The International Seismological Summary for 1923 October, November, December.

FORMERLY THE BULLETIN OF THE BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

The present number of the Summary deals with 128 epicentres, 55 of which are new and 73 repetitions from old epicentres. The seismic agitation of the previous three months had apparently not quite subsided, for these numbers are still in excess of the average of previous sets of three months.

As regards abnormal focus, there are five cases, viz., on

Date.	d.	h.	Focal Depth.
1923 Oct.	15	7	0·020
Nov.	3	8	0·010
Nov.	17	2	0·020
Dec.	19	19	0·020
Dec.	28	22	0·010

Attention may be called to the Notes on October 15, 17, November 17, 24, December 28.

A visit to the United States prevents my seeing this number of the Summary through the press as usual. If any further comments are suggested on my return (in May, 1927) they will be added at the end of this number.

H. H. TURNER.

University Observatory, Oxford,
1927 February 28.

1923 OCTOBER, NOVEMBER, & DECEMBER.

Oct. 1d. 3h. 7m. 20s. (I) } Epicentre 42°·5N. 15°·5E.
10h. 40m. 28s. (II) }

A = +·710, B = +·197, C = +·676 ; D = +·267, E = −·964 ;
G = +·651, H = +·181, K = −·737.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I Mostar		1·9	63	i 0 28	− 1	i 0 50	− 3	—	1·0
II		1·9	63	e 0 29	0	e 0 51	− 2	—	1·3
II Pompeii		1·9	203	1 22	+53	2 12	+79	—	—
I Rocca di Papa	E.	2·2	250	e 0 51	+17	—	—	1·5	2·0
I	N.	2·2	250	e 0 54	+20	—	—	1·9	2·2
II	E.	2·2	250	e 0 50	+16	i 1 25	?L	(i 1·4)	2·0
II	N.	2·2	250	i 0 52	+18	—	—	—	—
I Sarajevo		2·5	58	i 0 37	− 2	i 1 7	− 2	—	1·2
II		2·5	58	i 0 39	0	i 1 8	− 1	—	1·2
II Florence		3·3	292	0 52	0	(1 42)	+11	—	2·0
I Venice		3·7	323	1 29	+31	(1 29)	−13	—	1·9
II		3·7	323	1 10	+12	—	—	—	1·9
I Belgrade		4·2	56	e 1 7	+ 2	i 1 59	+ 4	—	2·2
II		4·2	56	e 1 7	+ 2	i 1 59	+ 4	—	2·2
I Innsbruck		5·6	330	i 2 36	?S	(i 2 36)	+ 2	—	—
II		5·6	330	e 1 32	+ 5	i 2 32	− 2	—	—
I Vienna		5·7	6	e 2 8	+40	—	—	—	2·6
II		5·7	6	i 1 14	−14	2 36	0	—	2·7
II Moncalieri		6·2	297	e 0 2	?	3 7	?L	(3·1)	—
II Zurich		6·9	317	e 1 51	+ 6	i 3 17	+10	i 3·5	—
II Strasbourg		8·1	320	e 2 32	+29	—	—	—	—
II Besançon		8·2	308	3 21	?S	(3 21)	−21	—	—
II Hamburg		11·6	346	—	—	—	—	e 5·5	—
II De Bilt		11·8	328	—	—	—	—	e 5·5	—

Additional readings and notes: Mostar II gives also MN = +1·1m. Rocca di Papa I iE = +55s., iN = +1m.1s., II iE = +1m.1s., iN = +1m.5s. Venice II MN = +4·4m. Belgrade I iP = +1m.35s., II eP = +1m.33s., all readings for shock II have been diminished by 1m. Vienna II P = +1m.32s., i = +1m.40s., R_3P_3S = +2m.1s., R_1PS = +2m.12s., S is given as R_3PS_3.

Oct. 1d. 8h. 16m. 25s. Epicentre 31°·2N. 70°·3E.

A = +·288, B = +·805, C = +·518 ; D = +·941, E = −·337 ;
G = +·175, H = +·488, K = −·855.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Simla		5·9	89	1 41	+10	2 53	+12	3·8	4·0
Dehra Dun		6·7	96	0 43	−59	—	—	2·6	4·3
Bombay		12·5	169	2 44	−22	5 10	−22	6·2	7·6
Calcutta	E.	18·2	114	4 59	+40	7 21	−23	9·6	—
	N.	18·2	114	5 1	+42	7 22	−22	9·4	10·1
Kodaikanal		22·0	161	—	—	(8 47)	−18	8·8	12·3
Colombo		25·9	158	9 35	?S	(9 35)	−45	14·0	15·3
Ekaterinburg		26·5	348	i 6 1	+ 8	i 10 45	+13	13·6	16·5
Helwan		33·4	278	e 7 5?	+ 5	14 57	+147	—	23·2
Pulkovo		39·0	330	7 45	− 1	13 55	+ 3	21·6	24·7
Hong Kong		39·9	93	—	—	—	—	—	22·6
Konigsberg		42·1	320	—	—	—	—	e 19·1	28·6
Zi-ka-wei		43·3	77	—	—	—	—	e 19·6	—
Vienna		43·8	311	e 8 21	− 3	—	—	—	29·6
Upsala		44·9	326	—	—	e 18 35	?	e 25·6	27·6
Taihoku		45·2	86	—	—	—	—	e 26·5	—
Rocca di Papa	E.	46·6	300	e 8 42	− 2	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Florence		47·5	304	9 5	+14	21 35	?L	37·6	45·1
Hamburg		48·1	317	e 10 47	?PR$_1$	—	—	e 27·6	35·2
Manila		49·0	99	—	—	e 15 35	−31	—	—
Strasbourg		49·5	310	—	—	—	—	e 29·6	—
Moncalieri		49·8	306	e 6 43	−143	16 17	+ 1	29·7	34·2
Besançon		50·8	309	—	—	—	—	—	29·6
De Bilt		51·0	315	—	—	e 21 5	?	e 26·6	37·0
Bergen		51·0	325	—	—	—	—	e 32·6	—
Uccle		51·5	313	—	—	e 16 53	+15	e 26·6	33·3
Paris		52·9	312	—	—	—	—	e 30·6	46·6
Kew		54·4	315	—	—	—	—	—	39·6
Algiers		54·9	296	—	—	e 17 20	0	e 30·6	34·6
Oxford		55·0	315	—	—	—	—	28·6	39·3
Stonyhurst		55·4	317	e 20 35	?	—	—	—	37·6
Edinburgh		55·6	320	—	—	—	—	e 34·6	—
Bidston		55·8	317	—	—	—	—	—	38·9
Toledo		59·4	301	e 18 21	?S	(e 18 21)	+ 5	e 32·6	44·1
Rio Tinto		61·9	300	43 35	?L	—	—	(43·6)	47·6
San Fernando		62·1	298	—	—	27 47	?	35·1	44·6
Coimbra		62·5	303	e 9 50	−39	22 20	+205	32·6	—
Ottawa		97·4	337	—	—	e 38 35	?	e 47·6	—
Toronto	E.	100·2	339	—	—	i 39 5	?	55·3	—
Chicago		104·3	344	—	—	e 48 15	?	e 58·6	—
Rio de Janeiro	E.	121·0	260	—	—	—	—	e 64·1	—
La Paz		139·6	282	e 23 1	?PR$_1$	—	—	69·6	74·1

Additional readings and notes: Simla gives also PN = +1m.53s. Colombo S = +12m.53s. Ekaterinburg MN = +16·9m., MZ = +18·4m. Pulkovo SR$_1$ = +16m.59s. Rocca di Papa ePZ = +8m.50s., ePN = +9m.14s. Florence readings have been increased by 19m. Hamburg MN = +32·9m., MZ = +33·9m. Moncalieri MN = +31·6m. De Bilt MN = +32·7m., MZ = +37·1m. Uccle e = +21m.5s. Eskdalemuir (Δ = 55°·6) gives simply 8h. Bidston reading has been increased by 1h. Toledo eS? = +25m.45s., MNW = +43·6m. San Fernando MN = +37·6m. Coimbra eN = +15m.20s. Toronto iE = +42m.28s., iN = +44m.11s., eE = +47m.11s. Chicago L = +63·1m.

Oct. 1d. 22h. 27m. 30s. Epicentre 32°·0S. 179°·0W.

A = −·848, B = −·015, C = −·530; D = −·017, E = +1·000; G = +·530, H = +·009, K = −·848.

The distant stations suggest the increase of T$_0$ (taken from Riverview) by perhaps 10sec.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington		10·6	208	e 2 42	+ 4	i 4 18	−27	5·3	6·5
Christchurch		13·3	207	—	—	5 54	+ 3	9·2	11·9
Apia		19·3	21	4 30	− 3	—	—	—	—
Riverview		25·1	258	i 5 42	+ 3	e 10 10	+ 5	e 12·3	—
Sydney		25·1	258	—	—	—	—	12·9	15·0
Melbourne		30·0	249	e 5 48	−40	i 11 18	−16	—	18·2
Adelaide		35·3	254	—	—	8 54	?PR$_1$	17·0	22·7
Batavia		73·3	273	10 47	−51	i 21 12	+ 6	—	—
Manila		74·0	298	e 11 30	−12	—	—	—	—
Victoria	E.	94·5	33	24 3	?[S]	(24 3)	[+ 8]	43·3	45·6
	N.	94·5	33	24 5	?[S]	(24 5)	[+10]	43·3	59·4
La Paz		98·0	115	e 14 0	0	i 24 23	[+10]	45·3	47·9
Colombo		103·1	270	28 30	?S	(28 30)	+125	—	65·5
Kodaikanal		106·8	272	58 54	?L	—	—	(58·9)	—
Rio de Janeiro		110·7	136	—	—	e 25 45	[+32]	35·0	—
Chicago		111·6	52	25 10	?[S]	(25 10)	[− 6]	e 52·5	—
Toronto	E.	117·9	52	—	—	e 25 51	[+11]	e 56·5	—
Ottawa		120·9	51	25 55	?[S]	36 55	?	e 56·5	—
Ekaterinburg		132·7	319	i 19 28	[+ 4]	e 28 46	?	51·5	73·1
Pulkovo		146·1	334	i 19 53	[+ 3]	e 30 8	?	—	75·0
Eskdalemuir		156·5	6	—	—	—	—	77·5	—
Stonyhurst		158·0	5	—	—	—	—	—	89·5
De Bilt		159·7	352	20 10	[+ 2]	e 31 20	?	e 83·5	97·0
Vienna	Z.	160·0	329	i 20 8	[0]	—	—	—	—
Oxford		160·2	4	—	—	—	—	79·5	92·5
Uccle		161·0	353	e 20 30	[+21]	e 31 29	?	e 79·5	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Strasbourg	162·7	345	e 20 15	[+ 5]	e 24 52	?PR$_1$	e 82·5	—
Florence	165·7	328	—	—	—	—	90·5	95·5
Moncalieri	166·0	340	e 21 0	[+48]	30 10	?	51·2	—
Rocca di Papa	166·5	320	e 20 0	[−12]	e 25 15	?PR$_1$	32·2	33·4
Coimbra	168·8	41	e 20 0	[−14]	e 32 2	?	78·5	99·2
Toledo	171·1	26	e 20 22	[+ 7]	e 32 18	?	e 53·9	94·7
Tortosa	171·1	3	20 23	[+ 8]	e 30 30	?	e 87·5	96·6
San Fernando	172·6	51	20 40	[+24]	31 25	?	43·5	48·5
Granada	173·6	35	20 27	[+11]	e 32 32	?	47·5	—
Algiers	174·9	341	e 20 19	[+ 3]	e 32 5	?	e 89·5	104·5

Additional readings and notes: Wellington gives also e = +3m.30s. Melbourne e = 21h.54m.42s. Adelaide SR$_1$ = +12m.42s. Chicago L = +59·8m. and +69·0m. Toronto eE = +36m.56s., iN = +38m.9s., iE = +38m.10s., and several other L readings. Ekaterinburg MN = +80·2m. De Bilt MN = +93·7m., MZ = +98·5m. Strasbourg eL = +38·5m. Rocca di Papa eP = +20m.24s. Coimbra eN = +20m.56s., e = +34m.6s., eL = +46·5m., e = +57m.30s., LN = +80·5m. Granada PR$_1$ = +25m.53s., PS? = +33m.50s. Algiers eL = +46·5m.

Oct. 1d. Readings also at 4h. (Hong Kong, Simla, Ekaterinburg (3), Colombo, and Calcutta), 10h. (Ekaterinburg), 14h. (Rocca di Papa, Pompeii, and near Athens), 15h. (Mendoza, Chacarita, Rio de Janeiro, and La Paz), 17h. and 19h. (Rio Tinto), 20h. (Paris and Strasbourg), 21h. (Cipolletti), 22h. (Athens and Rocca di Papa and near Oaxaca and Tacubaya).

Oct. 2d. 1h. 25m. 18s. Epicentre 38°·5N. 136°·0E.

A = −·563, B = +·544, C = +·623.

	Δ	P.	O−C.	S.	O−C.	L.	M.
	°	m. s.	s.	m. s.	s.	m.	m.
Osaka	3·9	e 1 4	+ 3	(1 45)	− 2	1·8	2·1
Kobe	3·9	0 55	− 6	(1 43)	− 4	1·7	1·9
Mizusawa	4·0	1 4	+ 2	1 51	+ 1	—	—

Osaka gives also MN = +2·4m.

Oct. 2d. 11h. 22m. 20s. Epicentre 31°·2N. 70°·3E. (as on Oct. 1d.).

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Simla	N.	5·9	89	2 46	?S	(2 46)	+ 5	—	—
Dehra Dun		6·7	96	1 41	− 1	—	—	3·2	3·6
Bombay		12·5	169	e 0 34	− ?	4 26	−66	7·3	7·7
Calcutta	E.	18·2	114	7 21	?S	(7 21)	−23	9·1	—
	N.	18·2	114	7 25	?S	(7 25)	−19	9·2	—
Colombo		25·9	158	14 40	?L	—	—	(14·7)	—
Ekaterinburg		26·5	348	—	—	e 10 41	+ 9	14·7	17·2
Pulkovo		39·0	330	—	—	—	—	e 19·7	—
De Bilt		51·0	315	—	—	—	—	e 33·7	—

Simla gives also PE = +3m.4s.

Oct. 2d. Readings also at 1h. (near Mizusawa), 2h. (Osaka), 7h. and 9h. (Venice), 16h. (near Athens).

Oct. 3d. 14h. 8m. 18s. Epicentre 35°·0N. 139°·5E. (as on Sept. 26d.).

A = −·623, B = +·532, C = +·574.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Osaka	3·4	266	0 51	− 2	—	—	1·7	2·2
Kobe	3·6	266	0 57	+ 1	—	—	1·7	1·8
Mizusawa	4·3	17	0 22	−45	0 54	−64	—	—

Additional readings: Osaka gives also MN = +2·8m. Mizusawa PN = +20s.

Oct. 3d. 15h. 54m. 5s. Epicentre 35°·0N. 139°·5E. (as on Oct. 3d. 14h.).

A = −·623, B = +·532, C = +·574; D = +·649, E = +·760; G = −·436, H = +·372, K = −·819.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Osaka	3·4	266	1 1	+ 8	—	—	1·9	2·6
Kobe	3·6	266	1 1	+ 5	—	—	1·8	2·0
Mizusawa	4·3	17	1 15	+ 8	2 3	+ 5	—	—
Hakodate	6·8	7	1 56	+12	—	—	3·5	4·0
Nagasaki	8·4	257	2 3	− 4	—	—	4·2	5·2
Zi-ka-wei	15·6	261	3 33	−14	e 6 55	+ 9	—	10·1
Taihoku	18·4	242	—	—	e 6 55	−54	10·2	—
Hong Kong	25·5	247	5 31	−12	10 12	− 1	13·1	15·9
Manila	26·4	224	e 6 6	+14	—	—	13·6	—
Ekaterinburg	55·5	320	i 9 38	− 5	i 18 19	+51	26·4	35·6
Bombay	60·5	275	18 15	?S	(e 18 15)	−15	35·9	37·6
Colombo	61·3	260	34 55	?L	—	—	(34·9)	43·9
Pulkovo	68·9	330	11 10	0	20 12	− 1	31·9	43·2
Tiflis	70·7	310	e 11 55	+34	e 21 7	+33	e 38·0	45·7
Upsala	73·9	334	—	—	—	—	e 39·9	—
Hamburg	81·3	333	—	—	—	—	e 43·9	55·6
Budapest	81·9	325	—	—	—	—	e 44·2	—
Vienna	82·6	326	i 12 31	− 3	—	—	e 46·9	54·9
Edinburgh	83·7	340	—	—	—	—	e 49·9	—
De Bilt	84·2	334	—	—	e 23 7	− 3	e 41·9	48·8
Eskdalemuir	84·2	340	—	—	—	—	40·9	—
Uccle	85·5	334	—	—	—	—	e 42·9	—
Bidston	85·8	339	—	—	—	—	—	56·9
Strasbourg	86·1	330	—	—	—	—	e 50·9	—
Kew	86·6	337	—	—	—	—	—	59·9
Oxford	87·0	337	—	—	—	—	—	59·6
Moncalieri	88·9	328	—	—	—	—	48·8	—
Rocca di Papa	89·1	323	e 11 37	−94	15 37	?	e 49·6	58·6
Ottawa	93·6	23	—	—	—	—	e 40·9	—
Rio Tinto	100·7	334	60 55	?L	—	—	(60·9)	62·9

Additional readings: Kobe gives also MN = +2·1m. Hakodate MN = +3·7m. Zi-ka-wei MNZ = +10·0m. Ekaterinburg MN = +31·0m., MZ = +35·7m. Bombay eS = +25m.22s. Pulkovo SR_1 = +24m.25s. De Bilt MN = +53·5m., MZ = +57·9m. Moncalieri e = +40m.58s. Rocca di Papa iL = +56·6m. Ottawa L = +47·9m.

Oct. 3d. Readings also at 1h. (Batavia), 4h. and 6h. (La Paz), 11h. (Kobe), 14h. (Manila, Nagasaki, Osaka, and Kobe), 15h. (Toledo), 19h. and 21h. (Florence).

Oct. 4d. 7h. 37m. 4s. Epicentre 5°·6N. 126°·3E. (as on 1923 Mar. 14d.).

A = −·589, B = +·802, C = +·098.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Manila	10·4	330	e 2 56	+20	—	—	6·1
Batavia	22·7	239	5 8	− 5	i 9 15	+ 4	—
Zi-ka-wei	25·9	350	e 5 56	+ 9	—	—	—
Ekaterinburg	72·1	329	11 34	+ 3	20 47	− 4	—
Pulkovo	88·2	330	—	—	—	—	e 42·9

No additional readings.

Oct. 4d. 17h. 31m. 10s. Epicentre 14°·0S. 61°·5W.

A = +·463, B = −·853, C = −·242; D = −·879, E = −·477; G = −·115, H = +·213, K = −·970.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz		6·9	248	i 1 43	− 2	i 3 3	− 4	i 3·6	4·0
Andalgala	E.	14·3	197	—	—	—	—	7·9	8·6
	N.	14·3	197	—	—	—	—	7·2	7·5
Pilar	E.	17·6	186	3 14	−58	(6 38)	−53	6·6	7·0
	N.	17·6	186	3 8	−64	(5 38)	−113	5·6	6·8
Rio de Janeiro	E.	19·5	120	i 4 35	0	8 13	0	9·2	11·8
	N.	19·5	120	i 4 28	− 7	8 10	− 3	9·6	—
Mendoza		19·9	197	8 20	?S	(8 20)	− 1	11·0	12·9
Chacarita	E.	20·8	173	2 56	−115	—	—	6·9	7·0
	N.	20·8	173	3 26	−85	—	—	7·3	8·0
Cipolletti		25·6	192	—	—	—	—	12·6	12·7
Tacubaya	E.	49·9	311	8 58	− 8	16 11	− 7	—	—
Ottawa		60·8	350	—	—	i 19 30	+57	31·8	—
San Fernando		72·5	44	21 50	?S	(21 50)	+54	—	—
Coimbra		73·2	40	—	—	i 22 4	+60	24·2	—
Toledo		75·8	42	e 22 22	?S	(e 22 22)	+47	—	—
Algiers		79·2	47	—	—	e 22 34	+20	—	—
Oxford		83·8	34	—	—	i 23 10	+ 3	—	—
Eskdalemuir		84·8	29	—	—	e 23 9	− 8	—	—
Pulkovo		102·9	30	—	—	i 24 37	[− 1]	44·8	—
Ekaterinburg		119·0	31	i 18 42	?PR_1	i 28 47	+ 5	52·8	58·3
Colombo		141·4	97	78 50	?L	—	—	(78·8)	—
Malabar		156·2	152	19 25	[−38]	19 37	?	—	—
Batavia		156·7	150	i 19 31	[−33]	—	—	—	—
Manila		177·5	284	e 19 50	[−27]	—	—	—	—

Additional readings and notes: La Paz gives also MN = +5·1m., all readings being given for 16h. Andalgala and Cipolletti readings have been increased by 8m. Tacubaya SN = +16m.13s. San Fernando S = +22m.2s. Coimbra iE = +22m.6s., possibly a local shock in Spain. Pulkovo i = +25m.43s., +26m.27s., +28m.13s., and +34m.28s. Ekaterinburg iP = +21m.44s., e = +25m.32s., i = +27m.29s., e = +30m.31s., and +37m.50s.

Oct. 4d. Readings also at 2h. (Florence), 4h. (Port au Prince and near Athens), 5h. (near Granada), 8h. (Nagasaki and near Tacubaya), 9h. (Ekaterinburg), 10h. (near Manila), 14h. (near Tiflis and Irkutsk), 21h. (Taihoku and San Fernando).

Oct. 5d. 13h. 5m. 28s. Epicentre 35°·0N. 139°·5E. (as on Oct. 3d.).

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Osaka		3·4	266	1 7	+14	—	—	1·9	2·8
Mizusawa	E.	4·3	17	1 13	+ 6	2 0	+ 2	—	—
Hakodate		6·8	7	−0 44	?	—	—	—	1·2
Zi-ka-wei		15·6	261	3 42	− 5	e 6 44	− 2	—	10·0
Ekaterinburg		55·5	320	e 9 42	− 1	e 17 15	−13	28·5	—
Pulkovo		68·9	330	11 2	− 8	e 20 7	− 6	33·5	44·8
De Bilt		84·2	334	—	—	—	—	e 48·5	—

Additional readings: Osaka gives also MN = +2·6m. Mizusawa SN = +1m.59s. Pulkovo MN = +43·0m.

Oct. 5d. Readings also at 0h. (Colombo), 1h. (Tacubaya, Victoria, La Paz, and Toronto), 2h. (Ekaterinburg), 3h. (near Sarajevo and Tacubaya), 4h. (Tacubaya), 6h. (Tacubaya), 9h. (Ekaterinburg), 17h. (Tacubaya), 22h. (Zi-ka-wei), 23h. (Tacubaya).

Oct. 6d. Readings at 2h. (Taihoku), 5h. (Puebla), 7h. (Riverview and Apia), 8h. (Ekaterinburg (2), Florence, and near Mostar (2)), 11h. (near Kobe), 13h. (Tacubaya and Vera Cruz), 16h. (Ekaterinburg and near Osaka), 18h. (Rocca di Papa), 19h. (Ekaterinburg).

1923. Oct. 7d. 3h. 29m. 30s. Epicentre 1°·0S. 129°·0E.

A = −·629, B = +·777, C = −·017; D = +·777, E = +·629;
G = +·011, H = −·014, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		17·5	333	e 4 10	− 1	—	—	9·6	—
Malabar		22·2	253	5 4	− 3	i 9 18	+ 9	11·5	—
Batavia		22·7	256	5 11	− 2	i 9 37	+18	—	10·0
Hokoto		26·2	340	6 51	+61	(11 39)	+73	11·6	—
Taihoku		27·0	345	6 11	+13	—	—	11·3	19·5
Hong Kong		27·4	329	5 53	− 9	10 27	−21	—	13·5
Zi-ka-wei		33·0	350	e 6 45	−11	e 11 49	−35	—	16·7
Perth		33·4	201	—	—	12 5	−25	18·9	21·9
Nagasaki		33·7	3	6 25	−37	(11 57)	−39	12·0	15·7
Adelaide		35·1	167	—	—	i 12 24	−33	i 19·2	21·9
Kobe		36·1	9	7 16	− 7	(12 57)	−14	13·0	17·4
Osaka		36·2	9	7 11	−13	12 49	−24	12·8	15·3
Riverview		38·9	150	e 7 26	−19	i 13 21	−30	e 18·1	—
Sydney		38·9	150	6 48	−57	13 12	−39	19·7	26·5
Melbourne		39·6	161	7 18	−33	13 36	−24	21·1	27·9
Mizusawa	E.	41·6	15	8 1	− 7	14 14	−15	21·1	—
Hakodate		44·0	13	8 11	−15	—	—	—	—
Calcutta	N.	46·0	305	8 53	+13	15 46	+18	22·7	25·9
Ootomari		49·1	12	e 9 39	+38	16 45	+38	20·8	24·0
Colombo		49·7	280	9 6	+ 1	16 12	− 3	32·0	34·3
Kodaikanal		52·5	283	9 30	+ 7	(17 6)	+16	17·1	34·8
Christchurch		57·6	144	10 24	+28	19 24	+90	31·9	41·4
Wellington		57·7	141	9 54	− 3	17 48	− 7	29·1	32·5
Dehra Dun		57·7	309	8 5	−112	16 0	−115	20·7	34·9
Simla	E.	58·6	310	10 6	+ 3	18 24	+18	—	37·4
	N.	58·6	310	10 12	+ 9	18 6	0	—	36·6
Bombay		58·6	293	10 13	+10	18 23	+17	33·2	34·7
Honolulu	E.	74·5	68	e 11 38	− 8	i 21 16	− 4	e 37·1	40·0
	N.	74·5	68	e 11 50	+ 4	21 16	− 4	—	36·0
Ekaterinburg		79·2	330	i 12 11	− 3	22 12	− 2	32·5	51·5
Tiflis		86·3	312	i 14 6	+71	i 23 54	+21	42·8	65·7
Sitka	E.	93·9	34	—	—	24 7	[+16]	43·6	50·3
	N.	93·9	34	—	—	24 36	−19	43·2	45·4
Pulkovo		95·2	331	i 13 36	− 8	i 24 45	−23	44·5	47·5
Helwan		97·1	300	e 13 47	− 8	24 25	[+16]	—	64·5
Johannesburg		99·4	243	—	—	—	—	31·5	48·5
Upsala		101·4	332	e 18 3	?PR$_1$	e 25 35	−34	e 43·5	59·8
Konigsberg		101·4	325	e 24 34	?S	(e 24 34)	[+ 3]	e 47·5	57·5
Victoria	E.	102·4	40	17 44	?PR$_1$	24 40	[+ 4]	32·5	33·5
	N.	102·4	40	18 38	?PR$_1$	25 38	−41	33·3	56·6
Athens		102·5	309	e 18 17	?PR$_1$	i 27 44	+84	e 50·5	63·6
Belgrade		103·7	316	e 18 40	?PR$_1$	e 26 57	+27	50·9	61·2
Budapest		104·0	320	e 24 43	?S	(e 24 43)	[0]	e 30·7	—
Berkeley	E.	105·3	50	—	—	e 25 7	[+18]	e 49·3	55·7
Sarajevo		105·4	316	—	—	e 25 58	−48	—	—
Vienna		105·6	321	e 17 54	?PR$_1$	34 9	?SR$_1$	53·5	64·5
Lick	E.	105·9	50	—	—	i 25 1	[+ 9]	e 49·6	53·9
	N.	105·9	50	—	—	e 25 9	[+17]	e 44·2	—
Cape Town		106·3	234	25 12	?S	(25 12)	[+18]	—	52·2
Bergen		106·7	335	e 20 30	?PR$_1$	—	—	e 50·5	58·5
Hamburg		107·5	327	e 18 10	?	e 19 7	?	45·5	54·5
Pompeii		109·0	315	e 20 10	?PR$_1$	—	—	57·5	84·5
Innsbruck		109·1	320	—	—	33 12	?SR$_1$	e 38·9	—
Venice		109·1	318	18 30	?PR$_1$	—	—	—	—
Rocca di Papa		110·0	314	e 19 6	?PR$_1$	e 28 42	+74	e 55·9	78·9
Florence		110·4	317	19 35	?PR$_1$	26 30	−62	35·5	39·5
De Bilt		110·8	327	—	—	e 26 30	−65	e 51·5	59·1
Zurich		110·8	320	e 19 25	?PR$_1$	29 56	+141	—	—
Strasbourg		110·9	322	e 14 30	−32	30 0	+144	52·5	64·8
Uccle		111·9	325	19 36	?PR$_1$	e 26 36	−69	e 40·5	59·8
Moncalieri		112·3	319	19 17	?PR$_1$	29 43	+115	53·1	70·3
Besançon		112·5	321	29 19	?S	(29 19)	+89	—	39·5
Edinburgh		113·0	333	e 19 54	?PR$_1$	i 26 39	−75	47·5	62·0
Eskdalemuir		113·4	333	e 19 46	?PR$_1$	29 30	+93	50·5	62·6
Paris		113·8	325	e 14 31	−44	e 29 27	+87	55·5	59·5
Stonyhurst		113·8	330	e 20 6	?PR$_1$	30 30	+150	59·5	65·5
Kew		114·1	329	20 30	?PR$_1$	—	—	—	67·5
West Bromwich		114·3	330	19 55	?PR$_1$	—	—	—	60·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bidston		114·4	330	26 10	?S	(26 10)	−115	—	70·7
Marseilles		114·5	318	e 21 0	?PR$_1$	—	—	35·5	—
Tucson	E.	115·7	53	e 33 28	?SR$_1$	—	—	58·0	59·0
Barcelona		117·5	316	e 20 20	?PR$_1$	—	—	e 53·5	63·1
Algiers		118·7	312	e 20 11	?PR$_1$	—	—	e 41·5	66·5
Tortosa	N.	118·8	317	20 26	?PR$_1$	31 35	?	50·0	62·5
Toledo		122·3	317	e 20 17	?PR$_1$	e 33 7	?SR$_1$	e 52·1	62·6
Granada		123·3	315	e 19 41	?PR$_1$	31 26	?	e 57·5	65·8
Coimbra	E.	125·0	321	e 21 2	?PR$_1$	33 34	?	62·0	69·9
	N.	125·0	321	—	—	—	—	60·5	64·6
Rio Tinto		125·1	317	21 30	?PR$_1$	—	—	—	42·5
San Fernando		125·5	315	21 7	?PR$_1$	—	—	51·0	52·0
Chicago		127·6	35	20 37	?PR$_1$	32 30	?	66·5	—
Ann Arbor		129·3	30	e 21 30	?PR$_1$	—	—	56·5	72·0
Tacubaya	E.	129·4	66	22 0?	?PR$_1$	33 20	?	58·6?	64·6
Toronto	E.	130·4	26	21 30	?PR$_1$	33 27	?	60·2	69·3
	N.	130·4	26	21 25	?PR$_1$	33 22	?	68·2	76·8
Ottawa		130·5	21	e 21 39	?PR$_1$	34 5	?	e 61·5	73·5
Ithaca		132·6	25	e 22 30	?PR$_1$	e 35 0	?	67·5	—
Northfield		132·7	20	e 20 30	?PR$_1$	—	—	e 62·5	—
Georgetown		135·2	28	e 16 30	?	i 23 7	?PR$_1$	65·7	—
Washington		135·2	28	20 15	?PR$_1$	31 50	?	63·5	—
Cheltenham	E.	135·4	28	—	—	—	—	e 73·8	76·3
	N.	135·4	28	—	—	e 34 20	?	61·0	81·9
Cipolletti		137·1	160	28 30	?	—	—	75·9	81·9
Mendoza		142·4	155	28 0	?	—	—	29·8	47·9
Pilar	E.	145·2	161	23 54	?PR$_1$	—	—	85·6	90·8
	N.	145·2	161	20 0	[+12]	—	—	80·4	95·5
Andalgala	N.	147·9	154	18 18	[−95]	—	—	73·4	88·1
Rio de Janeiro		154·9	197	e 20 45	[+43]	—	—	40·8	45·1
La Paz		155·7	137	i 20 22	[+19]	—	—	68·3	75·1

Additional readings and notes: Malabar gives also iE = +5m.24s. Batavia iE = +5m.18s., iN = +5m.30s., L = +22·8m. Hong Kong S = +8m.48s.?, MN = +11·2m. Zi-ka-wei MN = +17·2m. Perth PR$_1$? = +7m.0s., PS = +11m.11s., SR$_1$ = +15m.36s. Adelaide iSR$_1$ = +15m.48s., iSR$_2$ = +17m.6s. Kobe S = +9m.35s., MN = +18·5m. Osaka MN = +19·7m. Sydney PR$_2$ = +9m.24s., SR$_1$ = +15m.48s., L = +34·6m. Melbourne SR$_1$ = +17m.12s. Mizusawa PN = +8m.2s. Ootomari MN = +29·1m. Wellington SR$_1$ = +23m.0s. Honolulu PR$_1$E = +14m.2s., PR$_1$N = +14m.27s., PR$_2$N = +16m.25s., iPSE = +21m.58s., eE = +25m.0s., SR$_1$N = +30m.29s., eE = +33m.50s. T$_o$ = 3h.29m.28s. Ekaterinburg PR$_1$ = +15m.20s., PR$_2$ = +17m.2s., MZ = +45·4m. Tiflis iSN = +25m.42s., MN = +57·1m. Sitka SR$_1$ = +30m.27s., SR$_2$N = +34m.39s., eN = +39m.34s., LN = +44·4m. T$_o$ = 3h.29m.19s. Pulkovo PR$_1$ = +17m.26s., SR$_1$ = +31m.42s., MN = +59·3m., MZ = +66·6m. Helwan PR$_1$ = +17m.43s. Upsala MN = +56·2m. Konigsberg iE = +21m.9s., i = +24m.38s., MN = +52·5m. Athens i = +24m.54s., MN = +60·6m. Belgrade PR$_1$ = +22m.32s., SR$_1$ = +34m.24s., eL = +44·4m. Berkeley eN = +25m.15s., eE = +33m.3s., eN = +44m.1s. Vienna iZ = +18m.48s., iE = +19m.31s., PS = +21m.29s., PR$_2$ = +25m.4s., iN = +25m.50s., and +28m.46s., iE = +38m.12s., eL = +47·5m., i = +56m.1s. Lick eE = +28m.9s. and +33m.5s. Hamburg SR$_1$ = +34m.30s., MNZ = +60·5m. Rocca di Papa iPE = +19m.28s., eP = +19m.36s., eS = +28m.46s., eL = +34·6m., eLN = +53·3m. De Bilt ePR$_1$ = +19m.30s., eN = +26m.43s., eE = +35m.18s., eN = +35m.32s., MN = +63·6m., MZ = +68·3m. Strasbourg e = +19m.30s., eSE? = +30m.9s., i = +39m.21s., MN = +63·2m. Uccle e = +35m.18s., MN = +67·1m. Moncalieri MN = +66·7m. Edinburgh i = +29m.9s. Eskdalemuir SR$_1$? = +35m.30s. Paris PR$_1$ = +19m.50s., iSE = +29m.40s., MN = +60·5m. Bidston S = +36m.10s. Tucson LE = +53·2m. Barcelona SR$_1$? = +36m.23s. Algiers ? = +29m.50s. Tortosa eLE = +51·5m., ME = +73·4m. Toledo PR$_1$ = +24m.35s., PR$_2$NW = +26m.27s., PR$_2$NE = +26m.28s., PR$_2$NE = +28m.32s., PR$_2$NW = +28m.39s., SR$_1$NE = +37m.58s., SR$_1$NW = +38m.55s., SR$_2$NE = +42m.35s., SR$_2$NW = +43m.14s., SR$_2$NE = +46m.31s., SR$_2$NW = +46m.25s., MNW = +63·1m. Granada iP = +20m.2s., SR$_1$ = +41m.41s., MN = +70·3m. Coimbra SR$_1$N = +36m.32s., SR$_1$E = +37m.34s., iE = +39m.35s. San Fernando SR$_1$? = +38m.37s. Chicago eL = +54·5m. Ann Arbor eL = +43·5m. Toronto PR$_1$E = +22m.41s. PR$_1$N = +22m.45s., iE = +23m.40s., eE = +30m.45s., i = +31m.45s., iSE = +33m.44s., iSN = +33m.46s., i = +34m.30s., i = +44m.30s. and several Ls., Ottawa e = +39m.0s. and +44m.18s. T$_o$ = 3h.26m.6s. Ithaca i = +22m.54s., and several Ls. Northfield L = +70·5m. and +80·5m. Georgetown eLE = +28·9m., LE = +58·5m. Washington PR$_1$ = +23m.15s., eL = +49·8m. Cheltenham PR$_2$N = +23m.37s., LN = +74·4m. La Paz L = +67·8m., MN = +73·7m.

Oct. 7d. Readings also at 4h. (Tacubaya), 7h. (Toronto), 8h. (Riverview, Batavia, and Hong Kong), 9h. (Uccle and De Bilt), 10h. and 12h. (Ekaterinburg), 17h. (Tiflis), 21h. (La Paz), 23h. (near Osaka and Mizusawa.

Oct. 8d. 3h. 41m. 46s. Epicentre 6°·7N. 84°·4W.

$A = +\cdot097$, $B = -\cdot988$, $C = +\cdot117$; $D = -\cdot995$, $E = -\cdot098$; $G = +\cdot011$, $H = -\cdot116$, $K = -\cdot993$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Heights		5·3	64	1 22	0	2 2	−23	2·6	2·7
Tacubaya	E.	19·2	313	5 20	+49	9 29	+83	11·2	—
	N.	19·2	313	5 21	+50	9 32	+86	12·0	—
La Paz		28·2	145	i 6 11	+ 1	11 4	+ 1	15·0	17·4
Chicago		35·2	356	e 6 14	−61	—	—	19·7	—
Ann Arbor		35·6	1	—	—	—	— e	17·5	—
Toronto	E.	37·2	6	—	— e	13 29	+ 2	16·4	—
	N.	37·2	6	8 0	+28	13 25	− 2	16·6	—
Ottawa		39·4	11	e 14 3	?S	(14 3)	+ 6 e	17·7	21·2
Victoria		53·1	329	—	—	—	—	29·9	34·8
De Bilt		84·4	39	—	—	—	— e	43·2	—
Pulkovo		96·2	27	—	— e	26 14	+56	44·2	—

Additional readings: Balboa Heights gives also LN = +2·3m., MN = +3·1m. Ann Arbor L = +19·2m. Toronto PR_1N = +9m.12s., eE = +16m.4s., LE = +16·4m., eLN = +22·2m. Ottawa eS = +16m.47s. Victoria MN = +32·9m.

Oct. 8d. Readings also at 0h. (Rocca di Papa), 2h. (Ekaterinburg), 3h. (Taihoku), 8h. (Ekaterinburg), 9h. (Zi-ka-wei and Ekaterinburg and near Tacubaya), 11h. (Ekaterinburg, Barcelona, and near Tortosa), 14h. (Florence), 15h. and 18h. (La Paz), 20h. (Ekaterinburg).

Oct. 9d. 11h. 22m. 42s. Epicentre 39°·5N. 140°·5E.

$A = -\cdot595$, $B = +\cdot491$, $C = +\cdot636$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	N.	0·6	129	0 6	− 3	0 14	− 3	—	—
Hakodate		2·3	4	0 40	+ 4	(1 0)	− 3	1·0	2·3
Nagoya		5·2	214	1 45	+25	2 15	− 7	3·2	3·8
Osaka		6·3	221	1 39	+ 3	2 47	− 5	2·8	3·2
Kobe		6·4	224	1 39	+ 1	2 51	− 4	3·4	4·1
Zi-ka-wei		17·6	248	e 3 36	−36	—	—	—	—
Pulkovo		65·4	329	i 10 34	−13	—	—	—	—

Additional readings: Mizusawa gives also PE = +8s. Hakodate MN = +2·2m. Osaka MN = +4·6m. Kobe MN = +3·6m.

Oct. 9d. 23h. 10m. 30s. Epicentre 39°·3N. 21°·0E. (as on 1923 May 21d.).

$A = +\cdot722$, $B = +\cdot277$, $C = +\cdot633$; $D = +\cdot358$, $E = -\cdot934$; $G = +\cdot591$, $H = +\cdot227$, $K = -\cdot774$.

Doubtful.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Athens	2·6	120	0 39	− 2	—	—	1·1	1·3
Mostar	4·7	331	e 1 18	+ 5	e 1 45	−24	—	2·4
Sarajevo	4·9	339	e 1 27	+11	e 2 23	+ 9	—	3·3
Pompeii	5·2	288	e 1 59	+39	e 2 30	+ 8	4·5	—
Belgrade	5·5	356	e 1 38	+13	e 3 11	?L	(e 3·2)	3·6
Rocca di Papa	6·8	294	e 1 43	− 1	3 56	+51	4·4	5·4
Budapest	8·3	351	e 5 21	?L	—	—	(e 5·4)	—
Florence	8·5	305	4 58	?L	—	—	(5·0)	6·5
Venice	8·8	317	e 4 34	?L	—	—	(e 4·6)	4·8
Vienna	9·4	341	3 6	+44	4 14	+ 1	1 5·8	5·3
Innsbruck	10·6	322	e 2 48	+10	e 4 38	− 7	—	—
De Bilt	16·8	325	—	—	—	—	e 9·5	—
Pulkovo	21·3	13	i 5 0	+ 3	—	—	—	—
Ekaterinburg	31·1	43	—	—	—	—	15·5	—

Additional readings: Athens gives also iP = +43s. Sarajevo eP = +1m.36s. Rocca di Papa ePE = +1m.48s., ePN = +1m.54s., iN = +2m.0s., SE = +4m.13s., L = +4·3m. Venice MN = +7·2m.

Oct. 9d. The following shocks are presumed to come from the same epicentre, 39°·3N. 21°·0E. :—

h.	m.	s.			
22	44	6	Athens P = +40s.		
22	46	37	Athens P = +40s.		
22	52	22	Athens P = +40s.		
23	2	51	Athens P = +40s. eP = +1m.54s.	Belgrade eP = +1m.34s.	Rocca di Papa
23	5	11	Athens P = +40s.	Pompeii eP = +1m.28s.	
(23	10	30)	As above.		
23	15	11	Athens P = +40s. +2m.20s.	Mostar eP = +2m.30s.	Sarajevo eP =
23	37	23	Athens P = +40s.		
23	47	54	Athens P = +40s. eP = +3m.40s. eP = +1m.57s.	Sarajevo eP = +1m.28s. Belgrade eP = +1m.43s.	Pompeii Rocca di Papa

Oct. 9d. Readings also at 3h. (Ekaterinburg and near Mizusawa), 5h. (Ekaterinburg), 9h. (Ekaterinburg), 15h. (Puy de Dôme), 16h. (near Osaka and Mizusawa), 17h. (near Mizusawa), 18h. (La Paz, San Fernando, and near Mizusawa).

1923. Oct. 10d. 7h. 11m. 8s. Epicentre 71°·0N. 12°·0W.

A = +·318, B = −·068, C = +·946; D = −·208, E = −·978; G = +·925, H = −·197, K = −·326.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bergen		12·7	138	e 2 42	−27	5 7	−30	5·6	8·9
Edinburgh		15·6	161	i 4 12	+25	i 6 57	+11	—	12·7
Eskdalemuir		16·2	162	i 4 3	+ 8	—	—	—	—
Upsala		16·4	118	i 3 56	− 1	i 7 0	− 4	e 7·9	10·9
Stonyhurst		17·7	161	4 46	+33	7 52	+19	—	10·4
Bidston		18·0	163	4 36	+19	8 20	+40	—	11·9
West Bromwich		19·0	161	4 38	+ 9	8 16	+14	—	—
Hamburg		20·0	139	e 4 45	+ 4	i 8 30	+ 7	e 12·9	14·1
Pulkovo		20·3	102	i 4 44	− 1	i 8 34	+ 5	9·8	10·2
Kew		20·3	158	8 52	?L	—	—	(8·9)	11·9
De Bilt		20·5	149	i 4 53	+ 6	8 39	+ 5	10·5	13·0
Konigsberg		21·4	122	i 4 58	0	e 8 53	0	10·9	11·9
Uccle		21·6	151	i 5 4	+ 4	i 8 56	− 1	e 9·9	13·5
Paris		23·2	155	i 5 24	+ 5	i 9 34	+ 5	11·9	12·9
Le Mans		23·7	160	e 5 32	+ 7	i 9 52	+14	—	—
Strasbourg		24·3	147	i 5 29	− 2	i 9 58	+ 8	14·9	19·4
	Z.	24·3	147	i 5 27	− 4	i 9 59	+ 9	—	—
Besançon		25·3	151	5 44	+ 3	10 10	+ 1	14·9	—
Zurich		25·6	146	e 5 43	− 1	e 10 7	− 7	e 14·9	—
Innsbruck		26·2	142	i 5 50	0	i 10 22	− 4	e 15·1	18·1
Puy de Dôme		26·3	156	—	—	—	—	13·9	17·2
Vienna		26·4	134	5 49	− 3	i 10 26	− 4	e 13·9	21·9
Lemberg		26·9	123	e 5 45	−12	e 10 25	−14	e 14·4	16·9
Moncalieri		27·8	149	6 6	0	i 10 42	−13	14·3	17·4
Budapest		27·8	131	6 20	+14	11 2	+ 7	16·0	—
Venice		28·2	142	6 15	+ 5	—	—	—	7·6
Marseilles		29·1	153	e 6 24	+ 5	11 18	− 1	15·9	21·1
Florence		29·6	145	e 6 22	− 2	10 42	−45	13·9	20·9
Barcelona		30·4	159	6 29	− 3	e 11 38	− 3	—	17·5
Belgrade		30·6	131	e 6 28	− 6	e 11 58	+14	e 14·3	27·4
Tortosa	E.	30·9	163	6 33	− 4	11 38	−12	—	20·5
	N.	30·9	163	6 32	− 5	11 27	−23	14·5	19·4
Coimbra	N.	30·9	175	i 6 37	0	i 11 42	− 8	15·4	17·5
Sarajevo		31·0	135	(e 6 52)	+14	—	—	e 6·9	—
Toledo		31·5	168	i 6 34	− 9	i 11 47	−13	e 15·3	18·7
Rocca di Papa		31·8	143	i 6 37	− 8	11 40	−25	e 19·2	23·8
Lisbon		32·3	177	6 45	− 6	12 9	− 4	—	—
Ekaterinburg		32·4	78	i 6 36	−16	i 11 47	−27	13·9	17·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Pompeii		33·1	141	e 7 21	+24	e 11 52	−34	21·9	25·9
Rio Tinto		33·4	173	10 52	?S	(10 52)	−98	—	17·9
Granada		34·1	169	i 7 4	− 2	i 12 32	−10	i 16·7	22·0
Azores		34·1	200	10 34	?S	(10 34)	−128	—	19·5
San Fernando		34·7	173	7 17	+ 6	12 52	+ 1	15·4	22·4
Algiers		35·2	160	7 10	− 5	i 12 45	−13	16·9	20·0
Athens		37·9	131	7 25	−12	i 13 18	−19	e 21·4	21·9
Ottawa		39·3	265	i 7 51	+ 2	i 14 4	+ 8	e 20·4	21·9
Tiflis		40·4	105	e 7 51	− 7	e 13 58	−15	21·9	23·7
Toronto	E.	42·0	269	i 8 9	− 2	14 38	+ 3	21·5	23·2
	N.	42·0	269	i 8 7	− 4	i 14 41	+ 6	21·3	27·8
Ithaca		42·2	264	8 12	0	14 28	−10	e 19·9	—
Fordham		42·7	260	—	—	—	—	e 11·9	25·9
Ann Arbor		44·6	270	8 22	− 8	14 22	−48	20·5	24·9
Georgetown		45·5	262	8 39	+ 2	15 40	+19	e 21·5	—
Washington		45·5	262	8 56	+19	15 58	+37	e 21·9	—
Cheltenham	N.	45·6	262	8 32	− 5	15 31	+ 9	25·6	26·8
Sitka		45·9	320	—	—	15 25	− 2	24·2	24·4
Chicago		46·3	274	i 8 47	+ 5	15 47	+15	23·2	—
Helwan		47·5	127	8 45	− 6	15 39	− 9	—	—
Victoria	E.	51·1	309	9 23	+ 9	16 49	+17	26·6	30·7
	N.	51·1	309	9 22	+ 8	—	—	27·0	31·6
Simla	N.	60·5	81	10 22	+ 6	e 18 34	+ 4	e 31·5	36·3
Berkeley		60·6	302	—	—	—	—	e 34·5	38·1
	N.	60·6	302	—	—	—	—	e 33·0	36·7
Lick	E.	60·9	302	—	—	—	—	e 31·8	—
Porto Rico	N.	61·4	240	10 15	− 6	18 20	−21	29·3	—
Tucson	E.	62·4	290	10 8	−20	18 43	−10	29·8	37·1
Bombay		70·5	90	11 28	+ 8	20 35	+ 3	37·1	46·5
Tacubaya		70·8	274	11 33	+11	21 0	+24	33·6	—
Zi-ka-wei		72·7	40	e 10 10	−84	e 20 28	−30	—	43·6
Taihoku		78·6	42	41 41	?L	—	—	(41·7)	—
Hong Kong		79·6	50	12 15	− 2	—	—	—	43·9
Kodaikanal		80·2	89	27 4	?	—	—	38·4	48·6
Colombo		84·1	88	23 4	?S	(23 4)	− 5	—	53·4
Honolulu	N.	84·7	330	—	—	23 12	− 4	e 45·1	51·9
Manila		88·7	45	—	—	—	—	e 44·9	55·9
La Paz		95·4	233	i 13 52	+ 7	i 26 24	+74	44·8	49·0
Rio de Janeiro	E.	96·4	209	17 37	?PR$_1$	(23 29)	[−35]	24·5	31·9
Batavia		105·0	64	e 19 47	?PR$_1$	—	—	62·0	—

Additional readings and notes: Upsala gives also MN = +10·1m. Hamburg iS = +8m.52s., MN = +16·7m., MZ = +16·8m. De Bilt LN = +10·3m., MN = +15·6m., MZ = +15·4m. Konigsberg PE = +5m.0s., iN = +8m.50s., iSE = +8m.55s., MN = +16·9m. Uccle i = +9m.10s., MN = +14·2m. Paris MN = +13·9m. Strasbourg MN = +15·7m. Innsbruck MNW = +19·6m. Vienna iZ = +5m.50s. and +5m.59s., PR$_2$ = +6m.56s., e = +9m.58s., SR$_1$ = +11m.32s., SR$_4$ = +16m.34s. Moncalleri MN = +17·5m. Florence eP = +5m.24s. Barcelona MN = +14·1m. Belgrade iP = +6m.30s. Coimbra iN = +12m.10s., MN = +16·6m. T$_e$ = 7h.11m.20s. Toledo PR$_1$ = +7m.37s., PR$_2$ = +9m.16s., PR$_3$ = +10m.14s., SR$_1$ = +13m.16s., MNW = +19·1m. Rocca di Papa iPEN = +6m.38s., SN = +10m.22s. and +11m.51s. Ekaterinburg PR$_1$ = +7m.17s., PR$_2$ = +7m.46s., SR$_1$ = +11m.54s., SR$_2$ = +13m.45s., MZ = +18·6m. Granada MN = +22·4m. San Fernando MN = +21·9m. Algiers PR$_1$ = +8m.35s., MN = +22·4m. Athens PR$_1$E = +8m.36s. Ottawa iPR$_1$ = +9m.22s., SR$_1$ = +17m.16s., SR$_2$ = +18m.4s. T$_e$ = 7h.11m.8s. Tiflis MN = +23·3m. Toronto PR$_1$E = +9m.57s., iPR$_1$N = +10m.0s., iE = +14m.45s., iSR$_1$ = +17m.59s., iE = +18m.13s. and +19m.31s. Ithaca e = +9m.39s., i = +10m.13s., L = +23·9m. Fordham readings are given for 6h. Georgetown LE = +25·5m., LN = +25·9m. Washington L = +25·9m. and +27·9m. Cheltenham PR$_1$E = +10m.56s., SR$_1$E = +18m.55s., SR$_1$N = +18m.59s., ME = +26·5m. T$_e$ = 7h.10m.52s. Sitka ePR$_1$N = +10m.30s., SR$_1$ = +18m.57s., MN = +28·6m. T$_e$ = 7h.10m.53s. Berkeley ePR$_1$NZ = +10m.30s., iPR$_1$NZ = +10m.33s., iZ = +10m.36s. and +10m.42s., eE = +10m.47s., eN = +20m.0s. Lick iPR$_1$N = +10m.33s., iPR$_1$E = +10m.36s., iSR$_1$E = +18m.21s., iN = +33m.51s. Porto Rico PE = +11m.35s. T$_e$ = 7h.11m.4s. Tucson LE = +32·2m. and +37·0m. T$_e$ = 7h.10m.42s. Zi-ka-wei MN = +46·1m. Hong Kong MN = +51·9m. Rio de Janeiro eN = +18m.52s., LN = +31·9m. La Paz PR$_1$ = +17m.39s., SR$_1$ = +31m.19s. T$_e$ = 7h.10m.3s. Batavia i = +48m.47s.

Oct. 10d. Readings also at 1h. (Athens), 2h. (La Paz (2)), 5h. (Barcelona and near Tacubaya), 19h. (La Paz), 22h. (Ekaterinburg, Victoria, and Riverview), 23h. (Toronto, Ottawa, and De Bilt).

Oct. 11d. 12h. 28m. 48s. Epicentre 44°·0N. 39°·5W.

A = +·555, B = −·458, C = +·695; D = −·636, E = −·772; G = +·536, H = −·443, K = −·719.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Coimbra		23·3	88	e 5 39	+19	9 33	+ 2	10·9	—
Bidston		25·5	55	—	—	15 37	?L	(15·6)	22·2
Rio Tinto		25·5	93	10 12	?S	(10 12)	− 1	—	19·2
Ottawa		25·6	286	—	—	e 12 42	?L	e 16·2	—
Eskdalemuir		25·7	51	—	—	—	—	14·2	—
Edinburgh		25·8	50	—	—	—	—	e 14·2	—
San Fernando		26·4	95	—	—	e 9 36	−54	—	—
Oxford		26·5	59	—	—	—	—	—	21·2
Toledo		26·5	86	5 52	− 1	10 30	− 2	e 17·6	—
Toronto	E.	28·5	283	e 28 20	?	—	—	—	—
Paris		29·0	65	—	—	—	—	e 16·2	—
Uccle		30·0	62	—	—	—	—	e 15·2	—
De Bilt	E.	30·4	60	—	—	—	—	e 17·2	—
Strasbourg		32·5	65	—	—	—	—	e 14·2	—
Hamburg		33·3	56	—	—	—	—	e 21·2	—
Rocca di Papa		37·7	75	(e 6 42)	−54	—	—	e 6·7	26·0
Pulkovo		43·5	43	—	—	—	—	e 22·2	34·0
Ekaterinburg		59·2	39	6 49	?	i 18 27	+14	26·2	43·0
La Paz		65·9	210	10 52	+ 2	—	—	—	—

Additional readings and notes: Coimbra gives also ePN = +5m.51s., L = +17·7m. Toronto gives a series of L's, of which the earliest is LN = +30·3m.; probably the time is in error. De Bilt eLN = +16·2m. Ekaterinburg e = +12m.27s. and +20m.52s.

Oct. 11d. Readings also at 8h. (Ekaterinburg and near Nagasaki), 12h. (La Paz and near Malabar and Batavia), 14h. (La Paz), 15h. (Ekaterinburg), 16h. (Colombo and La Paz), 21h. (Tacubaya), 22h. (near Balboa Heights)

Oct. 12d. Readings at 2h. (near La Paz), 5h. (Taihoku), 7h. (La Paz), 8h. (Ekaterinburg), 10h. (Ekaterinburg, Zante, and near Manila), 13h. (Tacubaya), 18h. (Ekaterinburg and near Osaka and Kobe), 20h. (Stonyhurst and near Mizusawa).

Oct. 13d. 4h. 28m. 24s. Epicentre 50°·5N. 129°·5W. (as on 1920 Mar. 29d.).

A = −·405, B = −·491, C = +·772; D = −·772, E = +·636; G = −·491, H = −·595, K = −·636.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Victoria		4·5	115	1 14	+ 4	—	—	2·7	3·4
Sitka	E.	7·4	334	—	—	—	—	3·7	5·7
	N.	7·4	334	—	—	—	—	4·1	4·7
Berkeley		13·6	155	i 2 47	−34	e 5 38	−20	e 7·4	—
Lick	E.	14·3	154	i 3 30	0	—	—	e 6·9	8·9
Chicago		29·8	91	11 24	?S	(11 24)	− 7	16·2	—
Ann Arbor		32·1	88	e 7 36	+48	—	—	17·4	—
Toronto	E.	34·1	83	i 4 21	−165	—	—	17·8	19·6
	N.	34·1	83	—	—	e 12 31	−11	18·1	19·2
Ottawa		35·5	78	—	—	e 12 54	− 9	e 17·6	19·6
Ithaca		36·6	82	—	—	—	—	19·1	—
Northfield		38·1	77	—	—	e 13 36	− 3	e 14·6	—
Georgetown		38·2	88	—	—	e 13 36	− 5	e 20·4	—
Washington		38·2	88	11 54	?	—	—	20·6	—
Edinburgh		64·7	30	—	—	—	—	—	39·6
Eskdalemuir		65·2	30	—	—	e 19 36	+ 9	31·6	—
Pulkovo		68·6	11	e 11 12	+ 4	e 20 17	+ 8	33·6	40·3
De Bilt	N.	70·5	28	—	—	—	—	e 34·6	44·2
Uccle		71·3	29	—	—	—	—	—	40·6
Ekaterinburg		72·4	355	12 33	+61	21 55	+60	32·6	42·6
Strasbourg		74·4	28	—	—	—	—	e 42·6	—
Moncalieri		77·6	30	—	—	—	—	e 38·5	—

Additional readings and notes: Berkeley gives also eN = +4m.28s. Lick eE = +4m.25s. Chicago S = +15m.7s.(?L). Toronto eE = +15m.5s., eN = +17m.6s., and several L's. Georgetown LN = +23·6m., LE = +23·8m. Eskdalemuir e = +24m.6s. De Bilt eLE = +36·6m. Moncalieri L = +45·7m.

Oct. 13d. Readings also at 1h. (near Malabar and Batavia), 7h. (Ekaterinburg and near Mostar), 9h. (Ekaterinburg), 16h. (Ekaterinburg, Osaka, and near Kobe and Mizusawa), 22h. (Florence), 23h. (near La Paz).

Oct. 14d. Readings at 0h. (La Paz), 1h. (Tacubaya), 2h. (Manila), 3h. (Taihoku), 4h. (Tacubaya and near Osaka and Kobe), 9h. (near Lick and Berkeley), 10h. (near Athens), 12h. (Ekaterinburg), 14h. (near Kobe) 20h. (La Paz and Ekaterinburg), 23h. (Ekaterinburg (2), De Bilt, Strasbourg, and near Athens).

Oct. 15d. 3h. 49m. 10s. Epicentre 31°·2N. 70°·3E. (as on Oct. 2d.).

$A = +\cdot288$, $B = +\cdot805$, $C = +\cdot518$; $D = +\cdot941$, $E = -\cdot337$; $G = +\cdot175$, $H = +\cdot488$, $K = -\cdot855$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ekaterinburg	26·5	348	e 5 42	−11	e 10 17	−15	13·8	18·0
Pulkovo	39·0	330	8 5	+19	14 5	+13	20·8	—
Florence	47·5	304	e 21 50	?L	—	—	(e 21·8)	23·3
Strasbourg	49·5	310	—	—	—	—	e 23·8	—
Moncalieri	49·8	306	—	—	e 15 9	−67	19·8	—
Besançon	50·8	309	—	—	—	—	—	23·8
De Bilt N.	51·0	315	—	—	—	—	e 22·8	—
Eskdalemuir	55·6	320	—	—	—	—	24·8	—

No additional readings.

Oct. 15d. 7h. 31m. 48s. (I) } Epicentre 9°·0S. 121°·0E.
7h. 57m. 55s. (II) }

$A = -\cdot509$, $B = +\cdot847$, $C = -\cdot156$; $D = +\cdot857$, $E = +\cdot515$; $G = +\cdot081$, $H = -\cdot134$, $K = -\cdot988$.

But see note at end.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Malabar	13·4	277	3 18	0	i 6 2	+ 9	e 9·2	—
II	13·4	277	3 3	−15	5 55	+ 2	7·6	—
I Batavia	14·3	280	3 21	− 9	i 6 46	+31	10·7	—
II	14·3	280	3 32	+ 2	i 6 32	+17	10·1	—
I Perth	23·5	191	—	—	—	—	13·3	—
I Manila	23·6	0	e 5 43	+19	—	—	—	11·6
II	23·6	0	5 47	+23	—	—	—	—
I Adelaide	30·6	150	—	—	11 30	−14	e 17·0?	20·2
II	30·6	150	—	—	12 17?	+33	17·2?	20·2
II Hong Kong	32·6	350	—	—	—	—	—	20·6
II Taihoku	34·0	1	—	—	—	—	e 16·1	—
I Melbourne	36·0	147	—	—	12 18	−52	i 18·3	22·9
I Riverview	37·2	138	e 7 41	+ 9	e 13 28	+ 1	e 20·2	—
II	37·2	138	—	—	—	—	e 18·8	—
I Sydney	37·2	138	—	—	13 30	+ 3	23·1	24·7
II	37·2	138	—	—	—	—	23·3	24·8
I Zi-ka-wei	40·2	1	i 8 5	+ 8	e 13 57	−13	—	24·5
II	40·2	1	e 8 15	+18	e 13 58	−12	—	24·6
II Nagasaki	42·6	12	10 46	+151	—	—	—	—
I Colombo	44·0	289	12 12	?	24 42	?L	(24·7)	—
II	44·0	289	—	—	—	—	22·1	34·6
I Kodaikanal	47·4	294	23 48	?L	—	—	(23·8)	—
II	47·4	294	—	—	—	—	27·5	31·3
I Bombay	55·1	301	17 23	?S	(17 23)	+ 1	(29·1)	56·3
I Christchurch	56·5	138	—	—	—	—	35·6	39·2
I Simla	58·0	316	—	—	e 15 30	?	—	—
I Ekaterinburg	82·1	332	i 12 40	+ 9	22 46	− 1	e 41·2	—
II	82·1	332	i 12 42	+11	—	—	40·1	50·4
I Pulkovo	98·1	330	13 55	− 6	25 24	−13	45·2	55·5
II	98·1	330	14 3	+ 2	25 32	− 5	46·1	56·4
II Upsala N.	104·4	330	—	—	—	—	e 45·1	—
II Vienna	106·4	319	e 19 5	?PR_1	e 25 18	[+24]	e 38·1	66·1
II Hamburg	109·6	323	—	—	e 22 5	?	43·1	68·1
I Rocca di Papa	109·6	310	—	—	e 34 6	?	i 54·7	54·8
II Innsbruck	109·8	317	—	—	—	—	68·1	—
I Florence	110·4	313	—	—	—	—	e 51·2	69·2
I Strasbourg	112·0	319	—	—	—	—	e 20·2	—
II	112·0	319	—	—	—	—	—	67·1

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I	Moncalieri	112·7	314	e 20 12	?PR$_1$	e 32 22	?	48·3	—
I	De Bilt	112·8	322	—	—	—	—	e 65·2	79·4
II		112·8	322	—	—	—	—	—	71·6
I	Uccle	113·6	320	e 19 54	?PR$_1$	e 25 42	[+18]	e 29·6	37·8
I	Victoria E.	113·6	40	—	—	—	—	e 55·8	—
II	E.	113·6	40	—	—	—	—	—	63·6
II	Paris	115·3	320	—	—	—	—	e 59·1	71·1
I	Edinburgh	116·1	328	—	—	e 26 12	[+39]	56·2	—
II		116·1	328	—	—	—	—	—	77·1
I	Eskdalemuir	116·4	328	e 20 12	?PR$_1$	e 30 12	?	e 56·2	—
II		116·4	328	—	—	—	—	56·1	—
I	Stonyhurst	116·5	325	e 30 12	?	—	—	—	—
II		116·5	325	—	—	—	—	—	76·1
I	Oxford	116·6	323	—	—	i 25 53	[+17]	i 56·1	—
II		116·6	323	—	—	—	—	—	76·6
II	Bidston	117·1	325	—	—	—	—	—	75·8
II	Toledo	122·3	311	—	—	e 40 30	?SR$_1$	e 50·3	—
I	Rio Tinto	124·9	310	55 12	?L	—	—	(55·2)	79·2
II		124·9	310	63 5	?L	—	—	(63·1)	79·1
II	Coimbra	125·4	313	—	—	e 31 5	?	i 55·1	—
I	Chicago	138·6	32	—	—	—	—	e 58·2	—
II	Ottawa	140·8	17	—	—	e 27 5	?	77·1	—
I	Toronto E.	141·0	23	i 29 53	?	e 41 57	?SR$_1$	73·1	—
I	N.	141·0	23	i 29 55	?	—	—	70·4	—
II	E.	141·0	23	—	—	—	—	e 74·5	—
II	Rio de Janeiro	144·6	205	—	—	e 41 35	?SR$_1$	67·1	—
I	La Paz	153·0	160	e 20 39	[+39]	—	—	77·2	84·8
II		153·0	160	i 20 42	[+42]	—	—	77·1	83·5

Additional readings: Malabar gives also for I i = +5m.13s., II i = +5m.16s. Batavia I iN = +5m.57s., iE = +8m.35s. Ekaterinburg I PR$_2$ = +15m.53s., II MN = +44·8m., MZ = +52·0m. Pulkovo I Y = +24m.31s., II Y = +24m.42s., MN = +55·6m. Vienna II SR$_1$? = +27m.29s. De Bilt I ePR$_1$ = +19m.46s., eLN = +60·2m., MN = +70·2m., MZ = +75·0m., II MN = +70·4m., MZ = +71·1m. Uccle I MN = +35·3m. Paris II MN = +63·1m. Coimbra II e = +41m.5s., L = +72·1m. Ottawa II eL = +50·1m. Toronto I eE = +35m.21s., eN = +35m.27s., and several L's.

The above solution represents a compromise. But there is ground for supposing that the Malabar and Batavia observations are 1 minute in error; that the T$_0$ should be increased by 30sec. in each case; that the focus is perhaps ·020 below normal; and that the epicentre should be moved N.E. say to 8°·0S. 123°·4E. It is noteworthy that for the earthquake of 1919 Mar. 13d. 14h., for which 8°·5S. 124°·5E. is adopted, "an extra depth of focus is suggested, but the material is scanty." Making the changes suggested, including the alteration of 1min. for Batavia and Malabar, we should have

SUGGESTED REVISED SOLUTION.

Oct. 15d. 7h. 32m. 18s. (I) } Epicentre 8°·0S. 123°·5E.
7h. 58m. 25s. (II) } Focal depth ·020 below normal.

A = −·546, B = +·825, C = −·139.

		Corr. for Focus.	Δ	P.	O−C.	S.	O−C.
		°	°	m. s.	s.	m. s.	s.
I	Malabar	−0·6	15·7	2 48	−52	i 5 32	−62
II		−0·6	15·7	2 33	−67	5 25	−69
I	Batavia	−0·6	16·7	2 51	−62	i 5 16	−41
II		−0·6	16·7	3 2	−51	i 6 2	−55
I	Manila	−1·0	22·7	e 5 13	+12	—	—
II		−1·0	22·7	5 17	+16	—	—
I	Adelaide	−1·4	30·3	—	—	11 0	−15
II		−1·4	30·3	—	—	11 47	+32
I	Melbourne	−1·6	35·6	—	—	11 48	−52
I	Riverview	−1·6	36·3	e 7 11	0	e 12 58	+ 7
I	Zi-ka-wei	−1·7	39·2	i 7 35	+ 1	e 13 27	− 4
II		−1·7	39·2	e 7 45	+11	e 13 28	− 3
I	Ekaterinburg	−2·7	82·4	i 12 10	− 7	22 16	− 4
II		−2·7	82·4	i 12 12	− 5	—	—
I	Pulkovo	−3·0	98·5	13 25	−21	24 54	−17
II		−3·0	98·5	13 33	−13	25 2	− 9
I	Uccle	—	114·4	e 19 24	?PR$_1$	e 25 12	[−15]
I	Edinburgh	—	116·6	—	—	e 25 42	[+ 8]
I	Oxford	—	117·3	—	—	i 25 23	[−14]
I	La Paz	—	153·0	e 20 9	[+ 9]	—	—
II		—	153·0	i 20 12	[+12]	—	—

Oct. 15d. 12h. 48m. 0s. Epicentre 11°·0N. 127°·0E. (as on 1921 Nov. 18d.).

A = −·591, B = +·784, C = +·191; D = +·799, E = +·602; G = −·115, H = +·152, K = −·982.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	6·9	303	e 1 51	+ 6	(3 20)	+13	3·3	—
Zi-ka-wei	20·8	347	e 4 49	− 2	—	—	—	—
Batavia	26·4	230	e 5 42	−10	i 9 44	−46	—	—
Ekaterinburg	67·9	328	e 10 59	− 4	19 53	− 8	33·0	—
Pulkovo	83·9	330	e 12 42	+ 1	e 23 9	+ 1	43·5	52·2

No additional readings.

Oct. 15d. 20h. 10m. 10s. Epicentre 58°·5N. 163°·0E.

A = −·500, B = +·153, C = +·853; D = +·292, E = +·956; G = −·815, H = +·249, K = −·522.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ekaterinburg	49·3	316	i 9 1	− 1	16 10	0	24·8	—
Pulkovo	56·1	334	9 48	+ 1	17 35	0	28·8	37·2
Ottawa	65·4	41	—	—	—	—	e 34·8	—
Toronto E.	65·6	46	—	—	—	—	34·8	—
De Bilt E.	68·0	346	—	—	—	—	e 41·8	—
Strasbourg	71·1	344	—	—	—	—	e 45·8	—
Rocca di Papa	76·8	339	—	—	—	—	e 46·7	55·4

Additional readings: Ekaterinburg PR_1 = +10m.56s., SR_1 = +19m.45s. Pulkovo MN = +36·9m. Ottawa L = +35·8m. Toronto LE = +43·5m. De Bilt eLN = +43·8m.

Oct. 15d. Readings also at 7h. (Melbourne), 15h. (Azores and Nagasaki), 19h. (Taihoku), 21h. (Azores), 22h. (Taihoku), 23h. (Batavia and near Malabar).

Oct. 16d. 18h. 4m. 0s. Epicentre 35°·0N. 139°·5E. (as on Oct. 5d.).

A = −·623, B = +·532, C = +·574.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	2·1	274	−0 15	−48	—	—	0·1	0·4
Osaka	3·4	266	0 56	+ 3	—	—	1·7	2·7
Kobe	3·6	266	0 53	− 3	—	—	1·8	1·9
Mizusawa E.	4·3	17	1 5	− 2	1 54	− 4	—	—
N.	4·3	17	1 4	− 3	1 51	− 7	—	—
Hakodate	6·8	7	2 11	+27	—	—	—	—
Zi-ka-wei	15·6	261	—	—	e 6 46	0	—	—
Ekaterinburg	55·5	320	9 31	−12	e 17 10	−18	28·0	—
Pulkovo	68·9	330	—	—	—	—	e 39·0	—

Additional readings: Osaka gives also MN = +2·4m. Kobe PR_1 = +1m.2s., MN = +1·8m.

Oct. 16d. Readings also at 0h. (Colombo), 2h. (Ekaterinburg), 3h. (Nagasaki), 4h. (Ekaterinburg) 6h. (La Paz), 7h. (Zi-ka-wei), 9h. (Nagasaki), 15h. (La Paz), 16h. (Ekaterinburg and Kobe), 20h. (Vienna and near Osaka and Kobe), 21h. (Ekaterinburg and La Paz).

Oct. 17d. 12h. 11m. 46s. Epicentre 50°·0S. 24°·0W.

A = +·587, B = −·261, C = −·766; D = −·407, E = −·914;
G = −·700, H = +·312, K = −·643.

Very doubtful; see note below.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Cape Town	34·8	79	12 54	?S	(12 54)	+ 2	—	—
La Paz	48·6	298	i 8 57	− 1	16 2	+ 1	26·2	31·8
Strasbourg	102·3	21	—	—	—	—	e 46·2	—
Colombo	104·2	94	49 26	?L	—	—	(49·4)	57·2
De Bilt E.	105·0	18	—	—	—	—	e 47·2	—
Ekaterinburg	127·5	42	—	—	e 34 48	?SR_1	49·2	66·7
Manila	134·6	129	—	—	—	—	e 57·0	—
Taihoku	143·5	120	37 8	?SR_1	—	—	—	—

No additional readings.

The position of the epicentre rests entirely on the evidence of La Paz and Cape Town, the other evidence only availing to reject the alternative position to the north of the line joining them (say 20°S. 20°W.), which would be too near Europe. But a position nearer Europe would be an improvement, *e.g.*, that of 1919 April 16d. 3h., which is 39°·0S. 17°·0W., distant 49°·7 from La Paz and 93°·1 from De Bilt. The distance from Cape Town, however, is only 28°·8, so that we should have to assume a considerable error in this observation.

Oct. 17d. Readings also at 0h. (Ekaterinburg), 3h. (Pulkovo and Ekaterinburg), 5h. (Riverview, Melbourne, and Christchurch), 6h. (Ottawa, Toronto, Riverview, and Ekaterinburg), 7h. (Taihoku), 8h. (Kobe and near Osaka), 9h. (Colombo), 10h. (Florence), 13h. (Batavia), 15h. (La Paz), 16h. (Calcutta and Ekaterinburg), 17h. (near Taihoku), 19h. (Osaka), 20h. (Ekaterinburg, Osaka, and La Paz).

Oct. 18d. 0h. 51m. 50s. Epicentre 44°·8N. 14°·7E. (given by De Bilt).

A = +·686, B = +·180, C = +·705.

	Δ	P.	O−C.	S.	O−C.	L.	M.
	°	m. s.	s.	m. s.	s.	m.	m.
Venice	1·8	0 20	− 8	—	—	—	3·4
Sarajevo	2·9	e 0 47	+ 2	e 1 31	+11	—	1·6
Innsbruck	3·4	e 0 46	− 7	—	—	—	—
Rocca di Papa	3·4	e 1 28	?S	(e 1 28)	− 6	—	—
Vienna	3·6	e 1 9	+13	i 1 43	+ 4	—	2·3
Pompeii	4·1	3 3	?L	—	—	(3·1)	—
Moncalieri	4·9	2 40	?L	5 51	?	(e 2·7)	—
Strasbourg	6·1	—	—	—	—	e 3·2	—
De Bilt	9·6	—	—	—	—	e 5·1	—

Additional readings: Innsbruck gives also PR_1 = +1m.34s. Rocca di Papa PE = +1m.34s., PZ = +1m.58s. Vienna iPR_1E = +1m.33s.

Oct. 18d. Readings also at 3h. (near Athens), 5h. (Azores), 8h. (Ekaterinburg), 9h. (near Batavia and Malabar), 11h. (La Paz), 12h. (Ekaterinburg and Rio Tinto), 15h. (Rocca di Papa), 16h. (Florence and Rocca di Papa), 21h. (Riverview, Ekaterinburg, and La Paz), 22h. (De Bilt, Ottawa, Toronto, and Rio Tinto), 23h. (Christchurch and Wellington).

Oct. 19d. 9h. 2m. 0s. Epicentre 36°·0N. 5°·0W.

A = +·806, B = −·071, C = +·588; D = −·087, E = −·996;
G = +·585, H = −·015, K = −·809.

Very rough.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Malaga	0·9	32	0 29	+15	—	—	—	—
San Fernando	1·0	296	0 27	+12	0 43	+15	0·9	1·0
Granada	1·6	43	0 24	0	—	—	0·7	0·8
Almeria	2·3	67	0 44	+ 8	—	—	—	—
Toledo	3·9	11	0 51	−10	i 1 37	−10	1·8	2·1
Coimbra	5·0	329	e 1 48	+31	2 20	+ 3	2·8	—
Tortosa N.	6·5	40	e 1 51	+12	2 54	− 3	3·0	3·4
De Bilt	17·6	21	—	—	—	—	e 9·6	—

Additional readings: Granada gives also P = +26s. Tortosa PZ = +1m.39s. (O−C. = 0s.), SE = +2m.53s.

Oct. 19. Readings also at 0h. (Colombo), 2h. (Coimbra), 10h. (Ekaterinburg), 12h. (Mizusawa), 14h. (Nagasaki), 19h. (La Paz), 22h. (Nagasaki), 23h. (Toronto).

Oct. 20d. 0h. 24m. 0s. Epicentre 65°·0N. 15°·0W.

A = +·408, B = −·109, C = +·906; D = −·259, E = −·966;
G = +·875, H = −·235, K = −·423.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Edinburgh	10·8	142	—	—	—	—	i 6·3	7·7
Eskdalemuir	11·3	144	—	—	—	—	e 6·0	—
Oxford	15·0	145	—	—	—	—	i 9·8	—
De Bilt E.	16·5	131	—	—	—	—	e 11·0	12·3
Hamburg	16·9	120	e 4 0	− 4	—	—	—	—
Paris	18·6	141	—	—	e 8 34	+41	11·7	13·0
Strasbourg	20·4	133	e 5 42	+56	—	—	e 12·0	—
Besançon	21·1	137	4 53	− 1	—	—	—	13·0
Pulkovo	21·1	83	i 4 51	− 3	9 1	+15	12·0	13·9
Moncalieri	23·6	137	e 5 35	+11	—	—	11·7	—
Coimbra	25·1	168	e 0 34	−305	10 46	+41	17·0	—
Florence	25·7	133	e 4 15	−90	—	—	13·0	26·0
Tortosa N.	25·8	152	5 46	0	10 22	+ 4	e 14·0	18·3
Toledo	25·9	160	e 5 33	−12	e 9 48	−32	10·1	—
Rocca di Papa	28·0	132	5 57	−11	10 42	−17	e 19·7	24·8
Granada	28·6	161	e 6 27	+13	e 9 55	−75	—	—
Victoria E.	53·9	309	—	—	—	—	30·1	31·1

De Bilt gives also eLN = +10·0m.

Oct. 20d. 3h. 18m. 48s. Epicentre 30°·0N. 99°·0E.

A = −·135, B = +·855, C = +·500; D = +·988, E = +·156;
G = −·078, H = +·494, K = −·866.

Very rough.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Calcutta N.	12·1	234	3 2	+ 2	—	—	9·4	—
Hong Kong	15·6	116	3 32	−15	6 23	−23	7·8	8·5
Simla E.	18·8	279	4 36	+ 9	8 12	+14	11·5	12·5
N.	18·8	279	4 42	+15	8 24	+26	11·0	11·5
Zi-ka-wei	19·3	81	e 3 14	−79	e 7 46	−22	—	10·5
Taihoku	20·6	99	8 28	?S	(8 28)	− 8	10·5	11·7
Manila	25·4	122	e 5 53	+11	(10 32)	+21	10·5	11·5

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bombay		26·2	251	5 56	+ 6	10 58	+32	15·0	18·1
Kodaikanal		28·2	230	23 30	?	—	—	—	—
Colombo		29·2	222	11 12	?S	(11 12)	− 8	—	21·7
Osaka		31·0	74	5 32	−66	—	—	13·6	22·3
Batavia		37·0	169	i 7 26	− 4	i 13 18	− 6	(i 22·1)	—
Pulkovo		53·8	325	9 29	− 3	17 2	− 4	28·2	36·2
Upsala		60·1	325	—	—	—	—	e 31·2	—
Vienna		63·4	313	i 10 28	− 6	—	—	—	37·2
Hamburg		65·7	320	e 10 54	+ 5	—	—	e 35·2	41·2
Innsbruck		66·9	313	i 10 54	− 3	—	—	—	—
Rocca di Papa		68·0	307	i 11 10	+ 6	i 20 12	+10	e 27·0	45·0
Florence		68·2	310	15 12	?PR_1	22 42	?	31·2	37·2
Strasbourg		68·8	315	—	—	—	—	e 31·2	41·2
De Bilt	E.	69·0	319	—	—	e 28 37	?	e 37·2	43·5
	N.	69·0	319	—	—	e 20 22	+ 8	e 35·2	38·7
Uccle		69·9	318	—	—	—	—	e 35·2	—
Moncalieri		70·1	311	e 11 40	+22	20 36	+ 9	40·0	—
Eskdalemuir		72·1	324	—	—	—	—	36·7	—
Kew		72·2	320	—	—	—	—	—	46·2
Oxford		72·7	320	—	—	—	—	38·3	46·3
Tortosa	N.	76·6	310	—	—	—	—	e 39·2	44·6
Toledo		80·2	310	—	—	—	—	e 32·7	—
Coimbra		82·8	313	—	—	—	—	e 45·7	—
Victoria	E.	95·8	26	—	—	—	—	48·1	52·0
	N.	95·8	26	—	—	—	—	48·8	52·5
Ottawa		104·5	356	—	—	—	—	e 47·2	—
Ann Arbor		107·7	1	—	—	—	—	e 73·2	—
Chicago		108·0	5	—	—	—	—	60·2	—
La Paz		162·1	316	20 27	[+18]	—	—	—	—

Additional readings: Zi-ka-wei gives also MN = +11·3m. Manila MN = +10·7m. Osaka MN = +20·1m. Batavia i = +8m.56s., iS = +22m.4s., True S is given as i. Pulkovo SR_1 = +21m.0s. Rocca di Papa eP = +11m.12s. and +14m.12s. De Bilt MZ = +43·6m. Ottawa L = +63·2m. Coimbra e = +44m.2s. Victoria LEN = +42·1m. Chicago e = +48m.46s.

Oct. 20d. 10h. 1m. 40s. Epicentre 4°·0N. 139°·0E.

A = −·753, B = +·654, C = +·070; D = +·656, E = +·755; G = −·053, H = +·046, K = −·998.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		20·7	302	e 4 47	− 2	—	—	9·8	11·7
Hong Kong		30·2	310	6 32	+ 2	—	—	—	11·5
Zi-ka-wei		31·8	331	e 7 46	+61	—	—	—	—
Batavia	E.	33·7	253	e 7 0	− 2	i 12 33	− 3	i 13·8	—
Pulkovo		95·8	331	—	—	e 25 20	+ 6	54·3	—
De Bilt	N.	111·7	331	—	—	—	—	e 57·3	—

Manila gives also MN = +10·9m.

Oct. 20d. Readings also at 2h. (Coimbra), 3h. (Tacubaya), 4h. (Rocca di Papa), 5h. (near La Paz), 14h. (Taihoku and near Tacubaya (2)), 15h. (Ekaterinburg), 16h. (near La Paz), 17h. (Ekaterinburg), 18h. (Toronto and Victoria), 19h. and 21h. (Ekaterinburg).

Oct. 21d. Readings at 0h. (near La Paz), 2h. (Manila), 3h. (Nagasaki), 6h. (Strasbourg, Puy de Dôme, Stonyhurst, and Toledo), 10h. (near Granada), 13h. (Batavia), 16h. (Ekaterinburg), 17h. (near Granada), 19h. (Ottawa, Victoria, and Toronto), 20h. (Sapporo and near Mizusawa), 22h. (Riverview), 23h. (Ekaterinburg and Simla).

Oct. 22d. 5h. 25m. 20s. Epicentre 58°·5S. 145°·5E.

$A = -·431$, $B = +·296$, $C = -·853$; $D = +·566$, $E = +·824$; $G = +·703$, $H = -·483$, $K = -·522$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Melbourne	20·7	359	—	—	(i 7 58)	−40	i 8·0	8·7
Christchurch	22·4	60	(5 10)	0	(9 10)	− 3	9·2	11·7
Adelaide	24·0	346	i 10 1	?S	(i 10 1)	+17	i 11·2	12·2
Riverview	25·0	11	e 5 36	− 2	e 9 58	− 5	e 11·7	—
Sydney	25·0	11	—	—	9 58	− 5	12·5	12·7
Ekaterinburg	133·5	311	—	—	—	—	40·7	61·0
Tortosa N.	151·8	247	—	—	—	—	e 81·7	89·3
Upsala	154·0	295	—	—	—	—	e 108·7	—
Hamburg	155·1	279	—	—	—	—	e 108·7	—
De Bilt	156·9	271	—	—	—	—	e 95·7	—

Additional readings and notes: Christchurch gives P as S and S as L. Adelaide gives S = +10m.25s.? Ekaterinburg e = +5m.37s., i = +9m.9s.

Oct. 22d. 19h. 45m. 45s. Epicentre 35°·0N. 139°·5E. (as on Oct. 16d.).

$A = -·623$, $B = +·532$, $C = +·574$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	2·1	274	0 40	+ 7	—	—	1·0	1·2
Osaka	3·4	266	0 57	+ 4	—	—	1·5	1·6
Kobe	3·6	266	0 52	− 4	1 25	−14	1·6	1·7
Mizusawa	4·3	17	1 6	− 1	1 52	− 6	—	—

Osaka gives also MN = +2·3m.

Oct. 22d. Readings also at 0h. (La Paz), 2h. and 6h. (Ekaterinburg), 7h. (Bombay), 12h. (Ekaterinburg), 13h. (Melbourne), 15h. (Ekaterinburg, Christchurch, Wellington, and Taihoku), 16h. (Ottawa, De Bilt, near Kobe (2), and Osaka), 17h. (near Mizusawa), 20h. (Ekaterinburg), 22h. (near Mizusawa).

Oct. 23d. 16h. 37m. 22s. Epicentre 65°·0N. 15°·0W. (as on Oct. 20d.).

$A = +·408$, $B = -·109$, $C = +·906$; $D = -·259$, $E = -·966$; $G = +·875$, $H = -·235$, $K = -·423$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Edinburgh	10·8	142	—	—	—	—	e 5·6	—
Eskdalemuir	11·3	144	—	—	—	—	5·6	—
Kew	15·5	144	—	—	—	—	—	9·6
De Bilt	16·5	131	—	—	—	—	e 8·6	—
Strasbourg	20·4	133	—	—	—	—	11·6	—
Pulkovo	21·1	83	4 52	− 2	8 57	+11	11·1	12·9

Bidston ($\Delta = 13°·0$ Az. = 147°) gives M = 16h.6m.

Oct. 23d. Readings also at 4h. (La Paz), 9h. (near Algiers), 13h. (near Mizusawa), 16h. (Ekaterinburg and near Kobe (2)), 22h. (Manila).

Oct. 24d. Readings at 1h. (Ekaterinburg), 5h. (La Paz and near Athens), 6h. (near Mizusawa), 8h. (La Paz and near Tacubaya), 15h. (Azores and near Tacubaya), 22h. (Tiflis).

Oct. 25d. Readings at 5h. (Puebla and Tacubaya), 9h. (Ekaterinburg and Taihoku), 15h. (Taihoku), 18h. (near La Paz), 21h. (Tiflis and Ekaterinburg), 22h. (Nagasaki).

Oct. 26d. 12h. 13m. 16s. Epicentre 41°·2N. 28°·6E.

A = +·661, B = +·360, C = +·659; D = +·479, E = −·878; G = +·578, H = +·316, K = −·752.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Athens	5·0	229	e 1 17	0	e 2 16	− 1	2·4	2·9
Belgrade	6·9	304	i 1 47	+ 2	—	—	(3·8)	4·6
Vienna	11·1	313	e 2 45	− 1	6 5	?L	(6·1)	7·7
Tiflis	12·2	83	(e 2 44)	−18	—	—	7·7	—
Strasbourg	16·4	304	—	—	—	—	8·7	—
Pulkovo	18·6	3	—	—	—	—	9·7	—
De Bilt	19·3	312	—	—	—	—	e 11·7	14·2
Ekaterinburg	25·4	42	—	—	e 10 22	+11	15·2	—

Additional readings: Athens gives also iE = +2m.3s., MN = +2·7m. Belgrade i = +2m.33s., MN = +4·0m., L is given as SR_1. Vienna PR_1? = +7m.6s. Tiflis readings are both given as L.

Oct. 26d. Readings also at 1h. (Azores), 5h. (Victoria and near Vera Cruz, Tacubaya, and Oaxaca), 6h. (Manila and Zi-ka-wei), 7h. (Ekaterinburg), 8h. (Manila and near Tacubaya), 9h. (Manila, Ekaterinburg, and Taihoku), 10h. (Wellington), 12h. (Kobe and near Batavia and Malabar), 13h. (Manila), 14h. (Taihoku), 15h., 17h., and 18h. (Ekaterinburg), 19h. (Toronto, Ottawa, and Victoria), 20h. (Taihoku), 22h. (Nagasaki), 23h. (Ekaterinburg).

Oct. 27d. Readings at 3h. (near Victoria), 6h. and 8h. (Nagasaki), 18h. (San Fernando, near Berkeley, and near Simla), 21h. (Tacubaya), 22h. (La Plata, Rio de Janeiro, and near La Paz), 23h. (Algiers).

Oct. 28d. 9h. 28m. 12s. Epicentre 46°·0N. 89°·0E.

A = +·012, B = +·695, C = +·719; D = +1·000, E = −·017; G = +·013, H = +·718, K = −·695.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Simla	E.	17·5	216	e 4 12	+ 1	—	—	—
Ekaterinburg		20·5	312	i 4 48	+ 1	i 8 35	+ 1	8·8
Bombay		30·2	211	5 12	−78	—	—	—
Pulkovo		36·6	314	8 48	+81	14 8	+50	17·3
Vienna	Z.	47·6	301	8 41	−10	—	—	—

Additional readings: Simla gives also eN = +4m.30s. Ekaterinburg iPR_2 = +5m.23s., iPR_3 = +5m.48s.

Oct. 28d. Readings also at 1h. (Ekaterinburg (2)), 2h. (Taihoku, Azores, Tiflis, near Osaka and Kobe), 3h. (Ekaterinburg and Osaka), 4h. (Apia and La Paz), 5h. (Georgetown), 7h. (Rocca di Papa and Pompeii), 8h. (near Athens), 16h. (near Osaka), 17h. (Azores), 20h. (Manila), 21h. (Nagasaki), 23h. (near Mizusawa and Osaka).

Oct. 29d. Readings at 2h. (near La Paz), 12h. (Hong Kong, Nagasaki, and near Manila), 13h. (Batavia and Ekaterinburg), 15h. (Edinburgh), 17h. (Apia), 19h. (Riverview, Hong Kong, Ekaterinburg, and near Manila), 20h. (Azores and Ekaterinburg), 21h. (Nagasaki), 23h. (Granada).

Oct. 30d. 19h. 34m. 12s. Epicentre 40°·0N. 20°·0E. (as on 1923 July 8d.).

A = +·720, B = +·262, C = +·643 ; D = +·342, E = −·940 ;
G = +·604, H = +·220, K = −·766.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Sarajevo	4·1	344	e 1 0	− 4	1 43	−10	—	1·8
Pompeii	4·2	281	3 10	?	—	—	—	—
Belgrade	4·8	4	e 1 17	+ 3	i 2 21	+10	—	2·5
Rocca di Papa	5·8	291	e 1 42	+12	2 45	+ 6	—	3·1
Venice	7·8	316	e 3 48	?L	—	—	(e 3·8)	4·6
Vienna	8·6	344	e 2 7	− 3	—	—	—	6·3

Additional readings: Sarajevo gives eP = +1m.7s. Belgrade iP = +1m.58s. Rocca di Papa e = +1m.24s.

Oct. 30d. Readings also at 1h. (Port au Prince and Tacubaya), 9h. (Tacubaya, Oaxaca, and Merida), 15h. (Taihoku), 17h. (Tacubaya), 18h. (Osaka), 21h. (Manila (2)), 22h. (Zurich (2) and Tiflis).

Oct. 31d. 16h. 37m. 30s. Epicentre 35°·0N. 139°·5E. (as on Oct. 22d.).

A = −·623, B = +·532, C = +·574.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	2·1	274	0 49	+16	—	—	1·4	1·9
Osaka	3·4	266	0 51	− 2	(1 32)	− 2	1·5	2·3
Kobe	3·6	266	e 0 58	+ 2	1 43	+ 4	1·7	2·0

Kobe gives also MN = +1·8m.

Oct. 31d. Readings also at 1h. (Mizusawa and near Manila), 2h. (Manila), 6h. (Tacubaya), 7h. (near Sarajevo), 11h. (near Mizusawa), 13h. (Taihoku), 14h. (Tacubaya), 16h. (near Apia), 17h. (Rio Tinto and near Mizusawa).

Nov. 1d. 20h. 2m. 10s. Epicentre 33°·6N. 111°·4W. (as on 1923 Mar. 18d.).

A = −·304, B = −·776, C = +·553 ; D = −·931, E = +·365 ;
G = −·202, H = −·515, K = −·833.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	E.	1·4	161	e −0 10	−31	—	—	—	3·2
	N.	1·4	161	e 0 25	+ 4	—	—	—	4·7
Victoria		17·3	333	6 37	?S	(6 37)	−48	9·5	12·0
Tacubaya		17·8	139	(4 16)	+ 1	—	—	4·3	—
Chicago		20·4	59	6 36	?	e 8 31	− 1	9·7	11·1
Ann Arbor		23·4	60	—	—	e 10 56	+83	11·6	—
Toronto	E.	26·7	58	e 8 31	?PR_1	e 10 35	0	e 12·6	13·9
	N.	26·7	58	—	—	10 31	− 4	e 13·5	13·8
Georgetown		28·0	69	—	—	e 13 14	?	14·3	—
Washington		28·0	69	—	—	—	—	e 12·8	—
Cheltenham	N.	28·2	69	—	—	i 13 19	?	e 14·9	15·2
Ithaca		28·7	62	—	—	e 11 50	+38	13·8	—
Ottawa		29·6	56	—	—	e 13 56	?	e 14·5	15·7
Northfield		31·6	58	—	—	—	—	e 15·8	—
Eskdalemuir		72·1	35	—	—	e 18 50	−121	32·8	—
Oxford		75·1	37	—	—	—	—	40·8	46·8
De Bilt	E.	78·0	33	—	—	—	—	e 41·8	—
Uccle		78·5	35	—	—	—	—	37·8	—

Additional readings: Victoria gives also PN = +6m.39s., MN = +13·2m. Tacubaya PE = 20h.2m.26s. Toronto iE = +9m.11s., eN = +13m.5s., LEN = +13·8m., iE = +16m.27s., LE = +17·2m., LN = +17·1m. Georgetown e = +18m.50s. Cheltenham eE = +13m.29s. De Bilt eLN = +36·8m.

Nov. 1d. Readings also at 0h. (La Plata and Stonyhurst), 1h. (La Paz and near Batavia and Malabar), 2h. (Taihoku), 4h. (Stonyhurst), 6h. (Manila), 7h. (Manila (3) and Eskdalemuir), 8h. (Batavia, Pulkovo, Eskdalemuir, De Bilt, and Manila), 9h. (Tucson), 10h., 11h. (2), and 12h. (3) (Manila), 13h. (Azores), 15h. Manila, 16h. (2) Manila, 20h. (Manila and Mazatlan), 22h. (Athens).

1923. Nov. 2d. 21h. 7m. 54s. Epicentre 5°·7S. 151°·8E.

(as on 1918 Dec. 9d.).

A = −·877, B = +·470, C = −·099; D = +·473, E = +·881; G = +·088, H = −·047, K = −·995.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		28·2	181	e 6 2	− 8	i 10 49	−14	e 12·5	—
Sydney		28·2	181	6 6	− 4	10 48	−15	13·3	15·6
Adelaide		31·7	200	6 45	+ 1	11 54	− 9	15·1?	18·1
Melbourne		32·7	189	i 7 48	+54	12 36	+17	15·9	18·5
Manila		36·7	305	e 7 21	− 7	—	—	i 16·7	18·1
Apia		36·8	103	7 48	+20	13 24	+ 3	15·4	18·1
Wellington		41·1	153	e 8 18	+14	i 14 12	−10	i 17·7	20·1
Taihoku		42·5	319	8 11	− 4	15 29	+47	21·0	—
Perth		42·6	228	8 18	+ 3	15 16	+33	24·8	29·0
Osaka		43·2	341	9 6	+46	19 53	+302	23·4	29·2
Kobe		43·3	340	9 5	+45	—	—	e 22·0	24·0
Nagasaki		43·7	334	7 59	−25	—	—	—	—
Malabar		44·1	266	8 27	0	15 10	+ 7	26·3	—
Batavia		44·7	268	i 8 29	− 2	15 17	+ 6	23·7	—
Mizusawa	E.	45·9	350	8 26	−13	9 50	?PR_1	—	—
Hong Kong		46·3	309	8 30	−12	15 26	− 6	—	25·8
Zi-ka-wei		46·9	324	e 8 40	− 6	e 14 48	−52	—	—
Fanning Island		49·4	80	8 36	−27	—	—	—	—
Ootomari		52·9	353	9 30	+ 5	—	—	—	—
Honolulu		56·1	60	i 10 0	+13	17 10	−25	22·8	29·4
Colombo		72·9	279	11 36	+ 1	21 36	+35	45·4	58·1
Kodaikanal		75·8	282	12 24	+30	(22 54)	+79	22·9	23·1
Simla	E.	80·0	304	12 36	+17	22 42	+19	41·8	43·8
	N.	80·0	304	12 30	+11	21 36	−47	—	—
Bombay		81·5	290	12 28	0	22 41	0	38·5	54·2
Sitka	E.	85·6	31	13 19	+28	23 41	+15	38·7	53·4
	N.	85·6	31	—	—	—	—	e 35·4	52·2
Berkeley	E.	90·2	52	e 13 36	+19	e 23 56	−20	40·4	41·6
Lick	E.	90·8	52	e 13 31	+11	e 23 22	[−11]	e 29·2	40·1
Victoria	E.	90·8	41	13 16	− 4	23 26	[− 7]	41·4	53·8
	N.	90·8	41	13 16	− 4	23 26	[− 7]	42·1	43·8
Ekaterinburg		95·4	327	i 13 26	−19	24 33	−37	42·1	57·7
Tucson	E.	99·3	58	13 58	− 9	24 58	−51	i 44·7	56·1
Mazatlan		103·0	67	31 33?	?	—	—	46·6	52·0
Denver		103·7	50	45 6	?L	—	—	(45·1)	—
Tiflis	E.	106·5	313	e 15 0	+18	e 29 12	?	e 53·7	70·9
	N.	106·5	313	e 15 48	+66	—	—	—	67·1
Tacubaya	E.	109·8	71	19 28	?PR_1	30 51	?	50·0	57·4
	N.	109·8	71	19 30?	?PR_1	30 52	?	50·2	61·5
Pulkovo		110·3	333	15 6	+ 7	27 27	− 4	48·1	67·9
Vera Cruz		112·7	72	—	—	—	—	52·8	63·5
Upsala		115·7	336	e 19 48	?PR_1	—	—	50·7	72·5
Chicago		116·3	45	18 6	?	28 51	+31	53·6	—
Johannesburg		116·9	236	—	—	—	—	30·5	65·1
Mobile	E.	118·6	56	—	—	—	—	e 57·1	—
Merida		118·7	69	—	—	—	—	49·9	58·9
Ann Arbor		118·9	43	20 30	?PR_1	30 18	?	55·1	—
Helwan		119·1	302	—	—	—	—	—	63·9
Bergen		119·7	341	e 19 6	?PR_1	e 28 6	−41	—	—
Capetown		120·8	224	21 11	?PR_1	31 41	?	59·1	63·5
Toronto	E.	121·3	40	e 19 47	?PR_1	e 30 36	?	59·1	71·2
	N.	121·3	40	19 51	?PR_1	30 36	?	59·4	62·0
Budapest		122·0	324	20 37	?PR_1	—	—	? 43·0	—
Cipolletti		122·1	143	20 42	?PR_1	—	—	59·3	65·5
Ottawa		122·8	37	19 42	?PR_1	e 30 42	?	e 50·6	71·6
Hamburg		123·0	333	e 19 43	?PR_1	—	—	53·1	74·1
Athens		123·0	311	e 19 11	[+10]	e 32 46	?	e 61·1	122·6
Vienna		123·1	326	e 19 57	?PR_1	30 45	?	e 55·1	72·1
Ithaca		123·7	40	e 20 58	?PR_1	31 6	?	60·1	—
Georgetown	E.	124·9	45	21 2	?PR_1	29 29	+ 4	61·3	75·2
Washington		124·9	45	e 20 36	?PR_1	—	—	62·1	—
Cheltenham	E.	125·0	45	—	—	e 52 22	?	58·0	75·3
	N.	125·0	45	—	—	e 52 12	?	58·2	62·9
Northfield		125·3	37	—	—	—	—	e 59·1	—
Mendoza		125·8	137	21 12	?PR_1	—	—	60·2	61·7
Edinburgh		126·0	341	e 21 24	?PR_1	31 30	?	52·1	60·9
De Bilt		126·1	335	e 19 9	[+ 1]	e 36 44	?	e 55·1	80·0
Eskdalemuir		126·5	341	e 21 6	?PR_1	—	—	57·1	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Uccle		127·4	332	19 5	[− 7]	e 31 6	?	e 55·1	65·6
Strasbourg		127·4	330	19 6	[− 6]	e 31 27	?	e 53·6	77·0
Stonyhurst		127·5	339	20 6	?PR_1	—	—	—	83·6
Zurich	Z.	127·8	327	e 19 5	[− 8]	—	—	—	—
Bidston		127·9	339	21 56	?PR_1	31 37	?	—	114·1
Pompeii		128·2	318	e 22 18	?PR_1	—	—	130·1	—
West Bromwich		128·4	338	22 6	?PR_1	—	—	—	—
Florence		128·6	324	e 22 6	?PR_1	22 48	?	58·1	75·1
Kew		128·7	337	23 6	?PR_1	—	—	—	112·1
Rocca di Papa		128·8	321	e 19 6	[−10]	—	—	65·1	76·8
Besançon		129·2	330	20 37	?PR_1	—	—	—	64·1
Pilar	E.	129·5	140	22 30	?PR_1	—	—	62·9	76·1
	N.	129·5	140	22 6	?PR_1	—	—	66·6	83·2
Paris		129·6	333	e 19 15	[− 2]	—	—	74·1	—
Moncalieri		129·8	327	20 4	?PR_1	33 29	?	61·1	121·3
Andalgala	N.	130·4	135	17 36	?	—	—	62·1	64·0
Chacarita	E.	130·6	147	22 30	?PR_1	—	—	61·6	69·0
La Plata	E.	130·7	147	19 55	[+35]	—	—	—	67·4
	N.	130·7	147	19 56	[+36]	—	—	64·6	66·1
Marseilles		132·2	327	e 22 36	?PR_1	—	—	e 50·1	—
La Paz	E.	134·7	121	19 23	[− 6]	32 11	?	56·0	64·7
	N.	134·7	121	—	—	32 19	?	55·4	66·9
Barcelona		135·2	327	—	—	—	—	e 63·7	83·9
Tortosa		136·5	328	—	—	—	—	e 64·1	109·8
	N.	136·5	328	—	—	—	—	e 60·1	114·9
Algiers		137·8	321	e 19 32	[− 4]	e 32 17	?	48·1	116·1
Toledo		139·5	330	e 19 47	[+ 8]	i 33 45	?	e 58·3	82·6
Coimbra		141·2	336	20 9	[+28]	31 41	?	e 61·6	112·4
Granada		141·3	328	i 18 49	[−53]	—	—	e 54·1	121·1
Porto Rico	E.	141·6	68	43 5	?SR_1	—	—	65·9	68·0
	N.	141·6	68	69 7	?	—	—	71·7	73·6
Rio Tinto		142·4	331	19 6	[−38]	—	—	—	103·1
San Fernando		143·2	330	19 23	[−22]	—	—	46·1	125·6
Rio de Janeiro		147·9	154	e 19 44	[− 9]	41 59	?SR_1	59·2	76·7

Additional readings and notes:—Manila gives also MN = +17·6m. Apia e = +7m.5s., P = +9m.3s., and +9m.42s., PS = +12m.14s., T_e = 21h.8m.42s. Perth PR_1 = +10m.58s., SR_1 = +18m.56s., L = +28·2m., and +35·8m. Kobe MN = +23·2m. Malabar i = +8m.32s. and +9m.16s. Batavia iN = +9m.3s., i = +10m.15s. Mizusawa PN = +8m.25s. Hong Kong S = +12m.36s. Honolulu PN = +10m.10s., iLN = +23·5m., T_e = 21h.8m.53s. Sitka eE = +22m.50s., PSE = +24m.46s., SR_1E = +29m.37s. Lick ePR_1E = +16m.14s. Ekaterinburg i = +13m.54s., iPR_1 = +17m.22s., SR_1 = +30m.56s., MN = +51·7m., MZ = +60·1m. Tucson PR_1E = +17m.46s., SR_1E = +36m.18s., LE = +51·2m. and +53·8m. Tiflis e = +18m.42s., eN = +19m.36s., eE = +26m.0s., eN = +27m.6s., MN = +67·1m. Pulkovo PR_1 = +19m.4s., PS = +28m.59s., SR_1 = +34m.30s., i = +35m.36s., SR_2 = +40m.0s., MN = +72·9m. Upsala MN = +75·4m., eL = +101·1m. Chicago L = +48·1m. Ann Arbor SR_1 = +37m.6s., SR_2 = +41m.6s., L = +64·1m. Helwan PR_1? = +20m.23s. Toronto PR_1E = +26m.19s., iE = +30m.41s., SR_1E = +36m.44s., iN = +37m.14s., iSR_1 = +38m.36s. and several L's. Ottawa eP = +20m.30s., PR_1 = +24m.15s., PR_2 = +26m.30s., SR_1 = +36m.58s., SR_2 = +41m.17s. Hamburg MN = +69·1m., L = +100·1m. and +112·1m. Athens MN = +132·8m. Vienna iPZ = +20m.3s., iZ = +20m.29s. and +21m.24s., PR_1 = +23m.22s., PR_2 = +25m.45s. Ithaca e = +37m.36s., L = +56·1m., +71·6m., and +85·1m. Georgetown eN = +21m.8s., eLEN = +38·4m., LN = +62·1m. Washington eL = +57·1m. De Bilt ePR_1 = +21m.5s., MN = +71·2m., MZ = +79·8m. Uccle e = +21m.18s., MN = +79·5m. Strasbourg MN = +78·7m. Rocca di Papa ePN = +19m.36s., eL = +54·6m., MN = +80·8m. La Plata PE = +21m.28s., PR_1 = +22m.8s. and several other readings given without phase. La Paz PR_1N = +23m.30s., SR_1N = +39m.27s., L = +62·0m., LN = +63·7m. Algiers PR_1 = +23m.2s., MN = +73·1m. Toledo PR_1NE = +23m.58s., PR_1NW = +24m.16s., PR_2 = +27m.42s., PR_2 = +30m.18s., iSNW = +34m.4s., SR_1NE = +41m.36s., SR_1NW = +41m.40s., SR_2NW = +46m.29s., SR_2NE = +46m.34s., MNW = +119·7m. Coimbra eN = +14m.36s., eP = +17m.41s., PR_1 = +23m.39s., and +27m.36s., SR_1 = +35m.16s. and +59m.6s., L = +63·6m., MN = +68·9m., T_e = 21h.8m.4s. Granada PR_1 = +22m.30s., +23m.10s., +24m.6s., +25m.5s., and +25m.17s., PS? = +30m.26s., MN = +82·6m. San Fernando SR_1? = +36m.6s., MN = +92·1m. Rio de Janeiro LE = +42·2m., LN = +59·1m., MN = +83·1m.

Nov. 2d. Readings also at 8h. (Strasbourg and Marseilles), 20h. (La Paz and Strasbourg), 22h. (Barcelona and near Mizusawa), 23h. (Tiflis, Taihoku, and near Zurich).

Nov. 3d. 4h. 49m. 0s. Epicentre 5°·7S. 151°·8E. (as on Nov. 2d.).

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		28·2	181	—	—	e 10 44	−19	e 14·4	—
Sydney		28·2	181	—	—	11 6	+ 3	15·7	17·3
Adelaide		31·7	200	—	—	e 13 30	+87	16·9	20·2
Melbourne		32·7	189	—	—	e 12 0	−19	—	20·7
Wellington		41·1	153	—	—	e 13 42	−40	e 20·6	22·0
Malabar		44·1	266	e 8 26	− 1	i 14 59	− 4	—	—
Batavia		44·7	268	1 8 38	+ 7	i 15 8	− 3	—	—
Hong Kong		46·3	309	—	—	—	—	—	27·0
Victoria	E.	90·8	41	25 0	?S	(25 0)	+38	41·6	55·2
	N.	90·8	41	—	—	—	—	42·7	48·3
Ekaterinburg		95·4	327	i 13 19	−26	24 39	−31	—	58·6
Pulkovo		110·3	333	e 14 30	−29	26 22	−69	48·0	64·1
Chicago		116·3	45	29 10	?S	(29 10)	+50	e 56·0	—
Toronto	E.	121·3	40	(17 28)	+99	(27 30)	−89	e 60·0	—
Ottawa		122·8	37	—	—	—	—	e 63·5	—
De Bilt	N.	126·1	335	—	—	—	—	e 57·0	70·8
Uccle		127·4	332	—	—	—	—	e 58·0	—
Strasbourg		127·4	330	—	—	—	—	e 73·0	—
Florence		128·6	324	—	—	—	—	—	64·0
La Paz		134·7	121	23 17	?PR_1	—	—	—	—

Additional readings: Manila (Δ=36°·7) gives e=4h.39m. Wellington gives also e=+17m.6s. Victoria S=+39m.0s. Ekaterinburg PR_1=+17m.19s. Chicago S?=+39m.30s. Toronto e=+55m.30s., +59m.8s., L=+78·6m., P and S are given as L. Ottawa e=+54m.0s. De Bilt eLE=+60·0m.

1923. Nov. 3d. 8h. 37m. 40s. Epicentre **19°·0N. 74°·0W.**

A=+·261, B=−·909, C=+·326; D=−·961, E=−·276; G=+·090, H=−·313, K=−·946.

A focal depth 0·010 has been adopted.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Port au Prince		+0·2	1·7	106	0 37	+ 8	1 2	+ 9	—	1·3
Porto Rico		−0·1	8·1	97	1 42	−19	2 54	−43	3·3	4·7
Merida		−0·2	14·8	281	2 23	−71	—	—	—	11·5
Mobile		−0·3	17·4	315	—	—	—	—	e 8·3	—
Cheltenham		−0·4	19·9	353	5 16	+41	e 8 8	− 5	10·8	15·8
Georgetown		−0·4	20·1	353	4 41	+ 4	8 23	+ 6	e 9·3	—
Washington		−0·4	20·1	353	4 37	0	8 15	− 2	e 10·3	—
Ithaca		−0·5	23·5	355	5 17	0	9 27	+ 2	e 11·8	—
Ann Arbor		−0·5	24·7	343	5 38	+ 8	10 2	+14	12·0	—
Toronto	E.	−0·5	25·1	351	e 5 27	− 7	i 10 2	+ 7	e 12·4	18·5
	N.	−0·5	25·1	351	i 5 28	− 6	i 10 3	+ 8	e 14·0	22·0
Northfield		−0·5	25·2	2	—	—	e 9 40	−17	e 17·8	—
Chicago		−0·5	25·5	336	5 43	+ 5	9 58	− 5	11·8	—
Ottawa		−0·6	26·4	357	5 42	− 4	10 12	− 6	e 12·3	15·3
La Paz		−0·8	36·0	171	7 14	− 1	i 12 57	− 1	18·7	23·4
Victoria	E.	−0·8	49·3	320	16 20	?S	(16 20)	+20	28·0	31·7
	N.	−0·8	49·3	320	16 20	?S	(16 20)	+20	25·1	29·0
Rio de Janeiro		−1·0	51·6	143	—	—	e 16 20	− 6	25·5	—
Mendoza		−1·0	52·2	175	14 50	?	—	—	30·1	36·3
Sitka	E.	−1·2	58·7	328	—	—	20 42	?SR_1	39·3	40·8
	N.	−1·2	58·7	326	—	—	20 8	?SR_1	31·9	33·9
Coimbra	E.	−1·2	59·4	55	e 10 7	+ 7	17 51	−10	27·8	32·0
	N.	−1·2	59·4	55	—	—	—	—	e 26·8	31·6
Rio Tinto		−1·2	60·9	58	18 20	?S	(18 20)	+ 1	—	36·3
Granada		−1·2	63·3	58	10 32	+ 6	—	—	e 34·3	36·7
Edinburgh		−1·2	63·6	38	—	—	—	—	e 23·3	—
Paris		−1·2	67·0	45	—	—	i 19 30	− 5	27·3	28·3
Uccle		−1·3	68·1	42	—	—	—	—	—	29·3
De Bilt	E.	−1·3	68·5	41	—	—	—	—	e 32·3	38·8
Strasbourg		−1·3	70·5	45	—	—	—	—	e 24·3	34·5
Moncalieri		−1·3	70·9	49	11 17	+ 2	20 12	− 9	32·7	—
Zurich	Z.	−1·3	71·2	47	e 11 16	0	—	—	—	—
Hamburg		−1·3	71·3	39	e 10 20?	−57	—	—	e 37·3	—
Rocca di Papa		−1·3	75·1	51	i 11 47	+ 6	—	—	e 35·5	46·2
Vienna		−1·3	76·2	43	e 11 54	+ 6	21 32	+ 7	e 37·3	43·3
Pompeii		−1·3	76·6	51	e 7 12	?	e 13 2	?	—	—
Pulkovo		−1·3	80·6	30	12 30	+15	22 10	− 5	35·8	59·9
Ekaterinburg		−1·4	95·2	24	13 37	0	24 1	[+ 3]	39 3	47·9
Tiflis		−1·4	97·0	41	—	—	e 24 40	[+32]	e 50·3	—

For Notes see next page.

NOTES TO NOV. 3d. 8h. 37m. 40s.

Additional readings: Port au Prince gives also iP = +40s. Porto Rico MN = +4·2m. Mobile eE = +10m.20s. Cheltenham eE = +26m.25s. Georgetown LN = +11·2m., LE = +11·9m. Ithaca L = +16·3m. and +35·3m. Toronto iN = +9m.50s., iE = +10m.12s., iSR$_1$E = +11m.1s., LE = +13·3m., LN = +18·9m. T$_0$ = 8h.37m.21s. Victoria SN = +19m.0s., SE = +20m.20s. De Bilt eLN = +27·3m., MN = +30·8m., MZ = +36·4m. Strasbourg MN = +39·3m. Vienna readings have been diminished by 1h. Pulkovo PR$_1$ = +15m.46s., PR$_2$ = +18m.33s., Y = +19m.47s., PS = +22m.50s., SR$_1$ = +28m.2s., SR$_2$ = +31m.38s. Ekaterinburg MZ = +50·6m. Tiflis eE = +53m.44s. and +64m.26s.

1923. Nov. 3d. 16h. 19m. 12s. Epicentre 29°·0N. 130°·0E.

(as on 1921 July 4d.).

A = −·562, B = +·670, C = +·485; D = +·766, E = +·643; G = −·312, H = +·371, K = −·875.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki	3·7	358	0 54	− 4	—	—	1·8	2·8
Kobe	7·2	36	1 54	+ 5	3 6	− 9	4·0	5·4
Osaka	7·3	38	1 59	+ 8	—	—	3·8	5·4
Zi-ka-wei	7·7	289	2 0	+ 3	e 3 28	− 1	—	5·0
Taihoku	8·5	244	2 15	+ 6	—	—	4·3	9·9
Nagoya	8·5	42	2 24	+15	—	—	5·0	5·6
Mizusawa E.	13·7	39	3 27	+ 5	8 32	?L	(8·5)	—
N.	13·7	39	3 26	+ 4	8 31	?L	(8·5)	—
Hong Kong	15·7	249	3 46	− 2	7 5	+17	8·0	10·1
Manila	16·7	212	e 4 8	+ 7	—	—	—	—
Ootomari	20·3	26	4 46	+ 1	(8 30)	+ 1	8·5	—
Calcutta N.	37·9	270	7 42	+ 5	13 11	−26	18·6	—
Batavia	41·7	217	i 7 57	−12	i 14 11	−20	e 24·8	—
Malabar	42·2	214	i 7 59	−13	i 14 16	−22	e 23·1	—
Simla N.	45·3	286	14 36	?S	(14 36)	−43	24·5	25·4
Colombo	52·1	256	8 48	−33	16 24	−21	35·3	36·3
Kodaikanal	52·5	261	12 54	?PR$_1$	—	—	31·3	40·3
Bombay	52·7	273	9 24	0	17 15	+23	—	30·7
Ekaterinburg	54·9	322	i 9 38	0	i 17 18	− 2	22·8	31·8
Perth	62·4	194	14 53	?PR$_1$	—	—	—	—
Adelaide	64·5	172	—	—	e 19 18	− 1	e 30·8	35·0
Honolulu E.	64·7	79	—	—	i 19 29	+ 8	29·5	31·3
N.	64·7	79	—	—	e 19 23	+ 2	30·4	31·6
Riverview	66·0	161	e 11 0	+ 9	e 19 27	−10	e 29·2	—
Sydney	66·0	161	19 36	?S	(19 36)	− 1	35·0	37·8
Tiflis	67·8	308	e 11 13	+10	e 20 17	+17	37·8	41·9
Melbourne	68·3	168	—	—	19 12	−54	30·9	37·2
Pulkovo	69·9	330	11 18	+ 2	20 27	+ 2	32·8	44·6
Apia	70·7	119	—	—	—	—	—	36·8
Upsala	75·4	332	—	—	e 22 0	+30	e 35·8	48·8
Victoria E.	78·7	40	12 3	− 8	21 57	−11	38·8	45·1
N.	78·7	40	—	—	22 3	− 5	39·4	54·9
Bergen	79·9	336	—	—	e 22 48	+26	40·8	50·8
Wellington	81·6	147	—	—	(e 22 36)	− 6	41·1	42·8
Budapest	81·9	321	12 41	+11	—	—	40·7	—
Belgrade	82·3	318	12 32	0	23 4	+15	e 33·0	52·0
Hamburg	82·5	329	e 12 22	−11	(23 48)	+56	e 41·8	52·8
Vienna	82·6	323	e 12 31	− 3	22 54	+ 1	e 39·8	46·8
Athens	84·0	311	e 12 4	−38	e 24 11	+63	e 46·8	53·9
De Bilt E.	85·6	329	—	—	23 29	+ 3	e 44·8	55·6
N.Z.	85·6	329	12 46	− 5	23 32	+ 6	e 43·8	55·6
Innsbruck	85·8	324	e 12 57	+ 5	e 24 0	+32	e 41·8	50·7
Edinburgh	86·2	336	—	—	i 29 58	?SR$_1$	42·8	48·8
Eskdalemuir	86·7	336	e 12 48	− 9	23 36	− 2	40·8	52·7
Strasbourg	86·9	325	12 44	−14	e 23 48	+ 8	40·8	49·0
Uccle	86·9	329	e 12 47	−11	e 23 29	−11	e 42·8	56·5
Zurich	87·3	325	12 53	− 8	—	—	e 45·3	—
Bidston	88·1	334	28 3?	?SR$_1$	38 8?	?L	(38·1?)	55·8
Pompeii	88·1	317	e 13 20	+14	—	—	65·8	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Florence	88·2	321	13 18	+12	23 18	−36	29·8	33·8
Kew	88·4	332	19 48	?PR_1	—	—	—	58·8
Oxford	88·6	331	—	—	i 23 43	−16	40·7	57·8
Rocca di Papa	88·6	319	i 13 0	− 8	23 48	−11	e 46·8	57·2
Besançon	88·7	325	—	—	23 42	−18	—	48·8
Paris	89·2	329	12 45	−26	e 23 45	−20	31·8	58·8
Moncalieri	89·3	323	13 5	− 7	23 48	−18	36·6	57·4
Le Mans	90·8	329	—	—	e 47 48	?L	e 51·8	59·3
Marseilles	91·6	324	—	—	—	—	e 45·8	59·8
Barcelona	94·7	324	—	—	—	—	e 51·0	58·7
Tortosa E.	95·9	324	—	—	—	—	e 50·8	63·2
N.	95·9	324	—	—	—	—	e 44·8	62·7
Algiers	97·5	320	—	—	—	—	51·8	56·8
Coimbra	100·7	329	e 13 18	−56	27 32	+90	e 49·3	56·1
Granada	100·9	325	—	—	—	—	e 53·8	64·2
Chicago	101·2	27	e 17 48	?PR_1	—	—	e 45·8	—
Rio Tinto	101·9	326	16 48	?PR_1	—	—	—	64·8
Ottawa	102·0	18	e 25 16	?S	(e 25 16)	−59	e 45·8	53·8
Ann Arbor	102·2	25	—	—	e 24 48	[+13]	47·3	—
Toronto E.	102·5	21	(e 19 31)	?PR_1	e 25 58	−22	e 41·3	60·8
N.	102·5	21	—	—	i 24 58	[+22]	56·4	—
San Fernando	102·7	325	—	—	33 18	?SR_1	—	66·3
Ithaca	104·5	20	—	—	i 25 9	[+24]	57·8	—
Georgetown	107·6	21	—	—	e 24 48	?	59·0	—
Washington	107·6	21	18 48	[+36]	—	—	e 58·8	—
Cape Town	122·5	246	—	—	—	—	—	69·8
La Paz	159·2	57	20 9	[+ 2]	34 20	?SR_1	76·8	82·6
Cipolletti	162·0	128	32 36	?	—	—	84·4	87·6
Mendoza	163·8	109	29 24	?	—	—	82·7	91·2
Andalgala N.	165·6	88	20 18	?	—	—	84·8	107·3
Pilar	167·8	106	27 18	?PR_1	—	—	89·8	92·6
La Plata E.	171·1	133	20 4	[−11]	31 58	?	82·0	85·4
N.	171·1	133	20 11	[− 4]	32 28	?	83·8	88·6
Rio de Janeiro	171·3	313	e 25 18	?PR_1	35 48	?	74·3	102·3

Additional readings and notes: Osaka gives also MN = +4·8m. Taihoku MN = +6·6m. Batavia i = +8m.46s. Simla S = +19m.0s. Ekaterinburg PR_1 = +11m.39s., PR_2 = +13m.10s., iPS = +17m.42s., MZ = +35·5m. Adelaide e = +24m.48s. and +29m.18s. Honolulu eN = +26m.48s. Sydney S = +27m.0s. Tiflis eS = +21m.19s., eN = +34m.42s., eE = +35m.7s., MN = +44·1m. Pulkovo PR_1 = +14m.12s., PR_2 = +15m.42s., PS = +21m.15s., SR_1 = +25m.24s., SR_2 = +29m.42s., MN = +42·6m. Upsala MN = +45·4m. Bergen e = +31m.48s. Wellington S is given as PR_1, eS = +28m.30s., e = +35m.12s., and +37m.6s. Hamburg, S is given as L. Vienna iPZ = +12m.32s., iZ = +12m.49s., i = +13m.47s., PR_1 = +15m.56s., PR_2 = +17m.55s., PS = +23m.47s., MZ = +51·8m. Athens MN = +51·4m. De Bilt PR_1Z = +16m.12s., SR_1E = +29m.25s., SR_1N = +29m.43s., SR_2 = +33m.43s. Eskdalemuir PR_1 = +16m.48s., PR_2 = +20m.0s., SR_1 = +29m.48s. Strasbourg eS = +23m.29s., MN = +55·0m. Uccle PR_1 = +16m.18s., PR_2 = +18m.36s., SR_1 = +29m.18s., SR_2 = +33m.36s., MN = +56·8m. Moncalieri MN = +58·0m. Coimbra PR_1 = +16m.18s., MN = +63·5m. T_o = 16h.19m.12s. Granada MN = +58·8m. Ottawa eS? = +36m.48s. (?SR_1). Toronto gives several other eE readings. Georgetown eLE = +58·8m., eLN = +58·2m., LN = +59·1m. Pilar MN = +98·6m. La Plata PE? = +20m.25s., PN? = +20m.31s., SR_1E? = +47m.15s., SR_1N? = +47m.14s. Rio de Janeiro LE = +49·3m., LN = +49·8m., MN = +95·3m.

Nov. 3d. Readings also at 2h. (Riverview), 3h. (Kodaikanal, Ekaterinburg, Victoria, Toronto, Chicago, and Ottawa), 4h. (La Paz, near Osaka, Kobe, and Nagoya), 8h. (Nagasaki), 10h. (Budapest and Port au Prince), 11h. (near Port au Prince), 14h. (Azores), 15h. (Ekaterinburg), 16h. (near Port au Prince), 18h. (near Hakodate), 19h. (La Paz), 21h. (Accra, Port au Prince, Azores, and La Paz), 23h. (Nagasaki, Batavia, and near Malabar).

1923. Nov. 4d. 0h. 4m. 20s. Epicentre 5°·7S. 151°·8E.

(as on Nov. 3d.).

A = −·877, B = +·470, C = −·099; D = +·473, E = +·881;
G = +·088, H = −·047, K = −·995.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		28·2	181	i 6 4	− 6	i 10 52	−11	e 13·0	—
Sydney		28·2	181	(6 16)	+ 6	(11 10)	+ 7	11·2	16·6
Adelaide		31·7	200	e 6 52	+ 8	i 11 58	− 5	i15·4	18·2
Melbourne		32·7	189	—	—	11 28	−51	14·4	18·1
Manila		36·7	305	e 7 27	− 1	—	—	—	—
Apia		36·8	103	e 7 16	−12	12 53	−28	15·6	17·2
Wellington		41·1	153	e 7 58	− 6	i 14 4	−18	17·5	22·7
Taihoku		42·5	319	8 12	− 3	14 40	− 2	18·4	—
Perth		42·6	228	8 17	+ 2	14 43	0	26·3	28·7
Osaka		43·2	341	7 48	−32	—	—	18·0	19·0
Kobe		43·3	340	e 8 20	0	—	—	18·2	18·8
Malabar		44·1	266	i 8 34	+ 7	—	—	e 21·9	—
Batavia		44·7	268	i 8 32	+ 1	i 15 15	+ 4	22·7	30·7
Hong Kong		46·3	309	8 33	− 9	15 38	+ 6	—	24·8
Zi-ka-wei		46·9	324	e 8 39	− 7	e 15 32	− 8	e 19·3	23·6
Honolulu	E.	56·1	59	9 32	−15	i 17 11	−24	25·2	27·8
	N.	56·1	59	9 38	− 9	—	—	26·0	27·1
Calcutta	N.	68·1	297	11 34	+29	—	—	—	—
Colombo		72·9	279	(12 40)	+65	12 40	?P	22·2	22·7
Kodaikanal		75·8	282	11 52	− 2	(21 46)	+11	21·8	22·8
Simla		80·0	304	12 34	+15	e 22 34	+11	—	—
Bombay		81·5	290	12 31	+ 3	22 49	+ 8	—	22·9
Sitka	E.	85·6	31	—	—	e 22 48	−38	38·2	40·0
Berkeley		90·2	52	e 13 25	+ 8	e 24 25	+ 9	e 40·6	43.0
Victoria	E.	90·8	41	13 7	−13	23 35	−47	40·5	43·6
	N.	90·8	41	—	—	23 55	−27	36·9	42·6
Ekaterinburg		95·4	327	i 13 34	−11	24 42	−28	39·7	38·7
Tucson	E.	99·3	58	e 17 44	?PR$_1$	e 25 25	−24	e 44·6	49·0
Mazatlan	E.	103·0	67	—	—	—	—	—	48·9
Denver	E.	103·7	50	—	—	—	—	46·7	—
Tiflis		106·5	313	e 18 56	?PR$_1$	e 26 27	−30	53·0	61·9
Tacubaya	E.	109·8	71	19 10	?PR$_1$	—	—	50·3	56·5
Pulkovo		110·3	333	—	—	—	—	44·7	52·9
Upsala		115·7	337	—	—	e 29 40	+84	e 48·7	70·0
Chicago		116·3	45	19 36	?PR$_1$	29 22	+62	55·7	—
Johannesburg		116·9	236	—	—	—	—	29·7	—
Ann Arbor		118·9	43	—	—	e 30 4	+83	e 50·2	—
Bergen		119·7	341	—	—	—	—	e 55·7	—
Toronto	E.	121·3	40	19 36	?PR$_1$	e 30 26	+87	50·5	61·1
	N.	121·3	40	19 33	?PR$_1$	e 30 30	+91	49·9	60·8
Budapest		122·0	324	e 20 32	?PR$_1$	—	—	e 54·5	—
Cipolletti		122·1	143	26 28	?S	(26 28)	−157	70·2	71·0
Ottawa		122·8	37	20 34	?PR$_1$	30 44	?	e 50·7	66·2
Hamburg		123·0	333	e 19 10	[+ 9]	—	—	e 52·7	56·7
Athens		123·0	311	19 2	[+ 1]	30 43	?	e 51·7	73·4
Vienna		123·1	326	e 19 5	[+ 4]	30 52	—	e 54·7	68·7
Ithaca		123·7	40	20 30	?PR$_1$	—	—	58·7	—
Georgetown	E.	124·9	45	e 20 2	—	e 32 40	?	58·8	63·2
	N.	124·9	45	e 19 40	[+34]	e 32 40	?	59·1	62·9
Washington		124·9	45	e 37 40	?SR$_1$	—	—	63·7	—
Cheltenham		125·0	45	e 37 47	?SR$_1$	—	—	60·8	63·9
Northfield		125·3	37	—	—	—	—	e 60·7	—
Mendoza		125·8	137	18 34	[−34]	—	—	58·6	66·5
Edinburgh		126·0	341	—	—	—	—	43·7	67·2
De Bilt		126·1	335	21 12	?PR$_1$	—	—	e 52·7	61·2
Eskdalemuir		126·5	341	i 21 15	?PR$_1$	—	—	55·7	—
Uccle		127·4	332	e 19 16	[+ 4]	e 29 40	− 3	e 53·7	60·8
Strasbourg		127·4	330	e 20 12	[+60]	e 22 7	?PR$_1$	e 36·7	69·7
Stonyhurst		127·5	339	e 10 58	?	21 22	?PR$_1$	56·7	75·2
Zurich		127·8	327	e 19 8	[− 6]	—	—	—	—
Bidston		127·9	339	43 23	?SR$_1$	54 21	?L	(54·4)	67·0
Florence		128·6	324	e 19 40	[+25]	32 10	?	50·7	68·2
Kew		128·7	337	23 40	?PR$_1$	—	—	—	95·7
Oxford		128·8	338	—	—	—	—	54·7	66·3
Rocca di Papa		128·8	321	e 19 22	[+ 6]	35 52	?	e 57·2	75·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Pilar	E.	129·5	140	23 4	?PR_1	—	—	69·5	79·9
	N.	129·5	140	23 10	?PR_1	—	—	73·7	86·2
Moncalieri		129·8	327	20 29	[+71]	33 5	?	53·4	76·7
La Plata	E.	130·7	146	21 29	?PR_1	—	—	60·3	66·0
	N.	130·7	146	21 37	?PR_1	—	—	59·3	65·8
Marseilles		132·2	327	—	—	—	—	e 51·7	—
La Paz		134·7	121	i 19 27	[− 2]	32 43	?	63·7	106·2
Barcelona		135·2	327	—	—	—	—	e 67·0	71·8
Tortosa	N.	136·5	328	—	—	e 21 40	?	43·7	76·4
Algiers		137·8	321	—	—	e 22 33	?PR_1	e 52·7	84·7
Toledo		139·5	330	e 21 36	?PR_1	33 22	?	e 50·3	64·9
Coimbra		141·2	336	e 18 51	[−50]	30 51	?	e 59·2	61·9
Granada		141·3	328	e 19 53	[+11]	31 33	?	e 62·7	68·7
Porto Rico		141·6	68	—	—	—	—	e 70·2	—
Rio Tinto		142·4	331	—	—	—	—	—	93·7
San Fernando		143·2	330	—	—	21 40	?	—	112·7
Rio de Janeiro	E.	147·9	154	i 19 48	[+ 5]	—	—	43·7	—

Additional readings: Sydney gives P as S and S as L, also P = 0h.4m.30s. Melbourne PR_1 = +6m.52s. Perth SR_1? = +18m.5s. Osaka MN = +22·0m. Zi-ka-wei MN = +22·2m., MZ = +24·6m. Honolulu PSE = +17m.44s., SR_2E = +23m.0s., SR_2N = +22m.40s., T_o = 0h.4m.18s. Colombo P = 0h.0m.0s. Kodaikanal L and M diminished by 1h. Simla eSN = +22m.40s. Sitka eLN = +35·8m., MN = +37·4m. Berkeley ePSE = +24m.42s., eSR_2E = +30m.49s. Ekaterinburg i = +17m.32s., MZ = +59·0m. Tiflis eE = +12m.55s., +13m.12s., +19m.38s., +20m.15s. and +25m.35s., L = +34·1m., eLN = +53·7m., MN = +55·2m. Pulkovo PR_1 = +19m.22s., P$\mathfrak{S}$ = +28m.41s., SR_1 = +34m.58s. Upsala MN = +69·8m. Chicago eL = +47·7m. Ann Arbor L = +60·0m. Toronto eE = +20m.38s., PR_1E = +25m.50s., i = +27m.15s., eN = +30m.10s., iSR_1E = +37m.8s., SR_2 = +37m.53s., LN = +58·7m. Ottawa PR_2 = +25m.52s., e = +27m.29s., SR_1 = +37m.4s., SR_2 = +41m.8s., T_o = 0h.12m.41s. Hamburg MN = +60·7m., MZ = +76·7m. Vienna i = +20m.56s. Ithaca eL = +50·7m. Georgetown SR_1E = +37m.40s., eLEN = +56·7m. Washington eL = +49·7m. Cheltenham eN = +53m.47s., MN = +62·7m. De Bilt e = +22m.35s. and +30m.46s., MN = +63·3m., MZ = +71·2m. Eskdalemuir iN = +31m.14s., eN = +32m.52s., +38m.40s., and +43m.40s. Uccle PR_1 = +22m.34s., MN = +82·5m. Strasbourg MN = +80·2m. Bidston P = +48m.15s. Rocca di Papa ePN = +19m.52s., ePE = +20m.58s., +21m.40s., eLE = +61·7m., eLN = +64·7m. Moncalieri MN = +89·7m. La Plata E = +22m.35s., N = +22m.38s., +39m.3s., +39m.22s., E = +60m.42s. and N = +61m.39s. La Paz PR_1N = +23m.2s., SR_1N = +40m.43s. Toledo i = +23m.18s., MNW = +64·7m. Coimbra eP = +14m.15s., PR_1 = +23m.45s., S = +29m.31s., MN = +70·7m. Granada iP = +19m.57s. Porto Rico eLN = +71·5m. Rio de Janeiro LN = +42·7m.

Nov. 4d. 11h. 55m. 0s. Epicentre 19°·5S. 174°·2W. (as on 1918 Oct. 14d.).

A = −·938, B = −·095, C = −·334; D = −·101, E = +·995; G = +·332, H = +·034, K = −·943.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington		23·7	201	—	—	e 9 36	− 2	e 10·6	12·0
Riverview		33·9	238	e 7 6	+ 2	e 12 36	− 3	e 13·4	—
Sydney		33·9	238	—	—	8 12	?PR_1	14·2	15·8
Melbourne		39·8	233	—	—	—	—	9·3	10·3
Toronto	E.	106·7	48	—	—	—	—	e 59·9	—
Ottawa		109·6	48	—	—	—	—	e 58·0	—
Ekaterinburg		125·2	327	—	—	e 34 35	?	55·0	66·2
Vienna	Z.	150·0	346	20 4	[+ 8]	—	—	—	—
Rio Tinto		158·8	28	90 0	?L	—	—	(90.0)	98·0

Ekaterinburg gives also MN = +58·0m.

Nov. 4d. 18h. 36m. 36s. Epicentre 37°·5N. 142°·5E. (as on 1923 Aug. 6d.).

A = −·630, B = +·483, C = +·609; D = +·609, E = +·793; G = −·483, H = +·370, K = −·793.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	E.	2·0	327	0 30	− 1	0 54	− 1	—	—
Hakodate		4·5	343	4 7	?L	—	—	(4·1)	6·0
Nagoya		5·1	244	1 45	+26	—	—	2·8	3·2
Osaka		6·3	248	1 24	−12	(3 2)	+10	3·0	3·2
Kobe		6·6	247	—	—	—	—	—	2·9

Additional readings: Osaka gives also MN = +3·6m. Kobe MN = +3·2m.

Nov. 4d. 20h. 3m. 10s. Epicentre 5°·7S. 151°·8E. (as at 0h.).

A = −·877, B = +·470, C = −·099; D = +·473, E = +·881; G = +·088, H = −·047, K = −·995.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		28·2	181	—	—	e 10 49	−14	e 13·7	—
Sydney		28·2	181	10 44	?S	(10 44)	−19	15·8	18·8
Manila		36·7	305	e 7 50	+22	—	—	—	—
Wellington		41·1	153	e 13 38	?S	(e 13 38)	−44	e 21·1	22·8
Perth		42·6	228	—	—	13 58	−45	—	—
Batavia		44·7	268	e 8 42	+11	i 15 14	+ 3	e 27·2	—
Hong Kong		46·3	309	—	—	—	—	—	25·8
Zi-ka-wei		46·9	324	i 8 33	−13	e 13 55	−105	—	25·8
Honolulu	E.	56·1	59	—	—	—	—	e 25·9	—
Bombay		81·5	290	12 57	+29	22 42	+ 1	—	22·8
Victoria	E.	90·8	41	25 6	?S	(25 6)	+44	42·1	42·7
Ekaterinburg		95·4	327	i 13 26	−19	24 41	−29	40·8	54·8
Chicago		116·3	45	—	—	—	—	—	54·8
Toronto	E.	121·3	40	—	—	e 29 26	+27	57·3	—
Ottawa		122·8	37	—	—	e 30 20	+70	e 58·6	66·8
Vienna	Z.	123·1	326	54 50	?L	—	—	(54·8)	—
De Bilt		126·1	335	—	—	—	—	e 59·8	—
Uccle		127·4	332	—	—	—	—	e 56·8	—
La Paz		134·7	121	19 43	[+14]	—	—	—	—
Rio Tinto		142·4	331	79 50	?L	—	—	(79·8)	104·8
Azores		147·9	356	61 50	?L	—	—	(61·8)	63·8

Additional readings and notes: Sydney gives also S = +13m.44s. Wellington eS = +17m.32s. Honolulu eN = +31m.24s. Ekaterinburg i = +17m.20s., MN = +50·8m. Ottawa e = +37m.46s. and +36m.5s., L = +62·8m.

Nov. 4d. 20h. 45m. 40s. Epicentre 35°·0N. 139°·5E. (as on Oct. 31d.).

A = −·623, B = +·532, C = +·574; D = +·649, E = +·760; G = −·436, H = +·372, K = −·819.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		2·1	274	0 51	+18	—	—	1·4	1·5
Osaka		3·4	266	1 3	+10	—	—	1·8	2·3
Kobe		3·6	266	1 5	+ 9	—	—	1·9	2·2
Mizusawa	E.	4·3	17	1 2	− 5	1 44	−14	—	—
Hakodate		6·8	7	4 19	?L	—	—	(4·3)	6·6
Zi-ka-wei		15·6	261	i 3 41	− 6	e 6 51	+ 5	—	10·1
Taihoku		18·4	242	—	—	e 7 20	−29	—	—
Hong Kong		25·5	247	—	—	—	—	—	16·3
Ekaterinburg		55·5	320	i 9 32	−11	i 17 11	−17	28·3	35·4
Pulkovo		68·9	330	11 4	− 6	20 14	+ 1	32·3	—
De Bilt		84·2	334	—	—	—	—	e 45·3	—
La Paz		149·2	60	19 46	[− 8]	—	—	—	—

Osaka gives also MN = +2·5m.

Nov. 4d. 22h. 13m. 20s. Epicentre 5°·7S. 151°·8E. (as at 20h.).

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		28·2	181	e 6 59	+49	—	—	e 14·7	—
Manila		36·7	305	e 7 35	+ 7	—	—	—	—
Perth		42·6	228	—	—	14 40	− 3	—	—
Batavia		44·7	268	i 8 2	−29	i 15 22	+11	—	—
Hong Kong		46·3	309	—	—	—	—	—	26·7
Zi-ka-wei		46·9	324	i 8 45	− 1	e 15 39	− 1	—	25·8
Victoria	E.	90·8	41	44 1	?L	—	—	49·6	52·4
Ekaterinburg		95·4	327	—	—	e 24 11	[+12]	42·7	58·8
Ottawa		122·8	37	—	—	—	—	e 61·7	—
De Bilt		126·1	335	—	—	—	—	e 70·7	—
La Paz		134·7	121	19 40	[+11]	—	—	—	—

Ekaterinburg gives also e = +26m.25s.

Nov. 4d. Readings also at 1h. and 4h. (near Manila), 5h. (Azores), 8h. (Azores, and Ekaterinburg), 10h. (Ekaterinburg and La Paz) 11h. (Ekaterinburg), 12h. (Tacubaya), 16h. (Azores), 18h. (near Mizusawa), 19h. (Ekaterinburg), 20h. (Mizusawa), 22h. (Azores).

1923. Nov. 5d. 21h. 27m. 52s. Epicentre **29°·0N. 130°·0E.**
(as on Nov. 3d.).

A = −·562, B = +·670, C = +·485 ; D = +·766, E = +·643 ;
G = −·312, H = +·371, K = −·875.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki		3·7	358	0 48	−10	(1 41)	− 1	1·7	1·9
Kobe		7·2	36	1 46	− 3	3 8	− 7	3·7	5·5
Osaka		7·3	38	1 48	− 3	—	—	3·5	3·9
Zi-ka-wei		7·7	289	i 1 53	− 4	e 3 37	+ 8	—	6·7
Nagoya		8·5	42	2 11	+ 2	—	—	5·0	5·7
Taihoku		8·5	244	2 18	+ 9	—	—	4·8	10·3
Mizusawa	N.	13·7	39	2 20	−62	7 53	− 8	—	—
Hong Kong		15·7	249	3 45	− 3	—	—	—	12·6
Manila		16·7	212	e 4 4	+ 3	—	—	—	—
Ootomari		20·3	26	4 46	+ 1	—	—	8·6	13·5
Calcutta	N.	37·9	270	7 24	−13	15 36	+119	22·2	24·8
Batavia		41·7	217	i 7 54	−15	—	—	24·8	—
Malabar		42·2	214	i 7 38	−34	i 14 31	− 7	—	—
Simla	E.	45·3	286	8 50	+15	18 56	?SR_1	27·3	31·0
	N.	45·3	286	8 38	+ 3	18 32	?SR_1	24·5	25·7
Colombo		52·1	256	9 8	−13	16 38	− 7	36·1	40·1
Kodaikanal		52·5	261	9 20	− 3	—	—	31·6	35·7
Bombay		52·7	273	9 20	− 4	17 12	+20	29·1	36·3
Ekaterinburg		54·9	322	i 9 35	− 3	i 17 24	+ 4	24·1	39·4
Perth		62·4	194	—	—	17 43	−70	—	—
Adelaide		64·5	172	—	—	i 19 20	+ 1	e 26·9	40·1
Honolulu		64·7	79	19 29	?S	(19 29)	+ 8	—	31·3
Riverview		66·0	161	e 11 48	+57	e 19 36	− 1	e 29·4	—
Sydney		66·0	161	19 26	?S	(19 26)	−11	35·6	37·9
Tiflis	E.	67·8	308	e 11 2	− 1	e 20 11	+11	e 35·0	45·6
	N.	67·8	308	—	—	e 20 21	+21	e 34·0	48·6
Melbourne		68·3	168	—	—	i 21 2?	+56	34·6	37·4
Pulkovo		69·9	330	11 14	− 2	20 34	+ 9	33·1	41·2
Apia		70·7	119	e 16 8	?PR_1	e 23 8	?	e 34·1	—
Upsala		75·4	332	e 11 53	+ 2	e 21 29	− 1	e 35·1	49·2
Lemberg		77·6	320	e 12 36	+31	e 22 12	+16	e 40·8	45·0
Victoria	E.	78·7	40	12 8	− 3	22 3	− 5	38·6	39·7
	N.	78·7	40	12 21	+10	22 3	− 5	34·9	40·8
Bergen		79·9	336	—	—	e 11 8	?	e 31·1	42·1
Wellington		81·6	147	12 56	+28	22 8	−34	40·1	42·1
Budapest		81·9	321	12 35	+ 5	22 53	+ 8	32·0	—
Belgrade		82·3	318	12 30	− 2	e 22 43	− 6	e 45·0	50·2
Hamburg		82·5	329	e 12 46	+13	23 1	+ 9	44·1	49·3
Vienna		82·6	323	e 12 27	− 7	22 53	0	e 36·1	49·1
Helwan		82·7	300	12 27	− 7	22 43	−11	—	57·0
Athens		84·0	311	e 12 26	−16	23 8	0	e 35·1	51·1
Berkeley		85·0	49	—	—	—	—	e 35·6	→

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
De Bilt	E.	85·6	329	—	—	23 17	− 9	e 45·1	50·8
	N.	85·6	329	—	—	23 18	− 8	e 44·1	57·2
	Z.	85·6	329	12 42	− 9	—	—	—	56·1
Lick	E.	85·7	49	e 14 34	+102	i 23 24	− 3	35·7	—
Innsbruck		85·8	324	e 12 50	− 2	e 23 32	+ 4	e 43·1	50·1
Edinburgh		86·2	336	—	—	23 32	0	41·1	52·0
Eskdalemuir		86·7	336	12 59	+ 2	i 23 38	0	40·1	52·5
Uccle		86·9	329	e 12 46	−12	23 20	−20	e 41·1	51·6
Strasbourg		86·9	325	12 43	−15	i 23 45	+ 5	e 42·1	56·6
Zurich		87·3	325	e 12 48	−13	e 23 15	[+ 4]	e 28·6	—
Stonyhurst		87·5	333	13 8	+ 6	23 38	− 9	46·6	57·6
Bidston		88·1	334	25 23	?	—	—	—	61·0
Florence		88·2	321	e 12 53	−13	e 23 28	−26	43·1	52·1
West Bromwich		88·3	333	—	—	23 22	[+ 5]	44·1	60·1
Kew		88·4	332	23 8	?S	(23 8)	[−10]	—	59·1
Rocca di Papa		88·6	319	e 13 44	+36	23 32	[+13]	e 45·1	51·6
Oxford		88·6	331	13 16	+ 8	23 20	[+ 1]	42·0	52·0
Besançon		88·7	325	16 34	?	—	—	—	47·1
Paris	Z.	89·2	329	e 12 59	−12	e 23 31	[+ 8]	49·1	64·1
Moncalieri		89·3	323	12 41	−31	22 54	[−29]	37·3	59·0
Le Mans		90·8	329	—	—	—	—	47·1	59·6
Marseilles		91·6	324	e 17 8	?PR_1	e 24 8	−23	e 49·1	59·6
Barcelona		94·7	324	—	—	e 23 57	[+ 2]	e 50·2	55·6
Tucson	E.	95·8	47	42 6	?	—	—	42·7	43·6
Tortosa		95·9	324	—	—	e 17 8	?PR_1	e 31.1	63·2
Algiers		97·5	320	—	—	24 24	[+13]	e 44·1	62·1
Toledo		99·0	326	e 13 48	−17	e 24 38	[+19]	e 43·2	65·5
Coimbra	E.	100·7	329	e 13 14	−60	24 31	[+ 4]	44·6	55·5
	N.	100·7	329	—	—	—	—	51·6	57·9
Granada		100·9	325	e 13 40	−35	e 24 57	[+28]	e 53·8	61·2
Chicago		101·2	27	17 56	?PR_1	25 30	−37	53·1	—
Rio Tinto		101·9	326	18 8	?PR_1	—	—	—	72·1
Ottawa		102·0	18	14 24	+ 4	25 28	−47	e 45·1	48·1
Ann Arbor		102·2	25	14 8	−13	25 44	−33	50·6	—
Lisbon		102·3	330	—	—	(e 27 35)	+77	e 27·6	58·6
Toronto	E.	102·5	21	14 16	− 7	i 25 4	−76	e 43·7	51·8
	N.	102·5	21	14 16	− 7	i 25 3	−77	46·5	59·3
San Fernando		102·7	325	24 55	?S	(24 55)	[+18]	56·6	66·1
Ithaca		104·5	20	e 18 8	?PR_1	e 28 8	+90	56·1	—
Georgetown	E.	107·6	21	—	—	e 24 39	[−20]	60·7	—
Washington		107·6	21	—	—	e 25 8	[+ 9]	60·1	—
Cheltenham	E.	107·8	22	—	—	e 53 55	?L	e 60·8	62 8
	N.	107·8	22	49 4	?L	—	—	e 60·0	70·6
La Paz		159·2	57	20 10	[+ 3]	38 24	?	77·1	82·5
Cipolletti		162·0	128	31 32	?	—	—	83·7	95·1
Mendoza		163·8	109	20 38	?	—	—	81·2	92·4
La Plata	E.	171·1	133	21 36	[+81]	32 0	?	82·0	86·1
	N.	171·1	133	21 37	[+82]	25 42	?PR_1	79·3	104·1
Rio de Janeiro	E.	171·3	313	e 25 1	?PR_1	35 38	?	51·6	—
	N.	171·3	313	e 25 0	?PR_1	35 48	?	50·6	—

Additional readings and notes: Nagasaki gives also MN = +3·0m. Kobe MN = +4·3m. Osaka MN = +7·4m. Zi-ka-wei MN = +8·4m. Taihoku MN = +6·8m. Batavia i = +9m.49s., and +15m.49s. Malabar i = +9m.37s. Ekaterinburg PR_1 = +11m.42s., PR_2 = +13m.3s., MZ = +40·0m., MN = +44·6m. Adelaide eSR_2 = +24m.32s. Honolulu SN = +26m.46s., SR_1N = +30m.17s., T_o = 21h.38m.10s. Sydney PR_2 = +24m.44s., S = +27m.56s., SR_1 = +31m.20s. Tiflis gives several other e readings. Pulkovo PR_1 = +14m.14s., SR_1 = +25m.26s., MN = +40·6m. Upsala MN = +48·9m. Bergen e = +16m.8s. Wellington SR_1 = +27m.56s. Belgrade iP = +13m.4s., PR_1 = +14m.26s., PR_2 = +16m.14s., PR_3 = +20m.4s., SR_1 = +31m.23s. Hamburg SR_1 = +28m.8s., MN = +48·7m. Vienna iPZ = +12m.28s., iZ = +12m.38s., PR_1 = +16m.16s. Athens MN = +49·6m. Berkeley eN = +63m.56s. and eE = +66m.8s. De Bilt PR_1Z = +16m.5s., SR_1E = +29m.28s., SR_1N = +29m.30s. Lick iE = +9m.54s., eEN = +44m.8s., iN = +45m.41s., eE = +52m.21s. Eskdalemuir PR_1 = +16m.34s., e = +20m.8s., S = +23m.28s., SR_1 = +29m.34s. Uccle PR_1 = +16m.24s., SR_1 = +29m.23s., MN = +56·8m. Strasbourg PR_1 = +16m.8s., PR_2 = +18m.11s., S = +23m.1s., MN = +56·5m. Rocca di Papa e = +12m.50s., SN = +25m.20s. Paris iPZ = +13m.16s., PR_1Z = +16m.35s. Moncalieri eL = +30·7m., MN = +54·6m. Barcelona MN = +58·0m. Tucson LN = +43·0m. eE = +52m.19s. Tortosa MN = +63·0m. Toledo PR_1NW = +18m.0s., PR_1NE = +18m.2s., MNW = +58·2m. Coimbra PR_1 = +18m.4s., i = +24m.57s., T_o = 21h.27m.48s.

Continued on next page.

Granada $PR_1 = +18$m.1s., $SR_1 = +27$m.41s., MN = +64·3m. Chicago eL = +36·9m. Ottawa $PR_1 = +18$m.21s., $PR_2 = +20$m.26s., i = +27m.23s. $SR_1 = +36$m.38s. Ann Arbor $PR_1 = +18$m.38s., L = +45·1m., $T_0 = 21$h.28m.0s. Toronto eE = +25m.51s., LE = +49·5m., and +105·3m. San Fernando PS = +37m.40s., MN = +67·6m. Ithaca eL = +45·1m. Georgetown eL = +50·3m. Washington eL = +54·1m. La Plata SR_1?N = +45m.26s., SR_1?E = +46m.16s., SR_2?N = +50m.14s., SR_2?E = +51m.27s., also several other readings for north component.

Nov. 5d. Readings also at 1h. (near Vienna and Rocca di Papa), 2h. (Toronto, Ottawa, Ekaterinburg, and near Zurich), 3h. (Ekaterinburg), 7h. (Azores), 8h. (Tiflis), 11h. (Manila and Granada), 14h. (La Paz, Toronto, Ottawa, and Balboa Heights), 15h. (Ekaterinburg and De Bilt), 17h. (La Paz), 20h. (Adelaide, near Manila, and near Hakodate), 23h. (near Manila).

Nov. 6d. 13h. 36m. 8s. Epicentre 38°·7N. 136°·0E.

A = −·561, B = +·542, C = +·625; D = +·695, E = +·719; G = −·450, H = +·434, K = −·780.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	E.	4·0	82	1 0	− 2	1 49	− 1	—	—
	N.	4·0	82	1 4	+ 2	1 51	+ 1	—	—
Osaka		4·0	181	1 7	+ 5	(1 51)	+ 1	1·8	2·5
Kobe		4·1	190	e 0 57	− 7	(1 52)	− 1	1·9	1·9
Nagasaki		7·8	222	1 20	−38	—	—	—	—
Ekaterinburg		50·8	317	—	—	—	—	33·9	—

Osaka gives also MN = +2·8m. Nagasaki reading is given for 3h.

Nov. 6d. 17h. 15m. 12s. Epicentre 38°·0S. 73°·5W. (as on 1922 Mar. 12d.).

A = +·224, B = −·755, C = −·616; D = −·959, E = −·284; G = −·175, H = +·590, K = −·788.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Cipolletti		4·4	104	(1 12)	+ 4	—	—	1·2	2·8
Mendoza		6·6	41	0 6	−95	—	—	1·7	2·4
Pilar		10·1	54	3 0	+29	—	—	6·1	7·3
Andalgala	N.	12·0	32	−1 48	−287	—	—	5·7	6·6
Chacarita	E.	12·6	79	2 30	−37	—	—	7·2	7·6
	N.	12·6	79	3 6	− 1	—	—	7·2	8·1
La Plata	E.	12·9	81	3 8	− 4	5 32	−10	6·0	8·6
	N.	12·9	81	3 5	− 7	5 30	−12	7·0	8·4
La Paz		22·0	14	i 5 11	+ 6	i 9 16	+11	11·8	14·1
Rio de Janeiro	E.	30·0	69	e 6 18	−10	11 18	−16	15·7	18·9
	N.	30·0	69	e 6 18	−10	11 11	−23	16·2	19·0
Cape Town		71·2	119	33 46	?L	—	—	(33·8)	38·8
Chicago		80·6	350	12 14	− 9	22 23	− 7	e 46·8	—
Toronto	E.	81·8	356	—	—	e 22 38	− 6	e 34·4	—
	N.	81·8	356	—	—	e 22 40	− 4	47·0	—
Ottawa		83·4	359	—	—	i 22 56	− 5	37·8	—
Melbourne		96·3	210	—	—	—	—	e 45·8	48·8
San Fernando		97·0	49	—	—	—	—	e 51·6	59·8
Victoria	E.	97·1	329	—	—	—	—	49·1	54·7
	N.	97·1	329	—	—	—	—	49·3	51·5
Coimbra	E.	98·2	43	e 44 20	?	47 30	?L	52·3	—
	N.	98·2	43	e 45 44	?	48 48	?L	—	—
Algiers		102·6	52	—	—	—	—	e 55·8	61·8
Tortosa	N.	103·8	49	—	—	—	—	e 58·8	62·0
Oxford		109·5	38	—	—	—	—	—	66·5
Bidston		109·7	37	—	—	—	—	—	64·8
Paris		109·8	41	—	—	—	—	e 56·8	60·8
Kew		109·9	38	—	—	—	—	—	71·8
Moncalieri		110·5	47	e 46 2	?	52 5	?L	57·0	—
Eskdalemuir		110·8	35	19 28	?PR_1	e 28 58	+83	e 34·8	—
Edinburgh		111·2	34	—	—	—	—	e 61·8	67·8
Rocca di Papa		111·8	51	e 19 35	?PR_1	e 27 34	−10	e 60·8	68·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Uccle		111·9	40	—	—	—	—	e 51·8	62·0
Strasbourg		112·5	45	—	—	—	—	e 57·8	—
De Bilt		113·0	40	e 19 46	?PR$_1$	e 29 24	+90	e 55·8	64·4
Innsbruck		113·9	48	—	—	—	—	e 50·8	—
Hamburg		116·3	40	—	—	—	—	e 52·8	—
Upsala	N.	122·7	36	—	—	—	—	e 69·8	—
Pulkovo		128·8	38	e 22 40	?PR$_1$	—	—	e 53·8	70·8
Colombo		140·6	138	78 30	?L	—	—	(78·5)	84·8
Kodaikanal		141·9	129	77 54	?L	—	—	(77·9)	—
Ekaterinburg		144·7	41	i 19 47	[− 1]	e 32 9	?	68·8	81·2
Bombay		145·0	116	—	—	—	—	63·8	—
Zi-ka-wei	Z.	166·0	245	e 20 11	[− 1]	—	—	—	115·5

Additional readings and notes: Pilar gives also MN = +7·5m. Toronto iN = +22m.58s. San Fernando i = +58m.40s. Eskdalemuir e = +25m.48s. Rocca di Papa i = +68m.1s. De Bilt MN = +65·4m., MZ = +70·4m. Pulkovo MN = +74·9m. Ekaterinburg PS = +33m.16s., MN = +81·5m., MZ = +85·0m.

Nov. 6d. 19h. 18m. 34s. Epicentre 29°·0N. 130°·0E. (as on Nov. 5d.).

A = −·562, B = +·670, C = +·485; D = +·766, E = +·643; G = −·312, H = +·371, K = −·875.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki		3·7	358	−0 2	−60	—	—	2·0	2·8
Kobe		7·2	36	e 1 52	+ 3	e 3 22	+ 7	e 4·4	5·5
Osaka		7·3	38	1 42	− 9	—	—	4·3	6·8
Zi-ka-wei		7·7	289	e 2 1	+ 4	e 3 53	+24	—	6·4
Taihoku		8·5	244	e 2 38	+29	—	—	—	—
Hong Kong		15·7	249	3 50	+ 2	7 22	+34	8·4	10·9
Manila		16·7	212	e 4 8	+ 7	—	—	—	—
Simla		45·3	286	—	—	—	—	e 24·2	—
Colombo		52·1	256	18 26	?SR$_1$	—	—	—	36·4
Kodaikanal		52·5	261	32 56	?L	—	—	(32·9)	—
Bombay		52·7	273	17 26	?S	(17 26)	+34	—	—
Ekaterinburg		54·9	322	i 9 35	− 3	17 17	− 3	24·4	36·0
Tiflis		67·8	308	—	—	—	—	e 39·9	48·9
Pulkovo		69·9	330	11 13	− 3	20 20	− 5	32·4	45·8
Upsala	N.	75·4	332	—	—	—	—	e 41·4	45·0
Bergen		79·9	336	—	—	—	—	e 45·4	—
Budapest	E.	81·9	321	—	—	—	—	e 44·0	—
Hamburg		82·5	329	—	—	—	—	e 47·4	—
Vienna		82·6	323	12 28	− 6	e 22 52	− 1	e 46·4	55·4
De Bilt		85·6	329	—	—	—	—	e 46·4	57·2
Eskdalemuir		86·7	336	—	—	e 23 11	−27	41·4	—
Uccle		86·9	329	—	—	—	—	e 45·4	56·9
Strasbourg		86·9	325	—	—	—	—	e 46·4	56·1
Bidston		88·1	334	—	—	—	—	—	60·4
Kew		88·4	332	—	—	—	—	—	58·4
Rocca di Papa		88·6	319	e 13 14	+ 6	—	—	e 56·4	58·6
Oxford		88·6	331	—	—	—	—	46·2	58·6
Besançon		88·7	325	—	—	—	—	53·4	—
Paris		89·2	329	—	—	—	—	e 48·4	57·4
Moncalieri		89·3	324	e 13 13	+ 1	41 49	?L	49·6	58·8
Barcelona		94·7	324	—	—	—	—	e 56·7	62·6
Tortosa	E.	95·9	324	—	—	—	—	e 60·4	63·5
	N.	95·9	324	—	—	—	—	e 59·4	63·2
Algiers		97·5	320	—	—	—	—	—	63·4
Coimbra		100·7	329	e 40 56	?	45 58	?L	57·4	67·0
Ottawa		102·0	18	—	—	e 41 26	?	e 50·4	—
Toronto	E.	102·5	21	—	—	—	—	52·9	—
San Fernando		102·7	325	—	—	—	—	e 57·7	66·9
La Paz		159·2	57	e 19 1	[−66]	—	—	—	—

Additional readings and notes: Kobe gives also MN = +5·0m. Osaka MN = +7·0m. Ekaterinburg MN = +32·7m., MZ = +35·9m. Tiflis MN = +50·2m. Pulkovo MN = +46·1m. Upsala ME = +49·0m. Bergen reading has been increased by 1h. Budapest eN = +44m.16s. De Bilt MN = +55·8m., MZ = +57·2m. Strasbourg MN = +56·6m. Moncalieri e (?P) has been diminished by 20m. Coimbra SE = +53m.56s., MN = +66·4m. Toronto eLN = +58·1m., LN = +59·7m., LE = +60·6m. San Fernando L = +58·4m., i = +66m.38s.

Nov. 6d. Readings also at 0h. (Riverview and Kodaikanal), 5h. (Tacubaya and near Manila), 6h. (Malabar, Ekaterinburg, Tacubaya, Zi-ka-wei, and near Osaka), 7h. (Ekaterinburg), 8h. (Tacubaya), 10h. (La Paz), 11h. (Azores), 12h. (Apia), 15h. (Tacubaya), 16h. (near Ekaterinburg), 18h. (La Paz), 22h. (Ekaterinburg), 23h. (Colombo).

Nov. 7d. 3h. 48m. 15s. Epicentre 4°·0N. 144°·0E. (as on 1919 June 10d.).

A = −·807, B = +·586, C = +·070; D = +·588, E = +·809; G = −·056, H = +·041, K = −·998.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Manila	25·0	297	e 5 45	+ 7	(9 17)	−46	9·3
Riverview	38·5	171	e 14 47	?S	(e 14 47)	+62	—
Ekaterinburg	83·0	327	i 12 32	− 4	22 50	− 7	41·8
La Paz	146·1	114	20 5	[+15]	—	—	—

No additional readings.

Nov. 7d. 4h. 52m. 50s. Epicentre 40°·8N. 0°·5E. (near Tortosa and as on 1919 Nov. 29d.).

A = +·757, B = +·007, C = +·654; D = +·009, E = −1·000; G = +·654, H = +·006, K = −·757.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tortosa	0·0	—	0 27	+27	—	—	1·0	1·7
Barcelona	1·4	64	0 15	− 6	0 26	−13	—	0·6
Toledo	3·6	257	1 58	?S	(1 58)	+19	3·5	4·0
Algiers	4·5	152	e 0 59	−11	—	—	—	5·8
San Fernando	6·6	231	—	—	—	—	—	7·2
Coimbra	6·8	269	—	—	—	—	e 4·9	—
Paris	8·1	10	—	—	—	—	e 8·2	—
Strasbourg	9·3	31	—	—	—	—	e 5·2	—
Uccle	10·3	14	e 5 28	?L	—	—	(e 5·4)	—
De Bilt	11·5	14	—	—	—	—	e 7·7	—

Additional readings: Tortosa gives also MN = +1·4m. Toledo P = +2m.48s. S = +3m.9s., MNW = +3·8m., all readings are given for 3h. San Fernando MN = +6·7m. Coimbra L = +5·7m.

Nov. 7d. 23h. 56m. 52s. Epicentre 31°·0N. 116°·0W.

A = −·376, B = −·770, C = +·515; D = −·899, E = +·438; G = −·226, H = −·463, K = −·857.

		Δ	Az.	P.	O−C.	S.	O−C.	S.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson	E.	4·6	72	1 6	− 5	(1 59)	− 7	1 2·6	2·7
	N.	4·6	72	—	—	(2 9)	+ 3	2·2	2·3
Berkeley		8·6	324	e 2 11	+ 1	i 3 53	0	4·9	—
Denver		12·5	43	—	—	—	—	4·1	5·1
Victoria	E.	18·3	344	7 18	?S	(7 18)	−29	9·0	10·7
	N.	18·3	344	7 8	?S	(7 8)	−39	9·1	11·1
Mobile	E.	23·8	84	e 4 18	−68	—	—	—	—
Chicago		25·1	57	7 13	?PR$_1$	—	—	11·8	—
Ann Arbor		28·1	57	10 14	?S	(10 14)	−47	16·3	—
Toronto	E.	31·4	55	11 43	?S	(11 43)	−15	19·1	18·7
	N.	31·4	55	—	—	i 16 12	?L	17·8	18·5
Georgetown		32·6	66	—	—	e 16 33	?L	e 22·6	—
Washington		32·6	66	—	—	e 12 28	+10	—	—
Cheltenham	N.	32·8	66	—	—	—	—	e 16·4	17·3
Ithaca		33·3	60	—	—	—	—	e 16·6	—
Ottawa		34·3	54	11 44	?S	(11 44)	−60	e 20·1	—
Honolulu	E.	38·7	268	—	—	—	—	e 17·4	20·3
	N.	38·7	268	—	—	—	—	e 17·8	19·0
Edinburgh		76·1	33	—	—	—	—	e 40·1	—
Eskdalemuir		76·4	33	—	—	—	—	34·1	—
Oxford		79·5	36	—	—	—	—	1 40·1	45·8

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
De Bilt		82·3	32	—	—	—	—	e 38·1	50·3
Uccle		82·8	33	—	—	—	—	e 37·1	—
Pulkovo		85·1	16	—	—	e 22 51	[− 6]	43·6	50·2
Toledo		85·2	47	—	—	—	—	e 37·8	—
Strasbourg		85·9	35	—	—	—	—	e 43·1	—
Ekaterinburg		92·2	2	e 13 4	−24	e 23 36	[+ 5]	39·1	55·4

Additional readings and notes: Berkeley gives also eNZ = +2m.17s., eE = +2m.18s., eSZ = +3m.55s., iZ = +4m.39s. Mobile eN = +4m.38s. Ann Arbor S = +14m.26s. Toronto eN = +13m.47s. and +15m.26s., iN = +15m.55s., iSE = +16m.8s., LE has been diminished by 1m. and MN increased by 2m. to adjust the order of the L and M readings relative to each other. Ithaca e = +19m.20s. Ottawa S = +17m.8s., SR? = +18m.34s.

Nov. 7d. Readings also at 1h. (Ekaterinburg and near Nagasaki), 2h. and 6h. (Ekaterinburg), 14h. (Ottawa), 16h. (Nagasaki (2)), 20h. (San Fernando), 23h. (near Port au Prince).

Nov. 8d. 12h. 29m. 0s. Epicentre 43°·0N. 15°·0E. (as on 1920 June 25d.).

A = +·706, B = +·189, C = +·682; D = +·259, E = −·966; G = +·659, H = +·176, K = −·731.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Rocca di Papa	E.	2·1	233	i 0 31	− 2	0 45	−13	1·1	1·3
	N.	2·1	233	i 0 26	− 7	0 50	− 8	—	1·2
Pompeii		2·3	192	i 0 30	− 6	i 1 3	0	—	1·3
Sarajevo		2·6	71	e 0 39	− 2	1 11	− 1	i 1·6	1·7
Belgrade		4·3	63	e 2 4	+57	e 2 57	+59	—	3·1
Strasbourg		7·5	320	—	—	—	—	e 4·0	—
Uccle		10·6	321	—	—	—	—	—	7·0
De Bilt		11·2	327	—	—	—	—	e 7·7	—
Ekaterinburg		31·7	48	—	—	—	—	17·0	—

Additional readings: Sarajevo gives also eP = +46s. Belgrade eP = +2m.31s.

Nov. 8d. Readings also at 0h. (Mazatlan and Tacubaya), 4h. (Manila), 5h. (La Paz), 12h. (La Plata and La Paz), 17h. and 18h. (La Paz), 20h. (Ekaterinburg, Pulkovo, and Ottawa), 21h. (Florence), 22h. (Manila (2), Ekaterinburg, and Batavia).

Nov. 9d. 3h. 19m. 28s. Epicentre 16°·0N. 103°·0W.

A = −·216, B = −·937, C = +·276; D = −·974, E = +·225; G = −·062, H = −·269, K = −·961.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Colima		2·3	344	—	—	—	—	−0·8	0·3
Tacubaya		4·9	47	1 53	+37	2 55	+41	3·7	4·6
Mazatlan		7·9	337	2 26?	+26	4 47?	+73	5·4	7·2
Tucson	E.	17·8	338	—	—	—	—	e 7·7	8·0
Berkeley		27·7	326	—	—	—	—	e 13·0	16·0
Chicago		29·0	24	6 14	− 4	11 14	− 3	—	—
Ann Arbor		31·0	28	—	—	12 2	+11	e 17·8	—
Georgetown	N.	32·2	40	e 9 2	?PR_1	e 12 42	+31	e 15·2	—
Washington		32·2	40	12 2	?S	(12 2)	− 9	—	—
Toronto	E.	34·1	31	—	—	e 12 40	− 2	21·1	23·0
Ithaca		34·8	35	—	—	—	—	e 20·5	—
Victoria	E.	36·4	338	13 1	?S	(13 1)	−15	18·5	21·4
	N.	36·4	338	13 1	?S	(13 1)	−15	18·4	21·7
Ottawa		37·2	32	9 0	?PR_1	13 34	+ 7	18·5	—
La Paz		47·3	132	i 8 51	+ 2	e 15 46	+ 1	23·6	25·9
Honolulu	E.	52·2	284	—	—	—	—	e 24·5	27·9
Rio de Janeiro	E.	70·3	122	—	—	20 40	+10	31·5	—
Edinburgh		82·2	35	—	—	—	—	e 41·5	—
Eskdalemuir		82·3	35	—	—	e 23 3	+14	40·0	—
Oxford		84·5	38	—	—	—	—	43·5	51·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Rio Tinto		85·2	52	45 32	?L	—	—	(45·5)	52·5
Kew		85·2	38	—	—	—	—	—	53·5
De Bilt	E.	88·1	36	—	—	e 24 8	+15	e 42·5	44·8
Uccle		88·1	37	—	—	—	—	e 42·5	—
Strasbourg		91·1	39	—	—	—	—	e 45·4	—
Pulkovo		95·3	21	e 19 15	?PR_1	e 30 3	?SR_1	45·5	58·0
Florence		95·4	40	—	—	—	—	51·5	57·5
Ekaterinburg		106·1	10	—	—	28 15	+82	49·5	64·4

Additional readings: Berkeley eE = +12m.2s. Ann Arbor L = +19·6m. Georgetown LN = +19·5m., LE = +23·5m. Toronto e = +14m.47s., L = +22·5m. Ottawa eL = +16·2m. Honolulu eN = +21m.42s., eE = +22m.17s., MN = +23·7m. Eskdalemuir e = +28m.34s. and +32m.1s. De Bilt eSR_1E = +30m.8s., MN = +46·9m., MZ = +54·6m.

Nov. 9d. 13h. 22m. 34s. Epicentre 46°·0N. 9°·0E. (as on 1920 Oct. 22d.).

A = +·686, B = +·109, C = +·719.

	Δ	P.	O−C.	S.	O−C.
	°	m. s.	s.	m. s.	s.
Zurich	1·4	i 0 20	− 1	i 0 36	−3
Moncalieri	1·4	0 33	+12	(0 33)	−6
Innsbruck	2·1	e 0 34	+ 1	(e 1 0)	+2

Innsbruck eS is given as ePR_1.

Nov. 9d. Readings also at 0h. (Ekaterinburg), 1h. (Tacubaya), 3h. (Oaxaca), 9h. (Ekaterinburg), 12h. (Manila), 15h. (La Paz), 21h. (near Mizusawa).

Nov. 10d. 0h. 57m. 40s. Epicentre 37°·5N. 142°·5E. (as on Nov. 4d.).

A = −·630, B = +·483, C = +·609; D = +·609, E = +·793; G = −·483, H = +·370, K = −·793.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	2·0	327	0 30	− 1	0 54	− 1	—	—
Hakodate	4·5	343	1 24	+14	—	—	—	3·3
Nagoya	5·1	244	1 7	−12	(1 59)	−21	2·0	2·6
Osaka	6·3	248	1 31	− 5	(2 43)	− 9	2·7	4·0
Kobe	6·6	247	—	—	—	—	—	4·8
Ekaterinburg	55·2	319	9 29	−11	16 30	−54	27·3	35·1
Pulkovo	68·0	330	—	—	—	—	e 39·3	—

Additional readings: Hakodate gives also MN = +2·5m. Osaka MN = +3·8m. Kobe MN = +3·3m. Ekaterinburg MN = +29·3m.

Nov. 10d. 21h. 22m. 15s. Epicentre 16°·0S. 168°·0E. (as on 1923 July 16d.).

A = −·940, B = +·200, C = −·276; D = +·208, E = +·978; G = +·270, H = −·057, K = −·961.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Apia		19·7	86	e 4 45	+ 8	—	—	e 13·8	—
Riverview		23·4	210	e 5 19	− 2	e 9 29	− 4	—	—
Melbourne		29·8	218	—	—	—	—	e 10·2	16·6
Perth		49·8	241	16 22	?S	(16 22)	+ 4	i 30·9	—
Manila		55·6	301	—	—	e 15 45	−104	—	—
Zi-ka-wei		65·0	317	e 10 48	+ 3	—	—	—	34·8
Victoria	E.	88·5	38	24 23	?S	(24 23)	+25	43·6	48·0
Ekaterinburg		112·8	325	19 46	?PR_1	29 29	+97	44·8	64·0
Ottawa		119·7	45	—	—	—	—	59·8	—
Pulkovo		126·6	335	—	—	—	—	e 60·8	—
De Bilt	N.	141·4	343	—	—	—	—	e 68·8	80·6
Strasbourg		143·7	338	e 21 45	?PR_1	—	—	—	—
Rocca di Papa	N.	146·7	328	e 20 9	[+18]	—	—	—	—

Additional readings: Perth gives also iS? = +28m.4s. Victoria MN = +43·9m. Ekaterinburg MN = +56·0m., MZ = +74·6m. Ottawa eL = +37·8m. De Bilt eLE = +62·8m. Rocca di Papa eE = +20m.15s.

Nov. 10d. Readings also at 3h. (Toronto), 4h. (Honolulu, Ottawa, and Ekaterinburg), 7h. (Ekaterinburg), 8h. (Florence (2) and Ekaterinburg), 11h. (near Manila), 13h. (La Paz), 16h. (Azores and La Paz), 19h. (Melbourne), 23h. (Apia).

Nov. 11d. 4h. 57m. 45s. (I) / 5h. 11m. 30s. (II) } Epicentre 35°·0N. 139°·5E. (as on Nov. 4d. 20h.).

A = −·623, B = +·532, C = +·574 ; D = +·649, E = +·760 ;
G = −·436, H = +·372, K = −·819.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
II Nagoya		2·1	274	0 55	+22	—	—	1·7	2·0
I Osaka		3·4	266	1 30	?S	(1 30)	− 4	3·2	4·6
II		3·4	266	—	—	—	—	3·0	4·6
II Kobe		3·6	266	0 24	−32	(1 27)	−12	1·4	1·5
I Mizusawa	E.	4·3	17	1 9	+ 2	1 50	− 8	—	—
I	N.	4·3	17	1 10	+ 3	1 52	− 6	—	—
II	E.	4·3	17	1 7	0	1 54	− 4	—	—
II	N.	4·3	17	1 6	− 1	1 55	− 3	—	—
II Hakodate		6·8	7	—	—	e 2 52	−13	—	—
I Zi-ka-wei		15·6	261	e 3 50	+ 3	—	—	—	11·9
II		15·6	261	e 3 49	+ 2	—	—	—	11·9
II Manila		26·4	224	e 6 30	+38	—	—	—	—
II Ekaterinburg		55·5	320	—	—	—	—	32·5	37·3
II Victoria	E.	68·9	45	—	—	—	—	44·1	45·6
II	N.	68·9	45	—	—	—	—	44·0	45·3
II Berkeley	E.	74·9	54	—	—	—	—	e 37·4	—
II De Bilt	E.	84·2	334	—	—	—	—	e 45·5	—
II Eskdalemuir		84·2	340	—	—	—	—	46·5	—
II Strasbourg		86·1	330	—	—	—	—	58·5	—
II Chicago		91·9	33	—	—	—	—	e 47·5	—
II Ottawa		93·6	23	—	—	—	—	e 53·5	—
II Georgetown		98·7	28	—	—	—	—	e 52·5	—
I La Paz		149·2	60	19 45	− 9	—	—	—	—
II		149·2	60	19 35	−19	—	—	—	—

Additional readings : Nagoya II gives also MN = +2·1m. Osaka I MN = +7·3m., II MN = +5·4m. Ekaterinburg II MN = +32·8m., MZ = +39·3m. Berkeley II eN = +37m.49s. Ottawa e = +60m.30s. Georgetown SEN? = +60m.18s.

Nov. 11d. 14h. 0m. 24s. Epicentre 84°·0N. 100°·0E.

A = −·018, B = +·103, C = +·995 ; D = +·985, E = +·174 ;
G = −·173, H = +·979, K = −·105.
Very doubtful.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Pulkovo		28·7	260	—	—	11 8	− 4	12·6	14·9
Ekaterinburg		28·8	226	e 6 16	0	11 14	+ 1	14·6	20·9
De Bilt		38·8	282	e 6 36	−68	—	—	e 15·6	—
Victoria	E.	46·1	40	—	—	—	—	24·0	26·1
	N.	46·1	40	—	—	—	—	24·2	27·7
Ottawa		50·6	356	—	—	e 17 36	+70	25·6	—
Chicago		54·2	7	—	—	—	—	e 21·6	—
Georgetown	E.	57·1	357	e 13 36	?PR_1	—	—	—	—

Additional readings : Ekaterinburg gives also MN = +20·8m. Ottawa eL = +20·6m. Georgetown eEN = +5m.36s., eN = +13m.56s.

Nov. 11d. Readings also at 0h. (Azores), 1h. (Apia and Mizusawa), 4h. (near Mizusawa, Zi-ka-wei, Osaka, and La Paz), 7h. (La Paz), 12h. (Apia), 15h. (Riverview), 17h. (Manila), 19h. (Colombo and near Tacubaya).

Nov. 12d. 11h. 50m. 30s. Epicentre 52°·5N. 170°·0W. (as on 1921 Sept. 19d.).

A = −·600, B = −·106, C = +·793; D = −·174, E = +·985; G = −·781, H = −·138, K = −·609.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Victoria	E.	29·5	79	—	—	(11 23)	− 3	11·4	14·6
	N.	29·5	79	—	—	(11 34)	+ 8	11·6	13·6
Honolulu	N.	32·4	158	—	—	—	—	e 14·5	16·0
Chicago		53·9	68	9 30	− 2	18 5	+57	e 29·5	—
Toronto	E.	57·1	61	e 9 56	+ 3	i 17 59	+12	e 30·9	36·5
Ottawa		58·7	57	12 38	?PR_1	18 0	− 7	29·5	—
Ekaterinburg		63·1	333	10 31	− 2	19 0	− 2	30·5	42·3
Pulkovo		66·6	350	e 10 46	− 9	e 19 56	+11	32·0	—
De Bilt		75·4	4	—	—	e 21 48	+18	e 36·5	47·5
Uccle		76·6	5	—	—	e 21 48	+ 4	e 37·5	—
Rio Tinto		88·6	13	54 30	?L	—	—	(54·5)	57·5
San Fernando		90·9	12	—	—	—	—	—	57·5
Bombay		90·4	304	33 30	?SR_1	—	—	—	—

Additional readings and notes: Toronto gives also e = +17m.51s., SR_1 = +20m.0s., L = +33·7m. Ottawa SR_2? = +20m.8s., eL? = +22·5m. Ekaterinburg and Pulkovo readings have been increased by 1h. Ekaterinburg gives also MZ = +37·0m., MN = +37·7m. San Fernando MN = +57·0m.

Nov. 12d. Readings also at 0h. (Ekaterinburg), 4h. (Manila), 8h. (Apia), 13h. (Nagasaki), 15h. (La Paz), 18h. (Ekaterinburg), 21h. (Azores and Ekaterinburg), 23h. (Azores).

Nov. 13d. Readings at 2h. (Azores), 5h. (La Paz), 6h. and 8h. (Azores), 11h. (Riverview), 16h. (Azores and La Paz), 20h. (near Batavia and Malabar), 21h. (near Sarajevo).

Nov. 14d. Readings at 1h. (Barcelona), 4h. and 5h. (Azores), 6h. (La Paz), 7h. (Apia), 12h. (Venice), 13h. (Venice, La Paz, and Azores), 15h. (La Paz), 17h. and 18h. (Taihoku), 22h. (La Paz), 23h. (Nagasaki and near Tacubaya).

Nov. 15d. 21h. 33m. 36s. Epicentre 35°·0N. 139°·5E. (as on Nov. 11d.).

A = −·623, B = +·532, C = +·574; D = +·649, E = +·760; G = −·436, H = +·372, K = −·819.

Perhaps this is not a repetition.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		2·1	274	0 26	− 7	(1 6)	+ 8	1·1	1·6
Osaka		3·4	266	1 2	+ 9	(1 51)	+17	1·8	3·0
Kobe		3·6	266	0 57	+ 1	(1 45)	+ 6	1·8	2·1
Mizusawa	E.	4·3	17	0 51	−16	1 55	− 3	—	—
	N.	4·3	17	0 47	−20	1 57	− 1	—	—
Ekaterinburg		55·5	320	—	—	—	—	21·4	—

Additional readings: Osaka gives also MN = +3·6m. Kobe MEN = +1·8m.

Nov. 15d. Readings also at 2h. (near Mizusawa), 3h. (Zante), 7h. (Taihoku), 8h. (near Granada), 10h. (Azores), 14h. (near Athens), 15h. (near Simla), 17h. (Tacubaya (2)), 18h. (near Tacubaya), 21h. (Batavia), 23h. (Taihoku).

Nov. 16d. 4h. 15m. 35s. Epicentre 53°·0N. 131°·0W.

A = −·395, B = −·454, C = +·799; D = −·755, E = +·656; G = −·524, H = −·603, K = −·602.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sitka	E.	4·7	330	2 30	?S	(2 30)	+21	3·1	3·3
Victoria		6·7	130	1 40	− 2	—	—	3·2	3·8
Berkeley	E.	16·3	155	e 3 59	+ 3	e 7 4	+ 2	9·9	—
	N.Z.	16·3	155	i 3 51	− 5	e 7 17	+15	9·9	—
Lick	E.	17·0	154	i 4 4	− 1	e 7 6	−12	—	9·8
	N.	17·0	154	e 4 8	+ 3	e 7 25	+ 7	i 7·8	9·7
Chicago		30·9	93	—	—	e 11 25	−25	—	—
Ann Arbor		32·9	89	—	—	—	—	e 16·6	—
Toronto	E.	34·8	84	—	—	e 12 53	+ 1	16·9	19·5
	N.	34·8	84	—	—	e 12 40	−12	17·9	19·7
Ottawa		36·0	78	7 14	− 8	13 8	− 2	e 17·9	19·9
Ithaca		37·2	83	—	—	—	—	19·4	—
Honolulu	E.	37·8	223	—	—	—	—	e 15·4	17·2
Northfield		38·5	78	—	—	—	—	e 19·4	—
Georgetown		39·0	89	e 17 25	?SR_1	20 49	?L	e 22·4	—
Washington		39·0	89	e 16 55	?SR_1	—	—	—	—
Cheltenham		39·2	89	—	—	—	—	e 20·8	21·7
Kew		67·6	30	—	—	—	—	—	40·2
Ekaterinburg		69·8	353	—	—	25 28	?SR_1	31·4	45·3
Rio Tinto		77·3	42	37 25	?L	—	—	(37·4)	40·4

Additional readings: Sitka gives also LN = +2·7m. Ann Arbor L = +17·6m. Toronto iE = +16m.45s., iLE = +18·6m., iLN = +18·9m. Ithaca L = +23·4m. Georgetown LE = +23·4m., LN = +25·1m.

Nov. 16d. Readings also at 1h. (Victoria), 3h. (La Paz), 6h. (near Osaka), 7h. (Georgetown, Washington, Ottawa, Toronto, Chicago), 9h. (near Port au Prince), 12h. (Tacubaya), 13h. (Azores), 18h. (Apia and Ekaterinburg), 19h. (Taihoku, Ekaterinburg, and Ottawa), 21h. (La Paz, Apia, and Ekaterinburg), 22h. (near Manila), 23h. (Granada and Apia).

Nov. 17d. 2h. 53m. 20s. Epicentre 51°·0N. 179°·5W. (as on 1921 Nov. 11d.).

A = −·629, B = −·005, C = +·777; D = −·009, E = +1·000; G = −·777, H = −·007, K = −·629.

Focal depth 0·020 assumed. See note at end.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Honolulu	E.	−1·6	34·1	142	—	—	e 11 55	−21	13·9	19·1
	N.	−1·6	34·1	142	—	—	e 12 0	−16	14·1	18·1
Victoria	E.	−1·6	35·6	73	6 48	−17	12 15	−25	16·8	16·9
	N.	−1·6	35·6	73	6 48	−17	12 14	−26	17·4	17·4
Berkeley		−1·8	41·7	86	i 7 39	−15	e 17 10	?SR_1	e 20·2	—
Zi-ka-wei		−2·0	47·2	270	8 31	− 3	e 15 25	+ 7	—	27·2
Hong Kong		−2·4	58·0	269	—	—	—	—	—	33·7
Chicago		−2·4	60·0	60	9 2	−54	17 50	− 4	27·7	—
Ekaterinburg		−2·4	61·3	329	i 9 46	−18	(19 11)	+61	29·7	39·4
Ann Arbor		−2·4	61·6	57	—	—	e 23 10	?SR_1	31·7	—
Toronto	E.	−2·5	62·8	53	e 10 16	+ 2	e 18 35	+ 8	e 29·2	38·7
	N.	−2·5	62·8	53	i 10 13	− 1	18 29	+ 2	e 29·2	—
Ottawa		−2·5	63·4	50	10 3	−15	18 38	+ 3	e 28·7	39·2
Apia		−2·5	65·2	172	—	—	—	—	34·7	—
Ithaca		−2·5	65·2	52	—	—	e 18 58	+ 1	34·7	—
Pulkovo		−2·5	66.6	346	10 45	+ 6	19 36	+22	30·7	44·4
Georgetown		−2·5	67·5	56	e 10 21	−24	19 37	+12	37·8	—
Washington		−2·5	67·5	56	10 42	− 3	19 15	−10	e 39·2	—
Upsala		−2·6	68·3	353	—	—	—	—	e 40·7	—
Edinburgh		−2·6	73.0	3	—	—	—	—	e 38·7	—
Eskdalemuir		−2·6	73·6	3	e 11 33	+10	e 20 58	+20	34·7	—
Simla	N.	−2·6	73·9	300	—	—	—	—	e 37·5	—
Hamburg		−2·6	75·1	355	11 34	+ 1	—	—	e 37·7	—
De Bilt	E.	−2·6	76·8	357	i 11 48	+ 5	—	—	e 32·7	53·4
	N.	−2·6	76·8	357	—	—	e 22 28	+72	e 36·7	49·4
Kew		−2·7	77·5	0	—	—	—	—	—	59·7
Uccle		−2·7	78·1	358	e 11 51	0	e 22 10	+40	e 32·7	—

Continued on next page.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Vienna	−2·7	79·8	350	i 12 3	+ 1	—	—	—	55.7
Paris	−2·7	80·2	359	—	—	—	—	e 50·7	53·7
Budapest	−2·7	80·2	348	—	—	—	—	e 42·1	—
Strasbourg	−2·7	80·2	356	i 11 56	− 8	—	—	e 38·7	—
Innsbruck	−2·7	81·2	355	i 12 11	+ 1	—	—	—	—
Zurich	−2·7	81·4	356	i 12 11	0	—	—	—	—
Moncalieri	−2·7	83·8	355	e 11 58	−28	23 42	+66	38·2	—
Batavia	−2·7	84·6	257	i 12 44	+14	i 22 57	+12	—	—
Florence	−2·7	84·7	354	e 12 40	+10	22 40	− 6	36·7	44·7
Bombay	−2·7	85·9	297	23 30	?S	(23 30)	+31	—	53·3
Rocca di Papa	−2·7	86·6	351	e 12 37	− 4	e 22 58	−10	—	24·7
Tortosa N.	−2·8	88·2	0	—	—	—	—	e 46·7	58·2
Coimbra	−2·8	88·4	7	—	—	e 23 23	− 3	47·0	—
Toledo	−2·8	89·0	5	—	—	e 24 26	+54	e 44·4	53·4
Rio Tinto	−2·8	91·1	7	40 40	?L	—	—	(40·7)	63·7
Colombo	−2·8	91·2	282	23 52	?S	(23 52)	− 4	—	59·7
Granada	−2·8	91·8	5	i 13 4	− 6	e 22 43	−80	e 47·0	51·5
La Paz	—	116·2	84	19 20	?PR_1	—	—	73·9	77·5
Rio de Janeiro E.	—	136·8	67	e 22 48	?PR_1	—	—	66·2	—

Additional readings and notes: Honolulu gives also eN = +13m.3s. Berkeley ePE = +7m.48s., ePN = +7m.56s. Ekaterinburg S is given as PS. Toronto iSE = +18m.37s., eSN = +18m.49s., iSR_1N = +20m.3s., iN = +35m.0s. Ottawa PR_2 = +14m.4s., SR_1 = +23m.26s., SR_2 = +25m.37s. T_0 = 2h.52m.49s. Apia reading has been diminished by 1h. Ithaca i = +20m.20s. Pulkovo MN = +44·2m. Georgetown LN = +42·7m. Eskdalemuir e = +26m.8s. Simla eE = +32m.40s. De Bilt iP is given for Z component, eN = +26m.52s. Uccle e = +16m.28s. Bombay S = +29m.22s. Rocca di Papa iS = +24m.31s. Toledo MNW = +62·0m.

NOTE.—The determination of T_0 are not very accordant, but residuals for δT_0 are +30, +23, +17, +6, +4, −2, −4, −6, −7, −14, −15, −37, −50, −69, −117, all in seconds as unit, from which it will be seen that the adopted value cannot be seriously altered without doing violence to the observations. Collecting the observations as they stand according to azimuth, they give the following groups:—

No. of Stations.	Mean Az.	Corr. for Focus.	$\delta\Delta$		Sin Az.	Cos Az.	Calc.	$\delta\Delta$ − Calc.
	°	°	°				°	°
8	62	−2·4	−0·5	=	+0·88x	+0·47y	0·0	−0·5
1	142	−1·6	−1·1	=	+0·62x	−0·79y	−0·7	−0·6
3	285	−2·2	−0·6	=	−0·97x	+0·26y	+0·1	−0·7
12	355	−2·7	+0·1	=	−0·09x	+1·00y	+0·6	−0·5

Solving the equations we get quite small values of x = −0°·3 and y = +0°·6, and on substituting these in the equations we get the column "Calc.," which still requires a negative correction, *i.e.*, the corrections for focus are not large enough. We might have adopted an even greater focal depth, say 0·025.

Nov. 17d. 20h. 40m. 30s. Epicentre 35°·5N. 141°·0E. (as on 1922 Aug. 24d.).

A = −·633, B = +·512, C = +·581; D = +·629, E = +·777;
G = −·451, H = +·365, K = −·814.

The observations do not support the hypothesis that this is a repetition from 35°·0N. 139°·5E., as on Nov. 15d. and preceding dates.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	3·4	265	0 52	− 1	—	—	1·6	2·0
Mizusawa E.	3·6	1	0 55	− 1	1 37	− 2	—	—
N.	3·6	1	0 57	+ 1	1 38	− 1	—	—
Osaka	4·6	279	1 9	− 2	(2 10)	+ 4	2·2	2·6
Kobe	4·9	262	1 29	+13	(2 25)	+11	2·4	3·8
Hakodate	6·2	358	1 39	+ 4	(2 55)	+ 6	2·9	3·5
Nagasaki	9·7	257	3 2	+36	—	—	5·0	—
Zi-ka-wei	16·9	261	3 56	− 8	—	—	—	—
Ekaterinburg	55·9	319	9 39	− 6	17 20	−13	27·5	—
La Paz	147·8	61	i 19 55	[+ 2]	—	—	—	—

Additional readings and notes: Nagoya gives also MN = +1·9m. All readings have been increased by 1m. Kobe MN = +2·6m., MZ = +2·5m. Hakodate MN = +3·3m.

Nov. 17d. Readings also at 2h. (La Paz and near Apia), 9h. (La Paz), 12h. (Vienna), 14h. (Azores).

Nov. 18d. 21h. 29m. 20s. Epicentre 24°·0N. 123°·0E. (as on 1923 June 23d.).

$A = -\cdot498$, $B = +\cdot766$, $C = +\cdot407$; $D = +\cdot839$, $E = +\cdot545$; $G = -\cdot224$, $H = +\cdot341$, $K = -\cdot913$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku		1·7	308	0 32	+ 6	—	—	0·8	—
Hokoto		3·2	262	i 1 11	+21	—	—	i 1·6	1·6
Zi-ka-wei		7·3	349	1 43	− 8	e 3 15	− 3	—	4·6
Hong Kong		8·3	260	—	—	—	—	—	5·7
Manila		9·6	192	e 2 24	0	—	—	7·2	—
Nagasaki		10·6	33	2 38	0	—	—	5·2	7·5
Kobe		15·0	42	3 52	+13	7 13	+41	e 9·5	12·2
Osaka		15·2	43	3 59	+17	—	—	7·2	12·7
Mizusawa	E.	21·5	42	4 23	−36	8 51	− 4	13·1	—
	N.	21·5	42	4 24	−35	8 49	− 6	13·1	—
Ootomari		27·6	30	6 12	+ 8	—	—	—	—
Batavia		34·1	209	7 18	+12	12 39	− 3	—	—
Simla	N.	41·0	290	—	—	e 13 52	−29	—	22·5
Colombo		44·8	256	8 16	−16	15 10	− 2	27·7	30·7
Kodaikanal		45·5	261	13 4	?	—	—	—	—
Bombay		46·7	275	8 37	− 8	15 22	−15	23·4	27·5
Ekaterinburg		55·1	325	i 9 36	− 4	17 14	− 8	25·7	35·2
Adelaide		60·8	166	—	—	—	—	—	39·0
Riverview		63·7	154	e 19 11	?S	(e 19 11)	+ 2	e 30·4	—
Sydney		63·7	154	—	—	32 10	?L	37·7	39·6
Tiflis		65·9	308	(e 11 33)	+43	e 11 33	?P	e 28·9	43·3
Pulkovo		70·8	328	11 26	+ 4	20 33	− 3	32·7	46·0
Honolulu	E.	71·9	75	—	—	—	—	e 35·4	—
Upsala		76·7	331	—	—	e 30 40	?	e 39·7	49·3
Konigsberg	E.	77·4	325	—	—	—	—	45·7	—
Budapest		81·4	319	—	—	—	—	e 39·6	—
Vienna	Z.	82·6	321	12 25	− 9	e 15 47	?PR_1	e 47·7	53·2
Hamburg		83·4	327	—	—	—	—	e 40·7	45·7
Victoria	E.	86·5	38	12 45	−11	23 29	− 7	41·0	55·1
	N.	86·5	38	12 44	−12	23 39	+ 3	36·2	57·0
De Bilt		86·7	327	i 12 49	− 8	e 23 27	−11	e 40·7	55·2
Strasbourg		87·4	323	—	—	e 40 40	?L	e 46·7	56·1
Uccle		87·8	326	—	—	e 23 34	−16	41·7	57·4
Rocca di Papa		88·0	316	—	—	—	—	e 54·7	78·1
Edinburgh		88·0	333	—	—	—	—	45·7	56·7
Eskdalemuir		88·4	333	—	—	—	—	41·7	56·7
Besançon		89·1	323	—	—	—	—	—	49·7
Stonyhurst		89·1	330	e 24 40	?S	(e 24 40)	+36	—	59·2
Moncalieri		89·3	320	—	—	e 23 56	−10	49·0	57·2
Bidston		89·6	330	—	—	—	—	—	60·7
Kew		89·6	329	—	—	—	—	—	58·7
Paris		90·0	326	—	—	—	—	e 45·7	56·7
Oxford		90·0	329	—	—	—	—	42·5	49·9
Tortosa	N.	96·1	320	—	—	—	—	e 50·7	62·4
Algiers		97·0	316	—	—	—	—	e 53·7	61·7
Toledo		99·3	322	—	—	—	—	e 51·0	65·4
Coimbra		101·6	324	—	—	e 38 55	?	e 49·8	66·0
Rio Tinto		102·2	321	21 40	?PR_1	—	—	—	64·7
San Fernando		102·9	320	—	—	—	—	60·7	66·7
Chicago		108·4	24	16 24	+94	28 16	+62	e 59·7	—
Ottawa		108·5	13	e 18 58	[+41]	28 19	+64	e 42·7	—
Toronto	E.	109·3	15	—	—	(37 10)	?SR_1	53·4	—
Ithaca		111·2	17	—	—	—	—	67·7	—
La Paz		167·1	56	e 20 22	[+ 9]	—	—	—	—

Additional readings and notes: Zi-ka-wei gives also MN = +5·2m. The P and S have been increased by 3min. Kobe MN = +11·2m., MZ = +9·8m. Osaka MN = +12·2m. Batavia iZ = +8m.35s., iE = +12m.26s. Ekaterinburg SR_1 = +21m.1s., MZ = +36·2m. Tiflis eN = +2m.49s., eE = +7m.13s., eS? = +23m.56s., MN = +34·8m. Pulkovo PR_1 = +14m.30s., PR_2 = +16m.10s., PS = +21m.17s., SR_1 = +25m.58s., SR_2 = +28m.58s., MZ = +44·8m., MN = +46·4m. Upsala MN = +49·1m. Vienna iZ = +13m.6s. De Bilt MNZ = +56·5m. Strasbourg MN = +56·0m. Uccle e = +29m.40s., MN = +57·1m. Moncalieri S = +38m.51s. Toledo MNW = +55·5m. Coimbra e = +32m.57s., L = +51·8m. San Fernando SR_1 = +53m.10s., MN = +69·2m. Ottawa SR_1? = +33m,52s. Toronto LN = +63·5m.

Nov. 18d. Readings also at 0h. (La Paz), 6h. (La Paz), 7h. (De Bilt), 8h. (Vienna, La Paz, and Rio de Janeiro), 9h. (Ekaterinburg and Georgetown), 10h. (near Nagasaki), 16h. (Taihoku), 17h. (Ekaterinburg), 19h. (Taihoku and near Mizusawa), 20h., 21h. (2), and 22h. (Taihoku), 23h. (La Paz).

Nov. 19d. 2h. 19m. 0s. Epicentre 24°·0N. 123°·0E. (as on 18d.).

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku	1·7	308	0 31	+ 5	—	—	0·8	0·9
Hokoto	3·2	262	0 39	−11	—	—	e 1·6	—
Zi-ka-wei	7·3	349	1 45	− 6	e 3 31	+13	—	4·1
Hong Kong	8·3	260	2 7	+ 1	—	—	—	5·7
Manila	9·6	192	—	—	—	—	e 5·0	—
Bombay	46·7	275	15 14	?S	(15 14)	−23	—	27·3
Ekaterinburg	55·1	325	i 9 33	− 7	—	—	27·0	35·2
Pulkovo	70·8	328	—	—	—	—	e 39·0	46·1
Upsala N.	76·7	331	—	—	—	—	e 42·0	—
De Bilt	86·7	327	—	—	—	—	e 46·0	55·2
Uccle	87·8	326	—	—	—	—	e 45·0	—
Oxford	90·0	329	—	—	—	—	50·4	—
Rio Tinto	102·2	321	58 0	?L	—	—	(58·0)	67·0

Additional readings: Zi-ka-wei gives also MN = +4·4m. Bombay S = +18m.20s. De Bilt MNZ = +56·4m.

Nov. 19d. 3h. 54m. 5s. Epicentre 42°·5N. 1°·0E.

A = +·737, B = +·013, C = +·676; D = +·017, E = −1·000; G = +·675, H = +·012, K = −·737.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Barcelona	1·4	142	i 0 17	− 4	—	—	i 0·6	0·9
Tortosa E.	1·7	192	0 25	− 1	—	—	0·8	1·0
Marseilles	3·3	76	0 55	+ 3	1 39	+ 8	—	2·1
Puy de Dôme	3·5	23	0 55	0	—	—	1·9	2·4
Toledo	4·6	236	1 10	− 1	1 53	−13	i 2·1	3·0
Moncalieri	5·4	60	1 38	+15	2 22	− 6	2·6	3·1
Le Mans	5·5	354	—	—	—	—	4·9	6·9
Besançon	5·9	36	1 37	+ 6	2 54	+13	—	2·9
Algiers	6·0	163	e 2 13	+41	3 59	+75	4·4	5·4
Almeria	6·2	206	1 57	+22	—	—	—	—
Granada	6·4	215	i 1 40	+ 2	3 12	+17	3·3	4·3
Paris	6·4	9	e 1 22	−16	e 2 29	−26	3·3	3·9
Malaga	7·1	218	1 36	−12	—	—	—	—
Zurich	7·2	45	e 1 35	−14	i 3 15	0	—	—
Coimbra	7·5	255	e 1 56	+ 2	3 20	− 4	4·2	4·8
Strasbourg	7·7	36	2 15	+18	e 3 53	+27	3·9	5·2
San Fernando	8·3	224	3 46	?S	4 46	?L	(4·8)	4·9
Lisbon	8·6	247	4 9	?S	(4 9)	+16	(5·0)	5·5
Uccle	8·6	15	e 2 2	− 8	i 3 31	−22	e 4·3	5·4
Innsbruck N.E.	8·8	54	e 2 13	0	e 4 40	?L	(e 4·7)	—
Kew	9·0	355	—	—	—	—	—	4·9
Oxford	9·4	351	—	—	4 7	− 6	5·1	5·7
De Bilt	10·0	15	—	—	e 4 25	− 4	—	7·7
Bidston	11·2	347	—	—	—	—	—	7·9
Stonyhurst	11·6	350	i 4 55	?S	(i 4 55)	−14	—	—
Vienna	12·2	57	e 5 12	?S	(e 5 12)	−12	i 6·5	7·1
Hamburg	12·6	26	—	—	(e 4 55)	−39	—	8·3
Eskdalemuir	13·1	349	—	—	5 55	+ 9	—	8·1
Edinburgh	13·6	350	—	—	i 6 27	+29	—	7·2
Budapest	13·7	63	e 3 17	− 5	—	—	—	—
Konigsberg	17·7	39	e 4 50	+37	—	—	—	7·9
Upsala	20·1	25	—	—	—	—	e 10·9	—
Pulkovo	24·8	36	e 5 35	− 1	e 10 4	+ 5	12·9	16·8
Ekaterinburg	39·7	48	—	—	e 16 33	?	22·9	24·9

Additional readings: Tortosa gives also iPN = +24s. Toledo P = +1m.16s., e = +1m.39s., MNW = +2·6m. Moncalieri MN = +2·9m. Granada MN = +3·7m. Zurich ePE = +1m.37s. Coimbra MN = +4·3m. Strasbourg MN = +5·5m. San Fernando MN = +5·9m. Lisbon gives S as P and L as S. Innsbruck iSNW = +4m.44s. De Bilt MZ = +6·6m., MN = +6·9m. Hamburg MN = +9·3m.

Nov. 19d. Readings also at 0h., 2h. (2), and 4h. (2) (near Taihoku), 8h. (Oaxaca and Tacubaya), 9h. (Strasbourg, Rio Tinto, Victoria, De Bilt, Ottawa, Toronto, Merida, and La Paz), 12h. (Azores), 13h. (Tacubaya), 16h. (Kobe), 17h. (Taihoku), 19h. (Florence), 21h. (La Paz (2), Ekaterinburg, Ann Arbor, and Honolulu), 22h. (Rio de Janeiro).

Nov. 20d. Readings at 1h. (Nagasaki), 3h. (Taihoku and Tacubaya), 4h. (Manila, Zi-ka-wei, and near Nagasaki), 5h. (Ekaterinburg), 12h. (Taihoku), 13h. (Denver and the Azores), 16h. (near Manila), 17h. (Ekaterinburg, Riverview, Christchurch, and near Wellington), 19h. (La Paz and Apia), 21h. (Ekaterinburg), 22h. (Nagasaki).

Nov. 21d. 13h. 34m. 0s. Epicentre 37°·5N. 90°·0E.

A = ·000, B = +·793, C = +·609; D = +1·000, E = ·000; G = ·000, H = +·609, K = −·793.

Very doubtful.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Simla	N.	12·4	243	3 0	− 5	—	—	—	—
Bombay		23·9	224	e 10 22	?L	—	—	(e 10·4)	18·0
Ekaterinburg		27·4	324	6 0	− 2	10 43	− 5	15·0	16·4
Colombo		32·0	200	13 30	?S	(13 30)	+82	—	16·0
Pulkovo		43·3	322	—	—	e 14 0	−52	19·0	28·4
Strasbourg		58·2	310	—	—	—	—	e 32·0	—
De Bilt	E.	58·4	314	—	—	—	—	e 35·0	37·4
Edinburgh		61·3	320	—	—	—	—	e 38·0	—
Eskdalemuir		61·6	320	—	—	—	—	31·0	—
Kew		61·7	315	—	—	—	—	—	41·0

Additional readings and notes: Simla gives also PE = +3m.12s., eE = +3m.36s. Bombay readings have been increased by 10 min. Ekaterinburg MZ = +18·6m. Pulkovo ePR$_1$ = +9m.35s., SR$_1$ = +16m.54s., MZ = +27·4m., MN = +28·1m. De Bilt eLN = +32·0m., MZ = +37·6m.

Nov. 21d. 16h. 32m. 36s. (I) } Epicentre 35°·5N. 141°·0E. (as on Nov. 17d.).
17h. 0m. 20s. (II) }

A = −·633, B = +·512, C = +·581; D = +·629, E = +·777; G = −·451, H = +·365, K = −·814.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I	Nagoya	3·4	265	1 9	+16	(1 38)	+ 4	1·6	2·0
II		3·4	265	0 56	+ 3	(1 35)	+ 1	1·6	1·8
I	Mizusawa E.	3·6	1	0 45	−11	1 33	− 6	—	—
I	N.	3·6	1	0 53	− 3	1 31	− 8	—	—
II	E.	3·6	1	0 45	−11	1 32	− 7	—	—
II	N.	3·6	1	0 48	− 8	1 31	− 8	—	—
I	Osaka	4·6	279	1 14	+ 3	(1 59)	− 7	2·0	2·8
II		4·6	279	1 16	+ 5	(2 4)	− 2	2·1	2·9
I	Kobe	4·9	262	1 14	− 2	(2 21)	+ 7	2·4	2·2
II		4·9	262	1 13	− 3	(2 7)	− 7	2·1	2·8
II	Ekaterinburg	55·9	319	—	—	—	—	27·7	—

Additional readings and notes: Osaka gives also for I MN = +2·9m. All readings for Osaka II are given for 18h. Kobe I MN = +2·4m., MZ = +2·3m., II MN = +2·4m., MZ = +2·2m.

Nov. 21d. Readings also at 2h. (Ekaterinburg), 3h. (La Paz), 10h. (Strasbourg, Ekaterinburg, and near Apia), 11h. (Strasbourg and Eskdalemuir), 18h. (near La Paz and near Batavia (2) and Malabar (2)), 19h. (Ekaterinburg and near Sarajevo), 20h. (Ekaterinburg), 23h. (near Batavia and Malabar).

Nov. 22d. 7h. 20m. 45s. Epicentre 24°·0N. 123°·0E. (as on Nov. 19d.).

A = −·498, B = +·766, C = +·407; D = +·839, E = +·545; G = −·244, H = +·341, K = −·913.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku	1·7	308	0 30	+ 4	—	—	0·8	1·1
Hokoto	3·2	262	0 47	− 3	(e 1 14)	−14	e 1·2	1·3
Zi-ka-wei	7·3	349	2 8	+17	e 3 28	+10	—	4·5
Hong Kong	8·3	260	—	—	—	—	—	5·8
Manila	9·6	192	e 2 15	− 9	—	—	—	—
Colombo	44·8	256	17 15	?	—	—	—	30·2
Bombay	46·7	275	9 15	+30	(e 15 25)	−12	—	27·5
Ekaterinburg	55·1	325	i 9 40	0	17 17	− 5	25·2	35·4
Pulkovo	70·8	328	e 11 47	+25	20 55	+19	32·2	45·1
Upsala	76·7	331	—	—	—	—	e 42·2	49·4
Hamburg	83·4	327	—	—	—	—	e 33·2	54·2
De Bilt	86·7	327	—	—	—	—	e 44·2	55·3
Strasbourg	87·4	323	—	—	—	—	46·2	56·2
Uccle	87·8	326	—	—	—	—	e 40·2	—
Edinburgh	88·0	333	—	—	—	—	e 47·2	56·2
Eskdalemuir	88·4	333	—	—	e 23 40	−16	43·2	57·2
Moncalieri	89·3	320	—	—	—	—	54·3	—
Kew	89·6	329	—	—	—	—	—	60·2
Ottawa	108·5	13	—	—	—	—	e 58·2	—

Additional readings and notes: Bombay gives eL as the eP of another shock. Ekaterinburg SR_1 = +21m.30s., MZ = +35·3m. Pulkovo PR_1 = +14m.47s., MZ = +43·8m., MN = +44·8m. De Bilt MNZ = +56·6m. Strasbourg eL = +50·2m. Eskdalemuir e = +30m.15s. and +33m.45s. Moncalieri e = +46m.37s.

Nov. 22d. Readings also at 0h. (near Manila), 1h. (Ekaterinburg and Tacubaya), 5h. and 7h. (Ekaterinburg), 10h. (La Paz), 14h. (Azores), 15h. (Hong Kong, Manila, and Ekaterinburg), 16h. (Azores), 18h. (Granada).

Nov. 23d. 2h. 33m. 40s. Epicentre 35°·0N. 139°·5E. (as on Nov. 15d. 21h.).

A = −·623, B = +·532, C = +·574; D = +·649, E = +·760; G = −·436, H = +·372, K = −·819.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	2·1	274	0 31	− 2	—	—	1·1	1·3
Osaka	3·4	266	1 10	+17	—	—	1·9	2·5
Kobe	3·6	266	1 1	+ 5	—	—	1·8	2·0
Mizusawa	4·3	17	1 4	− 3	1 52	− 6	—	—
Hakodate	6·8	7	e 1 44	0	—	—	3·2	3·6
Zi-ka-wei	15·6	261	e 4 4	+17	—	—	—	—
Hong Kong	25·5	247	—	—	—	—	—	17·3
Manila	26·4	224	e 6 20	+28	—	—	—	—
Ekaterinburg	55·5	320	9 35	− 8	17 11	−17	28·3	35·6
Pulkovo	68·9	330	11 0	−10	20 2	−11	31·3	43·1
Edinburgh	83·7	340	—	—	—	—	e 49·3	—
De Bilt	84·2	334	—	—	e 22 52	−18	e 44·3	51·9
Eskdalemuir	84·2	340	—	—	e 22 48	−22	40·3	—
Uccle	85·5	334	—	—	—	—	—	45·3
Strasbourg	86·1	330	—	—	—	—	e 50·3	—
Paris	87·9	333	e 15 48	?	—	—	50·3	—
Moncalieri	88·9	328	—	—	—	—	e 49·0	—
Ottawa	93·6	23	—	—	—	—	e 48·3	—
Toronto E.	93·7	27	—	—	—	—	e 53·7	—
Toledo	97·9	333	—	—	—	—	e 51·6	—
Colombo	99·2	335	39 20	?L	—	—	(39·3)	44·3
La Paz	149·2	60	19 51	[− 3]	—	—	—	—

Additional readings: Osaka gives also MN = +4·6m. Kobe MNZ = +2·1m. Hakodate MN = +4·7m. Ekaterinburg MN = +30·8m. Pulkovo SR_1 = +24m.26s., MZ = +43·0m., MN = +47·6m. De Bilt MZ = +52·1m., MN = +55·4m. Moncalieri L = +50·9m. Ottawa L = +54·3m.

Nov. 23d. Readings also at 1h. (near Osaka), 3h. (Manila), 8h. (Ekaterinburg), 12h. (Kobe), 13h. (La Paz and near Taihoku and Tacubaya), 15h. (La Paz), 17h. (Eskdalemuir, Ekaterinburg, and Edinburgh), 18h. (Pulkovo, Oxford, Algiers, Moncalieri, Strasbourg, De Bilt (2), and Uccle), 20h. (near Taihoku (2)), 21h. (Ekaterinburg and La Paz), 22h. (Pulkovo and Ekaterinburg), 23h. (Ekaterinburg, Pulkovo, and La Paz).

Nov. 24d. 7h. 54m. 58s. Epicentre 37°·0N. 7°·5W.

$A = +\cdot792$, $B = -\cdot104$, $C = +\cdot602$; $D = -\cdot131$, $E = -\cdot991$; $G = +\cdot597$, $H = -\cdot079$, $K = -\cdot799$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
San Fernando		1·2	117	0 17	− 1	0 33	0	1·0	2·0
Malaga		2·4	84	0 36	− 1	—	—	—	—
Granada		3·1	87	i 0 50	+ 1	1 25	− 1	—	1·6
Coimbra	E.	3·3	347	0 58	+ 6	1 43	+12	2·2	2·3
	N.	3·3	347	—	—	1 47	+16	—	2·2
Toledo		3·9	42	1 6	+ 5	1 58	+11	i 2·1	2·5
Almeria		4·1	90	1 9	+ 5	—	—	—	—
Tortosa		7·3	56	1 51	0	3 17	− 1	—	4·2
Strasbourg		16·0	39	—	—	—	—	9·0	—
Uccle		16·2	28	—	—	—	—	—	8·0
De Bilt		17·5	26	—	—	—	—	e 9·0	—
Eskdalemuir		18·5	8	—	—	—	—	e 8·0	—
Ekaterinburg		48·2	43	—	—	—	—	19·0	—

Additional readings: Granada gives also MN = +1·8m. Toledo P = +1m.16s.

Nov. 24d. 18h. 47m. 20s. Epicentre 39°·2N. 7°·8E.

$A = +\cdot768$, $B = +\cdot105$, $C = +\cdot632$; $D = +\cdot136$, $E = -\cdot991$; $G = +\cdot626$, $H = +\cdot086$, $K = -\cdot775$.

Very doubtful. Tortosa and Coimbra, two of the three observatories which give S and P, indicate a T_0 about 2min. earlier, which would put the epicentre about 10° further east. But it seems incredible that if this be the correct position, the Italian observatories should make no indication.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Algiers	4·4	239	e 1 17	+ 9	(1 59)	− 2	(4·1)	7·2
Barcelona	4·9	300	e 1 5	−11	—	—	e 2·7	—
Moncalieri	5·8	0	2 42	?S	(2 42)	+ 3	—	—
Tortosa	5·9	289	1 27	− 4	4 7	?L	(4·1)	5·3
Toledo	9·1	278	e 2 24	+ 6	(e 4 28)	+22	e 4·5	5·6
Strasbourg	9·4	0	—	—	—	—	e 5·2	—
Paris	10·4	340	—	—	—	—	e 5·7	6·7
Uccle	11·9	349	—	—	—	—	e 5·7	—
Coimbra	12·5	280	e 2 43	−23	6 38	?L	7·8	8·5
De Bilt	13·0	353	1 41	?	—	—	e 6·9	9·4
Eskdalemuir	17·7	339	—	—	—	—	8·7	—
Edinburgh	18·2	340	—	—	—	—	—	11·7
Pulkovo	25·0	27	—	—	—	—	e 19·1	—
Ekaterinburg	38·3	45	—	—	—	—	20·7	—

Additional readings and notes: Algiers gives S as P of a separate shock. Barcelona i = +1m.38s. Moncalieri S = +4m.14s. Toledo eS = +2m.55s., MNW = +6·7m. Strasbourg eL = +7·2m. Paris e = +8m.10s. De Bilt MZ = +8·9m., MN = +9·0m.

Nov. 24d. Readings also at 2h. and 4h. (Ekaterinburg), 5h. (Riverview and near Malabar), 6h. (near Balboa Heights), 7h. (near Wellington), 8h. (Azores), 9h. (Ekaterinburg), 11h. (near Tortosa, Barcelona, and Toledo), 12h. (Taihoku), 14h. (La Paz), 16h. (Florence), 19h. (Eskdalemuir, La Plata, La Paz, and Ekaterinburg), 21h. (Ekaterinburg, Tacubaya, Puebla, Oaxaca, Vera Cruz, and near Athens), 22h. (Ekaterinburg and Riverview), 23h. (Merida).

Nov. 25d. 17h. 3m. 5s. Epicentre 24°·0N. 123°·0E. (as on Nov. 22d.).

A = −·498, B = +·766, C = +·407; D = +·839, E = +·545; G = −·224, H = +·341, K = −·913.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku		1·7	308	0 44	+18	—	—	1·2	1·3
Hokoto		3·2	262	−0 13	−63	—	—	0·4	0·5
Zi-ka-wei		7·3	349	2 0	+ 9	e 3 32	+14	—	4·8
Hong Kong		8·3	260	2 9	+ 3	4 24	?L	5·0	5·4
Manila		9·6	192	2 26	+ 2	6 1	?	7·4	8·0
Nagasaki		10·6	33	e 2 40	+ 2	—	—	—	—
Kobe		15·0	42	e 3 47	+ 8	7 21	+49	e 11·1	14·1
Batavia		34·1	209	i 7 2	− 4	—	—	—	—
Simla	N.	41·0	290	—	—	e 14 13	− 8	—	22·9
Colombo		44·8	256	14 25	?	15 55	+43	—	—
Bombay		46·7	275	9 4	+19	10 49	?	—	28·1
Ekaterinburg		55·1	325	i 9 43	+ 3	17 19	− 3	24·9	31·6
Tiflis	E.	65·9	308	e 10 44	− 6	e 19 42	+ 6	e 38·9	—
	N.	65·9	308	e 11 33	+43	e 20 19	+43	—	39·5
Pulkovo		70·8	328	11 27	+ 5	20 35	− 1	31·9	45·6
Honolulu	E.	71·9	75	—	—	—	—	e 34·9	—
Apia		74·1	114	—	—	—	—	39·9	—
Upsala		76·7	331	—	—	e 21 55	+10	e 39·9	49·8
Vienna		82·6	321	e 12 34	0	e 22 53	0	e 42·9	—
Hamburg		83·4	327	e 12 55?	+17	—	—	e 40·9	46·8
De Bilt		86·7	327	12 56	− 1	23 33	− 5	e 39·9	48·2
Strasbourg		87·4	323	e 12 55?	− 6	e 23 55?	+10	e 43·9	48·6
Uccle		87·8	326	e 12 58	− 6	e 23 25	−25	e 41·9	47·4
Florence		87·9	320	—	—	—	—	33·9	46·9
Rocca di Papa		88·0	316	12 58	− 7	—	—	—	—
Edinburgh		88·0	333	—	—	23 55	+ 3	45·9	49·9
Eskdalemuir		88·4	333	—	—	e 23 58	+ 2	39·9	—
Moncalieri		89·3	320	e 13 28	+16	23 53	−13	e 43·4	—
Kew		89·6	329	—	—	—	—	—	35·9
Paris		90·0	326	—	—	—	—	e 43·9	47·9
Oxford		90·0	329	—	—	i 23 44	[+16]	41·9	51·4
Tortosa	N.	96·1	320	—	—	—	—	e 47·9	—
Toledo		99·3	322	—	—	—	—	e 42·4	56·6
Coimbra		101·6	324	—	—	—	—	e 51·6	55·9
San Fernando		102·9	320	—	—	—	—	66·1	67·9
Ottawa		108·5	13	—	—	—	—	e 46·9	—
Toronto	E.	109·3	15	—	—	—	—	e 54·6	—
La Paz		167·1	56	20 19	[+ 6]	—	—	—	—

Additional readings: Zi-ka-wei gives also MZ = +5·4m. Manila MN = +9·1m. Ekaterinburg SR_1 = +21m.13s., MN = +30·2m., MZ = +36·2m. Pulkovo MN = +40·0m., MZ = +45·4m. Vienna iPZ = +12m.37s., PR_1? = +15m.27s. De Bilt MN = +48·6m., MZ = +56·0m. Uccle MN = +49·8m. San Fernando MN = +68·4m. Toronto LE = +41·7m. and +57·2m., LN = +63·2m. and +71·9m.

Nov. 25d. Readings also at 0h. (near Athens), 3h. (Ekaterinburg), 4h. (near Algiers), 6h. (Nagasaki and Apia), 10h. (Azores), 11h. (Rio Tinto and Apia), 16h. (Rocca di Papa), 23h. (Ekaterinburg, La Paz, Nagasaki, near Manila, and near Kobe).

Nov. 26d. 6h. 7m. 54s. Epicentre 58°·5S. 153°·0E.

A = −·466, B = +·237, C = −·853; D = +·454, E = +·891; G = +·760, H = −·387, K = −·522.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Christchurch	19·2	48	—	—	—	—	9·1	13·1
Melbourne	21·4	342	—	—	(i 9 6)	+13	i 9·1	10·7
Wellington	22·0	48	9 6	?S	(9 6)	+ 1	12·0	13·1
Riverview	24·7	356	e 5 33	− 2	e 9 57	0	e 11·2	—
Ekaterinburg	136·5	307	—	—	e 35 22	?	58·1	—
Eskdalemuir	166·7	266	—	—	—	—	87·1	—

Wellington gives also S = +10m.18s.

Nov. 26d. 12h. 18m. 27s. Epicentre 31°·0S. 56°·0E.

$A = +\cdot479$, $B = +\cdot711$, $C = -\cdot515$; $D = +\cdot829$, $E = -\cdot559$; $G = -\cdot288$, $H = -\cdot427$, $K = -\cdot857$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Cape Town		31·6	257	11 19	?S	(11 19)	−42	—	—
Colombo		44·2	36	16 3	?S	(16 3)	+58	—	24·8
Kodaikanal		46·1	30	15 9	?S	(15 9)	−20	20·2	24·4
Bombay		52·4	21	9 25	+ 3	16 49	0	27·2	37·0
Batavia		53·5	75	i 9 24	− 6	i 16 55	− 8	—	—
Helwan		65·2	338	e 10 57	+11	19 46	+19	—	40·5
Simla	N.	65·3	20	—	—	—	—	e 31·4	35·0
Melbourne		70·8	125	—	—	(21 51)	+75	21·8	35·6
Tiflis	E.	73·4	352	e 12 8	+30	e 21 16	+ 9	e 39·6	43·0
	N.	73·4	352	e 11 48	+10	e 21 23	+16	—	44·7
Riverview		77·2	122	—	—	—	—	e 38·0	—
Budapest		85·2	337	e 12 47	− 2	—	—	—	—
Rio de Janeiro	N.	85·8	246	—	—	—	—	e 41·5	—
Vienna		86·8	336	12 56	− 2	e 23 36	− 3	e 47·6	59·6
Zi-ka-wei		87·8	51	12 51	−13	—	—	—	45·0
Moncalieri		87·8	330	e 15 29	+145	e 23 50	0	50·0	—
Ekaterinburg		87·9	3	—	—	—	—	44·6	53·2
Tortosa	E.	88·2	323	—	—	23 44	−10	e 48·6	—
	N.	88·2	323	e 13 5	− 1	24 4	+10	e 44·6	55·8
San Fernando		89·1	316	—	—	—	—	48·6	57·6
Rio Tinto		90·2	317	22 33	?[S]	(22 33)	[−56]	—	55·6
Strasbourg		90·5	331	—	—	e 23 33	[+ 2]	e 49·6	—
Paris		92·9	329	—	—	—	—	e 52·6	—
Coimbra	E.	92·9	318	e 24 11	?[S]	(e 24 11)	[+26]	e 48·0	57·1
	N.	92·9	318	—	—	—	—	e 51·6	53·6
Pulkovo		93·2	349	e 12 52	−41	23 29	[−18]	42·6	55·9
Hamburg		93·5	335	—	—	—	—	e 53·6	64·6
Uccle		93·6	331	—	—	—	—	e 47·6	—
De Bilt		94·2	332	—	—	—	—	e 46·6	54·2
Upsala		96·2	343	—	—	—	—	e 56·6	—
Eskdalemuir		100·0	331	—	—	e 24 37	[+13]	48·6	—
La Paz		108·4	237	e 18 3	?PR_1	—	—	56·6	62·3
Ottawa		140·1	305	—	—	e 46 33	?	67·6	78·6
Toronto		142·9	302	—	—	e 69 56	?L	76·7	—
Chicago		149·0	301	—	—	—	—	e 81·6	—
Victoria	E.	162·6	358	45 20	?SR_1	—	—	84·1	100·6
	N.	162·6	358	45 15	?SR_1	—	—	81·1	99·2

Additional readings and notes: Batavia gives also i = +10m.4s. Tiflis eE = +12m.44s. Vienna PR_1? = +16m.13s. Moncalieri readings are given for 11h. Ekaterinburg MN = +49·2m., MZ = +50·3m. San Fernando MN = +52·0m. Coimbra S = +30m.51s. Pulkovo SR_1 = +30m.21s., SR_2 = +35m.9s., MN = +53·0m. Eskdalemuir e = +27m.7s. and 32m.42s. Toronto LN = +78·4m. and several other L readings.

Nov. 26d. Readings also at 2h. and 12h. (La Paz), 14h. (Eskdalemuir and Ekaterinburg), 15h. (Azores), 16h. (Moncalieri, Tacubaya, Merida, De Bilt, Ottawa, Toronto, and La Paz), 17h. (Ekaterinburg), 18h. and 22h. (near Tacubaya), 23h. (near Osaka and Kobe).

Nov. 27d. 3h. 21m. 0s. Epicentre 29°·0N. 133°·0E.

$A = -\cdot596$, $B = +\cdot640$, $C = +\cdot485$; $D = +\cdot731$, $E = +\cdot682$; $G = -\cdot331$, $H = +\cdot355$, $K = -\cdot875$.

Trial was made of the epicentre 29°·0N, 130°·0E. used on Nov. 6d. 19h. and preceding days, but the evidence was against this identification.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki	4·6	325	0 52	−19	—	—	1·4	1·5
Kobe	6·0	17	e 1 20	−12	(2 34)	−10	2·6	2·8
Osaka	6·1	19	1 50	+17	(2 38)	− 8	2·6	4·5
Nagoya	7·0	27	2 7	+21	—	—	—	—
Zi-ka-wei	10·2	285	2 40	+ 7	—	—	—	7·0
Hong Kong	18·2	253	—	—	—	—	—	13·5

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ekaterinburg	56·5	322	i 9 51	+ 2	17 42	+ 2	27·0	33·1
Pulkovo	71·2	330	—	—	—	—	e 31·5	44·5
De Bilt	86·9	331	—	—	—	—	e 44·0	51·9
Eskdalemuir	87·9	337	—	—	e 23 40	−11	42·0	—
Uccle	88·2	330	—	—	—	—	e 44·0	—
Strasbourg	88·3	328	—	—	—	—	e 46·0	56·0
Kew	89·6	334	—	—	—	—	—	58·0
Moncalieri	90·8	325	—	—	—	—	e 40·9	—
Coimbra	102·0	331	—	—	—	—	e 40·0	—

Additional readings: Kobe gives also MZ = +4·0m. Ekaterinburg MZ = +35·4m., MN = +37·6m. Pulkovo MN = +38·0m. Coimbra e = +45m.0s., eL = +53·0m. De Bilt MN = +55·0m.

Nov. 27d. Readings also at 1h. (Tacubaya), 8h. (Nagasaki (2) and near Manila), 14h. (near Zurich), 15h. (De Bilt, Rocca di Papa, Pulkovo, and near Athens), 16h. (Ekaterinburg), 19h. (near Algiers), 20h. and 21h. (Ekaterinburg), 22h. (Ekaterinburg and Azores), 23h. (Apia).

Nov. 28d. 0h. 34m. 8s. Epicentre 53°·5N. 37°·0W.

A = +·475, B = −·358, C = +·804; D = −·602, E = −·799;
G = +·642, H = −·484, K = −·595.

Possibly the same epicentre as that of Nov. 28d. 14h., when 55°·0N. 35°·0W. was adopted. The material is scarcely sufficient to decide.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Edinburgh	19·5	69	—	—	—	—	e 8·9	—
Eskdalemuir	19·5	72	e 4 39	+ 4	e 8 11	− 2	8·9	—
Oxford	21·5	80	—	—	i 9 3	+ 8	10·6	12·0
Kew	22·2	80	—	—	—	—	—	12·9
Coimbra	23·4	113	—	—	(e 9 44)	+11	e 9·7	—
Paris	24·9	84	—	—	(e 9 55)	− 6	e 9·9	—
Uccle	25·2	79	e 5 36	− 4	e 10 1	− 6	e 11·9	13·9
De Bilt	25·2	76	5 40	0	10 6	− 1	e 11·9	15·2
Ottawa	26·1	268	e 5 52	+ 3	—	—	e 14·9	—
Strasbourg	28·1	82	—	—	(e 10 52)	− 9	e 10·9	16·2
Toronto E.	29·2	268	(8 7)	?PR_1	—	—	15·1	—
Pulkovo	35·9	52	e 7 24	+ 3	12 56	−13	14·9	21·1
Ekaterinburg	51·0	44	8 22	−51	15 41	−50	23·9	26·9

Additional readings: Coimbra gives also e = 0h.34m.30s. De Bilt MNZ = +15·3m. Strasbourg MN = +16·4m. Toronto L = +17·5m. Pulkovo MN = +22·8m.

Nov. 28d. 6h. 6m. 55s. Epicentre 47°·2N. 13°·7E. (given by De Bilt).

A = +·660, B = +·161, C = +·734; D = +·237, E = −·972;
G = +·713, H = +·174, K = −·679.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Venice	2·0	208	i−0 27	−58	—	—	—	0·5
Vienna	2·1	60	0 31	− 2	1 3	+ 5	—	1·2
Zurich	3·5	274	e 0 47	− 8	1 41	+ 4	—	—
Budapest	3·6	85	—	—	—	—	e 4·0	—
Strasbourg	4·2	291	e 1 5	0	1 55	0	2·1	2·6
Moncalieri	4·7	244	e 1 31	+18	2 15	+ 6	—	—
Besançon	5·2	273	1 37	+17	—	—	—	2·1
Hamburg	6·8	341	—	—	—	—	e 3·4	—
Uccle	7·1	304	e 2 35	+47	—	—	e 4·7	—
De Bilt	7·4	315	—	—	—	—	e 5·0	—
Paris	7·6	286	—	—	e 3 18	− 8	5·0	5·1
Pulkovo	15·9	32	—	—	—	—	e 7·1	—

Additional readings: Venice gives also MN = +0·0m. Vienna PR_1 = +35s., i = +38s., +42s. and +47s., SR_1 = +51s. Zurich iP = +56s. Strasbourg P = +1m.18s., MN = +2·4m. Paris e = +4m.1s.

Nov. 28d. 16h. 8m. 10s. Epicentre 37°·7N. 73°·6E.

A = +·223, B = +·759, C = +·612; D = +·959, E = −·282; G = +·173, H = +·587, K = −·791.

		Δ	Az.	P.	O−C.	S.	O−C.	L.
		°	°	m. s.	s.	m. s.	s.	m.
Simla	N.	7·2	155	2 26	+37	e 3 38	?L	(e 3·6)
Bombay		18·8	182	4 26	− 1	7 56	− 2	9·9
Calcutta		19·8	136	4 38	− 1	—	—	—
Tiflis	E.	22·4	289	e 5 9	− 1	e 8 51	−22	—
	N.	22·4	289	e 5 38	+28	e 9 0	−13	—
Pulkovo		35·1	323	i 7 7	− 7	12 25	−32	14·8

Additional readings: Simla gives also PE = +2m.44s. Tiflis eE = +6m.10s., eN = +6m.28s.

Nov. 28d. Readings also at 0h. (Eskdalemuir), 2h. (De Bilt and Pulkovo), 5h. and 7h. (2) (Ekaterinburg), 9h. (Ekaterinburg and near Nagoya, Osaka, and Mizusawa), 11h. (Rio Tinto), 12h. (Manila and near Athens), 15h. (Ekaterinburg and Eskdalemuir), 16h. (Pulkovo, Strasbourg, De Bilt, and Edinburgh), 18h. and 19h. (2) (Nagasaki), 22h. (Azores).

Nov. 29d. 3h. 36m. 36s. Epicentre 31°·2N. 61°·6E.

A = +·407, B = +·752, C = +·518; D = +·880, E = −·476; G = +·246, H = +·456, K = −·855.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Simla	E.	13·4	86	3 18	0	—	—	—	—
Bombay		16·0	138	2 42	−70	6 35	−20	9·2	12·7
Ekaterinburg		25·6	359	5 45	+ 1	10 15	+ 1	12·4	15·0
Kodaikanal		25·6	141	11 54	?L	—	—	(11·9)	—
Colombo		29·7	141	7 36	+71	14 24	?L	(14·4)	—
Pulkovo		35·3	333	7 11	− 5	12 25	−35	18·4	24·8
Upsala	N.	40·8	328	—	—	—	—	e 24·4	25·5
Moncalieri		43·7	304	—	—	—	—	e 21·4	—
Strasbourg		43·8	311	—	—	—	—	e 28·4	—
De Bilt	N.	45·6	314	—	—	—	—	e 28·4	32·5
Uccle		46·0	312	—	—	—	—	—	29·4
Hong Kong		47·4	87	—	—	—	—	—	13·9
Eskdalemuir		50·6	318	—	—	—	—	28·4	—
Edinburgh		50·7	319	—	—	—	—	e 31·4	—
Nagasaki		56·9	69	39 28	?L	—	—	(39·5)	—
Kobe		60·4	65	—	—	—	—	—	68·9

Additional readings and notes: Colombo P has been increased by 10m. Pulkovo gives also SR_1 = +15m.42s., MN = +20·9m. Moncalieri S = +30m.36s., L = +37·6m. De Bilt ME = +35·6m., MZ = +35·8m.

Nov. 29d. Readings also at 3h. (Ekaterinburg), 5h. and 6h. (3) (Azores), 14h. (La Paz), 16h. (Azores and La Paz), 17h. (near Zurich), 19h. (Rio Tinto, 20h. (Azores), 22h. (Nagasaki).

Nov. 30d. Readings at 0h. (Oxford, Azores, Edinburgh, Eskdalemuir, Ekaterinburg, Strasbourg, Uccle, De Bilt, and near Malabar), 1h. (near Batavia), 3h. (Azores), 5h. (Azores, Moncalieri, Uccle, Strasbourg, De Bilt, and Eskdalemuir), 8h. (La Paz), 12h. (Nagasaki and near La Paz), 16h. (Azores (2)), 17h. (San Fernando), 18h. (Azores and Ekaterinburg), 22h. (Rocca di Papa and Pompeii), 23h. (Nagasaki).

Dec. 1d. Readings at 0h. (Azores), 2h. (Azores and Nagasaki), 7h. (Ekaterinburg, Strasbourg, Uccle, De Bilt, Edinburgh, Eskdalemuir, Pulkovo, Rocca di Papa, and La Paz), 8h. and 9h. (La Paz), 10h. (Ekaterinburg), 11h. (Ekaterinburg and Simla), 12h. (Ekaterinburg, De Bilt, and Pulkovo), 13h., 20h., and 21h. (Azores).

Dec. 2d. 14h. 36m. 24s. Epicentre 17°·5S. 168°·8E.

$A = -\cdot935$, $B = +\cdot185$, $C = -\cdot301$; $D = +\cdot194$, $E = +\cdot981$; $G = +\cdot295$, $H = -\cdot058$, $K = -\cdot954$.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Riverview		22·7	221	e 5 12	− 1	e 9 23	+ 4	e 10·4	—
Sydney		22·7	221	—	—	9 18	− 1	12·3	13·5
Wellington		24·3	169	8 0	?PR_1	10 18	+28	12·2	14·6
Perth		49·7	243	21 37	?L	—	—	29·1	—
Batavia		61·4	272	i 10 22	+ 1	i 18 38	− 3	—	—
Victoria	E.	89·3	38	48 4	?L	—	—	52·9	53·9
Chicago		111·6	50	—	—	—	—	e 55·6	—
Ekaterinburg		114·5	325	e 17 41	?PR_1	27 15	−51	43·6	68·3
Toronto	E.	117·7	49	—	—	—	—	e 59·8	—
Ottawa		120·1	47	—	—	e 37 24	?SR_1	63·6	—
Eskdalemuir		142·7	351	—	—	—	—	63·6	—
De Bilt	E.	143·1	343	—	—	—	—	e 74·6	80·3
	N.	143·1	343	—	—	—	—	e 68·6	81·5
Uccle		144·5	343	—	—	—	—	e 72·6	—
Oxford		144·9	349	—	—	—	—	77·1	83·6
Paris		146·8	343	—	—	—	—	e 77·6	81·6
Florence		147·6	329	74 36	?L	—	—	80·6	82·6
Rocca di Papa		148·3	325	e 20 6	[+13]	—	—	—	—
Toledo		156·8	346	—	—	—	—	e 76·7	91·0
Coimbra		157·2	354	—	—	e 59 16	?	e 83·9	—
Rio Tinto		159·4	349	80 36	?L	—	—	(80·6)	100·6
SanFernando	E.	160·5	348	—	—	—	—	—	118·1

Additional readings: Batavia gives also i = +11m.21s. Chicago L = +59·6m. Ekaterinburg e = +23m.33s., MN = +69·1m. Toronto L = +61·5m. De Bilt MZ = +81·6m. Paris MN = +81·6m. Coimbra e = +71m.26s. San Fernando MN = +96·1m.

Dec. 2d. Readings also at 0h. (Tacubaya), 3h. (Rocca di Papa and near Athens), 7h. (Tashkent), 12h. (Hong Kong, Malabar, Batavia, Ekaterinburg, and near Manila), 13h. (Azores and near Kobe and Nagoya), 14h. (Batavia), 23h. (Nagoya and near Kingston).

Dec. 3d. 7h. 55m. 45s. Epicentre 37°·0S. 175°·0E. (as on 1923 Aug. 5d.).

$A = -\cdot795$, $B = +\cdot070$, $C = -\cdot602$; $D = +\cdot087$, $E = +\cdot996$; $G = +\cdot600$, $H = -\cdot052$, $K = -\cdot799$.

Very doubtful.

		△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Riverview		19·6	272	e 4 40	+ 4	e 8 11	− 4	—	—
Sydney		19·6	272	—	—	8 3	−12	13·6	14·8
Chicago		118·6	58	—	—	—	—	e 61·8	—
Toronto	E.	124·9	59	—	—	—	—	61·5	—
Ottawa		127·9	58	—	—	—	—	e 60·2	—
Ekaterinburg		133·2	31[illegible]	—	—	e 21 21	?PR_1	42·2	53·2
Pulkovo		148·0	327	—	—	e 54 48	?	67·2	—
De Bilt		163·3	338	—	—	—	—	e 68·2	—

Additional readings: Toronto gives also LE = +64·6m. Ottawa L = +33·2m.

Dec. 3d. 8h. 36m. 20s. Epicentre 38°·0N. 137°·5E.

A = −·581, B = +·532, C = +·616; D = +·676, E = +·737; G = −·454, H = +·416, K = −·788.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	3·0	68	0 48	+ 1	1 25	+ 2	—	—
Kobe	3·9	210	—	—	—	—	—	4·2
Hakodate	4·5	32	e 1 10	0	—	—	—	2·6
Ekaterinburg	52·1	318	i 9 16	− 5	—	—	29·7	33·1

Additional readings: Mizusawa also gives SN = +1m.23s. Kobe MN = +5·1m.

Dec. 3d. Readings also at 11h. (near Batavia and Malabar), 14h. (Hong Kong and La Paz), 18h. (Nagoya and La Paz), 21h. (Simla and near Zurich), 22h. (Manila, Ekaterinburg, and Pulkovo), 23h. (Florence).

Dec. 4d. 0h. 50m. 10s. Epicentre 24°·0N. 120°·0E. (as on 1922 Dec. 2d.).

A = −·457, B = +·792, C = +·407.

	Δ	P.	O−C.	S.	O−C.	L.	M.
	°	m. s.	s.	m. s.	s.	m.	m.
Hokoto	0·6	0 11	+ 2	(e 0 17)	0	e 0·3	0·3
Taihoku	1·8	e 0 22	− 6	(0 53)	+ 2	0·9	1·1
Zi-ka-wei	7·3	—	—	e 3 19	+ 1	—	—

No additional readings.

Dec. 4d. 9h. 50m. 18s. Epicentre 38°·0N. 137°·5E. (as on Dec. 3d.).

	Δ	P.	O−C.	S.	O−C.	L.	M.
	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	2·9	−0 11	−56	—	—	—	—
Mizusawa E.	3·0	0 46	− 1	1 25	+ 2	—	—
N.	3·0	0 45	− 2	1 27	+ 4	—	—
Osaka	3·7	0 55	− 3	(1 41)	− 1	1·7	2·4
Kobe	3·9	0 57	− 4	(1 45)	− 2	1·8	1·9

Osaka gives also MN = +2·1m.

Dec. 4d. 23h. 39m. 0s. Epicentre 32°·0N. 127°·5E.

A = −·516, B = +·673, C = +·530; D = +·793, E = +·609; G = −·323, H = +·420, K = −·848.

The epicentre was adopted from the subsequent shock on Dec. 8d.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki	2·1	70	2 11	+98	2 33	+95	3·1	3·2
Zi-ka-wei	5·2	263	e 4 4	?L	—	—	(4·1)	—
Kobe	6·9	65	1 54	+ 9	—	—	2·3	2·5
Osaka	7·2	66	1 57	+ 8	—	—	2·5	3·2
Nagoya	8·5	66	2· 9	0	(3 8)	−42	3·1	3·3
Taihoku	8·7	218	—	—	—	—	—	10·0
Mizusawa E.	13·2	54	3 29	+13	5 33	−16	—	—
Hakodate	14·4	43	i 3 32	0	—	—	—	—
Hong Kong	15·3	234	—	—	—	—	—	15·5
Ekaterinburg	51·2	320	6 0?	?	—	—	21·0	—

Additional readings: Osaka gives also MN = +3·0m. Mizusawa SN = +5m.30s.

Dec. 4d. Readings also at 0h. (Florence), 3h. (Ekaterinburg), 7h. (Tacubaya (3)), 9h. (Ekaterinburg and Bombay), 10h. (near Mizusawa), 11h. (near Athens), 15h. (Apia), 20h. (Azores), 22h. (Simla, Ekaterinburg, Tashkent, and Coimbra), 23h. (Azores and De Bilt).

1923. Dec. 5d. 20h. 56m. 40s. Epicentre **40°·0N. 24°·0E.**

A = +·700, B = +·312, C = +·643; D = +·407, E = −·914;
G = +·587, H = +·261, K = −·766.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Athens		2·1	188	i 0 39	+ 6	—	—	1·1	1·7
Sofia		2·7	350	i 0 35	− 7	—	—	—	—
Belgrade		5·5	334	e 1 32	+ 7	i 2 36	+ 5	—	3·4
Mostar	N.	5·7	308	e 1 36	+ 8	i 2 50	+14	—	4·1
Sarajevo	N.	5·7	316	e 1 37	+ 9	2 52	+16	—	3·8
Travnik	N.	5·8	306	e 1 38	+ 8	i 2 34	− 5	—	4·6
Sinj	N.	6·6	307	1 45	+ 4	3 0	0	—	4·7
Pompeii		7·3	279	1 38	−13	(3 20)	+ 2	3·3	5·3
Budapest		8·3	336	2 19	+13	3 9	−36	4·7	—
Rocca di Papa	E.	8·7	284	i 2 14	+ 2	3 57	+ 1	6·0	7·3
	N.	8·7	284	i 2 23	+11	3 55	− 1	6·1	6·8
	Z.	8·7	284	i 2 14	+ 2	3 48	− 8	5·9	6·8
Lemberg		9·8	0	e 2 15	−12	—	—	e 4·7	6·7
Vienna		9·9	329	2 32	+ 3	4 28	+ 2	i 5·1	6·9
Florence		10·2	296	2 30	− 3	4 20	−15	—	6·2
Innsbruck	N.W.	11·7	313	i 2 56	+ 1	i 6 3	+51	e 6·3	7·7
Helwan		11·8	147	2 57	+ 1	e 4 48	−26	—	11·8
Moncalieri		13·0	298	3 9	− 4	5 54	+10	7·6	11·1
Zurich		13·4	309	e 3 17	− 1	i 5 55	+ 2	—	—
Marseilles		14·3	290	3 20?	−10	5 42	−33	7·8	9·8
Grenoble		14·4	297	3 41	+ 9	5 52	−26	7·8	13·2
Strasbourg		14·4	312	i 3 35	+ 3	6 35	+17	7·3	8·6
Besançon		14·9	305	3 39	+ 1	7 24	+54	—	8·3
Tiflis	E.	15·8	77	e 4 16	+27	e 7 17	+27	e 9·1	12·7
	N.	15·8	77	e 4 1	+12	e 6 16	−34	13·3	13·0
Puy de Dôme		16·4	298	e 3 55	− 2	8 13	?L	9·3	11·8
Barcelona		16·6	282	e 3 54	− 6	7 13	+ 4	8·8	12·3
Hamburg		16·6	330	e 4 3	+ 3	i 7 17	+ 8	—	8·6
Algiers		16·7	266	i 4 0	− 1	7 1	−10	7·8	12·2
Uccle		17·4	315	e 4 10	0	7 30	+ 3	8·3	11·5
De Bilt		17·7	319	4 18	+ 5	7 44	+11	8·7	12·2
Tortosa	E.	17·8	280	4 17	+ 2	7 42	+ 6	—	19·1
	N.	17·8	280	4 14	− 1	7 33	− 3	8·4	12·4
Le Mans		18·8	303	4 30	+ 3	—	—	e 8·3	14·3
Pulkovo		20·2	9	i 4 46	+ 3	i 8 18	− 9	9·3	15·3
Upsala		20·3	351	4 45	0	8 30	+ 1	—	14·8
Kew		20·3	312	5 20	+35	—	—	—	14·3
Oxford		21·0	313	4 51	− 2	8 45	+ 1	11·3	12·6
Toledo		21·4	279	i 4 56	− 2	i 8 56	+ 3	e 10·3	15·0
Granada		21·7	269	i 4 58	− 3	i 8 59	0	e 11·0	14·4
West Bromwich		21·7	314	5 0	− 1	9 0	+ 1	—	—
Stonyhurst		22·6	317	5 20	+ 8	9 26	+ 9	12·8	13·3
Bidston		22·7	315	1 48	?	10 1	+42	—	15·8
Bergen		23·5	337	5 19	− 4	9 40	+ 5	10·3	15·8
Eskdalemuir		23·6	319	i 5 16	− 8	9 23	−13	11·3	13·7
San Fernando		23·9	271	5 24	− 3	9 28	−14	12·8	15·3
Edinburgh		23·9	321	5 23	− 4	9 40	− 2	—	16·9
Coimbra		24·7	281	6 17	+42	11 13	+76	16·8	18·0
Lisbon		25·5	278	—	—	14 10	?L	15·3	—
Ekaterinburg		29·0	43	i 6 7	−11	11 1	−16	13·8	20·3
Bombay		46·7	102	8 42	− 3	15 37	0	24·6	31·4
Kodaikanal		55·7	107	37 26	?L	—	—	(37·4)	—
Ottawa		68·6	312	i 11 18	+10	i 20 20	+11	31·3	42·3
Ithaca		70·8	310	11 3	−19	e 20 38	+ 2	e 33·3	—
Toronto	N.	71·6	312	—	—	e 20 58	+13	34·5	—
Georgetown	N.	73·2	307	e 9 47	−110	21 28	+24	—	—
Cape Town		74·1	185	21 15	?S	(21 15)	0	—	—
Ann Arbor		75·0	313.	—	—	—	—	e 34·3	—
Chicago		77·5	314	11 25	−39	21 2	−53	e 36·0	—
Taihoku		79·6	67	e 16 55	?PR_1	—	—	—	—
Victoria	E.	87·1	339	—	—	—	—	—	51·3
La Paz		102·1	259	15 20	+59	e 27 29	+73	54·3	61·5

Additional readings and notes: Athens gives also iP = +46s., MN = +1·5m. Belgrade iPN = +1m.46s. and +1m.59s. Mostar iPN = +2m.27s. and +2m.41s. Sarajevo iP = +2m.6s., MN = +4·3m. Travnik iP = +2m.1s. Pompeii S = +2m.23s. Vienna iPZ = +2m.35s., iZ = +2m.41s., +3m.32s., and +4m.5s., MN = +6·8m., MZ = +7·7m. Florence readings have been increased by 1h. Innsbruck eSNE = +6m.5s., MNE = +6·8m. Moncalieri MN = +8·8m. Strasbourg i = +3m.43s., MN = +9·6m. Tiflis eN = +10m.16s. Puy de Dôme e = +4m.7s.

Continued on next page.

Barcelona MN = +11·8m. Hamburg iPZ = +4m.4s. Uccle iP = +4m.13s., MN = +10·7m. De Bilt eZ = +7m.47s., eN = +7m.48s., MN = +10·5m. Pulkovo MN = +13·4m., MZ = +14·4m. Upsala MN = +13·9m. Toledo PR_1NE = +5m.26s., PR_1NW = +5m.27s., SR_1NE = +9m.41s., SR_1NW = +9m.43s., MNW = +13·8m. Granada MN = +13·5m. Bergen readings have been increased by 3min. San Fernando MN = +14·8m. Coimbra MN = +17·2m. Ekaterinburg MZ = +18·8m., MN = +30·0m. Ithaca L = +35·3m. Toronto iN = +21m.7s., iE = +30m.43s., also several L's. Georgetown eE? = +9m.41s. Chicago L = +38·0m.

Dec. 5d. 22h. 35m. 6s. Epicentre 1°·0S. 121°·0E.

A = −·515, B = +·857, C = −·017 ; D = +·857, E = +·515 ;
G = +·009, H = −·015, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Malabar		14·8	245	3 34	− 2	6 28	+ 1	e 8·7	—
Batavia		15·0	249	i 3 31	− 8	e 7 16	+44	—	10·0
Manila		15·6	1	e 4 0	+13	—	—	7·3	8·6
Hong Kong		24·2	344	5 24	− 6	—	—	—	12·4
Taihoku		26·0	1	e 6 16	+28	(e 11 13)	+51	e 11·2	—
Zi-ka-wei		32·2	1	e 6 28	−22	—	—	—	—
Nagasaki		34·7	13	2 51	?	—	—	—	—
Adelaide		37·7	156	—	—	e 12 48	−46	18·1	21·5
Kobe		38·0	20	7 44	+ 6	11 11	?	15·8	18·4
Osaka		38·1	20	7 25	−14	(13 13)	−26	13·2	16·3
Calcutta	E.	39·6	310	7 44	− 7	13 49	−11	19·6	—
	N.	39·6	310	8 9	+18	13 47	−13	—	—
Colombo		41·8	280	10 24	$?PR_1$	20 24	?L	26·7	29·4
Riverview		43·3	143	e 8 12	− 8	i 14 22	−30	e 17·9	—
Sydney		43·4	143	6 48	−93	14 36	−18	22·4	23·1
Kodaikanal		44·8	284	11 24	$?PR_1$	—	—	26·0	32·0
Bombay		51·3	297	9 17	+ 2	16 36	+ 1	29·1	31·0
Simla	E.	52·5	313	e 9 54	+31	e 17 12	+22	—	—
Wellington		62·9	138	—	—	(19 24)	+24	35·1	35·9
Ekaterinburg		75·1	330	i 11 43	− 7	21 24	− 3	33·9	51·0
Tiflis		80·4	314	e 12 46	+25	e 22 30	+ 2	e 39·9	58·6
Honolulu	E.	81·9	69	—	—	—	—	e 34·9	—
Pulkovo		91·2	330	13 33	+11	24 55	+29	42·9	59·0
Upsala		97·5	331	—	—	e 32 54	$?SR_1$	e 48·9	63·1
Cape Town		99·8	235	24 29	?S	(24 29)	[+ 6]	—	—
Hamburg		103·1	325	e 17 54	$?PR_1$	—	—	e 52·9	—
Rocca di Papa		104·2	314	—	—	—	—	e 48·1	62·1
Florence		104·8	316	e 25 54	?S	(e 25 54)	−46	48·3	55·9
Strasbourg		105·9	321	—	—	—	—	e 54·9	—
De Bilt		106·3	324	—	—	e 26 54	− 1	e 53·9	59·4
Moncalieri		106·9	317	—	—	e 26 57	− 3	e 45·1	—
Uccle		107·2	323	—	—	—	—	e 49·9	—
Edinburgh		109·2	330	—	—	—	—	e 58·9	76·9
Eskdalemuir		109·5	330	—	—	—	—	56·9	—
Kew		109·7	326	—	—	—	—	—	69·9
Stonyhurst		109·8	328	e 57 54	?L	—	—	(e 57·9)	65·9
Oxford		110·1	326	—	—	—	—	55·0	71·6
Bidston		110·3	328	—	—	54 49	?L	(54·8)	65·9
San Fernando		119·8	312	—	—	69 54	?L	(69·9)	90·9
Rio Tinto		119·5	313	25 54	?	—	—	—	35·9
Ottawa		133·2	15	—	—	—	—	63·9	—
Toronto	N.	133·6	20	—	—	—	—	e 73·4	—
La Paz		160·3	153	e 20 16	[+ 8]	34 21	?	79·9	96·3

Additional readings and notes : Batavia gives also MN = +11·0m. Manila MN = +8·2m. Adelaide iSR_1 = +14m.54s. Kobe MN = +20·5m. Osaka MN = +18·0m. Sydney readings are given for 23h. Wellington PR_1 = +6m.12s., S is given as SR_1. Ekaterinburg PS = +22m.9s., MN = +45·3m., MZ = +49·4m. Tiflis e = +13m.3s., e = +23m.2s., eN = +34m.42s., eLN = +47·9m., eLE = +50·9m. Pulkovo PR_1 = +17m.22s., Y = +23m.43s., MN = +58·1m., MZ = +68·9m. Upsala MN = +61·9m. Rocca di Papa i = +52m.54s. and +60m.54s. Florence readings have been increased by 1h. De Bilt MN = +58·8m., MZ = +73·4m. Moncalieri S = +35m.7s. Stonyhurst eP has been increased by 1h. Bidston S = +56m.2s. Rio Tinto readings have been increased by 1h. Toronto gives also several eN readings. Ottawa eL? = +42·9m. La Paz iP = +20m.20s.

Dec. 5d. Readings also at 0h. (near Granada), 7h. (Toronto), 19h. (Nagoya), 20h. (Kobe), 22h. (near Athens).

Dec. 6d. Readings at 0h. (Pulkovo, Tiflis, Strasbourg, Uccle, Upsala, De Bilt, Ekaterinburg, and near Athens (2)), 3h. (La Paz and near Athens), 4h. (Mostar), 8h. (Tacubaya and near La Paz (2)), 16h. (near Athens (2)), 17h. (Ekaterinburg), 18h. (Apia), 20h. (near Osaka and Kobe), 21h. (Taihoku, Mostar, and Rio de Janeiro), 22h. (Eskdalemuir, Pulkovo, Ekaterinburg, and De Bilt), 23h. (Coimbra, Strasbourg, and Rio de Janeiro).

Dec. 7d. 15h. 53m. 8s. Epicentre 53°·5N. 158°·5E.

A = −·553, B = +·218, C = +·804; D = +·367, E = +·930; G = −·748, H = +·295, K = −·595.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Osaka	24·9	230	5 36	− 1	—	—	—	—
Kobe	25·0	231	5 41	+ 3	10 17	+14	14·4	15·0
Zi-ka-wei	34·7	244	e 7 5	− 6	—	—	—	20·6
Hong Kong	45·7	243	—	—	—	—	—	28·9
Honolulu N.	46·0	118	—	—	—	—	e 19·9	22·2
Ekaterinburg	51·0	317	i 9 5	− 8	16 16	−15	23·9	35·4
Pulkovo	59·4	333	10 11	+ 3	18 21	+ 5	27·9	34·3
Tiflis	69·1	314	e 25 44	?	—	—	41·6	43·0
Ottawa	70·8	38	—	—	—	—	e 36·9	—
Toronto E.	70·9	40	—	—	—	—	e 38·8	—
De Bilt	72·1	344	—	—	e 21 55	+64	e 40·9	—
Bombay	72·3	278	—	—	—	—	38·9	—
Uccle	73·4	344	e 11 40	+ 2	—	—	e 39·9	—
Strasbourg	75·0	341	—	—	—	—	e 49·9	—
Zurich	75·9	340	i 11 55	+ 1	—	—	—	—
Moncalieri	78·5	340	—	—	—	—	e 43·3	—
Rocca di Papa	80·3	335	i 12 19	− 2	—	—	—	—
Toledo	85·4	347	—	—	—	—	e 48·5	54·2
Rio Tinto	87·5	349	50 52	?L	—	—	(50·9)	57·9

Additional readings and notes: Osaka readings have been diminished by 1h. Ekaterinburg gives also MZ = +34·2m., MN = +34·4m. Pulkovo MZ = +38·1m., MN = +40·3m. Toronto eN = +37·2m. and +39·1m., eE = +41·1m. Moncalieri L = +47·5m. Rocca di Papa eZ = +8m.4s.

Dec. 7d. 23h. 36m. 40s. Epicentre 12°·0S. 102°·0E.

A = −·203, B = +·957, C = −·208; D = +·978, E = +·208; G = +·043, H = −·203, K = −·978.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Malabar	7·3	50	1 46	− 5	e 3 0	−18	—	—
Batavia	7·5	40	1 55	+ 1	e 3 23	− 1	—	5·2
Perth	23·7	150	(5 13)	−12	9 36	− 2	13·1	—
Hong Kong	36·4	20	—	—	—	—	—	15·3
Adelaide	40·3	132	—	—	e 11 56	?	e 14·3	18·3
Bombay	42·2	317	—	—	—	—	16·3	—
Riverview	49·7	125	e 10 25	+80	e 17 30	+75	e 22·3	—
Ekaterinburg	76·8	339	e 11 57	− 3	21 49	+ 2	35·3	40·4
Pulkovo	91·4	331	13 23	0	24 34	+ 6	41·3	—
La Paz	149·9	199	20 5	[+ 9]	—	—	—	—

Additional readings and notes: Malabar gives also iP = +1m.47s. Batavia iP = +1m.59s. Perth P is given as PR_1. Ekaterinburg iP = +11m.58s. Pulkovo PR_1 = +17m.5s.

Dec. 7d. Readings also at 0h. (near Batavia and Malabar), 4h. (Batavia), 5h. (near Athens), 6h. (Ekaterinburg and near Belgrade), 8h. (Rio Tinto), 9h. (Tacubaya), 10h. (Apia), 11h. (Oaxaca, Tacubaya, and Taihoku), 15h. (near Taihoku and Hokoto), 16h. (Kobe and Nagasaki), 19h. (Honolulu and Taihoku), 21h. (La Paz), 22h. (Nagasaki), 23h. (Osaka, near Manila (2), and near Tacubaya).

Dec. 8d. 19h. 6m. 20s. Epicentre 32°·0N. 127°·5E. (as on Dec. 4d.).

A = −·516, B = +·673, C = +·530; D = +·793, E = +·609; G = −·323, H = +·420, K = −·848.

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Nagasaki	2·1	70	0 42	+ 9	—	—	1·5	1·7
Zi-ka-wei	5·2	263	e 1 23	+ 3	—	—	—	—
Kobe	6·9	65	1 35	−10	2 49	−18	3·6	3·8
Osaka	7·2	66	2 10	+21	—	—	4·0	6·4
Taihoku	8·7	218	—	—	—	—	e 4·7	—
Hong Kong	15·3	234	—	—	—	—	—	11·3
Manila	18·4	201	e 4 21	− 1	—	—	—	—
Bombay	50·5	271	—	—	—	—	e 27·7	—
Ekaterinburg	51·2	320	i 9 20	+ 6	—	—	26·7	35·2
Pulkovo	66·2	328	—	—	—	—	e 40·7	—
De Bilt	82·0	330	—	—	—	—	e 46·7	—
Strasbourg	83·2	325	—	—	—	—	e 49·7	—
Florence	84·5	321	38 40	?L	—	—	(38·7)	47·7
Rocca di Papa	85·0	318	—	—	—	—	e 48·4	57·1
Moncalieri	85·6	323	—	—	—	—	e 44·7	—
La Paz	159·0	46	20 10	[+ 3]	—	—	—	—

Additional readings: Kobe gives also MN = +3·9m. Osaka MN = +6·6m. Ekaterinburg MN = +32·0m., MZ = +35·4m.

Dec. 8d. Readings also at 2h. (Nagasaki (2)), 3h. (Merida), 4h. (Tacubaya), 5h. (Zi-ka-wei, near Hokoto, and Taihoku, also near Athens), 6h. (Tacubaya). 11h. (Nagasaki, La Paz, and La Plata), 13h. (near Sarajevo and Mostar), 15h. (Rio Tinto), 17h. (Bombay, Zi-ka-wei, Nagasaki, Manila, Ekaterinburg, and Hong Kong), 20h. (La Paz (2)), 22h. (Tacubaya (2)).

Dec. 9d. Readings at 1h. and 3h. (Tacubaya), 4h. (Tacubaya, Nagasaki (2), and near Athens), 6h. (Azores), 7h. (near Athens), 12h. (Manila), 14h. (Nagoya (2) and near Osaka and Kobe), 15h. (Tacubaya), 18h. (Nagasaki), 19h. (Tashkent), 20h. (near Batavia and Malabar), 23h. (Tashkent and Nagasaki (2)).

Dec. 10d. 23h. 53m. 28s. Epicentre 13°·5N. 50°·0E.

A = +·625, B = +·745, C = +·233; D = +·766, E = −·643. G = +·150, H = +·179, K = −·972.

	△ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Helwan	23·8	316	5 18	− 8	i 9 32	− 8	—	14·0
Kodaikanal	27·0	94	15 32	?L	—	—	(15·5)	—
Tiflis	28·6	352	e 6 56	+42	e 11 53	+43	e 18·5	22·6
Colombo	30·1	101	—	—	—	—	—	41·5
Tashkent	32·5	27	e 6 32	−21	—	—	e 39·5	76·5
Rocca di Papa	42·9	320	e 8 26	+ 9	—	—	e 26·1	29·8
Ekaterinburg	44·1	9	i 8 20	− 7	15 1	− 2	22·5	27·0
Algiers	47·8	310	—	—	—	—	29·5	33·5
Pulkovo	48·5	348	9 2	+ 5	16 5	+ 5	22·5	33·0
Strasbourg	49·4	325	e 9 5	+ 2	e 16 7	− 4	e 22·5	—
Tortosa E.	50·9	313	—	—	—	—	e 34·5	—
Uccle	52·4	326	—	—	e 16 44	− 5	e 26·5	—
De Bilt	52·6	328	—	—	16 55	+ 4	e 27·5	—
Granada	53·1	307	i 9 38	+11	i 17 53	+56	e 25·8	30·0
Toledo	54·0	310	—	—	—	—	e 22·9	37·8
San Fernando	55·0	306	—	—	17 20	− 1	—	36·5
Coimbra	57·4	310	—	—	e 18 2	+11	e 27·5	—
Eskdalemuir	58·5	328	—	—	e 18 12	+ 7	30·5	—

Additional readings: Tiflis gives also ePE = +7m.8s., MN = +20·1m. Tashkent e = 23h.53m., also e = +9m.32s., +20m.10s., and +24m.32s. Rocca di Papa e = +7m.56s. Ekaterinburg PR_1 = +10m.4s., SR_1 = +18m.15s., MN = +27·1m., MZ = +31·0m. Pulkovo PR_1 = +10m.59s., SR_1 = +19m.56s., MZ = +34·2m. Uccle e = +20m.32s. Granada iE = +9m.53s., e = +16m.53s. San Fernando MN = +36·0m. Coimbra e = +12m.2s., L = +36·0m. Eskdalemuir e = +24m.39s.

Dec. 10d. Readings also at 2h. (Nagasaki and near Taihoku), 3h. (Nagasaki), 6h. (Ekaterinburg and near Mizusawa), 8h. (Nagasaki), 10h. (Kobe), 11h. (La Paz), 12h. and 14h. (Nagasaki), 17h. (Apia, Pulkovo, and Ekaterinburg), 19h. (near Athens), 20h. (Nagasaki), 21h. (Bombay and near Athens (2)), 22h. (Manila), 23h. (near Athens).

Dec. 11d. 5h. 4m. 0s. Epicentre 8°·0S. 95°·0E.

A = −·086, B = +·986, C = −·139; D = +·996, E = +·087; G = +·012, H = −·139, K = −·990.

Very doubtful.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	34·3	47	—	—	—	—	e 14·9	—
Bombay	34·6	322	7 10	0	—	—	—	—
Hong Kong	35·7	32	11 38	?S	(11 38)	−88	—	31·0
Taihoku	41·9	37	—	—	—	—	e 21·0	—
Zi-ka-wei	46·6	32	15 39	?	(15 39)	+ 3	(e 22·8)	32·6
Adelaide	48·1	131	e 18 48	?SR_1	—	—	e 24·5	29·0
Riverview	57·6	125	e 14 5	?	e 17 52	− 2	e 21·6	—
Sydney	57·6	125	—	—	17 36	−18	22·3	23·7
Ekaterinburg	70·6	341	11 13	− 8	20 19	−14	—	—
Wellington	77·1	131	12 0	− 2	(21 36)	−14	24·6	26·0
Pulkovo	84·6	334	13 15	+29	—	—	41·0	72·6
Strasbourg	94·2	319	—	—	—	—	e 77·0	—
De Bilt	96·2	322	—	—	—	—	e 72·0	—
Uccle	96·6	320	—	—	—	—	e 70·0	—
Eskdalemuir	101·3	325	—	—	—	—	56·0	—
Victoria E.	128·3	30	—	—	—	—	50·1	53·3
Ottawa	141·8	349	—	—	—	—	67·0	—
Toronto E.	144·0	353	—	—	—	—	e 67·1	—
Chicago	146·2	4	—	—	—	—	e 65·4	—
La Paz	150·4	214	27 41	?PR_1	—	—	—	—

Additional readings and notes: Adelaide gives also e = +21m.36s. and i = +27m.48s. Wellington S = +18m.36s.; true S is given as SR_1. Pulkovo Y = +22m.23s., PS = +25m.38s., MZ = +72·2m. Ottawa L = +72·0m. Toronto eN = +66m.0s. and several L readings.

Dec. 11d. Readings also at 0h. and 2h. (La Paz), 8h. (Nagasaki), 11h. (La Paz), 15h. (Batavia), 18h. (Azores and Nagasaki), 20h. (Tacubaya), 22h. (Colombo).

Dec. 12d. 4h. 4m. 10s. Epicentre 34°·0N. 133°·0E.

A = −·565, B = +·606, C = +·559.

	Δ	P.	O−C.	S.	O−C.	L.	M.
	°	m. s.	s.	m. s.	s.	m.	m.
Kobe	1·9	0 26	−3	(0 47)	−6	0·8	0·8
Osaka	2·1	0 32	−1	(0 56)	−2	0·9	1·4
Nagasaki	2·9	0 46	−1	(1 24)	+4	1·4	—
Nagoya	3·4	0 53	0	(1 34)	0	1·6	—

Osaka gives also MN = +1·6m.

Dec. 12d. 16h. 27m. 0s. Epicentre 12°·0S. 2°·0W.

A = +·977, B = −·034, C = −·208; D = −·035, E = −·999; G = −·208, H = +·007, K = −·978.

Uncertain.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Cape Town	28·8	143	21 37	?	—	—	—	—
San Fernando	48·6	356	—	—	17 40	+99	22·5	26·5
Algiers	49·0	7	—	—	—	—	e 22·0	23·5
Granada	49·2	358	i 8 38	−23	e 16 8	− 1	—	—
Rio Tinto	49·9	356	15 30	?S	(15 30)	−48	—	24·5
Toledo	51·9	358	e 8 20	−59	e 15 27	−76	e 22·2	27·2

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Coimbra	E.	52·6	354	e 7 0	−144	15 30	−81	24·0	27·2
	N.	52·6	354	8 52	−32	e 18 30	+99	—	—
Azores		54·5	339	10 36	+60	—	—	—	12·8
Rocca di Papa		55·4	14	—	—	—	—	e 28·0	30·4
Strasbourg		61·2	8	—	—	—	—	e 30·0	—
Vienna	Z.	62·4	14	10 37	+ 9	—	—	—	—
Mendoza		63·7	239	28 30	?	—	—	33·6	35·4
La Paz		64·0	259	10 37	− 1	e 19 14	+ 1	29·0	31·4
De Bilt	Z.	64·4	6	e 10 38	− 3	—	—	e 33·0	—
Pulkovo		76·3	17	e 13 49	?	—	—	41·0	46·4
Ekaterinburg		85·9	30	i 13 1	+ 8	23 43	+14	38·0	—

San Fernando gives also PR_1? = +14m.40s., MN = +23·5m.

Dec. 12d. Readings also at 2h. (near Malabar), 3h. (Pulkovo, Ekaterinburg and, Tiflis), 7h. (Nagasaki and near Athens), 10h. (La Paz), 11h. (Toronto and Tashkent), 14h. (near Sinj and near Algiers), 15h. (near Sinj), 18h. (Ekaterinburg), 22h. (Taihoku).

Dec. 13d. Readings at 4h. (Taihoku), 10h. (near Batavia and Malabar), 12h. (Ekaterinburg), 14h. (Nagoya), 17h. (De Bilt, Ekaterinburg, Victoria, Ann Arbor, Georgetown, Ottawa, Toronto, and Chicago, and near Mazatlan).

Dec. 14d. 10h. 31m. 18s. Epicentre 1°·0N. 77°·0W.

A = +·225, B = −·974, C = +·017; D = −·974, E = −·225; G = +·004, H = −·017, K = −1·000.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz		19·5	154	i 4 36	+ 1	8 16	+ 3	10·4	13·1
Mendoza		34·8	168	8 18	+67	—	—	16·0	17·9
Pilar	E.	34·9	160	13 24	?S	(13 24)	+30	22·1	25·2
	N.	34·9	160	12 12	?S	(12 12)	−42	20·1	26·4
Georgetown	E.	37·9	0	—	—	e 13 28	− 9	—	—
La Plata		40·1	155	—	—	13 42	−26	e 22·4	24·2
Rio de Janeiro	E.	40·7	129	i 7 57	− 4	14 12	− 5	20·2	25·6
	N.	40·7	129	i 7 57	− 4	i 14 5	−12	21·0	22·7
Cipolletti		40·8	170	16 54	?SR_1	—	—	26·5	26·7
Ann Arbor		41·8	353	—	—	e 14 12	−20	19·2	—
Chicago		41·9	349	i 14 8	?S	(14 8)	−26	23·7	—
Ottawa		44·4	2	i 14 57	?S	(i 14 57)	−10	e 18·7	27·2
Victoria	E.	61·9	328	—	—	—	—	33·7	35·3
Coimbra		73·2	48	e 11 47	+10	20 11	−53	e 37·2	44·2
Rio Tinto		74·0	51	17 42	?PR_1	—	—	—	40·7
Granada		76·2	52	i 12 7	+11	i 22 10	+31	—	—
Toledo		76·4	50	—	—	—	—	e 35·5	—
Eskdalemuir		80·0	34	—	—	—	—	39·7	43·7
Stonyhurst		80·2	37	e 30 42	?L	—	—	(e 30·7)	49·7
Oxford		80·5	38	—	—	—	—	40·9	44·7
Uccle		83·8	40	—	—	e 23 12	+ 5	e 37·7	44·7
De Bilt	E.	84·4	38	—	—	23 20	+ 8	e 40·7	45·1
	N.	84·4	38	—	—	—	—	e 43·7	45·6
	Z.	84·4	38	e 12 49	+ 5	—	—	e 43·7	48·5
Strasbourg		85·8	41	—	—	—	—	e 45·7	—
Hamburg		87·4	37	e 12 59	− 2	—	—	e 44·7	—
Sinj		91·9	46	i 47 37	?L	—	—	(i 47·6)	47·7
Cape Town		95·1	124	—	—	—	—	—	67·9
Pulkovo		97·8	28	—	—	—	—	48·7	—
Ekaterinburg		113·0	23	—	—	e 27 6	−48	49·7	64·5
Nagoya		131·9	321	29 38	?	—	—	—	—
Bombay		144·3	53	—	—	—	—	72·7	—
Kodaikanal		152·2	66	89 42	?L	—	—	(89·7)	—
Colombo		155·6	71	83 42	?L	—	—	(83·7)	96·0

Additional readings: Georgetown gives also eN = +13m.31s. La Plata MN = +27·6m. Rio de Janeiro PR_1N = +9m.35s. T_2N = 10h.31m.30s. Chicago S = +17m.15s., L = +18·2m. Ottawa iS = +18m.4s., L = +36·7m. Coimbra ePE = +12m.12s. Uccle e = +31m.54s. Ekaterinburg MN = +59·0m.

Dec. 14d. Readings also at 0h. (Colombo), 1h. (near Barcelona (4) and Tortosa, also near Athens), 6h. (La Paz), 7h. (Calcutta, Ekaterinburg, and near Simla), 8h. (Taihoku), 10h. (Apia), 12h. (near Balboa Heights), 15h. (near Athens), 18h. and 21h. (La Paz), 22h. (Colombo).

Dec. 15d. Readings at 5h. (La Paz), 6h. (Batavia and near Manila), 11h. (near Kobe), 12h. (Ottawa, Toronto, and Victoria), 13h. (Apia), 14h. (near Simla), 18h. (Rocca di Papa), 21h. (Hong Kong), 22h. (Ekaterinburg and Bombay), 23h. (Apia).

Dec. 16d. 7h. 36m. 40s. Epicentre 1°·0N. 77°·0W. (as on Dec. 14d.).

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz	19·5	154	4 37	+ 2	8 28	+15	10·7	13·7
Rio de Janeiro N.	40·7	129	—	—	e 14 12	− 5	22·1	25·3
Chicago	41·9	349	7 22	−48	12 55	−99	e 17·3	—
Toronto	42·7	358	e 8 35	+19	e 14 28	−16	21·3	—
Ottawa	44·4	2	e 8 23	− 6	e 14 54	−13	e 21·3	—

Additional readings: Toronto gives also iN = +21m.43s., LN = +25·6m. Ottawa eSR_1 = +17m.56s. T_0 = 7h.36m.48s.

Dec. 16d. 11h. 48m. 20s. Epicentre 37°·0N. 81°·0E.

A = +·125, B = +·789, C = +·602; D = +·988, E = −·156; G = +·094, H = +·594, K = −·799.

Uncertain.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Simla	E.	6·6	209	1 52	+11	3 22	+22	4·9	5·2
	N.	6·6	209	1 34	− 7	2 46	−14	4·4	5·6
Calcutta	N.	15·8	155	6 49	?S	(6 49)	− 1	—	—
Bombay		19·5	204	6 35	?	8 5	− 8	9·5	9·7
Irkutsk		22·4	39	e 13 18	?L	—	—	16·7	—
Ekaterinburg		24·0	332	14 14	?L	—	—	(14·2)	23·6
Kobe	N.	43·4	76	—	—	—	—	—	11·8

Ekaterinburg gives also S = +18m.47s., MN = +25·5m., MZ = +25·7m.

Dec. 16d. Readings also at 4h. (La Paz and near Tacubaya (3)), 5h. (La Paz and near Batavia and Malabar), 7h. (La Paz), 8h. (La Paz, Hakodate, Nagasaki (2), Ekaterinburg, and near Mizusawa), 10h. (near Taihoku), 13h. (Nagasaki), 14h. (near Kobe), 17h. (Nagasaki), 19h. (La Paz), 21h. (Taihoku and near Puebla, Tacubaya, and Colima).

Dec. 17d. Readings at 0h. (Toledo and La Paz), 4h. (La Paz), 6h. (near Mizusawa (2)), 8h. (Tacubaya), 11h. (near Ootomari), 13h. (Nagoya and near Algiers), 15h. (Wellington and near Manila), 16h. (near Osaka, Kobe, and Nagoya), 19h. (Perth, Riverview, and near Mizusawa).

Dec. 18d. Readings at 8h. (Taihoku), 10h. (near Ootomari) 13h. (near Tucson), 17h. (near Tiflis), 19h. (Innsbruck and near Tacubaya), 23h. (near Kobe, Nagoya (2) and Osaka).

Dec. 19d. 15h. 38m. 4s. Epicentre 10°·0N. 127°·5E. (as on 1922 April 13d.).

A = −·600, B = +·781, C = +·174; D = +·793, E = +·609; G = −·106, H = +·138, K = −·985.

	Δ	Az.	P.	O−C.	S.	O−C.	L.
	°	°	m. s.	s.	m. s.	s.	m.
Manila	7·9	307	—	—	—	—	e 4·1
Zi-ka-wei	21·9	346	e 5 17	+13	—	—	—
Batavia	26·3	232	e 5 59	+ 8	e 8 54	?	—
Ekaterinburg	69·1	327	11 4	− 8	20 5	−10	34·9

No additional readings.

Dec. 19d. 16h. 0m. 48s. Epicentre 42°·3N. 17°·8E. (as on 1923 May 3d.).

A = +·704, B = +·226, C = +·673.

	Δ	P.	O−C.	S.	O−C.	M.
	°	m. s.	s.	m. s.	s.	m.
Mostar	1·0	i 0 19	+ 4	i 0 27	− 1	0·8
Sarajevo	1·6	i 0 24	0	i 0 41	− 4	0·8
Sinj	1·6	0 32	+ 8	0 55	+10	1·0
Belgrade	3·2	i 0 46	− 4	i 1 31	+ 3	1·9
Rocca di Papa	3·8	e 1 9	+10	e 2 26	+42	2·7
Venice	5·0	e 1 12	− 5	—	—	2·2
Innsbruck N.E.	6·7	—	—	e 2 58	− 4	—

Additional readings and notes: Mostar readings have been increased by 1m.30s. Sarajevo gives also i = +1m.29s. Belgrade iP = +52s., i = +1m.4s. Rocca di Papa ePE = +1m.24s., ePN = +1m.34s., SN = +2m.29s. Innsbruck eNW = +2m.54s.

Dec. 19d. 19h. 2m. 0s. Epicentre 0°·5N. 126°·5E. (as on 1920 Dec. 18d.).

A = −·595, B = +·804, C = +·009; D = +·804, E = +·595; G = −·005, H = +·007, K = −1·000.

On 1920 Dec. 18 a depth of focus +0·020 was assumed; for the present shock +0·010 seems to be sufficient.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	−0·2	15·1	339	e 3 40	+ 2	—	—	—	—
Malabar	−0·4	20·4	247	4 40	− 1	8 25	+ 2	—	—
Batavia	−0·4	20·7	251	4 50	+ 5	8 24	− 5	14·9	—
Hong Kong	−0·5	24·9	332	—	—	—	—	—	18·0
Zi-ka-wei	−0·8	31·1	352	6 19	−12	—	—	—	17·7
Perth	−0·8	34·0	195	—	—	(12 8)	−19	19·8	—
Riverview	−0·8	41·5	149	—	—	e 17 7	? SR_1	e 22·5	—
Sydney	−0·8	41·5	149	9 18	? PR_1	—	—	22·8	28·5
Colombo	−0·9	47·0	278	6 0	?	—	—	—	—
Irkutsk	−1·1	55·0	344	9 35	+ 3	17 13	+ 5	21·0	—
Ekaterinburg	−1·3	76·6	330	i 11 27	−24	21 4	−25	32·0	74·9
Pulkovo	−1·4	92·7	330	—	—	i 24 13	−14	53·0	—
Victoria B.	−1·5	102·8	40	—	—	—	—	49·6	57·4
De Bilt	—	108·2	326	—	—	—	—	e 58·0	69·8
Ottawa	—	130·1	20	—	—	—	—	e 72·5	—
La Paz	—	158·5	139	19 53	[−14]	—	—	—	—

Additional readings: Perth gives also PR_1? = +10m.56s., S = +14m.26s., SR_1 = +16m.9s., L = +23·4m. and +25·8m., PR_2 is entered as S. De Bilt eLN = +57·0m.

Dec. 19d. Readings also at 6h. (near Mizusawa), 12h. (Manila), 13h. (near Mostar and Sarajevo, also near Osaka, Kobe, and Nagoya), 14h. (near Mizusawa), 15h. (near Algiers), 16h. (Stonyhurst and near Tucson), 17h. (Uccle, Nagasaki, and near Mizusawa), 18h. (Ekaterinburg and Irkutsk), 19h. (Osaka), 20h. (La Paz), 21h. (Batavia and Ekaterinburg).

Dec. 20d. 15h. 13m. 20s. Epicentre 39°·5N. 72°·0E. (as on 1918 Sept. 12d.).

$A = +\cdot234$, $B = +\cdot734$, $C = +\cdot636$; $D = +\cdot951$, $E = -\cdot309$; $G = +\cdot197$, $H = +\cdot605$, $K = -\cdot772$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent		2·9	310	i 0 51	+ 6	i 1 25	+ 5	—	1·5
Simla	N.	9·4	152	—	—	e 4 16	+ 3	—	—
Ekaterinburg		18·9	340	4 8	−20	7 39	−21	9·7	10·7
Bombay		20·6	178	4 50	+ 2	8 46	+10	11·0	13·0
Tiflis		20·7	285	e 4 4	−45	e 8 10	−28	e 11·4	—
Calcutta	E.	21·9	136	9 2	?S	(9 2)	− 1	—	—
Pulkovo		33·0	323	6 45	−11	11 47	−37	16·7	21·2
De Bilt	N.	46·5	309	—	—	—	—	e 24·7	26·6
Uccle		47·4	307	—	—	—	—	e 24·7	—
Kew		50·1	310	—	—	—	—	—	36·7
Edinburgh		50·4	315	—	—	—	—	—	34·7
Oxford		50·6	310	—	—	—	—	26·9	29·3
Eskdalemuir		50·6	315	—	—	—	—	24·7	—

Additional readings: Tashkent gives also $P_2 = +53$s., $P_3 = +55$s., $P_4 = +57$s., e = +1m.10s. Ekaterinburg i = +4m.14s., MNZ = +11·3m. Tiflis e = +5m.10s. and +9m.22s. Calcutta PN = +9m.6s. Pulkovo MZ = +21·0m. De Bilt eLE = +26·7m.

Dec. 20d. Readings also at 1h. (Apia and La Paz), 4h. (near Ootomari), 12h. (Nagoya, Zi-ka-wei, Osaka, and near Nagasaki), 13h. (Uccle and near Osaka and Kobe), 17h. (Ekaterinburg), 18h. (Nagasaki), 20h. (Strasbourg), 21h. (Colombo, Ekaterinburg, and Nagasaki), 23h. (near Balboa Heights).

Dec. 21d. Readings at 0h. (Balboa Heights), 5h. (Apia), 8h. (Georgetown and Rio Tinto), 9h. (Chicago), 11h. (near Nagasaki), 14h. (Batavia, Riverview, Perth, Puebla, and Tacubaya, and near Zurich), 15h. (Ekaterinburg), 16h. (Taihoku), 20h. (near Manila).

Dec. 22d. 9h. 56m. 0s. Epicentre 5°·5N. 71°·5W.

$A = +\cdot316$, $B = -\cdot944$, $C = +\cdot096$; $D = -\cdot948$, $E = -\cdot317$; $G = +\cdot030$, $H = -\cdot091$, $K = -\cdot995$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Balboa Hts.	E.	8·7	294	2 6	− 6	3 14	−42	3·9	4·1
	N.	8·7	294	2 4	− 8	3 26	−30	4·1	4·8
Porto Rico	E.	14·0	24	—	—	—	—	e 7·9	9·8
	N.	14·0	24	—	—	—	—	e 9·7	10·4
La Paz		22·3	172	i 5 3	− 6	i 9 5	− 6	11·2	12·7
Tacubaya	E.	30·3	300	—	—	7 24?	?	8·4	—
Pilar	E.	37·9	170	12 54	?S	(12 54)	−43	19·8	22·4
	N.	37·9	170	12 54	?S	(12 54)	−43	21·4	28·8
Ann Arbor		38·4	346	9 12	?PR_1	13 42	− 2	17·0	—
Toronto	E.	38·8	352	8 51	?PR_1	i 13 43	− 6	e 16·4	25·5
	N.	38·8	352	8 47	?PR_1	13 40	− 9	20·5	25·4
Rio de Janeiro		39·7	138	i 7 53	+ 1	i 14 0	− 2	19·0	25·0
Ottawa		40·1	356	e 9 27	?PR_1	e 14 6	− 2	e 17·0	—
La Plata	E.	42·4	166	8 22	+ 8	15 21	+41	24·2	24·9
	N.	42·4	166	8 52	+38	15 40	+60	24·5	33·1
Cipolletti		44·6	177	18 0	?SR_1	—	—	24·4	26·5
Victoria	E.	61·3	325	18 35	?S	(18 35)	− 5	30·6	39·8
	N.	61·3	325	18 30	?S	(18 30)	−10	33·4	39·0
Rio Tinto		66·8	51	22 0	?	—	—	—	39·0
Stonyhurst		73·3	36	10 0	−98	—	—	—	45·0
Edinburgh		73·4	34	—	—	—	—	e 39·0	—
Oxford		73·5	39	—	—	—	—	—	37·0
Paris		75·4	41	—	—	e 22 0	+30	36·0	43·0
Uccle		76·8	40	—	—	e 22 0	+13	e 34·0	—
De Bilt		77·5	39	—	—	e 21 0	−55	e 40·0	43·7
Strasbourg		78·8	41	—	—	e 23 0	+50	e 42·0	—
Hamburg		80·5	37	e 12 30	+ 8	—	—	e 33·0	46·0

Continued on next page.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Florence		81·0	46	35 0	?L	—	—	44·0	46·0
Innsbruck		81·1	43	e 12 0	−26	—	—	33·0	—
Rocca di Papa		82·0	49	11 48	−42	—	—	e 34·8	40·2
Upsala	N.	84·8	30	—	—	—	—	e 38·0	—
Pulkovo		91·1	30	12 1	−81	22 50	[−45]	39·0	49·7
Cape Town		93·1	124	46 30	?L	—	—	(46·5)	54·2
Apia		101·3	257	24 0	?S	(24 0)	[−31]	—	—
Ekaterinburg		106·6	26	—	—	24 43	[−12]	44·0	57·6
Tashkent		121·1	32	—	—	—	—	e 64·0	81·0
Riverview		131·4	227	—	—	—	—	e 64·9	—
Bombay		137·2	53	—	—	—	—	64·0	—
Batavia		178·2	112	i 32 53	?	—	—	—	34·8

Additional readings and notes: La Paz gives also $iPR_1 = +5m.17s.$, $i = +5m.25s.$ $PR_2 = +5m.34s.$, $T_0 = 9h.56m.0s.$ Toronto $PN = +9m.23s.$, $iN = +17m.24s.$ and $+20m.28s.$, $eN = +20m.14s.$, also several other L readings. Rio de Janeiro $PR_1 = +9m.15s.$, $MN = +25·0m.$, $T_0 = 9h.56m.10s.$ Ottawa $L = +25·0m.$ La Plata $PR_1N = +10m.41s.$, $T_0 = 9h.56m.14s.$ Victoria $SE = +27m.25s.$ Uccle $e = +26m.12s.$ De Bilt $MN = +45·6m.$ Pulkovo $PR_1 = +17m.56s.$, $SR_1 = +28m.24s.$ Tashkent $e = +74·0m.$

Dec. 22d. Readings also at 0h. (Colombo), 2h. (near Kobe), 5h. (Azores), 7h. (Merida), 8h. (La Paz), 15h. (Mizusawa and near Merida), 16h. (La Paz and Tacubaya), 17h. (La Paz), 18h. (La Paz, Rio de Janeiro, Ekaterinburg (2), Toronto, and Ottawa), 19h. (Taihoku), 21h. (Manila).

Dec. 23d. Readings at 0h. (Colombo), 4h. (near Batavia and Malabar), 5h. (Simla and Pulkovo), 6h. (Hamburg, De Bilt, Upsala, and Strasbourg), 7h. (La Paz), 9h. (Riverview and Sydney), 10h. (Tashkent and Ekaterinburg), 12h. (Nagasaki and near Zurich), 13h. (Nagasaki), 15h. (Perth, Nagoya, and near Kobe), 16h. (La Paz (2)), 18h. (La Paz and Balboa Heights), 19h. (De Bilt and near Tashkent), 20h. (La Paz).

Dec. 24d. 3h. 39m. 54s. Epicentre 35°·0N. 139°·5E. (as on Nov. 23d.).
$A = -·623$, $B = +·532$, $C = +·574$; $D = +·649$, $E = +·760$; $G = -·436$, $H = +·372$, $K = -·819$.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	2·1	274	0 30	− 3	(0 58)	—	1·0	1·2
Osaka	3·4	266	0 57	+ 4	(1 41)	+ 7	1·7	2·1
Kobe	3·6	266	0 56	0	(1 37)	− 2	1·6	2·9
Mizusawa	4·3	17	1 10	+ 3	1 59	+ 1	—	—
Hakodate	6·8	7	1 30	−14	(3 0)	− 5	3·0	3·3
Zi-ka-wei	15·6	261	e 3 49	+ 2	—	—	—	—
Ekaterinburg	55·5	320	i 9 3	−40	16 43	−45	26·1	—
Pulkovo	68·9	330	—	—	—	—	e 36·1	—
De Bilt	84·2	334	—	—	—	—	e 51·1	—
La Paz	149·2	60	19 25	[−29]	—	—	—	—

Additional readings: Osaka gives also $MN = +2·3m.$ Kobe $MZ = +1·8m.$, $MN = +1·9m.$

Dec. 24d. Readings also at 5h. (Tashkent), 9h. (near Mizusawa), 10h. (Apia), 11h. (Hamburg), 19h. (Taihoku), 20h. (La Paz, Balboa Heights, and near Tacubaya), 21h. (Nagasaki).

Dec. 25d. Readings at 0h. and 3h. (La Paz), 4h. (Taihoku), 5h. (Tacubaya), 6h. (Taihoku), 12h. (Tacubaya), 14h. (Tiflis), 16h. (Perth, Batavia, and near Athens), 20h. (near Nagasaki), 23h. (Apia).

Dec. 26d. Readings at 0h. (La Paz and near Tashkent), 3h. (La Paz, Algiers, and Toronto), 4h. (Nagasaki), 5h. (Algiers), 6h. (Taihoku), 7h. (Ekaterinburg, Mazatlan, Tacubaya, and near Nagasaki), 8h. (La Paz, Victoria, Berkeley, Ottawa, Tucson, Chicago, Pulkovo, and Ekaterinburg), 12h. (Rio de Janeiro and La Paz), 14h. (Riverview (2) and Ekaterinburg), 22h. (near Athens).

Dec. 27d. 7h. 17m. 12s. Epicentre 35°·0N. 139°·0E. (as on Dec. 24d.).

		Δ	Az.	P.	O−C.	S.	O−C.	P.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		2·1	274	1 1	+28	(1 1)	+ 3	1·6	1·9
Osaka		3·4	266	1 37	+44	(1 37)	+ 3	2·5	3·7
Kobe		3·6	266	—	—	—	—	—	2·5
Mizusawa	E.	4·3	17	1 0	− 7	1 58	0	—	—
	N.	4·3	17	1 2	− 5	1 57	− 1	—	—

Additional readings: Osaka gives also MN = +3·6m. Kobe MN = +3·1m.

Dec. 27d. 10h. 28m. 35s. Epicentre 9°·0S. 163°·0E. (as on 1922 Aug. 26d.).

A = −·945, B = +·289, C = −·156; D = +·292, E = +·956; G = +·150, H = −·046, K = −·988.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Apia	25·2	103	e 4 25	−75	—	—	—	6·4
Riverview	27·2	202	e 6 2	+ 2	—	—	—	—
Sydney	27·2	202	4 55	−65	(10 49)	+ 4	10·8	13·6
Manila	47·9	300	e 8 54	+ 1	(15 59)	+ 6	16·0	—
Perth	49·3	235	—	—	21 2	?	22·8	—
Batavia	55·7	269	i 9 39	− 5	i 17 21	− 9	—	—
Hong Kong	57·2	305	17 56	?S	(17 56)	+ 7	—	18·0
Ekaterinburg	104·2	327	—	—	24 56	[+12]	43·4	54·4

Perth gives also L = +27·0m. and +28·4m.

Dec. 27d. 14h. 38m. 50s. Epicentre 36°·0N. 142°·0E. (as on 1923 July 21d.).

A = −·638, B = +·498, C = +·588; D = +·616, E = +·788; G = −·463, H = +·362, K = −·809.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	E.	3·2	348	1 0	+10	1 18	−10	—	—
	N.	3·2	348	0 59	+ 9	1 16	−12	—	—
Nagoya		4·2	260	1 7	+ 2	—	—	2·0	2·5
Osaka		5·5	258	1 30	+ 5	—	—	2·6	3·4
Kobe		5·8	259	1 34	+ 4	2 10	−29	2·8	4·1
Hakodate		5·9	351	e 1 56	+25	—	—	2·8	3·9
Nagasaki		10·6	256	2 27	−11	(4 39)	− 6	4·6	6·2
Zi-ka-wei		17·8	260	i 4 10	− 5	e 7 28	− 8	—	11·8
Taihoku		20·7	244	e 3 48	−61	—	—	—	—
Hong Kong		27·9	248	5 55	−12	11 1	+ 4	14·4	15·2
Manila		28·5	227	e 6 40	+27	—	—	—	—
Irkutsk		31·1	313	i 6 22	−17	11 38	−15	14·2	19·2
Batavia		53·6	226	i 9 30	0	i 16 55	− 9	—	—
Tashkent		55·4	300	—	—	—	—	—	34·2
Ekaterinburg		56·1	321	i 9 11	−36	i 16 52	−43	25·2	34·9
Colombo		63·5	261	26 10	?L	—	—	(26·2)	41·6
Victoria	E.	66·7	47	20 9	?S	(20 9)	+23	—	43·4
Pulkovo		69·1	330	i 11 14	+ 2	i 20 16	+ 1	33·2	43·7
Tiflis		71·7	310	e 11 36	+ 8	e 21 47	+61	e 36·8	44·7
Upsala		73·9	334	—	—	e 21 34	+21	e 39·2	—
Hamburg		81·3	335	i 12 28	+ 1	e 22 58	+20	e 42·2	54·2
Vienna		82·9	329	12 47	+12	22 56	0	e 35·2	51·2
Edinburgh		83·5	343	—	—	—	—	e 41·2	—
Eskdalemuir		84·0	343	12 42	0	e 23 0	− 8	40·2	—
De Bilt		84·2	337	12 41	− 2	23 17	+ 7	e 40·2	51·8
Stonyhurst		85·0	341	e 0 10	?	—	—	—	55·2
Bidston		85·6	341	32 16	?	39 16	?	—	56·4
Uccle		85·6	336	e 12 52	+ 1	e 23 28	+ 2	e 42·2	53·2
Strasbourg		86·2	333	12 48	− 6	e 23 37	+ 5	41·2	56·3
Kew		86·5	339	—	—	—	—	—	55·2
Oxford		86·6	340	—	—	e 23 19	−18	i 37·3	55·6
Paris		87·9	336	e 13 0	− 4	—	—	—	—
Besançon		88·0	335	12 50?	−15	—	—	—	43·2
Moncalieri		89·1	331	e 11 23	−108	21 7	−177	47·2	—
Rocca di Papa		89·5	326	—	—	23 40	−29	e 46·5	58·9
Chicago		89·9	36	—	—	e 24 10	− 3	e 49·2	—
Ottawa		91·8	26	—	—	e 24 10	−25	e 49·2	—
Toronto		91·9	30	—	—	i 24 18	−16	—	—
Toledo		98·0	336	—	—	—	—	e 51·6	59·6
La Paz		146·9	62	19 57	[+ 6]	—	—	—	—

For Notes see next page.

Notes to Dec. 27d. 14h. 38m. 50s.

Additional readings and notes: Nagoya gives also MN = +2·4m. Kobe MNZ = +3·4m. Hakodate MN = +3·3m. Irkutsk PR_1 = +7m.25s. Tashkent e = +1m.10s., +13m.10s., and +24m.10s. Ekaterinburg MN = +29·3m., MZ = +35·1m. Bombay (Δ = 62°·5 Az. = 275°) gives simply 14h. Pulkovo PR_1 = +13m.53s., PR_3 = +16m.13s., SR_1 = +25m.46s., MN = +39·5m., MZ = +43·4m. Tiflis e = +11m.52s., MN = +45·8m. Vienna iZ = +14m.2s. Eskdalemuir SR_1 = +28m.51s. De Bilt PR_1Z = +15m.55s., MN = +45·6m., MZ = +53·0m. Strasbourg MN = +59·8m. Ottawa e = +30m.34s. Toronto iN = +23m.55s., eE = +24m.48s., iE = +27m.40s., iN = +27m.48s. Toledo readings have been increased by 1h.

Dec. 27d. Readings also at 8h. (near Algiers), 10h. (Ekaterinburg), 15h. and 16h. (near Mizusawa), 18h. (Tacubaya), 19h. (Rio Tinto), 21h. (Athens and near Tacubaya).

Dec. 28d. 22h. 24m. 42s. Epicentre 40°·3N. 69°·5E.

A = +·267, B = +·714, C = +·647; D = +·937, E = −·350; G = +·227, H = +·606, K = −·763.

A depth of focus 0·010 has been assumed.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Tashkent		+0·2	1·0	352	i 0 36	+18	i 1 2	+29	—	2·4
Simla	E.	−0·1	11·1	144	—	—	e 4 42	−12	—	—
Ekaterinburg		−0·3	17·5	344	i 3 38	−29	i 6 49	−33	9·3	10·6
Tiflis		−0·3	18·6	283	e 4 22	+ 1	e 7 52	+ 5	e 10·3	18·0
Bombay		−0·4	21·6	171	4 53	− 2	8 42	− 6	11·1	14·9
Calcutta	E.	−0·5	23·9	132	5 12	− 9	9 36	+ 3	15·0	—
	N.	−0·5	23·9	132	5 7	−14	9 31	− 2	14·0	—
Irkutsk		−0·5	26·5	51	6 2	+14	10 21	− 1	13·3	—
Kodaikanal		−0·7	30·9	164	15 54	?L	—	—	20·0	21·1
Pulkovo		−0·7	31·1	323	i 6 27	− 5	11 32	− 9	13·8	21·3
Helwan		−0·8	32·7	262	6 38	− 8	11 56	−11	—	26·6
Lemberg		−0·8	32·9	300	e 8 0	+72	—	—	—	—
Colombo		−0·8	34·7	162	12 48	?S	(12 48)	+ 9	—	49·8
Konigsberg		−0·8	35·2	311	7 8	0	e 12 39	− 7	e 12·3	26·3
Upsala		−0·8	37·3	320	7 21	− 5	13 10	− 7	—	23·5
Vienna		−0·8	38·0	300	i 7 27	− 5	15 56	+149	e 21·3	27·3
Hamburg		−0·8	41·4	309	i 7 58	− 2	—	—	20·3	28·0
Innsbruck		−0·8	41·5	300	e 7 54	− 7	—	—	—	—
Hong Kong		−0·8	41·6	102	14 18	?S	(14 18)	0	22·2	22·8
Rocca di Papa	Z.	−0·8	42·1	290	7 54	−11	—	—	—	9·8
Zi-ka-wei		−0·8	42·5	86	—	—	e 14 30	− 1	—	—
Zurich		−0·9	43·4	299	e 9 6	+51	—	—	e 19·1	—
Bergen		−0·9	43·4	320	10 48	?PR_1	—	—	e 21·3	24·3
Strasbourg		−0·9	43·6	301	e 8 16	0	14 40	− 4	25·3	29·2
De Bilt	E.	−0·9	44·5	307	—	—	e 15 3	+ 7	e 22·3	31·1
Moncalieri		−0·9	44·6	296	4 33	?	14 27	−31	27·8	31·6
Besançon		−0·9	45·1	300	—	—	—	—	—	25·3
Uccle		−0·9	45·2	305	e 10 24	?PR_1	e 15 12	+ 6	e 22·3	31·9
Taihoku		−0·9	45·7	93	—	—	—	—	24·3	—
Paris		−0·9	46·9	304	e 7 55	−45	—	—	28·3	—
Edinburgh		−1·0	48·5	314	—	—	—	—	27·3	33·8
Stonyhurst		−1·0	48·5	310	e 24 18	?L	—	—	(e 24·3)	33·3
Eskdalemuir		−1·0	48·6	314	—	—	i 15 55	+ 6	23·3	—
Bidston		−1·0	49·0	310	16 58	?	27 0	?L	(27·0)	31·3
Manila		−1·0	51·5	105	—	—	e 16 35	+10	—	—
Toledo		−1·1	54·5	295	—	—	—	—	e 34·2	39·4
Granada		−1·1	55·4	290	e 9 38	+ 3	17 20	+ 7	e 30·3	—
Rio Tinto		−1·1	57·2	293	27 18	?L	—	—	(27·3)	45·3
Coimbra		−1·1	57·3	298	8 48	−59	18 3	+27	34·3	40·0
San Fernando		−1·2	57·6	291	—	—	34 57	?L	39·3	41·8
Ottawa		−1·4	88·8	336	—	—	—	—	e 42·3	—
Victoria	E.	−1·4	90·6	7	—	—	—	—	44·5	55·1
	N.	−1·4	90·6	7	23 44	?S	(23 44)	[+13]	48·5	57·0
Toronto	E.	−1·4	91·5	338	—	—	—	—	50·0	—
Chicago		−1·4	95·3	343	—	—	—	—	e 50·3	—
La Paz		—	136·4	290	19 33	[0]	—	—	73·6	80·2

For Notes see next page.

NOTES TO DEC. 28d. 22h. 24m. 42s.

Additional readings: Tashkent gives also $P_3 = +37$s., $iP_3 = +41$s. Simla eE = +11m.20s., eN = +3m.30s. Tiflis MN = +12·1m. Pulkovo MN = +18·6m., MZ = +19·6m. Konigsberg $PR_1 = +8$m.37s., SR_1? = +15m.3s., i = +15m.36s., MN = +23·3m. Upsala $PR_1 = +8$m.42s., SR_1 = +15m.44s., MN = +22·5m. Vienna i = +8m.54s. and +10m.58s., $PR_2 = +11$m.20s., i = +12m.31s., PS = +16m.11s., i = +18m.0s. Innsbruck ePNW = +8m.0s., $iPR_1NE = +9$m.31s. Hamburg $iPR_1Z = +9$m.35s., $iSR_1E = +17$m.29s., iE = +17m.50s., MZ = +29·1m., MN = +29·3m. Zurich ePN = +9m.9s., ePE = +9m.13s., iE = +10m.47s. Strasbourg $eSR_1 = +17$m.56s., MN = +33·4m. Bergen $PR_1 = +14$m.18s. All readings have been diminished by 20min. Moncalieri MN = +31·2m. De Bilt $eSR_1E = +18$m.15s., eLNZ = +24·3m., MN = +27·8m., MZ = +31·2m. Toledo reading gives 29d. Uccle $SR_1 = +18$m.30s., MN = +28·3m. Eskdalemuir SR_1? = +19m.18s. Bidston P = +19m.28s. Coimbra eN = +12m.18s., eE = +13m.38s., iN = +19m.18s. San Fernando PR_1? = +30m.23s., MN = +44·8m. Toronto eN = +31m.50s., LN = +37·4m., +54·6m., and 60·9m. Chicago L = +57·3m. La Paz eP = +22m.6s.

It seems desirable to present briefly the evidence for abnormal focus. Firstly, the correctness to T_0 derived in the usual way from the cases where P and S are both observed are (in order of magnitude) +33, +4, +3, +2, 0, −2, −2, −4, −6, −25, −27. It seems clear that the adopted value cannot be altered sensibly if the observations are accepted. Secondly, collecting the corrections to calculated △ in azimuth we get the following groups of observations:—

No. Obs.	Azimuth	$\delta_1\triangle$	$\delta_2\triangle$		Sin. Az.	Cos. Az.	(1)	(2)
	°	°	°				°	°
4	86	−0·9	−0·1	=	+1·00x	+0·07y	−0·3	+0·3
3	146	−0·4	−0·1	=	+0·56x	−0·83y	−1·2	−0·6
6	289	−1·0	−0·2	=	−0·95x	+0·33y	−1·1	−0·2
6	314	−1·1	−0·3	=	−0·72x	+0·69y	−0·6	+0·2
2	356	−1·1	−1·1	=	−0·07x	+1·00y	+0·2	−0·3

$\delta_1\triangle$ is the correction without any assumption of deep focus; $\delta_2\triangle$ the correction with depth +0·010. Solving on the former supposition, we get x = −0°·5, y = −1°·3, with the residuals (1); on the latter we get x = −0°·3, y = −0°·8, with the residuals (2). It will be seen that the residuals (1) are all negative, with the exception of the last, which refers to Tashkent and Ekaterinburg near the epicentre; the residuals (2) vary in sign and are distinctly smaller.

Dec. 28d. Readings also at 1h. (Nagasaki), 2h. (Colombo, Nagasaki (2), and near Athens), 3h. (Tashkent and Nagasaki), 5h. (Tashkent and near Mizusawa), 6h. (Ekaterinburg), 7h. (Nagasaki), 12h. (Nagasaki (2), Pulkovo, Ekaterinburg, and near Osaka and Kobe (2)), 15h. (Simla), 16h. (Tashkent), 18h. (Toronto), 19h. (near Taihoku), 20h. (La Paz), 21h. (Osaka and La Paz), 22h. (Tashkent), 23h. (Zurich and Taihoku).

Dec. 29d. Readings at 0h. (Hamburg and near Taskent), 1h. (5) and 2h. (near Tashkent), 3h. (Simla, near Manila, and near Tashkent), 4h. (Simla and near Tashkent), 13h. (near Mizusawa), 19h. (Tiflis), 20h. (Malabar and near Batavia).

Dec. 30d. Readings at 0h. (Ekaterinburg), 9h. and 12h. (Tashkent), 13h. (Manila and near Nagasaki), 16h. (Tacubaya), 19h. (Nagoya and near Mizusawa), 21h. and 22h. (La Paz).

Dec. 31d. 5h. 51m. 6s. Epicentre 35°·0N. 139°·5E. (as on Dec. 27d.).

$A = -\cdot623$, $B = +\cdot532$, $C = +\cdot574$; $D = +\cdot649$, $E = +\cdot760$; $G = -\cdot436$, $H = +\cdot372$, $K = -\cdot819$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	2·1	274	0 39	+ 6	—	—	—	—
Osaka	3·4	266	0 52	− 1	—	—	1·7	2·8
Kobe	3·6	266	0 51	− 5	(1 32)	− 7	1·5	1·7
Mizusawa N.	4·3	17	2 3	?S	(2 3)	+ 5	(2·5)	—
Ekaterinburg	55·5	320	—	—	e 17 29	+ 1	27·9	30·8
De Bilt	84·2	334	—	—	—	—	e 49·9	—

Additional readings: Osaka gives also MN = +2·6m. Kobe ME is same as L, MNZ entered in M column. Mizusawa P has been entered in the S and S in the L column.

Dec. 31d. 15h. 20m. 0s. Epicentre 8°·5S. 113°·5E.

$A = -\cdot394$, $B = +\cdot907$, $C = -\cdot148$; $D = +\cdot917$, $E = +\cdot399$; $G = +\cdot059$, $H = -\cdot136$, $K = -\cdot989$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Malabar	6·0	282	1 23	− 9	3 11	?L	(3·2)	—
Batavia	7·0	289	1 41	− 5	—	—	—	4·6
Perth	23·5	175	5 27	+ 4	(9 27)	− 8	(14·5)	29·4
Riverview	42·9	132	—	—	—	—	e 22·7	—
Ekaterinburg	78·3	334	i 12 10	+ 1	e 22 7	+ 3	39·0	49·5

Perth gives S as PR_1 and L as S; also $SR_1 = +18$m.17s., $SR_2 = +21$m.35s., L = +23·7m. and +28·5m.

Dec. 31d. 19h. 48m. 42s. Epicentre 34°·5N. 25°·0E. (as on 1922 Sept. 22d.).

$A = +\cdot747$, $B = +\cdot348$, $C = +\cdot566$; $D = +\cdot423$, $E = -\cdot906$; $G = +\cdot513$, $H = +\cdot239$, $K = -\cdot824$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Athens	3·6	344	e 1 21	+25	—	—	1·9	2·1
Pompeii	10·3	310	e 3 48	+74	4 33	− 4	—	5·3
Belgrade	10·9	343	e 2 43	0	i 3 41	−71	—	4·0
Rocca di Papa	12·1	310	—	—	—	—	e 6·0	7·3
Vienna	16·2	337	e 3 15	−27	6 8	−29	—	8·1
Moncalieri	16·9	314	e 0 55	?	5 49	−87	8·9	12·4
Strasbourg	19·0	323	—	—	e 7 18	−44	—	11·3
Uccle	22·1	324	—	—	—	—	e 10·4	—
De Bilt	22·6	327	—	—	—	—	e 10·3	—
Pulkovo	25·5	6	e 5 44	+ 1	—	—	11·3	—
Ekaterinburg	32·8	36	6 54	− 1	e 12 18	− 3	15·3	19·4

Additional readings and notes: Athens gives also MN = +2·9m. Belgrade readings are given as at 18h.

Dec. 31d. Readings also at 1h. (near Mizusawa), 2h. (Tacubaya and near Mizusawa), 10h. (Tiflis), 12h. (Nagasaki), 13h. (Batavia), 14h. (Nagasaki), 15h. (near Granada), 16h. (La Paz), 18h. (Ekaterinburg), 20h. (Nagasaki), 23h. (La Paz and near Nagasaki).

BELATED READINGS.

The following readings were received when the corresponding numbers of the Summary had been printed and issued :—

1923. Jan. 22d. 9h. 4m. 8s. Epicentre 41°·1N. 125°·5W.
(given by Berkeley ; see revised solution which follows).

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mazatlan	E.	24·0	132	5 42	+14	10 4	+20	11·4	16·8
	N.	24·0	132	5 41	+13	10 3	+19	11·6	15·6
Colima	E.	29·6	134	6 31	+ 7	11 15	−12	14·8	20·4
Tacubaya		31·2	126	6 58	+18	11 58	+ 4	15·9	18·4
Vera Cruz		33·3	122	6 56	− 3	12 8	−21	17·5	21·5
Oaxaca		34·5	126	7 22	+13	12 37	−11	17·5	20·6
Merida		36·4	113	6 37	−58	12 8	−68	15·8	24·5

Mazatlan and Colima readings have been diminished by 7m. and 13m. respectively. Vera Cruz readings given as at 4h. Oaxaca readings increased by 3m. Merida readings given as at 8h.

1923. Jan. 22d. 9h. 4m. 8s. Revised epicentre 39°·7N. 124°·6W.
(both these solutions appear in the Summary).

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mazatlan	22·6	131	5 42	+30	10 4	+47	11·4	16·8
	22·6	131	5 41	+29	10 3	+46	11·6	15·6
Colima	28·1	134	6 31	+22	11 15	+14	27·8	33·4
Tacubaya	29·8	126	6 58	+32	12 8	+27	15·9	18·4
Vera Cruz	31·9	122	6 56	+10	12 8	+ 1	17·5	21·5
Oaxaca	33·1	125	7 22	+25	12 37	+11	17·5	20·6
Merida	35·2	112	6 37	−38	12 8	−50	15·8	24·5

Jan. 27d. 8h. 4m. 0s. Epicentre 39°·7N. 105°·0W.

	Δ	Az.	P.	O−C.	L.	M.
	°	°	m. s.	s.	m.	m.
Mazatlan	16·6	185	6 43	?S	7·6	7·8
Tacubaya	20·9	165	4 34	−18	8·1	8·8
Vera Cruz	21·9	157	—	—	—	3·1

Tacubaya readings have been increased by 8m.

Feb. 2d. 1h. 6m. 15s. Epicentre 50°·5N. 164°·0E.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Tacubaya	79·3	72	12 50	+35	22 48	+33

Feb. 2d. 5h. 7m. 15s. Epicentre 50°·5N. 164°·0E.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	79·3	72	12 44	+29	22 44	+29	34·9	44·1

Feb. 3d. 16h. 1m. 36s. Epicentre 54°·0N. 161°·0E.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mazatlan	72·9	74	—	—	—	—	31·1	39·2
Tacubaya	80·0	71	12 37	+18	22 45	+22	35·8	44·2
Vera Cruz	81·8	68	12 32	+ 3	22 52	+ 8	35·2	46·9
Oaxaca	83·2	70	12 54	+17	23 15	+16	35·8	42·4
Merida	83·8	62	13 33	+52	23 15	+ 8	41·4	46·2

Oaxaca readings have been increased by 2m.

Feb. 8d. 0h. 33m. 24s. Epicentre 18°·2N. 97°·5W.

	Δ	Az.	P.	O−C.	L.	M.
	°	°	m. s.	s.	m.	m.
Oaxaca	1·3	149	0 23	+ 3	0·9	1·2
Vera Cruz	1·6	52	1 42	+78	2·7	2·8
Tacubaya	2·0	323	0 45	+14	1·0	1·3
Colima	5·9	271	4 26	+175	5·3	6·4
Merida	7·9	67	2 28	+28	4·1	4·8
Mazatlan	9·7	303	—	—	12·6	12·9

Oaxaca readings have been increased by 3m.

Feb. 24d. 7h. 34m. 30s. Epicentre 55°·0N. 162°·5E.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	78·8	72	12 11	− 1	22 9	− 1	33·5	43·9
Vera Cruz	80·6	70	—	—	—	—	—	52·6

The receipt of belated information from the Mexican stations made it clear that the solution formerly given for the following earthquake required considerable revision. The former T_0 = 37m.20s., epicentre 37°·7N. 118°·5W. must be altered as below :—

Feb. 27d. 20h. 31m. 40s. Epicentre 19°·6N. 106°·5W. (as on 1919 April 18d.).

A = −·268, B = −·903, C = +·336; D = −·959, E = +·284; G = −·095, H = −·322, K = −·942.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Colima		3·0	118	0 50	+ 3	—	—	1·5	1·9
Mazatlan	Z.	3·6	2	2 8?	?	—	—	3·7	4·9
Tacubaya		6·9	91	1 48	+ 3	—	—	3·1	4·3
Vera Cruz		9·8	91	2 28	+ 1	—	—	5·0	5·7
Tucson	E.	13·2	344	—	—	—	—	e 8·0	9·7
	N.	13·2	344	—	—	—	—	e 9·0	11·0
Lick	N.	22·1	327	—	—	—	—	e 9·8	—
Berkeley	E.	22·8	326	6 19	+64	10 56	?L	(10·9)	—
	N.	22·8	326	6 32	+77	11 10	?L	(11·2)	—
Chicago		27·3	32	10 34	?S	(10 34)	−12	(15·0)	—
Ann Arbor		29·8	35	11 32	?S	(11 32)	+ 1	e 18·7	—
Victoria	E.	31·8	340	12 35	?S	(12 35)	+80	17·1	23·4
Georgetown	N.	31·9	46	e 12 42	?S	(e 12 42)	+35	(17·7)	—
Washington		31·9	46	e 10 20	?S	(10 20)	−107	(14·8)	—
Ithaca		34·0	41	—	—	e 12 33	− 7	e 19·1	—
Fordham	E.	35·0	45	—	—	—	—	e 19·9	—
Ottawa		36·2	38	13 14	?S	(13 14)	+ 1	e 20·0	—
Honolulu		48·1	281	—	—	—	—	e 23·3	—
Ekaterinburg		102·8	7	—	—	33 48	?SR_1	42·3	—

Additional readings and notes: Colima readings have been diminished by 4m. Tacubaya readings are given as on 26d. Berkeley gives also PE = +7m.40s. and PN = +7m.0s. Ann Arbor S = +16m.20s. Victoria SE = +15m.26s., SN = +15m.23s., MN = +22·9m. Georgetown and Washington Ls are given as S. Fordham LE = +23·3m. Ottawa S = +17m.46s., L = +22·1m.

Mar. 19d. 11h. 13m. 6s. Epicentre 6°·0N. 84°·0W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	20·0	313	4 54	+13	8 46	+23	9·8	13·4

April 13d. 15h. 30m. 54s. Epicentre 55°·7N. 162°·5E.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	78·6	72	12 4	− 7	22 3	− 4	42·6	47·2

May 4d. 16h. 26m. 32s. Epicentre 54°·5N. 156°·5W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	55·5	106	9 56	+13	17 37	+ 9	25·8	30·8

May 4d. 22h. 26m. 40s. Epicentre 28°·5S. 71°·5W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	54·9	327	9 39	+ 1	17 18	− 2	23·8	30·6

June 18d. 8h. 15m. 45s. Epicentre 18°·5S. 176°·0W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	84·3	67	12 41	− 3	22 56	−15	36·9	—

June 19d. 22h. 43m. 30s. Epicentre 61°·8N. 151°·0W.

	Δ	Az.	P.	O−C.	L.
	°	°	m. s.	s.	m.
Tacubaya	55·3	116	9 40	− 1	30·5

July 4d. 8h. 12m. 38s. Epicentre 2°·6S. 105°·8W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	22·9	16	5 12	− 4	9 57	+34	11·9	12·2

July 10d. 0h. 28m. 54s. Epicentre 30°·5S. 73°·0W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	55·9	330	10 . 2	+17	17 41	+ 8	23·5	30·4

July 12d. 3h. 15m. 30s. Epicentre 16°·5S. 180°·0.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Tacubaya	87·1	69	12 56	− 4	22 14	−88

July 16d. 13h. 38m. 25s. Epicentre 16°·0S. 168°·0E.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington	26·0	168	e 5 5	−43	e 10 11	−11	i 12·9	13·8

Also several e readings.

July 22d. 14h. 17m. 54s. Epicentre 51°·6N. 172°·0E.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington	92·9	178	—	—	i 24 24	−20	e 45·4	48·1

Wellington $ePR_1 = +17$m.12s., $ePR_2 = +19$m.12s., $eSR_1 = +30$m.54s., $eSR_2 = +35$m.12s.

July 23d. 7h. 30m. 18s. Epicentre 33°·0N. 119°·0W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	22·3	123	4 55	−14	9 33	+22	11·8	—

Aug. 8d. 12h. 1m. 27s. Epicentre 10°·6N. 65°·6W.

	Δ	Az.	P.	O−C.	S.	O−C.
	°	°	m. s.	s.	m. s.	s.
Tacubaya	−1·9	33·6	289	6 43	− 1	12 16	+13

Aug. 10d. 22h. 14m. 38s. Epicentre 7°·0S. 145°·0E.

	Δ	Az.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m.	m.
Wellington	43·3	147	e 16 22	+90	19·9	20·4

Aug. 11d. 0h. 54m. 15s. Epicentre 5°·0N. 120°·0E.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington	68·1	138	13 45	?PR_1	20 21	+18	e 29·6	31·8

Aug. 17d. 12h. 10m. 25s. Epicentre 9°·0S. 141°·0E.

	Δ	Az.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m.	m.
Wellington	44·0	143	e 13 41	−81	e 18·9	22·9

Aug. 23d. 5h. 12m. 45s. Epicentre 5°·0S. 95°·0W.

	Δ	Az.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m.	m.
Tacubaya	24·7	350	9 37	−20	15·8	18·7

Tacubaya 3min. have been added.

Aug. 28d. 23h. 15m. 12s. Epicentre 26°·0N. 107°·0W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mazatlan	2·8	170	0 37	− 7	—	—	1·5	2·2
Colima	8·4	158	0 7	?	—	—	2·0	3·4
Tacubaya	9·7	131	2 34	+ 8	4 56	+35	5·4	6·5
Vera Cruz	12·1	122	1 16	?	—	—	5·1	6·3
Oaxaca	13·0	131	1 9	?	—	—	5·2	6·0
Merida	16·7	104	2 24	?	6 6	−65	7·9	11·0
Wellington	98·7	228	—	—	e 24 12	[− 6]	e 41·8	45·8

Vera Cruz readings are given for 27d.

Sept. 1d. 2h. 58m. 28s. Epicentre 35°·0N. 139°·5E.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Mazatlan	94·6	57	14 4	+23	—	—	40·2	55·5
Colima	99·9	59	13 53	−17	24 32	−83	40·2	51·6
Tacubaya	102·1	56	14 55	+34	25 40	−36	43·4	58·9
Vera Cruz	104·3	54	14 36	+ 5	—	—	40·5	63·5
Oaxaca	105·4	56	—	—	—	—	41·2	—
Merida	107·1	48	16 33	?	—	—	—	81·0

Sept. 2d. 22h. 33m. 0s. Epicentre 15°·0S. 66°·0W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Merida	42·8	326	5 36	−101	—	—	—	12·0
Tacubaya	47·5	315	8 23	−28	15 8	−40	20·5	—

All readings diminished by 5m.

Sept. 28d. 21h. 0m. 12s. Epicentre 3°·0N. 85°·0W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya	21·5	321	5 22	+23	10 0	+65	11·9	13·5

Sept. 30d. 1h. 20m. 35s. Epicentre 54°·5N. 33°·0W.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Merida	53·9	255	8 28	−64	—	—	21·8	30·7
Vera Cruz	59·0	259	8 9	−116	16 17	−114	22·0	46·8
Tacubaya	60·6	262	10 32	+16	18 49	+18	32·1	38·6
Mazatlan	61·8	271	—	—	—	—	32·7	39·4

Jan. 4d. 22h. (Oaxaca and Tacubaya), 23h. (Oaxaca and Tacubaya). 6d. 17h. (Puebla). 8d. 9h. (Merida). 9d. 18h. (Tacubaya). 10d. 5h. (Tacubaya), 14h. (Tacubaya). 11d. 20h. (Merida and Tacubaya). 17d. 8h. (Tacubaya). 20d. 0h. (Tacubaya), 6h. (Tacubaya). 23d. 7h. (Tacubaya). 24d. 20h. (Oaxaca), 21h. (Tacubaya). 25d. 14h. (Tacubaya, Oaxaca, and Vera Cruz), 19h. (Tacubaya). 26d. 8h. (Colima), 20h. (Tacubaya). 27d. 0h. (Tacubaya). 30d. 12h. (Tacubaya). 31d. 9h. (Oaxaca and Tacubaya), 16h. (Merida and Tacubaya).

Feb. 1d. 18h. (Oaxaca, Merida, and Tacubaya). 6d. 21h. (Tacubaya). 7d. 14h. (Colima). 8d. 14h. (Oaxaca, Tacubaya, Merida, and Vera Cruz), 17h. (Tacubaya). 9d. 3h. (Merida and Tacubaya), 20h. (Tacubaya), 10d. 8h. (Tacubaya), 11h. (Tacubaya), 13h. (Tacubaya). 13d. 12h. (Tacubaya), 19h. (Tacubaya), 20h. (Merida), 21h. (Vera Cruz). 14d. 2h. (Tacubaya), 14h. (Tacubaya), 15h. (Vera Cruz and Oaxaca), 20h. (Tacubaya), 22h. (Oaxaca). 18d. 21h. (Tacubaya and Oaxaca), 22h. (Merida). 20d. 19h. (Oaxaca, Vera Cruz, and Tacubaya). 21d. 11h. (Oaxaca), 12h. (Vera Cruz and Tacubaya). 22d. 3h. (Tacubaya), 16h. (Tacubaya). 23d. 6h. (Tacubaya), 10h. (Oaxaca), 12h. (Tacubaya). 24d. 11h. (Puebla, Oaxaca, Vera Cruz, and Tacubaya), 16h. (Tacubaya (2)). 25d. 19h. (Colima). 26d. 10h. (Vera Cruz and Tacubaya), 13h. (Oaxaca and Tacubaya), 14h. (Tacubaya). 27d. 4h. (Merida), 6h. (Tacubaya, Oaxaca, and Vera Cruz).

Mar. 2d. 17h. (Tacubaya). 3d. 17h. (Tacubaya (3)). 4d. 22h. (Puebla, Oaxaca, Tacubaya, Vera Cruz, and Merida). 6d. 0h. (Tacubaya). 9d. 0h. (Tacubaya), 6h. (Tacubaya). 11d. 12h. (Tacubaya). 12d. 23h. (Tacubaya). 14d. 0h. (Tacubaya). 21d. 14h. (Merida). 22d. 4h. (Tacubaya), 5h. (Tacubaya). 23d. 2h. (Tacubaya). 26d. 13h. (Colima). 27d. 11h. (Merida). 30d. 10h. (Tacubaya). 31d.13h. (Tacubaya).

April 1d. 13h. (Tacubaya). 2d. 1h. (Oaxaca), 18h. (Oaxaca). 3d. 12h. (Vera Cruz). 4d. 12h. (Tacubaya and Oaxaca). 11d. 16h. (Oaxaca). 19d. 23h. (Tacubaya). 20d. 5h. (Oaxaca), 16h. (Vera Cruz, Tacubaya, Merida, and Oaxaca). 22d. 1h. (Tacubaya). 23d. 14h. (Tacubaya), 22h. (Tacubaya). 24d. 4h. (Tacubaya). 26d. 3h. (Tacubaya), 5h. (Tacubaya). 27d. 6h. (Tacubaya), 13h. (Tacubaya). 28d. 6h. (Oaxaca). 30d. 5h. (Tacubaya), 15h. (Tacubaya and Merida).

May 1d. 15h. (Merida), 16h. (Tacubaya), 17h. (Merida and Tacubaya). 2d. 11h. (Tacubaya). 3d. 4h. (Tacubaya). 5d. 8h. (Oaxaca), 19h. (Tacubaya). 6d. 4h. (Puebla), 20h. (Tacubaya). 7d. 4h. (Vera Cruz and Tacubaya). 10d. 14h. (Tacubaya). 17d. 21h. (Tacubaya). 19d. 14h. (Tacubaya). 20d. 19h. (Tacubaya). 27d. 14h. (Tacubaya). 28d. 8h. (Tacubaya). 30d. 19h. (Tacubaya). 31d. 2h. (Tacubaya and Oaxaca).

June 4d. 20h. (Vera Cruz and Tacubaya). 5d. 6h. (Tacubaya). 6d. 1h. (Vera Cruz and Tacubaya). 8d. 20h. (Tacubaya (2)). 9d. 5h. (Tacubaya). 14d. 11h. (Tacubaya). 21d. 19h. (Tacubaya). 22d. 7h. (Tacubaya). 24d. 20h. (Tacubaya). 27d. 9h. (Tacubaya).

July 2d. 7h. (Tacubaya), 21h. (Tacubaya and Oaxaca). 4d. 8h. (Tacubaya), 19h. (Tacubaya), 20h. (Colima). 10d. 1h. (Tacubaya and Merida). 14d. 7h. (Tacubaya). 15d. 10h. (Tacubaya). 16d. 13h. (Wellington). 20d. 13h. (Tacubaya), 18h. (Tacubaya), 19h. (Tacubaya). 21d. 0h. (Tacubaya), 2h. (Colima), 12h. (Tacubaya), 14h. (Tacubaya), 22h. (Colima and Tacubaya). 22d. 1h. (Tacubaya), 5h. (Tacubaya). 23d. 9h. (Tacubaya and Vera Cruz). 24d. 21h. (Colima, and Tacubaya (3)). 26d. 1h. (Colima). 28d. 21h. (Merida).

Aug. 3d. 16h. (Colima). 7d. 1h. (Colima and Tacubaya). 11d. 13h. (Wellington). 13d. 16h. (Wellington), 17h. (Tacubaya), 18h. (Wellington), 20h. (Tacubaya), 22h. (Tacubaya and Vera Cruz). 15d. 15h. (Tacubaya). 16d. 0h. (Tacubaya), 1h. (Tacubaya). 17d. 12h. (Wellington). 18d. 16h. (Tacubaya (2)), 22h. (Tacubaya (3)). 19d. 10h. (Wellington (2)), 12h. (Wellington (2)). 20d. 0h. (Tacubaya (2), Oaxaca, Vera Cruz, and Merida), 9h. (Wellington). 24d. 6h. (Tacubaya), 19h. (Oaxaca). 25d. 5h. (Oaxaca and Tacubaya), 23h. (Tacubaya and Colima).

Sept. 5d. 1h. (Oaxaca), 2h. (Tacubaya), 16h. (Merida). 8d. 0h. (Tacubaya). 9d. 8h. (Tacubaya), 9h. (Tacubaya), 14h. (Tacubaya (3)). 12d. 16h. (Tacubaya, Oaxaca, and Vera Cruz). 15d. 16h. (Tacubaya). 16d. 22h. (Tacubaya). 23d. 20h. (Tacubaya). 24d. 0h. (Tacubaya), 2h. (Puebla), 7h. (Merida and Tacubaya). 25d. 2h. (Tacubaya and Vera Cruz). 29d. 1h. and 12h. (Tacubaya). 30d. 9h. (Merida).

TABLE.

Degrees.	P sec.	S sec.	S − P sec.	Degrees.	P sec.	S sec.	S − P sec.	Degrees.	P sec.	S sec.	S − P sec.
1	15	28	13	51	553	991	438	101	855	1565	710
2	31	55	24	52	560	1004	444	102	860	1575	715
3	47	83	36	53	566	1016	450	103	865	1584	719
4	62	110	48	54	573	1029	456	104	870	1593	723
5	77	137	60	55	579	1041	462	105	874	1602	728
6	92	164	72	56	586	1054	468	106	879	1612	733
7	106	190	84	57	592	1066	474	107	884	1621	737
8	121	217	96	58	599	1079	480	108	888	1630	742
9	136	243	107	59	605	1091	486	109	893	1639	746
10	150	269	119	60	612	1103	491	110	897	1648	751
11	164	294	130	61	619	1116	497	111	902	1657	755
12	179	319	140	62	625	1128	503	112	907	1666	759
13	193	344	151	63	632	1141	509	113	911	1674	763
14	206	368	162	64	638	1153	515	114	916	1682	766
15	219	392	173	65	645	1165	520	115	920	1690	770
16	232	415	183	66	651	1177	526	116	925	1698	773
17	245	438	193	67	658	1190	532	117	929	1706	777
18	257	460	203	68	664	1202	538	118	934	1714	780
19	269	482	213	69	671	1214	543	119	938	1722	784
20	281	503	222	70	677	1226	549	120	942	1729	787
21	293	524	231	71	683	1238	555	121	947	1737	790
22	305	545	240	72	690	1250	560	122	952	1744	792
23	317	565	248	73	696	1262	566	123	957	1752	795
24	328	584	256	74	702	1274	572	124	961	1759	798
25	338	603	265	75	709	1286	577	125	966	1766	800
26	348	622	274	76	715	1297	582	126	970	1773	803
27	358	641	283	77	721	1309	588	127	974	1780	806
28	368	659	291	78	727	1320	593	128	978	1787	809
29	378	677	299	79	733	1332	599	129	983	1794	811
30	388	694	306	80	739	1343	604	130	988	1801	813
31	398	711	313	81	745	1355	610	131	992	1807	815
32	407	728	321	82	750	1366	616	132	996	1814	818
33	416	744	328	83	756	1377	621	133	1001	1821	820
34	425	760	335	84	762	1388	626	134	1005	1827	822
35	433	775	342	85	768	1399	631	135	1009	1833	824
36	442	790	348	86	773	1410	637	136	1014	1840	826
37	450	804	354	87	779	1421	642	137	1018	1846	828
38	458	818	360	88	785	1432	647	138	1023	1852	829
39	466	832	366	89	790	1443	653	139	1027	1858	831
40	475	847	372	90	796	1454	658	140	1031	1864	833
41	483	861	378	91	801	1464	663	141	1035	1869	834
42	491	875	384	92	807	1475	668	142	1039	1875	836
43	498	888	390	93	812	1485	673	143	1043	1881	838
44	506	902	396	94	818	1496	678	144	1047	1886	839
45	513	915	402	95	823	1506	683	145	1051	1892	841
46	520	928	408	96	829	1516	687	146	1055	1897	842
47	527	941	414	97	834	1526	692	147	1059	1902	843
48	534	954	420	98	840	1536	696	148	1063	1907	844
49	540	966	426	99	845	1546	701	149	1067	1912	845
50	547	979	432	100	851	1556	705	150	1071	1917	846

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