The International Seismological Summary.

1938 April, May, June.

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 Second Quarter for 1938 contains altogether 114 determined epicentres, of which 47 are repetitions from origins determined since the introduction of the use of geocentric co-ordinates.

Cases of abnormal focal depth are noticed as below :—

April	2d. 7h.	44·6°N.	149·4°E.	0·005
	4d. 21h.	6·8S.	127·5E.	0·060
	9d. 9h.	15·0S.	168·5E.	Depth Suggested.
	13d. 2h.	39·0N.	15·2E.	0·030
	14d. 1h.	22·5N.	94·5E.	0·010
	17d. 14h.	19·5S.	70·6W.	Depth Suggested.
May	2d. 23h.	7·2N.	75·0W.	0·010
	3d. 2h.	18·5N.	99·0W.	Depth Suggested.
	3d. 19h.	46·5N.	150·7E.	Depth Suggested.
	8d. 14h.	2·5S.	122·0E.	0·040
	16d. 1h.	29·0S.	173·0W.	0·040
	23d. 8h.	18·0N.	120·0E.	Depth Suggested.
June	5d. 16h.	35·9N.	140·3E.	A Focus at the base of Superficial Layers.
	5d. 19h.	35·9N.	140·3E.	
	15d. 7h.	31·5S.	71·0W.	
	28d. 19h.	18·2N.	100·3W.	Depth Suggested.

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, 1949.

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1938 APRIL, MAY, JUNE.

April 1d. 0h. 43m. 46s. Epicentre 19°·6N. 120°·6E. (as on 1938 March 31d.).

$A = -\cdot4799$, $B = +\cdot8115$, $C = +\cdot3334$; $\delta = -1$; $h = +5$;
$D = +\cdot861$, $E = +\cdot509$; $G = -\cdot170$, $H = +\cdot287$, $K = -\cdot943$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		5·0	176	1 29	P*	3 1	S_g	—	—	—
Hong Kong		6·6	295	1 37	− 4	3 1	+ 3	—	—	3·7
Nagoya		21·2	40	e 4 52	+ 3	—	—	(e 5 9)	PP	—
Vladivostok		25·3	20	e 5 22	− 8	e 10 26	+32	—	—	17·1
Medan	E.	26·7	238	e 6 2	PP	e 10 20	+ 3	—	—	—
Calcutta	N.	30·2	283	e 6 4	−10	e 11 29	+16	e 13 15	SSS	i 15·5
Agra	E.	39·7	291	e 7 47	+11	13 43	+ 3	e 9 12	PP	—
Colombo	E.	41·5	259	e 7 44	− 6	—	—	—	—	—
Bombay		45·0	278	e 8 20	+ 1	e 15 4	+ 6	e 18 25	SS	e 23·6
Tashkent		48·5	309	8 45	− 1	i 15 54	+ 6	—	—	e 24·9
Sverdlovsk		57·5	327	9 59	+ 6	17 57	+ 7	—	—	29·2
Baku		63·0	307	e 10 38	+ 7	e 19 20	+19	—	—	e 33·2
Tiflis		66·8	309	e 10 58	+ 2	e 20 2	+14	—	—	38·7
Moscow		70·1	324	e 11 18	+ 2	20 30	+ 3	—	—	41·7
Pulkovo		73·4	329	e 11 43	+ 7	e 21 15	+10	—	—	e 41·7
Ksara		75·1	301	i 11 50a	+ 4	e 22 17	PPS	e 15 9	PP	—

Additional readings :—
Hong Kong +2m.22s. and +2m.41s.
Ksara eSS = +27m.53s.
Long waves were also recorded at Phu-Lien, Copenhagen, Paris, Triest, De Bilt, Kew, Strasbourg, Potsdam, Cheb, and Uccle.

April 1d. 13h. 40m. 24s. Epicentre 34°·1N. 134°·0E. (given by Central Met. Obs., Tokyo).

Felt rather strongly at Tadotu, moderately at Tokusima, Okayama, slightly at Muroto, Wakayama, and Hirosima. Macroseismic radius 200-300kms.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1938, Tokyo 1940 pp. 28-29. Macroseismic chart p. 28.

$A = -\cdot5764$, $B = +\cdot5969$, $C = +\cdot5580$; $\delta = -11$; $h = 0$;
$D = +\cdot719$, $E = +\cdot695$; $G = -\cdot388$, $H = +\cdot401$, $K = -\cdot830$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Tadotu	0·3	314	0 10a	P*	0 15	S*	—	—
Tokusima	0·5	94	−0 10a	−24	−0 4	−27	—	—
Okayama	0·6	354	0 19	+ 4	0 27	+ 1	—	—
Koti	0·7	216	i 0 16k	− 1	i 0 24	− 4	—	—
Sumoto	0·8	71	0 18a	0	0 29	− 2	—	—
Muroto	0·9	170	0 18k	− 2	0 28	S_g	—	—
Wakayama	1·0	82	0 21	0	0 33	S_g	—	—
Matuyama	1·1	256	0 20k	− 2	0 35	S_g	—	—
Kobe	1·2	59	0 22	− 2	0 36	− 5	—	—
Hirosima	1·3	282	0 25k	0	0 42	− 2	—	—
Osaka B	1·3	66	0 26	+ 1	0 43	− 1	—	—
Yagi	1·5	74	0 28	0	0 47	− 2	—	—
Sakai	1·6	337	0 30	0	0 51	0	—	—
Simidu	1·6	213	0 24	− 6	0 46	− 5	—	—
Siomisaki	1·6	114	0 29	− 1	0 48	− 3	—	—
Toyooka	1·6	25	0 30	0	0 48	− 3	—	—
Kyoto	1·7	57	0 34	+ 3	0 53	− 1	—	—
Miyadu	1·7	34	0 32k	+ 1	0 52	− 2	—	—
Hamada	1·8	297	0 31	− 1	0 52	− 4	—	—
Hikone	2·2	58	0 40k	P*	1 6	0	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Kameyama	2·2	70	0 41	P*	1 3	− 3	—	—
Ibukisan	2·3	57	0 42	+ 2	—	—	—	—
Gihu	2·6	60	0 44	0	1 13	− 4	—	—
Izuka	2·9	261	0 34	−14	1 6	−18	—	—
Hukuoka B	3·0	260	e 0 58	P_g	1 48	S_g	—	—
Kumamoto	3·0	245	1 3	P_g	1 45	S_g	—	—
Hamamatu	3·1	79	1 11	P_g	1 39	S*	—	—
Miyazaki	3·1	225	1 3	P_g	1 24	− 5	1 34	S*
Husiki	3·6	42	1 35	S	(1 35)	− 7	—	—
Toyama	3·7	42	1 1	+ 1	1 52	S*	—	—
Wazima	4·0	34	1 7	+ 3	—	—	—	—
Kohu	4·1	66	1 6	+ 1	1 51	− 4	—	—
Numadu	4·1	75	1 51	S	(1 51)	− 4	—	—
Hunatu	4·2	68	0 56	−11	1 54	− 3	—	—
Misima	4·2	75	1 11	+ 4	1 55	− 2	—	—
Nagano	4·3	51	1 20	P*	—	—	—	—
Oiwake	4·3	58	1 29	P_g	2 11	S*	—	—
Yakusima	4·6	221	1 58	S	(1 58)	− 9	—	—
Maebasi	4·8	59	1 47	P_g	—	—	—	—
Yokohama	4·8	72	2 14	S	(2 14)	+ 2	—	—
Tokyo	5·0	69	2 16	S	(2 16)	− 2	—	—

~~Numadu gives S = +2m.46s.~~

April 1d. 21h. 31m. 11s. Epicentre 19°·6N. 120°·6E. (as at 0h.).

A = −·4799, B = +·8115, C = +·3334; $\delta = -1$; $h = +5$;
D = +·861, E = +·509; G = −·170, H = +·287, K = −·943.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		5·0	176	1 22	+ 4	2 32	S*	—	—	—
Hong Kong		6·6	295	1 30	+11	2 59	+ 1	1 58	PPP	3·7
Zi-ka-wei	E.	11·6	5	—	—	e 5 30	SSS	—	—	—
Phu-Lien		13·2	278	e 3 6	− 5	e 6 10	SSS	—	—	8·4
Hukuoka B		16·4	30	e 3 58	+ 5	e 8 43	L	—	—	(8·7)
Taikyu		17·7	23	e 3 57	−13	e 7 31	+ 5	—	—	—
Zinsen		18·6	14	e 4 16k	− 5	e 8 9	SS	e 4 41	PPP	e 9·9
Keizyo		18·7	17	e 4 14	− 8	—	—	—	—	—
Nagoya		21·2	40	(e 4 59)	+10	e 4 59	P	—	—	—
Vladivostok		25·3	20	e 5 32	+ 2	e 10 18	+24	—	—	e 12·5
Mizusawa		26·3	48	5 40	+ 1	10 26	+15	—	—	—
Medan	E.	26·7	238	e 5 46	+ 3	10 18	+ 1	—	—	—
Batavia		29·0	210	e 6 4	0	11 9	+15	—	—	e 18·8
Calcutta	N.	30·2	283	e 6 16	+ 2	i 11 22	+ 9	e 7 35	PPP	e 15·9
Irkutsk		35·0	343	e 6 55	− 1	12 29	+ 1	—	—	18·8
Agra	E.	39·7	291	7 34	− 2	13 37	− 3	9 18	PP	—
Colombo	E.	41·5	259	e 7 49?	− 1	—	—	—	—	—
Almata		43·5	314	e 8 10	+ 3	—	—	—	—	—
Semipalatinsk		44·3	325	8 11	− 2	—	—	—	—	—
Bombay		45·0	278	e 8 23	+ 4	e 15 3	+ 5	i 10 9	PP	23·7
Andijan		46·1	309	8 31	+ 3	e 18 31	SS	—	—	30·8
Tashkent		48·5	309	i 8 44	− 2	i 15 54	+ 6	—	—	e 24·0
Samarkand		49·9	306	8 53	− 4	e 17 49	?	—	—	—
Sverdlovsk		57·5	327	e 9 50	− 3	i 18 0	+10	—	—	26·8
Baku		63·0	307	10 34	+ 3	19 13	+12	—	—	33·3
Grozny		65·9	310	e 10 52	+ 2	—	—	—	—	—
Tiflis		66·8	309	10 56	0	19 59	+11	—	—	e 31·8
Moscow		70·1	324	e 11 15	− 1	e 20 30	+ 3	—	—	34·3
Pulkovo		73·4	329	e 11 36	0	e 21 1	− 4	—	—	34·3
Ksara		75·1	301	i 11 48k	+ 2	e 21 46	+22	e 22 26	PS	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Upsala		79·6	331	—	—	e 21 49?	−23	—	—	e 41·8
Helwan		79·9	298	e 12 19	+ 7	i 22 27	+11	—	—	—
Copenhagen		83·8	328	—	—	22 55	0	—	—	40·8
Potsdam		85·0	325	e 12 31	− 7	e 23 7	0	—	—	e 51·1
Hamburg		86·0	327	e 12 45	+ 2	—	—	—	—	e 45·8
Triest		87·4	319	12 49	− 1	e 23 22	− 8	—	—	—
Stuttgart		88·7	323	e 12 58	+ 1	e 23 54	+11	e 16 31	PP	46·8
De Bilt		89·3	327	i 13 16	+17	e 23 31	[+ 3]	—	—	e 44·8
Chur		89·4	322	e 13 0	0	—	—	—	—	—
Zurich		89·7	321	e 13 1	0	—	—	—	—	—
Kew		92·5	327	—	—	e 23 49	[+ 2]	—	—	49·8
Paris		92·5	324	e 12 49?	−25	—	—	—	—	53·8
Oxford		92·8	328	—	—	e 23 58	[+ 9]	—	—	e 49·8
Ottawa		113·6	12	—	—	i 31 49?	?	—	—	59·8
Fort de France		145·8	2	e 19 42	[+ 1]	—	—	—	—	—
La Paz		171·2	71	20 16	[+ 6]	i 26 49	[−23]	—	—	—

Additional readings :—
Hong Kong ? = +1m.39s. and +2m.47s.
Batavia ePE = +6m.9s.
Calcutta iSSN = +13m.34s.
Bombay e = +15m.21s. and +18m.46s.
Tiflis eZ = +11m.12s., eSKSZ = +21m.10s.
Ksara i = +12m.5s., ePS = +27m.2s.
Stuttgart ePS = +25m.13s.
Long waves were also recorded at Strasbourg, Cheb, Prague, Aberdeen, Bergen, Göttingen, Bidston, Edinburgh, Malaga, Stonyhurst, San Fernando, Granada, and Toledo.

April 1d. Readings also at 2h. (Phu-Lien, Tashkent, Sverdlovsk, and Vladivostok), 5h. (Fort de France and Mizusawa), 6h. (San Juan, Nagoya, Montserrat, and Tananarive), 7h. (Keizyo and Hamburg), 9h. (Tiflis), 10h. (San Juan and Fort de France), 11h. (Zurich, Chur, and Basle), 13h. (near Amboina and Nagoya), 18h. (Nagoya, Pasadena, Mount Wilson, and Riverside), 19h. (La Jolla, Tucson, Pasadena, Mount Wilson, and Riverside), 21h. (Calcutta and Phu-Lien), 22h. (Frunse, Samarkand, Almata, Agra, Andijan, Irkutsk, Huancayo, Little Rock, Grozny, Nagoya, Mizusawa, Vladivostok, Sverdlovsk, and Tashkent).

April 2d. 6h. 1m. 50s. Epicentre 60°·0S. 50°·0W.

$A = +·3230$, $B = -·3849$, $C = -·8646$; $\delta = +1$; $h = -9$;
$D = -·766$, $E = -·643$; $G = -·556$, $H = +·662$, $K = -·503$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata		25·6	345	5 33	+ 1	9 54	− 5	—	—	11·9
Santiago		29·8	325	e 6 8	− 3	—	—	—	—	—
Rio de Janeiro	E.	37·3	12	e 8 40	PP	i 13 8	+ 4	—	—	i 15·5
La Paz		45·4	336	i 8 26a	+ 4	i 15 10	+ 6	18 10	SS	20·6
Cape Town		50·6	91	e 11 33	PPP	16 5	−12	—	—	18·6
Huancayo		51·4	328	11 8	PP	e 16 31	+ 3	12 6	PPP	20·0
Christchurch		71·1	212	i 11 19a	− 3	i 20 39	+ 1	25 23	SS	e 34·5
Wellington		72·6	214	i 11 30	− 1	i 20 55	− 1	25 50	SS	34·2
Fort de France		75·0	350	e 11 43	− 2	—	—	—	—	—
Melbourne		81·7	192	—	—	i 22 28	− 6	i 27 57	SS	33·6
Riverview		84·9	198	—	—	e 22 58	− 8	—	—	e 46·2
Sydney		84·9	198	—	—	e 23 14	+ 8	—	—	i 45·7
Adelaide		85·1	187	—	—	i 22 47	[−14]	i 28 51	SS	e 46·8
Perth		87·6	169	e 23 12	S	(e 23 12)	[− 5]	32 12	SSS	43·1
Brisbane	E.	91·0	200	—	—	i 24 4	+ 1	i 30 16	SS	—
Columbia		97·1	334	e 17 32	PP	—	—	—	—	—
Philadelphia		101·7	340	—	—	i 24 29	[− 6]	e 32 36	SS	e 41·9
Cape Girardeau	N.	102·3	328	(e 18 16)	PP	(e 24 32)	[− 6]	—	—	—
Fordham		102·4	342	e 18 9	PP	32 51	SS	—	—	—
San Fernando		102·7	35	24 34	S	(24 34)	[− 6]	—	—	53·2
Harvard		103·7	344	e 22 4	?	—	—	—	—	e 53·2
St. Louis	E.	103·7	328	—	—	e 28 14	SS	—	—	e 38·9
Granada		104·1	37	e 27 20	PS	—	—	—	—	e 51·2
Tucson		104·6	310	e 18 22	PP	e 26 16	+17	i 27 47	PS	43·2
East Machias		105·4	347	e 28 32	PPS	e 33 29	SS	—	—	e 41·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Algiers		105·9	42	—	—	e 24 44	[−10]	—	—	e 49·2
Chicago		106·2	331	—	—	e 26 4	− 8	e 35 24	SS	e 46·6
Toledo		106·5	35	—	—	e 26 22	+ 7	e 27 50	PS	98·1
Ottawa		107·1	341	e 18 46	PP	e 24 40	[−19]	e 28 10	PS	44·2
Seven Falls		108·1	345	—	—	e 26 22	{+30}	—	—	44·2
Riverside	Z.	108·7	305	e 18 25	PKP	—	—	—	—	—
Mount Wilson		109·2	305	e 18 47	PP	—	—	—	—	—
Pasadena		109·2	305	e 19 2	PP	e 28 16	PS	e 34 46	SS	e 52·8
Helwan		111·3	67	—	—	e 25 4	[−13]	—	—	—
Batavia		111·5	155	24 13	SKS	(24 13)	[−65]	—	—	e 53·2
Berkeley		114·0	304	—	—	e 29 22	PS	—	—	e 55·0
Colombo	E.	115·0	123	—	—	e 27 10?	{+30}	—	—	—
Bozeman		116·5	316	e 29 30	PS	e 35 51	SS	e 40 20	SSS	e 48·4
Paris		116·5	35	—	—	e 24 10?	?	—	—	54·2
Ksara		116·7	68	e 15 33	P	e 30 33	PPS	e 29 40	PS	54·5
Kodaikanal	E.	117·0	118	e 19 10?	PP	—	—	—	—	—
Triest		117·5	45	—	—	e 25 17	[−23]	e 29 30	PS	e 55·2
Strasbourg		117·9	39	—	—	e 29 39	PS	—	—	e 59·8
Kew		118·1	32	—	—	e 28 10	?	—	—	48·2
Oxford		118·1	31	—	—	e 29 10	PS	—	—	e 54·2
Stuttgart		118·6	40	—	—	e 29 10?	PS	e 36 10	SS	e 57·2
De Bilt		120·2	35	—	—	e 28 10?	{+55}	—	—	e 50·2
Cheb		120·7	41	e 22 10?	PPP	—	—	—	—	e 60·2
Bombay		122·4	109	e 20 27	PP	e 25 47	[−11]	e 30 21	PS	51·2
Copenhagen		125·5	37	—	—	29 10?	?	33 16	PPS	58·2
Tiflis		127·2	69	e 21 0	PP	e 27 49	{−12}	e 30 57	PS	e 53·2
Baku		128·6	74	e 21 28	PP	—	—	—	—	—
Agra	E.	131·9	110	e 22 32	PP	—	—	—	—	—
Calcutta	N.	132·6	124	e 22 42	?	e 26 18	[− 8]	33 41	PPS	—
Samarkand		136·5	88	e 22 33	PP	—	—	—	—	—
Tashkent		138·9	89	e 23 4	PP	28 1	{−73}	32 6	PS	e 59·9
Andijan		140·1	92	e 19 48	[+17]	—	—	e 23 8	PP	—
Sverdlovsk		145·0	63	i 19 33	[− 6]	e 29 37	{−13}	e 35 37	PPS	62·2
Nagoya		154·8	195	e 20 14	[+20]	—	—	—	—	—
Irkutsk		163·8	107	e 20 14	[+10]	e 27 16	[+ 9]	e 24 16	PP	75·2

Additional readings :—
La Paz iP_cP = +10m.15s., iZ = +11m.6s., iS?N = +14m.46s., iZ = +15m.40s. and +16m.40s., iN = +17m.44s.
Cape Town iE = +16m.0s.
Huancayo eP_cP = +10m.21s., eS_cS = +19m.0s., SS = +19m.41s.
Christchurch iZ = +17m.21s., eL_qE = +29·3m.
Wellington iP_cP? = +11m.50s., iS_cS = +21m.45s., i = +22m.32s. and +24m.5s., L_q = +31·2m.
Melbourne i = +29m.10s.
Riverview eN = +36m.40s.
Adelaide i = +38m.56s., i = +44m.25s.
Perth PP = +26m.11s., eS = +31m.57s., SS = +36m.32s.
Philadelphia ePS = +27m.10s.
Cape Girardeau readings have been increased by 15m.
San Fernando ePS = +32m.58s., SSSN = +42m.10s.
Harvard eL_q = +42·2m.
Tucson iP = +18m.30s., i = +19m.18s.
Chicago eS = +27m.24s. and +27m.55s.
Ottawa eE = +33m.58s.
Seven Falls e = +34m.10s.
Riverside eZ = +19m.0s.
Mount Wilson eZ = +19m.0s.
Helwan e = +26m.4s.
Ksara ePP = +19m.57s.
Stuttgart e = +30m.40s.
Bombay e = +27m.16s. and +36m.46s.
Calcutta iN = +28m.21s., eN = +33m.4s. and +40m.1s.
Tashkent e = +25m.23s., +29m.9s., +34m.27s., +36m.15s., +39m.49s., and +45m.49s.
Sverdlovsk i = +19m.49s. and +19m.59s., e = +41m.15s.
Irkutsk e = +29m.12s., +31m.18s., and +35m.10s.
Long waves were also recorded at Prague, Potsdam, Upsala, Hamburg, Ukiah, Phu-Lien, Stonyhurst, Florence, Vladivostok, Pulkovo, Göttingen, Bidston, Honolulu, Butte, and Jersey.

April 2d. 7h. 30m. 8s. Epicentre 44°·6N. 149°·4E. (as on 1937 June 21d.).

$A = -\cdot6149$, $B = +\cdot3637$, $C = +\cdot6998$; $\delta = +10$; $h = -3$;
$D = +\cdot509$, $E = +\cdot861$: $G = -\cdot603$, $H = +\cdot356$, $K = -\cdot714$.

A depth of focus 0·005 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa		8·2	231	e 1 52	− 7	i 3 15	−16	—	—	—
Vladivostok		12·7	269	e 2 55	− 5	e 5 13	− 7	—	—	e 7·0
Nagoya		13·4	229	e 3 3	− 6	5 20	−17	—	—	—
Hukuoka B		18·3	238	4 6	− 5	e 7 53	+24	—	—	—
Zinsen		18·5	256	e 4 11a	− 2	e 7 31	− 3	—	—	e 9·4
Irkutsk		30·5	301	e 6 21	+12	e 10 52?	−13	e 12 51	SS	16·9
Andijan		54·8	295	9 34	+ 8	17 10	+10	—	—	—
Tchimkent		55·7	298	e 10 34	+62	—	—	—	—	—
Tashkent		56·4	297	i 9 35	− 2	i 17 18	− 3	—	—	26·6
Agra	E.	58·6	277	e 9 48	− 5	17 50	0	e 12 1	PP	27·4
Samarkand		58·8	296	9 55	+ 1	17 52	− 1	—	—	—
Batavia		63·4	228	i 10 23	− 2	18 35	−16	—	—	—
Tinemaha		66·6	61	e 10 46	0	—	—	—	—	—
Bombay		67·5	274	—	—	e 20 5	PS	e 24 32	SS	—
Pasadena		68·5	63	i 10 59	+ 1	—	—	—	—	e 32·3
Mount Wilson	Z.	68·6	63	i 10 57	− 1	—	—	—	—	—
Upsala		68·7	336	e 9 52?	−67	—	—	—	—	—
Riverside		69·1	63	i 11 3	+ 2	—	—	—	—	—
Grozny		69·2	310	e 11 2	0	—	—	—	—	—
Tiflis		70·8	310	i 11 11a	− 1	e 20 24	+ 4	—	—	e 27·9
Copenhagen		73·7	336	11 27	− 2	—	—	—	—	35·9
Simferopol		74·0	318	e 11 30	0	—	—	—	—	—
Tucson		74·4	60	e 11 24	− 9	21 15	+14	14 19	PP	e 33·1
Hamburg		76·2	337	e 11 43	0	—	—	—	—	e 43·9
Jena		78·1	333	i 11 52	− 2	—	—	—	—	—
De Bilt		78·9	338	i 12 40	+42	—	—	—	—	e 42·9
Istanbul		79·3	319	13 5	+65	23 12	+78	—	—	—
Uccle	N.	80·3	339	i 12 5	0	—	—	—	—	—
Stuttgart		80·7	335	i 12 8a	0	—	—	—	—	e 44·9
Ksara		81·3	309	i 12 12a	+ 1	e 23 11	+56	—	—	—
Strasbourg		81·3	335	i 12 14	+ 3	—	—	—	—	—
Zurich		82·1	335	e 12 16a	+ 1	—	—	—	—	—
Basle		82·3	335	e 12 17	+ 1	—	—	—	—	—
Chur		82·3	334	e 12 16	0	—	—	—	—	—
Cape Girardeau		82·6	45	(i 12 20)	+ 3	(e 22 32)	+ 4	(e 12 33)	pP	—
Paris		82·6	339	i 12 18	+ 1	—	—	—	—	39·9
Neuchatel		82·9	335	e 12 20	+ 1	—	—	—	—	—
Florence		84·4	331	e 11 53	−34	—	—	—	—	—
Williamstown		85·1	29	i 12 32	+ 2	—	—	—	—	—
Harvard		85·9	28	i 12 35	+ 1	—	—	—	—	—
Weston	Z.	86·1	28	i 12 36k	+ 1	—	—	—	—	—
Philadelphia		86·8	33	—	—	e 23 18	+ 9	e 23 33	PS	e 43·5
Helwan		86·9	309	—	—	i 23 31	+21	—	—	—
La Paz		137·8	59	e 17 17	?	—	—	—	—	68·4

Additional readings :—
Agra eE = +13m.3s., +18m.23s., +21m.55s., and +23m.45s.
Bombay e = +20m.59s.
Tucson P = +11m.56s.
Stuttgart eZ = +12m.25s., e = +18m.7s.
Strasbourg e = +33m.52s.
Cape Girardeau readings have all been increased by 15m.
Weston i = +12m.49s.
Lóng waves were also recorded at Triest, Cheb, Göttingen, Prague, Pulkovo, Moscow, and Chatham Ils.

April 2d. Readings also at 0h. (near Andijan and Samarkand), 2h. (Harvard and Weston), 4h. (Honolulu, La Plata, near Santiago, and San Javier), 5h. (La Paz, Mount Wilson, Pasadena, Riverside, Sverdlovsk, and Irkutsk), 6h. (La Paz), 7h. (Cape Girardeau and Mizusawa), 12h. (Sitka), 15h. (Malabar), 16h. (near Tiflis), 19h. (near Harvard and near Williamstown), 20h. (near Tananarive), 21h. (Fordham, Harvard, Weston, Williamstown, Balboa Heights, Fort de France, Tucson, La Jolla, Mount Wilson, Riverside, Pasadena, Tinemaha, and New Plymouth).

April 3d. Readings at 1h. (near Algiers), 3h. (Fort de France), 4h. (Ksara, Arapuni, Wellington, and Christchurch), 6h. (Husan, Istanbul, and Samarkand), 10h. (Calcutta and Batavia), 11h. (Wellington, Sverdlovsk, Florence, Tiflis, Irkutsk, La Paz, Melbourne, Brisbane, Cape Town, Ksara, Phu-Lien, Sydney, Pasadena, Mount Wilson, Tinemaha, Haiwee, Adelaide, Huancayo, Tashkent, Riverview, Kodaikanal, Bombay, Colombo, Medan, and Perth), 12h. (Sebastopol, Copenhagen, San Fernando, Paris, Strasbourg, Harvard, and Granada), 16h. (Tchinkent), 21h. (Sverdlovsk).

April 4d. 21h. 9m. 2s. Epicentre 6°·8S. 127°·5E.

H. P. Berlage. Note on the deep focus earthquake of April 4th, 1938.

Naturkurding Tijdschrift voor Nederlandsch-Indie, Afl. 3. deel XCIX, 1939, B. 12, 136-137.

~~Epicentre 7°·0S. 127°·0E. depth 400kms.~~

$A = -\cdot 6045$, $B = +\cdot 7878$, $C = -\cdot 1176$; $\delta = -12$; $h = +7$;
$D = +\cdot 793$, $E = +\cdot 609$; $G = +\cdot 072$, $H = -\cdot 093$, $K = -\cdot 993$.

A depth of focus 0·060 has been assumed.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		3·2	12	i 1 6	0	i 1 58	0	14 8	S_cS	—
Malabar		19·7	267	i 4 1	0	i 7 46	+30	—	—	—
Batavia		20·5	271	i 4 6₁	− 3	i 7 30	+ 1	—	—	—
Manila		22·2	344	4 25k	0	i 8 3	+ 5	—	—	—
Perth		27·3	201	e 6 20	PP	10 58	SS	—	—	13·0
Adelaide		29·8	161	i 6 49	PP	i 10 0	+ 1	—	—	—
Medan		30·6	290	e 5 39	0	i 10 8	− 3	—	—	—
Hong Kong		31·7	336	5 49	0	10 27	− 1	13 2	SS	—
Brisbane		31·8	133	e 7 10	PP	e 12 34	SS	—	—	—
Phu-Lien		34·3	325	i 6 12	+ 1	e 11 7	− 1	—	—	—
Melbourne		34·7	155	—	—	i 11 21	+ 7	i 14 29	SS	—
Riverview		34·7	143	e 6 16	+ 2	e 11 16	+ 2	i 14 16	SS	—
Sydney		34·7	143	e 6 8	− 6	e 14 1	SS	—	—	—
Miyazaki		38·7	7	6 50	+ 2	—	—	8 26	PP	—
Sumoto		41·5	10	7 11	+ 1	12 53	− 2	—	—	—
Nagoya		42·7	12	7 22	+ 2	13 13	+ 1	—	—	—
Gihu		42·9	12	7 22	+ 1	13 15	0	—	—	—
Tokyo		43·8	15	7 30	+ 2	—	—	—	—	—
Keizyo		44·1	359	7 36	+ 5	—	—	—	—	—
Toyama		44·2	11	7 33	+ 1	13 36	+ 2	—	—	—
Kakioka		44·4	14	7 32	− 1	13 35	− 2	—	—	—
Sendai		46·5	15	7 50	0	14 6	0	—	—	—
Mizusawa		47·4	15	(7 58)	+ 1	7 58	P	—	—	—
Morioka		48·0	15	8 2	+ 1	—	—	—	—	—
Calcutta	N.	48·2	309	i 8 2	− 1	i 14 25	− 5	e 9 22	pP	—
Colombo	E.	49·4	285	9 50	?	14 44	− 2	—	—	—
Vladivostok		49·9	5	i 8 14	− 2	e 14 52	− 1	—	—	e 17·3
Kodaikanal	E.	52·6	289	—	—	e 15 58?	+29	—	—	—
Hyderabad		54·1	297	—	—	15 39	−10	—	—	—
Bombay		59·6	297	e 9 23	− 1	i 16 56	− 5	i 18 28	PS	—
Irkutsk		62·1	345	i 9 41	0	i 17 34	+ 2	—	—	—
Almata		67·6	323	10 17	+ 2	—	—	—	—	—
Frunse		68·9	321	10 23	0	—	—	—	—	—
Andijan		69·2	318	10 30	+ 5	19 2	+ 5	—	—	—
Semipalatinsk		70·1	331	10 30	0	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tashkent		71·5	318	i 10 37	− 2	i 19 22	− 1	—	—	e 35·6
Tchimkent		71·8	319	10 42	+ 1	—	—	—	—	—
Samarkand		72·4	315	10 42	− 2	19 29	− 4	—	—	—
Baku		85·0	311	i 11 55	+ 4	i 21 51	+ 7	—	—	e 38·0
Grozny		88·6	314	12 10	+ 2	21 58	−20	—	—	—
Erevan		89·0	310	e 12 15	+ 5	—	—	—	—	—
Tiflis		89·1	312	i 12 12a	+ 1	i 22 25	+ 3	e 25 18	PPS	—
Ksara		95·1	303	i 12 40k	+ 2	e 30 2	SS	e 14 12	pP	—
Pulkovo		99·5	329	e 16 1	?	—	—	—	—	—
Tinemaha	z.	113·4	53	i 17 54	[+ 5]	i 20 51	PKS	i 18 49	PP	—
Haiwee	z.	113·8	53	i 17 55	[+ 5]	i 20 53	PKS	—	—	—
Pasadena		113·9	56	i 17 54k	[+ 4]	i 20 52	PKS	—	—	—
Mount Wilson	z.	114·0	56	i 17 55k	[+ 4]	i 20 52	PKS	—	—	—
Riverside		114·6	56	i 17 56k	[+ 4]	i 20 54	PKS	—	—	—
Tucson		120·3	57	18 8	[+ 5]	—	—	i 19 45	PP	e 47·7
Florissant		133·3	41	e 18 39	[+11]	e 21 1	PP	—	—	—
Little Rock		134·0	48	e 18 32	[+ 2]	e 21 24	PP	—	—	—
Williamstown		139·8	22	e 18 34	[− 6]	—	—	i 21 35	PP	—
Harvard		140·7	21	e 18 38	[− 3]	22 2	PKS	i 21 44	PP	—
Weston	z.	140·8	21	i 18 40a	[− 1]	—	—	—	—	—
Fordham		141·1	26	i 18 40	[− 2]	—	—	i 21 43	PP	—
~~La Paz~~		~~152·2~~	~~150~~	~~19 11~~	[+12]	—	—	~~i 23 16~~	~~PP~~	—

Additional readings :—
Malabar i = +4m.7s.
Batavia iE = +5m.50s.
Perth i = +8m.13s.
Adelaide i = +6m.54s.
Medan iE = +8m.39s., iN = +9m.0s.
Hong Kong ? = +7m.9s.
Brisbane iPPE = +8m.16s., i?N = +10m.34s., i?E = +10m.40s., iSN = +12m.46s.
Melbourne i = +13m.46s.
Riverview iN = +11m.22s. and +14m.11s.
Calcutta ePPN? = +10m.35s., isSN = +16m.52s., iN = +20m.35s.
Bombay e = +11m.25s., +19m.28s., and +21m.4s.
Tiflis eE = +22m.2s.
Ksara esP = +14m.52s., eSP = +24m.46s., ePKP,PKP = +37m.44s.
Pulkovo e = +16m.33s.
Tucson epPP = +21m.14s., esPP = +22m.10s.
Florissant eE = +21m.21s.
Little Rock ePE = +18m.35s., iN = +21m.48s. and +22m.2s.
Williamstown iP = +18m.38s.
Harvard $iPKP_3$ = +18m.44s.
La Paz eN = +20m.58s.

April 4d. Readings also at 2h. (Frunse, Almata, Andijan, Tashkent, Tchimkent, and Samarkand), 3h. (Nagoya), 4h. (Manila (2) and Tiflis), 5h. (Medan, Lick, San Francisco, Branner, and Berkeley), 7h. (La Paz, Samarkand, and Huancayo), 9h. (Andijan), 15h. (Andijan, Samarkand, Tchimkent, Tashkent, Frunse, Grozny, Semipalatinsk, and Almata), 19h. (Tashkent, Tiflis, Baku, Ksara, Bombay, Kodaikanal, Colombo, and Calcutta), 20h. (Frunse, Tchimkent, Andijan, and Brisbane), 21h. (near Williamstown, Istanbul, Nagoya, and Harvard), 22h. (Mizusawa, Wellington, and Nagoya), 23h. (Harvard).

April 5d. Readings at 3h. (Tiflis, Wellington (3), Riverside, Mount Wilson, Pasadena, Tashkent, and Baku), 4h. (Fort de France and Sverdlovsk), 5h. (Tiflis), 7h. (Mizusawa), 8h. (Tucson), 10h. (Mizusawa), 11h. (La Jolla, Cape Girardeau, Philadelphia, East Machias, Chicago, Butte, Little Rock, Florissant, Tucson, Pasadena, Mount Wilson, and Riverside), 12h. (Grozny), 16h. (Wellington and New Plymouth (2)), 17h. (Oaxaca, Koti, and Mount Wilson), 19h. (Toledo, Granada (2), Malaga, and Almeria).

April 6d. 1h. 14m. 23s. Epicentre 36°·3N. 71°·0E. (as on 1938 February 14d.).

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		4·6	14	1 5	− 7	i 1 58	− 9	—	—	—
Samarkand		4·6	319	1 10	− 2	1 58	− 9	—	—	—
Tashkent		5·2	347	1 21	0	2 14	− 8	—	—	2·3
Frunse		7·1	22	1 52	+ 4	i 3 13	+ 3	—	—	—
Almata		8·3	32	2 13	+ 9	3 45	+ 5	2 47	?	—
Agra	E.	10·9	145	e 2 45	+ 5	i 4 43	− 1	—	—	—
Semipalatinsk		15·6	22	3 41	− 2	e 6 31	− 6	—	—	—
Bombay		17·4	174	e 4 4	− 2	7 19	0	—	—	—
Grozny		20·6	299	e 4 22	−21	e 8 2	−27	—	—	—
Sverdlovsk		21·7	345	e 4 43	−12	e 9 28	SS	i 5 19	PP	—
Ksara		28·8	275	e 5 25	−37	e 9 59	−52	—	—	e 12·3
Moscow		29·8	321	e 5 54	−17	e 12 33	SS	—	—	—
Pulkovo		35·1	325	e 6 40	−17	e 11 55	−35	—	—	—

Additional readings :—
Samarkand e = +1m.44s.
Agra eSN = +4m.53s.
Moscow e = +7m.54s.
Long waves were also recorded at Tiflis.

April 6d. Readings also at 1h. (Tchimkent, Frunse, Samarkand, and Andijan), 5h. (Tucson), 6h. (Wellington), 12h. (Tiflis), 16h. (Harvard and near Williamstown).

April 7d. Readings at 0h. (Tucson), 2h. (Manila), 3h. (Mizusawa, Nagoya, Samarkand, Tashkent, Frunse, Tchimkent, and Andijan), 4h. (Hastings, Mount Wilson, and Pasadena), 5h. (Tananarive), 7h. (Fort de France and Samarkand), 8h. (Tacubaya, Manzanillo, and Guadalajara), 9h. (Samarkand, Tucson, Mount Wilson, and Pasadena), 10h. (Riverview, Wellington, Perth, Sydney, Tucson, Brisbane, Mount Wilson, Pasadena, and Riverside), 13h. (Apia, Samarkand, and Andijan), 14h. (Agra, Riverside, Tucson, Pasadena (2), Mount Wilson (2), Frunse, Tchimkent, Almata, Ksara, La Paz, and Tiflis), 16h. (Manila), 21h. (Rio de Janeiro), 22h. (Tinemaha, near Berkeley, Huancayo, La Plata, Erevan, Grozny, Williamstown, Tiflis, La Paz, Ksara, Mount Wilson, Pasadena, Tucson, and Riverside), 23h. (Tashkent, Sverdlovsk, De Bilt, Uccle, Bombay, Malaga, Granada, Paris, and Strasbourg).

April 8d. Readings also at 1h. (New Plymouth and Pennsylvania), 2h. (San Javier and Santiago), 8h. (La Paz), 13h. (Sofia, Santiago, San Javier, and Harvard), 16h. (Theodosia), 20h. (Nagoya, Samarkand, Tchimkent, Andijan, Frunse, and near Tananarive), 21h. (Balboa Heights), 23h. (Mizusawa).

April 9d. 9h. 10m. 32s. Epicentre 15°·0S. 168°·5E.

Epicentre 16°·0S. 169°·0E. given by Bulletin Mensuel du Bureau Central Seismologique de Strasbourg, Avril, p. 47.

Pasadena suggests depth 100kms.

$A = -\cdot9470$, $B = +\cdot1927$, $C = -\cdot2572$; $\delta = +9$; $h = +6$;
$D = +\cdot199$, $E = +\cdot980$; $G = +\cdot252$, $H = -\cdot051$, $K = -\cdot966$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	E.	19·0	227	i 4 16	−10	i 7 46	− 9	—	—	—
Apia		19·1	89	i 4 34	+ 7	e 7 49	− 8	i 4 52	pP	—
Riverview		24·4	216	i 5 20a	− 1	e 9 26	−13	i 10 36	SS	e 11·8
Sydney		24·4	216	e 5 4	−17	e 9 11	−28	—	—	e 11·6
Wellington		26·7	170	5 38	− 5	10 0	−17	i 5 53	pP	12·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Melbourne		30·8	218	—	—	i 11 16	− 7	e 13 6	SSS	—
Adelaide		33·4	227	8 14	PPP	14 21	SSS	—	—	e 11·7
Perth		50·7	241	12 34	PPP	i 16 12	− 6	20 31	SS	25·6
Manila		55·4	300	i 9 36k	− 2	—	—	13 43	PPP	—
Vladivostok		66·7	332	e 10 55	0	e 19 50	+ 4	—	—	e 28·4
Berkeley		83·5	48	i 12 33	+ 2	—	—	—	—	42·9
Pasadena		85·1	53	i 12 40	+ 1	—	—	—	—	e 42·5
Mount Wilson	Z.	85·2	53	i 12 39	0	—	—	e 16 0	PP	—
La Jolla		85·3	54	e 12 40	0	—	—	—	—	—
Haiwee	E.	86·0	51	e 12 45	+ 2	—	—	—	—	—
Tinemaha		86·1	50	i 12 46	+ 2	—	—	—	—	—
Tucson		90·2	57	i 13 7	+ 3	—	—	e 16 46	PP	e 39·6
Bombay	E.	100·0	287	e 13 43	− 5	—	—	e 16 52	PP	—
Tashkent		106·6	310	—	—	i 26 13	− 2	e 32 58	SS	—
Sverdlovsk		112·2	327	e 19 20	PP	28 58	PS	—	—	46·5
Baku		121·3	310	e 20 1	PP	i 30 5	PS	—	—	e 45·5
Tiflis	E.	124·9	312	e 19 3	[+ 1]	—	—	e 20 33	PP	67·5
Ksara		133·7	303	e 19 21	[+ 2]	e 39 56	SS	e 22 6	PP	—
De Bilt		140·7	345	e 19 22	[− 9]	—	—	e 22 37	PP	e 74·5
Stuttgart		142·3	339	e 19 31	[− 3]	—	—	e 22 42	PP	—
Strasbourg		142·9	340	e 19 30	[− 5]	—	—	i 22 47	PP	e 73·5
Zurich		143·7	339	e 19 34	[− 3]	—	—	—	—	—
Padova		143·9	333	e 20 22?	[+45]	—	—	—	—	—
Paris		144·4	346	e 19 38	[0]	—	—	—	—	78·5
Jersey		145·0	352	e 18 48	[−51]	—	—	—	—	e 78·1
Granada		156·8	344	e 20 5	[+ 8]	—	—	24 14	PP	—
Malaga		157·4	344	e 23 58	PP	—	—	—	—	—

Additional readings :—
Brisbane i?E = +5m.40s.
Apia ePP = +5m.5s., sS? = +8m.19s., iP$_c$P = +8m.44s., pP$_c$P = +9m.20s., i = +9m.58s., S$_c$P = +12m.26s., P$_c$S = +12m.36s., pP$_c$S = +13m.6s., iS$_c$S = +15m.49s., sS$_c$S = +16m.42s., e = +20m.15s.
Riverview iEN = +5m.27s., iSSE = +10m.2s.
Wellington i = +7m.33s. and +10m.58s. and +11m.23s.
Melbourne i = +11m.28s. and +14m.30s.
Perth i = +24m.40s.
Tashkent e = +28m.3s., +29m.21s., and +45m.58s.
Ksara ePPS = +34m.32s.
Jersey e = +20m.13s.
Long waves were also recorded at Harvard and Rathfarnham Castle.

April 9d. Readings also at 2h. (Sverdlovsk), 3h. (Tacubaya, Oaxaca, Baku, Tiflis, Tashkent, and near Tananarive), 5h. (local shock record at Basle, Florence, Chur, Zurich, Neuchatel, and Moncalieri), 6h. (Tashkent and Sverdlovsk), 9h. (Fort de France, Tuai, New Plymouth, and Wellington), 10h. (Grozny (2)), 11h. (Grozny, Harvard, and Fort de France), 12h. (Malaga, Nagoya, Mizusawa, and Copenhagen), 13h. (La Paz, Grozny, Frunse, Andijan, Samarkand, and Tchimkent), 15h. (Tiflis, Tashkent, and Ksara), 16h. (Baku, Tchimkent, Samarkand, Andijan, and Frunse), 19h. (Harvard and Williamstown), 20h. (Grozny), 22h. (Tucson (2), Pasadena, and Mount Wilson).

April 10d. 5h. 5m. 32s. Epicentre 35°·5N. 100°·5E.

$A = -·1487$, $B = +·8023$, $C = +·5781$; $\delta = 0$; $h = 0$;
$D = +·983$, $E = +·182$; $G = -·105$, $H = +·568$, $K = -·816$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Phu-Lien		15·6	158	4 35	+52	—	—	—	—	—
Calcutta	N.	16·7	223	i 4 13	PPP	i 7 26	SSS	e 8 19	SS	i 9·3
Irkutsk		17·0	8	4 14	PP	7 15	+ 5	—	—	9·0
Almata		19·8	302	4 31	− 4	7 33	−40	—	—	e 8·9
Semipalatinsk		20·1	323	4 41	+ 3	—	—	—	—	—

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.	20·9	253	i 4 48	+ 2	8 25	−10	9 7	SS	—
Frunse		21·3	298	4 48	− 2	—	—	—	—	—
Andijan		22·7	291	5 3	− 1	—	—	e 6 45	?	e 11·7
Tchimkent		24·9	296	e 5 23	− 3	—	—	—	—	e 12·8
Tashkent		25·1	294	i 5 23	− 5	e 9 27	−24	—	—	i 13·0
Samarkand		26·8	289	e 5 34	−10	—	—	—	—	e 13·5
Manila		27·8	133	e 14 19	?	19 11	?	—	—	—
Bombay		29·5	243	e 6 13	+ 5	e 11 8	+ 6	e 6 47	PP	—
Sverdlovsk		34·2	322	i 6 50	+ 1	e 12 21	+ 5	—	—	17·6
Baku		39·8	293	e 9 46	PPP	e 16 30	SS	—	—	22·7
Grozny		42·4	298	7 52	− 6	—	—	—	—	—
Tiflis		43·3	296	e 8 7	+ 2	e 14 40	+ 7	e 17 42	SS	e 23·5
Moscow		46·6	317	e 8 32	0	e 15 10	−11	—	—	e 20·0
Pulkovo		50·3	322	e 9 3	+ 3	e 16 26	+13	—	—	e 20·0
Ksara		52·3	288	i 9 20	+ 5	e 16 52	+12	e 11 18	PP	—
Basle		66·6	313	e 10 59	+ 5	—	—	—	—	—

Additional readings :—
Tiflis eN = +20m.42s.
Ksara eSS = +20m.27s.
Long waves were also recorded at Medan, Hong Kong, Vladivostok, and European stations.

April 10d. 19h. 30m. 15s. Epicentre 14°·5N. 92°·3W.

A = −·0389, B = −·9678, C = +·2488 ; δ = +5 ; h = +6 ;
D = −·999, E = +·040 : G = −·010, H = −·249, K = −·969.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	4·9	300	1 26	P*	—	—	—	—	—
Merida	N.	6·9	20	1 57	P*	—	—	—	—	—
Tacubaya	N.	8·2	307	2 12	+ 9	—	—	—	—	—
Little Rock	E.	20·2	0	e 4 38	− 1	e 8 32	+11	5 10	PPP	—
Cape Girardeau	N.	22·9	7	i 4 0	−66	—	—	—	—	—
Florissant		24·3	4	e 4 48	−32	—	—	—	—	—
Tucson		24·5	320	e 5 38	+16	e 11 10	SSS	e 6 50	PP	13·5
Riverside	Z.	29·8	315	e 6 11	0	—	—	—	—	—
Mount Wilson		30·4	315	i 6 18	+ 2	—	—	—	—	—
Pasadena	Z.	30·5	315	e 6 17	0	—	—	—	—	—
Ottawa		33·8	21	e 6 38	− 8	—	—	—	—	16·8

Additional readings :—
Little Rock eE = +5m.38s., +5m.54s., and +9m.17s.
Cape Girardeau eN = +4m.14s. and +6m.58s.
Riverside iZ = +6m.28s., +9m.10s., +9m.24s., and +9m.42s.
Mount Wilson iZ = +6m.33s.
Pasadena eZ = +6m.34s., iZ = +9m.11s.

April 10d. Readings also at 2h. (Taihoku), 4h. (Santiago), 5h. (Samarkand), 7h. (Samarkand), 8h. (Manzanillo), 9h. (Tucson, Oaxaca, and Tacubaya), 11h. (Sverdlovsk, Tashkent, Almata, Oaxaca, Samarkand, Andijan, Grozny, Tchimkent, and Frunse), 12h. (La Paz and Almeria), 14h. (Tacubaya and Oaxaca (2)), 16h. (La Plata, San Javier, Copiapo, La Paz, and Santiago), 18h. (La Paz and Andijan), 19h. (Frunse, Tchimkent, and Grozny), 21h. (Mizusawa).

April 11d. Readings at 3h. (New Plymouth and Hastings), 4h. (Manzanillo), 5h. (Phu-Lien, Mount Wilson, and Pasadena), 6h. (Mount Wilson, local shock recorded twice within the hour at Stuttgart, Ravensburg, Potsdam, Ebingen, Uccle, Cheb, Zurich, Chur, Basle, Jena, Strasbourg, Besançon, Triest, and once at Göttingen, Jersey, and Paris), 8h. (Moncalieri, New Plymouth, and Wellington), 11h. (San Juan, Oaxaca, and Tacubaya), 21h. (Riverside, Tinemaha, Tucson, Mount Wilson, and Pasadena, La Paz, and Huancayo), 22h. (La Paz, Huancayo, Wellington, Baku, Sverdlovsk, Ksara, and Tiflis).

April 12d. 11h. 2m. 21s. Epicentre 12°·0N. 91°·9W.

Epicentre given by "Universidad Nacional de Mexico."

$A = -\cdot0324$, $B = -\cdot9779$, $C = +\cdot2066$; $\delta = +2$; $h = +6$;
$D = -\cdot999$, $E = +\cdot033$; $G = -\cdot007$, $H = -\cdot206$, $K = -\cdot978$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	6·8	317	e 1 25	−19	—	—	—	—	—
Merida	N.	9·2	13	i 2 1	−15	—	—	—	—	—
Tacubaya	N.	10·2	317	e 2 13?	−18	—	—	—	—	—
Little Rock		22·7	358	e 5 4	0	e 8 56	−13	i 5 35	PPP	—
Columbia		24·0	22	e 5 21	+ 4	e 9 39	+ 7	—	—	e 13·0
Cape Girardeau	N.	25·3	6	e 5 30	0	e 9 49	− 5	i 6 8	PP	—
St. Louis		26·6	3	e 6 0	+18	e 10 11	− 5	e 7 10	PPP	e 15·9
Tucson		26·6	323	5 43	+ 1	e 10 19	+ 3	7 1	PPP	12·8
Florissant		26·7	3	e 5 31	−12	i 9 56	−21	—	—	—
Huancayo		29·0	144	—	—	e 11 9	+15	13 13	SSS	i 14·7
Chicago		30·0	6	—	—	e 10 50	−20	—	—	e 11·8
Philadelphia		31·5	25	—	—	e 11 22	−12	—	—	e 12·1
Mount Wilson	Z.	32·5	318	e 6 35	+ 1	—	—	—	—	—
Pasadena		32·5	318	e 6 39	+ 5	—	—	—	—	e 15·1
Tinemaha		34·4	321	e 6 55	+ 4	—	—	—	—	—
Ottawa		36·0	19	—	—	e 12 39?	− 5	—	—	15·6
Bozeman		37·3	338	—	—	e 12 52	−12	—	—	e 19·3
East Machias		38·8	28	—	—	e 13 9	−17	—	—	e 15·7
Sitka		55·9	333	—	—	e 17 15	−14	—	—	e 30·0
Sverdlovsk		107·7	16	—	—	e 25 23	[+21]	—	—	54·6
Ksara		112·6	46	e 20 14	PP	e 29 56	PPS	—	—	—
Tiflis		113·3	34	—	—	e 29 35	PS	—	—	e 58·6
Baku		117·0	31	—	—	e 29 59	PS	—	—	60·6

Additional readings :—
Little Rock iPN = +5m.10s., eE = +5m.40s., and +9m.24s.
Cape Girardeau iN = +6m.0s., eN = +19m.46s.
St. Louis eE = +14m.18s.
Tucson iS = +10m.22s.
Florissant iZ = +5m.35s., iSN = +9m.30s.
Huancayo S = +12m.4s., iS = +12m.19s.
Bozeman eS = +12m.59s.
Baku e = +38m.31s.
Long waves were also recorded at College, Ukiah, Seattle, Butte, La Paz, Paris, Strasbourg, Kew, De Bilt, Tashkent, Uccle, Edinburgh, Fort de France, Berkeley, and Harvard.

April 12d. Readings also at 1h. (Fresno and Manila), 2h. (Sverdlovsk, De Bilt, Tashkent, Calcutta, and Phu-Lien), 3h. (Grozny), 4h. (Andijan (2), Frunse, and Samarkand), 5h. (New Plymouth, Wellington, Christchurch, and Santiago), 6h. (Göttingen), 8h. (Samarkand, Frunse, and Andijan), 9h. (Berkeley, Lick, Branner, and San Francisco), 11h. (Mizusawa and Granada), 14h. (Santiago and Tucson), 15h. (Santiago (3)), 16h. (Tucson, Fresno, Mount Wilson, Riverside, Tinemaha, Pasadena, Cape Girardeau, Little Rock, and La Jolla), 17h. (La Paz), 18h. (La Paz and Ottawa), 20h. (Pasadena, Tinemaha, Riverside, and Mount Wilson), 21h. (Santiago), 22h. (Tananarive), 23h. (Tucson and Merida).

April 13d. 1h. 10m. 17s. Epicentre 26°·0N. 91°·0E.

$A = -\cdot0157$, $B = +\cdot8999$, $C = +\cdot4360$; $\delta = +16$; $h = +3$;
$D = +1\cdot000$, $E = +\cdot017$; $G = -\cdot008$, $H = +\cdot436$, $K = -\cdot900$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	4·2	215	e 1 6	− 1	i 1 52	− 5	i 1 14	P*	—
Agra	E.	11·7	280	2 45	− 6	5 0	− 4	—	—	—
Hyderabad		14·4	236	—	—	6 4	− 5	—	—	—
Bombay		18·2	251	e 4 19	+ 3	e 7 45	+ 8	—	—	—
Kodaikanal	E.	20·2	224	(e 4 36)	− 3	e 8 6	−15	—	—	10·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		21·3	317	5 4	+14	8 40	− 3	—	—	—
Frunse		21·5	325	4 53	+ 1	—	—	—	—	—
Colombo	E.	21·7	212	e 4 13	−42	—	—	—	—	—
Tashkent		23·6	316	—	—	e 9 49	SS	—	—	e 13·2
Tchimkent		23·9	319	e 5 45	PP	—	—	—	—	—
Samarkand		24·2	309	5 23	+ 4	9 39	+ 4	—	—	—
Irkutsk		28·1	17	—	—	e 11 43?	SS	—	—	—
Tananarive		61·4	228	16 29	?	e 19 46	+66	—	—	—

Additional readings :—
Calcutta $iP_gN = +1m.22s.$, $iSN = +2m.3s.$, $iS_gN = +2m.11s.$
Kodaikanal $eP = +4m.20s.$, PPPE fits as P.
Andijan $e = +9m.22s.$
Tashkent $e = +10m.12s.$
Irkutsk $e = +16m.43s.$?
Long waves were also recorded at Sverdlovsk and Phu-Lien.

April 13d. 2h. 45m. 44s. Epicentre 39°·0N. 15°·2E. (as on 1937 Oct. 17d.).

Felt in eastern Sicily, Calabria, Pouilles, and force III at Taranto.

A. Agamennone.

Sulla profonita del foco nel terremoto Calabro-Siculo de 13 Aprile, 1938. Boll. della Soc. Seismol. Italiana XXXVII, 1939, pp. 33-51. Macroseismic chart, p. 75.

Pietro Caloi.

Attivita Sismica in Italia nel Decennio, 1930-39, vol. IX, Firenze, 1942, XX, p. 74, 75, 76.

Epicentre 39°·5N. 15°·0E. (given by Strasbourg), Tyrrhenian Sea, north of the Lipari Isles.

J.S.A. 39°·4N. 15°·0E.

Gutenburg and Richter 39°·2N. 15°·2E.

U.S.S.R. 39°·5N. 15°·5E.

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

A depth of focus 0·030 has been assumed.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florence	5·7	328	i 1 30a	+ 6	i 2 30	0	—	—	—
Triest	6·7	352	i 1 40k	+ 3	i 2 56	+ 3	i 2 14	PPP	—
Padova	6·9	339	i 1 45	+ 5	i 3 6	+ 8	—	—	—
Belgrade	7·0	32	i 1 41a	0	i 3 0	0	1 59	PP	—
Laibach	7·0	356	i 1 46	+ 5	i 3 1	+ 1	1 54	PP	—
Sofia	7·2	55	e 1 47	+ 3	i 3 7	+ 2	i 2 0	PP	—
Graz	8·1	2	i 1 53	− 2	i 3 21	− 5	—	—	—
Moncalieri	8·2	320	i 2 4	+ 7	—	—	—	—	—
Marseilles	8·5	303	2 1	+ 1	i 3 37	+ 2	2 33	PPP	—
Kecskemet	8·6	21	i 2 4	+ 2	3 24	−13	4 34	S_g	i 4·6
Chur	8·9	334	2 8k	+ 2	e 3 46	+ 2	—	—	—
Budapest	9·0	18	2 8	+ 1	i 3 42	− 4	—	—	e 5·8
Ogyalla	9·1	13	e 2 10	+ 2	e 4 14	+26	—	—	—
Ravensburg	9·7	337	i 2 18k	+ 2	i 4 3	+ 1	i 4 24	SS	—
Zurich	9·7	332	e 2 17k	+ 1	i 4 1	− 1	—	—	—
Bucharest	9·8	53	i 2 20a	+ 3	i 4 5	0	i 4 47	SSS	—
Algiers	9·9	259	e 2 23	+ 5	e 4 11	+ 4	—	—	7·3
Neuchatel	10·0	326	e 2 19k	− 1	e 4 6	− 3	—	—	—
Basle	10·2	330	e 2 21	− 1	i 4 14	0	—	—	—
Ebingen	10·2	336	e 2 22k	0	i 4 15	+ 1	—	—	—
Besançon	10·6	324	i 2 28	+ 1	i 4 22	− 1	—	—	—
Stuttgart	10·7	338	e 2 28k	− 1	i 4 22	− 3	i 4 55	SS	—
Istanbul	10·8	75	2 35	+ 5	4 34	+ 6	3 3	P_g	—
Strasbourg	11·0	333	e 2 32a	0	i 4 31	− 1	—	—	—
Karlsruhe	11·1	337	i 2 33	− 1	—	—	—	—	i 3·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Prague		11·1	357	i 2 34k	0	e 4 32	− 3	—	—	—
Cheb		11·2	352	e 2 37	+ 2	e 4 35	− 2	—	—	—
Hof		11·6	348	i 2 36	− 4	i 4 38	− 8	i 5 16	SS	—
Bagnères		12·1	295	i 3 2	PP	i 5 13	+15	i 3 4	pP	—
Jena		12·2	349	i 2 47	− 1	e 5 1	+ 1	i 5 53	SSS	—
Göttingen		13·1	345	i 3 0	+ 1	i 5 18	− 2	—	—	—
Paris		13·4	321	i 3 2k	− 1	i 5 27	0	—	—	6·3
Potsdam		13·5	355	i 3 4	0	i 5 30	+ 1	—	—	—
Almeria		14·1	266	i 3 12	+ 1	i 5 39	− 3	—	—	e 7·0
Uccle		14·1	331	e 3 10a	− 1	i 5 38	− 4	i 6 10	SS	—
De Bilt		14·8	335	i 3 22k	+ 2	i 5 59	+ 1	—	—	—
Sebastopol		14·8	62	i 3 21	+ 1	6 3	+ 5	—	—	—
Granada		14·9	269	i 3 27	+ 6	i 6 3	+ 3	—	—	—
Toledo		14·9	280	i 3 23k	+ 2	i 6 6	+ 6	—	—	—
Hamburg		15·0	348	i 3 22k	0	i 6 5	+ 2	—	—	—
Yalta		15·2	63	i 3 21	− 4	6 5	− 2	—	—	—
Simferopol		15·3	60	i 3 28	+ 2	—	—	—	—	—
Malaga		15·7	267	i 3 32	+ 1	i 6 25	+ 7	—	—	—
Jersey		16·0	315	i 3 31	− 3	6 21	− 4	i 3 37	PP	7·1
Helwan		16·2	120	i 3 36	− 1	i 6 28	− 1	i 4 46	PPP	—
Theodosia		16·2	61	3 36	− 1	i 6 29	0	—	—	—
Kew		16·5	322	i 3 39k	− 1	i 6 36	0	4 17	PP	8·3
Copenhagen		16·8	354	i 3 40	− 4	i 6 36	− 6	i 4 15	PP	—
San Fernando		17·1	268	i 3 46	− 1	i 6 48	0	—	—	—
Oxford		17·2	323	i 3 45k	− 3	i 6 41	− 9	—	—	—
Ksara		17·4	100	i 3 53	+ 3	i 7 1	+ 6	i 7 51	sS	—
Sotchi		19·0	67	e 4 4	− 3	i 7 24	− 2	—	—	—
Bidston		19·1	324	i 4 8	0	i 7 6	−22	i 7 54	SS	8·3
Stonyhurst		19·2	326	i 4 8	− 1	i 7 31	+ 1	i 5 27	PPP	—
Durham	N.	19·4	330	i 4 7	− 4	i 7 26	− 7	i 5 30	PPP	—
Rathfarnham Castle		20·5	322	i 4 21	− 1	i 7 55	+ 2	i 4 39	PP	9·4
Edinburgh		20·9	331	i 4 24	− 2	i 8 0	0	5 32	PPP	—
Upsala		20·9	3	i 4 24	− 2	i 7 55	− 5	i 5 46	PPP	—
Aberdeen		21·4	334	i 4 27	− 4	i 8 2	− 7	i 5 6	PP	10·2
Bergen		22·3	347	4 37	− 2	(8 27)	+ 2	—	—	8·4
Moscow		22·4	34	i 4 39	− 1	8 17	−10	5 24	pP	—
Erevan		22·6	77	i 4 48	+ 6	i 8 42	+12	—	—	—
Tiflis		22·7	73	e 4 42a	− 1	i 8 32	0	i 9 25	SS	—
Pulkovo		22·9	19	i 4 40	− 5	8 26	− 9	5 25	pP	—
Grozny		23·3	69	i 4 59	+10	i 8 43	+ 1	—	—	—
Baku		26·6	75	i 5 21	+ 1	i 9 33	− 3	6 10	pP	11·5
Sverdlovsk		34·5	43	e 6 28	− 1	i 11 35	− 5	i 7 12	pP	—
Scoresby Sund		37·0	340	i 6 48	− 2	—	—	i 8 21	PP	—
Samarkand		39·6	72	7 8	− 3	12 43	−14	—	—	—
Tashkent		40·8	69	i 7 21	0	i 13 5	−10	8 5	pP	e 16·4
Tchimkent		40·8	67	7 21	0	i 13 7	− 8	—	—	—
Andijan		43·2	69	7 42	+ 2	i 13 46	− 4	—	—	—
Frunse		44·2	65	7 49	+ 1	i 14 1	− 3	—	—	—
Ivigtut		44·2	321	i 7 45	− 3	i 13 55	− 9	9 32	PP	—
Almata		45·8	63	7 59	− 2	14 16	−11	—	—	—
Semipalatinsk		46·7	54	8 3	− 5	14 21	−19	—	—	—
Agra	E.	53·0	82	i 8 54	− 2	i 15 59	− 7	9 54	pP	—
Bombay		53·4	95	i 8 56	− 3	i 16 10	− 2	i 9 56	pP	—
Hyderabad		58·6	93	—	—	17 4	−16	—	—	—
East Machias		59·2	305	i 9 38	− 2	i 17 23	− 5	e 10 50	pP	—
Irkutsk		59·9	45	i 9 42	− 2	i 17 31	− 6	—	—	24·3
Seven Falls		60·3	309	e 9 40	− 7	e 17 28	−14	—	—	25·3
Kodaikanal	E.	62·1	100	i 10 1	+ 2	18 6	+ 1	12 25	PP	—
Weston		62·9	304	e 10 0k	− 4	i 18 9	− 6	i 11 11	pP	—
Harvard		63·0	304	e 10 0	− 5	e 18 10	− 6	i 10 50	pP	—
Vermont		63·0	306	i 10 8k	+ 3	e 18 13	− 3	e 11 16	pP	—
Calcutta	N.	63·4	82	e 10 11	+ 3	i 18 15	− 6	i 14 23	PPP	—
Williamstown		63·9	304	i 10 ·8	− 3	i 18 24	− 3	12 30	PP	—
Ottawa		64·1	308	i 10 9	− 3	e 18 25	− 5	e 11 42	PP	25·3
Fordham		65·3	304	i 10 15	− 5	i 18 39	− 5	e 22 24	SS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Colombo	E.	66·1	101	10 23	− 2	18 39	−15	—	—	—
Philadelphia		66·6	302	i 10 26k	− 2	e 18 50	−10	e 12 50	pP	—
Pennsylvania	N.	67·9	305	i 10 36	0	e 19 14	− 1	20 59	PPS	—
Georgetown		68·4	303	i 10 38	− 1	i 19 16	− 5	11 45	PP	—
Fort de France		70·4	272	i 10 52	0	e 19 40	− 5	—	—	—
San Juan		72·0	279	e 10 59	− 2	e 19 58	− 5	11 58	pP	—
Cape Town		72·7	177	e 16 33	PPP	i 20 6	− 5	—	—	24·8
Cincinnati		73·0	307	i 11 5	− 2	i 20 5	− 9	i 12 15	pP	—
Chicago		73·3	311	e 11 7	− 2	e 20 13	− 4	e 12 18	pP	e 30·2
Florissant		76·8	309	i 11 25	− 3	i 20 46	−10	i 12 39	pP	—
St. Louis		76·8	309	e 11 25	− 3	i 20 49	− 7	i 12 33	pP	—
Cape Girardeau	N.	77·3	308	e 11 28	− 3	20 53	− 8	e 14 11	PP	—
Phu-Lien		78·3	72	e 11 38	+ 1	i 21 6	− 6	—	—	—
Vladivostok		80·2	41	i 11 44	− 3	i 21 24	− 8	—	—	i 32·7
Little Rock		80·7	307	e 11 47	− 2	i 21 29	− 8	e 23 16	PS	—
Sitka		81·1	344	i 11 49k	− 3	e 21 22	−19	e 13 0	pP	e 33·4
Zinsen		81·2	49	e 11 38k	−14	i 21 35	− 7	—	—	e 37·0
Rio de Janeiro	E.	82·3	232	i 21 49	S	(i 21 49)	− 4	—	—	—
Medan		82·7	91	e 12 5	+ 5	i 21 50	− 7	—	—	—
Bozeman		82·9	325	e 12 0	− 1	e 21 55	− 4	e 15 20	PP	e 34·6
Hong Kong		82·9	67	13 6	+65	21 54	− 5	—	—	—
Butte		83·3	326	12 1	− 2	e 23 22	pS	e 15 12	PP	—
Taikyu		83·4	48	—	—	e 21 55	− 9	—	—	—
Hamada		86·1	47	12 16	− 1	22 24	− 6	—	—	—
Hukuoka B		86·1	49	12 17	0	22 27	− 3	—	—	—
Kumamoto		86·8	49	12 19	− 1	22 33	− 4	—	—	—
Kosyun		87·7	63	13 25	+61	23 26	[+58]	—	—	—
Mizusawa	E.	87·8	39	e 12 18	− 7	i 22 22	[− 7]	—	—	—
	N.	87·8	39	e 12 22	− 3	22 24	[− 5]	—	—	—
Koti		87·9	47	e 11 16?	−69	—	—	—	—	—
Merida	N.	87·9	295	i 12 0	−25	—	—	—	—	—
Miyazaki		87·9	50	12 24	− 1	22 1	[−28]	—	—	—
Nagano		88·2	43	12 29	+ 2	22 46	− 4	—	—	—
Gihu		88·4	43	12 28	0	22 22	[−10]	—	—	—
Sendai		88·4	39	12 26	− 2	22 25	[− 7]	—	—	—
Muroto		88·5	48	12 28	0	22 50	− 3	—	—	—
Nagoya		88·7	43	e 17 8	PP	22 34	[0]	—	—	—
Maebasi		88·9	43	12 24	− 6	22 31	[− 5]	—	—	—
Manila		92·8	69	i 13 52	+64	22 55	[− 3]	—	—	—
Tinemaha		93·0	324	i 12 48	− 1	—	—	e 18 56	PPP	—
Tucson		93·2	317	i 12 48	− 2	e 23 1	[0]	i 14 1	pP	e 37·0
Fresno	N.	94·0	326	e 12 53	− 1	—	—	—	—	—
Berkeley		94·1	327	i 12 53	− 1	—	—	e 16 43	PP	—
Batavia		95·1	94	—	—	i 23 3	[− 8]	—	—	—
Riverside	Z.	95·1	323	e 12 55	− 4	—	—	i 16 49	PP	—
La Paz		95·2	254	i 12 58k	− 1	25 8	?	17 6	PP	50·8
Mount Wilson	Z.	95·2	323	i 12 58k	− 1	—	—	i 16 50	PP	—
Pasadena		95·3	323	i 13 0k	0	e 23 5	[− 7]	i 16 53	PP	—
Tacubaya	N.	95·6	300	i 13 3	+ 2	e 24 12	+17	—	—	—
La Jolla		96·0	321	i 12 51	−12	—	—	i 16 55	PP	—
Huancayo		97·9	261	i 13 14	+ 3	e 23 15	[−11]	e 14 20	pP	e 43·4
La Plata		99·9	233	—	—	23 28	[− 7]	—	—	—

Additional readings :—
Belgrade iNW = +1m.53s., iNE = +2m.9s., +2m.29s., and +2m.40s., iNW = +3m.19s., iS_gNW = +3m.33s.
Laibach i = +2m.22s. and +2m.36s.
Sofia iN = +1m.54s. and +2m.3s.
Marseilles iE = +2m.8s., iPE = +2m.24s., iP_gE = +2m.50s., iE = +2m.56s., i = +3m.9s., +3m.18s., +3m.25s., +3m.34s., and +3m.55s., iSN = +4m.10s., iE = +4m.15s., iS_g = +4m.28s., i = +4m.43s. and +4m.53s.
Kecskemet e = +2m.13s., i = +2m.26s., +2m.37s., and + 2m.46s., $eP_gP_gS_g$ = +2m.55s., eS = +3m.15s., $eP_gS_gS_g$ = +3m.34s.
Budapest PPN = +2m.44s., PPSN = +3m.17s., iE = +3m.25s.
Bucharest iEN = +3m.30s.
Algiers i = +2m.29s., iS = +4m.14s., SS = +5m.36s.
Neuchatel iP = +2m.22s.

Continued on next page.

Basle i = +2m.24s.
Ebingen iP = +2m.25s., eZ = +3m.18s., iS = +4m.18s., i = +4m.36s.
Stuttgart i = +3m.37s., iS = +4m.26s., i = +4m.48s.
Strasbourg iE = +2m.46s., iZ = +3m.11s., +3m.37s., +3m.54s., and +5m.4s.
Prague e = +4m.41s.
Hof iS = +4m.54s., i = +5m.8s.
Bagnères ipPN = +3m.9s., iSS? = +5m.19s., iSS = +5m.42s., iP_cPN = +8m.10s., ipP_cPE = +9m.23s., isP_cPE = +9m.53s., iS_cPN = +11m.17s., eP_cS = +11m.36s., ipP_cS = +12m.53s., i = +13m.55s.
Jena eSN = +4m.49s., eSZ = +5m.9s., iE = +5m.58s.
Potsdam ePNZ = +2m.58s.
Uccle iEN = +4m.10s., iN = +4m.16s., iE = +4m.19s., iZ = +4m.48s., iSN = +5m.43s.
Sebastopol i = +14m.59s.
Yalta i = +14m.54s.
Simferopol i = +14m.57s.
Jersey iPPP = +3m.55s., eSS = +6m.51s.
Theodosia i = +15m.2s.
Kew iZN = +4m.48s., iSSEN = +6m.46s., iEN = +7m.20s.
Copenhagen e = +4m.0s. and +4m.21s., iSN = +6m.40s.
Ksara iS_cS = +15m.10s.
Bidston i = +5m.25s., iSS = +7m.23s.
Rathfarnham Castle i = +4m.28s., iPPP = +4m.45s., i = +5m.38s., iSS = +8m.38s. and +8m.58s.
Edinburgh i = +5m.41s., +5m.45s., +6m.4s., and +7m.53s.
Aberdeen iPP = +4m.49s., iPPP = +4m.56s., i = +5m.47s., iSS = +8m.59s., iSSS = +9m.12s.
Bergen i = +6m.48s.
Tiflis iN = +4m.46s., iZ = +4m.50s., iE = +8m.43s., iE = +9m.36s., iSSN = +9m.53s., iE = +10m.0s.
Grozny i = +4m.54s.
Sverdlovsk sP = +7m.52s.
Scoresby Sund ? = +8m.13s. and +9m.36s.
Ivigtut +9m.9s., +10m.16s., +10m.48s., +14m.45s., +15m.28s., +17m.16s., and +18m.57s.
Agra PPPE = +12m.10s., sSE = +17m.58s., SSE = +19m.50s.
Bombay isP = +10m.32s., iPP = +11m.3s., e = +16m.47s. and +17m.10s., sS = +18m.17s.
East Machias eP_cP = +10m.23s., esP = +21m.27s., ePP = +12m.2s., epPP = +12m.59s., esPP = +13m.40s., eS_cS = +18m.54s., esS = +19m.27s.
Kodaikanal SSE = +22m.16s.?
Weston iP = +10m.3s., iP_cP = +10m.39s., ipP = +11m.11s., isPZ = +11m.43s., iPPEZ = +12m.16s., iPPP = +13m.56s., isS = +19m.56s., eGZ = +25m.6s., ePKP,PKPZ = +39m.4s.
Harvard iP_cPZ = +10m.38s., eSPZ = +11m.34s., ePPPZ = +13m.57s., esSE = +19m.30s., PKP,PKPZ = +39m.13s.
Vermont epPP = +13m.56s., esS = +20m.16s., esSS = +24m.16s., eSSS = +25m.24s.
Calcutta iN = +11m.10s.
Williamstown i = +10m.29s., +10m.42s., +11m.9s., and +11m.39s., e = +20m.9s. and +23m.0s.
Fordham i = +10m.47s., +11m.25s., and +11m.47s., e = +19m.46s.
Philadelphia epPP = +14m.11s., iS = +18m.55s., eS_cS = +19m.56s.
Pennsylvania iN = +10m.39s., +10m.45s., +11m.5s., and +11m.39s., eN = +12m.58s.
San Juan iP = +11m.11s., PP = +13m.41s., epPP = +15m.8s., SP = +20m.46s., sPS = +22m.51s.
Cape Town eE = +16m.48s., iE = +20m.9s.
Cincinnati iP_cP = +11m.21s., i = +13m.38s., e = +16m.59s., iSKS = +20m.49s.
Chicago ePP = +14m.12s., epPPP = +16m.53s., eS_cS = +20m.39s.
Florissant iSP = +12m.51s., iPP = +14m.33s., ePP = +15m.42s.
St. Louis ipPN = +13m.0s., iPPPN = +14m.8s., eN = +14m.25s., iN = +21m.16s. and +22m.37s., isSN = +22m.46s.
Cape Girardeau iN = +11m.46s., +11m.58s., and +16m.16s., eN = +20m.49s. and +24m.26s.
Little Rock iP_cPEN = +11m.57s., iEN = +12m.53s., eE = +24m.24s.
Sitka esS = +13m.49s., ePP = +15m.29s., epPP = +16m.26s., eSKS = +21m.36s., pS = +23m.9s., iPS = +23m.34s., isPS = +24m.48s.
Bozeman eP_cP = +12m.11s., epPP = +16m.29s., epPPP = +18m.35s., epS = +23m.19s., esS = +23m.49s., eSS = +27m.32s., esSS = +29m.24s., eSSS = +31m.45s.
Hong Kong ? = +16m.1s.
Butte eP_cP = +12m.14s., esPS = +24m.45s.
Tucson iP = +12m.51s., isP = +14m.39s., ePP = +16m.41s., eS = +23m.31s., epS = +24m.57s., esPS = +26m.59s.
Berkeley eE = +16m.36s., iZ = +16m.39s.
Riverside i +12m.57s., iZ = +16m.34s., iPKKPZ = +29m.51s.
La Paz iZ = +18m.20s., iSN = +26m.34s., eZ = +47m.16s.
Mount Wilson iPKKPZ = +29m.51s., iPKP,PKPZ = +38m.2s.
Pasadena isPPN = +18m.28s., ePSN = +25m.41s., iPPSEN = +27m.7s., iPKKPZ = +29m.52s.
Huancayo esP = +14m.46s., ePP = +17m.12s., esPP = +18m.30s., ePPP = +19m.28s., SKKS = +23m.27s., S = +24m.14s., esS = +26m,25s., sPS = +27m,32s,
Long waves were also recorded at Seattle,

April 13d. Readings also at 0h. (Santiago), 2h. (Tacubaya), 4h. (Santiago, near Batavia, Amboina, and Malabar), 5h. (Copiapo), 6h. (Samarkand and Tacubaya), 10h. (Calcutta, Frunse, Wellington, and near Amboina), 11h. (Manila, Christchurch, and Tacubaya), 12h. (Tacubaya, Malabar, Batavia, Pasadena, Merida, Little Rock, Fort de France, Williamstown, Philadelphia, and Tucson), 13h. (Fort de France, San Juan, La Paz, and Huancayo), 14h. (La Plata, De Bilt, Semipalatinsk, Rio de Janeiro, Williamstown, Little Rock, Pasadena, Santiago, and Riverside), 15h. (Santiago (2), Ksara, Tiflis, and Bombay), 17h. (Puebla, Oaxaca, Tucson, Merida, and Tacubaya), 18h. (Tucson (2), Pasadena, Wellington, Amboina (2), Christchurch, New Plymouth, Riverview, Brisbane, and Sydney), 19h. (Baku, La Jolla, near Fresno, Lick, Tucson, Tinemaha, Tashkent, Sverdlovsk, Pasadena, Ksara, Philadelphia, and Riverside).

April 14d. 1h. 16m. 30s. Epicentre 22°·5N. 94°·5E.

Damage at Monywa and Mau. Felt Force VI at Jailpaiguri, Berkampur, etc., and strongly in Assam, Bengal, and Bihar.

Epicentre—Upper Burma 22°·5N. 94°·5E. (Bombay).
23°·5N. 95°·0E. (U.S.S.R.).
22°·6N. 94°·0E. (U.S.C.G.S.).

Depth 140kms.

$A = -\cdot0726$, $B = +\cdot9219$, $C = +\cdot3805$; $\delta = -5$; $h = +4$;
$D = +\cdot997$, $E = +\cdot078$; $G = -\cdot030$, $H = +\cdot379$, $K = -\cdot925$.

A depth of focus 0·010 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta		5·7	278	e 1 24	0	i 2 27	− 1	1 36	PP	—
Phu-Lien		11·4	96	i 2 44	+ 3	4 58	+11	2 48	PP	6·4
Agra		15·7	291	3 30	− 7	i 6 15	−13	—	—	—
Hyderabad		15·9	254	3 36	− 3	6 25	− 7	—	—	7·7
Hong Kong		18·2	86	4 9k	+ 1	7 33	+ 9	7 47	SS	—
Medan		19·2	168	4 32	+13	i 8 11	SS	—	—	—
Kodaikanal	E.	20·4	238	i 4 41	+10	i 8 17	+ 8	4 57	PP	—
Bombay		20·6	265	i 4 38	+ 5	8 19	+ 5	i 5 4	PP	—
Colombo	E.	21·0	226	4 46	+ 9	8 37	+17	—	—	9·9
Tainan		23·7	82	5 9	+ 5	8 37	−31	—	—	—
Taihoku		24·8	78	i 5 17	+ 3	e 13 47	L	—	—	(13·8)
Karenko		24·9	81	5 20	+ 5	9 31	+ 2	—	—	—
Almata		25·3	331	5 20	+ 1	—	—	e 5 52	PP	—
Zi-ka-wei		25·5	64	e 4 36	−45	8 54	−45	—	—	—
Andijan		26·1	320	e 5 23	− 3	9 55	+ 6	6 12	PP	—
Frunse		26·2	326	5 23	− 4	9 49	− 1	—	—	—
Manila		26·3	103	i 5 33a	+ 5	10 1	+ 9	—	—	11·9
Isigakizima		27·3	79	5 38	+ 1	10 7	− 1	—	—	—
Tashkent		28·3	319	i 5 42	− 4	i 10 15	− 9	6 11	pP	—
Samarkand		29·0	312	5 47	− 6	10 29	− 6	—	—	—
Semipalatinsk		30·0	343	5 54	− 8	10 42	− 9	—	—	—
Irkutsk		30·7	12	6 4	− 4	10 52	−10	—	—	15·5
Batavia		31·0	155	6 16	+ 6	i 11 19	+12	—	—	e 20·5
Zinsen		31·4	54	—	—	e 12 58	SS	—	—	e 16·0
Keizyo		31·7	55	e 11 7	S	(e 11 7)	−11	e 13 8	SS	—
Nake		32·1	72	6 20	0	—	—	—	—	13·5
Yakusima		33·1	68	6 28	− 1	11 3	−37	—	—	13·5
Hukuoka B		33·4	63	6 34	+ 3	11 35	− 9	—	—	—
Hamada		35·0	61	6 41	− 4	11 58	−11	—	—	14·6
Hirosima		35·2	62	6 56	+ 9	12 15	+ 3	—	—	14·5
Koti		36·0	63	6 53	0	i 12 22	− 2	—	—	—
Muroto		36·5	64	6 55	− 3	12 28	− 4	—	—	—
Vladivostok		37·1	47	i 6 59	− 4	e 12 29	−12	—	—	e 15·1
Toyooka		37·3	60	7 5	+ 1	12 40	− 4	—	—	—
Osaka		37·8	62	7 11	+ 3	12 40	−12	8 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.
Siomisaki		37·8	64	7 7	− 1	12 49	− 3	—	—	—
Gihu		38·9	61	7 16	− 2	12 59	− 9	—	—	17·7
Nagoya		39·0	61	7 20	+ 2	13 7	− 3	—	—	—
Nagano		40·2	59	7 28	0	13 25	− 3	—	—	—
Misima		40·6	61	7 34	+ 2	13 24	−10	—	—	—
Tokyo		41·3	61	8 5	+28	14 6	+22	—	—	—
Baku		41·5	306	i 7 40	+ 1	i 13 52	+ 5	—	—	—
Amboina	E.	41·9	124	i 7 48	+ 6	i 13 59	+ 6	—	—	—
Sverdlovsk		42·3	334	i 7 45	− 1	13 49	−10	—	—	22·5
Sendai		42·5	58	7 44	− 3	13 54	− 8	—	—	—
Mizusawa	E.	42·9	56	e 7 47	− 3	i 14 1	− 7	—	—	—
Mizusawa	N.	42·9	56	e 7 42	− 8	i 13 58	−10	—	—	—
Grozny		45·2	310	8 10	+ 1	14 37	− 4	—	—	—
Erevan		45·6	305	e 8 19	+ 7	e 14 27	−20	—	—	—
Tiflis		45·6	308	8 11	− 1	i 14 44	− 3	i 8 32	pP	—
Piatigorsk		47·2	311	e 8 21	− 4	e 15 12	+ 3	—	—	—
Sotchi		49·5	310	e 8 40	− 2	e 15 40	− 1	—	—	—
Ksara		52·3	295	i 9 6a	+ 2	i 16 24	+ 4	i 9 36	pP	—
Theodosia		52·8	311	9 4	− 4	16 21	− 6	—	—	—
Moscow		53·2	324	e 9 6	− 4	e 16 24	− 8	9 38	pP	e 22·0
Simferopol		53·7	310	9 11	− 3	16 35	− 4	—	—	—
Sebastopol		54·1	310	e 9 18	+ 1	—	—	—	—	—
Helwan		56·5	292	9 35	+ 1	17 15	− 1	10 5	pP	—
Istanbul		57·4	306	9 36	− 5	15 21	?	10 10	PP	—
Perth		57·9	158	i 9 58	+14	i 17 47	+12	—	—	—
Pulkovo		57·9	328	9 36	− 8	17 22	−13	10 7	pP	22·0
Bucharest		59·4	310	e 9 54a	0	i 17 53	− 1	i 11 50	PP	—
Belgrade		63·4	310	e 10 13k	− 9	18 35	−10	—	—	e 26·8
Budapest		64·1	314	10 25	− 1	i 18 47	− 6	19 36	PS	—
Upsala		64·2	328	i 10 26	− 1	i 18 47	− 8	e 19 39	PS	e 29·5
Ogyalla		64·6	314	10 30?	+ 1	—	—	—	—	—
Prague		66·8	318	10 43a	0	e 19 19	− 7	e 20 13	PS	—
Copenhagen		67·3	324	e 10 42	− 4	19 26	− 6	i 11 14	pP	—
Potsdam		67·4	320	i 10 49	+ 2	i 19 30	− 4	i 20 9	PS	e 25·0
Triest		67·9	312	i 10 50a	0	i 19 33	− 7	i 11 22	pP	—
Cheb		68·1	317	e 10 49	− 2	e 19 37	− 5	—	—	e 35·5
Jena		68·5	318	e 10 53	− 1	i 19 39	− 8	i 20 37	PS	e 26·5
Hamburg		69·0	321	i 10 56a	− 1	i 19 47	− 6	i 20 43	PS	e 28·6
Padova		69·3	312	i 10 56	− 3	i 19 53	− 3	—	—	—
Göttingen		69·4	319	i 10 59	− 1	e 19 52	− 5	e 20 48	PS	—
Florence		70·1	311	i 11 3	− 1	i 19 56	−10	—	—	—
Bergen		70·3	329	10 33	−32	19 30	−38	—	—	27·5
Stuttgart		70·4	316	e 11 2a	− 4	e 20 4	− 5	e 14 11	PP	e 37·5
Karlsruhe		70·7	317	i 11 10	+ 3	—	—	—	—	—
Zurich		71·1	315	e 11 5a	− 5	e 20 17	0	—	—	—
Strasbourg		71·4	316	e 11 9a	− 3	e 20 15	− 5	i 12 2	pP	—
Basle		71·7	315	e 11 9	− 4	e 20 19	− 5	—	—	—
De Bilt		72·2	320	i 11 16a	0	i 20 25	− 5	i 11 47	pP	e 34·5
Moncalieri		72·3	312	11 19	+ 2	20 23	− 8	—	—	—
Neuchatel		72·3	315	e 11 12	− 5	e 20 21	−10	—	—	—
Uccle		73·0	319	e 11 19a	− 2	i 20 33	− 6	e 11 50	pP	e 34·5
Paris		74·7	317	i 11 28	− 3	e 20 48	−10	12 1	pP	40·5
Aberdeen		74·9	327	i 11 28	− 4	i 20 52	− 8	16 15	PPP	—
Durham		75·3	324	i 11 34	0	i 20 54	−10	i 21 34	PS	—
Kew		75·6	320	i 11 37	+ 1	i 21 3	− 5	—	—	e 34·5
Edinburgh		75·8	325	i 11 38	+ 1	i 21 5	− 5	—	—	e 36·5
Oxford		76·1	321	i 11 36a	− 3	i 21 7	− 6	—	—	e 28·5
Stonyhurst		76·1	323	i 11 41	+ 2	i 21 7	− 6	—	—	e 30·0
Melbourne		76·5	141	i 11 43	+ 2	i 21 26	+ 9	i 22 20	PS	32·7
Bidston		76·6	323	i 12 48	+66	i 21 13	− 5	e 26 8	SS	e 35·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Scoresby Sund		77·3	343	i 11 45	− 1	21 21	− 5	22 19	PS	—
Jersey		77·4	319	i 11 45	− 1	e 22 23	PS	12 18	pP	e 36·5
Riverview	N.	77·7	135	—	—	e 21 36	+ 6	—	—	e 32·5
Algiers		78·0	305	e 11 48	− 1	e 21 29	− 5	12 22	pP	—
Rathfarnham Castle		78·4	324	i 11 48	− 4	i 21 50	+12	i 14 50	PP	40·5
College		80·8	23	—	—	e 22 37	+34	23 19	PS	e 45·3
Almeria		82·1	307	e 12 9	− 2	e 22 7	− 9	—	—	—
Toledo		82·1	310	e 12 10	− 1	i 22 12	− 4	i 15 22	PP	—
Granada		82·8	307	i 12 20	+ 5	e 22 25	+ 2	—	—	—
Malaga		83·6	307	e 12 18	− 1	i 22 22	− 9	—	—	—
San Fernando		85·0	307	e 12 30	+ 4	e 22 39	[+ 1]	—	—	36·5
Ivigtut		91·3	343	12 47	− 9	23 41	− 3	23 16	SKS	—
Cape Town	E.	91·5	234	—	—	i 23 22	[+ 4]	—	—	—
Butte		107·5	18	e 18 33	PP	e 27 40	PS	e 33 32	SS	—
Seven Falls		109·4	349	—	—	e 26 8	SKKS	e 33 46	PS	44·5
East Machias		111·0	345	e 18 59	PP	e 25 21	[+28]	e 29 11	PS	—
Ottawa		111·8	352	e 18 6	[−17]	e 34 30?	SS	—	—	48·5
Harvard		114·1	347	e 18 29	[+ 1]	e 35 2	SS	e 19 21	PP	—
Weston		114·1	347	i 18 30k	[+ 2]	e 26 53	SKKS	e 19 9	pPKP	—
Williamstown		114·1	349	i 18 30	[+ 2]	i 29 34	PS	22 10	PPP	—
Mount Wilson	Z.	115·6	29	i 18 33	[+ 2]	—	—	i 29 8	PKKP	—
Pasadena	Z.	115·7	29	i 18 33	[+ 2]	—	—	e 29 7	PKKP	—
Chicago		115·9	2	e 19 29	PP	e 26 9	SKKS	29 26	PS	e 56·7
Fordham		116·1	348	i 18 30	[− 2]	e 27 5	SKKS	22 3	PP	—
Riverside	Z.	116·9	29	i 18 34	[0]	—	—	i 29 5	PKKP	—
Philadelphia		117·1	350	e 19 39	PP	e 26 14	SKKS	i 29 13	PS	—
Florissant		118·8	3	e 18 33	[− 4]	e 25 11	[−12]	i 29 42	PS	—
St. Louis	E.	119·0	3	i 25 19	SKS	(i 25 19)	[− 4]	31 10	PPS	—
Tucson		120·4	24	i 18 44	[+ 4]	e 30 43	PS	i 20 7	PP	e 48·3
Little Rock		122·6	6	i 18 49	[+ 4]	e 24 6	?	20 20	PP	—
San Juan		135·2	333	e 22 14	PP	e 31 54	PS	25 24	PPP	
Tacubaya	N.	136·3	18	i 22 44	PP	—	—	—	—	—
Rio de Janeiro	E.	141·1	261	e 39 0	?	—	—	—	—	—
Balboa Heights		148·1	348	e 19 30?	[− 1]	—	—	—	—	—
La Plata		152·9	236	19 42	[+ 3]	—	—	—	—	—
La Paz		162·4	287	19 56	[+ 6]	—	—	25 0	PP	81·5
Huancayo		165·8	315	e 19 39	[−14]	e 45 4	SS	e 29 2	PPP	—

Additional readings :—
Calcutta iE = +1m.49s., i = +2m.46s. and +2m.58s.
Phu-Lien SSN = +5m.20s.
Hong Kong P_cP? = +8m.28s.
Kodaikanal SSE = +8m.52s.
Bombay e = +4m.56s., esP = +5m.23s., e = +5m.38s., i = +8m.30s., e = +8m.49s., esS = +9m.19s.
Taihoku e = +12m.20s.
Almata e = +6m.56s.
Zi-ka-wei iE = +9m.6s., iN = +9m.42s.
Andijan e = +6m.33s. and +10m.53s.
Frunse e = +5m.50s.
Batavia iE = +8m.20s.
Osaka SS = +14m.27s.
Tiflis i = +8m.14s., isPZ = +8m.42s., ePPz = +9m.47s., PPPZ = +10m.24s., eE = +14m.35s. and +18m.14s., SSN = +18m.32s., eZ = +18m.42s. and +19m.5s.
Helwan i = +11m.2s., pPP = +12m.10s., PPP = +13m.10s., sS = +18m.18s., i = +19m.15s.
Perth i = +19m.25s.
Bucharest iPPPE = +12m.35s., PSE = +18m.20s.
Belgrade P_cPNW = +10m.48s., eNE = +11m.21s., PPSNW = +19m.30s.
Budapest iSN = +18m.51s., iN = +19m.43s., iE = +21m.9s.
Upsala iE = +19m.47s., i = +20m.8s., iN = +21m.7s.
Copenhagen iP = +10m.45s., sP = +11m.30s., PP = +13m.14s., e = +20m.12s., eE = +20m.30s. and +21m.32s., SS = +23m.42s., SSS = +27m.12s.
Potsdam eP = +10m.42s., eE = +11m.6s., iP_cPZ = +11m.17s., iPPZ = +13m.14s., eEZ = +13m.42s., eSEZ = +19m.24s., iSN = +19m.28s., iN = +19m.50s., eN = +20m.0s., iS_cSEN = +20m.29s.
Triest PS = +20m.0s.
Hamburg iN = +20m.16s., eE = +27m.48s.
Stuttgart iP = +11m.6s., iP_cP = +11m.36s., ePS = +20m.38s., e = +24m.30s., eSSE = +25m.0s., eSSS = +28m.24s.

Continued on next page.

Zurich iP = +11m.9s.
Strasbourg ePPE = +13m.19s., esSZ = +21m.3s., +21m.13s., eSS = +24m.41s., sSSE = +25m.30s., PKP, PKPZ = +38m.52s.
Basle i = +11m.13s.
De Bilt iZ = +13m.52s. and +14m.32s., iSSN = +21m.27s.
Neuchatel i = +11m.16s.
Uccle eZ = +12m.10s., eE = +14m.32s., isS = +21m.31s., eE = +25m.7s., SSN = +25m.53s., SSSN = +29m.12s.
Aberdeen iP$_c$P = +12m.0s., PS = +21m.20s., SS = +25m.43s., iSSS = +29m.27s.
Durham iPSE = +21m.1s.
Kew iZ = +12m.9s., i = +21m.38s., iEN = +22m.8s., eEN = +25m.52s. and +29m.32s.
Edinburgh i = +12m.8s., +21m.42s., +26m.48s., and +30m.1s.
Bidston i = +21m.47s. and +22m.12s., e = +30m.13s.
Scoresby Sund i = +13m.42s.
Jersey e = +14m.38s., eSS = +23m.48s.
Algiers iP = +11m.50s., sS = +22m.9s.
Rathfarnham Castle i = +12m.14s., iPPP = +16m.34s., i = +22m.30s., isS = +23m.0s., iSS = +27m.18s., i = +30m.48s. and +33m.10s.
Toledo e = +23m.12s.
Ivigtut 24m.34s.
Cape Town iN = +23m.26s.
East Machias PP = +19m.5s., ePPP = +21m.52s., eS = +27m.29s., ePPS = +29m.53s., eSS = +34m.56s.
Ottawa e = +26m.30s.?
Harvard ePSNZ = +28m.45s., iPKKPZ = +29m.13s., ePPSNZ = +29m.40s.
Weston ePPZ = +19m.24s., iZ = +20m.8s. and +20m.56s., ePS = +28m.46s., iPKKP = +29m.13s., iPPS = +29m.42s., eSS = +35m.0s.
Williamstown i = +19m.22s. and +20m.4s., iS = +28m.41s.
Mount Wilson iSKPZ = +21m.58s., iSKKPZ = +32m.44s.
Pasadena iSKPZ = +21m.55s., eSKKPZ = +32m.42s.
Chicago eS = +27m.20s., eSS = +35m.20s.
Fordham iP$_c$P = +19m.30s., eS$_c$S? = +29m.11s.
Philadelphia ePPP = +22m.14s., eSS = +35m.36s.
St. Louis iE = +25m.22s., eE = +26m.16s. and +27m.22s., eSE = +28m.46s., eE = +29m.22s.
Tucson iPKS = +22m.8s., PPP = +22m.40s., eSS = +36m.18s., eSSS = +41m.2s.
San Juan PP = +22m.41s.
La Paz PKPN = +15m.46s., iN = +35m.24s.
Huancayo PKP = +20m.2s., iPKP = +20m.58s.

April 14d. 15h. 47m. 39s. Epicentre 2°·8S. 128°·6E.

Felt force II at Amboina.

Epicentre, Isle of Aran, 2°·8S. 128°·6E. (Batavia).

See Annales de l'Institut de Physique due Globe de Strasbourg, 1938, Tome II, 2e partie; Seismologie, Mende, 1941, p. 21.

A = −·6231, B = +·7806, C = −·0485; δ = −6; h = +7;
D = +·782, E = +·624; G = +·030, H = −·038, K = −·999.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		1·0	206	i−0 3	−24	—	—	—	—	—
Manila		18·8	338	e 4 21	− 2	7 56	+ 6	i 4 51	PP	—
Batavia		22·0	260	5 2	+ 4	8 51	− 5	—	—	—
Perth		31·4	200	—	—	13 11	SS	—	—	20·0
Brisbane		33·9	138	—	—	i 11 51	−20	15 9	SSS	—
Melbourne		38·0	158	—	—	e 12 46	−28	—	—	e 22·4
Calcutta	N.	46·7	305	—	—	e 14 58	−24	—	—	—
Bombay	E.	58·9	294	e 12 3	PP	e 18 46	PPS	—	—	—
Andijan		67·0	316	e 11 1	+ 4	—	←	—	—	—
Tashkent		69·4	316	—	—	e 20 10	− 8	28 1	SSS	e 32·8
Samarkand		70·4	313	e 10 59	−19	—	—	—	—	—
Sverdlovsk		80·5	329	12 12	− 3	—	—	—	—	34·4
Tiflis		87·2	312	e 12 44	− 5	e 23 11	[− 4]	—	—	e 43·4

Additional readings :—
Perth i = +15m.43s. and +18m.21s.
Brisbane eN = +13m.33s.
Melbourne i = +20m.18s.
Tashkent e = +22m.37s.
Samarkand e = +9m.24s.
Long waves were also recorded at Riverview, Sydney, De Bilt, Paris, Copenhagen, and Strasbourg.

April 14d. 18h. 31m. 4s. Epicentre 27°·0S. 71°·0W. (Rough).

$A = +\cdot2905$, $B = -\cdot8436$, $C = -\cdot4516$; $\delta = -1$; $h = +3$;
$D = -\cdot946$, $E = -\cdot326$; $G = -\cdot147$, $H = +\cdot427$, $K = -\cdot892$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Copiapo		0·7	149	0 21	+ 4	0 33	+ 5	—
Montezuma		4·8	25	e 1 13	− 2	i 2 35	S_g	—
Santiago		6·4	178	1 52	P*	3 18	S*	—
La Paz		10·8	14	2 40	+ 1	i 4 52	SS	5·8
La Plata		13·7	127	3 10	− 8	5 54	+ 2	6·8
Huancayo		15·4	344	e 2 58	−42	i 6 49	SS	—
Rio de Janeiro	E.	25·5	86	e 4 27	−65	e 8 56	−61	—
Harvard	Z.	69·2	0	i 11 3	− 7	—	—	—
Williamstown		69·4	359	i 11 6	− 6	—	—	—
Tucson		70·1	325	i 11 9	− 7	—	—	—
Riverside	Z.	74·9	321	e 11 46	+ 2	—	—	—
Mount Wilson	Z.	75·5	321	i 11 46	− 2	—	—	—
Pasadena	Z.	75·5	321	e 11 47	− 1	—	—	—
Samarkand		143·0	61	e 20 34	[+58]	—	—	—
Andijan		146·9	57	e 19 49	[+ 7]	—	—	—
Frunse		147·9	52	e 19 51	[+ 7]	—	—	—

Additional readings:—
Huancayo i = +8m.19s., +8m.28s., +9m.15s., +10m.19s., +11m.2s., and +11m.59s.
Long waves were also recorded at Cape Town, Strasbourg, Paris, De Bilt, and Fort de France.

April 14d. Readings also at 0h. (Calcutta), 2h. (Samarkand, Tucson, and Andijan), 3h. (Tucson and Andijan), 4h. (La Plata, La Paz, Wellington, and Kodaikanal), 5h. (Tucson), 6h. (La Paz), 7h. (Tacubaya, Oacaxa, and Wellington), 8h. (Copenhagen and Wellington), 9h. (Tiflis, Bombay, and Wellington), 10h. (Wellington), 12h. (Tiflis and Amboina), 13h. (La Paz and Copenhagen), 14h. (Amboina), 15h. (La Paz and Kodaikanal), 18h. (Wellington), 20h. (Huancayo), 22h. (Taihoku and Phu-Lien), 23h. (Irkutsk, Tashkent, Sverdlovsk, and Tiflis).

April 15d. 0h. 4m. 36s. Epicentre 35°·4N. 138°·3E. (given by Tokyo).

$A = -\cdot6100$, $B = +\cdot5435$, $C = +\cdot5767$; $\delta = +8$; $h = 0$;
$D = +\cdot665$, $E = +\cdot747$; $G = -\cdot431$, $H = +\cdot384$, $K = -\cdot817$.

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Koyama		0·6	95	0 31	+16	0 40	+14
Susaki		0·9	143	0 15	− 5	0 25	S_g
Kamakura		1·0	95	0 23	+ 2	0 38	+ 2
Mitaka		1·0	75	0 23	+ 2	0 39	+ 3
Misaki		1·1	103	0 23	+ 1	0 40	+ 1
Nagoya		1·1	258	0 22	0	0 38	− 1
Komaba		1·2	77	0 24	0	0 42	+ 1
Tokyo Imp. Univ.		1·2	75	0 24	0	0 43	+ 2
Kiyosumi		1·6	99	0 31	+ 1	0 51	0
Tukubasan		1·7	61	0 23	− 8	0 45	− 9
Koti		4·3	247	e 1 24	P_g	2 6	+ 6
Mizusawa	E.	4·4	30	e 1 30	P_g	i 2 20	S_g
Hukuoka B		6·8	258	e 3 5	S	(e 3 5)	+ 2

April 15d. Readings also at 1h. (La Plata, La Paz, Tiflis, and near Copiapo), 3h. (Haiwee, Brisbane, Pasadena, Riverside, Tinemaha, Tucson, near Copiapo, and near Hastings, Wellington, New Plymouth, and Christchurch), 4h. (Tiflis), 6h. (Harvard, Williamstown, and San Juan), 7h. (Amboina), 9h. (Frunse, Samarkand, La Paz, and near Andijan), 10h. (Wellington), 11h. (Manila, La Paz, Tucson, Tinemaha, Riverside, and Pasadena), 13h. (Wellington), 15h. (Tacubaya), 16h. (Apia), 17h. (Nagoya, Mizusawa, Harvard, and Manila), 19h. (Pasadena, Riverside, Tinemaha, and Tucson), 20h. (Tucson, Pasadena, Riverside, and Tinemaha), 23h. (Tiflis and Grozny).

April 16d. 20h. 17m. 0s. Epicentre 13°·8N. 93°·1W.

Epicentre given by U.S.C.G.S.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Puebla	N.	7·1	318	e 1 49?	+ 1	—	—	—	—	—
Merida	N.	7·8	25	1 39	−19	—	—	—	—	—
Tacubaya	N.	8·1	315	2 2	0	—	—	—	—	—
Guadalajara	N.	11·9	306	e 2 59?	+ 5	—	—	—	—	—
Little Rock	E.	20·9	1	e 4 47	+ 1	i 8 30	− 5	e 5 8	PP	—
Columbia		22·9	26	e 5 8	+ 2	e 9 15	+ 2	—	—	e 10·2
Tucson		24·5	322	e 5 22	0	e 9 50	+10	i 6 11	PPP	e 10·7
St. Louis		24·9	5	e 5 22	− 4	e 9 49	+ 2	e 10 39	SS	—
Florissant		25·0	5	e 5 28	+ 1	e 9 53	+ 4	—	—	—
Chicago		28·4	7	—	—	e 10 28	−17	—	—	e 13·5
Riverside	Z.	29·8	317	i 6 7	− 4	—	—	—	—	—
Mount Wilson	Z.	30·4	317	i 6 15	− 1	—	—	—	—	—
Pasadena		30·4	317	i 6 16	0	—	—	—	—	e 14·5
Philadelphia		30·4	28	e 6 59	PP	e 11 27	+11	7 22	PPP	e 12·5
Huancayo		31·1	144	—	—	e 11 34	+ 6	—	—	e 12·5
Tinemaha		32·3	320	i 6 22	−11	—	—	—	—	—
Williamstown		33·5	28	i 6 39	− 4	—	—	i 7 42	PP	e 16·6
Harvard		34·1	29	i 6 40	− 8	e 14 35	SS	—	—	e 21·0
Ottawa		34·8	21	e 8 0?	PP	e 12 24	− 1	—	—	15·0
Bozeman		35·2	339	—	—	e 13 24	+53	—	—	e 19·6
Berkeley		35·3	318	—	—	e 12 37	+ 4	—	—	e 17·2
Butte		36·1	338	e 8 27	PP	—	—	—	—	e 19·4
East Machias		37·9	30	e 7 21	+ 1	e 12 54	−19	e 8 45	PP	e 15·2
Seven Falls		38·1	24	e 8 51	PP	e 12 36	−40	—	—	—
College		63·0	337	e 10 24	− 7	—	—	e 14 25	PPP	e 34·8
Paris		83·4	42	e 12 29	− 1	—	—	—	—	43·0
De Bilt		84·2	38	i 12 37	+ 3	e 23 5	+ 6	—	—	e 42·0
Strasbourg		86·8	40	e 12 48	+ 1	—	—	—	—	e 45·5
Stuttgart		87·7	40	e 12 52	0	e 24 36	PS	—	—	e 49·0
Sverdlovsk		106·3	14	—	—	e 25 13	[+17]	—	—	48·5
Tiflis		112·5	33	—	—	e 29 0	PS	—	—	e 86·0

Additional readings :—
Little Rock iE = +9m.17s.
Columbia eS = +9m.27s.
Tucson S = +10m.13s.
St. Louis iN = +5m.45s., eE = +11m.5s. and +12m.27s.
East Machias ePPP = +9m.25s., eS = +13m.26s.
Long waves were also recorded at Ukiah, Seattle, La Paz, Fort de France, Copenhagen, Kew, Uccle, Edinburgh, Cheb, Tashkent, Pulkovo, Baku, and Potsdam.

April 16d. Readings also at 5h. (Wellington), 7h. (Andijan and Samarkand), 8h. (Tucson), 9h. (Tucson), 12h. (Medan), 13h. (Santiago), 16h. (De Bilt, Tiflis, Baku, Almata, Semipalatinsk, Tchimkent, Agra, Kodaikanal, Bombay, Samarkand, Frunse, Irkutsk, and Tashkent), 17h. (Triest, Moncalieri, and Vladivostok), 18h. (Irkutsk, Tucson (2), Riverside (2), Mount Wilson (2), Pasadena (2), and La Jolla (2)), 19h. (Tucson, Riverside, Mount Wilson, Pasadena, La Jolla, and San Juan), 20h. (Guadalajara, Tacubaya, Merida, Puebla, Tinemaha, Pasadena (2), Mount Wilson (2), Riverside, and Tucson), 21h. (Philadelphia and Samarkand), 22h. (College, Tananarive, and Sitka), 23h. (Samarkand, Frunse, and Andijan).

April 17d. 8h. 56m. 22s. Epicentre 25°·8S. 137°·0E. (as on 1937 Dec. 20d.).

$A = -\cdot6593$, $B = +\cdot6148$, $C = -\cdot4329$; $\delta = +6$; $h = +3$;
$D = +\cdot682$, $E = -\cdot731$; $G = +\cdot317$, $H = -\cdot295$, $K = -\cdot901$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Adelaide		9·2	172	e 1 36	−40	i 4 17	+14	i 4 30	S*	—
Melbourne		13·8	153	5 29	?	i 5 44	−10	i 6 16	SS	—
Riverview		14·7	127	e 3 32	+ 1	e 6 22	+ 6	—	—	8·1
Sydney		14·7	127	e 3 30	− 1	e 6 18	+ 2	—	—	7·7
Perth		19·5	247	e 4 34	+ 3	i 7 59	− 7	8 34	SS	9·6
Amboina		23·6	340	5 12	− 1	—	—	—	—	—
Christchurch		33·9	132	e 10 57a	?	14 50	SSS	—	—	16·5
Batavia		34·8	300	i 6 27	−27	—	—	—	—	—
Wellington		34·8	126	e 8 3	PP	12 16	− 9	i 15 5	SSS	17·6
Manila		43·1	338	i 8 1a	− 3	14 30	0	—	—	—
Medan	E.	47·2	303	e 8 40	+ 4	—	—	—	—	—
Colombo	E.	64·3	293	10 39	0	19 30	+13	—	—	—
Kodaikanal	E.	68·1	295	e 10 38?	−26	—	—	—	—	—
Vladivostok		68·7	358	e 11 6	− 1	e 20 11	+ 1	—	—	e 28·6
Bombay		76·6	299	i 11 52	− 2	i 21 44	+ 4	i 14 14	PP	37·0
Baku		104·2	308	e 18 30	PP	e 32 36	SS	—	—	51·6
Sverdlovsk		104·2	327	—	—	e 33 15	SS	—	—	47·6
Pasadena	Z.	115·7	63	i 18 43	[− 1]	i 29 23	PS	i 19 55	PP	—
Mount Wilson	Z.	115·8	63	i 18 41	[− 3]	i 29 21	PS	—	—	—
Tinemaha	Z.	116·3	60	i 18 45	[0]	—	—	—	—	—
Tucson		121·2	66	e 18 52	[− 3]	—	—	e 20 20	PP	—
Paris		138·0	315	—	—	i 25 36	[−60]	—	—	—
Granada		144·8	299	e 19 46	[+ 7]	—	—	—	—	—
Malaga		145·5	299	i 19 38	[− 2]	—	—	—	—	—
Ottawa		147·3	44	i 19 40	[− 3]	—	—	—	—	—
Shawinigan Falls		148·6	40	i 19 45	[0]	—	—	—	—	—
Williamstown		150·1	46	i 19 45	[− 2]	—	—	—	—	—
Fordham		150·3	51	i 19 50	[+ 2]	—	—	—	—	—
Harvard	Z.	151·3	47	i 19 48	[− 1]	—	—	—	—	—
Weston	Z.	151·5	48	i 19 48	[− 1]	—	—	—	—	—

Additional readings:—
Adelaide iS = +3m.45s., i = +3m.53s.
Melbourne i = +7m.28s.
Riverview eSN = +6m.4s.
Christchurch L_q = +15·2m.
Wellington P_cS = +15m.56s., i = +16m.28s.
Bombay iPS = +22m.18s.
Baku e = +31m.15s.
Granada iS = +19m.59s.
Malaga eS = +19m.46s.
Weston i = +20m.2s.
Long waves were also recorded at Tiflis, Ksara, and Arapuni.

April 17d. 14h. 39m. 32s. Epicentre 19°·5S. 70°·6W. (given by U.S.C.G.S.).

$A = +\cdot3133$, $B = -\cdot8897$, $C = -\cdot3318$; $\delta = -19$; $h = +5$;
$D = -\cdot943$, $E = -\cdot332$; $G = -\cdot110$, $H = +\cdot313$, $K = -\cdot943$.

Pasadena suggests depth 50kms.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Montezuma		3·5	152	e 0 55	− 1	1 31	− 9	i 1 7	P_g	—
La Paz		3·8	39	i 1 10a	P*	i 2 3	S_g	i 1 21	P_g	—
Huancayo		8·7	328	e 2 8	− 2	3 50	0	i 4 19	S*	—
La Plata		19·0	146	4 12	−14	7 22	−33	—	—	9·5
Rio de Janeiro	E.	25·7	102	i 5 21	−12	i 9 39	−22	—	—	i 12·2
Balboa Heights		29·6	344	e 5 28	−41	—	—	—	—	—
Fort de France		35·3	18	i 6 55	− 4	12 23	−10	7 51	PP	16·6
San Juan		37·9	8	e 7 20	0	e 13 0	−13	e 8 32	PP	i 16·6
Tacubaya	N.	47·8	323	i 8 46	+ 5	i 15 45	+ 7	—	—	—
Columbia		54·1	350	e 9 30	+ 1	e 17 4	− 1	—	—	e 21·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Little Rock	E.	57·8	340	e 9 57	+ 2	i 17 55	+ 1	e 12 36	PP	—
Philadelphia		59·3	358	i 10 8k	+ 2	e 18 3	−11	—	—	e 25·5
Fordham		60·1	359	e 10 9	− 2	i 18 23	− 1	—	—	—
St. Louis		60·7	344	i 10 13	− 2	i 18 28	− 4	e 10 24	pP	—
Florissant		60·9	344	i 10 42	+25	e 18 38	+ 4	—	—	—
Weston		61·6	0	i 10 21a	− 1	i 18 27	−16	i 10 41	pP	—
Harvard		61·7	0	i 10 22a	0	i 18 44	0	—	—	42·7
Williamstown		62·0	359	i 10 23	− 1	i 18 11	−37	i 12 31	PP	—
Chicago		63·1	346	—	—	e 18 56	− 6	e 22 58	SS	e 26·0
Vermont		63·7	359	i 10 36a	0	i 19 15	+ 5	e 12 58	PP	e 26·2
East Machias		64·0	3	i 10 38	0	19 12	− 1	e 12 54	PP	—
Tucson		64·3	323	i 10 40	+ 1	19 20	+ 3	e 14 45	PPP	e 26·8
Ottawa		64·8	357	10 41	− 2	19 23	0	—	—	36·5
Shawinigan Falls		65·8	359	i 10 48	− 1	i 19 35	0	—	—	—
Seven Falls		66·3	0	—	—	19 44	+ 2	—	—	31·5
Riverside		69·4	320	i 11 12	0	i 20 25	+ 7	—		—
Mount Wilson		70·0	320	—	—	e 20 27	+ 1	39 6	P'P'	—
Pasadena		70·0	320	i 11 16	+ 1	i 20 32	+ 6	39 9	P'P'	—
Haiwee		71·2	322	e 11 26	+ 3	i 20 47	+ 7	—	—	—
Tinemaha		72·0	322	i 11 29	+ 1	i 20 57	+ 8	—	—	—
Bozeman		74·5	333	e 11 44	+ 2	e 21 8	− 9	—	—	e 31·7
Berkeley		74·9	321	e 11 43	− 1	i 21 27	+ 5	—	—	—
Butte		75·5	332	e 11 47	− 1	e 21 30	+ 2	—	—	—
Ukiah		76·3	321	—	—	e 21 44	+ 7	—	—	—
Cape Town	E.	78·6	122	i 12 2	− 3	i 22 12	+10	e 26 40	SS	e 37·5
	N.	78·6	122	i 12 4	− 1	i 21 52	−10	e 27 10	SS	e 39·0
Seattle		81·3	328	—	—	e 22 28?	− 2	—	—	—
San Fernando		82·4	48	e 14 44	PP	i 22 53	PS	—	—	42·6
Malaga		83·8	48	e 12 28	− 4	e 22 52	− 3	—	—	45·5
Granada		84·6	48	i 12 39	+ 3	i 22 55	− 8	—	—	—
Almeria		85·2	49	e 12 50	+11	—	—	—	—	—
Toledo		85·6	45	i 12 37a	− 4	e 23 21	+ 8	—	—	e 38·9
Algiers		89·1	51	—	—	e 23 56	+10	i 25 3	PS	e 45·5
Bidston		92·9	33	—	—	i 24 8	−12	—	—	e 43·5
Oxford		93·1	35	i 18 36	PPP	i 24 2	[+12]	—	—	e 35·0
Kew		93·4	36	i 13 15	− 3	i 24 9	−15	i 16 54	PP	e 45·5
Paris		93·9	39	i 13 15	− 6	e 24 8	[+13]	17 3	PP	46·5
Edinburgh		94·0	31	—	—	i 24 12	−18	—	—	e 47·5
Durham	E.	94·3	32	—	—	i 24 15	−17	—	—	—
Wellington		94·5	223	—	—	e 23 28?	[−30]	e 31 3	SS	43·6
Christchurch		94·7	220	i 13 34a	+10	23 53	[− 6]	30 58	SS	43·9
Moncalieri		95·6	43	e 13 47	+19	—	—	—	—	—
Uccle		95·8	38	e 13 33	+ 4	24 21	[+16]	—	—	e 43·5
Scoresby Sund		95·9	14	13 28	− 2	24 21	[+15]	17 17	PP	—
De Bilt		96·8	36	e 13 32	− 2	e 24 25	[+14]	i 17 26	PP	e 40·5
Strasbourg		97·0	40	e 13 30	− 5	e 24 56	+ 1	e 17 25	PP	e 45·1
Stuttgart		97·9	40	e 13 36	− 3	e 24 31	[+15]	e 26 40	PS	50·5
Triest		99·9	45	i 17 39	PP	e 24 37	[+11]	—	—	—
Jena		100·1	40	e 17 52	PP	—	—	—	—	e 50·5
Cheb		100·3	40	e 17 57	PP	e 24 49	[+21]	e 27 28?	PPS	e 51·5
Copenhagen		102·1	35	—	—	24 28?	[− 9]	—	—	44·5
College		102·2	335	—	—	e 24 35	[− 2]	e 32 45	SS	e 47·5
Pulkovo		112·1	32	e 21 8	PPP	e 28 57	PS	35 3	SS	e 39·0
Ksara		114·0	62	19 31	PP	29 21	PS	—	—	—
Tiflis		121·5	52	i 20 39	PP	e 30 30	PS	e 37 12	SS	e 53·5
Grozny		122·2	50	e 20 32	PP	—	—	—	—	—
Baku		125·4	54	e 19 4	[+ 2]	e 38 14	SS	e 20 50	PP	56·5
Sverdlovsk		128·2	31	e 21 18	PP	e 28 24	{+16}	e 38 31	SS	55·5
Samarkand		138·5	52	e 19 40	[+12]	—	—	e 22 10	PP	—
Tashkent		139·6	48	e 19 59	[+29]	(29 52)	{+34}	e 23 1	PP	e 29·9
Semipalatinsk		141·5	28	e 19 30	[− 3]	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		142·0	48	e 19 21	[−13]	—	—	e 23 47	PP	—
Frunse		142·6	43	e 20 0	[+25]	—	—	—	—	—
Bombay		145·5	84	e 19 35	[− 5]	e 29 59	{+ 6}	35 46	PPS	e 68·7
Irkutsk		147·0	5	e 19 44	[+ 1]	41 46	SS	e 23 8	PP	e 72·5
Kodaikanal	E.	147·8	101	e 19 28?	[−16]	—	—	—	—	—
Colombo	E.	148·7	109	19 46	[+ 1]	—	—	—	—	—
Vladivostok		149·8	325	e 19 46	[− 1]	e 30 16	{− 1}	e 23 31	PP	—
Agra	E.	150·2	69	19 44	[− 4]	—	—	23 39	PP	—
Calcutta	N.	160·1	76	e 20 31	[+30]	—	—	i 24 46	PP	i 72·3
Manila		167·9	248	i 20 8	[0]	31 49	{− 4}	25 13	PP	—
Phu-Lien		177·1	62	e 21 56	?	e 32 37	{+ 1}	—	—	—

Additional readings :—
Montezuma iS = +1m.48s.
Fort de France SS = +14m.11s., SSS = +14m.24s.
San Juan P = +7m.34s. and +7m.48s., iPP = +8m.52s., iS = +13m.13s., i = +13m.22s.
Columbia eP = +9m.37s.
Little Rock eE = +10m.10s. and +10m.33s., iE = +18m.11s. and +18m.21s.
Philadelphia iS = +18m.16s., iS_cS = +19m.54s.
St. Louis iN = +12m.30s., isSEN = +18m.49s., eE = +19m.56s., iN = +22m.21s.
Weston iPPZ = +10m.31s., iPPZ = +12m.31s., iN = +18m.36s., isSN = +19m.2s., iN = +19m.20s.
Williamstown i = +10m.33s., iPS? = +18m.53s.
Vermont iP = +10m.40s., iS_cS = +20m.30s.
East Machias ePPP = +14m.57s., eSS = +23m.9s.
Tucson eSS = +23m.45s., eSSS = +26m.40s.
Pasadena iZ = +11m.27s.
Bozeman eP = +12m.1s., eS = +21m.23s.
Berkeley eZ = +21m.36s.
Butte eP = +12m.8s.
Cape Town ePSN = +22m.25s.
Algiers e = +29m.28s.
Kew iE = +25m.52s., eE = +26m.25s.
Wellington L_q = +38·3m.
Christchurch S = +24m.38s., eL_q = +38·6m.
Jena eZ = +18m.4s.
Tiflis eN = +21m.17s., +22m.34s., and +30m.33s.
Baku e = +33m.18s. and +33m.56s.
Sverdlovsk e = +31m.18s.
Tashkent i = +23m.39s.
Bombay ePKS = +22m.55s.
Irkutsk e = +33m.28s.?
Agra PKP_2E = +19m.55s., SKPE? = +23m.17s.
Manila $iPKP_2Z$ = +21m.26s.
Long waves were also recorded at Perth, Stonyhurst, Potsdam, Prague, Jersey, Aberdeen, Upsala, Hamburg, and Budapest.

April 17d. Readings also at 1h. (Mount Wilson, Tacubaya, and Merida), 2h. (Balboa Heights), 3h. (Mount Wilson, Pasadena, Tucson, Riverside, Wellington, Nagoya, and La Jolla), 4h. (Kodaikanal, Sverdlovsk, Harvard, Calcutta, Bombay, Agra, Andijan, Samarkand, and Tashkent), 5h. (Balboa Heights), 6h. (Tchimkent, Samarkand (3), and Andijan (2)), 11h. (Samarkand, Tchimkent, Tashkent, Frunse, and Andijan), 14h. (Almeria), 15h. (Balboa Heights), 17h. (Andijan, Frunse, Tchimkent, Samarkand, and Santiago), 19h. (near Medan), 21h. (Mizusawa, Little Rock, and New Plymouth), 23h. (Mizusawa).

April 18d. Readings also at 0h. (Merida, Tacubaya, near Amboina, Puebla, and Oaxaca), 1h. (Tucson, Mount Wilson, and Pasadena), 2h. (Tacubaya, Tashkent, Andijan (2), Samarkand (2), Tchimkent, and Frunse), 3h. (near Amboina), 4h. (Samarkand, Tacubaya, Fort de France, Wellington, and St. Louis), 5h. (Manila, Triest, Mount Wilson, and Pasadena), 7h. (Huancayo, Mount Wilson, and La Paz), 11h. (Tashkent), 18h. (Fort de France), 20h. (Harvard), 21h. (Tiflis and Santiago), 22h. (Philadelphia, Chicago, Butte, College, and Sitka).

April 19d. 10h. 59m. 17s. Epicentre 39°·5N. 33°·7E.

Prof. W. Salomon-Calvi and Dr. H. Kleinsorge.

Das Erdbeben von Kirsehir vom 19 April.

"Meteae" Serie B. Irdeller Serie B. Abhandlunger, No. 5, Ankara, 1940, pp. 5-16, résumé in German p. 17-28 (12 photographs and one map).

Affected area 177 sq. kms. length approximately N.-S. 30 kms., E.-W. 24kms. Maximum intensity 9 at Akpinar-Kosker.

Dr. P. Ami.

Earthquake in Kirzchir, Keskir, and Verkoy.

"Meteae," Serie B, Abhandlunger No. 1, pp. 5-20, résumé in German, p. 23-38, 29 figures and isoseismic charts. Damage at Akpinar, Kosker (Nahiye), Takazli, and Homurlu Has Hoyuk.

Epicentre 39°·5N. 34°·0E.

E. Parejas and H. N. Pamir.

"Tremblement de terre du 19 April 1938 en Anatolic Centrale." Review of Faculty of Science, University of Istanbul, Vol. 4, No. 3-4, 183-193, 1939.

Epicentres: 40°·0N. 33°·0E. Bombay.
39°·0N. 33°·1E. J.S.A.
39°·0N. 34°·0E. Swiss.
38°·9N. 32°·7E. Strasbourg.
39°·5N. 34°·0E. U.R.S.S.
39°·5N. 33°·5E. U.S.C.G.S.

$A = +\cdot6437$, $B = +\cdot4293$, $C = +\cdot6335$; $\delta = -3$; $h = -2$;
$D = +\cdot555$, $E = -\cdot832$; $G = +\cdot527$, $H = +\cdot351$, $K = -\cdot774$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul	3·9	295	1 4	+ 2	2 12	S_g	1 16	P_g	—
Yalta	5·0	3	e 1 13	− 5	2 21	+ 3	—	—	—
Sebastopol	5·1	359	1 18	− 2	—	—	—	—	—
Simferopol	5·4	3	1 21	− 3	—	—	—	—	—
Theodosia	5·7	13	1 25	− 3	2 35	0	1 41	P*	—
Ksara	6·0	161	i 1 30k	− 2	i 2 37	− 6	3 5	S*	—
Sotchi	6·0	46	2 39	+67	—	—	—	—	—
Bucharest	7·5	313	e 1 55k	+ 2	i 3 33	S*	i 4 9	S_g	—
Athens	7·9	262	1 57	− 2	—	—	—	—	—
Erevan	8·3	83	i 2 10	+ 6	i 4 44	S_g	—	—	—
Piatigorsk	8·3	54	2 23	PPP	—	—	—	—	—
Sofia	8·5	296	e 2 11	+ 4	i 3 53	+ 8	i 4 9	S*	—
Tiflis	8·7	72	i 2 7a	− 3	i 3 55	+ 5	i 2 14	PP	—
Grozny	9·8	63	2 26	+ 2	—	—	—	—	—
Helwan	9·8	192	2 19	− 5	i 4 15	− 2	i 2 27	PP	—
Belgrade	11·2	303	e 2 45k	+ 1	i 5 21	SSS	i 3 3	PPP	—
Budapest	13·3	312	i 3 14	+ 1	i 5 50	+ 8	4 13	PP	—
Ogyalla	14·0	312	3 24	+ 2	6 8	+ 9	i 3 56	PPP	—
Graz	15·3	306	i 3 38	− 1	i 6 38	+ 8	—	—	7·4
Laibach	15·5	302	e 3 45	+ 3	i 7 1	SSS	i 3 56	PP	e 7·7
Triest	15·9	299	i 3 52	+ 6	i 7 3	+19	—	—	—
Moscow	16·5	8	e 3 48	− 6	6 53	− 5	—	—	8·2
Padova	17·1	297	i 4 4	+ 2	e 7 22	+10	i 4 28	PPP	10·7
Prague	17·2	314	4 1k	− 2	e 7 20	+ 6	—	—	e 7·7
Florence	17·3	292	i 4 11	+ 7	i 7 13	− 3	—	—	—
Cheb	18·4	314	e 4 17	− 1	e 7 50	+ 9	—	—	e 8·8
Hof	18·8	314	i 4 24	+ 1	e 7 58	+ 8	—	—	e 8·9
Chur	19·0	302	e 4 28a	+ 2	e 8 3	+ 8	—	—	—
Potsdam	19·2	320	i 4 25	− 3	i 7 58	− 1	—	—	e 9·8
Jena	19·2	314	e 4 30	+ 2	e 8 7	+ 8	—	—	e 8·7

Continued on next page.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Stuttgart		19·8	308	e 4 32a	− 3	i 8 17	+ 4	i 4 50	PP	i 9·4
Zurich		19·8	303	e 4 31a	− 4	e 8 15	+ 2	8 33	SS	—
Moncalieri		20·0	295	i 4 37	0	i 8 29	+12	—	—	—
Göttingen		20·4	315	e 4 39	− 2	i 8 27	+ 2	—	—	e 10·0
Karlsruhe		20·4	308	i 4 41	0	i 8 27	+ 2	—	—	9·8
Pulkovo		20·4	357	i 4 36	− 5	8 10	−15	—	—	11·2
Basle		20·5	303	e 4 40	− 2	e 8 40	+13	—	—	—
Strasbourg		20·7	306	e 4 45	+ 1	i 8 35	+ 4	i 5 8	PP	i 10·7
Neuchatel		20·8	302	e 4 45	0	e 8 45	+12	—	—	—
Hamburg		21·4	320	e 4 51k	0	i 8 48	+ 3	—	—	e 11·0
Besançon		21·5	302	e 5 1	+ 9	i 8 54	+ 7	—	—	e 10·2
Copenhagen		21·5	328	e 4 49	− 3	e 8 42	− 5	5 9	PP	—
Marseilles		21·5	290	i 4 56	+ 4	e 8 53	+ 6	i 5 19	PP	e 10·7
Upsala		22·8	339	e 5 3	− 2	i 9 10	− 1	5 34	PP	e 11·1
De Bilt		23·4	314	i 5 16k	+ 5	i 9 30	+ 9	—	—	e 10·7
Uccle		23·4	309	e 5 12	+ 1	i 9 28	+ 7	6 9	PPP	10·7
Paris		24·1	303	i 5 21	+ 3	9 36	+ 2	—	—	10·7
Algiers		24·2	273	e 5 18	− 1	e 9 34	− 1	5 48	PP	i 13·0
Sverdlovsk		24·7	37	i 5 22	− 2	i 9 42	− 2	—	—	14·0
Samarkand		25·6	79	5 27	− 5	9 52	− 7	—	—	—
Kew		26·4	309	i 5 44k	+ 4	i 10 12	0	11 58	SSS	e 12·7
Jersey		27·1	304	e 5 48	+ 2	10 52	+28	i 11 49	SS	e 15·2
Oxford		27·1	310	i 5 49k	+ 3	i 10 19	− 5	—	—	e 11·6
Tchimkent		27·2	72	e 5 46	− 1	e 10 46	+21	—	—	—
Bergen		27·4	331	5 49	0	10 34	+ 6	—	—	13·7
Durham		28·1	316	i 5 58	+ 3	i 10 47	+ 7	—	—	—
Stonyhurst		28·3	312	i 5 58	+ 1	i 10 44	+ 1	—	—	12·7
Almeria		28·4	277	i 5 54	− 4	e 10 35	−10	—	—	e 15·1
Bidston		28·5	313	i 5 48	−11	i 10 30	−16	—	—	e 12·7
Toledo		28·9	283	i 6 5	+ 2	e 10 54	+ 1	e 6 45	PP	—
Aberdeen		29·2	321	i 6 7	+ 2	i 10 56	− 2	—	—	—
Granada		29·2	277	i 6 11	+ 6	e 11 3	+ 5	—	—	—
Edinburgh		29·3	318	i 6 11	+ 5	i 11 0	+ 1	—	—	12·7
Andijan		29·4	76	6 9	+ 2	e 11 49	+48	—	—	—
Malaga		30·0	277	i 6 12	0	i 11 8	− 2	—	—	15·2
Rathfarnham Castle		30·3	312	i 6 18	+ 3	i 11 22	+ 7	i 13 0	SSS	13·7
Frunse		30·8	70	6 15	− 5	—	—	e 7 22	PP	20·7
San Fernando		31·4	278	e 6 34	+ 9	i 11 37	+ 5	13 4	SS	14·2
Almata		32·4	68	e 6 29	− 5	e 13 5	SS	—	—	—
Semipalatinsk		34·2	56	6 45	− 4	—	—	—	—	—
Dehra Dun	N.	37·2	90	e 7 33?	+18	e 12 55?	− 7	—	—	e 22·1?
Agra		38·7	94	i 7 24	− 3	i 13 18	− 7	8 39	PP	18·3
Bombay		39·4	109	i 7 34	+ 1	i 13 35	0	i 9 8	PP	18·8
Scoresby Sund		42·0	336	7 58	+ 4	14 17	+ 3	9 34	PP	—
Hyderabad		44·5	106	8 20	+ 5	14 50	− 1	10 5	PP	21·8
Kodaikanal	E.	48·6	114	i 8 51a	+ 4	i 15 46	− 3	i 10 28	PP	i 21·9
Irkutsk		48·9	50	8 49	− 1	15 52	− 1	—	—	24·7
Calcutta	N.	49·1	63	e 9 2	+11	i 16 1	+ 5	10 45	PP	i 23·4
Colombo	E.	52·6	116	9 17	− 1	16 38	− 6	—	—	27·6
Ivigtut		52·6	323	9 18	0	16 46	+ 2	20 25	SS	23·7
Tananarive		59·5	165	e 12 23	PP	e 18 23	+ 7	19 50	ScS	e 26·2
Phu-Lien		64·1	84	e 10 39	+ 1	e 19 12	− 2	—	—	—
Medan		68·5	104	e 11 7	+ 1	e 20 7	− 1	—	—	e 32·7
Hong Kong		69·0	78	11 12k	+ 3	20 17	+ 3	25 2	SS	34·0
Zi-ka-wei		69·3	66	e 11 13	+ 2	20 21	+ 4	—	—	36·2
Zinsen		69·4	59	i 11 13k	+ 1	e 20 19	+ 1	e 14 9	PP	33·2
East Machias		70·2	312	e 11 16	− 1	e 20 31	+ 3	e 14 7	PP	e 32·8
Seven Falls		70·7	316	11 14	− 6	20 29	− 5	e 25 13	SS	36·7
Taikyu		71·6	58	e 21 10	PS	—	—	—	—	—
Shawinigan Falls		72·1	316	e 11 25	− 3	—	—	—	—	33·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vermont		73·7	315	i 11 41	+ 3	e 21 11	+ 3	e 29 1	SSS	e 30·8
Weston		73·9	312	e 11 38k	− 1	e 21 14	+ 4	e 26 4	SS	—
Harvard		74·0	312	e 11 38	− 1	e 21 11	0	—	—	e 41·7
Taito		74·0	73	11 34	− 5	—	—	—	—	—
Hukuoka B		74·1	59	e 11 40	0	e 22 19	+67	—	—	—
Cape Town		74·4	193	—	—	i 21 18	+ 2	e 29 26	SSS	e 40·2
Ottawa		74·4	312	11 44	+ 2	21 17	+ 1	—	—	32·7
Williamstown		74·8	313	e 11 42	− 2	e 21 12	− 8	i 14 37	PP	—
Hirosima		75·0	58	11 46	+ 1	21 22	− 1	—	—	—
Miyazaki		75·8	61	11 50	0	21 22	− 9	—	—	—
College		76·0	1	e 11 54	+ 3	e 21 33	− 1	e 26 37	SS	e 35·6
Koti		76·2	57	e 19 54	?	—	—	—	—	—
Fordham		76·4	312	i 11 55	+ 2	i 21 39	+ 1	—	—	—
Toyama		76·6	53	11 54	0	21 45	+ 5	—	—	—
Osaka		76·8	57	11 56	+ 1	21 50	+ 8	14 48	PP	—
Wakayama		76·9	57	11 54	− 2	21 46	+ 3	—	—	—
Mizusawa		77·4	49	e 11 53	− 5	e 21 49	0	—	—	—
Oiwake		77·7	53	12 2	+ 2	21 59	+ 7	—	—	—
Philadelphia		77·7	311	e 12 4	+ 4	i 21 54	+ 2	e 14 51	PP	e 32·0
Sendai		77·8	50	11 53	− 8	21 55	+ 2	—	—	—
Pennsylvania	N.	78·7	314	i 12 10	+ 4	i 22 9	+ 6	—	—	e 39·3
Manila		78·8	80	i 12 10a	+ 4	22 20	+16	—	—	41·0
Tokyo		78·8	53	12 27	+21	22 10	+ 6	—	—	32·1
Georgetown		79·5	312	i 12 12	+ 2	e 22 9	− 2	—	—	32·7
Batavia		81·0	105	e 12 15	− 3	—	—	—	—	41·7
Saskatoon		82·4	336	12 31	+ 6	22 49	+ 8	—	—	34·7
Chicago		83·0	320	e 12 27	− 1	e 22 44	− 3	e 28 34	SS	e 37·4
Sitka		83·4	354	—	—	23 0	+ 9	e 28 47	SS	i 37·2
Fort de France		84·4	284	e 12 39	+ 3	e 23 3	+ 2	—	—	e 40·0
Columbia		85·2	310	e 12 44	+ 5	e 22 55	[− 7]	—	—	e 34·8
San Juan		85·8	290	e 12 47	+ 5	23 5	[− 1]	e 15 55	PP	—
Florissant		86·7	319	i 12 51	+ 4	i 23 20	[+ 8]	—	—	—
St. Louis		86·8	319	e 12 47	0	i 23 27	+ 2	23 8	SKS	e 32·5
Cape Girardeau		87·5	318	e 12 52	+ 1	e 23 33	+ 2	—	—	36·2
Bozeman		89·5	336	—	—	e 23 30	[+ 1]	e 24 57	PS	e 37·5
Butte		89·7	337	e 16 33	PP	e 23 28	[− 3]	e 24 51	PS	e 36·4
Little Rock		90·9	318	e 13 8	+ 1	e 23 33	[− 5]	e 16 47	PP	e 45·1
Rio de Janeiro	E.	94·8	244	e 17 43	PP	—	—	—	—	e 30·3
Ukiah		98·9	342	e 14 25	+42	e 31 59	SS	e 26 43	PS	e 48·4
Berkeley		99·9	341	e 13 27	−21	e 27 2	PPS	e 17 55	PP	—
Tucson		101·4	330	e 13 58	+ 3	e 24 24	[−10]	i 18 6	PP	40·3
Mount Wilson	Z.	102·1	337	i 13 59	+ 1	—	—	i 18 10	PP	—
Pasadena		102·2	337	e 13 59	+ 1	e 32 30	SS	i 18 13	PP	e 44·9
Perth		104·1	120	13 23	−44	24 53	[+ 7]	i 33 16	SS	46·8
La Paz		109·3	264	18 53	PP	i 29 48	PPS	28 41	PS	47·7
Honolulu		118·6	11	c 15 20	P	e 25 44	[− 1]	e 19 57	PP	e 54·7
Adelaide		121·0	111	—	—	e 36 54	SS	—	—	e 51·4
Melbourne		127·5	111	e 22 30	?	i 31 6	PS	—	—	65·5
Brisbane		128·9	95	i 21 25	PP	—	—	—	—	—
Riverview		130·4	105	—	—	e 33 13	PPS	—	—	e 57·6
Sydney		130·4	105	—	—	e 32 59	PPS	—	—	e 61·2
Christchurch		149·2	112	i 19 54a	[+ 8]	30 15	{+ 1}	23 27	PP	e 72·3
Wellington		150·5	106	19 53	[+ 5]	27 3	[+ 9]	42 53	SS	70·7

Additional readings :—
Istanbul PS = +1m.47s.
Yalta e = +1m.16s., iPP = +1m.28s., ePg = +2m.27s.
Sebastopol e = +1m.22s. and +1m.27s.
Theodosia i = +1m.29s., iP = +1m.37s., iPP = +1m.45s., S = +2m.22s., S = +2m.49s.
Grozny i = +3m.4s., e = +5m.42s.
Helwan i = +2m.55s.
Belgrade iZ = +2m.50s., iNW = +4m.8s., iZ = +4m.12s., PPSZ = +4m.44s., iNW = +4m.59s.
Budapest PN = +3m.19s., iE = +3m.50s., and +4m.43s., iN = +5m.1s., PPSN = +5m.8s., eE = +5m.39s., PSSN = +6m.13s., iE = +6m.16s. and +7m.12s.
Ogyalla PN = +3m.28s., iN = +4m.0s., iE = +4m.40s.

Continued on next page.

Prague i = +4m.7s.
Hof iP = +4m.27s., eSNW = +8m.6s.
Potsdam iPE = +4m.30s., iN = +5m.58s., +6m.41s. and +6m.59s., iSE = +8m.2s.
Jena iP = +4m.33s., eE = +6m.30s., eSNZ = +8m.10s., iSN = +8m.18s.
Stuttgart i = +4m.39s.k, e = +6m.35s., i = +8m.55s.
Göttingen iP = +4m.44s.
Strasbourg iSZ = +8m.39s., iSSE = +9m.28s.
Hamburg iPEZ = +4m.54s.k, iE = +10m.17s.
Copenhagen i = +4m.54s., e = +6m.5s., eN = +8m.54s., iE = +8m.59s.
Marseilles iN = +5m.5s., iPPPN = +5m.29s., i = +5m.51s., eSE = +8m.57s.
Upsala iP = +5m.8s.
Uccle iP = +5m.16s.k, iE = +7m.8s.
Paris P = +5m.26s.
Algiers PPP? = +6m.1s., i = +6m.33s., SS = +10m.23s.
Sverdlovsk L_q = +11·7m.
Kew iE = +10m.26s., iZ = +10m.37s., iN = +10m.51s. and +12m.12s.
Jersey e = +7m.3s., i = +10m.7s., +11m.10s., and +11m.25s.
Oxford iSE = +10m.32s.
Durham iN = +8m.29s., iE = +8m.35s.
Toledo e = +12m.11s.
Aberdeen i = +8m.20s.
Edinburgh i = +8m.13s. and +11m.15s.
Andijan e = +18m.43s.
Almata e = +9m.33s.
Dehra Dun iN = +18m.47s.
Agra PPPE = +9m.6s., SSE = +15m.31s., SSS = +15m.54s.
Bombay P_cP = +9m.49s., SS = +16m.11s., S_cS = +17m.53s.
Scoresby Sund +8m.23s., SS = +17m.18s.
Hyderabad S_cSE = +18m.17s.
Kodaikanal iPPPE = +11m.11s., iSSE = +18m.53s., iSSSE = +19m.43s.
Calcutta ePPPN = +11m.31s., iSSN = +19m.12s., iSSSN = +20m.26s.
Ivigtut +22m.43s.
Tananarive N = +20m.57s.
Hong Kong PS? = +20m.33s., S_cS? = +21m.3s.
Zinsen ePPP = +15m.31s., eSSEN = +24m.49s.
East Machias eP = +11m.20s., ePPP = +15m.40s., S = +20m.37s.
Weston iP = +11m.43s., iP_cPZ = +12m.17s., i = +12m.26s.
Harvard L_qN = +36m.43s.
Cape Town iSE = +21m.26s., ePSE = +22m.4s., SSSN = +29m.51s., SSSE = +29m.54s.
Williamstown i = +11m.55s.
College eSSS = +29m.55s.
Mizusawa ePN = +12m.0s.
Pennsylvania iN = +12m.18s.
Georgetown iSN = +22m.13s.
Chicago ePS = +23m.42s., eSSS = +31m.52s.
Sitka ePPS = +24m.26s., eSSS = +32m.29s.
Columbia eS = +23m.2s.
Florissant eSN = +23m.27s.
St. Louis eE = +13m.6s.
Cape Girardeau eN = +13m.23s., +13m.33s., and +23m.23s., iN = +23m.37s.
Bozeman eS = +23m.58s., ePPS = +25m.28s., eSS = +29m.50s.
Butte eS = +23m.56s., ePPS = +25m.27s., eSS = +29m.33s.
Little Rock iN = +23m.43s., eSKKSN = +24m.3s., eN = +24m.5s. and +26m.0s.
Tucson PPP = +20m.37s., eS = +25m.25s. and +25m.43s., PS = +26m.47s., eSS = +32m.18s.
Mount Wilson iZ = +16m.43s., ePPSZ = +28m.12s., ePKKPZ = +29m.55s., eZ = +30m.23s.
Pasadena eZ = +18m.2s., ePKKPZ = +30m.0s.
Perth eP = +10m.37s., i = +16m.53s.
Honolulu eS = +27m.42s., ePS = +29m.51s., ePPS = +30m.53s., eSS = +36m.4s.
Riverview eN = +41m.49s.
Christchurch eEZ = +26m.16s., ePSKSEZ = +33m.43s., PPSEN = +37m.39s., SSE = +42m.55s., SSSE = +48m.42s., eL_qE = +62·1m.
Wellington iPKKP?Z = +19m.58s., i = +20m.20s., +20m.35s., +20m.55s., +21m.13s., +21m.47s., and +22m.33s., PP = +23m.23s., ePSKS? = +32m.48s., i = +34m.48s., and +36m.27s., iPPS = +37m.37s., i = +45m.3s., SSS = +46m.48s., e = +52m.18s and +57m.48s., L_q = +60·7m.
Long waves were also recorded at La Plata, Seattle, and Keizyo.

April 19d. 21h. Undetermined shock. Focus probably deep.

Apia e = 46m.55s., 47m.23s., and 47m.56s., i = 50m.33s. and 51m.0s., eL = 52m.6s.
Wellington P = 47m.49s., i = 47m.58s., ipP? = 48m.15s., i = 48m.56s., iPP = 49m.15s., iP_cP = 49m.26s., i = 49m.37s., i = 49m.56s., iPPP = 50m.11s., i = 50m.31s., S = 53m.52s., P_cS = 54m.20s., i = 54m.36s., L_q = 55m.10s., S_cS = 58m.50s.
Brisbane ePN = 48m.0s., iPE = 48m.6s., eS?E = 51m.36s., iSN = 51m.48s.
Sydney eP = 48m.55s., iS = 53m.11s., eL = 55m.30s.
Riverview ePE = 49m.48s., iSN = 53m.31s., iN = 54m.32s., eLN = 55m.54s.
Melbourne e = 51m.40s. and 54m.37s., i = 55m.20s., 57m.23s., and 59m.4s.
Manila ePZ = 54m.7s., SEN = 63m.27s.
Adelaide e = 54m.15s., 58m.14s., and 59m.26s.
Honolulu ePP = 54m.55s., ePPP = 55m.43s., eS = 58m.23s., eSS = 63m.8s., eL = 64m.22s.
Mount Wilson eZ = 55m.57s., iZ = 57m.0s.
Pasadena eZ = 56m.1s. and 56m.51s.
Haiwee eN = 56m.8s.
Vladivostok P = 56m.20s., S = 66m.2s., eL = 75·7m.
Paris e = 63m.0s., L = 122m.0s.
Bombay eE = 63m.17s.
Stuttgart ePZ = 63m.18s., e = 66m.20s. and 74m.19s., eL = 123m.0s.
De Bilt eZ = 63m.53s., eL = 115m.
Hamburg eZ = 64m.0s., eLE = 119m.0s.
Strasbourg e = 64m.0s., eL = 123m.0s.
Kodaikanal eE = 64m.
Ksara ePKP = 64m.2s., epPKP = 64m.26s., ePP = 67m.2s.
Tiflis eZ = 64m.4s., 67m.32s., and 70m.19s., eLZ = 102m.
Copenhagen 64m.19s. and 64m.49s., L = 114m.
Granada eP = 65m.46s., eS = 69m.36s.
Moscow e = 66m.31s., 67m.35s., and 76m.36s., L = 105·5m.
Perth P = 67m.0s., S = 69m.50s., i = 70m.46s., L = 71m.49s.
Upsala e = 69m.0s., eL = 117m.0s.
Agra eE = 69m.13s.
Malaga e = 70m.?
Long waves were also recorded at Kew, Bidston, Cheb, Prague, San Fernando, Uccle, Harvard, Philadelphia, and Pulkovo.

April 19d. 23h. 11m. 12s. Epicentre 39°·5N. 33°·7E. (as at 10h.).

$A = +·6437$, $B = +·4293$, $C = +·6335$; $\delta = -3$; $h = -2$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul	3·9	295	1 5	+ 3	2 16	S_g	1 13	P*	—
Yalta	5·0	3	1 14	− 4	2 10	− 8	1 25	P*	—
Sebastopol	5·1	359	1 20	0	2 20	0	1 32	P*	—
Simferopol	5·4	3	1 23	− 1	2 26	− 2	i 1 48	P_g	—
Theodosia	5·7	13	1 25	− 3	2 31	− 4	e 1 39	P*	—
Ksara	6·0	161	i 1 31	− 1	2 32	−11	3 6	S*	—
Sotchi	6·0	46	e 2 37	+65	—	—	—	—	—
Athens	7·9	262	e 2 21	P*	—	—	—	—	—
Erevan	8·3	83	2 11	+ 7	4 39	S_g	—	—	—
Piatigorsk	8·3	54	2 23	P*	—	—	—	—	—
Sofia	8·5	296	e 2 16	+ 9	e 4 20	S*	—	—	—
Tiflis	8·7	72	2 9	− 1	e 3 56	+ 6	—	—	i 4·5
Grozny	9·8	63	2 28	+ 4	e 5 26	S_g	—	—	—
Helwan	9·8	192	e 2 28	+ 4	i 4 10	− 7	i 5 18	S_g	—
Belgrade	11·2	303	e 2 43a	− 1	e 5 34	SSS	—	—	—
Budapest	13·3	312	e 3 16	+ 3	5 48	+ 6	—	—	—
Ogyalla	14·0	312	e 3 18	− 4	e 6 45	SSS	—	—	e 8·3
Graz	15·3	306	e 3 38	− 1	e 8 35	L	—	—	9·8
Triest	15·9	299	i 3 48	+ 1	8 54	L	—	—	(8·9)
Moscow	16·5	8	3 50	− 4	6 58	0	—	—	9·3
Padova	17·1	297	e 4 0	− 2	—	—	—	—	e 9·6
Prague	17·2	314	i 4 3k	0	i 7 24	+10	—	—	—
Florence	17·3	292	e 1 19	?	—	—	—	—	—
Cheb	18·4	314	e 4 19	+ 1	e 7 55	+14	—	—	e 10·8
Chur	19·0	302	e 4 26	0	e 7 59	+ 4	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Potsdam		19·2	320	e 4 24	− 4	e 8 18	+19	—	—	e 11·9
Jena		19·2	314	e 4 25	− 3	—	—	—	—	—
Stuttgart		19·8	308	i 4 34k	− 1	8 19	+ 6	—	—	10·8
Zurich		19·8	303	e 4 34	− 1	e 8 18	+ 5	—	—	—
Moncalieri		20·0	295	e 4 31	− 6	7 58	−19	—	—	11·1
Göttingen		20·4	315	e 4 39	− 2	—	—	—	—	e 11·8
Karlsruhe		20·4	308	e 4 46	+ 5	—	—	—	—	—
Pulkovo		20·4	357	4 38	− 3	8 32	+ 7	—	—	—
Basle		20·4	303	e 4 41	0	e 8 36	+11	—	—	—
Strasbourg		20·7	306	i 4 44	0	i 8 37	+ 6	—	—	e 10·8
Neuchatel		20·8	302	e 4 44	− 1	e 8 39	+ 6	—	—	—
Hamburg		21·4	320	e 4 49k	− 2	e 8 47	+ 2	—	—	e 12·2
Copenhagen		21·5	328	i 4 51	− 1	8 55	+ 8	—	—	—
Upsala		22·8	339	e 5 6	+ 1	e 9 15	+ 4	—	—	e 11·8
De Bilt		23·4	314	i 5 13	+ 2	e 9 31	+10	—	—	e 11·3
Uccle		23·4	309	e 5 11	0	e 9 29	+ 8	—	—	e 11·8
Paris		24·1	303	i 5 19	+ 1	e 9 35	+ 1	—	—	12·8
Samarkand		25·6	79	5 32	0	—	—	—	—	—
Tashkent		27·0	74	5 43	− 2	i 10 32	+10	—	—	e 16·5
Jersey		27·1	304	—	—	e 10 52	+28	—	—	e 17·2
Oxford		27·1	310	5 45	− 1	—	—	—	—	e 10·8
Stonyhurst		28·3	312	—	—	e 11 48?	SS	—	—	—
Aberdeen		29·2	321	—	—	e 12 18	SS	—	—	—
Edinburgh		29·3	318	—	—	e 11 48?	+49	—	—	e 16·8
Andijan		29·4	76	5 56	−11	e 11 30	+29	—	—	—
Malaga		30·0	277	—	—	(e 10 48?)	−22	—	—	e 10·8
Rathfarnham Castle		30·3	312	e 6 17	+ 2	—	—	—	—	21·3
Frunse		30·8	70	6 16	− 4	—	—	—	—	—
Agra	E.	38·7	94	—	—	i 13 17	− 8	—	—	—
Bombay		39·4	109	—	—	e 13 39	+ 4	—	—	—
Calcutta	N.	49·1	63	—	—	e 16 1	+ 5	—	—	—
Williamstown		74·8	313	e 11 41	− 3	—	—	—	—	—
Little Rock		90·9	318	—	—	i 31 59	?	33 14	SSS	—

Additional readings :—
Istanbul PS = +1m.52s.
Yalta e = +1m.57s. and +2m.7s.
Sebastopol e = +1m.36s.
Simferopol i = +2m.32s. and +2m.42s.
Theodosia ePP = +1m.51s., e = +1m.56s. and +2m.4s., i = +2m.43s.
Tiflis iSNZ = +3m.59s.
Belgrade eZ = +3m.40s., eNW = +6m.29s.
Budapest i = +8m.4s., ePE = +3m.28s.
Ogyalla eN = +7m.41s.
Padova e = +9m.39s.
Florence i = +3m.44s. and +9m.48s.
Potsdam iPE = +4m.28s., eSN = +8m.24s.
Stuttgart e = +5m.20s.
Upsala eE = +9m.22s., eN = +9m.26s.
Bombay e = +17m.38s.
Williamstown e = +12m.52s.
Long waves were also recorded at Vladivostok, Cape Town, and Granada.

April 19d. Readings also at 1h. (near Batavia), 2h. (Branner (3), Fresno (3), Lick (3), and Berkeley (3)), 3h. (Malabar and Balboa Heights), 5h. (Samarkand (2)), 6h. (Santiago), 8h. (Santiago), 9h. (Samarkand), 11h. (Yalta and Simferopol), 12h. (Yalta (3), Ksara (2), Simferopol (2), and Santiago), 13h. (Santiago), 14h. (Ksara, Yalta, and Simferopol), 16h. (Simferopol, Tiflis, Ksara, Yalta, Wellington, Sebastopol, and Sofia), 17h. (Malaga, Tiflis, Ksara, Yalta, Tchimkent, Laibach, Samarkand, Andijan, and Frunse), 18h. (Ksara, Yalta, and Malaga), 19h. (Yalta), 21h. (Calcutta), 22h. (Bucharest).

April 20d. 6h. 27m. 6s. Epicentre 22°·0S. 175°·0E.
(Calculated epicentre, not merely approximate).

Epicentres: 20°·2S. 174°·8E. (Apia).
21°·0S. 177°·0E. (Bombay).
22°·0S. 175°·0E. (Wellington).
19°·0S. 170°·0W. (U.S.S.R.).

$A = -·9246$, $B = +·0809$, $C = -·3724$; $\delta = +11$; $h = +4$;
$D = +·087$, $E = +·996$; $G = +·371$, $H = -·032$, $K = -·928$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		15·0	59	i 3 33	− 2	i 6 35	SS	i 3 42	PP	6·9
Arapuni		16·0	178	—	—	7 6	SS	i 8 12	SS	i 9·2
New Plymouth		17·0	182	4 5	+ 4	7 30	SS	4 30	PPP	9·5
Wellington		19·2	181	i 4 28	0	8 16	SS	i 4 43	PP	10·0
Brisbane		20·7	250	i 4 36	− 8	i 8 30	− 1	—	—	9·5
Christchurch		21·5	185	e 4 50k	− 2	8 58	+11	—	—	i 11·0
Sydney		24·0	235	i 5 4	−13	i 9 30	− 2	e 10 29	SS	11·4
Riverview		24·1	235	i 5 21	+ 3	i 9 43	+ 9	i 10 26	SS	e 11·1
Melbourne		30·3	231	i 6 12	− 3	i 11 14	− 1	—	—	—
Adelaide		34·3	239	e 5 26	?	e 12 5	−12	—	—	e 14·7
Amboina		48·9	285	8 45	− 5	—	—	—	—	—
Honolulu		50·5	34	e 9 3	+ 1	e 15 58	−18	e 11 7	PP	e 20·3
Perth		53·1	246	e 9 41	+20	16 49	− 2	11 56	PP	23·8
Manila		64·2	300	10 34	− 5	19 23	+ 7	19 43	PS	—
Tokyo		66·4	330	11 5	+12	19 44	+ 1	—	—	—
Nagoya		67·3	328	e 11 5	+ 6	—	—	—	—	—
Batavia		67·5	273	10 59	− 1	i 19 52	− 4	—	—	e 32·9
Mizusawa	E.	68·6	333	11 4	− 3	16 50	?	—	—	—
	N.	68·6	333	11 8	+ 1	17 3	?	—	—	—
Hamada		69·7	324	11 18	+ 4	20 26	+ 4	—	—	29·1
Hukuoka B		69·7	323	e 11 15	+ 1	e 20 25	+ 3	—	—	—
Hong Kong		73·8	304	11 41	+ 3	21 11	+ 2	14 12	PP	—
Zinsen		74·6	323	e 11 39a	− 4	e 21 18	0	—	—	e 35·3
Vladivostok		76·0	330	e 11 53	+ 2	e 21 37	+ 3	—	—	i 31·7
Medan		78·7	279	e 12 11	+ 5	22 0	− 3	—	—	e 37·9
Phu-Lien		79·1	298	e 12 11	+ 3	e 22 12	+ 5	—	—	—
Berkeley		83·8	46	e 12 33	+ 1	e 22 56	+ 1	—	—	e 39·3
Ukiah		83·8	44	e 12 37	+ 5	e 23 1	+ 6	e 28 26	SS	35·1
Pasadena		84·6	51	i 12 35a	− 1	e 23 4	+ 1	i 16 2	PP	e 35·0
Mount Wilson	Z.	84·7	51	i 12 33a	− 4	—	—	—	—	—
Fresno	N.	84·8	48	e 12 36	− 1	—	—	—	—	—
Riverside		85·0	51	e 12 39	+ 1	e 23 19	+12	—	—	—
Haiwee		85·7	49	e 12 41	− 1	—	—	—	—	—
Tinemaha		86·0	48	e 12 43	0	e 23 23	+ 6	—	—	—
Tucson		89·0	55	e 12 59	+ 1	e 23 31	[+ 4]	e 16 28	PP	e 36·5
Sitka		89·1	25	e 18 52	PP	e 23 14	[−13]	23 53	PS	e 36·1
College		91·2	15	e 13 12	+ 4	e 23 24	[−16]	e 25 1	PS	e 37·0
Butte		94·1	42	e 12 57	−25	e 24 30	− 1	e 25 10	PS	e 39·4
Bozeman		94·9	43	—	—	e 23 8	[−52]	e 25 36	PS	e 38·5
Irkutsk		96·0	324	13 54	+24	e 30 54?	SS	17 56?	PP	41·9
Colombo	E.	97·3	274	e 9 59	?	—	—	—	—	45·1
Kodaikanal	E.	100·2	277	e 13 54	+ 5	i 24 30?	[+ 2]	e 19 59	PPP	48·3
Huancayo		103·2	109	—	—	e 24 34	[− 8]	e 26 48	PS	e 41·2
Agra	E.	105·6	294	e 18 24	PP	i 24 44	[− 9]	—	—	—
Florissant		106·9	55	e 18 57	PP	e 25 26	[+27]	—	—	—
La Paz		107·3	117	18 51	PP	i 28 18	PS	—	—	55·9
Bombay		107·8	283	e 14 29	P	e 28 3	PS	—	—	e 53·2
Chicago		109·7	51	e 18 57	PP	e 25 12	[+ 1]	e 28 30	PS	e 43·9
Frunse		112·1	309	e 19 24	PP	—	—	—	—	—
Columbia		113·2	61	—	—	e 26 31	{+ 4}	e 29 4	PS	e 50·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		113·4	306	e 19 36	PP	—	—	—	—	—
Tashkent		115·7	306	e 19 54	PP	27 37	{+52}	e 20 41	PP	—
Samarkand		117·3	304	e 19 43	PP	—	—	—	—	—
Ottawa		118·7	49	e 20 6	PP	e 25 42	[− 3]	e 29 54	PS	49·9
Philadelphia		118·7	56	e 19 48	PP	e 25 46	[+ 1]	e 29 48	PS	e 53·2
Fordham		119·8	54	e 20 17	PP	e 27 15	{+ 3}	30 1	PS	—
Williamstown		120·4	52	i 20 14	PP	—	—	—	—	—
Vermont		120·5	50	—	—	e 25 56	[+ 4]	e 29 41	PS	e 50·4
Sverdlovsk		121·4	324	e 18 59	[+ 4]	37 30	SS	e 20 27	PP	58·4
Weston		121·8	52	e 21 57	?	i 28 46	?	e 30 48	PS	e 55·4
Seven Falls		122·1	47	e 20 12	PP	e 25 51	[− 6]	e 41 6	SSS	50·9
San Juan		122·9	81	—	—	e 36 48	SS	e 14 26	SSS	e 57·5
Fort de France		126·5	88	e 21 20	PP	—	—	—	—	—
Scoresby Sund		130·5	7	22 37	?	—	—	—	—	62·9
Grozny		133·1	309	e 18 57	[−21]	—	—	—	—	—
Moscow		133·9	328	e 19 22	[+ 3]	e 27 38	[+69]	21 50	PP	e 63·4
Tiflis		134·1	307	e 19 18	[− 2]	—	—	e 21 54	PP	e 53·9
Pulkovo		134·8	335	e 19 24	[+ 4]	39 24	SS	21 24	PP	61·4
Upsala	N.	138·9	343	e 19 54	[+26]	—	—	—	—	e 70·9
Simferopol		140·7	315	e 19 49	[+18]	—	—	—	—	—
Ksara		142·2	296	19 34	[0]	—	—	23 2	PP	68·9
Copenhagen		143·9	344	i 19 33	[− 4]	—	—	22 44	PP	68·9
Istanbul		145·4	313	19 42	[+ 2]	—	—	—	—	69·9
Edinburgh		146·1	358	e 19 54?	[+13]	—	—	—	—	e 60·9
Hamburg		146·5	344	e 19 42	[0]	—	—	—	—	e 66·9
Helwan		146·5	291	19 46	[+ 4]	—	—	e 23 21	PP	—
Durham	N.	147·2	356	e 19 44	[+ 1]	—	—	—	—	—
Budapest		148·0	329	e 19 49	[+ 5]	—	—	—	—	e 78·4
Prague		148·1	336	e 19 54	[+10]	—	—	e 22 54	PP	e 68·9
Stonyhurst		148·1	357	e 19 54?	[+10]	—	—	—	—	e 69·9
Ogyalla		148·2	329	17 54?	?	—	—	23 3	PP	—
Göttingen		148·3	343	e 19 46	[+ 1]	—	—	—	—	—
Bidston		148·6	359	e 19 54	[+ 9]	—	—	—	—	e 62·9
Rathfarnham Castle		148·7	1	i 20 40	[− 5]	i 27 26	[+34]	—	—	42·9
Cheb		148·8	339	e 19 9	[−36]	e 29 56	{−16}	—	—	e 72·9
De Bilt		148·9	348	i 19 50	[+ 4]	—	—	—	—	e 68·9
Belgrade	Z.	149·1	323	e 19 48a	[+ 2]	—	—	—	—	—
Oxford		150·2	356	e 19 59	[+12]	43 31	SSP	e 23 35	PP	62·9
Uccle		150·3	349	e 19 54	[+ 6]	e 42 56?	SS	e 23 36	PP	—
Kew		150·4	354	e 19 51	[+ 3]	—	—	i 23 18	PP	e 62·9
Karlsruhe		151·0	342	e 19 52	[+ 3]	—	—	—	—	—
Stuttgart		151·0	341	e 19 49	[0]	e43 56	SSP	e 23 39	PP	e 70·9
Strasbourg		151·6	341	e 19 56	[+ 6]	—	—	i 23 14	PP	e 75·4
Triest		151·9	332	e 17 10	?	—	—	—	—	—
Zurich		152·4	341	e 19 53	[+ 2]	—	—	e 23 48	PP	—
Basle		152·6	342	e 19 54	[+ 3]	—	—	e 23 44	PP	—
Chur		152·6	339	e 19 58	[+ 7]	—	—	—	—	—
Paris		152·6	349	e 19 54	[+ 3]	—	—	—	—	74·9
Jersey		152·8	356	e 25 24	?	(e 36 24)	PPS	29 29	SKKS	e 36·4
Neuchatel		153·3	342	e 19 57	[+ 5]	—	—	e 23 49	PP	—
Florence		154·5	332	e 19 55	[+ 1]	—	—	—	—	e 94·4
Moncalieri		154·8	341	(19 54?)	[0]	—	—	—	—	19·9
Toledo		162·2	358	i 20 54	[+51]	—	—	i 24 39	PP	80·8
Granada		164·8	356	e 20 39	[+34]	—	—	i 24 57	PP	—
Almeria		165·1	352	e 20 13	[+ 7]	—	—	—	—	—
San Fernando		165·5	6	e 20 23	[+17]	—	—	e 25 37	PP	83·9

For Notes see next page.

NOTES TO APRIL 20d. 6h. 27m. 6s.

Additional readings :—
Apia iPPP = +3m.51s., i = +5m.3s. and +5m.40s.
New Plymouth i = +4m.10s., +4m.48s., +5m.38s., +6m.0s., and +8m.5s., L_t = +8·9m.
Wellington i = +4m.53s., iPPP? = +5m.13s., i = +5m.36s., +6m.0s., +7m.12s., +7m.34s., and +7m.39s., iP_cP = +8m.33s., i = +9m.8s., SS = +9m.23s., L_q = +9·5m.
Christchurch iPNZ = +4m.54s.a, iP_cP = +8m.27s., L_q = +9·7m.
Sydney e = +8m.8s.
Riverview iP_cPE = +8m.54s., iN = +10m.1s.
Melbourne i = +9m.57s.
Adelaide e = +8m.36s.
Honolulu ePPP = +11m.55s., iS = +16m.22s., eSS = +19m.34s., SS = +19m.46s.
Perth P_cP = +11m.36s., P_cS = +15m.29s., SP = +17m.4s., SS = +20m.27s., SSS = +21m.55s.
Hong Kong PS = +21m.57s., SS = +26m.9s.
Berkeley eE = +23m.0s., eN = +35m.5s.
Pasadena iPSE = +24m.2s.
Tucson ePPP = +19m.6s., iPS = +23m.59s., ePPS = +24m.57s.
Sitka eS = +23m.35s., PPS = +24m.53s., eSS = +29m.40s.
College eS = +24m.7s., PPS = +25m.13s.
Bozeman eS = +24m.25s., eSS = +31m.12s.
Irkutsk e = +22m.54s.?
Kodaikanal iSKKSE = +25m.5s., iSE = +25m.28s., iPSE = +26m.46s., iPPSE = +27m.27s., iSSE = +32m.18s., iSSSE = +36m.43s.
Huancayo S = +25m.49s., i = +29m.48s., SS = +32m.13s.
Florissant eE = +19m.9s., eN = +26m.12s.
La Paz iN = +26m.53s.
Bombay eE = +17m.24s., e = +19m.24s., eSKKS = +26m.21s.
Chicago eS = +27m.0s., eSS = +34m.35s., eSSS = +38m.43s.
Columbia eSS = +35m.2s.
Tashkent SSS = +42m.58s.
Ottawa eN = +28m.18s. and +36m.36s., eE = +39m.54s.?
Philadelphia ePPP = +22m.46s., eS = +28m.3s., eSS = +36m.39s.
Fordham e = +25m.48s., +28m.19s., +30m.31s., and +44m.54s.
Vermont eSS = +36m.51s.
Sverdlovsk ePS = +30m.17s., L_q = +53·7m.
Weston iSSN = +37m.17s., eSSSZ = +14m.17s.
Moscow PKS = +22m.44s., e = +30m.32s, +34m.48s., +35m.47s. and +37m.58s.
Tiflis ePKPNZ = +19m.23s., ePKSZ = +22m.51s., iE = +22m.56s., eN = +24m.0s., e = +30m.11s., ePPSZ = +34m.55s., eZ = +40m.11s.
Pulkovo PKS = +22m.56s., PPP = +24m.14s., PPS = +34m.9s., SSS = +44m.30s.
Ksara PSKS = +33m.24s., PPS = +36m.4s.
Copenhagen e = +36m.42s.
Helwan e = +20m.14s. and +24m.34s.
Durham eE = +19m.52s.
Budapest ePN = +19m.54s.
Ogyalla eN = +19m.54s., eE = +20m.54s.?
Rathfarnham Castle i = +22m.8s. and +24m.0s.
Belgrade eZ = +20m.23s. and +21m.43s.
Uccle e = +42m.54s.
Stuttgart ePKP = +20m.32s., ePPP = +17m.32s., eSKSP = +34m.22s., ePPS = +37m.54s., eSSS = +48m.36s.
Strasbourg i = +24m.12s.
Paris e = +22m.54s.?
Long waves were also recorded at Bucharest, Malaga, Cape Town, La Plata, Tananarive, and Aberdeen.

April 20d. Readings also at 0h. (Ksara, Simferopol, Tiflis, Frunse, Basle, Zurich, Chur, Sebastopol, Theodosia, Yalta, Lick, and Fresno), 1h. (Branner and Berkeley), 2h. (Balboa Heights, Fort de France, Malaga (2), and Samarkand), 4h. (Samarkand), 6h. (Christchurch), 8h. (San Juan), 9h. (New Plymouth), 11h. (near Amboina), 12h. (Little Rock), 16h. (Malabar, Cheb, and Ksara), 19h. (Huancayo, Irkutsk, Mount Wilson, Pasadena, Sverdlovsk, Tashkent, and La Paz), 20h. (Wellington (2) and New Plymouth (2)), 22h. (Manila), 23h. (Triest, Vladivostok, Graz, Mizusawa, Sverdlovsk, Tashkent, and La Paz).

April 21d. 1h. Undetermined shock.

Cape Town iS?N =19m.42s., iS?E =19m.47s., iSS?E =23m.29s., iSS?N =23m.32s., SSS? =24m.57s.
Tashkent e =22m.22s., 33m.4s., 36m.10s., 39m.35s., and 42m.48s., eL =56·4m.
Colombo PE =26m.51s., SE =36m.12s.
Bombay e =26m.0s. and 37m.43s.
La Paz P =27m.30s., iSN =37m.39s., LZ =55m.3s.
Ksara iP =28m.2s., ePP =31m.28s., ePS =39m.49s., ePPS =40m.16s.
Baku e =28m.39s. and 39m.16s., L =59·0m.
Tiflis eZ =32m.30s., eLNEZ =55·0m.
Granada e =32m.32s., L =65·0m.
Strasbourg ePPZ =33m.23s., eSSZ =48m.0s., eL =66·5m.
Paris e =33m.31s. and 48m.28s., L =65·0m.
Stuttgart eNZ =33m.23s., e =42m.24s., 47m.47s., and 51m.12s., eL =64·0m.
De Bilt iZ =33m.54s., eL =66·0m.
Uccle eN =33m.48s. and 48m.16s., L =66·0m.
Christchurch iPZ =33m.16s., eZ =38m.16s., S =42m.36s., eSS =47m.30s., eSSSE = 49m.56s., eL_qE =51m.16s., L =54m.51s.
Tucson e =34m.45s.
Mount Wilson eZ =35m.3s.
Pasadena iZ =35m.3s.
Helwan eP =37m.54s., e =41m.58s. and 50m.36s.
Huancayo e =38m.12s., i =39m.1s., 40m.5s., 40m.32s., and 61m.4s.
San Fernando iSEN =39m.55s., LEN =64·0m.
Toledo e =40m.8s., eL =64m.8s.
Sverdlovsk e =41m.38s., 45m.18s., and 50m.42s., L =63·5m.
Pulkovo e =41m.14s. and 43m.30s., eL =72·5m.
Copenhagen 43m.36s. and 49m.26s., L =66m.
Oxford e =44m.12s. and 49m.0s., eL =64m.10s.
Kew e =49m.0s., eL =66·0m.
Riverview eE =51m.48s., eLN =56·3m.
Cheb e =54m.0s., eL =70·0m.
Long waves were also recorded at Harvard, Stonyhurst, Edinburgh, Malaga, Moscow, Moncalieri, Hamburg, Algiers, Bucharest, and Triest.

April 21d. Readings also at 0h. (Baku, Tiflis, Sverdlovsk, and Vladivostok), 3h. (Uccle and Balboa Heights), 4h. (Manila), 9h. (Prague and Chur), 12h. (Hukuoka B), 13h. (Tchimkent and Samarkand), 14h. (Medan), 15h. (Tiflis), 16h. (Tchimkent, Sverdlovsk, Harvard, Tashkent, Mount Wilson, La Paz, Christchurch, Pasadena, Huancayo, Riverview, Brisbane, Tinemaha, and Kodaikanal), 17h. (Paris, Baku, and Balboa Heights), 20h. (Mount Wilson and Apia), 21h. (Koti), 23h. (Granada, Tashkent, Sverdlovsk, Manila, and near Nagoya).

April 22d. 4h. 15m. 46s. Epicentre 49°·2N. 129°·9W. (as on 1937 Sept. 29d.).

A = −·4199, B = −·5040, C = +·7548; δ = +6; h = −5;
D = −·768, E = +·640; G = −·483, H = −·580, K = −·656.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Seattle		5·2	105	e 1 15	− 6	e 1 56	−26	—	—	2·6
Sitka		8·6	339	2 7	− 2	3 56	+ 8	—	—	4·4
Ferndale		9·5	153	e 2 34	PPP	e 4 58	SSS	—	—	—
Ukiah		11·1	153	e 2 52	PP	—	—	—	—	5·4
Butte		12·1	91	e 3 1	+ 4	i 5 0	−14	—	—	i 5·8
Berkeley		12·6	152	i 3 12	PP	e 6 0	SSS	—	—	—
San Francisco	N.	12·6	152	e 3 17	PP	—	—	—	—	—
Branner		13·0	152	e 3 28	PPP	—	—	—	—	—
Bozeman		13·2	100	—	—	e 5 39	− 1	e 5 46	SS	e 5·9
Lick		13·2	151	e 3 22	PP	—	—	—	—	e 8·0
Fresno	N.	14·4	146	e 3 36	+ 9	—	—	3 45	PP	—
Tinemaha		14·7	141	i 3 41	PP	e 6 59	SSS	—	—	—
Saskatoon		15·0	70	3 38	+ 3	6 22	− 1	—	—	7·8
Haiwee		15·7	142	i 3 43	− 1	—	—	—	—	—
Mount Wilson		17·3	146	i 4 13a	+ 9	—	—	—	—	—
Pasadena		17·3	146	i 4 13a	+ 9	e 7 40	SS	—	—	e 8·8
Riverside		17·8	144	i 4 18	+ 7	e 7 50	SS	—	—	—
College		18·4	336	e 4 14	− 4	e 7 36	− 5	—	—	e 8·3
La Jolla		18·8	145	e 4 30	+ 7	—	—	—	—	—
Tucson		22·1	133	i 5 4	+ 5	e 9 20	+22	—	—	9·4

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florissant	29·9	96	e 5 3	−69	i 10 3	−66	—	—	—
Chicago	30·1	89	—	—	e 11 13	+ 1	—	—	11·6
Little Rock	31·0	105	e 6 28	+ 7	i 11 36	+10	e 13 5	SS	e 16·7
Honolulu	35·7	229	e 7 29	+27	e 13 25	?	e 8 55	PPP	e 15·7
Ottawa	36·2	75	7 6	0	12 44	− 3	15 14	SS	17·2
Shawinigan Falls	37·6	72	e 7 56	+38	—	—	—	—	19·2
Vermont	38·2	75	—	—	e 13 17	0	—	—	e 17·9
Seven Falls	38·5	70	7 21	− 5	13 18	− 4	—	—	19·2
Columbia	38·9	94	—	—	e 13 25	− 4	—	—	e 16·3
Williamstown	39·1	77	i 7 30	− 1	e 13 2	−29	e 8 59	PP	—
Philadelphia	39·2	82	e 8 52	PP	e 13 13	−19	—	—	e 15·9
Fordham	39·6	81	i 7 34	− 1	e 13 39	+ 1	i 9 4	PP	—
Harvard	40·2	77	e 7 38	− 2	e 13 48	0	i 9 13	PP	e 20·8
Weston	40·4	77	e 7 30k	−11	e 13 52	+ 2	i 9 16	PP	e 19·5
East Machias	41·8	72	e 7 52	− 1	—	—	e 9 26	PP	e 14·4
Scoresby Sund	50·0	25	—	—	16 7	− 2	—	—	24·2
San Juan	59·1	98	—	—	e 17 31	−40	—	—	e 23·5
Edinburgh	66·2	30	—	—	i 19 42	+ 2	—	—	e 32·2
Rathfarnham Castle	67·3	34	—	—	i 19 50	− 4	i 20 3	PS	35·2
Durham E.	67·7	30	—	—	i 19 55	− 3	—	—	—
Bidston	68·3	32	—	—	e 20 46	PPS	—	—	e 35·2
Irkutsk	68·9	329	—	—	e 20 14	+ 1	e 24 14?	SS	37·2
Pulkovo	70·2	12	—	—	e 20 25	− 3	e 21 17	PPS	e 32·7
Oxford	70·3	31	—	—	e 20 26	− 3	—	—	e 32·2
Copenhagen	70·8	22	—	—	19 33	−62	26 14	?	—
Kew	70·9	31	—	—	i 20 36	0	—	—	e 34·2
De Bilt	72·1	28	i 11 27	− 1	i 20 52	+ 2	—	—	e 34·2
Uccle	72·9	29	e 11 32	− 1	e 20 59	0	e 21 41	PS	e 30·2
Sverdlovsk	74·0	355	11 37	− 2	21 9	− 2	—	—	34·2
Paris	74·1	31	—	—	e 21 14?	+ 2	—	—	38·2
Moscow	74·9	9	e 11 44	0	e 21 20	− 2	—	—	e 34·7
Cheb	75·9	24	—	—	e 23 14?	?	—	—	e 37·2
Strasbourg	75·9	28	e 12 3	+13	e 22 35	PPS	—	—	e 31·9
Stuttgart	76·2	27	e 11 52	0	e 21 37	+ 1	e 16 30	PPP	37·2
Prague	76·5	23	—	—	e 21 39	0	—	—	e 36·2
Triest	80·3	25	—	—	e 22 19	− 1	—	—	—
Granada	81·7	42	e 12 42	+20	—	—	—	—	44·2
La Paz Z.	85·1	122	e 12 41	+ 2	—	—	—	—	—
Tashkent	88·3	347	e 13 5	+10	i 23 37	− 2	23 26	SKS	—
Tiflis	89·3	5	—	—	e 23 51	+ 3	—	—	e 38·2
Baku	90·8	1	e 13 14	+ 8	e 24 4	+ 2	—	—	41·5
Ksara	96·4	12	—	—	23 45	[−24]	—	—	—

Additional readings :—
Sitka iS = +4m.13s.
Ferndale iE = +7m.34s., eN = +9m.26s.
Berkeley eZ = +4m.16s., eE = +6m.8s., eZ = +7m.2s.
San Francisco eN = +8m.13s.
Branner eN = +3m.43s., eE = +8m.20s.
College eS = +7m.44s.
Little Rock eN = +6m.54s. and +9m.47s.
Honolulu ePP = +9m.27s.
Williamstown e = +14m.36s., +19m.38s., and +20m.8s.
Philadelphia eS = +13m.25s.
Fordham eSS = +16m.29s., e = +19m.55s., i = +20m.55s.
Harvard iP_cP = +9m.48s., eSSN = +16m.32s.
Weston iP_cP = +9m.25s., iP_cSE = +13m.9s., eSS = +16m.31s.
East Machias ePP = +8m.16s.
Rathfarnham Castle i = +20m.59s.
Irkutsk e = +31m.14s.?
Oxford eSN = +20m.31s.
Stuttgart eSNZ = +21m.41s., eSSEN = +26m.14s.
Ksara ePPS = +37m.11s.
Long waves were also recorded at Bombay, Aberdeen, Pennsylvania, Bucharest, San Fernando, Hamburg, Jersey, Upsala, Toledo, Stonyhurst, Malaga, and Moncalieri.

April 22d. 11h. 3m. 25s. Epicentre 42°·8N. 19°·9E.

Damage in the immediate district of Berane (Northern Albania). Epicentre 42°50′N. 19°55′E.

Carlo Morelli.

La Sismicita dell'Albania. Estratto dal "Bollettino della Societa Sismolog. Italiana," Vol. XXXIX, No. 1-2, 1941, et Public. del'Instituto Geofisico de Rome, No. 84.

A = +·6921, B = +·2505, C = +·6770; δ = +8; h = −3;
D = +·340, E = −·940; G = +·637, H = +·230, K = −·736.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Belgrade	2·0	11	i 0 57	S	(0 57)	− 5	i 1 5	S_g	—
Budapest	4·7	354	e 1 40	P_g	i 2 44	S_g	—	—	—
Bucharest	4·8	68	—	—	e 3 5	+53	—	—	4·1
Triest	5·3	305	e 1 28	+ 6	i 2 22	− 3	i 2 37	S*	—
Florence	6·4	281	i 1 44	+ 6	—	—	—	—	—
Padova	6·4	297	e 2 49	P*	—	—	—	—	—
Chur	8·4	302	e 2 3	− 3	e 3 10	−33	—	—	—
Zurich	9·2	303	e 2 19	+ 3	e 3 59	− 4	—	—	—
Stuttgart	9·6	312	e 2 20	− 1	e 4 49	S*	e 5 9	S_g	e 5·7
Basle	9·9	303	e 2 27	+ 2	—	—	—	—	—
Jena N.	9·9	328	e 2 35	+10	—	—	—	—	e 4·1
Karlsruhe	10·1	312	—	—	e 4 32	+ 7	—	—	—
Neuchatel	10·1	299	e 2 27	− 1	—	—	—	—	—
Strasbourg	10·3	309	—	—	e 4 17	−13	i 5 0	SSS	—
Rathfarnham Castle	20·3	310	i 5 50	+70	i 8 13	−10	—	—	—

Additional readings:—
Belgrade iNW = +1m.30s., iSNW = +1m.38s., iNW = +1m.41s.
Budapest iN = +2m.57s., +3m.9s., and +3m.22s.
Stuttgart iSEN = +4m.58s., eEN = +5m.5s.
Jena eE = +2m.41s.
Strasbourg i = +5m.11s. and +5m.18s.
Long waves were also recorded at De Bilt, Prague, Potsdam, Hamburg, and Upsala.

April 22d. 14h. 50m. 25s. Epicentre 42°·8N. 19°·9E. (as at 11h.).

A = +·6921, B = +·2505, C = +·6770; δ = +8; h = −3.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Belgrade	2·0	11	i 1 0a	S	(i 1 0)	− 2	i 1 7	S_g	—
Budapest	4·7	354	e 1 29	P_g	i 2 31	S_g	—	—	3·5
Bucharest	4·8	68	—	—	e 3 16	+64	—	—	4·5
Laibach	5·1	312	e 1 35	P*	—	—	—	—	—
Graz	5·3	325	1 24	+ 2	i 2 19	− 6	—	—	—
Triest	5·3	305	i 1 33	P*	i2 27	+ 2	—	—	—
Florence	6·4	281	1 55	P*	2 35	−18	—	—	—
Padova	6·4	297	e 3 9	S*	—	—	e 3 45	S_g	—
Chur	8·4	302	e 2 7	+ 1	—	—	—	—	—
Zurich	9·2	303	e 2 13	− 3	e 3 59	− 4	—	—	—
Stuttgart	9·6	312	e 2 21	0	e 4 50	S*	—	—	e 5·7
Basle	9·9	303	e 2 28	+ 3	—	—	—	—	—
Jena	9·9	328	e 2 35	+10	—	—	—	—	e 4·1
Karlsruhe	10·1	312	—	—	e 4 32	+ 7	—	—	—
Neuchatel	10·1	299	e 2 31	+ 3	—	—	—	—	—
Strasbourg	10·3	309	—	—	e 4 21	− 9	4 54	SSS	—
Rathfarnham Castle	20·3	310	e 5 45	PPP	i 7 35	−48	—	—	—

Additional readings:—
Belgrade iPPSZ = +1m.28s., iSNW = +1m.41s., PSSNW = +1m.46s.
Budapest ePE = +1m.51s., iE = +2m.44s., iN = +2m.49s. and +3m.2s., iE = +3m.16s.
Bucharest iEN = +4m.4s.
Chur e = +2m.10s.
Stuttgart iS = +4m.59s.
Strasbourg i = +5m.1s.
Long waves were also recorded at Copenhagen, Potsdam, De Bilt, Tiflis, Prague, and Hamburg.

April 22d. Readings also at 1h. (Harvard), 5h. (near Christchurch), 7h. (Harvard), 9h. (Andijan), 13h. (Ksara, Simferopol, Theodosia, Sebastopol, and Tiflis (3)), 16h. (Tiflis), 18h. (Tiflis), 20h. (Tucson), 21h. (La Paz), 22h. (Grozny), 23h. (Wellington, Tucson, and Manila).

April 23d. 0h. 27m. 51s. Epicentre 28°·1N. 131°·0E.

Felt rather strongly at Nake, Yakusima, and moderately at Kagosima.

Epicentre 28°·1N. 131°·0E. Macroseismic radius greater than 300kms.

See Seismological Bulletin of the Cent. Met. Obs., Japan, for the year 1938. Tokyo, 1940 pp. 29-31. Macroseismic Chart, p. 31.

A = −·5796, B = +·6668, C = +·4686; δ = +14; h = +2;
D = +·755, E = +·656; G = −·307, H = +·354, K = −·884.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nake	1·3	282	0 29a	+ 4	0 47	+ 3	—	—	—
Yakusima	2·4	349	0 43a	+ 2	1 13	+ 1	—	—	—
Kagosima	3·5	357	1 5	P*	1 42	+ 2	—	—	—
Miyazaki	3·9	9	1 2k	0	1 46	− 4	—	—	—
Kumamoto	4·6	359	1 15k	+ 3	2 7	0	—	—	—
Unzendake	4·6	355	1 17k	+ 5	2 6	− 1	—	—	—
Nagasaki	4·7	350	1 16a	+ 2	2 7	− 3	—	—	—
Ooita	5·1	8	1 16a	− 4	1 53	−27	—	—	—
Hukuoka B	5·4	356	i 1 25	+ 1	e 2 26	− 2	—	—	—
Izuka	5·5	359	1 25	0	2 31	+ 1	—	—	—
Muroto	5·8	28	1 27k	− 2	2 30	− 8	—	—	—
Koti	5·9	22	i 1 29	− 2	2 30	−10	—	—	—
Matuyama	5·9	15	1 36	+ 5	2 39	− 1	—	—	—
Miyakozima	6·1	238	1 25k	− 9	2 36	− 9	—	—	—
Hirosima	6·3	11	1 37a	+ 1	2 45	− 5	—	—	—
Tadotu	6·6	19	1 40	− 1	2 49	− 9	—	—	—
Tokusima	6·7	29	1 40	− 2	—	—	—	—	—
Hamada	6·8	8	1 44	0	3 11	+ 8	—	—	—
Siomisaki	6·8	37	1 45	+ 1	3 45	L	—	—	(3·7)
Sumoto	7·0	27	1 45	− 1	4 5	+57	—	—	—
Wakayama	7·0	30	1 46a	0	4 9	+61	—	—	—
Isigakizima	7·1	240	1 45	− 3	—	—	—	—	—
Kobe	7·5	28	1 50	− 3	3 39	S*	—	—	—
Osaka B	7·5	29	1 49	− 4	5 5	?	—	—	—
Yagi	7·5	328	1 53	0	3 13	− 7	—	—	—
Sakai	7·6	14	2 1	+ 6	3 18	− 5	—	—	—
Kyoto	8·0	30	2 0	0	—	—	—	—	—
Taikyu	8·0	347	e 1 53	− 7	3 33	0	—	—	5·2
Toyooka	8·0	21	2 0	0	—	—	—	—	—
Tu	8·1	34	1 54	− 8	—	—	—	—	—
Kameyama	8·2	33	2 1	− 2	5 15	?	—	—	—
Hikone	8·4	30	2 5	− 1	—	—	—	—	—
Gihu	8·7	32	2 9k	− 1	3 44	− 6	—	—	—
Hamamata	8·7	39	2 10	0	—	—	—	—	—
Nagoya	8·7	34	2 8	− 2	3 44	− 6	—	—	—
Zi-ka-wei	8·8	292	e 2 11	0	3 59	+ 6	—	—	—
Omaesaki	8·9	42	2 14	+ 2	—	—	—	—	—
Karenko	9·4	246	2 48	PPP	4 39	S*	—	—	—
Numadu	9·6	42	2 24	+ 3	—	—	—	—	—
Ito	9·7	43	2 24	+ 2	—	—	—	—	—
Misima	9·7	42	2 22	0	4 15	0	—	—	—
Hunatu	9·9	40	2 26	+ 1	5 29	S_g	—	—	—
Kohu	9·9	38	2 24	− 1	—	—	—	—	—
Titizima	9·9	92	2 22	− 3	—	—	—	—	—
Keizyo	10·0	342	2 31	+ 4	4 28	+ 6	—	—	5·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Matumoto		10·0	33	2 22	− 5	5 15	L	—	—	(5·2)
Taityu		10·0	250	2 25	− 2	4 45	SSS	—	—	—
Toyama		10·0	30	2 28	+ 1	4 21	− 1	—	—	—
Zinsen		10·0	340	e 2 32	+ 5	e 4 28	+ 6	—	—	e 5·3
Mera		10·1	45	2 42	PPP	—	—	—	—	—
Yokohama		10·3	43	2 34	+ 2	4 50	SSS	—	—	—
Nagano		10·4	33	2 37	+ 3	6 7	L	—	—	(6·1)
Oiwake		10·4	36	2 33	− 1	—	—	—	—	—
Taito		10·4	241	2 30	− 4	5 52	L	—	—	(5·9)
Kumagaya		10·7	39	2 37a	− 1	6 31	?	—	—	—
Tokyo		10·7	42	2 40	+ 2	4 47	+ 8	—	—	—
Maebasi		10·7	37	2 26	−12	—	—	—	—	—
Tainan		11·0	245	2 51	+ 9	—	—	—	—	—
Kakioka		11·2	41	2 41	− 3	4 50	− 2	—	—	—
Tukubasan		11·2	40	2 44	0	4 55	+ 3	—	—	—
Utunomiya		11·2	39	2 47	+ 3	—	—	—	—	—
Tyosi		11·3	45	2 41	− 5	—	—	—	—	—
Mito		11·5	41	2 50	+ 2	—	—	—	—	—
Heizyo		11·7	340	e 2 58	+ 7	e 5 22	SS	—	—	—
Hukusima		12·4	37	3 2	+ 1	—	—	—	—	—
Sendai		13·1	36	3 9	− 1	6 23	L	—	—	(6·4)
Mizusawa		13·8	34	e 3 21	+ 2	e 7 50	?	—	—	—
Morioka		14·3	33	3 24	− 2	—	—	—	—	—
Vladivostok		15·0	2	e 3 40	+ 5	i 6 42	SS	—	—	e 8·2
Hong Kong		16·3	253	3 55	+ 3	7 10	SS	4 0	PP	—
Manila		16·3	217	i 3 51k	− 1	9 30	?	i 4 0	PP	—
Sapporo		17·1	26	3 58	− 4	8 40	L	—	—	(8·7)
Phu-Lien		23·3	258	e 5 13	+ 3	e 9 29	+ 9	—	—	—
Irkutsk		31·3	328	6 26	+ 2	11 39	+ 8	—	—	16·1
Calcutta	N.	38·8	272	e 7 34	+ 6	i 13 30	+ 4	e 8 48	PP	i 18·6
Medan	E.	39·3	238	e 7 35	+ 3	—	—	—	—	—
Semipalatinsk		44·1	315	—	—	e 16 25	?	—	—	—
Almata		45·7	305	8 28	+ 4	e 15 13	+ 5	—	—	—
Agra	E.	46·6	282	8 30	− 2	15 26	+ 5	10 16	PP	—
Frunse		47·4	304	8 40	+ 2	—	—	—	—	—
Andijan		49·1	301	8 55	+ 4	16 3	+ 7	—	—	—
Hyderabad		49·3	270	9 24	+31	16 32	PPS	—	—	25·0
Tchimkent		51·1	304	9 9	+ 3	—	—	—	—	—
Tashkent		51·4	302	i 9 9	0	i 16 27	− 1	—	—	e 25·0
Colombo	E.	52·7	257	9 21	+ 3	—	—	—	—	26·1
Kodaikanal	E.	53·2	263	i 9 22a	0	i 16 57	+ 5	21 37	SS	25·3
Samarkand		53·4	300	9 19	− 5	e 15 44	−71	—	—	—
Bombay		53·7	274	i 9 29	+ 3	i 17 4	+ 5	11 19	PP	26·1
Sverdlovsk		56·3	322	i 9 33	−12	17 30	− 4	—	—	36·4
Brisbane	E.	59·2	156	—	—	i 18 3	− 9	i 19 51	PPS	—
College		61·2	28	e 10 19	0	e 18 31	− 7	—	—	e 25·5
Riverview		64·5	161	—	—	e 19 15	− 4	—	—	e 29·4
Baku		66·0	305	e 10 54	+ 4	i 19 45	+ 7	—	—	35·9
Grozny		68·1	308	e 11 5	+ 1	20 4	+ 1	—	—	—
Sitka		68·8	35	—	—	e 20 10	− 1	—	—	—
Moscow		69·1	324	e 11 9	− 1	i 20 17	+ 2	—	—	35·6
Tiflis		69·2	307	e 11 10	0	20 22	+ 6	20 58	PS	38·1
Erevan		70·0	305	11 18	+ 3	—	—	—	—	—
Pulkovo		71·3	330	e 11 24	+ 1	e 20 44	+ 3	—	—	e 36·6
Theodosia		74·4	313	e 11 41	− 1	—	—	—	—	—
Simferopol		75·2	314	e 11 46	0	—	—	—	—	—
Sebastopol		75·8	314	e 11 51	+ 1	e 20 15	?	—	—	—
Upsala		76·8	332	—	—	e 21 44	+ 2	—	—	e 38·1
Ksara		78·8	302	i 12 7k	+ 1	e 22 15	+11	22 53	PS	44·1
Scoresby Sund		79·8	352	12 10	− 2	22 13	− 1	15 23	PP	40·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Wellington		80·1	148	—	—	e 22 9	− 9	e 26 59?	SS	36·1
Istanbul		80·3	312	12 1	−13	21 59	−21	—	—	e 45·1
Bucharest		80·6	315	e 12 23	+ 7	22 22	− 1	22 52	PS	—
Christchurch		80·9	150	e 20 5	?	(22 22)	− 4	28 0	SS	38·0
Copenhagen		81·5	330	12 20	− 1	22 33	+ 1	15 27	PP	38·2
Potsdam		83·3	327	e 12 27	− 3	e 22 45	− 5	15 21	PP	e 44·1
Belgrade		83·8	318	e 12 32a	0	e 23 1	+ 6	—	—	e 46·9
Hamburg		84·0	330	e 12 32	− 2	e 22 57	0	—	—	e 43·1
Prague		84·0	325	—	—	e 22 57	0	e 23 50	PS	e 40·1
Helwan		84·1	301	e 12 35	+ 1	22 59	+ 1	12 59	pP	—
Jena		84·9	326	e 12 45	+ 7	e 23 9	+ 3	—	—	e 44·2
Cheb		85·1	326	e 12 40	+ 1	e 23 12	+ 4	—	—	e 34·1
Göttingen		85·3	328	—	—	e 23 9	− 1	—	—	e 46·1
Aberdeen		86·3	336	—	—	e 23 5	[− 5]	e 29 7	SS	—
De Bilt		87·1	330	i 12 49	0	e 23 25	− 3	i 16 19	PP	e 42·1
Stuttgart		87·5	326	e 12 52	+ 1	e 23 36	+ 5	e 16 20	PP	e 42·1
Edinburgh		87·7	336	e 16 24	PP	i 23 42	+ 9	—	—	e 41·1
Karlsruhe		87·7	327	e 13 44	+52	—	—	—	—	e 50·1
Durham	N.	88·0	335	e 16 24	PP	e 23 19	[− 1]	—	—	—
Tinemaha		88·2	49	e 12 58	+ 4	—	—	—	—	—
Strasbourg		88·3	327	i 12 55	0	i 23 9	[−13]	i 16 27	PP	e 44·1
Uccle		88·4	330	e 12 56	+ 1	23 42	+ 2	e 16 26	PP	e 42·1
Chur		88·6	325	e 12 44	−12	e 23 51	+ 9	e 16 26	PP	e 47·1
Zurich		88·8	326	e 12 53	− 4	e 23 53	+ 9	—	—	—
Haiwee		88·9	49	e 12 57	− 1	—	—	—	—	—
Stonyhurst		89·0	335	—	—	e 23 29	[+ 2]	—	—	46·1
Basle		89·1	326	e 12 52	− 6	—	—	—	—	—
Bidston		89·6	335	i 16 41	PP	e 23 36	[+ 6]	—	—	e 45·1
Mount Wilson	Z.	89·6	51	e 13 0	− 1	—	—	e 16 18	PP	—
Neuchatel		89·8	326	e 12 56	− 6	—	—	—	—	—
Pasadena		89·9	51	i 12 58	− 4	—	—	e 16 45	PP	e 47·1
Kew		90·0	332	i 13 4	+ 1	e 23 34	[+ 1]	i 16 41	PP	e 44·1
Oxford		90·1	333	—	—	e 23 31	[− 2]	—	—	e 42·6
Paris		90·7	329	e 13 4	− 2	—	—	i 16 44	PP	48·1
Rathfarnham Castle		90·9	336	e 13 6	− 1	i 23 38	[0]	—	—	50·1
Jersey		92·4	331	—	—	e 24 39	+23	—	—	e 47·6
Tucson		96·0	48	e 13 31	+ 1	—	—	e 17 17	PP	e 39·9
Granada		102·3	324	e 18 16	PP	e 28 0	PPS	—	—	—
San Fernando		104·2	325	—	—	e 33 48	SSP	—	—	e 54·6
Fordham		107·6	18	i 19 12	PP	e 25 10	[+ 8]	e 28 9	PS	—
Philadelphia		108·0	19	—	—	e 25 7	[+ 3]	e 28 3	PS	e 56·2
La Paz		158·9	61	19 59	[0]	—	—	—	—	85·1

Additional readings :—
Zi-ka-wei iN = +5m.23s.
Mizusawa eSN = +8m.5s.
Hong Kong SS = +7m.19s.
Calcutta ePPPN = +9m.14s., eSSN = +15m.44s.
Agra PPP = +10m.52s.
Bombay i = +9m.31s., P_cP = +10m.37s., i = +17m.4s., eS_cS = +19m.13s., eSS = +20m.16s.
Sverdlovsk L_q = +26·4m.
Tiflis iPEZ = +11m.12s., iZ = +11m.18s., iP_cPEZ = +11m.28s., ePSE = +21m.0s.
Ksara i = +12m.58s.
Scoresby Sund +27m.27s.
Wellington L_q = +33·7m.
Christchurch L_qE = +34·2m. ; S reading is given as PP.
Copenhagen +27m.51s.
Potsdam iPZ = +12m.31s., eZ = +12m.39s. and +22m.3s., eEN = +22m.57s.
Helwan e = +13m.39s. and +15m.48s., PP = +16m.14s., e = +22m.14s., iS = +23m.21s., sS = +24m.1s.
Stuttgart eP_cPZ = +13m.5s., eS = +24m.31s., eSS = +30m.30s.
Strasbourg eS = +23m.43s., eSS = +29m.39s.
Uccle eSS = +29m.41s.
Kew iE = +24m.4s.
Rathfarnham Castle i = +13m.46s. and +17m.43s., iS = +24m.9s., i = +30m.57s.
Tucson ePPP = +19m.37s.
Long waves were also recorded at Harvard, Toledo, Rio de Janeiro, Triest, Malaga, Cape Town, East Machias, Bergen, Honolulu, and Moncalieri.

April 23d. 6h. 4m. 3s. Epicentre 27°·3N. 53°·2E.

$A = +\cdot5330$, $B = +\cdot7125$, $C = +\cdot4562$,; $\delta = -14$; $h = +3$;
$D = +\cdot801$, $E = -\cdot599$; $G = +\cdot273$, $H = +\cdot365$, $K = -\cdot890$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku		13·4	349	e 3 13	− 1	5 45	0	—	—	e 7·2
Erevan		14·7	333	3 47	+16	—	—	—	—	e 8·4
Tiflis		16·0	338	3 47k	− 1	6 46	0	—	—	e 8·3
Ksara		16·3	298	i 3 54k	+ 2	i 7 5	SS	—	—	—
Samarkand		16·8	39	3 47	−11	7 7	+ 2	—	—	—
Grozny		17·1	341	e 4 3	+ 1	e 7 18	+ 6	—	—	—
Tashkent		19·3	39	i 4 2	−27	i 7 49	−13	—	—	9·8
Helwan		19·4	284	i 5 30	+60	i 8 12	+ 8	8 47	SSS	—
Sotchi		19·6	330	e 4 37	+ 5	e 8 14	+ 6	—	—	—
Bombay		19·9	111	i 4 35	− 1	e 8 19	+ 4	e 4 48	PP	—
Tchimkent		20·1	37	e 4 37	− 1	—	—	—	—	—
Andijan		20·7	45	e 4 44	0	e 8 36	+ 5	—	—	—
Agra	E.	22·1	84	4 59	0	8 59	+ 1	9 45	SS	—
Theodosia		22·7	327	5 3	− 1	e 9 9	0	—	—	—
Frunse		23·3	43	e 5 10	0	—	—	—	—	—
Simferopol		23·3	325	5 10	0	9 21	+ 1	—	—	—
Sebastopol		23·4	323	5 11	0	e 9 26	+ 5	—	—	—
Istanbul		24·2	312	5 20	+ 1	9 57	+22	—	—	e 17·4
Almata		25·0	44	e 5 31	+ 4	e 10 16	+27	—	—	—
Bucharest		27·6	317	e 5 12	−39	10 40	+ 8	—	—	—
Kodaikanal	E.	28·5	121	e 4 57?	−62	—	—	—	—	—
Sofia		28·7	310	e 5 42	−19	e 10 46	− 4	—	—	—
Sverdlovsk		30·0	9	i 6 11	− 1	i 11 10	0	—	—	19·3
Moscow		30·6	343	e 7 13	PP	e 11 19	− 1	12 22	SS	—
Belgrade		31·5	313	—	—	e 13 2	SS	—	—	e 23·9
Calcutta	N.	32·2	90	e 6 14	−18	e 11 33	−12	i 13 26	SS	e 15·6
Colombo	E.	32·4	124	e 3 57?	?	—	—	—	—	—
Pulkovo		36·1	341	7 5	0	e 12 37	− 8	e 15 27	SSS	21·4
Cheb		38·5	318	e 7 26	0	e 13 21	− 1	—	—	—
Potsdam		39·0	322	e 7 57?	+27	—	—	—	—	—
Chur		39·3	313	e 7 31	− 1	e 13 28	− 6	—	—	—
Stuttgart		40·0	315	e 7 36	− 2	e 13 37	− 7	e 9 9	PP	e 24·0
Zurich		40·1	313	e 7 38	− 1	e 13 40	− 6	—	—	—
Copenhagen		40·7	326	i 7 44	0	13 53	− 2	9 15	PP	19·9
Basle		40·8	313	e 7 44	− 1	e 13 51	− 5	—	—	—
Strasbourg	Z.	40·9	315	i 7 44	− 2	e 14 4	+ 6	e 9 24	PP	—
Neuchatel		41·1	312	e 7 45	− 2	—	—	—	—	—
Hamburg		41·2	323	e 7 45	− 3	e 13 57?	− 5	—	—	—
De Bilt		43·4	319	i 8 8	+ 2	14 37	+ 2	—	—	e 21·9
Uccle		43·4	316	e 8 8	+ 2	14 36	+ 1	e 17 48	SS	—
Paris		44·4	313	i 8 13	− 1	—	—	—	—	27·9
Irkutsk		45·3	42	e 8 21	0	e 14 59	− 3	—	—	24·9
Durham		48·0	321	—	—	e 15 38	− 3	e 15 43	PS	—
Edinburgh		49·1	322	—	—	e 15 57?	+ 1	—	—	—
Rathfarnham Castle		50·5	318	—	—	i 16 10	− 6	—	—	29·9
Vladivostok		64·0	53	e 10 35	− 3	—	—	e 12 58	PP	e 31·8
Tacubaya	N.	126·4	327	e 22 17	?	—	—	—	—	—

Additional readings :—
Tiflis iSEZ = +6m.49s.
Ksara i = +9m.7s.
Helwan e = +5m.42s., i = +8m.28s.
Bombay i = +6m.12s. and +6m.22s., eSS = +8m.42s.
Frunse e = +12m.52s.
Belgrade eNW = +16m.44s. and +20m.55s.
Pulkovo e = +11m.53s. and +17m.18s.
Copenhagen +17m.21s.
Strasbourg eSS = +16m.57s.
Long waves were also recorded at Moncalieri, Upsala, and Cape Town.

April 23d. 9h. 26m. 1s. Epicentre 27°·3N. 53°·2E. (as at 6h.).

$A = +\cdot5330$, $B = +\cdot7125$, $C = +\cdot4562$; $\delta = -14$; $h = +3$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku		13·4	349	3 15	+ 1	5 46	+ 1	—	—	7·0
Erevan		14·7	333	e 3 18	−13	—	—	—	—	e 8·3
Tiflis		16·0	338	i 3 47k	− 1	6 47	+ 1	—	—	e 8·4
Ksara		16·3	298	i 3 54k	+ 2	i 7 5	SS	—	—	—
Samarkand		16·8	39	4 11	PP	—	—	—	—	—
Grozny		17·1	341	e 4 7	+ 5	e 7 13	+ 1	—	—	—
Tashkent		19·3	39	i 4 26	− 3	i 7 58	− 4	—	—	10·7
Helwan		19·4	284	i 4 27	− 3	i 8 11	+ 7	e 4 54	PPP	—
Bombay		19·9	111	i 4 38	+ 2	e 8 21	+ 6	—	—	—
Tchimkent		20·1	37	e 4 33	− 5	—	—	—	—	—
Andijan		20·7	45	4 43	− 1	8 30	− 1	—	—	—
Agra	E.	22·1	84	4 58	− 1	9 3	+ 5	—	—	—
Theodosia		22·7	327	e 4 58	− 6	9 9	0	—	—	—
Frunse		23·3	43	5 13	+ 3	e 9 30	+10	—	—	i 15·0
Simferopol		23·3	325	e 5 13	+ 3	9 22	+ 2	—	—	—
Sebastopol		23·4	323	e 5 13	+ 2	e 9 27	+ 6	—	—	—
Istanbul		24·2	312	5 23	+ 4	10 3	+28	—	—	e 17·1
Almata		25·0	44	e 5 39	+12	—	—	—	—	—
Bucharest		27·6	317	e 6 11	PP	10 40	+ 8	—	—	—
Kodaikanal	E.	28·5	121	e 4 59?	−60	—	—	—	—	—
Sofia		28·7	310	e 6 18	+17	i 10 50	0	—	—	—
Sverdlovsk		30·0	9	i 6 11	− 1	11 12	+ 2	—	—	19·6
Moscow		30·6	343	e 6 16	− 2	e 11 14	− 6	e 7 11	PP	—
Calcutta	N.	32·2	90	—	—	e 11 41	− 4	—	—	—
Colombo	E.	32·4	124	—	—	e 11 29	−19	—	—	—
Pulkovo		36·1	341	e 7 6	+ 1	12 49	+ 4	—	—	19·5
Cheb		38·5	318	—	—	e 13 22	0	—	—	e 22·0
Chur		39·3	313	e 7 32	0	e 13 29	− 5	—	—	—
Stuttgart		40·0	315	e 7 33	− 5	e 13 39	− 5	e 9 9	PP	e 23·0
Zurich		40·1	313	e 7 38	− 1	e 13 38	− 8	—	—	—
Copenhagen		40·7	326	i 7 44	0	13 54	− 1	9 23	PP	22·0
Strasbourg	Z.	40·9	315	e 7 46	0	e 14 5	+ 7	e 9 25	PP	—
Hamburg		41·2	323	e 8 13	+25	—	—	—	—	e 24·0
De Bilt		43·4	319	8 10	+ 4	14 39	+ 4	—	—	e 22·0
Uccle		43·6	316	e 8 9	+ 1	e 14 37	− 1	e 17 51	SS	—
Paris		44·4	313	—	—	e 13 59?	−50	—	—	25·0
Irkutsk		45·3	42	e 8 21	0	e 15 3	+ 1	—	—	26·0
Kew		46·6	317	—	—	i 15 20	− 1	—	—	e 24·0
Oxford		47·2	317	—	—	i 15 20	− 9	—	—	27·2
Jersey		47·4	314	e 11 47	PPP	—	—	—	—	—
Durham		48·0	321	—	—	e 15 39	− 2	—	—	—
Bidston		48·6	319	—	—	i 15 35	−14	—	—	e 25·0
Edinburgh		49·1	322	—	—	e 15 59?	+ 3	e 19 46	SS	—
Rathfarnham Castle		50·5	318	—	—	i 16 49	+33	—	—	30·3

Additional readings:—
Ksara i = +9m.7s.
Helwan i = +8m.36s.
Moscow e = +8m.47s.
Copenhagen +17m.11s.
Strasbourg eSS = +16m.52s.
Durham eN = +14m.14s., eE = +14m.29s., eN = +15m.32s.
Long waves were also recorded at Vladivostok, Cape Town, Upsala, and Potsdam.

April 23d. Readings also at 0h. (Koti), 1h. (Almata, Tchimkent, Frunse, and Andijan), 2h. (Fordham and Manila), 3h. (Andijan), 4h. (Colombo), 7h. (Manila), 8h. (Manila), 11h. (Tucson), 12h. (Amboina), 13h. (Vladivostok, Tashkent, and Sverdlovsk), 14h. (Sebastopol), 17h. (Tananarive and La Paz), 20h. (Tananarive and Fort de France), 21h. (Samarkand, Harvard, Frunse, and near Medan), 23h. (near Medan, Sebastopol, Tashkent, Sverdlovsk, Andijan, Copenhagen, Chur, Kodaikanal, Theodosia, Tiflis, Baku, Christchurch, and Yalta).

April 24d. 14h. South America.
Montezuma iP = 12m.2s.
La Paz iPZ = 12m.51s.a, iSN = 14m.15s., LN = 14m.39s.
Huancayo P = 14m.20s. and 14m.30s., iS = 17m.7s., i = 17m.53s., L = 18m.37s.
La Plata P = 14m.4s., S = 16m.6s., L = 17m.15s.
Rio de Janeiro e = 15m.28s., iS = 19m.9s.
Fort de France e = 18m.8s. and 23m.39s.
Weston iP = 21m.28s.
Harvard i = 21m.29s.
Williamstown iP = 21m.31s.
Tucson iP = 21m.55s., ePP = 24m.38s., esPP = 25m.33s.
Riverside ePN = 22m.24s.
Pasadena iP = 22m.27s.k
Mount Wilson iP = 22m.28s.
Haiwee iP = 22m.35s.
Tinemaha iPEN = 22m.39s.
Ksara ePP = 30m.9s., ePS = 42m.20s.
Tashkent e = 32m.2s. and 38m.19s.
Samarkand e = 50m.19s.
Long waves were also recorded at Cheb and Baku.

April 24d. Readings also at 0h. (Apia, Wellington, Brisbane, Melbourne, Riverview, Sydney, Tucson, Mount Wilson, Pasadena, De Bilt, Ksara, and Tiflis), 1h. (Fordham), 2h. (Kodaikanal), 3h. (Copenhagen, Cheb, De Bilt, Strasbourg, Hamburg, Potsdam, Bucharest, Triest, Tiflis, and Ksara), 4h. (Cape Girardeau, Moscow, and Pulkovo), 5h. (near Algiers), 13h. (Fordham, New Plymouth, and near Wellington), 14h. (Irkutsk, Vladivostok, Manila, and near Taihoku), 15h. (Cheb, Mizusawa, and near Batavia), 19h. (Balboa Heights), 20h. (Balboa Heights, San Juan, Huancayo, La Paz, Tucson, Pasadena, and near Berkeley).

April 25d. 9h. 4m. 11s. Epicentre 79°·1N. 1°·6E.

$A = +\cdot1903$, $B = +\cdot0053$, $C = +\cdot9817$,; $\delta = -2$; $h = -12$;
$D = +\cdot028$, $E = -1\cdot000$; $G = +\cdot981$, $H = +\cdot027$, $K = -\cdot190$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Scoresby Sund		10·5	227	2 37	+ 2	—	—	—	—	4·8
Pulkovo		21·4	138	i 4 48	− 3	8 52	+ 7	—	—	10·3
Aberdeen		22·1	185	—	—	e 8 27	−31	—	—	e 10·7
Copenhagen		23·8	165	5 14	− 1	9 29	+ 1	—	—	—
Hamburg		25·8	169	e 5 39	+ 5	e 10 37	+35	—	—	—
Moscow		26·3	131	e 5 37	− 2	e 10 31	+20	—	—	14·3
De Bilt		27·1	175	e 5 52	+ 6	—	—	—	—	e 13·8
Potsdam		27·1	166	e 7 49?	?	—	—	—	—	—
Sverdlovsk		29·1	104	5 59	− 5	10 50	− 6	—	—	13·8
Stuttgart		30·6	170	e 6 15	− 3	e 11 19	− 1	—	—	e 15·8
Strasbourg		30·7	172	—	—	e 13 5	SS	—	—	e 17·3
Yalta		36·9	141	e 8 21	PP	—	—	—	—	—
Grozny		39·6	128	e 7 35	0	—	—	—	—	—
Tiflis		41·0	129	e 7 55	+ 9	e 17 0	SS	e 9 17	PP	e 20·8
Irkutsk		41·5	66	e 7 50	0	e 17 0	SS	—	—	23·8
Baku		43·1	124	e 8 20	+16	e 14 37	+ 7	e 18 7	SSS	22·2
Frunse		45·0	97	e 8 28	+ 9	—	—	—	—	—
Harvard		45·4	264	e 8 21	− 1	e 14 59	− 5	—	—	e 25·8
Weston	z.	45·5	264	i 8 23	0	—	—	—	—	e 23·3
Williamstown		45·5	265	i 8 22	− 1	—	—	—	—	—
Tashkent		45·6	103	e 8 54	+30	i 15 6	0	e 18 35	SS	e 24·8
Ksara		47·6	141	e 8 55	+16	—	—	e 10 45	PP	—
Philadelphia		48·6	267	—	—	e 19 28	SS	—	—	e 23·5
Tinemaha		59·1	307	e 10 4	0	—	—	—	—	—
Haiwee	N.	60·0	307	e 10 10	− 1	—	—	—	—	—
Mount Wilson	z.	61·9	307	e 10 22	− 2	—	—	—	—	—
Pasadena		62·0	307	i 10 23	− 1	—	—	—	—	e 33·0
Tucson		62·6	298	i 10 28	0	—	—	—	—	—

Additional readings:—
Moscow e = +8m.42s.
Tiflis ePE = +8m.4s.
Baku e = +15m.0s.
Weston i = +8m.32s.
Long waves were also recorded at Upsala, Granada, Paris, Uccle, Cheb, Prague, Jersey, Edinburgh, Kew, Kodaikanal, Sitka, and Fordham.

April 25d. 10h. 14m. 3s. Epicentre 55°·0N. 92°·0E.

$A = -·0201$, $B = +·5758$, $C = +·8173$; $\delta = -7$; $h = -7$;
$D = +·999$, $E = +·035$; $G = -·029$, $H = +·817$, $K = -·576$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Irkutsk	7·8	106	1 51	− 7	3 18	−10	—	—	—
Semipalatinsk	8·5	242	2 12	+ 5	—	—	—	—	—
Almata	15·3	226	e 2 21	?	e 7 43	L	—	—	(e 7·7)
Sverdlovsk	17·6	289	4 5	− 3	7 40	SS	—	—	10·3
Andijan	19·3	233	e 4 33	+ 4	e 10 33	L	—	—	(e 10·5)
Tchimkent	19·4	240	e 4 57	PPP	e 10 36	L	—	—	(e 10·6)
Tashkent	20·3	238	e 4 27	−13	e 8 22	− 1	i 4 52	PP	i 10·2
Samarkand	22·7	239	e 5 6	+ 2	—	—	—	—	—
Moscow	30·3	294	e 6 10	− 5	e 11 30	+15	—	—	e 19·5
Baku	31·4	261	—	—	e 14 1	?	—	—	18·2
Grozny	31·8	269	e 6 30	+ 2	—	—	—	—	—
Pulkovo	32·5	304	—	—	e 13 59	SSS	—	—	e 17·4
Tiflis	33·4	266	e 6 41	− 1	14 15	SSS	—	—	—

Additional readings :—
Moscow e = +14m.51s., +15m.8s., and +17m.16s.
Pulkovo e = +16m.55s.
Tiflis ePE = +6m.45s., eN = +18m.49s. and +20m.0s., eE = +23m.37s.
Long waves were also recorded at Phu-Lien, Frunse, De Bilt, Copenhagen, Kew, Hamburg, Potsdam, Paris, Uccle, and Stuttgart.

April 25d. 11h. Undertermined shock.

Pulkovo e = 41m.23s., 41m.25s., 46m.28s., and eL = 47·5m.
Moscow e = 42m.11s., 45m.57s., and L = 50·5m.
Sverdlovsk e = 42m.37s. and L = 52·0m.
Tiflis ePZ = 44m.22s., eN = 44m.33s. and LNZ = 60·0m.
Williamstown iP = 44m.58s. and 45m.35s.
Edinburgh e = 46m.0s.
Tinemaha ePEN = 46m.38s.
Haiwee ePEN = 46m.46s.
Mount Wilson iPZ = 46m.58s. and iZ = 47m.35s.
Pasadena iPZ = 46m.58s.a
Tucson e = 47m.2s. and i = 47m.4s.
Ksara eP = 47m.13s. and eS = 55m.10s.
Tashkent e = 51m.40s., 55m.11s., and eL = 56·9m.
Baku e = 53m.48s. and L = 59·3m.
Long waves were also recorded at Kew, De Bilt, Potsdam, Copenhagen, Scoresby Sund, Hamburg, Paris, Uccle, Stuttgart, Harvard, Fordham, Philadelphia, Granada, and Strasbourg.

April 25d. 14h. 45m. 3s. Epicentre 37°·1N. 141°·8E.

Felt very strongly at Tukubasan, Kakioka, moderately at Onahama, Hukusima, Tokyo, and Sendai, and slightly at Kumagaya, Maebasi, and Yokohama.

Epicentre 37°·1N. 141°·8E. (Kasima Bay). Macroseismic radius greater than 300kms.

See Seismological Bulletin of the Cent. Met. Obs., Japan, for the year 1938, Tokyo, 1940, pp. 31-33. Macroseismic Chart p. 31.

$A = -·6283$, $B = +·4944$, $C = +·6006$; $\delta = -9$; $h = -1$;
$D = +·618$, $E = +·786$; $G = -·471$, $H = +·371$, $K = -·800$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Onahama	0·8	257	0 14k	− 4	0 21	−10	—	—	—
Hukusima	1·2	302	0 25k	+ 1	0 39	− 2	—	—	—
Mito	1·3	236	0 23k	− 2	0 36	− 8	—	—	—
Sendai	1·3	329	0 15k	−10	0 27	−17	—	—	—
Aidu	1·4	289	0 18k	− 9	0 35	−11	—	—	—
Kakioka	1·5	236	0 27k	− 1	0 43	− 6	—	—	—
Tukubasan	1·6	237	0 39k	+ 9	0 56	+ 5	—	—	—
Yamagata	1·6	315	0 34	+ 4	1 1	+10	—	—	—
Utunomiya	1·7	250	0 30k	− 1	0 50	− 4	—	—	—
Kumagaya	2·1	244	0 34k	− 3	1 0	− 4	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa	2·1	346	i 0 39	+ 2	1 1	− 3	—	—	—
Tokyo Cen. Met. Ob.	2·1	229	0 37k	0	i 0 58	− 6	i 0 47	P_g	—
Tokyo I.U.	2·1	229	0 34	− 3	1 1	− 3	—	—	—
Komaba	2·2	230	0 36	− 2	1 2	− 4	—	—	—
Kiyosumi	2·3	214	0 35	− 5	1 4	− 5	—	—	—
Maebasi	2·3	252	0 38	− 2	1 5	− 4	—	—	—
Mitaka	2·3	232	0 39	− 1	1 6	− 3	—	—	—
Niigata	2·4	291	0 37	− 4	1 21	S_g	—	—	—
Yokohama	2·4	226	0 42	+ 1	1 8	− 4	—	—	—
Kamakura	2·5	226	0 39	− 4	1 14	0	—	—	—
Misaki	2·6	222	0 39	− 5	1 10	− 7	—	—	—
Miyako	2·6	3	0 46	+ 2	1 12	− 5	—	—	—
Mera	2·7	216	0 45k	0	1 28	S_g	—	—	—
Morioka	2·7	349	0 47k	+ 2	1 19	0	—	—	—
Oiwake	2·7	254	0 47k	+ 2	1 17	− 2	—	—	—
Takada	2·8	270	0 50	+ 3	1 48	+26	—	—	—
Hunatu	2·9	237	0 48	0	1 22	− 2	—	—	—
Koyama	2·9	232	0 35	−13	1 21	− 3	—	—	—
Nagano	2·9	261	0 49	+ 1	1 34	S_g	—	—	—
Akita	3·0	334	0 48	− 2	1 26	− 1	—	—	—
Ito	3·0	225	0 52	+ 2	1 40	S_g	—	—	—
Misima	3·0	229	0 51	+ 1	1 40	S_g	—	—	—
Kohu	3·0	241	0 49a	− 1	1 31	+ 4	—	—	—
Numadu	3·1	230	0 54	+ 3	1 42	S_g	—	—	—
Matumoto	3·2	254	0 55	+ 3	1 39	+ 7	—	—	—
Susaki	3·3	225	0 50	− 3	1 33	− 2	—	—	—
Toyama	3·4	266	1 3	P*	1 54	S_g	—	—	—
Hatinohe	3·5	356	1 0	+ 3	1 34	− 6	—	—	—
Iida	3·6	245	1 6	P*	1 52	S*	—	—	—
Aomori	3·8	348	1 5	P*	1 59	S*	—	—	—
Husiki	3·8	267	1 4	+ 3	1 56	S*	—	—	—
Omaesaki	3·8	231	1 12	P*	1 25	−22	—	—	—
Takayama	3·8	257	0 59	− 2	2 11	S_g	—	—	—
Wazima	3·9	277	1 2	0	1 55	+ 5	—	—	—
Hamamatu	4·1	235	1 21	P_g	1 51	− 4	—	—	—
Hatidyozima	4·3	203	1 11	+ 3	1 52	−8	—	—	—
Gihu	4·4	250	1 9k	− 1	2 0	− 2	—	—	—
Nagoya	4·4	245	i 1 9a	− 1	1 57	− 5	—	—	—
Ibukisan	4·7	251	1 15	+ 1	2 7	− 3	—	—	—
Hikone	4·8	250	1 22	P*	2 6	− 6	—	—	—
Kameyama	4·9	245	1 26	P*	2 14	− 1	—	—	—
Tu	4·9	243	1 16	− 1	2 19	+ 4	—	—	—
Mori	5·1	349	1 24	+ 4	2 24	+ 4	—	—	—
Urakawa	5·1	8	2 33	S*	5 6	?	—	—	—
Muroran	5·2	353	1 28	P*	2 30	+ 8	—	—	—
Kyoto	5·3	249	1 22	0	2 26	+ 1	—	—	—
Yagi	5·5	245	1 26	+ 1	2 37	+ 7	—	—	—
Miyadu	5·6	257	1 25	− 2	2 28	− 5	—	—	—
Osaka B	5·6	247	1 26	− 1	2 51	S*	—	—	—
Toyooka	5·8	257	1 36	+ 7	3 7	S_g	—	—	—
Obihiro	5·9	10	1 33	+ 2	2 44	+ 4	—	—	—
Sapporo	6·0	356	1 43	P*	2 46	+ 3	—	—	—
Siomisaki	6·1	236	1 37	+ 3	3 17	S_g	—	—	—
Sumoto	6·2	247	1 36k	+ 1	3 2	S*	—	—	—
Wakayama	6·2	244	1 35k	0	3 9	S*	—	—	—
Tokusima	6·6	246	1 42	+ 1	3 16	S*	—	—	—
Asahigawa	6·7	4	2 11	P_g	—	—	—	—	—
Okayama	6·8	252	1 43	− 1	3 17	+14	—	—	—
Nemuro	6·8	24	1 42	− 2	2 58	− 5	—	—	—
Sakai	7·1	260	1 51	+ 3	3 53	S_g	—	—	—
Tadotu	7·1	250	1 55	+ 7	—	—	—	—	—
Muroto	7·3	241	1 51	+ 1	3 23	+ 8	—	—	—
Koti	7·6	245	e 1 50	− 5	3 22	− 1	—	—	—
Hirosima	8·1	254	1 58	− 4	4 7	S*	—	—	—
Izuka	9·7	254	2 25	+ 3	4 37	S*	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Vladivostok		9·7	311	i 2 23	+ 1	—	—	—	—	e 4·6
Hukuoka B		9·9	253	e 2 31	+ 6	e 5 4	S*	—	—	—
Kumamoto		10·0	248	2 27	0	4 58	S*	—	—	—
Miyazaki		10·0	242	2 28$_s$	+ 1	4 22	0	—	—	—
Titizima		10·0	179	2 27	0	—	—	—	—	—
Unzendake		10·4	249	2 54	+20	4 49	+17	—	—	—
Nagasaki		10·7	250	2 57	PPP	—	—	—	—	—
Taikyu		10·7	267	2 36	− 2	e 4 44	+ 5	—	—	—
Yakusima		11·5	238	2 49	+ 1	—	—	—	—	—
Tomie		11·6	251	2 52	+ 2	—	—	—	—	—
Keizyo		11·8	277	e 2 41	−12	—	—	—	—	e 6·5
Zinsen		12·1	277	e 3 2k	+ 5	e 5 30	SS	—	—	e 6·3
Nake		13·5	234	3 18	+ 3	—	—	—	—	—
Hong Kong		28·0	246	10 29	S	(10 29)	− 9	—	—	15·7
Manila		29·1	225	6 2	− 2	12 29	SS	—	—	19·0
Irkutsk		30·2	312	e 6 12	− 2	e 11 11	− 2	—	—	15·9
Semipalatinsk		45·1	308	e 8 27	+ 7	—	—	—	—	—
Andijan		52·8	297	e 9 16	− 3	e 17 9	PPS	—	—	—
Tashkent		54·8	299	i 9 31	− 3	e 17 3	−11	—	—	—
Sverdlovsk		55·3	319	9 34	− 4	17 15	− 6	—	—	25·0
Bombay		62·3	274	e 10 29	+ 3	e 18 49	− 3	—	—	—
Kodaikanal	E.	63·5	263	e 9 57?	−37	—	—	—	—	—
Moscow		67·4	323	e 10 48	−11	e 20 10	PS	e 13 33	PP	40·5
Pulkovo		68·3	330	e 11 12	+ 7	e 19 57	− 9	—	—	34·5
Baku		68·4	305	e 11 4	− 2	e 20 50	PS	—	—	35·0
Grozny		69·6	309	e 11 4	− 9	—	—	—	—	—
Tiflis		71·0	308	e 11 19	− 3	e 20 58	PS	—	—	36·0
Yalta		75·8	315	e 11 36	−14	e 21 32	+ 1	—	—	—
Mount Wilson	Z.	77·3	57	e 12 2	+ 4	—	—	e 15 0	PP	—
Pasadena	Z.	77·3	57	i 12 5	+ 7	—	—	—	—	—
Copenhagen		78·0	334	i 12 0	− 2	22 45	PS	—	—	39·0
Ksara		81·4	305	i 12 20	0	e 23 14	PS	e 24 14	PS	—
De Bilt		83·4	335	12 29	− 1	—	—	—	—	e 41·0
Stuttgart		84·7	330	e 12 34	− 3	e 23 14	+10	—	—	e 44·0
Strasbourg		85·4	331	e 12 39	− 1	—	—	—	—	e 49·4
Chur		86·1	330	e 12 39	− 5	—	—	—	—	—
Helwan		86·9	305	e 12 39	− 9	i 23 38	+12	e 16 5	PS	—
La Paz	Z.	146·5	60	e 19 48	[+ 6]	—	—	—	—	—

Additional readings :—
Hong Kong S? = +14m.14s.
Tiflis eSKSE = +21m.25s.
Long waves were also recorded at Cape Town, San Fernando, Cheb, Paris, Kew, Hamburg, Potsdam, Uccle, Triest, Phu-Lien, Upsala, Granada, and Prague.

April 25d. 17h. 7m. 46s. Epicentre 11°·5N. 87°·0W..

Damage at Leon and Chinandega.

Epicentre—Nicaragua : 13°·0N. 87°·0W. (Strasbourg).
12°·2N. 86°·9W. (U.S.C.G.S.).

See Annales de l'Institut de Physique du Globe de Strasbourg, 1938, Tome III, 2e partie, Mende, 1941, p. 25.

$A = +·0513$, $B = -·9789$, $C = +·1981$; $\delta = +12$; $h = +6$;
$D = -·999$, $E = -·052$; $G = +·010$, $H = -·198$, $K = -·980$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights	N.	7·7	108	e 2 7	P*	e 3 46	S*	—	—	—
Oaxaca	N.	10·9	301	e 2 42?	+ 2	—	—	—	—	—
Tacubaya	N.	14·1	305	i 3 24	+ 1	—	—	—	—	—
San Juan		21·3	69	e 4 52	+ 2	i 8 51	+ 8	5 20	PP	i 10·1
Little Rock		23·7	350	e 5 7	− 7	e 9 21	− 6	e 5 28	PP	e 12·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Fort de France		25·4	81	i 5 35	+ 4	i 10 11	+15	6 11	PP	13·1
Cape Girardeau	N.	25·8	358	e 5 26	− 8	e 9 55	− 7	i 6 1	PP	e 11·9
Huancayo		26·1	153	e 5 37	0	e 10 14	+ 7	6 25	PP	i 11·6
Tucson		30·1	319	e 6 19	+ 6	e 11 26	+14	e 7 27	PPP	13·5
Philadelphia		30·2	19	—	—	e 10 59	−14	—	—	e 12·5
Chicago		30·3	359	—	—	e 11 47	+32	—	—	12·7
Pennsylvania	N.	30·3	14	—	—	e 12 42	SS	—	—	—
Fordham		31·4	20	6 22	− 3	11 25	− 7	—	—	—
Williamstown		33·3	20	e 6 27	−14	e 11 50	−12	e 7 45	PP	e 15·9
La Paz		33·5	145	e 7 35	PP	i 14 49	SSS	—	—	19·8
Harvard		33·7	21	e 6 41	− 4	e 11 54	−14	e 13 32	SS	e 17·7
Weston		33·7	21	e 6 43k	− 2	i 11 54	−14	e 7 32	PP	15·7
Vermont		34·9	18	—	—	e 12 18	− 9	—	—	e 14·6
Ottawa		35·1	14	6 52	− 5	12 16	−14	14 14	SS	16·2
Mount Wilson	Z.	36·2	315	i 7 2	− 4	—	—	i 8 32	PP	—
Pasadena		36·3	315	e 7 7	0	—	—	e 8 32	PP	e 15·4
Shawinigan Falls		36·9	17	e 7 8	− 4	—	—	—	—	—
East Machias		37·2	24	e 8 33	PP	e 12 42	−20	—	—	e 14·0
Tinemaha	E.	37·9	318	e 7 22	+ 2	—	—	—	—	—
Seven Falls		38·0	18	—	—	e 13 2	−12	e 15 8	SS	17·2
Bozeman		39·8	335	e 9 19	PP	e 13 28	−14	—	—	e 16·3
Butte		40·7	335	e 9 23	PP	e 13 55	0	—	—	e 20·4
Berkeley		41·0	317	—	—	e 13 39	−20	—	—	e 22·9
Ukiah		42·3	318	—	—	e 14 38	+19	—	—	e 17·9
Sitka		58·5	333	e 13 37	PPP	e 17 56	− 7	e 21 45	SS	e 23·9
College		67·5	338	e 20 42	PS	e 24 25	SS	—	—	e 27·5
Scoresby Sund		71·0	19	—	—	20 26	−11	—	—	28·2
Toledo		77·3	53	e 12 2	+ 4	e 21 45	− 3	e 15 1	PP	e 31·9
Granada		77·9	55	e 12 13	+12	e 22 7	+13	—	—	—
Oxford		78·4	40	—	—	e 24 3	?	—	—	e 32·5
Paris		81·1	43	e 12 25	+ 7	—	—	—	—	e 38·2
Uccle		82·0	41	—	—	e 22 38	+ 1	—	—	e 33·2
De Bilt		82·4	39	—	—	e 22 38	− 3	—	—	e 35·2
Strasbourg		84·6	42	e 12 31	− 5	e 22 50	−13	e 13 55	pP	38·2
Hamburg		85·0	37	e 12 42	+ 4	—	—	—	—	e 41·2
Stuttgart		85·5	41	e 12 43	+ 2	e 23 2	[− 2]	—	—	e 35·2
Copenhagen		85·9	34	—	—	23 13	− 3	—	—	34·2
Chur		86·1	44	e 12 5	−39	—	—	—	—	—
Cheb		87·2	40	e 11 14	?	—	—	—	—	e 39·2
Upsala	N.	87·4	30	—	—	e 24 14?	PS	—	—	—
Triest		89·3	44	—	—	e 23 28	[0]	—	—	—
Pulkovo		93·3	27	—	—	e 26 11	PPS	e 30 31	SS	37·7
Moscow		98·7	28	—	—	e 31 10	SS	—	—	e 42·7
Sverdlovsk		106·8	17	—	—	e 25 48	{+ 6}	—	—	42·2
Ksara		109·5	49	e 14 49	P	e 28 21	PS	e 19 0	PP	53·2
Baku		114·8	35	—	—	e 28 51	PS	38 1	P′P′	53·9
Tashkent		123·1	21	e 20 37	PP	e 31 43	PPS	—	—	e 50·5

Additional readings :—
Balboa Heights eN = +4m.36s.
San Juan iP = +4m.54s.
Little Rock iPPPEN = +5m.38s., eE = +9m.50s.
Fort de France PPP = +6m.27s., SS = +11m.3s., SSS = +11m.13s.
Cape Girardeau iN = +5m.29s.
Huancayo eP = +5m.49s., ePPP = +6m.43s., iS = +10m.52s. and +10m.56s.
Philadelphia eS = +11m.9s.
Williamstown iP = +6m.38s.
La Paz iN = +16m.57s.
Harvard eL_g = +16·2m.
Weston eP_cPZ = +9m.24s., eSSEZ = +13m.35s.
Ottawa eN = +13m.28s.
Berkeley eE = +14m.17s.
Toledo e = +16m.28s.
Strasbourg ePPZ = +16m.2s.
Cheb e = +4m.14s.
Moscow e = +29m.14s., +32m.51s., and +37m.4s.
Baku e = +42m.13s.
Long waves were also recorded at Aberdeen, Vladivostok, Kodaikanal, Tiflis, San Fernando, Prague, Kew, Rio de Janeiro, Malaga, Edinburgh, Christchurch, Göttingen, Potsdam, Jersey, La Plata, Wellington, Stonyhurst, Seattle, Columbia, and Cape Town.

April 25d. Readings also at 1h. (Harvard and Fordham), 7h. (Ksara and Tiflis), 9h. (Basle, Chur, Ksara, Brisbane, De Bilt, Stuttgart, Mount Wilson, Pasadena, Tucson, Uccle, Strasbourg, and Apia), 10h. (Jersey and Malabar), 11h. (Copiapo and Grozny), 15h. (Andijan, Grozny, Tananarive (2), Simferopol, Tiflis, Ksara, Perth, Mizusawa, and La Paz), 20h. (Nagoya, New Plymouth, and La Paz), 21h. (Perth), 22h. (Mizusawa), 23h. (Cape Girardeau, Fort de France, Little Rock, and Pennsylvania).

April 26d. 12h. 53m. 39s. Epicentre 5°·5S. 126°·0E.

$A = -\cdot5851$, $B = +\cdot8054$, $C = -\cdot0952$; $\delta = +7$; $h = +7$;
$D = +\cdot809$, $E = +\cdot588$: $G = +\cdot056$, $H = -\cdot077$, $K = -\cdot996$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		2·7	50	i 1 1	P_g	—	—	—	—	—
Malabar		18·3	264	4 34	PP	i 8 1	SS	—	—	—
Batavia		19·1	268	i 4 26	− 1	8 3	+ 6	i 5 34	PP	—
Manila		20·6	347	i 4 54a	+11	9 1	SS	—	—	11·4
Perth		28·0	198	6 1	+ 6	—	—	7 35	PPP	9·7
Medan		28·7	289	6 7	+ 6	—	—	—	—	—
Adelaide		31·5	161	e 5 50	−36	i 10 24	−70	i 13 6	SS	—
Phu-Lien		32·3	325	e 6 40	+ 7	—	—	—	—	—
Brisbane	E.	33·7	133	i 6 45	0	i 10 57	?	7 21	PP	13·0
Melbourne		36·5	154	—	—	e 12 56	+ 5	—	—	—
Riverview		36·6	144	—	—	i 11 50	−63	i 15 4	SS	—
Sydney		36·7	144	—	—	e 12 4	−50	—	—	—
Nagoya		41·7	14	e 8 52	+60	—	—	—	—	—
Vladivostok		48·7	5	e 8 42	− 6	e 15 47	− 3	—	—	—
Christchurch		55·8	140	e 15 14	?	21 55	SS	—	—	29·0
Wellington		56·1	137	—	—	e 16 33	PS	—	—	e 23·4
Bombay		57·7	297	i 9 47	− 8	i 17 47	− 6	e 18 55	PS	—
Irkutsk		60·4	345	10 13	0	18 29	+ 1	—	—	e 32·4
Frunse		66·9	322	e 10 56	0	—	—	—	—	—
Semipalatinsk		68·2	332	e 11 2	− 2	—	—	—	—	—
Tashkent		69·6	318	i 11 6	− 7	i 21 24	+63	—	—	e 35·3
Samarkand		70·4	315	e 11 18	0	—	—	e 14 48	PP	—
Sverdlovsk		81·5	330	12 13	− 8	e 22 17	SS	—	—	e 33·4
Baku		83·0	312	i 12 25	− 3	e 22 37	−10	23 51	PPS	e 38·4
Grozny		86·7	314	e 12 41	− 6	—	—	—	—	—
Tiflis		87·1	312	i 12 42	− 7	e 23 46	+18	24 29	PS	e 44·4
Ksara		93·1	303	e 13 11	− 6	e 24 22	0	e 16 53	PP	—
Pulkovo		97·6	329	e 20 7	PPP	e 25 39	+39	31 56	SS	e 44·8
Potsdam		108·2	324	e 18 21?	PP	e 24 21?	[−44]	—	—	e 54·3
Stuttgart		111·6	321	e 19 21	PP	28 59	PS	21 40	PPP	e 62·4
Strasbourg		112·6	321	e 19 26	PP	—	—	—	—	—
De Bilt		112·9	325	e 19 39	PP	—	—	—	—	e 59·4
Tinemaha	E.	113·8	52	i 18 23	[−18]	—	—	—	—	—
Haiwee		114·2	52	i 18 24	[−18]	—	—	—	—	—
Pasadena		114·4	54	i 18 23	[−19]	—	—	—	—	—
Mount Wilson	Z.	114·5	54	i 18 23	[−19]	—	—	e 19 15	PP	—
Tucson		120·8	55	e 18 32	[−22]	—	—	—	—	—
Fordham		140·6	23	i 19 12	[−19]	—	—	—	—	—
La Paz	Z.	154·1	148	e 19 42	[−11]	—	—	—	—	—

Additional readings :—
Batavia iE = +7m.34s., +7m.57s., S?E = +8m.9s.
Manila iZ = +4m.57s.
Perth i = +6m.20s., SSS = +8m.6s.
Adelaide i = +6m.36s. = P.
Melbourne i = +11m.46s.
Riverview iN = +14m.17s.
Bombay i = +10m.47s.
Tashkent e = +11m.36s. and +12m.0s.
Tiflis eZ = +13m.24s., eE = +23m.21s.
Ksara ePS = +25m.27s., ePPS = +26m.4s.
Stuttgart eEZ = +20m.20s., e = +29m.57s. and +30m.51s.
Strasbourg e = +20m.28s.
La Paz iZ = +20m.37s.
Long waves were also recorded at Kew and Copenhagen.

April 26d. Readings also at 0h. (Perth), 2h. (Triest, Padova, and near Belgrade), 4h. (Ksara and Mizusawa), 7h. (Copiapo and Andijan), 8h. (Fordham), 9h. (Graz), 10h. (Aberdeen), 11h. (Colombo, Malabar, Tacubaya, and Oaxaca), 12h. (Kodaikanal), 16h. (Mizusawa and Fordham), 17h. (Berkeley), 22h. (Oaxaca (2) and Tacubaya (2)).

April 27d. 10h. 40m. 18s. Epicentre 39°·5N. 33°·7E. (as on 19d.).

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul	3·9	295	1 18	P_g	2 13	S_g	1 51	S*	—
Yalta	5·0	3	e 1 20	+ 2	e 2 29	S_g	e 1 53	?	—
Simferopol	5·4	3	1 24	0	e 2 41	+13	—	—	—
Theodosia	5·7	13	e 1 27	− 1	e 2 49	S*	—	—	—
Ksara	6·0	161	e 1 41	+ 9	i 3 31	S_g	—	—	—
Sotchi	6·0	46	e 2 53	S	(e 2 53)	+10	—	—	—
Bucharest	7·5	313	e 3 0	+67	4 48	+88	—	—	—
Tiflis	8·7	72	2 48	P_g	e 5 2	?	e 4 32	S_g	—
Grozny	9·8	63	e 2 59	P_g	—	—	—	—	—
Pulkovo	20·4	357	—	—	e 8 34	+ 9	e 9 34	SSS	e 13·2
Sverdlovsk	24·7	37	5 23	− 1	9 49	+ 5	—	—	12·7
Tashkent	27·0	74	—	—	e 10 24	+ 2	—	—	e 13·0

Bucharest gives also $iE = +3m.48s.$, $iN = +4m.10s.$, $iS_gN = +5m.58s.$, $iS_gE = +6m.2s.$; readings appear to be about 1m. in error.
Long waves were also recorded at Baku, Copenhagen, De Bilt, Strasbourg, and Paris.

April 27d. Readings also at 2h. (near Nagoya), 5h. (near Mount Wilson and Pasadena), 12h. (Baku, Tiflis, Vladivostok, Mizusawa, and near Nagoya), 14h. (Tiflis), 15h. (La Paz, Tucson, Mount Wilson, Monowai, Wellington, and near Christchurch), 16h. (Tucson), 19h. (Florence and Harvard), 20h. (Ksara, Mount Wilson, and Pasadena).

April 28d. 9h. 16m. 45s. (I) Epicentre 35°·6N. 140°·0E.
11h. 7m. 27s. (II) (as on 1937 Jan. 6d.).

Epicentre given by Earthquake Research Institute, Imperial University, Tokyo.

$A = -·6243$, $B = +·5239$, $C = +·5795$; $\delta = +4$; $h = 0$;
$D = +·643$, $E = +·766$; $G = -·444$, $H = +·373$, $K = -·815$.

		Δ	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
II	Tokyo, Cen. M. Ob.	0·2	298	i 0 13a	+ 3	0 24	+ 8
I	Tokyo, Imp. Univ.	0·2	298	0 13	+ 3	0 22	+ 6
II		0·2	298	0 13	+ 3	0 23	+ 7
I	Komaba	0·2	281	0 10	0	0 16	0
II		0·2	281	0 10	0	0 19	+ 3
I	Mitaka	0·4	280	0 13	0	0 23	+ 2
II		0·4	280	0 13	0	0 24	+ 3
I	Kiyosumi	0·5	162	0 20	+ 6	0 29	+ 6
II		0·5	162	0 14	0	0 26	+ 3
I	Misaki	0·5	215	0 13	− 1	0 23	0
II		0·5	215	0 13	− 1	0 24	+ 1
I	Tukubasan	0·6	7	0 13	− 2	0 21	− 5
II		0·6	7	0 13	− 2	0 23	− 3
I	Koyama	0·9	253	0 20	0	—	—
II		0·9	253	0 14	− 6	—	—
I	Nagoya	2·5	260	e 0 58	P_g	—	—

April 28d. Readings also at 0h. (Tiflis and near Grozny (4)), 6h. (Berkeley, Branner, Lick, Fresno, Butte, Philadelphia, Fordham, Tucson, Haiwee, near La Jolla, Mount Wilson, Pasadena, Riverside, Santa Barbara, and Tinemaha), 7h. (Mount Wilson, Pasadena, and near Apia), 10h. (Cape Town, Sverdlovsk, Tiflis, Helwan, Tashkent, Ksara, Granada, Strasbourg, De Bilt, Paris, Chur, Malaga, San Fernando, Kodaikanal, and Tananarive), 11h. (near Andijan), 12h. (Bucharest), 14h. (Tiflis), 20h. (near Ksara and near Mizusawa), 21h. (La Paz, Tucson, Chicago, and Mount Wilson), 22h. (Tucson).

April 29d. 4h. Undetermined shock near Iceland.

Oxford P =57m.44s., eL =62m.30s.
Kew i =57m.50s., L =63m.0s.
De Bilt PZ =58m.17s., eL =64m.0s.
Uccle ePNZ =58m.20s., eSE =62m.26s., eL =64m.0s.
Jersey e =58m.36s., eL =66m.0s.
Strasbourg eP? =58m.52s., eL =67m.48s.
Stuttgart eP =59m.0s., eSEN =63m.40s., eL =67m.48s.
Cheb e =60m.0s., eL =68m.0s.
Sverdlovsk e =68m.29s., L =73m.
Ksara e =69m.44s.
Tashkent e =79m.45s., eL =83·3m.
Long waves were also recorded at Scoresby Sund, Bidston, Granada, Copenhagen, Potsdam, Edinburgh, Stonyhurst, Rathfarnham Castle, Reykjavik, San Fernando, and Moncalieri.

April 29d. 11h. 45m. 14s. Epicentre 36°·2N. 140°·0E. (as on 1937 Dec. 5d.).

Epicentre given by Tokyo Imperial University 36°·1N. 140°·0E.

$A = -·6196$, $B = +·5199$, $C = +·5880$; $\delta = -6$: $h = 0$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Tukubasan	0·1	—	0 18	+10	0 23	+10
Tokyo, Cen. M. Ob.	0·5	200	i 0 17$_a$	+ 3	e 0 27	+ 4
Tokyo, I.U.	0·5	200	0 15	+ 1	0 25	+ 2
Komaba	0·6	200	0 12	− 3	0 26	0
Mitaka	0·6	214	0 18	+ 3	0 28	+ 2
Kamakura	1·0	202	0 18	− 3	0 28	S*
Kiyosumi	1·1	172	0 26	+ 4	0 40	+ 1
Misaki	1·1	196	0 18	− 4	0 34	S_g
Koyama	1·2	224	0 26	+ 2	—	—

April 29d. Readings also at 2h. (Paris, Sverdlovsk, Strasbourg, De Bilt, Edinburgh, Scoresby Sund, Wellington, Samarkand, Copenhagen, Bidston, Cheb, Reykjavik, Stuttgart, Potsdam, Uccle, and Kew), 3h. (Almata and Tashkent), 8h. (Oaxaca and Tacubaya), 10h. (Istanbul), 12h. (Yalta, Sotchi, Batavia, Grozny, Ksara, Sverdlovsk, Strasbourg, Jersey, Tashkent, and Tiflis), 13h. (Paris and Edinburgh), 14h. (Upsala, De Bilt, Jersey, and Strasbourg), 15h. (Apia), 17h. (Sverdlovsk, Tiflis (2), Tashkent, Baku, Vladivostok, Pasadena, and Mount Wilson), 18h. (Pasadena, Mount Wilson, Haiwee, and Tinemaha).

April 30d. Readings also at 0h. (Malabar, Andijan, and Tchimkent), 2h. (Samarkand (2)), 3h. (Manila and La Paz), 4h. (Samarkand), 6h. (La Paz), 7h. (Andijan, Sverdlovsk, Tashkent, Almata, Frunse, and San Javier), 9h. (Cape Town, Tashkent, Sverdlovsk, La Paz, Ksara, Kodaikanal), 10h. (Strasbourg, Paris, San Fernando, Triest, Baku, and Belgrade), 11h. (Tiflis), 12h. (Istanbul), 15h. (Tashkent), 16h. (Bombay, Kodakanal, Irkutsk, and Sverdlovsk), 17h. (Jena and Balboa Heights), 18h. (Sverdlovsk, Ksara, and Tashkent), 20h. (Nagoya and Andijan), 21h. (Apia, Samarkand, and Andijan), 22h. (Tchimkent, Haiwee, Tinemaha, Pasadena, and Tucson), 23h. (Ksara, Theodosia, Sebastopol, and Yalta).

May 1d. Readings at 0h. (San Javier, Huancayo, La Paz, Tiflis, Adelaide, Brisbane, Melbourne, Riverview, Christchurch, and near Wellington (2)), 1h. (Adelaide, Brisbane, Melbourne, Riverview, La Paz, Perth, Batavia, Medan, Manila, Ksara, Copenhagen, Strasbourg, Jersey, Rathfarnham Castle, Chur, San Fernando, San Juan, La Plata, Weston, Mount Wilson, and Pasadena (2)), 2h. (Malaga, Stuttgart, Potsdam, Granada, Paris, Uccle, De Bilt, Cheb, Kew, and Tiflis (2)), 3h. (Andijan), 7h. (Huancayo, Christchurch, and La Paz), 10h. (Samarkand), 12h. (Wellington), 13h. (Adelaide, Brisbane, Melbourne, Perth, Riverview, near New Plymouth, Christchurch, and Wellington), 14h. (Apia, Riverview, Sydney, Christchurch, Brisbane, Wellington, Ksara, and near Nagoya), 15h. (Kodaikanal, and near Malabar), 16h. (near Grozny (2) and Tiflis), 17h. (Jena, near Christchurch, and near San Javier), 18h. (Wellington), 19h. (Brisbane, Riverview, Perth, Andijan, New Plymouth, near Wellington, and Christchurch), 21h. (Erevan and near Tiflis (2)), 22h. (near Mizusawa and Nagoya), 23h. (near Apia).

May 2d. 14h. 54m. 57s. Epicentre 28°·1N. 131°·0E. (as on 1938 April 23d.).

$A = -\cdot5796$, $B = +\cdot6668$, $C = +\cdot4686$; $\delta = +14$; $h = +2$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hukuoka B		5·4	356	1 23	− 1	2 48	S*	—	—	—
Taikyu		8·0	347	e 2 0	0	3 37	+ 4	—	—	—
Nagoya		8·7	34	2 16	+ 6	4 41	S_g	—	—	—
Zi-ka-wei	E.	8·8	292	e 2 23	+12	—	—	—	—	—
Keizyo		10·0	342	4 40	S	(4 40)	+18	—	—	—
Zinsen		10·0	340	e 2 29k	+ 2	e 4 31	+ 9	—	—	e 5·0
Heizyo		11·7	340	e 5 29	S_g	—	—	—	—	—
Hong Kong		16·3	253	4 32	+40	7 58	+65	—	—	9·0
Manila		16·3	217	3 46	− 6	7 55	SSS	—	—	—
Agra	E.	46·6	282	e 10 38	PP	—	—	—	—	—
Kodaikanal	E.	53·2	263	—	—	e 16 3?	−49	—	—	—
Bombay	E.	53·7	274	—	—	—	—	e 18 13	?	—
Tiflis		69·2	307	—	—	e 21 10	+54	e 37 46	?	e 39·0
Ksara		78·8	302	e 12 14	+ 8	e 15 33	?	—	—	—

Long waves were also recorded at the European stations.

May 2d. 23h. 40m. 30s. Epicentre 7°·2N. 75°·0W.

$A = +\cdot2568$, $B = -\cdot9584$, $C = +\cdot1245$; $\delta = -2$; $h = +7$;
$D = -\cdot966$, $E = -\cdot259$; $G = +\cdot032$, $H = -\cdot120$, $K = -\cdot992$.

A depth of focus 0·010 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		4·8	292	i 1 7	− 4	e 1 28	−38	—	—	1·9
San Juan		14·1	37	e 3 5	−11	e 5 33	−18	—	—	5·9
Fort de France		15·5	60	e 3 27	− 7	e 6 5	−18	—	—	—
Huancayo		19·2	181	i 4 24a	+ 5	e 7 51	+ 6	i 4 39	PP	i 8·1
La Paz	N.	24·6	164	i 5 16	+ 4	i 10 7	SS	—	—	12·1
Little Rock		31·8	332	e 6 3	−14	—	—	e 7 52	PPP	—
Weston		35·2	6	i 6 43k	− 4	i 12 34	+22	—	—	—
Harvard		35·3	6	i 6 44k	− 3	—	—	—	—	—
Williamstown		35·4	4	i 6 45	− 3	—	—	i 8 28	PP	—
Tucson		41·6	312	e 7 38k	− 2	—	—	e 9 38	PP	—
Riverside	Z.	47·3	310	i 8 36	+10	—	—	—	—	—
Mount Wilson	Z.	47·9	310	i 8 41	+11	—	—	—	—	—
Samarkand		121·6	34	e 19 14	[+31]	—	—	—	—	—

Additional readings :—
Huancayo iS = +8m.0s.
Little Rock iEN = +6m.37s., eEN = +8m.22s.
Weston iZ = +6m.59s.
Williamstown i = +7m.1s. and +8m.2s.
Tucson P = +7m.51s. and +7m.56s.

May 2d. Readings also at 1h. (Huancayo and Tiflis), 2h. (Huancayo, Tucson, and Fresno), 3h. (Huancayo, Andijan, Samarkand, and Frunse), 4h. (Pasadena, Samarkand, Tucson, Riverside, and Mount Wilson), 5h. (Pasadena, Riverside, Mount Wilson, Andijan, and Tucson), 6h. (Mizusawa), 13h. (Lick and Koti), 16h. (Ottawa), 17h. (Ottawa), 18h. (Branner), 19h. (Ottawa), 20h. (Ottawa and Wellington), 21h. (Christchurch, Ottawa, Little Rock, Oaxaca, Merida, and Tacubaya), 23h. (Taikyu, Keizyo, Heizyo, and Zinsen).

May 3d. 2h. 15m. 21s. Epicentre 18°·5N. 99°·0W. (as on 1937 October 6d.).

Mexico, destructive at Iguala (Guerrero), force VIII to IX.

Felt force IV at Mexico City.

Epicentres: 17° 47′N. 99° 10′W. (Tacubaya).
17 ‘9′N. 99° 8′W. (U.S.C.G.S.).

See "Temblores registrados, 1935-1939." Universidad nacional de Mexico, Instituto de Geologia Serie Sismologica, Mexico, 1942, p.55.

Pasadena suggests depth 100kms.

$A = -\cdot1485$, $B = -\cdot9373$, $C = +\cdot3154$; $\delta = +6$; $h = +5$;
$D = -\cdot988$, $E = +\cdot156$; $G = -\cdot049$, $H = -\cdot312$, $K = -\cdot949$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Puebla	N.	0·9	54	0 32	S	(0 32)	− 2	—	—	—
Tacubaya	N.	0·9	349	0 28	+ 8	—	—	—	—	—
Oaxaca	N.	2·6	125	0 44	0	—	—	—	—	—
Vera Cruz	Z.	2·8	76	0 54	P_g	—	—	—	—	—
Guadalajara	N.	4·6	296	1 18	+ 6	—	—	—	—	—
Manzanillo	N.	5·0	272	1 20	+ 2	—	—	—	—	—
Mazatlan	N.	8·4	307	2 12?	+ 6	—	—	—	—	—
Merida	N.	9·1	75	e 2 23	+ 9	—	—	—	—	—
Little Rock		17·3	19	i 4 7	+ 3	i 7 26	+10	i 4 26	pP	—
Tucson		17·3	323	i 4 7k	+ 3	i 7 27	+11	i 4 26	pP	i 8·7
Balboa Heights		21·1	113	e 4 56	+ 8	—	—	—	—	—
St. Louis		21·5	19	e 4 52	0	i 8 50	+ 3	i 5 12	pP	e 11·4
Denver		21·7	348	i 4 55	0	e 8 53	+ 2	i 5 11	pP	—
La Jolla		21·7	314	i 4 53	− 2	i 8 53	+ 2	—	—	—
Columbia		22·3	41	e 5 3	+ 2	e 9 10	+ 8	e 5 30	PP	e 9·7
Riverside		22·5	317	i 5 12	+10	i 9 10	+ 5	—	—	—
Pasadena		23·1	316	i 5 7	− 1	i 9 17	+ 1	i 5 28	pP	e 10·3
Mount Wilson		23·2	316	i 5 7k	− 2	i 9 10	− 8	—	—	—
Haiwee		24·3	321	i 5 19	− 1	i 9 38	+ 1	i 5 39	pP	—
Santa Barbara		24·3	316	i 5 18	− 2	—	—	—	—	—
Tinemaha		25·1	321	e 5 25	− 3	—	—	i 6 30	PPP	—
Chicago		25·3	19	e 5 29	− 1	i 10 4	+10	6 28	PPP	11·0
Lick		27·3	319	i 5 47	− 1	—	—	e 6 51	PPP	e 15·5
Branner		27·7	318	i 5 51	− 1	—	—	—	—	—
Berkeley		28·0	319	i 5 52	− 3	e 10 22	−16	e 6 48	PP	e 15·5
Pennsylvania		28·7	34	i 6 2	+ 1	e 10 51	+ 1	e 6 40	PP	—
Bozeman		28·9	346	e 6 1	− 2	e 10 50	− 3	e 7 4	PPP	11·8
Ukiah		29·4	320	e 6 27	+20	e 11 59	+58	—	—	13·6
Butte		29·6	342	e 6 27	+18	e 11 38	+34	i 7 30	PPP	e 12·8
Buffalo		29·7	31	i 6 9	− 1	i 11 2	− 4	i 7 8	PP	—
Philadelphia		29·7	39	i 6 9	− 1	i 11 2	− 4	6 51	PP	e 13·4
Fordham		31·0	39	i 6 20	− 1	i 11 26	0	—	—	—
San Juan		31·2	84	e 6 24	+ 1	i 11 31	+ 2	e 7 32	PP	e 12·6
Williamstown		32·6	37	i 6 35	0	i 11 47	− 4	i 7 6	pP	e 16·4
Ottawa		33·1	30	6 39	− 1	i 11 57	− 2	7 59	PP	16·6
Harvard		33·4	38	i 6 42	0	i 12 0	− 3	e 7 0	pP	—
Weston		33·4	38	i 6 42k	0	i 12 3	0	i 7 2	pP	—
Vermont		33·7	34	i 6 45	0	i 12 8	0	i 8 7	PP	e 15·4
Shawinigan Falls		35·3	31	7 5	+ 6	12 38	+ 5	—	—	17·6
Fort de France		36·4	90	e 8 9	PP	e 13 55	+65	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Seven Falls	36·7	33	7 4	− 6	12 46	− 8	—	—	16·6
East Machias	37·2	39	e 7 21	+ 6	e 13 19	+17	e 8 56	PPP	15·9
Huancayo	38·3	140	e 7 32	+ 8	i 13 18	− 1	i 8 44	PP	i 14·9
La Paz	46·2	136	i 8 30a	+ 2	i 14 59	−16	10 14	PP	22·2
Sitka	47·0	334	e 8 31	− 4	i 15 26	0	e 10 30	PP	e 19·5
Honolulu	55·1	284	e 9 59	+23	e 17 24	+ 6	—	—	e 22·5
La Plata	65·9	143	10 46	− 4	19 31	− 6	—	—	—
Scoresby Sund	68·4	20	i 11 4	− 2	20 4	− 3	—	—	34·6
Rathfarnham Castle	77·0	37	i 12 16	+20	i 22 26	PS	—	—	41·6
Edinburgh	78·1	35	—	—	i 21 54	− 2	—	—	e 40·6
Bidston	78·8	38	—	—	i 22 4	0	—	—	e 33·6
Oxford	80·4	39	—	—	22 13	− 8	—	—	e 34·1
Bergen	80·9	29	i 12 15	− 2	e 22 21	− 5	—	—	—
Kew	81·0	39	i 12 18k	0	i 22 23	− 4	—	—	e 33·6
Toledo	82·6	51	i 12 23	− 3	i 22 40	− 3	i 15 37	PP	—
Malaga	82·7	54	i 12 30	+ 3	e 22 48	+ 4	—	—	32·6
Granada	83·2	53	i 12 30	+ 1	e 22 52	+ 3	—	—	—
Paris	83·6	41	i 12 33	+ 1	—	—	—	—	42·6
De Bilt	84·0	37	i 12 34k	0	i 22 54	− 3	—	—	e 40·6
Uccle	84·0	38	i 12 33k	− 1	i 22 56	− 1	i 12 55	pP	e 40·6
Hamburg	86·0	34	i 12 43	0	i 23 20	+ 3	—	—	e 44·6
Copenhagen	86·4	32	12 45k	0	23 21	0	23 48	S	38·6
Upsala	86·7	27	e 12 50	+ 3	23 26	+ 2	—	—	e 40·6
Göttingen	86·9	36	e 12 46	− 2	e 23 29	+ 3	—	—	—
Strasbourg	86·9	39	i 12 48k	0	i 23 29	+ 3	i 13 4	pP	e 41·6
Neuchatel	87·1	41	e 12 47	− 2	—	—	—	—	—
Basle	87·2	41	e 12 49	0	e 23 30	+ 2	—	—	—
Stuttgart	87·7	39	12 51k	− 1	e 23 36	+ 3	—	—	e 37·6
Zurich	87·9	41	e 12 48k	− 5	e 23 32	− 3	—	—	—
Jena	88·1	37	e 12 39	−15	e 23 39	+ 2	—	—	e 44·6
Potsdam	88·2	35	e 13 51	+57	i 23 41	+ 3	e 24 15	PS	e 38·6
Algiers	88·3	52	e 12 52	− 3	e 23 39?	0	—	—	—
Chur	88·7	41	e 12 55	− 2	—	—	—	—	—
Cheb	89·0	37	e 15 23	PP	e 23 28	[+ 1]	—	—	e 45·6
Triest	91·9	40	—	—	e 23 5	[−39]	—	—	—
Ogyalla	93·4	37	—	—	e 24 29	+ 5	—	—	—
Bucharest	99·9	36	e 17 39	PP	—	—	—	—	—
Yalta	104·2	33	e 18 36	PP	—	—	—	—	—
Grozny	110·5	26	e 18 14	[−20]	—	—	—	—	—
Tiflis	111·4	29	e 19 19	PP	i 28 50	PS	—	—	e 53·6
Ksara	112·5	41	e 19 25	PP	e 29 3	PS	e 30 5	PPS	63·6
Agra E.	134·5	3	e 22 46	PP	e 32 39?	PPS	—	—	—
Bombay	142·0	13	e 19 30	[− 4]	—	—	e 23 13	PP	—
Batavia	151·9	293	19 47	[− 3]	—	—	—	—	—
Medan E.	152·0	320	e 19 56	[+ 6]	—	—	—	—	—

Additional readings :—
Little Rock iN = +7m.43s., iE = +8m.34s., iEN = +9m.14s. and +12m.18s.
St. Louis iE = +5m.6s., iPPN = +5m.19s., iPcPEN = +8m.53s., isSEN = +9m.25s.
Denver ePPE = +5m.23s., ipPPN = +5m.39s., iE = +6m.8s., ePcPE = +8m.57s., isSE = +9m.25s., iE = +9m.29s., eN = +9m.57s., isSSNE = +10m.0s.
Riverside iPcPZ = +8m.53s.
Pasadena iPcPZ = +8m.55s.
Mount Wilson iPcPZ = +8m.55s.
Haiwee iPcPZ = +8m.59s.
Chicago eP = +5m.41s., iS = +10m.21s., i = +10m.34s. and +10m.39s.
Lick eE = +6m.7s.
Branner iN = +5m.54s.
Berkeley iN = +6m.13s., eE = +7m.4s., iZ = +9m.7s., eN = +9m.10s., iE = +9m.34s., eGE = +11m.8s.
Pennsylvania e = +12m.13s.
Bozeman ePPP = +7m.10s., S = +11m.26s.
Buffalo epPcP = +9m.26s., eSS = +12m.55s.
Philadelphia iP = +7m.9s., iS = +11m.28s.
Fordham iPcP = +8m.46s.
San Juan P = +6m.57s., ePPP = +7m.35s., S = +11m.55s.
Williamstown isP = +7m.27s., iPP = +7m.42s., iSS = +13m.47s.
Ottawa SS = +13m.39s.
Harvard isSE = +12m.36s.

Continued on next page.

Weston isPEZ = +7m.15s., ePPEZ = +7m.59s., iP$_c$PZ = +9m.22s., esSN = +13m.35s.
East Machias eP = +7m.35s., PPP = +9m.19s.
Huancayo P = +7m.38s., +8m.1s., iPPP = +9m.17s., iP$_c$P = +9m.25s., i = +13m.50s., +13m.58s. and +14m.9s.
La Paz iN = +11m.5s. and +19m.4s.
Sitka eP = +8m.47s., ePPP = +11m.43s.
Honolulu iS = +17m.29s.
Scoresby Sund ? = +11m.24s. and +20m.32s.
Toledo e = +23m.6s.
Uccle i = +23m.22s.
Strasbourg isS = +23m.53s., eSS = +29m.14s.
Stuttgart eP$_c$PEZ = +13m.6s., eEZ = +14m.5s., eS = +23m.54s.
Jena ePN = +12m.54s.
Potsdam eZ = +23m.21s., eEN = +23m.33s.
Bucharest eE = +22m.37s.
Bombay eN = +36m.50s.
Batavia iN = +20m.40s., eE = +21m.28s.
Long waves were also recorded at Ferndale, Moncalieri, San Fernando, and Kodaikanal.

May 3d. 19h. 15m. 45s. Epicentre 46°·5N. 150°·7E. (as on 1937 May 18d.).

Pasadena suggests depth 100kms.

$A = -\cdot6024$, $B = +\cdot3381$, $C = +\cdot7231$; $\delta = +7$; $h = -4$;
$D = +\cdot489$, $E = +\cdot872$; $G = -\cdot631$, $H = +\cdot354$, $K = -\cdot691$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa		10·2	227	e 2 31	0	i 4 16	−11	—	—	—
Nagoya		15·3	227	3 47	+ 8	6 37	+ 7	—	—	—
Koti		18·4	230	4 19	+ 1	e 7 42	+ 1	—	—	—
Heizyo		19·7	256	e 4 34	0	—	—	—	—	—
Keizyo		19·7	251	4 35	+ 1	8 19	+ 9	—	—	—
Zinsen		20·0	252	i 4 38k	+ 1	e 8 13	− 4	—	—	e 9·5
Hukuoka B		20·1	236	4 39	+ 1	8 22	+ 3	—	—	—
Manila		40·4	227	7 41	0	i 13 42	− 8	—	—	—
Almata		50·6	295	8 17	−45	—	—	—	—	—
Andijan		54·8	294	8 59	−35	—	—	—	—	—
Tchimkent		55·7	298	9 42	+ 2	—	—	—	—	—
Samarkand		58·8	296	9 41	−21	—	—	—	—	—
Agra	E.	59·3	278	i 9 59k	− 7	17 59	−15	—	—	—
Scoresby Sund		63·2	358	10 31	− 1	—	—	—	—	—
Pasadena	Z.	66·9	64	e 10 55	− 1	—	—	—	—	—
Upsala		67·3	337	—	—	e 27 15?	SSS	—	—	—
Riverside	Z.	67·5	64	i 10 58	− 2	—	—	—	—	—
Bombay		68·3	275	i 11 4	− 1	i 20 3	− 3	—	—	—
Grozny		68·6	311	e 11 7	0	e 19 57	−12	—	—	—
Bergen		69·8	343	—	—	e 20 15?	− 8	—	—	—
Tiflis		70·3	311	i 11 17k	0	e 21 6	PS	15 38	PPP	e 37·2
Kodaikanal	E.	71·1	266	e 11 15?	− 7	—	—	—	—	—
Copenhagen		72·3	337	11 29	0	20 48	− 4	16 30	PP	38·2
Tucson		72·7	61	i 11 32	0	—	—	—	—	—
Potsdam		75·0	335	i 11 44	− 1	e 21 39	+16	—	—	e 44·3
Jena		76·7	335	e 11 55	0	—	—	—	—	—
Bucharest		77·1	323	e 11 57	0	e 22 5	PS	e 22 44	PPS	36·5
Cheb		77·3	335	—	—	e 26 15?	SS	—	—	—
De Bilt		77·4	340	i 11 57	− 1	e 21 43	− 6	—	—	e 39·2
Istanbul		78·5	320	e 12 4	0	—	—	—	—	—
Uccle	Z.	78·8	340	e 12 5	− 1	—	—	—	—	—
Kew		79·3	342	i 12 9	0	—	—	—	—	e 39·2
Stuttgart		79·4	336	12 9k	0	e 22 15	+ 5	e 23 0	PS	44·2
Strasbourg		79·9	337	i 12 15?	+ 3	—	—	—	—	46·7
Ksara		80·8	310	i 12 18k	+ 1	e 23 9	PS	—	—	42·2
Zurich		80·8	336	e 12 15k	− 2	—	—	—	—	—
Chur		81·0	335	e 12 15	− 3	—	—	—	—	—
Paris		81·1	340	e 12 18	0	e 22 26	− 2	—	—	44·2
Little Rock	N.	81·2	48	e 12 19	0	22 21	− 8	(e 17 36)	PPP	—
Neuchatel		81·6	336	e 12 22	+ 1	—	—	—	—	—
Williamstown		83·0	31	i 12 27	− 1	—	—	—	—	—
Weston	Z.	84·0	30	i 12 33k	− 1	—	—	—	—	—

For Notes see next page.

NOTES TO MAY 3d. 19h. 15m. 45s.

Additional readings :—
Koti iS = +7m.55s.
Zinsen iN = +8m.24s.
Pasadena iZ = +11m.21s.
Riverside iZ = +11m.20s.
Bombay eEN = +16m.28s., iE = +20m.36s.
Tiflis eSSSE = +29m.6s.
Copenhagen +21m.25s.
Tucson i = +11m.50s. and +11m.58s.
Cheb e = +35m.15s.?
De Bilt iZ = +12m.32s.
Kew iZ = +12m.41s.
Stuttgart eP_cPZ = +12m.41s.
Little Rock eN = +12m.58s. and +22m.38s.
Williamstown i = +12m.54s.
Weston iZ = +13m.0s.
Long waves were also recorded at Rathfarnham Castle and Jersey.

May 3d. Readings also at 0h. (Keizyo, Cheb, La Plata, Semipalatinsk, and Copenhagen), 1h. (Fordham and Tiflis), 2h. (Tiflis and Grozny), 3h. (Balboa Heights (2)), 5h. (Nagoya), 6h. (Triest, Tiflis, and near Batavia), 7h. (Harvard and San Juan), 9h. (Andijan, Samarkand, and Tchimkent), 10h. (Copenhagen), 14h. (near Tananarive), 16h. (Christchurch and Andijan (2)), 17h. (Medan), 19h. (Grozny and Tiflis), 23h. (Tucson, Pasadena, Riverside, and Mount Wilson).

May 4d. 5h. Undetermined epicentre probably Flores or Timor.
Melbourne e = 44m.43s. and 66m.57s., i = 68m.50s., L = 70m.45s.
Perth P = 52m.57s., PP = 55m.9s., PPP = 55m.32s., S = 59m.43s., PS = 60m.3s., i = 61m.3s., SS = 63m.15s., SSS = 63m.58s., SSSS = 64m.20s., L = 66m.5s.
Batavia PEZ = 53m.53s.
Manila iPZ = 55m.9s.a, iSEN = 59m.17s.
Medan ePE = 55m.52s., SEN = 60m.33s.
Zi-ka-wei eE = 59m.40s., SE = 60m.46s.
Brisbane eE = 61m.6s., eN = 61m.12s., iN = 68m.0s., eL?N = 69m.30s.
Bombay eEN = 61m.18s.
Agra eE = 61m.48s., S?E = 67m.7s., SSS?E = 71m.53s.
Tiflis ePEZ = 62m.40s., eE = 73m.4s.
Ksara eP = 63m.15s., e = 74m.25s.
Fordham i = 69m.32s.
Copenhagen 76m.30s., L = 102m.
Long waves also recorded at Wellington.

May 4d. Readings also at 1h. (Erevan), 2h. (Berkeley, Chur, Zurich, Stuttgart, Uccle, Jena, Strasbourg, Balboa Heights, Tucson, Haiwee, Mount Wilson, Pasadena, Riverside, Santa Barbara, Tinemaha, and Adelaide), 3h. (near Andijan and Samarkand), 4h. (Tananarive), 5h. (Kodaikanal), 6h. (near Christchurch), 7h. (La Paz), 8h. (near Amboina), 11h. (near Wellington), 14h. (Kodaikanal, Tchimkent, Samarkand, near Andijan, and near La Paz), 15h. (near Berkeley (2), Branner (2), Lick (2), Fresno (2), and San Francisco (2)), 16h. (Ksara and Tacubaya), 19h. (Prague, Balboa Heights, near Berkeley, Branner, and Lick), 20h. (Istanbul), 21h. (Fordham and Istanbul).

May 5d. Readings at 0h. (Fordham, Shawinigan Falls, near Ottawa, Harvard, Williamstown, and near Mizusawa), 3h. (Grozny, Balboa Heights, and La Paz), 4h. (Huancayo and near La Paz), 5h. (Wellington and near Algiers), 6h. (Fordham and near Wellington), 7h. (Samarkand and Tiflis), 8h. (Tacubaya and Triest), 9h. (Fort de France and Samarkand), 11h. (San Javier and near Helwan), 13h. (near Tiflis (3)), 14h. (Tacubaya), 15h. (near Fordham), 16h. (Tacubaya, Mount Wilson, Pasadena, Riverside, Tucson, and Mizusawa), 17h. (Tucson), 18h. (Andijan, Taikyu, near Hukuoka B, and Koti), 21h. (Oaxaca and Tacubaya), 22h. (Balboa Heights), 23h. (Balboa Heights, Tucson, and near Andijan).

May 6d. 3h. 40m. 57s. Epicentre 24°·9N. 94°·7E. (as on 1937 Sept. 9d.).

$A = -\cdot0744$, $B = +\cdot9050$, $C = +\cdot4187$; $\delta = -13$; $h = +3$;
$D = +\cdot997$, $E = +\cdot082$; $G = -\cdot034$, $H = +\cdot417$, $K = -\cdot908$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	6·3	249	e 1 36	0	i 2 45	− 5	e 1 55	P*	—
Phu-Lien		11·8	108	e 3 3	PP	—	—	—	—	e 6·6
Agra	E.	15·2	283	3 40	+ 2	e 6 42	SS	—	—	—
Bombay		21·2	258	i 4 51	+ 2	i 8 40	− 1	5 8	pP	—
Medan		21·5	169	4 57	+ 5	i 8 50	+ 3	—	—	—
Kodaikanal	E.	21·9	232	e 4 3?	−54	—	—	—	—	—
Colombo	E.	22·9	221	4 58	− 8	9 8	− 5	—	—	—
Andijan		24·4	315	e 5 26	+ 5	e 10 23	SS	—	—	—
Manila		26·7	107	e 6 47	+64	—	—	—	—	e 16·6
Tiflis	Z.	44·3	304	e 8 24	+11	e 14 32	−16	—	—	e 31·0
Ksara		51·4	293	e 9 25	+16	e 20 58	SSS	e 11 29	PP	—

Additional readings :—
Calcutta iN = +3m.7s., eN = +3m.22s.
Bombay eEN = +5m.17s., eE = +8m.47s., eEN = +9m.32s., S_cSE = +15m.56s.
Medan iN = +12m.28s., iE = +12m.33s. and +13m.48s.
Long waves were also recorded at Batavia, Copenhagen, Cheb, De Bilt, and Potsdam.

May 6d. 4h. 58m. 36s. Epicentre 45°·9N. 3°·1W.

Felt on the French Atlantic coast at St. Georges de Didonne IV (Charente-Inferieure) and on part of the coast of Brittany in the region of Fovesnant (Finisterre).

Epicentre: Atlantic 45°·55′N. 3°05′W. (Strasbourg). Depth $h = 45$kms.

See Annales de l'Institut de Physique du Globe de Strasbourg, 1938, Tome III, 2e partie, Seismologie, Mende, 1941, p. 27.

$A = +\cdot6973$, $B = -\cdot0378$, $C = +\cdot7158$; $\delta = +3$; $h = -4$;
$D = -\cdot054$, $E = -\cdot999$; $G = +\cdot715$, $H = -\cdot039$, $K = -\cdot698$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Jersey		3·4	12	e 0 53	− 2	i 1 33	− 4	e 1 4	P^*	—
Paris		4·8	51	e 1 13	− 2	2 10	− 2	1 33	P_g	—
Kew		5·9	18	i 2 31	S	(i 2 31)	− 9	3 15	S_g	—
Oxford		6·0	11	2 39	S	(2 39)	− 4	3 16	S_g	—
Toledo		6·0	186	e 1 49	P^*	e 3 38	S_g	e 2 10	P_g	—
Besançon		6·4	75	—	—	i 3 54	S_g	—	—	—
Neuchatel		7·0	78	e 1 46	0	e 3 56	S_g	—	—	—
Uccle	N.	7·0	43	e 1 58	P^*	i 3 4	− 4	i 4 2	S_g	—
Basle		7·5	73	e 1 54	+ 1	e 4 16	S_g	—	—	—
Strasbourg		7·8	66	e 2 35	P_g	3 36	+ 8	i 4 12	S_g	—
Stonyhurst		7·9	3	—	—	e 3 38	+ 8	i 4 28	S_g	—
Zurich		8·2	76	e 2 3	0	e 3 37	− 1	—	—	—
De Bilt		8·3	38	—	—	e 4 44	S_g	—	—	e 4·8
Karlsruhe		8·4	64	e 4 37	S_g	—	—	—	—	—
Granada		8·7	182	3 38	S	(3 38)	−12	4 48	S_g	—
Stuttgart		8·8	67	e 3 4	?	e 3 52	− 1	e 5 4	S_g	—
Durham	E.	8·9	6	e 3 42	S	(e 3 42)	−13	i 4 54	S_g	—
Malaga		9·2	187	e 3 35	?	e 4 25	S^*	e 4 51	S_g	—
Edinburgh		10·0	0	—	—	e 4 49	S^*	e 5 50	S_g	—
Göttingen		10·3	52	—	—	e 4 27	− 3	e 5 54	S_g	—
Jena		11·0	58	—	—	e 4 54	+ 7	—	—	—
Cheb		11·2	62	—	—	e 4 24?	−28	—	—	—
Aberdeen		11·3	3	—	—	e 5 53	SSS	—	—	—
Hamburg		11·4	43	—	—	e 4 24?	−32	—	—	—
Tacubaya	E.	80·4	288	e 12 35	+20	i 23 19	PS	—	—	—

For Notes see next page.

NOTES TO MAY 6d. 4h. 58m. 36s.

Additional readings :—
Jersey e = +1m.15s. and +1m.27s., iS = +1m.53s., SS = +1m.58s., SSS = +2m.3s., i = +2m.9s.
Paris i = +1m.40s. and +1m.54s., e = +2m.19s., iS_g = +2m.38s., iSS = +2m.44s., iSSS = +2m.46s., i = +2m.52s., iSSSS = +2m.58s., i = +3m.4s.
Kew iP_gEN = +2m.36s., iS*EN = +3m.20s., and +3m.24s., iS_g = +3m.29s., iN = +3m.45s.
Strasbourg i = +2m.54s., eSS = +4m.33s.
Stuttgart +5m.13s., eN = +5m.28s.
Durham iE = +5m.3s.
Jena eN = +4m.24s. and +4m.58s.
Aberdeen e = +6m.30s. and +7m.17s.
Long waves were also recorded at Potsdam and Copenhagen.

May 6d. 18h. 17m.25s. Epicentre 12°·5N. 86°·8W.

Damage at Telica, felt at Leon.

Epicentre : 12°·3N. 86°·7W. (U.S.C.G.S.).
12°·6N. 86°·9W. (J.S.A.).

See Annales de L'Institut de Physique du Globe de Strasbourg, 1938, Tome III, 2e partie, Seismologie, Mende 1941, p.28.

A = +·0545, B = −·9751, C = +·2151 ; δ = +6 ; h = +6
D = −·998, E = −·056 ; G = +·011, H = −·215, K = −·977.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		7·9	115	e 1 35	−24	i 3 54	S*	i 4 37	S_g	—
Merida	N.	8·8	342	i 2 22	+11	—	—	—	—	—
Oaxaca	N.	10·6	296	e 2 43	+ 7	—	—	—	—	—
Tacubaya	E.	13·7	301	i 3 25	+ 7	—	—	—	—	—
Guadalajara	N.	17·8	299	e 4 15	+ 4	—	—	—	—	—
San Juan		20·8	70	e 4 42	− 3	8 30	− 3	i 5 14	PP	i 9·2
Columbia		22·0	12	i 4 59	+ 1	9 0	+ 4	—	—	e 10·4
Little Rock		22·7	347	e 5 4	0	i 9 14	+ 5	e 5 32	PP	e 12·6
Fort de France		25·0	82	i 5 25	− 2	e 10 5	+16	6 3	PP	12·7
Huancayo		26·9	154	5 47	+ 2	10 21	+ 1	i 6 42	PP	i 11·1
Philadelphia		29·2	19	i 6 10	+ 5	i 10 54	− 4	i 8 22	P_cP	i 12·1
Chicago		29·3	357	i 6 2	− 4	e 10 58	− 1	—	—	e 12·9
Pennsylvania		29·3	13	e 6 8	+ 2	i 11 2	+ 3	e 12 20	SS	—
Tucson		29·5	314	e 6 8	0	e 11 14	+12	7 2	PP	e 12·6
Fordham		30·4	19	e 6 14	− 2	i 11 17	+ 1	—	—	—
Buffalo		31·1	11	i 6 23	+ 1	e 11 33	+ 5	i 7 27	PP	—
Williamstown		32·3	20	i 6 32	− 1	e 11 54	+ 8	i 7 27	PP	—
Harvard		32·7	21	e 6 34	− 2	e 11 52	0	e 13 44	SS	e 17·6
Weston		32·7	21	i 6 37k	+ 1	i 11 53	+ 1	e 7 37	PP	—
Vermont		33·9	17	—	—	e 12 7	− 4	—	—	i 14·4
Ottawa		34·1	13	6 49	+ 1	12 13	− 1	7 49	PP	16·6
La Paz		34·2	145	7 42	+53	i 13 10	+54	i 9 51	PP	i 16·7
Mount Wilson	Z.	35·7	313	i 7 1	− 1	—	—	—	—	—
Pasadena		35·7	313	e 7 1	− 1	—	—	—	—	e 15·1
Shawinigan Falls		36·0	16	e 7 9	+ 4	—	—	—	—	19·6
East Machias		36·2	24	e 7 5	− 1	e 12 51	+ 4	e 8 19	PP	e 15·1
Seven Falls		37·0	17	—	—	12 58	− 1	e 15 35	SS	18·6
Bozeman		38·9	333	e 8 59	PP	e 13 34	+ 6	e 9 22	PPP	e 16·3
Butte		39·9	333	e 7 48	+11	—	—	e 9 18	PP	e 17·8
Berkeley		40·4	315	—	—	e 13 55	+ 5	—	—	—
Ukiah		41·7	317	e 8 5	+13	e 14 13	+ 3	e 9 55	PPP	e 17·4
La Plata		54·5	150	—	—	17 7	− 3	—	—	31·0
Rio de Janeiro		55·3	128	e 13 10	PPP	e 15 35	?	—	—	e 26·6
Sitka		57·8	332	—	—	e 17 50	− 4	—	—	e 29·8
College		66·6	337	e 15 6	PPP	e 23 41	SS	—	—	e 27·7

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Honolulu	68·0	289	e 11 2	− 1	e 19 37	−25	e 13 25	PP	e 27·8
Rathfarnham Castle	74·4	37	i 11 54	+12	i 21 36	+20	i 22 16	PPS	35·6
Edinburgh	76·2	35	—	—	e 21 41	+ 5	—	—	e 37·6
Malaga	76·6	55	e 11 56	+ 2	e 21 42	+ 2	e 15 18	PP	41·6
Toledo	76·6	52	e 11 52	− 2	e 21 39	− 1	—	—	—
Aberdeen	76·7	34	—	—	e 21 16	−25	29 41	SSS	—
Stonyhurst	76·7	37	—	—	e 21 35	− 6	—	—	36·6
Granada	77·2	55	e 12 1	+ 4	e 22 10	PS	—	—	—
Jersey	77·2	41	e 13 0	+63	e 21 44	− 3	—	—	e 33·6
Oxford	77·5	39	—	—	e 21 36	−14	—	—	e 32·6
Kew	78·2	39	e 12 1	− 2	—	—	—	—	e 32·6
Paris	80·3	42	e 12 10	− 4	—	—	—	—	e 34·6
Uccle	81·2	39	e 12 17	− 2	e 22 24	− 5	—	—	e 33·6
De Bilt	81·5	38	12 24	+ 3	—	—	—	—	e 33·6
Strasbourg	83·7	41	e 12 36	+ 4	e 22 53	− 1	e 15 52	PP	e 34·8
Hamburg	84·0	36	e 12 33	− 1	e 22 57	0	—	—	e 38·6
Moncalieri	84·4	45	23 33	S	(23 33)	+32	—	—	—
Zurich	84·5	43	e 12 33	− 3	—	—	—	—	—
Stuttgart	84·6	41	e 12 36	0	e 22 55	[−3]	e 15 35	PP	e 35·6
Copenhagen	84·9	34	12 28	−10	—	—	—	—	36·6
Chur	85·3	43	e 12 34	− 6	—	—	—	—	—
Potsdam	86·1	37	e 12 17	−27	e 23 11	[+ 3]	e 27 47	SS	36·6
Cheb	86·3	39	e 11 35?	−70	—	—	—	—	e 42·6
Upsala	86·4	29	—	—	e 23 18	− 3	e 29 5	SS	e 38·6
Prague	87·6	39	—	—	e 23 35?	+ 3	—	—	e 37·6
Istanbul	100·4	43	e 24 20	SKS	(e 24 20)	[− 9]	—	—	—
Helwan	107·1	54	—	—	e 28 5	PS	e 29 2	PPS	—
Ksara	108·7	49	i 14 39	P	—	—	e 28 1	PS	—
Tiflis	110·0	36	e 18 35	[+ 2]	—	—	e 21 31	PPP	e 50·6
Agra E.	137·9	19	—	—	e 40 21	SS	—	—	—
Manila	141·5	313	e 21 24	?	—	—	—	—	—
Bombay E.	142·9	34	—	—	e 43 43	SSP	—	—	e 77·0

Additional readings :—
Balboa Heights eN = +3m.8s., eE = +3m.59s.
Columbia S = +9m.13s.
Little Rock iN = +5m.25s., iSN = +9m.19s., eSSE = +9m.58s.
Fort de France PPP = +6m.21s., SSS = +11m.13s.
Huancayo iP_cP = +8m.10s., iS = +10m.46s.
Philadelphia iP = +6m.19s.
Chicago P = +6m.56s.
Tucson eS = +11m.21s.
Buffalo e = +10m.37s., eSS = +13m.23s.
Williamstown iPPP = +7m.47s., iS = +11m.59s., iSS = +13m.37s.
Harvard eL_qE = +14·6m.
Weston iNZ = +6m.43s., iZ = +7m.3s., ePPPN = +7m.53s., eSSSNZ = +13m.57s., iE = +14m.7s.
Ottawa SS = +14m.5s.
East Machias eP = +7m.23s., ePPP = +9m.9s., S = +12m.57s.
Berkeley eZ = +23m.1s.
Honolulu ePPP = +15m.7s., eSS = +24m.39s.
Malaga e = +25m.26s.
Aberdeen e = +32m.3s. and +36m.7s.
Jersey ePPS = +25m.25s.
Strasbourg ePSZ = +23m.47s., ePS = +23m.53s., eE = +25m.14s., eSSE = +27m.47s., eSSSE = +32m.3s.
Stuttgart ePS = +23m.55s., e = +24m.58s.
Long waves were also recorded at Bidston, Colombo, Cape Town, Triest, Budapest, Christchurch, Göttingen, Jena, Algiers, and San Fernando.

May 6d. Readings also at 0h. (Mizusawa and Nagoya), 2h. (Weston, Graz, and Istanbul (2)), 5h. (Mizusawa, Nagoya, Fort de France, Taihoku, Kodaikanal, and Tananarive), 6h. (Mizusawa, Nagoya, near Algiers, Manila, Keizyo, and Hukuoka B), 7h. (Fordham), 8h. (Samarkand and Andijan), 9h. (Samarkand), 14h. (Copenhagen and La Paz), 16h. (Fort de France and Grozny), 17h. (Kodaikanal), 21h. (Balboa Heights).

May 7d. Readings at 2h. (Grozny, Ksara, Belgrade, Bucharest, Florence, Triest (2), Cheb (2), De Bilt (2), Sofia (2), Sebastopol, Simferopol, Theodosia, Yalta, Tiflis, and Taihoku), 3h. (Balboa Heights, Copenagen (2), and Samarkand), 6h. (Copenhagen), 8h. (Ksara, Oaxaca, Tacubaya, and Tiflis), 11h. (Aberdeen and Keizyo), 12h. (Keizyo), 14h. (Fort de France, Mount Wilson, Pasadena, and Keizyo), 16h. (Tacubaya, Andijan, and Tiflis), 17h. (Andijan and Samarkand), 18h. (Tacubaya), 21h. (Balboa Heights, Bucharest, and La Paz).

May 8d. 13h. 47m. 54s. Epicentre 49°·0S. 98°·5E.

$A = -\cdot0973$, $B = +\cdot6514$, $C = -\cdot7525$; $\delta = +5$; $h = -5$;
$D = +\cdot989$, $E = +\cdot148$; $G = +\cdot111$, $H = -\cdot744$, $K = -\cdot659$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Perth		21·5	44	4 44	− 8	8 34	−13	—	—	—
Adelaide		32·6	79	i 6 32	− 3	i 11 46	− 5	i 7 37	PP	14·5
Melbourne		35·0	88	6 56	0	12 28	0	14 46	SS	16·3
Riverview		41·5	89	e 7 52	+ 2	e 14 7	0	e 17 6	SS	e 18·8
Sydney		41·5	89	e 7 45	− 5	i 14 11	+ 4	e 17 8	SSS	e 18·7
Batavia		43·1	12	8 5	+ 1	i 14 33	+ 3	i 9 54	PP	e 18·1
Brisbane	N.	46·8	83	i 8 30a	− 3	i 15 18	− 6	i 10 24	PP	—
~~Christchurch~~		~~49·6~~	~~113~~	~~9 0~~	~~+ 5~~	~~i 16 15~~	~~+12~~	i 11 7	PP	~~24·6~~
Tananarive		50·6	288	e 10 38	PP	e 16 29	+12	—	—	19·8
Amboina		51·7	39	9 12	+ 1	16 31	− 1	—	—	—
Wellington		52·2	112	e 9 17	+ 2	i 16 42	+ 3	i 20 47	SS	25·0
Medan	E.	52·4	0	e 9 18	+ 2	i 16 43	+ 1	—	—	—
Colombo	E.	58·0	339	9 18	−39	18 2	+ 5	—	—	—
Cape Town		59·1	253	—	—	i 18 33	+22	i 25 13	SSS	i 28·9
Kodaikanal	E.	61·8	337	e 10 26	+ 3	i 18 54	+ 8	i 22 52	SS	—
Manila		66·4	24	i 10 51a	− 2	i 19 33	−10	24 19	SS	31·1
Phu-Lien		69·9	8	e 11 17	+ 2	20 23	− 1	—	—	—
Bombay		71·3	335	e 11 20	− 3	e 21 6?	+25	i 15 43	PPP	—
Calcutta		71·8	352	—	—	20 49	+ 3	—	—	—
Hong Kong		72·3	15	—	—	20 53	+ 1	—	—	—
Dehra Dun	N.	81·1	343	e 12 40?	+22	e 21 56?	−32	e 27 43?	SS	e 39·5
Andijan		92·3	340	e 13 24	+ 9	—	—	—	—	46·1
Almata		93·8	344	e 13 8	−14	—	—	—	—	43·1
Helwan		98·7	306	e 18 0	PP	e 22 12	?	e 27 12	PPS	—
Ksara		99·5	311	e 13 57	+11	e 32 29	SS	e 26 51	PS	—
Rio de Janeiro	E.	100·7	216	e 24 44	S	(e 24 44)	[+14]	e 32 54	SSP	e 42·1
Tiflis		101·9	322	e 14 11	+14	e 24 47	[+11]	e 31 38	SS	e 42·1
Grozny		102·9	323	e 14 11	+10	—	—	—	—	—
Istanbul		108·5	312	e 14 54	P	26 51	{+57}	28 21	PS	e 52·9
La Paz	N.	113·7	194	19 58	PP	—	—	—	—	—
Honolulu		114·7	85	—	—	e 29 11	PS	e 35 21	SS	e 51·3
Belgrade	N.3.	115·6	309	—	—	e 27 56	{+72}	e 28 47	PS	e 61·8
Huancayo		119·0	187	—	—	e 26 4	[+17]	30 11	PS	i 49·8
Algiers		119·9	292	—	—	e 25 6	[−44]	e 35 27	SS	e 63·1
Prague		122·1	311	—	—	—	—	e 41 6?	SSS	e 60·1
Cheb		123·1	310	e 22 6?	PPP	—	—	—	—	e 67·1
Stuttgart		124·0	307	e 21 6	PP	e 23 28	?	—	—	65·1
Potsdam		124·2	313	e 21 18	PP	—	—	—	—	e 60·1
Malaga		124·5	288	e 26 5	S	(e 26 5)	[+ 1]	38 13	SSP	60·1
Strasbourg		124·6	306	e 20 56	PP	—	—	e 33 34	PPS	e 60·1
San Fernando		125·5	286	e 26 48	S	(e 26 48)	[+41]	e 38 17	SS	66·6
Toledo		126·2	291	—	—	—	—	e 38 15	SS	e 57·5
Hamburg		126·4	312	—	—	e 32 6?	PPS	—	—	e 64·1
Copenhagen		126·5	316	24 6?	PPP	—	—	—	—	54·1
Upsala		126·7	321	—	—	e 38 6?	SS	—	—	e 61·1
Paris		127·6	304	e 21 30	PP	—	—	—	—	64·1
Uccle		127·7	307	—	—	e 33 6?	PPS	e 38 12	SS	e 53·1
De Bilt		128·0	309	—	—	e 31 6	PS	—	—	e 53·1
Jersey		130·3	303	e 22 56	PP	e 38 24	SS	—	—	e 64·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kew		130·6	306	—	—	e 39 1	SS	—	—	e 62·1
Oxford		131·2	306	—	—	e 39 1	SS	—	—	e 54·3
Durham		132·9	309	—	—	e 39 29	SS	—	—	—
Bidston		133·0	307	—	—	e 39 31	SS	—	—	e 58·1
Edinburgh		134·2	310	—	—	e 39 45	SS	—	—	68·1
Fort de France		142·0	213	e 19 41	[+ 7]	—	—	—	—	—
College		142·5	39	e 26 22	PPP	e 41 20	SS	e 33 46	PS	e 56·4
San Juan		147·0	209	e 20 2	[+19]	—	—	e 23 3	PP	61·3
Santa Barbara		148·4	103	i 19 52	[+ 7]	—	—	—	—	—
Berkeley		148·7	95	e 19 54	[+ 9]	—	—	—	—	e 70·5
La Jolla	z.	148·9	107	e 19 55	[+10]	—	—	—	—	—
Pasadena	z.	149·2	105	e 19 52	[+ 6]	—	—	—	—	61·8
Mount Wilson	z.	149·3	105	e 19 53	[+ 7]	—	—	—	—	—
Riverside	z.	149·6	105	e 19 54	[+ 7]	—	—	—	—	—
Haiwee	z.	150·5	101	i 20 1	[+13]	—	—	—	—	—
Tinemaha		150·9	100	e 20 1	[+12]	—	—	—	—	—
Tucson		152·4	115	e 20 0k	[+ 9]	e 43 21	SS	23 36	PP	e 62·3
Bozeman		159·8	87	e 37 52	PPS	e 44 21	SS	—	—	e 63·7
Little Rock		163·7	146	e 20 31	[+27]	—	—	—	—	—
St. Louis	E.	167·9	145	e 24 27	PP	i 26 45	[−25]	—	—	—
East Machias		169·3	251	26 21	?	27 18	[+ 7]	e 45 50	SS	e 67·4
Philadelphia		169·9	208	i 25 36	PP	e 46 23	SS	e 53 13	SSS	e 76·1
Fordham		170·2	217	i 20 19	[+10]	i 46 47	SS	i 25 35	PP	—
Weston		170·3	231	e 20 17	[+ 8]	e 32 18	{+14}	e 25 28	PP	e 80·1
Harvard		170·5	230	e 20 21	[+12]	e 32 22	{+17}	e 25 32	PP	78·6
Williamstown		171·4	228	e 21 42	PKP_2	e 29 33	PPP	e 23 18	PKS	—
Chicago		171·7	214	—	—	46 47	SS	e 53 27	SSS	e 68·5
Seven Falls		172·6	259	e 26 12	PP	e 47 0	SS	—	—	72·1
Vermont		172·8	235	—	—	e 47 41	SS	—	—	e 80·8
Ottawa		174·7	230	e 20 16	[+ 5]	—	—	25 47	PP	76·1

Additional readings :—
Adelaide i = +7m.52s., +8m.35s., and +13m.58s.
Riverview eP = +7m.55s., iE = +14m.12s., iN = +14m.17s.
Sydney e = +13m.45s.
Batavia iPN = +8m.8s.
Brisbane eN = +11m.54s., iSS?N = +18m.54s.
Christchurch SS = +19m.33s., L_q = +21m.25s.
Tananarive SE = +16m.35s.
Wellington i = +9m.30s., +19m.1s., L_q = +22m.32s.
Medan iEN = +9m.27s.
Kodaikanal eE = +24m.47s., iE = +29m.4s.
Bombay iEN = +16m.43s., eEN = +19m.52s. and +25m.10s.
Tiflis eZ = +16m.56s., eE = +27m.22s.
Belgrade eNW = +34m.56s.
Huancayo iSS = +37m.3s., eSSS = +41m.45s.
Algiers e = +49m.6s.
Prague e = +55m.6s.?
Stuttgart e = +33m.6s., eN = +36m.12s., e = +37m.24s., eZ = +38m.13s. and +38m.53s.
Strasbourg e = +21m.14s., +21m.54s., and +25m.14s.
Jersey e = +54m.24s. and +60m.8s.
Edinburgh e = +48m.6s.?
College eSSS = +45m.52s.
Berkeley iZ = +19m.57s., +20m.0s., eE = +20m.43s., eZ = +20m.56s.
Pasadena $iPKP_2$ = +19m.56s.
Mount Wilson $iPKP_2$ = +19m.57s., iPKPZ = +20m.3s., iZ = +20m.58s.
Riverside $iPKP_2Z$ = +19m.58s.
Tucson iPKP = +20m.17s.
Little Rock eEN = +21m.20s.
St. Louis eE = +22m.0s., iE = +40m.12s.
East Machias ePPP = +29m.21s., ePS = +38m.11s., eSSS = +53m.5s.
Fordham i = +21m.39s., e = +34m.22s., i = +37m.30s.
Weston $ePKP_2Z$ = +21m.39s., iSSEN = +46m.33s.
Harvard $ePKP_2$ = +21m.39s., eSSN = +46m.42s.
Williamstown e = +25m.8s. and +25m.29s.
Vermont ePS = +37m.46s.
Ottawa e = +21m.58s., +26m.36s., eZ = +29m.15s., e = +32m.39s., iZ = +73m.26s.
Long waves were also recorded at Hyderabad, Göttingen, Budapest, Bergen, Triest, Jena, Moncalieri, La Plata, Sofia, Stonyhurst, Rathfarnham Castle, and Chatham Ils.

May 8d. 14h. 40m. 33s. Epicentre 2°·5S. 122°·0E.

Phases of distant stations obscured by the long waves of the previous quake.

W. A. Lynch.

"Deep-focus earthquake of May 8, 1938," Earthquake Notes, Vol. II, No. 3, Washington, Jan., 1940, depth approx. 700km

$A = -\cdot5294$, $B = +\cdot8473$, $C = -\cdot0433$; $\delta = +6$; $h = +7$;
$D = +\cdot848$, $E = +\cdot530$; $G = +\cdot023$, $H = -\cdot037$, $K = -\cdot999$.

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.
Amboina		6·3	101	1 40	+ 7	i 2 54	+ 8	i 13 25	S_cS	—
Malabar		15·2	251	i 3 19	− 3	i 5 56	− 7	—	—	—
Batavia		15·5	256	3 22	− 4	5 45	−25	—	—	—
Manila		17·0	356	i 4 3	PP	i 7 38	SS	—	—	10·0
Medan		24·1	285	4 55	+ 4	i 8 48	+ 2	—	—	—
Taito		25·1	358	5 9	+ 8	9 12	+10	—	—	—
Phu-Lien		27·6	328	i 5 38	+15	e 10 2	+20	—	—	—
Titizima		35·3	32	6 24	− 6	11 25	−17	—	—	—
Miyazaki		35·4	14	6 34	+ 4	11 48	+ 4	—	—	—
Hirosima		38·0	14	6 53	+ 1	12 22	− 1	—	—	—
Kobe		39·0	17	7 1	+ 1	12 37	− 1	—	—	—
Osaka		39·1	17	6 57	− 4	12 38	− 1	8 28	PP	—
Kameyama		39·6	18	7 5	0	12 45	− 2	—	—	—
Nagoya		40·0	19	7 10	+ 1	12 48	− 5	—	—	—
Keizyo		40·1	5	7 15	+ 5	—	—	—	—	—
Toyama		41·5	18	7 17	− 4	13 12	− 3	—	—	—
Oiwake		41·6	19	7 19	− 3	13 12	− 4	—	—	—
Kakioka		42·1	21	7 18	− 8	13 12	−11	—	—	—
Mizusawa		45·0	20	e 7 47	− 2	i 14 1	− 4	—	—	—
Sapporo		48·6	18	8 12	− 5	14 49	− 7	—	—	—
Andijan		62·4	319	e 9 50	− 4	17 50	− 7	—	—	—
Tchimkent		65·0	320	e 10 3	− 8	—	—	—	—	—
Samarkand		65·5	315	e 8 10	?	e 18 20	−15	—	—	—
Istanbul		93·9	310	e 18 36	PPP	27 15	?	—	—	—
Sofia		98·1	313	—	—	e 25 38	PS	—	—	—
Neuchatel		108·7	320	e 18 29	PP	—	—	—	—	—
Aberdeen		110·0	332	e 19 3	PP	—	—	—	—	—
Ukiah		110·7	49	e 18 46	PP	e 24 45	[+ 4]	e 28 10	PS	e 48·1
Haiwee	z.	115·5	51	i 17 36	[−32]	—	—	—	—	—
Butte		115·8	39	e 23 43	?	—	—	—	—	—
Mount Wilson	z.	115·9	54	i 17 35	[−33]	—	—	i 18 52	PP	—
Pasadena	z.	115·9	54	i 17 35	[−33]	—	—	—	—	—
Riverside	z.	116·6	54	i 17 38	[−32]	—	—	—	—	—
Tucson		122·3	53	e 17 49a	[−32]	—	—	—	—	—
Little Rock		134·7	42	e 18 12	[−32]	—	—	—	—	—
Williamstown		137·3	15	e 18 14	[−35]	—	—	—	—	—
Harvard	z.	138·4	14	i 18 17	[−34]	—	—	e 22 27?	PP	—
Weston	z.	138·5	14	i 18 17a	[−35]	—	—	—	—	—
Fordham		139·2	17	i 18 21	[−32]	—	—	—	—	—
Columbia		142·0	31	e 19 55	[+57]	—	—	—	—	—
La Paz	z.	158·6	152	18 47	[−36]	—	—	—	—	—

Additional readings :—
Amboina iSN = +2m.57s.
Manila S?EN = +7m.52s.
Medan iN = +9m.9s., iE = +9m.42s., iN = +14m.27s.
Osaka PPP = +8m.42s., SS = +15m.8s.
Mizusawa iSE = +14m.4s.
Istanbul P = +23m.6s., S = +29m.15s., PPS = +32m.15s.
Sofia eEN = +28m.17s.
Aberdeen e = +23m.51s.
Ukiah epPPP = +22m.37s., eSS = +32m.57s.
Little Rock eEN = +20m.44s., eN = +26m.51s.
Williamstown i = +18m.21s. and +20m.55s.
Harvard ePPZ = +20m.54s.
Weston iZ = +20m.57s.
Fordham i = +21m.2s.
Columbia epPP = +23m.57s., ePPS = +35m.3s.
Long waves were also recorded at Stuttgart.

May 8d. Readings also at 1h. (Santiago and Tacubaya), 3h. (Philadelphia (2), Balboa Heights, Harvard, Samarkand, and Andijan), 4h. (Keizyo), 5h. (San Juan), 6h. (Keizyo), 11h. (Phu-Lien and Calcutta), 13h. (Santiago, Medan, Phu-Lien, Calcutta, San Fernando, Agra, Bombay, and San Javier), 14h. (Tiflis and Grozny), 15h. (Medan), 16h. (Taihoku), 17h. (Riverside, Pasadena, and Mount Wilson), 21h. (Tucson), 22h. (Andijan).

May 9d. 10h. 46m. 5s. Epicentre 36°·2N. 139°·9E. (as on 1937 Sept. 28d.).

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

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Tukubasan	0·2	84	0 16	+ 6	0 25	+ 9
Tokyo Cen. Met. Obs.	0·5	192	i 0 17 a	+ 3	i 0 29	+ 6
Tokyo Imp. Univ.	0·5	192	0 16	+ 2	0 27	+ 4
Komaba	0·6	198	0 15	0	0 27	+ 1
Mitaka	0·6	208	0 16	+ 1	0 28	+ 2
Titibu	0·7	252	0 17	0	0 28	0
Kamakura	0·9	198	0 16	P_g	0 29	S_g
Kiyosumi	1·1	168	0 17	− 5	0 31	S_g
Koyama	1·1	221	0 17	− 5	0 32	S_g
Misaki	1·1	192	0 16	− 6	0 30	S_g
Susaki	1·7	206	0 26	− 5	0 46	− 8
Nagoya	2·6	247	0 42	− 2	1 19	− 2

May 9d. 15h. Epicentre near Sino-Burmese frontier. The observations do not lead to a consitent epicentre, and are recorded as given by stations :—

Phu-Lien ePn = 42m.13s., eS = 43m.29s., L = 43m.54s.
Calcutta ePN = 43m.18s., iSN = 45m.25s., eSSN = 45m.43s., eLN = 45m.57s.
Hyderabad eP = 44m.41s., S = 48m.36s.
Agra PE = 44m.52s., SE = 48m.40s.
Kodaikanal ePE = 45m.32s., iS = 49m.50s.
Manila ePNZ = 45m.35s., S = 49m.16s., L = 51m.10s.
Bombay eN = 45m.43s., ePPEN = 46m.17s., iSEN = 50m.8s., iEN = 55m.10s.
Colombo ePE = 46m.20s., S?E = 49m.46s.
Almata e = 46m.32s.
Andijan e = 46m.37s.
Dehra Dun eSN = 48m.59s.?, eL?N = 53m.17s.?
Medan PE = 49m.36s., SEN = 50m.16s.
Ksara eP = 50m.43s., e = 53m.37s., eS = 58m.53s., eSS = 63m.3s.
Batavia eN = 53m.59s.
Taikyu e = 56m.0s.
Husan e = 56m.7s.
Hukuoka B S? = 56m.22s.
Tiflis eE = 60m.15s., eLN = 68m.
Stuttgart e = 77m.0s., eL = 81m.30s.
Long waves were also recorded at Upsala, Potsdam, Uccle, De Bilt, and Strasbourg.

May 9d. Readings also at 2h. (Keizyo, Butte, Berkeley, Ferndale, Mount Wilson, Pasadena, Tinemaha, Tucson, and St. Louis), 3h. (Keizyo (2), Harvard, Butte, Tucson (2), Mount Wilson (2), Koti, near Nagoya, near Berkeley (2), and Ferndale (2)), 4h. (near Copiapo), 5h. (near Wellington), 6h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Fordham, Harvard, Weston, Williamstown, Tucson, and La Paz). 7h. (near La Paz), 9h. (near Manila), 10h. (Balboa Heights, San Juan, Ksara, Tiflis, and near Mizusawa), 14h. (Samarkand, Copenhagen, Berkeley, Branner, Fresno, Lick (2), Huancayo, and La Paz), 15h. (near Sebastopol and near Hong Kong), 17h. (Samarkand and near Algiers), 18h. (Tucson), 19h. (near Ferndale), 21h. (Erevan, Mount Wilson, Pasadena, Tucson, and near La Paz).

May 10d. Readings at 0h. (Almata, Samarkand, Erevan, and near Frunse), 1h. (Mount Wilson, Tucson, Merida, Oaxaca, Tacubaya, and near Copiapo), 2h. (near Little Rock and near Neuchatel), 3h. (Balboa Heights), 5h. (Keizyo), 10h. (Samarkand, Tiflis, Tucson, near Berkeley (4), Branner (4), Fresno (4), Lick (4), San Francisco (3), Haiwee, Mount Wilson, Pasadena, Santa Barbara, and Tinemaha), 11h. (Mount Wilson, Pasadena, Tucson, Oaxaca, and Tacubaya), 12h. (Oaxaca, Tacubaya, and near Manila), 14h. (near Manila and near Mizusawa), 15h. (near Manila (2) and near Tananarive), 17h. (near Manila), 19h. (near Algiers (2)), 22h. (Tiflis, near Algiers, and near Manila), 23h. (Oaxaca, Tacubaya, Branner, Berkeley, Fresno, and near Lick).

May 11d. 3h. 9m. 43s. Epicentre 40°·6N. 142°·9E.

Slight at Miyako, Hatinohe, Morioka, Hakodate, and Aomori.

Epicentre near Hatinohe, 40°·6N. 142°·9E. Slightly deep.

Macroseismic radius 200-300kms.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1938, Tokyo, 1940, pp. 33-34. Macroseismic chart, p. 33.

$A = -\cdot6073$, $B = +\cdot4593$, $C = +\cdot6482$; $\delta = -7$; $h = -2$;
$D = +\cdot603$, $E = +\cdot798$; $G = -\cdot517$, $H = +\cdot391$, $K = -\cdot761$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hatinohe		1·0	266	0 20k	− 1	0 35	− 1	—	—	—
Miyako		1·2	216	0 20k	− 4	0 34	− 7	—	—	—
Urakawa		1·5	357	0 36	+ 8	0 56	+ 7	—	—	—
Aomori		1·6	278	0 47k	S	(0 47)	− 4	1 14	?	—
Morioka		1·6	235	0 28k	− 2	0 49	− 2	—	—	—
Hakodate		2·0	306	0 43	P_g	1 23	+21	—	—	—
Mizusawa		2·0	223	i 0 35	0	i 0 58	− 4	—	—	—
Muroran		2·3	320	0 39	− 1	1 8	− 1	—	—	—
Mori		2·3	311	0 42	+ 2	1 9	0	—	—	—
Obihiro		2·3	6	0 35	− 5	1 4	− 5	—	—	—
Sapporo		2·7	335	0 37	− 8	1 26	S*	—	—	—
Asahigawa		3·2	353	0 53	+ 1	1 30	− 2	—	—	—
Hukusima		3·4	215	0 51	− 4	1 37	0	—	—	—
Nemuro		3·4	36	0 53	− 2	1 30	− 7	—	—	—
Niigata		4·0	229	1 28	P_g	2 5	S*	—	—	—
Mito		4·6	205	1 9	− 3	1 39	−28	—	—	—
Utunomiya		4·7	211	1 11	− 3	2 25	S*	—	—	—
Kakioka		4·9	207	1 11	− 6	1 48	−27	—	—	—
Takada		5·0	227	1 32	P*	2 48	S_g	—	—	—
Maebasi		5·1	217	1 19	− 1	2 40	S_g	—	—	—
Tyosi		5·1	199	1 17	− 3	2 12	− 8	—	—	—
Kumagaya		5·2	213	1 19	− 2	2 28	+ 6	—	—	—
Nagano		5·4	225	1 24	0	2 42	S*	—	—	—
Oiwake		5·4	220	1 25	+ 1	2 36	+ 8	—	—	—
Tokyo, Cen. Met. Ob.		5·5	207	1 23	− 2	2 33	S*	—	—	—
Yokohama		5·7	208	1 36	+ 8	2 56	S*	—	—	—
Wazima		5·7	237	1 30	+ 2	2 39	+ 4	—	—	—
Matumoto		5·8	224	1 39	P*	—	—	—	—	—
Toyama		5·9	230	1 31	0	2 41	+ 1	—	—	—
Hunatu		6·0	213	1 31	− 1	2 57	S*	—	—	—
Kohu		6·0	216	1 31	− 1	2 54	S*	—	—	—
Misima		6·3	211	1 41	+ 5	2 54	+ 4	—	—	—
Numadu		6·4	212	1 34	− 4	3 1	+ 8	—	—	—
Omaesaki		7·0	213	3 8	S	(3 8)	0	4 38	?	—
Gihu		7·0	225	1 45	− 1	3 19	+11	—	—	—
Hamamatu		7·2	216	2 40	P_g	4 5	S_g	—	—	—
Nagoya		7·2	223	e 1 49	0	3 31	S*	—	—	—
Ibukisan		7·3	226	2 0	+10	3 27	+12	—	—	—
Hikone		7·5	227	1 53	0	—	—	—	—	—
Kameyama		7·6	224	2 0	+ 5	4 15	S_g	—	—	—
Hatidyozima		7·9	199	2 13	P*	3 14	−16	—	—	—
Osaka B		8·4	227	2 10	+ 4	4 33	S_g	—	—	—
Pasadena	z.	74·7	58	i 11 51	+ 8	—	—	—	—	—
Mount Wilson	z.	74·9	58	e 11 50	+ 6	—	—	—	—	—

Long waves were also recorded at Tiflis, Copenhagen, and De Bilt.

May 11d. 14h. 44m. 45s. Epicentre 16°·8N. 100°·7W.

See Annales de L'Institut de Physique du Globe de Strasbourg, 1938, Tome III, 2e partie Seismologie Mende, 1941, p. 29.

Epicentre 15°·9N. 101°·2W. (U.S.C.G.S.).
16°·8N. 100°·7W. (J.S.A.).

$A = -\cdot1778$, $B = -\cdot9412$, $C = +\cdot2872$; $\delta = -5$; $h = +5$;
$D = -\cdot983$, $E = +\cdot186$; $G = -\cdot053$, $H = -\cdot282$, $K = -\cdot958$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	E.	3·0	29	0 50	0	—	—	—	—	—
Puebla	E.	3·3	47	0 58	P*	—	—	—	—	—
Oaxaca	N.	3·8	85	1 9	P*	—	—	—	—	—
Manzanillo	N.	4·1	304	0 53	−12	—	—	—	—	—
Guadalajara	N.	4·6	328	1 2	−10	—	—	—	—	—
Vera Cruz	Z.	5·0	61	1 23	+ 5	—	—	—	—	—
Merida	N.	11·3	67	e 2 53	+ 7	—	—	—	—	—
Chihuahua	Z.	12·8	339	i 2 56	−10	—	—	—	—	—
Tucson		17·9	331	4 10k	− 2	7 25	− 5	i 4 17	PP	i 8·4
Little Rock		19·4	21	e 4 27	− 3	i 8 20	SS	i 4 48	PP	e 10·5
La Jolla	Z.	21·9	321	e 4 53	− 4	—	—	—	—	—
Balboa Heights		22·0	108	e 4 15	−43	—	—	—	—	—
Cape Girardeau		22·7	23	e 5 0	− 4	e 9 3	− 6	e 5 21	PP	—
Denver		23·1	352	e 5 8	0	e 9 24	+ 8	e 5 35	PP	e 11·4
Mount Wilson		23·3	233	e 5 7	− 3	—	—	—	—	—
Pasadena		23·3	233	i 5 9	− 1	e 9 27	+ 7	i 5 57	PPP	e 10·5
Florissant	E.	23·7	233	i 6 1	PPP	i 10 15	SSS	—	—	—
Santa Barbara		24·5	20	e 5 18	− 4	—	—	—	—	—
Columbia		24·6	41	e 5 23	0	e 9 51	+ 9	e 6 15	PPP	e 11·5
Haiwee	Z.	24·6	326	e 5 25	+ 2	—	—	—	—	—
Tinemaha		25·5	326	e 5 29	− 3	—	—	—	—	—
Fresno	N.	26·1	324	e 5 43	+ 6	e 11 2	SS	—	—	—
Chicago		27·4	20	e 5 45	− 4	e 10 39	+11	e 6 25	PP	i 11·5
Lick	N.	27·6	323	i 5 54	+ 3	—	—	—	—	e 14·2
Branner		27·9	323	—	—	e 11 17	+40	e 12 14	SSS	—
Berkeley		28·3	323	i 5 53	− 4	12 30	SSS	—	—	—
San Francisco	N.	28·3	322	—	—	e 12 8	SS	—	—	—
Ukiah		29·7	324	e 6 13	+ 3	e 10 36	−30	e 6 52	PP	12·1
Bozeman		30·1	347	e 6 12	− 1	e 11 7	− 5	e 7 16	PP	12·1
Georgetown		30·2	38	6 12	− 2	11 15	+ 2	6 51	PP	—
Butte		30·8	346	e 6 20	0	11 27	+ 4	e 7 10	PP	i 12·1
Pennsylvania		31·0	34	e 6 19	− 2	e 11 50	+24	7 18	PP	e 15·0
Buffalo		32·0	31	e 6 30	0	e 11 54	+12	e 13 44	SS	e 15·7
Philadelphia		32·0	39	i 6 27k	− 3	i 11 45	+ 3	i 8 26	PPP	i 14·3
San Juan		33·0	81	e 6 34	− 5	e 12 9	+12	e 7 39	PP	i 13·3
Fordham		33·3	38	e 6 41	0	i 12 6	+ 4	—	—	—
Williamstown		34·9	37	i 6 53	− 2	i 12 35	+ 8	i 8 0	PP	—
Ottawa		35·4	30	6 57	− 3	12 39	+ 5	8 30	PPP	18·7
Saskatoon		35·6	354	7 2	+ 1	12 45	+ 7	—	—	18·2
Harvard		35·7	38	i 7 1	− 1	i 12 38	− 1	i 8 5	PP	i 25·2
Weston		35·8	38	i 7 2	− 1	i 13 37	+56	i 8 5	PP	e 17·6
Vermont		36·0	34	e 7 5	0	e 12 45	+ 1	—	—	e 15·8
Shawinigan Falls		37·6	32	7 23	+ 5	13 21	+13	—	—	18·2
Fort de France		38·1	87	e 7 29	+ 7	—	—	—	—	e 17·2
Huancayo		38·1	137	e 7 11	−11	e 12 38	−38	e 8 37	PP	14·9
Seven Falls		39·0	32	7 29	− 1	13 40	+11	—	—	19·2
East Machias		39·5	38	e 7 36	+ 2	e 13 42	+ 5	e 9 16	PP	e 16·7
Halifax		41·7	40	e 7 51	− 1	e 14 45	+35	—	—	24·2
La Paz	Z.	46·1	133	i 8 33	+ 5	i 15 19	+ 5	10 19	PP	23·7
Sitka		47·8	337	e 9 2	+21	—	—	e 11 10	PPP	e 24·4
Honolulu		53·9	285	e 11 0	PP	e 16 18	−44	e 12 3	PPP	e 21·4
Ivigtut		57·8	27	—	—	18 14	+20	18 44	PPS	—
La Plata		65·5	141	11 15	+28	19 33	+ 1	—	—	31·5
Rio de Janeiro	E.	68·7	123	e 11 45	+38	—	—	—	—	e 34·2
	N.	68·7	123	e 12 15	+68	—	—	—	—	e 34·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rathfarnham Castle		79·3	37	i 11 45	−24	i 21 55	−14	i 14 48	PP	39·2
Edinburgh		80·4	35	e 12 15?	0	i 23 31	PPS	i 28 7	SS	39·2
Aberdeen		80·6	33	e 12 40	+24	e 22 47	[+16]	—	—	40·1
Bidston		81·1	37	—	—	e 22 35	+ 7	—	—	e 40·2
Durham		81·6	35	e 12 23	+ 2	i 21 39	−54	—	—	—
Oxford		82·7	38	e 12 35	+ 8	i 23 44	PS	—	—	e 34·2
Jersey		82·9	40	e 13 15	+47	e 24 23	PPS	e 19 8	?	e 41·3
Bergen		83·2	28	16 32	PP	23 49	+60	—	—	63·2
Kew		83·3	38	i 12 35	+ 5	i 22 49	− 1	i 16 29	PP	e 40·2
San Fernando		83·7	54	e 12 51	+19	e 23 56	PS	e 29 43	SS	43·2
Toledo		84·4	50	i 12 42	+ 6	e 23 16	+15	e 23 55	PS	—
Malaga		85·0	53	e 12 47	+ 9	e 23 48	PS	—	—	49·2
Granada		85·5	53	i 12 45	+ 4	e 23 29	+17	—	—	—
Paris		85·9	40	e 13 8	+25	23 24	+ 8	e 14 11	pP	42·2
De Bilt		86·3	36	e 12 48	+ 3	e 23 26	+ 6	—	—	e 40·2
Uccle		86·3	38	e 12 24	−21	e 23 28	+ 8	e 16 45	PP	e 41·2
Hamburg		88·4	34	e 13 44	+49	e 23 55	+15	—	—	e 43·2
Copenhagen		88·7	31	e 13 47	+50	23 45	+ 1	16 54	PP	39·2
Upsala		88·9	27	e 17 29	?	e 24 12	+28	e 24 56	PS	e 42·2
Göttingen		89·2	35	e 17 15?	PP	e 24 3	+16	—	—	e 56·2
Strasbourg		89·2	39	e 13 1	+ 2	e 23 50	+ 3	e 16 29	PP	e 41·2
Neuchatel		89·4	40	—	—	e 23 30	−19	—	—	—
Stuttgart		90·0	39	e 13 11	+ 8	e 23 45	− 9	e 16 43	PP	e 46·2
Jena		90·4	36	e 16 27	PP	e 24 15	+17	—	—	e 40·2
Algiers		90·6	51	e 13 14	+ 9	e 24 54	PS	—	—	65·2
Potsdam		90·6	33	14 4?	+59	e 24 15?	+15	25 15	PS	e 44·2
Moncalieri		90·7	41	(16 55)	PP	—	—	—	—	16·9
Cheb		91·3	36	e 16 50	PP	e 24 54	PS	—	—	e 55·2
Prague		92·4	35	e 17 15?	PP	e 26 15?	PS	—	—	44·2
Triest		94·2	39	17 7	PP	e 24 8	[+11]	—	—	e 47·2
Wellington		96·9	229	—	—	e 24 15?	[+ 4]	—	—	—
Belgrade	N.W.	98·7	38	e 18 1	PP	e 25 12	+ 2	—	—	e 59·0
Bucharest		102·2	35	21 15	PPP	i 24 40	[+ 2]	—	—	—
Simferopol		106·1	31	22 6	?	—	—	—	—	—
Brisbane		111·7	247	e 18 27	[− 9]	e 25 15	[− 4]	29 21	PPS	—
Grozny		112·7	25	18 56	[+18]	—	—	—	—	—
Tiflis		113·6	27	e 18 38	[− 2]	—	—	e 19 40	PP	e 52·2
Helwan		114·5	45	e 19 45	PP	i 26 33	{− 3}	e 29 43	PS	—
Ksara		114·8	39	e 15 48	?	e 29 34	PS	e 19 46	PP	56·7
Melbourne		119·2	236	—	—	e 26 41	{−27}	37 13	SSP	55·2
Cape Town		123·2	120	e 22 47	PPP	e 36 44	SS	—	—	68·1
Manila		128·4	305	e 21 2	PP	—	—	—	—	—
Agra	E.	136·3	1	e 20 22	[+58]	40 50	SSP	45 50	SSS	—
Calcutta	N.	139·9	347	e 20 26	[+56]	e 30 3	{+43}	e 41 42	SSP	e 67·6
Bombay	N.	144·0	11	e 19 39	[+ 2]	—	—	—	—	—
Batavia	Z.	151·1	288	e 19 58	[+ 9]	—	—	—	—	—
Medan	E.	152·1	315	e 20 17	[+26]	—	—	—	—	—
Kodaikanal	E.	153·1	5	e 20 40	[+48]	44 7	SSP	—	—	73·9

Additional readings :—
Little Rock iN = +5m.13s., eE = +7m.11s., iSSE = +9m.6s.
Cape Girardeau iE = +5m.53s. and +6m.2s., iSSEN = +10m.9s.
Denver eE = +5m.24s., eN = +6m.9s., eE = +6m.16s. and +9m.55s., eSSE = +10m.17s.
Branner eE = +13m.24s., eN = +13m.51s., eE = +17m.4s., eN = +18m.44s., eE = +19m.25s.
Berkeley iE = +6m.19s., iZ = +11m.29s., eE = +19m.21s., eN = +19m.54s. and +22m.56s.
San Francisco eE = +13m.11s.
Ukiah eS = +11m.10s.
Bozeman eP = +6m.48s., eS = +11m.15s.
Georgetown i = +12m.5s.
Butte eP = +6m.58s., PPP = +7m.38s.
Buffalo +7m.6s., ePP = +7m.28s., e = +12m.32s., e = +14m.14s.
Philadelphia iP = +7m.14s. and +12m.21s.
San Juan iPP = +7m.48s., ePPP = +8m.0s.
Williamstown i = +7m.48s.
Ottawa e = +7m.29s., +9m.7s., +13m.27s., and +16m.20s.
Harvard iP_cSE = +13m.35s., eL_qN = +17m.56s.
Vermont iS = +13m.42s.

Huancayo PPP = +9m.7s., i = +14m.14s.
Seven Falls i = +14m.24s.
East Machias eP = +7m.52s., P = +8m.21s., ePPP = +9m.52s., S = +13m.48s.
La Paz SSZ = +18m.23s., iZ = +19m.59s.
Honolulu eSS = +19m.58s.
Edinburgh e = +8m.15s., i = +24m.18s.
Aberdeen eS = +24m.8s., ePPS = +26m.1s., eSSS = +34m.53s.
Bidston iS = +23m.38s.
Durham eE = +20m.13s.
Oxford eN = +12m.57s.
Kew iE = +13m.2s., iZ = +13m.34s., iS = +23m.49s., iSPZ = +24m.34s.
Paris SKP? = +18m.54s.
Copenhagen eE = +16m.24s. and +23m.0s., eZ = +23m.15s., SE = +24m.5s., PS = +24m.50s., PPS = +25m.51s., SS = +30m.15s.
Strasbourg eZ = +14m.5s. and +17m.26s., ePPPZ = +18m.33s., eN = +25m.47s., eZ = +34m.46s.
Stuttgart e = +13m.49s., +17m.21s., +24m.57s., eEZ = +25m.58s.
Jena e = +22m.15s.
Potsdam e = +16m.33s., eN = +25m.45s., iE = +25m.59s., eN = +26m.39s.
Belgrade iNW = +28m.15s.
Brisbane eE = +23m.21s.
Tiflis ePPE = +19m.48s., ePPSZ = +30m.2s., eN = +30m.8s., eSSSN = +40m.33s.
Helwan i = +20m.42s.
Melbourne e = +30m.15s.
Cape Town ePPE = +27m.50s., ePPN = +34m.52s., eSN = +37m.30s.
Calcutta iPPN = +23m.18s., iSKKPN = +23m.56s., ePPPN = +26m.25s., ePSKS = +33m.21s.
Bombay ePKSEN = +23m.18s., eEN = +23m.56s.
Kodaikanal SSSE = +50m.20s.
Long waves were also recorded at Christchurch, Graz, and Zinsen.

May 11d. Readings also at 1h. (Andijan), 2h. (Manila), 3h. (Nagoya, Ksara, Copenhagen, Fort de France, Tacubaya, and Mizusawa), 4h. (Oaxaca, Tacubaya, Mount Wilson, and Tucson), 8h. (Tiflis, Nagoya, Hukuoka B, and De Bilt), 9h. (Andijan, Samarkand, Frunse, and Almata), 10h. (Almata, Frunse, Andijan, Samarkand (2), and Tchimkent), 11h. (Algiers), 14h. (Colombo and Granada), 15h. (Helwan, Copenhagen, and Tacubaya (2)), 16h. (Tacubaya), 17h. (Melbourne, Tiflis, Batavia, Perth, Ksara, Manila, Brisbane, and Harvard), 18h. (Balboa Heights), 20h. (Fort de France (2)), 21h. (Andijan, Samarkand, Frunse, and Tchimkent), 22h. (Haiwee, Tinemaha, La Paz, La Plata, Copiapo, Weston, Harvard, Brisbane, Manila, Tucson, Mount Wilson (2), and Pasadena (2)), 23h. (Tacubaya, Tiflis, and Vera Cruz).

May 12d. 15h. 38m. 59s. Epicentre 6°·2S. 147°·7E.

New Guinea. Felt at Salamauca, Wau, Medang, and Rabaul.

C. W. B. Normand.

See Seismological Bulletin, Meteorological Dept., Colaba Observatory, Bombay, April-June, 1938. Delhi, 1939. P. 36.

Epicentre 5°·0S. 147°·5E. (Strasbourg).
5°·3S. 148°·0E. (Bombay).

$A = -\cdot8404$, $B = +\cdot5313$, $C = -\cdot1073$; $\delta = +7$; $h = +7$;
$D = +\cdot534$, $E = +\cdot845$; $G = +\cdot091$, $H = -\cdot057$, $K = -\cdot994$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Palau	18·8	315	4 27	+ 4	8 2	SS	—	—	—
Amboina	19·6	277	4 32	0	i 8 14	+ 6	—	—	e 12·0
Brisbane	21·8	165	i 4 49	− 7	i 8 43	− 9	—	—	—
Riverview	27·7	173	e 5 54	+ 2	i 10 34	+ 1	11 34	SS	e 12·6
Sydney	27·7	173	e 5 48	− 4	i 10 35	+ 2	e 11 47	SS	e 12·4
Adelaide	29·8	194	i 6 13	+ 2	i 11 1	− 6	i 6 57	PP	i 13·2
Melbourne	31·6	183	5 35	−51	11 41	+ 6	—	—	16·0
Titizima	33·5	352	6 42	− 1	—	—	—	—	—
Manila	33·6	309	i 6 39a	− 5	12 27	+21	—	—	—
Miyakozima	37·7	327	7 24	+ 5	13 4	− 6	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nake		38·6	335	7 39	+13	13 18	− 5	—	—	—
Perth		39·2	224	i 7 41	+10	i 13 33	+ 1	9 4	PP	18·6
Tainan		39·5	319	7 36	+ 2	13 34	− 3	—	—	—
Hatidyozima		39·8	350	7 40	+ 4	13 50	+ 8	—	—	19·2
Malabar		39·8	266	e 7 41	+ 5	i 13 50	+ 8	—	—	20·0
Yakusima		40·0	338	7 39	+ 1	14 4	+20	—	—	19·3
Taihoku		40·2	322	e 7 37	− 3	i 13 41	− 7	—	—	17·1
New Plymouth		40·5	147	7 45	+ 3	14 0	+ 8	i 7 57	pP	16·0
Apia		40·6	103	e 7 44	+ 1	i 14 1	+ 7	i 9 12	PP	e 17·3
Arapuni		40·6	145	—	—	13 49	− 5	16 43	S_cS	17·6
Batavia		40·6	268	7 42	− 1	14 1	+ 7	i 9 11	PP	e 17·0
Miyazaki		41·0	339	7 45	− 1	13 44	−15	—	—	—
Siomisaki		41·0	345	7 44	− 2	14 7	+ 8	—	—	—
Muroto		41·3	343	7 51	+ 2	13 48	−16	9 30	PP	19·4
Koti		41·8	343	7 52	− 1	e 14 3	− 8	9 46	PP	—
Misima		41·9	351	7 54	0	14 14	+ 1	10 13	PPP	—
Osaka B		42·2	345	7 53	− 3	14 21	+ 4	9 33	PP	—
Hunatu		42·3	351	8 2	+ 5	14 18	− 1	17 51	SS	21·0
Tokyo Cent. Met. Obs.		42·3	352	7 58	+ 1	14 12	− 7	—	—	20·7
Kobe		42·4	345	7 55	− 3	14 3	−17	10 26	PP	—
Nagoya		42·4	348	e 7 59	+ 1	14 22	+ 2	—	—	18·8
~~Wellington~~		~~42·5~~	~~149~~	~~e 7 59~~	~~0~~	~~14 33~~	~~+11~~	~~8 13~~	~~pP~~	~~20·8~~
Tomie		42·6	337	7 59	0	14 22	− 1	—	—	—
Hukuoka B		42·8	340	8 0	− 1	14 46	+20	—	—	e 17·7
Mito		42·9	354	7 59	− 3	15 4	+37	9 48	PP	—
Maebasi		43·1	351	8 4	0	14 49	+19	—	—	21·7
Christchurch		43·2	153	i 8 8a	+ 4	i 14 29	− 3	—	—	21·5
Hong Kong		43·4	312	8 4k	− 2	14 29	− 6	18 3	SS	21·3
Hamada		43·5	342	8 8	+ 1	14 58	+22	9 57	PP	—
Nagano		43·6	350	8 8	0	14 39	+ 1	—	—	—
Hukusima		44·2	352	8 11	− 1	15 23	+37	18 24	SS	—
Wazima		44·5	348	8 16	+ 1	14 53	+ 2	—	—	22·3
Husan		44·7	338	8 18	+ 2	14 52	− 2	—	—	—
Sendai		44·7	353	8 29	+13	15 49	+55	—	—	—
Mizusawa		45·5	353	8 21	− 2	14 59	− 6	—	—	—
Taikyu		45·5	338	e 8 22	− 1	15 3	− 2	—	—	18·6
Morioka		46·1	353	8 28	0	15 15	+ 1	19 6	SS	22·5
Syuhurei		46·1	338	8 32	+ 4	15 43	PPS	—	—	—
Hatinohe		46·8	354	8 31	− 2	15 25	+ 1	19 39	SSS	—
Keizyo	N.	47·6	337	8 40	+ 1	15 37	+ 2	10 27	PP	19·1
Zinsen		47·7	337	i 8 40a	0	e 15 39	+ 3	i 10 48	PP	e 22·5
Phu-Lien		48·4	345	e 8 45	− 1	e 15 40	− 6	—	—	—
Chatham Ils.		49·0	146	—	—	16 1	+ 6	18 7	?	20·2
Nemuro		49·3	359	8 7	−46	16 4	+ 5	—	—	—
Heizyo		49·4	337	e 8 57	+ 4	15 57	− 3	—	—	20·1
Sapporo		49·4	355	8 57	+ 4	15 34	−26	—	—	—
Medan		49·9	280	9 2	+ 5	16 18	+11	—	—	—
Ootomari		52·8	356	9 23	+ 4	—	—	—	—	—
Honolulu		60·0	60	e 10 9	− 2	e 18 16	− 7	e 12 22	PP	e 24·2
Calcutta	N.	64·7	299	e 10 38	− 4	i 19 15	− 7	e 13 3	PP	—
Colombo	E.	68·9	279	e 11 7	− 2	20 25	+12	—	—	30·8
Kodaikanal	E.	71·8	283	i 11 22	− 4	i 20 39	− 7	i 21 5	PS	e 33·7
Hyderabad		72·3	290	11 31	+ 2	20 43	− 9	—	—	23·9
Agra		75·0	300	i 11 40a	− 5	21 8	−15	14 26	PP	34·1
Dehra Dun	N.	75·8	304	e 11 50	0	i 21 26?	− 5	—	—	e 36·6
Bombay		77·8	291	11 59	− 2	i 21 50	− 3	i 15 16	PP	37·6
Almata		80·4	316	11 15	−60	(22 43)	+22	—	—	22·7
Semipalatinsk		80·7	324	12 24	+ 8	—	—	—	—	—
Frunse		82·0	315	12 23	0	—	—	—	—	37·5
Andijan		83·0	312	12 30	+ 2	23 6	+19	—	—	40·0
College		85·1	22	e 12 40	+ 1	i 22 49	[−12]	e 15 26	PP	37·7
Tchimkent		85·4	314	12 38	− 2	(e 23 1)	[− 2]	—	—	e 23·0
Samarkand		86·8	310	12 43	− 4	(e 22 55)	[−18]	—	—	e 22·9
Ferndale		92·5	49	e 16 21	PP	e 24 1	−16	—	—	e 48·0
Ukiah		93·2	50	e 13 21	+ 4	e 34 11	SSS	e 17 9	PP	i 38·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Berkeley		93·8	52	i 13 21	+ 1	e 23 31	[−23]	i 17 12	PP	—
Lick	E.	94·2	52	e 13 29	+ 7	—	—	—	—	—
Santa Barbara		95·6	56	e 13 32	+ 4	—	—	—	—	—
Pasadena		96·9	56	e 13 30	− 4	i 24 11	[0]	e 17 17	PP	i 39·5
Tinemaha		96·9	53	e 13 37	+ 3	—	—	—	—	—
Mount Wilson	Z.	97·0	56	e 13 31	− 4	—	—	i 38 34	P'P'	—
Haiwee	E.	97·1	54	e 13 39	+ 4	—	—	—	—	—
Tananarive		97·5	250	e 13 40	+ 3	24 10	[− 4]	17 43	PP	46·2
Butte		101·2	43	e 18 21	PP	e 24 22	[−11]	e 26 1	PS	e 40·2
Bozeman		102·3	43	e 17 51	PP	e 24 6	[−32]	e 26 53	PS	i 40·5
Grozny		102·9	313	e 13 58	P	—	—	e 18 4	PP	—
Tucson		103·0	57	e 14 1k	P	24 13	[−28]	18 14	PP	42·5
Tiflis		103·7	311	e 14 1	P	e 24 33	[−11]	i 18 25	PP	e 41·0
Erevan		104·1	310	e 14 41	P	—	—	—	—	—
Saskatoon		104·5	37	—	—	e 27 45	PS	e 33 31	SS	49·0
Piatigorsk		104·8	314	e 15 14	P	e 23 44	[−66]	—	—	—
Denver		107·3	50	e 18 39	PP	e 27 52	PS	e 28 52	PPS	e 50·5
Sotchi		107·3	314	e 17 38	PP	—	—	—	—	—
Theodosia		110·1	316	e 18 54	PP	e 28 26	PS	—	—	43·5
Simferopol		111·0	316	e 18 59	PP	e 28 40	PS	—	—	41·2
Ksara		111·5	303	e 14 42	P	29 2	PS	i 19 29	PP	—
Sebastopol		111·5	316	e 18 35	[− 1]	—	—	—	—	—
Tacubaya	E.	113·8	71	i 21 57	PPP	—	—	—	—	—
Upsala		114·6	335	e 15 14	P	e 25 17	[−13]	19 43	PP	e 49·0
Istanbul		115·5	313	14 52	P	28 9	?	19 40	PP	59·5
Bucharest		116·6	317	e 15 8	P	26 2	[+25]	i 20 14	PP	37·7
Cape Town	E.	117·6	227	i 20 3	PP	i 29 25	PS	i 24 8	?	56·6
	N.	117·6	227	i 19 57	PP	i 29 44	PS	i 23 27	PPP	56·6
Little Rock		118·0	54	e 18 48	[− 1]	e 25 47	[+ 4]	e 20 8	PP	e 49·3
Florissant	Z.	118·5	48	e 19 11	[+21]	—	—	i 21 35	PP	—
Bergen		119·0	340	20 15	PP	e 26 43	{−24}	30 56	PPS	41·0
Sofia		119·1	316	e 19 1	[+10]	e 28 7	{+59}	e 20 7	PP	—
Copenhagen		119·2	333	15 17	P	26 1	[+14]	i 20 16	PP	51·0
Cape Girardeau		119·6	49	e 21 21	PP	e 40 57	SSS	e 22 42	PPP	e 42·6
Chicago		119·6	44	—	—	i 29 56	PS	e 40 43	SSS	e 49·8
Kecskemet	Z.	119·8	321	e 19 58	PP	—	—	—	—	—
Budapest	E.	120·0	322	e 19 33	PP	i 26 9	[+19]	e 30 1	PS	—
	N.	120·0	322	e 19 39	PP	26 15	[+25]	e 30 20	PS	—
Ogyalla		120·3	323	e 20 2	PP	e 30 18	PS	e 37 2	SS	e 42·5
Belgrade		120·4	319	e 18 55a	[+ 2]	i 28 8	{+52}	e 20 30	PP	e 65·6
Potsdam		120·9	330	e 18 49	[− 5]	i 30 15	PS	i 20 24	PP	e 52·0
Prague		121·4	327	e 16 19	P	e 30 16	PS	e 20 28	PP	e 48·0
Hamburg		121·7	333	e 18 56	[0]	e 30 21	PS	e 43 1?	SSS	e 51·0
Graz		122·4	323	e 19 15	[+18]	e 30 43	PS	—	—	e 54·0
Jena		122·4	328	e 18 59	[+ 2]	e 30 21	PS	e 37 21	SS	e 49·5
Cheb		122·5	328	e 20 41	PP	e 30 31	PS	—	—	e 54·0
Hof		122·7	327	e 22 1	PPP	e 30 34	PS	37 31	SS	e 51·0
Merida	N.	122·7	68	—	—	e 25 54?	[− 5]	—	—	—
Göttingen		122·9	331	e 18 57	[− 1]	e 30 33	PS	e 20 44	PP	e 51·0
Ivigtut		123·8	9	19 1	[+ 1]	30 44	PS	20 44	PP	—
Aberdeen		123·9	341	e 19 22	[+22]	e 30 32	PS	e 23 50	PPP	e 51·0
Triest		124·1	323	19 37	[+36]	30 15	PS	36 10	SS	e 50·0
De Bilt		124·8	333	e 15 40	P	e 30 57	PS	20 57	PP	e 58·0
Stuttgart		125·0	327	e 15 46	P	e 25 44	[−22]	e 20 57	PP	e 56·0
Buffalo		125·1	40	e 19 3	[+ 1]	i 38 36	SS	i 20 56	PP	e 46·0
Karlsruhe		125·2	329	e 19 12	[+10]	—	—	—	—	e 56·0
Edinburgh		125·3	341	e 21 15	PP	i 28 5	{+16}	i 30 58	PS	48·0
Padova		125·4	323	e 19 17	[+15]	e 28 14	{+24}	—	—	e 53·5
Durham		125·6	338	i 20 59	PP	i 30 56	PS	i 38 47	SS	—
Ottawa		125·8	35	19 5	[+ 1]	27 58	{+ 3}	20 58	PP	52·0
Strasbourg		125·8	328	e 15 46	P	e 26 13	[+ 5]	i 21 3	PP	e 52·5
Chur		125·9	326	e 19 0	[− 4]	—	—	—	—	—
Uccle		126·1	333	e 15 46	P	i 27 57	{+ 2}	i 21 2	PP	54·0
Zurich		126·1	327	e 19 3	[− 1]	e 32 16	PPS	e 20 59	PP	—

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	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Basle	126·6	327	e 19 3	[− 2]	—	—	e 21 10	PP	—
Florence	126·6	322	e 19 1	[− 4]	28 1	[+ 4]	—	—	—
Stonyhurst	126·7	339	e 19 30	[+25]	i 31 20	PS	i 21 10	PP	52·5
Pennsylvania	126·8	42	e 22 9	PP	e 31 47	PS	e 38 44	SS	e 56·0
Shawinigan Falls	126·8	32	19 7	[+ 2]	38 37	SS	21 5	PP	56·0
Columbia	127·2	50	e 22 19	PP	e 31 18	PS	—	—	e 50·6
Neuchatel	127·2	327	e 19 4	[− 2]	—	—	—	—	—
Bidston	127·3	339	i 21 14	PP	e 27 57	{− 5}	i 23 59	PPP	47·0
Seven Falls	127·6	31	e 21 1?	PP	i 31 18	PS	i 38 33	SS	51·5
Kew	127·7	336	e 16 0	P	e 28 0	{− 4}	i 21 15	PP	48·0
Oxford	127·8	337	i 21 10	PP	i 32 56	PPS	—	—	e 49·0
Vermont	127·8	35	e 21 13	PP	e 38 13	SS	e 31 30	PS	e 51·4
Moncalieri	128·0	325	e 19 1?	[− 7]	29 24	?	—	—	40·2
Georgetown	128·2	43	i 19 8	[0]	—	—	21 8	PP	—
Paris	128·3	331	e 19 11	[+ 2]	39 10	SS	e 21 21	PP	48·0
Rathfarnham Castle	128·5	341	i 16 21	P	i 26 41	[+25]	i 19 21	PKP	70·0
Williamstown	128·8	36	e 19 9	[0]	i 26 14	[− 3]	i 21 18	PP	—
Philadelphia	129·0	42	e 21 12	PP	38 51	SS	i 22 37	PKS	e 51·3
Fordham	129·4	40	e 21 15	PP	i 39 28	SS	i 23 9	PPP	e 55·0
Harvard	129·9	36	i 19 12	[0]	e 38 43	SS	i 21 25	PP	e 51·0
Jersey	130·1	336	e 14 49	P	e 28 58	{+37}	e 21 26	PP	e 64·0
Weston	130·1	36	e 19 14	[+ 2]	e 31 27	PS	i 21 27	PP	i 61·7
Marseilles	130·4	325	e 19 1	[−11]	e 25 58	[−22]	e 20 26	PP	e 47·0
East Machias	130·9	32	e 19 0	[−13]	e 27 1	[+39]	e 21 32	PP	52·3
La Plata	132·5	151	19 16	[0]	—	—	—	—	54·8
Halifax	133·0	29	e 23 7	?	—	—	—	—	60·0
Huancayo	133·5	113	i 19 17	[− 2]	i 26 23	[− 5]	i 21 54	PP	i 55·1
Algiers	135·6	318	e 19 26	[+ 4]	e 29 47	{+52}	22 1	PP	55·0
Toledo	137·9	327	i 19 33	[+ 6]	e 23 8	?	i 40 47	SS	e 53·7
La Paz z.	138·0	123	e 19 21	[− 6]	i 41 31	SS	i 22 15	PP	65·0
Almeria	139·1	323	e 19 26	[− 3]	e 34 38	PPS	e 23 16	PP	e 61·2
Granada	139·6	324	i 19 31	[+ 2]	—	—	i 22 31	PP	—
Malaga	140·3	324	e 19 31	[0]	26 11	[−29]	22 33	PP	65·0
San Fernando N.	141·6	326	e 19 55	[+22]	i 26 27	[−14]	i 23 22	PP	—
San Juan	144·9	66	e 19 35	[− 4]	i 41 43	SS	i 22 30	PP	56·6
Rio de Janeiro	149·2	160	i 19 49	[+ 3]	i 33 31	PS	—	—	i 42·5
Fort de France	150·4	71	i 19 49	[+ 1]	e 25 49	[−65]	—	—	30·7

Additional readings :—
Riverview iPN = +6m.0s., eE = +6m.4s., iE = +6m.11s., iN = +6m.14s., iZ = +10m.40s. and +11m.15s.
Sydney e = +10m.27s.
Adelaide i = +7m.43s. and +11m.29s.
Melbourne e = +8m.14s., i = +10m.33s.
Perth PPP = +9m.35s., SS = +16m.18s., SSS = +16m.36s.
Taihoku iZ = +7m.47s.
New Plymouth PP = +8m.44s., P_cP = +9m.34s., sS = 13m.23s., SS = +15m.36s.
Apia i = +8m.55s., iP_cP = +9m.38s., i = +10m.11s.
Batavia i = +9m.34s., iEN = +14m.11s.
Koti S = +14m.26s., SS = +17m.24s.
Misima SSS = +17m.26s.
Osaka B PPP = +10m.13s., SS = +16m.35s.
Kobe SSS = +17m.40s.
Wellington PP = +9m.6s., pPP = +9m.28s., P_cP = +9m.54s., pP_cP = +10m.13s., PPP = +10m.20s., P_cS = +14m.4s., sS = +14m.58s., SS = +16m.8s., L_q = +16m.48s., S_cS = +17m.13s.
Christchurch eZ = +7m.59s.a, iP_cP = +10m.8s., iP_cS = +13m.49s., iS = +14m.35s., L_q = +17m.45s., iS_cSZ = +18m.8s.
Hamada PPP = +10m.41s., SS = +17m.47s.
Mizusawa PE = +18m.24s.
Zinsen iEN = +8m.58s., iZ = +9m.0s., eSZ = +15m.42s., iSSSEN = +19m.39s.
Medan iN = +9m.25s., +16m.5s., and +16m.26s.
Honolulu iP = +10m.19s., ePPP = +13m.54s., eSS = +22m.19s.
Calcutta iPPPN = +4m.16s., iSSN = +23m.36s.
Kodaikanal iSSE = +25m.24s., iSSSE = +28m.7s.
Agra eN = +11m.48s., PPPE = +15m.56s., iN = +21m.21s., PSE = +21m.36s., SSE = +25m.56s., SSSE = +28m.52s., iE = +30m.25s.
Dehra Dun iSN = +20m.38s.?, i = +25m.46s.

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Bombay iEN = +12m.6s., +12m.41s., +13m.3s., +23m.0s., and +23m.14s., SSEN = +26m.34s.
College iP = +12m.44s., iS_cS = +23m.2s., iPPS = +24m.9s., iSS = +28m.34s., SSS = +31m.26s.
Ferndale eN = +24m.29s., eE = +41m.33s.
Ukiah ePPP = +18m.38s., PPS = +25m.53s., ePSPS = +30m.51s.
Berkeley ePEZ = +13m.27s., ePN = +13m.44s., eN = +17m.17s., eSN = +23m.37s., eN = +23m.57s., eE = +24m.13s.
Lick eN = +13m.34s.
Pasadena eN = +24m.27s., eSN = +25m.7s., eSPZ = +26m.4s., iPSE = +26m.18s., iPPSZ = +26m.36s., iSSEN = +33m.56s., iPKP,PKPZ = +38m.39s.
Tananarive ePE = +13m.43s., PPPN = +19m.46s., SKKS = +24m.40s., SN = +25m.7s., eN = +25m.31s., PSE = +26m.28s., SS = +31m.34s., E = +31m.49s., +34m.16s., SSSE = +35m.40s.
Butte S = +25m.13s., ePPS = +27m.10s.
Bozeman ePPP = +19m.53s., S = +25m.17s., iPPS = +27m.27s., SS = +32m.36s., i = +33m.30s., SSS = +36m.18s.
Tucson iP = +14m.11s., PS = +26m.45s., iPPS = +27m.43s., iPSPS = +32m.46s., PKP,PKP = +38m.20s.
Tiflis iZ = +14m.9s., ePKPZ = +17m.45s., ePPEZ = +18m.7s., PPPZ = +20m.37s., PPPN = +21m.3s., eZ = +24m.15s., eSKKSZ = +26m.1s., iE = +26m.33s., iPSZ = +27m.31s., SSZ = +33m.25s., SSE = +33m.41s., eSSSZ = +37m.30s.
Saskatoon e = +36m.31s.
Denver eN = +18m.59s., eS_cPP_cSE = +29m.8s.
Ksara PPS = +30m.2s.
Upsala ePKPN = +18m.58s., eN = +22m.7s., eE = +22m.20s., eN = +23m.29s., iN = +27m.38s., eE = +29m.27s., iN = +29m.31s., +30m.44s., and +35m.46s., eE = +35m.58s.
Istanbul PS = +29m.15s., SS = +35m.27s.
Bucharest ePKPE = +19m.34s., SKPEN = +21m.32s., PPPE = +22m.28s., SEN = +28m.5s., ePSEN = +29m.40s., PPSN = +30m.48s., PPSE = +30m.53s., iE = +32m.7s., SSN = +36m.7s.
Cape Town iN = +25m.47s., iE = +26m.6s., eN = +28m.20s., iSS = +36m.35s., iE = +43m.27s., iN = +43m.33s., iE = +50m.15s.
Little Rock ePPPE = +22m.45s., eSKKSE = +27m.6s., eSE = +27m.44s., ePSN = +29m.57s., eSSSE = +40m.43s.
Copenhagen PKP = +18m.55s., PPP = +22m.49s., e = +27m.7s., +27m.31s., +28m.17s., +29m.1s., eZ = +29m.37s., iPS = +29m.55s., PPS = +31m.32s., e = +32m.25s. and +34m.55s., SS = +36m.50s., and +37m.16s., SSS = +41m.19s.
Cape Girardeau eSKPN = +21m.31s., eN = +21m.54s., ePPS = +30m.45s., eEN = +31m.7s. and +38m.6s.
Chicago i = +30m.14s., iPSPS = +36m.33s., i = +36m.55s.
Budapest E. i = +20m.35s., +22m.48s., +25m.1s., and +37m.29s.
Budapest N. i = +20m.47s. and +25m.1s.
Ogyalla ePKPN = +20m.22s., iE = +23m.14s., eE = +24m.12s., eN = +32m.12s., eSSE = +37m.1s.?
Belgrade eNW = +23m.19s., +26m.9s., and +27m.4s.
Potsdam ePZ = +15m.25s., e = +19m.49s., eE = +20m.7s., eEN = +30m.7s., ePPSE = +31m.43s., eZ = +32m.19s., eEZ = +36m.19s., eZ = +37m.31s., iN = +38m.14s., iSSSE = +41m.54s., eE = +51m.25s.
Prague eSPS = +31m.31s., eSS = +37m.43s., eSSS = +41m.49s.
Graz eSS = +30m.1s.
Hamburg eZ = +19m.2s., +20m.33s., and +38m.1s., eEN = +38m.13s.
Jena e = +20m.37s., eN = +20m.41s. and +32m.1s., eE = +32m.13s., e = +37m.43s., +42m.1s., and +46m.1s.
Hof eNE = +32m.1s., +42m.25s., and +46m.1s.
Göttingen e = +33m.1s.?
Ivigtut SS = +38m.13s.
Aberdeen ePPP = +26m.14s., ePPPP = +27m.42s., eSKS = +29m.52s., PPPS = +32m.47s., SS = +36m.37s.
De Bilt iPKP = +19m.8s., e = +38m.12s.
Stuttgart ePKPZ = +19m.4s., iPKPZ = +19m.9s., ePPEZ = +20m.37s., ePKS = +22m.1s., ePPP = +23m.52s., eSKKSE = +27m.49s., eS = +29m.1s., ePS = +30m.41s., ePPS = +32m.15s., eSS = +38m.1s., eSSS = +42m.31s., eSSSS = +47m.1s.
Buffalo i = +21m.52s., +23m.44s., +31m.49s., +32m.52s., and +36m.14s.
Edinburgh i = +22m.17s., +22m.33s., +24m.33s., +25m.48s., +32m.30s., +33m.44s., +38m.21s., and +38m.39s.
Durham iE = +21m.21s., iEN = +22m.22s., +23m.56s., and +38m.30s., +44m.1s., +44m.26s., +45m.1s., iN = +46m.45s., iEN = +46m.59s., iE = +47m.31s.
Ottawa PPS = +32m.33s., SS = +38m.13s., SSSZ = +42m.39s.
Strasbourg iPKPZ = +19m.10s., iSKPE = +22m.17s., iPPPZ = +23m.43s., eS = +29m.19s., iPSN = +31m.7s., iPPSZ = +32m.34s., iN = +33m.37s., iZ = +33m.44s., eSSN = +34m.33s.
Uccle ePKP = +19m.5s., iSKP = +22m.26s., iPPPZ = +23m.47s., iPS = +31m.9s., iPPS = +32m.35s., iZ = +33m.41s., iSSN = +38m.5s., i = +39m.13s.
Stonyhurst i = +22m.17s. and +38m.55s.
Pennsylvania e = +26m.49s., i = +32m.38s.

Continued on next page.

Shawinigan Falls PPS = +32m.53s.
Bidston i = +21m.30s., iPKS = +22m.31s., iPS = +31m.21s., iPPS = +32m.53s., i = +33m.25s., +34m.13s., +35m.1s., eSS = +38m.11s., i = +38m.56s., +39m.51s., +42m.36s., and +43m.51s.
Seven Falls i = +22m.28s., e = +32m.56s.
Kew iPKPZ = +19m.14s., i = +21m.32s., iPKSEN = +22m.30s., iPP = +24m.1s., iPSEN = +31m.29s., iPPS = +32m.52s., iEN = +33m.30s., iZ = +34m.4s., i = +34m.12s., and +35m.4s., eSS = +38m.14s., iN = +38m.52s., iE = +39m.0s., i = +39m.52s., iN = +42m.42s., iSSSE = +43m.38s., iN = +44m.8s.
Vermont i = +22m.32s., iPPS = +32m.58s., eSSS = +42m.2s.
Georgetown +19m.29s., +21m.13s., SKP = +22m.35s.
Paris PPP = +24m.11s., PPS? = +33m.10s.
Rathfarnham Castle iPP = +23m.1s., iSKP = +23m.13s., iPPP = +26m.21s., iSKKS = +29m.43s., iPPS = +36m.1s.?, iSS = +42m.1s.?, iSSS = +47m.31s.
Williamstown iPKP = +19m.14s., iSKP = +22m.25s., S? = +29m.19s., i = +33m.21s., eSS = +39m.3s., i = +53m.58s.
Philadelphia iSKSP = +31m.1s., i = +33m.33s., +34m.4s., +39m.8s., and +43m.26s.
Fordham i = +21m.51s., +33m.10s., +34m.11s.
Harvard ePKS = +22m.42s.
Jersey iPKP = +18m.19s., iSKP = +22m.36s., i = +42m.59s., e = +53m.1s.
Weston iPPP = +22m.44s., iSKPNZ = +23m.9s., iPPPZ = +24m.17s., iEN = +25m.56s. iSN? = +30m.37s., iPPSN = +33m.7s., ePPPSEN = +34m.37s., iSSNZ = +39m.11s., eSSSE = +43m.43s., eSSSSE = +48m.3s.
Marseilles e = +22m.39s., iPPP = +23m.24s., ePS = +30m.54s., iPPS = +31m.33s., e = +33m.48s., and +39m.51s.
East Machias ePPP = +23m.57s., iPS = +31m.41s., eSS = +38m.14s., i = +44m.57s.
Huancayo i = +22m.54s., iPKS = +23m.4s., i = +23m.11s., +23m.28s., +23m.37s., and +23m.49s., PPP = +24m.44s., i = +24m.55s., +25m.14s., +25m.26s., iSKKS = +28m.8s., iSKKKS = +28m.49s., i = +29m.27s., +31m.48s., +32m.27s., iPPS = +34m.8s., i = +34m.49s., +35m.59s., +36m.31s., SS = +39m.19s., iSS = +39m.53s., iPSPS = +40m.18s., iSSS = +44m.28s.
Algiers SKP = +22m.59s., PPP = +24m.41s., PPS = +34m.12s.
Toledo iPPS = +34m.28s.
La Paz iPKPZ = +19m.33s., iZ = +23m.27s.
San Fernando iSN = +35m.9s.; two shocks suggested.
San Juan i = +20m.42s., +21m.4s., iSKSP = +32m.33s.
Fort de France PP = +21m.4s., PPP = +21m.29s., SS = +28m.9s., SSS = +28m.41s
Long waves were also recorded at Manzanillo, Besançon, and Laibach.

May 12d. 21h. 31m. 35s. Epicentre 18°·0N. 37°·5E.

A = +·7550, B = +·5794 C = +·3071; δ = +4; h = +5;
D = +·609, E = −·793; G = +·244, H = +·187, K = −·952.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ksara		15·8	355	i 3 40a	− 5	7 0	SS	—	—	—
Erevan		22·9	13	e 5 2	− 4	—	—	—	—	—
Athens		23·3	331	i 5 9	− 1	—	—	—	—	—
Istanbul		24·1	345	5 16	− 2	9 36	+ 2	10 55	SSS	e 15·7
Tiflis		24·4	12	i 5 21a	0	9 51	+12	e 5 54	PP	e 12·6
Grozny		26·2	13	5 35	− 3	—	—	—	—	—
Sebastopol		26·7	353	e 5 47	+ 4	—	—	—	—	—
Simferopol		27·0	354	e 5 49	+ 4	—	—	—	—	—
Theodosia		27·0	358	e 5 43	− 2	—	—	—	—	—
Sofia	E.	27·4	337	e 5 47	− 2	e 10 31	+ 3	—	—	e 18·4
Bucharest		28·0	343	e 5 55	0	e 10 48	+10	e 7 10	PPP	19·4
Budapest		33·1	337	e 6 25	−15	i 15 27	SSS	—	—	—
Samarkand		33·4	43	e 6 8	−34	e 8 28	PPP	—	—	21·9
Bombay		33·5	83	e 6 45	+ 2	—	—	i 7 55	PP	—
Florence		33·9	325	e 7 53	PP	12 5	− 6	—	—	—
Triest		33·9	330	6 42	− 5	12 11	0	—	—	—
Graz		34·2	333	e 6 47	− 2	—	—	—	—	e 22·4
Padova		34·7	328	e 6 56	+ 2	e 12 22	− 2	—	—	—
Algiers		35·6	309	i 7 1	0	12 25	−13	—	—	17·4
Tchimkent		36·5	41	e 7 8	− 1	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Moncalieri		36·6	325	i 7 30	+20	e 12 35	−18	—	—	e 18·2
Chur		36·8	328	e 7 3	− 8	—	—	—	—	—
Marseilles		37·0	320	e 8 25?	PP	—	—	—	—	—
Prague		37·0	336	—	—	e 13 7	+ 8	—	—	—
Andijan		37·5	45	e 4 55	?	e 9 56	?	—	—	e 19·4
Zurich		37·6	328	e 7 15	− 3	—	—	—	—	—
Cheb		37·8	335	e 13 11	S	(e 13 11)	0	e 16 25	SSS	—
Basle		38·3	328	i 7 20	− 4	—	—	—	—	—
Neuchatel		38·3	327	e 7 19	−5	—	—	—	—	—
Stuttgart		38·3	331	e 7 18	− 6	e 13 11	− 8	e 8 56	PP	e 22·4
Agra	E.	38·4	68	7 19	− 6	—	—	8 52	PP	20·2
Dehra Dun	N.	38·8	63	—	—	e 13 35?	+ 9	—	—	e 22·7
Jena		38·8	334	e 7 25	− 3	e 13 23	− 3	—	—	e 15·4
Strasbourg		38·9	329	i 7 30	+ 1	e 13 22	− 6	e 8 42	PP	—
Potsdam		39·3	337	e 8 55	PP	e 16 25?	SS	—	—	e 22·4
Kodaikanal	E.	39·4	96	e 8 55	PP	13 47	+12	—	—	i 16·7
Almeria		39·8	307	e 7 37	+ 1	—	—	e 9 13	PP	e 22·9
Göttingen		39·9	334	e 7 38	+ 1	e 13 32	−11	—	—	e 26·4
Frunse		40·1	43	e 7 21	−18	—	—	—	—	e 23·2
Granada		40·7	307	i 7 45	+ 1	—	—	i 9 12	PP	—
Malaga		41·3	306	e 7 52	+ 3	e 14 4	0	—	—	19·4
Hamburg	E.	41·4	336	—	—	e 15 25?	?	—	—	—
Almata		41·7	43	e 8 5	+13	—	—	—	—	—
Paris		41·8	325	e 7 47	− 6	—	—	—	—	18·4
Toledo		41·9	310	i 7 55	+ 1	e 14 10	− 3	e 9 42	PP	19·8
Uccle		42·0	328	e 7 51	− 3	i 14 11	− 3	i 18 15	SSS	—
Copenhagen		42·1	340	7 57	+ 2	14 15	− 1	17 25	SS	—
De Bilt		42·5	332	i 7 55	− 4	—	—	—	—	e 19·4
San Fernando	N.	42·6	304	e 10 36	PPP	e 19 56	?	—	—	—
Upsala		44·1	346	e 8 10	− 2	e 14 40	− 5	e 17 46	SS	e 22·4
Jersey		44·5	324	e 7 37	−38	e 16 1	+70	—	—	—
Calcutta	N.	47·7	75	e 7 51	−49	i 15 31	− 5	e 19 15	SSS	e 24·6
Cape Town		54·8	199	—	—	e 21 4	SS	—	—	75·2
San Juan		96·7	291	—	—	e 24 5	[− 5]	e 35 34	SSS	e 41·1
Tacubaya	E.	123·5	309	i 20 42	PP	e 28 50	?	—	—	—

Additional readings :—
Ksara +9m.10s.
Tiflis ePPPN = +6m.7s., ePPPZ = +6m.10s., iSZ = +9m.55s., iN = +10m.5s., eSSN = +11m.0s.
Bucharest eE = +8m.20s. and +9m.4s., eN = +9m.34s.
Budapest eE = +6m.45s.
Stuttgart e = +15m.55s., +17m.44s., and +19m.43s.
Dehra Dun eN = +18m.24s.?
Strasbourg eSS = +15m.44s.
Göttingen eEN = +18m.21s.
Toledo e = +8m.10s.
Copenhagen +17m.41s.
Upsala eSN = +14m.51s.
Jersey e = +6m.28s.
Calcutta eSSSN = +20m.54s.
Cape Town eE = +24m.5s. and +27m.1s., eN = +27m.11s., eE = +31m.54s.
San Juan eS = +24m.55s.
Long waves were also recorded at Bergen, Edinburgh, Stonyhurst, Kew, Bidston, La Paz, and Tananarive.

May 12d. 22h. 9m. 37s. Epicentre 34°·8N. 26°·2E. (as on 1938 Feb. 10d.).

Felt Force V at Hierapetra and Force IV at Sitia.

Epicentre 34°·0N. 25°·5E. (Athens).
34°·9N. 27°·2E. (Strasbourg).

See Annales de l'Institut de Physique du Globe de Strasbourg., 1938, Tome III, 2e partie, Mende, 1941, p. 31.

$A = +\cdot7384$, $B = +\cdot3633$, $C = +\cdot5681$; $\delta = -4$; $h = 0$;
$D = +\cdot442$, $E = -\cdot897$; $G = +\cdot510$, $H = +\cdot251$, $K = -\cdot823$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Athens		3·2	328	i 0 57	P*	—	—	—	—	—
Istanbul		6·7	20	1 37	− 5	3 3	+ 3	1 56	P*	—
Ksara		8·1	98	e 1 44k	−18	e 3 36	+ 1	—	—	—
Sofia	E.	8·2	345	e 2 1	− 2	i 3 35	− 3	e 4 31	S_g	—
Bucharest		9·6	358	e 2 26	+ 5	i 4 24	+12	i 4 56	S*	—
Belgrade		10·9	339	e 2 37a	− 3	i 5 42	+28	e 3 6	PPP	e 5·8
Sebastopol		11·3	28	e 2 25	−21	—	—	—	—	—
Simferopol		11·8	28	e 2 53	0	—	—	—	—	—
Theodosia		12·4	32	e 3 0	− 1	e 5 31	+10	—	—	—
Kecskemet		13·0	340	e 3 6	− 3	e 5 42	+ 7	—	—	(e 7·3)
Budapest		13·7	340	e 3 5	−13	e 7 1	L	—	—	(7·0)
Laibach		14·3	326	e 3 29	+ 3	i 6 24	SS	—	—	i 7·7
Ogyalla		14·4	338	e 3 23	− 4	e 6 16	+ 7	e 3 32	PP	7·4
Triest		14·4	327	3 34	+ 7	6 44	SSS	—	—	—
Florence		14·6	312	e 3 23	− 7	7 53	L	—	—	(7·9)
Graz		14·7	330	i 3 33	+ 2	—	—	—	—	e 7·0
Padova		15·2	319	e 3 41	+ 3	7 59	L	—	—	(8·0)
Erevan		15·5	64	e 3 53	+11	—	—	—	—	—
Tiflis		16·1	59	3 51	+ 2	6 54	+ 5	i 7 6	SS	e 8·4
Chur		17·4	319	e 4 2	− 4	e 7 15	− 4	—	—	—
Grozny		17·4	55	i 4 12	+ 6	e 7 32	+13	—	—	—
Moncalieri		17·4	310	e 3 23?	−43	7 4	−15	—	—	9·9
Prague		17·5	334	e 4 2	− 5	e 7 19	− 2	—	—	e 8·4
Zurich		18·2	319	e 4 12k	− 4	e 7 31	− 6	—	—	—
Marseilles		18·3	304	e 4 14	− 3	e 7 31	− 8	i 4 31	PP	e 11·0
Cheb		18·3	330	e 4 17	0	e 7 38	− 1	—	—	e 10·4
Hof	N.E.	18·7	330	e 4 23	+ 1	e 7 56	+ 8	—	—	e 9·4
Stuttgart		18·8	323	e 4 23k	0	e 7 49	− 1	—	—	e 9·9
Algiers		18·9	281	4 23	− 1	7 53	0	i 9 8	SSS	12·4
Basle		18·9	319	e 4 19	− 5	e 7 51	− 2	—	—	—
Neuchatel		18·9	317	e 4 19	− 5	e 7 54	+ 1	—	—	—
Jena		19·3	332	i 4 23	− 6	e 7 59	− 3	—	—	e 9·4
Karlsruhe		19·4	322	e 4 34	+ 4	—	—	—	—	—
Strasbourg		19·4	320	i 4 27	− 3	i 7 59	− 5	i 5 12	PPP	—
Potsdam		19·9	335	e 4 34	− 2	8 12	− 3	—	—	e 10·4
Göttingen		20·4	330	e 4 37	− 4	e 8 23	− 2	—	—	e 11·4
Hamburg		22·0	333	e 4 52k	− 6	e 8 58	+ 2	—	—	e 11·6
Paris		22·4	315	e 4 57	− 5	e 9 5	+ 1	—	—	13·4
Uccle		22·5	321	e 5 1	− 1	i 9 5	0	—	—	11·4
Copenhagen		22·9	340	i 5 4	− 2	9 11	− 2	—	—	11·4
De Bilt		22·9	326	i 5 4	− 2	9 9	− 4	—	—	11·4
Almeria		23·3	283	e 5 9	− 1	e 9 21	+ 1	—	—	—
Granada		24·2	284	i 5 25	+ 6	i 9 46	+11	—	—	—
Toledo		24·5	290	i 5 23	+ 1	i 9 43	+ 3	e 5 57	PP	—
Malaga		24·9	284	i 5 26	0	e 9 56	+ 9	—	—	13·4
Jersey		25·3	314	e 4 47	−43	e 8 26	?	—	—	13·4
Kew		25·3	319	i 5 28	− 2	i 9 54	0	—	—	13·4
Upsala		25·7	349	e 5 6	−27	e 9 37	−24	e 10 40	SS	e 12·7
Oxford		26·0	319	—	—	i 10 6	0	—	—	e 12·4
Bidston		27·8	321	i 5 19	−34	i 9 46	−49	—	—	13·4
Durham		27·8	324	5 51	− 2	10 31	− 4	—	—	—
Aberdeen		29·4	328	—	—	e 13 32	SSS	—	—	—
Samarkand		32·3	69	6 31	− 2	11 51	+ 5	—	—	—
Tchimkent		34·4	63	6 53	+ 2	—	—	—	—	—
Andijan		36·6	67	7 15	+ 5	13 0	+ 7	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Frunse		38·1	63	7 27	+ 5	—	—	—	—	—
Almata		39·8	61	7 44	+ 8	—	—	—	—	—
Agra	E.	44·7	84	e 8 28	+12	15 0	+ 6	18 30	SSS	—
Weston		72·4	309	i 11 28a	− 2	—	—	—	—	—
Harvard	Z.	72·5	309	e 11 29	− 1	—	—	—	—	—
Williamstown		73·5	310	i 11 38	+ 2	—	—	—	—	—
Mount Wilson	Z.	103·6	330	e 18 19	PP	—	—	—	—	—
Huancayo		106·2	267	e 14 31	P	—	—	e 18 37	PP	—

Additional readings :—
Bucharest iS* = +5m.6s., iS$_E$E = +5m.27s.
Belgrade iNE = +3m.50s., eNE = +4m.51s.
Simferopol e = +3m.57s.
Budapest ePN = +3m.12s., iE = +7m.30s.
Laibach i = +4m.17s.
Ogvalla eSN = +6m.23s.
Tiflis iPZ = +3m.55s., iSN = +7m.0s.
Marseilles ePPP = +4m.36s., eSS = +8m.22s.
Jena eSN = +8m.7s.
Strasbourg iSZ = +8m.3s
Potsdam eEN = +8m.5s.
Toledo iSS = +10m.43s.
Kew i = +10m.2s.
Durham iE = +10m.35s.
Aberdeen i = +17m.28s., e = +18m.9s.
Long waves were also recorded at Tucson.

May 12d. Readings also at 0h. (Tacubaya, Vera Cruz, and Ksara), 3h. (Tiflis), 6h. (La Paz), 7h. (La Paz, Balboa Heights (3), and Huancayo), 8h. (Balboa Heights and near Manila), 9h. (La Paz and near Algiers), 10h. (Balboa Heights), 11h. (La Paz and Tiflis), 12h. (Phu-Lien), 14h. (Ksara), 15h. (Branner, Lick, and Merida), 16h. (Grozny, Branner (2), and Lick), 17h. (Grozny, Ksara, Amboina, Sotchi, Piatigorsk, Andiian, Erevan, Simferopol, and Sebastopol), 18h. (Weston), 20h. (Amboina, Harvard, Williamstown, Malaga, and Granada), 21h. (San Fernando, Amboina, Manila (2), Algiers, Colombo, Batavia, and Medan), 22h. (Rio de Janeiro and Tucson), 23h. (Tacubaya).

May 13d. 2h. 53m. 15s. Epicentre 52°·0N. 34°·0W. (very approximate).

$A = +·5125$, $B = -·3457$, $C = +·7860$; $\delta = -4$; $h = -6$;
$D = -·559$, $E = -·829$; $G = +·652$, $H = -·440$, $K = -·618$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Stonyhurst		19·0	72	i 4 20	− 6	—	—	—	—	8·7
Aberdeen		19·1	63	—	—	e 8 36	SSS	—	—	—
Kew		20·8	77	i 4 47	+ 2	—	—	—	—	9·7
Uccle		23·8	77	e 5 16	+ 1	e 9 30	+ 2	—	—	e 11·2
De Bilt		23·9	72	e 5 13	− 3	e 9 33	+ 3	—	—	e 10·7
Hamburg		26·3	68	e 5 31	− 8	e 9 39	−32	—	—	e 13·7
Strasbourg		26·6	79	e 5 47	+ 5	e 10 23	+ 7	i 6 17	PP	e 13·6
Basle		27·0	82	e 5 53	+ 8	—	—	—	—	—
Copenhagen		27·2	63	i 5 40	− 7	10 13	−12	6 24	PP	12·7
Cheb		28·8	74	e 1 55	?	—	—	—	—	e 14·7
Ksara		52·2	81	e 9 22	+ 7	e 16 48	+ 9	—	—	—
Tucson		57·5	282	e 9 56k	+ 3	—	—	—	—	e 27·7
Tinemaha		58·6	292	e 9 59	− 2	—	—	—	—	—
Haiwee	Z.	59·1	290	e 10 7	+ 3	—	—	—	—	—
Mount Wilson	Z.	60·5	289	e 10 11	− 3	—	—	—	—	—
Pasadena		60·6	289	e 10 12	− 3	—	—	—	—	e 30·7
Santa Barbara	Z.	61·3	290	e 10 19	− 1	—	—	—	—	—

Additional readings :—
Aberdeen e = +9m.16s.
Strasbourg eS = +10m.27s.
Tucson iP = +10m.1s.
Pasadena iZ = +10m.17s.
Long waves were also recorded at San Fernando, Ivigtut, Edinburgh, Prague, Potsdam, Bidston, Tiflis, and Triest.

May 13d. 15h. 6m. 37s. Epicentre 4°·1N. 132°·8E.

$A = -\cdot6777$, $B = +\cdot7319$, $C = +\cdot0710$; $\delta = 0$; $h = +7$;
$D = +\cdot734$, $E = +\cdot679$; $G = -\cdot048$, $H = +\cdot052$, $K = -\cdot997$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		9·0	211	2 15	+ 2	5 25	?	—	—	—
Manila		15·6	313	i 3 43a	0	8 47	?	—	—	12·6
Batavia		27·9	249	i 5 50	− 4	—	—	—	—	—
Hukuoka B		29·4	356	6 8	+ 1	—	—	—	—	—
Phu-Lien	E.	30·4	306	e 6 17	+ 1	—	—	—	—	—
Nagoya		31·2	8	e 5 58	−25	—	—	—	—	—
Medan	E.	34·0	271	6 53	+ 5	—	—	—	—	—
Adelaide		39·2	172	i 7 29	− 2	i 13 30	− 2	i 16 45	SSS	—
Perth		39·3	202	i 9 31	PPP	13 30	− 4	—	—	i 21·5
Riverview		41·5	156	e 7 47	− 3	e 14 5	− 2	—	—	e 22·5
Sydney		41·5	156	—	—	e 13 46	−21	—	—	—
Melbourne		43·2	165	—	—	i 14 33	+ 1	e 17 39	SS	—
Calcutta	N.	46·7	297	e 8 41	+ 9	i 15 30	+ 8	e 10 20	PP	e 22·5
Colombo	E.	52·7	276	e 9 23?	+ 5	—	—	—	—	—
Kodaikanal	E.	55·2	280	e 9 23?	−14	—	—	—	—	—
Agra	E.	57·0	300	i 9 46a	− 4	i 17 35	− 8	21 18	SS	—
Bombay		60·3	289	e 12 23	PP	e 18 23	− 3	—	—	—
Grozny		85·1	313	12 40	+ 1	—	—	—	—	—
Tiflis		85·8	311	i 12 43a	+ 1	e 23 10	[+ 4]	e 16 9	PP	e 43·4
Ksara		93·5	303	i 13 18	− 1	e 24 18	− 7	e 16 50	PP	—
Helwan		97·9	301	—	—	i 24 23	[+ 7]	—	—	—
Copenhagen		103·1	330	—	—	33 18	SS	—	—	47·4
Paris		111·9	327	—	—	e 29 23	PS	—	—	54·4
Williamstown		127·8	23	i 19 8	[0]	—	—	—	—	—
Balboa Heights		145·2	67	e 21 23	PP	—	—	—	—	—
San Juan		150·9	38	e 20 0	[+12]	—	—	—	—	—
Huancayo		151·1	107	i 19 51	[+ 2]	—	—	—	—	—
La Paz	Z.	156·0	123	19 56	[0]	—	—	—	—	—

Additional readings:—
Amboina S?N = +5m.44s.
Batavia e = +5m.56s.
Medan iE = +10m.56s.
Adelaide i = +7m.52s.
Perth i = +17m.38s.
Melbourne i = +20m.48s., e = +24m.53s.
Calcutta ePPPN = +11m.3s., eSSN = +18m.33s.
Agra PS = +18m.10s.
Tiflis eSKSN = +23m.15s., iSE = +23m.29s., ePPSZ = +24m.58s., eSSN = +28m.56s.
Ksara ePS = +25m.20s.
Huancayo i = +19m.57s., +20m.14s., and +20m.36s.
Long waves were also recorded at Stonyhurst, Kew, Upsala, Edinburgh, San Fernando, Strasbourg, Uccle, and De Bilt.

May 13d. Readings also at 1h. (Pasadena, Cheb, Potsdam, Hamburg (2), Aberdeen, Ksara, Paris, Strasbourg, Copenhagen (2), De Bilt (2), Uccle (2), San Fernando, Edinburgh, Kew, Stonyhurst, Tiflis, Bidston, Ivigtut (2), and Mount Wilson (2)), 2h. (Wellington, Brisbane, Williamstown, Perth, Riverview, Sydney, Melbourne, Tiflis, Potsdam, San Fernando, Triest, and Prague), 3h. (Copenhagen, and Balboa Heights), 4h. (Copenhagen, Stonyhurst, Kew, Zurich, Potsdam, Uccle, and De Bilt), 5h. (Copenhagen), 6h. (De Bilt, Zurich, and La Paz), 7h. (Zurich), 8h. (De Bilt and Copenhagen), 9h. (Copenhagen, De Bilt (2), Uccle, Prague, Tiflis, Ivigtut, and Edinburgh), 11h. (Amboina), 12h. (Manila, Batavia, Nagoya, Ivigtut, and Grozny (2)), 13h. (Tucson, Christchurch, Edinburgh, Uccle, De Bilt, Copenhagen, Kew, Stonyhurst, San Fernando, Mount Wilson, and Wellington), 14h. (De Bilt), 15h. (Lick), 17h. (Tacubaya), 22h. (Wellington), 23h. (De Bilt).

May 14d. 4h. 45m. 48s. Epicentre 39°·5.N 33°·7E. (as on 1938 April 27d.).

$A = +·6437$, $B = +·4293$, $C = +·6335$; $\delta = -3$; $h = -2$;
$D = +·555$, $E = -·832$; $G = +·527$, $H = +·351$, $K = -·774$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		3·9	295	1 14	P_g	2 7	S_g	—	—	—
Sebastopol		5·1	359	i 1 14	− 6	e 2 12	− 8	—	—	—
Simferopol		5·4	3	1 24	0	2 27	− 1	e 1 37	P*	—
Theodosia		5·7	13	1 28	0	2 34	− 1	e 1 39	P*	—
Ksara		6·0	161	i 1 35	+ 3	i 3 3	S*	—	—	—
Sotchi		6·0	46	1 36	+ 4	e 2 48	+ 5	—	—	—
Bucharest		7·5	313	e 2 12	P*	i 4 10	S_g	i 4 0	S*	—
Erevan		8·3	83	2 10	+ 6	e 4 35	S_g	—	—	—
Sofia		8·5	296	e 2 24	+17	i 4 52	S_g	—	—	—
Tiflis		8·7	72	e 2 12	+ 2	e 4 7	+17	e 4 26	S*	4·9
Grozny		9·8	63	e 2 24	0	e 5 7	S*	—	—	—
Helwan		9·8	192	—	—	e 4 15	− 2	—	—	—
Cheb		18·4	313	e 4 12?	− 6	—	—	—	—	e 10·2
Stuttgart		19·8	307	e 4 35	0	e 8 25	+12	—	—	e 10·2
Moncalieri		20·0	295	e 5 29	PPP	8 31	+14	—	—	—
Strasbourg		20·7	306	e 4 46	+ 2	e 8 43	+12	—	—	e 13·4
Hamburg		21·4	320	e 4 52	+ 1	e 9 24	SS	—	—	—
Copenhagen		21·5	327	i 4 52	0	9 1	+14	—	—	12·2
Upsala		22·8	339	e 5 2	− 3	e 8 12	−59	—	—	e 14·2
De Bilt		23·4	314	—	—	9 35	+14	—	—	e 12·2
Uccle		23·4	310	—	—	e 9 36	+15	—	—	e 12·2
Kew		26·4	310	—	—	e 11 12?	SS	—	—	—
Rathfarnham Castle		30·3	312	i 8 36	?	i 10 12	−63	i 12 42	SS	—

Additional readings :—
Istanbul $S_g = +2$m.35s.
Theodosia $eP_g = +1$m.50s., $e = +2$m.9s. and $+2$m.30s.
Ksara $SS = +3$m.57s.
Bucharest $iS^* = +4$m.47s., $S_g = +5$m.2s.
Tiflis $eZ = +2$m.32s., $eSN = +4$m.12s.
Long waves were also recorded at Granada, Aberdeen, Paris, Triest, Ogyalla, and Belgrade.

May 14d. 6h. 55m 17s. Epicentre 39°·5N. 33°·7E. (as at 4h.).

$A = +·6437$, $B = +·4293$, $C = +·6335$; $\delta = -3$; $h = -2$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		3·9	295	1 19	P_g	2 47	S_g	—	—	—
Sebastopol		5·1	359	e 1 18	− 2	2 20	0	—	—	—
Simferopol		5·4	3	e 1 24	0	e 2 30	+ 2	e 1 34	P*	—
Theodosia		5·7	13	e 1 26	− 2	e 2 23	−12	e 1 52	P_g	—
Ksara		6·0	161	i 1 38	+ 6	i 2 54	S*	i 3 36	S_g	—
Sotchi		6·0	46	e 2 42	S	(e 2 42)	− 1	—	—	—
Bucharest		7·5	313	e 2 43	P_g	i 3 10	−10	—	—	—
Erevan		8·3	83	e 3 5	P_g	—	—	—	—	—
Sofia	E.	8·5	296	—	—	3 43	− 2	e 4 23	S*	—
Tiflis		8·7	72	e 2 26	+16	e 3 55	+ 5	2 39	PPP	e 4·7
Grozny		9·8	63	e 3 46	S	(e 3 46)	−31	—	—	—
Hamburg		21·4	320	—	—	e 8 43?	− 2	—	—	—
Copenhagen		21·5	327	—	—	8 55	+ 8	—	—	11·7
De Bilt		23·4	314	—	—	e 9 37	+16	—	—	e 11·7
Kew		26·4	310	—	—	e 10 43?	+31	—	—	—

Additional readings :—
Bucharest $iE = +4$m.30s., $iSEN = +4$m.47s.
Sofia $eE = +4$m.49s.
Tiflis $eZ = +2$m.45s., $eE = +4$m.5s.
Grozny $eS = +7$m.24s.
Long waves were also recorded at Strasbourg, Paris, Upsala, Uccle, Stonyhurst, Moncalieri, Triest, Ogyalla, and Belgrade.

May 14d. 12h. 3m. 3s. Epicentre 21°·5N. 99°·5E.

$A = -\cdot1537$, $B = +\cdot9185$, $C = +\cdot3644$; $\delta = +5$; $h = +4$;
$D = +\cdot986$, $E = +\cdot165$; $G = -\cdot060$, $H = +\cdot359$, $K = -\cdot931$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Phu-Lien		6·7	95	e 1 46	+ 4	3 5	+ 5	—	—	3·8
Calcutta	N.	10·4	278	i 2 36	+ 2	i 4 44	+12	i 5 3	SS	i 5·3
Hong Kong		13·6	84	3 17	0	5 47	− 3	—	—	7·1
Medan		17·8	182	4 43	PPP	8 32	SSS	—	—	—
Taityu		19·7	78	4 36	+ 2	—	—	—	—	—
Hyderabad		20·2	262	4 49	+10	8 41	SS	9 11	SSS	10·9
Agra		20·4	290	i 4 38$_s$	− 3	8 28	+ 3	5 3	PP	10·2
Taihoku		20·4	75	e 4 45	+ 4	10 41	L	—	—	(10·7)
Dehra Dun	N.	21·2	299	e 4 27	−22	i 8 13	−28	—	—	e 11·8
Manila		21·5	104	i 5 32k	PPP	9 11	SS	—	—	—
Zi-ka-wei		21·9	58	e 4 53	− 4	8 49	− 5	—	—	—
Colombo	E.	23·9	235	6 48	PPP	—	—	—	—	—
Kodaikanal	E.	23·9	246	e 5 12	− 4	i 10 6	SS	i 11 19	?	—
Bombay		25·2	268	e 5 40	+11	i 10 19	+27	e 6 27	PPP	13·3
Zinsen		28·3	48	e 5 59	+ 2	e 10 52	+ 9	—	—	e 14·5
Batavia		28·4	164	i 6 21	PP	e 11 17	SS	—	—	—
Almata		28·7	324	5 58	− 3	11 4	+14	—	—	—
Taikyu		29·1	53	e 9 44	?	e 15 19	?	—	—	—
Frunse		29·8	321	6 7	− 4	11 25	+18	—	—	e 19·5
Hukuoka B		29·8	59	e 5 13	−58	—	—	—	—	—
Andijan		29·9	315	6 16	+ 4	11 37	+28	—	—	—
Samarkand		33·1	310	6 21	−19	—	—	—	—	—
Gihu		35·3	58	6 57	− 2	—	—	—	—	—
Nagoya		35·5	59	e 6 59	− 1	—	—	—	—	—
Oiwake		37·0	56	7 12	− 1	12 56	− 3	—	—	—
Mizusawa		39·6	53	7 33	− 2	13 31	− 7	—	—	—
Grozny		49·4	309	8 53	0	e 16 1	+ 1	—	—	—
Tiflis		49·9	307	e 8 58	+ 1	e 16 4	− 3	e 10 58	PP	e 28·6
Perth		55·4	162	—	—	i 16 4	?	—	—	25·4
Ksara		56·9	296	i 9 51	+ 2	17 50	+ 8	21 47	SS	—
Yalta		57·8	310	9 54	− 1	17 49	− 5	10 23	PP	—
Simferopol		57·9	310	9 55	− 1	17 52	− 3	—	—	—
Helwan		61·2	293	—	—	i 18 40	+ 2	—	—	—
Bucharest		63·6	310	11 57?	?	—	—	—	—	38·9
Belgrade	N.W.	67·5	311	—	—	e 19 58	+ 2	e 26 17	SSS	e 38·4
Copenhagen		70·9	323	—	—	20 29	− 7	e 24 57	SS	44·9
Potsdam		71·1	320	e 11 21	− 1	e 20 33	− 5	e 28 33	SSS	e 38·0
Triest		72·1	312	e 12 27	+59	—	—	—	—	—
Hamburg		72·7	321	e 11 57?	+25	—	—	—	—	e 37·9
Stuttgart		74·3	317	e 11 43	+ 2	e 21 13	− 2	e 29 21	SSS	e 39·9
Chur		74·6	314	e 11 41	− 2	—	—	—	—	e 42·0
Zurich		75·1	315	e 11 47	+ 1	—	—	—	—	—
Strasbourg		75·3	317	—	—	e 25 57	SS	e 29 57?	SSS	e 41·9
De Bilt		75·9	321	—	—	e 21 31	− 1	—	—	e 38·9
Aberdeen		78·3	327	—	—	e 30 44	SSS	—	—	e 41·9
Paris		78·6	318	—	—	e 21 57?	− 5	—	—	41·9
Edinburgh		79·3	326	—	—	e 31 17	SSS	—	—	e 40·9
Bidston		80·2	324	—	—	e 31 22	SSS	—	—	41·9

Additional readings :—
Medan iN = +9m.40s., iE = +10m.18s., +10m.30s., and +10m.39s.
Taityu i = +10m.23s.
Agra eN = +4m.42s.
Zi-ka-wei iE = +11m.41s., +12m.3s., +12m.19s., iN = +12m.49s.
Bombay iE = eN = +5m.53s., eE = iN = +10m.4s., SSEN = +11m.20s.
Batavia eS?N = +11m.20s., iN = +15m.45s., iE = +15m.57s., iN = +17m.15s.
Mizusawa SE = +13m.51s.
Tiflis eN = +16m.10s., eZ = +17m.31s., eEZ = +19m.25s., eN = +19m.45s.
Belgrade eNW = +34m.59s.
Copenhagen e = +28m.9s.
Potsdam eZ = +20m.45s.
Long waves were also recorded at Koti, Jersey, Harvard, Williamstown, Philadelphia, Huancayo, and other European stations.

May 14d. Readings also at 0h. (La Paz), 1h. (Fort de France, De Bilt, Ksara, Copenhagen, and Uccle), 2h. (Balboa Heights), 3h. (Nagoya), 4h. (Tananarive, Theodosia, Simferopol, Sebastopol, Istanbul, Copenhagen, Ksara, and Tiflis), 6h. (Tiflis, Copenhagen, Batavia, Agra, Tchimkent, Samarkand, Andijan, Frunse, and Almata), 7h. (Sofia, Triest, Grozny, Copenhagen, De Bilt, Kew, and Strasbourg), 10h. (near Zurich and Mizusawa), 11h. (Melbourne), 14h. (Strasbourg, Kew, De Bilt, Copenhagen, Paris, and College), 15h. (Nagoya), 16h. (Ksara), 17h. (Medan), 18h. (Batavia and Kew), 19h. (Harvard), 22h. (Lick (4)), 23h. (Harvard, Huancayo, Fort de France, La Paz, Tucson, Pasadena, Williamstown, Weston, Ottawa, San Juan, Mount Wilson, and Philadelphia).

May 15d. 3h. 33m. 35s. Epicentre 56°·8N. 33°·7W. (as on 1937 June 2d.).

$A = +\cdot4577$, $B = -\cdot3053$, $C = +\cdot8351$; $\delta = +9$; $h = -8$;
$D = -\cdot555$, $E = -\cdot832$; $G = +\cdot695$, $H = -\cdot463$, $K = -\cdot550$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Aberdeen		17·1	76	i 4 0	− 2	e 7 51	SSS	—	—	e 8·4
Bidston		17·8	88	i 4 15	+ 4	—	—	—	—	9·4
Stonyhurst		17·9	86	i 4 10	− 2	—	—	—	—	8·9
Durham		18·1	83	i 4 14	0	7 45	+10	—	—	—
Oxford		19·5	92	i 4 35a	+ 4	—	—	—	—	e 9·3
Kew		20·1	92	e 4 41k	+ 3	i 8 40	SS	—	—	9·4
Jersey		20·4	98	e 3 33	−68	e 8 37	SS	—	—	e 10·3
De Bilt		22·9	84	i 5 6	0	9 19	+ 6	—	—	e 10·9
Uccle		23·0	90	e 5 8	+ 1	e 9 23	+ 9	—	—	e 11·4
Paris		23·1	95	e 5 10	+ 2	—	—	—	—	11·4
East Machias		24·2	255	e 5 20	+ 1	e 9 52	+17	e 5 53	PP	e 11·0
Hamburg		24·8	79	e 5 21	− 4	e 9 41	− 5	—	—	e 13·4
Copenhagen		25·3	73	5 30	0	10 4	+10	—	—	13·4
Toledo		25·7	119	e 5 37	+ 4	e 7 50	?	—	—	11·4
Strasbourg		26·1	90	e 5 14	−23	e 9 49	−18	—	—	e 12·6
Upsala	N.	26·6	62	e 5 40	− 2	e 10 35	+19	—	—	e 13·4
Stuttgart		26·8	88	e 5 43	− 1	e 10 26	+ 7	—	—	e 13·4
Potsdam		27·0	79	e 6 1	+16	e 10 25	+ 3	—	—	e 14·4
Cheb		27·8	83	—	—	e 10 25?	−10	—	—	—
Harvard		27·9	257	e 8 37	?	e 10 43	+ 6	—	—	e 14·9
Weston		27·9	257	e 5 50	− 4	e 10 42	+ 5	—	—	e 14·3
Granada		28·0	121	e 6 6	+11	—	—	—	—	—
Malaga		28·0	123	—	—	e 10 42	+ 4	—	—	—
Ottawa		28·3	266	—	—	e 10 49	+ 6	—	—	14·4
Philadelphia		31·7	256	e 7 16	−11	e 11 40	+ 3	—	—	e 15·9
Bucharest		38·7	82	—	—	11 25	?	—	—	23·4
Tiflis		50·5	73	e 9 1	− 1	e 16 25	+ 9	—	—	e 24·4
Ksara		51·5	86	e 9 10	+ 1	e 16 44	+15	e 10 44	PP	25·4
Tucson		56·8	280	e 9 50	+ 2	e 17 50	+ 9	—	—	e 23·9
Mount Wilson	Z.	59·2	286	e 10 4	− 1	—	—	—	—	—

Additional readings :—
Jersey e = +6m.40s.
Toledo e = +4m.49s.
Granada e = +9m.0s.
Long waves were also recorded at Rathfarnham Castle, Chicago, Williamstown, San Fernando, and Moncalieri.

May 15d. Readings also at 0h. (Manila, Copenhagen, Strasbourg, De Bilt (2), Uccle, Tiflis, Ksara, Amboina, Hong Kong, and Batavia), 1h. (Kew and La Paz), 3h. (Paris), 4h. (Williamstown, Weston, Medan, Fordham, Fort de France, and Harvard), 6h. (La Paz and Huancayo), 9h. (Huancayo), 10h. (Triest, Padova, Fresno, and Florence), 13h. (Hukuoka B and Manila), 14h. (Strasbourg, Paris, and Copenhagen), 15h. (Mizusawa), 16h. (Huancayo, La Paz, Mount Wilson, and Balboa Heights (2)), 17h. (La Paz), 18h. (Hamburg, Branner, Berkeley, Lick, and San Francisco), 19h. (Upsala, Copenhagen, and Mizusawa).

May 16d. 1h. 7m. 10s. Epicentre 29°·0S. 173°·0W.

$A = -\cdot8695$, $B = -\cdot1068$, $C = -\cdot4823$; $\delta = +5$; $h = +2$;
$D = -\cdot122$, $E = +\cdot992$; $G = +\cdot479$, $H = +\cdot059$, $K = -\cdot876$.

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.
New Plymouth		14·7	224	3 12	− 4	i 5 43	−10	i 3 34	PP	—
Apia		15·2	5	i 3 25	+ 3	i 5 59	− 4	i 3 41	PP	—
Wellington		15·8	216	i 3 30	+ 1	6 10	− 6	i 3 56	PP	—
Christchurch		18·5	214	e 3 54a	− 3	6 19	−50	9 34	P_cP	7·2
Melbourne		35·9	245	e 9 13	PPP	i 13 6	SS	—	—	—
Batavia	N.	78·4	269	—	—	i 18 55	?	—	—	—
Pasadena		81·4	44	i 11 46k	0	—	—	—	—	—
Mount Wilson	Z.	81·6	44	i 11 47	0	—	—	e 15 14	PP	—
Haiwee	Z.	83·0	42	i 11 53	− 1	—	—	—	—	—
Tinemaha		83·4	42	e 11 54	− 2	—	—	—	—	—
Tucson		84·8	49	i 12 7k	+ 4	22 11	+ 6	—	—	—
Tiflis		146·9	303	e 18 33	[−34]	—	—	e 21 13	PP	e 77·8
Theodosia		152·4	313	e 18 43	[−31]	—	—	—	—	—
Copenhagen		153·0	354	i 18 48	[−28]	—	—	—	—	—
Yalta		153·5	313	e 18 49	[−27]	—	—	—	—	—
Ksara		154·9	287	i 18 48k	[−29]	—	—	e 22 50	PP	—
De Bilt		156·9	2	e 18 58	[−23]	—	—	e 22 57	PP	—

Additional readings:—
New Plymouth i = +3m.20s. and +3m.24s., P_cP? = +7m.43s.
Apia i = +6m.18s., +6m.22s., +6m.26s., and +6m.34s.
Wellington SS? = +6m.50s., P_cP? = +8m.25s., P_cS? = +10m.10s., S_cS = +14m.2s.
Melbourne i = +10m.4s.
Christchurch L_q = +6m.32s., iZ = +16m.26s.
Mount Wilson ipPZ? = +14m.1s.
Tiflis eE = +22m.12s.
Copenhagen i = +18m.52s.
Ksara ipPKP = +21m.11s., esPKP = +22m.12s.
De Bilt iZ = +19m.19s.

May 16d. 7h. 4m. 43s. Epicentre 5°·0S. 138°·5E.

$A = -\cdot7461$, $B = +\cdot6601$, $C = -\cdot0866$; $\delta = -10$; $h = +7$;
$D = +\cdot663$, $E = +\cdot749$; $G = +\cdot065$, $H = -\cdot057$, $K = -\cdot996$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		10·3	277	2 30	− 2	4 19	−11	—	—	—
Manila		26·1	319	5 40k	+ 3	10 4	− 3	—	—	—
Brisbane		26·3	149	i 10 41	S	(i 10 41)	+30	—	—	—
Adelaide		29·8	180	—	—	e 11 43	+36	i 14 54	SSS	—
Riverview		31·0	159	—	—	e 12 37	SS	e 14 0	SSS	18·7
Batavia		31·5	267	6 5	−21	i 12 5	+31	e 7 22	PP	—
Melbourne		33·2	170	—	—	e 12 49	+49	i 14 22	SSS	18·9
Perth		34·2	215	i 8 25	PPP	i 12 45	+29	i 14 21	SS	—
Phu-Lien		40·5	311	—	—	e 13 41	−11	—	—	—
Medan		40·7	282	9 0	PP	i 13 49	− 6	—	—	—
Wellington		48·5	143	—	—	16 40	+52	20 0	SSS	25·0
Christchurch		48·8	147	8 47a	− 2	16 44	+52	—	—	26·4
Calcutta	N.	56·1	302	—	—	e 17 34	+ 2	—	—	—
Colombo	E.	59·7	280	e 7 47	?	—	—	—	—	—
Agra	E.	66·5	303	e 11 23	+29	19 43	− 1	20 20	PS	—
Frunse		74·7	317	e 11 53	+10	—	—	—	—	—
Andijan		75·5	314	11 48	0	e 21 30	+ 2	—	—	—
Tiflis		96·1	311	e 17 30	PP	e 24 17	[+10]	—	—	e 46·3
Ksara		103·2	303	e 17 3	?	e 28 8	PPS	—	—	—
La Paz	Z.	146·7	129	20 20	[+38]	—	—	—	—	—

For Notes see next page.

NOTES TO MAY 16d. 7h. 4m. 43s.

Additional readings :—
Brisbane ePE = +10m.47s., iEN = +12m.53s., iN = +15m.23s., iE = +15m.29s.
Adelaide i = +16m.53s., iS? = +17m.21s.
Riverview iSE = +17m.28s., iEN = +18m.13s.
Batavia eN = +7m.49s., iN = +12m.11s.
Melbourne S = +16m.32s.
Perth i = +16m.54s.
Medan PE = +9m.4s.
Wellington L_q = +21m.17s.?
Christchurch L_q = +22m.32s.
Agra SSE = +23m.43s.
Tiflis eE = +17m.46s., eN = +24m.58s., eE = +25m.45s.
Long waves were also recorded at Strasbourg, Paris, Copenhagen, De Bilt, and Sydney.

May 16d. Readings also at 1h. (Paris, De Bilt, and Copenhagen), 4h. (Mount Wilson), 9h. (Tiflis), 10h. (Agra and Granada), 11h. (Tucson, Pasadena, and Mount Wilson), 12h. (Bucharest, Helwan, Tiflis, Yalta, and Ksara), 13h. (Fort de France), 14h. (Paris, Aberdeen, Bidston, Kew, De Bilt, and Copenhagen), 15h. (Ksara, Helwan, Tiflis (2), Sebastopol, Calcutta, Melbourne, Riverview, Frunse, Andijan, Bombay, Agra, Medan, Colombo, Batavia, Manila, and Amboina), 16h. (Tiflis, Bidston, Kew, De Bilt, and Copenhagen), 17h. (Florence), 18h. (Jersey, Stonyhurst, Edinburgh, Bidston, Balboa Heights, Oxford, Uccle, Strasbourg, Kew, De Bilt, Copenhagen, Durham, Aberdeen, Paris, Yalta, Pasadena, and Mount Wilson (2)), 19h. (Harvard, Fordham, and Copiapo).

May 17d. Readings at 1h. (Tiflis (2)), 2h. (Mount Wilson, Pasadena, Riverside, Tucson, Huancayo, La Paz, La Plata, and near Copiapo), 3h. (Pasadena, Riverside, Tucson, and Manila), 5h. (Andijan, Frunse, Tiflis, and Santiago), 7h. (Tiflis), 8h. (Adelaide, Brisbane, and Perth), 9h. (De Bilt, Andijan, near Almata, and Frunse), 11h. (Andijan and Frunse), 12h. (Tiflis and near Malabar), 13h. (near Andijan (2)), 16h. (Christchurch and Harvard), 17h. (Santiago, Ksara, and Tiflis), 18h. (Harvard, Ottawa, Seven Falls, and Shawinigan Falls), 19h. (near Fordham).

May 18d. Readings at 0h. (near Algiers), 2h. (Balboa Heights), 3h. (Mount Wilson, Pasadena, and Riverside), 6h. (Semipalatinsk and Tiflis), 9h. (Apia and Christchurch), 11h. (Copenhagen, Ksara, Tiflis, Strasbourg, and Paris), 13h. (near Fort de France), 14h. (Brisbane, Perth, Mount Wilson, and Pasadena), 17h. (Malabar), 19h. (near Hukuoka B, near Manila, and near Tananarive), 21h. (Tiflis), 23h. (Wellington).

May 19d. 17h. 8m. 30s. Epicentre 0°·5S. 119°·2E.

Damage at Dongala and at Parigi (Celebes). Tidal wave at Manbara.

H. P. Berlage.

Aardbevingen in den Oost Indischen Archipel waargenomen gedurende het jaar, 1938. Natuurkundig Tijdschrift voor Nederlandsch-Indie, Afl. 1, van Deel XCX blg., 38-75. Macroseismic Chart fig. 1, p.42. Epicentre, Gulf of Tomini 0°·7S. 120°·3E.

A = −·4879, B = +·8729, C = −·0087 ; δ = +8 ; h = +7 ;
D = +·873, E = +·488 ; G = +·004, H = −·008, K = −1·000.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina	9·5	109	2 0	−20	4 13	+ 3	i 4 48	S*	—
Malabar	13·3	240	e 3 29	PPP	i 6 35	SSS	—	—	—
Batavia	13·6	245	3 20	+ 3	i 6 49	+59	i 3 36	PPP	—
Manila	15·1	8	i 3 35a	− 1	6 36	+11	—	—	—
Palau	17·1	65	3 58	− 4	—	—	—	—	—
Medan	20·9	282	4 52	+ 6	i 9 17	?	i 5 17	PPP	—
Hong Kong	23·2	348	5 8k	− 1	9 33	+15	5 30	PP	12·2
Taito	23·2	4	5 6	− 3	9 24	+ 6	—	—	—
Arisan	23·9	3	5 16	0	9 47	+17	—	—	—
Phu-Lien	24·5	331	i 5 23	+ 1	i 10 0	+20	5 53	PP	12·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Isigakizima		25·1	10	5 27	− 1	10 14	+23	—	—	—
Taihoku		25·5	4	e 5 24	− 8	10 24	+27	—	—	—
Miyakozima		25·8	11	5 34	0	10 23	+21	—	—	—
Nake		30·4	18	6 17	+ 1	11 25	+ 9	—	—	—
Perth		31·4	185	i 6 43	+18	11 13	−19	i 7 43	PP	11·9
Zi-ka-wei	N.	31·6	3	e 6 22	− 4	11 0	−35	—	—	16·0
Takusima		32·6	18	6 41	+ 6	11 59	+ 8	7 58	PP	15·6
Miyazaki		34·2	19	6 54	+ 5	12 28	+12	8 19	PP	16·1
Tomie		34·2	14	6 56	+ 7	12 13	− 3	8 20	PP	25·3
Hukuoka B		35·5	16	7 5	+ 5	12 21	−15	—	—	—
Simidu		35·6	20	7 5	+ 4	12 26	−12	8 34	PP	—
Koti		36·5	20	e 7 7	− 2	e 12 39	−12	e 8 45	PP	e 17·6
Husan		36·6	12	7 14	+ 4	12 57	+ 4	8 56	PPP	—
Hamada		37·2	17	7 16	+ 1	13 4	+ 2	8 52	PP	17·1
Siomisaki		37·2	23	7 23	+ 8	13 6	+ 4	15 49	SS	—
Taikyu		37·2	12	e 7 10	− 5	13 12	+10	—	—	16·0
Calcutta		37·8	309	i 7 23	+ 3	i 13 36	+25	i 9 16	PPP	i 19·2
Kobe		38·1	21	7 20	− 2	13 24	+ 8	9 12	PPP	—
Osaka B		38·2	21	7 26	+ 3	13 43	+26	9 35	PPP	18·7
Zinsen	Z.	38·4	9	e 7 26a	+ 1	e 13 30	+10	—	—	e 16·4
Keizyo		38·6	10	7 20	− 6	13 25	+ 2	9 5	PP	—
Adelaide		38·7	154	i 7 38	+11	i 13 21	− 4	i 9 8	PP	16·7
Kameyama		38·7	23	7 24	− 3	12 56	−29	—	—	16·6
Nagoya		39·2	23	e 7 23	− 8	(13 42)	+10	—	—	13·7
Gihu		39·3	23	7 37	+ 5	13 18	−16	9 10	PP	—
Heizyo		39·8	7	e 7 42	+ 6	i 13 45	+ 3	—	—	16·9
Colombo	E.	39·9	281	7 38	+ 1	13 33	−10	9 45	PPP	19·6
Kohu		40·2	24	7 44	+ 4	13 46	− 2	—	—	—
Oiwake		40·8	23	7 39	− 6	13 53	− 3	9 43	PPP	—
Tokyo, Cent. Met. O.		40·8	25	7 51	+ 6	13 52	− 4	17 10	SSS	—
Wazima		41·1	21	7 45	− 2	13 59	− 2	9 44	PPP	19·7
Kakioka		41·4	25	7 51	+ 1	13 57	− 8	9 18	PP	—
Brisbane		42·1	132	i 7 48	− 7	i 13 54	−22	i 9 30	PP	i 17·1
Kodaikanal	E.	42·9	286	i 8 0	− 2	14 50	+23	i 10 10	PPP	21·7
Sendai		43·4	25	8 12	+ 6	14 33	− 2	17 13	SS	—
Hyderabad		43·9	296	8 12	+ 2	15 6	+24	9 57	PP	21·8
Melbourne		44·1	150	e 8 9	− 3	14 48	+ 3	i 10 3	PP	21·5
Mizusawa		44·3	24	8 20	+ 7	14 46	− 2	—	—	20·7
Riverview		44·7	141	e 8 5	−11	i 14 54	0	i 10 11	PP	e 19·6
Sydney		44·7	141	e 7 56	−20	i 15 2	+ 8	i 10 18	PP	21·5
Morioka		44·8	24	8 24	+ 7	14 55	0	10 12	PP	21·1
Miyako		45·0	25	8 20	+ 1	15 0	+ 2	—	—	—
Mori		46·6	22	8 46	+14	15 32	+11	—	—	22·2
Sapporo		47·7	22	8 51	+11	15 27	− 9	18 51	SS	22·0
Agra		48·2	308	i 8 43a	− 1	i 16 3	+20	11 6	PPP	22·6
Bombay		49·4	296	e 8 52	− 1	i 16 29	+29	e 10 38	PP	25·1
Nemuro		49·6	24	8 44	−11	16 10	+ 7	11 24	PPP	—
Dehra Dun	N.	49·7	312	i 9 14	+18	16 24	+20	i 10 25	PP	e 26·3
Almata		57·7	325	9 51	− 4	18 21	+28	e 14 23	PPP	—
Frunse		58·8	323	10 0	− 2	e 18 36	+29	—	—	27·2
Andijan		59·1	320	e 10 4	0	—	—	—	—	—
Semipalatinsk		60·6	333	10 11	− 4	—	—	—	—	—
New Plymouth		63·0	134	e 10 25	− 6	19 8	+ 7	i 12 20	PP	28·3
Arapuni		63·8	133	10 24	−12	18 42	−29	23 12	SS	28·0
Christchurch		63·9	139	e 10 36k	− 1	i 19 19	+ 7	13 6	PP	31·2
Wellington		64·4	136	e 10 30	−10	19 19	+ 1	13 22	PP	29·1
Apia		69·5	104	e 11 24	+12	i 20 31	+11	i 13 38	PP	—
Tananarive		72·5	251	e 11 48	+18	e 20 42	−12	12 11	pP	32·4
Grozny		78·3	315	12 3	0	22 19	+20	12 25	pP	—
Erevan		78·7	311	e 12 17	+11	e 22 28	+25	—	—	—
Tiflis		78·7	313	i 12 4	− 2	i 22 20	+17	27 30	SS	33·5
Piatigorsk		80·4	315	12 14	− 1	e 21 31	−50	—	—	—
Sotchi		82·7	314	e 12 24	− 3	—	—	15 50	PP	—
Honolulu		83·6	68	e 12 36	+ 4	i 22 57	+ 4	15 42	PP	34·0
Ksara		84·7	303	i 12 36a	− 1	i 23 25	+21	29 33	SS	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Theodosia		86·0	315	e 12 40	− 3	23 25	+ 8	—	—	35·5
Yalta		86·8	314	12 43	− 4	23 30	+ 5	—	—	—
Simferopol		86·9	315	12 45	− 3	e 23 34	+ 8	—	—	—
Sebastopol		87·3	315	12 44	− 6	e 23 33	+ 4	—	—	—
Helwan		88·4	299	e 12 54	− 1	23 40	0	i 16 50	PP	—
Istanbul		90·4	311	13 3	− 1	23 50	− 8	16 35	PP	—
College		91·7	24	e 13 11	+ 1	i 23 44	[+ 1]	16 26	PP	i 38·5
Bucharest		92·6	314	e 13 20	+ 5	i 24 8	−10	i 23 30	SKS	44·5
Sofia		94·7	312	e 13 32	+ 8	e 24 46	+10	24 16	SKS	e 38·2
Upsala		96·2	330	13 44	+13	i 24 20	[+12]	e 17 43	PP	e 42·5
Belgrade		96·6	314	e 13 46k	+13	24 25	[+15]	i 17 57	PP	e 38·6
Kecskemet	Z.	96·9	317	e 13 43	+ 9	26 43	PS	e 17 53	PP	e 40·5
Budapest	E.	97·2	318	e 13 52	+16	i 24 25	[+12]	i 17 50	PP	e 42·5
	N.	97·2	318	e 13 59	+23	i 24 30	[+17]	i 17 59	PP	e 43·5
Ogyalla		97·8	318	14 2	+24	24 58	− 4	e 17 48	PP	e 40·5
Cape Town		98·6	236	e 18 9	PP	i 25 33	+24	e 22 19	PPP	52·3
Sitka		98·8	31	e 13 51	+ 8	24 32	[+11]	i 17 42	PP	i 41·4
Copenhagen		99·8	326	i 14 2	+15	24 40	[+14]	18 10	PP	—
Prague		99·8	321	e 13 56	+ 9	e 24 43	[+17]	18 5	PP	e 36·5
Potsdam		100·2	324	e 13 48	− 1	e 24 30	[+ 2]	i 18 7	PP	e 43·5
Cheb		101·1	321	e 13 56	+ 3	e 24 50	[+18]	e 18 32	PP	e 43·5
Triest		101·1	317	e 14 7	+14	24 40	[+ 8]	18 12	PP	e 46·5
Jena		101·4	322	e 14 9	+14	e 24 30	[− 4]	e 18 9	PP	e 41·5
Hof		101·4	321	e 18 30	PP	e 28 30	PPS	e 32 30	SS	e 41·5
Hamburg		101·8	325	e 14 11k	+15	i 24 42	[+ 6]	i 18 35	PP	e 42·5
Bergen		102·1	333	18 25	PP	24 53	[+16]	—	—	52·5
Göttingen		102·3	323	e 14 30?	+31	i 24 49	[+11]	i 18 29	PP	e 45·5
Padova		102·5	317	e 14 11	+11	24 56	[+17]	i 18 40	PP	e 46·5
Florence		103·3	315	e 18 38	PP	24 57	[+14]	i 20 23	PPP	27·9
Stuttgart		103·5	320	e 13 59	− 5	24 54	[+11]	i 18 48	PP	e 47·5
Chur		103·7	319	e 14 12	+ 7	e 27 45	PS	e 18 39	PP	—
Karlsruhe		103·9	321	i 14 5	− 1	i 27 53	PS	i 18 40	PP	e 42·5
Zurich		104·2	319	e 14 20	+13	e 27 50	PS	e 18 45	PP	—
Strasbourg		104·4	321	e 14 4	− 4	i 25 3	[+15]	i 14 25	pP	e 43·8
Basle		104·8	319	e 18 7	PKP	e 25 7	[+18]	e 18 58	PP	—
De Bilt		105·0	325	e 14 27	P	e 26 25	+23	i 18 37	PP	e 46·5
Moncalieri		105·4	317	e 14 28	P	28 10	PS	i 17 42	?	34·0
Neuchatel		105·4	319	e 17 40	PKP	—	—	—	—	—
Uccle		105·9	324	e 14 25	P	i 25 6	[+12]	i 18 56	PP	43·5
Besançon		106·0	319	—	—	e 34 6	SSP	—	—	e 44·5
Aberdeen		106·9	331	e 14 37	P	25 11	[+12]	i 18 58	PP	40·8
Marseilles		107·5	315	i 18 48	PP	i 27 4	sS	e 33 40	SS	e 43·5
Durham		107·7	329	e 14 38	P	i 25 12	[+10]	e 18 35	PPP	—
Paris		107·7	322	e 14 39	P	25 12	[+10]	19 11	PP	41·5
Edinburgh		108·0	330	e 14 43	P	i 25 14	[+10]	i 19 9	PP	41·5
Stonyhurst		108·0	328	e 14 46	P	i 26 21	{+30}	i 19 21	PP	44·5
Kew		108·4	325	i 14 42	P	i 25 20	[+15]	i 19 13	PP	41·5
Oxford		108·8	325	i 14 47	P	i 25 15	[+ 8]	i 28 32	PS	i 46·0
Bidston		109·1	328	i 14 51	P	i 25 26	[+18]	i 19 14	PP	e 40·5
Ferndale	E.	110·2	46	e 19 2	PP	—	—	—	—	54·5
Jersey		110·3	324	i 19 29	PP	i 25 32	[+19]	i 28 46	PS	e 53·6
Rathfarnham Castle		110·8	329	i 18 10	[−24]	i 26 48	{+38}	i 29 0	PS	52·5
Algiers		111·1	309	e 19 29	PP	25 29	[+13]	20 54	pPP	48·0
Ukiah		111·4	47	e 18 12	[−24]	24 58	[−20]	e 19 22	PP	i 45·8
San Francisco		112·4	49	—	—	e 47 5	?	—	—	e 51·6
Berkeley		112·5	49	18 33	[− 5]	e 34 35	SS	e 19 32	PP	—
Branner	E.	112·7	49	—	—	29 11	PS	—	—	—
Lick	E.	113·2	49	e 19 43	PP	e 29 33	PS	—	—	e 52·1
Fresno	N.	114·8	49	e 14 20	?	—	—	e 20 4	PP	—
Almeria		115·2	311	e 19 0	[+17]	i 29 57	PS	—	—	e 51·3
Tinemaha	E.	115·8	48	e 18 55	[+11]	e 29 20	PS	e 19 50	PP	—
Butte		115·9	36	e 18 53	[+ 8]	i 28 54	PS	e 20 0	PP	46·8
Saskatoon		115·9	29	e 19 30?	PP	e 29 30?	PS	e 36 30?	SSP	50·5
Toledo		115·9	315	e 19 50	PP	i 25 52	[+17]	i 29 44	PS	48·3
Granada		116·0	312	e 19 0	[+15]	—	—	e 15 7	P	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Malaga		116·7	312	e 19 27	PP	i 27 10	{+18}	—	—	51·0
Mount Wilson	z.	116·9	51	i 19 1	[+14]	—	—	i 20 4	PP	—
Pasadena		116·9	51	e 18 39	[− 8]	e 27 28	{+35}	e 22 16	PPP	e 46·2
Bozeman		117·0	36	e 15 6	P	e 25 47	[+ 8]	e 19 59	PP	i 49·1
Riverside	z.	117·6	51	e 18 50	[+ 2]	—	—	i 20 4	PP	—
San Fernando		118·2	311	e 20 33	PP	i 28 13	PS	i 35 16	SS	54·5
Ivigtut		118·7	353	19 2	[+12]	25 48	[+ 3]	35 32	SS	46·5
Tucson		123·3	50	19 10	[+11]	i 30 42	PS	i 20 45	PP	i 51·3
Denver		124·0	40	e 31 16	PS	e 33 57	PPS	—	—	e 53·9
Chicago		132·2	26	e 21 32	PP	e 38 36	SS	e 33 19	PPS	e 55·4
Seven Falls		132·8	8	e 21 42	PP	e 38 24	SS	—	—	55·5
Shawinigan Falls		133·0	10	e 19 29	[+11]	e 32 12	PS	e 21 59	PP	43·5
Ottawa		133·4	14	e 19 30?	[+11]	e 39 42	SS	e 21 44	PP	59·5
Buffalo		134·8	18	e 19 20	[− 1]	i 34 0	PPS	i 22 6	PP	—
Cape Girardeau	E.	134·8	32	e 19 30	[+ 9]	—	—	e 21 53	PP	—
Vermont		134·9	11	e 19 28	[+ 7]	e 28 28	{−22}	i 22 10	PP	e 57·0
Little Rock		135·0	37	e 19 33	[+12]	e 32 12	PS	e 39 50	SS	—
East Machias		135·5	6	e 19 3	[−19]	e 26 2	[−29]	e 21 46	PP	i 56·3
Cincinnati		135·9	25	19 36	[+13]	—	—	—	—	—
Halifax		136·0	2	e 23 30?	?	e 40 30?	SS	—	—	57·5
Williamstown		136·5	10	e 19 18	[− 6]	i 27 19	[+45]	i 22 14	PP	i 66·0
~~Pennsylvania~~		~~137·0~~	~~18~~	~~i 22 18~~	~~PP~~	~~e 32 26~~	~~PS~~	—	—	—
Harvard		137·1	10	e 19 15	[−10]	e 40 20	SS	i 22 2	PP	e 66·5
Weston		137·3	10	i 19 17	[− 9]	e 29 12	{+ 7}	i 22 21	PP	e 66·7
Tacubaya	E.	138·0	60	e 19 30	[+ 3]	—	—	—	—	—
Fordham		138·1	14	e 19 17	[−10]	i 46 2	SSS	i 22 21	PP	e 61·5
Philadelphia		138·6	15	i 19 29	[+ 1]	i 40 29	SS	i 22 26	PP	e 59·8
Georgetown		139·0	18	e 19 25	[− 4]	—	—	22 30	PP	—
Columbia		141·7	26	e 19 37	[+ 4]	e 26 46	[+ 4]	e 22 44	PP	61·6
La Plata		144·7	185	19 29	[− 9]	—	—	—	—	63·0
Merida	E.	145·3	50	i 19 50	[+11]	—	—	i 41 57	SS	—
Rio de Janeiro		151·1	216	i 20 12	[+23]	i 29 30	{−54}	i 23 52	PP	42·2
Huancayo		161·0	132	e 20 15	[+13]	i 31 18	{ 0}	i 24 42	PP	i 65·8
La Paz		161·4	159	e 20 2	[0]	i 27 2	[− 4]	44 12	SS	i 71·5
San Juan		161·5	15	e 20 14	[+11]	i 31 16	[− 4]	i 25 26	PP	—
Fort de France		165·9	1	i 20 19	[+13]	27 30	[+21]	—	—	—

Additional readings :—
Amboina iE = +2m.20s., iEN = +4m.32s., iE = +5m.14s.
Malabar i = +3m.48s., +3m.52s., +4m.25s., +8m.5s., and +11m.6s.
Batavia iPZ = +3m.40s., i = +7m.2s.
Hong Kong SS = +11m.0s.
Phu-Lien PPP = +6m.15s.
Perth i = +7m.58s., S = +10m.13s.
Zi-ka-wei PPN? = +6m.48s., iN = +10m.12s., SSN = +11m.48s.
Koti P = +7m.20s.
Calcutta iSSN = +16m.5s., iSSSN = +16m.46s.
Kobe SS = +15m.30s.
Osaka B SSS = +16m.36s.
Adelaide i = +9m.20s., +13m.50s., and +16m.8s.
Gihu SS = +16m.21s.
Kakioka SSS = +17m.1s.
Brisbane iPP?N = +9m.42s.
Hyderabad P_cPN = +9m.32s., S_cSN = +17m.35s., SSN = +18m.21s.
Melbourne iP = +8m.13s., i = +8m.27s., SS = +17m.48s.
Riverview i = +8m.24s., iP = +8m.29s.a, iN = +11m.28s., iE = +15m.23s., iN = +18m.6s., iZ = +18m.13s., iSSE = +18m.15s., iN = +18m.18s.
Sydney i = +8m.36s. and +17m.47s.
Morioka PS = +15m.16s., SSS = +18m.23s.
Agra eN = +8m.47s., iE = +9m.4s., iN = +9m.10s. and +18m.46s., SSN = +19m.55s.
Bombay iEN = +9m.4s., iE = +9m.17s., iEN = +9m.34s., eP_cPEN = +10m.2s., SSEN = +20m.3s.
Dehra Dun i?N = +18m.59s. and +23m.19s.
Frunse e = +10m.24s.
New Plymouth i = +11m.40s., SKS = +19m.43s., i = +20m.32s., +21m.48s., +24m.58s., L_q = +25m.50s.
Arapuni L_q = +25m.36s.
Christchurch iPZ = +10m.44s.a, iNZ = +10m.47s., iP = +10m.50s., L_q = +26m.48s.
Wellington P_cP = +11m.7s., PP = +12m.44s., PPP = +14m.29s., SKS = +19m.59s., SS = +23m.34s., SSS = +25m.34s., L_q = +26m.14s.

Continued on next page.

Apia $iP_cP = +11m.42s.$, $ePPP = +15m.20s.$, $S_cSZ = +21m.21s.$, $i = +21m.30s.$, $SS = +24m.50s.$, $SSS = +27m.16s.$
Tananarive $P_cP = +11m.52s.$, $sPE = +12m.36s.$, $PPE = +14m.35s.$, $sPPE = +15m.2s.$, $PPPN = +15m.59s.$, $SPE = +21m.7s.$, $pSN = +21m.17s.$, $sSE = +21m.21s.$, $sPSE = +22m.3s.$, $SSN = +25m.22s.$, $sSSE = +26m.19s.$, $SSSN = +27m.47s.$
Tiflis $iEZ = +12m.10s.$, $iP_cPE = +12m.23s.$, $iE = +12m.30s.$, $iPPE = +15m.33s.$, $iPPPE = +17m.24s.$, $iE = +19m.38s.$, $+21m.24s.$, and $+22m.26s.$, $iSSN = +27m.33s.$, $eE = +28m.2s.$, $SSSE = +30m.26s.$
Honolulu $iP = +12m.47s.$, $PPP = +17m.51s.$, $eS = +22m.38s.$, $i = +23m.5s.$, $ePS = +23m.36s.$, $i = +23m.43s.$, $iPPS = +23m.52s.$, $i = +24m.12s.$, $+24m.21s.$, $+25m.19s.$, $iSS = +28m.1s.$, $i = +28m.44s.$, $+28m.49s.$, $SSS = +31m.52s.$
Theodosia $e = +12m.58s.$
Yalta $e = +13m.1s.$
Helwan $i = +13m.12s.$, $SKS = +23m.12s.$, $SS = +29m.44s.$
Bucharest $iPS = +24m.46s.$, $iPPS = +26m.6s.$
Sofia $eE = +17m.26s.$, $eN = +17m.40s.$, $eE = +23m.12s.$, $PSE = +26m.24s.$, $eE = +27m.12s.$, $eN = +31m.12s.$
Col ege $iS = +24m.13s.$, $iPPS = +25m.26s.$, $i = +26m.26s.$, $iSS = +29m.47s.$, $i = +30m.20s.$
Upsala $PN = +13m.54s.$, $eE = +17m.27s.$, $iPPE = +17m.50s.$, $iPPPE = +20m.0s.$, $eE = +24m.12s.$, $iPSE = +26m.20s.$, $iSSN = +31m.46s.$, $eSSSE = +35m.40s.$
Belgrade $iNW = +17m.46s.$ and $+21m.48s.$, $iPSNE = +26m.39s.$, $iNW = +30m.38s.$
Kecskemet $ePKP = +17m.21s.$, $eZ = +19m.44s.$, $+21m.27s.$, $+22m.33s.$, $+23m.29s.$, $ePS = +28m.46s.$, $e = +31m.17s.$, $eSS = +33m.45s.$
Budapest E $i = +17m.7s.$, $+21m.44s.$, $+26m.47s.$, $+27m.13s.$, $+28m.43s.$, $+32m.13s.$, $+34m.43s.$, and $+36m.13s.$
Budapest N $i = +20m.36s.$, $+22m.0s.$, $+22m.17s.$, $+25m.13s.$, $+27m.13s.$, $+30m.46s.$, $+31m.33s.$, and $+32m.3s.$
Ogyalla $eN = +17m.30s.$, $PP = +18m.10s.$, $iE = +20m.16s.$, $eE = +22m.2s.$, $SKSE = +24m.30s.?$, $ePSE = +27m.2s.$, $eN = +30m.30s.$, $SSN = +32m.30s.?$
Cape Town $ePN = +18m.39s.$, $iPPPN = +24m.39s.$, $iPPPE = +24m.42s.$, $iN = +32m.14s.$, $iSSN = +35m.47s.$, $iSSE = +35m.58s.$, $iSSS = +40m.59s.$, $iN = +41m.51s.$
Sitka $S = +25m.17s.$, $ePS = +26m.15s.$, $i = +26m.48s.$, $iSS = +32m.6s.$, $i = +32m.55s.$, $i = +34m.52s.$, $iSSS = +36m.16s.$
Copenhagen $eZ = +17m.6s.$, $PKP = +17m.36s.$, $PPP = +20m.26s.$, $eN = +20m.42s.$, $eEZ = +22m.7s.$, $eN = +23m.6s.$, $SKKSN = +25m.42s.$, $SE = +26m.24s.$, $PS = +27m.2s.$, $PPS = +27m.54s.$, $e = +28m.50s.$, $SS = +31m.30s.?$
Prague $eSKKS = +25m.24s.$, $ePS = +27m.17s.$, $eSS = +32m.30s.$
Potsdam $eEN = +14m.0s.$, $iZ = +14m.12s.$, $eE = +17m.36s.$, $ePPN = +18m.12s.$, $iZ = +20m.13s.$, $ePPPZ = +20m.30s.$, $eE = +26m.30s.$, $eZ = +26m.42s.$, $ePSE = +27m.24s.$, $ePPSZ = +27m.54s.$, $iEN = +28m.14s.$, $eE = +29m.54s.$, $eN = +32m.0s.$, $eSSEN = +32m.36s.$, $iZ = +34m.19s.$, $SSSZ = +38m.27s.$, $iE = +39m.31s.$
Triest $iSS = +32m.57s.$
Jena $eP = +14m.12s.$, $ePKPN = +18m.0s.$, $ePKPZ = +18m.5s.$, $i = +18m.13s.$, $+18m.17s.$, $e = +20m.30s.$, $eE = +22m.21s.$, $eNZ = +22m.24s.$, $e = +27m.30s.$, $eE = +32m.51s.$, $eN = +32m.54s.$
Hamburg $eE = +18m.13s.$, $iZ = +18m.17s.$, $ePPPZ = +20m.47s.$, $eN = +25m.51s.$, $eSSE = +32m.19s.$, $eSSN = +32m.59s.$, $eSSSE = +36m.53s.$
Bergen $P = +18m.36s.$, $e = +31m.30s.?$
Göttingen $eEZ = +17m.30s.$
Padova $e = +14m.17s.$, $iPP = +19m.5s.$, $SKS = +25m.2s.$, $iSKKS = +26m.5s.$, $i = +27m.56s.$, $iPS = +28m.33s.$, $iPS = +28m.38s.$ and $+28m.41s.$, $i = +30m.11s.$, $+30m.20s.$, and $+33m.11s.$
Stuttgart $eP = +14m.17s.$, $ePKP = +17m.33s.$, $+17m.51s.$, $ePS = +27m.42s.$, $iSS = +33m.34s.$, $ePPP = +37m.20s.$, $e = +39m.36s.$ and $+42m.30s.?$
Zurich $ePKP = +18m.6s.$, $ePPP = +20m.57s.$
Strasbourg $ePPZ = +18m.28s.$, $ipPP = +18m.52s.$, $iPPPZ = +20m.53s.$, $ipPPPZ = +21m.9s.$, $iPSE = +27m.52s.$, $iPKKP = +29m.48s.$, $iSS = +33m.46s.$, $iPKP,PKP = +38m.8s.$
Basle $ePS = +28m.6s.$
De Bilt $iE = +26m.36s.$, $iEZ = +27m.59s.$
Uccle $e = +14m.30s.$, $i = +14m.37s.$, $e = +18m.37s.$, $i = +19m.6s.$, $iPPPZ = +21m.21s.$, $iPS = +28m.9s.$, $iPPSN = +28m.52s.$, $iSS = +34m.5s.$, $iSSSN = +38m.40s.$
Aberdeen $i = +17m.39s.$, $iPPP = +21m.20s.$, $iPS = +28m.16s.$, $iPPS = +29m.16s.$, $i = +32m.32s.$, $iSS = +34m.2s.$, $i = +37m.17s.$ and $+38m.37s.$
Marseilles $i = +20m.14s.$, $ePPP = +21m.7s.$, $e = +23m.49s.$, $sSS = +37m.12s.$
Durham $eEN = +14m.43s.$, $iEN = +19m.15s.$, $+25m.19s.$, and $+26m.13s.$, $iN = +27m.20s.$, $iE = +28m.27s.$ and $+29m.0s.$, $iEN = +29m.27s.$, $iE = +33m.30s.$ and $+38m.41s.$, $iN = +38m.55s.$, $iE = +41m.15s.$, $iN = +41m.25s.$ and $+44m.40s.$
Paris $PS = +28m.28s.$, $SS = +34m.38s.$
Edinburgh $i = +19m.19s.$, $+21m.40s.$, $+22m.0s.$, $+28m.59s.$, $+29m.43s.$, and $+30m.33s.$
Stonyhurst $i = +28m.56s.$ and $+31m.1s.$
Kew $iZ = +14m.47s.$, $+19m.23s.$, $iE = +21m.9s.$, $iPPP = +21m.43s.$, $iSN = +26m.51s.$, $iSPZ = +28m.24s.$, $iPSEN = +28m.39s.$, $iE = +28m.51s.$ and $+29m.11s.$, $iPPS = +29m.38s.$, $iEZ = +31m.52s.$, $iPKKSE = +33m.50s.$, $iSSZN = +34m.29s.$, $iPPPE = +38m.7s.$, $iSSSE = +38m.51s.$, $iN = +39m.31s.$

Continued on next page.

Oxford i = +19m.9s.
Bidston i = +19m.23s., iPPP = +21m.43s., iS = +26m.56s., iPS = +28m.36s., iPPS = +29m.27s., iSS = +34m.26s., i = +39m.27s.
Ferndale eE = +31m.50s., +42m.30s., +50m.30s.
Jersey iP = +14m.51s., iSKKS = +26m.33s., i = +36m.15s., iSS = +37m.24s., iSSS = +40m.8s.
Rathfarnham Castle eP = +15m.0s., i = +19m.38s., iSKS = +24m.56s., i = +27m.30s., iPPS = +30m.10s., i = +31m.26s., iSS = +35m.5s., iSSS = +39m.30s., i = +45m.0s.
Algiers PPP = +21m.52s., SKKS = +26m.30s., PS = +29m.27s., PPS = +30m.21s., SS = +35m.15s., eEZ = +14m.55s.
Ukiah PS = +28m.55s., iPSPS = +35m.0s.
Berkeley eN = +15m.15s., eE = +19m.29s., eN = +28m.45s. and +29m.13s., eE = +29m.25s., eN = +35m.5s. and +47m.5s.
Branner eE = +29m.26s. and +51m.48s.
Lick eE = +52m.5s.
Butte PP = +20m.19s., ePPP = +22m.19s., ePPS = +30m.51s., SS = +35m.59s.
Toledo ePPP = +22m.31s., eSS = +36m.52s.
Mount Wilson ePZ = +15m.23s., iPKKPZ = +29m.29s.
Pasadena ePZ = +15m.12s., iPKPNZ = +18m.59s., iPP = +20m.2s., ePSEN = +29m.26s., ePKKPNZ = +29m.29s., iSKKPZ = +33m.3s., iSSEN = +36m.2s.
Bozeman ePPP = +22m.15s., iSKS = +25m.52s., eS = +27m.31s., S = +27m.51s., ePS = +29m.39s., iPS = +29m.43s., iPPS = +31m.2s., i = +31m.38s., eSS = +35m.45s., iSS = +36m.7s., iPSPS = +36m.36s.
Riverside ePKKPZ = +29m.26s.
San Fernando iPPN = +22m.48s.
Ivigtut +20m.22s., +22m.51s., SKKS = +27m.0s., +27m.23s., PS = +30m.10s., SSS = +40m.48s.

Tucson iPS = +30m.48s.
Seven Falls i = +22m.55s.
Shawinigan Falls e = +22m.54s.
Ottawa e = +22m.3s., +22m.56s., and +35m.4s.
Buffalo iSKP = +23m.4s., e = +28m.0s., i = +33m.10s., i = +35m.29s.
Cape Girardeau eE = +23m.56s.
Vermont i = +22m.18s., iPKS = +23m.8s., iSKSP = +32m.3s., i = +34m.28s., eSS = +39m.43s., i = +45m.52s.
Little Rock eE = +21m.55s., iSKPEN = +22m.51s., eEN = +37m.7s.
East Machias iPKS = +23m.13s., i = +23m.17s., PPP = +24m.42s., PPS = +33m.38s., iPPPS = +35m.13s., i = +35m.28s., +35m.39s., +35m.48s., iSS = +39m.59s., SSS = +45m.10s., i = +45m.29s. and +46m.2s.
Williamstown iPKP = +19m.36s., iPKS = +23m.9s., iPPP = +26m.2s., eS? = +30m.1s., iSKSP = +32m.11s., iPS? = +32m.41s., iPPS? = +34m.14s., eSS? = +39m.57s., eSSS = +45m.44s.
Pennsylvania i = +23m.13s., e = +34m.48s. and +47m.18s.
Harvard ePZ = +16m.46s. iPKSZ = +23m.6s.
Weston eP?Z = +16m.49s., iSKP = +23m.7s., +23m.13s., iPPPZ = +25m.31s., eSKSPEN = +32m.36s., eSSEZ = +40m.27s., eG = +61m.30s.
Fordham iP = +19m.30s., i = +23m.13s., iPS = +34m.41s., iSS = +40m.32s., i = +52m.23s.
Philadelphia iPKS = +23m.17s., iSS = +40m.48s., eSSS = +45m.8s.
Georgetown iPKP = +19m.31s.
Columbia eSKSP = +32m.39s., ePPS = +35m.13s., SS = +41m.2s., eSSS = +46m.5s.
Rio de Janeiro iSSE = +34m.18s., iSSN = +34m.42s.
Huancayo PKP = +20m.50s., i = +25m.44s., iPPP = +28m.3s., i = +28m.38s., iSKKS = +30m.54s., i = +31m.33s., +33m.51s., iSKSP = +34m.48s., i = +35m.28s., +35m.46s., +35m.59s., iPPS = +38m.6s., i = +43m.27s., iSS = +44m.3s. and +44m.59s., iSSS = +50m.51s., i = +51m.3s., +51m.50s., +52m.8s., +52m.35s., +52m.52s., +53m.23s., +55m.6s., +58m.1s., +59m.16s. and +59m.54s.
La Paz iZ = +20m.52s., iPKP$_2$ = +21m.2s., iPPZ = +24m.50s., iSKKS = +31m.30s., iSKSP = +35m.16s.
San Juan ePKP = +21m.3s., iPPP = +27m.48s., i = +29m.20s., i = +32m.48s., iSKSP = +35m.12s.
Fort de France PP = +21m.19s., PPP = +21m.34s., eS = +25m.39s., SS = +27m.19s., L = +29m.31s.

May 19d. Readings also at 0h. (Agra, Bombay, and Andijan), 1h. (Andijan, Frunse, and Samarkand), 3h. (Bombay, Agra, and Balboa Heights), 4h. (Tiflis), 6h. (Balboa Heights and Upsala), 7h. (Malabar and Batavia), 8h. (Tiflis), 13h. (Bombay, Ksara, Grozny, Erevan, Tiflis (2), and Sotchi), 14h. (Fort de France), 15h. (Uccle, Strasbourg, Copenhagen, Ivigtut, Bidston Paris, De Bilt, Yalta, Christchurch, Wellington, Adelaide, Melbourne, Brisbane, Sydney, Perth, Ksara, Riverview, Harvard (2), Riverside, Mount Wilson (2), San Fernando, and Kew), 16h. (San Fernando, Tiflis, Bombay, and La Paz), 17h. (Tiflis (2)), 18h. (Tiflis, Kew, La Paz, Mount Wilson, Riverside, Harvard, Riverview, Grozny (2), Amboina, Batavia, Malabar, Tucson, Medan, Pasadena, Fordham, Weston, and Williamstown), 19h. (Grozny, Tiflis, and Erevan), 20h. (Frunse), 21h. (Koti), 22h. (Tucson).

May 20d. 7h. 17m. 49s. Epicentre 22°·0S. 170°·5E.

$A = -\cdot9154$, $B = +\cdot1532$, $C = -\cdot3724$; $\delta = +11$; $h = +4$;
$D = +\cdot165$, $E = +\cdot986$; $G = +\cdot367$, $H = -\cdot061$, $K = -\cdot928$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·8	247	i 3 47	−11	i 6 59	− 6	—	—	e 8·2
Wellington		19·6	172	e 1 11	?	—	—	—	—	—
Riverview		20·7	232	e 4 50	+ 6	e 8 39	+ 8	—	—	e 10·6
Sydney		20·7	232	e 4 56	+12	i 8 46	SS	—	—	e 10·6
Christchurch		21·5	176	e 4 52a	0	9 27	SS	—	—	12·4
Melbourne		27·1	228	i 8 44	?	i 10 30	+ 6	i 13 39	?	15·1
Adelaide		30·7	238	—	—	e 11 19	− 2	—	—	—
Mount Wilson	z.	87·9	52	i 12 50	− 3	—	—	—	—	—
Riverside	z.	88·3	52	i 12 52	− 3	—	—	—	—	—
Tucson		92·5	56	13 14k	0	—	—	—	—	—
Ksara		138·5	294	e 19 25	[− 3]	—	—	e 23 3	PP	—
De Bilt		147·9	343	e 19 41	[− 3]	—	—	—	—	e 83·2
Uccle	z.	149·3	344	e 19 46	[0]	—	—	—	—	—
Stuttgart	z.	149·4	336	e 19 44	[− 2]	—	—	—	—	—
Strasbourg	z.	150·1	337	e 19 46	[− 1]	—	—	—	—	—

Additional readings:—
Riverview iEN = +8m.43s.
Christchurch L_gE = +10m.30s., P_gS = +12m.6s.
Melbourne iSS = +10m.44s.
Adelaide e = +14m.47s.
Strasbourg e = +21m.46s.
Long waves were also recorded at Amboina and Tiflis.

May 20d. Readings also at 2h. (Tiflis (2) and Mizusawa), 4h. (Christchurch, Brisbane, Yalta, and Wellington), 7h. (Tiflis, Samarkand, Andijan, and Frunse), 9h. (Balboa Heights, Mount Wilson, Pasadena, and Tucson), 10h. (Medan, Manila, Phu-Lien, Frunse, Brisbane, and Batavia), 11h. (Mount Wilson, Pasadena, Tucson, Tiflis, and Riverside), 12h. (Frunse and Andijan), 14h. (Belgrade and Tacubaya), 16h. (Ottawa), 17h. (Ksara), 18h. (Tiflis (2), Ottawa, Copenhagen, Yalta, Paris, De Bilt, Strasbourg, Jersey, Edinburgh, and Aberdeen), 19h. (Tucson, Tacubaya, Manzanillo, Guadalajara, Fordham, and Oaxaca), 20h. (Ksara and Ottawa), 21h. (Batavia), 22h. (Amboina and Toledo).

May 21d. Readings at 3h. (near Tokyo, Tukubasan, Komaba, Mitaka, Susaki, and Nagoya), 5h. (La Paz), 7h. (near Balboa Heights), 8h. (Tiflis), 9h. (near Sebastopol), 10h. (near Nagoya), 11h. (Edinburgh and Samarkand), 12h. (Guadalajara, Oaxaca, Tacubaya, Tucson, and Mount Wilson), 13h. (Oaxaca, Tacubaya (2), and Tucson), 14h. (La Paz), 15h. (near Nagoya), 17h. (Ksara, Sebastopol, and Tiflis), 18h. (Tiflis and near Grozny), 19h. (College, near Granada, Malaga, and Toledo), 20h. (Tiflis, Batavia, Malabar, Mount Wilson, Pasadena, Riverside, and Tucson), 21h. (Fordham, Ottawa, and Williamstown).

May 22d. 7h. 45m. 52s. Epicentre 21°·0S. 169°·5E. (as on 1937 June 14d.).

$A = -\cdot9188$, $B = +\cdot1703$, $C = -\cdot3563$; $\delta = +15$; $h = +4$;
$D = +\cdot182$, $E = +\cdot983$; $G = +\cdot350$, $H = -\cdot065$, $K = -\cdot934$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	16·3	244	i 3 50a	− 2	i 7 2	+ 9	—	—	—
Apia		19·2	72	e 4 36	+ 8	e 8 29	SS	i 4 51	PPP	e 10·1
Riverview		20·6	228	e 4 42	− 1	i 8 40	+11	—	—	e 10·0
Sydney		20·6	228	e 4 48	+ 5	i 8 45	+ 6	—	—	e 10·5
Wellington		20·7	169	4 53	+ 9	8 53	SS	5 18	PPP	9·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Christchurch		22·6	174	i 5 7a	+ 4	i 9 29	+22	5 33	PP	13·0
Melbourne		27·0	226	e 5 50	+ 5	10 26	+ 4	i 12 22	SSS	13·5
Adelaide		30·5	235	—	—	i 10 38	−40	e 13 42	SSS	—
Perth		48·8	246	22 18	S	(22 18)	SSS	—	—	35·9
Honolulu		52·8	39	e 9 28	+ 9	e 16 16	−31	e 12 14	PPP	e 21·4
Manila		59·3	303	e 9 59	− 7	18 9	− 5	—	—	—
Batavia		62·3	275	e 10 23	− 3	i 18 45	− 7	e 12 38	PP	—
Berkeley		86·8	48	e 12 44	− 3	e 24 32	PS	—	—	e 41·5
Pasadena		87·9	53	e 12 48	− 5	—	—	—	—	e 40·1
Mount Wilson	Z.	88·1	53	i 12 48	− 6	—	—	—	—	—
Riverside	Z.	88·4	53	i 12 51	− 4	—	—	—	—	—
Tinemaha		89·2	50	e 12 56	− 3	—	—	—	—	—
Calcutta	N.	90·2	294	—	—	e 23 48	− 8	—	—	—
Tucson		92·7	57	13 14	− 1	e 24 33	+15	—	—	e 43·2
Agra	E.	100·6	296	—	—	24 16	[−13]	—	—	—
Bombay		102·6	285	—	—	e 32 8?	SS	—	—	—
St. Louis	E.	110·6	55	—	—	e 28 45	PS	—	—	e 50·2
Chicago		113·1	52	—	—	e 28 59	PS	—	—	e 55·6
Ottawa		121·9	48	—	—	e 30 8?	PS	—	—	59·1
Fordham		123·4	54	e 20 33	PP	—	—	—	—	—
Harvard		125·0	53	e 20 45	PP	e 32 8?	PPS	—	—	e 62·1
Seven Falls		125·2	47	—	—	e 31 44	PPS	—	—	61·1
San Juan		127·8	83	e 23 40	PPP	—	—	—	—	—
Tiflis		129·4	307	e 19 9	[− 2]	e 26 2	[−16]	e 21 16	PP	e 72·1
Upsala		136·3	339	e 22 48	PP	—	—	—	—	—
Ksara		137·2	297	i 19 25k	[0]	e 34 41	PPS	e 22 14	PP	—
Istanbul		141·1	311	e 18 26	[−66]	—	—	—	—	—
Copenhagen		141·4	341	22 8?	PP	—	—	—	—	—
Potsdam		143·8	337	e 19 26	[−11]	—	—	e 22 44	PP	—
Hamburg		143·9	341	e 19 16	[−21]	—	—	—	—	e 82·1
Sofia		144·4	315	e 19 36	[− 2]	—	—	—	—	—
Jena		145·5	335	e 19 38	[− 2]	—	—	—	—	—
Göttingen		145·6	338	e 19 36	[− 4]	—	—	—	—	—
De Bilt		146·7	343	e 19 38a	[− 4]	—	—	—	—	e 69·1
Rathfarnham Castle		147·6	355	i 19 39	[− 4]	—	—	—	—	—
Stuttgart		148·1	336	e 19 42	[− 2]	e 29 28	{−40}	e 23 13	PP	—
Uccle		148·1	344	i 19 43a	[− 1]	—	—	—	—	—
Triest		148·4	328	e 18 8?	?	—	—	—	—	—
Kew	Z.	148·6	348	i 19 44	[− 1]	—	—	—	—	—
Strasbourg		148·8	337	e 19 43	[− 2]	—	—	e 23 17	PP	e 79·1
Chur		149·5	335	e 19 44	[− 2]	—	—	—	—	—
Zurich		149·5	336	e 19 46	[0]	—	—	—	—	—
Paris		150·4	342	e 19 47	[− 1]	—	—	—	—	—
Neuchatel		150·5	336	e 19 48	[0]	—	—	—	—	—

Additional readings :—
Apia i = +4m.41s., +4m.55s., +5m.13s., eSS = +9m.0s., e = +9m.51s.
Riverview iSN = +8m.44s., iN = +8m.54s.
Wellington i = +5m.28s., +9m.3s., SS = +9m.43s., i = +9m.58s.
Christchurch iZ = +5m.17s., i = +9m.54s., L_QE = +11m.5s.
Melbourne i = +10m.46s.
Perth i = +25m.18s. and +27m.48s.
Honolulu eSS = +20m.24s.
Tucson iP = +13m.29s.
St. Louis eE = +40m.10s.
Tiflis PKSEN = +22m.31s., ePSE = +31m.9s., eSSN = +38m.31s.
Potsdam eZ = +19m.44s., eZ = +25m.8s.
Hamburg eZ = +55m.48s.
Rathfarnham Castle i = +20m.13s. and +21m.24s.
Stuttgart iZ = +19m.51s., eZ = +20m.18s., +20m.30s., and e = +20m.49s.
Strasbourg i = +19m.45s.
Chur i = +19m.48s.
Long waves were also recorded at Chatham Ils., College, Ukiah, Bozeman, Butte, Prague, and Huancayo.

May 22d. 8h. 22m. 10s. Epicentre 21°·0S. 169°·5E. (as at 7h.).

A = −·9188, B = +·1703. C = −·3563; δ = +15; h = +4.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	N.	16·3	244	i 3 44	− 8	i 6 50	− 3	—	—	—
Apia		19·2	72	e 4 31	+ 3	i 8 23	SS	i 4 51	PP	e 9·8
Riverview		20·6	228	e 4 42	− 1	i 8 40	+11	i 8 54	SS	e 10·0
Sydney		20·6	228	e 4 42	− 1	e 8 34	+ 5	—	—	e 10·2
Wellington		20·7	169	4 55	+11	8 54	SS	5 20	PP	9·3
Christchurch		22·6	174	i 5 10a	+ 7	i 9 35	SS	5 28	PP	12·8
Melbourne		27·0	226	—	—	10 25	+ 3	—	—	14·7
Adelaide		30·5	235	e 9 41	?	i 11 8	−10	i 13 40	SS	—
Perth		48·8	246	—	—	i 21 40	SSS	—	—	27·6
Honolulu		52·8	39	—	—	e 17 7	PS	—	—	20·8
Manila		59·3	303	(10 1)	− 5	10 1	P	—	—	—
Batavia		62·3	275	10 29	+ 3	18 44	− 8	—	—	—
Pasadena		87·9	53	e 12 48	− 5	—	—	—	—	e 40·3
Mount Wilson	Z.	88·1	53	i 12 48	− 6	—	—	—	—	—
Riverside	Z.	88·4	53	i 12 51	− 4	—	—	—	—	—
Tinemaha		89·2	50	e 12 56	− 3	—	—	—	—	—
Calcutta	N.	90·2	294	e 18 48	PPP	i 23 45	[+11]	—	—	—
Colombo	E.	92·1	277	e 20 20	?	—	—	—	—	—
Tucson		92·7	57	e 13 12	− 3	—	—	—	—	—
Agra	E.	100·6	296	—	—	i 24 18	[−12]	—	—	—
La Paz	Z.	112·3	119	e 19 16	PP	i 30 20	PPS	—	—	59·8
Vermont		123·8	49	—	—	e 26 2	[0]	e 24 57	?	—
Williamstown		123·8	52	e 18 56	[− 4]	—	—	—	—	e 82·4
San Juan		127·8	83	—	—	e 26 20	[+ 6]	—	—	—
East Machias		127·9	50	—	—	e 27 11	{−55}	27 31	SKKS	—
Tiflis		129·4	307	e 19 6	[− 5]	—	—	e 21 16	PP	—
Upsala	N.	136·3	339	e 19 50?	[+26]	—	—	—	—	—
Ksara		137·2	297	i 19 26k	[+ 1]	32 17	PS	e 22 16	PP	—
Copenhagen		141·4	341	20 50?	?	—	—	—	—	—
Bucharest	E.	141·8	317	e 19 50?	[+17]	—	—	—	—	—
Potsdam		143·8	337	e 19 32	[− 5]	—	—	22 38	PP	43·8
Hamburg		143·9	341	e 19 30	[− 7]	—	—	—	—	e 45·8
Edinburgh		144·7	354	—	—	e 27 50?	?	—	—	—
Sofia		144·4	315	e 19 50?	[+12]	—	—	—	—	—
Jena		145·5	335	e 19 35	[− 5]	—	—	—	—	—
Göttingen		145·6	338	e 19 36	[− 4]	—	—	—	—	e 47·8
De Bilt		146·7	343	i 19 38	[− 4]	—	—	—	—	e 69·8
Rathfarnham Castle		147·6	355	i 19 36	[− 8]	—	—	—	—	43·8
Stuttgart		148·1	336	i 19 44a	[0]	—	—	23 8	PP	e 44·8
Uccle		148·1	344	e 19 42	[− 2]	—	—	e 23 12	PP	e 42·8
Triest		148·4	328	e 19 50?	[+ 5]	—	—	—	—	—
Kew		148·6	348	i 19 44a	[− 1]	—	—	—	—	e 38·8
Strasbourg	Z.	148·8	337	e 19 40	[− 5]	—	—	e 23 14	PP	—
Chur		149·5	335	e 19 44	[− 2]	—	—	—	—	—
Zurich		149·5	336	e 19 47	[+ 1]	—	—	—	—	—
Paris		150·4	342	e 19 50?	[+ 2]	—	—	—	—	43·8
Neuchatel		150·5	336	e 19 44	[− 4]	—	—	—	—	—

Additional readings :—
Apia i = +4m.43s., iSS = +9m.27s.
Riverview iSN = +8m.44s.
Wellington i = +5m.30s., +9m.5s., SS = +9m.45s., i = +10m.0s.
Christchurch L_qE = +10m.25s.
Melbourne i = +10m.44s.
Manila eP?EZ = +3m.57s.
Tiflis ePKSEZ = +22m.32s.
Potsdam eZ = +19m.44s.
Stuttgart eZ = +20m.3s. and +20m.57s.
Uccle iZ = +19m.45s.
Strasbourg i = +19m.43s.
Chur i = +19m.48s.
Long waves were also recorded at Stonyhurst and Bidston.

May 22d. 11h. 28m. 59s. Epicentre 3°·7N. 128°·5E.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina	N.	7·4	183	e 1 52	0	—	—	—	—	—
Manila		13·1	326	e 3 17	+ 7	i 5 54	SS	—	—	—
Hong Kong		23·1	324	5 11	+ 3	9 26	+10	—	—	—
Batavia		23·8	245	i 5 14	− 1	i 9 33	+ 5	—	—	—
Brisbane	N.	39·0	143	—	—	e 13 1	−28	—	—	—
Calcutta	N.	43·2	298	—	—	i 14 33	+ 1	—	—	—
Kodaikanal	E.	51·0	280	—	—	e 16 23	+ 1	—	—	—
Agra	E.	53·5	301	e 9 22	− 2	16 56	− 1	—	—	—
Grozny		82·2	313	e 12 47	+23	e 22 39	0	—	—	—
Tiflis		82·9	311	e 12 17	−11	e 22 45	− 1	e 23 34	?	—
Ksara		90·1	303	e 13 8	+ 5	e 25 12	PS	—	—	—

May 22d. Readings also at 0h. (Berkeley, Lick, and Branner), 2h. (Wellington), 3h. (Weston, Harvard, Fordham, Riverside, Mount Wilson, and Tucson), 4h. (Tiflis), 5h. (Tananarive, Nagoya, Fort de France, and La Paz), 7h. (Kodaikanal, Santiago, and Amboina), 9h. (East Machias), 10h. (Oaxaca), 12h. (De Bilt, Tiflis (2), and Erevan (2)), 14h. (La Plata, Santiago, and Andijan), 15h. (Ksara and Tiflis), 16h. (Andijan), 17h. (Branner and Manila), 21h. (Balboa Heights).

May 23d. 7h. 18m. 28s. Epicentre 36°·5N. 141°·6E. (as on 1937 Feb. 27d.).

Some damage to houses at Hukusima and Tharaki. Shock violent at Onahama, Mito, Kakioka, Aidu, Hukusima, strong at Sendai, Tukubasan, Kumagaya, and Yokohama, rather strong at Tyosi, Tokyo, Yamagata, Niigata, Miyako, and Hakodate.

Epicentre South of Cape Sioya 36°·7N. 141°·45E.

Macroseismic radius greater than 300km.

See Seismological Bulletin of the Cent. Met. Obs., Japan, for the year 1938, Tokyo 1940, pp. 34-37. A macroseismic chart and a chart giving the direction of the initial movement of the earth, p. 35.

$A = -\cdot6315$, $B = +\cdot5005$, $C = +\cdot5922$; $\delta = -1$; $h = 0$;
$D = +\cdot621$, $E = +\cdot784$; $G = -\cdot464$, $H = +\cdot368$, $K = -\cdot806$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Onahama	0·7	308	0 15	− 2	—	—	—	—	—
Mito	0·9	263	0 16k	− 4	0 26	S_g	—	—	—
Tyosi	1·0	218	0 19k	− 2	0 39	+ 3	—	—	—
Kakioka	1·2	257	0 21a	− 3	0 39	S_g	—	—	—
Tukubasan	1·2	257	0 33k	+ 9	0 50	+ 9	—	—	—
Utunomiya	1·4	272	0 26k	− 1	0 34	−10	—	—	—
Hukusima	1·5	324	0 27k	− 1	0 47	S*	—	—	—
Aidu	1·6	312	0 27k	− 3	0 46	− 5	—	—	—
Tokyo, C.M.O.	1·7	242	0 31k	0	0 55	+ 1	—	—	—
Tokyo, I.U.	1·7	242	0 30	− 1	0 54	0	—	—	—
Katuura	1·8	220	0 35	+ 3	0 49	− 7	—	—	—
Kiyosumi	1·8	220	0 33	+ 1	0 54	− 2	—	—	—
Komaba	1·8	241	0 30	− 2	0 52?	− 4	—	—	—
Kumagaya	1·8	259	0 31k	− 1	0 53	− 3	—	—	—
Sendai	1·8	343	0 34	+ 2	0 59	+ 3	—	—	—
Mitaka	1·9	243	0 33	− 1	0 57?	− 2	—	—	—
Yokohama	1·9	236	0 35k	+ 1	0 59	0	—	—	—
Kamakura	2·0	235	0 33	− 2	0 57	− 5	—	—	—
Maebasi	2·0	267	0 35k	0	0 58	− 4	—	—	—
Yamagata	2·0	330	0 36	+ 1	1 3	+ 1	—	—	—
Mera	2·1	222	0 39a	+ 2	1 17	S_g	—	—	—
Misaki	2·1	230	0 33	− 4	1 3	− 1	—	—	—
Titibu	2·1	256	0 33	− 4	0 56	− 8	—	—	—
Kohu	2·4	251	0 44k	+ 3	1 17	+ 5	—	—	—
Koyama	2·4	242	0 33	− 8	0 58	−14	—	—	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hunatu	2·5	246	0 43k	0	1 20	S*	—	—	—
Niigata	2·5	305	0 44k	+ 1	1 14	0	—	—	—
Oiwake	2·5	266	0 42k	− 1	1 13	− 1	—	—	—
Iito	2·6	233	0 49k	P*	1 31	S_g	—	—	—
Misima	2·6	237	0 43k	− 1	1 21	S*	—	—	—
Mizusawa	2·6	352	i 0 45a	+ 1	—	—	—	—	—
Numadu	2·6	238	0 42k	− 2	1 19	+ 2	—	—	—
Nagano	2·7	273	0 47k	+ 2	1 19	0	—	—	—
Yosiwara	2·7	241	0 33	−12	1 5	−14	—	—	—
Susaki	2·8	229	0 46	− 1	1 23	+ 1	—	—	—
Takada	2·8	283	0 52	+ 5	1 25	+ 3	—	—	—
Matumoto	3·0	265	1 5k	P_g	1 40	S_g	—	—	—
Iida	3·1	250	0 56a	+ 5	1 30	+ 1	—	—	—
Miyako	3·1	6	0 50a	− 1	1 27	− 2	—	—	—
Morioka	3·2	353	0 52a	0	1 30	− 2	—	—	—
Omaesaki	3·3	236	0 58k	P*	1 42	S*	—	—	—
Akita	3·4	340	0 55a	0	1 43	S*	—	—	—
Takayama	3·5	265	0 58k	+ 1	1 47	S*	—	—	—
Hamamatu	3·6	242	1 2a	P*	1 50	S*	—	—	—
Toyama	3·6	275	0 58k	0	1 49	S*	—	—	—
Hatidyozima	3·7	205	1 1	+ 1	1 39	− 6	—	—	—
Husiki	3·7	276	1 2	+ 2	1 46	+ 1	—	—	—
Wazima	3·9	286	0 59k	− 3	1 53	+ 3	—	—	—
Hatinohe	4·0	359	1 2a	− 2	1 48	− 4	—	—	—
Kanazawa	4·0	272	0 56k	− 8	1 42	−10	—	—	—
Nagoya	4·0	252	e 1 5a	+ 1	1 54	+ 2	—	—	—
Gihu	4·1	256	1 5k	0	1 55	0	—	—	—
Aomori	4·4	352	1 10	0	2 9	+ 7	—	—	—
Ibukisan	4·4	256	1 10k	0	2 8	+ 6	—	—	—
Hikone	4·5	256	1 12	+ 1	2 13	S*	—	—	—
Kameyama	4·5	250	1 11	0	2 0	− 5	—	—	—
Tu	4·5	249	1 14	+ 3	2 8	+ 3	—	—	—
Kyoto	5·0	254	1 16k	− 2	2 29	S*	—	—	—
Yagi	5·1	249	1 23a	+ 3	2 31	S*	—	—	—
Hakodate	5·3	353	1 28k	P*	2 25	0	—	—	—
Miyadu	5·3	262	1 21k	− 1	2 33	S*	—	—	—
Osaka B	5·3	252	1 26a	+ 4	2 35	S*	—	—	—
Kobe	5·5	253	1 27a	+ 2	2 42	S*	—	—	—
Toyooka	5·6	262	1 24a	− 3	2 26	− 7	—	—	—
Mori	5·7	352	1 32k	+ 4	2 45	S*	—	—	—
Siomisaki	5·7	242	1 27a	− 1	2 43	+ 8	—	—	—
Urakawa	5·7	9	1 30	+ 2	2 38	+ 3	—	—	—
Wakayama	5·7	248	1 28a	0	2 47	S*	—	—	—
Muroran	5·8	355	1 29k	0	2 45	S*	—	—	—
Sumoto	5·9	250	1 30a	− 1	2 44	+ 4	—	—	—
Tokusima	6·3	248	1 35	− 1	3 12	S*	—	—	—
Obihiro	6·5	10	1 31	− 8	2 27	−28	—	—	—
Okayama	6·5	256	1 37	− 2	3 8	S*	—	—	—
Sapporo	6·6	358	1 38	− 3	3 14	S*	—	—	—
Tadotu	6·7	254	1 44	+ 2	3 31	S*	—	—	—
Kusiro	6·8	18	1 45	+ 1	3 8	+ 5	—	—	—
Sakai	6·8	266	1 47	+ 3	—	—	—	—	—
Muroto	6·9	244	1 45a	0	3 3	− 2	—	—	—
Koti	7·2	249	1 49k	0	3 19	+ 6	—	—	3·5
Asahigawa	7·3	4	1 54	+ 4	3 39	S*	—	—	—
Nemuro	7·5	23	1 49	− 4	3 15	− 5	—	—	—
Matuyama	7·7	253	1 49a	− 7	3 39	+14	—	—	—
Hirosima	7·8	257	1 55	− 3	3 41	+13	—	—	—
Simidu	8·0	246	2 6	+ 6	—	—	—	—	—
Uwazima	8·1	249	2 2a	0	3 43	+ 8	—	—	—
Simonoseki	9·1	256	2 17	+ 3	—	—	—	—	—
Izuka	9·4	256	2 18	0	—	—	—	—	—
Titizima	9·4	177	2 15	− 3	4 4	− 3	—	—	—
Hukuoka B	9·6	256	i 2 23a	+ 2	4 25	+13	—	—	—
Miyazaki	9·6	245	2 22a	+ 1	4 22	+10	—	—	—

Continued on next page.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Kumamoto		9·7	251	2 24a	+ 2	4 10	− 5	—	—	—
Saga		9·8	254	2 35	+11	—	—	—	—	—
Unzendake		10·1	251	2 27a	− 1	4 27	+ 2	—	—	—
Ootomari		10·2	6	2 30	− 1	4 16	−11	—	—	—
Husan		10·3	266	2 35	+ 3	4 31	+ 1	—	—	—
Kagosima		10·4	245	2 39	+ 5	5 32	S_v	—	—	—
Nagasaki		10·4	252	2 32	− 2	4 33	+ 1	—	—	—
Taikyu		10·5	270	2 35	0	4 33	− 2	—	—	—
Otiai		10·9	5	3 58	?	—	—	—	—	—
Yakusima		11·1	240	2 43a	0	4 51	+2	—	—	—
Tomie		11·3	254	2 52k	+ 6	5 37	SSS	—	—	—
Keizyo		11·8	280	e 2 45	− 8	5 5	− 1	i 2 57	PP	6·0
Zinsen		12·0	279	i 2 57a	+ 2	i 5 15	+ 4	i 3 6	PP	6·2
Heizyo		12·8	286	i 3 2a	− 4	i 5 26	− 4	—	—	6·3
Sikka		12·8	5	3 38	PPP	6 13	SSS	—	—	—
Nake		13·0	236	3 12k	+ 3	5 47	SS	—	—	—
Dairen		16·0	284	3 47	− 1	7 1	SS	—	—	—
Zi-ka-wei		17·5	259	e 4 2	− 5	7 16	− 5	4 20	PP	8·9
Miyakozima		18·2	237	4 11	− 5	7 35	− 2	—	—	—
Isigakizima		19·3	237	4 22	− 7	7 54	− 8	—	—	—
Taihoku		20·6	243	e 4 38	− 5	8 25	− 4	—	—	—
~~Giran~~		~~20·7~~	~~243~~	~~4 47~~	~~+ 3~~	—	—	—	—	—
Karenko		21·2	240	4 46	− 3	9 35	SSS	—	—	—
Taityu		21·8	241	4 53	− 3	9 15	SS	—	—	—
Arisan		22·1	241	4 47	−12	8 57	− 1	—	—	—
Taito		22·4	237	4 56	− 6	9 1	− 3	—	—	—
Tainan		22·9	240	5 2	− 4	9 7	− 6	—	—	—
Kosyun		23·2	237	5 6a	− 3	9 9	− 9	—	—	—
Hong Kong		27·6	247	5 47a	− 4	10 27	− 5	6 42	PP	13·1
Manila		28·6	226	i 5 57a	− 3	11 12	+24	—	—	—
Palau		29·7	195	6 11	+ 1	11 3	− 3	—	—	—
Phu-Lien		34·2	253	i 6 48	− 1	i 12 9	− 7	8 6	PP	16·1
Amboina		41·9	200	e 7 53	− 1	i 14 9	− 4	—	—	22·5
Semipalatinsk		45·4	309	8 22	0	15 0	− 4	—	—	—
Calcutta	N.	47·8	269	i 8 43	+ 2	i 15 38	0	i 10 24	PP	i 22·9
Almata		49·0	300	8 46	− 4	15 48	− 7	—	—	24·2
College		49·5	32	e 8 55	+ 1	i 16 4	+ 2	i 19 53	SS	i 22·6
Frunse		50·8	299	8 59	− 5	16 15	− 5	—	—	25·2
Medan		51·3	241	e 9 6	− 2	16 22	− 4	—	—	e 23·5
Dehra Dun	N.	52·6	283	e 9 11	− 7	i 16 37	− 7	i 20 38	SS	i 26·4
Andijan		53·0	297	9 18	− 3	16 52	+ 2	11 6	PP	28·2
Batavia		53·5	225	i 9 21	− 3	e 16 51	− 6	—	—	25·5
Malabar		53·9	224	9 39	+12	—	—	—	—	e 30·5
Agra		54·0	279	9 20a	− 8	16 48	−15	11 27	PP	24·8
Honolulu		54·3	89	e 9 44	+14	i 17 24	+17	11 47	PP	e 22·0
Tchimkent		54·4	300	9 28	− 3	e 17 3	− 6	—	—	—
Sitka		56·7	40	9 48	0	i 17 40	0	i 22 3	SS	23·8
Samarkand		57·2	298	9 50	− 1	17 42	− 4	—	—	—
Hyderabad		58·1	269	e 9 59	+ 1	17 56	− 2	11 56	PP	i 24·3
Bombay		62·2	274	i 10 24	− 2	i 18 44	− 7	12 39	PP	39·6
Kodaikanal	E.	63·2	263	i 10 29	− 3	i 18 54	− 9	i 23 20	SS	29·5
Colombo	E.	63·3	258	10 30	− 3	19 0	− 4	—	—	31·4
Brisbane		64·5	168	i 10 38	− 3	i 19 14	− 5	i 23 26	SS	i 26·0
Apia		66·6	129	e 11 0	+ 6	i 19 56	+11	i 20 18	PS	e 27·3
Seattle		67·8	46	e 12 10	+68	20 12	+12	—	—	—
Grozny		69·8	310	11 12	− 2	e 20 36	+13	—	—	—
Ferndale		70·2	54	e 11 34	+17	e 20 32	+ 4	—	—	e 34·5
Riverview		70·5	171	e 11 23	+ 5	i 20 32	0	i 20 53	PS	e 29·9
Sydney		70·6	171	e 11 41	+22	i 20 33	0	e 21 25	PPS	e 30·4
Adelaide		71·1	182	i 11 35	+13	i 20 35	− 3	e 13 58	PP	e 31·9
Platigorsk		71·1	312	e 12 21	+59	e 21 24	PS	—	—	—
Tiflis		71·3	308	i 11 21a	− 2	e 20 32	− 9	e 15 53	PPP	—
Ukiah		71·6	55	11 29	+ 4	i 20 46	+ 2	15 52	PPP	29·8
Perth		72·2	202	(i 11 33)	+ 4	(i 20 54)	+ 3	(14 19)	PP	(35·0)
Erevan		72·3	308	11 32	+ 3	e 20 57	+ 5	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Francisco	N.	72·8	56	—	—	e 20 53	− 5	—	—	—
Berkeley		72·9	56	e 11 31	− 2	i 21 0	+ 1	—	—	33·7
Branner		73·2	56	e 11 38	+ 3	e 21 1	− 1	—	—	—
Sotchi		73·4	313	e 11 35	− 1	e 21 5	0	—	—	—
Upsala		73·5	334	11 36	0	i 20 56	−10	e 14 12	PP	e 33·5
Lick		73·6	56	e 11 39	+ 2	e 21 6	− 1	—	—	—
Saskatoon		73·6	37	11 37	0	21 2	− 5	28 32?	SSS	32·5
Melbourne		74·0	177	e 12 19?	+40	21 8	− 8	25 44	SS	32·2
Butte		74·3	44	e 11 43	+ 2	i 21 7	− 8	e 14 26	PP	31·6
Theodosia		75·1	316	e 11 43	− 3	e 21 19	− 5	—	—	41·5
Fresno	N.	75·2	56	e 11 56	+10	e 21 28	+ 3	—	—	—
Bozeman		75·3	44	e 11 45	− 2	i 21 21	− 5	e 16 23	PPP	31·8
Simferopol		75·8	317	11 46	− 4	21 27	− 4	—	—	31·5
Tinemaha		76·0	54	e 11 51	0	e 21 33	− 1	—	—	—
Yalta		76·1	316	11 48	− 3	21 30	− 5	—	—	36·5
Sebastopol		76·3	317	11 50	− 2	e 21 35	− 2	—	—	31·5
Santa Barbara		76·5	57	i 11 56	+ 2	—	—	—	—	—
Haiwee	E.	76·7	54	e 11 53	− 2	e 21 35	− 6	—	—	—
Bergen		77·0	340	e 11 57	+ 1	21 37	− 8	—	—	36·5
Pasadena		77·7	57	i 12 0	0	i 21 49	− 3	e 38 58	P'P'	e 31·7
Mount Wilson		77·8	57	i 11 59	− 2	e 21 50	− 3	—	—	—
Riverside		78·4	57	i 12 3	− 1	e 21 49	−11	e 38 59	P'P'	—
Copenhagen		78·5	334	i 12 2	− 2	i 21 54	− 7	14 54	PP	—
Bucharest		80·5	340	i 12 14k	− 1	i 22 21	− 1	—	—	37·5
Arapuni		80·6	153	—	—	22 20	− 3	27 44	SS	—
Potsdam		80·8	332	i 12 14	− 3	i 22 22	− 3	e 15 8	PP	e 34·5
Hamburg		81·0	334	i 12 17a	− 1	i 22 24	− 3	e 15 21	PP	e 37·5
Istanbul		81·2	316	12 18	− 1	22 12	−17	—	—	e 43·7
Ksara		81·6	305	i 12 25	+ 4	i 22 50	+17	e 15 39	PP	—
Aberdeen		81·8	341	e 12 19	− 3	i 22 32	− 3	17 29	PPP	37·4
Budapest	E.	81·9	325	i 12 21	− 2	22 40	+4	15 27	PP	38·0
	N.	81·9	325	12 21	− 2	i 22 33	− 3	15 27	PP	38·0
Ogyalla		82·0	326	12 20	− 3	22 32	− 5	e 27 12	SS	e 39·5
Prague		82·0	329	i 12 21a	− 2	i 22 31	− 6	e 15 37	PP	—
Ivigtut		82·3	5	12 22a	− 3	22 36	− 4	15 33	PP	—
Jena		82·5	331	i 12 24	− 2	i 22 32	−10	e 15 32	PP	e 35·5
Denver		82·6	46	—	—	i 22 38	− 5	—	—	e 41·5
Göttingen		82·6	333	i 12 26	0	—	—	e 15 34	PP	e 41·5
Cheb		82·8	331	e 12 26	− 1	e 22 41	− 4	—	—	e 39·5
Belgrade		83·1	322	i 12 26	− 3	i 22 45	− 3	i 15 38	PP	e 41·7
Edinburgh		83·2	341	e 12 28	− 1	i 22 45	− 4	i 15 48	PP	36·5
Sofia		83·2	319	e 12 28	− 1	i 22 44	− 5	—	—	e 38·1
Wellington		83·2	156	e 12 31	+ 2	i 22 43	− 6	i 15 43	PP	35·6
Durham		83·7	340	i 12 29	− 3	i 22 50	− 4	i 15 42	PP	42·3
Tucson		83·8	54	e 12 33a	+ 1	i 22 56	+ 1	i 28 28	SS	34·1
De Bilt		83·9	335	i 12 31a	− 2	i 22 53	− 3	i 15 46	PP	e 39·5
Stonyhurst		84·1	340	12 37	+ 3	i 23 6	+ 8	i 15 54	PP	42·5
Christchurch		84·5	158	i 12 40a	+ 4	i 22 58	− 4	15 54	PP	39·8
Laibach		85·0	326	e 11 40	−58	e 22 6	−61	i 15 11	PP	e 46·0
Stuttgart		85·1	331	i 12 37a	− 2	e 23 0	[− 1]	e 15 57	PP	e 41·5
Karlsruhe		85·3	332	i 12 32	− 8	i 23 7	− 3	—	—	e 38·6
Uccle		85·3	335	i 12 37a	− 3	i 23 10	0	i 29 33	SS	e 39·5
Bidston		85·4	340	i 12 37	− 3	i 23 7	− 4	i 15 51	PP	38·5
Triest		85·7	327	12 39a	− 3	23 2	[− 4]	i 15 55	PP	e 28·5
Strasbourg		85·9	332	i 12 41	− 2	e 23 4	[− 3]	i 16 3	PP	e 43·5
Kew		86·3	337	i 12 43a	− 2	i 23 15	[+ 5]	i 16 7	PP	38·5
Oxford		86·3	338	i 12 40a	− 5	i 24 2	PS	i 16 1	PP	e 29·5
Rathfarnham Castle		86·3	341	i 12 47	+ 2	i 23 21	+ 1	i 16 18	PP	39·0
Zurich		86·3	331	e 12 44a	− 1	e 23 7	[− 3]	—	—	—
Padova		86·7	327	i 12 43a	− 4	i 23 13	[+ 1]	e 16 4	PP	41·5
Basle		86·8	331	e 12 44	− 3	e 23 20	[+ 7]	—	—	—
Helwan		87·1	305	i 12 48	− 1	23 8	[− 6]	16 7	PP	—
Neuchatel		87·5	331	e 12 48	− 3	e 23 14	[− 3]	—	—	—
Paris		87·6	334	i 12 49a	− 2	23 14	[− 3]	16 6	PP	38·5
Florence		88·3	326	12 52	− 3	23 18	[− 4]	24 2	PS	30·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chatham Ils.		88·6	151	—	—	e 29 32?	SS	—	—	—
Jersey		88·8	338	i 12 56	− 1	i 23 31	[+ 6]	e 16 5	PP	e 42·4
Moncalieri		88·8	331	i 12 55	− 2	i 20 50	?	—	—	30·1
Chicago		89·9	34	i 12 59	− 3	i 23 26	[− 6]	29 34	SS	e 36·5
Florissant	z.	91·0	38	i 13 2	− 5	i 24 1	− 2	i 13 18	pP	—
Marseilles		91·1	329	e 14 32?	?	e 34 2	SSS	e 24 51	PS	—
St. Louis		91·2	38	e 13 0	− 8	e 23 22	[−18]	e 16 43	PP	e 38·5
Shawinigan Falls		91·7	22	13 13	+ 3	23 43	[0]	—	—	45·5
Ottawa		91·8	25	13 9	− 2	23 41	[− 2]	e 16 57	PP	41·5
Seven Falls		91·8	21	13 8	− 3	23 40	[− 3]	29 48	SS	40·5
Cape Girardeau		92·6	39	i 13 15	0	e 23 40	[− 8]	i 13 30	pP	—
Buffalo		92·8	28	e 13 15	− 1	e 23 44	[− 5]	i 16 57	PP	—
Vermont		93·5	23	i 13 20	+ 1	i 23 58	[+ 5]	e 17 7	PP	i 41·5
Little Rock		93·9	42	e 12 51	−30	i 23 52	[− 3]	e 30 4	SS	—
East Machias		95·0	20	e 13 30	+ 4	24 3	[+ 2]	i 17 27	PP	47·8
Williamstown		95·0	24	e 13 25	− 1	i 24 33	− 5	i 17 17	PP	46·3
Pennsylvania		95·0	28	e 13 37	+11	i 23 59	[− 2]	e 17 40	PP	e 50·5
Harvard		95·8	23	e 13 29	0	e 24 2	[− 4]	e 17 22	PP	e 52·5
Weston		95·9	23	e 13 29k	− 1	i 24 7	[+ 1]	i 17 25	PP	e 45·6
Fordham		96·4	25	i 13 32	0	i 25 5	+15	i 17 23	PP	e 45·0
Philadelphia		96·7	27	e 13 31	− 2	i 24 7	[− 3]	i 17 29	PP	e 42·4
Georgetown		96·9	29	i 13 33	− 1	i 24 8	[− 3]	i 17 28	PP	—
Algiers		97·6	327	17 20	PP	32 2	SS	26 16	PS	41·5
Toledo		97·7	334	i 13 36	− 2	i 24 32	−29	i 17 37	PP	—
Columbia		99·4	34	—	—	e 24 21	[− 3]	26 42	PS	45·0
Almeria		99·8	331	e 14 2	+15	e 24 44	[+18]	—	—	e 44·8
Granada		99·9	332	i 13 45	− 3	—	—	i 17 46	PP	—
Malaga		100·6	332	e 13 44	− 7	27 14	PS	17 37	PP	47·0
San Fernando		101·5	334	e 13 58	+ 3	24 48	[+14]	i 18 2	PP	34·5
Tananarive		104·2	257	18 28	PP	24 48	[+ 1]	20 46	PPP	44·0
San Juan		119·4	30	20 45	PP	25 48	[0]	23 12	PPP	47·3
Fort de France		124·7	26	e 20 42	PP	—	—	—	—	—
Cape Town	E.	134·1	256	i 21 51	PP	i 26 46	[+17]	i 39 53	SS	e 64·5
	N.	134·1	256	i 21 53	PP	i 26 58	[+29]	i 39 43	SS	e 65·7
Huancayo		138·8	63	e 19 54	[+26]	e 40 30	SS	25 36	PPP	i 57·2
La Paz		147·0	61	i 19 45a	[+ 2]	i 26 36	[−14]	43 3	SS	66·5
La Plata		164·0	90	20 50	[+45]	—	—	—	—	76·7
Rio de Janeiro		165·8	18	e 19 32	[−34]	e 32 50	{+68}	i 23 52	PP	i 45·2

Additional readings :—

Nagoya iP = +1m.9s.
Keizyo PPN = +3m.0s.
Zinsen iPPZ = +3m.1s.
Zi-ka-wei PPPE = +4m.32s., iE = +4m.56s., iN = +5m.32s., SSE = +7m.44s., SSSE = +7m.52s.
Hong Kong SS = +11m.42s.
Phu-Lien SS = +14m.3s.
Amboina iEN = +8m.0s., iE = +8m.9s.
Calcutta iPPPN = +11m.9s., iSSN = +18m.46s., iSSSN = +19m.58s.
College P = +9m.43s., i = +18m.29s.
Andijan e = +9m.58s.
Medan SN = +16m.26s.
Agra PPP? = +12m.37s., SSSE = +20m.27s., SSN = +20m.33s., SSSE = +21m.59s.
Honolulu iP = +9m.51s., ePPP = +13m.7s., SS = +20m.58s.
Hyderabad PSE = +18m.12s., S_cSE = +19m.38s., SSE = +21m.40s.
Bombay eEN = +10m.43s., eP_cPEN = +11m.6s., eN = +11m.16s., iN = +28m.38s., S_cSEN = +30m.20s., SSEN = +32m.37s.
Kodaikanal iPSE = +19m.25s., iSSSE = +25m.4s.
Brisbane ePE = +10m.50s., iSSE = +23m.32s.
Apia e = +19m.49s., eS_cS = +20m.59s.
Seattle eP = +12m.29s.
Ferndale eN = +11m.42s.
Riverview iS_cSE = +21m.24s.
Adelaide 1 = +25m.14s.
Tiflis $iP_cP?N$ = +11m.35s., eSZ = +20m.40s., ePSN = +20m.51s., iSSN = +25m.25s., iZ = +25m.55s., eN = +29m.1s., iZ = +29m.16s.
Ukiah SS = +25m.16s., SSS = +28m.40s.
Perth iP = (+11m.52s.), PS = (+21m.18s.), SS = (+25m.8s.), SSS = (+30m.4s.), SSSS = (+32m.17s.); all readings have been increased by two minutes.
Berkeley iP = +11m.34s., iNZ = +20m.57s.

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Upsala iPPPE = +16m.15s., iPSE = +21m.24s., iSSE = +25m.20s., eSSN = +25m.30s., SSSN = +29m.7s., SSSE = +29m.12s.
Lick eN = +30m.54s.
Melbourne PS = +21m.25s., S_cS = +21m.56s., i = +29m.25s.
Butte P = +11m.57s., ePPP = +16m.22s., iPS = +21m.45s., eSS = +26m.20s.
Bozeman iPS = +22m.4s., PPS = +22m.18s., eSS = +26m.20s., SSS = +30m.5s.
Copenhagen PPP = +16m.48s., e = +21m.20s., +22m.16s., eE = +22m.45s., +23m.44s., SS = +26m.32s., e = +27m.32s.
Arapuni i = +33m.56s.
Potsdam ePPEN = +15m.20s., eZ = +22m.38s., eE = +26m.14s., eSSN = +27m.44s., eNZ = +28m.20s., SSSN = +31m.32s., eN = +32m.26s., eZ = +33m.32s.
Hamburg iSSZ = +27m.43s., eSSE = +27m.50s.
Ksara PS = +23m.43s.
Aberdeen e = +14m.44s., PPPP = +18m.54s., PPPS = +23m.54s., P_cSS_cP = +27m.22s., iSS = +28m.12s., iSSS = +31m.29s., SSSS = +32m.51s.
Budapest E i = +13m.0s., +13m.23s., +14m.40s., +16m.57s., S_cS = +23m.6s., PS = +23m.37s., i = +27m.40s., SS = +28m.6s., i = +31m.25s.
Budapest N i = +15m.32s., +18m.47s., PS = +23m.15s., SS = +27m.36s., i = +31m.19s. and +32m.51s.
Ogyalla eN = +12m.48s., eSSE = +27m.56s.
Ivigtut +18m.58s., eN = +23m.9s., SS = +27m.44s.
Jena e = +28m.32s.
Denver eSKSE = +22m.6s., eN = +22m.11s., iE = +22m.16s.
Belgrade iZ = +12m.30s., iNE = +28m.17s.
Edinburgh i = +12m.37s., +24m.2s., and +28m.20s.
Sofia iSE = +22m.49s.
Durham iEN = +17m.35s., +17m.47s., iE = +28m.33s.
Wellington i = +12m.42s., +13m.15s., SKS = +23m.17s., PS = +23m.37s., SS = +28m.7s., SSS = +31m.5s., L_q = +31m.52s.
Tucson iPS = +23m.52s., iSSS = +32m.21s.
De Bilt iPPPZ = +17m.39s.
Stonyhurst i = +12m.54s., SS = +28m.39s.
Christchurch iP_cPNZ = +12m.46s., PPP = +17m.56s., SS = +28m.32s., SSS = +31m.48s., L_qE = +34m.52s.
Stuttgart iP_cP = +12m.55s., e = +13m.38s., ePPP = +17m.49s., eSKKS = +23m.37s., ePS = +23m.54s., eSS = +28m.53s., e = +29m.55s.
Uccle iZ = +13m.53s., iPS = +23m.57s.
Bidston i = +12m.51s., iPPP = +17m.49s., iSS = +28m.24s., e = +29m.49s.
Strasbourg PPP = +18m.4s., iE = +23m.7s., iPSE = +24m.3s., eSSE = +29m.2s., iN = +33m.16s.
Kew i = +12m.53s., iPPP = +18m.7s., iZ = +19m.25s., iS_cS = +23m.26s., iE = +23m.35s., iSPZ = +24m.5s., iSS = +28m.43s., e = +30m.7s.
Rathfarnham Castle iPS = +24m.16s., iSS = +28m.58s., iSSS = +32m.33s.
Padova iE = +13m.25s., ePPE = +17m.1s., ePPPN = +17m.37s., ePPPE = +19m.34s., iPSN = +23m.40s., iE = +23m.43s.
Helwan iS = +23m.28s., PPS = +24m.47s., SS = +29m.18s.
Jersey ePPP = +17m.59s., iPS = +23m.50s., e = +29m.42s.
Chicago eS = +24m.16s., iPS = +24m.59s., eSSS = +33m.36s.
Marseilles e = +31m.2s.
St. Louis iPN = +13m.6s., eSKKSE = +23m.59s., eSSN = +30m.12s., eSSSN = +34m.16s.
Ottawa i = +25m.17s., iE = +30m.21s., e = +37m.56s.
Seven Falls i = +24m.6s., SSS = +33m.8s.
Cape Girardeau eSKKSE = +24m.9s., iSEN = +24m.19s., ePPSN = +26m.33s., eSSN = +30m.23s.
Buffalo iSP = +25m.25s.
Vermont iSKKS = +24m.20s., iPS = +25m.27s., iSS = +30m.39s., eSSS = +34m.30s.
Little Rock eE = +12m.55s., +13m.8s., and +18m.10s.
East Machias ePPP = +19m.54s., S = +24m.37s., iS = +24m.51s., i = +25m.13s., iPS = +26m.3s., i = +26m.13s., SS = +31m.17s., SSS = +34m.42s.
Williamstown ePPP = +19m.35s., iPS = +25m.49s., iPPS = +26m.28s., eSS = +31m.47s., eSSS = +36m.18s.
Pennsylvania i = +24m.39s., eSS = +32m.8s.
Harvard eSE = +24m.42s., iPSZ = +26m.2s., iSSE = +31m.22s., eL_qE = +49·5m.
Weston iPNZ = +13m.32s., iSE = +25m.6s., iPSNZ = +26m.3s., eSSE = +31m.19s., eSSSE = +36m.45s., iSSSSEN = +38m.37s.
Fordham eSS = +31m.22s.
Philadelphia iS = +24m.47s., ePS = +26m.4s., iSS = +31m.16s., i = +31m.23s. and +37m.31s.
Georgetown eSP = +26m.2s., eSS = +31m.37s.
Algiers PPP = +21m.8s.
Toledo ePPP = +19m.40s., iS = +25m.8s., ePS = +26m.24s., eSS = +31m.45s., iSS = +36m.10s.
Columbia SS = +32m.12s.
Tananarive SN = +25m.58s., SSN = +33m.16s., SSSN = +37m.9s.
San Juan iPS = +30m.8s., iSS = +36m.35s., i = +37m.1s.
Cape Town iSKP = +22m.54s., iSE = +29m.49s., iSN = +30m.4s., PPSN = +33m.54s., PPSE = +33m.58s., eE = +38m.38s., SSS = +45m.10s.
Huancayo iPKS = +23m.2s., iPPS = +34m.45s., iSS = +40m.39s., iPSPS = +41m.30s., i = +42m.20s., iSSS = +45m.31s., i = +46m.13s., +49m.45s., and +51m.15s.
La Paz iZ = +20m.5s., iPPKPZ = +20m.56s., SSSZ = +47m.54s.
Long waves were also recorded at Besançon.

May 23d. 8h. 21m. 48s. Epicentre 18°·0N. 120°·0E. (as on 1938, Feb. 11d.).

China Sea, north of Luzon, Philippines. Felt force VI at Vigar, force V at Batac, (Laoag), force IV at Baguio, in the greater part of Luzon and at Hong Kong.

Depth 80km. (Pasadena).

W. C. Repetti.

Manila Central Observatory, Seismological Bulletin for 1938, January-June, Manila, 1938, p. 17. Epicentre 18° 15′N. 119° 45′E.

$A = -\cdot4758$, $B = +\cdot8242$, $C = +\cdot3071$; $\delta = 0$; $h = +5$;
$D = +\cdot866$, $E = +\cdot500$; $G = -\cdot154$, $H = +\cdot266$, $K = -\cdot952$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		3·5	165	i 1 3a	P*	1 55	Sg	—	—	—
Hong Kong		6·9	309	1 43	− 2	3 9	+ 4	—	—	—
Taihoku		7·1	10	e 1 47	− 1	3 8	− 2	i 3 58	—	—
Phu-Lien		13·0	285	i 3 4	− 5	e 5 28	− 7	—	—	6·2
Zi-ka-wei	N.	13·2	5	e 4 4	+53	6 2	SSS	—	—	—
Hukuoka B		18·1	30	4 18	+ 4	7 24	−11	—	—	—
Husan		18·8	23	4 25	+ 2	7 52	+ 2	—	—	—
Taikyu		19·4	22	4 32	+ 2	8 4	0	—	—	—
Koti		19·7	36	4 32	− 2	e 8 13	+ 3	—	—	—
Zinsen		20·3	14	e 4 39a	− 1	e 8 21	− 2	—	—	e 10·3
Keizyo		20·4	16	4 38	− 3	8 27	+ 2	—	—	11·2
Heizyo		21·6	11	e 4 45	− 9	—	—	—	—	8·8
Nagoya		22·8	39	i 4 9k	−56	8 16	−55	—	—	—
Amboina		23·0	158	e 5 7	0	i 9 18	+ 4	i 9 32	SS	12·2
Medan		25·3	238	5 31	+ 1	9 58	+ 4	—	—	—
Batavia		27·3	210	i 5 48	0	i 10 41	+14	—	—	17·2
Malabar		27·9	207	5 58	+ 4	e 10 24	−13	—	—	—
Mizusawa		27·9	37	(5 55)	+ 1	5 55	P	—	—	—
Agra		39·7	291	e 7 28	− 8	13 49	+ 9	8 51	PP	—
Colombo	E.	40·6	259	7 43	0	13 26	−28	—	—	22·0
Almata		44·1	315	8 13	+ 1	14 45	0	—	—	25·7
Bombay		44·7	279	8 16	0	i 14 52	− 2	i 10 2	PP	22·4
Semipalatinsk		45·2	326	8 23	+ 3	—	—	—	—	—
Frunse		45·6	313	8 23	− 1	15 5	− 1	—	—	—
Andijan		46·6	309	8 32	0	15 20	− 1	—	—	—
Tchimkent		49·0	311	8 50	0	—	—	—	—	—
Perth		49·8	183	(i 8 58)	+ 2	(16 2)	− 4	(10 59)	PP	(24·2)
Adelaide		55·5	161	i 9 35	− 4	i 17 17	− 7	e 11 16	PP	35·3
Riverview		59·5	149	e 10 4	− 3	i 18 17	+ 1	i 18 43	PS	—
Melbourne		60·3	157	—	—	18 24	− 2	i 25 42	SSS	i 29·2
Grozny		66·6	310	e 11 52	+58	—	—	—	—	—
Erevan		67·7	307	e 11 6	+ 5	e 20 2	+ 4	—	—	—
Piatigorsk		68·4	311	e 11 6	0	e 20 6	− 1	—	—	—
Sotchi		70·9	311	e 11 19	− 2	—	—	—	—	—
Theodosia		73·7	313	e 11 36	− 2	e 21 5	− 3	—	—	39·2
Apia		74·4	109	e 11 47	+ 5	i 21 18	+ 2	i 14 3	PP	37·2
Simferopol		74·6	313	11 41	− 2	21 14	− 4	—	—	26·2
College		74·8	26	e 11 49	+ 5	21 20	0	—	—	e 33·1
Ksara		75·4	300	e 11 46	− 1	e 21 29	+ 2	—	—	—
Arapuni		76·4	137	—	—	21 36	− 2	—	—	33·9
Wellington		77·8	140	e 11 59	− 2	i 21 47	− 6	15 7	PP	34·6
Christchurch		77·9	143	i 12 1a	0	i 22 0	+ 6	i 22 14	PS	38·8
Tananarive		80·0	246	—	—	22 18	+ 1	—	—	39·2
Helwan		80·1	298	12 18	+ 5	i 22 15	− 3	15 14	PP	—
Bucharest		80·3	313	e 12 18	+ 4	i 22 19	− 1	—	—	—
Upsala		80·7	330	e 12 25	+ 9	e 22 16	− 8	—	—	e 38·2
Sitka		82·8	31	i 12 29	+ 2	i 22 44	− 1	e 28 2	SS	—
Sofia		82·8	312	e 12 25	− 2	e 22 37	− 8	—	—	—
Belgrade		84·1	315	e 12 31a	− 3	i 22 54	− 4	e 15 58	PP	e 30·9
Budapest		84·1	317	12 33	− 1	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chatham Ils.		84·6	139	—	—	e 24 12?	PS	—	—	—
Copenhagen		84·8	327	i 12 35	− 2	22 54	−11	—	—	—
Potsdam		85·8	324	e 13 12?	+30	e 24 18	PS	—	—	e 44·2
Bergen		86·0	333	13 46	+63	24 7	PS	—	—	31·2
Prague		86·0	322	e 12 42	− 1	e 23 24	+ 7	—	—	—
Hamburg		87·0	325	e 12 48a	0	i 23 16	[+ 2]	—	—	e 41·2
Jena		87·3	322	e 12 48	− 2	e 23 12	[− 3]	—	—	e 41·7
Hof		87·4	322	e 9 12	?	e 19 12	?	—	—	e 33·2
Göttingen		87·9	324	e 12 48	− 5	e 23 18	[− 2]	—	—	e 45·2
Triest		88·2	318	12 52	− 2	23 17	[− 4]	—	—	e 42·2
Padova		89·5	318	e 13 5	+ 5	23 29	[− 1]	—	—	—
Stuttgart		89·6	322	e 13 0	− 1	e 23 18	[−12]	—	—	e 45·2
De Bilt		90·3	326	e 13 3	− 1	i 23 36	[+ 2]	—	—	e 47·2
Strasbourg		90·5	322	e 13 5	0	e 23 34	[− 2]	—	—	e 48·2
Zurich		90·5	321	e 13 4k	− 1	e 23 33	[− 3]	—	—	—
Florence		90·6	317	13 14	+ 9	23 41	[+ 4]	—	—	—
Aberdeen		91·0	333	e 13 15	+ 8	i 30 54	SS	e 16 51	PP	44·4
Basle		91·1	321	e 13 5	− 3	—	—	—	—	—
Uccle	z.	91·4	326	e 13 8	− 1	—	—	—	—	—
Neuchatel		91·8	321	e 13 9	− 2	e 23 37	[− 7]	—	—	—
Durham	E.	92·2	331	—	—	i 23 43	[− 2]	—	—	—
Moncalieri		92·3	320	e 12 53	−20	—	—	—	—	—
Kew		93·5	327	i 17 1	PP	i 23 40	[−13]	i 30 43	SS	45·2
Paris		93·5	324	e 13 18	− 1	e 23 48	[− 5]	—	—	46·2
Bidston		93·7	330	i 17 9	PP	i 23 44	[−10]	i 30 59	SS	45·2
Marseilles		94·8	319	—	—	e 23 53	[− 8]	e 26 52	PPS	52·2
Rathfarnham Castle		95·3	331	i 13 12	−15	i 23 37	[−26]	—	—	52·2
Jersey		95·7	327	e 22 32	?	i 24 6	[+ 1]	—	—	e 42·8
Algiers		99·4	314	e 13 42	− 4	24 12?	[−12]	—	—	—
Toledo		102·3	319	e 14 8	+ 9	i 24 34	[− 4]	e 18 9	PP	—
Tinemaha		102·5	44	e 14 0	0	—	—	—	—	—
Almeria		103·1	316	e 17 38	PP	e 24 38	[− 3]	—	—	—
Mount Wilson	z.	104·2	47	i 14 6	− 1	—	—	i 18 30	PP	—
Pasadena		104·2	47	i 14 7	0	—	—	e 18 35	PP	—
Riverside	z.	104·8	47	e 14 10	0	—	—	e 18 28	PP	—
Tucson		110·3	44	e 18 29	[− 4]	—	—	e 14 35a	P	—
Williamstown		118·4	10	i 18 49	[0]	—	—	i 20 17	PP	—
Harvard	z.	118·9	9	i 18 50	[0]	—	—	—	—	—
Weston	z.	119·0	9	i 18 50	[− 1]	—	—	e 20 11	PP	—
Fordham		120·1	12	e 18 49	[− 4]	—	—	—	—	—
Balboa Heights		147·0	36	e 19 42	[− 1]	—	—	—	—	—
Fort de France		147·5	2	e 19 45	[+ 2]	—	—	—	—	—
Huancayo		164·0	70	21 3	[+58]	—	—	24 48	PP	—
La Paz	z.	172·1	80	e 20 16	[+ 6]	—	—	—	—	—

Additional readings :—
Zi-ka-wei iN = +10m.32s.
Koti SN = +8m.22s.
Amboina iPN = +5m.10s.
Medan iN = +8m.16s. and +10m.4s.
Batavia iPN = +5m.51s., iSN = +10m.45s.
Malabar i = +11m.31s.
Mizusawa SN = +5m.58s.
Agra SSN = +16m.40s., SSE = +16m.48s., SSSE = +17m.31s.
Bombay iE = +10m.6s., eN = +14m.37s., iEN = +17m.50s.
Perth ; PPP =(+12m.17s.), PS =(+16m.22s.). 2m. have been added to all readings.
Adelaide i = +9m.47s. and +17m.34s.
Riverview iEN = +10m.9s., iE = +19m.35s., iN = +19m.40s. and +20m.17s.
Apia i = +22m.25s.
College iS = +21m.34s.
Wellington i = +12m.13s., +12m.28s., and +12m.45s., PS = +22m.42s., i = +24m.22s., SS = +26m.57s., L_Q = +30m.12s.?
Christchurch iP_cPZ = +12m.7s., L_QE = +34m.52s.
Helwan e = +16m.12s., PPP = +17m.9s., e = +19m.48s., SS = +27m.33s.
Sitka PS = +25m.8s.
Potsdam eN = +13m.30s., eE = +14m.6s.
Hof e = +12m.12s. and +25m.12s.
Aberdeen e = +34m.39s. and +41m.2s.

Continued on next page.

Durham iN = +23m.47s.
Kew iPSE = +24m.9s., iSSN = +29m.25s., iN = +37m.55s.
Bidston iSS = +29m.37s.
Marseilles e = +24m.24s., +28m.54s., and +31m.31s.
Jersey e = +38m.57s.
Mount Wilson iZ = +17m.25s. and +18m.13s.
Pasadena eZ = +18m.15s.
Riverside eZ = +17m.50s.
Long waves were also recorded at Edinburgh.

May 23d. 15h. 8m. 47s. Epicentre 18°·0N. 120°·0E. (as at 8h.).

A = −·4758, B = +·8242, C = +·3071; δ = 0; h = +5.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Manila	3·5	165	i 0 56$_a$	− 1	1 48	S*	—	—
Phu-Lien	13·0	285	2 13?	+ 4	—	—	—	—
Frunse	45·6	313	e 8 21	− 3	—	—	—	—
Andijan	46·6	309	e 8 22	−10	—	—	e 12 50	?
Ksara	75·4	300	e 11 56	+ 9	e 22 54	PPS	—	—

Long waves were also recorded at Brisbane, Copenhagen, Christchurch, De Bilt, Tiflis, Strasbourg, Kew, Paris, and Adelaide.

May 23d. Readings also at 0h. (Malabar and Balboa Heights), 5h. (Tiflis), 6h. (Santiago), 8h. (Christchurch), 9h. (Mizusawa, Piatigorsk, Grozny, and Nagoya), 11h. (Santiago) 12h. (Santiago (2), Riverside, Mount Wilson, and Brisbane), 13h. (Mizusawa and Nagoya), 14h. (Brisbane, Tucson, Pasadena, Riverside, and Mount Wilson), 16h. (Tiflis, Brisbane, Grozny, Medan, Andijan, Ksara, Adelaide, Riverview, Batavia, and Amboina), 17h. (Nagoya, Mizusawa, and Medan), 20h. (Samarkand, Almata, Tchimkent, Frunse, Grozny, and Andijan), 21h. (La Paz, Mizusawa, and Nagoya), 22h. (Nagoya).

May 24d. 9h. 37m. 25s. Epicentre 36°·7N. 74°·0E.

A = +·2215, B = +·7725, C = +·5951; δ = −4; h = 0;
D = +·961, E = −·276; G = +·164, H = +·572, K = −·804.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		4·2	343	1 5	− 2	2 4	S*	i 1 15	P*	—
Frunse		6·2	4	e 1 37	+ 2	e 2 39	− 9	e 1 48	P*	—
Samarkand		6·2	300	1 38	+ 3	2 33	−15	3 3	S*	—
Tchimkent		6·5	330	1 39	0	2 44	−11	e 2 1	P*	—
Almata		6·8	18	1 45	+ 1	e 3 6	+ 3	e 3 28	S*	—
Dehra Dun		7·2	151	e 3 51	S$_g$	e 4 36	—	—	—	—
Agra	E.	10·1	159	e 2 29	+ 1	4 29	+ 4	5 44	S$_g$	—
Semipalatinsk		14·4	17	e 3 22	− 5	—	—	—	—	e 7·4
Bombay		17·8	184	e 3 46	−25	e 7 47	SS	e 5 44	?	—
Grozny		22·6	296	e 5 2	− 1	e 9 5	− 2	—	—	—
Tiflis		23·1	292	5 9	+ 1	9 25	+ 9	e 10 29	SS	e 11·8
Ksara		31·1	276	e 11 54	S	(e 11 54)	+26	—	—	—

Additional readings:—
Andijan e = +1m.54s.
Samarkand P$_g$ = +1m.49s.
Tchimkent e = +2m.18s., S = +3m.16s.
Agra P*E = +2m.59s., S* = +4m.59s.
Ksara eS = +17m.48s.
Long waves were also recorded at Kodaikanal, Bergen, Copenhagen, Kew, De Bilt, and Potsdam.

May 24d. Readings also at 2h. (Santiago), 3h. (Christchurch), 6h. (Montserrat), 7h. (Manila), 8h. (Manila), 10h. (Fort de France, San Juan, Tucson, Riverside, and Mount Wilson), 11h. (Mizusawa), 15h. (Apia, Ksara, Tiflis, and Istanbul), 18h. (Basle, Chur, Aberdeen, Fordham, Manila, and Zurich), 19h. (Zurich, near Algiers, and Granada), 20h. (Ksara, Tiflis, Mizusawa, Fort de France, and Nagoya), 21h. (Manila).

May 25d. Readings at 0h. (Istanbul), 1h. (Erevan and Tiflis), 2h. (Triest, Sofia, Toledo, Granada, Malaga, Bucharest, Ksara, and Tiflis), 3h. (Andijan and Frunse), 5h. (Samarkand), 7h. (Samarkand), 13h. (Fort de France and San Juan), 14h. (Riverside, Tiflis, Mount Wilson, Pasadena, Tucson, Mizusawa, and Nagoya), 15h. (Mizusawa and Nagoya), 17h. (Ksara), 18h. (Harvard), 20h. (Fort de France and Mizusawa), 21h. (Tacubaya and Perth), 23h. (Perth, Nagoya, and Mizusawa).

May 26d. Readings at 0h. (Fort de France), 3h. (Samarkand), 4h. (Bucharest, Istanbul, and Triest), 7h. (Tucson), 8h. (Weston, Ksara, and Mizusawa), 9h. (Edinburgh), 11h. (Ksara, Mizusawa, Bucharest, Tiflis, Nagoya, Strasbourg, Stuttgart, Copenhagen, Prague, Potsdam, Manila (2), Kew, De Bilt, Cheb, Uccle, and Hukuoka B), 12h. (Paris and Nagoya), 13h. (San Javier), 14h. (Malaga), 16h. (San Javier), 17h. (Tucson), 18h. (Yalta and Tiflis), 22h. (Balboa Heights and Florence), 23h. (Perth, Riverside, Mount Wilson, and Pasadena).

May 27d. 21h. 23m. 45s. Epicentre 41°·9N. 17°·3E.

Force VI at Jelsa, V at Ston, Dobrota, Budua, etc. (Yugoslavia) and in the whole of the Province of Foggia (Italy), IV at Vieste and Foggia, III at San Severo, Bari, Taranto, Pompeii, Naples, and Triest.

Epicentre Ile de Hvar (Yugoslavia) 43°10′N. 16°42′E. Radius of the macroseismic area about 350kms.

J. Mihailovic.

Annuaire de l'Institut seismologique de Beograd, Année XVIII, 1938, Beograde 1939, p. 27.

Notizie Sismiche Bollettino della Societe sismologica Italiana, Vol. XXXVI (1938-XVIII), No. 3-4, Rome, 1938-XVII, p. 144.

$A = +\cdot7128$, $B = +\cdot2220$, $C = +\cdot6653$; $\delta = -1$; $h = -2$;
$D = +\cdot297$, $E = -\cdot955$; $G = +\cdot635$, $H = +\cdot198$, $K = -\cdot747$.

		Δ	Az	P.	O−C.	S	O−C.	Supp		L.
		°	°	m. s.	s.	m. s.	s.	m. s		m.
Belgrade		3·7	37	e 1 16	P_g	i 1 48	+ 3	i 2 7	S_g	—
Sofia		4·5	77	e 1 22	P*	3 15	S*	i 1 38	P_g	—
Triest		4·6	328	1 13a	+ 1	2 7	0	1 30	P_g	—
Florence		4·8	294	1 15	0	2 20	S*	—	—	—
Kecskemet	Z.	5·3	18	i 1 8	−14	i 2 31	+ 6	e 1 24	P*	e 2·8
Padova		5·3	315	i 1 24k	+ 2	i 3 2	S_g	i 1 53	P_g	—
Budapest	E.	5·7	12	1 37	P*	2 51	S*	2 3	P_g	—
	N.	5·7	12	1 33	+ 5	2 51	S*	1 58	P_g	—
Ogyalla	E.	6·0	7	1 44	P*	2 52	+ 9	2 6	P_g	—
	N.	6·0	7	1 48	P*	2 48	+ 5	3 8	S*	—
Bucharest		6·9	66	e 2 15	P_g	i 3 32	S*	i 3 45	S_g	—
Chur		7·4	315	e 1 54	+ 2	e 3 18	0	—	—	—
Moncalieri		7·7	298	0 50	−66	3 0	−25	—	—	4·1
Zurich		8·3	314	e 2 1	− 3	e 3 52	+12	—	—	—
Prague		8·4	348	e 2 5	− 1	e 3 50	+ 7	—	—	—
Basle		8·9	313	e 2 13	+ 1	e 4 5	+10	—	—	—
Cheb		8·9	339	e 2 12	0	e 3 43	−12	—	—	e 4·3
Istanbul		8·9	95	2 22	+10	4 30	S*	—	—	—
Stuttgart		8·9	323	e 2 13	+ 1	i 4 3	+ 8	i 4 39	S*	—
Neuchatel		9·0	307	e 2 13	0	e 4 2	+ 4	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Karlsruhe	9·5	322	e 2 18	− 2	e 4 18	+ 8	—	—	—
Strasbourg	9·5	319	e 2 27	+ 7	i 4 28	+18	i 4 57	S*	—
Besançon	9·7	317	i 3 51	?	i 5 39	S_g	—	—	—
Jena	9·9	338	e 2 26	+ 1	i 4 31	+11	i 4 59	S*	e 5·1
Göttingen	10·9	335	e 2 40	0	e 4 50	+ 6	—	—	—
Potsdam	10·9	346	e 2 45	+ 5	e 4 45	+ 1	i 5 10	SSS	—
Sebastopol	12·1	72	2 49	− 8	—	—	—	—	—
Paris	12·5	309	e 3 16	PP	e 7 12	?	—	—	8·2
Hamburg	12·6	340	e 3 6	+ 3	—	—	—	—	e 6·3
Simferopol	12·6	70	3 9	+ 6	e 7 39	L	—	—	(7 ·6)
Uccle	12·6	320	e 3 15	PP	e 6 5	SSS	—	—	—
Yalta	12·6	73	3 4	+ 1	—	—	—	—	—
De Bilt	13·1	325	i 3 18	+ 8	—	—	—	—	e 7·2
Theodosia	13·5	71	3 25	+10	e 6 4	SS	—	—	—
Copenhagen	14·2	349	3 31	+ 7	6 27	SSS	i 3 35	PP	—
Jersey	15·4	305	e 5 40	S	(e 5 40)	−58	(i 7 10)	SSS	—
Kew	15·4	315	i 3 48	+ 8	i 8 29	?	e 7 15	SSS	i 8·9
Oxford	16·0	315	—	—	e 7 2	SS	—	—	8·2
Toledo	16·3	270	i 3 58	+ 6	—	—	e 4 36	PPP	—
Ksara	16·7	112	i 4 5	PP	e 7 43	SSS	—	—	—
Granada	16·8	260	e 3 56	− 2	e 7 10	+ 5	—	—	—
Malaga	17·6	260	4 4	− 4	i 7 34	+11	—	—	9·2
Stonyhurst	17·8	319	e 4 15	+ 4	e 7 5	−23	—	—	11·4
Durham N.	17·9	323	—	—	e 7 43	+13	—	—	—
Upsala N.	18·0	359	e 3 37	−36	—	—	—	—	e 7·2
Edinburgh	19·4	323	e 4 33	+ 3	—	—	—	—	—
Rathfarnham Castle	19·5	314	i 4 29	− 2	i 9 45	L	5 15	PPP	(i 9·7)
Aberdeen	19·7	328	—	—	i 8 9	− 1	—	—	—
Tiflis	20·5	81	i 4 46	+ 4	8 38	+11	—	—	e 10·9
Grozny	21·0	76	e 4 47	0	—	—	—	—	—
Samarkand	37·3	76	6 15	−61	—	—	—	—	—
Andijan	40·8	72	e 7 42	− 3	—	—	—	—	—
Weston Z.	62·6	303	i 10 30	+ 2	—	—	—	—	—
Williamstown	63·6	304	i 10 38	+ 3	—	—	—	—	e 38·0
Fordham	65·1	303	i 10 43	− 2	—	—	—	—	—
Tucson	92·1	318	13 18k	+ 6	—	—	—	—	—

Additional readings :—
Belgrade iNW = +1m.23s. and +1m.32s., iSNW = +2m.18s.
Triest S_g = +2m.27s.
Budapest E. i = +3m.12s., P_gS_g = +3m.17s., S_g = +3m.24s.
Budapest N. i = +1m.45s. and +3m.10s.
Ogyalla S_gE = +3m.20s.
Bucharest iE = +5m.3s. and +5m.48s.
Istanbul S_g = +5m.32s.
Stuttgart e = +2m.30s. and +2m.39s., i = +4m.20s., e = +4m.33s., i = +4m.55s. and +5m.2s., iZ = +5m.10s., i = +5m.25s., iZ = +5m.38s.
Strasbourg iP_g = +3m.19s.
Jena e = +4m.43s., eE = +4m.47s., iSZ = +4m.51s.
Potsdam eN = +4m.33s., iN = +4m.55s., eE = +5m.21s., eZ = iN = +5m.27s., eN = +5m.33s., iE = +5m.45s. and +5m.53s., eZ = +5m.57s.
Upsala eN = +4m.12s.
Rathfarnham Castle i = +6m.53s. and +7m.45s.
Aberdeen i = +11m.15s.?, +12m.58s., and +14m.8s.
Andijan e = +11m.15s.
Long waves were also recorded at Almeria, Bergen, and San Fernando.

May 27d. Readings also at 0h. (Nagoya and Mizusawa), 1h. (La Paz, Ksara, and Huancayo), 3h. (Tucson, Batavia, Ksara, Medan, Manila, Fort de France, and Tiflis), 4h. (Ksara, Medan, Fort de France, and Tiflis), 6h. (Fordham, San Juan, Fort de France, and La Paz), 7h. (La Paz), 8h. (Brisbane), 10h. (Sebastopol, Tiflis, and Ksara), 12h. (Takaka, Christchurch, Belgrade, New Plymouth, and Wellington), 13h. (Manila and Columbia), 14h. (Tacubaya), 15h. (New Plymouth, Mount Wilson, Pasadena, Wellington, Tiflis, and Tananarive), 16h. (Strasbourg), 17h. (Mount Wilson, Pasadena, San Francisco, Haiwee, Tinemaha, Riverside, Fresno, Branner, and Lick), 19h. (Harvard, Ottawa, Neuchatel, Basle, Zurich, Moncalieri, Chur, Strasbourg, and Fort de France), 20h. (Brisbane and Melbourne), 22h. (Lick, Branner, and Fresno).

May 28d. 0h. 4m. 56s. Epicentre 39°·5N. 33°·7E. (as on 1938 April 27d.).

$A = +\cdot6437$, $B = +\cdot4293$, $C = +\cdot6335$; $\delta = -3$; $h = -2$;
$D = +\cdot555$, $E = -\cdot832$; $G = +\cdot527$, $H = +\cdot351$, $K = -\cdot774$.

		Δ	Az	P.	O−C	S.	O−C.	Supp		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		3·9	295	1 5	+ 3	2 48	S_g	1 25	P_g	—
Yalta		5·0	3	e 1 18	0	—	—	—	—	—
Sebastopol		5·1	359	e 1 21	+ 1	2 22	+ 2	—	—	—
Simferopol		5·4	3	1 25	+ 1	2 28	0	—	—	—
Theodosia		5·7	13	1 28	0	2 34	− 1	i 2 45	S*	—
Ksara		6·0	161	i 1 28	− 4	e 2 42	− 1	i 3 22	S_g	—
Bucharest		7·5	313	e 2 58	P_g	—	—	—	—	4·0
Sofia		8·5	296	e 2 28	P*	e 4 3	S*	—	—	e 4·5
Tiflis		8·7	72	e 2 10	0	e 4 25	S*	e 4 36	S_g	e 4·9
Cheb		18·4	313	e 4 16	− 2	—	—	—	—	e 10·1
Chur		19·0	302	e 4 28	+ 2	—	—	—	—	—
Potsdam		19·2	320	e 4 28	0	e 8 10	+11	—	—	e 11·1
Zurich		19·8	303	e 4 32	− 3	—	—	—	—	—
Basle		20·5	303	e 4 41	− 1	—	—	—	—	—
Strasbourg	z.	20·7	306	e 4 49	+ 5	e 8 40	+ 9	—	—	—
Neuchatel		20·8	302	e 4 44	− 1	—	—	—	—	—
Copenhagen		21·5	328	i 4 49	− 3	—	—	—	—	12·1
De Bilt		23·4	314	—	—	e 9 36	+15	—	—	e 12·1
Kew		26·4	309	—	—	e 11 4?	SS	—	—	—
Bidston		28·5	313	—	—	11 4	+18	—	—	—

Additional readings :—
Istanbul PS = +2m.13s.
Theodosia i = +2m.59s.
Tiflis eE = +4m.33s.
Long waves were also recorded at Belgrade and Triest.

May 28d. 9h. Local shock recorded by stations associated with the Earthquake Institute of Tokyo Imperial University.

Komaba P = 50m.12s., S = 50m.36s.
Tokyo I.U.P = 50m.14s., S = 50m.35s.
Tokyo Cen. Met. Obs. P = 50m.14s.k, S = 50m.33s.
Kiyosumi P = 50m.15s., S = 50m.44s.
Titibu P = 50m.15s., S = 50m.31s.
Tukubasan P = 50m.15s., S = 50m.29s.
Mitaka P = 50m.16s., S = 50m.37s.
Misaki P = 50m.16s., S = 50m.41s.
Koyama P = 50m.16s., S = 50m.45s.
Mizusawa ePN = 50m.22s., S = 50m.58s.
Susaki P = 50m.32s., S = 51m.5s.
Nagoya eP = 50m.50s., S = 51m.34s.

May 28d. 10h. 14m. 5s. Epicentre 43°·0N. 125°·6W.

Felt at Gardiner Marshfield (Oregon) and other places on the coast.

Epicentre 43°·0N. 125°·6W. (U.S.C.G.S.).
43°·3N. 125°·0W. (J.S.A.).

F. Neuman.

United States Earthquakes, 1938. Serial No. 629. Washington, 1940, p. 27.

$A = -\cdot4270$, $B = -\cdot5965$, $C = +\cdot6795$; $\delta = -14$; $h = -3$;
$D = -\cdot813$, $E = +\cdot582$; $G = -\cdot396$, $H = -\cdot553$, $K = -\cdot734$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ferndale		2·6	158	e 0 38	− 6	i 1 9	− 8	e 0 43	P*	—
Ukiah		4·3	153	e 0 57	−11	1 45	−15	i 2 12	S*	2·6
San Francisco		5·8	153	e 1 29	0	e 2 32	− 6	2 52	S*	—
Branner		6·3	152	e 1 33	− 3	e 3 18	S*	e 3 26	S_g	—
Lick		6·4	151	e 1 34	− 4	—	—	—	—	—
Fresno	N.	7·7	142	e 1 57	+ 1	e 3 43	S*	—	—	—
Tinemaha		8·2	134	e 2 8	+ 5	i 3 52	+14	—	—	—
Haiwee		9·1	137	e 2 18	+ 4	e 4 25	S*	—	—	—
Santa Barbara	Z.	9·7	150	e 2 19	− 3	—	—	—	—	—
Butte		9·8	67	e 2 25	+ 1	e 4 6	−11	—	—	i 4·7
Mount Wilson		10·6	144	i 2 34a	− 2	—	—	—	—	—
Pasadena		10·6	144	i 2 34a	− 2	—	—	—	—	4·5
Bozeman		10·8	70	e 2 39	0	e 4 18	−24	—	—	e 5·0
Riverside		11·1	142	i 2 41a	− 2	—	—	—	—	—
Sitka		15·4	340	e 3 33k	− 7	i 6 59	SS	i 3 52	PP	i 7·6
Saskatoon		15·7	48	3 43	− 1	6 58	SS	—	—	8·9
Denver		15·9	95	e 3 47	0	e 6 30	−14	e 4 24	PPP	e 9·5
Tucson		15·9	128	i 3 47a	0	i 7 10	SS	i 4 2	PP	8·1
College		25·2	338	e 5 24	− 5	9 56	+ 4	—	—	11·5
Florissant		26·8	87	e 5 42	− 2	e 10 19	0	—	—	—
Little Rock		27·0	97	e 5 43	− 2	e 10 31	+ 9	i 6 20	PP	e 14·7
St. Louis		27·0	87	e 5 44	− 1	i 10 28	+ 6	—	—	—
Chicago		27·9	79	e 5 53	− 1	e 10 26	−11	e 6 32	PP	e 11·9
Buffalo		33·9	73	i 6 47	0	i 12 15	+ 4	i 7 59	PP	—
Honolulu		34·5	241	e 7 10	+18	e 12 19	− 1	e 8 19	PP	e 14·2
Pennsylvania		35·2	77	i 6 55	− 3	e 12 37	+ 6	e 8 9	PP	e 16·0
Ottawa		35·4	68	6 58	− 2	12 40	+ 6	8 19	PP	17·4
Columbia		35·7	88	—	—	e 12 44	+ 5	—	—	e 17·3
Georgetown		36·5	78	i 7 8	− 1	i 12 58	+ 7	8 20	PP	—
Shawinigan Falls		37·1	64	7 14	0	—	—	—	—	18·9
Vermont		37·4	69	e 7 17	+ 1	e 13 9	+ 4	—	—	e 18·5
Philadelphia		37·5	77	7 18	+ 1	i 13 12	+ 5	—	—	e 15·3
Williamstown		37·9	71	i 7 20	0	e 13 19	+ 6	i 8 36	PP	e 18·5
Fordham		38·0	75	i 7 19	− 2	i 13 19	+ 5	i 8 45	PP	—
Seven Falls		38·3	64	7 24	0	13 21	+ 2	e 8 51	PP	18·9
Harvard		39·1	71	i 7 30a	− 1	e 13 37	+ 6	i 9 1	PP	e 21·9
Weston		39·3	71	i 7 32a	0	i 13 40	+ 6	i 8 58	PP	e 19·3
East Machias		41·2	66	e 8 0	+12	e 14 12	+10	e 9 19	PP	e 16·7
Ivigtut		47·8	40	8 42	+ 1	15 43	+ 5	10 34	PP	22·9
San Juan		55·5	96	e 11 35	PP	e 17 30	+ 6	e 21 7	SS	e 23·1
Aberdeen		69·6	29	—	—	i 20 10	−11	—	—	33·6
Edinburgh		70·1	31	—	—	i 20 28	+ 1	—	—	32·9
Durham		71·6	31	11 31	+ 6	i 20 43	− 1	e 17 39	PPP	—
Stonyhurst		72·0	32	—	—	e 24 55	SS	—	—	38·9
Upsala		73·1	19	—	—	e 21 4	+ 3	—	—	—
Oxford		74·0	33	e 11 56	+17	i 21 12	+ 1	—	—	e 29·9
Kew		74·6	33	e 11 39	− 4	i 21 22	+ 4	—	—	e 36·9
Copenhagen		75·5	24	11 46	− 2	21 25	− 3	—	—	33·9
Jersey		75·7	35	e 12 5	+16	e 24 24	?	e 14 45	PP	e 37·9
De Bilt		76·3	29	11 52	0	21 39	+ 2	—	—	e 35·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hamburg		76·5	26	e 11 55?	+ 1	e 28 55?	SSS	—	—	—
Uccle		76·9	31	11 55	− 1	21 45	+ 2	—	—	e 35·9
Paris		77·8	33	11 58	− 3	e 21 58	+ 5	—	—	37·9
Potsdam		78·5	25	e 12 1	− 3	e 22 1	0	—	—	e 33·9
La Paz	Z.	79·2	124	12 14	+ 6	—	—	—	—	—
Strasbourg		80·0	30	i 12 13	0	e 22 24	+ 7	i 15 16 PP		e 36·9
Cheb		80·3	27	—	—	e 22 22	+ 2	—	—	e 41·9
Stuttgart		80·4	29	e 12 13k	− 2	e 22 22	+ 1	e 15 23 PP		e 37·9
Toledo		82·0	42	e 12 22	− 1	—	—	—	—	e 35·8
San Fernando		83·6	45	e 16 43	PP	e 23 3	+10	—	—	41·9
Granada		84·3	43	e 12 43	+ 8	e 22 46	−14	—	—	—
Malaga		84·3	44	e 12 32	− 3	e 22 56	− 4	—	—	—
Bucharest		89·4	20	—	—	e 26 45	?	—	—	42·9
Yalta		91·0	14	e 13 6	− 1	—	—	—	—	—
Istanbul		93·2	19	16 58	PP	24 53	+30	—	—	—
Tiflis		95·2	7	—	—	24 4	[+ 2]	e 26 2 PS		e 41·9
Manila		96·5	297	13 42	+10	e 26 15	PS	—	—	—
Rio de Janeiro		100·0	112	e 43 55	?	—	—	—	—	—
Ksara		101·7	16	e 18 4	PP	e 27 10	PS	e 27 59 PPS		—
Agra	E.	106·9	338	—	—	—	—	44 53 ?		—

Additional readings :—
Ferndale eEN = +2m.23s., iE = +2m.53s., eN = +3m.1s.
Ukiah P = +1m.6s.
San Francisco eE = +5m.2s., eN = +5m.18s. and +5m.55s.
Branner iPN = +1m.37s., eE = +2m.30s., eN = +4m.11s., eE = +4m.34s., eN = +7m.9s. and +9m.17s.
Lick eE = +1m.37s.
Denver eN = +4m.30s.
Tucson iP = +3m.52s.
Florissant iN = +10m.25s.
Little Rock ePPPN = +6m.33s.
St. Louis iN = +10m.43s., eN = +13m.19s.
Buffalo e = +6m.5s. and +11m.19s.
Honolulu ePPP = +8m.41s.
Pennsylvania e = +7m.35s., ePPP = +8m.36s., eSS = +15m.44s.
Philadelphia iS = +13m.16s.
Fordham e = +16m.8s. and +17m.45s., i = +20m.27s., e = +20m.51s.
Weston iP_cPZ = +9m.6s., eSSEZ = +16m.10s., eSSSN = +16m.56s.
Ivigtut +19m.13s.
Durham ?EN = +13m.15s.
Uccle eZ = +12m.17s.
Strasbourg i = +12m.36s., eSS = +27m.32s.
Stuttgart ePS = +23m.4s.
Tiflis eSKSE = +22m.46s., SSN = +31m.21s., eEN = +37m.55s.
Long waves were also recorded at Prague, Bergen, Rathfarnham Castle, Christchurch, Jena, and Göttingen.

May 28d. 11h. 3m. 4s. Epicentre 1°·5N. 84°·5W.

A = +·0958, B = −·9951, C = +·0260; δ = +8; h = +7;
D = −·995, E = −·096; G = +·002, H = −·026, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		8·9	33	e 1 56	−16	—	—	—	—	—
Huancayo		16·2	146	e 3 47	− 3	e 6 43	− 8	i 7 15	SS	7·5
La Paz		24·1	137	i 5 22k	+ 4	i 9 46	+12	—	—	13·6
San Juan		24·6	45	e 5 25	+ 2	9 59	+17	5 59	PP	11·6
Tucson		39·4	324	e 7 35	+ 2	13 40	+ 5	e 8 34	PP	e 18·3
Williamstown		42·3	14	e 7 58	+ 1	—	—	e 9 48	PP	—
Riverside	Z.	44·6	321	e 8 16	0	—	—	—	—	—
Mount Wilson	Z.	45·2	321	e 8 16	− 4	—	—	—	—	—
Pasadena		45·2	321	e 8 17	− 3	—	—	—	—	—
Tinemaha	E.	47·1	323	e 8 36	+ 1	—	—	—	—	—

Additional readings :—
Huancayo P = +3m.51s.
Tucson S = +13m.50s.
Long waves were also recorded at Copenhagen.

May 28d. 16h. 42m. 0s. Epicentre 43°·6N. 144°·3E.

Slight damage in the area of Lake Kuttyaro (Hokkaido). Strongly felt at Nemuro, Kusiro, slightly at Obihiro. Epicentre 43°·6N. 144°·3E. Macroseismic radius 200-300kms. Shallow.

See Seismological Bulletin of the Central Meteorological Observatory, Japan, for the year 1938. Tokyo, 1940, pp. 37-39. Macroseismic chart, p. 39.

Yosio Kato. Investigation of the changes in the earth's magnetic field accompanying Earthquakes or Volcanic Eruptions. On the strong earthquake of May 28th, 1938, which occurred near Kuttyaro Lake (Hokkaido).

The reports of the Tohoku Imperial University, First Series, Sendai, Japan, Vol. XXIX, No. 3.

Maruzen Co., Ltd., Tokyo and Sendai, November, 1940, pp. 315-328. Four macroseismic and magnetic charts, 3 graphs, and 12 figures: Resumé:

The vertical component of the magnetic field of the earth was measured by the Schmidt balance after this quake, and it was found that there existed a definite relationship between the magnetic anomaly and the relative seismic activity of this shock.

$A = -\cdot5900$, $B = +\cdot4239$, $C = +\cdot6872$; $\delta = +4$; $h = -3$;
$D = +\cdot584$, $E = +\cdot812$; $G = -\cdot558$, $H = +\cdot401$, $K = -\cdot726$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kusiro	0·6	173	0 22	S	(0 22)	S*	—	—	—
Nemuro	1·0	106	0 30k	+ 9	0 43	+ 7	—	—	—
Obihiro	1·1	230	0 51	S	(0 51)	+12	—	—	—
Asahigawa	1·4	277	0 30a	P_g	—	—	—	—	—
Urakawa	1·8	217	0 39a	P_g	1 5	S_g	—	—	—
Sapporo	2·2	256	0 41k	P*	1 22	S_g	—	—	—
Muroran	2·7	243	0 46a	+ 1	—	—	—	—	—
Mori	3·1	241	0 44k	− 7	1 15	−14	—	—	—
Hakodate	3·2	235	0 56k	+ 4	1 35	+ 3	—	—	—
Ootomari	3·2	340	0 53	+ 1	1 49	S_g	—	—	—
Hatinohe	3·7	214	0 58a	− 2	1 49	+ 4	—	—	—
Aomori	3·8	224	1 0	− 1	1 51	+ 4	—	—	—
Miyako	4·3	205	1 4	− 4	1 54	− 6	—	—	—
Morioka	4·6	212	1 9	− 3	2 21	S*	—	—	—
Akita	5·0	220	1 14	− 4	2 15	− 3	—	—	—
Mizusawa	5·1	208	1 16	− 4	2 17	− 3	—	—	—
Sikka	5·7	352	1 21	− 7	2 46	S*	—	—	—
Sendai	5·9	206	1 27	− 4	2 43	+ 3	—	—	—
Yamagata	6·1	210	1 28	− 6	—	—	—	—	—
Hukusima	6·6	208	1 36	− 5	2 55	− 3	—	—	—
Aidu	6·8	208	1 40	− 4	4 20	?	—	—	—
Niigata	6·9	217	1 48	+ 3	3 8	+ 3	—	—	—
Mito	7·8	203	1 51k	− 7	3 23	− 5	—	—	—
Kakioka	8·0	204	1 54	− 6	3 22	−11	—	—	—
Takada	8·0	217	2 6	+ 6	—	—	—	—	—
Maebasi	8·2	211	2 0	− 3	4 8	S*	—	—	—
Tyosi	8·3	200	2 0	− 4	3 28	−12	—	—	—
Kumagaya	8·4	208	2 7	+ 1	3 35	− 8	—	—	—
Nagano	8·4	216	2 3	− 3	3 58	+15	—	—	—
Wazima	8·4	224	2 4	− 2	3 43	0	—	—	—
Tokyo Cen. Met. Ob.	8·7	205	2 7	− 3	4 12	S*	—	—	—
Husiki	8·8	221	2 13	+ 2	—	—	—	—	—
Matumoto	8·8	215	2 4	− 7	—	—	—	—	—
Toyama	8·8	220	2 10	− 1	4 23	S*	—	—	—
Yokohama	8·9	205	2 10	− 2	4 34	S*	—	—	—
Kanazawa	9·1	222	2 19	+ 5	4 54	S_g	—	—	—
Kohu	9·1	211	2 14	0	4 1	+ 1	—	—	—
Hunatu	9·2	209	2 15	− 1	4 5	+ 2	—	—	—
Takayama	9·2	218	2 12	− 4	—	—	—	—	—
Mera	9·3	203	2 13	− 4	4 33	S*	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Misima		9·4	208	2 18	0	4 34	S*	—	—	—
Numadu		9·5	208	2 30	+10	5 29	S_g	—	—	—
Gihu		10·0	218	2 24	− 3	4 26	+ 4	—	—	—
Hamamatu		10·2	212	2 30	− 1	4 42	+15	—	—	—
Ibukisan		10·2	219	2 32	+ 1	—	—	—	—	—
Nagoya		10·2	216	2 31	0	5 20	S_g	—	—	—
Omaesaki		10·2	209	2 25	− 6	5 5	SSS	—	—	—
Hikone		10·4	219	2 33a	− 1	4 33	+ 1	—	—	—
Kameyama		10·6	217	2 31	− 5	5 44	L	—	—	(5·7)
Miyadu		10·7	224	2 34	− 4	—	—	—	—	—
Tu		10·7	217	2 33	− 5	5 25	L	—	—	(5·4)
Kyoto		10·8	220	2 40	+ 1	—	—	—	—	—
Toyooka		10·9	225	2 40k	0	4 56	+12	—	—	—
Hatidyozima		11·1	200	2 39	− 4	—	—	—	—	—
Osaka B		11·2	220	2 42	− 2	5 10	SS	—	—	—
Yagi		11·3	219	2 42	− 4	5 59	L	—	—	(6·0)
Wakayama		11·7	220	2 49	− 2	5 37	SSS	—	—	—
Sumoto		11·8	221	2 49k	− 4	5 37	SSS	—	—	—
Okayama		12·0	225	2 47	− 8	5 22	+11	—	—	—
Siomisaki		12·1	216	2 53	− 4	5 40	SS	—	—	—
Tokusima		12·1	221	2 44	−13	7 2	L	—	—	(7·0)
~~Hamada~~		~~12·8~~	~~231~~	~~3 26~~	~~PP~~	~~6 6~~	~~SSS~~	—	—	—
Hirosima		13·0	229	3 6	− 3	5 48	SS	—	—	—
Muroto		13·0	221	3 9	0	5 38	+ 3	—	—	—
Koti		13·1	223	3 5	− 5	6 26	SSS	—	—	—
Uwazima		13·8	225	3 10	− 9	7 10	L	—	—	(7·1)
Simidu		14·0	223	3 20	− 2	5 59	0	—	—	—
Taikyu		14·3	242	3 27	+ 1	6 15	+ 9	—	—	—
Husan		14·5	239	3 34	+ 6	e 6 38	SS	—	—	—
Izuka		14·5	231	3 25	− 3	—	—	—	—	—
Keizyo	N.	14·5	251	3 31	+ 3	6 22	+11	—	—	8·5
Heizyo		14·7	258	i 3 34k	+ 3	i 6 20	+ 4	—	—	8·7
Zinsen		14·7	251	e 3 33k	+ 2	e 6 19	+ 3	—	—	e 7·3
Hukuoka B		14·8	231	3 30	− 2	e 6 53	SSS	—	—	—
Kumamoto		15·1	229	3 36	0	—	—	—	—	—
Saga		15·1	231	3 40	+ 4	—	—	—	—	—
Unzendake		15·4	230	3 44	+ 4	7 51	L	—	—	(7·9)
Miyazaki		15·5	225	3 38	− 4	6 49	+14	—	—	—
Nagasaki		15·7	231	3 30	−14	7 12	SSS	—	—	—
Kagosima		16·2	226	3 50	0	—	—	—	—	—
Tomie		16·4	233	3 53a	0	—	—	—	—	—
Titizima		16·6	187	3 49	− 7	—	—	—	—	—
Nake		19·3	223	4 26	− 3	—	—	—	—	—
Zi-ka-wei	N.	21·9	243	e 5 2	+ 5	8 58	+ 4	i 9 10	SS	—
Naha		22·0	223	5 31	+33	9 38	SSS	—	—	—
Miyakozima		24·4	226	5 21	0	9 54	+15	—	—	—
Taityu		27·4	233	6 15	PP	—	—	—	—	—
Arisan		27·8	231	5 58	+ 5	—	—	—	—	—
Kosyun		29·1	230	6 3	− 1	—	—	—	—	—
Hong Kong		32·7	239	6 40	+ 4	11 53	+ 1	7 45	PP	15·6
Manila		35·1	221	i 6 57a	0	12 34	+ 4	—	—	18·0
Phu-Lien		38·7	246	e 7 29	+ 2	e 13 26	+ 1	—	—	—
College		42·4	36	e 8 1	+ 3	e 14 16	− 4	e 9 32	PP	e 17·2
Semipalatinsk		43·0	303	8 1	− 2	—	—	—	—	—
Almata		47·7	294	8 40	0	—	—	—	—	29·0
Frunse		49·4	294	8 53	0	—	—	—	—	27·3
Sitka		50·0	44	e 8 54	− 4	i 16 11	+ 2	—	—	21·1
Calcutta	N.	50·4	263	e 9 17	+16	e 19 31	SS	i 16 18	PS	e 23·8
Andijan		51·8	293	9 12	0	16 42	PS	—	—	29·0
Honolulu		52·5	95	e 9 22	+ 5	e 16 18	PS	e 11 6	PP	e 20·9
Dehra Dun	N.	53·3	279	e 10 34?	+71	i 20 57	SS	e 16 20	PS	e 29·9
Agra	E.	55·1	275	9 34	− 2	i 17 14	− 4	11 47	PP	—
Samarkand		55·9	295	9 35	− 7	e 16 26	PS	—	—	—
Medan		56·6	239	e 9 54	+ 7	e 17 46	+ 8	—	—	31·0
Batavia		60·0	224	i 10 8	− 3	18 25	+ 2	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hyderabad		60·2	267	—	—	18 30	+ 5	—	—	—
Bombay		63·9	272	10 46	+ 9	i 19 13	+ 1	e 12 45	PP	—
Kodaikanal		66·3	262	—	—	i 19 42	0	—	—	—
Colombo	E.	66·8	257	e 12 30	PP	—	—	—	—	—
Grozny		67·0	309	11 0	+ 3	19 58	+ 8	—	—	—
Berkeley		67·3	58	i 11 2	+ 3	i 19 54	0	—	—	—
Butte		67·8	46	—	—	e 19 44	−16	—	—	e 30·8
Upsala		68·0	335	e 11 1	− 2	e 20 0	− 2	27 32	SSS	e 35·0
Platigorsk		68·1	311	e 11 10	+ 6	—	—	—	—	—
Tiflis		68·5	308	11 7	+ 1	i 20 11	+ 3	e 14 47	PPP	e 34·0
Bozeman		68·8	46	e 13 47	PP	e 24 28	SS	e 20 13	PS	e 28·2
Erevan		69·7	307	e 11 18	+ 4	e 20 50	+28	—	—	—
Tinemaha		70·3	58	e 11 17	0	e 20 40	+11	—	—	—
Haiwee	Z.	71·1	58	i 11 18	− 4	—	—	—	—	—
Santa Barbara		71·1	60	i 11 21	− 1	—	—	—	—	—
Bergen		71·1	340	—	—	e 20 0?	−38	—	—	30·0
Theodosia		71·5	315	11 25	+ 1	20 50	+ 7	—	—	—
Brisbane	E.	71·8	171	e 18 54	?	i 20 42	− 4	i 21 24	PS	—
Pasadena		71·8	59	i 11 27	+ 1	i 20 53	+ 7	—	—	—
Simferopol		72·2	316	11 28	− 1	e 20 53	+ 2	—	—	35·5
Mount Wilson	Z.	72·3	59	i 11 26	− 3	—	—	—	—	—
Yalta		72·5	315	11 29	− 1	e 20 56	+ 2	—	—	35·0
Riverside	Z.	72·8	59	e 11 29	− 3	—	—	—	—	—
Copenhagen		73·0	334	i 11 34	+ 1	21 2	+ 2	16 0	PPP	34·0
La Jolla		73·7	60	e 11 39	+ 1	—	—	—	—	—
Ivigtut		75·1	7	11 45	− 1	21 22	− 2	—	—	36·0
Hamburg		75·6	334	i 11 51k	+ 3	e 21 30	+ 1	—	—	e 38·0
Potsdam		75·6	332	e 11 48	0	e 21 30	+ 1	e 16 24	PPP	e 36·0
Aberdeen		75·7	341	—	—	e 21 27	− 3	—	—	37·2
Bucharest		76·5	319	e 11 58	+ 4	i 21 43	+ 4	—	—	37·0
Prague		77·0	330	21 45	S	(21 45)	0	—	—	e 36·0
Edinburgh		77·1	342	—	—	i 21 49	+ 3	—	—	e 38·0
Budapest	E.	77·2	325	e 12 0	+ 3	21 53	+ 6	—	—	e 41·5
	N.	77·2	325	e 12 2	+ 5	21 51	+ 4	—	—	e 40·5
Göttingen		77·3	333	e 11 59	+ 1	e 21 49	+ 1	—	—	e 40·0
Jena		77·3	331	e 11 54	− 4	e 21 48	0	—	—	e 37·0
Ogyalla	E.	77·3	326	e 12 9	+11	22 0	[− 5]	—	—	e 43·5
	N.	77·3	326	e 12 0	+ 2	22 7	[+ 2]	—	—	e 44·5
Istanbul		77·6	316	12 0	0	21 55	+ 4	—	—	42·3
Cheb		77·7	331	e 12 2	+ 2	e 21 55	+ 3	—	—	e 40·0
Durham	E.	77·8	341	e 12 39	+38	i 22 35	PS	—	—	—
Tucson		78·1	56	e 12 2	0	e 21 59	+ 3	—	—	34·3
De Bilt		78·3	336	12 5	+ 2	22 2	+ 3	—	—	e 37·0
Belgrade		78·8	322	e 12 7a	+ 1	i 22 5	+ 1	—	—	e 41·8
Stonyhurst		78·8	341	—	—	e 22 5	+ 1	—	—	42·0
Ksara		79·1	306	i 12 9k	+ 1	e 22 16	+ 9	15 11	PP	—
Sofia		79·1	319	e 12 11	+ 3	e 22 11	+ 4	—	—	40·5
Uccle		79·7	336	12 12	+ 1	22 13	0	—	—	e 37·0
Stuttgart		79·9	331	e 12 13a	+ 1	e 22 12	− 4	e 27 0	SS	40·0
Oxford		80·4	339	—	—	i 22 20	− 1	—	—	e 37·0
Kew		80·5	338	i 12 16k	+ 1	i 22 24	+ 2	—	—	e 37·0
Strasbourg		80·6	332	i 12 18	+ 2	e 22 27	+ 4	e 15 29	PP	e 38·0
Triest		80·9	327	12 50	+33	22 32	+ 6	—	—	e 40·0
Zurich		81·3	331	e 12 20	0	—	—	—	—	—
Chur		81·4	331	e 12 22	+ 2	e 22 36	+ 5	—	—	—
Basle		81·5	332	e 12 22	+ 1	e 22 36	+ 4	—	—	—
Padova		81·8	328	13 0?	+38	—	—	—	—	46·5
Paris		82·1	335	i 12 27	+ 3	i 22 40	+ 2	—	—	41·0
Chicago		82·9	36	—	—	e 22 42	− 4	—	—	e 38·8
Jersey		83·0	340	e 10 50	?	e 22 1	−46	e 26 3	PS	e 41·4

Continued an next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Florence	83·4	327	—	—	e 21 30	?	—	—	47·0
Florissant	84·2	40	—	—	i 22 56	− 3	e 38 36	?	—
St. Louis N.	84·4	40	e 11 37	−59	e 22 56	− 5	e 14 54	PP	—
Shawinigan Falls	84·4	23	12 36	0	23 2	+ 1	—	—	55·0
Ottawa	84·5	27	12 35	− 1	22 58	− 4	—	—	39·0
Seven Falls	84·5	23	—	—	23 0	− 2	—	—	39·0
Helwan	84·6	306	e 12 35	− 1	e 23 2	− 1	e 16 15	PP	—
Vermont	86·1	25	—	—	e 23 10	[+ 2]	—	—	e 36·2
Little Rock	86·5	43	e 12 51	+ 5	e 23 25	+ 3	e 24 16	PS	e 42·8
East Machias	87·6	22	e 13 11	+20	e 23 24	− 8	e 33 12	SSS	e 36·3
Williamstown	87·7	25	i 12 52	0	e 23 24	[+ 6]	—	—	—
Harvard	88·4	25	e 12 54	− 1	e 23 26	[+ 4]	e 41 0?	L_g	e 52·0
Weston	88·6	25	i 12 56a	0	i 23 27	[+ 3]	e 33 25	SSS	e 41·0
Fordham	89·2	27	i 12 59	0	i 23 29	[+ 1]	24 47	PS	—
Philadelphia	89·5	29	e 13 0	0	e 23 47	− 3	e 24 48	PS	e 38·6
Toledo	92·1	336	i 13 15	+ 3	e 23 51	[+ 6]	e 16 34	PP	e 42·3
Granada	94·5	334	e 17 26	PP	—	—	—	—	49·0
Malaga	95·1	335	e 18 0	PP	—	—	—	—	44·0
San Fernando	95·9	336	—	—	24 16	[+10]	e 33 26	SS	49·0
San Juan	112·3	30	—	—	e 28 35	PS	—	—	e 50·2

Additional readings :—
Kusiro S = +30s.
Obihiro S = +1m.2s.
Zinsen eSZ = +6m.22s.
Hong Kong SS? = +13m.8s.
Manila iZ = +7m.2s.
Sitka eP = +9m.3s., iS = +16m.16s.
Calcutta iSSS = +20m.46s.
Honolulu ePPP = +12m.11s.
Agra PSE = +17m.47s., SSE = +21m.2s., SSSE = +22m.47s.
Bombay eN = +11m.11s., eEN = +20m.20s. and +23m.28s.
Berkeley eZ = +19m.58s.
Butte S = +20m.4s.
Tiflis PN = +11m.11s., iSE = +20m.13s., eN = +20m.29s., PSE = +20m.41s., PSZ = +20m.46s., SSSE = +27m.47s.
Bozeman eSSS = +27m.12s.
Copenhagen +21m.40s., SSS = +28m.48s.
Potsdam iPN = +11m.51s.
Aberdeen i = +27m.44s.
Prague eS = +31m.18s.
Budapest N i = +12m.9s.
Jena eP = +12m.0s.
Belgrade eNW = +25m.21s.
Stuttgart e = +18m.30s., eSKS = +22m.20s., eSS = +31m.42s.
Jersey e = +37m.30s.
St. Louis iSN = +22m.59s.
Little Rock eN = +13m.3s.
Williamstown eS = +24m.30s.
Weston eSN = +23m.47s., eN = +36m.15s.
Philadelphia eS = +23m.55s.
Long waves were also recorded at Rathfarnham Castle, Cape Town, Moncalieri, Marseilles, Karlsruhe, and Huancayo.

May 28d. Readings also at 0h. (Sebastopol (2), Ksara, and Theodosia), 2h. (Huancayo, Christchurch, and Bozeman), 3h. (La Paz and Almeria), 4h. (Neuchatel, Zurich, Basle, and Chur), 5h. (Almeria), 6h. (Tiflis), 7h. (Ksara, Samarkand, and Manila), 9h. (Tiflis, Florence, and Belgrade), 13h. (Tucson, La Jolla, Riverside, Mount Wilson, and Pasadena), 15h. (Andijan), 20h. (Nagoya, Riverside, Mount Wilson, and Pasadena), 23h. (Wellington and New Plymouth).

May 29d. Readings at 0h. (Wellington), 4h. (Tiflis and Samarkand), 5h. (La Paz, Cheb, and Huancayo), 8h. (Huancayo), 9h. (Sofia and Amboina), 13h. (Tananarive and Wellington), 14h. (Mizusawa), 17h. (Montserrat and Nagoya), 18h. (Samarkand, Andijan, Frunse, and Tchimkent), 19h. (Tiflis and Grozny), 20h. (Tiflis and Grozny), 21h. (Fort de France), 23h. (Samarkand, Andijan, Frunse, and Tchinkent).

May 30d. 14h. 29m. 46s. Epicentre 19°·9S. 169°·0E.

$A = -·9232$, $B = +·1795$, $C = -·3397$; $\delta = -9$; $h = +5$;
$D = +·191$, $E = +·982$,; $G = +·333$, $H = -·065$, $K = -·941$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·4	240	i 3 50a	− 3	i 7 2	+ 6	—	—	8·5
Arapuni		19·0	164	4 20	− 6	8 8	+13	—	—	9·2
Apia		19·4	76	i 4 28	− 2	8 18	+14	i 4 42	pP	—
New Plymouth		19·5	167	e 4 36	+ 5	8 16	+10	i 5 6	PPP	9·7
Riverview		21·0	224	i 4 48k	+ 1	i 8 46	+ 9	i 5 4	PP	10·1
Sydney		21·0	224	4 32	−15	i 8 29	− 8	—	—	10·0
Wellington		21·8	169	4 56	0	9 0	+ 8	5 28	PP	11·2
Christchurch		23·7	174	i 5 14a	0	i 9 26	− 1	i 8 58	PcP	11·7
Chatham Ils.		26·8	157	—	—	9 14	−65	—	—	i 13·7
Melbourne		27·4	224	e 5 48	− 1	10 28	0	i 6 3	PP	—
Adelaide		30·7	234	e 6 26	+ 7	i 11 16	− 5	i 13 43	SSS	i 14·6
Amboina		43·0	288	e 7 59	− 4	i 14 18	−11	—	—	e 24·2
Perth		48·1	245	e 8 38	− 5	i 15 6	−36	11 6	PPP	29·0
Honolulu		52·3	41	e 9 16	+ 1	e 16 26	−14	e 11 3	PP	e 21·2
Manila		58·4	303	i 10 0a	0	18 3	− 1	—	—	27·7
Hatidyozima		59·7	333	10 7	− 2	18 32	+13	23 38	SS	—
Miyakozima		61·5	317	10 24	+ 3	18 43	+ 1	—	—	—
Batavia		61·8	275	i 10 23	0	i 18 7	−39	i 14 7	PPP	25·2
Siomisaki		61·9	330	10 19	− 5	18 45	− 2	—	—	—
Tokyo Cen. Met. Ob.		61·9	335	10 25	+ 1	18 46	− 1	25 45	SSS	—
Kakioka		62·2	336	10 25	− 1	18 50	− 1	—	—	—
Mito		62·2	336	10 24	− 2	18 45	− 6	—	—	—
Yakusima		62·3	324	10 27	+ 1	18 53	+ 1	25 57	SSS	—
Muroto		62·7	329	10 27	− 2	18 53	− 4	—	—	29·0
Nagoya		62·7	333	10 28	− 1	—	—	—	—	e 21·1
Gihu		63·0	333	10 30	− 1	18 56	− 5	13 11	PP	—
Oiwake		63·0	335	10 29	− 2	18 58	− 3	—	—	—
Osaka		63·0	331	10 31	0	19 6	+ 5	13 15	PP	—
Koti		63·1	329	10 30	− 2	19 2	0	—	—	—
Taito		63·1	310	10 25	− 7	17 37	?	—	—	—
Mizusawa		64·3	338	e 10 34	− 5	19 15	− 2	—	—	29·0
Taihoku		64·3	313	e 10 34	− 5	19 14	− 3	—	—	—
Nagasaki		64·4	326	10 39	− 1	19 48	+30	—	—	—
Miyako		64·5	340	10 38	− 3	19 18	− 1	—	—	—
Hukuoka B		64·8	327	i 10 42a	− 1	i 19 23	0	—	—	26·7
Hamada		64·9	328	10 42	− 1	19 26	+ 2	—	—	—
Akita		65·2	338	10 45	0	19 27	− 1	—	—	—
Husan		66·6	326	e 10 56	+ 2	e 19 45	0	—	—	—
Mori		67·1	339	10 57	0	19 54	+ 3	—	—	33·2
Taikyu		67·4	327	e 11 0	+ 1	(19 56)	+ 1	—	—	19·9
Hong Kong		68·1	306	11 3k	− 1	20 4	+ 1	13 21	PP	32·7
Zi-ka-wei	N.	68·4	318	e 11 6	0	—	—	—	—	—
Keizyo		69·6	327	e 11 9	− 4	—	—	—	—	—
Zinsen		69·7	327	i 11 11a	− 3	i 20 20	− 2	i 28 7	SSS	—
Medan		72·8	281	e 11 34	+ 2	20 56	− 2	—	—	37·2
Phu-Lien		73·3	300	e 11 34	− 1	e 21 4	0	—	—	—
Branner	N.	86·3	49	i 12 47	+ 2	—	—	—	—	41·1
Berkeley		86·4	49	i 12 43	− 2	e 23 23	+ 2	e 24 33	PS	—
Ferndale		86·4	45	e 12 54	+ 9	e 24 38	PS	—	—	e 39·2
Ukiah		86·4	47	e 12 44	− 1	23 44	+23	i 24 36	PPS	35·4
Lick		86·6	49	e 12 49	+ 3	—	—	—	—	—
Santa Barbara	Z.	86·7	53	i 12 46	− 1	—	—	—	—	—
Fresno	N.	87·7	50	e 12 52	0	—	—	—	—	—
Pasadena		87·7	53	i 12 50a	− 2	i 23 46	+13	i 16 17	PP	i 36·2
La Jolla		87·8	54	e 12 51	− 1	—	—	—	—	—
Mount Wilson		87·8	53	i 12 49a	− 3	—	—	i 16 17	PP	—
Riverside		88·2	53	i 12 50	− 4	—	—	e 38 45	P'P'	—
Haiwee		88·7	51	e 12 57	0	e 23 44	+ 1	—	—	—
Tinemaha		88·9	50	e 13 0	+ 2	e 23 20	[− 6]	—	—	—
Sitka		89·7	27	—	—	e 23 34	[+ 3]	e 24 20	PS	e 35·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	89·8	294	i 12 58	− 4	i 23 37	− 6	e 16 26	PP	i 42·6
Colombo	E.	91·5	277	13 11	+ 1	23 46	[+ 4]	—	—	40·2
Tucson		92·5	56	i 13 15	+ 1	23 44	[− 3]	i 16 54	PP	i 36·8
Kodaikanal	E.	94·9	280	i 13 25	0	i 23 59	[− 1]	25 18	PS	45·2
Hyderabad		96·3	287	13 33	+ 1	24 3	[− 5]	31 18	SS	46·1
Butte		96·4	43	e 13 44	+12	e 24 5	[− 4]	e 26 16	PS	40·3
Bozeman		97·3	44	e 13 36	0	e 23 51	[−22]	e 17 25	PP	e 39·3
Tacubaya	N.	98·1	73	i 19 15	PPP	—	—	e 25 52	PS	—
Agra	E.	99·7	296	13 46	− 1	i 24 20	[− 5]	17 55	PP	48·0
Dehra Dun	N.	100·6	299	e 14 13?	+22	e 26 5	PS	e 19 43	PPP	e 47·8
Bombay		101·8	286	i 13 56	0	i 24 35	[− 1]	i 28 4	PPS	e 42·2
Saskatoon		102·2	38	—	—	e 25 26	−13	—	—	48·2
Frunse		106·5	311	e 16 21	?	—	—	—	—	—
Andijan		107·3	308	14 57	P	e 25 3	[+ 3]	e 18 50	PP	45·2
Little Rock		108·0	59	e 18 51	PP	e 25 0	[− 4]	e 28 14	PPS	e 37·9
Huancayo		109·2	111	19 1	PP	24 53	[−16]	e 21 1	PPP	e 44·1
Florissant		110·3	54	e 14 50	P	e 28 44	PS	e 19 18	PP	—
Cape Girardeau		110·7	55	e 17 58	[−37]	e 28 41	PS	e 19 10	PP	—
Tananarive		110·8	241	—	—	25 17	[+ 2]	28 38	PS	53·9
Chicago		112·9	51	e 19 14	PP	e 28 51	PS	e 34 30	SS	e 46·1
La Paz		113·2	119	i 18 41	[+ 2]	i 29 6	PS	34 14	SS	52·7
Columbia		117·1	60	—	—	e 29 49	PS	—	—	e 47·7
Buffalo		119·4	51	e 18 54	[+ 3]	e 29 28	PS	—	—	—
Cape Town		119·5	208	e 20 25	PS	e 27 10	{ 0}	e 29 45	PS	56·0
Georgetown		120·7	55	18 53	[− 1]	25 38	[−14]	20 20	PP	—
Ottawa		121·6	47	18 55	[− 1]	25 50	[− 5]	20 25	PP	58·2
Philadelphia		122·2	54	20 32	PP	i 27 46	{+18}	e 29 56	PS	49·7
Fordham		123·1	53	i 20 38	PP	i 26 14	[+14]	—	—	—
Vermont		123·5	50	e 20 42	PP	30 54	PS	e 37 28	SS	e 51·4
Williamstown		123·6	51	i 18 59	[− 1]	e 28 29	{+51}	i 20 37	PP	e 59·2
Harvard		124·8	51	e 19 1	[0]	e 37 58	SS	i 20 44	PP	e 61·2
Seven Falls		124·8	45	20 50	PP	30 42	PS	37 54	SS	59·2
Weston		125·0	51	e 19 0	[− 2]	i 32 20	PPS	i 20 48	PP	e 60·2
Rio de Janeiro		127·1	142	e 21 1	PP	(e 38 46)	SS	—	—	e 38·8
Grozny		127·5	310	e 19 10	[+ 3]	—	—	—	—	—
East Machias		127·6	48	e 21 13	PP	e 26 42	[+28]	e 31 13	PS	e 52·6
San Juan		128·1	81	e 19 5	[− 3]	26 48	[+33]	e 21 10	PP	—
Tiflis		128·6	308	i 19 9	[0]	e 26 37	[+21]	e 38 40	SS	e 52·2
Erevan		128·8	306	e 19 12	+ 3]	—	—	—	—	—
Scoresby Sund		129·1	5	i 19 9	[− 1]	39 20	SS	31 22	PS	—
Piatigorsk		129·3	311	e 19 54	[+44]	—	—	—	—	—
Halifax		130·2	47	e 22 38	?	e 26 44	[+24]	—	—	66·2
Ivigtut		131·3	23	19 12	[− 3]	26 46	[+24]	24 20	PPP	54·2
Sotchi		131·8	312	e 19 23	[+ 8]	—	—	—	—	—
Fort de France		132·0	88	e 19 16	[0]	e 22 41	PP	—	—	25·2?
Theodosia		134·4	315	e 19 26	[+ 6]	—	—	e 22 51	PP	—
Upsala		135·2	341	e 19 29	[+ 8]	e 29 21	{+29}	i 22 50	PP	e 59·2
Simferopol		135·3	315	e 19 23	[+ 2]	—	—	—	—	—
Yalta		135·4	314	e 19 22	[+ 1]	—	—	e 21 53	PP	—
Ksara		136·3	298	i 19 23a	[− 1]	34 35	PPS	i 22 12	PP	—
Bergen		138·0	349	e 22 14?	PP	—	—	—	—	e 50·2
Copenhagen		140·6	340	19 22	[− 9]	27 16	[+36]	22 23	PP	60·2
Helwan		140·6	294	19 24	[− 7]	29 26	{+ 2}	22 32	PP	—
Bucharest		140·8	318	e 18 54	[−37]	i 32 34	PS	i 23 13	PP	64·2
Aberdeen		142·3	352	—	—	i 40 46	SS	—	—	70·3
Potsdam		142·6	336	e 19 20	[−15]	e 41 20	SS	i 22 32	PP	66·2
Hamburg		142·8	340	i 19 30a	[− 5]	e 47 14	SSS	e 22 47	PP	e 64·2
Budapest		143·3	326	19 31	[− 5]	—	—	—	—	e 64·2
Kecskemet	Z.	143·3	325	e 19 31	[− 5]	—	—	e 23 32	PP	e 75·2
Sofia		143·3	316	e 19 37	[+ 1]	e 31 51	?	e 41 38	SS	—

Continued on next page,

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Ogyalla	143·5	327	19 33	[− 3]	—	—	—	—	e 63·2
Edinburgh	143·6	353	e 19 44	[+ 8]	—	—	—	—	e 60·2
Prague	143·8	332	e 19 33	[− 4]	e 41 44	SS	e 22 53	PP	e 55·2
Belgrade	144·1	321	i 19 35k	[− 2]	—	—	i 23 27	PP	e 55·9
Jena	144·4	334	i 19 35	[− 3]	—	—	e 23 42	PP	e 65·2
Göttingen	144·5	338	i 19 35	[− 3]	—	—	i 23 43	PP	e 67·2
Cheb	144·7	334	e 19 38	[− 1]	e 30 21	{+33}	—	—	e 65·2
De Bilt	145·5	343	i 19 41a	[+ 1]	—	—	i 23 4	PP	e 67·2
Bidston	146·1	352	i 19 41	[0]	—	—	i 23 20	PP	—
Rathfarnham Castle	146·5	355	i 19 44	[+ 2]	—	—	i 23 14	PP	65·2
Laibach	146·6	327	i 19 47	[+ 5]	—	—	—	—	e 77·2
Uccle	146·9	343	i 19 40a	[− 2]	—	—	i 23 10	PP	e 70·2
Stuttgart	147·0	336	e 19 43a	[0]	—	—	e 23 8	PP	e 66·2
Karlsruhe	147·1	337	e 19 45	[+ 2]	—	—	—	—	e 74·3
Triest	147·3	328	19 44a	[+ 1]	e 32 29	?	i 23 56	PP	e 66·2
Oxford	147·4	348	i 19 42a	[− 1]	i 42 48	SS	i 33 18	PS	e 65·2
Kew	147·5	347	i 19 42a	[− 1]	e 43 10	SS	i 23 12	PP	e 65·2
Strasbourg	147·7	337	i 19 42a	[− 2]	i 42 36	SS	i 23 21	PP	e 75·7
Chur	148·4	334	e 19 44	[− 1]	—	—	e 23 56	PP	—
Padova	148·4	329	i 19 54	[+ 9]	—	—	i 21 0	pP	e 70·2
Zurich	148·4	335	e 19 44	[− 1]	—	—	—	—	—
Florence	149·2	328	19 50	[+ 4]	—	—	—	—	72·2
Paris	149·2	342	i 19 46	[0]	—	—	e 23 23	PP	71·2
Neuchatel	149·3	335	e 19 45a	[− 1]	—	—	e 23 20	PP	—
Jersey	150·0	350	e 19 25	[−22]	—	—	i 27 18	PPP	e 75·0
Moncalieri	150·6	334	i 19 59	[+11]	—	—	23 37	PP	28·6
Marseilles	153·0	333	e 19 44	[− 8]	i 25 54	[−64]	—	—	70·2
Algiers	159·2	326	e 19 59	[− 1]	e 44 14?	SS	e 23 29	PP	e 74·2
Toledo	159·3	345	i 20 0	[0]	i 44 34	SS	i 24 20	PP	—
Almeria	161·5	338	e 20 3	[+ 1]	—	—	e 24 39	PP	e 83·3
Granada	161·7	341	i 20 5	[+ 3]	—	—	i 24 38	PP	—
Malaga	162·3	343	e 20 4	[+ 1]	—	—	e 24 41	PP	72·2
San Fernando	163·0	347	e 20 10	[+ 6]	i 26 27	[−40]	i 24 43	PP	75·7

Additional readings :—
Apia isP = +4m.53s., iPP = +5m.4s., P_cP? = +8m.34s., sS = +8m.55s., S_cS = +15m.42s.
New Plymouth i = +5m.42s.
Riverview iZ = +4m.53s., iEN = +4m.57s., iEN = +5m.23s., iN = +6m.0s., iEN = +6m.23s., iZ = +8m.50s.
Sydney e = +4m.47s., i = +4m.51s.
Wellington i = +5m.12s., +5m.43s., +6m.3s., +6m.13s., +7m.23s., and +7m.36s., L_q = +9m.14s.?
Christchurch i = +9m.40s., iS_cSN = +16m.8s., iS_cSEZ? = +16m.52s.
Melbourne iP = +5m.56s., i = +12m.29s. and +14m.41s.
Adelaide e = +9m.51s.
Perth i = +9m.15s., S = +17m.9s., SP = +17m.30s., i = +18m.42s. and +19m.46s., SS = +22m.0s., i = +23m.5s. and +23m.36s., SSS = +25m.11s., i = +27m.9s. and +28m.36s.
Honolulu P = +9m.25s., ePPP = +12m.32s., i = +17m.0s., +17m.12s., and +17m.16s., eSS = +19m.45s.
Manila iZ = +20m.51s.
Osaka SS = +23m.36s.
Mizusawa ePE = +10m.38s.
Hong Kong SS = +24m.19s.
Zinsen ePPE = +12m.16s.
Medan iN = +11m.49s.
Berkeley iZ = +12m.53s., eEZ = +23m.23s., eZ = +24m.36s. and +29m.47s.
Pasadena iZ = +13m.19s., eSKS = +23m.5s., iSE = +23m.46s., iPSE = +24m.48s., eSSNZ = +29m.19s., ePKP,PKP = +38m.47s.
Mount Wilson ePKP,PKP = +38m.49s.
Tinemaha iEN = +23m.47s.
Sitka iS = +23m.48s., ePPS = +25m.9s., eSS = +29m.43s.
Calcutta ePPPN = +18m.27s., eSKSN = +23m.15s., ePSN = +24m.43s., iPPSN = +25m.11s., eSSN = +29m.53s., eSSSN = +33m.27s.
Tucson S = +23m.59s., ePPS = +25m.18s., iSS = +30m.7s., i = +31m.7s., +34m.24s., and +34m.38s.
Kodaikanal iSE = +24m.37s., iPPSE = +26m.14s.?, SSE = +31m.26s.

Continued on next page.

Hyderabad SEN = +24m.48s.
Bozeman ePPP = +19m.22s., S = +24m.29s., ePS = +25m.45s., iPPS = +26m.39s., eSS = +31m.8s., eSSS = +35m.15s., SSS = +35m.42s.
Agra SKKSE = +25m.15s., PSE = +26m.55s., SS?E = +31m.46s., SSSE = +36m.27s.
Bombay iPKPE = +16m.58s., iE = +18m.12s., iEN = +18m.21s., iS_cSEN = +24m.51s., i = +25m.42s., iEN = +31m.12s., iSSEN = +32m.35s., iE = +33m.35s., +36m.42s., and +37m.12s.
Little Rock eN = +19m.9s., ePPSE = +28m.31s.
Huancayo S = +26m.4s., PS = +27m.52s., i = +28m.42s., iPPS = +29m.12s., i = +30m.30s., SS = +34m.4s., iSS = +34m.22s., iPSPS = +35m.5s., i = +35m.45s., eSSS = +37m.58s.
Cape Girardeau eN = +28m.54s.
Tananarive N = +30m.17s., eN = +35m.33s.
La Paz SE = +30m.24s.
Buffalo i = +20m.14s., e = +22m.50s. and +30m.8s., i = +32m.4s. and +32m.22s.
Cape Town eE = +28m.15s. and +29m.55s., i = +36m.22s., eE = +49m.15s., eN = +49m.27s.
Georgetown PS = +30m.0s.
Ottawa PPPZ = +23m.3s., PS = +30m.0s., SS = +37m.20s., SSS = +41m.20s.
Philadelphia iPSPS = +38m.2s., eSSS = +40m.37s.
Fordham i = +20m.59s., iSKS = +27m.28s., i = +30m.52s., +31m.27s., +32m.28s., and +37m.53s.
Williamstown eP = +15m.37s., iPPP = +23m.17s., i = +24m.50s., iSKSP? = +30m.8s., iPS = +30m.22s., ePPS = +31m.24s., i = +33m.29s., e = +36m.1s., iSS = +37m.27s., iSSS = +41m.47s., i = +47m.37s.
Harvard ePZ = +15m.20s.
Seven Falls SKP = +22m.12s.
Weston ePZ = +15m.44s.k, iSKP?E = +22m.24s., eE = +30m.30s., iSSN = +38m.23s., eSSSE = +42m.26s.
East Machias ePPS = +31m.30s., eSS = +37m.58s., eSSS = +43m.12s.
San Juan PPP = +23m.46s., PPS = +32m.16s., SS = +38m.19s.
Tiflis ePPZ = +21m.11s., iPPN = +21m.19s., eN = +29m.33s., eN = +33m.43s., eZ = +35m.19s., eN = +35m.37s., eSSSN = +43m.49s.
Scoresby Sund i = +21m.17s., PKS = +22m.31s., ? = +32m.59s., +34m.59s., +35m.35s., and +35m.57s., SSS = +43m.44s.
Ivigtut +21m.30s., +22m.35s., e = +31m.30s., +34m.38s., and +39m.38s.?
Fort de France PP = +19m.32s., PPP = +19m.36s.
Upsala eN = +21m.56s., eE = +22m.56s., ePSE = +33m.14s.?, eSSE = +40m.11s.
Yalta e = +22m.55s.
Bergen i = +23m.7s.
Copenhagen PKSN = +23m.6s., PPP = +25m.32s., SKKS = +29m.2s., e = +30m.57s., +32m.31s., PS = +34m.37s., e = +36m.18s., SS = +41m.8s., SSS = +45m.50s.
Helwan SKP = +23m.2s., PSKS = +32m.38s., e = +33m.32s.
Bucharest iE = +18m.56s., eEN = +19m.27s., iE = +24m.22s., +28m.24s., and +40m.58s.
Potsdam iZ = +19m.29s., iN = +19m.32s., eN = +22m.56s., iSKPE = +23m.17s., eNZ = +24m.8s., eEN = +32m.32s., eNZ = +34m.8s.
Kecskemet eZ = +25m.23s.
Ogyalla eE = +21m.39s., eN = +25m.5s.
Edinburgh e = +25m.24s.
Prague e = +20m.49s. and +30m.56s.
Belgrade iNW = +19m.44s., iZ = +23m.45s., iNW = +32m.25s.
Jena iPKPE = +19m.38s., eN = +22m.54s., e = +35m.14s.
Bidston i = +19m.50s., +20m.0s., +23m.5s., and +23m.53s., e = +43m.5s.
Rathfarnham Castle e = +40m.14s.?
Laibach i = +20m.0s.
Uccle i = +19m.45s., +20m.9s., iSKPZ = +23m.54s.
Stuttgart i = +20m.11s., iZ = +21m.0s., e = +21m.23s., iZ = +23m.54s., e = +33m.14s., +42m.15s., +43m.27s., +44m.26s., and +49m.2s.
Triest e = +41m.59s.
Kew iNZ = +19m.48s., iN = +20m.4s., iZ = +21m.19s., iNZ = +23m.18s., +23m.55s., eE = +41m.58s.
Strasbourg iE = +19m.47s., iSKPZ = +23m.14s., PPPE = +27m.5s., SKKSE = +30m.6s., PSKSZ = +33m.43s., PPSZ = +36m.33s., eE = +44m.14s.
Padova iPP? = +24m.18s.
Florence i = +21m.14s. and +38m.14s.
Jersey e = +20m.42s., +22m.52s., i = +24m.39s., e = +29m.19s.
Marseilles e = +23m.44s., +28m.52s., and +41m.26s.
Algiers iPKP$_2$ = +20m.39s., e = +29m.14s., +34m.51s., and +50m.14s.?
Toledo iPKP$_2$ = +20m.40s., iPPS = +38m.22s., iSSS = +50m.49s.
San Fernando iSS = +45m.2s.
Long waves were also recorded at Pennsylvania, Oaxaca, and La Plata.

May 30d. 23h. 28m. 5s. Epicentre 48°·5N. 155°·2E.

$A = -\cdot6038$, $B = +\cdot2790$, $C = +\cdot7467$; $\delta = -2$; $h = -5$;
$D = +\cdot419$, $E = +\cdot908$; $G = -\cdot678$, $H = +\cdot313$, $K = -\cdot665$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nagoya		18·8	232	4 26	+ 3	—	—	—	—	—
Hukuoka B		23·8	241	e 5 15	0	e 9 26	− 2	—	—	—
Andijan		56·7	297	9 55	+ 7	—	—	—	—	e 30·7
Calcutta	N.	58·3	269	—	—	e 17 49	−12	—	—	e 40·2
Scoresby Sund		61·3	359	10 20	0	—	—	—	—	19·9
Agra	E.	61·9	281	e 10 21	− 3	—	—	—	—	—
Mount Wilson	Z.	63·3	68	i 10 34	+ 1	—	—	—	—	—
Pasadena	Z.	63·3	68	e 10 32	− 1	—	—	—	—	—
Riverside	Z.	63·9	68	e 10 37	0	—	—	—	—	—
Upsala	N.	66·6	340	—	—	e 24 13	SS	—	—	e 39·9
Tucson		69·1	65	e 11 11a	+ 1	—	—	—	—	—
Grozny		69·6	314	e 11 33	+20	—	—	—	—	—
Tiflis		71·3	313	11 22	− 1	e 20 52	+11	e 15 56	PP	38·9
Copenhagen		71·6	340	i 11 26	+ 1	20 43	− 1	25 55?	SS	31·9
Erevan		72·6	311	e 11 53	+22	—	—	—	—	—
Hamburg		74·1	341	e 10 55	−45	—	—	—	—	42·9
St. Louis	E.	75·7	48	—	—	e 21 28	− 2	e 21 48	sS	—
Stuttgart		78·7	339	e 12 7a	+ 1	—	—	—	—	e 39·9
Strasbourg		79·3	340	i 12 9a	0	—	—	i 27 55?	SS	e 45·9
Paris		80·2	343	i 12 14	0	—	—	—	—	47·9
Zurich		80·2	340	e 12 14k	0	—	—	—	—	—
Harvard	Z.	80·5	33	e 12 13	− 2	—	—	—	—	e 36·9
Neuchatel		81·0	340	e 12 18	0	—	—	—	—	—
Ksara		81·8	314	i 12 22a	0	e 22 38	+ 3	i 12 44	pP	—
Tacubaya	N.	85·6	66	i 18 12	PPP	—	—	e 19 53	PP	—
San Juan		103·9	40	22 17	?	—	—	—	—	—
Huancayo		124·6	66	i 17 8	?	i 25 34	[−31]	i 19 57	PP	—

Additional readings:—
Pasadena iZ = +10m.44s., +10m.55s., and +11m.11s.
Tiflis eZ = +11m.45s., eE = +20m.21s., eSSSN = +28m.44s.
St. Louis iE = +22m.21s., eE = +23m.12s.
Stuttgart eZ = +12m.28s.
Strasbourg eZ = +12m.28s.
Ksara esS = +23m.12s.
Huancayo i = +22m.12s., +40m.12s., +40m.30s., +40m.59s., +42m.47s., and +44m.35s.
Long waves were also recorded at Bombay, La Paz, and European stations.

May 30d. Readings also at 2h. (Huancayo, Tucson, Riverside, Pasadena, La Paz, and La Plata), 3h. (Samarkand, Andijan, Mount Wilson, Tucson, Huancayo, La Paz, and Riverside), 8h. (Yalta), 9h. (Bucharest and Scoresby Sund), 10h. (Tacubaya), 12h. (College), 14h. (Tiflis (2), Pasadena, Tinemaha, Wellington, Riverside, Mount Wilson, Haiwee, Tucson, and Santa Barbara), 17h. (Göttingen and Mizusawa), 19h. (Christchurch, Melbourne, Brisbane, Riverview, Tinemaha, Wellington, Pasadena, Riverside, Tucson, and Mount Wilson), 20h. (Fort de France, Tiflis, Medan, Harvard, and Ksara), 21h. (Oaxaca, Tacubaya, Copenhagen, Huancayo, and College), 22h. (San Juan, Harvard, and La Paz).

May 31d. 8h. 34m. 52s. Epicentre 33°·7N. 117°·5W.

Felt along the coast of California from Santa Barbara to San Diego and 150 miles into the interior.

Force VI at Keystone, Ontario, Laguna Beach, and Arlington.

Epicentre 33° 41′N. 117° 32′W. (Pasadena).

F. Neuman.

United States Earthquakes, 1938, serial No. 629, Washington, 1940, pp. 15, 16, 17. Isoseismic Chart, p. 21.

$A = -\cdot3850$, $B = -\cdot7395$, $C = +\cdot5523$; $\delta = +12$; $h = +1$;
$D = -\cdot887$, $E = +\cdot462$; $G = -\cdot255$, $H = -\cdot490$ $K = -\cdot834$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverside		0·3	20	i 0 9k	− 2	i 0 13	− 5	—	—	—
Mount Wilson		0·7	319	i 0 17k	0	i 0 26	− 2	—	—	—
Pasadena		0·7	309	i 0 17k	0	i 0 26	− 2	—	—	—
La Jolla		0·9	166	i 0 19	− 1	i 0 31	− 3	—	—	—
Santa Barbara		2·0	292	i 0 36	+ 1	i 1 7	S_g	—	—	—
Haiwee		2·4	351	i 0 44	+ 3	i 1 21	S_g	i 0 49	P_g	—
Tinemaha		3·4	350	e 0 57	e+ 2	—	—	—	—	—
Fresno	N.	3·5	330	i 0 59	+ 2	i 1 7	−33	—	—	—
Lick		5·0	318	e 1 17	− 1	e 2 47	S_g	—	—	—
Branner		5·3	316	e 1 37	P*	i 2 37	S*	e 1 41	P_g	—
Berkeley		5·7	318	i 1 25	− 3	i 2 42	+ 7	i 1 56	P_g	—
San Francisco		5·7	317	e 0 38	−50	e 3 17	S_g	—	—	—
Tucson		5·8	103	e 1 29k	0	3 9	S_g	1 50	P_g	—
Ukiah		7·1	322	—	—	e 3 53	S_g	—	—	—
St. Louis	E.	22·5	70	—	—	i 9 24	+19	—	—	e 10·8

Additional readings:—
Branner eN = +1m.49s. and +2m.47s.
Berkeley iN = +1m.30s., iZ = +2m.12s., iN = +2m.29s.
San Francisco eE = +1m.5s., eN = +3m.26s.
Long waves were also recorded at Copenhagen, Cape Girardeau, Tiflis, Little Rock, Harvard, Fordham, Philadelphia, Butte, Strasbourg, and Paris.

May 31d. 17h. 55m. 18s. Epicentre 41°·0N. 33°·5E.

$A = +\cdot6312$, $B = +\cdot4178$, $C = +\cdot6535$; $\delta = +3$; $h = -2$;
$D = +\cdot552$, $E = -\cdot834$; $G = +\cdot545$, $H = +\cdot361$, $K = -\cdot757$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		3·4	272	0 44	−11	1 50	S_g	1 5	P_g	—
Yalta		3·5	8	e 0 58	+ 1	1 40	0	—	—	—
Sebastopol		3·6	0	e 1 1	+ 3	1 45	+ 3	e 1 12	P_g	—
Simferopol		4·0	6	1 5	+ 1	e 1 53	+ 1	e 1 16	P_g	—
Theodosia		4·2	19	1 10	+ 3	2 1	+ 4	i 1 17	P*	—
Sotchi		5·3	58	e 1 19	− 3	e 2 55	S_g	—	—	—
Bucharest		6·4	305	1 44	+ 6	i 2 59	+ 6	2 1	P*	—
Ksara		7·4	164	i 1 49	− 3	3 21	+ 3	4 16	S_g	—
Piatigorsk		7·7	63	e 1 55	− 1	e 3 37	+12	—	—	—
Sofia		7·8	286	e 2 15	P*,	i 4 11	S_g	i 2 40	P_g	—
Erevan		8·4	92	e 2 7	+ 1	e 5 3	?	—	—	—
Tiflis		8·5	82	e 2 9	+ 2	e 3 52	+ 7	—	—	i 4·7
Grozny		9·4	72	e 2 24	+ 6	e 5 26	?	—	—	—
Belgrade	N.W.	10·3	297	—	—	e 4 15	−15	e 5 7	SSS	—
Helwan		11·3	188	—	—	e 4 46	− 8	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Budapest	N.	12·2	307	e 5 58	SS	—	—	—	—	e 7·7
Ogyalla		12·9	307	e 6 42	SSS	—	—	—	—	—
Triest		15·1	295	e 3 42	+ 6	e 6 42	SS	—	—	e 8·7
Prague		16·1	314	—	—	e 6 42?	− 7	—	—	e 8·7
Florence		16·7	287	e 1 42	?	—	—	—	—	—
Potsdam		18·0	318	e 4 6	− 7	e 7 42	+10	e 4 30	PP	e 10·5
Stuttgart		18·8	304	e 4 25	+ 2	e 8 0	+10	—	—	e 10·0
Zurich		19·0	300	e 4 25	− 1	—	—	—	—	—
Basle		19·6	300	e 4 6	−26	—	—	—	—	—
Strasbourg	Z.	19·7	304	e 4 42	+ 8	e 8 24	+14	—	—	e 11·2
Neuchatel		20·0	299	e 4 38	+ 1	—	—	—	—	—
Copenhagen		20·2	326	i 4 38k	− 1	8 31	+10	8 40	SS	10·7
Hamburg		20·2	319	e 4 41	+ 2	e 8 32	+11	—	—	e 12·7
Upsala		21·3	339	e 4 42	− 8	e 8 39	− 4	10 5	SSS	e 14·2
De Bilt		22·3	313	—	—	9 13	+11	—	—	e 10·7
Uccle		22·4	307	e 5 5	+ 3	e 9 18	+14	—	—	—
Paris		23·2	301	e 5 42?	PP	—	—	—	—	13·7
Bergen		26·0	330	—	—	e 10 16	+10	—	—	—
Jersey		26·2	303	e 1 47	?	—	—	(e 7 2)	PPP	e 7·0
Edinburgh		28·1	316	—	—	e 10 52	+12	—	—	e 16·7
Granada		29·0	275	e 6 7	+ 3	e 11 25	+31	—	—	—
Andijan		29·2	78	e 5 57	− 8	e 12 1	SS	—	—	—
Frunse		30·4	73	e 6 32	+16	—	—	—	—	—
Agra	E.	39·0	96	—	—	e 13 8	−21	—	—	—
Calcutta		49·3	95	—	—	e 18 14	?	—	—	—

Additional readings :—
Istanbul PS = +1m.35s.
Yalta i = +3m.5s., e = +3m.32s., i = +3m.47s.
Simferopol e = +1m.35s., +1m.58s., +2m.4s., and +2m.8s.
Theodosia P_g = +1m.28s., e = +1m.41s. and +2m.12s.
Bucharest P_gN = +2m.18s., iS^*E = +3m.22s., iS_gE = +3m.34s.
Belgrade iNW = +5m.32s., +5m.52s., +6m.14s., and +7m.8s., eNW = +8m.58s.
Helwan e = +6m.6s.
Budapest ePE = +6m.5s.
Ogyalla eE = +8m.56s., eN = +9m.1s., e = +9m.29s.
Triest e = +8m.15s.
Bergen e = +16m.42s.?
Long waves were also recorded at Kecskemet, Jena, Moncalieri, Kew, Bidston, Göttingen, Cheb, and Malaga.

May 31d. 18h. 3m. 11s. Epicentre 41°·0N. 33°·5E. (as at 17h.).

A = +·6312, B = +·4178, C = +·6535 ; δ = +3 ; h = −2.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		
	°	°	m. s.	s.	m. s.	s.	m. s.		
Istanbul	3·4	272	1 7	P_g	—	—	—	—	—
Yalta	3·5	8	—	—	i 1 36	− 4	—	—	—
Sebastopol	3·6	0	e 1 7	P*	e 1 44	+ 2	—	—	—
Simferopol	4·0	6	e 1 4	0	e 1 50	− 2	e 1 9	P*	
Theodosia	4·2	19	e 1 8	+ 1	e 2 4	+ 7	—	—	
Tiflis	8·5	82	e 2 6	− 1	—	—	—	—	

Additional readings :—
Sebastopol e = +1m.41s.
Simferopol e = +1m.21s. and +1m.30s., i = +1m.54s.
Theodosia e = +1m.55s. and +2m.0s.

May 31d. 19h. 34m. 47s. Epicentre 41°·0N. 33°·5E. (as at 18h.).

$A = +·6312$, $B = +·4178$, $C = +·6535$; $\delta = +3$; $h = -2$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul		3·4	272	1 3	P*	—	—	—	—	—
Yalta		3·5	8	e 0 56	− 1	i 1 36	− 4	—	—	—
Sebastopol		3·6	0	e 0 57	− 1	e 1 42	0	e 1 0	P*	—
Simferopol		4·0	6	1 3	− 1	1 52	0	i 1 10	P*	—
Theodosia		4·2	19	1 7	0	i 1 59	+ 2	e 1 11	P*	—
Sotchi		5·3	58	e 1 23	+ 1	—	—	—	—	—
Bucharest		6·4	305	1 43	+ 5	3 0	+ 7	2 3	P*	—
Ksara		7·4	164	i 1 47	− 5	4 13	S_g	15 40	S_cS	—
Sofia		7·8	286	e 2 14	P*	i 3 58	S*	e 2 23	P_g	—
Erevan		8·4	92	e 2 23	P*	—	—	—	—	—
Tiflis		8·5	82	e 2 6	− 1	e 3 53	+ 8	—	—	i 4·4
Grozny		9·4	72	e 2 18	0	e 5 21	S_g	—	—	—
Belgrade	N.W.	10·3	297	—	—	e 4 59	+29	—	—	—
Helwan		11·3	188	—	—	e 4 31	−23	—	—	e 6·0
Kecskemet	Z.	11·6	305	e 6 4	SSS	—	—	—	—	—
Budapest	N.	12·2	307	e 6 3	SSS	—	—	—	—	e 8·5
Ogyalla	E.	12·9	307	e 6 13	SSS	—	—	—	—	—
Triest		15·1	295	e 3 43	+ 7	e 6 43	SS	—	—	e 8·8
Prague		16·1	314	—	—	7 13?	SS	—	—	—
Florence		16·7	287	e 3 43	−14	—	—	—	—	—
Cheb		17·3	308	—	—	e 5 13?	?	—	—	e 10·2
Potsdam		18·0	318	e 4 13	0	e 7 37	+ 5	—	—	e 10·2
Stuttgart		18·8	304	e 4 21	− 2	e 7 58	+ 8	—	—	e 10·0
Zurich		19·0	300	e 4 33	+ 7	—	—	—	—	—
Basle		19·6	300	e 4 32	0	—	—	—	—	—
Strasbourg		19·7	304	e 4 40	+ 6	e 8 14	+ 4	—	—	—
Copenhagen		20·2	326	i 4 34s	− 5	8 27	+ 6	—	—	11·2
Hamburg		20·2	319	e 4 39	0	—	—	—	—	e 12·4
Upsala		21·3	339	e 4 41	− 9	e 8 46	+ 3	—	—	—
De Bilt		22·3	313	—	—	9 11	+ 9	—	—	e 10·7
Bergen		26·0	330	—	—	e 10 22	+16	—	—	—
Edinburgh		28·1	316	i 4 9	?	—	—	—	—	e 7·2
Granada		29·0	275	—	—	e 11 45	+51	—	—	e 15·5
Agra	E.	39·0	96	—	—	e 13 18	−11	—	—	—

Additional readings :—
Simferopol e = +1m.43s.
Theodosia e = +1m.57s.
Bucharest P_gEN = +2m.18s., S*EN = +3m.20s.
Belgrade eNW = +5m.31s., iNW = +5m.54s., +6m.31s., +7m.5s., and +7m.45s.
Kecskemet eZ = +7m.18s.
Budapest ePE = +6m.13s.
Ogyalla eE = +9m.3s.
Triest e = +8m.16s.
Copenhagen +8m.36s.
Bergen e = +16m.13s.?
Edinburgh i = +4m.26s.
Long waves were also recorded at Göttingen, Bidston, Kew, Jena, and Paris.

May 31d. Readings also at 0h. (La Paz, San Juan, and Lick), 2h. (Samarkand, Padova, Cheb, Triest, Sofia, Ksara, Belgrade, Budapest, Bucharest, and Amboina), 3h. (Uccle, De Bilt, Strasbourg, Copenhagen, and Potsdam), 4h. (Frunse), 8h. (Nagoya and Hukuoka B (2)), 12h. (Christchurch, East Machias, Santiago, Wellington, and New Plymouth), 14h. (Simferopol, Yalta, Copenhagen, Nagoya, Mizusawa, and Theodosia), 15h. (Samarkand), 18h. (Mount Wilson), 19h. (Mizusawa and Nagoya), 20h. (Theodosia, Tiflis (2), Sebastopol, and Simferopol), 22h. (Tucson).

June 1d. Readings at 2h. (Jena and near Medan), 3h. (Ksara), 4h. (Tucson (2)), 5h. (Ksara, Melbourne, Riverview, Sydney, Christchurch, and Wellington), 6h. (Ksara, Sverdlovsk, Baku, near Batavia, and Malabar), 8h. (Harvard, near La Jolla, Mount Wilson, Pasadena, Riverside, and Tucson), 10h. (Riverview, Harvard, Brisbane, near Adelaide, and near Copiapo), 11h. (Vladivostok, Medan, near Mizusawa, and Nagoya), 12h. (Perth, Brisbane, Sverdlovsk, Pasadena, Mount Wilson, Riverside, and near Algiers), 13h. (La Paz, near Mizusawa, Nagoya, near Christchurch, New Plymouth, and Wellington), 14h. (Harvard, Mount Wilson, Riverside, Tucson, and Christchurch), 20h. (near Istanbul), 21h. (Ksara, Yalta, near Simferopol, near Mizusawa (2), and Nagoya), 22h. (near Irkutsk).

June 2d. Readings at 1h. (Moscow, Pulkovo, Tiflis, Mizusawa, and Fort de France), 2h. (Apia, Riverview, and Branner), 3h. (Mount Wilson, Tucson, Sverdlovsk, Tashkent, Ksara, Frunse, Christchurch, Wellington, Hong Kong, near Manila, near Andijan, and Samarkand), 5h. (San Juan), 6h. (Hastings), 8h. (Fort de France and Huancayo), 9h. (Vladivostok, La Paz, Sverdlovsk, and Tashkent), 10h. (Adelaide, Brisbane, Melbourne, Manila, Irkutsk, Riverview, Wellington, Vladivostok, Tashkent, Samarkand, and Sverdlovsk), 15h. (Copenhagen, Ottawa, and near Mizusawa), 16h. (Andijan, Tashkent, Frunse, Sverdlovsk, Almata, Tchimkent, Semipalatinsk, and Irkutsk), 17h. (Copenhagen, Moscow, Ottawa, and St. Louis), 19h. (Harvard), 20h. (Ottawa), 22h. (near Copiapo), 23h. (near Malabar).

June 3d. 0h. 28m. 13s. Epicentre 36°·4N. 141°·1E. (given by Tokyo Imperial Univ.).

$A = -\cdot6279$, $B = +\cdot5067$, $C = +\cdot5908$; $\delta = +5$; $h = 0$;
$D = +\cdot628$, $E = +\cdot778$; $G = -\cdot460$, $H = +\cdot371$, $K = -\cdot807$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tukubasan	0·8	257	0 28	S*	—	—	0 37	S	—
Tokyo Cen. Met. Ob.	1·3	237	i 0 25k	0	e 0 42	− 2	—	—	—
Tokyo Imp. Univ.	1·3	237	0 25	0	0 41	− 3	—	—	—
Komaba	1·4	237	0 24	− 3	0 42	− 4	—	—	—
Kiyosumi	1·5	211	0 47	S	(0 47)	− 2	1 4	S_g	—
Mitaka	1·5	240	0 28	0	0 47	− 2	—	—	—
Misaki	1·7	224	0 28	− 3	0 49	− 5	—	—	—
Titibu	1·7	256	0 47	P_g	1 7	S_g	—	—	—
Koyama	2·0	239	0 47	P_g	1 10	S_g	—	—	—
Yosiwara	2·3	238	0 47	P_g	1 18	S_g	—	—	—
Susaki	2·4	225	0 40	− 1	1 6	− 6	—	—	—
Mizusawa	2·7	0	0 44	− 1	1 19	0	—	—	—
Nagoya	3·5	250	e 1 1	+ 4	1 41	+ 1	—	—	—
Koti	6·8	248	e 2 6	P*	—	—	—	—	—
Hukuoka B	9·2	256	e 2 22	+ 6	e 5 1	S_g	—	—	—
Vladivostok	9·8	316	e 2 23	− 1	e 4 20	+ 3	—	—	e 4·6
Andijan	52·7	297	e 9 10	− 8	e 16 52	+ 6	—	—	—
Tashkent	54·7	299	i 9 28	− 5	e 16 59	−14	—	—	e 30·3
Sverdlovsk	55·5	319	e 9 35	− 4	18 41	?	—	—	25·8
Moscow	67·6	323	e 10 47	−14	—	—	—	—	—
Pasadena z.	78·1	56	i 12 10	+ 8	—	—	—	—	—
Mount Wilson z.	78·2	56	i 12 10	+ 7	—	—	—	—	—
Ksara	81·3	306	e 15 33	PP	e 25 43	?	—	—	—

Long waves were also recorded at Copenhagen, Baku, and Irkutsk.

June 3d. 16h. 37m. 51s. Epicentre 34°·9N. 27°·0E.

$A = +\cdot7324$, $B = +\cdot3732$, $C = +\cdot5696$; $\delta = +13$; $h = 0$;
$D = +\cdot454$, $E = -\cdot891$; $G = +\cdot507$, $H = +\cdot259$, $K = -\cdot822$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan	6·2	143	i 1 34	− 1	2 39	− 9	1 47	P*	—
Istanbul	6·3	14	1 43	+ 7	3 9	S*	—	—	—
Ksara	7·4	96	e 2 1	P*	i 3 25	+ 7	—	—	—
Sofia	8·3	341	e 2 16	PPP	i 3 49	SS	—	—	—
Bucharest	9·6	356	e 2 30	+ 9	4 21	+ 9	—	—	5·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Belgrade	N.E.	11·1	336	—	—	e 4 35	−14	e 5 24	SSS	—
Triest		14·7	321	e 3 24	− 7	i 6 24	SS	—	—	—
Tiflis	Z.	15·5	59	e 3 30	−12	e 7 4	SSS	—	—	e 11·4
Padova		15·6	317	2 9	?	—	—	—	—	—
Chur		17·8	318	e 4 8	− 3	—	—	—	—	—
Zurich		18·6	318	e 4 17k	− 4	7 42	− 4	—	—	—
Baku		18·9	65	e 4 25	+ 1	—	—	—	—	e 8·2
Stuttgart		19·1	323	i 4 23k	− 4	e 7 55	− 2	—	—	e 12·6
Basle		19·2	318	e 4 23	− 5	e 7 59	0	—	—	—
Neuchatel		19·3	317	e 4 24	− 5	e 8 1	− 1	—	—	—
Jena		19·5	330	e 4 26	− 5	e 8 9	+ 3	—	—	e 12·2
Strasbourg		19·7	321	4 33	− 1	i 8 9	− 1	i 5 1	PPP	—
Potsdam		20·1	335	e 4 33	− 5	e 8 21	+ 2	—	—	e 13·2
Göttingen		20·7	329	e 4 42	− 8	—	—	—	—	—
Moscow		22·1	16	e 5 8	+ 9	9 3	+ 5	—	—	14·6
Hamburg		22·2	333	i 4 57k	− 3	e 8 30	−30	—	—	—
Paris		22·8	315	e 5 1	− 4	e 9 38	+27	—	—	14·2
Uccle		22·8	321	e 5 3	− 2	—	—	—	—	—
Copenhagen		23·1	339	5 8	0	9 12	− 4	—	—	13·2
De Bilt		23·2	325	i 5 8k	− 1	—	—	—	—	—
Pulkovo		25·0	4	—	—	e 9 48	− 1	—	—	—
Malaga		25·5	283	—	—	e 9 51	− 6	—	—	—
Jersey		25·7	315	e 4 39	−54	—	—	—	—	e 13·2
Upsala	N.	25·7	348	—	—	e 8 32	?	—	—	—
Sverdlovsk		31·6	35	6 58	PP	—	—	—	—	13·2
Tashkent		33·6	66	—	—	i 12 40	+34	—	—	—

Additional readings :—
Sofia 1N = +3m.53s.
Belgrade eNE = +5m.45s. and +6m.4s.
Baku e = +5m.10s.
Stuttgart eS = +8m.5s.
Jena iP = +4m.29s., eSN = +8m.39s.
Strasbourg eSS = +8m.40s.

June 3d. Readings also at 0h. (Mount Wilson, Manila (2), and Tucson), 1h. (Mizusawa), 10h. (Samarkand and Andijan), 11h. (Huancayo, La Plata, Rio de Janeiro, Santiago, La Paz, Tucson, Mount Wilson, San Javier (3), Riverside, and Pasadena), 12h. (De Bilt, San Javier, Sverdlovsk, and Tashkent), 14h. (Tashkent, Pasadena, Riverside, Mount Wilson, Tucson (3), Manila, Haiwee, La Jolla, Andijan, Samarkand, and Almata), 15h. (Tucson), 16h. (San Javier), 17h. (Tashkent, Sverdlovsk, Vladivostok, and Hukuoka B), 19h. (Santiago), 20h. (Fordham, near Theodosia, and Tucson), 21h. (Santiago), 22h. (Tiflis).

June 4d. Readings at 4h. (Balboa Heights), 6h. (St. Louis), 7h. (Oaxaca), 8h. (Irkutsk), 9h. (Sverdlovsk and Tashkent), 11h. (Mount Wilson, Pasadena, Riverside, Tucson, and near Tokyo), 13h. (Sverdlovsk, Irkutsk, and Tashkent), 14h. and 16h. (La Paz), 17h. (near Riverview), 18h. (near Mizusawa), 20h. (La Paz, San Juan, Mount Wilson, and Pasadena), 21h. (near Medan), 22h. (Batavia, Harvard, Weston, Williamstown, Tucson, Mount Wilson, Pasadena, Andijan (2), Frunse, Samarkand, and Tchimkent), 23h. (Frunse, Tchimkent, near Andijan, and Samarkand).

June 5d. 1h. 18m. 41s. Epicentre 15°·2N. 98°·7W. (as on 1937 June 13d.).

$A = -\cdot1460$, $B = -\cdot9544$, $C = +\cdot2606$; $\delta = +11$; $h = +6$;
$D = -\cdot988$, $E = +\cdot151$; $G = -\cdot039$, $H = -\cdot258$, $K = -\cdot965$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	2·6	46	0 54	P_g	—	—	—	—	—
Puebla	E.	3·9	6	1 2	0	—	—	—	—	—
Tacubaya	N.	4·3	353	1 6	− 2	—	—	—	—	—
Vera Cruz	N.	4·7	31	1 18	+ 4	—	—	—	—	—
Guadalajara	N.	7·0	321	1 43	− 3	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Merida	N.	10·3	55	e 2 42	+10	—	—	—	—	—
Tucson		20·2	329	e 4 41a	+ 2	e 8 48	SS	—	—	e 9·7
Cape Girardeau		23·5	19	e 5 9	− 3	e 9 20	− 3	i 5 19	pP	—
La Jolla		24·3	320	e 5 24	+ 4	—	—	—	—	—
St. Louis		24·4	16	e 5 19	− 2	i 9 45	+ 6	i 5 30	pP	—
Columbia		24·6	37	—	—	e 9 45	+ 3	—	—	—
Florissant		24·6	16	e 5 21	− 2	e 9 46	+ 4	e 5 31	pP	—
Riverside	z.	25·2	322	i 5 32	+ 3	—	—	—	—	—
Mount Wilson	z.	25·8	322	i 5 36	+ 2	—	—	—	—	—
Pasadena		25·8	322	i 5 36	+ 2	—	—	—	—	e 14·1
Santa Barbara	z.	26·9	320	e 5 50	+ 5	—	—	—	—	—
Haiwee		27·0	325	e 5 46	+ 1	—	—	—	—	—
Tinemaha		27·9	326	e 5 57	+ 3	—	—	—	—	—
Chicago		28·3	17	—	—	e 10 32	−11	—	—	e 13·2
San Juan		31·3	80	e 6 41	+17	—	—	e 7 41	PP	e 13·3
Bozeman		32·1	344	—	—	e 11 47	+ 4	—	—	e 17·1
Philadelphia		32·1	35	e 6 33	+ 2	e 11 32	−11	—	—	e 19·2
Fordham		33·4	36	e 6 36	− 6	e 12 1	− 2	—	—	—
Williamstown		35·1	34	i 6 58	+ 1	—	—	—	—	—
Harvard		35·8	35	i 8 3k	PP	i 12 38	− 3	—	—	e 23·3
Weston		35·9	35	e 7 1	− 3	e 12 42	0	16 50	SSS	e 23·3

Additional readings :—
Cape Girardeau iEN = +5m.13s.
Florissant eE = +9m.38s., esSE = +10m.9s.
Philadelphia eS = +11m.52s.
Long waves were also recorded at Sverdlovsk, Berkeley, Butte, College, and Sitka.

June 5d. 2h. 9m. 33s. Epicentre 15°·2N. 98°·7W. (as at 1h.).

$A = -\cdot1460$, $B = -\cdot9544$, $C = +\cdot2606$; $\delta = +11$; $h = +6$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	2·6	46	0 55	P_g	—	—	—	—	—
Puebla	E.	3·9	6	1 3	+ 1	—	—	—	—	—
Tacubaya	N.	4·3	353	1 7	− 1	—	—	—	—	—
Vera Cruz	N.	4·7	31	1 19	+ 5	—	—	—	—	—
Guadalajara	N.	7·0	321	1 44	− 2	—	—	—	—	—
Merida	N.	10·3	55	e 2 43	PP	—	—	—	—	—
Tucson		20·2	329	e 4 41k	+ 2	e 8 44	SS	—	—	e 10·4
Cape Girardeau	N.	23·5	19	e 5 9	− 3	e 9 22	− 1	—	—	—
La Jolla		24·3	320	e 5 21	+ 1	—	—	—	—	—
St. Louis	N.	24·4	16	i 5 32	+11	i 9 54	+15	—	—	—
Columbia		24·6	37	—	—	e 9 44	+ 2	—	—	—
Florissant		24·6	16	e 5 20	− 3	e 9 40	− 2	i 5 28	pP	—
Riverside		25·2	322	i 5 32	+ 3	—	—	—	—	—
Mount Wilson	z.	25·8	322	i 5 36	+ 2	—	—	—	—	—
Pasadena		25·8	322	i 5 37	+ 3	—	—	—	—	e 14·3
Santa Barbara	z.	26·9	320	e 5 54	+ 9	—	—	—	—	—
Haiwee	E.	27·0	325	e 5 45	0	—	—	—	—	—
Tinemaha		27·9	326	e 5 52	− 2	—	—	—	—	—
Chicago		28·3	17	—	—	e 10 34	− 9	—	—	—
San Juan		31·3	80	—	—	e 10 27	−64	—	—	—
Bozeman		32·1	344	—	—	e 11 44	+ 1	—	—	—
Fordham		33·4	36	e 6 44	+ 2	e 12 7	+ 4	—	—	—
Williamstown		35·1	34	i 6 57	0	i 11 38	−52	—	—	—
Harvard		35·8	35	e 6 49	−14	e 12 36	− 5	—	—	e 22·4
Weston		35·9	35	e 7 3	− 1	e 12 44	+ 2	—	—	e 21·8
Tashkent		122·7	11	e 13 27	?	—	—	—	—	e 66·4

Additional readings :—
St. Louis iN = +9m.37s.
Florissant epPN = +5m.31s., iN = +5m.35s., iSN = +9m.44s., esS = +10m.0s.
Long waves were also recorded at Berkeley, College, and Sverdlovsk.

June 5d. 16h. 31m. 37s. Epicentre 35°·9N. 140°·3E.

Rather strong at Tukubasan, Kakioka, Tokyo, Yokohama, Katuura, Onahama; moderate at Tyosi, Hukusima; slight at Yamagata and Oiwake.

Epicentre 35°·92N. 140°·28E. Depth 65km.

Macroseimic radius greater than 300km.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1938, Tokyo, 1940, pp. 40-41. Macroseimic chart p. 39.

$A = -\cdot6241$, $B = +\cdot5181$, $C = +\cdot5850$; $\delta = +15$; $h = 0$;
$D = +\cdot639$, $E = +\cdot769$; $G = -\cdot450$, $H = +\cdot374$, $K = -\cdot811$.

A focus at the base of the Superficial Layers has been assumed.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kakioka	0·3	344	0 11	+ 3	0 19	+ 4	—	—	—
Tukubasan	0·3	333	0 14a	+ 6	0 22	+ 7	—	—	—
Mito	0·4	16	0 12a	+ 2	0 21	+ 5	—	—	—
Tokyo, Cent. Met. Obs.	0·5	245	0 12k	+ 2	0 22	+ 4	—	—	—
Tokyo, Imp. Univ.	0·5	245	0 12	+ 2	0 20	+ 2	—	—	—
Tyosi	0·5	110	e 12k	+ 2	0 21	+ 3	—	—	—
Komaba	0·6	243	0 10	− 2	0 19	− 2	—	—	—
Utunomiya	0·6	332	0 15	+ 3	0 28	+ 7	—	—	—
Mitaka	0·7	249	0 14	+ 1	0 24	+ 1	—	—	—
Katuura	0·8	187	0 15	0	0 27	+ 1	—	—	—
Kiyosumi	0·8	187	0 14	− 1	0 25	− 1	—	—	—
Kumagaya	0·8	289	0 16a	+ 1	0 26	0	—	—	—
Yokohama	0·8	229	0 14k	− 1	0 24	− 2	—	—	—
Kamakura	0·9	226	0 14	− 2	0 26	− 2	—	—	—
Misaki	1·0	217	0 14	− 4	0 27	− 4	—	—	—
Titibu	1·0	275	0 14	− 4	0 29	− 2	—	—	—
Maebasi	1·1	297	0 18a	− 1	0 34	+ 1	—	—	—
Mera	1·1	201	0 18k	− 1	0 32	− 1	—	—	—
Onahama	1·1	25	0 18a	− 1	0 36	+ 3	—	—	—
Koyama	1·2	243	0 14	− 6	0 30	− 6	—	—	—
Hunatu	1·4	252	0 21k	− 2	0 38	− 3	—	—	—
Ito	1·4	226	0 22k	− 1	0 40	− 1	—	—	—
Kohu	1·4	259	0 23k	0	0 44	+ 3	—	—	—
Misima	1·4	235	0 20	− 3	0 36	− 5	—	—	—
Oiwake	1·5	287	0 25a	0	0 43	− 1	—	—	—
Numadu	1·5	236	0 26a	+ 1	0 43	− 1	—	—	—
Yosiwara	1·6	241	0 14	−12	0 33	−13	—	—	—
Aidu	1·7	355	0 27a	− 1	0 53	+ 4	—	—	—
Susaki	1·7	221	0 24	− 4	0 41	− 8	—	—	—
Hukusima	1·9	4	0 35a	+ 4	1 3	+ 9	—	—	—
Matumoto	1·9	279	0 31k	0	0 55	+ 1	—	—	—
Nagano	1·9	294	0 31a	0	0 53	− 1	—	—	—
Iida	2·0	259	0 34k	+ 2	0 58	+ 2	—	—	—
Takada	2·0	306	0 40	+ 8	1 6	+10	—	—	—
Niigata	2·2	334	0 41	+ 6	1 16	+15	—	—	—
Omaesaki	2·2	233	0 30k	− 5	1 18	+17	—	—	—
Sendai	2·4	11	0 40	+ 2	1 21	+15	—	—	—
Hamamatu	2·5	241	0 37k	− 2	1 10	+ 1	—	—	—
Takayama	2·5	276	0 41	+ 2	1 29	+20	—	—	—
Toyama	2·6	287	0 43	+ 3	1 25	+14	—	—	—
Husiki	2·8	289	0 45	+ 2	1 17	+ 1	—	—	—
Nagoya	2·8	255	0 43	0	1 34	+18	—	—	—
Hatidyozima	2·9	188	0 40	− 5	1 11	− 8	—	—	—
Gihu	3·0	260	0 44k	− 2	1 37	+15	—	—	—
Kanazawa	3·0	282	0 48	+ 2	1 27	+ 5	—	—	—
Wazima	3·1	299	0 48	0	1 25	+ 1	—	—	—
Hukui	3·2	273	1 1	+12	1 42	+15	—	—	—
Kameyama	3·2	251	0 50k	+ 1	1 47	+20	—	—	—
Mizusawa	3·2	12	i 0 52	+ 3	i 1 32	+ 5	—	—	—
Ibukisan	3·3	261	0 50	− 1	1 28	− 1	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hikone		3·4	259	0 51k	− 1	1 31	− 1	—	—	—
Tu		3·4	249	0 49	− 3	1 44	+12	—	—	—
Akita		3·7	357	0 54	− 2	1 47	+ 8	—	—	—
Morioka		3·8	11	1 0k	+ 2	1 44	+ 2	—	—	—
Kyoto		3·9	256	0 56	− 3	1 56	+12	—	—	—
Miyako		3·9	20	1 1a	+ 2	1 44	0	—	—	—
Yagi		4·0	249	1 2k	+ 2	2 0	+13	—	—	—
Miyadu		4·2	246	1 2	− 1	2 5	+13	—	—	—
Osaka B		4·2	253	1 2	− 1	2 7	+15	—	—	—
Kobe		4·4	255	1 5k	− 1	2 2	+ 5	—	—	—
Siomisaki		4·5	237	1 4k	− 4	2 13	+13	—	—	—
Wakayama		4·5	249	1 6k	− 2	2 12	+12	—	—	—
Hatinohe		4·6	12	1 11	+ 2	2 3	+ 1	—	—	—
Sumoto		4·7	252	1 7k	− 3	2 12	+ 7	—	—	—
Aomori		4·8	5	1 14	+ 2	2 20	SS	—	—	—
Tokusima		5·0	250	1 14	− 1	2 27	SS	—	—	—
Okayama		5·3	258	1 32	PP	3 13	+53	—	—	—
Tadotu		5·6	254	1 26	+ 3	2 19	− 8	—	—	—
Hakodate		5·8	3	1 29	+ 3	2 59	SSS	—	—	—
Sakai		5·8	268	1 23	− 3	2 58	SSS	—	—	—
Koti		6·1	248	1 26	− 4	3 8	SSS	—	—	—
Mori		6·1	2	1 32	+ 2	2 57	SS	—	—	—
Muroran		6·4	4	1 38	+ 4	2 47	0	—	—	—
Urakawa		6·4	17	1 43	PP	3 9	+22	—	—	—
Hirosima		6·6	258	1 35	− 2	3 17	+25	—	—	—
Simidu		6·8	242	1 29	−11	3 15	+18	—	—	—
Uwazima		6·9	249	1 38k	− 3	3 41	SSS	—	—	—
Sapporo		7·1	6	1 51	+ 7	2 32	−33	—	—	—
Kusiro		7·6	23	1 32	−19	2 50	−27	—	—	—
Ooita		7·7	251	1 51k	− 2	3 47	SSS	—	—	—
Asahigawa		8·0	11	2 3	+ 6	3 38	+11	—	—	—
Izuka		8·3	255	1 59	− 2	4 16	L	—	—	(4·3)
Miyazaki		8·4	244	1 58k	− 4	3 38	+ 1	—	—	—
Nemuro		8·4	27	1 57	− 5	3 28	− 9	—	—	—
Hukuoka B		8·5	256	1 40	−24	3 47	+ 7	—	—	—
Kumamoto		8·5	251	2 2	− 2	4 24	L	—	—	(4·4)
Unzendake		8·9	251	2 7	− 2	3 53	+ 4	—	—	—
Titizima		9·0	169	2 1	−10	—	—	—	—	—
Nagasaki		9·1	252	2 14	+ 2	4 47	L	—	—	(4·8)
Husan		9·2	268	e 2 20	+ 7	4 20	SS	—	—	—
Kagosima		9·3	244	2 14	− 1	—	—	—	—	—
Taikyu		9·5	272	2 16	− 2	4 10	+ 6	—	—	—
Vladivostok		9·6	320	i 2 20	+ 1	e 4 13	+ 6	—	—	e 4·6
Yakusima		9·9	239	2 20a	− 3	4 15	+ 1	—	—	—
Keizyo	N.	10·8	283	e 1 28	−67	—	—	—	—	—
Zinsen		11·0	282	e 2 43	+ 5	e 4 57	SS	—	—	e 6·4
Nake		11·8	233	2 48	− 1	—	—	—	—	—
Naha		14·6	231	3 58	PPP	—	—	—	—	—
Zi-ka-wei	E.	16·4	258	e 3 47	− 2	—	—	—	—	—
Miyakozima		17·1	233	4 55	+57	8 6	+60	—	—	—
Isigakizima		18·1	236	4 5	− 5	—	—	—	—	—
Taito		21·2	238	4 37	− 8	—	—	—	—	—
Kosyun		22·0	238	4 48	− 5	8 44	− 5	—	—	—
Manila		27·4	225	e 6 5	+21	11 34	SS	—	—	16·0
Irkutsk		30·1	315	e 6 14	+ 6	e 12 47	SS	—	—	16·4
Calcutta	N.	46·8	269	—	—	e 13 59	?	—	—	—
Almata		48·3	300	8 38	− 2	—	—	—	—	—
Frunse		50·1	300	8 41	−13	—	—	—	—	—
Andijan		52·3	298	e 9 8	− 2	e 16 31	− 1	—	—	—
Tchimkent		53·8	301	9 25	+ 3	—	—	—	—	—
Tashkent		54·3	299	i 9 24	− 1	i 16 55	− 4	—	—	e 26·4
Sverdlovsk		55·3	320	i 9 30	− 2	i 17 9	− 3	—	—	26·4
Samarkand		56·5	298	9 13	−28	17 23	− 5	—	—	—
Moscow		67·6	324	e 10 50	− 5	e 19 41	− 7	—	—	e 38·9
Baku		68·1	306	e 11 6	+ 8	19 53	− 1	—	—	35·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grozny		69·3	310	e 11 6	0	—	—	—	—	—
Tiflis		70·8	309	e 11 16	+ 1	—	—	—	—	e 40·4
Theodosia		74·7	315	e 11 35	− 3	—	—	—	—	—
Yalta		75·7	315	e 16 31	PPP	—	—	—	—	—
Haiwee	E.	77·9	54	e 11 53	− 3	—	—	—	—	—
Mount Wilson	Z.	78·9	56	i 11 58	− 4	—	—	—	—	—
Pasadena		78·9	56	i 11 59	− 3	—	—	—	—	—
Riverside	Z.	79·5	56	i 12 2	− 3	—	—	—	—	—
La Jolla		80·3	57	e 12 8	− 1	—	—	—	—	—
Ksara		81·0	305	e 12 14	+ 1	e 23 10	PS	—	—	—
Jena		82·4	330	e 12 17	− 3	—	—	—	—	—
Tucson		84·9	54	i 12 30a	− 3	—	—	—	—	—
La Paz	Z.	148·1	60	19 43	[+ 4]	—	—	—	—	—

Additional readings :—
Manila SSSE = +14m.29s.
Pasadena iZ = +12m.22s.
Long waves were also recorded at Phu-Lien, Strasbourg, Jersey, De Bilt, and Copenhagen.

June 5d. 19h. 53m. 33s. Epicentre 35°·9N. 140°·3E. (as at 16h.).

A = −·6241, B = +·5181, C = +·5850 ; δ = +15 ; h = 0.

A focus at the base of the superficial layers has been assumed.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Tukubasan	0·3	333	0 14	+ 6	0 21	+ 6
Tokyo, Imp. Univ.	0·5	245	0 13	+ 3	0 24	+ 6
Tokyo, Cen. Met. Ob.	0·5	245	i 0 13a	+ 3	i 0 24	+ 6
Komaba	0·6	243	0 14	+ 2	0 25	+ 4
Mitaka	0·7	249	0 14	+ 1	0 25	+ 2
Kyosumi	0·8	187	0 14	− 1	0 27	+ 1
Kamakura	0·9	226	0 14	− 2	0 26	− 2
Misaki	1·0	217	0 14	− 4	0 28	− 3
Titibu	1·0	275	0 14	− 4	0 27	− 4
Koyama	1·2	243	0 14	− 6	0 29	− 7
Yosiwara	1·6	241	0 14	−12	0 32	−14
Susaki	1·7	221	0 20	− 8	0 44	− 5
Nagoya	2·8	255	0 47	+ 4	1 32	+16
Mizusawa	3·2	12	1 7	PP	1 38	+11

June 5d. Readings also at 0h. (Florence), 1h. (Copiapo), 2h. (La Paz, Oaxaca, Puebla, Huancayo, Tacubaya (2), Guadalajara, Montezuma, Merida, Cape Girardeau, Riverside, Mount Wilson, and Vera Cruz), 3h. (Harvard, Williamstown, Mount Wilson (2), Riverside (2), Tucson (2), and Pasadena), 10h. (Sverdlovsk, Koti, Tokyo, Mizusawa, Nagoya, and Vladivostok), 11h. (Tucson), 12h. (Malabar), 14h. (Mizusawa, Tucson, Pasadena, Riverside, Mount Wilson, La Paz, and Copiapo), 16h. (Paris and Strasbourg), 17h. (La Jolla, Medan, Tucson, Mount Wilson, Riverside, and Pasadena), 22h. (Tashkent, Nagoya, Vladivostok, Baku, and Mizusawa), 23h. (Cheb, Copenhagen, and Tiflis).

June 6d. Readings at 1h. (near Mizusawa and Nagoya), 2h. (Philadelphia, Florissant, Butte, Cape Girardeau, Lick, Berkeley, Fresno, Haiwee, La Jolla, Tinemaha, near Mount Wilson, Pasadena, Riverside, and Tucson (2)), 3h. (Harvard), 4h. and 7h. (Santiago), 9h. (Tacubaya, Almata, Andijan, Frunse, Samarkand, and Tchimkent 12h. (near Haiwee, La Jolla, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 13h. (Medan and near La Paz), 16h. (Manila), 21h. (Nagoya), 23h. (La Plata, near Santiago, and San Javier).

June 7d. Readings at 0h. (Yalta), 3h. (Fort de France), 4h. (Balboa Heights and Florissant), 6h. (Malabar and near Mizusawa), 10h. (near La Paz), 14h. (Tchimkent, near Andijan, and near Manila), 15h. (Andijan), 16h. (Erevan, near Grozny, and Tiflis), 22h. (near Medan).

June 8d. Readings at 1h. (Almata, Andijan, Frunse, Tashkent, Sverdlovsk, Irkutsk, Vladivostok, and near Copiapo), 4h. (Tacubaya), 7h. (Medan), 8h. (Adelaide, Brisbane, Melbourne, Riverview, Sydney, Baku, Andijan, Tashkent, Sverdlovsk, Irkutsk, Manila, and near Amboina), 9h. (Ksara, Tiflis, and Amboina (2)), 10h. (Harvard, Tucson, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Huancayo, and near La Paz (2)), 12h. (De Bilt, Strasbourg, Stuttgart, Uccle, Basle, Chur, Zurich, Tiflis, Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, near Santiago, and San Javier), 13h. (Almata, Andijan, and Ksara), 14h. and 17h. (Tiflis), 18h. (San Juan), 20h. (Jersey, Medan (2), and near Fort de France).

June 9d. 19h. 15m. 5s. Epicentre 3°·3S. 126°·5E.

W. C. Repetti.

Commonwealth of the Phillipines Dept. Seismological Bulletin for 1938, Jan.-June, Manila, 1938, p. 21.

H. P. Berlage.

Aardbevingen in den Oost Indischer Archipel Waargenomen gedurende het jaar, 1938, Natuurkundig Tijdschrift voor Nederlandsch-Indie, Afl. 1, Van Deel XCX 40, blz. 38-75, p. 63.

Mer de Banda entre Celebes et Nouvelle Guinee. Felt on Mindanao at Dapa and Surigao and at Butuan (Agusan). Force III in the Isle of Boeroe (Netherlands East Indies).

Epicentre 2°·8S. 126°·0E. (Strasbourg).
2°·9S. 126°·0E. (Batavia).

$A = -\cdot5938$, $B = +\cdot8025$, $C = -\cdot0572$; $\delta = -12$; $h = +7$;
$D = +\cdot804$, $E = +\cdot595$; $G = +\cdot034$, $H = -\cdot046$, $K = -\cdot998$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		1·7	103	i 0 26	− 5	—	—	—	—	—
Palau		13·2	37	3 6	− 5	5 46	+ 6	—	—	—
Manila		18·6	344	i 4 18a	− 3	7 40	− 6	—	—	—
Malabar		19·2	259	e 4 38	+10	i 8 17	SS	i 4 46	PP	—
Batavia		19·8	263	e 4 34	− 1	8 22	+ 9	i 8 32	SS	11·9
Arisan		27·2	350	5 50	+ 3	10 27	+ 2	—	—	—
Miyakozima		27·9	359	4 56	−58	9 50	−47	—	—	—
Hong Kong		28·2	336	5 56a	0	10 37	− 4	6 31	PP	12·7
Medan		28·6	285	6 7	+ 7	11 0	+12	i 11 28	SS	—
Taihoku		28·6	351	e 6 1	+ 1	10 49	+ 1	—	—	—
Naha		29·4	2	6 26	+19	11 24	+23	7 21	PP	—
Phu-Lien		30·9	322	e 6 22	+ 2	e 11 21	− 3	—	—	14·4
Nake		31·6	6	6 29	+ 3	11 44	+ 9	—	—	—
Adelaide		33·4	162	i 6 45	+ 3	i 12 6	+ 3	i 8 2	PP	16·5
Titizima		33·4	26	6 44	+ 2	—	—	—	—	—
Yakusima		33·8	6	6 52	+ 6	12 17	+ 7	14 57	SSS	—
Zi-ka-wei	N.	34·6	352	e 6 55	+ 2	12 5	−17	—	—	—
Brisbane		34·9	136	i 6 55	0	i 12 25	− 2	i 8 13	PP	14·7
Miyazaki		35·3	6	6 58	− 1	12 11	−22	—	—	—
Nagasaki		36·0	4	7 5	0	12 45	+ 1	15 23	SS	—
Hukuoka B		36·9	5	e 7 17	+ 5	12 27	−31	—	—	15·7
Koti		37·3	9	e 7 14	− 2	13 7	+ 3	—	—	18·8
Riverview		38·1	146	i 7 25a	+ 3	i 13 21	+ 5	i 8 47	PP	e 19·2
Sydney		38·1	146	i 7 20	− 2	i 13 18	+ 2	i 8 51	PP	19·4
Hatidyozima		38·3	17	6 56	−28	12 17	−62	8 55	PP	—
Husan		38·3	3	7 26	+ 2	13 0	−19	i 9 0	PP	19·3
Melbourne		38·3	156	i 7 29	+ 5	13 23	+ 4	8 55	PP	18·5
Hamada		38·4	7	7 25	0	13 23	+ 3	9 10	PP	20·4
Kobe		38·7	12	7 25	− 2	13 28	+ 3	9 9	PP	—
Osaka		38·7	12	7 18	− 9	13 27	+ 2	—	—	19·7
Taikyu		39·0	3	e 7 34	+ 4	(e 16 27)	SS	9 4	PP	e 16·4
Nagoya		39·6	14	e 7 33	− 2	—	—	—	—	16·7
Gihu		39·7	14	7 34	− 2	13 38	− 2	9 14	PP	19·5
Kohu		40·3	16	7 41	+ 1	13 37	−12	—	—	—
Zinsen	E.	40·6	0	e 7 49	+ 6	e 13 51	− 3	—	—	e 19·7
	N.	40·6	0	e 7 45	+ 2	e 13 57	+ 3	i 9 24	PP	e 19·7
	Z.	40·6	0	e 7 43	0	e 13 43	−11	i 9 24	PP	e 19·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Keizyo		40·7	1	e 7 49	+ 5	e 13 50	− 5	9 25	PP	e 20·8
Tokyo Cent. Met. Ob.		40·7	16	7 32	−12	13 36	−19	—	—	—
Oiwake		41·0	13	7 44	− 2	13 58	− 1	17 20	SSS	—
Wazima		41·6	12	7 47	− 4	—	—	9 37	PP	—
Hukusima		42·8	16	8 0	− 1	14 34	+ 8	18 16	SSS	—
Heizyo		43·0	359	e 7 59	− 4	i 14 18	−11	8 39	PP	—
Sendai		43·5	17	8 9	+ 2	14 40	+ 4	—	—	—
Mizusawa		44·3	16	8 13	0	14 21	−27	—	—	22·3
Morioka		44·9	16	8 21	+ 3	15 5	+ 9	10 11	PP	—
Calcutta	N.	45·3	307	i 8 19	− 2	i 15 5	+ 3	i 9 57	PP	i 22·1
Vladivostok		46·5	6	e 8 28	− 3	i 15 26	+ 7	—	—	e 18·7
Mori		47·0	14	8 43	+ 8	15 32	+ 6	10 44	PP	25·4
Colombo	E.	47·6	283	e 8 42	+ 3	15 43	+ 8	19 19	SSS	25·0
Sapporo		48·1	14	8 46	+ 3	15 39	− 3	—	—	—
Kodaikanal	E.	50·6	286	i 9 7	+ 5	i 16 25	+ 8	—	—	24·4
Hyderabad		51·7	295	9 10	− 1	16 26	− 6	11 20	PP	25·2
Agra		55·7	307	i 9 34k	− 6	17 26	0	11 48	PP	27·1
Christchurch		57·1	141	i 9 51a	+ 1	i 17 40	− 5	i 11 59	PP	27·3
Dehra Dun	N.	57·1	311	e 10 12	+22	e 17 14	−31	i 22 11	SS	e 28·0
Bombay		57·2	295	i 9 53	+ 2	i 17 53	+ 7	11 56	PP	28·4
Wellington		57·4	138	i 9 51a	− 2	17 50	+ 1	10 10	pP	25·3
Irkutsk		58·5	344	9 58	− 2	18 2	− 1	—	—	28·9
Apia		61·8	103	i 10 23a	0	i 18 47	+ 1	12 44	PP	—
Almata		64·3	323	10 36	− 3	19 24	+ 7	—	—	—
Chatham Ils.		64·4	138	—	—	17 55	?	21 55?	L_q	24·9
Frunse		65·6	321	10 49	+ 1	—	—	—	—	—
Andijan		66·0	318	e 10 50	0	19 45	+ 7	—	—	31·9
Semipalatinsk		66·6	331	e 10 47	− 7	—	—	—	—	—
Tashkent		68·3	318	11 3	− 2	20 13	+ 7	—	—	—
Tchimkent		68·5	319	11 5	− 1	—	—	—	—	—
Samarkand		69·2	315	11 10	0	20 7	− 9	—	—	—
Honolulu		77·9	67	e 12 12	+11	22 22	+28	e 15 1	PP	e 33·2
Tananarive		78·5	252	e 12 7	+ 3	22 2	+ 1	e 15 1	PP	—
Sverdlovsk		79·8	330	i 12 10	− 2	27 49	SS	i 15 17	PP	49·9
Baku		82·0	312	e 12 28	+ 5	i 22 47	+10	16 2	PP	39·9
Grozny		85·5	314	12 36	− 5	e 23 14	+ 2	—	—	—
Erevan		86·0	311	e 12 38	− 5	—	—	—	—	—
Tiflis		86·0	312	12 43k	0	i 23 15	− 2	i 16 7	PP	e 34·9
Piatigorsk		87·6	314	e 12 57	+ 6	e 23 30	− 2	—	—	—
College		91·1	25	13 3	− 5	i 23 52	−12	e 16 43	PP	i 36·9
Moscow		92·1	325	13 13	+ 1	23 54	[+ 9]	17 0	PP	49·4
Ksara		92·3	303	i 13 14k	+ 1	30 25	SS	i 16 49	PP	—
Theodosia		93·1	315	13 17	0	23 57	[+ 7]	e 16 58	PP	30·9
Simferopol		94·0	315	13 27	+ 6	—	—	—	—	30·9
Yalta		94·0	313	13 23	+ 2	24 5	[+ 9]	—	—	31·4
Sebastopol		94·4	314	13 26	+ 3	—	—	—	—	30·9
Pulkovo		96·0	329	e 13 27	− 3	24 12	[+ 5]	e 17 26	PP	e 48·2
Helwan		96·4	299	i 13 31	− 1	24 1	[− 8]	17 28	PP	46·7
Sitka		97·2	32	i 13 37	+ 1	i 24 25	[+12]	17 28	PP	e 45·0
Istanbul		97·8	312	13 34	− 4	26 33	PS	17 15	PP	53·5
Bucharest		99·7	314	13 55	+ 8	24 32	[+ 6]	17 30	PP	69·9
Sofia		101·9	313	e 13 59	+ 2	i 24 47	[+11]	e 17 11	PP	—
Upsala		102·3	331	e 18 8	PP	e 24 40	[+ 2]	32 42	SS	e 48·9
Cape Town		103·0	234	e 14 29	+27	i 24 43	[+ 2]	e 18 19	PP	47·9
Belgrade	N.W.	103·7	315	e 14 1	− 4	e 24 40	[− 4]	e 18 14	PP	e 51·2
Kecskemet	Z.	103·9	318	e 14 7	+ 1	e 28 41	PPS	e 18 25	PP	—
Budapest	N.	104·2	318	e 14 25	+18	i 26 3	+ 8	18 31	PP	e 56·9
Ogyalla		104·7	318	e 14 55	+46	25 1	[+12]	18 33	PP	e 37·4
Copenhagen		106·1	328	14 15	P	24 28	[−27]	i 18 43	PP	—
Potsdam		106·4	324	e 14 13	P	e 25 7	[+11]	e 18 37	PP	e 50·9
Prague		106·6	321	e 14 22	P	e 24 55	[− 2]	e 18 55	PP	e 48·9
Bergen		107·8	334	18 55	PP	—	—	e 21 10	PPP	e 53·2
Cheb		107·8	322	e 14 26	P	e 25 13	[+10]	e 19 0	PP	e 54·9
Ukiah		107·8	49	e 14 27	P	e 25 12	[+ 9]	e 18 50	PP	e 45·2
Hof		108·1	322	—	—	e 29 22	PPS	—	—	e 48·9

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		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Jena		108·1	323	e 18 55	PP	e 24 54	[−10]	e 21 10	PPP	e 47·9
Triest		108·1	317	e 15 6	P	i 25 18	[+14]	i 19 3	PP	e 55·9
Hamburg		108·2	326	e 14 28a	P	e 25 9	[+ 4]	i 19 0	PP	e 50·9
Berkeley		108·7	51	e 14 35	P	e 28 19	PS	e 18 55	PP	e 51·7
Göttingen		108·9	323	e 18 50	PP	e 26 40	{+42}	e 21 24	PPP	e 55·9
Padova		109·5	317	e 15 12	P	25 33	[+23]	20 3	PP	e 54·9
Scoresby Sund		109·9	349	14 35	P	25 21	[+ 9]	19 13	PP	—
Stuttgart		110·2	321	e 14 36k	P	34 55	SS	19 13	PP	e 57·9
Chur		110·4	319	e 18 16	[−17]	e 25 24	[+11]	—	—	—
Florence		110·4	316	e 14 55	P	—	—	i 18 55	PP	27·9
Karlsruhe		110·7	322	e 14 43	P	e 27 42	PS	e 19 18	PP	e 57·9
Zurich		111·1	320	e 18 38	[+ 3]	e 28 38	PS	e 14 41	P	—
Strasbourg		111·2	321	e 14 39a	P	e 27 6	{+53}	i 19 17	PP	e 57·4
De Bilt		111·4	325	e 14 41	P	e 28 47	PS	i 19 20	PP	54·9
Basle		111·7	320	e 18 46	[+10]	e 28 55	PS	—	—	—
Neuchatel		112·3	320	e 19 32	PP	—	—	—	—	—
Moncalieri		112·4	318	e 15 25	P	(28 25)	PS	i 19 6	PP	28·4
Uccle		112·4	324	e 18 12	[−26]	25 32	[+10]	e 19 24	PP	54·9
Pasadena		112·7	53	i 18 46	[+ 8]	e 25 28	[+ 5]	e 19 26	PP	e 46·2
Aberdeen		112·8	332	e 18 0	[−39]	i 28 57	PS	i 22 20	PPP	e 54·4
Mount Wilson	z.	112·8	53	i 18 40	[+ 1]	—	—	i 19 35	PP	—
Riverside	z.	113·4	53	e 18 47	[+ 7]	—	—	i 19 33	PP	—
Butte		113·5	39	e 19 27	PP	e 29 10	PS	39 25	SSS	i 47·7
Durham		113·8	330	e 18 10	[−31]	i 29 8	PS	i 22 3	PPP	—
Edinburgh		114·0	331	e 15 4	P	i 25 43	[+15]	i 22 3	PPP	e 57·9
Paris		114·3	323	14 56	P	29 20	PS	19 52	PP	53·9
Saskatoon		114·5	32	e 15 55?	?	—	—	e 21 55?	PPP	36·9
Bozeman		114·6	39	e 15 2	P	e 25 17	[−13]	e 19 37	PP	e 46·3
Marseilles		114·6	316	e 19 43	PP	e 25 43	[+13]	e 29 35	PS	e 52·9
Stonyhurst		114·7	329	e 18 53	[+11]	i 29 38	PS	i 19 45	PP	57·9
Kew		114·8	327	i 19 44	PP	i 29 28	PS	i 22 27	PPP	e 55·9
Oxford		115·1	328	e 18 40	[− 3]	i 29 27	PS	i 19 42	PP	e 49·9
Bidston		115·3	329	i 19 6	[+23]	i 29 22	PS	e 40 26	SSS	e 54·9
Puy de Dôme		115·3	320	e 17 55	[−48]	—	—	—	—	—
Jersey		116·9	325	e 19 31	PP	e 27 7	{+14}	e 35 13	SS	—
Rathfarnham Castle		116·9	331	e 19 10	[+23]	30 45	PPS	20 19	PP	i 64·0
Algiers		118·4	310	14 55	P	26 15	[+31]	20 6	PP	54·9
Tucson		119·1	54	e 18 50k	[− 1]	26 17	[+30]	e 20 11	PP	e 48·4
Ivigtut		122·1	357	18 55	[− 2]	25 49	[− 8]	30 25	PS	50·9
Toledo		122·4	316	e 19 1	[+ 4]	e 25 26	[−32]	e 20 39	PP	—
Almeria		122·5	312	e 19 7	[+ 9]	e 30 19	PS	—	—	e 48·6
Granada		123·2	313	i 19 8	[+ 9]	30 37	PS	i 20 35	PP	e 64·4
Malaga		124·0	313	i 19 8	[+ 7]	25 25	[−38]	e 20 52	PP	58·4
San Fernando		125·4	313	e 20 56	PP	i 26 17	[+10]	i 31 36	PS	61·9
Chicago		130·9	33	e 21 28	PP	e 38 37	SS	e 24 16	PPP	e 45·1
Florissant		131·3	38	e 19 14	[0]	e 22 40	PKS	i 21 29	PP	—
St. Louis	N.	131·5	38	e 19 21	[+ 6]	e 24 31	PPP	e 21 30	PP	e 54·3
Cape Girardeau		132·7	39	e 19 22	[+ 5]	e 32 16	PS	e 21 38	PP	63·9
Ottawa		133·8	20	19 20	[+ 1]	40 55	SSP	21 55	PP	55·4
Seven Falls		133·8	15	19 25	[+ 6]	28 43	{ 0}	21 45	PP	64·9
Shawinigan Falls		133·8	16	e 19 25	[+ 6]	e 31 55?	PS	e 22 58	PP	77·9
Buffalo		134·5	25	i 19 25	[+ 5]	i 31 10	PS	i 21 51	PP	—
Cincinnati		134·5	33	i 19 24	[+ 4]	e 29 21	{+33}	i 21 50	PP	—
Vermont		135·5	19	e 19 29	[+ 7]	e 39 40	SS	e 21 59	PP	59·0
East Machias		136·9	13	e 19 22	[− 3]	e 36 32	[− 2]	e 22 4	PP	54·9
Williamstown		137·0	19	e 19 22	[− 3]	e 34 13	PPS	i 22 13	PP	e 65·7
Harvard		137·8	18	e 19 15	[−11]	e 26 7	[−28]	i 22 11	PP	e 66·9
Weston		138·0	18	e 19 13	[−14]	i 32 30	PS	i 22 13	PP	e 62·7
Fordham		138·4	22	e 19 19	[− 8]	i 35 30	PPS	i 22 14	PP	—
Philadelphia		138·5	24	e 19 15	[−13]	e 40 1	SS	22 2	PP	e 55·9
Georgetown		138·6	26	e 19 16	[−12]	i 32 26	PS	i 22 20	PP	—
Columbia		140·1	35	e 22 17	PP	e 40 51	SS	—	—	e 59·5
Rio de Janeiro		152·1	201	e 20 6	[+16]	e 27 46	[+49]	e 33 46	PS	e 43·2
Huancayo		153·5	125	e 19 55	[+ 3]	e 27 3	[+ 5]	e 23 25	PP	i 62·0
La Paz	N.	155·5	144	i 20 9	[+14]	i 26 35	[−25]	i 21 19	pPKP	74·4
San Juan		160·6	37	e 20 4	[+ 3]	i 44 32	SS	23 55	PP	i 64·3
Fort de France		166·4	33	i 20 7	[0]	(28 3)	[+54]	(e 24 55)	PP	28·0

For Notes see next page.

NOTES TO JUNE 9d. 19h. 15m. 5s.

Additional readings :—
Batavia iPEZ = +4m.38s., SZ = +8m.29s.
Hong Kong P_cP = +9m.7s., S = +10m.27s., SS = +11m.40s., S_cS? = +16m.55s.
Naha SS = +12m.47s.
Adelaide i = +6m.58s., +9m.48s., +11m.22s., and +12m.10s., iSS? = +14m.14s., i = +15m.13s.
Zi-ka-wei iN = +12m.47s.
Brisbane iP_cPE = +9m.13s., iSE = +12m.31s.
Riverview iEN = +8m.54s., iSN = +13m.24s., iE = +13m.31s., iSSN = +16m.4s., iZ = +16m.6s., iN = +18m.34s., iE = +18m.38s.
Sydney i = +13m.23s., iSS = +16m.6s.
Hamada SS = +15m.52s.
Kobe SS = +15m.57s.
Taikyu eS = +10m.10s.
Nagoya iP = +7m.40s.
Mizusawa SN = +14m.28s.
Morioka SS = +18m.27s.
Calcutta iPPPN = +10m.38s., iSSN = +18m.6s., iSSSN = +19m.13s.
Mori PPP = +11m.43s.
Hyderabad SN = +16m.39s., S_cSN = +19m.1s., SSN = +19m.8s.
Agra iN = +9m.44s., PPP = +13m.0s., i = +14m.29s., PS = +17m.58s., iE = +19m.32s., iN = +19m.36s., SS = +21m.16s., SSSE = +23m.14s.
Christchurch iPSN = +18m.4s., iEZ = +20m.35s., iSSE = +21m.22s., iN = +21m.55s., iZ = +22m.14s., L_q = +23m.12s., iNZ = +23m.49s.
Bombay iEN = +10m.20s., +10m.33s., and +18m.31s., S_cSEN = +19m.40s., SSEN = +21m.35s., iL_qEN = +24m.8s.
Wellington P_cP = +10m.56s., PP = +12m.3s., PPP = +13m.15s., i = +14m.1s., +14m.29s., and +17m.11s., iZ = +18m.13s., iEN = +18m.33s., S_cS = +19m.41s., i = +20m.46s., L_q = +22m.1s.
Apia i = +10m.31s., iPS = +18m.54s., i = +19m.14s. and +19m.24s., eS_cS = +20m.12s., eSS = +23m.17s.
Andijan e = +11m.47s.
Honolulu iP = +12m.27s., eSS = +27m.31s., SSS = +30m.19s.
Tananarive SN = +22m.7s., PSN = +22m.47s., PSE = +22m.49s., EN = +23m.37s., SSE = +27m.43s., SSN = +27m.55s., SSSE = +30m.37s.
Sverdlovsk iPPP = +17m.9s., i = +21m.20s., SSS = +30m.55s., L_q = +38m.49s.
Baku PPP = +17m.8s., SS = +28m.1s.
Tiflis eN = +12m.47s., iZ = +13m.19s., eE = +16m.19s., eN = +16m.30s., PPPZ = +18m.2s., ePPPE = +18m.29s., iSZ = +23m.24s., iE = +23m.29s., iSKKSN = +23m.42s., iZ = +23m.51s., iPPSE = +24m.17s., SSE = +28m.1s., SSSN = +32m.37s.
College ePPP = +18m.19s., S = +24m.14s., PS = +24m.37s., eSS = +29m.57s., SS = +30m.11s.
Moscow PPP = +19m.12s., SKKS = +24m.8s., S = +24m.21s., PPS = +26m.28s., SS = +30m.43s.
Ksara PPS = +25m.45s.
Pulkovo ePPP = +19m.25s., S_cS = +25m.4s., ePS = +26m.5s., ePPS = +27m.5s., eSS = +31m.13s., eSSS = +35m.31s.
Helwan PPP = +19m.40s., i = +21m.19s., iS = +24m.58s., PS = +26m.11s., PPS = +26m.55s.
Sitka iPS = +26m.27s.
Istanbul SS = +33m.50s.
Bucharest i = +17m.56s., eEN = +20m.56s., iPPSE = +27m.0s., iEN = +27m.53s., iSSEN = +32m.22s.
Sofia eN = +17m.27s., eE = +18m.7s., iE = +27m.21s.
Upsala ePPN = +18m.11s., eE = +20m.22s., iPS = +27m.13s., iPPS = +28m.16s., eSSSE = +36m.55s.
Cape Town eN = +21m.13s., eSKKSN = +25m.19s., eSKKSE = +25m.23s., iSN = +25m.59s., iSE = +26m.25s., iSSE = +33m.5s., iSSN = +33m.17s., iSSS = +36m.49s., iE = +42m.26s., iN = +42m.49s.
Belgrade eNW = +19m.9s., iNW = +27m.41s.
Budapest eN = +22m.33s., +24m.48s., iE = +24m.56s., and +27m.37s., eN = +29m.3s., iN = +33m.33s., iE = +34m.0s., eN = +44m.13s.
Ogyalla eN = +18m.55s., +25m.33s., iE = +29m.3s.
Copenhagen PKP = +17m.43s., PPP = +20m.55s., iSKKS = +25m.10s., e = +25m.55s., +26m.16s., +27m.36s., PS = +27m.58s., PPS = +28m.49s., SS = +33m.25s., +33m.55s., SSSN = +37m.58s.
Potsdam eEZ = +14m.37s., ePKP = +17m.49s., ePPPEZ = +20m.55s., eSKKSE = +25m.55s., eSN = +26m.19s., ePSEN = +28m.1s., eN = +28m.37s., ePPSZ = +28m.55s., ePPSE = +29m.1s., eSSE = +34m.1s., eN = +34m.37s., eEN = +37m.19s., eE = +38m.7s., eN = +44m.7s.
Prague ePS = +27m.55s., ePPS = +28m.49s., eSS = +34m.1s., e = +37m.55s., eSSS = +38m.55s.
Cheb ePS = +28m.24s., eSS = +34m.40s.
Ukiah ePS = +28m.12s., eSS = +34m.6s., eSSS = +37m.25s.
Jena eN = +21m.14s., eE = +21m.18s., e = +28m.22s., eZ = +28m.55s., eN = +29m.55s., +31m.55s., e = +32m.55s., e = +38m.19s., eN = +38m.25s.

Continued on next page.

Triest iPS = +28m.9s.
Hamburg iPPZ = +19m.3s., eZ = +21m.6s., iSKKS = +26m.12s., iPSE = +28m.23s., ePPSZ = +29m.15s., eSSE = +34m.13s., eSSSZ = +38m.55s.
Berkeley eZ = +18m.59s.
Göttingen eEN = +28m.27s.
Padova i = +27m.54s., PS = +30m.25s.
Scoresby Sund +17m.49s., +21m.24s., +26m.47s., PS = +28m.23s., +29m.31s., SS = +34m.13s., SSS = +38m.31s.
Stuttgart ePKP = +18m.9s., +18m.27s., e = +20m.10s., +21m.14s., i = +21m.35s., e = +22m.39s., +23m.42s., +28m.0s., ePS = +28m.38s., e = +28m.55s., iPPS = +29m.42s., e = +31m.12s., eSSS = +38m.59s., eN = +56m.27s.
Strasbourg eZ = +15m.5s., iPPPZ = +21m.36s., i = +21m.43s., iPSZ = +28m.25s., iPPSE = +29m.36s., iE = +29m.51s., eSSE = +34m.43s., iSSSE = +39m.22s.
Uccle ePZ = +14m.43s., eZ = +15m.11s., iPPPZ = +21m.53s., PSZ = +28m.52s., iE = +29m.15s., iPPSZ = +29m.37s., iSSE = +35m.26s., iSSSE = +39m.22s.
Pasadena ePZ = +14m.39s., eSE = +26m.46s.
Aberdeen eP = +14m.26s., i = +19m.31s. and +29m.9s., iSS = +35m.14s., iSSS = +40m.9s.
Mount Wilson ePZ = +14m.47s.
Riverside ePZ = +14m.51s.
Butte ePPS = +30m.24s.
Durham eE = +18m.20s., iEN = +19m.37s., +23m.37s., +29m.22s., and +35m.37s., iE = +40m.10s.
Edinburgh i = +19m.38s., +23m.4s., +29m.26s., +35m.38s., and +35m.56s.
Paris PPP = +22m.11s., PPS = +30m.20s., SS = +35m.42s.
Bozeman eS = +27m.9s., ePS = +29m.15s., eSS = +35m.39s., SSS = +39m.50s.
Marseilles e = +31m.0s.
Stonyhurst eP = +15m.3s., i = +22m.11s., +30m.27s., +30m.58s., iSS = +35m.53s.
Kew iPZ = +14m.58s.a, iNZ = +20m.51s., +22m.14s., iEN = +29m.49s., iE = +29m.57s., iPPS = +30m.28s., eEN = +30m.0s., iNE = +30m.28s., iSS = +36m.4s., iE = +39m.32s., eSSSN = +40m.16s., iE = +40m.45s., eEN = +43m.40s.
Oxford e = +28m.48s.
Bidston i = +19m.50s., +21m.51s., iPPP = +22m.13s., i = +29m.51s., iSPP = +30m.21s., i = +34m.56s., +35m.31s., i = +43m.31s.
Jersey ePP = +22m.34s., iS = +29m.43s., e = +40m.25s. and +44m.3s.
Rathfarnham Castle i = +23m.8s., +23m.40s., +35m.26s., and +36m.32s.
Algiers PS = +29m.56s., PPS = +31m.56s., SS? = +37m.37s., SSS = +40m.35s.
Tucson PS = +29m.58s., i = +41m.39s.
Ivigtut +20m.35s., +27m.44s., +36m.13s., +37m.25s., +40m.37s., and +41m.25s.
Toledo e = +27m.44s., ePS = +30m.41s., eSS = +37m.22s.
Granada iP = +15m.34s., iPPP = +23m.45s.
Malaga e = +28m.47s.
San Fernando PPSE = +34m.19s., iSSSN = +44m.26s.
Chicago eSSS = +43m.52s.
Florissant ePKPZ = +19m.11s., ePKPN = +19m.17s., iE = +22m.45s., iEN = +23m.5s., ePSKSN = +31m.26s., iPPSN = +33m.23s., iZ = +33m.58s.
St. Louis iSKPN = +22m.44s., iN = +23m.40s., ePPSN = +33m.20s., eN = +37m.44s., +38m.40s., and +41m.48s.
Cape Girardeau e = +22m.49s., ePPPE = +25m.3s.
Ottawa PPP = +22m.51s.
Seven Falls SKP = +22m.50s., PPP = +24m.55s., e = +31m.55s., SS = +39m.25s., SSS = +44m.50s.
Buffalo iSKP = +22m.56s., i = +32m.16s.
Cincinnati iSKP = +22m.30s., i = +22m.53s., e = +32m.2s., iPPS = +33m.56s.
Vermont PKS = +22m.59s., ePPP = +25m.3s., SSS = +44m.19s.
East Machias iPKS = +23m.5s., PPP = +25m.29s., eSS = +39m.56s.
Williamstown i = +19m.31s., iSKP = +23m.6s., i = +23m.58s., iPPP? = +25m.7s.
Harvard ePZ = +16m.39s., iZ = +19m.29s., eSKKSN = +29m.25s., eSKSPZ = +32m.49s., eSSN = +40m.7s., eL$_g$E = +61m.55s.
Weston iZ = +19m.30s., iSKP = +23m.6s., ePPPN = +25m.8s., eSKSPEN = +32m.14s., iN = +35m.44s., ePPPS = +36m.0s., eSS = +40m.26s.
Fordham iSKP = +23m.7s., iPPP = +25m.17s., e = +29m.19s. and +42m.57s.
Philadelphia SSS = +45m.53s.
Georgetown i = +23m.6s. and +32m.31s.
Rio de Janeiro eSE = +27m.55s.
Huancayo PKP = +20m.10s., i = +21m.46s., iPP = +23m.46s., i = +25m.49s., iPPP = +27m.13s., i = +28m.44s. and +33m.9s., iSKSP = +34m.27s., i = +34m.59s., iPPS = +37m.28s., i = +41m.10s., eSS = +43m.28s., iSS = +43m.38s., i = +44m.37s., +44m.53s. +46m.34s., +46m.41s., eSSS = +49m.1s., i = +50m.14s., +51m.10s., +51m.56s., +53m.8s., +53m.53s., +55m.26s., and +57m.6s.
La Paz iPKP$_2$ = +20m.25s., isPKPN = +22m.9s., iSKP = +23m.39s., iPPN = +24m.13s., iSKKS = +30m.58s., iSKSP = +34m.25s., iN = +35m.41s., iSSN = +44m.43s., iSSS = +50m.23s., iSSSS = +53m.19s.
San Juan PKP = +20m.16s., i = +23m.37s., ePPP = +28m.5s., eSSS = +51m.7s.
Fort de France PP = +20m.51s., PPP = +21m.11s., SS = +26m.4s. and +26m.15s. PP is given as eS.
Long waves were also recorded at La Plata.

June 9d. Readings also at 0h. (Sverdlovsk, Baku, and Tashkent), 2h. (Fort de France), 3h. (Tiflis), 4h. (La Paz and Huancayo), 5h. (Scoresby Sund), 9h. (Andijan), 13h. (Andijan, Lick (2), Frunse, Almata, Hukuoka B, Branner, Berkeley, and San Francisco), 14h. (Medan), 15h. (Williamstown, Lick, and Harvard), 18h. (Harvard, Batavia, Copenhagen, Yalta, Malabar, and Balboa Heights), 21h. (Mizusawa, Nagoya, Batavia, Samarkand, Frunse, Andijan, and Sverdlovsk), 22h. (Fordham Weston, Tucson, and Harvard), 23h. (Manila).

June 10d. 9h. 53m. 37s. Epicentre 25°·3N. 125°·2E.

Tremor accompanied by a small tidal wave and several aftershocks. Strongly felt at Miyakozima and moderately at Isigakizima. Epicentre 25°·3N. 125°·2E. N.N.E. of the Isle of Miyako. Macroseismic radius greater than 300kms. Shallow.

See Seismological Bulletin of the Central Met. Obs. Japan for the year, 1938, Tokyo, 1940. pp. 41-43. Macroseismic Chart, p. 44.

$A = -\cdot5218$, $B = +\cdot7396$, $C = +\cdot4250$; $\delta = -9$; $h = +3$;
$D = +\cdot817$, $E = +\cdot576$; $G = -\cdot245$, $H = +\cdot347$, $K = -\cdot905$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyakozima		0·5	172	0 7a	Pg	0 15	Sg	—	—	—
Isigakizima		1·3	224	0 29	+ 4	0 54	+10	—	—	—
Naha		2·4	68	1 18	S	(1 18)	Sg	—	—	—
Giran		3·2	260	0 52	0	1 30	− 2	—	—	—
Taihoku		3·4	266	e 0 54	− 1	1 39	+ 2	—	—	—
Karenko		3·5	249	1 1	+ 4	2 24	Sg	—	—	—
Taityu		4·3	256	1 13	+ 5	2 13	S*	—	—	—
Arisan		4·4	247	1 10	0	2 17	S*	—	—	—
Taito		4·5	236	1 13	+ 2	2 30	Sg	—	—	—
Nake		4·9	50	1 18	+ 1	2 53	Sg	—	—	—
Tainan		5·1	245	1 21	+ 1	—	—	—	—	—
Kosyun		5·2	232	1 20	− 1	2 43	S*	—	—	—
Takao		5·2	241	1 23	+ 2	2 33	S*	—	—	—
Zi-ka-wei	E.	6·8	331	e 1 37	− 7	i 3 13	+10	—	—	—
Yakusima		7·0	42	1 51a	+ 5	3 29	S*	—	—	—
Kagosima		7·8	36	2 2	+ 4	6 23	?	—	—	—
Tomie		8·0	22	2 4	+ 4	3 58	S*	—	—	—
Nagasaki		8·5	30	2 7	0	3 52	+ 7	—	—	—
Miyazaki		8·6	38	2 9a	0	4 9	S*	—	—	—
Unzendake		8·7	30	2 14	+ 4	4 38	Sg	—	—	—
Kumamoto		8·9	31	2 15	+ 3	4 30	S*	—	—	—
Hukuoka B		9·4	27	i 2 23a	+ 5	i 4 21	+14	—	—	—
Ituhara		9·6	21	2 32	+11	4 30	+18	—	—	—
Izuka		9·6	29	2 27	+ 6	6 12	?	—	—	—
Simonoseki		10·0	29	2 35k	+ 8	6 0	Sg	—	—	—
Simidu		10·1	41	2 31a	+ 3	5 14	S*	—	—	—
Uwazima		10·2	38	2 37a	+ 6	—	—	—	—	—
Husan		10·3	18	2 32	0	5 4	+34	—	—	—
Hong Kong		10·6	256	2 33a	− 3	4 28	− 9	—	—	5·1
Matuyama		10·8	36	2 11a	−28	4 33	− 9	—	—	—
Koti		10·9	39	e 2 41	+ 1	e 4 15	−29	—	—	5·0
Taikyu		11·0	15	2 42	0	4 43	− 4	—	—	5·8
Hirosima		11·1	33	2 43	0	4 44	− 5	—	—	—
Muroto		11·1	42	2 42	− 1	5 45	+56	—	—	—
Syuhurei		11·2	12	2 54	+10	5 11	+19	—	—	6·3
Hamada		11·3	30	2 48	+ 2	4 42	−12	—	—	—
Manila		11·4	201	i 2 49k	+ 2	4 52	− 4	—	—	—
Tadotu		11·6	38	3 9	PPP	6 13	?	—	—	—
Tokusima		12·0	41	3 9	PP	6 14	?	—	—	—
Zinsen		12·2	5	i 2 58a	0	e 5 44	SSS	i 3 10	PP	e 7·9
Sakai		12·3	32	3 10	PP	—	—	—	—	—
Siomisaki		12·3	46	2 56	− 3	—	—	—	—	—
Sumoto		12·3	41	3 5k	+ 6	5 16	− 2	—	—	—
Keizyo		12·4	8	3 4	+ 3	5 29	+ 8	—	—	—
Wakayama		12·4	42	3 4	+ 3	6 2	SSS	—	—	—

Continued on next page,

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kobe	12·7	41	3 1	− 4	6 7	SSS	—	—	—
Osaka B	12·9	41	3 6a	− 1	6 42	L	—	—	(6·7)
Yagi	13·0	43	3 10	+ 1	6 30	L	—	—	(6·5)
Toyooka	13·1	37	3 18	+ 8	6 19	SSS	—	—	—
Kyoto	13·3	41	3 25	+12	6 42	+60	—	—	—
Miyadu	13·4	38	3 21	+ 7	6 39	+54	—	—	—
Kameyama	13·6	43	3 19	+ 2	6 21	SSS	—	—	—
Tu	13·6	44	3 11	− 6	5 47	− 3	—	—	—
Heizyo	13·7	2	i 3 23a	+ 5	i 6 45	+53	—	—	7·7
Hikone	13·7	41	3 25	+ 7	6 35	+43	—	—	—
Dairen	13·9	348	3 32	+11	6 24	+27	—	—	—
Ibukisan	13·9	41	3 27	+ 6	6 53	+56	—	—	—
Nagoya	14·1	43	e 3 29	+ 6	—	—	—	—	9·0
Gihu	14·2	42	3 20a	− 4	6 29	+25	—	—	—
Hamamatu	14·3	46	3 31	+ 5	—	—	—	—	—
Hukui	14·3	39	3 25	− 1	—	—	—	—	—
Omaesaki	14·6	48	3 39	+ 9	8 4	?	—	—	—
Hatidyozima	14·9	55	3 36	+ 2	6 50	SSS	—	—	—
Kanazawa	14·9	39	3 32	− 2	7 16	L	—	—	(7·3)
Takayama	15·0	41	3 41	+ 6	—	—	—	—	—
Toyama	15·3	39	3 29	−10	7 19	L	—	—	(7·3)
Husiki	15·3	39	3 56	PPP	7 32	L	—	—	(7·5)
Numadu	15·3	47	3 48	+ 9	7 6	SSS	—	—	—
Titizima	15·3	80	3 41	+ 2	—	—	—	—	—
Ito	15·4	48	3 48	PP	7 0	SS	—	—	—
Kohu	15·4	45	3 44	+ 4	—	—	—	—	—
Misima	15·4	47	3 38	− 2	6 58	SS	—	—	—
Hunatu	15·5	47	3 42	0	7 1	SS	—	—	—
Matumoto	15·5	42	3 47	+ 5	6 47	+12	—	—	—
Wazima	15·6	37	3 35	− 8	6 58	SS	—	—	—
Mera	15·9	49	3 51	+ 4	7 13	SSS	—	—	—
Nagano	15·9	41	3 51	+ 4	7 2	SS	—	—	—
Oiwake	15·9	43	3 48	+ 1	7 8	SS	—	—	—
Yokohama	16·0	48	3 54	+ 6	7 5	SS	—	—	—
Tokyo Cen. Met. Ob.	16·2	47	3 52	+ 2	7 4	SS	—	—	—
Maebasi	16·2	44	4 0	PP	7 9	SS	—	—	—
Kumagaya	16·3	45	4 1	PP	6 57	+ 4	—	—	—
Utunomiya	16·8	45	3 56	− 2	—	—	—	—	—
Kakioka	16·8	46	3 54	− 4	7 15	+10	—	—	—
Tyosi	17·0	49	4 4	+ 3	7 20	+10	—	—	—
Mito	17·1	46	3 59	− 3	7 22	+10	—	—	—
Niigata	17·2	40	4 4	+ 1	—	—	—	—	—
Onahama	17·7	46	4 12	+ 2	7 32	+ 6	—	—	—
Phu-Lien	17·7	259	e 4 10	0	e 7 29	+ 3	—	—	8·7
Hukusima	18·0	42	4 15	+ 2	8 47	L	—	—	(8·8)
Yamagata	18·2	41	4 18	+ 2	9 3	L	—	—	(9·1)
Sendai	18·5	41	4 21	+ 2	8 10	+26	—	—	—
Vladivostok	18·6	15	e 4 19	− 2	i 8 9	SS	—	—	i 9·4
Mizusawa E.	19·2	39	4 32	+ 4	i 8 22	+23	—	—	9·8
Mizusawa N.	19·2	39	4 29	+ 1	i 8 11	+12	—	—	9·6
Morioka	19·6	39	4 38	+ 6	8 27	SS	—	—	—
Miyako	20·1	39	4 39	+ 1	8 30	SS	—	—	—
Aomori	20·2	35	4 54	PP	—	—	—	—	—
Hatinohe	20·4	38	4 46	+ 5	8 22	− 3	—	—	—
Mori	21·1	31	5 0	+12	8 53	+14	—	—	—
Sapporo	22·1	31	5 4	+ 5	9 13	+15	—	—	—
Urakawa	22·2	34	5 21	PP	9 9	+ 9	—	—	—
Asahigawa	23·1	32	5 9	+ 1	9 29	+13	—	—	—
Haboro	23·3	31	5 14	+ 4	—	—	—	—	—
Nemuro	24·5	36	5 33	+11	9 51	+11	—	—	—
Ootomari	25·5	27	5 42	+10	10 20	+23	—	—	—
Sikka	27·7	24	6 2	+10	—	—	—	—	—
Amboina	29·0	173	e 6 4	0	e 11 5	+11	—	—	13·4
Irkutsk	31·3	334	6 22	− 2	i 11 31	0	—	—	—
Medan	33·4	234	6 48	+ 6	i 12 25	+22	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	33·8	273	i 7 8	+22	i 12 14	+ 4	e 7 57	PP	i 15·7
Batavia		36·0	212	e 7 5	0	13 1	+17	i 8 52	PPP	e 14·4
Malabar		36·6	211	7 16	+ 6	—	—	—	—	—
Dehra Dun	N.	41·8	288	e 7 17	−36	i 13 39	−32	i 16 43	SS	i 20·3
Agra		42·2	283	7 51	− 5	14 21	+ 4	9 41	PP	20·4
Semipalatinsk		42·6	318	i 8 3	+ 4	14 28	+ 5	—	—	—
Almata		43·1	308	e 8 5	+ 1	e 14 31	+ 1	—	—	—
Hyderabad		44·1	269	8 5	− 7	14 52	+ 7	18 27	SS	22·5
Frunse		44·7	306	e 8 15	− 1	e 14 19	−35	—	—	16·6
Andijan		46·2	303	8 35	+ 7	e 14 34	−41	—	—	24·5
Colombo	E.	47·0	255	8 26	− 9	15 31	+ 5	—	—	22·9
Kodaikanal	E.	47·6	262	i 8 38	− 1	i 15 38	+ 3	10 43	PP	—
Tchimkent		48·3	305	e 8 51	+ 6	—	—	—	—	—
Bombay		48·7	274	e 8 51	+ 3	i 15 59	+ 9	19 6	SS	23·7
Samarkand		50·4	301	e 9 0	− 1	—	—	—	—	19·8
Sverdlovsk		55·3	323	i 9 35	− 3	i 17 15	− 6	—	—	25·4
Perth		57·6	189	10 10	+16	i 18 11	PPS	22 16	SS	28·2
Brisbane	E.	58·9	150	i 10 11	+ 8	i 18 29	+21	—	—	24·6
	N.	58·9	150	i 10 5	+ 2	i 18 23	+15	i 12 17	PP	25·2
Adelaide		61·2	167	e 10 20	+ 1	i 18 59	+21	i 12 46	PP	29·9
Baku		63·3	304	e 10 33	0	e 19 14	+10	—	—	31·4
Riverview		63·8	156	e 10 44	+ 8	e 19 26	+15	19 57	PS	e 30·7
Sydney		63·8	156	e 10 32	− 4	i 19 39	+28	i 19 49	PS	30·0
Melbourne		65·5	162	10 59	+12	19 57	PS	—	—	31·4
Grozny		65·7	308	10 50	+ 2	e 19 14	−20	—	—	—
College		66·1	27	e 10 51	0	e 19 33	− 6	e 13 8	PP	i 26·9
Tiflis		66·8	306	i 10 53k	− 3	e 19 30	−18	15 37	PPP	e 29·8
Erevan		67·3	305	11 11	+12	e 20 2	+ 8	—	—	—
Moscow		68·2	322	11 0	− 4	19 57	− 7	—	—	26·9
Honolulu		69·9	74	e 11 18	+ 3	e 20 24	0	e 14 0	PP	e 28·8
Sotchi		69·9	310	e 11 18	+ 3	e 20 32	+ 8	—	—	—
Pulkovo		70·9	328	11 17	− 4	e 20 35	− 1	—	—	e 35·1
Theodosia		72·4	311	11 26	− 4	e 20 55	+ 2	—	—	38·4
Apia		72·7	114	i 11 46	+14	e 20 51	− 6	e 21 19	PS	—
Simferopol		73·3	312	11 33	− 2	e 21 7	+ 3	—	—	36·4
Yalta		73·4	311	e 11 36	0	e 21 11	+ 6	—	—	32·4
Sebastopol		73·8	312	e 11 38	0	—	—	—	—	—
Sitka		74·1	33	e 11 38	− 2	i 21 23	+11	e 22 0	PS	e 31·3
Ksara		75·8	300	i 11 50k	0	i 21 39	+ 8	26 44	SS	—
Upsala		76·8	331	—	—	e 21 43	+ 1	i 22 11	PS	e 36·9
Istanbul		78·2	311	12 2	− 1	22 2	+ 5	14 38	PP	47·0
Arapuni		78·8	141	—	—	22 11	+ 7	27 23	SS	38·3
Bucharest		78·8	313	i 12 21k	+15	22 14	+10	15 12	PP	38·4
Wellington		80·6	144	12 18	+ 2	22 29	+ 6	15 23?	PP	38·5
Helwan		80·9	298	12 14	− 3	i 22 32	+ 6	17 17	PPP	39·4
Christchurch		81·2	147	e 12 19a	0	22 39	+10	i 15 43	PP	39·3
Copenhagen		81·3	328	12 18k	− 2	22 28	− 2	15 20	PP	38·4
Sofia		81·4	313	e 12 20	0	e 22 38	+ 7	e 15 27	PP	e 32·2
Bergen		81·7	334	12 23	+ 1	22 40	+ 6	—	—	34·4
Kecskemet	Z.	81·7	318	12 26	+ 4	i 22 52	+18	e 15 20	PP	e 46·4
Scoresby Sund		81·7	349	12 19	− 3	22 31	− 3	15 31	PP	—
Budapest	E.	81·9	318	12 22	− 1	i 22 52	+16	15 22	PP	e 39·4
	N.	81·9	318	e 12 37	+14	i 22 50	+14	15 29	PP	e 36·4
Ogyalla	E.	82·2	319	e 12 39	+15	22 51	+12	15 39	PP	e 41·4
	N.	82·2	319	12 31	+ 7	22 49	+10	15 53	PP	39·9
Belgrade		82·3	316	e 12 28	+ 3	i 22 41	+ 1	i 15 37	PP	e 39·6
Potsdam		82·7	325	e 12 23	− 4	e 22 47	+ 3	e 23 23	PS	e 42·4
Prague		83·2	323	e 12 31	+ 1	e 22 52	+ 3	e 28 17	SS	e 36·4
Hamburg		83·6	327	e 12 28k	− 4	e 22 58	+ 5	i 15 49	PP	e 40·1
Cheb		84·3	324	e 12 39	+ 4	e 23 1	+ 1	e 15 52	PP	e 44·4
Jena		84·3	324	e 12 35	0	e 22 53	− 7	e 15 43	PP	e 38·4
Hof		84·5	324	e 12 41	+ 5	i 23 6	+ 4	e 23 54	PS	e 36·4
Göttingen		84·8	326	e 12 39	+ 2	i 23 8	+ 3	e 15 59	PP	e 42·4
Laibach		85·3	319	e 12 54	+14	e 23 33	+23	e 16 2	PP	e 42·7
Triest		85·9	319	e 12 43k	0	i 23 14	− 2	—	—	e 38·4

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Aberdeen	86·7	333	i 12 51	+ 4	i 23 18	− 6	16 11	PP	—
De Bilt	86·8	327	12 47	0	i 23 24	− 1	i 16 19	PP	e 41·4
Stuttgart	86·8	323	i 12 47k	0	e 22 55	[−18]	e 16 33	PP	e 42·4
Chatham Ils.	87·1	142	—	—	e 22 23?	?	—	—	—
Karlsruhe	87·1	324	e 12 48	− 1	i 23 24	− 4	—	—	e 41·4
Padova	87·2	320	i 13 2	+13	i 23 23	− 5	e 24 20	PS	e 45·4
Tananarive	87·3	248	e 12 51	+ 1	23 27	− 2	13 27	pP	e 40·1
Chur	87·7	322	e 12 51	− 1	—	—	e 16 18	PP	—
Strasbourg	87·7	324	e 12 50	− 2	i 23 15	[− 3]	i 16 19	PP	e 41·4
Zurich	87·9	322	e 12 50	− 3	e 24 42	PS	e 16 21	PP	—
Edinburgh	88·0	333	e 12 56	+ 3	i 23 28	[+ 8]	i 16 35	PP	30·4
Uccle	88·1	327	e 12 52k	− 2	i 23 29	[+ 8]	i 16 27	PP	41·4
Durham	88·2	332	i 13 3	+ 9	i 23 28	[+ 7]	i 16 38	PP	—
Basle	88·4	322	e 12 55	0	e 24 50	PS	e 34 0	SSS	—
Florence	88·5	318	e 12 53	− 3	23 30	[+ 7]	—	—	37·4
Neuchatel	89·1	322	e 12 58	0	e 23 29	[+ 2]	—	—	—
Stonyhurst	89·2	332	i 13 16	+17	i 23 39	− 8	24 51	PS	42·4
Ukiah	89·5	46	e 13 7	+ 7	e 23 34	[+ 4]	e 16 49	PP	e 36·7
Bidston	89·7	332	e 13 2	+ 1	i 23 33	[+ 2]	i 16 42	PP	39·4
Kew	89·8	329	e 13 2k	0	i 23 41	[+ 9]	i 16 42	PP	40·4
Moncalieri	89·8	322	i 13 6	+ 4	i 23 33	[+ 1]	—	—	34·7
Oxford	90·1	330	e 12 55	− 8	i 23 31	[− 2]	i 16 34	PP	e 30·4
Paris	90·3	326	e 13 4	0	i 23 42	[+ 7]	e 16 52	PP	40·4
Saskatoon	90·6	29	13 19	+14	24 20	+20	—	—	39·4
Berkeley	90·8	47	e 13 4	− 2	e 23 48	[+10]	—	—	—
Rathfarnham Castle	91·1	333	i 13 25	+17	i 23 47	[+ 8]	16 49	PP	45·4
Lick E.	91·5	41	e 13 15	+ 5	—	—	—	—	—
Butte	91·8	35	e 13 10	− 1	e 23 51	[+ 7]	e 17 8	PP	e 48·0
Puy de Dôme	92·0	323	e 13 17	+ 5	i 23 54	[+10]	—	—	—
Jersey	92·2	329	e 12 25	−48	i 23 26	[−19]	e 16 1	PP	e 41·3
Marseilles	92·2	320	e 13 27	+14	e 23 57	[+12]	e 16 41	PP	e 42·7
Bozeman	92·8	35	e 13 26	+10	e 23 58	[+ 9]	e 17 6	PP	e 39·9
Ivigtut	93·6	357	13 17	− 2	24 0	[+ 7]	17 17	PP	—
Tinemaha	93·9	46	e 13 24	+ 3	e 24 0	[+ 5]	e 17 11	PP	—
Haiwee E.	94·7	46	e 13 23	− 1	e 24 9	[+10]	i 17 19	PP	—
Mount Wilson Z.	95·7	48	e 13 27	− 2	—	—	—	—	—
Pasadena	95·7	48	i 13 29	0	i 24 49	+ 5	i 17 26	PP	e 39·9
Riverside Z.	96·3	48	e 13 26	− 6	—	—	e 17 29	PP	—
La Jolla	97·1	48	e 13 41	+ 6	e 24 21	[+ 9]	—	—	—
Algiers	97·7	316	—	—	30 23	SS	—	—	47·1
Toledo	99·7	322	e 13 50	+ 3	e 25 19	+ 1	i 17 58	PP	—
Almeria	100·9	319	e 14 6	+14	i 24 31	[+ 5]	e 18 8	PP	e 41·8
Granada	101·4	320	i 14 1k	+ 6	i 34 12	SS	i 18 2	PP	e 54·3
Tucson	101·7	45	e 13 57k	+ 1	e 24 39	[+ 4]	e 18 5	PP	i 47·3
Malaga	102·2	320	e 14 8	+10	24 47	[+10]	i 18 16	PP	48·9
San Fernando	103·4	321	e 14 52	?	i 24 52	[+ 9]	—	—	52·9
Seven Falls	106·5	11	e 19 11	PP	e 24 36	[−21]	e 33 47	SS	54·8
Chicago	106·6	25	e 18 42	PP	25 7	[+10]	e 27 53	PS	e 43·9
Shawinigan Falls	106·7	12	e 17 23?	?	e 25 5	[+ 7]	—	—	54·4
Ottawa	107·1	15	e 14 27	P	e 25 9	[+ 9]	e 29 5	PPS	48·4
Florissant	108·1	28	e 14 25	P	i 25 13	[+ 9]	e 14 34	pP	—
St. Louis N.	108·3	28	e 14 38	P	i 25 14	[+ 9]	e 19 6	PP	—
Buffalo	108·6	18	e 14 37	P	i 33 58	SS	e 19 4	PP	—
Vermont	108·6	13	e 14 35	P	25 8	[+ 2]	e 18 44	PP	46·6
East Machias	109·3	8	e 19 19	PP	i 25 21	[+12]	e 21 28	PPP	43·2
Cape Girardeau	109·7	28	e 14 40	P	e 25 17	[+ 6]	e 19 12	PP	48·4
Cincinnati	110·2	23	i 14 44	P	i 25 17	[+ 4]	i 19 21	PP	—
Williamstown	110·2	13	e 14 38	P	i 25 19	[+ 6]	i 19 8	PP	e 50·8
Pennsylvania	110·8	18	—	—	e 25 21	[+ 6]	e 29 57	PPS	e 56·2
Harvard	110·8	12	e 18 38	[+ 3]	e 25 23	[+ 8]	e 19 23	PP	e 59·4
Weston	111·0	12	e 14 43	P	i 25 25	[+ 9]	i 19 20	PP	e 46·8
Fordham	111·8	14	e 14 52	P	e 25 29	[+10]	e 19 15	PP	—
Philadelphia	112·3	15	e 19 26	PP	25 32	[+10]	e 22 39	PPP	43·7
Georgetown	112·8	17	e 14 59	P	25 34	[+11]	28 53	PS	—
Columbia	116·0	23	e 19 54	PP	e 29 35	PS	—	—	e 52·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	L.
		°	°	m. s.	s.	m. s.	s.	m. s.	m.
Cape Town		116·9	243	i 20 7	PP	e 25 22	[−17]	e 37 9 SS	59·4
San Juan		135·2	14	e 19 31	[+10]	26 31	[0]	21 46 PP	i 56·0
Fort de France		139·7	8	e 19 31	[+ 1]	e 23 13	PKS	(e 25 1) PPP	e 25·0
Huancayo		156·5	59	e 19 56	[0]	i 26 48	[−13]	i 23 53 PP	—
Santiago		164·0	↑21	e 20 11	[+ 6]	—	—	— —	—
La Paz	N.	164·8	57	i 20 16	[+11]	i 26 59	[− 9]	44 7 SS	81·5
Rio de Janeiro		169·1	283	i 20 23	[+14]	e 30 45	{−73}	36 1 SKSP	e 46·0

Additional readings :—
Naha S = +1m.57s.
Zi-ka-wei iE = +1m.53s. and +2m.5s., SE = +2m.18s., i = +2m.31s., iN = +2m.41s., iN = +8m.39s., +9m.49s., and +15m.13s.
Zinsen eSN = +5m.49s., eSZ = +6m.9s.
Vladivostok i = +4m.22s.
Amboina iE = +6m.17s.
Medan iE = +9m.5s., iEN = +11m.8s., iE = +11m.56s.
Calcutta ePPPN = +8m.15s., iSSN = +13m.45s.
Batavia iEN = +7m.27s., iN = +13m.10s.
Malabar i = +7m.35s.
Dehra Dun iN = +7m.49s.
Agra iE = eN = +8m.7s., iE = +13m.48s., iSSE = +17m.12s., iSSN = +17m.30s.
Kodaikanal i = +16m.43s., PS = +17m.18s., iSSSE = +22m.38s.
Tchimkent e = +12m.47s.
Bombay iEN = +8m.59s., P_cPEN = +10m.3s., ePPEN = +10m.37s., iEN = +15m.43s., S_cSEN = +18m.28s.
Samarkand e = +14m.45s.
Perth P_cP = +11m.1s., PS = +18m.41s., SSS = +24m.13s.
Brisbane iP_cPN = +10m.47s., iP_cPE = +10m.53s., iE = +13m.41s., iSSN = +22m.5s.
Adelaide iP = +10m.27s., i = +10m.36s., +10m.57s., and +13m.24s., iPPP? = +14m.11s., i = +19m.21s., iSS? = +22m.50s., iSSS? = +25m.37s., i = +26m.39s.
Riverview iPZ = +10m.47s., iPEN = +10m.50s., iSN = +19m.36s., S_cS?E = +20m.30s.
Sydney e = +26m.39s.
Melbourne i = +11m.25s.
College P = +10m.55s., PP = +13m.21s., iS = +19m.42s., i = +19m.52s. and +20m.2s., iS_cS = +20m.47s., i = +21m.10s., SS = +23m.43s., iSS = +24m.3s., i = +24m.31s., SSS = +26m.50s.
Tiflis PN = +10m.59s., iEZ = +11m.12s., iPS = +19m.55s., iSSE = +24m.41s., eSSSE = +27m.2s.
Honolulu ePPP = +15m.36s., S = +20m.32s., iS = +20m.39s., iSS = +25m.7s., SSS = +28m.21s.
Apia eSS = +25m.58s.
Sitka eSS = +26m.3s.
Upsala iPSN = +22m.20s., iE = +22m.30s., eSS = +26m.39s., SSS = +30m.52s.
Istanbul PP = +16m.33s.
Arapuni i = +23m.23s., SSS = +30m.41s., L_q = +33m.47s.
Bucharest PPPE = +16m.52s., PSE = +23m.0s., SSEN = +27m.32s.
Wellington i = +12m.24s. and +17m.0s., S_cS = +22m.48s., PS = +23m.14s., PPS = +23m.49s., i = +24m.48s., SS = +27m.49s., SSS = +31m.33s., L_q = +34m.49s.
Helwan i = +12m.26s., PS = +23m.17s.
Christchurch iP = +12m.31s., iE = +22m.47s., iZ = +22m.53s., PS = +23m.25s., SS = +28m.13s., SSS = +31m.19s., L_qE = +35m.8s.
Copenhagen i = +12m.31s., iZ = +15m.37s., PPP = +17m.14s., PPPP = +18m.53s., PPS = +23m.29s., eN = +26m.11s., SS = +27m.29s. and +27m.47s., SSS = +31m.17s. and +32m.5s.
Sofia iEN = +12m.32s., E = +12m.44s., PSN = +23m.44s.
Kecskemet iP_cPZ = +12m.33s., eZ = +17m.7s. and +18m.21s., ePSZ = +23m.33s., eZ = +24m.38s., eSSZ = +29m.33s., eZ = +43m.20s.
Scoresby Sund +12m.25s., +12m.37s., +19m.0s., +22m.50s., +23m.41s., and +26m.23s., SS = +27m.41s., SSS = +31m.41s. and +33m.59s.
Budapest SKKSN = +22m.40s., S_cS = +22m.59s., PS = +23m.52s., SS = +28m.29s., PKKPE = +37m.35s.
Ogyalla PSE = +23m.33s., iE = +25m.49s., SSN = +28m.23s., e = +32m.23s.
Belgrade iPZ = +12m.41s., e = +28m.19s., iNE = +32m.21s., iNW = +33m.47s.
Potsdam eEN = +12m.35s., iZ = +12m.40s., iSZ = +23m.0s., eE = +23m.41s., iPSZ = +23m.57s., iPPSZ = +24m.9s., eSSSE = +32m.17s., eSSSN = +32m.23s., eE = +32m.47s., iZ = +32m.58s., eE = +34m.47s., eEZ = +38m.35s.
Prague P = +12m.39s., eSSS = +32m.11s.
Hamburg iPPZ = +15m.59s., iSE = +23m.1s., ePSN = +23m.36s., iPPSN = +24m.46s., iSSE = +28m.31s., eSSSE = +32m.37s.
Cheb eSS = +28m.46s., e = +32m.38s.
Jena ePPN = +15m.53s., iS = +23m.3s., e = +23m.53s., eSS = +28m.23s.
Hof e = +32m.53s.
Göttingen eEN = +33m.29s.
Triest i = +12m.53s. and +29m.23s.?

Continued on next page.

Aberdeen i = +12m.57s., SS = +29m.15s., SSS = +32m.42s.
Stuttgart iP = +12m.52s., iP_cP = +12m.59s., e = +13m.44s., ePPP = +17m.58s., e = +19m.31s., iSEN = +23m.21s., iS_cS = +23m.35s., ePS = +24m.23s., iE = +24m.53s., eSS = +28m.57s., eSSS = +33m.23s.
Padova iPPS = +24m.41s.
Tananarive P_cPE = +12m.56s., PPE = +16m.30s., pPPEN = +16m.47s., SKSEN = +22m.53s., pSEN = +23m.40s., SSEN = +23m.49s., PSEN = +24m.18s., SSEN = +27m.39s., sSSE = +28m.25s., SSSE = +30m.14s.
Strasbourg iPPPPZ = +20m.0s., iSE = +23m.27s., ePSE = +24m.33s., ePPSE = +24m.59s., iSSE = +29m.50s., SSSE = +33m.49s.
Zurich eSS = +29m.47s.
Edinburgh i = +13m.9s., +23m.42s., +24m.34s., +25m.29s., and +29m.35s.
Uccle iZ = +13m.5s., iPPPZ = +18m.14s., iPSE = +24m.35s., iSS = +29m.22s., iSSSE = +32m.44s.
Durham iSN = +23m.44s., iSSE = +29m.34s., iSSSEN = +34m.2s.
Stonyhurst iS = +23m.55s., i = +34m.7s.
Ukiah eS = +23m.41s., S = +24m.2s., ePS = +24m.55s., eSS = +29m.53s., eSSS = +33m.28s.
Bidston iP = +13m.15s., ePPP = +18m.13s., iS = +24m.0s., iPS = +24m.50s., iSS = +29m.56s., iSSS = +33m.51s.
Kew iP = +13m.15s., ePPP = +18m.14s., iS = +24m.0s., iPSEN = +24m.50s., iPSN = +30m.1s., iSSSN = +34m.9s.
Oxford iP = +13m.7s.
Paris iP = +13m.16s., i = +17m.47s., PS = +25m.5s., SS = +30m.23s.?, SSS = +33m.35s.
Berkeley eN = +13m.7s., eE = +13m.11s., iZ = +13m.20s.
Rathfarnham Castle iS = +24m.14s., iPS = +25m.12s., iPPS = +25m.50s., i = +29m.21s., iSS = +30m.23s.
Butte P = +13m.25s., iS = +24m.24s.
Jersey ePPPP = +19m.42s., iS = +22m.52s., iPPS = +24m.25s., iSS = +29m.37s.
Marseilles ePS = +24m.26s., eSS = +30m.8s., eSSS = +35m.29s.
Ivigtut +23m.21s., **S** = +24m.27s., PS = +25m.40s., SS = +31m.11s., SSS = +34m.53s.
Bozeman iS = +24m.27s., eSS = +30m.30s., eSSS = +34m.31s.
Pasadena eEN = +24m.6s., i = +24m.15s., iPSZ = +26m.4s., eSSN = +30m.41s., iSSSN = +34m.59s.
Toledo iP = +13m.58s., ePPP = +20m.0s., i = +24m.36s., e = +31m.40s.
Granada iPS = +28m.53s.
Tucson P = +14m.8s., iPP = +18m.14s., iSKS = +24m.49s., iS = +25m.49s., PS = +27m.15s., iSS = +32m.44s., iSSS = +36m.40s.
Malaga PPP = +20m.23s.
San Fernando iSS = +31m.12s.
Seven Falls e = +37m.53s. and +45m.5s.
Chicago eS = +26m.11s., PPS = +29m.5s., eSS = +33m.51s.
Ottawa e = +17m.26s. and +18m.42s.
Florissant epPZ = +14m.41s., ePPZ = +18m.51s., ePPEN = +18m.55s., ipPP = +19m.10s., iSE = +26m.35s., iSPEN = +28m.9s., ePPSN = +29m.12s., eSSE = +36m.15s.
St. Louis ePKPN = +17m.51s., iSKKSN = +26m.5s., ePSN = +28m.16s., ePPSN = +29m.26s., eSSN = +34m.16s.
Buffalo iPS = +28m.23s., iPPS = +29m.28s.
Vermont PS = +28m.23s.
East Machias ePS = +28m.21s., iPPS = +29m.38s.
Cape Girardeau eSKKSE = +26m.12s., eSE = +26m.37s.
Cincinnati iPPP = +21m.21s., iS = +26m.55s., iPS = +28m.39s., iPPS = +29m.39s.
Williamstown ePKP = +18m.21s., iPS = +28m.27s., iPPS = +29m.45s., i = +33m.46s., eSS = +34m.35s., eSSS = +37m.47s.
Pennsylvania e = +38m.34s.
Harvard ePZ = +14m.48s., eSKKSN = +26m.23s., ePSZ = +28m.23s., eL_qE = +49m.53s.
Weston iPZ = +14m.47s., ePKPZ = +18m.38s., iZ = +19m.41s., eSKKS = +26m.20s., iSE? = +27m.1s., ePSNZ = +28m.31s., eN = +28m.43s., ePKKPZ = +29m.35s., iPPS = +29m.51s., eSSNZ = +35m.15s., eSSSZ = +39m.35s., iPPPPE = +41m.55s.
Fordham eSKKS = +26m.28s., iPS = +28m.57s., i = +30m.8s., e = +36m.4s.
Philadelphia eSKKS = +26m.27s., eS = +27m.6s., PPS = +30m.18s., SS = +35m.10s., eSSS = +40m.12s.
Georgetown ePKP = +19m.1s., iPP = +19m.37s., and +34m.26s.
Cape Town ePPE = +22m.19s., ePPPE = +24m.54s., iSE = +29m.49s., iSN = +29m.52s., ePPS = +33m.4s., SSN = +36m.14s.
San Juan iPKS = +23m.6s., iPPP = +24m.57s., SKSP = +32m.23s., PPS = +34m.3s., iPPPS = +35m.26s., SS = +39m.26s., iSS = +39m.50s.
Fort de France SSS = +23m.37s.
Huancayo iPKP = +20m.14s., iPKS = +24m.46s., ePPP = +27m.51s., iSKKS = +30m.33s., i = +35m.10s., PPS = +37m.30s., i = +40m.18s., SS = +43m.49s.
La Paz iN = +20m.26s. and +20m.35s., $iPKP_2$ = +21m.6s., iN = +21m.26s., iSKP = +23m.53s., iPPN = +24m.43s., iPPPN = +27m.47s., iN = +29m.51s., iSKKSN = +31m.43s., PPSN = +39m.17s., iSSSN = +48m.55s.
Rio de Janeiro eSE = +30m.48s.
Long waves were also recorded at Ithaca Besançon, and La Plata.

June 10d. 18h. 5m. 58s. Epicentre 16°·3N. 98°·6W. (as on 1937 Dec. 31d.).

Force V at Oaxaca. Epicentre 15°43′N. 98°06′W. (Mexico).

Temblores registrados, 1935 a 1939. Universidad Nacional de Mexico, Instituto de Geologica Catalogo de Temblores. Serie Sismologica Mexico, 1942, p. 58.

$A = -\cdot1436$, $B = -\cdot9496$, $C = +\cdot2789$; $\delta = +15$; $h = +5$;
$D = -\cdot989$, $E = +\cdot150$; $G = -\cdot042$, $H = -\cdot276$, $K = -\cdot960$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	N.	1·9	68	0 27	− 7	—	—	—	—	—
Puebla	N.	2·8	8	0 47	0	—	—	—	—	—
Tacubaya	N.	3·1	350	0 54	P*	—	—	—	—	—
Vera Cruz	N.	3·7	39	0 55	− 5	—	—	—	—	—
Manzanillo	N.	6·0	298	1 36	+ 4	—	—	—	—	—
Guadalajara	N.	6·3	315	1 39	+ 3	—	—	—	—	—
Merida	N.	9·7	61	e 2 15?	− 7	—	—	—	—	—
Tucson		19·4	328	e 4 32k	+ 2	i 7 59	− 5	i 5 1	PPP	i 9·9
Cape Girardeau		22·4	18	e 4 54	− 8	e 8 57	− 7	e 5 19	PP	—
St. Louis		23·4	16	e 5 8	− 3	e 9 19	− 2	i 6 16	PPP	—
Florissant		23·6	16	e 5 9	− 4	i 9 23	− 2	—	—	—
La Jolla		23·6	318	i 5 17	+ 4	i 9 44	+19	—	—	—
Columbia		23·7	37	—	—	e 9 19	− 8	—	—	—
Denver		23·9	348	e 5 17	+ 3	e 9 36	+ 6	i 10 20	SS	e 12·9
Riverside		24·4	321	i 5 25	+ 4	e 9 59	+20	—	—	—
Mount Wilson		25·0	321	i 5 30	+ 3	e 9 59	+10	—	—	—
Pasadena		25·0	321	i 5 32	+ 5	i 10 4	+15	—	—	e 152·
Cincinnati		25·9	25	i 5 32	− 3	i 10 6	+ 2	i 5 53	PP	—
Haiwee	Z.	26·2	324	i 5 43	+ 5	—	—	—	—	—
Tinemaha		27·1	324	e 5 49	+ 3	—	—	—	—	—
Chicago		27·2	17	e 5 46	− 1	e 10 18	− 7	—	—	e 13·5
Fresno	N.	27·7	322	e 5 15	−37	—	—	6 14	PP	e 15·4
Georgetown		29·4	36	i 6 5	− 2	11 4	+ 3	—	—	—
Berkeley		29·9	321	e 6 16	+ 4	e 11 20	+11	—	—	—
San Juan		31·0	80	e 7 6	PP	e 11 17	− 9	—	—	e 12·2
Bozeman		31·1	344	e 6 25	+ 3	e 11 34	+ 6	—	—	e 12·2
Philadelphia		31·2	36	6 21	− 2	11 26	− 3	—	—	e 12·8
Ukiah		31·3	323	—	—	e 11 45	+14	—	—	—
Buffalo		31·4	28	i 6 23	− 2	i 11 37	+ 5	i 13 30	SSS	—
Butte		31·8	344	e 6 28	0	11 43	+ 5	—	—	17·6
Fordham		32·5	36	e 6 31	− 3	i 11 49	0	—	—	—
Williamstown		34·1	35	i 6 43	− 5	i 12 24	+10	—	—	e 22·3
Ottawa		34·8	28	6 50	− 4	i 12 22	− 3	—	—	21·0
Harvard		34·9	36	i 6 49	− 6	e 12 22	− 5	—	—	e 21·0
Weston		34·9	36	i 6 52k	− 3	e 12 23	− 4	i 7 51	PP	—
Vermont		35·3	32	—	—	e 12 31	− 2	—	—	e 21·0
Saskatoon		36·3	352	—	—	e 12 2?	−46	—	—	18·0
Huancayo		36·4	139	e 7 53	+45	i 13 10	+20	e 9 4	PP	e 15·2
Shawinigan Falls		37·0	30	7 9	− 4	13 2	+ 3	—	—	22·0
Seven Falls		38·4	31	e 7 37	+12	13 17	− 3	—	—	19·0
East Machias		38·7	37	e 7 45	+18	e 13 25	0	e 9 26	PP	e 17·5
La Paz		44·3	135	i 8 16	+ 3	i 14 58	+10	10 46	PPP	23·0
Sitka		49·3	335	e 12 6	PPP	e 19 9	SS	—	—	e 24·8
Honolulu		56·0	286	—	—	e 21 11	SS	—	—	e 24·5
Ivigtut		57·3	27	—	—	e 17 46	− 1	—	—	33·0
College		58·7	338	e 13 45	PPP	e 18 15	+ 9	—	—	e 30·1
Rio de Janeiro		66·7	124	e 19 44	S	(e 19 44)	− 2	—	—	e 33·2
Scoresby Sund		70·3	20	11 16	− 1	20 31	+ 2	24 24	SS	—
Edinburgh		79·7	35	—	—	i 22 32	+19	—	—	e 42·0
Aberdeen		79·9	34	—	—	e 22 2?	−14	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kew		82·5	39	e 12 25	− 1	—	—	—	—	e 44·0
Paris		85·0	42	e 12 38	0	e 22 57	[− 4]	15 55	PP	45·0
De Bilt		85·5	37	e 12 42	+ 1	e 23 17	+ 5	—	—	e 44·0
Uccle		85·5	39	e 12 41	0	e 23 12	0	—	—	—
Hamburg		87·6	35	e 12 54	+ 3	i 23 38	+ 6	—	—	e 43·0
Copenhagen		88·0	32	12 54	+ 1	23 41	+ 5	29 26	SS	42·0
Strasbourg		88·3	40	e 12 55	0	e 23 43	+ 4	e 16 20	PP	e 38·0
Upsala	N.	88·5	27	—	—	e 23 46	+ 5	—	—	—
Stuttgart		89·1	39	e 12 59	+ 1	e 23 51	+ 5	e 16 27	PP	e 49·0
Potsdam		89·8	34	e 12 56	− 6	e 23 56	+ 3	e 19 2?	PP	e 42·0
Cheb		90·5	37	—	—	e 24 2?	+ 3	—	—	e 49·0
Pulkovo		93·7	24	e 21 26	?	—	—	—	—	—
Vladivostok		104·9	324	e 18 29	PP	e 24 56	[+ 6]	—	—	e 63·9
Sverdlovsk		105·1	12	—	—	e 24 54	[+ 3]	e 33 28	SS	46·0
Irkutsk		108·9	345	e 19 2?	PP	e 25 12	[+ 5]	(e 29 2)	PPS	e 60·0
Tiflis		113·1	30	e 19 27	PP	e 25 32	[+ 8]	e 21 55	PPP	e 58·0
Ksara		113·9	42	e 19 35	PP	e 29 18	PS	e 30 21	PPS	—
Tashkent		121·6	11	—	—	e 27 26	{+ 2}	e 29 54	PS	e 60·7

Additional readings :—
Tucson iS = +8m.19s.
Cape Girardeau iSEN = +9m.4s.
St. Louis ePcPN = +8m.37s., iSSN = +10m.35s.
Florissant eSZ = +9m.16s., iSN = +9m.20s., iSN = +9m.29s., i = +16m.13s.
Columbia eS = +9m.29s.
Denver eN = +9m.32s., eSEN = +9m.44s.
Cincinnati i = +6m.45s., iSN = +10m.9s., iSZ = +10m.13s., iSSZ = +11m.19s.
Chicago S = +10m.29s.
Berkeley eZ = +11m.25s. and +17m.37s.
San Juan iS = +11m.27s.
Ottawa i = +12m.30s.
Weston iZ = +7m.15s. and +7m.37s., ePcSScPZ = +24m.50s.
Vermont iS = +12m.42s.
La Paz SSN = +18m.22s.
Sitka i = +12m.40s. and +12m.44s.
Scoresby Sund = +28m.20s.
Stuttgart eSKKS = +24m.9s.
Potsdam eEZ = +16m.32s., eEN = +29m.44s., eE = +33m.32s.
Tiflis ePSZ = +29m.4s., ePSN = +29m.16s., eSSZ = +35m.21s.
Tashkent e = +6m.50s., +7m.26s., +37m.12s., +42m.44s., and +56m.50s.
Long waves were also recorded at Wellington, Christchurch, Jersey, Bidston, Baku, and Lick.

June 10d. Readings also at 0h. (Baku), 1h. (Frunse, Andijan, Tashkent, Sverdlovsk, Tiflis, and Ksara), 2h. (Amboina), 3h. (Mizusawa and Nagoya), 5h. (Amboina), 6h. (Nagoya), 7h. (Tiflis, Amboina, and Grozny), 8h. (Amboina), 9h. (Amboina), 10h. (Santiago), 11h. (Grozny), 12h. (Amboina), 14h. (Harvard, Pasadena, Mount Wilson, Riverside, Tucson, Tinemaha, La Jolla, and Haiwee), 15h. (Keizyo, Zinsen, Sverdlovsk, Tashkent, Zi-ka-wei, Irkutsk, Pulkovo, Hukuoka B, and Vladivostok), 16h. (Samarkand, Potsdam, Cheb, Jersey, Mount Wilson, Tiflis, Vladivostok, Pulkovo, Irkutsk (2), Zi-ka-wei, Sverdlovsk (2), Tashkent, Tucson; Andijan, Frunse, Baku, Copenhagen, De Bilt, Paris, Kew, and Strasbourg), 17h. (Perth, San Fernando, Fort de France, Strasbourg, Kew, De Bilt, Sverdlovsk, Irkutsk (2), Mount Wilson, Vladivostok, and near Tchimkent), 18h. (Brisbane, Melbourne, Riverview, Frunse, Irkutsk (2), Riverside (2), Pasadena (2), Harvard, Mount Wilson (2), Vera Cruz, Oaxaca, Puebla, Tacubaya, Tucson, and Sverdlovsk), 19h. (Hukuoka B), 20h. (Sverdlovsk, Tacubaya, Irkutsk, De Bilt, Kew, Strasbourg, Paris, Copenhagen, Pulkovo, and near Tchimkent), 21h. (Vladivostok, near Nagoya, Amboina, Tashkent (2), Sverdlovsk (2), Irkutsk, Christchurch, New Plymouth, Bunnythorp, and Wellington), 22h. (Tacubaya), 23h. (Sverdlovsk, Tacubaya (2), and Tashkent).

June 11d. 10h. 57m. 33s. Epicentre 50°·8N. 3°·6E.

O. Somville.

The earthquake in Belgium, 11th June, 1938. See Annales de l'Observatoire Royal de Belgique 3e Serie Tome II, 1939, pp. 1-16.

C. Charlier and L. Poncelet.

Interpretations of some records obtained from the earthquake of 11th June, 1938.

Extracts of the Bulletin " Ciel et Terre," No. 5, May, 1940. Casualties and damage in Belgium, in Flanders, Brabant, and Hainaut, in France, at Tourcoing and Lille. Felt in the North of France near Paris, in England, the Low Country, and West Germany.

Epicentre Belgium 50°47′N. 3°35′E. (Uccle).
Depth 50kms. (Uccle).

$A = +\cdot6333$, $B = +\cdot0398$, $C = +\cdot7728$; $\delta = -13$; $h = -6$;
$D = +\cdot063$, $E = -\cdot998$; $G = +\cdot771$, $H = +\cdot049$, $K = -\cdot635$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Uccle		0·5	90	i 0 13a	− 1	i 0 20	− 3	—	—	—
De Bilt		1·6	37	i 0 30a	0	i 0 55	+ 4	—	—	1·0
Paris		2·1	200	i 0 38	+ 1	—	—	i 0 43	P_g	1·1
Kew		2·2	285	i 0 45	P_g	i 1 5	− 1	i 1 23	S_g	—
Oxford		3·2	288	e 0 57	P*	i 1 29	− 3	—	—	—
Strasbourg		3·5	127	e 0 55k	− 2	1 48	S*	i 1 2	P*	—
Karlsruhe		3·6	117	e 0 59	+ 1	—	—	—	—	e 1·8
Besançon		3·9	155	e 1 9	P*	i 2 9	S_g	—	—	—
Jersey		4·0	249	e 1 2	− 2	i 1 47	− 5	i 1 10	P*	—
Göttingen		4·1	77	i 1 3	− 2	i 1 49	− 6	i 1 11	P*	e 2·3
Basle		4·2	139	e 1 5	− 2	e 1 53	− 4	e 1 13	P*	—
Stuttgart		4·2	114	e 1 5k	− 2	i 2 0	+ 3	e 1 13	P*	2·2
Ebingen		4·4	125	e 1 27	P_g	e 2 6	+ 4	i 2 17	S*	—
Neuchatel		4·4	149	e 1 8	− 2	e 1 56	− 6	—	—	—
Zurich		4·7	135	e 1 13	− 1	e 2 10	0	—	—	—
Hamburg		4·8	51	e 1 12	− 3	i 2 5	− 7	e 1 21	P*	—
Stonyhurst		4·8	311	1 25	P*	i 2 31	S*	1 40	P_g	—
Bidston		4·9	305	i 1 32	P*	i 2 1	−14	i 1 42	P_g	—
Jena		5·0	85	i 1 17	− 1	i 2 14	− 4	i 1 27	P*	e 2·5
Ravensburg		5·0	125	e 1 17	− 1	e 2 21	+ 3	e 2 39	S*	—
Durham		5·1	324	e 1 18	− 2	i 2 25	+ 5	i 1 41	P_g	—
Puy de Dôme		5·1	185	e 1 30	P*	e 2 38	S*	—	—	—
Cheb		5·6	86	e 2 10?	P_g	e 2 35	+ 2	—	—	e 2·7
Chur		5·6	133	e 1 25	− 2	—	—	—	—	—
Potsdam		6·1	71	e 1 27	− 7	i 2 47	+ 2	i 2 58	S*	—
Moncalieri		6·4	153	2 2	P_g	3 39	S_g	—	—	—
Edinburgh		6·5	324	—	—	e 2 48	− 7	i 3 27	S*	—
Rathfarnham Castle		6·6	296	e 1 25	−16	i 2 30	−28	—	—	i 3·5
Prague		7·0	91	e 1 47	+ 1	e 3 22	+14	—	—	—
Aberdeen		7·2	335	2 23	P_g	3 47	S*	2 59	P_g	—
Copenhagen		7·2	44	i 1 44	− 5	—	—	—	—	—
Marseilles		7·5	170	—	—	i 3 16	− 4	e 3 40	S*	—
Padova		7·7	130	e 1 1	−55	3 55	S*	—	—	—
Triest		8·5	123	e 2 31	P*	i 4 27	S*	—	—	—
Florence		8·7	141	2 27	+17	4 43	S_g	—	—	—
Bergen		9·6	5	4 4	S	(4 4)	− 8	5 27	S_g	—
Ogyalla	E.	10·0	102	4 46	S	(4 46)	+24	e 5 10	S*	—
Budapest		10·7	102	1 1	?	4 50	+11	—	—	—
Kecskemet	Z.	11·3	104	e 4 51	S	(e 4 51)	− 3	—	—	—
Upsala		12·1	36	—	—	e 5 23	+ 9	—	—	—
Toledo		12·2	209	e 2 53	− 5	e 5 6	−10	—	—	—
Malaga		15·2	205	—	—	e 6 23	− 5	i 6 41	PP	7·6
San Fernando	N.	16·0	210	—	—	e 7 55	SSS	—	—	—
Moscow		20·8	63	e 4 42	− 3	e 8 46	+13	—	—	10·0

For Notes see next page.

NOTES TO JUNE 11d. 10h. 57m. 33s.

Additional readings :—
Kew iP* = +0m.52s., iP$_g$ = +0m.57s., iS* = +1m.31s., iS$_g$ = +1m.38s.
Strasbourg iP* = +1m.8s., i = +1m.12s., iS$_g$N = +1m.53s., iN = +1m.58s.
Jersey i = +1m.16s. and +2m.0s., iS$_g$ = +2m.13s.
Göttingen iS* = +1m.44s.
Basle eS$_g$ = +2m.12s.
Stuttgart eP$_g$ = +1m.19s. and +1m.23s., i = +1m.27s., iS = +1m.49s., i = +2m.9s.
Ebingen iS$_g$ = +2m.25s.
Hamburg eN = +1m.48s., eEN = +2m.45s., iN = +3m.8s.
Bidston i = +1m.47s.
Stonyhurst i = +2m.5s., iS$_g$ = +2m.40s.
Jena eN = +2m.10s. and +2m.25s.
Ravensburg eS$_g$ = +2m.45s., i = +2m.52s.
Durham iEN = +1m.58s., iE = +2m.7s., iSEN = +2m.12s., iS$_g$EN = +2m.42s., iEN = +2m.48s., +2m.57s., and +3m.17s.
Cheb e = +2m.24s.
Potsdam e = +2m.39s., iN = +3m.9s., e = +3m.16s.
Edinburgh e = +2m.43s., i = +3m.2s., +3m.33s., +3m.36s., +3m.46s., +3m.49s., +4m.1s., and +4m.10s.
Aberdeen S* = +4m.14s., S$_g$ = +5m.24s.
Marseilles e = +3m.28s., i = +4m.7s., SS = +4m.19s., i = +4m.27s., i = +4m.42s., +4m.50s., and +5m.6s.
Ogyalla PN = +4m.52s., iN = +6m.22s., SE = +6m.52s., iS = +7m.4s.
Budapest iN = +5m.37s. and +5m.44s., iN = +6m.1s., +6m.9s., +6m.18s., +6m.31s., +6m.48s., +7m.5s., and +7m.20s.
Kecskemet eZ = +6m.3s., +7m.1s., and +7m.37s.
Toledo e = +5m.36s., +6m.0s., and +6m.45s., i = +6m.54s. and +7m.3s.
San Fernando eSN = +9m.40s.
Long waves were also recorded at Almeria, Sofia, Irkutsk, Baku, Sverdlovsk, Grozny, Pulkovo, and Hof.

June 11d. 13h. 8m. 58s. Epicentre 50°·8N. 3°·6E. (as at 10h.).

A = +·6333, B = +·0398, C = +·7728 ; δ = −13 ; h = −6.

		△	Az.	P.	O−C.	S.	O−C.	Supp.
		°	°	m. s.	s.	m. s.	s.	m. s.
Uccle		0·5	90	0 14	0	i 0 21	− 2	— —
De Bilt		1·6	37	e 0 38	P$_g$	—	—	— —
Paris		2·1	200	e 0 49	P$_g$	—	—	— —
Kew		2·2	285	i 0 25	−13	i 1 24	S$_g$	— —
Strasbourg		3·5	127	—	—	e 1 56	S$_g$	— —
Karlsruhe		3·6	117	—	—	e 2 3	S$_g$	— —
Göttingen		4·1	77	e 1 5	0	e 1 49	− 6	e 2 9 S*
Basle		4·2	139	e 1 33	P$_g$	—	—	— —
Stuttgart		4·2	114	—	—	e 2 2	+ 5	e 2 16 S$_g$
Neuchatel		4·4	149	e 1 8	− 2	—	—	— —
Jena	N.	5·0	85	—	—	e 2 14	− 4	— —
Puy de Dôme		5·1	185	—	—	e 2 59	S$_g$	— —

Strasbourg also gives e = +2m.11s.

June 11d. Readings also at 1h. (Tucson, Pasadena, Riverside, Mount Wilson, Copenhagen, Sverdlovsk, Weston, near Nagoya, and Fordham), 2h. (Tiflis and Bucharest), 4h. (Moncalieri and Amboina (2)), 5h. (La Jolla, Tinemaha, Apia, Sverdlovsk, Mount Wilson, Riverside, Pasadena, Tucson, Paris, and Strasbourg), 6h. (Amboina, Grozny, and Tiflis (2)), 7h. (Grozny and Tiflis), 9h. (Tiflis, Amboina (2), Sverdlovsk, Ksara, Pulkovo, Baku, Irkutsk, and Vladivostok), 10h. (Potsdam, De Bilt, Tacubaya, Tiflis, Grozny (2), Paris, Strasbourg, and Copenhagen), 11h. (Amboina (2)), 12h. (Kew and Amboina), 13h. (Tananarive and Scoresby Sund), 14h. (Amboina), 15h. (Balboa Heights, La Paz, Batavia, Grozny, Tiflis, and Malabar), 16h. (Triest and Brisbane), 17h. (Ksara, Brisbane, Amboina, Philadelphia, Melbourne (2), Sydney, Samarkand, Riverview (2), and Adelaide (2)), 18h. (Harvard, Tiflis, Copenhagen (2), Paris, Strasbourg, Tucson, Pasadena, and Riverside), 19h. (Perth and Malabar), 20h. (Berkeley Branner, Fresno, and Lick).

June 12d. 2h. 33m. 9s. Epicentre 25°·3N. 125°·2E. (as on 1938 June 10d.).

$A = -\cdot5218$, $B = +\cdot7396$, $C = +\cdot4250$; $\delta = -9$; $h = +3$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Zi-ka-wei	E	6·8	331	i 2 45	P_g	i 3 3	0	i 3 59	S_g	—
Hukuoka B		9·4	27	e 2 32	+14	e 5 37	S_g	—	—	—
Hong Kong		10·6	256	(2 8)	−28	2 8	P	—	—	—
Manila		11·4	201	3 2	+15	6 0	L	—	—	(6·0)
Phu-Lien		17·7	259	e 4 8	− 2	—	—	—	—	—
Vladivostok		18·6	15	i 4 19	− 2	i 7 51	+ 5	—	—	e 9·2
Irkutsk		31·3	334	e 6 15	− 9	e 11 51	+20	7 45	PPP	18·8
Andijan		46·2	303	e 9 33	+65	—	—	—	—	e 27·8
Sverdlovsk		55·3	323	9 31	− 7	17 16	− 5	29 51	L_q	34·2
Baku		63·3	304	—	—	e 25 41	SSS	—	—	e 35·7
Grozny		65·7	308	e 10 47	− 1	—	—	—	—	—
Tiflis		66·8	306	e 10 47	− 9	e 19 37	−11	i 13 13	PP	e 35·8
Moscow		68·2	322	—	—	28 10	SSS	—	—	36·3
Ksara		75·8	300	e 17 44	?	25 37	SS	—	—	—
Copenhagen		81·3	328	—	—	22 41	+11	—	—	43·8

Additional readings:—
Zi-ka-wei eE = 2h.29m.30s., 1E = +2m.51s.
Hong Kong P? = 2h.32m.10s.
Irkutsk e = +9m.17s., +14m.6s., and +15m.41s.
Baku e = +30m.35s.
Tiflis eE = +27m.0s.
Moscow e = +32m.2s.
Long waves were also recorded at Pulkovo, De Bilt, Bucharest, Uccle, Edinburgh, Prague, Puy de Dôme, Paris, Strasbourg, Hamburg, Cheb, Potsdam, Upsala and Taikyu.

June 12d. 7h. Local shocks only recorded by Imperial University of Japan:—

Kamakura P = 48m.26s., S = 49m.2s.
Kiyosumi P = 48m.26s., S = 48m.57s.
Koyama P = 48m.26s., S = 48m.39s.
Yosiwara P = 48m.26s., S = 49m.8s.
Titibu P = 48m.26s., S = 48m.58s.
Mitaka P = 48m.33s., S = 49m.0s.
Tokyo Imp. Univ. P = 48m.33s., S = 48m.59s.
Tukubasan P = 48m.33s., S = 48m.52s.
Komaba P = 48m.38s., S = 49m.4s.
Susaki P = 48m.40s., S = 49m.33s.

June 12d. 13h. 25m. 40s. Epicentre 50°·8N. 3°·6E. (as on 1938 June 11d.).

$A = +\cdot6333$, $B = +\cdot0398$, $C = +\cdot7728$; $\delta = -13$; $h = -6$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Uccle		0·5	90	i 0 13	− 1	i 0 20	S*	—	—	—
De Bilt		1·6	37	e 0 32	P_g	e 0 55	S_g	—	—	—
Paris		2·1	200	e 0 44	P_g	—	—	—	—	—
Kew		2·2	285	i 0 52	P_g	i 1 1	− 5	1 15	S_g	—
Oxford		3·2	288	i 0 43	− 9	—	—	—	—	—
Strasbourg		3·5	127	e 1 20?	P_g	i 1 55	S_g	—	—	—
Karlsruhe		3·6	117	—	—	e 1 53	S*	—	—	—
Jersey		4·0	249	—	—	i 1 47	− 5	2 13	S_g	—
Göttingen		4·1	77	i 1 4	− 1	e 1 47	− 8	—	—	e 2·2
Basle		4·2	139	e 1 7	0	e 1 55	− 2	—	—	—
Stuttgart		4·2	114	e 1 5	− 2	e 1 49	− 8	e 2 14	S_g	—
Neuchatel		4·4	149	e 1 7	− 3	e 1 55	− 7	—	—	—
Zurich		4·7	135	e 1 14	0	e 2 12	+ 2	—	—	—
Jena	N.	5·0	85	e 1 50	P_g	e 2 12	− 6	—	—	e 2·7
Durham		5·1	324	—	—	i 2 26	+ 6	i 2 52	S_g	—
Puy de Dôme		5·1	185	e 3 12	?	i 3 59	?	—	—	—
Chur		5·6	133	e 1 25	− 2	—	—	—	—	—
Padova		7·7	130	1 20	−36	—	—	—	—	—

For Notes see next page,

NOTES TO JUNE 12d. 13h. 25m. 40s.

Additional readings :—
De Bilt iZ = +36s. and +40s.
Kew i = +1m.23s. and +1m.28s., iZ = +1m.42s. and +1m.50s.
Jersey i = +2m.16s.
Stuttgart iS_g = +2m.18s., i = +2m.21s.

June 12d. Readings also at 0h. (Nagoya), 1h. (Mizusawa), 3h. (Berkeley), 5h. (Pasadena, Mount Wilson, Riverside, Riverview, Sydney, and Brisbane), 6h. (Santiago (2)), 7h. (Melbourne, Sydney, Vladivostok, Brisbane, Riverview, Riverside, Mount Wilson, Mizusawa, Nagoya (2), and Adelaide), 8h. (Honolulu, Ksara, Baku (2), Sverdlovsk (2), Irkutsk (2), De Bilt, and Mizusawa), 9h. (Uccle, Adelaide, Riverview, Sydney, Brisbane, and Tiflis), 12h. (Moncalieri), 13h. (Sydney, Riverview, and Brisbane), 14h. (Tiflis), 16h. (Tiflis), 17h. (Amboina), 18h. (Branner), 19h. (Samarkand (2) and Tchimkent), 20h. (Amboina and Chur).

June 13d. 6h. 54m. 42s. Epicentre 3°·3S. 126°·5E. (as on 9d.).

A = −·5938, B = +·8025, C = −·0572 ; $\delta = -12$; $h = +7$.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
~~Amboina~~	~~1·7~~	~~103~~	~~i 0 28~~	~~− 3~~	~~i 0 48~~	~~− 6~~	—	—	—
Manila	18·6	344	i 4 21k	0	7 53	+ 7	—	—	9·7
Batavia	19·8	263	4 35	0	8 29	+16	—	—	—
Medan	28·6	285	e 6 7	+ 7	—	—	i 7 7	PPP	—
Brisbane	34·9	136	e 8 0	PP	e 14 36	SS	—	—	—
Riverview	38·1	146	e 8 54	PP	—	—	—	—	—
Melbourne	38·3	156	—	—	i 13 51	+32	—	—	20·6
Vladivostok	46·5	6	i 8 28	− 3	—	—	—	—	i 15·5
Almata	64·3	323	10 39	0	—	—	—	—	—
Andijan	66·0	318	10 51	+ 1	19 42	+ 4	—	—	—
Tashkent	68·3	318	11 5	0	20 4	− 2	—	—	—
Tchimkent	68·5	319	e 11 5	− 1	—	—	—	—	—
Sverdlovsk	79·8	330	i 12 10	− 2	e 22 45	+31	i 15 18	PP	39·3
Baku	82·0	312	e 12 23	0	e 22 58	+21	—	—	e 43·3
Tiflis	86·0	312	e 12 44	+ 1	e 23 39	+22	e 24 44	PS	e 47·3
Moscow	92·1	325	e 13 10	− 2	e 24 14	+ 1	e 16 52	PP	—
Ksara	92·3	303	e 13 13	0	e 25 38	PS	16 55	PP	46·3
De Bilt	111·4	325	e 19 20	PP	—	—	—	—	e 68·3

Additional readings :—
Batavia iEN = +4m.42s., iN = +5m.44s.
Medan iE = +8m.35s.
Brisbane iN = +18m.18s., iE = +18m.30s.
Moscow e = +16m.58s., +18m.51s., and +23m.7s.

June 13d. Readings also at 1h. (Samarkand), 2h. (Samarkand, Strasbourg, De Bilt, and Uccle (2)), 3h. (Manila, Brisbane (2), Sydney (2), Riverview (2), Melbourne (2), Baku, Vladivostok, Sverdlovsk, Tiflis, Moscow, Ksara, Paris, Potsdam, Pulkovo, Irkutsk, Riverside, Honolulu, Perth (2), Adelaide (2), Sitka, Tucson, Pasadena (2), Mount Wilson (2), Sydney (2), Wellington, Stuttgart, Apia, Tashkent, Strasbourg, and De Bilt), 4h. (Harvard, Samarkand, Philadelphia, Puy de Dôme, and Copenhagen), 10h. (Wellington (2), New Plymouth, Christchurch, Strasbourg, and Andijan), 11h. (Belgrade and Bozeman), 12h. (Santiago and San Javier), 13h. (Huancayo), 14h. (Jena, Göttingen, Andijan, and Stuttgart), 16h. (Tashkent), 17h. (Santiago, San Javier, and Sverdlovsk), 18h. (La Plata and La Paz), 22h. (Batavia), 23h. (Apia).

June 14d. Readings at 2h. (near Bunnythorp, Christchurch, Chatham Ils., Hastings, New Plymouth (2), Stratford, Takaka, Tuai, and Wellington (2) ; Brisbane, Huancayo, Ksara, and La Paz), 3h. (Sverdlovsk, Tashkent, Tiflis, Samarkand, De Bilt, Strasbourg, and Balboa Heights), 4h. (Mount Wilson, Pasadena, Tucson, Paris, and near New Plymouth), 5h. (Bozeman and near Nagoya), 7h. (Samarkand), 8h. (Istanbul, Kew, and La Paz), 9h. (near Manila), 10h. (Tiflis, Ksara, Bucharest, Helwan, and Sofia), 13h. (near Andijan), 15h. (Andijan and near Almata), 16h. (Tchimkent, Andijan, Sofia, and near Almata), 17h. (Almata and Andijan), 18h. (Sverdlovsk. Tashkent, near Berkeley, Branner, Lick, and near Harvard), 20h. (Amboina), 21h. (Berkeley, Branner, and Lick).

June 15d. 7h. 43m. 53s. Epicentre 31°·5S. 71°·0W.

Felt in Chile at Iquique, Valparaiso, Antofagasta, Copiapo, and in Argentine at San Juan and Mendoza. Epicentre 32°·8S. 71°·9W. (Strasbourg). Depth 70kms. (Pasadena).

See Annales de l'Institut de Physique du Globe de Strasbourg, Tome III, 2e partie, Seismologie, Mende, 1941, p. 45.

$A = +\cdot2781$, $B = -\cdot8077$, $C = -\cdot5199$; $\delta = +1$; $h = +3$;
$D = -\cdot945$, $E = -\cdot326$; $G = -\cdot169$, $H = +\cdot492$, $K = -\cdot854$.

A focus at the base of the superficial layers has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Santiago		2·0	171	0 36	+ 4	1 1	+ 5	—	—	—
Copiapo		4·2	7	1 9	+ 6	2 3	+11	—	—	—
San Javier		4·2	189	1 5	+ 2	1 55	+ 3	—	—	—
Montezuma		9·0	13	e 2 28	+17	e 3 57	+ 5	—	—	4·1
La Plata		11·4	111	2 48	+ 4	4 49	− 2	—	—	5·6
La Paz		15·2	10	i 3 36	+ 2	i 6 31	+ 9	i 6 37	SS	8·9
Huancayo		19·8	349	4 32	+ 2	i 8 10	+ 4	4 49	PP	—
Rio de Janeiro		26·1	78	i 5 32	− 1	i 9 58	− 1	—	—	i 11·8
Fort de France		46·9	15	(e 8 25)	− 4	e 8 25	P	—	—	—
San Juan		49·8	7	e 8 43	− 9	15 47	−11	e 10 41	PP	e 20·7
Cape Girardeau		70·6	346	e 11 9	− 5	e 20 17	− 7	e 11 24	pP	—
Philadelphia		71·2	358	11 17	− 1	e 20 18	−13	20 29	sS	—
Fordham		72·0	359	i 11 21	− 1	i 20 40	0	—	—	—
St. Louis	N.	72·0	345	e 11 16	− 6	i 20 32	− 8	i 11 34	pP	—
Florissant		72·2	345	i 11 25	+ 2	e 20 41	− 1	i 11 41	pP	—
Weston		73·5	0	i 11 31a	0	e 21 48	+51	i 11 55	pP	—
Harvard		73·6	0	e 11 30	− 2	e 20 59	+ 1	e 21 27	PS	—
Tucson		73·8	326	e 11 32	− 1	e 20 54	− 7	i 11 51	pP	e 35·6
Williamstown		73·9	0	i 11 32	− 1	e 21 6	+ 4	i 11 48	pP	—
Buffalo		74·4	356	i 11 36	0	21 8	+ 1	i 11 52	pP	—
Ottawa		76·6	357	e 11 49	0	—	—	—	—	21·1
Riverside	Z.	78·4	323	e 11 58	− 1	—	—	i 12 16	pP	—
Mount Wilson		79·0	323	i 12 1	− 1	—	—	i 12 19	pP	—
Pasadena		79·0	323	i 12 1	− 1	e 21 58	+ 1	i 12 18	pP	e 37·1
Haiwee	E.	80·4	324	e 12 9	− 1	e 22 11	− 1	—	—	—
Tinemaha		81·3	324	e 12 18	+ 4	i 22 24	+ 3	—	—	—
Paris		103·3	41	e 18 7?	PP	—	—	—	—	51·1
Strasbourg		106·2	42	e 18 34	PKP	—	—	—	—	e 56·1
De Bilt		106·5	39	e 18 34	PP	—	—	—	—	e 53·1
Stuttgart		107·1	43	e 18 37	PP	e 24 7	[−43]	28 7	PS	e 55·1
Potsdam		110·9	40	e 19 1	PP	e 28 37	PS	—	—	e 58·1
Ksara		119·7	67	i 20 11	PP	e 36 37	SS	e 22 47	PPP	—
Moscow		125·6	40	e 18 58	[0]	—	—	e 20 44	PP	e 64·6
Tiflis	Z.	128·5	60	e 21 9	PP	e 31 27	PS	—	—	e 63·1
Grozny		129·5	58	e 21 8	PP	—	—	—	—	—
Sverdlovsk		138·3	37	i 19 23	[+ 1]	e 40 37	SS	i 22 11	PP	54·1
Tashkent		146·8	61	e 20 39	[+62]	—	—	—	—	e 76·2
Andijan		149·2	63	e 19 47	[+ 6]	—	—	e 24 38	PP	—
Medan	E.	150·6	159	19 56	[+13]	—	—	—	—	—
Irkutsk		158·9	8	e 19 56	[+ 2]	e 44 7?	SS	e 24 10	PP	e 83·1

Additional readings :—
Huancayo iPP = +4m.54s.
San Juan ePcP = +9m.57s., e = +12m.57s. and +18m.30s., eSS = +19m.24s.
Cape Girardeau esSEN = +20m.46s.
Philadelphia P = +11m.31s., esSS = +25m.28s.
St. Louis eN = +17m.47s., esSN = +21m.4s.
Florissant eSZ = +20m.38s., iSZ = +20m.46s., esSE = +21m.11s.
Weston isPZ = +12m.9s.
Buffalo ePP = +14m.14s., e = +19m.21s.
Ksara ePPS = +31m.17s.
Tashkent e = +20m.57s.
Medan iE = +20m.48s.
Irkutsk e = +34m.7s.?, +39m.7s.?, and +50m.7s.?
Long waves were also recorded at Kew and Puy de Dôme.

June 15d. 12h. 40m. 48s. Epicentre 21°·0S. 169°·5E. (as on 1937 June 14d.).

$A = -\cdot 9188$, $B = +\cdot 1703$, $C = -\cdot 3563$; $\delta = +15$; $h = +4$;
$D = +\cdot 182$, $E = +\cdot 983$; $G = +\cdot 350$, $H = -\cdot 065$, $K = -\cdot 934$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·3	244	i 3 42	−10	i 6 54	+ 1	i 4 0	PP	7·9
Apia		19·2	72	e 4 33k	+ 5	e 8 20	SS	e 4 49	PP	—
Riverview		20·6	228	i 4 41	− 2	8 26	− 3	i 4 50	PP	e 10·4
Sydney		20·6	228	i 4 39	− 4	e 8 27	− 2	—	—	e 10·8
Wellington		20·7	169	4 50	+ 6	8 44	+13	i 9 7	SS	10·2
Melbourne		27·0	226	5 40	− 5	10 14	− 8	—	—	12·5
Adelaide		30·5	237	i 7 2	PP	e 11 57	+39	—	—	i 15·3
Perth		48·8	246	—	—	i 18 45	SS	—	—	26·2
Honolulu		52·8	39	—	—	e 17 0	+13	—	—	e 21·9
Manila		59·3	303	10 5	− 1	18 15	+ 1	—	—	—
Vladivostok		72·6	333	i 11 32	+ 1	e 21 3	+ 7	—	—	e 31·5
Berkeley		86·8	48	i 12 48	+ 1	e 23 14	[+ 1]	—	—	—
Pasadena		87·9	53	i 12 53	0	e 23 23	[+ 3]	e 24 45	PS	e 42·2
Mount Wilson		88·1	53	i 12 54	0	—	—	—	—	—
Riverside	z.	88·4	53	i 12 56	+ 1	—	—	—	—	—
Haiwee		89·0	51	e 12 58	0	—	—	—	—	—
Tinemaha		89·2	50	e 13 1	+ 2	—	—	—	—	—
Calcutta	N.	90·2	294	—	—	i 23 58	+ 2	—	—	—
Irkutsk		92·3	326	i 13 26	+13	e 24 17	+ 2	e 16 55	PP	45·2
Tucson		92·7	57	13 16	+ 1	e 23 51	[+ 3]	e 25 45	PS	e 44·3
Sverdlovsk		117·6	324	e 20 52	PP	e 27 54	{+57}	e 36 13	SS	—
Philadelphia		122·4	56	—	—	e 25 59	[+ 1]	e 27 29	SKKS	64·0
Williamstown		123·8	52	i 19 12	[+12]	—	—	—	—	e 69·2
Weston	z.	125·2	52	e 20 53	PP	—	—	—	—	—
San Juan		127·8	83	e 22 23	PKS	—	—	e 23 29	PPP	—
Tiflis	z.	129·4	307	e 22 20	PKS	—	—	—	—	e 74·2
Scoresby Sund		130·0	5	22 36	PKS	—	—	—	—	67·2
Ksara		137·2	297	e 19 28	[+ 3]	—	—	e 22 47	PP	—
Potsdam		143·8	336	19 12?	[−25]	—	—	—	—	—
De Bilt		146·7	343	i 19 44	[+ 2]	—	—	—	—	e 80·2
Stuttgart		148·1	336	e 19 45	[+ 1]	e 30 12	{+ 5}	—	—	89·2
Uccle		148·1	343	e 19 48	[+ 4]	—	—	—	—	—
Kew		148·6	348	e 19 48	[+ 3]	—	—	—	—	e 66·2
Strasbourg		148·8	337	e 19 47	[+ 2]	e 42 48	SS	—	—	—
Chur		149·5	335	e 19 42	[− 4]	—	—	—	—	—
Zurich		149·5	336	e 19 32	[−14]	—	—	—	—	—
Basle		149·8	336	e 19 44	[− 3]	—	—	—	—	—
Neuchatel		150·4	336	e 19 56	[+ 8]	—	—	—	—	—
Paris		150·4	342	e 19 50	[+ 2]	—	—	e 23 12?	PP	80·2

Additional readings :—
Brisbane iPPN = +4m.6s., iEN = +5m.36s., iSE = +7m.0s.
Apia e = +8m.39s.
Riverview e?E = +3m.50s., eSN = +8m.31s., iE = +8m.36s.
Wellington i = +5m.32s. and +9m.38s., P_cS = +12m.33s., S_cS = +16m.13s.
Perth eS? = +22m.14s.
Irkutsk e = +16m.55s., +17m.55s., and +22m.27s.
Tucson eS = +24m.28s.
Ksara ePSKS = +32m.52s., ePPS = +35m.32s.
Stuttgart eZ = +20m.5s., e = +20m.36s., eE = +24m.43s., eZ = +29m.36s.
Strasbourg eZ = +20m.19s. and +20m.46s.
Long waves were also recorded at Moscow.

June 15d. 20h. 13m. 40s. Epicentre 21°·0S. 169°·5E. (as at 12h.).

$A = -\cdot 9188$, $B = +\cdot 1703$, $C = -\cdot 3563$; $\delta = +15$; $h = +4$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·3	244	i 3 44	− 8	i 6 56	+ 3	i 4 2	PP	7·7
Apia		19·2	72	—	—	e 8 6	+ 7	—	—	e 9·7
Riverview		20·6	228	e 3 49	−54	i 8 35	+ 6	e 4 37	PP	e 11·0
Sydney		20·6	228	e 3 51	−52	e 8 25	− 4	—	—	e 10·6
Wellington		20·7	169	e 4 31	−13	8 38	+ 7	i 9 1	SS	12·5
Melbourne		27·0	226	i 5 43	− 2	i 10 15	− 7	—	—	i 14·3
Adelaide		30·5	237	e 4 19	?	i 11 35	+17	—	—	e 16·5
Manila		59·3	303	10 2	− 4	18 15	+ 1	—	—	—
Vladivostok		72·6	333	e 11 34	+ 3	(e 20 38)	−18	—	—	e 20·6
Pasadena		87·9	53	e 12 50	− 3	—	—	—	—	e 47·3
Mount Wilson	Z.	88·1	53	e 12 51	− 3	—	—	—	—	—
Riverside		88·4	53	e 12 52	− 3	—	—	—	—	—
Haiwee	E.	89·0	51	e 14 4	+66	—	—	—	—	—
Calcutta	N.	90·2	294	—	—	i 24 6	+10	—	—	—
Irkutsk		92·3	326	e 13 36	+23	e 24 9	− 6	—	—	45·3
Tucson		92·7	57	13 14k	− 1	23 52	[+ 4]	—	—	e 45·7
Butte		96·9	43	i 21 19	?	—	—	—	—	—
Bozeman		97·7	44	e 21 6	?	—	—	—	—	—
Tashkent		111·0	308	—	—	e 34 56	SS	e 38 58	SSS	e 57·4
Sverdlovsk		117·6	324	e 20 10	PP	e 27 54	{+56}	—	—	55·3
Tiflis	Z.	129·4	307	e 20 36	PP	39 20?	SSP	—	—	e 65·3
Ksara		137·2	297	e 19 53	[+28]	e 29 52	{+48}	e 23 2	PP	—
De Bilt		146·7	343	e 19 41	[− 1]	—	—	—	—	e 82·3
Stuttgart		148·1	336	e 19 48	[+ 4]	—	—	—	—	e 88·3
Uccle		148·1	343	e 19 46	[+ 2]	—	—	—	—	—
Strasbourg		148·8	337	e 19 51	[+ 6]	e 26 38	[−14]	—	—	—
Paris		150·4	342	e 20 18	[+30]	—	—	—	—	82·3
Moncalieri		151·8	333	e 7 53	?	—	—	—	—	—
Granada		162·8	342	e 21 24	?	—	—	e 25 12	PP	—
Malaga		163·5	342	e 21 15	[+71]	e 28 15	PPP	25 0	PP	—

Additional readings :—
Brisbane iE = +5m.2s.
Riverview eN = +4m.41s. and +9m.36s.
Wellington P_cP = +6m.7s., P_cS = +9m.31s., i = +10m.5s., SS = +11m.23s., L_q = +11m.34s., S_cS = +13m.34s.
Pasadena iZ = +13m.54s.
Mount Wilson iZ = +13m.54s. and +14m.4s.
Riverside eZ = +13m.56s. and +14m.9s.
Tashkent e = +49m.26s., +50m.44s., and +53m.4s.
Sverdlovsk e = +28m.54s.
Tiflis eZ = +22m.45s. and +29m.12s.
Malaga ePS = +35m.48s.
Long waves were also recorded at Harvard.

June 15d. Readings also at 1h. (Tashkent and Andijan), 2h. (Mizusawa, Andijan, Vladivostok, Sverdlovsk, Manila, and Medan), 3h. (Tiflis, Ksara, Almata, Tchimkeut, Andijan (4), Vladivostok, Sverdlovsk, and Tashkent), 4h. (Irkutsk, Tashkent, Medan, Vladivostok, and Phu-Lien (2)), 5h. (Manila, Williamstown, Weston, Harvard, Fordham, Sverdlovsk, and Tashkent), 7h. (Samarkand), 8h. (Samarkand), 16h. (Wellington), 19h. (Nagoya), 22h. (Mount Wilson, Andijan, Riverside, and Almata).

June 16d. 1h. 48m. 7s. Epicentre 2°·5S. 122°·0E. (as on 1938 May 8d.).

$A = -\cdot5294$, $B = +\cdot8473$, $C = -\cdot0433$; $\delta = +6$; $h = +7$;
$D = +\cdot848$, $E = +\cdot530$; $G = +\cdot023$, $H = -\cdot037$, $K = -\cdot999$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina	N.	6·3	101	e 1 13	−23	—	—	—	—	—
Batavia		15·5	256	i 3 51	+ 9	—	—	—	—	i 8·0
Manila		17·0	356	4 0	− 1	7 56	L	—	—	(7·9)
Medan		24·1	285	e 5 24	+ 6	9 31	− 3	e 9 56	SS	i 14·7
Hong Kong		25·8	346	5 33	− 1	10 3	+ 1	5 48	PP	12·8
Phu-Lien		27·6	328	e 5 50	− 1	—	—	—	—	—
Perth		29·9	190	i 9 57	?	i 12 0	+51	—	—	—
Adelaide		35·8	156	—	—	e 13 27	+46	—	—	23·2
Brisbane		38·7	133	—	—	—	—	i 17 11	SS	i 21·2
Melbourne		41·0	151	—	—	e 14 49?	+50	i 17 56	SSS	i 24·1
Calcutta	N.	41·2	310	—	—	i 13 51	−11	—	—	i 29·6
Riverview		41·4	142	—	—	e 16 23	SS	e 18 29	SSS	—
Colombo	E.	43·1	283	—	—	e 13 53?	−37	—	—	—
Agra	E.	51·6	309	e 9 8	− 2	16 18	−13	—	—	—
Irkutsk		56·6	348	e 9 49	+ 2	e 17 33	− 5	—	—	e 26·9
Tashkent		64·7	319	10 33	− 9	i 19 8	−14	—	—	e 34·0
Sverdlovsk		76·9	331	i 12 2	+ 6	e 21 34	− 9	—	—	—
Tiflis		82·1	313	e 12 28	+ 4	e 22 41	+ 3	—	—	—
Ksara		88·1	303	i 13 3a	+ 9	e 23 25	[+ 4]	—	—	—
Helwan		91·8	300	13 18	+ 7	—	—	i 16 53	PP	—
Toledo		118·7	314	e 20 55	PP	—	—	—	—	—

Additional readings :—
Hong Kong SS = +10m.57s.
Perth i = +23m.41s.
Adelaide i = +14m.30s., e = +16m.4s., i = +19m.22s.
Brisbane iE = +17m.17s.

June 16d. 2h. 15m. 14s. Epicentre 27°·7N. 129°·4E.

Strong at Yakusima, Naha, slight at Kagosima and Miyazaki.

Epicentre, China Sea, South of Amanis-Oosima 27°·7N. 129°·4E.

Macroseismic radius greater than 300km. Shallow. See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1938, Tokyo, 1940, pp. 43-46. Macroseismic chart, p. 44.

$A = -\cdot5628$, $B = +\cdot6851$, $C = +\cdot4624$; $\delta = -8$; $h = +3$;
$D = +\cdot773$, $E = +\cdot635$; $G = -\cdot294$, $H = +\cdot357$, $K = -\cdot887$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nake	0·7	7	0 18a	+ 1	0 29	+ 1	—	—	—
Naha	2·1	226	1 12	S	(1 12)	Sg	—	—	—
Yakusima	2·9	19	0 49a	+ 1	1 31	S*	—	—	—
Kagosima	3·9	15	1 8a	P*	2 3	Sg	—	—	—
Miyazaki	4·6	22	1 13a	+ 1	2 19	S*	—	—	—
Miyakozima	4·7	233	1 15k	+ 1	2 25	S*	—	—	—
Nagasaki	5·0	4	1 20a	+ 2	2 22	+ 4	—	—	—
Unzendake	5·1	8	1 27a	P*	2 44	Sg	—	—	—
Kumamoto	5·2	12	1 24a	+ 3	2 33	S*	—	—	—
Isigakizima	5·8	236	1 25	− 4	3 0	S*	—	—	—
Ooita	5·8	19	1 36a	P*	2 54	S*	—	—	—
Hukuoka B	5·9	9	i 1 32a	+ 1	i 2 55	S*	—	—	—
Izuka	6·0	11	1 34	+ 2	2 53	+10	—	—	—
Simidu	6·0	31	1 29	− 3	3 1	S*	—	—	—
Uwazima	6·2	26	1 34a	− 1	3 6	S*	—	—	—
Simonoseki	6·3	12	1 38	+ 2	4 14	?	—	—	—
Ituhara	6·4	0	1 43a	+ 5	3 9	S*	—	—	—
Koti	6·8	30	1 42	− 2	e 3 1	− 2	i 3 34	S*	4·4
Matuyama	6·8	25	1 42	− 2	3 28	S*	—	—	—
Muroto	6·9	35	1 43a	− 2	3 52	Sg	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hirosima	7·1	21	1 46$_a$	− 2	3 24	S*	—	—	—
Husan	7·4	358	1 55$_k$	+ 3	3 23	+5	—	—	—
Hamada	7·5	18	1 52	− 1	3 42	S*	—	—	—
Tadotu	7·5	29	1 50	− 3	3 16	−4	—	—	—
Taihoku	7·5	251	e 2 0	+ 7	3 49	S*	—	—	—
Tokusima	7·7	34	1 57$_a$	+ 1	3 40	S*	—	—	—
Zi-ka-wei	7·8	298	i 2 7	+ 9	3 27	− 1	i 2 23	P*	7·3
Siomisaki	7·9	42	1 56$_a$	− 3	4 21	S_g	—	—	—
Okayama	8·0	28	1 50	−10	3 9	−24	—	—	—
Sumoto	8·1	35	2 0	− 2	4 19	S_g	—	—	—
Taikyu	8·2	356	2 6$_a$	+ 3	3 59	S*	—	—	—
Wakayama	8·2	36	2 0	− 3	3 23	−15	—	—	—
Kobe	8·5	34	2 6$_a$	− 1	4 30	S_g	—	—	—
Sakai	8·5	22	2 9	+ 2	3 58	+13	—	—	—
Osaka	8·6	35	2 7$_a$	− 2	4 26	S*	—	—	—
Syuhurei	8·6	352	2 12	+ 3	4 11	S*	—	—	—
Taityu	8·6	248	2 6	− 3	4 6	S*	—	—	—
Yagi	8·7	37	2 8$_a$	− 2	4 22	S*	—	—	—
Arisan	8·8	244	2 11	0	4 16	S*	—	—	—
Taito	8·9	238	2 8	− 4	3 18	?	—	—	—
Toyooka	9·0	29	2 15$_a$	+ 2	4 34	S*	—	—	—
Kyoto	9·1	35	2 13$_a$	− 1	4 27	S*	—	—	—
Miyadu	9·2	31	2 15	− 1	4 42	S*	—	—	—
Tu	9·3	39	2 9	− 8	5 5	S_g	—	—	—
Kameyama	9·4	39	2 17$_a$	− 1	5 0	S*	—	—	—
Hikone	9·5	36	2 21	+ 1	5 5	S_g	—	—	—
Tainan	9·5	243	2 21	+ 1	5 29	S_g	—	—	—
Kosyun	9·6	236	2 20	− 1	4 28	+16	—	—	—
Ibukisan	9·7	36	2 21	− 1	5 11	S_g	—	—	—
Hokoto	9·8	247	2 27	+ 3	4 34	+17	—	—	—
Gihu	9·9	37	2 26$_a$	+ 1	5 14	S*	—	—	—
Nagoya	9·9	39	i 2 26$_k$	+ 1	5 22	S_g	—	—	—
Hamamatu	10·0	43	2 27$_a$	0	4 43	+21	—	—	—
Keizyo	10·0	349	e 2 32	+ 5	4 32	+10	—	—	—
Zinsen	10·0	349	i 2 30$_a$	+ 3	i 4 36	+14	—	—	i 5·8
Hukui	10·1	33	2 26$_a$	− 2	5 15	S*	—	—	—
Omaesaki	10·2	46	2 28$_a$	− 3	5 51	L	—	—	(5·9)
Hatidyozima	10·5	57	2 33$_a$	− 2	4 59	SSS	—	—	—
Iida	10·6	41	2 34	− 2	5 54	L	—	—	(5·9)
Kanazawa	10·7	32	2 31	− 7	5 31	L	—	—	(5·5)
Numadu	10·9	45	2 36	− 4	6 22	L	—	—	(6·4)
Ito	11·0	46	2 43$_a$	+ 1	4 43	− 4	—	—	—
Hunatu	11·1	44	2 42	− 1	5 6	SS	—	—	—
Kohu	11·1	42	2 42$_a$	− 1	6 15	L	—	—	(6·2)
Toyama	11·1	35	2 42	− 1	5 59	L	—	—	(6·0)
Matumoto	11·2	38	2 45	+ 1	6 2	L	—	—	(6·0)
Mera	11·4	48	2 48	+ 1	5 39	SSS	—	—	—
Nagano	11·6	38	2 47	− 3	6 20	L	—	—	(6·3)
Oiwake	11·6	40	2 48$_a$	− 2	5 37	SSS	—	—	—
Wazima	11·6	31	2 48$_a$	− 2	5 20	SS	—	—	—
Yokohama	11·6	46	2 49$_k$	− 1	5 44	L	—	—	(5·7)
Katuura	11·8	48	2 52	− 1	—	—	—	—	—
Heizyo	11·9	346	i 2 53$_a$	− 1	i 5 57	L	—	—	(i6·0)
Kumagaya	11·9	43	2 54$_a$	0	6 10	L	—	—	(6·2)
Maebasi	11·9	41	2 54	0	6 33	L	—	—	(6·5)
Tokyo, Cen. Met. Ob.	11·9	45	2 55$_a$	+ 1	6 43	L	—	—	(6·7)
Takada	12·0	37	2 34	−21	5 37	SSS	—	—	—
Kakioka	12·5	44	3 1$_a$	− 1	5 35	SS	—	—	—
Utunomiya	12·5	43	3 10	PP	—	—	—	—	—
Tyosi	12·6	48	3 2	− 1	5 27	+ 1	—	—	—
Mito	12·7	44	3 4$_a$	− 1	7 17	L	—	—	(7·3)
Dairen	12·9	332	3 11	+ 4	5 53	SS	—	—	—
Niigata	13·0	36	3 17	PP	—	—	—	—	—
Aidu	13·4	40	3 12	− 2	4 38	−67	—	—	—
Onahama	13·4	44	3 16$_a$	+ 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hukusima		13·6	40	3 16a	− 1	6 17	SSS	—	—	—
Sendai		14·3	40	3 24	− 2	6 9	+ 3	—	—	—
Hong Kong		14·8	252	3 36	+ 4	7 20	L	3 52	PP	(7·3)
Akita		14·9	34	3 32	− 2	7 6	+46	—	—	—
Mizusawa		15·0	38	i 3 35	0	6 41	SS	—	—	14·7
Manila		15·2	213	i 3 39k	+ 1	6 22	− 6	—	—	—
Morioka		15·4	35	3 41a	+ 1	6 46	SS	—	—	—
Vladivostok		15·5	7	e 3 40	− 2	e 6 48	SS	—	—	e 8·3
Miyako		15·9	38	3 41	− 6	6 43	SS	—	—	—
Aomori		16·1	33	3 48	− 1	—	—	—		—
Hatinohe		16·2	35	3 58	+ 8	7 31	SSS	—	—	—
Hakodate		16·8	31	4 0	+ 2	—	—	—	—	—
Mori		17·0	29	4 4a	+ 3	—	—	—	—	—
Muroran		17·4	30	4 4	− 2	—	—	—	—	—
Sapporo		18·1	28	4 13a	− 1	9 58	L	—	—	(10·0)
Obihiro		18·9	32	4 26	+ 2	—	—	—	—	—
Asahigawa		19·2	28	4 29	+ 1	—	—	—	—	—
Haboro		19·4	26	4 22	− 8	—	—	—	—	—
Nemuro		20·4	35	4 38a	− 3	8 41	+16	—	—	—
Palau		20·8	166	4 47	+ 2	8 42	+ 9	—	—	—
Ootomari		21·6	25	4 52	− 2	9 5	+16	—	—	—
Phu-Lien		21·9	257	e 4 55	− 2	e 9 3	+ 9	—	—	11·5
Sikka		24·0	22	5 12	− 5	—	—	—	—	—
Irkutsk		30·9	330	6 18	− 2	11 32	+ 8	—	—	16·8
Amboina		31·2	181	6 22	− 1	—	—	—	—	12·8
Calcutta	N.	37·4	272	i 7 18	+ 2	i 13 25	+20	i 8 38	PP	i 19·8
Medan		37·9	237	7 25	+ 5	i 13 14	+ 1	—	—	e 17·8
Batavia		40·1	216	7 40	+ 1	i 14 1	+15	—	—	23·8
Malabar		40·6	215	7 48	+ 5	13 47	− 7	i 9 33	PP	—
Semipalatinsk		43·4	316	i 8 3	− 3	17 59	SS	—	—	—
Almata		44·7	306	8 16	0	e 18 38	SSS	—	—	24·3
Dehra Dun	N.	44·7	287	e 7 21	−55	e 14 8	−46	e 17 13	SS	i 23·2
Agra		45·3	282	i 8 17	− 4	14 58	− 4	10 19	PP	23·1
Hyderabad		47·9	269	8 33	− 9	15 39	0	18 18	S_eS	23·8
Andijan		48·1	301	8 45	+ 2	e 18 38	SS	—	—	28·8
Tchimkent		50·1	304	8 59	0	e 12 50	?	—	—	—
Tashkent		50·4	302	i 8 56	− 5	i 16 2	−12	—	—	24·0
Colombo	E.	51·2	256	9 6	− 1	16 22	− 3	—	—	26·8
Kodaikanal	E.	51·7	262	i 9 25	+14	i 16 46?	PS	i 21 26	SSS	24·9
Bombay		52·3	274	i 9 16a	+ 1	i 16 53	+13	11 28	PP	25·9
Samarkand		52·3	299	9 15	0	e 19 3	SS	—	—	31·3
Sverdlovsk		55·8	322	i 9 40	− 1	i 17 5	−23	—	—	29·8
Brisbane		59·4	155	i 10 4	− 2	i 18 10	− 5	—	—	—
Perth		60·7	193	—	—	i 18 33	+ 1	—	—	i 32·4
College		62·2	29	10 32	+ 6	i 18 49	− 2	12 53	PP	i 26·2
Adelaide		62·9	171	i 10 30	0	i 18 54	− 6	i 11 9	?	i 26·7
Riverview		64·6	160	e 10 42	+ 1	i 19 22	+ 1	e 19 32	PS	e 26·1
Sydney		64·6	160	e 10 21	−20	i 19 14	− 7	—	—	e 25·7
Baku		65·1	305	i 10 45	0	20 6	PPS	—	—	—
Honolulu		65·7	77	e 10 52	+ 4	e 19 41	+ 7	e 13 31	PP	e 26·9
Melbourne		66·8	167	11 0	+ 4	19 44	− 4	i 13 24	PP	e 34·6
Grozny		67·2	308	10 59	+ 1	19 54	+ 2	—	—	—
Tiflis		68·3	307	i 11 4a	− 1	e 20 6	0	14 3	PP	e 30·3
Moscow		68·6	323	i 11 5	− 2	20 7	− 2	—	—	38·3
Piatigorsk		68·8	310	11 7	− 1	20 0	−11	—	—	—
Erevan		69·0	305	11 7	− 2	—	—	—	—	—
Sitka		70·0	35	11 14	− 1	20 26	0	13 44	PP	35·5
Pulkovo		70·8	329	i 11 19	− 1	i 20 39	+ 4	—	—	e 34·7
Theodosia		73·6	313	11 36	− 1	21 4	− 3	—	—	34·8
Simferopol		74·5	313	11 41	− 1	21 15	− 2	—	—	29·8
Sebastopol		75·0	313	11 44	− 1	21 21	− 2	—	—	34·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Upsala		76·5	332	e 11 51	− 3	e 21 33	− 6	15 8	PP	—
Ksara		77·8	301	i 12 2a	+ 1	e 21 54	+ 1	e 14 58	PP	—
Istanbul		79·5	312	10 28?	?	20 5	?	—	—	—
Bucharest		79·8	315	i 12 12a	0	i 22 18	+ 4	—	—	37·8
Scoresby Sund		80·0	351	i 12 12	− 1	22 14	− 3	15 25	PP	33·8
Wellington		80·5	147	12 12	− 3	22 16	− 6	15 2	PP	36·9
Bergen		81·1	336	i 12 17	− 1	22 26	− 2	—	—	23·8
Christchurch		81·2	150	12 12	− 7	i 22 28	− 1	27 58	SS	39·8
Copenhagen		81·2	330	i 12 17	− 2	22 28	− 1	15 28	PP	40·8
Kecskemet	Z.	82·4	320	i 12 27	+ 2	e 23 6	PS	e 15 26	PP	e 51·7
Sofia		82·4	315	i 12 26	+ 1	i 22 41	0	23 37	PS	33·0
Budapest	E.	82·5	320	e 12 26	0	22 54	+12	e 22 46	SKKS	e 42·8
	N.	82·5	320	e 12 28	+ 2	e 22 43	+ 1	15 18	PP	e 45·3
Ogyalla		82·8	321	12 27	0	22 49	+ 4	—	—	e 36·8
Potsdam		82·9	327	e 12 22	− 6	i 22 47	+ 1	e 23 40	PS	e 44·8
Helwan		83·0	300	i 12 28	0	i 22 58	+11	23 42	PS	45·8
Belgrade		83·1	317	i 12 27a	− 2	i 22 50	+ 2	—	—	e 33·2
Prague		83·5	317	i 12 30a	− 1	e 22 46	− 6	—	—	e 42·8
Hamburg		83·6	329	e 12 30	− 2	i 22 56	+ 3	e 23 35	PS	e 42·3
Ferndale	E.	83·7	47	i 12 34	+ 2	e 23 16	+22	—	—	—
Jena		84·5	326	i 12 35	− 1	i 22 55	− 7	—	—	e 39·8
Cheb		84·6	326	e 12 34	− 2	e 23 10	+ 7	e 15 41	PP	e 45·8
Hof		84·7	326	i 12 39	+ 2	e 23 0	− 4	—	—	e 40·8
Göttingen		84·9	327	i 12 37	− 1	i 23 9	+ 3	—	—	e 47·8
Ukiah		85·1	48	e 12 40	+ 1	e 23 10	+ 2	e 24 14	PS	e 35·2
Laibach		85·9	321	i 12 44	+ 1	i 23 29	+13	—	—	e 49·5
Aberdeen		86·1	336	i 12 42	− 2	i 23 30	+12	i 18 10	PPP	44·5
San Francisco		86·4	49	e 12 47	+ 2	—	—	—	—	—
Berkeley		86·5	49	i 12 46	0	e 23 3	[− 6]	16 10	PP	e 40·2
Triest		86·5	321	i 12 45a	− 1	i 23 9	[0]	e 33 26	SSS	e 42·8
Saskatoon		86·6	31	i 12 52	+ 6	e 23 27	+ 4	—	—	46·8
Branner		86·8	49	i 12 50	+ 3	—	—	—	—	—
De Bilt		86·8	330	i 12 47a	0	e 23 12	[− 1]	i 16 7	PP	e 46·8
Stuttgart		87·0	324	i 12 48a	0	e 23 13	[− 1]	e 16 16	PP	e 43·8
Lick		87·1	49	e 12 49	0	—	—	—	—	—
Karlsruhe		87·3	326	i 12 51	+ 1	i 23 21	[+ 5]	—	—	43·9
Edinburgh		87·5	336	e 12 49	− 2	e 23 14	[− 3]	i 16 37	PP	45·8
Butte		87·6	37	i 12 51	0	e 23 17	[0]	e 16 31	PP	e 42·6
Durham		87·7	334	i 12 50	− 2	i 23 19	[+ 1]	i 24 42	PS	—
Padova		87·7	321	i 12 52	0	i 23 17	[− 1]	i 24 29	PS	e 47·4
Strasbourg		87·9	326	i 12 52a	− 1	e 23 4	[−16]	i 16 31	PP	e 48·3
Uccle		88·0	329	i 12 52a	− 1	i 23 12	[− 8]	i 16 31	PP	e 46·8
Chur		88·1	324	e 12 52	− 2	e 23 19	[− 1]	—	—	—
Zurich		88·3	325	e 12 53a	− 2	e 23 19	[− 3]	—	—	—
Basle		88·7	325	e 12 55	− 2	e 23 24	[− 1]	—	—	—
Bozeman		88·7	37	e 13 8	+11	e 23 39	− 4	e 17 0	PP	41·2
Fresno	N.	88·7	48	e 12 58	+ 1	e 23 40	− 3	—	—	—
Stonyhurst		88·7	334	i 12 56	− 1	i 23 41	− 2	i 16 28	PP	46·3
Florence		89·1	320	12 57	− 1	23 27	[0]	—	—	—
Bidston		89·3	334	i 12 58	− 1	i 23 41	− 7	i 16 36	PP	43·8
Neuchatel		89·3	325	e 12 58	− 1	e 23 24	[− 5]	—	—	—
Tinemaha		89·5	48	i 13 3	+ 3	i 23 31	[+ 1]	—	—	—
Kew		89·6	332	i 13 0a	− 1	i 23 44	− 6	i 16 39	PP	e 44·8
Oxford		89·8	333	12 57a	− 5	i 23 26	[− 6]	i 16 47	PP	e 45·8
Paris		90·2	328	e 13 3	− 1	23 40	[+ 7]	16 49	PP	45·8
Haiwee	E.	90·3	48	i 13 4	0	e 23 31	[− 4]	i 16 39	PP	—
Moncalieri		90·3	323	i 12 59	− 5	i 23 28	[− 7]	—	—	e 38·2
Rathfarnham Castle		90·6	336	i 13 1	− 4	i 23 33	[− 4]	i 16 33	PP	48·8
Mount Wilson		91·3	50	i 13 8	− 1	e 23 44	[+ 3]	i 16 43	PP	—
Pasadena		91·3	50	i 13 7	− 2	e 23 35	[− 6]	e 16 44	PP	e 38·0
Ivigtut		91·4	359	i 13 1a	− 8	23 50	[+ 9]	16 46	PP	—
Tananarive		91·7	250	—	—	e 24 12	+ 2	30 38	SS	40·4
Riverside		91·9	50	e 13 11	0	—	—	e 16 49	PP	—
Jersey		92·1	331	i 13 12	0	e 23 47	[+ 2]	e 16 1	PP	47·8
Puy de Dôme		92·2	326	e 13 13	0	e 23 50	[+ 5]	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Jolla		92·6	51	e 13 17	+ 2	e 23 51	[+ 3]	—	—	—
Marseilles		92·6	323	e 16 33	PP	e 23 42	[− 6]	e 24 37	PS	e 50·8
Tucson		97·3	47	i 13 37k	+ 1	24 18	[+ 5]	e 17 26	PP	40·5
Algiers		98·4	319	13 42	+ 1	24 15	[− 4]	25 8	PS	44·8
Toledo		100·0	325	e 13 48	0	i 25 18	− 2	e 17 41	PP	—
Almeria		101·4	322	e 13 54	− 1	e 24 28	[− 6]	—	—	e 46·3
Granada		101·8	324	i 13 54	− 2	27 36	PS	i 18 24	PP	55·3
Malaga		102·6	324	i 13 53	− 7	24 32	[− 7]	19 57	PPP	54·3
Chicago		102·8	27	e 14 10	+ 9	e 24 42	[+ 2]	e 18 15	PP	e 43·3
Ottawa		103·4	17	14 4	0	24 56	[+13]	18 19	PP	48·8
Seven Falls		103·4	14	e 13 46?	−18	e 24 46	[+ 3]	e 18 16	PP	47·8
Shawinigan Falls		103·4	13	e 14 3	− 1	e 24 43	[0]	e 18 16	PP	60·8
San Fernando	N.	103·7	325	e 18 43	PP	i 26 48	+57	i 27 38	PS	47·8
Florissant		104·1	31	e 14 4	− 3	i 33 20	SS	i 18 22	PP	—
Buffalo		105·1	20	i 14 22	+11	i 33 53	SS	i 18 24	PP	—
Cape Girardeau		105·2	31	e 18 31	PP	i 26 12	+ 8	e 27 41	PS	—
Vermont		105·3	16	e 14 26	+14	i 24 54	[+ 2]	e 18 26	PP	e 41·8
East Machias		106·3	12	e 18 43	PP	e 24 58	[+ 2]	e 21 13	PPP	49·7
Cincinnati		106·4	26	i 14 16	− 1	i 27 54	PS	i 18 38	PP	e 57·3
Williamstown		106·9	16	i 14 17	− 3	i 25 13	[+14]	i 18 47	PP	—
Harvard		107·5	15	e 14 24	+ 2	e 25 1	[0]	i 18 47	PP	e 63·8
Weston		107·7	15	i 14 22	− 1	e 25 28	[+26]	i 18 47	PP	—
Fordham		108·5	18	e 14 23	P	e 25 5	[− 1]	i 18 57	PP	—
Philadelphia		108·9	19	e 14 29	P	24 40	[−27]	18 58	PP	e 52·6
Georgetown		109·3	21	e 14 30	P	i 25 5	[− 4]	i 18 59	PP	—
Cape Town		121·4	247	e 20 31	PP	i 26 11	[+17]	e 23 44	PPP	i 60·4
San Juan		131·8	19	e 19 25	[+10]	e 26 44	[+20]	e 24 41	PPP	e 57·1
Fort de France		136·6	14	i 19 25	[+ 1]	i 22 15	PP	(23 26)	PKS	23·4
Huancayo		152·1	61	e 19 54	[+ 4]	i 43 12	SS	i 23 38	PP	i 60·7
La Paz		160·3	57	i 20 4a	[+ 3]	i 26 56	[− 9]	i 21 44	pPKP	79·3
Rio de Janeiro		171·7	305	e 20 34	[+24]	e 29 32	PPP	e 25 33	PP	e 46·7

Additional readings :—
Naha S = +1m.39s.
Zi-ka-Wei iN = +2m.37s., +2m.57s., +3m.11s., iE = +3m.43s., +3m.55s., and +4m.13s., iN = +4m.35s., iE = +5m.35s. and +6m.35s.
Zinsen iSN = +4m.39s.
Kumagaya S = +6m.14s.
Hong Kong SS = +8m.15s.
Mizusawa SN = +6m.45s.
Amboina iEN = +6m.36s.
Calcutta iPPPN = +9m.6s., iSSN = +14m.48s., iSSSN = +16m.25s.
Medan iE = +10m.39s.
Batavia eZ = +10m.21s., iN = +10m.58s.
Agra PPP = +10m.59s., S = +15m.21s., SS = +18m.26s., iSSN = +18m.46s.
Bombay iP_cPN = +10m.33s., iS_cSN = +19m.7s., SSEN = +20m.37s., iN = +22m.23s.
Perth i = +18m.51s. and +19m.36s.
College ePPP = +14m.20s., iS = +19m.15s., eSS = +22m.46s.
Adelaide i = +12m.29s., +12m.59s., +19m.10s., +19m.16s., i = +21m.4s., i = +23m.32s.
Riverview iPN = +10m.47s., iEN = +20m.0s., iS_cSN = +20m.40s., iN = +20m.54s.
Honolulu P = +11m.27s., eSS = +23m.53s.
Melbourne i = +27m.45s.
Tiflis i = +11m.14s., iP_cPN = +11m.36s., PPPZ = +15m.15s., PPPE = +15m.19s., SE = +20m.8s., iPSEZ = +20m.33s., iN = +21m.8s., SSSN = +27m.59s.
Sitka PPP = +15m.32s., iS = +20m.44s.
Upsala i = +12m.0s., iN = +12m.10s., iSE = +21m.43s., ePSN = +22m.13s., SSSE = +30m.51s.
Ksara ePS = +22m.34s., eSS = +27m.6s.
Scoresby Sund = +18m.39s., +22m.33s., SS = +27m.16s.
Wellington i = +12m.30s., SKS = +22m.32s., ePS = +23m.14s., i = +24m.12s. and +26m.16s., SS = +27m.36s., SSS = +31m.8s., L_q = +32m.41s.
Christchurch iP_ePNZ = +12m.28s., L_qE = +33m.22s., eZ = +35m.4s.
Copenhagen i = +12m.27s., PPPP = +28m.58s., e = +23m.1s. and +23m.28s., SS = +27m.28s. and +28m.10s., SSS = +31m.58s.
Kecskemet iP_cPZ = +12m.32s., eZ = +12m.40s. and +13m.32s., iZ = +14m.27s., eZ = +15m.11s., +16m.4s., and +18m.31s., ePSZ = +25m.32s., eSS?Z = +28m.25s., eZ = +32m.55s. and +38m.55s.
Sofia iN = +12m.36s.
Budapest P_cPN = +12m.32s., PSE = +23m.5s., PSN = +23m.9s., eSSE = +27m.48s.
Ogyalla SE = +22m.59s.

Continued on next page.

Potsdam iP = +12m.27s., eZ = +13m.52s. and +14m.58s., eNZ = +18m.58s., eN = +21m.58s., iSE = +22m.50s., iN = +22m.58s., eZ = +23m.4s., ePSZ = +23m.46s., eE = +24m.22s., eN = +29m.58s., eEN = +32m.46s., eN = +33m.58s. and +38m.46s.?, eE = +39m.10s., +42m.46s.?, and +43m.34s.
Belgrade iZ = +12m.37s. and +12m.54s., iNE = +13m.16s. and +14m.33s.
Prague eSKS = +22m.10s.
Hamburg iN = +13m.8s., iE = +14m.26s. and +24m.7s., eN = +30m.52s., eE = +32m.46s.
Ferndale iN = +12m.38s.
Jena iN = +13m.21s., iZ = +13m.31s., iSN = +22m.58s., iSE = +23m.3s.
Cheb eSS = +28m.50s., e = +33m.22s.
Hof eSNE = +23m.4s.
Laibach i = +12m.58s., e = +23m.9s.
Aberdeen i = +13m.0s., +13m.45s., +23m.3s., and +24m.1s., PPS = +24m.51s.
San Francisco eE = +12m.55s.
Berkeley iN = +13m.14s., eN = +13m.22s., eE = +23m.26s.
Triest iPP = +12m.55s.
Branner eN = +13m.4s.
De Bilt i = +23m.33s.
Stuttgart iP_cP = +13m.6s., e = +13m.32s., +14m.3s., and +14m.20s., iS = +23m.32s., eSKKS = +24m.7s., eEN = +25m.46s., eSS = +29m.24s., eSSS = +33m.46s.
Edinburgh i = +12m.52s., +13m.0s., +13m.8s., +15m.35s., +23m.18s., +23m.35s., +24m.47s., +30m.5s., and +32m.30s.
Butte S = +23m.32s., eSS = +29m.38s.
Durham iSKKSE = +23m.26s., iSN = +23m.32s., iPSEN = +23m.39s., and +25m.10s.
Strasbourg iS = +23m.40s., ePS = +24m.40s., eSS = +29m.50s.
Uccle i = +23m.48s., eSSE = +29m.17s., iSSSN = +34m.3s.
Basle eS = +23m.49s.
Bozeman eS = +24m.22s., eSS = +30m.3s.
Stonyhurst i = +23m.26s., +23m.56s., and +25m.1s.
Florence S = +24m.4s.
Bidston i = +13m.12s., iS = +24m.31s., iPPS = +24m.58s., i = +25m.28s., iSS = +30m.20s., eSSS = +36m.6s.
Kew i = +13m.12s., iPPPZ = +18m.40s., iSKS = +23m.30s., iS = +23m.53s., iPSE = +24m.40s., iPPS = +25m.11s., iEN = +25m.43s., iEZ = +29m.16s., iSSN = +30m.20s., eSSSN = +36m.32s., iZ = +36m.52s.
Paris PS = +25m.24s.
Rathfarnham Castle i = +23m.45s., iSKKS = +24m.16s., iS = +24m.56s., iPS = +26m.21s.
Mount Wilson ePKP,PKPZ = +38m.37s.
Pasadena iSN = +24m.4s., ePKP,PKPZ = +38m.42s.
Ivigtut +23m.37s. and +25m.27s.
Jersey eSS = +30m.14s.
Marseilles eSN = +23m.51s.
Tucson PP = +17m.32s., iPPP = +20m.17s., eS = +25m.35s., iPKP,PKP = +38m.30s.
Algiers e = +17m.46s., i = +27m.36s.
Toledo ePPP = +19m.53s., i = +24m.29s., +24m.52s., and +25m.5s., e = +27m.10s.
Granada i = +20m.59s. and +23m.12s., SS = +32m.36s.
Chicago PP = +18m.28s., ePPP = +20m.23s., ePS = +27m.27s., ePPS = +28m.34s., eSSS = +37m.3s.
Ottawa PS = +27m.36s.
San Fernando SSN = +34m.57s.
Florissant ePZ = +14m.16s., eZ = +18m.14s., iSPE = +27m.39s.
Buffalo i = +18m.1s., ePPP = +20m.24s., ePS = +27m.42s., ePPS = +28m.38s.
Cape Girardeau eN = +17m.36s., eE = +18m.34s. and +24m.55s., eE = +27m.48s.
Vermont iPP = +18m.39s., i = +18m.52s., eS = +26m.14s., eSSS = +38m.19s.
East Machias ePS = +28m.1s., eSS = +33m.57s.
Cincinnati e = +15m.41s., i = +18m.51s., iPPP = +21m.9s., iPPS = +28m.37s.
Williamstown ePKP = +17m.55s., ePPP = +21m.13s., i = +22m.52s., eS = +26m.33s., iPS = +27m.55s., eSS = +33m.47s.
Harvard ePKPZ = +18m.9s.
Weston iZ = +14m.32s., ePKPZ = +18m.15s., iPPE = +19m.2s., ePPPZ = +21m.16s., eSE = +26m.31s., ePKKPZ = +29m.43s., eSSEZ = +34m.11s.
Fordham e = +18m.37s., iPPP = +21m.21s., iPS = +28m.29s.
Philadelphia ePPP = +21m.16s., PPP = +21m.27s., PS = +28m.17s., iPS = +28m.30s.
Georgetown iPP = +21m.17s., eSKSN = +25m.10s., iPS = +28m.26s., PPS = +28m.40s.
Cape Town ePPN = +28m.26s., iPPSN = +36m.56s., iPPSE = +37m.23s.
San Juan ePP = +22m.36s., iPS = +32m.39s., eSS = +39m.29s., SS = +39m.51s., eSSS = +43m.52s.
Fort de France PP = +19m.33s., PPP = +19m.38s., SSS = +22m.19s.
Huancayo PKP = +20m.0s., iPKP = +20m.8s., i = +20m.24s. and +20m.41s., PPS = +37m.9s., i = +43m.18s., SSS = +49m.4s.
La Paz $iPKP_2$ = +20m.51s., ipPKPZ = +21m.44s., iSPKPZ = +22m.25s., iSKPZ = +24m.34s., iSKPN = +24m.38s., iPPZ = +25m.40s., iPPPZ = +28m.22s., iSKKS = +30m.56s., iSKSP = +34m.52s., iSSS = +50m.36s.
Rio de Janeiro eSN = +29m.36s.
Long waves were also recorded at La Plata.

June 16d. 11h. 44m. 36s. Epicentre 21°·0S. 169°·5E. (as on June 15d.).

$A = -·9188$, $B = +·1703$, $C = -·3563$; $\delta = +15$; $h = +4$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·3	244	i 4 18	PPP	i 7 48	SSS	—	—	9·7
Riverview		20·6	228	e 5 11	PPP	e 9 12	SSS	—	—	e 11·0
Sydney		20·6	228	—	—	e 9 19	SSS	—	—	—
Wellington		20·7	169	4 43	− 1	8 41	+10	i 5 6	PP	10·1
Christchurch		22·6	174	e 5 6	+ 3	9 20	+13	—	—	11·6
Melbourne		27·0	226	—	—	i 11 17	SS	i 12 24	SSS	14·2
Adelaide		30·5	237	—	—	e 12 56	SS	—	—	i 14·9
Pasadena	z.	87·9	53	e 12 55	+ 2	—	—	—	—	—
Mount Wilson	z.	88·1	53	e 12 50	− 4	—	—	—	—	—
Riverside	z.	88·4	53	e 12 58	+ 3	—	—	—	—	—
Tucson		92·7	57	e 13 15k	0	—	—	—	—	—
Tashkent		111·0	308	—	—	e 39 42	SSS	—	—	e 61·4
Sverdlovsk		117·6	324	—	—	e 27 2	{+ 4}	e 36 36	SS	52·4
Tiflis		129·4	307	e 22 45	PP	—	—	e 23 42	PPP	e 67·4
Ksara		137·2	297	e 19 46	[+21]	e 41 52	SSP	e 23 4	PP	—
De Bilt		146·7	343	e 20 24?	[+42]	—	—	—	—	e 74·4
Stuttgart		148·1	336	e 20 29	[+45]	—	—	e 32 24	?	e 76·4
Strasbourg		148·8	337	e 19 54	[+ 9]	—	—	—	—	e 79·4
Paris		150·4	342	e 20 24?	[+36]	—	—	—	—	73·4

Additional readings :—
Brisbane iE = +8m.24s. and +9m.0s.
Riverview eSE = +9m.17s.
Sydney e = +11m.35s.
Wellington i = +9m.11s.
Adelaide e = +14m.10s.
Tashkent e = +37m.42s. and +45m.54s.
Long waves were also recorded at Perth, Baku, Upsala, Hastings, and Copenhagen.

June 16d. 22h. 50m. 30s. Epicentre 24°·6N. 121°·1E. (as on 1938 Feb. 8d.).

$A = -·4702$, $B = +·7794$, $C = +·4140$; $\delta = -5$; $h = +3$;
$D = +·856$, $E = +·517$; $G = -·214$, $H = +·354$, $K = -·910$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Taihoku		0·6	31	i 0 21	+ 6	0 41	+15	—	—	—
Zi-ka-wei	E.	6·5	2	e 1 10	−29	—	—	—	—	—
Manila		10·0	182	e 2 17	−10	4 47	S*	—	—	—
Taikyu		13·0	28	e 3 7	− 2	—	—	—	—	—
Phu-Lien		13·9	257	e 3 35	PPP	—	—	—	—	—
Zinsen		13·9	20	e 3 16	− 5	e 7 35	?	—	—	e 9·8
Vladivostok		20·5	23	e 4 45	+ 3	e 8 39	+12	—	—	e 11·0
Calcutta	N.	30·1	273	—	—	e 9 54	?	—	—	—
Andijan		43·5	304	8 10	+ 3	—	—	—	—	—
Sverdlovsk		53·7	324	e 9 27	+ 1	—	—	—	—	26·5
Baku		60·6	304	—	—	e 19 6	+36	—	—	e 36·0
Grozny		63·2	308	e 9 36	−56	—	—	—	—	—
Tiflis		64·2	306	e 10 41	+ 2	e 19 37	+21	—	—	e 36·5
Moscow		66·4	323	e 10 50	− 3	—	—	e 13 7	PP	34·0
Ksara		73·0	299	e 11 36	+ 3	—	—	—	—	—

Additional readings :—
Zi-ka-wei iE = +4m.2s. and +4m.10s.
Phu-Lien e = +7m.51s.
Moscow e = +15m.44s.
Ksara e = +24m.7s.
Long waves were also recorded at Edinburgh, De Bilt, Cheb, Stuttgart, Potsdam, Aberdeen, Göttingen, Copenhagen, Hamburg, Uccle, Upsala, Pulkovo, Tashkent, Irkutsk, Stonyhurst, Strasbourg, Durham, Kew, Bidston, and Paris.

June1 6d: Readings also at 2h. (near Tiflis), 3h. (Koti, near Hukuoka B, Husan, and Nagoya), 4h. (New Plymouth and near Nagoya), 5h. (near La Jolla, Mount Wilson, Riverside, Haiwee, Pasadena, near Christchurch, and Wellington), 6h. (Haiwee and Tucson), 9h. (near Nagoya), 12h. (Medan, near Hukuoka B, Koti, and Nagoya), 13h. (Zurich), 17h. (near Bucharest, near Sofia, and Ksara), 18h. (Ksara and Tiflis), 20h. (near Andijan), 21h. (Scoresby Sund).

June 17d. Readings at 0h. (near Medan), 7h. (Samarkand), 9h. (Riverview), 10h. (near Amboina), 11h. (Samarkand), 12h. (Irkutsk, Vladivostok, Zi-ka-wei, Manila, near Amboina, and near Taihoku), 13h. (Almeria, De Bilt, Copenhagen, Pulkovo, and Tiflis), 14h. (Copenhagen (2), Oaxaca, and near Uccle), 15h. and 16h. (Wellington), 20h. (Oaxaca and Tacubaya), 21h. (Harvard), 23h. (Tacubaya and near Hukuoka B).

June 18d. 0h. 43m. 12s. Epicentre 36°·4N. 141°·1E. (as on 1938 June 3d.).

Strong at Onahama, Kakioka, and Hukusima, moderate at Tukubasan, Utunomiya, and Sendai, slight at Tokyo and Yokohama. Epicentre 36°·5N. 141°·1E. Shallow. Macroseismic radius greater than 300kms.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1938, Tokyo, 1940, pp. 46-48, Macroseismic chart p. 48.

$A = -\cdot6279$, $B = +\cdot5067$, $C = +\cdot5908$; $\delta = +5$; $h = 0$;
$D = +\cdot628$, $E = +\cdot778$; $G = -\cdot460$, $H = +\cdot371$, $K = -\cdot807$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mito	0·5	268	0 15k	+ 1	0 23	0	—	—	—
Onahama	0·6	343	0 14k	− 1	0 21	− 5	—	—	—
Tyosi	0·7	196	0 18	+ 1	0 27	− 1	—	—	—
Kakioka	0·8	257	0 18k	0	0 28	− 3	—	—	—
Tukubasan	0·8	257	0 19k	+ 1	0 30	− 1	—	—	—
Utunomiya	1·0	279	0 22	+ 1	0 35	− 1	—	—	—
Tokyo Cen. Met. Ob.	1·3	237	i 0 27k	+ 2	0 45	+ 1	—	—	—
Tokyo Imp. Univ.	1·3	237	0 26	+ 1	0 44	0	—	—	—
Aidu	1·4	326	0 29k	+ 2	0 47	+ 1	—	—	—
Hukusima	1·4	339	0 27k	0	0 44	− 2	—	—	—
Komaba	1·4	237	0 26	− 1	0 44	− 2	—	—	—
Kumagaya	1·4	260	0 29k	+ 2	0 47	+ 1	—	—	—
Katuura	1·5	211	0 25	− 3	0 42	− 7	—	—	—
Kiyosumi	1·5	211	0 42	+14	1 2	S_g	—	—	—
Mitaka	1·5	240	0 28	0	0 47	− 2	—	—	—
Yokohama	1·5	231	0 30k	+ 2	0 54	+ 5	—	—	—
Maebasi	1·6	270	0 30k	0	0 51	0	—	—	—
Kamakura	1·7	229	0 40	P_g	1 1	S_g	—	—	—
Misaki	1·7	224	0 40	P_g	1 5	+11	—	—	—
Titibu	1·7	256	0 42	P_g	1 1	S_g	—	—	—
Mera	1·8	215	0 36	P_g	1 3	S_g	—	—	—
Sendai	1·9	355	0 31k	− 3	0 52	− 7	—	—	—
Koyama	2·0	239	0 42	P_g	1 7	S_g	—	—	—
Hunatu	2·1	245	0 37k	0	1 13	S_g	—	—	—
Oiwake	2·1	268	0 37k	0	1 1	− 3	—	—	—
Ito	2·2	229	0 42	+ 4	1 12	S_g	—	—	—
Kohu	2·2	249	0 40k	+ 2	1 15	S_g	—	—	—
Misima	2·2	234	0 38k	0	1 9	+ 3	—	—	—
Numadu	2·2	235	0 39	+ 1	1 4	− 2	—	—	—
Nagano	2·3	277	0 42k	+ 2	1 13	+ 4	—	—	—
Niigata	2·3	313	0 41	+ 1	1 20	S_g	—	—	—
Yosiwara	2·3	238	0 42	+ 2	1 11	+ 2	—	—	—
Takada	2·4	287	0 44	+ 3	1 22	S_g	—	—	—
Susaki	2·4	225	0 42	+ 1	1 15	+ 3	—	—	—
Matumoto	2·5	266	0 42	− 1	1 11	− 3	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa	2·9	0	0 45	− 3	i 1 22	− 2	—	—	—
Omaesaki	3·0	232	0 52	+ 2	1 44	S_g	—	—	—
Hamamatu	3·2	239	0 50k	− 2	1 30	− 2	—	—	—
Takayama	3·2	265	0 52	0	—	—	—	—	—
Toyama	3·2	275	0 53	+ 1	1 36	S*	—	—	—
Husiki	3·3	277	0 55	+ 2	1 39	+ 4	—	—	—
Miyako	3·3	12	0 52	− 1	1 24	−11	—	—	—
Morioka	3·3	1	0 52a	− 1	1 29	− 6	—	—	—
Akita	3·4	346	0 53	− 2	1 38	+ 1	—	—	—
Hatidyozima	3·4	198	0 59	+ 4	1 33	− 4	—	—	—
Nagoya	3·5	250	e 0 59a	+ 2	1 53	S_g	—	—	—
Wazima	3·5	289	0 56k	− 1	1 48	S*	—	—	—
Kanazawa	3·6	274	0 43	−15	—	—	—	—	—
Gihu	3·7	256	1 0k	0	1 46	+ 1	—	—	—
Ibukisan	3·9	256	1 6	+ 4	1 52	+ 2	—	—	—
Hatinohe	4·1	4	1 3	− 2	1 57	+ 2	—	—	—
Hikone	4·1	255	1 6a	+ 1	2 3	S*	—	—	—
Kameyama	4·1	249	1 11a	P*	2 13	S_g	—	—	—
Tu	4·1	247	1 8	+ 3	2 6	S*	—	—	—
Aomori	4·4	357	1 10	0	2 10	S*	—	—	—
Kyoto	4·6	254	1 13	+ 1	2 24	S*	—	—	—
Yagi	4·7	248	1 14	0	2 25	S*	—	—	—
Miyadu	4·8	262	1 17	+ 2	2 19	+ 7	—	—	—
Osaka	4·9	252	1 19	+ 2	2 33	S*	—	—	—
Kobe	5·1	252	1 15	− 5	2 33	S*	—	—	—
Siomisaki	5·2	238	1 22a	+ 1	2 44	S*	—	—	—
Toyooka	5·2	262	1 21	0	2 27	+ 5	—	—	—
Wakayama	5·3	247	1 22	0	2 50	S_g	—	—	—
Hakodate	5·4	357	1 27	+ 3	2 34	+ 6	—	—	—
Sumoto	5·5	250	1 24	− 1	2 52	S*	—	—	—
Mori	5·7	356	1 27	− 1	2 40	+ 5	—	—	—
Tokusima	5·8	249	1 35	+ 6	3 7	S_g	—	—	—
Muroran	5·9	0	1 26	− 5	2 46	+ 6	—	—	—
Tadotu	6·3	253	1 41	+ 5	—	—	—	—	—
Muroto	6·4	244	1 41	+ 3	3 16	S*	—	—	—
Obihiro	6·7	13	1 30	−12	2 41	−19	—	—	—
Sapporo	6·7	1	1 38	− 4	2 46	−14	—	—	—
Koti	6·8	248	1 44	0	—	—	—	—	3·8
Kusiro	7·0	24	2 39	P_g	—	—	—	—	—
Matuyama	7·3	252	1 51	+ 1	3 54	S_g	—	—	—
Asahigawa	7·4	8	1 55	+ 3	3 11	− 7	—	—	—
Hirosima	7·4	257	1 50	− 2	3 22	+ 4	—	—	—
Simidu	7·6	244	1 55	0	3 36	+13	—	—	—
Nemuro	7·7	24	1 51	− 5	3 14	−11	—	—	—
Uwazima	7·7	248	2 8	P*	—	—	—	—	—
Ooita	8·4	251	2 3a	− 3	4 28	S_g	—	—	—
Simonoseki	8·6	257	2 2	− 7	—	—	—	—	—
Izuka	9·0	255	2 14	+ 1	4 27	S*	—	—	—
Hukuoka B	9·2	256	e 2 18a	+ 2	e 4 22	+19	—	—	—
Miyazaki	9·2	243	2 17	+ 1	4 6	+ 3	—	—	—
Kumamoto	9·3	250	2 19a	+ 2	4 20	+15	—	—	—
Titizima	9·3	174	2 14	− 3	—	—	—	—	—
Unzendake	9·7	251	2 29	+ 7	5 5	S*	—	—	—
Husan	9·8	266	e 2 7	−17	e 4 31	+14	—	—	—
Vladivostok	9·8	316	i 2 23	− 1	e 4 18	+ 1	—	—	e 4·5
Nagasaki	9·9	253	2 27	+ 2	4 52	S*	—	—	—
Taikyu	10·1	271	i 2 31	+ 3	4 30	+ 5	—	—	—
Keizyo	11·4	280	2 48	+ 1	e 5 1	+ 5	—	—	—
Zinsen	11·6	280	e 2 52	+ 2	e 4 57	− 4	—	—	e 6·9
Nake	12·6	234	2 52	−11	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Taito		22·0	237	2 52	?	—	—	—	—	—
Kosyun		22·8	237	3 4	?	—	—	—	—	—
Manila		28·2	225	4 39	?	8 11	?	—	—	—
Irkutsk		30·3	314	e 6 7	− 8	e 11 8	− 7	—	—	14·8
Phu-Lien		33·8	252	e 6 42	− 4	—	—	—	—	—
Andijan		52·7	297	9 15	− 3	e 16 30	−16	—	—	—
Tchimkent		54·1	300	e 9 34	+ 5	—	—	—	—	—
Tashkent		54·7	299	e 10 18	+45	i 16 6	−67	e 21 18	SS	e 30·2
Sverdlovsk		55·5	319	i 9 34	− 5	i 17 16	− 8	—	—	24·8
Moscow		67·6	323	10 54	− 7	19 48	− 9	—	—	35·3
Baku		68·4	305	e 11 7	+ 1	e 20 21	+14	—	—	35·3
Pulkovo		68·6	330	e 11 0	− 7	e 20 0	− 9	—	—	—
Tiflis		71·0	308	11 16	− 6	—	—	—	—	e 37·8
Perth		72·0	202	—	—	i 30 30	?	—	—	—
Tinemaha		76·4	54	e 12 2	+ 9	—	—	—	—	—
Pasadena	z.	78·1	56	i 12 10	+ 8	—	—	—	—	—
Mount Wilson	z.	78·2	56	i 11 59	− 4	—	—	—	—	—
Copenhagen		78·4	334	i 11 58a	− 6	21 48	−12	22 15	PS	39·8
Riverside	z.	78·8	56	e 12 1	− 5	—	—	—	—	—
Potsdam		80·7	331	e 12 6	−10	e 22 12	−13	e 22 36	PS	e 46·8
Hamburg		80·9	334	e 12 14	− 3	e 22 18	− 8	—	—	48·8
Ksara		81·3	306	e 12 15	− 5	e 23 17	PS	—	—	—
Jena		82·4	330	e 12 22	− 3	—	—	—	—	—
De Bilt		83·8	335	12 29	− 3	e 23 13	+18	—	—	e 41·8
Tucson		84·2	54	e 12 31k	− 3	—	—	—	—	—
Stuttgart		85·0	330	e 12 34a	− 4	e 22 53	[− 8]	—	—	e 43·8
Uccle	z.	85·2	335	e 12 34	− 5	—	—	—	—	—
Triest		85·5	326	e 22 48	S	(e 22 48)	[−16]	—	—	e 45·8
Strasbourg		85·8	331	e 12 35	− 7	e 23 8	[+ 2]	—	—	e 45·3
Basle		86·7	330	e 12 41	− 6	e 23 35	+11	—	—	—
Paris		87·5	334	e 12 46	− 5	—	—	—	—	48·8

Additional readings :—
Tiflis eZ = +33m.48s.
Perth i = +31m.36s.
Mount Wilson iZ = +12m.10s.
Copenhagen +12m.10s.
Riverside eZ = +12m.12s.
Jena eN = +11m.50s.
Basle e = +12m.53s.
Long waves were also recorded at Puy de Dôme, Kew, Edinburgh, Aberdeen, Cheb, and Upsala.

June 18d. Readings also at 0h. (Montserrat (2)), 1h. (Mount Wilson and Tananarive), 2h. (Apia, Tucson, Riverside, Pasadena, Mount Wilson, and Sverdlovsk), 3h. (Samarkand), 4h. (Fort de France, La Paz, Rio de Janeiro, San Juan, Huancayo, and Williamstown), 6h. (Andijan, Nagoya, Sverdlovsk, and Vladivostok), 9h. (La Paz, Tiflis, and Scoresby Sund), 10h. (near Balboa Heights, Sverdlovsk, and Tashkent), 12h. (Oaxaca (2), Tacubaya (2), and Samarkand), 13h. (Durham), 14h. (Florence), 18h. (Medan, Almata, Batavia, Ksara, Moscow, Manila, Tashkent, Sverdlovsk, and Vladivostok), 22h. (Wellington and Tiflis).

June 19d. Readings at 0h. (Tucson, Huancayo, Mount Wilson, Riverside, Pasadena, La Paz, Tchimkent, Samarkand, near Andijan, and Tashkent), 1h. (Jena, near Andijan, Samarkand, and near Triest), 3h. (Wellington), 6h. (Tiflis (2), Almata, Tananarive, Tchimkent, near Andijan, and Samarkand), 7h. (Wellington), 9h. (Tucson, Mount Wilson, and Riverside), 12h. (Manila), 13h. (Harvard, Weston, and Williamstown), 16h. (near Berkeley), 17h. (Huancayo, Harvard, Tucson, Weston, Haiwee, Pasadena, Riverside, Tinemaha, San Juan, and near Balboa Heights).

June 20d. 23h. 50m. 31s. Epicentre 41°·9N. 75°·8E.

Felt strongly in the area of Lake Issyk-Koul, damage at Fruenze, and in the Tien-Shan mountains.

Epicentre: 41°·3N. 77°·3E. (Strasbourg).
41°54′N. 75°45′E. (U.S.S.R.).
42°·0N. 76°·5E. (Bombay).

See Annales de l'Institut de Physique du Globe de Strasbourg, 1938, Tome III, 2 eme partie. Seismologie Mende, 1941, p. 47.
Seismological Despatches, Washington.

$A = +\cdot1831$, $B = +\cdot7237$, $C = +\cdot6653$; $\delta = -11$; $h = -2$;
$D = +\cdot969$, $E = -\cdot245$; $G = +\cdot163$, $H = +\cdot645$, $K = -\cdot747$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		2·8	246	i 0 59	P_g	1 44	S_g	—	—	—
Tchimkent		4·7	278	i 1 18	P*	2 40	S_g	1 36	P_g	—
Tashkent		4·9	266	e 1 21	+ 4	—	—	—	—	—
Samarkand		7·1	255	i 1 53	+ 5	3 19	+ 9	—	—	—
Semipalatinsk		9·1	18	i 2 5	− 9	3 54	− 6	—	—	—
Dehra Dun	N.	11·7	170	e 2 54	+ 3	i 4 51	−13	—	—	i 7·0
Agra		14·8	173	3 42	+10	6 26	+ 8	6 50	SSS	—
Sverdlovsk		17·9	332	i 4 4	− 8	i 7 27	− 3	—	—	i 9·1
Baku		19·5	276	i 4 35	+ 4	i 8 15	+ 9	—	—	11·5
Irkutsk		21·9	50	i 4 51	− 6	i 8 54	0	—	—	11·2
Calcutta	N.	22·0	145	i 5 10k	PP	i 9 12	+14	i 5 35	PPP	i 11·1
Grozny		22·1	284	i 5 2	+ 3	i 9 44	SS	—	—	—
Bombay		23·1	186	i 5 18	+10	i 9 30	+14	e 5 45	PPP	12·0
Tiflis		23·1	281	i 5 9	+ 1	—	—	—	—	—
Erevan		23·6	277	5 23	+10	e 10 6	SS	—	—	—
Piatigorsk		24·0	287	5 21	+ 4	10 1	SS	—	—	—
Hyderabad	N.	24·5	173	5 29	+ 7	9 55	+15	6 0	PP	13·2
Sotchi		26·4	287	5 39	− 1	e 10 12	0	—	—	—
Moscow		28·3	313	i 5 54	− 3	i 10 52	+ 9	—	—	—
Theodosia		29·3	291	6 6	0	—	—	—	—	17·0
Simferopol		30·2	291	i 6 15	+ 1	11 25	+12	—	—	16·8
Sebastopol		30·6	291	e 6 31	+13	—	—	—	—	—
Kodaikanal	E.	31·6	176	e 7 39	PPP	i 12 54	SS	14 59	SS	i 16·9
Ksara		32·3	269	i 6 36a	+ 3	11 51	+ 5	i 7 34	PP	—
Pulkovo		33·0	319	i 6 34	− 5	i 11 57	0	—	—	e 15·9
Phu-Lien		33·4	118	e 6 51	+ 9	e 12 13	+10	—	—	—
Istanbul		34·7	288	6 49	− 5	12 22	− 2	7 59	PP	—
Colombo	E.	35·0	172	e 7 6	+10	12 33	+ 5	15 30	SSS	20·3
Bucharest		35·9	292	e 7 6a	+ 2	e 12 57	+15	i 8 35	PPP	24·5
Hong Kong		37·5	108	7 24	+ 7	13 14	+ 7	8 37	PP	19·2
Helwan		37·6	296	i 7 19	+ 1	i 13 21	+13	8 37	PP	—
Heizyo		37·7	77	e 7 21	+ 2	13 18	+ 8	—	—	20·3
Sofia		38·3	290	e 6 25	−59	i 15 15	SS	—	—	—
Zinsen	E.	38·9	79	e 7 25	− 4	e 18 30	?	—	—	e 23·8
Keizyo	N.	39·1	78	e 8 10	+39	—	—	—	—	e 20·9
Kecskemet	Z.	39·4	298	i 7 37	+ 4	i 14 6	+31	i 9 18	PP	e 21·3
Upsala	E.	39·4	318	i 7 30	− 3	e 13 29	− 6	e 8 55	PP	—
	N.	39·4	318	e 7 34	+ 1	i 13 38	+ 3	—	—	—
Belgrade		39·7	294	i 7 35k	− 1	i 13 51	+11	i 9 11	PP	e 23·4
Budapest		39·9	298	7 38	+ 1	13 53	+10	9 9	PP	e 19·5
Ogyalla		40·4	299	7 41	0	e 13 51	+ 1	9 15	PP	e 18·5
Vladivostok		40·7	68	e 7 39	− 5	i 13 55	0	—	—	i 17·1
Husan		41·6	81	e 7 52	+ 1	22 44	L	—	—	(22·7)
Karenko		41·8	99	8 2	+ 9	—	—	—	—	—
Taikyu		41·9	79	7 37	−17	(13 57)	−16	—	—	(22·1)
Prague		42·3	304	e 7 55	− 2	e 14 25	+ 6	e 9 35	PP	e 18·5
Copenhagen		42·4	313	i 7 56	− 2	14 26	+ 6	9 34	PP	—
Potsdam		42·7	307	i 7 57	− 3	e 14 29	+ 5	e 17 29	SS	e 21·5
Hukuoka B		43·3	82	e 8 8	+ 3	e 18 3	SS	—	—	—
Laibach		43·3	298	e 8 6	+ 1	i 14 41	+ 8	i 10 6	PPP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan	E.	43·3	144	e 8 44	+39	16 53	SS	—	—	25·5
Cheb		43·6	305	i 8 4	− 4	e 14 53	+15	i 9 52	PP	e 23·5
Hof		43·9	305	e 8 17	+ 7	e 14 43	+ 1	e 9 54	PP	e 19·5
Jena		43·9	305	i 8 7	− 3	e 14 44	+ 2	i 9 52	PP	e 21·5
Triest		44·0	297	i 8 7a	− 4	i 14 51	+ 8	i 9 49	PP	e 26·8
Hamburg		44·2	310	i 8 10a	− 2	e 14 48	+ 2	e 9 55	PP	—
Göttingen		44·7	307	i 8 15	− 1	e 15 4	+10	i 10 2	PP	e 24·5
Miyazaki		44·9	83	8 19	+ 1	15 6	+10	—	—	—
Yakusima		44·9	85	8 22	+ 4	14 51	− 5	—	—	—
Padova		45·3	298	e 8 26	+ 5	16 20	?	e 11 8	PPP	24·8
Bergen		45·5	320	10 36	PP	19 44	SSS	11 24	PPP	24·5
Stuttgart		46·0	303	i 8 25a	− 2	e 15 12	0	i 8 37	pP	e 23·5
Florence		46·3	295	8 29?	0	15 29?	+13	19 29?	SSS	25·5
Chur		46·4	301	e 8 27	− 3	18 35	PS	—	—	—
Karlsruhe		46·4	304	i 8 32	+ 2	e 15 9	− 9	—	—	—
Osaka		46·6	77	8 20	−12	14 50	−31	—	—	—
Zurich		46·8	301	e 8 31	− 2	e 15 32	+ 8	e 10 25	PP	—
Strasbourg	Z.	46·9	303	i 8 32a	− 2	i 15 41	+16	i 10 26	PP	—
Mori		47·1	65	8 31	− 4	15 19	− 9	—	—	—
Basle		47·4	301	e 8 35	− 3	e 19 7	SS	i 10 30	PP	—
De Bilt		47·4	309	i 8 36a	− 2	15 39	+ 7	i 10 23	PP	e 23·0
Manila		47·5	110	i 8 45k	+ 7	i 15 44	+10	—	—	23·5
Nagano		47·6	74	8 33	− 6	15 34	− 1	—	—	—
Nagoya		47·6	76	e 8 45	+ 6	—	—	—	—	—
Neuchatel		48·0	301	e 8 39	− 4	—	—	e 10 35	PP	—
Oiwake		48·1	74	8 42	− 1	15 42	0	—	—	—
Moncalieri		48·2	300	e 8 29	−15	14 41	−62	—	—	19·2
Uccle		48·3	307	i 8 42	− 3	i 15 54	+ 9	i 10 35	PP	e 22·5
Mizusawa		48·7	69	8 43	− 5	15 39	−11	—	—	—
Hukusima		48·8	72	8 45	− 4	—	—	—	—	—
Tokyo, Cen. Met. Ob.		49·2	74	8 55	+ 3	16 18	+20	—	—	25·6
Aberdeen		50·0	316	i 8 53	− 5	i 16 16	+ 7	i 10 50	PP	25·2
Paris		50·2	305	i 8 57	− 3	16 19	+ 8	10 51	PP	25·5
Marseilles		50·4	297	i 8 50	−11	e 16 21	+ 7	i 10 50	PP	e 25·8
Durham		50·5	313	e 9 0	− 2	i 16 21	+ 5	i 10 55	PP	—
Edinburgh		50·9	315	e 9 1	− 4	i 16 35	+14	i 11 4	PP	25·5
Kew		50·9	309	i 9 2	− 3	i 16 31	+10	i 10 58	PP	26·5
Puy de Dôme		51·0	301	e 9 4	− 2	e 16 11	−11	—	—	—
Oxford		51·3	310	i 9 6a	− 2	i 16 31	+ 5	i 10 59	PP	e 24·2
Stonyhurst		51·3	313	e 8 59	− 9	i 16 34	+ 8	i 11 1	PP	26·5
Bidston		51·7	312	i 9 20	+ 9	i 16 37	+ 5	i 11 16	PP	26·5
Jersey		52·8	308	e 9 8	−11	e 16 49	+ 2	e 11 14	PP	—
Scoresby Sund		53·6	336	i 9 21	− 4	16 52	− 6	11 24	PP	—
Algiers		54·9	290	i 9 33	− 2	e 17 15	− 1	i 11 38	PP	29·5
Batavia		55·6	140	e 9 44	+ 4	—	—	—	—	30·5
Toledo		58·3	297	i 9 56	− 3	e 18 13	+12	e 12 12	PP	—
Almeria		58·7	293	i 9 58	− 4	e 18 12	+ 6	—	—	e 27·1
Granada		59·3	294	e 10 10	+ 4	i 18 18	+ 4	—	—	—
Malaga		60·1	294	10 9	− 2	18 38	+14	14 4	PPP	31·0
San Fernando		61·5	294	e 10 10	−11	i 18 43	+ 1	19 52	PS	33·5
Tananarive		65·1	209	e 10 59	+14	19 50	+23	24 14	SS	30·1
Ivigtut		67·7	334	i 10 56a	− 5	20 2	+ 4	13 20	PP	—
College		68·2	18	e 10 57	− 7	e 19 53	−11	e 13 32	PP	27·6
Sitka		78·0	16	—	—	e 30 44	SSS	—	—	e 38·8
Saskatoon		86·3	1	e 15 53	PP	—	—	—	—	38·5
Seven Falls		86·5	338	12 35	−11	23 14	[+ 3]	15 57	PP	47·5
EastMachias		87·6	335	e 12 52	+ 1	e 23 25	− 7	e 16 17	PP	e 35·8
Shawinigan Falls		87·6	339	e 12 50	− 1	e 23 11	[− 6]	—	—	48·5
Ottawa		89·4	340	12 57	− 3	23 37	[+ 8]	16 36	PP	44·5
Vermont		89·6	338	e 13 8	+ 7	e 23 19	[−11]	e 16 35	PP	43·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Weston		91·0	336	e 13 4	− 3	i 23 37	[− 2]	i 16 39	PP	—
Harvard		91·0	336	i 13 4	− 3	e 24 14	+11	i 17 20	PP	e 48·5
Williamstown		91·3	337	i 13 5	− 4	e 24 15	+ 9	i 16 41	PP	e 43·5
Cape Town		92·0	224	e 14 59	?	(e 23 35)	[− 9]	(e 30 17)	SS	52·0
Butte		92·2	6	e 13 9	− 4	e 23 34	[−11]	e 25 10	PS	e 37·8
Bozeman		92·6	5	e 13 14	− 1	e 25 11	PS	e 18 59	PPP	e 37·8
Fordham		93·2	338	i 13 8	− 9	i 23 56	[+ 5]	i 17 1	PP	—
Philadelphia		94·4	338	e 13 26	+ 3	23 54	[− 4]	e 17 10	PP	e 42·7
Chicago		95·3	348	e 17 21	PP	e 23 56	[− 6]	e 25 42	PS	e 40·1
Adelaide		95·7	133	e 11 1	?	e 23 58	[− 7]	—·	—	47·5
Ukiah		97·5	15	—	—	e 26 26	PS	—	—	—
St. Louis	N.	98·8	350	e 13 33	−10	e 24 3	[−18]	i 17 33	PP	—
Berkeley		98·9	14	e 17 13	PP	e 26 48	PS	—	—	—
Honolulu		99·9	50	e 13 40	− 8	e 24 22	[− 5]	32 17	SS	e 44·5
Cape Girardeau	N.	100·0	348	e 17 38	PP	e 24 25	[− 2]	e 20 54	PPP	—
Tinemaha	N.	100·3	11	e 17 59	PP	—	—	—	—	—
Columbia		101·5	341	—	—	e 27 5	PS	—	—	e 48·1
Melbourne		101·7	132	—	—	i 24 40	[+ 5]	e 32 13	SS	55·3
Sydney		102·3	125	—	—	e 35 14	?	—	—	e 49·0
Riverview	N.	102·3	125	—	—	e 35 59	SSS	—	—	e 48·9
Pasadena		103·2	12	e 13 58	− 5	e 32 59	SS	i 18 11	PP	e 41·1
Riverside		103·5	12	e 18 10	PP	—	—	e 38 3	P'P'	—
La Jolla		104·6	11	e 18 21	PP	—	—	—	—	—
Tucson		106·0	6	e 14 12a	P	e 24 56	[+ 1]	18 31	PP	42·9
San Juan		110·4	322	e 19 12	PP	e 25 30	[+16]	28 37	PS	e 45·1
Fort de France		111·1	315	e 19 20	PP	e 28 48	PS	—	—	e 41·6
Christchurch		121·4	122	e 30 27	PS	36 59	SS	41 3	SSS	66·7
Rio de Janeiro	E.	126·3	272	e 21 1	PP	—	—	—	—	—
La Paz		140·1	298	19 29	[− 2]	26 17	[−22]	43 5	SS	72·5
Huancayo		141·0	311	e 19 33	[+ 1]	e 26 49	[+ 8]	e 22 31	PP	e 57·8

Additional readings :—
Andijan iPP = +1m.11s., i = +1m.15s.
Tchimkent iPP = +1m.38s., i = +1m.42s., +1m.48s., and +2m.29s.
Samarkand PP = +2m.27s., i = +3m.13s., +3m.29s., and +3m.43s.
Semipalatinsk i = +2m.16s., +2m.27s., and +2m.41s.
Agra iEN = +3m.47s.
Calcutta iPPPN = +5m.44s., iSSN = +10m.3s.
Bombay iEN = +6m.47s., iP$_c$PEN = +8m.53s., SSEN = +10m.9s.
Tiflis iN = +5m.15s.
Ksara iP$_c$S = +12m.58s.
Istanbul SS = +14m.30s.
Bucharest iE = +7m.11s., iN = +9m.11s., +17m.27s., and +19m.28s.
Hong Kong SS = +16m.3s., S$_c$S = +17m.37s.
Helwan PPP = +9m.3s.
Sofia ePEN = +6m.30s., iN = +12m.33s.
Zinsen iE = +21m.25s.
Kecskemet iZ = +7m.50s., +8m.3s., and +8m.11s., iP$_c$PZ = +9m.30s., iZ = +14m.56s., iS$_c$SZ = +17m.44s., eZ = +17m.56s. and +18m.57s.
Upsala eSSE = +16m.23s.
Belgrade iNW = +9m.19s. and +10m.8s., S$_c$SNE = +17m.29s., iNE = +22m.21s.
Budapest PPN = +9m.17s., P$_c$PE = +9m.23s., P$_c$SE = +13m.10s., SSN = +16m.51s., SSE = +17m.1s., S$_c$SN = +17m.17s., S$_c$SE = +17m.32s.
Ogyalla PPE = +9m.25s., iN = +11m.25s., eSE = +14m.5s., iN = +17m.25s.
Taikyu gives S as PP? and L as S.
Prague eSS = +17m.29s.?
Copenhagen SE = +14m.29s., e = +15m.4s., eN = +16m.41s., iSSZ = +17m.20s., eE = +17m.23s., eN = +17m.29s.
Potsdam i = +8m.0s. and +8m.11s., ePPEZ = +9m.29s., iP$_c$P = +9m.40s., iSN = +14m.33s., iE = +15m.11s., eN = +15m.29s., eNZ = +16m.59s.
Laibach i = +8m.19s., iNE = +18m.13s., +25m.15s., and +26m.9s.
Cheb eSS = +17m.57s.
Hof eSNW = +14m.47s., eNW = +17m.49s., eNE = +17m.59s.
Jena iPN = +8m.10s., iPE = +8m.14s., eSN = +14m.48s., eSZ = +14m.59s., eE = +17m.52s.
Triest iSS = +18m.5s.
Hamburg iPPE = +9m.59s., ePPN = +10m.11s., eSE = +14m.58s., iSSE = +17m.58s., eSSZ = +18m.4s., iE = eZ = +19m.41s.
Göttingen eE = +18m.29s.?
Stuttgart ePP = +10m.14s., ePPP = +10m.49s., eP$_c$S = +14m.32s., eS$_c$S = +18m.35s., iSS = +18m.49s.

Continued on next page.

Strasbourg iSSZ = +19m.4s.
De Bilt iE = +15m.45s., iSSE = +18m.48s., iZ = +18m.57s., iN = +19m.20s.
Uccle iZ = +8m.47s., iSS = +19m.10s.
Mizusawa PN = +8m.47s.
Aberdeen iPPP = +11m.40s., iSS = +19m.44s.
Paris SS = +19m.41s.
Marseilles i = +11m.15s., ePPP = +11m.58s., ePS = +17m.8s., eSS = +20m.50s.
Durham iN = +9m.4s., +10m.57s., and +11m.54s., iE = +16m.12s. and +19m.7s., iSSN = +19m.44s., iEN = +20m.1s., iN = +21m.16s., iEN = +22m.10s., +25m.59s. and +26m.9s.
Edinburgh i = +9m.6s., +9m.14s., +11m.11s., and +20m.10s.
Kew iZE = +12m.22s., iSSEN = +19m.47s., iE = +20m.7s., iNZ = +20m.19s.
Oxford i = +19m.54s.
Stonyhurst iP = +9m.7s., i = +20m.19s.
Bidston iSS = +20m.2s., i = +20m.26s.
Jersey e = +12m.17s. and +19m.47s.
Scoresby Sund +9m.26s., i = +9m.34s., +12m.6s., +12m.33s., and +17m.2s., SS = +20m.47s and +24m.5s.
Algiers i = +10m.17s., iPS? = +17m.34s.
Batavia eZ = +10m.29s., iN = +10m.53s.
Toledo iPPP = +13m.28s.
Tananarive E = +28m.7s.
College ePPP = +15m.7s., eSS = +24m.17s., eSSS = +26m.58s.
Saskatoon e = +5m.29s.?
Seven Falls PPS = +24m.15s.
East Machias PS = +24m.5s., PPS = +24m.57s.
Ottawa PPS = +24m.57s., SS = +30m.29s.?
Vermont ePPP = +18m.38s., iS = +24m.3s., ePS = +24m.57s., eSSS = +33m.29s.
Weston iPZ = +13m.7s., iPPPNZ = +18m.36s., iS?EN = +23m.49s., iPSN = +25m.13s., eSSN = +30m.31s., eSSSN = +33m.51s.
Harvard ePS = +25m.4s.
Williamstown iPPP = +18m.47s., iPS = +25m.25s., eSS = +30m.47s.
Cape Town ePN = +24m.23s., ePPE = +29m.47s., eE = +36m.59s., eN = +37m.47s. ; SKS is given as ePE ; SS is given as ePPN.
Butte PS = +25m.25s.
Bozeman eSS = +30m.55s.
Fordham i = +16m.32s., +19m.0s., and +25m.42s.
Philadelphia ePPP = +19m.2s., ePS = +25m.33s.
Chicago ePPP = +19m.26s., eS = +24m.43s., eSS = +31m.13s.
Adelaide i = +24m.19s.
St. Louis eN = +14m.35s., +19m.39s., and +21m.43s., iN = +26m.38s.
Berkeley eE = +16m.50s., eN = +17m.50s.
Cape Girardeau eN = +26m.49s.
Pasadena iZ = +17m.36s., ePPPZ = +20m.23s., iNZ = +27m.16s., ePKP,PKPZ = +38m.12s.
Tucson PPP = +20m.50s., PS = +27m.45s., SS = +33m.36s., SSS = +38m.0s.
San Juan ePPP = +21m.14s., iPS = +28m.44s., PPS = +29m.42s., SS = +35m.0s.
Christchurch L_Q = +58m.51s.
La Paz iPKPZ = +19m.37s.k, iSKP = +22m.27s., iPPN = +23m.18s., iZ = +25m.52s., iN = +32m.45s., SKSP = +33m.49s., iN = +34m.54s., iSSSN = +48m.9s., L_QN = +66m.51s.
Huancayo PP = +23m.20s., iPPS = +35m.1s., eSS = +41m.14s.
Long waves were also recorded at La Plata and Wellington.

June 20d. Readings also at 0h. (Wellington), 1h. (Balboa Heights), 2h. (Wellington and Medan), 3h. (Tashkent, Ksara, Mizusawa, and Sverdlovsk), 4h. (Batavia, Medan, and Perth), 5h. (Helwan and Balboa Heights), 7h. (Santiago, La Plata, and Tiflis), 14h. (Mount Wilson, La Jolla, Fordham, Berkeley, Williamstown, Weston, Harvard, Ottawa, Ksara, Honolulu, Perth, Huancayo, Pasadena, La Paz, Riverside, Tinemaha, and Tucson), 15h. (Adelaide, Manila, Vladivostok, Wellington, Brisbane, Riverview, Melbourne, Christchurch, Sverdlovsk, Tiflis, Tucson, Tinemaha, Riverside, Pasadena, and Ksara), 16h. (Ksara, Sverdlovsk, Tiflis (2), Triest, Sofia, Bucharest, Belgrade, Prague, Potsdam, Cheb, Paris, Strasbourg, De Bilt, Uccle, Moscow, and Padova), 21h. (near Irkutsk and Medan), 22h. (Bucharest, Sofia, Triest, La Paz, and Huancayo).

June 21d. 6h. Shock in South-west Pacific :—

Brisbane iPEN =33m.18s., iPPE =33m.48s., iPPN =33m.54s., iSN =36m.42s., iSE = 36m.48s.
Riverview ePEN =34m.17s., iE =34m.48s., iSN =38m.30s., eLN =42·4m.
Upsala eN =35m.30s., 51m.30s., eE =55m.18s., eLN =85m.
Adelaide iP =36m.7s., i =36m.54s., i =39m.37s., iS =40m.40s., L =42·7m.
Christchurch 39m.
Batavia iZ =39m.8s.
Vladivostok e =39m.50s. and 40m.20s.
Kodaikanal eE =40m.
Mount Wilson iPZ =41m.41s.
Pasadena ePZ =41m.41s., eZ =42m.11s., iZ =42m.16s.
Riverside iPZ =41m.43s., iZ =42m.15s. and 42m.18s.
Tinemaha ePE =41m.48s., eN =42m.20s.
Tucson eP =42m.6s.a, i =42m.38s., 42m.51s., and 56m.1s.
Calcutta N. eP =45m.44s., ePP =47m.14s., iS =52m.12s., iSS =54m.56s., eSSS = 55m.49s., iL =58m.27s.
Ksara i =48m.15s., e =51m.11s., 52m.31s., 60m.49s., and 62m.29s.
Tashkent e =48m.29s.
Stuttgart ePZ =48m.29s., eZ =51m.38s., eN =63m.0s., e =67m.18s., eL =90m.
Basle eP =48m.32s.
Zurich eP =48m.33s.
Paris ePKP =48m.36s., L =96m.0s.
San Juan e =48m.37s., i =49m.17s. and 49m.37s.
Puy de Dôme ePKP =48m.43s.
Zi-ka-wei eE =48m.50s.
Tiflis eE =50m.10s., eN =50m.35s.
Strasbourg eSKP =52m.12s., eL =93m.0s.
Weston ePZ =53m.13s., eLN =104m.0s.
Potsdam eZ =54m.0s., eEN =60m.0s., eL =90m.0s.
Fordham i =57m.58s.
Tashkent eS =60m.0s., e =65m.44s., eL =69m.6s.
Bombay eEN =62m.22s.
Long waves were also recorded at Wellington.

June 21d. 6h. 43m. 34s. Epicentre 20°·4N. 122°·0E.

A = −·4971, B = +·7955, C = +·3465 ; $\delta = -1$; $h = +5$;
D = +·848, E = +·530 ; G = −·184, H = +·294, K = −·938.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Taihoku		4·6	355	e 1 2	−10	1 52	−15	—	—	—
Manila		5·8	190	i 1 46a	P*	3 10	S_g	—	—	—
Hong Kong		7·5	285	1 54	+ 1	3 24	+ 4	3 53	S*	4·9
Phu-Lien		14·4	275	e 3 27	0	e 6 31	SSS	—	—	—
Hukuoka B		15·1	29	e 3 34	− 2	e 7 55	L	—	—	(7·9)
Husan		15·9	22	e 3 46	− 1	—	—	—	—	10·6
Taikyu		16·5	20	e 3 45	− 9	e 5 5	?	—	—	—
Zinsen		17·5	348	e 4 7	0	e 7 23	+ 2	—	—	e 9·9
Heizyo	N.	18·9	8	i 4 22	− 2	—	—	—	—	—
Nagoya		19·7	39	e 4 38	+ 4	8 31	SS	—	—	—
Vladivostok		24·1	18	e 5 20	+ 2	(e 9 38)	+ 4	—	—	e 9·6
Mizusawa		24·9	37	e 4 46	−40	e 9 53	+ 6	—	—	—
Medan		28·2	238	5 56	0	—	—	i 6 51	PP	e 17·8
Batavia		30·3	211	6 20	+ 5	—	—	—	—	—
Irkutsk		34·7	341	e 6 58	+ 4	e 12 34	+10	—	—	17·4
Agra	E.	40·7	288	e 9 44	PP	—	—	—	—	—
Bombay		46·2	277	e 9 26	+58	—	—	—	—	—
Tashkent		49·0	308	e 8 56	+ 6	e 15 47	− 8	—	—	e 25·5
Sverdlovsk		57·6	326	i 9 54	0	17 44	− 7	—	—	27·4
Baku		63·6	306	e 10 50	+15	e 20 2	+54	—	—	e 33·8
Tiflis		67·3	308	e 10 57	− 2	e 19 39	−15	—	—	e 33·4
Moscow		70·3	324	e 11 16	− 1	e 20 27	− 2	—	—	36·9
Pulkovo		73·4	329	e 11 42	+ 6	e 20 44	−21	14 22	PP	—
Mount Wilson	Z.	101·2	47	i 13 36	−18	—	—	—	—	—
Riverside	Z.	101·8	47	e 13 32	−24	—	—	—	—	—

Additional readings :—
Tashkent eS = +16m.26s., e = +22m.10s.
Pulkovo PPP = +16m.0s.
Mount Wilson iPZ = +13m.15s.
Riverside ePZ = +13m.9s.
Long waves were also recorded at Göttingen, Copenhagen, Hamburg, Cheb, De Bilt, Edinburgh, Prague, Kew, and La Paz.

June 21d. 14h. Shock recorded locally :—

Tokyo Imp. Univ. P = 34m.3s., S = 34m.19s.
Komaba P = 34m.5s., S = 34m.22s.
Mitaka P = 34m.6s., S = 34m.23s.
Tukubasan P = 34m.6s., S = 34m.17s.
Kamakura P = 34m.11s., S = 34m.30s.
Kiyosumi P = 34m.11s., S = 34m.31s.
Koyama P = 34m.11s., S = 34m.33s.
Misaki P = 34m.11s., S = 34m.26s.
Titibu P = 34m.11s., S = 34m.27s.
Yosiwara P = 34m.11s., S = 34m.36s.
Nagoya eP = 34m.33s., S = 35m.28s.
Mizusawa eSE = 34m.50s.

June 21d. Readings also at 0h. (Andijan), 1h. (Almata, Tchimkent, Tashkent, and Semipalatinsk), 2h. (Montserrat), 3h. (Almata), 6h. (Fort de France and Tiflis), 7h. (Huancayo), 11h. (Samarkand), 13h. (La Paz), 14h. (Jersey), 15h. (Amboina), 16h. (Samarkand, Almata, Andijan, Tchimkent, Tashkent, Frunse, Sverdlovsk, and Semipalatinsk), 19h. (Manila and Wellington), 22h. (Tucson).

June 22d. 23h. 8m. 7s. Epicentre 1°·0S 148°·0E.

Felt in New Guinea ; force IV at Kerema (Gulf Division, Papua) ; and force III at Buna.

Epicentre 1°·0S. 150°·0E. (U.S.C.G.S.).

See " Annales de l'Institut de Physique du Globe de Strasbourg, 1938," Tome III, 2 eme partie. Seismologie Mende, 1941, p. 48.

$A = -\cdot 8479$, $B = +\cdot 5298$, $C = -\cdot 0173$; $\delta = -8$; $h = +7$;
$D = +\cdot 530$, $E = +\cdot 848$; $G = +\cdot 015$, $H = -\cdot 009$, $K = -1\cdot 000$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila	30·9	302	e 6 22	+ 2	11 22	− 2	—	—	14·7
Riverview	32·8	176	e 6 44	+ 7	e 12 9	+15	i 13 24	SS	e 15·3
Adelaide	34·9	194	e 6 52	− 3	i 12 34	+ 7	i 15 59	SSS	i 17·2
Melbourne	36·8	184	—	—	e 12 55	− 1	i 16 21	SSS	23·8
Koti	37·0	338	—	—	i 13 23	+24	—	—	—
Hong Kong	40·3	307	8 31	+51	13 50	+ 1	15 13	SS	—
Mizusawa	40·4	352	8 2	+21	14 22	+32	—	—	—
Perth	43·2	222	i 11 55	?	i 15 53	?	—	—	18·8
Vladivostok	46·3	343	e 8 45	+16	i 15 43	+27	—	—	19·6
Wellington	46·8	153	e 11 53	PPP	i 15 5	−19	—	—	15·7
Irkutsk	64·5	332	10 46	+ 5	i 19 29	+10	—	—	e 31·7
Tashkent	82·2	312	i 12 17	− 7	i 22 23	−16	—	—	—
Pasadena	93·7	56	i 13 18	− 2	—	—	—	—	—
Mount Wilson	93·8	56	i 13 19	− 1	—	—	—	—	—
Riverside	94·4	56	i 13 19	− 4	—	—	—	—	—
Grozny	99·6	313	e 23 57	S	(e 23 57)	[−28]	—	—	—
Tiflis	100·5	311	e 18 32	PP	e 25 53	+28	—	—	e 54·7
Ksara	108·8	304	e 19 46	PP	e 29 16	PPS	—	—	61·7
De Bilt	120·3	335	e 20 43	PP	—	—	—	—	e 50·7
Ottawa	121·4	34	e 18 45	[−10]	—	—	(30 43?)	PS	30·7
Paris	123·9	333	—	—	e 32 4	PPS	—	—	66·7
Williamstown	124·5	35	i 18 51	[−10]	—	—	e 20 55	PP	—
Fordham	125·2	37	e 18 48	[−15]	—	—	i 20 58	PP	—
Weston	125·8	35	i 18 55k	[− 9]	e 38 16	SS	i 21 6	PP	—
San Juan	142·3	60	e 19 31	[− 4]	—	—	e 23 29	PP	—
Fort de France	148·1	65	e 19 32	[−12]	—	—	—	—	—

Additional readings :—
Riverview iE = +10m.18s.
Adelaide i = +7m.15s., iS? = +10m.46s.
Mizusawa PN = +8m.5s.
Perth i = +13m.13s.
Tiflis eEN = +23m.59s.
Williamstown i = +21m.52s.
Fordham i = +21m.48s.
Weston iZ = +21m.57s.
Long waves were also recorded at Upsala, Potsdam, Strasbourg, and Copenhagen.

June 22d. Readings also at 1h. (Manila (2), Vladivostok, Irkutsk, Tashkent, and Sverdlovsk), 2h. (Tiflis), 3h. (Harvard, Chicago, Florissant, Philadelphia, Sitka, East Machias, Butte, Riverside, Mount Wilson, Sverdlovsk, Tashkent (2), Irkutsk, Vladivostok, and Tucson), 4h. (Samarkand), 8h. (Tananarive (2) and Nagoya), 9h. (Tucson), 12h. (near Santiago and Fort de France), 14h. (Samarkand), 15h. (Samarkand), 18h. (Mizusawa).

June 23d. 1h. 4m. 6s. Epicentre 28°·0S. 70°·0W.

Andes—Central Chile.

Felt at la Serena and at Coquimbo.

Epicentre 30°·0S. 70°·0W. (U.S.C.G.S.). Depth 75km.

See Annales de l'Institut de Physique du Globe de Strasbourg, 1938, Tome III, 2e partie, Seismologie Mende, 1941, p. 48.

$A = +\cdot3024$, $B = -\cdot8310$, $C = -\cdot4670$; $\delta = +10$; $h = +2$;
$D = -\cdot940$, $E = -\cdot342$; $G = -\cdot160$, $H = +\cdot439$, $K = -\cdot884$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Copiapo	0·7	335	0 48	+31	1 17	+49	—	—	—
Montezuma	5·5	12	i 1 34	P*	i 3 5	S_g	—	—	4·0
Santiago	5·5	186	1 9	−16	1 57	−33	—	—	—
San Javier	7·8	191	1 41	−17	3 9	−19	—	—	—
La Paz	11·6	9	2 58	+ 8	i 5 29	SSS	—	—	6·4
La Plata	12·4	127	3 1	0	5 12	− 9	—	—	6·3
Huancayo	16·6	341	i 4 4	+ 8	i 7 44	SSS	i 4 27	PPP	i 8·0
Rio de Janeiro	24·7	83	e 5 24	0	i 9 52	+ 8	—	—	i 12·0
Balboa Heights	37·9	345	e 6 54	−26	—	—	—	—	—
Fort de France	43·3	13	i 8 3	− 2	—	—	—	—	—
San Juan	46·3	6	e 8 44	+15	e 15 5	−11	e 10 37	PP	e 19·1
Cape Girardeau E.	67·5	344	e 11 17	+17	e 20 19	PS	14 36	PPP	—
Fordham	68·6	357	11 3	− 4	20 37	PS	14 2	PP	—
Florissant	69·1	344	i 11 7	− 3	e 20 11	− 4	i 11 26	pP	—
Williamstown	70·4	358	i 11 19	+ 1	—	—	—	—	—
Weston	71·0	359	e 11 16	− 6	e 20 51	+14	—	—	—
Tucson	71·4	324	e 11 21k	− 3	—	—	—	—	—
Ottawa	73·2	356	e 11 54	+19	e 21 28	+26	—	—	28·9
Seven Falls	74·8	359	—	—	e 21 47	PS	—	—	30·9
Riverside	76·2	321	i 11 50	− 2	—	—	—	—	—
Mount Wilson	76·8	321	i 11 52	− 3	—	—	—	—	—
Pasadena	76·8	321	i 11 53	− 2	i 22 8	PS	—	—	—
Santa Barbara	77·9	320	i 12 17	+16	—	—	—	—	—
Haiwee	78·2	322	e 11 59	− 4	e 22 23	PS	—	—	—
Tinemaha	79·0	322	i 12 5	− 2	e 22 34	PS	—	—	—
Paris	100·1	40	i 17 54?	PP	—	—	—	—	50·9
Uccle	102·1	38	—	—	i 24 36	[− 1]	—	—	e 44·9
Strasbourg	103·0	42	e 18 48	PP	e 28 0	PPS	—	—	e 65·9
De Bilt	103·2	38	e 18 24	PKP	—	—	—	—	e 44·9
Ksara	117·4	65	e 20 5	PP	e 29 59	PS	e 36 35	SS	—
Tiflis	126·0	58	e 21 1	PP	e 31 5	PS	e 37 46	SS	61·9
Grozny	126·9	55	e 19 59	[+53]	—	—	—	—	—
Baku	129·7	59	22 34	PP	e 32 59	PPS	—	—	e 64·9
Tashkent	144·3	57	i 19 35	[− 3]	—	—	e 23 14	PP	e 60·7
Andijan	146·7	58	19 46	[+ 4]	—	—	—	—	—
Frunse	147·8	53	19 44	[0]	—	—	—	—	—
Irkutsk	155·4	8	e 20 15	[+20]	—	—	e 36 54?	PPS	e 79·9

Additional readings :—
Montezuma S = +2m.57s., iS = +3m.31s.
La Paz iPZ = +3m.4s.
Huancayo iP = +4m.8s., i = +4m.39s., +4m.48s., +4m.55s., +5m.4s., +5m.24s., +5m.32s., and +7m.14s.
San Juan PPP = +10m.52s.
Cape Girardeau eE = +12m.5s.
Florissant isSE = +20m.39s., esSN = +20m.42s. eE = +28m.47s.,

Continued on next page.

Williamstown i = +11m.37s., +11m.44s., and +11m.57s.
Weston iZ = +11m.35s.
Tucson iP = +11m.47s.
Riverside iZ = +12m.8s. and +12m.16s.
Mount Wilson iZ = +12m.12s.
Pasadena iZ = +12m.12s. and +12m.20s.
Strasbourg e = +23m.54s.?
Tiflis eN = +31m.11s., eE = +31m.17s.
Tashkent i = +19m.55s.
Andijan e = +20m.51s.
Irkutsk e = +24m.16s., +28m.54s.?, and +42m.54s.
Long waves were also recorded at Puy de Dôme, Kew, Cheb, Edinburgh, Potsdam, and Copenhagen.

June 23d. 12h. 55m. 22s. Epicentre 20°·2S. 169°·5E.

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

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane	16·7	241	i 3 56	− 1	i 7 8	+ 5	—	—	—
Apia	19·0	73	i 4 31	+ 5	7 48	− 7	4 42	pP	—
New Plymouth	19·3	168	4 28	− 1	8 15	+13	i 4 56	PPP	—
Riverview	21·2	227	i 4 47k	− 2	i 8 42	+ 1	i 5 0	pP	e 10·1
Sydney	21·2	227	i 4 45	− 4	i 8 37	− 4	—	—	11·1
Wellington	21·5	170	i 4 46	− 6	8 43	− 4	5 6	pP	10·4
Christchurch	23·4	174	i 5 7a	− 4	i 9 18	− 3	i 5 32	pP	—
Melbourne	27·6	226	5 58	+ 7	10 26	− 6	i 6 25	PP	13·2
Adelaide	30·9	236	e 6 25	+ 5	i 11 13	−11	i 7 8	PP	i 13·2
Amboina N.	43·5	288	e 8 7	0	e 14 26	−10	—	—	24·6
Perth	49·2	246	(8 53)	+ 1	15 16	−42	i 9 57	PP	21·9
Honolulu	52·2	40	e 9 22	+ 7	16 42	+ 3	e 11 25	PP	e 21·9
Titizima	53·9	330	9 27	0	—	—	—	—	—
Manila	58·9	303	i 10 1a	− 2	i 18 9	+ 1	—	—	—
Hatidyozima	60·1	333	10 16	+ 5	18 29	+ 5	—	—	—
Mera	61·0	333	10 23	+ 5	18 47	+12	—	—	—
Miyakozima	62·0	315	10 24	0	18 47	− 1	—	—	—
Misima	62·2	332	10 25	− 1	18 45	− 6	—	—	—
Batavia	62·3	275	10 23	− 3	i 18 48	− 4	—	—	25·6
Tokyo, Cen. Met. Ob.	62·3	334	10 29	+ 3	18 53	+ 1	—	—	—
Yakusima	62·8	323	10 30	0	—	—	—	—	—
Nagoya	63·1	332	e 10 34	+ 2	—	—	—	—	—
Gihu	63·4	332	10 34	0	19 6	0	—	—	—
Miyazaki	63·4	325	10 35	+ 1	18 59	− 7	—	—	—
Oiwake	63·4	333	10 33	− 1	19 5	− 1	—	—	—
Kagosima	63·6	323	10 28	− 7	—	—	—	—	—
Koti	63·6	327	10 35	0	19 9	+ 1	—	—	—
Hukusima	63·8	336	10 36	0	19 12	+ 1	—	—	—
Hirosima	64·7	327	10 41	− 1	19 21	− 1	—	—	—
Mizusawa	64·7	337	10 39	− 3	19 24	+ 2	—	—	—
Nagasaki	64·8	325	10 43	0	19 26	+ 3	—	—	—
Hukuoka B	65·2	326	i 10 45a	0	19 27	− 1	—	—	26·2
Husan	67·1	326	9 58	−59	18 56	−55	—	—	—
Mori	67·5	339	11 3	+ 3	20 1	+ 5	—	—	—
Taikyu	67·9	326	e 11 2	0	e 20 1	0	—	—	e 29·8
Hong Kong	68·6	306	11 5k	− 2	20 9	0	24 27	SS	32·8
Keizyo	70·0	326	11 16	+ 1	e 20 5	−21	—	—	—
Zinsen	70·1	325	e 11 15	− 1	e 20 28	+ 1	—	—	—
Vladivostok	71·9	333	i 11 29	+ 2	i 20 52	+ 4	—	—	e 25·7
Medan	73·3	281	e 11 40	+ 5	i 21 2	− 2	—	—	40·6
Phu-Lien	73·8	300	e 11 38	0	e 21 9	0	—	—	—
Branner	86·1	48	e 12 44	0	—	—	—	—	—
Berkeley	86·2	48	e 12 43	− 1	e 23 7	[− 2]	e 16 21	PP	e 39·6
Ukiah	86·2	46	i 12 45	+ 1	e 23 3	[− 6]	e 24 35	PPS	e 36·0
Lick	86·4	48	e 12 47	+ 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		86·4	52	i 12 38	− 7	—	—	—	—	—
Fresno	N.	87·4	49	e 12 52	+ 2	—	—	—	—	—
La Jolla		87·6	54	e 12 52	+ 1	—	—	—	—	—
Mount Wilson		87·6	53	i 12 51a	0	—	—	i 16 17	PP	—
Pasadena		87·6	53	i 12 50a	− 1	e 23 28	− 4	i 16 17	PP	i 36·1
Riverside		88·0	53	i 12 52a	− 1	—	—	e 38 45	P'P'	—
Haiwee		88·5	51	e 12 57	+ 1	—	—	—	—	—
Tinemaha		88·7	50	e 12 59	+ 2	e 23 43	0	—	—	—
Sitka		89·7	27	e 12 56	− 5	e 23 27	[− 4]	e 25 19	PPS	41·4
Calcutta	N.	89·8	294	e 13 58	+56	i 23 53	0	e 16 57	PP	e 39·3
College		90·9	17	e 13 6	− 1	e 23 30	[− 8]	e 16 39	PP	e 37·0
Irkutsk		91·6	327	13 9	− 1	23 39	[− 4]	e 16 31	PP	40·6
Colombo	E.	92·0	277	—	—	23 42	[− 2]	—	—	—
Tucson		92·2	57	e 13 14	+ 1	24 22	+ 8	i 17 9	PP	e 41·7
Kodaikanal	E.	95·4	279	e 13 26	− 2	i 24 14	[+11]	i 31 8	SS	45·2
Butte		96·3	43	e 17 23	PP	e 24 3	[− 5]	e 26 19	PS	e 44·6
Hyderabad		96·8	286	e 13 42	+ 8	24 3	[− 7]	24 48	S	41·8
Bozeman		97·1	44	e 17 48	PP	e 24 8	[− 4]	e 19 52	PPP	e 43·9
Tacubaya	N.	97·7	72	i 13 41	+ 3	e 36 7	SSS	—	—	—
Agra	E.	100·2	296	13 44	− 5	24 17	[−11]	17 53	PP	48·2
Bombay		102·4	286	i 14 0	+ 1	i 24 35	[− 4]	e 18 11	PP	51·7
Almata		105·4	311	e 18 0	PP	—	—	—	—	—
Frunse		107·0	310	e 18 12	PP	—	—	—	—	—
Andijan		108·2	307	e 14 13	P	—	—	e 19 14	PP	—
Huancayo		108·6	111	e 14 35	P	e 24 57	[−9]	e 19 5	PP	e 44·6
Florissant		110·1	54	e 14 48	P	e 26 17	{+11}	e 19 15	PP	—
St. Louis	E.	110·2	54	—	—	e 25 14	[+ 1]	e 29 20	PPS	—
Cape Girardeau	E.	110·4	55	e 19 5	PP	e 28 35	PS	—	—	—
Tananarive		111·1	239	—	—	26 11	{− 2}	34 53	SS	58·3
La Paz		112·7	118	e 14 49	P	29 3	PS	19 20	PP	53·1
Chicago		112·8	51	e 19 28	PP	e 29 0	PS	—	—	—
Columbia		116·8	60	—	—	29 48	PS	—	—	e 56·3
Sverdlovsk		117·0	325	e 18 36	[−11]	29 39	PS	i 19 56	PP	48·6
Cape Town		119·5	207	—	—	e 27 11	{+ 1}	e 29 56	PS	56·1
Georgetown		120·4	55	e 20 17	PP	e 25 46	[− 5]	e 30 7	PS	e 56·6
Ottawa		121·4	47	e 18 54	[− 1]	e 30 2	PS	e 20 26	PP	35·6
Philadelphia		121·9	55	e 20 29	PP	e 26 7	[+11]	e 30 3	PS	e 51·2
Fordham		122·9	53	18 46	[−12]	i 30 9	PS	e 20 35	PP	—
Vermont		123·2	49	e 20 44	PP	e 30 43	PS	e 37 49	SS	e 51·8
Williamstown		123·3	51	i 18 58	[− 1]	e 30 48	PS	i 20 38	PP	—
Harvard		124·6	51	i 19 0a	[− 1]	e 38 0	SS	e 20 46	PP	e 59·6
Seven Falls		124·6	45	e 20 46	PP	i 30 41	PS	i 32 30	PPS	62·6
Weston		124·7	51	i 19 0	[− 2]	e 30 52	PS	i 20 48	PP	—
Baku		125·2	306	19 5	[+ 3]	31 21	SKSP	i 20 56	PP	57·6
East Machias		127·3	48	e 21 8	PP	e 31 16	PS	e 38 52	SS	—
San Juan		127·7	81	e 19 10	[+ 2]	e 26 49	[+35]	e 21 11	PP	e 52·8
Grozny		128·0	309	19 4	[− 4]	—	—	—	—	—
Tiflis		128·9	307	i 19 10	[0]	e 27 53	{−19}	21 16	PP	e 49·6
Scoresby Sund		129·2	5	21 19	PP	31 26	PS	i 22 34	PKS	—
Moscow		129·6	326	19 9	[− 2]	27 10	[+51]	21 23	PP	53·1
Pulkovo		131·0	334	e 19 12	[− 2]	31 54	PS	e 22 34	PKS	e 53·4
Ivigtut		131·3	23	19 10	[− 4]	—	—	21 32	PP	—
Fort de France		131·5	88	i 19 33	[+18]	e 21 48	PP	—	—	23·0
Upsala		135·6	340	e 22 53	PP	e 45 38?	SSS	—	—	e 59·6
Simferopol		135·8	315	e 19 19	[− 4]	—	—	—	—	82·6
Ksara		136·8	298	i 19 26a	[+ 2]	i 34 30	PPS	22 3	PP	—
Copenhagen		140·6	340	19 23	[− 8]	41 14	SS	22 23	PP	58·6
Istanbul		140·6	311	19 26	[− 5]	31 43	?	41 30	SS	73·6
Helwan		141·1	293	i 19 23	[− 9]	—	—	22 50	PP	—
Aberdeen		142·6	352	e 20 14	[+39]	—	—	e 22 59	PP	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.
Potsdam		143·0	336	e 19 26	[−10]	—	—	e 22 38	PP	64·6
Hamburg		143·2	340	i 19 32a	[− 4]	e 37 3	?	—	—	e 62·6
Budapest		143·7	325	i 19 37	[0]	—	—	—	—	e 71·6
Sofia		143·8	316	e 19 37	[0]	e 41 31	SS	—	—	—
Edinburgh		143·9	353	e 19 46	[+ 9]	—	—	—	—	e 58·6
Ogyalla	N.	144·0	326	e 18 55	[−42]	—	—	—	—	—
Prague		144·2	332	e 19 37	[0]	e 35 8	PPS	e 22 50	PP	e 56·6
Belgrade		144·5	321	i 19 37k	[− 1]	30 6	{+19}	—	—	e 74·8
Jena		144·7	335	i 19 38	[0]	—	—	—	—	e 65·6
Durham		144·8	351	i 19 40	[+ 1]	—	—	—	—	—
Göttingen		144·8	339	i 19 40	[+ 1]	—	—	—	—	e 65·6
Cheb		145·1	335	e 19 39	[0]	e 33 17	PS	—	—	e 65·6
De Bilt		145·9	343	i 19 40a	[− 1]	—	—	i 23 5	PP	e 71·6
Stonyhurst		145·9	352	i 19 39	[− 2]	—	—	—	—	69·6
Bidston		146·4	353	i 19 43	[+ 2]	—	—	e 23 9	PP	e 60·6
Uccle		147·3	344	e 19 42a	[− 1]	i 30 1	{− 2}	i 23 13	PP	e 69·6
Stuttgart		147·4	336	i 19 42a	[− 1]	e 30 9	{+ 5}	e 42 31	SS	e 70·6
Karlsruhe		147·5	337	i 19 47	[+ 4]	—	—	—	—	e 77·6
Oxford		147·5	350	i 19 46a	[+ 3]	i 29 59	{− 5}	i 23 23	PP	e 68·6
Triest		147·7	327	e 19 44	[0]	—	—	—	—	64·6
Kew		147·8	348	e 19 43a	[− 1]	—	—	e 23 15	PP	e 61·6
Strasbourg		148·1	337	i 19 43a	[− 1]	i 30 6	{− 1}	i 23 18	PP	e 73·6
Padova		148·8	329	e 19 59	[+14]	—	—	—	—	e 32·0
Basle		149·0	336	e 19 44	[− 2]	—	—	—	—	—
Paris		149·6	343	i 19 46	[0]	—	—	23 28	PP	73·6
Florence		150·3	327	e 19 48	[0]	30 13	{− 6}	—	—	—
Moncalieri		151·0	334	e 20 0	[+11]	e 29 43	{−41}	e 14 50	P	—
Puy de Dôme		152·2	339	e 19 53	[+ 2]	—	—	—	—	—
Toledo		159·6	346	i 19 59	[− 1]	—	—	i 24 22	PP	—
Algiers		159·7	326	20 38	[+38]	34 50	SKSP	44 11	SS	80·6
Almeria		162·0	339	e 20 14	[+11]	—	—	e 24 42	PP	e 78·8
Granada		162·0	343	e 19 59	[− 4]	24 35	PP	—	—	—
Malaga		162·7	343	20 7	[+ 4]	44 50	SS	i 24 38	PP	56·6
San Fernando		163·4	348	e 20 8	[+ 4]	e 45 2	SS	24 52	PP	79·6

Additional readings :—
Apia iPP = +4m.59s., i = +6m.4s., sS? = +8m.11s., i = +8m.18s. and +8m.34s.
New Plymouth i = +5m.26s. and +11m.12s.
Riverview iE = +5m.30s., iEN = +5m.52s., iZ = +8m.46s., isSN = +9m.5s.
Sydney i = +4m.51s.
Wellington i = +5m.18s. and +5m.44s., SS = +9m.23s., i = +9m.44s. and +10m.6s., S_cS = +16m.7s.
Christchurch iNZ = +5m.32s., isP = +5m.45s., iP_cP = +8m.50s., eZ = +11m.8s., P_cSE = +12m.21s., iN = +15m.23s., S_cSEN = +16m.11s.
Melbourne i = +10m.45s.
Adelaide e = +10m.54s.
Perth P = +6m.21s., pP = +8m.10s., S = +11m.52s., i = +14m.30s., SS = +16m.16s., i = +17m.34s., +19m.33s., and +19m.54s. The phases entered are given as PP, i, and sS respectively. The whole record appears to have been wrongly interpreted.
Honolulu ePPP = +12m.35s., SS = +19m.54s.
Mizusawa PE = +10m.43s.
Hong Kong P_cP = +11m.25s.
Branner eE = +12m.48s.
Berkeley iPEZ = +12m.46s., eE = +22m.43s., iE = +23m.43s., eNZ = +24m.39s.
Ukiah eS = +23m.20s.
Lick iPE = +12m.50s.
Pasadena ePSE = +24m.31s., iSSN = +30m.4s., iPKP,PKPZ = +38m.49s.
Mount Wilson ePKP,PKPZ = +38m.49s.
Calcutta N. ePPP = +18m.37s., iPS = +24m.33s., eSS = +29m.5s., eSSS = +32m.12s.
College eS = +23m.59s., ePS = +24m.49s., PPS = +25m.27s., eSS = +30m.4s.
Irkutsk iS = +24m.9s., PS = +25m.22s., SS = +30m.26s.
Tucson iP = +13m.17s., PPS = +25m.28s., eSSS = +34m.7s.
Kodaikanal iSE = +24m.59s., SSS = +34m.52s.
Bozeman eS = +24m.58s., ePS = +26m.11s., eSSS = +35m.9s.
Agra SKKSE = +25m.16s., PSE = +26m.42s., SSE = +32m.32s., SSSE = +36m.27s.
Bombay eE = +26m.35s., iEN = +28m.5s. and +29m.10s., iE = +32m.38s.
Huancayo ePPP = +20m.30s., eS = +26m.14s., iPS = +28m.15s., iPPS = +29m.36s., SS = +33m.48s., iSS = +34m.21s., iSSS = +37m.41s.

Continued on next page.

Florissant eE = +18m.2s., eSPE = +28m.50s., eSPZ = +28m.54s.
St. Louis eSKKSE = +26m.16s., eE = +28m.1s., iE = +35m.41s.
Cape Girardeau eE = +19m.30s.
Tananarive N = +34m.3s., eN = +35m.18s.
La Paz PPS = +30m.10s., SSN = +36m.27s.
Sverdlovsk e = +15m.2s., i = +27m.47s., PPS = +31m.1s., SS = +35m.38s., eSSS = +40m.20s.
Cape Town E = +33m.56s.
Georgetown eSS = +36m.7s.
Philadelphia eSS = +37m.4s., eSSS = +41m.34s.
Fordham PKP = +14m.46s., e = +32m.12s. and +33m.8s.
Williamstown e = +29m.23s., +32m.19s., +41m.8s., and +46m.25s.
Harvard eE = +21m.52s., +33m.26s., eN = +42m.12s.
Seven Falls e = +22m.8s.
Weston eP = +15m.44s.k, eSKPE = +22m.16s., ePPPZ = +23m.52s., ePPSZ = +32m.37s., eSSEZ = +38m.8s.
Baku PPS = +32m.37s., SSS = +42m.20s.
East Machias eSSS = +42m.58s.
San Juan eSSS = +43m.8s.
Tiflis PPE = +21m.22s., ePKSN = +22m.24s., iPKSZ = +22m.33s., ePPPE = +23m.52s., eSKKSE = +28m.1s., eSKSPN = +31m.3s., eSKSPE = +31m.7s., ePSZ = +31m.19s., ePPSZ = +32m.19s., eSSE = +38m.28s., eN = +38m.46s.
Scoresby Sund +30m.44s.
Moscow e = +16m.49s., PKS = +22m.33s., e = +29m.35s.
Pulkovo SKSP = +32m.8s.
Ivigtut +22m.33s.
Fort de France PP = +19m.38s., PPP = +19m.41s.
Upsala eN = +20m.38s.?
Copenhagen PKS = +23m.6s., PPS = +35m.8s., SSS = +46m.8s.
Istanbul PKP = +22m.30s., PS = +34m.34s., PPS = +35m.55s.
Helwan e = +22m.20s.
Potsdam iZ = +19m.30s., iEN = +19m.33s., eE = +23m.20s., eZ = +24m.38s.
Ogyalla eE = +18m.43s.
Belgrade eZ = +19m.58s., eNW = +20m.10s., +23m.55s., and +31m.58s.
Durham iN = +19m.51s.
Bidston e = +22m.25s.
Uccle i = +19m.47s., iSSSN = +48m.13s.
Stuttgart iPKP = +19m.46s., iPKPZ = +20m.3s., ePKS = +23m.10s., $ePPP_2$ = +33m.4s., eSS = +42m.31s.
Oxford i = +33m.19s.
Kew i = +19m.47s., eEN = +22m.28s.
Strasbourg i = +28m.0s., ePSKS = +33m.35s., ePPS = +36m.16s., eSS = +42m.38s.
Basle i = +19m.51s.
Florence e = +13m.13s.
Toledo $iPKP_2$ = +20m.41s., e = +33m.59s. and +35m.4s., eSS = +39m.21s.
Algiers SKP = +24m.4s.
Malaga i = +23m.18s.
Long waves were also recorded at Bergen and La Plata.

June 23d. Readings also at 0h. (Grozny), 1h. (New Plymouth (4) and Wellington (7)), 2h. (Wellington), 3h. (Weston and Williamstown), 5h. (Moncalieri), 6h. (Fort de France, Frunse, and Andijan), 7h. (Balboa Heights, Wellington, and Grozny), 8h. (Andijan, Malaga, and Almeria), 9h. (Medan), 10h. (Samarkand (2)), 11h. (Amboina, Rio de Janeiro, Tashkent, and Manila), 12h. (Sverdlovsk), 13h. (Tiflis and Lick), 14h. (Florence), 16h. (Florence), 17h. (Manila), 21h. (Malaga and Wellington), 22h. (Granada, Ksara, Pasadena, Mount Wilson, Riverside, Tucson, Tiflis, La Jolla, Malaga, Grozny, and Almeria), 23h. (Brisbane and Adelaide).

June 24d. 12h. Central Asia :—

Samarkand P = 45m.35s., e = 45m.48s. and 45m.58s., S_g = 46m.32s.
Sverdlovsk e = 45m.38s., L = 62m.
Tashkent iP = 45m.43s. eS = 47m.13s., iL = 47m.42s.
Andijan P = 45m.44s., e = 46m.1s. and 46m.35s., iS = 46m.52s., e = 47m.5s. and 47m.27s.
Tchimkent P = 45m.58s., iS = 47m.15s.
Frunse eP = 46m.16s., S = 47m.57s., e = 48m.41s.
Almata e = 46m.47s., 48m.23s., and 49m.27s.
Agra ePE = 46m.49s., SE = 48m.30s.
Sotchi eP = 47m.18s.
Grozny eP = 48m.47s.
Tiflis PZ = 48m.49s., ePE = 48m.52s., eN = 52m.18s., eS = 52m.35s., eLZ = 54m.30s.
Baku eP = 51m.16s., i = 55m.0s., e = 61m.13s. and 71m.0s.
Calcutta eN = 52m.46s., iN = 55m.18s.
Bombay iE = 53m.27s.
Long waves recorded at Ksara, Irkutsk, Istanbul, Sofia, Bucharest, Triest, and Copenhagen.

June 24d. 13h. Shock recorded locally.
Komaba P =6m.28s., S =6m.47s.
Tokyo, Cen. Met. Obs. iP =6m.29s., iS =6m.46s.
Tokyo, Imp. Univ. P =6m.29s., S =6m.46s.
Mitaka P =6m.31s., S =6m.50s.
Tukubasan P =6m.31s., S =6m.41s.
Kamakura P =6m.42s., S =7m.3s.
Kiyosumi P =6m.42s., S =7m.1s.
Koyama P =6m.42s., S =7m.9s.
Misaki P =6m.42s., S =7m.2s.
Titibu P =6m.42s., S =7m.6s.
Mizusawa P =6m.49s., iS =7m.19s.
Susaki P =6m.49s., S =7m.17s.
Nagoya eP =7m.4s., S =7m.56s.
Vladivostok eP =8m.25s., eS =10m.25s., eL =10m.48s.
Koti e =9m.

June 24d. Readings also at 0h. and 1h. (La Paz), 6h. (Tiflis and Tucson), 7h. (Scoresby Sund, Almeria, Malaga, and near Granada), 9h. (Scoresby Sund), 10h. (near Ksara), 13h. (Tashkent and Tiflis), 14h. (near Andijan), 17h. (La Paz), 19h. (Bucharest, Triest, Paris, Strasbourg, Sofia, Tiflis, Baku, Ksara, Helwan, Sverdlovsk,, Hamburg, Cheb, Potsdam, Istanbul, and Copenhagen), 20h. (De Bilt, Uccle, Kew, Moscow, and near Wellington), 21h. (Frunse, near Mizusawa, and near Harvard), 22h. (Bucharest and Mizusawa), 23h. (Tashkent).

June 25d. 23h. 45m. 10s. Epicentre 76°·7N. 7°·8E.

$A = +\cdot2294$, $B = +\cdot0314$, $C = +\cdot9728$; $\delta = -5$; $h = -13$;
$D = +\cdot136$, $E = -\cdot991$; $G = +\cdot964$, $H = +\cdot132$, $K = -\cdot232$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Scoresby Sund		10·4	246	2 29	− 5	4 31	− 1	—	—	—
Bergen		16·4	185	3 54	+ 1	7 10	+14	—	—	8·8
Upsala		17·3	166	i 4 3	− 1	i 7 23	+ 7	—	—	—
Pulkovo		18·7	143	e 4 16	− 6	e 7 46	− 2	—	—	e 8·9
Aberdeen		19·9	195	i 4 36	0	8 23	+ 8	—	—	10·3
Copenhagen		21·2	172	i 4 47a	− 2	8 48	+ 7	5 15	PP	10·8
Edinburgh		21·3	196	e 5 50?	PPP	i 8 56	+13	—	—	i 11·1
Durham	N.	22·5	193	e 5 0	− 2	i 9 10	+ 5	—	—	—
Hamburg		23·2	177	e 5 10a	+ 1	e 9 31	+13	—	—	e 11·8
Stonyhurst		23·3	194	—	—	i 9 25	+ 5	—	—	11·8
Moscow		23·7	134	5 13	− 1	9 28	+ 1	—	—	13·3
Bidston		23·8	195	i 5 11	− 4	i 9 46	+18	—	—	—
Ivigtut		24·0	261	i 5 18a	+ 1	9 43	+11	—	—	11·8
Potsdam		24·5	172	i 5 22	0	e 9 56	+16	e 6 26	PPP	e 12·4
De Bilt		24·7	182	i 5 25a	+ 1	e 9 52	+ 8	—	—	e 12·3
Göttingen		25·3	176	e 5 50?	+20	—	—	—	—	e 15·8
Kew		25·5	190	i 5 34	+ 2	i 10 11	+14	—	—	—
Jena		25·9	173	i 5 32	− 3	—	—	—	—	—
Uccle		26·0	185	e 5 36	0	i 10 12	+ 6	i 6 16	PP	12·8
Cheb		26·8	173	e 5 43	− 1	e 10 26	+ 7	—	—	e 16·8
Prague		26·9	170	e 5 44	− 1	e 10 26	+ 6	—	—	—
Sverdlovsk		27·2	107	i 5 46	− 1	10 26	+ 1	13 8	L_{q}	15·7
Stuttgart		28·0	177	e 5 54a	− 1	e 10 50	+12	e 7 0	PPP	e 16·8
Paris		28·1	187	i 5 56	+ 1	10 48	+ 8	—	—	13·8
Strasbourg		28·2	179	e 5 57	+ 1	e 11 23	SS	—	—	—
Ogyalla		29·2	165	e 6 6	+ 1	—	—	—	—	—
Zurich		29·5	180	e 6 6	− 2	—	—	—	—	—
Puy de Dôme		31·1	185	e 6 20	− 2	—	—	—	—	—
Triest		31·3	172	6 29	+ 5	e 12 17	?	—	—	—
Belgrade		32·4	162	e 6 36	+ 2	—	—	e 7 30	PP	e 19·6
Bucharest		33·3	166	e 6 38	− 3	e 11 38	−24	e 13 0	SS	i 18·6
Simferopol		33·7	145	e 6 43	− 2	—	—	—	—	21·3
Sofia		34·7	168	e 6 54	0	e 14 50	SSS	—	—	—
Istanbul		36·9	153	7 17	+ 5	13 7	+ 9	15 49	SS	—
Grozny		37·0	131	i 7 14	+ 1	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toledo		37·3	194	i 7 16	0	e 14 18	+74	e 8 47	PP	19·6
Tiflis		38·4	133	7 25	0	e 13 20	0	e 8 50	PP	e 20·8
Erevan		39·9	134	e 7 51	+14	—	—	—	—	—
Algiers		40·0	185	e 7 41	+ 3	—	—	9 12	PP	17·8
Malaga		40·4	194	e 7 45	+ 4	e 14 11	+21	e 9 15	PP	19·8
Baku		40·6	128	e 7 45	+ 2	e 17 10	SS	—	—	20·8
San Fernando	N.	40·8	197	e 6 48	−57	e 14 9	+13	—	—	23·8
Irkutsk		41·3	68	e 7 48	− 1	e 14 2	− 2	—	—	23·8
Seven Falls		42·1	273	—	—	e 13 53	−23	—	—	19·8
Frunse		43·4	100	e 8 7	+ 1	—	—	—	—	—
East Machias		43·5	269	e 8 12	+ 5	e 14 44	+ 8	e 9 53	PP	e 18·1
Almata		43·6	97	e 8 9	+ 1	—	—	—	—	—
Ksara		44·8	146	i 8 19	+ 2	e 15 15	+20	e 10 3	PP	—
Andijan		44·9	103	e 8 18	0	—	—	e 11 56	PPP	—
Ottawa		44·9	278	e 8 18	0	e 15 0	+ 4	e 10 10	PP	21·8
Harvard		46·6	272	i 8 32	0	e 15 30	+ 9	e 10 26	PP	e 23·3
Weston		46·7	272	i 8 33	+ 1	e 15 29	+ 7	i 10 23	PP	e 22·2
Williamstown		46·8	273	i 8 34	+ 1	e 15 23	− 1	i 10 26	PP	e 22·4
Helwan		48·2	152	i 8 42	− 2	i 15 44	+ 1	11 14	PPP	—
Fordham		48·8	273	8 43	− 6	15 51	− 1	10 43	PP	—
Butte		52·0	311	e 9 14	+ 1	e 16 36	0	e 10 29	P_cP	e 30·0
Florissant		54·4	288	e 9 38	+ 7	e 17 11	+ 2	—	—	—
Agra	E.	59·3	102	—	—	e 16 12	?	—	—	—
Berkeley		61·5	317	i 10 22	+ 1	e 18 51	+ 9	—	—	—
Tinemaha		61·6	313	i 10 23a	+ 1	—	—	—	—	—
Haiwee		62·5	312	i 10 29	+ 1	—	—	—	—	—
Mount Wilson		64·4	312	i 10 40a	0	—	—	i 13 3	PP	—
Pasadena		64·5	312	i 10 40a	− 1	—	—	e 12 59	PP	e 33·5
Riverside		64·5	312	i 10 38a	− 3	—	—	—	—	—
Santa Barbara		64·5	313	i 10 41a	0	—	—	—	—	—
Tucson		65·0	305	i 10 44	0	—	—	13 6	PP	e 31·0
Calcutta	N.	66·1	94	i 11 16	+25	i 19 45	+ 6	—	—	—
San Juan		68·5	259	e 11 8	+ 2	e 20 20	+12	e 13 38	PP	e 32·4
Kodaikanal	E.	75·5	107	—	—	e 24 50?	SS	—	—	—

Additional readings :—
Scoresby Sund = +2m.32s. and +4m.36s.
Durham iN = +5m.7s. and +9m.20s.
Ivigtut +9m.55s.
Potsdam iN = +5m.25s., eEN = +9m.20s.
Jena iPN = +5m.36s.
Belgrade e = +15m.24s.
Bucharest eEN = +14m.47s.
Toledo e = +9m.56s.
Tiflis e = +7m.31s., eZ = +7m.33s., +8m.37s., eP_cPEN = +9m.7s., eE = +15m.32s.
Baku e = +15m.6s.
Ksara SS = +18m.25s.
Weston iZ = +9m.8s.
Florissant eN = +10m.44s., +29m.55s., eE = +30m.54s., eN = +31m.58s.
Berkeley eE = +18m.55s.
Pasadena iZ = +11m.27s.
Tucson iP = +10m.49s., ePPP = +14m.42s.
San Juan eSS = +25m.12s.
Long waves were also recorded at Phu-Lien, Bombay, Sitka, and Vladivostok.

June 25d. Readings also at 0h. (Tucson and Huancayo), 1h. (La Paz), 2h. (San Juan), 4h. (Wellington, Almata, and New Plymouth), 5h. (La Jolla, Haiwee, Tucson, Mount Wilson, Pasadena, and Riverside), 6h. (Adelaide, Baku, Sverdlovsk, and Vladivostok), 9h. (Sverdlovsk, Vladivostok, and Copenhagen), 12h. (Mount Wilson, Tucson, Pasadena, and Riverside), 14h. (Frunse, Andijan, Almata, Samarkand, and Tchimkent), 18h. (Balboa Heights), 20h. (Vladivostok), 21h. (Branner, Belgrade, Sverdlovsk, and Triest), 22h. (Branner, Lick (2), Istanbul, Chur, Padova, Berkeley, Florissant, Sofia, Zurich, Cheb, Stuttgart, Gottninge, Ogyalla, Potsdam, and Hamburg), 23h. (Jena and Lick).

June 26d. Readings also at 0h. (near Santiago), 1h. (Lick and near Santiago), 2h. (Baku, Sverdlovsk, Tiflis, and Vladivostok), 3h. (Balboa Heights and Nagoya), 4h. (Samarkand), 5h. (Samarkand, Huancayo, and near La Paz), 6h. (Sverdlovsk and Vladivostok), 7h. (Mount Wilson, Pasadena, Riverside, and Tucson), 10h. (Samarkand), 11h. (Almeria, Toledo, Malaga, and near Granada), 12h. (Almata, Samarkand, near Andijan, and Frunse), 13h. (near Almata), 15h. (Ksara and Tiflis), 16h. (Haiwee, Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, and Mizusawa), 18h. (La Paz), 20h. (Batavia (2), Medan, Malabar, Kodaikanal, Irkutsk, Vladivostok, Tashkent and Ksara), 21h. (Andijan, Almata, Frunse, Sverdlovsk, and Samarkand), 22h. (Almata, Andijan, Samarkand, Batavia, and near Tchimkent), 23h. (Andijan and Wellington).

June 27d. Readings at 4h. (Tucson), 7h. (Ksara), 8h. (Baku, Sverdlovsk, Tashkent, and Brisbane), 9h. (La Paz, Helwan, Ksara, Sverdlovsk, Tashkent, Baku, Vladivostok, and near Mizusawa), 10h. (Cape Town, Tananarive, Agra, Colombo, Bombay, Kodaikanal, Tiflis, Sverdlovsk (2), Tashkent (2), Batavia, and near Medan), 11h. (Malaga, Wellington, and near Mizusawa), 13h. (Mount Wilson, Pasadena, Riverside, near Grozny, near Mizusawa, and near Nagoya), 15h. (Malabar and Samarkand), 18h. (Belgrade), 20h. (Nagoya, Vladivostok, San Juan, Almata, Tiflis, Andijan, Frunse, Sverdlovsk, Mount Wilson, Pasadena, Riverside, Tucson, and near Mizusawa), 21h. (College), 22h. (Butte, Istanbul, Tucson, Mount Wilson, Pasadena, Riverside, Florissant, East Machias, Baku, Sverdlovsk, Tashkent, Irkutsk, and Riverview), 23h. (Tucson).

June 28d. 19h. 17m. 39s. Epicentre 18°·2N. 100°·3W.

Damage at Teloloapan, Force IV at Mexico Iguala. Epicentre 18°12′N. 100°18′W. (Tacubaya). Depth 110km. (Pasadena).

Temblores registrados, 1935, à 1939. Universidad Nacional de Mexico, Instituto de Geologia Catalogo de Temblores, Serie Sismologica, Mexico, 1942, p. 59.

$A = -\cdot1700$, $B = -\cdot9353$, $C = +\cdot3104$; $\delta = +3$; $h = +5$;
$D = -\cdot984$, $E = +\cdot179$; $G = -\cdot056$, $H = -\cdot305$, $K = -\cdot951$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	N.	1·6	41	0 34	+ 4	—	—	—	—	—
Puebla	N.	2·2	67	0 39	+ 1	—	—	—	—	—
Oaxaca	N.	3·6	108	0 59	+ 1	—	—	—	—	—
Guadalajara	N.	3·8	312	1 1	0	—	—	—	—	—
Manzanillo		3·9	284	1 3	+ 1	—	—	—	—	—
Vera Cruz	N.	4·1	75	1 6	+ 1	—	—	—	—	—
Mazatlan	N.	7·6	312	—	—	i 5 33	?	—	—	—
Merida	N.	10·4	73	e 2 41	PP	—	—	—	—	—
Tucson		16·9	328	4 3a	+ 4	i 7 15	+ 8	i 4 20	PPP	i 8·4
La Jolla		21·1	318	i 4 51	+ 3	e 8 51	+12	—	—	—
Denver		21·8	351	e 4 57	+ 1	e 8 58	+ 6	e 5 14	pP	—
Riverside		21·9	320	i 4 59	+ 2	i 8 56	+ 2	—	—	—
Balboa Heights		22·1	111	e 4 21?	−38	—	—	—	—	—
St. Louis	E.	22·2	21	e 4 54	− 6	i 9 23	SS	i 5 18	PP	—
Florissant		22·3	21	i 4 54	− 7	i 8 54	− 8	i 5 11	pP	—
Mount Wilson		22·5	320	e 5 4	+ 2	i 9 13	+ 8	—	—	—
Pasadena		22·5	320	i 5 4	+ 2	e 9 1	− 4	5 25	pP	e 11·5
Columbia		23·3	43	e 5 6	− 4	e 9 16	− 4	—	—	e 12·5
Haiwee		23·7	324	i 5 18	+ 4	e 9 33	+ 6	—	—	—
Santa Barbara		23·7	318	i 5 18	+ 4	—	—	—	—	—
Tinemaha		24·6	324	i 5 25	+ 2	—	—	—	—	—
Cincinnati		25·0	31	i 5 25	− 2	i 9 19	−30	i 5 45	pP	—
Fresno	N.	25·2	323	e 5 32	+ 3	—	—	—	—	e 13·9
Chicago		26·0	20	e 5 34	− 2	i 10 12	+ 6	6 29	PP	10·5
Chicago Loyola		26·0	20	e 5 32	− 4	i 10 13	+ 7	i 6 22	PP	—
Lick		26·7	321	e 5 45	+ 2	—	—	—	—	e 15·0
Branner		27·1	320	e 5 43	− 3	—	—	—	—	—
Bozeman		28·8	346	e 6 1	− 1	e 10 50	− 1	e 7 8	PPP	e 12·0
Georgetown		28·9	40	e 5 50	−13	i 10 35	−18	e 6 47	PP	—
Butte		29·5	345	e 6 9	+ 1	e 11 10	+ 8	—	—	e 12·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Philadelphia		30·7	41	e 6 53	+34	e 11 18	− 3	e 7 9	PP	e 13·5
Fordham		32·0	39	6 28	− 2	11 33	− 9	7 18	PP	—
San Juan		32·4	83	6 55	+21	i 11 45	− 3	—	—	13·5
Williamstown		33·5	38	i 6 40	− 3	i 11 47	−18	i 7 20	pP	—
Ottawa		34·0	32	e 6 45	− 3	e 12 3	−10	8 5	PP	15·3
Saskatoon		34·2	354	e 6 56	+ 7	—	—	—	—	15·3
Harvard		34·4	39	i 6 47k	− 4	e 12 7	−12	e 8 10	PP	—
Weston		34·4	39	i 6 48k	− 3	e 12 12	− 7	e 7 29	PP	—
Fort de France		37·7	90	e 7 15	− 4	—	—	—	—	e 12·4
East Machias		38·2	39	e 7 34	+11	e 13 43	+26	e 9 11	PPP	e 15·5
Huancayo		38·9	138	7 47	+18	13 57	+29	9 26	PPP	e 16·5
La Paz		46·8	135	i 8 37	+ 4	15 31	+ 7	19 17	SS	22·3
Sitka		48·7	335	e 10 50	PP	—	—	—	—	e 26·0
Honolulu		54·0	284	e 9 25	− 3	e 16 50	−13	—	—	e 22·2
College		56·3	339	e 9 43	− 2	e 17 33	− 1	—	—	e 24·2
Ivigtut		56·3	28	9 42k	− 3	—	—	—	—	—
Rio de Janeiro		69·1	123	i 20 8	S	(i 20 8)	− 7	—	—	—
Scoresby Sund		69·1	20	11 8	− 2	20 8	− 7	—	—	—
Kew		82·0	39	i 12 24a	+ 1	i 22 36	− 1	i 23 0	PS	37·3
San Fernando	N.	82·6	55	e 12 37	+11	—	—	—	—	—
Toledo		83·2	51	i 12 29	0	e 22 48	− 1	—	—	—
Malaga		83·9	54	i 12 34	+ 1	i 23 1	+ 5	16 21	PP	—
Granada		84·4	53	i 12 42	+ 6	i 23 4	+ 3	—	—	—
Paris		84·6	41	i 12 37a	+ 1	22 54	− 9	—	—	45·3
De Bilt		85·0	37	i 12 39	+ 1	e 23 7	0	—	—	e 42·3
Uccle		85·0	38	e 12 38	0	23 5	− 2	—	—	e 40·3
Almeria		85·3	53	e 12 41	+ 1	e 22 49	[−14]	—	—	—
Puy de Dôme		86·0	43	e 12 46	+ 3	—	—	—	—	—
Hamburg		87·0	34	e 12 46	− 2	i 23 27	0	—	—	e 47·3
Copenhagen		87·3	31	i 12 51	+ 1	23 28	− 1	—	—	42·3
Upsala	N.	87·5	26	e 12 50	− 1	e 23 31	0	—	—	—
Strasbourg		87·9	39	i 12 54	+ 1	i 23 36	+ 1	e 29 42	SS	e 45·2
Basle		88·3	40	e 12 53	− 2	—	—	—	—	—
Stuttgart		88·7	39	e 12 56	− 1	e 23 43	0	—	—	e 45·3
Zurich		88·9	40	e 12 41	−17	—	—	—	—	—
Jena		89·1	36	e 13 51	+53	e 23 45	− 1	—	—	—
Potsdam		89·2	34	13 0	+ 1	e 23 33	[+ 5]	—	—	e 42·4
Algiers		89·5	52	e 13 2	+ 2	e 23 47	− 3	29 20	SS	52·3
Cheb		89·9	37	e 14 21?	?	e 23 57	+ 3	—	—	e 44·3
Pulkovo		92·6	22	—	—	e 23 50	[+ 2]	i 25 48	PS	—
Triest		92·9	40	—	—	e 24 26	+ 6	—	—	—
Moscow		98·2	22	13 38	− 2	e 24 18	[0]	—	—	—
Vladivostok		102·4	323	e 17 53	PP	e 24 41	[+ 2]	—	—	e 33·2
Sverdlovsk		103·6	10	e 14 4	P	e 24 45	[+ 1]	e 27 50	PS	—
Irkutsk		106·6	344	e 17 30	PP	e 24 57	[0]	e 28 22	PS	e 57·3
Tiflis	N.	112·2	27	—	—	e 25 44	[+23]	e 28 56	PS	e 62·3
Helwan		113·3	45	i 19 26	PP	i 29 5	PS	—	—	—
Ksara		113·5	39	e 19 30	PP	e 29 12	PS	e 30 24	PPS	—
Baku		115·4	24	e 20 31	?	e 30 34	PPS	—	—	52·3
Tashkent		120·0	9	e 18 49	[− 4]	e 25 46	[− 4]	20 13	PP	—

Additional readings :—
Tucson iP = +4m.7s.
Denver eN = +5m.5s., esPEN = +5m.21s., eN = +9m.3s. and +9m.14s., esSN = +9m.21s., esSE = +9m.30s., eN = +10m.25s.
St. Louis iE = +5m.47s., iP$_c$PE = +8m.57s.
Florissant iP$_c$PE = +9m.2s., isS = +9m.21s.
Pasadena iZ = +6m.1s., iSE = +9m.7s.
Cincinnati iPP = +6m.6s., isS = +10m.4s.
Chicago iS = +10m.30s.
Branner eEN = +5m.50s.
Bozeman eS = +11m.29s.
Georgetown iSE = +10m.43s.
Philadelphia ePPP = +7m.14s., i = +11m.53s.
San Juan iS = +12m.11s.
Williamstown i = +7m.27s., iPP = +8m.15s. and +9m.39s.

Continued on next page.

Weston iE = +7m.15s., eE = +8m.42s.
East Machias ePPP = +9m.26s.
Huancayo P = +8m.0s., ePPP = +10m.2s.
Ivigtut +10m.4s. and +10m.42s.
Toledo i = +12m.52s.
Malaga e = +18m.45s., SS = +28m.25s., SSS = +31m.51s.
De Bilt iZ = +13m.1s.
Strasbourg iS = +23m.38s.
Basle i = +13m.15s.
Stuttgart e = +24m.4s.
Jena ePZ = +13m.55s., eS = +24m.46s.
Potsdam eZ = +13m.15s., eSNZ = +23m.45s., iE = +23m.48s.
Algiers e? = +14m.49s., PPS = +25m.10s.
Moscow e = +23m.2s.
Irkutsk e = +34m.21s.? and +40m.21s.?
Sverdlovsk e = +25m.6s. and +27m.50s.
Helwan i = +19m.46s.
Tashkent e = +22m.31s. and +24m.40s., i = +26m.1s., +26m.17s., and +27m.12s., e = +27m.36s., +30m.1s., +30m.3s., +31m.21s., +35m.57s., and +38m.21s.

June 28d. Readings also at 1h. (Tiflis), 3h. (Balboa Heights), 7h. (Berkeley, Tashkent, and Sverdlovsk), 8h. (Sverdlovsk and Tashkent), 9h. (Frunse, Tchimkent, Andijan, Almata, and Samarkand), 10h. (Irkutsk, Sverdlovsk, Samarkand, Vladivostok, Tucson, Santa Barbara, Haiwee, Pasadena, Mount Wilson, and Riverside), 11h. (Balboa Heights, Sverdlovsk, and Tashkent), 12h. (Malabar), 16h. (Fort de France, Semipalatinsk, Sverdlovsk, Tashkent, Andijan, and Almata), 18h. (near Branner, La Paz, Christchurch, and Wellington), 20h. (Malabar, Batavia, and La Paz).

June 29d. 9h. 39m. 56s. Epicentre 4°·7N. 128°·3E.

A = −·6177, B = +·7822, C = +·0814; δ = +2; h = +7;
D = +·785, E = +·620; G = −·050, H = +·064, K = −·997.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		12·2	323	i 3 5a	+ 7	5 33	SS	i 3 20	PPP	7·3
Hong Kong		22·2	325	5 8	+ 8	9 9	+ 9	5 32	PP	—
Batavia		24·0	243	6 15	PPP	i 10 32	SS	—	—	—
Phu-Lien		26·4	310	e 7 42	?	e 10 16	+ 4	—	—	—
Medan	E.	29·6	270	—	—	11 39	+35	—	—	—
Vladivostok		38·4	5	e 7 24	− 1	i 13 20	0	—	—	i 16·3
Brisbane		39·9	144	e 8 58	PP	i 13 22	−21	i 16 4	SS	e 20·3
Calcutta	N.	42·5	299	—	—	i 14 21	− 1	—	—	—
Riverview		44·0	152	e 14 16	PS	e 17 34	SS	—	—	—
Melbourne		45·1	160	i 14 54	PS	i 18 4	SS	—	—	23·1
Irkutsk		51·4	342	e 9 28	+19	e 16 28	0	—	—	—
Agra	E.	52·8	301	e 9 25	+ 6	i 16 51	+ 4	—	—	—
Almata		59·3	320	10 7	+ 1	—	—	—	—	—
Frunse		60·7	317	10 7	− 8	—	—	—	—	—
Andijan		61·5	314	10 20	− 1	18 44	+ 2	—	—	—
Samarkand		65·1	311	10 43	− 2	19 25	− 2	—	—	—
Sverdlovsk		74·0	328	i 11 37	− 2	i 21 6	− 5	—	—	35·1
Baku		78·1	310	e 12 2	0	e 21 58	+ 2	—	—	42·1
Grozny		81·4	313	e 12 18	− 2	e 22 26	− 5	—	—	—
Tiflis		82·0	311	12 22	− 1	22 33	− 4	e 23 23	PS	46·1
Moscow		86·5	326	e 12 43	− 3	23 17	− 5	—	—	47·6
Ksara		89·4	303	e 13 7	+ 7	e 25 2	PS	e 30 23	SS	—
Pulkovo		90·0	330	e 12 59	− 4	24 56	PS	30 4	SS	—
Helwan		93·7	300	e 13 16	− 4	i 23 46	[− 8]	—	—	—
Almeria		118·3	317	e 10 54	?	—	—	—	—	—
La Paz	z.	160·1	127	20 44	[+43]	—	—	—	—	—

Additional readings :—
Manila iE = +3m.55s.
Hong Kong SS = +9m.57s.
Melbourne i = +22m.17s.
Tiflis PSZ = +23m.26s., ePSN = +23m.34s., eSSSZ = +32m.4s.?
Long waves were also recorded at Paris, Strasbourg, Copenhagen, and Pasadena.

June 29d. 14h. 1m. 34s. Epicentre 36°·4N. 141°·1E. (as on 1938 June 18d.).

Strong at Aidu, Onahama, Tukubasan, moderate at Tokyo, Mizusawa, Morioka, Sendai, slight at Yamagata and Yokohama.

Epicentre 36°·75N. 141°·15E. Shallow. Macroseismic radius greater than 300kms.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1938, Tokyo, 1940, pp. 48-50, macroseismic chart p. 48.

$A = -\cdot6279$, $B = +\cdot5067$, $C = +\cdot5908$; $\delta = +5$; $h = 0$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mito	0·5	268	0 15	+ 1	0 25	+ 2	—	—	—
Onahama	0·6	343	0 9k	P_g	0 15	S_g	—	—	—
Tyosi	0·7	196	0 22a	+ 5	0 38	+10	—	—	—
Kakioka	0·8	257	0 19k	+ 1	0 30	− 1	—	—	—
Tukubasan	0·8	257	0 19	+ 1	0 32	+ 1	—	—	—
Utunomiya	1·0	279	0 21	0	0 34	− 2	—	—	—
Tokyo Cen. Met. Ob.	1·3	237	0 26	+ 1	0 46	+ 2	—	—	—
Tokyo Imp. Univ.	1·3	237	0 28	+ 3	0 47	+ 3	—	—	—
Hukusima	1·4	339	0 19k	− 8	0 32	−14	—	—	—
Komaba	1·4	237	0 30	+ 3	0 51	+ 5	—	—	—
Kumagaya	1·4	260	0 28	+ 1	0 46	0	—	—	—
Katuura	1·5	211	0 31	+ 3	0 54	+ 5	—	—	—
Kiyosumi	1·5	211	0 40	P_g	1 3	+14	—	—	—
Mitaka	1·5	240	0 31	+ 3	0 52	+ 3	—	—	—
Yokohama	1·5	231	0 32	+ 4	0 56	+ 7	—	—	—
Maebasi	1·6	270	0 31	+ 1	0 50	− 1	—	—	—
Kamakura	1·7	229	0 40	P_g	0 59	S_g	—	—	—
Misaki	1·7	224	0 40	P_g	1 5	S_g	—	—	—
Titibu	1·7	256	0 40	P_g	1 4	S_g	—	—	—
Mera	1·8	215	0 38	P_g	1 5	S_g	—	—	—
Sendai	1·9	355	0 23k	−11	0 39	−20	—	—	—
Yamagata	2·0	342	0 30	− 5	0 49	−13	—	—	—
Koyama	2·0	239	0 40	P_g	1 10	S_g	—	—	—
Hunatu	2·1	245	0 38	+ 1	1 7	+ 3	—	—	—
Oiwake	2·1	268	0 35k	− 2	1 3	− 1	—	—	—
Ito	2·2	229	0 43k	P_g	1 16	S_g	—	—	—
Kohu	2·2	249	0 39	+ 1	1 8	+ 2	—	—	—
Misima	2·2	234	0 42k	+ 4	1 17	S_g	—	—	—
Numadu	2·2	235	0 45	P_g	1 26	S_g	—	—	—
Nagano	2·3	277	0 40	0	1 12	S*	—	—	—
Niigata	2·3	313	0 37	− 3	1 6	− 3	—	—	—
Yosiwara	2·3	238	0 40	0	1 12	+ 3	—	—	—
Susaki	2·4	225	0 43	+ 2	1 19	S_g	—	—	—
Takada	2·4	287	0 43	+ 2	1 12	0	—	—	—
Matumoto	2·5	266	0 41	− 2	1 10	− 4	—	—	—
Iida	2·8	252	0 58	P_g	1 21	− 1	—	—	—
Mizusawa	2·9	0	i 0 38	−10	i 1 2	−22	—	—	—
Omaesaki	3·0	232	0 53	+ 3	1 50	S_g	—	—	—
Hamamatu	3·2	239	1 1k	P*	1 33	+ 1	—	—	—
Takayama	3·2	265	0 49	− 3	—	—	—	—	—
Toyama	3·2	275	0 52	0	1 29	− 3	—	—	—
Husiki	3·3	277	0 55	+ 2	1 44	S*	—	—	—
Miyako	3·3	12	0 44a	− 9	1 16	−19	—	—	—
Morioka	3·3	1	0 44k	− 9	1 17	−18	—	—	—
Akita	3·4	346	0 48	− 7	1 28	− 9	—	—	—
Hatidyozima	3·4	198	1 2k	P*	1 41	+ 4	—	—	—
Nagoya	3·5	250	e 1 4	P*	1 55	S_g	—	—	—
Wazima	3·5	289	0 53	− 4	1 42	+ 2	—	—	—
Kanazawa	3·6	274	0 58	0	1 44	+ 2	—	—	—
Gihu	3·7	256	1 0a	0	1 41	− 4	—	—	—
Hukui	3·9	266	1 5	+ 3	1 49	− 1	—	—	—
Ibukisan	3·9	256	1 8	P*	1 52	+ 2	—	—	—
Hatinohe	4·1	4	0 57	− 8	1 39	−16	—	—	—
Hikone	4·1	255	1 6a	+ 1	1 55	0	—	—	—
Kameyama	4·1	249	1 12	P*	2 9	S*	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tu		4·1	247	1 7	+ 2	2 14	S_g	—	—	—
Aomori		4·4	357	0 59	−11	1 47	−15	—	—	—
Kyoto		4·6	254	1 9	− 3	2 52	?	—	—	—
Yagi		4·7	248	1 34a	P_g	2 23	S*	—	—	—
Miyadu		4·8	262	1 14	− 1	2 9	− 3	—	—	—
Osaka B		4·9	252	1 33	P*	2 33	S*	—	—	—
Kobe		5·1	252	1 28	P*	2 23	+ 3	—	—	—
Siomisaki		5·2	238	1 53	P_g	2 55	S_g	—	—	—
Toyooka		5·2	262	1 21	0	—	—	—	—	—
Wakayama		5·3	247	1 23	+ 1	2 38	S*	—	—	—
Hakodate		5·4	357	1 9	−15	2 11	−17	—	—	—
Sumoto		5·5	250	1 28	+ 3	2 47	S*	—	—	—
Mori		5·7	356	1 20	− 8	2 24	−11	—	—	—
Tokusima		5·8	249	2 6	−23	3 25	S_g	—	—	—
Muroran		5·9	0	1 23	− 8	2 31	− 9	—	—	—
Muroto		6·4	244	1 45	+ 7	3 25	S*	—	—	—
Obihiro		6·7	13	2 5k	P*	3 20	S*	—	—	—
Sapporo		6·7	1	1 39	− 3	3 22	S*	—	—	—
Koti		6·8	248	e 1 59	P*	3 29	S*	—	—	—
Kusiro		7·0	24	1 36	−10	2 48	−20	—	—	—
Hirosima		7·4	257	1 40	−12	3 32	+14	—	—	—
Hamada		7·5	260	1 57	+ 4	3 41	S*	—	—	—
Nemuro		7·7	24	1 44	−12	2 59	−26	—	—	—
Izuka		9·0	255	2 7	− 6	4 1	+ 3	—	—	—
Hukuoka B		9·2	256	e 2 41	PPP	e 5 3	S_g	—	—	—
Kumamoto		9·3	250	2 16	− 1	4 36	S*	—	—	—
Titizima		9·3	174	2 19	+ 2	—	—	—	—	—
Vladivostok		9·8	316	e 2 16	− 8	i 4 8	− 9	—	—	i 4·7
Taikyu		10·1	271	e 2 28	0	—	—	—	—	—
Keizyo		11·4	280	e 2 37	−10	e 4 52	− 4	—	—	—
Zinsen		11·6	280	e 2 54	+ 4	e 4 58	− 3	—	—	—
Irkutsk		30·3	314	—	—	e 10 26?	+11	—	—	16·4
Tashkent		54·7	299	—	—	e 16 51	−22	e 21 2	SS	e 27·4
Sverdlovsk		55·5	319	i 28	−11	e 17 9	−15	—	—	25·4
Baku		68·4	305	—	—	e 19 51	PS	e 25 1	SS	e 36·4
Grozny		69·8	309	e 12 30	?	—	—	—	—	—
Tiflis		71·0	308	e 11 13	− 9	—	—	—	—	e 41·4
Pasadena	z.	78·1	56	i 11 54	− 8	—	—	—	—	—
Mount Wilson	z.	78·2	56	i 11 56	− 7	—	—	—	—	—
Riverside	z.	78·8	56	e 11 59	− 7	—	—	—	—	—
Ksara		81·3	306	e 12 13	− 7	e 23 33	PPS	—	—	43·4
Tucson		84·2	54	e 12 27a	− 7	—	—	—	—	—

Additional readings :—
Mera S = +1m.13s.
Tashkent e = +17m.43s., i = +17m.59s. and +18m.9s., e = +26m.27s.
Baku e = +28m.42s.
Tiflis eNZ = +33m.19s.
Pasadena iZ = +12m.10s.
Mount Wilson iZ = +12m.9s.
Tucson i = +12m.42s.
Long waves were also recorded at Pulkovo, Moscow, Paris, and Copenhagen.

June 29d. 18h. 44m. 8s. Epicentre 21°·0S. 174°·0W.

A = −·9293, B = −·0977, C = −·3563; δ = +9; h = +4;
D = −·105, E = +·995; G = +·354, H = +·037, K = −·934.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia	7·4	16	e 1 50	− 2	e 3 10	− 8	—	—	3·9
Wellington	22·3	204	—	—	8 57	− 5	i 10 22	SSS	11·6
Christchurch	25·1	203	e 4 28	−60	i 9 43	− 8	—	—	12·7
Brisbane	30·7	251	e 5 52	−27	e 10 52	−29	i 7 28	PPP	i 11·2
Riverview	33·7	240	e 9 34	?	—	—	—	—	e 15·2
Melbourne	39·1	236	i 9 26	PPP	i 16 29	SS	—	—	19·7
Adelaide	43·7	241	e 13 28	?	e 18 11	SSS	—	—	e 20·3
Honolulu	44·9	22	—	—	e 13 44	−72	—	—	e 16·5
Perth	62·8	244	e 9 45	−45	18 54	− 4	19 12	PS	32·8
Santa Barbara	75·5	44	e 11 50	+ 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Berkeley		76·1	40	e 11 52	+ 1	i 21 48	+13	e 32 52	?	—
Pasadena		76·3	45	i 11 53	+ 1	i 21 44	+ 7	—	—	e 31·9
Mount Wilson	z.	76·5	45	i 11 54	0	—	—	—	—	—
Riverside	z.	76·8	45	e 11 54	− 1	—	—	—	—	—
Haiwee		77·7	44	e 12 5	+ 5	—	—	—	—	—
Tucson		80·3	50	i 12 17k	+ 3	—	—	—	—	e 35·1
Vladivostok		80·9	323	i 12 16	− 1	i 22 32	+ 6	—	—	e 34·2
Hong Kong		82·2	297	—	—	22 43	+ 4	—	—	—
Butte		86·8	38	—	—	e 23 28	+ 3	—	—	e 39·2
College		87·9	11	—	—	23 37	+ 2	—	—	e 39·2
Huancayo		93·7	104	—	—	23 58	[+ 4]	e 29 47	SS	i 43·4
La Paz		98·3	112	e 13 52	+11	i 24 31	[+13]	i 25 18	S	46·9
Ottawa		110·4	48	—	—	e 26 52?	{+44}	e 28 42	PS	50·9
Fordham		110·9	53	—	—	e 29 5	PS	35 20	SS	—
San Juan		112·6	78	—	—	e 25 20	[− 2]	—	—	e 54·5
Harvard		112·9	51	—	—	e 27 22	{+57}	—	—	e 58·9
Tashkent		123·4	307	18 58	[− 1]	26 2	[+ 1]	i 20 26	PP	—
Sverdlovsk		126·5	327	19 5	[0]	26 13	[+ 3]	21 0	PP	54·9
Pulkovo		137·6	343	e 19 58	[+32]	—	—	—	—	—
Baku		138·1	308	e 19 30	[+ 3]	41 22	SSP	e 24 17	PPP	64·4
Moscow		138·1	334	e 19 33	[+ 6]	29 13	{+ 3}	22 17	PP	—
Grozny		140·2	314	e 19 26	[− 5]	—	—	—	—	—
Tiflis		141·4	312	e 19 28	[− 5]	34 37	PPS	e 23 14	PP	75·9
Copenhagen		145·0	355	i 19 39a	[0]	—	—	—	—	75·9
Hamburg		147·4	357	e 19 44	[+ 1]	—	—	—	—	e 83·9
Potsdam		148·2	353	e 19 40	[− 5]	—	—	—	—	e 81·9
Jena		149·8	354	e 19 52	[+ 5]	—	—	—	—	—
Uccle		150·3	4	e 19 54	[+ 6]	—	—	—	—	e 81·9
Ksara		150·7	302	e 19 53	[+ 5]	—	—	23 34	PP	—
Istanbul		152·0	323	e 19 52	[+ 2]	—	—	—	—	—
Stuttgart		152·2	356	e 19 57	[+ 6]	e 30 28	{− 2}	—	—	e 84·9
Strasbourg		152·4	358	e 19 56	[+ 5]	—	—	—	—	e 55·9
Paris		152·8	5	e 12 52?	?	—	—	—	—	75·9
Belgrade	z.	153·4	336	e 20 12a	[+20]	—	—	—	—	—
Helwan		155·5	296	e 19 55	[0]	e 30 52	{+ 4}	e 23 52	PP	—
Toledo		159·3	23	e 20 52	PKP_2	—	—	—	—	86·8

Additional readings :—
Apia i = +3m.14s. and +3m.28s.
Melbourne i = +15m.42s. and +17m.20s.
Perth PP = +11m.44s., SS = +23m.38s., i = +24m.40s., SSS = +27m.19s., SSSS = +28m.57s.
Tucson iP = +12m.51s.
Huancayo eSKS = +24m.39s., eSSS = +33m.36s.
Fordham i = +29m.14s. and +47m.15s.
Ksara PKP_2 = +20m.8s., ePPS = +36m.55s., eSS = +43m.0s.
Tashkent P_cPS = +21m.48s., SKKS = +27m.36s., ePS = +30m.28s., PPS = +31m.55s., SS = +37m.34s.
Sverdlovsk PKS = +22m.24s., SKKS = +28m.1s., PS = +31m.2s.
Baku PPS = +35m.3s.
Grozny eP = +17m.36s.
Tiflis eZ = +43m.17s.
Potsdam eZ = +25m.28s.
Stuttgart e = +32m.23s.
Belgrade e = +21m.42s.
Helwan e = +35m.57s.
Long waves were also recorded at La Plata, Rio de Janeiro, Sydney, Stonyhurst, Triest. Cheb, De Bilt, Kew, Fort de France, Philadelphia, Puy de Dôme, San Fernando, and Jersey.

June 29d. Readings also at 0h. (Christchurch, Wellington, and Hastings), 3h. (Pulkovo, Moscow, Tiflis, Andijan, Scoresby Sund, Copenhagen, Frunse, and Mount Wilson), 4h. (Irkutsk, Baku, and Sverdlovsk), 5h. (San Juan and Wellington), 6h. (Tananarive, Mizusawa, and Nagoya), 7h. (Wellington, Baku, Sverdlovsk, New Plymouth (2), and Grozny), 10h. (Fresno (2), La Jolla (2), Pasadena (2), Nagoya, Mount Wilson (2), Riverside (2), and Tucson (2)), 11h. (Frunse, Copenhagen, and Nagoya (2)), 12h. (Semipalatinsk), 15h. (Samarkand and Almata), 17h. (Amboina, Almata, and Tucson), 18h. (Tashkent and Sverdlovsk), 21h. (Mizusawa, Malaga, Granada, and Almeria).

June 30d. 16h. 44m. 42s. Epicentre 20°·2S. 169°·5E. (as on 1938 June 23d.).

$A = -\cdot 9235$, $B = +\cdot 1712$, $C = -\cdot 3432$; $\delta = -5$; $h = +5$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		16·7	241	i 3 54	− 3	i 7 6	+ 3	i 4 12	PP	8·4
Apia		19·0	73	i 4 31k	+ 5	e 8 2	+ 7	i 4 41	pP	—
Riverview		21·2	227	i 4 54k	+ 5	i 8 43	+ 2	5 30	PPP	e 10·5
Sydney		21·2	227	i 4 44	− 5	i 8 38	− 3	—	—	e 10·5
Wellington		21·5	170	4 54	+ 2	8 54	+ 7	5 21	PP	12·7
Christchurch		23·4	174	i 5 18a	+ 7	9 33	+12	—	—	11·9
Melbourne		27·6	226	e 5 36	−15	10 27	− 5	i 11 26	SS	14·5
Adelaide		30·9	236	e 5 24	−56	i 11 30	+ 6	i 7 16	PP	i 15·5
Perth		49·2	246	e 12 35	PPP	19 46	SS	19 55	SSS	26·8
Honolulu		52·2	40	e 9 40	+25	e 16 36	− 3	—	—	e 21·7
Manila		58·9	303	i 9 55	− 8	18 5	− 3	—	—	—
Hong Kong		68·6	306	11 12	+ 5	19 59	−10	—	—	—
Vladivostok		71·9	333	i 11 21	− 6	i 20 38	−10	—	—	e 25·9
Branner		86·1	48	e 12 43	− 1	—	—	—	—	—
Berkeley		86·2	48	e 12 44	0	e 23 24	+ 5	—	—	e 40·0
Santa Barbara		86·4	52	i 12 46	+ 1	—	—	—	—	—
La Jolla		87·6	54	e 12 52	+ 1	—	—	—	—	—
Mount Wilson		87·6	53	i 12 49	− 2	—	—	i 16 16	PP	—
Pasadena		87·6	53	i 12 49a	− 2	e 23 30	− 2	e 16 15	PP	e 40·3
Riverside	Z.	88·0	53	e 12 51	− 2	—	—	e 38 45	P'P'	—
Haiwee		88·5	51	e 12 56	0	—	—	—	—	—
Tinemaha		88·7	50	i 12 56	− 1	—	—	—	—	—
Calcutta	N.	89·8	294	—	—	i 23 43	[+11]	—	—	—
College		90·9	17	—	—	e 23 27	[−11]	e 25 10	PPS	e 38·6
Irkutsk		91·6	327	e 13 6	− 4	e 23 34	[− 8]	e 16 26	PP	46·3
Colombo	E.	92·0	277	e 11 48	?	—	—	—	—	—
Tucson		92·2	57	e 13 10a	− 3	e 23 42	[− 3]	i 16 54	PP	i 42·0
Huancayo		108·6	111	e 19 27	PP	e 26 35	S	e 21 8	PPP	e 51·8
Tashkent		110·6	308	e 18 20	[−14]	e 34 30	SS	19 2	PP	—
La Paz		112·7	118	e 17 30	[−68]	i 29 22	PS	—	—	52·3
Sverdlovsk		117·0	325	i 18 44	[− 3]	26 44	{−10}	i 19 50	PP	51·3
Fordham		122·9	53	i 20 37	PP	i 32 38	PPS	—	—	—
Williamstown		123·3	51	i 18 56	[− 3]	—	—	—	—	e 58·6
Harvard		124·6	51	i 18 59a	[− 2]	e 37 48	SS	e 20 45	PP	e 59·8
Seven Falls		124·6	45	e 30 42	PS	e 37 42	SS	—	—	58·3
Weston		124·7	51	e 18 59	[− 3]	e 38 8	SS	e 21 0	PP	e 59·5
Baku		125·2	306	19 2	[− 1]	—	—	20 50	PP	—
San Juan		127·7	81	e 23 28	PPP	—	—	—	—	e 50·5
Grozny		128·0	309	19 7	[− 1]	—	—	—	—	—
Tiflis		128·9	307	e 19 9	[− 1]	33 11	PPS	e 38 50	SS	e 62·3
Scoresby Sund		129·2	5	22 30	PP	—	—	—	—	61·3
Pulkovo		131·0	334	e 22 30	PP	—	—	—	—	—
Ivigtut		131·3	23	18 58	[−16]	—	—	22 31	PP	—
Fort de France		131·5	88	e 22 31	PP	—	—	—	—	—
Upsala	N.	135·6	340	e 20 46	PKP_2	—	—	i 22 50	PP	67·3
Sebastopol		136·3	315	e 19 22	[− 2]	—	—	e 22 49	PP	—
Ksara		136·8	298	i 19 23a	[− 1]	e 32 7	SKSP	i 22 9	PP	67·3
Copenhagen		140·6	340	19 18	[−14]	—	—	22 24	PP	63·3
Istanbul		140·6	311	e 19 22	[−10]	—	—	e 22 31	PP	—
Helwan		141·1	293	i 19 24	[− 8]	—	—	i 22 30	PP	—
Bucharest		141·2	317	19 18	[−15]	23 14	?	—	—	79·3
Potsdam		143·0	336	i 19 24	[−12]	e 25 24	PPP	i 22 36	PP	e 69·3
Hamburg		143·2	340	e 19 27a	[− 9]	—	—	—	—	e 77·3
Kecskemet	Z.	143·7	325	i 18 40	[−57]	—	—	i 22 32	PP	—
Sofia		143·8	316	e 19 34	[− 3]	—	—	—	—	—
Prague		144·2	332	e 19 31	[− 7]	—	—	—	—	—
Belgrade		144·5	321	e 19 31a	[− 7]	—	—	e 23 42	PP	—
Jena	Z.	144·7	335	i 19 33	[− 6]	—	—	—	—	—
Göttingen		144·8	339	i 19 33	[− 6]	—	—	—	—	—
Cheb		145·1	335	e 19 36	[− 3]	e 30 18?	{+27}	—	—	e 71·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
De Bilt		145·9	352	i 19 39a	[− 2]	—	—	—	—	e 70·3
Uccle		147·3	344	e 19 41	[− 2]	—	—	e 23 8	PP	e 74·3
Stuttgart		147·4	336	i 19 40a	[− 3]	—	—	e 23 8	PP	e 73·3
Karlsruhe		147·5	337	e 19 42	[− 1]	—	—	—	—	—
Oxford		147·5	350	i 19 42	[− 1]	—	—	—	—	e 75·3
Triest		147·7	327	i 19 43a	[− 1]	—	—	21 22	pP	e 77·3
Kew		147·8	348	i 19 41k	[− 3]	—	—	—	—	65·3
Strasbourg		148·1	337	i 19 42	[− 2]	—	—	e 23 18	PP	e 75·3
Padova		148·8	329	e 19 18	[−27]	—	—	—	—	—
Zurich		148·8	335	i 19 43k	[− 2]	—	—	—	—	—
Basle		149·0	336	e 19 43	[− 3]	—	—	—	—	—
Paris		149·6	343	i 19 44	[− 3]	—	—	23 25	PP	75·3
Neuchatel		149·7	336	i 19 45	[− 2]	—	—	—	—	—
Chur		149·8	334	i 19 45	[− 2]	—	—	—	—	—
Moncalieri		151·0	334	19 45	[− 4]	—	—	—	—	—
Puy de Dome		152·2	339	e 19 57	[+ 6]	—	—	—	—	—
Toledo		159·6	346	e 19 58	[− 2]	—	—	e 24 20	PP	72·1
Algiers		159·7	326	19 59	[− 1]	26 37	[−27]	23 34	PP	71·3
Almeria		162·0	339	e 20 3	[0]	—	—	—	—	—
Malaga		162·7	343	e 20 18?	[+15]	—	—	—	—	—
San Fernando	N.	163·4	348	e 20 18	[+14]	—	—	—	—	92·3

Additional readings :—
Apia iSP = +4m.52s., iPP = +5m.3s., sS? = +8m.28s., P_cP = +8m.40s., pP_cP = +9m.2s., sP_cP = +9m.17s., S_cP? = +12m.6s., P_cS = +12m.22s.
Riverview N = +5m.1s., E = +5m.4s., N = +6m.19s., iSE = +8m.47s., iE = +8m.56s., +9m.4s. and +9m.16s.
Wellington iEN = +5m.44s., iZ = +6m.19s., i = +9m.16s., +9m.30s., and +9m.55s., L_q = +10m.18s.
Melbourne i = +6m.7s. and +13m.48s.
Adelaide i = +6m.28s., e = +9m.49s., iS = +10m.57s., iG? = +14m.54s.
Perth P_cP = +13m.44s., PP = +14m.27s., P_cS = +18m.2s., SS = +24m.6s.
Berkeley iE = +12m.53s.
Mount Wilson ePKP,PKPZ = +38m.47s.
Pasadena iZ = +13m.6s. and +13m.17s., ePKP,PKPZ = +38m.47s.
College eS = +23m.49s.
Irkutsk PS = +25m.8s., eSS = +30m.6s.
Tucson iP = +13m.13s., PS = +24m.40s., PPS = +25m.44s., iPKP,PKP = +38m.37s.
Huancayo eSS = +34m.18s.
Tashkent eP = +14m.20s., PP = +18m.49s., PPP = +21m.24s., i = +23m.25s. and +29m.36s., i = +37m.20s.
Sverdlovsk S = +27m.38s., i = +39m.36s.
Harvard eE = +32m.36s.
Tiflis eEN = +22m.31s.
Pulkovo i = +22m.34s.
Ivigtut +19m.10s.
Ksara ePPS = +34m.33s.
Copenhagen PKS = +23m.3s.
Helwan e = +23m.9s.
Bucharest eE = +21m.49s., iE = +23m.38s.
Potsdam iN = +23m.11s.
Kecskemet eZ = +20m.15s. and +21m.27s.
Belgrade iPZ = +19m.34s., eNW = +20m.34s. and +25m.30s.
Jena iPN = +19m.36s.
Stuttgart iPKP = +19m.44s., iPKPZ = +20m.2s.
Zurich i = +19m.47s.
Basle i = +19m.47s.
Neuchatel i = +19m.50s.
Chur i = +19m.48s.
Toledo $iPKP_2$ = +20m.37s.
Long waves were also recorded at Sitka and Philadelphia.

June 30d. Readings also at 0h. (near Grozny and Tiflis), 1h. (Tiflis), 4h. (Wellington), 9h. (Wellington, Mount Wilson, Riverside (2), and Tucson), 11h. (Medan), 14h. (Belgrade), 15h. (Medan and Tashkent), 16h. (Vermont), 19h. (Pasadena, Mount Wilson, Riverside, and Apia), 21h. (Pasadena (2), Mount Wilson (2), Riverside (2) Tashkent, Tucson (2), Mizusawa, Copenhagen, Ksara, Sverdlovsk, Irkutsk, Riverview, and Brisbane), 23h. (Nagoya and Istanbul).