The International Seismological Summary.

1938 January, February, March.

FORMERLY THE BULLETIN OF THE BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

At the meeting of the International Seismological Association in Oslo in 1948 certain sugestions were put forward with regard to the future form of the Summary. In view of the opinions expressed there it has been decided to modify the tabular portion of the work to the extent of adding a column to accommodate an extra phase, the column to be headed " Supp."—Supplementary Phases. It is intended to use this column preferably for some phase, other than those already appearing under P or S, noted at a number of observing stations. Thus the column might exhibit PP, SKKS, PKP_2, PS, SS, or even SKS if the S column is already filled ; in deep shocks it would be used mainly for pP and sS. In each case the symbol for the phase would be entered after the figures for the time.

The omission of the column headed M was decided upon partly to economise in page width. The exact interpretation of this phase seems very vague, and probably the recorded time depends largely on the instrument used and on the frequency response of the recording system.

The first quarterly number for 1938 contains 92 determinations of epicentre, 37 being repetitions from origins determined since the introduction of the use of geocentric co-ordinates.

Cases of abnormal focal depth are noticed as below :—

Jan.	1d.	23h.	25°·8N. 143°·4E.	0·005
	10d.	20h.	29·8N. 131·2E.	Base of Superficial Layers.
	18d.	9h.	37·0N. 70·5E.	0·020
	26d.	10h.	36·3N. 71·0E.	0·025
	27d.	6h.	36·3N. 71·0E.	0·025
Feb.	1d.	18h.	Undertermined	Suggested Deep.
		19h.	5·0S. 131·5E.	Base of Superficial Layers.
		19h.	5·0S. 131·5E.	Base of Superficial Layers.
	5d.	2h.	4·6N. 75·4W.	0·015
	7d.	14h.	36·2N. 139·2E.	0·010

Mar. 1d. 14h.	6°·2N.	82°·4W.	0·020
9d. 5h.	6·2N.	82·4W.	0·020
18d. 2h.	46·2N.	147·1E.	0·040

Thanks are due to U.N.E.S.C.O. for financial support. Also to the Director of the Meteorological Office and the Superintendent of Kew Observatory for hospitality extended to the staff.

May, 1949.

KEW OBSERVATORY,
RICHMOND,
SURREY.

1938 JANUARY, FEBRUARY, MARCH.

January 1d. 11h. 25m. 20s. Epicentre 16°·3N. 98·6W. (as on 1937 December 31d.).

Felt on the S.W. coast of Mexico, force III at Tacubaya. Epicentre 16°·0N. 97°·9W. given by U.S.C.G.S.

See " Annales de l'Institut de Physique du Globe de Strasbourg, p. III, 1938, 2e partie, Seismologie Mende, 1941, p.1."

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

		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 37	P_g	—	—	—	—	—
Puebla	N.	2·8	8	0 52	+ 5	—	—	—	—	—
Tacubaya	E.	3·1	350	0 57	P*	—	—	—	—	—
Vera Cruz	N.	3·7	39	1 2	+ 2	—	—	—	—	—
Manzanillo	E.	6·0	298	1 41?	P*	—	—	—	—	—
Guadalajara	N.	6·3	315	1 44	+ 8	—	—	—	—	—
Merida	N.	9·7	61	—	—	4 16	+ 1	—	—	—
Little Rock		19·2	16	e 4 19	− 9	e 7 57	− 2	—	—	e 12·6
Tucson		19·4	328	e 4 30	0	8 15	+11	i 4 56	PPP	i 10·3
St. Louis		23·4	16	i 5 10	− 1	e 9 26	+ 5	9 58	SSS	—
Columbia		23·7	37	e 5 7	− 7	e 9 29	+ 2	—	—	—
Mount Wilson	Z.	25·0	321	e 5 28	+ 1	—	—	—	—	—
Pasadena		25·0	321	e 5 28	+ 1	i 10 2	+13	—	—	e 12·2
Haiwee	N.	26·2	324	e 6 10	PP	—	—	—	—	—
Santa Barbara		26·2	319	e 5 40	+ 2	—	—	—	—	—
Tinemaha		27·1	324	e 5 48	+ 2	—	—	—	—	—
Lick	N.	29·2	321	e 6 8	+ 3	—	—	—	—	—
San Juan		31·0	80	e 5 57	−24	e 11 26	0	e 7 10	PP	e 11·9
Bozeman		31·1	344	—	—	e 11 34	+ 6	—	—	e 12·9
Philadelphia		31·2	36	—	—	i 11 31	+ 2	—	—	e 12·8
Ukiah		31·3	323	—	—	e 11 43	+12	—	—	e 12·8
Butte		31·8	344	—	—	e 11 42	+ 4	e 13 56	SS	e 14·3
Toronto		31·8	27	—	—	e 11 40?	+ 2	—	—	17·7
Fordham		32·5	36	e 6 27	− 7	11 50	+ 1	—	—	—
Williamstown		34·1	35	e 7 42	PP	—	—	—	—	—
Ottawa		34·8	28	e 6 52	− 2	12 28	+ 3	—	—	18·7
Harvard		34·9	36	e 6 47	− 8	e 12 37	+10	—	—	e 24·7
Weston		34·9	36	—	—	i 12 35	+ 8	—	—	—
Vermont		35·3	32	—	—	i 12 40	+ 7	—	—	e 15·3
Huancayo		36·4	139	e 6 59	− 9	i 12 45	− 5	e 8 25	PP	i 14·7
Victoria		37·9	334	—	—	e 13 18	+ 5	—	—	19·2
Seven Falls		38·4	31	—	—	e 14 40?	?	—	—	19·8
La Paz		44·3	135	8 6	− 7	i 14 44	− 4	9 48	PP	22·7
Sitka		49·3	335	—	—	i 16 27	+28	—	—	i 21·4
College		58·7	338	—	—	e 18 11	+ 5	e 12 28	PP	e 26·1
Scoresby Sund		70·3	20	—	—	20 35	+ 6	—	—	32·7
Aberdeen		79·9	34	—	—	e 22 7	− 9	e 27 15	SS	e 45·0
Oxford		81·8	39	—	—	22 34	− 1	—	—	e 40·6
Paris		85·0	42	e 12 36	− 2	—	—	—	—	43·7
De Bilt		85·5	37	12 40	− 1	e 23 20	+ 8	15 51	PP	e 40·7
Uccle		85·5	39	—	—	e 23 17	+ 5	—	—	e 39·7
Copenhagen		88·0	32	16 13	PP	23 37	+ 1	—	—	40·7
Stuttgart		89·1	39	e 12 55	− 3	e 22 44	[−43]	e 16 23	PP	e 45·7
Potsdam		89·8	35	e 12 52	−10	e 23 40?	−13	e 16 28	PP	e 46·7
Pulkovo		93·7	24	e 16 8	PP	e 23 53	[− 1]	—	PP	47·2
Christchurch		99·9	228	37 38	SSS	—	—	e 42 44	?	48·4
Sverdlovsk		105·1	12	e 18 29	PP	e 24 49	[− 2]	33 26	SS	—
Irkutsk		108·9	346	—	—	e 26 22	{+25}	e 33 40?	SS	e 55·7
Tiflis	Z.	113·1	30	e 19 23	PP	e 28 58	PS	e 21 53	PPP	e 54·7
Helwan		113·3	47	e 19 48	PP	—	—	e 29 7	PS	—
Ksara		113·9	42	e 18 28	[−13]	e 29 15	PS	e 19 30	PP	55·7
Cape Town		121·2	121	—	—	—	—	38 16	SSP	—

For Notes see next page,

NOTES TO JAN. 1d 11h. 25m. 20s.

Additional readings :—
Little Rock iN = +4m.54s., eSN = +8m.7s.
Tucson P = 4m.34s., iP = 4m.42s., i = +8m.26s.
St. Louis iN = +5m.15s., eEN = +5m.24s., ePPN = +6m.38s., iPPPE = +6m.46s., iSN = +9m.30s., iE = +10m.38s., iEN = +10m.57s., iN = +20m.21s.
San Juan ePPP = +7m.22s., eS_cS = +16m.55s.
Philadelphia iS = +11m.37s.
Fordham P? = +4m.44s.
Weston iN = +15m.42s.
Huancayo P = +7m.3s., S_cS = +17m.0s.
Victoria e = +16m.22s.
La Paz iPPPN = +10m.26s., iSSN = +17m.50s.
Aberdeen e = +21m.7s.
Stuttgart ePS = +23m.43s.
Potsdam eSSN = +29m.40s.?
Irkutsk e = +38m.40s.?
Ksara ePPP = +22m.2s.
Cape Town iE = +42m.48s., iN = +42m.52s., eE = +44m.24s., i = +45m.8s., iN = +46m.36s., iE = +46m.39s.
Long waves were also recorded at Upsala, Strasbourg, Jersey, Bombay, Mazatlan, Moscow, Hamburg, East Machias, Seattle, Honolulu, Baku, Berkeley, Fresno, and Rio de Janeiro.

Jan. 1d. 12h. 52m. 44s. Epicentre 16°·3N. 98°·6W. (as at 11h.).

A = −·1436, B = −·9496, C = +·2789 ; δ = +15 ; h = +5.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
		°	°	m. s.	s.	m. s.	s.	m. s.	
Puebla	E.	2·8	8	0 45	− 2	—	—	—	—
Tacubaya	N.	3·1	350	0 49	− 2	—	—	—	—
Vera Cruz	Z.	3·7	39	0 54	− 6	—	—	—	—
Merida	N.	9·7	61	—	—	3 24	−51	—	—
Tucson		19·4	328	e 4 30	0	—	—	i 4 55	PP
St. Louis		23·4	16	i 5 10	− 1	e 9 48	+27	—	—
Mount Wilson	Z.	25·0	321	e 5 27	0	—	—	—	—
Pasadena	Z.	25·0	321	e 5 29	+ 2	—	—	—	—
Tinemaha	Z.	27·1	324	e 5 49	+ 3	—	—	—	—
Williamstown		34·1	35	e 7 41	PP	—	—	—	—
Harvard	Z.	34·9	36	e 6 57	+ 2	—	—	—	—

Additional readings :—
Tucson i = +10m.25s., +10m.30s., +10m.50s., +11m.8s., +11m.31s., and +11m.40s.
Long waves were also recorded at Bozeman, Guadalajara, Sverdlovsk, and Irkutsk.

Jan. 1d. 15h. 56m. 33s. Epicentre 16°·3N. 98°·6W. (as on 1938 Jan. 1d. 12h.).

A = −·1436, B = −·9496, C = +·2789 ; δ = +15 ; h = +5.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oaxaca	Z.	1·9	68	0 33	− 1	—	—	—	—	—
Puebla	N.	2·8	8	0 46	− 1	—	—	—	—	—
Tacubaya	E.	3·1	350	0 53	+ 2	—	—	—	—	—
Guadalajara	N.	6·3	315	1 39?	+ 3	—	—	—	—	—
Merida	N.	9·7	61	—	—	4 15	0	—	—	—
Tucson		19·4	328	4 36	+ 6	e 8 55	SSS	i 5 5	PPP	i 10·6
St. Louis		23·4	16	e 5 7	− 4	e 9 22	+ 1	—	—	—
Mount Wilson	Z.	25·0	321	i 5 27	0	—	—	—	—	—
Pasadena	Z.	25·0	321	e 5 27	0	—	—	—	—	—
Santa Barbara	Z.	26·2	319	e 5 37	− 1	—	—	—	—	—
Tinemaha	Z.	27·1	324	e 5 50	+ 4	—	—	—	—	—
Williamstown		34·1	35	e 7 41	PP	e 11 55	−19	—	—	—
Ottawa		34·8	28	e 6 49	− 5	—	—	—	—	19·4
Harvard	Z.	34·9	36	e 6 51	− 4	—	—	—	—	—
Triest		93·3	41	i 21 19	?	—	—	—	—	—

Additional readings :—
Tucson iP = +4m.39s., P = +4m.58s., i = +5m.46s.
St. Louis iE = +5m.21s., eE = +5m.26s., iE = +6m.2s., eSE = +9m.1s.
Williamstown i = +8m.16s. and +12m.53s.
Triest e = +21m.30s.
Long waves were also recorded at Vera Cruz, Bozeman, and Uccle,

Jan. 1d. 23h. 28m. 4s. Epicentre 25°·8N. 143°·4E.

$A = -\cdot 7237$, $B = +\cdot 5375$, $C = +\cdot 4329$; $\delta = +5$; $h = +3$;
$D = +\cdot 596$, $E = +\cdot 803$; $G = -\cdot 348$, $H = +\cdot 258$, $K = -\cdot 902$.

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.
Nagoya		10·8	331	2 32	− 2	5 52	L	—	—	(5·9)
Koti		11·5	315	2 44	0	—	—	i 2 58	PP	5·1
Mizusawa		13·4	353	3 7	− 2	e 5 25	−12	—	—	6·0
Hukuoka B		13·7	307	3 13	0	e 5 35	− 9	—	—	—
Husan		15·5	311	3 35	− 1	6 38	+12	—	—	—
Taikyu		16·5	311	3 41	− 8	6 49	0	—	—	—
Keizyo		18·2	314	e 4 7	− 3	e 7 45	+18	—	—	—
Zinsen		18·4	313	i 4 8a	− 4	e 7 45	+13	—	—	e 9·3
Vladivostok		19·7	334	i 4 25	− 2	i 8 15	+15	—	—	i 9·5
Heizyo		19·8	316	e 4 41	+13	e 8 11	+ 9	—	—	—
Taihoku		19·8	273	e 4 23	− 5	e 7 56	− 6	—	—	—
Zi-ka-wei		20·0	292	e 4 26	− 4	7 58	− 8	—	—	—
Manila		23·8	247	i 5 3a	− 5	9 20	+ 5	—	—	—
Hong Kong		26·9	270	5 39	+ 2	10 2	− 5	6 15	PP	—
Phu-Lien		34·1	270	6 36	− 4	11 31	−30	—	—	—
Irkutsk		39·5	323	e 7 24	− 2	e 13 19	− 4	e 16 55	SSS	19·9
Batavia		47·7	234	e 8 32	0	—	—	—	—	21·9
Medan		48·2	252	8 30	− 6	i 15 25	− 4	—	—	21·9
Calcutta	N.	50·0	279	e 8 49	− 1	i 15 53	− 1	e 10 35	PP	i 23·7
Semipalatinsk		53·6	316	9 14	− 3	—	—	—	—	—
Honolulu		53·7	81	e 9 24	+ 6	e 17 1	+16	11 31	PP	e 23·3
Agra	E.	57·9	287	e 9 37	−11	i 17 26	−15	—	—	—
College		57·9	27	e 9 55	+ 7	e 17 50	+ 9	e 21 45	SS	e 24·6
Andijan		59·7	303	9 57	− 3	18 2	− 2	—	—	e 31·9
Riverview		59·8	172	e 10 2	+ 1	i 18 10	+ 5	—	—	e 30·1
Sydney		59·8	172	—	—	18 14	+ 9	—	—	e 27·7
Adelaide		60·6	184	i 10 4	− 2	i 18 17	+ 1	i 22 13	SS	e 28·4
Tchimkent		61·6	306	10 10	− 3	18 23	− 5	—	—	—
Tashkent		61·9	305	i 10 11	− 4	i 18 29	− 3	—	—	e 28·0
Colombo	E.	63·2	265	10 20	− 4	18 38	−11	—	—	—
Perth		63·2	206	e 10 11	−13	i 18 48	− 1	i 19 4	PS	e 28·3
Melbourne		63·3	178	—	—	i 18 56	+ 6	i 26 19	SSS	33·4
Samarkand		64·0	303	10 22	− 7	17 55	−64	—	—	—
Sitka		64·1	36	—	—	e 19 15	+15	e 20 42	S_gS	e 26·9
Bombay		65·0	280	e 10 37	+ 2	i 19 8	− 3	e 13 2	PP	e 28·9
Sverdlovsk		65·3	323	i 10 31	− 6	i 19 7	− 7	—	—	i 37·9
Wellington		72·8	156	i 11 27	+ 4	i 20 45	+ 2	e 14 13	PP	31·9
Victoria		73·2	44	11 36	+10	21 3	+16	25 56	SS	33·9
Christchurch		74·0	158	i 11 29a	− 1	i 21 4	+ 8	i 11 46	pP	e 35·9
Baku		76·3	309	e 11 43	− 1	i 21 22	0	—	—	37·4
Ukiah		76·7	53	—	—	e 21 40	+14	e 26 26	SS	e 31·2
Moscow		77·4	326	11 49	− 1	i 21 34	0	—	—	40·4
San Francisco		77·7	54	e 11 51a	0	—	—	—	—	—
Berkeley		77·8	54	i 11 54k	+ 2	i 21 44	+ 6	—	—	—
Grozny		78·0	321	e 11 54	+ 1	e 21 43	+ 3	—	—	—
Branner		78·1	54	e 11 57	+ 3	—	—	—	—	—
Lick		78·5	54	e 12 0	+ 4	—	—	—	—	—
Pulkovo		78·8	332	11 54	− 3	21 47	− 2	—	—	37·4
Tiflis		79·3	312	11 59	− 1	21 47	− 7	22 25	PS	e 38·9
Piatigorsk		79·4	314	e 11 28	−33	—	—	—	—	—
Fresno	N.	80·1	55	e 12 9	+ 5	—	—	—	—	—
Butte		80·9	43	e 12 25	+16	22 36	+25	e 23 34	PS	e 41·2
Santa Barbara		81·1	56	i 12 13	+ 3	—	—	—	—	—
Tinemaha		81·1	53	i 12 13	+ 3	e 22 25	+12	—	—	—
Haiwee		81·7	54	i 12 16	+ 3	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman		82·0	43	—	—	e 22 21	− 1	e 23 30	PS	e 34·1
Sotchi		82·1	315	e 12 14	− 1	—	—	—	—	—
Mount Wilson		82·4	56	i 12 20k	+ 4	—	—	e 15 23	PP	—
Pasadena		82·4	56	i 12 20k	+ 4	i 22 51	+25	—	—	e 35·9
Upsala		83·8	336	e 12 9	−15	i 22 38	− 2	—	—	—
Scoresby Su d		84·2	356	i 12 22	− 4	22 43	− 1	28 2	SS	—
Theodosia		84·2	317	12 20	− 6	22 39	− 5	—	—	45·9
Simferopol		84·6	318	12 27	− 1	22 49	+ 1	—	—	—
Yalta		84·9	317	i 12 26	− 3	i 22 47	− 4	—	—	45·9
Bergen		87·6	341	12 46	+ 4	23 17	0	—	—	e 43·9
Copenhagen		88·7	335	i 12 45k	− 2	23 14	[+ 5]	24 27	PS	43·9
Ksara		89·2	307	i 12 49k	− 1	e 23 34	+ 2	e 16 13	PP	—
Tucson		89·3	55	i 12 51	+ 1	e 23 6	[− 7]	16 18	PP	e 40·9
Bucharest		89·7	320	e 12 58	+ 6	23 22	[+ 7]	16 19	PP	—
Potsdam		90·9	331	e 12 56	− 2	i 23 27	[+ 5]	e 16 32	PP	49·9
Hamburg		91·3	334	e 12 56	− 4	e 23 31	[+ 7]	—	—	e 45·9
Prague		92·0	329	e 14 23	?	e 24 32	+35	—	—	—
Ogyalla		92·2	326	13 0	− 4	e 23 58	0	—	—	e 48·4
Aberdeen		92·4	341	—	—	e 23 8	[−22]	e 30 18	SS	48·0
Belgrade		92·6	322	e 13 3a	− 3	e 24 0	− 2	25 50	PS	e 51·4
Jena		92·6	331	e 13 2	− 4	e 23 56	− 6	—	—	e 48·9
Graz		93·6	326	i 13 10	0	e 23 39	[+ 2]	—	—	e 47·9
Edinburgh		93·8	341	—	—	e 24 34	+22	—	—	e 48·9
De Bilt		94·2	335	13 11	− 2	e 23 50	[+10]	e 30 44	SS	e 45·9
Durham	N.	94·3	340	i 20 5	?	—	—	—	—	—
Helwan		94·6	305	e 12 29	−46	e 23 41	[− 1]	—	—	—
Stuttgart		95·2	331	i 13 17k	− 1	e 23 50	[+ 5]	e 17 6	PP	e 47·9
Stonyhurst		95·4	340	—	—	i 24 25	− 1	—	—	e 48·9
Triest		95·5	327	e 16 46	PP	i 23 48	[+ 1]	—	—	—
Uccle		95·6	335	e 13 19	0	e 23 51	[+ 4]	30 58	SS	e 46·9
Bidston		95·9	340	i 17 12	PP	i 24 12	−18	—	—	—
Strasbourg		96·0	332	e 13 26	+ 5	e 24 47	+16	e 17 21	PP	e 45·9
Chur		96·5	330	e 13 21	− 2	—	—	e 17 10	PP	—
Zurich		96·6	330	e 13 22	− 2	—	—	e 17 13	PP	—
Kew		96·7	338	i 17 28	PP	i 24 39	+ 2	—	—	e 46·9
Oxford		96·8	338	12 59	−26	24 35	− 3	i 26 7	PS	e 41·6
Basle		96·9	331	e 13 24	− 1	—	—	e 17 10	PP	—
Neuchatel		97·6	331	e 13 26	− 2	—	—	—	—	—
Paris		97·9	335	—	—	—	—	e 26 8	PS	51·9
Florence		98·0	327	e 13 56	+26	—	—	—	—	—
St. Louis		98·6	40	e 14 27	+54	e 24 6	[+ 2]	e 17 28	PP	e 42·4
Jersey		99·2	338	e 12 26	−70	—	—	e 30 16	SS	e 45·3
Toronto		100·5	29	—	—	e 24 36	[+23]	e 32 44	SS	45·9
Ottawa		100·7	26	—	—	e 24 38	[+24]	e 32 44	SS	48·9
Seven Falls		101·1	22	—	—	e 24 26	[+10]	e 27 8	PS	44·9
Fordham		105·2	27	i 18 27	PP	24 44	[+ 9]	33 25	SS	—
Philadelphia		105·4	29	—	—	e 24 34	[− 2]	—	—	e 48·4
Weston		105·8	25	—	—	—	—	e 33 38	SS	e 48·9
Columbia		107·1	37	—	—	e 25 12	[+29]	e 28 14	PS	e 46·1
San Fernando		111·8	333	e 27 16	PS	e 33 36	?	e 35 16	SS	59·4
Cape Town	E.	132·1	246	i 22 32	PP	—	—	—	—	e 62·8
Huancayo		141·1	76	e 19 19	[− 4]	e 41 9	SS	e 22 15	PP	e 65·2
La Paz		149·2	78	i 19 42k	[+ 5]	26 42	[+ 5]	i 20 36	pPKP	69·9
Rio de Janeiro	N.	173·3	65	e 25 28	PP	(47 23)	SS	—	—	47·4

Additional readings :—
Koti i = +2m.49s.
Mizusawa PE = +3m.10s., iSE = +5m.28s.
Zi-ka-wei iN = +8m.10s.
Manila iZ = +9m.24s.
Hong Kong ? = +9m.8s., SS = +11m.0s.
Batavia eE = +9m.26s.
Calcutta ePSN = +16m.29s., iSSSN = +20m.25s.
Honolulu iP = +9m.28s., P_cP = +10m.18s.
College eP = +10m.10s.
Riverview e?E = +6m.38s., iE = +18m.30s., iN = +18m.38s.

Continued on next page.

Sitka eS = +19m.24s., S = +19m.41s.
Melbourne e = +29m.16s.
Bombay e = +10m.58s., +23m.19s., and +27m.10s.
Sverdlovsk iL_q = +33·1m.
Wellington P_cP? = +11m.54s., iPS = +21m.6s., L_q = +29m.6s.
Christchurch isSNE = +21m.35s., eSSE = +25m.58s., eL_q = +31·2m.
Ukiah ePPS = +22m.30s., eSSS = +29m.49s.
San Francisco eN = +12m.41s.
Berkeley eE = +21m.48s., iE = +22m.1s., eZ = +36m.48s., eN = +37m.43s.
Tiflis i = +12m.9s., e = +12m.23s., eN = +21m.27s., SE = +21m.51s., eN = +22m.9s., eSSN = +26m.33s., eZ = +33m.9s.
Fresno eN = +14m.54s.
Butte eP = +12m.40s.
Bozeman eS = +22m.35s., eS_cS = +23m.0s., eSS = +28m.10s., eSSS = +31m.22s.
Pasadena iZ = +12m.41s.
Upsala ePE = +12m.21s.
Scoresby Sund +23m.0s.
Copenhagen PP = +16m.14s., +16m.27s., S = +23m.26s., eN = +28m.26s., SS = +29m.14s.
Ksara ePS = +24m.28s.
Tucson P = +13m.10s., iP = +13m.13s., S = +23m.41s.
Bucharest PPPEN = +18m.13s., SE = +23m.39s.
Potsdam eSKSE = +23m.32s., eSKKSN = +23m.56s., e = +24m.50s., eN = +27m.32s., e = +29m.38s.
Ogyalla ePN = +13m.4s.
Aberdeen i = +23m.56s.?
Durham iE = +20m.12s.
Helwan e = +13m.23s., +23m.11s., and +24m.12s., PPS = +25m.12s.
Stuttgart ePPP = +19m.21s., eS = +24m.9s., eSS = +30m.56s.
Strasbourg eSS = +31m.9s.
St. Louis eE = +15m.27s., eSN = +24m.16s., iSEN = +24m.28s.
Jersey ePP = +16m.26s., e = +23m.12s. and +32m.5s.
Seven Falls e = +33m.26s.
Huancayo iPKS = +23m.9s., PPP = +25m.25s., eSKKKS = +29m.40s., PSPS = +41m.33s., ePSPS = +42m.2s.
La Paz iZ = +20m.0s., isPKPZ = +21m.16s., iZ = +22m.20s., SKP = +23m.26s., SKKS = +29m.30s., SSN = +42m.48s.
Long waves were also recorded at Rathfarnham Castle, Karlsruhe, Harvard, Göttingen, La Plata, Granada, Malaga, Simferopol, East Machias, San Juan, and Seattle.

Jan. 1d. Readings also at 0h. (Tacubaya, Oaxaca (2), Tucson, and Vera Cruz), 4h. (Capodimonte), 5h. (Tacubaya, Puebla, Oaxaca, Tucson, and Vera Cruz), 7h. (Tacubaya, Oaxaca, Puebla, Tucson, Vera Cruz, Tashkent, Nagoya, Almata, Manila, Mizusawa, Andijan, Tchimkent, Samarkand, Irkutsk, Sverdlovsk, Mount Wilson, and Pasadena), 8h. (Tacubaya, Puebla, Oaxaca, Tucson, Vera Cruz, Mount Wilson, Pasadena, and Tinemaha), 11h. (Oaxaca and Balboa Heights), 12h. (Mount Wilson, Pasadena and Oaxaca), 14h. (Mount Wilson, Pasadena, Tacubaya, Puebla, Vera Cruz, Tucson, and Bozeman), 15h. (Tchimkent, Mizusawa, and Amboina), 16h. (Amboina, Irkutsk, Samarkand, Manila, Tashkent, Christchurch, Perth, La Paz, Riverview, Adelaide, Sydney, Batavia, and Melbourne), 17h. (Santiago and Sverdlovsk), 20h. (Tashkent, Samarkand, Irkutsk, Mizusawa, Andijan, and Semipalatinsk), 21h. (Andijan), 23h. (Jersey).

Jan. 2d. 7h. 53m. 48s. Epicentre 34°·9N. 133°·6E.

Felt rather strongly at Okayama, moderately at Tadotu and Miyadu, and slightly at Hirosima and Osaka. Slight damage in the N.W. Province of Okayama.

Epicentre 34°·88N. 133°·37E. Shallow.

Macroseismic radius 200-300km.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1938, Tokyo 1940, pp. 17-19. Macroseismic Chart, p.19.

$A = -·5668$, $B = +·5952$, $C = +·5696$; $\delta = -3$; $h = 0$;
$D = +·724$, $E = +·690$; $G = -·393$, $H = +·412$, $K = -·822$.

	Δ	Az.	P.	O−C.	S.	P−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Okayama	0·4	130	0 10k	P*	0 18	S*	—	—	—
Tadotu	0·6	167	0 17a	+ 2	0 28	+ 2	—	—	—
Sakai	0·7	335	0 11k	P_g	0 23	S_g	—	—	—
Hirosima	1·1	241	0 15k	− 7	0 28	−11	—	—	—
Sumoto	1·2	118	0 25k	P_g	0 43	+ 2	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tokusima	1·2	136	0 25	P_g	0 43	+ 2	—	—	—
Toyooka	1·2	57	0 23k	P_g	0 41	0	—	—	—
Kobe	1·3	99	0 26k	P_g	0 46	+ 2	—	—	—
Koti	1·3	182	i 0 24a	− 1	0 44	0	—	—	—
Miyadu	1·5	64	0 27k	P*	0 46	S*	—	—	—
Wakayama	1·5	117	0 28k	P*	0 49	S*	—	—	—
Osaka B	1·6	99	0 32a	+ 2	0 56	+ 5	—	—	—
Muroto	1·7	164	0 30	− 1	0 54	0	—	—	—
Kyoto	1·7	86	0 35a	+ 4	1 0	+ 6	—	—	—
Uwazima	1·9	208	0 18a	−16	0 38	−21	—	—	—
Yagi	1·9	102	0 35k	+ 1	1 5	S_g	—	—	—
Hikone	2·2	80	0 40	+ 2	1 13	S_g	—	—	—
Ooita	2·3	225	0 29	−11	0 52	−17	—	—	—
Siomisaki	2·3	129	0 44	+ 4	1 19	S_g	—	—	—
Kameyama	2·4	91	0 44	+ 3	1 18	S_g	—	—	—
Gihu	2·6	79	0 45k	+ 1	1 25	S_g	—	—	—
Izuka	2·7	242	0 47	+ 2	1 19	0	—	—	—
Nagoya	2·8	84	0 48	+ 1	1 33	S_g	—	—	—
Hukuoka B	3·0	243	0 50	0	1 26	− 1	—	—	—
Kanazawa	3·0	57	1 6	P_g	1 37	S_g	—	—	—
Kumamoto	3·2	229	0 50k	− 2	1 30	− 2	—	—	—
Hamamatu	3·4	92	1 3	P*	1 51	S_g	—	—	—
Toyama	3·4	57	1 0	P*	1 50	S_g	—	—	—
Iida	3·5	79	1 11	P_g	1 57	S_g	—	—	—
Miyazaki	3·5	213	1 3a	P*	1 45	S*	—	—	—
Wazima	3·6	46	1 5	P*	1 59	S_g	—	—	—
Husan	3·7	274	1 6	P*	e 1 49	+ 4	—	—	—
Matumoto	3·8	71	1 13	P_g	2 1	S*	—	—	—
Nagasaki	3·8	237	1 6	P*	1 51	+ 4	—	—	—
Nagano	4·1	63	1 10	+ 5	2 7	S*	—	—	—
Taikyu	4·2	285	1 22	P_g	2 21	S_g	—	—	—
Hunatu	4·3	81	1 10	+ 2	2 17	S_g	—	—	—
Oiwake	4·3	68	1 12	+ 4	2 13	S*	—	—	—
Misima	4·4	85	1 13	+ 3	2 26	S_g	—	—	—
Tomie	4·6	243	1 20	P*	2 13	+ 6	—	—	—
Maebasi	4·7	70	1 22	P*	2 39	S_g	—	—	—
Kumagaya	4·9	73	1 20	+ 3	2 39	S_g	—	—	—
Yokohama	5·0	80	1 24	P*	—	—	—	—	—
Tokyo, Cen.M.Obs.	5·1	78	1 51	P_g	2 49	S_g	—	—	—
Kakioka	5·6	73	1 26	− 1	—	—	—	—	—
Mito	5·8	72	1 54	P_g	3 8	S_g	—	—	—
Keizyo	6·0	298	e 2 22	S	(e 2 22)	−21	—	—	—
Zinsen	6·2	297	1 28	− 7	—	—	—	—	—
Irkutsk	27·2	320	—	—	e 10 12?	−13	—	—	14·2
Wellington	84·7	151	e 17 12?	PPP	—	—	—	—	—

Long waves were also recorded at Tashkent and Sverdlovsk.

Jan. 2d. 10h. 54m. 44s. Epicentre 34°·1N. 24°·9E. (as on 1937 January 2d.).

Felt force VI at Sitia, force IV at Heirapetra, and at Tzermides (Crete). (Given by Athens).

Epicentre near the S.E. coast of Crete.

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

$A = +·7527$, $B = +·3494$, $C = +·5580$; $\delta = 0$; $h = 0$;
$D = +·421$, $E = -·907$; $G = +·506$, $H = +·235$, $K = -830$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan	6·9	126	—	—	i 2 55	−10	—	—	—
Ksara	9·1	90	e 2 20	+ 6	e 4 2	+ 2	i 5 6	S_g	—
Bucharest	10·3	358	—	—	e 4 13	−17	4 51	SSS	—
Belgrade	11·3	344	e 2 40a	− 6	e 5 51	L	—	—	(e 5·8)
Yalta	12·6	33	2 46	−17	—	—	—	—	e 8·0

Continued on next page.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Simferopol		13·0	30	2 20	−49	—	—	—	—	—
Florence		14·3	315	—	—	e 6 19	+13	—	—	i 8·2
Graz		14·8	334	e 0 54	?	—	—	—	—	e 8·3
Padova		15·1	323	5 16?	PPP	—	—	—	—	—
Chur		17·2	322	e 4 5	+ 2	e 7 24	+10	—	—	—
Tiflis		17·4	58	e 3 53	−13	e 7 8	−11	—	—	e 8·3
Prague		17·7	338	—	—	e 7 16?	−10	—	—	—
Zurich		18·1	321	e 5 15	?	e 8 3	SS	—	—	—
Basle		18·7	320	e 4 20	− 2	e 8 1	SS	—	—	—
Grozny		18·7	54	e 4 14	− 8	—	—	—	—	—
Neuchatel		18·7	320	e 4 23	+ 1	—	—	—	—	—
Stuttgart		18·7	327	e 4 26	+ 4	e 7 51	+ 3	e 9 16	?	e 10·2
Strasbourg		19·3	324	e 4 28	− 1	e 8 10	+ 8	—	—	e 10·1
Jena		19·4	334	e 4 28	− 2	—	—	—	—	e 10·3
Potsdam		20·2	338	e 4 34	− 5	i 8 26	+ 5	—	—	e 10·3
Göttingen		20·5	333	—	—	e 8 58	+31	—	—	e 11·3
Baku		20·8	64	4 52	+ 7	e 8 20	−13	—	—	e 10·8
Paris		22·2	318	—	—	e 9 13	+13	—	—	13·3
Hamburg		22·2	336	e 4 54	− 6	e 8 57	− 3	—	—	e 12·4
Uccle		22·4	323	e 5 2	0	e 9 6	+ 2	—	—	e 11·3
De Bilt		22·9	328	e 5 21	+15	9 18	+ 5	—	—	e 11·8
Copenhagen		23·2	342	9 14	S	(9 14)	− 4	—	—	11·3
Granada		23·3	286	e 5 52	PPP	—	—	—	—	9·8
Moscow		23·4	18	e 5 8	− 3	e 9 3	−18	—	—	11·8
Kew		25·2	322	—	—	i 9 59	+ 7	—	—	13·3
Oxford		25·8	321	—	—	e 10 12	+10	—	—	e 11·4
Pulkovo		25·9	7	e 5 34	− 1	9 42	−22	—	—	e 12·8
Upsala	N.	26·2	350	—	—	e 10 4	− 5	—	—	—
Bidston		27·7	323	—	—	9 46	−47	—	—	e 13·3
Sverdlovsk		33·4	36	e 6 40	− 2	e 11 37	−26	—	—	15·3
Tashkent		35·5	65	—	—	e 12 18	−18	—	—	e 18·8
Andijan		37·9	66	e 7 8	−12	e 13 2	−11	—	—	—

Additional readings :—
Helwan i = +3m.58s. and +9m.22s.
Bucharest eN = +5m.11s., iE = +5m.32s.
Belgrade eNW = +2m.55s., iNW = +6m.17s. and +7m.5s.
Jena eE = +4m.46s.
Potsdam e = +4m.52s., eN = +5m.52s., e = +8m.4s.
Tashkent i = +16m.58s., e = +17m.37s. and +18m.17s.
Long waves were also recorded at Cape Town, Irkutsk, Edinburgh, Triest, Aberdeen, and Stonyhurst.

Jan. 2d. 22h. 27m. 18s. Epicentre 16°·3N. 98°·6W. (as on 1938 January 1d.).

Destructive at Ometepec, felt force VII in Mexico, very strongly in the centre and in the S.E. and S.W. of the Republic.

Epicentre, Mexican coast, 16°·08′N. 98°19′W., given by Tacubaya. See " Universidad Nacional de Mexico, Instituto de Geologia, Catalogo de Tremblores, Serie Sismologica, 1935, à 1939. Mexico 1942, page 47."

A = −·1436, B = −·9496, C = +·2789 ; δ = +15 ; h = +5.

		Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Oaxaca	N.	1·9	68	0 32	− 2	—	—	—	—	—
Puebla	N.	2·8	8	0 48	+ 1	—	—	—	—	—
Tacubaya	E.	3·1	350	0 53	+ 2	—	—	—	—	—
Vera Cruz	N.	3·7	39	0 59	− 1	—	—	—	—	—
Manzanillo	N.	6·0	298	1 37	+ 5	—	—	—	—	—
Guadalajara	N.	6·3	315	1 39	+ 3	—	—	—	—	—
Merida	N.	9·7	61	i 2 22	0	—	—	—	—	—
Mazatlan	N.	10·0	314	e 2 33	+ 6	—	—	—	—	—
Chihuahua	Z.	14·1	332	e 3 26	+ 3	—	—	—	—	—
Little Rock		19·2	16	e 4 22	− 6	e 7 56	− 3	—	—	e 11·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		19·4	328	i 4 32	+ 2	i 8 17	+13	i 4 47	PP	i 8·7
Balboa Heights		19·9	108	e 4 36	0	—	—	—	—	—
St. Louis		23·4	16	e 5 9	− 2	i 9 24	+ 3	i 5 35	PP	e 14·9
Florissant		23·6	16	i 5 10	− 3	i 9 15	−10	—	—	—
Columbia		23·7	37	i 5 11	− 3	e 9 24	− 3	—	—	10·2
Mount Wilson		25·0	321	i 5 29k	+ 2	—	—	—	—	—
Pasadena		25·0	321	i 5 29k	+ 2	i 10 4	+15	—	—	e 11·8
Cincinnati		25·9	25	i 5 33	− 2	i 10 4	0	—	—	—
Haiwee		26·2	324	e 5 41	+ 3	—	—	—	—	—
Santa Barbara		26·2	319	i 5 40	+ 2	—	—	—	—	—
Tinemaha		27·1	324	i 5 47k	+ 1	—	—	—	—	—
Chicago (Loyola)		27·2	17	i 5 46	− 1	i 10 29	+ 4	i 6 37	PP	—
Fresno	N.	27·7	322	e 5 54	+ 2	—	—	e 11 48	SSS	—
Lick		29·2	321	e 6 9	+ 4	—	—	—	—	—
McComb Test		29·4	36	—	—	i 11 3	+ 2	—	—	—
Georgetown		29·4	36	i 6 6	− 1	i 11 3	+ 2	—	—	i 14·3
Branner		29·6	320	e 6 13	+ 4	—	—	—	—	e 17·1
Berkeley		29·9	321	i 6 11k	− 1	i 11 51	+42	—	—	—
San Francisco		30·0	320	e 6 12	0	—	—	—	—	e 16·0
Pennsylvania		30·3	32	i 6 17	+ 2	e 11 33	+18	—	—	e 19·9
San Juan		31·0	80	e 6 19	− 2	e 11 24	− 2	e 7 9	PP	i 12·4
Bozeman		31·1	344	e 6 21	− 1	i 11 35	+ 7	7 22	PP	12·2
Philadelphia		31·2	36	i 6 24	+ 1	e 11 23	− 6	e 7 32	PP	e 12·6
Ukiah		31·3	323	e 6 18	− 6	i 11 43	+12	e 7 25	PP	e 12·6
Buffalo		31·4	28	i 6 22	− 3	11 26	− 6	—	—	e 14·2
Butte		31·8	344	e 6 27	− 1	11 37	− 1	e 7 17	PP	12·4
Toronto		31·8	27	6 25	− 3	11 40	+ 2	—	—	17·7
Fordham		32·5	36	i 6 32	− 2	i 11 51	+ 2	—	—	—
Ferndale	N.	32·8	324	e 6 30	− 7	—	—	—	—	e 17·7
Williamstown		34·1	35	i 6 48	0	i 12 25	+11	i 14 23	SS	e 16·5
Ottawa		34·8	28	6 53	− 1	12 24	− 1	15 24	SSS	17·7
Harvard		34·9	36	e 6 53	− 2	i 12 33	+ 6	—	—	e 22·7
Weston		34·9	36	e 6 54	− 1	i 12 30	+ 3	i 8 31	PPP	—
Fort de France		36·1	87	e 6 59	− 6	e 12 47	+ 2	—	—	—
Saskatoon		36·3	352	7 4	− 3	12 47	− 1	—	—	17·2
Huancayo		36·4	139	i 7 11a	+ 3	i 12 47	− 3	i 8 25	PP	i 15·1
Seattle		36·9	334	e 7 25	+13	—	—	e 9 20	PcP	e 16·4
Shawinigan Falls		37·0	30	7 13	0	13 0	+ 1	—	—	22·7
Victoria		37·9	334	7 19	− 1	13 18	+ 5	8 58	PP	19·2
Seven Falls		38·4	31	7 10	−15	13 16	− 4	8 46	PP	17·7
Last Machias		38·7	37	e 7 25	− 2	e 13 26	+ 1	e 8 57	PP	e 16·3
La Paz		44·3	135	i 8 14a	+ 1	i 14 45	− 3	i 9 56	PP	21·3
Sitka		49·3	335	e 8 49	− 4	i 16 9	+10	e 10 48	PP	e 21·4
Honolulu		56·0	286	i 9 40	− 3	e 17 16	−14	e 11 53	PP	25·3
College		58·7	338	e 10 9	+ 7	—	—	e 19 55	ScS	e 24·4
La Plata		63·9	143	10 35	− 2	19 12	0	—	—	33·2
Rio de Janeiro		66·7	124	8 47	?	19 44	− 2	—	—	e 32·5
Scoresby Sund		70·3	20	11 16	− 1	20 33	+ 4	24 48	SS	36·7
Rathfarnham Castle		78·5	38	i 12 26	+22	i 22 6	+ 5	i 26 17	SS	39·7
Edinburgh		79·7	35	—	—	i 22 14	+ 1	—	—	44·7
Aberdeen		79·9	34	e 11 50	−22	e 22 12	− 4	e 14 55	PP	e 40·9
Bidston		80·3	37	i 12 6	− 8	i 22 22	+ 2	e 25 23	?	39·7
Stonyhurst		80·6	37	12 22	+ 6	i 22 42	+19	e 22 17	S	42·7
Durham		80·8	36	e 12 23	+ 6	i 22 33	+ 8	—	—	—
Oxford		81·8	39	e 12 36	+14	i 22 35	0	—	—	e 38·9
Jersey		82·0	41	e 15 33	PP	i 22 35	− 2	e 32 16	SSS	e 44·8
San Fernando		82·4	55	e 17 9	PPP	i 22 51	+10	28 1	SS	—
Kew		82·5	39	i 12 25k	− 1	i 22 42	0	e 25 41	?	40·7
Bergen		82·7	29	12 34	+ 7	22 49	+ 5	—	—	e 42·7
Malaga		83·7	54	e 12 40	+ 8	e 22 54	0	—	—	40·7
Granada		84·2	53	i 12 42	+ 8	e 23 15	+16	—	—	—
Paris		85·0	42	i 12 49	+11	i 23 8	+ 1	15 57	PP	43·7
De Bilt		85·5	37	12 42	+ 1	e 23 15	+ 3	e 15 58	PP	41·7
Uccle		85·5	39	12 42	+ 1	i 23 14	+ 2	i 28 41	SS	e 40·7
Hamburg		87·6	35	e 12 47	− 4	e 23 39	+ 7	e 16 5	PP	e 43·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Copenhagen		88·0	32	12 54	+ 1	23 22	[+ 2]	16 16	PP	—
Strasbourg		88·3	40	e 12 55	0	e 23 44	+ 5	e 16 18	PP	45·7
Göttingen		88·5	37	—	—	i 23 45	+ 4	—	—	e 36·5
Neuchatel		88·5	42	e 12 56	0	e 23 42	+ 1	—	—	—
Upsala		88·5	27	e 13 9	+13	i 23 47	+ 6	e 16 21	PP	e 42·7
Stuttgart		89·1	39	e 12 58	0	23 28	[+ 1]	e 16 26	PP	e 46·7
Zurich		89·3	41	e 13 5	+ 6	e 23 50	+ 2	—	—	—
Jena		89·6	37	—	—	e 23 54	+ 3	e 29 42	SS	e 44·7
Potsdam		89·8	35	e 12 54	− 8	i 23 56	+ 3	e 16 30	PP	e 38·7
Chur		90·1	41	e 12 54	− 9	e 24 1	+ 6	e 16 28	PP	—
Prague		91·7	37	e 16 38	PP	23 42	[− 1]	e 30 17	SS	—
Florence		92·5	43	e 12 37	−37	i 24 12	− 5	—	—	—
Triest		93·3	41	13 6	−12	e 23 46	[− 6]	e 30 36	SS	—
Graz		93·7	40	e 16 17	PP	e 25 31	PS	—	—	e 51·7
Pulkovo		93·7	24	e 13 18	− 2	23 49	[− 5]	e 16 58	PP	50·2
Ogyalla		94·9	38	e 16 42?	PP	—	—	—	—	—
Wellington		98·1	230	e 13 42?	+ 2	25 32	+28	—	—	45·7
Moscow		99·3	24	e 13 46	+ 1	24 24	[+ 1]	17 42	PP	e 51·2
Christchurch		99·9	228	e 13 46	− 2	e 24 40	[+14]	i 25 38	PS	43·9
Bucharest		101·4	37	—	—	e 24 42	[+ 8]	—	—	57·7
Sverdlovsk		105·1	12	e 14 12	+ 1	i 24 53	[+ 2]	i 18 32	PP	46·7
Irkutsk		108·9	346	18 49	PP	i 25 12	[+ 5]	i 28 34	PS	55·7
Grozny		112·3	27	e 19 29	PP	—	—	—	—	e 34·7
Tiflis	Z.	113·1	30	19 29	PP	e 29 9	PS	—	—	61·1
Helwan		113·3	47	e 19 30	PP	e 26 56	{+28}	i 35 24	SS	—
Ksara		113·9	42	e 19 25	PP	e 29 8	PS	e 32 32	SS	—
Baku		116·5	27	19 57	PP	29 41	PS	22 15	PPP	e 60·0
Cape Town	E.	121·2	121	i 20 25	PP	i 26 2	[+ 8]	i 30 19	PS	e 61·3
Tashkent		121·6	11	e 18 59	[+ 3]	25 58	[+ 3]	20 22	PP	58·7
Manila		130·3	306	21 29	PP	31 38	PS	24 7	PPP	59·7
Agra	E.	136·7	4	e 20 41	?	—	—	i 40 3	SS	—
Calcutta	N.	140·8	349	i 22 45	PP	—	—	40 9	SS	—
Bombay		144·0	14	e 19 37	[0]	e 29 47	{+ 3}	e 22 52	PP	83·9
Perth		145·1	238	22 42?	PP	—	—	—	—	—
Kodaikanal	E.	153·4	9	—	—	33 17	PS	43 22	SS	e 79·5

Additional readings :—
Tucson i = +5m.29s., and +5m.57s., iS = +8m.24s.
St. Louis iPEN = +5m.12s., iPPPN = +5m.47s., iN = +7m.17s., iSSN = +9m.54s., iSSSN = +10m.5s., iE = +10m.10s.
Columbia iS = +9m.40s.
Chicago (Loyola) i = +11m.44s.
Fresno eN = +6m.23s. and +6m.41s., iN = +12m.6s.
Branner eN = +8m.9s.
Berkeley iE = +6m.20s., iZ = +7m.21s. and +13m.33s.
San Francisco eE = +6m.17s.
Pennsylvania i = +6m.39s., e = +8m.4s., +8m.12s., and +9m.37s.
San Juan eP = +6m.26s., PPP = +7m.20s., iS = +11m.48s.
Bozeman PP = +7m.0s., ePcP = +8m.16s., iS = +11m.39s.
Philadelphia iS = +11m.29s.
Ukiah eP = +6m.25s., PP = +7m.17s.
Buffalo i = +10m.46s.
Butte ePcP = +8m.32s.
Fordham i = +6m.58s. and +11m.59s.
Williamstown i = +7m.10s. and +7m.26s.
Huancayo iP = +7m.19s., i = +7m.35s., ePPP = +8m.46s., ePcP = +9m.32s., iS = +12m.58s., ScS = +17m.9s.
Weston iZ = +7m.8s. and +7m.23s., iPcSN = +13m.36s., iN = +15m.48s.
Victoria SSS = +16m.18s.
East Machias ePPP = +9m.10s., iS = +13m.33s.
La Paz iPPZ = +10m.6s., iPcPZ = +10m.58s., iSN = +14m.56s., iZ = +16m.22s., iScS = +18m.10s.
Sitka eP = +9m.0s., ePPP = +11m.48s., i = +16m.14s.
Honolulu ePPP = +13m.5s., iS = +17m.45s.
Aberdeen e = +16m.20s., PPP = +17m.3s., e = +26m.58s., SS = +27m.17s., SSS = +31m.5s.
Durham eN = +22m.23s.
Oxford e = +25m.10s.
De Bilt eE = +23m.22s.

Continued on next page.

Hamburg eE = +23m.23s., iSSN = +29m.21s.
Copenhagen S = +23m.41s., PS = +24m.38s., eE = +25m.48s., SS = +29m.0s., e = +36m.12s.
Upsala ePPN = +16m.27s.
Stuttgart eS = +23m.50s., ePS = +24m.57s., eSS = +29m.42s.
Potsdam eE = +23m.30s., ePSEZ = +24m.48s., eN = +29m.36s., iSSE = +29m.58s.
Prague e = +24m.19s.
Triest iN = +24m.28s., iE = +24m.42s.
Pulkovo PS = +25m.55s., SS = +30m.42s., SSS = +34m.42s.
Wellington i = +28m.11s., L_q = +37·7m.
Moscow P = +17m.36s., S = +25m.18s., PS = +26m.43s., SS = +32m.36s.
Christchurch L_q = +38·1m.
Sverdlovsk ePKP = +18m.20s., iPPP = +20m.42s., eS = +26m.7s., PS = +27m.45s., PPS = +28m.42s., SS = +33m.30s., SSS = +38m.24s.
Tiflis ePPPZ = +21m.54s., eZ = +23m.38s., eSKSPZ = +29m.9s., eZ = +34m.42s. and +43m.53s.
Helwan e = +21m.54s.
Baku SS = +36m.6s.
Cape Town iSKKSE = +27m.29s., iPSN = +30m.27s., iPPSE = +31m.41s., iSS = +36m.59s.
Tashkent e = +16m.59s., iPPP = +23m.4s., SKKS = +27m.30s., eSKSP = +31m.0s., eSSS = +42m.42s.
Manila SKP = +22m.45s.
Agra iSSS?E = +45m.8s.
Calcutta iN = +25m.47s. and +29m.30s., eN = +34m.58s.
Bombay eN = +20m.59s. and +23m.22s., iN = +26m.1s. and +35m.52s., e = +41m.45s. and +46m.54s., eE = +70m.52s.
Kodaikanal eE = +45m.31s. and +46m.50s., SSSE = +49m.10s., GE = +60m.47s.
Long waves were also recorded at Hong Kong and Phu-Lien.

Jan. 2d. Readings also at 0h. (Simferopol), 6h. (Perth, Pasadena (2), Mount Wilson (2), Tucson, Merida, Guadalajara, Vera Cruz, Tacubaya, Puebla, Oaxaca, Christchurch, and Tinemaha), 7h. (Sverdlovsk and Tashkent), 9h. (Berkeley, Branner, Lick, and Fresno), 13h. (Ottawa, Zurich, Amboina, Tchimkent (2), and Shawinigan Falls), 16h. (Wellington), 17h. (Zurich, Chur, and Basle), 18h. (Wellington and Samarkand), 20h. (Andijan and Tiflis), 21h. (La Paz), 22h. (Oaxaca, Puebla, and Vera Cruz (2), 23h. (Oaxaca (3), Vera Cruz, Tacubaya (5), Mizusawa, and Hong Kong).

Jan. 3d. 21h. 17m. 2s. Epicentre 31°·0S. 178°·5W.

A = −·8584, B = −·0225, C = −·5125; δ = +1; h = +2;
D = −·026, E = +1·000; G = +·512, H = +·013, K = −·859.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Arapuni		8·5	212	—	—	i 3 46	+ 1	—	—	—
New Plymouth		10·1	215	e 2 32	+ 4	i 4 20	− 5	i 5 46	SS	—
Wellington		11·6	206	e 2 37	−13	5 7	+ 6	5 53	SS	—
Christchurch		14·4	207	e 3 25	− 2	e 5 35	−34	e 4 50	?	e 6·5
Riverview		25·7	255	e 6 4	PP	e 10 7	+ 6	—	—	e 12·8
Sydney		25·7	255	—	—	e 10 18	+17	—	—	e 13·3
Melbourne		30·8	247	e 6 16	− 4	i 11 41	+18	—	—	15·1
Adelaide		36·0	252	e 7 18	+13	i 12 41	− 3	—	—	e 15·3
Perth		55·2	250	e 17 13	S	(e 17 13)	− 7	—	—	i 30·0
Batavia		73·7	272	e 14 58?	PP	—	—	—	—	—
Manila		73·7	298	i 11 40k	+ 2	21 22	+14	i 14 38	PP	—
Pasadena	z.	86·2	46	e 12 45	+ 1	—	—	—	—	—
Mount Wilson	z.	86·3	46	e 12 45	0	—	—	—	—	—
Ukiah		86·7	39	—	—	e 38 35	?	—	—	—
Tinemaha	z.	88·1	44	e 12 52	− 2	—	—	—	—	—
Tucson		89·9	50	e 13 3	+ 1	e 23 38	[+ 6]	e 16 41	PP	e 38·3
Huancayo		94·9	107	—	—	e 23 56	[− 5]	31 2	SS	38·0
La Paz		98·2	114	i 14 21	+41	—	—	—	—	50·0
Calcutta	N.	103·8	287	—	—	e 23 20	?	—	—	—
Irkutsk		106·7	320	e 18 58?	PP	e 24 58?	[0]	e 27 58?	PS	e 45·0
Bombay	E.	115·4	276	—	—	e 25 40	[+ 7]	—	—	e 63·0
Tashkent		125·6	300	e 18 58	[− 5]	e 28 8	{+17}	21 16	PP	e 59·0
Sverdlovsk		132·1	319	i 19 18	[+ 2]	e 26 30	[+ 5]	e 21 48	PP	65·0
Baku		140·0	297	e 19 52	[+21]	e 36 22	?	e 50 40	?	e 74·0
Grozny		142·0	301	e 14 31	?	—	—	e 19 44	PKP	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tiflis	143·9	298	i 19 37	[0]	e 21 9	?	e 23 23	PKS	e 76·0
Moscow	144·6	323	i 19 39	[+ 1]	—	—	—	—	—
Pulkovo	145·4	333	i 19 41	[+ 1]	—	—	—	—	—
Ksara	150·9	282	i 19 52k	[+ 3]	—	—	e 23 43	PP	—
Copenhagen	154·1	346	19 58	[+ 5]	—	—	—	—	85·0
Potsdam	157·0	342	e 19 58?	[+ 1]	—	—	—	—	e 97·0
Uccle	160·1	356	20 40	[+39]	—	—	—	—	e 88·0
Strasbourg	161·8	346	e 20 28	[+26]	—	—	e 24 34	PP	e 88·0
Granada	172·5	33	e 21 52	?	—	—	i 26 10	PP	—

Additional readings :—
New Plymouth i = +3m.18s. and +3m.48s., S? = +5m.3s., i = +7m.17s.
Wellington i = +3m.56s., +4m.30s., +6m.47s., +7m.20s. and +8m.0s., iP_cP? = +8m.46s., P_cS = +11m.56s.
Melbourne i = +14m.4s.
Tucson eP = +13m.13s., ePS = +25m.1s., PS = +25m.6s., eSSS = +33m.7s.
Huancayo iSKS = +24m.3s., iS = +24m.44s., S_cS = +25m.1s., iPS = +25m.48s., iPPS = +26m.20s., iSS = +31m.7s.
Irkutsk e = +37m.58s.?
Tashkent +23m.37s., +32m.25s., and +36m.42s.
Sverdlovsk i = +22m.48s.
Ksara SKSP = +33m.52s.
Long waves were also recorded at Hong Kong, Phu-Lien, De Bilt, San Fernando, Jersey, and Harvard.

Jan. 3d. Readings also at 0h. (Tucson (2), Tacubaya (3), Guadalajara, Oaxaca (3), and Vera Cruz (3), and Mizusawa), 1h. (Tacubaya (2) and Oaxaca), 2h. (Tacubaya), 3h. (Tacubaya, Oaxaca, and Vera Cruz), 4h. (Tacubaya, Oaxaca, and Balboa Heights), 5h. (Tacubaya and Tiflis), 6h. (Copiapo, Tacubaya (4), Oaxaca, and Huancayo), 7h. (Grozny), 8h. (Basle and Zurich), 9h. (Oaxaca (3), Tacubaya (3), Vera Cruz (2), and Tucson), 10h. (Oaxaca, Tacubaya, and Vera Cruz), 12h. (Mizusawa), 14h. (Bombay), 15h. (Calcutta, Tashkent, Ksara, and Sverdlovsk), 16h. (Agra, Colombo, Hyderabad, Samarkand, Sverdlovsk, Ksara, Tashkent, Calcutta, Bombay, Tiflis, Baku, and Andijan), 17h. (Andijan, Baku, Tiflis, Tashkent, Ksara, Sverdlovsk, Huancayo, Irkutsk, and Helwan), 18h. (Tacubaya, Branner, and La Paz), 19h. (Ksara and Tiflis), 20h. (Sverdlovsk, Tashkent, Bombay, Calcutta, and Little Rock), 21h. (Little Rock, Vera Cruz, and Tacubaya (3)), 22h. (Tacubaya, Vera Cruz, Oaxaca, Tucson, and Wellington), 23h. (Karlsruhe).

Jan. 4d. 4h. 49m. 6s. Epicentre 32°·5N. 98°·0E.

A = −·1176, B = +·8368, C = +·5347 ; δ = −3 ; h = +1 ;
D = +·990, E = −·139 ; G = −·074, H = +·529, K = −·845.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	13·1	223	e 4 28	?	i 7 58	L	i 8 36	SS	9·4
Agra	E.	18·1	258	e 4 2	−12	7 19	−16	—	—	—
Almata		19·7	311	e 4 27	− 7	—	—	—	—	—
Irkutsk		20·3	11	e 4 40	0	e 8 15	− 8	—	—	9·9
Andijan		22·1	299	e 5 1	+ 2	e 9 14	+16	—	—	13·9
Tashkent		24·5	300	i 5 23	+ 1	i 9 32	− 8	—	—	e 12·5
Samarkand		26·0	295	e 5 40	+ 4	—	—	—	—	—
Bombay	N.	26·3	245	e 6 17	PP	e 10 18	+ 7	—	—	—
Sverdlovsk		35·3	326	—	—	e 12 20	−13	—	—	17·9
Ksara		51·3	288	—	—	e 14 15	?	—	—	32·9

Long waves were also recorded at Baku, Hyderabad, Zi-ka-wei, De Bilt, Tiflis, Hong Kong, Phu-Lien, Uccle, and Copenhagen.

Jan. 4d. Readings also at 0h. (Balboa Heights, Fresno, Lick, and Tucson), 1h. (Ksara), 2h. (Tucson, Wellington, Pasadena, Mount Wilson, Tashkent, Sverdlovsk, Calcutta, Strasbourg, Zurich, Chur, Neuchatel, Basle, Florence, Manila, Haiwee, Santa Barbara, and Tinemaha), 3h. (Tacubaya), 4h. (Tacubaya, Vera Cruz, and Oaxaca), 6h. (Tacubaya, Vera Cruz, Oaxaca, Branner, Berkeley, and San Francisco), 7h. (Huancayo), 8h. (Huancayo and Malabar), 10h. (Wellington), 11h. (Balboa Heights (2)), 13h. (Bucharest, Belgrade, Triest, Budapest, and Prague), 14h. (Belgrade, Bucharest, Kecskemet, Triest, and Tacubaya), 15h. (Tacubaya, Vera Cruz, Oaxaca, Puebla, Tucson, Tchimkent, Andijan, Samarkand, Guadalajara, and Harvard), 17h. (Lick), 18h. (Berkeley, Oaxaca, and Mizusawa), 19h. (Huancayo, Mount Wilson, and Pasadena), 20h. (Oaxaca, Tacubaya, and Vera Cruz), 21h. (Tchimkent), 22h. (Almata, Frunse, Samarkand (2), Andijan (2), Tchimkent, and Tashkent), 23h. (Oaxaca (2), Tacubaya (2), and Vera Cruz).

Jan. 5d. 8h. 19m. 16s. Epicentre 16°·3N. 98°·6W. (as on 1938 Jan. 2d.).

$A = -\cdot1436$, $B = -\cdot9496$, $C = +\cdot2789$; $\delta = +15$; $h = +5$.

		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 38	+ 4	—	—	—	—	—
Puebla	N.	2·8	8	0 48	+ 1	—	—	—	—	—
Tacubaya	E.	3·1	350	0 52	+ 1	—	—	—	—	—
Vera Cruz	N.	3·7	39	1 2	+ 2	—	—	—	—	—
Tucson		19·4	328	e 4 28	− 2	—	—	i 4 50	PP	—
Mount Wilson	Z.	25·0	321	i 5 23	− 4	—	—	—	—	—
Pasadena		25·0	321	e 5 26	− 1	—	—	—	—	12·7
Haiwee		26·2	324	e 5 43	+ 5	—	—	—	—	—
Santa Barbara	Z.	26·2	319	e 5 38	0	—	—	—	—	—
Tinemaha	Z.	27·1	324	i 5 44	− 2	—	—	—	—	—
Williamstown		34·1	35	e 7 5	+17	—	—	—	—	—

Additional readings:—
Tucson i = +5m.50s., +12m.1s., +12m.6s., and +12m.19s.
Williamstown i = +8m.46s., e = +15m.46s.
Long waves were also recorded at Merida and Guadalajara.

Jan. 5d. Readings also at 0h. (Huancayo, Mizusawa, and Tiflis), 2h. (Mizusawa, Andijan (4), Tashkent, Frunse (2), and Manila), 3h. (Balboa Heights), 6h. (Pasadena, Berkeley, Tinemaha, Haiwee, Santa Barbara, Wellington, and Mount Wilson), 8h. (Samarkand and Andijan), 10h. (Batavia), 12h. (Balboa Heights), 13h. (Ksara), 15h. (Santiago, Berkeley, Lick, and Branner), 16h. (Huancayo), 17h. (Pennsylvania), 18h. (Huancayo), 20h. (Santiago, Andijan, Tashkent, Frunse, Almata, and Tchimkent), 22h. (Balboa Heights), 23h. (near Tiflis).

Jan. 6d. 21h. 27m. 14s. Epicentre 41°·0N. 44°·5E. (as on 1937 Sept. 14d.).

$A = +\cdot5399$, $B = +\cdot5305$, $C = +\cdot6535$; $\delta = -2$; $h = -2$;
$D = +\cdot701$, $E = -\cdot713$; $G = +\cdot466$, $H = +\cdot458$, $K = -\cdot757$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Erevan	0·8	180	0 26	+ 8	0 41	+10	—	—	—
Tiflis	0·8	17	i 0 14	− 4	—	—	i 0 16	P_g	0·4
Grozny	2·5	22	0 46	+ 3	1 17	+ 3	0 50	P*	—
Piatigorsk	3·2	341	0 47	− 5	1 28	− 4	0 55	P_g	—
Baku	4·2	100	e 1 55	S	(e 1 55)	− 2	2 43	?	3·7
Sotchi	4·4	307	1 11	+ 1	1 56	− 6	2 5	S*	—
Yalta	8·4	298	—	—	e 3 23	−20	—	—	—
Simferopol	8·6	301	e 2 11	+ 2	e 3 29	−19	—	—	—
Sebastopol	8·8	298	—	—	e 2 30	PPP	—	—	—
Ksara	9·9	227	e 3 46	?	—	—	—	—	—
Tashkent	18·7	80	i 4 9	−13	e 8 0	+12	—	—	e 10·4
Sverdlovsk	19·0	28	4 24	− 2	8 0	+ 5	—	—	11·8
Andijan	21·0	81	e 4 53	+ 6	e 9 17	SSS	—	—	—

Additional readings:—
Grozny $P_g = +52$s., $S_g = +1$m.23s.
Piatigorsk P* = +51s.
Baku e = +3m.3s.
Ksara e = +5m.40s. and +6m.26s.

Jan. 6d. Readings also at 0h. (Manila), 4h. (Wellington and Christchurch), 7h. (Amboina), 8h. (Vera Cruz and Oaxaca), 9h. (Medan), 13h. (Pasadena, Mount Wilson, Seattle, Seven Falls, Shawinigan Falls, Harvard, Williamstown, Victoria, and Ottawa), 14h. (Pasadena, Mount Wilson, Santiago, Balboa Heights, and Tucson), 15h. (Pasadena and Mount Wilson), 16h. (San Juan), 19h. (Balboa Heights, Tacubaya, Huancayo, and La Paz), 20h. (Santiago and Balboa Heights), 21h. (Yalta, Grozny (2), Tiflis (7), and Erevan (3)), 22h. (Grozny, Erevan, and Tiflis (4)), 23h. (Grozny Erevan (3), Piatigorsk, and Tiflis (5)).

Jan. 7d. 15h. 26m. 36s. Epicentre 4°·2S. 152°·2E.

Felt at Raboul (New Guinea).

Epicentre 4°·2S. 152°·2E. (given by U.S.C.G.S.). Depth 150km. (Wellington). See Annales de l'Institut de Physique du Globe de Strasbourg, 1938, tome II, 2e partie Seismologie, Mende 1941, p.2.

$A = -\cdot8822$, $B = +\cdot4652$, $C = -\cdot0728$; $\delta = -1$; $h = +7$;
$D = +\cdot466$, $E = +\cdot885$; $G = +\cdot064$, $H = -\cdot033$, $K = -\cdot997$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		23·2	182	i 5 12	+ 3	i 9 30	+12	—	—	—
Amboina		24·0	271	i 5 15	− 2	—	—	—	—	—
Riverview		29·5	182	e 6 0	− 8	i 11 10	+ 8	—	—	e 14·7
Sydney		29·5	182	—	—	i 11 14	+12	—	—	e 14·7
Adelaide		33·1	200	e 6 40	0	i 12 3	+ 4	—	—	i 15·4
Melbourne		34·1	190	e 7 34?	+46	12 17	+ 3	—	—	15·0
Manila		36·1	302	7 4	− 1	12 20	−25	—	—	—
Arapuni		39·9	151	—	—	e 13 54	+11	—	—	e 18·4
Wellington		42·1	155	i 7 55	0	14 19	+ 3	i 8 27	pP	18·8
Christchurch		43·1	158	i 8 6a	+ 2	i 14 37	+ 7	i 17 31	SS	21·2
Perth		43·8	226	e 8 19	+10	e 14 54	+14	17 55	SSS	i 22·3
Batavia		45·2	266	e 7 9	?	—	—	—	—	e 21·4
Hong Kong		45·6	307	8 27	+ 3	15 14	+ 8	9 45	PP	—
Zi-ka-wei	Z.	45·9	323	e 8 16	−10	—	—	i 13 54	PS	22·6
Vladivostok		50·6	341	e 8 58	− 4	e 16 6	−11	—	—	e 21·5
Medan	N.	54·0	278	e 9 27	− 1	e 17 7	+ 4	—	—	—
Honolulu		55·1	61	—	—	e 17 8	−10	—	—	e 23·7
Calcutta	N.	67·8	296	e 14 1	PP	i 20 7	+ 7	e 24 45	SS	i 27·9
Irkutsk		69·3	331	e 11 14	+ 3	20 16	− 1	—	—	32·4
Colombo	E.	73·6	278	11 35	− 2	21 15	+ 8	—	—	33·2
Hyderabad		75·8	289	11 25	−25	21 10	−21	26 21	SS	37·0
Bombay		81·3	290	e 12 28	+ 8	e 22 28	− 2	e 15 26	PP	37·5
College		81·5	22	—	—	e 22 25	− 7	22 43	S_cS	e 32·7
Almata		82·2	315	12 30	+ 6	—	—	—	—	—
Frunse		83·8	314	12 31	− 1	—	—	—	—	—
Andijan		85·0	311	12 40	+ 2	23 1	[0]	—	—	—
Tashkent		87·4	312	i 12 51	+ 1	23 19	[+ 3]	25 2	PS	38·4
Samarkand		89·0	310	e 12 54	− 4	—	—	—	—	—
Victoria		90·6	42	—	—	e 23 54	− 6	—	—	36·4
Pasadena		92·0	56	e 13 16	+ 4	—	—	—	—	e 36·8
Mount Wilson	Z.	92·1	56	e 13 15	+ 3	—	—	e 16 46	PP	—
Tinemaha	Z.	92·1	54	i 13 32	+20	—	—	—	—	—
Riverside	Z.	92·7	56	i 13 17	+ 2	—	—	i 16 53	PP	—
Sverdlovsk		94·3	327	i 13 20	− 3	23 53	[− 4]	31 6	SS	39·4
Bozeman		97·7	44	—	—	e 24 30	{− 8}	e 31 33	SS	e 39·5
Tucson		98·1	58	e 13 24	−16	31 18	SS	e 17 52	PP	39·4
Baku		102·1	310	e 18 20	PP	25 14	−24	e 33 6	SS	47·7
Tiflis		105·8	312	e 18 19	PKP	e 26 4	− 5	e 19 11	PP	e 43·4
Moscow		107·2	328	e 18 46	PP	e 24 46	[−14]	29 24	PS	51·9
Pulkovo		109·2	333	—	—	28 20	PS	34 4	SS	e 49·1
Ksara		114·1	305	e 19 39	PP	—	—	e 29 19	PS	53·4
Upsala	N.	114·6	337	—	—	—	—	e 46 24?	?	e 57·4
Chicago		115·0	46	—	—	e 25 15	[−17]	e 29 24	PS	e 49·2
Helwan		118·7	301	e 20 6	PP	e 25 54	[+ 8]	e 29 12	PS	—
Toronto		120·0	41	—	—	—	—	e 30 24?	PS	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.
Potsdam	121·3	333	—	—	—	—	e 31	6	PPS	e 57·4
Ottawa	121·5	38	—	—	e 27 24?	{+ 1}	e 37	0	SS	50·4
Prague	122·1	330	—	—	—	—	e 37	24?	SS	e 58·4
Cape Town	122·2	225	e 22 24	PPP	—	—	—		—	e 62·6
Cheb	123·1	331	e 21 24?	PP	e 31 24?	PS	—		—	e 59·4?
Seven Falls	123·5	34	—	—	—	—	e 37	24?	SS	50·4
Philadelphia	124·5	43	—	—	—	—	e 37	28	SS	e 51·8
Fordham	124·9	42	—	—	—	—	e 38	2	SS	e 54·6
De Bilt	125·0	336	—	—	—	—	e 38	24?	SS	e 56·4
Stuttgart	125·6	331	—	—	e 30 24?	PS	e 36	26	?	e 60·4
Weston	125·8	38	i 19 51	[+47]	—	—	e 38	6	SS	e 52·1
Kew	127·6	339	—	—	e 43 13	SSS	—		—	e 56·4
Huancayo	130·1	110	e 19 16	[+ 4]	e 25 58	[−22]	e 27	44	SKKS	e 54·6
La Paz	135·2	118	i 19 31	[+ 9]	—	—	41	36	SS	67·4
San Juan	140·0	66	e 19 17	[−14]	e 26 42	[+ 3]	41	12	SSP	e 57·7

Additional readings :—
Brisbane iSE = +9m.36s.
Amboina iE = +5m.22s., iN = +6m.24s.
Riverview iE = +11m.13s.
Wellington PP = +9m.19s., PPP = +10m.16s., PS = +14m.49s., S_cS? = +18m.14s.
Christchurch L_q = +18·2m.
Perth i = +11m.54s., SSS = +18m.51s.
Batavia iE = +13m.23s.
Hong Kong SS? = +18m.24s.
Medan iN = +10m.22s.
Honolulu i = +17m.28s.
Calcutta eN = +12m.59s., +14m.47s., and +20m.44s., iN = +23m.25s.
Hyderabad PSE = +21m.51s.
Bombay eE = +17m.22s., eEN = +22m.43s., S_cS = +23m.38s., SS = +27m.3s., eE = +31m.33s.
College ePPS = +23m.24s.
Tashkent iS = +23m.41s.
Sverdlovsk iS = +24m.29s., SSS = +35m.30s.
Bozeman ePS = +25m.51s., eSSS = +35m.51s., ePKP,PKP = +38m.31s.
Tucson ePSPS = +32m.2s.
Baku e = +28m.39s., +36m.48s., and +40m.48s.
Tiflis eZ = +18m.27s., eNZ = +28m.6s., eSSNZ = +33m.34s.
Moscow e = +20m.5s. and +33m.24s.
Ksara ePPS = +30m.23s.
Chicago eS = +27m.36s., ePSPS = +36m.10s.
Toronto eN = +36m.24s.?
Potsdam eZ = +32m.24s. and +35m.54s.
Cape Town eE = +51m.3s.
Philadelphia e = +37m.41s.
Fordham e = +44m.40s.
Stuttgart e = +36m.26s.
Weston eN = +46m.8s.
Huancayo PKS = +22m.50s., PPP = +23m.58s., PS = +31m.44s., ePPS = +32m.51s., eSS = +38m.13s., ePSPS = +39m.20s., eSSS = +43m.30s.
La Paz iPPZ = +22m.59s.
San Juan eSKKKS = +29m.16s., eSKSP = +32m.42s., PPS = +34m.19s., eSS = +40m.6s., eSSS = +45m.42s.
Long waves were also recorded at Berkeley, Williamstown, Triest, Rathfarnham Castle, Uccle, Copenhagen, Apia, Bucharest, Göttingen, La Plata, Toledo, Granada, Graz Belgrade, Strasbourg, San Fernando, Paris, East Machias, Seattle, Sitka, and Ukiah.

Jan. 7d. 18h. 27m. 21s. Epicentre 46°·0N. 96°·0E.

A = −·0729, B = +·6933, C = +·7170 ; δ = +7 ; h = −4 ;
D = +·995, E = +·105 ; G = −·075, H = +·713, K = −·697.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
	°	°	m. s.	s.	m. s.	s.	m.	s.		m.
Irkutsk	8·3	38	i 1 59	− 5	i 3 29	− 1	—		—	—
Semipalatinsk	11·4	298	2 49	+ 2	—	—	—		—	—
Almata	13·8	265	3 29	+10	8 3	?	—		—	—
Frunse	15·6	266	3 47	+ 4	—	—	—		—	e 9·1
Andijan	17·9	262	4 15	+ 3	—	—	—		—	e 10·4

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tchimkent		19·3	269	4 41	+12	—	—	—	—	e 11·4
Tashkent		19·8	267	e 4 25	−10	i 8 51	SSS	i 4 53	PP	i 11·3
Samarkand		22·1	264	4 54	− 5	—	—	—	—	e 13·0
Calcutta	N.	24·2	198	i 5 14	− 5	i 9 36	+1	i 5 45	PP	e 12·0
Sverdlovsk		24·3	310	i 5 19	− 1	9 59	+22	—	—	i 15·8
Grozny		35·4	284	e 7 0	0	—	—	—	—	—

Additional readings :—
Calcutta eSSN = +10m.35s.
Sverdlovsk iL_g = +13m.51s.
Long waves were also recorded at Strasbourg, Hamburg, De Bilt, Hong Kong, Pulkovo Hyderabad, Potsdam, Copenhagen, Moscow, Baku, and Tiflis.

Jan. 7d. Readings at 0h. (Erevan, Grozny, Tiflis, and Andijan), 1h. (La Paz), 2h. (Tiflis (2), Grozny, Apia, Fordham, and Santiago), 6h. (Tucson, Oaxaca, Tacubaya, Vera Cruz, and Tiflis), 9h. (Samarkand), 10h. (Sotchi, Tiflis (2), Grozny, Santiago, Erevan, and Piatigorsk), 13h. (Tiflis (5) and Balboa Heights), 14h. (Balboa Heights and Triest), 15h. (Tiflis (3)), 16h. (Tiflis, Nagoya, and Malabar), 17h. (Balboa Heights, Grozny, Erevan, Sotchi, Piatigorsk, Baku, Irkutsk, Sverdlovsk, and Tiflis), 21h. (Balboa Heights).

Jan. 8d. Readings at 1h. (Tiflis), 2h. (Tiflis), 3h. (Tiflis, Andijan (2), Perth, and Balboa Heights), 4h. (Riverside, Tucson, Pasadena, Mount Wilson, Tinemaha, and Haiwee), 5h. (Samarkand, Tiflis, Chur, Grozny, Husan, Koti, Hukuoka B, and Nagoya), 6h. (Samarkand), 7h. (Samarkand, Andijan, Copenhagen, and Triest), 10h. (Samarkand and Tiflis (2)), 11h. (Tiflis), 12h. (Tiflis, Tucson, Puebla, Tacubaya, Vera Cruz, and Oaxaca), 13h. (Puebla, Tacubaya, Vera Cruz, Oaxaca, Mount Wilson, Pasadena, Riverside, Fordham, and La Paz), 20h. (La Paz), 22h. (Tchimkent, Andijan, and Frunse), 23h. (Andijan, La Paz, Santiago, Huancayo, and La Plata).

Jan. 9d. Readings at 0h. (Tiflis (2) and Rio de Janeiro), 1h. (Perth and Tiflis (2)), 2h. (Mizusawa), 6h. (Samarkand), 7h. (Grozny), 8h. (Grozny, Tiflis, Nagoya, and Erevan), 10h. (Samarkand), 11h. (Samarkand, Tchimkent, Frunse, and Andijan), 15h. (Nagoya, Mizusawa, Mitaka, Komaba, Koyama, Tukubasan, Kamakura, Kiyosumi, Tokyo I.U., and Tokyo), 17h. (Samarkand, Tchimkent, and Frunse), 19h. (Nagoya, Pasadena, Tinemaha, Mount Wilson, Simferopol, Tucson, Wellington, Copenhagen, Riverside, Santa Barbara, Haiwee, and Malabar), 20h. (Fort de France, Harvard, La Paz, La Plata, Huancayo, Copiapo, Santiago, Mizusawa, Mount Wilson, Pasadena, Tinemaha, Frunse, and Samarkand).

Jan. 10d. 17h. 48m. 35s. Epicentre 50°·6N. 179°·6W.

$A = -·6373$, $B = -·0044$, $C = +·7706$; $\delta = 0$; $h = -6$;
$D = -·007$, $E = +1·000$; $G = -·771$, $H = -·005$, $K = -·637$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
College		21·8	37	e 2 30	?	i 9 12	SS	—	—	i 11·6
Tinemaha	z.	45·0	83	i 8 23	+ 4	—	—	—	—	—
Irkutsk		45·4	304	8 24	+ 2	e 14 6	−58	18 29	SS	21·4
Mount Wilson	z.	46·9	86	i 8 37	+ 3	—	—	e 10 56	PPP	—
Pasadena	z.	46·9	86	e 8 36	+ 2	—	—	—	—	—
Riverside	z.	47·5	86	i 8 40	+ 2	—	—	—	—	—
Tucson		52·8	83	e 9 20	+ 1	—	—	—	—	—
Sverdlovsk		62·0	328	i 10 25	+ 1	18 48	0	—	—	28·4
Ottawa		64·0	50	e 10 35	− 3	—	—	—	—	29·4
Williamstown		67·2	49	(i 10 57)	− 1	i 10 57	P	—	—	—
Pulkovo		67·3	345	e 12 44	PP	—	—	—	—	e 36·9
Harvard	z.	68·1	49	i 11 2a	− 2	—	—	—	—	—
Fordham		68·2	52	i 11 2	− 2	—	—	—	—	—
Weston		68·4	49	i 11 3a	− 3	—	—	—	—	—
Moscow		69·6	340	e 11 12	− 1	—	—	—	—	e 35·9
Tashkent		70·5	313	i 11 19	+ 1	i 20 31	− 1	—	—	e 35·9
Grozny		78·5	329	e 12 2	− 2	—	—	—	—	—
Baku		79·6	325	e 12 8	− 2	—	—	23 1	PS	40·9
Tiflis		80·2	329	e 12 16	+ 2	—	—	e 33 13	?	e 36·1
Chur		82·6	355	12 27	+ 1	—	—	—	—	—
Ksara		90·3	331	e 12 55	− 9	—	—	e 25 17	PS	47·4

For Notes see next page.

NOTES TO JAN. 10d. 17h. 48m. 35s.

Additional readings :—
Tucson i = +9m.43s. and +10m.46s.
Fordham i = +11m.9s., +11m.12s., and +11m.24s.
Weston iZ = +11m.11s., iE = +11m.20s.
Long waves were also recorded at Prague, Copenhagen, Bombay, and Calcutta.

Jan. 10d. 20h. 54m. 27s. Epicentre 29°·8N. 131°·2E.

Felt strongly at Yakusima, moderate intensity at Kagosima and Miyazaki, slightly at Ooita. Epicentre as above, rather deep. Radius of Macroseismic area 200-300km. Seismological Bulletin of Cent. Met. Obs., Japan, 1938, Tokyo, 1940, pp. 19-20. Macroseismic Chart, p. 19.

A = −·5725, B = +·6540, C = +·4945 ; δ = 0 ; h = +2 ;
D = +·752, E = +·659 ; G = −·326, H = +·372, K = −·869.

Tables for a focus at the base of superficial layers used below.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Yakusima	0·9	317	0. 21k	+ 5	0 36	+ 8	—	—	—
Kagosima	1·8	342	0 33k	+ 4	0 55	+ 4	—	—	—
Miyazaki	2·1	5	0 36k	+ 3	1 3	+ 4	—	—	—
Nake	2·1	226	0 33k	0	0 57	− 2	—	—	—
Kumamoto	3·0	352	0 50k	+ 4	1 25	+ 3	—	—	—
Nagasaki	3·1	339	0 51k	+ 3	1 30	+ 6	—	—	—
Simidu	3·3	27	0 50	− 1	1 25	− 4	—	—	—
Ooita	3·4	6	0 58a	+ 6	1 39	+ 7	—	—	—
Tomie	3·5	322	0 56k	+ 3	1 36	+ 2	—	—	—
Hukuoka B	3·8	349	1 0k	+ 2	1 46	+ 4	—	—	—
Izuka	3·8	350	1 0	+ 2	—	—	—	—	—
Simonoseaki	4·1	357	1 5	+ 3	1 51	+ 2	—	—	—
Koti	4·2	27	1 3k	0	1 47	− 5	—	—	—
Matuyama	4·2	17	1 18k	+15	2 4	+12	—	—	—
Muroto	4·3	35	1 3	− 2	1 47	− 7	—	—	—
Hirosima	4·7	12	1 10a	0	2 0	− 5	—	—	—
Ituhara	4·7	340	1 9	− 1	—	—	—	—	—
Naha	4·8	222	0 55	−17	1 49	−18	—	—	—
Tadotu	5·0	25	1 13a	− 2	2 7	− 5	—	—	—
Tokusima	5·1	33	1 30	+14	2 28	+13	—	—	—
Hamada	5·1	8	1 18	+ 2	2 12	− 3	—	—	—
Okayama	5·4	24	1 21	+ 1	—	—	—	—	—
Siomisaki	5·4	46	1 18	− 2	2 11	−11	—	—	—
Wakayama	5·5	36	1 20k	− 2	2 20	− 5	—	—	—
Husan	5·6	341	1 25	+ 2	3 1	?	—	—	—
Kobe	5·9	33	1 26	− 1	2 29	− 6	—	—	—
Osaka B	6·0	36	1 31	+ 2	—	—	—	—	—
Sakai	6·0	16	1 32	+ 3	2 34	− 3	—	—	—
Kyoto	6·4	35	1 32	− 2	—	—	—	—	—
Taikyu	6·4	341	1 35	+ 1	3 33	?	—	—	—
Toyooka	6·4	27	1 34	0	—	—	—	—	—
Miyadu	6·6	29	1 37	0	—	—	—	—	—
Tu	6·6	41	1 42	+ 5	3 4	+12	—	—	—
Kameyama	6·7	40	1 38	− 1	4 11	?	—	—	—
Hikone	6·9	37	1 34	− 7	—	—	—	—	—
Gihu	7·2	38	1 47k	+ 1	3 55	L	—	—	(3·9)
Miyakozima	7·2	228	1 52	+ 6	4 37	L	—	—	(4·6)
Nagoya	7·2	41	1 46	0	4 8	L	—	—	(4·1)
Hamamatu	7·4	47	1 42a	− 6	—	—	—	—	—
Hatidyozima	8·1	63	1 56	− 2	3 7	−23	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Kanazawa		8·1	33	1 48	−10	5 27	L	—	—	(5·4)
Isigakizima		8·3	231	1 53	− 8	—	—	—	—	—
Numadu		8·3	49	2 1	0	—	—	—	—	—
Ito		8·4	50	2 2	0	—	—	—	—	—
Misima		8·4	47	2 0a	− 2	—	—	—	—	—
Hunatu		8·5	46	2 3	− 1	2 46	?	—	—	—
Kohu		8·5	45	2 0	− 4	—	—	—	—	—
Matumoto		8·5	39	2 4	0	—	—	—	—	—
Toyama		8·5	35	2 5	+ 1	5 6	L	—	—	(5·1)
Zi-ka-wei		8·5	281	e 2 5	+ 1	—	—	—	—	i 6·8
Zinsen		8·5	335	i 2 5k	+ 1	e 3 44	+ 4	—	—	—
Wazima		8·9	31	2 10	+ 1	—	—	—	—	—
Mera		8·9	53	2 8	− 1	—	—	—	—	—
Nagano		9·0	38	2 11	0	5 42	L	—	—	(5·7)
Oiwake		9·0	41	2 16	+ 5	3 58	+ 6	—	—	—
Yokohama		9·1	49	2 13	+ 1	—	—	—	—	—
Kumagaya		9·3	45	2 16	+ 1	—	—	—	—	—
Maebasi		9·3	43	2 14	− 1	—	—	—	—	—
Tokyo Cen. Met. Ob.		9·3	48	2 15	0	—	—	—	—	—
Kakioka		9·9	47	2 20	− 3	—	—	—	—	—
Utunomiya		9·9	45	2 23	0	—	—	—	—	—
Titizima		10·0	103	2 20	− 4	—	—	—	—	—
Tyosi		10·1	51	2 36	+10	—	—	—	—	—
Mito		10·2	47	2 25a	− 2	—	—	—	—	—
Karenko		10·3	238	2 55	+27	—	—	—	—	—
Heizyo		10·3	335	i 2 31k	+ 3	e 4 45	+21	—	—	—
Taityu		10·9	242	3 5	+28	—	—	—	—	—
Hukusima		11·0	42	2 37	− 1	—	—	—	—	—
Sendai		11·7	41	2 48	0	6 36	L	—	—	(6·6)
Mizusawa	E.	12·4	39	e 3 2	+ 5	5 38	+23	—	—	7·5
	N.	12·4	39	e 2 56	− 1	5 25	+10	—	—	7·2
Vladivostok		13·3	2	i 3 14	+ 5	i 6 4	+27	—	—	e 6·8
Hong Kong		17·0	248	4 1a	+ 4	7 13	+10	4 9	PP	8·6
Manila		17·8	215	4 7	0	7 36	+14	i 6 45	?	—
Phu-Lien		23·9	254	4 33?	?	—	—	—	—	—
Irkutsk		29·9	326	e 6 24	+17	e 11 0	− 1	—	—	15·6
Calcutta	N.	39·0	270	e 7 26	+ 1	i 13 21	0	e 15 26	SS	i 18·8
Medan		40·3	237	7 37	+ 1	e 13 45	+ 4	—	—	25·6
Semipalatinsk		43·1	314	7 59	0	—	—	—	—	—
Agra	E.	46·5	280	8 18	− 8	15 1	−10	10 2	PP	—
Tchimkent		50·3	303	8 56	+ 1	—	—	—	—	—
Tashkent		50·7	301	i 8 56	− 2	16 10	0	—	—	e 26·2
Samarkand		52·7	299	e 10 18	PP	—	—	—	—	—
Colombo	E.	53·3	255	e 8 3	−75	—	—	—	—	—
Bombay		53·8	272	i 9 24	+ 2	i 16 54	+ 2	e 20 20	SS	—
Sverdlovsk		55·1	321	i 9 31	0	17 11	+ 1	—	—	27·6
Baku		65·2	304	e 10 43	+ 3	i 19 29	+ 9	—	—	33·0
Grozny		67·1	308	e 10 58	+ 6	e 19 48	+ 6	—	—	—
Moscow		67·9	323	10 57	0	19 52	0	—	—	34·0
Tiflis		68·4	307	e 11 0	0	e 20 1	+ 3	e 20 39	PS	e 35·6
Pulkovo		69·9	328	11 5	− 5	20 16	0	—	—	36·0
Simferopol		74·2	313	e 11 36	+ 1	e 21 7	+ 2	—	—	—
Yalta		74·4	312	11 35	− 1	21 5	− 2	—	—	—
Upsala	E.	75·4	332	—	—	e 20 33?	?	—	—	—
Ksara		78·1	302	e 11 49	− 8	e 22 37	PS	e 15 12	PP	—
Copenhagen		80·2	330	i 12 8	− 1	22 11	+ 1	—	—	41·6
Hamburg		82·6	329	e 12 20	− 1	—	—	—	—	e 46·6
Prague		82·8	325	—	—	e 22 37	0	—	—	—
Helwan		83·4	300	e 12 21	− 4	e 22 44	+ 1	—	—	—
Jena		83·6	326	e 12 27	+ 1	—	—	e 12 33	?	e 45·6
Cheb		83·8	326	—	—	e 22 33?	=14	—	—	e 45·6
Göttingen		84·0	328	e 12 27	− 1	—	—	—	—	e 47·6
De Bilt		85·8	330	—	—	e 23 15	+ 9	—	—	e 44·6
Stuttgart		86·2	326	—	—	e 23 15	+ 5	—	—	e 48·6
Strasbourg		87·0	326	e 16 33?	PP	—	—	e 32 33?	?	e 51·0
Tinemaha		87·0	49	i 12 41	− 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Haiwee		87·7	49	e 12 43	− 4	—	—	—	—	—
Pasadena	z.	88·7	51	i 12 47a	− 4	—	—	—	—	—
Mount Wilson	z.	88·8	51	e 12 47a	− 5	—	—	e 16 10	PP	—
Riverside	z.	89·4	51	i 12 50	− 5	—	—	—	—	—
Balboa Heights		131·4	42	e 12 17	?	—	—	—	—	—
La Paz		157·9	58	e 19 56	[+ 3]	—	—	—	—	87·6

Additional readings :—
Hong Kong SS = +7m.31s.
Calcutta eN = +7m.56s., ePPPN = +9m.22s., iN = +17m.26s.
Medan iSE = +13m.50s.
Agra SSE = +18m.10s.
Bombay eE = +19m.24s.
Tiflis PSE = +20m.43s., eN = +20m.58s., eEZ = +34m.33s.?
Ksara i = +12m.1s.
Long waves were also recorded at Brisbane, Huancayo, and other European stations.

Jan. 10d. Readings also at 0h. (Ferndale, Fort de France, Pasadena, and Tinemaha), 3h. (Christchurch, Wellington, and New Plymouth), 4h. (Tiflis), 5h. (Calcutta), 6h. (Malaga), 11h. (Samarkand), 14h. (Samarkand and Tchimkent), 16h. (Harvard (3), Fordham, and Williamstown), 17h. (Harvard (2), Christchurch, Wellington, and New Plymouth), 18h. (Fordham, Tiflis, Harvard, and Berkeley), 19h. (Medan, Berkeley, and Triest), 21h. (Tiflis), 23h. (Grozny and Tiflis).

Jan. 11d. 15h. 11m. 57s. Epicentre 33°·7N. 135°·2E.

Little damage in the S.W. part of the Province of Wakayama. Violent at Gobo, Tokusima, strongly felt at Siomisaki, Wakayama, Sumoto, Kobe, and Kyoto, rather strongly at Osaka, Okayama, Hirosima, and Matuyama, moderately at Takayama, Nagoya, Hamamatu, and Matumoto.

Epicentre at the mouth of the Gulf of Tanabe, 33°·72N. 135°·17E. Macroseismic radius 7300km.

See " Seismological Bulletin of the Central Met. Obs., Japan," for the year 1938, Tokyo, 1940, pp.20-23. Macroseismic Chart, and chart showing the distribution of the initial movements of the waves P. p. 21.

$A = -·5916$, $B = +·5874$, $C = +·5523$; $\delta = +6$; $h = +1$;
$D = +·705$, $E = +·710$; $G = -·392$, $H = +·389$, $K = -·834$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Siomisaki	0·5	118	0 13k	− 1	0 21	− 2	—	—	—
Wakayama	0·5	357	0 15k	+ 1	0 26	+ 3	—	—	—
Tokusima	0·6	306	0 20k	+ 5	0 27	+ 1	—	—	—
Sumoto	0·7	338	0 18k	+ 1	0 30	+ 2	—	—	—
Muroto	0·9	242	0 21a	+ 1	0 33	− 1	—	—	—
Yagi	0·9	31	0 19a	− 1	0 31	− 3	—	—	—
Kobe	1·0	359	0 21k	0	0 34	− 2	—	—	—
Osaka	1·0	16	0 22a	+ 1	0 39	+ 3	—	—	—
Tadotu	1·3	296	0 24k	− 1	0 40	S*	—	—	—
Kyoto	1·4	18	0 27a	0	0 45	− 1	—	—	—
Koti	1·4	265	0 28k	+ 1	0 45	− 1	—	—	e 0·7
Okayama	1·4	313	0 29k	+ 2	0 48	+ 2	—	—	—
Kameyama	1·5	42	0 29a	+ 1	0 48	− 1	—	—	—
Tu	1·5	47	0 22a	− 6	0 45	S*	—	—	—
Ibukisan	1·6	30	0 33a	+ 3	0 55	S_g	—	—	—
Hikone	1·8	29	0 33a	+ 1	0 57	+ 1	—	—	—
Miyadu	1·8	0	0 33k	+ 1	0 57	+ 1	—	—	—
Toyooka	1·9	350	0 35k	+ 1	0 59	0	—	—	—
Gihu	2·1	37	0 37a	0	1 3	− 1	—	—	—
Hamamatu	2·1	64	0 38a	+ 1	1 7	S*	1 13	S_g	—
Matuyama	2·1	274	0 43k	P_g	1 7	S*	—	—	—
Nagoya	2·1	45	0 37a	0	1 7	S*	—	—	—
Simidu	2·1	244	0 34a	− 3	1 2	− 2	—	—	—
Uwazima	2·3	258	0 39	− 1	1 14	S*	—	—	—
Hirosima	2·4	286	0 40k	− 1	1 7	− 5	—	—	—

Continued on next page,

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sakai	2·4	319	0 49k	P_g	1 23	S_g	—	—	—
Hukui	2·5	20	0 49	P_g	1 19	S*	—	—	—
Omaesaki	2·6	70	0 42	− 2	1 27	S_g	—	—	—
Hamada	2·8	295	0 47k	0	1 8	−14	—	—	—
Iida	2·8	50	0 44a	− 3	1 29	S*	—	—	—
Ooita	3·0	261	0 52a	+ 2	1 35	S*	—	—	—
Takayama	3·0	34	0 59	P_g	1 36	S*	—	—	—
Kanazawa	3·1	23	0 54a	+ 3	1 27	− 2	—	—	—
Numadu	3·1	65	0 53	+ 2	1 53	S_g	—	—	—
Husiki	3·4	25	1 2a	P*	1 51	S*	—	—	—
Matumoto	3·4	37	0 53	− 2	1 36	− 1	—	—	—
Misima	3·4	64	0 52a	− 3	1 39	+ 2	1 50	S_g	—
Toyama	3·4	28	0 58a	+ 3	1 50	S_g	—	—	—
Hunatu	3·4	58	0 53a	− 2	1 47	S*	—	—	—
Ito	3·5	67	0 55	− 2	1 51	S*	—	—	—
Kohu	3·6	53	0 54a	− 4	1 35	− 7	1 46	S*	—
Miyazaki	3·6	242	0 58a	0	1 41	− 1	—	—	—
Simonoseki	3·6	275	0 55a	− 3	1 33	− 9	—	—	—
Izuka	3·7	270	1 0k	0	1 47	+ 2	—	—	—
Oiwake	3·8	46	1 2a	+ 1	1 47	0	—	—	—
Hatidyozima	3·9	97	0 58a	− 4	1 38	−12	—	—	—
Kumamoto	3·9	257	1 1a	− 1	1 47	− 3	—	—	—
Wazima	3·9	18	1 3	+ 1	1 52	+ 2	—	—	—
Hukuoka B	4·0	270	i 1 4a	0	e 2 0	S*	—	—	—
Mera	4·0	73	1 3a	− 1	2 6	S*	—	—	—
Nagano	4·0	38	1 3a	− 1	1 54	+ 2	—	—	—
Yokohama	4·1	63	1 5a	0	1 59	+ 4	—	—	—
Maebasi	4·1	49	1 9a	+ 4	2 14	S_g	—	—	—
Kumagaya	4·2	54	1 9a	+ 2	2 13	S*	—	—	—
Tokyo Cent. Met. Ob.	4·2	61	1 9	+ 2	2 14	S*	—	—	—
Takada	4·2	36	1 14	P*	2 13	S*	—	—	—
Unzendake	4·3	255	1 5	− 3	2 14	S*	—	—	—
Kagosima	4·4	243	1 7a	− 3	2 21	S_g	—	—	—
Nagasaki	4·5	260	1 11a	0	2 19	S*	—	—	—
Utunomiya	4·7	52	1 15	+ 1	2 28	S*	—	—	—
Tukubasan	4·8	55	1 11	− 4	2 26	S*	—	—	—
Kakioka	4·8	57	1 10a	− 5	2 30	S*	—	—	—
Ituhara	4·9	279	1 16	− 1	2 34	S*	—	—	—
Mito	5·0	57	1 19a	+ 1	2 32	S*	—	—	—
Tyosi	5·0	66	1 18	0	2 45	S_g	—	—	—
Yakusima	5·1	232	1 20a	0	2 19	− 1	—	—	—
Husan	5·2	285	i 1 24	+ 3	2 34	S*	—	—	—
Niigata	5·2	35	1 30	P*	2 45	S_g	—	—	—
Tomie	5·5	261	1 26a	+ 1	2 46	S*	—	—	—
Onahama	5·6	54	1 35a	P*	3 1	S_g	—	—	—
Hukusima	5·8	45	1 31	+ 2	3 7	S_g	—	—	—
Taikyu	5·9	294	e 1 29	− 2	2 34	− 6	—	—	—
Sakata	6·4	35	1 44	+ 6	3 3	+10	—	—	—
Sendai	6·4	44	1 41	+ 3	3 18	S*	—	—	—
Syuhurei	6·4	295	1 40	+ 2	2 51	− 2	—	—	—
Isinomaki	6·8	45	1 47	+ 3	3 16	+13	—	—	—
Akita	7·2	32	1 51a	+ 2	3 20	+ 7	—	—	—
Mizusawa	7·2	39	i 1 50a	+ 1	3 29	+16	—	—	—
Nake	7·2	223	1 55a	+ 6	3 16	+ 3	—	—	—
Morioka	7·7	37	1 54a	− 2	3 25	0	—	—	—
Zinsen	7·9	301	e 1 59	0	i 3 25	− 5	—	—	e 3·6
Miyako	8·0	40	2 1a	+ 1	3 32	− 1	—	—	—
Aomori	8·3	30	2 7	+ 3	3 51	+11	—	—	—
Hatinohe	8·5	35	2 6a	− 1	3 46	+ 1	—	—	—
Titizima	8·9	136	2 14k	+ 2	3 57	+ 2	—	—	—
Hakodate	9·2	26	2 27	+11	—	—	—	—	—
Heizyo	9·3	308	i 2 21k	+ 4	i 4 25	SS	—	—	—
Muroran	9·7	26	2 26a	+ 4	4 26	+11	—	—	—
Vladivostok	9·8	346	i 2 26	+ 2	e 4 20	+ 3	—	—	i 5·2
Naha	9·9	223	2 36	+11	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Urakawa		10·3	33	2 39	+ 7	4 42	SS	—	—	—
Sapporo		10·5	26	2 41k	+ 6	4 41	+ 6	—	—	—
Obihiro		11·1	32	2 31	−12	—	—	—	—	—
Asahigawa		11·5	27	2 53	+ 5	5 12	SS	—	—	—
Kusiro		11·7	35	3 56	?	—	—	—	—	—
Haboro		11·8	24	3 1	PP	5 40	SSS	—	—	—
Zi-ka-wei		11·9	261	i 2 55	+ 1	6 11	L	—	—	(6·2)
Dairen		12·1	299	3 1	+ 4	5 41	SSS	—	—	—
Miyakozima		12·4	227	3 7	+ 6	5 45	SSS	—	—	—
Nemuro		12·6	37	3 35	PPP	6 48	L	—	—	(6·8)
Giran		14·7	236	3 47	PP	—	—	—	—	—
Taihoku		14·7	238	e 3 30a	− 1	6 36	SS	—	—	—
Karenko		15·3	234	3 52	PP	7 29	L	—	—	(7·5)
Taityu		15·9	237	3 51	+ 4	6 51	+ 7	—	—	—
Taito		16·5	232	3 54	0	7 9	+11	—	—	—
Tainan		16·9	235	3 56	− 3	7 38	SSS	—	—	—
Kosyun		17·3	231	4 5k	+ 1	7 27	+11	—	—	—
Hong Kong		21·7	244	4 50k	− 5	8 53	+ 2	5 12	PP	11·0
Manila		23·0	218	i 5 6	− 1	9 19	+ 5	—	—	—
Phu-Lien		28·4	251	e 5 57	− 1	e 10 41	− 4	e 11 47	SS	e 13·8
Irkutsk		28·9	320	6 6	+ 3	11 9	+18	—	—	15·0
Amboina		37·8	191	7 11	− 9	—	—	—	—	—
Calcutta	N.	42·5	268	e 8 1	+ 2	i 14 25	+ 3	i 10 3	PPP	i 20·4
Semipalatinsk		43·1	311	8 0	− 4	—	—	—	—	—
Medan		45·3	237	8 15	− 6	i 14 59	− 3	—	—	23·0
Almata		45·8	301	8 43	+18	15 29	+20	—	—	23·2
Frunse		47·5	300	8 37	− 1	15 33	− 1	—	—	24·6
Batavia		47·9	220	8 35	− 7	i 15 36	− 3	—	—	e 24·0
Dehra Dun	N.	48·0	283	e 7 42	−61	i 14 36	−55	i 18 18	SS	e 24·1
Agra	E.	49·2	279	i 8 25k	−27	i 15 30	−28	10 15	PP	23·1
Tchimkent		51·3	301	9 5	− 3	16 23	− 3	—	—	—
Tashkent		51·7	300	i 9 7	− 4	i 16 26	− 6	i 9 18	pP	24·0
Hyderabad		53·1	268	9 14	− 7	16 44	− 7	11 21	PP	25·6
Samarkand		53·8	298	9 25	− 1	16 55	− 6	—	—	—
Sverdlovsk		54·3	320	i 9 27	− 3	17 2	− 5	—	—	23·0
College		54·6	31	e 10 35	PcP	—	—	e 11 43	PP	e 22·8
Bombay		57·1	272	e 9 46	− 4	i 17 40	− 5	e 11 45	PP	e 26·9
Colombo	E.	57·5	255	9 50	− 3	17 49	− 1	13 27	−23	30·5
Sitka		62·2	38	—	—	i 18 38	−13	i 19 4	PS	e 29·7
Baku		65·9	304	i 10 46	− 4	e 19 50	+13	—	—	33·1
Moscow		66·9	323	10 50	− 6	19 40	− 9	11 3	pP	30·5
Grozny		67·4	308	e 10 56	− 3	e 19 52	− 3	i 11 12	pP	—
Perth		67·8	198	e 9 38	?	e 20 2	+ 2	27 37	SSS	34·1
Adelaide		68·3	178	i 11 4	− 1	i 19 59	− 7	—	—	e 32·8
Pulkovo		68·4	329	e 11 3	− 3	19 59	− 8	i 11 15	pP	32·6
Riverview		68·8	166	e 7 15	?	e 20 9	− 2	—	—	e 31·2
Tiflis		68·8	307	e 11 5	− 3	i 20 8	− 3	e 13 39	PP	e 31·4
Piatigorsk		68·9	310	e 11 6	− 3	e 20 6	− 7	i 11 21	pP	—
Sydney		68·9	166	—	—	e 20 14	+ 1	—	—	e 31·4
Erevan		69·7	305	e 11 12	− 2	e 20 17	− 5	—	—	—
Sotchi		71·2	311	e 11 20	− 3	—	—	—	—	—
Melbourne		71·7	172	—	—	e 20 43	− 2	—	—	32·0
Victoria		72·5	44	—	—	e 20 55	+ 1	e 25 21	SS	29·0
Upsala	N.	73·6	333	i 10 35	−62	e 20 42	−25	—	—	e 33·0
Simferopol		74·0	314	e 11 36	− 3	—	—	—	—	—
Yalta		74·3	313	e 10 49	−52	e 21 15	0	—	—	41·8
Scoresby Sund		74·8	353	—	—	21 22	+ 2	—	—	—
Ukiah		77·4	52	—	—	21 49	− 1	e 26 57	SS	e 32·5
Bergen		77·6	338	12 3	+ 3	21 51	0	—	—	37·0
Copenhagen		78·5	332	i 12 1	− 3	21 57	− 4	i 12 16	pP	—
Ksara		78·8	303	i 12 5k	− 1	e 22 11	+ 7	i 12 17	pP	—
Bucharest		79·1	317	11 11	−57	e 22 3	− 4	15 3	PP	—
Istanbul		79·3	313	12 8	− 1	—	—	—	—	e 48·0
Butte		79·9	41	—	—	22 8?	−13	—	—	—
Potsdam		80·5	329	e 12 10	− 5	i 22 17	− 5	e 27 3?	SS	e 42·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bozeman		80·9	41	—	—	22 23	− 3	e 27 32	SS	e 32·8
Budapest	E.	81·0	322	e 12 15	− 3	i 22 29	+ 2	i 24 37	?	e 42·0
	N.	81·0	322	e 12 19	+ 1	22 24	− 3	i 26 53	?	e 37·0
Hamburg		81·0	331	e 12 14	− 4	22 9	−18	—	—	—
Kecskemet		81·0	321	e 11 51	−27	e 21 1	?	e 14 59	PP	—
Ogyalla	N.	81·2	323	12 18	− 1	—	—	—	—	e 43·0
Prague		81·5	326	e 12 18	− 3	e 22 27	− 5	—	—	e 35·0
Tinemaha		81·8	51	i 12 18	− 4	—	—	15 14	PP	—
Belgrade		82·0	319	e 12 34	+11	i 22 34	− 3	e 34 14	?	e 42·2
Jena		82·2	328	i 12 22	− 2	e 22 39	0	—	—	e 34·0
Cheb		82·5	327	e 12 28	+ 2	e 22 42	0	—	—	e 42·0
Göttingen		82·5	330	e 12 19	− 7	e 22 39	− 3	—	—	e 40·0
Aberdeen		82·6	338	e 17 16	PPP	e 22 37	− 6	—	—	e 40·1
Haiwee	N.	82·6	52	e 12 22	− 4	—	—	—	—	—
Wellington		83·0	151	12 23	− 5	22 36	−11	15 31	PP	38·6
Graz		83·1	323	i 12 22	− 7	i 22 42	− 6	—	—	e 41·0
Pasadena		83·6	53	i 12 26a	− 6	e 22 47	− 6	e 15 43	PP	e 38·0
Mount Wilson	Z.	83·7	53	i 12 28a	− 4	—	—	i 15 31	PP	—
De Bilt		84·0	332	i 12 32	− 2	e 22 51	− 6	e 15 32	PP	e 38·0
Christchurch		84·1	154	12 30a	− 4	22 50	− 8	15 36	PP	e 40·2
Helwan		84·3	302	i 12 33	− 2	i 22 50	−10	e 15 28	PP	—
Riverside		84·3	53	e 12 30	− 5	—	—	—	—	—
Durham		84·4	337	i 10 56	?	i 22 52	− 9	—	—	—
Stuttgart		84·8	328	e 12 34	− 3	e 22 52	−13	e 16 3	PP	e 42·6
Triest		84·9	324	e 12 34	− 4	i 22 54	−12	28 42	SS	e 41·2
Stonyhurst		85·4	337	—	—	i 21 46	?	—	—	e 43·1
Uccle		85·4	332	e 12 37	− 3	e 22 59	[− 4]	e 16 12	PP	39·0
Strasbourg		85·6	328	e 12 40	− 1	e 23 1	[− 4]	e 16 15	PP	e 40·8
Bidston		86·0	337	—	—	i 23 9	[+ 1]	—	—	e 42·0
Padova		86·0	324	i 17 51	PPP	e 28 15	SS	—	—	e 53·0
Chur		86·1	326	e 12 40	− 4	e 23 13	− 5	—	—	—
Zurich		86·2	327	e 12 39k	− 5	e 23 40	+21	—	—	—
Basle		86·5	327	e 12 42	− 4	e 23 18	− 4	—	—	—
Kew		86·6	334	i 12 56a	+10	i 23 6	[− 5]	i 24 30	PS	e 38·0
Oxford		86·7	335	—	—	e 23 7	[− 5]	—	—	e 35·2
Rathfarnham Castle		87·1	338	e 12 29	−20	i 23 23	− 5	i 16 13	PP	45·0
Neuchatel		87·2	328	e 12 45	− 4	e 23 7	[− 8]	—	—	—
Florence		87·5	323	e 12 46	− 5	22 48	[−29]	—	—	—
Paris		87·7	331	e 13 8	+16	25 3?	PS	16 24	PP	44·0
Jersey		89·1	334	e 10 30	?	e 23 21	[− 6]	—	—	e 39·7
Tucson		89·6	51	e 12 58	− 3	e 23 27	[− 3]	e 16 27	PP	e 36·6
Chicago		95·1	31	—	—	e 24 46	+ 7	e 32 7	SS	e 39·4
Seven Falls		96·2	17	—	—	e 24 3	[− 5]	e 31 9	SS	40·0
Florissant		96·4	35	e 13 50	+18	i 24 17	[+ 8]	i 26 20	PS	e 49·6
Ottawa		96·4	22	—	—	e 24 3	[− 6]	e 31 15	SS	41·0
St, Louis		96·6	35	—	—	e 24 3	[− 7]	e 26 9	PS	e 31·2
Toronto		96·8	25	—	—	e 24 3	[− 8]	—	—	42·0
Vermont		98·0	20	e 17 51	PP	i 24 10	[− 7]	e 31 53	SS	e 42·9
East Machias		99·2	16	e 19 57	PPP	24 14	[− 9]	e 26 34	PS	e 40·7
Williamstown		99·6	20	e 17 51	PP	e 26 39	PS	e 27 9	PS	—
Weston		100·5	20	e 13 52	+ 1	i 24 23	[− 6]	e 17 53	PP	e 47·1
Fordham		101·1	22	e 13 23	−35	e 24 21	[−11]	i 17 59	PP	—
San Fernando		101·4	330	—	—	e 24 36	[+ 2]	e 37 6	SSS	53·6
Philadelphia		101·5	23	—	—	i 24 24	[−10]	e 32 26	SS	e 41·6
San Juan		124·4	24	i 15 32	P	—	—	—	—	e 49·9
Cape Town	E,	128·8	251	i 22 11	PP	i 33 5	PPS	i 38 50	SS	e 63·8
Huancayo		144·8	59	e 19 36	[− 3]	41 31	SS	e 22 48	PP	e 58·2
La Paz		152·9	55	i 19 53k	[+ 1]	i 30 33	{− 1}	43 51	SS	72·6

Additional readings :—
Zinsen iSN = +3m.27s., iSZ = +3m.30s., iZ = +3m.34s.
Zi-ka-wei iE = +2m.59s., iN = +6m.49s. and +7m.25s.
Calcutta iSSN = +17m.5s., iSSSN = +17m.48s.
Agra PPPE = +11m.5s., PSE = +16m.10s., SSE = +18m.50s., SSSE = +19m.58s.

Continued on next page.

Hyderabad $S_cSE = +18m.51s.$, SSE = +20m.14s.
Bombay eE = +10m.45s., PPPE = +12m.7s., $S_cS = +19m.30s.$, SS = +21m.30s.
Sitka i = +18m.17s., S = +18m.54s.
Perth i = +18m.29s., ePS = +20m.35s., SSS = +29m.6s.
Tiflis e = +11m.16s., $eP_cPN = +11m.28s.$, eZ = +12m.9s., ePPPZ = +15m.23s., iPSE = +20m.28s., iPSN = +20m.31s., eNZ = +21m.22s., SSN = +24m.43s., eZ = +26m.7s., eSSSN = +28m.2s.
Upsala eSE = +20m.58s.
Ukiah ePPS = +22m.25s.
Copenhagen PP = +15m.5s., e = +15m.27s., eE = +21m.47s.
Ksara ePP = +15m.5s., ePS = +22m.54s.
Bucharest iE = +22m.22s., iN = +22m.27s., iPSE = +22m.33s., iPSN = +22m.39s.
Bozeman $eS_cS = +22m.44s.$, eSSS = +31m.6s.
Potsdam $iP_cE = +12m.13s.$, iSE = +22m.13s., iE = +22m.43s., eN = +32m.33s.
Hamburg iZ = +12m.27s., eE = +22m.39s. and +33m.33s.
Kecskemet eZ = +12m.6s., $eP_cPZ = +12m.57s.$
Wellington PPP = +17m.20s., PS = +23m.24s., i = +26m.46s., $L_q = +34 \cdot 6m.$
De Bilt iZ = +12m.44s.
Christchurch SS = +28m.18s., $L_q = +35 \cdot 1m.$
Helwan i = +12m.48s. and +13m.50s., i = +23m.16s.
Stuttgart eEN = +12m.37s.k, iZ = +12m.49s.a, e = +19m.24s. and +22m.9s., iSN = +23m.5s., eSKKS = +23m.30s., ePS = +24m.3s., eE = +35m.3s.
Uccle iNZ = +12m.50s., eN = +23m.26s., iN = +24m.14s., eSSN = +29m.42s.
Strasbourg ipPZ = +12m.51s., eSZ = +23m.39s., iZ = +23m.45s., isSN = +24m.15s., ePS = +24m.35s.
Bidston i = +23m.22s.
Zurich eSKS = +22m.1s.
Kew iN = +23m.18s., eE = +35m.26s.
Rathfarnham Castle iS = +23m.10s., i = +24m.31s.
Jersey e = +11m.24s. and +15m.24s.
Tucson iP = +13m.4s., PP = +16m.58s., S = +23m.45s., ePS = +24m.55s.
Chicago eS = +24m.52s.
Florissant iZ = +26m.34s.
Ottawa e = +26m.8s.
St. Louis eN = +24m.46s., eE = +25m.55s.
Vermont iS = +25m.6s.
East Machias eS = +25m.9s., eSS = +32m.14s., eSSS = +36m.12s.
Williamstown ePP = +20m.18s.
Weston eSKKSE = +25m.15s., ePSZ = +26m.44s., eSS = +32m.7s.
Fordham eP = +13m.34s., e = +17m.55s., iPPS = +26m.55s.
San Fernando ePPP = +27m.33s., ePS = +32m.58s.
Cape Town iN = +38m.55s.
Huancayo PKP = +19m.50s., i = +20m.15s., ePPP = +26m.9s., ePPS = +35m.47s., eSSS = +47m.17s.
La Paz PPZ = +23m.53s.
Gobo P = +11s., S = +14s.
Long waves were also recorded at Balboa Heights, Theodosia, Moncalieri, Toledo, Granada, Edinburgh, and Karlsruhe.

Jan. 11d. Readings also at 0h. (Ferndale, Ukiah, San Francisco, Berkeley, Lick, and Branner), 1h. (Balboa Heights), 4h. (Tiflis), 7h. (Samarkand), 9h. (La Paz), 10h. (Pasadena and Mount Wilson), 11h. (Samarkand (2)), 13h. (Pasadena, Mount Wilson, Tiflis, Grozny, Yalta (2), Moscow, Pulkovo, Sotchi, Simferopol, Bucharest, Theodosia, and Sebastopol), 14h. (Yalta, Tashkent, and Copenhagen), 17h. (Frunse, Almata, Hukuoka B, Nagoya, and Koti), 18h. (Lick, Branner, Berkeley, San Francisco, Ukiah, and Balboa Heights), 19h. (Samarkand), 20h. (Baku, Sverdlovsk, Ksara, and Tiflis), 21h. (Riverview, Fresno, Lick, Berkeley, Grozny, and Branner), 22h. (Wellington and Berkeley), 23h. (Samarkand and Berkeley).

Jan. 12d. 1h. 8m. 24s. Epicentre 39°·6N. 70°·3E. (given by U.S.S.R.).

$A = +\cdot2604$, $B = +\cdot7273$, $C = +\cdot6349$; $\delta = -13$; $h = -2$;
$D = +\cdot941$, $E = -\cdot337$; $G = +\cdot214$, $H = +\cdot598$, $K = -\cdot773$.

		Δ	Az,	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Samarkand		2·6	272	0 43	− 1	1 29	S_g	0 48	P_g	—
Tchimkent		2·7	349	0 51	P*	i 1 21	+ 2	i 1 37	S_g	—
Frunse		4·6	43	e 1 13	+ 1	i 2 18	S*	1 27	P_g	—
Almata		6·2	51	e 2 2	P_g	e 3 18	S_g	e 3 39	S_g	—
Agra	E.	14·0	150	e 2 48	−34	e 5 5	−54	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku		15·7	279	—	—	e 6 49	+10	e 8 50	L_q	e 9·6
Sverdlovsk		18·4	343	e 4 21	+ 3	e 7 44	+ 3	10 12	L_q	11·4
Grozny		18·7	291	e 4 23	+ 1	e 7 53	+ 5	e 14 43	?	—
Tiflis		19·4	286	4 26	− 4	8 9	+ 5	e 9 2	SS	e 9·8
Bombay	E.	20·7	174	—	—	e 8 25	− 6	—	—	—
Piatigorsk		20·7	293	e 4 46	+ 2	e 8 34	+ 3	—	—	—
Calcutta	N.	22·9	133	i 9 3	S	(i 9 3)	−10	—	—	—
Hyderabad		23·2	160	e 9 19	S	(e 9 19)	+ 1	11 11	SSS	11·6
Irkutsk		26·6	50	e 6 15	PP	e 10 30	+14	—	—	14·6
Moscow		27·0	317	e 5 45	0	e 10 45	+23	—	—	14·1
Ksara		28·1	269	e 6 7	+12	e 11 12	+32	—	—	—
Pulkovo		32·1	323	—	—	e 11 44	+ 1	e 12 54	SS	e 17·1
Colombo	E.	33·7	163	—	—	12 36?	+28	—	—	—

Additional readings :—
Samarkand i = +59s., iS_gS_g = +1m.37s.
Tchimkent i = +1m.1s., iP_gP_g = +1m.9s.
Frunse i = +1m.14s., +1m.40s., +1m.50s. and +2m.39s.
Tiflis S = +8m.13s.
Calcutta iN = +9m.55s., iS?N = +12m.19s., iN = +12m.58s., iSSN = +13m.21s.
Pulkovo e = +14m.35s.
Long waves were also recorded at De Bilt, Hamburg, Copenhagen, Upsala, Cheb, and Potsdam.

Jan. 12d. Readings also at 0h. (Tashkent), 1h. (Medan), 2h. (Ksara, Tiflis, Sverdlovsk, Pasadena, Mount Wilson, Wellington, Riverview, Perth, Melbourne, Moscow, and Huancayo), 3h. (Baku and Harvard), 8h. (Frunse and Almata), 10h. (Medan), 11h. (Riverside, Tinemaha, Haiwee, Tucson, Pulkovo, Moscow, Melbourne, Perth, Riverview, Wellington, Mount Wilson, Pasadena, Sverdlovsk, Tiflis, Ksara, and Tcshkent), 12h. (Huancayo, Harvard, Baku, and Samarkand), 13h. (Balboa Heights, and Mizusawa), 15h. (Calcutta and Harvard (4)), 16h. (Harvard), 18h. (Tananarive), 19h. (Balboa Heights), 20h. (Baku, Ksara, Tiflis (3), Sverdlovsk, Erevan, Sotchi, Piatigorsk, and Grozny), 21h. (Samarkand, Tashkent, and Frunse), 22h. (Bozeman), 23h. (Wellington, Christchurch, Tuai, Hastings, and New Plymouth.

Jan. 13d. 22h. 44m. 26s. Epicentre 27°·6S. 116°·2W.

A = −·3918, B = −·7963, C = −·4609 ; δ = +3 ; h = +3 ;
D = −·897, E = +·442 ; G = +·203, H = +·414, K = −·887.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Huancayo		41·2	76	7 46	− 2	i 13 56	− 6	e 9 18	PP	16·9
La Paz		45·7	87	i 8 25a	+ 1	i 15 12	+ 4	—	—	19·6
Tucson		59·7	7	e 10 9	0	—	—	—	—	28·6
La Jolla		60·1	0	e 10 14	+ 3	—	—	—	—	—
Riverside		61·3	359	i 10 19	− 1	—	—	—	—	—
Pasadena		61·4	359	e 10 21	+ 1	—	—	—	—	e 29·1
Mount Wilson		61·5	359	i 10 21	0	—	—	—	—	—
Tinemaha		64·4	358	i 10 41	+ 1	—	—	—	—	—
San Juan		66·7	53	e 11 2	+ 7	e 19 30	−16	e 13 27	PP	e 31·4
Moscow		146·1	26	i 19 49	[+ 8]	—	—	—	—	—
Sverdlovsk		150·7	4	i 19 58	[+10]	—	—	e 43 41	SSP	64·6
Ksara		155·3	69	i 20 4k	[+ 9]	—	—	e 37 1	PPS	76·6
Tiflis	z.	159·0	43	e 20 8	[+ 8]	e 24 17	PP	e 20 41	PKP_2	—
Tashkent		165·6	343	i 20 15	[+ 9]	e 21 13	?	—	—	e 80·6

Additional readings :—
Huancayo PPP = +10m.8s., iS = +14m.5s.
Tucson eP = +20m.27s.
San Juan eSS = +24m.1s.
Sverdlovsk i = +20m.1s.
Ksara i = +20m.24s.
Long waves were recorded at La Plata.

Jan. 13d. Readings also at 0h. (Tacubaya and Tiflis), 1h. (Huancayo and near Nagoya), 2h. (Huancayo), 3h. (Huancayo, Tiflis, Mount Wilson, Pasadena, Riverside, Tinemaha, Tucson, Melbourne, Riverview, Perth, Christchurch, Wellington, Tashkent, and Ksara), 4h. (Amboina, Baku, Sverdlovsk, Wellington, Mount Wilson, Pasadena, Riverside, and near Mizusawa (3)), 6h. (Samarkand, near Erevan, Grozny, and Tiflis), 7h. (Balboa Heights and Samarkand), 8h. (Calcutta, Hong Kong, Irkutsk, Pulkovo, Baku, Sverdlovsk, Moscow, and Tashkent, Tiflis, and near Nagoya), 9h. (Ksara, Copenhagen, Mount Wilson (2), Pasadena (2), Riverside (2), and Tinemaha (2)), 10h. (Perth, Melbourne, Riverview, Brisbane, La Paz, Mount Wilson (2), Pasadena (2), and Riverside (2)), 11h. (Agra, Bombay, Kodaikanal, Calcutta, Tiflis, Baku, Ksara (2), Samarkand, Sverdlovsk, Tashkent, near Almata, Frunse, and Tchimkent), 14h. (Helwan, Tiflis, and Ksara), 17h. (near Nagoya), 18h. (Mizisawa), 19h. (Christchurch, Wellington, Balboa Heights, and Branner), 20h. (Berkeley), 21h. (Yalta), 22h. (Tchimkent), 23h. (Wellington).

Jan. 14d. Readings at 4h. (Frunse and Samarkand), 5h. (Tacubaya, Vera Cruz, Oaxaca, Puebla, and Santiago), 6h. (Balboa Heights), 7h. (Samarkand, Pennsylvania, and Moncalieri), 8h. (Samarkand, Vera Cruz, Oaxaca, Puebla, Tacubaya, Frunse, Tchinkent, and Almata), 9h. (Samarkand (2)), 10h. (Samarkand (2)), 11h. (Tacubaya, Pasadena, Mount Wilson, and Tinemaha), 12h. (Santiago), 14h. (Sverdlovsk, Baku, Samarkand, Pasadena, Mount Wilson, and Tinemaha), 15h. (Pennsylvania), 16h. (Santiago), 17h. (Samarkand), 18h. (San Francisco, Berkeley, Lick, and Branner), 21h. (Taihoku), 22h. (Tacubaya), 23h. (Tacubaya).

Jan. 15d. Readings at 0h. (Oaxaca, Puebla, Tacubaya, Vera Cruz, and Tucson), 6h. (near Almata), 8h. (Montezuma), 9h. (Tashkent, Sverdlovsk, Oaxaca, Vera Cruz, Tacubaya, and Irkutsk), 10h. (Amboina), 11h. (Tacubaya, Oaxaca, and Vera Cruz), 12h. (near Tananarive), 14h. (near Fort de France), 18h. (Medan), 19h. (Jena, Strasbourg, Padova, near Triest and Belgrade, Chur, Zurich, and Basle), 22h. (Huancayo and La Paz).

Jan. 16d. 13h. 36m. 45s. Epicentre 35°·1N. 28°·1E.

$A = +\cdot7233$, $B = +\cdot3862$, $C = +\cdot5724$; $\delta = -4$; $h = 0$;
$D = +\cdot471$, $E = -\cdot882$; $G = +\cdot505$, $H = +\cdot270$, $K = -\cdot820$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	S_s	m. s.		m.
Helwan		5·9	151	2 2	P_g	3 13	S_g	—	—	—
Istanbul		6·0	7	e 1 15?	−17	—	—	—	—	—
Ksara		6·6	98	e 2 7	P_g	i 3 11	+13	—	—	—
Bucharest		9·4	351	e 2 21	+ 3	—	—	—	—	4·7
Sebastopol		10·4	22	i 2 32	− 2	e 3 17	−75	—	—	—
Yalta		10·5	24	i 2 31	− 4	—	—	—	—	—
Simferopol		10·8	23	i 2 39	0	—	—	—	—	—
Theodosia		11·3	27	2 46	0	—	—	e 3 39	?	—
Tiflis		14·7	58	i 3 36	+ 5	e 6 26	+10	—	—	—
Triest		15·1	319	i 3 37	+ 1	i 6 27	+ 2	—	—	—
Grozny		15·9	53	e 3 55	+ 8	—	—	e 15 50	?	—
Padova		16·1	317	3 15?	−34	—	—	—	—	—
Baku		18·0	65	i 4 25	+12	i 7 45	+13	—	—	e 10·2
Chur		18·2	316	e 4 19	+ 3	—	—	—	—	—
Zurich		19·1	316	e 4 26k	− 1	—	—	—	—	—
Basle		19·7	315	e 4 34	0	—	—	—	—	—
Jena		19·8	329	i 4 34	− 1	—	—	—	—	—
Neuchatel		19·8	315	e 4 36	+ 1	—	—	—	—	—
Strasbourg	z.	20·2	319	e 4 39	0	—	—	—	—	—
Moscow		21·7	15	4 50	− 5	e 8 37	−14	—	—	—
Almeria		24·7	284	e 5 32	+ 8	—	—	—	—	—
Pulkovo		24·7	2	e 6 25	PPP	e 10 6	+22	—	—	—
Granada		25·6	285	—	—	e 9 51	− 8	—	—	—
Sverdlovsk		30·9	35	—	—	(10 15?)	−69	—	—	10·2
Weston		73·4	310	11 40k	+ 4	—	—	—	—	—
Williamstown		74·4	310	i 9 7	?	—	—	—	—	—

Additional readings :—
Helwan $P = +2m.31s.$, $S_g = +3m.49s.$
Bucharest $eEN = +2m.42s.$, $eE = +2m.56s.$
Tiflis $eN = +6m.32s.$, $eZ = +6m.49s.$, $e = +6m.59s.$
Triest $i = +6m.9s.$
Basle $e = +4m.37s.$ and $+4m.46s.$
Weston $iZ = +13m.0s.$

Jan. 16d. 13h. 59m. 40s. Epicentre 18°·5S. 175°·0W.

A = −·9454, B = −·0827, C = −·3154; δ = +10; h = +5;
D = −·087, E = +·996; G = +·314, H = +·027, K = −·949.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		5·6	34	e 1 25	− 2	2 35	+ 2	1 49	P_g	—
Wellington		24·3	199	e 5 20?	0	9 42	+ 5	10 41	SSS	12·1
Christchurch		27·0	199	7 7	PPP	10 39	SS	e 11 17	L_q	e 12·2
Riverview	N.	33·8	235	—	—	e 11 50	−20	—	—	e 14·5
Sydney		33·8	235	—	—	e 11 29	−41	—	—	e 14·7
Melbourne		39·8	232	e 8 55	?	i 13 32	−10	—	—	20·7
Adelaide		44·2	238	—	—	i 14 30	−16	i 17 50	SS	e 19·3
Perth		63·1	242	e 18 42	S	(e 18 42)	−20	20 11	PS	33·1
Manila		71·1	292	13 12	PP	19 8	?	—	—	—
Pasadena	Z.	75·3	45	e 11 46	− 1	—	—	—	—	e 31·0
Mount Wilson	Z.	75·4	45	e 11 43	− 4	—	—	—	—	—
Batavia	E.	76·9	267	e 11 15	−41	—	—	—	—	—
Vladivostok		78·3	323	e 11 9	−54	e 21 32	−27	—	—	—
Tucson		79·5	50	e 12 8	− 2	—	—	—	—	—
Huancayo		95·2	104	e 21 9	?	e 24 7	[+ 5]	e 24 26	SKKS	e 41·2
Irkutsk		98·9	322	—	—	e 24 20?	[− 2]	e 31 20?	SS	e 42·3
Calcutta	N.	102·8	290	e 20 16	PPP	—	—	—	—	—
Colombo	E.	106·5	272	e 14 50	P	—	—	—	—	—
Kodaikanal	E.	109·7	275	e 18 48	PKP	—	—	—	—	—
Bombay	E.	116·2	283	e 19 18	PP	—	—	—	—	—
Tashkent		121·2	308	—	—	e 31 18	PPS	—	—	i 51·3
Sverdlovsk		123·9	327	e 20 19	PP	e 36 58	SS	—	—	48·3
Baku		135·8	310	e 23 28	?	e 33 44	PPS	—	—	55·3
Tiflis		139·0	313	e 22 39	PP	—	—	e 24 23	?	e 60·3
Ksara		148·5	304	i 19 41k	[− 4]	e 33 34	PS	e 23 18	PP	75·3
Istanbul		149·5	322	e 18 20?	?	—	—	—	—	—
Stuttgart		149·6	355	e 19 43	[− 3]	—	—	—	—	e 85·3
Paris		149·7	3	—	—	e 33 20?	PS	—	—	84·3
Basle		151·0	355	e 19 47	[− 2]	—	—	—	—	—
Zurich		151·1	355	e 19 46	[− 3]	—	—	—	—	—
Chur		151·5	354	e 19 41	[− 8]	—	—	—	—	—
Neuchatel		151·5	355	e 19 47	[− 2]	—	—	—	—	—

Additional readings :—
Wellington i = +11m.36s., S_cS? = +15m.52s.
Melbourne i = +14m.10s.
Perth i = +22m.45s., eS = +25m.35s., PS = +25m.47s., SS = +29m.22s., SSS = +30m.48s.
Pasadena eZ = +12m.9s.
Huancayo e = +22m.4s., ePS = +25m.23s.
Irkutsk e = +37m.20s.?
Tashkent e = +43m.50s. and +48m.20s.
Baku e = +37m.46s. and +43m.34s.
Tiflis eE = +22m.52s., eN = +22m.58s., eZ = +24m.8s.
Ksara ePPS = +36m.30s.
Stuttgart e = +20m.34s.
Long waves were also recorded at Arapuni, Honolulu, Hong Kong, Ukiah, Bozeman, College, La Paz, San Fernando, Strasbourg, De Bilt, Cheb, Uccle, Copenhagen, Moscow, and Pulkovo.

Jan. 16d. 21h. 41m. 40s. Epicentre 6°·2S. 75°·3W.

A = +·2523, B = −·9617, C = −·1072; δ = +1; h = +7;
D = −·970, E = −·242; G = −·025, H = +·101, K = −·995.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Huancayo	5·8	175	i 1 33a	+ 4	i 2 39	+ 1	—
La Paz	12·4	145	i 3 2a	+ 1	i 5 30	+ 9	6·5
Balboa Heights	15·6	346	e 2 20	?	—	—	—
Fort de France	25·1	35	e 5 26	− 2	e 13 44	L	(e 13·7)
San Juan	26·0	20	e 5 39	+ 3	e 10 10	+ 4	e 10·9

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Fordham		46·8	2	i 8 32	− 1	—	—	—
Weston		48·5	4	i 8 46k	0	—	—	—
Harvard		48·6	4	i 8 46a	− 1	—	—	—
Williamstown		48·7	4	i 9 8	+20	—	—	—
Tucson		51·0	321	e 9 6	0	—	—	e 28·0
Ottawa		51·4	0	e 9 7	− 2	—	—	23·3
Riverside	z.	56·4	318	i 9 45a	0	—	—	—
Mount Wilson	z.	57·0	318	i 9 50a	0	—	—	—
Pasadena		57·0	318	i 9 50a	0	—	—	—
Tinemaha	z.	58·8	321	i 10 3	+ 1	—	—	—
Ksara		111·0	58	e 17 9	?	—	—	—
Tashkent		132·9	36	—	—	e 31 56	PS	e 63·9

Additional readings :—
Fordham i = +8m.41s.
Weston iNZ = +8m.53s.
Tucson eP = +9m.15s.
Riverside iZ = +10m.42s.
Pasadena iZ = +9m.59s.
Tashkent e = +50m.6s.
Long waves were also recorded at Kodaikanal, Bombay, Cheb, Sverdlovsk, and La Plata.

Jan. 16d. Readings also at 2h. (Huancayo), 3h. (Fort de France (2) and Almeria), 5h. (Andijan), 6h. (Huancayo, Bombay, Sverdlovsk, Santiago, Tashkent, Calcutta, Colombo, and Andijan (2)), 7h. (Samarkand), 8h. (Samarkand (2) and Mizusawa), 9h. (Huancayo, Wellington (2), La Paz, and Christchurch), 10h. (Samarkand (2), Tashkent, Sverdlovsk, and Perth), 11h. (Medan and Ksara), 14h. (Moncalieri), 15h. (Andijan), 16h. (Nagoya, Keizyo, Husan, Taikyu, Hukuoka B, and Kotl), 18h. (La Plata, La Paz, and Tiflis), 19h. (Santiago), 20h. (Pasadena, Mount Wilson, and Riverside), 21h. (Yalta, La Paz, Rio de Janeiro, and Huancayo), 22h. (Andijan), 23h. (Tiflis).

Jan. 17d. Readings at 0h. (near Mizusawa), 3h. (Phu-Lien), 4h. (Huancayo), 7h. (Tashkent, Sverdlovsk, Samarkand, and near Mizusawa), 8h. (Samarkand), 9h. (near Nagoya), 12h. (Huancayo, La Paz, and Samarkand), 15h. (Medan, Tiflis, Cape Town, and Tananarive), 16h. (Perth, La Paz, Baku, Sverdlovsk, and Tashkent), 19h. (Almeria), 20h. (Huancayo), 23h. (Sverdlovsk, Perth, Manila, near Amboina, and near Malabar).

Jan. 18d. 4h. 19m. 58s. Epicentre 3°·5S. 102°·3E.

Felt Force V in the centre and west of Sumatra. Epicentre 4°·0S. 102°·5E. given by Batavia. Depth 300km.

See Annales de l'Institut de Physique du Globe de Strasbourg. Tome III, 2nd part Seismology, published 1941, p. 3.

A = −·2126, B = +·9753, C = −·0606 ; δ = +8 ; h = +7 ;
D = +·977, E = +·213 ; G = +·013, H = −·059, K = −·998.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Batavia		5·2	121	i 1 15k	− 6	i 2 18	− 4	—	—	—
Malabar		6·4	125	1 38	0	i 2 57	+ 4	—	—	—
Medan		7·9	333	2 10	+11	4 1	S*	4 14	S_g	—
Phu-Lien		24·5	10	e 5 26	+ 4	e 9 53	+13	—	—	e 12·7
Colombo	E.	24·6	294	5 23	0	9 45	+ 3	—	—	15·4
Manila		25·8	45	i 5 42	+ 8	10 15	+13	—	—	13·4
Hong Kong		29·1	24	5 59k	− 5	10 50	− 6	6 51	PP	13·3
Calcutta	N.	29·2	333	e 6 12	+ 7	i 11 2	+ 4	i 12 19	sS	—
Perth		31·0	157	e 10 41	?	e 12 39	SS	—	—	14·1
Hyderabad		31·4	312	e 5 24	−61	10 32	−60	12 2	SS	14·3
Isigakizima		34·9	36	6 28	−27	—	—	—	—	—
Bombay	E.	36·6	308	e 7 8	− 2	i 12 47	− 6	i 8 26	sP	—
Agra	E.	38·4	325	e 7 29	+ 4	i 13 17	− 3	16 9	SSS	—
Nake		41·1	38	7 50	+ 3	—	—	—	—	—
Osaka		49·9	37	8 58	+ 1	14 4	?	—	—	17·0?

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		° ′	°	m. s.	s.	m. s.	s.	m. s.		m.
Gihu		50·4	38	8 59	− 2	—	—	—	—	—
Wazima		51·8	35	9 10	− 2	—	—	—	—	—
Melbourne		51·8	137	i 9 20	+ 8	i 16 20	−13	i 20 7	SS	27·2
Almata		51·9	348	9 16	+ 4	16 35	0	—	—	—
Andijan		51·9	331	e 9 12	0	e 16 35	0	—	—	—
Nagano		52·1	36	9 14	0	16 42	+ 4	—	—	—
Oiwake		52·1	37	9 13	− 1	16 36	− 2	—	—	—
Tokyo Cen. Met. Ob.		52·4	39	9 19	+ 3	—	—	—	—	—
Frunse		52·5	335	9 15	− 2	16 42	− 1	—	—	—
Vladivostok		53·5	27	i 9 24	0	i 17 2	+ 5	—	—	e 21·1
Samarkand		53·8	326	9 28	+ 2	16 58	− 3	—	—	—
Tashkent		53·8	330	i 9 21	− 5	i 16 54	− 7	—	—	e 26·5
Brisbane		53·9	122	—	—	i 16 50	−12	—	—	e 30·9
Tchimkent		54·4	331	9 32	+ 1	17 8	− 1	—	—	—
Riverview		54·5	130	—	—	e 16 56	−14	e 25 8	?	e 31·1
Sydney		54·6	130	—	—	i 16 57	−14	—	—	e 30·3
Mizusawa		55·5	37	9 38	− 1	17 24	0	—	—	—
Irkutsk		55·6	2	10 39	+59	18 27	+62	—	—	30·0
Tananarive		55·6	250	—	—	e 17 22	− 3	e 23 8	SSS	26·5
Semipalatinsk		56·9	346	9 45	− 4	—	—	—	—	—
Baku		64·8	318	e 10 41	− 2	i 19 24	+ 1	—	—	32·0
Erevan		68·4	316	e 11 31	+25	e 20 1	− 6	—	—	—
Grozny		68·9	320	i 11 16	+ 7	i 20 10	− 3	—	—	—
Sverdlovsk		68·9	338	11 7	− 2	i 20 9	− 4	—	—	34·0
Piatigorsk		71·0	319	e 11 21	− 1	i 20 29	− 8	—	—	—
Ksara		72·6	307	e 11 43	+12	21 23	PPS	—	—	37·5
Helwan		75·4	302	e 11 38	− 9	i 21 22	− 5	26 32	SS	—
Theodosia		76·4	318	11 55	+ 2	21 32	− 6	—	—	—
Yalta		77·1	317	12 6	+ 9	21 57	+11	—	—	—
Simferopol		77·2	318	12 5	+ 8	21 39	− 8	—	—	—
Moscow		79·0	329	e 12 9	+ 2	22 2	− 4	—	—	40·0
Cape Town	E.	82·9	236	—	—	i 22 33	−13	—	—	e 38·7
Pulkovo		84·0	331	e 12 30	− 4	22 51	− 6	15 49	PP	39·5
Belgrade	Z.	86·7	315	e 12 45a	− 2	—	—	—	—	—
Triest		91·5	315	—	—	e 23 27	[−15]	—	—	—
Copenhagen		92·8	325	24 20	S	(24 20)	+ 1	—	—	52·0
Chur		94·4	316	e 13 19	− 3	—	—	—	—	—
Zurich		95·1	317	e 13 50	+24	—	—	—	—	—
Granada		104·8	307	—	—	e 33 32	SS	—	—	—
Tinemaha	Z.	130·0	42	e 19 30	[+18]	—	—	i 22 29	PP	—
Santa Barbara	Z.	130·3	45	—	—	—	—	i 22 30	PP	—
Mount Wilson	Z.	131·6	46	i 19 13	[− 2]	—	—	i 22 34	PP	—
Pasadena		131·6	45	i 19 12	[− 3]	—	—	i 22 36	PP	—
Riverside		132·2	45	i 19 10	[− 6]	—	—	i 22 34	PP	—
Tucson		137·8	43	e 19 19	[− 7]	39 37	SS	e 22 27	PP	54·2
Little Rock		146·0	22	i 19 40	[− 1]	e 23 12	PP	—	—	—
La Paz		158·0	206	20 7	[+ 9]	—	—	i 20 46	PKP_2	76·0
Huancayo		164·4	189	e 19 58	[− 7]	e 45 30	SS	—	—	e 65·9

Additional readings :—
Batavia iN = +2m.9s., iE = +2m.22s.
Malabar i = +2m.47s.
Hong Kong P_gP = +9m.10s., SS? = +11m.49s.
Calcutta eN = +6m.26s., iSSN = +13m.33s., iN = +16m.52s.
Hyderabad ?E = +6m.16s., S_gSE = +15m.46s.
Bombay eE = +7m.34s., +7m.58s., +9m.16s., +12m.39s., +13m.18s., and +14m.23s., iSSE = +15m.50s., iE = +16m.8s., eE = +17m.13s.
Agra ?E = +7m.43s. and +13m.39s.
Helwan e = +21m.47s.
Pulkovo PPP = +18m.1s., SS = +28m.26s.
Belgrade eZ = +13m.18s. and +13m.47s.
Tucson ePKP = +19m.44s., iPKS = +22m.56s., PPP = +25m.10s.
Little Rock iN = +19m.44s. and +20m.13s., iE = +20m.26s.
Huancayo PKP = +20m.23s., SKP = +35m.10s.
Long waves were also recorded at Kew, De Bilt, Strasbourg, Paris, San Juan, and Uccle.

Jan. 18d. 9h. 29m. 2s. Epicentre 37°·0N 70°·5E. (as on 1937 Oct. 31d.).

Felt Force VIII at Srinagar, Force VI in the Provinces of N.W. Kashmir and Northern Punjab, and less strongly in the rest of the Punjab.

Epicentre 37°·0N. 70°·5E. (given by Bombay). Depth 250km.

See Government of India Meteorological Dept. Seismological Bulletin, Jan.-March, 1938, p. 25.

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

A depth of focus 0·020 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Samarkand		3·8	315	1 6	+ 7	i 1 58	+14	—	—	—
Andijan		4·0	20	1 5	+ 4	i 1 57	+ 8	—	—	—
Tashkent		4·4	351	i 1 10	+ 4	—	—	—	—	i 2·4
Tchimkent		5·3	354	1 23	+ 5	2 28	+ 9	—	—	—
Frunse		6·7	27	1 38	+ 1	2 48	− 4	i 1 49	PP	—
Almata		8·0	36	e 1 57	+ 3	3 28	+ 4	—	—	—
Dehra Dun	N.	9·1	135	i 2 9	0	i 3 33	−17	—	—	—
Agra		11·7	145	2 29	−14	i 4 27	−24	—	—	—
Baku		16·4	288	i 3 46	+ 4	i 6 54	+16	—	—	—
Bombay	E.	18·2	174	i 3 53	−10	i 7 3	−15	e 5 8	sP	—
Grozny		19·9	296	i 4 25	+ 4	i 8 11	+20	i 5 11	pP	—
Erevan		20·5	286	i 4 32	+ 5	i 8 26	+24	i 5 10	pP	—
Hyderabad		20·7	159	3 30	−59	8 24	+18	—	—	—
Sverdlovsk		20·9	345	i 4 33	+ 2	i 8 19	+10	—	—	—
Calcutta		21·1	128	i 4 27	− 6	i 8 7	− 6	i 5 1	pP	—
Piatigorsk		21·9	298	i 4 45	+ 4	i 8 37	+10	—	—	—
Irkutsk		28·2	46	6 34	PP	11 8	+56	—	—	—
Ksara		28·3	273	i 5 41k	0	10 25	+11	i 6 23	pP	—
Moscow		29·0	321	i 5 48	+ 1	e 10 28	+ 3	—	—	12·0
Colombo	E.	31·2	162	4 49	−77	12 2	+63	—	—	18·4
Helwan		33·3	270	i 6 20	− 4	i 11 28	− 4	—	—	—
Pulkovo		34·3	325	6 33	0	11 47	0	—	—	e 13·5
Phu-Lien		35·2	107	e 5 58	?	—	—	—	—	—
Hong Kong		40·3	99	—	—	13 3	−15	—	—	21·5
Upsala	E.	40·4	322	e 7 26	+ 2	e 16 40	SS	—	—	—
Medan		42·1	135	e 7 43	+ 5	i 13 21	−24	—	—	—
Triest		42·7	301	i 7 42	− 1	i 17 28	SS	—	—	—
Copenhagen		42·8	316	i 7 44	+ 1	13 59	+ 4	—	—	—
Jena		43·5	308	e 7 42	− 7	—	—	—	—	—
Hamburg		44·3	313	i 7 55k	0	e 17 46	SS	—	—	—
Göttingen		44·4	310	i 7 55	− 1	e 18 14	SSS	—	—	—
Stuttgart		45·3	305	i 8 2a	− 1	e 15 48	?	e 19 17	SSS	—
Chur		45·4	303	e 8 3	− 1	—	—	e 13 9	?	e 21·9
Zurich		45·9	304	e 8 9k	+ 1	—	—	—	—	—
Basle		46·6	303	e 8 11	− 3	—	—	—	—	e 60·0
Neuchatel		47·1	303	e 8 15	− 2	—	—	—	—	—
Paris		49·6	306	9 50	?	—	—	e 11 26	PPP	28·0
Manila		50·0	103	e 8 34	− 6	i 15 25	−12	i 16 52	PS	—
Batavia		54·7	133	6 58?	?	e 16 7	−33	—	—	—
Almeria		56·9	294	e 9 26	− 4	—	—	—	—	—
Tinemaha	z.	105·8	7	e 18 7	PKP	—	—	—	—	—
Mount Wilson	z.	108·7	7	e 18 31	PP	—	—	—	—	—
Pasadena	z.	108·8	7	e 18 37	PP	—	—	—	—	—
Riverside	z.	109·0	7	e 18 30	PP	—	—	—	—	—
Tucson		111·1	1	e 18 10	[− 4]	—	—	e 18 49	PP	—
La Paz	z.	138·2	288	i 22 17	PP	—	—	—	—	—
Huancayo		140·6	300	e 19 5	[− 5]	—	—	e 22 8	PP	—

For Notes see next page,

NOTES TO JAN. 18d. 9h. 29m. 2s.

Additional readings :—
Frunse i = +1m.58s., +2m.15s., +2m.47s., and +2m.54s.
Dehra Dun e?N = +2m.51s.
Bombay eE = +4m.29s. and +8m.0s.
Erevan i = +5m.33s.
Hyderabad ?N = +4m.24s., S = +7m.3s., ?N = +9m.32s., ?E = +9m,39s.
Calcutta esP?N = +5m.29s., isSN = +9m.6s., iSSN = +9m.30s.
Ksara sP = +6m.51s., isS = +11m.41s., SS = +12m.19s., SKKS = +17m.21s.
Helwan i = +16m.24s.
Upsala e = +16m.17s.
Copenhagen e = +10m.10s and +10m.28s., eE = +15m.16s., e = +17m.10s. and +17m.28s.
Jena eP = +7m.46s., ePN = +7m.53s.
Stuttgart ePPZ = +9m.8s., esPEZ = +9m.53s., ePPEZ = +10m.34s., esS = +18m.16s., e = +18m.42s.
Batavia eE = +15m.56s.
Huancayo PKS = +22m.46s.

Jan. 18d. Readings also at 0h. (Mizusawa, Frunse, Tchimkent, Tashkent, Samarkand, Andijan, and Nagoya), 2h. (Melbourne, Riverside, Pasadena, Arapuni, Chatham Ils., Tuai, Stratford, Hastings, Takaka, Wellington, Bunnythorpe, and New Plymouth), 3h. (Nagoya, Wellington, Bunnythorpe, New Plymouth, Bombay, Perth, Tiflis, Huancayo, Calcutta, Hyderabad, Tashkent (2), Sverdlovsk (2), and Agra), 5h. (Phu-Lien, Granada, Malaga (2), Samarkand, Hong Kong, Zi-ka-wei, Calcutta, Agra, and Wellington), 6h. (Tucson), 7h. (Huancayo), 9h. (Padova, Bombay (2), Calcutta (2), Agra (2), and Hyderabad), 10h. (De Bilt and Hyderabad), 13h. (Samarkand), 14h. (Wellington), 15h. (Göttingen and Amboina), 19h. (Sebastopol, Simferopol, Yalta, and Theodosia), 20h. (Balboa Heights, Hong Kong, and Manila), 21h. (Manila and Tacubaya), 22h. (Tacubaya), 23h. (Sverdlovsk, and Tashkent).

Jan. 19d. 6h. 4m. 0s. Epicentre 37°·6N. 71°·6E. (as on 1937 May 10d.).

U.S.S.R. gives Epicentre 39° 28′N., 72° 22′E.

$A = +\cdot2507$, $B = +\cdot7537$, $C = +\cdot6076$; $\delta = +9$; $h = -1$;
$D = +\cdot949$, $E = -\cdot316$; $G = +\cdot192$, $H = +\cdot577$, $K = -\cdot794$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		3·2	11	0 53	+ 1	1 35	+ 3	i 1 0	P_g	—
Samarkand		4·1	302	e 1 25	P_g	e 1 42	−13	e 1 37	P_g	—
Tashkent		4·1	336	i 0 59	− 6	i 1 41	−14	—	—	i 1·8
Tchimkent		4·9	343	e 1 16	− 1	2 16	+ 1	—	—	—
Frunse		5·8	23	e 1 27	− 2	i 2 37	− 1	i 1 45	P*	—
Almata		7·0	35	e 1 48	+ 2	e 2 54	−14	e 3 30	S*	—
Agra	E.	11·7	150	2 50	− 1	i 4 19	−45	—	—	—
Semipalatinsk		14·2	23	e 3 17	− 7	i 5 56	− 8	i 6 13	?	—
Bombay		18·7	177	e 4 26	+ 4	i 7 33	−15	—	—	—
Grozny		20·4	294	e 4 32	− 9	e 8 56	SS	—	—	—
Sverdlovsk		20·6	343	5 5	PP	8 25	− 4	10 42	L_q	11·4
Calcutta	N.	20·8	132	e 4 33	−12	i 8 13	−20	5 38	sP	e 9·7
Tiflis		21·0	292	e 4 35	−12	e 8 45	+ 8	—	—	—

Additional readings :—
Andijan i = +1m.6s., +1m.9s., +1m.11s., +1m.24s., iS_g = +1m.58s.
Frunse i = +1m.37s., iP_g = +1m.39s., i = +2m.16s., S_g = +2m.33s.
Agra ePE = +2m.25s.
Bombay eEN = +4m.8s.
Calcutta eSSN = +8m.55s.
Long waves were also recorded at Irkutsk and Baku.

Jan. 19d. Readings also at 2h. (Hong Kong, Manila, Phu-Lien, and Taihoku), 3h. (Sverdlovsk and Tashkent), 5h. (near Hukuoka B), 8h. (near Perth), 9h. (Samarkand), 10h. (Copenhagen and Samarkand (2)), 12h. (La Paz and near Copiapo), 13h. (Sebastopol), 14h. (Sebastopol, Batavia, and Manila), 15h. (Perth and Wellington), 17h. (Balboa Heights and Moncalieri), 19h. (Balboa Heights and Huancayo), 20h. (La Paz), 22h. (Granada and Tacubaya), 23h. (near Balboa Heights).

Jan. 20d. Readings at 2h. (Samarkand, Tchimkent, and near Andijan), 3h. (Mizusawa), 4h. (La Paz, Montezuma, near Nagoya, and near Tiflis), 5h. (Tchimkent and Tiflis), 6h. (Samarkand), 8h. (Samarkand), 11h. (Malabar), 12h. and 13h. (Samarkand), 15h. (Branner and Lick), 16h. (Wellington, near Apia, and near Tiflis), 18h. (near Nagoya and near Frunse and Andijan), 20h. (Fordham and near Mizusawa), 21h. (La Paz, Huancayo, Samarkand, Almata, Tashkent, near Andijan, Frunse, and Tchimkent), 22h. (Balboa Heights).

Jan. 21d. Readings at 0h. (Malabar), 1h. (Sverdlovsk and Tashkent), 3h. (Balboa Heights, Prague, Sverdlovsk, and Tashkent), 4h. (Samarkand), 5h. (Wellington), 10h. (near Samarkand), 11h. (near Tananarive), 12h. (near Mizusawa), 13h. (Wellington), 15h. (near Apia), 16h. (Almeria), 17h. (Ksara, Grozny, near Erevan, and Tiflis).

Jan. 22d. 15h. 27m. 13s. Epicentre 5°·0S. 106°·0E.

Very rough. Batavia reports felt at Priangan, Bantam, and Benkoelen, but does not suggest an epicentre.

$A = -\cdot2746$, $B = +\cdot9576$, $C = -\cdot0866$; $\delta = -10$; $h = +7$;
$D = +\cdot961$, $E = +\cdot276$; $G = +\cdot024$, $H = -\cdot083$, $K = -\cdot996$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Batavia		1·4	145	i 0 37k	PP	i 1 0	SSS	—	—	—
Malabar		2·7	144	i 0 48	+ 3	i 1 14	− 5	—	—	—
Medan		11·2	320	e 2 59	PPP	i 5 36	SSS	—	—	—
Manila		24·5	37	i 6 3k	+41	10 24	+44	—	—	—
Perth		28·4	162	10 11	S	(10 11)	−34	e 11 48	SS	e 12·8
Colombo	E.	28·6	294	6 3	+ 3	10 42	− 6	—	—	—
Calcutta	N.	32·4	329	e 8 25	PPP	i 12 42	+54	i 14 22	SS	—
Bombay		40·4	307	e 7 45	+ 4	e 13 46	− 4	e 9 49	PPP	—
Agra	E.	42·0	322	7 54	0	14 1	−13	—	—	—
Melbourne		48·2	138	—	—	i 15 19	−24	—	—	—
Vladivostok		53·3	24	e 10 2	+39	i 18 1	PPS	—	—	—
Andijan		55·0	329	9 35	0	e 17 15	− 2	—	—	—
Samarkand		57·2	325	9 45	− 6	19 20	?	—	—	—
Sverdlovsk		71·8	337	i 11 25	− 1	20 36	−10	—	—	29·8
Erevan		72·0	315	e 11 21	− 7	25 3	SS	—	—	—
Grozny		72·4	319	e 11 29	− 1	e 20 40	−13	—	—	—
Tiflis		72·4	317	i 11 28	− 2	i 20 40	−13	e 21 22	PS	—
Ksara		76·3	306	i 11 52k	0	e 21 50	+13	e 14 48	PP	—
Helwan		79·3	302	e 12 5	− 4	e 22 11	+ 2	—	—	—
Theodosia		80·0	318	—	—	e 21 59	−18	—	—	—
Simferopol		80·9	317	12 17	0	22 2	−24	—	—	—
Tinemaha	Z.	128·5	46	i 19 5	[− 4]	—	—	i 22 11	PP	—
Haiwee		129·1	46	—	—	—	—	e 22 6	PP	—
Mount Wilson	Z.	129·9	48	i 19 6	[− 6]	—	—	i 22 16	PP	—
Pasadena		129·9	48	i 19 9	[− 3]	—	—	i 22 15	PP	—
Riverside		130·5	48	e 19 9	[− 4]	—	—	i 22 18	PP	—
Weston	Z.	142·7	356	i 19 28a	[− 7]	—	—	i 22 53	PP	—
Fordham		144·3	0	i 19 31	[− 7]	—	—	i 22 56	PP	—

Additional readings :—
Medan iE = +6m.21s., iN = +6m.28s.
Bombay eE = +17m.31s.
Melbourne i = +18m.10s.
Tiflis e = +21m.46s., eE = +22m.43s.
Ksara e = +22m.25s.
Helwan e = +22m.55s.
Pasadena eZ = +19m.48s.
Long waves were also recorded at Phu-Lien, Hong Kong, and Baku,

Jan. 22d. Readings also at 1h. (Paris, Uccle, Cheb, Ksara, De Bilt, and Strasbourg), 2h. (Uccle, Strasbourg, Ksara, Aberdeen, Stonyhurst, Edinburgh, Kew, Scoresby Sund, and East Machias), 3h. (De Bilt, Copenhagen, Cheb, Paris, Potsdam, Triest, Harvard, Granada, Balboa Heights, Bozeman, Philadelphia, Fordham, Tucson, and Ukiah), 4h. (Bozeman, Philadelphia, De Bilt, Cheb, Harvard, Granada, Ksara, Uccle, Strasbourg, Paris, Nagoya, Sverdlovsk, Scoresby Sund, Baku, and Tashkent), 6h. (Paris), 7h. (Medan), 10h. (La Paz), 14h. (Samarkand (2), Andijan, Lick, Fresno, Tchimkent, and Frunse), 15h. (Santiago), 16h. (La Paz), 17h. (Huancayo), 18h. (La Paz, Wellington, Manila, Christchurch, and Hukuoka B), 19h. (Nagoya, Balboa Heights, and Berkeley), 23h. (Berkeley).

Jan. 23d. 5h. 50m. 46s. Epicentre 36°·0N. 140°·1E. (as on 1937 May 4d.).

Tokyo gives Epicentre 36°·1N. 140°·1E.

$A = -\cdot6221$, $B = +\cdot5202$, $C = +\cdot5852$; $\delta = +8$; $h = 0$;
$D = +\cdot641$, $E = +\cdot767$; $G = -\cdot449$, $H = +\cdot375$, $K = -\cdot811$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.	
	°	°	m. s.	s.	m. s.	s.	m. s.	
Tukubasan	0·2	0	0 15	S	(0 15)	− 1	0 21	—
Tokyo, I.U.	0·4	222	0 9	P_g	0 16	S*	—	—
Komaba	0·5	224	0 11	P*	0 21	− 2	—	—
Mitaka	0·6	233	0 12	− 3	0 23	S*	—	—
Kiyosumi	0·8	175	0 15	P_g	0 30	− 1	—	—
Titibu	0·8	269	0 15	P_g	0 28	S*	—	—
Koyama	1·1	234	0 15	− 7	0 28	−11	—	—

Tokyo I.U., Komaba, and Mitaka readings have been reduced by one minute to bring them into alignment with other stations.

Jan. 23d. 8h. 32m. 47s. Epicentre 21°·2N. 156°·1W.

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

$A = -\cdot8531$, $B = -\cdot3780$, $C = +\cdot3595$; $\delta = -10$; $h = +4$;
$D = -\cdot405$, $E = +\cdot914$; $G = -\cdot329$, $H = -\cdot146$, $K = -\cdot933$.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Honolulu	1·1	274	i 0 28	+ 6	—	—	—	—	—
Kilauwea	1·9	156	i 0 33	− 1	0 55	− 4	—	—	—
Ukiah	33·0	50	e 6 33	− 6	e 11 49	− 8	e 7 44	PP	e 13·5
Ferndale	33·2	48	e 6 52	+12	e 12 14	+14	14 17	SS	—
San Francisco	33·4	54	e 6 29a	−13	e 12 8	+ 5	—	—	e 15·3
Branner	33·5	54	e 6 46	+ 3	e 12 12	+ 7	i 8 8	PP	e 14·9
Berkeley	33·6	54	e 6 44	0	e 12 8	+ 2	i 7 48	PP	—
Lick	33·9	54	e 6 48	+ 1	e 12 19	+ 8	—	—	e 15·2
Santa Barbara	34·6	61	e 6 51	− 2	e 12 26	+ 4	—	—	—
Fresno	35·1	56	e 6 13?	−44	11 51?	−39	i 15 23?	P_cP	—
Pasadena	35·8	61	e 7 2	− 1	i 12 41	0	i 8 17	PP	i 15·4
Mount Wilson	35·9	61	i 7 3	− 1	i 12 47	+ 5	—	—	—
La Jolla	36·3	63	e 7 7	0	e 12 48	0	—	—	—
Haiwee N.	36·4	57	e 7 9	+ 1	—	—	—	—	—
Riverside	36·4	61	i 7 7	− 1	i 12 48	− 2	—	—	—
Tinemaha	36·4	56	e 7 6	− 2	i 12 51	+ 1	—	—	—
Victoria	37·7	36	7 18	− 1	13 9	− 1	8 57	PPP	18·2
Seattle	37·9	38	e 7 20	0	e 13 29	+16	e 8 33	PP	e 16·2
Apia	38·0	204	i 7 34	+13	e 13 13?	− 1	8 47	PP	17·2
Sitka	38·9	18	i 7 32	+ 3	i 13 32	+ 4	—	—	e 15·8
Tucson	41·6	64	e 7 52	+ 1	e 14 9	+ 1	i 9 50	PPP	e 17·9
Butte	43·2	45	8 8	+ 4	i 14 33	+ 1	e 9 57	PP	i 18·0
College	44·0	5	e 7 58	−13	e 14 27	PS	e 9 43	PP	e 17·7
Bozeman	44·1	46	8 12	0	i 14 48	+ 3	e 9 55	PP	18·1
Denver	47·1	56	e 8 37	+ 2	e 15 29	+ 1	e 19 13	SS	e 23·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Saskatoon		48·9	38	8 53	+ 3	15 57	+ 4	19 31	SS	23·2
Tacubaya	E.	53·2	81	e 9 22	0	e 17 9	+17	—	—	—
Mizusawa		56·1	303	e 9 46	+ 3	14 2	?	—	—	17·4
Little Rock		57·0	62	i 9 50	0	e 17 46	+ 3	e 13 22	PPP	e 27·7
Tukubasan		57·0	301	9 50	0	17 41	− 2	—	—	—
Tokyo Cen. Met. Ob.		57·3	299	9 43	− 9	17 46	− 1	e 25 47	?	—
Oiwake		58·2	300	9 56	− 2	18 3	+ 4	—	—	—
Nagano		58·5	301	10 2	+ 2	17 48	−15	—	—	—
St. Louis		58·5	57	e 9 58	− 2	e 18 0	− 3	e 12 14	PP	e 27·4
Nagoya		59·6	299	e 9 48	−20	10 49	?	—	—	—
Chicago		60·3	53	e 10 30	+17	i 18 41	+15	e 22 27	SS	e 24·9
Chicago (Loyola)		60·3	53	e 10 15	+ 2	18 32	+ 6	—	—	—
Siomisaki		60·8	297	10 12	− 4	18 34	+ 1	—	—	—
Cincinnati		62·9	56	i 10 29	− 1	i 19 1	+ 1	—	—	e 29·2
Miyazaki		64·6	295	10 44	+ 3	19 24	+ 3	e 27 0	?	—
Toronto		66·2	50	10 50	− 2	19 37	− 3	24 13	SS	32·2
Columbia		66·4	61	e 10 53	0	e 19 36	− 7	e 24 15	SS	e 27·5
Buffalo		66·7	51	i 10 55	0	e 19 45	− 1	i 13 29	PP	e 31·2
Pennsylvania	N.	67·8	53	i 11 10	+ 8	e 20 0	0	—	—	e 33·2
Wellington		67·8	203	11 59	+57	19 48	−12	20 3	PS	33·0
Ottawa		68·6	48	11 7	0	20 7	− 2	24 51	SS	33·2
Georgetown		68·7	55	i 11 6	− 1	e 19 59	−11	26 56	SSS	i 31·8
Brisbane	N.	69·0	227	i 11 7	− 2	e 20 7	− 7	e 24 25	SS	e 28·0
Philadelphia		69·9	54	i 11 16a	+ 1	e 20 12	−12	e 14 1	PP	e 27·9
Shawinigan Falls		70·4	46	11 22	+ 4	20 32	+ 2	—	—	34·2
Christchurch		70·5	203	i 11 16a	− 2	i 20 28	− 4	28 13	L_g	33·0
Vermont		70·5	49	e 11 20	+ 2	i 20 29	− 3	e 24 47	SS	e 32·9
Fordham		70·7	53	e 11 16	− 4	i 20 34	0	e 25 26	SS	—
Williamstown		70·8	50	i 11 19	− 1	i 20 38	+ 3	i 13 59	PP	e 33·4
Seven Falls		71·6	45	11 19	− 6	20 33	−11	27 35	SSS	33·2
Harvard		72·1	51	i 11 18	−10	e 20 38	−12	—	—	37·2
Weston		72·3	51	i 11 28	− 1	i 20 51	− 1	e 14 15	PP	e 34·5
Riverview		74·3	223	e 11 37	− 4	e 21 9	− 6	—	—	e 32·1
Sydney		74·3	223	e 11 40	− 1	e 21 9	− 6	—	—	e 31·2
East Machias		74·5	48	11 54	+12	21 19	+ 2	e 14 40	PP	e 30·5
Manila		78·4	281	e 11 21	−43	22 0	0	—	—	—
Ivigtut		79·9	29	—	—	22 13	− 3	—	—	33·2
Melbourne		80·7	223	i 12 15	− 1	22 25	+ 1	15 25	PP	36·4
Hong Kong		82·0	291	12 25	+ 2	22 40	+ 3	15 36	PP	38·3
Scoresby Sund		83·1	15	12 28	− 1	22 48	0	—	—	34·2
Adelaide		83·4	228	i 14 34	?	i 22 45	− 6	—	—	32·4
San Juan		83·5	72	12 55	+24	i 22 50	− 2	16 0	PP	e 34·9
Huancayo		85·9	105	e 12 40	− 3	i 23 10	[+ 3]	15 53	PP	35·9
Phu-Lien		89·1	292	—	—	23 46	0	—	—	—
Fort de France		89·3	75	e 12 59	0	e 23 44	− 4	—	—	—
Semipalatinsk		93·1	328	13 16	− 1	—	—	—	—	—
La Paz		94·0	106	13 25	+ 4	i 24 55	+25	i 17 21	PP	44·4
Sverdlovsk		96·4	341	i 13 33	+ 1	e 24 5	[− 4]	i 17 24	PP	42·2
Batavia		98·8	267	e 16 43	?	e 24 15	[− 6]	—	—	—
Aberdeen		98·9	13	—	—	e 38 3	?	—	—	e 48·2
Pulkovo		99·1	357	e 18 2	PP	e 24 22	[0]	e 26 41	PS	42·7
Upsala		99·1	3	—	—	i 24 22	[0]	—	—	e 41·2
Perth		99·3	239	—	—	25 23	+ 9	32 23	SS	50·8
Rathfarnham Castle		101·3	17	i 13 29	−25	—	—	i 36 23	SSS	48·2
Bidston		102·1	16	i 18 33	PP	—	—	i 27 53	PS	43·2
Moscow		102·5	352	e 18 9	PP	i 24 36	[− 2]	e 27 28	PS	43·7
Calcutta	N.	103·6	301	e 15 0	+56	24 48	[+ 4]	i 32 57	SS	e 39·8
Andijan		103·7	324	e 17 37	?	e 24 49	[+ 5]	—	—	—
Hamburg	Z.	104·6	8	e 18 31	PP	—	—	—	—	—
Kew		104·6	14	i 18 28k	PP	i 33 10	SS	i 27 53	PS	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.
Tashkent		104·9	326	e 17 59	PKP	24 46	[− 4]	27 39	PS	e 49·8
De Bilt		105·2	11	e 18 37	PP	e 24 58	[+ 6]	e 27 46	PS	e 43·2
Jersey		106·2	17	e 27 53	?	e 33 48	SS	—	—	e 51·7
Uccle	N.	106·3	13	e 18 50	PP	i 25 3	[+ 7]	—	—	—
Jena		107·4	7	e 18 43	PP	—	—	—	—	e 55·2
Paris		107·7	15	e 18 13?	PKP	e 28 13?	PS	—	—	45·2
Samarkand		107·7	326	e 16 55	?	—	—	—	—	—
Cheb		108·3	7	e 23 50	?	e 33 8	SS	—	—	e 52·2
La Plata		108·3	121	19 3	PP	—	—	—	—	51·1
Prague		108·6	6	—	—	e 26 43	{+48}	e 28 9	PS	e 51·2
Agra	E.	108·9	310	e 18 50	PP	25 4	[− 3]	28 20	PS	—
Strasbourg		109·1	10	—	—	e 25 7	[− 1]	e 28 37	PS	e 52·7
Stuttgart		109·1	9	e 18 47	PP	e 28 27	PS	e 25 13	SKS	e 55·2
Neuchatel		110·4	11	e 18 17	PKP	—	—	—	—	—
Moncalieri		112·5	12	e 24 23	S	(e 24 23)	[−59]	28 38	PS	34·9
Grozny		112·7	343	e 19 30	PP	—	—	—	—	—
Piatigorsk		112·8	346	e 18 58	[+20]	—	—	e 29 24	PS	—
Triest		112·8	7	—	—	i 33 13	?	—	—	—
Theodosia		113·3	351	e 19 38	PP	—	—	—	—	57·7
Simferopol		113·5	353	e 19 28	PP	—	—	—	—	—
Toledo		113·9	24	i 19 33	PP	—	—	i 22 28	PPP	52·4
Yalta		114·0	352	e 19 39	PP	e 29 7	PS	—	—	59·2
Baku		114·1	338	19 38	PP	35 55	SS	29 13	PS	52·3
Tiflis		114·5	343	e 18 40	[− 2]	25 23	[− 7]	19 38	PP	e 47·2
San Fernando	N.	116·0	27	—	—	e 35 52	SS	—	—	—
Granada		116·4	24	19 41	PP	—	—	—	—	57·2
Malaga		116·5	25	e 19 37	PP	—	—	—	—	60·2
Almeria		117·1	23	e 19 48	PP	—	—	—	—	e 56·5
Bombay		117·7	306	e 18 55	[+ 7]	e 25 46	[+ 5]	e 35 41	SS	—
Istanbul		117·9	354	19 42	PP	29 49	PS	—	—	e 59·0
Rio de Janeiro	N.	118·3	105	e 28 29	?	e 36 34	SS	—	—	e 49·6
Colombo	E.	118·4	291	e 19 2	[+13]	—	—	25 47	PP	—
Kodaikanal	E.	118·8	296	e 19 58	PP	—	—	—	—	—
Ksara		124·1	348	i 19 14a	[+13]	e 37 38	SS	i 20 48	PP	59·7
Helwan		128·7	352	e 19 28	[+19]	e 29 37	?	32 28	PPS	—
Cape Town	E.	166·4	161	e 23 26	?	i 45 51	SS	—	—	e 78·0

Additional readings :—
Ukiah P = +6m.56s., ePPP = +7m.57s., iS = +12m.5s. and +12m.13s.
Ferndale eN = +13m.23s., eE = +14m.40s., eN = +14m.49s., eE = +18m.17s., +18m.53s., +24m.17s., and +25m.37s.
San Francisco eEN = +6m.45s.
Fordham iP = +11m.20s., ipP = +11m.43s., iP$_c$P = +11m.52s., iPS = +21m.0s., iS$_c$S = +21m.27s., iSS = +29m.20s.
Williamstown iPS = +21m.5s., iSS = +25m.24s.
Harvard iE = +11m.22s., i = +11m.42s.
Weston iP = +11m.38s. and +11m.49s., eP$_c$P = +12m.3s., ePPP = +15m.52s., iPSE = +21m.22s., eSSE = +25m.40s.
Riverview eN = +13m.54s. and +21m.22s.
East Machias eSS = +25m.49s.
Melbourne PS = +23m.1s., SS = +27m.32s., e = +34m.11s.
Hong Kong SS = +27m.58s.
San Juan eP = +10m.41s., iPPP = +17m.13s., iS$_c$S = +23m.6s., eSSS = +31m.56s.
Huancayo iP = +12m.57s. and +13m.8s., i = +13m.13s. and +13m.28s., ePPP = +18m.5s., iS = +23m.20s., i = +23m.30s. and +23m.40s., iPS = +23m.54s., i = +24m.15s., iPPS = +24m.26s., i = +24m.34s., +24m.49s., and +25m.46s., SS = +29m.9s., i = +29m.21s. and +29m.24s.
Phu-Lien e = +22m.40s.
La Paz iPZ = +13m.34s., iSKS = +24m.4s., iSSN = +31m.18s., L$_q$N = +40·2m.
Sverdlovsk S = +24m.55s., iPS = +26m.8s., iSS = +31m.37s., iSSS = +35m.25s.
Pulkovo SS = +32m.19s.
Perth PPS = +25m.53s., SSS = +37m.14s., SSSS = +39m.58s., i = +45m.12s.
Moscow SS = +33m.1s.
Calcutta ePKPN = +17m.55s., eN = +19m.34s., +25m.25s., and +29m.54s.
Kew iSSSE = +37m.9s.
Berkeley eE = +12m.2s., eSN = +12m.9s., iPKP,PKPZ = +39m.38s., iZ = +41m.26s., PKP$_2$,PKP$_2$ = +41m.35s.
Tinemaha i = +7m.10s.
Victoria SSS = +15m.52s.

Continued on next page,

Seattle eP = +7m.48s., ePPP = +9m.18s.
Apia PPP = +9m.27s., iSSS = +16m.13s.?
Tucson iP = +7m.56s., iP_cP = +9m.31s., i = +10m.16s., iS = +14m.16s., iS_cS = +17m.36s.
Butte S = +14m.56s.
College eP = +8m.7s., ePPP = +10m.25s., S = +14m.41s.
Bozeman eP = +8m.34s.
Denver eN = +8m.43s. and +15m.31s., iE = +15m.49s.
Little Rock i = +9m.58s., e = +18m.0s.
St. Louis iE = eN = +10m.7s., iSN = +18m.3s., eS_cSN = +19m.47s.
Cincinnati i = +19m.15s. and +20m.23s.
Buffalo iPPP = +14m.9s., e = +22m.57s.
Pennsylvania i = +11m.22s., e = +15m.58s.
Wellington SKS = +21m.2s., S_cS = +21m.18s., L_q = +27·4m.
Ottawa iN = +21m.3s., SSS = +27m.31s.
Georgetown i = +20m.11s.
Philadelphia i = +11m.23s., +20m.24s., +20m.49s., and +21m.19s.
Vermont iS = +10m.42s., i = +25m.21s.
Tashkent ePP = +18m.18s., SKKS = +25m.29s., SS = +33m.31s.
De Bilt eE = +33m.23s.
Jersey e = +44m.25s. and +45m.40s.
Prague eE = +44m.58s.
Agra SKKSE = +26m.0s., SSE = +34m.10s., SSSE = +38m.20s.
Strasbourg eSSE = +34m.20s.
Toledo i = +19m.51s.
Baku PPS = +30m.24s., SSS = +42m.1s.
Tiflis eE = +19m.51s., ePPPZ = +21m.47s., eZ = +23m.25s., ePS = +29m.9s., ePPS = +30m.31s., eZ = +33m.32s., eNZ = +35m.24s., eE = +35m.34s., eN = +44m.38s.
Bombay iPS = +29m.45s., PPS = +30m.33s., SSS = +40m.34s.
Ksara ePS = +30m.54s., ePPS = +32m.10s.
Helwan SKP = +22m.33s., e = +23m.3s.
Cape Town i? = +25m.36s., +29m.51s., +33m.51s., and +40m.35s.
Long waves were also recorded at Besançon, Graz, Arapuni, Durham, Chatham Ils., Göttingen, Copenhagen, Potsdam, Edinburgh, Florence, Stonyhurst, Hyderabad, Belgrade, and Bergen.

Jan. 23d. Readings also at 1h. (Medan), 3h. (Bucharest), 5h. (Andijan, Samarkand, Frunse, Almata, and Tchimkent), 6h. (Nagoya), 7h. (Andijan), 8h. (Samarkand), 9h. (Tinemaha, Riverside, Mount Wilson, Pasadena, and Santa Barbara), 10h. (La Plata), 11h. (Samarkand), 12h. (Andijan and Frunse), 14h. (Tacubaya (2), Puebla (2), Oaxaca (2), Calcutta, and Tucson), 16h. (Wellington, Tiflis, Baku, and Grozny), 17h. (Wellington), 18h. (Samarkand, Frunse, and Andijan), 23h. (Samarkand, Malabar, and Mizusawa).

Jan. 24d. 10h. 31m. 48s. Epicentre 60°·0S. 37°·0W.

A = +·4013, B = −·3024, C = −·8646; δ = +2; h = −9;
D = −·602, E = −·799; G = −·691, H = +·520, K = −·503.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
La Plata		28·6	322	6 6	+ 6	11 12	+24	—	—	12·8
Santiago		34·5	305	6 57	+ 5	12 33	+13	—	—	—
Rio de Janeiro		37·3	350	(i 7 27)	+11	i 7 27	P	—	—	i 16·7
Montezuma		43·5	315	e 8 13	+ 6	e 14 7	−29	—	—	e 17·8
Cape Town	E.	44·2	79	e 8 1	−11	i 14 37	− 9	i 9 32	PP	e 45·2
La Paz		49·0	319	i 8 46k	− 4	i 16 12	PS	i 9 57	pP	24·2
Huancayo		55·6	312	e 9 18	−22	16 52	−33	i 11 15	PP	i 21·9
Tananarive		71·1	95	11 22	0	e 20 36	− 2	14 8	PP	28·6
Chatham Ils.		71·2	208	e 13 12?	?	i 21 42	PS	—	—	i 36·4
Christchurch		74·0	201	i 11 26a	−13	i 21 12	+ 1	i 14 22	PP	36·3
Wellington		75·7	203	11 45	− 4	21 35	+ 5	26 23	SS	36·2
Balboa Heights		76·6	317	e 11 12?	−42	—	—	—	—	—
Fort de France		77·0	336	e 11 52	− 4	e 21 52	+ 7	—	—	37·7
Arapuni		78·6	205	—	—	26 12?	SS	—	—	i 35·2
San Juan		81·6	332	12 24	+ 3	22 19	−14	i 15 5	PP	32·6
Melbourne		82·5	182	12 34	+ 8	22 35	− 7	27 52	SS	33·3
Perth		85·7	156	i 12 27	−15	i 23 7	[+ 2]	16 37	PP	40·4
Riverview		86·3	187	i 12 40	− 5	i 23 16	− 4	i 24 13	PS	e 41·2
Sydney		86·3	187	e 12 44	− 1	i 23 15	− 5	i 29 6	SS	e 42·1
Brisbane	E.	92·4	188	e 13 6	− 8	i 24 12	− 4	i 25 30	PS	e 37·1

Continued on next page

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	E.	93·7	303	i 13 20	0	i 24 37	+10	—	—	—
Apia		98·0	224	e 17 54	PP	e 26 12?	PS	—	—	e 46·2
San Fernando		99·4	23	e 18 30	?	i 24 39	[+15]	32 23	SS	44·7
Malaga		100·1	25	e 13 44	− 5	e 25 36	+15	17 56	PP	48·2
Columbia		100·4	323	e 14 1	+11	e 24 30	[+ 1]	e 17 49	PP	e 39·9
Almeria		100·6	27	e 17 9	?	—	—	—	—	e 48·1
Granada		100·7	25	i 13 51	− 1	—	—	i 18 1	PP	—
Toledo		103·2	24	i 14 11	+ 8	e 25 50	+ 3	18 11	PP	—
Georgetown		103·9	329	e 13 56	−10	i 24 39	[− 6]	i 18 28	PP	46·2
Philadelphia		104·4	330	e 14 15	+ 7	i 33 21	SS	e 18 29	PP	i 43·1
Little Rock	E.	104·8	314	e 18 48	PP	e 24 51	[+ 1]	e 27 58	PS	e 29·6
Fordham		105·0	331	e 14 8	− 3	e 24 42	[− 9]	e 18 49	PP	—
Helwan		105·5	56	e 13 37	P	25 24	[+31]	18 22	PP	45·2
Pennsylvania		105·9	328	e 18 41	PP	e 24 54	[− 1]	34 6	SSP	e 58·8
Weston		105·9	333	e 14 26	P	i 24 47	[− 8]	i 18 46	PP	e 48·2
Harvard		106·0	333	e 14 24	P	e 33 59	SS	e 18 12	PP	e 43·2
Cincinnati		106·2	323	14 14	P	28 14	PS	i 18 55	PP	e 49·7
Williamstown		106·6	333	e 14 20	P	24 59	[+ 2]	19 32	PP	i 49·8
East Machias		107·3	337	e 14 42	P	e 24 56	[− 4]	e 18 43	PP	e 44·3
St. Louis	N.	107·6	318	e 18 53	PP	e 24 59	[− 3]	e 28 14	PS	e 44·5
Batavia		108·1	141	e 18 21	PP	i 25 7	[+ 3]	—	—	i 48·2
Buffalo		108·2	328	e 14 32	P	e 28 41	PS	i 18 56	PP	e 51·9
Vermont		108·3	333	e 18 31	PP	i 34 17	SS	e 28 15	PS	i 45·2
Toronto		109·0	328	i 19 12?	PP	e 25 12?	[+ 4]	e 28 36	PS	50·2
Colombo	E.	109·2	110	e 14 27	P	—	—	—	—	43·5
Ottawa		109·7	331	e 18 24	PP	e 25 10	[0]	e 28 30	PS	51·2
Tucson		109·9	299	e 14 47	P	26 34	{+30}	e 18 59	PP	e 52·7
Shawinigan Falls		110·1	334	e 19 12?	PP	e 25 12?	[0]	e 30 8	PPS	52·2
Seven Falls		110·3	335	e 19 21	PP	e 26 54	{+47}	e 28 54	PS	52·2
Florence		110·7	35	19 23	PP	30 22	PPS	—	—	—
Ksara		110·8	58	e 14 37	P	35 37	SS	i 19 17	PP	53·7
Moncalieri		110·8	31	e 19 20	PP	27 52	PS	—	—	38·6
Padova		112·4	34	e 19 23	PP	—	—	e 29 44	PPS	e 48·2
Jersey		112·5	22	e 20 17	PP	e 25 19	[− 3]	e 29 57	PPS	e 58·1
Neuchatel		112·5	30	e 18 43	[+ 5]	—	—	—	—	—
Chur		113·1	31	e 19 1	[+22]	—	—	—	—	—
Paris		113·1	26	e 18 12?	[−27]	e 29 12?	PS	e 36 12?	SS	49·2
Triest		113·1	35	i 19 27	PP	i 29 24	PS	i 33 14	?	e 48·2
Basle		113·2	30	e 19 28	PP	—	—	—	—	—
Zurich		113·3	30	e 18 47	[+ 7]	e 30 29	PPS	—	—	—
Strasbourg		114·2	30	e 18 39	[− 2]	e 35 45	SS	i 19 39	PP	e 54·7
Istanbul		114·3	49	19 29	PP	29 49	PS	22 29	PP	e 57·2
Riverside	Z.	114·3	295	e 18 28	[−14]	e 29 10	PS	—	—	—
Medan		114·4	129	e 19 12	PP	i 30 24	PPS	—	—	e 50·2
Belgrade		114·5	41	e 19 16	PP	e 29 29	PS	—	—	e 70·6
Karlsruhe		114·7	30	e 19 40	PP	—	—	—	—	e 59·2
Stuttgart		114·7	31	e 19 37	PP	e 29 46	PS	e 35 52	SS	e 59·2
Mount Wilson	Z.	114·8	295	e 18 41	[− 1]	—	—	e 19 40	PP	—
Pasadena		114·8	295	e 18 40	[− 2]	i 29 35	PS	i 19 50	PP	e 55·1
Kew		115·0	23	—	—	i 26 50	{+10}	i 36 17	SSP	50·2
Oxford		115·1	22	—	—	i 29 40	PS	i 35 22	SS	e 41·6
Amboina		115·4	163	e 18 54	[+10]	—	—	—	—	55·2
Uccle		115·4	26	e 19 39	PP	i 29 54	PS	i 36 26	SS	e 49·2
Bombay		116·1	96	e 14 52	P	e 25 47	[+11]	e 19 34	PP	53·8
Bucharest		116·1	45	e 20 12	PP	29 54	PS	30 6	PPS	—
Kecskemet		116·1	39	e 18 26	[−19]	e 26 0	[+24]	e 19 57	PP	—
Bidston		116·3	20	—	—	i 32 57	?	i 36 12	SS	54.2
Budapest		116·4	38	e 19 44	PP	29 36	PS	—	—	—
Ogyalla	N.	116·5	37	e 20 12	PP	30 8	PS	—	—	—
Cheb		116·8	32	e 21 0	?	e 30 1	PPS	e 28 31	PS	e 50·2
De Bilt		116·8	27	i 19 57	PP	e 36 39	SSP	e 29 42	SP	e 49·2
Stonyhurst		116·8	21	—	—	i 29 12	PS	—	—	e 57·2
Jena		117·3	32	e 19 56	PP	e 36 29	SSP	—	—	e 48·2
Prague		117·3	34	e 19 47	PP	e 29 50	PS	—	—	e 49·2
Tinemaha	Z.	117·3	296	e 18 43	[− 4]	e 30 7	PS	e 19 51	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Göttingen		117·5	30	e 19 57	PP	e 29 54	PS	—	—	e 60·2
Hyderabad		117·6	103	21 19	SKP	28 4	?	29 36	PS	54·8
Potsdam		119·0	31	e 20 6	PP	—	—	—	—	e 52·2
Sebastopol		119·1	49	e 20 36	PP	—	—	—	—	—
Yalta		119·2	50	e 20 17	PP	e 25 53	[+ 6]	e 21 35	PPP	40·2
Hamburg	Z.	119·3	29	e 20 8	PP	—	—	—	—	e 56·2
Simferopol		119·6	49	e 20 50	PP	—	—	e 22 10	PPP	—
Berkeley		119·7	294	e 18 53	[+ 1]	—	—	e 20 20	PP	—
Aberdeen		120·0	20	—	—	i 37 21	SSP	i 41 28	SSS	i 66·7
Ivigtut		121·2	353	20 35	PP	30 50	PS	37 48	SS	—
Ukiah		121·2	294	e 15 42	?	e 26 26	[+32]	e 20 32	PP	e 49·1
Bozeman		121·3	307	e 20 33	PP	i 37 31	SS	e 30 27	PS	51·1
Copenhagen		121·8	29	e 19 0	[+ 4]	e 26 2	[+ 6]	e 20 38	PP	—
Butte		122·2	307	20 50	PP	e 26 24	[+27]	e 23 10	PPP	i 54·3
Piatigorsk		122·4	57	e 19 11	[+14]	e 30 23	PS	—	—	—
Baku		122·5	64	e 18 58	[0]	27 38	{+ 7}	30 20	PS	54·2
Grozny		123·0	59	e 18 58	[− 1]	—	—	—	—	—
Honolulu		123·5	253	e 20 52	PP	37 23	SS	23 45	PPP	e 51·7
Saskatoon		125·0	314	—	—	e 38 12?	SSP	—	—	59·2
Agra	E.	125·6	96	e 19 14	[+11]	26 6	[− 2]	29 44	PS	58·3
Calcutta	N.	126·7	109	e 17 23	?	e 27 53	{− 5}	i 21 2	PP	i 57·7
Upsala		126·8	30	19 12?	[+ 7]	e 38 12?	SS	—	—	e 53·2
Seattle		127·5	301	e 23 22	PPP	e 43 4	SSS	e 22 16	PKS	e 65·0
Victoria		128·6	301	e 19 30	[+21]	e 32 0	PS	e 21 16	PP	57·2
Moscow		129·4	44	19 7	[− 4]	26 0	[−18]	21 18	PP	e 63·7
Samarkand		130·1	77	e 19 11	[− 1]	—	—	e 22 29	PP	—
Pulkovo		130·4	37	e 19 18	[+ 5]	26 1	[−19]	e 21 33	PP	e 58·7
Scoresby Sund		130·6	5	19 13	[0]	25 42	[−39]	—	—	—
Manila		131·9	150	19 13	[− 2]	—	—	i 24 37	PPP	—
Tashkent		132·5	77	i 18 29	[−48]	—	—	i 19 23	?	58·2
Phu-Lien		133·1	131	e 19 17	[− 1]	—	—	21 38	PP	—
Andijan		133·5	81	e 19 14	[− 5]	—	—	e 22 55	?	—
Frunse		136·2	81	e 18 37	[−46]	—	—	e 22 49	?	—
Hong Kong		137·2	139	19 23	[− 2]	28 32	{−32}	32 17	PS	—
Almata		137·7	82	e 19 37	[+11]	—	—	e 22 13	PP	—
Sverdlovsk		139·4	56	19 22	[− 7]	25 30	?	29 3	PS	62·2
Sitka		139·8	303	22 41	PP	e 27 3	[+26]	i 46 46	SSS	e 56·2
Semipalatinsk		144·3	76	e 19 32	[− 6]	—	—	—	—	—
Nake		147·1	157	19 33	[−10]	—	—	—	—	—
Titizima		147·1	178	19 26	[−17]	—	—	—	—	—
Zi-ka-wei	N.	147·8	144	e 19 45	[+ 1]	—	—	—	—	—
College		149·1	308	e 19 46	[0]	27 4	[+11]	e 23 21	PP	e 61·6
Yakusima		149·3	158	19 38	[− 8]	—	—	i 22 15	?	—
Miyazaki		150·9	160	19 40	[− 9]	—	—	i 23 17	PP	—
Hukuoka		152·3	157	e 19 56	[+ 5]	—	—	e 24 22	PP	—
Hukuoka B		152·3	157	e 19 56	[+ 5]	e 24 22	?	—	—	—
Muroto		152·6	163	19 47	[− 4]	—	—	i 23 29	PP	—
Koti		152·8	161	15 52	?	—	—	—	—	—
Siomisaki		153·0	166	19 52	[0]	—	—	—	—	—
Husan		153·5	152	e 19 44	[− 8]	e 23 55	PP	—	—	—
Hamada		153·9	158	20 5	[+12]	—	—	i 23 21	PP	—
Taikyu		154·1	212	e 19 40	[−13]	e 23 50	PP	—	—	—
Kobe		154·2	165	19 51	[− 2]	—	—	—	—	—
Osaka		154·2	165	19 39	[−14]	—	—	22 50	?	—
Nagoya		154·8	169	e 18 48	[−66]	e 20 22	?	—	—	—
Misima		155·0	171	20 2	[+ 8]	—	—	i 23 52	PP	—
Gihu		155·1	169	19 51	[− 4]	i 23 59	PP	—	—	—
Zinsen	N.	155·2	146	19 49	[− 6]	26 22	[−38]	—	—	—
Keizyo		155·3	148	e 19 56	[+ 1]	e 23 46	PP	e 30 3	?	e 84·7
Tokyo, Cent. Met. Obs.		155·6	172	20 30	[+35]	23 22	PP	—	—	—
Oiwake		156·1	170	19 57	[+ 1]	i 24 46	PP	i 29 29	?	—
Nagano		156·4	169	20 16	[+20]	—	—	i 24 24	PP	—
Sendai		158·2	175	19 53	[− 6]	—	—	—	—	—
Mizusawa		159·1	175	e 19 58	[− 2]	e 24 10	PP	28 14	PPP	—

For Notes see next page.

NOTES TO JAN. 24d. 10h. 31m. 48s.

Additional readings :—

Montezuma eP = +8m.24s.
Cape Town iSKPE = +8m.7s., iSKSE = +11m.57s., iSKKSE = +13m.48s., iPSE = +17m.1s., iPPSE = +18m.5s., iSSE = +23m.46s., iSSE = +28m.4s.
La Paz ipZ = +8m.58s., iSPE = +10m.29s., PPN = +10m.44s., iPPZ = +11m.10s., iN = +11m.16s., PPPN = +11m.52s., iSZ = +16m.26s., iSSN = +19m.28s., iN = +20m.12s., iSSSN = +20m.36s.
Huancayo P = +9m.40s., iP = +10m.0s., iP_cP = +10m.19s., i = +10m.25s., +10m.38s., +11m.30s., +11m.35s., +12m.0s., and +12m.6s., iPPP = +12m.23s., i = +13m.12s., +14m.19s., +14m.32s., +16m.6s., +17m.39s., +17m.45s., +17m.52s., +17m.59s., and +18m.8s., iSS = +20m.35s.
Tananarive eN = +20m.44s., ePSEN = +21m.11s., eSSEN = +25m.17s.
Chatham Ils. i = +23m.6s. and +23m.48s., iL_q = +30·7m.
Christchurch i = +11m.31s., iPPPN = +16m.10s., iPS = +21m.51s., iSS = +26m.5s., iE = +30m.56s., eE = +32m.12s.
Wellington iZ = +12m.14s., +12m.40s., and +14m.1s., iP_cP? = +16m.35s., iEN = +18m.45s. and +20m.45s., i = +23m.25s., L_q = +30·2m.
San Juan iP = +12m.45s., iPP = +14m.53s., i = +15m.26s., PPP = +16m.54s., iS_cS = +22m.34s., i = +23m.43s., iSS = +27m.16s., i = +28m.4s.
Melbourne i = +22m.44s., +22m.57s., and +23m.45s.
Perth P_cP = +12m.44s., PS = +23m.57s., SS = +28m.41s., SSS = +32m.11s.
Riverview eZ = +12m.43s., iN = +24m.20s., iPPSE = +24m.30s., SSEN? = +29m.11s., SSSSE = +35m.26s.
Sydney e = +15m.12s., i = +24m.37s., e = +35m.38s.
San Fernando SSN = +35m.59s.
~~Columbia S = +25m.24s., ePS = +26m.49s., eSS = +32m.20s., eSSS = +36m.3s.~~
Georgetown eP = +14m.5s., PS = +27m.32s.
Philadelphia iPP = +18m.47s., iPSPS = +33m.39s.
Fordham iP = +14m.14s., e = +19m.32s., +23m.46s., and +27m.52s., SSS = +33m.54s.
Helwan S = +26m.15s., PS = +28m.12s.
Weston ePKPZ = +17m.47s., iPPPZ = +21m.23s., ePPPPZ = +24m.39s., iSN = +27m.26s., iPSN = +28m.2s., iPPSN = +28m.56s., iSS = +34m.0s., eSSSSE = +42m.39s.
Harvard eZ = +18m.37s.
Cincinnati e = +13m.32s.
Williamstown iPKP = +18m.7s., i = +18m.44s., SKP = +21m.20s., SKKS = +25m.39s., iS = +26m.33s., PS = +28m.0s., PPS = +28m.48s., iSS = +34m.1s., SSS = +38m.9s., i = +42m.57s. and +47m.7s.
East Machias ePPP = +20m.46s., eS = +25m.56s., ePS = +27m.25s., eSS = +32m.58s.
St. Louis iN = +28m.23s.
Buffalo i = +19m.12s., +22m.42s., ePPS = +29m.27s., i = +30m.12s., and +32m.29s., iSS = +34m.52s.
Vermont iPP = +18m.38s., PSPS = +34m.33s.
Toronto e = +34m.36s. and +46m.12s.?
Ottawa e = +34m.48s. and +46m.12s.?
Tucson iPP = +19m.49s., i = +22m.15s. and +29m.0s., iPSPS = +34m.57s., i = +35m.7s.
Shawinigan Falls e = +35m.16s.
Seven Falls e = +20m.47s., +34m.42s., and +45m.24s.
Ksara ePKP = +18m.15s., PS = +29m.9s., PPS = +31m.17s.
Jersey ePPS = +31m.24s.
Triest ePPP = +25m.4s.
Zurich e = +19m.37s.
Strasbourg eSKP = +21m.12s., ePPPZ = +21m.57s., eZ = +23m.58s., ePSZ = +29m.24s., ePPSZ = +30m.12s.
Istanbul SS = +34m.44s.
Belgrade eZ = +19m.37s., iNE = +32m.38s.
Kew iN = +33m.4s., iE = +40m.42s.
Oxford i = +29m.51s.
Uccle i = +27m.55s.
Bombay i = +20m.10s., e = +22m.41s., iPS = +29m.27s., iPPS = +30m.48s., i = +31m.12s., iSS = +36m.7s., eG? = +45m.42s.
Kecskemet iZ = +19m.1s., eZ = +21m.53s. and +24m.48s., eSZ? = +28m.24s.
Budapest eE = +20m.4s., e?N = +29m.45s.
Ogyalla eE = +20m.2s.
Jena eE = +37m.0s.
Hyderabad PPS? = +30m.49s., ?N = +35m.52s.
Berkeley eE = +20m.12s.
Aberdeen i = +52m.27s.
Ivigtut +27m.54s., PS = +31m.7s.
Ukiah ePPP = +22m.49s., eS = +27m.48s., ePS = +30m.12s., eSS = +36m.36s., eSSS = +41m.1s.
Bozeman eSSS = +42m.10s.
Copenhagen eE = +21m.30s., eN = +22m.0s., e = +24m.6s., eE = +26m.32s., eN = +26m.48s., eEZ = +27m.31s., e = +30m.36s. and +31m.36s.
Butte SS = +37m.35s.
Baku iPP = +20m.42s., SS = +37m.18s., SSS = +43m.18s.

Continued on next page.

Honolulu iPKS = +22m.18s., iPSPS = +38m.25s.
Saskatoon e = +50m.12s.?
Agra SKPE = +20m.44s., PPPE = +22m.7s., SKS?E = +24m.54s., iSE = +27m.38s., iPPSE = +30m.51s.
Calcutta iN = +22m.5s., iPPPN = +24m.37s., eN = +29m.7s. and +29m.59s., ePSN = +31m.32s., ePPSN = +32m.55s., iSSN = +38m.10s., iSSSN = +42m.45s.
Victoria e = +22m.40s. and +39m.0s.
Moscow PKS = +22m.31s., PPP = +24m.16s., PS = +31m.35s., SS = +38m.54s., SSS = +43m.18s.
Pulkovo SKKS = +28m.13s., PS = +32m.8s., PPS = +33m.33s.
Scoresby Sund +22m.41s., +23m.0s., and +36m.24s.
Manila iEN = +22m.48s.
Tashkent PPP = +21m.42s.
Hong Kong ? = +22m.16s., +22m.59s., +34m.15s., and +40m.52s.
Sverdlovsk SS = +35m.24s., SSS = +40m.36s.
Sitka iPKS = +23m.3s., iPSPS = +41m.57s., i = +46m.46s.
College eSKKS = +29m.34s., eSKSP = +33m.37s., SS = +43m.3s.
Yakusima i = +21m.13s.
Osaka i = +20m.38s.
Gihu i = +24m.2s. and +31m.25s
Mizusawa ePE = +20m.10s., eSE = +24m.20s.
Long waves were also recorded at Theodosia, Graz, Edinburgh, Rathfarnham Castle, and Oaxaca.

Jan. 24d. 13h. 2m. 30s. Epicentre 33°·7N. 135°·2E. (as on 1938 Jan. 11d.).

Moderate strength at Siomisaki, Wakayama, Tokusima, and slight at Tu, Osaka, and Okayama.

Epicentre 33°·8N. 135°·1E.

Macroseismic radius 200-300kms. Shallow.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1938, Tokyo 1940, pp. 23-24. Macroseismic chart p. 23.

$A = -\cdot5916$, $B = +\cdot5874$, $C = +\cdot5523$; $\delta = +6$; $h = +1$;

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Siomisaki	0·5	118	0 12$_a$	− 2	0 20	− 3	—	—	—
Wakayama	0·5	357	0 14k	0	0 21	− 2	—	—	—
Tokusima	0·6	306	0 15$_a$	0	0 25	− 1	—	—	—
Sumoto	0·7	338	0 16	− 1	0 26	S*	—	—	—
Muroto	0·9	242	0 20$_a$	0	0 33	− 1	—	—	—
Yagi	0·9	31	0 19k	− 1	0 30	− 4	—	—	—
Kobe	1·0	359	0 19k	− 2	0 32	− 4	—	—	—
Osaka B	1·0	16	0 19	− 2	0 32	− 4	—	—	—
Tadotu	1·3	296	0 24k	− 1	0 38	− 6	—	—	—
Kyoto	1·4	18	0 26	− 1	0 42	− 4	—	—	—
Koti	1·4	265	i 0 27$_a$	0	0 41	− 5	—	—	—
Okayama	1·4	313	0 29$_a$	+ 2	0 49	+ 3	—	—	—
Kameyama	1·5	42	0 27	− 1	0 44	− 5	—	—	—
Ibukisan	1·6	30	0 44	+14	1 0	S$_g$	—	—	—
Hikone	1·8	29	0 29	− 3	0 49	− 7	—	—	—
Miyadu	1·8	0	0 32$_a$	0	0 53	− 3	—	—	—
Toyooka	1·9	350	0 33	− 1	0 55	− 4	—	—	—
Gihu	2·1	37	0 36k	− 1	1 0	− 4	—	—	—
Hamamatu	2·1	64	0 42$_a$	P$_g$	1 10	S$_g$	—	—	—
Nagoya	2·1	45	i 0 35k	− 2	1 3	− 1	—	—	—
Simidu	2·1	244	0 34	− 3	0 58	− 6	—	—	—
Sakai	2·4	319	0 43	+ 2	1 11	− 1	—	—	—
Hukui	2·5	20	0 38	− 5	—	—	—	—	—
Hamada	2·8	295	0 55	P$_g$	1 43	P$_g$	—	—	—
Ooita	3·0	261	0 51k	+ 1	—	—	—	—	—
Numadu	3·1	65	1 9	P$_g$	1 49	S$_g$	—	—	—
Hunatu	3·4	58	0 56	+ 1	1 46	S*	—	—	—
Matumoto	3·4	37	1 8	P$_g$	—	—	—	—	—
Misima	3·4	64	0 52	− 3	1 48	S*	—	—	—
Kohu	3·6	53	0 58	0	1 44	+ 2	—	—	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyazaki	3·6	242	0 58	0	1 39	− 3	—	—	—
Izuka	3·7	270	1 0	0	1 40	− 5	—	—	—
Oiwake	3·8	46	1 15	P_g	1 55	S*	—	—	—
Hatidyozima	3·9	97	0 59	− 3	1 40	−10	—	—	—
Kumamoto	3·9	257	1 3	+ 1	—	—	—	—	—
Wazima	3·9	18	1 14	P*	—	—	—	—	—
Hukuoka B	4·0	270	1 3	− 1	2 18	S_g	—	—	—
Mera	4·0	73	1 23	P_g	—	—	—	—	—
Nagano	4·0	38	1 11	P*	1 58	+ 6	—	—	—
Maebasi	4·1	49	1 8	+ 3	2 3	S*	—	—	—
Yokohama	4·1	63	1 18	+13	2 14	S_g	—	—	—
Kumagaya	4·2	54	1 12	P*	2 14	S_g	—	—	—
Tokyo, Cent. Met. Obs.	4·2	61	1 19	P*	2 13	S*	—	—	—
Nagasaki	4·5	260	1 5	− 6	1 42	−23	—	—	—
Kakioka	4·8	57	1 21	P*	—	—	—	—	—
Tukubasan	4·8	55	1 25	P*	2 18	S*	—	—	—
Mito	5·0	57	1 36	P_g	—	—	—	—	—
Yakusima	5·1	232	1 21	+ 1	2 14	− 6	—	—	—
Husan	5·2	285	e 1 52	P_g	e 2 54	S_g	—	—	—

Jan. 24d. Readings also at 4h. (Tacubaya and Tucson), 5h. (Harvard, Weston, Williamstown, Shawinigan Falls, near Ottawa and near Taikyu), 6h. (Berkeley and near Mizusawa), 7h. (near Hukuoka B), 10h. (La Paz, Samarkand, and near Nagoya), 11h. (La Paz and Phu-Lien), 12h. (Andijan, Fresno, and near Medan), 15h. (near Balboa Heights and near Medan), 18h. (Amboina, Oaxaca, and Tacubaya), 19h. (Oaxaca, Puebla, Tacubaya, Tucson, Nagoya, and near Fort de France), 20h. (Oaxaca, Puebla, Tacubaya, Tucson, Berkeley, near Branner, and Lick), 21h. (Huancayo, near La Paz, and near Wellington), 22h. (Santiago and near Mizusawa).

Jan. 25d. 0h. Shock recorded in Eastern Europe.
Istanbul P_g =10m.56s., S_g =11m.5s.
Bucharest ePEN =11m.47s., P* =11m.52s., iP_gN =12m.4s., eE =12m.10s., iSEN = 12m.24s., S_gEN =12m.41s.
Yalta P =12m.1s.
Sebastopol P =12m.3s.
Simferopol P =12m.5s., i =12m.14s.
Belgrade iPz =12m.11s.a, iZ =12m.18s. and 12m.32s., iSNE =14m.9s., iNE =14m.14s., 14m.28s., and 14m.50s.
Theodosia P =12m.22s.
Ksara eP =12m.57s., e =14m.53s., eSS =16m.2s.
Kecskemet ePZ =13m.20s., eZ =14m.10s., iZ =15m.40s., eSZ? =25m.32s.
Triest eP =14m.8s.
Budapest ePN =14m.27s., ePE =14m.42s., iN =15m.20s. and 16m.16s., iE =16m.29s., eLN =16m.40s.
Moncalieri PS =15m.33s., L =19m.0s.
Padova eS =16m.0s.
Cheb e =18m.
Long waves were also recorded from Baku, Tiflis, Sverdlovsk, and Tashkent.

Jan. 25d. 16h. 53m. 41s. Epicentre 29°·3S. 178°·2W.

A = −·8730, B = −·0274, C = −·4869; δ = −5; h = +2;
D = −·031, E = +·1·000; G = +·487, H = +·015, K = −·873.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Arapuni	10·1	208	—	—	i 4 37	+12	—	—	—
New Plymouth	11·7	211	e 3 18	PPP	5 14	SS	i 5 22	SSS	5·9
Wellington	13·3	203	3 4	− 9	5 7	−35	9 29	P_cP	6·3
Christchurch	16·0	207	i 3 52a	+ 4	6 14	−32	—	—	—
Apia	16·5	23	e 3 59	+ 5	—	—	—	—	e 7·8
Brisbane	25·4	267	i 5 31	0	e 10 19	+23	—	—	11·3
Riverview	26·4	251	i 5 39k	− 1	e 9 12	−60	—	—	e 12·6
Sydney	26·4	251	i 5 43	+ 3	e 9 7	−65	—	—	e 13·3
Melbourne	31·7	244	i 6 22	− 5	11 23	−14	i 7 52	PPP	14·3
Honolulu	54·0	24	—	—	e 17 9	+ 6	—	—	e 23·3

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Perth		56·0	249	i 8 54	−49	—	—	i 24 21	?	i 30·0
Amboina	E.	56·8	286	9 55	+ 7	—	—	—	—	—
Manila		73·1	298	e 11 34	0	21 19	+18	—	—	—
Batavia		73·9	272	e 11 29	−10	e 21 8	− 2	i 16 12	PPP	37·3
Hong Kong		82·9	300	12 27	− 1	23 7	+21	15 24	PP	—
Zi-ka-wei	N.	83·2	311	e 15 57	PP	—	—	—	—	—
La Jolla		84·6	48	e 12 28	− 8	—	—	—	—	—
Pasadena		84·8	47	e 12 34	− 3	i 23 1	−4	—	—	e 38·6
Berkeley		84·9	42	e 12 36	− 2	e 23 7	+ 1	—	—	e 38·4
Lick	N.	84·9	42	e 12 41	+ 3	—	—	—	—	—
Mount Wilson	Z.	85·0	47	i 12 35	− 3	—	—	i 15 52	PP	—
Ukiah		85·2	40	—	—	e 23 4	[+ 2]	e 23 29	PS	e 34·5
Riverside		85·3	47	i 12 36	− 4	—	—	—	—	—
Medan		85·7	276	e 12 15	−27	—	—	—	—	42·3
Tinemaha		86·7	44	i 12 43	− 4	—	—	i 16 19	PP	—
Tucson		88·5	51	12 54	− 2	e 23 19	[− 5]	24 55	PPS	36·7
Huancayo		95·1	107	e 13 29	+ 3	i 23 59	[− 2]	17 36	PP	43·8
College		96·8	13	—	—	e 24 59	+ 5	e 31 30	SS	e 39·8
La Paz		98·6	115	e 14 4	+22	i 24 15	[− 5]	i 26 25	PS	47·0
Calcutta	N.	103·6	288	—	—	e 23 14	?	—	—	—
Colombo	E.	103·7	270	14 40	+30	—	—	—	—	—
Agra	E.	114·0	289	—	—	e 25 29	[+ 1]	i 36 4	SSP	—
Bombay		115·2	278	e 19 46	PP	e 29 27	PS	e 36 16	SSP	—
San Juan		117·7	84	e 14 48	P	e 25 33	[− 9]	e 29 30	PS	e 50·2
Vermont		120·1	54	e 19 4	[+11]	—	—	e 29 59	PS	e 60·5
Tashkent		124·9	302	e 18 44	[−18]	e 27 43	{− 3}	e 32 19	PPS	e 65·3
Sverdlovsk		130·9	322	i 19 13	[− 1]	—	—	—	—	57·3
Baku		139·4	299	e 19 33	[+ 4]	e 28 47	{−30}	e 32 39	PS	73·5
Grozny		142·3	304	e 19 53	[+18]	—	—	—	—	—
Tiflis		143·2	302	i 19 31a	[− 5]	e 25 55	[−49]	e 23 11	PP	e 65·7
Moscow		143·3	326	e 19 32	[− 4]	—	—	e 22 56	PP	74·8
Pulkovo		143·9	336	e 19 31	[− 6]	—	—	e 22 59	PP	e 74·8
Piatigorsk		144·2	306	e 19 40	[+ 2]	—	—	—	—	—
Theodosia		149·2	310	e 19 49	[+ 3]	—	—	—	—	—
Simferopol		150·1	311	e 19 52	[+ 5]	—	—	—	—	—
Yalta		150·2	309	i 19 54	[+ 7]	—	—	—	—	—
Ksara		150·7	287	i 19 53a	[+ 5]	e 42 53	SS	e 23 33	PP	73·3
Copenhagen		152·6	347	(19 49)	[− 2]	—	—	—	—	72·3
Potsdam		155·5	345	e 19 43	[−12]	—	—	—	—	e 78·3
Cheb		157·7	343	e 34 44	PS	e 43 54	SS	—	—	e 76·3
Stuttgart		159·7	346	e 20 33	[+33]	—	—	e 24 40	PP	e 82·3
Strasbourg		160·2	348	—	—	—	—	e 24 47	PP	e 77·3
Paris		160·5	359	—	—	—	—	e 24 19?	PP	88·3
Zurich		161·2	346	e 20 2	[0]	—	—	—	—	—
Chur		161·5	345	e 19 58	[− 4]	—	—	—	—	—
Neuchatel		161·9	347	e 20 0	[− 2]	—	—	—	—	—
Moncalieri		163·6	345	23 38	?	34 32	?	—	—	48·8
Toledo		168·4	22	e 20 7	[− 1]	—	—	e 25 5	PP	e 88·8
San Fernando		170·2	41	—	—	25 51	PP	e 46 33	SS	82·3
Malaga		170·9	34	e 21 47	?	—	—	e 25 39	PP	—

Additional readings :—
Wellington i = +11m.17s.
Christchurch iN = +7m.4s., iE = +7m.14s., i = +8m.0s.
Riverview eN = +5m.47s.
Perth i = +5m.49s.
Amboina P?N = +4m.26s.
Batavia iE = +21m.19s.
Hong Kong SS = +28m.36s.
Berkeley eN = +12m.44s., eZ = +13m.5s., +13m.8s., and +22m.44s., eE = +35m.10s., eZ = +46m.44s.
Lick eE = +12m.44s.
Ukiah eS = +23m.15s., ePPS = +24m.14s., eSS = +28m.52s.
Tucson S = +23m.46s.
Huancayo P = +13m.36s., i = +23m.58s., iS = +24m.35s., ePS = +25m.42s., i = +26m.1s., eSS = +30m.55s., iSS = +31m.7s.
College eSSS = +35m.13s.

Continued on next page.

La Paz ePZ = +18m.14s.
Agra iSKS?E = +29m.15s.
Vermont ePSPS = +36m.59s.
Tashkent e = +17m.28s., i = +17m.51s. and +36m.19s.
Sverdlovsk i = +22m.38s., e = +33m.37s., +34m.39s., and +40m.23s.
Baku e = +33m.39s., +35m.1s., +42m.23s., and +50m.13s.
Tiflis eEZ = +21m.1s., eN = +21m.8s., eN = +31m.48s., eE = +33m.46s., eEZ = +35m.41s.
Moscow e = +19m.43s.
Pulkovo e = +19m.56s., +23m.45s., and +25m.24s.
Ksara ePPS = +36m.43s.
Copenhagen = +18m.4s.
Stuttgart e = +34m.19s.
Toledo ePKP$_2$ = +21m.21s., ePPP = +29m.19s.
Long waves were also recorded at Chatham Ils., De Bilt, Budapest, Upsala, Philadelphia, Bozeman, East Machias, Tananarive, Göttingen, Kew, Fordham, Granada, Williamstown, Uccle, Hyderabad, Harvard, Prague, Bidston, Triest, Stonyhurst, Hamburg, and Rio de Janeiro.

Jan. 25d. Readings also at 0h. (near Copiapo and near Nagoya), 3h. (Cheb), 4h. (near Mizusawa), 8h. (Medan, Almata, near Andijan, Frunse, and Tchimkent), 10h. (Samarkand), 11h. (Columbia), 12h. (La Paz, La Plata, Fort de France, and Fresno), 13h. (Moncalieri), 15h. (Tacubaya), 16h. (Bombay, Calcutta, Helwan, Andijan, Frunse, Tchimkent, Tashkent, Huancayo, La Paz, Rio de Janeiro, near Samarkand, and near Wellington), 17h. and 19h. (La Plata), 21h. (Tiflis and near Manila), 23h. (Tiflis, Frunse, near Andijan, Samarkand, and Tchimkent).

Jan. 26d. 3h. 40m. 2s. Epicentre 33°·2N. 46°·4E.

Felt force III at Baghdad (Iraq).

Epicentre 33°·2N. 46°·4E., given by Strasbourg.
33°·5N. 42°·0E., given by U.R.S.S.

See "Annales de l'Institut de Physique du Globe" de Strasbourg, 1938, Tome III, 2e partie, Seismologie, Mende, 1941, p. 4.

$A = +\cdot5782$, $B = +\cdot6072$, $C = +\cdot5450$; $\delta = +3$; $h = +1$;
$D = +\cdot724$, $E = -\cdot690$; $G = +\cdot376$, $H = +\cdot395$, $K = -\cdot839$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Erevan		7·1	350	e 1 50	+ 2	e 3 46	SSS	—	—	—
Tiflis		8·6	354	i 2 7a	− 2	i 3 44	− 4	i 2 15	?	3·9
Ksara		8·8	277	e 2 17	+ 6	e 3 18	−35	—	—	—
Grozny		10·1	358	e 2 32	+ 4	i 5 22	L	—	—	(5·4)
Piatigorsk		11·1	349	i 2 44	+ 1	e 5 58	L	—	—	(6·0)
Sotchi		11·6	336	e 2 48	− 2	—	—	—	—	—
Helwan		13·3	260	e 3 14	+ 1	7 10	L	3 47	PPP	(7·2)
Theodosia		14·5	328	3 28	0	e 6 6	− 5	i 3 37	PP	—
Yalta		14·7	324	e 3 23	− 8	6 15	− 1	i 3 35	PP	—
Sebastopol		15·2	323	i 3 32	− 6	i 6 24	− 4	—	—	—
Simferopol		15·2	322	3 34	− 4	e 6 29	+ 1	—	—	—
Istanbul		15·9	305	(3 36)	−11	5 30	−74	—	—	—
Tashkent		19·9	59	i 5 26	PPP	—	—	—	—	17·2
Tchimkent		20·1	56	e 4 47	+ 9	—	—	—	—	—
Sofia	N.	20·5	305	e 4 43	+ 1	e 8 23	− 4	—	—	e 10·9
Andijan		22·0	64	e 6 4	PPP	10 51	SSS	—	—	—
Belgrade		23·2	308	e 5 7	− 2	e 9 11	− 7	e 12 39	?	e 14·4
Moscow		23·4	348	e 5 9	− 2	e 9 13	− 8	—	—	10·5
Frunse		24·1	59	e 6 25	?	—	—	—	—	—
Kecskemet	7.	24·5	314	i 4 11	−71	8 18	?	—	—	—
Budapest		25·1	314	i 5 25	− 3	9 53	+ 2	i 6 30	PP	—
Sverdlovsk		25·6	19	i 5 34	+ 2	10 8	+ 9	—	—	—
Almata		25·9	58	6 55	PPP	10 23	+19	—	—	e 14·8
Bombay		27·6	115	e 5 58	+ 7	e 10 45	+13	—	—	—
Triest		27·8	307	5 56	+ 3	i 10 31	− 4	—	—	—

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.	27·9	94	e 5 57	+ 3	10 48	+11	i 11 11	SS	—
Pulkovo		28·7	344	e 6 2	+ 1	e 10 44	− 6	—	—	15·5
Prague		28·9	317	—	—	e 11 16	+23	e 13 10	?	e 16·0
Padova		29·1	306	5 28	−36	—	—	—	—	—
Chur		31·0	308	e 6 18	− 3	—	—	—	—	—
Stuttgart		31·7	311	e 6 25	− 2	—	—	—	—	e 19·5
Zurich		31·8	308	e 6 24a	− 4	e 11 29	− 9	—	—	—
Basle		32·5	308	e 6 31	− 3	e 11 38	−11	—	—	—
Strasbourg		32·6	311	e 6 31	− 4	—	—	—	—	e 18.0
Neuchatel		32·8	308	e 6 34	− 3	—	—	—	—	—
De Bilt		35·1	317	—	—	e 13 58?	?	—	—	e 19·0
Uccle		35·3	313	—	—	e 12 58?	+25	—	—	e 20·0
Calcutta		38·3	95	—	—	e 16 51	SS	—	—	—
Kew		38·3	314	—	—	e 14 58?	?	—	—	—
Colombo	E.	40·6	123	e 5 28	?	—	—	—	—	—
Granada		40·7	291	7 41	− 3	e 14 1	+ 6	—	—	—
Malaga		41·4	290	e 7 42	− 8	e 13 42	−23	—	—	—
Mount Wilson		111·4	345	e 19 11	PP	—	—	—	—	—
Pasadena		111·5	345	e 19 19	PP	(e 33 10)	?	—	—	e 33·2
Tucson		111·5	339	e 19 15	PP	e 34 46	SS	28 26	PS	e 45·1
Brisbane	N.	117·6	105	—	—	—	—	e 31 40	PPS	—
Riverview	N.	118·7	113	e 19 40	PP	(e 27 16)	{+10}	—	—	e 27·3

Additional readings :—
Ksara i = +4m.47s.
Helwan i = +5m.46s., +6m.22s., and +6m.46s.
Istanbul P = +2m.23s. ; reading entered as P is given as PP.
Tashkent i = +6m.5s., +10m.39s., and +14m.27s.
Kecskemet eZ = +4m.29s., +5m.0s., +5m.9s., and +10m.5s.
Budapest iN = +9m.45s., +11m.12s., and +11m.27s.
Bombay eE = +16m.43s.
Calcutta iN? = +19m.34s., iN = +20m.27s. and +21m.57s.
Tucson eSSS = +39m.8s.
Long waves were also recorded at Hyderabad, Stonyhurst, Göttingen, Fordham, Potsdam, Hamburg, Phu-Lien, Hong Kong, Baku, Upsala, Copenhagen, Bozeman, Ukiah, Paris, and Samarkand.

Jan. 26d. 5h. 13m. 20s. Epicentre 1°·5N. 126°·0E.

A = −·5876, B = +·8088, C = +·0260 ; δ = +11 ; h = +7 ;
D = +·809, E = +·588 ; G = −·015, H = +·021, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		5·6	157	1 30	+ 3	i 2 27	− 6	—	—	—
Manila		13·9	339	3 34	+13	6 32	SS	—	—	8·1
Batavia	E.	20·6	249	e 5 12	PPP	—	—	—	—	—
Hong Kong		23·7	332	5 10	− 4	(8 59)	−28	—	—	9·0
Phu-Lien		26·9	317	5 40?	− 5	—	—	—	—	—
Medan	E.	27·4	276	5 48	− 1	—	—	—	—	—
Calcutta	N.	42·1	303	—	—	e 13 46	−30	—	—	—
Andijan		62·1	316	10 25	0	e 18 47	− 2	—	—	—
Sverdlovsk		75·5	330	i 11 46	− 2	—	—	—	—	36·7
Ksara		89·3	303	e 12 57	− 2	—	—	—	—	—
Strasbourg		107·1	322	11 40?	?	—	—	—	—	—
Pasadena	Z.	110·3	53	e 18 35	[+ 2]	—	—	—	—	—
Mount Wilson	Z.	110·4	53	i 18 36	[+ 2]	—	—	—	—	—
Tacubaya	E.	131·0	63	18 41	[−33]	—	—	—	—	—

Additional readings :—
Hong Kong S? = +7m.51s.
Medan iE = +8m.4s.
Ksara e = +11m.8s.
Long waves were also recorded at Tashkent.

Jan. 26d. 10h. 48m. 10s. Epicentre 36°·3N. 71°·0E. (as on 1937 Nov. 16d.).

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

A depth of focus 0·025 has been assumed.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		4·6	14	1 8	− 2	i 2 1	− 3	1 16	P_g	—
Samarkand		4·6	319	1 7	− 3	i 1 55	− 9	—	—	—
Tashkent		5·2	347	i 0 13	−65	—	—	—	—	i 1·2
Tchimkent		6·1	351	1 30	+ 1	2 33	− 6	—	—	—
Frunse		7·1	22	1 42	0	3 2	0	i 2 52	S_g	—
Almata		8·3	32	2 0	+ 2	3 33	+ 3	—	—	—
Dehra Dun	N.	8·4	133	e 2 46?	PPP	i 3 52	+19	—	—	—
Agra		10·9	145	i 2 32	0	i 4 25	− 6	—	—	—
Semipalatinsk		15·6	22	3 30	− 1	6 18	0	—	—	—
Baku		17·0	290	—	—	e 6 54	+ 5	—	—	—
Bombay		17·4	174	i 3 56	+ 4	i 7 8	+10	e 4 57	sP	—
Hyderabad		19·9	159	4 20	+ 2	8 2	+15	—	—	—
Calcutta	N.	20·4	127	e 5 55	?	i 8 5	+ 9	i 9 29	sS	—
Grozny		20·6	299	e 4 26	+ 1	e 8 3	+ 4	—	—	—
Sverdlovsk		21·7	345	i 4 34	− 2	e 8 19	0	—	—	—
Platigorsk		22·6	300	e 4 45	0	i 8 47	+12	—	—	—
Colombo	E.	30·4	163	—	—	e 11 50?	+68	—	—	—
Mount Wilson	Z.	109·3	7	e 18 18	PP	—	—	—	—	—
Pasadena	Z.	109·4	7	e 18 37	PP	—	—	—	—	—
Riverside	Z.	109·6	7	e 18 22	PP	—	—	—	—	—

Other additional readings :—
Andijan i = +1m.12s., i = +1m.42s., iS_gS_g = +2m.10s.
Frunse i = +1m.49s., +2m.29s., and +2m.50s.
Dehra Dun eN = +3m.28s.?
Hyderabad ?N = +5m.24s., +10m.27s., and +10m.29s.
Calcutta eN = +8m.55s.

Jan. 26d. Readings also at 3h. (Moncalieri, Wellington, Christchurch, La Paz, New Plymouth, Calcutta, Kodaikanal, San Juan, Bombay, Huancayo, Cape Town, Rio de Janeiro, Perth, La Plata, and Phu-Lien), 4h. (Sverdlovsk, Agra, and Tashkent), 5h. (Mount Wilson, Pasadena, and Wellington), 6h. (Wellington (2), New Plymouth, and Christchurch), 11h. (Amboina and Samarkand), 18h. (Bombay, Samarkand, Calcutta, Agra, Almata, Frunse, Tchimkent, and Andijan), 22h. (Malaga and Santiago), 23h. (La Paz).

Jan. 27d. 6h. 51m. 8s. Epicentre 36°·3N. 71°·0E. (as on 1938 Jan. 26d.).

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

Depth of focus 0·025.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		4·6	14	e 1 11	+ 1	e 2 8	+ 4	—	—	—
Samarkand		4·6	319	1 0	−10	1 42	−22	—	—	—
Tashkent		5·2	347	i 1 10	− 8	e 1 55	−23	—	—	2·1
Tchimkent		6·1	351	1 24	− 5	i 2 28	−11	—	—	—
Frunse		7·1	22	e 1 46	+ 4	—	—	e 3 9	S*	—
Almata		8·3	32	2 5	+ 7	—	—	—	—	—
Agra	E.	10·9	145	i 2 35	+ 3	i 4 30	− 1	3 34	sP	—
Semipalatinsk		15·6	22	e 3 34	+ 3	—	—	e 4 59	?	—
Bombay	N.	17·4	174	i 3 56	+ 4	i 7 10	+12	—	—	—
Calcutta	N.	20·4	127	—	—	i 8 13	+17	e 6 20	?	i 9·4
Grozny		20·6	299	e 4 24	− 1	—	—	—	—	—
Sverdlovsk		21·7	345	e 4 37	+ 1	8 30	+11	—	—	11·4

Additional readings :—
Samarkand i = +1m.14s. and +1m,33s,
Semipalatinsk e = +3m.11s.
Calcutta eN = +8m,54s,

Jan. 27d. Readings also at 2h. (Mount Wilson and Pasadena), 4h. (La Paz), 6h. (near Hukuoka B and near Samarkand), 7h. (Wellington), 9h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Phu-Lien, Calcutta, Kodaikanal, Hong Kong, Andijan, Batavia, Medan, Malabar, and near Wellington), 10h. (Tchimkent and near Nagoya), 11h. (Amboina and near Honolulu), 13h. (near Sofia), 16h. (Ksara), 17h. (Frunse), 22h. (Huancayo), 23h. (near Belgrade).

Jan. 28d. Readings at 1h. (Harvard), 4h. (Adelaide, Brisbane, Melbourne, Perth, Riverview, Sydney, Manila, Medan, Hong Kong, Vladivostok, Sverdlovsk, Tashkent, and Ksara), 5h. (near Wellington, near Keizyo, and Zinsen), 6h. (Mount Wilson and Samarkand), 9h. (Samarkand), 12h. (Samarkand and Wellington), 15h. (Harvard (2)), 16h. (Samarkand), 22h. (Graz).

Jan. 29d. 4h. 13m. 8s. Epicentre 27°·5N. 87°·0E.

$A = +\cdot0465$, $B = +\cdot8871$, $C = +\cdot4593$; $\delta = +7$; $h = +3$;
$D = +\cdot999$, $E = -\cdot052$; $G = +\cdot024$, $H = +\cdot459$, $K = -\cdot888$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	5·1	166	i 1 21	+ 1	i 2 21	+ 1	1 41	P_g	—
Agra		8·0	270	i 1 59	− 1	3 35	+ 2	2 27	P*	—
Hyderabad		12·7	220	3 4	− 1	5 18	−10	—	—	6·3
Bombay		15·6	240	i 3 41	− 2	e 6 37	0	4 22	PP	—
Almata		17·7	335	4 10	0	7 34	+ 8	—	—	—
Andijan		17·9	321	4 9	− 3	7 32	+ 2	—	—	e 10·8
Frunse		18·4	330	—	—	e 7 49	+ 8	—	—	—
Phu-Lien		19·1	106	4 24	− 3	e 7 57	0	—	—	—
Kodaikanal	E.	19·4	210	i 4 34	+ 4	7 57	− 7	8 19	SS	9·1
Tashkent		20·0	318	i 4 34	− 3	i 8 18	+ 1	—	—	11·1
Tchimkent		20·5	321	e 4 40	− 2	—	—	—	—	—
Samarkand		20·6	310	4 39	− 4	8 19	−10	—	—	—
Colombo	E.	21·6	199	4 56	+ 2	9 9	+20	—	—	—
Semipalatinsk		23·5	350	5 11	− 1	e 9 22	− 1	—	—	—
Hong Kong		25·2	96	5 26	− 3	9 45	− 7	—	—	—
Medan		26·3	153	5 40	+ 1	—	—	—	—	—
Zi-ka-wei	E.	30·2	74	e 6 15	+ 1	—	—	—	—	—
Baku		33·1	303	—	—	i 12 6	+ 7	—	—	e 20·2
Manila		34·1	105	e 6 48	0	12 47	+33	—	—	17·4
Sverdlovsk		34·8	335	e 6 54	0	12 23	− 2	—	—	17·9
Grozny		36·7	306	e 7 17	+ 7	—	—	—	—	—
Batavia		38·6	147	e 8 59	PP	—	—	—	—	—
Vladivostok		39·3	55	i 7 30	− 2	e 13 25	− 9	—	—	e 21·0
Ksara		44·0	290	i 8 14k	+ 3	i 14 53	+10	—	—	—
Moscow		45·1	322	e 8 19	− 1	e 14 49	−10	—	—	e 22·4
Helwan		48·5	286	8 46	0	15 40	− 8	e 16 2	PS	—
Pulkovo		50·0	327	e 9 1	+ 3	16 4	− 5	—	—	e 25·4
Chur		62·2	312	e 10 22	− 4	—	—	—	—	—
Zurich		62·7	311	e 10 58	+29	—	—	—	—	—
Huancayo		157·4	309	e 20 1	[+ 3]	—	—	—	—	e 80·5

Additional readings :—
Calcutta iP*N = +1m.31s., iS*N = +2m.29s., iS_gN = +3m.40s.
Agra P_g = +2m.47s., S*E = +4m.1s., S_g = +4m.26s.
Bombay i = +3m.59s. and +4m.7s., iS = +6m.53s., e = +7m.14s.
Hong Kong S? = +9m.57s.
Medan eE = +5m.46s.
Ksara i = +8m.34s., e = +15m.29s.
Long waves were also recorded at Copenhagen, Cheb, Strasbourg, and Besançon.

Jan. 29d. 18h. 35m. 51s. Epicentre 36°·0N. 139°·4.E. (as on 1937 April 14d.).

Seismometrical report of the Imperial University, Tokyo, gives Epicentre 35°·91N. 139°·33E.

$A = -\cdot6157$, $B = +\cdot5277$, $C = +\cdot5852$; $\delta = +1$; $h = 0$.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	s.	s.	s.	s.
Titibu	0·3	266	13	+ 2	22	+ 4
Tokyo Imp. Univ.	0·4	135	13	0	23	+ 2
Komaba	0·4	147	12	− 1	21	0
Mitaka	0·4	160	13	0	22	+ 1
Tukubasan	0·6	69	13	− 2	22	S*
Koyama	0·7	208	13	− 4	24	− 4
Kiyosumi	1·1	143	13	− 9	29	−10

Jan. 29d. Readings also at 0h. (Amboina), 3h. (Kodaikanal and Ksara), 5h. (Uccle), 10h. (Christchurch (2), Rio de Janeiro and Huancayo), 11h. (Brisbane, Christchurch, and Wellington), 13h. (Samarkand, Frunse, and Andijan), 14h. and 15h. (near Nagoya), 16h. (Harvard (2)), 18h. (near Nagoya and near Wellington), 20h. (near Hukuoka B and near Tiflis (4)), 22h. (Huancayo).

Jan. 30d. 17h. South Pacific Ocean:—
Apia P = 11m.54s., i = 13m.0s.?, S = 13m.11s.?
Wellington P = 15m.2s., PP = 15m.42s., PPP = 16m.25s., i = 17m.22s., P_cP? = 18m.22s., S = 20m.7s., SS = 21m.24s., L_q = 23m.35s., S_cS = 27m.0s.
Christchurch eP = 15m.27s.a, PP = 16m.22s., P_cPNZ = 17m.27s., S = 20m.47s., P_cSEZ = 21m.46s., SS = 22m.17s., L_q = 22m.32s., L_r = 24m.45s.
Sydney e = 16m.8s. and 22m.6s.
Brisbane ePE = 17m.18s., eSEN = 21m.30s.
Melbourne i = 17m.55s., 20m.11s., 23m.50s., L = 29m.15s.
Riverview e?E = 20m.18s., iE = 22m.0s., iSN = 27m.21s., eLN = 31m.42s.
Manila eP = 21m.33s., SN = 31m.0s.
Batavia ePEZ = 22m.10s.
Riverside iPZ = 22m.13s.
Pasadena iPZ = 22m.14s.
Tinemaha iPZ = 22m.24s.
Tucson P = 22m.39s., eL = 48m.48s.
Sitka eP = 23m.35s., eS = 32m.56s., PS = 33m.46s., SSS = 41m.27s., eL = 44m.18s.
Ksara e = 30m.17s. and 47m.25s.
Jena eZ = 31m.0s., e = 40m.18s., 41m.44s., and 43m.36s.
Baku e = 31m.52s.
Kodaikanal eE = 36m.0s.
Perth i = 40m.9s., 43m.20s., and 45m.32s.
Long waves are also recorded at Uccle, Paris, and De Bilt.

Jan. 30d. 17h. 34m. 11s. Epicentre 40°·5N. 19°·0E.

Felt Force II at Lecce, Italy.

Epicentre Straits of Otranto, near 40°30′N. 19°00′E.

See "Annales de l'Institut de Physique du Globe" de Strasbourg, 1938, Tome III 2e Partie. Seismologie, Mende, 1941, p. 4.

$A = +\cdot7211$, $B = +\cdot2483$, $C = +\cdot6469$; $\delta = +12$; $h = -2$;
$D = +\cdot326$, $E = -\cdot946$; $G = +\cdot612$, $H = +\cdot211$, $K = -\cdot763$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia		3·9	55	e 0 55	− 7	i 2 13	S_g	—	—	—
Belgrade		4·5	13	e 1 17a	P*	2 19	S*	e 1 38	P_g	—
Kecskemet	z.	6·4	4	i 3 47	S	—	—	—	—	—
Triest		6·4	326	1 59	P*	i 3 18	S*	—	—	—
Florence		6·6	302	e 1 14	−27	i 3 49	S_g	—	—	—
Budapest		7·0	0	e 3 1	S	(e 3 1)	− 7	—	—	5·3
Padova		7·2	316	e 1 49	0	4 49	?	—	—	—
Ogyalla		7·3	356	—	—	3 55	S_g	—	—	—
Istanbul		7·7	81	3 8	S	(3 8)	−17	—	—	—
Chur		9·3	316	e 2 33	PPP	e 4 33	S_g	—	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Moncalieri	9·4	302	e 1 13	−65	—	—	—	—	—
Prague	10·1	344	—	—	i 5 17	SSS	—	—	—
Zurich	10·2	316	e 2 40	+ 9	—	—	—	—	—
Cheb	10·6	337	—	—	e 5 29	SSS	—	—	—
Stuttgart	10·8	324	e 4 56	SSS	—	—	—	—	—
Strasbourg	11·4	319	—	—	e 5 23	SSS	—	—	6·8
Tiflis	19·4	79	e 4 23	− 7	e 8 5	+ 1	—	—	e 42·8
Baku	23·5	80	—	—	e 9 17	− 6	—	—	—

Additional readings :—
Belgrade iZ = +1m.55s., eS = +2m.51s., i = +3m.7s.
Kecskemet eZ = +4m.0s., eSZ = +4m.55s., eP_cPZ = +10m.30s.
Budapest ePE = +3m.5s., iN = +3m.31s., iE = +4m.27s., iN = +4m.43s., iE = 4m.59s. iN = +5m.3s.
Ogyalla eN = +4m.49s.
Istanbul SN = +4m.41s.
Prague eS = +6m.28s.
Cheb e = +7m.13s.
Stuttgart eE = +6m.6s., eZ = +7m.8s., eEN = +7m.23s., e = +7m.33s.
Strasbourg eE = +6m.9s., +6m.34s., and +8m.4s.
Baku e = +13m.5s., +15m.29s., and +19m.55s.
Long waves were also recorded at De Bilt, Copenhagen, Uccle, Jena, Potsdam, Ksara, Harvard, Tashkent, Kew, and Sverdlovsk.

Jan. 30d. Readings also at 3h. (Amboina), 5h. (Samarkand (2), 6h. (Hukuoka B), 8h. (Andijan), 10h. (Hong Kong, Manila, and Samarkand (3)), 11h. (Mizusawa), 12h. (Kodaikanal), 13h. (Kodaikanal, Andijan, Samarkand, Grozny, Calcutta, Bombay, Agra, and Frunse), 14h. (La Paz and Huancayo), 19h. (Medan), 20h. (Santiago).

Jan. 31d. Readings at 2h. (near Tananarive), 3h. (Berkeley, Branner, San Francisco, Haiwee, Mount Wilson, Pasadena, Riverside, and Tinemaha), 6h. (near Berkeley), 8h. (Agra, Samarkand, Sverdlovsk, Andijan, Almata, and Tashkent), 9h. (Samarkand), 11h. (La Paz), 14h. (Nagoya), 15h. (Medan, Paitigorsk (2), and Phu-Lien), 18h. (near Hukuoka B and near Andijan), 21h. (near Santiago).

Feb. 1d. 18h. Epicentre in Indian Ocean. Probably deep focus.
Malabar iP = 53m.41s., iS = 54m.58s.
Batavia iPZ = 53m.54s., iSEN = 55m.17s.
Manila P = 55m.2s., S = 59m.4s.
Medan PEN = 55m.45s., eSE = 58m.32s.
Hong Kong P? = 58m.50s., S? = 61m.27s.
Nagoya e = 59m.52s.
Almata P = 61m.18s.
Frunse P = 61m.20s.
Andijan P = 61m.21s., e = 68m.46s.
Samarkand P = 61m.36s.
Tchimkent P = 61m.39s.
Grozny e = 63m.12s. and 72m.16s.
Tiflis ePZ = 63m.12s.
Simferopol e = 63m.54s.
Bombay e = 65m.59s. and 68m.39s.
Tinemaha ePKPZ = 70m.5s., eZ = 71m.54s.
Haiwee iPKPZ = 70m.7s.
Pasadena iPKPZ = 70m.7s.
Riverside iPKPZ = 70m.8s.
Little Rock iPKPEN = 70m.38s., eE = 70m.44s. and 71m.25s., eSE = 73m.13s., eLE = 74m.12s.
Fordham iP = 70m.39s.
Harvard iNZ = 70m.39s.
Weston iP = 70m.40s., iZ = 70m.49s.

Feb. 1d. 19h. 4m. 21s. Epicentre 5°·0S. 131°·5E.

Destructive in the Kei Islands, particularly at Tocal. Felt in the Malaccas, New Guinea near Merauke, and Australia near Port Darwin.

Epicentre 5°·0S. 131°·5E. given by Batavia.

Aardbevingen in der Oost Indischer Archipel. waargenammer gedurende het Jaar 1938. Natuurkundig Tijdschrift voor Nederlandsch-Indie, Afl. 1 van Deel XCX 40, p. 45-46.

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

Tables for a focus at the base of the superficial layers have been used.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina	3·6	292	0 56	+ 1	—	—	—	—	—
Manila	22·1	333	4 51	− 3	8 39	−11	—	—	—
Malabar	23·9	264	e 5 6	− 6	i 9 22	− 1	—	—	11·6
Batavia	24·6	267	5 16	− 2	i 9 40	+ 6	—	—	e 13·6
Kosyun	28·8	340	6 0	+ 3	11 7	+24	—	—	—
Isigakizima	30·0	348	6 11	+ 3	11 45	+43	—	—	17·1
Brisbane	30·3	139	i 6 3	− 7	—	—	—	—	—
Karenko	30·4	343	6 16	+ 5	11 19	+11	—	—	—
Adelaide	30·5	169	i 6 8	− 4	i 11 13	+ 3	—	—	i 14·2
Perth	30·6	206	i 6 11	− 2	i 11 1	−11	7 33	PPP	13·2
Taihoku	31·4	343	e 6 29	+ 9	i 11 23	− 1	—	—	—
Hong Kong	32·0	329	6 28k	+ 3	11 37	+ 3	7 28	PP	—
Nake	33·2	358	6 35	− 1	11 51	− 1	—	—	—
Medan	33·9	285	i 6 43	+ 1	i 12 11	+ 8	—	—	38·6
Riverview	34·0	150	e 6 41	− 2	i 12 0	−5	—	—	—
Sydney	34·1	150	i 6 46	+ 2	i 12 4	− 2	—	—	i 15·4
Melbourne	34·9	161	i 6 49	− 1	—	—	—	—	—
Tokusima	35·3	359	6 47	− 7	12 23	− 2	—	—	17·3
Phu-Lien	35·4	318	e 6 54	− 1	i 12 31	+ 5	8 30	PPP	—
Miyazaki	36·7	0	7 3	− 3	12 54	+8	15 16	SS	18·1
Zi-ka-wei	37·3	346	e 7 11	0	13 3	+ 7	7 43	PP	15·3
Tomie	37·5	357	7 20	+ 8	13 6	+ 7	8 56	PP	18·2
Nagasaki	37·6	358	7 11	− 2	12 57	− 3	15 40	SS	—
Hukuoka B	38·4	359	e 7 17	− 3	13 11	− 1	—	—	15·9
Koti	38·4	3	e 7 10	−10	e 13 10	− 2	e 8 56	PP	i 16·0
Siomisaki	38·5	7	7 17	− 4	13 13	− 1	8 47	PP	—
Matuyama	38·6	2	7 11	−11	13 14	− 1	8 57	PP	—
Hamada	39·7	1	7 34	+ 3	13 34	+ 2	9 11	PP	—
Nagoya	39·8	7	7 36	+ 4	13 35	+ 2	—	—	—
Husan	40·0	357	8 34	+61	14 38	+ 2	10 13	PPP	—
Toyooka	40·4	4	7 47	+11	13 48	+ 6	9 28	PP	—
Gihu	40·5	7	7 27	−10	13 32	−12	9 17	PP	—
Taikyu	40·7	357	7 37	− 2	i 13 46	− 1	—	—	20·2
Syuhurei	41·1	357	6 55	−47	13 43	−10	—	—	—
Tokyo Cen. Met. Ob.	41·2	10	7 39	− 4	14 31	+37	—	—	—
Oiwake	41·6	8	7 53	+ 7	14 18	+18	9 48	PP	—
Kakioka	41·8	11	7 39	− 9	14 4	+ 1	17 19	SS	—
Toyama	41·8	7	7 48	0	13 49	−14	9 39	PP	20·2
Nagano	41·9	8	7 44	− 5	14 13	+ 8	9 41	PP	—
Zinsen	42·5	354	i 7 57k	+ 3	i 14 12	− 1	i 9 48	PP	—
Keizyo	42·6	355	7 56	+ 1	i 14 16	+ 1	i 9 44	PP	e 18·6
Heizyo	44·1	353	i 8 14k	+ 7	14 32	− 5	—	—	21·3
Dairen	44·6	349	8 10	− 1	14 45	+ 1	19 0	SSS	—
Mizusawa	44·8	11	e 8 7	− 5	i 14 42	− 5	—	—	19·4
Morioka	45·4	10	8 18	+ 1	14 49	− 7	—	—	—
Vladivostok	47·9	1	e 8 43	+ 6	—	—	e 10 17	PP	—
Sapporo	48·7	9	8 40	− 3	15 18	−24	10 28	PP	—
Nemuro	49·8	13	8 46	− 6	15 53	− 5	10 56	PP	—
Calcutta	50·3	305	i 8 56	+ 1	i 15 47	−17	e 10 55	PP	—
New Plymouth	51·3	137	i 9 6	+ 3	16 26	+ 8	i 11 17	PP	23·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Arapuni		51·9	136	e 9 3	− 4	16 45	+19	11 3	PP	—
Ootomari		52·4	9	9 8	− 3	17 28	PPS	—	—	—
Colombo	E.	52·9	282	9 14	− 1	16 49	+ 9	15 9	?	—
Wellington		52·9	140	e 9 11	− 4	16 50	+10	10 59	PP	24·8
Kodaikanal	E.	55·9	286	i 9 39?	+ 2	17 9	−12	12 9	PP	—
Apia		56·5	103	i 9 40	− 1	i 17 28	0	9 56	pP	27·7
Hyderabad		56·9	295	9 46	+ 2	17 38	+ 4	21 26	SS	26·3
Chatham Ils.		59·8	139	i 9 39?	−25	i 17 39	−33	12 9	PP	i 25·4
Agra	N.	60·7	305	10 16	+ 6	18 30	+ 7	14 14	PPP	—
Dehra Dun	N.	62·0	309	i 10 12	− 7	i 18 30	−10	14 24	PPP	—
Bombay		62·5	294	e 10 18	− 4	i 18 48	+ 2	i 14 56	PPP	—
Almata		68·7	321	11 5	+ 3	20 11	+ 9	—	—	—
Frunse		70·1	319	11 9	− 2	20 21	+ 3	—	—	—
Andijan		70·6	316	11 14	0	20 32	+ 8	e 25 20	SS	—
Semipalatinsk		70·6	329	11 13	− 1	20 14	−10	—	—	—
Tashkent		73·0	316	i 11 26	− 2	—	—	—	—	—
Tchimkent		73·1	317	11 33	+ 4	21 3	+10	—	—	—
Honolulu		74·0	66	i 11 36	+ 2	i 20 57	− 6	e 16 11	PPP	29·6
Samarkand		74·0	313	11 31	− 3	21 4	+ 1	—	—	—
Tananarive		82·7	251	e 12 25	+ 3	e 22 26	−10	12 53	pP	34·6
Sverdlovsk		83·8	329	i 12 26	− 1	i 23 1	+14	—	—	—
Baku		86·8	311	e 12 44	+ 2	—	—	—	—	—
Grozny		90·3	313	i 13 3	+ 4	i 23 37	[+12]	—	—	33·6
College		90·5	25	e 13 1	+ 1	23 11	[−16]	i 16 37	PP	i 36·3
Tiflis		90·8	312	e 12 59	− 2	e 23 33	[+ 3]	30 42	SS	e 36·6
Erevan		90·9	310	i 13 9	+ 7	i 23 44	−10	—	—	—
Sotchi		94·7	313	e 13 39	+20	e 23 59	[+ 9]	—	—	—
Sitka		95·9	32	e 13 29	+ 5	i 24 28	− 9	i 17 25	PP	39·6
Moscow		96·3	325	e 13 39	+13	24 10	[+11]	17 27	PP	37·1
Ksara		97·4	302	i 13 39a	+ 8	26 29	PS	i 17 37	PP	—
Theodosia		97·8	313	e 13 45	+12	e 24 36	−17	—	—	—
Simferopol		98·7	313	e 13 42	+ 5	i 24 21	[+10]	—	—	—
Yalta		98·7	313	e 13 38	+ 1	e 24 21	[+10]	i 17 54	PP	—
Sebastopol		99·2	313	i 13 45	+ 5	e 24 17	[+ 3]	—	—	—
Pulkovo		99·8	329	13 57	+15	24 37	[+20]	18 1	PP	e 41·1
Helwan		101·3	298	13 51	+ 2	24 29	[+ 5]	20 14	PPP	—
Istanbul		102·7	310	13 57	+ 2	—	—	—	—	—
Victoria		103·8	41	e 14 3	+ 3	24 46	[+10]	17 20	PP	46·6
Ferndale		104·0	48	e 14 29	+28	e 24 47	[+10]	18 59	PP	e 50·4
Bucharest		104·5	314	i 14 23k	+20	24 56	[+17]	18 19	PP	—
Seattle		104·6	41	e 18 24	PP	25 15	[+36]	25 42	S	43·3
Ukiah		105·0	50	e 13 58	− 7	24 47	[+ 6]	18 25	PP	i 40·8
Lemberg		105·1	320	e 17 19	?	e 24 3	[−38]	—	—	e 27·8
San Francisco		105·7	52	e 18 24	PP	e 24 32	[−12]	27 39	PS	—
Berkeley		105·9	52	e 14 13	P	e 24 49	[+ 4]	e 18 46	PP	e 46·8
Branner		106·0	52	e 14 21	P	24 54	[+ 8]	e 18 46	PP	—
Cape Town		106·0	233	i 14 23	P	25 5	[+19]	i 18 34	PP	i 49·6
Upsala		106·2	331	14 34	P	25 15	[+29]	i 18 48	PP	e 44·6
Lick	N.	106·4	52	e 14 21	P	24 50	[+ 3]	e 18 45	PP	—
Sofia	E.	106·7	312	e 17 57	PKP	i 24 49	[0]	27 55	PS	—
Belgrade		108·4	314	e 14 31	P	i 33 48	SS	i 21 19	PPP	e 38·9
Kesckemet	Z.	108·5	316	e 14 6	P	e 24 4	[−53]	i 18 38	PP	e 42·5
Budapest	E.	108·8	318	e 14 33	P	25 4	[+ 6]	19 7	PP	60·6
	N.	108·8	318	e 14 40	P	25 28	[+30]	19 13	PP	45·1
Tinemaha		109·1	52	i 14 23	P	e 25 8	[+ 9]	i 18 37	PP	—
Ogyalla		109·2	319	e 14 56	P	25 8	[+ 8]	19 10	PP	e 44·6
Haiwee		109·5	52	e 14 27	P	i 25 12	[+11]	i 19 5	PP	—
Pasadena		109·6	55	e 14 29	P	i 25 8	[+ 7]	i 19 6	PP	i 44·2
Mount Wilson	E.	109·7	55	e 18 2	PKP	e 25 3	[+ 1]	—	—	—
Copenhagen		110·2	328	e 14 44	P	25 30	[+26]	19 21	PP	44·6
Riverside		110·3	55	e 14 32	P	e 25 8	[+ 4]	e 18 53	PP	—
La Jolla		110·5	56	e 14 5	P	i 25 14	[+ 9]	i 19 12	PP	—
Prague		110·9	321	e 14 51	P	e 25 27	[+21]	e 19 1	PP	e 44·6
Potsdam		111·0	324	i 14 46	P	e 25 21	[+14]	e 19 9	PP	—
Graz		111·2	318	e 18 15	[−15]	i 29 1	PS	i 34 33	SS	45·6

Continued on next page.

		△	Az.	P.		O−C.	S.		O−C.	Supp.			L.
		°	°	m.	s.	s.	m.	s.	s.	m.	s.		m.
Bergen		111·5	334	19	39?	PP	29	4	PS	—		—	e 34·6
Butte		111·5	40	e 19	0	[+29]	26	43	?	i 19	22	PP	i 45·3
Cheb		112·2	321	e 14	56	P	e 27	1	?	e 19	41	PP	e 45·6
Laibach		112·2	317	e 18	30	[− 2]	e 25	39?	[+27]	i 19	24	PP	e 47·7
Hamburg		112·3	326	e 14	51a	P	i 25	41	[+29]	i 19	33	PP	e 46·0
Jena		112·4	322	e 14	51	P	i 25	21	[+ 9]	e 19	31	PP	e 47·6
Scoresby Sund		112·4	350	14	56	P	25	35	[+23]	28	50	PS	—
Bozeman		112·6	40	e 19	21	PP	i 25	26	[+13]	e 21	38	PPP	45·5
Triest		112·8	317	e 14	57k	P	25	31	[+17]	i 19	30	PP	e 51·7
Göttingen		113·1	324	e 14	54	P	i 29	39?	PS	i 30	39?	PPS	—
Saskatoon		113·1	34	19	20	PP	25	17	[+ 2]	28	48	PS	55·6
Padova		114·1	317	e 14	58	P	i 29	28	PS	i 19	43	PP	e 43·6
Stuttgart		114·7	321	e 15	1	P	e 25	39	[+17]	i 19	50	PP	50·6
Florence		115·0	316	e 18	39	[+ 1]	29	39	PS	—		—	—
Karlsruhe		115·1	322	e 15	5	P	27	39?	?	—		—	e 40·6
Chur		115·2	319	e 14	41	P	e 29	38	PS	e 19	28	PP	—
De Bilt		115·6	326	i 15	13	P	—		—	—		—	e 50·6
Strasbourg		115·6	322	e 15	8k	P	i 27	30	S	i 19	52	PP	i 47·3
Zurich		115·6	320	e 15	18	P	e 25	50	[+25]	e 19	50	PP	—
Tucson		116·0	55	e 14	47	P	i 25	42	[+15]	19	46	PP	i 47·6
Basle		116·1	320	e 15	22	P	e 25	55	[+28]	e 19	54	PP	—
Aberdeen		116·6	333	19	12	[+31]	i 25	59	[+31]	i 29	47	PS	—
Neuchatel		116·7	320	e 18	39	[− 2]	e 29	53	PS	e 19	53	PP	—
Uccle		116·7	325	18	45	[+ 4]	25	54	[+26]	20	1	PP	47·6
Moncalieri		117·0	317	i 14	54	P	26	44	SKKS	—		—	e 38·4
Besançon		117·2	320	i 20	8	PP	i 30	6	PS	e 27	39?	SKKS	i 48·5
Durham		117·7	331	e 20	0	PP	i 26	19	[+47]	i 30	10	PS	—
Edinburgh		117·8	332	e 15	34	P	i 26	5	[+32]	20	17	PP	—
Grenoble		118·3	318	i 20	19	PP	—		—	i 31	25	PPS	—
Paris		118·7	323	e 15	16	P	30	13	PS	i 20	14	PP	38·6
Stonyhurst		118·7	331	i 20	24	PP	i 26	5	[+28]	29	42	PS	47·6
Kew		118·9	327	i 15	31k	P	i 26	1	[+24]	30	16	PS	47·6
Marseilles		118·9	317	e 18	39	[− 6]	i 27	4	SKKS	i 19	58	PP	i 46·8
Bidston		119·2	330	i 20	14	PP	i 25	55	[+17]	i 30	9	PS	—
Oxford		119·2	328	15	7	P	—		—	i 20	23	PP	—
Rathfarnham Castle		120·8	332	i 15	30	P	i 25	58	[+15]	i 20	37	PP	50·6
Jersey		121·1	326	i 20	38	PP	26	9	[+24]	23	9	PPP	i 46·6
Mazatlan	N.	121·3	65	—		—	e 25	48	[+ 2]	—		—	—
Algiers		123·3	310	19	3	[+ 9]	26	6	[+14]	20	53	PP	i 51·4
Ivigtut		123·9	359	20	42	PP	26	21	[+28]	23	19	PPP	—
Guadalajara	N.	124·6	68	e 19	1	[+ 5]	—		—	—		—	—
Toledo		127·1	317	e 16	5	P	e 29	27	PS	i 21	12	PP	59·1
Almeria		127·3	313	e 19	13	[+12]	38	5	SS	i 21	19	PP	e 73·2
Granada		128·0	314	e 19	19	[+16]	—		—	21	19	PP	—
Tacubaya	Z.	128·6	68	e 19	12	[+ 8]	—		—	—		—	—
Chicago		129·4	36	e 19	26	[+21]	25	54	[−15]	e 20	59	PP	i 50·7
Chicago (Loyola)		129·4	36	e 19	18	[+13]	31	21	PS	i 21	30	PP	38·4
St. Louis		129·5	41	e 19	9	[+ 3]	e 26	16	[+ 7]	e 21	20	PP	—
Little Rock		129·8	47	e 19	3	[− 3]	—		—	i 21	33	PP	—
San Fernando		130·2	314	e 19	22	[+15]	26	22	[+11]	i 21	34	PP	—
Toronto		132·8	30	19	39	[+27]	31	56	PS	21	42	PP	62·6
Cincinnati		132·9	38	e 16	16	P	26	28	[+10]	i 21	31	PP	—
Ottawa		133·3	25	e 19	14	[+ 1]	39	9	SS	21	39	PP	59·6
Buffalo		133·6	30	i 19	16	[+ 2]	e 33	54	PPS	21	32	—	—
Shawinigan Falls		133·6	21	19	21	[+ 7]	40	45	SSP	21	59	PP	—
Seven Falls		133·8	20	19	20	[+ 6]	28	41	SKKS	21	45	PP	55·6
Vermont		135·1	24	e 19	24	[+ 8]	i 39	19	SS	i 21	50	PP	i 54·5
Pennsylvania		135·7	31	e 19	26	[+ 9]	—		—	32	9	PS	e 39·7
Santiago		136·4	153	14	29	P	—		—	e 24	14	PPP	—
Williamstown		136·5	24	e 19	5	[−14]	25	56	[−28]	i 24	58	PPP	—

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		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
East Machias		137·1	19	e 19 7	[−13]	40 4	SS	e 22 14	PP	i 50·9
Merida	N.	137·1	64	e 21 45	PP	—	—	—	—	—
Georgetown		137·5	32	19 24	[+ 3]	—	—	i 22 12	PP	—
Weston		137·6	24	e 19 22a	[+ 1]	e 26 37	[+11]	i 22 19	PP	—
Fordham		137·7	28	e 19 6	[−15]	26 7	[−19]	—	—	—
Philadelphia		137·7	30	i 19 31	[+10]	—	—	i 39 24	SS	56·6
Columbia		138·2	41	e 19 17	[− 5]	26 29	[+ 2]	39 45	SS	i 56·7
La Plata		139·3	167	19 27	[+ 3]	26 15	[−14]	22 9	PP	58·0
Montezuma		146·1	145	e 19 30	[− 6]	—	—	—	—	e 60·7
Huancayo		148·4	122	i 19 47	[+ 8]	—	—	i 22 46	PP	i 59·6
Balboa Heights		148·9	80	e 19 42	[+ 2]	—	—	—	—	—
La Paz		151·1	139	i 19 51a	[+ 7]	i 26 54	[+ 8]	i 21 27	pPKP	70·6
Rio de Janeiro	N.	151·8	190	i 20 27	[+43]	—	—	i 24 10	PP	i 43·2
San Juan		158·3	51	i 20 8	[+14]	—	—	—	—	—
Fort de France		164·2	50	i 19 57	[− 3]	e 30 3	PS	23 2	?	56·2

Additional readings :—
Batavia iPZ = +5m.24s., iZ = +14m.21s.
Perth iPP = +6m.39s., i = +6m.59s. and +9m.2s., iS = +9m.49s.
Hong Kong ? = +6m.38s., SS = +13m.23s.
Riverview iP = +6m.45s., iN = +12m.10s., eZ = +12m.20s.
Sydney i = +6m.52s.
Melbourne P = +6m.52.s
Phu-Lien i = +7m.3s., PP = +7m.53s.
Zi-ka-wei PPPN = +7m.55s., PPPPE = +8m.11s., iN = +9m.7s., iE = +9m.33s., SSN = +13m.3s., SSSN = +13m.25s., SSSN = +13m.43s.
Koti iNZ = +7m.29s.
Siomisaki SS = +15m.59s.
Matuyama SS = +15m.48s.
Hamada PPP = +9m.24s.
Toyooka SS = +16m.41s.
Gihu SS = +16m.41s.
Oiwake SS = +16m.6s.
Toyama SS = +17m.15s.
Nagano SS = +17m.14s.
Keizyo iEN = +14m.29s., eSSE = +17m.34s., SSN = +17m.37s.
Mizusawa iSE = +14m.46s.
Morioka PP = +10m.10s., PPP = +10m.48s., PS = +14m.58s., SS = +18m.12s., SSS = +19m.28s.
Vladivostok iP = +8m.49s.
Sapporo PS = +15m.39s., SS = +18m.33s.
Calcutta i = +10m.17s., iPPN = +11m.26s., iS = +15m.30s., i = +17m.59s.
New Plymouth i = +9m.14s., +9m.26s., and +9m.30s., PS = +16m.49s., SS = +20m.4s., L_q = +21m.26s.
Arapuni PPP = +12m.45s., i = +18m.51s. and +21m.15s.
Ootomari i = +10m.31s.
Wellington i = +9m.23s. and +9m.44s., iP_cP = +10m.23s., iPPP = +12m.37s., P_cS = +14m.23s., i = +15m.12s. and +15m.44s., SP = +17m.11s., iS_cS = +19m.37s., i = +20m.2s., iSS? = +20m.26s., L_q = +21m.57s., SSS = +22m.30s.
Kodaikanal iE = +13m.9s. and +21m.39s.?
Apia pP = +9m.56s., sP = +10m.8s., i = +11m.39s., iPP = +11m.55s., pPP = +12m.2s., isPP = +12m.30s., PPP = +13m.9s., sS = +18m.5s., S_cS = +19m.14s., sS_cS = +19m.55s., SS = +21m.28s., sSS = +22m.7s., i = +23m.25s.
Chatham Ils. iPPP = +13m.27s., iP_cS = +15m.9s., iS_cS? = +19m.39s., iSS = +21m.27s., iL_q = +23·0m.
Agra iN = +10m.23s., SSN = +22m.28s.
Dehra Dun eN? = +22m.30s.
Bombay iP = +10m.29s., e = +10m.55s., e = +22m.48s.?
Andijan eSSS = +28m.23s.
Tashkent i = +11m.35s.
Honolulu iP = +11m.43s., i = +11m.52s. and +16m.17s., iS = +21m.2s., i = +21m.10s., iS_cS = +21m.37s., i = +23m.11s. and +24m.6s., iSS = +25m.36s., iSSS = +28m.51s., i = +29m.10s. and +29m.22s.
Tananarive iP_cPE = +12m.29s., iSPE = +13m.16s., iSN = +22m.42s., iE = +22m.51s., isSN = +23m.7s., PSE = +23m.43s., SSN = +28m.4s., SSSN = +30m.59s., iN = +34m.20s.
College eP = +13m.7s., i = +16m.7s., iSKS = +23m.38s., iS = +23m.45s. and +23m.54s., iS_cS = +24m.5s., iPS = +24m.35s. and +24m.48s., i = +24m.53s., iPPS = +25m.28s., SS = +29m.20s., iSS = +29m.46s., SSS = +33m.23s.
Tiflis iZ = +13m.6s. and +13m.13s., i = +23m.41s., iSKKS = +24m.12s.
Erevan i = +13m.37s.
Sitka iP = +13m.46s., iPP = +17m.29s., iS = +24m.50s. and +25m.3s., i = +30m.52s., iSS = +31m.5s., i = +31m.11s.
Moscow SKKS = +24m.29s., S = +24m.41s.

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Yalta e = +13m.45s., i = +16m.54s.
Pulkovo PKP = +17m.48s., PPP = +20m.19s., S = +25m.17s., PPS = +27m.44s.
Helwan S = +25m.27s., SS = +32m.29s.
Victoria SS = +31m.39s.
Ferndale eN = +19m.13s., eE = +27m.33s.
Bucharest iN = +19m.36s., iE = +19m.44s., iPPPE = +20m.35s., iEN = +24m.30s., iSKKSEN = +25m.13s., iS = +26m.4s., iPS = +27m.26s., SSN = +32m.38s., SSE = +32m.53s., SSSE = +36m.37s.
Ukiah PP = +18m.31s., ePP = +18m.41s., i = +19m.54s., ePPP = +20m.22s., iSKS = +25m.10s., iSKKS = +25m.14s., iS = +25m.58s., i = +26m.59s., PS = +27m.12s., iPKKP = +29m.55s., iSS = +32m.49s. and +33m.22s., iPSPS = +33m.36s., iSSS = +37m.24s., iS_cSS_cS = +37m.41s.
San Francisco ePPE = +18m.31s., eSKSE = +24m.40s., ePSE = +27m.33s., eN = +32m.21s., eE = +32m.58s.
Berkeley eE = +14m.17s., eN = +14m.21s., eZ = +18m.19s., eZ = +27m.44s. and +28m.33s.
Cape Town iPPPN = +20m.48s., iPPPE = +20m.53s., iSKKSE = +25m.43s.?, iSKKSN = +25m.49s., iS = +26m.13s., i?E = +26m.32s., iPSN = +27m.23s., iPSE = +27m.39s., iPPS = +28m.23s., iSSN = +33m.23s., iSSE = +33m.27s., iSSSE = +37m.34s., iSSSN = +37m.39s., iGN = +44m.8s., iGE = +44m.43s.
Upsala ePKPN = +17m.54s., ePKPE = +17m.58s., iSKPE = +20m.9s., PPPE = +21m.17s., iE = +22m.50s., iPSE = +28m.9s., iPSN = +28m.11s., iPPSE = +28m.50s., SS = +33m.45s.
Belgrade eZ = +17m.34s., iZ = +18m.59s., iNE = +24m.58s., i = +28m.16s. and +32m.6s.
Kecskemet eZ = +16m.23s., iPKPZ = +17m.53s., iZ = +19m.6s., +21m.43s., +22m.36s., +23m.9s., and +23m.45s., eSKKSZ = +24m.44s., eZ = +27m.3s., ePSZ = +28m.5s., ePKKPZ = +28m.59s., eZ = +29m.36s., eSSZ = +33m.51s., eZ = +37m.33s.
Buffalo e = +16m.24s. and +21m.54s., i = +22m.57s. and +32m.2s.
Budapest E. i = +16m.11s., +17m.44s., +20m.38s., +21m.37s., and +22m.30s., SKKS = +26m.11s., i = +28m.11s., PS? = +28m.34s., S_cSP = +29m.11s., i = +30m.7s. and +31m.52s., PKKS = +33m.11s., SS = +34m.52s., i = +39m.11s.
Budapest N. i = +15m.17s. and +17m.37s., PKP = +18m.19s., i = +20m.53s., PPP? = +21m.43s., i = +22m.32s., +22m.45s., +23m.11s., +24m.50s., and +26m.43s., PS? = +28m.35s., i = +30m.7s. and +31m.56s., PKKS = +33m.20s., i = +34m.11s., SS = +34m.49s., SKKS = +37m.3s.
Ogyalla ePE = +16m.4s., eN = +18m.52s., eE = +19m.6s., PPE = +19m.22s., iE = +21m.4s., iE = +25m.24s., PSE = +28m.36s., PSN = +28m.44s., eSSE = +35m.9s., iN = +38m.6s., iE = +38m.44s., eN = +39m.8s.
Pasadena eZ = +17m.37s., iPPE = +18m.30s., ePSEN = +28m.15s., iN = +30m.15s., eSSN = +34m.15s., iSSSN = +37m.57s.
Copenhagen PKP = +18m.34s., PPP = +21m.33s., eN = +23m.3s. and +23m.39s., eE = +24m.45s., e = +25m.2s., eN = +26m.33s., eNE = +26m.57s., e = +28m.21s., PS = +28m.51s., PPS = +29m.39s., eE = +33m.3s., SSN = +34m.34s., e = +35m.40s.
La Jolla eN = +17m.41s.
Prague ePS = +28m.39s., ePPS = +30m.9s., eSS = +34m.51s., eSSS = +39m.3s.
Potsdam eE = +19m.15s., iE = +19m.27s., iN = +19m.30s., iE = +21m.16s., iPPPN = +21m.39s., iPPPE = +21m.51s., iN = +21m.56s. and +22m.38s., eEN = +22m.57s., i = +26m.45s., e = +27m.15s., iPSE = +28m.56s., iE = +29m.0s., eN = +29m.9s., iPPSE = +30m.0s., iN = +31m.58s., eSSN = +34m.51s., iE = +35m.36s. and +40m.21s., iN = +41m.27s. and +45m.42s.
Graz iPS = +30m.8s.
Butte i = +24m.54s., eSS = +34m.6s., i = +41m.58s.
Cheb eSS = +35m.39s.
Laibach iNE = +19m.45s. and +29m.13s.
Hamburg iPPP = +22m.5s., iPSE = +29m.8s., iPPSE = +30m.19s., iSSN = +35m.11s., iSSSN = +39m.13s.
Jena eN = +19m.35s., e = +21m.39s., eE = +25m.3s., eEZ = +28m.57s., eN = +29m.3s., i = +29m.7s. and +30m.23s., eN = +35m.3s., eEZ = +35m.39s., eN = +38m.39s., eZ = +40m.9s. and +45m.9s., eE = +45m.39s.
Scoresby Sund +19m.36s., i = +21m.59s., +25m.46s., and +26m.35s.
Bozeman SKKS = +26m.5s., iS = +26m.50s., iPS = +29m.3s., iPPS = +29m.53s., iSS = +34m.55s., iPSPS = +35m.35s., iSSS = +39m.0s., iS_cSS_cS = +39m.4s., i = +41m.42s.
Triest ePKP = +18m.21s., PPP = +21m.57s., iPS = +29m.0s., iSS = +35m.12s.
Saskatoon SS = +34m.53s., SSSN = +38m.39s.
Stuttgart i = +15m.9s., eZ = +16m.28s. and +18m.17s., ePKPZ = +18m.53s., e = +19m.5s., ePPP = +22m.19s., iN = +23m.38s., ePKKP = +29m.17s., PS = +29m.37s., ePPS = +30m.35s., eSS = +35m.57s.
Chur ePKP = +19m.2s.
Strasbourg iPKPZ = +18m.39s., iPP = +19m.57s., iSKPE = +21m.25s., iPPPZ = +22m.1s., i = +22m.29s., iPSZ = +29m.34s., iSSN = +36m.11s., iSSSN = +40m.5s.
Zurich ePKP = +18m.44s., ePS = +29m.28s.
Tucson P = +14m.56s., ePKP = +18m.39s. and +18m.48s., PP = +19m.57s., iPPP = +21m.22s., iSKS = +25m.59s., i = +26m.48s., iS = +27m.24s., PS = +29m.22s., i = +33m.43s. and +36m.55s.

Continued on next page.

Basle ePKP = +18m.48s., ePS = +29m.36s.
Aberdeen i = +19m.55s., +23m.47s., +27m.9s., +33m.32s., and +34m.9s., iSS = +35m.57s. and +36m.52s.
Uccle PZ = +15m.15s., SKKSE = +27m.4s., iN = +27m.23s., PSN = +29m.41s., iPPSE = +31m.0s., iEZ = +31m.56s., iSSN = +36m.9s., iSSSN = +40m.5s.
Durham ePN? = +15m.26s., iN = +20m.9s., iSSN = +36m.9s., iN = +36m.21s.
Edinburgh i = +28m.8s., +30m.9s., +31m.9s., +36m.22s., and +36m.59s.
Stonyhurst i = +31m.27s.
Kew iZ = +15m.36s., eZ = +19m.10s., iPP = +20m.19s., i = +20m.30s., iPPP = +22m.45s., iEN = +26m.22s., i = +30m.42s., iPPS = +31m.30s., iSSN = +36m.36s., iSSE = +36m.43s., i = +41m.38s.
Marseilles iPP = +22m.32s., iPS = +29m.46s., iPPS = +30m.53s., iSS = +36m.6s., iPPSS = +36m.52s., iSSS = +40m.38s., iSSSS = +45m.14s.
Bidston i = +20m.25s.
Rathfarnham Castle iSKP = +21m.50s., iPPP = +23m.50s., iSKKS? = +27m.35s., iS = +28m.10s., iPS = +30m.12s., i = +30m.49s., iPPS = +31m.37s., i = +33m.43s. and +36m.7s., iSS = +36m.52s., i = +39m.12s., +39m.39s., and +43m.39s.
Jersey i = +22m.3s., +24m.21s., +28m.39s., +29m.42s., +31m.18s., +32m.33s., +36m.49s., and +42m.9s.
Algiers SKP = +22m.10s., S = +29m.9s., PS = +30m.52s., SS = +37m.47s., SSS = +42m.55s.
Ivigtut +22m.22s., +27m.39s., +30m.27s., +30m.39s., +32m.24s., +37m.3s., +37m.57s., eN = +38m.16s., +42m.15s., +44m.35s., and +46m.13s.
Toledo iP = +19m.6s., iSS = +28m.9s.
Almeria ePS = +31m.15s.
Chicago iPP = +21m.20s., PPP = +23m.54s., SKSP = +31m.4s., iSS = +38m.9s. and +38m.24s., iSSS = +43m.14s.
Chicago (Loyola) iPPP = +22m.30s.
St. Louis e = +19m.34s., i = +21m.46s., +22m.31s., and +24m.13s.
Little Rock iEN = +19m.25s., +19m.36s., and +22m.31s., iN = +24m.10s.
San Fernando iPKPN = +19m.44s.
Toronto SKP = +22m.50s., i = +28m.59s., SS = +39m.11s., SSS = +44m.11s., i = +56m.4s.
Cincinnati iPKP = +19m.28s., i = +23m.7s., +23m.28s., +23m.48s., and +25m.33s., eSS = +39m.8s., eSSS = +44m.14s.
Ottawa eZ = +19m.2s., SKPZ = +22m.45s., PPS = +33m.51s., SSS = +44m.39s.?
Shawinigan Falls SKP = +22m.57s., SKKS = +28m.45s., SSS = +45m.39s.?
Seven Falls SKP = +22m.57s., S = +30m.6s., PPS = +36m.3s., SS = +39m.21s., SSS = +43m.39s.
Vermont eP = +19m.40s., iPP = +22m.10s., iPKS = +22m.55s. and +23m.10s., i = +36m.18s., iPSPS = +40m.23s., i = +42m.40s. and +45m.25s.
Pennsylvania i = +22m.6s., +23m.7s., and +23m.56s., e = +28m.55s. and +34m.7s.
Santiago e = +17m.12s., +17m.32s., +18m.18s., +30m.33s., +35m.37s., and +50m.39s.
Williamstown iPKP = +19m.21s., iPP = +22m.13s., SKP? = +22m.51s.
East Machias ePP = +22m.14s. and +22m.20s., iPKS = +23m.13s., ePPP = +25m.23s. iSKKKS = +29m.22s., iSKSP = +32m.38s., iPPS = +34m.31s., i = +36m.30s., iSSS = +45m.48s.
Georgetown i = +23m.6s.
Weston eP = +16m.51s., iPKPZ = +19m.27s., ePPZ = +21m.55s., iSKPZ = +23m.1s., iSKP = +23m.9s., ePPP = +25m.11s., iPPPPN = +28m.23s., eSKKS = +29m.19s., ePPPPP = +29m.59s., $ePPP_2$ = +37m.39s., eSS = +40m.3s., eSSS = +45m.41s.
Fordham iPKP = +19m.21s., i = +19m.24s., +19m.49s., and +20m.46s., iPP = +21m.54s. and +22m.23s., iSKS = +26m.0s., i = +28m.0s. and +32m.41s.
Philadelphia iPP = +22m.0s., iPKS = +23m.12s., iSKKKS = +29m.9s., i = +29m.16s. and +32m.34s., iPPS = +34m.4s., iSS = +40m.9s.
Columbia eP = +16m.27s., ePKP = +19m.26s., ePP = +21m.55s., PP = +22m.17s. and +22m.31s., iPKS = +23m.14s., PPP = +25m.13s., eSKS = +27m.20s., iSS = +40m.11s., iPSPS = +41m.24s., SSS = +45m.11s.
La Plata PKS = +23m.3s., PPP = +25m.9s., SS = +40m.27s., SSS = +45m.51s.
Montezuma ePKP = +19m.35s., iPKS = +23m.36s., iSKKKS = +30m.4s., iSKSP = +33m.20s., eSS = +41m.46s., iSS = +41m.52s., iSSS = +47m.19s.
Huancayo iPKP = +19m.52s., i = +19m.56s., +20m.4s., +23m.24s., +25m.0s., and +28m.47s., iSKKKS = +30m.23s., i = +30m.33s. and +58m.3s.
Balboa Heights eE = +21m.10s., eN = +21m.22s., e = +24m.11s.
La Paz iPKPZ = +19m.56s., and = +20m.6s., i = +20m.21s., isPKPE = +22m.11s., iPPN = +23m.51s., iSKKS = +30m.47s., iSKSP = +33m.47s., iSSN = +42m.57s., iSSSN = +47m.9s., iSSSE = +48m.1s., iSSSSN = +51m.9s., L_qN = +64·2m.
San Juan i = +21m.39s.
Fort de France PPP = +24m.46s., SS = +35m.23s., SSS = +38m.33s.
Long waves were also recorded at Malaga.

Feb. 1d. 19h. 49m. 58s. Epicentre 5°·0S. 131°·5E. (as at 19h. 4m.).

$A = -\cdot6601$, $B = +\cdot7461$, $C = -\cdot0866$; $\delta = -10$; $h = +7$.

Tables for a focus at the base of the superficial layers have been used.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Malabar		23·9	264	5 15	+ 3	9 29	+ 6	—	—	e 14·0
Batavia		24·6	267	5 21	+ 3	9 39	+ 5	i 10 7	SS	12·0
Medan		33·9	285	i 6 56	+14	i 12 44	+41	—	—	i 21·0
Riverview	z.	34·0	150	i 6 42k	− 1	—	—	—	—	i 17·6
Hukuoka B		38·4	359	e 7 15	− 5	—	—	—	—	—
Koti	z.	38·4	3	e 7 12	− 8	—	—	—	—	—
Nagoya		39·8	7	7 34	+ 2	14 13	+40	—	—	—
Husan		40·0	357	e 8 24	+51	e 9 58	PPP	—	—	—
Taikyu		40·7	357	7 33	− 6	14 11	+24	—	—	19·8
Keizyo		42·6	355	e 6 22	?	—	—	—	—	—
Mizusawa	E.	44·8	11	e 8 0	−12	14 31	−16	—	—	—
	N.	44·8	11	e 8 2	−10	14 34	−13	—	—	21·8
New Plymouth		51·3	137	e 9 0	− 3	—	—	—	—	—
Wellington		52·9	140	i 9 11	− 4	i 16 42	+ 2	i 11 10	PP	—
Almata		68·7	321	11 7	+ 5	—	—	—	—	—
Frunse		70·1	319	11 10	− 1	—	—	—	—	—
Andijan		70·6	316	11 15	+ 1	—	—	—	—	—
Semipalatinsk		70·6	329	11 20	+ 6	20 21	− 3	—	—	—
Samarkand		74·0	313	11 32	− 2	20 56	− 7	—	—	—
Tiflis		90·8	312	e 13 3	+ 2	e 23 28	[0]	—	—	—
Tinemaha	z.	109·1	52	i 14 14	P	—	—	i 18 22	PKP	—
Riverside		110·3	55	i 18 52	PP	—	—	—	—	—
Fordham		137·7	28	e 19 14	[− 7]	—	—	e 21 46	PP	—
Balboa Heights		148·9	80	19 35	[− 5]	—	—	—	—	—
La Paz		151·1	139	i 19 50	[+ 6]	—	—	24 7	PP	—
San Juan		158·3	51	i 34 33	PPS	—	—	—	—	—
Fort de France		164·2	50	e 19 53	[− 7]	—	—	—	—	—

Additional readings:—
Medan iE = +9m.34s.
Wellington i = +9m.21s., +9m.38s., and +11m.35s.
Fordham i = +19m.33s. and +21m.56s.
San Juan i = +34m.48s.
Long waves were recorded at Crimea stations.

Feb. 1d. Readings also at 0h. (Frunse, near Andijan, and Samarkand), 5h. (Sofia), 7h. (Manila), 8h. (Tucson and near Piatigorsk (2)), 9h. (near Fort de France), 12h. and 14h. (near Ksara), 15h. (Tinemaha), 16h. (Florence (2) and Ksara), 17h. (Santiago), 19h. (La Paz, Wellington, Manila, Andijan, and Tiflis (2)), 21h. (La Paz), 22h. (Keizyo).

Feb. 2d. 9h. 36m. 55s. Epicentre 2°·0S. 100°·0E.

$A = -\cdot1735$, $B = +\cdot9842$, $C = -\cdot0347$; $\delta = -4$; $h = +7$;
$D = +\cdot985$, $E = +\cdot174$; $G = +\cdot006$, $H = -\cdot034$, $K = -\cdot999$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Medan		5·7	347	e 1 34	+ 6	i 2 40	+ 5	—	—	—
Batavia		8·0	122	1 56	− 4	i 3 46	+13	—	—	—
Malabar		9·2	125	2 16	0	3 50	−13	—	—	—
Colombo	E.	22·0	293	5 4	+ 6	9 9	+13	—	—	—
Phu-Lien		23·6	16	e 5 11	− 2	e 9 17	− 8	—	—	—
Kodaikanal	E.	25·5	299	i 5 35	+ 3	i 10 6	+ 9	i 6 9	PP	i 13·1
Manila		26·5	51	5 35	− 6	10 0	−14	—	—	—
Calcutta	N.	26·9	336	e 6 31	pP•	i 10 16	− 4	i 11 24	sS	—
Hong Kong		27·8	29	6 9	+16	10 24	−11	11 15	SS	—
Amboina	N.	28·2	93	e 5 56	0	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		33·8	309	i 6 49	+ 3	e 12 10	0	8 9	sP	—
Dehra Dun		38·4	328	—	—	e 13 24	+ 4	—	—	—
Almata		49·6	338	9 1	+ 6	15 59	− 4	—	—	—
Samarkand		51·3	327	9 5	− 3	16 15	−11	—	—	—
Tashkent		51·4	330	i 9 38	+29	i 16 21	− 7	e 16 46	PS	—
Semipalatinsk		54·9	345	9 32	− 3	—	—	—	—	—
Tiflis		66·2	317	i 10 51	− 1	i 19 35	− 5	e 20 6	PS	e 34·1
Grozny		66·3	319	e 10 54	+ 2	e 19 34	− 8	—	—	—
Sverdlovsk		66·7	338	i 10 53	− 2	i 19 35	−11	—	—	32·1
Ksara		69·9	307	e 11 45	+30	e 22 33	?	—	—	36·6
Tinemaha	Z.	130·4	41	e 19 10	[− 3]	—	—	i 22 55	PP	—
Pasadena	Z.	132·1	43	e 19 15	[− 1]	—	—	i 22 32	PP	—
Riverside	Z.	132·8	43	i 19 15	[− 2]	—	—	i 22 33	PP	—
Little Rock		145·4	18	e 19 38	[− 2]	e 23 8	PP	—	—	—

Additional readings :—
Kodaikanal iE = +6m.26s.
Calcutta eSPN = +7m.33s., iSS = +11m.44s.
Bombay eE = +7m.29s., e = +12m.30s. and +13m.28s.
Tiflis eN = +20m.21s., eE = +20m.39s.
Little Rock iPE = +19m.41s., iN = +20m.9s., eE = +20m.24s.

Feb. 2d. Readings also at 0h. (Chur, Mount Wilson, Pasadena, Riverside, and Tinemaha), 1h. (Huancayo, San Francisco, and near Mizusawa), 2h. (near Mizusawa), 4h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Simferopol, Yalta, Andijan, Samarkand (2), Sverdlovsk, Vladivostok, Grozny, Tiflis, Nagoya, near Mizusawa, and near Hukuoka B), 10h. (near Laibach, Graz, and Triest), 13h. (Kodaikanal), 14h. (Copenhagen), 15h. (near Amboina), 19h. (Vladivostok, Sverdlovsk, Tiflis (2), Tashkent, and Mizusawa), 20h. (near Berkeley (2), Branner (2), and Lick (2)), 21h. (near Grozny), 22h. (La Paz).

Feb. 3d. Readings at 0h. (Grozny, Manila, and near Mizusawa), 4h. (Chur), 5h. (Tacubaya), 6h. (Tashkent, Samarkand, near Andijan, Frunse, and Tchimkent), 8h. (Samarkand and near Copiapo), 9h. (Wellington), 11h. (near Algiers), 12h. (Hukuoka B and Manila), 13h. (Baku, Sverdlovsk, Tiflis, Vladivostok, and Ksara), 15h. (College (2) and Sitka), 16h. (East Machias, Seven Falls, Ottawa, Harvard, Williamstown, Philadelphia, Fordham, Columbia, Tucson, Pulkovo, Moscow, Sverdlovsk, Tashkent, Mount Wilson, Tinemaha, Pasadena, Semipalatinsk, Ksara, Tiflis, Baku, Vladivostok, Bombay, and Calcutta), 18h. and 19h. (Fordham), 20h. (Baku, Tiflis, Vladivostok, Tashkent, Sverdlovsk, Mount Wilson, Tinemaha, Pasadena, Riverside, College, Fordham, near Batavia, and Malabar), 21h. (Tiflis), 23h. (Bombay and College).

Feb. 4d. 0h: 19m. 1s. Epicentre 26°·0N. 65°·0E.

$A = +\cdot3804$, $B = +\cdot8157$, $C = +\cdot4360$; $\delta = +17$; $h = +3$;
$D = +\cdot906$, $E = -\cdot423$; $G = +\cdot184$, $H = +\cdot395$, $K = -\cdot900$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay	E.	10·1	133	e 2 17	−11	i 4 43	+18	—	—	—
Agra		11·7	82	e 2 59	PP	e 5 11	+ 7	e 5 25	SS	6·2
Dehra Dun	N.	12·3	65	—	—	e 5 22	+ 4	—	—	—
Samarkand		13·7	5	3 5	−13	—	—	—	—	—
Hyderabad		15·1	122	—	—	6 45	SS	—	—	9·0
Tashkent		15·7	12	i 3 47	+ 3	i 7 4	SSS	—	—	e 8·9
Andijan		15·9	21	3 53	+ 6	8 54	L	—	—	(8·9)
Tchimkent		16·7	11	4 3	+ 6	—	—	—	—	—
Frunse		18·6	23	e 4 17	− 4	—	—	—	—	—
Baku		19·1	321	4 24	− 3	8 4	+ 7	—	—	12·7
Kodaikanal	E.	19·6	140	e 4 31	− 1	i 8 14	+ 6	i 9 13	SSS	10·2
Calcutta	N.	21·5	93	—	—	i 9 2	+15	i 9 23	SS	i 11·7
Tiflis		22·9	317	e 5 4	− 2	e 9 17	+ 4	e 5 39	PP	e 13·0
Colombo	E.	23·7	141	e 3 29	?	—	—	—	—	—
Ksara		26·3	293	e 5 37	− 2	e 10 31	+20	11 51	SSS	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Semipalatinsk	27·0	22	5 50	+ 5	—	—	—	—	—
Sverdlovsk	31·0	354	6 24	+ 3	11 32	+ 6	—	—	20·3
Moscow	35·8	332	e 7 9	+ 6	e 12 31	−10	—	—	23·5
Pulkovo	41·4	333	e 7 47	− 3	—	—	—	—	e 23·5
Cheb	46·7	314	e 15 59?	PS	—	—	—	—	e 31·0

Additional readings :—
Bombay P?E = +2m.36s., iE = +2m.47s., eE = +5m.31s., iE = +7m.5s.
Dehra Dun e? = +7m.1s.?, +8m.35s.?, and +11m.13s.?
Samarkand e = +7m.52s.
Tiflis PE = +5m.7s., ePPPZ = +5m.53s., eSZ = +9m.21s.
Sverdlovsk L_q = +17·9m.
Moscow e = +7m.40s., +8m.30s., and +17m.35s.
Pulkovo e = +8m.50s., +9m.32s., +11m.9s., +13m.9s., and +16m.52s.
Long waves were also recorded at De Bilt, Vladivostok, Hong Kong, Helwan, Hamburg, Copenhagen, Upsala, Kew, and Potsdam.

Feb. 4d. 10h. 27m. 19s. Epicentre 2°·0N. 91°·0W.

A = −·0174, B = −·9992, C = +·0347; δ = −9; h = +7;
D = −1·000, E = +·017; G = −·001, H = −·035, K = −·999.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		13·3	58	e 2 41?	−32	—	—	—	—	—
Merida	N.	18·9	4	i 4 16	− 8	—	—	—	—	—
Tacubaya	E.	19·1	337	i 4 35?	+ 8	—	—	—	—	—
Huancayo		20·9	132	4 43	− 3	e 8 33	− 2	e 5 9	PP	9·0
La Paz		29·1	129	i 6 7k	+ 3	i 11 23	+27	—	—	i 12·7
San Juan		29·3	54	e 6 13	+ 7	10 54	− 5	e 7 4	PP	e 12·1
Fort de France		32·1	65	e 6 47	+16	—	—	—	—	—
Columbia		33·2	15	e 7 49	PP	e 11 59	− 1	e 8 2	PPP	e 13·6
Tucson		35·4	330	i 7 1	+ 4	12 21	−13	8 30	PP	13·9
St. Louis	E.	36·5	1	—	—	e 12 23	−28	—	—	e 15·6
Florissant	Z.	36·6	1	e 6 14	−56	—	—	e 11 37	?	e 18·1
Riverside	Z.	40·3	325	7 41	+ 1	—	—	—	—	—
Philadelphia		40·4	19	e 9 25	PP	e 13 29	−21	—	—	e 16·3
Mount Wilson	Z.	40·8	325	i 7 46	+ 1	—	—	—	—	—
Pasadena	Z.	40·8	325	e 7 44	− 1	—	—	—	—	—
Fordham		41·7	19	e 7 53	+ 1	e 13 55	−15	e 9 49	PP	—
Toronto		42·7	12	—	—	e 15 12	+48	—	—	22·7
Tinemaha	Z.	43·0	327	i 8 6	+ 3	—	—	—	—	—
Weston		43·9	21	e 8 7	− 3	e 14 48	+ 6	e 18 3	SS	e 20·6
Vermont		45·1	18	—	—	e 14 56	− 3	—	—	e 18·2
Ottawa		45·3	14	8 20	− 1	15 5	+ 3	18 17	SS	21·7
Seven Falls		48·3	18	—	—	e 15 46	+ 1	e 18 29	SS	22·7
Granada		86·7	53	e 12 41?	− 6	—	—	—	—	—
Paris		90·8	41	e 9 41?	?	—	—	—	—	42·7
Christchurch		96·0	226	e 7 5	?	—	—	—	—	45·0
Cheb		97·0	39	—	—	e 22 41?	?	—	—	e 46·7
Sverdlovsk		117·0	17	—	—	e 36 9	SS	—	—	46·7
Ksara		118·7	50	e 20 11	PP	—	—	e 30 6	PS	56·7
Baku		124·7	36	—	—	e 25 44	[−21]	e 37 58	SS	58·2
Manila		144·3	299	20 8	[+30]	—	—	15 9	P	—

Additional readings :—
Huancayo S = +8m.40s., iS = +8m.50s.
Columbia eS = +12m.6s.
Tucson iP = +7m.6s., P = +7m.25s.
St. Louis eSE = +12m.55s.
Tinemaha eZ = +7m.20s., iZ = +9m.55s.
Seven Falls e = +19m.53s.
Christchurch eN = +33m.53s. and +40m.31s.
Ksara ePP = +20m.19s.
Baku e = +34m.4s. and +42m.44s.
Long waves were also recorded at Uccle, Moncalieri, Pulkovo, Bozeman, Strasbourg, De Bilt, Copenhagen, Wellington, and Santiago.

Feb. 4d. Readings also at 1h. (Hukuoka B), 2h. (Almata), 3h. (Philadelphia), 5h. (Samarkand, La Paz, and Huancayo), 7h. (Samarkand (2)), 8h. (Huancayo and La Paz), 9h. (Tashkent, Sverdlovsk, Riverside, Tinemaha, Huancayo (3), and La Paz), 10h. (Fordham, Moncalieri, Sverdlovsk, Kodaikanal, and Fort de France), 11h. (East Machias and Manila), 14h. (Colombo, Kodaikanal, and Ksara), 15h. (Samarkand, Frunse, Andijan, Philadelphia, and Fort de France (3)), 17h. (Hukuoka B), 18h. (near Fort de France), 19h. (Santiago and Tinemaha), 21h. (near Fort de France).

Feb. 5d. 2h. 23m. 36s. Epicentre 4°·6N. 75°·4W.

Destructive in the department of Caldas, at Armenia, Calarca, Manizalles, etc. Felt over 1,000,000 sq. kms. as far as Panama.

Epicentre 4·6N. 75·4W. (U.S.C.G.S.).

Depth =130kms. given by J.S.A.

See Seismological Notes, Bulletin of the Seismological Society of America, Vo.. 28, pp. 227-229, 1938.

J. E. Ramirez. The Columbian Earthquake of February 5th, 1948. Earthquake Notes, Vol. X, No. 1 and 2, p. 15, 1948.

Annales de l'Institut de Physique du Globe de Strasbourg, 1938, Tome III, 2nd partie, Mende, 1941, p. 6.

Mapa sismico y tectomico de Columbia (Banco de la Republica. Bol. grafico 7, Febrero de 1947). Epicentre 5°·1N. 75°·7W.

$A = +\cdot2513$, $B = -\cdot9646$, $C = +\cdot0796$; $\delta = -6$; $h = +7$;
$D = -\cdot968$, $E = -\cdot252$; $G = +\cdot020$, $H = -\cdot077$, $K = -\cdot997$.

A depth of focus 0·015 has been assumed.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bogota		1·3	90	i 0 39	+13	i 1 5	+19	—	—	—
Balboa Heights	E.	•6·0	317	i 1 34	+ 6	i 2 26	−10	—	—	—
	N.	6·0	317	i 1 24	− 4	i 2 28	− 8	—	—	—
San Juan		16·4	32	i 3 45	+ 1	—	—	—	—	i 11·6
Huancayo		16·5	180	i 3 44k	− 1	—	—	—	—	—
Fort de France		17·3	55	i 3 50	− 5	i 7 7	+ 6	4 5	PP	—
Merida	N.	21·3	322	i 4 32	− 6	—	—	—	—	—
La Paz		22·2	159	i 4 46k	0	i 8 42	+ 5	5 18	PP	10·6
Tacubaya	E.	27·5	304	i 5 36	0	—	—	—	—	—
Montezuma		27·8	166	e 6 10	PP	e 10 12	+ 1	—	—	11·6
Columbia		29·7	350	e 5 55	− 1	e 10 56	+15	e 6 59	PP	12·4
Guadalajara	N.	31·5	303	i 7 4	PP	—	—	—	—	—
Little Rock		33·9	334	i 6 33	0	i 11 16	−31	i 7 14	pP	—
Georgetown		34·2	358	i 6 41	+ 6	11 50	− 1	7 59	PP	—
Philadelphia		35·2	2	e 6 45k	+ 1	i 12 1	− 6	i 7 42	PP	i 14·9
Cincinnati		35·3	348	i 6 46	+ 2	i 12 12	+ 4	i 7 18	pP	—
Fordham		36·1	3	i 6 50	− 1	12 21	+ 1	7 49	PP	—
Pennsylvania		36·1	357	i 6 52	+ 1	i 12 24	+ 4	8 3	PP	e 16·8
St. Louis	N.	36·5	341	i 6 59	+ 4	e 12 23	− 4	i 6 31	pP	—
Florissant	Z.	36·7	341	i 7 1	+ 5	i 12 34	+ 4	i 7 31	pP	—
Ithaca		37·7	359	i 7 5	0	e 12 41	− 4	i 7 41	pP	—
Weston		37·8	6	e 7 6k	+ 1	i 12 50	+ 4	i 7 44	pP	—
Harvard		37·9	6	i 7 9k	+ 3	i 12 48	0	i 7 44	pP	—
Santiago		38·1	173	7 14	+ 6	13 6	+15	16 20	SSS	e 20·9
Buffalo		38·3	357	i 7 9	− 1	12 43	−11	8 7	sP	16·7
Chicago		38·7	345	e 7 13	0	i 12 55	− 5	i 8 43	PP	15·0
Chicago (Loyola)		38·7	345	i 7 14	+ 1	i 12 57	− 3	8 9	sP	—
Toronto		39·1	356	7 18	+ 2	13 8	+ 2	16 6	SS	18·4
Vermont		39·8	3	i 7 25k	+ 3	i 13 16	0	i 8 57	PP	i 16·3
Ottawa		40·6	0	i 7 28	− 1	13 28	0	8 42	PP	18·4
Rio de Janeiro	N.	41·6	131	7 52	+15	—	—	—	—	i 17·2
Shawinigan Falls		41·9	4	7 40	+ 1	13 52	+ 5	9 36	PP	20·4
La Plata		42·6	157	7 40	− 5	13 55	− 3	—	—	16·4
Seven Falls		42·6	5	7 44	− 1	13 54	− 4	8 44	PP	19·4
Tucson		43·1	314	i 7 46	− 3	i 14 5	0	i 9 50	PP	i 17·5

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	48·1	311	8 27	− 2	—	—	i 9 18	sP	—
Riverside	48·7	312	i 8 30	− 3	—	—	i 9 26	sP	—
Mount Wilson	49·3	312	i 8 35	− 3	—	—	9 18	pP	—
Pasadena	49·4	312	e 8 34	− 5	e 15 24	−10	i 9 12	pP	—
Haiwee	50·1	315	e 8 41	− 3	—	—	e 11 18	sPP	—
Santa Barbara	50·6	312	i 8 46	− 2	—	—	i 9 41	pP	—
Tinemaha	50·8	315	i 8 46	− 3	e 15 59	+ 5	i 9 42	pP	—
Bozeman	51·4	328	e 8 49	− 5	e 16 9	+ 7	10 42	PP	e 20·4
Butte	52·4	328	9 0	− 1	e 16 21	+ 6	10 53	PP	e 20·6
Lick	53·3	314	e 9 7	− 1	—	—	—	—	—
Branner	53·7	314	e 9 11	0	e 16 26	− 7	—	—	—
Berkeley	54·0	314	e 9 11	− 2	i 17 43	+66	—	—	—
Saskatoon	54·0	337	8 59	−14	16 23	−14	e 17 25	PS	24·4
Ukiah	55·2	315	e 9 22	0	e 16 55	+ 2	e 11 35	PP	21·6
Ferndale	56·6	316	e 9 38	+ 6	—	—	e 12 34	PP	—
Seattle	58·7	325	e 10 20	+34	e 18 2	+23	e 12 44	PP	e 24·3
Victoria	59·7	325	9 54	+ 1	17 53	+ 1	i 18 54	PS	28·4
Ivigtut	60·1	15	9 57	+ 1	17 56	− 1	13 32	PPP	—
Sitka	70·2	330	e 11 2	+ 1	i 20 2	+ 2	i 13 41	PP	e 28·2
San Fernando	70·6	53	i 10 59	− 4	i 19 54	−11	—	—	—
Malaga	72·0	53	i 11 21	+ 9	i 20 27	+ 6	—	—	33·4
Granada	72·8	52	i 11 24	+ 8	i 20 34	+ 4	—	—	—
Toledo	72·8	50	i 11 18	+ 2	i 20 39	+ 9	e 26 50	SS	e 29·2
Almeria	73·6	53	i 11 19	− 2	i 20 38	− 1	—	—	e 33·1
Rathfarnham Castle	73·9	36	e 11 17	− 6	20 39	− 3	12 17	pP	—
Scoresby Sund	74·1	16	11 25	+ 1	20 44	− 1	21 28	PS	—
Jersey	75·7	40	i 11 38	+ 5	i 21 3	+ 1	14 29	PP	e 31·8
Bidston	75·8	36	i 11 27	− 6	i 21 1	− 2	i 22 10	PS	e 31·4
Edinburgh	76·3	33	—	—	i 21 12	+ 3	i 26 2	SS	35·4
Stonyhurst	76·3	36	11 42	+ 6	i 21 12	+ 3	i 12 37	pP	37·4
Oxford	76·6	38	11 39	+ 1	i 21 7	− 5	—	—	e 31·9
Durham	76·9	35	i 11 44	+ 4	i 21 19	+ 4	i 22 25	PS	31·9
Aberdeen	77·1	32	i 11 44	+ 3	i 21 20	+ 2	i 22 3	PS	35·6
Kew	77·2	38	i 11 44a	+ 3	i 21 18	− 1	i 12 23	pP	e 31·4
Algiers	78·0	54	i 11 50	+ 4	i 21 30	+ 3	12 20	pP	i 29·0
Paris	78·6	41	i 11 53	+ 4	i 21 33	− 1	12 50	pP	31·4
College	79·4	335	e 11 40	−13	21 28	−14	14 50	PP	31·5
Uccle	80·0	39	e 11 58a	+ 1	i 21 48	0	i 12 36	pP	e 32·4
Marseilles	80·2	47	e 11 24?	−34	i 21 11	−39	e 25 42	?	—
Grenoble	80·5	45	i 12 20	+21	22 38	PS	12 48	pP	—
De Bilt	80·6	37	i 12 3	+ 3	i 21 57	+ 2	—	—	e 33·4
Besançon	80·8	43	—	—	i 21 57	0	—	—	—
Honolulu	81·3	291	e 12 7	+ 4	22 13	+11	22 56	PS	e 32·8
Bergen	81·4	29	12 1	− 3	22 3	0	—	—	—
Neuchatel	81·4	43	e 12 4	0	e 22 5	+ 2	—	—	—
Basle	81·9	43	e 12 5	− 2	e 22 11	+ 3	—	—	—
Moncalieri	81·9	45	i 11 48	−19	21 39	−29	—	—	—
Strasbourg	82·0	41	e 12 8	+ 1	i 22 9	0	i 12 46	pP	—
Karlsruhe	82·5	41	i 12 13	+ 3	i 22 16	+ 2	—	—	—
Zurich	82·5	43	e 12 10	0	e 22 15	+ 1	e 12 44	pP	—
Stuttgart	83·0	41	e 12 16	+ 4	i 22 20	+ 1	12 56	pP	e 35·4
Chur	83·2	43	e 12 18	+ 5	e 22 24	+ 3	—	—	—
Göttingen	83·5	38	i 12 18	+ 3	e 22 29	+ 5	—	—	—
Hamburg	83·6	36	e 12 7k	− 8	i 22 26	+ 1	—	—	e 33·4
Jena	84·3	40	e 12 18	− 1	i 22 36	+ 4	—	—	e 32·4
Florence	84·4	46	i 12 22	+ 3	i 22 26	− 7	(28 9)	SS	28·2
Padova	84·4	45	i 12 29	+10	i 22 41	+ 8	—	—	—
Copenhagen	85·0	34	12 24	+ 2	22 36	− 3	13 4	pP	—
Cheb	85·1	40	i 12 26	+ 3	i 22 41	+ 1	—	—	e 51·4
Potsdam	85·5	37	i 12 32	+ 7	e 22 36	[+ 1]	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Triest		86·2	45	i 12 32a	+ 4	e 22 39	[0]	i 16 10	PP	—
Prague		86·4	40	12 33k	+ 4	e 22 45	[+ 5]	24 0	PS	e 32·4
Laibach		86·7	44	e 12 36	+ 6	i 23 1	+ 6	—	—	—
Graz		87·2	44	i 12 34	+ 1	i 22 43	[− 2]	i 24 6	PS	e 37·4
Upsala		87·6	30	i 12 41	+ 6	i 23 3	− 1	i 24 13	PS	—
Ogyalla	E.	89·0	42	13 28	+47	e 23 20	+ 4	e 24 20	PS	—
Budapest	E.	89·7	43	i 12 49	+ 4	23 26	+ 3	14 14	pP	—
	N.	89·7	43	12 52	+ 7	23 26	+ 3	14 21	pP	35·4
Kecskemet	Z.	90·2	43	i 11 36	?	22 34	[−30]	e 12 32	P	—
Belgrade		90·9	46	i 12 55k	+ 5	i 23 37	+ 3	i 16 33	PP	e 40·7
Sofia		93·3	47	e 12 41	−20	e 22 57	[−24]	i 30 7	SS	—
Pulkovo		93·9	30	13 8	+ 4	23 23	[− 2]	13 51	pP	38·9
Bucharest		95·0	45	e 13 15k	+ 6	e 23 33	[+ 2]	e 17 2	PP	42·6
Cape Town		95·8	124	i 13 14	+ 1	i 23 36	[+ 1]	i 17 7	PP	e 46·9
Istanbul		97·3	48	13 25	+ 5	24 41	+12	31 26	SS	e 54·4
Moscow		98·9	31	e 14 16	+49	24 45	+ 3	e 15 14	pP	e 41·9
Sebastopol		100·1	43	e 17 37	PP	e 24 59	+ 7	—	—	—
Simferopol		100·4	43	e 14 49	+75	e 25 4	+ 9	—	—	31·7
Theodosia		101·2	42	e 13 41	+ 4	—	—	e 17 49	PP	—
Helwan		102·1	59	13 49	+ 8	24 44	−25	14 26	pP	—
Ksara		104·9	55	i 14 0k	+ 7	33 0	SS	i 14 38	pP	—
Wellington		107·9	229	18 31	PKP	i 25 6	[+33]	19 32	PP	50·1
Grozny		108·8	42	e 16 43	P	—	—	i 18 53	PP	—
Tiflis		108·8	44	e 15 0	P	24 42	[+ 5]	e 17 49	PKP	e 44·3
Christchurch		109·0	226	i 15 9a	P	24 40	[+ 2]	i 19 46	PP	e 51·2
Sverdlovsk		109·1	24	18 40	PKP	i 26 12	S	19 49	sPP	i 44·5
Baku		112·9	43	19 22	PP	28 42	PS	34 54	SS	e 48·4
Semipalatinsk		121·3	18	e 19 31	[+53]	—	—	—	—	—
Sapporo		122·1	329	19 54	PP	—	—	—	—	—
Samarkand		124·0	36	e 19 49	PP	—	—	—	—	—
Tashkent		124·1	32	e 18 13	[−31]	37 12	SS	20 32	PP	e 45·7
Frunse		125·5	27	e 18 41	[− 5]	—	—	—	—	—
Andijan		126·1	30	e 18 46	[− 2]	e 28 45	PS	—	—	—
Vladivostok		126·5	336	18 50	[0]	28 32	PS	22 55	PPP	—
Tukubasan		127·5	325	18 55	+ 5	—	—	—	—	—
Tokyo (Cen.Met.Ob.)		128·1	324	19 0	+ 9	—	—	i 22 10	PP	—
Oiwake		128·4	326	18 53	[+ 1]	—	—	—	—	—
Nagoya		130·1	325	18 56	[+ 1]	22 10	PP	—	—	—
Melbourne		131·0	223	i 21 9	PP	i 31 21	PS	—	—	—
Osaka		131·3	326	18 58	[+ 2]	—	—	22 19	PP	—
Zinsen		133·4	336	e 21 5	PP	e 28 3	?	21 32	PP	e 34·4
Taikyu		133·9	333	e 21 43	PP	e 26 3	[+ 5]	—	—	—
Dehra Dun		137·0	35	e 19 49	[+41]	e 26 22	[+18]	—	—	—
Agra		139·3	37	e 19 21	[+ 9]	e 26 25	[+17]	e 20 1	pPKP	62·0
Bombay		141·0	53	i 16 56	P	i 28 58	SKKS	i 40 39	SS	—
Isigakizima		145·5	328	19 25	[+ 2]	—	—	—	—	—
Hyderabad		146·1	49	19 32	[+ 8]	—	—	—	—	—
Taito		148·4	331	19 30	[+ 3]	—	—	—	—	—
Calcutta	N.	148·7	30	i 19 41	[+13]	i 26 34	[+12]	i 42 3	SS	—
Kodaikanal	E.	149·2	61	e 19 35	[+ 6]	i 29 44	SKKS	i 42 54	SS	i 70·4
Hong Kong		151·7	341	19 46	[+14]	32 45	PS	23 58	PP	—
Colombo	E.	152·8	66	19 42	[+ 8]	—	—	—	—	—
Phu-Lien		154·7	4	e 20 8	[+31]	—	—	—	—	—
Manila		155·0	320	i 19 45	[+ 7]	—	—	—	—	—
Amboina	N.	156·9	271	19 44	[+ 5]	—	—	—	—	—
Medan		169·9	36	e 20 1	[+ 9]	i 23 2	?	i 25 32	PP	e 60·4
Batavia		177·3	234	i 19 58	[+ 3]	—	—	e 25 43	PP	47·4

Additional readings :—
Huancayo i = +3m.49s. and +3m.55s.
Fort de France PPP = +4m.10s., SS = +7m.12s., SSS = +7m.18s.
La Paz iZ = +9m.40s., iE = +9m.49s.
Columbia P = +6m.48s., S = +11m.35s.
Little Rock iN = +6m.45s. and +7m.22s., isPN = +7m.52s., iP$_c$PEN = +8m.50s.
Georgetown +10m.3s.
Philadelphia iP = +6m.55s., iPPP = +8m.4s., i = +12m.50s. and +13m.3s.
Cincinnati isP = +7m.42s., iPP = +8m.4s., sS = +13m.10s., SS = +14m.28s.

Continued on next page.

Fordham PPP = +8m.23s., P_cP = +9m.17s.
Pennsylvania i = +6m.55s. and +13m.6s.
St. Louis isPN = +7m.49s., iPPN = +8m.22s., iSSN = +13m.17s., iSPN = +13m.25s.
Florissant isSZ = +13m.24s.
Ithaca isP = +8m.1s., ePP = +8m.23s., esS = +13m.52s.
Weston iP = +7m.9s., i = +8m.14s., iPPN = +8m.38s., i = +9m.22s., isS = +13m.50s., eS_cS = +17m.10s.
Harvard iPPZ = +8m.38s., SS = +13m.48s.
Santiago e = +7m.50s.
Buffalo PPPP = +8m.56s., S_cP = +12m.59s., SS = +13m.43s.
Chicago eP = +7m.17s., P_cP = +9m.25s., i = +13m.55s.
Chicago (Loyola) PP = +8m.39s.
Vermont eP = +8m.19s., iPPP = +9m.6s., iS = +13m.23s., i = +14m.20s.
Ottawa iNZ = +8m.26s., PPP = +9m.10s., i = +14m.30s., SSS = +16m.30s.
Shawinigan Falls SSS = +17m.26s.
Seven Falls SSS = +17m.24s.
Tucson iP = +7m.55s., i = +8m.50s. and +10m.6s., iPPP = +10m.14s., i = +11m.45s., iS = +14m.32s., iS_cS = +17m.44s.
La Jolla iSPZ = +9m.18s., iP_cSEZ = +13m.34s., iS_cSNE = +18m.5s.
Riverside ePPE = +10m.46s., iS_cSEN = +18m.10s., esS_cSN = +19m.19s.
Mount Wilson isPEZ = +9m.32s., ePPE = +10m.48s., isPPNZ = +11m.24s., eS_cSN = +18m.14s.
Pasadena iP = +8m.42s., isP = +9m.28s., iPPZ = +10m.37s., isPPE = +11m.25s., iE = +12m.32s., iP_cSNZ = +13m.40s., isSN = +16m.37s., iS_cSEN = +18m.15s., isS_cSE = +19m.24s., epPKP,PKPZ = +40m.27s.
Haiwee eP_cSEZ = +13m.45s.
Santa Barbara iNZ = +8m.52s., isPZ = +10m.6s., iZ = +11m.40s. and +13m.45s., eS_cSNZ = +18m.17s.
Tinemaha i = +15m.59s., esS_cSN = +19m.46s.
Bozeman iP = +8m.59s., eP = +9m.12s., iP_cP = +9m.49s., PPP = +11m.54s., eS_cS = +18m.41s., eSS = +19m.26s.
Butte iP = +9m.6s., P = +9m.36s., iP_cP = +9m.55s., i = +10m.28s., PPP = +11m.55s., i = +17m.19s., iS_cS = +18m.39s., eSS = +19m.53s.
Lick iN = +9m.15s.
Branner iPEN = +9m.17s.
Berkeley iZ = +13m.9s., eE = +13m.14s., eN = +13m.26s., eE = +15m.43s., eN = +16m.11s., iGZ = +23m.2s.
Saskatoon SSS = +21m.30s.
Ukiah eP = +9m.25s., P = +9m.40s., P_cP = +10m.17s., ePPP = +12m.30s., eSS = +20m.16s.
Ferndale eE = +10m.33s. and +12m.29s.
Seattle eP = +10m.25s.
Ivigtut +10m.35s. and +11m.1s., pPPP = +14m.9s., sS = +19m.2s., e = +20m.36s., SSS = +24m.44s.
Sitka i = +14m.34s., PPP = +15m.30s., iS_cS = +21m.8s., SSS = +27m.42s.
Rathfarnham Castle i = +11m.59s. and +13m.18s., iPS = +21m.22s., isS = +21m.51s., i = +24m.43s., +25m.28s., and +27m.27s.
Scoresby Sund ? = +11m.53s., +21m.23s., and +22m.29s.
Jersey e = +12m.10s., PPP = +16m.42s., SS = +21m.44s.
Bidston iPP = +12m.2s., iS_cS = +21m.30s., iSPS = +22m.37s., iSS = +25m.57s.
Edinburgh i = +22m.32s. and +25m.44s.
Aberdeen P_cP = +13m.11s., i = +15m.14s. and +21m.37s., iPS = +22m.26s., i = +25m.58s., +29m.3s., and +31m.39s.
Kew iS_cSN = +21m.45s., iPS = +22m.26s., isPSN = +22m.56s., i = +24m.47s., iSS = +26m.18s.
Algiers sP = +12m.52s., ePP = +14m.46s., sS = +22m.50s.
College P = +11m.53s., eP = +12m.11s., iPPS = +22m.36s., SS = +26m.23s.
Uccle isP = +12m.56s., isS = +22m.42s., iPSN = +22m.55s., iSSN = +27m.5s.
Grenoble sS = +23m.10s.
De Bilt iZ = +12m.42s.
Honolulu iP = +12m.11s., P = +12m.28s., iPPS = +23m.16s., i = +24m.1s.
Neuchatel i = +12m.8s.
Basle e = +12m.9s.
Strasbourg iSP = +13m.8s., iPPZ = +14m.21s., iPPE = +14m.28s., iE = +14m.47s., ipPP = +14m.54s., iPPPZ = +15m.14s., pPPPZ = +16m.42s., iN = +17m.35s., isSN = +23m.14s., iSSN = +27m.22s.
Stuttgart eSP = +13m.10s., e = +13m.52s., ePP = +15m.39s., eSP = +23m.1s., epSN = +23m.25s., iEZ = +23m.56s., eSSN = +27m.54s.
Göttingen iZ = +13m.14s.
Hamburg iZ = +12m.18s., eZ = +12m.58s., iZ = +13m.15s., iE = +23m.37s.
Jena ePN = +12m.24s., eE = +13m.0s., eN = +13m.6s., eZ = +13m.16s., eN = +13m.18s., eE = +13m.20s., iE = +23m.40s.
Padova e = +15m.45s.
Copenhagen sP = +13m.24s., PP = +16m.12s., e = +18m.48s., +23m.24s., and +23m.54s.
Cheb e = +13m.4s. and +23m.42s.
Potsdam iZ = +12m.37s., iE = +22m.42s., iN = +22m.45s.
Triest iS = +22m.52s., iPS = +23m.59s., i = +28m.5s. and +35m.4s.

Continued on next page.

Prague i = +13m.11s., eSS = +28m.31s.
Laibach iPNE = +12m.47s.
Upsala iPSE = +24m.25s., eSSN = +28m.48s.
Budapest E. i = +13m.30s., +13m.39s., and +24m.11s., sP = +24m.36s., sS = +26m.6s., e = +27m.45s.
Budapest N. i = +13m.19s., +13m.54s., +14m.39s., +16m.24s., +24m.21s., and +24m.52s., PS = +25m.30s., sS = +26m.4s., i = +26m.24s., and +26m.45s., SS = +29m.29s.
Kecskemet z. e = +12m.13s., epP = +12m.32s., esP = +12m.54s., e = +13m.27s. and +14m.19s., ePPP = +17m.50s., e = +24m.38s.
Belgrade i = +13m.52s., iSSNE = +29m.49s.
Sofia iS = +23m.32s.
Pulkovo PP = +16m.39s., iS = +24m.0s., pS = +25m.6s., SS = +30m.18s.
Bucharest iE = +18m.22s., PPN = +21m.6s., iS = +24m.14s., PSN = +25m.27s., PSE = +25m.34s., PPSN = +26m.13s., SSE = +30m.42s., SSN = +30m.45s., SSS = +34m.53s.
Cape Town iSKKSE = +24m.29s., iSE = +24m.45s., iPS = +26m.1s., iPPSE = +26m.45s., iSSN = +30m.47s., iSSE = +30m.58s., iSSSN = +34m.38s., iSSSE = +34m.53s., eN = +39m.6s., iGN = +39m.16s.
Istanbul PS = +25m.3s.
Moscow PP = +18m.26s., i = +23m.54s., PPS = +27m.37s., SSS = +37m.0s.
Theodosia e = +15m.19s.
Helwan PP = +17m.54s., PPP = +20m.34s., pPPP = +20m.54s., SKP = +24m.9s., iS = +25m.17s., sS = +26m.24s.
Ksara sP = +14m.56s., ePP = +18m.24s., isS = +26m.54s., PPS = +28m.38s.
Wellington i = +18m.43s., +21m.2s., +23m.6s., +27m.24s., and +34m.47s.
Tiflis epPKP = +18m.34s., iEN = +18m.51s., eE = +23m.57s., iE = +25m.35s., iSEN = +26m.13s., isS = +27m.19s., iN = +28m.47s., eN = +37m.56s. and +38m.50s., eE = +39m.3s.
Christchurch iEZ = +18m.51s., SKSN = +25m.43s., iN = +26m.29s., SKKSEZ = +26m.39s., iSN = +27m.32s., iE = +28m.21s., ePS = +29m.11s., iPPSE = +30m.13s., iSSN = +35m.6s., iN = +38m.40s., iSSSN = +39m.15s., eSSSSN = +43m.13s., L_q = +45·6m.
Sverdlovsk PKP = +17m.28s., sSS = +35m.8s.
Baku PP = +19m.56s., pPP = +20m.30s., PPP = +22m.39s.
Tashkent i = +18m.45s., PKP = +19m.11s., SP = +29m.31s., PS = +29m.56s., sS = +30m.35s.
Vladivostok sPP = +20m.45s., SP = +28m.32s., sSS = +37m.40s.
Melbourne i = +20m.20s., +22m.15s., +22m.54s., and +27m.54s.
Zinsen ePPPZ? = +22m.9s., eZ = +23m.25s.
Dehra Dun eSKP = +23m.33s.
Agra ePPE = +21m.51s., eSKPE = +23m.27s., eE = +24m.48s. and +28m.51s., iSKKSE = +29m.16s., iE = +30m.30s., SKKPE = +31m.43s., PPSE = +34m.51s., SSE = +40m.15s., SSSE = +45m.16s.
Bombay e = +46m.4s. and +56m.12s.
Calcutta iPKP$_3$N = +20m.19s., eN = +23m.58s., iN = +27m.41s., +30m.41s., and +34m.24s.
Kodaikanal iSSSE = +48m.39s.
Hong Kong SS? = +39m.18s., SSS? = +42m.45s.
Manila iZ = +21m.9s., iE = +22m.10s., iEN = +25m.40s.
Long waves were also recorded at Apia and Williamstown.

Feb. 5d. 9h. 55m. 6s. Epicentre 14°·2N. 122°·1E. (as on 1937 Aug. 20d.).

Felt Intensity VII at Virac, strong vertical movement, subterranean noise and damage to buildings. Intensity V at Legaspi. Epicentre around the Isle of Catanduanes 14°·0N. 124°·5E. (Strasbourg).

See W. C. Repetti, Manila Central Observatory Seismological Bulletin for 1938. January-June, Manila, 1938, p. 8.

A = −·5154, B = +·8216, C = +·2438; δ = +10; h = +6;
D = +·847, E = +·531; G = −·130, H = +·206, K = −·970.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila	1·1	290	i 0 50k	+28	1 30	+51	—	—	—
Kosyun	7·9	351	2 16	P*	3 59	S*	—	—	—
Karenko	9·7	357	2 38	PP	4 36	SSS	—	—	—
Isigakizima	10·3	10	2 41	PP	—	—	—	—	—
Hong Kong	11·0	318	3 1a	PP	5 14	SSS	5 34	SS	6·2
Nake	15·7	25	3 41	− 3	—	—	—	—	—
Phu-Lien	16·2	296	e 4 8	PP	e 7 29	SSS	—	—	e 8·4
Amboina	18·8	161	i 3 35	−28	e 7 12	−38	—	—	—
Miyazaki	19·6	24	4 27	− 5	8 8	0	—	—	—
Nagasaki	19·7	19	4 31	− 3	8 7	− 3	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hukuoka B		20·7	19	e 2 44	?	—	—	—	—	—
Husan		21·7	14	e 5 16	PP	—	—	—	—	—
Matuyama		21·8	24	4 55	− 1	8 52	0	—	—	—
Taikyu		22·3	12	4 59	− 2	i 9 7	+ 5	—	—	—
Titizima		22·7	51	5 15	+11	—	—	—	—	—
Siomisaki		22·8	30	5 22	+17	8 55	−16	—	—	—
Zinsen		23·5	7	e 5 3	− 9	e 9 25	+ 2	—	—	—
Osaka		23·7	27	5 13	− 1	9 27	0	5 49	PP	—
Nagoya		24·8	28	e 4 28	−57	—	—	(5 57)	PP	—
Gihu		24·9	28	5 23	− 3	9 27	−20	—	—	—
Batavia		25·3	217	5 27	− 3	i 9 56	+ 2	—	—	—
Medan		25·4	248	5 35	+ 4	e 9 58	+ 2	—	—	—
Oiwake		26·5	31	5 38	− 3	10 4	−10	—	—	—
Tokyo Cen. Met. Ob.		26·6	32	6 4	+22	10 56	+40	—	—	—
Mizusawa		29·9	30	6 26	+14	—	—	—	—	—
Calcutta	N.	33·0	289	i 7 35	PP	i 12 10	+13	i 8 10	PPP	i 14·6
Hyderabad		42·0	280	8 0	+ 6	14 30	+16	9 43	PP	21·1
Colombo	E.	42·1	264	7 58	+ 3	14 29	+13	—	—	—
Kodaiaknal	E.	43·8	271	i 8 11	+ 2	i 14 52	+12	i 17 48	SS	21·5
Perth		46·3	186	i 8 13	−16	i 15 31	+15	i 20 12	SSS	—
Bombay	E.	47·4	282	i 8 39	+ 1	? 15 42	+10	i 10 37	PP	23·6
Semipalatinsk		49·5	327	8 56	+ 2	—	—	—	—	—
Frunse		49·7	314	e 8 59	+ 3	—	—	—	—	—
Brisbane	E.	51·2	143	e 8 42	−25	i 15 36	−49	i 10 30	PP	19·6
Tashkent		53·0	311	9 22	+ 1	i 16 56	+ 6	—	—	e 28·8
Tchimkent		53·0	312	9 30	+ 9	—	—	—	—	—
Samarkand		54·3	309	e 9 11	−19	—	—	—	—	—
Melbourne		56·0	157	—	—	i 16 52	−38	—	—	—
Sverdlovsk		62·7	327	i 10 27	− 2	i 18 58	+ 1	—	—	28·9
Baku		67·4	309	i 11 1	+ 2	i 20 4	+ 9	—	—	e 35·4
Grozny		70·5	311	e 11 2	−16	—	—	—	—	—
Tiflis		71·3	309	11 24	+ 1	i 20 44	+ 3	21 24	PS	e 36·9
Christchurch		73·7	144	—	—	e 20 32	−36	—	—	e 37·7
Ksara		79·1	301	i 12 8k	0	22 16	+ 9	12 48	pP	—
Helwan		83·7	299	i 12 29	− 3	22 44	−10	13 12	pP	—
Cheb		91·4	323	—	—	e 24 54?	PS	—	—	—
Uccle		95·1	326	—	—	e 24 54	+15	—	—	e 49·9
Pasadena	Z.	105·2	48	e 18 5	PKP	—	—	—	—	—
Mount Wilson	Z.	105·3	48	i 18 47	PP	—	—	—	—	—
Riverside	Z.	105·9	48	i 18 15	PKP	—	—	—	—	—
Ottawa		118·5	14	e 18 41	[− 9]	(35 54?)	SS	—	—	35·9
Fort de France		151·1	7	e 19 23	[−26]	—	—	—	—	—
Santiago		157·6	151	17 51	?	—	—	—	—	—
La Paz	Z.	169·9	105	i 20 4k	[− 5]	—	—	i 25 18	PP	81·9

Additional readings :—
Zinsen ePZ = +5m.8s.
Nagoya S = +5m.38s.
Calcutta iN = +8m.24s.
Hyderabad S_0SE = +17m.54s.
Kodaikanal iSSSE = +18m.48s.
Perth = +15m.2s. and +19m.38s.
Bombay iE = +9m.1s. and +9m.19s., PPPE = +11m.16s., iE = +16m.16s., iSSE = +19m.13s. iE = +17m.8s., SSSE = +20m.15s., iE = +20m.53s.
Brisbane iSSE = +18m.24s.
Tiflis iE = +21m.57s., eSSN = +25m.44s., eSSSN = +29m.6s.
Christchurch eEN = +32m.38s.
Ksara sS = +23m.19s.
Helwan PP = +15m.59s., SS = +23m.44s., e = +24m.34s.
Long waves were also recorded at Wellington, Paris, Strasbourg, and De Bilt.

Feb. 5d. Readings also at 2h. (near Tananarive), 3h. (Moncalieri, Melbourne, and Wellington), 4h. (Apia, Mount Wilson, Pasadena, Riverside, and Tinemaha), 6h. (Samarkand and Andijan), 7h. (Andijan), 8h. (Samarkand), 10h. (Ksara, Grozny, and Tiflis), 12h. (Mount Wilson, Riverside, and Tinemaha), 13h. (Amboina), 15h. (near Nagoya), 20h. (Mount Wilson, Pasadena, Riverside, Tinemaha, Haiwee, Amboina, Manila (2), Brisbane, Wellington, Grozny, Ksara, Tiflis, Simferopol, Theodosia, Yalta, and Tucson), 21h. (Perth and Fort de France).

Feb. 6d. 7h. 7m. 36s. Epicentre 3°·5S. 149°·5E.

$A = -\cdot 8601$, $B = +\cdot 5066$, $C = -\cdot 0606$; $\delta = +9$; $h = +7$;
$D = +\cdot 508$, $E = +\cdot 862$; $G = +\cdot 052$, $H = -\cdot 031$, $K = -\cdot 998$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		21·3	268	e 4 48	− 2	—	—	—	—	—
Brisbane	N.	24·1	172	i 5 12	− 6	i 9 36	+ 2	—	—	11·0
Riverview		30·2	176	e 7 12	PP	—	—	—	—	e 13·7
Adelaide		32·9	196	i 6 37	− 1	i 11 58	+ 2	i 14 27	SSS	16·9
Manila		33·5	303	i 6 44	+ 1	12 50	+45	—	—	—
Melbourne		34·4	185	—	—	i 12 21	+ 2	14 36	SS	17·6
Perth		42·4	223	i 9 39	PP	e 14 21	+ 1	i 12 11	PPP	e 24·3
Batavia	E.	42·6	294	e 7 30	−29	—	—	—	—	—
Hong Kong		43·0	308	8 5	+ 2	14 36	+ 7	9 6	PP	—
Wellington		43·9	152	—	—	e 16 24?	?	—	—	23·4
Christchurch		44·8	156	—	—	9 52	PP	—	—	e 24·6
Vladivostok		49·1	343	i 8 51	0	i 16 3	+ 7	—	—	e 22·5
Medan	E.	51·3	277	e 9 10	+ 2	—	—	—	—	—
Calcutta	N.	65·0	296	e 10 52	+ 8	i 19 38	+12	—	—	—
Colombo	E.	70·3	277	e 11 24?	+ 7	—	—	—	—	—
Kodaikanal	E.	73·0	282	e 11 24?	− 9	—	—	—	—	—
Frunse		81·4	314	11 29	−51	—	—	—	—	—
Andijan		82·6	311	e 12 27	+ 1	e 21 59	−44	—	—	—
Tashkent		85·0	311	12 40	+ 2	23 9	+ 2	e 24 56	PS	e 41·3
Samarkand		86·5	310	12 45	− 1	—	—	—	—	—
Sverdlovsk		92·3	326	—	—	e 24 24?	+ 9	—	—	43·4
Pasadena		93·9	56	e 13 17	− 4	—	—	—	—	e 42·4
Tinemaha	Z.	93·9	53	i 13 16	− 5	—	—	—	—	—
Mount Wilson	Z.	94·0	56	i 13 16$_a$	− 5	—	—	—	—	—
Riverside	Z.	94·5	56	i 13 19$_a$	− 4	—	—	—	—	—
Baku		99·6	311	17 55	PP	—	—	—	—	e 52·4
Tucson		100·0	57	e 13 47	− 1	e 24 18	[− 9]	17 50	PP	e 40·1
Ksara		111·5	304	e 19 26	PP	—	—	29 6	PS	—
La Paz	Z.	137·8	119	e 22 29	PP	—	—	—	—	70·4
Fort de France		147·8	69	e 19 47	[+ 3]	—	—	—	—	—

Additional readings :—
Melbourne i = +14m.55s. and +17m.11s.
Perth i = +17m.26s. and +17m.49s.
Hong Kong S? = +12m.59s.
Christchurch eP? = 7h.7m.24s., L_q = +19m.52s.
Calcutta iN = +20m.45s.
Tashkent S = +23m.32s., eSS = +30m.48s.
Baku PPS = +28m.47s., e = +34m.41s. and +41m.54s.
Tucson ePPP = +19m.59s., PPS = +27m.51s., SS = +32m.38s.
Long waves were also recorded at San Juan, Columbia, Fordham, Moncalieri, Huancayo, Ukiah, and Sydney.

Feb. 6d. Readings also at 0h. (Tiflis, Frunse, Andijan, Samarkand, Weston, Tchimkent, and Almata), 1h. (La Paz), 3h. (Oaxaca and Tacubaya), 6h. (Tiflis), 7h. (Ksara, Nagoya, Mizusawa, Manila, Pasadena, Tinemaha, Mount Wilson, and Riverside), 8h. (Fort de France), 10h. (Huancayo), 12h. (Riverside, Mount Wilson, Tinemaha, Pasadena, and Haiwee), 13h. (Moncalieri), 14h. (Hukuoka B), 16h. (Mizusawa and Apia), 17h. (Christchurch), 18h. (Wellington, Melbourne, Adelaide, Vladivostok, Tashkent, Baku, Amboina, Mizusawa, Perth, Manila, Nagoya, and La Paz), 19h. (La Paz, Huancayo, Riverside, Mount Wilson, Tinemaha, Pasadena, Haiwee, and Sverdlovsk), 20h. (Mizusawa), 22h. (Frunse, Samarkand, and Andijan), 23h. (Andijan, Frunse, Florence, and Cheb).

Feb. 7d. 1h. 19m. 4s. Epicentre 1°·4S. 152°·0E.

$A = -\cdot 8827$, $B = +\cdot 4693$, $C = -\cdot 0243$; $\delta = -1$; $h = +7$;
$D = +\cdot 469$, $E = +\cdot 883$; $G = +\cdot 021$, $H = -\cdot 011$, $K = -1\cdot 000$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		23·9	264	i 5 13	− 3	—	—	—	—	—
Brisbane		26·9	178	i 5 32	−13	i 10 2	−18	—	—	10·4
Riverview		32·3	181	e 7 37	PP	e 13 26	SS	—	—	e 17·2
Sydney		32·3	181	6 48	+15	e 13 28	SS	—	—	—
Manila		34·6	298	i 6 54a	+ 1	13 8	+46	—	—	i 17·4
Adelaide		35·6	199	i 6 58	− 3	i 12 37	− 1	e 8 24	PP	e 17·5
Melbourne		36·8	188	i 8 26	PP	e 12 50	− 6	i 15 6	SS	18·1
Wellington		44·7	156	8 22	+ 6	14 49	− 5	10 1	PP	18·5
Batavia	E.	45·3	263	e 8 22	+ 1	—	—	—	—	—
Perth		45·7	224	i 10 57	PPP	e 15 8	0	19 1	SS	24·2
Vladivostok		47·9	340	e 8 36	− 6	i 15 42	+ 3	—	—	i 19·8
Phu-Lien		49·6	299	e 8 56?	+ 1	—	—	—	—	—
Medan		53·5	276	e 9 27	+ 3	—	—	—	—	—
Calcutta	N.	66·4	296	—	—	i 19 50	+ 7	—	—	—
Colombo	E.	72·4	277	e 11 26	− 4	—	—	—	—	—
Kodaikanal	E.	75·0	281	e 11 56?	+11	—	—	—	—	—
Bombay		80·2	290	i 12 14	0	e 22 17	− 2	—	—	—
Frunse		81·7	314	12 12	−10	—	—	—	—	—
Andijan		83·1	311	12 33	+ 4	22 54	+ 6	—	—	—
Tashkent		85·4	312	i 12 42	+ 2	i 23 13	+ 2	e 16 18	PP	e 35·8
Samarkand		87·0	310	12 48	0	23 20	− 7	—	—	—
Tinemaha		90·6	53	i 13 7	+ 2	—	—	—	—	—
Pasadena		90·6	56	e 13 4	− 1	—	—	—	—	—
Mount Wilson	Z.	90·7	56	i 13 6	0	—	—	—	—	—
Riverside	Z.	91·7	56	i 13 8	− 2	—	—	—	—	—
Tucson		96·8	58	e 13 43	+ 9	—	—	—	—	e 44·9
Baku		100·1	311	e 21 1	?	e 24 9	[−18]	e 32 15	SS	e 51·1
Grozny		102·8	314	e 12 58	−63	—	—	—	—	—
Tiflis		103·7	313	e 18 23	PP	e 33 15	SS	e 20 16	PPP	50·9
Ksara		112·3	306	e 19 28	PP	e 29 10	PS	e 30 16	PPS	—
Cheb		120·6	332	—	—	e 30 56?	PS	—	—	—
Williamstown		122·4	37	e 18 56	[− 1]	—	—	—	—	e 57·0
La Paz	Z.	136·6	116	e 19 32	[+ 8]	—	—	i 23 8	PP	74·9

Additional readings:—
Amboina iE = +5m.22s.
Brisbane iSN = +10m.8s.
Riverview eE = +7m.45s.
Sydney i = +15m.16s.
Perth i = +14m.41s.
Tashkent PPS = +24m.27s., eSS = +28m.44s., eSSS = +32m.20s.
Pasadena iNZ = +13m.14s.
Baku e = +25m.31s., +28m.57s., +33m.23s., and +42m.8s.
Tiflis eE = +18m.43s., eZ = +18m.45s.
Long waves were also recorded at Harvard, Fordham, Hong Kong, Taihoku, Sverdlovsk, and De Bilt.

Feb. 7d. 14h. 43m. 2s. Epicentre 36°·2N. 139°·2E.

Felt strongly at Kumagaya, Kakioka, Tukubasan, Tokyo, Kohu, rather strongly at Yokohama, Oiwake, Katuura, Mito, moderately at Hukusima, Onahama, and slightly at Nagoya and Sendai.

Epicentre 120km. N.W. of Tokyo 36°·25N. 139°·22E.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1938, Tokyo 140, pp. 25-27. The macroseismic chart and the chart showing the distribution of the initial movement of the P waves, page 25.

$$A = -\cdot6123,\ B = +\cdot5285,\ C = +\cdot5880;\quad \delta = -3;\quad h = 0;$$
$$D = +\cdot653,\ E = +\cdot757;\quad G = -\cdot445,\ H = +\cdot384,\ K = -\cdot809.$$

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.
Kumagaya	0·2	109	0 15k	+ 1	0 28	+ 3	—	—	—
Maebasi	0·2	332	0 16	+ 2	0 27	+ 2	—	—	—
Titibu	0·2	204	0 21	+ 7	0 34	+ 9	—	—	—
Oiwake	0·5	284	0 22k	+ 6	0 34	+ 6	—	—	—
Mitaka	0·6	152	0 18	+ 1	0 33	+ 4	—	—	—
Komaba	0·7	145	0 18	0	0 32	+ 1	—	—	—
Tokyo Cen. Met. Obs.	0·7	139	i 0 20a	+ 2	i 0 33	+ 2	—	—	—
Tokyo I.U.	0·7	139	0 18	0	0 33	+ 2	—	—	—
Tukubasan	0·7	89	0 18k	0	0 32	+ 1	—	—	—
Utunomiya	0·7	57	0 18k	0	0 32	+ 1	—	—	—
Hunatu	0·8	207	0 21a	+ 3	—	—	—	—	—
Kakioka	0·8	88	0 17k	− 1	0 29	− 3	—	—	—
Kohu	0·8	222	0 20a	+ 2	0 33	+ 1	—	—	—
Kamakura	0·9	162	0 21	+ 2	0 36	+ 2	—	—	—
Koyama	0·9	192	0 21	+ 2	0 36	+ 2	—	—	—
Nagano	0·9	300	0 22k	+ 3	0 38	+ 4	—	—	—
Yokohama	0·9	155	0 20a	+ 1	0 35	+ 1	—	—	—
Mito	1·0	80	0 21k	+ 1	0 36	0	—	—	—
Misaki	1·1	162	0 21	− 1	0 37	− 1	—	—	—
Misima	1·1	191	0 22	0	0 39	+ 1	—	—	—
Numadu	1·1	194	0 23a	+ 1	0 43	+ 5	—	—	—
Yosiwara	1·1	202	0 21	− 1	0 38	0	—	—	—
Iida	1·3	238	0 24a	0	0 42	0	—	—	—
Ito	1·3	184	0 22a	− 2	0 37	− 5	—	—	—
Katuura	1·3	143	0 30	+ 6	0 43	+ 1	—	—	—
Kiyosumi	1·3	143	0 21	− 3	0 41	− 1	—	—	—
Mera	1·4	158	0 26a	+ 1	0 44	0	—	—	—
Tyosi	1·4	109	0 22k	− 3	0 41	− 3	—	—	—
Susaki	1·5	187	0 21	− 6	0 40	− 7	—	—	—
Takayama	1·6	268	0 30	+ 2	0 52	+ 3	—	—	—
Niigata	1·7	356	0 31	+ 2	0 55	+ 4	—	—	—
Toyama	1·7	287	0 30k	+ 1	0 53	+ 2	—	—	—
Husiki	1·8	289	0 31	+ 1	0 56	+ 3	—	—	—
Hamamatu	1·9	219	0 32a	0	0 55	0	—	—	—
Hukusima	1·9	33	0 32k	0	0 55	0	—	—	—
Gihu	2·1	248	0 35k	+ 1	0 59	− 1	—	—	—
Kanazawa	2·1	279	0 38k	+ 4	1 4	+ 4	—	—	—
Nagoya	2·1	240	i 0 36k	+ 2	1 1	+ 1	—	—	—
Wazima	2·2	303	0 35a	− 1	1 3	+ 1	—	—	—
Yamagata	2·2	24	0 46	+10	1 17	+15	—	—	—
Hukui	2·4	266	0 34	− 4	1 6	− 1	—	—	—
Ibukisan	2·4	250	0 38k	0	1 9	+ 2	—	—	—
Hikone	2·5	249	0 40k	0	1 11	+ 1	—	—	—
Sendai	2·5	33	0 39k	− 1	1 8	− 2	—	—	—
Kameyama	2·6	239	0 41k	0	1 8	− 4	—	—	—
Tu	2·6	236	0 35k	− 6	1 12	0	—	—	—
Isinomaki	2·8	37	0 42	− 2	1 15	− 2	—	—	—
Hatidyozima	3·1	170	0 48a	0	1 24	0	—	—	—
Kyoto	3·1	247	0 49k	+ 1	1 36	+12	—	—	—
Yagi	3·2	239	0 50k	0	1 27	0	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Miyadu		3·3	258	0 51k	0	1 32	+ 3	—	—	—
Mizusawa		3·3	28	i 0 51	0	i 1 27	− 2	—	—	—
Osaka		3·4	243	0 53k	+ 1	1 46	+14	—	—	—
Akita		3·6	11	0 54a	− 1	1 38	+ 1	—	—	—
Toyooka		3·6	262	0 56k	+ 1	1 36	− 1	—	—	—
Kobe		3·6	246	0 55k	0	1 37	0	—	—	—
Morioka		3·8	24	0 58a	0	1 42	0	—	—	—
Siomisaki		3·9	228	1 0k	+ 1	1 33	−11	—	—	—
Wakayama		3·9	240	0 58k	− 1	2 13	SS	—	—	—
Sumoto		4·0	244	1 0k	0	1 55	+ 9	—	—	—
Miyako		4·1	30	1 0a	− 2	1 43	− 6	—	—	—
Tokusima		4·4	243	1 18	PP	2 1	+ 5	—	—	—
Hatinohe		4·7	22	1 10a	0	2 0	− 4	—	—	—
Aomori		4·8	14	1 12a	+ 1	2 6	0	—	—	—
Tadotu		4·8	249	1 11k	0	2 22	SS	—	—	—
Sakai		4·9	265	1 15	+ 2	2 21	+12	—	—	—
Muroto		5·1	236	1 15k	− 1	2 38	SS	—	—	—
Koti		5·3	243	i 1 20k	+ 2	2 42	SS	—	—	—
Hakodate		5·7	11	1 31k	+ 7	2 22	− 6	—	—	—
Hirosima		5·8	254	1 25k	0	2 48	SS	—	—	—
Matuyama		5·8	248	1 34k	+ 9	3 1	SSS	—	—	—
Hamada		6·0	260	1 28k	0	2 34	− 2	—	—	—
Simidu		6·2	239	1 29k	− 1	2 59	SS	—	—	—
Muroran		6·3	12	1 29	− 3	2 47	+ 4	—	—	—
Urakawa		6·6	24	1 22	−14	2 31	−19	—	—	—
Ooita		6·9	247	1 43	+ 3	—	—	—	—	—
Sapporo		7·0	12	1 37a	− 5	3 8	+ 8	—	—	—
Simonoseki		7·1	254	1 46	+ 3	3 11	+ 8	—	—	—
Izuka		7·4	253	1 47	0	3 25	+15	—	—	—
Miyazaki		7·7	239	1 53k	+ 2	3 23	+ 6	—	—	—
Hukuoka		7·7	253	1 53k	+ 2	3 45	SS	—	—	—
Kumamoto		7·8	247	1 53k	+ 1	3 20	0	—	—	—
Asahigawa		7·9	17	1 50	− 4	3 46	SS	—	—	—
Unzendake		8·2	248	2 1k	+ 3	4 3	SSS	—	—	—
Haboro		8·4	12	1 53	− 7	2 58	−36	—	—	—
Husan		8·4	265	e 2 0	0	e 3 31	− 3	—	—	—
Nagasaki		8·4	249	2 1k	+ 1	4 1	SS	—	—	—
Kagosima		8·5	240	2 3	+ 1	4 16	SSS	—	—	—
Taikyu		8·6	271	i 2 5k	+ 2	e 3 47	+ 8	—	—	—
Nemuro		8·7	32	1 53	−12	3 24	−18	—	—	—
Vladivostok		8·9	323	i 2 7	0	i 3 50	+ 3	—	—	i 4·8
Yakusima		9·3	234	2 13	0	—	—	—	—	—
Titizima		9·4	164	2 9	− 5	—	—	—	—	—
Keizyo		9·9	282	2 23	+ 2	4 19	+ 8	—	—	—
Zinsen		10·2	281	i 2 26k	+ 1	e 4 20	+ 2	—	—	—
Heizyo	E.	11·0	289	i 2 37a	+ 1	—	—	—	—	—
Nake		11·3	229	2 39k	− 1	4 50	+ 6	—	—	—
Naha		14·0	228	2 16	−59	—	—	—	—	—
Zi-ka-wei	E.	15·6	256	i 3 32	− 4	—	—	i 4 12	PPP	—
Miyakozima		16·5	230	3 44	− 3	—	—	—	—	—
Isigakizima		17·5	232	4 12	+13	—	—	—	—	—
Karenko		19·5	237	3 58	−24	—	—	—	—	—
Taityu		20·0	238	4 47	PP	—	—	—	—	—
Taito		20·6	233	4 28	− 5	—	—	—	—	—
Kosyun		21·6	233	4 40a	− 3	—	—	—	—	—
Hong Kong		25·8	243	2 21	?	9 47	+ 3	6 8	PP	—
Manila		27·0	211	5 29	− 6	10 6	+ 3	—	—	—
Phu-Lien		32·3	250	e 6 19	− 3	—	—	—	—	—
Semipalatinsk		44·0	308	i 7 57	− 2	e 14 13	−11	—	—	—
Calcutta	N.	45·9	266	i 8 15	+ 1	i 14 50	− 1	i 18 22	SS	—
Almata		47·4	299	8 22	− 4	—	—	—	—	—
Frunse		49·2	298	8 37	− 3	15 33	− 4	—	—	—
Andijan		51·4	296	8 55	− 2	16 6	− 2	—	—	—
Tchimkent		52·9	299	9 8	0	16 19	− 9	—	—	—
Tashkent		53·4	298	i 9 8	− 4	i 16 30	− 5	—	—	e 24·4

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Sverdlovsk		54·6	319	i 9 18	− 3	16 48	− 3	—	—	28·0
Samarkand		55·6	297	9 20	− 8	16 52	−12	—	—	—
Bombay		60·3	272	i 9 56	− 5	i 18 3	− 3	e 22 20	SS	—
Kodaikanal	E.	61·3	261	i 9 58?	−10	—	—	—	—	—
Moscow		66·9	323	10 41	− 3	19 23	− 5	—	—	32·5
Baku		67·2	304	e 10 51	+ 4	19 32	+ 1	—	—	—
Pulkovo		68·0	329	10 48	− 3	19 36	− 5	—	—	35·5
Grozny		68·5	308	e 10 53	− 1	e 19 43	− 4	—	—	—
Tiflis		69·9	307	e 11 9	+ 7	i 20 1	− 2	e 20 43	PS	e 33·0
Simferopol		74·7	314	e 11 38	+ 7	e 20 52	− 6	—	—	—
Yalta		74·9	314	e 11 51	+19	i 20 53	− 7	—	—	—
Tinemaha		77·7	52	i 11 46	− 2	—	—	—	—	—
Copenhagen		77·8	333	i 11 46	− 2	21 28	− 3	—	—	41·0
Haiwee		78·5	53	e 11 51	− 1	—	—	—	—	—
Mount Wilson	Z.	79·5	55	i 11 53	− 5	—	—	i 15 5	PP	—
Pasadena		79·5	55	e 11 52	− 6	i 21 49	− 1	e 15 19	PP	—
Riverside	Z.	80·1	55	e 11 58	− 3	—	—	—	—	—
Potsdam		80·1	330	—	—	e 21 46	−10	—	—	e 53·0
Ksara		80·2	304	e 12 24	+23	e 22 44	PS	—	—	—
Jena	N.	81·8	329	i 12 7	− 3	—	—	—	—	—
Stuttgart		84·4	329	e 12 22k	− 1	e 22 34	− 5	e 13 10	pP	—
Basle		86·1	329	e 12 28	− 3	—	—	—	—	e 43·2
La Paz	Z.	148·8	58	i 19 38	[+ 6]	—	—	—	—	—

Additional readings :—
Bombay e = +20m.27s. and +24m.39s.
Tiflis SZ = +20m.8s.
Tinemaha iZ = +12m.13s.
Haiwee e = +12m.16s.
Mount Wilson iZ = +12m.16s., +12m.22s., and +15m.20s.
Pasadena iNZ = +12m.26s.
Riverside iZ = +12m.25s.
Stuttgart eZ = +12m.48s., eSP = +23m.23s.
La Paz iZ = +20m.6s., iSZ = +20m.16s.
Long waves were also recorded at Cheb, Uccle, Ottawa, and De Bilt.

Feb. 7d. Readings also at 0h. (Hong Kong, Vladivostok, Sverdlovsk, and Williamstown), 1h. (Oaxaca, Tacubaya, and Hong Kong), 2h. (Cape Giradeau), 3h. (Hong Kong, Vladivostok, Samarkand, Taihoku, Manila, Zi-ka-wei, and Bucharest), 4h. (Phu-Lien, Uccle, De Bilt, Baku, Samarkand (2), Vladivostok, Tiflis, Tashkent (2), and Calcutta), 5h. (Calcutta, Tiflis, and Philadelphia), 7h. (Philadelphia and Samarkand), 8h. (Grozny, Tiflis, and Samarkand), 9h. (Samarkand), 10h. (Mizusawa, Jersey, and Strasbourg), 13h. (Moncalieri, Samarkand, Balboa Heights, and Malabar), 14h. (Colombo, Philadelphia, Calcutta, Vladivostok, Hong Kong, and Sverdlovsk), 15h. (Mount Wilson, Pasadena, Tinemaha, Riverside, La Paz, and Florence), 16h. (Oaxaca and Tacubaya), 19h. (Copiapo), 21h. (Oaxaca, Tacubaya, and Vera Cruz), 22h. (Andijan).

Feb. 8d. 5h. 38m. 15s. Epicentre 1°·5S. 81°·0W.

A = +·1564, B = −·9874, C = −·0260; δ = +10 ; h = +7;
D = −·988, E = −·156 ; G = −·004, H = +·026, K = −1·000.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Balboa Heights		10·5	7	e 2 38	+ 3	e 2 41	+ 6	—	—	—
Huancayo		11·9	152	e 2 51	− 3	i 5 10	+ 1	—	—	i 5·4
La Paz	Z.	19·6	139	i 4 35a	+ 3	i 8 21	+13	—	—	10·8
Merida	N.	23·8	341	i 5 9	− 6	—	—	—	—	—
San Juan		24·6	36	i 5 22	− 1	9 51	+ 9	i 6 15	PPP	i 11·2
Fort de France		25·4	51	i 5 26	− 5	e 10 50	SS	6 24	PP	15·1
Vera Cruz	E.	25·4	326	i 5 26	− 5	—	—	—	—	—
Tacubaya	E.	27·4	321	e 5 57?	+ 8	—	—	—	—	—
Columbia		35·3	0	e 7 4	+ 5	e 12 30	− 3	—	—	e 15·6
Florissant		41·0	349	e 6 51	−55	—	—	i 9 20	PP	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Rio de Janeiro		42·4	122	e 7 57	− 1	e 14 13	− 7	—	—	e 21·5
Chicago		43·6	352	—	—	e 14 30	− 8	—	—	e 17·9
Tucson		43·9	323	e 8 11	+ 1	—	—	—	—	e 20·8
Williamstown		44·6	11	e 8 15	− 1	—	—	—	—	—
Toronto		45·0	2	—	—	e 14 45	−13	—	—	17·8
Vermont		46·3	9	—	—	i 15 16	0	—	—	e 18·4
Ottawa		46·9	6	8 32	− 2	15 25	0	18 31	SS	22·8
Riverside	Z.	49·1	320	i 8 52	+ 1	—	—	—	—	—
Seven Falls		49·2	10	—	—	e 15 52	− 6	e 18 51	SS	21·8
Mount Wilson	Z.	49·7	320	i 8 56	0	—	—	—	—	—
Pasadena	Z.	49·8	320	i 8 57	+ 1	—	—	—	—	—
Tinemaha	Z.	51·6	322	i 9 11	+ 1	—	—	—	—	—
Uccle		88·2	38	—	—	e 23 27	[+ 6]	—	—	e 43·8
De Bilt		88·8	38	—	—	e 23 39	[+14]	—	—	e 43·8
Cheb		93·3	40	—	—	e 22 45?	[−66]	—	—	e 48·8
Cape Town		97·0	124	—	—	i 24 18	[+ 6]	—	—	e 48·2
Ksara		113·0	55	e 19 30	PP	—	—	e 29 10	PS	—
Sverdlovsk		116·9	22	—	—	e 25 49	[+10]	e 29 41	PS	50·2
Semipalatinsk		128·7	15	22 28	PP	—	—	—	—	—
Vladivostok		129·2	329	e 32 55	PPS	—	—	—	—	—
Tashkent		132·2	30	e 21 47	PP	e 38 55	SS	—	—	—
Bombay	E.	149·1	55	e 23 24	PP	—	—	—	—	—
Kodaikanal	E.	156·9	67	e 23 45?	PP	—	—	—	—	—

Additional readings :—
Huancayo S = +4m.56s.
La Paz iZ = +5m.9s., iSN = +8m.25s.
San Juan i = +5m.40s., iS = +10m.0s., i = +10m.19s. and +10m.54s.
Fort de France PPP = +6m.44s., SS = +12m.35s., SSS = +12m.49s.
Columbia eP = +7m.18s., eS = +12m.18s.
Chicago eS = +14m.13s.
Vladivostok e = +34m.54s.
Tashkent i = +22m.42s., e = +52m.39s. and +63m.39s.
Long waves were also recorded at Baku, College, Sitka, and Christchurch.

Feb. 8d. 7h. 16m. 9s. Epicentre 1°·5S. 81°·0W. (as at 5h.).

Felt at Guayagvil.

Epicentre 2°·1S. 81°·1W. given by Strasbourg.

See Annales de l'Institut de Physique du Globe de Strasbourg, 1938. Tome III, 2e partie. Mende, 1941, p. 7.

A = +·1564, B = −·9874, C = −·0260 ; δ = +10 ; h = +7 ;
D = −·988, E = −·156 ; G = −·004, 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		10·5	7	e 2 36	+ 1	e 4 21	−14	—	—	e 5·4
Huancayo		11·9	152	e 2 51	− 3	i 4 43	−26	—	—	i 5·0
La Paz		19·6	139	i 4 31a	− 1	i 8 14	+ 6	i 8 50	SS	10·6
Merida	N.	23·8	341	i 5 6	− 9	—	—	—	—	—
San Juan		24·6	36	i 5 26	+ 3	i 9 46	+ 4	i 6 11	PPP	i 10·7
Fort de France		25·4	51	i 5 24	− 7	i 10 20	+24	6 8	PP	13·5
Vera Cruz	E.	25·4	326	e 5 46	+15	—	—	—	—	—
Tacubaya	E.	27·4	321	e 6 23?	PP	—	—	—	—	—
Columbia		35·3	0	e 6 53	− 6	12 30	− 3	e 8 8	PP	e 14·9
La Plata		39·6	149	13 35	S	(13 35)	− 3	—	—	22·4
St. Louis	N.	40·8	349	e 7 47	+ 2	e 13 42	−14	9 41	PPP	—
Florissant	Z.	41·0	349	e 8 6	+20	e 16 30	SS	—	—	—
Rio de Janeiro		42·4	122	e 8 0	+ 2	i 14 19	− 1	—	—	e 20·7
Fordham		42·6	9	e 8 0	+ 1	i 14 26	+ 3	i 17 37	SS	—
Chicago		43·6	352	e 8 6	− 2	e 14 30	− 8	e 17 37	SS	i 18·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson		43·9	323	e 8 10	0	i 14 47	+ 5	e 9 58	PP	e 19·7
Weston		44·5	10	e 8 14	− 1	i 14 49	− 2	i 18 15	SS	e 22·7
Harvard	z.	44·6	10	—	—	—	—	e 18 15	SS	—
Toronto		45·0	2	8 15	− 4	14 51	− 7	18 9	SS	21·9
Vermont		46·3	9	e 8 32	+ 3	i 15 15	− 1	i 18 29	SS	e 26·3
Ottawa		46·9	6	8 32	− 2	15 21	− 4	18 27	SS	22·9
East Machias		47·7	13	e 8 43	+ 3	i 15 36	0	e 10 38	PP	19·1
Riverside	z.	49·1	320	i 8 50	− 1	e 15 8	−48	—	—	—
Seven Falls		49·2	10	—	—	i 15 54	− 4	e 18 51	SS	21·9
Mount Wilson	z.	49·7	320	e 8 57	+ 1	i 15 13	−51	—	—	—
Pasadena		49·8	320	i 8 58	+ 2	e 16 9	+ 3	—	—	e 22·9
Tinemaha	z.	51·6	322	e 9 12	+ 2	—	—	—	—	—
Bozeman		54·0	335	—	—	e 16 56	− 7	e 19 15	ScS	e 21·9
Ukiah		56·0	321	—	—	i 17 34	+ 4	21 38	SS	e 24·9
Sitka		72·7	333	—	—	21 5	+ 8	25 31	SS	e 29·5
San Fernando		79·0	53	e 12 20	+13	e 22 12	+ 6	—	—	40·9
Malaga		80·2	53	e 11 52	−22	—	—	—	—	—
Granada		80·9	52	i 12 21	+ 4	—	—	—	—	45·1
College		81·7	337	e 15 27	PP	e 22 35	+ 1	e 17 27	PPP	e 33·0
Jersey		83·9	40	—	—	e 22 54	− 2	—	—	—
Bidston		84·0	36	—	—	e 23 2	+ 5	—	—	e 39·9
Kew		85·4	37	—	—	i 23 2	[− 3]	—	—	e 39·9
Uccle		88·2	38	e 12 59	+ 5	i 23 9	[−13]	e 24 48	?	e 39·9
De Bilt		88·8	38	—	—	e 23 39	− 4	—	—	e 39·8
Strasbourg		90·3	41	—	—	e 24 6	+ 9	—	—	e 30·1
Copenhagen		93·2	34	23 57	S	(23 57)	[+ 6]	—	—	49·8
Cheb		93·3	40	e 11 51?	?	—	—	—	—	—
Cape Town		97·0	124	—	—	i 24 17	[+ 5]	31 27	SS	e 50·9
Christchurch		100·8	225	—	—	e 32 37	SS	—	—	e 50·6
Pulkovo		101·9	28	—	—	e 25 40	+ 4	(29 21)	PPS	e 29·3
Helwan		110·1	59	—	—	25 14	[+ 2]	28 51	PS	—
Ksara		113·0	55	e 19 33	PP	e 35 33	SS	e 29 17	PS	—
Sverdlovsk		116·9	22	e 19 57	PP	e 27 52	{− 1}	i 29 41	PS	46·9
Tiflis	z.	117·1	43	e 19 55	PP	—	—	e 29 48	PS	e 59·9
Baku		121·1	42	e 20 27	PP	e 26 6	[+12]	30 20	PS	e 54·9
Vladivostok		129·2	329	e 21 53	PP	e 28 19	{+ 5}	i 38 46	SS	—
Tashkent		132·2	30	i 22 46	PP	i 28 42	{+ 9}	e 40 53	SSP	—
Andijan		134·1	28	e 20 38	?	—	—	22 59	?	—
Bombay		149·1	55	e 19 58	[+12]	e 30 13	{− 1}	—	—	—
Manila		154·7	302	19 53	[− 1]	28 44	PPP	—	—	—
Calcutta	N.	156·7	25	e 23 13	PP	—	—	—	—	—

Additional readings :—
Balboa Heights eSN = +4m.31s.
Huancayo i = +3m.23s., +3m.47s., and +3m.51s.
La Paz iSE = +8m.18s.
San Juan i = +6m.57s., iS = +9m.58s. and +10m.28s.
Fort de France PPP = +6m.24s., SS = +11m.36s., SSS = +11m.44s.
Columbia eP = +7m.32s., ePPP = +8m.26s., eS = +12m.36s.
St. Louis eN = +9m.44s., eSSN = +17m.11s.
Florissant eZ = +6m.45s.
Rio de Janeiro ePE = +8m.3s.
Fordham e = +4m.59s. and +5m.14s., i = +18m.4s.
Tucson eP = +8m.15s., PP = +10m.19s., SS = +18m.12s.
East Machias S = +14m.59s., SS = +18m.7s.
Pasadena eZ = +15m.12s.
Sitka i = +22m.6s.
College ePPS = +23m.24s.
Kew eZN = +23m.13s.
Copenhagen SS = +24m.27s.
Cape Town iE = +26m.27s., eE = +32m.2s. and +44m.47s., eN = +45m.26s.
Christchurch eN = +42m.45s. and +47m.22s.
Sverdlovsk e = +14m.55s., i = +35m.59s. and +40m.6s.
Baku e = +38m.14s.
Vladivostok e = +10m.43s.
Long waves were also recorded at Colombo, Hastings, Wellington, Oaxaca, Paris, Hamburg, Potsdam, Ogyalla, Toledo, Prague, Stonyhurst, Tananarive, Seattle, Honolulu, and Hong Kong.

Feb. 8d. 13h. 13m. 10s. Epicentre 24°·6N. 121°·1E. (as on 1937 Nov. 25d.).

$A = -\cdot4702$, $B = +\cdot7794$, $C = +\cdot4140$; $\delta = -5$; $h = +3$;
$D = +\cdot856$, $E = +\cdot517$; $G = -\cdot214$, $H = +\cdot354$, $K = -\cdot910$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Taihoku		0·6	31	i 0 14	− 1	0 24	− 2	—	—	—
Zi-ka-wei		6·5	2	e 1 36	− 3	i 3 20	S*	i 3 50	S_g	—
Hong Kong		6·8	252	1 52	P*	3 18	S*	—	—	4·0
Manila		10·0	182	2 27	0	4 14	− 8	—	—	—
Hukuoka B		12·1	40	2 53	− 4	e 6 37	L	—	—	(e 6·6)
Husan		12·5	31	2 58	− 4	e 6 26	L	—	—	(e 6·6)
Taikyu		13·0	28	i 3 5a	− 4	e 5 34	− 1	—	—	—
Keizyo	N.	13·9	20	e 3 17	− 4	e 7 34	L	—	—	(e 7·6)
Phu-Lien		13·9	257	e 3 31	+10	e 6 30	SS	—	—	—
Zinsen		13·9	20	i 3 13a	− 8	e 5 59	+ 2	—	—	e 7·6
Heizyo		14·9	14	e 3 34	0	6 31	+11	—	—	—
Vladivostok		20·5	23	i 4 33	− 9	i 8 25	− 2	—	—	e 9·6
Calcutta	N.	30·1	273	e 6 19	+ 6	11 19	+ 7	i 13 37	SSS	e 15·0
Almata		40·6	309	e 7 59	+16	—	—	—	—	—
Frunse		42·2	307	e 7 55	− 1	—	—	—	—	—
Andijan		43·5	304	8 16	+ 9	—	—	—	—	—
Kodaikanal	E.	43·8	259	e 7 50?	−19	—	—	—	—	—
Bombay		45·0	273	e 8 33	+14	15 3	+ 5	—	—	—
Tashkent		45·9	305	i 8 50	+24	—	—	—	—	—
Samarkand		47·5	301	e 8 41	+ 3	—	—	—	—	—
Sverdlovsk		53·7	324	i 9 23	− 3	e 16 50	− 9	—	—	—
Baku		60·6	304	e 10 15	0	e 18 31	+ 1	—	—	—
Grozny		63·2	308	e 10 30	− 2	—	—	—	—	—
Tiflis		64·2	306	e 10 36	− 3	e 19 15	− 1	—	—	e 37·8
Ksara		73·0	299	e 11 28	− 5	e 22 0	+60	—	—	—
Helwan		78·0	297	—	—	e 21 50	− 5	—	—	—
Tinemaha		97·0	44	i 13 27	− 8	—	—	—	—	—
Mount Wilson	z.	98·9	46	e 13 34	− 9	—	—	—	—	—
Riverside	z.	99·5	46	e 13 36	−10	—	—	—	—	—
La Paz	z.	168·2	49	17 22	?	—	—	—	—	—

Additional readings:—
Zi-ka-wei iE = +4m.13s., iN = +4m.52s.
Calcutta eN = +8m.39s., eP_cP?N = +9m.41s., eS_cS iN = +16m.50s.
Tashkent e = +8m.56s.
Tiflis e = +10m.53s.
Helwan e = +24m.50s.
Long waves were also recorded at Copenhagen, Kew, and De Bilt.

Feb. 8d. 14h. 21m. 25s. Epicentre 1°·5S. 81°·0W. (as at 7h.).

$A = +\cdot1564$, $B = -\cdot9874$, $C = -\cdot0260$; $\delta = +10$; $h = +7$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights	E.	10·5	7	e 2 39	+ 4	e 4 29	− 6	—	—	—
	N.	10·5	7	e 2 42	+ 7	e 4 34	− 1	—	—	—
Huancayo		11·9	152	2 54	0	4 59	−10	—	—	i 6·4
La Paz		19·6	139	i 4 33a	+ 1	i 8 15	+ 7	i 4 45	PP	9·9
Merida	N.	23·8	341	e 5 17	+ 2	—	—	—	—	—
San Juan	•	24·6	36	i 5 24	+ 1	i 9 50	+ 8	6 13	PPP	i 11·0
Fort de France		25·4	51	i 5 31	0	e 11 11	SS	6 39	PP	15·8
Tacubaya	E.	27·4	321	i 5 43	− 6	—	—	—	—	—
Columbia		35·3	0	e 6 58	− 1	e 12 31	− 2	e 8 24	PPP	14·3
La Plata		39·6	149	7 23	−12	13 35	− 3	—	—	22·5
St. Louis	N.	40·8	349	—	—	e 13 51	− 5	e 17 11	SSS	—
Rio de Janeiro		42·4	122	e 8 1	+ 3	e 14 15	− 5	—	—	21·3
Fordham		42·6	9	e 7 59	0	i 14 25	+ 2	e 17 42	SS	—
Chicago		43·6	252	e 7 57	−11	e 14 29	− 9	e 9 19	PP	e 25·6
Tucson		43·9	323	e 8 18	+ 8	i 14 50	+ 8	10 7	PP	i 18·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Weston		44·5	10	—	—	i 14 52	+ 1	i 18 13	SS	e 22·4
Harvard	E.	44·6	10	—	—	i 14 57	+ 5	i 18 15	SS	—
Williamstown		44·6	9	—	—	—	—	e 18 11	SS	—
Toronto		45·0	2	—	—	i 14 35?	−23	e 18 11	SS	21·6
Vermont		46·3	9	—	—	i 15 15	− 1	i 18 32	SS	e 19·3
Ottawa		46·9	6	8 33	− 1	15 22	− 3	18 30	SS	22·6
East Machias		47·7	13	e 9 13	+33	e 15 29	− 7	e 10 41	PP	e 19·4
Riverside	Z.	49·1	320	e 8 50	− 1	—	—	i 10 45	PP	—
Seven Falls		49·2	10	—	—	i 15 53	− 5	e 18 41	SS	21·4
Mount Wilson	Z.	49·7	320	i 8 57	+ 1	—	—	i 10 46	PP	—
Pasadena		49·8	320	e 8 58	+ 2	i 16 12	+ 6	e 10 47	PP	—
Tinemaha		51·6	322	i 9 12	+ 2	—	—	i 11 3	PP	—
Bozeman		54·0	335	—	—	e 17 5	+ 2	e 21 18	SS	e 22·9
Sitka		72·7	333	—	—	i 21 5	+ 8	—	—	e 34·6
Granada		80·9	52	e 12 35?	+18	—	—	—	—	—
Bidston		84·0	36	—	—	e 23 1	+ 4	—	—	e 38·6
Kew		85·4	37	—	—	e 23 12	+ 1	—	—	e 38·6
Uccle		88·2	38	—	—	i 23 29	[+ 8]	—	—	e 43·6
De Bilt		88·8	38	—	—	e 23 41	− 3	—	—	e 39·6
Copenhagen		93·2	34	—	—	23 35?	[−16]	—	—	50·6
Cheb		93·3	40	e 14 35?	?	24 35?	+11	—	—	e 49·6
Cape Town		97·0	124	e 14 56	?	i 24 19	[+ 7]	i 26 28	PS	e 49·2
Wellington		99·7	228	—	—	e 31 35?	SS	—	—	e 46·6
Christchurch		100·8	225	—	—	e 32 44	SSP	—	—	e 51·4
Helwan		110·1	59	—	—	e 25 18	[+ 5]	—	—	—
Ksara		113·0	55	e 19 39	PP	e 29 21	PS	—	—	—
Sverdlovsk		116·9	22	—	—	e 27 54	{+61}	e 29 42	PS	43·6
Tiflis		117·1	43	e 19 57	PP	e 25 45	[+ 5]	—	—	e 58·6
Vladivostok		129·2	329	e 22 37	?	i 38 49	SS	—	—	—
Tashkent		132·2	30	e 21 46	PP	e 39 19	SS	—	—	—
Bombay		149·1	55	e 20 3	[+17]	—	—	—	—	—
Manila		154·7	302	e 18 53	[−61]	i 28 43	PPP	—	—	—
Calcutta	N.	156·7	25	—	—	e 26 33	[−28]	31 7	SKKS	—
Kodaikanal	E.	156·9	67	e 16 35?	?	—	—	—	—	—
Colombo	E.	160·1	75	e 20 35?	[+34]	—	—	—	—	—

Additional readings :—
Huancayo iS = +5m.8s., i = +6m.2s.
La Paz iSE = +8m.20s.
Fort de France PPP = +7m.3s., SS = +13m.15s., SSS = +13m.37s.
San Juan i = +10m.36s.
Columbia eP = +7m.50s., S = +12m.43s.
Fordham e = +21m.51s. and +22m.59s.
Tucson P = +8m.27s., iPPP = +10m.47s.
Vermont eS_eS = +18m.5s.
East Machias eP = +10m.23s., ePPP = +11m.21s., iS = +15m.40s., eSS = +19m.5s.
Uccle iN = +23m.41s., iE = +24m.49s.
Christchurch eN = +42m.43s. and +48m.7s.
Tashkent i = +22m.44s.
Long waves were also recorded at Paris, Oaxaca, Baku, San Fernando, Strasbourg, Potsdam, Brisbane, and Hong Kong.

Feb. 8d. Readings also at 1h. (Amboina), 4h. (Samarkand and La Paz), 5h. (La Plata and La Paz), 6h. (Samarkand and La Paz (2)), 7h. (Wellington, Tinemaha, Riverside, La Jolla, Pasadena, Mount Wilson, Santa Barbara, Fresno, and Haiwee), 8h. (Brisbane, Balboa Heights, Hukuoka B, and La Paz (2)), 9h. (Frunse, Hukuoka B, Andijan, and Samarkand), 10h. (Huancayo, Balboa Heights, and La Paz (2)), 11h. (La Paz, Samarkand, Mount Wilson, Pasadena, Riverside, Tucson, Huancayo, Fort de France, and San Juan), 12h. (Kodaikanal, Riverside, Mount Wilson, and Samarkand (2)), 13h. (Mizusawa and Bombay), 14h. (La Paz), 15h. (Huancayo and La Paz), 16h. (Fort de France, San Juan, Huancayo, Balboa Heights, Mount Wilson, Pasadena, Riverside, Tucson, and Tinemaha), 19h. (Samarkand, Ottawa, La Jolla, Tucson, and Pasadena), 20h. (Ottawa), 21h. (Tacubaya and Tucson), 22h. (La Paz, Pasadena (2), Tinemaha (2), Riverside, and Mount Wilson (2)).

Feb. 9d. Readings at 1h. (near Berkeley, Branner, and Lick), 2h. (Balboa Heights), 4h. (Sverdlovsk, Vladivostok, and near Taihoku), 7h. (Pasadena, Riverside, Tinemaha, Yalta, and near Brisbane), 8h. and 9h. (2) (Samarkand), 10h. (Amboina), 11h. (near Moncalieri), 12h. (Huancayo, La Paz, Rio de Janeiro, San Juan, Balboa Heights, Tucson, Pasadena, Riverside, Tinemaha, and Samarkand), 14h. (Malabar), 15h. (Moncalieri), 16h. (Moncalieri), 18h. (Samarkand, Frunse, and near Andijan), 19h. (near Apia and near Batavia and Malabar), 20h. (La Paz (2) and Ottawa), 21h. (Ottawa, Tacubaya, Andijan, Frunse, and near Samarkand (2)), 23h. (Vladivostok, near Mizusawa, and Nagoya).

Feb. 10d. 20h. 37m. 53s. Epicentre 34°·8N. 26°·2E.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan		6·6	137	1 39	− 2	2 49	− 9	—	—	—
Istanbul		6·7	20	1 39	− 3	2 49	−11	4 16	S_g	—
Ksara		8·1	98	i 2 1a	− 1	i 3 45	+10	—	—	—
Sofia		8·2	345	2 6	+ 3	i 3 44	+ 6	i 4 41	S_g	—
Bucharest		9·6	358	i 2 26k	+ 5	4 21	+ 9	5 32	S_g	—
Belgrade	N.W.	10·9	339	e 2 43	+ 3	4 48	+ 4	—	—	6·9
Sebastopol		11·3	28	i 2 35	−11	i 6 25	L	—	—	(i 6·4)
Yalta		11·4	30	i 2 45	− 2	—	—	—	—	e 5·9
Simferopol		11·8	28	i 2 53	0	—	—	—	—	e 6·3
Theodosia		12·4	32	e 3 2	+ 1	e 5 30	+9	—	—	9·1
Kecskenet	Z.	13·0	340	e 5 12	S	(e 5 12)	−23	—	—	—
Budapest		13·7	340	e 3 22	+ 4	i 5 54	+ 2	i 3 34	PP	—
Ogyalla		14·4	338	e 4 43	?	e 7 57	?	—	—	e 9·1
Triest		14·4	327	e 4 10	PPP	e 6 14	+ 5	—	—	—
Florence		14·6	312	e 2 32	−58	—	—	—	—	—
Graz		14·7	330	i 3 37	+ 6	e 6 31	SS	—	—	e 8·1
Padova		15·2	319	e 3 38	0	e 7 46	L	—	—	(7·8)
Erevan		15·5	64	e 4 44	+62	—	—	—	—	—
Tiflis		16·1	59	i 3 50	+ 1	i 6 57	+ 8	e 7 14	SS	e 8·1
Chur		17·4	319	e 4 6	0	e 7 30	+11	—	—	e 11·7
Grozny		17·4	55	e 4 9	+ 3	—	—	—	—	—
Moncalieri		17·4	310	e 1 7?	?	e 5 57	?	—	—	9·0
Prague		17·5	334	e 4 41	PPP	e 7 51	SS	—	—	e 9·1
Cheb		18·3	330	—	—	e 8 7?	SS	—	—	e 10·1
Stuttgart		18·8	323	e 4 24k	+ 1	e 7 55	+ 5	e 4 55	PPP	e 9·9
Algiers		18·9	281	i 4 26	+ 2	e 8 32	SSS	4 53	PPP	—
Basle		18·9	319	e 4 23	− 1	e 8 1	+ 8	—	—	—
Neuchatel		18·9	317	e 4 23	− 1	e 7 57	+ 4	—	—	—
Jena		19·3	332	e 4 37	+ 8	e 8 1	− 1	e 9 7	SSS	e 10·1
Karlsruhe		19·4	322	e 4 28	− 2	e 8 21	SS	—	—	—
Strasbourg		19·4	320	e 4 30	0	e 8 7	+ 3	e 8 58	SSS	e 10·9
Baku		19·6	66	e 4 32	0	i 8 11	+ 3	—	—	10·8
Potsdam		19·9	335	5 13	+37	8 13	− 2	—	—	e 11·1
Göttingen		20·4	330	—	—	e 8 33	+ 8	—	—	e 11·1
Hamburg		22·0	333	e 5 2	+ 5	—	—	—	—	e 12·1
Moscow		22·4	17	5 8	+ 6	8 59	− 5	—	—	12·6
Paris		22·4	315	e 5 17	+15	9 14	+10	—	—	12·1
Uccle		22·5	321	e 5 2	0	i 9 14	+ 9	—	—	e 11·1
Copenhagen		22·9	340	5 5	− 1	—	—	—	—	10·1
De Bilt		22·9	326	—	—	9 18	+ 5	—	—	e 11·1
Almeria		23·3	283	i 5 9	−1	e 9 27	+ 7	—	—	—
Granada		24·2	284	i 5 31	+12	e 9 37	+ 2	—	—	—
Toledo		24·5	290	e 5 24	+ 2	i 9 46	+ 6	—	—	12·5
Malaga		24·9	284	i 5 4	−22	9 10	−37	—	—	11·1
Pulkovo		25·1	3	e 5 30	+ 2	e 9 45	− 6	—	—	12·6
Jersey		25·3	314	e 5 25	− 5	i 10 1	+ 7	e 12 22	?	e 15·1
Kew		25·3	319	—	—	i 10 9	+15	i 10 45	SS	13·1
Upsala	E.	25·7	349	e 6 30	PPP	e 10 42	+41	—	—	e 13·1
Oxford		26·0	319	—	—	e 10 15	+ 9	—	—	e 13·5
San Fernando		26·3	282	e 6 22	PP	e 10 26	+15	—	—	16·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bidston		27·8	321	—	—	i 10 38	+ 3	—	—	e 13·1
Bergen		29·0	339	e 4 7?	?	—	—	—	—	—
Rathfarnham Castle		29·4	319	e 5 51	−16	i 10 27	−34	i 8 43	PP	17·1
Sverdlovsk		32·0	36	6 35	+ 5	e 11 37	− 5	—	—	16·1
Samarkand		32·3	69	6 32	− 1	11 42	− 4	—	—	—
Tashkent		34·3	66	i 7 47	+57	13 21	+64	—	—	—
Andijan		36·6	67	7 13	+ 3	12 51	− 2	—	—	—
Frunse		38·1	63	7 21	− 1	13 14	− 2	—	—	—
Almata		39·8	61	7 43	+ 7	—	—	—	—	—
Semipalatinsk		41·8	50	7 48	− 5	—	—	—	—	—
Bombay	E.	44·1	98	e 11 41	?	e 18 8	SS	—	—	—
Agra	E.	44·7	84	—	—	e 14 46	− 8	—	—	—
Kodaikanal	E.	52·6	104	—	—	e 16 7?	−37	—	—	—
Calcutta	N.	55·1	85	—	—	e 17 8	−10	—	—	—
Weston	Z.	72·4	309	i 11 31	+ 1	—	—	—	—	—
Ottawa		73·5	313	e 11 37	+ 1	e 21 7?	+ 1	—	—	35·1
Williamstown		73·5	308	e 11 38	+ 2	—	—	—	—	—

Additional readings :—
Helwan P = +1m.55s., P_g = +2m.11s.
Ksara i = +3m.31s.
Sofia iS_g = +4m.45s., i = +4m.53s.
Bucharest iN = +3m.6s. and +3m.26s., S* = +5m.8s.
Belgrade iNW = +3m.2s. and +5m.40s., iSNW = +5m.58s. and +6m.21s.
Kecskemet z. e = +5m.35s., eS = +7m.30s., e = +9m.40s., eP_cP = +10m.40s., e = +12m.29s., eP_cS = +14m.12s.
Budapest eE = +5m.30s., iN = +7m.0s., eE = +7m.39s., iE = +7m.52s., eN = +8m.0s., iE = +8m.11s., iN = +8m.33s., iE = +8m.39s.
Tiflis e = +5m.56s.
Chur e = +11m.44s.
Stuttgart ePP = +5m.49s., iS = +8m.3s., eSS = +9m.4s.
Algiers PPP = +5m.4s.
Strasbourg eSN = +8m.15s.
Long waves were also recorded at Cape Town, Aberdeen, Vladivostok, and Stonyhurst.

Feb. 10d. Readings also at 0h. (Santiago and Sverdlovsk), 1h. (Mizusawa and Nagoya (3)), 2h. (Mizusawa (2) and Nagoya (2)), 4h. (Samarkand, La Paz, Aberdeen, and Huancayo), 5h. (Mizusawa, Nagoya, and Vladivostok), 6h. (Amboina and Sverdlovsk), 7h. (Sverdlovsk, Aberdeen, Tashkent, Copenhagen, De Bilt, Frunse, Andijan, Scoresby Sund, Apia, Perth, Kew, Almata, Paris, and Cheb), 8h. (Scoresby Sund and De Bilt (2)), 10h. (De Bilt, Copenhagen, Santiago, and Berkeley), 11h. (Andijan, Frunse, Tchimkent, and Samarkand), 14h. (Tashkent and Amboina), 17h. (Florence (2)), 18h. (Mizusawa).

Feb. 11d. 6h. 56m. 24s. Epicentre 42°·7N. 147°·3E.

A = −·6204, B = +·3982, C = +·6757 ; δ = +3 ; h = −3 ;
D = +·540, E = +·842 ; G = −·569, H = +·365, K = −·737.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa		5·8	237	1 30	+ 1	i 2 31	− 7	—	—	—
Nagoya		11·0	230	e 2 38	− 4	3 58	−49	—	—	—
Vladivostok		11·3	277	i 2 45	− 1	e 4 57	+ 3	—	—	e 6·1
Zinsen		16·6	259	e 3 54	− 2	e 7 46	SSS	—	—	e 9·6
Hong Kong		34·2	244	6 53	+ 4	13 6	+50	8 18	PPP	18·8
Manila		36·0	228	i 7 6a	+ 1	14 13	SS	i 8 52	PPP	—
Semipalatinsk		45·3	305	8 22	+ 1	—	—	—	—	—
Almata		50·0	297	9 3	+ 5	—	—	—	—	—
Frunse		51·7	297	9 10	− 1	—	—	—	—	—
Calcutta	N.	52·5	268	e 9 26	+ 9	i 16 53	+10	—	—	—
Sverdlovsk		54·0	318	e 9 28	0	i 17 2	− 1	—	—	24·6
Andijan		54·2	295	9 31	+ 2	—	—	—	—	—
Tashkent		56·0	298	—	—	e 17 55	+25	—	—	37·0
Agra	E.	57·4	279	9 50	− 3	18 0	+11	e 21 59	SS	—
Samarkand		58·3	297	9 54	− 5	17 46	−15	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay	E.	66·2	275	e 10 52	0	e 19 43	+ 3	—	—	—
Tinemaha		68·9	59	i 11 10	+ 1	—	—	—	—	—
Haiwee	E.	69·7	60	e 11 14	0	—	—	—	—	—
Mount Wilson	Z.	70·8	61	i 11 19	− 1	—	—	—	—	—
Pasadena		70·8	61	i 11 19	− 1	—	—	—	—	—
Tiflis		70·8	310	11 22	+ 2	i 20 38	+ 3	—	—	e 35·6
Riverside	Z.	71·4	61	i 11 23	− 1	—	—	—	—	—
Ksara		81·4	308	i 12 22	+ 2	e 23 22	PS	i 13 2	pP	—
Ottawa		84·3	29	e 12 48	+13	—	—	—	—	49·6
Williamstown		87·5	29	i 13 14	+23	—	—	—	—	—

Additional readings :—
Hong Kong SS? = +15m.19s.
Manila iN = +9m.59s.
Tashkent i = +18m.30s. and +25m.24s., e = +25m.53s.
Tinemaha iZ = +11m.22s.
Pasadena iZ = +11m.33s.
Long waves were also recorded at College, Baku, Uccle, Sitka, Paris, De Bilt, and Cheb.

Feb. 11d. 14h. 39m. 21s. Epicentre 18°·0N. 120°·0E. (as on 1937 Mar. 16d.).

A = −·4758, B = +·8242, C = +·3071 ; δ = 0 ; h = +5 ;
D = +·866, E = +·500 ; G = −·154, H = +·266, K = −·952.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		3·5	165	i 1 9	P_g	1 59	S_g	—	—	—
Hong Kong		6·9	309	1 29	−16	3 14	+ 9	3 20	S_g	3·9
Phu-Lien		13·0	285	e 3 2	− 7	—	—	—	—	—
Husan		18·8	23	e 3 18	−65	—	—	—	—	—
Zinsen	N.	20·3	14	e 4 41	+ 1	e 8 35	+12	—	—	—
Keizyo		20·4	16	e 5 1	PP	—	—	—	—	—
Nagoya		22·8	39	(5 11)	+ 6	5 11	P	—	—	—
Medan	E.	25·3	238	e 5 34	+ 4	—	—	—	—	—
Vladivostok		27·0	20	e 5 49	+ 4	e 10 42	+20	—	—	e 15·4
Calcutta	N.	30·0	284	e 6 29	+17	e 12 6	SS	e 14 4	SSS	e 16·6
Agra	E.	39·7	291	i 7 34	− 2	13 46	+ 6	i 9 24	PPP	—
Colombo	E.	40·6	259	e 7 39?	− 4	—	—	—	—	—
Kodaikanal	E.	41·9	266	e 7 39?	−15	—	—	—	—	—
Bombay		44·7	279	e 8 21	+ 5	e 14 48	− 6	e 18 16	SS	—
Semipalatinsk		45·2	326	8 22	+ 2	—	—	—	—	—
Frunse		45·6	313	8 23	− 1	—	—	—	—	—
Andijan		46·6	309	8 35	+ 3	15 22	+ 1	—	—	—
Tashkent		49·0	309	8 48	− 2	16 2	+ 7	—	—	27·0
Samarkand		50·4	306	8 51	−10	—	—	—	—	—
Sverdlovsk		58·5	327	9 58	− 2	18 1	− 2	—	—	27·6
Tiflis		67·3	308	e 10 59	0	e 19 55	+ 1	—	—	e 36·6
Ksara		75·4	300	i 11 51	+ 4	22 14	+47	—	—	—

Additional readings :—
Manila S_gE = +2m.9s.
Nagoya eP = +3m.40s.
Agra SSSE = +16m.41s.
Long waves were also recorded at Kew, Jersey, Baku, Paris, De Bilt, Cheb, Hyderabad, Copenhagen, Strasbourg, and Potsdam.

Feb. 11d. Readings also at 1h. (Perth and Ksara), 3h. (Mount Wilson, Riverside, Tacubaya, Oaxaca, College, Vera Cruz, Manzanillo, Tucson, and Butte), 6h. (Kodaikanal and Erevan), 7h. (Mizusawa, Andijan, and Frunse), 8h. (Samarkand, Mount Wilson, Riverside, and Andijan), 9h. (Samarkand, Perth, and Jena), 10h. (Samarkand, Ksara, Calcutta, Tananarive, and Cape Town), 11h. (Andijan and Paris), 15h. (Tchimkent, Frunse, Andijan, and Samarkand), 16h. (Tacubaya and Oaxaca), 17h. (Manila), 19h. (Manila and Huancayo), 23h. (La Paz).

Feb. 12d. Readings at 0h. (near Apia and near Mizusawa), 3h. (Kodaikanal, La Paz, and near Fort de France (2)), 5h. (near La Paz), 6h. (Chicago, Little Rock, and Williamstown), 7h. (Kodaikanal and La Paz), 8h. (Samarkand), 10h. (Hong Kong, Samarkand, Colombo, Calcutta, Medan, Batavia, and Malabar), 11h. (near Andijan, Frunse (2), Tchimkent, and Samarkand (2)), 15h. (Kodaikanal), 16h. (Tiflis, near Andijan, Samarkand, Frunse, Batavia, and Malabar), 17h. (Batavia and Malabar), 18h. (Kodaikanal), 19h. (near Berkeley, Branner, Lick, and near Amboina), 20h. (Vladivostok, Haiwee, Riverside, Mount Wilson, Pasadena, near Tinemaha, Berkeley, Branner, Lick, San Francisco, Baku, Tiflis, Sverdlovsk, near Mizusawa, and Nagoya), 21h. (Oaxaca, Tacubaya (2), Mount Wilson, Pasadena, Riverside, and Tinemaha).

Feb. 13d. 8h. 3m. 51s. Epicentre 35°·5S. 179°·6E.

$A = -\cdot 8160$, $B = +\cdot 0057$, $C = -\cdot 5781$; $\delta = +9$; $h = 0$;
$D = +\cdot 007$, $E = +1\cdot 000$; $G = +\cdot 578$, $H = -\cdot 004$, $K = -\cdot 816$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tuai		3·8	209	1 9?	P*	1 47	0	—	—	—
Arapuni		4·1	230	1 4	− 1	1 59	+ 4	1 22	P_g	—
Hastings		4·6	206	1 9?	− 3	1 42	−25	—	—	—
New Plymouth		5·7	229	e 1 26	− 2	2 18	−17	—	—	—
Stratford		5·7	226	2 9?	P_g	—	—	—	—	—
Wellington		6·9	211	e 1 42	− 3	3 29	S*	—	—	—
Chatham Ils.		9·0	162	e 2 21	+ 8	e 3 45	−13	9 33	P*	—
Christchurch		9·6	211	2 11?	−10	3 53	−19	—	—	—
Apia		22·9	24	e 5 9	+ 3	i 9 23	+10	i 5 16	pP	—
Riverview		23·4	266	i 5 12_a	+ 1	9 52	SS	5 56	PPP	e 11·6
Sydney		23·4	266	i 5 20	+ 9	e 9 43	+22	—	—	e 11·2
Brisbane	N.	24·0	283	i 5 15	− 2	i 9 51	+19	—	—	11·7
Melbourne		27·8	256	5 52	− 1	e 10 30	− 5	i 6 31	PP	13·3
Adelaide		33·3	259	0 59	?	(i 11 34)	−28	i 7 49	PP	i 11·6
Perth		52·3	255	e 9 14	− 1	e 16 49	+ 9	20 47	SS	25·4
Honolulu		60·4	26	e 10 11	− 2	i 18 35	+ 7	e 22 30	SS	e 24·0
Batavia		72·4	275	i 11 29	− 1	e 20 48	− 5	i 15 54	PPP	36·2
Manila		74·5	302	i 11 42_a	0	21 17	0	—	—	—
Hong Kong		84·5	303	12 38	+ 2	22 56	− 6	15 56	PP	—
Medan	E.	84·7	279	e 12 38	+ 1	—	—	—	—	46·2
Vladivostok		89·5	328	i 12 58	− 2	i 23 25	[− 5]	—	—	e 38·0
Santa Barbara	Z.	89·7	46	e 12 53	− 8	—	—	—	—	—
Pasadena		90·4	49	e 13 4	0	e 23 34	[− 1]	e 16 41	PP	e 36·6
Mount Wilson	Z.	90·6	49	e 13 3	− 2	—	—	i 16 44	PP	—
Berkeley		90·7	43	—	—	e 23 40	[+ 3]	—	—	—
Riverside	Z.	90·8	49	i 13 5	− 1	—	—	e 16 37	PP	—
Ukiah		91·1	40	e 13 7	− 1	e 23 58	− 6	e 16 51	PP	e 36·7
La Plata		91·8	136	22 51	S	(22 51)	[−52]	29 51	SS	43·4
Tinemaha	Z.	92·4	46	e 13 12	− 2	—	—	e 17 4	PP	—
Tucson		93·8	52	13 23	+ 3	e 23 41	[−13]	17 14	PP	e 40·5
Huancayo		95·0	109	e 13 32	+ 6	e 23 44	[−17]	e 17 2	PP	e 37·6
La Paz		97·7	117	e 13 47	+ 9	i 24 15	[0]	i 17 34	PP	45·6
Victoria		97·8	36	—	—	e 24 15	[− 1]	e 31 45	SS	45·2
Sitka		99·7	22	—	—	e 24 13	[−12]	e 32 20	SS	e 41·7
Colombo	E.	101·1	270	e 16 59	?	24 32	[0]	—	—	—
Bozeman		102·2	42	—	—	e 24 39	[+ 1]	e 32 49	SS	e 40·9
College		103·2	13	—	—	e 24 38	[− 4]	e 33 5	SS	e 43·2
Calcutta	N.	103·7	288	e 14 12	+ 7	i 24 46	[+ 2]	e 17 26	PP	i 50·3
Kodaikanal	E.	105·7	272	e 17 31	?	i 24 52	[− 2]	i 29 8	PPS	52·5
Cape Town		108·7	197	—	—	i 26 27	S	—	—	e 57·4
Hyderabad		108·8	278	18 53	PP	—	—	29 33	PPS	48·0
Rio de Janeiro		109·2	139	e 24 59	S	(e 24 59)	[−10]	—	—	53·2
Florissant		111·2	57	—	—	e 25 36	[+19]	—	—	e 51·4
Agra	E.	114·1	287	i 19 29	PP	—	—	29 15	PS	53·7
Bombay	N.	114·2	277	e 18 49	[+ 7]	i 25 23	[− 6]	i 30 32	PPS	—
Chicago		114·5	55	—	—	e 25 18	[−12]	e 29 25	PS	e 49·8
Columbia		115·6	65	—	—	e 25 28	[− 6]	e 35 17	SS	e 47·4
San Juan		120·0	88	e 20 29	PP	i 25 48	[− 2]	e 22 0	PPP	e 52·7
Toronto		120·7	56	—	—	e 37 3	SS	—	—	e 53·2
Fort de France		122·1	95	e 20 7	PP	—	—	—	—	e 58·9

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Philadelphia		122·3	61	—	—	e 30 31	PS	e 37 24	SSP	e 57·6
Frunse		123·2	302	—	—	e 36 8	?	—	—	—
Fordham		123·6	61	i 19 0	[0]	37 12	SS	—	—	—
Ottawa		123·8	55	18 58	[− 2]	25 57	[− 5]	30 39	PS	53·2
Andijan		124·0	298	e 19 4	[+ 3]	36 15	?	—	—	—
Williamstown		124·6	58	e 18 49	[−12]	—	—	—	—	—
Vermont		125·2	56	—	—	e 37 41	SS	—	—	e 60·6
Harvard	z.	125·7	59	i 19 7	[+ 4]	—	—	—	—	—
Weston		125·9	59	i 19 9a	[+ 5]	i 26 8	[0]	e 37 56	SS	e 59·8
Tashkent		126·6	298	19 25	[+20]	26 8	[− 2]	20 56	PP	e 56·9
Samarkand		127·5	296	e 19 4	[− 3]	—	—	e 36 19	?	—
Seven Falls		127·5	54	—	—	e 25 3	[−70]	e 37 33	SS	58·2
Sverdlovsk		134·4	318	19 18	[− 2]	31 56	PS	21 48	PP	—
Baku		140·5	293	19 28	[− 3]	41 27	SSP	32 31	PS	74·2
Grozny		143·9	297	e 19 43	[+ 6]	—	—	—	—	—
Erevan		144·5	291	19 34	[− 4]	—	—	—	—	—
Tiflis		144·5	294	i 19 34	[− 4]	e 42 56	SSP	e 35 18	PPS	68·2
Moscow		147·2	320	e 19 44	[+ 1]	e 27 54	[+64]	—	—	e 76·6
Pulkovo		148·6	330	19 42	[− 3]	42 15	SS	24 1	PP	66·6
Ksara		150·2	276	i 19 47a	[0]	—	—	23 30	PP	73·6
Helwan		152·8	267	e 20 9	[+18]	—	—	i 23 41	PP	—
Copenhagen		158·0	342	19 59	[+ 1]	—	—	—	—	68·2
Potsdam		160·9	336	20 7	[+ 5]	e 27 51	[+46]	e 37 51	PPS	e 80·2
Rathfarnham Castle		161·7	10	—	—	e 35 39	?	—	—	41·2
Prague		161·9	329	—	—	e 44 51	SS	50 9	SSS	e 83·2
Cheb		162·7	331	e 20 9?	[+ 6]	e 31 39	{+13}	—	—	e 71·2
De Bilt		162·9	349	e 20 9	[+ 5]	e 45 3	SS	e 57 51	?	73·2
Oxford		163·8	1	—	—	37 56	PPS	—	—	73·3
Uccle		164·3	348	e 20 14	[+ 9]	—	—	e 34 27	PS	—
Stuttgart		165·0	335	e 20 11	[+ 5]	—	—	e 24 39	PP	e 87·2
Strasbourg		165·6	338	e 20 10	[+ 4]	e 32 17	?	e 24 19	PP	e 81·2
Jersey		166·3	4	—	—	i 57 13	?	—	—	e 88·0
Paris		166·5	351	e 20 6	[− 1]	—	—	—	—	79·2
San Fernando		175·3	78	e 20 26	[+14]	e 46 45	SS	—	—	—
Malaga		176·6	70	e 20 5	[− 7]	—	—	e 25 59	PP	—
Granada		177·0	56	i 20 14	[+ 2]	—	—	i 25 59	PP	—
Almeria		178·0	50	e 20 5	[− 7]	—	—	i 26 1	PP	e 87·4

Additional readings :—
Apia sP = +5m.22s., iPP = +5m.51s., sS = +9m.41s., PcS = +12m.37s.
Riverview iEN = +5m.15s.
Melbourne i = +11m.6s. and +12m.45s.
Adelaide i = +1m.24s. and +8m.39s.
Perth i = +19m.5s., SSS = +22m.30s., SSSS = +23m.14s.
Honolulu ScS = +20m.5s.
Hong Kong SS = +28m.54s.
Pasadena iSEN = +24m.6s., ePSEN = +25m.11s., eSSEN = +30m.33s.
Berkeley eN = +36m.34s., eE = +37m.26s.
Ukiah S = +24m.14s., ePS = +24m.46s., ePPS = +25m.21s., eSS = +29m.54s.
Tucson P = +13m.31s., eS = +24m.29s., S = +24m.37s., ePS = +25m.51s.
Huancayo eP = +13m.43s., SKS = +24m.0s., S = +24m.34s. and +24m.45s., ePS = +25m.26s., PPS = +25m.47s., i = +26m.17s., +26m.23s., +31m.24s., and +32m.30s.
La Paz iPPN = +18m.2s., iSKKS? = +26m.3s., iSKKSN = +26m.23s., SSN = +31m.39s.
Sitka eS = +25m.29s. and +25m.33s.
Bozeman eS = +25m.48s.
College eS = +25m.56s. and +26m.3s., ePS = +27m.17s., eSSS = +36m.51s.
Calcutta ePPPN = +20m.49s., eSKKSN = +25m.36s., iPSN = +27m.37s., eSSSN = +36m.42s.
Kodaikanal iPKKPE? = +29m.53s., ?E = +30m.14s., iE = +40m.56s.
Cape Town iE = +35m.10s., iN = +35m.22s.?, eN = +39m.57s., eE = +44m.33s.
Rio de Janeiro eSE = +34m.31s., eSN = +34m.35s.
Florissant eSN = +26m.24s., eSZ = +27m.58s.
Bombay ePPN = +19m.34s., eN = +21m.50s., iSKSPN = +29m.22s., e = +54m.23s.
Chicago ePPS = +30m.12s., eSS = +35m.22s., eSSS = +39m.48s.
Columbia ePS = +29m.15s. and +29m.28s., eSS = +35m.32s.
San Juan SKS = +26m.9s., ePS = +30m.17s., ePPS = +31m.23s., iPSPS = +37m.11s.
Ottawa SS = +37m.37s.
Andijan e = +21m.47s.

Continued on next page.

Weston eSKKSE = +27m.56s., ePPPSE = +34m.7s., eSSSSZ = +48m.16s., eGN = +52m.52s.
Tashkent PPS = +32m.34s., SS = +43m.9s.
Sverdlovsk PKS = +22m.46s., PPS = +34m.9s.
Baku SSS = +46m.33s.
Tiflis iZ = +19m.44s., iN = +19m.49s., ePKSZ = +23m.0s., eZ = +24m.13s., ePPSZ = +26m.7s., eSKSPZ = +32m.22s.
Moscow e = +20m.47s. and +21m.19s.
Pulkovo e = +21m.37s., PPP = +26m.32s.
Ksara PSKS = +33m.49s., PPS = +36m.47s.
Potsdam eZ = +26m.27s., +33m.51s., and +39m.21s.
Prague eN = +53m.33s. and +57m.39s., e = +70m.33s. and +74m.57s., e = +89m.27s.
Stuttgart e = +21m.9s., +35m.41s., +41m.42s., +48m.32s., +53m.9s., and +62m.57s.
Jersey e = +61m.39s., +62m.12s., +66m.24s., and +68m.12s.
San Fernando eE = +32m.33s., eN = +33m.13s. and +47m.9s.
Almeria e = +32m.40s.
Long waves were also recorded at Tananarive, Seattle, Butte, East Machias, Santiago, Algiers, and other European stations.

Feb. 13d. 8h. 31m. 18s. Epicentre 24°·1N. 123°·1E. (as on 1937 Nov. 26d.).

A = −·4991, B = −·7656, C = −·4061; δ = +16; h = +4;
D = +·838, E = +·546; G = −·222, H = +·340, K = −·914.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Taihoku	1·6	303	e 0 31	+ 1	0 55	+ 4	—
Hong Kong	8·4	259	2 2	− 4	3 22	−21	4·1
Manila	9·7	193	i 2 17	− 5	—	—	i 5·6
Zinsen	13·7	12	e 3 21	+ 3	e 5 54	+ 2	e 7·7
Keizyo	13·8	13	e 3 22	+ 3	—	—	—
Phu-Lien	15·6	260	e 3 48	+ 5	e 6 53	SS	—

Manila gives also SEN = +7m.27s.

Feb. 13d. Readings also at 1h. (Amboina), 7h. (Andijan and Frunse), 8h. (Wellington and New Plymouth), 9h. (Ksara and Istanbul), 10h. (Belgrade, Amboina, and Nagoya), 11h. (Christchurch, Wellington, New Plymouth, and Samarkand), 12h. (Riverview), 13h. (Samarkand, Nagoya, and Santiago), 14h. (Samarkand), 15h. (Amboina and Santiago), 17h. (Tacubaya), 18h. (Andijan, Frunse, and Samarkand), 19h. (Malabar), 21h. (Amboina).

Feb. 14d. 2h. 54m. 13s. Epicentre 40°·8N. 53°·5E.

Felt Intensity IV-V at Krasnovodsk. Epicentre 40°·8N. 53°·5E. given by Strasbourg. Depth 65km. given by Bombay.

See Annales de l'Institut de Physique du Globe de Strasbourg, 1938. Tome III, 2e partie, Mende, 1941, p. 9.

A = +·4516, B = +·6103, C = +·6509; δ = +8; h = −2;
D = +·804, E = −·595; G = +·387, H = +·523, K = −·759.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku	2·7	261	0 52	P_g	1 30	S_g	—	—	—
Grozny	6·3	297	i 1 42	+ 6	e 2 41	− 9	3 6	S*	—
Tiflis	6·6	281	i 1 42	+ 1	i 3 0	+ 2	i 1 56	P*	—
Erevan	6·9	265	e 1 46	+ 1	3 16	+11	e 3 31	S*	—
Samarkand	10·3	99	2 25	− 7	i 4 43	+13	i 2 46	PPP	—
Sotchi	10·6	290	i 2 39	+ 3	e 4 34	− 3	—	—	—
Tashkent	11·9	86	i 2 47	− 7	i 4 55	−14	—	—	6·0
Tchimkent	12·1	78	2 52	− 5	—	—	—	—	—
Theodosia	13·9	294	i 3 24	+ 3	5 57	0	6 2	SS	—
Andijan	14·3	84	e 3 22	− 4	—	—	—	—	—
Yalta	14·7	291	i 3 29	− 2	i 6 14	− 2	—	—	—
Simferopol	14·8	298	i 3 34	+ 2	i 6 21	+ 3	i 7 12	SSS	—
Sebastopol	15·2	298	i 3 40	+ 2	i 6 32	+ 4	—	—	—
Ksara	15·6	249	i 3 42k	− 1	i 6 39	+ 2	—	—	—
Frunse	15·8	76	3 47	+ 2	—	—	—	—	—

Continued on next page.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	Supp. m. s.		L. m.
Sverdlovsk		16·7	14	i 4 1	+ 4	i 7 2	− 1	—	—	i 8·4
Almata		17·6	74	4 7	− 1	—	—	—	—	—
Moscow		18·2	330	i 4 19	+ 3	i 7 40	+ 3	—	—	—
Istanbul		18·5	279	3 28	−51	7 37	− 7	—	—	e 9·8
Bucharest		20·4	290	e 4 44	+ 3	i 8 31	+ 6	—	—	—
Semipalatinsk		20·9	54	4 48	+ 2	—	—	—	—	—
Helwan		21·1	245	i 4 42	− 6	i 8 34	− 5	9 23	SS	—
Lemberg		22·5	304	e 5 21	+19	e 9 31	SS	—	—	e 13·4
Sofia		22·5	284	5 4	+ 2	i 9 10	+ 5	—	—	—
Pulkovo		23·9	331	i 5 19	+ 3	i 9 34	+ 4	—	—	12·3
Agra		24·4	116	i 5 14	− 7	9 28	−11	5 26	pP	—
Belgrade		24·5	290	i 5 21k	− 1	i 9 52	+12	i 6 39	PPP	e 14·4
Budapest	E.	25·4	297	5 33	+ 2	10 18	+22	6 17	PP	—
	N.	25·4	297	5 35	+ 4	i 9 58	+ 2	i 6 9	PP	—
Ogyalla		26·1	298	5 40	+ 3	10 22	+15	—	—	14·8
Bombay		27·4	137	i 5 47	− 2	i 10 18	−10	i 6 24	PP	e 13·0
Graz		27·9	295	i 5 31	−23	i 10 58	+21	—	—	e 12·8
Prague		28·6	303	e 5 59	− 1	e 10 48	0	—	—	—
Triest		29·2	293	i 6 2	− 3	10 53	− 5	7 17	PPP	—
Upsala		29·3	323	i 6 8	+ 2	11 22	+23	i 6 49	PP	—
Potsdam		29·7	307	e 6 11	+ 1	e 11 11	+ 5	i 7 25	PP	e 19·2
Cheb		30·0	303	i 6 13	+ 1	i 11 14	+ 4	—	—	e 16·8
Jena		30·5	304	i 6 17	0	i 11 16	− 2	—	—	e 12·8
Padova		30·5	293	i 6 17	0	i 11 21	+ 3	—	—	—
Copenhagen		30·6	314	i 6 20	+ 2	11 23	+ 3	i 6 33	pP	—
Florence		31·2	290	6 23	0	11 33	+ 4	—	—	—
Göttingen		31·6	305	i 6 27	+ 1	e 11 47	+12	—	—	—
Hamburg		31·7	309	i 6 28	+ 1	e 11 59	+22	13 17	SS	—
Hyderabad		31·7	130	6 25	− 2	11 20	−17	12 45	SS	14·7
Stuttgart		32·0	300	i 6 31a	+ 1	e 11 43	+ 1	6 43	pP	e 18·8
Chur		32·0	296	e 6 30	0	—	—	—	—	—
Karlsruhe		32·6	301	i 6 37	+ 2	i 11 53	+ 2	—	—	16·8
Zurich		32·6	297	e 6 35a	0	—	—	—	—	—
Strasbourg		33·0	300	i 6 39a	0	e 12 3	+ 6	i 6 50	pP	—
Basle		33·2	297	e 6 40	0	—	—	—	—	—
Moncalieri		33·5	292	6 24	−19	11 37	−28	—	—	16·4
Neuchatel		33·7	297	e 6 44	− 1	e 11 26	−42	—	—	—
Besançon		34·3	297	e 6 47?	− 3	—	—	—	—	—
Calcutta	N.	34·5	111	e 6 52	0	i 12 15	− 5	i 7 33	pP	—
De Bilt		34·5	307	i 6 54a	+ 2	12 22	+ 2	i 7 5	pP	e 17·8
Uccle		35·1	304	6 58	+ 1	12 32	+ 2	i 8 17	PP	e 19·8
Bergen		35·3	321	7 4	+ 5	10 47?	?	8 9	PP	13·8
Paris		36·5	300	i 7 10	+ 1	13 10	+19	9 25	PPP	20·8
Kodaikanal	E.	37·1	138	e 7 13	− 1	i 12 44	−17	14 26	SS	16·5
Kew		38·0	305	i 7 23a	+ 2	13 13	− 1	8 45	PP	e 20·8
Durham		38·5	310	i 7 28	+ 2	i 13 22	0	16 9	SS	—
Oxford		38·5	305	i 7 23	− 3	i 13 25	+ 3	i 16 7	SS	e 21·8
Aberdeen		38·8	315	i 7 29	+ 1	i 13 29	+ 3	i 8 58	PP	24·1
Stonyhurst		39·1	309	i 7 33	+ 2	i 13 28	− 3	13 55	sS	22·8
Edinburgh		39·4	312	e 7 32	− 1	i 13 38	+ 3	i 16 29	SS	—
Jersey		39·4	302	i 7 32	− 1	i 13 57	+22	i 16 10	SS	e 21·5
Bidston		39·5	309	i 7 46	+12	i 13 36	− 1	i 16 21	SS	e 20·8
Colombo	E.	41·1	138	7 41	− 6	13 43	−18	—	—	—
Rathfarnham Castle		41·4	309	i 7 42	− 8	e 13 32	−33	i 17 27	SSS	22·8
Almeria		43·1	284	i 8 0	− 4	e 14 16	−14	—	—	—
Toledo		43·2	288	i 8 5	+ 1	i 14 24	− 8	—	—	17·7
Granada		43·9	285	i 8 10	0	e 14 31	−11	—	—	—
Malaga		44·6	285	8 6	−10	14 43	− 9	—	—	21·3
San Fernando		46·1	285	e 8 25	− 3	i 15 5	− 9	—	—	—
Scoresby Sund		47·4	334	i 8 40	+ 2	15 35	+ 3	i 10 30	PP	23·8
Phu-Lien		49·0	97	e 8 57	+ 7	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Hong Kong		53·8	91	e 9 22	− 4	12 56	PPP	—	—	—
Medan		54·9	120	9 37	+ 2	—	—	—	—	—
Vladivostok		56·3	60	i 9 40	− 5	e 17 21	−13	—	—	e 28·7
Manila		63·6	93	10 32a	− 3	19 3	− 5	—	—	—
Batavia		67·6	120	e 10 44	−17	i 20 6	+ 9	—	—	—
College		73·4	9	e 11 27	− 9	e 20 54	−11	e 14 32	PP	e 29·8
Seven Falls		79·4	325	—	—	e 22 11	+ 1	—	—	32·8
East Machias		79·6	321	—	—	e 22 13	+ 1	—	—	e 32·0
Cape Town		81·1	208	—	—	22 19	− 9	—	—	e 41·4
Sitka		82·2	5	—	—	e 22 35	− 4	24 7	S_cS	e 34·0
Ottawa		82·9	326	12 29	+ 1	22 50	+ 4	23 49	PS	37·8
Weston		83·3	322	i 12 30	0	i 23 54	PS	i 12 58	pP	—
Harvard		83·4	322	i 12 30a	0	i 22 53	+ 2	i 12 43	pP	—
Williamstown		83·9	323	i 12 33	0	e 23 0	+ 4	i 12 47	pP	—
Fordham		85·7	322	i 12 39	− 3	i 23 13	− 1	i 12 53	pP	—
Toronto		85·8	328	—	—	e 23 17	+ 2	—	—	40·8
Victoria		91·1	358	—	—	e 23 53	[+14]	—	—	41·8
Cape Girardeau	N.	95·2	331	e 13 16	−11	(26 5)	PS	—	—	26·1
Tinemaha	Z.	102·1	353	e 13 59	+ 1	—	—	e 18 10	PP	—
Mount Wilson	Z.	104·9	352	i 14 10	0	—	—	i 18 33	PP	—
Pasadena	Z.	105·0	352	e 14 17	+ 6	—	—	i 18 32	PP	—
Riverside	Z.	105·1	352	e 14 12	+ 1	—	—	—	—	—
Tucson		105·9	346	e 14 15	+ 2	—	—	18 42	PP	e 43·4
La Paz		124·4	278	19 14	[+13]	—	—	i 22 7	PP	70·3
Huancayo		126·9	286	e 19 17	[+11]	—	—	e 20 59	PP	e 62·9

Additional readings :—
Grozny i = +1m.46s., P* = +1m.57s., i = +2m.4s., e = +2m.41s.
Tiflis i = +1m.44s. and +2m.23s.
Erevan i = +1m.56s., iP* = +2m.2s.
Samarkand i = +3m.0s. and +4m.12s.
Theodosia e = +5m.38s. and +6m.2s.
Simferopol i = +3m.51s. and +4m.23s.
Bucharest iSN = +6m.47s., SE = +7m.5s., S*EN = +8m.4s.
Sofia iEN = +5m.15s., iN = +9m.30s.
Agra PPPE = +5m.51s., sS = +9m.49s., SSE = +10m.21s.
Belgrade iNE = +5m.33s., iNW = +7m.10s. and +9m.41s.
Budapest E i = +6m.47s. and +10m.50s., SS = +11m.32s., P_cS = +12m.43s., i = +13m.20s., +14m.11s., +14m.56s., +15m.18s., +15m.39s., +16m.48s., +18m.18s., and +19m.5s.
Budapest N i = +5m.37s. and +6m.50s., S = +10m.12s., i = +10m.25s., +11m.47s., +12m.5s., +13m.21s., +15m.28s., and +15m.39s.
Ogyalla iN = +10m.10s., SE = +10m.24s., iE = +10m.42s.
Bombay +5m.56s., +6m.2s., eSS = +11m.21s., S_cS? = +16m.29s.
Triest iN = +6m.5s., i = +6m.41s. and +11m.16s.
Upsala eSN = +11m.29s.
Potsdam eN = +7m.29s. and +8m.5s., eE = +8m.11s., iN = +10m.4s., iE = +11m.6s., eSE = +11m.29s., iE = +11m.49s., iN = +11m.55s., iE = +12m.4s.
Jena iE = +6m.30s., e = +11m.45s.
Copenhagen eZ = +11m.33s.
Florence i = +6m.36s. and +11m.47s.
Göttingen i = +6m.39s., eN = +16m.47s.
Hamburg eE = +10m.12s., eEZ = +13m.47s.
Hyderabad S_cSE = +17m.7s.
Stuttgart iZ = +6m.46s., ePP = +7m.58s., eN = +10m.25s., iS = +12m.5s., e = +12m.38s., eSS = +13m.35s.
Zurich e = +6m.46s.
Strasbourg ePP = +7m.21s., eSS = +14m.1s.
Basle e = +6m.52s.
Calcutta isSN = +13m.35s., iSSN = +14m.22s., iN = +16m.59s.
De Bilt iZ = +8m.12s., esS = +12m.46s.
Uccle i = +7m.10s., SS = +15m.8s.
Bergen SS = +12m.38s.
Kew i = +7m.34s. and +13m.36s., iSS = +15m.59s., i = +17m.7s.
Durham iN = +13m.43s.
Oxford iP? = +7m.39s.
Aberdeen iSS = +16m.7s.
Stonyhurst iSS = +16m.28s.
Edinburgh i = +23m.52s. and +25m.37s.
Jersey PP = +9m.23s., e = +13m.17s.
Bidston i = +8m.28s., +13m.56s., and +17m.21s.
Rathfarnham Castle e = +10m.27s.

Continued on next page,

Toledo i = +8m.15s., e = +8m.59s., +14m.51s., and +15m.43s.
San Fernando iPN = +8m.38s.
Scoresby Sund ? = +15m.57s., +19m.17s., and +20m.33s.
Batavia iZ = +11m.1s., iE = +11m.36s.
College eP = +11m.35s., ePPP = +16m.7s., eSS = +25m.53s.
East Machias S = +22m.18s., ePPS = +22m.56s.
Sitka eS = +22m.39s.
Weston iP_eP = +12m.44s., iPS = +23m.15s., ePPPSE = +23m.56s.
Harvard isSE = +23m.17s.
Fordham iPS? = +25m.26s., i = +28m.36s. and +37m.59s.
Cape Girandeau eN = +14m.30s. and +17m.10s.
Tinemaha iZ = +17m.15s., iPKKPZ = +30m.28s.
Mount Wilson iZ = +14m.24s. and +17m.6s., iPKKPZ = +29m.46s., iZ = +29m.59s.$_2$ and +30m.16s.
Pasadena eZ = +17m.14s., iPKKPZ = +29m.45s., iZ = +29m.57s., and +30m.15s.
Riverside iZ = +29m.58s. and +30m.15s.
Tucson PP = +18m.54s.
Long waves were also recorded at Ukiah, Amboina, Bozeman, Chicago, Columbia, and Honolulu.

Feb. 14d. 19h. 14m. 48s. Epicentre 36°·3N. 71°·0E. (as on 1938 Jan. 27d.).

A = +·2630, B = +·7638, C = +·5894; $\delta = -5$; $h = 0$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Andijan		4·6	14	1 16	+ 4	2 4	− 3	2 12	S_g	—
Samarkand		4·6	319	1 11	− 1	1 51	−16	i 1 55	S_g	—
Tashkent		5·2	347	i 1 20	− 1	i 2 21	− 1	—	—	—
Tchimkent		6·1	351	e 1 36	+ 2	e 2 48	+ 3	—	—	—
Frunse		7·1	22	e 1 48	0	e 3 2	− 8	—	—	—
Semipalatinsk		15·6	22	e 3 39	− 4	—	—	—	—	—
Baku		17·0	290	—	—	e 7 6	− 4	—	—	e 10·2
Bombay		17·4	174	e 3 54	−12	e 7 24	+ 5	e 4 22	PP	—
Calcutta	N.	20·4	127	—	—	e 8 2	−23	—	—	—
Grozny		20·6	299	e 4 38	− 5	e 8 32	+ 3	—	—	—
Tiflis		21·0	295	e 4 38	− 9	e 8 29	− 8	e 5 28	PPP	—
Sverdlovsk		21·7	345	4 49	− 6	8 52	+ 1	—	—	12·2
Keizyo		44·2	71	e 7 33	−39	—	—	—	—	—
Vladivostok		46·4	62	e 9 47	?	i 10 23	PP	—	—	—
Husan		46·5	73	e 9 12	+41	—	—	—	—	—
Mizusawa	E.	54·3	64	—	—	19 23	?	—	—	—

Additional readings:—
Andijan e = +1m.33s. and +1m.38s.
Samarkand P_gP_g = +1m.25s., e = +1m.40s.
Frunse e = +2m.36s. and +2m.50s.

Feb. 14d. Readings also at 0h. (La Paz), 2h. (Butte), 3h. (La Paz, Hong Kong, and near Mizusawa), 4h. (near Malabar), 5h. (Oaxaca, Tacubaya, and near Balboa Heights), 7h. (Yalta), 8h. (near Baku), 10h. (near Fresno), 11h. (Samarkand), 12h. (near Baku), 13h. (Samarkand and near Baku), 14h. (Amboina and near Santiago), 15h. (Florissant, Tucson, San Juan, Huancayo, La Paz, La Plata, and near Copiapo), 16h. (Kodaikanal), 18h. (Frunse and near Apia), 23h. (La Paz).

Feb. 15d. 3h. 27m. 45s. Epicentre 19°·6N. 26°·2W.

A = +·8459, B = −·4162, C = +·3334; $\delta = -8$; $h = +5$;
D = −·442, E = −·897; G = +·299, H = −·147, K = −·943.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Fernando	24·3	42	i 5 21	+ 1	i 9 58	+21	11 11	SSS	14·2
Malaga	25·6	43	5 42	+10	10 27	SS	—	—	13·2
Granada	26·4	43	i 5 43	+ 3	e 10 28	+16	—	—	—
Almeria	27·0	45	e 5 43	− 2	e 10 39	+17	—	—	e 19·9
Toledo	27·8	38	i 5 55	+ 2	e 10 42	+ 7	i 6 29	PP	12·8
Algiers	30·8	50	i 6 15	− 5	12 7	+44	7 9	PP	i 16·0
Fort de France	33·7	266	e 5 47	−58	—	—	—	—	—
Jersey	35·3	26	i 6 33	−26	e 12 40	+ 7	8 23	PP	e 17·8
Rathfarnham Castle	37·0	19	i 7 13	0	i 13 1	+ 2	i 8 27	PP	16·1
Paris	37·2	32	i 7 16	+ 1	—	—	8 46	pP	17·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Oxford		37·6	25	e 7 16	− 2	13 12	+ 4	—	—	e 15·9
San Juan		37·7	275	e 7 16	− 3	i 13 8	− 2	—	—	i 15·9
Kew		37·8	26	i 7 20a	0	i 13 12	+ 1	8 47	PP	16·2
Moncalieri		37·8	38	7 20	0	—	—	—	—	17·7
Neuchatel		38·4	36	e 7 25	0	—	—	—	—	—
Stonyhurst		38·7	21	i 7 26	− 1	—	—	—	—	16·2
Basle		39·1	36	e 7 30	− 1	—	—	—	—	—
Uccle		39·4	29	i 7 34a	+ 1	13 34	− 1	i 9 6	PP	e 17·2
Florence		39·5	43	7 36	+ 2	—	—	—	—	—
Zurich		39·6	36	e 7 34a	− 1	—	—	—	—	—
Durham	E.	39·8	22	e 7 30	− 6	e 13 25	−17	—	—	—
Strasbourg		39·8	35	i 7 36	0	e 13 43	+ 1	i 9 6	PP	e 18·7
Edinburgh		40·2	20	e 8 55	PP	i 13 55	+ 7	—	—	e 17·2
Karlsruhe		40·4	34	i 7 42	+ 1	—	—	—	—	e 19·2
De Bilt		40·6	29	7 45	+ 2	e 14 14	+20	i 9 23	PP	e 17·2
Stuttgart		40·7	35	i 7 45a	+ 1	e 13 54	− 1	e 9 16	PP	e 19·2
Aberdeen		41·5	20	i 11 54	?	i 17 0	SS	—	—	—
Triest		41·9	42	i 7 50	− 4	i 14 10	− 3	9 25	PP	—
East Machias		42·3	315	e 9 26	PP	14 22	+ 3	e 10 1	PPP	e 17·6
Göttingen		42·6	32	i 8 1	+ 2	—	—	—	—	—
Cheb		43·1	35	e 8 4	0	e 14 29	− 1	—	—	e 20·2
Jena		43·1	35	e 8 3	− 1	—	—	e 9 45	PP	e 18·2
Graz		43·5	41	i 8 4	− 3	e 14 34	− 2	—	—	e 21·2
Hamburg		43·8	29	e 8 15	+ 6	—	—	—	—	e 21·2
Prague		44·2	36	e 8 23	+11	e 14 52	+ 6	—	—	e 18·2
Weston		44·2	311	i 8 13k	+ 1	e 14 44	− 2	e 18 5	SS	e 21·7
Harvard		44·4	311	i 8 14	0	—	—	—	—	—
Ivigtut		44·4	345	—	—	14 50	+ 1	—	—	18·2
Rio de Janeiro	N.	45·4	201	e 8 15	− 7	e 14 55	− 9	—	—	e 20·2
Seven Falls		45·4	318	—	—	e 15 5	+ 1	—	—	18·2
Ogyalla		45·6	41	e 8 45	+21	—	—	—	—	—
Williamstown		45·6	312	i 8 24	0	—	—	—	—	e 21·5
Fordham		45·7	308	i 8 23	− 1	i 15 8	0	i 10 11	PP	—
Belgrade		46·0	46	e 8 23a	− 4	e 15 15	+ 3	—	—	e 27·8
Budapest		46·0	42	8 26	− 1	i 15 7	− 5	—	—	e 26·7
Copenhagen		46·2	28	i 8 30	+ 2	15 20	+ 5	—	—	20·2
Kecskemet	Z.	46·2	43	i 8 25	− 3	—	—	—	—	—
Bergen		46·5	20	8 33	+ 2	15 15	− 4	—	—	22·2
Philadelphia		46·5	307	e 8 34	+ 3	i 15 22	+ 3	e 10 54	PP	e 21·2
Ottawa		48·1	314	8 43	0	15 45	+ 3	19 15	SS	22·2
Pennsylvania		48·6	307	—	—	15 53	+ 4	—	—	—
Toronto		50·3	311	—	—	e 16 15	+ 2	—	—	27·2
Columbia		50·5	298	i 9 7	+ 5	e 16 16	0	—	—	e 20·3
Scoresby Sund		51·0	1	9 6	0	16 26	+ 4	—	—	21·2
Helwan		52·8	67	9 18	− 1	e 16 51	+ 4	e 21 15	?	29·0
La Paz		54·8	231	9 34	0	i 17 12	− 2	i 20 47	SS	26·8
Yalta		55·5	49	i 9 35	− 4	—	—	—	—	—
Chicago		56·1	308	—	—	e 17 24	− 8	—	—	e 23·9
Theodosia		56·4	48	i 9 47	+ 2	—	—	—	—	—
Ksara		56·5	62	i 9 45a	− 1	e 17 52	+15	e 11 59	PP	27·7
Pulkovo		56·6	30	e 9 50	+ 3	17 40	+ 2	—	—	23·7
Cape Girandeau		57·4	301	e 9 49	− 4	e 17 46	− 3	i 13 26	PPP	e 24·4
Huancayo		57·7	241	e 9 55	0	e 17 54	+ 1	11 48	PP	e 22·9
St. Louis		58·0	303	e 9 54	− 3	e 17 55	− 2	19 5	PS	e 27·3
Moscow		59·3	36	e 10 6	0	e 18 15	+ 1	—	—	27·7
Little Rock		59·8	299	e 10 6	− 3	18 23	+ 3	—	—	—
Erevan		63·1	54	e 10 28	− 4	—	—	—	—	—
Tiflis		63·2	53	10 30	− 2	19 4	+ 1	e 12 50	PP	e 30·2
Grozny		63·8	50	e 10 35	− 1	—	—	—	—	—
Baku		67·2	53	e 10 57	− 1	19 55	+ 3	—	—	32·3
Sverdlovsk		72·1	35	e 11 27	− 1	20 53	+ 3	—	—	32·2
Bozeman		72·7	313	—	—	e 20 59	+ 2	e 25 35	SS	e 33·9
Tucson		75·4	299	e 11 47	0	21 31	+ 4	e 14 40	PP	e 31·7
Haiwee	E.	80·1	305	e 12 19	+ 6	—	—	—	—	—
Samarkand		80·1	52	12 14	+ 1	—	—	—	—	—

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverside		80·2	303	i 12 13	− 1	—	—	—	—	—
Victoria		80·2	318	e 12 27	+13	e 22 17	− 2	—	—	38·2
La Jolla	z.	80·5	301	e 12 17	+ 2	—	—	—	—	—
Mount Wilson	z.	80·7	303	i 12 16	0	—	—	—	—	—
Pasadena		80·8	303	i 12 16	− 1	—	—	—	—	e 38·5
Tashkent		81·3	49	12 17	− 3	i 22 31	+ 1	—	—	e 25·2
Santa Barbara	z.	82·0	303	e 12 23	0	—	—	—	—	—
Andijan		83·7	49	e 12 30	− 2	—	—	—	—	—
Sitka		83·7	329	e 12 34	+ 2	e 31 46	SSS	e 15 50	PP	e 33·5
Frunse		84·5	46	e 12 47	+11	—	—	—	—	—
College		84·8	339	—	—	e 22 27	−38	—	—	e 34·1
Semipalatinsk		85·1	37	12 38	− 1	—	—	—	—	—
Bombay	N.	91·9	69	e 12 43	−28	e 23 50	[+ 6]	e 22 57	SKS	—
Agra	E.	93·2	59	e 13 16	− 1	e 23 45	[− 6]	24 40	SKKS	51·2
Kodaikanal	E.	99·2	75	—	—	e 24 15?	[− 8]	—	—	—
Calcutta	N.	103·6	59	e 21 38	PPP	—	—	—	—	—
Manila		133·1	46	21 46	PP	—	—	24 35	PPP	68·2

Additional readings :—
Toledo iPPP = +6m.44s.
Jersey e = +9m.18s., SS = +15m.35s.
Rathfarnham Castle i = +8m.6s.
San Juan iS = +13m15s., S = +13m.38s.
Florence i = +7m.46s.
Strasbourg iPPP = +9m.25s., eS = +13m.50s., eSS = +16m.15s.
Stuttgart e = +12m.20s., eSS = +16m.53s.
East Machias S = +14m.37s.
Weston i = +8m.24s.
Harvard iE = +8m.24s.
Rio de Janeiro eSE = +15m.5s.
Fordham iSS = +18m.38s.
Belgrade eP = +8m.29s., i = +8m.36s., eNW = +9m.58s., eSNW = +17m.24s.
Budapest iE = +8m.30s., +9m.34s., and +10m.13s.
Kecskemet eZ = +8m.44s. and +9m.21s.
Philadelphia eSS = +18m.23s.
La Paz iPZ = +9m.37s., P_cPZ = +10m.47s., S_cSN = +19m.31s., iN = +22m.45s. and +23m.31s.
Ksara ePS = +18m.22s., eSS = +21m.52s.
Cape Girandeau ePN = +9m.56s., iN = +11m.2s.
Huancayo eP = +10m.7s., eP_cP = +10m.43s., ePPP = +13m.14s., eS_cS = +19m.53s., eSS = +21m.21s.
St. Louis eE = +17m.55s., eN = +19m.35s., eSSSN = +24m.25s.
Tiflis eSSSN = +25m.51s.
Bozeman eS_cS = +21m.51s.
Tucson iP = +11m.51s., +11m.57s., S_cS = +22m.6s.
Samarkand e = +12m.27s.
Sitka iS_cS = +23m.0s.
College eS = +22m.56s., eS_cS = +23m.5s.
Bombay eN = +24m.30s.
Manila SKP = +22m.30s.
Long waves were also recorded at Hyderabad, La Plata, Hong Kong, Upsala, Vladivostok, Seattle, Butte, Ukiah, and Colombo.

Feb. 15d. 6h. 57m. 13s. Epicentre 19°·6N. 26°·2W. (as at 3h.).

A = +·8459, B = −·4162, C = +·3334 ; δ = −8 ; h = +5.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Fernando	24·3	42	i 5 23	+ 3	—	—	e 11 0	SSS.	15·8
Malaga	25·6	43	5 47	+15	10 32	+33	—	—	13·8
Granada	26·4	43	i 5 44	+ 4	e 10 18	+ 6	—	—	—
Almeria	27·0	45	i 5 45	0	—	—	—	—	e 15·5
Toledo	27·8	38	e 5 54	+ 1	e 10 38	+ 3	e 6 38	PP	11·9
Algiers	30·8	50	i 6 19	− 1	—	—	—	—	16·8
Fort de France	33·7	266	e 6 44	− 1	—	—	—	—	—
Jersey	35·3	26	e 7 5	+ 6	e 12 56	+23	e 17 17	?	e 19·6
Rathfarnham Castle	37·0	19	e 7 11	− 2	e 12 57	− 2	—	—	16·8
Paris	37·2	32	i 7 14	− 1	—	—	8 45	pP	17·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
San Juan		37·7	275	—	—	13 13	+ 3	—	—	e 14·6
Kew		37·8	26	i 7 19a	− 1	—	—	—	—	e 17·8
Neuchatel		38·4	36	e 7 25	0	—	—	—	—	—
Basle		39·1	36	e 7 31a	0	—	—	—	—	—
Uccle		39·4	29	i 7 33a	0	e 13 36	+ 1	e 9 10	PP	e 17·8
Florence		39·5	43	e 7 17	−17	—	—	—	—	—
Zurich		39·6	36	e 7 34a	− 1	—	—	—	—	—
Durham	N.	39·8	22	i 7 33	− 3	—	—	—	—	—
Strasbourg		39·8	35	i 7 36	0	e 13 46	+ 4	e 9 14	PP	e 20·3
De Bilt		40·6	29	i 7 44	+ 1	—	—	i 9 17	PP	e 18·8
Stuttgart		40·7	35	i 7 43a	− 1	e 13 57	+ 2	e 9 17	PP	e 19·3
Aberdeen		41·5	20	—	—	—	—	e 17 23	SSS	e 18·4
Göttingen		42·6	32	i 8 1	+ 2	—	—	—	—	—
Jena		43·1	35	e 8 11	+ 7	—	—	—	—	—
Graz		43·5	41	i 8 2	− 5	—	—	13 29	PS	e 23·8
Hamburg		43·8	29	i 8 9	0	—	—	—	—	22·8
Weston		44·2	311	i 8 12	0	—	—	—	—	—
Ivigtut		44·4	345	—	—	14 51	+ 2	—	—	17·8
Seven Falls		45·4	318	—	—	e 15 5	+ 1	—	—	19·8
Williamstown		45·6	312	e 8 24	0	—	—	—	—	—
Fordham		45·7	308	i 8 22	− 2	15 7	− 1	i 9 59	PP	—
Belgrade		46·0	46	i 8 27a	0	—	—	e 10 6	PP	e 30·5
Copenhagen		46·2	28	i 8 29	+ 1	15 23	+ 8	—	—	22·8
Philadelphia		46·5	307	—	—	e 15 2	−17	e 18 23	SS	e 18·9
Ottawa		48·1	314	8 43	0	15 45	+ 3	18 47	SS	23·8
Toronto		50·3	311	—	—	e 16 11	− 2	—	—	24·8
Scoresby Sund		51·0	1	9 4	− 2	16 25	+ 3	—	—	21·8
Istanbul		51·4	52	e 9 4	− 5	—	—	—	—	—
Helwan		52·8	67	i 9 18	− 1	e 17 19	SS	e 12 21	PPP	—
La Paz		54·8	231	i 9 32k	− 2	i 17 12	− 2	—	—	27·3
Theodosia		56·4	48	(i 9 45)	0	—	—	—	—	—
Ksara		56·5	62	i 9 46a	0	e 21 58	SS	e 11 58	PP	—
Huancayo		57·7	241	e 9 50	− 5	e 17 51	− 2	e 11 33	PP	e 24·3
Erevan		63·1	54	e 10 28	− 4	—	—	—	—	—
Tiflis		63·2	53	i 10 30	− 2	e 19 18	+15	—	—	e 32·8
Grozny		63·8	50	e 10 34	− 2	—	—	—	—	—
Baku		67·2	53	e 10 57	− 1	20 26	PS	28 5	SSS	41·8
Sverdlovsk		72·1	35	i 11 28	0	20 56	+ 6	—	—	33·8
Tucson		75·4	299	e 11 47	0	—	—	—	—	e 37·3
Samarkand		80·1	52	12 12	− 1	—	—	—	—	—
Victoria		80·2	318	—	—	e 22 11	− 8	—	—	38·8
Mount Wilson	Z.	80·7	303	i 12 16	0	—	—	—	—	—
Pasadena	Z.	80·8	303	e 12 16	− 1	—	—	—	—	—
Tashkent		81·3	49	i 12 48	+28	—	—	—	—	e 42·7
Andijan		83·7	49	12 33	+ 1	—	—	—	—	—
Frunse		84·5	46	12 35	− 1	—	—	—	—	—
Agra	E.	93·2	59	—	—	e 23 54	[+ 3]	—	—	—
Kodaikanal	E.	99·2	75	—	—	e 25 47?	+33	—	—	—

Additional readings :—
Toledo e = +7m.3s.
Kew iE = +7m.33s.
Stuttgart eSS = +16m.53s.
Fordham eSS = +18m.19s.
Philadelphia i = +15m.20s.
Theodosia P reading has been increased by 2 minutes.
Ksara ePS = +18m.22s.
Huancayo eP = +9m.55s.
Baku e = +36m.33s.
Tashkent e = +13m.39s. and +14m.36s.
Long waves were also recorded at Amboina, Calcutta, Pulkovo, Budapest, Cheb, Edinburgh, Stonyhurst, Hyderabad, and Vladivostok.

Feb. 15d. Readings also at 0h. (Samarkand, Andijan, Tashkent, Frunse, and Tchimkent), 2h. (Zurich, Basle, Neuchatel, Moncalieri, Strasbourg, and Besançon), 3h. (Harvard), 4h. (Amboina), 6h. (Samarkand and Rio de Janeiro), 7h. (Tinemaha, Tucson, Haiwee, Riverside, La Jolla, Santa Barbara, Mount Wilson, and Pasadena), 8h. (Wellington and Hukuoka B), 9h. (Amboina), 10h. (Fort de France, Copenhagen, and Malabar), 12h. (Amboina), 13h. (San Javier), 17h. (Malabar), 19h. (Tiflis).

Feb. 16d. Readings at 2h. (Frunse, Tiflis, Samarkand, and near Andijan), 3h. (Mizusawa), 4h. (Samarkand), 5h. (Amboina, Samarkand, near Tashkent, and near Santiago), 6h. (Samarkand (3), Semipalatinsk, near Frunse, Andijan, Tchimkent, and near Nagoya), 7h. (Mount Wilson, Pasadena, Riverside, and Brisbane), 8h. (near Samarkand), 9h. (Wellington and near Samarkand), 10h. (Samarkand (3)), 11h. (Samarkand, Sebastopol (2), Theodosia (2), near Simferopol (2), and Yalta (2)), 13h. (Graz and Ksara), 14h. (Mizusawa), 16h. (La Paz), 18h. (Balboa Heights, Santiago, and near Mizusawa), 19h. (La Paz, Huancayo, Tiflis, and near Ksara), 20h. (La Paz, Calcutta, Tiflis, near Erevan, and near Manila), 21h. (Wellington).

Feb. 17d. 5h. Earthquake felt in Kei Islands 5°·5S. 133°·0E. The readings do not afford a determination of the epicentre.

Amboina iP =21m.0s., iSE =21m.31s.
Manila P =25m.0s.a, S =28m.47s., iZ =28m.53s.
Perth i =25m.27s., 27m.58s., 32m.7s., and 32m.47s.
Batavia iP? =25m.51s., iZ =30m.10s., iS =30m.19s.
Medan eE =28m.48s., eS?E =34m.12s.
Adelaide i =30m.37s. and 33m.19s., eL =35m.40s.
Brisbane iP?N =31m.0s., iEN =31m.18s., iS?N =35m.12s.
Andijan P =31m.7s., S =40m.5s.
Samarkand eP =31m.32s., S =40m.35s.
Frunse eP =31m.36s.
Riverview e?E =32m.18s., eN =34m.28s.
Sverdlovsk eP =32m.29s., S =42m.26s., L =60m.
Tiflis ePZ =33m.57s., eEN =43m.37s., eZ =43m.39s., eE =48m.42s., eLZ =58m.
Mount Wilson iPPZ? =39m.15s., iSKPZ? =41m.53s.
Riverside ePPZ? =39m.21s.
La Paz PZ =40m.3s.
Tashkent i =40m.30s., e =41m.8s., 41m.46s., 42m.32s., and 44m.56s.
Pasadena iSKP?Z =41m.51s.
Baku i =43m.2s.
Ksara e =50m.9s.

Feb. 17d. Readings also at 1h. (Helwan and Ksara), 3h. (La Paz), 4h. (Amboina, Samarkand, and near Apia), 5h. (Amboina), 6h. (near Samarkand), 7h. (Samarkand, Mizusawa, and Nagoya), 8h. (Samarkand, Sebastopol, near Simferopol, Theodosia, and Yalta), 9h. (Medan and near Berkeley), 10h. (Aberdeen and Samarkand), 11h. (near Berkeley), 12h. (Pasadena and Riverside), 13h. (Medan), 14h. (Malabar), 16h. (Huancayo and La Paz), 18h. (near Mizusawa), 23h. (Manila, Christchurch, Hastings, new Plymouth, Tuai, and near Wellington).

Feb. 18d. Readings at 0h. (La Paz), 1h. (Phu-Lien, Hong Kong (2), Manila, Baku, Tiflis, Sverdlovsk (2), Ksara, De Bilt, Cheb, and near Strasbourg), 2h. (Manila, near Basle, Chur, Neuchatel, and Zurich), 3h. (Tashkent and Sverdlovsk), 4h. (near Almata, Andijan, Frunse, Samarkand, and near Tchimkent), 5h. (Manila, Mount Wilson, Pasadena, Riverside, Tinemaha, near Medan (2), near Keizyo and Zinsen), 6h. (Sverdlovsk, Tashkent, and Ksara (2)), 7h. (Mount Wilson, Pasadena, Riverside, and Tinemaha), 12h. (near Balboa Heights), 14h. (near La Paz), 16h. (near Mizusawa and Nagoya), 17h. (Oaxaca and Tacubaya), 19h. (Harvard, near Andijan, and near Manila), 20h. (near Andijan and Frunse), 22h. (Huancayo and La Paz).

Feb. 19d. Readings at 6h. (near Andijan), 7h. (Huancayo, Ksara, Helwan, Sverdlovsk, De Bilt, Fordham, Granada, Rio de Janeiro, Harvard, La Paz, and Tinemaha), 8h. (Ksara), 10h. (Huancayo and La Paz (2)), 11h. (Pasadena, Riverside, and Tinemaha), 15h. (Tacubaya), 16h. (Amboina), 17h. (near Fort de France), 22h. (Andijan and Frunse), 23h. (near Hukuoka B and Nagoya).

Feb. 20d. Readings at 1h. (Berkeley), 6h. (near Berkeley, Branner, and San Francisco), 7h. (Malabar, Manila, and near La Paz (2)), 8h. (Amboina, Yalta, Rio de Janeiro. Huancayo, San Juan, Tucson, and La Paz), 9h. (near Nagoya and near Tiflis), 10h. (near Berkeley, Branner, and Lick), 11h. (Grozny and Santiago), 12h. (Grozny), 14h. (near Santiago, Malabar, and near Batavia), 16h. (near Malaga), 17h. (La Paz), 19h. (near Berkeley), 20h. (Andijan), 21h. (Manila), 23h. (La Paz and near Copiapo).

Feb. 21d. 13h. 49m. 0s. Epicentre 50°·0N. 98°·0E.

$A = -·0898$, $B = +·6390$, $C = +·7639$; $\delta = -7$; $h = -5$;
$D = +·990$, $E = +·139$; $G = -·106$, $H = +·756$, $K = -·645$.

Uncertain.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Semipalatinsk		11·4	279	2 38	− 9	4 44	−12	i 3 58	?	—
Almata		15·9	253	3 56	+ 9	—	—	—	—	e 7·4
Frunse		17·6	255	4 16	+ 8	e 8 15	?	8 38	?	—
Andijan		20·2	252	4 57	+18	—	—	—	—	—
Sverdlovsk		23·1	302	i 5 5	− 3	8 40	−36	—	—	i 13·1
Samarkand		24·1	257	5 18	0	—	—	—	—	—
Calcutta	N.	28·4	199	—	—	—	—	i 11 48	SS	—
Baku		34·7	274	—	—	—	—	e 13 40	?	18·1
Grozny		35·8	280	e 8 10	PP	—	—	—	—	—
Moscow		35·9	304	e 7 5	+ 1	e 12 59	+17	e 15 33	SSS	e 17·5
Bombay	E.	37·0	222	—	—	e 13 24	+25	—	—	e 16·8
Tiflis		37·3	279	e 7 25	+ 9	—	—	e 15 0	SS	i 19·1
Pulkovo		38·2	312	e 7 11	−12	—	—	e 16 59	SSS	e 18·5
Ksara		47·6	275	e 19 0	?	—	—	—	—	—

Additional readings :—
Sverdlovsk $iL_q = +11$m.24s.
Baku e = +17m.1s.
Moscow e = +14m.24s.
Tiflis eE = +14m.2s., eZ = +16m.32s., eE = +17m.35s., eZ = +18m.31s.
Pulkovo e = +11m.56s.
Ksara ePP = +20m.48s., ePS = +26m.54s.
Long waves were also recorded at Vladivostok, Hong Kong, Phu-Lien, Hyderabad, and several European stations.

Feb. 21d. Readings also at 0h. (Guadalajara, Tucson, Mount Wilson, Pasadena, and Tinemaha), 1h. (Guadalajara, Tucson, and Riverside), 2h. (Mount Wilson, Pasadena, and Tinemaha), 4h. (Oaxaca, Frunse, Samarkand, and Mizusawa), 5h. (Bombay), 6h. (Sitka, Rathfarnham Castle, Bombay, and near Santiago), 7h. (Florence, near Berkeley, Lick, and near Medan), 9h. (near Berkeley), 10h. (Berkeley), 11h. (Almata, Frunse (2), Huancayo, and La Paz), 12h. (Santiago), 14h. (Pasadena, Mount Wilson, Tinemaha, Riverside, La Paz, Rio de Janeiro, La Plata, Huancayo, near Copiapo, Santiago, Heizyo, Zinsen, and near Hukuoka B), 15h. (Manila and Santiago), 16h. (Manila), 23h. (Amboina, Tchimkent, Frunse, Samarkand, and near Andijan).

Feb. 22d. 5h. Shock in South Atlantic :—
Cape Town iE = 11m.21s., iN = 11m.41s., eL = 16m.
Rio de Janeiro ePN = 12m.0s., eLN = 19m.30s.
La Plata P = 12m.32s., S = 17m.42s., L = 20m.18s.
La Paz PZ = 14m.59s.a, SN = 22m.37s., LN = 32m.29s.
Huancayo e = 15m.40s., i = 15m.57s., 24m.31s., and 24m.59s.
Kodaikanal eE = 18m.0s.
Granada e = 18m.6s., L = 50m.
Ksara e = 18m.20s., 21m.46s., 24m.12s., and 30m.32s., L = 49m.
Tashkent e = 23m.39s., 26m.3s., 34m.48s., and 41m.0s., eL = 64m.
Tiflis ePPZ = 23m.40s., eZ = 24m.2s. and 33m.3s., eN = 38m.13s., eL = 53m.
Baku PP = 23m.54s., PPS = 34m.6s., SS = 38m.36s., SSS = 43m.54s., L = 55m.24s.
Mount Wilson ePZ = 24m.30s., eZ = 26m.7s.
Riverside ePZ = 24m.30s., eZ = 25m.52s.
Pasadena ePZ = 24m.33s., eZ = 26m.8s.
Tinemaha ePZ = 24m.37s., eZ = 26m.15s.
Sverdlovsk e = 26m.6s., 35m.45s., and 42m.37s., i = 52m.12s. and 52m.18s., L = 62m.30s.
Uccle eN = 30m.47s. and 37m.17s., eL = 53m.
Agra eE = 31m.51s.
De Bilt e = 32m.0s., eL = 56m.
Helwan e = 39m.0s.
Long waves were also recorded at Jersey, Kew, Cheb, Paris, Strasbourg, Potsdam, and Copenhagen.

Feb. 22d. 5h. 39m. 36s. Epicentre 6°·5S. 128°·5E.

A = −·6186, B = +·7777, C = −·1125; δ = +14; h = +7;
D = +·783, E = +·623; G = +·070, H = −·088, K = −·994.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		2·8	353	0 42	− 5	1 16	− 6	—	—	—
Batavia		21·5	270	e 4 54	+ 2	e 9 35	SS	—	—	—
Manila		22·2	341	5 3	+ 3	9 4	+ 4	—	—	—
Perth		27·9	203	e 9 3	?	e 13 31	?	9 27	PP	16·4
Adelaide		29·8	164	e 6 6	− 5	—	—	—	—	—
Brisbane		31·3	135	e 12 6	S	(e 12 6)	+35	—	—	—
Medan	E.	31·4	288	e 6 33	+ 8	—	—	—	—	—
Riverview	N.	34·3	146	—	—	e 13 6	+49	—	—	19·0
Melbourne		34·6	157	—	—	12 37	+15	—	—	i 17·8
Calcutta	N.	48·8	308	—	—	e 16 3	+11	—	—	—
Vladivostok		49·5	4	e 8 48	− 6	—	—	—	—	e 11·0
Colombo	E.	50·3	285	e 9 24?	+24	—	—	—	—	—
Christchurch		53·4	141	—	—	e 20 6	SS	—	—	e 28·3
Wellington		53·7	137	(e 10 24?)	+58	—	—	—	—	e 10·4
Agra	E.	59·2	307	—	—	18 19	+ 7	—	—	—
Andijan		69·7	318	e 11 24	+10	—	—	e 15 17	PPP	—
Semipalatinsk		70·3	330	e 11 17	0	—	—	—	—	—
Samarkand		72·9	315	e 11 34	+ 1	—	—	—	—	—
La Paz		151·8	144	e 20 3	[+13]	—	—	—	—	85·4

Additional readings:—
Batavia iN = +5m.28s.
Perth P_cP = +12m.16s., SS = +14m.37s.
Brisbane iPPN = +13m.12s., iSKSN = +19m.12s., iSKSPN = +23m.0s., eSKSPE = +23m.12s., iPPSE = +23m.54s.
Melbourne i = +15m.0s.
Christchurch eN = +20m.58s.
Long waves were also recorded at Sydney.

Feb. 22d. 6h. 4m. 33s. Epicentre 8°·5S. 156°·60E. (as on 1937 December 20d.).

A = −·9037, B = +·4023, C = −·1468 δ = +7; h = +7;
D = +·407, E = +·914; G = +·134, H = −·060, K = −·989.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		19·1	188	i 4 27	0	i 7 57	0	4 45	PP	10·2
Riverview		25·6	189	i 5 38k	+ 6	e 10 14	+15	11 9	SS	—
Sydney		25·6	189	—	—	i 10 16	+17	e 11 22	SSS	—
Adelaide		30·8	208	i 7 6	PP	i 11 31	+ 8	i 13 20	SSS	—
Melbourne		30·9	197	—	—	i 10 46	−38	e 13 27	SSS	15·0
Wellington		36·6	156	i 7 7	− 3	12 49	− 4	i 8 47	PPP	17·5
Christchurch		37·8	160	i 7 22	+ 2	i 13 17	+ 6	i 8 54	PPP	e 18·6
Manila		41·6	303	7 56	+ 5	14 48	+40	—	—	—
Perth		44·0	231	i 14 51	S	(i 14 51)	+ 8	18 2	SS	23·8
Batavia	N.	48·8	269	e 9 6	+17	15 57	+ 5	—	—	—
Hong Kong		51·2	307	9 10	+ 3	16 32	+ 7	—	—	—
Vladivostok		55·9	339	e 9 39	− 3	i 17 31	+ 2	—	—	e 28·3
Phu-Lien		56·6	302	12 27?	PPP	—	—	—	—	—
Medan		58·4	280	e 11 39	PP	—	—	—	—	—
Calcutta	N.	73·0	297	e 15 43	PPP	i 21 10	+10	i 21 48	PS	—
Agra	E.	83·3	298	e 12 27	− 3	—	—	—	—	—
College		84·1	20	—	—	e 22 46	[− 9]	e 31 37	SSS	e 34·3
Sitka		85·8	30	e 12 43	+ 1	e 23 12	− 3	—	—	e 39·5
Frunse		89·5	313	e 13 26	+26	—	—	—	—	—
Victoria		90·2	41	e 15 27?	?	e 23 57	+ 1	—	—	40·5
Andijan		90·7	310	e 13 10	+ 4	e 24 9	+ 8	—	—	—
Pasadena		91·3	56	e 13 7	− 2	e 23 49	[+ 9]	—	—	e 41·5
Mount Wilson	Z.	91·4	56	i 13 7	− 2	—	—	—	—	—
Tinemaha		91·7	53	i 13 9	− 1	—	—	—	—	—
Riverside		91·9	56	i 13 8	− 3	—	—	—	—	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tucson	97·1	58	i 17 37	PP	23 44	[−28]	e 25 8	S	e 40·4
Sverdlovsk	100·0	327	i 13 47	− 1	i 24 29	[+ 2]	i 17 58	PP	43·0
Tiflis	111·4	312	—	—	e 28 53	PS	—	—	58·5
Moscow	112·8	327	19 31	PP	e 29 0	PS	—	—	e 56·0
Pulkovo	114·7	333	19 46	PP	e 29 2	PS	—	—	e 56·0
Ksara	119·4	304	i 20 20	PP	e 30 21	PS	e 37 1	SSP	—
Copenhagen	124·9	336	20 45	PP	27 53	{+ 7}	—	—	61·5
Potsdam	126·9	333	e 20 57	PP	—	—	—	—	e 67·5
De Bilt	130·4	337	e 22 41	PKS	—	—	—	—	e 64·5
Uccle	131·8	337	e 22 45	PKS	—	—	—	—	e 64·5
Strasbourg	131·9	333	i 22 42	PKS	—	—	—	—	e 67·5
Paris	134·1	336	e 22 54	PKS	—	—	—	—	75·5
Granada	146·0	331	i 19 42	[+ 1]	—	—	—	—	—

Additional readings :—
Brisbane eN = +8m.21s.
Riverview iSE = +10m.17s., iN = +10m.29s.
Melbourne i = +11m.32s.
Perth S = +20m.7s. and +20m.52s.
Calcutta iN = +17m.11s.
Agra eN = +13m.24s.
College eS = +22m.52s., ePPS = +24m.0s., eSS = +27m.34s.
Sverdlovsk e = +27m.0s.
Moscow e = +28m.1s.
Pulkovo e = +29m.34s.
Long waves were also recorded at Huancayo, Tashkent, Kew, Jersey, Honolulu, Chicago, Bozeman, Ukiah, Philadelphia, San Juan, Harvard, and Hyderabad.

Feb. 22d. 11h. Local shock.
Komaba P =10h.15s., S =10m.24s.
Tokyo Cen. Met. Obs. P =10h.15s., S =10m.24s.
Mitaka P =10m.15s., S =10m.25s.
Tokyo Imp. Univ. P =10m.17s., S =10m.24s.
Kamakura P =10m.20s., S =10m.30s.
Misaki P =10m.20s., S =10m.31s.
Kiyosumi P =10m.20s., S =10m.29s.
Titibu P =10m.20s., S =10m.36s.
Koyama P =10m.20s., S =10m.35s.?
Yosiwara P =10m.20s., S =10m.39s.
Tukubasan P =10m.24s., S =10m.33s.
Nagoya eP =10m.53s., S =11m.30s.

Feb. 22d. Readings also at 4h. (New Plymouth and Wellington), 8h. (Mizusawa, Samarkand, and Andijan), 10h. (Samarkand and Andijan), 11h. (Amboina), 13h. (Batavia, Medan, Frunse, and Almata), 14h. (Amboina), 15h. (Semipalatinsk), 17h. (Haiwee, Pasadena, Mount Wilson, Tinemaha, Riverside, and Tucson), 19h. (Mount Wilson, Pasadena, Tinemaha, Riverside, Tucson, Huancayo, Hukuoka B, and San Juan), 20h. (Pasadena, Mount Wilson, Tinemaha, Riverside, Huancayo, La Paz, Jena, Almeria (2), and Tashkent), 21h. (New Plymouth, Tiflis, Wellington, Vladivostok, and Sverdlovsk), 22h. (Tiflis and Jena).

Feb. 23d. Readings at 0h. (Hong Kong and near Manila), 1h. (Sverdlovsk and Tashkent), 2h. (near Berkeley), 3h. (near Mizusawa), 4h. (Malaga), 5h. (Samarkand), 7h. (Frunse, near Andijan, and near Tokyo), 10h. (New Plymouth and near Wellington), 16h. (Florence and near Baku), 17h. (Samarkand, Williamstown, near Ottawa, and near Manila), 18h. (near Christchurch, New Plymouth, and Wellington), 20h. (Amboina), 21h. (Tucson, Frunse, near Andijan, and Samarkand), 23h. (Pasadena, Riverside, Huancayo, La Plata, and La Paz).

Feb. 24d. Readings at 3h. (Oaxaca, Tacubaya, Cape Girandeau, College (2), Fordham (2), Ottawa (2), Harvard (2), Weston (2), Williamstown (2), Haiwee, Mount Wilson (2), Pasadena (2), Riverside (2), Tinemaha (2), and Baku), 4h. (Erevan, Sverdlovsk, Tashkent (2), and Tiflis (3)), 6h. (near Mizusawa), 8h. (Oaxaca, Tacubaya, Tucson, Santiago, Mount Wilson, Pasadena, Riverside, Williamstown, and Florence), 9h. (Florence and near La Paz), 10h. (Fort de France), 11h. (Frunse, near Andijan, Samarkand, and Tchimkent), 13h. (Mount Wilson, Pasadena, Riverside, and Vladivostok), 14h. (Sverdlovsk and Tashkent), 15h. (Santiago (3)), 17h. (Scoresby Sund (2), 18h. (Sverdlovsk and Tashkent), 20h. (Scoresby Sund).

Feb. 25d. Readings at 1h. (near Mizisawa), 3h. (Samarkand), 4h. (Florence), 6h. (Samarkand), 7h. (Florence, Christchurch, New Plymouth, and near Wellington), 8h. (Tacubaya, Mount Wilson, Riverside, Tinemaha, and near Nagoya), 10h. (Frunse and Tchimkent), 12h. (Tacubaya, Huancayo, and near La Paz), 17h. (near Batavia and Malabar), 18h. (Erevan and near Tiflis), 23h. (near La Paz).

Feb. 26d. 12h. 10m. 43s. Epicentre 28°·0N. 90°·5E. (as on 1937 March 31d.).

$A = -\cdot0077$, $B = +\cdot8843$, $C = +\cdot4670$; $\delta = +13$; $h = +2$;
$D = +1\cdot000$, $E = +\cdot009$; $G = -\cdot004$, $H = +\cdot467$, $K = -\cdot884$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	6·0	201	e 1 31	− 1	i 2 39	− 4	2 59	S*	—
Agra		11·1	269	2 51	+ 8	5 4	SS	6 18	S_g	—
Hyderabad		15·3	229	—	—	6 42	SS	—	—	8·0
Bombay		18·6	245	e 4 22	+ 1	e 7 51	+ 5	8 11	SS	e 9·7
Almata		18·8	329	e 4 30	+ 7	—	—	—	—	—
Andijan		19·6	315	4 34	+ 2	—	—	e 14 34	?	—
Frunse		19·7	323	e 4 30	− 4	e 8 30	+20	—	—	—
Kodaikanal	E.	21·5	219	e 7 37	S	(e 7 37)	−70	i 12 2	SS	i 12·6
Tashkent		21·9	313	e 4 56	− 1	i 9 2	+ 8	—	—	i 12·7
Colombo	E.	23·3	208	e 5 17?	+ 7	—	—	—	—	—
Sverdlovsk		35·7	332	i 7 3	+ 1	e 12 47	+ 8	—	—	19·3
Vladivostok		36·5	55	e 8 21	PP	e 12 58	+ 7	—	—	e 15·8
Moscow		46·6	322	e 8 29	− 3	—	—	—	—	27·8
Pulkovo		51·3	326	—	—	e 16 31	+ 5	e 22 16	SS	e 25·8

Additional readings :—
Calcutta $iP_gN = +1$m.58s., $iN = +2$m.48s.
Agra $eP_gE = +4$m.4s., $eN = +4$m.50s.
Kodaikanal $iSE = +11$m.27s.
Pulkovo $e = +16$m.58s.
Long waves were also recorded at Hong Kong, Phu-Lien, Baku, Copenhagen, Cheb, and De Bilt.

Feb. 26d. Readings also at 4h. (Samarkand), 6h. (Andijan and Wellington), 7h. (Andijan, Kodaikanal, Baku, Tiflis, Fordham, Cape Girandeau, Mount Wilson, Pasadena, Riverside, Tinemaha, Sverdlovsk, near Batavia, and Malabar), 8h. (La Jolla, Pulkovo, and Tashkent), 10h. (near Samarkand), 13h. (near Moncalieri), 15h. (near Fort de France), 17h. (Wellington), 19h. (Tchimkent, near Santiago, and near Manila), 20h. (La Paz, La Plata, and near Copiapo), 21h. (near Berkeley, Branner, Lick, and San Francisco), 22h. (Mount Wilson, Pasadena, and Tinemaha).

Feb. 27d. 1h. 29m. 15s. Epicentre 44°·5N. 148°·0E. (as on 1937 February 2d.).

$A = -\cdot6069$, $B = +\cdot3792$, $C = +\cdot6985$; $\delta = +2$; $h = -3$;
$D = +\cdot530$, $E = +\cdot848$; $G = -\cdot592$, $H = +\cdot370$, $K = -\cdot716$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Mizusawa		7·4	226	i 1 52	0	3 10	− 8	—	—	—
Vladivostok		11·7	269	i 2 53	+ 2	5 19	SS	—	—	e 6·0
Nagoya		12·6	226	e 3 9	+ 6	e 4 46	−40	—	—	—
Hukuoka B		17·4	235	e 4 8	+ 2	7 25	+ 6	—	—	—
Hong Kong		35·5	242	12 20	S	(12 20)	−16	—	—	—
Manila		37·6	226	6 52	−26	13 4	− 4	—	—	—
Phu-Lien		41·5	249	e 7 53	+ 3	—	—	—	—	—
Almata		49·7	295	8 58	+ 2	—	—	—	—	—
Frunse		51·4	295	8 58	−11	16 27	− 1	—	—	—
Sverdlovsk		53·0	317	e 9 20	− 1	e 16 53	+ 3	—	—	25·8
Andijan		53·9	296	9 3	−24	—	—	—	—	28·8
Tashkent		55·6	296	i 9 39	− 1	i 17 21	− 4	—	—	e 27·0
Agra	E.	57·6	278	i 9 55	+ 1	17 53	+ 2	e 12 5	PP	—
Samarkand		58·0	297	9 32	−25	17 32	−25	—	—	—
Moscow		64·2	324	e 10 41	+ 2	e 19 7	− 9	—	—	e 34·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Pulkovo		64·3	330	e 10 42	+ 3	19 18	+ 1	—	—	e 33·3
Bombay		66·6	274	e 10 53	− 1	e 19 54	+ 9	e 21 6	?	—
Tinemaha	z.	67·5	60	i 11 1a	+ 1	—	—	—	—	—
Kodaikanal	E.	69·0	265	—	—	e 19 45?	−29	—	—	—
Mount Wilson	z.	69·5	62	i 11 12a	0	—	—	—	—	—
Pasadena		69·5	62	i 11 12a	0	—	—	—	—	e 32·2
Riverside	z.	70·1	62	i 11 15a	− 1	—	—	—	—	—
Tiflis		70·1	309	i 11 18	+ 2	e 20 30	+ 3	—	—	e 34·8
Copenhagen		73·4	336	i 11 37a	+ 1	21 5	0	—	—	36·8
Simferopol		73·4	318	e 11 37	+ 1	—	—	—	—	—
Yalta		73·7	318	e 11 36	− 2	—	—	—	—	—
Hamburg		75·9	337	i 11 52	+ 2	—	—	—	—	43·8
Potsdam		76·0	335	i 11 53	+ 2	—	—	—	—	e 42·8
Göttingen	z.	77·7	336	e 12 14	+ 4	—	—	—	—	—
Jena		77·8	334	i 12 1	0	—	—	—	—	—
Cheb		78·2	334	—	—	e 21 45?	−12	—	—	e 45·8
De Bilt		78·6	338	i 12 7	+ 2	e 22 22	+20	—	—	e 36·8
Uccle		80·0	339	i 12 14	+ 1	—	—	—	—	e 45·8
Stuttgart		80·4	335	i 12 17a	+ 2	e 22 19	− 2	—	—	e 44·8
Ksara		80·6	308	i 12 19a	+ 3	e 22 27	+ 4	e 15 25	PP	—
Strasbourg		81·0	335	i 12 16	− 2	—	—	e 12 36	pP	e 41·2
Basle		81·9	335	e 12 24	+ 1	—	—	—	—	—
Paris		82·3	339	12 25	0	—	—	e 12 48	?	46·8
Ottawa		82·5	30	—	—	e 22 45?	+ 3	—	—	40·8
Williamstown		85·7	29	e 12 34	− 8	—	—	—	—	—
Harvard	z.	86·4	28	i 12 47	+ 2	—	—	—	—	—
Weston	z.	86·6	28	i 12 43	− 3	—	—	—	—	—
Fordham		87·1	31	i 12 48	− 1	—	—	—	—	—

Additional readings :—
Mizusawa ePE = +1m.55s.
Hong Kong S? = +16m.6s.
Manila iZ = +7m.19s.
Agra PSE = +18m.32s., SSE = +22m.5s.
Samarkand e = +9m.38s.
Stuttgart eSKS = +22m.36s.
Ksara ePS = +23m.15s.
Long waves were also recorded at Triest, Kew, Wellington, Baku, and Christchurch.

Feb. 27d. Readings also at 0h. (La Paz, Fort de France (2), Huancayo, Tinemaha, Pasadena, Mount Wilson, Riverside, Williamstown, Weston, Fordham, Santiago, and La Plata), 1h. (Tchimkent), 2h. (Samarkand, Frunse, and Andijan), 3h. (Amboina), 5h. (Yalta), 6h. (Tiflis), 8h. (Balboa Heights and Andijan (2)), 11h. (Riverview, Sverdlovsk, Brisbane, Melbourne, Perth, Vladivostok, and Manila), 12h. (Moscow, Copenhagen, and Pulkovo), 13h. (Wellington, Christchurch, and New Plymouth), 16h. (Florence), 18h. (Frunse, Tchimkent, and Andijan), 20h. (Tchimkent, and Moncalieri (2)), 22h. (Tucson and Hukuoka B).

Feb. 28d. Readings at 0h. (Andijan), 1h. (Sverdlovsk, near Mizusawa, and Nagoya), 2h. (Baku and Tashkent), 3h. (Cheb, Nagoya, and near Mizusawa), 6h. (near Manila), 8h. (Oaxaca, Tacubaya, and Tucson), 11h. (Moncalieri), 12h. (Helwan, Ksara, Baku, Tashkent, Christchurch, near New Plymouth, Wellington, and near Manila), 14h. (Batavia, near Grozny, and Tiflis), 15h. (Grozny), 16h. (Ksara), 17h. (near Manila), 22h. (Huancayo, Tucson, and near Mizusawa), 23h. (Neuchatel).

Mar. 1d. 4h. 24m. 30s. Epicentre 11°·0N. 92°·0E.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Calcutta	N.	12·0	343	e 4 53	S	(e 4 53)	−18	5 38	SS	—
Colombo	E.	12·6	254	(3 4)	+ 1	3 4	P	—	—	—
Kodaikanal	E.	14·3	269	i 3 24	− 2	—	—	—	—	—
Phu-Lien		17·1	53	e 4 10	+ 8	—	—	—	—	—
Bombay		20·1	295	i 4 37	− 1	i 8 38	SS	8 57	SSS	—
Agra	E.	20·8	324	e 4 44	− 1	i 8 35	+ 2	e 9 7	SS	—
Manila		28·5	80	11 9	S	(11 9)	+23	—	—	16·5
Andijan		34·3	334	e 6 55	+ 5	e 12 17	0	—	—	—
Tashkent		36·2	331	—	—	i 12 41	− 6	e 15 21	SS	e 17·9
Baku		47·2	317	—	—	e 16 39	PS	—	—	e 28·5
Sverdlovsk		51·7	340	9 7	− 4	16 30	− 2	—	—	25·5
Ksara		55·9	303	e 9 48	+ 6	e 21 20	SS	—	—	—

Additional readings:—
Calcutta eS?N = +7m.53s., eN = +9m.19s., iN = +10m.22s., eN = +11m.42s.
Colombo P? = 4h.21m.4s.
Kodaikanal e = 4h.22m.29s.
Bombay eN = +5m.32s.
Tashkent i = +13m.8s.

Mar. 1d. 14h. 1m. 46s. Epicentre 6°·2N. 82°·4W. (fore-shock of Mar. 9d.).

A = +·1315, B = −·9855, C = +·1073; δ = +2; h = +7;
D = −·991, E = −·132; G = +·014, H = −·106, K = −·994.

A depth of focus 0·020 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Balboa Heights		3·9	45	i 0 47	−13	i 1 27	−19	—	—	—	—
Huancayo		19·4	159	e 4 20	+ 4	e 7 50	+ 8	e 4 45	PP		e 8·1
San Juan		20·0	51	i 4 20	− 2	e 8 5	+12	i 4 31	PP		8·6
Fort de France		22·5	68	i 4 45	− 1	8 53	+15	—	—		11·7
La Paz	N.	26·6	147	i 5 36k	+11	i 10 24	+38	—	—		14·1
Columbia		27·7	3	—	—	e 10 11	+ 7	—	—		e 11·7
Philadelphia		34·2	10	—	—	e 11 56	+10	—	—		e 14·1
Fordham		35·4	11	—	—	e 12 18	+ 4	—	—		i 17·4
Tucson		37·1	318	e 6 57	+ 1	—	—	e 8 21	PP		17·8
East Machias		40·6	17	—	—	e 13 38	+15	—	—		e 16·4
Seven Falls		42·0	12	—	—	e 13 50	+ 7	—	—		16·2
Bozeman		46·5	333	—	—	e 15 3	+15	—	—		e 18·6
Rio de Janeiro	E.	48·0	127	e 6 14	?	—	—	—	—		i 25·8
Ksara		109·4	52	e 13 52	P	e 25 54	S	—	—		—
Sverdlovsk		109·5	21	—	—	34 18	SS	—	—		44·2

Additional readings:—
Fort de France PPP = +5m.21s., SSS = +9m.29s.
Huancayo P = +4m.24s. and +4m.30s.
Columbia eS = +10m.33s.
East Machias eS = +13m.48s.
Long waves were also recorded at Chicago, Ukiah, and Tashkent.

Mar. 1d. 23h. 27m. 10s. Epicentre 52°·5S. 8°·0E.

$A = +·6054$, $B = +·0851$, $C = -·7914$; $\delta = +7$; $h = -6$;
$D = +·139$, $E = -·990$; $G = -·784$, $H = -·110$, $K = -·611$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Cape Town		20·0	26	i 4 38	+ 1	e 8 16	− 1	—	—	15·3
Rio de Janeiro	E.	48·8	287	e 9 50	+61	—	—	—	—	e 16·2
La Paz		68·7	271	i 11 6k	− 1	i 20 17	+ 7	—	—	35·3
Huancayo		76·5	267	e 11 53	− 1	21 19	−20	e 14 35	PP	e 31·6
Helwan		84·5	20	e 12 32	− 4	e 23 8	+ 6	e 15 24	PP	—
Kodaikanal	E.	85·9	67	—	—	e 22 50?	[−17]	—	—	—
Ksara		89·3	23	i 12 58k	− 1	e 25 10	PS	16 36	PP	—
San Fernando		89·5	348	e 13 1	+ 1	e 24 6	+16	—	—	48·8
Granada		89·9	351	e 13 5	+ 3	e 23 26	[− 6]	—	—	—
Bombay		90·5	59	e 13 0	− 5	e 24 0	+ 1	e 24 58	PS	—
Tiflis		99·1	26	e 17 27	PP	e 27 46	PPS	e 27 51	PS	e 44·8
Baku		99·4	31	e 17 57	PP	e 28 15	PPS	e 27 0	PS	42·3
Agra	E.	100·0	58	—	—	e 24 17	[−10]	—	—	—
Stuttgart		100·9	1	e 18 1	PP	e 27 26	PPS	—	—	e 57·8
Calcutta	N.	101·9	70	—	—	e 24 32	[− 4]	—	—	—
Tashkent		107·4	44	20 54	PPP	e 24 53	[− 8]	28 0	PS	—
Sverdlovsk		117·2	29	i 18 40	[− 7]	29 38	PS	i 19 54	PP	50·8
Tucson		132·1	270	e 19 11	[− 5]	—	—	—	—	e 50·8
Riverside	Z.	137·2	266	i 19 21k	[− 4]	—	—	—	—	—
Mount Wilson	Z.	137·8	266	i 19 21	[− 5]	—	—	—	—	—
Tinemaha	Z.	139·9	269	i 19 23	[− 7]	—	—	—	—	—

Additional readings :—
Cape Town iN = +4m.47s. and +8m.21s., iE = +8m.26s.
Huancayo P = +12m.3s., eP = +12m.18s., ePPP = +16m.34s., eSS = +26m.5s.
Tiflis eP_cPNZ = +17m.45s.
Long waves were also recorded at Wellington, Riverview, Rathfarnham Castle, Copenhagen, La Plata, Strasbourg, Paris, Jersey, Potsdam, Kew, Bidston, Triest, and Uccle.

Mar. 1d. Readings also at 0h. (Andijan and Tchimkent), 5h. (Amboina and Ukiah), 6h. (Heizyo, Husan, Malabar, Hukuoka B, Nagoya, Manila, and Ukiah), 8h. (Mizusawa, Christchurch, and Wellington), 9h. (Ksara, Andijan, Frunse, and Tiflis), 10h. (Fort de France), 13h. (Andijan), 14h. (Mizusawa), 15h. (St. Louis and Harvard), 16h. (Perth), 20h. (Ferndale and Berkeley), 21h. (Cheb), 23h. (Granada and Berkeley).

Mar. 2d. Readings also at 1h. (Baku and Sverdlovsk), 4h. (Samarkand), 5h. (Cheb and Samarkand), 6h. (near Ferndale and near Santiago), 7h. (Fort de France, Fordham, Sverdlovsk, Ksara, Stonyhurst, Bidston, Kew, De Bilt, Rathfarnham Castle, Jersey (2), Strasbourg, Paris, Triest, Moncalieri, Uccle, Malaga, Toledo, near Almeria, Granada, and Algiers), 8h. (near Algiers), 10h. (Fort de France), 11h. (Amboina), 12h. (Samarkand), 14h. (Amboina and Mizusawa), 15h. (Bombay, Calcutta, near Algiers, and near La Paz), 16h. (near Algiers, near Grozny, and near New Plymouth), 18h. (near Andijan and Samarkand), 20h. (Riverside, Tucson, Tinemaha, and Brisbane), 21h. (Adelaide, Perth, near Mizusawa (2), and near Wellington), 22h. (near Algiers).

Mar. 3d. Readings at 2h. (Tiflis, Belgrade, Strasbourg, Bucharest, Istanbul, Sofia, Florence, Moncalieri Padova, Triest, Basle, Chur, and Zurich), 4h. (Samarkand and near Tananarive), 5h. (Florence, Tiflis, Ksara, near Baku, near Erevan, and near Algiers), 6h. (near Algiers (2)), 9h. (Samarkand), 10h. (Samarkand and near Santiago), 11h. (Samarkand and near Wellington), 13h. (Ottawa), 14h. (Frunse, Tashkent, near Andijan, Samarkand, and Tchimkent), 18h. (Manila), 19h. (Oaxaca, Tacubaya, and La Paz), 20h. (La Paz and near San Javier), 21h. (Samarkand), 23h. (Taikyu and near Manila).

Mar. 4d. 13h. 32m. 8s. Epicentre 18°·0N. 109°·0W. (as on 1937 July 24d.).

$A = -·3098$, $B = -·8999$, $C = +·3071$; $\delta = +11$; $h = +5$;
$D = -·946$, $E = +·326$; $G = -·100$, $H = -·290$, $K = -·952$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Tacubaya	E.	9·4	80	e 2 16	− 2	—	—	e 6 12	SS	—
Tucson		14·3	354	i 3 23	− 3	6 8	+ 2	—	—	e 6·3
Riverside		17·6	337	i 4 4	− 4	—	—	—	—	—
Pasadena		18·0	337	i 4 13	0	—	—	—	—	e 8·6
Mount Wilson		18·1	337	e 4 11	− 3	—	—	—	—	—
Santa Barbara	Z.	19·0	334	e 4 18	− 8	—	—	—	—	—
Tinemaha		20·7	340	i 4 45	+ 1	—	—	—	—	—
Lick		22·2	334	5 4	+ 4	—	—	—	—	—
Little Rock		22·3	39	e 5 11	+10	e 9 13	+11	—	—	—
Berkeley		23·0	334	e 5 10	+ 3	—	—	—	—	—
Ukiah		24·4	334	—	—	e 9 32	− 7	—	—	e 10·6
St. Louis		26·1	35	—	—	e 10 17	+10	—	—	13·1
Bozeman		27·7	357	e 6 4	+12	e 10 15	−18	—	—	e 11·2

Little Rock gives also iPE = +5m.15s., eN = +5m.54s.
Long waves were also recorded at other American stations.

Mar. 4d. Readings also at 0h. (Mizusawa), 1h. (Hong Kong, Manila, Phu-Lien, and near Taihoku), 2h. (Sverdlovsk, Tashkent, Tiflis, Fordham, Florissant, Harvard, Weston, Berkeley, Mount Wilson, Pasadena, Riverside, Tinemaha, and Tucson), 6h. (Tchimkent and near Samarkand), 7h. (Adelaide, Brisbane, Melbourne, Riverview, Perth, Wellington, Samarkand, and Tiflis), 8h. (Colombo, Ksara, Samarkand, and Tucson), 9h. (Andijan), 10h. (Samarkand), 11h. (Mizusawa), 14h. (Copenhagen and Harvard), 16h. (College), 17h. (Nagoya and near Hukuoka B), 18h. (near Balboa Heights), 21h. (near La Paz), 22h. (near Mizusawa).

Mar. 5d. 11h. 32m. 23s. Epicentre 0°·5N. 126°·5E.

$A = -·5948$, $B = +·8039$, $C = +·0087$; $\delta = +12$; $h = +7$;
$D = +·804$, $E = +·595$; $G = -·005$, $H = +·007$, $K = -1·000$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Amboina		4·5	157	1 23	P*	i 1 54	−11	—	—	—
Manila		15·0	339	i 3 37	+ 2	6 51	SSS	—	—	8·5
Batavia		20·7	251	e 4 42	− 2	i 8 43	+12	—	—	—
Taito		22·7	348	5 9	+ 5	—	—	—	—	—
Isigakizima		23·8	356	5 13	− 2	—	—	—	—	—
Miyakozima		24·2	359	6 23	PPP	—	—	—	—	—
Hong Kong		24·8	333	5 26	+ 1	9 42	− 4	10 21	SS	—
Medan		28·0	277	e 5 55	0	—	—	—	—	—
Phu-Lien		28·0	318	e 5 55	0	—	—	—	—	—
Perth		33·8	196	3 37	?	—	—	—	—	—
Hirosima		34·2	10	6 50	+ 1	12 7	− 9	—	—	—
Nagoya		35·8	16	e 7 6	+ 3	—	—	—	—	—
Gihu		36·0	16	7 6	+ 1	12 39	− 5	—	—	—
Kohu		36·7	18	7 13	+ 3	13 8	+14	—	—	—
Toyama		37·3	14	7 11	− 5	13 4	0	—	—	—
Nagano		37·6	15	7 20	+ 2	13 4	− 4	—	—	—
Brisbane	E.	37·7	139	i 8 55	PP	i 13 13	+ 3	—	—	—
Mizusawa	E.	40·7	18	(e 7 49)	+ 5	e 7 49	P	—	—	—
Colombo	E.	46·9	279	e 8 37?	+ 3	—	—	—	—	—
Bombay		55·7	293	i 9 57	+17	e 17 16	−10	—	—	—
Andijan		63·2	317	e 10 32	0	—	—	i 14 4	PPP	—
Semipalatinsk		63·3	330	10 27	− 6	—	—	—	—	—
Tchimkent		65·7	317	e 11 7	+19	—	—	—	—	—
Samarkand		66·6	313	e 10 53	− 1	e 19 35	−10	—	—	—
Sverdlovsk		76·6	330	i 11 53	− 1	—	—	—	—	31·6

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku	79·8	311	—	—	e 22 44	PS	—	—	e 42·6
Grozny	82·9	314	e 12 29	+ 1	e 22 45	− 1	—	—	—
Tiflis	83·5	312	12 33	+ 2	—	—	—	—	—
Ksara	90·2	304	e 13 7	+ 3	—	—	—	—	—
La Paz	158·5	139	20 45	[+46]	—	—	—	—	—

Additional readings :—
Manila ePEN = +3m.40s., iZ = +4m.14s.
Baku e = +31m.59s.
Ksara e = +15m.37s.

Mar. 5d. Readings also at 0h. (Ksara, Grozny, Bombay, and Simferopol), 2h. (Tiflis), 6h. (Frunse, Tchimkent, Samarkand, and Andijan), 9h. (San Javier), 10h. (Samarkand, Andijan, Tchimkent, Ksara, and La Paz), 13h. (Koti), 14h. (Florence), 17h. (Manila (2), La Paz, and Huancayo), 18h. (La Paz (2) and Rio de Janeiro), 19h. (La Paz and Mizusawa), 20h. (La Paz and Hukuoka B), 23h. (Manila, La Paz, and Adelaide).

Mar. 6d. 1h. 56m. 18s. Epicentre 5°·1S. 153°·1E. (as on 1937 Jan. 23d.).

A = −·8883, B = +·4507, C = −·0883 ; δ = 0 ; h = +7 ;
D = +·452, E = +·892 ; G = +·079, H = −·040, K = −·996.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.			L.
		°	°	m. s.	s.	m. s.	s.	m. s.			m.
Brisbane	N.	22·3	182	i 4 54	− 7	i 8 54	− 8	i 6 0	PPP		—
Riverview		28·6	184	—	—	(e 10 24)	−24	—	—		e 10·4
Sydney		28·6	184	—	—	e 9 56	−52	—	—		—
Melbourne		33·4	192	—	—	e 12 17	+14	—	—		i 17·7
Manila		37·4	302	i 7 17	+ 1	13 28	+23	—	—		19·7
Wellington		40·9	155	—	—	e 15 42?	SS	—	—		e 22·7
Christchurch		42·0	159	e 12 4	?	e 17 46	SSS	—	—		21·4
Perth		43·9	228	e 13 21	PS	18 32	SSS	—	—		22·7
Hong Kong		46·8	308	8 34	+ 1	15 21	− 3	—	—		—
Frunse		85·1	314	e 12 38	− 1	—	—	—	—		—
Andijan		86·3	311	e 12 47	+ 2	e 23 26	+ 6	—	—		—
Tchimkent		88·6	313	e 13 49	?	—	—	—	—		—
Samarkand		89·2	310	e 13 8	+ 9	—	—	—	—		—
Pasadena		91·8	57	e 13 8	− 3	—	—	—	—		e 64·7
Mount Wilson	Z.	91·9	57	e 13 10	− 1	—	—	—	—		—
Riverside	Z.	92·4	57	e 13 9	− 5	—	—	—	—		—
Tucson		97·8	58	e 17 45	PP	—	—	—	—		e 45·2
Ksara		115·4	304	e 20 7	PP	—	—	—	—		—
Chur		127·9	330	e 19 7	[0]	—	—	—	—		—
La Paz		133·9	120	e 19 24	[+ 5]	21 57	PP	—	—		—

Additional readings :—
Melbourne e = +14m.34s., i = +16m.10s.
Perth PP = +14m.33s., SS = +21m.0s.
Pasadena eZ = +13m.30s., iZ = +13m.41s.
Mount Wilson iZ = +13m.34s.
Riverside iZ = +13m.34s.
Long waves were also recorded at Phu-Lien, Ukiah, Harvard, and Fordham.

Mar. 6d. 16h. Epicentre in South Pacific. Pasadena suggests depth 400kms.

Apia iP =56m.2s.a, iS? =57m.32s.
New Plymouth 58m.20s.
Wellington S? =58m.33s.
Manila iPEZ =64m.27s., SEN =72m.54s.
Batavia PZ =64m.57s., SEN =73m.49s.
Santa Barbara iPZ =65m.11s.
Berkeley eP =65m.12s.
La Jolla iP =65m.14s.
Pasadena iP =65m.14s.k, iZ =68m.13s.
Mount Wilson iP =65m.15s.k, eZ =66m.46s. and 68m.11s.
Riverside iP =65m.17s.k, iZ =67m.3s.
Tinemaha iP =65m.23s.k.
Tucson iP =65m.39s., i =65m.54s., 66m.10s., and 94m.52s.
Andijan e =71m.59s. and 73m.23s.
Samarkand e =72m.7s. and 73m.47s.
Yalta P =72m.39s.
Tiflis eP =72m.40s., e =75m.29s.
Theodosia P =72m.45s.
Simferopol P =72m.46s., eS =75m.40s.
De Bilt iZ =72m.54s.
Jena eZ =72m.57s.
Zurich eP =72m.57s.k i =73m.4s.
Stuttgart e =72m.58s., e =73m.4s.
Ksara iPKP =72m.58s.k, ipPKP =75m.0s., sPKP =75m.52s., ePP =76m.32s., ePSKS = 86m.29s., ePPS =89m.32s.
Basle eP =72m.59s., e =73m.43s.
Chur eP =73m.0s.
Padova e =73m.0s.
Uccle PZ =73m.0s.
Neuchatel eP =73m.1s.
Strasbourg eP =73m.5s.
College e =94m.42s.

Mar. 6d. Readings also at 0h. (Pasadena and near Manila), 1h. (Philadelphia), 3h. (Andijan, Fort de France, Fordham, and Tacubaya), 5h. (La Paz), 7h. (Philadelphia), 8h. (Cape Girardeau, Fordham, St. Louis, Tucson, and San Juan), 9h. (Ksara), 11h. (Samarkand), 12h. (near Manila), 13h. (Samarkand, Tchimkent, and near Andijan), 14h. (Frunse, Samarkand, near Andijan, and near La Paz), 15h. (La Paz (3), La Plata, Tiflis, and near Tchimkent), 16h. (Huancayo, Ksara, and near Malabar), 17h. (Samarkand and near Algiers).

Mar. 7d. Readings at 5h. (Florissant, Christchurch, and Wellington), 6h. (Berkeley, Rathfarnham Castle, Frunse, Tchimkent, Samarkand (2), and near Andijan), 7h. (Samarkand and near Taihoku), 8h. (La Paz and Rio de Janeiro), 11h. (near Moncalieri), 12h. (Samarkand and near Ferndale), 13h. (La Paz and Samarkand), 14h. (Sitka and near Hukuoka B), 16h. and 18h. (Santiago), 19h. (Sverdlovsk and Tashkent), 21h. (Huancayo, near La Paz, and near Batavia).

Mar. 8d. 5h. 35m. 20s. Epicentre 5°·1S. 153°·1E. (as on 1938 Mar. 6d.).

$A = -\cdot8883$, $B = +\cdot4507$, $C = -\cdot0883$; $\delta = 0$; $h = +7$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Brisbane		22·3	182	e 4 58	− 3	i 8 58	− 4	i 5 22	PP	—
Amboina		24·9	273	e 5 24	− 2	—	—	—	—	14·7
Riverview		28·6	184	i 6 5	+ 5	e 10 29	−19	—	—	e 14·7
Sydney		28·6	184	e 4 58	−62	e 10 12	−36	—	—	e 15·6
Melbourne		33·4	192	e 7 50	PP	e 11 52	−11	i 15 58	SSS	16·7
Manila	z.	37·4	302	i 7 10a	− 6	15 51	SSS	—	—	—
Arapuni		38·7	152	—	—	e 13 28	+ 3	—	—	—
New Plymouth		38·8	153	e 7 21	− 7	13 25	− 1	—	—	—
Wellington		40·9	155	e 7 43	− 3	13 33	−25	i 9 52	PPP	i 22·1
Tokusima		41·4	332	i 7 49	− 1	i 14 14	+ 9	—	—	—
Christchurch		42·0	159	i 7 50	− 4	i 14 20	+ 6	17 14	SS	21·3
Hunatu		42·6	343	i 8 6	+ 7	i 18 13	SSS	—	—	—
Mito		42·9	346	i 8 3	+ 1	i 18 5	SS	—	—	—
Tukubasan		42·9	346	i 7 57	− 5	i 18 0	SS	—	—	—
Oiwake		43·4	343	i 8 4	− 2	i 18 4	SS	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nagasaki		43·6	332	i 7 47	−21	i 18 18	SSS	—	—	—
Hirosima		43·8	336	i 8 8	− 1	i 18 8	SS	—	—	—
Perth		43·9	228	7 42	−28	i 14 39	− 3	10 23	PPP	22·8
Hukuoka B		44·1	333	e 8 13	+ 1	e 14 5	−40	—	—	—
Hamada		44·4	335	i 8 22	+ 8	i 14 56	+ 7	—	—	—
Mizusawa	N.	45·4	348	e 8 17	− 5	15 1	− 3	—	—	22·2
Batavia		46·0	267	e 8 33	+ 6	—	—	i 11 43	PPP	22·7
Husan		46·0	332	e 8 38	+11	e 15 28	+16	—	—	—
Hong Kong		46·8	308	8 32	− 1	15 20	− 4	18 26	SS	—
Taikyu		46·8	333	e 7 43	−50	e 14 45	−39	—	—	—
Chatham Ils.		47·0	150	—	—	i 17 16	?	—	—	i 29·2
Zi-ka-wei	E.	47·1	323	e 8 25	−10	—	—	—	—	—
Zinsen		49·0	332	e 8 18	−32	—	—	—	—	e 25·3
Phu-Lien		52·4	301	e 9 15	− 1	e 16 40	− 2	—	—	—
Honolulu		54·8	60	—	—	e 17 26	+12	e 20 48	SS	e 23·0
Medan		55·0	279	e 9 58	+23	17 46	+29	—	—	e 27·7
Calcutta	N.	69·0	297	e 12 57	PP	i 20 12	− 2	i 24 59	SS	i 28·2
Colombo	E.	74·1	279	11 36	− 4	21 13	+ 1	—	—	—
Kodaikanal	E.	76·8	282	i 11 54	− 1	i 21 40?	− 2	14 30	PP	36·4
Hyderabad		77·0	290	11 57	+ 1	21 49	+ 4	—	—	37·6
Agra		79·1	299	i 12 3	− 5	22 0	− 7	e 14 56	PP	37·6
Dehra Dun	N.	79·8	302	e 11 30	−42	—	—	—	—	—
College		82·0	22	i 12 19	− 4	e 22 28	− 9	e 16 52	PPP	e 32·3
Bombay	N.	82·5	290	e 12 29	+ 3	i 22 38	− 4	23 11	PS	39·1
Semipalatinsk		83·1	323	12 38	+ 9	—	—	—	—	—
Almata		83·5	315	12 32	+ 1	—	—	—	—	—
Sitka		84·4	32	—	—	—	—	23 28	PS	e 35·0
Frunse		85·1	314	e 12 35	− 4	e 22 59	[− 2]	—	—	48·4
Andijan		86·3	311	e 12 45	0	23 24	+ 4	—	—	—
Ukiah		88·3	51	e 12 54	− 1	e 32 9	SSS	23 42	PS	e 36·1
Tchimkent		88·6	313	13 2	+ 6	23 5	[−18]	—	—	—
Tashkent		88·7	312	i 12 55	− 2	i 23 28	[+ 4]	e 16 1	PP	e 41·1
Samarkand		89·2	310	12 59	0	—	—	—	—	—
Pasadena	Z.	91·8	57	e 13 13	+ 2	—	—	e 16 53	PP	—
Mount Wilson	Z.	91·9	57	e 13 7	− 4	—	—	—	—	—
Riverside	Z.	92·4	57	i 13 9	− 5	—	—	—	—	—
Sverdlovsk		95·6	327	i 13 23	− 5	e 23 52	[−12]	17 15	PP	55·7
Bozeman		97·7	45	—	—	e 24 0	[−15]	e 34 49	SSS	e 39·6
Tucson		97·8	58	e 13 29	− 9	e 23 56	[−20]	17 41	PP	38·8
Baku		103·3	311	e 14 4	+ 1	24 57	[+15]	33 34	SS	50·7
Grozny		106·1	314	e 15 43	P	24 42	[−13]	—	—	—
Tiflis		107·0	312	e 14 18	P	e 25 8	[+ 9]	e 18 40	PP	e 44·7
Moscow		108·4	328	14 36	P	26 15	{+26}	19 0	PP	53·2
Pulkovo		110·4	333	e 14 53	P	25 13	[0]	e 19 6	PP	48·2
Little Rock	E.	113·0	55	—	—	e 25 32	[+ 8]	(e 28 49)	PS	e 55·4
St. Louis	N.	113·9	50	—	—	e 25 34	[+ 7]	e 29 18	PS	e 45·8
Chicago		115·0	46	—	—	e 25 12	[−20]	e 35 33	SS	e 47·1
Ksara		115·4	304	i 19 47	PP	—	—	i 29 39	PS	—
Istanbul		118·7	316	19 59	PP	—	—	—	—	—
Bergen		119·7	344	—	—	e 27 9	{− 3}	—	—	e 63·7
Helwan		119·9	301	e 20 15	PP	i 27 32	{+19}	—	—	—
Copenhagen		120·6	335	20 16	PP	25 56	[+ 4]	30 10	PS	54·7
Ottawa		121·6	38	e 18 53	[− 3]	e 26 4	[+ 9]	—	—	51·7
Cape Town	E.	122·2	224	e 25 57	S	(e 25 57)	[0]	e 37 34	SS	e 59·7
	N.	122·2	224	e 26 10	S	(e 26 10)	[+13]	e 37 23	SS	e 60·7
Columbia		122·3	53	—	—	e 25 48	[− 9]	e 30 8	PS	e 51·3
Potsdam		122·5	333	e 29 28	PP	—	—	e 30 10	PS	e 54·7
Hamburg		123·1	335	e 20 40?	PP	—	—	—	—	e 60·7
Prague		123·3	329	—	—	e 43 59	SSS	—	—	e 58·7
Seven Falls		123·7	35	e 20 40	PP	e 30 28	PS	—	—	49·7
Vermont		123·7	39	—	—	e 41 22	SSS	—	—	e 52·0
Cheb		124·4	331	e 20 47	PP	e 30 37	PS	—	—	e 57·7
Philadelphia		124·5	44	e 20 47	PP	e 26 2	[− 2]	e 37 32	SS	e 51·2
Williamstown		124·5	40	i 18 59	[− 2]	—	—	—	—	—
Fordham		125·0	43	e 20 49	PP	e 28 0	{+13}	e 23 0	PPP	—

Continued on next page.

	△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Harvard	125·7	40	e 19 3	[0]	—	—	—	—	e 71·7
Weston	125·9	40	e 20 3	[+60]	e 38 3	SS	—	—	e 54·4
De Bilt	126·2	336	e 20 55	PP	—	—	e 22 22	PPP	e 56·7
Triest	126·4	326	e 21 0	PP	—	—	—	—	e 59·7
Stuttgart	126·8	331	e 19 4	[− 1]	e 28 10	{+12}	43 28	SSS	e 61·7
East Machias	127·0	36	—	—	e 26 19	[+ 7]	e 37 16	SS	e 50·3
Padova	127·5	328	e 19 40	[+33]	—	—	—	—	—
Uccle	127·5	336	e 19 7	[0]	e 26 41	[+28]	e 21 18	PP	e 56·7
Strasbourg	127·6	332	e 19 5	[− 2]	30 50	PS	e 21 8	PP	e 60·7
Bidston	128·1	342	i 22 24	?	e 28 7	{ 0}	—	—	e 57·7
Kew	128·8	338	e 21 16	PP	e 28 10	{− 1}	—	—	e 57·7
Florence	128·9	326	e 17 55	[−74]	—	—	—	—	—
Huancayo	128·9	110	e 19 15	[+ 6]	e 25 59	[−17]	e 21 16	PP	e 50·5
Oxford	128·9	341	e 21 12	PP	—	—	i 22 26	?	e 56·7
Rathfarnham Castle	129·1	345	e 18 35	[−35]	e 31 32	PS	i 42 52	SSS	59·7
Paris	129·8	335	e 19 11	[− 1]	—	—	21 23	PP	65·7
La Plata	130·6	147	22 34	?	—	—	—	—	69·8
La Paz	133·9	120	19 20	[+ 1]	—	—	i 22 44	PP	64·7
San Juan	139·5	67	—	—	26 11	[−27]	e 40 25	SS	e 54·2
Toledo	139·7	332	e 23 8	PP	—	—	—	—	69·6
Almeria	141·3	328	e 23 7	PP	—	—	—	—	—
Granada	142·5	330	i 19 27	[− 8]	—	—	i 23 12	PP	—
San Fernando	143·5	332	e 19 36	[0]	e 30 6	{+24}	e 34 1	PP	74·7
Fort de France	145·0	73	e 20 47	[+68]	—	—	—	—	—
Rio de Janeiro E.	147·9	151	e 18 40	[−64]	—	—	—	—	e 42·4

Additional readings :—
Brisbane ePE = +5m.10s.
Riverview eSN = +10m.47s.
Manila iZ = +10m.57s.
New Plymouth i = +7m.29s.
Wellington iP_cP = +10m.2s., i = +11m.33s., +13m.48s., +14m.22s., and +14m.47s., SS? = +16m.52s., i = +18m.15s. and +19m.10s.
Christchurch i +8m.4s., iP_cS = +13m.54s., i = +14m.8s., iN = +14m.50s., S_cS = +17m.32s., L_qE = +17m.54s., iSSSE = +18m.5s., iZ = +18m.12s.
Perth P_cP = +8m.55s., P_cS = +13m.0s., SS = +18m.15s., SSS = +19m.48s.
Hong Kong ? = +15m.46s.
Chatham Ils. i = +25m.28s.
Medan SN = +17m.50s.
Calcutta eN = +14m.48s. and +15m.38s., i = +20m.47s., S_cS = +21m.8s., i = +24m.16s.
Kodaikanal PPPE = +16m.28s., iPSE = +22m.17s., SSE = +26m.40s.?
Agra PSE = +22m.43s., SS = +27m.13s., SSS = +30m.5s.
Andijan e = +13m.27s.
Tashkent PPP = +18m.51s., SKS = +23m.11s., PS = +24m.34s., eSS = +29m.34s.
Pasadena iZ = +13m.34s.
Mount Wilson iZ = +13m.35s. and +13m.52s.
Riverside iZ = +13m.27s., eZ = +15m.25s.
Sverdlovsk S = +24m.34s., PS = +25m.52s., SS = +31m.4s., L_q = +40m.16s.
Bozeman S = +24m.33s.
Tucson P = +13m.47s., SKS = +24m.20s., eS = +25m.8s.
Baku PS = +27m.38s., SSS = +37m.34s.
Tiflis eSKKSN = +26m.2s., PSZ = +28m.6s., eN = +36m.40s., eSSSN = +38m.36s.
Moscow PS = +28m.15s., PPS = +29m.32s.
Pulkovo ePS = +28m.30s., PPS = +29m.44s., SS = +34m.34s.
Little Rock eN = +25m.37s. and +40m.7s. ; PS is given as eLE.
Chicago ePS = +29m.15s.
Ksara PPS = +30m.50s.
Copenhagen SKKS = +27m.32s., SS = +36m.58s.
Cape Town ePPE = +30m.3s., ePPN = +30m.11s.
Potsdam eZ = +22m.58s.
Philadelphia ePS = +30m.54s., eSSS = +41m.41s.
Fordham i = +19m.7s., ePPP = +26m.5s., e = +28m.46s., +29m.21s., +33m.20s., and +38m.2s.
Harvard eN = +39m.40s.
Stuttgart e = +20m.46s. and +26m.55s.
East Machias ePS = +30m.58s.
Uccle PKS = +22m.28s., eN = +28m.2s.
Strasbourg eZ = +23m.18s., ePPSZ = +32m.34s.
Kew i = +22m.29s., iZ = +22m.41s.
Huancayo ePPP = +23m.35s., ePS = +31m.7s., eSSS = +42m.23s.
Paris sPP = +22m.32s.
La Paz SSZ = +41m.20s.
Long waves were also recorded at Apia, Butte, Seattle, Tananarive, and other European stations.

Mar. 8d. Readings also at 0h. (Copiapo and Santiago), 3h. (Colombo, Kodaikanal, Agra, Baku, Tiflis, Fort de France, Ksara, Sverdlovsk, and Tashkent), 4h. (Riverside, Mount Wilson, Pasadena, Kew, Huancayo, Paris, La Paz (2), Granada, and San Fernando), 5h. (Tiflis and Tananarive), 7h. (College, Tucson, Tacubaya, and Oaxaca), 8h. (Tinemaha, Williamstown, Fordham, Weston, Riverside, Mount Wilson, Pasadena, and Samarkand), 9h. (Harvard), 10h. (Bucharest and Samarkand), 11h. (Samarkand (2), Perth, and Sverdlovsk), 12h. (Moscow and Santiago), 13h. (Heizyo), 18h. (Tashkent and Amboina), 19h. (Sverdlovsk and Santiago), 20h. (Tashkent, Sverdlovsk, Perth, Ksara, Lick, Brisbane, and Riverview), 21h. (Philadelphia).

Mar. 9d. 2h. South Pacific :—

Wellington eP? =5m.50s., S =8m.15s., eL =11m.45s., iS_cS? =16m.30s.
Christchurch eP =6m.8s., iP_cPEZ =8m.49s., iS =11m.32s., P_cS =12m.40s., L_q = 13m.16s., L_rZ =15m.42s., iS_cS =16m.56s., i =17m.5s.
New Plymouth S =7m.45s., eL? =12m.15s.
Chatham Ils. i =9m.0s.
Brisbane iPE =9m.36s., ePN =9m.42s., iPPN =10m.42s., eE =13m.48s., iSN =14m.18s.
Riverview eE =10m.36s., eSEN =15m.42s., eN =15m.55s., eSSEN =16m.57s., eLE = 18m.30s.
Melbourne i =12m.8s., e =16m.5s., L? =19m.18s.
Honolulu eP =13m.0s., ePP =15m.0s., eSS =24m.52s., eL =26m.56s.
Sydney e =14m.59s., eL =18m.28s.
Manila P =15m.20s., SEN =20m.51s., LN =25m.15s.
Mount Wilson ePZ =16m.5s.
Riverside ePZ =16m.6s.
Pasadena ePPZ =16m.13s., eLZ =41m.
Tucson P =16m.27s., iP =16m.33s., i =16m.44s., eS =27m.50s., PS =28m.38s., L = 42m.8s.
Colombo e =22m.30s.
Sverdlovsk eP =22m.59s., e =41m.58s., L =59m.0s.
Tiflis eZ =23m.30s. and 27m.9s., eL =73m.
Ksara eP =23m.44s., ePP =28m.27s.
Perth P =24m.12s., i =26m.4s., S =29m.51s., L =33m.50s.
Harvard iPZ =24m.15s.k, P_cPZ =25m.44s.
Tashkent e =24m.23s., 26m.16s., 37m.54s., 40m.54s., 41m.55s., 44m.40s., and 46m.4s., eL =55m.54s.
Granada e =24m.30s. and 94m.0s.
College eSKS =27m.35s., eS =28m.10s., ePS =29m.6s., eSS =35m.16s., eL =43m.35s.
Huancayo eS =29m.10s., ePS =30m.47s., eSS =36m.43s., eSSS =41m.7s., eL =45m.10s.
Ottawa e =31m.48s., L =56m.0s.
Long waves were also recorded at Arapuni, Cape Town, La Paz, Rio de Janeiro, Pulkovo, and other American and European stations.

Mar. 9d. 5h. 17m. 12s. Epicentre 6°·2N. 82°·4W. (as on 1938 Mar. 1d.).

$A = +\cdot1315$, $B = -\cdot9855$, $C = +\cdot1073$; $\delta = +2$; $h = +7$;
$D = -\cdot991$, $E = -\cdot132$; $G = +\cdot014$, $H = -\cdot106$, $K = -\cdot994$.

A depth of focus 0·020 has been assumed.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Balboa Heights		3·9	45	i 0 54	− 6	i 1 41	− 5	—	—	—
Huancayo		19·4	159	e 4 16	0	7 49	+ 7	e 4 39	PP	i 8·7
San Juan		20·0	51	e 4 24	+ 2	i 8 14	+21	4 59	PP	8·9
Fort de France		22·5	68	i 10 35	?	e 14 47	?	10 55	PP	16·8
La Paz	z.	26·6	147	5 26	+ 1	11 24	SS	—	—	15·4
Columbia		27·7	3	—	—	e 10 16	+12	—	—	e 11·1
Cape Girardeau	N.	31·6	351	i 6 6	− 4	e 11 15	+ 9	—	—	—
Philadelphia		34·2	10	e 6 33	+ 1	e 11 40	− 6	e 7 46	PP	e 14·2
Fordham		35·4	11	e 8 6	PP	e 12 23	+19	—	—	—
Chicago		35·9	353	—	—	e 12 17	+ 5	—	—	e 14·5
Tucson		37·1	318	i 6 57	+ 1	—	—	e 8 10	PP	e 15·2
Weston		37·3	14	i 7 1	+ 3	e 12 45	+12	e 8 29	PP	e 18·0
Williamstown		37·3	14	i 6 59	+ 1	—	—	—	—	—
Ottawa		39·5	7	e 7 16	0	e 13 18	+12	e 8 54	PP	16·8
East Machias		40·6	17	e 8 57	PP	e 13 42	+19	e 9 40	PPP	e 16·3

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		41·9	314	e 7 34	− 2	—	—	—	—	—
Seven Falls		42·0	12	—	—	i 13 59	+16	e 16 54	SS	20·8
Riverside	Z.	42·6	315	i 7 42a	0	—	—	—	—	—
Mount Wilson	Z.	43·2	315	e 7 46a	− 1	—	—	—	—	—
Pasadena		43·2	315	i 7 47k	0	—	—	—	—	—
Santa Barbara		44·5	314	e 7 53	− 4	—	—	—	—	—
Tinemaha		44·9	319	i 8 0	0	—	—	—	—	—
Rio de Janeiro	E.	48·0	127	e 5 11	?	—	—	—	—	e 24·8
Malaga		76·7	54	e 12 10	+35	—	—	—	—	—
Granada		77·4	54	e 11 29	−10	e 21 38	+24	—	—	—
Ksara		109·4	52	e 20 7	?	e 29 57	PPS	—	—	49·5
Sverdlovsk		109·5	21	—	—	e 34 31	SS	—	—	52·8

Additional readings :—
Huancayo iP = +4m.22s., i = +4m.55s., S = +8m.0s.
San Juan iP = +4m.26s., iS = +8m.27s.
Fort de France PPP = +11m.17s., SS = +15m.19s.
Columbia eS = +10m.23s.
Cape Girardeau eN = +6m.15s.
Philadelphia ePPP = +8m.4s., S = +12m.4s.
Tucson PPP = +8m.25s.
East Machias eS = +13m.48s.
Long waves were also recorded at Strasbourg, Cheb, Kew, Uccle, De Bilt, and Tashkent.

Mar. 9d. Readings also at 0h. (Tchimkent, Frunse, Andijan, Agra, and Samarkand), 3h. (La Paz), 10h. (Malabar), 11h. (Istanbul, La Paz, and Huancayo), 12h. (Copiapo and Samarkand), 13h. (Moncalieri), 14h. (Copiapo), 16h. (Tucson), 22h. (Ksara).

Mar. 10d. 15h. 41m. 21s. Epicentre 31°·5N. 140°·0E.

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

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Nagoya		4·4	326	i 1 41	P_g	—	—	—	—	3·7
Mizusawa	E.	7·6	5	e 1 55	0	i 3 14	− 9	—	—	—
Helzyo		13·9	307	e 3 20	− 1	—	—	—	—	e 9·3
Manila		24·2	230	e 5 14	− 5	9 15	−20	—	—	—
Calcutta	N.	46·5	272	—	—	e 13 29	?	—	—	—
Agra	E.	53·6	282	9 24	− 1	17 31	+33	e 12 44	PPP	—
Tashkent		56·3	301	i 9 45	0	17 42	+ 8	—	—	e 27·6
Sverdlovsk		58·6	321	i 9 57	− 4	18 9	+ 5	—	—	32·6
Bombay		61·2	275	—	—	e 18 50	+12	—	—	—
Pulkovo		72·4	331	—	—	e 21 2	+ 9	—	—	e 41·6
Copenhagen		82·3	334	—	—	21 33	−67	—	—	42·6
Ksara		83·4	305	e 12 31	+ 1	e 23 10	+19	e 17 47	PPP	—
De Bilt		87·8	335	—	—	e 23 33	− 1	—	—	e 46·6
Stuttgart		88·8	330	—	—	e 23 45	+ 1	—	—	e 48·6

Additional readings :—
Pulkovo e = +38m.24s. and +39m.37s.
Ksara ePS = +24m.2s.
Long waves were also recorded at Tucson, Tiflis, Moscow, Cheb, and Uccle.

Mar. 10d. 16h. 20m. 50s. Epicentre 7°·2N. 126°·3E. (as on 1937 June 30d.).

Felt strongly in Mindanao (Santa Cruz, Davao).

Epicentre partie Sud de la Fosse des Philippines 6°·0N. 126°·8E. (Strasbourg)., 6°·0N. 126°·5E. (U.R.S.S.).

W. C. Repetti. Manila Central Observatory. Seismological Bulletin for 1938 Jan.-June, p. 11.

$A = -\cdot5874$, $B = +\cdot7997$, $C = +\cdot1245$; $\delta = +6$; $h = +7$;
$D = +\cdot806$, $E = +\cdot592$,; $G = -\cdot074$, $H = +\cdot100$, $K = -\cdot992$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		9·0	325	i 2 33	PPP	4 37	S*	—	—	—
Amboina	N.	11·0	170	i 2 40	− 2	—	—	—	—	—
Hong Kong		19·0	324	4 35	+ 9	8 25	SS	4 43	PP	—
Phu-Lien		23·3	308	e 5 18	+ 8	e 8 58	−22	e 5 34	PP	—
Batavia		23·6	236	e 5 8	− 5	10 24	SSS	i 5 25	PP	—
Medan		27·6	264	e 6 18	+27	—	—	—	—	—
Calcutta	N.	39·6	297	e 8 20	+45	i 13 15	−23	—	—	—
Perth		40·2	193	8 28	+48	i 13 22	−26	9 31	PPP	16·3
Brisbane	N.	43·1	144	e 7 46	−18	i 13 52	−38	i 17 34	SS	—
Colombo	E.	46·1	273	8 29	+ 1	15 9	− 5	—	—	—
Riverview		47·1	151	—	—	e 15 4	−24	e 18 34	SS	e 27·6
Sydney		47·2	151	—	—	e 18 26	SS	—	—	e 27·6
Agra	E.	49·8	300	i 8 56	0	i 16 3	− 3	11 11	PP	—
Bombay		53·2	288	e 9 44	+22	e 16 43	− 9	—	—	—
Frunse		57·6	318	10 7	+13	—	—	—	—	—
Semipalatinsk		57·6	328	9 53	− 1	—	—	—	—	—
Andijan		58·4	314	10 4	+ 4	—	—	e 14 54	?	—
Tashkent		60·7	313	i 10 17	+ 2	i 18 36	+ 4	—	—	e 31·6
Samarkand		62·0	311	e 10 21	− 3	—	—	e 12 13	PP	—
Sverdlovsk		70·8	328	i 11 20	0	i 20 35	0	i 11 32	pP	38·2
Baku		75·0	310	e 11 51	+ 6	i 21 30	+ 7	—	—	e 39·7
Grozny		78·2	313	e 12 1	− 2	e 22 1	+ 4	—	—	—
Tiflis		78·9	311	e 12 10	+ 3	e 22 7	+ 2	e 22 46	PS	39·2
Moscow		83·4	326	e 12 27	− 3	i 22 50	− 1	e 12 41	pP	—
Ksara		86·4	303	i 12 47a	+ 2	i 23 32	+11	i 13 2	pP	—
Pulkovo		86·8	330	e 12 43	− 4	23 18	[+ 6]	16 39	PP	e 39·7
Helwan		90·7	300	e 13 4	− 2	23 39	[+ 2]	16 34	PP	—
Copenhagen		97·2	329	—	—	24 28	+31	—	—	51·2
Triest		100·3	318	—	—	i 24 23	[− 5]	—	—	—
Stuttgart		101·9	323	e 18 24	PP	e 24 58	[+22]	—	—	e 55·2
De Bilt		102·6	327	e 16 21	?	e 25 5	[+26]	—	—	e 53·2
Strasbourg	N.	102·8	324	e 15 22	?	—	—	e 17 16	PP	—
Paris		105·7	325	e 8 10?	?	—	—	—	—	60·2
Kew		105·8	328	e 17 10?	?	—	—	—	—	e 56·2
Rathfarnham Castle		107·7	333	i 14 54	P	i 19 19	PP	—	—	—
Jersey		108·1	328	e 15 0	P	—	—	—	—	—
Granada		115·7	318	—	—	e 29 55	PS	—	—	73·2
Huancayo		158·1	104	—	—	—	—	e 32 13	?	—
La Paz		163·1	125	i 20 2k	[− 2]	—	—	—	—	78·7

Additional readings :—
Hong Kong SS? = +8m.48s.
Batavia iN = +6m.24s.
Perth P = +8m.55s., PPP = +9m.44s., P_cP = +12m.10s., SS = +14m.36s., SSS = +14m.51s., P_cS = +15m.57s.
Agra pPE = +9m.15s., sS = +16m.35s., SSS = +20m.32s.
Sverdlovsk isP = +11m.44s., L_q = +32·2m.
Moscow eSP = +12m.52s., esS = +23m.15s.
Ksara sS = +23m.52s., SP = +24m.30s., SS = +29m.35s.
Pulkovo SKKS = +23m.24s., SS = +30m.28s.
Helwan e = +13m.25s. and +25m.41s.
Rathfarnham Castle i = +15m.19s.
Long waves were also recorded at Melbourne, Wellington, Bidston, Uccle, and Potsdam.

Mar. 10d. Readings also at 0h. (Algiers), 1h. (Fort de France), 2h. (Columbia, Tiflis, and Frunse), 3h. (Potsdam and Samarkand (2)), 4h. (Fort de France and Kodaikanal), 9h. (Algiers and Columbia), 10h. (Andijan, Samarkand, and Tchimkent), 14h. (Triest), 17h. (Wellington), 21h. (Andijan (2), Wellington, Pasadena, and Riverside).

Mar. 11d. 14h. 50m. 55s. Epicentre 38°·8N. 20°·6E.

Damage at Preveza, felt at Missolonghi. Epicentre near the Isle of Leucade, 38°·8N. 20°·6E. (Athens).

J. Mihailovic. Annuaire de l'Institut Seismolgique de Belgrade, Année XVIII, 1938, Belgrade, 1939, p. 18.

$A = +\cdot7314$, $B = +\cdot2749$, $C = +\cdot6240$; $\delta = -11$; $h = -1$;
$D = +\cdot352$, $E = -\cdot936$; $G = +\cdot584$, $H = +\cdot220$, $K = -\cdot781$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	N.	4·4	27	e 1 11	+ 1	—	—	—	—	—
Belgrade		6·0	359	e 1 30a	− 2	i 2 58	S*	1 37	P*	—
Istanbul		6·9	68	1 46	+ 1	3 6	+ 1	2 14	P_g	—
Bucharest		7·0	35	e 1 46	0	i 3 4	− 4	2 20	P_g	—
Kecskemet		8·1	356	e 1 46	−16	e 3 40	+ 5	4 30	S_g	e 4·6
Laibach		8·5	330	e 1 59a	− 8	3 26	−19	—	—	—
Triest		8·5	326	2 4	− 3	e 3 51	+ 6	—	—	—
Florence		8·6	308	2 15	+ 6	i 4 38	S_g	—	—	—
Budapest		8·8	353	e 2 16	+ 5	4 41	S_g	—	—	5·4
Graz		9·1	337	e 2 5	− 9	i 3 55	− 5	—	—	i 4·9
Ogyalla		9·2	350	2 23	+ 7	4 53	S_g	—	—	7·1
Padova		9·3	317	e 2 35	PP	i 4 35	S*	—	—	—
Lemberg		11·3	12	—	—	e 4 35	−19	—	—	—
Sebastopol		11·3	55	e 2 48	+ 2	—	—	—	—	—
Chur		11·4	318	e 2 46	− 1	—	—	3 0	PP	—
Moncalieri		11·4	307	e 3 35	+48	5 39	SSS	—	—	i 7·4
Yalta		11·6	57	e 2 47	− 3	—	—	—	—	—
Simferopol		11·8	54	e 2 58	+ 5	—	—	—	—	e 7·1
Prague		12·1	341	e 2 52	− 5	e 5 21	+ 7	—	—	e 5·8
Zurich		12·3	316	e 2 55	− 4	—	—	—	—	—
Helwan		12·6	132	3 10	+ 7	5 20	− 6	—	—	—
Theodosia		12·6	56	—	—	5 7	−19	—	—	7·1
Cheb		12·7	335	e 5 27	S	(e 5 27)	− 1	e 5 51	SSS	e 7·0
Basle		12·9	317	e 3 5	− 2	—	—	—	—	—
Neuchatel		12·9	314	e 3 7	0	—	—	—	—	—
Stuttgart		12·9	324	e 3 3	− 4	e 5 31	−2	3 25	PP	e 7·4
Ksara		13·3	107	i 3 18	+ 5	e 5 54	+12	—	—	—
Karlsruhe		13·5	323	e 3 26	+11	—	—	—	—	e 6·9
Strasbourg		13·5	321	e 3 14	− 1	e 5 54	+ 7	—	—	i 7·7
Besançon		13·6	313	—	—	e 5 35	−15	—	—	e 8·1
Jena		13·7	335	e 3 17	− 1	e 6 17	SSS	—	—	e 7·1
Algiers		14·0	267	i 3 26	+ 4	i 6 19	SS	—	—	e 10·1
Potsdam		14·6	341	e 3 29	− 1	e 6 23	+10	e 3 59	PP	e 8·1
Paris		16·4	313	e 3 56	+ 3	e 7 7	SS	—	—	9·1
Hamburg		16·5	333	e 4 1	+ 7	e 7 7	SS	—	—	e 9·3
Uccle		16·6	324	e 3 59	+ 3	e 7 15	SS	—	—	e 9·1
De Bilt		17·1	326	—	—	e 7 27	SS	—	—	e 9·6
Copenhagen		17·8	344	4 5	− 6	7 31	+ 3	—	—	9·1
Almeria		18·3	273	e 4 20	+ 3	—	—	—	—	—
Erevan		18·5	78	e 4 25	+ 6	—	—	—	—	—
Tiflis		18·7	73	e 4 25	+ 3	8 6	SS	—	—	e 10·1
Toledo		19·1	283	e 4 28	+ 1	e 8 4	+ 7	4 44	PP	9·7
Granada		19·2	274	e 4 5	−23	e 8 12	+13	—	—	—
Jersey		19·3	312	i 4 25	− 4	e 8 10	+ 8	i 5 14	PPP	e 11·6
Kew		19·4	319	i 4 29	− 1	i 8 11	+ 7	i 5 1	PPP	i 11·3
Grozny		19·5	68	e 4 33	+ 2	i 8 20	SS	—	—	—
Malaga		19·9	274	e 4 15	−21	e 8 23	SS	—	—	—
Oxford		20·0	319	—	—	i 8 22	+ 5	—	—	11·3
Moscow		20·4	29	e 4 38	− 3	e 8 22	− 3	—	—	11·6
Upsala		21·2	355	e 4 46	− 3	e 8 30	−11	—	—	e 11·1
Bidston		21·8	320	i 5 22	PPP	i 9 0	+ 8	—	—	i 12·3
Stonyhurst		21·8	323	—	—	e 9 25	SS	—	—	e 12·5
Durham		21·9	326	e 4 57	0	e 8 53	− 1	—	—	—
Pulkovo		21·9	13	4 53	− 4	e 8 48	− 6	—	—	10·6
Baku		22·6	76	e 5 22	PPP	e 9 14	+ 7	—	—	e 13·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Edinburgh		23·3	326	—	—	i 9 26	+ 6	—	—	—
Rathfarnham Castle		23·5	319	i 5 17	+ 5	i 9 33	+10	9 53	SS	12·4
Aberdeen		23·7	330	e 3 4	?	e 9 22	− 5	e 5 49	PP	—
Bergen		23·7	343	—	—	e 9 41	+14	—	—	e 13·1
Sverdlovsk		31·8	42	—	—	e 11 33	− 5	—	—	19·7
Samarkand		35·6	74	6 33	−28	—	—	—	—	—
Tashkent		37·0	71	7 10	− 3	13 0	+ 1	—	—	e 22·0
Tchimkent		37·0	69	e 7 3	−10	—	—	—	—	—
Andijan		39·4	71	e 7 37	+ 4	—	—	e 7 40	?	—
Frunse		40·5	67	e 7 41	− 1	e 13 31	−21	—	—	—
Agra	E.	48·8	86	—	—	e 15 47	− 5	—	—	—
Weston	Z.	66·4	307	i 10 54	+ 1	—	—	—	—	—
Harvard	Z.	66·5	307	10 52k	− 2	—	—	—	—	—
Williamstown		67·4	308	i 11 1	+ 2	—	—	—	—	—
Fordham		68·9	306	i 11 8	− 1	—	—	—	—	—

Additional readings :—
Sofia iN = +1m.19s.
Belgrade RsP = +1m.56s., i = +2m.8s., PPS = +2m.43s.
Bucharest iPEN = +1m.50s., P*EN = +2m.6s., iEN = +2m.49s., S*EN = +3m.31s., S_gE = +3m.39s.
Kecskemet ePEN = +2m.8s., eZ = +2m.34s., eN = +2m.42s., eZ = +3m.13s., +3m.22s., and +4m.19s.
Laibach i = +2m.34s., +5m.17s., and +6m.0s.
Budapest i = +2m.48s., PPP = +3m.9s., PPS = +3m.58s., i = +4m.10s., iN = +5m.15s.
Ogyalla ePE = +3m.21s., iN = +4m.33s., iE = +5m.55s.
Helwan e = +3m.25s., S = +6m.11s.
Basle e = +7m.44s.
Stuttgart eS = +5m.40s., e = +6m.18s.
Potsdam iE = +4m.55s., iSE = +6m.31s., iE = +6m.37s., eN = +6m.41s.
Hamburg eN = +7m.14s.
Tiflis iNE = +8m.9s.
Toledo e = +8m.19s.
Jersey eSS = +9m.0s.
Kew iEN = +5m.14s.
Upsala eSE = +8m.39s.
Durham eN = +8m.20s., iN = +9m.0s.
Baku e = +11m.0s.
Rathfarnham Castle iS = +8m.33s.
Sverdlovsk i = +14m.13s. and +15m.19s., L_q = +17·0m.
Tchimkent eP = +7m.12s.
Long waves were also recorded at San Fernando and Göttingen.

Mar. 11d. 16h. 51m. 38s. Epicentre 10°·5N. 44°·5E.

A = +·7015, B = +·6893, C = +·1811 ; δ = +3 ; h = +6 ;
D = +·701, E = −·713 ; G = +·129, H = +·127, K = −·984.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Helwan		22·8	330	e 4 47	−18	9 0	−11	e 6 2	PPP	—
Ksara		24·5	342	i 5 17	− 5	i 9 41	+ 1	—	—	—
Bombay	E.	28·6	69	—	—	8 34	?	—	—	—
Erevan		29·6	0	—	—	e 11 42	+38	—	—	—
Baku		30·1	8	e 6 38	+25	e 11 58	+46	—	—	16·6
Tiflis		31·1	0	e 6 21	− 1	e 11 25	− 3	—	—	e 15·4
Grozny		32·7	2	e 7 36	PP	—	—	—	—	—
Istanbul		33·4	339	e 10 32	?	—	—	—	—	—
Samarkand		35·3	31	7 4	+ 5	—	—	—	—	—
Agra	E.	35·6	57	—	—	i 12 53	+15	—	—	—
Tashkent		37·7	31	e 7 17	− 2	i 13 13	+ 3	—	—	20·8
Andijan		38·9	34	e 7 43	+14	—	—	—	—	—
Moscow		45·5	355	e 8 22	− 1	e 14 54	−11	—	—	e 23·9
Sverdlovsk		47·9	12	8 43	+ 1	15 34	− 5	—	—	23·4
Pulkovo		50·3	351	—	—	e 19 52	SS	—	—	e 25·9
Granada		50·7	310	e 11 7	PP	—	—	—	—	28·1

Additional readings :—
Tiflis ePE = +6m.38s., eN = +10m.59s.
Long waves were also recorded at Calcutta, Malaga, De Bilt, Cheb, Bucharest, Kew, Hamburg, Strasbourg, Algiers, Paris, Copenhagen, and San Fernando.

Mar. 11d. Readings also at 1h. (Fort de France, Tiflis, and Grozny), 2h. (Tinemaha, Pasadena, Riverside, Harvard (2), Balboa Heights, San Juan, Tucson, Williamstown, and Fordham (2)), 4h. (Tiflis), 5h. (Fort de France, Wellington, and Balboa Heights (2)), 6h. (Triest and Ksara), 7h. (Christchurch, Wellington, Tashkent, and Sverdlovsk), 9h. (La Paz), 12h. (Copiapo), 14h. (Sverdlovsk, Tinemaha, Pasadena, and Riverside), 15h. (Bucharest), 16h. (Sverdlovsk, Tashkent, Grozny, Simferopol, Upsala, Bergen, Moscow, Pulkovo, Potsdam, Hamburg, and Copenhagen), 17h. and 20h. (Grozny).

Mar. 12d. I 12h. 37m. 34s. Epicentre 10°·5N. 44°·5E. (as on Mar. 11d.).
II 13h. 4m. 40s.
III 20h. 4m. 13s.

$A = +\cdot7015$, $B = +\cdot6893$, $C = +\cdot1811$; $\delta = +3$; $h = +6$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
I	Helwan	22·8	330	e 5 2	− 3	9 18	+ 7	—	—	—
II		22·8	330	e 5 5	0	9 3	− 8	—	—	—
III		22·8	330	5 2	− 3	9 2	− 9	—	—	—
I	Ksara	24·5	342	e 5 26?	+ 4	e 9 56?	+16	—	—	—
II		24·5	342	5 21?	− 1	e 9 50?	+10	—	—	—
III		24·5	342	5 21?	− 1	9 47?	+ 7	—	—	—
II	Bombay E.	28·6	69	e 7 11	PPP	—	—	—	—	—
III	E.	28·6	69	e 6 17	+17	—	—	—	—	—
III	Erevan	29·6	0	—	—	e 11 4	0	—	—	—
I	Baku	30·1	8	—	—	11 30	+18	—	—	e 19·4
II		30·1	8	e 6 18	+ 5	e 11 56	+44	—	—	e 17·3
III		30·1	8	6 17	+ 4	11 57	+45	—	—	16·8
II	Tiflis	31·1	0	e 6 20	− 2	e 11 27	− 1	—	—	e 16·3
III		31·1	0	e 6 23	+ 1	e 11 29	+ 1	e 7 25	PP	e 14·8
II	Grozny	32·7	2	e 5 30	−66	—	—	e 8 0	PPP	—
III		32·7	2	—	—	e 14 9	SSS	—	—	—
I	Samarkand	35·3	31	e 7 18	+19	—	—	—	—	—
III		35·3	31	7 47	+48	—	—	—	—	—
I	Tashkent	37·7	31	—	—	e 15 32	SS	—	—	e 19·9
II		37·7	31	—	—	e 13 14	+ 4	—	—	e 20·2
III		37·7	31	i 5 26	?	i 13 19	+ 9	—	—	e 20·5
II	Andijan	38·9	34	e 9 21	PPP	—	—	—	—	—
III		38·9	34	e 7 53	+24	—	—	—	—	—
II	Moscow	45·5	355	e 9 53	PP	—	—	—	—	e 25·8
III		45·5	355	e 8 23	0	e 15 15	+10	e 18 15	SS	e 24·3
I	Sverdlovsk	47·9	12	—	—	e 15 54	+15	—	—	23·4
II		47·9	12	8 43	+ 1	15 39	0	—	—	24·3
III		47·9	12	8 45	+ 3	e 15 37	− 2	e 19 26	SS	23·8
II	Pulkovo	50·3	351	e 10 57	PP	e 16 3	−10	—	—	25·8
III		50·3	351	e 10 54	PP	e 16 5	− 8	e 19 47	SS	23·3
III	Granada	50·7	310	7 48	−16	—	—	—	—	18·3

Additional readings :—
Baku I e = +17m.24s.
Tashkent I e = +19m.41s., II e = +18m.19s.
Andijan III e = +24m.42s.
Moscow III e = +13m.39s.
Long waves for one or other of the quakes were also recorded at Malaga, Cape Town, Copenhagen, Toledo, San Fernando, Paris, De Bilt, Kew, Strasbourg, Frevan, Tiflis, and Pulkovo.

Mar. 12d. Readings also at 4h. (Malabar, Batavia, and La Paz), 5h. (La Paz, San Javier, and Santiago), 6h. (La Paz (2)), 9h. (Fort de France), 13h. (Granada (2)), 14h. (Andijan and Samarkand), 23h. (Tashkent and Ksara).

Mar. 13d. 17h. 45m. 32s. Epicentre 38°·8N. 20°·6E. (as on 1938 Mar. 11d.).

Repetition of Mar. 11, 1938. Damage at Leucade. Epicentre near the N. of the Isle of Leucade, 38°·8N. 20°·6E.

J. Mihailovic. Annuare de l'Institut Sismologique de Belgrad, Année XVIII, 1938, Belgrade, 1939, p. 19.

$A = +\cdot7314$, $B = +\cdot2749$, $C = +\cdot6240$; $\delta = -11$; $h = -1$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sofia	E.	4·4	27	e 1 18	P*	e 2 28	S_g	—	—	—
Belgrade		6·0	359	e 1 30k	− 2	i 2 54	+11	2 4	P_g	—
Istanbul		6·9	68	1 38	− 7	3 9	+ 4	i 3 58	S_g	—
Bucharest		7·0	35	e 1 50	+ 4	3 16	+ 8	i 4 4	S_g	—
Laibach		8·5	330	e 2 14	+ 7	i 3 56	+11	i 2 25	PP	—
Triest		8·5	326	e 1 57	−10	i 3 33	−12	—	—	—
Florence		8·6	308	e 2 17	+ 8	4 9	S*	—	—	—
Budapest	E.	8·8	353	e 2 12	+ 1	e 4 18	+25	4 38	S_g	5·0
	N.	8·8	353	e 2 18	+ 7	e 4 14	+21	i 4 30	S*	5·7
Graz		9·1	337	i 2 18	+ 4	i 3 56	− 4	—	—	e 4·9
Ogyalla		9·2	350	2 28	+12	4 52	S_g	—	—	5·1
Padova		9·3	317	i 2 34	PPP	e 4 21	+16	—	—	—
Lemberg		11·3	12	—	—	e 5 20	SSS	—	—	—
Sebastopol		11·3	55	e 2 48	+ 2	—	—	—	—	—
Chur		11·4	318	e 2 44	− 3	—	—	—	—	—
Moncalieri		11·4	307	e 3 10	PPP	5 32	SSS	—	—	7·4
Yalta		11·6	57	e 2 45	− 5	—	—	—	—	—
Simferopol		11·8	54	e 2 55	+ 2	—	—	—	—	—
Prague		12·1	341	e 2 52	− 5	e 5 3	−11	—	—	—
Zurich		12·3	316	e 2 57	− 2	e 5 30	+12	—	—	—
Helwan		12·6	132	—	—	i 5 14	−12	—	—	—
Theodosia		12·6	56	3 8	+ 5	6 11	SSS	—	—	—
Cheb		12·7	335	e 5 17	S	(e 5 17)	−11	e 5 44	SS	e 7·1
Basle		12·9	317	e 2 58	− 9	—	—	—	—	—
Neuchatel		12·9	314	e 3 5	− 2	—	—	—	—	—
Stuttgart		12·9	324	e 3 3	− 4	e 5 36	+ 3	—	—	e 7·2
Ksara		13·3	107	e 3 10?	− 3	e 5 46	+ 4	—	—	—
Karlsruhe		13·5	323	e 3 14	− 1	6 3	+16	—	—	6·9
Strasbourg		13·5	321	e 3 12	− 3	e 5 50	+ 3	—	—	e 7·5
Besançon		13·6	313	—	—	e 5 22	−28	—	—	e 8·5
Jena		13·7	335	e 3 16	− 2	e 6 10	SS	—	—	e 7·0
Algiers		14·0	267	e 3 19	− 3	e 6 9	SS	—	—	e 9·0
Potsdam		14·6	341	e 3 22	− 8	e 6 10	− 3	—	—	e 7·9
Göttingen		14·8	333	—	—	e 6 37	+19	—	—	e 8·5
Paris		16·4	313	i 3 56	+ 3	e 7 4	SS	—	—	8·5
Hamburg		16·5	333	e 3 53	− 1	e 6 55	− 3	—	—	e 9·2
Uccle		16·6	324	e 3 57	+ 1	e 7 0	0	—	—	e 8·5
De Bilt		17·1	326	4 1	− 1	7 20	+ 8	—	—	e 8·5
Copenhagen		17·8	344	4 16	+ 5	7 28	0	7 40	SS	8·5
Almeria		18·3	273	e 4 14	− 3	—	—	—	—	e 13·5
Erevan		18·5	78	e 4 17	− 2	—	—	—	—	—
Tiflis		18·7	73	e 4 20	− 2	7 53	+ 5	i 8 8	SS	9·8
Toledo		19·1	283	e 4 27	0	e 7 58	+ 1	e 4 47	PP	e 9·2
Granada		19·2	274	4 29	+ 1	e 8 11	+12	—	—	—
Jersey		19·3	312	i 4 28	− 1	e 8 8	+ 6	—	—	e 10·1
Kew		19·4	319	i 4 35	+ 5	i 8 9	+ 5	i 4 44	PP	10·5
Grozny		19·5	68	e 4 30	− 1	e 8 18	+12	—	—	—
Malaga		19·9	274	e 4 48	+12	e 8 53	SSS	—	—	—
Oxford		20·0	319	4 37	0	i 8 13	− 4	—	—	10·1
Moscow		20·4	29	e 4 39	− 2	e 8 22	− 3	—	—	11·0
Upsala		21·2	355	4 52	+ 3	i 8 51	+10	e 10 40	SS	e 11·5
San Fernando		21·3	273	—	—	e 9 0	SS	—	—	—
Bidston		21·8	320	i 5 23	PP	i 8 58	+ 6	—	—	10·5
Stonyhurst		21·8	323	e 4 58	+ 2	e 8 58	+ 6	—	—	12·5
Durham		21·9	326	e 5 0	+ 3	i 8 53	− 1	—	—	12·5
Pulkovo		21·9	13	e 4 59	+ 2	e 8 57	+ 3	—	—	e 11·0

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Baku		22·6	76	5 1	− 2	9 7	0	—	—	13·1
Edinburgh		23·3	326	—	—	i 9 26	+ 6	—	—	—
Rathfarnham Castle		23·5	319	e 5 16	+ 4	e 9 36	+13	—	—	13·5
Aberdeen		23·7	330	e 5 12	− 2	e 8 46	−41	e 9 22	SS	12·9
Bergen		23·7	343	5 39	+25	9 28	+ 1	—	—	13·5
Sverdlovsk		31·8	42	6 24	− 4	11 31	− 7	—	—	19·7
Tashkent		37·0	71	i 7 7	− 6	e 13 42	−17	e 8 43	PP	e 22·5
Andijan		39·4	71	e 7 37	+ 4	17 38	SSS	—	—	—
Agra	E.	48·8	86	—	—	e 15 47	− 5	—	—	—
Calcutta	N.	59·3	85	—	—	e 17 51	−23	—	—	—
Weston	Z.	66·4	307	i 11 55	+62	—	—	—	—	—
Ottawa		67·5	312	e 11 2	+ 2	—	—	—	—	32·5
Fordham		68·9	306	i 11 8	− 1	—	—	—	—	—
Cape Town		72·4	182	—	—	e 34 10	?	—	—	39·5

Additional readings :—
Belgrade PP = +1m.35s., i = +1m.59s. and +2m.51s., SS = +3m.20s.
Bucharest ePE = +1m.46s., iE = +3m.18s., iSE = +3m.23s., iEN = +3m.30s., iN = +3m.33s., +3m.38s., and +3m.50s.
Laibach i = +3m.15s.
Budapest E. i = +3m.21s.
Budapest N. i = +5m.14s.
Padova i = +3m.3s. and +3m.17s.
Stuttgart eZ = +4m.10s., e = +6m.32s.
Jena eSZ = +6m.16s., eSN = +6m.22s.
Potsdam SEN = +6m.26s., eZ = +7m.4s., iN = +7m.23s.
Copenhagen +7m.45s.
Kew eEN = +8m.2s.
Durham iSEN = +9m.3s.
Edinburgh i = +13m.49s.
Sverdlovsk L_q = +17·2m.
Tashkent e = +7m.38s., +15m.15s., +15m.50s., and +17m.31s.

Mar. 13d. 21h. 5m. 30s. Epicentre 27°·0N. 66°·5E.

A = +·3558, B = +·8182, C = +·4516; δ = −1; h = +3;
D = +·917, E = −·399; G = +·180, H = +·414, K = −·892.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		10·0	142	e 2 36	+ 9	e 4 51	SSS	—	—	—
Agra		10·3	86	e 2 30	− 2	e 4 31	+ 1	—	—	—
Dehra Dun	N.	10·7	69	—	—	i 4 23	−16	—	—	i 6·1
Samarkand		12·6	3	2 59	− 4	—	—	—	—	e 6·7
Andijan		14·5	18	e 3 34	+ 6	6 19	+ 8	—	—	e 8·9
Tashkent		14·5	9	e 3 24	− 4	i 6 11	0	i 3 52	PPP	e 6·2
Hyderabad		14·6	129	—	—	e 5 58	−15	—	—	8·5
Tchimkent		15·5	9	e 3 35	− 7	—	—	—	—	—
Frunse		17·2	21	e 3 59	− 4	e 6 57	−17	—	—	9·2
Almata		18·3	24	e 4 18	+ 1	e 6 54	−45	—	—	—
Baku		19·2	319	4 24	− 4	7 56	− 3	—	—	11·6
Calcutta	N.	20·3	98	e 4 46	+ 6	8 35	+12	9 0	SS	i 10·9
Erevan		22·5	312	e 5 8	+ 6	—	—	—	—	—
Tiflis		23·1	316	5 8	0	i 9 18	+ 2	—	—	e 12·5
Grozny		23·4	321	e 5 12	+ 1	10 26	SSS	—	—	—
Colombo	E.	23·7	146	—	—	9 48	+21	—	—	14·3
Semipalatinsk		25·6	22	e 5 31	− 1	—	—	—	—	—
Ksara		27·2	292	e 6 2?	+15	e 10 41?	+16	—	—	—
Sverdlovsk		30·1	355	e 6 15	+ 2	11 7	− 5	—	—	19·5
Helwan		31·0	285	—	—	11 54	+28	—	—	—
Moscow		35·5	333	e 7 0	+ 4	e 12 32	− 4	—	—	19·0
Pulkovo		41·1	334	i 7 46	− 1	e 14 34	+33	10 15	PPP	e 20·0
Triest		45·5	310	—	—	20 30	?	—	—	—
Cheb		47·0	315	e 5 53	?	e 15 15	−11	—	—	e 27·5
Copenhagen		48·0	323	8 44	+ 1	—	—	—	—	24·5

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
De Bilt	51·7	318	—	—	e 20 30?	SSS	—	—	e 30·5
Manila	52·1	93	15 51	S	(15 51)	−47	—	—	32·5
Kew	55·1	316	—	—	e 24 30?	?	—	—	e 33·5
Bidston	56·8	319	—	—	e 24 30?	?	—	—	e 33·5
Edinburgh	56·8	322	—	—	e 15 30?	?	—	—	—
Granada	59·0	299	—	—	e 18 0	−10	—	—	e 41·3

Additional readings :—
Bombay eEN = +5m.23s., iEN = +5m.56s. and +6m.35s.
Andijan e = +5m.55s.
Hyderabad e = +8m.8s.
Calcutta eN = +7m.5s., P_cPN = +8m.39s.
Grozny e = +7m.48s.
Sverdlovsk L_g = +16·4m.
Pulkovo e = +9m.19s. and +15m.23s.
Manila iN = +18m.53s., SEN = +23m.5s.
Long waves were also recorded at Perth, Aberdeen, Uccle, Rathfarnham Castle, Potsdam, Prague, Jersey, Paris, Strasbourg, Upsala, Jena, Phu-Lien, and Hamburg.

Mar. 13d. Readings also at 0h. (Semipalatinsk, Sverdlovsk, and Frunse), 1h. (Malaga, Fort de France, Tiflis (2), Sverdlovsk, Baku, Granada, and Ksara (2)), 3h. (Ksara), 4h. (Nagoya), 5h. (Tiflis, Sverdlovsk, and Baku), 6h. (Granada, Triest, Copenhagen, De Bilt, Belgrade, Florence, Tiflis, Baku, Jersey, Hamburg, and Strasbourg), 7h. (Grozny, and Sverdlovsk), 8h. (Sverdlovsk, Baku, Tiflis, and Ksara), 9h. (Mizusawa and La Paz), 10h. (Belgrade, De Bilt, Triest, Prague, and Upsala), 11h. (Rio de Janeiro, La Paz, and Samarkand), 12h. (Samarkand and Perth), 14h. (Baku, Tiflis, Sverdlovsk, Granada, and Tashkent), 15h. (Prague, Budapest, Triest, De Bilt, Belgrade, Florence, Copenhagen, Cheb, Kew, Bidston, Williamstown, Zurich, Tiflis (2), Basle, Bucharest, and Sverdlovsk), 16h. (Tashkent and Samarkand), 19h. (La Paz), 20h. (Belgrade), 21h. (Basle, Chur, Neuchatel, and Zurich), 23h. (Graz).

Mar. 14d. 0h. 48m. 24s. Epicentre 21°·6N. 65°·0E.

Slight damage at Bushwal, Khandwa, Godhra, Baroda, and Nazik. Felt Force VII at Amla, Force VI at Baroda. Macroseismic area includes Agra, Bombay, Delhi, Dewas, Indore, Nagpur, Surat, etc.

Epicentre, Central India (Dekkan), in the mountains of Satpura (S.W. of Khandwa), 21°·6N. 76°·0E. (Bombay).

See Government of India Meteorological Department, Seismological Bulletin of India, Jan.-March, 1938, pp. 9 and 25.

S. M. Mukherjee.

Seismological features of the Satpura earthquake of the 14th March, 1938. Proceedings, Indian Academy of Sciences, Series A, Vol. 16, 167-175, Bombay, Sept., 1942.

$A = +\cdot2251$, $B = +\cdot9030$, $C = +\cdot3660$; $\delta = +4$; $h = +4$;
$D = +\cdot970$, $E = -\cdot242$; $G = +\cdot089$, $H = +\cdot355$, $K = -\cdot931$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Bombay		4·0	229	i 1 1	− 3	1 48?	− 4	1 11	P*	—
Hyderabad		4·7	150	1 14	0	2 13	+ 3	—	—	2·5
Agra		5·8	18	1 34	+ 5	2 37	− 1	3 11	S_g	—
Dehra Dun	N.	8·8	12	i 2 10	− 1	i 3 40	−13	i 4 31	S*	—
Calcutta	N.	11·4	83	e 3 8	PPP	i 5 17	SS	—	—	—
Colombo	E.	15·1	165	3 42	+ 6	6 19	− 6	—	—	8·0
Andijan		19·3	352	e 4 29	0	e 7 56	− 6	e 8 29	SS	—
Samarkand		19·6	339	e 4 30	− 2	e 8 24	+16	—	—	—
Tashkent		20·5	346	i 4 42	0	i 8 28	+ 1	—	—	i 10·5
Frunse		21·2	315	4 53	+ 4	e 8 43	+ 2	—	—	—
Almata		21·6	3	4 56	+ 2	e 9 4	SS	—	—	—
Semipalatinsk		28·9	7	6 5	+ 2	e 11 11	+18	—	—	—
Baku		29·0	316	i 6 2	− 2	11 31	+37	—	—	15·6
Erevan		32·5	312	e 6 53	+19	—	—	—	—	—
Tiflis		33·0	315	i 6 40a	+ 1	e 12 0	+ 3	e 7 54	PP	e 16·6

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Grozny		33·2	317	i 6 43	+ 3	e 14 14	SSS	—	—	—
Hong Kong		35·7	81	12 23	S	(12 23)	−16	15 56	SSS	18·4
Sverdlovsk		37·0	346	i 7 13	0	i 12 57	− 2	—	—	19·4
Ksara		37·3	297	e 6 54	−22	e 12 13	−51	—	—	—
Theodosia		40·6	315	7 44	+ 1	e 13 13	−41	—	—	—
Helwan		40·9	291	7 46	0	13 51	− 7	9 36	PP	—
Yalta		41·3	313	7 46	− 3	—	—	—	—	—
Simferopol		41·4	314	7 51	+ 1	—	—	—	—	—
Zi-ka-wei	z.	41·6	67	e 7 58	+ 7	14 24	+16	—	—	—
Manila		43·2	91	8 19	+15	14 44	+12	—	—	21·1
Moscow		44·4	330	i 8 15	+ 1	14 59	+10	—	—	25·1
Pulkovo		49·9	332	8 57	0	i 16 9	+ 2	—	—	e 24·1
Belgrade		50·8	310	i 9 3a	− 1	e 16 29	+ 9	—	—	e 39·3
Triest		55·6	312	—	—	e 19 16	?	—	—	e 34·1
Upsala		55·8	329	—	—	e 21 36?	SS	e 23 54	SSS	—
Potsdam		56·7	320	i 9 45	− 3	e 17 12	−28	—	—	e 29·6
Cheb		56·9	317	e 9 48	− 1	e 17 39	− 3	—	—	e 33·6
Jena		57·5	318	e 10 1	+ 8	—	—	—	—	30·6
Copenhagen		57·6	324	i 9 52a	− 2	—	—	—	—	29·6
Chur		58·6	313	e 9 58	− 3	—	—	—	—	—
Hamburg		58·7	321	e 10 0	− 2	—	—	—	—	27·9
Stuttgart		58·9	316	e 10 0	− 3	e 19 56	?	e 13 46	PP	e 35·6
Zurich		59·3	314	e 10 3a	− 3	—	—	—	—	—
Strasbourg		59·8	315	e 10 7	− 2	—	—	—	—	e 32·6
Basle		60·5	314	e 10 8	− 6	—	—	—	—	—
Neuchatel		60·8	314	e 10 10	− 6	—	—	—	—	—
De Bilt		61·5	320	i 10 20a	− 1	e 18 52	+10	i 14 20	PPP	e 32·6
Bergen		61·9	329	e 14 26	PPP	—	—	—	—	—
Uccle		62·0	318	i 10 23	− 1	e 18 48	0	e 14 22	PP	e 35·6
Paris		63·3	315	e 10 28	− 5	—	—	—	—	35·6
Algiers		64·1	301	e 10 35	− 3	e 18 5	−69	—	—	—
Kew		65·0	318	i 10 42	− 2	—	—	—	—	e 33·6
Oxford		65·5	318	14 58	PP	19 33	+ 1	—	—	e 34·6
Perth		65·5	143	—	—	19 36?	+ 4	—	—	—
Jersey		66·3	316	e 11 9	+17	—	—	—	—	e 35·6
Almeria		68·4	302	e 11 3	− 3	—	—	—	—	—
Rathfarnham Castle		68·4	321	i 10 54	−12	i 21 14	+67	—	—	33·6
Toledo		69·1	306	e 11 7	− 3	—	—	—	—	—
Granada		69·2	303	e 11 7	− 3	—	—	—	—	44·8
Scoresby Sund		72·5	340	11 31	+ 1	—	—	—	—	—
Mount Wilson	z.	122·9	12	i 19 2	[+ 4]	—	—	—	—	—
Riverside	z.	123·3	12	i 19 3	[+ 4]	—	—	—	—	—
Tucson		126·1	6	19 10	[+ 6]	—	—	—	—	e 73·9
La Paz	z.	145·6	291	i 19 46	[+ 6]	—	—	—	—	—

Additional readings :—
Bombay P_g? = +1m.21s., i = +1m.26s., S*N = +1m.56s.
Agra iN = +1m.42s., eP* = +1m.54s.
Calcutta iS*N = +6m.6s., iS_gN = +6m.40s.
Frunse e = +6m.59s.
Almata e = +11m.28s.
Tiflis i = +6m.50s., e = +12m.12s., eSSSZ = +14m.3s.
Hong Kong PP? = +12m.42s.
Sverdlovsk L_q = +16·2m.
Helwan SSS = +17m.0s.
Belgrade iZ = +9m.14s.
Potsdam iZ = +9m.56s., eN = +12m.36s.?
Copenhagen i = +9m.56s.
Stuttgart eEZ = +10m.12s. and +12m.15s., eSS = +24m.54s.
De Bilt iZ = +10m.30s.
Kew iZ = +10m.53s.
Toledo i = +11m.18s.
Riverside iZ = +19m.10s.
Long waves were also recorded at Prague, Bucharest, Medan, Bozeman, Wellington, San Fernando, Zinsen, Fordham, Bidston, Stonyhurst, Aberdeen, Edinburgh, and Göttingen.

Mar. 14d. 5h. 14m. 17s. Epicentre 32°·0N. 103°·5E.

$A = -\cdot1983$, $B = +\cdot8261$, $C = +\cdot5273$; $\delta = -19$; $h = +1$;
$D = +\cdot972$, $E = +\cdot233$; $G = -\cdot123$, $H = +\cdot513$, $K = -\cdot850$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Phu-Lien		11·5	165	e 2 49	+ 1	e 5 51	SSS	6 17	SS	6·9
Hong Kong		13·6	133	3 17	0	5 32	−18	3 53	PPP	6·6
Zi-ka-wei	Z.	15·3	88	e 3 36	− 3	6 36	+ 6	i 6 50	SS	—
Calcutta	N.	16·5	239	i 3 57	+ 3	i 7 11	SS	i 4 14	PP	i 8·3
Tainan		17·3	117	4 9	+ 5	7 33	SS	—	—	9·9
Taihoku		17·3	109	e 4 7	+ 3	e 7 26	SS	—	—	9·3
Heizyo		19·4	63	e 4 19	−11	8 10	+ 6	—	—	—
Zinsen		19·8	68	i 4 33k	− 2	i 8 16	+ 3	4 53	pP	i 11·1
Taikyu		21·2	72	e 4 42	− 7	e 8 42	+ 1	—	—	e 11·2
Husan		21·5	74	5 53	PPP	9 47	SSS	—	—	—
Dehra Dun	N.	21·8	273	e 4 59	+ 3	—	—	—	—	i 9·1
Agra		22·7	263	i 5 3	− 1	i 9 8	− 1	e 5 25	PP	11·5
Hukuoka B		22·7	79	e 4 59	− 5	e 9 13	+ 4	—	—	—
Kumamoto		23·0	81	5 5	− 2	9 18	+ 4	—	—	—
Takusima		23·1	87	5 8	0	9 24	+ 8	—	—	—
Manila		23·6	133	i 5 16k	+ 3	i 9 42	+17	—	—	12·6
Almata		23·8	307	5 16	+ 1	11 38	SS	—	—	—
Hamada		24·0	76	5 15	− 2	9 38	+ 6	—	—	—
Semipalatinsk		25·2	324	5 27	− 2	9 55	+ 3	—	—	—
Frunse		25·3	303	5 30	0	e 9 50	− 4	—	—	—
Andijan		26·4	297	5 39	− 1	10 20	+ 8	—	—	—
Kobe		26·6	75	5 37	− 5	10 24	+ 8	—	—	—
Osaka B		26·8	75	5 42	− 2	10 32	+13	—	—	—
Hyderabad		26·9	243	5 43	− 2	10 39	+19	—	—	14·2
Siomisaki		27·1	78	5 46	0	10 38	+14	—	—	—
Gihu		27·8	73	5 49	− 4	10 30	− 5	—	—	—
Medan		28·6	190	6 3	+ 3	10 53	+ 5	—	—	12·7
Tchimkent		28·7	300	5 49	−12	—	—	—	—	—
Tashkent		28·8	298	i 6 1	− 1	e 10 50	− 1	—	—	e 16·3
Nagano		28·9	70	6 10	+ 7	10 35	−18	—	—	—
Samarkand		30·4	294	6 17	+ 1	11 19	+ 3	—	—	—
Bombay		30·5	251	i 6 18	+ 1	i 11 21	+ 3	7 9	PP	14·7
Kodaikanal	E.	32·4	234	i 6 33	− 1	i 11 53	+5	—	—	—
Colombo	E.	33·3	226	e 6 43?	+ 2	—	—	—	—	—
Batavia		38·1	174	i 7 22	0	i 13 23	+ 7	—	—	—
Sverdlovsk		38·5	323	i 7 25	− 1	i 13 17	− 5	—	—	21·2
Baku		43·5	297	8 6	− 1	14 29	− 7	—	—	22·3
Grozny		46·3	302	8 29	0	e 15 15	− 1	—	—	—
Tiflis		47·2	299	8 35a	− 1	15 35	+ 6	10 30	PP	29·5
Erevan		47·6	297	e 8 23	−16	—	—	—	—	—
Moscow		50·9	319	9 4	− 1	16 18	− 3	e 11 24	PP	25·2
Yalta		54·4	304	e 9 25	− 6	—	—	—	—	—
Pulkovo		54·6	324	9 30	− 2	17 11	0	—	—	e 26·2
Ksara		55·8	291	e 9 43?	+ 2	e 17 34?	+ 6	—	—	—
Helwan		60·8	288	10 13	− 3	18 32	− 1	12 33	PP	—
Upsala	E.	60·9	325	10 14	− 3	—	—	—	—	—
Belgrade		63·7	308	e 10 32k	− 4	—	—	—	—	e 35·5
Copenhagen		64·8	322	i 10 40a	− 3	—	—	—	—	e 33·7
Potsdam		65·6	318	i 10 45	− 3	e 19 19	−14	e 14 13	PP	e 33·7
Bergen		66·6	329	10 54	0	—	—	—	—	e 33·7
Cheb		66·9	316	e 10 53	− 3	e 18 34	?	—	—	e 34·7
Hamburg		66·9	320	i 10 55	− 1	—	—	—	—	e 34·7
Jena		67·0	317	i 10 54	− 3	—	—	—	—	e 33·7
Triest		67·8	311	i 10 55	− 7	—	—	—	—	—
Florence		70·2	310	e 9 28	?	—	—	—	—	38·7
Stuttgart		69·3	316	e 11 9a	− 2	—	—	e 13 43	PP	e 36·7
Chur		69·9	314	e 11 12	− 3	—	—	—	—	e 37·4
De Bilt		70·2	320	i 11 15a	− 2	20 31	+ 3	—	—	e 33·7
Strasbourg		70·2	316	i 11 14	− 3	e 24 59	SS	e 13 50	PP	e 34·7
Zurich		70·3	314	e 11 15	− 2	—	—	—	—	—

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	70·7	344	11 18	− 2	—	—	—	—	—
Basle	70·8	314	e 11 18	− 2	—	—	—	—	—
Uccle	71·2	319	i 11 21a	− 2	—	—	—	—	e 34·7
Neuchatel	71·5	314	e 11 21	− 3	—	—	—	—	—
Moncalieri	71·9	313	e 10 43	−44	—	—	i 13 51	PP	—
Paris	73·2	317	i 10 43?	−48	e 19 43?	?	—	—	39·7
Kew	73·5	321	i 11 34	− 2	—	—	e 29 38	SSS	e 35·7
Bidston	73·9	324	—	—	e 28 43	SSS	—	—	e 35·7
Jersey	75·6	320	e 11 43	− 5	e 20 46	−43	—	—	e 35·7
Rathfarnham Castle	75·6	325	i 11 33	−15	—	—	—	—	35·7
Algiers	79·0	306	i 12 7	0	—	—	e 14 27	PP	—
Toledo z.	82·0	312	i 12 21	− 2	—	—	—	—	—
Almeria	82·7	309	e 12 34	+ 7	—	—	—	—	—
Granada	83·2	310	12 32	+ 3	—	—	—	—	50·9
Tucson	108·3	30	e 18 39	PP	—	—	e 21 18	PPP	e 54·1
La Paz z.	162·8	332	e 20 6a	[+ 3]	—	—	—	—	—

Additional readings :—
Phu-Lien e = +4m.43s.
Zi-ka-wei iZ = +3m.41s. and +7m.34s., iN = +8m.16s., iE = +8m.43s.
Calcutta iSSN = +7m.44s.
Zinsen SSE = +9m.9s.
Agra PPP = +5m.39s., iN = +9m.16s., SSE = +10m.8s.
Almata e = +7m.50s.
Hyderabad P_cPN = +8m.47s.
Bombay P_cP = +9m.16s., SS = +12m.54s., S_cSE = +16m.45s.
Batavia iPN = +7m.25s.
Sverdlovsk L_q = +18·4m.
Tiflis ePPPZ = +10m.57s., eSSZ = +19m.21s., eN = +23m.15s., eZ = +23m.39s.
Helwan e = +18m.52s., PS = +19m.1s.
Belgrade eZ = +11m.10s.
Stuttgart eZ = +11m.53s.
Algiers e = +12m.53s.
Tucson PP = +19m.16s.
Long waves were also recorded at Ogyalla, Prague, Göttingen, Aberdeen, Edinburgh, East Machias, Fordham, Philadelphia, and College.

Mar. 14d. Readings also at 0h. (New Plymouth and Wellington), 2h. (Andijan), 3h. (San Fernando), 4h. (Christchurch (2) and Simferopol), 5h. (Grozny, Tiflis, and Christchurch), 10h. (Lick), 11h. (Ksara and Perth), 12h. (Moncalieri), 14h. (Copenhagen, Andijan, Frunse, Tchimkent, and Samarkand), 15h. (Erevan, Tiflis (2), and Moncalieri), 20h. (Tiflis), 21h. (Tiflis (2), New Plymouth, Ksara, Lick, Riverside, Mount Wilson, Pasadena, Tinemaha, Haiwee, Fresno, and Berkeley), 23h. (Christchurch (2)).

Mar. 15d. Readings at 10h. (Frunse, Samarkand (2), near Andijan, and Tchimkent), 12h. (near Copiapo), 15h. (Copenhagen), 16h. and 23h. (near Wellington).

Mar. 16d. Readings at 0h. (near Tiflis), 1h. (Fresno, Tiflis, Ksara, and near Istanbul), 2h. (Mount Wilson, Riverside, Calcutta, Huancayo, La Paz, La Plata, near Copiapo, Santiago, San Javier, and near Algiers), 3h. (near Samarkand), 4h. (Cape Girardeau, Harvard, Weston, Mount Wilson, Pasadena, Tinemaha, Riverside, La Paz, Rio de Janeiro, La Plata, Huancayo, near Copiapo, Santiago, and San Javier), 5h. (Ksara, Andijan, La Plata, and near Copiapo), 6h. (La Plata, La Paz, Huancayo, near Copiapo (2), and Santiago), 8h. (near Andijan), 9h. (near Samarkand), 10h. (Semipalatinsk), 16h. (Frunse and near Andijan), 19h. (Tiflis), 20h. (Oaxaca, Tacubaya, Mount Wilson, Riverside, Nagoya, near Mizusawa, near Hukuoka B, and Koti), 22h. (near Malabar).

Mar. 17d. Readings at 1h. (La Paz, La Plata, Bucharest, Ksara, Yalta, near Simferopol, and Theodosia), 2h. (Tucson, Mount Wilson, Pasadena, Riverside, Oaxaca, Puebla, Tacubaya, San Javier, and near Copiapo), 3h. (near Fort de France and Ksara), 4h. (New Plymouth), 5h. (Huancayo, La Paz, La Plata, Rio de Janeiro, and near Copiapo), 7h. (Batavia, near Malabar, and near Copiapo), 8h. (near Manila), 9h. (Harvard, San Juan, and near Wellington), 10h. (near Bucharest), 11h. (Samarkand), 12h. (Sverdlovsk, Tashkent, Tiflis, and Ksara), 13h. (near Copiapo), 14h. (near Tiflis), 16h. (Cape Girardeau, Fresno, and Riverside), 19h. (College), 20h. (Pasadena, Riverside, and Wellington), 23h. (Christchurch and near Andijan).

Mar. 18d. 2h. 8m. 51s. Epicentre 46°·2N. 147°·1E.

Slight at Kusiro, Urakawa, and Hatinohe.

Epicentre 46°·2N. 147°·1E. Macroseismic radius 200-300kms. Depth $h = 320$kms.

See Seismological Bulletin of the Central Met. Obs., Japan, for the year 1938, Tokyo, 1940, pp. 27-28. Macroseismic chart p. 28.

$A = -\cdot5832$, $B = +\cdot3773$, $C = -\cdot7194$; $\delta = +1$; $h = -4$;
$D = +\cdot543$, $E = +\cdot840$; $G = -\cdot604$, $H = +\cdot319$, $K = -\cdot695$.

A depth of focus 0·040 has been assumed.

		△	Az.	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
Nemuro		2·7	201	1 4	PPP	1 50	SSS
Kusiro		3·8	211	0 50	−14	1 39	−15
Asahigawa		4·1	237	1 16	+ 9	2 9	+ 9
Haboro		4·2	247	1 15	+ 7	—	—
Obihiro		4·3	223	1 20	PP	2 14	SS
Urakawa		5·1	220	1 24	+ 5	2 29	+ 9
Sapporo		5·2	235	1 22a	+ 2	2 10	−12
Muroran		5·8	231	1 27a	0	—	—
Mori		6·3	251	1 32a	− 1	—	—
Hakodate		6·4	228	1 36	+ 2	—	—
Hatinohe		7·0	218	1 50a	+ 8	3 7	+ 5
Aomori		7·1	223	1 41	− 2	2 58	− 6
Miyako		7·6	212	1 48k	− 1	3 11	− 4
Morioka		7·8	216	1 52a	0	3 18	− 2
Mizusawa		8·3	214	i 1 58	0	i 3 28	− 3
Sendai		9·2	213	2 9a	0	3 46	− 5
Hukusima		9·8	213	2 17	+ 1	4 6	+ 2
Kakioka		11·2	210	2 33	− 1	4 43	+ 7
Takada		11·2	219	2 39	+ 5	—	—
Tukubasan		11·3	210	2 35	0	4 34	− 4
Maebasi		11·5	214	2 39	+ 1	—	—
Tyosi		11·5	207	2 46	+ 8	—	—
Kumagaya		11·6	213	2 39	0	4 47	+ 3
Nagano		11·6	218	2 39	0	4 48	+ 4
Wazima		11·6	226	2 25	−14	—	—
Oiwake		11·8	216	2 41a	0	4 51	+ 2
Tokyo Cen. Met. Ob.		11·8	210	2 46	+ 5	4 49	0
Toyama		12·0	221	2 43	− 1	—	—
Yokohama		12·1	210	2 48	+ 3	—	—
Hunatu		12·4	213	2 50	+ 1	5 2	0
Kohu		12·4	214	2 48	− 1	5 2	0
Mera		12·5	209	2 51	+ 1	—	—
Misima		12·6	212	2 52	+ 1	—	—
Numadu		12·7	212	2 59	+ 7	—	—
Gihu		13·3	220	2 58a	− 2	5 20	− 2
Nagoya		13·4	218	e 2 44	−17	—	—
Ibukisan		13·5	221	2 58	− 4	—	—
Hikone		13·6	221	2 58	− 5	—	—
Kyoto		14·1	222	3 2	− 7	—	—
Toyooka		14·1	226	3 7	− 2	—	—
Osaka		14·5	221	3 11	− 3	5 48	0
Wakayama		15·0	221	3 16	− 4	—	—
Siomisaki		15·4	218	3 21	− 4	—	—
Hirosima		16·2	229	3 32	− 1	6 24	0
Keizyo		17·3	247	e 5 16	?	—	—
Kumamoto		18·4	228	3 57	+ 1	7 5	− 2
Miyazaki		18·7	224	5 16	+77	—	—
Pasadena	z.	69·2	62	i 10 35a	− 2	—	—
Mount Wilson	z.	69·3	62	i 10 36a	− 2	—	—
Riverside	z.	69·8	62	i 10 38a	− 3	—	—

Mar. 18d. Readings also at 0h. (Malaga), 2h. (Bucharest), 3h. (Padova, Triest, and Samarkand), 4h. (Tiflis, New Plymouth, and Grozny), 9h. (La Paz), 10h. (Río de Janeiro and La Paz), 15h. (Wellington), 18h. (Ksara), 19h. (Wellington).

Mar. 19d. Readings at 2h. (Istanbul and near Samarkand), 3h. (Göttingen, Strasbourg, Jena, near Stuttgart, near Sofia, near Samarkand, and near San Javier), 4h. (Andijan), 6h. (Samarkand), 9h. (Almata, Andijan, Semipalatinsk, Sverdlovsk, Ksara, Mount Wilson, Pasadena, Riverside, and near Zinsen), 12h. (Strasbourg, Göttingen, near Stuttgart, near Nagoya, near New Plymouth, and Wellington), 13h. (Kew and Manzanillo), 14h. (Wellington), 19h. (Fordham), 20h. (near Fort de France), 22h. (Wellington), 23h. (near Nagoya).

Mar. 20d. Readings at 0h. (Balboa Heights), 1h. (Christchurch, Honolulu, Huancayo, and La Paz), 5h. (near Apia), 6h. (Fort de France) 8h. (Moncalieri and Samarkand), 9h. (Fordham, La Paz, Samarkand, Fresno, San Francisco, near Berkeley, Branner, and Lick), 10h. (Samarkand), 11h. (Cheb and Samarkand), 14h. (Cheb, near Batavia, and Malabar), 15h. (Manzanillo, Harvard, Fordham, and near Fort de France), 16h. (Malabar), 18h. (near Wellington), 20h. (Mount Wilson, Huancayo, and La Paz), 22h. (near Batavia, Malabar, and near Mizusawa) 23h. (near Medan and near Nagoya).

Mar. 21d. Readings at 1h. (Apia, Christchurch, Wellington, Brisbane, Melbourne, Riverview, Sydney, Perth, Manila, Mount Wilson, Pasadena, Riverside, Tucson, Ottawa, Harvard, Honolulu, Tashkent, Sverdlovsk, Tiflis, Ksara, Moscow, Pulkovo, De Bilt, Paris, Strasbourg, and Granada), 2h. (Honolulu, Huancayo, La Paz, Copenhagen, Kew, Cheb, Jersey, Fordham, and Philadelphia), 3h. (near Apia), 4h. (Almata, Frunse (2), Rio de Janeiro, Samarkand, near Andijan (2), and Tashkent (2)), 7h. (Amboina), 8h. (Mount Wilson, Pasadena, Riverside, Tucson, and Fordham), 9h. (Apia), 13h. (Sverdlovsk, Almata, near Frunse, Andijan, Samarkand, and Tashkent), 18h. (near Tiflis), 20h. (near Riverview), 23h. (Edinburgh).

Mar. 22d. 15h. 22m. 11s. Epicentre 52°·6N. 132°·1W.

Felt on Queen Charlotte Islands and at Prince Rupert (British Columbia, Canada).

Epicentre Queen Charlotte Islands 52°·2N. 133°·1W. (J.S.A.).
52°·6N. 132°·1W. (U.S.C.G.S.).

See Annales de l'Institut de Physique du Globe de Strasbourg, 1938, Tome III, 2e partie, Mende, 1941, p. 15.

$A = -\cdot4089$, $B = -\cdot4525$, $C = +\cdot7924$; $\delta = -15$; $h = -6$;
$D = -\cdot742$, $E = +\cdot670$; $G = -\cdot531$, $H = -\cdot588$, $K = -\cdot610$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sitka		4·8	339	i 1 19a	+ 4	i 2 18	+ 6	i 1 39	P_g	—
Seattle		8·0	124	—	—	e 3 40	+ 7	—	—	e 4·8
Ferndale	E.	13·2	153	e 3 24	PP	e 5 57	SS	—	—	e 7·1
Butte		14·3	110	e 3 32	+ 6	e 6 11	+ 5	3 39	PP	6·9
College		14·7	333	e 3 40	+ 9	i 6 44	SSS	3 55	PPP	7·3
Ukiah		14·8	152	e 3 32	0	e 6 18	0	—	—	i 6·8
Bozeman		15·4	109	e 3 40	0	6 31	− 1	e 7 9	SSS	e 7·5
Berkeley		16·3	151	e 3 53	+ 1	e 7 13	SS	—	—	e 9·1
San Francisco		16·3	152	e 3 52	0	e 7 18	SSS	—	—	—
Branner		16·7	152	e 4 4	+ 7	e 7 17	SS	—	—	—
Lick		17·0	152	e 4 5	+ 4	e 7 38	SS	—	—	—
Fresno	N.	18·1	146	e 4 17	+ 3	—	—	—	—	—
Haiwee		19·3	142	e 4 32	+ 3	e 8 21	+19	—	—	—
Santa Barbara		20·2	148	e 4 39	0	e 8 36	+15	—	—	—
Mount Wilson		21·0	145	e 4 47	0	e 8 50	+13	—	—	—
Pasadena		21·0	145	i 4 47	0	i 8 48	+11	—	—	e 10·1
Riverside		21·4	145	i 4 50	− 1	e 8 55	+10	—	—	—
La Jolla	Z.	22·5	145	e 5 3	+ 1	—	—	—	—	—
Denver		22·7	114	e 4 49	−15	e 8 49	−20	e 5 10	PP	e 11·0
Tucson		25·5	134	e 5 32	0	i 10 12	+15	i 6 6	PP	e 12·6

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Chicago		31·6	92	e 6 29	+ 3	11 38	+ 3	e 7 28	PP	15·2
Florissant	Z.	31·8	99	e 6 36	+ 8	e 11 59	+21	—	—	—
St. Louis	E.	32·0	99	e 6 28	− 2	i 11 54	+12	e 7 28	PP	e 14·6
Cape Girardeau		33·2	101	e 6 39	− 1	e 13 14	SS	e 7 45	PP	—
Little Rock		33·3	106	e 6 41	0	e 12 14	+12	i 14 13	SS	e 14·8
Ann Arbor		33·7	87	e 6 49	+ 4	e 12 13	+ 5	e 7 55	PP	e 17·0
Cincinnati		35·1	93	e 7 2	+ 5	e 12 40	+10	e 8 12	PP	e 17·0
Buffalo		36·3	83	i 7 12	+ 5	i 12 50	+ 2	—	—	i 19·1
Ottawa		36·9	78	7 12	0	12 57	− 1	8 37	PP	17·8
Honolulu		37·0	222	e 7 21	+ 8	i 13 13	+14	e 8 40	PP	e 14·6
Ithaca		38·0	83	—	—	e 13 19	+ 5	—	—	e 20·3
Shawinigan Falls		38·0	74	7 28	+ 7	13 29	+15	—	—	19·8
Pennsylvania	N.	38·1	86	—	—	e 13 0	−16	e 16 4	SS	e 19·6
Seven Falls		38·8	73	7 31	+ 3	13 30	+ 4	9 6	PPP	18·8
Georgetown		39·8	87	7 35	− 1	i 13 26	−16	9 7	PP	—
Williamstown		39·8	79	i 7 38	+ 2	13 49	+ 7	e 9 5	PP	e 19·3
Philadelphia		40·3	85	i 7 47k	+ 7	e 13 32	−17	i 9 18	PP	e 16·7
Columbia		40·6	96	e 7 37	− 6	e 13 33	−21	e 9 10	PP	e 16·0
Fordham		40·6	83	i 7 40	− 3	e 13 32	−22	e 9 8	PP	—
Harvard		41·0	79	i 7 48k	+ 2	i 14 9	+10	i 9 7	PP	e 20·6
Weston		41·2	79	e 7 47	− 1	i 14 18	+16	i 9 12	PP	19·3
East Machias		42·1	74	i 8 5	+10	i 14 25	+ 9	i 9 44	PP	18·8
Ivigtut		43·6	44	8 13	+ 5	14 50	+12	18 1	SS	21·8
Scoresby Sund		47·5	26	8 38	0	15 43	+ 9	19 19	SS	23·8
San Juan		61·0	67	e 10 39	+21	e 18 38	+ 3	—	—	30·3
Bergen		62·3	23	10 29	+ 3	18 49?	− 3	—	—	29·8
Aberdeen		63·2	28	e 10 30	− 2	e 19 8	+ 5	e 14 23	PPP	e 32·7
Edinburgh		63·9	30	e 10 39	+ 2	i 19 28	+16	13 1	PP	30·8
Rathfarnham Castle		65·2	33	i 10 46	+ 1	e 19 45	+17	e 13 40	PP	32·8
Upsala	N.	65·3	17	10 47	+ 1	e 19 17	−12	e 23 47	SS	e 30·8
Durham		65·4	30	i 10 50	+ 3	i 19 18	−12	—	—	—
Stonyhurst		65·9	31	10 46	− 4	19 41	+ 4	—	—	27·8
Bidston		66·1	32	i 10 55	+ 4	i 20 7	PS	i 13 28	PP	31·8
Fort de France		66·9	96	e 10 56	0	—	—	—	—	—
Zinsen		67·3	303	—	—	(e 19 6)	−48	—	—	e 19·1
Oxford		68·1	31	i 11 2a	− 2	i 20 7	+14	i 24 44	SS	i 28·3
Copenhagen		68·2	21	11 5	+ 1	20 20	+16	13 37	PP	—
Hukuoka B		68·3	297	e 11 19	+14	e 20 11	+ 5	—	—	—
Kew		68·7	31	i 11 7a	0	i 20 19	+ 9	i 13 47	PP	31·8
Hamburg		69·6	24	e 11 13a	0	e 20 26	+ 5	e 13 43	PP	e 33·8
De Bilt		69·7	27	i 11 14a	0	e 20 37	+15	e 13 9	PP	e 32·8
Jersey		70·1	32	e 11 10	− 6	—	—	—	—	e 38·8
Sverdlovsk		70·4	353	i 11 20	+ 2	i 20 36	+ 6	—	—	42·0
Uccle		70·6	29	i 11 19a	0	20 16	−17	e 13 56	PP	e 32·8
Göttingen		71·4	25	e 11 24	0	—	—	—	—	—
Potsdam		71·4	22	e 11 19	− 5	20 59	+17	e 13 55	PP	e 31·8
Moscow		71·7	7	i 11 26	0	20 47	+ 2	—	—	38·3
Paris		71·9	30	e 11 26	− 1	—	—	14 10	PP	33·8
Jena		72·4	24	e 11 21	− 9	e 21 1	+ 8	e 29 31	SSS	e 32·3
Cheb		73·4	24	e 11 40	+ 4	e 21 16	+11	—	—	e 34·8
Karlsruhe		73·4	27	e 11 31	− 5	e 21 25	+20	—	—	e 38·8
Strasbourg		73·6	27	i 11 39a	+ 2	e 21 9	+ 2	e 14 20	PP	e 37·8
Semipalatinsk		73·8	340	11 41	+ 3	—	—	—	—	—
Stuttgart		73·8	26	i 11 39a	+ 1	e 21 19	+10	e 14 24	PP	e 37·8
Prague		73·9	22	e 11 40	+ 1	e 21 19	+ 9	e 26 13	SS	e 34·8
Basle		74·5	27	e 11 43	+ 1	—	—	—	—	—
Neuchatel		74·8	27	e 11 44	0	—	—	—	—	—
Zi-ka-wei	Z.	74·9	302	11 45	+ 1	21 33	+11	14 43	PP	42·2
Zurich		74·9	27	e 11 45	+ 1	e 21 35	+13	—	—	—
Chur		75·6	27	e 11 49	+ 1	e 21 45	+16	—	—	—
Moncalieri		76·8	29	i 11 49	− 6	e 21 39	SS	e 17 9	PPP	30·1
Ogyalla		76·8	21	11 50	− 5	21 59	SS	—	—	41·3
Graz		76·9	23	e 12 23	+27	e 21 54	+11	e 26 59	SS	e 40·8
Budapest	E.	77·3	20	e 12 15	+17	e 22 4	+16	—	—	e 42·8
	N.	77·3	20	e 12 4	+ 6	e 22 2	+14	i 14 25	PP	e 42·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Toledo		77·5	31	e 11 58	− 1	e 22 1	+11	e 27 7	SS	e 33·6
Padova		77·6	25	e 12 10	+10	21 51	0	—	—	—
Marseilles		77·7	31	e 18 19	?	22 7	PS	—	—	e 36·8
Triest		77·8	24	12 2	+ 1	22 3	+10	15 3	PP	e 41·3
Kesckemet	z.	78·0	20	e 12 0	− 2	—	—	e 15 23	PP	—
Florence		78·9	27	e 12 19	+12	22 19	+14	—	—	42·8
San Fernando		79·6	43	e 12 14	+ 4	i 22 28	+16	e 15 20	PP	37·8
Granada		80·0	40	i 12 17	+ 4	i 23 9	− 8	—	—	—
Belgrade		80·1	19	e 12 14k	+ 1	e 22 32	+14	15 32	PP	e 44·5
Huancayo		80·6	124	e 12 13	− 3	22 27	+4	e 15 3	PP	—
Almeria		80·7	40	e 12 18	+ 2	e 22 52	+28	—	—	e 40·9
Bucharest		81·6	16	e 12 22k	+ 1	i 22 47	+14	15 35	PP	39·1
Frunse		82·2	341	12 24	0	—	—	—	—	46·5
Sofia		82·7	18	e 12 28	+ 1	e 22 54	+10	—	—	—
Algiers		82·8	35	e 12 30	+ 3	e 22 49	PS	e 17 49	PPP	40·8
Grozny		84·4	2	e 12 42	+ 6	e 21 29	?	—	—	—
Andijan		84·6	342	12 35	− 1	—	—	—	—	43·8
Tashkent		84·6	345	i 10 44	?	e 22 3	−60	—	—	40·6
Istanbul		85·3	14	12 42	+ 2	23 7	− 3	15 58	PP	e 50·8
Hong Kong		85·9	302	12 47	+ 4	23 18	+ 2	16 19	PP	42·8
Tiflis		86·0	3	i 12 45a	+ 2	i 23 21	+ 4	18 6	PPP	e 39·8
Samarkand		86·6	346	e 12 56	+10	—	—	—	—	—
La Paz	z.	88·1	120	i 12 53a	− 1	23 47	+10	i 16 33	PP	47·3
Manila		88·5	292	i 12 59k	+ 3	i 23 56	+15	—	—	—
Phu-Lien		90·9	307	e 13 14	+ 7	e 24 13	+10	—	—	—
Ksara		93·3	9	e 13 19a	+ 1	e 24 42?	+18	17 6	PP	45·3
Agra	E.	96·4	332	e 13 31	− 1	24 12	[+ 3]	17 25	PP	45·3
Helwan		96·6	13	e 13 43	+10	i 24 22	[+12]	e 18 9	PP	—
Calcutta	N.	97·3	322	e 13 47	+11	e 24 16	[+ 3]	i 17 40	PP	e 46·8
Brisbane		102·8	242	i 18 19	PP	i 24 43	[+ 3]	i 27 37	PS	—
Wellington		104·2	218	i 13 49?	−18	e 32 49?	SS	e 27 49?	PS	e 47·8
Hyderabad		105·4	329	17 41	?	—	—	—	—	52·8
Bombay		105·6	335	e 14 14	P	e 25 9	[+16]	e 18 38	PP	52·4
Christchurch		106·9	218	e 13 32	P	e 24 19	[−40]	e 18 28	PP	51·5
Rio de Janeiro		107·2	104	e 18 49	PP	—	—	—	—	e 51·8
Riverview		108·8	239	—	—	e 25 7	[0]	e 28 27	PS	e 50·4
Sydney		108·8	239	—	—	e 25 11	[+ 4]	28 32	PS	e 48·8
Medan		109·6	305	—	—	24 49?	[−21]	—	—	—
Kodaikanal	E.	112·5	328	e 13 58	P	—	—	34 51	SS	—
Melbourne		115·1	240	e 19 49	PP	i 25 42	[+10]	i 29 41	PS	53·8
Adelaide		116·5	247	e 20 1	PP	e 26 59	{+ 9}	e 29 47	PS	49·4
Perth		127·7	294	e 17 11	?	i 31 26	PS	38 19	SS	65·4
Cape Town		151·9	60	e 22 52	PP	43 12	SS	i 36 47	PPS	e 75·8

Additional readings :—
Sitka i = +7m.16s.
Butte S = +6m.41s.
Ukiah eS = +6m.29s.
Berkeley eZ = +7m.9s., eE = +7m.16s.
San Francisco ePN = +3m.55s., eN = +7m.51s.
Branner eSN = +7m.20s.
Fresno eN = +10m.36s.
Denver iPN = +4m.55s., eE = +5m.3s., ePPN = +5m.13s., eE = +5m.43s. and +7m.11s., eN = +7m.55s., eE = +9m.22s., eSSN = +19m.37s.
Tucson P = +5m.46s., i = +5m.51s., iS = +10m.19s., i = +10m.27s.
Chicago eP = +6m.42s., S = +12m.15s.
St. Louis iPPPE = +7m.44s., eE = +11m.26s., eSSE = +13m.13s.
Cape Girardeau eEN = +12m.10s.
Little Rock eN = +6m.53s., iSN = +12m.24s.
Ann Arbor eSS = +14m.1s.
Ottawa SS = +15m.1s.
Honolulu eP = +7m.33s., P = +7m.41s., iPPP = +8m.58s., P_cP = +9m.25s.
Ithaca e = +17m.49s.
Pennsylvania iN = +13m.17s., eN = +17m.9s. and +18m.18s.
Seven Falls SSS = +16m.19s.
Georgetown +15m.50s., SS = +16m.7s., SSS = +17m.31s.
Williamstown PPP = +9m.39s., iSS = +16m.19s.
Philadelphia i = +9m.3s., iS = +13m.55s., i = +16m.3s., iS_cS = +18m.8s.

Continued on next page.

Columbia eP = +7m.57s., ePcP = +9m.24s., ePPP = +9m.52s., eS = +14m.0s.
Fordham i = +9m.18s., iS = +14m.0s., iSS = +17m.0s.
Weston iPcPZ = +9m.47s., iSS = +17m.7s., ePcSScPE = +25m.13s.
East Machias P = +8m.13s., ePPP = +10m.27s., i = +14m.32s., iS = +14m.48s., iSS = +17m.27s., iScS = +18m.13s.
Ivigtut +10m.2s.
Scoresby Sund ? = +10m.33s. and +14m.6s.
San Juan P = +10m.43s., iS = +18m.43s.
Aberdeen eSS = +23m.13s., eSSS = +25m.48s., e = +30m.18s.
Edinburgh i = +10m.49s., +14m.47s., +18m.36s., +19m.40s., +20m.43s., and +28m.21s.
Rathfarnham Castle ePPP = +14m.50s., i = +20m.35s., iScS = +20m.58s., iSS = +24m.0s., iSSS = +26m.5s.
Bidston i = +11m.12s., iPPP = +15m.5s., iScS = +21m.0s., iSSS = +27m.55s.
Oxford iPE = +11m.6s., iS = +21m.12s.
Copenhagen eE = +12m.13s. and +19m.13s., eN = +19m.29s., +20m.43s., +21m.13s., and +24m.19s., SS = +24m.37s., SSS = +27m.49s.
Kew i = +11m.12s., iPPP = +15m.29s., iZ = +21m.1s., iScSEN = +21m.13s., iSS = +24m.55s., eZ = +28m.1s., iSSSEN = +28m.38s.
Hamburg eSS = +25m.13s., eSSS = +28m.43s.
Jersey eP = +9m.28s., eS = +18m.7s., e = +21m.31s.
Sverdlovsk L_g = +31·7m.
Uccle iN = +21m.24s., SSN = +25m.26s.
Potsdam iPZ = +11m.24s., eZ = +13m.31s., PPN = +13m.59s.?, ePPPNZ = +15m.37s., eN = +20m.31s., ePSZ = +21m.25s., eE = +22m.49s., +23m.37s., and +24m.37s., eSSE = +25m.31s.
Paris PPP = +15m.53s.
Jena eZ = +11m.29s., eE = +21m.7s.
Cheb e = +30m.15s.
Strasbourg ePPPZ = +15m.43s., eSE = +21m.22s., ePSZ = +21m.57s., eSSE = +26m.7s., iSSN = +26m.13s.
Stuttgart eZ = +13m.37s., ePPP = +16m.9s., ePS = +21m.55s., eSS = +26m.8s., eSSS = +29m.49s.
Prague ePS = +21m.49s., eSSS = +29m.49s.
Zi-ka-wei iZ = +11m.49s., PPPZ = +16m.37s., PPPPZ = +17m.51s., iZ = +39m.31s.
Zurich e = +13m.28s.
Ogyalla ePE = +12m.19s., e = +14m.49s.?
Toledo e = +30m.29s.
Budapest iN = +22m.34s.
Marseilles e = +25m.26s.
Triest iSE = +22m.7s.
Kecskemet eZ = +12m.17s., +13m.19s., and +16m.21s.
Belgrade PcPZ = +12m.29s.
Huancayo eP = +12m.18s., P = +12m.33s., ePPP = +17m.4s.
Bucharest PSE = +23m.35s., SSEN = +28m.25s., ?EN = +32m.25s.
Sofia eE = +22m.59s., PS = +23m.2s.
Algiers eSSS = +31m.50s.
Tashkent i = +11m.36s., e = +14m.25s. and +15m.15s., i = +18m.12s., e = +20m.23s.
Istanbul PPP = +17m.50s., SS = +28m.47s.
Hong Kong SS = +28m.51s.
Tiflis eSKSE = +23m.25s., eEZ = +23m.34s., eSSSZ = +33m.53s.
La Paz eZ = +24m.49s.
Ksara PPP = +19m.13s., ePS = +25m.46s., ePPS = +26m.16s.?
Agra PPPE = +19m.26s., SE = +24m.15s., PSE = +25m.57s., PPSE = +26m.41s., SSE = +31m.23s.
Helwan i = +25m.7s. and +26m.31s.
Calcutta ePPPN = +19m.52s., eSKKSN = +24m.55s., iSN = +25m.16s., ePSN = +26m.27s., ePPSN = +27m.5s., iSSN = +31m.57s.
Brisbane eE = +20m.49s., iSE = +24m.49s., iE = +26m.1s.
Bombay ePS = +27m.59s., iSSS = +38m.17s.
Christchurch iPKPZ = +17m.31s., eSKKS = +25m.20s., iPS = +28m.16s., iPPS = +29m.13s., SS = +34m.4s., SSS = +38m.32s., L_gE = +45m.32s.
Riverview eE = +28m.31s. and +34m.30s., eN = +34m.36s.
Sydney e = +33m.1s.
Melbourne i = +26m.49s., e = +34m.55s.
Adelaide iS? = +35m.18s.
Perth PP = +22m.25s., PPP = +26m.51s., PS = +35m.44s., i = +41m.9s. and +46m.31s., SSS = +50m.15s., i = +54m.51s.
Cape Town ePPE = +23m.45s., iPSKSN = +33m.59s., iPSKSE = +34m.7s., SSE = +43m.16s.
Long waves were also recorded at Besançon, Malaga, and La Plata.

Mar. 22d. 22h. 27m. 44s. Epicentre 52°·6N. 132°·1W. (as at 15h.).

$A = -\cdot4089$, $B = -\cdot4525$, $C = +\cdot7924$; $\delta = -15$; $h = -6$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Sitka		4·8	339	i 1 11	− 4	i 2 25	+13	i 1 28	P*	—
Butte		14·3	110	3 27	+ 1	e 6 10	+ 4	6 28	SS	e 6·9
College		14·7	333	e 3 39	PP	e 6 18	+ 2	3 46	PPP	e 6·4
Ukiah		14·8	152	—	—	e 6 26	+ 8	—	—	e 6·7
Bozeman		15·4	109	e 3 40	0	e 6 31	−1	—	—	7·5
Saskatoon		15·6	81	e 3 38	− 5	e 7 58	SSS	—	—	9·3
Berkeley		16·3	151	e 3 45	− 7	—	—	4 0	PP	—
Fresno	N.	18·1	146	e 4 15	+ 1	—	—	—	—	—
Haiwee		19·3	142	e 4 29	0	—	—	—	—	—
Santa Barbara		20·2	148	i 4 36	− 3	e 8 33	+12	—	—	—
Mount Wilson		21·0	145	i 4 46	− 1	e 8 45	+ 8	—	—	—
Pasadena		21·0	145	i 4 46a	− 1	e 8 48	+11	—	—	—
Riverside		21·4	145	i 4 50	− 1	e 8 56	+11	—	—	—
La Jolla		22·5	145	e 5 4	+ 2	—	—	—	—	—
Tucson		25·5	134	e 5 32	0	e 10 4	+ 7	e 6 21	PPP	e 10·5
Chicago		31·6	92	—	—	e 11 38	+ 3	—	—	e 13·3
Florissant		31·8	99	e 6 28	0	—	—	—	—	e 16·3
St. Louis		32·0	99	e 6 27	− 3	i 11 43	+ 1	e 7 30	PP	—
Cape Girardeau		33·2	101	e 6 33	− 7	—	—	e 7 35	PP	e 19·7
Little Rock	N.	33·3	106	e 6 38	− 3	e 11 11	−51	—	—	i 17·5
Ottawa		36·9	78	7 11	− 1	13 0	+ 2	—	—	18·3
Shawinigan Falls		38·0	74	e 7 30	+ 9	—	—	—	—	19·3
Pennsylvania	N.	38·1	86	—	—	e 17 36	?	—	—	—
Seven Falls		38·8	73	—	—	i 13 29	+ 3	—	—	23·3
Williamstown		39·8	79	i 7 36	0	—	—	9 10	PP	—
Philadelphia		40·3	85	e 9 3	PP	e 13 47	− 2	—	—	e 16·3
Columbia		40·6	96	e 9 20	PP	e 13 51	− 3	—	—	e 16·4
Fordham		40·6	83	i 7 41	− 2	e 13 54	0	e 9 13	PP	20·4
Harvard	Z.	41·0	79	i 7 47a	+ 1	—	—	e 9 22	PP	—
Weston		41·2	79	i 7 47	− 1	e 13 58	− 4	i 9 17	PP	e 21·4
San Juan		61·0	67	—	—	e 18 40	+ 5	—	—	e 30·7
Rathfarnham Castle		65·2	33	e 11 27	+42	e 21 30	?	—	—	38·8
Copenhagen		68·2	21	11 5a	+ 1	—	—	—	—	38·3
Kew		68·7	31	—	—	e 21 16?	+66	—	—	39·3
Hamburg		69·6	24	e 11 14	+ 1	—	—	—	—	e 43·3
De Bilt		69·7	27	i 11 15	+ 1	e 20 22	+11	—	—	e 36·3
Jersey		70·1	32	e 11 37	+21	e 21 19	PPS	—	—	e 41·7
Sverdlovsk		70·4	353	11 20	+ 2	20 35	+ 5	—	—	40·3
Uccle		70·6	29	e 11 19	0	e 20 47	+14	—	—	e 38·3
Moscow		71·7	7	e 11 27	+ 1	20 48	+ 3	—	—	e 37·8
Paris		71·9	30	i 11 31	+ 4	—	—	—	—	39·3
Cheb		73·4	24	—	—	e 22 1	PPS	—	—	e 42·3
Strasbourg		73·6	27	e 11 45	+ 8	e 21 16	+ 9	—	—	e 42·5
Stuttgart		73·8	26	e 11 38	0	e 21 16	+ 7	e 14 28	PP	e 39·3
Basle		74·5	27	e 11 43	+ 1	—	—	—	—	—
Neuchatel		74·8	27	e 11 43	− 1	—	—	—	—	—
Zurich		74·9	27	e 11 46	+ 2	—	—	—	—	—
Chur		75·6	27	e 11 49	+ 1	—	—	—	—	—
Triest		77·8	24	—	—	e 22 56	PPS	—	—	—
Granada		80·0	40	e 12 16	+ 3	—	—	—	—	45·0
Grozny		84·4	2	e 12 41	+ 5	—	—	—	—	—
Andijan		84·6	342	e 12 41	+ 5	—	—	—	—	—
Tashkent		84·6	345	e 11 32	−64	e 27 53	SS	—	—	e 49·6
Tiflis		86·0	3	e 12 58	+15	e 23 16	− 1	—	—	e 49·3
Manila		88·5	292	14 37	?	23 51	+10	—	—	—
Ksara		93·3	9	e 13 26	+ 8	e 25 52	PS	e 31 50	SSP	51·6

Additional readings :—
Sitka i = +1m.35s., +2m.4s., and +2m.15s.
Berkeley eZ = +3m.54s., +4m.14s., and +4m.24s.
Pasadena iSE = +8m.53s.
Tucson i = +5m.41s., eS = +10m.14s.

Continued on next page.

St. Louis iPPPN = +7m.46s., eSE = +11m.46s., iN = +12m.53s.
Cape Girardeau eE = +6m.40s., eN = +16m.33s., iN = +17m.36s.
Pennsylvania eN = +19m.42s., +20m.5s., and +20m.51s.
Seven Falls i = +20m.2s.
Williamstown i = +22m.26s. and +25m.19s.
Columbia eS = +13m.59s.
Fordham iPPP = +9m.30s.
Jersey e = +12m.43s. and +17m.52s.
Tashkent i = +11m.40s. and +21m.18s., e = +35m.4s.
Long waves were also recorded at Aberdeen, Seattle, Honolulu, Stonyhurst, Bidston, Potsdam, Prague, San Fernando, and Almeria.

Mar. 22d. Readings also at 1h. (Tchimkent, Almata, Algiers, Frunse, Tashkent, Sverdlovsk, Andijan, and Samarkand), 3h. (Branner, Lick, and Berkeley), 4h. (New Plymouth and Wellington (2)), 6h. (Fordham), 7h. (Fort de France), 8h. (Fort de France), 10h. (Fordham and Ksara), 12h. (Sebastopol (2)), 13h. (Tashkent), 14h. (Laibach), 15h. (Mizusawa, Nagoya, Basle, Copenhagen, Chur, Samarkand, Sverdlovsk, Andijan, Pasadena, and Riverside), 16h. (La Paz, Tiflis, and Grozny), 17h. (Fresno), 19h. (Riverside and Wellington), 22h. (Riverside, Mount Wilson, and Pasadena), 23h. (Andijan, Samarkand, and New Plymouth).

Mar. 23d. 14h. 5m. 46s. Epicentre 16°·3N. 98°·6W. (as on 1938 Jan. 5d.).

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

		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 44	P_g	—	—	—	—	—
Tacubaya	N.	3·1	350	0 50	− 1	—	—	—	—	—
Little Rock		19·2	16	e 4 29	+ 1	e 8 9	+10	e 5 37	PP	e 12·2
Tucson		19·4	328	e 4 27	− 3	e 8 56	SSS	—	—	9·8
St. Louis	N.	23·4	16	e 5 14	+ 3	i 9 29	+ 8	i 10 8	SS	i 11·9
Denver		23·9	348	e 4 14	−62	e 8 40	−50	—	—	e 12·6
Riverside	Z.	24·4	321	i 5 8	−13	—	—	—	—	—
Mount Wilson	Z.	25·0	321	e 5 9	−18	—	—	i 5 14	?	—
Pasadena		25·0	321	e 5 11	−16	—	—	i 5 16	?	e 13·2
Haiwee		26·2	324	e 5 26	−12	—	—	—	—	—
Chicago		27·2	17	—	—	e 10 25	0	e 10 51	S	e 12·1
San Juan		31·0	80	—	—	e 11 27	+ 1	—	—	e 12·9
Philadelphia		31·2	36	—	—	e 11 40	+11	i 11 47	S	e 19·8
Fordham		32·5	36	—	—	e 12 12	+23	—	—	—

Additional readings:—
St. Louis eSN = +9m.32s., iN = +11m.12s.
Long waves were also recorded at Bozeman, Butte, Ukiah, College, Harvard, and East Machias.

Mar. 23d. Readings also at 0h. (Husan), 2h. (Mizusawa and near Nagoya), 4h. (Amboina and Samarkand), 6h. (Cape Girardeau, Florissant, and Tucson), 9h. (Samarkand), 15h. (Yalta and Wellington), 16h. (near Sotchi and near Frunse), 17h. (Tucson), 18h. (Fort de France (2)), 21h. (Ksara), 23h. (Fresno and Medan).

Mar. 24d. Readings at 1h. (near New Plymouth), 4h. (Samarkand, near Tiflis, and near Christchurch), 6h. (Semipalatinsk), 13h. (near Copiapo), 14h. (Andijan and near Taihoku), 16h. (College, Fordham, Sitka, and Ksara), 17h. (East Machias, Harvard, Philadelphia, Chicago, Columbia, Tucson, Mount Wilson, Pasadena, Riverside, and La Paz), 18h. (Wellington), 20h. (near Brisbane, Melbourne, Riverview, and near Santiago), 21h. (Harvard), 23h. (Frunse, Samarkand, near Andijan, and near Fort de France).

Mar. 25d. 8h. 22m. 39s. Epicentre 16°·0N. 86°·0W.

$A = +\cdot0671$, $B = -\cdot9595$, $C = +\cdot2739$; $\delta = +16$; $h = +6$;
$D = -\cdot998$, $E = -\cdot070$; $G = +\cdot019$, $H = -\cdot273$, $K = -\cdot962$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Columbia		18·5	13	e 4 11	− 8	e 7 38	− 6	—	—	e 8·3
San Juan		19·1	79	e 4 33	+ 6	e 8 3	+ 6	—	—	i 8·5
Little Rock		19·5	345	e 4 33	+ 2	i 8 2	− 4	—	—	e 9·7
Cape Girardeau		21·5	353	e 4 47	− 5	e 8 33	−14	e 10 4	SS	—
St. Louis		22·8	352	e 5 7	+ 2	e 9 5	− 6	i 5 36	PP	e 10·6
Florrisant		23·0	352	e 5 7	0	i 9 9	− 5	—	—	—
Fort de France		24·0	90	i 5 24	+ 7	e 9 50	+18	6 0	PP	13·4
Georgetown		24·1	18	i 5 15	− 3	9 40	+ 6	i 11 1	SPP	12·4
Philadelphia		25·7	20	i 5 31	− 2	9 55	− 6	—	—	e 12·3
Chicago		25·8	356	—	—	e 9 50	−12	—	—	e 11·4
Fordham		26·9	21	i 5 41	− 4	e 10 13	− 7	—	—	—
Tucson		27·7	311	e 5 55	+ 3	e 10 45	+12	e 6 54	PP	e 12·9
Williamstown		28·8	21	i 6 0	− 2	—	—	—	—	—
Weston		29·2	23	i 6 4	− 1	e 10 52	− 6	—	—	e 16·4
Huancayo		29·8	158	e 6 40	+29	e 10 57	−10	e 6 56	PP	11·9
Vermont		30·4	18	—	—	e 11 7	− 9	—	—	e 14·6
Ottawa		30·5	15	—	—	e 11 11	− 7	—	—	14·4
East Machias		32·7	25	e 6 27	− 9	e 11 50	− 2	e 7 44	PP	e 13·1
Riverside	z.	33·4	309	i 6 45	+ 3	—	—	—	—	—
Seven Falls		33·5	19	—	—	e 11 57	− 8	—	—	14·4
Bozeman		36·3	331	—	—	e 12 44	− 4	—	—	e 14·8
La Paz		36·8	150	7 56	+45	i 14 21	SS	—	—	19·8
Ksara		105·7	47	e 18 26	PP	—	—	—	—	—

Additional readings :—
Little Rock iN = +4m.48s., +5m.23s., and +6m.17s., eN = +6m.37s.
Cape Girardeau iPPN = +5m.2s., iN = +5m.27s. and +5m.55s., eSN = +8m.44s.
St. Louis iS = +9m.11s., iSSN = +10m.20s.
Fort de France PPP = +6m.12s., SS = +10m.36s., SSS = +10m.56s.
Georgetown +9m.43s.
Chicago eS = +10m.0s.
Tucson eP = +6m.8s., PPP = +7m.6s.
Huancayo eP = +6m.45s., ePPP = +7m.30s.
East Machias eP = +6m.34s., eS = +12m.8s.
Long waves were also recorded at Sverdlovsk, Tashkent, De Bilt, Paris, and Kew.

Mar. 25d. 15h. 49m. 28s. Epicentre 14°·0S. 178°·0W.

$A = -\cdot9701$, $B = -\cdot0339$, $C = -\cdot2404$; $\delta = +4$; $h = +6$;
$D = -\cdot035$, $E = +\cdot999$; $G = +\cdot240$, $H = +\cdot008$, $K = -\cdot971$.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Apia		6·0	88	1 32	0	i 2 45	+ 2	—	—	—
Arapuni		24·6	192	—	—	e 9 32?	−10	—	—	—
Wellington		27·9	192	i 5 40	−14	10 47	+10	i 12 0	SS	i 14·1
Chatham Ils.		29·9	178	—	—	e 10 50	−19	—	—	e 14·0
Brisbane		30·1	239	i 5 56	−17	i 11 2	−10	e 6 56	PP	12·1
Christchurch		30·5	193	e 5 35	−42	i 11 3	−15	—	—	15·6
Riverview		34·2	228	e 6 50	+ 1	e 12 12	− 4	—	—	e 16·2
Sydney		34·2	228	e 6 40	− 9	e 12 7	− 9	7 59	PP	e 15·6
Melbourne		40·5	227	i 9 11	PP	i 13 38	−14	i 16 50	SS	21·5
Adelaide		44·5	233	e 4 6	?	e 13 32	?	—	—	—
Perth		62·6	241	e 21 52	SS	26 29	SSS	22 22	PP	30·0
Manila		66·7	293	e 10 52	− 3	19 28	−18	—	—	31·0
Ukiah		73·6	42	—	—	21 27	+20	—	—	e 30·2
Pasadena		74·3	48	e 11 44	+ 3	—	—	—	—	e 33·5
Mount Wilson	z.	74·4	48	i 11 44	+ 2	—	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Riverside	z.	74·8	48	i 11 43	− 1	—	—	—	—	—
Hong Kong		75·6	298	11 36	−12	21 35	+ 6	—	—	—
Tinemaha	z.	75·7	45	e 11 54	+ 5	—	—	—	—	—
Tucson		79·0	52	12 9	+ 2	22 6	0	e 17 12	PPP	e 35·2
College		81·9	12	e 12 42	+19	e 22 40	+ 4	e 15 15	PP	e 33·6
Bozeman		84·6	40	—	—	e 22 51	−12	e 28 4	SS	e 35·0
Calcutta		98·6	291	e 19 12	PPP	i 25 16	+ 7	i 31 49	SS	—
Huancayo		99·1	105	—	—	e 24 56	−17	e 31 50	SS	e 39·8
La Paz		104·4	111	e 18 57	PP	—	—	—	—	49·5
Kodaikanal	E.	106·4	277	—	—	i 24 32?	[−24]	—	—	—
Ottawa		108·4	46	—	—	e 24 32?	[−33]	e 27 32?	PS	46·5
Philadelphia		108·6	53	—	—	e 26 23	{+28}	e 34 26	SS	e 49·6
Fordham		109·6	51	—	—	e 34 38	SS	—	—	—
Vermont		110·2	47	e 28 40	PS	e 34 50	SS	—	—	e 50·7
Seven Falls		111·8	44	e 28 44	PS	e 35 14	SS	—	—	53·5
Bombay		112·3	285	e 20 32?	PP	—	—	—	—	—
San Juan		114·8	75	e 29 17	PS	—	—	—	—	e 46·3
Tashkent		116·1	310	—	—	e 35 39	SS	—	—	e 49·2
Sverdlovsk		118·6	328	e 31 14	PPS	e 36 31	SS	e 37 3	SSP	46·5
Baku		130·7	312	e 21 50	PP	32 16	?	39 32	SS	65·5
Tiflis	z.	133·8	316	e 21 46	PP	—	—	—	—	e 61·5
Rathfarnham Castle		140·2	7	e 19 42	[+11]	e 29 49	{+27}	e 33 32	PS	75·5
Ksara		143·5	307	e 19 36?	[0]	—	—	e 23 20	PP	72·5
Stuttgart		144·8	352	e 19 56	[+17]	—	—	—	—	e 72·5
Strasbourg		145·2	354	e 19 42	[+ 2]	—	—	—	—	e 74·5
Paris		145·3	0	e 19 51	[+11]	—	—	—	—	77·5
Basle		146·2	354	e 19 41	[0]	—	—	—	—	—
Neuchatel		146·8	354	e 19 38	[− 4]	—	—	—	—	—
Helwan		148·7	305	e 19 57	[+12]	e 25 41	[−71]	—	—	—
Granada		156·4	12	21 43	?	—	—	—	—	84·5
San Fernando		156·4	17	e 21 0	[+64]	—	—	e 24 40	PP	80·5

Additional readings :—
Arapuni i = +13m.8s.
Wellington i? = +15h.48m.59s., i? = +2m.49s. and i = +9m.18s.
Brisbane eE = +10m.32s.
Christchurch P_eS = +12m.9s., L_q = +12m.45s.
Melbourne e = +17m.38s., i = +19m.35s.
Perth P_eP = +24m.30s., SS = +28m.17s.
Tucson iP = +12m.20s., eS = +22m.16s., eSSS = +30m.37s.
College ePPP = +17m.34s., eSS = +28m.0s.
Bozeman eS = +23m.7s., ePS = +23m.53s., eSSS = +32m.18s.
Huancayo eS = +25m.12s., ePS = +26m.9s., ePSPS = +32m.11s., eSSS = +35m.39s., PKP,PKP = +38m.6s.
Ottawa e = +34m.8s.
Vermont ePPS = +29m.40s., eSSS = +38m.55s.
Baku PS = +34m.11s.
Tiflis e = +22m.52s.
Rathfarnham Castle e = +21m.24s. and +52m.44s.
Ksara ePPS = +36m.36s.
Stuttgart eZ = +20m.52s.
Basle e = +31m.36s.
Helwan e = +30m.13s.
Long waves were also recorded at Honolulu, Sitka, Butte, Harvard, Chicago, East Machias, Colombo, New Plymouth, and other European stations.

Mar. 25d. Readings also at 2h. (Mount Wilson, Pasadena, Riverside, and near Wellington), 3h. (Batavia and near Malabar), 4h. (Medan, New Plymouth, Bombay, Calcutta, Ksara, and near Balboa Heights), 5h. (La Paz and near Nagoya), 6h. (Honolulu and near Santiago), 8h. (Harvard), 9h. (Triest), 14h. (Andijan), 16h. (near Sotchi), 19h. (Williamstown), 23h. (Moncalieri and near Neuchatel).

Mar. 26d. Readings at 0h. (near Santiago), 1h. (Montserrat), 2h. (Andijan, Strasbourg, Jersey, and Rathfarnham Castle), 3h. (near Wellington), 4h. (Huancayo, La Paz, Mount Wilson, Pasadena, and Riverside), 5h. (Samarkand and near Fort de France), 7h. (Bozeman, Butte, Chicago, Mount Wilson, Pasadena, and Riverside), 8h. (Harvard, Bozeman, and Philadelphia (2)), 9h. (near Brisbane and near Perth), 11h. (Samarkand). 14h. (near Tiflis), 15h. (Montserrat), 17h. (near La Paz), 18h. (San Juan), 19h. (Fort de France and near San Javier).

Mar. 27d. 11h. 16m. 24s. Epicentre 46°·2N. 16°·8E.

Damage at Kalnik (Croatia), churches destroyed at Gyekenyes (Hungary), chimneys fell at Nagykanizsa and at Szigetvar. Scale VIII at Koprivnica, Novi Grad, Kapela, Djurdjevac, Ravenludbreg, etc. Felt widely in Yugoslavia. Scale VI-V in the Province of Somogy at Baranya (Hungary) in Styrie, at Vienna, Budapest, Szegedir, and on the Italian coast of the Adriatic (Venice Taranto).

Epicentre Koprivnica (Toug) 46°10′N. 16°50′E. Macroseismic radius 350-400kms.

See Simon Bela, Az. 1938, Evi Magyarorszagi Földrengések Serie B, Budapest, pages 5 to 8.

J. Mihailovic. Annuaire de l'Institut Seismologique de Beograd, Année XVIII, 1938. Beograd, 1939, p. 20 and 66.

$A = +\cdot6650$, $B = +\cdot2008$, $C = +\cdot7194$; $\delta = +8$; $h = -4$;
$D = +\cdot289$, $E = -\cdot957$; $G = +\cdot689$, $H = +\cdot208$, $K = -\cdot695$.

		Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Graz		1·3	314	i 0 25	0	—	—	—	—	—
Laibach	N.W.	1·6	265	i 0 31	+ 1	i 0 47	− 4	1 0	SS	—
Ogyalla		1·9	30	0 33	− 1	—	—	i 0 37	P_g	—
Budapest		2·0	50	0 36	+ 1	—	—	—	—	—
Kecskemet		2·1	70	e 0 32	− 5	0 53	−11	—	—	1·2
Triest		2·2	255	0 40a	+ 2	1 15	S_g	—	—	—
Belgrade		2·9	118	i 0 43k	− 5	1 30	S*	i 0 51	P*	—
Padova		3·6	256	i 1 1	+ 3	i 1 53	S*	1 16	P_g	—
Prague		4·1	342	i 1 8k	+ 3	e 2 20	S_g	e 1 22	P_g	—
Florence		4·6	244	e 1 14	+ 2	i 2 6	− 1	—	—	—
Cheb		4·8	325	e 1 18	+ 3	e 2 15	+ 3	—	—	2·7
Chur		5·0	277	e 1 19	+ 1	e 2 49	S_g	—	—	—
Hof		5·2	323	e 1 24	+ 3	i 2 1	−21	—	—	e 2·6
Stuttgart		5·7	300	e 1 28a	0	i 3 16	S_g	i 1 59	P_g	—
Jena		5·8	326	i 1 31	+ 2	i 2 44	+ 6	2 58	S*	3·1
Sofia		5·8	124	e 1 28	− 1	i 2 54	S*	i 3 9	S_g	—
Zurich		5·8	285	e 1 28a	− 1	e 3 13	S_g	e 1 51	P_g	—
Lemberg		6·0	50	e 2 8	P_g	e 2 58	S*	—	—	—
Karlsruhe		6·3	299	e 1 37	+ 1	i 2 46	− 4	—	—	i 3·6
Basle		6·4	285	e 1 36	− 2	e 2 50	− 3	e 2 12	P_g	—
Moncalieri		6·5	263	1 36?	− 3	2 55	0	—	—	3·9
Potsdam		6·6	340	e 1 36	− 5	i 2 54	− 4	—	—	e 3·0
Strasbourg		6·6	295	e 1 45	+ 4	i 3 3	+ 5	2 11	P_g	—
Bucharest		6·8	103	i 1 42k	− 2	i 3 6	+ 3	i 1 58	P*	—
Neuchatel		6·8	280	e 1 42	− 2	e 3 44	S_g	—	—	—
Göttingen		7·0	322	e 1 46	0	3 7	− 1	e 2 1	P*	—
Besançon		7·5	282	—	—	3 36?	S*	—	—	—
Hamburg		8·6	329	e 2 10	+ 1	i 4 27	S*	2 15	PP	—
Marseilles		8·6	254	e 2 5	− 4	i 3 50	+ 2	i 2 28	PPP	—
Uccle		9·5	304	e 2 21	+ 1	i 4 18	+ 8	—	—	i 5·1
De Bilt		9·6	312	e 2 44	PPP	—	—	—	—	e 5·0
Copenhagen		9·9	346	i 2 26	+ 1	—	—	—	—	4·6
Paris		10·0	290	e 2 59	PPP	5 7	S*	—	—	5·6
Istanbul		10·2	116	2 29	− 2	—	—	—	—	8·2
Sebastopol		11·8	91	—	—	e 4 5	−61	—	—	e 8·3
Simferopol		12·2	87	e 2 58	0	e 6 42	?	—	—	9·6
Yalta		12·3	91	e 3 17	PPP	i 6 25	SSS	—	—	10·1
Kew		12·4	301	e 3 6	+ 5	i 5 15	− 6	—	—	—
Theodosia		13·1	88	—	—	e 5 56	SS	—	—	—
Upsala		13·7	1	3 17	− 1	6 14	SSS	—	—	—
Algiers		13·9	232	e 3 20	− 1	e 5 36	−21	—	—	7·6
Bidston		14·7	306	4 56	?	i 6 48	SSS	—	—	—
Edinburgh		15·8	316	—	—	e 6 56	SS	—	—	—
Bergen		15·8	339	3 57	+12	8 57	L	—	—	(9·0)
Pulkovo		15·8	25	e 3 44	− 1	6 32	−10	—	—	8·5
Aberdeen		16·0	321	6 52	S	(6 52)	+ 6	—	—	11·5
Moscow		16·1	46	e 3 49	0	e 6 42	− 7	—	—	8·9
Rathfarnham Castle		16·5	307	i 3 31	−23	i 7 1	+ 3	i 7 46	SSS	8·9
Toledo		16·5	255	i 3 54	0	i 7 1	+ 3	—	—	—
Almeria		17·1	244	i 3 55	− 7	—	—	—	—	e 11·4

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Granada		17·6	247	i 4 11	+ 3	i 7 38	+15	—	—	—
Malaga		18·4	347	4 19	+ 1	7 55	SS	—	—	11·6
Ksara		19·1	124	i 4 22a	− 5	e 8 0	+ 3	e 8 41	SSS	—
Helwan		19·8	140	i 4 32	− 3	e 8 2	−11	e 4 56	PP	—
San Fernando		19·8	348	4 33	− 2	8 17	+ 4	—	—	12·1
Tiflis		20·6	92	i 4 40	− 3	8 41	+12	—	—	12·0
Grozny		21·5	87	e 4 46	− 6	—	—	—	—	e 11·8
Baku		24·7	91	i 5 23	− 1	e 10 5	+21	—	—	e 13·2
Sverdlovsk		28·8	52	i 6 2	0	i 10 53	+ 2	—	—	14·5
Tashkent		37·6	77	e 8 42	PP	i 16 1	SSS	—	—	e 20·6
Frunse		40·5	72	7 43	+ 1	—	—	—	—	—
Almata		41·9	70	7 57	+ 3	—	—	—	—	—
Bombay		53·2	101	e 8 36?	−46	—	—	—	—	—
Calcutta	N.	61·5	86	—	—	e 18 24	−18	—	—	—
Fort de France		71·2	271	—	—	e 27 56	?	—	—	—
Tucson		88·7	318	12 57	0	—	—	—	—	e 51·3
Riverside	z.	90·1	324	i 13 0	− 3	—	—	—	—	—
Mount Wilson	z.	90·2	324	i 13 2	− 2	—	—	—	—	—
Pasadena	z.	90·3	324	i 13 2	− 2	—	—	—	—	—

Additional readings :—
Laibach iNW = +38s.
Kecskemet eP_gE = +36s., ePPSZ = +39s., iPPSN = +47s., iN = +59s., iS_g = +1m.3s., iSSSN = +1m.8s.
Belgrade i = +1m.3s. and +1m.13s., iPS = +1m.16s., i = +1m.44s.
Padova iS_g = +2m.10s.
Prague eP* = +1m.19s.
Chur e = +1m.21s.
Jena iZ = +2m.36s.
Lemberg e = +3m.54s.
Potsdam iZ = +2m.14s., eE = +2m.18s., iE = +2m.47s.
Strasbourg i = +1m.52s., eP_g = +2m.6s., iP_gZ = +2m.19s., iP_gN = +2m.25s., iPPS = +2m.45s., iPSS = +3m.12s., iSS = +3m.37s., iS_g = +3m.50s.
Bucharest iE = +2m.43s., iS*EN = +3m.28s.
Göttingen i = +1m.58s. and +3m.17s.
Hamburg eN = +2m.30s., eN = +4m.0s.
Marseilles i = +2m.35s., iP_g = +2m.54s., i = +3m.16s., +3m.22s., +3m.29s., +3m.56s., and +4m.7s., iSS = +5m.8s., i = +5m.25s.
Uccle iE = +4m.55s.
Paris e = +5m.22s.
Istanbul P_g = +3m.31s., PS = +5m.7s., S_g = +6m.31s.
Kew iN = +5m.3s., i = +6m.51s. and +8m.5s.
Upsala eE = +6m.49s., iN = +7m.9s., eN = +7m.21s.
Bidston i = +7m.56s.
Edinburgh i = +8m.24s. and +9m.59s.
Aberdeen iS = +9m.58s.
Toledo e = +4m.9s., +8m.3s., and +8m.50s.
Ksara eP_eS = +12m.22s.
Helwan e = +5m.1s.
Tiflis eN = +5m.42s., SEZ = +8m.44s.
Baku e = +11m.50s.
Tashkent e = +16m.45s. and +17m.29s.
Tucson eP = +13m.10s.
Long waves were also recorded at Erevan, Stonyhurst, Durham, and Jersey.

Mar. 27d. Readings also at 0h. (Christchurch), 1h. (Wellington and Christchurch), 2h. (Ivigtut), 3h. (Ivigtut, Wellington, Ksara, Kew, New Plymouth, Paris (2), Strasbourg (2), De Bilt (2), Copenhagen (2), Tashkent (2), and Sverdlovsk (2)), 5h. (Paris), 7h. (La Paz), 9h. (New Plymouth and Fort de France), 11h. (Granada and Marseilles), 12h. (La Paz), 13h. (La Paz), 14h. (Frunse, Samarkand, Tchimkent, and Andijan), 18h. (Nagoya and Mizusawa), 21h. (Andijan, Haiwee, Riverside, Mount Wilson, and Pasadena), 22h. (Mizusawa), 23h. (Nagoya and Apia).

Mar. 28d. Readings at 0h. (Tucson), 2h. (near Belgrade), 13h. (Calcutta, near Keizyo, Taikyu, Zinsen, Nagoya (2), near Koti, and Hukuoka B), 14h. (Calcutta, Bombay, Tashkent, Sverdlovsk, New Plymouth, and near Wellington), 15h. (Hastings, near New Plymouth, Wellington, and near Medan), 17h. (Malabar and near Batavia), 21h. (Batavia and near Malabar), 23h. (Andijan, Frunse, Tashkent, and near Tchimkent).

Mar. 29d. Readings at 0h. (Amboina, Andijan, Samarkand, and Sverdlovsk), 2h. (Ksara), 4h. (Almata, Andijan, Frunse, Samarkand (2), Tchimkent, and near La Paz), 6h. (Andijan), 7h. (Amboina), 9h. (Ksara and near Lick), 11h. (near Taihoku), 13h. (near Samarkand (2)), 14h. (near Amboina (2)), 16h. (San Juan and Tucson), 20h. (Sverdlovsk, Tashkent, Baku, Ksara, Tiflis, and near Malabar), 21h. (Riverside).

Mar. 30d. Readings at 0h. (Copiapo), 1h. (Pasadena, Riverside, Tucson, Montezuma, and near La Paz), 2h. (near Manila), 3h. (Christchurch, Wellington, and near Erevan), 4h. (Fort de France), 5h. (Erevan and near Santiago), 6h. (near Granada and Malaga), 7h. (near Toledo, and La Paz), 9h. (near Fort de France), 12h. (near San Javier), 13h. (La Paz and near Tiflis), 15h. (near Almeria, Granada, Malaga, Toledo, San Fernando, Chur, Zurich, Kew, and Fort de France), 18h. (near Sotchi), 19h. (near Santiago), 20h. (Cape Town, Wellington, and Tananarive), 21h. (Ksara, near New Plymouth, Wellington, and near Fort de France), 23h. (Wellington).

Mar. 31d. 22h. 31m. 11s. Epicentre 19°·6N. 120°·6E.

Felt Force III at Laoag. Epicentre Phillipines 21°·0N. 123°·5E. (U.S.S.R.).
19°·6N. 120°·6E. (Strasbourg).

See W. C. Repetti. Manila Central Observatory, Seismological Bulletin for 1938, Jan.—June, Manila, 1938, p. 11.

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

		△	Az.	P.	O−C.	S.	O−C.	Supp.		L.
		°	°	m. s.	s.	m. s.	s.	m. s.		m.
Manila		5·0	176	1 24	P*	2 47	S_g	—	—	—
Taihoku		5·6	11	e 1 31	+ 4	2 11	−22	—	—	—
Hong Kong		6·6	295	1 35	− 6	3 10	S*	—	—	3·8
Zi-ka-wei	N.	11·6	5	e 2 42	− 8	—	—	—	—	—
Phu-Lien		13·2	278	e 3 10	− 1	e 5 59	+19	—	—	8·6
Hukuoka B		16·4	30	e 3 56	+ 3	e 6 29	−27	—	—	e 9·6
Koti		18·1	37	4 13	− 1	e 7 51	SS	—	—	—
Zinsen		18·6	14	e 4 19a	− 2	e 7 44	− 2	e 4 38	PP	e 9·1
Nagoya		21·2	40	4 50	+ 1	8 46	+ 5	—	—	—
Mizusawa	N.	26·3	48	5 37	− 2	e 10 1	−10	—	—	—
Medan	N.	26·7	238	e 5 42	− 1	i 10 21	+ 4	—	—	14·8
Batavia	Z.	29·0	210	i 6 3	− 1	—	—	—	—	—
Calcutta	N.	30·2	283	e 6 12	− 2	i 11 13	0	e 12 37	SS	i 14·6
Agra		39·7	291	7 33	− 3	i 13 31	− 9	9 14	PP	18·7
Dehra Dun	N.	39·8	295	e 8 9?	+33	e 14 3?	+21	—	—	24·4?
Hyderabad		39·9	275	7 29	− 8	13 44	+ 1	—	—	19·3
Colombo	E.	41·5	259	7 49	− 1	—	—	—	—	—
Almata		43·5	314	8 8	+ 1	—	—	—	—	—
Semipalatinsk		44·3	325	e 8 11	− 2	—	—	—	—	—
Bombay		45·0	278	i 8 19	0	i 15 1	+ 3	e 10 22	PP	21·4
Frunse		45·0	312	8 33	+14	—	—	—	—	—
Andijan		46·1	309	8 27	− 1	e 15 16	+ 2	—	—	28·5
Tashkent		48·5	309	i 8 46	0	i 15 48	0	—	—	24·1
Samarkand		49·9	306	8 48	− 9	e 15 33	−34	—	—	27·3
Sverdlovsk		57·5	327	i 9 53	0	i 17 48	− 2	—	—	35·2
Baku		63·0	307	i 10 32	+ 1	19 5	+ 4	—	—	32·8
Grozny		65·9	310	e 11 45	+55	e 20 11	+34	—	—	—
Tiflis		66·8	309	i 10 54	− 2	i 19 48	0	e 26 58	SSS	e 33·8
Erevan		67·2	307	e 11 0	+ 2	e 19 58	+ 6	—	—	—
Moscow		70·1	324	11 15	− 1	20 23	− 4	—	—	36·3
College		73·1	27	e 11 30	− 4	e 20 58	− 3	—	—	e 33·6
Theodosia		73·1	313	11 35	+ 1	—	—	—	—	—
Pulkovo		73·4	329	11 32	− 4	20 59	− 6	—	—	35·3
Yalta		74·1	312	11 43	+ 3	21 0	−12	—	—	—
Ksara		75·1	301	i 11 46k	0	e 21 35	+11	i 12 2	pP	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	Supp.		L.
	°	°	m. s.	s.	m. s.	s.	m. s.		m.
Istanbul	78·5	311	11 59	− 5	—	—	—	—	—
Upsala	79·6	331	e 12 11	+ 1	e 22 9	− 3	—	—	e 41·8
Bucharest	79·7	315	12 13	+ 2	22 11	− 2	—	—	50·8
Helwan	79·9	298	i 12 11	− 1	i 22 15	− 1	22 49	PS	—
Belgrade	83·3	316	e 12 29	− 1	e 21 59	+ 9	24 15	PPS	e 47·4
Copenhagen	83·8	328	12 32k	0	22 51	− 4	—	—	40·8
Potsdam	85·0	325	i 12 37	− 1	i 23 7	0	e 23 43	PS	e 45·8
Prague	85·1	323	e 12 33	− 6	e 23 22	+14	—	—	e 42·8
Hamburg	86·0	327	e 12 43k	0	—	—	—	—	e 39·8
Cheb	86·3	323	e 12 46	+ 1	e 23 14	[+ 5]	—	—	e 52·8
Jena	86·3	324	e 12 45	0	e 23 13	[+ 4]	—	—	e 46·8
Göttingen	87·0	325	—	—	e 22 49?	· ?	—	—	46·8
Triest	87·4	319	i 12 48	− 2	i 23 23	− 7	13 7	pP	—
Stuttgart	88·7	323	i 12 56k	− 1	e 23 42	− 1	e 24 43	PS	e 47·8
De Bilt	89·3	327	13 0	+ 1	e 23 49	+ 1	—	—	e 44·8
Chur	89·4	322	e 12 59	− 1	e 23 49	0	—	—	—
Strasbourg	89·6	323	i 13 2	+ 1	e 23 54	+ 3	i 24 54	PS	e 43·3
Zurich	89·7	321	e 13 0	− 1	e 23 53	+ 1	e 13 41	?	—
Basle	90·3	322	e 13 2	− 2	—	—	—	—	—
Uccle	90·4	326	13 4	0	e 24 1	+ 3	16 54	PP	e 44·8
Neuchatel	90·9	322	e 13 6	− 1	—	—	—	—	—
Kew	92·5	327	—	—	e 23 58	[+11]	i 25 24	PS	49·8
Paris	92·5	324	e 13 14	0	30 9	SS	25 26	PS	52·8
Oxford	92·8	328	—	—	24 33	+14	i 25 36	PS	e 46·8
Rathfarnham Castle	94·2	331	i 13 3	−19	i 23 55	[− 2]	i 33 33	SSS	46·8
Jersey	94·7	327	e 26 19	PPS	31 9	PS	e 34 52	SSS	—
Granada	102·9	317	e 18 31	PP	—	—	—	—	66·8
Ottawa	113·6	12	e 19 37	PP	e 29 13	PS	e 35 25	SS	50·8
Fordham	118·4	11	—	—	e 29 49?	PS	—	—	—
Philadelphia	119·0	13	e 20 13	PP	e 36 37	SS	—	—	e 54·6
Fort de France	145·8	2	e 19 42	[+ 2]	—	—	—	—	—
Huancayo	162·9	66	e 19 55	[− 9]	—	—	—	—	75·3
La Paz z.	171·2	71	i 20 15k	[+ 5]	26 53	[−19]	i 21 25	pPKP	82·8

Additional readings :—
Hong Kong ? = +1m.44s.
Zinsen eSSEN = +8m.6s.
Mizusawa eSE = +10m.7s.
Bombay ePN = +8m.22s., iE = +14m.32s., i? = +14m.42s., i = +14m.55s. and +18m.1s.
Sverdlovsk L_q = +28·7m.
Tiflis eN = +11m.2s., SN = +19m.52s., PSZ = +20m.20s., eN = +28m.9s.
College eP = +11m.44s., eS = +21m.11s.
Ksara esS = +22m.4s.
Upsala e = +22m.20s.
Helwan e = +12m.24s. and +12m.59s.
Belgrade eZ = +13m.27s.
Potsdam eN = +13m.7s.
Strasbourg eSE = +23m.58s., eSS = +30m.1s., eSSSE = +33m.28s.
Stuttgart eP_cP = +13m.11s.
Uccle PS = +25m.2s., eSSE = +29m.58s., SSSE = +33m.51s.
Kew iE = +25m.33s.
Jersey e = +37m.40s.
La Paz isPKPZ = +22m.37s., iPP = +25m.21s., iZ = +29m.33s., SSN = +46m.25s.
Long waves were also recorded at Toledo, Bergen, Edinburgh, Bidston, Stonyhurst, Aberdeen, and San Fernando.

Mar. 31d. Readings also at 0h. (Santiago), 2h. (Huancayo, Copiapo (2), and La Paz (2)), 3h. (Copiapo), 5h. (Balboa Heights, Calcutta, Mizusawa, and Manila), 6h. (Tashkent, Padova, and Sverdlovsk), 7h. (Copiapo), 9h. (Copiapo and La Paz), 10h. (Fordham, Little Rock, Williamstown, Florissant, and St. Louis), 13h. (Almata and La Paz), 15h. (Manila), 16h. (Wellington), 17h. (Wellington (2), Tucson, Haiwee, Tinemaha, La Jolla, Riverside, Mount Wilson, and Pasadena), 19h. (Mizusawa), 22h. (Wellington).