The International Seismological Summary for 1924 April, May, June.

FORMERLY THE BULLETIN OF THE BRITISH ASSOCIATION SEISMOLOGY COMMITTEE.

The present number of the Summary deals with 107 epicentres, 33 of which are new and 74 repetitions from old epicentres. The average number of shocks dealt with in the five years 1918-1922 was 81 per 3 months, 35 being new and 46 old. For 1923 these numbers rose to 122 (47 and 75) and for Jan.—Mar. of this year they were 106 (22 and 84). It is not yet clear whether this represents a real increase in seismic activity, permanent or temporary, or is merely the result of greater vigilance on the part of existing and the establishment of new stations.

The publications have now reached a date when contributions from Russian stations are again available, after their unfortunate cessation owing to the War; and the information received from them has undoubtedly made it possible to identify epicentres which must, without them, have been relegated to the notes.

As regards abnormal focus, there are seven cases :—

Date.	d.	h.	Epicentre.		Focal Depth.
			o	o	
1924 April	3	2	+32·0	+139·0	+0·050
April	13	13	+ 1·0	+118·0	+0·015 or ·010
May	4	16	−22·0	+179·0	+0·060
May	25	13	−19·0	+179·0	+0·070
May	28	9	+48·0	+148·0	+0·060
June	22	16	− 6·5	+107·5	+0·020
June	30	15	+44·7	+147·6	+0·020

In nearly all these cases a discussion of the residuals has been given, showing the necessity of the assumption of deep focus, *or some alternative.*

The shocks which have attracted most attention recently were those in Palestine, especially on 1927 July 11. The damage was greatest in Jerusalem, Nazareth, Nablus, Ramallah, and Ramleh in Palestine, and Essalt and Irbid in Transjordan, but

there is not yet enough seismographic evidence to hand for fixing the epicentre very accurately. On July 14 the position was estimated at 32°·7N. 36°·2E., but this seems to be to the NE of the stricken area. The following particulars are taken from *The Times* of July 15 :—

> The damage to Government House is so serious that it will take two years to effect the necessary repairs, which will cost £30,000. Lord Plumer's effects were removed to safety and suffered very little damage.
>
> Relief work is being rapidly organised by district commissioners. The situation is most serious at Nablus, as the bakeries were either destroyed or are in the danger zone. Supplies are being sent from Jerusalem, and Telaviv has sent a consignment of 1200 loaves and many Jewish volunteers to help in clearing the *debris*. The Government has made grants of money to Nablus, Lydda, and Ramleh, and local donations were immediately forthcoming. Mr. Nathan Straus, of New York, telegraphed £5000. The Royal Air Force placed tents and other supplies at the disposal of the relief organisations.
>
> The economic effects of the earthquake are still problematical. Already at Nablus it has been found necessary to apply the Ottoman law for the purpose of preventing attempts at profiteering and cornering supplies. Nablus is the centre of the soap and tobacco industries, which constitute roughly half Palestine's exports. The immediate requirements for reconstruction will probably mitigate the present prevalent unemployment.
>
> During the wholesale destruction of the biochemical laboratory apparatus at the Hebrew University Dr. S. Adler, Director of the Department of Parasitology, succeeded in saving typhus and dysentery microbes. Mr. P. L. O. Guy, acting Director of Antiquities, states that no damage was done to the Palestine Museum, and generally antiquities have not suffered as seriously as might be expected. Rachel's Tomb was damaged, and has been closed for expert examination. In Jerusalem the premises of the Anglo-Palestine Bank and the Evelina de Rothschild School have been seriously damaged.

On July 22 there was a shock in latitude 35°·5N. 55°·0E., probably a repetition of that on September 17, 1923.

H. H. TURNER.

University Observatory, Oxford.
1927 Aug. 20.

1924 APRIL, MAY, JUNE.

April 1d. Readings at 0h. (Mobile), 4h. (De Bilt, Ekaterinburg (2), Eskdalemuir, Pulkovo, near Baku (2), and Taihoku), 7h. (Osaka, near Kobe, and near Nagasaki), 8h. (Nagoya), 11h. and 12h. (Taihoku), 15h. (near Zurich), 16h. (Vera Cruz), 22h. (La Paz and Eskdalemuir).

April 2d. Readings at 2h. and 3h. (Eskdalemuir), 4h. and 6h. (La Paz), 15h. (Toledo), 16h. (near Athens), 18h. (La Paz), 19h. (Ekaterinburg), 21h. (near Athens), 22h. (De Bilt and Ekaterinburg), 23h. (near Tacubaya).

April 3d. 1h. 17m. 30s. Epicentre 16°·2S. 165°·4E. (as on 1920 Oct. 24d.).

$A = -\cdot929$, $B = +\cdot242$, $C = -\cdot279$; $D = +\cdot252$, $E = +\cdot968$; $G = +\cdot270$, $H = -\cdot070$, $K = -\cdot960$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		21·8	213	e 1 48	?	e 9 42	+41	e 15·0	21·7
Sydney		21·8	213	8 50	?S	(8 50)	−11	13·3	17·2
Wellington		26·4	164	—	—	—	—	e 23·2	—
Adelaide		30·4	227	—	—	—	—	e 17·5?	19·3
Perth		47·4	241	—	—	e 15 46	0	—	—
Honolulu	N.	51·9	45	—	—	—	—	e 27·2	32·0
Manila		53·6	304	e 10 11	+41	—	—	—	—
Batavia	E.	58·1	273	1 9 53	− 7	—	—	—	—
Victoria	E.	90·2	38	—	—	—	—	51·6	52·9
Bombay		97·6	287	24 30	?S	(24 30)	−62	—	—
Ekaterinburg		111·6	325	e 19 16	?PR_1	26 0	−102	44·5	57·1
La Paz		117·9	120	21 30	?PR_1	—	—	—	—
Baku		119·7	307	e 20 48	?PR_1	—	—	52·5	—
Pulkovo		125·7	334	—	—	e 27 0	−151	63·5	—
De Bilt	E.	140·9	340	—	—	—	—	e 65·5	—
Strasbourg		142·8	335	—	—	—	—	e 67·5	—

Additional readings: Riverview MN = +25·3m. Wellington e = 1h.15m.47s., eL = +29·8m. Honolulu eE = +34·5m. Ekaterinburg MN = +50·4m., MZ = +57·3m. Baku e = +30m.42s., +33m.32s., and +40m.11s. De Bilt eLN = +67·5m.

April 3d. 2h. 30m. 30s. Epicentre 32°·0N. 139°·0E.

$A = -\cdot640$, $B = +\cdot556$, $C = +\cdot530$; $D = +\cdot656$, $E = +\cdot755$; $G = -\cdot400$, $H = +\cdot348$, $K = -\cdot848$.

A depth of focus 0·050 has been assumed. There are three Japanese stations giving consistent results, and three others in nearly the same azimuth (Ekaterinburg, Baku, and Pulkovo) which cannot be reconciled in Δ without the deep focus assumption.

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		+0·7	3·6	332	1 2	− 5	(1 49)	− 9	1·8	1·9
Osaka		+0·6	4·0	313	1 12	+ 1	(2 6)	0	2·1	2·8
Kobe		+0·5	4·2	311	1 11	− 2	(2 4)	− 5	2·1	2·1
Mizusawa	E.	−0·1	7·3	13	1 50	+ 1	3 16	+ 1	—	—
Nagasaki		−0·2	7·8	278	1 44	−11	—	—	1·9	—
Ekaterinburg		−5·3	57·5	320	1 9 22	+ 1	16 51	+ 5	26·5	30·6
Apia		−5·7	65·7	128	—	—	—	—	51·5	—
Baku		−5·9	69·3	305	e 10 29	− 5	—	—	—	—
Pulkovo		−5·9	71·3	330	10 42	− 5	19 29	− 1	34·5	40·6
Upsala		−6·0	76·3	334	—	—	—	—	e 39·5	—
Hamburg		−6·3	83·7	333	—	—	e 23 30	+97	e 40·5	—
Edinburgh		−6·4	86·4	340	—	—	—	—	—	48·5
De Bilt		−6·4	86·7	334	—	—	—	—	e 45·5	48·1
Strasbourg		−6·5	88·4	330	—	—	—	—	e 45·5	—
La Paz		—	150·9	64	19 24	[−33]	—	—	—	—

Additional readings: Osaka MN = +2·9m. Mizusawa PN = +1m.49s. Ekaterinburg i = +24m.5s., MN = +30·3m., MZ = +30·9m. Pulkovo e = +28m.8s., MZ = +39·5m. Upsala eLN = +40·5m. De Bilt MNZ = +51·4m.

April 3d. 2h. 48m. 30s. Epicentre 32°·0N. 74°·0E. (as on 1919 Sept. 5d.).

$A = +·234$, $B = +·815$, $C = +·530$; $D = +·961$, $E = -·276$; $G = +·146$, $H = +·509$, $K = -·848$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Simla	2·8	108	0 36	− 8	—	—	—	—
Bombay	13·1	185	4 13	+59	—	—	—	9·4
Hyderabad	15·1	163	4 2	+22	6 14	−20	6·8	9·5
Baku	21·1	300	1 58	−176	8 59	+13	11·0	13·0
Kodaikanal	22·0	171	10 12	?L	—	—	(10·2)	—

Baku gives also e = +7m.54s. and +9m.40s. If there was more than one shock the solution is obviously rendered uncertain.

April 3d. Readings also at 0h. and 2h. (Nagasaki), 11h. (near Tacubaya), 16h. (Taihoku), 20h. (Edinburgh, Uccle, De Bilt, Ekaterinburgh, and Strasbourg), 21h. (Kobe), 23h. (Strasbourg, Toronto, Lick, and near Berkeley).

April 4d. 21h. 54m. 10s. Epicentre 9°·0S. 121°·0E. (as on 1923 Oct. 15d.).

$A = -·509$, $B = +·847$, $C = -·156$; $D = +·857$, $E = +·515$; $G = +·081$, $H = -·134$, $K = -·988$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Malabar	13·4	277	i 3 12	− 6	5 43	−10	—	—
Batavia	14·3	280	i 3 26	− 4	i 6 7	− 8	—	—
Perth	23·5	191	(5 20)	− 3	(9 20)	−15	9·3	—
Manila	23·6	0	e 5 31	+ 7	—	—	—	—
Irkutsk	62·9	349	18 49	?S	(18 49)	−11	—	—
Baku	81·8	313	—	—	e 22 26	−18	39·3	—
Ekaterinburg	82·1	332	i 12 37	+ 6	e 22 26	−21	38·8	—
Pulkovo	98·1	330	e 13 37	−24	i 24 6	[− 8]	—	—
Eskdalemuir	116·4	328	—	—	—	—	e 51·5	—
West Bromwich	116·8	323	50 37	?L	—	—	(50·6)	—

Additional readings and notes: Perth gives P as S and S as L; also PR_1 = +2m.55s. Irkutsk S = +20m.54s. Baku e = +24m.7s., +34m.6s., and +54m.20s. Ekaterinburg i = +15m.44s.

April 4d. Readings also at 0h. (Toronto and Victoria), 3h. (La Paz, Ekaterinburg, Zi-ka-wei, and near Taihoku), 9h. (La Paz), 13h. (Zi-ka-wei), 14h. (Manila (2)), 17h. (Zi-ka-wei, Stonyhurst (2), and near La Paz), 23h. (Stonyhurst).

April 5d. Readings at 4h. (La Paz), 8h. (Pulkovo and Ekaterinburg), 11h. (Hyderabad), 12h. (near La Paz), 19h. (Pulkovo and Ekaterinburg), 20h. (Pulkovo and Ekaterinburg).

April 6d. 20h. 51m. 32s. Epicentre 6°·0S. 160°·0E.

$A = -·935$, $B = +·340$, $C = -·105$; $D = +·342$, $E = +·940$; $G = +·098$, $H = -·036$, $K = -·995$.

Very rough. If the Riverview readings are correct there must have been a second shock much closer to Riverview.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	29·0	195	e 9 56	+218	e 10 29	−48	e 14·1	15·4
Sydney	29·0	195	—	—	11 16	− 1	17·3	17·8
Wellington	37·7	162	—	—	—	—	e 15·4	—
Manila	43·9	299	e 8 20	− 5	—	—	—	—
Hong Kong	53·1	304	—	—	—	—	—	26·5
Irkutsk	75·0	328	e 11 50	+ 1	21 28	+ 2	35·5	49·2
Victoria E.	85·8	40	—	—	—	—	43·7	50·8

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ekaterinburg		100·2	326	e 18 52	?PR_1	e 24 43	[+18]	43·5	60·8
Toronto	E.	116·0	42	—	—	—	—	e 58·0	—
Ottawa		117·9	40	—	—	—	—	e 58·9	—
Eskdalemuir		128·9	347	—	—	—	—	68·5	—
De Bilt		129·5	339	—	—	—	—	e 60·5	—
Uccle		130·8	339	—	—	—	—	e 59·5	—
Strasbourg		131·4	335	—	—	—	—	e 42·5	—
Paris		133·1	340	—	—	—	—	e 80·5	—
Granada		145·4	336	—	—	—	—	e 84·0	87·9

Additional readings: Riverview MN = +18·5m. Irkutsk MN = +48·8m.
Toronto eL = +65·4m. Ottawa eL = +64·5m.

April 6d. Readings also at 7h. (near Tacubaya), 13h. (Apia), 14h. (Zi-ka-wei), 17h. (La Paz and Kobe), 19h. (Nagoya and near Mizusawa), 22h. (Nagasaki).

April 7d. Readings at 5h. (Taihoku), 6h. (near La Paz), 9h. (Manila), 13h. (near Oxford), 17h. (near La Paz).

April 8d. 9h. 43m. 10s. Epicentre 55°·0N. 35°·0W. (as on 1924 Mar. 28d.).

A = +·470, B = −·329, C = +·819; D = −·574, E = −·819;
G = +·671, H = −·470, K = −·547.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Eskdalemuir		18·0	76	—	—	—	—	6·8	—
Kew		20·9	84	—	—	—	—	—	11·8
Paris		23·6	89	e 5 30	+ 6	e 9 50	+14	12·8	14·8
De Bilt		23·7	80	5 25	0	9 31	− 7	e 11·3	14·4
Uccle		23·8	83	e 5 31	+ 5	9 39	− 1	11·3	—
Hamburg		25·8	74	e 5 50?	+ 4	—	—	—	16·8
Strasbourg		26·8	86	—	—	—	—	e 12·8	—
Ottawa		27·3	266	—	—	—	—	e 14·8	—
Upsala		28·0	58	—	—	e 10 50	− 9	—	—
Toronto	E.	30·5	266	—	—	e 13 0	+77	16·2	—
Florence		31·4	90	—	—	—	—	10·8	15·8
Pulkovo		34·1	55	e 6 50	−16	e 13 48	+66	—	—
Ekaterinburg		49·1	47	e 8 54	− 7	e 15 46	−21	20·8	—
Baku		55·3	67	—	—	e 17 27	+ 2	26·3	30·8

Additional readings: De Bilt MZ = +14·2m. Toronto eN = +18m.5s.,
LN = +19·1m. Ekaterinburg e = +19m.1s.

April 8d. Readings also at 0h. (Athens), 10h. (near Victoria), 11h. (Ekaterinburg and near Tacubaya), 13h. (near Taihoku), 14h. (near Kobe), 21h. (Batavia), 22h. (Manila, Apia, and near La Paz).

April 9d. Readings at 4h. (near Taihoku), 5h. (near Belgrade), 6h. (Colombo), 13h. (Rocca di Papa and near Taihoku), 14h. (Rocca di Papa, Ekaterinburg, and near La Paz), 17h. (near Taihoku), 19h. (Manila and Ekaterinburg), 20h. (Ekaterinburg), 22h. (Ekaterinburg, near Victoria, and near Tacubaya).

April 10d. 14h. 57m. 12s. Epicentre 40°·3N. 139°·5E. (as on 1921 Dec. 12d.).

A = −·580, B = +·495, C = +·647.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	E.	1·7	133	0 28	+ 2	0 50	+ 2	—	—
Nagoya		5·5	203	0 42	−43	—	—	—	—
Osaka		6·5	212	1 45	+ 6	(2 45)	−12	2·8	3·8
Kobe		6·6	213	1 39	− 2	2 17	−43	3·2	3·8

Mizusawa gives also SN = +49s.

April 10d. 19h. 21m. 50s. Epicentre 27°·0S. 176°·0W. (as on 1923 May 16d.).

A = −·889, B = −·062, C = −·454; D = −·070, E = +·998; G = +·453, H = +·032, K = −·891.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington	16·2	206	4 4	+ 9	6 57	− 3	e 8·0	12·4
Riverview	29·0	248	—	—	e 11 16	− 1	e 14·7	17·7
Sydney	29·0	248	5 58	−20	—	—	14·6	16·3
Irkutsk	105·1	321	e 25 51	?S	(e 25 51)	−52	29·2	—
Ottawa	115·8	50	—	—	—	—	e 53·8	—
Pulkovo	142·6	339	i 20 33	?PR_1	—	—	86·7	—
Eskdalemuir	151·2	9	—	—	—	—	e 61·0	—
De Bilt	154·9	358	—	—	—	—	e 96·2	—
Uccle	156·2	359	—	—	—	—	e 91·2	—
Strasbourg	158·2	353	—	—	—	—	e 100·2	—
Pompeii	163·7	331	e 41 10	?	—	—	—	—
Granada	168·0	31	—	—	—	—	e 88·2	100·2

Additional readings: Riverview MN = +15·2m. Ottawa e? = +56m.38s., eL = +66·2m. Eskdalemuir L = +86·2m. There appears to have been two shocks as indicated by Irkutsk, but all the readings are very rough.

April 10d. Readings also at 2h. (Rocca di Papa (2)), 5h. (near Batavia), 6h. (near Malabar), 8h. (De Bilt and Apia), 13h. (near Batavia and Malabar), 14h. (Strasbourg), 20h. (Irkutsk), 22h. (Manila).

April 11d. 7h. 18m. 14s. Epicentre 42°·5N. 15°·5E. (as on 1924 Mar. 26d.).

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.
Mostar	1·9	63	0 31	+ 2	0 49	− 4	—	0·9
Rocca di Papa	2·2	250	i 0 12	−22	—	—	—	—
Belgrade	4·2	56	i 1 5	0	i 1 55	0	e 3·0	3·3
Innsbruck N.W.	5·6	330	e 2 7	+40	e 5 40	?	—	—
Vienna	5·7	6	—	—	—	—	e 3·6	5·8
Strasbourg	8·1	320	—	—	—	—	e 5·8	—
Paris	11·0	310	—	—	—	—	e 10·8	—
Uccle	11·2	321	—	—	—	—	e 8·8	—
Hamburg	11·6	346	—	—	—	—	e 7·8	—
De Bilt	11·8	328	—	—	—	—	e 11·3	—
Granada	15·6	256	—	—	—	—	e 18·8	22·1
Eskdalemuir	17·6	323	—	—	—	—	e 8·7	—
Ekaterinburg	31·8	47	—	—	e 13 36	+91	15·8	—

Additional readings: Mostar i = +1m.8s. and +1m.40s. Rocca di Papa eP = +18s., PR_1 = +3m.12s.; all readings diminished by 1h. Vienna i = +4m.56s. Strasbourg eS? = +7m.16s., eL = +8·8m.

April 11d. 13h. 28m. 20s. Epicentre 49°·0N. 144°·0E. (as on 1924 Mar. 15d.).

A = −·531, B = +·386, C = +·755; D = +·588, E = +·809; G = −·611, H = +·444, K = −·656.

The Japanese stations are not in good agreement and suggest an origin more to the North-West.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ootomari	2·4	200	1 12	+35	1 49	+43	1·8	2·3
Sapporo	6·2	198	e 2 3	+28	—	—	4·3	—
Zi-ka-wei	24·5	232	—	—	—	—	e 13·2	—
Irkutsk	25·1	293	5 35	− 4	10 3	− 2	12·7	15·8
Hong Kong	35·6	231	18 30	?L	—	—	(18·5)	20·3

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ekaterinburg		47·7	314	8 54	+ 2	15 44	− 6	22·7	26·9
Kucino		58·6	321	—	—	—	—	e 30·9	32·9
Pulkovo		58·7	327	3 22	?	—	—	26·7	37·5
Upsala		62·8	334	—	—	—	—	e 35·7	37·5
Baku		63·1	301	e 16 6	?	e 19 9	+ 7	31·1	36·1
Hamburg		70·4	334	—	—	—	—	e 35·7	40·7
Eskdalemuir		72·2	342	—	—	—	—	38·7	—
De Bilt	E.	73·1	335	—	—	—	—	e 35·7	43·2
Uccle		74·4	335	—	—	—	—	e 35·7	—
Kew		75·1	338	—	—	—	—	—	46·7
Strasbourg		75·4	332	—	—	—	—	e 38·7	—
Paris		76·7	335	—	—	—	—	i 35·7	44·7
Ottawa		79·5	27	—	—	—	—	e 39·7	—
Toronto		79·9	30	—	—	—	—	44·3	—
Toledo		86·8	336	—	—	—	—	e 48·2	—
Granada		89·2	335	—	—	—	—	e 42·5	51·1
Rio Tinto		89·4	338	52 40	?L	—	—	(52·7)	55·7

Additional readings: Irkutsk MN = +16·0m. Ekaterinburg SR_1 = +19m.12s., MN = +26·6m., MZ = +30·6m. Kucino MN = +32·3m. Pulkovo MZ = +37·4m. Baku e = +26m.6s. De Bilt eLN = +37·7m. Paris L = +43·7m.

April 11d. 17h. 15m. 45s. Epicentre 44°·5N. 140°·0E. (as on 1920 Oct. 19d.).

A = −·546, B = +·458, C = +·701; D = +·643, E = +·766; G = −·537, H = +·451, K = −·713.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Sapporo		1·7	145	0 42	+16	—	—	1·0	1·2
Mizusawa	E.	5·5	170	1 23	− 2	1 58	−33	—	—
	N.	5·5	170	1 24	− 1	1 56	−35	—	—
Nagoya		9·6	195	1 11	−73	—	—	—	—
Zi-ka-wei		19·7	233	e 4 21	−16	—	—	—	—
Irkutsk		24·6	300	e 5 34	0	9 56	+ 1	13·2	18·7
Ekaterinburg		48·8	314	8 56	− 3	15 57	− 7	24·2	28·0
Pulkovo		61·0	328	—	—	—	—	32·2	—
Eskdalemuir		70·1	340	—	—	—	—	40·2	—
De Bilt		75·8	333	—	—	—	—	e 41·2	—
Uccle		77·2	333	—	—	—	—	e 41·2	—
Strasbourg		78·0	330	—	—	—	—	47·2	—

Additional readings: Irkutsk MN = +18·5m. Ekaterinburg SR_1 = +19m.41s., MN = +27·8m., MZ = +32·5m.

April 11d. Readings also at 3h. (near Zurich), 4h. (Wellington and near La Paz), 6h. (near Athens), 9h. (Barcelona, Wellington, Nagoya, and near Osaka), 13h. (near Nagasaki), 16h. (near Manila), 21h. (Ekaterinburg).

April 12d. 19h. 8m. 18s. Epicentre 34°·0N. 139°·5E. (as on 1916 April 21d.).

A = −·630, B = +·538, C = +·559; D = +·649, E = +·760; G = −·425, H = +·363, K = −·829.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		2·4	299	1 11	?S	(1 11)	+ 5	—	—
Osaka		3·4	278	0 54	+ 1	(1 30)	− 4	1·5	2·3
Kobe		3·7	282	2 42	?S	(2 42)	+60	3·3	3·3
Mizusawa	E.	5·3	14	1 26	+ 4	2 26	+ 1	—	—
Irkutsk		31·0	317	—	—	e 11 35	−16	13·7	—

Additional readings: Mizusawa SN = +2m.28s.

April 12d. 21h. 50m. 36s. Epicentre 15°·0S. 155°·0E. (as on 1922 April 10d.).

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

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview		19·1	190	—	—	e 10 18	?L	e 11·7	13·4
Manila		44·8	310	e 8 21	−11	—	—	—	—
Irkutsk		80·2	331	12 27	+ 7	22 39	+14	31·4	—
Victoria	E.	95·8	41	—	—	—	—	40·4?	44·4
Ekaterinburg		104·9	326	e 16 29	?PR_1	e 28 15	+94	46·4	61·2
Baku		111·1	309	—	—	e 29 47	+129	e 41·4	—
Pulkovo		120·1	331	—	—	—	—	e 59·4	—
Chicago		120·3	49	—	—	—	—	e 53·1	—
La Paz		127·0	125	56 48	?L	—	—	(56·8)	—
De Bilt		135·9	332	—	—	e 44 24	?	e 72·4	—
Eskdalemuir		136·4	340	e 22 24	?PR_1	—	—	66·4	—
Granada		150·7	323	i 41 52	?SR_1	i 53 13	?	e 74·4	84·6

Additional readings: Riverview eP? = 21h.45m.18s., MN = +13·2m. Ekaterinburg MN = +63·3m., MZ = +68·4m. De Bilt eLN = +73·4m. Granada i = +45m.15s., +60m.44s., and +62m.37s.

April 12d. Readings also at 0h. and 2h. (Ekaterinburg), 5h. (Manila), 7h. (near Athens), 10h. (Toronto), 13h. (near Osaka and Kobe), 14h. (Batavia), 18h. (Manila).

April 13d. 13h. 47m. 55s. Epicentre 1°·0N. 118°·0E.

A = −·469, B = +·883, C = +·017; D = +·883, E = +·469; G = −·008, H = +·015, K = −1·000.

A depth of focus 0·015 has been assumed. Discussion of the residuals indicates that this is rather too much; 0·010 would be better, with epicentre 0°·5 further east. 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.
Malabar		−0·3	13·2	232	3 18	+ 6	—	—	i 7·0	—
Batavia		−0·3	13·2	237	3 6	− 6	i 6 1	+19	i 7·1	7·4
Manila		−0·3	13·9	12	i 3 29	+ 8	—	—	—	—
Hong Kong		−0·7	21·7	350	4 57	+ 4	8 58	+14	10·8	16·2
Taihoku		−0·8	24·3	8	1 30	?	3 25	?	5·5	—
Zi-ka-wei		−0·8	30·4	6	e 6 22	− 2	e 11 14	−13	—	18·4
Calcutta	E.	−1·2	36·0	311	5 51	−80	—	—	—	—
Kobe		−1·2	37·3	25	7 23	0	—	—	8·8	8·9
Osaka		−1·2	37·4	25	7 29	+ 5	(13 17)	+ 4	13·3	15·4
Colombo		−1·3	38·5	280	7 23	− 9	17 5	?	23·2	25·7
Nagoya		−1·3	38·5	26	8 25	+53	—	—	—	—
Adelaide		−1·3	40·8	153	9 5	+74	e 16 47	?SR_1	e 23·9	28·1
Kodaikanal		−1·3	41·3	285	8 47	+52	—	—	24·5	26·9
Hyderabad		−1·3	42·2	297	7 51	−11	14 30	+10	20·8	32·2
Mizusawa		−1·4	43·6	28	(8 15)	+ 3	8 15	?P	—	—
Riverview		−1·4	46·7	142	e 8 38	+ 3	e 15 23	+ 4	e 22·4	31·6
Sydney		−1·4	46·7	142	7 35	−60	15 17	− 2	25·7	27·8
Bombay		−1·5	47·7	297	8 44	+ 3	10 48	?PR_1	11·6	33·5
Irkutsk		−1·6	52·6	350	i 9 19	+ 6	i 16 47	+16	24·1	34·9
Wellington		−1·9	66·4	138	—	—	i 19 42	+23	e 27·1	—
Ekaterinburg		−2·0	71·9	332	i 11 31	+15	i 20 48	+23	31·1	45·2
Baku		−2·0	73·4	314	i 11 37	+11	i 21 4	+21	39·4	47·6
Kucino		−2·1	83·6	329	11 45	−43	22 5	−36	48·1	56·8
Helwan		−2·1	86·6	300	12 47	+ 2	23 12	− 2	—	54·4
Pulkovo		−2·1	88·0	330	12 55	+ 2	i 23 22	− 7	48·6	61·8
Upsala		−2·2	94·3	331	e 17 5	?PR_1	e 23 56	[+ 2]	—	65·0
Vienna	Z.	−2·2	96·9	320	e 17 0	?PR_1	—	—	—	—
Sitka	E.	−2·2	98·2	32	—	—	—	—	e 63·3	64·8
Cape Town		−2·2	98·4	236	—	—	—	—	—	64·8
Hamburg		−2·2	99·8	325	e 17 59	?PR_1	e 24 48	[+ 5]	e 51·1	62·1

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.
Rocca di Papa	E.	−2·2	100·6	314	e 15 59	+117	—	—	—	—
Strasbourg		−2·2	102·5	320	14 5	− 7	e 27 15	+76	e 40·1	62·1
De Bilt	Z.	−2·2	103·0	325	e 14 8	− 6	e 27 25	+82	—	68·8
Uccle		−2·2	103·9	324	e 18 23	? PR_1	e 27 35	+83	e 47·1	61·1
Dyce		−2·2	104·9	331	18 41	? PR_1	24 50	[+2]	—	57·7
Paris		−2·2	105·7	322	e 17 40	? PR_1	e 27 54	+85	51·1	66·1
Edinburgh		−2·2	106·0	329	i 18 59	? PR_1	i 29 11	?	58·1	—
Eskdalemuir		−2·2	106·3	329	e 18 45	? PR_1	e 28 5	+91	53·1	—
Kew		−2·2	106·3	326	—	—	—	—	—	80·1
Stonyhurst		−2·2	106·5	327	e 20 20	? PR_1	—	—	(e 58·1)	—
Oxford		−2·2	106·8	326	18 55	? PR_1	27 47	+69	—	72·3
Victoria	E.	−2·2	107·8	37	28 38	? S	(28 38)	+110	51·8?	53·0
Toledo		—	113·3	315	e 19 36	? PR_1	e 30 31	?	e 51·8	72·7
Granada		—	114·0	312	i 18 47	[+13]	i 29 41	+99	e 59·1	73·0
Rio Tinto		—	116·0	313	51 5	? L	—	—	(51·1)	81·1
San Fernando		—	116·2	312	17 40	[−62]	29 40	+80	—	75·6
Chicago		—	131·4	24	—	—	—	—	e 81·1	—
Ottawa		—	132·1	11	—	—	—	—	60·1	—
Toronto	E.	—	132·8	16	e 39 35	? SR_1	—	—	e 88·6	—
Ithaca		—	134·7	13	—	—	—	—	e 82·6	—
Georgetown		—	137·8	16	e 21 5	? PR_1	—	—	66·4	—
La Paz		—	163·3	157	20 24	[+14]	31 38	?	48·1	53·4

Additional readings and notes: Malabar i = +6m.2s. and +7m.12s. Batavia i = +6m.10s. Zi-ka-wei MN = +19·1m., MZ = +19·4m. Calcutta PN = +5m.49s. Hyderabad PR_1 = +9m.35s. Riverview eSR_1 = +18m.49s., MN = +30·9m., MZ = +34·9m. Irkutsk SR_1 = +20m.49s., MZ = +35·2m. Ekaterinburg iPR_1 = +14m.8s., iPR_2 = +16m.56s., MN = +43·1m., MZ = +51·3. Kucino PR_1 = +15m.0s. Helwan readings have been increased by 1h. Pulkovo PR_1 = +16m.26s., PR_2 = +18m.22s., MZ = +57·8m., MN = +57·9m. Upsala MN = +57·2m. Sitka eN = +63m.18s., LN = +65·4m., MN = +65·7m. Hamburg MN = +58·1m. Rocca di Papa eN = +17m.5s. Strasbourg ePZ = +17m.36s., i = +18m.12s. and +24m.38s. De Bilt ePR_1 = +18m.21s., eE = +24m.45s., ME = +65·3m., MN = +71·4m. Eskdalemuir iE = +24m.59s. Oxford i = +25m.2s. (O − C. = [+6]). Victoria SE = +28m.45s. Toledo MNW = +69·9m. San Fernando MN = +77·6m. Ottawa i = +82m.5s. and +82m.45s. Toronto iE = +82m.41s., iN = +82m.44s. Georgetown eN = +22m.5s. and several L's.

NOTE ON APRIL 13d. 13h.

It seems desirable to show the evidence for abnormal focus, whenever assumed. In the present case the value of T_s falls under suspicion owing to the La Paz [P] residual of +14sec. (The residuals of Granada and San Fernando at $\Delta < 120°$ are of doubtful significance.) But eight observatories give fair support to the adopted value, the corrections to T_s indicated by Zi-ka-wei, Helwan, Ekaterinburg, Riverview, Baku, Irkutsk, Hong Kong, and Hyderabad being in that order +16s., +7s., +5s., +2s., −2s., −7s., −9s., −17s. Accepting it and grouping the stations in azimuth we get six groups well distributed round the epicentre, indicating corrections to Δ as follows:—

No. Stns.	Mean Az.	Coeff. (x)	Coeff. (y)	δΔ (1)	(2)	(3)	(4)	(5)	(6)
				°	°	°	°	°	°
5	19	+·32	+·95	−0·8	+0·2	−0·1	−0·2	+0·2	0·0
2	142	+·62	−·79	−1·2	+0·2	−0·3	−1·6	+0·7	−0·1
2	235	−·82	−·57	+0·1	+0·4	+0·3	−0·3	+0·1	0·0
4	294	−·91	+·41	−1·6	−0·1	−0·5	−1·5	−0·7	−0·9
3	325	−·57	+·82	−0·7	+1·3	+0·6	−0·2	+0·8	+0·4
2	350	−·17	+·98	−0·4	+0·6	+0·4	+0·2	+0·3	+0·3
Sums				±4·8	±2·8	±2·2	±4·0	±2·8	±1·7

If no abnormal depth be assumed the corrections would be as in column (1); solving for x and y to get a new position of the epicentre we get x = −0°·1 y = −0°·6. The revised residuals are shown in column (4). With the adopted depth ·015 we have column (2). Solving we get x = −0°·5 y = +0°·2. Residuals shown in column (5). With adopted depth ·010 we get column (3); x = −0°·4 y = +0°·0 residuals shown in column (6), which is best.

April 13d. Readings also at 1h. (Porto Rico), 10h. (Granada), 13h. (Taihoku), 14h. (near Victoria), 15h. (Georgetown and Taihoku (2)), 18h. (near Mostar), 23h. (Ekaterinburg).

April 14d. 8h. 57m. 12s. Epicentre 18°·0S. 173°·0W. (as on 1921 Nov. 29d.).

A = −·944, B = −·116, C = −·309; D = −·122, E = +·993; G = +·307, H = +·038, K = −·951.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Apia		4·3	17	e 1 2	− 5	e 2 18	+20	2·6	3·6
Wellington		25·5	202	e 4 18	−85	—	—	e 12·8	—
Riverview		35·7	236	—	—	e 13 6	0	e 18·2	24·5
Sydney		35·7	236	12 30	?S	(12 30)	−36	19·6	21·7
Honolulu	N.	42·0	21	—	—	—	—	e 19·6	—
Manila		72·8	292	—	—	e 20 48	−12	—	—
Victoria	E.	79·8	31	22 7	?S	(22 7)	−14	41·6	44·0
Zi-ka-wei		79·9	308	e 12 20	+ 2	—	—	—	—
Chicago		98·6	49	—	—	—	—	e 51·0	—
Toronto	E.	104·8	48	—	—	—	—	59·2	—
Ottawa		107·7	47	—	—	—	—	e 56·3	—
Ekaterinburg		124·5	328	e 19 17	[+12]	—	—	55·8	81·2
Pulkovo		135·0	344	e 20 4	[+34]	i 22 52	?PR_1	72·8	—
Eskdalemuir		141·8	9	—	—	—	—	76·8	—
De Bilt		145·9	2	e 19 48	[− 2]	—	—	e 77·8	—
Vienna	Z.	148·8	349	e 24 55	?PR_1	—	—	—	—
Paris		149·0	6	i 20 44	[+50]	—	—	79·8	—
Strasbourg		149·4	358	20 6	[+11]	—	—	e 86·8	—

Additional readings: Apia MNZ = +5·6m. Honolulu eE = +16m.48s. Victoria LN = +40·1m., MN = +43·0m. Chicago L = +58·1m. Ekaterinburg e = +20m.52s., +26m.12s., +27m.50s., +29m.42s., and +32m.58s., MN = +81·4m., MZ = +96·6m.

1924. April 14d. 16h. 20m. 15s. Epicentre 6°·5N. 127°·0E.

(as on 1923 Mar. 16d.).

A = −·598, B = +·793, C = +·113; D = +·799, E = +·602; G = −·068, H = +·090, K = −·994.

The antipodal observations both [P] and [S] suggest a T_e about 15sec. larger, but this is only supported by Mizusawa, Perth, and possibly Calcutta among the nearer stations.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		10·0	325	i 2 33	+ 3	—	—	i 6·0	—
Hokoto		18·5	338	i 4 27	+ 4	(i 7 56)	+ 5	i 7·9	10·8
Taihoku		19·3	345	2 25	?	—	—	5·7	8·4
Hong Kong		20·1	323	4 37	− 5	8 20	− 5	—	9·8
Malabar		23·7	235	i 5 25	0	i 10 3	+25	—	—
Batavia		23·8	238	e 5 28	+ 2	i 9 43	+ 3	14·1	—
Zi-ka-wei		25·3	349	i 5 35	− 6	e 9 39	−30	—	15·4
Nagasaki		26·4	6	5 56	+ 4	(10 36)	+ 6	10·6	16·1
Osaka		29·2	14	6 27	+ 7	(11 42)	+22	11·7	15·4
Kobe		29·2	14	6 21	+ 1	10 16	−64	14·5	15·4
Nagoya		30·1	16	5 55	−34	(11 44)	+ 8	11·7	21·5
Mizusawa	E.	35·0	19	7 14	+ 1	12 41	−14	—	—
Sapporo		38·7	16	7 56	+12	(13 47)	− 1	13·8	—
Perth		39·9	195	7 57	+ 3	14 0	− 5	21·7	22·4
Calcutta		40·6	297	8 25	+25	(14 49)	+34	14·8	25·7
Ootomari		42·4	15	8 7	− 7	(14 40)	0	14·7	21·9
Adelaide		42·9	166	i 8 33	+16	i 14 33	−14	—	—
Riverview		46·4	152	e 8 47	+ 4	i 15 41	+ 8	e 22·0	27·0
Sydney		46·4	152	8 45	+ 2	15 51	+18	25·4	26·4
Colombo		46·8	273	8 39	− 7	11 3	?PR_1	—	31·2
Hyderabad		48·6	288	8 48	−10	15 56	− 5	23·2?	33·8
Kodaikanal		49·1	278	(9 21)	+20	—	—	9·4	33·8
Irkutsk		49·4	342	i 8 58	− 5	16 12	+ 1	22·8	—
Dehra Dun		51·7	304	8 30	−48	15 35	−65	19·3	31·8
Simla	N.	52·6	305	e 9 39	+15	e 17 15	+24	e 34·0	—
Bombay		54·1	289	9 38	+ 4	17 17	+ 7	—	26·8
Apia		64·0	108	e 11 13	+35	19 47	+34	27·9	34·8
Wellington		64·7	143	i 10 54	+11	i 19 44	+23	32·0	33·5
Ekaterinburg		71·8	329	e 11 31	+ 3	20 47	− 1	—	—
Honolulu	E.	73·6	70	11 58	+18	22 3	+54	40·8	43·1
Baku		76·0	311	12 2	+ 7	—	—	—	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ksara		87·3	304	13 7	+ 6	i 23 42	− 2	—	—
Pulkovo		87·8	330	13 1	− 3	23 49	− 1	34·8	52·0
Sitka	E.	88·6	32	13 16	+ 8	23 17	[− 2]	41·8	45·4
Helwan		91·7	300	13 23	− 2	23 55	[+17]	—	53·4
Lemberg	E.	93·2	321	e 13 22	−11	e 24 8	[+21]	e 34·8	62·2
	N.	93·2	321	e 13 26	− 7	e 24 14	[+27]	—	53·2
Upsala		93·9	332	e 13 37	0	i 24 5	[+14]	e 40·8	57·5
Konigsberg		94·1	326	i 13 37	− 2	i 23 58	[+ 5]	e 40·2	48·8
Belgrade		97·0	318	e 13 53	− 1	i 24 28	[+20]	e 31·9	62·0
Victoria		97·9	39	14 2	+ 3	24 40	[+27]	41·0	46·8
Vienna		98·6	323	e 13 56	− 7	25 27	−15	39·8	50·2
Sarajevo		98·6	316	e 14 9	+ 6	e 24 38	[+22]	e 33·0	54·1
Mostar		99·2	316	e 14 23	+17	e 25 8	[+47]	e 32·8	55·8
Bergen		99·2	336	e 18 59	?PR_1	24 45	[+24]	—	61·8
Travnik		99·4	316	e 14 27	+20	e 25 15	[+54]	e 30·0	55·4
Sinj		99·9	316	14 40	+30	25 35	−20	32·8	54·8
Hamburg		100·2	328	e 14 7	− 5	i 24 45	[+20]	e 45·8	51·8
Johannesburg		100·9	244	25 45	?S	(25 45)	−19	41·8	53·8
Berkeley		101·9	49	e 14 19	− 1	25 1	[+27]	i 42·8	—
Innsbruck	N.E.	102·0	323	e 14 18	− 2	i 24 51	[+17]	e 46·8	59·4
Venice		102·2	320	e 14 7	−14	e 24 53	[+18]	e 32·8	68·7
Pompeii		102·4	314	e 14 35	+13	25 10	[+34]	33·8	54·8
Lick	N.	102·6	50	17 45	?	—	—	i 43·0	50·0
Rocca di Papa	E.	103·3	316	e 14 18	− 9	e 24 54	[+14]	e 33·6	56·8
	N.	103·3	316	e 14 7	−20	—	—	e 33·2	58·5
De Bilt		103·5	328	14 25	− 3	i 25 4	[+23]	e 42·8	54·5
Florence		103·5	320	14 15	−13	25 15	[+34]	49·8	57·8
Strasbourg		103·7	325	14 20	− 9	26 4	−26	41·8	52·0
Zurich		103·7	323	e 14 22	− 7	i 25 1	[+20]	—	—
Dyce		104·1	334	14 31	+ 1	25 1	[+18]	33·6	57·2
Uccle		104·5	327	e 14 28	− 4	i 25 8	[+23]	44·8	54·9
Moncalieri		105·3	320	14 31	− 5	25 27	[+39]	39·3	57·8
Edinburgh		105·4	333	i 17 33	?PR_1	25 9	[+20]	41·8	59·7
Eskdalemuir		105·8	333	14 37	− 1	25 17	[+26]	—	—
Stonyhurst		106·3	332	i 19 5	?PR_1	—	—	45·0	62·8
Paris		106·6	326	e 14 28	−14	i 25 16	[+21]	43·8	54·8
Kew		106·6	329	—	—	—	—	—	64·8
West Bromwich		106·9	330	19 2	?PR_1	(25 8)	[+12]	44·8	57·8
Bidston		106·9	332	18 27	[+15]	25 0	[+ 4]	36·8	56·8
Oxford		107·0	329	14 40	− 4	25 13?	[+16]	—	56·0
Capetown		109·0	235	15 6	+13	25 36	[+30]	51·5	81·8
Barcelona		110·5	319	19 19	?PR_1	e 29 7	+94	e 48·6	60·2
Tortosa	E.	111·9	319	—	—	29 17	+92	47·6	60·6
	N.	111·9	319	19 12	?PR_1	29 16	+91	46·5	60·6
Algiers		112·1	314	e 19 10	?PR_1	i 29 10	+83	46·8	59·8
Tucson	E.	112·7	50	—	—	e 25 30	[+ 9]	50·7	54·4
Toledo		115·4	320	15 13	− 9	i 29 41	+88	e 42·4	63·7
Granada		116·6	317	19 39	?PR_1	—	—	38·4	56·8
Rio Tinto		118·1	320	15 45	+11	—	—	—	69·8
San Fernando		118·7	318	20 1	?PR_1	30 20	?	—	83·8
Mazatlan		120·0	58	—	—	30 53	?	50·4	59·2
Chicago		122·3	30	21 15	?PR_1	30 51	?	59·8	—
St. Louis		123·2	34	—	—	—	—	e 53·0	62·8
Ann Arbor		123·8	26	20 51	?PR_1	31 3	?	52·2	—
Ottawa		124·3	17	e 19 16	[+12]	31 4	?	e 54·8	66·8
Toronto	E.	124·4	23	19 14	[+10]	30 59	?	i 60·1	66·2
	N.	124·4	23	—	—	31 0	?	55·7	66·4
Northfield		126·3	16	e 21 15	?PR_1	—	—	65·8	—
Ithaca		126·6	20	e 21 29	?PR_1	—	—	e 56·8	—
Tacubaya		127·7	60	19 35	[+22]	31 53	?	54·8	64·6
Halifax		128·0	60	i 21 33	?PR_1	—	—	e 59·8	—
Georgetown	E.	129·4	22	e 19 32	[+15]	23 12	?PR_1	39·8	—
Washington		129·4	22	19 31	[+14]	28 35	−82	74·8	—
Cheltenham	E.	129·6	22	19 57	[+40]	—	—	68·2	78·5
	N.	129·6	22	19 39	[+22]	—	—	67·4	68·5
Vera Cruz		130·3	58	18 27	[−52]	31 45?	?	58·4	84·4
Port au Prince		148·5	37	e 20 5	[+11]	36 45?	?	49·2	62·8
La Plata	E.	151·3	172	i 20 20	[+22]	—	—	65·6	103·9
	N.	151·3	172	20 20	[+22]	—	—	62·6	113·1
Porto Rico	E.	152·5	26	20 34	[+34]	—	—	73·5	83·2
	N.	152·5	26	20 22	[+22]	—	—	78·6	82·7
Rio de Janeiro	N.	161·1	209	e 20 39	[+30]	e 31 45	?	45·2	—
La Paz		162·1	125	i 20 25	[+16]	—	—	74·8	107·2

For Notes see next page.

NOTES TO APRIL 14d. 16h. 20m. 15s.

Additional readings and notes: Taihoku MN = +6·6m. Malabar i = +5m.31s., +5m.37s., and +5m.44s. Batavia i = +5m.35s. and a second set of readings. Zi-ka-wei MN = +12·8m., MZ = +15·9m. Osaka MN = +14·8m. Kobe MN = +15·7m. Nagoya S = +7m.17s. Mizusawa SN = +12m.42s. Sapporo eS = +10m.51s. Perth PR_1 = +9m.42s., PR_2 = +10m.21s., SR_1 = +18m.15s., SR_2 = +20m.10s. Calcutta LE = +15·3m., MN = +24·1m. Ootomari S = +9m.51s., MN = +15·0m. Riverview iP = +8m.48s. and +9m.1s., iPR_1 = +10m.41s. and +11m.1s., iS = +15m.49s., PS = +16m.9s., iSR_1 = +18m.50s. and +19m.49s., iSR_2 = +20m.27s., MN = +26·6m., MZ = +35·9m.; T_0 = 16h.20m.24s. Sydney PR_1 = +10m.39s., PR_2 = +11m.45s., SR_1 = +19m.9s., and several other L's. Simla eE = +17m.33s., +21m.51s., and +33m.21s. Apia eP = +11m.19s. and +14m.2s., PR_1 = +14m.36s., +18m.21s., and +24m.12s. Wellington PR_1 = +13m.39s., SR_1 = +23m.57s., SR_2 = +27m.40s.; T_0 = 16h.20m.13s. Ekaterinburg iP = +11m.34s., PR_1 = +14m.51s., PR_2 = +16m.7s. Honolulu SR_2E = +31m.37s., iE = +35m.6s.; T_0 = 16h.20m.5s. Pulkovo PR_1 = +16m.38s., PR_2 = +18m.37s., i = +23m.6s., MN = +46·1m., MZ = +49·6m. Sitka PR_1E = +16m.48s., PSN = +24m.11s., PSE = +24m.16s., SR_1E = +29m.10s., eSR_1N = +30m.21s., eN = +37m.36s., MN = +38·0m.; T_0 = 16h.20m.7s. Upsala MN = +52·1m. Konigsberg PE = +13m.41s., PR_1 = +17m.29s., PR_2 = +19m.19s., PR_2? = +20m.9s., iSE = +24m.48s., iSN = +24m.17s., PS = +24m.54s., i = +26m.59s., SR_1 = +29m.29s., MN = +52·2m. Belgrade PR_1 = +15m.52s., +17m.53s., +20m.22s., and +22m.7s., eSR_1 = +27m.30s., MN = +56·2m. Victoria MN = +42·3m.; T_0 = 16h.21m.37s. Vienna iPZ = +13m.57s., PR_1 = +18m.10s., PS = +24m.25s. and +26m.56s., SR_1 = +32m.24s., SR_2 = +36m.51s., MZ = +53·2m., MN = +55·8m.; also several i readings. Hamburg iPZ = +14m.10s., iPR_1Z = +18m.16s., ePR_1N = +18m.24s., iPR_1E = +18m.25s., PS = +25m.51s., eSR_1E = +32m.45s., eZ = +38m.4s. Berkeley PZ = +17m.53s., PR_1Z = +18m.19s., PR_1E = +18m.20s., PS = +25m.1s., PSE = +27m.33s. and +28m.16s., SR_1E = +33m.5s., iLNZ = +43·0m., eENZ = +43m.59s., iENZ = +48m.47s. Venice PR_1 = +20m.57s., SR_1 = +25m.37s., MN = +56·9m. Lick ePR_1N = +18m.36s., PS = +25m.1s., iPSN = +27m.1s., iN = +28m.50s. and +32m.3s., iSR_1N = +33m.21s., iSR_2N = +37m.6s., +37m.36s., iLN = +44·0m., MZ = +48·1m. Rocca di Papa ePR_1E = +17m.38s., iPR_1N = +17m.54s. De Bilt PR_1 = +18m.42s., PR_2 = +20m.48s., iSN = +25m.5s., MZ = +54·0m., MN = +56·4m. Florence P = +13m.10s., S = +27m.45s., L = +52·8m. Strasbourg PR_1 = +18m.45s., e = +19m.32s., and +25m.3s., MN = +49·9m., MZ = +57·8m. Dyce PR_1 = +18m.46s. Uccle PR_1 = +18m.50s., i = +28m.5s., SR_1 = +33m.36s., MZ = +55·1m., MN = +56·4m. Moncalieri MN = +60·8m. Edinburgh PR_1 = +18m.59s. Eskdalemuir iPR_1 = +18m.59s. Stonyhurst PR_1? = +25m.15s. Paris PR_1 = +19m.7s., MN = +55·8m. West Bromwich S is given as PR_1, MN = +69·8m. Oxford PR_1 = +19m.17s. Barcelona PR_1 = +21m.53s. and 25m.42s. (?[S]), ? = +32m.50s. and +34m.52s., MN = +53·9m. Tucson PR_2E = +22m.2s., PSE = +29m.25s., SR_1E = +35m.0s., SR_2E = +39m.27s., eE = +50m.42s., LE = +58·8m.; T_0 = 16h.20m.15s. Toledo PR_1 = +20m.6s., PR_2NW = +22m.7s., PR_2EZ = +22m.9s., PR_2NW = +26m.11s., PR_2NE = +26m.12s., PR_2Z = +26m.22s., MNW = +57·2m., MZ = +61·3m. Granada gives several i readings, also MN = +64·1m. San Fernando MN = +79·8m. Mazatlan MN = +63·2m., MZ = +64·6m. Chicago PR_1 = +26m.43s. St. Louis ePR_1N = +20m.45s., ePR_1E = +20m.55s., S_cP_cSE = +26m.11s., S_cP_cSN = +26m.21s., $S_cP_cP_cSE$ = +27m.45s., ePSE = +30m.38s., ePSN = +30m.57s., eN = +36m.25s., SR_1E = +37m.45s., eLN = +52·2m., MN = +63·8m. Ann Arbor SR_1 = +38m.9s. Ottawa PR_1 = +23m.34s.; also several e and i readings. Toronto gives several other i readings for both components. Ithaca e = +22m.33s. and +24m.8s., i = +26m.34s., e = +28m.19s. Halifax i = +22m.49s. and +26m.36s., e = +28m.27s., and +39m.3s. Georgetown PR_1N = +21m.48s., SN = +23m.13s., eLEN? = +31·8m., LN = +40·0m. Washington i = +21m.39s., PR_1 = +23m.0s. Cheltenham PR_2N = +22m.47s., PR_1E = +22m.53s., SR_1N = +39m.10s., SR_2E = +44m.16s., SR_2N = +44m.20s., eN = +57m.6s., L = +62·8m.; T_0 = 16h.20m.29s. Port au Prince iP = +21m.14s., PR_1 = +22m.23s. La Plata PR_1N? = +23m.52s., PR_2N? = +27m.38s., SR_1E = +43m.31s., SR_1N = +44m.21s., SR_2E = +51m.16s.; T_0 = 16h.20m.16s. and several other readings. "Porto Rico PSE = +34m.31s., SR_1E = +43m.33s., SR_1N = +45m.24s., SR_2E = +49m.4s., eE = +63m.49s.; T_0 = 16h.20m.23s.

April 14d. **Readings also at 0h. (Granada and Ekaterinburg), 4h. (Wellington), 5h. (Eskdalemuir), 6h. (near Nagasaki), 7h. (La Plata and near La Paz), 15h. (Irkutsk), 17h. (near Batavia), 18h. (Manila, La Paz, and near Batavia), 20h. (Irkutsk, La Paz, Ekaterinburg, and Rocca di Papa), 23h. (La Paz).**

April 15d. 12h. 36m. 0s. Epicentre 6°·5N. 127°·0E. (as on 14d.).

A = −·598, B = +·793, C = +113 ; D = +·799, E = +·602 ;
G = −·068, H = +·090, K = −·994.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hong Kong	20·1	323	—	—	—	—	—	13·0
Zi-ka-wei	25·3	349	i 5 33	− 8	9 48	−21	—	15·2
Ekaterinburg	71·8	329	i 11 34	+ 6	20 53	+ 5	e 30·7	—
Baku	76·0	311	e 12 6	+11	—	—	—	—
De Bilt	103·5	328	—	—	—	—	e 55·0	—
Strasbourg	103·7	325	—	—	—	—	63·0	—
Uccle	104·5	327	—	—	—	—	—	46·0

Additional readings and notes: Ekaterinburg L = +28·0m. ; all readings have been increased by 17m. Baku L = 12h.34m.18s.

April 15d. 12h. 48m. 34s. Epicentre 46°·2N. 7°·9E. (given by Zurich).

A = +·686, B = +·095, C = +·722 ; D = +·137, E = −·991 ;
G = +·715, H = +·099, K = −·692.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Neuchatel		1·1	320	0 17	0	0 31	0	—	—
Moncalieri		1·2	187	0 17	− 1	0 36	+ 3	—	0·9
Zurich		1·3	22	i 0 21	+ 1	i 0 37	+ 1	—	—
Chur		1·3	60	i 0 20	0	i 0 37	+ 1	—	—
Strasbourg		2·4	358	0 36	− 1	1 6	0	1·4	1·5
Venice		3·2	102	i 0 50	0	i 1 2	−26	—	1·6
Florence		3·4	135	0 46	− 7	(1 11)	−23	—	1·9
Paris		4·5	308	e 1 8	− 2	e 2 8	+ 4	2·6	3·3
Uccle		5·2	335	e 1 16	− 4	—	—	e 2·6	—
Rocca di Papa	E.	5·6	139	e 2 12	+45	e 3 54	?	3·9	—
	N.	5·6	139	e 2 19	+52	e 4 12	?L	—	—
Vienna		6·1	67	i 1 28	− 5	2 37	− 9	—	3·8
De Bilt		6·2	345	e 2 2	+27	(3 2)	+13	3·0	3·8
Barcelona		6·3	222	e 1 37	+ 1	e 2 54	+ 2	e 3·3	3·8
Hamburg		7·5	10	e 2 26	+32	—	—	—	6·0
Tortosa		7·5	227	1 51	− 3	3 59	+35	4·2	5·7
Oxford		8·2	317	—	—	3 30	−12	4·3	—
Toledo		10·8	239	5 29	?S	(5 29)	+39	6·2	7·6
Lemberg	E.	11·4	66	e 6 30	?L	—	—	(e 6·5)	8·1
	N.	11·4	66	e 6 20	?L	—	—	(e 6·3)	8·3
Eskdalemuir		11·5	326	—	—	5 26	+19	—	—
Konigsberg		11·8	38	5 52	?L	—	—	(5·9)	8·4
Edinburgh		11·9	329	—	—	—	—	—	6·4
Granada		12·4	227	3 3	− 2	5 26	− 3	6·7	9·0
Pulkovo		19·0	36	4 24	− 5	8 7	+ 5	9·9	11·2
Baku		30·8	86	—	—	e 10 13	−95	24·7	31·0
Ekaterinburg		33·6	52	(5 26)	−95	—	—	5·4	10·8
Colombo		72·6	98	11 2	−32	(21 26)	+29	21·4	—

Additional readings and notes: Moncalieri MN = +0·8m. Zurich iSN = +39s. Strasbourg MN = +1·4m. Florence gives S as another P. Uccle P = +1m.38s. Vienna P = +1m.50s., i = +2m.16s., PS = +2m.54s., S? = +3m.15s. De Bilt MN = +4·3m., MZ = +4·5m. Hamburg MZ = +4·5m., MN = +5·3m. Tortosa SN = +3m.58s., MN = +4·8m. Toledo +6m.3s. Konigsberg iE = +6m.5s., iN = +6m.12s., +6m.25s., +6m.38s., and +6m.57s. Ekaterinburg MN = +10·6m.

April 15d. 21h. 0m. 0s. Epicentre 6°·5N. 127°·0E. (as at 12h. 36m.).

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku	19·3	345	—	—	(8 16)	+ 8	e 8·3	—
Hong Kong	20·1	323	4 40	− 2	—	—	—	8·7
Batavia	23·8	238	5 9	−17	i 9 23	−17	—	—
Zi-ka-wei	25·3	349	5 36	− 5	9 58	−11	—	14·7
Osaka	29·2	14	6 41	+21	(12 12)	+52	12·2	17·1
Ekaterinburg	71·8	329	i 11 31	+ 3	20 44	− 4	33·0	42·8

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Baku	76·0	311	e 11 59	+ 4	21 37	0	38·8	42·7
Pulkovo	87·8	330	13 5	+ 1	23 25	−25	42·0	55·0
De Bilt	103·5	328	—	—	—	—	e 52·0	64·1
Strasbourg	103·7	325	—	—	—	—	e 54·0	—
Uccle	104·5	327	—	—	e 33 0	?SR_1	e 52·0	—
Eskdalemuir	105·8	333	—	—	—	—	51·0	—
Paris	106·6	326	—	—	—	—	e 63·0	—
Granada	116·6	317	—	—	—	—	e 63·6	73·8
Toronto	124·4	23	—	—	—	—	80·4	—

Additional readings and notes: Hong Kong readings are given for 20h. Ekaterinburg MZ = +44·8m., all readings having been increased by 17min. Baku SR_2 = +30m.47s. Pulkovo MZ = +54·8m. De Bilt MN = +63·9m., MZ = +67·2m.

April 15d. Readings also at 0h. (Apia), 5h. (La Paz), 8h. (Tortosa), 11h. (Apia, Wellington, and Manila), 12h. (Florence, Ekaterinburg, Manila (2), Toronto, and Ottawa), 13h. (Manila and near Zurich), 14h. (Manila and Venice), 15h. (Venice and near Nagasaki), 16h. (Ekaterinburg and Manila), 17h. and 20h. (Manila), 21h. (Perth, Manila, near Lick, and Berkeley), 22h. (Ottawa).

April 16d. 19h. 14m. 42s. Epicentre 6°·5N. 127°·0E. (as on April 15d.).

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	10·0	325	e 2 44	+14	—	—	—	—
Hong Kong	20·1	323	8 24	?S	(8 24)	− 1	—	15·3
Irkutsk	49·4	342	e 8 55	− 8	16 2	− 9	26·3	—
Apia	64·0	108	—	—	—	—	—	44·3
Ekaterinburg	71·8	329	e 11 37	+ 9	20 50	+ 2	35·3	—

No additional readings.

April 16d. Readings also at 4h. (Taihoku, Manila, and Ekaterinburg), 10h. (Manila), 14h. (Manila and Irkutsk), 19h. (Manila).

April 17d. Readings at 0h. (Manila), 2h. (near Athens), 4h. (near Nagasaki), 5h. (Ekaterinburg, near Athens, and near Nagasaki), 7h. (Ekaterinburg, near Batavia, and Malabar), 8h. (near Mostar), 10h. and 12h. (Apia), 13h. (Tortosa and near Algiers), 14h. (La Paz, Irkutsk, and Ekaterinburg), 16h. (Irkutsk, Ekaterinburg, and Manila), 21h. (Ottawa, Ekaterinburg, and Victoria), 22h. (Baku).

April 18d. Readings at 0h. (near Kobe), 6h. (near Porto Rico), 9h. (La Paz), 10h. (near Victoria), 11h. (Apia, Riverview, Sydney, Wellington, and Ekaterinburg), 12h. (Ekaterinburg, Granada, Toronto, Ottawa, and near Irkutsk), 13h. (Ekaterinburg), 21h. (Apia).

April 19d. Readings at 6h. (La Paz), 10h. (Stonyhurst), 16h. (Nagoya, Osaka, and near Mizusawa), 19h. (near Mizusawa), 21h. (La Paz).

April 20d. 14h. 26m. 54s. Epicentre 14°·5N. 52°·0E.

$A = +·596$, $B = +·763$, $C = +·250$; $D = +·788$, $E = -·616$; $G = +·154$, $H = +·197$, $K = -·968$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Bombay		20·4	75	4 49	+ 3	8 42	+10	11·3	—
Ksara		24·2	326	i 5 30	0	i 13 2	?L	(i 13·0)	—
Helwan		24·5	312	5 33	0	i 10 2	+ 8	—	15·4
Kodaikanal		25·2	97	12 36	?L	—	—	13·9	15·0
Hyderabad		25·6	80	5 30	−14	9 59	−15	12·5	16·7
Colombo		28·4	103	10 54	?S	(10 54)	−12	—	16·9
Athens		34·3	319	e 6 57	−10	12 21	−23	e 20·3	24·7
Calcutta		35·8	72	7 2	−18	—	—	—	—
Pompeii		41·8	317	e 8 35	+26	16 6	+94	—	—
Lemberg		42·0	333	e 7 30	−41	—	—	—	—
Ekaterinburg		42·9	6	i 8 6	−11	i 14 30	−17	19·6	26·0
Rocca di Papa		43·5	317	i 8 14	− 8	14 45	−10	e 30·8	—
Vienna		44·7	327	i 8 23	− 8	15 2	− 9	e 26·6	34·6
Florence		45·3	320	—	—	—	—	6·1	13·1
Innsbruck	N.E.	47·0	323	i 8 43	− 4	e 15 31	−10	e 26·1	—
Konigsberg		47·1	335	i 8 47	− 1	i 15 33	− 9	—	32·7
Pulkovo		48·0	347	i 9 49	+55	i 16 45	+51	22·6	33·1
Moncalieri		48·2	319	8 30	−25	15 33	−23	25·2	32·6
Zurich		48·7	321	e 8 52	− 6	e 15 55	− 7	—	—
Algiers		48·8	308	8 56	− 3	16 0	− 4	25·1	40·1
Strasbourg		49·8	323	9 1	− 5	16 10	− 6	25·1	46·7
Besançon		50·2	319	9 3	− 5	16 26	+ 5	—	31·1
Barcelona		50·8	314	e 9 39	+27	16 20	− 9	24·5	37·4
Hamburg		51·1	330	e 9 14	0	i 16 33	+ 1	e 27·1	35·1
Tortosa		51·7	312	9 26	+ 8	16 49	+ 9	—	30·2
Upsala		51·9	339	e 9 13	− 6	e 16 38	− 5	e 26·1	35·0
Uccle		52·7	324	e 9 25	+ 1	16 54	+ 2	e 25·1	39·1
De Bilt		52·8	326	9 26	+ 1	16 57	+ 3	e 26·1	35·0
Paris		53·0	321	i 9 27	+ 1	i 16 52	− 4	29·1	35·1
Granada		54·1	306	i 9 37	+ 3	i 17 14	+ 4	28·8	35·8
Toledo		54·9	309	9 40	+ 2	i 17 24	+ 4	e 25·6	31·4
Kew		55·6	323	—	—	—	—	—	37·1
Irkutsk		55·9	36	i 9 48	+ 3	i 17 36	+ 3	29·1	38·4
San Fernando		56·0	305	9 31	−15	i 17 41	+ 7	28·1	33·6
Oxford		56·3	323	i 9 55	+ 7	17 42	+ 4	30·8	42·3
Rio Tinto		56·5	307	25 6	?L	—	—	(25·6)	38·1
Stonyhurst		57·7	325	—	—	18 1	+ 6	38·7	42·8
Bidston		57·9	325	—	—	(17 53)	− 5	—	39·4
Cape Town		58·0	213	18 12	?S	(18 12)	+13	—	37·2
Batavia		58·2	107	i 10 4	+ 4	i 18 4	+ 3	—	—
Eskdalemuir		58·7	327	10 5	+ 2	18 8	+ 1	28·1	37·7
Edinburgh		58·9	326	e 13 46	?PR_1	i 18 15	+ 5	30·1	46·4
Dyce		58·9	329	10 12	+ 8	18 14	+ 4	29·9	38·7
Zi-ka-wei		65·1	60	10 50	+ 4	—	—	—	—
Manila		66·5	80	e 11 6	+11	—	—	—	—
Perth		76·7	129	—	—	e 21 42	− 3	—	—
Adelaide		95·5	125	—	—	—	—	—	55·8
Ottawa		103·8	324	—	—	e 28 32	+121	e 48·1	—
Toronto	E.	106·9	325	—	—	—	—	e 45·5	—
Victoria	N.	117·0	357	29 58	?S	(29 58)	+92	59·0	72·2
La Paz		122·5	259	19 50	[+50]	—	—	68·3	74·2

Additional readings: Athens MN = +22·0m. Calcutta PN = +7m.3s. Ekaterinburg iPR_1 = +9m.52s., e = +14m.9s., MZ = +28·6m., MN = +31·2m. Rocca di Papa e = +7m.51s., ePE = +8m.21s., SZ = +14m.27s. Vienna PR_1 = +10m.35s., iZ = +11m.31s., SR_1 = +18m.38s., iE = +19m.27s., and +23m.21s. Innsbruck SNW = +15m.24s. Konigsberg i = +16m.46s. Pulkovo iPR_1 = +11m.45s. Moncalieri MN = +28·5m. Zurich iP = +8m.54s. Strasbourg PR_1 = +11m.4s., MN = +40·9m. Barcelona MN = +32·8m. Tortosa SN = +16m.42s. Upsala MN = +35·1m. De Bilt e = +12m.48s., MZ = +35·5m., MN = +42·1m. Granada i = +10m.21s., SR_1 = +21m.2s. Toledo MZ = +38·3m., MNW = +38·7m. Irkutsk MN = +34·8m., MZ = +39·2m. San Fernando MN = +37·1m. Oxford PR_1 = +13m.17s. Bidston S is given as iM. Eskdalemuir PR_2 = +13m.40s. Ottawa e = +33m.25s. Victoria LE = +64·0m., ME = +66·8m.

April 20d. Readings also at 0h. (near Athens and near Nagasaki), 1h. (Ekaterinburg), 3h. (Manila and near Zurich), 5h. (Granada), 12h. (West Bromwich and near Kobe), 13h. (Ekaterinburg and near Tacubaya), 17h. (Zurich), 22h. (Florence and Ottawa).

April 21d. 16h. 12m. 25s. Epicentre 35°·5N. 104°·0E. (as on 1920 Dec. 28d.).

A = −·197, B = +·790, C = +·581; D = +·970, E = +·242; G = −·140, H = +·564, K = −·814.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Zi-ka-wei	15·1	102	e 3 48	+ 8	—	—	—	—
Hong Kong	15·9	143	6 58	?S	(6 58)	+ 5	—	8·8
Irkutsk	16·8	1	i 4 12	+10	i 7 36	+23	8·6	9·8
Taihoku	18·4	120	—	—	—	—	e 9·0	—
Osaka	25·6	83	e 5 37	− 7	—	—	10·2	14·8
Manila	25·9	140	e 6 13	+26	—	—	—	—
Hyderabad	29·0	238	11 20	?S	(11 20)	+ 3	—	17·8
Bombay	32·1	250	12 7	?S	(12 7)	− 3	17·2	19·6
Ekaterinburg	35·9	322	i 7 25	+ 4	i 13 8	− 1	18·1	23·6
Baku	42·3	295	—	—	—	—	25·2	—
Kucino	48·3	318	—	—	—	—	i 26·6	—
Hamburg	64·3	320	—	—	—	—	e 35·6	—
De Bilt	67·6	320	—	—	—	—	e 35·6	—
Strasbourg	67·9	315	—	—	—	—	e 36·6	—
Uccle	68·7	319	—	—	—	—	e 36·6	—
Edinburgh	69·8	325	—	—	—	—	—	39·6
Paris	70·7	317	e 11 35	+14	—	—	39·6	—
Granada	81·1	310	e 37 11	?	—	—	i 50·2	51·8
Apia	93·4	104	—	—	—	—	e 39·6	—

Additional readings and notes: Irkutsk MZ = +10·5m., MN = +10·9m. Bombay S = +15m.32s. Ekaterinburg MZ = +24·5m.

1924. April 21d. 20h. 0m. 50s. Epicentre 19°·0N. 100°·0W.

(as on 1913 Jan. 15d.).

A = −·164, B = −·931, C = +·326; D = −·985, E = +·174; G = −·057, H = −·321, K = −·946.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya		0·8	62	0 44	+32	—	—	1·0	1·2
Puebla		1·7	88	0 57	+31	—	—	1·5	1·9
Vera Cruz		3·7	86	1 10	+12	—	—	2·2	3·1
Manzanillo		4·1	272	1 8	+ 4	—	—	1·8	1·9
Mazatlan		7·3	307	1 50	− 1	—	—	3·7	4·9
Mobile		15·8	40	e 4 10	+21	4 30	?	—	—
Tucson	E.	16·5	326	4 23	+24	7 17	+10	8·9	9·6
	N.	16·5	326	4 19	+20	—	—	8·5	9·3
Denver		21·1	349	4 10?	−44	7 10?	−96	10·7	14·7
St. Louis	E.	21·4	21	5 4	+ 6	9 5	+12	—	—
	N.	21·4	21	5 1	+ 3	9 3	+10	—	—
Chicago		25·1	22	5 48	+ 9	10 12	+ 7	12·9	—
Port au Prince		26·2	86	e 6 6	+16	10 32	+ 6	14·3	—
Berkeley		27·1	319	i 5 50	− 9	i 10 26	−17	12·4	14·4
Ann Arbor		27·1	27	6 28	+29	10 58	+15	e 14·2	—
Georgetown	E.	28·1	40	e 6 20	+11	e 11 36	+35	e 13·6	—
Washington		28·1	40	5 45	−24	10 22	−39	—	—
Cheltenham		28·1	41	6 34	+25	11 21	+20	13·5	—
Toronto	E.	30·1	30	6 22	− 7	i 11 18	−18	15·6	23·6
	N.	30·1	30	6 18	−11	i 11 14	−22	16·3	17·3
Ithaca		30·7	35	e 6 40	+ 5	11 30	−16	e 13·7	—
Porto Rico	E.	32·7	86	7 4	+10	12 16	− 3	18·0	—
	N.	32·7	86	7 19	+25	12 16	− 3	17·3	—
Ottawa		33·2	32	e 6 55	− 3	12 8	−19	15·8	19·2
Northfield		34·0	36	e 7 10	+ 5	—	—	—	—
Victoria	E.	34·9	333	7 16	+ 4	11 28	−86	18·5	20·0
	N.	34·9	333	7 11	− 1	11 28	−86	18·6	19·5
Sitka	E.	46·1	335	—	—	e 23 6	?L	26·1	26·3
	N.	46·1	335	—	—	e 19 10	?	26·2	26·2
La Paz		47·4	137	i 8 42	− 8	i 15 42	− 4	22·5	26·3
Honolulu	E.	54·2	283	—	—	17 2	− 9	24·5	27·8
	N.	54·2	283	9 42	+ 8	17 5	− 6	23·2	28·0

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Apia		77·9	251	—	—	—	—	39·2	—
Edinburgh		78·0	35	e 12 10	+ 3	22 13	+13	39·2	—
Dyce		78·2	33	—	—	22 12	+10	42·8	—
Stonyhurst		79·0	37	—	—	22 10	− 2	—	44·2
Oxford		80·4	38	12 24	+ 3	22 29	+ 1	39·8	50·0
Rio Tinto		81·0	53	24 10	?S	(24 10)	+95	—	51·2
San Fernando		81·7	54	13 0	+31	i 22 50	+ 7	36·2	55·2
Toledo		82·3	50	e 12 34	+ 2	i 22 53	+ 4	e 35·4	50·2
Granada		83·5	53	i 12 34	− 5	i 23 2	− 1	38·3	46·0
Paris		83·7	40	i 12 41	+ 1	i 22 57	− 9	36·2	46·2
De Bilt		84·0	37	12 43	+ 1	23 2	− 6	e 41·2	42·6
Uccle		84·0	38	e 12 41	− 1	23 2	− 6	e 36·2	44·0
Tortosa	E.	85·3	48	12 55	+ 5	23 13	− 9	—	—
	N.	85·3	48	12 53	+ 3	23 14	− 8	36·6	37·8
Hamburg		85·9	34	e 13 16	+23	i 23 31	+ 2	e 38·2	43·2
Barcelona		86·2	46	e 12 44	−10	23 13	−19	—	—
Upsala		86·5	26	—	—	i 23 16	−20	e 41·2	51·7
Besançon		86·5	40	12 56	0	i 23 34	− 2	—	53·2
Strasbourg		87·0	39	12 58	− 1	23 40	− 1	40·2	—
Zurich		88·0	40	e 13 2	− 3	e 23 47	− 5	—	—
Moncalieri		88·5	42	e 12 32	−36	23 29	−29	39·4	—
Algiers		88·7	50	—	—	23 51	− 9	—	—
Innsbruck		89·7	39	—	—	e 24 4	− 7	e 43·2	—
Florence		91·2	41	—	—	24 45	+19	44·2	—
Pulkovo		91·5	23	e 13 19	− 5	i 23 47	[+10]	39·2	—
Rocca di Papa		93·1	43	e 8 27	?	21 28	?	—	24·2
Kucino		97·1	21	—	—	i 24 10	[+ 1]	e 42·7	57·4
Wellington		98·6	229	—	—	—	—	e 48·6	—
Zante		99·2	44	—	—	—	—	—	69·2
Ekaterinburg		102·4	10	—	—	24 40	[+ 4]	33·2	65·8
Osaka		104·8	314	e 21 51	?PR_1	(26 8)	−32	26·1	28·8
Irkutsk		105·6	345	e 14 21	−16	i 24 57	[+ 7]	54·2	64·8
Baku		114·3	25	e 15 55	+38	e 25 36	[+ 9]	51·2	53·7
Hong Kong		126·8	318	—	—	—	—	—	70·2
Manila		127·5	307	e 22 10	?PR_1	—	—	—	—
Bombay		141·4	8	19 36	[− 6]	23 17	?PR_1	25·4	—
Hyderabad		143·5	3	20 40	[+54]	—	—	—	86·6
Batavia		150·9	292	i 19 56	[− 1]	—	—	—	—

Additional readings and notes: Puebla readings have been diminished by 3min. Manzanillo MN = +2·0m.; readings have all been increased by 2min. Vera Cruz MZ = +2·8m. Denver MN = +12·7m.; all readings have been increased by 1h. Berkeley iE = +11m.12s., iN = +11m.15s. Cheltenham PN = +6m.50s., T_o = 20h.1m.22s. Toronto iSR_1N = +12m.2s.; T_o E = 20h. 0m. 59s. Ithaca i = +7m.21s. Porto Rico PR_1E = +8m.1s., T_o = 20h.1m.20s. Ottawa PR_2 = +8m.3s., i = +8m.26s., SR_2 = +13m.50s., T_o = 20h.1m.9s. La Paz PR_1 = +10m.41s., SR_1 = +19m.6s., SR_2 = +20m.17s., T_o = 20h.0m.38s. Granada L = +133·4m., ME = +144·8m. De Bilt eSR_1 = +28m.49s., eLN = +36·2m., MN = +42·5m., MZ = +46·8m. Uccle SR_1 = +28m.58s. Hamburg eS = +23m.14s. Strasbourg PR_1 = +16m.40s. Zurich iS = +23m.48s. Algiers e = +22m.40s., ? = +23m.32s. Pulkovo i = +25m.44s. Kucino e = +26m.56s., +27m.58s., +31m.43s., MN = +53·1m. Ekaterinburg PR_1 = +18m.33s., MN = +56·3m., MZ = +56·9m. Irkutsk MN = +65·4m., MZ = +65·8m. Baku e = +19m.43s., i = +26m.50s., and e = +30m.46s. Batavia i = +20m.56s.

April 21d. Readings also at 0h. (Apia), 1h. (Ekaterinburg and Granada), 4h. (Apia), 10h. (Granada), 14h. (Stonyhurst), 20h. (La Paz), 21h. (Apia), 22h. (near Zurich).

April 22d. Readings at 0h. (Kobe), 5h. (Granada), 6h. (Baku), 10h. (near Lick (2) and Berkeley), 11h. (Taihoku), 12h. (Apia), 13h. (Baku, Ekaterinburg, Irkutsk, and near Batavia and Malabar), 14h. (Manila and near Vera Cruz), 15h. (Port au Prince and near Porto Rico), 16h. (Port au Prince), 19h. (near Mizusawa), 21h. (Apia).

April 23d. Readings at 7h. (Kobe), 10h. (near Manila), 11h. (Ekaterinburg), 12h. (Ekaterinburg, near Tacubaya, and near Batavia and Malabar), 13h. (De Bilt), 14h. (near Tacubaya), 17h. and 18h. (Ekaterinburg), 19h. (near Tacubaya, Vera Cruz, and Puebla), 23h. (near Manila).

April 24d. Readings at 0h. (Baku and Ekaterinburg), 2h. (near Tacubaya), 3h. (near Manila), 4h. (Granada and Zi-ka-wei), 5h. (Toronto), 7h. and 12h. (near Manila), 14h. (near Puebla), 16h. (Irkutsk), 17h. (Kobe and La Paz), 18h. (near Nagasaki), 22h. (Rio Tinto).

April 25d. 10h. 52m. 45s. Epicentre 41°·0N. 21°·5E. (as on 1921 Oct. 21d.).

$A = +·702$, $B = +·277$, $C = +·656$.

	Δ	P.	O−C.	S.	O−C.	M.
	°	m. s.	s.	m. s.	s.	m.
Mostar	3·6	1 1	+ 5	1 39	0	2·0
Sarajevo	3·7	i 1 7	+ 9	i 1 27	−15	1·8
Belgrade	3·9	i 0 57	− 4	i 1 42	− 5	2·0
Rocca di Papa	6·7	—	—	e 2 40	−22	4·6
Venice	8·0	e 2 15?	+14	—	—	5·4

Additional readings: Belgrade eP = +1m.5s. Rocca di Papa ePR_1E = +3m.37s., iPR_1N = +4m.7s.

April 25d. 12h. 0m. 40s. Epicentre 52·°8N. 155°·2E. (as on 1923 Sept. 23d.).

$A = -·549$, $B = +·254$, $C = +·797$; $D = +·419$, $E = +·908$; $G = -·723$, $H = +·334$, $K = -·605$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Irkutsk	30·3	289	e 6 32	+ 1	e 11 41	+ 2	17·3	20·9
Zi-ka-wei Z.	32·6	242	e 6 20	−33	—	—	—	18·9
Taihoku	37·5	235	—	—	—	—	e 16·3	—
Ekaterinburg	50·2	315	e 10 7	+59	e 20 47	+266	29·3	35·5
Pulkovo	59·1	331	—	—	—	—	e 32·3	40·2
Kucino	59·8	324	—	—	—	—	e 39·3	—
Baku	66·8	308	—	—	—	—	37·3	—
Bombay	70·5	276	—	—	—	—	38·3	—
De Bilt	72·2	340	—	—	—	—	e 45·3	—
Uccle	73·5	341	—	—	—	—	—	44·3
Wellington	95·6	165	—	—	—	—	i 43·6	—

Additional readings and notes: Irkutsk MNZ = +20·4m. Ekaterinburg MZ = +35·6m.; P and S are given as e simply.

April 25d. 18h. 4m. 54s. Epicentre 27°·5N. 142°·0E.

$A = -·699$, $B = +·546$, $C = +·462$; $D = +·616$, $E = +·788$; $G = -·364$, $H = +·284$, $K = -·887$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	8·8	332	17 4	?	—	—	—	—
Osaka	9·1	324	2 26	+ 8	—	—	4·6	5·2
Kobe	9·3	323	—	—	—	—	—	5·1
Zi-ka-wei	18·3	287	i 4 24	+ 3	e 7 58	+11	—	11·8
Taihoku	18·5	267	e 5 0	+37	—	—	—	—
Manila	23·4	241	e 5 34	+13	—	—	10·6	—
Hong Kong	25·7	265	5 39	− 6	(10 36)	+20	10·6	10·8
Irkutsk	37·4	322	i 7 20	−13	i 13 8	−22	18·1	23·7
Hyderabad	59·0	275	10 0	− 5	—	—	—	38·7
Ekaterinburg	62·6	323	i 10 30	+ 1	i 18 56	0	26·6	40·5
Bombay	63·4	279	11 6	+32	—	—	—	—
Victoria	72·7	45	20 52	?S	(20 52)	− 6	33·9	35·7
Baku	74·1	309	11 51	+ 8	21 22	+ 7	36·6	40·9
Kucino	74·9	326	24 7	?S	(24 7)	+162	41·9	50·3
Pulkovo	76·5	332	11 57	− 1	21 43	0	37·1	44·9
Upsala N.	81·5	336	—	—	—	—	e 44·1	—
Vienna	90·0	328	e 13 12	− 4	—	—	—	59·1

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
De Bilt	91·9	335	—	—	e 24 16	−18	e 48·1	51·0
Innsbruck	93·0	330	—	—	—	—	59·1	—
Uccle	93·2	335	—	—	e 24 30	−17	e 48·1	—
Strasbourg	93·6	332	—	—	—	—	e 53·1	—
Paris	95·5	335	—	—	—	—	e 58·1	60·1
Rocca di Papa	96·4	325	—	—	—	—	e 55·4	63·8
Moncalieri	96·4	330	—	—	—	—	e 53·0	—
Ottawa E.	99·4	27	—	—	—	—	e 42·1	—
Toronto E.	99·4	29	—	—	—	—	41·8	—
Toledo	105·6	334	—	—	—	—	e 59·2	69·1
La Paz	150·1	75	20 13	[+17]	—	—	—	—

Additional readings: Osaka MN = +5·7m. Kobe MN = +7·2m. Irkutsk MZ = +23·4m., MN = +23·6m. Ekaterinburg i = +20m.17s., MZ = +40·6m., MN = +42·0m. Victoria LN = +34·1m., MN = +35·8m. Kucino MN = +50·5m. Pulkovo PR_1 = +14m.53s., MN = +44·8m. De Bilt MN = +58·4m., MZ = +59·4m. Strasbourg reading given for 24d. Rocca di Papa L = +60·9m. Toronto eN = +49m.29s., LN = +50·5m. Toledo e = +61m.8s.

April 25d. Readings also at 6h. (La Paz), 8h. (Riverview and Wellington), 9h. (Bombay), 14h. (Manila), 15h. (near Tacubaya), 16h. (Irkutsk), 17h. (La Paz), 18h. (Moncalieri), 20h. (Tortosa).

April 26d. 20h. 11m. 54s. Epicentre 6°·5N. 127°·0E. (as on 1924 April 16d.).

A = −·598, B = +·793, C = +·113; D = +·799, E = +·602; G = −·068, H = +·090, K = −·994.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	10·0	325	e 2 57	+27	—	—	5·9	—
Hong Kong	20·1	323	4 46	+ 4	(8 50)	+25	8·8	13·6
Batavia E.	23·8	238	i 5 18	− 8	—	—	—	—
Zi-ka-wei	25·3	349	e 5 40	− 1	e 10 10	+ 1	—	17·3
Irkutsk	49·4	342	9 4	+ 1	16 15	+ 4	26·1	—
Ekaterinburg	71·8	329	i 11 31	+ 3	i 20 55	+ 7	31·1	41·2
Kucino	84·2	325	e 12 54	+11	22 50	−20	e 34·4	41·3
Pulkovo	87·8	330	i 13 0	− 4	23 24	−26	44·1	50·7
De Bilt	103·5	328	—	—	—	—	e 56·1	—

Kucino readings have been diminished by 13min. De Bilt gives also e = +53m.6s.

April 26d. Readings also at 9h. (Port au Prince), 15h. (Stonyhurst), 20h. and 21h. (La Paz), 23h. (Taihoku).

April 27d. 0h. 14m. 4s. Epicentre 44°·5N. 140°·0E. (as on 1924 April 11d.).

A = −·546, B = +·458, C = +·701.

	Δ	P.	O−C.	S.	O−C.	L.
	°	m. s.	s.	m. s.	s.	m.
Sapporo	1·7	0 48	+22	(0 48)	0	1·6
Ootomari	2·9	0 41	− 4	(1 17)	− 3	1·3
Mizusawa E.	5·5	1 30	+ 5	2 28	− 3	—
N.	5·5	1 29	+ 4	2 29	− 2	—
Ekaterinburg	48·8	—	—	—	—	25·9

No additional readings.

April 27d. Readings also at 6h. (La Paz), 12h. (Taihoku), 15h. (Zi-ka-wei, Taihoku, and Irkutsk), 22h. (Bombay, Pulkovo, Kucino, and Ekaterinburg).

April 28d. 17h. 34m. 0s. Epicentre 55°·0N. 35°·0W. (as on 1924 April 8d.).

$A = +·470$, $B = -·329$, $C = +·819$; $D = -·574$, $E = -·819$; $G = +·671$, $H = -·470$, $K = -·574$.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Edinburgh		17·9	75	—	—	—	—	e 9·0	—
Eskdalemuir		18·0	76	e 4 19	+ 2	—	—	8·0	—
Dyce		18·3	69	—	—	—	—	7·2	10·2
Stonyhurst		18·8	80	—	—	—	—	—	9·5
Kew		20·9	84	—	—	—	—	—	12·0
De Bilt		23·7	80	—	—	—	—	e 12·0	14·5
Strasbourg		26·8	86	—	—	—	—	e 14·0	—
Ottawa		27·3	266	—	—	e 12 30	+104	e 17·7	—
Granada		27·7	117	—	—	—	—	e 14·5	16·7
Toronto	N.	30·5	266	—	—	—	—	18·3	—
Pulkovo		34·1	55	6 53	−13	e 11 52	−50	17·0	—
Ekaterinburg		49·1	47	—	—	—	—	19·0	—
Baku		55·3	67	—	—	—	—	e 29·0	—

No additional readings.

April 28d. 20h. 57m. 4s. Epicentre 26°·5S. 179°·0W.

$A = -·895$, $B = -·016$, $C = -·446$; $D = -·017$, $E = +1·000$. $G = +·446$, $H = +·008$, $K = -·895$.

Possibly this is from the epicentre 27°·0S. 176°·0W., as on April 10 and on 1923 May 16. But that supposition does not improve the residuals of this shock, poor as they are.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington		15·7	197	e 5 33	+105	8 48	+120	e 10·2	13·2
Riverview		26·8	247	—	—	e 10 38	+ 1	e 15·3	21·0
Sydney		26·8	247	0 44	?	—	—	17·1	19·9
Melbourne		32·3	240	—	—	(e 13 8)	+55	e 13·1	22·6
Adelaide		37·2	247	—	—	—	—	—	30·7
Perth		56·3	248	—	—	—	—	e 29·9	—
Zi-ka-wei		81·0	313	12 25	0	e 22 35	0	—	40·6
Hong Kong		81·0	300	—	—	—	—	—	43·9
Victoria	E.	89·9	33	—	—	—	—	39·4	54·8
	N.	89·9	33	—	—	—	—	44·3	52·5
La Paz		100·3	114	14 26	+14	26 44	+45	50·1	52·8
Irkutsk		103·1	322	e 13 46	−40	24 41	[+ 2]	45·9	60·5
Chicago		108·2	50	—	—	—	—	e 50·9	—
Ann Arbor		112·3	50	—	—	—	—	e 55·9	—
Bombay		114·1	279	—	—	—	—	61·9	—
Toronto	E.	114·6	50	—	—	e 25 19	[− 9]	57·2	—
Ottawa		117·5	49	—	—	28 41	+11	55·9	—
Ekaterinburg		128·4	322	e 19 12	[− 3]	—	—	51·4	59·1
Baku		137·5	301	e 19 40	[+ 5]	e 22 24	?PR_1	62·9	—
Pulkovo		141·1	335	i 19 37	[− 4]	i 22 22	?PR_1	62·9	79·1
Hamburg		152·1	349	e 18 56	[−63]	—	—	—	19·9
De Bilt	Z.	154·2	354	i 20 20	[+19]	—	—	e 86·9	—
Vienna	Z.	155·2	335	e 20 1	[− 1]	—	—	—	—
Uccle		155·5	355	—	—	—	—	—	86·9
Strasbourg		157·3	349	e 19 56	[− 9]	—	—	e 79·9	—
Paris		157·6	357	—	—	—	—	e 84·9	—
Rocca di Papa	E.	162·0	331	e 20 22	[+13]	—	—	e 96·1	—
Granada		168·6	19	e 20 9	[− 5]	—	—	e 72·9	82·8

Additional readings: Riverview MN = +18·5m. Irkutsk MNZ = +60·3m. Toronto eE. = +26m.11s., +29m.19s., and +34m.22s., eN = +34m.48s. Ottawa e? = +25m.21s., S = +34m.49s. Ekaterinburg MZ = +72·6m. Baku e = +40m.33s. Pulkovo MZ = +80·9m., MN = +81·0m. Rocca di Papa ePN = +21m.4s., eP = +21m.12s. Granada i = +20m.28s., iS = +21m.16s., and several other i's.

April 28d. Readings also at 2h. (Victoria, Tacubaya, and Ekaterinburg), 3h. (Ekaterinburg), 4h. (Taihoku), 5h. (near Nagasaki), 9h. (Ekaterinburg, De Bilt, Pulkovo, and Eskdalemuir), 11h. and 14h. (Taihoku), 20h. (Wellington), 22h. (La Paz).

April 29d. 9h. 8m. 50s. Epicentre 58°·5S. 145°·5E. (as on 1923 Oct. 22d.).

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

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Melbourne	20·7	359	—	—	(i 8 34)	− 4	i 8·6	11·2
Adelaide	24·0	346	—	—	e 9 40	− 4	e 11·5	12·2
Riverview	25·0	11	e 5 38	0	(e 10 4)	+ 1	e 10·1	11·2
Sydney	25·0	11	7 58	+140	(10 10)	+ 7	10·2	10·9
Wellington	25·2	60	3 53	−107	7 28	−159	8·8	12·4
Perth	33·3	310	12 36	?S	(12 36)	+ 7	18·6	—

Additional readings: Riverview eS = +9m.31s., MZ = +11·0m., MN = +11·4m. Perth PR_1 = +14m.59s., S = +16m.28s.

April 29d. 9h. 17m. 48s. (I) / 9h. 54m. 6s. (II) Epicentre 55°·0N. 35°·0W. (as on April 28d.).

$A = +·470$, $B = -·329$, $C = +·819$; $D = -·574$, $E = -·819$; $G = +·671$, $H = -·470$, $K = -·574$.

The Pulkovo and Baku readings suggest yet another shock following the first by about 3 or 4 minutes.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Edinburgh	17·9	75	—	—	e 7 12	−26	—	11·2
II	17·9	75	—	—	i 8 24	+46	—	11·4
II Eskdalemuir	18·0	76	—	—	(7 54)	+14	7·9	9·9
I Dyce	18·3	69	—	—	7 39	− 8	8·5	10·4
II	18·3	69	4 18	− 3	7 18	−29	8·6	14·2
I Bidston	18·6	82	—	—	—	—	—	10·7
II	18·6	82	—	—	—	—	—	11·7
I Stonyhurst	18·8	80	—	—	—	—	17·2	19·7
II	18·8	80	—	—	—	—	—	48·9
I Oxford	20·2	85	—	—	—	—	—	18·7
II	20·2	85	—	—	—	—	—	12·6
I Kew	20·9	84	—	—	—	—	—	19·2
I Paris	23·6	89	—	—	—	—	e 12·2	—
II	23·6	89	—	—	e 9 40	+ 4	11·9	—
I De Bilt	23·7	80	—	—	e 9 23	−15	e 11·0	14·5
II	23·7	80	—	—	e 9 23	−15	e 11·2	14·4
I Uccle	23·8	83	—	—	e 9 22	−18	e 10·7	13·2
II	23·8	83	—	—	e 9 22	−18	e 11·4	13·4
I Hamburg	25·8	74	—	—	—	—	e 14·2	—
II	25·8	74	e 5 54	+ 8	i 9 56	−22	e 13·9	14·9
I Strasbourg	26·8	86	—	—	—	—	e 13·2	23·2
II	26·8	86	—	—	—	—	—	15·9
I Ottawa	27·3	266	—	—	e 11 36	+50	e 14·8	—
II	27·3	266	—	—	e 11 26	+40	e 15·2	—
I Granada	27·7	117	(e 6 42)	+37	—	—	e 6·7	9·3
I Upsala	28·0	58	—	—	—	—	e 11·2	—
I Moncalieri	28·7	94	—	—	e 13 31	?	16·4	—
II	28·7	94	—	—	e 11 6	− 6	14·3	—
I Toronto	30·5	266	—	—	—	—	16·6	—
I Pulkovo	34·1	55	e 10 30	+204	i 13 41	+59	—	—
I Chicago	36·3	271	—	—	—	—	22·2	—
I Kucino	39·5	59	—	—	—	—	e 14·3	—
I Ekaterinburg	49·1	47	—	—	—	—	17·2	33·7
I Victoria	51·4	302	28 36	?L	—	—	(28·6)	36·8
I Baku	55·3	67	e 13 31	+230	e 20 51	+206	29·2	—

Additional readings: De Bilt I eLN = +11·6m., MN = +13·2m., MZ = +14·6m., II eLN = +11·6m., MN = +12·9m., MZ = +14·2m. Toronto I eN = +12m.17s. (O−C. = +34s.), LN = +17·4m. Ekaterinburg I MZ = +33·4m. Victoria I PN = +29m.11s.?, MN = +38·3m.

April 29d. 20h. 51m. 45s. Epicentre 51°·5N. 161°·5E.

$A = -\cdot590$, $B = +\cdot198$, $C = +\cdot783$; $D = +\cdot317$, $E = +\cdot948$; $G = -\cdot742$, $H = +\cdot248$, $K = -\cdot622$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Ootomari	13·1	256	3 36	+22	—	—	—	—
Osaka	25·1	238	6 5	+26	11 5	+60	14·5	18·8
Kobe	25·3	238	—	—	—	—	—	17·0
Irkutsk	34·4	294	6 53	−15	12 46	0	18·2	21·5
Zi-ka-wei	35·6	251	7 17	− 1	e 13 37	+33	—	21·6
Taihoku	40·2	244	e 11 20	?PR_1	—	—	—	—
Honolulu N.	43·5	118	—	—	—	—	e 20·5	24·2
Victoria	46·3	64	—	—	(15 19)	−13	15·3	29·0
Hong Kong	46·5	250	15 39	?S	(15 39)	+ 4	—	29·2
Ekaterinburg	53·7	320	i 8 22	−69	15 36	−89	23·8	33·6
Pulkovo	62·0	335	i 10 22	− 3	18 37	−11	29·2	40·7
Simla	62·8	287	—	—	—	—	e 34·8	—
Kucino	63·0	329	10 46	+14	19 11	+10	e 29·4	37·5
Upsala	64·9	341	e 10 41	− 3	e 19 26	+ 2	e 32·2	40·2
Chicago	69·2	48	20 15	?S	(20 15)	− 1	35·2	—
Apia	69·4	151	e 7 22	?	—	—	10·2	12·0
Dyce	70·4	351	—	—	20 39	+ 8	40·1	—
Ann Arbor	70·5	45	—	—	—	—	e 34·2	—
Baku	70·6	313	12 28	+67	21 51	+78	37·8	41·5
Toronto E.	71·3	42	e 20 30	?S	(e 20 30)	−12	e 35·4	—
N.	71·3	42	e 20 30	?S	(e 20 30)	−12	e 36·9	—
Ottawa	71·3	38	21 25	?S	(21 25)	+43	e 35·2	—
Edinburgh	71·8	351	—	—	e 20 57	+ 9	33·2	—
Hyderabad	72·1	276	20 56	?S	(20 56)	+ 5	—	46·2
Hamburg	72·2	344	e 11 33	+ 2	e 21 4	+12	e 37·2	48·2
Eskdalemuir	72·4	351	—	—	e 20 45	−10	e 29·2	—
Stonyhurst	73·8	350	—	—	—	—	31·8	52·8
De Bilt	74·5	346	i 11 47	+ 1	e 21 24	+ 4	e 36·2	46·7
Bombay	74·5	281	39 22	?L	—	—	(39·4)	48·0
Oxford	75·7	350	—	—	—	—	39·2	51·8
Vienna	75·8	337	11 54	0	22 12	+37	e 33·8	51·8
Kew	75·8	349	—	—	—	—	—	50·2
Uccle	75·9	346	e 11 51	− 3	e 21 27	− 9	e 34·2	47·5
Strasbourg	77·5	344	e 12 0	− 4	e 21 55	0	28·2	47·2
Innsbruck	77·9	340	e 12 0	− 6	e 21 33	−26	e 40·2	—
Paris	78·1	347	e 12 7	− 1	—	—	45·2	50·2
Kodaikanal	78·3	273	47 27	?L	—	—	(47·4)	—
Moncalieri	80·9	342	e 11 47	−37	22 38	+ 4	32·0	—
Florence	81·2	340	22 22	?S	(22 22)	−15	(33·2)	43·2
Rocca di Papa	82·9	337	e 13 7	+32	e 22 31	−25	e 45·5	—
Tortosa	86·2	347	12 49	− 5	23 30	− 2	39·5	58·5
Toledo	87·8	349	—	—	e 23 37	−13	e 50·4	59·2
Granada	90·3	349	—	—	—	—	e 42·1	54·6
San Fernando	91·4	351	—	—	—	—	51·8	56·8

Additional readings and notes: Osaka MN = +19·4m. Irkutsk PR_1 = +8m.19s., MZ = +21·7m. Victoria MN = +29·1m. Ekaterinburg MZ = +33·8m. Kucino SR_1 = +24m.3s., MN = +40·0m. Upsala MN = +38·9m. Chicago S = +26m.15s. Apia e = +8m.39s. and 9m.8s. Baku PR_1 = +15m.24s., SR_1 = +27m.6s., SR_2 = +29m.51s. Toronto eSN = +28m.30s., eSE = +28m.33s. Ottawa e = +24m.53s., S? = +28m.31s. Eskdalemuir e = +24m.17s. De Bilt e = +22m.5s., MN = +49·7m., MZ = +50·1m. Uccle MN = +53·6m. Innsbruck LNE = +55·2m. Florence gives S as P and L as S; all readings have been increased by 1h. Toledo MNW = +56·4m.

April 29d. Readings also at 2h. (Rocca di Papa), 5h. (Granada), 7h. (Taihoku), 8h. (Batavia and near Malabar), 9h. (Uccle, De Bilt, and Stonyhurst), 10h. (De Bilt, Strasbourg, Eskdalemuir, and near Mizusawa), 11h. (Vienna, Ekaterinburg, Edinburgh, Eskdalemuir, Strasbourg, and De Bilt), 16h. (near Mizusawa), 17h. (Pompeii, Irkutsk, Rocca di Papa, and Ekaterinburg), 19h. and 20h. (near Tacubaya).

April 30d. 3h. 59m. 10s. (I)
5h. 7m. 30s. (II)
9h. 8m. 20s. (III)
} Epicentre 34°·0S. 175°·0W.

A = −·826, B = −·072, C = −·559; D = −·087, E = +·996;
G = +·557, H = +·049, K = −·829.

The epicentre 33°·3S. 173°·7W. used on 1921 April 15 was tried but found unsuitable.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I	Wellington	10·9	225	3 27	+44	i 5 10	+18	6·0	8·2
II		10·9	225	3 59	+76	5 37	+45	6·1	8·0
III		10·9	225	i 0 20	?	—	—	e 6·1	—
I	Suva	15·3	334	1 50	−113	4 53	−106	6·0	—
II		15·3	334	1 30	−133	4 40	−119	5·8	—
III		15·3	334	1 40	−123	5 43	−56	6·7	—
I	Apia	20·4	9	4 45	− 1	8 32	0	11·3	—
II		20·4	9	4 47	+ 1	8 10	−22	8·7	—
I	Riverview	28·0	261	e 6 6	− 2	e 10 59	0	13·2	15·6
II		28·0	261	e 6 1	− 7	e 10 46	−13	e 13·1	15·4
III		28·0	261	e 6 0	− 8	—	—	e 13·7	15·4
I	Sydney	28·0	261	(6 20)	+12	6 20	?P	13·5	16·3
II		28·0	261	(6 0)	− 8	6 0	?P	13·2	16·0
III		28·0	261	5 10	−58	—	—	13·8	16·0
I	Melbourne	32·4	251	—	—	i 12 14	0	16·6	18·7
II		32·4	251	e 6 48	− 4	i 12 6	− 8	16·0	18·0
III		32·4	251	—	—	—	—	e 15·9	18·4
I	Adelaide	37·9	257	—	—	e 13 50	+13	e 17·7	22·7
II		37·9	257	—	—	—	—	e 17·8	22·3
I	Perth	56·9	251	—	—	e 17 52	+ 7	—	—
III		56·9	251	—	—	—	—	e 31·4	—
I	Honolulu	57·6	20	—	—	—	—	e 26·8	—
II		57·6	20	—	—	e 18 8	+14	—	—
I	Batavia	76·7	272	e 14 8	?PR_1	—	—	e 44·2	—
II		76·7	272	e 13 53	?PR_1	—	—	40·9	—
I	Manila	77·8	298	e 12 13	+ 7	(e 21 55)	− 3	—	—
I	Zi-ka-wei	88·5	311	13 5	− 3	—	—	—	—
II		88·5	311	13 6	− 2	—	—	—	48·8
I	La Paz	94·1	114	14 25	+46	24 57	0	—	—
II		94·1	114	i 14 9	+30	24 43	−14	—	—
I	Victoria E.	94·4	31	24 56	?S	(24 56)	− 4	46·4	58·3
II	E.	94·4	31	25 6	?S	(25 6)	+ 6	45·4	54·2
II	N.	94·4	31	25 4	?S	(25 4)	+ 4	45·8	49·6
I	Colombo	106·3	267	23 50	?	—	—	—	—
II		106·3	267	—	—	—	—	—	66·5
III		106·3	267	63 40	?L	—	—	(63·7)	67·7
I	Chicago	110·2	51	25 20	?S	(25 20)	[+ 9]	e 41·2	—
I	Kodaikanal	110·2	269	—	—	—	—	64·7	70·1
II		110·2	269	60 18	?L	—	—	64·5	69·2
II	Ann Arbor	113·0	52	—	—	—	—	e 52·5	—
I	Hyderabad	113·1	276	24 56	?S	(24 56)	[−26]	(59·4)	—
II		113·1	276	19 40	?PR_1	—	—	—	29·4
I	Toronto E.	116·4	53	e 26 5	?S	(e 26 5)	−136	e 64·1	—
I	N.	116·4	53	e 28 25	?S	(e 28 25)	+ 4	e 53·6	—
III		116·4	53	—	—	—	—	e 67·9	—
I	Bombay	118·5	274	—	—	—	—	66·8	—
I	Ottawa	119·4	52	e 26 20	?S	(e 26 20)	−145	e 63·8	—
III		119·4	52	—	—	—	—	e 69·7	—
I	Ekaterinburg	136·4	320	i 18 41	[−52]	i 22 11	?PR_1	56·8	83·6
II		136·4	320	i 18 39	[−54]	i 22 9	?PR_1	52·5	62·5
III		136·4	320	—	—	e 52 7	?	61·7	—
III	Baku	144·0	294	—	—	—	—	81·7	—
I	Pulkovo	149·4	335	i 20 9	[+14]	30 26	?	78·8	86·5
II		149·4	335	i 20 5	[+10]	30 19	?	48·5	86·4
III		149·4	335	i 20 1	[+ 6]	—	—	—	—
II	Upsala	152·8	346	—	—	—	—	e 53·5	—
II	Edinburgh	157·4	12	—	—	—	—	e 43·5	—
I	Eskdalemuir	157·9	12	e 24 50	?PR_1	—	—	—	—
I	Stonyhurst	159·4	13	—	—	—	—	99·8	111·3
II		159·4	13	—	—	—	—	88·5	111·0
I	Hamburg	160·1	351	—	—	—	—	e 96·8	—
II		160·1	351	—	—	—	—	e 91·5	—
I	De Bilt	161·8	0	e 21 12	[+63]	—	—	91·8	110·4
II		161·8	0	—	—	—	—	e 90·5	110·5
III		161·8	0	—	—	—	—	e 90·7	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I Uccle		163·2	1	e 24 50	?PR_1	—	—	—	—
II Vienna	Z.	163·4	332	e 20 30	[+20]	—	—	—	—
I Paris		165·0	6	—	—	—	—	e 91·8	—
II		165·0	6	—	—	—	—	e 87·5	91·5
I Strasbourg		165·3	353	e 19 50	[−22]	e 25 50	?PR_1	95·8	106·8
II		165·3	353	e 20 30	[+18]	—	—	—	97·5
I Moncalieri		168·8	350	—	—	—	—	96·9	—
II		168·8	350	—	—	—	—	95·8	—
II Rocca di Papa		170·2	324	—	—	—	—	e 108·8	—
I San Fernando		170·5	72	—	—	84 20	?L	97·3	109·3
II		170·5	72	—	—	69 0	?	88·0	101·5
I Toledo		170·7	48	—	—	e 82 52	?	e 95·0	115·0
II		170·7	48	—	—	e 70 17	?	e 92·4	100·6
I Granada		172·3	63	i 25 49	?PR_1	i 33 7	?	e 43·4	100·0
II		172·3	63	—	—	—	—	82·4	103·0

Additional readings and notes: Wellington I $SR_1 = +5$m.22s., II $PR_1 = +4$m.28s. Apia II SN = +8m.15s.; also several other readings for both shocks. Riverview I $PR_1 = +7$m.4s., MN = +15·3m., II MN = +15·0m., III MN = +14·8m. Sydney I P = 3h.59m.48s. Manila readings are given as separate eP's. Zi-ka-wei I and II readings have been diminished by 1h. Victoria I PN = +25m.0s. Chicago I S? = +25m.10s. Hyderabad I L is given as another P. Toronto I eE = +30m.20s., eSN = +37m.0s., eE = +37m.3s. Ottawa I $PR_1 = +30$m.20s., eS = +37m.31s., $SR_1 = +54$m.22s. Ekaterinburg I MZ = +83·7m., II MZ = +63·0m. Pulkovo I $SR_1 = +36$m.20s., MZ = +85·7m., II MZ = +56·0m., MN = +85·2m. De Bilt ePR_1Z = +25m.32s., MN = +95·7m., MZ = +112·4m., II MN = +95·5m., MZ = +112·1m. Toledo I MNW = +114·0m., II MNW = +109·5m. Granada I i = +26m.47s. and +30m.15s., iSR_1 = +36m.59s.

April 30d. Readings also at 1h. (Ekaterinburg), 6h. (La Paz), 7h. (Berkeley), 11h. and 12h. (near Taihoku), 14h. (near Mostar), 20h. (Taihoku and near Puebla), 22h. (Zi-ka-wei, Hokoto, and Taihoku), 23h. (Apia).

1924. May 1d. 19h. 54m. 15s. Epicentre 14°·0N. 89°·0W.

A = +·017, B = −·970, C = +·242; D = −1·000, E = −·017; G = +·004, H = −·242, K = −·970.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Vera Cruz	E.	8·6	308	3 45	?S	(3 45)	− 8	5·8	9·0
	N.	8·6	308	3 45	?S	(3 45)	− 8	5·9	7·9
Balboa Heights	E.	10·5	117	2 37	0	6 23	?L	8·1	8·5
	N.	10·5	117	2 43	+ 6	6 23	?L	7·2	9·6
Tacubaya		11·2	300	2 56	+ 9	5 22	+23	5·6	7·1
Manzanillo	E.	15·5	291	5 57	?	10 3?	?	11·0	22·6
	N.	15·5	291	6 0	?	9 51?	?	10·8	21·9
Port au Prince		16·6	72	e 4 4	+ 4	i 7 37	+28	10·4	14·2
Mobile		16·7	3	e 3 35	−26	7 5	− 6	—	—
Mazatlan		18·9	302	4 33	+ 5	8 21?	+21	9·4	11·2
Porto Rico	E.	23·0	77	e 5 11	− 6	(e 9 27)	+ 2	12·0	18·3
	N.	23·0	77	e 5 12	− 5	(e 9 38)	+13	11·9	16·4
St. Louis	E.	24·6	355	e 5 45	+11	i 10 14	+19	i 13·1	14·7
Georgetown	E.	27·0	21	e 5 55	− 3	10 57	+16	e 13·2	19·3
	N.	27·0	21	e 5 59	+ 1	10 47	+ 6	e 13·0	—
Washington		27·0	21	6 23	+25	11 14	+33	14·2	—
Cheltenham	E.	27·0	21	e 6 20	+22	e 10 35	− 6	e 19·1	19·3
	N.	27·0	21	e 5 59	+ 1	e 10 37	− 4	e 17·9	20·8
Tucson	E.	27·1	316	6 3	+ 4	e 11 50	+67	e 15·0	16·3
Chicago		27·8	2	6 8	+ 2	10 57	+ 2	14·2	—
Ann Arbor		28·7	8	6 15	0	11 9	− 3	14·2	18·6
Denver		29·3	334	e 6 15	− 6	—	—	e 9·8	—
Ithaca		30·4	19	e 6 32	0	12 13	+32	16·2	—
Toronto	E.	30·8	14	e 6 35	− 1	i 11 45	− 3	16·4	22·7
	N.	30·8	14	i 6 38	+ 2	11 45	− 3	i 16·1	21·9
Northfield		33·2	23	6 59	+ 1	12 25	− 2	e 16·2	—
Ottawa		33·3	18	7 0	+ 1	12 29	0	e 16·2	20·8
La Paz		36·8	145	7 4	−24	i 12 45	−36	14·8	18·2
Halifax		37·5	30	e 7 35	+ 1	i 13 30	− 1	e 17·8	—
Berkeley	E.	38·0	315	i 7 30	− 8	13 30	− 8	19·0	22·7

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Berkeley	N.	38·0	315	i 7 32	− 6	13 32	− 6	19·0	23·0
	Z.	38·0	315	i 7 30	− 8	13 39	+ 1	19·0	23·4
Victoria		44·5	329	8 32	+ 2	15 16	+ 7	23·8	31·1
Sitka	E.	55·4	332	e 9 58	+16	e 17 58	+32	e 30·7	42·9
	N.	55·4	332	—	—	e 18 10	+44	e 31·7	41·6
La Plata	E.	57·1	150	i 9 40	−13	17 20	−27	28·8	35·6
	N.	57·1	150	9 47	− 6	17 28	−19	35·2	39·6
Rio de Janeiro		58·1	130	i 9 53	− 7	17 45	−15	28·8	36·1
Honolulu	E.	65·7	286	10 12	−37	18 30	−63	31·2	33·0
	N.	65·7	286	—	—	18 40	−53	30·2	32·8
Lisbon		73·4	53	—	—	21 16	+ 9	—	40·1
San Fernando		76·0	56	12 5	+10	21 53	+16	34·8	39·8
Edinburgh		76·1	36	12 11	+15	22 12	+34	36·8	49·9
Dyce		76·6	34	12 4	+ 5	21 52	+ 8	37·0	57·8
Stonyhurst		76·7	38	12 5	+ 6	21 55	+10	44·8	—
Toledo		77·3	52	i 11 58	− 5	i 21 46	− 6	34·2	42·5
Oxford		77·6	40	12 13	+ 8	22 0	+ 4	37·4	44·8
Bidston		77·6	38	e 13 21	+76	27 8	?	37·8	46·4?
Granada		78·0	55	i 12 13	+ 6	i 22 10	+10	i 29·2	44·3
Kew		78·3	40	—	—	—	—	—	49·8
Bergen		80·0	30	—	—	—	—	e 40·8	50·8
Paris		80·5	42	i 12 28	+ 6	i 22 42	+13	34·8	38·8
Tortosa	E.	80·6	50	12 25	+ 2	i 22 35	+ 5	e 36·2	47·6
	N.	80·6	50	e 12 48	+25	i 22 37	+ 7	34·3	44·3
Uccle		81·3	40	e 12 26	− 1	e 22 41	+ 3	38·8	39·8
De Bilt		81·5	39	12 34	+ 6	22 48	+ 7	e 38·8	41·9
Barcelona		81·6	49	e 12 32	+ 4	i 22 48	+ 6	e 35·7	46·8
Besançon		83·1	44	e 12 43	+ 6	23 0	+ 2	39·8	44·8
Algiers		83·3	54	e 12 41	+ 3	23 1	+ 1	39·8	47·8
Strasbourg		83·9	42	12 42	+ 1	23 0	− 8	38·8	48·5
Hamburg		84·0	36	e 12 44	+ 2	i 23 10	+ 2	e 38·8	52·8
Zurich		84·8	44	e 12 51	+ 4	e 23 13	− 4	—	—
Moncalieri		84·8	46	13 6	+19	23 20	+ 3	36·1	55·7
Upsala	E.	86·0	29	12 53	0	i 23 19	−11	e 40·8	46·4
	N.	86·0	29	—	—	—	—	e 38·8	50·8
Innsbruck		86·6	42	e 12 57	0	i 23 27	−10	e 38·8	—
Florence		87·6	45	13 0	− 3	24 25	+37	30·2	40·8
Rocca di Papa		89·2	47	13 12	+ 1	i 23 41	−24	e 48·1	—
Konigsberg		89·4	33	e 13 12	0	23 41	−26	e 43·6	55·8
Vienna		89·5	40	i 13 10	− 3	23 44	−25	e 42·2	50·8
Pompeii		90·8	48	i 24 0	?S	(i 24 0)	−22	—	—
Pulkovo		91·6	26	i 13 20	− 5	i 23 55	−36	39·8	57·0
Lemberg		93·5	36	e 17 57	?PR_1	e 24 3	[+14]	—	—
Kucino		97·3	27	13 49	− 7	i 24 25	[+15]	42·8	51·4
Athens		98·4	48	e 12 15	−107	i 24 29	[+13]	—	24·6
Wellington		103·8	230	18 45	?PR_1	25 45	−46	48·2	—
Ekaterinburg		104·8	17	i 14 17	−16	i 24 56	[+10]	32·8	33·9
Helwan		107·7	53	e 15 0	+13	i 25 15	[+15]	—	64·4
Cape Town		112·1	120	19 26	?PR_1	29 11	+84	—	63·5
Irkutsk		112·7	351	e 14 52	−18	i 26 46	−66	48·8	68·2
Baku		113·6	32	e 15 1	−13	i 27 7	−52	53·8	60·0
Osaka		118·9	320	17 39	?	(26 43)	−118	26·7	31·5
Zi-ka-wei		126·2	327	e 10 24	?	e 22 26	?PR_1	—	—
Melbourne		126·8	233	15 45	−28	—	—	—	—
Simla	E.	133·0	16	49 51	?L	—	—	(49·8)	—
Hong Kong		137·1	327	19 35	[+ 1]	—	—	—	83·1
Manila		138·8	314	e 19 37	[− 1]	—	—	—	—
Bombay		142·5	28	19 40	[− 4]	23 25	?PR_1	25·6	73·9
Hyderabad		146·2	20	—	—	—	—	—	86·4
Perth		151·1	228	e 24 4	?PR_1	—	—	—	—
Kodaikanal		152·3	30	41 27	?SR_1	—	—	—	—
Colombo		156·3	28	78 45	?L	—	—	(78·8)	106·8
Batavia		162·6	295	i 20 42	[+32]	—	—	—	—

Additional readings and notes: Vera Cruz SE = +5m.37s.?, SN = +5m.45s. Manzanillo gives its readings as at 13h. Port au Prince R_1 = +11m.37s. and +13m.48s., MNW = +12·2m. Mobile iPN = +3m.30s., N = +3m.49s.; all readings have been increased by 2m. Mazatlan M = +11·1m. Porto Rico eSE = +7m.51s., eSN = +9m.2s., true S is given as L, eE = +15m.9s., T_e = 19h.54m.38s. St. Louis iPR_1E = +6m.34s., i = +11m.16s., eSR_1E = +11m.19s., iE = +11m.22s. Cheltenham ePN = +6m.19s. Tucson eLN = +15·6m., MN = +27·8m. Toronto PR_1N = +11m.0s., iSR_1E = +12m.14s., and +12m.29s., iSR_1N = +12m.15s., iE = +14m.15s., T_1E = 19h.54m.18s., T_1N = 19h.54m.24s. Ottawa PR_1 = +7m.51s., PR_2 = +8m.9s., SR_2 = +14m.45s., T_e = 19h.54m.20s. La Paz iP = +7m.8s.,

Continued on next page.

$PR_1 = +7$m.34s., $T_0 = 19$h.55m.23s. Halifax i = +9m.9s. and +16m.45s., $T_0 = 19$h.54m.22s. Victoria MN = +31·6m., $T_0 = 19$h.54m.17s. Sitka $ePR_2E = +13$m.38s., $eSR_2N = +25$m.37s., LE = +32·3m., $T_0 = 19$h.54m.17s. La Plata N = +11m.51s., +14m.14s., and +14m.25s., E = +14m.57s., $SR_1E = +21$m.12s., $SR_1N = +21$m.19s., +25m.31s., +27m.29s. Rio de Janeiro LN = +28·0m., MN = +35·1m. Honolulu LN = +28·0m., LE = +28·8m. Toledo MNW = +44·4m. Oxford $PR_1 = +15$m.15s. Granada i = +13m.17s., i = +22m.34s., +23m.7s., and +23m.48s. Paris eS = +22m.47s. Uccle $PR_1 = +15$m.33s., $SR_1 = +28$m.9s., $SR_2 = +31$m.21s. De Bilt $SR_1E = +28$m.37s., MZ = +47·2m., MN = +55·3m. Barcelona $PR_1 = +16$m.0s., $SR_1 = +28$m.53s. Strasbourg PZ = +12m.43s., eP = +12m.47s., $PR_1 = +16$m.11s., $PR_2 = +18$m.40s., $SR_1 = +29$m.5s., MN = +48·3m. Moncalieri MN = +56·2m. Upsala $PR_1 = +16$m.23s. Innsbruck iSNW = +23m.28s. Rocca di Papa eLN = +48·6m. Konigsberg e = +16m.53s., i = +17m.9s. Vienna iZ = +13m.43s., i = +14m.30s., PS = +24m.40s., i = +25m.43s., and +26m.28s., MN = +52·8m. Pulkovo $PR_1 = +17$m.6s., $PR_2 = +19$m.31s., $PR_3 = +21$m.8s., $SR_1 = +29$m.57s., MN = +50·9m. Kucino MN = +57·2m. Ekaterinburg eP = +17m.30s., i = +18m.39s., and +20m.53s., iS = +28m.3s., MN = +54·9m., MZ = +55·6m. Irkutsk e = +18m.4s., +19m.44s., +29m.27s., +30m.44s., and +35m.37s., MN = +66·1m. Baku eP = +19m.51s., +25m.43s., and +25m.51s., iS = +29m.44s., and +36m.35s., $SR_2 = +43$m.15s.

May 1d. Readings also at 3h. (Melbourne, Wellington, Sydney, Adelaide, Taihoku, Baku, and Pulkovo), 4h. (Eskdalemuir, Ottawa, Toronto, and and Ekaterinburg), 5h. (De Bilt), 9h. (Pulkovo and Wellington), 10h. (Ekaterinburg and near Vera Cruz), 12h. (Nagasaki (2)), 13h. (Ekaterinburg), 14h. (near La Paz), 20h. (Wellington), 21h. (Kodaikanal), 22h. (Apia).

May 2d. Readings at 1h. (Ekaterinburg, Wellington, Baku, Granada, and Pulkovo), 2h. (Granada, Eskdalemuir, Apia, Ottawa, Toronto, and Chicago), 3h. (Uccle, Strasbourg, and De Bilt), 5h. (La Paz and Granada), 16h. (Irkutsk and near Mizusawa), 17h. (Apia and Ekaterinburg), 20h. (Granada and Hyderabad), 22h. (Manila and near Berkeley).

May 3d. 11h. 19m. 30s. Epicentre 0°·5N. 126°·5E. (as on 1923 Dec. 19d.).

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

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	15·1	339	e 3 48	+ 8	—	—	7·2	—
Malabar	20·4	247	i 4 48	+ 2	—	—	—	—
Batavia	20·7	251	e 4 44	− 5	—	—	14·6	—
Hong Kong	24·9	332	5 23	−14	(9 50)	−11	9·8	—
Zi-ka-wei	31·1	352	6 20	−19	e 11 27	−26	—	17·9
Adelaide	37·2	164	—	—	—	—	—	24·0
Sydney	41·5	149	8 54	+47	—	—	22·2	24·5
Melbourne	41·9	158	—	—	(14 54)	+20	14·9	28·5
Hyderabad	50·2	292	11 18	+130	—	—	—	—
Ekaterinburg	76·6	330	i 10 30	−89	20 11	−93	30·5	48·6
Baku	79·5	312	e 12 17	+ 1	i 22 13	− 5	40·5	49·0
Kucino	88·8	326	23 18	?S	(23 18)	[− 3]	e 42·3	53·5
Pulkovo	92·7	330	e 13 17	−14	e 23 46	[+ 2]	40·5	56·3
Victoria E.	102·8	40	—	—	—	—	51·2	55·0
Strasbourg	108·1	322	—	—	(e 27 30)	+19	e 27·5	62·5
De Bilt	108·2	326	—	—	e 28 30	+78	e 55·5	69·4
Uccle	109·2	324	—	—	—	—	—	56·5
Edinburgh	110·5	332	—	—	—	—	e 62·5	—
Eskdalemuir	110·9	332	—	—	—	—	40·5	—
Toronto E.	130·1	24	—	—	e 55 23	?L	74·0	—
Ottawa	130·1	20	—	—	—	—	e 55·0	—
La Paz	158·5	139	20 15	[+ 8]	—	—	82·3	83·0

Additional readings : Batavia iN = +8m.37s. Ekaterinburg MN = +37·7m., MZ = +48·8m. Baku $SR_2 = +31$m.0s., $SR_3 = +34$m.49s. Kucino eS = +32m.1s., MN = +50·7m. Pulkovo e = +17m.27s. (?PR_1), i = +24m.17s., $SR_1 = +30$m.6s., MNZ = +59·6m. De Bilt MNZ = +69·9m.

May 3d. 15h. 14m. 48s. Epicentre 16°·0N. 119°·0E. (see May 6d.).

A = −·466, B = +·841, C = +·276 ; D = +·875, E = +·485 ;
G = −·134, H = +·281, K = −·961.

De Bilt records west of Manila.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	2·4	126	0 14	−23	—	—	i 0·5	—
Hong Kong	7·8	325	1 52	− 6	—	—	—	5·5
Zi-ka-wei	15·3	8	e 3 39	− 4	e 6 31	− 8	—	9·7
Ekaterinburg	59·5	328	10 12	+ 3	18 23	+ 6	29·2	—
Baku	63·9	308	—	—	e 19 17	+ 5	—	—
Pulkovo	75·6	330	e 11 48	− 5	e 21 18	−15	39·2	49·8
De Bilt	91·2	326	—	—	—	—	e 49·2	—
Strasbourg	91·4	323	—	—	—	—	e 55·2	—
Eskdalemuir	93·7	331	—	—	—	—	59·2	—

Pulkovo gives also MN = +47·5m., MZ = +47·8m.

May 3d. Readings also at 1h. (Granada and near Port au Prince), 5h. (Granada), 8h. (Kodaikanal and near Tacubaya), 9h. (Wellington and near Mizusawa), 10h. and 13h. (Ekaterinburg), 14h. (near Belgrade), 15h. (Irkutsk (2)), 17h. and 23h. (Ekaterinburg).

1924. May 4d. 16h. 51m. 40s. Epicentre **22°·0S. 179°·0E.**

A = −·927, B = +·016, C = −·375 ; D = +·017, E = +1·000 ;
G = +·375, H = −·007, K = −·927.

A depth of focus 0·060 has been 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.
Apia		−1·1	12·0	49	2 38	− 5	—	—	4·3	4·8
Wellington		−2·4	19·6	190	i 4 11	+ 4	i 6 29	−53	7·5	—
Riverview		−3·4	27·2	238	i 5 32	+ 6	i 9 47	+ 7	e 11·6	19·3
Sydney		−3·4	27·2	238	5 20	− 6	9 50	+10	17·1	21·0
Melbourne		−4·0	33·2	235	(6 20?)	0	6 20?	?P	9·1	15·3
Adelaide		−4·5	37·5	241	e 6 56	0	e 9 44	?PR_1	—	16·5
Honolulu	N.	−5·4	48·8	30	e 8 3	−18	e 10 36	?PR_1	11·8	14·2
Perth		−6·0	56·4	246	9 17	+ 8	i 16 39	+15	i 24·1	—
Manila		−6·7	67·7	299	e 10 24	+ 5	(18 47)	+11	18·8	—
Nagoya		−6·8	69·7	326	10 43	+12	—	—	—	—
Malabar		−6·8	70·1	272	i 10 42	+ 8	i 19 19	+14	—	—
Osaka		−6·8	70·2	324	10 35	+ 1	(19 8)	+ 2	19·1	21·6
Kobe		−6·8	70·4	324	10 34	− 2	(19 7)	− 1	19·1	19·2
Mizusawa		−6·8	70·7	331	10 32	− 5	(19 5)	− 7	19·1	—
Batavia		−6·8	71·2	272	i 10 49	+ 8	i 19 30	+12	e 27·6	—
Nagasaki		−6·9	72·1	320	e 10 40	− 6	(e 19 30)	+ 3	—	—
Taihoku		−6·9	73·0	309	e 10 53	+ 1	e 19 38	0	—	—
Hokoto		−6·9	73·6	307	—	—	e 20 13	+27	—	—
Ootomari		−7·0	76·1	336	10 48	−24	—	—	—	—
Zi-ka-wei		−7·1	76·7	314	i 11 10	− 5	e 18 58	−83	—	32·5
Hong Kong		−7·1	77·2	301	11 12	− 6	20 27	0	—	20·5
Berkeley		−7·3	81·3	44	e 11 19	−23	e 20 33	−41	e 34·0	—
Victoria		−7·4	87·2	35	11 50	−28	13 55	?	17·9	31·1
Sitka	E.	−7·5	87·8	24	18 30	?PR_1	—	—	—	21·8
	N.	−7·5	87·8	24	18 16	?PR_1	—	—	—	25·5
Tacubaya		−7·5	90·0	70	12 1	−32	21 38	−74	—	—
Irkutsk		−7·7	98·4	324	i 12 52	−28	22 37	−104	28·3	34·3
Colombo		−7·8	101·0	273	13 32	− 1	—	—	—	74·3
La Plata	E.	−7·8	101·6	136	17 27	?PR_1	25 30	+36	—	—
	N.	−7·8	101·6	136	17 33	?PR_1	25 33	+39	38·2	—
La Paz		—	103·8	115	13 19	−70	i 22 50	?	53·5	57·6
Kodaikanal		—	104·4	276	27 8	?S	(27 8)	+31	63·1	65·0
Hyderabad		—	105·9	283	17 52	?PR_1	30 7	?SR_1	—	—
Chicago		—	106·9	50	15 23	+39	23 2	?	57·3	—
Ann Arbor	E.	—	109·8	50	e 20 2	?PR_1	i 23 20	?	—	—
Bombay		—	111·4	283	18 16	?PR_1	—	—	—	31·4

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.
Toronto	N.	—	113·2	51	—	—	i 25 28	[+ 5]	63·5	—
Georgetown		—	114·1	55	e 18 20	?PR_1	—	—	38·8	—
Washington		—	114·1	55	15 39	+23	23 40	?	—	—
Ottawa		—	116·0	48	15 56	+31	23 42	?	e 31·2	—
Northfield		—	118·0	50	—	—	e 23 20	?	—	—
Rio de Janeiro	N.	—	119·1	135	e 18 5	[−45]	(29 48)	+65	29·8	—
Cape Town		—	120·4	199	22 47	?PR_1	—	—	—	—
Baku		—	133·5	306	i 18 34	[−52]	i 25 37	?	35·3	—
Pulkovo		—	136·3	338	i 18 30	[−63]	31 7	?	60·3	80·0
Upsala		—	139·9	345	e 18 26	[−73]	i 24 22	?PR_1	—	55·8
Bergen		—	141·4	355	—	—	35 20	?SR_1	—	—
Dyce		—	144·8	1	18 42	[−66]	31 57	?	44·2	—
Konigsberg		—	143·4	339	(i 18 45)	[−61]	—	—	—	48·3
Lemberg		—	145·9	330	e 18 45	[−65]	—	—	—	—
Edinburgh		—	146·1	2	i 18 46	[−64]	i 44 44	?SR_1	—	—
Eskdalemuir		—	146·7	2	i 18 50	[−61]	—	—	—	—
Hamburg		—	147·3	349	i 18 50	[−62]	—	—	e 63·3	67·3
Stonyhurst		—	148·1	1	i 18 52	[−61]	—	—	—	25·7
De Bilt		—	149·6	352	i 18 53	[−62]	—	—	—	—
Helwan		—	150·0	291	i 18 55	[−61]	—	—	—	52·5
Vienna		—	150·3	336	18 54	[−62]	—	—	—	55·3
Uccle		—	150·9	353	i 18 54	[−63]	—	—	45·7	52·0
Belgrade		—	151·2	327	e 18 43	[−74]	—	—	—	—
Strasbourg		—	152·6	347	i 18 57	[−63]	—	—	27·3	48·3
Innsbruck		—	152·8	342	i 18 57	[−63]	i 28 49	?	e 44·3	—
Paris		—	153·0	355	i 18 58	[−62]	—	—	35·3	51·3
Zurich		—	153·4	345	18 24	[−96]	42 55	?SR_1	—	—
Moncalieri		—	156·0	345	19 40	[−23]	26 45	?	36·0	45·2
Florence		—	156·0	338	19 2	[−61]	29 3	?	36·3	42·3
Pompeii		—	157·1	329	e 19 20	[−45]	—	—	48·3	—
Rocca di Papa		—	157·2	333	19 4	[−61]	21 23	?	e 30·8	51·5
Barcelona		—	160·4	353	19 9	[−59]	29 30	?	60·9	—
Tortosa	N.	—	161·2	357	i 19 8	[−61]	29 28	?	41·6	44·0
Lisbon		—	161·9	21	i 19 11	[−58]	—	—	—	49·6
Toledo		—	162·0	8	19 10	[−59]	26 40	?PR_1	e 34·5	53·3
Granada		—	164·7	8	i 19 11	[−61]	i 26 45	?PR_1	—	—
Algiers		—	164·8	348	i 19 9	[−63]	—	—	35·3	41·3
San Fernando		—	164·9	16	i 19 15	[−57]	26 50	?PR_1	34·3	—

Additional readings and notes: Apia +2m.42s. Riverview iS = +9m.52s., MN = +15·2m., MZ = +20·2m. Perth SR_1 = +20m.52s., L? = +30·5m. Osaka S = +15m.4s., MN = +24·2m. Kobe eS = +15m.6s., MN = +19·9m. Mizusawa PN = +10m.33s. Batavia iN = +11m.33s. Nagasaki gives S as eM. Zi-ka-wei PR_1Z = +14m.18s., SR_1Z = +21m.15s. Hong Kong +14m.10s. Berkeley ePENZ = +11m.20s., iZ = +11m.36s., iEZ = +13m.18s., PR_2Z = +17m.7s., iSENZ = +20m.40s., iN = +20m.48s., and +24m.14s., iE = +24m.11s. Victoria MN = +30·9m. Irkutsk PR_1 = +14m.53s., P_3 = +15m.48s., S_1 = +19m.46s., SR_1 = +23m.36s., SR_2 = +25m.10s., SR_3 = +26m.24s. La Plata iE = +22m.48s., iN = +22m.56s., E = +26m.37s., N = +26m.51s., SR_2?E = +32m.1s. La Paz eS = +22m.20s., L and M are given as for a second shock for which iP = +23m.3s. and no S is recorded. Toronto eN = +23m.18s., iE = +23m.29s., and +24m.34s. Georgetown eL = +30·7m., LN = +39·7m. Ottawa e = +13m.57s., PR_1? = +18m.44s., e = +21m.33s., i = +24m.48s., iSR_1? = +27m.40s., iSR_1? = +28m.50s. Ekaterinburg (Δ = 123°·7), e = +11m.17s., i = +11m.40s., +13m.17s., and +13m.27s. Baku i = +21m.12s., L = +21·7m. Pulkovo e = +18m.7s., SR_1 = +38m.32s., MZ = +82·6m., MN = +82·8m., and several i readings. Upsala i = +22m.11s. Dyce i = +35m.7s., i = +37m.20s. Konigsberg [P] is given as PR_1, also i = +19m.54s., +21m.4s., +22m.27s., and +24m.39s. Eskdalemuir iPE = +18m.55s., iN = +21m.0s. Hamburg iZ = +21m.3s., and +21m.59s., iN = +22m.35s. and +32m.15s., eZ = +35m.38s., eN = +46m.40s. De Bilt PN = +18m.55s., iZ = +21m.8s., i = +21m.10s., iZ = +22m.6s., and +25m.27s. Vienna iP = +19m.9s., PR_1 = +22m.32s., PR_2 = +25m.10s., SR_2 = +32m.41s., and several i readings. Uccle i = +21m.14s., and +22m.10s. Belgrade e = +18m.52s., i = +19m.7s., +20m.49s., and +21m.29s. Strasbourg PR_1 = +19m.55s., e = +24m.8s., and +25m.25s., MN = +48·1m. Innsbruck eNE = +32m.44s. Paris PR_1 = +21m.9s. Florence S = +22m.20s. (?PR_1). Rocca di Papa PN = +19m.6s. Barcelona PS = +30m.19s., SR_1? = +36m.17s., eL = +48·2m. Tortosa iPE = +19m.11s. Toledo i = +19m.56s. and +23m.38s., MNW = +52·4m. Granada i = +20m.59s., +22m.26s., +24m.16s., and +25m.16s. Algiers i = +20m.2s., e = +23m.54s., ? = +26m.56s.

NOTE TO MAY 4d. 16h.

The assumption of so great a depth of focus as 0·060 requires careful examination.

(a) The value of T_0 is well supported by Riverview, Perth, Manila, Malabar, Osaka, Batavia, Taihoku, Hong Kong, Berkeley.

(b) There is a large number of stations near the antipodes which consistently show the arrival of [P] to be early by about one minute.

(c) Collecting the stations according to azimuth we should have the following values of $\delta\Delta$ to satisfy.

No. Stns.	Az.	With deep focus.	Without focus.	Eqn. Sin Az. Cos Az.	Residuals. With	Residuals. Without
	°	°	°		°	°
3	41	−2·0	−6·6	= +·66x + ·75y	−1·0	− 7·9
1	190	+0·3	−2·1	= −·17x − ·98y	−0·5	− 4·7
4	239	+0·4	−3·8	= −·86x − ·52y	−0·7	− 0·5
7	296	+0·7	−6·2	= −·90x + ·44y	+0·4	+ 1·1
6	327	−0·4	−7·3	= −·54x + ·84y	−0·2	− 0·8
	Sum	±3·8	±26·0		±2·8	±15·0

The solution *with* deep focus is $x = -0°·8$, $y = -0°·7$, which still leaves the residuals mainly negative, suggesting that the depth 0·060 is even yet not large enough.

The solution *without* deep focus is $x = +6°·2$, $y = -3°·8$, and shews some improvement by moving the epicentre in this drastic fashion, but leaves still some large residuals.

May 4d. Readings also at 3h. (Manila), 4h. (near Granada), 6h. (near Baku), 8h. (Apia), 10h. (Lemberg), 12h. (Perth, La Paz, and Pulkovo), 13h. (Nagoya, De Bilt, Ekaterinburg, Uccle, and Vienna), 15h. (Irkutsk), 17h. (La Paz), 20h. (Kucino), 21h. (Apia), 22h. (Colombo), 23h. (La Paz).

May 5d. 6h. 7m. 45s. Epicentre 15°·5N. 106°·0W.

$A = -·266$, $B = -·926$, $C = +·267$; $D = -·961$, $E = +·276$; $G = -·074$, $H = -·257$, $K = -·964$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya		7·6	58	4 43	?L	9 42	?	11·0?	—
Chicago		30·7	27	—	—	e 11 45	− 1	—	—
Victoria		35·8	340	20 11	?L	—	—	29·7	33·1
Toronto	E.	36·1	34	—	—	i 13 25	+14	20·2	—
Ottawa		39·2	35	—	—	e 13 45	− 9	e 21·2	—
La Paz		49·2	129	9 1	0	16 8	− 1	23·4	25·9
De Bilt		90·2	35	—	—	—	—	e 48·2	—
Pulkovo		96·9	20	e 17 28	?PR_1	e 25 35	+10	—	—

Additional readings: Tacubaya LN = +11·8m. Victoria MN = +35·8m.

May 5d. 15h. 56m. 45s. Epicentre 12°·5N. 158°·0E.

$A = -·905$, $B = +·366$, $C = +·216$; $D = +·375$, $E = +·927$; $G = -·201$, $H = +·081$, $K = -·976$.

Uncertain.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	36·0	279	e 7 23	+ 1	—	—	12·2	—
Zi-ka-wei	38·5	308	e 7 50	+ 8	—	—	—	—
Hong Kong	42·8	289	14 25	?S	(14 25)	−20	—	—
Riverview	46·8	188	e 10 9	?PR_1	(e 15 27)	−11	e 15·4	17·0
Malabar	53·8	252	18 23	?S	(18 23)	+77	—	—
Batavia	54·1	254	18 14	?S	(18 14)	+64	—	—
Irkutsk	58·4	325	e 10 28	+27	19 44	+100	33·2	—
Perth	60·0	222	e 16 21	?PR_1	—	—	—	—
Ekaterinburg	83·5	327	1 12 39	0	e 23 3	0	34·8	—
La Paz	135·3	102	19 9	[−22]	—	—	—	—

Additional readings: Malabar S = +23m.13s. Batavia iN = +19m.37s., iE = +21m.13s., iS = +22m.57s. Irkutsk PS = +20m.24s. Ekaterinburg i = +16m.31s.

May 5d. Readings also at 0h. (Ekaterinburg), 3h. (Rocca di Papa), 4h. (Ekaterinburg, De Bilt, Pulkovo, Eskdalemuir, and Simla), 14h. (La Paz), 17h. (near Irkutsk), 18h. (Taihoku), 20h. (La Paz), 21h. (Taihoku and Ekaterinburg), 23h. (La Paz).

May 6d. 2h. 49m. 0s. Epicentre 34°·0S. 175°·0W. (as on 1924 April 30d.).

$A = -\cdot826$, $B = -\cdot072$, $C = -\cdot559$; $D = -\cdot087$, $E = +\cdot996$; $G = +\cdot557$, $H = +\cdot049$, $K = -\cdot829$.

The epicentre of 1921 April 15, viz. 33°·3S. 173°·7W., suits these observations rather better than that adopted, but the epicentre of 1924 April 30d. was preferred because of the recent occurrence of a shock from thence.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington		10·9	225	3 0	+17	4 57	+ 5	5·9	9·2
Suva		15·3	334	3 15	−28	6 50	+11	7·8	—
Apia		20·4	9	6 0	+74	—	—	—	16·0
Riverview		28·0	261	—	—	e 11 4	+ 5	e 15·3	16·2
Sydney		28·0	261	6 18	+10	—	—	15·3	16·7
Melbourne		32·4	251	—	—	(12 0)	−14	12·0	19·4
Adelaide		37·9	257	—	—	—	—	—	23·4
Perth		56·9	251	—	—	—	—	e 32·1	—
Zi-ka-wei		88·5	311	e 12 29	−39	—	—	—	—
Victoria	E.	94·4	31	25 40	?S	(25 40)	+40	47·6	50·7
	N.	94·4	31	25 40	?S	(25 40)	+40	48·3	50·3
Chicago		110·2	51	—	—	—	—	e 51·0	—
Toronto	E.	116·4	53	—	—	—	—	56·5	—
Bombay		118·5	274	—	—	—	—	67·0	—
Ottawa		119·4	52	—	—	—	—	e 56·0	—
Ekaterinburg		136·4	320	e 20 8	[+35]	—	—	70·0	112·6
Pulkovo		149·4	335	i 20 38	[+43]	e 34 0	?	79·0	91·4
De Bilt		161·8	0	e 21 36	[+87]	—	—	e 92·0	98·8
Uccle		163·2	1	—	—	—	—	—	90·0
Vienna	Z.	163·4	332	e 20 58	[+48]	—	—	—	—
Paris		165·0	6	e 21 5	[+53]	—	—	92·0	96·0
Strasbourg		165·3	353	—	—	—	—	71·0	—
Granada		172·3	63	e 20 43	[+27]	i 31 24	?	e 42·1	48·9

Additional readings: Wellington $SR_1 = +5$m.30s., $T_e = 2$h.49m.5s. Riverview ePR_1? = +6m.31s., MZ = +16·0m., MN = +16·3m. Ekaterinburg i = +23m.36s. and +24m.34s., MZ = +112·7m. Toronto LN = +65·7m. Pulkovo MZ = +91·0m. De Bilt MZ = +96·4m. Granada iP = +20m.54s.

May 6d. 6h. 23m. 10s. (I) / 10h. 32m. 5s. (II) } Epicentre 55°·0N. 160°·0W. (as on 1924 Jan. 7d.).

$A = -\cdot539$, $B = -\cdot196$, $C = +\cdot819$; $D = -\cdot342$, $E = +\cdot940$; $G = -\cdot770$, $H = -\cdot280$, $K = -\cdot574$.

			Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
			°	°	m. s.	s.	m. s.	s.	m.	m.
I	Victoria	E.	23·4	90	5 31	+10	(9 46)	+13	9·8	12·4
I		N.	23·4	90	5 38	+17	(9 45)	+12	9·8	12·5
II		E.	23·4	90	5 40	+19	(9 44)	+11	9·7	12·5
II		N.	23·4	90	5 43	+22	(9 45)	+12	9·8	12·6
I	Honolulu		33·7	177	—	—	—	—	e 16·8	—
II			33·7	177	—	—	—	—	e 14·3	—
I	Chicago		47·5	76	—	—	e 15 40	− 8	28·3	—
II			47·5	76	—	—	i 15 45	− 3	28·4	—
I	Toronto		50·7	67	—	—	—	—	28·3	—
II		E.	50·7	67	—	—	e 16 25	− 2	28·2	—
II		N.	50·7	67	i 16 27	?S	(i 16 27)	0	28·6	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I Ottawa		51·4	63	—	—	e 16 37	+ 1	e 23·8	—
II		51·4	63	—	—	e 16 36	0	e 27·7	—
II Zi-ka-wei		58·6	281	10 0	− 3	—	—	—	31·7
I Pulkovo		64·9	355	10 46	+ 2	19 27	+ 3	29·8	—
II		64·9	355	i 10 50	+ 6	19 29	+ 5	31·9	38·2
II De Bilt		72·2	10	11 37	+ 6	—	—	e 36·9	—
II Uccle		73·4	10	—	—	e 21 13	+ 6	e 35·9	—
I Vienna	Z.	76·7	3	e 12 2	+ 3	—	—	—	—
I Granada		85·6	19	e 17 13	?PR_1	i 29 21	?SR_1	e 38·9	49·6
II		85·6	19	e 13 37	+46	i 24 32	+66	e 43·6	45·9
I San Fernando		85·8	21	—	—	43 18	?L	49·8	56·8

Additional readings: Honolulu I eE = +15m.15s. Toronto I eN = +29m.59s., II eE = iN = +16m.48s., eSE = +24m.55s., iSN = +24m.57s., eN = +26m.48s. Ottawa I e = +20m.37s., eL = +27·8m. Pulkovo II MZ = +37·8m., MN = +43·9m. Granada I i = +23m.22s., II iP = +13m.44s.

1924. May 6d. 16h. 9m. 20s. Epicentre 16°·0N. 119°·0E.

(as on May 3d.).

A = −·466, B = +·841, C = +·276; D = +·875, E = +·485; G = −·134, H = +·241, K = −·961.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		2·4	126	i 0 46	+ 9	—	—	—	—
Hokoto		7·5	4	—	—	e 3 21	− 3	—	—
Hong Kong		7·8	325	2 0	+ 2	3 57	+26	—	5·7
Taihoku		9·3	15	2 38	+18	—	—	4·8	6·4
Zi-ka-wei		15·3	8	3 43	0	e 6 33	− 6	—	11·6
Nagasaki		19·4	28	e 4 34	0	(8 14)	+ 4	8·2	8·6
Kobe		23·6	35	2 23	−181	7 2	−154	9·7	10·3
Osaka		23·8	35	5 23	− 3	(9 46)	+ 6	9·8	11·0
Nagoya		25·0	37	5 18	−20	(10 1)	− 2	10·0	11·2
Calcutta	E.	29·6	288	6 25	+ 1	11 25	− 2	16·8	—
Mizusawa	E.	30·2	37	6 16	−14	11 14	−23	—	—
	N.	30·2	37	6 17	−13	11 13	−24	—	—
Irkutsk		38·1	347	7 27	−12	13 23	−16	18·7	20·6
Hyderabad		38·8	279	7 35	− 9	13 40	− 9	19·3	24·7
Colombo		39·4	263	7 16	−34	(13 40)	−17	13·7	14·2
Kodaikanal		40·8	270	8 4	+ 3	(14 52)	+34	14·9	28·3
Bombay		44·0	282	8 31	+ 5	14 20	−42	20·2	32·6
Perth		48·1	183	9 2	+ 7	15 43	−12	e 21·9	—
Adelaide		54·3	160	—	—	e 16 34	−39	—	33·4
Riverview		58·6	150	e 10 19	+16	e 17 55	−11	e 26·2	36·7
Sydney		58·6	150	9 46	−17	—	—	25·9	30·5
Melbourne		59·1	157	—	—	e 17 52	−20	—	33·9
Ekaterinburg		59·5	328	—	—	—	—	67·2	77·2
Suva		68·2	123	9 50	−75	—	—	22·7	—
Kucino		71·8	325	—	—	—	—	e 33·2	41·6
Ksara		75·3	302	11 59	+ 8	21 47	+18	—	—
Pulkovo		75·6	330	11 52	− 1	i 21 39	+ 6	37·7	41·7
Wellington		77·1	140	e 11 58	− 4	21 46	− 4	22·7	—
Honolulu	E.	77·9	71	e 12 51	+45	22 10	+11	35·9	45·5
	N.	77·9	71	e 13 17	+71	22 10	+11	35·8	44·8
Helwan		80·2	299	12 20	0	22 23	− 2	—	57·4
Lemberg	E.	80·9	320	e 12 5	−19	e 22 33	− 1	e 44·4	50·4
	N.	80·9	320	e 12 7	−17	e 22 27	− 7	e 43·2	49·1
Upsala		81·8	331	e 12 22	− 7	22 42	− 2	e 37·7	52·2
Athens		84·3	310	e 12 50	+ 6	e 23 5	− 6	—	—
Belgrade		84·7	316	e 12 50	+ 4	e 23 8	− 8	e 43·6	54·4
Vienna		86·2	320	12 52	− 2	23 32	0	e 41·2	47·2
Bergen		87·2	334	—	—	e 35 20	?L	(e 35·2)	70·7
Hamburg		87·9	326	e 12 40	−24	e 23 34	−17	e 42·7	48·3
Innsbruck		89·7	320	e 13 4	−10	e 23 41	−30	e 44·7	52·1
Venice		89·8	319	20 40	?	—	—	—	—

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		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Pompeii		90·1	314	e 17 25	?PR$_1$	e 27 25	?SR$_1$	—	—
Rocca di Papa		91·0	315	e 13 20	− 1	—	—	e 48·4	55·4
De Bilt		91·2	326	e 13 21	− 1	23 55	[+20]	e 45·7	52·7
Florence		91·2	318	23 10	?S	(23 10)	[−25]	43·7	50·7
Zurich		91·4	320	e 13 16	− 7	23 46	[+ 9]	—	—
Strasbourg		91·4	323	13 20	− 3	23 53	[+16]	40·7	59·2
Uccle		92·2	325	e 13 18	−10	e 23 51	[+10]	e 39·7	53·6
Dyce		92·2	332	13 22	− 6	24 2	[+21]	41·9	62·3
Moncalieri		93·0	319	13 40	+ 8	23 52	[+ 6]	38·0	52·8
Besançon		93·1	321	e 13 39	+ 6	23 59	[+12]	49·7	51·7
Edinburgh		93·3	331	e 16 40	?PR$_1$	i 24 43	− 5	42·7	53·0
Eskdalemuir		93·7	331	e 13 45	+ 9	e 24 7	[+17]	41·7	51·5
Paris		93·8	325	e 13 29	− 8	e 24 7	[+16]	46·7	59·7
Stonyhurst		94·2	330	14 8	+29	24 10	[+17]	48·2	—
Kew		94·4	328	23 40	?S	(23 40)	[−14]	—	66·7
Oxford		94·7	328	e 17 42	?PR$_1$	i 25 15	+12	46·4	60·2
Bidston		94·7	330	17 16	?PR$_1$	24 0	[+ 5]	41·6	56·6
Victoria	E.	95·1	37	13 42	− 2	24 16	[+18]	45·3	57·2
	N.	95·1	37	13 42	− 2	24 21	[+23]	45·2	59·2
Barcelona		98·2	318	17 54	?PR$_1$	24 25	[+11]	e 47·7	59·8
Tortosa		99·5	319	e 18 4	?PR$_1$	28 20	+149	45·7	63·0
Algiers		99·8	315	—	—	e 23 33	[−50]	e 42·7	57·7
Toledo		103·0	320	e 14 0	−25	24 52	[+14]	e 45·2	68·7
Granada		104·2	317	e 14 5	−26	e 25 15	[+31]	e 43·7	58·0
San Fernando	N.	106·4	318	—	—	—	—	—	70·2
Lisbon		106·9	321	—	—	e 25 51	−69	—	58·4
Cape Town		107·4	239	19 27	?PR$_1$	—	—	—	58·4
Chicago		117·2	21	19 18	?PR$_1$	27 58	−30	50·7	—
Ottawa		117·2	11	20 6	?PR$_1$	e 27 51	−37	e 48·2	—
Ann Arbor		118·0	18	20 16	?PR$_1$	—	—	50·7	—
Toronto	E.	118·0	14	19 41	?PR$_1$	e 30 4	?	48·2	59·8
	N.	118·0	14	19 40	?PR$_1$	e 30 1	?	55·4	—
Ithaca		119·8	12	e 20 30	?PR$_1$	—	—	e 50·7	—
Georgetown		123·0	14	—	—	—	—	58·7	—
Washington		123·0	14	e 20 25	?PR$_1$	—	—	78·7	—
Rio de Janeiro		162·0	245	e 20 48	[+39]	—	—	51·2	—
La Paz		173·1	95	e 20 25	[+ 9]	34 40	?	78·9	100·4

Additional readings: Taihoku MN = +8·0m. Zi-ka-wei MN = +10·3m. Nagasaki MN = +8·4m. Osaka MN = +12·0m. Calcutta SN = +11m.32s., LN = +16·5m. Irkutsk MZ = +23·8m. Hyderabad PR$_1$ = +9m.15s., T$_o$ = 16h.9m.11s. Colombo S = +9m.10s. Perth PR$_1$ = +10m.54s., PR$_2$? = +14m.4s., L = +28·0m. Riverview eS = +19m.51s., MN = +32·4m., T$_o$ = 16h.10m.6s. Ekaterinburg MN = +76·1m. Kucino MN = +41·2m. Pulkovo eS = +21m.2s., SR$_1$ = +26m.22s., SR$_2$ = +29m.46s., MN = +45·2m. Upsala MN = +46·1m. Vienna iPZ = +12m.57s., iN = +13m.43s., iE = +14m.56s., PR$_1$ = +16m.49s., S? = +23m.51s., iEN = +25m.54s., iE = +26m.28s., and +27m.42s., iEN = +38m.46s. Hamburg MN = +50·5m., MZ = +55·3m. Innsbruck MNW = +52·2m. Rocca di Papa ePN = +13m.21s., ePE = +13m.51s. De Bilt eSR$_1$ = +30m.27s., eLN = +44·7m., MZ = +57·6m. Florence S = +30m.40s. Strasbourg MN = +51·1m. Uccle SR$_1$ = +30m.42s., MN = +50·7m. Dyce PR$_1$ = +17m.29s. Moncalieri MN = +57·6m. Eskdalemuir e = +17m.10s. (?PR$_1$). Paris e = +17m.6s. (?PR$_1$), SR$_1$ = +27m.5s., MN = +50·7m. Tortosa eLN = +45·2m., MN = +63·4m. Toledo MNW = +58·9m. Granada iS = +27m.15s. Ottawa e = +29m.54s., +35m.38s., and +39m.25s. Toronto P?E = +19m.43s., PR$_1$N = +20m.21s., eE = +27m.48s., +29m.18s., and +36m.25s. Ithaca e = +36m.40s.

May 6d. Readings also at 0h. (Tacubaya), 1h. (Rocca di Papa (2)), 2h. (Rocca di Papa and La Paz), 4h. (Granada), 5h. (Victoria), 8h. (La Paz and Ekaterinburg), 12h. (Nagoya and near Osaka), 15h. (Ekaterinburg, Irkutsk, Toledo, and near Taihoku), 16h. and 17h. (2) (Manila), 18h. (near Mizusawa), 19h. (Ekaterinburg), 22h. (Apia), 23h. (near Manila).

May 7d. 0h. 17m. 45s. Epicentre 16°·0S. 140°·0E.

$A = -\cdot736$, $B = +\cdot618$, $C = -\cdot276$; $D = +\cdot643$, $E = +\cdot766$; $G = +\cdot211$, $H = -\cdot177$, $K = -\cdot961$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	20·5	153	e 4 54	+ 7	e 8 36	+ 2	e 9·8	10·8
Sydney	20·5	153	—	—	8 27	− 7	10·2	11·6
Melbourne	22·2	170	i 5 15	+ 8	—	—	—	7·4
Perth	27·1	230	10 35	?S	(10 35)	− 8	13·8	—
Manila	35·9	328	e 7 24	+ 3	—	—	—	—
Wellington	39·2	137	6 25	−83	(11 35)	−139	11·6	12·6
Bombay	74·7	295	—	—	—	—	44·2	—
Pulkovo	113·7	329	e 19 57	?PR_1	e 29 49	+109	76·2	79·4
Strasbourg	129·4	321	—	—	—	—	85·2	—
De Bilt	129·4	326	—	—	—	—	e 75·2	—
Uccle	130·4	325	—	—	—	—	e 81·2	—
Paris	132·4	323	—	—	—	—	90·2	—
Toronto	136·7	42	75 53	?L	—	—	79·4	—
La Paz	137·3	138	37 37	?SR_1	—	—	48·4	—
Ottawa	138·1	38	—	—	—	—	e 79·2	—

Additional readings: Riverview MN = +10·5m., MZ = +13·1m. Perth iS = +12m.7s., L? = +14·5m. Wellington eS = +10m.6s. Toronto LN = +95·4m.

May 7d. Readings also at 1h. (near Nagasaki), 2h. (near Kobe), 3h. and 4h. (Eskdalemuir), 5h. (Apia), 6h. (Eskdalemuir), 10h. (Nagoya and near Kobe (2)), 12h. (near Manila), 13h. (Ekaterinburg, Toronto, Ottawa, and Chicago), 14h. (Riverview, Sydney, and Wellington), 15h. (Riverview, Sydney, Melbourne, Wellington, Perth, Ekaterinburg, and De Bilt), 16h. (Irkutsk, Baku, and Ekaterinburg), 17h. (De Bilt), 19h. (Manila, Taihoku, and La Paz), 21h. (Baku), 23h. (Ekaterinburg).

May 8d. 5h. 35m. 42s. Epicentre 10°·7S. 158°·5E.

$A = -\cdot914$, $B = +\cdot360$, $C = -\cdot186$; $D = +\cdot367$, $E = +\cdot930$; $G = +\cdot173$, $H = -\cdot068$, $K = -\cdot983$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Suva	20·9	119	4 58	+ 6	8 38	− 4	9·7	—
Riverview	24·1	195	e 5 21	− 8	e 10 45	+59	13·7	15·4
Sydney	24·1	195	5 24	− 5	9 54	+ 8	14·3	15·8
Melbourne	29·7	202	—	—	11 42?	+13	18·0	18·7
Adelaide	30·2	214	e 8 18	?PR_1	e 12 6	+29	e 18·6	22·5
Wellington	33·8	158	3 12	?	4 42	?	8·8	9·2
Perth	44·6	235	—	—	e 17 33	?SR_1	32·2	—
Honolulu	53·4	53	—	—	—	—	e 27·5	—
Berkeley	88·2	51	—	—	—	—	e 57·9	—
Victoria E.	90·3	41	24 24	?S	(24 24)	+ 7	44·3	59·4
Victoria N.	90·3	41	24 26	?S	(24 26)	+ 9	45·5	63·6
Ekaterinburg	103·2	326	e 19 1	?PR_1	i 22 30	?	62·3	82·1
Baku	111·0	310	e 19 55	?PR_1	e 26 25	−72	74·3	84·9
Chicago	114·9	48	—	—	e 28 48	+39	—	—
Kucino	115·8	327	—	—	—	—	e 73·3	—
Pulkovo	117·8	333	19 32	?PR_1	e 29 52	+80	79·3	85·5
Toronto E.	120·4	44	—	—	(35 56)	?SR_1	61·5	—
Ottawa	122·4	41	e 30 3	?	36 48	?SR_1	63·3	—
Edinburgh	132·6	346	—	—	—	—	—	89·3
De Bilt	133·4	337	e 20 22	?PR_1	—	—	84·3	92·6
Uccle	134·7	335	—	—	—	—	—	89·3
Strasbourg	135·0	332	—	—	—	—	124·3	—
Moncalieri	137·6	329	—	—	e 58 20	?	73·7	—
Toledo	147·0	335	—	—	—	—	e 90·2	—

Additional readings: Riverview MN = +15·1m., T_e = 5h. 34m. 12s. Adelaide e = +16m.18s. Perth S = +28m.33s. Honolulu eN = +27m.1s. Baku e = +40m.50s. Pulkovo MZ = +86·1m. De Bilt MN = +93·0m., MZ = +93·1m.

May 8d. Readings also at 0h. (La Paz), 3h. (Zante), 10h. (Sapporo), 12h. (Apia), 14h. (Irkutsk), 15h. (Ekaterinburg), 16h. (Irkutsk and near Berkeley (28)), 17h. (near Berkeley (13)), 21h. (Ekaterinburg), 22h. (Ekaterinburg, Manila (3), and Pulkovo), 23h. (Manila (3) and Ekaterinburg).

May 9d. Readings at 3h. (Pompeii), 4h. (Manila and Pompeii), 5h. (Strasbourg, Pompeii, Perth, near Belgrade, and near Rocca di Papa), 11h. (Ekaterinburg and Wellington), 12h. (Baku), 13h. (Strasbourg), 22h. (Toledo), 23h. (Apia and Ekaterinburg).

May 10d. 2h. 48m. 40s. Epicentre 36°·3S. 169°·0W.

$A = -\cdot791$, $B = -\cdot154$, $C = -\cdot592$; $D = -\cdot191$, $E = +\cdot982$; $G = +\cdot581$, $H = +\cdot113$, $K = -\cdot806$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington		13·5	243	e 3 20	0	(5 52)	− 4	6·6	15·3
Suva		19·9	322	4 40	0	8 20	− 1	9·3	13·7
Apia		22·6	353	—	—	e 10 5	?PR_1	—	12·3
Riverview		32·5	264	e 6 55	+ 2	e 12 20	+ 4	e 14·7	18·5
Melbourne		36·4	255	—	—	13 20	+ 4	19·8	21·6
Adelaide		42·1	258	—	—	e 13 38?	+ 2	e 20·7	23·8
Honolulu		58·6	12	—	—	—	—	e 19·2	30·3
Perth		60·8	250	e 18 35	?S	(18 35)	+ 2	43·3	—
Manila		83·3	294	e 12 59	+21	—	—	—	—
Victoria		93·9	28	25 17	?S	(25 17)	+22	47·2	70·8
Chicago		107·7	51	—	—	e 26 20	−47	71·3	—
Colombo		111·1	261	55 20	?L	—	—	(55·3)	70·3
Toronto		113·9	50	—	—	i 27 5	−56	62·7	—
Ottawa	E.	117·0	50	e 24 35	?	e 27 13	−73	65·3	—
Ekaterinburg		141·4	318	e 20 32	[+50]	e 23 59	?PR_1	59·3	77·2
Baku		149·5	290	—	—	—	—	66·3	—
Kucino		153·4	326	25 28	?	—	—	47·3	—
Pulkovo		153·5	338	21 5	?PR_1	e 31 22	?	47·8	77·2
Edinburgh		158·2	22	—	—	—	—	e 88·3	—
Hamburg		162·7	2	—	—	—	—	e 83·3	—
De Bilt		163·7	13	e 21 46	?	—	—	e 77·3	102·1
Uccle		164·7	16	—	—	e 35 20	?	e 45·7	78·3
Paris		166·0	24	e 21 30	?	e 26 3	?	86·3	—
San Fernando		166·1	84	e 22 43	?PR_1	—	—	e 54·0	—
Strasbourg		167·5	10	e 22 34	?	e 37 20	?	47·8	—
Toledo		167·6	69	e 22 34	?	e 34 36	?	e 89·9	—
Granada		168·3	81	e 23 4	?	34 51	?	—	—
Tortosa	N.	170·6	58	—	—	—	—	e 80·3	—
Moncalieri		171·0	15	e 25 24	?PR_1	34 5	?	46·3	—
Rocca di Papa		174·4	348	e 24 22	?PR_1	—	—	e 53·9	—

Additional readings: Wellington gives S as SR_1, also S = +5m.37s., T_g = 2h.49m.5s. Riverview MN = +16·5m. Perth S? = +23m.36s. Victoria LN = +47·3m., MN = +69·6m. Toronto iE = +27m.5s., eE = +31m.12s. LN = +54·5m. Ottawa e = +31m.28s. Ekaterinburg i = +20m.35s., e = +23m.59s., i = +24m.4s., e = +41m.4s. and +43m.0s., MN = +65·7m., MZ = +71·2m. Pulkovo MN = +79·8m. Kucino S = +36m.5s. De Bilt eE = +45m.56s., MZ = +94·7m., MN = +95·0m. Toledo e = +47m.18s.

May 10d. Readings also at 3h. (Osaka, Zi-ka-wei, Mizusawa, Kobe, and Nagoya), 4h. (Manila (2)), 5h. (Apia), 8h. (Manila), 9h. (Ekaterinburg and Manila (2)), 10h. (Nagasaki), 11h. (Ekaterinburg), 15h. and 17h. (Manila), 18h. (Moncalieri), 22h. (Perth and Rio de Janeiro).

May 11d. 15h. 53m. 10s. Epicentre 34°·6N. 140°·7E. (as on 1921 May 13d.).

A = −·637, B = +·521, C = +·568 ; D = +·633, E = +·774 ; G = −·439, H = +·360, K = −·823.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		3·2	281	1 20	+30	—	—	—	—
Osaka		4·3	272	1 38	+31	—	—	3·4	4·6
Mizusawa	E.	4·5	358	1 6	− 4	1 58	− 6	3·1	—
	N.	4·5	358	1 7	− 3	1 59	− 5	3·0	—
Kobe		4·6	272	1 16	+ 5	2 14	+ 8	3·4	3·5
Hong Kong		26·2	249	—	—	—	—	—	18·3
Manila		26·8	227	e 6 50	+54	—	—	—	—
Irkutsk		31·3	316	e 6 56	+15	e 11 15	−41	14·8	19·1
Ekaterinburg		56·4	320	e 10 28	+40	17 32	− 7	26·8	36·6
Apia		66·2	130	—	—	—	—	42·8	—
Kucino		68·5	325	e 20 10	?S	(e 20 10)	+ 2	e 34·7	41·4
Baku		69·0	306	—	—	e 20 13	− 1	35·2	39·8
Pulkovo		69·8	331	—	—	e 20 21	− 3	37·8	43·9
Hamburg		82·1	334	—	—	—	—	e 44·8	—
De Bilt		85·0	335	—	—	—	—	e 47·8	—
Uccle		86·3	334	—	—	—	—	e 45·8	—
Strasbourg		86·9	331	—	—	—	—	47·8	—
Moncalieri		89·8	330	e 18 30	?PR_1	—	—	47·8	—
Ottawa		93·5	25	—	—	—	—	e 58·8	—
Toronto	E.	93·6	28	—	—	—	—	53·0	—
Granada		100·9	334	—	—	—	—	e 53·8	57·3
La Paz		148·5	62	—	—	—	—	93·8	—

Additional readings: Osaka MN = +4·3m. Kobe MN = +3·4m. Ekaterinburg MN = +36·7m., MZ = +38·7m. Kucino eS = +26m.40s. Baku MN = +38·9m. Pulkovo MNZ = +44·0m. Ottawa LE = +51·3m.

May 11d. 22h. 16m. 48s. Epicentre 40°·0N. 76°·0E. (as on 1924 Mar. 31d.).

A = +·185, B = +·743, C = +·643 ; D = +·970, E = −·242 ; G = +·155, H = +·624, K = −·766.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Ekaterinburg		19·6	335	4 30	− 6	8 14	− 1	i 10·2	10·9
Baku		20·0	280	—	—	e 8 24	+ 1	10·5	—
Kucino		29·5	315	—	—	—	—	e 14·6	—
Pulkovo		34·4	320	e 7 13	+ 5	—	—	17·2	—
De Bilt	N.	48·6	310	—	—	—	—	e 25·7	—

Additional readings: Ekaterinburg MZ = +10·5m., MN = +11·3m. De Bilt eLN = +27·1m.

May 11d. Readings also at 4h. (Ottawa, Toronto, and near Tacubaya (3)), 9h. (Nagasaki and Ekaterinburg), 12h. (Ekaterinburg, West Bromwich, and Baku), 22h. (near Tacubaya), 23h. (Riverview and Ekaterinburg).

May 12d. 8h. 45m. 54s. Epicentre 46°·5N. 13°·0E. (as on 1918 Feb. 19d.).

A = +·671, B = +·155, C = +·725 ; D = +·225, E = −·974 ; G = +·707, H = +·163, K = −·688.

De Bilt gives epicentre 46°·7N. 13°·0E.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Venice	1·1	204	i 0 39	+22	—	—	—	2·2
Innsbruck	1·4	305	i 0 23	+ 2	i 0 42	+ 3	—	—
Vienna	2·9	52	0 49	+ 4	1 25	+ 5	i 1·7	1·8
Florence	3·0	206	0 48	+ 1	—	—	—	1·4
Zurich	3·2	288	i 0 51	+ 1	i 1 39	+11	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Moncalieri	4·0	249	0 39	−23	1 24	−26	—	—
Strasbourg	4·1	302	e 0 55	− 9	1 51	− 2	2·3	2·5
Rocca di Papa	4·7	183	1 18	+ 5	2 45	?L	(2·8)	—
Mostar	4·7	131	e 1 14	+ 1	2 28	?L	(2·5)	2·6
Besançon	4·9	280	1 12	− 4	2 10	− 4	—	2·6
Belgrade	5·5	106	e 1 48	+23	i 3 9	?L	(i 3·2)	4·0
Pompeii	5·8	169	e 3 9	?L	—	—	(e 3·2)	—
Uccle	7·2	310	e 1 56	+ 7	—	—	e 3·9	—
Hamburg	7·4	346	—	—	e 3 6	−15	—	6·8
Paris	7·4	292	e 1 59	+ 7	e 3 18	− 3	3·9	5·1
De Bilt	7·6	321	—	—	e 3 48	+22	e 4·1	—
Konigsberg	9·6	27	—	—	e 4 31	+13	e 4·8	6·4
Pulkovo	16·7	32	e 2 53	?	—	—	e 9·0	—
Ekaterinburg	30·6	53	—	—	—	—	14·1	—

Additional readings: Venice MZ = +0·8m. Vienna PR_1 = +55s., i = +58s. and +1m.2s., PR_2 = +1m.9s., PS = +1m.14s., iZ = +1m.28s., SR_1 = +1m.30s., N = +1m.39s. Zurich iP = +58s. Strasbourg PZ = +59s., P = +1m.12s. Mostar eP = +1m.20s. Belgrade e = +2m.51s. Hamburg MN = +6·0m., MZ = +6·2m. Paris e = +4m.4s., +4m.45s.

May 12d. 14h. 30m. 50s. Epicentre 42°·5N. 26°·0E.

A = +·663, B = +·323, C = +·676; D = +·438, E = −·899; G = +·607, H = +·296, K = −·737.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Belgrade	4·6	303	i 1 32	+21	i 2 32	?L	(i 2·5)	2·9
Athens	4·9	201	e 1 21	+ 5	e 2 15	+ 1	2·4	3·2
Sarajevo	5·6	287	i 1 22	− 5	2 16	−18	—	2·6
Mostar	6·0	280	e 1 24	− 8	i 2 16	−28	—	2·4
Pompeii	8·7	263	e 1 38	−34	2 38	−78	—	—
Vienna	8·8	314	e 2 25	+12	4 36	?L	(4·6)	5·3
Rocca di Papa	9·9	270	i 1 56	−33	3 1	−85	3·7	—
Venice	10·2	291	e 2 31	− 2	e 4 40	+ 5	—	6·8
Florence	10·8	282	4 10	?S	(4 10)	−40	—	6·7
Zurich	13·2	298	e 2 58	−18	—	—	—	—
Moncalieri	13·4	287	e 2 4	−74	5 5	−48	5·5	—
Strasbourg	14·1	302	e 3 49	+22	e 6 12	+ 2	—	—
Hamburg	15·3	322	—	—	—	—	e 7·2	11·1
Uccle	16·9	307	—	—	—	—	8·2	—
De Bilt	17·0	311	—	—	—	—	e 8·2	—
Paris	17·5	299	—	—	—	—	e 8·1	—
Pulkovo	17·5	7	5 3	+52	8 50	?L	12·2	—
Baku	18·0	89	—	—	—	—	e 10·0	—
Upsala E.	18·1	346	—	—	—	—	e 12·0	—
Ekaterinburg	26·2	45	—	—	—	—	12·2	—

Additional readings: Belgrade iP = +1m.45s. Sarajevo P = +1m.28s. Mostar P = +1m.32s. Vienna PR_1 = +3m.3s., PR_2 = +3m.55s., SR_1 = +4m.10s., iZ = +4m.56s. Rocca di Papa iPN = +2m.8s. Hamburg MZ = +9·4m., MN = +11·8m. Baku e = +11m.59s. and +14m.59s., L = +23·2m. Ekaterinburg e = 14h.19m.8s., L has been increased by 10m.

May 12d. Readings also at 2h. (Hyderabad, Ekaterinburg, and near Manila), 3h. (Nagoya and Granada), 4h. (La Paz), 6h. (Granada), 7h. (La Paz), 9h. and 11h. (Colombo), 13h. (La Paz, Taihoku, Ottawa, and near Tacubaya), 14h. (La Paz and Victoria), 20h. (Manila), 22h. (Apia), 23h. (near Manila).

May 13d. 1h. 52m. 30s. Epicentre 40°·0N. 42°·0E.

A = +·569, B = +·513, C = +·643; D = +·669, E = −·743;
G = +·478, H = +·430, K = −·766.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Baku		6·0	85	i 2 0	+28	i 2 30	−14	3·0	—
Ksara		7·9	220	(i 2 7)	+ 7	i 2 7	?P	—	—
Athens		14·4	278	e 3 33	+ 1	7 5	+47	i 8·4	9·8
Vienna		20·0	303	4 44	+ 3	7 31	−52	—	13·5
Konigsberg		20·6	323	e 4 52	+ 4	—	—	—	16·7
Ekaterinburg		20·7	30	i 4 43	− 6	i 8 28	−10	9·5	13·1
Pulkovo		21·1	344	e 4 50	− 4	8 45	− 1	10·0	15·6
Rocca di Papa		22·2	284	e 5 8	+ 1	(9 12)	+ 3	e 14·5	—
Florence		23·1	290	—	—	(9 30)	+ 3	9·5	15·5
Innsbruck		23·2	299	e 5 17	− 2	e 10 0	+31	e 15·5	—
Upsala		25·0	331	e 5 37	− 1	e 10 1	− 2	—	20·1
Hamburg		25·5	313	e 5 38	− 5	e 10 20	+ 7	e 15·7	17·6
Moncalieri		25·6	293	e 6 1	+17	9 38	−36	14·8	21·2
Strasbourg		25·8	301	7 58	+132	e 10 20	+ 2	e 18·2	—
De Bilt		27·9	308	e 6 8	+ 1	10 53	− 4	e 16·5	20·5
Uccle		28·2	305	—	—	e 11 0	− 3	—	—
Paris		29·2	301	—	—	—	—	e 14·3	21·5
Tortosa	N.	31·3	285	—	—	—	—	e 14·5	21·6
Stonyhurst		32·7	310	—	—	—	—	—	24·0
Edinburgh		33·4	314	—	—	e 12 15	−15	—	24·5
Toledo		34·9	285	e 7 23	+11	e 13 3	+ 9	e 18·6	—
Granada		35·4	280	e 7 23	+ 6	i 13 3	+ 2	e 16·5	17·3
Ottawa		78·1	321	—	—	—	—	e 45·3	—
Toronto	N.	81·1	321	—	—	—	—	46·4	—

Additional readings and notes: Athens eL = +8·6m., MN = +9·5m. Ekaterinburg MN = +12·1m., MZ = +14·9m. Pulkovo iP = +4m.52s., MZ = +13·8m., MN = +14·0m. Rocca di Papa gives S as (L). Hamburg MN = +16·7m. De Bilt MN = +19·0m. Paris e = +18m.7s., L = +19·7m. Granada i = +8m.22s., +9m.19s., and +15m.36s.

May 13d. 19h. 15m. 26s. Epicentre 26°·3N. 121°·5E. (as on 1918 Dec. 16d.).

A = −·468, B = +·764, C = +·443; D = +·853, E = +·522;
G = −·231, H = +·378, K = −·896.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Taihoku		1·3	179	0 20	0	(0 32)	− 4	0·5	0·6
Hokoto		3·3	212	0 52	0	—	—	e 1·2	—
Hong Kong		7·8	240	3 34	?S	(3 34)	+ 3	—	4·3
Irkutsk		29·0	338	e 13 54	?L	e 15 7	?	16·6	19·9
Ekaterinburg		52·4	323	—	—	—	—	27·6	—
De Bilt		84·0	326	—	—	—	—	e 48·6	—
Moncalieri		86·7	320	—	—	—	—	e 48·3	—
Toronto	E.	107·5	15	e 9 10	?	e 32 57	?SR_1	35·0	—
	N.	107·5	15	e 9 12	?	e 23 19	?PR_1	26·7	—

No additional readings.

May 13d. Readings also at 0h. (Taihoku and Manila), 3h. (Apia), 4h. (Manila and Colombo), 9h. (Batavia and near Malabar), 16h. (La Paz), 21h. (Manila).

May 14d. 1h. 29m. 20s. Epicentre 50°·0S. 24°·0W. (as on 1923 Oct. 17d.).

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

The objection to this suggested solution is that we should have expected readings from La Paz and Rio de Janeiro, &c.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
San Feranndo	87·8	14	—	—	—	—	53·2	68·2
Granada	89·0	16	e 13 6	− 4	e 24 9	+ 6	e 43·5	59·8
Rio Tinto	89·0	13	61 40	?L	—	—	(61·7)	70·7
Tortosa N.	93·4	18	—	—	(e 23 40)	−69	e 23·7	66·4
Rocca di Papa	97·2	27	—	—	—	—	e 63·6	—
Paris	101·4	17	—	—	—	—	e 58·7	—
Strasbourg	102·3	21	—	—	—	—	65·7	—
Uccle	103·7	18	—	—	—	—	e 65·7	—
De Bilt	105·0	18	—	—	—	—	e 55·7	—
Eskdalemuir	106·8	12	—	—	—	—	58·7	—
Apia	110·2	215	15 40	+42	—	—	—	—
Baku	111·1	51	e 15 23	+20	—	—	35·5	—
Pulkovo	118·2	28	—	—	—	—	e 60·7	83·0
Ekaterinburg	127·5	42	—	—	—	—	30·7	—

San Fernando gives also MN = +61·2m.

May 14d. Readings also at 1h. (Melbourne, Wellington, and Riverview), 8h. (Nagoya and Batavia), 13h. (Victoria), 15h. (Irkutsk, Baku, and Ekaterinburg), 23h. (Apia).

May 15d. 4h. 22m. 24s. Epicentre 1°·0S. 129°·0E. (as on 1923 Oct. 7d.).

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

Apparently this is not an anticipation of May 17d. 5h. (1°·4S. 133°·0E.).

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	17·5	333	e 4 2	− 9	—	—	6·6	—
Batavia	22·7	256	i 5 19	+ 6	i 9 28	+ 9	—	—
Ekaterinburg	79·2	330	e 12 7	− 7	e 14 58	?PR_1	30·6	—
Baku	82·4	313	—	—	e 22 40	−10	44·4	—
Pulkovo	95·2	331	—	—	—	—	e 63·6	—
Rocca di Papa	110·0	314	—	—	—	—	e 54·9	59·1
De Bilt	110·8	327	—	—	—	—	e 54·6	—
Uccle	111·9	325	—	—	—	—	e 55·6	—

No additional readings.

May 15d. 13h. 57m. 34s. Epicentre 58°·5N. 163°·0E. (as on 1923 Oct. 15d.).

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.
Irkutsk	32·8	285	e 6 50	− 5	12 24	+ 3	19·4	—
Ekaterinburg	49·3	316	—	—	e 16 11	+ 1	26·4	33·4
Pulkovo	56·1	334	—	—	—	—	24·4	39·8
Baku	66·7	310	—	—	—	—	35·4	—
Strasbourg	71·1	344	—	—	—	—	40·4	—

Additional readings: Irkutsk PR_1 = +8m.10s., SR_1 = +14m.49s. Ekaterinburg MZ = +33·5m., MN = +34·0m.

May 15d. Readings also at 0h. (near Granada), 1h. (Rocca di Papa), 5h. (near Granada), 6h. (Manila), 7h. (Nagoya and near Mizusawa), 8h. (near Baku and near Zurich), 18h. (near Sinj), 19h. (Hyderabad), 20h. (near Zurich), 22h. (Apia and Baku), 23h. (near Tacubaya).

May 16d. 12h. 50m. 36s. Epicentre 11°·0N. 127°·0E. (as on 1923 Oct. 15d.).

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 50	+ 5	—	—	4·4	6·1
Taihoku	14·9	341	—	—	(e 6 21)	− 9	e 6·4	—
Hong Kong	16·7	315	3 54	− 7	7 4	− 7	8·2	10·1
Zi-ka-wei	20·8	347	e 4 54	+ 3	e 8 44	+ 4	—	—
Osaka	24·9	17	6 16	+39	—	—	10·9	15·0
Irkutsk	45·2	341	8 31	− 3	15 9	− 9	21·4	25·5
Ekaterinburg	67·9	328	11 3	0	e 20 1	0	33·4	41·7
Baku	73·1	310	—	—	e 21 22	+19	36·6	42·3
Kucino	80·4	325	—	—	e 22 32	+ 4	42·1	43·0
Pulkovo	83·9	330	—	—	e 31 8	?SR_1	45·9	—
Upsala N.	89·9	332	—	—	—	—	e 48·4	—
Hamburg	96·4	328	—	—	—	—	e 51·4	60·4
De Bilt	99·6	329	—	—	—	—	e 52·4	63·5
Strasbourg	100·0	324	—	—	—	—	e 52·9	—
Uccle	100·8	327	—	—	—	—	e 51·4	55·4
Edinburgh	101·4	335	—	—	—	—	e 51·4	—
Paris	102·8	327	—	—	—	—	e 38·4	—

Additional readings: Manila MN = +5·9m. Osaka MN = +14·1m. Irkutsk MN = +25·6m., MZ = +29·5m. Ekaterinburg MN = +36·5m., MZ = +45·8m. Baku e = +29m.26s. De Bilt MN = +57·6m., MZ = +63·7m. Strasbourg L = +59·4m.

May 16d. 18h. 22m. 50s. Epicentre 42°·0N. 22°·5E.

A = +·687, B = +·284, C = +·669; D = +·383, E = −·924;
G = +·618, H = +·256, K = −·743.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Belgrade	3·2	333	e 0 46	− 4	i 1 26	− 2	—	1·8
Sarajevo	3·5	304	e 0 31	−24	i 1 16	−21	—	1·4
Mostar	3·6	293	e 0 57	+ 1	i 1 45	+ 6	—	1·8
Pompeii	6·1	260	e 1 48	+15	—	—	—	3·2
Rocca di Papa	7·3	272	e 1 48	− 3	—	—	—	4·0
Vienna	7·6	328	e 1 51	− 4	i 3 28	+ 2	—	3·7
Venice	8·1	297	e 2 22	+19	e 4 10	?L	(e 4·1)	5·2
Innsbruck N.E.	9·5	308	e 2 4	−19	—	—	—	—
Moncalieri	11·1	291	e 3 40	+54	5 23	+26	6·6	—
Strasbourg	12·3	307	e 4 44	?	e 6 11	?L	(e 6·2)	7·0
Besançon	12·8	299	—	—	e 5 52	+13	—	6·7
Konigsberg	12·9	355	—	—	—	—	e 8·2	8·6
Hamburg	14·3	329	—	—	—	—	e 7·2	—
Uccle	15·2	311	—	—	—	—	e 7·1	—
De Bilt	15·5	317	—	—	—	—	e 7·9	—
Paris	15·5	303	—	—	—	—	e 8·3	—
Kucino	17·1	31	—	—	—	—	i 7·9	—
Upsala	18·1	352	—	—	—	—	e 9·3	—
Pulkovo	18·4	13	4 22	0	7 44	− 5	8·7	—
Ekaterinburg	28·4	45	—	—	(11 10)	+ 4	11·2	—

Additional readings and notes: Belgrade iP = +52s. Sarajevo iP = +37s. Mostar iP = +1m.29s., MN = +2·2m. Rocca di Papa ePN = +2m.12s., PR_1E = +2m.28s., PR_1N = +2m.32s., PR_2N = +3m.37s., PR_2E = +3m.42s. Vienna i = +3m.46s. Venice MN = +5·9m. De Bilt e = +8m.28s.

May 16d. Readings also at 3h. (Baku), 7h. (Sinj), 11h. (Strasbourg), 13h. (Manila, Osaka, and Zi-ka-wei), 14h. (Irkutsk), 15h. (Irkutsk (2) and near Sapporo), 20h. (Hyderabad), 22h. (Apia).

May 17d. 3h. 47m. 30s. Epicentre 17°·0S. 177°·5W. (as on 1923 Sept. 12d.).

$A = -\cdot955$, $B = -\cdot042$, $C = -\cdot292$; $D = -\cdot044$, $E = +\cdot999$; $G = +\cdot292$, $H = +\cdot013$, $K = -\cdot956$.

Very uncertain.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Apia		6·3	61	e 1 35	− 1	—	—	2·8	3·5
Wellington		25·2	194	—	—	11 42	+95	13·8	15·5
Riverview		32·7	232	e 6 30	−24	—	— e	15·4	20·6
Sydney		32·7	232	12 48	?S	(12 48)	+29	21·7	22·6
Honolulu	E.	42·8	29	15 47	?S	(15 47)	+62	17·5	18·3
	N.	42·8	29	15 38	?S	(15 38)	+53	17·6	21·0
Adelaide		42·9	237	—	—	—	— e	23·3	27·3?
Victoria	E.	81·2	33	22 36	?S	(22 36)	− 1	37·9	40·5
	N.	81·2	33	22 29	?S	(22 29)	− 8	38·0	40·4
Chicago		101·1	50	—	—	e 25 30	−36	52·5	—
Toronto	E.	107·3	49	e 34 7	?SR_1	—	—	53·9	—
Georgetown	E.	108·5	53	e 33 47	?SR_1	—	—	56·0	—
Ottawa		110·1	46	—	—	e 26 10	−79 e	51·5	—
Rio de Janeiro		120·1	131	—	—	—	— e	63·0	—
Ekaterinburg		121·4	327	e 20 30	?PR_1	e 31 8	?	53·5	65·8
Pulkovo		132·7	341	e 21 46	?PR_1	e 39 52	?SR_1	60·5	77·7
Kucino		132·9	334	e 22 46	?PR_1	—	—	68·9	74·6
De Bilt		144·8	357	20 2	[+14]	—	— e	75·5	85·9
Uccle		146·2	358	—	—	—	— e	68·5	85·5
Vienna	Z.	146·8	343	e 20 8	[+17]	—	—	—	—
Strasbourg,		148·1	351	e 19 58	[+ 5]	—	—	—	—
Paris		148·2	1	e 20 8	[+15]	e 34 17	?	81·5	—
Rocca di Papa		153·7	343	e 20 20	[+19]	—	—	—	—
San Fernando		159·1	20	—	—	69 0	?	80·0	88·0

Additional readings: Riverview MN = +18·8m. Sydney S = +17m.54s. Honolulu SE = +16m.48s., SN = +16m.53s. Toronto eN = +49m.8s., eE = +51m.52s., LN = +63·0m. Ottawa S? = +34m.40s. Ekaterinburg MN = +66·4m., MZ = +67·1m. Pulkovo e = +23m.4s., MN = +73·2m., MZ = +73·3m. De Bilt eLN = +72·5m., MZ = +84·1m., MN = +84·8m. Strasbourg e = +20m.54s.

May 17d. 5h. 16m. 10s. Epicentre 1°·4S. 133°·0E. (as on 1921 Feb. 19d.).

$A = -\cdot682$, $B = +\cdot731$, $C = -\cdot024$; $D = +\cdot731$, $E = +\cdot682$; $G = +\cdot017$, $H = -\cdot018$, $K = -1\cdot000$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Manila		19·9	324	i 4 40	0	(8 23)	+ 2	8·4	10·0
Batavia		26·5	259	i 5 58	+ 5	—	— i	13·1	—
Hong Kong		30·0	323	6 11	−17	10 37	−57	12·7	14·0
Adelaide		34·0	173	—	—	e 13 14	+34 i	16·3	23·2
Zi-ka-wei		34·4	345	e 6 47	−21	e 10 49	−117	—	—
Perth		34·6	205	8 9	+59	i 13 47	+58	16·4	—
Riverview		36·6	154	e 7 13	−14	e 12 56	−22 e	15·8	29·6
Sydney		36·6	154	12 56	?S	(12 56)	−22	24·9	26·8
Melbourne		38·0	166	—	—	12 50?	−48	20·8	24·8
Wellington		54·8	142	—	—	e 16 50	−29 e	28·5	34·8
Hyderabad		56·9	293	9 56	+ 5	—	—	—	17·7
Kodaikanal		57·5	283	31 8	?L	—	—	(31·1)	—
Honolulu	N.	70·9	67	—	—	e 20 37	0	—	—
Ekaterinburg		81·6	329	i 12 19	− 9	i 22 30	−12	36·8	48·0
Baku		85·7	312	e 12 55	+ 3	e 23 25	− 2	41·1	43·9
Kucino		94·0	326	—	—	23 50	[− 2]	44·7	55·4
Pulkovo		97·6	331	i 13 37	−21	24 52	−40	44·3	54·0
Victoria	E.	100·0	41	24 38	?S	(24 38)	[+14]	45·7	58·3
Upsala		103·6	333	e 18 17	?PR_1	—	— e	49·8	63·4
Konigsberg		103·9	327	e 17 50	?PR_1	e 25 8	[+26]	—	55·3
Vienna		108·4	321	e 18 18	?PR_1	28 27	+73	—	59·8
Hamburg		110·0	329	e 18 50	?PR_1	—	— e	54·8	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Rocca di Papa	113·1	315	e 18 10	?PR$_1$	—	—	—	31·2
De Bilt	113·4	329	e 14 56	−17	—	—	e 53·8	67·4
Strasbourg	113·6	322	e 19 34	?PR$_1$	e 29 14	+75	41·8	63·5
Uccle	114·4	327	e 19 44	?PR$_1$	e 29 14	+69	e 53·8	68·1
Edinburgh	115·1	333	e 19 50	?PR$_1$	i 29 32	+81	54·8	—
Moncalieri	115·2	320	e 19 20	?PR$_1$	29 24	+72	42·0	—
Stonyhurst	116·0	331	19 43	?PR$_1$	29 27	+69	59·8	70·8
Paris	116·4	326	e 15 45	+18	e 19 55	?PR$_1$	56·8	66·3
Oxford	116·8	330	20 0?	?PR$_1$	29 50	+86	52·2	61·1
Tortosa	121·8	319	e 20 39	?PR$_1$	30 35	+92	e 58·8	66·2
Chicago	125·6	37	20 48	?PR$_1$	29 5	−25	62·8	—
San Fernando	128·6	318	—	—	64 14	?L	76·8	80·8
Toronto E.	128·9	30	i 21 15	?PR$_1$	31 17	?	74·0	—
N.	128·9	30	e 21 11	?PR$_1$	i 31 15	?	e 62·6	—
Ottawa	129·2	25	e 20 20	?PR$_1$	e 22 35	?	e 38·3	67·8
La Paz	152·5	131	20 7	[+ 7]	e 30 48	?	44·8	—
Rio de Janeiro	155·4	189	e 23 5	?	—	—	—	—

Additional readings: Manila MN = +10·1m. Batavia iE = +6m.52s. Perth SR$_1$ = +15m.17s. Riverview PS = +13m.11s., MN = +24·3m., MZ = +24·6m., T$_o$ = 5h.16m.7s. Sydney S = +18m.50s. Wellington e = +23m.50s. Honolulu eE = +21m.3s. Ekaterinburg iPR$_1$ = +15m.26s., PS = +23m.29s., MN = +41·6m., MZ = +50·0m. Baku iP = +12m.59s., iS = +23m.30s. Kucino PR$_1$ = +16m.22s., MN = +56·3m. Pulkovo PR$_1$ = +17m.37s., e = +24m.15s., PS = +26m.32s., MN = +58·2m., MZ = +62·5m. Victoria SE = +32m.38s. Upsala MN = +64·6m. Konigsberg e = +27m.38s. De Bilt PR$_1$ = +19m.38s., MZ = +68·0m., MN = +70·5m. Strasbourg eP = +19m.36s., e = +30m.20s., MN = +61·8m. Uccle eSR$_1$ = +35m.44s. Toronto e?E = +20m.14s. and +22m.34s., PR$_1$N = +22m.35s.

May 17d. Readings also at 0h. (Kucino, Ekaterinburg, and Manila), 5h. (Mizusawa, Taihoku, Nagoya, and Osaka), 7h. (Ekaterinburg (2) and Uccle), 10h. (La Paz and Innsbruck), 11h. (Manila), 20h. (Ekaterinburg), 21h. (near Algiers).

May 18d. Readings at 1h. (La Paz), 2h. (Ekaterinburg), 3h. (La Paz), 6h. (near Nagasaki), 7h. (Riverview), 10h. (Toronto, Ottawa, Baku, and Ekaterinburg), 11h. (Taihoku), 12h. (Ekaterinburg, Irkutsk, and near Tacubaya), 14h. (Ekaterinburg and Osaka), 22h. (Zante).

May 19d. Readings at 0h. (Paris), 3h. (Zante), 4h. (Zurich), 8h. (near Nagasaki), 10h. (Strasbourg), 15h. (Apia), 16h. (Irkutsk), 22h. (Zante, Kobe, and Nagoya), 23h. (near Venice).

May 20d. 0h. 59m. 48s. Epicentre 42°·5N. 7°·5E. (as on 1922 May 26d.).

A = +·731, B = +·096, C = +·676; D = +·130, E = −·991; G = +·669, H = +·088, K = −·737.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Moncalieri	2·5	3	0 39	0	1 6	− 3	—	—
Florence	3·0	64	0 32	−15	—	—	—	0·7
Rocca di Papa	3·9	99	e 1 24	+23	—	—	—	2·9
Besançon	4·8	348	—	—	e 2 4	− 7	—	—
Zurich	4·9	9	e 1 10	− 6	2 9	− 5	—	—
Innsbruck N.W.	5·5	29	e 1 16	− 9	i 1 51	−40	—	—
Strasbourg	6·0	2	e 2 24	+52	e 2 48	+ 4	e 3·1	—
Paris	7·2	333	—	—	—	—	e 4·3	—
Vienna	8·5	44	e 2 13	+ 4	i 3 44	− 6	—	—
Uccle	8·6	347	—	—	—	—	5·2	—
De Bilt	9·7	351	—	—	—	—	e 5·3	—
Pulkovo	22·2	31	—	—	—	—	e 10·6	—

Additional readings: Rocca di Papa ePN = +1m.55s. Innsbruck eNE = +1m.30s. Paris L = +5·6m.

May 20d. Readings also at 3h. (Nagoya (2)), 5h. (San Fernando), 9h. (near Mizusawa), 10h. and 16h. (Ekaterinburg), 19h. (Nagoya and Mizusawa), 22h. (Nagoya).

May 21d. 1h. 29m. 6s. Epicentre 33°·6N. 111°·4W. (as on 1923 Nov. 1d.).

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

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tucson		1·4	161	0 25	+ 4	—	—	0·9	1·0
Victoria		17·3	333	8 57	?L	—	—	9·6	11·6
Chicago		20·4	59	—	—	e 8 31	− 1	e 11·8	—
Toronto	E.	26·7	58	—	—	—	—	15·3	—
Georgetown	E.	28·0	69	—	—	—	—	e 16·0	—
Washington		28·0	69	e 8 44	?	—	—	—	—
Ithaca		28·7	62	—	—	—	—	15·9	—
Ottawa		29·6	56	—	—	—	—	e 16·9	—

Additional readings: Tucson eE = +3s., PE = +38s. Victoria MN = +11·2m. Toronto LN = +17·4m. Georgetown eN = +15m.24s.

May 21d. 10h. 12m. 50s. Epicentre 14°·5N. 88°·7W.

A = +·022, B = −·968, C = +·250 ; D = −1·000, E = −·023 ; G = +·006, H = −·250, K = −·968.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya		11·2	298	2 34	−13	4 24	−35	4·5	5·6
Georgetown		26·5	20	e 6 4	+11	e 12 5	+93	e 15·6	—
Washington		26·5	20	5 52	− 1	10 40	+ 8	—	—
Chicago		27·3	2	5 50	−11	10 37	− 9	14·6	—
Ann Arbor		28·2	8	—	—	e 11 10	+ 7	17·2	—
Ithaca		29·9	18	—	—	e 11 22	−10	17·8	—
Toronto	E.	30·2	13	6 25	− 5	11 25	−12	17·6	—
	N.	30·2	13	i 6 24	− 6	11 27	−10	18·4	—
Ottawa		32·8	18	e 6 46	− 9	i 12 10	−11	e 16·2	—
La Paz		37·0	146	7 33	+ 3	e 13 18	− 6	17·2	21·0
Victoria	E.	44·3	330	7 12	−76	13 44	−82	22·7	24·7
	N.	44·3	330	8 24	− 4	—	—	22·7	28·2
Edinburgh		75·6	37	—	—	—	—	38·2	—
Uccle		80·7	40	—	—	—	—	e 39·2	—
De Bilt		80·9	39	12 26	+ 2	—	—	e 39·2	42·5
Strasbourg		83·4	42	—	—	—	—	27·2	—
Konigsberg		88·8	34	—	—	—	—	e 51·3	—
Pulkovo		91·2	26	e 16 18	?PR_1	—	—	39·2	—
Ekaterinburg		104·3	18	e 18 32	?PR_1	e 27 41	+65	49·2	58·7
Baku		113·0	33	—	—	e 29 28	+94	56·0	—

Additional readings: Toronto PN = +5m.31s., SR_1E = +13m.38s., iSR_1E = +14m.27s., iN = +14m.35s., iE = +15m.18s. Ottawa PR_2N = +7m.50s., T_o = 10h.12m.48s. De Bilt eLN = +36·2m. Ekaterinburg e = +24m.45s., O−C as [S] = +1s., MNZ = +60·7m.

May 21d. 15h. 32m. 36s. Epicentre 47°·0N. 10°·0E. (as on 1924 Mar. 26d.).

A = +·672, B = +·118, C = +·731 ; D = +·174, E = −·985 ; G = +·720, H = +·127, K = −·682.

	△	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Chur	0·4	245	i 0 2	− 4	i 0 12	+ 1	—	—
Zurich	1·0	291	e 0 19	+ 4	i 0 40	+12	—	—
Innsbruck	1·0	74	i 0 8	− 7	i 0 21	− 7	—	—
Strasbourg	2·2	317	e 0 38	+ 4	i 1 22	+22	1·6	1·8
Venice	2·3	134	0 54	+18	—	—	—	1·4
Moncalieri	2·5	218	0 7	−32	0 47	−22	—	—

Continued on next page.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Besançon	2·7	275	0 51	+ 9	1 22	+ 8	—	2·0
Vienna	4·5	71	e 1 8	− 2	2 8	+ 4	—	2·7
Uccle	5·3	318	—	—	e 2 24	− 1	—	—
Paris	5·3	292	—	—	e 2 10	−15	e 3·0	—
Rocca di Papa	5·6	158	e 1 41	+14	e 2 32	− 2	e 2·9	—
De Bilt	6·0	328	—	—	—	—	e 3·6	—
Hamburg	6·6	0	—	—	—	—	e 3·4	5·2
Konigsberg	10·3	36	—	—	—	—	e 5·5	6·4

Additional readings: Zurich iP = +21s. Strasbourg P = +44s. and +50s. Vienna PR_1 = +1m.53s., PR_2 = +2m.4s., SR_2 = +2m.21s., MZ = +2·4m., MN = +2·6m. Hamburg MN = +5·8m.

May 21d. Readings also at 1h. (La Paz, Pulkovo, and Ekaterinburg), 2h. (near Nagasaki), 3h. (near Kobe and near Puebla), 5h. (near Nagasaki), 7h. (Ekaterinburg and Taihoku), 8h. (La Paz (2)), 9h. (Nagoya), 10h. (Manila), 16h. (Tortosa), 17h. (La Paz), 19h. (Ekaterinburg), 23h. (Zante).

May 22d. 17h. 14m. 40s. Epicentre 39°·0S. 166°·5E.

A = −·756, B = +·181, C = −·629; D = +·233, E = +·972; G = +·612, H = −·147, K = −·777.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Wellington	6·8	112	1 47	+ 3	2 59	− 6	3·6	5·0
Riverview	13·4	288	e 3 13	− 5	—	—	e 6·5	6·9
Sydney	13·4	288	—	—	—	—	5·6	6·3
Melbourne	16·9	267	i 5 20?	+76	—	—	—	—
Perth	41·4	264	12 40	?S	(12 40)	−107	16·6	—
Manila	68·4	312	12 20	+73	—	—	—	—
Kodaikanal	95·7	279	51 14	?L	—	—	(51·2)	—
Cape Town	101·4	207	—	—	—	—	—	36·8
La Paz	104·6	126	e 17 20	—	—	—	41·3	—
Irkutsk	106·0	325	e 17 29	—	e 21 56	?PR_2	44·3	—
Ekaterinburg	130·0	316	e 19 19	[+ 1]	—	—	45·3	—
Toronto	131·6	62	—	—	—	—	59·2	—
Ottawa	134·6	61	—	—	e 40 18	?	e 58·3	—
Pulkovo	145·7	322	e 18 54	[−55]	—	—	—	—
De Bilt z.	161·6	321	e 20 19	[+10]	—	—	—	—
Edinburgh	161·8	341	—	—	e 31 20	?	—	—
Strasbourg	162·0	309	e 19 43	[−26]	—	—	33·3	—
Uccle	162·8	319	—	—	e 34 20	?	e 45·3	—
Paris	164·9	316	e 19 9	[−63]	—	—	—	—

Additional readings: Riverview MN = +7·1m. Sydney P = 17h.10m.12s., S = 17h.16m.0s. Perth S = +15m.28s. Irkutsk L = +26·4m. Ekaterinburg e = +21m.58s. Ottawa eE = +53m.5s. Strasbourg e = +23m.46s.

May 22d. 18h. 9m. 12s. Epicentre 44°·0N. 141°·5E.

A = −·563, B = +·448, C = +·695; D = +·622, E = +·783; G = −·544, H = +·432, K = −·719.

	Δ °	Az. °	P. m. s.	O−C. s.	S. m. s.	O−C. s.	L. m.	M. m.
Sapporo	1·0	187	i 0 21	+ 6	—	—	0·6	1·0
Ootomari	2·8	17	1 54	+70	—	—	2·6	2·7
Mizusawa E.	4·9	184	1 8	− 8	1 51	−23	—	—
Nagoya	9·5	204	9 39	?	—	—	—	—
Osaka	10·4	209	2 54	+18	(4 37)	− 3	4·6	5·8
Kobe	10·5	213	—	—	—	—	—	4·4
Zi-ka-wei	20·3	238	e 4 38	− 7	e 8 22	− 7	—	—

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	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Irkutsk	25·8	302	i 5 47	+ 1	i 10 15	− 3	12·8	14·6
Manila	34·2	219	e 6 48	−19	—	—	—	—
Ekaterinburg	49·9	317	i 9 6	0	i 16 16	− 2	22·8	33·5
Pulkovo	62·0	330	i 10 33	+ 8	18 56	+ 8	28·8	34·2
Konigsberg	69·1	330	—	—	—	—	e 29·8	—
Apia	71·8	132	—	—	—	—	—	62·8
Hamburg	74·0	333	e 11 45	+ 3	i 21 20	+ 6	e 37·8	40·8
Edinburgh	75·8	341	—	—	—	—	e 25·8	—
Vienna	76·0	327	e 10 58	−57	21 42	+ 5	—	—
De Bilt	76·8	335	i 12 3	+ 3	i 21 49	+ 2	e 40·8	43·3
Uccle	78·1	335	e 12 6	− 2	e 22 2	+ 1	—	—
Innsbruck N.W.	78·7	329	e 12 12	+ 1	—	—	—	—
Strasbourg	79·0	331	i 12 14	+ 1	(i 22 11)	− 1	i 22·2	—
Paris	80·5	335	e 12 23	+ 1	—	—	39·8	—
Rocca di Papa	82·8	325	12 31	− 4	(22 44)	−11	22·7	—
Tortosa N.	88·3	332	—	—	—	—	e 25·8	36·1
Toledo	90·5	334	—	—	e 23 30	[− 1]	e 35·2	44·3
Granada	92·9	334	e 11 10	−142	e 22 6	−158	—	33·3
San Fernando	94·4	336	—	—	—	—	32·8	38·3
La Paz	142·8	52	19 58	[+13]	—	—	—	—

Additional readings: Mizusawa PN = +1m.9s. Osaka MN = +6·6m. Kobe MN = +4·9m. Irkutsk MZ = +18·0m. Ekaterinburg MN = +33·7m., MZ = +34·4m. Hamburg iZ = +12m.21s. Vienna iPZ = +11m.0s., iZ = +11m.32s., iN = +15m.39s. De Bilt MZ = +45·9m., MN = +46·0m. Paris e = +12m.55s. Rocca di Papa PE = +12m.36s., SN = +15m.48s., SE = +15m.54s. Toledo MNW = +41·4m. Granada i = +13m.36s. and +25m.8s.

May 22d. Readings also at 1h. (La Paz), 5h. (Baku), 8h. (Tacubaya and Baku), 10h. (Pulkovo), 14h. (Manila), 15h. (Manila and near Athens), 16h. (near Athens), 22h. (La Paz).

May 23d. 14h. 36m. 40s. Epicentre 28°·0N. 127°·0E. (as on 1922 Feb. 22d.).

A = −·531, B = +·705, C = +·470; D = +·799, E = +·602; G = −·283, H = +·375, K = −·883.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagasaki	5·3	27	1 28	+ 6	—	—	2·7	3·0
Zi-ka-wei	5·8	305	e 1 23	− 7	—	—	—	—
Osaka	9·8	45	2 21	− 6	—	—	5·0	7·3
Nagoya	11·1	47	2 33	−15	—	—	—	—
Manila	14·6	204	e 4 8	+34	—	—	7·1	—
Irkutsk	29·5	331	e 6 16	− 7	e 10 49	−37	15·3	—
Ekaterinburg	54·0	323	i 9 35	+ 2	e 17 13	+ 4	25·3	31·5
Baku	63·0	304	—	—	—	—	33·3	—
Kucino	66·6	323	—	—	—	—	e 34·4	36·8
Pulkovo	69·3	329	e 11 18	+ 5	e 21 4	+46	35·3	43·7
Upsala	75·0	331	—	—	—	—	e 43·3	—
Hamburg	81·9	328	—	—	—	—	e 43·3	—
De Bilt	85·2	328	—	—	—	—	e 45·3	50·8
Strasbourg	86·2	325	—	—	—	—	45·3	—
Uccle	86·4	328	—	—	—	—	—	46·3
Rocca di Papa	87·6	318	—	—	e 41 50	?	e 53·4	—
Ottawa	103·7	17	—	—	—	—	e 60·8	—
La Paz	161·9	54	19 46	[−23]	—	—	—	—

Additional readings and notes: Osaka MN = +5·2m. Manila readings have been increased by 20min. Ekaterinburg eSR_1 = +21m.3s., MN = +30·8m., MZ = +35·0m. Pulkovo MZ = +44·7m., MN = +44·8m. De Bilt MN = +50·6m., MZ = +56·1m.

May 23d. 21h. 1m. 15s. Epicentre 9°·5N. 128°·8E. (as on 1923 July 18d.).

A = −·618, B = +·769, C = +·165; D = +·779, E = +·627;
G = −·103, H = +·129, K = −·986.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	9·2	305	e 2 24	+ 5	—	—	5·0	6·0
Ekaterinburg	70·2	328	e 11 18	0	e 20 25	− 3	31·8	37·8
Kucino	82·7	325	—	—	e 27 45	?SR_1	e 37·8	—
Pulkovo	86·0	330	e 13 46	+53	e 23 27	− 3	38·8	53·8
De Bilt	101·9	329	—	—	—	—	e 52·8	—
Granada	115·4	319	—	—	—	—	e 66·6	71·8
La Paz	162·1	115	12 54	?	—	—	—	—

Additional readings: Manila MN = +6·4m. Ekaterinburg i = +11m.20s., MZ = +44·3m. Pulkovo MZ = +54·3m.

May 23d. Readings also at 2h. (La Paz, Ottawa, and Toronto), 5h. (La Plata and La Paz), 6h. (near Mizusawa and Sapporo), 7h. (Hyderabad, Ekaterinburg, and La Paz), 15h. (near Nagasaki), 18h. (Kobe).

May 24d. 2h. 15m. 30s. Epicentre 3°·5S. 146°·5E. (as on 1922 Dec. 14d.).

A = −·832, B = +·551, C = −·061; D = +·552, E = +·834;
G = +·050, H = −·034, K = −·998.

Uncertain.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	30·6	172	—	—	e 11 42	− 2	e 15·7	17·4
Sydney	30·6	172	5 18	−76	11 48	+ 4	16·5	19·0
Manila	31·2	308	7 0	+20	—	—	14·1	—
Adelaide	32·3	191	—	—	1 9 54	?	i 17·5	21·2
Taihoku	37·6	322	e 10 30	?	—	—	—	—
Osaka	39·6	347	7 53	+ 2	(12 52)	−68	12·9	16·9
Batavia	39·6	265	e 7 54	+ 3	—	—	e 21·5	—
Perth	40·4	221	e 9 5	+67	—	—	—	—
Zi-ka-wei	42·1	328	e 8 15	+ 3	—	—	—	—
Wellington	45·5	150	9 15	+38	14 41	−40	22·1	23·8
Honolulu E.	59·7	63	17 47	?S	(17 47)	−32	27·4	33·9
N.	59·7	63	—	—	23 24	?SR_1	27·2	27·8
Hyderabad	70·2	290	12 6	+48	—	—	—	—
Ekaterinburg	90·6	326	12 57	−22	23 31	−49	42·5	53·8
Victoria E.	92·7	41	23 55	?S	(23 55)	[+11]	40·7	53·0
N.	92·7	41	23 55	?S	(23 55)	[+11]	37·2	41·0
Baku	97·3	311	—	—	e 24 45	−44	48·5	—
Kucino	103·2	326	e 24 11	?S	(e 24 11)	[−28]	49·5	57·8
Pulkovo	106·0	333	—	—	e 27 51	+59	53·5	63·4
Upsala	111·6	335	—	—	—	—	e 64·5	—
De Bilt	121·8	332	—	—	—	—	e 59·5	68·4
Edinburgh	122·3	339	—	—	—	—	e 64·5	—
Strasbourg	122·8	328	e 21 30	?PR_1	—	—	60·5	—
Uccle	123·0	332	—	—	—	—	e 61·5	—
Toronto E.	123·0	38	—	—	e 37 8	?SR_1	56·0	—
Rocca di Papa	123·8	320	—	—	e 29 36	+18	e 70·5	—
Ottawa	124·2	34	—	—	e 31 15	?SR_1	66·0	—
Paris	125·3	331	—	—	—	—	e 71·5	—
Tortosa N.	131·7	325	—	—	—	—	e 70·5	72·7
San Fernando	138·6	325	—	—	—	—	49·5	79·5
La Paz	140·4	124	e 19 29	[−11]	e 32 49	?	76·5	97·7

Additional readings and notes: Riverview MN = +18·8m. Osaka MN = +17·6m. Perth reading has been increased by 10min. Wellington L = +18·2m. Honolulu readings have been diminished by 1h. Ekaterinburg MZ = +52·8m. Baku e = +31m.18s. and +34m.40s. Kucino S = +32m.27s., SR_1 = +35m.55s. De Bilt MN = +67·9m., MZ = +72·4m. Toronto LN = +56·1m. Tortosa readings have been diminished by 1h.

May 24d. 5h. 25m. 34s. Epicentre 17°·3N. 120°·5E. (as on 1923 July 13d.).

A = −·485, B = +·823, C = +·297; D = +·862, E = +·508; G = −·151, H = +·256, K = −·955.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	2·8	170	i 0 38	− 6	—	—	i 1·3	1·8
Hong Kong	7·8	312	—	—	—	—	—	7·4
Zi-ka-wei	14·0	3	e 3 33	+ 7	—	—	—	—
Ekaterinburg	59·3	327	10 6	− 1	18 13	− 2	29·4	—
Pulkovo	75·3	330	—	—	—	—	e 29·2	—
De Bilt	91·0	326	—	—	—	—	e 46·4	—
Granada	104·3	317	e 13 8	−83	—	—	—	17·2

Additional reading. Manila MN = +2·2m.

May 24d. Readings also at 1h. (Zi-ka-wei and Ekaterinburg), 4h. (La Paz), 7h., 10h., 11h., 12h., and 22h. (Ekaterinburg), 23h. (Wellington and near Manila).

May 25d. 13h. 46m. 40s. Epicentre 19°·0S. 179°·0E (as on 1921 Sept. 19d.).

A = −·945, B = +·017, C = −·326; D = +·017, E = +1·000; G = +·325, H = −·006, K = −·946.

A depth of focus 0·070 has been assumed. It seems that this is not a repetition from the focus of May 4d. 16h., unless some of the evidence is sensibly in error.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	°	m. s.	s.	m. s.	s.	m.	m.
Apia	−0·9	10·3	61	2 12	−10	3 20	−53	3·7	—
Wellington	−3·2	22·6	188	e 4 10	−24	(7 7)	−63	7·1	—
Riverview	−4·1	28·8	234	e 5 41	+ 6	e 10 5	+ 8	e 14·6	18·6
Honolulu	−5·9	46·2	31	e 7 33	−24	—	—	—	—
Manila	−7·4	66·3	297	e 10 11	+ 7	—	—	—	—
Batavia	−7·8	71·1	271	i 10 42	+ 8	i 19 24	+19	—	—
Zi-ka-wei	−8·0	74·6	314	—	—	e 19 46	+ 1	—	—
Victoria	−8·4	84·7	34	14 37	?PR_1	(20 55)	−46	20·9	21·0
Irkutsk	−8·9	96·0	324	e 15 57	?	i 22 16	−86	i 23·1	—
Ekaterinburg	—	121·2	326	17 54	?PR_1	26 38	[+50]	43·3	—
Baku	—	131·7	308	20 56	?PR_1	—	—	e 53·6	—
Pulkovo	—	133·5	339	e 20 54	?PR_1	—	—	35·3	—
De Bilt z.	—	146·6	351	i 18 43	[−68]	—	—	—	—
Vienna z.	—	147·6	339	18 44	[−68]	—	—	—	—
Strasbourg	—	149·6	349	e 19 7	[−48]	—	—	—	—

Additional readings and notes: Wellington readings have been diminished by 1h. Riverview iP = +5m.45s., eS = +10m.14s., i = +15m.12s., MN = +15·2m., T_o = 13h.46m.47s. Victoria LN = +20·8m. Ekaterinburg e = +19m.24s. Baku e = +33m.24s. and +37m.53s. Pulkovo i = +25m.10s. Vienna iZ = +21m.8s. Strasbourg eZ = +21m.1s.

May 25d. Readings also at 3h. (Ekaterinburg, Zi-ka-wei, near Osaka, Kobe, and Nagoya), 4h. (Ekaterinburg and near Taihoku), 5h. (Zi-ka-wei), 7h. (Ekaterinburg and Manila), 13h. (Irkutsk and Taihoku), 14h. (Irkutsk and Osaka), 15h. (Wellington (2)), 17h. (Batavia), 18h. (Batavia and Malabar (2)), 19h. and 20h. (Batavia), 23h. (Ekaterinburg).

May 26d. Readings at 8h. (Ekaterinburg), 12h. (Apia), 13h. (Pulkovo, Baku, Manila, Ekaterinburg, and Riverview), 17h. (Taihoku), 19h. (Ekaterinburg), 21h. (near Mostar and near Manila), 22h. (La Paz), 23h. (Ekaterinburg).

May 27d. 2h. 24m. 50s. Epicentre 3°·5S. 146°·5E. (as on May 24d.).

$A = -\cdot832$, $B = +\cdot551$, $C = -\cdot061$; $D = +\cdot552$, $E = -\cdot834$; $G = +\cdot050$, $H = -\cdot034$, $K = -\cdot998$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Riverview	30·6	172	—	—	e 11 34	−10	16·9	20·5
Sydney	30·6	172	10 46	?S	(10 46)	−58	17·1	18·3
Manila	31·2	308	e 6 33	− 7	—	—	—	—
Adelaide	32·3	191	—	—	—	—	e 17·2?	20·2
Osaka	39·6	347	8 5	+14	(15 5)	+65	15·1	17·1
Perth	40·4	221	14 50	?S	(14 50)	+37	22·5	—
Zi-ka-wei	42·1	328	—	—	(e 14 16)	−20	14·3	—
Honolulu	59·7	63	—	—	—	—	e 29·5	—
Ekaterinburg	90·6	326	13 16	− 3	24 29	+ 9	37·2	53·5
Victoria E.	92·7	41	—	—	—	—	43·6	50·9
Baku	97·3	311	—	—	e 26 32	+63	48·2	—
Kucino	103·2	326	—	—	e 26 54	+28	52·9	—
Pulkovo	106·0	333	e 18 56	?PR_1	e 27 59	+67	58·2	65·2
Upsala	111·6	335	—	—	—	—	e 68·2	—
Chicago	118·5	42	49 28	?	55 25	?	61·7	—
De Bilt	121·8	332	e 20 58	?PR_1	—	—	e 59·2	77·3
Edinburgh	122·3	339	—	—	—	—	e 73·2	—
Strasbourg	122·8	328	—	—	—	—	63·2	—
Uccle	123·0	332	—	—	—	—	e 59·2	—
Ottawa	124·2	34	e 38 10	?SR_1	—	—	61·6	—
Paris	125·3	331	—	—	—	—	e 70·2	75·2

Additional readings: Riverview MN = +18·7m. Osaka MN = +16·8m. Perth S? = +20m.45s. Apia (Δ = 44°·2) gives 2h. 13m. Ekaterinburg MN = +46·8m., MZ = +53·5m. Baku e = +35m.53s. Kucino e = +35m.4s. and +39m.4s. Pulkovo MZ = +65·3m. De Bilt MNZ = +75·1m. Ottawa eL = +55·2m.

May 27d. 10h. 13m. 45s. Epicentre 17°·5N. 72°·5W.

$A = +\cdot287$, $B = -\cdot910$, $C = +\cdot301$; $D = -\cdot954$, $E = -\cdot301$ $G = +\cdot090$, $H = -\cdot287$, $K = -\cdot954$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Port au Prince	1·1	9	i 0 18	+ 1	—	—	—	0·6
Porto Rico	6·8	83	3 0	?S	(3 0)	− 5	e 3·6	5·1
Washington	21·8	350	e 4 5	−58	—	—	—	—
Ithaca	25·3	353	e 5 52	+11	9 56	−13	—	—
Toronto E.	26·8	349	e 4 40	−76	e 9 42	−55	16·6	—
Ottawa	28·0	355	—	—	(e 11 45)	+46	e 11·8	—
La Paz	34·3	174	7 7	0	12 45	+ 1	20·6	22·6
Victoria E.	51·4	320	—	—	—	—	30·3	31·2
Paris	67·2	44	—	—	—	—	e 33·2	35·2
Uccle	68·3	41	—	—	—	—	—	26·2
De Bilt E.	68·7	40	e 11 6	− 3	—	—	e 32·2	36·1
Strasbourg	70·6	44	—	—	—	—	33·2	—
Ekaterinburg	96·0	25	e 17 58	?PR_1	25 42	+26	42·2	—
Baku	101·2	41	—	—	e 24 26	−101	44·6	—

Additional readings: Porto Rico MN = +4·0m. Toronto PR_1N = +5m.15s., PR_1E = +5m.38s. Chicago (Δ = 27°·5 Az. = 335°) gives simply e = 10h.7m.30s. Strasbourg 10h.11m. Ekaterinburg i = +23m.50s. Baku e = +32m.53s.

May 27d. 14h. 32m. 15s. Epicentre 30°·0N. 85°·0E. (as on 1913 March 6d.).

$A = +\cdot076$, $B = +\cdot863$, $C = +\cdot500$; $D = +\cdot996$, $E = -\cdot087$; $G = +\cdot044$, $H = +\cdot498$, $K = -\cdot866$.

Uncertain.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Hyderabad	13·9	207	10 13	?L	—	—	(10·2)	—
Bombay	15·6	228	—	—	—	—	8·8	—
Irkutsk	26·4	27	e 6 42	+50	10 48	+18	14·8	—
Baku	30·3	300	—	—	e 11 37	− 2	15·2	—
Ekaterinburg	31·8	335	e 6 54	+ 9	e 11 56	− 9	15·8	—

No additional readings.

May 27d. 20h. 9m. 24s. Epicentre 65°·8N. 131°·0E.

A = −·269, B = +·309, C = +·912 ; D = +·755, E = +·656 ;
G = −·598, H = +·688, K = −·410.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Irkutsk		19·0	238	e 4 32	+ 3	7 59	− 3	9·6	—
Ekaterinburg		33·0	289	6 56	0	12 30	+ 6	15·6	21·6
Pulkovo		41·4	312	e 8 24	+18	e 16 50	?SR_1	22·1	28·8
Upsala		45·0	319	—	—	—	—	e 25·6	29·2
Konigsberg		48·4	313	—	—	—	—	e 27·8	29·9
Baku		50·3	282	—	—	—	—	27·5	—
Hamburg		52·5	320	—	—	—	—	e 25·6	32·6
De Bilt	E.	55·1	323	—	—	—	—	e 27·6	33·5
Vienna		55·5	313	—	—	—	—	e 32·8	36·6
Uccle		56·5	322	—	—	—	—	e 27·6	—
Strasbourg		57·7	319	—	—	—	—	31·6	—
Paris		58·8	323	—	—	—	—	e 34·6	35·6
Rocca di Papa		62·5	312	—	—	—	—	e 33·4	—
Ottawa	E.	66·9	20	—	—	—	—	e 35·1	—
Toronto		68·0	23	—	—	—	—	35·7	—

Additional readings: Ekaterinburg MN = +21·4m., MZ = +23·2m. Baku e = +21m.1s. De Bilt eLN = +30·6m., MN = +33·1m.

May 27d. Readings also at 5h. (La Paz and La Plata), 6h. and 7h. (Manila), 9h. (Manila and Ekaterinburg), 14h. (La Paz (2)), 16h. (Manila), 17h. (Apia), 19h. (Manila), 23h. (near Rocca di Papa).

1924. May 28d. 9h. 51m. 48s. Epicentre 48°·0N. 148°·0E.

(as on 1923 Aug. 17d.).

A = −·567, B = +·355, C = +·743 ; D = +·530, E = +·848 ;
G = −·630, H = +·394, K = −·669.

A depth of focus 0·060 has been assumed.

		Corr. for Focus	Δ	Az.	P.	O—C.	S.	O—C.	L.	M.
		•	•	•	m. s.	s.	m. s.	s.	m.	m.
Ootomari		+1·0	3·8	249	1 4	−10	—	—	2·0	2·1
Sapporo		+0·1	6·7	226	1 53	+ 9	—	—	3·1	3·3
Mizusawa		−0·7	10·1	211	2 28	+ 6	4 11	− 2	—	—
Nagoya		−1·6	15·2	217	3 20	− 1	(5 58)	0	6·0	6·1
Osaka		−1·9	16·3	220	3 42	+10	(6 27)	+ 9	6·4	6·6
Kobe		−1·9	16·4	220	3 36	+ 3	(6 21)	+ 1	6·4	6·5
Nagasaki		−2·4	20·5	228	4 7	−11	(7 24)	−18	7·4	7·7
Zi-ka-wei		−3·3	26·3	240	e 4 48	−29	e 8 36	−49	—	—
Taihoku		−3·8	31·0	231	6 4	+ 4	10 11	−34	12·9	—
Hong Kong		−4·4	37·2	238	8 12	+77	11 42	−39	14·4	15·0
Manila		−4·7	40·2	224	e 7 3	−15	—	—	—	—
Ekaterinburg		−5·5	50·2	316	i 8 21	−10	i 14 55	−16	19·2	20·9
Honolulu	E.	−5·5	50·4	102	8 43	+11	15 25	+11	21·6	25·6
	N.	−5·5	50·4	102	8 49	+17	15 25	+11	21·8	25·8
Calcutta	E.	−5·8	53·3	265	9 29	+38	16 20	+32	23·0	—
	N.	−5·8	53·3	265	9 22	+31	16 15	−27	22·7	—
Simla	N.	−5·9	55·1	279	16 12	?S	(16 12)	+ 3	—	—
Victoria	E.	−5·9	55·6	53	9 12	+ 7	(16 24)	+ 9	16·4	19·4
	N.	−5·9	55·6	53	9 13	+ 8	(16 25)	+10	16·4	19·2
Kucino		−6·3	61·0	323	e 10 38	+61	i 16 30	−47	e 20·8	23·8
Pulkovo		−6·3	61·0	330	i 9 38	+ 1	i 17 16	− 1	24·7	33·4
Hyderabad		−6·3	62·4	269	9 49	+ 2	17 45?	+10	—	—
Upsala		−6·5	64·8	335	e 10 3	+ 2	18 3	0	—	26·1
Batavia		−6·5	65·1	227	i 10 3	0	i 17 49	−17	—	—
Baku		−6·5	65·8	305	i 11 11	+64	i 19 35	+80	—	—
Bombay		−6·6	66·2	273	10 4	− 5	12 39	?	13·7	18·4

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.
Konigsberg		−6·7	68·0	330	10 24	+ 3	18 42	+ 2	29·2	32·2
Kodaikanal		−6·8	69·4	264	19 0	?S	(19 0)	+ 4	—	—
Colombo		−6·8	70·3	260	11 30	+55	(19 30)	+23	19·5	20·2
Lemberg	E.	−6·8	70·9	325	e 10 42	+ 3	e 19 16	+ 2	—	—
	N.	−6·8	70·9	325	e 10 30	− 9	e 19 6	− 8	—	—
Dyce		−6·8	71·6	345	10 45	+ 1	19 31	+ 8	28·5	—
Hamburg		−6·9	72·4	337	e 10 49	+ 1	i 19 36	+ 5	e 32·2	39·4
Edinburgh		−6·9	73·3	344	e 13 12	?	(20 49)	+67	20·8	20·9
De Bilt		−7·0	75·0	339	i 11 4	0	20 3	+ 1	—	—
Vienna	Z.	−7·0	75·0	330	i 11 4	0	i 20 4	+ 2	—	—
Stonyhurst		−7·0	75·1	341	13 34	?PR_1	19 47	−16	—	—
Uccle		−7·1	76·4	339	e 11 10	− 3	e 20 16	− 2	e 29·2	—
Belgrade		−7·1	76·5	324	e 11 3	−10	i 20 19	0	e 33·7	—
Oxford		−7·1	76·8	340	11 16	+ 1	20 20	− 2	31·4	—
Strasbourg		−7·1	77·5	334	i 11 16	− 3	i 20 28	− 3	31·2	—
Innsbruck		−7·1	77·5	331	i 11 18	− 1	i 20 26	− 5	e 34·2	40·4
Chicago		−7·1	77·7	40	11 30	+ 9	20 37	+ 4	41·2	—
Zurich		−7·1	78·4	333	i 11 23	− 2	20 38	− 4	—	—
Paris		−7·1	78·6	340	i 11 25	− 2	i 20 42	− 2	31·2	43·2
Ann Arbor		−7·2	78·8	36	11 42	+15	21 0	+15	e 32·2	—
Venice		−7·2	78·8	330	11 42	+15	—	—	—	—
Ottawa		−7·2	79·1	29	11 31	+ 2	20 49	0	e 32·8	48·2
Besançon		−7·2	79·2	335	11 31	+ 1	i 20 49	− 1	32·2	—
Toronto	E.	−7·2	79·3	33	e 11 29	− 2	i 20 51	0	36·6	—
	N.	−7·2	79·3	33	i 11 34	+ 3	i 20 53	+ 2	29·6	—
Moncalieri		−7·2	80·7	333	11 46	+ 7	21 9	+ 1	31·9	34·0
Ithaca		−7·3	81·4	30	—	—	i 22 0	+45	—	—
Riverview		−7·3	81·9	177	e 11 46	0	e 21 15	− 6	e 34·1	38·0
Sydney		−7·3	81·9	177	21 12	?S	(21 12)	− 9	24·2	38·0
Rocca di Papa		−7·3	81·9	329	e 11 42	− 4	i 21 13	− 8	—	21·3
Pompeii		−7·3	82·1	326	e 11 30	−18	e 21 30	+ 6	—	—
Helwan		−7·3	83·7	309	11 49	− 8	i 21 21	−21	—	21·6
Georgetown		−7·4	84·3	33	e 12 0	0	i 21 48	0	e 34·7	—
Washington		−7·4	84·3	33	11 57	− 3	21 38	−10	—	—
Perth		−7·4	85·0	207	—	—	e 21 33	−23	—	—
Barcelona		−7·4	85·6	336	e 13 55	+107	e 21 42	−20	—	—
Tortosa	E.	−7·4	86·6	336	12 10	− 4	21 45	−29	—	—
	N.	−7·4	86·6	336	12 9	− 5	i 21 43	−31	—	—
Toledo		−7·5	88·7	339	e 12 11	−15	21 53	−44	e 32·6	49·5
Algiers		−7·5	89·6	332	e 12 6	−25	i 22 26	−21	—	—
Tacubaya		−7·5	89·9	60	12 33	+ 1	22 32?	−18	—	—
Rio Tinto		−7·5	91·3	340	18 12	?PR_1	—	—	—	43·2
Granada		−7·5	91·5	338	i 12 27	−15	i 22 47	−21	e 32·6	36·6
Wellington		−7·5	92·4	160	—	—	i 22 17	−61	—	—
San Fernando		−7·6	92·5	340	11 34	−73	i 22 25	−53	36·2	—
La Paz		—	136·8	56	i 18 49	[−45]	33 1	?	—	—

Additional readings: Ootomari MN = +2·0m. Osaka MN = +7·6m. Kobe S = +4m.51s. Ekaterinburg i = +9m.53s., +10m.47s., +11m.40s., +12m.31s., +16m.16s., and +17m.19s. Honolulu PR_2 = +11m.1s., T_o = 9h.52m.10s. Victoria SE = +11m.42s., SN = +11m.44s. Kucino iSR_1 = +17m.54s., SR_2 = +19m.26s. Pulkovo iP = +11m.14s., PR_1 = +11m.58s., iS = +18m.38s., SR_1 = +21m.24s., MN = +30·4m., MZ = +34·5m. Batavia i = +11m.46s. Konigsberg PR_1 = +13m.7s., PS = +19m.35s., SR_1 = +23m.22s. Dyce i = +22m.38s. Hamburg MN = +34·4m., MZ = +44·8m. De Bilt iZ = +12m.48s. and +13m.33s. Vienna PR_1 = +14m.1s., iE = +14m.45s., SR_1 = +25m.10s. Stonyhurst S? = +24m.45s. Belgrade PR_1 = +12m.59s. Oxford SR_1 = +25m.30s. Strasbourg PR_2 = +15m.48s., SR_1? = +25m.42s., MN = +43·1m. Innsbruck eSNE = +20m.31s. Zurich iS = +20m.39s. Ottawa e = +22m.57s. and +23m.40s., SR_2?E = +28m.35s., T_o = 9h.52m.0s. Toronto ePE = +11m.35s., eN = +19m.5s., iE = +20m.57s., iN = +21m.9s., eE = +22m.42s., and +23m.50s., eN = +22m.59s., and +23m.58s., T_oE = 9h.51m.53s., T_oN = 9h.52m.1s. Moncalieri i = +26m.28s. Riverview eS = +21m.30s., e = +24m.11s., and +24m.30s., MN = +41·6m., T_o = 9h.51m.54s. Rocca di Papa PN = +11m.44s., iP = +11m.50s. Toledo MNW = +52·4m. Algiers SN = +22m.3s. Granada i = +14m.21s., +17m.53s., and +25m.47s.

NOTE TO 1924 MAY 28d. 9h. 51m. 48s.

Previous shocks attributed to this epicentre (1919 Sept. 12d. and 1923 Aug. 17d.) have borne no evidence of exceptional focal depth. In the present case the evidence is considerable.

(1) Very well determined T_0, supported by the observations of a large number of stations.

(2) Unusually small value for L for stations in the interval $\Delta = 60°$ to $90°$

(3) The single antipodal station (La Paz) gives a very large negative residual for [P].

Grouping the stations according to azimuth round the epicentre the equations available for determining corrections to the position of the epicentre are:

No. of Stations	Mean Az.	$\delta\Delta$		Equations	C	$\delta\Delta - C$
	°	°			°	°
6	37	+0·1	=	+ ·60x + ·80y	+0·2	−0·1
1	102	+1·2	=	+ ·98x − ·21y	+0·4	+0·8
2	177	−0·2	=	+ ·05x −1·00y	0·0	−0·2
11	226	−0·6	=	− ·72x − ·69y	−0·3	−0·3
5	270	+0·5	=	−1·00x + ·00y	−0·4	+0·9
23	332	−0·2	=	− ·47x + ·88y	−0·2	0·0
		±2·8				±2·3

From these we obtain the approximate values $x = +0°·4$ $y = +0°·0$, which give the values C for the algebraic quantities. The column $\delta\Delta - C$ shows a slight reduction of the numerical sum, but not enough to justify a change of epicentre from that adopted.

Had the considerable corrections to Δ for focus been omitted the values of $\delta\Delta$ in all the equations would have been large and negative; and no satisfactory solution of them would have been possible.

May 28d. Readings also at 0h. (Ekaterinburg and Manila), 2h. (Taihoku and near Tacubaya), 4h. (Apia and Rocca di Papa), 5h. and 9h. (Manila), 10h. (Kobe), 13h. (near Taihoku), 14h. (Manila), 15h. (Manila and Taihoku), 16h. (Baku and Ekaterinburg), 19h. (La Paz, Apia, and Ekaterinburg), 23h. (near Batavia).

May 29d. Readings at 3h. (La Paz), 5h. (Apia), 17h. (Batavia), 20h. (Batavia and Ekaterinburg), 21h. (Taihoku), 22h. (Nagasaki), 23h. (near Mizusawa).

May 30d. 3h. 47m. 20s. (I)
4h. 22m. 6s. (II) } Epicentre 43°·5N. 17°·0E. (as on 1923 March 15d.).

$A = +·694$, $B = +·212$, $C = +·688$; $D = +·292$, $E = -·956$;
$G = +·658$, $H = +·201$, $K = -·725$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Mostar	0·6	104	i 0 6	− 3	i 0 10	− 7	—	0·2
II	0·6	104	i 0 9	0	i 0 13	− 4	—	0·2
I Sarajevo	1·1	70	i 0 20	+ 3	i 0 29	− 2	—	0·5
II	1·1	70	i 0 18	+ 1	i 0 27	− 4	—	0·5
I Belgrade	2·8	62	e 0 49	+ 5	i 1 21	+ 4	—	1·5
II	2·8	62	e 0 42	− 2	i 1 17	0	—	1·5
I Pompeii	3·3	220	e 0 50	− 2	—	—	—	—
II	3·3	220	e 0 44	− 8	e 1 17	−14	—	—

Continued on next page.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
I Rocca di Papa	3·6	243	e 1 17	+21	i 2 28	?L	e 7·2	—
II	3·6	243	1 9	+13	—	—	—	—
I Venice	3·8	301	2 36	?L	—	—	(2·6)	—
II	3·8	301	1 42	?S	(1 42)	− 2	—	2·7
I Vienna	4·8	355	e 1 31	+17	2 55	?L	(2·9)	—
II	4·8	355	e 1 36	+22	2 57	?L	(3·0)	3·2
I Innsbruck	5·5	316	e 1 22	− 3	—	—	—	—
II	5·5	316	e 2 12	+47	e 2 42	+11	—	—
I Strasbourg	8·2	312	—	—	—	—	e 4·4	—
II	8·2	312	—	—	—	—	e 4·7	—
I De Bilt	11·7	321	—	—	—	—	e 7·8	—
II	11·7	321	—	—	—	—	e 7·6	—
I Pulkovo	18·2	22	—	—	—	—	e 11·0	—
II	18·2	22	e 4 24	+ 5	—	—	—	—

Additional readings: Belgrade I iP = +54s., II iP = +45s. Rocca di Papa I iPE = +1m.27s., PR_1N = +2m.2s., II PN = +1m.11s., PR_1N = +2m.3s. Vienna I i = +3m.12s., II iE = +2m.32s. and 2m.48s., iZ = +3m.44s.

Several repetitions of the above shocks are recorded by Mostar, the initial phases iP being as follow :—

H.	M.	S.	H.	M.	S.
3	47	26	4	37	43
4	9	45	4	42	38
4	20	27	8	20	36
4	22	15	9	5	23
4	24	38	9	8	43
4	28	17	11	6	36
4	33	39	11	21	19

May 30d. Readings also 0h. (Osaka, Kobe, Ekaterinburg (2)), 1h. (De Bilt, Pulkovo, Granada, Strasbourg, and Baku), 3h. (Granada and near Lick), 8h. (La Paz), 19h. (near Honolulu).

May 31d. 12h. 2m. 30s. (I) } Epicentre 36°·0N. 142°·0E. (as on 1923 Dec. 27d.).
12h. 27m. 42s. (II) }

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.
I Mizusawa	E.	3·2	348	0 52	+ 2	1 34	+ 6	—	—
I	N.	3·2	348	0 53	+ 3	1 32	+ 4	—	—
II	E.	3·2	348	0 56	+ 6	1 37	+ 9	—	—
II	N.	3·2	348	0 55	+ 5	1 36	+ 8	—	—
I Nagoya		4·2	260	0 57	− 8	2 2	+ 7	3·5	4·0
II		4·2	260	0 46	−19	(1 57)	+ 2	2·0	2·5
I Osaka		5·5	258	1 31	+ 6	—	—	2·7	4·7
II		5·5	258	1 28	+ 3	—	—	2·6	3·5
I Kobe		5·8	259	1 20	−10	(2 46)	+ 7	2·8	3·2
II		5·8	259	1 17	−13	(2 44)	+ 5	2·7	3·1
I Sapporo		7·1	355	2 4	+16	—	—	3·5	—
II		7·1	355	1 51	+ 3	(3 19)	+ 6	3·3	—
I Nagasaki		10·6	256	e 3 50	?	—	—	e 6·9	—
II		10·6	256	e 2 38	0	—	—	e 5·7	—
I Zi-ka-wei		17·8	260	e 3 54	−21	e 7 30	− 6	—	12·3
II		17·8	260	e 4 6	− 9	—	—	—	—
I Taihoku		20·7	244	—	—	—	—	e 7·5	—
II		20·7	244	—	—	—	—	e 7·3	—
I Hong Kong		27·9	248	7 41	?PR_1	—	—	—	18·5
II		27·9	248	—	—	—	—	—	17·3
I Manila		28·5	227	e 7 30	?PR_1	—	—	—	—
II Irkutsk		31·1	313	—	—	—	—	e 31·3	—

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
I Ekaterinburg		56·1	321	i 9 36	−11	i 17 14	−21	32·5	—
II		56·1	321	i 9 39	− 8	i 17 29	− 6	30·3	36·1
I Hyderabad		58·7	271	19 10	?S	(19 10)	+63	—	40·6
I Bombay		62·5	275	19 55	?S	(19 55)	+60	—	41·8
I Victoria	E.	66·7	47	—	—	—	—	—	46·4
I Kucino		68·0	325	—	—	i 21 5	+63	e 36·9	45·1
I Pulkovo		69·1	330	i 11 3	− 9	i 21 24	+69	40·5	46·6
I Baku		69·1	307	e 11 7	− 5	i 21 24	+69	36·9	—
II		69·1	307	(11 42)	+30	—	—	11·7	—
I Upsala		73·9	334	—	—	—	—	e 43·5	48·1
I Konigsberg		76·3	330	—	—	e 41 18	?	e 45·8	50·5
II		76·3	330	—	—	—	—	e 45·1	50·3
I Hamburg		81·3	335	—	—	e 39 30	?	e 46·5	77·9
I Dyce		82·0	343	—	—	—	—	—	53·4
II		82·0	343	—	—	—	—	—	56·8
I Vienna		82·9	329	12 31	− 4	—	—	—	54·5
I Edinburgh		83·5	343	—	—	—	—	e 45·5	—
I De Bilt		84·2	337	—	—	24 9	+59	e 45·5	53·3
II		84·2	337	—	—	—	—	—	53·7
I Stonyhurst		85·0	341	—	—	—	—	—	55·5
I Uccle		85·6	336	—	—	e 24 18	+52	e 45·5	—
I Bidston		85·6	341	—	—	—	—	—	57·6
I Innsbruck		85·8	330	—	—	—	—	e 48·5	—
II		85·8	330	—	—	—	—	e 50·3	—
I Strasbourg		86·2	333	i 12 49	− 5	—	—	—	—
II		86·2	333	—	—	—	—	47·5	57·9
I Oxford		86·6	340	—	—	—	—	48·5	58·1
I Paris		87·9	336	—	—	—	—	e 47·5	56·5
I Moncalieri		89·1	331	e 13 44	+33	i 37 36	?	50·0	60·1
I Rocca di Papa		89·5	326	e 14 2	+49	25 1	+52	e 55·3	—
II		89·5	326	—	—	—	—	57·6	—
I Ottawa		91·8	26	—	—	—	—	e 52·5	—
I Toronto	E.	91·9	30	—	—	—	—	53·3	—
II	N.	91·9	30	—	—	—	—	i 60·5	—
I Barcelona		94·2	332	—	—	—	—	e 57·6	62·8
I Tortosa	N.	95·5	333	—	—	—	—	e 48·5	—
I Toledo		98·0	336	—	—	—	—	e 57·2	90·0
I Rio Tinto		100·7	337	56 30	?L	—	—	(56·5)	70·5
I San Fernando		101·8	336	—	—	57 30	?	65·0	67·5
I La Paz		146·9	62	19 49	[− 2]	—	—	34·5	38·0
II		146·9	62	19 48	[− 3]	—	—	—	—

Additional readings: Osaka I MN = +4·4m., II MN = +3·2m. Kobe I MN = +3·1m. Sapporo II readings have been diminished by 10min. Zi-ka-wei I MN = +12·0m. Ekaterinburg I i = +9m.46s., iP = +10m.52s., i = +11m.2s., iS = +18m.42s., i = +20m.38s., II MN = +35·5m., MZ = +36·2m. Kucino I e = +25m.20s. and +29m.0s. Pulkovo I i = 11h.43m.0s., iS = 11h.47m.1s., i = +36m.29s. Baku I e = +25m.20s. Upsala I MN = +47·1m.; all readings diminished by 1h. Konigsberg I MN = +47·5m. Hamburg I MN = +56·5m. Edinburgh I L = +51·5m. De Bilt I MN = +54·0m., MZ = +55·0m., II MN = +52·2m., MZ = +53·7m. Strasbourg I MN = +61·2m. Rocca di Papa I iL = +58·6m. Toledo I MNW = +63·8m. San Fernando I MN = +70·0m.

The following additional shocks for Mostar are recorded for 31d. :—

H.	M.	S.	H.	M.	S.
0	43	8	4	27	9
3	52	9	12	53	43
			22	27	7

May 31d. Readings also at 0h. (Manila), 5h. (near La Paz), 7h. (Sydney), 8h. (Nagoya and Ekaterinburg), 11h. (Baku and Ekaterinburg), 12h. (Kobe), 14h. (near Mizusawa), 15h. (Manila), 19h. (Hyderabad), 21h. (Rocca di Papa and Pompeii), 23h. (Batavia (2) and Granada).

June 1d. 1h. 39m. 30s. Epicentre 0°·5N. 126°·5E. (as on 1924 May 3d.).

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

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	15·1	339	e 4 7	+27	—	—	—	—
Malabar	20·4	247	i 4 47	+ 1	—	—	—	—
Batavia	20·7	251	4 48	− 1	e 8 36	− 2	—	—
Ekaterinburg	76·6	330	i 12 10	+11	21 45	+ 1	32·5	—
Baku	79·5	312	—	—	e 22 15	− 3	39·5	—
Pulkovo	92·7	330	—	—	e 24 31	−11	e 48·0	—
Granada	120·5	314	—	—	e 23 39	?	e 37·8	79·5
La Paz	158·5	139	20 58	[+52]	(31 36)	?	—	—

Additional readings: Baku i = +23m.25s. Granada i = +32m.46s. La Paz readings are given as separate P's.

June 1d. Readings also at 0h. (Granada), 1h. (near Mostar (2)), 4h. (Tacubaya and Oaxaca), 5h. (Malabar, near Batavia, and near Mostar), 6h. (near Belgrade and Mostar (2)), 7h. (Taihoku and near Sapporo), 11h. and 13h. (near Mostar), 15h. (near Nagoya, Osaka, and Mizusawa), 16h. (Ekaterinburg), 17h. (Kingston), 19h. (Manila), 21h. (near Mostar), 23h. (Manila (2)).

June 2d. 19h. 39m. 10s. Epicentre 9°·5S. 108°·0E.

A = −·305, B = +·938, C = −·165; D = +·951, E = +·309;
G = +·051, H = −·157, K = −·986.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Malabar	2·3	350	0 40	+ 4	1 11	+ 8	—	—
Batavia	3·5	341	i 0 55	0	i 1 37	0	i 2·1	2·7
Manila	27·3	28	e 5 50	−11	—	—	—	—
Hong Kong	32·4	11	11 2	?S	(11 2)	−72	—	26·3
Colombo	32·5	299	10 50	?	—	—	—	22·8
Kodaikanal	36·2	303	23 56	?L	—	—	(23·9)	—
Riverview	46·4	130	—	—	—	—	e 24·2	32·2
Irkutsk	61·9	357	e 10 35	+11	18 42	− 5	34·8	—
Baku	73·2	318	e 11 54	+17	20 59	− 5	36·8	44·2
Ekaterinburg	76·8	336	i 11 54	− 6	i 21 40	− 7	38·8	—
Kucino	87·0	328	—	—	e 22 50	−51	—	—
Pulkovo	92·2	331	—	—	e 23 45	[+ 4]	—	—
De Bilt	105·4	322	—	—	—	—	e 68·8	—
Uccle	106·0	321	—	—	—	—	e 58·8	—

Additional readings: Malabar i = +1m.4s. Riverview MN = +26·4m.

June 2d. Readings also at 2h. (La Paz), 6h. (near Batavia (2)), 11h. (Porto Rico, Port au Prince, La Paz (2), Granada, Rocca di Papa, De Bilt, Uccle, Strasbourg, and Ekaterinburg), 13h. (Taihoku), 15h. (Azores), 18h. (Venice), 20h. (Ekaterinburg, near Malabar, and Batavia, and near Irkutsk), 21h. (Riverview).

June 3d. 2h. 41m. 42s. Epicentre 34°·0N. 139°·5E. (as on 1924 April 12d.).

A = −·630, B = +·538, C = +·559; D = +·649, E = +·760;
G = −·425, H = +·363, K = −·829.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya	2·4	299	0 46	+ 9	(1 1)	− 5	1·0	1·0
Osaka	3·4	278	0 54	+ 1	(1 36)	+ 2	1·6	2·0
Kobe	3·7	282	1 2	+ 4	(1 41)	− 1	1·7	1·7
Mizusawa E.	5·3	14	1 25	+ 3	2 23	− 2	—	—
Ekaterinburg	56·2	320	—	—	e 17 4	−32	21·3	—
Pulkovo	69·8	330	e 10 55	−21	i 19 48	−36	47·3	55·2

Additional readings: Osaka MN = +2·3m. Mizusawa SN = +2m.26s. Ekaterinburg e = +15m.28s.

June 3d. Readings also at 3h. (La Paz and Mizusawa), 4h. (Ekaterinburg, Uccle, De Bilt, Kucino, and Paris), 7h. (Nagasaki), 8h. (La Paz), 10h. (Pulkovo), 11h. (Apia), 15h. (Taihoku), 23h. (Nagasaki).

June 4d. 16h. 9m. 30s. Epicentre 14°·5N. 94°·0W. (as on 1921 Jan. 8d.).

$A = -\cdot068$, $B = -\cdot966$, $C = +\cdot250$; $D = -\cdot998$, $E = +\cdot070$; $G = -\cdot017$, $H = -\cdot249$, $K = -\cdot968$.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Oaxaca		3·7	315	1 11	+13	—	—	1·8	2·2
Vera Cruz	N.	5·1	337	0 46	−33	—	—	2·0?	3·1
Tacubaya		7·0	315	1 52	+ 6	—	—	3·4	4·0
Merida		7·7	32	1 54	− 3	(3 13)	−16	3·2	4·0
Tucson	E.	23·5	322	—	—	—	—	12·8	13·4
Chicago		27·9	10	6 52	+45	—	—	20·5	—
Washington		28·6	28	e 6 19	+ 5	—	—	e 17·5	—
Ithaca		31·8	26	—	—	e 11 30	−35	e 15·5	—
Toronto	E.	31·8	21	e 6 38	− 7	—	—	16·6	24·5
Ottawa		34·5	23	e 6 54	−15	e 12 30	−18	e 16·5	24·5
Victoria	E.	41·6	330	8 8	0	14 18	−11	22·2	27·7
	N.	41·6	330	8 13	+ 5	14 18	−11	22·1	29·0
Coimbra		77·3	51	—	—	e 19 10	?	e 38·2	—
Eskdalemuir	E.	78·6	36	e 12 12	+ 1	e 22 15	+ 8	38·5	—
Edinburgh		78·6	36	—	—	—	—	41·5	47·5
Oxford		80·4	40	12 21	0	i 22 19	− 9	—	46·1
Toledo		80·8	51	—	—	—	—	e 40·7	—
Paris		83·4	41	e 12 40	+ 2	e 23 14	+13	43·5	46·5
Uccle		84·0	40	e 12 41	− 1	e 23 3	− 5	e 39·5	46·5
De Bilt	E.	84·1	38	12 43	0	23 11	+ 2	e 41·5	49·7
Hamburg		86·5	36	e 12 57	+ 1	e 23 30	− 6	e 42·5	52·5
Strasbourg		86·8	41	12 52	− 6	e 23 44	+ 5	44·5	—
Upsala	N.	87·9	28	—	—	—	—	e 45·5	—
Innsbruck	N.W.	89·5	40	—	—	e 23 58	−11	—	—
Konigsberg		91·6	31	—	—	—	—	e 44·5	52·5
Pulkovo		93·4	25	13 26	− 8	24 2	−47	38·5	58·3
Ekaterinburg		105·6	15	—	—	e 26 7	−41	50·5	64·4
Irkutsk		111·4	348	—	—	—	—	57·5	—

Additional readings and notes: Oaxaca readings have been diminished by 2min. Vera Cruz readings have been increased by 1mfn.; the north component readings have been entered, being the earlier. Tacubaya MN = +3·8m. Merida MN = +4·5m. Toronto LN = +16·9m., MN = +23·8m. Ottawa eE = +8m.26s. Coimbra e = +27m.0s. Oxford i = +23m.38s. De Bilt eLN = +38·5m. Pulkovo PR_1 = +17m.12s. Ekaterinburg iPR_1 = +18m.45s. Irkutsk PR_1 = +19m.23s., SR_1 = +28m.58s.

June 4d. Readings also at 1h. (Nagasaki), 2h. (Berkeley (2), La Paz, and near Balboa Heights), 3h. (Granada, De Bilt, Uccle, Ekaterinburg, Ottawa, Toronto, and Chicago), 6h. (Berkeley and Manila), 7h. (Konigsberg (2)), 8h. (near Mizusawa), 10h. (Georgetown, Zurich, and near Mostar), 13h. (near Mostar), 14h. (Taihoku), 22h. (Nagasaki).

June 5d. Readings at 1h. (Manila), 3h. (Batavia, Ekaterinburg, Manila), 4h. (Paris), 5h. (Kobe), 7h. (Ekaterinburg), 9h. (Azores), 11h. (Ekaterinburg), 12h. (La Paz, Batavia, Nagasaki, and near Manila), 13h. (Ekaterinburg, near Tacubaya, and near Manila), 14h. (Nagoya, La Paz, and La Plata (2)), 20h. (Kobe).

June 6d. Readings at 3h. (De Bilt, Strasbourg, Granada, Rocca di Papa, and near Mizusawa), 4h. (near Mizusawa and Ootomari), 5h. (La Paz and near Mostar), 6h. and 10h. (Ekaterinburg), 14h. (Irkutsk and Taihoku), 15h. (Riverview and Ekaterinburg), 16h. (Kobe, Irkutsk, Ekaterinburg, Manila, and Nagoya), 17h. (Pulkovo and De Bilt), 19h. (near La Paz and near Lick and Berkeley), 21h. (Kobe), 22h. (Rocca di Papa and near Belgrade).

June 7d. 19h. 7m. 20s. Epicentre 29°·0S. 112°·3W.

A = −·332, B = −·809, C = −·485 ; D = −·925, E = +·379 ;
G = +·184, H = +·449, K = −·875.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz		42·5	83	8 14	− 1	14 40	− 2	19·8	21·9
La Plata	N.	46·0	111	13 54	?	(15 27)	− 1	21·2	23·9
Tacubaya	E.	50·0	16	—	—	—	—	25·0	26·8
Honolulu	E.	67·2	314	e 29 45	?	—	—	32·2	37·5
	N.	67·2	314	e 29 30	?	—	—	32·1	33·6
Victoria	E.	78·1	353	21 57	?S	(21 57)	− 4	38·8	40·2
	N.	78·1	353	21 51	?S	(21 51)	−10	38·4	39·6
Toronto	N.	78·6	24	—	—	e 22 15	+ 8	44·3	—
Sydney		79·2	237	33 10	?	—	—	39·7	42·9
Ottawa		81·5	25	—	—	e 22 40	− 1	e 33·7	—
Granada		121·1	61	—	—	—	—	e 57·8	69·1
Paris		127·4	48	—	—	—	—	65·7	—
Uccle		128·6	45	—	—	—	—	e 62·7	—
De Bilt		129·1	43	—	—	—	—	e 65·7	—
Strasbourg		130·8	48	—	—	—	—	73·7	—
Pulkovo		140·3	28	—	—	—	—	e 71·7	80·8
Irkutsk		144·4	320	e 19 46	[− 1]	e 30 4	?	55·7	—
Ekaterinburg		151·7	8	20 9	[+11]	—	—	54·7	89·2

Additional readings: La Plata gives S as L, also L = +20·1m. Tacubaya LN = +25·2m., MN = +27·7m. Toronto LE = +27·9m. Ottawa e = +28m.4s., eLN = +34·7m.

June 7d. Readings also at 0h. (Ekaterinburg), 3h. (near Kobe), 4h. (Colombo, Hyderabad, and Baku), 8h. (near Tacubaya), 13h. and 14h. (Apia), 16h. (near Osaka), 20h. (La Paz (2)).

June 8d. Readings at 3h. (near Mostar), 6h. (near Zurich), 8h. (Nagasaki), 13h. (Batavia, Ekaterinburg, and near Malabar), 19h. (Taihoku), 21h. (Hyderabad).

June 9d. 19h. 43m. 42s. Epicentre 11°·0N. 122°·0E. (as on 1917 Feb. 18d.).

A = −·520, B = +·832, C = +·191 ; D = +·848, E = +·530 :
G = −·101, H = +·162, K = −·982.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	3·7	345	e 1 11	+13	—	—	i 1·9	—
Hong Kong	13·6	328	3 28	+ 7	6 2	+ 4	6·9	8·8
Zi-ka-wei	20·2	358	e 3 54	−49	—	—	—	—
Batavia	22·9	222	i 5 15	− 1	i 9 30	+ 7	—	—
Osaka	26·7	26	6 11	+16	(9 40)	−55	9·7	11·0
Colombo	41·8	268	14 36	?S	(14 36)	+ 4	—	28·3
Hyderabad	42·6	283	—	—	—	—	16·3	—
Irkutsk	43·7	346	i 8 11	−13	14 40	−18	22·3	27·4
Kodaikanal	43·7	273	26 36	?L	—	—	(26·6)	—
Ekaterinburg	65·3	329	i 10 51	+ 4	19 34	+ 5	29·3	37·1
Kucino	77·6	325	—	—	e 21 2	+ 4	e 44·3	46·6
Pulkovo	81·4	329	12 24	− 3	22 32	− 7	41·3	51·3
De Bilt	97·0	326	—	—	—	—	e 53·3	—
Uccle	98·0	325	—	—	—	—	e 50·3	—
Edinburgh	99·2	332	—	—	—	—	—	63·3
Granada	109·9	317	—	—	—	—	66·3	73·2
La Paz	168·8	120	20 25	[+11]	—	—	—	—

Additional readings: Irkutsk MZ = +27·5m. Kucino e = +30m.3s. Pulkovo MZ = +51·0m., MN = +51·1m.

June 9d. 21h. 34m. 35s. Epicentre 35°·2N. 33°·3E. (as on 1921 April 20d.).

$A = +\cdot683$, $B = +\cdot449$, $C = +\cdot576$; $D = +\cdot549$, $E = -\cdot836$; $G = +\cdot482$, $H = +\cdot316$, $K = -\cdot817$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Rocca di Papa	17·4	298	e 4 9	− 1	e 7 19	− 8	—	11·0
Venice	18·9	309	4 25	− 3	—	—	—	—
Strasbourg	23·1	313	—	—	—	—	e 31·4	—
Pulkovo	24·7	356	i 5 32	− 3	i 10 1	+ 4	12·9	18·3
Uccle	26·1	316	—	—	—	—	e 14·4	—
De Bilt	26·2	319	—	—	—	—	e 16·0	—
Ekaterinburg	28·4	32	6 12	0	11 38	+32	18·4	—
Eskdalemuir	32·1	320	—	—	—	—	17·4	—

Additional readings: Rocca di Papa ePN = +4m.14s. Pulkovo MZ = +18·4m.

June 9d. Readings also at 7h. (La Plata and near Osaka), 9h. and 11h. (La Plata), 12h. (La Paz and La Plata), 16h. (Irkutsk), 21h. (Strasbourg).

June 10d. Readings at 2h. (Nagasaki), 5h. (Apia), 6h. (Paris and near La Paz), 8h. (Nagasaki), 9h. (La Paz), 11h. (La Paz and Manila), 12h. (La Paz and Manila), 13h. (Manila), 14h. (Apia), 15h. (La Paz), 18h. (Ekaterinburg, Nagoya, near Osaka, and Kobe (2)), 19h. (La Paz, Ekaterinburg, Irkutsk, near Oaxaca, Vera Cruz, Tacubaya, and Puebla).

June 11d. Readings at 5h. (Apia and near Oaxaca), 6h. (near Tacubaya, Puebla, and Vera Cruz), 9h. (near Mizusawa), 18h. (De Bilt), 21h. and 22h. (Apia), 23h. (Apia and La Paz).

June 12d. 21h. 3m. 48s. Epicentre 43°·8N. 11°·2E. (as on 1922 Sept. 20d.).

$A = +\cdot708$, $B = +\cdot140$, $C = +\cdot692$; $D = +\cdot194$, $E = -\cdot981$; $G = +\cdot679$, $H = +\cdot134$, $K = -\cdot722$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Florence	0·0	—	0 0	0	—	—	—	0·2
Venice	1·9	26	i 0 27	− 2	—	—	—	1·1
Rocca di Papa	2·3	152	i 0 37	+ 1	—	—	—	1·6
Moncalieri	2·8	295	1 11	+27	1 52	+35	2·7	—
Innsbruck	3·5	2	i 0 50	− 5	—	—	—	—
Pompeii	3·9	142	e 1 12	+11	—	—	—	—
Zurich	4·0	332	e 0 51	−11	1 47	− 3	—	—
Besançon	5·0	316	e 1 31	+14	—	—	—	2·0
Strasbourg	5·3	334	e 1 30	+ 8	2 44	+19	—	—
Vienna	5·7	37	e 1 18	−10	2 20	−16	—	3·1
Paris	7·8	313	—	—	e 3 32	+ 1	—	—
Uccle	8·4	329	—	—	e 3 48	+ 1	—	—
De Bilt	9·2	336	—	—	—	—	e 4·9	—
Hamburg	9·8	356	—	—	e 4 12	−11	—	—
Pulkovo	19·7	29	—	—	—	—	e 10·7	—
Ekaterinburg	33·3	49	—	—	—	—	16·7	—

Additional readings: Rocca di Papa iPN = +41s., PR_1N = +1m.17s., PR_1E = +1m.24s. Vienna P = +1m.40s., S = +2m.55s., and several i's.

June 12d. Readings also at 0h. (Granada), 2h. (La Paz), 7h. (near Mizusawa) 11h. (Nagoya), 12h. (Apia), 13h. (Ekaterinburg, Pulkovo, Apia, and near Mizusawa), 14h. (La Paz), 16h. (Uccle), 17h. (Kobe, Apia, and Ekaterinburg), 21h. (Zurich and La Paz), 22h. and 23h. (Florence).

June 13d. Readings at 0h. (De Bilt and Florence), 1h. (Granada), 8h. (Konigsberg and near Hong Kong), 10h. (Venice).

June 14d. Readings at 4h. (La Paz), 5h. (Apia), 8h. (Rocca di Papa, Pompeii, and Apia), 12h. (Chicago, Victoria, Toronto, Ottawa, Ithaca, and Georgetown), 13h. (Ekaterinburg), 15h. (Paris), 16h. (De Bilt, La Paz, and Ekaterinburg).

June 15d. 13h. 14m. 30s. Epicentre 9°·5N. 128°·8E. (as on 1924 May 23d.).

A = −·618, B = +·769, C = +·165; D = +·779, E = +·627; G = −·103, H = +·129, K = −·986.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	9·2	305	e 2 21	+ 2	—	—	6·7	—
Hong Kong	19·0	314	4 33	+ 4	(8 10)	+ 8	8·2	—
Irkutsk	47·2	340	8 50	+ 2	15 46	+ 2	26·5	—
Ekaterinburg	70·2	328	11 16	− 2	20 28	0	33·5	—
Pulkovo	86·0	330	e 12 47	− 6	23 20	−10	50·0	55·2
De Bilt	101·9	329	—	—	—	—	e 62·5	—
Uccle	103·0	329	—	—	—	—	e 53·5	—
Eskdalemuir	103·8	334	—	—	—	—	59·5	—
Paris.	105·0	327	—	—	—	—	e 56·5	—

Additional reading: De Bilt eLN = +57·5m.

June 15d. Readings also at 3h. (near Algiers), 5h. (Manila (2) and La Paz), 6h. (La Paz), 11h. (Toronto and Ottawa), 16h. (La Paz), 18h. (Manila), 19h. (Ekaterinburg).

June 16d. Readings also at 0h. (near Taihoku), 1h., 6h., and 7h. (near Nagasaki), 17h. (Perth and near Nagasaki), 19h. (Nagasaki, Irkutsk, Ekaterinburg, and near Bombay), 20h. (De Bilt, Uccle, Eskdalemuir, and Pulkovo), 23h. (Rocca di Papa).

June 17d. 16h. 26m. 36s. Epicentre 37°·5N. 90°·0E. (as on 1923 Nov. 21d.).

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

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Irkutsk	17·8	30	4 10	− 5	7 33	− 3	9·4	10·5
Hong Kong	25·8	119	—	—	—	—	—	12·9
Zi-ka-wei	26·6	94	—	—	e 10 26	− 7	—	—
Ekaterinburg	27·4	324	6 3	+ 1	11 0	+12	14·9	19·1
Manila	35·7	122	—	—	—	—	—	18·4
Pulkovo	43·3	322	e 8 16	− 4	—	—	18·7	—
Hamburg	55·1	314	—	—	—	—	e 29·4	—
De Bilt	58·4	314	—	—	—	—	e 32·4	39·9

Additional readings: Irkutsk MN = +10·4m. Ekaterinburg MZ = +22·7m. De Bilt MZ = +39·8m.

June 17d. 20h. 51m. 15s. Epicentre 1°·0N. 129°·0W.

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

This epicentre is far away from any already adopted, which throws some doubt on the solution.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya		34·5	56	6 58	−11	11 27	−81	12·9	15·8
Victoria	E.	47·7	5	20 1	?	—	—	27·5	34·0
	N.	47·7	5	19 58	?	—	—	29·4	33·4
Toronto	E.	61·2	39	—	—	18 37	− 1	28·8	—
La Paz		62·5	109	i 10 29	0	18 56	+ 1	69·2	—
Ottawa		64·4	39	—	—	e 19 45	+27	e 29·8	—
Eskdalemuir		108·6	30	—	—	—	—	45·8	—
Granada		116·8	46	—	—	—	—	e 68·8	83·6
Ekaterinburg		121·7	355	—	—	—	—	55·8	—

Tacubaya gives also LN = +13·3?m., MN = +15·6m.

June 17d. Readings also at 0h. (near Tacubaya), 2h. (Ekaterinburg), 4h. (Rocca di Papa and Hyderabad), 10h. (near Mizusawa), 13h. (Irkutsk), 14h. (Irkutsk and Ekaterinburg), 21h. (near Honolulu), 23h. (Vienna, Pulkovo, Granada, and Ekaterinburg).

June 18d. 17h. 26m. 45s. Epicentre 40°·0N. 26°·0E.

$A = +\cdot689$, $B = +\cdot336$, $C = +\cdot643$; $D = +\cdot438$, $E = -\cdot899$; $G = +\cdot578$, $H = +\cdot282$, $K = -\cdot766$.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Athens	2·7	221	e 0 34	− 8	(1 1)	−13	1·0	1·6
Belgrade	6·3	322	e 1 37	+ 1	i 2 57	+ 5	—	3·3
Pompeii	8·8	279	e 2 41	+28	—	—	—	—
Rocca di Papa	10·2	285	2 32	− 1	e 3 32	−63	e 4·9	5·0
Vienna	10·7	323	e 2 58	+18	—	—	i 5·3	5·8
Venice	11·4	302	—	—	—	—	7·2	—
Konigsberg	15·3	348	—	—	—	—	e 9·8	14·8
Strasbourg	15·6	310	—	—	e 6 15	−31	—	—
Hamburg	17·4	327	—	—	—	—	e 8·2	—
Uccle	18·5	313	—	—	—	—	e 8·2	—
De Bilt	18·8	317	—	—	—	—	e 9·6	10·6
Paris	18·9	306	—	—	—	—	e 9·2	9·2
Pulkovo	20·0	7	4 41	0	8 21	− 2	9·8	—
Edinburgh	24·9	319	—	—	—	—	—	14·8
Ekaterinburg	28·0	42	—	—	—	—	15·2	—

Additional readings and notes: Athens PEN = +40s., MN = +2·1m. Belgrade eP = +1m.47s. Rocca di Papa ePN = +2m.19s. De Bilt MN = +10·2m. Pulkovo readings have been increased by 10min.

June 18d. 17h. 30m. 52s. Epicentre 33°·6N. 111°·4W. (as on 1924 May 21d.).

$A = -\cdot304$, $B = -\cdot776$, $C = +\cdot553$; $D = -\cdot931$, $E = +\cdot365$; $G = -\cdot202$, $H = -\cdot515$, $K = -\cdot833$.

		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 21	0	—	—	1·0	1·5
Victoria	E.	17·3	333	—	—	—	—	9·2	10·0
	N.	17·3	333	—	—	—	—	9·4	10·7
Chicago		20·4	59	e 1 1	?	—	—	11·6	—
Toronto	E.	26·7	58	—	—	e 11 46	+71	16·0	18·4
Georgetown		28·0	69	e 15 19	?L	e 16 25	?	e 18·9	—
Washington		28·0	69	15 19	?L	—	—	(15·3)	—
Ithaca		28·7	62	—	—	—	—	e 16·1	—
Ottawa		29·6	56	e 1 8	?	—	—	e 16·4	21·9

Additional readings: Tucson ePN = +41s. Toronto e = +15m.16s., eN = +14m.31s., LN = +15·5m. Ottawa LE = +17·1m., MN = +17·1m.

June 18d. Readings also at 0h. (Ekaterinburg), 16h. (Berkeley), 18h. (Azores and Ekaterinburg), 23h. (near Tacubaya).

June 19d. Readings at 1h. (near Victoria), 2h. (Porto Rico), 8h. (Wellington and Pulkovo), 9h. (Ekaterinburg), 11h. (Pulkovo and Ekaterinburg), 12h. (near Batavia and near Mizusawa), 15h. (near Mizusawa), 17h. (Apia, Wellington, and Riverview), 20h. (near Nagasaki), 21h. (Paris).

June 20d. 16h. 21m. 28s. Epicentre 0°·0 27°·0W. (as on 1917 Oct. 28d.).

A = +·891, B = −·454, C = 000 ; D = −·454, E = −·891 ;
G = ·000, H = ·000, K = −1·000.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz		43·8	246	8 28	+ 4	—	—	21·7	24·8
Moncalieri		54·4	30	e 8 49	−46	17 12	− 2	29·8	—
Paris		55·0	23	e 13 3	?PR_1	—	—	26·5	30·5
Strasbourg		57·1	26	e 9 32	−21	e 17 32	−15	25·5	29·5
Uccle		57·4	22	—	—	—	—	23·5	—
De Bilt		58·6	23	10 2	− 1	18 6	0	e 25·5	—
Eskdalemuir		58·6	16	—	—	e 18 5	− 1	24·5	—
Edinburgh		59·2	15	—	—	i 18 16	+ 3	—	—
Hamburg		61·7	23	—	—	e 20 32	+108	31·5	—
Ottawa		62·4	323	—	—	e 19 14	+21	e 26·0	—
Pulkovo		74·2	26	11 44	+ 1	21 15	− 1	36·5	47·9
Ekaterinburg		88·7	33	i 13 3	− 6	e 23 54	− 6	40·5	—
Irkutsk		113·8	30	—	—	e 29 9	+69	56·5	—

Pulkovo gives also PS = +22m.7s.

June 20d. Readings also at 0h. (near Tacubaya), 11h. (Nagoya), 17h. (La Paz), 21h. (Ekaterinburg).

June 21d. Readings at 0h. (Strasbourg), 3h. (Apia), 5h. and 7h. (La Paz), 16h. (Nagasaki), 17h. and 18h. (Irkutsk).

June 22d. 13h. 23m. 4Cs. Epicentre 30°·6N. 144°·0E. (as on 1923 June 29d.).

A = −·696, B = +·506, C = +·509 ; D = +·588, E = +809 ;
G = −·412, H = +·299, K = −·861.

		△	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Nagoya		7·5	311	1 27	−27	(2 33)	−51	2·6	2·8
Osaka		8·3	302	2 0	− 6	(3 58)	+13	4·0	4·9
Kobe	E.	8·6	302	—	—	—	—	—	5·7
Mizusawa	E.	8·8	345	2 17	+ 4	3 38	−20	—	—
	N.	8·8	345	2 26	+13	3 39	−19	—	—
Zi-ka-wei		19·4	278	e 4 30	− 4	—	—	—	—
Manila		26·5	238	e 6 0	+ 7	(10 45)	+13	10·8	—
Hong Kong		27·8	260	—	—	—	—	—	16·8
Irkutsk		36·1	319	i 7 5	−18	e 11 58	−73	15·3	21·8
Honolulu	E.	52·4	85	—	—	e 17 25	+36	—	—
Ekaterinburg		61·2	322	e 10 24	+ 4	18 33	− 5	26·3	35·0
Victoria		69·3	45	20 39	?S	(20 39)	+21	—	44·6
Kucino		73·4	325	12 41	+63	22 3	+56	35·8	47·2
Pulkovo		74·7	331	i 11 47	0	21 16	− 6	33·8	43·9
Upsala		79·4	336	—	—	—	—	e 51·3	—
Hamburg		86·9	335	e 12 55	− 3	e 23 26	−14	e 46·3	—
Edinburgh		89·1	342	—	—	i 23 50	−14	—	—
Eskdalemuir		89·6	342	—	—	e 23 57	−13	44·3	—
De Bilt		89·8	336	13 9	− 6	23 56	−16	e 45·3	56·8
Uccle		91·1	336	—	—	—	—	49·3	—
Strasbourg		91·7	333	13 23	− 2	24 19	−13	e 41·3	59·3
Paris		93·5	336	—	—	—	—	e 50·3	60·3
Rocca di Papa	N.	94·9	326	i 17 18	?PR_1	—	—	—	—
Toronto	E.	95·8	30	—	—	—	—	50·5	—
Ottawa		95·9	27	—	—	e 44 20	?	e 49·8	—
Toledo		103·5	335	—	—	—	—	e 48·4	—
La Paz		147·5	72	19 52	[0]	—	—	—	—

Additional readings: Osaka MN = +4·2m. Kobe MN = +6·4m. Irkutsk MZ = +22·0m. Honolulu eN = +17m.35s. Victoria MN = +40·2m. Kucino PR_1 = +15m.23s., PR_2 = +17m.9s., MN = +45·6m. Pulkovo PR_1 = +14m.33s., PR_2 = +16m.20s., MZ = +47·2m. De Bilt PR_1 = +16m.40s., MN = +54·9m., MZ = +59·7m. Strasbourg PR_1 = +16m.59s. Rocca di Papa iE = +17m.23s.

June 22d. 16h. 36m. 48s. Epicentre 6°·5S. 107°·5E. (as on 1921 Mar. 3d.).

$A = -\cdot299$, $B = +\cdot948$, $C = -\cdot113$; $D = +\cdot954$, $E = +\cdot301$; $G = +\cdot034$, $H = -\cdot108$, $K = -\cdot994$.

A depth of focus +0·020 is assumed.

	Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Batavia	+0·5	0·7	295	i 0 22	+ 4	i 0 41	+ 8	—	—
Malabar	+0·5	0·8	171	i 0 19	− 1	—	—	—	—
Manila	−1·1	25·0	32	e 5 49	+22	(10 45)	+63	10·8	—
Perth	−1·2	26·6	164	—	—	(10 27)	+16	10·4	—
Hong Kong	−1·4	29·6	13	—	—	—	—	—	13·7
Colombo	−1·4	30·7	297	11 12	?S	(11 12)	−10	—	13·2
Kodaikanal	−1·6	34·3	300	12 6	?S	(12 6)	−13	—	—
Hyderabad	−1·6	37·4	311	7 32	+12	—	—	—	—
Bombay	−1·8	42·6	309	13 59	?S	(13 59)	−19	—	17·6
Riverview	−2·0	48·7	130	e 15 17	?S	(e 15 17)	−20	e 26·1	30·7
Irkutsk	−2·4	58·8	357	e 9 47	− 1	17 46	+ 7	31·2	—
Ekaterinburg	−2·6	73·9	335	11 23	− 2	e 20 38	− 4	31·2	—
Kucino	−2·7	84·2	328	—	—	i 23 28	+47	e 33·6	—
Pulkovo	−2·8	89·3	331	i 12 42	−14	i 22 58	−38	37·2	—
Upsala	—	95·5	330	—	—	i 23 31	[−29]	—	—
Rocca di Papa	—	98·0	312	e 23 38	?S	(e 23 38)	[−35]	—	—
Hamburg N.	—	99·6	324	—	—	e 23 58	[−24]	—	—
Zurich	—	100·8	317	—	—	i 24 2	[−26]	—	—
Strasbourg	—	101·3	319	—	—	e 24 13	[−18]	—	—
Moncalieri	—	101·4	316	i 24 29	?S	(i 24 29)	[− 2]	—	—
De Bilt	—	102·7	323	—	—	i 24 12	[−25]	e 52·2	—
Uccle	—	103·3	321	—	—	e 24 13	[−27]	—	—
Paris	—	104·7	320	—	—	i 24 21	[−25]	—	—
Edinburgh	—	106·9	327	—	—	i 24 30	[−26]	—	—
Eskdalemuir	—	107·0	327	—	—	i 24 29	[−28]	—	—
La Paz	—	156·6	191	19 47	[−17]	—	—	—	—

Additional readings: Malabar i = +23s. Riverview i = +15m.21s., MN = +29·0m. Irkutsk P = +10m.21s., S = +18m.22s. Ekaterinburg i = +20m.44s. Pulkovo iP = +13m.16s., iS = +23m.19s. Kucino e = +24m.23s. and +29m.48s. Rocca di Papa iP = +23m.49s., eL = +24·5m. Strasbourg e = +26m.33s. Moncalieri S? = +27m.12s., L = +28·9m. De Bilt eZ = +26m.50s. Eskdalemuir e = +27m.31s.

June 22d. 22h. 28m. 58s. Epicentre 5°·5N. 77°·5W.

$A = +\cdot215$, $B = -\cdot972$, $C = +\cdot096$; $D = -\cdot976$, $E = -\cdot216$; $G = +\cdot021$, $H = -\cdot094$, $K = -\cdot995$.

(The epicentre 4°·5N. 77°·5W. of 1920 Jan. 30 does not suit the observations).

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
La Paz	23·9	157	i 5 23	− 4	i 9 38	− 4	16·0	19·5
Chicago	37·4	349	7 18	−15	13 7	−23	17·3	—
Toronto E.	38·2	357	e 7 34	− 6	i 13 30	−11	19·8	21·0
N.	38·2	357	e 7 32	− 8	i 13 32	− 9	23·5	—
Ottawa	39·9	3	7 47	− 7	13 52	−13	e 20·0	—
Victoria E.	57·8	326	9 56	− 2	17 58	+ 2	30·7	—
N.	57·8	326	9 53	− 5	17 48	− 8	27·2	—
Eskdalemuir	76·6	35	e 12 4	+ 5	21 49	+ 5	—	—
Edinburgh	76·7	35	—	—	e 22 2	+17	—	—
Oxford	77·2	38	—	—	22 0	+ 9	—	—
Paris	79·3	41	e 12 21	+ 6	e 22 19	+ 4	33·0	—
Uccle	80·6	40	e 12 25	+ 2	e 22 29	− 1	e 40·0	—
De Bilt	81·2	38	12 28	+ 2	i 22 41	+ 4	e 34·0	45·9
Strasbourg	82·8	42	e 11 2	−93	e 22 39	−16	e 31·0	—
Hamburg	84·1	37	e 12 50	+ 7	e 23 2	− 7	—	—
Rocca di Papa	86·5	49	i 12 51	− 5	i 23 33	− 3	—	—
Pulkovo	94·0	29	e 13 33	− 5	(23 2)	[−50]	23·0	—
Kucino	99·3	31	e 25 42	?S	(e 25 42)	− 7	e 52·9	—
Ekaterinburg	109·0	23	—	—	e 26 49	−30	47·0	—

Additional readings: La Paz iPN = +5m.26s., PR_1 = +5m.46s., SR_1 = +10m.42s., T_o = 22h.28m.41s. Ottawa PR_1 = +9m.20s., SR_2N = +16m.53s., T_o = 22h.29m.4s. De Bilt MZ = +45·7m. Strasbourg e = +23m.2s. Pulkovo e = +15m.59s.

June 22d. Readings also at 0h. (near Nagasaki), 1h. (Ekaterinburg and La Paz), 2h. (Apia), 6h. (La Paz), 7h. and 8h. (near Athens), 9h. and 11h. (La Paz), 15h. (near Barcelona), 16h. (La Paz), 20h. (Toledo), 22h. (Nagasaki and near Nagoya).

June 23d. 4h. 45m. 16s. Epicentre 9°·5N. 128°·8E. (as on 1924 June 15d.).

A = −·618, B = +·769, C = +·165; D = +·779, E = +·627; G = −·103, H = +·129, K = −·986.

	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
	°	°	m. s.	s.	m. s.	s.	m.	m.
Manila	9·2	305	e 2 48	+29	(4 8)	0	4·1	—
Hong Kong	19·0	314	—	—	—	—	—	12·7
Ekaterinburg	70·2	328	i 11 20	+ 2	20 26	− 2	31·7	—
Pulkovo	86·0	330	12 53	0	23 25	− 5	33·2	53·4
De Bilt	101·9	329	—	—	—	—	e 54·7	—
Rocca di Papa	102·3	317	e 51 47	?L	—	—	(e 51·8)	—
Strasbourg	102·3	325	—	—	—	—	e 54·7	—
Uccle	103·0	329	—	—	—	—	e 54·7	—
Paris	105·0	327	—	—	—	—	55·7	—
La Paz	162·1	115	69 14	?L	—	—	(69·2)	—

Pulkovo gives also PR_3 = +17m.29s.

June 23d. Readings also at 3h. (near Balboa Heights), 7h. (Ekaterinburg), 18h. (Nagoya), 19h. (Ekaterinburg and Pulkovo).

June 24d. 13h. 48m. 50s. Epicentre 8°·0N. 118°·0W.

A = −·465, B = −·874, C = +·139; D = −·883, E = +·469; G = −·065, H = −·123, K = −·990.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Tacubaya		21·5	56	6 7	+68	8 56	+ 1	9·4	9·9
Merida		30·3	61	6 12	−19	8 9	?	8·4	8·8
Victoria	E.	40·7	355	—	—	—	—	30·2	36·2
Chicago		43·1	35	e 9 43	+84	—	—	19·0	—
Toronto		49·0	38	e 8 48	−12	e 14 31	−95	e 21·3	—
Ottawa	N.	52·1	38	e 9 40	+19	e 15 6	−99	e 20·2	24·2
La Paz		55·1	116	9 41	+ 1	17 23	+ 1	26·4	—
De Bilt		102·9	32	—	—	—	—	e 42·2	49·2
Paris		103·1	36	—	—	—	—	e 43·2	—
Uccle		103·2	34	—	—	—	—	e 42·2	—
Strasbourg		106·2	35	—	—	—	—	e 44·2	—
Rocca di Papa		112·9	38	—	—	—	—	e 64·9	—
Ekaterinburg		115·2	1	—	—	30 53	?	53·2	61·9

Additional readings: Tacubaya MN = +9·7m. Merida MN = +9·2m.; all readings given for 12h. Victoria MN = +35·7m. Toronto LE = +17·0m. Ottawa eN = +11m.40s. De Bilt eLN = +45·2m., MZ = +49·3m.

June 24d. Readings also at 9h. (La Paz), 10h. (Pulkovo), 11h. (near Tacubaya and Apia), 12h. (Nagoya), 13h. (Pulkovo), 14h. (near Taihoku), 20h. (Hong Kong and Nagasaki), 21h. (Pulkovo, Ekaterinburg, Batavia, and near La Paz), 22h. (Strasbourg, Uccle, Paris, De Bilt, and Eskdalemuir).

June 25d. Readings at 3h. (Eksdalemuir), 7h. (Uccle, Eskdalemuir, and near Tacubaya), 11h. (Ekaterinburg (2) and Pulkovo), 16h. (Pulkovo and Apia), 19h. (near Kobe), 21h. (near Manila).

1924. June 26d. 1h. 37m. 20s. Epicentre 57°·0S. 159°·0E.

A = −·509, B = +·195, C = −·839; D = +·358, E = +·934;
G = +·783, H = −·301, K = −·545.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Wellington		18·6	40	i 4 25	+ 1	i 7 55	+ 2	—	19·2
Melbourne		21·3	328	i 4 4	−53	(8 46)	− 4	8·8	9·2
Riverview		23·8	344	e 5 18	− 8	i 9 45	+ 5	e 10·8	11·4
Sydney		23·8	344	5 16	−10	9 22	−18	11·4	—
Adelaide		26·0	319	i 5 22	−26	i 10 34	+12	14·2?	—
Perth		38·7	292	7 38	− 6	13 43	− 5	17·1	20·3
Suva		39·6	29	4 16	−215	10 40	−200	e 17·1	—
Apia		48·5	40	8 7	−50	15 9	−51	21·7	29·7
Malabar		63·8	301	10 40	+ 3	i 19 25	+14	26·5	31·2
Batavia		65·0	300	i 10 48	+ 3	i 19 42	+17	30·4	32·4
Manila		78·3	323	i 12 12	+ 3	—	—	—	—
La Plata	E.	83·0	150	i 12 45	+ 9	23 8	+11	35·1	49·9
	N.	83·0	150	i 12 44	+ 8	23 15	+18	33·9	50·8
Cape Town		83·2	214	12 40	+ 3	23 10	+11	31·8	42·7
Honolulu	E.	86·2	40	12 54	0	23 35	+ 3	41·7	—
Johannesburg		87·2	224	13 22	+22	23 40	− 3	41·7	—
Hong Kong		87·8	320	12 54	−10	(23 38)	−12	23·6	29·7
Taihoku	E.	87·9	327	13 6	+ 2	23 36	−15	29·4	36·3
	N.	87·9	327	—	—	23 38	−13	29·3	29·9
Colombo		90·0	282	12 58	−18	23 40	−34	38·7	79·3
Nagasaki		93·1	336	e 13 21	−12	—	—	—	30·8
Zi-ka-wei		93·2	330	e 13 23	−10	e 24 30	−17	—	—
Osaka		93·8	341	13 25	−12	(24 48)	− 6	24·8	31·5
Kobe		93·8	341	—	—	—	—	—	31·2
Nagoya		94·0	343	13 4	−34	—	—	—	—
Kodaikanal		94·1	283	13 28	−11	(23 58)	[+ 6]	24·0	49·3
La Paz		96·7	135	13 53	0	i 24 32	[+26]	44·5	46·2
Mizusawa		97·3	347	13 46	−10	(24 15)	[+ 5]	24·2	—
Rio de Janeiro	E.	98·0	160	i 13 55	− 5	e 24 40	[+27]	32·5	32·9
	N.	98·0	160	e 13 58	− 2	e 24 40	[+27]	32·6	32·7
Calcutta		99·0	299	13 56	− 9	24 42	[+23]	—	—
Hyderabad		99·5	286	14 16	+ 8	18 30	?PR_1	22·5	27·6
Bombay		103·7	283	14 9	−20	24 59	[+18]	48·1	55·6
Dehra Dun		110·5	295	18 4	[−19]	25 57	[+45]	32·8	56·0
Simla	E.	111·5	294	14 46	−19	25 34	[+18]	28·9	49·0
Mazatlan	E.	111·7	81	15 5?	− 1	24 29	[−48]	46·4	50·9
	Z.	111·7	81	14 44	−22	24 20	[−57]	46·4	50·9
Oaxaca		111·9	90	16 55?	+108	26 29	[+71]	49·4	53·0
Tacubaya		112·5	88	19 36	?PR_1	29 19	+89	51·7	57·1
Vera Cruz	E.	114·0	90	19 8?	?PR_1	29 4	+62	52·5	58·5
	Z.	114·0	90	19 16?	?PR_1	29 8	+66	52·1	63·6
Lick	E.	115·3	60	i 19 59	?PR_1	i 33 6	?	i 53·4	56·8
	N.	115·3	60	i 20 3	?PR_1	i 32 52	?	i 53·4	62·7
Berkeley		115·5	59	e 18 54	[+14]	27 0	−74	53·3	57·1
Tucson	E.	116·6	70	—	—	—	—	53·5	54·5
Irkutsk		118·1	325	—	—	e 28 40	+ 5	51·7	—
Merida		119·0	94	21 40	?PR_1	31 36	?	57·3	61·4
Victoria	E.	123·3	50	15 55?	− 3	30 50	?	55·8	60·0
	N.	123·3	50	15 55?	− 3	30 48	?	56·3	68·9
Denver		125·4	70	—	—	29 40?	+11	55·7	56·7
Sitka	E.	125·5	38	—	—	e 28 4	−86	57·6	—
	N.	125·5	38	—	—	e 30 54	+84	57·9	—
Port au Prince		126·1	115	e 20 17	?PR_1	37 40	?SR_1	—	—
Porto Rico		129·1	120	—	—	—	—	54·3	54·8
Helwan		134·9	257	e 16 50	?	—	—	—	41·2
Chicago		136·0	81	i 19 36	[+ 4]	—	—	—	68·0
Ekaterinburg		138·2	306	e 19 20	[−16]	—	—	—	—
Ann Arbor		138·5	83	20 52	[+75]	e 35 10	?	e 64·3	74·8
Georgetown	E.	139·7	91	e 19 37	[− 2]	32 53	?	67·9	69·9
	N.	139·7	91	e 19 37	[− 2]	32 50	?	67·9	69·2
Washington		139·7	91	19 33	[− 6]	—	—	e 41·0	—
Cheltenham	E.	140·0	91	—	—	—	—	e 67·4	69·7
	N.	140·0	91	—	—	e 29 29	?	67·0	68·0
Toronto	E.	141·7	84	i 19 38	[− 4]	i 33 3	?	46·8	74·2
	N.	141·7	84	i 19 39	[− 3]	i 33 1	?	47·0	75·6
Ithaca		142·5	88	e 19 45	[+ 1]	—	—	61·7	—
Ottawa		144·8	85	i 19 45	[− 3]	30 0	?	e 47·0	71·3

Continued on next page.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Athens		145·1	259	19 52	[+ 4]	e 32 35	?	e 67·7	79·1
Northfield		145·7	89	19 49	[0]	—	—	74·7	—
Kucino		148·4	293	i 19 33	[−20]	—	—	42·6	52·1
Halifax		151·0	96	20 8	[+11]	30 31	?	e 48·2	79·7
Belgrade		151·7	263	e 20 7	[+ 9]	e 30 5	?	61·5	77·2
Pompeii		152·1	250	i 19 29	[−30]	28 33	?	44·7	108·7
Mostar		152·2	257	e 20 10	[+11]	e 34 42	?	77·2	—
Lemberg	E.	152·8	274	e 20 5	[+ 5]	e 25 51	?PR_1	e 43·7	118·4
	N.	152·8	274	e 20 11	[+11]	e 26 15	?PR_1	—	117·2
Sinj		153·1	257	e 20 57	[+57]	—	—	—	—
Rocca di Papa	E.	153·7	249	e 20 4	[+ 3]	30 20	?	e 98·2	—
	N.	153·7	249	e 19 59	[− 2]	30 54	?	e 73·6	107·4
Pulkovo		153·7	298	20 0	[− 1]	e 34 6	?	72·7	99·7
Algiers		154·2	229	20 4	[+ 3]	33 44	?	65·7	108·7
Florence		155·9	250	20 2	[− 1]	35 32	?	37·7	102·7
Vienna		156·0	264	e 20 3	[0]	—	—	e 56·7	115·7
Venice		156·5	254	19 12	[−52]	30 18	?	65·9	105·5
Granada		157·1	218	20 15	[+10]	—	—	60·6	65·2
San Fernando		157·2	212	20 15	[+10]	33 40	?	59·7	102·7
Innsbruck		158·2	258	20 10	[+ 4]	e 37 46	?	e 77·7	103·7
Barcelona		158·5	233	20 9	[+ 2]	32 11	?	e 50·3	—
Moncalieri		158·6	249	20 19	[+12]	38 0	?	50·8	58·5
Rio Tinto		158·6	213	21 10	[+63]	—	—	—	40·7
Tortosa	E.	158·7	230	20 11	[+ 4]	32 56	?	—	106·2
	N.	158·7	230	20 10	[+ 3]	32 24	?	53·7	95·2
Zurich		159·6	254	e 20 8	[0]	e 32 51	?	—	—
Toledo		159·6	220	20 11	[+ 3]	i 35 7	?	i 65·1	82·8
Upsala		159·9	295	e 20 2	[− 6]	i 34 56	?	e 64·7	86·3
Lisbon		160·2	208	e 21 14	[+66]	—	—	e 56·1	64·1
Strasbourg		160·9	256	20 8	[− 1]	—	—	52·7	102·7
Besançon		160·9	251	20 17	[+ 8]	35 10	?	45·7	75·7
Coimbra		161·3	211	20 14	[+ 5]	33 19	?	50·8	60·0
Hamburg		162·2	273	e 20 10	[+ 1]	—	—	e 76·7	—
Paris		163·8	250	i 20 11	[0]	38 35	?	51·7	78·7
Uccle		164·0	258	20 12	[+ 1]	—	—	e 69·7	101·2
De Bilt		164·2	263	i 20 10	[− 1]	e 31 54	?	e 78·7	82·8
Bergen		166·0	296	20 57	[+45]	36 40	?	52·7	54·7
Kew		166·8	254	20 40	[+27]	—	—	—	110·7
Oxford		167·5	254	20 13	[− 1]	—	—	65·2	100·0
West Bromwich		168·2	256	20 19	[+ 5]	—	—	—	—
Stonyhurst		169·1	262	e 20 16	[+ 2]	—	—	78·7	97·7
Bidston		169·2	258	35 18	?	45 20	?	80·3	—
Dyce		169·8	279	19 55	[−20]	—	—	—	—
Eskdalemuir		170·0	268	20 19	[+ 4]	—	—	—	—
Edinburgh		170·1	271	20 22	[+ 7]	—	—	50·7	114·1

Additional readings and notes: Wellington L_g = +22·4m. Riverview iP = +5m.19s., +5m.23s., and +5m.30s., PR_1 = +6m.3s., +7m.17s., and +8m.42s., PS = +9m.59s., MN = +12·6m., MZ = +14·8m., T_e = 1h.36m.57s., epicentre 58°·0S. 159°·0E. Adelaide i = +8m.46s. Perth e = +16m.5s. Suva SR_1 = +13m.34s., SR_2 = +14m.22s. Apia P = +8m.13s. and +12m.58s., MN = +30·7m., T_e = 1h.36m.37s. Malabar iN = +11m.58s. Batavia iE = +12m.0s. and +12m.29s. La Plata iPN = +15m.36s., PR_1?N = +16m.11s., iPE = +20m.59s., SN = +26m.12s., and +28m.30s., SE = +28m.15s., T_e = 1h.37m.24s. Honolulu SR_1E = +24m.30s. and +28m.40s., T_e = 1h.37m.30s. Johannesburg PR_1 = +16m.52s. Hong Kong S = +18m.26s. (?PR_1). Osaka S = +18m.15s. (?PR_1). La Paz PR_1 = +17m.36s., PR_2 = +20m.13s., 1S? = +26m.39s., SR_1 = +30m.43s., SR_2 = +35m.29s. Mizusawa SE = +16m.45s., SN = +16m.48s. and +24m.13s. Calcutta PN = +14m.13s. Simla PN = +14m.52s., LN = +29·0m. Tacubaya LN = +52·7m., MN = +62·5m. Lick iPR_1 = +20m.9s., iPSE = +30m.6s., PR_2 = +36m.56s. and +37m.7s. Berkeley gives PR$_1$Z = +19m.55s., PSN = +25m.42s., and many other PR_1, PS, and SR_1 readings, eLN = +53·3m., MZ = +56·3m., MN = +58·5m. Tucson ePR$_1$E = +20m.2s., PSE = +29m.56s., PSN = +30m.10s., SR_1E = +36m.56s., LE = +56·1m., LN = +56·9m. Irkutsk e = +36m.40s. Merida LN = +57·1m., MN = +66·5m. Victoria PN = +19m.11s., PE = +19m.13s. Denver PE = +32m.40s.?. Sitka ePR$_1$N = +20m.41s., PR$_1$E = +20m.44s., eE = +25m.48s., eN = +26m.14s., SR_1N = +38m.12s., SR_1E = +38m.18s., e = +52m.27s. Porto Rico ePR$_1$E = +22m.43s., ePR$_1$N = +25m.5s., SR_1N = +38m.52s., SR_1E = +39m.5s. Helwan ? = +19m.33s. and +22m.5s. Chicago PR_1 = +22m.5s.

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Ekaterinburg e = +16m.1s. and +16m.52s., i = +22m.26s. Ann Arbor PR_1? = +26m.10s., PR_2 = +29m.10s., SR_1? = +41m.40s., SR_2? = +45m.40s., MN = +73·7m. Georgetown iN = +23m.12s., iE = +23m.17s., SR_1 = +41m.40s. Washington PR_1 = +22m.35s. Cheltenham PR_1N = +19m.51s., PR_1E = +19m.55s., PR_2 = +23m.18s., SR_2 = +40m.59s. Toronto iSN = +33m.3s. and iSE = +33m.12s., and several i readings. Ithaca e = +22m.55s., +33m.5s., +41m.40s., and 47m.10s. Ottawa PR_1? = +23m.18s., PR_2? = +25m.20s., i = +33m.20s. and +42m.24s., MN = +73·7m. Athens i = +20m.2s., S = +33m.25s., L = +68·9m., MN = +111·4m. Kucino e = +22m.45s. and +30m.4s. Halifax PR_1N? = +23m.53s., i = +33m.44s., and +43m.5s. Belgrade iP = +20m.10s., e = +33m.41s. and +34m.19s., also several PR and SR readings. Mostar eL = +43·0m. Rocca di Papa PZ is entered as PN, PN = +20m.7s. Pulkovo e = +37m.54s. Algiers PR_1 = +14m.2s., i = +50m.10s. Vienna iPZ = +20m.6s., PR_1 = +24m.12s., PS = +27m.9s., PR_2 = +27m.42s., SR_1 = +43m.47s., eLN = +66·7m., MZ = +74·7m., MN = +87·7m. Venice ePR_1 = +19m.55s. and +20m.12s., ePR_2 = +20m.40s., and +21m.12s., SR_2 = +21m.34s. Granada MN = +66·3m. San Fernando MN = +89·7m. Innsbruck iNW = +20m.55s., eSR_1NE = +31m.58s., MNW = +42·5m. Barcelona PR_1 = +24m.51s., i = +34m.33s., ? = +45m.17s., and +50m.59s. Moncalieri MN = +47·7m. Toledo PR_1Z = +24m.29s., i = +39m.43s., SR_1NE = +42m.47s., MNW = +65·7m., MZ = +99·2m., also several other PR and SR readings. Upsala MN = +93·2m. Strasbourg i = +24m.41s. and +32m.47s., MN = +101·7m., MZ = +103·2m. Coimbra PR_1 = +24m.49s. and three other PR readings, iS = +35m.15s., SR_1 = +38m.25s., MN = +53·0m. Hamburg iZE = +24m.43s., iN = +25m.32s., +33m.25s., and +39m.36s., eZE = +45m.40s. and +51m.40s., eE = +58m.40s. Paris iP = +20m.16s., PR_1 = +25m.1s., e = +31m.45s., SR_1 = +46m.48s. Uccle iPR_1 = +24m.53s., MZ = +100·5m., also several i readings. De Bilt eZ = +18m.52s., iE = +24m.52s., iZ = +24m.54s., eE = +59m.45s., MN = +83·2m., MZ = +100·6m. Bergen i = +21m.40s. Stonyhurst ? = +58m.35s. Edinburgh gives several i readings, of which the first two are +21m.40s. and +25m.34s.

June 26d. 3h. 27m. 48s. Epicentre 36°·0N. 142°·0E. (as on 1924 May 31d.).

A = −·638, B = +·498, C = +·588.

		Δ	P.	O−C.	S.	O−C.	L.	M.
		°	m. s.	s.	m. s.	s.	m.	m.
Mizusawa	E.	3·2	0 54	+ 4	1 28	0	—	—
	N.	3·2	0 55	+ 5	1 29	+ 1	—	—
Nagoya		4·2	0 48	−17	—	—	1·4	1·7
Osaka		5·5	1 34	+ 9	(2 23)	− 8	2·4	2·8
Kobe		5·8	1 23	− 7	(2 24)	−15	2·4	2·5

Osaka gives also MN = +3·0m. Kobe MN = +2·6m.

June 26d. Readings also at 0h. (Ekaterinburg), 2h. (La Paz), 4h. (near Almeria), 6h. (Hamburg), 11h. (Ekaterinburg (2), Honolulu, and Apia), 12h. (Pulkovo, Uccle, and De Bilt), 18h. (Pulkovo, Ekaterinburg (2), Rocca di Papa, Pompeii, Venice, and near Taihoku).

June 27d. Readings at 0h. (Ekaterinburg and La Paz), 5h. and 14h. (La Paz), 18h. (Toledo and La Paz), 20h. (La Paz), 21h. (Ekaterinburg and Hyderabad), 22h. (Apia), 23h. (Taihoku).

June 28d. Readings at 0h. (Paris), 4h. (Batavia), 5h. (Melbourne and Perth), 7h. (Ekaterinburg, La Paz, Honolulu, and near Tacubaya), 12h. (Tortosa and Ekaterinburg), 15h. (Hyderabad and near La Paz), 22h. (Granada, La Paz, Ekaterinburg, Riverview, Apia, and Pulkovo), 23h. (Toronto, Ottawa, Uccle, and Strasbourg).

June 29d. Readings at 0h. (Granada and near Mizusawa), 1h. (near Zurich), 2h. (Azores and Granada (2)), 3h. (Granada), 4h. (Granada, La Paz (2), and Apia), 6h. (Granada (2) and Rocca di Papa), 7h. (Granada), 8h. (Taihoku), 9h. (Ekaterinburg), 13h. (Apia), 14h. (Granada, Vienna, Toledo, Irkutsk, Cape Town, and Ekaterinburg), 15h. (Toledo, Granada, Irkutsk, Kucino, Strasbourg, Hyderabad, Ottawa, and Toronto), 16h. (Moncalieri, Uccle, De Bilt, and Toledo), 17h. (Ottawa, Toronto, Irkutsk, Rocca di Papa, Strasbourg, and Ekaterinburg), 18h. (Ottawa, Toronto, Irkutsk, and Rocca di Papa), 19h. (Irkutsk, Granada, De Bilt, Apia, Toledo, Cape Town, Uccle, Ekaterinburg, Hyderabad, Tortosa, San Fernando, and Pulkovo), 20h. (Granada (2) and Rocca di Papa), 22h. (Rocca di Papa), 23h. (Paris and Granada).

June 30d. 3h. 41m. 12s. Epicentre 27°·5N. 53°·8E. (as on 1913 March 24d.).

A = +·524, B = +·716, C = +·462 ; D = +·809, E = −·591 ;
G = +·273, H = +·373, K = −·887.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Hyderabad		24·8	109	8 52	?S	(8 52)	−67	—	12·1
Ekaterinburg		29·7	8	i 6 30	+ 5	11 38	+ 9	—	—
Pulkovo		36·0	340	—	—	—	—	e 18·3	—
Rocca di Papa		36·3	304	—	—	—	—	—	18·8
Moncalieri		40·4	308	(8 15)	+17	8 15	?P	16·3	—
Strasbourg		41·1	315	—	—	—	—	e 18·8	—
Uccle		43·2	317	—	—	—	—	—	18·8
Algiers		43·4	296	e 12 24	?	—	—	—	17·3
De Bilt		43·6	320	—	—	—	—	e 19·8	—
Paris		44·5	313	—	—	—	—	e 16·8	—
Tortosa	N.	45·3	303	—	—	—	—	e 14·2	16·6
Granada		48·7	296	i 6 52	−126	(i 16 13)	+11	i 16·2	19·4
Toledo		48·8	300	—	—	e 16 13	+ 9	—	20·8
Eskdalemuir		49·1	321	—	—	—	—	18·8	—
San Fernando		50·9	296	—	—	(15 48)	−42	15·8	—
Ottawa		93·9	327	—	—	—	—	e 38·8	—
Chicago		102·1	333	—	—	—	—	e 43·8	—

Additional readings and notes: Pulkovo i = +47m.16s. and +48m.39s. Rocca di Papa ePE = 3h.35m.37s., ePN = +3h.36m.49s. Moncalieri e = 3h.38m.56s. Granada iS = +12m.49s., SR_1 = +14m.27s. Toledo MNW = +21·1m.

June 30d. 11h. 35m. 16s. Epicentre 49°·0N. 174°·0E. (as on 1923 Aug. 8d.).

A = −·652, B = +·068, C = +·755 ; D = +·105, E = +·995 ;
G = −·751, H = +·079, K = −·656.

Rough.

		Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	m. s.	s.	m. s.	s.	m.	m.
Kobe		31·9	259	—	—	—	—	e 19·6	—
Ekaterinburg		60·7	325	i 10 10	− 7	18 19	−13	25·7	—
Chicago		64·4	56	39 44	?L	—	—	(39·7)	—
Pulkovo		67·3	341	—	—	—	—	e 37·2	—
Toronto	E.	67·3	49	—	—	—	—	e 37·9	—
Ottawa		67·8	45	—	—	—	—	e 41·7	—
Eskdalemuir		75·6	358	—	—	—	—	34·7	—
De Bilt		78·4	353	—	—	—	—	e 34·7	—
Hyderabad		80·5	285	23 30	?S	(23 30)	+61	26·1	—
Strasbourg		81·7	352	—	—	—	—	e 31·7	—
Moncalieri		85·3	351	—	—	—	—	29·4	—
Rocca di Papa	E.	87·6	346	e 8 28	?	—	—	—	—
Tortosa	N.	90·0	356	—	—	—	—	e 26·7	29·3
Coimbra		90·8	3	e 19 4	?PR_1	e 23 4	[−29]	30·2	—
Granada		93·8	358	i 20 54	?PR_1	—	—	i 29·9	33·3
Cape Town		156·4	301	20 0	[− 4]	—	—	—	21·6

Additional readings: Ekaterinburg e = +12m.22s. Toronto eE = +40m.14s. Rocca di Papa ePN = +8m.30s., e = +14m.38s. Granada SR_1 = +28m.22s.

1924. June 30d. 15h. 44m. 18s. Epicentre 44°·7N. 147°·6E.

A = −·600, B = +·381, C = +·703 ; D = +·536, E = +·844 ;
G = −·594, H = +·377, K = −·711.

A depth of focus +0·020 is assumed (See May 28d. 9h.).

		Corr. for Focus	Δ	Az.	P.	O−C.	S.	O−C.	L.	M.
		°	°	°	m. s.	s.	m. s.	s.	m.	m.
Ootomari		+0·1	3·9	301	1 7	+ 5	—	—	2·0	2·4
Sapporo		0·0	4·8	253	1 18	+ 4	—	—	2·3	—
Mizusawa		−0·1	7·3	223	1 54	+ 5	3 12	− 3	—	—
Nagoya		−0·4	12·5	224	3 48	+48	—	—	5·9	6·3
Osaka		−0·4	13·7	227	3 14	− 3	5 46	− 5	5·8	7·9
Kobe		−0·4	13·8	228	3 16	− 2	(5 59)	+ 6	6·0	6·2
Nagasaki		−0·7	18·2	235	4 13	+ 2	7 26	− 3	7·6	10·6
Zi-ka-wei		−1·1	24·5	246	i 5 14	− 7	e 9 13	−20	—	—
Taihoku		−1·3	28·8	236	e 5 51	−12	(10 58)	+ 8	11·0	13·9
Irkutsk		−1·4	29·2	301	i 5 53	−13	10 43	−12	—	—
Hong Kong		−1·6	35·3	241	6 45	−17	12 19	−17	16·5	19·4
Manila		−1·7	37·6	226	e 7 11	−10	—	—	—	—
Sitka	N.	−2·0	47·4	46	8 32	− 4	15 19	− 1	25·3	—
Honolulu	E.	−2·1	50·1	99	8 51	− 3	14 47	−67	20·6	23·6
	N.	−2·1	50·1	99	—	—	14 41	−73	20·5	30·6
Ekaterinburg		−2·2	52·4	317	i 9 6	− 2	16 17	− 5	20·7	34·1
Calcutta	E.	−2·2	52·7	267	9 9	− 1	(16 26)	+ 1	16·4	—
	N.	−2·2	52·7	267	9 5	− 5	(16 29)	+ 4	16·5	—
Simla	N.	−2·3	55·4	282	9 30	+ 3	17 0	+ 3	29·1	30·4
Victoria	E.	−2·4	57·7	51	9 43	+ 2	17 33	+ 8	27·9	28·4
	N.	−2·4	57·7	51	9 43	+ 2	17 33	+ 8	25·4	26·2
Batavia		−2·5	62·6	228	i 10 20	+ 7	i 18 38	+14	e 27·7	—
Malabar		−2·5	63·1	227	i 10 21	+ 5	—	—	—	—
Hyderabad		−2·5	63·1	270	10 21	+ 5	18 43	+12	32·3	37·8
Kucino		−2·5	63·4	324	i 11 20	+62	i 19 31	+56	e 26·2	33·3
Pulkovo		−2·5	63·7	330	i 10 22	+ 2	18 51	+13	29·7	35·2
Berkeley	E.	−2·5	64·5	61	10 31	+ 6	18 59	+11	27·3	—
	N. or Z.	−2·5	64·5	61	10 29	+ 4	18 25	−23	26·4	34·2
Lick		−2.5	65·2	61	i 10 37	+ 7	i 19 14	+17	i 27·6	—
Bombay		−2·5	66·1	274	10 40	+ 4	19 14	+ 6	33·2	36·0
Upsala		−2·6	67·7	336	e 10 48	+ 2	19 33	+ 7	e 29·7	40·8
Apia		−2·6	69·1	137	e 11 30	+35	e 21 0	+76	28·4	31·0
Colombo		−2·6	69·4	260	11 18	+21	(20 36)	+48	20·6	46·7
Bergen		−2·6	70·5	342	—	—	21 12	+71	29·0	40·7
Lemberg	N.	−2·6	73·5	325	e 11 22	0	e 20 52	+15	e 36·7	39·7
Dyce		−2·6	75·0	344	11 19	−13	21 3	+ 8	34·1	43·6
Tucson	E.	−2·6	75·2	59	11 59	+25	21 10	+13	—	—
Hamburg	E.	−2·6	75·3	336	—	—	i 21 5	+ 7	e 30·7	43·8
	Z.	−2·6	75·3	336	i 11 35	+ 1	—	—	e 36·7	46·3
Edinburgh		−2·6	76·5	344	11 46	+ 5	21 19	+ 6	37·7	45·3
Eskdalemuir		−2·6	77·0	344	e 11 46	+ 1	21 25	+ 6	37·7	—
Budapest		−2·6	77·4	327	12 4	+16	21 34	+10	31·6	—
Vienna		−2·7	77·7	330	i 11 50	+ 1	21 30	+ 4	e 35·7	43·2
De Bilt		−2·7	77·9	337	i 11 51	+ 1	21 31	+ 3	e 33·7	42·4
Stonyhurst		−2·7	78·2	343	12 42	+50	21 42	+10	42·7	46·2
Riverview		−2·7	78·6	177	e 12 0	+ 6	i 21 44	+ 8	e 34·1	37·6
Sydney		−2·7	78·6	177	14 54	+180	(21 36)	0	21·6	22·7
Bidston		−2·7	78·7	343	11 49	− 6	21 48	+11	30·4	45·9
Belgrade		−2·7	79·0	324	i 12 2	+ 5	i 21 51	+10	e 43·4	—
Uccle		−2·7	79·3	337	i 11 56	− 3	i 21 45	+ 1	35·7	43·2
West Bromwich		−2·7	79·3	342	12 2	+ 3	—	—	—	—
Oxford		−2·7	79·9	342	12 4	− 2	21 52	+ 1	37·2	45·2
Kew		−2·7	79·9	341	21 42	?S	(21 42)	− 9	—	49·7
Ksara		−2·7	80·0	309	12 5	+ 2	i 21 49	− 3	—	—
Innsbruck	N.W.	−2·7	80·3	332	i 12 3	− 2	i 21 37	−19	—	—
Strasbourg		−2·7	80·4	335	i 11 59	− 6	i 21 58	+ 1	35·7	50·3
Chicago		−2·7	80·4	38	12 4	− 1	21 57	0	38·5	—
Sarajevo		−2·7	80·5	326	i 12 13	+ 7	e 22 10	+12	e 44·9	—
Zurich		−2·7	81·1	333	i 12 8	− 1	i 22 7	+ 2	—	—
Paris		−2·7	81·7	338	i 12 11	− 2	i 22 18	+ 6	33·7	43·7
Ann Arbor		−2·7	81·7	35	11 42	−31	21 54	−18	e 39·4	44·4
St. Louis	E.	−2·7	81·8	42	e 12 13	− 1	i 22 18	+ 5	e 34·1	45·9
Perth		−2·7	81·9	207	9 19	−175	23 13	+59	36·6	—
Besançon		−2·7	82·1	335	i 12 14	− 1	i 22 18	+ 2	33·6	45·7

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.
Ottawa		−2·7	82·1	28	i 12	13	− 2	i 22	12	− 4	e 37·7	41·7
Toronto	E.	−2·7	82·2	31	i 12	15	− 1	i 22	14	− 4	37·6	46·1
	N.	−2·7	82·2	31	i 12	16	0	i 22	16	− 2	42·8	45·4
Florence		−2·7	83·4	330	12	22	− 1	22	27	− 4	—	56·7
Moncalieri		−2·7	83·5	333	12	49	+25	22	57	+24	35 8	47 8
Northfield		−2·7	84·3	27	—		—	e 22	36	− 6	—	—
Ithaca		−2·7	84·4	30	12	26	− 3	22	36	− 7	37·7	—
Rocca di Papa		−2·7	84·6	327	i 12	26	− 4	i 22	37	− 8	e 43·1	56·2
Pompeii		−2·7	84·7	325	e 11	52	−38	e 21	4	−102	33·7	45·7
Helwan		−2·7	85·6	309	12	32	− 3	22	42	−14	—	43·3
Georgetown		−2·7	87·2	33	i 12	43	− 2	i 23	10	− 4	e 39·1	—
Washington		−2·7	87·2	33	i 12	42	− 3	22	52	−22	39·5	—
Cheltenham		−2·8	87·5	32	12	44	− 2	22	58	−18	—	—
Barcelona		−2·8	88·5	335	e 12	46	− 6	i 23	21	− 6	e 41·9	50·4
Wellington		−2·8	89·4	160	i 12	47	−10	i 24	2	+25	e 41·8	46·0
Tortosa	E.	−2·8	89·5	336	12	50	− 7	23	10	−28	36·2	50·6
	N.	−2·8	89·5	336	i 12	51	− 6	i 23	9	−29	35·9	50·9
Toledo		−2·8	91·7	339	i 13	1	− 9	i 23	22	−40	e 41·2	61·5
Tacubaya		−2·8	91·8	60	13	12	+ 2	24	2	− 1	40·7	52·8
Coimbra		−2·8	92·4	343	13	4	−10	i 24	0	−10	45·0	51·5
Algiers		−2·8	92·4	332	13	4	−10	23	56	−14	41·7	52·7
Lisbon		−2·8	94·0	342	e 28	58	?	—		—	38·0	—
Rio Tinto		−2·8	94·4	340	22	42	?	—		—	—	57·7
Granada		−2·8	94·9	337	i 13	12	−16	i 24	8	−28	40·5	53·4
San Fernando		−2·8	95·5	340	13	16	−15	23	49	[−11]	41·7	54·7
Porto Rico		—	110·3	33	e 19	6	? PR_1	26	16	−75	e 58·3	—
La Paz		—	138·9	59	i 19	28	[−10]	e 33	33	?	70·3	83·8
Cape Town		—	139·9	267	19	48	[+ 9]	—		—	—	79·9
Rio de Janeiro		—	156·5	25	i 20	20	[+16]	23	50	?	44·4	—

Additional readings and notes: Ootomari MN = +2·1m. Osaka MN = +8·5m. Kobe MN = +6·0m. Nagasaki PR_1 = +4m.47s., MN = +12·5m. Zi-ka-wei PSN = +9m.48s., PR_1N = +10m.33s., PR_1E = +10m.35s. Taihoku LN = +11·2m. Irkutsk e = +5m.57s., +6m.44s., +6m.48s., +6m.57s., and +7m.4s. Sitka SR_1N = +19m.37s., T_e = 15h.44m.17s. Honolulu e = +11m.10s., SR_1E = +16m.28s., SR_1N = +16m.33s. Ekaterinburg i = +9m.53s. and +11m.54s. Simla eE = +9m.24s. Batavia i = +11m.50s. Kucino MN = +33·0m. Pulkovo PR_1 = +13m.16s., PR_2 = +14m.44s., PS = +19m.37s., SR_2 = +26m.0s., MZ = +38·1m. Berkeley PN = +10m.35s., PR_2 = +14m.19s., SR_1 = +23m.13s., SR_2E = +25m.49s., iN = +29m.15s. Lick iZ = +11m.12s., iPR_1E = +12m.48s., iPR_2E = +15m.20s., ePR_2N = +15m.31s., iEN = +15m.58s., eSR_2E = +26m.41s. Upsala MN = +39·7m. Apia e = +16m.36s. (?PR_1) Bergen PR_1 = +17m.7s. Hamburg eSR_1 = +26m.20s., MN = +43·4m. Eskdalemuir SN = +21m.30s., SR_1 = +26m.24s., SR_2 = +31m.42s. Vienna PR_1 = +14m.58s., PS = +21m.56s., SR_2? = +32m.9s., MZ = +51·7m. De Bilt e = +31m.29s., eLN = +35·7m., MN = +41·7m., MZ = +46·9m. Riverview iS = +21m.52s., PS = +22m.36s., MN = +41·1m., T_e = 15h.44m.21s. Belgrade i = +12m.11s. and +23m.12s. Uccle MN = +43·1m. Innsbruck iSNE = +21m.36s. Strasbourg SR_1 = +27m.17s., MN = +51·7m. Chicago SR_1 = +27m.17s. Paris MN = +46·7m. Ann Arbor MN = +44·7m. St. Louis i = +22m.21s., PSE = +23m.12s., SR_1E = +27m.44s., SR_2E = +33m.2s. Perth PS = +21m.31s., SR_1 = +26m.35s., SR_2 = +29m.5s., SR_3 = +32m.15s., L (rep.) = +51·4m. Ottawa SR_1N = +27m.50s., SR_2N = +31m.35s., MN = +43·7m., T_e = 15h.44m.30s. Toronto iE = +23m.8s., iE = eN = +34m.44s., T_e = 15h.44m.32s. Florence iPN = +12m.20s. Moncalieri MN = +50·0m. Rocca di Papa L = +36·6m., eL = +43·1m. Barcelona ? = +23m.3s., +24m.26s., +27m.8s., and +35m.36s. Wellington PR_1 = +16m.42s., PR_2 = +18m.52s., PS = +23m.27s., SR_1 = +28m.17s., e = +36m.42s. Toledo MNW = +52·7m. Granada PS = +25m.17s. Coimbra S = +23m.23s., iN = +26m.6s., LN = +48·0m., MN = +53·7m. San Fernando MN = +57·7m. La Paz PR_1 = +23m.55s., PR_2 = +26m.50s. SR_1 = +41m.10s., SR_2 = +46m.25s., T_e = 15h.43m.52s. Cape Town P has been increased by 20m. Rio de Janeiro LE = +24·7m.

NOTE TO JUNE 30d. 15h. 44m. 18s.

The large amount of material for the determination of this shock gives ample evidence for the existence of an extra deep focus. For assuming the correction for focus and epicentre adopted in the text we have, using mean residuals grouped in azimuths, equations as follows :—

No. of Stations	Mean Az.	Equations	$\delta\triangle$
	°		°
16	40	$+ \cdot 64x + \cdot 77y =$	$-0 \cdot 1$
1	100	$+ \cdot 98x - \cdot 17y =$	$-0 \cdot 6$
2	176	$+ \cdot 07x - 1 \cdot 00y =$	$+0 \cdot 4$
9	225	$- \cdot 71x - \cdot 71y =$	$-0 \cdot 2$
5	270	$-1 \cdot 00x =$	$0 \cdot 2$
32	335	$- \cdot 42x + \cdot 91y =$	$0 \cdot 0$

where $-1 \cdot 4x$ and $-y$ are the corrections in longitude and latitude respectively. Solving these equations after weighting according to Column 1 we get

$$x = -0^{\circ} \cdot 01 \qquad y = +0^{\circ} \cdot 02.$$

showing that the correction and epicentre are as close as can be obtained from the observations.

June 30d. Readings also at 0h. (Granada and Rocca di Papa), 1h. (Granada (2), Algiers, and Rocca di Papa (2)), 4h. (Vienna, Riverview, Granada, and near Wellington), 5h. (near Mostar), 7h. (Paris), 8h. (Pulkovo), 9h. (Zi-ka-wei, near Nagasaki (2), and near Osaka), 10h. (Kobe), 14h. (Ekaterinburg), 17h. (Apia), 18h. (Batavia, Perth, and Zi-ka-wei), 19h. (Hong Kong and Riverview), 23h. (Rocca di Papa and Granada).

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