GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

S E I S M O L O G I C A L B U L L E T I N

January, 1951.

Published under the direction of
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INTRODUCTION

Till the end of 1937, the seismic data from the observatories of the India Meteorological Department were being published annually as Part D of the Annual Summary of the India Weather Review. Since 1938, the data were being published in the form of the Quarterly Seismological Bulletin. From the month of January 1948, the data are being published in the present form of a Monthly Seismological Bulletin. With the kind co-operation of the Surveyor-General of India, the Director of the Nizamiah Observatory, Hyderabad and the Director, Colombo Observatory and the Central Water and Power Commission, New Delhi, it has been possible to incorporate in the bulletin the seismic data of their respective observatoriesv viz. Dehra Dun, Hyderabad, Colombo and Chatra. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona .

TABLE I.

List of Seismograph Stations.

Station	Latitude North o '	Longitude East o '	Height above M.S.L. 'Metres'	Lithologic Foundation	Officer-in-charge of Observatory.
Bombay	18 54	72 49	6	Deccan Trap	Director.
Calcutta	22 32	88 22	(i)7 (ii)6	Alluvium	Director.
Chatra	26 50	87 10	161	Sand stone	Exe. Engineer, C.W.P. & C.Jogbani.
VColombo	06 54	79 52	7	Beach sand	Director.
Dehra Dun	30 19	78 03	682	Gravel	President.
Hyderabad	17 26	78 27	528	Granite	Director.
Kodaikanal	10 14	77 28	2343	Rock	Director.
New Delhi	28 35	77 12	207	Massive Quartzite	Dy.Director General of Observatories (I & S).
Poona	18 32 73	73 51	560	Deccan Trap	Dy.Director General of Observatories (C & G).

(i) Milne-Shaw (ii) Omori-Ewing.

TABLE II.

Instruments and their constants.

Station	Instrument	Component	Period in secs.	Static Magnification.	Damping Ratio.	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	15:1	8.0
	Milne-Shaw	E	12	350	14:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	22	32	---	25.4
	Omori-Ewing	E	24	30	---	25.4
	Wood-Anderson	N	2	870	Critical	30.0
Chatra	Wood-Anderson	N	1	995	40:1	60.0
	Wood-Anderson	E	1	995	38:1	60.0
	Benioff	VZ	0.45	10,000	seismometer 8	60.0
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	----	----
Hyderabad	Milne-Shaw	E	12	242	20:1	8.0
	Milne-Shaw	N	12	268	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0
New Delhi	Milne-Shaw	N	12 2	299	20:1	8.0
	Wood-Anderson	N	4	1000	20:1	16.0
	Wood-Anderson	E	2	1700	30:1	60.0
	Omori	E	30	30	1	12.0
Poona	Milne-Shaw	N	12	250	20:1	8.0
	Wood-Anderson	E	4	1000	20:1	16.0
	Benioff	Z	To= 1 sec. Tg.0.28 sec.		Critical	60.0
Micro	-Sprengnether	E	7.2	-	-	30.0

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
January. 1951.				h. m. s.	Km.	
1	Chatra	N,E	eP	01 3 5 02	670	Slight.
			Pg	01 35 37		
			L_Q	01 36 10		
			S	01 36 22		
			SS	01 36 22		
			S	01 36 42		
			M	01 37 00		
	New Delhi	E	eP	01 37 05	1570	Slight.
		E	PP	01 37 16		
		N,E	L_Q	01 39 37		
			iS	01 39 40		
			SS	01 40 00		
	Bombay	N	e	01 38 37		Feeble.
			e	02 42 41		
			e	01 45 05		
		E	Record disturbed at the time.			
1	Chatra	N,E	e	03 13 39		Feeble.
	Kodaikanal	E	e?	03 20 18		Tremor.
	Hyderabad	N	e	03 21 26		
			M	03 32 11		Per. = 12 secs. μ = 4
		E	M	03 32 21		Per.= 12 secs. μ = 3.
	Bombay	N,E	e	03 25 --		Feeble.
	Poona	E	M	03 34 00		Slight,distant.
1	New Delhi	N,E	eP	04 14 17		Slight.Distant.
		N	e	04 19 31		
			e	04 24 47		Surface waves.
1	Epc:- 18.0° S, 169.0° E			0 = 20h. 16m. 20s. (U.S.C.G.S.).		
	Chatra	N,E	e	20 15 14		Feeble.
	Poona	E	P	20 30 24	10500	Slight.
			PP	20 34 30		
			SKS	20 40 36		
			SKKS	20 41 06		
			S	20 41 34		
			i	20 42 12		
			SS	20 48 24		
			SSP	20 48 34		
2	Chatra	N,E	e	01 32 08		Feeble.Near.
			i	01 32 54		
			i	01 33 08		
2	Chatra	N,E	e	13 28 39		Tremor.
2	Chatra	N,E	e	23 42 32		Tremor.
3	Epc:- 29.0° N, 95.0° E,			0 = 21h. 14m. 03s. (Poona).		
	Chatra	N,E	eP	21 15 52	800	
			Pg	21 16 26		
			L_Q	21 17 01		
			S	21 17 14		
			SS	21 17 23		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
January. 1951.						
3 (cont.)						
	Chatra (cont.)	N,E	S*	21 17 35		
		N	M	21 18 01		Amp.= 6.0 mm
		E	M	21 18 02		Amp.= 6.0 mm.
	Calcutta	E	eS	21 17 48	940	Slight.
			L_Q	21 18 39		
			e_Q	21 18 50		
			PcP	21 24 42		
	New Delhi	E	eP	21 17 48	1740	Slight.
		N,E	L_Q	21 20 22		
		N,E	S	21 20 44		
	Hyderabad	E	P	21 18 34	2110	
			eS	21 22 03		
			M	21 25 17		Per. = 14 secs. μ = 2
	Poona	Z	iP	21 19 04	2490	Slight
			i	21 19 12		Possibly a second P.
			eS	21 23 06		
			i	21 23 14		Possibly a second S.
	Bombay	N,E	eP	21 19 14	2555	Slight.
			eS	21 23 17		
		N	M	21 26 00		Per.= 4 secs. μ = 4
		E	M	21 27 49		Per.= 11 secs. μ = 3.
	Kodaiakanal	E	e	21 19 23		Tremor.
4	Calcutta	E	e	03 40 40		Slight tremor.
			e	03 42 53		
			i	03 46 27		
	Chatra	E	e	03 41 57		Lost in changing
		N	e	03 44 46		-Do-
	Bombay	N	eP	03 42 38	2120	Slight.
			eS	03 46 04		
		E	Record disturbed at the time.			
	New Delhi	N,E	iP	03 40 42	1050	Slight.Direction
			PPP	03 40 58		of first motion
			P*	03 41 04		S and W
			P	03 41 29		
			iS	03 42 30		
			SSS	03 42 52		
			S*	03 43 06		
			S	03 43 38		
	Poona	E	eP	03 42 45	1950	Slight.
			S	03 46 00		
			SS	03 46 16		
			PcP	03 47 28		
			M	03 48 08		
	Kodaikanal	E	e?	03 47 32		
4	Epc:- 29.0° N, 95.0° E, O = 23h. 13m.17s. (Poona)					
	Chatra	N,E	eP	23 15 05	780	Slight.
			Pg	23 15 40		
			L_Q	23 16 15		
			S	23 16 26		
			SS	23 16 37		
			S*	23 16 48		
		N	M	23 17 08		
		E	M	23 17 10		Amp.= 4.0 mm.
		E	M	23 1		
	New Delhi	N,E	eP	23 16 59	1700	Slight.
			L_Q	23 19 48		
			S	23 19 56		

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January. 1951.				h. m. s.	Km.	
4 (cont.)						
	Calcutta	E	eS	23 17 15		Slight
			e	23 18 06		
	Poona	Z	iP	23 18 15		Very feeble.
	Poona	Z E	S	23 22 14		
	Bombay	N,E	eP	23 18 20	2455	Slight.
			eS	23 22 28		
5	Chatra	N,E	e	08 43 06		Tremor.
5	Chatra	N,E	e	12 35 02		Tremor.
6	Chatra	N,E	e	03 06 06		Tremor.
6	Epc:- 36°.5N, 70°.5 E, O = 05h. 17m.09s. Poona. O = 05h. 17m. 19s. (U.S.C.G.S.) Felt at Dras, Sring Srinagar Delhi.					
	Dehra Dun	N	eP?	05 15 09	1240	
			eS?	05 16 30		
			M	05 16 48	Per.= 03 secs. Amp.=0.75"	
	New Delhi	N,E	iP	05 19 30		Moderate
		N	i	05 20 55		Felt locally. Direction of first motion S & E Phases indistinct due to quick movements.
	Chatra	N,E	iP	05 21 03	1720	Moderate.
			iPP	05 21 16		
			iPPP	05 21 22		
			iS	05 23 57		
			iSS	05 24 13		
			iSSS	05 24 27		
			L_R	05 24 36		
	Bombay	N,E	iP	05 21 12	1990	Moderate.
			iPP?	05 22 06		
		E	iS	05 24 26		
		N,E	L_Q	05 24 54		
		E	M	05 26 46		Per.= 4 secs. μ = 61
		N	M	05 28 50		Per. = 6 secs. μ = 45
	Poona	N,E	iP	05 21 17		Moderate.
			PP	05 21 31		
			PPP	05 21 41		
			iS	05 24 32		
			SS	05 24 59		
			SSS	05 25 03		
			PcP	05 25 58		
			M	05 27 --		
	Calcutta	E	iP	05 21 46	2135	Great.
			iS?	05 25 17	Record too faint for correct identification.	
	Kodaikanal	E	eP?	05 22 00	3365	
			PP	05 23 00		
			iS?	05 27 00		
			L_R	05 29 51		
			M	05 32 30		Per.= 7 secs. μ = 4

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
January. 1951. 6 (cont.)	Hyderabad	N,E	iP	05 22 06	21600	
		N	i	05 23 04		
		E	iS	05 25 40		
		N	L	05 27 59		
			M	05 30 06		Per. = 6 secs. μ = 43
6	Epc:- 7.5 N, 81.0 W.		Felt in Panama Canal Zone. 0 = 07h. 51m.31s. (U.S.C.G.S.)			
	Hyderabad	E	e	07 50 46?		
			M	08 53 00		Per.= 20 secs. μ = 11. Tremor.
	Kodaikanal	E	e	08 11 42		
	Bombay	N,E	ePKP	08 10 58	16345	Moderate.
		E	PPP	08 17 47		
		N	PPP	08 17 53		
		E	eSS	08 33 27		
		N	eSS	08 34 04		
		E	SSS	08 38 46		
		N	SSS	08 39 35		
		E	L_Q	08 52 22		
			L_R	08 58 19		
		N	L_R	09 00 05		
			M	09 25 09		Per. = 18 secs. μ = 7
		E	M	09 27 53		Per. = 18 secs. μ = 7
	New Delhi	N,E	PKP 1	08 11 17	16000	Moderate.
		N	PP	08 14 29		
			PPP	08 17 42		
			$SKKS_1$	08 20 47		
			PS	08 24 49		
			PPS	08 26 50		
			SS	08 33 02		
	Calcutta	E	PKP?	08 11 11	16610	Slight.
			PP	08 14 48		
			SS	08 33 32		
			SSP	08 34 15		
			SSS	08 38 43		
			M?	09 12 48		
	Poona	N,E	M	09 45 00		Very distant. Moderate (Record disturbed)
6	Chatra	N,E	e	17 17 44	Tremor	
7	Bombay	N,E	e	19 11 --		Feeble surface waves.
8	Z Chatra	Z	iP	01 11 28	360	Slight.
			P*	01 11 32		
			PP	01 11 35		
			Pg	01 11 38		
			PPP	01 11 42		
		N,E	e	01 11 43		
		Z	iS	01 12 08		
		N,E	e	01 12 09		
		Z	S*	01 12 15		
			SS	01 12 18		
			Sg	01 12 22		
			SSS	01 12 29		

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
January. 1951.				h. m. s.	Km.	
8	Chatra	Z	iP?	03 37 56	700	Feeble.
		N,E	e	03 38 45		
		Z	iS?	03 39 10		
		N,E	e	03 39 11		
8	Chatra	Z	e	08 44 00		Tremor.
		N,E	e	08 46 43		
8	Kodaikanal	E	e?	12 50 48		Tremor.
8	Kodaikanal	E	e?	18 05 48		Tremor.
	Bombay	N,E	e --	18 09 --		Feeble.
8	Epc:- 35.0°N, 140.0° E		0 = 18h. 32m. 18s,			(U.S.C.G.S.)
	Chatra	N,E,Z	e	18 40 44		Feeble. Distant.
	New Delhi	N,E	iP	18 41 38	5760	Slight.
		N	iS	18 49 00		
			ScS	18 51 21		
	Poona	E	P	18 42 32	6665	Slight.
			eS	18 50 44		
			PS	18 50 56		
			PPS	18 51 04		
	Bombay	N,E	eP	18 42 36	6700	Feeble.
			eS	18 50 50		
8	Chatra	Z	i	19 51 08		Feeble.
			e	19 51 49		
8	Chatra	Z	P	20 11 50	290	Slight.
			P*	20 11 53		
			Pg	20 11 58		
			PPP	20 12 04		
			L_Q	20 12 14		
		N,E	e	20 12 22		
		Z	S	20 12 23		
			S*	20 12 26		
8	Chatra	Z	iP	20 33 54	820	Slight.
			PP	20 34 04		
			Pg	20 34 33		
			L_Q	20 35 10		
		N,E	e	20 35 18		
		Z	iS	20 35 20		
			SS	20 35 33		
			S*	20 35 46		
8	Chatra	Z,E,N,	e	21 50 41		Tremor.
9	Chatra	N,E	e	09 01 35		Tremor.
		Z	i	09 01 36		
	Bombay	E	eP	09 03 --		Feeble.
		N,E	eS?	09 10 34		
9	Chatra	N	e	13 36 03		Tremor.
9	Chatra	N	e	16 10 03		Tremor.
	Bombay	N	e	16 11 --	Very feeble.	
		N,E	e	16 20 --		
	Kodaikanal	E	e?	16 31 51		Tremor.

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10	Kodaikanal	E	e	06 35 51		Tremor.
	Bombay	N,E	eP	06 37 19	3820	Feeble.
			eS	06 42 46		
10	Chatra	N,E,Z	P	13 36 00	140	Slight.
		Z	Pg	13 36 03		
			PP	13 36 07		
		N,E,Z	iS	13 36 18		
		Z	SS	13 36 30		
	Chatra	Z	eP?	13 56 43	720	Feeble.
		N,E	e	13 57 43		
		Z	iS?	13 57 58		
10	Chatra	Z	eP?	17 07 37	680	Feeble.
		N,E	e	17 08 11		
		Z	iS?	17 08 48		
10	Bombay	N,E	eP	19 15 55	9110	Feeble.
			eS	19 20 12		
	Kodaikanal	E	e?	19 47 51	Tremor	
11	Chatra	Z	iP	12 44 14	445	Slight.
		N,E	eP	12 44 15		
		Z	P*	12 44 20		
		N,E	P*	12 44 22		
		E,Z	PPP	12 44 26		
		N	PPP	12 44 28		
		Z	Pg	12 44 31		
		N,E	Pg	12 44 32		
		Z	L_Q	12 44 49		
		N,E	L_Q	12 44 51		
		N,E,Z	iS	12 45 02		
		S*	S*	12 45 12		
12	Chatra	Z	iP	04 39 12	130	Slight.
		N,E	eP	04 39 12		
		N,E,Z	iS	04 39 29		
13	Chatra	Z	iP	07 41 56	370	Feeble.
		N,E	eP	07 41 57		
		Z	P*	07 41 59		
			PP	07 42 02		
			L_Q	07 42 23		
		N,E	iS	07 42 33		
		Z	iS	07 42 37		
13	Chatra	Z	i	14 07 38	Fr	Tremor.
		N,E	e	14 07 47		
14	Chatra	Z	eP?	02 33 16	730	Feeble.
		N,E	e	02 33 18		
		Z	iS?	02 34 32		
14	Kodaikanal	E	e	04 13 26		Tremor.
14	Bombay	N	e	10 45 --	Very	feeble.
		N,E	e	10 55 --		
1	Z	i.	i			
14	Chatra	Z	iP?	13 21 46	800	Feeble
		N,E	e	13 22 11		
		Z	iS?	13 23 10		

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January. 1951.				h. m. s.	Km.	
14	Chatra	Z	i	18 17 50		Tremor.
		N,E	e	18 18 03		
15	Epc:- 3°.5 S, 161°.5 E, in Pacific 300 miles to the north of Soloman Islands. 0 = 04h. 13m. 00s. Poona. h = 100 Km.±					
	Chatra	Z	iP }	04 2454	89000	Slight
		N,E	eP }			
			eS	04 35 00		
			PS	04 35 51		
	Bombay	N	P	04 25 08		
			S	04 30 32		
			L	04 35 19		
			M	04 36 33		Amp.= 2.4 mm.
	Calcutta	E	iP	04 25 13	8755	Moderate.
			pP	04 25 31		
			S	04 35 15		
			sS	04 35 47		
	Kodaikanal	E	iP	04 25 22	9135	Moderate.
			iS	04 35 37		
			PP	04 36 32		
			M	04 58 50		Per. = 15 secs. μ = 5
	Poona	Z)	iP }	04 25 37	9810	Moderate
		E	eP }			
		E	pP	04 26 03		
			PP	04 29 00		
			SKS	04 35 45		
			SKKS	04 35 55		
			iS	04 36 05		
			sS	04 36 54		
			PS	04 37 14		
			PPS	04 37 39		
			SS	04 41 09		
			SSS	04 45 16		
	Bombay	N,E	eP	04 25 46	10410	Moderate.
			$iSKS_1$	04 36 12		
			iS	04 36 59		
		E	i	04 37 48		
		N	i	04 37 52		
			L_Q	04 52 30		
			L_R	04 57 15		
			M	05 09 14		Per. = 9 secs. μ = 2
	New Delhi	N	e	04 29 51		Moderate.
			iS	04 35 58		
			i	04 36 36		
			i	04 37 28		
			SS	04 41 32		
			L_R	04 52 25		
	Dehra Dun	N	eP	04 31 20		
	Hyderabad	A shock of moderate intensity in 04 hour G.M.T. timemarks absent.				
15	Chatra	Z	e	10 24 06		Tremor
		N,E	e }	10 25 18		
		Z	i }			
16	Chatra	Z	e P?	04 11 50	980	Slight.
			i	04 12 26		
		N,E	e	04 12 26		
			iS?	04 13 21		

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16	Epc:- 36.5 N, 68.5		Hindukush Region.	0 = 08h. 08m. 20s. (Poona)		
	New Delhi	N,E	iP	08 10 59	1170	Slight.Do
			L_Q	08 12 32		Direction of first
			iS	08 12 42		motion S & E.
		E	SS	08 12 53		
			L_R	08 12 59		
			SSS	08 13 07		
			S*	08 13 13		
	Chatra	N,E	eP	08 12 32	1980	Slight deep.
		Z	iP	08 12 33		
		N,E	PP	08 12 44		
		Z	PP	08 12 45		
		N,E	PPP	08 12 53		
		Z	PPP	08 12 54		
			iS?	08 15 36		
		N,E	iS?	08 15 37		
			SS	08 15 53		
		Z	SS	08 15 54		
		N,E,Z	SSS	08 16 07		
	Bombay	N,E	eP	08 12 34	2055	Feeble.
			eS	08 15 54		
	Poona	Z	iP	08 12 40	2040	
		E	eP	08 12 41		
		E	PPP	08 13 02		
			S	08 15 59		
			SS	08 16 23		
			M	08 18 15		
			ScP	08 18 15		
	Hyderabad	N	eP	08 13 02	2230	
			eS	08 16 43		
		E	M	08 19 18		Per. = 6 secs.
	Dehra Dun	N	eP	08 13 06		μ = 2.
16	Chatra	Z	eP?	12 24 24	780	Feeble.
		N,E	e	12 24 51		
		Z	iS ?	12 25 45		
17	Z Chatra	i Z	iP	04 54 30	60	Feeble.
			PP	04 54 35		
			iS	04 54 39		
		N,E	i	04 54 40		
		Z	PPP	04 54 41		
			SS	04 54 47		
			SSS	04 54 58		
18	B9 Bombay	N,E	e	04 18 --		Very feeble
	Hyderabad	N	M	04 30 51		Per. = 12 secs.
						μ = 2
18	Chatra	Z	iP	11 40 Ø8	720	Feeble.
		N,E	eP	11 40 08		
		Z	ePP	11 40 17		
			P*	11 40 22		
			Pg	11 40 33		
			L_Q	11 41 13		
		N,E	iS	11 41 21		
		Z	iS	11 41 23		
			L_R	11 41 30		
			SS	11 41 34		
			S*	11 41 45		
			Sg	11 41 55		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
January 1951				h. m. s.	Km.	
18	Chatra	Z	iP	14 05 38	300	Feeble.
		N,E	eP	14 05 40		
		Z	P*	14 05 41		
			PP	14 05 45		
			Pg	14 05 49		
			PPP	14 05 52		
			L_Q	14 06 01		
			L_R	14 06 07		
		N,E	iS	14 06 11		
		Z	iS	14 06 12		
			S*	14 06 18		
			Sg	14 06 23		
18	Chatra	Z	iP ?	18 36 28	790	Feeble.
		N,E	e	18 37 10		
		Z	iS?	18 37 50		
18	Epc:- 52°.0 N, 177°.0 W		O = 21h. 15m 15s.	(U.S.C.G.S.)		
	Hyderabad	N	P	21 28 19	9880	
			SKS	21 38 43		
			S	21 39 06		
			M	22 05 06		Per.= 18 secs. μ = 7
		E	M	22 05 16		Per. = 18 secs. μ = 4
	Poona	Z	iP	21 28 30	9800	Slight.
		E	iP			
			PP	21 29 57		
			PPP	21 31 55		
			SKS	21 38 51		
			SKKS	21 39 00		
			eS	21 39 15		
			PS	21 40 13		
			PPS	21 40 47		
	Bombay	N,E	eP	21 28 30		Slight.
		N	eS?	21 39 12		
			M	22 09 30		Per. = 15 secs, μ = 3
	Kodaikanal	E	e	21 39 10		Tremor.
19	Kodaikanal	E	e	07 18 11		Slight, Phases not clear
	Chatra	N,E,Z	e	07 18 58		Tremor
	Hyderabad	N	eP	07 19 21	2440	
			S	07 23 20		
			SS	07 23 35		
	Bombay	N,E	e	07 24 29		Feeble
			e	07 26 47		
19	New Delhi	N,E	eP	10 27 44	780	Slight.
		E	eS	10 29 05		
19	Chatra	N,E,Z	e	12 43 29		
20	Chatra	N,E	eP?	23 10 02	1280	Slight.
		Z	iP?	23 10 02		
		N,E	eS ?	23 12 13		

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
January. 1951.				h. m. s.	Km.	
20 (cont.)						
	Calcutta	E	eP	23 18 42	1635	Slight, Phases are doubtful.
			L	23 21 26		
			eS	23 21 36		
			M	23 23 23		
	Hyderabad	N	PcP	23 24 01		
			M	23 27 55		
21	Bombay	N,E	e	00 28 --		Per. = 11 secs.
			e	00 30 --		μ = 2 Feeble.
21	Chatra	N,E,Z	e	11 16 49		Tremor.
21	Chatra	N,E,Z	e	13 44 06		Tremor.
22	Chatra	N,E,Z	e	02 03 12		Tremor.
22	Hyderabad	N	M	11 37 00		Per. = 14 secs. μ = 2
22	Epc:-			17.5 S, 41.0 E 0 = 12h. 16m. 02s. (U.S.C.G.S.). 19.0S, 44.0E, 0 = 12h. 16m. 01s. (Poona)		
	Colombo	N	P	12 24 10	4860	
			S?	12 30 55		
			L	12 36 25		
			M	12 45 20		
	Kodaikanal	E	iP	12 24 16	4910	Slight.
			PP	12 26 00		
			iS	12 30 50		
			SS	12 33 52		
			L_Q	12 34 22		
			L_R	12 36 32		
			M	12 40 02		
	Bombay	N,E	eP	12 24 40	5290	Per.= 18 secs. μ = 1 Slight.
			eS	12 31 34		
	Poona	E	iP	12 24 43	5335	Slight.
			iS	12 31 40		
	Hyderabad	N	P	12 25 02	5575	
			S?	12 52 04		
			SS	12 35 57		
			M	12 43 41		
	Calcutta	E	eP?	12 26 01	6780	Per. = 15 secs. μ = 8. Slight.
			PcP	12 26 36		
			PP	12 28 22		
			PcS	12 30 30		
			iS	12 34 34		
			PS	12 34 54		
			L_Q	12 42 41		
			M	12 50 56		
	New Delhi	N	e	12 26 09		Slight. Dist.
			i	12 33 44		
			e	12 54 23		
			e	12 39 57		
			e	12 43 54		
	Chatra	Z	i	12 26 27		
		N,E	e	12 26 28		Distant.

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
January. 1951				h. m. s.	Km.	
22	Chatra	Z	iP?	13 46 59	1140	Feeble.
		N,E	e	13 47 14		
		Z	iS?	13 48 56		
23	New Delhi	N,E	e	07 13 22		Moderate, very distant. Surface waves.
		N	e	08 05 56		
	Bombay	N	e	07 15 20		Slight. Distant.
			M	08 01 20		Per. = 18 secs. μ = 7
		E	Record unsatisfactory.			
	Kodaikanal	E	e	07 31 16		Slight.
	Hyderabad	N	M	07 58 51		Per. = 21 secs. μ = 9
23	Chatra	Z	i)	23 03 43		Very near, feeble.
		N,E	e)	03 43		
24	Bombay	N,E	e	05 08 --		Feeble. Distant.
	Kodaikanal	E	e	05 14 17		Tremor.
	Hyderabad	N	M	05 46 49		Per. = 15 secs. μ = 3
24	Chatra	Z	iP?	17 29 43	70	Very near, feeble.
		N,E	eP?	17 29 45		
			iS?	17 29 53		
24	Calcutta	Z	iP	23 37 22	830	Slight.
		E,N	eP?	23 37 23		
			eS?	23 38 48		
25	New Delhi	N	eP	10 41 47	3410	Moderate.
			PP	10 42 47		
			iS	10 46 50		
			M	10 52 02		
			Mn	10 54 10		Per. = 16 secs. μ = 23.
25	Epc:- 2°.0 S, 80°.5 E		O = 16h. 35m. 30s. (Poona).			
	Colombo	N	P	16 37 32		
			S	- - -		
			L	16 39 30		
			M	16 40 05		Amp.= 6.6 mm.
	Kodaikanal	E	eP	16 38 28	1290	Moderate.
			iS	16 40 40		
			M	16 42 04		Per. = 9 secs.
			PcS	16 47 52		μ = 9
			ScS	16 51 26		
	Hyderabad	N	iP	16 39 59	2130	
		E	iS?	16 43 38		
		N	SS	16 43 54		
			L	16 45 29		
			M	16 47 38		Per. = 14 secs. μ = 26
	Poona	E	iP	16 40 25	2400	Moderate.
			iS	16 44 21		
			L_Q	16 44 45		
			SS	16 45 11		
			M	16 47 30		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
January. 1951.				h. m. s.	Km.	
25 (cont.)						
	Bombay	N	iP	16 40 35	2535	Moderate.
			iS	16 44 36		
			L_Q	16 45 01		
			L_R	16 45 38		
			M	16 50 50		Per. = 16 secs.
		E	Instrument under adjustment.			μ = 37
	Calcutta	E	eP	16 41 07	2820	Moderate.
			PP	16 41 45		
			PcP	16 44 44		
			iS	16 45 32		
			L_Q	16 46 25		
			SS	16 46 25		
			SSS	16 46 58		
			PcS	16 48 18		
			M	16 49 47		
			ScS	16 51 52		
			Mn	16 57 02		Per. = 15 secs.
	Chatra	Z	i	16 41 36		μ = 39
		N,E	e	16 41 43		Feeble.
26	Chatra	Z	e	01 38 44		Feeble.
		N,E	e	01 39 05		
26	Colombo	N	P	03 33 47		
			S	03 40 35		
			L	03 51 --		
			M	03 53 45		Amp.=0.1 mm.
	Bombay	N	eP	03 34 49	5955	Slight.
			eS?	03 42 21		
		E	Instrument under adjustment.			
	Hyderabad	E	eB	03 34 04	5420	
			S	03 41 07		
		N	M	03 53 40		Per.= 18 secs.
						μ = 5.
27	Chatra	Z	iP	01 52 38	810	Slight.
		N,E	eP	01 52 39		
		Z	Pg	01 53 10		
		N,E	Pg	01 53 11		
		Z	iS	01 54 02		
		N,E	eS	01 54 04		
		Z	SS	01 54 12		
			S*	01 54 21		
		N,E,Z	M	01 54 53		
27	Chatra	Z	iP?	12 59 44	810	Feeble.
			iS?	13 01 08		
		N,E	e	13 01 09		
27	Chatra	Z	iP?	14 46 08	810	Slight.
		N,E	eP?	14 46 09		
		Z	iS?	14 47 32		
		N,E	eS?	14 47 33		
28	New Delhi	N,E	eP	10 22 11	960	Slight.
		E	i	10 22 30		
		N,E	iS	10 23 51		
		E	SS	10 24 02		
			SSS	10 24 12		
			M	10 24 47		

DATE.	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
28	Chatra	e E	e	13 33 04		Tremor
	New Delhi	e N E	eP	13 34 05	4540	Slight.
		N	eS	13 40 17		
			SS	13 43 12		
			M	13 52 18		
	Poona	E	P?	13 34 54		Very feeble.
			e	13 41 24		
			M	13 53 00		
	Calcutta	E	eP?	13 35 44	2955	Slight.
			PP	13 36 22		
			eS	13 40 18		
			L_Q	13 41 20		
			SSS	13 41 46		
			L_R	13 42 38		
			M	13 44 46		
			Mn	13 47 33		Per.= 12 secs. μ = 19
	Bombay	N	e	13 35 --		Slight.
			e	13 41 58		
			M	13 54 30		Per.= 15 secs. μ=6
		E	Instrument under adjustment.			
	Hyderabad	N	S	13 44 23		
			M	13 51 23		Per.= 13 secs.
		E	M	13 51 54		μ = 5
						Per.= 12 secs.
						μ = 4.
29	Hyderabad	E	M	06 49 28		Per.= 15 secs. μ = 2
30	Earthquake felt in Jullunder, Kapurthala and Karachi. (Press Report).					
30	New Delhi	N,E	eP	07 17 49	490	Slight.
			P*	07 17 58		
		E	P	07 18 07		
			L_Q	07 18 30		
			iS	07 18 41		
			S*	07 18 53		
			S	07 19 04		
	Poona	Z	iP	07 59 59		
		E	S	07 22 06		
			SS	07 22 14		
			M	07 23 26		
	Bombay	N	e	07 22 19		Feeble.tremor.
30	Epc:-	34.0° N, 33.0° E		Earttern Mediterranean Sea h = 100 Km. ±		
				0 = 23h. 07m. 40s. (U.S.C.G.S.)		
		Felt in Telaviv. Some damage reported.				
	Calcutta	E	e	23 14 26		Slight distant,
			e	23 16 38		Tremor.
			e	23 19 31		
			e	23 20 27		
			S ?	23 23 21		
	Bombay	N	eP	23 14 44	4355	Moderate.
			iPP	23 16 09		
			eS	23 20 44		
			M	23 34 41		Per.= 16 secs, μ = 6
		E	Instrument under adjustment.			

			COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
30 (cont.)							
	New Delhi	N		eP	23 14 44	4140	Moderate.
				PP	23 16 12		
				PPP	23 16 31		
				iS	23 20 32		
				PcS	23 20 47		
				SSS	23 23 34		
				M	23 27 47		
				Mn	23 29 58		Per,= 22 secs. μ = 40
	Poona	E		P	23 14 50	4290	Moderate.
				PP	23 17 50		
				PPP	23 18 16		
				PcP	23 18 26		
				S	23 20 47		
				SS	23 23 27		
				L_Q	23 23 47		
				SSS	23 23 57		
				M	23 28 --		
	Hyderabad	N		eP	23 15 28	5020	
				e	23 19 32		
				S?	23 22 08		
				SS	23 25 06		
				L	23 29 42		
				M	23 32 38		Per.= 12 secs. μ = 4.
	Chatra	Z	*	e	23 15 54	*	Slight distant.
	Kodaikanal	E		eP	23 16 20	5110	Slight.
				PP	23 18 13		
				eS	23 22 55		
				SS	23 26 02		
				SSS	23 26 52		
				L_Q	23 27 15		
				M	23 32 20		
22 31	Chatra	Z		i	06 56 40		Tremor
		N,E		e	06 56 43		
31	Bombay	N		e	07 07 --		Feeble, near.
		E		Instrum	Instrument under adjustment.		
31	Chatra	Z		i	09 59 20		Tremor.
		N,E		e	09 59 43		
31	Chatra	Z		iP?	10 47 38	500	Feeble.
		N,E		eP?	10 47 38		
		Z		iS?	10 48 31		
30		N,E		iS?	10 48 31		
30 *	Chatra	N,E		e	23 16 02	*	

M.L.P.
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S E I S M O L O G I C A L B U L L E T I N

February, 1951.

Published under the direction of

V. V. SOHONI, B.A.(Hons.), M.Sc.

Director General of Observatories.

Instruments and their constants.

Station	Instrument	Compt.	Period in secs.	Static Magnification	Damping Ratio.	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	15:1	8.0
	Milne-Shaw	E	12	350	15:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	22	32	-	25.4
	Omori-Ewing	E	24	30	-	25.4
	Wood-Anderson	N	2	870	Critical	30.0
Chatra	Wood-Anderson	N	1	995	22:1	60.0
	Wood-Anderson	E	1	995	22:1	60.0
	Benioff	V	To=.45 Tg=.45	Instrument period 10000 Galvanometer Period sensitivity 3	8 Seismometer 8 Galvanometer	60.0
	Milne-Shaw (From 27th Feb.)	N	10	150	20:1	15.0
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	242	20:1	8.0
	Milne-Shaw	N	12	268	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0
New Delhi	Milne-Shaw	N	12	299	20:1	8.0
	Wood-Anderson	N	4	1000	20:1	16.0
	Wood-Anderson	E	2	1700	30:1	60.0
	Omori-Ewing	E	30	30	1	12.0
	Wood-Anderson	E	4	1100	20:1	16.0
Poona	Milne-Shaw	N	12	250	20:1	8.0
	Micro Sprengnether	E	7.2	-	-	30.0
	Benioff	V	To = 1; Tg = 0.28		--	60.0

		COMPT.	PHASE	G.M.T.	△	REMARKS.
February. 1951.				h. m.s.	Km.	
1	Chatra	Z	i	13 48 15		Tremor.
		N,E	e	13 48 20		
1	Chatra	N,E	eP	14 20 52	78	Slight.
		Z	iP			
		N,E,Z	iS	14 21 03		
1	Chatra	Z	iP	14 28 59	89	Slight
		N,E	eP			
		N,E,Z	iS	14 29 11		
2	Chatra	N,E	eP	00 34 58	70	Feeble.
		Z	iP			
		N,E,Z	iS	00 35 08		
2	Z Chatra	Z	i	11 22 53		Tremor.
		N,E	e	11 24 25		
2	Chatra	Z	e	16 53 07		Slight distant.
		N,E	e	16 53 14		
2	Bombay	N	e	17 19 --		Feeble.
		N,E	e	17 23 36		
2	Chatra	Z	i	19 36 35		Tremor.
		N,E	e	19 36 55		
2	Chatra	N,E	e	21 11 15		Tremor.
		Z	i	21 11 22		
2	Chatra	Z	i	23 36 06		Tremor.
		N,E	e	23 37 27		
2	Chatra	N	eP	00 07 52	5220	Slight.Distant.
		Z	iP	00 07 54		
		N,E,Z	eS	00 14 44		
3	Chatra	Z	iP?	06 34 41	880	Feeble.
			iS?	06 36 12		
		N,E	e	06 36 13		
4	Chatra	Z	i	09 17 18		Slight.
		N,E	e	09 17 21		
4	Chatra	Z	e	22 46 37		Tremor.
6	Bombay	N	e	15 56 --		Very feeble.
		E	Record too faint.			
6	Chatra	Z	e	18 52 33		Feeble.
6	Chatra	Z	e	18 57 00		Feeble.
7	New Delhi	N,E	eP	06 26 45	960	Slight.
			iS	06 28 25		
		E	SSS	06 28 46		
			S*	06 28 57		
	Chatra	N,E,Z	e	06 28 18		Feeble.
	Poona	Z	i	06 28 28		Very feeble. indefinite.

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Km.	
February. 1951.						
8	Poona	E	i	11 03 37		Feeble.
	Bombay	N,E	e	11 03 42		Feeble.
8	Probable Epc:- 27.2°N, 95.0°E,			0 = 21h. 14m. 27s.		
	Chatra	Z	iP	21 16 07	800	Slight.
		N	eP			
			PP	21 16 14		
			PPP	21 16 19		
			Pg	21 16 38		
			L_Q	21 17 15		
			iS	21 17 30		
			SS	21 17 41		
			S*	21 17 54		
			M	21 17 54		Per.= 1 secs. Amp = 6.0 mm.
	Calcutta	E	eS	21 17 55	725	Slight.
			se	21 19 10		
			e	21 19 34		
			S	21 19 51		
	New Delhi	E	eP	21 17 59	1610	Slight.
		N,E	e	21 20 41		
			iS	21 20 52		
			SS	21 21 12		
	Poona	E	iP	21 19 14	2350	Slight.
			PP	21 19 38		
			PPP	21 19 49		
			eS	21 23 05		
			L_Q	21 23 16		
			SS	21 23 39		
			SSS	21 23 51		
			L_R	21 25 20		
			M	21 25 59		
			ScP	21 26 43		
	Bombay	N	eP	21 19 25	2580	Slight.
		N,E	eS	21 23 30		
		N	M	21 27 48		Per= 7 secs. μ = 2.
		E	M	21 28 10		Per.= 8 secs. μ = 3
	Hyderabad	N	M	21 25 15		Per. = 10 secs. μ = 2.
10	Kodaikanal	E	e?	03 52 39		Per.= 18 secs. μ = 7
			Slight shock phases not clear.			
	Bombay	N,E	e	03 53 30		Feeble surface waves.
	Hyderabad	N	M	04 25 19		Per= 23 secs. μ = 10.
10	Kodaikanal	E	iP	18 23 16	3410	Feeble. First movement towards East.
			iS	18 28 19		
10	Epc:- 2.5°S, 105.0° E, in Sumatra			0 = 15h. 19m. 02s. (Poona).		
	Calcutta	E	eP	15 23 04	3390	Slight.
			PcP	15 26 08		
			iS	15 28 05		
			L_Q	15 29 25		
			SSS	15 30 03		
			L_R	15 30 54		

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Z-X Km.	REMARKS
1951.						
10 (cont.)						
	Hyderabad	N	P	15 23 33	3560	
			S?	15 28 53		
	Chatra	Z	iP?	15 23 40		Slight.
		N,E	e	15 23 40		
		Z	iS?	15 25 37		
	Poona	Z,E	iP	15 24 12	4030	Slight.
		N	iS	15 29 53		
	Bombay	N,E	eP	15 24 20		Feeble
			e	15 28 42		
	New Delhi	N,E	iP	15 24 37	4280	Slight.
			iS	15 30 42		
		N	SS	15 33 26		
			SSS	15 33 54		
10	Chatra	Z	i	21 03 13		Feeble,very near.
		N,E	e			
10	Epc:- North coast of New Guinea ,			0 = 21h.52m. 19s. (U.S.C.G.S.)		
				0 = 21h. 52m. 25s. (Poona).		
	Calcutta	E	e	22 01 04		Slight,distant.
			e	22 09 27		
	New Delhi	E	eP	22 03 03	7350	Moderate.
		N	eS	22 11 51		
	Poona	Z,E	iP	22 03 08	7300	Slight.
		E	PcP	22 03 31		
			PP	05 05 39		
			PPP	22 07 09		
			ScP	22 07 31		
			iS	22 11 58		
			PS	22 12 23		
			PPS	22 12 34		
			ScS	22 12 44		
	Bombay	E	eP	22 03 13	7580	Feeble.
		N	P	22 03 --		
		N,E	eS	22 12 14		
11	Kodaikanal	E	e?	00 02 37		Slight shock probably at a lon distance Phases not clear.
11	New Delhi	E	iP	07 12 06	950	Slight.
			iS	07 13 44		
			SS	07 13 56		
			SSS	07 14 07		
			S*	07 14 22		
12	Epc:- 65.0° N, 135.0° E, in Eastern Siberia .			0 = 17h. 22m. 10 s.(Poona).		
	66.0° N, 136.0° E, near Siberia			0 = 17h. 22m. 02s. (U.S.C.G.S.)		
	Chatra	Z	iP	17 30 54	5345	Slight,distant.
		N	eP	17 30 54		
		Z	iS?	17 37 23		
N	New Delhi	N,E	eP	17 31 11	5650	Moderate
			ePP	17 33 10		
			PPP	17 34 13		
			i	17 37 25		
			iS	17 38 27		
			ScS	17 40 57		

DATE	STATION	COMPT.	COMPT.	PHASE	G. M. T. h. m. s.	△ Km.	∠	REMARKS.
February. 1951. 12 (cont.)	New Delhi(cont.)	N,E		SS	17 41 57			
				SSS	17 43 33			
				M	17 49 31			Per.=17 secs. μ = 25.
				Mn	17 53 12			
	Calcutta		E	eP	17 31 25	5865		Moderate.
				PcP	17 32 45			
				PP	17 33 24			
				PcS	17 36 39			
				iS	17 38 52			
				PS	17 39 03			
				PPS	17 39 21			
				SS	17 42 25			
				L_R	17 46 23			
				M	17 50 35			
				Mn	17 54 14			Per.=13 secs. μ =38.
	Hyderabad		N	iP	17 32 17	6800		
				iS	17 40 37			
			E	L	17 50 17			
				M	17 55 09			Per.= 20 secs. μ = 44
			N	M	17 56 04			Per.= 15 secs. μ = 13.
	Poona		Z,E	iP	17 32 28	6780		Moderate.
			E	PcP	17 33 00			
				PP	17 34 40			
				PPP	17 36 11			
				PcS	17 36 56			
				iS	17 40 46			
				PS	17 40 58			
				PPS	17 41 06			
				ScS	17 41 38			
				SS	17 44 34			
				SSS	17 47 10			
				L_Q	17 47 43			
				L_R	17 50 34			
				M	17 55 43			
	Bombay		N,E	eP	17 32 27	6890		Moderate.
				eS	17 40 52			
			E	SS	17 44 15			
			N	SS	17 45 10			
			E	L_Q	17 47 26			
			N	L_Q	17 48 40			
			E	L_R	17 50 34			
			N	L_R	17 51 58			
			E	M	17 58 10			Per.= 14 secs. μ = 19
			N	M	17 58 20			Per.= 18 secs. μ = 29.
	Kodaikanal		E	e	17 33 14	7485		Distant.Moderate
				eS	17 42 09			
				L_Q	17 50 20			
				L_R	17 33 28			
				M	17 58 55			Per.= 16 secs. μ = 16 5 .
	Colombo		E	P?	17 32 03	7780		
				S	17 42 33			
				L	17 57 --			
				M	18 03 08			
	Dehra Dun		N	e	17 44 09			
				e	17 49 48			
				M	17 51 18			Per.= 18 secs. Amp = 0.05"

DATE	STATION	COMPT.	PHASE	G. M. T. h. m.s.	△ Km.	REMARKS.
February. 1951						
12	Chatra	Z	iP?	21 57 04	900	Feeble.
			iS?	21 58 26		
13	Calcutta	E	eP(?)	00 43 19	7200	Moderate.
			PPP	00 47 25		Phases doubtful.
			S(?)	00 52 00		
			PPS	00 52 42		
			SKS_1	00 53 10		
			SS	00 56 17		
			SSS	00 59 04		
			L_Q	01 00 03		
			L_R	01 03 15		
			PKKS	01 06 15		
			M	01 08 40		
			Mn	01 12 50		Per.= 14 secs.
						μ = 17
	Colombo	E	P	00 50 45		
			S	00 55 38		
			L	00 58 48		
			M	01 04 43		Amp.= 1.1 mm.
	Kodaikanal.	E	PKP_1	00 51 31	13220	Distant.Moderate.
			PP	00 53 13		
			PPP	00 55 37		
			SSS	01 14 35		
			L_Q	01 24 10		
			L_R	01 31 10		
			M	01 40 07		
	Hyderabad	N,E	eP?	00 51 56		
		N	S?	00 56 23		
			M	01 02 03		Per.= 14 secs.
						μ = 6 .
	New Delhi	N	i	00 51 58		Moderate. Distant.
			e	00 53 21		
			e	00 58 08		
			i	00 59 43		
			i	01 01 16		
			i	01 02 08		
			e	01 04 03		
			e 01 11 51	01 11 51		
	Chatra	Z	i	00 52 23		
	Poona	E	PKP	00 52 33	14410	Moderate.
			PP	00 54 44		
			PKS_1	00 56 03		
			PPP	00 57 35		
			SKS_2	00 59 33		
			SKKS	01 01 34		
			SKKKS	01 01 48		
			SKSP	01 04 34		
			PS	01 04 44		
			PPS	01 06 26		
			SS	01 10 48		
			SSP	01 11 20		
	Bombay	N,E	$ePKP_1$	00 52 48		Slight.Distant.
		N	ePPP	00 57 55		
		E				
		N,E	e	01 00 34		
		N		01 08 52		
		E	01 12 29	01 12 29		

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
February. 1951.				h. m. s.	Km.	
13	Epc:- 15.0S, 175.0W, Colombo		O = 11h. 55m. 50s. (U.S.C.G.S.)			
	Colombo	N	eP	12 10 20		
			PP	12 13 50		
			L	12 25 --		
			M	Not. well defined.		
	Poona	N,E	iPKP	12 14 02	12890	Moderate.
			$iSKKS_1$	12 22 38		
			$iPKKP_1$	12 24 27		
	Bombay	N,E	PKP_1	12 14 --		Slight.Distant.
			iSKKS?	12 27 46		
			i	12 24 39		
	Hyderabad	N	ePP?	12 14 30		
			SKS_1	12 21 55		
			e	12 23 42		
			M	12 35 23		Per.= 15 secs. μ = 3
	New Delhi	N	$eSKS_1$	12 20 18		Moderate.Distant
			e	12 21 23		
			$iSKKS_1$	12 22 18		
			i	12 24 06		
			ePPS?	12 26 10		
			e	12 30 03		
			i	12 31 59		
13	New Delhi	N,E	eP?	120 41 00	670	Slight.Beginning masked by time-mark and may by be earlier upto 3 seconds.
		E	PP	20 41 12		
			i	20 41 31		
		N,E	iS	20 42 11		
		E	L_R	20 42 16		
			SS	20 42 22		
		N,E	S*	20 42 27		
			SSS	20 42 32		
13	Epc:- 56.0 N, 155.5W, (about 150 miles east of Alaska Peninsula)		O = 22h. 12m. 58s. (U.S.C.G.S.)			
	Chatra	Z	iP }	22 25 14	9130	Moderate.
		N	eP }			
		Z	PP	22 28 21		
		N,Z	eS	22 35 29		
		N	ScS	22 35 50		
		Z	ScS	22 35 53		
			PS	22 36 19		
		N	PS	22 36 21		
			PPS	22 36 40		
			M	22 59 30		Per.= 16 secs. μ = 1.0 mm.
		Z	M	22 59 35		Per.= 7 secs. μ = 0.5 mm.
	New Delhi	N,E	iP	22 25 29	9250	Great.Direction of first motion N N and E.
			PP	22 25 29		
		N	PPP	22 30 37		
		N,E	iS	22 35 49		
		N	iPS	22 36 41		
			PPS	22 37 01		
			iSS	22 41 16		
			SSS	22 45 19		
			M	22 58 54		
			Mn	23 06 46		Per.= 18 secs. μ = 377

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km	
13 (cont.)		E	iP	22 25 36	9290	Moderate.
			PP	22 28 50		
			iS	22 35 58		
			PS	22 36 59		
			SS	22 41 29		
			$PKKP_1$	22 42 47		
			SSS	22 44 56		
			L_Q	22 48 53		
			L_R	22 52 30		
			M	22 59 39		
			Mn	23 07 31		Per.= 16 secs.
						μ =167.
	Poona	Z,N,E	iP	22 26 07	10819	Great.
		N	SKS_1	22 36 48		
			SKK_{S1}	22 37 11		
			eS	22 37 29		
			PS	22 38 56		
			PPS	22 39 42		
			SSS	22 48 18		
			M	23 07 11		
			Mn	23 13 07		Per.= 17 secs.
						μ = 200.
	Hyderabad	N	iP	22 26 16		
			PP	22 20 02		
			SKS	22 36 45		
			L	22 56 16		
			M	23 02 30		Per.= 18 secs.
						μ = 324.
	Bombay	N,E	eP	22 26 20	10890	Great.
			iPP	22 30 09		
			$iSKS_1$	22 36 54		
		E	iS	22 37 36		
		N	iS	22 37 45		
		E	iPS	22 38 24		
		N	iPS	22 39 00		
		E	L_R	22 58 04		
		N	L_R	22 59 12		
		E	M	23 12 22		Per.= 19 secs.
						μ = 141
		N	M	23 13 30		Per.= 17 secs.
						μ = 243.
	Kodaikanal	E	eP	22 26 45	11110	Moderate.Distant.
			ePP	22 30 53		
			PPP	22 33 01		
			$iSKS_1$	22 37 23		
			S	22 38 20		
			PS	22 39 45		
			PPS	22 40 35		
			SS	22 44 47		
			SSP	22 44 49		
			L_Q	22 55 50		
			L_R	23 01 05		
			M	23 09 49		Per.= 18 secs.
						μ =109.
	Colombo	N	P	22 26 50		
			S?	22 37 33		
			L	23 05 20		
			M_1	23 13 50		Amp.= 3.5 mm.
			M_2	23 21 00		Amp.= 4.4 mm.

		STN.	PHASE	G. M. T.	Δ	REMARKS.
February. 1951.				h. m. s.	Km.	
13 (cont.)	Dehra Dun	N	e	22 30 00		
			e	22 37 33		
			e	22 46 54		
			e	22 59 09		
			M	22 05 24		Per.= 24 secs. Amp = 1.7"
14	Bombay	E	eP	21 25 20	3445?	Feeble.
			eS?	21 30 25		
15	Epc:- 30.8° N, 97.0° E. 0 = 08h. 23m 28s. (Poona).					
	Chatra	Z	iP	08 25 46	1030	Slight.
		E	eP			
		Z,E	PP	08 25 51		
		Z	PPP	08 25 59		
			P*	08 26 07		
		E	P*	08 26 09		
		Z	Pg	08 26 35		
			L_Q	08 27 26		
			iS	08 27 32		
		E	iS	08 27 33		
		E,Z	SS	08 27 43		
			S*	08 28 08		
			M	08 28 35		
	New Delhi	N,E	eP	08 27 31	1890	Slight.
		E	PP	08 27 45		
			PPP	08 27 53		
		N,E	iS	08 30 38		
			SS	08 30 52		
	Poona	Z,E	eP	08 28 48	2700	Slight.
		E	eS	08 33 05		
		N,E	M	08 36 52		
	Bombay	N,E	eP	08 28 55	2755	Slight.
			eS	08 33 14		
		E	M	08 38 28		Per.= 8 secs. μ = 3
	Hyderabad	N	M	08 34 39		Per.= 9 secs. μ = 2.
16	Chatra	E,Z	eP	02 03 34	750	Slight.
		Z	PP	02 03 41		
			PPP	02 03 46		
		E,Z	Pg	02 04 06		
			iS	02 04 52		
			SS	02 05 04		
		E,Z	M	02 05 36		
16	Chatra	Z	iP?	11 19 26	820	Feeble.
			iS?	11 20 51		
		E	e	11 20 51		
16	New Delhi	E	P	21 05 24	1610	Slight.
			PP	21 05 35		
		N,E	eS	21 08 06		
		E	SS	21 08 22		
	Calcutta	E	e	21 05 57		Slight,near.
			e	21 06 42		
			e	21 10 06		
	Bombay	N,E	i	21 13 35		Very feeble.

		PT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
1951.						
17	New Delhi	N,E	eP	02 19 02	240	Slight.
		E	PP	02 19 10		
		N,E	iS	02 19 30		
		E	S	02 19 37		
			SS	02 19 40		
	Chatra	Z	eP	02 20 40	1170	(An earthquake accompanied by a rumbling sound shook Jullundar at 0748 I.S.T. on 17-2-51 P.T.I)
		e	eS	02 22 40		
17	Chatra	Z	iP	09 07 10	890	Slight (Shock felt in Dibrugarh at 1430 I.S.T. on 17-2-51 P.T.I.)
		E	eP			
		Z	iS	09 08 42		
		E	eS			
17	Epc:- 8.0°S, 143.0° E in New Guinea					00 0 = 21h. 07m. 06s. (Poona).
	7.0° S, 146.0° E in Southern New Guinea					14 0 = 21h. 06m. 58s. (U.S.C.G.S)
	Calcutta	E	iP	21 17 27	23656780	Moderate.
			S	21 25 44		
			Mn	21 27 08		
			ScS	21 28 49		
17	Chatra	Z,E	iP	21 17 41	7140	Moderate.
			PcP	21 18 17		
		E,Z	PP	21 19 53		
			eS	21 26 19		
		E	PS	21 26 34		
		Z	PS	21 26 40		
		E	PPS	21 26 49		
		E,Z,	SKS_1	21 27 19		
			$SKKS_2$	21 46 07		
	Colombo	N	P	21 17 49		
			L	21 26 29		
			M	21 27 31		Amp.= 3.9 mm.
	Hyderabad	N	iP	21 18 08	7550	
			iS	21 27 07		
			ScS	21 27 54		
			SS	21 31 38		
			L	21 39 50		
			M	21 45 12		Per.= 15 secs. μ = 5.
	Kodaikanal	E	iP	21 18 08	7580	Moderate.
			PP	21 20 44		
			iS	21 27 08		
			PS	21 27 29		
			PPS	21 27 44		
			SS	21 31 26		
			L_Q	21 35 40		
			L_R	21 38 54		
			M	21 41 34		
	New Delhi	N,E	iP	21 18 32	8000	Moderate. Direction of first motion South and East.
		E	PP	21 21 11		
		N,E	iS	21 27 53		
			PS	21 28 26		
			i	21 28 50		
		N	i	21 29 10		
			iSS	21 32 29		
			SSS	21 35 30		
			L_Q	21 37 03		
			L_R	21 40 35		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
February. 1951.				h. m. s.	Km.	
17 (cont.)						
	Poona	Z,N,E	iP	21 18 34	8000	Moderate.
		N	PcP	21 18 54		
			PP	21 21 13		
			PPP	21 22 55		
		N,E	iS	21 27 55		
			PS	21 28 29		
			PPS	21 28 46		
			SS	21 32 45		
			SSS	21 35 57		
			L_R	21 40 10		
	Bombay	N	eP	21 18 42	8190	Moderate.
		E	i			
		N,E	PP	21 21 32		
			PPP	21 23 25		
		N	L_R	21 41 24		
		E	L_R	21 41 45		
	Dehra Dun	N	e	21 19 30		
			e	21 28 54		
			M	21 29 18		Per.= 24 secs. Amp.= 0.1"
18	New Delhi	N,E	iP	00 04 46	116	Slight,direction of first motion West.
			iS	00 05 01		
19	Chatra	Z	iP	11 22 22	845	Feeble
		E	iS	11 23 49		
		e				
19	Bombay	N,E	e	11 [illegible] --		Very feeble.
19	Epc:- 25°.0 S, 117.0W, about 500 miles west of Easter Island. 0 = 22h. 11m. 54s. (U.S.C.G.S.).					
	Bombay	N,E	e	22 34 --		Feeble,distant.
	Kodaikanal	E,W	e	23 10 01		Feeble,phases not clear.
	Poona	E	M	00 52 42		Very feeble.
20	Colombo	N	P	00 26 30		
			L	00 44 20		
	Bombay	N? E	e	00 26 --		Feeble.Surface waves
	Kodaikanal	E	e?	00 27 16		Feeble.
	Hyderabad	N	M	00 49 32		Per.= 18 secs. μ = 8,
	Bombay	N,E	e	10 22 38		Very feeble.
20	Bombay	N,E	e	15 52 --		Feeble
			e	15 56 46		
21	Probable Epc:- 28°.0 N, 93°.5 E, 0 = 02h. 24m. 24m. 25s. (Poona).					
	Chatra	Z	iP	02 25 55	665	Slight
		E	eP			
		Z	PP	02 26 00		
			P*	02 26 08		

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
February, 1951.						
21 (cont.)						
	Chatra (cont.)	E,Z	Pg	02 26 23		
			L_Q	02 26 50		
		Z	iS	02 27 05		
		E	eS			
		E,Z	L_R	02 27 11		
		E	SS	02 27 16		
		E,Z	S*	02 27 21		
			SSS	02 27 27		
			M	02 27 50		
21	Calcutta	E	S	02 27 22	730	Slight.
			M	02 28 51		
	New Delhi	E	eP	02 27 45	1560	Slight.
			PP	02 27 55		
			PPP	02 28 02		
		N,E	eS	02 30 23		
			SS	02 30 39		
			SSS	02 30 49		
	Poona	Z,E	eP	02 29 03	2200	Slight.
		E	PP	02 29 18		
			eS	02 32 41		
			SS	02 33 03		
			SSS	02 33 14		
			L_R	02 33 36		
			M	02 35 20		
	Bombay	N,E	eP	02 29 22	2435	Slight.
			eS	02 33 15		
		E	SS	02 33 47		
		N	SS	02 33 53		
		E	L_R	02 34 39		
		N	L_R	02 34 41		
		E	M	02 37 40		Per. = 8 secs. A = 3 Per. = 9 secs. μ = 2.
		N	M	02 38 37		
13						
21	New Delhi	N	eP	13 37 05	990	Slight.
		E	P	13 37 09		
		N,E	PPP	13 37 22		
		N	eS	13 38 47		
		E	eS	13 38 51		
		N	SS	13 38 57		
		N	SSS	13 39 15		
22	Bombay	N,E	eP	01 57 09	7910	Feeble.
			ePP	01 59 46		
			eS	02 06 27		
26	Chatra	E,Z	iP	17 34 20	65	Feeble
			iS	17 34 29		
26	Chatra	Z	iP	18 34 20	65	Feeble
		E	eP			
		E,Z	iS	18 34 29		

M.L.P.
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GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

S E I S M O L O G I C A L B U L L E T I N

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Published under the direction of

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Director General of Observatories.

Instruments and their constants.

Station	Instrument	Compt.	Period in secs.	Static magnification	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	15:1	8.0
	Milne-Shaw	E	12	350	14:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Wood-Anderson	N	2	870	1:1	30.0
	Omori-Ewing	N	18	32	-	25.4
	Omori-Ewing	E	19	30	-	25.4
Chatra	Wood-Anderson	E	1	995	20:1	60.0
	Milne-Shaw	N	10	150	20:1	16.0
	Benioff	Z(or V)	0.45	10,000 (approximate)	-	60.0
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	--	--
Hyderabad	Milne-Shaw	E	12	242	20:1	8.0
	Milne-Shaw	N	12	268	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0
New Delhi	Milne-Shaw	N	12	299	20:1	18.0
	Wood-Anderson	N	4	1000	20:1	16.0
	Wood-Anderson	E	2	1700	30:1	60.0
	Omori-Ewing	E	30	30	1	12.0
Poona	Benioff	Z	-	-	1	60.0
	Milne-Shaw	N	12	250	20:1	8.0
	Wood-Anderson	E	4	1000	20:1	16.0
	Sprengnether	E	7.2	-	-	30.0

		CMPT.	PHASE	G. M. T.	Δ	REMARKS.
1951.				h. m. s.	Km.	
1	Chatra	Z	e	09 16 15		Feeble .
		N,E	e	09 17 31		Tremor
2	Chatra	Z	iP	13 59 56	770	Slight P.T.I.
			PP	14 00 02		reports
			Pg }	14 00 23		Dibrugarh
		E	e }			shaken.
		Z	L_Q	14 01 04		
		E	iS)	14 01 04		
		E	e)	14 01 16		
		Z	L_R	14 01 25		
			SS	14 01 27		
			S*	14 01 40		
			M	14 02 04		
2	Chatra	Z	iP)	18 01 39	320	Slight.
		E	eP)	18 01 39		
		Z	P*	18 01 43		
		E	P*	18 01 44		
		Z	Pg	18 01 48		
			L_Q	18 02 07		
		N,E,Z	iS	18 02 15		
		E,Z	S*	18 02 19		
			SS	18 02 24		
3	Chatra	Z	eP?	06 16 31	800	Feeble
		E,Z	eS?	06 17 54		
3	Bombay	N,E	e	19 08 --		Very feeble, surface waves
4	Epc:- 16.0° S, 74.0° W, 0 = 11h. 17m. 33s. (U.S.C.G.S.)					
	Poona	Z,E	iPKP1	11 37 05		Tremor.
	Bombay	N,E	ePKP1	11 37 11		Feeble.Distant.
			e	12 00 07		
	New Delhi	E	ePP	12 34 10	600	Slight.
			eS	12 35 07		
			L_R	12 35 12		
			S*	12 35 24		
			SSS	12 35 29		
			S	12 35 38		
5	Chatra	Z	eP?	01 09 20	850	Feeble.
		E	iS	01 10 48		
5	Epc:-	29°.0N, 128°.0,E,0 = 20h. 11m. 45s. (U.S.C.G.S.) h = 150 Kms.				
	Chatra V		iP)	20 18 38	4000	Moderate.
		N,E	eP)			
		N	PP	20 19 41		
			PPP	20 20 03		
			PcP	20 21 33		
		V	i)	20 23 43		
		N,E	e)			
		V,E	iS)	20 24 07		
		N	eS)			
			PcS	20 25 07		
			SSS	20 25 53		
		N,E	L_R	20 26 40		
		N,E,V	ScS	20 28 37		
		N	M	20 30 30		
	Calcutta	E	eP	20 18 41	3850	Moderate.Deep focus.
			ipP	20 19 17		
			sP	20 19 34		
			PP	20 19 53		

				G PHASE	G. M. T. h. m. s.	△ Km.	REMARKS.
March 1951.							
19(cont.)							
	Poona	Z,E		eP	20 40 46	8020	Moderate
		E		PcP	20 40 39		
				PP	20 43 17		
				PPP	20 45 01		
		N,E		eS	20 49 48		
		E		SKS	20 50 02		
				ScS	20 50 25		
				PPS	20 50 34		
				SS	20 54 32		
				SSS	20 57 37		
				L_Q	20 00 17		
	Calcutta	E		e	20 47 48		Slight, distant
				Mn	21 05 34		
	Hyderabad	N		e	20 49 36		
				M	21 08 27		Per.= 15 secs. μ = 4
		E		M	21 08 52		Per.= 15 secs. μ = 4
20	Chatra	E,V		eP?	06 42 55	890	Slight.
				iS?	06 44 27		
				M	06 45 20		
		N		M	06 45 20		
	Bombay	N,E		e	06 53 --		Very feeble.
20	Chatra	E,V		e	21 15 32		Feeble
		N,		e	21 17 10		
22	Poona	Z,E		eP	10 41 39		Tremor
	Bombay	N,E		e	10 49 37		Feeble.
23	Epc:- 31.0° S, 180° Kermadec Islands. O = 21h. 38m. 54s (U.S.C.G.S.)						
	Colombo	E		eP	21 53 19		
				S?	22 02 36		
				L	22 11 04		
				M	22 12 34		Amp.=0.5 mm.
	Kodaikanal	E		e	21 53 27		Distant. phases not decipherable.
	Calcutta	E		ePP	21 56 41	10665	Slight. P lost in microseisms
				PPP	21 58 56		
				iSKS	22 02 44		
				S	22 03 45		
				iPS	22 05 32		
				$PKKP_1$	22 08 05		
				SS	22 10 44		
				SSS	22 14 45		
				L_R	22 26 --		
	Chatra	V		e	21 56 45		Slight.
		N		e	22 02 52		Distant
				e	22 04 10		
				e (M?)	22 11 30		Per.= 11 secs. Amp=0.25 mm.
	Poona	Z,E		PKP_1	21 56 58	11780	Moderate.
				PP	21 57 35		
		E		PPP	21 59 47		
				PKS	22 00 18		
				SKS_1	22 03 18		
				SKS_2	22 03 52		
				SKKS	22 04 14		
				SKKKS	22 04 21		
				PS	22 06 41		
				PPS	22 07 47		

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
March 1951.				h. m. s.	Kms.	
18 (cont.)						
	Bombay	E	eP	09 27 38	5965	Feeble.
		N,E	eS	09 35 12		
18	Chatra	V	i	10 52 12		Feeble.
			i)	10 53 12		
		E	e)			
19	Chatra	V	e	07 51 43		Feeble.
		N	e	07 52 02		
	Bombay	N,E	e	07 59 --		Feeble.
19	Epc:- 21°.5 S; 33°.0 E		(Southern Mozambique)			
			0 = 09h. 29m. 35s(U.S.C.G.S.)			
	Kodaikanal	E	e	09 33 57		Tremor.
	Bombay	E	eP	09 37 36		Slight.
		N	P	09 37 --		
		E	PP	09 39 17		
		N	eS	09 44 11		
		E	eS	09 44 18		
		N	L_Q	09 47 41		
		E	L_Q	09 48 03		
			M	10 00 12		Per.= 17 secs. μ = 4
		N	M	10 00 29		Per. = 18 secs. μ = 6
	Poona	Z,E	eP	09 39 17		Tremor.
			M	09 59 33		
	Colombo	E	P	09 39 02		
			S	09 45 20		
			L	09 56 --		
			M	09 59 20		Amp.= 0.3 mm.
	Chatra	V	09 e	09 40 53		Slight,distant
		N	e	10 09 30		feeble surface waves
						Per.= 19 secs.
	Hyderabad	E	M	10 01 41	Per.=	Amp.= 0.25 mm. 18 Secs. u = 4
19	Kodaikanal	E	e	10 46 42		Tremor.
19	Chatra	V	e	19 53 51		Feeble.
19	Epc:-	57°.0N, 160°.0 E	(Northern Kamohatatka)			
			0 = 20h. 28m. 55s.(U.S.C.G.S.)			
			0 = 20h. 28m. 57s. (Poona)			
	Chatra	V	eP?	20 38 56	6480	Moderate.
			eS?	20 46 58		
			M	21 02 00		Per. 17 secs. Amp.= 0.5 mm.
	New Delhi	N,E	eP	20 39 23	7000	Slight.
		N	eS	20 47 53		
			M	21 04 48		
	Bombay	E	eP	20 40 27	8110	Slight.
		N	P	20 40 --		
			eS	20 49 44		
		E	iS	20 49 55		
		N	PS	20 50 21		
		E	PS	20 50 32		
		N	M	21 11 26		Per.= 15 secs. μ = 5
		E	M	21 11 32		Per. = 17 secs. μ = 3.

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
March 1951. 17 (cont.)	Poona (cont.)	M E	M	04 40 54		
		N	Mn	04 41 36	Per.=6.5 secs.	μ= 27
		E	M	04 42 14	Per.= 4.5 secs.	μ = 18.
	Bombay	E	iP	04 33 00	2835	Moderate.
			PPP	04 34 11		
			iS	04 37 24		
			L_Q	04 38 11		
			SS	04 38 31		
			L_R	04 39 47		
			M	04 42 51		Per.= 10 secs. μ = 32
		N	Loss of record.			
	Kodaikanal	E	iP	04 33 24	3080	Moderate.
			iS	04 38 16		
			L_Q	04 39 26		
			L_R	04 40 46		
			M	04 43 07		Per.= 10 secs. μ = 8.10
	Colombo	E	P	04 33 40		
			S	04 38 25		
			L	04 45 --		
			M	04 47 40		Amp.= 06 mm.
17	Kodaikanal	E	e	12 21 35		Tremor.
17	Colombo	E	P	15 56 20		
			S	16 01 55		
			L	16 14 --		
			M	16 18 50		Amp.= 0.3 mm.
	New Delhi	E	eP	15 57 18	6120	Slight.
		N	iS	16 05 00		
	Bombay	N,E	e	15 57 --		Feeble.
		N	e)	16 05 13		
		E	i)			
	Kodaikanal	E	e	16 03 45		Tremor.
17	New Delhi	N,E	eP	00 09 40	Slight, near.	
		E	e	00 11 42		
			i	00 11 47		
			i	00 11 55		
18	Chatra	V	iP?	02 41 59		Very near,
		E,V	iS?	02 42 08		feeble.
18	Epc:- Near the coast of Mindanao, Philippine Islands. 0 = (02h. 18m. 08s. (U.S.C.G.S.) 0 = 09h. 18m. 15s. (Poona).					
	Chatra	V	e	09 15 18		Distant.
		N	eS	09 17 59		
			e	09 47 30		
	Colombo	E	P	09 23 47		
			S	09 33 35		
			L	09 47 --		
	Kodaikanal	E	e	09 26 57		Tremor.
	Poona	Z,E	iP	09 27 28	5780	Slight.
			PcP	09 28 32		
			PP	09 29 32		
			iS	09 34 52		
			PS	09 35 01		
			PPS	09 35 17		
			ScS	09 37 18		

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
March 1951.						
16	Colombo	E	P	15 39 55		
			S	15 53 00		
			L	16 09 40		
			M	16 14 10		Amp. =0.5 mm.
	Kodaikanal	E	e	15 40 30		Tremor.
	Bombay	N,E	e	15 42 --		Feeble surface waves
16	Chatra	E,V	eP?	18 44 59		Feeble.
			iS?	18 53		Probably after-
		N	e	46 53		shock at
			eM	18 47 56		13h.59m.16s. of 16th.
	Calcutta	N	e	18 47 22		Tremor.
			i	18 49 02		
16	New Delhi	E	eP	22 27 04	240	Slight.
			P	22 27 11		
			PPP	22 27 18		
		N,E	iS	22 27 32		
			S*	22 27 35		
		E	S	22 27 39		
17	Epc:- 32°.0 N, 96°.5 E,		O = 04h. 27m. 29s. (Poona)			
	Chatra	N,E,V	eP	04 29 54	1110	Moderate.
		EV	PP	04 30 01		
			PPP	04 30 09		
			P*	04 30 21		
		N,E,V	Pg	04 30 47		
			L_Q	04 31 34		
			iS	04 31 48		
			SS	04 31 57		
			SSS	04 32 07		
			S*	04 32 23		
		E,V	M)	04 32 58		Per.= <1.5 se
		N	M)			Amp. 17.5 mm.
	Calcutta	E	iP	04 30 20	1300	Moderate
			iS	04 32 32		
			L	04 32 55		
			M	04 33 57		
			Mn	04 36 22		Per.= 8 secs
						μ = 207
	New Delhi	N,E	eP	04 31 35	1850	Moderate.
			PP	04 31 47		
			iS	04 34 41		
			SS	04 35 00		
		N	SSS	04 35 12		
			M	04 36 52		
	Dehra Dun	N	e	04 32 12?		
			M	04 34 06		Per.= 12 secs
						Amp.=0.3"
	Hyderabad	E,N	iP	04 32 24	2560	
		N	iS	04 36 32		
			L	04 38 57		
			M	04 40 22		Per.= 12 secs
						μ = 23
	Poona	Z,N,E	iP	04 32 53	2745	Moderate..
		E	PP	04 33 30		
			PPP	04 33 40		
			PcP	04 36 18		
		N,E	iS	04 37 13		
		E	L_Q	04 37 54		
			SS	04 38 06		
			SSS	04 38 24		
			L_R	04 39 01		
			ScP	04 39 46		

	MPT.	PHASE	G. M. T.	Δ	REMARKS.
			h. m. s.	Km.	
March 1951.					
16		Epc:- 31°.4 N, 96°.7 E,	0= 13h. 56m. 50s. (Poona).		
Chatra	N,E,V	eP	13 59 16	1100	
	E,V	PP	13 59 21		
		PPP	13 59 29		
		P*	13 59 38		
		Pg	14 00 05		
	N,E,V	L_Q	14 00 56		
		iS	14 01 07		
		SS	14 01 19		
		L_R	14 01 25		
	E,V	SSS	14 01 28		
	N,E,V	S*	14 01 42		
		M	14 02 08		
Calcutta	N	eP	13 59 40	1255	Slight.
		iS	14 01 48		
		L	14 02 14		
		M	14 03 13		
		Mn	14 04 29		Per.= 3 secs. μ = 25.
New Delhi	N,E	eP	14 00 57	1850	Slight.
		PP	14 01 10		
		PPP	14 01 17		
		iS	14 04 02		
		SS	14 04 21		
		M	14 06 10		
Kodaikanal	N	iP	14 01 45	2560	
		iS	14 05 53		
		L	14 08 28		
	E	M	14 09 48		Per.= 9 secs. μ = 6
	N	M	14 10 14		Per.= 10 secs. μ = 5.
Poona	Z,E	iP)	14 02 13	2730	Slight.
	N	eP)			
	E	PP	14 02 54		
		PPP	14 03 02		
		PcP	14 05 47		
	N,E	iS	14 06 32		
		L_Q	14 07 15		
		SS	14 07 34		
		SSS	14 07 43		
		L_R	14 08 30		
		ScP	14 09 12		
		M	14 10 14		
Bombay	N,E	eP	14 02 20	2845	Slight Δ from E component
	E	PPP	14 03 17		
	N	PPP	14 03 22		
	E	eS	14 06 45		
	N	eS 96 50	14 06 50		
		L_Q	14 07 42		
	E	L_Q	14 07 48		
	N	L_R	14 08 47		
	E	L_R	14 09 09		
	N	M	14 12 13		Per.= 10 secs. μ = 6
	E	M	14 12 17		Per. = 10 secs μ = 8
Colombo	E	P	14 02 20		
		S	14 08 38		
		L	14 14 --		
Kodaikanal	E	e	14 02 25		Tremor.

		COMPT.	PHASE	G. M. T.	Δ	REMARKS.
March. 1951. 12(cont.)				h. m. s.	Km.	
	Poona	Z,E	iP	14 57 08	2335	Moderate.
		E	i	14 57 12		Felt at
			PP	14 57 25		Dibrugarh.
			PPP	14 57 35		
			i	14 57 57		
			i	14 59 38		
			iS	15 00 58		
			i	15 01 04		
			L_Q	15 01 12		
			S S	15 01 33		
			SSS	15 01 43		
			L_R	15 02 08		
		N	Mn	15 03 20		Per.= 5.5 secs.
		E	M	15 03 50		μ = 40
			ScP	15 04 34		
			ScS	15 08 09		
	Bombay	E	eP	14 57 14	2535	Moderate
			PPP	14 58 00		
			iS	15 01 15		
			L_Q	15 01 40		
			SS	15 02 00		
			M	15 07 13		Per.= 9 secs.
						μ = 19
			M Record faint.			
	Kodaikanal	E	iP	14 57 33	2765	Moderate
			iS	15 01 54		
			L_Q	15 02 34		
			L_R	15 03 53		
			M	15 05 54		Per. 12 secs.
						μ = 14.
	Colombo	E	P	14 57 47		
			S	15 02 16		
			M	15 09 59		Amp.= 0.8 mm.
	Dehra Dun	N	eP	14 57 48?		
			eS	15 00 18?		
			M	15 01 27		Per. = 12 secs.
						Amp.=0.2"
13	Chatra	E,V	e	07 29 26		
		V	i	07 30 26		
			i	07 30 34		
13	Chatra	V	e	12 55 33		Feeble.
			i)	12 56 28		
		E	e)			
14	Chatra	V	i	12 55 52		Feeble.
			i)	12 57 22		
		E	e)			
14	Chatra	V	eP?	16 11 13		Feeble.
			iS?)	16 12 32		
		E	e)			
15	Chatra	V	e	16 38 40		Tremor.
16	Chatra	V	i	00 59 50		Tremor.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
March 1951.						
10 (cont.)	New Delhi	N,E	eP?	22 10 55	10665	Moderate.
		N	iSKS$_1$	22 21 17		
			SKS$_2$	22 21 35		
			S	22 21 59		
			iPS	22 23 08		
			PPS	22 23 53		
			sS	22 24 18		
			SS	22 28 16		
			SSP	22 28 31		
			SSS	2232 21		
			L$_Q$	22 37 20		
			L$_R$	22 43 20		
	Bombay	E	eP	22 11 08	10810	Slight
			iPP	22 14 59		Δ from PP - P
			SKS$_1$	22 21 29		
			iS	22 22 14		
			PPS	22 24 53		
			SS	22 29 24		
			SSS	22 33 09		
			L$_Q$	22 39 06		
			L$_R$	22 43 59		
			M	22 57 21		Per.= 14 secs. μ = 6
		N		Record too faint to identify phases.		
	Dehra Dun	N	e	22 21 48		
			e	22 29 18		
			M	22 34 24		Per.= 18 secs. Amp.= 0.02"
12	Epc:- 28.2° N, 94.0° E (75 miles to the North-West of Dibrugarh) O = 14h. 52m. 21s. (Poona).					
	Chatra	V	iP)	14 54 02	760	Moderate.
		N,E	eP)			
		E,V	PP	14 54 11		
			P*	14 54 19		
		N,E,V	Pg	14 54 36		
		N	L$_Q$	14 54 59		
		E,V	L$_Q$	14 55 10		
		N,E,V	iS	14 55 21		
		E,V	L$_R$	14 55 28		
			SS	14 55 32		
		N,E,V	SSS	14 55 43		
		E	M)	14 55 58		Per.=015secs.
			)			Amp.= 25.0 mm.
		V	M)			Per.= $<$0.5 secs. Amp.= 67.0 mm.
		N	M	14 56 04		Per.= $<$1.0 sec. Amp:- 33.0 mm.
	Calcutta	E	eP	14 54 13	870	Very f great
			iS	14 55 43		
			iS	14 56 34		
	New Delhi	N,E	eP	14 55 53	1640	Slight
		N	L$_Q$	14 58 34		
			eS	14 58 39		
			SS	14 58 51		
			M	15 00 28		
	Hyderabad	E,N	iP	14 56 30	2120	
		N	iS	15 00 00		
			L	15 02 06		
		E	M	15 03 19		Per.= 10 secs. μ = 17
		N	M	15 03 22		Per.= 8 secs. μ = 15

		COMPT.	PHASE	G. M.T.	Δ	REMARKS.
				h. m. s.	Km.	
1951.						
10	Chatra	V	iP }	06 54 32	320	Slight.
		E	eP }			
		V	P*	06 54 34		
		E,V	PP	06 54 38		
			Pg	06 54 41		
			PPP	06 54 44		
			iS	06 55 07		
			S*	06 55 10		
			SS	06 55 16		
			Sg	06 55 26		
10	Epc;- 15°.5 S, 167°.5 E,			O = 21h. 57m. 37s (U.S.C.G.S.)		
				h = 200 Kms. ±		
				O = 21h. 57m. 10s. (Poona)		
				h = 225 Kms. ±		
	Calcutta	E	iP	22 10 04	9710	Moderate,
			ipP	22 10 38		first movement
			PPP	22 15 11		west.
			SKS_1	22 20 24		
			iS	22 20 31		
			PS	22 21 20		
			isS	22 21 35		
			SS	22 26 06		
			SSS	22 29 36		
	Chatra	V	iP }	22 10 12	8555	Moderate.
		N,E	eP }			
		N	PcP	22 10 30		
			Pp	22 13 00		
			PPP	22 14 45		
			eS	22 20 00		
		N,E,V	SKS_1 (ScPcS)	22 20 26		
		N	PS	22 20 45		
			PPS	22 21 23		
			SS	22 24 37		
			SSS	22 27 26		
			L_R	22 34 08		
			M	22 41 50		Per.= 15 secs. Amp.=.75 mm.
	Kodaikanal	E	P	22 10 34	10220	Moderate.
			i	22 11 16		
			PP	22 14 19		
			PPP	22 16 19		
			$iSKS_1$	22 20 56		
			S	22 21 34		
			PS	22 22 44		
			PPS	22 23 19		
			SSP	22 27 54		
			SSS	22 31 34		
	Hyderabad	E	P	22 10 39	9260	
		E,N	S	22 21 00		
		E	PS	22 22 08		
		N	L	22 39 39		
			M	22 47 26		Per.= 16 secs μ = 8
		E	M	22 48 07		Per.= 15 secs. μ = 7
	Poona	Z,E	iP	22 10 54	10780	Moderate
		E	pP	22 11 56		
			SKS	22 21 14		
			iS	22 22 27		
			sS	22 24 37		

			PHASE	G. M. T. h. m. s.	△ Km.	REMARKS.
1951.						
9 (Cont.)	Kodaikanal	E	iP	19 53 15	5555	Moderate.
			PP	19 55 15		
			PPP	19 56 12		
			iS	20 00 26		
			SS	20 04 11		
			SSS	20 05 11		
			L_R	20 06 41		
			M	20 13 45		Per.= 17 secs. Amp.= 4.5 mm.
	Chatra	V	iP	19 53 15	5370	Moderate.
		N,E	eP			
		N	PcP	19 54 30		
		N,E,V	PP	19 55 19		
		N,E,V	eS	20 00 15		
		N	PS	20 00 30		
			PPS	20 00 48		
			ScS	20 02 32		
			SS	20 04 30		
			SSS	20 06 00		
			L_R	20 08 20		
			M	20 12 30		Per.= 23 secs. Amp.= 2.5 mm.
	Hyderabad	E,N	iP	19 53 29	5740	
		E	PP	19 55 48		
		N	iS	20 00 50		
		E	SS	20 05 23		
		N	L	20 09 37		
		E	M	20 13 57		Per.= 22 secs. μ = 32
		N	M	20 15 25		Per.= 20 secs. μ = 52
	Poona	Z,E	iP	19 53 58	6000	Moderate.
			PcP	19 54 57		
			PP	19 56 04		
			PPP	19 57 15		
			PcS	19 58 36		
			S	20 01 33		
			PS	20 01 41		
			PPS	20 01 49		
			i	20 02 22		
			ScS	20 03 17		
		Z,E	SS	20 05 13		
			SSS	20 07 35		
			L_Q	20 07 47		
			L_R	20 10 23		
			M	20 14 47		
	Bombay	E	eP	19 54 09	6365	Moderate
			PcP	19 55 13		
			PP	19 56 17		
			PPP	19 57 33		
			eS	20 02 06		
			iPS	20 02 21		
			SSS	20 08 00		
			L_R	20 10 49		
			M	Loss of record at the time.		
		N		Loss of record.		
	New Delhi	N,E	eP	19 54 05	6445	Moderate.
		N	eS	20 02 04		
			ScS	20 04 11		
			i	20 04 48		
			L_R	20 11 00		
			M	20 15 33		

		PT.	PHASE	G. M. T. h. m. s.	△ Km.	REMARKS.
March 1951. 6 (cont.)	Kodaikanal	E	iP	19 03 40	2820	Very slight.
			iS	19 08 05		
			L	19 10 05		
			M	19 12 06		
	Colombo	E	P	19 03 50		
			S	19 08 25		
			L	19 14 10		
			M	19 14 26		
7	Chatra	V	e	13 38 52		Amp. 0.2 mm. Feeble, near
7	Chatra	V	e	16 37 58		Feeble.
		E	e	16 38 26		
		N	e	16 40 13		
7	Chatra	V	e	18 40 40		Feeble surface waves
		N	e	18 59 23		Per.= 15 secs. Amp.= 0.25 mm.
	Poona	Z,E	eP	18 41 22		Tremor
	Bombay	N,E	eP	18 42 25	6890	Feeble
			eS	18 50 50		
8	Epc:- 6°.0 S, 154°.0 E. Soloman Islands region. O = 15h. 12m. 11s. (U.S.C.G.S.)					
	Chatra	V	i	15 23 41		Slight. Distant
		N	e			
			e	15 33 02		
	Poona	Z,E	eP	15 24 32	9220	Slight.
		E	iS	15 34 51		
	Bombay	N,E	eP	15 24 42	9220	Feeble.
			eS	15 35 04		
8	Calcutta	E	e	21 46 45		Slight. Distant.
			i	21 48 48		
			Mn	21 49 52		
	Poona	Z,E	eP	21 46 48		Tremor.
8	Chatra	V	i	22 43 51		Slight.
		N	e			
			e	22 46 48		
	Bombay	N,E	e	22 54 --		Very feeble.
9	Epc:- 28°.0 S, 124°.5 E. O = 19h. 16m. 44m. 16s. (U.S.C.G.S.)					
	Calcutta	E	eP	19 52 54	5220	Moderate.
			iPP	19 54 46		
			iPcS	19 58 25		
			iS	19 59 46		
	Calcutta	E	iPS	19 59 55		
			iPPS	20 00 02		
			iSS	20 03 08		
			L	20 06 19		
			M	20 09 48		
			Mn1	20 11 23		Per.= 26 secs. μ =51
			Mn2	20 14 23		Per.= 20 secs. μ = 48
	Dehra Dun	N	e	19 53 00		
			e	20 03 00		
			e	20 15 12		
			M	20 24 42		Per.= 21 secs. Amp.=0.15"

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
March 1951.				h. m. s.	Km.	
6	Chatra	N,E	eP	12 14 33	590	Slight.
			eS	12 15 35		
			SS	12 15 48		
			SSS	12 15 56		
			S	12 16 03		
6	Epc:- 29.3° N, 94.8° E .			0 = 18h. 58m. 11s.		(Poona).
	Chatra	N,E	eP	19 00 08	860	Moderate
			PP	19 00 15		
		E	PPP	19 00 21		
			P*	19 00 26		
		N,E	Pg	19 00 42		
			L_Q	19 01 26		
			iS	19 01 38		
		E	SS	19 01 51		
			SSS	19 02 01		
			S*	19 03 08		
		N	M }	19 03 24	Per.=	0.5 secs. Amp.=14.0
			M }		Per.=	0.4 sec. Amp.= 15.0
	Calcutta	N	eP	19 00 27	925	Moderate.
			iS	19 02 02		
			iSS	19 02 14		
			M	19 03 02		
			Mn	19 03 44		Per.= 2 secs. μ = 90
	New Delhi	N,E	eP	19 01 54	1720	Slight.
		N	PP	19 02 06		
		N,E	PPP	19 02 14		
			iS	19 04 47		
			SS	19 05 03		
		N	SSS	19 05 16		
		N,E	L_R	19 05 20		
			M	19 06 43		
	Hyderabad	E,N	iP	19 02 38	2200	
		N	iS	19 06 16		
			L	19 08 12		
		E	M	19 09 53		Per.= 11 secs. μ = 5
		N	M	19 09 55		Per.= 9 secs. μ = 9
	Poona	Z,E	iP	19 03 11	2470	Moderate
		E	pP ?	19 03 15		Appears to be
			PP	19 03 36		deep focus
			PPP	19 03 48		Dibrugarh
			PcP	19 06 54		reported
			S	19 07 12		Earthquake
			sS ?	19 07 22		felt at
			L_Q	19 07 23		0130 hrs.
			SS	19 07 55		
			SSS	19 08 10		
			L_R	19 08 40		
			M	19 10 31		
	Bombay	N	iP }	19 03 21	2590	Moderate △
		E	eP }			from
		N,E	PPP	19 04 19		N component
		E	iS	19 07 23		
		N	iS	19 07 27		
			L_R	19 09 05		
		E	L_R	19 09 18		
		M	M	19 12 18		Per. = 14 secs. μ = 16
		N	M	19 13 08		Per.= 10 secs. μ = 6

	COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
March 1951. 5(cont.)					
Calcutta (cont.)	E	2 PPP	20 20 08		
		PcP	20 20 55		
		ipPcP(?)	20 21 38		
		i	20 23 11		
		S	20 23 56		
		sS	20 25 01		
		SS	20 24 51		
		SSS	20 25 38		
Kodaikanal	E	iP	20 19 31	5665	Very slight.
		PcP	20 20 30		
		PPP	20 22 15		
		iS	20 26 33		
		sS	20 27 43		
		SS	20 30 08		
		SSS	20 31 45		
		L	20 31 15		
		M	20 37 25		
New Delhi	N,E	eP20 19 43	20 19 43	4890	Moderate. Deep focus
	N	iPcS	20 25 25		
		iS	20 26 03		
		PPS	20 26 27		
		isS	20 27 07		
		iSS	20 29 22		
		SSS	20 30 01		
Hyderabad	E,N	iP	20 20 03	6120	
	E	PP	20 22 47		
	N	i	20 26 43		
	E,N	iS	20 27 45		
	E	SS	20 31 23		
		L	20 36 47		
	N	M	20 41 06		Per.= 15 secs. μ = 5
	E	M	20 42 01		Per.= 15 secs. μ = 5
Poona	Z,E,N	iP	20 20 30	5610	Moderate.
	E	pP	20 21 08		
		PcP	20 21 47		
		PP	20 22 21		
		PPP	20 23 11		
		iS	20 27 30		
		PS	20 27 37		
		PPS	20 27 45		
		PS	20 28 04		
		SS	20 28 32		
		ScS	20 30 00		
		SS	20 30 47		
		L_Q	20 32 12		
		SSS	20 32 17		
		L_R	20 34 31		
Bombay	N	eP }	20 20 37	5665	Slight.
	E	iP }			
		pP	20 21 15		
	E	PcP	20 22 02		
		PP	20 22 38		
		PPP	20 23 34		
		S	20 27 47		
		sS	20 28 43		
		ScS	20 30 32		
		SS	20 31 20		
		SSS	20 32 40		
Dehra Dun	N	e	20 25 54		
5 Chatra	V	iP?	20 47 01	780	Feeble.
		iS?	20 48 22		

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
March 1951. 23 (cont.)	New Delhi	E	e	21 57 01	12780	Moderate
		N	PP	21 59 24		
			e	22 03 23		
			i	22 04 26		
			SKS	22 05 22		
			e	22 07 08		
			iPS	22 08 54		
			iPPS	22 10 09		
			i	22 13 44		
			SS	22 15 20		
			i	22 21 36		
	Hyderabad	E	e	21 57 19		
			M	22 38 48		Per.= 15 secs. μ = 4
	Bombay	N,E	ePKP$_1$	21 57 46	12645	Slight
		N	PPP	22 01 09		Δ from SS -PKP$_1$
		E	PPP	22 01 13		of E compo-
			SKS$_1$	22 04 31		nent.
		N	SKS$_1$	22 04 34		
		E	SS	22 14 29		
		N	SSS	22 18 47		
			M	22 46 32		Per.= 17 secs. μ = 4
		E	M	22 47 01		Per. = 17 secs. μ = 4
24	Epc:- 11°.0 S, 166°.0 E. Santacruz Islands					
			0 = 00h. 17m. 38s.		h = 150 Km.	(U.S.C.G.S.)
			0 = 00h. 18m.02s, ,		h = 150 Km.	(Poona).
	Calcutta	Z,E	iP e	00 30 11		Slight
			i	00 39 59		distant
	Kodaikanal	E	e	00 30 17		Tremor
	New Delhi	N,E	eP	0030 32	9890	Slight
		N	iSKS	00 40 59		
			eS	00 41 19		
			iScS	00 41 59		
	Poona	Z,E	E iP	00 30 51	10140	Moderate ,
		E	pP	00 31 30		deep focus
			PP	00 34 38		
			PPP	00 36 37		
			SKS	00 41 07		
			SKKS	00 41 21		
			SKKKS	00 41 25		
			iS	00 41 38		
			ScS	00 41 40		
			SS	00 42 38		
			PS	00 42 54		
			PPS	00 43 32		
	Bombay	N,E	P	00 30 --		Feeble
			iSKS$_1$	00 41 17		
		N	eS)	00 42 00		
		E	iS)			
	Hyderabad	E	i	00 40 45		
24	Chatra	V	iP?	09 04 41	833	Feeble.
		E	e iS?)	09 06 07		
			e)			
24	Chatra	V	eP?	18 24 55	790	Feeble
			iS?)	18 26 17		
		E	e)			
		N	e	18 27 00		

		COMPT.	PHASE	G. M. T.	Δ	REMARKS.
March 1951.				h. m. s.	Km.	
25	Chatra	V	eP	02 19 01	880	Slight.
			PP	02 19 07		
			PPP	02 19 12		
			P*	02 19 17		
		E,V	Pg	02 19 38		
		V	L_Q	02 20 21		
			iS)	02 20 32		
		E	eS)			
		E,V	SS	02 20 46		
			SSS	02 20 52		
		V	S*	02 20 59		
		N,E,V	M	02 21 23		
25	O = 18h. 25m. 32s (Poona)					
	Poona	Z,E	iP	18 34 57	5946	Slight.
			PPP	18 38 13		
			i	18 40 18		
			iS	18 42 29		
			PS	18 42 41		
			PPS	18 42 48		
26	New Delhi	N,E	eP	16 30 01	8000	Slight.
		N	L_Q	16 31 15		
			iS	16 31 24		
			SS	16 31 35		
			SSS	16 31 45		
27	Felt at Dibrugarh.					
	Chatra	E,V	eP	23 14 54	980	Slight.
		V	PP	23 15 03		
			PPP	23 15 08		
			P*	23 15 13		
		E,V	Pg	23 15 34		
			L_Q	23 16 16		
			iS	23 16 26		
			SS	23 16 37		
			SSS	23 16 49		
			S*	23 16 55		
		V	M)	23 17 21		Per.= 0.3 sec.
		N,E	M)			Amp.= 18.0 mm.
New Delhi		E	eP	23 16 44	1680	Slight.
			PPP	23 17 06		
		N,E	L_Q	23 19 29		
			eS	23 19 33		
			SS	23 19 50		
	Calcutta	N	eP?	23 16 53		Slight
			iS?	23 18 14		
			iS*	23 18 40		
			iS	23 18 59		
	Poona	Z,E	eP	23 17 58		Feeble.tremor
		E	S	23 22 09		
	Bombay	N,E	e	23 22 -		Very feeble.
		E	i	23 25 1[illegible]		
28	New Delhi	E	eP	12 44 57	900	Slight
			PP	12 45 06		
			PPP	12 45 13		
		N,E	eS	12 46 30		
		E	S*	12 47 00		
	Bombay	N,E	e	12 51 03		Very feeble.
29	Chatra	V	eP?	13 42 13	490	Feeble.
			S?	13 43 05		

		MPT.	PHASE	G. M. T.	Δ	REMARKS.
March 1951.				h. m. s.	Km.	
29	Chatra	E,V	eP	17 19 26	490	Slight.
		V	PP	17 19 34		
			PPP	17 19 39		
			Pg	17 19 43		
			L_Q	17 20 04		
		E,V	i_S	17 20 18		
			SS	17 20 29		
		V	Sg	17 20 39		
30	New Delhi	N,E	eP	02 39 15	970	Slight.
		E	PPP	02 39 29		
			P*	02 39 34		
			i	02 39 40		
		N,E	L_Q	02 39 47		
			iS	02 40 55		
			SS	02 41 07		
			SSS	02 41 17		
		E	S	02 41 54		
	Chatra	E,V	eP?	02 40 47	1740	Slight.Deep
		V	iS?)	02 43 42		focus
		E	eS?)			
	Poona	Z,E	eP	02 41 12	2100	Moderate
		E	iS	02 44 40		
			L_Q	02 44 46		
			SS	02 45 01		
			SSS	02 45 20		
			L_R	02 45 32		
			M?	?02 47 02		
	Calcutta	E	i	02 45 17		
30	Chatra	E,V	eP	12 15 15	1060	Slight
		V	PP	12 15 22		
			PPP	12 15 30		
			P*	12 15 37		
			L_Q	12 16 51		
		E,V	iS	12 17 03		
		V	SS	12 17 18		
			L_R	12 17 23		
			SSS	12 17 28		
	Poona	E	eP	12 18 19		Feeble tremor
			S?	12 22 23		
	Calcutta	E	e	12 18 38		Slight,near
			i	12 19 04		
			i	12 20 09		
			Mn	12 21 23		
	Bombay	E	eP	12 22 52	3380?	Feeble
			eS?	12 27 52		
		N	Movements not clear due to thickness of trace.			
31	Bombay	N,E	e	06 35 --		Very feeble.

The following table contains a list of earthquakes felt and reported by voluntary observers from various stations during January - to March 1951.

Place at which felt	Date	G.M.T. of Earthquake h. m.	Duration	Intensity R.F. Scale	No of shocks	Remarks.
Gurdaspur	6-1-1951	05 16	15	V	2	
Srinagar	6-1-1951	05 22	30	VIII	2	
Sonemarg	6-1-1951	05 17	3 - 4	V	1	
Ranborpara (Kargil)	6--1-1951	05 20	5	V	1	
Srinagar	6-3-1951	12 15	1	V	1	
Dibrugarh	6-3-1951	19 00	40	IV	1	
Tezpur	6-3-1951	19 01	30	V	1	
Gauhati	6-3-1951	19 05	15	V	1	
Mohanbari A.F.	12-3-1951	14 50	40	VII	4	Interval 1 to 2 secs.
Dibrugarh	12-3-1951	14 55	90	VI	1	
Rajasansi	30-1-1951	07 16	60	V	1	

M.L.P.
3-11-51.

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

S E I S M O L O G I C A L B U L L E T I N

April, 1951.

Published under the direction of

V.V. SOHONI, B.A.(Hons.), M.Sc.

Director General of Observatories.

Instruments and their constants.

Station	Instrument	Compt.	Period in secs.	Static Magnification	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	23:1	8.0
	Milne-Shaw	E	12	350	11:1	8.0
Calcutta	Minle-Shaw	E	12	250	20:1	8.0
	Wood-Anderson	N	2	870	Critical	30.0
	Omori-Ewing	N	18	32	-	25.4
	Omori-Ewing	E	19	30	-	25.4
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Chatra	Wood-Anderson	N	1	995	22:1	60.0
	Wood-Anderson	E	1	995	22:1	60.0
	Milne-Shaw	N	10	150	20:1	16.0
	Benioff	Z	To = .45 Tg = .45	-	-	60.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	242	20:1	8.0
	Milne-Shaw	N	12	268	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0
New Delhi	Milne-Shaw	N	12	299	20:1	8.0
	Wood-Anderson	N	4	1000	20:1	16.0
	Wood-Anderson	E	2	1700	30:1	60.0
	Omori-Ewing	E	30	30	1	12.0
Poona	Wood-Anderson	E	4	1100	20:1	16.0
	Milne-Shaw	N	12	250	20:1	8.0
	Sprengnether	E	7.2	-	-	30.0
	Benioff	Z	1	To = 1.0 Tg = 0.28	-	60.0

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
April 1951.				h. m. s.	Km.	
1	Chatra	Z	iP(?)	18 31 27	800	Feeble
		E	e			
		Z	i(S?)	18 32 50		
		E	e			
1	Bombay	N,E	e	19 19 -		Very feeble.
1	Bombay	N,E	e	21 05 -		Very feeble
	Poona	Z,E	i(PKP_1)	21 05 07		Tremor
2	Bombay	N,E	e	00 33 --		Very feeble.
	Poona	Z,E	e	00 33 12		Tremor.
2	Bombay	N,E	e	01 37 --		Very feeble.
2	New Delhi	N,E	eP	17 59 42	1160	Slight.
		E	PPP	17 59 56		
			eS	18 01 41		
			SSS	18 02 02		
			S*	18 02 24		
	Bombay	N,E	e	18 21 --		Very feeble.
2	Chatra	Z	i(P?)	21 13 48	810	Feeble
			i(S?)	2115 12		
2	Epc:- 6°.0 S, 149°.0 E (Near West coast of New Britain)					
			O =	22h. 09m. 29s. (U.S.C.G.S.)		
			O =	22h. 09m. 38s. (Poona).		
	Chatra	N,E,Z	e	22 20 33		Slight,distant.
	New Delhi	N,E	eP	22 21 25	8400	Slight.
			iS	22 31 06		
	Poona:	Z,E	eP	22 21 31	8490	Slight.
		E	PP	22 24 29		
			PPP	22 26 17		
			eS	22 31 16		
			SKS	22 31 25		
			ScS	22 31 33		
			PS	22 32 00		
			PPS	22 32 21		
			SS	22 36 02		
			SSS	22 39 21		
			L_Q	22 42 19		
			L_R	22 48 34		
	Bombay	E	eP	22 21 38	8535	Feeble
		N	P	22 21 --		
		N	iS eS	22 31 27		
2	Chatra:	N,E,Z	e	22 48 46		
3	New Delhi	N,E	eP	19 29 03	1290	Slight.
			L_Q	19 31 09		
			eS	19 31 15		
		E	SSS	19 31 38		
			S*	19 31 59		
5	Bombay	N,E	eP	03 24 17	5455	Feeble
			PP	03 26 12		
			PPP	03 27 12		
			eS	03 31 22		
			ScS	03 34 07		

		COMPT.	PHASE	G. M. T.	Δ	REMARKS.
1951.				h. m. s.	Km.	
5	New Delhi	N,E	eP	23 47 24	950	Slight
		e E	PPP	23 47 38		
			iS	23 49 02		
		E	SSS	23 49 25		
	Poona	E	eP	23 49 12	Tr	Tremor.
6	Hyderabad	N	M	09 27 06		Per.= 11 secs. μ = 3
6	Epc:- 32°.5 N, 98°.0 E		O = 23h. 52m. 55s. (Poona)			
	Chatra	Z	iP)	23 55 27	1150	Slight
		E	eP)			(Δ from P -0)
		E,Z	PP	23 55 40		
			PPP	23 55 47		
			L_Q	23 58 12		
			iS	23 58 22?		
			M	00 00 20		
	Calcutta	N	iP	23 55 55	1220	Slight.First movement towards North.
			iS	23 58 00		
			iSS	23 58 15		
			SSS	23 58 26		
	New Delhi	E	eP	23 57 07	1970	Slight.
			PP	23 57 22		
			PPP	23 57 31		
		N	eS	00 00 23		
			M	00 02 49		
	Hyderabad	N	iP	23 57 56	2380	
			iS	00 01 50		
			L	00 04 27		
			M	00 05 44		Per.= 9 secs. μ = 4
	Poona	Z,E	iP	23 58 23	2850	Slight.
		E	PP	23 59 05		
			PPP	23 59 13		
			PcP	00 01 36		
		E,N	iS	00 02 50		
		E	L_Q	00 03 46		
			SS	00 03 56		
			SSS	00 04 17		
			L_R	00 05 10		
			M	00 07 08		
		N	Mn	00 07 30		Per.= 8 secs. μ = 4.0
	Bombay	N,E	eP	23 58 30	2890	Slight.
			PP	23 59 13		
		E	iS	00 03 00		
		E	M	00 08 27		Per.= 8 secs. μ = 4
7	New Delhi	N,E	eP	19 46 27	1100	Slight.
			eS	19 48 22		
7	Epc:- 26°.0 N, 90°.5 E. Felt at Chatra, Gauhati and Shillong.		O = 20h. 29m. 05s. (Poona)			
	Chatra	E	eP	20 30 05	445	Slight. Felt locally. No damage.
			P*	20 30 12		
			PPP	20 30 25		
			Pg	20 30 29		
			L_Q	20 30 42		
			iS	20 30 53		
			S*	20 31 12		
			Sg	20 31 11		

		T.	PHASE	G. M. T.	Δ	REMARKS.
April 1951.				h. m. s.	Km.	
7(cont.)						
	Calcutta	E	eP	20 30 16	655	Moderate
			P*	20 30 30		
			iP	20 30 40		
			iS	20 31 25		
	New Delhi	E	eP	20 32 05	1380	Slight.
			PP	20 32 13		
			PPP	20 32 22		
		N	i	20 33 26		
		E	iS	20 34 25		
		N	i	20 34 30		
	N	N,E	SSS	20 34 52		
			M	20 35 50		
	Hyderabad	N	eP?	20 32 31	1390	
			iS	20 34 53		
			L	20 36 17		
			M	20 36 50		Per.= 6 secs. μ = 5
	Poona	Z,E	eP	20 33 12	1950	Slight.
		E	PP	20 33 30		
		Z	i)	20 36 10		
		E	e)	20 36 20		
		Z,E	iS	20 36 26		
		E	SS	20 36 49		
			SSS	20 37 00		
			L_R	20 37 11		
			PcP	20 37 42		
		E	M_1	20 38 01		
		N	Mn	20 38 01		Per.= 6 secs. μ = 12.0
		E	M_2	20 39 02		
			ScP	20 41 13		
	Bombay	E	eP	20 33 20	2100	Slight.
		N	P	20 33 --		
		N,E	eS	20 36 44		
			L_R	20 37 38		
		E	M	20 39 06		Per.= 5 secs. μ =5
		N	M	Record too faint.		
8	Epc:- 19.2° N, 70.8° E. (In the Arabian Sea; off Bombay coast) Felt locally at Poona, Bombay, Diu and Surat. O = 20h. 53m. 08s. (Poona).					
	Bombay	N,E	iP	20 53 44	222	Slight. Felt in Bombay. No damage . movements too faint to identify other phases.
		N	S	20 54 14		
	Poona	Z,N,E	iP	20 53 57	334	Moderate. Felt. No damage
		E	P*	20 54 01		
			PP	20 54 04		
			Pg	20 54 08		
			PPP	20 54 11		
			L_Q	20 54 16		
		N,E	iS	20 54 33		
		E	S*	20 54 39		
			SSS	20 54 43		
			Sg(M)	20 54 44		Per.=3.5 secs. μ = 34
			SS	20 54 54		
	Hyderabad	N	eP	20 55 00	1030	
			iS	20 56 46		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
April 1951.				h. m. s.	Km.	
8(cont.)						
	New Delhi	N,E	eP	20 55 47	1080	Slight.
			PP	20 55 56		
		N	S	20 57 38		
			SS	20 57 51		
			M	20 58 39		
	Chatra	Z	i)	20 57 00		Slight
		E	e)			
	Calcutta	N	eP	20 57 09	1890	Slight
			L_Q	20 59 50		
			i	20 59 57		
			iS	21 00 15		
	Kodaikanal	E	eS	20 57 47		Near.Slight. Phases not clear
	Colombo	E	S	20 59 19		
			e	21 0114		
8	Epc:- 37°.0N, 35.0E.		O = 21h. 38m. 20s. (U.S.C.G.S.) h = 100 Km.			
	New Delhi	N,E	P	21 45 09	3890	Slight.
		N	PP	21 46 24		
			iS	21 50 41		
			SS	21 53 09		
			M	21 58 12		
	Bombay	N,E	iP	21 45 22	4165	Slight.
			PP	21 46 36		
			PPP	21 47 21		
			iS	21 51 11		
			L_R	21 55 34		
		N	M	22 05 40		Per.= 14 secs. μ = 5
		E	M	22 06 33		Per.= 11 secs. μ = 3
	Poona	Z,E	iP	21 45 32	4370	Slight
		E	PP	21 46 00		
			PPP	21 46 18		
			ScP	21 51 05		
		E,N	iS	21 51 23		
		E	sS	21 52 01		
			SS	21 54 08		
			SSS	21 54 49		
			ScS	21 55 17		
			L_R	21 56 15		
	Chatra	Z	e	21 46 19		Tremor.
			e	21 47 00		
	Kodaikanal	E	iP	21 46 35	5110	Slight.
			PP	21 48 20		
			S	21 53 20		
	Colombo	E	P	21 47 09	5575	
			S	21 54 14		
			L	22 08 19		
			M	22 10 29		Amp. = 0.4 mm.
	Hyderabad	N	e	21 52 23		
			M	22 06 25		Per.= 13 secs. μ = 5
9	Calcutta	E	e	17 08 27		Tremor
			e	17 29 24		
	Bombay	N,E	e	17 28 --		Very feeble.
9	Calcutta	N	e	21 34 09		Tremor.
			i	21 35 41		

DATE	STATION	COMPT.	PHASE	G. M. T. h, m, s.	Δ Km.	REMARKS.
April 1951.						
10	Kodaikanal	E	e	03 49 45		Tremor.
	Bombay	E	iP	03 55 10		Feeble
			e	04 01 02		
		N	Loss of record due to thickness of trace.			
	Hyderabad	NE	M	03 57 04		Per. 9 secs. μ = 3
	Chatra	Z	i)	04 47 35		Feeble,tremor
		E	e)			
10	Bombay	E	e	11 25 --		Very feeble.
		N	Loss of record.			
10	Bombay	E	e	18 42 --		Very feeble.
		N	Loss of record.			
11		0 = 13h. 59m. 19s. (Poona)				
	Colombo	E	P	14 03 06.		
			L	14 09 --		
			M	14 11 13		Amp. = 0.4 mm.
	Kodaikanal	E	e	14 03 55		Slight.Phases not clear
	Bombay	N,E	iP	14 03 58	2010	Slight.
			PPP	14 04 22		
		E	eS?	14 07 14		
		N,E	L_R	14 08 16		
		E	M	14 09 27		Per.= 14 secs. μ = 3
		N	M	14 11 34		Per.= 16 secs. μ = 4
	Poona	Z,E	iP	14 04 03	2300	Slight.
		E	PP	14 04 28		
			PPP	14 04 39		
			eS	14 07 50		
			L_Q	14 08 08		
			SS	14 08 40		
			SSS	14 08 40		
			M	14 10 56		
	Hyderabad	E	M	14 08 37		Per.= 13 secs. μ = 8
	Calcutta	E	e	14 03 50		Slight.Distant.
			i	14 11 40		
			Mn	14 17 47		
12		0 = 11h. 06m. 38s. (Poona)				
	Colombo	E	P	11 10 00		
			S	11 13 50		
			L	11 28 --		
			M	11 31 20		Amp.= 0.5 mm.
	Kodaikanal	E	e	11 14 09		Tremor
	Calcutta	E	e	11 14 26		Slight.Distant
			i	11 18 20		
	Poona	Z,E	eP	11 14 46	4850	Feeble
		E	PP	11 16 30		
			PPP	11 17 08		
			ScP	11 20 17		
			eS	11 21 16		
			PS	11 21 24		
			PPS	11 21 32		
			M	11 35 34		
	Bombay	N,E	eS?	11 21 31		Feeble
	Hyderabad	N	M	11 35 04		Per.= 15 secs. μ = 4

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
April. 1951.				h. m. s.	Km.	
13	Epc:- 11.0° S, 118.0° E		0 = 10h. 14m. 50s.	(Poona).		
	Colombo	E	P	10 22 36	4555	
			S	10 28 56		
			L	10 38 51		
			M	10 48 31		Amp.= 0.5 mm.
	Calcutta	E	eP	10 22 54	4835	Moderate.
			PcS	10 28 09		
			iS	10 29 21		
			iSS	10 32 46		
			L	10 35 17		
			M	10 39 00		
			Mn	10 48 27		Per.= 18 secs. μ = 19
	Kodaikanal	E	iP	10 23 06	5110	Slight
			S	10 29 51		
			SS	10 33 06		
			L_R	10 36 06		
			M	10 40 12		Per.= 15 secs. μ = 7.1
	Chatra	N,Z	eP	10 23 18?	5370	Slight.
		N	PP	10 25 08		
			PcP	10 28 15		
			eS	10 30 18		
			L_Q	10 34 34		
			M	10 42 00		
	Hyderabad	N	eP	10 23 23	5220	
			iS	10 30 13		
			L	10 37 25		
			M	10 42 09		Per.= 18 secs. μ = 10
	Poona	Z,E,N	iP	10 23 57	5610	Moderate.
		N,E	ScP	10 29 02		
			eS	10 31 11		
			PS	10 31 19		
			PPS	10 31 27		
			L_R	10 39 40		
		N	M	10 44 02		Per.= 23 secs. μ = 17
		E	M	10 44 40		
	Bombay	N	eP)	10 24 04	5900	Moderate.
		E	iP)			
		N,E	PP	10 26 08		
			iS	10 31 34		
		E	L_Q	10 37 18		
		N	L_Q	10 37 26		
		E	L_R	10 39 38		
		N	L_R	10 39 46		
		E	M	10 49 07		Per.= 19 secs. μ = 7
		N	M	10 49 36		Per.= 19 secs. μ = 7
	New Delhi	N,E	eP	10 24 16	5990	Moderate.
		N	PP	10 26 19		
			iS	10 31 50		
			PPS	10 32 05		
			M	10 42 36		
14	Epc:- 24.0° S, 66.5° W (Northern Argentina)		0 = 00h. 45m. 28s. (U.S.C.G.S.) h = 250 Km. ±			
	Bombay	N,E	$ePKP_1$	01 04 33	16300	Slight Δ from PP - PKP_1 some phases lost during shifting of papers

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
April 1951				h. m. s.	Km.	
14 (cont.)						
	Bombay (cont.)	N,E	PP	01 07 58		
			PPP	01 11 24		
			SS	01 27 11		
		N	M	02 08 56		Per.= 18 secs. μ = 4
		E	M	02 11 23		Per.= 18 secs. μ = 3
	Poona	Z,E	PKP	01 04 35	16000	Moderate.Deep focus.
		E	i	01 07 53		
			PKS_1	01 08 14		
			PKS_2	01 08 38		
			i	01 09 08		
			PPP	01 11 46		
			SKKS	01 13 22		
			SS	01 25 14		
	Colombo	E	P?	01 04 35		
			S?	01 14 30		
			L	01 26 --		
			M	01 27 55		Amp.= 0,5 mm.
	Kodaikanal	E	e?	01 04 36		Tremor
	Hyderabad	E	e	01 04 44	7750	
			iP?	01 05 32		
		E, N	iS?	01 14 41		
	New Delhi	N	eP	01 04 47		Distant.
			i	01 05 39		Moderate.
			i	01 09 09		
			e	01 13 17		
			i	01 14 41		
			i	01 16 35		
			e	01 18 27		
			e	01 23 06		
	Chatra	N	e	01 04 59		Tremor
	Calcutta	E	eP	01 05 02		Other phases ~~not~~ lost while changing chart.
14	Epc:- 40.0° N, 74.0° E. 0 = 04h. 10m. 04s. (Poona).					
	New Delhi	N	iP	04 12 49	1280	Slight.Direction of first movement South.
		N,E	PP	04 12 56		
		N	PPP	04 13 04		
		N,E	iS	04 15 00		
			SSS	04 15 23		
		N	L_Q	04 15 28		
		N,E	M	04 16 23		
		N	Mn	04 17 15		Per.= 13 secs. μ = 43
	Chatra	N,E,Z	eP	04 14 12	2080	Slight.
		N	iS	04 17 28		
			SS	04 17 40		
			SSS	04 18 00		
			M	04 20 00		Per.= 7.5 secs. μ = 5.0 mm
	Bombay	N,E	eP?	04 14 42	2345	Moderate.
			PP	04 15 07		
			iS	04 18 29		
			L_R	04 20 05		
		N	M	04 22 50		Per.= 10 secs. μ = 24
		E	M	Record too faint.		
	Poona	Z,E	iP	04 14 46	2270	Moderate.
		E	iP	04 14 52		
			PP	04 15 06		
			PPP	04 15 15		
			iS	04 18 30		

				h. m. s.	Km.	
	Kodaikanal (cont.)	E	L_Q	04 18 40		
			SS	04 19 00		
			SSS	04 19 18		
			L_R	04 19 40		
			M	04 20 36		
			ScP	04 21 52		
			ScS	04 25 06		
	Hyderabad	E N	iP	04 15 03	2560	
			iS	04 19 11		
			L	04 21 44		
			M	04 23 29		Per.= 12 secs. μ = 80
	Calcutta	E	iP	04 15 03	2455	Moderate.First
			ipP	04 15 28		movement East.
			iS	04 19 03		
			iSS	04 19 38		
			L	04 20 28		
			M	04 22 13		
			Mn	04 24 53		Per.= 10 secs. μ = 10
	Colombo	E	P	04 15 37		
			L	04 26 05		
			M	04 30 02		Amp.= 1.8 mm.
	Kodaikanal	E	e?	04 20 00	Moderate.Phases not clear.	
14	New Delhi	N,E	eP	04 55 07	1260	Slight.
		E	PP	04 55 16		
		N,E	PPP	04 55 23		
			eS	04 57 16		
			M	04 58 37		
	Calcutta	E	i	05 01 19		Slight,near
			i	05 04 42		
14	New Delhi	E	eP	12 47 53	1240	Slight
			PP	12 48 01		
		N,E	eS	12 50 00		
			SS	12 50 11		
	Bombay	N	e	12 53 00		Very feeble.
			e	12 57 30		
		E	Loss of record.			
	Calcutta	E	e	12 54 32		Tremor
			i	12 57 27		
14	Epc:- 61.0°N, 136.0° E.			0 = 13h. 32m. 59s.(U.S.C.G.S.)		
	Chatra	Z	iP)	13 41 38	5370	Moderate.
		N,E	eP)			
		N	eS	13 48 38		
			ScS	13 51 30		
			L_Q	13 53 22		
			L_R	13 55 38		
			M	13 59 38		Per.= 10 secs. Amp.= 22.0 mm
		E	M	13 59 40		Per.= 12 secs. μ = 1.8 mm.
	Calcutta	E	eP	13 42 01	5720	Moderate
			iS	13 49 21		
			ScS	13 51 43		
			iSS	13 52 56		
			L	13 56 31		
			M	14 00 23		
			Mn	14 01 19		Per.= 15 secs. μ = 257

DATE.	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
14 (cont.)						
	New Delhi	N,E	eP	13 42 01	5590	Moderate.
		N	iS	13 49 14		
			iPS	13 49 21		
			ScS	13 51 50		
			SS	13 52 43		
			i	13 53 14		
			M	13 59 54		
			Mn	14 00 50		Per.= 20 secs. μ = 130
	Hyderabad	N	eP	13 43 10	6490	
			iS	13 51 13		
			L	13 59 53		
			M	14 04 32		Per.= 17 secs. μ = 147 148
	Poona	Z,E	eP	13 43 13	6740	Moderate
		E	PPP	13 47 04		
			eS	13 51 29		
			PS	13 51 47		
			PPS	13 51 56		
			ScS	13 53 04		
			SS	13 55 38		
			SSS	13 58 07		
			L_Q	13 58 32		
			L_R	14 01 48		
			M	14 05 46		Per.= 22 secs. μ = 194
	Bombay	N	eP	13 43 17	6720	Moderate.
			eS	13 51 33		
			SS	13 55 21		
			L_R	14 01 30		
			M	14 06 23		Per.= 21 secs. μ = 119
		E	Loss of record.			
	Kodaikanal	E	eP?	13 43 33	7690	Moderate
			iS	13 52 39		
			L_Q	14 01 33		
			M	14 10 39		Per.= 12 secs. μ = 7
14	Epc:- 29°.0 N, 94°.0 E. 0 = 23h. 40m. 41s, (Poona). Felt at Tezpur, Jorhat, Shillong and Dibrugarh.					
	Chatra	Z	iP)	23 42 28	745	Moderate.
		N,E	eP)			
		E	P*	23 42 44		
			Pg	23 43 00		
			L_Q	23 43 33		
		N,E	iS	23 43 55		
		E	SS	23 43 56		
			S*	23 44 07		
			M	23 44 20		Per.= <0.5 sec. Amp.= 22.0 mm.
		N	M	23 44 23		Per.= <1.0 secs: Amp = 32 mm.
	Calcutta	E	eP	23 42 35	890	Moderate.
			iP*	23 42 56		
			iP	23 43 18		
			iS	23 44 06		
			iS	23 44 59		
	New Delhi	N,E	eP	23 44 10	1640	Slight.
		E	PP	23 44 20		
		N,E	PPP	23 44 29		
		N	i	23 46 49		
		N,E	eS	23 46 56		

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
April 1951.						
14 (cont.)						
	New Delhi (cont.)	E	SS	23 47 13		
			L_R	23 47 36		
		N	M	23 48 44		
	Hyderabad	N	iP	23 45 01	2090	
		E	iS	23 48 28		
		N	L	23 49 55		
			M	23 50 13		Per.= 14 secs. μ = 45
	Poona	Z,E	eP	23 45 34	2390	Moderate.
		E	iP?	23 45 36		
			PP	23 45 58		
			PPP	23 46 12		
			iS	23 49 28		
			L_Q	23 49 42		
			SS	23 50 06		
		E	SSS	23 50 19		
			L_R	23 50 51		
			M	23 51 49		Per.= 5 secs. μ = 20.
	Bombay	N	eP)	23 45 45	2465	Moderate
		E	iP)			
		N	eS)	23 49 41		
		E	iS)			
		N	SS	23 50 11		
		E	SS	23 50 23		
		N	L_R	23 50 59		
		E	L_R	23 51 07		
		N	M	23 52 23		Per.= 9 secs. μ = 47
		E	M	23 54 07		Per.= 8 secs. u = 39
	Kodaikanal	E	iP	23 46 14	2665	Moderate.
			iS	23 50 28		Initial movement
			L_R	23 52 14		of P towards
			M	23 54 14		E
						Per.= 7.5 secs. μ = 3.0
	Colombo	E	P	23 46 19		
			S	23 50 46		
			L	23 58 --		
			M	23 58 49		Amp.=0.6 mm.
15	Calcutta	E	e	04 29 17		Slight,near
			i	04 30 11		
15	Calcutta	E	e	04 55 16		Slight.Distant
			i	04 57 02		
			i	04 58 56		
			i	05 00 54		
	Bombay	N,E	e	05 05 --		Very feeble.
15	New Delhi	E	eP	17 39 30	480	Slight
			PPP	17 39 44		
		N,E	eS	17 40 21		
			SSS	17 40 41		
			S	17 40 44		

			PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
1951						
16	Epc:- 31.0° N, 137.0° E.		South of Honshu			Japan. h = about 500 Km.
			O = 19h. 52m. 56s. (U.S.C.G.S.)			
	Calcutta	E	i	20 00 29		
			i	20 01 54		
	New Delhi	N,E	eP	20 01 20	5120	Moderate.Deep focus.
			iS	20 08 06		
		N	PPS	20 08 24		
		N,E	i	20 10 16		
		N	e	20 10 54		
			e	20 11 45		
			i	20 13 30		
			i	20 14 39		
	Poona	Z,E	eP	20 02 07	6280	Slight.
		E	pP	20 03 04		
			sP	20 03 41		
			PP	20 04 00		
			PPP	20 04 57		
			ScP	20 06 34		
			iS	20 09 35		
			PS	20 09 42		
			PPS	20 09 52		
			sS	20 11 07		
			SS	20 12 54		
			SSS	20 14 58		
	Colombo	E	P	20 02 09		
			S	20 09 39		
	Bombay	N,E	eP	20 02 12		Slight.
			esP	20 03 48		
			PP	20 04 09		
			iS	20 09 41		
			isS	20 11 16		
	Kodaikanal	E	e	20 02 18		Tremor.
	Hyderabad	E	e	20 08 50		
18	Bombay	E	e	12 39 --		Very feeble.
		N	Trace too thick.			
	Poona	Z	eP	12 40 34	2500	Slight
		E	PP	12 41 10		
			PPP	12 41 22		
			iS	12 44 42		
			L_Q	12 45 09		
			L_R	12 46 17		
			M	12 47 54		
19	Chatra	N,E	i	23 26 37		Very near.
			i	23 26 48		Slight.
22	Epc:- 28.7° N, 94.4 E		(Off the NE border of Assam)			
			O = 03h. 37m. 38s. (Poona)			
	Chatra	N,E,Z	eP	03 39 25	790	Moderate.
		N,E	PP	03 39 33		
			PPP	03 39 38		
			P*	03 39 41		
			Pg	03 39 58		
			L_Q	03 40 35		
			iS	03 40 47		
			L_R	03 40 56		
			SS	03 40 58		
			SSS	03 41 10		

		COMPT.	PHASE	G. M. T.	△	REMARKS.
April 1951.				h. m. s.	Km.	
22(cont.)						
	Chatra (cont.)	N,E	S*	03 41 12		
		N	M)	03 41 33		Per.= 0.8 sec.
			)			Amp. 32.0mm.
		E	M)			Per.= 0.8 secs.
						Amp.= 27.0 mm.
	Calcutta	E	eP	03 39 36	845	Moderate
			iS	03 41 04		
			iS	03 41 49		
	New Delhi	N,E	eP	03 41 14	1630	Slight.
			L_Q	03 43 51		
			iS	03 43 58		
		N	Ss	03 44 13		
			M	03 45 58		
	Hyderabad	N	iP	03 41 58	2150	
			iS	03 45 31		
		E	L	03 47 32		
			M	03 48 48		Per.= 12 secs.
						μ = 11
	Poona	Z,E	iP	03 42 32	2400	Moderate
		E	i	03 42 42		
			PP	03 42 54		
			PPP	03 43 04		
			PcP	03 46 21		
			iS	03 46 27		
			i	03 46 35		
			L_Q	03 46 45		
			SS	03 47 11		
			SSS	03 47 24		
			L_R	03 47 52		
			Ml	03 49 05		
		N	Mn	03 49 12		Per.= 5 secs.
		E	Sc P	03 49 32		μ = 18.0
			M_2	03 50 44		
			ScS	03 52 58		
	Bombay	N,E	eP	03 42 39	2520	Moderate.
			PPP	03 43 25		
			eS	03 46 39		
			L_Q	03 47 17		
			L_R	03 48 17		
	Kodaikanal	E	eP	03 43 04	2745	Slight.
			iS	03 47 25		Initial move-
			L_R	03 49 19		ment of P
			M	03 51 22		towards E
22	Chatra	Z	i)	05 44 12		Slight,near
		N,E	e)			
22	Chatra	Z	i)	21 39 16		Feeble,near
		N,E	e)			
23	Chatra	N	e	02 39 47		Feeble
23	Bombay	N,E	e	07 08 --		Feeble,Distant.
			e	07 19 21		
23	Chatra	N	e	08 07 45		Feeble.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
April 1951.				h. m. s.	Km.	
23	Chatra	N	e	08 43 54		Feeble.
23	Bombay	N,E	e	12 07 --		Feeble.
		E	e	12 15 05		
	New Delhi	N,E	eP	12 07 03		Slight.Near.
			i	12 07 13		
23	New Delhi	E	e	13 36 19		Slight
			i	13 36 23		
	Bombay	N,E	e	13 40 --		Feeble.
24	Calcutta	N	eP	19 46 33	300	Slight
			iS	19 47 06		
			iS	19 47 17		
	Chatra	N	e	19 46 41		Feeble.
26	New Delhi	N,E	0 iP	00 12 55	110	Slight
			iS	00 13 08		
	Poona	Z	iP	00 14 51	960	Slight
			iS	00 16 30		
	Bombay	N,E	e	00 17 29		Feeble,near
26	New Delhi	E	e	06 48 16		Slight,near.
			i	06 49 52		
27	New Delhi	N,E	eP	15 20 29	940	Slight.
		E	PP	15 20 37		
			L_Q	15 21 53		
			eS	15 22 06		
			SS	15 22 19		
28	Chatra	N	e	07 00 15		Feeble
28	Bombay	N,E	e	08 27 --		Feeble, surface waves
28	Chatra	N	e	09 37 55		Feeble
29	Bombay	N,E	e	08 10 --		Very feeble.
29	Epc:-	Celebes region.		0 = 19h. 35m. 00s.(U.S.C.G.S.)		
	Poona	Z	iP	19 44 18	4520	Slight.
		E	Pcp	19 45 13		
			PP	19 46 13		
			PPP	19 47 07		
			i	19 47 43		
			eS	19 50 29		
			i	19 51 53		
	Bombay	N,E	eP?	19 44 26		Very feeble.
			e	19 53 07		
30	Epc:- 8°.0 S, 153°.0 E.			0 = 15h. 28m. 00s. (U.S.C.G.S.)		
				0 = 15h. 28m. 12s. (Poona).		
	Calcutta	E	eP	15 39 33	8290	Moderate.Deep
			iS	15 48 46		focus
			iSS	15 50 26		Focal depth about 220 Km.

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
April 1951.				h. m. s.	Km.	
30 (cont.)						
	Colombo	E	P	15 39 56		
			S	15 49 36		
			L	16 07 49		
			M	16 12 56		Amp.= 0.5
	Poona	Z,E	iP	15 40 36	9130	Moderate
		E	PcP	15 40 40		
			PP	15 43 54		
			PPP	1545 43		
			SKS	15 50 43		
			eS	15 50 51		
			ScS	15 50 58		
			PS	15 52 08		
			SS	15 56 21		
			SSS	15 59 50		
	Kodaikanal	E	iP	15 40 10		Slight.Initial
			S?	15 50 22		movements of
			M	16 12 25		P towards E
	New Delhi	N,E	eP	15 40 32	4020	Moderate.
		N	PP	15 43 41		
			iS	15 50 42		
			PPS	15 51 40		
			i	15 53 50		
			SS	15 56 01		
			SSS	15 59 10		
			L_Q	16 01 33		
			L_R	16 05 46		
			M	16 13 01		
	Bombay	N,E	eP	15 40 41	9220	Moderate
			PP	15 43 52		
			iS	15 51 03		
			iPS	15 51 45		
			iPPS	15 52 17		
		E	SS	15 56 23		
		N	SS	15 56 41		
		E	L_Q	16 02 38		
		N	L_Q	16 03 12		
		E	L_R	16 06 28		
		N	L_R	16 07 31		
		E	M	16 23 42		Per.= 18 secs. μ = 6
		N	M	16 25 18		Per.= 19 secs. μ = 7

M.L.P.
14-11-51

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

S E I S M O L O G I C A L B U L L E T I N

May, 1951

Published under the direction of

V.V. SOHONI, B.A.(Hons.), M.Sc.

Director General of Observatories

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nts and their constants.

Station	Instrument	Compt.	Period in secs.	Static Magnification	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	19:1	8.0
	Milne-Shaw	E	12	350	11:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Wood-Anderson	N	2	870	Critical	30.0
	Omori-Ewing	N	18	32	-	25.4
	Omori-Ewing	E	19	30	-	25.4
Chatra	Wood-Anderson	N	1	995	22:1	60.0
	Wood-Anderson (7th to 31st May)	E	1	995	24:1	60.0
	Benioff	Z	0.45		-	60.0
	Milne-Shaw	N	10	150	20:1	16.0
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	25 -	-
Hyderabad	Milne-Shaw	E	12	242	20:1	8.0
	Milne-Shaw	N	12	268	20:1	8.0
Kodaikanal	Milne-Shaw	E	1	250	20:1	18.0
New Delhi	Milne-Shaw	N	12	299	20:1	8.0
	Wood-Anderson	N	4	1000	20:1	16.0
	Wood-Anderson	E	2	1700	30:1	60.0
	W Omori-Ewing	E	30	30	1	12.0
Poona	Milne-Shaw	N	12	250	20:1	8.0
	Wood-Anderson	E	4	1100	20:1	16.0
	Benioff		To= 1	Tg = 0.28	-	60.0
	Sprengnether	E	7.2	-	-	30.0

New Delhi seismographs dismantled on 9th May for repair of basement room

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
May 1951.						
1	Epc:- 50°.5 S, 149°.0 E.			0 = 05h. 02m. 41s.(U.S.C.G.S.)		
				0 = 05h. 03m. 23s.(Poona)		
	Colombo	E	P	05 15 05	9110	
			S	05 25 20		
			M	05 37 10		Amp.=1.0 mm.
	Kodaikanal	E	e	05 15 25		Distant . Phase not clear.
	Chatra	Z	e(P)?	05 15 38		(Moderate)
		N	e	05 16 01		
			e(S)?	05 26 32		
	Calcutta	E	eP?	05 16 06	9890	Moderate.
			PP	05 19 25		
			iS	05 26 37		
			SS	05 32 15		
	Poona	E	iP	05 16 06	10445	Moderate
			SKS	05 26 33		
			S	05 27 26		
			PS	05 29 05		
			PPS	05 29 32		
			SS	05 33 35		
			SSS	05 37 02		
		N	Mn	05 53 24		Per. = 17 secs. μ = 20.
	Bombay	N,E	eP	05 16 12	10555	Moderate.
			PP	05 19 56		
			eSKS$_1$	05 26 42		
		E	eS)	05 27 30		
		N	iS)			
		N,E	SS	05 33 39		
		E	L_Q	05 41 43		
		N	L_Q	05 42 14		
		E	M	05 56 33		Per.= 16 secs. μ = 7
		N	M	05 57 44		Per. = 19 secs. μ = 15
	New Delhi	N	eP	05 16 29	1110	Moderate.
			e	05 20 48		
			iSKS	05 27 06		
			iS	05 28 09		
			iPS	05 29 48		
			i	05 33 14		
			iSS	05 35 05		
	Hyderabad	E	S	05 26 23		
			M	05 41 49		Per. = 21 secs. μ = 18
2	Epc:- 42°.0 S, 30°.0 E Indian Ocean.			0 = 16h. 17m. 01s (U.S.C.G.S.).		
	Calcutta	E	e	16 26 08		Moderate. Distant
			e	16 31 24		
			iS	16 36 23		
			i	16 38 40		
			Mn$_1$	16 52 48		
			Mn$_2$	16 52 28		
	Colombo	E	eP	16 26 34		
			S	16 32 54		
			L	16 40 29		
			M	16 45 26		Amp.= 0.7 mm.
	Poona	N,Z	eP	16 27 10	6750	Moderate.
		N	iS	16 35 27		
			PS	16 35 34		
			PPS	16 35 42		
			SS	16 39 29		
			L_Q	16 42 41		

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
May 1951.				h. m. s.	Km.	
2 (cont.)						
	Poona (cont.)	N	L_R	16 45 20		
			M	16 50 30		Per.= 17 secs. μ = 21 .
	Bombay	E	eP	16 27 18	6780	Moderate.
		N	NP	16 27 --		Times of L_Q, L_R and M in the N compt. approximate due to the absence of time -marks.
		N,E	ePP	16 29 30		
			eS	16 35 37		
			SS	16 39 23		
		N	L_Q	16 42 22		
		E	L_Q	16 42 27		
		N	L_R	16 45 40		
		E	L_R	16 45 53		
			M	16 50 15		Per.= 14 secs. μ = 7
		N	M	16 50 22		Per.= 16 secs. μ = 16
	Kodaikanal	E	eP	16 27 24	4665	Slight
			eS	16 33 44		
			L_R	16 38 56		
			M	16 42 20		Per.= 18 secs. μ = 33.
	Hyderabad	N	eP?	16 27 33	6555	
			iS	16 35 04		
			L	16 43 07		
			M	16 46 28		Per.= 19 secs. μ = 58
	Chatra	N,Z	e	16 28 05		Distant.
	New Delhi	N,E	eP	16 28 12	7780	Slight.
			S	16 37 24		
			PS	16 37 49		
			iSS	16 41 59		
			Mn	16 55 21		Per.= 19 secs. μ = 45.
3	Hyderabad	N	M	15 16 45		Per.= 13 secs. μ = 3.
4	Epc:- 44°.0 N, 142°.0E (Japan)			h = 200kms.		O = 11h. 53m. 05s. (U.S.C.G.S.) O = 11h. 53m. 08s.(Poona)
	Chatra	N	eP	12 01 25	5220	
			iS	12 07 57		
			eS	12 07 57		
			esS	12 09 25		
	New Delhi	N,E	eP	12 02 09	5890	Moderate.Deep focus.
			iS	12 09 22		
			isS	12 10 51		
			e	12 11 29		
			eSS	12 13 12		
	Poona	Z	eP	12 03 08	6890	Feeble,distant, deep focus.
		E	iS	12 11 10		
			iScS	12 12 46		
			SS	12 14 23		
	Bombay	E	eP	12 03 13	6940	Feeble
			eS	12 11 29		
			iScS	12 12 55		
		N	Loss of record.			
	Hyderabad	E	M	12 10 39		Per.= 8 secs. μ = 3
6	Hyderabad	N	M	00 32 28		Per.= 18 secs. μ = 4
7	Bombay	N,E	e	00 17 --		Feeble surface waves.

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ Km.	REMARKS.
May 1951. 7	Chatra	N	eP	19 16 55	890	Slight.P.T.I. reports Sadia
			Lq	19 18 16		rocked. No
			iS	19 18 27		damage reported.
			SS	19 18 39		
			SSS	19 18 47		
			S*	19 18 58		
			Sg	19 19 14		
	Calcutta	N	eP	19 18 53	710	Slight.
			iP	19 19 25		
			iS	19 20 07		
			iSS	19 20 18		
			iS*	19 20 31		
			iS	19 20 46		
	Bombay	N,E	e	19 27 --		Very feeble.
8	Chatra	N		08 15 40		Tremor.
8	Chatra	N	e	08 45 13		Tremor
8	Bombay	E	e	21 31 --		Very feeble, surface waves
		N	Loss of record due to thickness of trace.			
10	Epc:- 21°.0 S, 33°.0 E		Southern Mazambigue 0 = 09h. 18m. 25s. (U.S.C.G.S.) 0 = 09h. 18m. 30s. (Poona)			
	26°.0 S, 40°.0 E					
	Colombo	E	P?	09 26 51	5665	
			S	09 35 21		
			L	09 44 --		
			M	09 50 36		Amp.=0.4 mm
			e	09 27 47		Tremor
	Kodaikanal	E	eP	09 28 01	6055	Slight.
	Bombay	N,E	PP	09 30 06		
			eS	09 35 38		
			ScS	09 37 48		
			SS	09 39 27		
		N	M	09 46 58		Per.= 21 secs. μ = 5
		E	M	09 47 10		Per.= 22 secs. μ = 11
	Poona	E	P	09 28 05	6120	Slight
			S	09 35 47		
	Hyderabad	N	eP	09 28 24		
			M	09 48 01		Per. 16 secs. μ = 6
	Chatra	N	eP	09 29 40	7665	Slight.
			eS	09 38 45		
			M	09 57 30		
10	Chatra	N,Z	e	15 00 49		Slight.
		N	e	15 04 42		
	Calcutta	E	i	15 05 03		Slight,near.
			i	15 06 05		
			Mn	15 10 04		
	Bombay	N,E	eP	15 07 52		Feeble
			e	15 09 33		
		N	i	15 13 09		
		E	e			
	Hyderabad	N	M	15 10 57		Per. 15 secs. μ = 6
10	Bombay	N,E	e	20 31 --		Feeble.
10	Bombay	N,E	e	22 47 --		Feeble. Surface waves.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
May 1951.						
11	Hyderabad	E	M	22 54 48		Per.= 18 secs. μ = 4
11	Calcutta	N	i	15 44 14		Slight,near
11	Chatra	Z	iP	16 31 48	710	Slight.
		N,E	eP			
		Z	PP	16 31 54		
			P*	16 32 02		
			Pg	16 32 18		
			L_Q	16 32 50		
		N,Z	iS	16 33 02		
		E	eS			
		N,Z	L_R	16 33 08		
			SS	16 33 13		
			S*	16 33 23		
			Sg	16 33 39		
	Bombay	E	e	16 34 --		Feeble surface waves
		N	Loss of record.			
12	Chatra	Z	i	13 52 50		Feeble,near
		N,E	e			
12	Epc:- Near 39°.0 N, 71°.0 E			0 = 22h. 08m. 03s. (Poona)		
	Chatra	N,EZ	eP	22 12 07		Slight.
		N	e	22 15 --		
	Bombay	N,E	eP	22 12 40	2265	Moderate.
			PPP	22 13 05		
			eS	22 16 21		
		E	L_R	22 17 14		
		N	L_R	22 17 34		
			M	22 20 40		Per.= 11 secs. μ = 5
		E	M	22 21 19		Per.= 10 secs. μ = 3
	Poona	E	eP	22 12 43	2250	Moderate.
			iS	22 16 26		
	Calcutta	E	eP	22 13 05	2480	Slight.
			PP	22 13 32		
			I iS	22 17 06		
			SS	22 17 50		
			L_R	22 18 32		
			PcS	22 20 33		
	Kodaikanal	E	e	22 19 48		Slight.
13	Colombo	E	P	04 12 37		
			S	04 17 21		
			L	04 20 49		
			M	04 23 21		Amp.=2.0 mm
13	Kodaikanal	E	e	08 36 52		Tremor.
14	Epc:- 31°.0 N, 70°.0 E .			North-Eastern Baluchistan 0 = 04h. 07m. 22s. (Poona)		
	30°.0 N, 70°.0 E.			North-Eastern Baluchistan . 0 = 04h.07m. 34s.(U.S.C.G.S.).		
	Bombay	N,E	eP	04 10 17	1280	Moderate.
		N	iPPP	04 10 35		
		E	ePPP			
		N,E	eS	04 12 24		
		N	L_R	04 12 51		

				h. m. s.	Km.	
14 (cont.)						
	Bombay (cont.)	N E	L_R	04 12 54		
		N	M	04 20 13		Per.= 7 secs. μ = 10
		E	M	04 22 25		Per.= 8 secs. μ = 14
	Poona	Z	iP	04 10 24	1490	Moderate
		E	L_Q	04 12 39		
			S	04 12 45		
			SS	04 12 59		
			SSS	04 13 15		
			M	04 14 20		
			PcP	04 15 59		
			ScP	04 19 05		
	Hyderabad	N	eP	04 11 03	1690	
			eS	04 13 53		
			L	04 15 20		
			M	04 16 59		Per.= 12 secs. μ = 49
	Calcutta	E	eP	04 11 43	2035	Moderate.
			iS	04 15 05		
			iSS	04 15 09		
			iSSS	04 15 44		
			L	04 16 04		
			M	04 17 23		
	Chatra	N,E,Z.	eP	04 11 10	1750	Moderate
		Z	PP	04 11 23		
		N,Z	PPP	04 11 30		
		N,E,Z	L_Q	04 14 03		
			iS	04 14 06		
			SS	04 14 26		
			SSS	04 14 37		
			L_R	04 14 53		
		N	M	04 16 10		Per.= 5 sec. Amp.= 7.0 mm
		E	M			Per.= 0.5 secs. Amp.= 5.0 mm.
		N	M			Per = 2.0 secs. Amp.= 9.0 mm
	Kodaikanal	E	iP	04 12 20	2335	Slight.
			iS	04 16 21		
			L	04 17 35		
			M	04 19 20		Per.= 9 secs. μ = 25
15	Epc:- 21.0° S, 21 69.5° W. 0 = 05h. 18m. 46s. h = 100 Kms. ± (U.S.C.G.S.)					
	Bombay	N,E	ePKP1	05 38 12	16055	Feeble.
			ePP	05 41 29		
	Poona	Z	iPKP1	05 38 15	17000	Slight
		E	PKP2	05 38 32		
			PP	05 41 35		
15	Bombay	N,E	eP	09 59 03	7245?	Feeble
		E	eS?	10 07 47		
		N,E	i	10 09 14		
15	Bombay	E	e	11 35 03		Feeble
		N,E	i	11 45 11		
16	Kodaikanal	E	e	14 14 31		Tremor.
	Poona	Z	iP	14 15 39	5910	Slight.
		E	iS	14 23 09		
	Hyderabad	E	M	14 22 05		Per.= 25 secs. μ = 9

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
May 1951				h. m. s.	Km.	
16 (cont.)						
	Bombay	N E	e i	14 23 24		Feeble.
		N,E	e	14 25 32		
18	Bombay	N,E	e	01 04 01		Feeble
20	Colombo	E	P	19 09 19		
			L	19 09 26		
			M	19 31 21		Amp.= 0.2 mm.
	Kodaikanal	E	e	19 12 51		Tremor.
	Bombay	E	e	19 18 --		Feeble surface waves
		N	Loss of record.			
	Hyderabad	N	M	19 27 18		Per.= 22 secs. μ = 7
21	Epc:- 11.0° S, 154.0° E .			0 = 08h. 27m. 24s. h = 100 Km. ± (Poona)		
	Calcutta	E	iP	08 38 26	7920	Moderate, first movement West.
			iS	08 47 32		
			isS	08 48 31		Deep focus. Focal depth 105 kms.
	Chatra	N	eP	08 38 36	8220	Moderate. Deep focus
			iS	08 47 55		
			PPS	08 48 30		
			isS	08 48 52		
	Colombo	E	P	08 38 53	8380	
			S	08 48 21		
			L	09 02 --		
			M	09 07 51		Amp.= 0.3 mm.
	Hyderabad	E	iP	08 39 10	8665	
			iS	08 48 51		
			L	09 04 23		
			M	09 11 00		Per.= 19 secs. μ = 6
	Kodaikanal	E	iP	08 39 10	8665	Slight
			PP	08 42 02		
			PPP	08 43 47		
			S	08 48 50		
			SS	08 53 45		
			SSS	08 56 50		
			L_Q	08 59 10		
			L_R	09 02 42		
	Poona	E	iP	08 39 36	9220	Slight.
			pP	08 40 09		
			iS	08 49 41		
			i	08 50 30		
			sS	08 50 41		
	Bombay	N E	eP iP	08 39 40	9280	Slight
		E	PPP	08 43 49		
		N,E	iS	08 49 49		
		E	PS	08 50 39		
		N	PS	08 50 38		
		E	PPS	08 51 17		
		N	PPS	08 51 35		
			L_R	09 04 39		
		E	L_R	09 04 51		
		N	M	09 40 37		Per.= 15 secs. μ = 4
		E	M	09 40 41		Per.= 17 secs. μ = 2

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
May 1951				h. m. s.	Km.	
22	Epc:- 9°.0 N, 49°.5 E		O = 19h. 29m. 50s.		(Poona).	
	Bombay	N,E	iP	19 35 12	2700	Slight.
			PP	19 35 37		
			eS	19 39 30		
			L_Q	19 40 00		
		E	SS	19 40 13		
		N	SS	19 40 17		
		E	L_R	19 41 12		
		N	L_R	19 41 29		
			M	19 44 13		Per.= 13 secs. μ = 4
		E	M	19 45 11		Per.= 11 secs. μ = 3
	Poona	Z,E,N	iP	19 35 23	2860	Moderate.
		E	iS	19 39 50		Deep focus.
			L_Q	19 40 53		
			SS	19 41 08		
			SSS	19 41 23		
			L_R	19 42 14		
		N	M	19 45 --		
			ScS	19 40 07		
	Kodaikanal	E	iP	19 35 41	3060	
			iS	19 39 41		
	Hyderabad	N	eP	19 35 49		
			iS?	19 40 02		
			L	19 41 27		
			M	19 44 40		Per.= 16 secs. μ = 5
	Colombo	E	P	19 36 08	3390	
			S?	19 40 32		
			L	19 45 20		
			M	19 50 15		Amp.=0.2mm.
	Chatra	Z	e	19 37 44		Feeble.Surface
		N	e	19 40 30		waves
23	Bombay	N,E	e	07 05 --		Very feeble.
23	Chatra	Z	iP)	10 42 03	920	Slight.
		N,E	eP)			
		Z	PP	10 42 08		
			PPP	10 42 15		
			P*	10 42 26		
			Pg	10 42 45		
			L_Q	10 43 28		
			iS	10 43 38		
			SS	10 43 52		
			SSS	10 44 03		
			S*	10 44 13		
			Sg	10 44 28		
	Calcutta	E	i	10 44 36		Slight,near.
			i	10 45 17		
	Bombay	N,E	eP	10 49 31		Feeble
			e	10 53 27		
27	Chatra	Z	i(P?)	13 00 30		Slight
			i(S?)	13 01 46		
28	Bombay	E	e	13 30 --		Very feeble.

		T.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
May 1951 28	Epc:- 27°.6 N, 85°.0 E in Nepal			0 = 15h. 59m. 29s. (Poona)		
	Chatra	Z	iP	16 00 02		Moderate. Shock. Locally felt by a few very sensitive people.
		N,E	eP			
			P*	16 00 04		
			Pg	16 00 09		
			PPP	16 00 15		
			iS	16 00 31		
			S*	16 00 33		
			Sg	16 00 36		
			SS	16 00 41		
			SSS	16 00 52		
	Calcutta	E	eP	16 01 01	670	Moderate
			iP	16 01 29		
			iS	16 02 09		
			iS	16 02 47		
	Hyderabad	N	iP	16 02 37	1370	
			iS	16 04 56		
			L	16 06 03		
			M	16 06 36		Per.= 9 secs. μ = 29
	Poona	Z, E	iP	16 03 02	1645	Moderate
		E	PP	16 03 16		
			PPP	16 03 22		
			L_Q	16 03 46		
			iS	16 05 48		
			SS	16 05 58		
			SSS	16 06 19		
			L_R	16 06 25		
			M	16 06 40		Per.= 9 secs. μ = 28
	Bombay	E	iP	16 03 10	1735	Moderate.
		N	eP			
		N,E	PP	16 03 21		
		E	iS	16 06 01		
		N	eS			
		N,E	SS	16 06 18		
			L_R	16 06 32		
		N	M	16 10 26		Per.= 7 secs. μ = 39
		E	M	Record too faint.		
	Kodaikanal	E	iP	16 04 02	2420	Moderate
			iS	16 07 59		
			L_Q	16 08 57		
			L_R	16 09 27		
			M	16 11 04		Per.= 12 secs. μ = 17.1
	Colombo	E	P	16 04 28		
			S	16 08 45		
			L	16 11 33		
			M	16 12 38		Amp.= 0.5 mm.
28	Chatra	Z	iP)P	19 10 00		Slight. After shock of the shock at 16h. 00m. 02s.
		N,E	eP)			
			iS	19 10 28		
	50 after shocks ranging from slightish to very feeble in intensity have been recorded by Benioff Vertical Seismograph during next fortyeight hours.					
	Calcutta	E	e	19 12 00		Slight,near
			i	19 12 54		
	Bombay	N,E	e	19 18 --		Very feeble. Surface waves

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
May 1951				h. m. s.	Km.	
28	Calcutta	E	i	20 19 56		Tremor
			i	20 20 23		
29	Epc:- 3	3.0° S, 138.5° E		0 = 06h. 03m. 06s. (U.S.C.G.S.)		
				0 = 06h. 03m. 13s. (Poona)		
	Colombo	E	P	06 13 15		
			S	06 21 37		
			L	06 32 --		
			M	06 37 18		Amp. 0.2 mm.
	Kodaikanal	E	e	06 13 33		Tremor.
	Poona	Z,N,E	iP	06 14 12	7480	Moderate.
		E	PcP	06 14 42		
			PP	06 16 51		
			PPP	06 18 26		
			iS	06 23 07		
			PS	06 23 26		
			PPS	06 23 40		
			ScS	06 27 08		
			SSS	06 29 59		
			L_Q	06 30 58		
	Bombay	E	eP	06 14 22	7620	Slight.
		N,E	eS	06 23 25		
		E	SS	06 27 38		
			L_Q	06 32 29		
			M	06 48 37		Per. = 17 secs. μ = 4
		N	Phases not clear due to thickness of trace.			
	Hyderabad	N	e	06 22 21		
			M	06 44 06		Per.= 18 secs. μ = 5
30	Bombay	N,E	e	04 01 --		Very feeble.
30			0 = 19h. 57m.21s. (Poona)			
	Hyderabad	N	e?	20 00 56		
			S	20 06 11		
			M	20 26 26		Per.= 10 secs. μ = 7
	Kodaikanal	E	iP	20 06 00	5620	Slight.
			PP	20 07 55		
			PPP	20 08 54		
			iS	20 13 15		
			SS	20 16 52		
			L_Q	20 18 15		
			M	20 24 55		
	Poona	Z	iP	20 06 44	5925	Moderate.Deep focus
			iS	20 14 15		
	Bombay	E	iP	20 06 53	6245	Moderate.Times of phases in N compt. approximate on account of the absence of time-marks.
		N	eP			
		N,E	PcP	20 07 36		
			PP	20 08 57		
			iS	20 14 43		
		N	SS	20 18 24		
		E	SS	20 18 31		
		N	L_Q	20 21 09		
		E	L_Q	20 21 20		
		N	L_R	20 23 42		
		E	L_R	20 23 45		

	STN.	COMPT.	PHASE	G. M. T.	△	REMARKS.
May 1951.				h. m. s.	Km.	
3031	Epc:- 19.0° N, 121.0° E			Felt in northern Luzon.		
	Slight property damage			O = 20h. 56m. 12s. (U.S.C.G.S.)		
				h = 100 Kms.		
				O = 20h. 56m. 12s. (Poona).		
	Calcutta	E	iP	21 02 05	2940	Moderate.
			iS	21 06 37		First movement
			iSs	21 07 46		east.
			L	21 08 43		
			PcS	21 09 14		
			M	21 11 05		
	Chatra	N	eP	21 02 24	3860	Slight.
			eS	21 07 54		
			pcS	21 08 46		
			L_Q	21 09 43		
			SSS	21 10 39		
			L_R	21 11 27		
			ScS	21 12 39		
			M	21 14 39		Per.= 15 secs. Amp.= 2.5 mm
	Colombo	E	P	21 03 42		
			S	21 09 59		
			L	21 19 --		
			M	21 21 34		Amp.= 0.3 mm.
	Poona	Z,E	iP	21 04 06	4640	Moderate.
		E	PP	21 05 53		
			PPP	21 06 41		
			iS	21 10 25		
			PS	21 10 32		
			PPS	21 10 36		
			SS	21 13 51		
			ScS	21 14 10		
			L_Q	21 14 30		
			SSS	21 14 41		
			L_R	21 16 42		
			M	21 20 28		
	Bombay	E	iP	21 04 13	4955	Moderate.
		N	eP			
		E	iPP	21 06 03		
		N	ePP			
		E	iS	21 10 49		
		N	eS			
		N,E	SS	21 14 01		
			L_Q	21 14 51		
			L_R	21 16 52		
		N	M	21 23 32		Per.= 13 secs. μ = 8
		E	M	21 28 32		Per.= 13 secs. μ = 10
	Hyderabad	N	e	21 09 34		
			M	21 12 56		Per.= 18 secs. μ = 20.

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GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

June, 1951.

Published under the direction of

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Director General of Observatories.

Instruments and their constants.

Station	Instrument	Compt.	Period in secs.	Static Magnification	Damping Ratio	Paper Speed. mm/min.
Bombay	Milne-Shaw	N	12	250	26:1	8.0
	Milne-Shaw	E	12	350	6:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Wood-Anderson	N	2	870	Critical	30.0
	Omori-Ewing	N	18	32	-	25.4
	Omori-Ewing	E	19	30	-	25.4
Chatra	Wood-Anderson	N	1	995	22:1	60.0
	Wood-Anderson	E	1	995	22:1	60.0
	Milne-Shaw	N	10	150	20:1	16.0
	Benioff	Z	.45	-	-	60.0
Colombo	Milne-Shaw	E	12	250	17:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	242	20:1	8.0
	Milne-Shaw	N	12	268	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0
New Delhi	Milne-Shaw	N	12	288	20:1	8.0
	Wood-Anderson	N(from 18 to 29)	4	1000	8:1	16.0
		29 to 30)	4	1000	20:1	16.0
	Wood-Anderson	E	2	2000	30:1	60.0
	Omori-Ewing	E	-	-	1	12.0
Poona	Milne-Shaw	N	12	250	20:1	8.0
	Wood-Anderson	E	4	2251100	20:1	16.0
	Sprengnether	E	- 7.2	-	-	30.0
	Benioff	Z	To = 1	Tg.=0.28		60.0

New Delhi seismographs were reinstalled on 18th June 51, after completion of the repairs of the basement room.

	MPT.		PHASE	G. M. T.	△	REMARKS.
June 1951.				h. m. s.	Km.	
1	Bombay	E	eP	16 34 44		Feeble.
			e	16 44 31		
		N	Phases not identifiable due to thickness of trace.			
2	Epc:- 7.0° N, 117.0° E,			0 = 06h. 47m. 52s. (U.S.C.G.S.)		
	3.0° N, 116.0° E			0 = 06h. 47m. 52s. (Poona).		
	Calcutta	N	eP?	06 54 40	3665	Slight.
			PP	06 55 44		
			iS	06 59 48		
	Chatra	N	e	06 54 46		Slight.Distant.
			e	07 00 11		Feeble surface
			i	07 05 11		waves.
			e	07 08 45		
	Hyderabad	E	eP	06 55 21	4290	
			PP	06 56 54		
			iS	07 01 21		
			L	07 07 47		
			M	07 09 42		Per.= 18 secs. μ = 8
		N	M	07 09 44		Per.= 18 secs. μ = 9
	Kodaikanal	E	iP	06 55 26	4255	Slight. Initial
			PP	06 56 56		movement toward
			eS	07 01 21		west.
			L_R	07 06 09		
			M	07 09 17		Per.= 18 secs. μ = 11.
	Poona	E	iP	06 55 59	4780	Moderate.
			iS	07 02 28		
			M	07 20 --		
	Bombay	E	iP	06 56 06	4990	Moderate.
		N	eP			
		N,E	PP	06 57 59		
		E	PPP	06 58 49		
		N,E	iS	07 02 44		
			iSS	07 06 03		
		E	L_R	07 08 55		
		N	L_R	07 09 23		
		E	M	07 15 25		Per.= 20 secs. μ = 8
		N	M	07 16 45		Per.= 16 secs. μ = 7.
	Colombo	E	P	- - -		P over
			S	06 56 --		lapping.
			L	07 06 20		
			M	07 11 58		
3	Calcutta	N	e	18 46 58		Tremor
			i	18 49 16		
			i	18 50 57		
	Chatra	N	e	18 51 00		Feeble surface waves
4	Chatra	Z	iP	06 06 14	170	Slight,near
			iS	06 06 34		
4 *	Chatra	Z	iP	18 02 07	240	Tremor
			iS	18 02 35		
5	Chatra	N,E	eP	03 13 49	170	Slight.
		Z	iP			
		N,E,Z	iS	03 14 09		
5	Bombay	N,E	e	14 12 --		Tremor.

			h. m. s.	Km.	
					Felt in Southern Kynshu, (Japan)
					h = 100 km.
					0 = 16h. 57m. 47s. U.S.C.G.S.)
					0 = 16h. 57m. 58s, (Poona).
Chatra	N,E,Z	eP	17 05 05	4620	Moderate.
	N	PP	17 06 55		
		PPP	17 07 19		
		eS	17 11 00		
		SS	17 13 55		
		ScS	17 14 35		
		L_Q	17 15 03		
		SSS	17 15 29		
		L_R	17 17 28		
	N	M	17 20 52		Per.= 15 Amp.= 5.0 mm.
	N,E	M	17 23 00		Per.= 15 secs. Amp = 1.75 mm
Calcutta	E	eP	17 05 11	4555	Moderate
		PP	17 06 51		
		PcS	17 11 06		
		iS	17 11 24		
		iPS	17 11 36		
		PPS	17 11 44		
		L_R	17 16 51		
		M	17 19 34		
		Mn_1	17 23 46		Per.= 20 secs. μ = 180
		Mn_2	17 27 14		Per.= 16 secs. μ = 75.
Hyderabad	N	eP	17 06 28	5660	
		PP	17 08 35		
		iS	17 13 48		
		L	17 23 01		
		M	17 26 46		Per.= 20 secs. μ = 75
Colombo	E	P	17 06 30		
		S?	17 14 45		
		L	17 23 50		
		M	17 32 00		
Kodaikanal	E	eP	17 06 41		Moderate.
		eS?	17 14 56		
		L_Q	17 21 56		
		L_R	17 24 36		
		M	17 29 50		Per.= 15 secs. μ = 14
Bombay	N,E	eP	17 07 07	5900	Moderate.
		PcP	17 08 05		
		PPP	17 10 27		
	E	iS	17 14 37		
	N	eS			
	E	ScS	17 16 53		
	N	ScS	17 17 10		
	E	SS	17 18 34		
	N	SS	17 19 07		
	E	L_R	17 22 47		
	N	L_R	17 23 12		
		M	17 32 14		Per.= 19 secs. μ = 44
	E	M	17 34 47		Per.= 19 secs. μ = 52
Poona	Z	iP	17 07 08	5720	Moderate
	E	S	17 14 29		
		L_R	17 23 --		
		M	17 27 --		
	N	Mn	17 31 30		Per.= 15.5 secs. μ =40

			PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Km.	
1951						
6	Chatra	Z N,E N,E,Z	iP eP PP Pg L_Q iS SS SSS S* Sg	15 28 28 15 28 38 15 29 04 15 29 42 15 29 53 15 30 03 15 30 15 15 30 20 15 30 38	820	Slight.
	Calcutta	N	eP iS iS* iS	15 30 18 15 31 36 15 31 59 15 32 18	745	Slight.
	Bombay	N,E	e	15 35 --		Very feeble
6	Epc:-	71°.5 N,	8.0 W,0 = 16h. 10m. 52s.		h = 60 Km.(U.S.C.G.S).	
	Chatra	Z N,E N	iP eP eS PS PPS SSS L_Q M	16 21 44 16 31 05 16 31 24 16 31 43 16 38 39 16 40 02 16 53 30	8000	Moderate. Per.= 15 secs. Amp.= 1.0 mm
	Poona	Z E	eP eS SKS ScS	16 21 56 16 31 00 16 31 46 16 31 55	7700	Slight.
	Bombay	N E N,E E N E	eP P eS iPS L_Q L_Q M M	16 22 03 16 22 -- 16 31 17 16 31 40 16 39 32 16 40 25 16 55 40 16 58 58	7835	Slight. Times of phases in N compt. approximate on account of the absence of minute marks. Per.= 17 secs. μ = 6 Per.= 16 secs. μ = 5
	Calcutta	E	eP iSKS iPS iPPS iSS L_Q L_R M Mn	16 22 13 17 32 01 17 32 43 17 32 56 17 36 52 17 42 26 17 46 08 17 52 28 17 58 11	7900	Moderate. Per.= 15 secs. μ = 14
	Hyderabad	N	eP iS PS M	16 22 22 16 31 57 16 32 11 16 53 12	8200	 Per.= 16 secs. μ = 12
		E	M	16 54 12		Per = 16 secs. μ = 9
	Colombo	E	P? S? L M	16 22 24 16 34 19 17 00 49 17 08 34		
	Kodaikanal	E	e?	16 33 10		Feeble.Phases not clear.

			PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Km.	
1951.						
7	Chatra	N,E	eP	23 00 41	570	Slight.
			Pg	23 01 02		
			L_Q	23 01 33		
			iS	23 01 41		
			L_R	23 01 43		
			SS	23 01 51		
			S*	23 01 56		
			SSS	23 02 01		
			Sg	23 02 11		
	Calcutta	N	eP	23 01 41	555	Slight.Felt at Shillong and Tezpur.
			iP	23 02 04		
			iS	23 02 40		
			iS*	23 02 58		
			iS	23 03 10		
	Bombay	N?E	e	23 21 34		Feeble.Distant
	Kodaikanal	E	e?	23 20 20		Feeble.Phases not clear.
9	Bombay	N,E	e	11 27 --		Feeble. Microseisms throughout N and E record.
			eS	11 32 12		
	Hyderabad	N	iS	11 33 04		
			SS	11 34 41		
			L	11 38 25		
			M	11 42 26		Per.= 11 secs. μ = 3
	Chatra	N	e	11 44 --		Feeble surface waves.
9	Chatra	Z N,E N,E,Z	iP eP iS	19 55 06	170	Feeble
10	Hyderabad	N	M	09 34 07		Per.= 17 secs. μ = 5
10	Chatra	Z N,E N,E,Z	iP eP iS	18 38 26 18 38 41	111	Feeble
12	Bombay	E	eP	22 43 54	1710	Slight △ from E compt. Times of phases in N compt. approximate on account of the absence of the minute marks.
		N	eP	22 43 58		
			eS	22 46 34		
		E	iS	22 46 43		
			M	22 49 53	Per.=6 secs. μ = 4	
		N	M	22 52 20		Per.= 9 secs. μ = 4
	Chatra	N,Z N,E	iP eP	22 44 26	1800	Slight. Deep focus.
		N,E,Z	PP	22 44 41		
			PPP	22 44 48		
			L_Q	22 47 23		
			iS	22 47 26		
			SS	22 47 46		
			SSS	22 47 57		
			L_R	22 48 03		
	Hyderabad	N	eP	22 45 12	1990	
			iS	22 48 32		
			L	22 50 24		
			M	22 51 06	Per.= 8 secs., u = 3.	
	Kodaikanal	E	eP?	Times uncertain due to microseism. Tremor.		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
June 1951				h. m. s.	Km.	
13	Poona	Z E	iP eS	04 14 40 04 17 55	1960	Slight. Shock felt in Srinagar and Gulmarg.
14	Chatra	Z	iP iS	18 02 19 18 02 32	100	Feeble.Very near.
14	Chatra	Z N,Z N,E,Z	iP } eP } iS	23 38 31 23 38 49	145	Feeble,near
15	Chatra	Z	i	17 12 05		Feeble,near.
15	Chatra	Z	i	19 35 26		Feeble,near.
15	Chatra	Z	i	23 53 57		Feeble,near.
18	New Delhi	N,E	eP PP eS SS	14 59 02 14 59 09 15 00 22 15 00 34	890	Slight.
	Bombay	E N	i Loss of record.	15 06 53		Feeble. Tremor.
	Chatra	N	e	15 33 --		Feeble surface waves.
20	New Delhi	N,E E N,E E	eP PP u iSS SSS	04 50 16 04 50 24 04 51 02 04 51 12	910	Slight.
20	Epc:- 25°.0 N, 121°.0 E (Felt in northern Formosa) 0 = 21h. 50m. 20s. (U.S.C.G.S.) 0 = 21h. 50m. 39s. (Poona)					
	New Delhi	E N	P(?) eS M	21 57 54 22 03 54 22 12 05	4330	Moderate.
	Poona	Z E	iP eS	21 58 36 21 04 52	4580	Slight.
	Calcutta	E	e i	22 05 13 22 10 03		
	Chatra	N	e	22 10 --		
	Bombay	N N E	P Lost due to thickness of trace eS ? 22 05 27 Record too faint.			Feeble.
21	Bombay	N E	e Record too faint.	00 01 53		Very feeble.
24	D New Delhi	N,E N	eP i i i i	17 01 34 17 01 58 17 11 36 17 12 15 17 12 29		Moderate.Distant
	Bombay	N E N,E	eP? P iSKS1 iS	17 02 09 Mixed up with microseisms. 17 12 03 17 12 46	9555?	Feeble
25	Bombay	E N	e e Phases not identifiable due to thickness of trace.	05 43 21 05 49 40		Very feeble.
	Kodaikanal	E	e?	05 47 20		Tremor
	Hyderabad	E	M	05 52 42	Per.= 14 secs.	μ = 4
		N	M	05 53 06	Per.= 15 secs.	μ = 4

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
June 1951				h. m. s.	Km.	
26	Colombo	E	P	03 49 03		
			M	04 09 59		
	Kodaikanal	E	eP?	03 49 28		Slight,distant.
			eS	03 56 20		
			M	04 06 43		
	New Delhi	N,E	iP	03 50 26	5980	Moderate.
		N	PP	03 52 23		
			PPP	03 53 40		
			iS	03 58 00		
	Bombay	N,E	i	03 58 00		Feeble.
			e	03 58 36		
	Hyderabad	E	M	04 11 47		Per.= 18 secs. μ = 3.
27	Kodaikanal	E	e?	14 59 40		Tremor.
29	Chatra	Z	eP?	04 10 22	845	Slight.
			iS	04 11 29		

The following table contains a list of earthquakes reported by voluntary observers from various stations for the period of April to June 1951.

Place at which felt	Date	G.M.T. of Earthquake h. m.	Duration in secs.	Intensity R.F.Scale	No .of shocks	Remarms.
Gauhati	7-4-51	20 33	15	V	1	
Shillong	7-4-51	20 40	130	VI	1	
Gauhati	7-4-51	20 30	15	V	1	
Krishnagar	7-4-51	20 30	40	VI	2	
Dhubri	7-4-51	20 30	10 and 5	V	2	
Chatra	7-4-51	20 30	2 and 3	V	2	
Berhampore	7-4-51	20 08	few seconds	VI	1	
Mohanbari A.F.	14-4-51	23 42	60	VI	1	Continuous shock
Tezpur	14-4-51	23 43	45	VI	1	Long continuous shock
Gauhati	14-4-51	23 46	15	V	1	
Mohanbari A.F.	22-4-51	03 40	30-40	VI	1	Continuous shock.
Darjeeling	28-4-51	09 39	3	V	2	-Do-
Mohanbari A.F.	7-5-51	19 20	40 - 50	VI	1	-Do-
Gauhati	25-5-51	04 15	10	V	1	
Port Blair	31-5-51	15 50	2	II	2	
Mohanbari A.F.	6-6-51	15 20	30 - 40	VI	2	
Gauhati	7-6-51	22 59	20	VI	1	
Tezpur	7-6-51	23 00	55 - 60	VI	V 1	
Gauhati	7-6-51	23 02	35	V	1	
Srinagar	12-6-51	22 40	2	VII	3	
Gauhati	25-6-51	04 15	1	V	1	

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	Milne-Shaw	E	12	350	5:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Wood-Anderson	N	2	870	critical	30.0
	Omori Ewing	N	18	32	-	25.4
Chatra	Wood-Anderson	N	1	995	22:1	60.0
	Wood-Anderson	N	10	250	20:1	16.0
*	Benioff	Z	0.45	5000		60.0
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	1280	-	-
Hyderabad	Milne-Shaw	N	12	250	20:1	8.0
	Milne-Shaw	E	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0
New Delhi	Milne-Shaw	N	12	288	20:1	8.0
	Wood-Anderson	N	4	1000	20:1	8x2 16.0
	Wood-Anderson	E	2	2000	30:1	60.0
	Omori Ewing	E	30	30	1	12
Poona	Milne-Shaw	N	12	250	20:1	8.0
	Wood-Anderson	E	4	1100	20:1	16.0
	Sprengnether	E	7.2	-	-	30.0
	Benioff	V	To = 1	Tg.= 0.28		60.0
* Chatra	Milne-Shaw	E	1	995	22:1	60.0

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
July 1951				h. m. s.	Km.	
1	Chatra	Z	e	09 14 28		Feeble, near
			i	09 15 13		
1	Chatra	N	e	18 47 46		Feeble surface waves.
	Bombay	N,E	e	18 57 --		Very feeble. Microseisms in N & E record.
2	Chatra	Z	i	05 14 07		Slight distant.
2	Kodaikanal	E	e?	22 46 34		Tremor. Phases not clear.
	Bombay	N,E	e	23 04 --		Very feeble. Pronounced microseisms throughout N & E record.
3			O = 05h. 25m. 12s. (Poona)			
	Bombay	E	iP	05 29 30	3100	Slight. Times of phases in N component approximate on account of the absence of time marks.
		N	P	Mixed with microseisms.		
		E	i	05 30 00		
		N	iS	05 34 08		
		E	iS	05 34 12		
		N	L_Q	05 35 17		
		E	L_Q	05 35 30		
		N	L_R	05 36 26		
		E	L_R	05 36 37		
	Poona	E	iP	05 30 20	2570	Moderate
			PP	05 30 52		
			PPP	05 31 03		
			iS	05 34 28		
			L_Q	Ø5 35 03		
			SS	05 35 22		
			SSS	05 35 39		
			L_R	05 36 10		
			M	05 38 --		
	Chatra	Z	e	05 31 26		Slight. Feeble, surface waves
		N	e	05 44 --		
	Hyderabad	N	e	05 35 29		
			M	05 40 46		Per.= 15 secs. μ = 4
3	Chatra	Z	e	08 56 16		Slight. Feeble surface waves.
			e	09 08 --		
	Hyderabad	N	M	09 04 02		Per.= 9 secs. μ = 2
		E	M	09 04 02		Per.= 10 secs. μ = 2
	Bombay	E	i)	09 05 21		Feeble
		N	e)			
3	Chatra	Z	i	16 47 48		Feeble near

	PT.		PHASE	G. M. T.	Δ	REMARKS.
July				h. m. s.	Km.	
1951						
3	Chatra	Z	i	18 15 09		Slight,feeble surface waves.
3	Bombay	E	eP	18 21 45	3165	Slight.Times of phases in N component approximate due to the absence of time marks.
		N	P Mixed with microseisms.			
		E	i	18 22 15		
		E	iS)	18 26 32		
		N	eS)			
		N	L_Q	18 27 35		
		E	L_Q	18 27 47		
		N	L_R	18 28 43		
		E	L_R	18 28 55		
	Chatra	Z	e	18 23 45		Slight,feeble surface waves.
		N	e	18 35 30		
	Hyderabad	N	M	18 29 38		Per.= 9 secs. μ = 2
		E	M	18 29 59		Per.= 6 secs. μ = 1
4	Chatra	Z	e(P?)	15 04 34		Feeble
			i(S?)	15 06 06		
5	Chatra	Z	i(P?)	02 28 47		
			i(S?)	02 30 04		
5	Epc:- 35°.5N, 83°.0 E, in Tibet. 0 = 09h. 03m. 50s. (Poona).					
	New Delhi	N,E	iP	09 05 59	870	Slight
			PP	09 06 07		
			iS	09 07 29		
			SS	09 07 47		
		E	SSS	09 07 52		
	Chatra	N,E,Z	eP	09 06 19	1090	Slight.
		Z	PP	09 06 27		
			P*	09 06 49		
			L_Q	09 08 00		
		N,E	iS)	09 08 10		
			eS)			
		Z	SS	09 08 22		
			L_R	09 08 29		
		Z	SSS	09 08 34		
		N	Sg	09 09 10		Per.= 7.5 secs. Amp.= 2.25 mm.
		N,E	Sg	09 09 20		Per.= 10.0 secs. Amp.= 1.0 mm.
	Calcutta	E	eP	09 08 07?	2180	Slight.Strong microseisms.
			i	09 11 44		
			i	09 12 10		
			i	09 12 25		
	Poona	Z	iP	09 08 13	2100	Moderate
		E	eS	09 11 41		
			L_Q	09 11 47		
			SS	09 12 07		
			L_R	09 12 42		
			M	09 14 14		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
July 1951.				h. m. s.	Km.	
5 (cont.)						
	Hyderabad	N	iP	09 08 13	2290	
			iS	09 11 59		
			L	09 13 57		
		E	L	09 13 51		
		N	M	09 15 03		Per.= 11 secs. μ = 9
		E	M	09 15 15		Per.= 9 secs. μ = 3
	Bombay	N,E	P	Mixed up with microseisms. Slight tremor		
		E	iS	09 11 44		
		N	eS			
		N	M	09 14 45		Per.= 10 secs. μ = 6
		E	M	09 15 20		Per.= 7 secs. μ = 8
6			O = 22h. 55m. 13s (Poona)			
	Kodaikanal	E	e	22 54 38		Distant.Slight
	Poona	E	eP?	23 00 26		Phases not clear
			iS	23 04 38		
			L_Q	23 05 17		
			SS	23 05 28		
			L_{QR}	23 06 20		
			M	23 08 --		
	Bombay	N,E	e	23 00 45		Feeble.
		E	i	23 04 42		
		N	e			
	Hyderabad	N	M	23 07 14		Per.= 17 secs. μ = 7
		E	M	23 07 18		Per.= 16 secs. μ = 5
18	Epc:- 11°.0 N, 122°.0 E, O = 05h. 44m. 20s. (U.S.C.G.S.)					
	12°.0 N, 123°.0 E, O = 05h. 44m. 22s. (Poona)					
	Calcutta	E	iP	05 51 18	3820	Moderate.First movement East
			iPP	05 52 30		
			iPcP	05 53 55		
			iS	05 56 46		
			SS	05 58 57		
			SSS	05 59 27		
			L_R	06 00 37		
			ScS	06 01 45		
			M	06 03 25		
			Mn_1	06 09 51		Per.= 15 secs. μ = 71
			Mn_2	06 11 35		Per.= 15 secs. μ = 64
			Mn_3	06 13 25		Per.= 15 secs. μ = 54.
	Chatra	N,E,Z	eP	05 51 33	4110	Moderate
		N	PP	05 53 00		
			PPP	05 53 23		
			PcP	05 53 55		
			iS	05 57 19		
		EZ	eS			

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km	
July 1951. 8 (cont.)	Chatra (cont.)	E,Z	PcS	05 57 45		
			L_Q	05 59 17		
			iSS	06 00 08		
			L_R	06 01 18		
		N	M	06 06 --		Per. = 15 secs. Amp. = 2.6 mm.
	Colombo	E	P	05 52 14	4600	
			S	05 58 31		
			L	06 07 --		
			M	06 12 --		Trace faint. Amp.= 3.5 mm.
	Hyderabad	E	iP	05 52 30	4650	
			PP	05 53 39		
			S	05 58 48		
			ScS	06 02 18		
			L	06 04 12		
			M	06 09 12		Per.= 17 secs. μ = 15
			M	06 09 15		Per.= 18 secs. μ = 33
	Kodaikanal	E	iP	05 52 32	4845	Moderate
			PP	05 54 15		
			PPP	05 55 02		
			iS	05 59 02		
			L_Q	06 02 56		
			L_R	06 04 47		
			M	06 08 21		Per.= 21 secs. μ = 22.0
	New Delhi	N,E	P(?)	05 52 47	5020	Moderate. P may be earlier due to the minute marks.
			PP	05 54 38		
			PPP	05 55 18		
			iS	05 59 27		
			iSS	06 01 28		
			SSS	06 03 34		
			M	06 09 47		
	Poona	E	iP	05 52 57	5240	Moderate
			iS	05 59 50		
			PPS	06 00 06		
			SS	06 03 02		
			M	06 16 --		
	Bombay	N,E	eP	05 53 07	5365	Moderate. Times of phases in N component approximate due to the absence of time marks.
		E	iPP	05 55 13		
		N	iPP	05 55 18		
		N	PPP	05 55 53		
		N,E	iS	06 00 06		
		E	SS	06 03 39		
		N	SS	06 03 46		
		E	SSS	06 04 54		
		E	L_R	06 07 10		
		N	L_R	06 07 16		
		E	M	06 15 04		Per.= 17 secs. μ = 12
		N	M	06 21 22		Per.= 14 secs. μ = 8

	STN.	CMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
July 1951.						
9	Epc:- 20°.5 N, 93°.0 E. On the Arakan coast.			0 = 09h. 04m. 09s. (Poona).		
	Calcutta	E	eP	09 05 29	625	Slight.
			PP	09 05 37		
			iS	09 06 34		
			iS*	09 06 53		
			iS	09 07 08		
	Chatra	E,Z	eP	09 06 09	990	Slight.
		Z	PP	09 06 17		
			PPP	09 06 24		
			P*	09 06 31		
			Pg	09 06 52		
			L_Q	09 07 37		
		E	iS)	09 07 50		
			eS)			
		E	SS	09 08 02		
			L_R	09 08 06		
			SSS	09 08 14		
			S*	09 08 24		
		E	Sg	09 06 47		
	New Delhi	N,E	eP	09 08 00	1610	Slight.
		E	PP	09 08 14		
		N,E	eS	09 11 04		
			SS	09 11 19		
	Poona	Z	iP	09 08 27	2045	Slight.
		E	PP	09 08 41		
			PPP	09 08 49		
			S	09 11 50		
			SS	09 12 16		
			SSS	09 12 30		
			L_R	09 12 48		
			M	09 14 20		
			ScP	09 16 13		
			ScS	09 18 50		
	Bombay	E	eP	09 08 51	2220	Feeble.
		N	P	Mixed up with microseisms.		
			eS	09 12 28		
			SS	09 12 56		
11	Epc:- 28°.5N, 139°.5 E. (Bonin Island felt.) 0 = 18h. 22m. 00s. (U.S.C.G.S.) h = 550 Kms.					
	30°.0N, 137°.0 E. 0 = 18h. 22m. 15s. (Poona) h = 475 Kms.					
	Dehra Dun	N	eP	18 27 48		
			eS	18 34 42		
			L	18 44 36		
			M	18 48 00		Per= 24 secs. Amp. = 0.1"
	Chatra	Z	iP }	18 29 37	4360	Moderate
		N,E	eP }			
		N	PP	18 31 12		
			PPP	18 31 38		
			PcP	18 31 53		
			eS	18 35 38		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
July 1951.						
11(cont.)						
	Chatra(cont.)	N	SS	18 38 27		
			L_R	18 44 34		
			M	18 44 15		
	Calcutta	E	iP	18 29 39	5110	Moderate.First movement east.
			PR1	18 32 04		
			S	18 35 49		
			SS	18 38 35		
	New Delhi	N,E	iP	18 30 35		Moderate
			ipP?	18 31 49		
		N	PP	18 33 04		
		N,E	iS	18 37 33		
		N	i	18 39 36		
			sS	18 40 22		
			SS	18 41 33		
			i	18 42 52		
			SSS	18 43 56		
	Hyderabad	N,E	iP	18 30 52	6000	
			iS	18 38 07		
			SS	18 40 58		
			M	18 54 04		Per.= 15 secs. A = 4.
	Poona	Z,E	iP	18 31 17	6445	Moderate
			pP	18 32 49		
			sP	18 33 37		
			S	18 38 49		
			SS	18 41 49		
	Colombo	E	P	18 31 19		
			S	18 38 51		
			L	18 54 --		
			M	18 05 21		Amp.= 0.3 mm.
	Kodaikanal	E	iP	18 31 20	6665	Slight.
			PcP	18 32 59		
			PPP	18 34 05		
			eS	18 38 56		
			L_R	18 45 27		
			M	18 49 35		
	Bombay	N,E	iP	18 31 23		Moderate.
			iSP	18 33 52		
			iS	18 39 07?		
			iPS	18 39 14		
			iPPS	18 39 30		
			iSS	18 42 25		
		E	L_R	18 47 17		
		N	L_R	18 47 32		
12	Bombay	E	e	14 02 --		Very feeble.
			e	14 09 14		
		N	Movements not distinct.			
12	Chatra	Z	i(P?)	21 03 38	790	Feeble
			i(S?)	21 05 00		

13 Epc:- 27°.9 N, 96°.0 E. O = 06h. 36m. 08s. (Poona).

Shock felt in many parts of the upper Assam including Tinsukia, Digboi, Margherite and Sedo. No damage.
(Press report)

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
July 1951.				h. m. s.	Km.	
13 (cont.)						
	Chatra	Z N	iP } eP }	06 38 03	920	Slight.
			Pg	06 38 45		
			L_Q	06 39 25		
			iS	06 39 38		
			SS	06 39 51		
			SSS	06 40 02		
			S*	06 40 09		
			Sg	06 40 30		
	Calcutta	N	eP	06 38 20	945	Per.= 1 secs Amp. 5.5 mm. Slight.
			iS	06 39 57		
			iSS	06 40 09		
	New Delhi	E	iS	06 40 52		
			eP	06 39 55	1790	Slight.
			L_Q	06 42 51		
			eS	06 42 54		
	Hyderabad	N	SS	06 43 12		
			eP	06 40 38	2150	
			eS	06 44 11		
			L	06 46 16		
			M	06 47 53		
	Poona	Z	iP	06 41 10	2490	Per.= 7 secs. μ = 2 . Slight.
	Bombay	N	iS	06 45 12		
			e	06 45 27		Slight.
		E	i	06 48 10		
			Record too faint.			
14	Bombay	N,E	eP	07 14 04	1550	Slight.
		E	PP	07 14 14		
			PPP	07 14 22		
		N,E	L_Q	07 16 35		
			eS	07 16 41		
			SS	07 16 57		
		E	SSS	07 17 08		
		N,E	e	07 22 52		Slight.Distant.
			e	07 24 30		
	Kodaikanal	E	e?	07 24 50		
15	Epc: 24°.5 N, 91°.5 E. Near SE border of Assam. Felt in Aijal. 0 = 17h. 18m. 09s.(Poona).					
	Chatra	Z N	iP } eP }	17 19 28	645	Slight.
			L_Q	17 20 21		
			iS	17 20 35		
			L_R	17 20 40		
			SS	17 20 45		
			SSS	17 20 55		
			Sg	17 21 06		
	Calcutta	E	eP	17 19 41	600	Slight.
			iP*	17 19 53		
			iP	17 20 07		
			iS	17 20 44		
			iS*	17 21 03		
			iS	17 21 17		

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	△ Km.	REMARKS.
July 1951.						
	New Delhi	E	eP	17 21 25	1540	Slight.
			PP	17 21 36		
		N	i	17 23 52		
		E	L_Q	17 23 55		
			eS	17 24 01		
			SS	17 24 15		
	Poona	Z	iP	17 22 16	1946	Slight.
			S	17 25 30		
	Hyderabad	N	M	17 27 47		Per.= 9 secs. μ = 2
	Bombay	E	e	17 28 46		Feeble. Pronounced
			e	17 31 56		microseisms in N record.
16	Probable Epc:- 6°.0S, 146°.0 E (Eastern New Guinea).					
				O = 10h. 40m. 23s. (U.S.C.G.S.).		
				h = About 200 Kms.		
	Chatra	N,Z	eP	10 50 56	7170	Slight.
			eS	10 59 35		
	Calcutta	E	e	10 51 02		Slight. Distant
			i	10 59 12		
	Colombo	E	P	10 51 11		
			S	11 00 24		
			L	11 08 30		
	Hyderabad	N	eP	10 51 35	7630	
			iS	11 00 38		
			L	11 13 17		
			M	11 19 00		Per.= 15 secs. μ = 5
	New Delhi	N,E	eP	10 51 50	8080	Moderate.
		N	eS	11 01 15		
			PPS	11 02 02		
	Poona	Z	iP	10 51 55	8470	Moderate.
		E	pP	10 52 28		
			sP	10 52 39		
			iS	11 01 27		
			SS	11 02 24		
	Bombay	E	iP	10 52 02	8290	Slight.
		N	P	Mixed up with microseisms.		
		N,E	iS	11 01 39		
			PPS	11 02 31		
16	New Delhi	N,E	(P?)	18 24 32	910	Slight. Beginning may be a little earlier due to the minute marks.
			eS	18 26 06		
18	Epc:- 1°.0 N, 27°.0 W,			O = 09h. 06m. 16s. (U.S.C.G.S.)		
				O = 09h. 08m. 18s. (Poona).		
	Poona	Z	iP)	09 21 05	9633	Moderate.
		N,E	eP)			
		N	PP	09 24 14		
		N,E	iS	09 31 43		
		N	SS	09 38 22		
			SSS	09 41 43		
			L_Q	09 46 41		
			L_R?	09 52 04		
			M	09 59 50		Per. = 17 secs μ = 18.

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
July 1951.				h. m. s.	Km.	
18(cont.)						
	Kodaikanal	E	eP?	09 21 39	11780	Slight.
			iS	09 33 43		
			L_Q	09 52 45		
			L_R	09 57 59		
			M	10 07 12		Per.= 16 secs.
						μ = 19
	Bombay	E.	P	Mixed up with microseisms.		Moderate
			iPP	09 24 02		△ from
			PPP	09 26 19		SS - PP.Times
			SKS_2	09 31 09		of phases
			iS	09 31 39		approximate
			iPS	09 32 57		on account of
			iPPS	09 33 56		the absence of
			iSS	09 38 31		time marks
			L_Q	09 48 33		Microseisms
			L_R	09 53 39		throughout the
			M	10 04 45		record.
						Per.= 15 secs.
						μ = 15.
		N				
	New Delhi	N	Phases not clear.			
			e	09 24 32	11445	Moderate.
			e	09 25 10		
			i	09 31 47		
			$iSKS_1$	09 32 50		
			iS	09 33 21		
			e	10 00 01		
	Chatra	N	$ePKP_1$	09 24 48	12220	Moderate
			PP	09 25 29		
			$SKKS_1$	09 32 15		
			PS	09 34 52		
			PPS	09 35 48		
			$PKKS_1$	09 39 34		
			SS	09 40 48		
			SSP	09 41 11		
			$SKKS_2$	09 44 26		
			SKKKS	09 46 30		
			L_Q	09 51 30		
			L_R	09 57 15		
			M	10 05 45		Per.= 17 secs.
						Amp.= 2.0 mm.
	Dehra Dun	N	e	09 31 48		
			e	09 39 42		
			e	09 42 30		
			e	09 50 52		
			M	10 02 39		Per.= 18 secs.
						Amp.= 0.1"
	Hyderabad	N	P	Lost in microseisms.		
			SKS	09 32 20		
			SS	09 39 33		
			L	09 50 52		
			M	09 57 32		Per.= 19 secs.
						μ = 18

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMAKRS.
July 1951.				h. m. s.	Km.	
19	Epc:- 51°.5 N, 177°.5 W (Near Adak Aleutian Islands felt)					
	O = 20h. 41m. 25s. (U.S.C.G.S.)					
	h = 60 Km.					
	O = 20h. 41m. 19s. (Poona)					
	Chatra	N	e	20 52 34		Slight.Distant.
			e	21 02 15		
	Calcutta	E	eP	20 53 00	8580	Moderate.
			PP	20 56 00		
			PPP	20 57 48		
			S	21 02 49		
			M	21 23 18		
	New Delhi	N	eP	20 53 14	8450	Moderate.
			eS	21 02 57		
	Poona	Z	iP	20 54 06	9665	Moderate.
		N	eS	21 04 44		
			M	21 31 07		
			Mn	21 34 18		Per.= 26 secs. μ = 37
	Hyderabad	N	i	21 04 22		
	Bombay	N	e	21 30 --		Feeble surface waves
		E	Record disturbed at the time.			
21	Probable Epc:- 30°.0 N, 96°.0 E .			O = 01h. 32m. 26s. (Poona).		
	Chatra	Z	iP)	01 34 31	920	Moderate.
		N	eP)			
			PP	01 34 39		
			PPP	01 34 44		
			P*	01 34 53		
			Pg	01 35 06		
			L_Q	01 35 52		
			iS	01 36 06		
			SS	01 36 18		
			SSS	01 36 26		
			S*	01 36 38		
			Sg	01 37 01		Per.= 2.75 secs. Amp. 15.0 mm.
	Calcutta	E	iP	01 34 52	990	Moderate.
		N	eP	01 34 54		
			iS	01 36 36		
			iSS	01 36 48		
	New Delhi	N,E	P	01 36 23	1800	Slight.
			PP	01 36 35		
			e	01 39 11		
			iS	01 39 23		
			SSS	01 39 40		
		E	L_R	01 39 46		
		N,E	M	01 41 08		
	Hyderabad	N	iP	01 37 01	2220	
			iS	01 41 02?		
			L	01 43 19		
			M	01 46 50		Per.= 6 secs. μ = 4

	STN.	PHASE	G. M. T.	Δ	REMARKS.
July 1951.			h. m. s.	Km.	
21(cont.)					
	Bombay	N,E	iP	01 37 25	2735	Moderate Δ from E compt. Times of phases approximate on account of the absence of time marks. Some phases lost during change of papers.
		E	iS	01 41 42		
		N	iS	01 41 57		
		E	iSS	01 42 51		
			PcS	01 44 41		
	Poona	E	iP	01 37 33	2555	Moderate
		Z	iP	01 37 35		Probably a double shock
		E	i(P2?)	01 37 39		
			PP	01 38 11		
			S	01 41 40		
			i(S2?)	01 41 49		
			i	01 42 00		
			L_Q	01 42 27		
			L_R	01 43 21		
			PcS	01 44 34		
			M	01 45 37		
			ScS	01 48 18		
	Kodaikanal	E	e?	01 37 48		Probably fairly short distance earthquake of slight intensity. Phases merged with microseisms, hence not decipherable.
21	New Delhi	N	e	03 22 00		Slight
			e	03 22 47		
			i	03 28 15		
			i	03 32 36		
			i	03 36 00		
	Colombo	E	e	03 25 07		
			S	03 28 21 ?		
			L	03 32 --		
			M	03 33 09		Amp.= 0.3 mm.
	Bombay	E	'P' Mixed up with microseisms. Slight			
			iS?	03 26 55	5855	Δ from SS - S times of phases approximate on account of the absence of time marks. Microseisms throughout the records. Per.= 12 secs. μ = 4
			iSS	03 30 25		
			L_Q	03 32 08		
			L_R	03 34 32		
			M	03 39 58		
		N	Phases not identifiable on account of microseisms.			
	Poona	N,E	i	03 27 05		Slight. Strong microseisms throughout record. Per.= 15 secs.
		N	i	03 30 25		
			M	03 32 35		
			Mn	03 33 58		
	Kodaikanal	E	iP	03 28 03	2420	μ = 9 Slight.
			iS	03 32 30		
			L_R	03 33 42		
			M	03 35 39		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
July 1951.				h. m. s.	Km.	
21 (cont.)						
	Calcutta	E	i	03 30 50		Slight.Distant.
			i	03 34 43		
	Hyderabad	N	e	03 31 53		
			M	03 37 41		Per. = 13 secs. μ = 5
21	New Delhi	E	eP	04 08 44	780	Slight.
		N,E	P	04 09 15		
			L_Q	04 09 53		
		E	e	04 10 13		
		N,E	i	04 10 20		
		E	S	04 10 47		
23	Bombay	E	e	16 44 --		Very feeble. Pronounced microseisms throughout N and E record .
		N	Trace too thick.			
26	Hyderabad	N	S	10 18 24		
			M	10 37 08		Per. = 15 secs. μ = 6
	Bombay	N,E	e	10 37 --		Very feeble.
28	Chatra	N,Z	e	23 13 12		Slight.Distant.
		N	e	23 20 08		Surface waves.
			e	23 32 30		Per. = 15 secs. Amp. = 0.5 mm.
	Calcutta	E	eP	23 13 27	5445	Slight.
			PP	23 15 21		
			PPP	23 16 27		
			PcS	23 18 51		
			iS	23 20 31		
			SS	23 23 56		
			L_R	23 27 43		
			M	23 31 34		
			Mn_1	23 35 21		Per.= 15 secs. μ = 14
			Mn_2	23 40 11		Per.= 12 secs. μ = 14.
	New Delhi	N,E	eP	23 14 04	6180	Slight.
		N	eS	23 21 48		
			e	23 24 46		
			SS	23 35 32		
			M	23 34 22		
	Bombay	E	P	Mixed up with microseisms. Feeble.		
		N,E	eS	23 23 41		
	Hyderabad	N	M	23 42 04		Per.= 14 secs. μ = 4
29	Epc:- 2.0° S, 131.0° E.			0 = 23h. 32m. 41s. (Poona).		
	Calcutta	E	ePcP	23 41 47	5335	Slight.Distant.
			i	23 44 44		
			iS	23 48 29		
			i	23 51 22		
	Colombo	E	P	23 41 49	5665	
			S	23 51 46?		
			L	00 03 --		

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
July 1951.				h. m. s.	Km.	
29(cont.)						
	Kodaikanal	E	e	23 42 02		Slight. Phases not clear.
	Poona	Z	iP	23 42 48	6610	Slight.
		E	PcP	23 43 24		
			PP	23 45 04		
			PcS	23 47 17		
			iS	23 50 57		
			PS	23 51 14		
			PPS	23 51 24		
			ScS	23 52 15		
			SS	23 54 46		
			SSS	23 57 25		
			M	00 06 --		
	New Delhi	N,E	eP	23 42 52	6610	Moderate.
		N	iPcS	23 47 36		
			eS	23 51 01		
			SS	23 54 52		
			LQ	23 58 19		
			M	00 07 24		
	Bombay	E	eP	23 42 56	6665	Slight.
			iPP	23 45 14		
			iS	23 51 09		
		N	Phases not identifiable due to thickness of trace and microseisms.			
31	O = 13h. 28m. 40s. (Poona).					
	Poona	E	iP	13 36 53	4920	Slight
			PcP	13 38 34		
			PPP	13 39 16		
			S	13 43 28		
			SS	13 46 33		
31	Chatra	Z	i)	22 43 33		
		N	e)			
			e	22 46 08		
	Calcutta	E	eP	22 44 25	1210	Moderate.
			eS	22 46 29		P phase is very
			iSS	22 46 43		uncertain due to
			M	22 47 43		microseisms.
	New Delhi	N	e	22 45 04		Slight.
			i	22 48 16		
			M	22 50 08		
	Bombay	E	eP	22 46 42	2820	Slight.
			eS	22 51 05		
			SSS	22 52 25		
			i	22 54 17		
			M	22 56 31		Per. = 7 secs. A = 3
		N	Phases not identifiable due to thickness of trace.			

M. I. P.
28-12-51

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

S E I S M O L O G I C A L B U L L E T I N

August, 1951.

Published under the direction of
V.V. SOHONI, B.A. (Hons.), M.Sc.
Director General of Observatories.

Instruments and their constants.

Station	Instrument	Compt.	Period in secs.	Static in secs.	Damping ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	I2	250	I8:I	8.0
	Milne-Shaw	E	I2	350	5:I	8.0
Calcutta	Milne-Shaw	E	I2	250	20:I	8.0
	Wood-Anderson	N	2	870	Critical	30.0
	Omori Ewing	N	I8	32	-	25.4
	Omori	E	I9	30	-	25.4
Chatra	Wood-Anderson	N	I	995	20:I	60.0
	Wood-Anderson	N	I	995	20:I	60.0
	Milne-Shaw	N	I0	150	20:I	I6.0
Colombo	Milne-Shaw	E	To = 8.45			60.0
DehraDun	Omori	N	I2	250	20:I	8.0
Hyderabad	Milne-Shaw	N	30	I2	-	-
	Milne-Shaw	E	I2	242	20:I	8.0
Kodaikanal	Milne-Shaw	E	I2	268	20:I	8.0
New Delhi	Milne-Shaw	N	I0	250	20:I	8.0
	Wood-Anderson	N	I2	288	20:I	8.0
	Wood-Anderson	E	4	I000	20:I	I6.0
	Omori Ewing	E	2	2000	30:I	60.0
Poona	Milne-Shaw	N	30	30	I	I2.0
	Wood-Anderson	E	I2	250	20:I	8.0
	Sprengnether	E	4	II00	20:I	I6.0
	Benioff	V	7.2 To = I Tg.= 0.28	-	-	30.0 60.0

		PHASE	G.M.T.	Δ	REMARKS.
			h. m. s.	km.	
Aug. 1961 I		Epc: 45 N., 57.5E., Indian Ocean 0 = 00h 54m 37s (Poona).			
	Bombay	E	iP	00 59 I6	Slight.
			eS	01 03 51	
		N	Phases not indentifiable due to thickness of trace.		
	Kodaikanal	E	iP	00 59 I7	2280 Slight.
			iS	01 03 02	
	Poona	Z,E	iP	00 59 31	2520 Slight.
		E	PP	59 56	
			PPP	01 00 05	
			S	03 25	
			LQ	03 45	
			SS	04 05	
			SSS	04 17	
			LR	04 47	
			M	05 35	
			ScP	06 47	
			ScS	10 27	
	Colombo	E	P	00 59 41	Trace lost.
	Hyderabad	N	iP	01 00 03	2500
			eS	04 06	
			L	06 09	
			M	08 35	Per.= 8 secs. μ = 2.
	New Delhi	N	PPP(?)	01 02 27	3620 Slight.
			PcP	04 23	
			eS	06 05	
			M	09 10	
	Bombay	E	e	03 28 -	Feeble. Microseisms throughout N and E records.
I		Epc: 31 N., 95 E., in Tibet 0 = 13h 37m 40s (Poona).			
	New Delhi	N	eP	13 41 15	1680 Slight.
			eS	44 04	
			SS	44 24	
			LR	44 48	
			M	46 10	
	Calcutta	E	e	13 41 15	Slight; near.
			e(S)	42 09	
			M	43 34	
			i	44 40	
	Hyderabad	N	iP	13 42 11	
			M	49 36	Per.= 9 secs. μ = 3.

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1 (contd)

		PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Poona	N,E	iP	13 42 39	2455	Slight
	E	PP	42 03		
		PPP	42 17		
	N,E	S	46 38		
		L_0	46 57		
	N	SS	47 17		
	E	SS	47 18		
		SSS	47 29		
		M	49 56		
	N	M	49 54		
		ScP	50 14		
Bombay	E	eP	13 42 45	2665	Slight. Times approximate. Time-marks absent. Per.= 9 secs. μ = 3
		iS	46 57		
		L_R	48 48		
		M	52 10		
	N	Phases not indentifiable on account of microseisms and thickness of trace.			

2 Epc: 4.0S 154.5E (New Britain Island Region)
H = 03h40m27s h = 500 kms. (U.S.C.G.S.)
Appears to be very deep but phases due to near reflections, not well developed in Indian Seismograms.
P & S very sharp and surface waves absent.

Colombo	E	P	03 51 28		Amp = 0.3 mm.
		S(?)	54 46		
		M	04 01 08		
New Delhi	N,E	iP	03 51 57		Moderate. Direction of first motion N & W
		iS	04 01 24		
	N	SS	06 10		
		L_R	13 42		
Bombay	E	eP	03 52 02		Slight. Times approximate. Time-marks absent.
	N	P	Mixed up with microseisms.		
	N,E	iS	04 01 52		
		i	02 04		
Poona	Z	iP	03 52 06		Moderate; probably deep.
	E	e	52 11		
		e	54 47		
		iS	04 01 41		
		e	01 48		

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Aug. 1951 2		Epc: 1700 Miles South of Easter Islands. H = 10h16m0.3s (U.S.C.G.S.)				
	Poona	Z	i	10 35 45		Slight
			i	39 01		
			i	39 24		
			i	39 08		
		N	M	11 31 44		
	Bombay	N,E	e	10 56 -		Feeble. Surface waves.
	Kodaikanal	E	e	11 16 01		Tremor
3	New Delhi	E	iPg	20 17 13	30	Slight. First movement west.
			iSg	17 17		
3		Epc: Near 38 N 71 E in Central Asia. O = 23h36.6m (Poona)				
	New Delhi	N,E	eP	22 33 15	1280	Slight.
		E	PP	33 34		
		N,E	L_g	40 14		
		E	i(S)	40 20		
		N,E	i	40 25		
		N	SSS	40 48		
			M	40 43		
	Poona	Z	iP	23 40 12	2110	Slight.
		E	S	43 41		
			L_g	43 47		
			SS	44 11		
			SSS	44 23		
			L_R	44 47		
			M	46 15		
	Calcutta	E	eS	23 44 29		Slight near
			i	44 39		
			i	47 37		
	Kodaikanal	E	e	23 46 01		Feeble.
	Bombay	E	i	23 46 12		Feeble
		N	e			

DATE	STATION	COMPT.	PHASE	G.M.T.	△	REMARKS.
				h. m. s.	km.	
Aug. 1951				°	°	
4	Probable Epicentre 38 N, 71 E in Central Asia O = 00h16.2m (Poona).					
	New Delhi	N,E	eP	00 18 52	1220	Slight.
			iS	20 57		
	Calcutta	E	eS	00 23 29		Slight, near.
			i	28 15		
	Poona	Z	iP	00 20 49	2210	Slight.
		Z,E	S	24 38		
			L_Q	24 46		
			SS	25 01		
			SSS	25 17		
			L_R	36 39		
			?	57 01		
4	Colombo	E	P	03 50 08		
			S	54 10		
			L	56 50		Amp. = 0.4 mm
			M	58 47		
	Kodaikanal	E	eP	03 54 38	2145	Slight, near.
			eS	58 11		
			M	04 00 44		Per.= 9 secs. μ = 5.
	Bombay	E	e	03 57 -		Feeble.
		N	Trace too thick.			
4	Calcutta	N	iP	11 11 29	490	Slight. First movement north. Felt at Shillon
			iS	12 21		
			iS*	12 35		
	Bombay	E	e	11 49 -		Very feeble . Micro-seisms throughout N, & E records.
		N	Trace too thick.			
4	Calcutta	E	e	11 36 12		Slight, Distant
			i	37 33		
			i	40 03		
6	Bombay	N,E	e	15 33 -		Very feeble.
8/9	Bombay	N,E	e	23 34 -		Very feeble. Microseis ms throughout N & E records.
		E	e	00 46 -		

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Aug. 1951 9	DehraDun	N	e	08 20 -		
9	DehraDun	N	e	08 55 39		Per.= 12 secs. Amp.= 0.05".
			e	58 24		
			e	09 03 48		
			M	03 36		
9	DehraDun	N	e	09 36 36		
10		Epc:	46.0N, 143.5E. Off the coast of Hokaido Japan. H = 23h00m21s h = 330 kms. (U.S.C.G.S.).			
	New Delhi	N,E	iP	23 09 15		Slight. First movement south and west. h = 300 km. approx.
		E	iP	09 24		
		N	sP	11 21		
		N,E	iS	16 21		
		N	sS	12 27		
	Poona	Z	i	23 10 17		Other phases not identifiable due to strong microseism.
12	New Delhi	N,E	eP	07 54 02	280	Slight.
			iS	54 34		
			SS	54 44		
		E	SSS	54 54		
	Poona	Z	eP	07 59 49		Slight.
13	Calcutta	E	i	13 17 35		Slight. Near.
			i	18 35		
13		Epc:	43.0N, 32.5E; Black Sea. Off the north coast of Turkey. H = 18h33m40s [illegible]. Severe casualties and heavy property damage (U.S.C.G.S.). 40.0N, 32.0E, i[illegible]th Turkey. O = 18h33m38s [illegible] (Poona).		
	DehraDun	N	eP	18 37 18	4396?	Probable clock correction + 3.5 mins.
			eS	43 18		
			e	46 12		
			e	50 30		
			M_1	53 42		Per. = 24 secs. Amp = 0.5".
			M_2	56 42		Per. = 24 secs. Amp = 0.4".

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Aug. 1951 13						
(Contd)	New Delhi	N	iP	18 40 56	4190	Moderate.
		N,E	PP	42 23		
			iS	46 47		
		N	SS	49 26		
			L_Q	49 37		
			SSS	49 55		
			L_R	51 55		
			M	55 18		
			Mn	55 37		Per. = 24 secs. μ =2.
	Bombay	N,E	eP	18 41 12	4445	Moderate
			PP	42 57		
			PPP	43 26		
		E	iS	47 17		
		N	eS			
		N,E	iPs	47 31		
			L_Q	50 33		
		N	L_Q	52 29		
		E	L_R	52 41		
			M	58 46		Per.= 19 secs. μ = 66.
		N	M	19 02 41		Per.= 17 secs. μ = 21.
	Poona	Z,N,E	iP	18 41 20	4720	Moderate.
		N	PP	43 08		
			PPP	43 42		
			ScP	46 51		
			S	47 23		
			PS	47 55		
			SS	50 57		
			L_R	53 28		
			M	56 15		Per.= 29 secs. μ= 340.
	Hyderabad	E	iP	18 41 58	4920	
			iS	48 33		
			SS	51 08		
			L	55 28		
			M	59 13		Per.= 18 secs. μ= 186.
	Kodaikanal	E	eP	18 42 27	5480	Moderate.
			PP	44 41		
			iS	49 39		
			SS	53 14		
			L_Q	54 26		
			L_R	56 47		
			M	19 00 47		Per.= 12 secs. μ= 41.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Aug. 1951 13 (Contd)	Calcutta	E	iP	18 42 30	5,520	Great, first movement east.
			PcP	43 53		
			PP	44 24		
			iS	49 39		
			SS	53 07		
			SSS	54 37		
			L	56 57		
			M	19 00 53		
			Mn	02 47		Per.= 20 secs. μ =379
	Colombo	E	P	18 42 59		
			S	50 32		Amp = 14.6 mm.
			L	19 03 29		
			M	10 06		
16/17		Epc:	Southern Iran. H = 23h52m10s ? (US.C.G.S.). 27°N, 56°E Near Bander Abbus in South Persia. O = 23h52m00s ? ? (Poona).			
	DehraDun	N	eS	23 59 00		
			e	00 02 12		Per.= 24 secs.
			M	03 27		Amp = 0.1".
	Bombay	N,E	iP	23 56 03	2020	Slight.
		E	iS	59 20		
		N	eS			
		E	L_R	00 00 16		
	New Delhi	N,E	eP	23 56 14	2030	Slight.
			PP	56 29		
		N	iS	59 36		
			i	59 49		
			SgS	00 00 15		
			M	02 19		
	Poona	Z, E	iP	23 56 17	2040	Moderate.
		E	PP	56 35		
			PPP	56 41		
			S	59 40		
			SS	00 00 05		
			SSS	00 16		
			M	02 10		
	Hyderabad	E	iP	23 57 04	2540	
			eS	00 01 10		
			M	06 05		Per. =19 secs. μ=15.
	Kodaikanal	E	eP	23 57 42		Slight. Phases not clear.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Aug. 1951 18			Epc: Gilolo island region H = 03h 38m 19s (U.S.C.G.S.).			
	Calcutta	E	e	03 46 12		Slight,distant.
			i	48 25		
	New Delhi	N,E	eP	03 47 37	5900	Moderate.
		N	eS	55 07		
			ScS	57 23		
			SS	58 45		
			SSS	04 00 37		
	Bombay	N,E	eS	03 55 -		Feeble.
			O	O		
19			Epc: 36 N, 72 E, Hindukush. O = 15h 38m 46s (Poona).			Felt at Gulmerg.
	New Delhi	N,E	iP	15 40 56	1000	Slight. First movement South and East.
		E	PP	41 12		
		N,E	i	42 18		
			iS	42 39		
			SS	42 50		
			LR	43 13		
			M	43 52		
	Poona	Z	iP	15 42 46	1870	Slight.
		E	PP	42 54		
			PPP	43 07		
			S	45 53		
			SSS	46 29		
			PcP	47 08		
		N,E	M	48 14		
	Calcutta	E	e	15 42 48		Slight,near.
			i	46 46		
	Bombay	E	eP	15 42 50	1955	Slight.
		N	P	42 -		
		N,E	iS	46 01		
		E	SS	46 21		
		E	M	43 07		Per.= 5 secs. μ = 1.
	Hyderabad	N	S	15 46 37		
			M	49 12		Per.= 6 secs. μ = 2.
		E	M	49 14		Per.= 5 secs. μ = 2.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Aug. 1951						
19	New Delhi	N,E	eP	23 36 09	440	Slight.
			eS(?)	36 57		
20	Poona	Z	eP	12 32 43		Tremor.
	Bombay	N,E	e	12 48 -		Feeble surface waves. Microseisms throughout N and E record.
20	Calcutta	E	iP	14 51 30	155	Slight. First movement south. Felt at Midnapore.
			iS	51 48		
21		Epc:	19½° N, 156.0° W. Near West coast of Hawii. Slight property damage on Kona Coast. H = 10h 56m 57s (U.S.C.G.S.).			
	Poona	E	PkP	11 15 34	13150	Slight.
			PP	17 02		
			PkS_1	19 11		
			PPP	19 24		
			SkS_1	22 44		
			SkkS	23 41		
			PS	26 29		
			SkSP	26 37		
			PPS	27 49		
			SS	33 01		
			SSS	37 19		
	New Delhi	N	e	11 16 11	12110	Moderate.
			SkS_1	22 07		
			$SkkS_2$	23 07		
			PS	25 22		
			e	26 20		
			SS	31 19		
			i	36 19		
	Bombay	E	i(PP)	11 17 15		Slight, distant.
		N	i, e } SkS_1	22 48		
		E	i } SkSP	26 55		
		N	e }			
	Hyderabad	N	M	11 23 44		Per.= 9 secs. μ = 3.
		E	M	23 44		Per.= 8 secs. μ = 3.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Aug. 1951 24	Calcutta	E	e	11 37 16		Slight;near.
			e	37 43		
			i	40 07		
24		Epc:	47.0N, 151.0E Kurile islands. H = 14h 21m 15s (U.S.C.G.S.).			
	New Delhi	N,E	P	14 31 18	6220	Moderate.
		N	iS	39 05		
			i	40 18		
			iScS	40 43		
			i	41 08		
	Calcutta	E	e	14 32 01		Slight; distant.
			i	33 22		
	Bombay	E	eP	14 32 06	7535	Slight.
		N,E	iS	41 05		
			ScS	42 01		
	Poona	Z,E	iP	14 32 16	7600	Moderate.
		Z	i	38 11		
		E	iS	40 59		
			PPS	41 30		
			ScS	41 52		
25	Bombay	E	i	04 45 42	2455	Slight.
			e	47 03		
			e	47 31		
		N	Loss of record.			
	Kodaikanal	E	e	04 45 40		Tremors
	Poona	Z,E	i	04 45 50		Slight.
		E	i	46 38		
	Hyderabad	E	e	04 50 25		
		N	e	50 28		Per.= 11 secs. μ = 3.
			M	52 43		Per.= 12 secs. μ = 3.
		E	M	53 09		

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Aug. 1951 26			Epc:	Near 31 N, 82 E in Himalayas. O = 10h 8.7m (Poona).		
	NewDelhi	N,E	eP	10 09 43	470	Slight.
			P*	09 59		
			Pg	10 01		
			i	10 13		
			iS	10 33		
			S*	10 44		
			Sg	10 55		
	Poona	Z	iP	10 12 01	1470	Slight.
		E	PP	12 09		
		E	eS	14 29		
		Z	iS	14 30		
		Z,E	SS	14 44		
		Z	SSS	14 54		
		Z,E	M	16 -		
		E	PcP	17 13		
	Bombay	E	e(SS)	10 15 47		Feeble.
		N	Loss of record.			
	Hyderabad	E	M	10 16 26		Por.= 6 secs. μ = 2.
26	Bombay	E	e	18 01 -		Very feeble.
		N	Loss of record.			
	New Delhi	N,E	eP	18 26 05	940	Slight.
			PP	26 13		
			iS	27 42		
			SS	27 54		
			SSS	28 05		
	Poona	Z	iP	18 27 56	2090	Slight.
			LQ	31 16		
		Z,E	S	31 28		
		Z	SS	31 41		
		E	SS	31 42		
		Z,E	LR	32 11		
27	Bombay	N,E	e	13 25 -		Very feeble

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Aug. 1951				° °		
28		Epc:	Near 28 N, 99 E. off North-East Assam.			
			O = 02h 59.5m (Poona).			
	Calcutta	E	iS(?)	03 04 25		Slight near.
			e	05 27		
			i	05 35		
			i	05 54		
	New Delhi	N,E	eP	03 03 52	2230	Slight.
		N	eS	07 33		
			M	10 21		
	Poona	Z	eP	03 04 50	2858	Slight.
		E	eS	09 07		
	Bombay	N,E	P	Mixed up with microseisms. Feeble.		
		E	e	03 05 09		
		N,E	eS	09 16		
	Hyderabad	N	S	03 07 54		
			M	11 14		Per.= 8 secs. μ = 2.
				° °		
28		Epc:	27 S, 178 E. Karmadac islands region.			
			H = 16h 31m 11s. h= 600 km Approx. (U.S.C.G.S.).			
	Calcutta	N	e	16 47 35		
			e	49 24		
			i	51 08		
			i	53 39		
			e	55 16		
			e	56 31		
	Poona	Z	i(PkP)	16 48 21		Slight.
		E	e(PkP)			
			i	53 52		
			SkkS	54 24		
			i	57 54		
			i	59 20		
			i	17 01 49		
			e	02 49		
	Bombay	E	e	16 49 -		Feeble; distant.
			e	55 33		
		N,E	e	17 02 07		

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Aug. 1951						
29	New Delhi	N,E	eP	12 08 47	940	Slight.
		E	PPP	09 01		
		N,E	iS	10 24		
	Poona	Z	i	12 10 33		Slight.
			i	14 03		
			0	0		
31		Epc:	36.5N, 23.0E. Near South coast of Greece.			
			H = 12h 29m 42s (U.S.C.G.S.).			
			O = 12h 29m 34s (Poona).			
	Poona	Z	iP	12 38 24	5445	Slight.
		E	PcP	39 45		
			iS	45 28		
			ScS	48 19		
			PS	48 49		
	Bombay	E	e	12 38 40		Feeble.
			eS	45 11		
		N	S	45 -		
31	Bombay	E	e	20 27 -		Very feeble.
			e	37 17		
		N	Trace too thick.			

NON-INSTRUMENTAL REPORTS.

THE FOLLOWING TABLE CONTAINS A LIST OF EARTHQUAKES THAT ARE REPORTED BY VARIOUS OBSERVERS AND V.P.LOCUS STATIONS:-

PLACE AT WHICH FELT.	DATE	G.M.T. OF EARTHQUAKE	DURATION	INTENSITY R.F. SCALE	NO. OF SHOCKS	REMARKS.
Mohanbari Air field.	1951 Aug.5	23h 00m	Sec 10-15	V	1	
Mohanbari Air field.	Aug.6	07 - 25	15-20	V	1	
Mohanbari Air field.	Aug.6	08 - 23	10-12	IV	1	
Midnapore	Aug.20	14 - 38	3- 4	VI	1	

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S.M.
2.6.53

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GOVERNMENT OF INDIA
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN
September, 1951

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Station	Instrument	Compt.	Period in Secs.	Static Magnification	Damping ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	6:1	8.0
	Milne-Shaw	E	12	350	5:1	8.0
	Sprengnether	E	7	-	-	30.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Wood-Anderson	N	2	870	Critical	30.0
	Omori-Ewing	N	18	32	-	25.4
	Omori-Ewing	E	19	30	-	25.4
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	N	12	242	20:1	8.0
	Milne-Shaw	E	12	258	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0
New Delhi	Milne-Shaw	N	12	268	20:1	8.0
	Wood-Anderson	N	4	1000	20:1	16.0
	Wood-Anderson	E	2	2000	30:1	60.0
	Omori-Ewing	E	30	30	-	12.0
Poona	Milne-Shaw	N	12	250	20:1	8.0
	Wood-Anderson	E	4	1100	20:1	16.0
	Sprengnether	E	7.2	-	-	30.0
	Benioff	V	To = 1	Tg = 0.28	-	60.0

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Sept. 1951						
1		Epc:		0 0 33 S., 110 W. (Easter Island region) H = 08h 49m 18s (J.S.C.G.S.).		
	Bombay	E	e	09 10 -		Feeble, distant.
		N,E	e	16 38		
	Kodaikanal	F	e(?)	09 14 30		Feeble, distant. Phases not clear.
	Hyderabad	N	M	10 15 07		Per.= 18 secs. μ = 6.
1	Kodaikanal	E	e(?)	12 19 47		Tremore
3	Bombay	N,E	e	00 23 15		Tremor.
		E	e(	23 45		
		N	i(			
3		Epc:		0 0 ~~Near 6 S., 71 E.~~ in Indian Ocean 0 = 07h 10m 63s (Poona)		Probably followed by another shock at short interval.
	Bombay	N,E	iP	07 15 56		Slight.
		E	S	20 07		
			e	27 03		Per.= 8 secs. μ = 1.
	Poona	Z	eP	07 15 51	2630	Moderate probably double shock.
		E	eS	20 04		
			i	24 36		
			M	26 18		
	Hyderabad	E	eS	07 21 13		
		N	M	25 28		Per.= 9 secs. μ = 3.
	Kodaikanal	E	e(S?)	07 18 00		Slight, near. Phases not clear.
4	Bombay	E	e	15 27 06		Very feeble.
		N		Movements insignificant.		
5	Bombay	E	e	17 04 13		Tremor.
			e	05 02		
		N		Trace too thick.		

DATE	STATION	COMPT.	PHASE	O. h.	M. m.	T. s.	Δ Km.	REMARKS
Sept. 1961		Epc:- 27°.0 N., 90°.5 E., border of Assam and Bhutan Felt at Dhubri and Shillong. O=08h. 08m. 0s. (Poona)						
6	Calcutta	N	P(?)	09	10	19	485	Slight; first movement North
			ig		10	37		
			is		11	28		
			S*		11	30		
			Sg		11	43		
	New Delhi	E	e	08	12	26	1280	Slight
			i		13	17		
			ig		14	10		
			M		15	30		
	Poona	Z	iP	08	13	08		Feeble; felt at Shillong
		E	L_R		17	03		
	Bombay	E	e	09	38	--		Very feeble
8		Epc:- 25°.0S., 179°.5 W., Kermadec Island Region O=16h. 15m. 27s; h= 500 Km (U.S.C.G.S)						
	Bombay	E	e	16	41	09		Very feeble
9		Epc:- 16°.0 S., 173°.0 W.,(Samoa Islands Region) O= 04h. 43m. 00s.,(U.S.C.G.S.)						
	Bombay	E	e	05	54	--		Very feeble
12	Poona	Z	iP	05	23	46		Tremor
12		Epc:-45°.5 N.,151°.0 E.,(Kurile Islands Region) O= 15h. 10m. 18s. h=180Km± (Poona) 46°.2 N., 150°.1 E., O=15h. 10m. 20s h=supposed normal (B.C.I.S.) 43°.8 N., 151°.7 E., h=150 Km.(C.M.C. JAPAN)						
	Calcutta	E	e	15	19	39		Tremor
			i		27	42		
	New Delhi	N,E	iP	15	20	22	6520	Moderate.
		N	e		28	22		First movement
			PPS		28	46		East.
			M		41	33		

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Sept. 1951 12 (Contd)	Poona	Z,E	iP	15 21 22	7780	Moderate . h = 130kms.
		E	PcP	21 43		
			eS	30 20		
			PS	30 42		
			iPS	30 58		
			sS	31 38		
			M	46 48		
	Bombay	E	iP	15 21 27	7590	Slight.
			PcP	21 51		
			eS	30 22		
			iPS	30 52		
			iPPS	31 07		
			L_Q	39 34		
			M	52 -		
		N		Phases not identifiable due to microseisms.		
12	Calcutta	E	e	13 40 40		Slight, distant.
			i	49 03		
12			Epc:	0 0 33.3N., 76.5E., North Kashmir in Karakoram range. 0 = 20h 41m 39s (Poona). Felt strongly at Amritsar, Srinagar, Jammu and parts of Kashmir and moderately to slightly at Gulmerg.		
	DehraDun	N	eP	20 39 17	845	Probable time correction +3 mins. (approx.). Per.= 03 secs. Amp = 0.02".
			eS	40 30		
			M	40 48		
	New Delhi	N,E	iP	20 42 54	580	Slight. First movement south.
			P*	43 04		
			PPP	43 08		
			Pg	43 16		
			i	43 31		
			iS	43 35		
			SS	44 05		
			S*	44 10		
			Sg	44 22		
	Poona	Z	iP	20 45 08	1611	Slight.
		N,E	ePx			
		E	PP	45 18		
			L_Q	47 44		
			iS	47 50		
			SS	48 08		
			SSS	48 20		
			L_R	48 26		
			i	49 09		
			M	49 45		

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Sept. 1931						
12 (contd)	Hyderabad	N	P	Mixed up with microseisms. Slight.		
		E	e?	20 45 39		
			L_0	47 41		
			iS	47 53		
			eS	48 18		
			SSS	48 31		
			L_R	48 50		
			i	49 02		Per.= 4 secs. μ = 7.
			M	49 55		Per.= 7 secs. μ = 6.
	Bombay	N	P	Mixed up with microseisms. Slight.		
		E	e(?)	20 45 39		
			L_0	47 41		
			iS	47 53		
			eS	48 18		
			SSS	48 31		
			L_R	48 50		
			i	49 02		Per.= 4 secs. μ = 7.
		N	M	49 55		Per.= 7 secs. μ = 6.
	Hyderabad	N	eP	20 46 34	1830	
		E	eS	48 37		
		N	L	49 39		
			M	51 05		Per.= 10 secs. μ = 9.
	Calcutta	E	e(S)	20 47 54		Slight.
			i	49 19		
			SS(?)	49 52		
	Kodaikanal	E	e(S)	20 50 50		Slight. Phases not clear.
13			Epc:	5° S., 123.2° E.,		
				H = 16h 26m 37s; h= 150 km (B.C.I.S.).		
				Banda Sea region		
				H = 16h 26m 26s		(U.S.C.G.S.).
				O = 16h 26m 36s		(Poona).
	Poona	E	iP	16 35 52	5813	Moderate.
			ScP	40 41		
			iS	43 17		
	Bombay	E	iP	16 36 03	6080	Slight.
		N	eP			
		E	PP	38 04		
		N,E	eS	43 42		
			iPS	43 52		

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Sept. 1951 15			Probable Epc:	32 N., 82 E. in Tibet O = 00h 56.2m (Poona).		
	New Delhi	N	eP	00 57 24	540	Slight.
			P*	57 30		
			PKP	57 35		
			Pg	57 41		
			iS	58 10		
			SS	58 30		
			S*	58 33		
			L	58 38		
			SSS	59 40		
			Se	58 45		
	Bombay	N,E	e	00 59 -		Ver. feeble.
	Poona	Z	iP	00 59 38	1485	Very feeble.
		E	eS	01 02 04		
			M	03 30		
16			Epc:	16 N., 145 E., Mariana Islands. H = 01h 43m 20s, h= 150 km (P.C.I.S.) 18°N., 145°E. (C.I.T.O.) Japan H = 01h 43m 02s (U.S.C.G.S.).		
	Colombo	E	L	01 54 -		P & S lost while changing chart.
			M	56 03		Amp = 0.2 mm.
	Poona	Z	iP	01 54 11		Tremor.
	Bombay	E	e	01 56 -		Very feeble.
		N	e	02 03 -		
17			Epc:	18 S., 173 W., Tonga Island region; H = 11h 57m 39s (U.S.C.G.S.). O = 12h 07m 44s (Poona).		
	Poona	Z	PKP	12 13 35		Slight.
		N	e	17 37		
			e	18 17		
			SKS	23 40		
	Bombay	E	e	12 17 -		Feeble, distant.
			e	27 53		
		N	Movements insignificant.			

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Sept. 1951 17		Epc:	1°.8S., 102°.3E.; H = 20h 48m 06s (B.C.I.S.). 2°.5S., 103°.5E. in Sumatra; O = 20h 48m 00s (Poona).			
	Colombo	E	P	20 57 20		S,L and M lost due to inner clock stoppage.
	Hyderabad	N	eP	20 54 20	3,410	
			PP	56 13		
			S	59 33		
			L	21 02 45		
	Poona	Z,E,N	iP	20 54 58	3,910	Slight.
		E	PP	56 09		
			PPP	56 32		
		N	PPP	56 33		
		N,E	S	21 00 31		
		E	ScP	01 06		
		N,E	SS	02 30		
			SSS	03 56		
			LR	04 09		
			ScS	05 00		
	Calcutta	E	e(PPP)	20 55 15		Slight.
			i(S)	50 52		
	New Delhi	N,E	eP	20 55 34	4,350	Moderate.
		N	PP	57 07		
		N,E	iS	21 01 35		
		N	PcS	02 05		
			LS	03 50		
			ScS	04 20		
			LR	05 23		
	Bombay	N,E	iPP	20 56 25	2,810?	Slight.
			iS(?)	21 00 49		
			LQ	01 10		
			LR	02 26		
18	Calcutta	E	e	15 20 24		Tremor.
			i	23 31		
	Bombay	E	e	15 25 -		Very feeble.

DATE	STATION	COMP.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Sept. 1951						
18	Poona	Z	iP	17 52 28		Tremor.
18	Poona	Z	iP	18 54 51		Tremor.
20		Epc:	5½°S., 81°W.; Near coast of Peru; H = 05h 48m 03s (U.S.C.G.S.). 5¼°S., 80½°W. ; H = 05h 48m 03s (B.C.I.S.).			
	Poona	Z	iPKP1(?)	06 08 09		Tremor.
	Bombay	E	e	07 19 -		Weeble. Surface waves.
		N	Trace too thick.			
20	Poona	Z	eP	09 01 56		Tremor.
20	Poona	Z	i	13 08 27		Tremor.
20		Epc:	Probably same as that of shock at 15d 00h. O = 23h 19m 35s (Poona).			
	New Delhi	E	eP	23 20 43	430	Slight.
			P*	20 50		
			Pg	21 00		
			eS	21 30		
			S*	21 40		
			Sg	21 48		
	Poona	Z	eP	23 22 53	1,545	Slight.
		E	PP	23 04		
			PPP	23 12		
			LQ	25 23		
			iS	25 29		
			SS	25 41		
			SSS	25 46		
			LR	26 01		
			S*	26 26		
			M	27 12		
	Bombay	E	e	23 25 -		Very feeble.
		N	Trace too thick.			

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Sept. 1951				°	°	
21		Epc:		0.0, 124.5E, H = 09h 10m 17s (B.C.I.S.)		
				Malacca Passage, H = 09h 10m 16s (U.S.C.G.S.).		
	Kodaikanal	E	e(?)	09 18 05		Feeble. Distant. Phases not clear.
	Poona	Z	iPG	09 19 39	6240	Slight.
		E	eS(			
			PcP	20 26		
			PP	21 27		
			PKP	23 12		
			S(?)	27 11		
			PS	27 38		
			iPS	27 54		
			SKS	33 41		
			LQ	34 00		
			L?	36 22		
	New Delhi	E	eP	09 19 38	5920	Slight.
		N	iS	27 10		
	Bombay	E	iP	09 19 47	6055	Slight.
			PP	21 51		
			eS	27 25		
			iPKS	27 48		
			SS	31 00		
			LR	36 00		
		N		Phases not identifiable due to thickness of trace.		
	Colombo	E	i	09 34 ?		
			P	38 57		Amp = 0.5 mm.
21	Calcutta	N	e	21 05 53		Tremor.
			i	07 55		
			i	09 31		
	Kodaikanal	E	e(?)	19 39 25		Tremor.
				°	°	
24		Epc:		49.5N., 156 E. in Kurile Islands		
				H = 13h 10m 41s; h = about 100 km (U.S.C.G.S.).		
	Kodaikanal	E	e(?)	13 19 59		Slight; distant. Phases not clear.
			S	32 10		
			M	51 40		

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Sept. 1951 24 (Contd)	New Delhi	N,E	eP	13 20 54	8720	Slight.
		N	PcP	21 32		
			eS	29 27		
			SS	38 24		
			L_Q	36 55		
			M	44 27		
	Calcutta	E	e	13 21 09		Slight; distant.
			-	30 39		
			M	43 43		
	Poona	Z,E	P	13 21 43	8130	Moderate.
			PcP	21 53		
			S	31 12		
			ScS	31 20		
			PS	32 04		
			PPS	39 22		
			L_Q	42 30		
			M	51 00		
	Bombay	E	eP	13 21 59	8390?	Slight.
		N	P	21 -		
		E	eS(?)	31 27		
			SKS	31 50		
			i	32 16		
			M	51 19		Per.= 16 secs. μ = 2.
		N	M	51 20		Per.= 18 secs. μ = 5.
	Hyderabad	N,E	P	13 21 59	7790	
		N.	S	31 10		
		E	M	49 38		Per.= 18 secs. μ = 5.
		N	M	50 08		Per.= 18 secs. μ = 5.
	Probable Epc:			Near 31.5N., 96.5E. in China O = 13h 30.6m (Poona).		
	Calcutta	E	eP	19 33 20	1,235	Slight.
			e(?)	34 39		
			iS	35 26		
			SS	35 39		
			e(?)	36 01		
	New Delhi	E	eP	19 34 29	1,850	Slight.
		N,E	eS	37 34		

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Sept. 1951						
24 (Contd)	Poona	Z	P	19 35 22	2400	Slight.
		T	S	39 17		
	Bombay	T	iP	19 35 42	2765	Slight.
			iS	40 03		
			L_G	40 58		
		N	Movements insignificant.			
25		0 = 11h 25m 16s (Poona).				
	Poona	Z	eP	11 28 02	1250	Slight.
		T	PPP	28 19		
			eS	30 10		
			L_R	30 33		
			?	31 -		
	Bombay	N,E	e	11 30 -		Tremor.
27	Bombay	N	e	20 15 -		Feeble.
		E	Record artificially disturbed at the time.			
28	Bombay	N,E	e	00 55 -		Feeble.
28	New Delhi	N,E	eP	01 59 34	990	Slight.
		E	eS	02 01 16		
		Epc: 8 S., 130 E., H = 03h 31.1m (B.C.I.S.).				
	Bombay	N	i(S)	03 43 36		Feeble.
		E	Loss of record.			
	Poona	Z,E	iP	03 40 58		Slight.
		E	e	48 20		
28		Epc: 50.5N., 130 W., H = 15h 18m 27s (U.S.C.G.S.).				
	Bombay	N	e(PP)	15 39 -		Feeble.
		E	Record too faint.			
	Poona	E	e	15 41 12		
			e	43 -		

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Sept. 1951						
28-29				° °		
		Epc:		30 S, 178 W.		
				H = 23h 28m 37s		(U.S.C.G.S.).
	Calcutta	E	ePP	23 47 01		Slight.
			iSKKS	53 39		
			PS	56 31		
			e	57 33		
	Poona	N	$ePKP_1$	23 47 07		Slight.
			PKS_1	50 43		
			PS	57 42		
			e	57 54		
			PPS	59 20		
			e	00 00 05		
			SS	04 37		
			SSP	04 54		
			SSS	08 20		
			M	27 -		
	Bombay	N	ePP	23 48 36		Slight. Distant.
			ePS	58 13		
		E		Record too faint.		
	Hyderabad	N	ePP	23 57 23		
			M	00 24 23		Per.= 18 secs. μ = 10.
		E	M	28 05		Per.= 18 secs. μ = 5
	New Delhi	N	e	23 58 00		Slight.
			e	00 29 20		Surface waves.
	Kodaikanal	E	e(PP)	23 58 35		Slight. Distant. Phases not clear. Per.= 18 secs. μ = 16.
29	Colombo	E	(SS)	00 02 13		P uncertain due to strong microseisms. Several maxima of equal amp follow. Amp = 0.5 mm.
			e	28 13		
			M	27 23		

NON-INSTRUMENTAL REPORTS.

FOLLOWING TABLE CONTAINS A LIST OF EARTHQUAKES THAT ARE REPORTED BY VOLUNTARY OBSERVERS FROM VARIOUS STATIONS :-

Place where felt	Date	G.M.T. of earthquake	Duration	Intensity R/F	No. of shock	Remarks.
Dhubri	Sept. 6	08h 10m	2 secs	III	1	
Dalhousie	Sept. 12	20h 43m	30 secs	VI	-	
Srinagar	Sept. 12	20h 45m	3 secs	VII	2	
Amritsar	Sept. 12	20h 48m	30 secs	VII	1	One or more shocks.
Tezpur	Sept. 30	11h 05m	40 secs	IV	3 or 4	

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S.M.
3.6.53

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

S E I S M O L O G I C A L B U L L E T I N

October, 1951.

Published under the direction of
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Director General of Observatories.

Instruments and their Constants.

Station	Instrument	Comp.	Period in secs.	Static Magnification	Damping ratio	Paper Speed mm/min.
Bombay	Milne-Shaw (Upto 12.10.51)	N	12	250	-	8.0
	Milne-Shaw (From 13.10.51)	N	12	350	-	16.0
	Milne-Shaw	E	12	350	9:1	8.0
	Sprengnether	E	7	-	-	30.0
	Milne-Shaw	E	12	250	20:1	8.0
Calcutta	Wood-Anderson	N	2	870	Critical	30.0
	Wood-Anderson	E	18	32	-	25.4
	Omori-Ewing	N	19	30	-	25.4
	Omori-Ewing	E	12	250	20:1	8.0
	Milne-Shaw	E	30	12	-	-
Colombo	Omori	N	12	249	20:1	8.0
Dehra Dun	Milne-Shaw	N	12	242	20:1	8.0
Hyderabad	Milne-Shaw	E	10	250	20:1	8.0
	Milne-Shaw	E	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	N	4	1000	20:1	16.0
New Delhi	Wood-Anderson	N	2	2000	30:1	60.0
	Wood-Anderson	E	30	30	-	12.0
	Omori-Ewing	E	12	250	20:1	8.0
	Milne-Shaw	N	4	1100	20:1	16.0
Poona	Wood-Anderson	E	7.2	-	-	30.0
	Sprengnether	E	To = 1.0 Tg = 0.28		-	60.0
	Benioff	V				

DATE	STATION	COMPS.	PHASE	O.T.T. h. m. s.	Δ km.	REMARKS.
Oct. 1951						
1	Hyderabad	N	P	11 08 34		Per.= 18 secs. μ = 6.
		E	S	08 22		Per.= 15 secs. μ = 8.
2		Epc: 25 N., 94 E., in Manipur State O = 10h 58m 40s (Poona).				
	Calcutta	E	P	00 01 02	685	Moderate; first movement West.
			S	02 08		
				02 13		
				02 18		
	Hyderabad	E	P	00 00 20	3,010	
		N		00 26		
		E		00 33		
				00 37		
		N	P	00 40		Per.= 10 secs. μ = 3.
	New Delhi	E,F	P	00 00 42	1,690	Slight.
			P	00 00 52		
		N	P,P	00 01 00		
		N,E	S	00 01 26		
			S	00 01 34		
		N	S	00 01 54		
			M	00 02 38		
	Poona	Z,E	P	00 01 06	2,231	Slight.
		E	P	00 01 27		
			PP	00 01 33		
			S	00 01 55		
			S	00 02 03		
		N,E	S	00 02 13		
		E	SSE	00 02 25		
			SE	00 02 37		
		L,E	M	00 02 58		Per.= 6 secs. μ = 6.
	Bombay	E	P			
		N	P	00 01 23	2,345	Slight.
		E	S	00 01 50		
		N	S			
		N	L	00 02 24		
		E,SE	L	00 02 33		
		N	M	00 02 42		Per.= 7 secs. μ = 8.
		E	M	00 02 [illegible]		
	Dehra Dun	N	P	00 00 42		

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	△ Km.	REMARKS.
Oct. 1951						
2	Calcutta	E	e	02 20 46		Slight; near.
			i	21 22		
2	Calcutta	E	e	02 42 36		Slight; near.
			i	43 27		
4		Epc: 38°N., 69°55. in Hindukush; O = 05h 46m 04s (Poona).				
	New Delhi	N,E	iP	05 45 17	990	Slight. First movement South and East.
		E	PP	45 25		
			PPP	45 39		
		N	LQ	46 40		
		N,E	iS	46 59		
		N	SS	47 10		
			eS	47 33		
			eS	47 39		
	Poona	Z,E	iP	05 47 04	1,813	Slight.
		E	eP	47 20		
			PPP	47 26		
			iS/LQ	50 07		
			SS	50 27		
			eS	50 41		
			LR	50 52		
			PSP	51 25		
			M	52 17		
	Hyderabad	N	eP	05 47 20	2,230	
		N,E	S	51 01		
	Bombay	E	i	05 52 26		Feeble; near.
		N		Loss of record.		
8		Epc: 38°N., 60°E.; H = 11h 31.4m (B.C.I.S.). Lpc: 34°N., 59°E. in Iran; O = 11h 34m 02s (Poona).				
	New Delhi	N,E	eP	11 36 14	2,010	Slight.
		N	eS	39 51		
			eS	40 12		
			M	42 51		
	Bombay	E	iP	11 36 47	2,290	Slight.
			eS	40 33		

DATE	STATION	COMPT.	PHASE	G.M.T.	△	REMARKS.
				h. m. s.	km.	
Oct. 1951						
8 (contd)	Poona	Z	iP	11 36 55	2230	
		E	eP	36 55		
			eS	40 36		
			LQ	40 52		
			SS	41 23		
			LR	41 52		
			M	43 -		
	Hyderabad	N	e(S)	11 42 11		
			M	49 19		Per.= 11 secs. μ=2.
	Calcutta	E	eSS?	11 45 09		Slight; near.
			I	49 39		
9	Poona	Z	iP	04 57 49		
11			P	0		
		Epc:	5°S., 152°E.; H = 01h 37m 31s (U.S.C.G.S.)			
			6°S., 151°E.; H = 01h 37m 32s (B.C.I.S.).			
	Calcutta	E	iP	01 48 41	8,090	Slight; First movement west.
			PP	51 28		
			iS	58 07		
			QS	02 02 46		
			LQ?	07 20		
			M	15 15		
	Colombo	E	P	01 49 05		
			S	58 30		
			L	02 14 20		
			Mn	17 33		Amp = 0.4 mm.
	Kodiakanal	E	iP	01 49 25	8,280	Slight. Initial movement west.
			eS	59 00		
	New Delhi	N,E	eP	01 49 40	8,660	Moderate.
			eS	59 34		
		N	S-S	59 57		
			PS	02 00 14		
			LR	13 36		
			M	22 12		
	Hyderabad	E	eP	01 49 22	8,370	
			iS	59 02		
			PS	59 57		
			L	02 14 36		
		N	M	19 24		Per.=22 secs. μ = 8.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Oct. 1951 11 (Contd)	Poona	Z,E	iP	01 49 48	8,800	Slight.
		N	eP	49 52		
		E	PP	53 00		
			iS			
		N	eS	59 48		
		E	SoS	02 00 03		
			PS	00 50		
			PPS	01 08		
			M	20 21		
	Bombay	E	eP	01 49 55	8,935	Feeble.
			eS	02 00 01		
11		Epc:	43°N., 143°E.; H = 04h 53m 00s (B.C.I.S.); Hokkaido, Japan; H = 04h 53m 00s (U.S.C.G.S.).			
	Poona	Z	iP	05 31 16		
	New Delhi	N,E	eP	10 41 25		Slight.
		N	e	44 10		
			i	44 30		Probably surface waves.
			e	48 32		
	Poona	E	e	10 49 32		Slight. Surface waves.
	Hyderabad	E	M	10 50 15		Per. = 8 secs. μ = 2.
11		Epc:	Hokkaido, Japan ; H = 11h 03m 38S; h = 200 kms (U.S.C.G.S.).			
	Poona	Z	iP	11 43 17		
	Kodaikanal	E	e?	11 51 43		Tremor:, Very near.
12	Poona	Z	iP	08 33 06		
12	Poona	Z	iP	12 18 47		
13	New Delhi	E	eP	19 13 55	680	Slight.
			iS	15 06		
			SS	15 17		

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Oct. 1961						
13					°	
	Epc:	60° S., 19° W. in Sandwich Island region; H = 22h 28m 06s (U.S.C.G.S.) H = 22h 28m 11s (B.C.I.S.)				
	Kodiakanal	E	eSKS	1 22 52 44		Slight; distant.
	Poona	N	eSKS	1 22 53 14		Slight.
		E	e	56 35		
		N	e	23 20 34		
	Hyderabad	E	eSKS	1 22 53 19		
		N	M	23 20 31		Per.= 18 secs. μ = 7.
		E	M	22 52		Per.= 15 secs. μ = 3.
	Calcutta	E	eLKJ	1 22 53 37		Slight; distant.
			i	58 10		
	Bombay	E	e(M)	23 25 -		Very feeble.
14						
	Epc:	In Java Sea; 8° S., 107° E.; H = 09h 29m 39s (U.S.C.G.S.). H = 09m 29s 37s (B.C.I.S.).				
	Colombo	E	P	09 35 56		
			S?	41 01		
			L	49 30		Amp = 0.3 mm.
			M	51 06		Several maxima of equal amplitude follow.
	Kodaikanal	E	iP	09 36 28	3735	Slight; distant.
			eS	41 00		
			SS/LQ	44 00		
			LR	45 35		
			Sec	46 30		
			M	48 28		Per.= 18 secs. μ = 4.
	Hyderabad	E	iP	09 36 55	4150	
			iS	42 44		
			L	48 43		
			M	52 55		Per.= 19 secs. μ = 4.

DATE	STATION	COMPT.	PHASE	G.M.T.	△	REMARKS.
				h. m. s.	km.	
Oct. 1951						
14 (Contd)	Poona	Z	iP	09 37 30	4610	Slight.
		E	PP	39 08		
			PcP	39 16		
			PPP	39 42		
			ScP	43 00		
			iS	43 46		
			SS	46 48		
			ScS	47 15		
			LQ	47 24		
			SSS	47 42		
			LR	49 25		
			M	52 58		
	Bombay	E	e	09 37 -		Feeble.
			e	43 08		
	New Delhi	N,E	iP	09 38 00	5000	Moderate.
			iS	44 39		
			O	O		
15		Epc:	36.5N., 70 E. in Hindukush			
			O = 14h 48m 40s (Poona)			
	New Delhi	N,E	P(?)	14 51 09	950	Slight; P in time - gup; 4 secs. uncertainty in absolute time.
		E	PP	51 17		
		N,E	PPP	51 25		
		E	LQ	52 37		
		N,E	iS	52 47		
			SS	52 59		
			SSS	53 09		
		N	S*	53 21		
			Sg	53 47		
	Poona	Z	iP	14 52 55	2011	Slight.
		E	PP	53 11		
			PPP	53 20		
			iS	56 15		
			LQ	56 19		
			SS	56 41		
			SSS	56 55		
			LR	57 11		
			M	58 45		
			PcS	15 00 45		
			ScS	04 13		
	Bombay	E	eP	14 52 -		Feeble; near. Microseisms throughout E - Record.
			M	58 -		

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Oct. 1951 15	Epc: 33° N., 134° E.; off south coast of Shikoku, Japan H= 21h 01m 57s (U.S.C.G.S.). 33.2° N., 133.5° E.; H = 21h 01m 57s (B.C.I.S.).					
	Calcutta	E	e	21 09 59		Slight; distant.
			e	16 14		
			i	16 21		
			i	19 56		
			Mn	27 32		
	New Delhi	E	eP	21 10 44	5390	Moderate.
		N	eS	17 45		
			Sn	21 10		
			M	27 28		
	Poona	Z	eP	21 11 34	7310	Slight.
		N,E	eS	19 27		
		N	PPS	19 56		
			M	31 19		
		E	M	32 -		
	Bombay	E	e	21 11 -		Very feeble.
	Kodaikanal	E	ePP	21 13 48		Slight; distant. Phases not clear.
	Hyderabad	N	S	21 18 38		Per.= 22 secs. A = 12.
			M	30 52		
17	Epc: 38° N., 67° E. (Poona). H = 7h 33m 00s					
	New Delhi	E	iP	07 34 44	73[illegible]	Slight.
			PP	34 51		
			PPP	34 59		
		N,E	Pg	35 16		
			LQ	35 48		
			iS	36 01		
			SS	36 12		
			SSS	36 22		
			i	36 37		
			Sg	36 43		

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ	REMARKS.
Oct. 1951						
17 (Contd)	Poona	Z	iP	07 33 57	1435	Slight.
		E	PP	34 07		
			PPP	36 13		
			LQ	38 47		
			eS	38 22		
			SS	38 37		
			SSS	38 50		
			LR	42 38		
			M	42 56		
	Hyderabad	N	eP	07 36 50	2150	
			S	40 28		
			L	41 50		
			M	42 57		Per.= 8 secs. μ = 3.
	Dehra Dun	N	e	07 37 06	1240	
			e	39 54		
			M	41 00		Per.= 12 secs. Amp = 0.01".
	Bombay	E	eS(?)	07 38 44		Feeble.
	Calcutta	N	e	07 40 42	1100	Slight.
			i	42 25		
			e	42 47		
				43 00		
18	Epc: 28.8N., 94 E.; 29°N., 94°E.					in North-East Assam; O = 05h 02m 37s (Poona). H = 05h 02m 37s (B.C.I.S.). Felt moderately at Jorhat, Dibrugarh, North-Lakhimpur and Tezpore.
	Calcutta	N	iP	05 04 40	890	Slight; First movement North.
			eS	05 06 00		
			iS	05 12		
	New Delhi	E	eP	05 06 08	1620	Slight.
			PP	06 19		
			PPP	06 30		
		N,E	LQ	08 46		
			eS	08 52		
			SSS	09 28		
			M	10 45		

		T.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Oct. 1931 18 (Contd)	Hyderabad	E	iP	05 06 42	6100	
			iS	10 18		
			L	12 07		
			M	13 31		Per.= 8 secs. μ = 2.
	Poona	Z,N,E	iP	05 07 24	2335	Slight.
		N,E	PP	07 30		
		E	PPP	07 42		
			iS	11 14		
		N	eS	11 25		
		N,E	PS	11 31		
		E	SS	11 54		
			SSS	12 06		
		N,E	LR	12 24		
		N	M	13 34		Per.= 5 secs. μ = 8.
		E	M	13 36		
			SeP	14 40		
			SeS	12 20		
	Bombay	E	iP	05 07 35	2520	Slight.
			iS	11 40		
			SSS	12 48		
			M	14 -		
	Kodaikanal	E	eP	05 07 53	2820	Slight; near.
			eS	12 18		
			PcS	15 08		
			M	16 28		
	Colombo	E	PP(?)	05 08 42		Over-lapping trace.
			S	13 -		
18	Epo: 42° N., 142° E. near Hokkaido, Japan; H = 08h 26m 25s; h = 100 kms (U.S.C.G.S.) 41.9°N., 142.2°E.; H = 08h 26m 24s; h= 60 kms (B.C.I.S.)					
	New Delhi	N,E	iP	08 37 09	5980	Moderate; First movement North and East.
		N	PP	37 28		
			eS	43 13		
			PS	43 23		
			M	55 44		
	Hyderabad	E	iP	08 36 18	6490	,
			iS	44 21		
			SS	48 28		
			M	09 00 46		Per.= 15 secs. μ = 4.

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Oct. 1951 18 (contd)	Poona	Z,N,E	iP	08 36 38	6633	Moderate.
		E,N	PcP	37 12		
			PP	38 52		
			[illegible]	40 30		
			PcS	41 10		
			[illegible]	44 48		
			PS	45 08		
			PPS	45 28		
			SS	48 52		
			SSS	51 24		
			[illegible]	53 38		
			[illegible]	54 38		
			M	09 00 00		
	Kodaikanal	E	iP	08 36 54	7.055	Slight; distant. Initial movement of P and S towards west. Per.= 18 secs. μ = 9.
			iS	45 27		
			M	09 01 15		
			SKKS	04 33		
			SKKS	10 03		
	Bombay	E	e(PP)	08 39 01		Feeble; distant.
			e(S)	45 11		
	Colombo	E	(S)	08 45 34		S - uncertain, overlapping trace.
			e	09 04 19		
			M	06 29		
18			Epc:	Near 28.5N., 98.5E., north-east Assam. 0 = 21h 33.5m (Poona). Felt moderately at Jorhat.		
	Calcutta	N	e	21 26 04		Slight.
			iSg(?)	27 24		
			e	27 30		
	New Delhi	N,E	P(?)	21 26 09	1710	Slight; P in time-mark. Uncertainty of 4 secs. in time.
		E	PPP	26 31		
		N,E	LQ	28 59		
			iS	29 03		
			SS	29 21		
	Poona	Z	iP	21 27 30	2445	Slight.
		E	iS	31 29		
		N,E	i	34 00		
		E	M	34 45		
	Bombay	E	e	21 34 -		Very feeble.

DATE	STATION	COMPT.	PHASE	G.M.T.	△	REMARKS.
				h. m. s.	km.	
Oct. 1951						
19				0 0		
			Epc:	3.5S., 70.0E. Indian Ocean.		
				O = 12h 51m 00s (Poona).		
	Colombo	E	P	12 54 19		
			L	58½ -		M' not well defined.
	Kodaikanal	E	eP	12 54 42		Slight. Per.= 7 secs. μ = 3.
	Poona	N	iP	12 55 47	2346	Slight.
		Z,E	iP	55 49		
		E	PP	56 09		
			PPP	56 23		
		N	eS	59 39		
		E	iS	59 40		
			PcP	59 44		
			LQ	59 55		
			SS	13 00 18		
		N	SS	00 20		
		E	SSS	00 31		
		N	LR	00 48		
			M	02 52		
	Hyderabad	E	iP	12 56 01		
			M	13 02 12		Per.= 18 secs. μ = 7.
19				0 0		
			Epc:	41 N., 142 E: off south-west of Hokkaido, Japan;		
				H= 14h 51m 14s; h= 100 kms (U.S.C.G.S.).		
				Felt at Hokkaido.		
	New Delhi	N,E	eP	15 00 45		Slight.
		N	e	02 30		
		e		06 36		
	Poona	Z	iP	15 01 44		
19				0 0		
			Epc:	Near 37 N., 80 E.;		
				O = 17h 17.1m (Poona).		
	New Delhi	N,E	eP	17 19 03	870	Slight.
			eS	20 33		
			SS	20 46		
		N	M	21 24		

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Oct. 1951						
19 (Contd)	Poona	Z	iP	17 21 20	2060	Slight.
		E	PP	21 39		
			eS	21 43		
			LQ	23 11		
			SS	23 29		
			SSS	23 43		
		N,E	M	28 11		
	Hyderabad	E	M	17 27 09		Per.= 9 secs. μ = ?
21	New Delhi	E	eP	11 34 22	740	Slight.
			PS	34 54		
		N,E	eS	35 40		
		E	LR	35 47		
			SS	35 51		
			SSS	36 01		
		N,E	M	36 22		
	Epc:	23.4°N., 121.9°E.;		M = 21h 34m 18s		(B.C.I.S.);
		24°N., 122°E.;		H = 21h 34m 13s		(U.S.C.G.S.);
		229.8N., 122.7E.;		O = 21h 34m 06s		(Poona);
		Magnification 7¾ to 8 (Pasha); 7.5 (Rome); 7.2 (Strasbourg)				
		6¼ to 7 (Berkeley); 6¾ (Pasadena).				
	Calcutta	E	iP	21 40 30	3890	Very great. First movement west.
			PP	41 48		
			iS	46 02(?)		
	New Delhi	E	eP	21 41 51	4480	Great.
		N	eP	41 58		
		E	PP	43 27		
		N	PP	43 33		
			PPP	44 12		
			PcS	47 35		
		E	S(?)	47 59		
		N	iS	48 06		
		E	eS	50 56		
		N	SS	51 03		
			ScS	52 04		
			LR	53 23		
			M	55 42		
			Mng	56 51		Per.= 10 secs. μ = 832.
			Mng	22 00 51		Per.=13 secs. μ = 956.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	△	REMARKS.
Oct. 1951 21 (Contd)	Kodaikanal	E	iP	21 41 54(?)	4980	Great. Initial movement of P and S towards West. Time uncertain.
			PP	43 39		
			PPP	44 24		
			iS	48 32		
			LR	54 52		
			M	58 27		Per. = 15 secs. μ = 133.
	Hyderabad	N	iP	21 41 57	4600	△ from iS_E-iP_E.
		E	iP	41 59		
			PP	43 44		
		N	S	46 12		
		E	iS	48 18		
		N	ScS	51 32		
			L	55 32		
		E	M	58 21		Per.=16 secs. μ = 286.
		N	M	22 00 25		Per. = 18 secs. μ = 519.
	Poona	Z	iP	21 42 29	5022	Moderate.
		N	iP	43 31		
			PP	44 27		
			PPP	45 09		
			iS	49 09		
			SS	52 27		
			LR	54 50		
			M	59 57		
			Mn	22 02 08		Per.= 20 secs. μ = 376.
	Bombay	E	iP	21 42 40	5335	Moderate.
			ePP	44 26		
			iS(?)	49 38		
			PPS	49 56		
			SS	53 12		
			LQ	54 20		
			LR	55 14		
			M	22 06 25		Per. = 17 secs. μ = 39.
	Dehra Dun	N	eP(?)	21 43 39		Absolute times uncertain.
			eS(?)	49 48		
			L	57 00		
			M_1	22 01 24		Per. = 24 secs. Amp. = 1.5".
			M_2	03 48		Per. = 27 secs. Amp. = 1.0".
21			Epc: Formusa; H = 22h 55m 54s (USCGS).			
	Poona	Z	iP	23 03 41		

DATE	STATION	COMPT.	PHASE	G.M.T.	△	REMARKS.
				h. m. s.	km.	
Oct. 1951 22	Epc:			24°N., 122°E.; H = 03h 29m 26s (U.S.G.G.S.)		
				23°4N., 121°9E.; H = 03h 29m 26s (B.C.I.S.)		
				24°5N., 122°E.; H = 3h 29m 28s.(Poona).		
				Destructive in Formosa. Hualien was worst affected. 100 killed and 200 injured.		
	Calcutta	F	iP	03 35 46	3,440	Great. First movement West.
			PPP	37 02		
			e?	37 18		
			PcP	38 41		
			iS	40 51		
			SS	42 36		
	New Delhi	N,E	eP	03 37 04	4,300	Great.
		N	PP	38 06		
			PPP	39 02		
			i	39 15		
			iS	43 02		
			SS	45 51		
			LQ	46 07		
			ScS	47 17		
			LR	48 09		
			M	50 40		
			Mn	52 27		Per.= 14 Secs. μ= 587.
	Hydorabad	E	iP	03 37 06	4,660	
		N	PP	38 53		
		N,E	iS	43 26		
		E	SS	46 47		
			M	53 08		Per.= 15 secs. μ= 211.
	Colombo	E	P	03 37 38		Beginning time approximate. Over lapping trace. End merged into following shock. Amp.= 7.0mm.
			S	44 13		
			L	53 03		
			M	56 40		
	Kodaikanal	E	iP	03 37 39	5,000	Great. Initial movement of P towards East.
			iS	44 18		
			LR	49 48		
			M	53 18		Per.= 16 secs. μ= 183.
	Poona	E	iP	03 37 42	5,056	Great.
		N	eP	37 44		
			iS	44 23		
		E	iS	44 24		
		N	SS	47 24		
			LR	50 57		
			M	54 24		Per.= 15 secs. μ= 47.9.
	Bombay	E	eP	03 37 47	5,210	Moderate.
			ePP	39 33		
			PPP	40 29		
			re	43 49		
			eS	44 33		
			SS	48 10		
			SSS	49 17		
			LR	51 08		
			M	55 04		
			Mn	56 42		Per.= 15 secs. μ = 93.

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Oct. 1951						
22 (Contd)	Dehra Dun	N	eP	03 38 42	4,171	Absolute times uncertain.
			eS	44 24		
			L	50 48		
			M	55 34		Amp:= 1.7".
22		Epc:	After shock of the preceeding one. H = 04h 26m 05s (U.S.C.G.S.), Mag. 7 (Praha).			
	Calcutta	N	e(P)	04 34 35		Moderate. Beginning merged in previous shock. Possibly after shock of the very great Formosa shock.
			i(S)	39 34		
	Colombo	E	P	04 36 16		End merged in following shocks.
			S	42 53		
			L	54 -		
			M	56 58		Amp.= 1.0mm.
	Poona	Z	iP	04 36 21	4923	Moderate. Beginning merged in earlier shock in N. and E. records.
		N	eP	36 23		
		E	iP(?)	36 24		
		N	PP	38 16		
		E	eS	43 01		
		N?	M	53 08		
			Mn	55 24		Per.= 15 secs. μ = 81.
	Bombay	E	iP	04 36 29	5,055	Slight.
			ePP	38 19		
			iS	43 11		
			M	59 38		Per.= 11 secs. μ = 5.
	Hyderabad	E	S	04 42 01		P lost in previous shock.
			M	52 21		Per.= 11 secs. μ = 32.
22.		Epc:	After shock of the Formosa shock of 22nd. H = 05h 17m 44s (U.S.C.G.S.) Mag. 6½ (Praha).			
	Hyderabad	E	iP	05 25 27	4600	
			iS	31 43		
			SS	35 08		
			L	37 50		
			M	41 14		Per.= 16 secs. μ = 13.
	Colombo	E	P	05 25 59		End merged in following shocks.
			S	32 24		
			M	46 39		Amp.= 0.5mm.
	Poona	Z	iP	05 26 00	4665	Moderate.
		N	PP	27 24		
			PPP	28 09		
			eS	05 32 20		
			SS	35 24		
			LR	37 56		
			M	41 25		

ATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
ct. 1951 22 (Contd)	ombay	E	iP	05 [illegible]	4,920	Slight.
			ePP	28 08		
			eS	32 50		
			SS	36 34		
			M	46 53		Per.= 10 secs. μ= 2.
	Calcutta	N	e	05 27 03		Slight.
22		Epc:	After shock of Formosa shock of 22nd. H = 05h 23m 53s (U.S.C.G.S.).			
	Poona	Z	iP	05 32 12		Slight.
22	Dehra Dun	N	e	05 36 38		
			e	41 12		Per.= 21 secs. Amp.=0.25".
			M_1	06 07 12		Per.= 21 secs. Amp.= 0.3".
			M_2	09 33		
22	Hyderabad	E	P	05 44 29	4,680	
			S	50 50		
			M	06 00 27		Per.= 12 secs. μ = 5.
		Epc:	After shock of Formosa shock of 22nd. H = 05h 43m 01s (U.S.C.G.S.) Mag. $6\frac{1}{4}$ to $6\frac{1}{2}$ (Pasadena); 7.2 (Strasbourg); $7\frac{1}{4}$ to $7\frac{1}{2}$ (Praha); $6\frac{3}{4}$ to 7 (Wellington).		
	Calcutta	N	iP	05 49 36	3,665	Great; First movement South.
			iS	54 54		
	New Delhi	N,E	eP	05 50 41	4,460	Moderate.
		N	PP	52 23		
			iS	56 48		
			PS	56 56		
			SS	59 45		
			LQ	06 00 02		
			SSS	00 24		
			LR	02 21		
			M	05 58		
			Mn	09 00		Per.= 16 secs. μ = 145.
	Colombo	E	P	05 51 11		Amp. = 1.0mm.
			LQ	06 01 31		
			M_1	08 58		
			M_2	12 01		
	Poona	Z	iP	05 51 16	4,980	Slight. Later phases
		N	iS	57 54		lost during changing
			SS	06 01 27		of charts.
	Kodaikanal	E	P	05 51 21	5,000	
			S	58 00		
	Bombay	E	iP	05 51 29	5,055	Slight.
			iPP	53 19		
			eS	58 11		
			PPS	58 29		
			M	06 13 45		Per.= 11 secs. μ = 7.
	Poona	Z	e	10 34 03		Slight.
	Calcutta	E	e	10 37 22		Slight; probably after shock of very great Formosa shock.

DATE	STATION	COMPT.	PHASE	G.M.T.	△	REMARKS.
				h. m. s.	km.	
Oct. 1951 22		Epc:	After shock of Formosa shock of 22nd; H = 11h 41m 02s (U.S.C.G.S.); Mag. 6½ – 6½ (Prana); 6½ (Wellington and Rome).			
	Calcutta	E	eP	11 17 25	3880	Moderate.
			iS	28 56		
	New Delhi	E	eP	11 18 41	4450	Moderate.
		N	PP	20 16		
			eS	24 47		
			SS	27 44		
			M	33 41		
	Hyderabad	E	eP	11 18 45	4810	
			PP	20 21		
			eS	25 13		
			SS	28 27		
			L	37 39		
			M	35 36		Per.= 14 secs. μ = 10.
	Colombo	E	P	11 19 20		Amp.= 0.6mm.
			S	25 40		
			L	36 00		
			M	40 07		
	Poona	Z	iP	11 19 20	5000	Slight.
		E	iP	19 21		
			PP	21 30		
			iS	25 59		
			SS	29 24		
		N	M	36 10		
	Kodaikanal	E	eP	11 19 25	5000	
			eS	26 04		
			M	35 04		Per.= 18 secs. μ = 11.
	Bombay	E	eS?	11 26 19		Feeble.
22		Epc:	After shock of Formosa quake of 22nd. H = 12h 43m 38s (U.S.C.G.S.); Mag. 6.3 (Rome).			
	Kodaikanal	E	e	12 54 54		
			eS	13 03 33		
			M	12 33		Per. = 15 secs. μ= 7.
	Calcutta	E	iP	12 55 00	3320	Moderate; First movement East.
			iS	59 57		
	New Delhi	N,E	eP	12 56 16	4450	Moderate.
		N	PcS	13 02 10		
			*iS	02 22		
			LQ	05 26		
			M	10 45		
			*SS	05 08		
	Hyderabad	E	iP	12 56 27	4470	
			PP	58 00		
			iS	13 02 35		
			SS	05 54		
			L	09 06		
			M	13 12		Per.= 11 secs. μ = 8.

DATE	STATION	COMPT.	PHASE	G.M.T.	△	REMARKS.
Oct. 1951				h. m. s.	km.	
22 (Contd)	Colombo	E	P	12 56 47		End merged into following shock.
			S	13 03 20		
			L	14 20		
			M	17 35		Amp. = 0.3mm.
	Poona	Z,E	iP	12 56 55	4,946	Slight.
		E	PP	58 41		
			PPP	59 25		
			iS	13 03 31		
		N	iS	03 32		
		N,E	SS	06 39		
		E	LQ	07 30		
			LR	09 38		
			M	13 10		
	Bombay	E	eP	12 57 10	4,910	Feeble.
			eS	13 03 44		
	Dehra Dun	N	e	13 10 03		
22	Poona	Z	iP	13 13 21		
	Hyderabad	E	M	13 26 06		Per.= 11 secs. μ = 8.
	Colombo	E	L	13 27 20		
			M	30 40		Amp.= 0.5mm.
22		Epc:	After shock of Formosa quake of 22nd. H = 14h 40m 42s (B.C.I.S.); Mag. 6.5 (Rome).			
	Calcutta	E	iP	14 53 16	3,190	Moderate; First movement West.
			iS	53 04		
			PcS	15 00 10		
			LR	00 40		
	Hyderabad	E	P	14 54 30	4,450	
			PP	56 05		
			eS	15 00 37		
			SS	04 03		
			M	11 46		Per.= 12 secs. μ = 6.
	New Delhi	E	eP	14 54 31	4,450	Moderate.
		N	eS	15 00 27		
			M	09 19		
	Kodaikanal	E	e?	14 54 54		Phases not clear.
	Colombo	E	P	14 54 56		End merged into following shock.
			S	15 01 34		
			L	12 19		
			M	15 36		Amp.= 0.3mm.
	Poona	Z,E	iP	14 55 01	4,968	Moderate.
		E	PP	56 51		
			PPP	57 29		
			iS	15 01 39		
	Bombay	E	eP	14 55 12	4,910	Feeble.
			eS	15 01 46		

			PT.	PHASE	G.M.T.	Δ	REMARKS.
					h. m. s.	km.	
Oct. 1951 22			Epc:	After shock of Formosa quake of 22nd. H = 15h 23m 47s (U.S.C.G.S.).			
	Calcutta	E		iP	15 30 15	3,300	Moderate. First movement
				iS	41 11		East.
				iS	41 46		
				Mn	52 39		Per.= 12 secs. μ = 206.
	New Delhi	N,E		eP	15 37 25	4,460	Moderate.
		N		eP	39 05		
				PcS	43 22		
				iS	43 32		
				LQ	46 35		
				M	54 55		
				M	56 50		Per.= 15 secs. μ = 55.
	Hyderabad	E		iP	15 37 37	4,470	
				P	39 10		
				iS	43 43		
				eS	47 04		
				L	50 27		
				M	5. 55		Per.= 12 secs. μ = 22.
	Colombo	E		P	15 37 58		
				S	44 30		
				L	55 19		
				M	58 43		Amp.= 0.6mm.
	Kodaikanal	E		eP	15 38 03	5,000	
				eS	44 42		
				M	55 42		
	Poona	Z,E		iP	15 38 04	4,990	Moderate.
		E		PP	39 49		
				PPP	40 35		
		N,E		iS	44 43		
		E		ScS	47 43		
		N		M	55 10		Per.= 11 secs. μ = 20.
	Bombay	E		iP	15 38 13	4,890	Slight.
				iS	44 46		
				eS	48 09		
				M	58 57		Per.= 13 secs. μ = 3.
22	Poona	Z		iP	16 15 15		
	Hyderabad	E		M	16 32 01		Per.= 12 secs. μ = 5.
22	Calcutta	E		i	17 42 12		Tremor.
	Calcutta	E		e	18 11 16		Tremor.
				i	17 26		
22			Epc:	After shock of Formosa quake of 22nd. H = 18h 42m 32s (U.S.C.G.S.).			
	Calcutta	E		iP	18 48 51	3,500	Moderate. First movement
				iS	54 00		East.
	New Delhi	E		eP	18 50 07	4,540	Moderate.
		N		ScS	56 08		
				eS	56 19		
				LQ	59 22		
				M	19 04 53		

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Oct. 1952.						
22 (Contd)	Hyderabad	E	iP	18 50 16	4,180	
			PP	51 49		
			eS	56 07		
			M	19 06 23		Per.= 11 secs. μ = 3.
	Colombo	E	P	18 50 36		
			S	57 08		
			L	19 07 46		
			M	11 08		Amp.= 0.4mm.
	Kodaikanal	E	eP	18 50 46	5,000	
			eS	57 24		
			M	19 08 24		Per.= 15 secs. μ = 9.
	Poona	Z,E	iP	18 50 46	4,655	Slight.
		E	PP	53 21		
			iS	57 09		
			PPP	57 27		
			M	19 08 10		
	Bombay	E	iP	18 50 54	4,890	Feeble.
			PP	58 43		
			eS	57 27		
			M	19 11 .		
22		Epc:	After shock of Formosa quake of 22nd. H = 20h 24m 45s (U.S.C.G.S.).			
	Calcutta	E	eP	20 31 04	3,535	Moderate.
			iS	35 14		
			eS	37 14		
			SS	37 14		
			LR	39 34		
			M	41 34		
	New Delhi	E	eP	20 32 25	4,410	Moderate.
		N	iS	38 27		
			LO	41 48		
			M	47 38		
	Poona	Z,E	iP	20 33 03	4,090	Slight.
		E	PP	54 01		
			iS	38 41		
			M	50 01		
	Bombay	E	eP	20 53 11	4,880	Feeble.
			PP	55 01		
			eS	59 43		
	Hyderabad	E	M	20 53 01		Per.= 10 secs. μ = 3.
22		Epc:	After shock of Formosa quake of 22nd. H = 20h 51m 38s (U.S.C.G.S.); Mag. 6¼ (Rome).			
	Calcutta	E	eP	20 57 46	3,810	Moderate.
			iS	21 03 13		
			SSS	05 47		
			LR	06 53		
			M	08 53		
			Mx	14 05		Per. = 10 secs. μ = 38.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ	REMARKS.
(Contd)	New Delhi	E	eP	20 59 15	4,450	Moderate.
		N	iS	21 05 24		
			LQ	08 17		
			M	14 13		
	Hyderabad	E	P	20 59 33	4,410	
			S	21 [illegible] 37		
			SS	08 47		
			M	26 30		Per. = 12 secs. μ = 7.
	Poona	Z	iP	20 59 56	4,990	Moderate.
		E	eP	59 56		
			PP	21 03 43		
			iS	06 [illegible]		
			PPS	06 47		
			M	16 18		
	Colombo	E	P	21 00 03		P time approximate. Beginning possibly in hour mark.
			S(?)	06 18		
			L	17 03		
			M	20 33		Amp. = 0.2mm.
	Kodaikanal	E	e?	21 10 03		Phases not clear.
22		Epc:	After shock of Formosa shock of 22nd.			
	Calcutta	E	e	23 42 11		Slight. Presumably after shock of Formosa shock of 22nd.
			i	49 17		
			i	51 11		
			Mn	58 21		
	New Delhi	N,E	eP	23 44 05	4,370	Moderate.
		N	eS	50 07		
			M	58 07		
	Poona	Z,E	iP	23 44 45		Slight.
23		Epc:	After shock of Formosa quake of 22nd. H = 01h 10m 56s (G.S.C.G.S.).			
	Calcutta	E	i	01 29 07		Moderate. Beginning lost while changing chart.
			i(S)	30 54		
			M(?)	35 09		
			Mn	41 49		
	New Delhi	N,E	eP	01 27 15	4,390	Moderate.
		N	i	29 03		
			iS	33 18		
			LQ	36 16		
			i	36 48		
			M	41 46		
			Mn	46 02		Per. = 16 secs. μ = 52.
	Hyderabad	E	iP	01 27 21	4,470	
			PP	23 51		
			iS	33 29		
			M	44 02		Per. = 15 secs. μ = 17.
	Kodaikanal	E	iP	01 27 45	5,000	
			eS	34 24		
			M	43 24		Per. = 18 secs. μ = 13.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	△ km.	REMARKS.
Oct. 1951						
23 (Contd)	Colombo	E	P	01 27 45		
			S(?)	34 30		
			L	46 -		
			M	48 26		Amp.= 0.6mm.
	Poona	Z,E	iP	01 27 51	4,990	Moderate.
		N	eP	27 54		
		E	PP	29 30		
		N	PP	29 43		
		E	PPP	30 24		
		N,E	iS	31 29		
		E	SS	37 45		
		N	SS	38 10		
		E	R	40 30		
		N	M	44 17		Per. = 15 secs. μ = 36.
	Bombay	E	iP	01 28 00	5,090	Slight.
			iPP	29 16		
			iS	34 44		
			iPPS	35 02		
			SS	36 37		
			M	51 -		
	Dehra Dun	N	e	01 39 02		
			e	43 40		
			M	48 15		Per.= 12 secs. μ = 0.1".
23		Epc:	After shock of Formosa quake of 22nd. H = 08h 55m 13s (U.S.C.G.S.) Mag. = 6.5 (Rome).			
	Calcutta	E	iP	09 01 33	3,445	Moderate.
			iS	06 38		
			SS(?)	08 10		
	Dehra Dun	N	e	09 01 48		
			e	08 36		
			M	17 09		Per.= 15 secs. Amp.=0.05".
	Hyderabad	E	i	09 02 01		
			e	03 36		
			i	07 59		
			e	11 34		
			M	19 14		Per. = 10 secs. μ = 7.
	New Delhi	E	eP	09 02 51	4,460	Moderate.
		N	PPP	04 44		
			iS	08 58		
			i	12 00		
			M	18 00		
	Kodaikanal	E	eP	09 03 19	5,000	
			eS	09 58		
	Colombo	E	P	09 03 21		
			S	09 54		
			L	18 21		
			M	22 41		Amp. = 0.5mm.
	Poona	Z	iP	09 03 27	4,743	Moderate.
		E	iP	03 29		
		N	eP	03 31		
		E	PP	05 07		
			PP	05 59		
			S	09 51		
			PPS	10 09		
			SS	13 27		

DATE	STATION	COMPT.	PHASE	G.M.T.	△	REMARKS.
				h. m. s.	km.	
(cont.)	Poona (Contd)	E	LR	03 15 18		
		N	M	23 47		Per. = 12 secs. μ = 11.
	Bombay	E	[illegible]	09 03 36	5,110	Slight. Time of SS and M in N-record uncertain on account of the absence of time marks.
		N,E	[illegible]	05 27		
		E	[illegible]	10 21		
		N	[illegible]	13 42		
		E	M	26 35		Per. = 9 secs. μ = 9.
23	Poona	Z	iP	11 49 45		Per. = 8 secs. μ = 2.
			i	50 14		
23	Epc: After shock of the Formosa quake of 22nd. H = 13h 27m 16s (B.C.I.S.).					
	Calcutta	E	i	13 37 25		Slight; distant.
			i	41 50		
			i	44 04		
			Mn	49 50		
	Bombay	E	e	13 37 29		Feeble.
		N	e	37 -		
23	Epc: After shock of Formosa quake of 22nd. H = 18h 10m 48s (B.C.I.S.).					
	Poona	Z	iP	18 27 03		Slight.
		E	eP	27 03		
			eSS	38 39		
			M	44 10		
	Calcutta	E	e	18 30 24		Slight; distant.
			i	37 27		
			Mn	41 34		
	Hyderabad	E	e	18 36 29		
			M	45 56		Per. = 11 secs. μ = 8.
	Bombay	E	e	18 37 37		Feeble.
		N	e	37 -		
23	Calcutta	E	e	22 43 58		Tremor.
			e	50 35		
			i	51 40		
	Bombay	N,E	e	22 57 -		Feeble, surface waves.
24	Epc: After shock of Formosa quake of 22nd. H = 03h 38m 57s (B.C.I.S.).					
	Calcutta	E	eP	03 45 26	3,335	Moderate.
			iS	50 24		
			SSS	52 20		
			e?	52 51		
			LR	53 14		
			M	55 49		
			Mn	04 01 21		Per. = 10 secs. μ = 48.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS
Oct. 1951						
24 (Contd)	New Delhi	E	eP	03 46 36	4,450	Moderate.
		N	iS	52 42		
			M	04 01 36		
	Colombo	E	P	03 47 10		L and M not well defined.
			S?	53 39		
	Kodaikanal	E	e?	03 47 12		Slight. Phases not clear.
	Poona	Z,E	iP	03 47 16	4,912	Moderate.
		E	PP	48 59		
			PPP	49 41		
		N,E	iS	53 30		
			PS	55 34		
			PPS	54 24		
			SS	56 39		
			LQ	57 52		
			LR	04 00 06		
		N,E	M	06 54		
	Bombay	E	eP	03 47 [illegible]	5,110	Slight.
			ePP	49 12		
			i	49 43		
			iS	54 09		
			LQ	58.10		
			M	04 10 32		Per. = 8 secs. μ = 1.
	Debra Dun	N	e	03 55 02		
			e	04 01 39		
			M	06 48		Per. = 12 secs. Amp.=0.05".
	Calcutta	E	e	03 34 42		Tremor.
			i	40 07		
24		Epc:	After shock of Formosa quake of 22nd. H = 18h 42m 12s (B.C.I.S.).			
	Poona	Z	iP	13 50 31		
	Calcutta	E	e	13 55 47		Slight; distant.
			e	14 00 44		
			i	02 15		
24	Poona	Z	i	17 55 34		Feeble.
	Calcutta	E	e	18 00 39		Tremor.
			i	07 12		
24		Epc:	After shock of Hokkaido quake of 24th. H =19h 23m 17s (B.C.I.S.).			
	Poona	Z	iP	19 33 38		
25		Epc:	After shock of Formosa quake of 22nd. H = 12h 19m 33s (B.C.I.S.).			
	Calcutta	E	iP	12 26 12	3,590	Moderate. First movement
			iS	31 26		East.
			PcS	32 43		
			SSS	33 43		
			M	37 03		
			Mn	39 58		Per.= 12 secs. μ = 228.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	△ km.	REMARKS.
Oct. 1951						
25 (Contd)	New Delhi	N,E	eP	12 27 19	4,390	Moderate.
		N	PPP	29 23		
			iS	33 22		
			SS	36 08		
			LQ	36 22		
			ScS	37 09		
			LR	38 44		
			M	41 31		
			Mn	42 37		Per.= 14 secs. μ = 88.
	Hyderabad	E	iP	12 27 27	4,450	
				29 06		
			eS	33 34		
			SS	36 38		
			M	44 09		Per.= 15 secs. μ = 26.
	Kodaikanal	E	eP	12 27 57	4,810	Slight.
			eS	34 25		
			LR	40 30		
			M	44 03		Per.= 16 secs. μ = 24.
	Colombo	E	P	12 27 57		
			S	34 25		
			L	46 30		
			M	48 57		Amp. = 0.5mm.
25	Poona	Z,E	iP	12 27 57	5,000	Moderate.
		N	eP	27 58		
		E	PP	29 43		
		N	PPP	30 39		
		N,E	iS	34 [illegible]		
			PPS	34 50		
		N	SS	38 00		
		E	LR	40 39		
		N	LR	40 43		
			M	44 27		
		E	M	44 41		Per.= 12 secs. μ = 50.
	Bombay	E	eP	12 28 06	4,855	Slight.
			ePP	29 57		
			iS	34 57		
			iSS	37 42		
			LQ	39 24		
			LR	40 38		
			M	47 00		
	Dehra Dun	N	e	12 33 48		Per. = 12secs. μ = 2.
			e	38 36		
			M	43 02		
	Calcutta	E	e	21 51 56		Per.=18 secs. Amp.= 0.25".
			e	55 57		Slight; distant.
			Mn	58 12		
28	Epc: 28°.5N., 54°.0E., South Persia. O = 01h 53.6m (Poona).					
	Bombay	E	eP	01 58 14		Feeble.
			i	02 02 08		
			M	26 -		
	New Delhi	N,E	eP	01 58 23	2,350	Slight.
		N	iS	02 02 14		

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Oct. 1951 28 (Contd)	Poona	Z,E	iP iS	01 58 25 02 02 20	2,301	Slight.
28.	Epc: After shock of Formosa quake of 22nd. H = 01h 56.6m (B.C.I.S.).					
	Poona	Z,E	iP e(S)	02 04 07 10 33		Slight.
	Calcutta	E	e i M	02 04 11 03 45 13 22		Slight.
	Hyderabad	N	M	02 21 02		Per. = 12 secs. μ = 7.
28	Epc: 58°S., 158°E.; H = 06h 47m 4bs (B.C.I.S.) Mag. 7 (Wellington); 6¾ (Pasadena); 6.5 (Rome).					
	Colombo	E	P S	07 01 05 11 20		L and M not well defined Amplitude small.
	Hyderabad	N	M	07 36 [illegible]		Per. = 18 secs. μ = 10.
	Bombay	E	e M	07 13 27 41 -		Very feeble.
	Poona	N	M	07 56 55		Slight. Beginning merged in microseism.
28	Calcutta	E	e i	23 46 39 53 31		Tremor.
29	Probable Epc: 31°N., 67°E. near Quetta. O = 21h 16m 20s (Poona).					
	New Delhi	E	eP PP P* Pg	21 13 29 18 37 18 46 19 -	8,20	Slight.
		N,E	Lg Sb SSS S* Sg	19 54 20 06 20 16 20 21 20 42		
	Poona	Z E	iPX ePX eS SS SSS LQ M	21 19 32 22 07 22 22 22 31 22 38 23 48	1,530	Slight.
	Bombay	E	e i	21 22 - 23 28		Feeble; near.
	Calcutta	E	i(S) M	21 24 36 27 32		Slight.
	Hyderabad	N	M	21 27 51		Per. = 18 secs. μ = 5.

DATE	STATION	COMPT.	PHASE	G.M.T.	Δ	REMARKS.
				h. m. s.	km.	
Oct. 1951						
30	Epc: 43°.5N., 83°.0E.; China. 0 = 15h 44m 40s (Poona); H = 15h 45m 00s (B.C.I.S.).					
	New Delhi	N,E	eP	15 48 08	1,650	**Slight.**
			i	48 16		
		E	LQ	50 49		
			iS	50 54		
			SS	51 10		
			SSS	51 21		
			M	53 07		
	Calcutta	E	i(S)	15 53 30		**Slight; near.**
			i	57 58		
	Poona	Z	iPY	15 50 13	**2,780**	Slight.
		E	ePY			
			PP	50 57		
			eS	54 35		
			LQ	55 36		
			SS	55 52		
			SSS	56 10		
	Bombay	E	eP	15 50 23	**2,810**	**Feeble.**
			eS	54 47		
30	**Epc:** After shock of previous quake at (**15h 44m 40s**). 0 = 16h 14m 30s (Poona). 44°½N., 78°E.; H = 16h 14.9m (B.C.I.S.).					
	New Delhi	N,E	eP	16 18 01	1,650	Slight.
		E	LQ	20 43		
		N,E	iS	20 47		
		N	SS	21 04		
			SSS	21 18		
			M	23 00		
	Calcutta	E	eP	16 19 32	2,245	Slight.
			iS	25 14		
	Poona	Z	iPY	16 20 02	2,930	Slight.
		E	ePY			
			PP	20 44		
			PPP	20 57		
			iS	24 34		
			LQ	25 14		
			SS	25 30		
			SSS	25 44		
			M	28 21		
	Bombay	E	eP	16 20 07	2,810	**Feeble.**
			eS	24 31		
	Hyderabad	N	M	16 31 28		Per. = 12 secs. A = 4.
31	**Epc:** 3°N., 101°E.; H = 06h 56m 21s (U.S.C.G.S.). 1°.5N., 99°.5E.; 0 = 06h 56m 21s (Poona). 1°N., 98°½E., Sumatra; H = 06h 56m 24s (B.C.I.S.).					
	Colombo	E	P	07 01 -		End merged into following shock.
			S	04 22		
			L	01 23		
			M_1	12 [illegible]		Amp. = 2.0mm.
			M_2	14 [illegible]		Amp. = 2.0mm.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Oct. 1951						
31 (Contd)	Kodaikanal	E	iP	07 01 36	2,610	Moderate. Initial movement of P towards West and that of S towards East.
			iS	05 46		
			PcS	08 45		
			Mn	09 41		Per. = 19 secs. μ = 99.
			ScS	12 33		
	Calcutta	E	iP	07 01 45	2,900	Moderate; First movement West. Depth about 100 kms
			PP	02 13		
			iS	06 05		
			SS	06 55		
	Hyderabad	N,E	iP	07 02 02	2,890	
		E	PP	02 45		
		N,E	iS	06 31		
		E	SS	06 59		
			L	09 52		
			M	11 06		Per.= 20 secs. μ = 46.
		N	M	11 49		Per.= 20 secs. μ = 86.
	Poona	Z,E,N	iP	07 02 36	3,210	Moderate.
		N	PP	03 20		
		E	PP	03 32		
		N	PPP	03 45		
		E	PPP	03 48		
			PcP	05 32		
		N	PcP	05 36		
		E,N	iS	07 36		
		N	SS	09 23		
		E	SS	09 25		
			SSS	09 35		
		N	LR	10 39		
		E	ScS	12 44		
		N	M	13 20		Per. = 15 secs. μ = 43.
	Bombay	E	eP	07 02 47	3,480	Moderate.
			PcP	05 42		
			iS	07 54		
			LQ	09 20		
			LR	10 42		
			M	17 51		Per. = 17 secs. μ = 5.
	New Delhi	N,E	eP	07 03 15	3,840	Moderate.
			PP	04 28		
		N	iS	08 44		
			PcS	09 28		
			SS	10 45		
			M	16 41		
			Mn	19 08		Per. = 19 secs. μ = 64.
	Dehra Dun	N	e	07 05 12	(?)	
			e	09 12		
			e	12 36		
			e	37 42		
			M	08 23 48		Per. = 24 secs. Amp = 0.2
31		Epc:	After shock of previous one. H = 08h 03m 11s (U.S.C.G.S.).			
	Colombo	E	P	08 07 40		
			S	11 22		
			M	29 25		Amp. = 0.5mm.

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Oct. 1951						
31 (Contd)	Kodaikanal	E	eP	08 08 21	3,610	Merged in previous shock.
			iS	16 31		Initial movement S towards
			PcS	16 30		East.
			Mn	16 26		Per.= 16 secs. μ = 19.
			ScS	19 18		
	Calcutta	N	eP	08 08 35	2,780	Slight.
			iS	12 57		
	Poona	Z	iP	08 09 33	3,380	Slight. Mixed up with earlier
		E	iP	08 24		shock in E and N records.
			PcP	12 17		
			iS	14 24		
			SS	16 18		
	Hyderabad	N	eP	08 09 32	2,430	
			S	13 30		
			M	18 48		Per. = 15 secs. μ = 7.
	Bombay	E	eP	08 09 36	3,480	Slight.
			iS	14 30		
			LQ	16 07		
			M	24 20		Per. = 17 secs. μ = 2.
	New Delhi	N,E	eP	08 10 02	3,840	Moderate.
		N	i	11 29		
			iS	16 51		
			ScS	20 17		
31		Epc:	Near West Coast of Sumatra. H = 10h 22m 17s (I.S.S.G.S.); After shock of previous one at 06h 56m. H = 10h 22m 14s. (B.C.I.S.)			
	Colombo	E	P	10 26 49		
			S	30 41		
			L	38 10		
			M	40 21		Amp. = 0.4mm.
	Kodaikanal	E	P	10 27 31	3,610	Initial movement of S towar-
			iS	31 41		ds East. P time approximate.
			PcS	34 40		
			Mn	36 56		Per. = 18 secs. μ = 23.
			ScS	38 48		
	Calcutta	E	eP	10 27 41	2,810	Slight.
			iS	32 05		
	Hyderabad	N	eP	10 27 52	2,940	
			iS	32 25		
			M	37 38		Per. = 15 secs. μ = 10.
	Poona	Z,E	iP	10 28 31	3,370	Slight.
		N,E	PcP	31 14		
			iS	33 31		
			SS	35 25		
			SSS	35 45		
			LR	36 45		
			ScS	38 56		
			M	39 25		

DATE	STATION	COMPT.	PHASE	G.M.T. h. m. s.	Δ km.	REMARKS.
Oct. 1951 31 (Contd)	Bombay	E	eP	10 28 41	3,480	Slight.
			PP	29 49		
			iS	33 46		
			ScP	34 59		
			iQ	35 40		
			LSS	36 00		
			LR	37 02		
			M	45 24		Per. = 17 secs. μ = 2.
	New Delhi	N,E	eP	10 29 10	3,840	Moderate.
		N	iS	34 39		
			LR	38 26		
			ScS	39 26		
31		Epc:	After shock of one at 15h 45m on 30th. O = 19h 14.5m.(Poona).			
	Kodaikanal	E	e?	19 16 18		Tremor.
	New Delhi	N,E	eP(?)	19 18 00	1,620	Slight.
		E	iQ	20 38		
		N,E	iS	20 48		
		N	M	23 00		
	Calcutta	E	e	19 18 39		Tremor.
			i	23 11		
	Poona	Z	iP	19 19 57	2,850	Slight.
		E	eG	24 23		
			iS	25 27		
			SSS	25 17		
			LR	26 28		
			M	28 12		
	Bombay	E	eP	19 20 -		Feeble.
			i	24 33		

Non-instrumental Reports.

Place	Date	G.M.T. Time of earthquake.	Duration	Instruments R.F. Scale	No. of shock.	Remarks.
Tezpur	Oct. 18	05h 14m	3½	IV	2	

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S.M.
16/7/53

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

S E I S M O L O G I C A L B U L L E T I N

December, 1951.

Published under the direction of
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Director General of Observatories.

Instruments and their Constants.

Station	Instrument	Compt.	Period in secs.	Static Magnification	Damping ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N-S	12.0	350	6:1	16.0
	Milne-Shaw	E-W	12.0	350	12:1 (1st to 12th) 5:1 (13th to 31st)	8.0
	Sprengnether Microseismograph	E-W	-	-	-	30.0
Calcutta	Milne-Shaw	E-W	12	250	20:1	8.0
	Wood-Anderson	N-S	2	870	Critical	30.0
	Omori-Ewing	N-S	18	32	-	25.4
	Omori-Ewing	E-W	19	30	-	25.4
Colombo	Milne-Shaw	E-W	12.0	250	20:1	8.0
Dehra Dun	Omori-Ewing	N-S	30	12	-	-
Hyderabad	Milne-Shaw	E-W	12.0	250	20:1	8.0
	Milne-Shaw	N-S	12.0	250	20:1	8.0
Kodaikanal	Milne-Shaw	E-W	10.0	250	20:1	8.0
New Delhi	Milne-Shaw	N-S	12.0	288	20:1	8.0
	Wood-Anderson	N-S	4.0	1000	20:1	16.0
	Wood-Anderson	E-W	2.0	2000	30:1	60.0
	Omori-Ewing	E-W	30.0	30	1	12.0
Poona	Milne-Shaw	N-S	12	250	20:1	8.0
	Wood-Anderson	E-W	4.0	1100	20:1	16.0
	Sprengnether	E-N	To=Tg=6.6			30.0
	Benioff	Z	To = 1.0			60.0
	Sprengnether	Z	To=Tg=1.5			30.0

Date 1961	Station	Comp.	Phase	Time	Δ km.	Remarks
1	Poona	Z	i	17 26 07		
			i	26 20		
		E	e	35 03		
	Bombay	E	eP	17 30 53	2,180	Feeble.
		N	P	Movements extremely faint.		
		E	eS	34 29		
		N	eS	34 -		
		E	SS	34 51		
		N,E	LR	35 34		
	Hyderabad	E	M	17 32 37		Per. = 9 secs. μ = 2.
2	Bombay	E	e	17 46 -		Very feeble.
		N		Record lost due to congestion of lines.		
	Poona	E	e	17 43 00		
3				Epc: 30°N., 91°E., Eastern Tibet; O = 06h 57m 50s (Poona).		
	New Delhi	N,E	eP	07 00 41	1,300	Slight.
		E	PP	00 50		
		N,E	eS	02 5-		
		N	SS	03 09		
		N,E	LR	03 17		
		N	M	04 25		
	Hyderabad	N	eP	07 01 46	1,810	
			S	04 47		
			S	06 09		
		E	M	07 12		Per. = 11 secs. μ = 3.
		N	M	07 16		Per. = 9 secs. μ = 3.
	Poona	Z	eP	07 02 17		
		E	iP			
		N	iS	02 20		
		E	iS	05 50		
			LQ	05 57		
				06 03		
			SS	06 16		
			SSS	06 32		
			LR	06 32		
			M	08 28		
		N	M	08 30		Per. = 14 secs. μ = 14.
	Bombay	E	iP	07 02 30	2,245	Slight.
			iS	06 07		
			LQ	06 23		
			i	07 23		
			M	11 22		Per. = 8 secs. μ = 2.
		N		Loss of record		
4	New Delhi	N,E	eP	11 07 39	1,230	Slight.
			eS	09 49		
	Bombay	E	e	12 04 -		Very feeble.
		N		Trace too thick.		
4	Poona	Z	i	19 00 05		Tremor.
6				Epc. 23°N., 122½°E., Formosa; H = 06h 58m 30s (U.S.C.G.S.). O = 06h 58m 30s (Poona).		
	Kodaikanal	E	e	07 05 43		Tremor.

STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ km.	REMARKS.
New Delhi (Contd)	N	eP	07 06 09	4,420	Moderate.
		iS	12 14		
		SS	15 07		
		M	20 47		
Poona	Z	iP	07 06 48	4,960	Moderate.
	E	PP	08 35		
		PPP	09 02		
		iS	13 25		
		PPS	13 33		
		SS	16 43		
		LQ	17 08		
		SSS	17 24		
Bombay	E	iP	07 07 09	5,055	Moderate. Movements faint in N-record.
	N	eP			
	E	PP	09 00		
	E	iS	13 52		
	N	eS			
	E	PS			
	N,E	PPS	14 01		
	E	SS	14 14		
		LR	17 30		
		M	20 54		
			30 45		
Hyderabad	N	M	07 22 50		Per. = 9 secs. μ = 2.
	E	M	25 14		Per. = 12 secs. μ = 4.
New Delhi	N,E	eP	06 27 47	2,280	Slight. Per. = 12 secs. μ = 4.
	E	PP	28 09		
	N,E	PPP	28 18		
	N	iS	31 32		
		M	34 39		
Poona	Z	i	06 28 42		
New Delhi	N,E	eP	15 13 17	989	Slight.
	E	i	13 28		
	N	eS	14 59		
	E	SSS	15 22		
	Epc: 31°N., 90°.5E., Eastern Tibet; O = 20h 53.1m (Poona).				
Calcutta	N	iP	20 55 18	910	Slight. First movement South.
		iS	56 52		
		S*	57 23		
		Sg	57 47		
New Delhi	E	eP	20 55 42	1,280	Slight.
	N	iS	57 53		
		LR	58 14		
		M	59 19		
Poona	Z,E	iP	20 57 24	3,110	Slight. Phases not clear due to microseisms.
	E	eS(?)	21 02 08		
		LQ	03 15		
		SS	03 30		
		SSS	03 47		
		LR	04 36		
		i	05 42		
		M	06 44		

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
Dec. 1951						
	Bombay (Contd.)	N,E	iP	20 57 28	2,845?	Slight. Microseisms throughout N and E records.
			eS(?)	01 54		
			LR	03 43		
		N	M	06 08		Per. = 9 secs. μ = 5.
		E	M	07 55		Per. = 5 secs. μ = 5.
	Hyderabad	E	S(?)	21 02 36		
		N	M	03 46		Per. = 9 secs. μ = 5.
8		Epc:		43½°N., 146°E., East of Hokkaido (Japan); H = 03h 40m 25s (U.S.C.G.S.).		
	Poona	Z	i(P)	03 51 06		
8		Epc:		34°S., 56½°E., Indian Ocean, about 900 miles S.E. of Madagascar; H = 04h 14m 20s; h = about 100 kms (U.S.C.G.S.). Near 34°S., 57°E., Indian Ocean; 0 = 04h 14m 32s (Poona); h = 100 kms. 33.6S., 56.7E.; H = 04h 14m 30s; h = 200 kms (BCIS). Mag. 7¾ (Pasadena); 7¼ to 7½ (Rome); 7¼ (Praha).		
	Kodaikanal	E	iP	04 22 55	5,520	Severe; distant. First movement East.
			PP	24 49		
			PPP	25 37		
			iS	30 04		
			LR	37 01		
			M	41 07		Per. = 18 secs. μ = 615.
	Poona	Z,E	iP	04 23 40	6,100	Great.
		N	PPP	26 55		
			iS	31 20		
			PS	31 27		
			SS	35 00		
			LQ	37 19		
			SSS	37 27		
			LR	39 57		
			i	40 29		Per. = 19 secs. μ = 735.
			M	43 20		Per. = 17 secs. μ = 281.
	Bombay	N,E	iP	04 23 44	6,110	Great.
			iPP	26 07		
			PPP	27 20		
			PcS	28 52		
			iS	31 25		
			iPPS	31 48		
			SS	35 16		
			i	35 43		
			LR	40 00		
		N	M	45 03		Per. = 15 secs. μ = 230.
		E	M	45 36		Per. = 15 secs. μ = 217.
	Hyderabad	N	iP	04 23 45	6,150	Time approximate.
			PP	26 11		
			iS	31 29		
			ScS	33 46		
			SS	35 20		
			M	45 51		Per. = 15 secs. μ = 293.
	New Delhi	N	iP	04 24 52	7,250	Great. Direction first motion South.
			i	27 35		
			PcS	29 20		
			iS	33 35		
			ScS	34 46		
			i	37 03		
			i	41 20		
			M	46 02		
			Mn	47 08		Per. = 22 secs. μ = 678.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	km.	
1951.						
(contd)	Calcutta	E	iP	04 24 55	7,000	Great. First movement East.
			PP	27 13		
			PcS?	29 30		
			iS	33 23		
			PS	33 39		
			PPS	33 52		
			SKS,	34 37		
			SS	37 22		
			LR	43 32		
			M	46 54		
			Mu	48 02		Per. = 20 secs. μ = 846.
	Dehra Dun	N	eP	04 26 57	7,277	Times uncertain.
			eS	35 45		
			L	44 42		
			M	51 36		Per. = 18 secs. μ = 114.3mm
8		Epc:	6°S., 154½°E., Solomon Islands; H = 13h 53m 10s; h = about 100 kms (U.S.C.G.S.).			
	Poona	Z	i(P)	14 10 33		
9	Poona	Z	e	18 32 16		
9	New Delhi	E	eP	21 37 30	140	Slight.
		N,E	iS	37 48		
11	New Delhi	N,E	eP	21 02 45	920	Slight.
		E	PP	02 53		
			PPP	03 00		
		N,E	iS	04 20		
		N	SS	04 32		
		N.E	LR	04 35		
			SSS	04 43		
12		Epc:	17°N., 94½°W., Oaxaca, Mexico (Slight property damage); H = 01h 37m 34s; h = about 100 kms (USCGS). 13°28'N., 93°54'W.; H = 01h 37m 52s; h = normal (Tacubaya); 16.7°N., 94.6W.; H= 01h 37m 35s; h = 100 kms (B.C.I.S.).		
	Poona	Z	i(PKP)	01 57 00		
		E		Strong Microseism throughout E record.		
	New Delhi	N	iPP	01 59 42	about 14,780	Moderate.
			iPKS	02 00 35		
			PPP	02 32		
			SKKS	06 32		
			SKSP	09 32		
			PS	10 01		
			PPS	11 37		
			i	12 49		
			i	15 13		
			SS	17 28		
			i	19 00		
	Bombay	E	e	02 18 -		Feeble; distant.
		N		Loss of record due to congestion of lines.		
12	New Delhi	N,E	eP	14 20 22	1,160	Slight.
		N	PP	20 30		
			eS	22 22		
			SS	22 33		
			SSS	22 44		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
Dec. 1931				h. m. s.	km.	
15	New Delhi	N,E	eP	17 56 38	980	Slight.
		E	eS	58 19		
		N	SS	58 33		
		N,E	Sg	59 16		
17	Poona	Z	e	17 11 03		Feeble; Tremor.
			i	14 34		
18	Calcutta	N	eP	05 37 38	525	Slight.
			PP	37 45		
			P*	37 49		
			Pg	37 59		
			iS	38 33		
			S*	38 48		
	Poona	Z	i	05 40 14		Tremor.
			i	40 18		
			e	43 17		
			i	45 10		
	Bombay	E	e	05 43 59		Feeble.
		N,E	LQ	45 37		
			i	45 45		
18	Epc: 19°S., 174½°W., Tonga Islands; H = 14h 09m 03s; h = about 60 kms (U.S.C.G.S.); 18.9S., 174.8W.; H = 14h 09m 06s; h = 60 kms (B.C.I.S.); Mag. 6¾ (Pasadena); 6 to 6¼ (Christchurch).					
	Poona	Z	i(PKP)	14 27 43		Feeble.
			i	38 24		
	Bombay	N,E	e	14 29 -		Feeble; Distant.
		E	i			
		N	e	34 34		
			e			
		E	i	38 51		
18	Poona	Z	i	20 09 01		Tremor.
			i	09 06		
			i	09 43		
			i	09 49		
20	Epc: 12½°S., 67¾°E., Indian Ocean; H = 00h 08m 50s (B.C.I.S.).					
	Kodaikanal	E	e	00 18 36		Slight; near.
			e	21 27		
			e	22 09		
			M	23 24		Per. = 12 secs. μ = 7.
	Bombay	N,E	e	00 20 34		Feeble.
		E	e	26 54		
		N	e	26 -		
		E	e	29 54		
		N	e	29 58		
	Hyderabad	E	M	00 20 37		Per. = 13 secs. μ = 5.
		N	M	21 19		Per. = 12 secs. μ = 4.
	Poona	E	e	00 25 -		Surface waves.
			M	30 -		

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	km.	
Dec. 1931						
20	Bombay	N,E	e	11 37 -		Very feeble.
20	Poona	Z	e	19 21 04		Feeble; Tremor.
			e	21 24		
21		Epc:	26½°N.,100°E., Yunnan Province, China; H = 08h 37m 28s (U.S.C.G.S.); 27.0°N., 99.7E.; H = 08h 37m 27s (B.C.I.S.);			
		Mag.	6½ (Strasbourg).			
	Calcutta	E	iP	08 40 13	1,455	Moderate. First movement
			iS	42 41		West.
			SS	42 57		
			SSS	43 09		
	New Delhi	N,E	iP	08 42 01	2,200	Moderate.
			PP	42 18		
			iS	45 39		
			LQ	45 45		
			SS	46 06		
		N	SSS	46 20		
			LR	46 44		
			M	48 23		
			Mn	49 54		Per. = 15 secs. μ = 155.
	Hyderabad	N,E	iP	08 42 21	2,540	
		N	PP	42 33		
			iS	46 27		
			i	46 35		
			L	48 59		
		E	M	51 11		Per. = 12 secs. μ = 47.
		N	M	51 25		Per. = 16 secs. μ = 125.
	Poona	Z	iP	08 42 53	2,730	Moderate.
		N	S	47 15		
			M	54 -		Per. = 15 secs. μ = 2.
	Bombay	E	iP)	08 43 05	2,900	Moderate.
		N	eP)			
		N,E	PP	43 53		
			PPP	44 13		
		E	iS)	47 35		
		N	eS)			
			LQ	48 35		
		E	LQ	48 41		
		N	SS	48 55		
		E	SS	49 05		
		N	LR	50 03		
		E	LR	50 27		
		N	M	52 41		Per. = 7 secs. μ = 38.
		E	M	53 35		Per. = 13 secs. μ = 32.
	Kodaikanal	E	eP	08 43 09	2,990	Moderate.
			PP	43 54		
			PPP	44 09		
			eS	47 45		
			LQ	48 48		
			LR	50 09		
			M	52 16		
	Colombo	E	P	08 43 19		Waves of largest amplitude
			S	48 11		taken as M.
			L	52 19		
			M	56 11		Amp. = 3.0mm.

	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	km.	
			Epc: Possibly aftershock of previous one.			
	Calcutta	E	e	11 17 30		
			i	18 45		Slight; near.
			i	19 05		
	Poona	Z	i	11 17 42		
			e	22 20		Slight.
			i	22 33		
	Bombay	N,E	e	11 22 35		Feeble.
21			Epc: 49°N., 156°E., Kurile Islands; H = 18h 07m 06s (U.S.C.G.S.).			
	Poona	Z	i(P)	18 18 30		
			i(pP)	20 52		Slight.
	Bombay	N,E	e	18 42 -		Very feeble.
22			Epc: 1°S., 155°E., New Britain Island Region; H = 14h 47m 36s (U.S.C.G.S.).			
	Poona	Z	i(P)	14 59 42		
	Bombay	N,E	eP			
		E	PPP	14 59 48	9,065	Feeble.
		N,E	iS	15 04 40		
23				10 00		
			Epc: 24½°S., 177°W., Tonga Islands Region; H = 00h 21m 06s ; h = about 100 kms (U. S.C.G.S.).			
	Bombay	E	e	00 50 39		
		N,E	e	01 27 -		Feeble; Distant.
	Colombo	E	L	01 18 21		
23			M	23 36		
	Kodaikanal	E	e	06 47 28		Tremor.
	Bombay	E	e	06 48 09		
		N,E	e	54 26		Slight.
	Colombo	E	P	06 52 14		
23			L	07 07 -		Treace overlapping.
			Epc: 41°N., 146°E.; H = 18h 28.7m (B.C.I.S.).			
	Poona	Z	i(P)	18 39 26		
23			Epc: 49°N., 155½°E., Kurile Islands; H = 11h 29m 31s ; h = 60 kms (U.S.C.G.S.).			
	Poona	Z	i(P)	11 40 53		
23			Epc: 9°.1N., 123°.0E., Philippines (Manila); H = 22h 09m 40s (B.C.I.S.).			
	Poona	Z	i(P)	22 18 17		
			i	19 42		
			i(PP)	20 12		
	Bombay	N,E	e	21 20 -		Feeble.
			e	25 42		

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	km.	
Dec. 1961						
25	Poona	Z	i	05 30 40		
			i	31 01		
25		Epc:	Indian Ocean, after shock of Dec.8d 04h 14m; H = 05h 49m 40s (B.C.I.S.).			
	Poona	Z	i	05 58 56		
			i	59 04		
			i	59 11		
	Bombay	N,E	e	05 59 03		Very feeble.
25	Poona	E	e	06 06 15		
25	Poona	Z	i	11 09 52		
			i	15 17		
25	New Delhi	N,E	eP	13 24 15	960	Slight.
			eS	25 54		
		E	SS	26 06		
		N,E	SSS	26 15		
			Sg	26 56		
	Poona	Z	i	13 30 02		
			i	30 22		
			i	30 30		
			i	31 01		
25		Epc:	49°N., 155½°E., Kurile Islands; H = 15h 58m 28s ; h = about 60 kms (U.S.C.G.S.); 49°.5N., 155°.0E.; H = 15h 58m 28s; h = 60 kms (B.C.I.S.).			
	Poona	E	e(P)	16 09 41		
		Z	i	09 55		
		E	e(pP)	10 01		
	Bombay	E	eP	16 09 51		
		N	e	10 15		
		E	M	44 29		Per. = 15 secs. μ = 2.
		N	M	44 34		Per. = 15 secs. μ = 2.
26		Epc:	32°.6N., 118°.7W., Pacific Ocean, off the Coast of Southern California; Felt at South California (Press); H = 00h 46m 49s (U.S.C.G.S.); Mag. 5½ to 5¾ (Pasadena).			
	Poona	Z	i(PKP)	01 06 01		
26		Epc:	32°N., 91°E., Eastern Tibet; H = 10h 06m 57s (U.S.C.G.S.); 32°.0N., 90°.5E., Tibet; H = 10h 06m 54s (Poona); Mag. 6¼ (Strasbourg).			
	Calcutta	E	eP	10 09 18	935	Moderate.
			iS	10 54		
			SS	11 06		
	New Delhi	N,E	eP	10 09 49	1,330	Slight.
		N	PPP	10 05		
		N,E	i	10 54		
			LQ	11 57		
			iS	12 05		
		N	SS	12 18		
			SSS	12 28		
		N,E	M	13 30		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS
				h. m. s.	km.	
Dec. 1951						
23 (Contd)	Hyderabad	N,E	iP	10 11 04	1,960	
		N	iS	14 20		
			eS	14 35		
			L	16 20		
			M	16 52		Per. = 11 secs. μ = 51.
		E	M	17 26		Per. = 10 secs. μ = 50.
	Poona	Z,N,E	iP	10 11 31	2,220	Moderate.
		E	PP	11 51		
			PPP	12 01		
		N,E	iS	15 10		
		E	LQ	15 17		
		N	LR	16 18		
		E	M	17 48		
		N	M	17 49		Per. = 10 secs. μ = 22.
	Bombay	N,E	iP	10 11 40	2,280	Moderate.
			PP	12 02		
		E	iS	15 25		
		N	eS			
		N,E	LQ	15 39		
		N	SS	16 01		
		E	SS	16 06		
		N	LR	16 35		
		E	LR	16 37		
			M	19 13		Per. = 9 secs. μ = 46.
		N	M	19 45		Per. = 9 secs. μ = 48.
	Kodaikanal	E	iP	10 12 16	2,820	Moderate.
			PP	12 29		
			PPP	13 07		
			S	16 41		
			LQ	17 17		
			LR	18 32		
			M	20 32		Per. = 11 secs. μ = 31.
	Colombo	E	eP	10 14 21		
			S	17 21		
			L	22 26		
			M	25 31		Amp. = 1.0mm.
26		Epc:	Northern Kanon Province, China; H = 16h 30m 51s (U.S.C.G.S.); 41½°N., 95½°E., Gobi desert; H = 16h 30m 55s (B.C.I.S.).			
	Calcutta	E	iP	16 35 06	2,100	Moderate. First movement East.
			PP	35 22		
			iS	38 34		
			SS	38 58		
			SSS	39 13		
			M	41 06		
			Mn	44 13		Per. = 10 secs. μ = 88.
	New Delhi	N,E	iP	16 35 10	2,030	Slight. First motion East.
		E	PP	35 25		
			PPP	35 33		
		N,E	i(S)	38 32		
		N	SS	38 55		
			LR	39 27		
			M	40 53		

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	Δ km.	REMARKS.
Dec. 1951						
26 (Contd)	Hyderabad	N	iP	16 36 31	2,880	
		N,E	iS	40 59		
		E	SS	42 01		
		N	L	44 21		
		E	M	45 39		Per. = 12 secs. μ = 19.
		N	M	45 53		Per. = 12 secs. μ = 27.
	Poona	Z,N,E	iP	16 36 46	2,960	Moderate.
		N	PP	37 24		
		E	PP	37 28		
			PPP	37 33		
		N,E	iS	41 23		
		E	LQ	42 13		
			SSS	42 44		
		N	SSS	42 45		
			M	45 33		
		E	M	45 40		
	Bombay	N,E	eP	16 36 51	3,120	Moderate. Record lost in Sprengnether Micro-seismogram during change of papers.
		N	PP	37 43		
		N,E	eS	41 36		
		E	LQ	42 33		
		N	LQ	42 52		
		E	M	48 53		Per. = 11 secs. μ = 9.
		N	M	48 59		Per. = 11 secs. μ = 22.
	Kodaikanal	E	eP	16 37 29	3,170	Slight; Distant.
			PP	38 35		
			PPP	39 02		
			S	42 50		
			LQ	44 56		
			LR	46 23		
			M	49 26		Per. = 9 secs. μ = 31.
	Colombo	E	eP	16 39 -		
			S	43 23		
			M	46 41		
26		Epc:		49½°N., 156°E., Northern Kurile Islands; H = 16h 53m 23s (U.S.C.G.S.).		
	Poona	Z	i(P)	17 04 42		
			ii	05 38		
	Bombay	E	M	17 39 14		Slight. Per. = 16 secs. μ = 2.
		N	M	39 29		Per. = 15 secs. μ = 2.
26		Epc:		50½°N., 156°E., Northern Kurile Islands; H = 17h 22m 20s (U.S.C.G.S.).		
	Poona	Z	i(P)	17 33 36		
			i	33 50		
26		Epc:		Northern Kurile Islands; H = 19h 33m 54s (U. S. C. G. S.).		
	Poona	Z	i(P)	19 45 13		
26	Poona	Z	i	23 30 12		
27		Epc:		49°N., 156°E., Northern Kurile Islands; H = 02h 21m 46s (U.S.C.G.S.).		
	Poona	Z	i(P)	02 33 08		
	Bombay	N,E	M	03 07 -		Feeble.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	km.	
Dec., 1941						
27	Poona	Z	i	03 51 47		
27	Poona	Z	i	07 43 35		
27	Poona	Z	i	16 21 43		
27	Poona	Z	i	16 33 39		
27		Epc:		49°N., 156°E. (Kurile Islands); H = 16h 36m 26s (B.C.I.S.).		
	Bombay	E	e	16 47 43		Feeble.
		N,E	e	56 38		
			M	17 22 -		
	Poona	Z	i	16 47 48		
	Poona	Z	i	19 45 00		
28	Poona	Z	i	02 53 08		Very feeble.
28		Epc:		17°N., 98½°W., Guerrero, Mexico (Felt); H = 09h 20m 25s (U.S.C.G.S.). 17°.4N., 98°.4E.; H = 09h 20m 27s (B.C.I.S.); 16°04'N., 99°33' E.; H = 09h 20m 14s (Tacubaya); Mag. 7¼ to 7½ (Pasadena); 6¾ to 7 (Berkeley); 6.85 (Rome); 6¾ (Strasbourg); 6.5 (Tacubaya).		
	New Delhi	N	ePKP	09 39 46	15,000	Moderate.
			iPP	42 14		
			iPKS	43 12		
			PPP	45 13		
			SKKS	49 11		
			PS	52 19		
			PPS	54 23		
			i	55 53		
			SS	10 00 10		
			SSS	05 28		
			M	37 28		
	Poona	Z,E	PKP	09 39 57	16,000	Moderate.
			PP	43 10		
			PKS_1	43 21		
			PKS_2	43 32		
			PPP	46 04		
			$PKKS_1$	50 07		
			SKSP	53 28		
			SKKKS	57 15		
			SS	10 02 02		
			SSS	06 46		
	Bombay	N	$iPKP_1$	09 39 59	16,255	Moderate. Δ from SS-PKP_1 of the E component.
		E	$ePKP_1$			
		N	iPP	43 10		
		E	ePP	43 23		
		N	$iPKS_1$	43 27		
		E	$iPKS_1$	43 39		
		N	PPP	46 20		
		E	PPP	46 41		
			PPS	56 29		
		N	eSS	10 01 37		
		E	iSS	02 20		
			SSS	07 31		
		N	LR	28 23		
		E	LR	29 31		
		N	M	56 15		Per. = 18 secs. μ = 4.
		E	M	56 33		Per. = 17 secs. μ = 3.

DATE	STATION	COMPT.	PHASE	G. M. T.	△ km.	REMARKS.
28 (Contd)	Hyderabad	N	PKP	09 40 02	16,300	△ from SS-P.
		E	SS	10 02 28		
			M	39 41		Per. = 21 secs. μ = 18.
		N	M	42 48		Per. = 18 secs. μ = 15.
	Calcutta	E	iPKP$_1$	09 40 28	15,335	Moderate. First movement East.
			PP	43 09		
			PPP	46 21		
			SKSP	53 15		
			SS	10 01 30		
			SSS	06 33		
	Colombo	E	PKP	09 40 32		
			L	10 32 -		
			M	54 24		Amp. = 1.1mm.
28	Poona	Z	i	16 02 35		
28	Poona	Z	i	17 29 30		
			i	32 33		
28	Poona	Z	i	19 24 00		
			i	24 28		
	Poona	Z	i	23 42 12		
29		Epc:	27.0°N., 89.0°E., about 70 miles NE of Jalpaiguri; Felt at Jalpaiguri; O = 09h 50m 46s (Poona).			
	Calcutta	N	eP	09 51 57	500	Slight.
			Pg	52 17		
			iS	52 51		
			SS	53 00		
	New Delhi	E	e	09 53 27		Slight; near.
		N,E	e	54 35		
			e	54 46		
			e	55 19		
		N	e	56 24		
	Poona	Z	iPχ	09 54 37	1,810	Slight.
		E	ePχ			
			PP	54 43		
		Z,E	PPP	54 59		
			iS	57 38		
			SS	57 56		
			SSS	58 09		
			LR	58 22		
			PcP	59 17		
		Z	M	59 56		
	Bombay	N,E	P	09 54 -		Feeble;, near.
			eS	57 38		
			M	59 -		
29	Poona	Z	i	10 58 04		
29		Epc:	About 100 miles South of Formosa; H = 22h 04m 05s (U.S.C.G.S.); 21¾°N., 121°E.; H = 22h 04m 08s (B.C.I.S.).			
	Kodaikanal	E	e	22 08 48		Slight; Distant. Phases not clear. Times uncertain.
			e	11 06		
			e	15 15		
			LQ	18 51		
			LR	20 51		
			M	24 27		Per. = 18 secs. μ = 14.

DATE	STATION	COMPT.	PHASE	G. M. T. h. m. s.	△ km.	REMARKS.
DEC. 1951						
(contd)	Calcutta	E	eP	22 10 21	3,410	Slight.
			eS	15 24		
			LQ	16 57		
			SSS	17 29		
			M	21 16		
			Mn	24 54		Per. = 12 secs. μ = 19.
	Colombo	E	P	22 11 52		
			S	18 19?		
			L	29 -		
			M	31 22		Amp. = 0.4mm.
	Poona	Z,E	iP	22 12 13	4,755	Moderate.
		E	PP	13 57		
			PPP	14 31		
			ScP	17 34		
			eS	18 38		
			PS	18 44		
			PPS	19 04		
			SS	21 42		
			SSS	22 46		
	Bombay	N	eP)	22 12 20	4,950	Moderate.
		E	iP)			
			ePP	14 12		
			iS)	18 56		
		N	eS)			
		N,E	iPS	19 04		
		E	iPPS	19 15		
			SS	22 15		
		N	SS	22 35		
			M	34 35		Per. = 11 secs. μ = 3.
		E	M	34 53		
	Hyderabad	N	e	22 17 42		
			M	27 14		Per. = 16 secs. μ = 6.
50	Poona	Z	i	01 31 15		
			i	31 30		
30	Poona	Z	iP)	10 19 34	2,665	Slight.
		E	eP)			
			PPP	20 20		
			iS	23 49		
			LQ	24 28		
			SS	24 44		
			SSS	25 01		
			LR	25 36		
			ScP	26 37		
			M	27 36		
	Bombay	N,E	e	10 23 59		Feeble.
			e	24 07		
			e	26 34		
			M	28 30		
30		Epc:	$62\frac{1}{2}^{\circ}$N., 146°W., Alaska; H = 17h 42m 28s; h = 100 kms (U.S.C.G.S.).			
	Poona	Z	i(P)	17 55 31		
			i	55 43		

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	km.	
Dec. 1961 30		Epc:	Near Southern Coast of Iran; H = 18h 21m 05s (U.S.C.G.S.); 28½°N., 58½°E.; H = 18h 21m 05s (B.C.I.S.).			
	Bombay	E	iP }	18 25 13	2,000	Moderate.
		N	eP }			
		N,E	PPP	25 34		
		E	iS }	28 32		
		N	eS }			
		N	SS	28 46		
		E	SS	28 51		
		N	LR	29 16		
		E	LR	29 25		
		N,E	M	32 -		
	New Delhi	N,E	eP	18 25 17	2,000	Slight.
		E	PP	25 31		
		N,E	PPP	25 41		
			iS	28 36		
		N	SS	28 59		
			SSS	29 12		
			M	30 57		
	Poona	Z,E	iP }	18 25 27	2,050	Slight.
			eP }			
			PP	25 44		
			iS	28 53		
			SS	29 21		
			LR	29 50		
			M	31 22		
	Hyderabad	N,E	P	18 26 18	2,530	
			S	30 23		
		N	L	32 44		
			M	34 36		Per. = 15 secs. μ = 4.
		E	M	34 37		Per. = 15 secs. μ = 6.
	Colombo	E	S	18 32 22		
			L	38 -?		
			M	38 50		
30		Epc:	28°S., 114½°W., Pacific Ocean Foreshock; H = 22h 17m 51s (U.S.C.G.S.); Mag. 6½ (Pasadena).			
	Poona	Z	i	22 37 39		
			i	38 05		
			e	43 02		
			i	43 26		
			e	44 33		
			i	47 24		
			i	48 19		
	Colombo	E	e	22 43 20		
			e	23 40 -		
			M	51 05		
	Kodaikanal	E	e	22 43 30		Tremor. Times of earlier tremor uncertain.
30/31	Bombay	N,E	e	22 43 54		Slight. Distant.
			e	48 24		
			M	00 01 -		
31	Poona	Z	i	23 41 56		