s. and +8m.0s.
Long waves were also recorded at Calcutta.

Aug. 18d. Readings also at 1h. (Philadelphia), 2h. (near Apia and near Samarkand), 8h. (La Paz), 11h. (near Ksara), 12h. (near Mizusawa and Helwan), 17h. (Jena, La Paz, and near Samarkand), 19h. (La Paz), 20h. (Hastings, Tuai, New Plymouth, near Wellington, and near Balboa Heights), 21h. (San Juan), 23h. (near Fort de France and La Paz).

Aug. 19d. 0h. 47m. 28s. Epicentre 18°·7S. 168°·4E. (as on 1939 Aug. 18d.).

A = −·9285, B = +·1906, C = −·3187; δ = +1; h = +5.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	16·6	235	i 3 56	0	i 7 14	+14	—	—	—
Apia		19·6	79	e 4 32	0	8 27	SS	4 54	PP	i 9·9
Arapuni		20·3	165	7 38	?	8 44	SS	—	—	i 10·0
Riverview		21·5	223	e 4 53	+ 1	i 8 56	SS	—	—	e 10·7
Sydney		21·5	223	e 5 2	+10	e 8 59	SS	—	—	e 11·3
Wellington		23·2	170	5 12	+ 3	i 9 10	− 8	i 5 21	PP	11·8
Christchurch		25·0	173	i 5 30	+ 3	i 9 51	+ 2	i 10 16	SS	e 12·8
Melbourne		28·0	223	—	—	10 45	+ 7	—	—	—
Adelaide		31·0	233	i 2 2	?	e 11 15	−11	—	—	i 14·9
Perth		49·0	244	—	—	i 16 17	+22	i 19 25	SS	i 27·4
Honolulu		51·2	42	e 9 34	+27	e 16 35	+10	e 10 52	PP	e 21·4
Manila		57·2	303	i 9 53	+ 2	17 52	+ 6	—	—	—
Hong Kong		66·9	306	10 54	− 2	19 48	− 1	—	—	—
Zi-ka-wei	Z.	67·0	318	e 10 56	− 1	—	—	—	—	—
Vladivostok		70·1	333	i 11 16	0	e 20 28	+ 1	—	—	32·7
Ukiah		85·9	47	e 13 13	+30	e 23 6	[− 1]	e 33 6	SSS	e 35·6
Berkeley		86·0	49	e 12 32	−11	—	—	—	—	e 42·3
Santa Clara		86·0	49	e 12 39	− 4	e 24 22	PS	—	—	e 39·7
Santa Barbara		86·3	53	i 12 46	+ 1	—	—	—	—	—
Pasadena		87·4	53	e 12 50	0	—	—	—	—	e 41·9
La Jolla		87·5	54	e 12 51	0	—	—	—	—	—
Mount Wilson		87·5	53	i 12 51	0	—	—	—	—	—
Riverside		87·9	53	e 12 53	0	—	—	—	—	—
Haiwee		88·3	51	e 12 56	+ 1	—	—	—	—	—
Tinemaha		88·5	50	e 12 56	0	—	—	—	—	—
Sitka		88·8	28	e 16 10	PP	e 23 30	[+ 5]	e 24 59	PPS	e 34·8
College		89·8	17	e 12 50	−12	e 23 41	[+ 9]	e 16 54	PP	e 36·1
Colombo	E.	90·8	277	—	—	e 23 32?	[− 6]	—	—	—
Tucson		92·3	56	13 15	+ 2	e 23 38	[− 8]	e 16 51	PP	e 38·7
Salt Lake City		94·5	47	e 13 44	+21	e 23 57	[− 1]	e 25 59	PS	e 37·6
Butte		95·9	43	e 13 55	+25	e 24 48	+ 2	e 17 13	PP	e 39·0
Bozeman		96·8	44	e 19 47	PPP	e 34 43	SSS	—	—	e 37·9
Agra	E.	98·7	296	13 51	+ 9	24 18	[− 2]	—	—	—
Tashkent		108·8	309	e 17 48	PKP	25 7	[0]	18 55	PP	72·5
Huancayo		110·1	11	e 20 19	PP	e 28 25	PS	e 34 5	SS	e 44·3
Chicago		112·5	51	e 18 55	[+17]	e 28 59	PS	e 35 35	PSPS	e 51·9
La Paz	Z.	114·3	119	19 45	PP	—	—	—	—	54·5
Sverdlovsk		115·2	325	18 45	[+ 2]	25 33	[0]	29 37	PS	52·5
Vermont		123·1	49	—	—	—	—	e 30 42	PPS	e 60·7
East Machias		127·1	47	e 15 42	P	e 27 26	{−35}	e 22 20	PKS	e 50·7
Tiflis		127·2	309	i 19 9	[+ 2]	e 26 6	[− 6]	e 21 0	PP	e 59·5
Moscow		127·9	327	19 7	[− 1]	38 2	SS	21 10	PP	e 65·0
Rio de Janeiro	E.	128·4	142	e 18 32	[−37]	—	—	—	—	—
San Juan		128·5	81	e 19 16	[+ 7]	—	—	—	—	—
Pulkovo		129·2	335	e 21 24	PP	—	—	—	—	—
Ivigtut		130·3	22	22 34	PKS	—	—	—	—	66·5
Bermuda		130·5	63	e 16 21	P	e 26 13	[− 8]	e 22 43	PKS	e 53·9
Upsala		133·8	341	e 22 44	PKS	—	—	—	—	e 59·5
Ksara		135·2	300	e 19 23	[+ 1]	e 34 13	PPS	e 22 7	PP	—
Copenhagen		138·8	341	e 19 32	[+ 4]	—	—	22 24	PP	62·5
Istanbul		138·8	312	e 19 32?	[+ 4]	—	—	—	—	—
Helwan	Z.	139·4	295	19 32	[+ 3]	—	—	i 22 38	PP	—
Hamburg		141·4	341	e 19 33	[0]	—	—	—	—	e 70·5
De Bilt		144·2	343	i 19 36a	[− 2]	—	—	e 22 56	PP	e 72·5
Bidston		144·7	352	i 19 39	[0]	—	—	—	—	e 72·5
Stuttgart		145·6	336	i 19 41a	[+ 1]	e 42 2	SS	i 23 2	PP	e 68·5
Uccle		145·6	344	i 19 40a	[0]	e 41 58	SS	23 0	PP	e 62·5
Triest		145·9	329	19 42	[+ 1]	e 41 54	SS	—	—	e 78·0
Kew		146·1	348	i 19 42	[+ 1]	—	—	e 25 32	PPP	e 72·5
Strasbourg		146·3	337	e 19 42	[+ 1]	e 42 7	SS	i 23 8	PP	e 70·5

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zurich	147·0	336	e 19 44	[+ 1]	—	—	—	—	—
Basle	147·2	337	e 19 42	[− 1]	—	—	—	—	—
Paris	147·9	344	e 19 49	[+ 5]	—	—	—	—	77·5
Jersey	148·6	351	e 19 32?	[−13]	—	—	24 42	PP	—
Rome	149·1	323	i 19 46a	[0]	e 42 43	SS	i 26 33	PPP	—
Clermont-Ferrand	150·4	340	e 19 53	[+ 5]	—	—	e 24 3	PP	e 78·4
Toledo	157·9	345	e 20 0	[+ 2]	—	—	—	—	—
Almeria	160·2	339	19 57	[− 4]	—	—	23 44	PP	—

Additional readings :—
Riverview iPN = +4m.57s.
Wellington iZ = +6m.26s., i = +9m.43s.
Christchurch eL_qE = +11m.10s.
Adelaide i = +5m.39s., e = +10m.42s.
Perth i = +20m.30s., +21m.50s., +22m.32s., and +24m.52s.
Honolulu S = +16m.58s.
Ukiah eS_cS = +23m.27s.
Sitka eS = +23m.41s.
College ePPS = +24m.56s., eSS = +29m.46s.
Tucson ePS = +25m.18s., ePPS = +25m.40s.
Salt Lake City ePSPS = +31m.27s., eSSS = +35m.19s.
Bozeman ePPS = +26m.50s.
Tashkent SKKS = +25m.57s., i = +28m.46s., PPS = +29m.24s., SS = +34m.8s.
Huancayo ePSPS = +35m.8s., PSPS = +35m.28s.
Sverdlovsk SKKS = +26m.42s., S = +27m.26s., SS = +35m.44s.
East Machias ePKP = +19m.8s., eSS = +38m.32s., ePSPS = +39m.7s., eSSS = +43m.45s.
Tiflis ePKPN = +19m.15s., ePPN = +21m.13s., ePKSZ = +22m.6s., ePKSN = +22m.11s., ePKSE = +22m.15s., ePPPE = +23m.22s., eSKSE = +26m.18s., eSKKSZ = +27m.44s., SKKSE = +28m.3s., eN = +28m.9s., eZ = +28m.39s., ePSZ = +31m.3s., PSEN = +31m.11s., eZ = +32m.5s., ePPSE = +32m.21s., SSE = +37m.59s., eSSN = +38m.8s., eSSSE = +42m.41s.
Moscow e = +22m.27s. and +27m.17s.
Bermuda ePPS = +33m.24s., ePSPS = +39m.16s.
Copenhagen +23m.7s.
Helwan iZ = +23m.20s.
Triest e = +20m.7s. and +24m.44s.
Strasbourg iPKPZ = +19m.45s.
Rome iN = +19m.59s. and +24m.14s., e = +47m.15s., eE = +56m.47s.?, iEN = +60m.47s.
Long waves were also recorded at Kodaikanal, Bombay, Columbia, Lincoln, San Fernando, Rathfarnham Castle, and Baku.

August 19d. Readings also at 0h. (near Hukuoka), 3h. (Andijan), 4h. (Mizusawa), 5h. (near Mizusawa), 10h. (Jena), 11h. (Ksara, Haiwee, Pasadena, Mount Wilson, Riverside, Tinemaha, Tashkent, Baku, Moscow, and Sverdlovsk), 12h. (Branner, Tiflis, and near Ksara), 19h. (near Wellington, Christchurch, Tuai, and New Plymouth), 22h. (near La Paz, Balboa Heights, and near Mizusawa), 23h. (Bagnères, Paris, Strasbourg, Stuttgart (2), Clermont-Ferrand, near San Fernando, near Toledo (4), Uccle, Rome (2), Bucharest, near Almeria (4), and near Granada (4)).

August 20d. 7h. 17m. 17s. Epicentre 53°·6N. 164°·4W.

A = −·5741, B = −·1603, C = +·8030 ; δ = +10 ; h = −7 ;
D = −·269, E = +·963 ; G = −·773, H = −·216, K = −·596.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
College	14·1	30	e 3 23a	0	e 6 1	− 1	—	—	e 7·4
Sitka	16·8	66	e 4 1	+ 3	7 13	+ 8	—	—	—
Honolulu	32·6	166	8 30	PP	e 11 45	− 6	—	—	e 14·9
Berkeley	32·8	100	i 6 36	− 1	—	—	—	—	—
Branner	33·1	101	e 6 41	+ 1	—	—	—	—	—
Lick	33·5	100	e 6 44	+ 1	—	—	—	—	—
Tinemaha	35·7	98	i 7 2	0	i 13 6	+27	—	—	—
Haiwee	36·5	98	i 7 9	0	13 7	+16	i 9 46	P_cP	—
Santa Barbara	36·6	101	i 7 11	+ 1	—	—	—	—	—
Mount Wilson	37·8	100	i 7 19	− 1	—	—	i 9 48	P_cP	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena		37·8	100	i 7 19	− 1	—	—	i 9 50	PcP	—
Riverside		38·3	100	i 7 24	0	—	—	i 9 52	PcP	—
La Jolla		39·2	101	i 7 31	0	—	—	—	—	—
Tucson		43·4	96	i 8 5a	− 1	—	—	i 9 50	PcP	—
St. Louis		51·2	75	e 9 2	− 5	i 16 15	−10	i 9 19	pP	—
Fordham		58·7	62	i 9 56	− 6	—	—	i 10 13	pP	—
Philadelphia		58·7	64	—	—	e 17 56	−10	—	—	e 27·0
Harvard	z.	58·8	59	i 9 55a	− 7	—	—	—	—	—
East Machias		59·2	55	—	—	e 18 1	−11	—	—	e 28·8
Sverdlovsk		63·9	334	e 11 22	−15	e 20 12	+60	—	—	30·7
Tashkent		74·8	321	—	—	i 20 57	−23	—	—	40·4
Baku		81·8	334	e 12 39	+17	e 22 24	−11	—	—	43·8
Tiflis		81·8	338	—	—	e 22 20	−15	—	—	e 34·8
Rome		84·8	2	—	—	e 22 44	−21	—	—	e 41·0
Ksara		91·2	345	e 8 3	?	e 18 12	PP	—	—	46·7

Additional readings :—
Sitka eP = +5m.4s.
Tinemaha iZ = +9m.16s. and +9m.44s.
Haiwee iZ = +9m.27s.
Riverside iZ = +9m.32s.
St. Louis esSN = +16m.43s., isSE = +16m.46s.
Harvard iZ = +10m.14s.
Tashkent e = +35m.30s., +36m.39s., +38m.6s., and +38m.22s.
Tiflis eE = +34m.26s.
Rome e = +35m.30s.

August 20d. Readings also at 0h. (near Andijan and near Istanbul), 1h. (Andijan and Rome), 3h. (near Andijan), 5h. (Zurich), 6h. (Rome, Ksara, and Tiflis), 7h. (near Manila), 8h. (Mount Wilson, Riverside, Tinemaha, Tiflis, and near Tuai), 10h. (Christchurch, near Tuai, and Wellington), 11h. (near Mizusawa), 12h. (Berkeley), 15h. (Andijan and near Almata), 17h. (La Paz), 18h. (Samarkand, near Andijan, and near Fort de France), 19h. (Almata, Andijan, Samarkand, Tashkent, Baku, Grozny, and Tiflis), 20h. (Ksara (2), Tiflis, Baku, Sverdlovsk (2), and Tashkent), 22h. (near La Paz).

August 21d. 15h. 19m. 5s. Epicentre 52°·0N. 177°·1E.

A = −·6174, B = +·0313, C = +·7860 ; $\delta = -4$; $h = -6$;
D = +·051, E = +·999 ; G = −·785, H = +·040, K = −·618.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		22·1	41	e 4 59	0	9 10	+12	—	—	e 10·8
Nemuro		22·8	261	5 2	− 3	—	—	—	—	—
Sapporo		25·5	265	5 31	− 1	—	—	—	—	—
Sitka		27·6	59	e 6 42	PP	e 10 38	+ 6	e 6 55	PPP	12·1
Mizusawa		28·0	257	e 5 49	− 6	e 10 38	0	—	—	—
Vladivostok		31·3	271	i 6 20	− 4	i 11 28	− 3	—	—	16·0
Nagano		31·3	256	6 22	− 2	—	—	—	—	—
Misima		31·9	254	6 29	0	—	—	—	—	—
Kobe		34·5	257	6 51	− 1	12 31	+11	—	—	—
Honolulu		36·3	137	—	—	e 12 47	− 1	—	—	e 14·6
Ukiah		42·5	83	—	—	14 24	+ 2	—	—	e 17·9
Berkeley		43·9	83	e 8 5	− 5	e 14 40	− 2	—	—	e 20·6
Branner		44·2	83	e 8 16	+ 4	—	—	—	—	—
Santa Clara		44·4	83	e 9 4	+50	e 14 45	− 4	—	—	e 19·3
Zi-ka-wei	z.	45·3	265	e 8 19	− 2	—	—	—	—	—
Tinemaha		46·9	82	i 8 35	+ 1	—	—	—	—	—
Haiwee		47·7	83	8 41	+ 1	—	—	—	—	—
Santa Barbara		47·7	85	8 47	+ 7	—	—	—	—	—
Salt Lake City		48·4	73	e 9 0	+14	e 15 42	− 4	e 11 50	PPP	e 23·4
Mount Wilson		48·9	84	i 8 49	− 1	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pasadena		48·9	84	e 8 49	− 1	e 15 51	− 2	—	—	e 22·2
Riverside		49·4	84	i 8 53	0	—	—	—	—	—
La Jolla		50·3	85	i 9 1	+ 1	—	—	—	—	—
Tucson		54·6	80	9 33k	+ 1	e 17 4	− 7	e 11 28	PP	e 24·8
Semipalatinsk		56·2	310	9 40	− 4	—	—	—	—	—
Scoresby Sund		57·1	7	9 50	0	17 48	+ 3	13 26	PPP	—
Sverdlovsk		59·7	325	10 7	− ½	18 17	− 2	—	—	28·9
St. Louis	E.	62·2	62	—	—	e 17 38	?	—	—	—
Almata		62·8	306	e 10 27	− 3	—	—	—	—	—
Ottawa		64·6	47	e 10 40	− 1	e 20 31	+70	—	—	e 29·9
Pulkovo		65·4	342	e 10 45	− 2	e 19 29	− 1	—	—	e 32·0
Seven Falls		65·4	43	—	—	e 19 31	+ 1	—	—	30·9
Andijan		66·9	307	e 10 53	− 3	—	—	—	—	—
Upsala		67·3	350	e 10 21	−38	19 51	− 3	e 20 6	PS	e 33·9
Moscow		67·5	337	i 11 0	0	19 55	− 1	—	—	31·4
Tashkent		68·0	309	10 56	− 7	e 19 56	− 6	—	—	34·5
East Machias		68·8	43	e 13 51	PP	e 20 6	− 5	e 15 36	PPP	e 28·4
Fordham		68·8	50	11 7	− 1	e 21 4	+53	—	—	—
Philadelphia		69·0	51	e 11 10	+ 1	e 20 10	− 4	—	—	e 28·7
Samarkand		70·4	310	e 11 17	− 1	e 20 27	− 3	—	—	37·9
Columbia		70·6	58	—	—	e 20 31	− 2	e 25 16	SS	e 30·8
Copenhagen		71·9	352	e 11 27	0	20 50	+ 2	—	—	34·9
Hamburg		74·3	353	e 11 40	− 1	e 21 14	− 1	—	—	e 44·9
Agra	E.	74·4	293	—	—	i 21 25	+ 9	—	—	—
Bidston		75·0	1	—	—	e 21 55?	+32	—	—	e 25·9
De Bilt		76·0	355	11 52a	+ 1	21 37	+ 3	—	—	e 36·9
Grozny		76·2	326	11 54	+ 2	—	—	—	—	44·6
Kew		76·9	359	—	—	e 21 55?	+12	—	—	e 25·9
Cernauti	N.	77·1	341	e 11 48	− 9	—	—	—	—	46·9
Baku		77·2	321	e 12 2	+ 5	e 21 54	+ 7	—	—	37·9
Prague		77·2	349	e 22 31	PS	e 32 7	?	—	—	e 41·9
Uccle		77·4	356	11 58a	0	e 21 50	+ 1	e 27 16	SS	e 37·9
Tiflis		77·9	326	12 2	+ 1	21 56	+ 2	e 29 55	SSS	e 39·9
Stuttgart		79·1	352	i 12 8a	0	e 22 7	0	e 15 21	PP	e 40·9
Jersey		79·2	0	—	—	e 21 55?	−13	—	—	33·9
Strasbourg		79·4	353	i 12 10a	+ 1	e 22 27	+17	e 23 12	PS	—
Paris		79·5	356	i 12 10	0	—	—	—	—	46·9
Kecskemet	Z.	79·6	345	e 12 9	− 1	—	—	e 16 5	PP	—
Bermuda		80·1	49	—	—	e 22 17	− 1	—	—	e 33·2
Bucharest		80·8	339	e 12 19	+ 2	e 22 26	+ 1	23 7	PS	—
Triest		81·7	348	e 12 21	− 1	e 22 38	+ 4	—	—	—
Clermont-Ferrand		82·5	356	—	—	e 22 44	+ 2	—	—	e 41·6
Sofia	E.	84·0	341	e 11 55?	−38	—	—	—	—	—
Rome		85·5	348	i 12 41	0	i 23 7	[+ 3]	e 15 58	PP	—
Ksara		88·0	329	e 12 49	− 4	e 23 48	+12	e 16 22	PP	—
Helwan		93·1	331	—	—	i 23 49	[− 2]	e 24 13	S	—

Additional readings :—
Sitka eS = +11m.26s.
Mizusawa eSE = +10m.51s.
Salt Lake City S_cS = +18m.30s., eSS = +19m.33s.
Tucson P_cP = +10m.50s.
St. Louis eN = +18m.42s.
Upsala eN = +20m.52s.
East Machias ePS = +21m.3s.
Columbia eSSS = +28m.16s.
Tiflis eE = +22m.18s.
Stuttgart eSPN = +23m.8s., eL_q = +37·9m.
Strasbourg eSSN = +28m.0s.
Kecskemet e = +17m.38s.
Bucharest eE = +12m.55s.
Rome iEN = +13m.45s., iE = +23m.16s., eSS = +28m.53s.
Ksara ePS = +24m.49s., ePPS = +25m.24s., eSS = +31m.2s.
Long waves were also recorded at Chicago, Calcutta, Harvard, San Juan, Huancayo, Budapest, Belgrade, Toledo, Granada, Bombay, and Cape Town.

Aug. 21d. Readings also at 0h. (Basle, Jena, and La Paz), 1h. (Tiflis, Berkeley (2), near Branner (2), near Lick (2), and Fresno), 5h. (near Manila), 6h. (Sverdlovsk, Helwan, and Tashkent), 9h. (Almata, Tashkent, Sverdlovsk, Tiflis, near Calcutta, and Fort de France), 10h. (De Bilt, Sofia, and Stuttgart), 12h. (Bozeman), 13h. (San Francisco, near Berkeley, Tiflis, Erevan, Grozny, near Piatigorsk, and Sotchi), 17h. (Tiflis and near Mizusawa), 18h. (Huancayo, La Plata, La Paz, Mount Wilson, Riverside, and Tinemaha), 19h. (De Bilt, Stuttgart, Rome, Paris, Strasbourg, Jersey, Kew, Bidston, Tashkent, Tiflis, Ksara, and Sverdlovsk), 20h. (Moscow and near Mizusawa), 23h. (near Tiflis).

Aug. 22d. 0h. 6m. 25s. Epicentre 37°·7N. 141°·8E.
(given by Seismological Bulletin of Central Meteorological Observatory, Tokyo).

$A = -\cdot 6234$, $B = +\cdot 4905$, $C = +\cdot 6090$; $\delta = +10$; $h = -1$;
$D = +\cdot 618$, $E = +\cdot 786$; $G = -\cdot 479$, $H = +\cdot 377$, $K = -\cdot 793$.

A depth of focus 0·005 has been assumed.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sendai		0·9	309	0 17k	− 1	0 30	− 1	—	—	—
Hukusima		1·1	273	0 19k	− 1	0 35	− 1	—	—	—
Onahama		1·1	223	0 9k	−11	0 22	−14	—	—	—
Mizusawa		1·5	343	i 0 23	− 3	0 41	− 4	—	—	—
Mito		1·7	219	0 25k	− 3	0 42	− 8	—	—	—
Kakioka		1·9	221	0 29k	− 2	0 52	− 2	—	—	—
Miyako		1·9	4	0 26k	−. 5	0 50	− 4	—	—	—
Utunomiya		1·9	233	0 31k	0	0 57	+ 3	—	—	—
Tyosi		2·1	201	0 31	− 3	0 57	− 2	—	—	—
Akita		2·4	326	0 39	+ 1	1 15	+ 8	—	—	—
Kumagaya		2·5	231	0 39k	0	1 9	0	—	—	—
Tokyo Cen. Met. Ob.		2·6	219	0 39k	− 2	1 11	− 1	—	—	—
Maebasi		2·6	239	0 42k	+ 1	1 14	+ 2	—	—	—
Yokohama		2·8	217	0 43	− 1	1 15	− 2	—	—	—
Hatinohe		2·8	356	0 41a	− 3	1 14	− 3	—	—	—
Nagano		3·0	247	0 49k	+ 2	1 36	+14	—	—	—
Aomori		3·2	346	0 50a	+ 1	1 39	+12	—	—	—
Mera		3·2	210	0 49	0	1 22	− 5	—	—	—
Hunatu		3·3	228	0 53	+ 2	1 31	+ 2	—	—	—
Wazima		3·9	267	0 59k	0	1 56	+12	—	—	—
Omaesaki		4·2	224	1 4	+ 1	1 56	+ 4	—	—	—
Hamamatu		4·5	229	1 9k	+ 2	2 8	+ 9	—	—	—
Mori		4·5	348	1 7	0	2 10	+11	—	—	—
Gihu		4·6	242	1 11k	+ 2	2 6	+ 4	—	—	—
Nagoya		4·7	237	1 11k	+ 1	2 7	+ 3	—	—	—
Sapporo		5·3	356	1 17	− 2	2 4	−15	—	—	—
Osaka		5·9	241	1 29	+ 2	2 43	+ 9	—	—	—
Toyooka		6·0	251	1 30	+ 2	2 40	+ 3	—	—	—
Kobe		6·2	243	1 27a	− 4	2 36	− 5	—	—	—
Nemuro		6·3	26	1 31	−·1	2 31	−13	—	—	—
Siomisaki		6·5	231	1 33	− 2	3 11	+22	—	—	—
Hirosima		8·3	249	2 1	+ 1	3 45	+12	—	—	—
Simidu		8·7	238	2 6	0	3 57	+14	—	—	—
Vladivostok		9·3	308	i 2 15	+ 1	i 4 3	+ 5	—	—	4·5
Izuka		9·9	249	2 23	+ 1	5 7	+55	—	—	—
Hukuoka		10·1	250	2 28	+ 3	5 13	+56	—	—	—
Miyazaki		10·3	239	2 31	+ 4	4 33	+11	—	—	—
Zi-ka-wei	Z.	18·0	255	e 3 59	− 8	7 33	+10	—	—	10·2
Semipalatinsk		44·8	308	e 11 41	PP	—	—	—	—	—
Calcutta	N.	48·0	268	i 8 39	+ 5	i 15 41	+15	—	—	—
Almata		48·5	299	8 39	+ 1	—	—	—	—	—
Andijan		52·6	297	9 10	+ 1	e 14 28	?	—	—	—
Agra	E.	54·0	279	9 19	− 1	16 52	+ 3	11 16	PP	—
Tashkent		54·5	298	i 9 22	− 1	e 16 58	+ 2	—	—	—
Sverdlovsk		54·9	319	i 9 27	+ 1	i 17 6	+ 5	—	—	24·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		62·3	274	e 10 18	0	i 19 1	+24	—	—	e 38·0
Moscow		66·9	323	i 10 47	0	19 38	+ 4	—	—	34·1
Pulkovo		67·8	330	i 10 52	− 1	19 48	+ 3	—	—	e 32·9
Baku		68·1	305	e 10 56	+ 1	20 31	PS	25 11	SS	35·6
Grozny		69·2	309	11 13	+11	—	—	—	—	38·6
Tiflis		70·7	308	i 11 11	0	e 20 37	+18	—	—	e 35·6
Scoresby Sund		71·5	355	11 20	+ 4	20 32	+ 4	13 53	PP	35·6
Erevan		71·7	307	e 11 20	+ 3	—	—	—	—	—
Upsala		72·5	335	e 11 22	0	e 20 54	+14	—	—	e 24·6
Sotchi		72·7	312	e 11 25	+ 2	—	—	—	—	—
Tinemaha		75·1	54	e 11 38	+ 1	—	—	—	—	—
Haiwee		75·9	55	e 11 41	0	—	—	e 11 48	pP	—
Mount Wilson	Z.	77·0	56	i 11 48	0	—	—	i 11 57	pP	—
Pasadena	Z.	77·0	56	e 11 54	+ 6	—	—	—	—	—
Cernauti	N.	77·2	323	e 12 20	+31	—	—	—	—	—
Copenhagen		77·5	336	i 11 51	+ 1	21 38	+ 3	14 45	PP	37·6
Riverside	Z.	77·6	56	e 11 50	− 1	—	—	i 11 59	pP	—
La Jolla	Z.	78·3	58	e 11 53	− 2	—	—	—	—	—
Bucharest		79·7	319	e 12 5	+ 3	22 5	+ 7	22 45	PS	—
Hamburg		80·0	334	e 12 4a	0	e 21 17	−44	—	—	e 44·6
Ksara		81·0	305	i 12 10a	+ 1	e 23 4	PS	e 15 16	PP	40·6
Prague		81·1	329	—	—	e 22 15	+ 2	—	—	e 42·6
Belgrade		82·3	322	i 12 7	+ 1	e 22 50	+25	e 12 33	pP	e 45·0
Sofia		82·4	319	e 12 35?	+19	—	—	—	—	—
De Bilt		82·9	335	12 21a	+ 2	e 23 0	+29	i 12 32	pP	e 39·6
Tucson		82·9	54	e 12 20a	+ 1	e 22 40	+ 9	12 29	pP	e 38·7
Stuttgart		84·2	334	i 12 27a	+ 1	e 22 48	+ 4	i 12 40	pP	e 44·6
Uccle		84·3	336	i 12 6a	−20	e 22 47	+ 2	—	—	e 40·6
Bidston		84·3	341	e 12 25	− 1	e 22 53	+ 8	—	—	e 41·6
Triest		84·8	327	e 13 29	+60	e 23 6	+16	—	—	e 44·2
Strasbourg		84·9	332	i 12 30a	+ 1	e 22 47	− 4	—	—	e 44·6
Kew		85·2	347	e 12 34	+ 3	e 22 54	0	—	—	e 41·6
Rathfarnham Castle		85·2	342	i 22 57	S	(i 22 57)	+ 3	—	—	e 45·9
Zurich		85·6	330	e 12 33a	0	—	—	—	—	—
Basle		85·8	331	e 12 35	+ 1	—	—	—	—	—
Helwan		86·5	305	i 12 38k	+ 1	22 59	[+ 4]	16 12	PP	—
Paris		86·6	335	i 12 39	+ 2	—	—	—	—	48·6
Jersey		87·7	338	e 12 35?	− 8	e 31 35?	?	e 15 35?	PP	43·6
Rome		88·3	325	i 12 46	0	23 29	+ 6	i 16 17	PP	e 41·8
Clermont-Ferrand		89·0	332	e 13 6	+17	—	—	—	—	e 44·6
St. Louis	N.	90·2	38	—	—	e 23 21	[+ 3]	—	—	28·8
Ottawa		90·6	26	e 12 56	0	e 23 47	+ 3	—	—	—
Toledo		96·7	334	e 13 25	+ 1	—	—	e 17 21	PP	47·6
La Paz		146·2	59	i 19 38	[+ 7]	—	—	(20 21)	pPKP	20·4

Additional readings :—
Zi-ka-wei iZ = +4m.19s., +4m.31s., and +7m.59s.
Agra SSE = +20m.22s.
Tiflis eE = +20m.24s., eN = +32m.10s., eE = +32m.47s.
Tucson ePPS = +23m.47s.
Stuttgart ePPZ = +15m.23s.
Helwan iZ = +12m.51s., eE = +15m.59s., SE = +23m.35s., PSE = +24m.30s.
Rome iPPP = +18m.13s., i = +25m.7s., SS = +29m.41s., SSS = +33m.29s.
Long waves were also recorded at Aberdeen, Stonyhurst, San Fernando, and Wellington.

Aug. 22d. 12h. 48m. 48s. Epicentre 42°·0N. 18°·3E.

$A = +\cdot7077$, $B = +\cdot2341$, $C = +\cdot6666$; $\delta = 0$; $h = -2$;
$D = +\cdot314$, $E = -\cdot949$; $G = +\cdot633$, $H = +\cdot209$, $K = -\cdot745$.

Scale VI at Divin (43°3′N. 18°18′E.) and Slano (42°47′N. 17°55′E.) V near Dubrovnik.
J. Mihailovic.
Annuaire microseismique et macroseismique annee XIX, 1939, Belgrade, 1940, p. 103.
Microseismic epicentre 42°·0N. 18°·3E. (Strasbourg).

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Belgrade		3·2	29	i 0 50a	− 2	i 1 29	− 3	i 1 4	P_g	—
Sofia		3·8	77	e 1 12	P_g	i 1 49	+ 2	i 2 4	S_g	—
Rome		4·4	270	i 1 20	P*	i 2 13	S*	—	—	e 2·8
Laibach		4·9	328	i 0 15	−62	i 1 23	−52	—	—	—
Triest		4·9	320	1 20	+ 3	2 7	− 8	i 1 30	P*	—
Kecskemet	z.	5·0	11	i 1 12	− 6	e 2 12	− 6	e 1 30	P*	e 2·7
Budapest		5·5	6	1 18	− 7	e 2 26	− 4	1 42	P_g	e 2·7
Bucharest		6·2	64	e 1 42	+ 7	e 3 27	S_g	—	—	4·0
Chur		7·9	310	e 1 57	− 2	e 3 37	+ 7	—	—	—
Prague		8·5	343	—	—	e 3 37	− 8	—	—	—
Zurich		8·8	310	e 2 11	0	e 3 58	+ 5	—	—	—
Stuttgart		9·3	320	2 17	0	3 56	− 9	4 24	L_q	—
Basle		9·4	310	e 2 19	+ 1	e 4 0	− 7	—	—	—
Strasbourg		9·9	315	e 2 28	+ 3	—	—	—	—	e 5·5
Jena		10·1	334	e 2 27	− 1	(e 4 12)	−13	—	—	e 4·2
Clermont Ferrand		11·7	293	—	—	e 5 20	+16	—	—	e 9·0
Uccle		13·0	317	—	—	e 5 54	+19	—	—	e 6·9
Ksara		16·1	115	e 4 21	+32	—	—	—	—	e 8·6
Moscow		18·6	35	e 4 19	− 2	e 7 48	+ 2	—	—	e 11·7
Pulkovo		19·3	19	—	—	e 7 47	−15	—	—	9·7

Additional readings :—
Belgrade $iP_g = +57$s., PS = +1m.18s.
Sofia eEN = +1m.19s.
Rome iN = +2m.17s. and +2m.22s., iE = +2m.30s., iNZ = +2m.34s.
Laibach i = +38s., +1m.4s., +1m.32s., and +1m.46s.
Triest $S_g = +2$m.27s.
Kecskemet eZ = +1m.40s., iPPSZ = +1m.54s., ePSSZ = +2m.21s., $eS_gZ = +2$m.34s.
Budapest SN = +2m.30s., E = +2m.46s.
Bucharest eEN = +2m.23s., eN = +2m.29s.
Prague e = +3m.49s. and +3m.55s.
Jena eN = +3m.30s.
Moscow e = +4m.26s., +9m.2s., and +9m.51s.
Long waves were also recorded at Tiflis and other European stations.

Aug. 22d. Readings also at 1h. (near La Paz (2)), 2h. (Branner, Fresno, and near Lick, also Belgrade, Rome, Triest, Basle, and Zurich foreshock of earthquake at 12h.), 4h. and 5h. (near La Paz), 8h. (Sverdlovsk, Tashkent, Ksara, Riveside, Tinemaha, and Tucson), 12h. (Sverdlovsk and Tucson), 13h. (Rome, Stuttgart, and near Triest), 16h. (East Machias), 17h. (Ottawa), 18h. (East Machias and near Berkeley), 19h. (Ottawa), 20h. (Harvard and near Fordham), 22h. (near Andijan), 23h. (near Wellington, near Berkeley, Branner, and Lick).

August 23d. 4h. 36m. 10s. Epicentre 20°·0S. 174°·0W. (as on August 3d.).

$A = -\cdot9352$, $B = -\cdot0983$, $C = -\cdot3400$; $\delta = -14$; $h = +5$;
$D = -\cdot105$, $E = +\cdot995$; $G = +\cdot338$, $H = +\cdot036$, $K = -\cdot940$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		6·5	19	e 1 37	− 2	(i 2 46)	− 9	—	—	i 3·9
Arapuni		20·1	205	—	—	i 8 50	SS	—	—	—
Wellington		23·3	202	e 5 1	− 9	9 16	− 4	5 50	PP	10·7
Christchurch		26·0	202	i 5 32	− 4	10 2	− 4	—	—	13·1
Brisbane	N.	31·0	249	—	—	i 10 56	−30	—	—	—
Riverview		33·8	238	i 7 48k	PP	i 11 48	−22	i 8 16	PP	e 14·0
Melbourne		39·7	234	i 13 17	?	i 13 35	− 5	i 16 12	SS	20·2
Honolulu		44·0	22	e 8 32	+21	e 14 44	+ 1	e 10 2	PP	i 18·3
Adelaide		44·2	239	i 14 20	S	(i 14 20)	−26	(i 17 50)	SS	i 21·7
Perth		63·2	243	i 21 50	?	—	—	i 25 40	SSS	i 31·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santa Barbara	Z.	74·8	44	e 11 57	+13	—	—	—	—	—
Santa Clara		75·2	40	e 11 53	+ 7	e 21 29	+ 4	—	—	e 30·8
Berkeley		75·3	40	—	—	e 21 29	+ 3	e 31 32	SSS	—
Pasadena	Z.	75·6	45	e 11 50	+ 2	—	—	—	—	—
Ukiah		75·6	38	—	—	—	—	e 26 32	SS	e 31·4
Mount Wilson		75·8	45	e 11 51	+ 1	—	—	—	—	—
Riverside	Z.	76·1	45	e 11 53	+ 2	—	—	—	—	—
Haiwee		77·0	43	e 11 57	+ 1	—	—	—	—	—
Tinemaha		77·3	42	e 11 59	+ 1	—	—	—	—	—
Tucson		79·7	49	e 12 12	+ 1	e 22 3	−10	—	—	e 32·8
Zi-ka-wei	Z.	80·2	308	e 11 56	−18	—	—	—	—	—
Sitka		83·3	20	—	—	e 23 40	PS	e 27 42	SS	e 34·3
Salt Lake City		83·5	42	e 13 20	+49	e 23 4	+12	e 17 27	PP	e 34·8
Butte		86·0	37	e 12 53	+10	e 23 20	+ 3	e 18 0	PP	e 35·5
Bozeman		86·7	38	e 12 55	+ 8	e 23 24	0	e 18 7	PP	e 34·8
College		87·0	10	e 13 13	+25	e 23 48	+21	e 29 33	SS	e 36·4
Huancayo		93·9	104	—	—	24 42	+13	e 25 51	PS	e 39·2
St. Louis		97·6	52	—	—	e 24 19	[+ 4]	e 25 13	S	e 40·8
La Paz	Z.	98·7	111	i 19 7	PPP	—	—	—	—	47·8
Chicago		100·5	49	e 13 56	+ 5	e 24 31	[+ 2]	e 20 26	PPP	e 42·4
Philadelphia		109·2	53	—	—	e 26 56	SKKS	e 34 40	SS	e 46·8
Kodaikanal	E.	110·4	274	—	—	e 23 50?	?	—	—	—
San Juan		112·4	77	e 19 34	PP	e 25 7	[−15]	e 29 7	PS	—
Agra	E.	114·4	292	—	—	e 28 45	PS	—	—	—
Tashkent		122·8	326	e 20 19	PP	—	—	e 36 46	SS	e 50·0
Sverdlovsk		125·7	327	e 20 32	PP	e 28 38	{+46}	e 37 16	SS	49·8
Pulkovo		136·6	343	e 20 3	?	e 22 50	PP	—	—	e 56·8
Moscow		137·3	334	e 18 54	[−32]	e 23 18	PP	e 21 48	PP	e 74·3
Baku		137·5	309	e 22 59	PP	e 25 39	[−56]	e 32 5	PS	59·8
Upsala	N.	139·3	352	e 22 50?	PP	—	—	—	—	e 63·8
Tiflis		140·8	312	e 18 45	[−47]	e 23 10	PKS	e 23 55	PKS	e 58·8
Copenhagen		144·0	353	19 32	[− 5]	23 32	PKS	—	—	65·8
Hamburg		146·3	357	e 19 36	[− 5]	—	—	—	—	e 76·8
De Bilt		148·0	1	19 41	[− 3]	—	—	i 20 42	PKP_2	e 68·8
Kew		148·2	6	e 19 43	[− 1]	—	—	—	—	e 68·8
Uccle		149·2	2	i 19 46	[0]	e 20 48	PKP_2	e 42 57	SS	e 69·8
Ksara		150·1	303	e 19 51	[+ 3]	e 23 11	PP	e 35 59	PPS	—
Jersey		150·2	10	—	—	e 28 50?	PPP	—	—	—
Paris		151·1	4	e 19 52	[+ 3]	e 20 53	PKP_2	—	—	77·8
Stuttgart		151·2	356	e 19 50	[+ 1]	e 43 6	SS	e 23 28	PKS	71·8
Strasbourg		151·4	356	e 19 50	[+ 1]	—	—	—	—	e 76·8
Triest		153·6	343	e 19 58	[+ 5]	e 21 7	PKP_2	—	—	e 81·3
Helwan		155·0	298	e 20 17	[+23]	—	—	—	—	—
Rome		157·5	347	e 19 34	[−24]	i 44 57	SS	e 23 17	PKS	—
Toledo		158·4	21	e 20 2	[+ 3]	e 24 22	PKS	—	—	—

Additional readings and notes :—
Apia S is given as PP, also later phases are recorded which do not fit in here.
Wellington i = +7m.48s., P_cP = +8m.50s.
Christchurch e = +11m.8s., iZ = +11m.42s.
Riverview PPPE = +8m.24s.
Honolulu eP = +8m.40s., eSS = +17m.46s.
Adelaide SS is given as S, also e = +16m.11s., i = +19m.54s.
Perth i = +29m.13s.
Tucson eP = +12m.22s.
Salt Lake City ePPS = +23m.52s., eSS = +28m.24s.
Butte eSS = +28m.53s.
Bozeman eP = +13m.7s.
College ePPS = +24m.51s.
Huancayo iS = +25m.7s., SS = +30m.53s., iPSPS = +31m.46s.
Chicago eSS = +32m.37s.
San Juan ePPS = +30m.5s., eSS = +34m.22s., eSSS = +39m.17s.
Tashkent e = +20m.34s., +21m.6s., +33m.7s., and +35m.29s.
Baku e = +39m.57s., +41m.56s., and +45m.37s.
Stuttgart ePKP_2Z = +20m.52s.
Helwan eE = +20m.56s.
Rome e = +20m.16s. and +49m.22s.
Long waves were also recorded at Sydney, Bidston, Stonyhurst, Clermont-Ferrand, and Bombay.

August 23d. 21h. 21m. 6s. Epicentre 7°·5N. 126°·7E. (as on 1939, June 27d.).

E. Mindanao, centre in the Philippine Deep. Oscillatory with intensity V and 26 seconds duration at Baganga. Felt with intensity II at Butuan, Davao, and Port Lamon. Felt in Cantilan and Cabadbaran.

Epicentre : 8°·0N. 127°·0E. (Manila).
9°·9N. 127°·3E. (Strasbourg).

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		9·0	322	i 2 21k	+ 8	i 4 2	+ 4	—	—	—
Hong Kong		19·0	323	4 27	+ 1	8 5	+10	4 41	PP	10·2
Yakusima		23·1	8	5 9	+ 1	—	—	—	—	—
Zi-ka-wei	Z.	24·1	350	e 5 16	− 2	9 38	+ 4	—	—	12·7
Kobe		28·2	15	5 56	0	11 39	SS	—	—	—
Kohu		30·0	19	6 13	+ 1	—	—	—	—	—
Nagano		30·9	17	6 20	0	—	—	—	—	—
Sendai		33·2	20	6 29	−11	—	—	—	—	—
Mizusawa	E.	34·1	19	6 48	0	7 15	?	—	—	—
Vladivostok		35·8	6	e 7 2	− 1	—	—	e 8 35	PP	—
Sapporo		37·7	17	7 20	+ 1	—	—	—	—	—
Calcutta	N.	39·7	297	e 9 23	PP	—	—	—	—	—
Agra	E.	50·0	300	8 55	− 2	16 11	+ 2	10 54	PP	—
Andijan		58·4	313	10 9	+ 9	—	—	—	—	—
Tashkent		60·8	313	e 10 25	+ 9	e 18 45	+12	—	—	—
Samarkand		62·1	311	10 2	−23	—	—	—	—	—
Sverdlovsk		70·8	328	i 11 17	− 3	20 26	− 9	—	—	29·9
Baku		75·1	310	e 11 45	− 1	e 21 25	+ 1	—	—	e 40·9
Grozny		78·3	313	e 11 24	−39	—	—	—	—	—
Tiflis		79·0	311	12 5	− 2	e 22 3	− 3	—	—	e 30·9
Moscow		83·4	326	i 12 27	− 3	22 37	−14	—	—	e 47·4
Ksara		86·6	303	i 12 46a	0	e 23 17	[+ 5]	e 24 11	PS	—
Pulkovo		86·8	330	e 12 45	− 2	e 23 16	− 9	—	—	—
Helwan		90·9	300	—	—	e 23 56	− 7	e 25 36	PS	—
Rome		102·6	316	—	—	e 26 20	?	e 27 32	PS	—

Additional readings :—
Hong Kong SS = +8m.22s.
Agra eSSE = +20m.1s.
Tiflis ePN = +12m.8s.
Rome e = +28m.38s. and +38m.20s.
Long waves were also recorded at Bombay, De Bilt, Paris, Strasbourg, and Stuttgart.

August 23d. Readings also at 0h. (near Mizusawa), 1h. (Andijan (2)), 2h. (Sitka, Bozeman, Mount Wilson, Riverside, Tinemaha, Tucson, and near Apia), 3h. (Harvard, Philadelphia, Baku, Sverdlovsk, and Tashkent), 4h. (near La Paz), 6h. (Branner, Lick, and near Berkeley), 11h. (Berkeley, Branner, Lick, near Fresno, near Chur, Basle, Neuchatel, and Zurich), 15h. (Upsala), 16h. (Baku, Tiflis, Sverdlovsk, Rome, Stuttgart, and near Ksara), 19h. (Harvard), 20h. (Bucharest and Triest).

August 24d. Readings at 2h. (Samarkand), 3h. (near La Paz), 4h. (Samarkand), 5h. (near Andijan), 7h. (Tucson, Mount Wilson, Merida, Tacubaya, and Oaxaca), 8h. (San Juan), 10h. (Tucson and Mount Wilson), 11h. (Triest and Tiflis), 13h. (Rathfarnham Castle), 14h. (Harvard, Tucson, Tinemaha, near Tuai, Huancayo, Pasadena, Mount Wilson, near Andijan, and La Paz), 15h. (Ksara and Sverdlovsk), 16h. (Tashkent), 17h. (near Fort de France), 18h. (near Fort de France and near La Paz), 20h. (Tashkent, Moscow, and Sverdlovsk).

August 25d. 3h. 48m. 10s. Epicentre 4°·5S. 153°·3E.

Felt at Rabaul and Kokopa.

Epicentre 5°·0S. 152°·7E. (U.S.C.G.S.).

See Annales de l'Institut de Physique du Globe de Strasbourg, vol. IV, 2e partie, p.68.

$A = -\cdot 8907$, $B = +\cdot 4480$, $C = -\cdot 0779$; $\delta = +12$; $h = +7$;
$D = +\cdot 449$, $E = +\cdot 893$; $G = +\cdot 070$, $H = -\cdot 035$, $K = -\cdot 997$;

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	22·9	182	e 5 8	+ 2	i 9 8	− 5	i 5 32	PP	—
	N.	22·9	182	i 5 2	− 4	i 9 2	−11	i 5 26	PP	—
Riverview		29·2	184	e 5 4	−61	e 10 52	− 6	e 6 48	PP	e 14·3
Sydney		29·2	184	e 5 47	−18	e 11 5	+ 7	—	—	e 14·8
Adelaide		33·2	202	e 6 47	+ 7	i 11 52	− 8	e 13 58	SS	i 17·0
Melbourne		34·0	172	—	—	i 13 5	+52	—	—	16·1
Yakusima		41·0	330	7 48	+ 2	—	—	—	—	—
Miyazaki		41·8	332	7 54	+ 1	—	—	—	—	—
Tokyo, Cen. Met. Ob.		41·9	344	8 4	+10	—	—	—	—	—
Kameyama		42·2	341	7 55	− 1	—	—	—	—	—
Christchurch		42·5	159	e 7 59	0	i 14 12	−10	16 54	L_q	20·3
Nagano		43·3	343	8 5	0	18 3	SS	—	—	—
Mizusawa		44·8	347	8 17	0	11 52	?	—	—	—
Hong Kong		46·6	307	8 34	+ 2	(15 25)	+ 4	—	—	—
Zi-ka-wei	Z.	46·7	322	i 8 32a	0	13 56	?	i 19 30	SSS	23·2
Sapporo		48·6	348	8 52	+ 5	—	—	—	—	—
Phu-Lien		52·2	301	e 9 16	+ 1	—	—	—	—	—
Honolulu		54·3	59	e 9 33	+ 3	17 12	+ 5	e 19 10	S_cS	24·3
Colombo	E.	74·2	278	—	—	e 21 40	+ 6	—	—	—
Kodaikanal	E.	76·9	282	i 16 57	PPP	i 26 42	SS	i 27 6	SSS	41·5
Agra	E.	79·0	299	12 3	− 4	22 15	+ 9	15 1	PP	—
College		81·4	21	—	—	e 22 25	− 6	e 22 44	pS	e 33·0
Bombay		82·5	290	i 12 24	− 2	i 22 36	− 6	e 28 46	SS	—
Sitka		83·7	31	e 12 32	0	e 22 31	−23	e 12 37	P_cP	e 34·2
Andijan		86·1	311	12 43	− 1	23 17	− 1	e 16 56	PP	—
Ukiah		87·8	51	e 13 31	sP	e 23 13	[− 5]	e 24 26	PS	e 36·5
Berkeley		88·4	52	—	—	e 23 5	[−17]	e 29 35	SS	e 40·9
Tashkent		88·4	312	i 12 53	− 2	23 15	[− 7]	16 40	PP	e 39·8
Santa Clara		88·5	52	e 12 54	− 2	e 24 23	PPPS	—	—	e 40·6
Victoria		88·9	41	e 16 50?	PP	e 22 50?	[−36]	—	—	36·8
Pasadena	Z.	91·3	56	e 13 8	− 1	—	—	i 13 33	pP	e 37·5
Mount Wilson		91·4	56	i 13 9	0	—	—	i 13 33	pP	—
Tinemaha		91·4	53	e 13 10	+ 1	—	—	—	—	—
Haiwee		91·6	54	e 13 10	0	—	—	e 13 35	pP	—
La Jolla	Z.	91·9	57	e 13 37	+26	—	—	—	—	—
Riverside	Z.	91·9	56	i 13 11	0	—	—	i 13 35	pP	—
Sverdlovsk		95·2	327	i 13 34	+ 7	—	—	—	—	40·8
Butte		96·1	44	e 13 52	+21	e 24 4	[− 3]	e 25 50	PS	e 40·0
Salt Lake City		96·1	49	e 17 26	PP	e 31 47	SS	e 35 14	SSS	—
Bozeman		97·2	44	e 14 4	+28	e 23 54	[−19]	e 26 10	PS	e 45·3
Tucson		97·3	58	e 13 34	− 2	—	—	e 13 59	pP	e 40·2
Baku		103·7	310	—	—	e 24 39	[− 5]	e 27 31	PS	51·8
Tiflis		106·8	313	14 18	P	24 55	[− 3]	18 37	PP	e 51·8
Lincoln		108·0	48	e 18 24	[− 5]	e 28 26	PS	21 4	PPP	e 43·2
Moscow		108·0	328	14 23	P	25 0	[− 4]	18 52	PP	e 52·3
Pulkovo		110·0	334	19 6	PP	25 6	[− 6]	28 29	PS	—
Florissant	E.	113·2	49	e 19 30	PP	26 24	{− 3}	e 29 9	PS	—
St. Louis		113·4	49	e 19 21	PP	i 26 30	{+ 1}	e 29 9	PS	—
Chicago		114·1	46	e 14 53	P	e 26 19	{−15}	e 19 20	PP	e 48·4
Ksara		115·2	305	e 18 52	[+ 9]	e 29 29	PS	i 19 47	PP	—
Helwan	E.	119·1	302	e 20 14	PP	i 25 44	[− 3]	i 27 14	SKKS	—
Copenhagen		120·1	336	20 14	PP	25 50	[0]	29 56	PS	53·8
Ottawa		121·1	38	i 18 54	[− 1]	e 27 50?	{+29}	—	—	36·8
Hamburg	E.	122·7	336	—	—	e 25 56	[− 3]	—	—	e 62·8
Seven Falls		123·1	34	—	—	e 30 38	PS	—	—	37·8

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Jena		123·8	332	e 19 0	[0]	—	—	—	—	—
Philadelphia		123·9	43	e 20 40	PP	e 30 36	PS	37 37	SS	e 53·2
Aberdeen	N.	124·0	344	—	—	e 30 37	PS	e 37 57	SS	e 60·5
Fordham		124·4	41	e 20 45	PP	—	—	—	—	—
Harvard		125·1	39	i 19 3	[0]	—	—	—	—	e 34·8
De Bilt		125·7	338	19 4a	[0]	—	—	i 20 58	PP	63·8
Triest		126·0	326	e 21 39	PP	i 26 4	[− 5]	—	—	e 62·4
Stuttgart		126·4	332	i 19 4a	[− 1]	e 26 8	[− 2]	e 20 56	PP	e 55·8
East Machias		126·7	35	e 21 0	PP	e 31 5	PS	e 24 3	PPP	e 49·2
Uccle		127·0	337	e 19 5	[− 1]	e 38 58	SS	e 21 6	PP	e 56·8
Strasbourg		127·2	332	e 21 9	PP	e 22 3	SKP	—	—	64·8
Bidston		127·5	343	e 22 25	PKS	—	—	—	—	51·8
Chur		127·5	331	e 19 6	[− 1]	—	—	—	—	—
Zurich		127·6	331	e 19 8	[+ 1]	—	—	—	—	e 20·1
Basle		128·0	332	e 19 2	[− 6]	—	—	—	—	—
Kew		128·3	340	i 19 8	[0]	—	—	e 22 25	PKS	e 51·8
Huancayo		128·9	109	—	—	e 26 17	[0]	e 32 10	sPS	—
Rome		129·0	323	e 19 10a	[0]	i 26 13	[− 4]	e 43 1	SSS	e 56·2
Paris		129·3	335	e 19 10	[0]	—	—	i 22 28	PP	65·8
Jersey		130·7	340	e 22 35	PKS	—	—	—	—	65·8
La Paz	z.	134·0	118	19 28	[+ 8]	—	—	i 22 48	PP	63·8
Bermuda		134·9	47	—	—	e 39 54	SS	—	—	e 58·1
San Juan		139·0	66	e 16 34	P	e 26 38	[0]	23 2	PKS	—
Toledo		139·3	333	e 19 30	[+ 1]	—	—	e 23 0	PKS	63·8
Fort de France		144·6	71	e 19 38	[0]	—	—	—	—	—

Additional readings :—
Adelaide i = +11m.25s. and +16m.40s.
Christchurch iNZ = +8m.8s., S_cSZ = +18m.0s.
Hong Kong S? = +13m.28s. and +14m.7s.; true S is given as SS.
Honolulu eSS = +20m.33s.
Agra SSE = +27m.22s.
Sitka eS = +22m.52s., ePS = +24m.4s., eSS = +28m.0s., eSSS = +32m.9s.
Ukiah eS = +23m.47s., esSP = +25m.18s., eSS = +29m.25s., esSS = +29m.49s.
Berkeley eE = +23m.21s., eN = +36m.33s., eEZ = +40m.38s.
Tashkent S = +23m.37s., PPS = +25m.38s., SS = +30m.14s.
Butte eS = +24m.54s., esSS = +32m.6s., eSSS = +35m.54s.
Bozeman eSKKS = +24m.7s., eSSS = +34m.57s.
Tucson ePP = +17m.35s.
Baku e = +33m.46s.
Tiflis SKKSN = +25m.49s., ePPSN = +28m.24s.
Lincoln eSS = +33m.57s., eSSS = +37m.38s.
Moscow PS = +28m.12s., SS = +34m.32s.
Pulkovo SKKS = +26m.3s., SS = +34m.44s.
Florissant eSSE = +35m.11s.
St. Louis eE = +19m.31s. and +35m.11s.
Chicago ePS = +29m.5s.
Copenhagen i = +27m.13s.
Hamburg eE = +55m.50s.?
Philadelphia epPS = +31m.20s.
Triest e = +22m.21s.
Stuttgart iPPZ = +21m.2s., eSKPZ = +22m.20s., iZ = +22m.38s., ePPPZ = +23m.39s., eSKKSE = +27m.54s., ePSZ = +31m.28s., ePPSZ = +32m.34s., ePPE = +32m.40s., eSSZ = +38m.2s.
East Machias ePS = +31m.15s., eSS = +37m.50s., eSSS = +42m.0s.
Uccle eEN = +22m.27s., eN = +32m.54s.
Huancayo eSS = +37m.23s.
Rome i = +21m.17s., iPKPZ = +22m.24s., eSKKS = +31m.7s., eSE = +31m.46s., e = +33m.5s., iPS = +33m.26s., e = +38m.36s., eE = +39m.34s., e = +48m.34s. and +52m.19s.
La Paz PKP = +19m.56s.
San Juan sPKS = +23m.57s., ePPP = +25m.57s.
Toledo e = +23m.6s.
Long waves were also recorded at Prague, Stonyhurst, and Upsala.

Aug. 25d. Readings also at 2h. (near Andijan), 3h. (Wellington), 8h. (near Andijan and near La Paz (2)), 9h. (near Wellington), 13h. (Tucson), 15h. (near Harvard).

Aug. 26d. 3h. 24m. 38s. Epicentre 20°·4N. 122°·0E. (as on 1938 June 21d.).

$A = -\cdot4971$, $B = +\cdot7955$, $C = +\cdot3465$; $\delta = -1$; $h = +5$;
$D = +\cdot848$, $E = +\cdot530$; $G = -\cdot184$, $H = +\cdot294$, $K = -\cdot938$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Manila		5·8	190	e 2 23	+54	4 12	?	—
Phu-Lien		14·4	275	e 3 25	− 2	—	—	—
Misima		20·9	44	4 44	− 2	—	—	—
Toyama		21·0	36	4 40	− 7	8 31	− 6	—
Nagano		21·5	37	4 54	+ 2	8 57	+10	—
Vladivostok		24·1	18	e 5 8	−10	e 9 18	−16	12·5
Mizusawa	E.	24·9	37	e 5 28	+ 2	—	—	—
Calcutta	N.	31·4	280	—	—	e 12 49	SS	—
Andijan		46·6	307	e 8 30	− 2	—	—	—
Sverdlovsk		57·6	326	9 44	−10	17 38	−13	27·4
Moscow		70·3	324	e 11 9	− 8	—	—	e 35·9

Long waves were also recorded at Tashkent, Pulkovo, and other European stations.

Aug. 26d. Readings also at 3h. (Samarkand, Tashkent, and near Andijan), 7h. (Rome, near Mizusawa, and near Apia), 8h. (Berkeley, Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, Rathfarnham Castle, Paris, Strasbourg, Uccle, Tiflis, and Ksara), 9h. (Bidston, Kew, and Rome), 14h. (Rome), 18h. (Christchurch and Tucson), 19h. (Ksara), 22h. (Apia, Sverdlovsk, Tashkent, near Almata, Andijan, and Samarkand).

Aug. 27d. 11h. 17m. 48s. Epicentre 19°·0S. 170°·0E.
(Epicentre given as approximate by Pasadena).

$A = -\cdot9318$, $B = +\cdot1643$, $C = -\cdot3236$; $\delta = -4$; $h = +5$;
$D = +\cdot174$, $E = +\cdot985$; $G = +\cdot319$, $H = -\cdot056$, $K = -\cdot946$.

A depth of focus 0·020 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	17·7	238	i 3 54	− 4	i 7 6	− 1	—	—	—
Riverview		22·4	225	i 4 46$_a$	0	i 8 30	− 6	—	—	—
Sydney		22·4	225	e 5 45	PPP	e 7 54	−42	—	—	e 11·5
Wellington		22·6	172	4 49	+ 2	8 34	− 5	i 5 29	PP	—
Christchurch		24·6	175	e 4 47$_a$	−20	i 9 7	− 6	9 45	L$_q$	e 12·3
Melbourne		28·8	224	—	—	i 10 9	−13	i 11 56	SS	i 15·6
Branner		84·9	48	e 12 18	0	—	—	—	—	—
Santa Clara		85·0	48	e 12 12	− 6	e 22 27	[+ 3]	—	—	—
Berkeley		85·1	48	i 12 20$_a$	+ 1	—	—	—	—	—
Lick		85·3	48	i 12 21	+ 1	—	—	—	—	—
Santa Barbara	Z.	85·3	52	i 12 21	+ 1	—	—	—	—	—
Fresno	N.	86·3	49	e 12 26	+ 1	—	—	—	—	—
Pasadena		86·3	52	i 12 23	− 2	e 22 23	[−10]	i 12 38	pP	—
La Jolla		86·5	54	i 12 27	+ 1	—	—	—	—	—
Mount Wilson		86·5	52	i 12 25$_a$	− 1	—	—	i 15 51	PP	—
Riverside		86·9	52	e 12 29	+ 1	—	—	—	—	—
Haiwee		87·4	50	i 12 31	+ 1	—	—	—	—	—
Tinemaha		87·6	50	i 12 32	+ 1	—	—	—	—	—
Sitka		88·4	26	—	—	e 22 42	[− 4]	e 24 4	PS	—
Tucson		91·2	56	i 12 49$_a$	+ 1	e 23 21	− 9	13 39	sP	e 42·8
Colombo	E.	92·7	276	—	—	e 22 12?	[−59]	—	—	—
Tashkent		110·2	308	i 19 38	PP	i 24 21	[−14]	i 27 57	PS	—
La Paz	Z.	112·8	118	e 18 27	[+10]	—	—	—	—	28·2
Sverdlovsk		116·7	325	—	—	e 26 54	SKKS	e 35 7	SS	43·2
San Juan		127·0	81	e 20 41	PP	e 25 25	[− 9]	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Grozny		127·6	311	e 16 16	P	—	—	e 18 46 PKP	—
Tiflis	z.	128·5	309	e 18 44	[− 4]	—	—	i 21 42 PP	—
Ksara		136·7	299	e 18 59	[− 4]	—	—	e 20 10 pPKP	—
Helwan	E.	141·0	294	e 22 24	PP	—	—	— —	—
Jena		143·8	336	e 19 12	[− 3]	—	—	— —	—
De Bilt	z.	144·9	345	i 19 16a	[− 2]	—	—	i 20 21 pPKP	—
Rathfarnham Castle		145·6	357	e 19 12	[− 7]	e 27 45 SKKS	—	— —	—
Stuttgart		146·5	337	i 19 18	[− 3]	—	—	e 20 23 pPKP	—
Uccle	z.	146·7	345	e 19 19	[− 2]	—	—	i 20 55 pPKP	—
Triest		147·0	330	e 19 22	[0]	—	—	i 20 48 pPKP	—
Strasbourg		147·2	339	i 19 22	[0]	—	—	e 20 30 pPKP	42·2
Zurich		147·9	337	e 19 20	[− 3]	—	—	e 20 28 pPKP	—
Basle		148·1	338	e 19 17	[− 6]	—	—	e 20 24 pPKP	—
Paris		148·6	345	e 19 24	[0]	—	—	i 20 33 pPKP	—
Rome		150·2	325	i 19 23a	[− 3]	—	—	e 21 2 pPKP	—
Toledo		158·6	348	e 20 14	PKP_2	—	—	e 21 16 pPKP	—

Additional readings :—
Christchurch ePNZ = +5m.5s.
Pasadena iZ = +13m.34s., eZ = +15m.47s.
Mount Wilson iZ = +13m.34s., eZ = +16m.51s.
Sitka S = +22m.57s., esSP = +24m.41s.
Tucson ePP = +16m.29s., esS = +24m.24s.
Tashkent i = +25m.21s. and +25m.57s., e = +28m.52s., i = +29m.18s., e = +31m.54s., i = +33m.52s.
Ksara iPP = +23m.10s., pPP = +24m.9s.
Helwan eE = +23m.12s., iE = +28m.42s.
Stuttgart ipPKPZ = +20m.31s., iZ = +20m.35s., ePPZ = +22m.44s., eZ = +23m.22s.
Strasbourg iZ = +19m.27s. and +20m.39s.
Zurich e = +19m.24s.
Rome e = +20m.29s., eZ = +24m.4s., iE = +24m.14s., e = +34m.25s.
Toledo e = +21m.30s. and +23m.58s.
Long waves were also recorded at Baku.

Aug. 27d. Readings also at 0h. and 1h. (Tucson), 3h. (near Berkeley), 4h. (Sverdlovsk and Tashkent), 5h. (Baku, Rome, and Triest), 7h. (Andijan), 8h. (Ksara, Tucson (2), near Istanbul, and near Mizusawa), 9h. (La Paz), 19h. (Sverdlovsk and Tashkent), 20h. (Baku, Sverdlovsk, Tashkent, Andijan, Vladivostok, Osaka, and near Mizusawa (2)), 21h. (Rome), 22h. (Mount Wilson, Pasadena, Tinemaha, Ukiah, Santa Clara, Berkeley, Ferndale, Tucson, and Istanbul).

Aug. 28d. 21h. 35m. 19s. Epicentre 35°·2N. 59°·3E. (as on 1938 July 19d.).

A = +·4181, B = +·7042, C = +·5739 ; δ = +7 ; h = 0 ;
D = +·860, E = −·511 ; G = +·293, H = +·494, K = −·819.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Samarkand		7·5	52	2 8	P*	e 3 32	+12	e 3 41 S*	—
Tashkent		9·9	49	e 2 27	+ 2	i 4 28	+ 8	— —	5·0
Andijan		11·6	58	e 3 12	PPP	5 39	SSS	— —	i 7·0
Erevan		12·7	298	e 3 5	0	e 5 10	−18	— —	—
Tiflis		13·0	304	e 2 57	−12	e 5 25	−10	e 5 58 SS	6·4
Grozny		13·2	312	3 8	− 3	5 41	+ 1	— —	11·3
Agra	E.	17·9	111	e 5 32	?	8 23	SSS	— —	—
Ksara		19·3	271	i 4 32a	+ 3	i 8 8	+ 6	— —	10·8
Bombay		20·2	141	e 5 21	PPP	—	—	— —	e 13·8
Sverdlovsk		21·6	2	e 4 55	+ 1	8 38	−11	10 47 L_g	12·9
Helwan		24·1	264	i 5 24a	+ 6	e 9 38	+ 4	e 5 53 PP	13·7
Moscow		25·4	331	5 28	− 3	9 41	−15	— —	15·2
Kodaikanal		29·9	142	—	—	e 12 41?	SS	— —	—
Pulkovo		31·0	332	e 6 44	+23	e 11 42	+16	— —	19·0
Rome		36·8	295	e 6 58?	−13	12 51	− 5	e 15 43 SS	—

Additional readings :—
Samarkand i = +2m.51s.
Andijan e = +4m.15s.
Tiflis eE = +3m.15s., eEN = +5m.12s., eZ = +6m.6s., iN = +6m.13s.
Helwan SE = +10m.8s., eE = +11m.50s.
Long waves were also recorded at Vladivostok and European stations.

Aug. 28d. Readings also at 6h. (Sverdlovsk, Tashkent, Triest, and Tucson), 7h. (Tucson), 8h. (San Francisco), 10h. (Mount Wilson, Riverside, and Tinemaha), 15h. (Tacubaya, Tucson, Haiwee, Mount Wilson, Pasadena, Tinemaha, Riverside, Harvard, East Machias, and Fordham), 16h. (Fordham, Tucson, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, La Jolla, Berkeley, Fresno, Santa Clara, and Florissant), 17h. (Tucson, Mount Wilson, Pasadena, and Riverside), 19h. (Berkeley, Branner, Fresno, and La Paz (2)), 21h. (Scoresby Sund and near Fort de France), 23h. (St. Louis and Sofia).

August 29d. Readings at 0h. (La Paz), 3h. (Tucson, College, Sitka, and near Mizusawa), 4h. (near Tuai, New Plymouth (2), Wellington, and near Andijan), 6h. (Tucson and near Mizusawa), 8h. (Tiflis, Arapuni, Christchurch, Brisbane, Riverview, Wellington, Mount Wilson, Riverside, Tinemaha, and Berkeley), 9h. (Ksara, Sverdlovsk, Vladivostok, near Mizusawa (2), and near Osaka), 10h. (Jena (3) and near Mizusawa), 12h. (La Paz and near Wellington), 14h. (near La Paz), 18h. (Jena, Helwan, and Ksara), 21h. (Helwan), 22h. (Mizusawa, Fort de France, and near La Paz).

August 30d. 0h. 14m. 22s. Epicentre 14°·0S. 14°·0W.

Rough epicentre.

$A = +\cdot 9419$, $B = -\cdot 2348$, $C = -\cdot 2404$; $\delta = +10$; $h = +6$;
$D = -\cdot 242$, $E = -\cdot 970$; $G = -\cdot 233$, $H = +\cdot 058$, $K = -\cdot 971$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rio de Janeiro	N.	29·0	248	—	—	e 10 38	−16	—	—	—
La Paz	Z.	52·2	290	9 13	− 2	—	—	—	—	27·1
Toledo		54·4	9	e 9 32	+ 1	e 11 28	PP	—	—	—
Huancayo		59·6	294	—	—	e 18 18	+ 1	—	—	—
Rome		60·7	23	e 10 26	+11	e 18 39	+ 7	—	—	30·6
Helwan		61·7	44	10 22	0	e 18 50	+ 6	—	—	—
Triest		64·4	21	e 10 43	+ 3	e 19 20	+ 2	e 13 1	PP	—
Stuttgart		65·8	16	e 10 51	+ 2	—	—	—	—	e 32·1
Kew		66·3	9	—	—	e 19 36	− 6	e 23 54	SS	e 34·6
Uccle		66·5	12	—	—	e 19 47	+ 3	—	—	e 30·6
Ksara		67·2	44	e 10 59	+ 1	e 21 11	?	—	—	—
Bidston		67·8	7	—	—	e 24 6	SS	—	—	e 34·6
De Bilt		67·9	12	—	—	e 24 32	SS	—	—	e 33·6
Harvard	Z.	77·1	321	i 11 54k	− 3	—	—	—	—	—
Tiflis		77·5	41	e 11 57	− 2	e 21 59	+ 9	—	—	e 38·6
Moscow		81·8	27	e 12 19	− 3	e 22 19	−16	e 15 33	PP	e 44·1
Sverdlovsk		93·4	32	e 17 4	PP	e 23 48	[− 4]	e 25 30	PS	40·6

Additional readings :—
Rome e = +7m.11s.
Long waves were also recorded at San Fernando, Clermont-Ferrand, Paris, Strasbourg, Jersey, Pulkovo, and Tashkent.

August 30d. Readings also at 7h. (Tacubaya), 9h. (Fort de France), 10h. (Mount Wilson, Pasadena, and Riverside), 13h. (Sverdlovsk, Tashkent, Tiflis, Andijan (2), Almata (2), Samarkand, and Bombay), 18h. (Baku, Vladivostok, Tiflis, Sverdlovsk, Tashkent, Moscow, Ksara, Rome, Tucson, Haiwee, Mount Wilson, Pasadena, Riverside, and near Fort de France), 22h. (near Wellington and near Berkeley).

August 31d. Readings at 0h. (near Almata), 1h. (Ksara, Tiflis, and near Istanbul), 7h. (Fort de France and Harvard), 8h. (Harvard), 10h. (Strasbourg and Tucson), 11h. (Tucson, Mount Wilson, Pasadena, Riverside, Almata, near Andijan, Samarkand, and Tashkent), 12h. (Tucson and near Hukuoka), 14h. (near New Plymouth, Wellington, Christchurch, and Monowai), 15h. (Ksara), 18h. (Andijan), 19h. (Andijan and near Mizusawa), 21h. (Mizusawa), 22h. (near Andijan (2)).

Sept. 1d. Readings at 1h. (Tucson), 3h. (near Berkeley and Branner), 4h. (Adelaide), 5h. (Sverdlovsk and Tashkent), 9h. (East Machias), 13h. (Fort de France, Harvard, and Sarajevo), 15h. (Sarajevo (2)), 16h. (near Sarajevo, San Juan, Santa Clara, near Andijan, near Berkeley, and Branner), 17h. (Sarajevo, Samarkand, and Tucson), 18h. (Tiflis), 19h. (Fresno, near Fordham, Grozny, Erevan, near Samarkand, near Berkeley, and Branner), 20h. (Ottawa), 22h. (Mizusawa and Harvard), 23h. (Tucson and St. Louis).

Sept. 2d. 8h. 58m. 43s. Epicentre 12°·4S. 166°·7E.

$A = -\cdot 9508$, $B = +\cdot 2247$, $C = -\cdot 2134$; $\delta = +5$; $h = +6$;
$D = +\cdot 230$, $E = +\cdot 973$; $G = +\cdot 208$, $H = -\cdot 049$, $K = -\cdot 977$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	19·8	218	i 4 35	0	i 8 17	+ 4	—	—	—
Apia		21·0	96	i 4 51	+ 4	i 8 50	+13	i 5 30	PPP	e 11·3
Riverview	E.	25·6	211	e 5 31	− 1	i 9 58	− 1	i 6 30	PPP	e 12·5
	N.	25·6	211	i 5 34	+ 2	i 10 1	+ 2	10 42	SS	e 11·2
Sydney		25·6	211	e 5 17	−15	e 9 47	−12	e 6 23	PPP	e 12·3
Arapuni		26·8	164	—	—	e 10 53	+34	—	—	13·3
Wellington		29·6	168	e 6 5	− 4	i 11 5	+ 1	i 7 9	PP	14·8
Christchurch		31·4	171	i 6 24a	− 1	11 25	− 7	e 12 52	L_g	e 15·1
Melbourne		31·9	213	i 6 29	0	11 37	− 3	13 30	SS	—
Adelaide		33·9	223	e 6 50	+ 3	i 12 5	− 6	e 7 30	PP	e 14·7
Honolulu		48·3	46	e 8 39	− 6	15 53	+ 8	9 8	pP	e 19·9
Perth		50·5	238	i 7 19	?	i 16 24	+ 8	10 39	PP	23·5
Manila		52·6	299	i 9 19a	+ 1	i 16 45	+ 1	—	—	26·0
Tokyo Cen. Met. Ob.		54·2	333	9 27	− 2	—	—	—	—	—
Kameyama		55·1	330	9 24	−12	—	—	—	—	—
Miyazaki		55·5	323	9 42	+ 3	—	—	—	—	—
Kobe		55·6	328	9 40	0	17 23	− 2	—	—	—
Nagano		55·7	333	9 39	− 1	17 24	− 2	—	—	—
Akita		57·5	336	10 7	+14	—	—	—	—	—
Hong Kong		62·0	304	10 25	+ 1	18 47	− 1	23 7	SS	—
Vladivostok		63·8	332	i 9 37	−59	i 19 9	− 2	—	—	—
Ukiah		82·8	47	e 12 27	0	e 22 43	− 2	e 27 32	SS	e 34·2
Berkeley		83·1	49	e 12 28	− 1	e 22 47	− 1	—	—	e 37·7
Santa Clara		83·1	49	i 12 36	+ 7	e 22 57	+ 9	—	—	e 37·7
Sitka		84·0	27	e 12 33	0	e 22 58	+ 1	e 15 43	PP	e 37·7
College		84·3	17	e 12 34	− 1	e 22 54	− 6	e 28 21	SS	e 34·4
Pasadena		84·9	53	i 12 40a	+ 2	e 23 9	+ 3	—	—	e 36·8
Mount Wilson		85·0	53	i 12 41	+ 3	—	—	—	—	—
Riverside		85·5	53	i 12 43	+ 2	—	—	—	—	—
Haiwee		85·7	51	e 12 45	+ 3	—	—	—	—	—
Seattle		86·7	39	—	—	e 23 15	[+ 3]	—	—	e 34·6
Colombo	E.	88·4	277	12 53	− 2	23 41	+ 1	—	—	—
Tucson		90·3	57	e 12 56	− 8	e 23 33	[− 2]	13 39	sP	e 37·2
Salt Lake City		91·3	48	—	—	e 22 44	[−57]	e 24 41	PS	e 35·9
Kodaikanal	E.	91·4	281	i 12 11a	−58	22 44	[−57]	23 34	SKS	—
Bozeman		93·5	44	e 13 21	+ 2	e 23 48	[− 5]	e 17 5	PP	e 38·4
Agra	E.	94·4	297	e 17 58	PP	e 24 50	+17	e 19 43	PPP	—
Bombay		97·5	288	—	—	e 24 14	[0]	—	—	—
Lincoln		103·0	50	e 13 52	−10	e 24 36	[− 5]	e 18 17	PP	e 45·4
Tashkent		103·6	310	i 14 3	− 1	i 24 50	[+ 6]	i 18 14	PP	37·0
Florissant	E.	107·7	53	—	—	e 25 1	[− 1]	i 28 19	PS	—
Sverdlovsk		109·1	327	e 14 29	P	25 0	[− 8]	18 58	PP	43·3
Chicago		109·8	49	e 21 7	PPP	e 25 8	[− 4]	e 28 35	PS	e 45·3
Huancayo		113·8	109	e 14 39	P	e 34 4	SS	e 19 12	PP	e 46·4
Columbia		115·2	57	e 19 25	PP	e 25 30	[− 3]	e 29 27	PS	e 47·2
Ottawa		118·0	44	i 18 49	[0]	e 25 17?	[−26]	—	—	43·3
Baku		118·3	309	18 55	[+ 6]	30 4	PS	i 20 6	PP	e 52·3
La Paz	Z.	118·7	117	21 11	?	—	—	—	—	56·3
Philadelphia		119·4	51	e 20 11	PP	e 25 43	[− 5]	e 29 38	PS	e 50·5
Fordham		120·2	49	e 20 18	PP	e 30 8	PS	e 36 18	SS	—
Grozny		120·2	313	e 18 20	[−33]	—	—	—	—	—
Seven Falls		120·9	41	e 20 47	PP	e 25 52	[− 1]	e 30 17	PS	49·3
Harvard		121·6	47	e 21 10	PP	e 37 17	SS	e 42 17	SSS	e 56·3
Moscow		121·6	329	e 15 27	P	27 22	{− 2}	i 20 29	PP	59·8
Scoresby Sund		121·7	4	e 20 42	PP	e 30 56	PS	e 37 6	SS	e 50·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tiflis		121·9	312	e 15 27	P	i 30 21	PS	20 16	PP	e 56·3
Pulkovo		122·8	335	19 1	[+ 3]	25 54	[− 5]	20 36	PP	54·2
Upsala		127·4	341	e 22 22	PKS	e 29 48	PS	e 36 56	SS	e 58·3
San Juan		128·9	76	e 21 8	PP	e 31 31	PS	22 30	PKS	e 51·4
Bergen		130·2	348	e 22 38	PKS	—	—	—	—	e 63·3
Ksara		130·5	303	i 19 15k	[+ 2]	e 33 33	PPS	i 21 33	PP	—
Istanbul		133·3	316	e 21 48	PP	—	—	—	—	—
Helwan	z.	134·8	300	i 19 26a	[+ 5]	—	—	i 22 0	PP	—
Prague		136·1	335	e 22 5	PP	—	—	—	—	66·3
Sofia		136·2	320	e 22 5	PP	e 29 17	PS	e 23 1	PKS	—
Belgrade		136·7	324	22 20	PP	—	—	e 24 41	PPP	e 71·6
De Bilt		137·7	343	i 19 28a	[+ 2]	—	—	i 22 12	PP	e 66·3
Bidston		138·3	352	i 23 1	PKS	—	—	—	—	64·3
Uccle		139·1	344	e 19 30	[+ 1]	i 23 8	PKS	i 22 25	PP	66·3
Kew		139·6	347	e 19 26	[− 4]	—	—	i 23 8	PKS	e 64·3
Strasbourg		139·9	338	i 19 27	[− 3]	e 23 12	PKS	i 22 28	PP	67·3
Paris		141·4	344	e 19 26	[− 7]	e 35 2	PPS	e 22 38	PP	e 70·3
Rome		143·0	326	i 19 33a	[− 3]	41 22	SS	22 37	PP	e 63·3
Toledo		151·4	345	e 19 50	[+ 1]	—	—	—	—	—
Almeria		153·8	341	19 58	[+ 5]	—	—	e 23 37	PKS	—
Granada		153·8	342	20 2	[+ 9]	—	—	—	—	78·3

Additional readings :—
Apia ePZ = +4m.54s., iSZ = +8m.55s., iSSN = +9m.24s., iN = +9m.57s., iE = +10m.29s.
Sydney e = +8m.17s.
Christchurch eZ = +10m.53s.
Melbourne +5m.20s.
Adelaide i = +8m.51s.
Honolulu eS$_c$S = +18m.3s., eSS = +18m.40s., esSS = +19m.48s.
Perth i = +5m.20s., P$_c$P = +8m.4s., PP = +9m.27s., i = +14m.32s., S = +14m.57s., PS = +15m.15s., i = +18m.17s., SS = +19m.7s., SSS = +20m.44s., i = +22m.17s.
Ukiah eP$_c$P = +12m.32s., esS = +23m.1s.
Berkeley eN = +33m.59s.
Sitka eP$_c$P = +12m.37s., esS = +23m.29s., ePS = +23m.57s., esPS = +24m.8s., eSS = +28m.27s., eSSS = +30m.52s.
Pasadena iZ = +13m.17s.
Mount Wilson iZ = +13m.19s.
Riverside iZ = +13m.22s.
Tucson iP = +13m.5s., epS = +24m.0s., esS = +24m.23s., epPS = +25m.9s., esPS = +25m.23s., esSS = +30m.9s., eSSS = +33m.37s.
Salt Lake City eSSS = +33m.14s.
Bozeman eSP = +25m.19s., epPS = +25m.49s., ePKKP = +29m.48s., esSS = +31m.13s., eSSS = +34m.11s.
Agra iE = +18m.8s., +25m.12s., +27m.4s., and +28m.34s.
Lincoln eS = +25m.46s., PS = +27m.29s., eSS = +33m.46s.
Tashkent PKP = +17m.47s., SKKS = +25m.22s., PS = +27m.28s., PPS = +28m.50s., SS = +33m.29s.
Sverdlovsk PS = +28m.24s., eSS = +34m.17s.
Chicago epS = +27m.5s., ePPS = +30m.4s., eSS = +34m.21s., eSSS = +38m.40s.
Huancayo epPP = +19m.40s., epPS = +29m.19s., esSS = +35m.37s., ePKP,PKP = +38m.41s.
Columbia epPS = +29m.39s., eSS = +35m.41s., esSS = +35m.54s.
Baku SS = +37m.4s., SSS = +41m.23s.
Philadelphia epS = +28m.19s., eSPP = +31m.0s., eSS = +36m.35s., esSS = +36m.57s., eSSS = +39m.52s.
Seven Falls e = +37m.41s.
Moscow PKP = +18m.54s., PPS = +32m.9s., SS = +37m.35s.
Scoresby Sund sSS = +37m.56s., eSSS = +41m.54s.
Tiflis PKPZ = +18m.58s., iZ = +20m.28s., iEN = +20m.34s., ePSN = +30m.32s., eEZ = +31m.58s., eN = +32m.10s., eSSN = +36m.49s., eSSE = +37m.14s., eSSSN = +42m.10s.
Pulkovo PPP = +23m.14s., PS = +30m.24s., SS = +37m.53s.
San Juan ePPP = +24m.25s., ePPS = +33m.2s., eSS = +38m.23s., eSSS = +43m.19s.
Helwan iZ = +22m.57s.
Strasbourg e = +23m.6s.
Rome iZ = +21m.5s., ePPS = +34m.54s., eZ = +36m.37s., i?Z = +39m.9s., eSSS = +46m.52s., e = +51m.6s., eL$_g$ = +57m.39s.
Almeria i = +20m.35s. and +28m.30s.
Granada PP = +21m.26s., PPP = +24m.48s.
Long waves were also recorded at Williamstown, Hamburg, Jena, San Fernando, Cape Town, Heligoland, Jersey, Budapest, Stonyhurst, and Bermuda.

Sept. 2d. Readings also at 0h. (near Hukuoka), 1h. (Tucson), 2h. (La Paz), 3h. (Tiflis, Grozny, and near Fort de France), 5h. (Sverdlovsk, Tashkent, Melbourne, Riverview, and near Samarkand), 8h. (Tiflis, near Ksara, and Harvard), 10h. (La Paz), 14h. (Fordham), 17h. (Haiwee, Riverside, Mount Wilson, and Tucson), 18h. (near Ottawa, Tiflis, and near Ksara), 19h. (near Mizusawa), 21h. (Tucson (2)), 22h. (near Andijan).

Sept. 3d. 7h. 44m. 4s. Epicentre 20°·4N. 122°·0E. (as on 1939 Aug. 26d.).

Batanes Islands. Centre in Luzon Strait. Intensity IV at Basco, with duration of 5 seconds. Feeble and oscillatory at Calayan.

Epicentre 19°·5N. 120°·0E. (Strasbourg).

W. C. Repetti.

Seismological Bulletin for 1939, Manila Central Obs., 1940, p. 55.

$A = -\cdot4971$, $B = +\cdot7955$, $C = +\cdot3465$; $\delta = -1$; $h = +5$;
$D = +\cdot848$, $E = +\cdot530$; $G = -\cdot184$, $H = +\cdot294$, $K = -\cdot938$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		5·8	190	i 1 25a	− 4	i 2 40	+ 2	—	—	—
Hong Kong		7·5	285	1 43	−10	3 26	+ 6	—	—	4·1
Phu-Lien		14·4	275	e 3 17	−10	e 6 16	+ 7	—	—	7·3
Mizusawa		24·9	37	5 32	+ 6	9 50	+ 3	—	—	—
Calcutta	N.	31·4	280	e 8 34	?	e 13 59	SSS	e 11 17	P_cP	e 18·3
Irkutsk		34·7	341	7 7	+13	12 27	+ 3	—	—	17·4
Agra	E.	40·7	288	e 8 36	+52	e 14 40	+45	i 10 12	PPP	—
Hyderabad		41·2	273	—	—	13 48	−14	17 18	SSS	24·2
Colombo	E.	42·9	258	e 11 26	?	—	—	—	—	—
Kodaikanal	E.	44·0	264	e 9 56?	PP	—	—	—	—	—
Bombay		46·2	277	i 10 12	PP	e 15 8	− 7	—	—	e 23·6
Andijan		46·6	307	e 9 37	+65	e 16 21	+60	—	—	—
Tchimkent		48·9	309	e 8 48	− 2	—	—	—	—	—
Tashkent		49·0	308	i 8 47	− 3	15 46	− 9	—	—	e 25·7
Samarkand		50·5	305	e 8 58	− 4	—	—	—	—	28·9
Sverdlovsk		57·6	326	i 9 51	− 3	i 17 47	− 4	—	—	25·9
Baku		63·6	306	e 10 43	+ 8	19 9	+ 1	—	—	32·9
Grozny		66·4	310	e 10 50	− 3	—	—	—	—	—
Tiflis		67·3	308	e 10 55	− 4	19 49	− 5	—	—	e 35·9
Erevan		67·8	306	e 10 54	− 8	—	—	—	—	—
Moscow		70·3	324	e 11 23	+ 6	20 22	− 7	—	—	—
Sotchi		70·8	311	e 11 23	+ 3	—	—	—	—	—
Pulkovo		73·4	329	e 11 43	+ 7	20 59	− 6	—	—	34·7
Ksara		75·8	300	e 11 41	− 9	e 21 31	0	e 26 30	SS	—
Upsala		79·5	330	e 12 18	+ 8	e 22 0	−12	e 26 56	SS	—
Helwan		80·7	298	e 12 13	− 3	22 14	−10	—	—	—
Bergen		84·8	334	—	—	e 23 4	− 1	—	—	—
Scoresby Sund		85·9	349	—	—	e 23 4	[− 3]	—	—	—
Hamburg	E.	86·1	327	e 13 2	+18	e 23 14	− 4	—	—	e 46·9
De Bilt		89·3	327	—	—	e 23 26	[− 3]	—	—	e 45·9
Rome		90·2	314	e 13 6	+ 2	i 23 28	[− 6]	e 16 28	PP	e 45·0
Uccle		90·5	326	—	—	e 23 30	[− 6]	e 25 0	PS	e 54·9
Kew		92·5	328	—	—	e 25 21	PS	—	—	e 47·9
Paris		92·6	325	—	—	e 25 25	PS	—	—	e 49·9
La Paz	Z.	169·6	70	20 12	[+ 3]	—	—	—	—	81·9

Additional readings:—
Mizusawa SN = +9m.54s.
Calcutta eSSN = +15m.56s., eS_cSN = +19m.1s.
Agra eE = +17m.45s.
Tiflis iZ = +11m.5s.
Ksara i = +11m.58s.
Helwan iZ = +12m.23s. and +12m.35s.
Rome ePPP = +18m.30s., S = +16m.43s., e = +25m.31s., eSS = +29m.31s., iSSS = +33m.26s., e = +38m.58s.
Long waves were also recorded at Clermont-Ferrand, Stonyhurst, Heligoland, Jersey, and Bidston.

Sept. 3d. Readings also at 0h. (Tashkent, Tucson, Baku, and Calcutta), 1h. (Sverdlovsk and Tiflis), 2h. (Samarkand), 5h. (Tiflis), 6h. (Rome), 7h. (near La Paz), 9h. (near Chur, Stuttgart, Neuchatel, Zurich, Basle, and Tiflis), 11h. (Ksara), 13h. (Riverside and Mount Wilson), 17h. (Scoresby Sund and Tucson), 18h. (Andijan, Tchimkent, Sverdlovsk, Tashkent, and Samarkand).

Sept. 4d. Readings at 1h. (Samarkand), 5h. (near Ottawa and near Mizusawa), 7h. (Sverdlovsk, Tashkent, Moncalieri, Budapest, Chur, Stuttgart, Hamburg, Basle, Zurich, and near Rome), 8h. (Rome, Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Fordham, and Sverdlovsk), 9h. (Baku and Tashkent), 12h. (Merida), 13h. (Tiflis, Ksara, Helwan, Tashkent, Baku, and near Andijan), 15h. (Tucson), 16h. (Sitka, Baku, Ksara, Sverdlovsk, Tashkent, and Samarkand), 20h. (La Paz and San Juan), 21h. (Tiflis and near Grozny), 23h. (Istanbul).

Sept. 5d. 6h. 2m. 0s. Epicentre 45°·7N. 26°·8E. (as on 1938 July 13d.).

$A = +\cdot6255$, $B = +\cdot3160$, $C = +\cdot7133$; $\delta = -10$; $h = -4$;
$D = +\cdot451$, $E = -\cdot893$; $G = +\cdot637$, $H = +\cdot322$, $K = -\cdot701$.

A depth of focus 0·020 has been assumed.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bucharest		1·4	198	e 0 28$_a$	− 2	i 0 48	− 4	—	—	—
Cernauti	N.	2·7	347	i 0 38	− 7	—	—	—	—	1·1
Sofia		3·9	221	i 0 58	− 2	i 1 36	−10	—	—	—
Belgrade		4·5	262	i 1 6$_a$	− 2	i 1 49	−11	—	—	—
Szeged		4·7	282	e 1 14	+ 4	i 2 11	+ 6	e 1 35	P$_g$	e 2·6
Istanbul		4·9	160	1 40	+27	—	—	—	—	—
Kecskemet	z.	5·1	286	e 1 14	− 2	e 2 16	+ 2	—	—	e 3·2
Budapest	E.	5·6	291	e 1 23	+ 1	e 2 14	−12	—	—	3·0
Sotchi		9·4	97	e 2 15	+ 2	e 3 53	− 4	—	—	—
Rome		11·0	255	i 2 32	− 2	i 3 30	−64	—	—	—
Jena		11·4	303	—	—	e 4 57	+13	—	—	—
Chur		12·0	282	e 2 43	− 4	—	—	e 3 15	PPP	—
Moscow		12·1	30	2 45	− 3	e 4 51	− 9	—	—	—
Stuttgart		12·4	291	e 2 52	0	—	—	—	—	—
Zurich		12·7	284	e 2 54	− 2	e 4 28	−46	—	—	—
Hamburg	E.	13·4	312	e 3 0?	− 5	—	—	—	—	—
Tiflis		13·6	100	2 30	−37	i 5 17	−18	—	—	—
Grozny		13·7	93	3 16	+ 8	—	—	—	—	e 7·8
Ksara		13·8	146	e 3 8	− 2	e 6 20	SSS	e 3 40	PPP	—
Pulkovo		14·3	7	3 13	− 3	5 33	−18	—	—	—
De Bilt		15·6	304	3 15	−17	i 6 30	+10	—	—	—
Uccle		15·8	297	e 3 39	+ 4	6 38	+13	e 4 12	PPP	—
Baku		17·7	100	e 4 4	+ 6	i 7 21	+14	—	—	e 8·6
Toledo		23·3	267	e 4 56	+ 2	—	—	—	—	—
Sverdlovsk		23·7	50	i 5 1	+ 3	e 9 0	+3	—	—	—
Tashkent		30·9	82	e 6 44	PP	e 12 10	SS	13 15	SSS	—
Williamstown		66·9	307	i 11 5	pP	—	—	—	—	—
Tinemaha	z.	91·8	332	e 12 54	+ 3	—	—	—	—	—
Mount Wilson	z.	94·3	331	i 13 5	+ 3	—	—	—	—	—
Riverside	z.	94·3	331	e 13 5	+ 3	—	—	—	—	—

Additional readings :—
Belgrade i = +1m.12s., +1m.20s., +1m.38s., +2m.22s., and +2m.28s.
Szeged iN = +1m.43s., ePPS = +1m.58s., eS$_g$N = +2m.28s., eS$_g$E = +2m.31s.
Kecskemet z. iP$_g$ = +1m.25s., ePPS = +1m.48s., eS = +2m.1s.
Jena eN = +5m.50s., eE = +5m.53s., e = +6m.38s.
Toledo e = +4m.30s.
Tashkent e = +7m.1s. and +14m.22s.

Sept. 5d. Readings also at 0h. (Kodaikanal), 3h. (Haiwee, La Jolla, Baku, Sverdlovsk, Tinemaha, Santa Barbara, Mount Wilson, Riverside, Pasadena, and Tucson), 4h. (Sverdlovsk, Tashkent, Bermuda, San Juan, and Andijan), 6h. (Andijan, Tashkent, Pasadena, Sverdlovsk, Riverside, Mount Wilson, Tinemaha, Baku, Samarkand, and Tchimkent), 7h. (Belgrade), 8h. (near Andijan), 14h. (near La Paz), 15h. (Rome, Honolulu, Bozeman, Butte, Chicago, Salt Lake City, Fordham, Santa Clara, Harvard, Tacubaya, La Paz, Tinemaha, Riverside, Pasadena, San Juan, Bermuda, and Tucson), 16h. (near Almata, Scoresby Sund, Baku, Andijan, Tchimkent, Samarkand, Sverdlovsk (2), and Tashkent), 21h. (Wellington and New Plymouth).

Sept. 6d. 11h. 27m. 34s. Epicentre 36°·5N. 67°·0E.

$A = +\cdot3149$, $B = +\cdot7417$, $C = +\cdot5922$; $\delta = -2$; $h = 0$;
$D = +\cdot921$, $E = -\cdot391$; $G = +\cdot231$, $H = +\cdot545$, $K = -\cdot806$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Samarkand		3·2	359	0 26	−26	i 1 19	−13	i 1 0	P*	—
Tashkent		5·2	20	i 1 17	− 4	i 2 29	+ 7	—	—	—
Andijan		5·9	43	1 33	+ 2	e 2 36	− 4	e 2 1	P_g	—
Tchimkent		6·1	18	1 31	− 3	i 2 51	+ 6	i 3 9	S*	—
Almata		10·2	45	e 2 36	+ 5	—	—	—	—	i 5·6
Dehra Dun	N.	11·1	120	e 4 13	?	e 5 23	SSS	—	—	(6·2)
Agra	E.	13·2	132	e 3 37	PPP	5 52	SS	—	—	—
Baku		14·0	294	—	—	e 6 15	SS	—	—	9·0
Grozny		17·6	299	4 13	+ 5	e 7 11	−12	7 37	SS	—
Erevan		18·0	288	e 4 19	+ 6	e 7 57	SS	—	—	—
Tiflis		18·0	293	e 4 13	0	i 7 35	+ 3	e 4 40	PPP	e 8·5
Bombay		18·3	161	i 4 18	+ 1	—	—	—	—	e 10·2
Piatigorsk		19·7	300	e 5 26	?	e 8 35	SS	—	—	e 12·0
Sverdlovsk		20·8	350	i 4 40	− 5	8 25	− 8	10 56	L_q	12·5
Hyderabad		21·5	148	5 9	+17	e 9 10	+23	—	—	—
Calcutta	N.	23·1	119	e 5 36	PP	e 9 27	+11	e 9 43	P_cP	e 11·3
Moscow		27·7	323	5 47	− 5	e 10 27	− 6	—	—	—
Kodaikanal	E.	27·8	157	—	—	e 12 8	SSS	—	—	e 14·0
Helwan	E.	30·4	268	—	—	e 12 14	SS	—	—	—
Colombo		31·7	155	—	—	e 14 56	?	—	—	—
Pulkovo		33·1	327	e 7 28	PP	12 5	+ 6	—	—	16·2
Upsala		39·1	323	—	—	e 15 45	?	e 16 14	SS	e 19·4
Rome		42·0	294	—	—	e 13 49	−25	e 17 41	SSS	23·5
Hamburg	N.	42·5	312	—	—	e 17 44	SSS	—	—	e 22·5

Additional readings:—
Samarkand i = +32s.
Andijan e = +1m.40s. and +2m.11s., eS = +2m.51s.
Tchimkent i = +2m.27s., e = +2m.36s.
Baku e = +8m.11s.
Tiflis ePZ = +4m.17s., ePE = +4m.20s., iN = +7m.49s.
Calcutta ePP?N = +5m.54s., eS_cSN = +17m.6s.
Upsala eN = +17m.54s.
Long waves were also recorded at Vladivostok, De Bilt, Sotchi, Scoresby Sund, Uccle, Kew, Bergen, Bidston, and Stonyhurst.

Sept. 6d. Readings also at 0h. (Tchimkent, Samarkand, near Andijan, and near Tashkent), 2h. (near Manila), 3h. (Ksara), 6h. (Tuai, New Plymouth, Christchurch, Wellington, near Hastings, and near Almata), 9h. (Scoresby Sund, De Bilt, Vladivostok, Pulkovo, Tiflis, Moscow, Baku, Ksara, Tashkent, Sverdlovsk, Haiwee, Riverside, Mount Wilson, Pasadena, and Tinemaha), 10h. (Tucson, Haiwee, La Jolla, Tinemaha, Pasadena, Mount Wilson, and Riverside), 12h. (near Andijan), 21h. (near Samarkand), 22h. (Mizusawa, Sverdlovsk, and Tashkent), 23h. (Rome).

Sept. 7d. Readings at 5h. (Pasadena, Mount Wilson, Rome, Tashkent, Baku, and Sverdlovsk), 6h. (La Paz), 9h. (Tiflis), 12h. (Tiflis), 13h. (Manila, Riverview, Melbourne, Adelaide, and Sverdlovsk), 14h. (La Paz), 19h. (Andijan), 20h. (Ksara), 22h. (Fort de France), 23h. (near Apia).

Sept. 8d. 6h. 50m. 8s. Epicentre 2°·0S. 97°·5E.

A = −·1304, B = +·9909, C = −·0347; δ = +9; h = +7;
D = +·991, E = +·131; G = +·005, H = −·034, K = −·999.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	19·7	296	4 32	− 2	8 23	SS	—	—	13·7
Kodaikanal	E.	23·3	303	e 5 19$_a$	+ 9	i 9 30	+10	—	—	11·6
Calcutta	N.	26·0	341	e 5 41	+ 5	—	—	—	—	—
Manila		28·5	54	i 6 3$_a$	+ 4	11 3	+17	—	—	—
Hong Kong		29·1	33	6 3	− 1	10 52	− 4	—	—	—
Bombay		31·9	312	e 6 34	+ 5	i 11 36	− 4	—	—	e 14·2
Agra	E.	34·5	329	e 7 51	PP	15 1	SSS	—	—	—
Andijan		48·3	334	8 42	− 3	e 15 39	− 6	—	—	—
Tashkent		50·2	333	i 8 55	− 5	i 16 0	−11	—	—	e 27·6
Tchimkent		50·8	334	e 9 2	− 2	—	—	—	—	—
Baku		60·5	320	e 10 16	+ 2	e 20 0	?	—	—	e 35·9
Tiflis		64·5	319	e 10 38	− 3	e 19 15	− 4	e 13 2	PP	—
Grozny		64·7	321	e 10 43	+ 1	—	—	—	—	—
Sverdlovsk		65·8	339	i 10 47	− 2	19 25	−10	—	—	30·9
Ksara		67·9	307	i 11 5	+ 3	e 20 15	+14	—	—	—
Helwan		70·5	302	11 21	+ 3	—	—	e 17 9	?	—
Moscow		75·2	330	11 45	− 1	e 21 15	−10	—	—	—
Pulkovo		80·4	332	12 15	0	22 15	− 6	—	—	—
Rome		87·6	312	i 12 53	+ 2	—	—	—	—	—
Tinemaha	z.	132·0	39	e 19 22	[+ 6]	—	—	e 24 11	PPP	—
Mount Wilson	z.	133·9	43	e 19 28	[+ 9]	—	—	i 24 4	PPP	—
Pasadena	z.	133·9	43	i 19 39	[+20]	—	—	—	—	—
Riverside	z.	134·5	43	e 19 29	[+ 9]	—	—	—	—	—
Palomar	z.	135·2	40	e 19 32	[+10]	—	—	i 24 6	PPP	—
Tucson		139·8	39	e 19 30	[0]	—	—	—	—	—

Additional readings :—
Tiflis PE = +10m.41s., eSZ = +19m.18s.
Rome i = +13m.17s.
Tinemaha eZ = +19m.32s.
Tucson ePKP = +19m.38s.

Sept. 8d. 12h. 4m. 43s. Epicentre 51°·3N. 175°·1E.

A = −·6255, B = +·0536, C = +·7783; δ = −13; h = −6;
D = +·085, E = +·996; G = −·775, H = +·066, K = −·628.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nemuro	21·4	260	4 47	− 4	8 45	0	—	—	—
College	23·4	40	e 5 12	+ 1	i 8 55	−26	i 5 36	PP	—
Sapporo	24·2	265	5 15	− 4•	9 36	+ 1	—	—	—
Mori	25·2	264	5 29	0	9 55	+ 3	—	—	—
Aomori	25·8	260	5 38	+ 4	10 14	+12	—	—	—
Mizusawa	26·6	256	5 38	− 4	10 14	− 2	—	—	16·3
Akita	26·9	257	5 51	+ 6	10 49	SS	—	—	—
Sendai	27·3	255	5 44	− 4	10 27	0	—	—	—
Mito	28·8	254	6 3	+ 1	10 51	0	—	—	—
Sitka	29·0	58	i 6 5	+ 1	i 11 0	+ 6	—	—	i 11·9
Tokyo Cen. Met. Ob.	29·7	253	6 11	+ 1	—	—	—	—	—
Nagano	30·0	256	6 9	− 3	11 17	+ 7	—	—	—
Wazima	30·3	258	6 16	+ 1	11 16	+ 1	—	—	—
Misima	30·5	253	6 14	− 3	11 17	− 1	—	—	—
Nagoya	31·7	255	6 28	+ 1	11 38	+ 1	—	—	—
Osaka	32·9	256	6 34	− 4	11 30	−26	7 42	PP	17·1
Hamada	34·9	259	6 55	0	12 29	+ 2	—	—	—
Koti	34·9	255	6 52	− 3	12 18	− 9	—	—	—
Honolulu	36·6	135	e 7 7	− 3	e 12 46	− 7	i 9 57	P$_c$P	i 14·8
Zinsen	36·6	268	7 8	− 2	12 52	− 1	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hukuoka		36·8	258	7 4	− 7	12 50	− 6	—	—	16·8
Miyazaki		37·3	255	7 14	− 2	13 6	+ 2	—	—	—
Nagasaki		37·7	259	7 17	− 2	13 10	0	—	—	—
Victoria		38·8	69	7 41	+13	13 35	+ 9	9 11	PPP	17·8
Seattle		39·7	70	e 8 3	+27	e 13 29	−11	9 24	PP	e 16·4
Irkutsk		42·2	301	7 56	0	14 34	+17	—	—	20·8
Ferndale		42·4	80	e 7 57	− 1	e 14 29	+ 9	e 17 57	SSS	—
Ukiah		43·9	81	e 8 14	+ 4	i 14 49	+ 7	e 9 47	P_cP	18·1
Zi-ka-wei		44·0	264	e 8 9	− 2	14 41	− 2	—	—	19·4
Berkeley		44·8	82	i 8 19a	+ 2	e 14 50	− 5	e 19 25	SSS	e 21·3
San Francisco		45·2	82	e 8 21	+ 1	i 15 40	PPS	—	—	e 21·5
Branner		45·6	82	e 8 24	0	e 14 49	−17	e 19 44	SSS	e 21·1
Santa Clara		45·8	82	e 8 24	− 1	i 15 4	− 5	—	—	—
Lick		46·0	82	e 8 30	+ 3	e 15 18	+ 6	e 18 24	SS	e 21·0
Saskatoon		46·2	57	8 14	−14	15 2	−13	18 23	SS	e 21·3
Butte		46·3	66	e 8 29	0	i 15 21	+ 5	e 10 27	PP	20·5
Bozeman		47·4	66	e 8 39	+ 1	i 15 36	+ 4	10 36	PP	i 20·7
Fresno	N.	47·5	81	i 8 42	+ 4	e 15 39	+ 5	i 10 31	PP	e 22·9
Tinemaha		48·2	80	i 8 43	− 1	e 15 41	− 2	—	—	—
Haiwee		49·0	81	i 8 49	− 1	e 15 59	+ 4	—	—	—
Santa Barbara		49·0	84	i 8 50	0	e 16 6	+11	—	—	—
Salt Lake City		49·8	71	i 8 57	+ 1	15 59	− 7	e 10 50	PP	i 20·0
Pasadena		50·2	83	i 8 57k	− 3	i 16 11	0	e 39 29	P′P′	e 20·3
Mount Wilson		50·2	83	i 8 58k	− 2	e 16 14	+ 3	e 39 22	P′P′	—
Riverside		50·8	83	i 9 1	− 3	e 16 23	+ 3	e 39 26	P′P′	—
Kosyun		51·0	256	9 9	+ 3	16 25	+ 3	—	—	—
Palomar	Z.	51·5	82	i 9 8	− 1	—	—	—	—	—
La Jolla		51·6	84	i 9 8	− 2	e 16 33	+ 2	—	—	—
Denver		54·5	69	i 9 1	−31	i 16 4	−66	i 9 14	pP	e 24·7
Hong Kong		54·8	262	9 36a	+ 2	17 17	+ 3	19 22	S_cS	—
Palau		55·2	232	9 39	+ 2	17 12	− 8	—	—	—
Semipalatinsk		55·7	310	i 9 36	− 4	17 26	0	—	—	—
Tucson		56·0	79	e 9 41k	− 2	i 17 34	+ 4	11 9	P_cP	e 23·4
Manila		56·6	250	i 9 42a	− 5	i 17 42	+ 4	—	—	27·5
Scoresby Sund		57·9	7	9 59	+ 3	e 17 46	− 9	10 25	pP	i 24·6
Lincoln		58·5	62	i 10 15	+15	e 18 7	+ 4	e 12 17	PP	e 23·5
Sverdlovsk		59·5	325	i 10 4	− 3	i 18 19	+ 3	28 11	L_q	36·8
Almata		62·2	306	10 26	0	18 51	0	—	—	31·1
Ivigtut		62·6	22	i 10 29	+ 1	18 58	+ 2	20 17	S_cS	—
Chicago		62·7	57	e 10 30a	+ 1	i 18 59	+ 2	i 12 56	PP	i 28·6
Florissant		63·5	61	i 10 34	0	i 19 7	0	i 10 52	pP	27·1
St. Louis		63·6	61	i 10 36	+ 1	i 19 9	+ 1	i 10 55	pP	29·2
Frunse		63·7	306	9 40	−56	—	—	—	—	31·9
Cape Girardeau		65·0	62	i 10 44	0	i 19 20	− 6	i 10 51	pP	e 30·3
Toronto		65·6	51	e 10 47	− 1	i 19 33	0	i 13 59	PP	e 31·3
Pulkovo		65·7	342	10 47	− 1	e 19 34	0	—	—	e 31·9
Apia		65·8	165	e 10 40	− 9	e 19 53	+18	e 27 1	SSS	—
Ottawa		66·0	47	10 47	− 3	i 19 34	− 4	13 17	PP	e 28·3
Shawinigan Falls		66·4	44	10 54	+ 1	19 44	+ 1	24 17	SS	34·3
Tchimkent		66·6	309	e 11 1	+ 7	e 19 48	+ 3	—	—	—
Seven Falls		66·8	43	11 0	+ 4	19 48	0	23 53	SS	29·3
Tashkent		67·5	308	10 53	− 7	i 19 53	− 3	—	—	35·3
Moscow		67·7	336	11 0	− 1	20 3	+ 5	—	—	35·8
Pittsburgh		67·7	53	i 10 55	− 6	i 20 0	+ 2	i 13 41	PP	—
Upsala		67·7	348	e 10 59	− 2	e 19 53	− 5	15 5	PPP	e 28·3
Vermont		67·8	46	i 11 8	+ 6	e 19 50	−10	e 13 32	PP	i 28·1
Bergen		68·4	355	e 11 6	0	i 20 12	+ 5	—	—	e 27·8
Williamstown		69·2	47	i 11 10	0	20 21	+ 5	13 49	PP	33·2
Samarkand		69·9	308	e 11 11	− 4	e 20 21	− 3	—	—	34·9
East Machias		70·1	43	e 11 16	0	e 20 12	−15	24 14	SS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Harvard		70·1	46	e 11 15	− 1	i 20 24	− 3	e 13 59	PP	e 37·3
Fordham		70·4	49	i 11 15k	− 3	i 20 30	0	i 14 7	PP	i 33·1
Philadelphia		70·4	50	i 11 15a	− 3	e 20 15	−15	e 14 0	PP	e 32·1
Calcutta		70·8	289	i 11 33k	+13	i 20 48	+13	e 14 3	PP	i 33·2
Dehra Dun	N.	71·1	295	e 11 11	−11	e 20 18	−20	e 28 40	SSS	e 36·9
Halifax		71·8	40	10 47	−39	19 59	−47	24 59	SS	33·3
Columbia		72·0	58	e 11 26	− 2	e 20 44	− 5	e 14 14	PP	e 28·5
Copenhagen		72·4	350	e 11 27	− 3	20 55	+ 2	14 11	PP	30·3
Tacubaya	N.	72·5	81	i 11 30	0	i 21 2	+ 8	—	—	—
Edinburgh		73·1	359	11 44	+10	21 3	+ 2	35 49	SS	—
Agra		73·5	293	11 35	− 1	20 58	− 8	11 58	pP	—
Heligoland		74·3	353	e 11 42	+ 1	e 21 17	+ 2	—	—	e 31·3
Hamburg		74·8	352	i 11 49k	+ 5	i 21 25	+ 5	i 22 9	PS	e 31·4
Stonyhurst		75·2	358	i 12 2	+16	i 21 32	+ 7	i 26 12	SS	36·3
Bidston		75·7	359	i 11 55	+ 6	i 21 37	+ 7	i 26 19	SS	e 35·3
Grozny		76·0	325	11 51	0	21 33	− 1	—	—	27·6
De Bilt		76·6	354	i 11 52k	− 2	i 21 46	+ 6	i 11 59	pP	62·8
Göttingen		76·8	351	e 11 52	− 3	i 21 44	+ 2	i 22 32	PS	e 32·3
Baku		76·9	320	e 11 58	+ 2	i 21 55	+12	—	—	e 40·3
Jena		77·2	350	e 11 53	− 4	i 21 45	− 2	—	—	e 32·3
Cernauti	N.	77·3	341	e 11 54	− 4	21 53	+ 5	15 2	PP	37·3
Kew		77·5	357	e 11 57	− 2	i 21 54	+ 4	e 14 20	PP	e 35·8
Prague		77·7	348	i 11 59	− 1	21 53	+ 1	e 15 4	PP	e 32·3
Tiflis		77·8	324	i 11 57	− 4	e 21 55	+ 2	i 15 4	PP	e 38·3
Sotchi		77·9	329	12 0	− 1	21 58	+ 4	—	—	28·1
Uccle		78·0	355	e 11 58k	− 4	i 21 52	− 3	i 26 59	SS	—
Erevan		79·2	324	12 10	+ 2	22 11	+ 3	—	—	—
Budapest		79·5	344	12 7	− 3	22 15	+ 4	15 15	PP	37·3
Stuttgart		79·6	351	i 12 15k	+ 5	i 22 15	+ 2	i 15 16	PP	e 32·8
Jersey		79·9	359	e 12 21	+ 9	i 22 17?	+ 1	i 27 19	SS	33·9
Paris		80·1	355	i 12 10k	− 3	i 22 22	+ 4	15 19	PP	e 36·3
Hyderabad		80·7	286	12 21	+ 5	22 23	− 1	15 22	PP	33·8
Brisbane	E.	80·8	200	e 12 41	+24	i 22 17	− 8	—	—	e 33·2
	N.	80·8	200	i 12 17	0	i 22 23	− 2	i 15 17	PP	i 33·2
Basle		81·0	352	e 12 16	− 2	e 22 35	+ 8	—	—	—
Bucharest		81·0	338	e 12 18	0	22 26	− 1	15 16	PP	38·3
Zurich		81·0	351	i 12 15k	− 3	e 22 31	+ 4	—	—	—
Besançon		81·4	353	e 14 27	?	e 22 41	+10	—	—	40·3
Bermuda		81·5	48	e 12 26	+ 5	i 22 38	+ 6	e 15 13	PP	i 38·1
Laibach		81·6	347	i 12 37	+16	e 22 42	+ 9	—	—	e 34·4
Neuchatel		81·6	352	e 12 19	− 2	e 22 37	+ 4	—	—	—
Belgrade		81·8	342	i 12 22k	0	i 22 38	+ 3	i 15 35	PP	38·9
Bombay		82·9	291	e 12 28	0	i 22 45	− 1	i 15 47	PP	41·0
Clermont-Ferrand		83·1	355	e 12 32	+ 3	—	—	—	—	—
Sarajevo		83·1	344	e 12 34	+ 5	i 22 56	+ 8	—	—	—
Istanbul		83·4	334	12 33	+ 3	23 2	+11	—	—	—
Moncalieri		83·5	352	12 17?	−14	—	—	—	—	—
Rome		86·0	347	12 40k	− 3	i 23 21	+ 4	i 16 9	PP	i 39·9
Kodaikanal	E.	86·8	283	i 12 49a	+ 2	i 23 23	− 2	i 15 58?	PP	42·8
Riverview		87·3	199	e 12 49	0	e 23 24	− 5	e 29 6	SS	40·3
Sydney		87·3	199	e 12 47	− 3	e 23 26	− 3	e 18 32	PPP	e 35·7
Colombo	E.	87·9	278	12 59	+ 6	23 25	[+ 5]	—	—	37·2
Ksara		88·0	327	i 12 51k	− 2	24 21	PS	16 11	PP	41·3
Arapuni		89·0	180	e 18 23	PPP	e 24 53	PS	—	—	—
Toledo		89·2	0	e 12 58	− 1	e 23 33	[+ 6]	e 16 25	PP	—
Granada		91·9	0	e 13 10a	− 1	i 23 28	[−16]	13 18	pP	37·6
Almeria		92·2	358	13 14	+ 1	23 44	[− 1]	17 1	PP	43·8
Wellington		92·2	181	i 13 9	− 4	i 23 28	[−17]	16 57	PP	38·1
Algiers		92·4	354	e 13 16	+ 2	e 23 47	[0]	16 30	PP	39·3
Balboa Heights		92·5	72	e 13 20	+ 6	e 23 41	[− 6]	—	—	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.	L.
	°	°	m. s.	s.	m. s.	s.	m. s.	m.
San Juan	92·5	56	e 13 14	0	i 23 56	[+ 9]	i 16 59 PP	e 42·6
Melbourne	92·6	203	e 16 7	PP	i 23 45	[− 3]	i 30 17 SS	36·1
San Fernando	92·6	1	e 13 25	+10	i 23 57	[+ 9]	e 30 47 SS	45·3
Helwan	93·1	328	13 17	0	23 54	[+ 4]	17 5 PP	44·9
Christchurch	94·5	182	i 13 28$_a$	+ 5	e 23 53	[− 5]	30 58 SS	44·1
Perth	97·9	227	i 17 45	PP	i 24 15	[− 1]	— —	i 52·3
Fort de France	98·1	53	e 17 34	PP	e 24 12	[− 5]	— —	—
Huancayo	111·5	82	e 14 46	P	i 25 20	[+ 2]	e 19 27 PP	i 45·8
La Paz	119·4	78	18 52	[+ 1]	25 48	[0]	i 29 29 PS	59·3
La Plata	138·9	87	19 41	[+12]	28 53	{−21}	22 5 PP	58·9
Rio de Janeiro	139·0	60	e 19 17	[−12]	—	—	i 22 32 PP	i 40·6
Cape Town	155·8	306	e 20 3	[+ 8]	30 3	{−47}	e 24 1 PP	—

Additional readings :—
College iP = +5m.21s., i = +6m.8s., iS = +9m.32s.
Sitka iP = +6m.8s.
Osaka SS = +13m.31s.
Honolulu iP = +7m.11s., iP = +7m.30s., iS = +13m.3s.
Victoria SS = +15m.35s., SSS = +16m.5s.
Seattle iPPP = +9m.49s., iS = +14m.23s.
Ferndale eN = +8m.25s.
Berkeley ePEN = +8m.22s., iPNZ = +8m.25s.
Zi-ka-wei iE = +8m.15s., iN = +8m.23s., iE = +8m.51s.
San Francisco eN = +19m.55s.
Lick eN = +19m.37s.
Butte P = +8m.32s., SS = +18m.26s.
Bozeman P = +9m.26s., iPP = +10m.53s., S_cS = +18m.36s., SS = +19m.6s.
Fresno eN = +21m.36s.
Tinemaha i = +8m.49s.
Salt Lake City iS = +16m.4s., S_cS = +18m.39s.
Pasadena i = +9m.2s.
Denver iP = +9m.5s., eE = +9m.42s., +10m.7s., +10m.29s., and +15m.58s., esSE = +16m.18s., eEN = +16m.42s., eE = +17m.42s.
Hong Kong SS = +20m.52s.
Tucson iP = +9m.51s., PPP = +13m.20s., eSS = +21m.15s.
Scoresby Sund iP = +10m.5s., isP = +10m.36s., P_cP = +10m.46s., iP_cP = +10m.54s., iPP = +12m.8s., PPP = +13m.30s., iPPP = +13m.47s., i = +13m.59s., iP_cS = +14m.54s., i = +16m.49s., S = +17m.55s., iS = +18m.4s., i = +19m.48s., +19m.54s., and +21m.34s., iSS = +21m.54s., i = +22m.21s., +23m.49s., and +23m.57s.
Lincoln ePPP = +14m.37s., iS = +18m.14s., iS_cS = +19m.57s.
Ivigtut +12m.39s. and +18m.53s., eZ = +19m.42s., +21m.11s., and +26m.17s.
Chicago iP = +10m.34s., iS_cS = +20m.4s., iSS = +23m.35s., eL_q = +25m.55s.
Florissant iPEN = +10m.40s., iPPN = +13m.1s., iSFN = +19m.11s., isSN = +19m.22s., iSPN = +19m.37s., isSPN = +19m.56s., iS_cSEN = +20m.35s.
St. Louis iPEN = +10m.44s., iE = +11m.8s., iP_cP = +11m.20s., isSEN = +19m.24s., iSPE = +19m.39s., iS_cSEN = +20m.36s.
Cape Girardeau iN = +11m.3s., iP_cPN = +11m.15s., iN = +20m.39s.
Toronto eE = +15m.23s., SS = +23m.41s., SSS = +26m.17s.
Ottawa PPP = +14m.53s., PS = +19m.53s., SS = +24m.17s., SSS = +27m.5s.
Seven Falls SSS = +26m.23s.
Pittsburgh ePPPNW = +5m.3s.
Upsala ePE = +11m.6s., S = +19m.59s., iPSN = +20m.20s., iE = +23m.20s. and +24m.20s., eSSN = +24m.47s., eSSSN = +27m.20s., eSSSE = +27m.32s.
Vermont iP = +11m.30s., ePPP = +15m.20s., iS = +20m.0s., iSS = +24m.50s.
Bergen iPZ = +11m.11s.
Williamstown PPP = +15m.26s., PS = +20m.59s., SS = +25m.23s.
East Machias iS = +20m.22s., SSS = +27m.56s.
Harvard iP = +11m.18s., ePPP = +15m.41s., eS_cS = +21m.5s., eSSEN = +25m.27s., eL_qEN = +32m.29s., ePKP,PKPZ = +39m.19s.
Fordham iPZ = +11m.22s., iPPZ = +15m.41s., iSSEN = +25m.49s., iSSN = +28m.17s.
Philadelphia iP = +11m.21s., +11m.49s., and +11m.56s., ePPP = +15m.44s., iS = +20m.31s., iS_cS = +21m.7s., eSS = +25m.30s., eSSS = +27m.44s.
Calcutta iP_cPN = +11m.53s., PSN = +21m.6s., iS_cSN = +21m.38s., iSSN = +25m.12s., iSSSN = +28m.24s.
Halifax SSS = +28m.17s.
Columbia eP = +11m.34s., iS = +20m.53s., eSS = +24m.47s., SS = +26m.10s., eSSS = +28m.10s.
Copenhagen iZ = +11m.34s. and +12m.7s., eNZ = +16m.5s., eN = +19m.32s. and +20m.47s., SN = +20m.59s., e = +21m.41s. and +22m.17s., eE = +24m.49s.
Edinburgh e = +22m.47s. and +25m.32s., SSS = +28m.58s.
Agra PPE = +14m.21s., iE = +21m.21s., sSE = +21m.40s., SSE = +25m.41s., SSSE = +28m.41s.
Heligoland iSE = +21m.20s.

Continued on next page.

Stonyhurst i = +26m.29s., e = +32m.7s., L_q = +33m.37s.
Bidston i = +12m.22s., +12m.29s., +12m.59s., and +22m.39s., e = +25m.42s., i = +27m.57s., eL_q = +32m.17s.
Göttingen i = +12m.1s., eSS = +26m.44s.
Jena eP = +11m.57s., iP = +12m.1s., iSN = +21m.53s.
Cernauti iPN = +12m.2s.
Kew iPNZ = +12m.5s., iNZ = +12m.26s., +12m.32s., and +13m.4s., eZ = +15m.6s., +18m.30s., and +20m.27s., iEN = +22m.20s. and +22m.42s., eN = +26m.27s., iSSN = +27m.23s., iN = +28m.2s., eL_q = +33·3m.
Prague eSS = +25m.11s., eSSS = +26m.59s.
Tiflis iPZ = +12m.1s., i = +12m.3s., iE = +12m.7s., iZ = +12m.32s., ipPPE = +15m.45s., isPPE = +15m.59s., iPPPZ = +16m.25s., ipPPPZ = +17m.0s., iE = +17m.49s. and +18m.9s., S = +21m.57s., i = +22m.13s.
Uccle iZ = +12m.8s., +12m.30s., and +21m.59s., iN = +27m.38s., iE = +32m.49s.
Budapest iE = +12m.11s., iN = +12m.15s., iE = +12m.19s., iN = +13m.2s., iE = +15m.46s., eN = +18m.21s., iE = +22m.19s., iN = +23m.40s., SSN = +27m.38s.
Stuttgart iEN = +14m.4s., eSKSE = +21m.2s., iSN = +22m.19s., iSPN = +23m.15s., iSSE = +27m.19s., eSSSE = +31m.19s.
Paris i = +12m.18s., SS = +28m.6s.
Hyderabad SSN = +28m.12s.
Brisbane iSSE = +27m.5s., iSSN = +27m.35s.
Bucharest eE = +12m.23s., iN = +12m.26s., PPPN = +17m.3s., iSE = +22m.29s., PSE = +23m.7s., SSN = +27m.37s., SSE = +27m.43s., SSSE = +31m.9s.
Bermuda PPP = +17m.38s., iSS = +27m.53s., eSSS = +32m.18s.
Belgrade iP_cP = +12m.32s., i = +12m.45s.
Bombay iPEN = +12m.34s., iPSEN = +23m.19s., iEN = +23m.42s., iSSEN = +27m.45s., iSSSEN = +31m.45s., L_qEN = +34m.44s.
Sarajevo iP = +12m.39s., i = +12m.55s.
Rome eP = +12m.43s., iN = +12m.49s. and +16m.53s., iEN = +17m.58s., iP = +19m.52s., eSKSZ = +22m.55s., eN = +23m.11s., iZ = +23m.28s., iN = +23m.45s., eN = +24m.11s., iNZ = +25m.26s., SS? = +29m.1s., iEZ = +35m.49s.
Kodaikanal iPSE = +24m.25s., SSE = +29m.17s.?
Riverview eP = +12m.52s., iN = +12m.59s., eSN = +23m.19s., PSEN = +23m.59s., eL_qN = +35m.35s.
Sydney e = +28m.17s.
Toledo i = +23m.51s. and +26m.49s., iSS = +29m.50s.
Granada iPPE = +16m.50s., pPPE = +16m.59s., iSE = +24m.12s., PSN = +25m.26s., iSSE = +30m.13s.
Almeria P_cP = +13m.27s., iS = +24m.16s.
Wellington iZ = +13m.19s., e = +22m.18s., iS = +24m.26s., iPS = +25m.17s., iSS = +30m.4s., eSSS = +34m.19s.
Algiers PPP = +18m.43s., e = +20m.25s., SKS = +22m.55s., PS? = +24m.40s., e = +25m.37s., SS? = +33m.34s.
San Juan eP = +13m.21s., eS = +24m.27s., iS = +25m.28s., iSS = +30m.28s., SSS = +34m.59s.
Melbourne S = +24m.59s. and +30m.29s.
San Fernando e?E = +13m.53s., iSKPSE = +24m.24s.
Helwan iEZ = +13m.47s., PPPZ = +18m.59s., iZ = +20m.49s., SE = +24m.29s., PSN = +25m.35s., SSE = +31m.0s., SSSE = +34m.41s., L_qE = +38m.35s.
Christchurch iZ = +24m.21s., iSEN = +24m.37s., SSSN = +37m.51s., SSSSE = +37m.51s., L_qE = +38m.29s.
Perth i = +19m.7s., +24m.39s., +26m.47s., +30m.12s., +32m.2s., +38m.17s., and +43m.2s.
Huancayo iPPP = +21m.58s., PS = +28m.45s., iPS = +28m.58s., iSS = +34m.49s., iSSS = +39m.52s., i = +43m.22s.,
La Paz iZ = +20m.22s., iSSZ = +36m.36s.
La Plata PKS = +23m.11s., PPS = +34m.41s., SS = +40m.35s.
Cape Town eE = +20m.7s., PPPN = +27m.11s., PPPE = +27m.16s., PSKS = +34m.31s., PPSE = +37m.33s., SSE = +44m.4s.
Long waves were also recorded at Piatigorsk.

Sept. 8d. Readings also at 0h. (near La Paz and Philadelphia), 7h. (near Wellington (2), Tuai (2), near Fort de France, and Tucson), 9h. (near Grozny and Tiflis), 12h. (La Paz), 13h. (near Andijan), 19h. (Tucson (3), Andijan, Pasadena, Riverside, Mount Wilson, and Tinemaha), 22h. (Tucson).

Sept. 9d. Readings at 1h. (Huancayo and La Paz), 3h. (Baku, Sverdlovsk, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, Sarajevo, and near Rome), 4h. (Tucson (2)), 5h. (near Rome), 8h. (Baku, Sverdlovsk, Moscow, Tashkent, Tiflis, Ksara, Vladivostok, Osaka, near Mizusawa, Tinemaha, and near Rome), 13h. (Sitka and near Balboa Heights), 14h. (near La Paz), 15h. (near Manila), 16h. (Baku, Sverdlovsk, Tashkent, and Sofia), 18h. (Tucson), 20h. (near Fordham), 21h. (Ksara, Sverdlovsk, Tashkent, Manila, and near Irkutsk), 22h. (Baku), 23h. (Ksara, Tiflis, and near Erevan).

Sept. 10d. Readings at 2h. (Almata, Frunse, Samarkand, Grozny, Tiflis, Baku, Sverdlovsk, Irkutsk, near Andijan, Tashkent, and Tchimkent), 3h. (Agra, Grozny, Tiflis, Ksara, Baku, Sverdlovsk, Irkutsk, Andijan, Tashkent, Tchimkent, Frunse, and near Samarkand), 5h. and 7h. (near La Paz), 9h. (near Mizusawa), 10h. (near Hukuoka), 17h. (Irkutsk, Sverdlovsk, Vladivostok, Ottawa, Bozeman, Salt Lake City, Sitka, Haiwee, Mount Wilson, Palomar, Pasadena, Riverside, Tinemaha, and near Tucson (2)), 18h. (Baku, Tashkent, Ksara, Scoresby Sund, East Machias, Philadelphia, Fordham, Butte, Erevan, Tiflis (2), near Grozny, and near Branner), 20h. (Scoresby Sund).

Sept. 11d. 7h. 53m. 26s. Epicentre 53°·4N. 168°·7W.

$A = -\cdot5872$, $B = -\cdot1173$, $C = +\cdot8009$; $\delta = 0$; $h = -7$;
$D = -\cdot196$, $E = +\cdot981$; $G = -\cdot785$, $H = -\cdot157$, $K = -\cdot599$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		15·6	35	e 3 48	+ 5	e 7 5	SSS	e 4 1	PP	e 9·0
Sitka		19·3	66	e 4 21	− 8	e 7 59	− 3	e 8 22	SS	e 9·2
Ukiah		33·9	96	—	—	e 12 12	+ 1	—	—	e 14·9
Berkeley		35·3	98	e 7 0	+ 1	e 15 20	SSS	—	—	e 18·8
Santa Clara	N.	35·8	98	e 7 8	+ 5	e 10 58	?	—	—	e 15·6
Butte		36·2	77	e 7 14	+ 8	e 12 49	+ 2	—	—	e 16·8
Bozeman		37·3	78	e 7 16	0	e 13 5	+ 1	e 8 59	PP	e 14·7
Tinemaha		38·2	95	e 7 23	0	e 17 17	?	—	—	—
Haiwee	N.	39·0	95	e 7 34	+ 4	—	—	—	—	—
Salt Lake City		39·7	86	e 8 25	+49	—	—	—	—	e 15·4
Vladivostok		39·8	280	e 7 37	+ 1	13 54	+12	—	—	20·9
Pasadena		40·2	98	e 7 42	+ 2	e 17 23	SSS	—	—	e 17·8
Mount Wilson	z.	40·3	98	e 7 38	− 2	e 17 16	SSS	—	—	—
Riverside	z.	40·8	98	e 7 41	− 4	e 17 22	SSS	—	—	—
Palomar		41·6	98	i 7 48	− 3	e 17 27	SSS	—	—	—
La Jolla		41·7	99	e 7 49	− 3	—	—	—	—	—
Tucson		45·9	94	e 8 23a	− 3	e 18 24	S_cS	e 10 40	PPP	e 21·4
Irkutsk		49·4	307	—	—	e 16 23	+23	—	—	27·1
Chicago		53·0	68	e 16 52	S	(e 16 52)	+ 2	(20 39)	SS	20·7
Florissant		53·5	73	e 9 47	+23	i 16 57	0	—	—	—
Zi-ka-wei	z.	53·9	276	e 9 20	− 7	—	—	—	—	—
Scoresby Sund		54·1	14	e 9 58	+29	—	—	—	—	e 22·0
Ottawa		56·9	57	i 9 48	− 1	e 17 40	− 2	—	—	29·6
Seven Falls		58·1	53	—	—	e 17 52	− 6	—	—	30·6
Vermont		58·8	57	—	—	e 18 12	+ 5	e 22 2	SS	e 27·3
Fordham		61·1	60	e 10 20	+ 2	e 18 44	+ 7	—	—	e 30·9
Philadelphia		61·1	62	—	—	e 18 38	+ 1	—	—	e 27·3
East Machias		61·4	53	e 10 36	+16	e 18 45	+ 5	—	—	e 30·5
Sverdlovsk		63·0	333	i 10 29	− 2	e 19 2	+ 1	—	—	28·6
Pulkovo		66·1	350	—	—	e 21 28	?	—	—	e 36·9
Manila		66·7	264	e 9 50	−65	19 54	+ 8	—	—	—
Bermuda		72·3	60	—	—	e 20 51	− 1	—	—	e 38·3
Andijan		72·5	317	e 11 18	−12	—	—	—	—	—
Samarkand		75·6	320	e 11 49	+ 1	—	—	—	—	—
Jena		76·0	0	e 11 46	− 5	—	—	—	—	—
Paris		77·9	8	e 12 34?	+33	—	—	—	—	e 46·6
Basle		79·4	4	e 12 9	0	—	—	—	—	—
Sotchi		80·4	340	e 12 15	0	—	—	—	—	—
Baku		80·8	332	e 12 17	0	e 22 47	+22	—	—	e 43·6
Tiflis		81·0	336	12 16	− 2	e 22 49	+22	—	—	e 42·6
Rome		85·1	0	i 12 39k	0	e 23 22	+14	e 24 40	PPS	e 44·2
Toledo		86·1	12	e 12 44	0	—	—	—	—	45·3
Ksara		90·6	340	—	—	e 24 2	+ 2	—	—	—

Additional readings :—
Berkeley eE = +15m.34s.?
Tucson eP = +8m.30s.
Tiflis SN = +22m.52s.
Rome iZ = +13m.25s., i = +23m.33s., eSS = +29m.22s., e = +40m.3s.
Toledo i = +12m.55s.
Long waves were also recorded at Seattle, Honolulu, Columbia, Bidston, Jersey, Harvard, De Bilt, La Paz, and Kew.

Sept. 11d. Readings also at 4h. (Rome (2) and near Andijan), 6h. (Andijan), 7h. (Samarkand (2)), 8h. (near Samarkand), 9h. (San Juan), 11h. (Balboa Heights), 12h. (Palomar and Tucson (2)), 14h. (near Granada), 16h. (Harvard), 19h. (Riverside, Mount Wilson, Pasadena, Tinemaha, Baku, Palomar, Tucson, near Andijan, Tchimkent (2), and Frunse), 20h. (Ksara, Tiflis, Sotchi, Sverdlovsk, Andijan, and Frunse), 21h. (near San Francisco, and Berkeley), 22h. (Hong Kong, Manila, Zi-ka-wei, Vladivostok, Sverdlovsk, and Tchimkent), 23h. (Calcutta and Baku).

Sept. 12d. 12h. 6m. 13s. Epicentre 29°·3S. 178°·2W. (as on 1938 Jan. 25d.).

$A = -\cdot 8730$, $B = -\cdot 0274$, $C = -\cdot 4869$; $\delta = -5$; $h = +2$;
$D = -\cdot 031$, $E = +1\cdot 000$; $G = +\cdot 487$, $H = +\cdot 015$, $K = -\cdot 873$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tuai		10·2	200	—	—	4 16	−11	—	—	—
Wellington		13·3	203	3 17	+ 4	5 17	−25	—	—	—
Apia		16·5	23	e 3 55	+ 1	5 49?	− 9	—	—	—
Brisbane	E.	25·4	267	i 5 29	− 2	e 10 23	+27	i 10 35	SS	e 12·4
	N.	25·4	267	e 5 41	+10	i 10 35	+39	—	—	—
Riverview		26·4	251	e 5 41	+ 1	e 10 54	SS	i 6 7	PP	e 13·1
Sydney		26·4	251	e 5 44	+ 4	e 10 35	+23	—	—	e 12·9
Melbourne		31·7	244	i 6 20	− 7	e 11 27	−10	i 7 59	PPP	15·6
Adelaide		36·8	250	e 3 56	?	e 15 54	SSS	—	—	—
Manila		73·1	298	i 11 36a	+ 2	i 21 29	+28	—	—	—
Santa Barbara	Z.	84·1	46	12 31	− 3	—	—	—	—	—
La Jolla	Z.	84·6	48	e 12 31	− 5	—	—	—	—	—
Vladivostok		84·6	325	—	—	e 22 44	−19	—	—	37·4
Pasadena		84·8	47	i 12 37a	0	—	—	—	—	e 37·9
Berkeley		84·9	42	e 12 17a	−21	e 23 5	− 1	e 24 5	PS	e 39·1
Mount Wilson		85·0	47	i 12 37a	− 1	—	—	—	—	—
Ukiah		85·2	40	e 12 33	− 6	e 23 1	[− 1]	e 16 0	PP	e 35·0
Haiwee		86·3	45	i 12 44	− 1	—	—	—	—	—
Tinemaha		86·7	44	i 12 46a	− 1	—	—	—	—	—
Tucson		88·5	51	i 12 55a	− 1	e 23 10	[−14]	i 13 13	pP	e 36·7
Salt Lake City		92·9	43	—	—	e 23 23	[−27]	e 29 9	SS	e 41·9
Sitka		93·3	21	e 16 24	PP	e 23 41	[−11]	—	—	—
Huancayo		95·1	107	e 13 32	+ 6	e 23 34	[−28]	e 13 51	pP	e 38·7
Bozeman		96·3	40	—	—	e 23 45	[−23]	e 26 8	PS	e 39·0
La Paz	Z.	98·6	115	18 11	PP	i 26 28	PS	—	—	45·8
Kodaikanal	E.	107·4	272	e 18 47?	PP	—	—	—	—	—
Philadelphia		118·8	57	e 19 47	PP	e 35 41	SS	29 55	PS	e 49·3
Vermont		120·1	54	—	—	e 43 29	?	—	—	—
Bermuda		123·5	68	—	—	e 26 2	[+ 1]	e 37 7	SS	e 47·9
Sverdlovsk		130·9	322	i 19 12	[− 2]	—	—	i 22 37	PKS	57·8
Baku		139·4	299	e 19 30	[+ 1]	30 0	{+43}	23 9	PP	72·8
Grozny		142·3	304	e 19 34	[− 1]	—	—	e 23 15	PP	—
Tiflis		143·2	302	i 19 33	[− 3]	e 26 16	[−28]	e 23 7	SKP	e 72·8
Moscow		143·3	326	e 19 33	[− 3]	29 32	{− 9}	e 22 46	PP	72·8
Erevan		143·6	298	e 19 38	[+ 2]	—	—	—	—	—
Pulkovo		143·9	336	e 19 33	[− 4]	41 59	SS	22 47	PP	—
Sotchi		146·6	306	19 43	[+ 1]	—	—	—	—	—
Ksara		150·7	287	i 19 49a	[+ 1]	—	—	23 36	PP	—
Helwan	Z.	154·3	278	e 19 53	[− 1]	—	—	e 23 58	PP	—
Kew		157·8	2	e 19 57	[− 1]	—	—	—	—	e 78·8
Uccle		158·4	356	i 20 35	[+36]	—	—	—	—	e 105·8
Stuttgart		159·7	346	e 20 43	[+43]	—	—	—	—	—
Paris		160·5	359	20 1	[0]	e 32 22	?	—	—	e 79·8
Basle		161·2	348	e 20 0	[− 2]	—	—	—	—	—
Rome		164·7	328	i 20 3a	[− 2]	e 26 51	[−17]	e 24 49	PP	e 70·9
Toledo		168·4	22	e 20 9	[+ 1]	—	—	e 25 6	PP	76·0
Granada		170·9	29	i 20 16	[+ 6]	e 32 25	{+18}	24 58	PP	—
Almeria		171·7	24	e 20 10	[0]	—	—	20 34	P_cP	—

For Notes see next page.

NOTES TO SEPTEMBER 12d. 12h. 6m. 13s.

Additional readings :—
Riverview eN = +6m.1s.
Adelaide e = +11m.24s.
Vladivostok e = +21m.53s.
Pasadena iZ = +12m.51s.
Ukiah epPP = +16m.19s., esS = +23m.15s., eSP = +24m.25s., eSS = +28m.52s.
Tucson ePP = +16m.15s., ePPP = +18m.21s., eS = +23m.24s., epS = +23m.53s., esS = +24m.6s., ePS = +24m.29s., esPS = +25m.5s., eSS = +29m.7s., eSSS = +33m.27s.
Sitka esS = +24m.27s.
Huancayo esPP = +18m.8s., eSKKS = +23m.57s., eS = +24m.14s., eSP = +25m.45s., eSS = +30m.55s., eSSS = +34m.26s., ePKP,PKP = +38m.9s.
Bozeman eSKKS = +23m.56s., eS = +24m.51s.
Vermont i = +48m.3s., e = +51m.10s. and +51m.41s.
Bermuda ePSKS = +30m.44s.
Sverdlovsk i = +23m.3s.
Baku PS = +35m.1s.
Tiflis eSKPZ = +23m.19s., eSKSZ = +26m.24s., eZ = +34m.18s., eE = +37m.18s.
Moscow SKKS = +31m.39s., PS = +34m.45s.
Pulkovo PP = +24m.44s., PPP = +27m.31s., PS = +35m.4s.
Helwan iZ = +20m.17s.
Basle e = +20m.47s.
Rome e = +21m.23s. and +27m.24s., eSKKS? = +32m.4s., ePSKS = +35m.49s., e = +38m.56s., +42m.26s., and +56m.57s.
Toledo ePKP = +21m.18s.
Granada ePPPN = +29m.19s.
Almeria +26m.19s. and +29m.15s.
Long waves were also recorded at Bombay, Colombo, Perth, Butte, Bidston, Florissant, Harvard, La Plata, San Juan, Clermont-Ferrand, Scoresby Sund, and De Bilt.

Sept. 12d. Readings also at 0h. (near Irkutsk (2) and Apia), 1h. (near New Plymouth, La Plata, La Paz, near Wellington, and near Fort de France (2)), 2h. (Samarkand), 3h. (near Mizusawa), 5h. (near Osaka, Hukuoka, Palomar, Grozny, Sotchi, Tiflis, near Mizusawa, Mount Wilson, Tinemaha, Tucson, Ksara, and Riverside), 6h. (near Granada, Almeria, and Toledo), 8h. (Manila), 10h. (Fordham, Florissant, Bermuda, Philadelphia, Pasadena, Mount Wilson, Tinemaha, Tucson (2), Ksara, Riverside, La Paz, and near Fort de France (2)), 11h. (Victoria and San Juan), 12h. (Apia), 13h. (near Andijan), 16h. (Tchimkent), 18h. (near Granada), 20h. (La Paz and Ottawa (2)), 21h. (Vermont), 22h. (Istanbul), 23h. (Fort de France).

Sept. 13d. 18h. 3m. 24s. Epicentre 18°·8S. 70°·5W.

$A = +\cdot3162$, $B = -\cdot8929$, $C = -\cdot3203$; $\delta = -16$; $h = +5$;
$D = -\cdot943$, $E = -\cdot334$; $G = -\cdot107$, $H = +\cdot302$, $K = -\cdot947$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Paz		3·2	44	i 0 52	0	i 1 21	−11	—	—	i 1·5
Huancayo		8·2	325	e 2 3	0	e 3 43	+ 5	e 2 40	P_g	i 4·4
La Plata		19·5	148	4 31	0	8 0	− 6	—	—	10·1
Fort de France		34·4	17	e 6 37	−14	—	—	—	—	—
San Juan		37·2	8	e 7 37	+22	e 12 29	−33	e 8 20	PP	e 15·2
Harvard		61·0	0	i 10 8	−10	—	—	—	—	—
Williamstown		61·3	359	i 10 11	− 9	—	—	—	—	—
Tucson		63·8	323	e 10 33	− 3	—	—	11 4	pP	e 32·6
La Jolla		68·1	319	e 11 31	+27	—	—	—	—	—
Mount Wilson		69·5	319	i 11 11	− 1	—	—	i 11 41	pP	—
Pasadena		69·5	319	i 11 11	− 1	—	—	i 11 41	pP	—
Tinemaha	E.	71·5	321	e 11 23	− 1	—	—	e 11 54	pP	—
Ksara		113·6	61	e 19 19	PP	—	—	—	—	—

Additional readings :—
Huancayo S = +3m.56s.
San Juan iS = +12m.33s., esS = +13m.22s.
Harvard iEZ = +10m.41s.
Williamstown i = +10m.42s.

Sept. 13d. Readings also at 0h. (San Juan), 1h. (near Fordham), 2h. (Mizusawa and La Paz), 6h. (La Paz), 8h. (Almata, Andijan, and Samarkand), 16h. (near Mizusawa and Tiflis), 17h. (Andijan), 18h. (Andijan, Tchimkent, Samarkand), 20h. (near Manila), 21h. (San Juan), 22h. (near Mizusawa), 23h. (Columbia, Tiflis, and Ksara).

Sept. 14d. 9h. 0m. 58s. Epicentre 11°·5N. 95°·0E.

$A = -\cdot0854$, $B = +\cdot9765$, $C = +\cdot1981$; $\delta = +9$; $h = +6$;
$D = +\cdot996$, $E = +\cdot087$; $G = -\cdot017$, $H = +\cdot197$, $K = -\cdot980$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	12·7	331	e 3 2	− 3	e 5 23	− 5	e 3 34	PPP	e 7·4
Phu-Lien		14·5	49	e 3 32	+ 4	e 7 2	+51	—	—	—
Colombo	E.	15·6	254	3 50	+ 7	6 50	+13	—	—	7·9
Hyderabad		17·1	291	4 0	− 2	7 22	+10	—	—	8·7
Kodaikanal	E.	17·3	267	e 4 5	+ 1	e 7 16	0	—	—	e 8·7
Hong Kong		21·2	57	4 50	+ 1	8 50	+ 9	—	—	—
Agra	E.	22·3	317	4 57	− 4	9 6	+ 4	5 23	PP	—
Bombay		22·6	291	e 5 4	+ 1	i 9 15	+ 8	e 10 1	SS	12·1
Dehra Dun	N.	24·5	323	e 4 51?	−31	e 9 24	−16	e 6 58?	?	—
Manila		25·5	80	e 5 38	+ 6	10 8	+11	—	—	12·5
Irkutsk		41·4	8	7 54	+ 4	14 16	+11	—	—	e 21·5
Vladivostok		44·9	39	—	—	e 15 1	+ 5	—	—	e 22·8
Baku		49·0	314	8 50	0	16 0	+ 5	—	—	25·0
Sverdlovsk		52·4	337	9 12	− 4	e 16 34	− 8	—	—	25·0
Tiflis		53·1	314	e 9 18	− 3	e 16 51	0	e 11 53	PP	e 27·0
Ksara		58·1	302	e 9 56	− 2	e 18 8	+10	—	—	28·0
Helwan	Z.	61·6	297	e 10 20	− 2	—	—	—	—	—
Moscow		62·5	328	10 22	− 6	18 53	− 1	—	—	36·5
Pulkovo		67·5	331	e 10 56	− 4	e 20 6	+10	e 20 47	PPS	39·5
Moncalieri		80·1	315	—	—	i 23 41	PPS	—	—	—
Scoresby Sund		87·9	343	—	—	e 23 20	[0]	e 28 29	SS	e 36·0
Mount Wilson	Z.	124·7	33	e 19 11	[+ 9]	—	—	—	—	—
Riverside	Z.	125·3	33	e 18 48	[−15]	—	—	—	—	—
Tucson		130·0	28	e 19 19	[+ 7]	e 26 9	[−11]	e 21 9	PP	e 58·4
Huancayo		170·5	265	e 20 27	[+18]	e 46 47	SS	e 26 4	PP	e 67·8

Additional readings :—
Calcutta eN = +6m.38s.
Bombay eE = +5m.37s. and +7m.57s.
Tiflis eN = +9m.26s., eE = +9m.40s., eN = +19m.12s.
Pulkovo e = +19m.31s.
Scoresby Sund eS = +23m.28s.
Riverside eZ = +19m.9s.
Tucson ePKP = +19m.32s., eSSS = +43m.52s.
Huancayo ePPP = +30m.16s., ePPS = +39m.51s., eSSS = +53m.37s.
Long waves were also recorded at Fordham, Paris, Kobe, Cape Town, Bidston, Jersey, De Bilt, Kew, and Koti.

Sept. 14d. Readings also at 0h. (Pasadena, Tucson (2), Mount Wilson, Chicago, and Riverside), 3h. (near Mizusawa), 4h. (Tacubaya, Andijan, Tchimkent, and Samarkand), 5h. (Scoresby Sund), 7h. (Zi-ka-wei), 9h. (Almata, Tchimkent, and Andijan), 11h. (Tucson), 12h. (Ukiah), 13h. (Manila, Hong Kong, Kodaikanal, and Calcutta), 15h. (Samarkand and Andijan), 16h. (Rome), 17h. (near La Paz and Andijan), 18h. (Riverview, Brisbane, Fort de France, Sydney, Sverdlovsk, Andijan, Samarkand (2), Pasadena, and Mount Wilson), 19h. (Baku), 20h. (Williamstown), 21h. (near Mizusawa).

Sept. 15d. 11h. Shock in South Pacific.

Apia eP = 49m.39s., e = 51m.31s., iS? = 52m.2s., i = 53m.2s., iN = 53m.22s., iE = 53m.32s.
Christchurch PNZ = 53m.14s.$_a$, SEN = 57m.33s., L_qE = 59m.0s., L_r = 60m.40s.
Riverview eN = 54m.55s., eLN = 62m.18s.
Arapuni e = 55m.0s., eL = 56m.42s.
Wellington i = 55m.13s., eS? = 57m.0s., L = 58m.36s.
Sydney e = 55m.30s., eL = 60m.
Honolulu eP = 56m.25s. and 56m.48s., eS = 63m.3s., eL = 66m.19s.
Santa Barbara ePZ = 59m.42s.
Pasadena eP = 59m.43s., eLZ = 82m.42s.
Mount Wilson iPZ = 59m.46s.
Riverside iPZ = 59m.46s.
Haiwee eP = 59m.55s.
Santa Clara ePZ = 60m.4s., eSE = 69m.30s., eLE = 85m.57s.
Tucson eP = 60m.7s., ePP = 63m.4s., ePPP = 64m.46s., eS = 70m.4s. and 70m.17s., ePPS = 71m.9s., eL = 82m.6s.

Continued on next page.

Melbourne i = 61m.53s., 65m.16s., and 68m.23s.
Bozeman ePP = 63m.39s., eS = 71m.12s. and 71m.22s., eSSS = 80m.37s., eL = 84m.15s.
Adelaide i = 65m.40s., e = 67m.50s. and 70m.55s.
Chicago ePP = 65m.40s., eSKS = 72m.18s., eS = 73m.30s., ePPS = 75m.58s., eSS = 80m.5s., L = 100m.8s.
San Juan ePP = 66m.53s., eSKS = 73m.12s., eS = 75m.26s., eSS = 82m.7s., eSSS = 88m.8s., eL = 95m.34s.
Sverdlovsk e = 67m.20s., 70m.14s., and 77m.3s., L = 100m.
Tiflis eZ = 67m.20s., e = 71m.5s., eLN = 119m.
De Bilt eZ = 67m.32s., L = 135m.
Ksara ePKP = 67m.41s., i = 68m.6s., ePP = 71m.22s., PPP = 74m.49s.
Baku e = 67m.45s., 70m.7s., 78m.1s., 81m.43s., 89m.16s., 94m.58s., and 98m.58s., L = 111m.
Paris ePKPZ = 67m.46s., ePP = 71m.40s., eL = 132m.
Rome e = 67m.54s. and 104m.34s., e = 131·6m.
Uccle eZ = 67m.54s., eL = 130m.
Helwan ePZ = 68m.10s.
Ukiah eS = 69m.35s., ePPS = 70m.20s., eSSS = 77m.50s., eL = 82m.8s.
Berkeley eN = 69m.39s., e = 78m.18s.
Victoria e = 70m.24s., L = 88m.
Sitka eS = 70m.51s., eSS = 76m.19s., eL = 83m.14s.
La Paz eZ = 71m.13s., LZ = 94m.
Butte eS = 71m.19s., eL = 82m.18s.
Huancayo eSKS = 71m.33s., ePS = 73m.39s., eSS = 78m.41s., ePSPS = 79m.7s., eL = 88m.28s.
Florissant iSEN = 73m.5s., LZ = 95m.42s.
Philadelphia ePS = 76m.22s., eSS = 82m.23s., eL = 101m.36s.
East Machias eSS = 83m.52s., eL = 95m.16s.
Long waves were also recorded at Kodaikanal, Brisbane, Salt Lake City, Harvard, and Fordham.

Sept. 15d. 21m. 48m. 58s. Epicentre 51°·3N. 175°·1E. (as on 1939 Sept. 8d.).

$A = -\cdot6255$, $B = +\cdot0536$, $C = +\cdot7783$; $\delta = -13$; $h = -6$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		23·4	40	e 5 18	+ 7	e 9 23	+ 2	—	—	e 10·7
Vladivostok		30·1	272	e 6 14	+ 1	e 11 15	+ 3	—	—	13·8
Honolulu		36·6	135	e 7 19	+ 9	e 13 4	+11	—	—	e 16·0
Irkutsk		42·2	301	7 52	− 4	14 14	− 3	—	—	e 23·5
Ukiah		43·9	81	—	—	e 14 40	− 2	—	—	e 18·3
Santa Clara		45·8	82	e 8 28	+ 3	e 15 11	+ 2	—	—	e 21·8
Tinemaha	E.	48·2	80	e 8 46	+ 2	—	—	—	—	—
Haiwee		49·0	81	i 8 50	0	—	—	—	—	—
Santa Barbara	Z.	49·0	84	e 8 49	− 1	—	—	—	—	—
Mount Wilson		50·2	83	i 8 58	− 2	—	—	—	—	—
Pasadena		50·2	83	e 8 59	− 1	—	—	—	—	e 24·7
Riverside		50·8	83	i 9 2	− 2	—	—	—	—	—
Palomar	Z.	51·5	82	i 9 8	− 1	—	—	—	—	—
La Jolla		51·6	84	e 9 8	− 2	—	—	—	—	—
Tucson		56·0	79	i 9 41a	− 2	e 17 32	+ 2	e 11 32	PP	e 23·3
Manila		56·6	250	e 9 40	− 7	17 44	+ 6	—	—	—
Sverdlovsk		59·5	325	i 10 5	− 2	e 18 22	+ 6	—	—	29·0
Chicago		62·7	57	e 10 29	0	e 18 50	− 7	—	—	26·0
Florissant		63·5	61	e 10 30	− 4	i 19 1	− 6	i 20 23	S_cS	—
Pulkovo		65·7	342	e 10 46	− 2	e 19 31	− 3	—	—	36·5
Ottawa		66·0	47	i 10 44	− 6	—	—	—	—	33·0
Andijan		66·4	307	e 10 52	− 1	—	—	—	—	—
Tchimkent		66·6	309	e 10 52	− 2	—	—	—	—	—
Seven Falls		66·8	43	—	—	e 19 50	+ 2	—	—	32·0
Moscow		67·7	336	10 59	− 2	19 55	− 3	—	—	38·5
Samarkand		69·9	308	e 11 18	+ 3	—	—	—	—	—
East Machias		70·1	43	—	—	e 20 15	−12	e 25 22	SS	e 35·3
Philadelphia		70·4	50	—	—	e 20 19	−11	—	—	e 33·9
Calcutta	N.	70·8	289	—	—	e 20 18	−17	—	—	—
Columbia		72·0	58	e 11 27	− 1	e 20 43	− 6	e 26 23	SS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Agra	E.	73·5	293	—	—	e 21 34	PS	—	—	—
Baku		76·9	320	e 11 57	+ 1	e 21 58	+15	e 27 36	SS	39·1
Tiflis		77·8	324	i 11 59	− 2	e 21 53	0	e 15 52	PPP	e 41·0
Sotchi		77·9	329	e 12 0	− 1	—	—	—	—	—
Uccle		78·0	355	e 12 7	+ 5	e 21 56	+ 1	—	—	e 45·0
Paris		80·1	355	e 12 13	0	—	—	—	—	e 43·0
Bombay		82·9	291	i 12 27	− 1	e 22 47	+ 1	—	—	e 45·5
Rome		86·0	347	—	—	e 23 5	[− 3]	e 29 4	SS	—
Ksara		88·0	327	e 12 54	+ 1	e 23 18	[− 2]	e 23 56	S	—
San Juan		92·5	56	—	—	e 24 13	− 4	e 26 13	PPS	e 36·0

Additional readings :—
College eS = +9m.32s.
Honolulu eP = +7m.30s. and +7m.45s.
Pasadena iEZ = +9m.8s.
Palomar iZ = +9m.18s.
Tucson ePPP = +13m.9s., eSS = +21m.20s.
Manila iZ = +10m.30s., iN = +10m.38s.
Sverdlovsk i = +10m.12s.
Florissant eZ = +10m.53s.
Philadelphia eS = +20m.23s.
Columbia eSSS = +29m.17s.
Baku eSSS = +31m.8s.
Uccle eZ = +12m.20s.
San Juan ePSPS = +31m.7s.
Long waves were also recorded at De Bilt, Bermuda, Harvard, Bozeman, Salt Lake City, Butte, and Sitka.

Sept. 15d. 23h. 16m. 26s. Epicentre 39°·8N. 29°·6E. (as on 1939 Aug. 9d.).

Damage at Inegöl, felt at Uckak, Brousse, Eskisehir, Balikesir, Bilecik, Ahkisar, etc. Macroseismic epicentre in the area of Inegöl 40°·2N. 29°·5E.

Annales de l'Institut de Physique du Globe de Strasbourg, Vol. IV, 2e partie, p. 71.

$A = +\cdot6698$, $B = +\cdot3805$, $C = +\cdot6376$; $\delta = -5$; $h = -2$;
$D = +\cdot494$, $E = -\cdot869$; $G = +\cdot554$, $H = +\cdot315$, $K = -\cdot770$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		1·3	342	0 29	+ 4	0 49	+ 5	—	—	—
Bucharest		5·3	330	e 1 23$_a$	+ 1	2 22	− 3	2 50	S_g	—
Sofia		5·5	303	e 1 28	+ 3	i 3 3	S_g	1 53	P_g	—
Ksara		7·8	138	e 1 57	− 1	i 3 49	S*	—	—	—
Belgrade		8·4	309	i 2 4$_a$	− 2	i 3 54	+11	4 21	S*	—
Sotchi		8·5	60	2 7	0	e 3 54	+ 9	—	—	9·6
Cernauti	E.	8·9	343	e 2 54	PPP	—	—	—	—	—
Sarajevo		9·3	300	e 2 31	PP	e 4 47	S*	i 5 6	S_g	—
Helwan		10·0	172	i 2 26$_a$	− 1	i 4 12	−10	2 39	PP	—
Kecskemet	Z.	10·1	318	i 1 54	−34	e 3 36	−49	e 2 39	PP	e 4·2
Budapest		10·8	319	2 36	− 3	e 4 40	− 2	i 5 6	SS	e 5·8
Erevan		11·4	83	2 57	+10	e 5 31	SSS	—	—	—
Tiflis		11·7	75	i 2 54	+ 3	5 8	+ 4	e 3 1	PP	i 6·6
Grozny		12·6	68	2 35	−28	e 5 29	+ 3	—	—	—
Rome		13·1	284	e 3 11	+ 1	e 5 14	−24	—	—	e 6·7
Prague		14·8	319	e 3 31	− 1	e 6 24	+ 6	—	—	e 7·1
Baku		15·5	81	i 3 47	+ 5	i 6 47	+12	—	—	8·6
Chur		16·2	302	e 3 54	+ 4	e 7 4	SS	—	—	—
Jena		16·8	317	e 3 59	+ 1	e 7 39	SS	—	—	e 8·6
Moscow		16·8	18	3 55	− 3	e 7 8	+ 3	—	—	10·1
Moncalieri		17·0	295	e 3 19	−42	5 44	?	—	—	—
Zurich		17·0	303	e 4 2	+ 1	e 7 12	+ 2	—	—	—
Stuttgart		17·1	308	e 4 0	− 2	e 7 18	+ 6	e 4 16	PP	e 8·6
Basle		17·7	304	e 4 11	+ 1	e 7 33	+ 7	—	—	—
Neuchatel		17·9	301	e 4 12	0	e 7 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.
Besançon		18·6	302	i 5 14	+53	i 8 8	SS	—	—	e 9·8
Hamburg		19·2	323	e 4 28a	0	e 8 4	+ 5	i 8 21	SS	e 10·9
Copenhagen		19·5	331	4 31	0	8 12	+ 6	5 8	PPP	10·6
Pulkovo		20·0	2	i 4 35	− 2	e 8 21	+ 4	—	—	e 9·6
Clermont-Ferrand		20·3	296	i 4 40	0	i 8 12	−11	—	—	e 12·2
De Bilt		20·8	316	i 4 47a	+ 2	i 8 41	+ 8	i 4 54	PP	i 11·2
Uccle		20·8	310	i 4 47	+ 2	i 8 38	+ 5	—	—	e 10·6
Algiers		21·0	271	e 4 45	− 2	e 8 51	+14	5 11	PP	10·7
Paris		21·3	304	i 4 50k	0	8 44	+ 1	—	—	e 11·6
Upsala		21·4	344	i 4 53	+ 2	e 8 44	− 1	5 15	PP	e 11·1
Kew		23·8	310	i 5 16	+ 1	i 9 36	+ 8	i 10 27	SS	e 12·1
Jersey		23·9	305	e 5 19	+ 3	e 9 34?	+ 4	—	—	—
Almeria		25·2	274	i 5 23	− 6	i 9 52	0	5 59	PP	11·6
Bergen	E.	25·6	333	e 5 34?	+ 2	e 10 0	+ 1	—	—	—
Toledo		25·7	281	e 5 34	+ 1	e 10 6	+ 5	i 6 58	PPP	—
Stonyhurst		25·8	315	i 5 34	0	i 10 6	+ 4	—	—	14·6
Bidston		26·0	313	—	—	i 10 7	+ 1	—	—	e 10·6
Sverdlovsk		26·4	39	i 5 40	0	10 10	− 2	12 40	L_g	18·0
Edinburgh		26·9	318	5 34	−11	9 56	−24	12 45	PS	—
San Fernando		28·3	275	—	—	e 10 34	− 9	—	—	15·6
Samarkand		28·6	77	e 5 57	− 3	—	—	—	—	—
Tchimkent		30·1	71	e 6 14	+ 1	—	—	—	—	—
Andijan		32·4	74	—	—	e 14 20	SSS	—	—	—
Almata		35·2	67	—	—	e 12 0	−31	—	—	—
Semipalatinsk		36·6	55	e 11 12	?	—	—	—	—	—
Scoresby Sund		40·4	337	e 9 12	PP	e 13 51	+ 1	e 9 27	P_cP	e 16·8
Agra	E.	41·9	91	—	—	i 14 16	+ 3	—	—	—
Bombay		42·6	105	i 7 59	0	i 14 31	+ 8	i 9 42	PP	22·1
Hyderabad		47·6	103	—	—	15 39	+ 4	—	—	—
Ivigtut		50·4	322	—	—	16 17	+ 3	—	—	25·6
Irkutsk		51·1	49	e 9 8	+ 2	e 16 28	+ 4	—	—	—
Calcutta		52·2	92	—	—	i 16 44	+ 5	e 18 35	SS	—
Colombo	E.	55·6	112	—	—	e 17 4	−21	—	—	—
Vladivostok		71·7	49	e 11 25	− 1	—	—	—	—	44·5
Ottawa		72·0	315	i 11 27	− 1	e 20 34?	−15	—	—	—
Bermuda		73·4	298	—	—	e 21 4	− 1	—	—	—
Fordham		73·8	310	i 11 38	0	i 21 13	+ 4	—	—	37·1
Philadelphia		75·1	309	e 16 10	PPP	e 21 22	− 2	e 21 29	S	e 33·3
Chicago		80·7	318	e 18 34?	?	—	—	—	—	—
San Juan		82·7	288	e 12 14	−13	e 22 42	− 2	e 23 51	PPS	e 34·9
Florissant		84·4	317	i 12 36	0	i 23 1	0	—	—	—
Bozeman		87·9	334	e 12 54	+ 1	e 23 15	[− 5]	23 38	S	e 35·8
Salt Lake City		92·5	332	—	—	i 24 32	+15	—	—	—
Tucson		99·5	327	e 13 46	0	e 25 31	+15	e 17 48	PP	e 44·7
Mount Wilson		100·5	333	e 17 57	PP	—	—	—	—	—

Additional readings :—
Istanbul +38s.
Bucharest iN = +2m.58s., iEN = +3m.2s.
Ksara S_g = +4m.54s.
Belgrade iZ = +2m.8s., i = +2m.52s., iSZ = +3m.21s., iNW = +4m.4s.
Sarajevo i = +3m.4s., e = +3m.17s.
Helwan PPPE = +3m.8s., eZ = +4m.59s., SN = +8m.25s., eE = +8m.41s.
Budapest eN = +4m.24s., iN = +4m.34s. and +4m.52s., iE = +5m.24s.
Tiflis ePN = +2m.57s., iE = +3m.7s., iZ = +3m.10s., iEZ = +3m.31s.
Rome iE = +4m.6s.
Jena eP = +4m.2s.
Stuttgart eSE = +7m.22s.
Hamburg iE = +9m.44s.
Algiers e = +6m.52s. and +9m.10s., SS = +9m.51s.
Upsala eSN = +8m.50s., iE = +9m.16s.
Kew eEN = +9m.29s., iNZ = +9m.46s.
Toledo e = +5m.37s. and +10m.14s.
Stonyhurst e = +10m.6s.
Bombay iE = +8m.22s., iEN = +17m.46s.
San Juan eSS = +27m.57s.
Tucson ePPP = +20m.6s., ePS = +26m.48s., ePPS = +28m.6s., ePSPS = +33m.0s., eSSS = +36m.55s.
Long waves were also recorded at Cape Town and La Paz.

Sept. 15d. Readings also at 2h. (Samarkand), 8h. (Toledo), 11h. (Pasadena, Mount Wilson, and Riverside), 13h. (Andijan), 14h. (Tucson, Tiflis, Ksara, Haiwee, Pasadena, Mount Wilson, Riverside, and near Apia), 15h. (Tucson), 16h. (Ksara), 17h. (Tiflis, Baku, Sverdlovsk, Colombo, Cape Town, and Calcutta), 18h. (Ottawa), 20h. (Tucson, Pasadena, Mount Wilson, Riverside, Andijan, near Samarkand, Palomar, and Tchimkent), 21h. (Ottawa), 23h. (Salt Lake City, Fordham, East Machias, Moscow, Haiwee, La Jolla, Tinemaha, Tchimkent, Palomar, Samarkand, Andijan, Riverside, Mount Wilson, Pasadena, Tucson, and Tiflis).

Sept. 16d. 7h. 16m. 15s. Epicentre 3°·7N. 128°·5E. (as on 1939 May 7d.).

Felt in the Morotai Isles. Macroseismic epicentre 4°·0N. 127°·3E. (Strasbourg).

Annales de l'Institut de Physique du Globe de Strasbourg, Vol. IV, 2e partie, p. 71.

$A = -\cdot6212$, $B = +\cdot7810$, $C = +\cdot0641$; $\delta = -4$; $h = +7$;
$D = +\cdot782$, $E = +\cdot623$; $G = -\cdot040$, $H = +\cdot050$, $K = -\cdot998$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palau		7·0	58	2 0	P*	4 33	L	—	—	(4·5)
Manila		13·1	326	i 3 11k	+ 1	i 5 49	SS	—	—	—
Kosyun		19·7	338	4 35	+ 1	—	—	—	—	—
Taihoku		22·3	344	4 52	− 9	—	—	—	—	—
Hong Kong		23·1	324	5 14	+ 6	9 15	− 1	10 4	SS	—
Mizusawa	E.	37·0	16	(7 19)	+ 6	7 19	P	—	—	—
Vladivostok		39·4	3	e 7 39	+ 6	e 13 37	+ 2	—	—	21·7
Kodaikanal	E.	51·0	280	e 8 45?	−21	—	—	—	—	—
Agra	E.	53·5	301	—	—	i 16 42	−15	—	—	—
Bombay		56·4	291	—	—	e 16 48	−48	—	—	—
Almata		60·2	319	e 10 58	+46	—	—	—	—	—
Andijan		62·3	315	e 10 25	− 1	18 56	+ 4	—	—	—
Samarkand		65·9	312	e 10 49	− 1	—	—	—	—	—
Sverdlovsk		74·9	329	i 11 43	− 1	i 21 15	− 7	—	—	33·8
Baku		78·9	311	i 12 7	0	i 22 4	− 1	—	—	42·8
Tiflis		82·9	311	12 24	− 4	22 38	− 8	—	—	e 41·8
Sotchi		86·6	313	12 50	+ 4	—	—	—	—	—
Moscow		87·5	325	12 48	− 3	23 26	− 5	—	—	47·2
Ksara		90·1	303	e 13 4	+ 1	e 24 5	+10	e 25 6	PS	—
Pulkovo		90·9	330	13 7	0	23 59	− 4	—	—	49·2
Haiwee		106·6	50	i 18 30	PKP	—	—	—	—	—
De Bilt		106·7	328	—	—	i 28 56	PPS	—	—	e 54·8
Mount Wilson	z.	107·0	53	i 18 33	PKP	—	—	—	—	—
Pasadena		107·0	53	i 18 32	PKP	—	—	—	—	e 54·2
Riverside	z.	107·7	53	e 18 33	PKP	—	—	—	—	—
Uccle		107·8	327	—	—	e 29 13	PPS	—	—	e 58·8
La Jolla		108·1	54	i 18 34	PKP	—	—	—	—	—
Palomar	z.	108·3	53	e 18 35	PKP	—	—	—	—	—
Paris		109·9	325	—	—	e 28 45?	PS	—	—	e 62·8
Tucson		113·4	52	e 18 44a	[+ 4]	e 27 12	{+43}	e 19 53	PP	e 50·6
Balboa Heights		149·3	63	e 19 45?	[− 1]	—	—	—	—	—
Fort de France		159·3	26	e 20 3	[+ 3]	—	—	—	—	—
La Paz	z.	159·3	129	20 6	[+ 6]	—	—	—	—	18·8

Additional readings:—
Sotchi $eS_g = +13$m.31s.
Tucson ePPP = +22m.25s., ePS = +29m.18s., epPS = +29m.32s., ePPS = +30m.52s., eSSS = +39m.49s.
Long waves were also recorded at Riverview and Sydney.

Sept. 16d. Readings also at 0h. (near Istanbul, Ksara, and Bucharest), 1h. (San Juan, Balboa Heights, near Istanbul, Ksara, Bucharest, Rome, De Bilt, Baku, Tiflis, Sverdlovsk, near Andijan, Samarkand, and Mizusawa), 2h. (Sofia, Ksara, Bucharest, Rome, Baku, Tiflis, Sverdlovsk, and Samarkand), 3h. (Samarkand, Lick, Berkeley, and Branner), 5h. (Clermont-Ferrand, Toledo, Helwan, Sverdlovsk, Tiflis, Baku, Ksara, and De Bilt), 6h. (Vladivostok, Sverdlovsk, Osaka, Kodaikanal, Agra, Bombay, Andijan, and near Mizusawa), 7h. (Andijan), 12h. (Fort de France (2)), 14h. (La Paz, Haiwee, Pasadena, Tucson, Riverside, Mount Wilson, and Huancayo), 15h. (Scoresby Sund, Sverdlovsk, and Ksara), 16h. (Baku), 18h. (Ksara, Williamstown, near Fordham, Harvard, near Mizusawa, and Rome), 21h. (near Andijan and Tchimkent), 22h. (Mount Wilson, Riverside, Tucson, and Berkeley), 23h. (Mount Wilson, Riverside, Tucson, Haiwee, La Jolla, and Pasadena).

Sept. 17d. 19h. Undetermined shock. Epicentre in the South Pacific Ocean.
Christchurch P = 22m.31s., iE = 24m.21s., iNZ = 24m.40s., iSE = 24m.53s., iLZ = 25m.42s.
Wellington iP = 23m.5s., eS = 25m.50s., L_q = 26·5m., L_r = 27·5m.
Melbourne i = 24m.27s., e = 27m.13s., i = 28m.0s. and 28m.41s.
Sydney e = 24m.33s., i = 28m.0s.
Riverview iPN = 24m.38s., iE = 24m.41s., PP?EN = 24m.58s., eSE = 28m.10s., eSN = 28m.14s.
Adelaide e = 25m.42s., i = 29m.52s., L = 31·7m.
Manila eP = 32m.1s., SEN = 41m.37s., LE = 55·2m.
Kodaikanal eE = 33m.0s.
Tucson ePKP = 38m.45s., ePP = 39m.35s., eS = 47m.25s., eL = 66·5m.
Sverdlovsk e = 39m.42s., 43m.14s., and 60m.11s., L = 82·0m.
Ksara ePKP = 39m.53s., ePP = 43m.6s., SKKS = 49m.53s.
Baku e = 41m.23s., 43m.17s., 49m.47s., and 55m.17s., eL = 87·0m.
San Juan ePKS = 42m.50s., eSKS = 46m.13s., eSS = 58m.5s.
Paris e = 44m.0s., eL = 112·0m.
Rome eZ = 48m.55s., e = 52m.48s., 61m.41s., 65m.38s., and 69m.12s.
Colombo eE = 58m.30s.
Calcutta e?N = 68m.10s.
Long waves were also recorded at Agra, Kew, Clermont-Ferrand, Bidston, Jersey, Pasadena, and Bombay.

Sept. 17d. Readings also at 4h. (Samarkand, near Almata, Frunse, and Andijan), 6h. (near La Paz), 7h. (Moscow, Irkutsk, Vladivostok, Haiwee, Palomar, La Jolla, Pasadena, Puebla, Tacubaya, Merida, Oaxaca, near Mizusawa, Riverside, Mount Wilson, and Tucson), 8h. (Pulkovo, Scoresby Sund, Paris, De Bilt, Bombay, Kodaikanal, Calcutta, Agra, Tucson, Haiwee, Mount Wilson, Santa Barbara, Riverside, Pasadena, Samarkand, Almata, Frunse, Andijan, Tiflis, Sverdlovsk, Ksara, and Baku), 9h. (Ksara, Baku, Sverdlovsk, and near Mizusawa), 10h. (Columbia and Clermont-Ferrand), 11h. (Philadelphia, Lick, and Branner), 15h. (near Mizusawa), 17h. (La Paz), 18h. (Istanbul, Tchimkent, Rome, and near Almata), 19h. (La Paz), 20h. (near Balboa Heights), 23h. (Tiflis).

Sept. 18d. 0h. 14m. 31s. Epicentre 47°·6N. 16°·0E.

The macroseismic epicentral zone forms a circle of radius 35kms. with the centre at Schneeberg; felt throughout the greater part of Austria, at Brno, Bratislava, etc. Damage at Puchberg, intensity VII.

Epicentre 47°47′N. 15°47′E. (Vienna).
47°·6N. 15°·6E. (Strasbourg).

Annales de l'Institut de Physique du Globe de Strasbourg, Vol. IV, 2e partie, p. 72.

A = +·6506, B = +·1865, C = +·7362; δ = +5; h = −4;
D = +·276, E = −·961; G = +·708, H = +·203, K = −·677.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Laibach	N.W.	1·9	213	e 0 44	+10	i 1 0	+ 1	—	—	—
Budapest		2·1	93	0 39	+ 2	1 5	+ 1	0 43	P_g	—
Kecskemet	Z.	2·6	105	i 0 43	− 1	i 1 15	− 2	e 0 57	P_g	e 1·7
Prague		2·7	337	e 0 44	− 1	1 20	+ 1	e 0 48	P*	—
Sarajevo		4·1	154	e 1 12	P*	i 2 26	S_g	i 1 34	P_g	—
Belgrade		4·2	130	i 0 43a	−24	i 1 50	− 7	i 1 15	P*	—
Ravensburg		4·3	275	e 1 9a	+ 1	i 1 56	− 4	i 1 17	P*	—
Jena		4·4	321	e 1 11	+ 1	e 1 59	− 3	i 1 21	P*	i 2·1
Chur		4·5	263	e 1 11	0	e 2 28	S_g	—	—	—
Stuttgart		4·7	289	i 1 13a	− 1	i 1 58	−12	i 1 24	P*	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ebingen		4·8	280	e 1 13	− 2	e 2 25	S*	i 1 37	P_g	—
Zurich		5·0	270	e 1 18	0	e 2 17	− 1	e 1 37	P_g	—
Göttingen		5·5	317	e 1 30	+ 5	e 2 29	− 1	e 1 45	P_g	—
Basle		5·7	273	e 1 27	− 1	e 3 9	S_g	e 1 54	P_g	—
Neuchatel		6·2	268	e 1 33	− 2	e 3 22	S_g	e 1 48	P*	—
Rome		6·2	206	e 2 2	P_g	e 3 6	S*	i 3 46	L_q	—
Moncalieri		6·3	249	e 1 49	P*	3 31	S_g	—	—	—
Besançon		6·8	271	e 2 18	P_g	e 4 37	L	—	—	(e 4·6)
Sofia		7·1	130	1 54	+ 6	e 3 48	S_g	—	—	—
Bucharest		7·7	111	e 1 52	− 4	—	—	e 2 3	P*	4·3
Heligoland		8·3	325	—	—	e 4 5	S*	e 4 36	S_g	i 4·8
De Bilt		8·3	306	—	—	i 3 58	+18	i 4 23	S_g	—
Uccle		8·3	297	e 2 5	+ 1	i 3 51	+11	i 4 19	S*	—
Copenhagen		8·4	346	3 0	+54	—	—	—	—	—
Clermont-Ferrand		9·1	264	e 2 48	PP	e 4 59	S_g	—	—	—
Paris		9·1	282	e 2 15	+ 1	4 51	S_g	—	—	5·5
Kew		11·3	296	—	—	e 5 26	SSS	—	—	i 6·1
Upsala		12·3	4	—	—	e 5 49	SSS	—	—	i 6·2
Bergen	E.	14·3	338	—	—	e 6 29?	SS	—	—	—
Pulkovo		14·8	29	e 3 41	+ 9	e 7 35	L	—	—	(e 7·6)
Moscow		15·6	50	e 4 0	PP	e 8 1	L	—	—	(e 8·0)
Toledo		16·4	249	e 3 57	+ 4	—	—	—	—	8·2
Ksara		20·3	126	e 4 54	+14	e 8 47	SS	—	—	—
Tiflis		21·2	95	—	—	e 9 0	+19	—	—	e 12·5
Sverdlovsk		28·4	54	—	—	e 10 49	+ 4	—	—	14·8
Kodaikanal	E.	63·4	105	—	—	e 22 29?	SS	—	—	—

Additional readings :—
Laibach iP_g = +49s., iS_g = +1m.9s., iSS = +1m.12s.
Budapest PPE = +47s., S_gN = +1m.1s., SSN = +1m.17s.
Kecskemet ePPS = +1m.1s., ePS = +1m.5s.
Prague ePS = +1m.14s.
Sarajevo i = +2m.31s.
Belgrade iZ = +2m.11s., iNE = +2m.30s. and +2m.43s.
Ravensburg P_g = +1m.26s., iE = +1m.38s., iN = +1m.41s., iS = +1m.49s., iN = +2m.17s., iS_g = +2m.21s.
Jena iSEZ = +2m.5s.
Stuttgart iP_g = +1m.31s., i = +1m.34s., iS* = +2m.4s., iNE = +2m.14s., iS*NW = +2m.19s. and +2m.31s., iS_gZ = +2m.34s.
Ebingen eZ = +1m.19s., iP_gEZ = +1m.32s., iS_g = +2m.36s. and +3m.7s.
Zurich eS_g = +2m.45s.
Göttingen eS = +2m.52s.
Sofia iN = +5m.3s., eE = +5m.29s.
Uccle iEZ = +3m.55s.
Upsala eN = +5m.53s.
Long waves were also recorded at San Fernando, Granada, Edinburgh, Jersey, Bidston, Stonyhurst, Baku, and Cernauti.

Sept. 18d. 20h. Undetermined shock.

College eP = 34m.12s., eS = 35m.45s.
Victoria e = 35m.12s. and 39m.30s., L = 41·0m.
Ottawa iZ = 36m.44s., 37m.1s., and 40m.3s., L = 57·0m.
Mount Wilson eZ = 37m.53s.
Tucson eP = 38m.37s. and 39m.24s., ePP = 39m.40s.
Sverdlovsk iP = 41m.52s., S = 50m.31s., L = 67·0m.
Moscow e = 42m.18s. and 50m.22s., eL = 78·5m.
East Machias ePPP = 42m.33s., eS = 46m.45s., eSS = 49m.20s., eL = 51·7m.
Tiflis ePZ = 43m.36s., eSEN = 53m.50s., eLNZ = 77·0m.
Ksara e = 45m.12s., 46m.22s., and 55m.10s.
Irkutsk e = 48m.36s., 59m.38s., and 60m.46s.
Seven Falls e = 51m.0s., L = 56·0m.
Baku e = 54m.0s., 63m.24s., 66m.12s., and 71m.0s., eL = 78·2m.
Long waves were also recorded at Ukiah, Chicago, and Butte.

Sept. 18d. Readings also at 0h. (Stuttgart), 1h. (Manila, Moscow, Sverdlovsk, Ksara, and Samarkand), 2h. (San Juan), 4h. (near Andijan), 6h. (Samarkand, Berkeley, and Branner), 7h. (Phu-Lien, Samarkand, Mount Wilson, Tucson, Pasadena, and Riverside), 9h. (Honolulu), 10h. (Honolulu, Mount Wilson (2), Tucson (3), Pasadena (2), Riverside, Ksara (2), Sitka, Uccle, Sverdlovsk, Baku, La Paz, Brisbane, Melbourne, Paris, Sydney, Riverview, and La Jolla), 11h. (Rome, Istanbul, Tiflis, and Toledo), 19h. (La Paz, San Juan, Sverdlovsk, Haiwee, Pasadena, Tucson, Mount Wilson, Fordham, Balboa Heights, Huancayo, and Zi-ka-wei), 20h. (near Fordham, Baku, Sitka, and near Andijan), 21h. (Rome), 23h. (Erevan, Moncalieri, and near Tiflis).

Sept. 19d. 3h. 24m. 3s. Epicentre 38°·6N. 57°·2E.

$A = +\cdot4244$, $B = +\cdot6586$, $C = +\cdot6213$; $\delta = -12$; $h = -1$;
$D = +\cdot841$, $E = -\cdot542$; $G = +\cdot337$, $H = +\cdot522$, $K = -\cdot784$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku		5·9	290	e 1 32	+ 1	e 2 59	S*	e 1 40	P*	4·0
Samarkand		7·7	79	2 5	+ 9	3 18	− 7	e 2 16	P*	—
Erevan		10·0	283	2 28	+ 1	—	—	—	—	e 7·0
Tiflis		10·0	292	e 2 24	− 3	i 4 19	− 3	i 2 36	PP	e 4·9
Tchimkent		10·2	64	2 29	− 2	4 15	−12	e 2 40	PP	—
Piatigorsk		11·9	302	e 2 51	− 3	i 5 0	− 9	—	—	—
Sotchi		14·1	296	3 23	0	—	—	—	—	—
Almata		15·6	66	e 3 43	0	e 6 57	SS	—	—	—
Ksara		17·9	260	i 4 13a	+ 1	i 7 45	SS	—	—	10·4
Sverdlovsk		18·4	6	i 4 15	− 3	i 7 28	−13	10 9	L_q	12·0
Agra	E.	20·8	115	4 40	− 5	8 28	− 5	—	—	—
Moscow		21·6	329	i 4 53	− 1	8 50	+ 1	—	—	13·2
Istanbul		21·7	286	4 57	+ 2	8 58	+ 7	—	—	—
Helwan		23·0	256	i 5 6k	− 1	9 21	+ 7	i 5 27	PP	13·8
Bombay		23·9	141	i 5 14	− 2	i 9 34	+ 4	i 5 43	PP	11·9
Bucharest		23·9	295	e 5 21	+ 5	9 37	+ 7	—	—	—
Cernauti	N.	24·5	304	e 5 22	0	—	—	—	—	17·9
Sofia		25·9	290	e 5 38	+ 3	e 10 20	+16	—	—	—
Pulkovo		27·2	330	i 5 49	+ 2	e 10 29	+ 4	—	—	e 15·1
Belgrade		28·0	295	e 5 55a	0	e 10 55	+17	e 13 4	SSS	e 19·4
Hyderabad		28·1	132	5 50	− 5	11 0	+20	12 9	SS	15·5
Calcutta	N.	31·0	110	e 7 4	+43	e 12 29	SS	e 8 11	PP	e 16·6
Prague		32·3	306	e 6 35	+ 2	e 14 57?	SSS	—	—	e 17·9
Upsala		32·7	323	6 39	+ 3	13 37	SS	e 7 34	PP	e 15·5
Kodaikanal	E.	33·6	141	e 6 41	− 3	i 12 6	0	e 14 54	SSS	i 18·1
Rome		34·0	290	e 6 44k	− 4	i 12 23	+10	e 14 39	SSS	e 16·7
Jena		34·1	306	i 6 47	− 1	—	—	—	—	—
Copenhagen		34·2	315	i 6 49	0	12 19	+ 3	—	—	—
Irkutsk		35·1	50	e 6 59	+ 2	e 12 36	+ 6	—	—	19·4
Hamburg		35·3	311	e 7 5	+ 6	e 15 51	SSS	8 37	PPP	e 21·6
Chur		35·5	300	e 6 59	− 1	—	—	—	—	—
Stuttgart		35·6	303	e 7 1	0	e 12 36	− 2	e 8 15	PP	e 20·1
Zurich		36·1	300	e 7 4	− 1	—	—	—	—	—
Basle		36·8	301	e 7 10	− 1	—	—	—	—	—
Colombo	E.	37·6	141	e 8 36	PP	e 13 9	+ 1	—	—	e 19·8
De Bilt		38·2	309	e 7 24	+ 1	e 13 20	+ 3	—	—	22·6
Uccle		38·7	306	7 32	+ 5	—	—	i 8 59	PP	e 22·9
Bergen	E.	38·8	322	—	—	e 13 12	−14	—	—	—
Clermont-Ferrand		40·1	298	e 7 43	+ 4	e 13 35	−11	—	—	—
Paris		40·1	303	i 7 42	+ 3	e 13 37	− 9	9 11	PP	e 22·9
Kew		41·6	308	e 7 55	+ 4	e 14 7	− 1	—	—	e 23·9
Algiers		42·4	285	e 7 35	−23	—	—	e 9 38	PP	—
Stonyhurst		42·7	312	e 8 6	+ 6	e 14 26	+ 2	e 9 48	PP	25·9
Edinburgh		43·0	315	—	—	e 14 27	− 2	—	—	—
Jersey		43·0	306	e 8 1	− 2	—	—	—	—	27·4
Bidston		43·1	311	—	—	e 14 30	0	—	—	e 21·9
Almeria		46·5	288	8 27	− 4	15 14	− 5	10 22	PP	—
Toledo		46·6	292	e 8 29	− 3	e 15 20	− 1	e 10 24	PP	—
Granada	N.	47·2	289	—	—	i 19 41	SSS	—	—	—
Scoresby Sund		50·6	335	e 11 32	PP	i 16 27	+10	—	—	—
Manila		60·6	95	—	—	e 17 57?	−33	—	—	—
La Paz		127·6	279	—	—	30 44	PS	—	—	84·0

For Notes see next page.

NOTES TO SEPTEMBER 19d. 3h. 24m. 3s.

Additional readings :—
Baku e = +2m.12s.
Samarkand i = +2m.22s., e = +2m.55s., S_g = +4m.57s.
Tiflis eN = +4m.8s. and +4m.28s., eZ = +4m.33s., e = +4m.36s.
Tchimkent i = +3m.5s., e = +3m.35s., e = +4m.8s.
Piatigorsk e = +4m.56s.
Helwan eZ = +5m.9s., iZ = +6m.12s. and +6m.51s., eE = +9m.57s.
Sofia eSE = +10m.26s.
Belgrade e = +6m.9s.
Hyderabad S_cSN = +16m.38s.
Calcutta eSSN = +14m.26s., eS_cSN = +17m.31s.
Upsala ePN = +6m.43s., eE = +7m.23s., eN = +9m.16s., iN = +14m.26s.
Rome e = +10m.30s. and +12m.29s.
Jena iN = +6m.53s.
Hamburg ePN = +7m.12s.
Stuttgart eNW = +7m.12s., eNE = +7m.43s., eSE = +12m.40s.
Algiers e = +8m.26s.
Almeria S_cS = +18m.17s.
Toledo i = +8m.32s.
Long waves were also recorded at Cape Town, Fordham, and Vladivostok.

Sept. 19d. 18h. Undetermined shock.
Phu-Lien eP = 52m.53s., iS_g = 54m.18s.
Hong Kong P = 56m.7s., S = 56m.57s., L = 57·3m.
Calcutta ePN = 57m.18s., eSN = 59m.30s., iS*N = 60m.21s., iS_gN = 60m.56s.
Sverdlovsk P = 59m.43s., e = 69m.59s., L = 76·0m.
Manila iPZ = 60m.1s., iS?N = 63m.0s.
Zi-ka-wei eZ = 60m.40s., iZ = 62m.12s. and 63m.20s.
Agra eE = 61m.5s.
Bombay eE = 62m.36s., eEN = 67m.21s.
Irkutsk e = 62m.36s., eL = 67·5m.
Vladivostok e = 63m.13s., 68m.16s., 68m.24s., and 69m.3s., L = 69·9m.
Baku e = 68m.49s., eL = 77·4m.
Stuttgart eN = 80m.15s. and 80m.23s., i = 80m.27s.
Rome e = 91m.52s.

Sept. 19d. Readings also at 0h. (near St. Louis), 4h. (Frunse), 5h. (Almata, Andijan, Tchimkent, Bucharest, near Mizusawa, and Semipalatinsk), 6h. (Sitka and Tucson), 9h. (near Andijan), 10h. (near La Paz), 13h. (Tiflis), 18h. (Wellington and La Paz), 19h. (Andijan), 20h. (Tchimkent and near La Paz), 22h. (near La Paz), 23h. (East Machias).

Sept. 20d. 0h. 19m. 26s. Epicentre 38°·0N. 21°·0E.

A = +·7375, B = +·2831, C = +·6131 ; δ = −6 ; h = −1 ;
D = +·358, E = −·934 ; G = +·572, H = +·220, K = −·790.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		5·1	21	e 1 22	+ 2	i 2 38	S*	i 1 48	P_g	—
Sarajevo		6·2	343	i 1 35	0	i 2 43	− 5	i 1 53	P*	—
Belgrade		6·8	357	i 1 42k	− 2	i 3 9	+ 6	i 2 1	P*	3·8
Istanbul		7·0	61	1 49	+ 3	—	—	2 33	P_g	—
Bucharest		7·4	30	e 1 57	+ 5	i 3 28	+10	3 48	S*	—
Rome		7·6	303	i 2 3	+ 8	i 3 18	− 5	i 2 32	P_g	—
Kecskemet	Z.	9·0	354	i 2 12	− 1	i 3 57	− 1	e 4 56	S_g	e 5·1
Laibach	N.E.	9·4	331	i 2 20	+ 2	i 3 56	−11	i 2 44	PPP	—
Budapest		9·6	353	2 20	− 1	4 26	SS	i 4 44	S*	—
Cernauti	N.	10·9	18	e 2 43	+ 3	4 39	− 5	—	—	5·6
Helwan		11·8	130	i 2 50a	− 3	5 34?	+28	i 3 4	PP	—
Chur		12·2	320	e 3 0	+ 2	e 5 6	−10	—	—	—
Moncalieri		12·2	309	e 1 44	?	3 16	?	—	—	5·9
Ksara		12·8	105	i 3 7	+ 1	i 5 18	−12	—	—	6·4
Prague		13·0	341	3 8	− 1	e 5 24	−11	—	—	e 6·6
Zurich		13·1	320	e 3 8	− 2	e 5 25	−13	i 3 19	PP	—
Basle		13·7	319	e 3 16	− 2	e 5 39	−13	—	—	—
Neuchatel		13·7	316	e 3 15	− 3	e 5 30	−22	—	—	—
Stuttgart		13·7	326	e 3 14	− 4	i 5 37	−15	i 3 25	PP	e 6·7
Algiers		14·3	271	i 3 24	− 2	e 6 17	+11	3 39	PP	7·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Besançon		14·4	315	e 3 24	− 3	i 6 12	+ 3	e 3 49	PPP	9·1
Jena		14·5	336	e 3 22	− 6	e 6 30	SS	i 6 46	SSS	e 7·1
Sotchi		15·2	63	3 40	+ 2	e 7 34	L	—	—	(e 7·6)
Clermont-Ferrand		15·4	306	i 3 36	− 4	e 6 26	− 6	—	—	—
Paris		17·2	315	4 3	0	7 7	− 7	e 4 31	PP	9·6
Hamburg		17·3	338	e 4 4	0	e 7 24	+ 8	e 4 55	PPP	e 9·6
Uccle		17·4	323	e 4 6k	0	i 7 14	− 5	i 4 23	PP	9·1
De Bilt		17·9	327	4 14k	+ 2	i 7 37	+ 7	—	—	9·6
Erevan		18·4	76	4 21	+ 3	e 8 10	SS	—	—	—
Heligoland		18·5	335	i 4 18	− 1	e 7 42	− 2	—	—	e 9·9
Tiflis		18·6	71	i 4 21	0	e 7 53	+ 7	i 4 39	PP	—
Almeria		18·7	275	i 4 10	−12	7 33	−15	4 41	PP	8·8
Granada		19·5	277	4 30k	− 1	i 8 14	+ 8	4 56	PP	i 10·9
Toledo		19·6	284	i 4 28	− 4	8 2	− 6	i 5 1	PP	9·6
Jersey		20·0	313	e 4 38	+ 1	e 8 14	− 3	—	—	—
Kew		20·2	320	i 4 37	− 2	e 8 13	− 8	i 4 55	PP	i 11·0
Moscow		21·0	27	4 47	0	8 32	− 5	—	—	8·6
San Fernando		21·7	276	e 5 2	+ 7	e 8 49	− 2	—	—	—
Upsala		22·0	356	e 4 53	− 5	8 50	− 6	i 9 35	SS	e 11·6
Baku		22·5	75	i 5 5	+ 3	9 7	+ 2	—	—	12·2
Bidston		22·6	322	i 5 0	− 3	i 9 0	− 7	e 9 17	SS	—
Pulkovo		22·6	13	i 5 4	+ 1	i 9 3	− 4	—	—	10·7
Stonyhurst		22·6	323	i 5 15	+12	i 9 5	− 2	—	—	12·6
Edinburgh		24·2	327	e 5 15	− 4	e 9 34	− 1	—	—	—
Bergen		24·5	343	e 5 34?	+12	e 9 44	+ 4	—	—	e 12·6
Sverdlovsk		32·2	42	i 6 29	− 3	i 11 36	− 9	—	—	15·0
Samarkand		35·6	73	e 7 0	− 1	e 12 58	+20	—	—	—
Andijan		39·3	70	e 7 34	+ 2	e 13 35	+ 1	e 8 0	PP	17·4
Scoresby Sund		39·5	340	—	—	e 13 35	− 2	—	—	e 16·8
Almata		42·1	64	e 7 58	+ 3	—	—	—	—	—
Agra	E.	48·6	86	e 8 44	− 3	15 39	−10	i 16 9	SS	—
Bombay		48·7	98	i 8 46	− 2	i 15 46	− 4	i 10 42	PP	—
Irkutsk		57·3	47	e 9 51	− 1	e 17 42	− 5	e 18 12	PS	e 31·1
Calcutta	N.	59·0	85	e 9 47	−17	i 18 3	− 7	—	—	—
Harvard	Z.	67·3	308	i 10 57	− 2	—	—	—	—	—
Williamstown		68·2	309	i 11 4	0	—	—	—	—	—
Ottawa		68·3	312	i 11 3	− 2	e 20 22	PS	—	—	—
Fordham		69·6	307	i 11 12a	− 1	e 20 14	− 7	e 20 43	PS	—
San Juan		76·7	284	e 11 54	− 1	e 21 38	− 3	e 14 28	PP	e 31·0
St. Louis		81·0	313	e 12 17	− 1	—	—	—	—	e 33·0
Sitka		83·2	348	—	—	e 23 12	PS	—	—	—
Bozeman		86·2	329	e 12 39	− 5	e 22 52	[−17]	e 23 39	S_eS	e 35·9
Butte		86·5	330	—	—	e 23 40	S_eS	—	—	—
Tucson		96·9	322	13 33	− 1	e 23 56	[−15]	e 17 31	PP	—
Riverside	Z.	98·6	327	e 13 41	− 1	—	—	e 17 49	PP	—
Mount Wilson	Z.	98·7	327	i 17 57	PP	—	—	—	—	—
Pasadena	Z.	98·8	327	e 16 58	?	—	—	i 17 57	PP	—
Huancayo		102·3	264	—	—	e 24 53	[+15]	e 27 3	PS	e 46·7

Additional readings :—
Sofia iE = +2m.8s.
Sarajevo i = +1m.41s., +2m.11s., and +2m.23s.
Belgrade i = +1m.46s., iZ = +2m.12s. and +2m.19s., iNE = +2m.53s., iSNE = +3m.13s., iNW = +3m.24s.
Istanbul PS = +2m.42s., S_g = +4m.41s.
Bucharest S_gE = +4m.40s.
Rome iSN = +3m.12s., iL_g = +3m.39s.
Kecskemet ePPZ = +2m.52s., iPPSZ = +3m.28s.
Laibach iNE = +4m.13s.
Budapest PPN = +3m.11s., PPSE = +3m.50s., SSSE = +5m.30s.
Helwan eE = +3m.37s. and +4m.37s.
Stuttgart iNW = +3m.42s., iSSNW = +5m.56s., iL_q = +6m.22s.
Algiers e = +3m.43s., SS = +6m.42s.
Besançon e = +5m.49s., S = +6m.52s.
Jena ePZ = +3m.30s.
Paris i = +7m.41s.
Hamburg eE = +5m.7s., iE = +7m.42s.
Uccle iZ = +4m.17s., iEN = +7m.41s.
Heligoland eSN = +7m.46s.

Tiflis iN = +4m.26s., iZ = +4m.29s. and +5m.0s., iSZ = +7m.59s., iN = +8m.5s. and +8m.9s.
Almeria PP = +4m.26s., SS = +8m.1s.
Granada eSSN = +9m.14s.
Toledo iPP = +4m.42s.
Kew iZ = +4m.48s. and +5m.17s., iEN = +8m.18s., iN = +8m.22s., iSSEN = +8m.38s., iP_cPZ = +8m.56s., eN = +9m.17s., iP_cSEN = +12m.50s.
San Fernando e?N = +6m.27s.
Upsala iE = +9m.15s.
Bidston i = +10m.51s., iP_cS = +12m.57s.
Stonyhurst i = +9m.15s.
Scoresby Sund eS = +13m.46s.
Bombay E = +16m.9s., iSSE = +19m.18s.
Williamstown i = +11m.12s.
San Juan eP = +12m.14s., eS_cS = +21m.53s., ePPS = +22m.21s.
St. Louis eE = +11m.6s.
Tucson i = +17m.59s., eS = +24m.42s., PS = +25m.46s., ePPS = +26m.44s., eSS = +30m.38s.
Huancayo ePSPS = +33m.25s., eSS = +36m.16s.

Sept. 20d. 3h. Shock recorded in Canada and the United States. Attributed to a Rock-burst at Lake Shore Mines, Kirkland, Lake Ontario.

Ottawa iP = 55m.46s., iP* = 55m.55s., iS = 56m.33s., iS* = 56m.46s., iS_g = 57m.0s.
Shawinigan Falls P = 56m.1s., S = 56m.57s., L = 57m.20s.
Williamstown iP = 56m.30s., iS? = 57m.50s., i = 58m.4s., iS? = 58m.26s. and 58m.39s.
Harvard iP = 56m.42s., i = 58m.5s. and 58m.15s., iSEZ = 58m.23s., iN = 58m.37s., iEN = 58m.47s., iSZ = 58m.53s.
Fordham iPZ = 56m.47s.k, iZ = 58m.19s., 58m.30s., 58m.42s., 58m.52s., 59m.0s., and 59m.15s., iEN = 59m.42s.
Toronto i = 57m.0s.
Seven Falls e = 57m.29s., L = 58m.1s.
Pittsburgh ePZ = 58m.3s., eP*Z = 58m.7s., eS?Z = 58m.39s., eS*?Z = 58m.43s.
St. Louis eN = 58m.42s., eE = 59m.11s., eN = 60m.7s.
Chicago e = 58m.56s.
East Machias e = 59m.31s., i = 59m.47s.
Tucson eP = 60m.35s.
Bozeman e = 62m.7s.

Sept. 20d. 6h. 53m. 10s. Epicentre 10°·3S. 75°·4W. (as on 1937 Dec. 24d.).

Slightly deeper than normal—Pasadena.

A = +·2481, B = −·9523, C = −·1776; δ = −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 23	− 9	—	—	—	—	—
La Paz		9·4	132	i 0 57a	?	i 3 39	−28	—	—	i 4·0
Balboa Heights		19·6	349	e 4 51	pP	—	—	—	—	—
Fort de France		28·6	31	e 6 13	+13	—	—	—	—	—
San Juan		29·9	17	e 6 13	+ 1	e 11 14	+ 5	e 7 35	PP	e 12·7
St. Louis		50·6	345	e 9 2	0	—	—	—	—	—
Fordham		50·9	2	i 9 13k	+ 8	e 16 47	+26	—	—	—
Williamstown		52·8	4	(i 9 34)	+15	i 9 34	P	—	—	—
Tucson		54·2	323	i 9 29	0	e 16 52	−14	i 9 42	pP	e 25·5
Ottawa		55·4	0	i 9 44	+ 6	e 18 8	?	—	—	—
La Jolla		58·6	319	e 9 59	− 2	—	—	—	—	—
Riverside		59·4	320	i 10 5a	− 1	—	—	i 10 19	pP	—
Mount Wilson		60·0	320	i 10 9a	− 2	i 10 22	pP	e 39 20	P'P'	—
Pasadena		60·0	320	i 10 10	− 1	i 10 23	pP	i 39 21	P'P'	—
Haiwee		61·2	322	i 10 17	− 2	—	—	i 10 31	pP	—
Santa Barbara		61·2	319	e 10 15	− 4	—	—	—	—	—
Toledo		82·6	47	e 12 25	− 1	—	—	—	—	—
Rome		95·2	48	e 24 33	S	(e 24 33)	− 7	e 26 48	PPS	—
Helwan		109·5	62	—	—	e 28 56	PS	e 34 54	SS	—
Andijan		138·4	38	e 19 22	[− 5]	—	—	e 23 1	PP	—
Kodaikanal	E.	153·3	87	—	—	e 31 50?	?	—	—	—

For Notes see next page.

NOTES TO SEPTEMBER 20d. 6h. 53m. 10s.

Additional readings :—
San Juan esP = +7m.3s.
St. Louis eE = +6m.51s., iEN = +8m.7s., eN = +8m.20s.
Tucson sP = +10m.1s., eP_cP = +10m.27s., ePP = +11m.28s., esPP = +12m.15s., eP_cS = +14m.23s., esS = +17m.15s.
Rome e = +37m.59s.
Helwan eE = +48m.20s.

Sept. 20d. 7h. 28m. 7s. Epicentre 51°·3S. 163°·6E.

A = −·6023, B = +·1773, C = −·7783 ; $\delta = -5$; $h = -6$;
D = +·282, E = +·959 ; G = +·747, H = −·220, K = −·628.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Christchurch		9·9	41	e 2 25	0	e 4 9	−11	i 5 5	S*	i 5·6
Wellington		12·6	42	i 3 4	+ 1	i 5 44	SS	6 23	L_Q	6·9
New Plymouth		14·2	35	i 2 53?	−31	—	—	—	—	e 7·9
Melbourne		18·8	309	4 24	+ 1	7 56	+ 6	—	—	i 10·1
Riverview		19·7	328	i 4 32a	− 2	i 8 5	− 5	—	—	—
Sydney		19·7	328	e 4 35	+ 1	i 7 53	−17	—	—	—
Adelaide		24·3	303	i 5 29	+ 9	i 9 35	− 2	i 10 3	SS	11·7
Brisbane		25·1	338	i 5 29	+ 1	i 9 47	− 4	i 5 59	PP	—
Perth		39·8	280	7 51	+15	13 55	+13	16 18	SS	18·6
Colombo	E.	91·4	279	—	—	e 23 53?	[+12]	—	—	—
Calcutta	N.	98·6	296	—	—	e 23 37	[−43]	—	—	—
Huancayo		99·0	122	—	—	e 24 28	[+ 6]	e 25 24	PS	—
Agra	E.	108·1	291	—	—	i 25 12	[+ 8]	—	—	—
Ukiah		110·4	53	—	—	e 28 18	PS	—	—	e 49·2
Tucson		111·8	66	e 18 23	[−14]	e 25 14	[− 5]	e 38 33	SSS	e 44·6
San Juan		129·0	111	e 19 11	[+ 1]	e 26 4	[−13]	e 22 5	PKS	e 56·0
Chicago		132·0	71	e 21 38	PP	e 28 10	{−22}	e 22 58	PKS	e 58·0
Baku		134·0	284	e 22 2	PP	—	?	e 40 23	SSP	63·9
Tiflis		137·9	282	e 19 44	[+17]	e 34 43	PPS	e 22 28	PP	e 68·9
Ksara		138·7	266	e 19 39	[+11]	e 35 18	PPS	e 22 34	PP	—
Ottawa		141·1	74	e 23 29	PKS	—	—	—	—	65·9
Rome		158·2	255	e 20 8	[+ 9]	e 31 22	{+19}	e 37 50	PPS	e 52·8
Uccle		166·9	277	e 21 23	[+76]	—	—	—	—	e 85·9
Paris		167·6	268	e 20 53?	[+45]	—	—	e 25 18	PP	e 90·9
Kew		169·9	279	e 20 23	[+14]	—	—	—	—	e 86·9

Additional readings :—
Riverview eSN = +8m.9s.
Perth i = +17m.33s.
Huancayo S = +24m.44s.
Tucson ePKP = +18m.49s.
San Juan eSKKS = +27m.29s., ePS = +31m.20s., eSS = +37m.57s., eSSS = +42m.33s.
Chicago ePPP = +24m.38s., ePS = +32m.5s.
Baku e = +23m.7s., e = +36m.48s.
Tiflis eSKPEZ = +23m.19s., eSKPN = +23m.42s.
Rome e = +34m.25s., eZ = +39m.47s., eSSS = +49m.23s.
Long waves were also recorded at Bombay, Tuai, Pasadena, Harvard, Sverdlovsk, Bidston, Clermont-Ferrand, De Bilt, Toledo, Salt Lake City, Berkeley, and Bozeman.

Sept. 20d. Readings also at 2h. (near Santa Clara, near Lick, Berkeley, Ukiah, Tucson, and near Fresno), 4h. (Ottawa), 7h. (Huancayo, near Rome, Tucson, and La Paz (2)), 9h. (La Paz), 10h. (Frunse and near Andijan), 11h. (Sitka, Tucson, Fresno, and Lick), 12h. (Sitka), 13h. (Andijan, Calcutta, Sverdlovsk, Phu-Lien (2), Palomar, Almata (2), Tucson, Sitka, La Jolla, Riverside, Mount Wilson, Pasadena, Tiflis, and Tchimkent), 15h. (near Basle, Neuchatel, Zurich, and Stuttgart), 17h. (Rome, Haiwee, Pasadena, Mount Wilson, Santa Barbara, Riverside, La Jolla, and Tucson), 20h. (Fort de France, Samarkand, Tchimkent, and Andijan), 22h. (Tiflis), 23h. (Andijan).

Sept. 21d. 11h. 18m. 39s. Epicentre 55°·3N. 35°·0W.

$A = +\cdot4685$, $B = -\cdot3280$, $C = +\cdot8204$; $\delta = +13$; $h = -7$;
$D = -\cdot574$, $E = -\cdot819$; $G = +\cdot672$, $H = -\cdot471$, $K = -\cdot572$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Scoresby Sund	16·3	16	e 4 3	PP	e 7 13	SS	—	—	e 8·2
Edinburgh	17·9	75	—	—	e 7 58	SS	—	—	—
Stonyhurst	18·8	80	i 4 21	− 2	i 8 21	SS	—	—	9·4
Jersey	20·9	92	e 4 55	+ 9	e 8 56	SS	—	—	—
Kew	20·9	85	e 4 50	+ 4	e 8 50	+15	—	—	e 10·3
East Machias	23·1	257	e 5 5	− 3	9 23	+ 7	—	—	e 11·9
Paris	23·7	90	5 16	+ 2	—	—	—	—	e 11·3
De Bilt	23·8	80	i 5 10a	− 5	—	—	—	—	12·4
Uccle	23·9	84	e 5 17	+ 1	e 9 38	+ 8	—	—	e 11·9
Ottawa	27·4	267	i 5 48	− 1	e 10 21?	− 7	—	—	15·4
Rome	33·4	92	e 6 44	+ 2	e 12 10	+ 7	—	—	e 16·5
Bozeman	47·0	292	—	—	e 16 8	+42	—	—	e 23·5
Ksara	52·4	84	e 9 17	+ 1	—	—	—	—	—
Tucson	56·3	279	e 9 44	− 1	e 17 52	+18	e 13 8	PPP	—

Tucson also gives eSS = +21m.32s.
Long waves were also recorded at Clermont-Ferrand, San Fernando, Basle, Ivigtut, Bidston, Philadelphia, Harvard, Chicago, Tiflis, and Baku.

Sept. 21d. 11h. 42m. 50s. Epicentre 55°·3N. 35°·0W. (as at 11h. 18m.).

$A = +\cdot4685$, $B = -\cdot3280$, $C = +\cdot8204$; $\delta = +13$; $h = -7$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bidston	18·6	82	e 4 22	+ 1	e 7 59	+13	—	—	9·2
Stonyhurst	18·8	80	i 4 25	+ 2	e 8 0	+10	—	—	10·2
Jersey	20·9	92	e 4 47	+ 1	e 8 50	+15	—	—	e 10·7
Kew	20·9	85	e 4 50	+ 4	e 8 49	+14	—	—	e 10·7
East Machias	23·1	257	e 5 10	+ 2	e 9 19	+ 3	—	—	e 10·7
Paris	23·7	90	5 16	+ 2	e 8 31	−56	—	—	e 11·2
Seven Falls	23·7	266	—	—	e 9 10?	−17	—	—	12·2
De Bilt	23·8	80	5 16	+ 1	e 9 39	+11	—	—	e 12·2
Uccle	23·9	84	5 16	0	e 9 37	+ 7	—	—	e 11·9
Hamburg	25·9	74	—	—	e 9 10	−54	—	—	—
Basle	27·3	87	e 4 50	−58	—	—	e 6 46	PPP	—
Ottawa	27·4	267	i 5 46	− 3	e 10 40	+12	—	—	15·2
Zurich	28·0	87	e 6 52	PPP	—	—	—	—	—
Philadelphia	30·6	256	e 7 32	PPP	e 11 24	+ 4	—	—	e 12·8
Rome	33·4	92	e 6 44	+ 2	e 12 9	+ 6	—	—	e 16·5
Bozeman	47·0	292	—	—	e 15 17	− 9	—	—	e 24·4
Sverdlovsk	49·1	46	e 8 49	− 2	e 16 3	+ 7	—	—	24·2
Tiflis	51·7	70	9 15	+ 4	e 16 44	+12	—	—	e 26·2
Ksara	52·4	84	e 9 15	− 1	e 16 54	+12	—	—	—
Tucson	56·3	279	e 9 44	− 1	—	—	—	—	—
Mount Wilson z.	58·9	286	e 10 3	0	—	—	—	—	—

Tucson also gives eP = +10m.23s.
Long waves were also recorded at Chicago, San Fernando, Clermont-Ferrand, and Ivigtut.

Sept. 21d. 12h. 43m. 48s. Epicentre 55°·3N. 35°·0W. (as at 11h.).

$A = +\cdot4685$, $B = -\cdot3280$, $C = +\cdot8204$; $\delta = +13$; $h = -7$;
$D = -\cdot574$, $E = -\cdot819$; $G = +\cdot672$, $H = -\cdot471$, $K = -\cdot572$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ivigtut		9·1	316	2 11	− 3	—	—	—	—	3·2
Scoresby Sund		16·3	16	i 3 54	+ 2	—	—	i 4 16	PPP	e 7·1
Edinburgh		17·9	75	e 4 12	0	—	—	—	—	—
Bidston		18·6	82	i 4 17	− 4	e 7 54	+ 8	—	—	e 9·2
Stonyhurst		18·8	80	i 4 25	+ 2	i 8 17	SS	—	—	e 9·5
Jersey		20·9	92	e 4 46	0	e 8 52	+17	e 5 12?	PP	e 10·2
Kew		20·9	85	i 4 47	+ 1	e 8 49	+14	—	—	e 10·2
Halifax		21·1	251	i 4 52	+ 4	e 8 42	+ 3	—	—	12·2
East Machias		23·1	257	i 5 9	+ 1	e 9 20	+ 4	—	—	e 10·8
Paris		23·7	90	i 5 15	+ 1	—	—	—	—	11·2
Seven Falls		23·7	266	e 5 16	+ 2	e 9 36	+ 9	—	—	12·2
Uccle		23·9	84	e 5 17	+ 1	9 36	+ 6	—	—	e 11·6
Heligoland		24·5	74	e 5 21	− 1	—	—	—	—	e 12·0
Clermont-Ferrand		25·7	96	e 5 33	0	e 10 5	+ 4	—	—	e 12·6
Toledo		25·7	114	i 5 34	+ 1	e 9 55	− 6	—	—	—
Hamburg		25·9	74	e 5 42	+ 7	—	—	—	—	e 14·2
Copenhagen		26·5	68	5 40	− 1	—	—	—	—	13·2
Ottawa		27·4	267	i 5 49	0	e 10 30	+ 2	—	—	14·2
Stuttgart		27·6	84	e 5 50	− 1	e 10 40	+ 8	e 7 27	PPP	e 15·7
Almeria		28·7	116	5 53	− 8	—	—	6 39	PP	13·5
Philadelphia		30·6	256	e 6 20	+ 2	e 11 20	0	—	—	e 12·8
Bermuda		31·1	235	e 6 41	+19	e 11 42	+14	—	—	e 14·8
Algiers		31·7	110	e 7 41	PP	e 14 28	SSS	—	—	—
Pittsburgh		33·0	263	e 6 48	+ 9	e 12 5	+ 8	e 8 26	PPP	e 16·6
Rome		33·4	92	6 45k	+ 3	12 11	+ 8	7 48	PP	e 16·6
Chicago		36·4	272	e 7 16	+ 8	e 12 41	− 9	—	—	e 15·9
Columbia		38·1	256	e 7 23	+ 1	e 13 21	+ 5	e 8 49	PP	e 16·3
Sofia		39·1	83	e 7 36	+ 5	—	—	—	—	—
Moscow		39·3	58	e 7 31	− 1	—	—	e 9 11	PP	e 21·7
Florissant		40·0	270	e 8 59	PP	e 13 47	+ 3	e 9 4	PP	e 20·3
St. Louis		40·1	270	e 7 39	0	(e 13 42)	− 4	—	—	e 13·7
Cape Girardeau	N.	40·6	267	e 8 22	+39	—	—	—	—	e 21·2
Bozeman		47·0	292	e 8 34	− 1	e 15 27	+ 1	e 10 2	P_cP	e 22·6
Butte		47·6	293	e 8 41	+ 2	e 15 41	+ 6	—	—	e 23·8
Sverdlovsk		49·1	46	e 8 49	− 2	16 2	+ 6	—	—	21·2
College		49·7	329	e 7 55	−61	e 16 8	+ 4	—	—	e 24·8
Salt Lake City		50·8	287	—	—	e 15 16	−64	—	—	e 20·6
Victoria		51·5	302	—	—	e 15 48	−41	—	—	25·2
Tiflis		51·7	70	i 9 12	+ 1	16 45	+13	—	—	e 25·2
Ksara		52·4	84	i 9 17k	+ 1	e 16 55	+13	e 11 16	PP	—
Helwan		52·7	90	i 9 25k	+ 7	e 16 54	+ 8	—	—	—
Baku		55·4	68	e 9 40	+ 2	17 36	+14	—	—	28·2
Tucson		56·3	279	e 9 44	− 1	e 17 51	+17	e 10 41	P_cP	e 24·2
Haiwee		57·4	288	e 10 11	+18	—	—	—	—	—
Ukiah		58·0	294	—	—	e 17 55	− 2	e 21 24	SS	e 25·5
Riverside	z.	58·7	286	e 10 1	− 1	—	—	—	—	—
Mount Wilson	z.	58·9	286	e 10 2	− 1	—	—	—	—	—
Pasadena	z.	59·0	286	i 10 5	+ 1	—	—	—	—	—
Tchimkent		63·7	53	e 10 34	− 2	—	—	—	—	—
Samarkand		64·5	57	e 10 40	− 1	—	—	—	—	—
Frunse		65·5	50	e 11 37	+50	—	—	—	—	—
Andijan		66·2	53	e 10 47	− 5	—	—	—	—	—
La Paz	z.	76·8	213	12 4	+ 9	—	—	—	—	—

Additional readings :—
Scoresby Sund i = +5m.14s.
Kew iEZ = +4m.52s.
East Machias iS = +9m.34s.
Paris e = +8m.47s.
Uccle SN = +9m.43s.
Toledo e = +9m.0s.

Continued on next page.

Copenhagen +5m.49s.
Stuttgart eSSE = +11m.47s.
Algiers e = +10m.24s.
Rome iZ = +7m.0s., iPPP = +8m.3s.
St. Louis eN = +7m.18s.
Cape Girardeau eN = +8m.49s., +10m.30s., and +19m.38s.
Bozeman eS_eS = +18m.24s.
Helwan eZ = +10m.33s.
Tucson ePP = +11m.53s., ePPP = +13m.15s., eSS = +21m.45s.
Long waves were also recorded at Upsala, San Fernando, Seattle, Berkeley, Harvard, Fordham, and Santa Clara.

Sept. 21d. 21h. 27m. 18s. Epicentre 29°·3N. 114°·3W.

A = −·3594, B = −·7961, C = +·4869; δ = +2; h = +2;
D = −·911, E = +·412; G = −·200, H = −·444, K = −·873.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		4·1	45	e 1 5	0	i 1 58	+ 3	—	—	—
La Jolla		4·4	325	i 1 8	− 2	i 2 8	+ 6	i 1 58	P_g	—
Riverside		5·4	332	e 1 19	− 5	i 2 33	+ 5	i 1 35	P*	—
Pasadena		5·8	328	e 1 28	− 1	i 2 42	+ 4	—	—	i 2·8
Mount Wilson		5·9	328	i 1 28	− 3	e 2 46	+ 6	i 1 49	P*	—
Haiwee	Z.	7·5	337	e 1 47	− 6	—	—	—	—	—
Fresno	N.	8·7	330	e 2 42	P*	—	—	—	—	i 5·1
Lick	N.	10·1	324	e 2 58	PPP	—	—	—	—	e 6·1
Santa Clara		10·3	323	e 2 34	+ 2	i 4 52	SS	—	—	—
Branner		10·4	323	e 2 41	+ 7	e 5 52	S*	—	—	—
Berkeley		10·8	324	e 2 42	+ 3	e 4 56	+14	e 2 58	PP	e 5·9
San Francisco	E.	10·8	325	e 1 48	−51	e 5 13	SSS	—	—	—
Salt Lake City		11·6	9	—	—	4 42	−19	—	—	i 5·2
Ukiah		12·2	326	e 2 56	− 2	e 5 48	SSS	—	—	e 6·1
Denver	N.	12·9	34	e 3 5	− 2	e 5 4	−29	—	—	e 6·4
Bozeman		16·6	9	3 59k	+ 3	e 7 12	SS	7 22	SSS	8·8
Butte		16·7	5	e 4 1	+ 4	e 7 32	SSS	—	—	e 9·3
Tacubaya	N.	16·9	122	e 4 38	PP	—	—	—	—	e 9·8
Lincoln		18·4	48	e 4 21	+ 3	e 7 43	+ 2	—	—	e 8·3
Seattle		19·3	344	—	—	e 8 45	SS	—	—	9·3
Victoria		20·3	344	4 48	+ 8	8 48	SS	—	—	10·7
Florissant		21·9	58	i 5 2	+ 5	e 8 57	+ 3	—	—	—
St. Louis		22·0	58	e 5 2	+ 4	e 8 58	+ 2	—	—	e 10·7
Chicago		25·0	52	5 33	+ 6	e 9 54	+ 5	—	—	e 11·3
Columbia		28·6	71	e 6 2	+ 2	e 10 49	+ 1	—	—	e 12·7
Pittsburgh		30·1	58	e 6 25	+12	e 11 27	+15	i 12 44	SS	e 15·6
Toronto		31·3	53	—	—	e 11 42	+11	—	—	e 16·2
Sitka		31·4	339	e 6 35	+10	e 11 45	+13	e 7 30	PP	e 13·4
Ottawa		34·2	51	i 6 54	+ 5	e 12 24	+ 8	e 8 24	PPP	18·2
Harvard		36·7	57	i 7 7	− 3	e 13 2	+ 8	e 8 31	PP	e 22·0
Seven Falls		37·9	49	—	—	e 13 24	+11	—	—	19·7
East Machias		40·0	54	e 9 5	PP	e 13 29	−15	—	—	e 16·8
Bermuda		42·3	73	e 8 21	+24	e 14 33	+14	e 9 59	PPP	e 17·4
San Juan		45·1	92	e 8 35	+15	e 14 42	−17	—	—	e 18·8
Huancayo		55·7	132	e 10 2	+22	e 17 12	−14	e 11 55	PP	e 26·8
Paris		84·0	36	12 43	+10	—	—	—	—	e 42·7
Sverdlovsk		94·1	2	—	—	e 24 16	−15	—	—	47·7
Ksara		111·2	26	e 19 21	PP	e 28 55	PS	—	—	—

Additional readings :—
Branner ePN = +2m.44s., eSN = +7m.17s.
Berkeley eN = +5m.8s.
San Francisco iE = +5m.27s.
Salt Lake City S = +4m.59s.
Denver eN = +4m.18s.
Florissant iSN = +9m.2s.
St. Louis iSE = +9m.3s.
Columbia eS = +10m.57s. and +11m.15s.
Sitka eP = +7m.0s.
Harvard eL_qN = +19m.48s.

Continued on next page.

San Juan eS = +15m.14s.
Huancayo ePPP = +13m.16s., eS = +17m.50s., eSS = +21m.43s.
Long waves were also recorded at Clermont-Ferrand, Hamburg, Uccle, De Bilt, Kew, Jersey, Stonyhurst, Bidston, Honolulu, Ferndale, Williamstown, Fordham, College, La Paz, Tiflis, Baku, and Scoresby Sund.

Sept. 21d. Readings also at 0h. (Almata), 1h. (Samarkand), 3h. (Andijan and Samarkand), 5h. (near Zurich), 6h. (La Paz, Tacubaya, Oaxaca, and Tucson), 7h. (Tucson and near Mizusawa (2)), 9h. (Fresno, Tucson, and Lick), 11h. (near Balboa Heights), 13h. (near Tucson (2), near Mizusawa, and Ukiah), 14h. (near Tucson, Baku, Rome, Sverdlovsk, and Irkutsk), 15h. (Ksara, Wellington, New Plymouth, and near Tuai), 18h. (near Mizusawa), 19h. (Berkeley, near Branner, Fresno, near Sofia, and near Lick), 20h. (near Fordham, Williamstown (2), near Harvard, and near Tucson), 21h. (Rome and Tucson), 22h. (Tiflis and Tucson (2)), 23h. (Tucson).

Sept. 22d. 0h. 36m. 32s. Epicentre 39°·0N. 26°·9E.

Damage at Dikili, Kabakum, Makaronya, and on the Dikili-Bergama road.

Prof. Wilhelm Salomon-Calvi.

Das Erdbeben von Dikili-Bergama (Westanatolien), von 21-22, IX, 1939.

"Meteae," Serie B, Abhandlungen, No. 5, Ankara, 1940, pp. 31-45, résumé in German. pp. 46-59, 6 plates and an isoseismic chart.

Epicentre 39°03′N. 26°48′E., approx. in the sea between Lesbos and Dikili.

$A = +\cdot6949$, $B = +\cdot3525$, $C = +\cdot6268$; $\delta = +2$; $h = -1$;
$D = +\cdot452$, $E = -\cdot892$; $G = +\cdot559$, $H = +\cdot284$, $K = -\cdot779$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		2·7	39	0 42	− 3	1 25	+ 6	0 47	P_g	—
Sofia		4·6	325	i 1 13a	+ 1	i 2 19	S*	i 1 27	P_g	—
Bucharest		5·4	353	e 1 24	0	2 32	+ 4	1 53	P_g	—
Belgrade		7·5	323	i 1 53a	0	i 3 34	+14	i 2 21	P-	—
Sarajevo		8·0	310	i 2 4	+ 4	i 4 3	S*	i 2 19	P*	—
Ksara		8·9	123	i 2 11k	− 1	i 3 54	− 1	—	—	i 4·9
Cernauti		9·3	354	e 2 19	+ 2	4 17	+12	—	—	4·9
Kecskemet	z.	9·5	329	e 2 19	− 1	i 4 21	+11	e 2 32	PPP	e 4·9
Helwan		9·8	157	i 2 22	− 2	e 4 28	+11	—	—	e 7·4
Budapest		10·2	329	2 29	− 2	i 4 25	− 2	2 39	PP	5·5
Sotchi		10·7	60	2 31	− 7	e 5 38	L	—	—	(e 5·6)
Rome		11·4	283	i 2 46k	− 1	i 5 6	+10	e 2 57	PP	i 6·6
Laibach		11·6	312	e 3 57	+67	i 4 32	−29	—	—	i 6·8
Erevan		13·6	80	3 24	+ 7	—	—	—	—	8·0
Tiflis		13·9	74	i 3 23	+ 2	e 5 52	− 6	i 3 30	PP	e 6·5
Prague		14·2	326	3 27	+ 3	e 6 4	0	—	—	e 6·5
Grozny		14·8	67	3 31	− 1	—	—	—	—	8·0
Chur		14·9	307	e 3 34	0	—	—	—	—	e 8·1
Moncalieri		15·5	319	i 3 38	− 4	7 8	SSS	—	—	—
Zurich		15·8	308	e 3 45	0	e 6 48	+ 6	—	—	—
Stuttgart		16·0	313	e 3 48k	0	i 6 54	+ 8	i 4 8	PP	i 8·5
Jena		16·1	322	e 3 48	− 1	i 7 4	SS	—	—	e 7·8
Sion		16·1	303	e 3 54	+ 5	e 7 4	SS	—	—	—
Basle		16·4	308	e 3 53	0	e 7 6	SS	—	—	—
Neuchatel		16·6	305	e 3 56	0	—	—	—	—	e 9·0
Marseilles		16·7	292	(e 4 3)	+ 6	(e 7 25)	+22	—	—	(8·9)
Göttingen		17·2	322	i 4 3k	0	i 7 27	+13	—	—	e 9·4
Besançon		17·3	305	i 4 7	+ 3	e 7 58	SSS	i 4 29	PP	10·0
Baku		17·7	78	e 4 12	+ 2	—	—	e 4 20	PP	8·1
Moscow		18·2	18	e 4 13	− 3	7 36	− 1	—	—	9·0
Hamburg		18·6	326	4 21	0	e 7 45	− 1	—	—	e 9·6
Clermont-Ferrand		18·8	298	i 4 21	− 2	e 7 39	−11	—	—	e 10·5
Algiers		19·0	270	i 4 28	+ 2	i 8 6	+11	4 48	PP	9·5
Copenhagen		19·3	335	4 27k	− 2	e 8 7	+ 5	5 5	PPP	8·5
Uccle		19·8	314	e 4 34	− 1	i 8 20	+ 7	i 4 45	PP	10·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	h. m. s.	s.	h. m. s.	s.	h. m. s.		h. m.
Heligoland		19·9	326	i 4 35k	− 1	e 8 17	+ 2	—	—	e 10·2
De Bilt		20·0	319	i 4 36k	− 1	i 8 23	+ 6	—	—	10·9
Paris		20·1	307	i 4 38k	0	i 8 23	+ 4	i 8 57	SS	e 10·5
Pulkovo		20·9	4	e 4 48	+ 2	8 32	− 3	—	—	e 9·9
Upsala		21·7	346	e 4 47	− 8	8 46	− 5	—	—	e 10·5
Kew		22·7	312	i 5 5k	+ 1	i 9 15	+ 6	e 5 39	PPP	e 11·0
Almeria		22·8	274	i 5 13	+ 8	9 33	SS	5 46	PPP	11·0
Jersey		23·0	307	e 5 8	+ 1	i 9 17	+ 3	e 5 43	PPP	e 11·0
Toledo		23·9	282	e 5 16	0	9 28	− 2	e 5 52	PP	—
Granada		24·0	276	i 5 20k	+ 3	i 9 39	+ 7	5 51	PP	—
Stonyhurst		24·9	317	e 5 28	+ 2	i 9 52	+ 5	—	—	14·2
Bidston		25·0	315	i 5 26	− 1	i 9 37	−12	e 5 15	PP	e 9·8
Bergen		25·3	336	i 5 34	+ 4	e 10 15	+21	—	—	e 13·5
Edinburgh		26·2	320	5 36	− 2	9 53	−16	9 28	P_gP	—
San Fernando		26·2	275	e 5 41	+ 3	10 19	+10	e 5 58	PP	13·5
Sverdlovsk		28·4	39	i 5 57	− 1	i 10 41	− 4	14 4	L_g	17·3
Samarkand		30·8	75	6 19	− 1	e 11 59	+36	—	—	18·0
Tchimkent		32·3	69	e 6 32	− 1	—	—	—	—	—
Andijan		34·6	72	e 6 56	+ 3	e 12 28	+ 6	—	—	21·9
Semipalatinsk		38·8	54	e 7 30	+ 2	—	—	—	—	—
Scoresby Sund		40·0	337	7 43	+ 5	e 13 50	+ 6	9 28	PP	i 16·2
Dehra Dun		42·5	85	e 11 15?	?	e 17 10	SS	—	—	e 23·7
Agra	E.	43·9	89	e 8 11	+ 1	14 44	+ 2	—	—	—
Bombay		44·4	103	i 8 15	+ 1	i 14 50	+ 1	i 9 36	PP	21·6
Hyderabad		49·5	100	8 56	+ 2	16 2	0	18 59	S_cS	25·4
Ivigtut		49·8	322	8 59	+ 3	16 16	+10	—	—	—
Irkutsk		53·2	48	e 9 25	+ 3	e 17 28	PPS	e 12 35	PPP	29·0
Kodaikanal	E.	53·3	108	e 9 25	+ 2	i 16 54	0	17 2	PS	27·7
Calcutta	N.	54·3	88	e 10 1	+31	i 17 12	+ 5	e 20 32	SS	e 25·1
Colombo	E.	57·3	109	—	—	17 28?	−19	—	—	31·4
Halifax		64·8	307	—	—	e 18 28?	−55	—	—	29·5
East Machias		66·5	309	e 10 51	− 3	e 19 42	− 2	—	—	e 28·6
Seven Falls		67·3	313	e 10 28?	−31	e 19 28?	−26	—	—	e 31·5
Phu-Lien		69·4	79	e 11 12	0	—	—	—	—	—
Vermont		70·1	312	e 11 17	+ 1	e 20 37	+10	—	—	e 31·8
Harvard		70·3	309	e 11 16	− 1	—	—	—	—	e 23·5
Ottawa		71·0	314	i 11 22	0	e 20 46	+ 9	e 25 28?	SS	32·5
Williamstown		71·2	310	i 11 24	+ 1	—	—	—	—	e 34·0
Bermuda		71·7	296	e 11 27	+ 1	20 50	+ 5	e 14 5	PP	e 30·7
Fordham		72·7	309	e 11 31	− 1	e 20 59	+ 2	—	—	—
Cape Town		73·0	187	—	—	e 21 6	+ 6	e 25 36	SS	—
Zinsen		74·0	54	25 18	SS	—	—	—	—	—
Toronto		74·2	314	—	—	e 21 10	− 4	—	—	32·5
Hong Kong		74·3	73	—	—	21 15	+ 1	26 17	SS	—
College		76·4	358	e 12 29	+36	e 21 40	+ 2	e 14 28	PP	e 31·8
Pittsburgh		76·5	312	e 11 57	+ 3	i 21 46	+ 7	e 16 9	PPP	—
Chicago		79·9	317	e 12 5	− 7	e 22 10	− 6	e 27 34	SS	e 35·3
San Juan		80·9	286	—	—	e 22 34	+ 8	—	—	e 34·0
Columbia		81·4	307	i 17 45	PPP	e 26 42	SS	—	—	e 34·8
Sitka		83·1	350	—	—	e 22 53	+ 5	e 31 44	SSS	e 33·4
Florissant		83·6	315	i 12 31	− 1	e 22 53	0	—	—	39·5
St. Louis		83·6	315	e 12 28	− 4	e 22 52	− 1	—	—	—
Cape Girardeau		84·2	313	—	—	e 22 31	−28	—	—	e 39·5
Lincoln		85·4	320	e 12 43	+ 3	e 23 7	[+ 4]	e 15 42	PP	e 34·8
Bozeman		87·6	332	e 12 50	− 1	e 23 38	+ 6	e 16 19	PP	e 35·8
Butte		87·9	333	e 12 54	+ 1	e 23 32	− 3	e 17 58	PPP	e 38·6
Victoria		89·0	340	—	—	e 23 34	[+ 7]	—	—	38·5
Rio de Janeiro	E.	89·9	240	—	—	e 23 28	[− 4]	—	—	e 37·9
Salt Lake City		92·1	330	—	—	e 34 35	SSS	—	—	e 39·9
Ukiah		97·4	336	—	—	e 26 33	PS	—	—	—
Haiwee	Z.	98·5	331	e 13 45	+ 3	—	—	—	—	—
Tucson		98·9	324	e 13 44	+ 1	e 24 10	[−11]	e 18 9	PP	42·1
Mount Wilson	Z.	100·2	330	e 13 52	+ 3	—	—	e 17 58	PP	—
Pasadena		100·4	330	e 13 52	+ 2	—	—	e 17 59	PP	e 44·0
La Paz	Z.	104·0	259	e 18 5	PP	29 5	PPS	—	—	53·5
Huancayo		106·9	268	e 14 12	P	e 24 42	[−17]	e 20 36	PPP	—

For Notes see next page.

NOTES TO SEPTEMBER 22d. 0h. 36m. 32s.

Additional readings :—
Bucharest SN = +2m.36s., E = +2m.58s., N = +3m.12s.
Belgrade iZ = +2m.0s., +2m.46s., and +3m.46s., iNE = +3m.50s. and +3m.59s.
Sarajevo i = +2m.46s., i = +4m.31s.
Kecskemet eZ = +2m.52s., iPPPZ = +3m.1s., eZ = +3m.14s. and +3m.31s., ePPSZ = +3m.56s.
Helwan PPZ = +3m.8s.
Budapest SE = +4m.47s., SN = +4m.53s., iN = +5m.15s.
Rome iZ = +2m.50s. and +3m.34s., iE = +6m.13s.
Laibach iNE = +4m.11s.
Tiflis PPP = +3m.35s., iS = +6m.6s.
Stuttgart iP = +3m.54s., iE = +7m.9s., iN = +7m.16s., eSSE = +7m.41s., iP_cPE = +8m.9s.
Jena iPZ = +3m.52s., iPEN = +3m.56s., iSZ = +7m.8s.
Marseilles readings have been reduced by 1 minute, by comparison with Paris.
Göttingen e = +5m.24s.
Baku i = +4m.15s. and +6m.35s.
Hamburg eSN = +7m.56s.
Algiers PPP = +4m.54s., SS? = +9m.0s.
Copenhagen +7m.52s., eN = +8m.11s.
Uccle N = +8m.28s., iN = +9m.48s.
Paris i = +5m.47s.
Upsala iPN = +4m.53s.
Kew iP = +5m.11s., eZ = +8m.31s., eP_cPEN = +9m.5s., iSSE = +9m.45s., iZ = +10m.5s.
Almeria PPP = +5m.59s., SS = +10m.8s., SSS = +10m.26s.
Jersey e = +5m.14s., iSS = +9m.46s.
Toledo SS = +10m.11s.
Granada sPP = +6m.50s., pP_cP = +9m.33s., sP_cP = +9m.56s., pS = +10m.20s., sS = +10m.34s., iSS = +11m.24s.
Stonyhurst iP = +5m.32s., i = +8m.37s. and +12m.13s.
Bidston eP_cP = +9m.24s.
Edinburgh SS = +10m.50s.
Scoresby Sund ePPP = +10m.0s., S = +14m.0s., i = +14m.7s.
Bombay iE = +17m.20s., L_cEN = +18m.6s.
Irkutsk e = +10m.3s., +14m.7s., +16m.6s., +17m.58s., +20m.25s., and +21m.3s.
Kodaikanal eE = +10m.45s., SSE = +20m.53s.
Calcutta iN = +19m.55s., iSSSN = +21m.55s.
Seven Falls e = +24m.28s. ?
Ottawa e = +28m.28s. ?
Bermuda eSS = +24m.42s.
Cape Town SSSN = +28m.11s.
College ePPS = +22m.36s., eSSS = +30m.37s.
Pittsburgh e? = +10m.58s. and +19m.34s., ePS? = +22m.9s., i = +22m.39s., e = +24m.29s., eSS = +26m.50s., eSSS = +29m.56s.
Chicago eSSS = +30m.54s.
Sitka S = +22m.58s.
Florissant eZ = +14m.9s.
St. Louis eE = +22m.33s.
Lincoln eSS = +28m.21s.
Bozeman ePPP = +17m.48s., ePS = +24m.42s., eSS = +29m.12s., eSSS = +33m.6s.
Butte eSS = +32m.7s.
Tucson ePPP = +20m.12s., eS = +25m.31s., ePS = +26m.38s.
La Paz PZ = +18m.38s., iZ = +30m.28s.
Huancayo eS = +25m.51s., ePPS = +29m.4s., eSS = +33m.48s.
Long waves were also recorded at Berkeley, Koti, Zi-ka-wei, Riverview, La Plata, and Hukuoka.

September 22d. Readings also at 0h. (Yokohama and Tucson), 1h. (Tucson (2), Istanbul (3), Bucharest, Santa Clara, Wellington, Huancayo, and Christchurch), 2h. (Istanbul (2), Bucharest (2), and Tucson), 3h. (near Samarkand, Hukuoka, Mizusawa, and near Osaka), 4h. (Samarkand, near Istanbul, Tiflis, Rome, and Ksara), 6h. (near Hastings, Tuai, Christchurch, Wellington, and near New Plymouth), 9h. (Wellington and New Plymouth), 10h. (near Branner, San Francisco, near Lick and Berkeley), 13h. (Baku, Andijan, Helwan, Sverdlovsk, Tiflis, Rome, and Ksara), 14h. (near Apia), 20h. (near Ferndale), 23h. (Haiwee, La Jolla, Riverside, Tinemaha, Pasadena, Mount Wilson, and Tucson (2)).

September 23d. Readings at 0h. (Sverdlovsk, Ksara, Fort de France, Seattle, and College), 1h. (Haiwee, Tinemaha, Butte, Santa Barbara, Riverside, Tucson (2), Pasadena, and Mount Wilson), 2h. (Samarkand and Bucharest), 5h. (Bucharest, near Samarkand, Ksara, near Branner (2), near Lick, Fresno, Berkeley, and Tiflis), 6h. (near Berkeley, Fresno, near Lick, and near Branner), 10h. (Berkeley, near Lick, and near Branner), 11h. (near La Paz), 12h. (Baku, near Osaka, Sverdlovsk, Andijan, and Tchimkent), 13h. (Tiflis, Sofia, Bucharest, and Istanbul), 14h. (Rome and Colombo), 16h. (Ottawa), 17h. (Mizusawa and Balboa Heights), 18h. (Istanbul and near Andijan), 19h. (Balboa Heights, La Paz (2), Haiwee, Mount Wilson, Pasadena, and Tucson), 23h. (Tucson, Tchimkent, near Andijan, and Samarkand).

September 24d. Readings at 0h. (Cape Town, Ksara, Tucson, and near Mizusawa), 1h. (near Hukuoka, Tiflis, Paris, and Rome), 2h. (Sitka), 3h. (near La Paz, Manila, Mount Wilson, Pasadena, Riverside, Tinemaha, Melbourne, Tucson, Fort de France and Riverview), 4h. (Tucson (3) and Rome), 6h. (near Mizusawa and Istanbul), 7h. (Rome and Ksara), 8h. (Toledo and Tiflis), 11h. (near Lick, Berkeley, Fresno, and near Branner), 14h. (near Mizusawa), 16h. (Riverview), 17h. (Fort de France), 18h. (Belgrade, Pulkovo, Sverdlovsk, Sofia, Bucharest, Tiflis (2), Istanbul, and Rome), 19h. (Ksara), 20h. (College), 21h. (Tchimkent, near Andijan and Samarkand), 23h. (Fort de France).

September 25d. 15h. 31m. 1s. Epicentre 8°·7N. 93°·9E.

$A = -\cdot0672$, $B = +\cdot9863$, $C = +\cdot1503$; $\delta = -11$; $h = +7$;
$D = +\cdot998$, $E = +\cdot068$; $G = -\cdot010$, $H = +\cdot150$, $K = -\cdot989$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	14·0	264	3 23	+ 1	—	—	—	—	7·1
Calcutta		14·8	339	e 3 37	+ 5	6 11	− 7	—	—	i 6·7
Kodaikanal	E.	16·3	278	i 3 54a	+ 2	i 7 4	+11	—	—	8·4
Phu-Lien		17·2	44	e 4 4	+ 1	7 25	+11	—	—	—
Hyderabad		17·4	302	4 11	+ 5	7 27	+ 8	7 47	SS	9·5
Bombay		22·8	299	i 5 10	+ 5	i 9 21	+10	—	—	12·1
Agra	E.	23·7	324	5 14	0	9 27	0	i 9 46	SS	—
Hong Kong		23·7	53	5 16	+ 2	9 39	+12	16 50	S_cS	12·6
Manila		27·2	75	e 5 47	0	10 25	0	—	—	13·6
Andijan		37·2	332	7 14	− 1	i 13 2	0	e 7 37	PP	—
Almata		37·5	340	e 7 18	+ 1	—	—	—	—	—
Tchimkent		39·7	331	7 36	0	i 13 37	− 3	—	—	—
Irkutsk		44·3	8	8 13	0	e 14 43	− 5	—	—	27·5
Vladivostok		47·7	37	e 8 40	0	e 15 35	− 1	—	—	24·9
Tiflis		54·2	315	e 9 27	− 2	e 17 3	− 3	—	—	e 28·0
Sverdlovsk		54·5	338	i 9 29	− 3	17 6	− 4	—	—	25·0
Ksara		58·7	304	e 10 4	+ 2	e 19 16	PS	—	—	31·3
Helwan		62·0	299	10 23	− 1	e 18 47	− 1	—	—	—
Moscow		64·3	329	i 10 36	− 3	i 19 16	− 1	—	—	—
Pulkovo		69·4	331	e 11 15	+ 3	e 20 10	− 8	—	—	34·5
Zurich		80·5	316	e 12 15	0	—	—	—	—	—
Paris		84·4	318	e 12 59?	+23	—	—	—	—	e 50·0
Fort de France		146·0	313	e 19 44	[+ 3]	—	—	—	—	—

Additional readings :—
Calcutta eN = +4m.31s.
Tiflis eSZ = +17m.9s., eZ = +19m.9s., eN = +19m.20s.
Helwan eZ = +10m.40s.
Pulkovo e = +11m.24s., +21m.9s., +22m.44s., and +28m.2s.

Sept. 25d. 16h. 25m. 7s. Epicentre 18°·7N. 105°·2W. (as on 1937, Dec. 22d.).

$A = -\cdot2485$, $B = -\cdot9147$, $C = +\cdot3187$; $\delta = 0$; $h = +5$;
$D = -\cdot965$, $E = +\cdot262$; $G = -\cdot084$, $H = -\cdot308$, $K = -\cdot948$.

Tacubaya suggests epicentre 18°37′N. 105°11′W.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Manzanillo	N.	0·9	67	0 19	− 1	—	—	—
Guadalajara	N.	2·6	41	0 47	+ 3	—	—	—
Mazatlan	N.	4·7	347	1 14	0	—	—	—
Tacubaya	E.	5·8	80	1 29	0	—	—	—
Tucson		14·4	341	3 26	− 1	—	—	i 7·2
Haiwee		20·7	330	e 4 39	− 5	—	—	—
Tinemaha		21·6	330	i 4 51	− 3	—	—	—
Salt Lake City		22·7	346	e 4 27	−37	—	—	—
Ukiah		25·7	327	e 6 47	?	—	—	—
Columbia		26·4	49	e 4 36	?	—	—	—
Bozeman		27·3	352	5 25	−23	—	—	—
Chicago		27·5	28	—	—	e 10 3	?	i 16·1
Butte		27·9	350	e 5 19	−35	—	—	—
Victoria		33·1	338	—	—	e 10 53	?	16·9
San Juan		37·0	83	e 7 13	0	—	—	—
Huancayo		42·4	134	e 8 41	+43	—	—	—
Sitka		44·4	337	e 9 1	PP	—	—	—
Honolulu		49·3	282	11 23	PP	—	—	—
College		54·1	339	e 10 8	+39	—	—	—

Additional readings :—
Tucson i = +3m.32s. and +3m.37s.
Long waves were also recorded at La Paz, Tiflis, and other American stations.

Sept. 25d. 16h. Eastern Europe.

Istanbul P = 29m.36s., S = 30m.14s., PS = 30m.35s.
Sofia ePEN = 30m.2s., iSEN = 31m.8s., iEN = 31m.19s.
Bucharest eN = 30m.12s., eE = 30m.24s., eE = 31m.28s., iN = 31m.32s., iE = 31m.42s.
Rome eP = 30m.44s., eS = 33m.6s., eL_Q = 34m.43s.
Zurich e = 32m.6s.
Ksara e = 32m.18s. and 34m.33s.
Belgrade eZ = 32m.30s.$_a$ and 32m.51s., iZ = 33m.5s., iNW = 33m.34s.
Szeged ePE = 33m.0s., eE = 33m.40s., 33m.58s. and 34m.28s., eLE = 34m.57s.
Moscow e = 33m.2s. and 36m.27s.
Pulkovo e = 33m.42s. and 37m.18s.
Hamburg eEN = 34m.
Budapest ePE = 34m.14s., ePN = 34m.26s., eE = 34m.34s., eLE = 35m.6s.
Prague e = 35m.30s.
Long waves were recorded at other European and Russian stations.

Sept. 25d. Readings also at 0h. (Fort de France), 3h. (Andijan), 8h. (near Mizusawa), 9h. (La Paz), 10h. (near Mizusawa), 13h. (Tiflis (2), Ksara, Erevan, Helwan, and Sverdlovsk), 15h. (Zinsen, Taikyu, Kobe, and Philadelphia), 16h. (Scoresby Sund, Rome, and near Fort de France), 17h. (Fort de France, Rome, and Istanbul), 18h. (Rome, Tiflis, Ksara. and Piatigorsk), 19h. (Istanbul, Kodaikanal, Calcutta, and Agra), 20h. (Kodaikanal), 21h. (Manila, Tiflis, Phu-Lien, Bombay, Istanbul (2), Rome, Ksara, near Andijan (2), Calcutta, and Agra), 22h. (near Manila and Andijan).

Sept. 26d. 10h. 37m. 54s. **Epicentre** 18°·7N. 105°·2W. (as on 1939, September 25d.).

Tacubaya gives epicentre 18° 37′N. 105°14′W.

$A = -\cdot2485$, $B = -\cdot9147$, $C = +\cdot3187$; $\delta = 0$; $h = +5$;
$D = -\cdot965$, $E = +\cdot262$; $G = -\cdot084$, $H = -\cdot308$, $K = -\cdot948$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Manzanillo	N.	0·9	67	0 18	− 2	—	—	—
Tacubaya	E.	5·8	80	1 30	+ 1	—	—	—
Tucson		14·4	341	e 3 24a	− 3	—	—	i 8·2
Riverside		18·7	326	e 4 21	− 1	—	—	—
Pasadena		19·3	326	e 4 31	+ 2	—	—	e 10·9
Santa Barbara	Z.	20·3	324	e 4 42	+ 2	—	—	—
Haiwee		20·7	330	e 4 41	− 3	—	—	—
Tinemaha		21·6	330	e 4 52	− 2	—	—	—
Salt Lake City		22·7	346	e 3 38	?	—	—	—
Lincoln		23·2	19	—	—	e 8 38	−40	e 12·8
Berkeley	Z.	24·2	326	e 5 21	+ 2	—	—	—
Bozeman		27·3	352	—	—	e 10 35	+ 8	—
Chicago		27·5	28	—	—	e 10 53	+23	—
Butte		27·9	350	e 4 50	−64	—	—	—

Long waves were also recorded at Philadelphia, College, and Scoresby Sund.

Sept. 26d. Readings also at 0h. (La Paz, La Plata, and Tinemaha), 2h. (near Stuttgart, near Zurich, Chur, and Port au Prince), 5h. (La Paz and La Plata), 6h. (near Taihoku), 8h. (Tucson), 10h. (Ukiah), 12h. (near Balboa Heights), 13h. (Rome), 14h. (La Paz), 17h. (near New Plymouth, Wellington, and Balboa Heights), 23h. (near Algiers).

Sept. 27d. Readings at 2h. (Samarkand), 3h. (Samarkand (2)), 5h. (Samarkand (2), Tchimkent, and Andijan), 6h. (Tucson (2)), 7h. (Tucson (2) and Samarkand), 9h. (Tucson (3)), 10h. (near Manila), 12h. (Samarkand and Tucson), 14h. (Fordham, Pasadena, Mount Wilson, Riverside, and Tucson (3)), 15h. (Tucson (2)), 16h. (near Mizusawa) and Rome), 23h. (Balboa Heights and Rome).

Sept. 28d. 14h. 58m. 17s. Epicentre 14°·3N. 91°·7W. (as on 1939 Aug. 5d.).

Tacubaya gives Epicentre 14°·5N. 92°·3E.

$A = -\cdot0288$, $B = -\cdot9690$, $C = +\cdot2454$; $\delta = +1$; $h = +6$;
$D = -\cdot999$, $E = +\cdot030$; $G = -\cdot007$, $H = -\cdot245$, $K = -\cdot969$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	5·5	299	1 33	+ 8	—	—	—	—	—
Puebla	N.	7·8	309	2 5	+ 7	—	—	—	—	—
Tacubaya	N.	8·8	306	2 19	+ 8	—	—	—	—	—
Balboa Heights		13·0	113	3 14	+ 5	—	—	—	—	—
Columbia		21·9	23	4 57	0	8 52	− 2	—	—	11·7
Cape Girardeau		23·0	4	i 5 4	− 3	i 9 7	− 7	i 5 13	pP	—
St. Louis		24·3	3	e 5 18	− 2	i 9 35	− 2	i 5 50	PP	—
San Juan		24·9	76	e 5 22	− 4	e 9 49	+ 2	i 10 41	SS	—
Tucson		25·0	320	i 5 28a	+ 1	e 9 53	+ 4	i 5 52	PP	12·3
Chicago		27·7	6	e 5 48	− 4	10 20	−13	6 23	PP	11·1
Philadelphia		29·4	28	e 6 5	− 2	e 10 51	−10	—	—	e 17·2
Fort de France		29·6	85	e 6 36	+27	—	—	—	—	—
La Jolla	Z.	29·7	314	i 6 13	+ 3	i 12 49	S_cP	i 9 15	P_cP	—
Bermuda		30·4	49	e 6 16	0	e 10 39	−37	e 7 28	PPP	e 12·0
Riverside		30·4	315	e 6 17	+ 1	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fordham		30·7	28	i 6 16a	− 3	e 11 14	− 7	—	—	e 15·2
Huancayo		30·8	147	e 6 27	+ 7	e 11 24	+ 1	9 1	P_cP	13·8
Mount Wilson		31·1	315	i 6 23k	+ 1	i 12 52	S_cP	i 9 18	P_cP	—
Pasadena		31·1	315	i 6 23k	+ 1	i 11 28	0	i 9 17	P_cP	—
Toronto		31·1	18	e 7 13	PP	e 10 55	−33	—	—	17·7
Salt Lake City		31·7	330	e 7 11	PP	e 11 38	+ 1	—	—	e 13·5
Haiwee		32·0	320	i 6 33	+ 3	—	—	—	—	—
Santa Barbara	z.	32·3	314	i 6 34	+ 1	—	—	i 9 20	P_cP	—
Williamstown		32·4	26	i 6 34	0	i 13 3	SS	i 6 58	pP	e 18·5
Tinemaha		32·8	320	i 6 38	+ 1	—	—	i 9 22	P_cP	—
Harvard		33·0	28	i 6 37a	− 2	e 11 49	− 8	—	—	e 18·7
Bozeman		35·3	337	e 7 21	+22	e 12 22	−11	e 8 19	PP	e 16·0
Shawinigan Falls		35·9	22	e 7 2	− 2	—	—	—	—	16·7
Seven Falls		37·1	33	e 8 43	PP	e 12 49	−12	—	—	17·7
Ukiah		37·1	318	e 7 17	+ 3	e 12 34	−27	e 9 8	PPP	e 15·9
La Paz		38·4	141	7 45	+20	13 22	+ 2	—	—	16·7
Sitka		53·9	333	e 9 20	− 7	i 16 59	− 3	e 10 21	P_cP	e 21·8
College		63·1	337	e 13 8	PP	e 18 50	−12	—	—	e 26·2
Scoresby Sund		69·9	19	e 15 34	PPP	e 20 19	− 5	e 24 14	SS	e 28·0
Rome		90·8	46	e 13 5	− 1	e 23 33	[− 5]	e 16 40	PP	e 38·6
Sverdlovsk		105·5	15	e 18 31	PP	e 24 41	[−12]	—	—	48·7
Ksara		110·9	46	e 19 17	PP	e 28 48	PS	—	—	—
Tiflis	z.	111·3	34	e 19 15	PP	e 28 41	PS	e 29 15	PPS	e 56·7
Baku		115·0	32	—	—	e 29 32	PS	—	—	51·7

Additional readings :—
Cape Girardeau iPPN = +5m.35s., iE = +7m.23s., isSE = +9m.25s., iSSSN = +9m.57s., iE = +10m.42s.
St. Louis iN = +9m.27s., eSN = +10m.15s., iSEN = +10m.20s.
Tucson i = +6m.28s., iP_cP = +9m.3s., S = +10m.31s.
Chicago eS = +10m.6s.
Huancayo iS = +11m.30s., i = +12m.9s.
Pasadena iZ = +9m.43s., iS_cPNZ = +12m.52s., iS_cSN = +16m.49s.
Williamstown isP? = +7m.6s.
Tinemaha iZ = +9m.48s., iS_cPZ = +12m.57s.
Sitka eS_cS = +19m.6s.
Rome eZ = +19m.29s., ePSZ = +24m.35s.,
Tiflis eZ = +19m.40s.
Long waves were also recorded at Butte.

Sept. 28d. Readings also at 0h. (Bucharest, Istanbul, and Ksara), 1h. (Palomar, Tinemaha, Pasadena, Mount Wilson, and Tucson), 3h. (near Erevan and Tiflis), 10h. (Ksara, Baku, Sverdlovsk, and Tiflis), 11h. (Scoresby Sund and Tacubaya), 13h. (Ksara, Tiflis, and Helwan), 14h. (Jena (3)), 16h. (Mizusawa), 18h. (La Paz), 19h. (Andijan, Ottawa, and Huancayo), 22h. (near Florissant(2)).

Sept. 29d. Readings at 1h. and 2h. (near Fort de France), 4h. (Tucson), 7h. (near La Paz), 10h. (Tucson, Riverside, Pasadena, and Mount Wilson), 14h. (Manila), 15h. (Rome), 19h. (Rome), 20h. (Huancayo).

Sept. 30d. Readings at 1h. (Grozny), 2h. (Haiwee, Palomar, Tinemaha, Huancayo, La Paz, Tchimkent, Ksara, Rome, San Juan, Pasadena, Mount Wilson, Moscow, Sverdlovsk, and Tucson), 3h. (Samarkand (2), Santa Barbara, La Jolla, Haiwee, Pasadena, Mount Wilson, Tucson, and Palomar), 9h. (Tacubaya), 10h. (Jena), 13h. (Andijan (2), Mizusawa, and Tacubaya), 14h. (Mizusawa and near Apia), 15h. (Fordham and near Harvard), 16h. (Manila, Andijan, Moscow, and Sverdlovsk), 18h. (near Erevan, Frunse, and Andijan), 19h. (Andijan), 20h. (Tucson (2)), 21h (Tucson (2)), 23h. (Helwan).

Original 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 have been scanned and collected by SGA Storia Geofisica Ambiente (Bologna) thanks to funding provided by the Istituto Nazionale di Geofisica e Vulcanologia (Rome), in the frame of the EUROSEISMOS project.