



## INSTRUMENTS AND THEIR CONSTANTS

Station	Instrument	Compt.	Period in Sec.	Static Magnifi- cation	Damping ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N-S	12.0	350	Unreliable	16.0
	Milne-Shaw	E-W	12.0	350	9 : 1	8.0
	Sprengnether	E-W	7.0	—	—	30.0
Calcutta	Milne-Shaw	E-W	10.0	150	20 : 1	8.0
	Wood-Anderson	N-S	2.0	870	Critical	30.0
	Omori-Ewing	N-S	18.0	32	—	25.4
	Omori-Ewing	E-W	19.0	30	—	25.4
Chatra	Wood-Anderson	N-S	1.0	1000	30 : 1	60.0
	Wood-Anderson	E-W	1.0	1000	40 : 1	60.0
	Benioff	Z	$T_0=0.72$ $T_g=0.45$	—	—	60.0
Colombo	Milne-Shaw	E-W	12.0	250	18 : 1	—
Dehra Dun	Milne-Shaw	N-S	12.0	250	20 : 1	16.0
	Wood-Anderson	E-W	1.0	1000	30 : 1	60.0
	Wood-Anderson	N-S	1.0	1000	30 : 1	60.0
Hyderabad	Milne-Shaw	E-W	12.0	253	20 : 1	8.0
	Milne-Shaw	N-S	12.0	251	20 : 1	8.0
Kodaikanal	Milne-Shaw	E-W	10.0	250	20 : 1	8.0
Madras	Sprengnether	E-W	7.2	—	Critically damped	30.0
New Delhi	Milne-Shaw	N-S	12.0	288	20 : 1	8.0
	Wood-Anderson	N-S	4.0	1070	20 : 1	16.0
	Wood-Anderson	E-W	2.0	1841	30 : 1	60.0
	Omori-Ewing	E-W	28	30	1	12.0
Poona	Milne-Shaw	N-S	12.0	250	20 : 1	8.0
	Wood-Anderson	E-W	4.0	1100	20 : 1	16.0
	Sprengnether	Z	$T_0=T_g=1.5$	—	—	30.0
Shillong	Milne-Shaw	N-S	12.0	250	20 : 1	8.0
	Wood-Anderson	N-S	4.0	1000	20 : 1	30.0
	Wood-Anderson	N-S	0.8	800	20 : 1	30.0
	Wood-Anderson	E-W	0.8	800	20 : 1	30.0
	Sprengnether	E-W	$T_0=T_g=7.5$	—	—	30.0
	Benioff	Z	$T_0=1.0$ $T_g=0.18$	—	—	60.0

## SEISMOLOGICAL BULLETIN

Date	Station	Compt.	Phase	G.M.T.	△	Remarks
				h. m. s.	km.	
May 1954						
01	Chatra	Z	i	18 13 03		Slight, distant.
	Dehra Dun	N	c	18 14 01		Tremor.
02	Shillong	Z	eP	16 42 12		Tremor.
02	Epc: 4°N., 94½° E. Off the NW Coast of Sumatra; 0=17h. 48m. 02s. (U.S.C.G.S.) 4°0 N., 95½° E. 0=17h. 48m. 03s. (B.C.I.S.) 5° N., 96° E. 0=17h. 48m. 06s. (Shillong) Magnitude — 6½ (Kiruna).					
	Colombo	E	P L M	17 51 43 57 49 01 36		Amp=1.0 mm.
	Madras	E	iP PP PPP iS SS SSS LR PcP S <sub>2</sub> P	17 52 08 52 21 52 28 55 16 55 35 55 55 56 27 56 50 18 00 26	1880	Moderate.
	Calcutta	NE E NE	eP e i	17 52 45 56 08 56 23		Moderate.
	Kodaikanal	E	iP PPP iS SS SSS LR M	17 52 48 53 24 56 15 56 39 56 54 57 12 58 39	2090	Slight. Per.=15 secs μ=13.
	Shillong	Z N	iP eP PP PPP eS SS SSS LR M PcS	17 52 49 52 49 53 04 53 16 56 32 56 49 57 07 57 39 59 01 18 00 19	3100	Moderate.
	Hyderabad	EN E EN E N	iP PP iS SS L M M	17 52 51 53 15 56 39 57 09 58 57 18 00 30 01 39	2310	Per.=12 secs μ=7. Per.=15 secs μ=9.
	Chatra	Z	eP PP PPP PcP eS LQ SS SSS LR M	17 53 15 53 53 54 01 56 51 57 33 58 11 58 24 58 47 59 13 18 01 04	2710	Slight.

Date	Station	Compt.	Phase	G.M.T.	△	Remarks
				h. m. s.	km.	
May 1954						
02 Contd.	Poona	Z EN	iP PP PPP PcP	17 53 34 54 16 54 33 56 44	2860	Moderate.
		NS	eS LQ SSS	58 01 58 50 59 29		
		EW	LR M	18 00 17 02 27		
	Bombay	NE N	eP PP PPP	17 53 44 54 25 54 42	2920	Slight.
		NE N NE E	eS e LQ LR	56 57 58 16 58 50 59 15 18 00 37		
	New Delhi	NE	eP PP iS LQ	17 54 13 55 08 59 03 18 09 03		Moderate.
		N NE	SS SSS LR	00 33 00 53 01 35		
***	Shillong	Z	eP	18 36 56		Tremor.
02	Poona	Z	eP	18 38 43		Tremor.
02	Shillong	Z	iP	21 48 11		Slight, local.
02	Shillong	Z	iP	21 29 03		Tremor.
02	Shillong	Z	eP	22 41 31		Tremor.
02	Shillong	Z	eP	23 26 11		Tremor.
03	Shillong	Z	e	05 34 59		Tremor.
03	Shillong	Z	e	06 46 14 47 59		Tremor.
03	Shillong	Z	eP	10 31 54		Slight, local.
03	Shillong	Z	e	10 31 54 32 31		Slight, local.
03	Shillong	Z	e	11 13 17		Tremor.
	Poona	Z	e?	11 15 05		Tremor.
03	Dehra Dun	NE N	eP PP PPP Pg iS SS S* SSS Sg	11 16 03 16 09 16 16 16 23 17 02 17 12 17 17 17 24 17 30	560	Slight.
***	Dehra Dun	NE	eP	17 54 22		Moderate.
03	New Delhi	NE	iP PP P* iS	11 16 35 16 32 16 41 17 40	720	Slight, direction of the first motion South and East.

Date	Station	Compt.	Phase	G.M.T.			$\Delta$	Remarks
				h.	m.	s.	km.	
May 1954								
03	Bombay	NE	iP	15	41	18	8170	Slight.
Contd.		N	PcP		41	30		
		NE	PPS		51	36		
		N	SS		55	37		
			SSS		58	41		
			M	16	16	45		Per.=17 secs $\mu=9$ .
			M		17	19		Per.=13 secs $\mu=9$ .
	Kodaikanal	E	iP	15	41	36		Slight.
			PP		44	27		
			PPP		46	21		
			iS		51	27		
			SS		56	27		
			SSS		59	45		
			LQ	16	02	05		
			LR		06	00		
			M		12	30		
	Colombo	E	eP	15	41	38		
			S		51	40		
			L	16	08	00		
			M1		14	28		Amp.=0.2 mm.
			M2		28	03		Amp.=0.4 mm.
03	Kodaikanal	E	e ?	17	19	46		
03	Shillong	Z	eP	17	32	48		Tremor.
03	Shillong	Z	i(Pg ?)	18	15	11		Local.
03	Epc : 31°N., 98½°E Si-Kang China; 0=18h 20m 26s (U.S.C.G.S. and B.C.I.S)							
	32°N., 98° E. 0=18h 20m 36s (Shillong)							
	Shillong	Z	iP	18	22	25	840	Slight.
		NE	Pg		23	02		
			LQ		23	39		
			iS		23	52		
			LR(?)		24	01		
		E	SSS		24	15		
		NE	S*		24	19		
			Sg		24	39		
	Chatra	Z	iP	18	23	05	1110	Slight.
			PP		23	14		
			PPP		23	19		
			P*		23	30		
			Pg		23	57		
			LQ		24	51		
			iS		24	59		
			?		25	07		
			SS		25	12		
			SSS	18	25	23		
			S*		25	39		
			M		26	12		
	Calcutta	N	eP	18	23	30	1290	Slight.
			iS		25	42		
		E	iS		25	40		
		N	LR		26	06		
	Dehra Dun	NE	eP	18	24	33	4550	Moderate.
		N	PP		26	12		
			PPP		26	35		
			iS		30	45		
			PS		30	48		
			PPS		31	00		
			SS		33	26		
			SSS		34	10		
			S <sub>c</sub> S		34	29		

Date	Station	Compt.	Phase	G.M.T.			△	Remarks
				h.	m.	s.	km.	
May 1954								
03	Dehra Dun		LR	35	30			
Contd.			M	38	40			
	New Delhi	NE	iP	18	24	46	1950	Moderate. Direction of first motion towards North and East.
		N	PP	25	02			
		NE	PPP	25	12			
		N	iS	28	01			
		NE	i	28	16			
			SS	28	23			
		N	SSS	28	36			
		NE	LR	28	54			
		N	M	30	20			
	Hyderabad	E	eP	18	25	37	2460	
			S	29	38			
			M	32	34			Per. = 12 secs $\mu=7$ .
	Poona	Z	iP	18	26	00		Slight shock. phases no clear.
		E	iS	30	35			
	Madras	E	P	18	26	00	2680	Moderate shock.
			PP	26	35			
			PPP	26	45			
			iS	30	16			
			LQ	30	58			
			SS	31	13			
			ScP	33	01			
	Bombay	E	e	18	31	00		Feeble.
		N	e	31	07			
			e	32	12			
		E	e	32	38			
		NE	M	34	14			
	Kodaikanal	E	e	18	31	06		Phases not clear.
	Colombo	E	eP	18	31	28		
			L	45	00			
			M	48	03			Amp=0.1 mm.
03	Shillong	Z	i(Pg)	23	23	32		Local.
04	Shillong	Z	iP	01	39	16		Tremor.
	Poona	Z	e?	01	41	05		
04	Shillong	Z	eP	03	52	19	700	Slight.
			PP	52	25			
			Pg	52	44			
			eS	53	31			
			SS	53	41			
		ZE	S*	53	52			
			Sg	54	09			
04	Bombay	N	e	04	04	00		Feeble.
		E	e	05	33			
			e	11	27			
04	Shillong	Z	e	06	32	50		Slight, near.
			i	32	56			
04	Bombay	E	e	07	41	23		Mainly surface waves.
			e	42	49			
04	Shillong	Z	e	08	58	14		Slight, near.
04	Shillong	Z	e	09	34	26		Slight, local.
			e	35	15			
04	Shillong	Z	e	11	51	16		Tremor.
			e	51	44			

Date	Station	Compt.	Phase	G. M. T.			△	Remarks
				h.	m.	s.	km.	
May 1954								
04	Shillong	ZNE	iPg iSg	12	08	50	110	Slight.
				09	04			
04	Shillong	Z	e	16	53	20		Tremor.
04	Shillong	Z	i	16	55	26		Tremor.
04	Shillong	Z	i	17	44	50		Tremor.
	Poona	Z	eP	17	46	38		Tremor.
04	Shillong	Z	i iSg	17	47	15	170	Slight.
				47	49			
04	Shillong	N	e(M?)	18	05	56		Slight, distant.
04	Shillong	Z	e	18	12	02		Tremor.
04	Shillong	Z	iP	18	21	14		Slight, near.
	Bombay	E	e(M)	18	22	07		Very feeble shock.
	Poona	Z	eP	18	22	50		Tremor.
04	Shillong	Z	e	20	43	04		Tremor.
04	Shillong	Z	e	20	56	10		Tremor.
04	Shillong	Z	e	23	54	53		Tremor.
05	Shillong	Z	i	00	40	11		Tremor.
05	Shillong	Z	e	01	04	48		Slight, near.
				05	16			
05	Shillong	Z	i	03	23	00		Slight, near.
	Poona	Z	e	03	24	48		
05	Shillong	Z	e	06	02	35		Slight, near.
			e	03	05			
05	Shillong	Z	e	09	05	24		Slight near.
				06	01			
05	Shillong	Z	iP Pg S S* iSg	09	23	24	220	Slight.
		EN		23	29			
				23	47			
				23	51			
				23	55			
05	Shillong	Z	i	11	44	23		Tremor.
	Poona	Z	iP	11	46	43		Tremor.
05	Shillong	Z	i	11	59	55		Tremor.
05	Poona	Z	i	13	29	12		Tremor.
	Shillong	N	e e e	13	30	26		Slight, distant.
				37	47			
				14	12	34		
05	Madras	E	L?	14	14	59		Slight shock, phases not clear.
	Kodaikanal	E	M	14	17	34		Tremor.
	Colombo	E		14	18	—		Tremor.
	Hyderabad	N	M	14	28	53		Per. = 18 sec. $\mu=12$ .

Date	Station	Compt.	Phase	G.M.T.			km.	
				h.	m.	s.		
May								
1954								
05	Shillong	Z	i	17	24	37		Tremor.
	Poona	Z	eP	17	24	37		Tremor.
05	Shillong	N	e e e	17	29 32 40	47 27 55		Slight, distant.
05	Dehra Dun	N	e	19	30	55		Tremor.
05	Dehra Dun	NE	eP i(S) e	19	57 59 20	32 06 25	910	Slight, phases not clear.
	New Delhi	NE E NE N NE	eP P* LQ iS SS S* Sg	19	57 58 59 59 59 59 20	40 01 09 19 30 50 12	960	Slight.
	Shillong	Z	iP eS	19	59 20	57 03 42	2270	Slight.
05	Dehra Dun	NE	eP iS	21	38 40	17 27	1280	Slight, other phases not clear.
	Shillong		e	21	40	04		Tremor.
06	Shillong	Z	e e	00	14 15	36 03		Slight, near.
06	Dehra Dun	N	e e i	00	46 46 47	19 58 11		Slight, phases not clear.
	Shillong	Z	e i	00	47 47	42 48		
06	Epc : 50° N., 155½° E. Off the South Coast of Kamchatka ; h=100 km. Ca ; 0=09h 02m 14s (U.S.C.G.S.)							
	Shillong	ZN	iP PcP eS i S S SS	09	11 12 18 19 21 22	32 46 51 52 02 03	5700	Slight, deep.
	Chatra	Z	eP	09	11	48		Slight, distant.
	Hyderabad	EN E N E	eP S ScS SS L M M	09	13 21 22 26 34 40 40	09 58 56 55 54 24 39	7360	Slight. Per.=8 secs $\mu=3$ . Per.=8 secs $\mu=2$ .
	Poona	Z NS	iP PcP eS PPS M	09	13 13 22 23 40	24 45 27 09 52	7630	Moderate.
	Bombay	NE E NE	eP eS PPS	09	13 22 23	26 31 15	7670	Feeble, deep.

Date	Station	Compt.	Phase	G.	M	T.	$\Delta$	REMARKS
May				h.	m.	s.	km.	
1954								
06	Shillong	Z	e	09	15	37		Tremor.
06	Shillong	Z	e	09	20	59		Tremor.
06	Shillong	Z	e	11	46	34		Slight, near.
			e		47	09		
06	Shillong	Z	e	17	40	24		Slight, near.
			e		40	57		
			e		41	22		
06	Shillong	Z	iP	23	53	52		Slight, near.
07	Shillong	Z	iP	00	30	12		Tremor.
07	Shillong	Z	iP	04	44	32		Tremor.
07	Shillong	Z	iP	07	41	09		Tremor.
07	Hyderabad	E	M	11	12	36		Per.=8 secs $\mu=3$ .
07	Dehra Dun	NE	e	22	00	57		Feeble, phases not clear.
			e		01	01		
			i		01	12		
			i		01	20		
08	Shillong	Z	iP	04	20	24	440	Slight.
			P*/PP		20	28		
			PPP		20	37		
			iS		21	12		
			S*/SS		21	23		
08	Shillong	Z	e	06	24	02		Tremor.
			e		24	57		
08	Shillong	Z	e	07	04	08		Tremor.
			e		04	39		
08	Shillong	Z	iP	11	17	58		Slight.
08	Shillong	Z	eP	14	12	32		Slight, distant.
08	Shillong	Z	eP	14	28	24		Slight.
08	Shillong	Z	eP	15	08	33		Slight.
08	Shillong	Z	e	20	24	07		Slight, distant.
		N	e		24	15		
			e		31	56		
			e		39	00		
08	Poona	ZEN	iP	20	25	34		Feeble shock, other phases doubtful.
	Bombay	E	eP	20	25	42	6610	Slight.
			eS		33	51		
	Colombo	E		20	27	—		Tremor.
	Hyderabad	E	M	20	36	40		Per.=9 secs $\mu=2$ .
08	Shillong	Z	i	21	35	27		Slight, local.
08	Shillong	Z	i	22	30	44		Slight, local.
09	Shillong	ZNE NE	iP	00	02	50	210	Slight.
			P*		02	52		
			Pg		02	55		
			S*		03	17		
			iSg		03	19		
			SS		03	25		

Date	Station	Compt.	Phase	G. M. T.	△	Remarks
				h. m. s.	km.	
May 1954						
09	Shillong		SSS	03 39		
Contd.	Calcutta	N	eP iS SS	00 04 07 05 26 05 38	750	Slight.
	Dehra Dun	N	e	00 06 56		Tremor.
	Poona	Z	e	00 11 56		
09	Shillong	Z	iP	20 50 30		Tremor.
09	Shillong	Z	ep	23 21 35		Tremor.
10	Epc: New Britain Region; 0=06h 25.5m. (B.C.I.S.)					
	Shillong	Z	iP	06 36 06		Tremor.
	Poona	Z	e?	06 37 55		
10	Shillong	Z	iP	06 43 26		Tremor
	Poona	Z	e?	06 45 04		
10	Epc: Off the East Coast of Mindanao, Philippines; 0=06h 41.5 m (B.C.I.S.)					
	Shillong	Z	iP	06 48 40		Tremor
	Bombay	E	eP eS PS SS	06 48 48 57 20 57 40 07 01 22	7035	Slight.
	Madras	E	iP PeP PP PPP iS PS PPS LQ SSS LR	06 49 29 50 49 51 17 52 09 56 15 56 26 56 35 07 00 50 02 00 03 16	5121	Slight.
10	Hyderabad	E	P S M	06 49 46 56 48 07 08 39	5410	Per.=21 secs $\mu=8$ .
10	Poona	Z	iP	06 50 02		Very feeble shock, phases not developed.
10	Shillong	Z	iP	08 04 58		Tremor.
10	Shillong	Z	iP	18 46 46		Local, tremor.
10	Shillong	Z	iP	19 00 37		Tremor.
12	Shillong	Z	iP	01 45 12		Local, tremor.
12	Shillong	Z	iP	04 42 36		Tremor.
12	Bombay Poona	E ZE	i eP	04 52 03 04 52 48		Feeble, local tremor. Tremor.
12	Epc: Off the East Coast of Mindanao, Philippines; 0=06h 22m. 14s. (U.S.C.G.S.) 61°N., 123½° E. 0=06h 22m 15s (B.C.I.S.) S Felt at Davao (Press report from Manila).					

Date	Station	Compt.	Phase	G.M.T.	△	Remarks
				h. m. s.	km.	
May 1954						
12	Shillong	Z	iP	06 29 41		Tremor.
	Dehra Dun	NE	e	06 31 29		Feeble, phases not clear.
	Poona	ZE	eP	06 31 33		Tremor.
12	Bombay	E	i	09 49 00		Feeble, local tremor.
	Poona	ZE	iP	09 49 36		Tremor.
12	New Delhi	E NE	eP PPP Pg eS LR S* Sg	18 38 33 38 48 38 52 39 24 39 26 39 37 39 50	480	Slight.
	Dehra Dun	NE	e e	18 39 56 40 30		Feeble, phases not clear.
	Poona	Z E	e? i	18 41 58 42 28		Very feeble shock, phases not clear.
	Bombay	E	e e	18 42 10 42 25		Minor local tremor.
13	Epc: 17° N., 95½° W.; h=100 km ca, 0=14h 46m 38s (U.S.C.G.S.) 16°5' N., 95°9' W.; h= 80 km, 0=14h 46m 36s (B.C.I.S.) 16°46' N., 95°54' W. h= 80 km 0=14h 46m 42s (Tacubaya) Felt over Central and SE Mexico (Press report). Magnitude -6½ (Berkeley, Kiruna, Uppsala, Praha), 6½ (Tacubaya)					
	Chatra	Z	e	15 05 43		Slight, distant.
	Shillong	Z N	iPKP PP PKS <sub>1</sub> PKS <sub>2</sub> PS PPS SKKS <sub>1</sub> SS SSP SSS LR M	15 05 55 08 41 09 29 09 47 19 14 20 48 22 02 26 48 27 25 31 39 50 47 16 02 13	15410	Slight, distant.
	Bombay	N N E N	ePKP e e e	15 06 03 10 05 10 14 28 16		Distant shock, feebly recorded (Microseisms present).
	Poona	Z	ePKP	15 06 05		Probably very distant, slight earthquake phases not clear.
	Hyderabad	N E	ePKP M M	15 06 08 16 02 06 02 09		Slight. Per.=24 secs $\mu=11$ . Per.=24 secs $\mu=8$ .
	Dehra Dhun	N	e e	15 06 15 09 01		Slight, phases not clear.
	Kodaikanal	E	e	15 06 23		Long distance tremor.
	Madras	E	iPKP PP	15 06 25 10 52		Slight, other phases not clear.
	Colombo	E	e M	15 15 49 16 17 30		Amp=0.2 mm.





Date Station Compt. Phase G. M. T.  $\Delta$

h. m. s. km.

Date	Station	Compt.	Phase	G.	M.	T.	$\Delta$	
May 1954								
13	Shillong	Z	iP	16	33	40		Local, tremor.
13	Dehra Dun	NE	e	17	42	56		Feeble, phases not clear.
13	Shillong	Z	iP	19	57	55		Very near.
13	Shillong	Z	iP	21	04	45		Tremor.
13	Shillong	Z	iP	21	55	55		Tremor.
14	Shillong	Z	eP	00	36	00		Tremor.
14	Dehra Dun	NE	e i	03	15 17	26 43		Feeble, phases not clear.
14	New Delhi	N NE	eP iS SS SSS	04	42 44 44 44	25 06 19 31	980	Slight.
		N	S* Sg		44 45	38 01		
	Shillong	Z	iP	04	44	44		Tremor.
	Poona	Z	eP	04	47	44		Tremor.
14	Shillong	Z	iP	07	12	12		Tremor.
14	Shillong	Z	iP	22	11	19		Tremor.

14 Epc: 36°N., 137°E. Hondo Japan; H=250 km. O=22h 39m 25s (U.S.C.G.S.)  
 36°0 N., 137°4 E. h=230-240 km; O=22h 39m 27s (CMO, Japan, B.C.I.S.)  
 36°N., 138°E. h=250 km. O=22h 39m 27s (Shillong).  
 Magnitude—7 (Pasadena), 6 $\frac{3}{4}$  (Kiruna).

	Shillong	Z N	iP pP PP PcP iS P S eS SS LQ SSS LR	22	46 47 48 48 52 52 53 54 54 55 56	37 30 08 56 25 41 56 33 48 23 34	4520	Moderate.
	Dehra Dun	NE N	eP PcP PP PPP PcS iS PPS ScS LQ SSS LR M	22	47 49 49 50 53 54 54 57 58 58 00 04	57 24 38 18 20 39 49 43 44 55 44 40	5060	Moderate
	New Delhi	NE	iP PP PcP iS	22	48 48 49 54	02 55 33 53	5210	Moderate
14	New Delhi	N	SS i SSS i	22	56 57 59 23	30 21 34 28		

Date	Station	Compt.	Phase	G.M.T			△	
				h.	m.	s.		
May								
1954								
14	Calcutta	E	iP	22	48	05	5250	Moderate. First movement
Contd.		N	iP		48	10		West
		E	P S		53	29		
		N	PcS		53	31		
		E	iS		54	59		
		N	S		55	05		
		E	SS		58	20		
	Madras	E	P	22	48	40		Moderate.
			pP		49	34		
			S		56	11		
			Ss		58	00		
	Poona	Z	eP	22	48	56	6110	Moderate.
		E	i		49	49		
			PP		50	57		
			PPP		52	15		
			PcS		53	31		
			eS		56	37		
			PS		56	45		
			S.S?		58	13		
			LQ	23	02	57		
			LR		05	30		
			M		10	17		
	Kodaikanal	E	iP	22	49	07		Slight.
			PP		51	22		
			PPP		52	49		
			S		56	55		
			SS	23	00	55		
			LQ		03	25		
			LR		06	37		
			M		11	23		
	Hyderabad	E	iP	22	49	24	4840	Moderate.
			PP		51	24		
			iS		55	54		
			L	23	01	29		
			M		06	18		Per.=18 secs $\mu=9$ .
		N	M		06	22		Per.=18 secs $\mu=10$ .
	Bombay	NE	iP	22	49	54	6980	Moderate.
			PcP		50	17		
		E	PP		52	04		
			i		52	27		
			i		54	37		
		N	e		56	44		
		E	i		56	47		
		NE	iS		58	23		
		E	PS		58	47		
			M	23	16	—		Suppressed.
	Colombo	E	iP	22	49	59		
			iS		56	57		
			M	23	07	55		Amp=0.1 mm.
15	Madras	E	eP?	05	52	21		Slight, phases not clear.
	Poona	Z	eP	05	53	48		Tremor.
15	Poona	Z	eP	05	57	08		Tremor.
	Dehra Dun	NE	e	05	58	29		Feeble, phases not clear.
			i		58	36		
15	Chatra	Z	i	22	47	05		Slight, distant.
16	Epc : $36\frac{1}{2}^{\circ}$ N., $70\frac{1}{2}^{\circ}$ E. Hindukush ; h=200 km ca ; 0=20h 10m 42s (U.S.C.G.S.)							
	36.°5 N., 70.°5 E. h=220 km ; 0=20h 10m 43s (B.C.I.S.)							
	36° N., 70.°5 E. h=200 km ; 0=20h 10m 40s (Shillong)							
	Felt : Drosh, Cherat, Chakdara and Risalpur (Press report from Quetta).							

Date	Station	Compt.	Phase	G.M.T.			△	Remarks	
				h.	m.	s.			
May 1954 16 Contd.	Dehra Dun	NE N	eP PP PPP P* LQ iS SS LR SSS S* S <sub>2</sub> , M	20	12	40	890	Moderate.	
	New Delhi	NE       N	iP PP PPP P* Pg iS SS SSS S*	20	12	51	960	Slight.	
	Chatra	Z	iP PP PPP LQ iS SS LR M	20	14	26	1760	Slight.	
	Bombay	NE N  NE E	eP e i eS i	20	14	37	1960	Slight, deep focus.	
	Poona	Z E	eP eS LR M	20	14	41	1935	Slight.	
	Shillong	Z N	iP iS	20	15	09	2280	Slight.	
	Calcutta	E	eP iS	20	15	12	2220		
	Hyderabad	E	iP iS M	20	15	54	1620	Per.=6 secs $\mu=2$ .	
	Kodaikanal	E	e?	20	19	55		Tremor.	
	Madras	E	i	20	19	58		Moderate, phases not clear.	
17	Dehra Dun	NE	e	19	30	40		Tremor.	
17	Shillong	Z	i	21	09	21		Slight.	
17	Poona	Z	eP	21	14	35		Tremor.	
17	Shillong	Z	i	22	01	58		Tremor.	
17	Shillong	Z	i	23	03	01		Tremor.	
19				Epc: 31° N., 92° E. Tibet; 0=04h 21.0 m (B.C.I.S.)					
	Shillong	N	i	04	24	29		Slight.	
	Poona	Z	i	04	26	22		Tremor.	

Date	Station	Compt.	Phase	G.M.T.			△	Remarks
				h.	m.	s.		
May 1956								
19	Shillong	Z	i	06	38	32		Slight.
19	Shillong	Z	iPg	15	40	04		Slight, local.
19	Shillong	Z	e	21	01	30		Tremor.
19	Shillong	Z N	i e(L)	23	18	05		Slight.
	Poona	Z	i	23	19	19		Tremor.
20	Shillong	Z	i	02	08	08		Tremor.
20	Shillong	Z	e(?) i	04	26	42		Slight.
20	Dehra Dun	NE	e i	09	41	39		Slight, phases not clear.
20	Shillong	Z	i i	17	15	49		Slight, local.
20	Shillong	Z	i i i	20	28	06		Slight, near.
21	Shillong	Z	e	04	06	20		Slight, near.
21	Poona	N	i? i i i	04	17	34		Feeble, phases not clear.
21	Shillong	Z	iPg	04	31	41		Slight, near.
21	Dehra Dun	NE	e	05	17	40		Tremor.
21	Shillong	Z N	i e e e e	05	17	52		Slight.
21	Shillong	Z N E	iPg iPg iPg	12	26	35		Slight., felt(?)
21	Shillong	Z	i	12	56	17		Slight.
21	Shillong	Z	i	16	25	27		Slight.
	Hyderabad	N	M	17	10	33		Per.=14 secs $\mu=4$ .
	Poona	N	e	17	12	38		
21	Shillong	Z N	i e(M)	17	52	02		Slight.
21	Shillong	Z	e	21	04	34		Slight, local.
22	Shillong	Z	i i i	04	19	44		Slight, near.
22	New Delhi	E  NE N	eP LQ SS S* Sg	08	03	49	640	Slight.

Date	Station	Compt.	Phase	G.M.T.			△	km.
May				h.	m.	s.		
1954								
22	Dehra Dun	NE	e	08	04	17		Slight, phases not clear.
Contd.			i		05	55		
			i		06	17		
	Poona	ZE	eP	08	08	06		Tremor,
22	Shillong	Z	i	11	41	49		Slight.
22	Dehra Dun	NE	i	11	45	25		Feeble, phases not clear.
22	Shillong	Z	i	11	47	29		Slight.
22	Shillong	Z	e	12	12	39		Slight.
22	Shillong	Z	iPg	14	39	59	80	Slight (Felt ?).
		N	iSg		40	08		
23	Shillong	Z	e	04	02	11		Slight, near.
			e		02	26		
23	Epc : 46° N., 149½° E. Kurile Island ; h=150 km ca. 0=04h 10m 27s (U.S.C.G.S.) 45° N., 150° E., h=160 km ; 0=04h 10m 30s—Felt (C.M.O. Japan).							
	Shillong	Z	iP	04	19	10		Slight.
			i		19	20		
23	Chatra	Z	iP	04	19	29		Slight, probably deep focus.
	Dehra Dun	NE	eP	04	19	59		Tremor.
	Poona	ZE	eP	04	21	09		Tremor.
23	Epc : 3° N., 124° E. Celebes Sea ; 0=06h 56m 42s (U.S.C.G.S.) 2° N., 124° E. 0=06h 56m 39s (Shillong).							
	Shillong	Z	iP	07	04	06	4230	Slight.
		N	eP		04	06		
			PP		05	35		
			iS		10	00		
	Chatra	Z	eP	07	04	41		Slight, distant.
	Madras	E	iP	07	05	00	4910	Moderate.
			PP		06	44		
			PPP		07	17		
			S P		10	20		
			eS		11	34		
			PPS		11	46		
			SS		14	46		
			LQ		15	33		
			SSS		15	47		
	Hyderabad	E	iP	07	05	16	5150	
			PP		07	06		
		EN	iS		12	04		
		E	SS		15	45		
			L		18	39		
			M		21	37		Per.=18 sec μ=5.
		N	M		22	48		Per.=18 secs μ=5.
	Kodaikanal		eP	07	05	17		Tremor.
	Poona	ZE	iP	07	05	50	5720	Moderate.
		E	PP		07	44		
			PPP		08	51		
			eS		13	10		
			FS		13	18		
			PIS		13	23		
			LR		20	34		
			M		25	05		

Date	Station	Compt.	Phase	G.M.T.			△ km.	Remarks
				h.	m.	s.		
May 1954								
23 Contd.	Bombay	E	eP	07	06	00		Feeble.
		N	iS		13	24		
			e		13	29		
	Colombo	E	S	07	11	29		
			L		21	—		
			M		27	49		Amp=0.2 mm.
23	Kodaikanal	E	e	07	49	17		Tremor.
23	Shillong	Z	iPg	12	22	40	100	Slight.
			i		22	58		
23	Shillong	Z	i	14	34	42		Slight, near.
24	Epc : 48½° N., 156° E. Kurile Is and; 0=07h 29m 59s (U.S.C.G.S.)							
	Shillong	Z	i	07	38	30		Slight, tremor.
	Poona	Z	iP	07	40	25		Tremor.
24	Shillong	Z	i	08	23	47		Slight.
24	Shillong	Z	ePg	17	11	53	120	Slight, Local.
			eSg		12	07		
24	Shillong	Z	e	18	03	57		Tremor.
24	Shillong	Z	ePg	18	25	55	110	Slight.
			iSg		26	08		
24	Shillong	Z	iP	19	07	40	230	Slight.
			i		07	50		
			iSg		08	13		
24	Shillong	Z	e	19	21	18		Slight.
24	Epc : Karakoram region; 0=22h 31.7m (B.C.I.S.) 39° N., 75° E. 0=22h 31m 51s (Shillong)							
	Dehra Dun	NE	eP	22	34	05	970	Slight.
		N	PPP		34	20		
			Pg		34	49		
			eS		35	44		
			SS		35	56		
			LR		36	01		
			SSS		36	06		
			S*		36	17		
			Sg,M		36	41		
	New Delhi	NE	eP	22	34	22	1030	Slight.
		N	i		34	34		
		E	LQ		35	57		
		NE	eS		36	08		
			SS		36	19		
			LR		36	23		
			SSS		36	31		
		N	S*		36	44		
			Sg		37	07		
	Shillong	Z	iP	22	36	14		Slight.
		N	eS		39	48		
	Poona	Z	eP	22	36	28		Slight shock, phases not clear.
			iS		40	15		
		E	i		42	32		
	Hyderabad	E	eP	22	37	25	2710	Slight.
			S		41	43		
			M		45	25		Per.=8 secs μ=3.
		N	M		45	53		Per.=8 secs μ=3.

Date	Station	Compt.	Phase	G.M.T.	△	Remarks
				h. m. s.	km.	
May 1954						
24	Bombay	E	e	22 41 25		
Contd.			e	41 30		
			i	42 22		
	Madras	E	i	22 45 35		Moderate, phases not clear.
26	Shillong	Z	e	01 35 08		Slight.
26	Poona	Z	eP	01 54 30		Tremor.
	Bombay	N	eP	01 54 41	8150	Slight.
			eS	02 04 10		Phases lost in microseisms.
	Shillong	N	e(M)	02 14 24		Slight.
26	Shillong	Z	iP	14 48 31		Feeble.
26	Shillong	Z	eP	19 05 34		Feeble.
27	Shillong	Z	e	07 57 56		Feeble.
27	Shillong	Z	iP	16 11 04		Feeble.
27		Epc : Celebes Sea, data discordant ; 0=16h 18-0m (B.C.I.S.)				
	Shillong	Z	i	16 24 01		Feeble.
	Dehra Dun	NE	e	16 26 20		Tremor.
	Poona	ZE	eP	16 27 03		Tremor.
	Bombay	NE	e	16 34 09		
27	Poona	Z	eP	19 08 56		Tremor.
27	Shillong	Z	i	23 33 48		Feeble.
28	Shillong	Z	eP	15 49 23		Feeble.
28	Shillong	Z	e	19 29 18		Feeble.
28	Shillong	Z	e	21 05 15		Feeble.
29	Shillong	Z	e	16 28 04		Feeble.
29	Shillong	Z	e	22 49 29		Feeble.
30	Shillong	Z	iP	14 55 13		Feeble.
30		Epc : Celebes Sea ; 0=19h 46m 56s (U.S.C.G.S.) 1° N., 124½° E. 0=19h 46m 35s (B.C.I.S.)				
	Shillong	Z	iP	19 54 09		Feeble.
	Chatra	Z	iP	19 54 46		Slight, distant.
	Dehra Dun	N	e	19 55 46		Feeble, phases not clear.
			i	56 08		
			i	56 25		
	Poona	Z	e?	19 55 47		Feeble.
31	Shillong	Z	i	15 55 36		Tremor.
31		Epc : Flores Sea ; 8° S., 118½° E. h=150 km ; 0=15h 48m 48s. (U.S.C.G.S.) 8° S., 118 E. 0=15h 48m 50s (Shillong) Magnitude—6½—6½ (Pasadena), 6 (Uppsala, Praha).				
	Madras	E	iP	15 56 43	4688	Moderate.
			PP	58 23		
			PcP	58 34		

Date	Station	Compt.	Phase	G.M.T.	△	Remarks
				h. m. s.	km.	
May 1954						
31	Madras		PPP	58 54		
Contd.			ScP	16 02 16		
			iS	03 04		
			SS	05 53		
			LQ	06 31		
			LR	08 26		
			M	12 16		
	Shillong	N	iP	15 56 46	4560	Moderate.
			i(?)	57 31		
			PPP	59 09		
			S	16 03 00		
			SS	06 09		
			LR	08 46		
			M	12 16		
	Chatra	Z	e	15 56 49		Slight, distant.
			e	16 03 46		
	Kodaikanal	E	iP	15 56 51	4810	Slight.
			PP	58 36		
			PPP	59 18		
			iS	16 03 21		
			LQ	07 21		
			SSS	07 39		
			LR	09 30		
			M	13 12		Per.=12 secs $\mu=8.6$ .
	Hyderabad	E	eP	15 57 06	5110	
			iS	16 03 51		
		N	M	14 42		Per.=18 secs $\mu=22$ .
		E	M	14 51		Per.=18 secs $\mu=22$ .
	Poona	Z	iP	15 57 42	5450	Moderate.
		E	PcP	59 03		
			PPP	16 00 25		
			eS	04 45		
			PS	04 52		
			PPS	04 57		
			ScS	07 13		
		N	SS	07 58		
		E	SSS	09 19		
		N	LR	11 28		
		E	M	15 15		
	Bombay	E	eP	15 57 49	5870	Moderate.
			PcP	58 00		
			PP	16 00 02		
			PPP	00 54		
			iS	05 17		
		N	iS(?)	05 20		
			M	24 36		Per.=15 secs $\mu=5$ .
		E	M	22 00		Per.=15 secs $\mu=5$ .
	New Delhi	NE	eP	15 58 00	5700	Moderate.
		N	i	16 00 17		
			eS	05 19		
			PPS	05 33		
			ScS	07 50		
			SS	08 49		
			i	09 17		
			SSS	10 19		
			i	11 33		
			LR	12 47		
			M	17 25		

**Earthquake Reports**  
(Non Instrumental Reports)

The following table contains a list of earthquakes that were reported by Voluntary Observers from various stations.

Place at which felt	Date	Time at which felt in G.M.T.	Intensity in R.F. scale	No. of shocks	Remarks
Tezpur	2.5.54	21h. 23m.	III	1	—
Shillong	21.5.54	12h. 30m.	I	1	—
Shillong	22.5.54	14h. 40m.	III	1	—

GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

# SEISMOLOGICAL BULLETIN

*JUNE, 1954*



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PUBLISHED UNDER THE DIRECTION OF  
SHRI S. BASU, M.Sc., F.N.I.,  
DIRECTOR GENERAL OF OBSERVATORIES.

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## INSTRUMENTS AND THEIR CONSTANTS

Station	Instrument	Compt.	Period in Secs.	Static Magnifi- cation	Damping ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N-S	12.0	350		16.0
	Milne-Shaw	E-W	12.0	350	9 : 1	8.0
	Sprengnether	E-W	$T_o = T_g = 7.0$	—	—	30.0
Calcutta	Milne-Shaw	E-W	10.0	150	20 : 1	8.0
	Wood-Anderson	N-S	2.0	870	Critical	30.0
	Omori-Ewing	N-S	18.2	32	—	25.4
	Omori-Ewing	E-W	19.0	30	—	25.4
Chatra	Wood-Anderson	N-S	1.0	1000	30 : 1	60.0
	Wood-Anderson	E-W	1.0	1000	40 : 1	60.0
	Benioff	Z	$T_o = 0.72$ $T_g = 0.45$	—	—	60.0
Colombo	Milne-Shaw	E-W	12.0	250	18 : 1	—
Dehra Dun	Milne-Shaw	N-S	12.0	250	20 : 1	16.0
	Wood-Anderson	E-W	1.0	1000	30 : 1	60.0
	Wood-Anderson	E-W	1.0	1000	30 : 1	60.0
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
Madras	Sprengnether	E-W	$T_o = T_g = 7.2$	—		30.0
New Delhi	Milne-Shaw	N-S	12.0	288	20 : 1	8.0
	Wood-Anderson	N-S	4.0	1070	20 : 1	16.0
	Wood-Anderson	E-W	2.0	1840	30 : 1	60.0
	Omori-Ewing	E-W	28	30	—	12.0
Poona	Milne-Shaw	N-S	12.0	250	20 : 1	8.0
	Wood-Anderson	E-W	4.0	1100	20 : 1	16.0
	Sprengnether	Z	$T_o = T_g = 1.5$	—	—	30.0
Shillong	Milne-Shaw	N-S	12.0	250	20 : 1	8.0
	Wood-Anderson	N-S	4.0	1000	20 : 1	30.0
	Wood-Anderson	N-S	0.8	800	20 : 1	30.0
	Wood-Anderson	E-W	0.8	800	20 : 1	30.0
	Sprengnether	E-W	$T_o = T_g = 7.5$	—	—	30.0
	Benioff	Z	$T_o = 1.0$ $T_g = 0.18$	—	—	60.0

## SEISMOLOGICAL BULLETIN

Date	Station	Compt.	Phase	G. M. T.			Remarks
				h.	m.	s.	
June 1954						km.	
01	Dehra Dun	NE	e i	07 48 30 49 59			Feeble, phases not clear.
	Shillong	Z	i	07 50 59			Tremor.
01	Shillong	Z	i	12 58 35			Tremor.
01	Shillong	Z	Pg Sg	17 39 42 39 47			Local.
01	Shillong	Z	Pg Sg	17 41 16 41 22			Local.
01	Shillong	Z	Pg Sg	17 59 17 59 22			Local.
01	Shillong	Z	iP Pg S S* Sg	19 05 47 06 02 06 32 06 43 06 53			Slight.
01	Poona	Z	eP	20 52 39			Tremor.
01	Shillong	Z	i	20 53 41			Tremor.
02	Poona	ZE	eP	07 10 39			Slight, phases mixed up with microseisms.
02	Shillong	Z	e	09 39 45			Tremor.
02	Poona	ZN	eP	10 49 20			Slight, phases mixed up with microseisms.
02	Shillong	Z	i i	11 02 54 03 23			Slight, local.
02	Dehra Dun	N	e	21 56 21			Tremor.
02	Shillong	Z	e i	22 14 55 15 27			Slight.
03	Shillong	Z	iP Pg S Sg SS	00 30 59 31 05 31 25 31 31 31 39			Slight, local.
03	Shillong	Z	e i	07 30 31 31 15			Tremor.
03	Shillong	Z	e	16 55 42			Tremor.
03	Shillong	Z	e	17 29 03			Tremor.
03	Shillong	Z	e	21 52 26			Tremor.
03	Shillong	Z	Pg Sg	22 26 03 26 28			Local.
04	Dehra Dun	NE	e i i	0 06 06 06 09 06 38			Feeble, phases not clear.

Date	Station	Compt.	Phase	G. M. T.			Remarks
				h.	m.	s.	
June 1954						km.	
04							Epc: $\frac{1}{2}^{\circ}$ S., $91\frac{1}{2}^{\circ}$ W. Galapagos Island; 0=06h 50m 42s (U.S.C.G.S.) Magnitude— $6\frac{3}{4}$ —7 (Lwir), $6\frac{1}{2}$ (Pasadena), $6\frac{1}{2}$ (Tacubaya, Praha), $6\frac{1}{2}$ (Berkeley)
	Dehra Dun	Ne	e e i	07 10 32 12 34 14 09			Feeble, phases not clear.
	Chatra	Z	e	07 10 33			Slight, distant.
	Shillong	N	PKP <sub>1</sub> SKS <sub>2</sub> PKKP PPP SKSP SS SSS M	07 10 34 17 57 18 53 23 23 24 13 32 50 38 47 08 16 47			Slight, distant.
	Hyderabad	N	M	08 34 40			Per. = 18 secs/ $\mu$ = 6.
04	Colombo	E	eP	10 37 —			
04	Madras	E	iP	10 40 50			Earthquake of moderate intensity, phases not clear due to presence of Microseisms.
04							Epc: Java Sea; 0=10h 41m 37s (U.S.C.G.S.) $5^{\circ}$ S., $108^{\circ}$ E., 0=10h 41.6m. data discordant (B.C.I.S.)
	Shillong	N	iP PcP iS SS/LQ LR ScS M	10 48 39 51 07 54 14 56 10 57 05 57 53 11 00 20			Slight.
	Chatra	Z E	iP eS	10 49 05 55 05			Slight, distant.
	Bombay	NE E N NE	eP e eS e e	10 49 24 54 52 55 49 58 08 59 27			Slight, phases doubtful due to presence of microseisms.
	New Delhi	NE N	eP iS PS PPS SSS	10 50 00 56 38 56 48 56 56 11 00 35	4990		Slight
	Hyderabad	E EN	e S L	10 50 13 54 34 11 03 44			Per. = 12 secs/ $\mu$ = 3. Per. = 12 secs/ $\mu$ = 5.
	Dehra Dun	N	e e e e	10 50 13 56 52 57 30 58 08			Feeble, phases not clear.

Date	Station	Compt	Phase	G. M. T.			Δ	Remarks			
				h.	m.	s.					
June 1954							km.				
04	Kodaikanal	E	i	10	53	45	2710	Slight intensity.			
04	Dehra Dun	NE	e	16	46	49		Tremor.			
04	Dehra Dun	NE	e	18	23	53		Tremor.			
05	Dehra Dun	NE N	eP PP PPP Pg LQ iS LR SS SSS S* Sg M	12	47	53	860	Slight.			
	New Delhi	NE	iP PP	12	48	11	880	Slight.			
		E	P* Pg	48	19	48			28		
		NE	iS SS LR SSS	49	42	49			51		
		E	i	50	03	50			03		
		N	S*	50	10	50			10		
06		Shillong	Z	i	11	13			42		Tremor.
06		Epc : $3\frac{1}{2}^{\circ}$ S., $136\frac{1}{2}^{\circ}$ E. West New Guinea ; O=16h 50m 33s (U.S.C.G.S.) $3.0^{\circ}$ S., $135.5^{\circ}$ E. O=16h 50m 40s (B.C I.S.) $4^{\circ}$ S., $137^{\circ}$ E. O=16h 50m 35s (Shillong) Magnitude—7— $7\frac{1}{2}$ (Hurbanovo), 7.1 (Praha), 7 (Pasad na, Tacubaya, Lwir), $6\frac{1}{4}$ —7 (Uppsala, De Bilt)									
		Shillong	Z	iP }	16	59			45	5890	Compression first move- ment North.
			N	iP }	17	00			04		
				PcP	02	50					
			PPP	05	04						
			PcS	06	04						
			iS	09	29						
			ScS	10	32						
			SS	12	13						
			LQ/SSS	14	36						
			LR	18	36						
	Calcutta	E	iP }	17	00	07	5865	Moderate.			
		N	iP }	00	08						
			eS	07	34						
		E	iS	11	15						
			SS	12	56						
			LQ	15	21						
			LR	19	28						
			M								
	Chatra	Z	iP }	17	00	17	6300	Moderate.			
		E	eP }	01	15						
			PcP	02	30						
			PP	03	56						
			PPP	08	09						
			iS								

Date	Station	Compt.	Phase	G. M. T.	$\Delta$	Remarks
				h. m. s.	km.	
June 1954						
06	Chatra	E	PS	17 08 15		
Contd.			PPS	08 30		
			ScS	10 11		
			SS	12 00		
			LQ	14 15		
			LR	16 52		
			M	22 00		
	Madras	E	iP	17 00 29	6440	Moderate.
			PcP	01 02		
			PP	02 40		
			PPP	04 08		
			PcS	05 08		
			iS	08 29		
			PS	08 43		
			PPS	08 49		
			ScS	10 09		
			SS	12 35		
			LR	15 37		
	Colombo	E	(P)	17 00 —		
			S	08 19		
			L	17 09		
	Hyderabad	E	iP	17 00 50	6660	
		N	iS	09 02		
		EN	ScS	10 36		
			SS	12 54		
		N	L	19 50		
		E	M	23 06		Per.=23 secs/ $\mu$ =15.
		N	M	23 54		Per.=24 secs/ $\mu$ =27.
	Poona	Z	eP	17 01 17	7130	Moderate.
		E	PP	03 39		
			eS	09 55		
			PS	10 19		
			PPS	10 27		
			ScS	10 49		
			SS	14 07		
			SSS	16 56		
			LQ	18 11		
			LR	21 31		
			M	26 56		
	Dehra Dun	NE	eP	17 01 18	7140	Moderate.
		N	PcP	01 17		
			PP	03 43		
			PPP	05 14		
			PcS	05 43		
			iS	09 56		
			PS	10 15		
			PPS	10 25		
			ScS	11 13		
			SS	14 13		
			SSS	17 03		
			LQ	17 56		
			LR	20 51		
			M	26 07		
	Bombay	E	iP	17 01 23	7310	Moderate.
		NE	PcP	01 28		
			PP	03 44		
			PPP	05 21		
			iS	10 09		

Date	Station	Compt.	Phase	G. M. T.			Δ	Remarks
				h.	m.	s.		
June 1954							km.	
06	Bombay	E	SKS <sub>1</sub>	17	11	09		
Contd.	Contd.	N	i		11	23		
		NE	SS		14	23		
		N	LQ		18	38		
		E	LQ		18	43		
			LR		21	13		
			M		29	07		Per. = 24 secs/ $\mu$ =12.
		N	M		29	11		Per. = 23 secs $\mu$ =13.
06	Dehra Dun	NE	e	19	07	07		Slight, phases not clear
			i		08	09		
			i		08	27		
06	Shillong	Z	i	22	06	35		Tremor.
07	Shillong	Z	e	06	35	35		Tremor.
07	Shillong	Z	[e e	09	51	12		Slight.
					52	01		
07	Epc : 3 $\frac{1}{2}$ °S., 152 $\frac{1}{2}$ °E. New Britain Region; h=450 km ca; 0=10h 15m 33s (U.S.C.G.S.) 7°S., 153°E. h=500 km ca; 0=10h 15m 38s (Shillong) Magnitude—7 (Uppsala, Wellington) 6 $\frac{3}{4}$ (Pasadena, Berkeley), 6 $\frac{1}{2}$ (Lwiro).							
	Shillong	ZNE	iP pP PP i iS i sS	10	25	36	7340	Compression, first movement North and West.
					27	12		
					28	02		
					30	42		
					33	40		
					34	44		
					36	32		
	Calcutta	E	iP	10	25	55	6835	Slight, first movement West and North.
		N	iP		25	59		
		E	iS		34	16		
		N	iS		34	20		
	Chatra	EZ	iP	10	26	03	7890	Slight, deep focus, other phases not clear.
		E	pP		27	38		
			iS		34	36		
			M		52	—		
	Colombo	E	P	10	26	22		Slight
			S		35	08		
	Madras	E	iP	10	26	25	7412	Moderate.
			PcP		26	47		
			pP?		28	03		
			PP		28	53		
			PcS		30	43		
			iS		35	16		
			PS		35	34		
			PPS		35	46		
			ScS		35	58		
	Hyderabad	E	iP	10	26	36	7660	Moderate.
			e		28	15		
			PP		29	04		
			iS		35	41		
		N	L		47	54		
			M		53	48		Per. = 15 secs/ $\mu$ =4.
		E	M		54	09		Per. = 15 secs/ $\mu$ =4.

Date	Station	Compt.	Phase	G. M. T.			Δ	Remarks
				h.	m.	s.		
June 1954							km.	
07	Kodaikanal	E	iP pP sP i	10	26	37		Slight.
Contd.					28	19		
					29	05		
					29	47		
	Dehra Dun	NE N	eP PcP PP iS PPS SS SSS LR M	10	26	51	7890	Moderate.
					27	08		
					29	37		
					36	07		
					36	59		
					40	51		
					43	41		
					49	16		
					55	23		
	New Delhi	NE N	iP pP sPi iS PS i i	10	26	53	7890	Moderate.
					28	35		
					29	34		
					36	09		
					36	41		
					40	21		
					40	50		
	Poona	Z E	iP PcP PP PPP eS SKS <sub>1</sub> ScS PS PPS SS SSS M	10	26	59	8130	Moderate.
					27	06		
					29	46		
					31	35		
					36	27		
					36	37		
					36	43		
					37	05		
					37	26		
					41	28		
					44	34		
					57	23		
	Bombay	NE N NE E	eP PP PPP iS i i i	10	27	07	8200	Moderate.
					29	46		
					31	30		
					36	38		
					39	05		
					39	37		
					39	54		
					41	47		
08	Dehra Dun	N	e	09	18	46		Tremor.
08	Shillong	Z	i e	11	03	33		Slight, near.
					04	09		
09	Shillong	Z N	i e i i	00	57	08		Slight, near.
					57	09		
					57	56		
					58	12		
09	New Delhi	N NE	eP eS i i	03	55	42		
					57	23		
					57	28		
					57	33		
	Dehra Dun	NE	e	03	57	02		
09	Shillong	Z N	iP L	10	08	47		Slight.
					20	—		

Date	Station	Compt.	Phase	G.	M.	T.	$\Delta$	Remarks
June 1954				h.	m.	s.	km.	
10	Shillong New Delhi	Z	iP	22	45	14	5430	Slight. Slight.
		NE	iP	22	46	43		
			eS		53	46		
		N	PPS		54	01		
			i		55	47		
			SSS		58	31		
11	Shillong	Z	i	01	01	34		Slight.
11	Shillong	Z	e	09	03	27		Tremor.
11	Shillong	Z	i	09	50	40		Slight.
11	Shillong	Z	iP	17	06	16		Slight.
			e		14	59		
			L		30	—		
	Chatra	Z	i	17	06	33		Slight, distant
11	Shillong	Z	e	17	16	53		Slight, local.
			e		17	14		
11	Shillong	Z	e	19	01	51		Slight.
11	Shillong	Z	i	21	32	27		Slight.
11	Poona	Z	eP	22	47	27		Tremor.
12	Shillong	Z	i	05	34	43		Slight.
12	Shillong	Z	i	05	47	54		Slight.
12	Shillong	Z	e	12	11	31		Slight, local.
			i		11	42		
12	Shillong	Z	i(S(g))	15	23	03		Slight.
12	Shillong	Z	i	17	54	40		Slight.
			i		55	14		
13	Shillong	Z	iP	02	20	34	150	Slight.
		NE	ep		20	35		
			i		20	41		
			iSg		20	53		
13	Dehra Dun	NE	e	04	21	46		Slight, phases not clear.
			i		51	51		
			i		51	58		
13	Shillong	Z	e	10	58	15		Slight.
			i		58	45		
13	Shillong	Z	e	17	10	10?		Slight.
13	Shillong	Z	e	17	29	36		Slight.
		N	e		35	46		
13	Shillong	Z	i	22	32	47		Slight.
			i		33	40		
			i		34	03		
13	Shillong	Z	i	23	10	46		Tremor.

Date	Station	Compt.	Phase	G. M. T.			$\Delta$ km.	Remarks
				h.	m.	s.		
<u>June</u>				h. m. s.				
<u>1954</u>								
14	Shillong	Z	i	06	55	25		Tremor.
14	Shillong	Z	e	07	10	48		Tremor.
14	Shillong	Z	e	08	38	02		Tremor.
14	Shillong	Z	i e	12	15	02 15 30		Slight, local.
14	Shillong	Z	i	13	35	20		Slight, trace very faint.
14	Shillong	Z	i	16	37	48		Slight.
14	Shillong	Z	ePg eSg	16	58	38 58 50	100	Slight, local.
15	Dehra Dun New Delhi	NE	e	13	40	50		Tremor.
		NE	eP	13	41	01		Slight.
			i		49	32		
			e		49	58		
15	Dehra Dun	NE	e	13	49	30		Slight, phases not clear.
			i		49	41		
			i		50	14		
	Bombay	NE	ePKP <sub>1</sub>	13	49	33	16780	Very distant and deep. Phases not clear due to microseisms.
		E	eSS	14	12	42		
	Poona	Z	eP	13	49	34		Other phases mixed with microseisms.
	Chatra	Z	i	13	49	39		Slight, distant.
	Shillong	N	eP	13	49	47		Slight.
		Z	eP	13	49	48		
		N	e		50	20		
			e		54	05		
			i	14	01	39		
	Calcutta	E	i i	13	50	41 57 41		Slight, distant.
	Madras	E	iP?	13	53	47		Slight shock. Phases not clear.
	Hyderabad	E	e	14	01	07		
16	Shillong	Z	e	17	45	39		Tremore.
16	Shillong	Z	i	23	32	28		Feeble.
17	Epc: 56° N., 154½° W. Off the South Coast of Kodaikanal; O=01h 42m 22s (U.S.C.G.S.) 56.8° N., 154° W. O=01h 42m 24s (B.C.I.S.) Magnitude—6¼ (Lwiro), 6½ (Pasadena, Praha, Roma, Hurbanovo).							
	Shillong	Z	iP	01	54	41		Slight, very distant
		N	eP		54	49		
			i(S)	02	04	49		

Date	Station	Compt.	Phase	G. M. T.			$\Delta$ km.	Remarks
				h.	m.	s.		
June 1954								
17 Contd.	Chatra	Z E E	iP } eP } eS } PS } PPS } LQ } LR } M }	01 54 49	9110		Slight.	
				02 05 03				
				05 52				
				06 11				
				16 20				
				20 39				
				27 —				
	New Delhi	NE N	eP iS PPS	01 55 00 02 05 20 06 43			Slight	
	Bombay	NE E N	eP eS i M M	01 55 28 02 06 28 06 56 37 13 42 37	10220		Moderate. Per. = 15 secs/ $\mu$ = 3. Per. = 13 secs/ $\mu$ = 3.	
	Poona	ZN N	eP i(?) i(?)	01 55 54 02 06 19 07 08			Distant shock, phases doubtful and lost in shifting.	
	Hyderabad	E N	e M M	01 55 59 02 35 53 38 05			Per. = 18 secs/ $\mu$ = 12. Per. = 18 secs/ $\mu$ = 17.	
	Calcutta	E	i i i	01 57 06 02 05 41 14 43			Slight, distant.	
	Colombo	E	i L	02 07 10 40 —				
17	Shillong	Z	iP	02 14 48			Slight.	
17	Shillong	N	i? i?	02 29 50 33 50			Slight.	
17	Kodaikanal	E	iP PPP iS LQ SSS LR M?	02 36 42 37 0 41 00 41 39 42 00 42 51 44 51	2710		Slight intensity.	
17	Shillong	Z	e i	05 46 32 47 27			Tremor.	
17	Poona	Z	eP	06 03 55			Slight shock, phases mixed up with microseism.	
17	Shillong	Z	iP iS	06 04 29 08 19	2250		Slight.	
17	New Delhi	NE N NE  N NE	eP PPP P* Pg iS i SS LR S* Sg	10 02 11 02 25 02 31 02 54 03 54 04 00 04 06 04 10 04 31 04 39			Slight.	

Date	Station	Compt.	Phase	G. M. T.			$\Delta$ km.	Remarks
				h.	m.	s.		
June 1954								
18	Poona	Z	eP	15 50 03				Slight shock, phases not clear.
	Bombay	NE	e	15 50 15				Feeble, near tremor.
12	Epc: Soenda Starit; 0=17h 54m 40s. Felt Djakarta (U.S.C.G.S.) 6°S., 105½° E. 0=17h 54m 42s (B.C.I.S.)							
	Madras	E	iP?	18 01 07				Slight shock, phases not clear.
	Shillong	Z N	iP eP S M	18 01 29 01 34 06 53 13 45	3760		Slight.	
	Hyderabad	E EN E	eP PcP iS L M	18 01 42 04 54 07 09 11 33 14 55	3810			
	Poona	Z N	eP PP PPP eS LQ SSS M	18 02 18 03 51 04 12 08 16 11 14 11 37 16 19	4300		Slight shock.	
	Bombay	E	eP PP eS ScS i i	18 02 20 03 50 07 57 11 55 12 54 13 25	3965		Slight. Possibly deep focus.	
	New Delhi	NE	eP eS	18 02 52 09 17	4750		Slight.	
19	Epc: 30½° N., 130° E. Off the South Coast of Kiu-Shiu, Japan; 0=01h 56m 30s (U.S.C.G.S. and B.C.I.S.) 29½° N., 131½° E. H=0-10km; 0=01h 56m 22s. Felt (C.M.O. Japan). Magnitude 6½ (Strasbourg), 6 (Roma).							
	Shillong	Z N	iP e e	02 03 13 04 52 07 29				Feeble.
	Chatra	Z E	iP e	02 03 46 20 —				Slight, distant; surface waves.
	Poona	Z	eP	02 05 39				Tremor.
	Bombay	E	eP eS	02 05 44 13 07	5780		Moderate.	
	Hyderabad	E	M	02 26 05				Per. = 15 secs. $\mu$ = 4
19	Poona	Z	eP	03 24 13				Tremor.



Date	Station	Compt.	Phase	G. M. T.			△	Remarks
				h.	m.	s.		
June 1954							km.	
19	Shillong	Z	e	05	59	40		Tremor.
19	Shillong	Z	i	12	35	03		Tremor.
19	Shillong	Z	i	23	14	44		Tremor.
20	Bombay	N	e e	01	20	— 26		
20	Dehra Dun	NE	e	17	42	57		Tremor.
20	Epc : 5°S., 146°E. of the Coast of New Gunnea ; h=60 km ca; 0=20h 45m 57s (U.S.C.G.S.) 4½°S., 145½°E. h=60 km ca; 0=20h 46m 00s (B.C.I.S.)							
	Shillong	Z	i	20	56	08		Tremor.
	Dehra Dun	NE	e	20	57	28		Tremor.
	Poona	Z	eP	20	57	39		Tremor.
21	Poona	Z N	e i? i i	02	08	07 59 19 01		Slight distant shock. Phases mixed with microseisms and other phases lost in shifting.
	Madras	E	e	02	08	20		Tremor.
	Shillong	Z	e	02	08	29		Tremor.
21	Shillong	Z	i	02	15	41		Tremor.
	Chatra	Z	i	02	16	10		Slight, distant.
21	Poona	Z	eP	14	36	22		Tremor.
22	Shillong	Z N	i(Sg) e	03	49	02 —		Slight, strong microseism.
22	Shillong	Z	i	17	35	01		Slight, local.
22	Shillong	Z	e i e	22	43	40 17 41		Slight.
23	Dehra Dun	NE	e i	08	01	47 29		Feeble.
24	Shillong	Z	Pg Sg	09	54	25 39		Slight.
24	Shillong	Z	Pg P* PPP Sg	10	44	41 45 55 00	170	Slight.
24	Shillong	Z	e	16	21	13		Slight.
24	Shillong	Z	P Pg P* S Sg	16	59	31 36 46 57 02	220	Slight.

Date	Station	Compt.	Phase	G. M. T.	△	Remarks
				h. m. s.		
<u>June 1954</u>						
24	Shillong	Z	Pg Sg	17 55 48 56 21		Slight, local.
	Chatra	Z	i i	17 56 40 58 01		
26	Shillong	Z	e	11 11 02		Tremor.
26	Shillong	Z	i	12 01 24		Tremor.
26	Shillong	Z	i	18 26 39		Slight, local.
26	Shillong	Z	Pg Sg	20 59 48 59 55		Slight.
26	Shillong	Z	i	21 43 47		Tremor.
27	Shillong	Z	e i	04 04 35 05 29		Slight.
27	Shillong	Z	e	16 24 27		Tremor.
28	Shillong	Z	e	03 33 38		Tremor.
28	Shillong	Z	P P* S Sg SSS	03 57 42 57 44 58 06 58 14 58 28		Slight.
28	Hyderabad	N	M	06 04 33		Per. = 23 secs/ $\mu$ = 10.
28	Shillong	Z	i	11 32 13		Tremor.
28	Shillong	Z	P Pg S* SS/Sg	14 33 25 33 34 34 02 34 08	300	Slight.
28	Shillong	Z	Pg Sg	17 57 53 58 03		Slight.
28	Epc : 29 $\frac{1}{4}$ °N., 86 $\frac{1}{2}$ °E South Tibet ; 0=21h 31m 44s (B.C.I.S.) 28.5°N., 86.8°E. 0=21h 31m 40s (Shillong)					
	Chatra	ZEN NE	iP Pg PP PPP iS SS SSS	21 32 13 32 15 32 21 32 26 32 34 32 44 32 58	170	Slight.
	Shillong	ZNE N	P PP LQ S/LR SSS M	21 33 03 33 05 33 47 34 00 34 17 34 28	530	Slight. Probably deep, compression. First movement South and East.  Suppressed.
	Calcutta	EN N E	eP LQ iS iS	21 33 16 34 03 34 17 34 20	580	Slight, felt at Katmundu.

Date	Station	Compt.	Phase	G. M. T.			$\Delta$ km.	Remarks
				h.	m.	s.		
June 1954								
28 Contd.	Dehra Dun	NE N	eP PPP P* Pg LQ iS LR SS SSS S* Sg,M	21	33	35	790	Moderate.
	New Delhi	NE	iP PPP P* i Pg LQ eS SS SSS S* Sg	21	33	43	890	Slight.
	Poona	Z E	eP PP PPP eS SS SSS LR M	21	35	11	1610	Slight.
	Madras	E	eP PPP iS SS SSS PcS M	21	35	35	1950	Moderate.
	Bombay	E NE	e i i	21	35	42		Feeble, phases not clear.
	Hyderabad	N	eP S M	21	36	55	1040	Per. = 12 secs/ $\mu$ = 4.
28	Chatra	Z	iP iS	22	03	19	170	Feeble, probably after shock of shock at 2132 hrs.
30	Epc: 7° N., 37° E. South Ethiopia; 0=13h 26m 50s (U.S.C.G.S.), 6° N., 37° 2 E. 0=13h 26m 55s (B.C.I.S.) Magnitude—6½ (Kiruna); 6 (Uppsala), 5.9 (Roma), 5½ (Praha).							
	Poona	Z N E N	iP PP PPP eS SS LR M	13	34	03	4150	Moderate.

Date	Station	Compt.	Phase	G. M. T.			$\Delta$ km.	Remarks
				h.	m.	s.		
June 1954								
30 Contd.	Bombay	E E N N	eP(?) iS eS LQ M	13	34	09	4070	Slight. Phases doubtful due to microseisms.
	Madras	E	eP?	13	34	50		Per. = 10 secs/14 $\mu$ = 4.
	New Delhi	N	eP? eS PS SS LQ LR M	13	35	03	4980	Slight.
	Dehra Dun	N	eP PcP e PcS iS PS SS LQ LR M	13	35	28	5000	Slight.
	Chatra	Z	eP	13	36	01		Slight, distant.
	Shillong	N	eP(?) iS SS LQ LR M	13	36	36	6090	Slight.
	Calcutta	E	i i i	13	43	35		

**Earthquake Reports**

(Non Instrumental Reports)

The following table contains a list of earthquakes that were reported by Voluntary Observers from various stations.

Place at which felt	Date	Time at which felt in G.M.T. h. m.	Duration in secs.	Intensity in R.F. scale	No. of Shocks	Remarks
Darjeeling	June 28	21 45	2	IV	1	—

GOVERNMENT OF INDIA  
METEOROLOGICAL DEPARTMENT

# SEISMOLOGICAL BULLETIN

*JULY, 1954*



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PUBLISHED UNDER THE DIRECTION OF  
SHRI S. BASU, M.Sc., F.N.I.,  
DIRECTOR GENERAL OF OBSERVATORIES.

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### INSTRUMENTS AND THEIR CONSTANTS

Station	Instrument	Compt.	Period in Secs.	Static Magnifi- cation	Damping ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N-S	12.0	350	23 : 1	16.0
	Milne-Shaw	E-W	12.0	350	—	8.0
	Sprengnether	E-W	$T_o = T_g = 7.0$	—	—	30.0
Calcutta	Milne-Shaw	E-W	10.0	150	20 : 1	8.0
	Wood-Anderson	N-S	2.0	870	Critical	30.0
	Omori-Ewing	N-S	18	32	—	25.4
	Omori-Ewing	E-W	19	30	—	25.4
Chatra	Milne-Shaw	E-W	12.0	250	20 : 1	16.0
	Wood-Anderson	N-S	1.0	1000	30 : 1	60.0
	Wood-Anderson	E-W	1.0	1000	40 : 1	60.0
	Benioff	Z	$T_o = 7.2$ $T_g = 0.45$	—	—	60.0
Colombo	Milne-Shaw	E-W	12.0	250	20 : 1	—
Dehra Dun	Milne-Shaw	N-S	12.0	250	20 : 1	16.0
	Wood-Anderson	E-W	1.0	1000	30 : 1	60.0
	Wood-Anderson	N-S	1.0	1000	30 : 1	60.0
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
Madras	Sprengnether	E-W	7.2	—	Critically damped	30.0
New Delhi	Milne-Shaw	N-S	12.0	300	20 : 1	8.0
	Wood-Anderson	N-S	4.0	1070	20 : 1	16.0
	Wood-Anderson	E-W	2.0	1800	30 : 1	60.0
	Omori-Ewing	E-W	28	30	1	12.0
Poona	Milne-Shaw	N-S	12.0	250	20 : 1	8.0
	Wood-Anderson	E-W	4.0	1100	20 : 1	16.0
	Sprengnether	Z	$T_o = T_g = 1.5$	—	—	30.0
Shillong	Milne-Shaw	N-S	12.0	250	20 : 1	8.0
	Wood-Anderson	N-S	4.0	1000	20 : 1	30.0
	Wood-Anderson	N-S	0.8	800	20 : 1	30.0
	Wood-Anderson	E-W	0.8	800	20 : 1	30.0
	Sprengnether	E-W	$T_o = T_g = 7.5$	—	—	30.0
	Benioff	Z	$T_o = 1.0$ $T_g = 0.18$	—	—	60.0

Date	Station	Compt.	Phase	G. M. T.			Δ	Remarks
				h.	m.	s.		
July 1954								
01	Poona	Z	iP	01	31	28		Tremor.
01	Bombay	N	e	03	24	13		Feeble Background micro-seisms.
			e		29	06		
	Shillong	N	e	03	31	15		
	Shillong		e	03	45	32		Surface wave.
01	Shillong	Z	iP	05	29	50		Slight.
	Chatra	Z	e	05	30	26		Slight.
01	Shillong	N	e	05	31	16		Slight, near.
			e		34	39		
			e		38	31		
01	Shillong	Z	iP	08	57	00		Slight, near.
	Dehra Dun	N	e	08	58	49		Tremor.
01	Shillong	Z	iP	09	35	15		Slight, near.
			e		36	13		
01	Shillong	Z	iPg	15	24	29	140	Slight.
		N	ePg		24	29		
			eP		24	35		
			iSg		24	46		
			S*		24	51		
			PP		24	55		
01	Shillong	Z	e	15	35	34		Tremor.
			e		36	12		
01	Dehra Dun	N	e	16	47	36		Feeble, phases not clear.
					49	06		
01	Shillong	Z	i	16	54	20		Slight, near.
			e		55	04		
01	Shillong	Z	iP	19	37	33		Slight, near.
					38	10		
02	Epe : 13° N., 124½° E. South East Luzon, Phillipine							
	0=02h 45m 08s (U.S.C.G.S.)							
	13° N., 124.°2 E. 0=02h 45m 09s (B.C.I.S.)							
	12° N., 125° E. 0=02h 45m 04s (Shillong)							
	Magnitude—7½ (Berkeley), 7 (Prah), 6½—7 (Strasbourg, Uppsala),							
	6½ (Pasadena, Tacubaya, Kiruna, Hurbanovo).							
	Shillong	ZN	iP	02	51	42	3650	Moderate.
			PP		52	44		
			iS		56	59		
			PcS		58	15		
			LQ		58	38		
			SSS		59	08		
			LR	03	00	25		
			ScS		02	12		
			M		04	09		

Date	Station	Compt.	Phase	G.M.T.			Δ	Remarks
				h.	m.	s.		
July 1954								
02	Calcutta	E	iP	02	52	11	4110	Great. First movement West.
Contd.			PP		53	37		
			SS	03	00	23		
	Chatra	EZ	eP	02	52	21	4250	Slight.
		E	PP		53	53		
			PPP		54	16		
			PcS		54	38		
			e?		56	42		
			iS		58	16		
			SS	03	00	38		
			LQ		00	50		
			SSS		01	08		
	Madras	E	i	02	53	12		Moderate. Record of beginning lost while changing chart.
			PP		54	50		
	Hyderabad	E	iP	02	53	17	5140	Moderate.
			PP		55	01		
			iS	03	00	04		
			ScS		02	29		
			SS		03	23		
			L		07	40		
		N	M		12	36		
		E	M		13	17		
	Colombo	E	P	02	53	21		S approximate. Beginning lost in hour mark.
			S	03	00	—		
			L		11	21		
	Kodaikanal	E	iP	02	53	32	5220	Moderate.
			PP		55	17		
			PPP		56	11		
			iS	03	00	20		
			SS		03	26		
			LQ		05	02		
			LR		07	17		
			M		11	20		
	New Delhi	NE	eP	02	53	35	5250	Moderate.
		N	PP		55	26		
			iS	03	00	29		
			iS		00	35		
			SS		03	50		
			i		04	13		
			LQ		04	50		
			M		11	17		
	Dehra Dun	N	eP	02	53	38	5280	Moderate.
			P P		54	59		
			PP		55	31		
			PcS		58	43		
			iS	03	00	33		
			PS		00	39		
			PPS		00	53		
			S S		03	29		
			SS		03	59		
			LQ		05	00		
			SSS		05	15		
			LR		07	13		
			M		11	14		

Date	Station	Compt.	Phase	G.M.T.	Δ	Remarks.
				h. m. s.	km.	
July 1954						
02	Poona	Z	eP	02 53 50	5510	Moderate.
Contd.		N	PP PPP eS PPS SS M	55 27 56 31 03 00 58 01 16 12 31 14 45		
	Bombay	N E NE E NE E N	eP } iP } PcP PP PPP iS PS PPS i	02 54 05 55 14 56 06 57 04 03 01 26 01 31 01 36 02 00	5750	Moderate, surface waves not well developed.
02	Shillong	NE Z	SS e i	04 58 05 59 59 06 00 05		Slight, near.
02	Shillong	Z	e e	07 52 18 52 35		Tremor.
02	Shillong	Z	iP	09 55 52		Slight.
02	Poona	Z	eP	14 23 06		Tremor.
02	Shillong	Z	iP i	14 23 40 24 15		Slight, near.
02	Shillong	N	e e	14 29 54 34 50		Slight, distant.
02	Shillong	Z	i	15 00 09		Tremor.
02	Shillong	Z N	iPg } ePg } eP iSg SS	15 51 52 51 56 52 17 52 25	220	Slight.
02	Shillong	Z	e	21 14 56		Tremor.
02	Shillong	Z	i	22 28 41		Tremor.
02	Shillong	N	e	22 43 49		Tremor.
03	Shillong	Z	i	00 43 52		Tremor.
03	Epc: 31° S. 29° E Tanganyika, Congo; 0 = 00h 32m 53s (USCGS) 3°24' S., 29°07' E. 0 = 00h 32m 57.5 s. (I.R.S.A.C.) Felt - Lwiro, Astrida, Uvira, Degats (Press report from Lwiro) Magnitude - 5½ (Praha)					
	Hyderabad	E	e e L M	00 47 15 53 12 58 25 01 01 17	4280	Per.=20 secs μ=8.
	Shillong	N	eS e e	00 52 42 01 02 29 06 26		Slight, distant.

Date	Station	Compt.	Phase	G. M. T.	Δ	Remarks
				h. m. s.	km.	
July 1954						
03	Shillong	Z	e e	07 29 50 29 53		Tremor.
03	Shillong	Z	e	10 17 38		Tremor.
03	Shillong	Z	eP Pg P* S* eSg SSS	10 51 05 51 10 51 19 51 47 51 52 51 58	330	Slight.
03	Epc: 19½° N., 121½° E. Off the Coast of Luzon, Phillipines; 0=21h 15m 00s (U.S.C.G.S.) 19°40' N., 121°35' E., (Manila). Felt—Calapyan, Aparri (Press report) Magnitude—5½—5¾ (Kiruna), 5½ (Upsala)					
	Shillong	Z N N	eP i eP eS eSS e e(M?)	21 20 52 20 57 21 03 25 33 26 40 28 48 30 55		Slight.
	Calcutta	E	e(S) e i	21 26 36 28 47 35 14		Slight.
	Hyderabad	N	M	21 46 28		Per.=12 secs μ=3.
03	Epc: 6½° S., 105½° E. h=100 km ca Off the South West Coast of Java; 0=22h 31m 25s G.M.T. Felt—Djakarta; Magnitude—7 (Pasadena, Praha, Kiruna), 6½ (Uppsala, Hurbanovo); 6½ (Tacubaya)					
	Madras	E	iP PP PcP iS	22 37 47 38 57 40 25 42 50	3380	Moderate. Other Phases not clear due to overlapping of traces.
	Kodaikanal		iP PP PPP iS LQ and SS SSS LR M	22 37 55 38 58 39 16 43 10 45 19 45 46 46 43 49 37	3610	Moderate.
	Calcutta	E N E N E	iP iP iS iS SS SSS ScS?	22 38 00 38 03 43 18 43 22 45 14 45 41 48 17	3665	Great. First movement West and South.



Date	Station	Compt.	Phase	G	M	T.	Δ	Remarks
				h.	m.	s.	km.	
July 1954								
03 (Contd.)	Shillong	ZN N	iP PP PPP PcP iS PcS LQ SS LR M	22	38	09	3660	Moderate, compression.
	Hyderabad	EN E EN N E N E	iP PP iS SS L L M M	22	38	22	3950	Great.  Per.=24 secs $\mu=97$ . Per.=21 secs $\mu=43$ .
	Chatra	EZ	iP PP PPP PcP eS PcS LQ SSS iScS M	22	38	35	3920	Moderate.
	Bombay	E	iP PP PPP PcP iS SS LQ SSS ScS LR M	22	33	40	4110	Moderate.
	Poona	Z E  N	iP PP PPP iS PS PPS SS LQ SSS LR M	22	38	55	4253	Great.
	New Delhi	NE   N	iP PP PPP PcS iS PS PPS i	22	39	30	4850	Moderate. Direction of first movement South and East.

Date	Station	Compt.	Phase	G	M	T.	Δ	Remarks
				h.	m.	s.	km.	
July 1954								
03	New Delhi	N	LQ	22	49	41		
Contd.	Contd.		LR M		51	45		
	Dehra Dun	NE N	eP PcP PP PPP PcS iS PS PPS SS ScS LQ SSS LR M	22	39	38	4910	Moderate.  Per.=21 secs $\mu=115$ .
	Dehra Dun	NE	e i i	00	56	52		Feeble, phases not clear.
	Shillong	Z	e	00	59	19		Tremor.
	Shillong	Z	e e i	06	48	19		Slight, near.
	Dehra Dun	NE	i i	13	40	43		Tremors.
	Shillong Dehra Dun	Z NE	i e	15	35	22		Tremor. Feeble, phases not clear.
	Shillong	Z	e e	17	46	53		Slight, near.
	Shillong	Z	e	20	02	07		Tremor.
	Shillong	Z	iP e	20	55	10		Slight, near.
	Shillong	Z	i	21	08	40		Tremor.
	Dehra Dun	N	i i	09	57	53		Feeble, phases not clear.
	Shillong	Z	iPg eSg	11	37	48	90	Slight.
	Shillong	Z	e e e	12	04	25		Slight.
	Dehra Dun	N	e i	12	24	34		Feeble, phases not clear.
	Shillong	Z	e	12	26	33		Tremor.
	Shillong	Z	iP	14	01	43		Tremor.
	Shillong	N	e	14	21	33		Ground wave.

Date	Station	Compt.	Phase	G. M. T.			△	Remarks
				h.	m.	s.		
July 1954							km.	
05	Shillong	Z	e	16	27	11		Tremor.
05	Shillong	Z	i	16	35	20		Tremor.
05	Dehra Dun	NE	e	19	31	59		Feeble, phases not clear.
			i		32	07		
	Shillong	Z	i		32	21		
			e	19	33	05		Tremor.
06	Shillong	Z	iP	04	10	36		Slight.
		N	i		18	54		
			e		19	31		
06	Dehra Dun	N	e	06	19	50		Tremor.
06	Shillong	Z	e	08	08	42		Tremor.
06	Epc: $46\frac{1}{2}^{\circ}$ N., $153\frac{1}{2}^{\circ}$ E. Kurile Island; h=100 km ea; 0=08h 04m 42s (U.S.C.G.S.) Magnitude—7(Praha, Tacubaya), $6\frac{3}{4}$ —7 (Pasadena, Kiruna), $6\frac{1}{2}$ — $6\frac{3}{4}$ (Berkeley, Uppsala, Hurbanovo).							
	Shillong	ZN	iP	08	13	48	5920	Moderate.
		N	e		14	42		
			PcP		15	11		
			PP		15	52		
			iS		21	19		
			SS		25	01		
			LR		28	—		
			M		32	19		
	Chatra	EZ	iP	08	14	07	6180	Slight.
		E	PcP		15	00		
			PP		16	09		
			PPP		17	24		
			PcS		19	07		
			iS		21	52		
			PS		22	05		
			PPS		22	19		
			ScS		23	35		
			SS		25	42		
			LQ		27	54		
			LR		30	31		
			M		35	20		
	Calcutta	E	iP	08	14	22	6370	Moderate, first movement West.
			iS		22	18		
	Dehra Dun	NE	eP	08	14	34	6520	Moderate.
		N	PcP		15	12		
			PP		16	39		
			PPP		18	10		
			cS		22	38		
			PS		22	54		
			PPS		23	04		
			ScS		24	05		
			SS		26	37		
			SSS		28	39		
			LQ		29	45		
			LR		32	21		
			M		37	34		

Date	Station	Compt.	Phase	G. M. T.			△	Remarks
				h.	m.	s.		
July 1954							km.	
06	Colombo	E	e	08	14	49		
Contd.			S		25	39		
			L		50	—		
			M		55	07		
	New Delhi	NE	P	08	14	50	6700	Moderate. Uncertain due starting of the phase within time break.
		N	PP		17	08		
			PPP		18	38		
			eS		23	04		
			PS		23	16		
			ScS		24	37		
			SS		26	35		
			SSS		29	05		
			M		36	13		
	Hyderabad	EN	iP	08	15	25	7550	Moderate.
			PP		18	01		
		E	iS		24	24		
		N	iS		24	28		
		EN	SS		28	58		
		E	L		37	46		
		N	M		41	19		Per.=16 secs $\mu=15$ .
		E	M		42	06		Per.=15 secs $\mu=10$ .
	Madras	E	iP	08	15	42	7780	Moderate shock, phases not clear due to presence of large microseisms.
			PcP		15	58		
			PP		18	30		
			iS		24	52		
	Poona	Z	iP	08	15	46	7800	Moderate.
		N	PP		18	14		
			PPP		19	54		
			PcP		20	21		
			iS		24	57		
			PS		25	21		
			PPS		25	50		
			SS		29	39		
			LQ		33	55		
			M		43	10		
	Bombay	N	iP	08	15	52	7800	Moderate.
			e		17	07		
			PP		18	24		
			iS		25	03		
			PS		25	36		
			i		26	27		
	Kodaikanal		e	08	15	59		Tremor.
06	Shillong	Z	iP	09	03	51		Slight.
06	Shillong	Z	iP	10	23	22		Slight.
	Dehra Dun	N	e	10	24	06		Tremor.
06	Shillong	Z	iP	10	56	06		Slight.
06	Shillong	Z	iP	11	20	54		Slight.
	Chatra	Z	i	11	21	13		Slight, distant.
	Dehra Dun	N	e	11	21	41		Tremor.
06	Shillong	Z	e	1	32	22		Tremor.
		N	e		41	44		
			e		52	—		

Date	Station	Compt.	Phase	G. M. T.	Δ	Remarks
				h. m. s.	km.	
July 1954						
06 Contd.	Hyderabad	E	M	12 20 05		Per.=20 secs $\mu=14$ .
06	Shillong	Z	e	16 49 15		Tremor.
06	Dehra Dun	N	e	18 01 36		Tremor.
06	Shillong	Z	i	19 23 44		Slight.
06	Shillong Hyderabad	N E	e M	23 03 — 23 19 16		Slight. Per.=20 secs. $\mu=8$ .
07	Shillong	Z	i	01 31 00		Slight.
07	Shillong	Z	e(?) i	13 17 15 18 03		Slight.
08	Shillong	Z	i	14 45 17		Slight, local.
08	Shillong	Z N	i e(L)	15 28 55 30 24		Slight.
08	Shillong	Z	e	16 55 53		Tremor.
08	Shillong	Z	e	17 27 36		Tremor.
08	Shillong	Z	i	19 15 00		Slight.
09	Shillong	Z N	e e(L)	12 34 23 45 —		Tremor.
09	Shillong	Z	i	14 51 10		Slight.
09	Shillong	Z N	i e(M)	15 46 57 16 06 —		Slight.
09	Shillong	Z	i i	18 36 14 41 33		Slight.
	Chatra Poona	Z Z	i eP	18 36 39 18 38 28		Slight, probably deep focus. Tremor.
09	Shillong	Z	eP iSg	20 20 20 20 48	200	Slight.
10	Dehra Dun	N	e i i l	18 37 17 37 17 37 36 38 20		Feeble, phases not clear.
10	Epc. 37° N., 70½° E. Hindukush; h=200 km ca; 0=22h 56m 53s (U.S.C.G.S.) 36°·5 N., 70°·5 E. h=220 km; 0=22h 56m 57s (B.C.I.S.) 37° N., 72° E. 0=22h 56m 45s (Shillong) Felt—Hengu, Drosh (Press report from Quetta).					
	Dehra Dun	NE N	eP PP P* PPP Pg	22 58 53 59 02 59 08 59 13 59 36	900	Moderate.

Date	Station	Compt.	Phase	G.M.T.	Δ	Remarks
				h. m. s.		
July 1954						
10	Dehra Dun	N	LQ	23 00 16		
Contd.	Contd.		iS SS LR SSS S* Sg/M	00 26 00 38 00 40 00 48 00 57 01 17		
	New Delhi	NE	eP PP P* Pg i i iS SS M	22 59 06 59 13 59 28 59 54 00 18 00 30 00 52 01 04 01 48	1030	Slight. Direction of first movement North.
	Chatra	Z NE	iP eP PP PPP LQ iS SS SSS LR M	23 00 38 00 49 00 58 03 34 03 36 03 57 04 08 04 22 05 43	1780	Slight, probably deep focus.
	Poona	Z E	eP PPP eS SS SSS LR M	23 00 58 01 23 04 20 04 42 04 50 05 05 06 37	2030	Slight.
	Bombay	N	i e i(S)	23 01 10 01 43 04 07		Slight, probably deep focus. Phases not clear.
	Calcutta	E	iP iS	23 01 19 04 54	2160	Slight.
	Shillong	N	iP i	23 01 21 05 00		Slight.
	Madras	E	eP PP PPP PoP iS LQ SS SSS LR ScP M	23 01 54 02 29 02 42 05 30 06 05 06 43 07 00 07 03 07 50 09 05 09 41	2610	Moderate.
	Hyderabad	N	e iS L	23 02 18 04 45 06 00		Slight.

Date	Station	Compt.	Phase	G. M. T.	$\Delta$	Remarks.
				h. m. s.	km	
July 1954						
10 Contd.	Hyderabad Contd.	E N	M M	23 07 00 07 11		Per. = 7 secs $\mu = 5$ . Per. = 8 secs $\mu = 3$ .
11	Chatra	Z	e i	07 30 14 31 35		Feeble, near.
11	Chatra	Z	e	17 15 42		Slight, near.
	Dehra Dun	E	e	21 05		Surface waves.
	Shillong	N N	e e(?) i	17 17 13 17 17 39 18 21		Tremor. Slight.
12	Dehra Dun	N	e	17 42 15		Tremor.
12	Dehra Dun	N	e e	17 55 00 57 18		Feeble, phases not clear.
12	Shillong	N	e(M)	18 52 --		Tremor.
12	Dehra Dun	N	e	23 16 37 16 49		Feeble, phases not clear.
13	Shillong	Z	eP	04 03 44		Feeble.
13	Shillong	Z	iP	05 54 47		Feeble.
13	Epc: 3° S., 151° E. New Britain Region; 0=08h 04m 44s (U. S. C. G. S.) Magnitude - 6½ (Kiruna).					
	Shillong	Z N	iP eP	08 15 19 15 26		Slight.
	Chatra	Z	eP	08 15 48		Slight, distant.
	Colombo	E	P S L M	08 16 20 25 39 40 30 46 30		
	Madras	E	e	08 16 24		Tremor.
	Calcutta	E	e i	08 16 51 24 31		Slight, distant.
	Poona	ZE	eP	08 16 51		Slight, distant shock, phases not clear.
	Bombay	E	e e e NE	08 17 09 17 37 26 16 27 54		Feeble.
	Hyderabad	N	M	08 45 52		Per. = 18 secs $\mu = 5$ .
13	Dehra Dun	N	e	14 20 12		Tremor.
13	Shillong	Z	eP	20 07 17		Feeble.
13	Shillong	Z	iP	22 17 11		Feeble.
13	Shillong	N	e e?	22 38 33 41 28		Feeble.

Date	Station	Compt.	Phase	G. M. T.	$\Delta$	Remarks
				h. m. s.	km.	
July 1954						
14	Shillong	Z	eP	06 48 41		Tremor.
14	Shillong	Z	eP	11 52 07		Feeble.
14	Shillong	Z	iP	23 23 44		Feeble.
14	Shillong Poona	Z Z	iP eP	23 53 39 23 55 33		Feeble. Tremor.
15	Shillong	ZNE	iP iS Sg	16 23 06 23 41 23 43		Local, Slight, felt.
	Chatra	Z	i i	16 24 02 25 24		Slight, near.
	Calcutta	N	i	16 24 41		Slight, very near.
16	Shillong	ZNE E	iP Sg	00 24 55 25 14		Local, Slight, felt.
16	Shillong	Z	iP	02 59 04		Feeble.
16	Shillong	Z	eP	07 39 14		Tremor.
16	Shillong Chatra Poona	Z Z Z	iP e e	12 50 01 12 50 27 12 52 13		Feeble. Slight, distant. Tremor.
16	Dehra Dun	N	e i	15 33 47 35 20		Feeble, phases not clear.
16	Shillong	Z	eP	20 04 57		Very feeble.
16	Shillong	Z	iP	22 56 21		Feeble.
17	Shillong	Z	eP	00 44 28		Feeble.
18	Shillong	N	eP	05 21 30		Feeble.
18	Dehra Dun	NE	e i	05 56 18 56 36		Feeble, phases not clear.
18	Shillong Chatra Poona	Z Z ZN	eP e eP	06 44 33 06 44 44 06 46 16		Tremor. Slight, distant. Very feeble, phases not developed.
18	Shillong	N	eP	07 05 32		Feeble.
18	Hyderabad	N E	M M	07 20 39 20 43		Per. = 14 secs $\mu = 5$ Per. = 15 secs $\mu = 4$ .
18	Epc: 35½° N., 140½° E. Off the East Coast of Hondo, Japan; 0=09h 07m 44s (U.S.C.G.S.) 35° 5' N., 141° 1' E. h=40 km ca; 0=09h 07m 36s Felt (C.M.O., Japan). Magnitude—7 (Wellington), 6½ (Pasadena, Roma), 6½—6½ (Praha), 6½ (Kiruna), 6—6½ (Uppsala).					
	Shillong	ZN	iP	09 15 35	4720	Moderate.

Date	Station	Compt.	Phase	G. M. T.			Δ	Remarks
				h.	m.	s.		
July 1954								
18 Contd.	Shillong. Contd.	ZN	PP iS PS PPS SS LQ SSS LR M	09	17	01 21 58 22 13 22 21 25 06 25 42 26 04 27 42 31 00		
	Chatra	Z E	iP } eP } PP PPP PcP eS PPS SS LQ LR M	09	16	02 17 53 18 45 21 34 22 45 23 00 26 04 26 53 29 08 33 23	5080	Slight.
	Calcutta	E	iP PcS iS SS	09	16	12 21 36 23 16 26 32	5450	Moderate.
	New Delhi	NE N NE N	eP PP eS PPS M	09	16	57 18 58 24 25 24 42 36 30	5870	Moderate.
	Hyderabad	EN E EN E N E	iP PP iS SS L M M	09	17	27 19 31 25 23 29 29 36 27 40 35 41 47	6360	Per.=21 secs μ=13. Per.=22 secs μ=14.
	Madras	E	iP PcP PPP iS PS PPS ScS SS	09	17	36 18 15 21 13 25 38 25 52 25 55 28 17 29 32	6480	Moderate.
	Poona	N      E N	eP PP PPP eS PS PPS SS SSS LQ LR M	09	17	50 20 04 21 26 26 08 26 19 26 35 29 17 32 51 33 21 36 03 41 00	6780	Slight.

Date	Station	Compt.	Phase	G.M.T.			Δ	Remarks
				h.	m.	s.		
July 1954								
18 Contd.	Bombay	NE	iP PcP PPP eS PS PPS SS	09	17	55 18 34 21 40 26 14 25 33 26 40 30 28		Moderate. Surface waves not prominent.
	Colombo		e S L M	09	21	— 26 23 41 — 46 06		
18								Epc : 20° N., 120° E. Off the North Coast of Luzon, Phillipines; 0=10h 57m 30 s(B.C.I.S.) Magnitude—5½ (Kiruna).
	Shillong	Z	eP eS M(?)	11	03	10 07 45 13 00		Feeble.
	Chatra Calcutta	Z E	e eS i i	11	03	49 11 08 39 14 29 17 00		Slight, distant. Slight, distant.
	Hyderabad	N E	M M	11	22	41 23 03		Per.=12 secs μ=3. Per.=12 secs μ=3.
18	Chatra Shillong	Z Z	e eP	14	52	11 14 52 39		Slight, distant. Very feeble.
18	Dehra Dun	N	e	19	34	39		Feeble, phases not clear.
18	Shillong	Z	eP	22	10	27		Very feeble.
18	Dehra Dun	N	e	22	55	40		Tremor.
19	Shillong	Z	eP	14	03	30		Feeble.
19	Shillong	Z	eP	15	57	24		Feeble.
19	Shillong	Z	eP	17	18	26		Feeble.
19	Poona	E	eP	19	10	20		Tremor.
19	Dehra Dun	N	e	20	10	16		Feeble.
19	Shillong	Z	iP	21	35	35		Feeble.
20	Dehra Dun	N	e	01	52	49		Tremor.
20	Shillong	Z	i i	08	52	33 53 03		Tremor.
20	Shillong	Z	P Pg PP Sg	18	52	20 52 24 52 27 52 40		Very feeble
20	Shillong	Z	i	20	02	53		Slight.

Date	Station	Compt.	Phase	G. M. T.			$\Delta$ km.	Remarks
				h.	m.	s.		
July 1954								
20	Dehra Dun	NE	e	20	15	21		Tremor.
20	Shillong	Z	P Pg PPP S S* Sg	20	46	46 46 58 47 02 47 28 47 30 47 36		Slight.
20	Shillong	Z N	eP eP PPP eS SSS/M	23	40	25 27 42 15 35		Slight.
20	Chatra	Z	e	23	40	45		Slight, near.
	Calcutta	E	e	23	41	15		Slight, near.
	Poona	N	i e*	23	48	38		Tremor.
21	Dehra Dun	N	e	00	45	14		Tremor.
21	Shillong	Z	Pg Sg	04	11	02 16		Tremor.
21	Epc: 27½° N., 101° E. Szechwan Province China; 0=04h 38m 51s (U.S.C.G.S.) 27° N., 101 E. Yunnan Province China; 0=04h 38m 50s (Shillong).							
	Shillong	Z N	iP eS LR M	04	40	57 31 15 53		Slight.
	Chatra	Z	i	04	41	51		Slight, near.
	Dehra Dun	NE N	eP PP PPP iS PcP LQ SS SSS LR M PcS ScS	04	43	33 55 08 19 31 35 56 09 34 24 08 06	2290	Moderate.
	New Delhi	NE N NE N	eP PP eS LQ PcP SSS LR M	04	43	41 03 22 32 48 03 19 32	2230	Slight.

Date	Station	Compt.	Phase	G. M. T.			$\Delta$ km.	Remarks
				h.	m.	s.		
July 1954								
21	Hyderabad	N	eP	04	43	56	2700	Slight.
Contd.			iS L M i		48	13 33 56 01		Per.=11 secs $\mu=5$ . Slight.
	Calcutta	N	i	04	44	01		
	Bombay	N	eP PPP eS LQ SS SSS LR M	04	44	41 48 26 35 56 11 51 01	3120	Slight, doubtful due micro-seisms. Per.=7 secs $\mu=4$ .
21	Shillong	Z	i	07	15	31		Tremor.
21	Shillong	Z	i	14	54	25		Tremor.
21	Shillong	Z	e	16	46	35		Tremor.
21	Shillong	Z	iP	17	44	31		Slight.
21	Shillong	Z	i	22	07	22		Tremor.
21	Shillong	Z	i	04	10	46 48		Slight, local.
22	Shillong	Z	i	06	03	57		Tremor.
22	Shillong	Z	i	07	48	26		Tremor.
22	Shillong	Z	e i	07	57	29 58		Tremor.
22	Shillong	Z	i	10	47	39		Slight.
22	Shillong	Z	i	12	24	23		Tremor.
22	Shillong	Z	e	12	46	16		Tremor.
22	Shillong	Z	i	14	54	27		Slight, rarefaction.
22	Shillong	Z	i	18	28	59		Tremor.
23	Bombay	E	i i	04	53	09 28		Unidentifiable phases of a very distant shock.
	Poona	Z	iP	04	53	09		Feeble shock. Phases lost.
	Shillong	Z	PKP	04	53	32		Slight compression. Other phases not clear.
23	Epc: 34½° N., 69½° E. Eastern Afghanistan; 0=14h 45m 16s (U.S.C.G.S.) 35° N., 69° E. 0=14h 45m 15s (Shillong).							
	New Delhi	NE N NE	iP PP PPP	14	47	21 29 35	360	Slight. Direction of first motion South and East.

Date	Station	Compt.	Phase	G.M.T.			Δ	Remarks
				h.	m.	s.		
July 1954								
28	Shillong	Z	iP P* Pg eS Sg	22	26	41	710	Slight.
28	Shillong	Z	iP PP P* Pg LQ eS SS S* Sg	22	30	54	690	Slight.
29	Shillong	Z	eP P* eSg	00	40	01	210	Slight.
29	Shillong	Z	e e	01	09	53		Tremor.
29	Epc: 49½° N., 158° E. Off the South Coast of Kamchatka; 0=03h 34m 20s (U.S.C.G.S.) Magnitude—6½—6½ (Berkeley), 6 (Pasadena), 6½ (Kiruna), Uppsala, Tacubaya), 6—6½ (Praha).							
	Dehra Dun	N	e i i i i	03	43	25		Slight, phases not clear.
	Shillong	ZN	iP i PoP iS PS PPS LR M	03	44	00	6180	Moderate.
	Calcutta	E	eP iS	03	44	30	6800	Slight.
	New Delhi	NE N	eP eS	03	44	51		Moderate.
	Hyderabad	E	iP iS M	03	45	36	7750	Per.=15 secs μ=5.
	Poona	ZN	eP PP eS SS SSS M	03	45	51	8030	Moderate.
	Kodaikanal	E	eP	03	45	53		Tremor.

Date	Station	Compt.	Phase	G. M. T.			Δ	Remarks
				h.	m.	s.		
July 1954								
29	Bombay	NE N E N E	iP eS iS M M	03	45	54	8070	Moderate.
29	Shillong	Z	i i	04	14	48		Per.=19 secs μ=5. Per.=23 secs μ=10.
29	Shillong	Z	iP eS eSg SS	06	17	24	180	Slight.
29	Shillong	Z	i i	06	48	00		Tremor.
29	Shillong	Z	e	08	32	10		Tremor.
29	Shillong	Z	e	08	48	43		Tremor.
29	Shillong	Z	i i	06	34	33		Tremor.
29	Shillong	Z	i	14	03	27		Tremor.
29	Shillong	Z	e i	14	29	00		Tremor.
29	Shillong	Z	i i	14	48	59		Slight, local.
29	Shillong	Z	e e	22	25	03		Tremor.
30	Shillong		e	00	04	16		Tremor.
30	Shillong	Z	iPg	07	23	16		Slight.
30	Epc: 35½° S., 97½° , South Pacific; h=100 km ca; 0=08h 46m 11s (U.S.C.G.S.) Magnitude—6½ (Pasadena, Kiruna), 6½ (Tacubaya), 6 (Uppsala)							
	Colombo	E	e e e	09	04	25		
	Bombay	E NE E N E NE	PKP PP i e i	09	06	06		Very distant shock, feebly recorded.
	Poona	Z N	PKP i i	09	06	09		

Date	Station	Compt.	Phase	G. M. T.	$\Delta$	Remarks
				h. m. s.		
July 1954						
30 Contd.	Shillong	N	PKP <sub>1</sub> PP e(SKKS <sub>1</sub> ) e(SKKS <sub>2</sub> ) PPS SS SSS LQ LR M	09 07 08 12 15 18 48 21 59 25 52 32 47 44 37 57 37 05 29 13 38	18580	Moderate, Beginning in Benioff Vertical mixed with traffic disturbance.
	Kodaikanal	E	e	09 10 57		Tremor.
	Hyderabad	E N	M M	10 08 32 10 14		Per.=21 secs $\mu = 6$ . Per.=22 secs $\mu = 15$ .
30	Shillong	Z	i	11 30 21		Tremor.
30	Shillong	Z	eP Pz eSg SS SSS	17 33 26 33 28 33 49 33 58 34 06	170	Slight.
31	Epc: 39° N., 104° E. Ningsia Province China; 0=00h 59m 57s (U.S.C.G.S.) 39° 5 N., 104° E. 0=00h 59m 56s (B.C.I.S.). 38° N., 105° E. 0=00h 59m 57s (Shillong). Magnitude - 7½ (Hurbanovo, De Bilt), 7.2 (Praha), 7-7.1 (Shillong), 7 (Roma), 6½ (Kiruna, Uppsala, Jerusalem), 6½ (Pasadena).					
	Shillong	ZN E N	iP ep PP PPP LQ iS SS SSS LR M PcS ScS	01 03 47 03 58 04 17 06 38 06 49 07 06 07 17 07 27 08 45 12 28 15 00	1810	Great.
	Chatra	Z	i	01 04 15		Moderate, Near; phases unidentifiable from vertical compt. record alone.
	Calcutta	E N E	iP iP PPP iS LR M	01 04 48 04 52 05 29 08 46 10 18 11 42	2430	Great. First movement West and South.

Date	Station	Compt.	Phase	G.M.T.	$\Delta$	Remarks
				h. m. s.	km.	
July 1954						
31 Contd.	Dehra Dun	NE N	eP PP PPP PcP iS LQ SS SSS LR PcS M ScS	10 05 07 05 29 05 42 08 41 09 21 10 04 10 27 10 38 11 11 12 14 13 09 15 52	2650	Moderate.
	New Delhi.	N	iP PP iS i LQ SS SSS LR PcS M	01 05 17 05 47 09 38 09 52 10 24 10 37 10 49 11 32 12 26 13 36	2760	Moderate, direction of first movement North.
	Hyderabad	E	i P iS SS L M	01 06 14 06 30 11 26 12 31 15 34 16 31	3300	Great. Per.=9 secs $\mu = 176$ .
	Poona	ZN	eP PP PPP iS SS SSS LR M	01 06 36 07 40 08 09 11 58 14 03 14 17 15 35 17 50	3732	Great.
	Madras	E	iP PcP iS LQ SSS LR	01 06 41 09 03 12 08 14 29 15 03 16 19	3810	Moderate.
	Bombay	NE N	iP PP PPP i iS i i LQ SS SSS LR M	01 06 43 08 02 08 20 10 54 12 07 12 34 13 07 14 16 14 28 14 39 15 56 17 00	3770	Great. (beginning)



Date	Station	Compt.	Phase	G. M. T.	$\Delta$	Remarks
July 1954				h. m. s.	km.	
31 Contd.	Kodaikanal	E	iP PP PPP iS LQ SSS LR	01 07 22 08 40 09 04 13 01 15 28 16 00 17 13	4000	Earthquake of moderate intensity.
	Colombo	E	P S L M1 M2	01 07 33 13 18 19 30 22 42 30 50		
31	Shillong	Z	iP	01 18 56		After shock of previous shock.
31	Shillong	Z	iP	01 26 11		After shock of previous shock.
31	Shillong	Z	i i	02 02 49 02 55		Tremor.
31	Shillong	Z	i	02 09 24		Tremor.
31	Shillong	Z	e e e	06 06 45 07 21 07 28		Slight, local. Begining doubtful due merging with traffic disturbance.
31	Shillong	Z	ePg eSg	06 10 19 10 33	120	Slight.
31	Shillong	Z	e	06 21 41		Tremor.
31	Shillong	Z	e	12 30 53		Tremor.
31	Shillong	Z	e e	13 52 35 53 53		Slight, near. Traces faint due to drop in voltage.
31	Dehra Dun	N	e i	15 45 38 46 12		Feeble.
31	Shillong	Z	e	17 08 07		Tremor.
31	Dehra Dun	N	e i	17 57 24 59 01		Slight, phases not clear.
	Shillong	Z	e(P)	17 59 58		Slight, near.
31	Shillong	Z	iPg eSg	19 06 10 06 24	120	Slight.
31	Shillong	Z	iP	20 23 37		Slight.
31	Shillong	Z	eP	22 20 13		Slight.

### Earthquake Reports

(Non-Instrumental Reports)

The following table contains a list of earthquakes that were reported by Voluntary Observers from various stations

Place at which felt	Date	Time at which felt in G.M.T.	Duration in secs	Intensity R.F. scale	No. of shocks	Remarks
		h. m.				
Shillong	July 1	15 25	1-2	II	1	—
Srinagar	July 10	23 —	30	V	2	Sound rumbling, cracking of walls heard.
Shillong	July 15	16 25	3	II-III	1	—
Shillong	July 16	00 25	3	II-III	1	—
SARKER						
28.1.56						