

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 1948.

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



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 Curator of the Nizamiah Observatory, Hyderabad, and of the Director, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.
List of Seismograph Stations.

Station	Latitude	Longitude	Height above M.S.L. 'meters'	Lithologic Foundation.	Officer-in- charge of Observatory.
Bombay	18°.54'N.	72°.49'E	6	Deccan Trap	Director.
Calcutta	22°.32'N	88°.22'E	(1)7 (11)6	Alluvium	Director.
Colombo	06°.54'N	79°.52'E	7	Beach sand	Superintendent
Dehra Dun	30°.19'N	78°.03'E	682	Gravel	President.
Hyderabad	17°.26'N	78°.27'E	528	Granite	Curator, Nizamiah Observatory.
Kodaikanal	10°.14'N	77°.28'E	2343	Rock	Director.
New Delhi	28°.35'N	77°.12'E	207	Massive Quartzites	Dy. Director General of Observ- atories (I & S)
Poona	18°.32'N	73°.51'E	560	Deccan Trap	Dy. Director General of Observ- atories (C & G).

M (1) Milne-Shaw

(2) Omori-Ewing

TABLE II.
Instruments and their constants.

Station	Instrument	Compo- nent	Period in secs.	Static Magnifi- cation.	Damping Ratio.	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	13 : 1	From 1st to 13th 16
Calcutta	Milne-Shaw	E	12	350	17 : 1	8.0
	Omori-Ewing	N	15	32	20 : 1	8.0
	Omori-Ewing	E	16	30	-	25.4
Colombo	Milne-Shaw	E	12	250	20 ; 1	25.4
Dehra Dun	Omori	N	30	12	-	8.0
Hyderabad	Milne-Shaw	E	12	250	20 ; 1	-
	Milne-Shaw	N	12	250	20 : 1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20 : 1	8.0

DATE	STATION	COMPT.	PHASE	G. M. T.			REMARKS	
				h.	m.	s.		
<u>January 1948.</u>								
2.	Bombay	N	e	03	25	-	Feeble, tremors. Per. = 15 secs. $\mu = 4.$	
	Hyderabad	E	e	03	37	-		
		N	M	03	43	51		
4.	Epicentre $21^{\circ}S, 180^{\circ}$			h = 600 Km. 0 = 08h. 56.5m. (U.S.C.G.S.)				
	Bombay	E	PP	09	15	-	Slight. Times uncertain. Record faint. Per. = 15 secs. $\mu = 4.$	
			PPP	09	17	30		
			i	09	20	00		
			SKS ₁	09	21	08		
			SKS ₂	09	22	08		
			PS	09	24	15		
			PPS	09	25	00		
			i	09	27	30		
	Colombo	E	SS	09	30	00		
			PP?	09	14	00		
			S	09	19	20		
			L	09	31	50		
	Kodaikanal	E	?	09	35	20		
			e	09	20	-		
	Hyderabad	N	SKS	09	21	51		
			SS	09	29	34		
			?	09	58	42		
6.	Epicentre $16.5^{\circ}N, 98^{\circ}W$			0 = 17h. 23.4m.				
	Colombo	E	PKP	17	42	34	17665	
			L	18	46	30		
			M	19	00	53		
	Calcutta	E	ePKP ₁	17	42	39	15665	
			ePP	17	46	01		
			PKS ₁	17	46	31		
			PPP	17	49	08		
			SKS ₂	17	50	05		
			PKKP ₁	17	51	57		
			SKKS ₁	17	52	33		
			SKSP	17	55	40		
			PS?	17	56	10		
			PPS	17	57	55		
			iSS	18	04	02		
			SSP	18	04	32		
			iSSS	18	09	09		
	Bombay	E	M	18	38	39		16665
			PKP ₁	17	43	08		
			PP	17	43	38		
			PPP	17	49	53		
			PKKP ₁	17	51	38		
			SKKS ₁	17	53	38		
			SKKKS	17	54	08		
			PKKS ₁	17	55	23		
			SKSP	17	57	08		
			PPS	17	59	38		
			iSS	18	05	38		
			SSP	18	06	08		
			SSS	18	11	08		
			L	18	35	00		
			M	18	59	-		
							Per. = 18 secs. $\mu = 5.$	

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Km.	
<u>January</u>						
1948.						
6. (cont.)						
	Hyderabad	N	PKP ₁	17 42 59	16550	
			SKKS	17 53 18		
			SKSP	17 56 36		
			M	18 47 59		Per. 20 secs.
	Kodaikanal	E	SKS?	17 49 20		$\mu = 9.$ Distant.
9.	Epicentral Region near			37°N, 78°E in Sinkiang 0 = 14h. 52m. 05s. Poona		
	Bombay	N	iP	14 56 25	2000	Feeble.
		E	eP			
		E	iLQ	14 59 32		
			S	14 59 54		
			LR	15 00 17		
			M	15 01 47		
	Hyderabad	N	P	14 56 46	2250	
			S	15 00 26		
			M	15 05 13		
	Calcutta	E	eP	14 57 03	1780	Slight.
			e	14 58 18		
			LR	15 00 37		
			M	15 01 56		
	Kodaikanal	E	eS	15 02 20	2890	Feeble
			LQ	15 03 20		
			SS	15 03 42		
			SSS	15 04 05		
			LR	15 04 50		
			M	15 07 50		
9	Kodaikanal	E	eS?	18 45 00		Feeble.
			M	18 50 00		
	Bombay	N,E	e	18 45 08		
		E	M	18 50 30		Per. = 19 secs. $\mu = 4.$
	Colombo	E	S	18 45 19		
			L	18 49 46		
			M	18 50 49		
	Hyderabad	N	P	18 45 47	2420	
			S	18 49 39		
	Calcutta	E	e	18 52 23		Slight, distant.
			Mn	18 58 58		
10	Epicentre 20°S, 169°E			0 = 05h. 14.5m. (U.S.C.G.S.).		
	Hyderabad	N	eP	05 29 50	10220	
			SKS	05 40 27		
			SS	05 47 34		
			M	06 12 57		Per. = 20 secs. $\mu = 18.$
	Bombay	N,E	eP	05 34 39	11220	Slight.
		E	PPP	05 41 18		
			SKS ₁	05 45 25		
			S	05 46 53		
			SS	05 53 25		
			LQ	06 02 -		
			LR	06 08 -		
			M	06 27 19		Per. = 18 secs. $\mu = 6.$
	Kodaikanal	E	e	05 39 30		

DATE	STATION	COMPT.	PHASE	G. M. T.	REMARKS.
				h. m. s. Km.	
<u>January</u>					
1948.					
14.	Epicentre 10°S, 109°W			0 = 02h. 25.4m. (U.S.C.G.S.).	
	Bombay	E	e	02 01 35	Slight, distant.
	Kodaikanal	N	e	03 48 -	Microseisms throughout the record.
	Hyderabad	N	M	03 56 46	Per. = 15 secs. μ = 5.
14.	N Bombay	N, E	e	22 32 00	Feeble
		E	e	22 33 51	
		N	e	22 33 54	
16.	Bombay	E	e	06 02 -	Feeble, surface waves
		N			Microseisms throughout the record.
16	Epicentre 52°N, 172°E			h = 100km. 0 = 11h. 08.5m. (U.S.C.G.S.)	
	Calcutta	E	eP	11 19 59	7780 Slight.
			iS	11 29 14	
			PS	11 29 29	
			PPS	11 29 56	
			SS	11 33 59	
	Hyderabad	N	Mn	11 52 -	
			P	11 20 48	8960
			S	11 30 57	
			SS	11 36 26	
			M	11 52 45	Per. = 15 secs. μ = 4.
	Bombay	N, E	eP	11 21 15	9220 Slight.
		E	iS	11 31 35	
			PS	11 33 05	
			SS	11 37 11	
			M	11 55 28	Per. = 16 secs. μ = 3.
	Kodaikanal	E	e	11 32 00	Distant.
	Colombo	E	P	11 32 04	
			L	12 01 -	
			M	12 03 05	
16.	Bombay	E	e	22 15 11	Slight, tremor.
	Kodaikanal	N	Movements	extremely feeble.	
		E	e	22 37 -	
17.	Epicentral Region 43°12'N, 0°36'W			B.C.S.F.	
	Hyderabad	N	eP	07 21 46	7240
			S	07 30 30	
			L	07 42 52	
			M	07 47 14	Per. = 19 secs. μ = 1.
	Kodaikanal	E	iP	07 22 12	8335 Slight.
			PcP	07 22 34	
			S	07 31 57	
			PS	07 32 27	
			PPS	07 32 57	
			SS	07 36 37	
			LR	07 47 -	
			M	07 50 -	Per. = 30 secs. μ = 10

DATE	STATION	COMPT.	PHASE	G. M. T.			Km.	REMARKS.
				h.	m.	s.		
<u>January</u>								
<u>1948.</u>								
<u>17. (cont.)</u>								
	Bombay	N	eP)	07	22	21	8065	Moderate.
		E	iP)					
		E	EP	07	25	00		
		N,E	PS	07	31	47		
		E	PS	07	32	32		
			SS	07	36	40		
			L	07	45	47		
			M	07	49	27		Per. = 25 secs. $\mu = 10.$
18.	Bombay	N,E	e	13	59	48		Feeble
			e	14	04	18		
19.	Bombay	E		03	28	-		Surface waves.
		N						Pronounced microseisms throughout the record.
20.	Epicentre 33°S, 179°E			0	09h.	44.0m.		(U.S.C.G.S.).
	Calcutta	E	ePP?	10	02	56	11335	Slight.
			ePS?	10	11	49		
			Mn	10	52	29		
	Bombay	E	ePKP ₁	10	02	56	13335	Slight.
			ePP	10	04	41		
			SKS ₁	10	09	41		
			SKS ₂	10	10	11		
			PS	10	14	01		
			PPS	10	15	17		
			SS	10	20	41		
			SSP	10	21	11		
			SSS?	10	25	17		
			Mn	10	52	29		Per. = 19 secs. $\mu = 7.$
	Colombo	E	SKS ₁ ?	10	08	49	11665	
			SSS	10	19	20		
			L	10	32	19		
			M	10	42	19		
	Hyderabad	N	SKS	10	09	16	12000	
			PS	10	12	48		
			M	10	43	44		Per. = 17 secs. $\mu = 4.$
	Kodaikanal	E	e	10	09	20		Distant. Phases not clear.
20	Kodaikanal	E	e	20	01	-		Tremor.
20.	Calcutta	E	eP	20	22	53	722	Slight
			eP*	20	23	08		
			eP	20	23	24		
			iS	20	24	08		
			iS*	20	24	32		
	Hyderabad	N	M	20	27	44		Per. = 10 secs. $\mu = 4.$
	Bombay	N,E	e	20	28	12		Feeble
22.	Epicentral Region 22°S, 175°W			h = 130km.	(U.S.C.G.S).			
				0 = 13h.	52m.	22s.	Riverview.	
	Colombo	E	P	14	12	19		
			S	14	19	42		
			L	14	28	04		
			M	14	29	49		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
<u>January</u>						
1948.						
22. (cont.)						
	Kodaikanal	E	e	14 13 00		
	Calcutta	E	eP	14 09 13	11555	Distant.
			iPP	14 13 13		Slight. Deep focus.
			i	14 13 51		
			iSKS ₁	14 19 45		
			i	14 20 15		
			iS	14 20 45		
			PPS	14 23 15		
			SS	14 27 36		
			SSP	14 28 00		
			SSS	14 31 51		
	Hyderabad	N	ePP	14 14 08	12335	
			SKS	14 20 01		
			SKKS	14 20 59		
			PS	14 23 44		
			M	14 56 12		
	Bombay	N,E	ePP	14 14 55	13220	Per. = 13 secs.
		E	PPP	14 17 10		$\mu = 2.$
			iSKS ₁	14 20 39		Slight.
			i	14 21 25		
			PS	14 24 40		
			PPS	14 25 30		
			SS	14 30 40		
			SSP	14 31 35		
			SSS	14 35 10		
22.	Bombay	N,E	e1	21 18 -		
24.	Epicentre 7.5°N, 122°E near Mindanao Islands					
	10°N, 122°E					
				0 = 17h. 46m. 45s. (Poona)		
				0 = 17h. 46.6m. (U.S.C.G.S.)		
	Calcutta	E	iP	17 53 33	3665	Very great. First
			iPP	17 54 30		movement East.
			iPPP	17 54 48		
			iS	17 58 52		
	Colombo	E	P	17 54 34	4665	
			S	18 00 52		
			L	18 11 00		Amp. = 68.6 mm.
			M	18 13 -		
	Hyderabad	N	eP	17 54 43	4780	Great.
			iP	17 54 55		
			PP	17 55 48		
			S	18 01 08		
			ScS	18 04 35		
			L	18 07 52		
			M	18 11 36		
	Kodaikanal	E	iP	17 54 56	5020	Per. = 18 secs.
			iS	18 01 36		$\mu = 474.$
			SS	18 04 26		Great.
			L	18 55 20		
			M	19 10 20		
						Per. = 24 secs.
						$\mu = 204$

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
January				h. m. s.	Km.	
1948.						
24. (cont.)						
	Bombay	N,E	iP	17 55 32	5335	Very great.
		E	PP	17 57 36		
			PPP	17 58 25		
		N,E	iS	18 02 29		
		E	PS	18 02 59		
		N	M	18 20 29		Per. = 16 secs. $\mu = 494$
		N	M	18 21 18		Per. = 15 secs. $\mu = 553$
	Dehra Dun	N	eP	17 57 44?	2049?	Great.
			iS	18 04 11?		Per. = 30 secs. Amp. = 0.78"
			i	18 07 30		Per. = 24 secs. Amp. = 0.66"
			eL	18 14 26		Per. = 26 secs. Amp. = 1.05"
			e	18 17 14		
			M	18 20 24		Per. = 22 secs. Amp. = 1.81"
25.	Aftershock of the great shock at 17h. 46m. 45s. on the 24th Epicentre 7.5°N, 121°E O = 08h. 58m. 05s. (Poona).					
	Calcutta	E	eP	06 04 55	3755	Slight.
			ePPP	06 06 18		
			iS	06 10 27		
			L	06 14 44		
			M	06 17 45		
			Mn	06 23 58		
	Colombo	E	PP	06 06 20	4665	
			e	06 12 50		
			L	06 22 -		
			M	06 28 05		
	Hyderabad	N	eP	06 06 00	4630	
			S	06 12 17		
			L	06 18 05		
			M	06 25 35		Per. = 14 secs. $\mu = 4.$
	Bombay	N	eP	06 06 45	5300	Slight.
		E	iP			
		E	ePP	06 08 40		
		E	eS	06 13 40		
		N	iS			
		E	M	06 32 44		Per. = 16 secs. $\mu = 3.$
	Kodaikanal	E	e	06 09 30		
26.	Kodaikanal	E	e	09 09 20		
26.	Aftershock of the great shock at 17h. 46m. 45s. on the 24th O = 14h. 10m. 40s.					
	Calcutta	E	eP	14 17 37	3900	Moderate.
			iPP	14 18 48		
			iS	14 23 10		
			L	14 27 47		
			M	14 30 57		
			Mn	14 34 07		Per. = 15 secs. $\mu = 12.$

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
<u>January</u>						
1948.						
26. (cont.)						
	Hyderabad	N	eP	14 18 40	4780	
			PP	14 20 51		
			S	14 25 05		
			ScS	14 28 49		
			L	14 31 23		
			M	14 34 53		
	Bombay	E	iP	14 19 23	5345	Per. = 18 secs. $\mu = 26.$ Moderate.
		N	eP			
		E	iPP	14 21 19		
		N,E	eS	14 26 21		
		E	L	14 34 25		
			M	14 44 17		
		N	M	14 45 00		Per. = 18 secs. $\mu = 26.$
	Kodaikanal	E	iP	14 20 00	5220	Per. = 15 secs. $\mu = 24$ Slight.
			eS	14 26 50		
			L	14 33 40		
			M	14 37 30		
	Dehra Dun	N	e	14 22 12?		Slight.
			e	14 32 01?		
			eL	14 40 36		
			M	14 43 54?		Per. = 27 secs. $\mu = \text{Amp.} = 0.04''$
27	Epicentre probably Kermadec Islands Region.					
	Calcutta	E	PKP ₁	12 10 59	12220	Slight.
			ePP	12 11 30		
			i	12 15 36		
			iPS	12 21 02		
			PPS	12 22 02		
	Colombo	E	PP	12 11 32	12220	
			PS	12 21 05		
			L	12 32 35		
			M	12 33 50		
	Bombay	N,E	PKP ₁	12 15 28	13555	Moderate.
		E	iPP	12 16 54		
			iPPP	12 19 08		
			SKS ₂	12 22 30		
		N,E	SKKS ₁	12 23 40		
		E	SKKKS	12 23 55		
			PKKP ₁	12 25 40		
			PS	12 26 10		
			PPS	12 27 40		
			PKKS ₁	12 29 25		
			SS	12 33 10		
			SSS	12 37 10		
			M	13 08 30		
	Hyderabad	N	eP?	12 16 23		Per. = 19 secs. $\mu = 6.$
			SKS	12 23 03		
			M	12 42 10		Per. 16 secs. $\mu = 6.$
27.	Calcutta	E	e	18 02 43		Slight. Distant.
			e	18 09 39		
			e	18 10 43		
			Mn	18 20 16		
	Hyderabad	N	S	18 08 52		Per. = 15 secs. $\mu = 3.$
			M	18 23 23		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
<u>January</u>						
1948.						
28.	Epicentre	$0^{\circ}, 125^{\circ}E$ $0^{\circ}, 125^{\circ}E$		0 = 03h. 47m. 20s. (Poona). 0 = 03h. 47.2m. (B.C.S.F.).		
	Calcutta	E	iP iPP iS iSS	03 55 16 03 57 07 04 01 39 04 04 26	4665	Moderate. First movement East.
	Colombo	E	P e L M	03 55 48 04 02 31 04 13 48 04 16 05	5110	
	Kodaikanal	E	iP PP PPP iS PS PPS LR M	03 56 12 03 58 10 03 59 10 04 03 12 04 03 22 04 03 37 04 10 20 04 14 -	5485	
	Bombay	E N E N E	eP eP iPP iS eS L M	03 56 47 03 56 53 04 00 26 04 04 22 04 04 25 04 13 40 04 19 23	6040	Moderate. Per. = 20 secs. $\mu = 18.$ Per. = 19 secs. $\mu = 8.$
	Hyderabad	N	M	04 23 22		
	Hyderabad	N	S M	04 03 14 04 15 42		Per. = 20 secs. $\mu = 16.$
28.	Epicentre	$38^{\circ}N, 65^{\circ}E$ $38^{\circ}N, 68^{\circ}E$ $36^{\circ}.5N, 68^{\circ}E$		0 = 15h. 50m. 52s. (Poona). 0 = 15h. 51.3m. (U.S.C.G.S.). 0 = 15h. 51m. 15s. (B.C.S.F.).		
	Bombay	N E N E N E	eP eP eS iS L M	15 55 24 15 55 31 15 59 00 15 59 06 16 01 13 16 02 38	2200	Moderate Per. = 9 secs. $\mu = 14.$ Per. = 9 secs. $\mu = 29.$
	Hyderabad	N	P S L M	15 56 00 16 00 06 16 02 37 16 04 23	2590	Per. = 23 secs. $\mu = 71.$
	Calcutta	E	iP iPP iS iSS	15 56 18 15 56 57 16 00 25 16 01 21	2600	Moderate. First movement West.
	Dehra Dun	N	eP i iS eL M1	15 57 10? 15 57 36 15 58 20 15 59 20? 16 00 21?	311	Slight. Per. 11 secs. Amp. = 0.19".

DATE	STATION	COMPT.	PHASE	G. M. T.			Δ	REMARKS.
				h.	m.	s.	Km.	
<u>January</u>								
1948.								
28. (cont.)								
	Kodaikanal	E	eP	15	57	25	3555	
			eS	16	02	35		
			M	16	08	40		
	Colombo	E	P	15	57	41	3665	Per. 14 secs.
			S	16	02	49		$\mu = 91.$
			L	16	07	26		
			M	16	11	00		
29.	Kodaikanal	E	e	02	18	50		Tremor.
30.	Epicentral Region		26°N, 64°E	0 = 08h. 43m. 36s. (Poona).				
			24°N, 64°E	0 = 08h. 43.6m. (U.S.C.G.S.).				
	Bombay	N,E	iP	08	46	25	1260	Great.
		E	PP	08	46	35		
			LQ	08	48	10		
			iS	08	48	35		
			M	08	50	-		Amp. = 27.5mm
	Hyderabad	N	P	08	47	33	2110	Trace too faint to measure period.
			S	08	50	51		
			M	08	53	44		
	Kodaikanal	E	iP	08	48	26	2335	Per. = 13 secs
			iS	08	52	11		$\mu = 193.$
			L	08	54	02		
			M	08	55	54		
	Dehra Dun	N	eP	08	48	28?	559	Per. 20secs.
			eS	08	50	45		$\mu = 87.$
			eL	08	52	35		Moderate.
			M ₁	08	55	20		
	Calcutta	E	eP	08	48	49	3210	Per. = 18 secs.
			iS	08	53	39		Amp. = 0.97"
			iSS	08	55	02		Moderate.
	Colombo	E	P	08	49	07	2860	
			S	08	53	34		
			L	08	56	26		
			M	08	59	05		
30.	Hyderabad	N	M	18	41	56		Amp. = 22.0mm.
								Per. = 12 secs.
								$\mu = 2.$

M.L.P.
2/8/50.

1961



GOVERNMENT OF INDIA
METEOROLOGICAL DEPARTMENT.

SEISMOLOGICAL BULLETIN

February 1948.

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



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 Curator of the Nizamiah Observatory, Hyderabad, and of the Director, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Stations.

Station	Latitude	Longitude	Height above M.S.L. 'meters'	Lithologic Foundation	Officer-in-charge of Observatory.
Bombay	18° .54' N.	72° .49' E.	6	Deccan Trap	Director.
Calcutta	22° .32' N.	88° .22' E.	(i) 7 (ii) 6	Alluvium	Director.
Colombo	06° .54' N.	79° .52' E.	7	Beach sand	Director.
Dehra Dun	30° .19' N.	78° .03' E.	682	Gravel	President.
Hyderabad	17° .26' N.	78° .27' E.	528	Granite	Curator, Nizamiah Observatory.
Kodaikanal	10° .14' N.	77° .28' E.	2343	Rock	Director.
New Delhi	28° .35' N.	77° .12' E.	207	Massive Quartzites	Dy. Director, General of Observatories (I & S).
Poona	18° .32' N.	73° .51' E.	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	30 : 1	16.0
	Milne-Shaw	E	12	350	15 : 1	8.0
Calcutta	Milne-Shaw	E	12	250	20 : 1	8.0
	Milne-Shaw	E	12	250	20 : 1	8.0
Colombo	Milne-Shaw	E	12	250	20 : 1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20 : 1	8.0
	Milne-Shaw	N	12	250	20 : 1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20 : 1	8.0

DATE	STATION	COMPT.	PHASE	G. M. T.			Δ	REMARKS.
				h.	m.	s.	Km.	
<u>February.</u>								
1948.								
1.	Kodaikanal	E	e	20	43	43		Tremor.
	Colombo	E	P	20	46	09		
			S	21	00	59		
			L	21	20	49		
	Bombay	N,E	M	21	27	34		Feeble. Per. = 16 secs. $\mu = 3.$
	Hyderabad	N	e	20	52	-		
			M	21	34	28		
4.	Epicentre near $23^{\circ}.5N, 94^{\circ}E$			O = 04h. 53 45.3m.				
	Calcutta	E	iP	04	46	35	555	Felt locally. First movement East.
			iP*	04	46	46		
			iP	04	46	58		
	Hyderabad	N	iS	04	47	34		Times approxi- mate as time marks are absent. Per. = 7 secs. $\mu = 15.$ Moderate.
			P	04	49	13	1660	
			S	04	51	58		
			L	04	53	02		
	Bombay	E	M	04	55	10		
		N	iP	04	49	45	2260	
		N,E	eP					
		E	iS	04	53	30		
			LQ	04	53	37		
			SS	04	53	54		
	Colombo	E	M	04	56	-		2335
			P	04	50	01		
			S?	04	53	39		
			L	04	56	39		
	Dehra Dun	N	M	04	57	54		
			eP	04	51	21		
4.	Calcutta	E	iP	06	22	59	522	Slight. First movement East. Possibly an aftershock of the previous shock felt in Gauhati. Very feeble
			iS*	06	23	55		
			iS*	06	24	21		
	Bombay	N,E	e	06	26	30		
6.	Hyderabad	N	eP	01	45	58	4410	Per. = 10secs. $\mu = 2.$
			S	01	52	01		
		N	M2	02	00	05		
6.	Epicentre $13^{\circ}N, 124^{\circ}E$			Phelippine Islands			O = 22h. 18.2m	
	Calcutta	E	eP	22	25	34	3700	Slight.
			eS	22	31	03		
			eSS	22	32	52		
			L	22	35	00		
	Kodaikanal	E	M	22	38	11		Slight.
			iP	22	26	50	5080	
			iS	22	33	33		
			L	22	35	51		
			M	22	38	59		
								Per. = 20secs. $\mu = 25.$

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
February						
1948.						
6. (cont.).						
	Bombay	E	eP	22 27 00	5490	Slight. Times approximate.
		N, E	eS	22 34 07		
		E	SS	22 37 44		
			L	22 42 37		
			M	22 54 14		
						Per. = 16secs. $\mu = 8.$
	Hyderabad	N	PP?	22 27 15	4200	Per. 15 secs. $\mu = 6.$
			S	22 33 06		
			SS	22 36 26		
			L	22 38 59		
			M	22 44 24		
9	Epicentre $35^{\circ}.5N, 27^{\circ}.2E$			0 = 12h. 58m. 13s. (B.C.I.S.) Destructive in Karpathos		
	$35^{\circ}.5N, 27^{\circ}E$			0 = 12h. 58m. 07s. (Poona).		
	Dehra Dun	N	eP?	13 03 44		Per. 26 secs. Amp. = 0.27" Per. = 25 secs. Amp. = 0.20". Great.
			eS?	13 10 12		
			eL	13 17 00?		
			M ₁	13 22 30		
			M ₂	13 26 35		
	Bombay	N, E	1P	13 06 20	4955	Per. = 24secs $\mu = 116.$ Per. = 23 secs. $\mu = 122.$
			1PP	13 08 13		
		E	1S	13 12 56		
		N	1S	13 12 59		
			1SS	13 16 00		
		E	1SS	13 16 11		
		N	L	13 19 23		
		E	L	13 20 11		
			M	13 27 04		
		N	M	13 28 29		
	Hyderabad	N	P	13 07 00	5410	Per. = 21 secd $\mu = 95.$ Moderate. First movement East.
			PP	13 08 57		
			S	13 04 02		
			SS	13 17 58		
			M	13 26 13		
	Calcutta	E	1P	13 07 23	5950	
			1PP	13 09 23		
			1PPP	13 10 15		
			1S	13 14 55		
			1SS	13 18 35		
	Colombo	E	M	13 27 41	6390	
			P	13 07 52		
			S	13 15 47		
			L	13 25 29		
			M	13 34 29		

DATE STATION COMPT. PHASE M. T. Δ REMARKS.

February 1948.

h. m. s. Km.

DATE	STATION	COMPT.	PHASE	M.	T.	Km.	REMARKS.
9.	Epicentre 0°, 122°E Celebes Island			0	= 14h. 54m. 24s. (Poona)		
	Calcutta	E	eP?	15	01 28	4335	Moderate
			1PP	15	02 46		
			1PPP	15	03 12		
			1S	15	07 30		
			1SS	15	09 47		
	Colombo	E	M	15	15 28		
			P	15	02 07	4665	
			S	15	08 34		
			L	15	12 34		
	Hyderabad	N	M	15	23 33		
			P	15	02 42	4990	
			PP	15	04 37		
			S	15	09 20		
			SS	15	13 12		
			L	15	17 02		
			M	15	21 04		
							Per. = 15 secs.
	Bombay	N	eP	15	03 24	5590	$\mu = 9.$ Moderate.
		E	1P				
		N	eS	15	10 38		
		E	1S				
		E	L	15	17 59		
			M	15	26 10		
							Per. = 16 secs
	Hyderabad	N	e	18	42 02		$\mu = 6.$
			M	19	10 51		
							Per. = 16 secs.
							$\mu = 3.$
11.	Calcutta	E	e	16	04 50		Slight, distant.
			Mn	16	29 15		
	Bombay	N, E	e	16	09 41		Slight.
	Kodaikanal	E	e	16	33 03		Tremor.
	Hyderabad	N	M	16	40 35		Per. = 20 secs.
							$\mu = 7.$
12.	Calcutta	E	i	12	43 12		Slight, near.
	Bombay	N, E	e	12	49 27		Very feeble.
13.	Epicentre 45°N, 90°E			0	= 05h. 56m. 54s. (B.C.I.S.).		
	48°N, 85°E			0	= 05h. 56m. 54s. (Poona).		
	Dehra Dun	N	1P	04	57 55	217	Slight.
			1S	04	58 50		
			1L	04	59 34		
			M ₁	05	00 13		
							Per. = 6 secs.
	Calcutta	E	1P	05	00 48	1735	Amp. = 0.12" Moderate. First movement East.
			1PP	05	01 00		
			1S	05	03 39		
			1SS	05	04 06		
	Hyderabad	N	P	05	01 21	2280	
			PP	05	01 35		
			eS	05	04 56		
			SS	05	05 10		
			L	05	07 02		
			M	05	08 06		
							Per. = 10 secs. $\mu = 45.$

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.	
				h. m. s.	Km.		
<u>February</u>							
1948.							
13. (cont.)							
	Bombay	N,E	eP	05 01 27	2190	Moderate.	
			iS	05 05 01			
		E	L	05 06 38			
			M	05 08 28		Per. = 10 secs. $\mu = 20.$	
		N	M	05 08 29		Per. = 10 secs. $\mu = 43.$	
	Colombo	E	P	05 03 07	3445		
			S	05 08 12			
			L	05 12 04			
			M	05 13 03			
	Kodaikanal	E	eP	05 02 53	2945	Moderate.	
			eS	05 07 25			
			L	05 10 05			
			M	05 17 16		Per. = 13 secs $\mu = 86.$	
14.	Bombay	N	e	22 20 21		Slight, distant.	
		E	e	22 32 00			
			M	23 30 26		Per. = 15 secs. $\mu = 2.$	
	Kodaikanal	E	e	23 24 06		Tremor.	
	Hyderabad	N	M	23 35 48		Per. = 16 secs. $\mu = 3.$	
15.	Calcutta	E	e	15 10 54		Slight, distant.	
			i	15 18 11			
16.	Kodaikanal	E	e	01 05 54		Tremor.	
	Hyderabad	N	e	01 06 22			
			M	01 29 33		Per. = 16 secs. $\mu = 4.$	
	Bombay	E	e	01 13 -		Feeble.	
		N	Loss of record.				
16.	Hyderabad	N	i	21 27 25		Per. 10 secs.	
			M	21 29 09		$\mu = 3.$	
	Calcutta	E	e	21 28 01		Slight, near.	
			iS?	21 29 21			
17.	Kodaikanal	E	e	22 18 11		Tremor.	
	Bombay	N,E	e	22 18 28		Feeble.	
			e	22 23 18			
	Calcutta	E	e	22 19 28		Slight, distant.	
			e	22 30 02			
18.	Epicentre $82^{\circ}.3N, 41^{\circ}E$			0 = 20h. 29m. 48s. (in Artic Ocean			
	Hyderabad	N	P	20 40 33	7360		
			PP	20 42 55			
			S	20 49 22			
			SS	20 53 43			
			M	21 11 11		Per. = 10 secs. $\mu = 12.$	
	Bombay	N,E	eP	20 40 36	7145	Moderate	
		E	eS	20 49 14			
		E	L	20 58 06			
			M	21 13 26		Per. = 15 secs. $\mu = 9.$	
		N	M	21 23 38		Per. = 19 secs. $\mu = 26.$	

DATE	STATION	COMPT.	PHASE	C	M. T.	Δ	REMARKS.
					h. m. s.	Km.	
<u>February</u>							
1948.							
18 (cont.)							
	Colombo	E	P		20 41 48	8665	
			S		20 51 40		
			L		21 06 50		
	Kodaikanal	E	M		21 17 08		
			iP		20 41 52	8335	Moderate, distant.
			iS		20 51 00		
			SS		20 55 30		
			L		21 04 29		
			M		21 10 09		Per. = 17 secs. $\mu = 32.$
19.	Bombay	N	e		22 08 -		Surface waves.
	Calcutta	E	e		22 13 -		
			e		22 11 05		Slight, distant.
			e		22 15 20		
	Hyderabad	N	Mn		22 29 20		
			i		22 11 31		
			M		22 22 25		Per. = 16 secs. $\mu = 4.$
	Kodaikanal	E	e		22 11 53		Tremor.
20	Calcutta	E	eP		14 31 10	980	Slight
			eS		14 32 50		
			eS*		14 33 25		
	Bombay	E	eS		14 33 50		
			e		14 39 04		Feeble.
21.	Kodaikanal	E	e		01 58 22		Tremor.
23.	Calcutta	E	e		09 36 18		Slight, distant.
	Colombo	E	e		09 45 43		
			P?		09 36 37		
			S?		09 40 05		
			L		09 45 48		
			M		09 46 30		
	Kodaikanal	E	e		09 36 57		Tremor.
	Bombay	E	eP		09 37 56	9245	Slight.
	Hyderabad	N, E	eS		09 48 19		
		N	eP		09 38 06	7420	
			e		09 46 22		
			S		09 46 59		
			L		09 59 49		
			M		10 09 01		Per. = 22 secs. $\mu = 6.$
24	Calcutta	E	eP		21 32 41	710	Slight.
			eS		21 33 55		
			eS*		21 34 19		
			C				
	Bombay	N, E	eS		21 34 35		
			e		21 39 11		Feeble
25.	Kodaikanal	E	e		01 59 43		
27.	Bombay	N, E	e		02 36 -		Surface waves.
28.	Hyderabad	N	P		02 16 23		
			M		02 57 31		Per. = 14 secs. $\mu = 3.$

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Km.	
<u>February</u>						
1948.						
28. (cont.)						
	Bombay	N,E	e	02 24 00		Feeble, distant.
29.	Kodaikanal	E	e	03 08 29		Tremor.
	Bombay	N,E	e	03 10 -		Feeble surface wav
			e	03 50 -		waves
	Hyderabad	N	M	03 20 09		Per.=12 secs.
						$\mu = 2.$
29.	Bombay	N,E	e	05 26 39		Very feeble.
	Kodaikanal	E	e	05 29 19		Tremor.
	Hyderabad	N	M	05 33 21		Per. = 12 secs.
						$\mu = 2.$

M.L.P.
10/8/50.



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

March 1948

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



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 Curator of the Nizamiah Observatory, Hyderabad, and of the Superintendent, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Stations

Station	Latitude	Longitude	Height above M.S.L. 'meter'	Lithologic Foundation	Officer-in- Charge of the Observatory during that period.
Bombay	18 54N	72 49E	72 6	Deccan Trap	Director.
Calcutta	22 32N	88 22E	(i) 7 (ii) 6	Alluvium	Director.
Colombo	06 54N	79 52E	7	Beach sand	Superintendent
Dehra Dun	30 19N	78 03E	682	Gravel	President
Hyderabad	17 26N	78 27E	528	Granite	Curator, Nizamiah Observatory.
Kodaikanal	10 14N	77 28E	2343	Rock	Director.
New Delhi	28 35N	77 12E	207	Massive Dy. Quartzites	Director General of Observatories (I & S).
Poona	18 32N	73 51E	560	Deccan Trap	Dy. Director General of Observatories (C & G).

i) Milne-Shaw

ii) Omori-Ewing.

TABLE II.

Instruments and their Constants

Station	Instrument	Compt.	Period in seconds	Static Magni- fication	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	22:1	12 16.0
	Milne-Shaw	E	12	350	14:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	15	32	-	25.4
	Omori-Ewing	E	16	30	-	25.4
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori-	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20:1	8.0
	Milne-Shaw	N	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s	Kms.	
March 1948						
1	Epc:-	3.0 S,	127.5 E.	0 = 01h. 12m. 28s.		
				h = 50 Kms. Pasadena		
		4.5 S,	127.0 E	0 = 01h. 12m. 36s.		
				h = 50 Kms. + (J.S.A.)		
		3.0 S,	130.5 E	0 = 01h. 12m. 42s. (U.S.C.G.S.)		
		4.5 S,	127.5 E	0 = 01h. 12m. 28s. (B.C.I.S.)		
		4.5 S,	127.5 E	0 = 01h. 12m. 25s. (Poona)		
						Press report says "felt at two islands in Moluccas in Dutch East Indies".
	Colombo	E	P?	01 20 05	5335	
			S?	01 27 03		
			L	01 35 50		
			M	01 44 18		
	Calcutta	E	iP	01 20 48	5110	Amp. = 14.6 mm.
			iPP	01 21 34		Great. First
			iS	01 27 33		movement East.
			iSSS	01 32 24		Times doubtful
						as the shock is
						distributed in
						two charts.
	Hyderabad	N	P	01 21 35	5740	
			PcP	01 22 54		
			PP	01 23 52		
			S	01 28 57		
			ScS	01 31 26		
			SS	01 33 01		
			L	01 38 31		
			M	01 43 57		
	Kodaikanal	E	iP	01 21 37	5700	Per. = 19 secs.
			PP	01 23 38		$\mu = 118$
			PS?	01 28 56		Great.
			ScS	01 31 17		
			SS	01 32 17		
			L	01 37 27		
			M	01 41 52		
	Hombay	E	iP	01 22 17	6390	Per. = 12 secs.
		N	iP			$\mu = 55$
		N,E	iS	01 30 15		Great
			L	01 38 30		
		E	M	01 45 11		
		N	M	01 47 48		
	Dehra Dun	N.	eP	01 24 12?		Per. = 23 secs.
			eS	01 32 00		$\mu = 87$
			M	01 41 00		
1	Bombay	N,E	eP?	16 54 51	2435?	Per. = 5 secs.
		N	eS?	16 58 44		$\mu = 2$
			M	17 01 34		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
March 1948						
3	Epc:-	18°5 N, 119°0 E	O	= 09h. 09m. 54s.	(Pasadena)	
		18°0 N, 119°0 E	O	= 09h. 09m. 54s.	(U. .C.G.S.)	
		18°7 N, 118°6 E	O	= 09h. 09m. 58s.	(J.S.A.)	
		Reported as felt at Hong Kong for one minute at 09h. 15m. G.M.T.				
	Calcutta	E	iP	09 16 02	3220	Great. First movement west.
			iPP	09 16 55		
			iPPP	09 17 09		
			iS	09 20 53		
	Hyderabad		P	09 17 20	4200	
			PP	09 18 51		
			S	09 23 11		
			SS	09 26 07		
			ScS	09 27 22		
			M	09 32 55		Per. = 16 secs. $\mu = 54$
	Colombo	E	P	09 17 33		
			SS	09 26 05		
			L	09 30 05		
			M	09 37 15		Amp. = 1.7 mm.
	Kodaikanal	E	iP	09 17 38	4580	Moderate
			PP	09 18 58		
			PPP	09 19 48		
			PS	09 23 24		
			SS?	09 25 59		
			L	09 58 59		
			M	09 32 19		
	Bombay	N,E	eP	09 18 00	4745	Moderate
		N	ePP	09 19 56		
		E	iPP	09 20 00		
		N,E	iS	09 24 23		
		N	iSS	09 27 51		
		E	iSS	09 27 56		
			L	09 31 36		
		N	L	09 31 50		
		M	M	09 40 35		Per. = 13 secs. $\mu = 53$
		E	M	09 40 52		Per. = 13 secs. $\mu = 42$
	Dehra Dun	N	eP?	09 23 00		Moderate
			eS?	09 28 00		
			eL	09 31 10		
			M	09 37 30		Per. = 24 secs. $\mu =$ $\mu = 0.9''$
4	Bombay	N	e	02 41 18		
		E	e	02 42 03		
			M	03 21 57		Per. = 20 secs. $\mu = 4$
	Hyderabad	N	M	03 23 30	Per 15	secs. $\mu = 3.$
4	Calcutta	E	e	23 03 02		Slight distant
			e	23 09 12		
			Mn	23 16 32		
	Bombay	E	e	23 03 46		Very feeble
		N	e	23 10 29		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
<u>March</u> 1948						
7	Epc:-	51°4N, 159°8 E,	O =	18h. 50m. 23s.	h = 150	(J.S.A.)
		54°0 N, 161°0 E	O =	18h. 50m. 12s.		(U.S.C.G.S.)
	Hyderabad	N	eP	19 01 34	7910	
			eS	19 10 52		
			PS	19 11 40		
			M	19 28 27		Per. = 15 secs.
	Bombay	N,E	eP	19 01 47		$\mu = 7$.
		E	M	19 39 00		Slight
						Per. = 18 secs.
						$\mu = 7$
8	Epc:-	5°0 S, 150°2 E	O =	16h. 07m. 38s.		(J.S.A.)
		6°0 S, 157°0 E	O =	16h. 07m. 54s.		(U.S.C.G.S.)
	Bombay	N,E	eP	16 20 00	8935	Slight
			eS	16 30 08		
		E	M	16 52 18		Per. = 21 secs.
						$u = 5$
	Hyderabad	N	eS	16 30 07		
			M	16 45 23		Per. = 16 secs.
						$\mu = 4$
9	Epc:-	3°0 S, 147°0 E	O =	18h. 48m. 00s.		(U.S.C.G.S.)
		3°0 S, 145°0 E	O =	18h. 47m. 47s.		(J.S.A.)
	Colombo	E	P	18 58 43	7445	
			PS	19 08 53		
			L	19 30 48		
			M	19 34 18		Amp. = 0.2 mm.
	Hyderabad	N	eP	18 59 16	7480	
			PcP	18 59 39		
			PP	19 01 33		
			S	19 08 12		
			SS	19 12 16		
			i	19 17 53		
			L	19 20 47		
			M	19 26 35		Per. = 14 secs.
						$\mu = 5$
	Bombay	N,E	eP	18 59 40	8090	Moderate
		E	eS	19 09 07		
		N	eS	19 09 11		
		E	SS	19 14 27		
		E	L	19 23 24		
		N	L	19 23 58		
		E	M	19 37 33		Per. 18 secs.
						$\mu = 5$.
9	Bombay	E	e	22 54 --		Very feeble tremor. Movements insignificant in N compt.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS
				h. m. s.	Kms.	
March 1948 10	Epc:- 21.0° S, 173.0° E			0 = 11h. 25m. 33s. (J.S.A.)		
	21.0° S, 174.0° E			0 = 11h. 25m. 18s. (B.C.I.S.)		
	Colombo	E	P?	11 39 50?	10680	
			S	11 50 35		
			L	12 19 20		
			M	12 26 35		
	Bombay	N,E	P?	11 43 44	1200	Slight.
			eS?	11 52 08		Times are
			SSP	11 59 53		approximate as
			L	12 16 00		time marks
			M	12 41 21		are absent
	Hyderabad	N	SKS	11 50 59	11130	
			M	12 18 31		Per. = 21 secs.
						$\mu = 11$
10	Epc:- 3.9° S, 127.8° E			0 = 20h. 04m. 01s. (Poona)		
	Colombo	E	P	20 12 50	5355	
			S	20 19 50		
			L	20 28 50		
			M	20 35 08		
	Hyderabad	N	P	20 13 20	5770	Amp. = $\angle 0.1$ mm.
			S	20 20 43		
			M	20 34 43		Per. = 15 secs.
	Bombay	N,E	eP	20 14 21	6330	$\mu = 5$ Slight. Times
			eS	20 22 14		approximate as
		E	SS	20 36 04		time marks are
			L	20 31 20		absent
	Hyderabad	N	M	12 13 41	Per. = 15 secs.	$\mu = 3$
12	Bombay	E	e	13 02 --		Feeble surface
		N	e	13 12 --		waves
12	Bombay	E	e	21 26 --		Surface waves.
						Feeble movements
13	Epc:- 1.0° N, 126.0° E			0 = 20h. 02m. 30s. (U.S.C.G.S.)		
	1.2° N, 125.5° E			0 = 20h. 02m. 30s. (J.S.A.)		
	1.5° N, 126.5° E			0 = 20h. 02m. 35s. (Pasadena)		
	Calcutta	E	iP	20 10 40	4500	Moderate.
			iPP	20 12 00		First movement
			iPPP	20 12 30		East.
			iS	20 16 50		
			iSS	20 19 15		
			L	20 23 20		
			M	20 25 40		
	Colombo	E	P	20 11 01	5130	
			S	20 17 47		
			L	20 28 54		
			M	20 31 19		
	Hyderabad	N	P	20 11 25	5370	Amp. = 0.9 mm.
			PcP	20 12 53		
			PP	20 13 23		
			S	20 18 24		
			ScS	20 21 14		
			SS	20 21 37		
			M	20 30 28	Per. = 20 secs.	$\mu = 20.$

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
<u>March 1948.</u>						
13 (contd.)	Kodaikanal	E	iP	20 11 29	5480	Moderate.
			PP	20 13 19		
			iS	20 18 35		
			SS	20 21 50		
			L	20 26 26		
			M	20 30 28		Per. = 25 secs.
	Bombay	E	iP)	20 11 56	6055	$\mu = 700$ Moderate
		N	eP)			
		E	i	20 15 34		
		N,E	iS	20 19 35		
		E	SS	20 24 01		
			L	20 28 38		
			M	20 34 30		Per. = 21 secs.
						$\mu = 24.$
			M	20 36 57		Per. = 22 secs.
						$\mu = 15.$
14	Bombay	N	iP)	21 22 37		Slight. Near.
		E	eP)			
			M	21 31 53		Per. = 13 secs.
						$\mu = 5$
		N	M	21 36 31		Per. = 9 secs.
						$\mu = 1$
	Hyderabad	N	P	21 23 26	2800	
			eS	21 27 48		
			M	21 34 16		Per. = 9 secs.
						$\mu = 3.$
14	Bombay	N,E	e	22 16 45		Feeble. Distant.
15	Hyderabad	N	M	02 02 34		Per. = 15 secs.
						$\mu = 3$
15	Epc:- 37°8 N, 139°2 E O = 11h. 24m. 00s. (J.S.A.)					
	40°0 N, 148° E O = 11h. 24m. 6s. (U.S.C.G.S.)					
	Hyderabad	N	eP	11 33 48	6400	
			S	11 41 50		
			PS	11 42 04		
			M	11 59 00		Per. = 15 secs.
						$\mu = 4.$
	Bombay	N,E	eP?	11 34 16		
			eS	11 42 48		
		E	M	12 03 51		Per. = 15 secs.
						$\mu = 04.$
15	Bombay	E	e	21 19 --		Feeble
			e	21 25 --		tremor.
16	Epc:- 14°5 N, 120°6 E, in Phillipines					
	O = 02h. 40m. 27s. (Poona).					
	Calcutta	E	eP	02 46 36	3480	Slight
			iS	02 51 43		
			iSS	02 53 35		
			L	02 55 40		
			M	02 58 21		
			Mn	03 02 37		Per. = 11 secs. $\mu = 33.$

DATE	STATION	COMPT.	PHASE	G. M. T.	Kms.	REMARKS.
				h. m. s.		
March 1948 16 (contd.)						
	Hyderabad	N	eP PP S M	02 48 16 02 49 51 02 54 24 03 04 57	4490	Per. = 15 secs. $\mu = 5$. Slight shock.
	Kodaikanal	E	e e	02 48 32 03 47 06		
	Bombay	E	eP eS	02 48 51 02 55 33	5055	Slight
		N	e M	02 55 41 03 12 01		Per. = 14 secs. $\mu = 5$
16	Epc:- 21.0° S, 174.0° E.			O = 16h. 57m. 48s. (B.C.I.S.)		
	Bombay	E N,E E	e e M	17 15 35 17 22 58 17 56 35		Feeble Per. = 18 secs. $\mu = 4$ Slight.
	Kodaikanal	E	e	17 22 26		Per. = 20 secs.
	Hyderabad	N	M	17 56 01		$\mu = 5$.
17	Epc:- 16.0° N, 146.0° E			O = 19h. 41m. 36s. (U.S.C.G.S.)		
				O = 19h. 41m. 51s. (J.S.A.)		
	Calcutta	E	e PS Mn	19 51 08 19 59 02 20 21 58	5920	Slight. Distant
	Kodaikanal	E	e	19 52 37		Feeble.
	Bombay	N,E	eP eS	19 53 03 20 02 13	7755	Slight.
	Hyderabad	N	ePP? e M	19 53 51 20 01 03 20 25 53	7000	Per. = 18 secs. $\mu = 4$.
21	Epc:- 57.8° S, 28.4° W			O = 21h. 34m. 40s. (J.S.A.)		
				O = 21h. 34m. 36s. (U.S.C.G.S.)		
	Hyderabad	N	eP? PP? eSKKS M	21 50 22 21 53 58 22 06 54 22 29 26	1040	Per. = 18 secs. $\mu = 16$ Slight. Distant. Phases not clear.
	Kodaikanal	E	e?	21 58 58		Slight distant. Per. = 19 secs. $\mu = 6$
	Bombay	N,E E	e M	21 53 52 21 35 18		Per. = 18 secs. $\mu = 4$
		N	M	21 35 34		Slight. Distant.
	Calcuttat	E	PP PS Mn	21 25 09 22 05 14 22 50 51	1236	

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Kms.	
March 1948						
22	Bombay	E	e	00 34 --		Feeble surface waves. Movements insignificant in N Compt.
22	Bombay	N,E	e	22 35 --		Surface waves.
23	Kodaikanal	E	e	17 22 46		Slight tremor.
23	Epc:- 50°4 N, 153°6 E			0 = 18h. 11m. 35s. (J.S.A.)		
	51°0 N 155°0 E			0 = 18h. 11m. 36s. (U.S.C.G.S.)		
				h = 200 Kms.		
	Bombay	N,E	eP	18 22 32	7535	Slight. Times approximate due to uncertain clock rate.
		E	eS	18 31 31		
		N	e	18 32 52		
24	Epc:- 7°2 S, 104°9 E			0 = 05h. 19m. 44s. h = 100 + Kms. (J.S.A.)		
	6°0 S, 104°0 E			0 = 05h. 19m. 30s. (U.S.C.G.S.)		
	Colombo	E	P	05 25 37	3220	
			S	05 30 28		
			L	05 33 50		
			M	05 35 50		
	Kodaikanal	E	iP	05 26 08	3600	Moderate.
			PP	05 27 08		
			iS	05 31 23		
			L	05 36 29		
			M	05 39 18		
						Per. = 15 secs.
	Calcutta	E	iP	05 26 17	3745	$\mu = 23.0$ Moderate. First movement West
			iS	05 31 40		
			iSS	05 33 11		
			L	05 34 53		
			M	05 37 53		
	Hyderabad	N	P	05 26 36	3900	
			S	05 32 09		
			SS	05 35 02		
			M	05 38 48		
						Per. = 17 secs.
	Bombay	N,E	iP	05 27 07	4520	$\mu = 29$ Moderate from N compt. clock rate erratic assumed error at the time of the shock -11 secs.
		N,E	PP	05 28 48		
		N	eS	05 33 18		
		E	iS	05 33 23		
		N	SS	05 36 36		
		E	SS	05 36 38		
		N	L	05 37 58		
		E	L	05 38 15		
			M	05 41 37		
		N	M	05 42 40		Per. = 23 secs. $\mu = 47$ Per. = 22 secs. $\mu = 33$
	Dahra Dun	N	e	05 29 00?		
			e	05 35 12		
			e	05 46 00		
			M ₁	05 47 00		
			M ₂	05 50 00		

DATE	STATION	COMPT.	PHASE	G. M. T.			REMARKS.
				h.	m.	s.	Kms.
March 1948 26	Epc:- 3°5 S, 117°4 E. Near S-E coast of						
				Borno			
				0 = 13h. 23m. 37s. (Poona).			
	Calcutta	E	e	13	30	27	Slight. Distant.
			e	13	32	55	
			i	13	36	35	
			Mn	13	56	57	
	Colombo	E	P	13	30	51	4510
			S	13	37	01	
			L	13	44	26	
			M	13	50	31	
	Hyderabad	N	P	13	31	32	4780
			S	13	37	57	
			SS	13	41	25	
			M	13	50	23	
	Bombay	E	eP	13	32	18	5610
		N	eP	13	32	25	
		E	ePP	13	34	10	
		N	eS)	13	39	32	
		E	iS)				
		E	iSS	13	43	10	
			L	13	48	25	
			M	13	56	32	
							Per. = 12 secs. $\mu = 4$.
							Times uncertain due to erratic movement of the clock
							Per. = 17 secs. $\mu = 4$.
29	Bombay	N,E	e	02	42	--	Surface waves
29	Epc:- 35°2 N, 23°3 E. 0 = 10h. 22m. 39s. (B.C.I.S.)						
	Bombay	N,E	eP	10	30	39	5190
			eS	10	37	28	
			SS	10	40	49	
							Slight. Times approximate due to the erratic behaviour of the clock.
	Kodaikanal	E	eP	10	32	16	6220
			eS	10	40	04	
			L	10	50	00	
			M	10	54	30	
							Per. = 16 secs. $\mu = 5$.
	Hyderabad	N	eP	10	31	32	5670
			S	10	39	09	
			M	10	54	39	
							Per. = 16 secs. $\mu = 3$
29	Kodaikanal	E	iP	12	04	21	9380
			iS	12	14	50	
			L	12	32	13	
			M	12	38	49	
							Per. = 19 secs. $\mu = 6$
	Hyderabad	N	eP	12	04	26	10780
			PP	12	08	28	
			SKS	12	14	53	
			eS	12	15	53	
			SS	12	22	44	
			M	12	46	06	
							Per. = 75 secs. $\mu = 3$

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
<u>March</u> 1948						
30	Calcutta	E	e	07 05 10		Slight. Near Very near
	Bombay	N,E	eP	07 10 32		
		N	e	07 10 38		
30	Bombay	N	e	08 21 --		Tremor. Move- ment insigni- ficant in East component.

The following table contains a list of Earthquake Reports received from voluntary observers from various stations for the period from January 1948 to March 1948.

Table.

Place at which felt	Date	G.M.T. of Earthquake	Dura- tion	Intensity R.F. Scale	No. of Shocks	Remarks.
		h. m.	sec			
Tezpur	30-1-48	02 26	5 -6	3	1	-
Gauhati	30-1-48	02 29	5	3	1	-
Gauhati	4-2-48	06 22	5	3	2	Interval 3 secs.
Tezpur	12-2-48	12 40	10	3	1	
Gauhati	12-2-48	12 44	20	4	1	

M.L.P.
17-9-52.

DEPARTMENT OF HEALTH

PHYSICIAN GENERAL

STATE OF CALIFORNIA

1911

THE STATE OF CALIFORNIA
DOCTOR OF MEDICINE
1911

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

April, 1948.

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



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 Curator of the Nizamiah Observatory, Hyderabad and of the Director, Superintendent, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

LIST OF SEISMOGRAPH STATIONS.

Station	Latitude	Longitude	Height above M.S.L. meters	Lithologic Foundation	Officer in-Charge of Observatory *
Bombay	18 54N	72 49E	6	Deccan Trap	Director.
Calcutta	22 32N	88 22E	(i) 7 (ii) 6	Alluvium	Director.
Colombo	06 54N	79 52E	7	Beach sand	Director.
Dehra Dun	30 19N	78 03E	682	Gravel	President.
Hyderabad	17 26N	78 27E	528	Granite	Curator, Nizamiah Observatory.
Kodaikanal	10 14N	77 28E	2343	Rock	Director.
New Delhi	28 35N	77 12E	207	Massive Quartzite	Dy. Director, General of Observatories (I & S).
Poona	18 32N	73 51E	560	Deccan Trap	Dy. Director, General of Observatories (C & G).

i) Milne-Shaw

ii) Omori-Ewing.

TABLE II.

Instruments and their Constants.

Station	Instrument	Compt.	Period in seconds	Static Magnification	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	27:1	16.0
	Milne-Shaw	E	12	350	14:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	15	32	-	25.4
	Omori-Ewing	E	16	30	-	25.4
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20:1	8.0
	Milne-Shaw	N	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0

* During that period.

Date	Station	Compt.	Phase	G.M.T.	△ Km.	Remarks.	
				h. m. s.			
April 1948							
3	Epc:- Near	0°5 N, 124°0 E in the Pacific					
		O = 07h. 42m. 50s. Probable h = 1100 Km. (Poona)					
	Colombo	E	P	07 50 51	4910	Slight.	
			PP	07 52 48			
			S	07 57 26		Amp. = 1.0 mm.	
	Kodaikanal	E	iP	07 51 00	5020	Slight.	
			iS	07 57 40			
			M	08 45 --			
	Hyderabad	N	eP	07 51 07	5060	Feeble.	
			S	07 57 49			
			SS	08 00 39			
			M	08 09 29		Per. = 9 secs.	
	Bombay	E	eP	07 51 48	5590	μ = 2	
		N	eP	07 51 52		Feeble	
		N,E	eS	07 59 05			
5	Bombay	N	e	18 39 --		F Surface waves	
		E		Loss of record.			
9	Proable Epc:-	Near 5° N; 78° E in the Indian Ocean to the SW of Ceylon. (Poona).					
		O = 14h. 59m. 06s. (Poona).					
	Bombay	N	eP	15 02 43	1687	Slight.	
			e	15 04 45			
			eS	15 05 33			
		E		Loss of record.			
	Calcutta	E	eP	15 03 43	2180	Slight.	
			iS	15 07 23			
			L	15 08 37			
	Hyderabad	N	PcP?	15 06 58			
			M	15 11 42		Per. = 9 secs.	
	Kodaikanal	E	PcP	15 07 50		μ = 6.	
			e	15 39 20			
			M	15 40 45		Per. = 20 secs.	
						μ = 32	
12	Epc:-	14°0 N, 90°0 W,		h = 200 Kms. O = 06h. 15m. 18s. (U.S.C.G.S.)			
		14°4 N, 90°7 W,		h = 200 Kms. O = 06h. 15m. 20s. (J.S.A.)			
	Bombay	N,E	e	06 41 --		Very feeble tremors.	
12	Epc:-	8°0 S; 157°0 E,		O = 08h. 49m. 30s. (B.C.S.F.)			
		(Soloman Island)					
	Kodaikanal	E	iP	09 01 00			
			eS	09 10 40			
	Hyderabad	N	eP	09 01 01	8340		
			S	09 10 40			
			M	09 85 19		Per. = 15 secs.	
	Bombay	N,E	eP	09 01 13	9035	μ = 4	
		N,E	69	09 11 26		Slight.	
15	Kodaikanal	E	102 32	02 32 40			

Date	Station	Compt.	Phase	G. M. T.	△	Km.	Remarks.
April 1948.							
15	Kodaikanal	e E	e	05 38 00			Probably distant shock. Phases not clear.
15	Kodaikanal	E	e	08 56 30			Tremor.
15	Calcutta	E	e	19 55 02			Tremor.
	Bombay	N,E -	e	19 56 06			Feeble
	Kodaikanal	E	i	19 56 30			Long distant shock. Phases not clear.
17	Epc:- 33°0 N, 135°5 E (U.S.C.G.S.). 32°7 N, 135°6 E, h = 100 Kms. O = 16h. 11m. 40s (J.S.A.). 32°7 N, 135°7 E, O = 16h. 11m. 26s. (B.C.I.S.) 33°0 N, 135°0 E to the NE of Hochu Islands (Poona). O = 16h. 11m. 26s. (Poona).						
	Dehra Dun	N	e	16 17 00			Great
			i	16 24 57			A time correction of about + 3 minutes?
			eL	16 34 02			
			M1	16 36 24			Per. = 30 secs.
			M2	16 39 42			Amp = 0.9"
							Per. = 18 secs.
	Calcutta	E	iP	16 19 31	4765		Amp. 0.4"
			iPPP	16 21 18			Very great.
			iS	16 25 56			First movement east.
			iSS	16 27 58			
			iSSS	16 28 53			
			L	16 31 03			
			M	16 34 18			
			Mn	16 40 38			Per. = 14 secs.
	* Bombay	N,E	iP	16 21 25	6435		μ = 519
		E	P	16 23 10			Great.
		N	eS)	16 29 24			
		N	iS)				
		N	SS	16 33 14			
		E	SS	16 33 23			
		N	L	16 41 36			
		E	L	16 41 48			
		N	M	16 51 18			Per. = 12 secs.
		E	M	16 52 22			μ = 116.
							Per. = 13 secs.
	Colombo	E	P	16 21 23			μ = 74.
			S	16 29 26			
			L	16 40 23			
			M	16 53 16			
	Kodaikanal	E	iP	16 21 30	6555		Amp. 4.3 mm
			iS?	16 29 20			
			SS	16 33 00			
			L	16 39 00			
			Mn	16 50 00			Per. = 24 secs.
	* Hyderabad	N	P	16 20 48	5970		μ = 167
			PcP	16 21 38			
			PP	16 22 39			
			S	16 28 22			
			ScS	16 30 34			
			SS	16 32 03			
			L	16 37 39			
			M	16 40 59			Per. = 19 secs. μ = 179

DATE	STATION	COMPT.	PHASE	G. M. T.		REMARKS.
				h. m. s.	Kms.	
<u>April 1948.</u>						
18	Kodaikanal	E	e	02 35 40		Tremor.
18	Epc:- $3^{\circ} 08'$ S, $137^{\circ} 0'$ E, O = 12h. 19m. 48s. (U.S.C.G.S.). $2\frac{1}{2}^{\circ}$ S, $137^{\circ} 5'$ E, O = 12h. 19m. 45s. (B.C.I.S.). 3.7° S, 138° E, O = 12h. 19m. 48s. (Poona).					
18	Calcutta	E	eP	12 29 24	6100	Moderate.
			iPP	12 31 30		
			iS	12 37 10		
			iPS	12 37 45		
			iSSS	12 42 42		
	Cplombo	E	M	12 50 55		
			P	12 29 58		
			S	12 38 04		
			L	12 51 52		
	Hyderabad	N	M	12 56 32		Amp.=0.5 mm.
			P	12 30 08	6960	
			PcP	12 31 19		
			S	12 38 37		
			SS	12 43 02		
		N	L	12 49 22		
		N	M	12 54 54		Per.= 15 secs. $\mu = 11$
	Kodaikanal	E	ip	12 30 20	5180	
			iS	12 38 45		
			SS	12 48 35		
			L	12 49 50		
			Mn	12 56 --		Per.= 24 secs. $\mu = 35$ mm.
	Bombay	N,E	eP	12 30 50	7520	Moderate.
		E	PP	12 33 20		
		N,E	eS	12 39 48		
		N	SS	12 44 08		
		E	SS	12 44 16		
		E	L	12 53 46		
		N	L	12 55 16		
		E	M	13 02 25		Per.= 19 secs. $\mu = 11$.
18	Kodaikanal	E	e	15 45 00		Tremor.
20	Calcutta	E	e	19 25 06		
			e	19 29 43		
21	Bombay	N,E	e	13 55 59		Very feeble.
21	Epc:- 13° S, 167° E, O = 16h. 21.2m (B.C.S.F.)					
	Bombay	N,E	e	15 35 --		Feeble tremor.
21	Epc; $19^{\circ} 0'$ N, $69^{\circ} 2'$ W, O = 20h. 22m. 00s. (U.S.C.G.S.). $19^{\circ} 3'$ N, $69^{\circ} 3'$ W, O = 20h. 22m. 01s. (B.C.I.S.).					
	Bombay	N,E	PKP	20 41 11	14190	Moderate.
		N,E	ePP	20 43 19		
		N	eSKS	20 48 14		
		E	eSKS	20 48 18		
		E	SKKS	20 50 06		
		E	iPS	20 53 18		
		N	ePS	20 53 21		
		N	SS	21 00 13		
		E	SS	21 00 23		

DATE	STATION	COMPT.	PHASE	G. M. T.	Km.	REMARKS.
				h. m. s.		
<u>April 1948.</u>						
21 (contd.)						
	Bombay (contd.)	E	L	21 22 01		
		N	M	21 39 57		Per. = 21 secs.
		E	M	21 41 33		$\mu = 14.$ Per. = 18 secs.
	Calcutta	E	ePKP	20 41 29	14850	$\mu = 17.$ Moderate.
			PKS	20 44 58		
			iPPP	20 46 21		
			iSKS	20 48 58		
			PS	20 54 17		
			PPS	20 56 16		
			iSSP	21 02 53		
	Colombo	E	M	21 02 42		
			PKP	20 41 36		
			L	21 32 30		
	Kodaikanal	E	M	21 46 33		Amp. 1.3 mm.
			ePP	20 44 34		Distant shee
			iSKS?	20 48 04		shock.
	Hyderabad	N	Mn	21 37 10		
			PKS	20 44 46		
			M	21 32 26		
	Dehra Dun	N	ePPP?	20 46 24		Per. = 19 secs.
			eL ?	21 31 25		$\mu = 40$ Moderate.
			M ₁	21 35 39		Per. = 21 sec. Amp. 0.08"
22				0 = 00h. 28m. 18s. (U.S.C.G.S.).		
				0 = 00h. 28m. 17s. (B.C.I.S.).		
	Dehra Dun	N	e	00 33 24		
			e	00 39 30		
	Bombay	N,E	M ₁	00 44 04		
		N,E	e	00 49 28		Slight.
	Calcutta	E	e	00 56 18		
			M	01 54 04		Per. = 17 secs.
	Kodaikanal	E	e	00 50 00		$\mu = 60$ Feeble, distant shock, phases not clear, slight
	Calcutta	E	e	00 51 09		Slight, distant
			e	01 01 03		Possibly an
			Mn	01 49 41		after shock of the previous shock.
	Colombo	E	e	00 51 30		Slight, distant.
			e	00 57 40		
			L	01 42 28		
	Hyderabad	N	M	01 51 33		
			M	01 45 22		Amp. 0.4 mm. Per. = 20 secs.
22	Bombay	N	e	04 54 --		$\mu = 14$
		E	e	04 58 --		
22	Kodaikanal	E	e	06 21 --		

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.	
				h. m. s.	Km.		
April 1948.	Epc:-	38 ^o .5 N, 20 ^o .6 E,	O =	10h. 42m. 41s.	(B.C.I.S.)		
		38 ^o .6 N, 19 ^o .5 E,	O =	10h. 48m. 48s.	(Rome).		
		39 ^o .0 N, 20 ^o .5 E,	O =	10h. 42m. 45s.	(Trieste).		
	Bombay	N,E	eP		10 51 38	5400	Moderate.
			eS		10 58 39		
		E	SS		11 02 27		
		E	L		11 07 06		
		N	L		11 07 20		
		E	M		11 13 05	Per. = 27 secs.	
	Hyderabad	N	M		11 17 46		$\mu = 33.$
			eP		10 52 11	5970	Per. = 19 secs.
			S		10 59 45		u = 8.
	M		11 13 09	Per. = 22 secs.			
	Dehra Dun	N	ePPP		10 53 00?		$\mu = 38$
			eSS?		10 59 55		Per. = 24 secs.
			M ₁		11 15 21	Amp. = 0.01"	
	Colombo	E	P		10 53 09		
			S		11 01 34		
			L		11 20 25		
			M		11 29 57		
	Kodaikanal	E	iPP		10 53 25	5720	Amp. = 0.5mm.
			iS		11 00 45		
Mn				11 16 00			
Calcutta	E	PcP		10 53 37	8035	Per. = 28 secs. $\mu = 35.$ Slight	
		eS		11 00 57			
		iSS		11 05 27			
		iSSS		11 08 15			
		L		11 13 27			
		M		11 19 29			
23				O = 11h. 50.3m. (U.S.C.G.S.).			
				O = 11h. 50m. 07s. (B.S.I.S.)			
Bombay	N,E	e		12 11 --		Surface waves. Per. = 16 secs.	
		M		13 10 08			
29	Bombay	N,E	eP?		190	$\mu = 4$ Feeble, near.	
			e				09 35 05
		E	eS?				09 35 15
		N	M				09 35 25
		E	M				09 36 18
	N	M		09 36 53	$\mu = 1$ Per. = 7 secs. $\mu = 2.$		
30	Kodaikanal	E	e	07 13 00		Traces.	
30	Bombay	N,E	e			Feeble. Per. = 12 secs. $\mu = 2.$	
			M				12 12 00
	Hyderabad	N	M			12 18 15	

M.L.P.
26-3-52.

INTERNATIONAL SEISMOLOGICAL CENTRE

STATION REPORT

STATION NO. 12345

DATE: 1960-01-01

Time	Amplitude	Phase	Remarks
00:00	1.2	W	Normal
00:05	1.5	W	Normal
00:10	1.8	W	Normal
00:15	2.1	W	Normal
00:20	2.4	W	Normal
00:25	2.7	W	Normal
00:30	3.0	W	Normal
00:35	3.3	W	Normal
00:40	3.6	W	Normal
00:45	3.9	W	Normal
00:50	4.2	W	Normal
00:55	4.5	W	Normal
01:00	4.8	W	Normal
01:05	5.1	W	Normal
01:10	5.4	W	Normal
01:15	5.7	W	Normal
01:20	6.0	W	Normal
01:25	6.3	W	Normal
01:30	6.6	W	Normal
01:35	6.9	W	Normal
01:40	7.2	W	Normal
01:45	7.5	W	Normal
01:50	7.8	W	Normal
01:55	8.1	W	Normal
02:00	8.4	W	Normal
02:05	8.7	W	Normal
02:10	9.0	W	Normal
02:15	9.3	W	Normal
02:20	9.6	W	Normal
02:25	9.9	W	Normal
02:30	10.2	W	Normal
02:35	10.5	W	Normal
02:40	10.8	W	Normal
02:45	11.1	W	Normal
02:50	11.4	W	Normal
02:55	11.7	W	Normal
03:00	12.0	W	Normal
03:05	12.3	W	Normal
03:10	12.6	W	Normal
03:15	12.9	W	Normal
03:20	13.2	W	Normal
03:25	13.5	W	Normal
03:30	13.8	W	Normal
03:35	14.1	W	Normal
03:40	14.4	W	Normal
03:45	14.7	W	Normal
03:50	15.0	W	Normal
03:55	15.3	W	Normal
04:00	15.6	W	Normal
04:05	15.9	W	Normal
04:10	16.2	W	Normal
04:15	16.5	W	Normal
04:20	16.8	W	Normal
04:25	17.1	W	Normal
04:30	17.4	W	Normal
04:35	17.7	W	Normal
04:40	18.0	W	Normal
04:45	18.3	W	Normal
04:50	18.6	W	Normal
04:55	18.9	W	Normal
05:00	19.2	W	Normal
05:05	19.5	W	Normal
05:10	19.8	W	Normal
05:15	20.1	W	Normal
05:20	20.4	W	Normal
05:25	20.7	W	Normal
05:30	21.0	W	Normal
05:35	21.3	W	Normal
05:40	21.6	W	Normal
05:45	21.9	W	Normal
05:50	22.2	W	Normal
05:55	22.5	W	Normal
06:00	22.8	W	Normal
06:05	23.1	W	Normal
06:10	23.4	W	Normal
06:15	23.7	W	Normal
06:20	24.0	W	Normal
06:25	24.3	W	Normal
06:30	24.6	W	Normal
06:35	24.9	W	Normal
06:40	25.2	W	Normal
06:45	25.5	W	Normal
06:50	25.8	W	Normal
06:55	26.1	W	Normal
07:00	26.4	W	Normal
07:05	26.7	W	Normal
07:10	27.0	W	Normal
07:15	27.3	W	Normal
07:20	27.6	W	Normal
07:25	27.9	W	Normal
07:30	28.2	W	Normal
07:35	28.5	W	Normal
07:40	28.8	W	Normal
07:45	29.1	W	Normal
07:50	29.4	W	Normal
07:55	29.7	W	Normal
08:00	30.0	W	Normal
08:05	30.3	W	Normal
08:10	30.6	W	Normal
08:15	30.9	W	Normal
08:20	31.2	W	Normal
08:25	31.5	W	Normal
08:30	31.8	W	Normal
08:35	32.1	W	Normal
08:40	32.4	W	Normal
08:45	32.7	W	Normal
08:50	33.0	W	Normal
08:55	33.3	W	Normal
09:00	33.6	W	Normal
09:05	33.9	W	Normal
09:10	34.2	W	Normal
09:15	34.5	W	Normal
09:20	34.8	W	Normal
09:25	35.1	W	Normal
09:30	35.4	W	Normal
09:35	35.7	W	Normal
09:40	36.0	W	Normal
09:45	36.3	W	Normal
09:50	36.6	W	Normal
09:55	36.9	W	Normal
10:00	37.2	W	Normal
10:05	37.5	W	Normal
10:10	37.8	W	Normal
10:15	38.1	W	Normal
10:20	38.4	W	Normal
10:25	38.7	W	Normal
10:30	39.0	W	Normal
10:35	39.3	W	Normal
10:40	39.6	W	Normal
10:45	39.9	W	Normal
10:50	40.2	W	Normal
10:55	40.5	W	Normal
11:00	40.8	W	Normal
11:05	41.1	W	Normal
11:10	41.4	W	Normal
11:15	41.7	W	Normal
11:20	42.0	W	Normal
11:25	42.3	W	Normal
11:30	42.6	W	Normal
11:35	42.9	W	Normal
11:40	43.2	W	Normal
11:45	43.5	W	Normal
11:50	43.8	W	Normal
11:55	44.1	W	Normal
12:00	44.4	W	Normal

Station No. 12345
Date: 1960-01-01
Time: 00:00 to 12:00
Amplitude: 1.2 to 44.4
Phase: W
Remarks: Normal

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

May 1948.

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

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 Curator of the Nizamiah Observatory, Hyderabad, and of the Superintendent, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Stations.

Station	Latitude	Longitude	Height above M.S.L. 'meter'	Lithologic Foundation	Officer-in- Charge of Observatory during that period
Bombay	18° 54' N	72° 49' E.	6	Deccan Trap	Director.
Calcutta	22° 32' N	88° 22' E.	(i) 7 (ii) 6	Alluvium	Director.
Colombo	06° 54' N	79° 52' E	7	Beach sand	Superintendent.
Dehra Dun	30° 19' N	78° 03' E	682	Gravel	President.
Hyderabad	17° 26' N	78° 27' E	528	Granite	Curator. *
Kodaikanal	10° 14' N	77° 28' E	2343	Rock	Director.
New Delhi	28° 35' N	77° 12' E	207	Massive Quartzites	Dy. Director General of Observ- atories (I & S).
Poona	18° 32' N	73° 51' E	560	Deccan Trap	Dy. Director General of Observatories (C & G).

i) Milne-Shaw

ii) Omori-Ewing.

TABLE II.

INSTRUMENTS AND THEIR CONSTANTS.

Station	Instruments	Compt.	Period in seconds	Static Magni- fication	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	19:1	16.0
	Milne-Shaw	E	12	350	14:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	15	32	-	25.4
	Omori-Ewing	E	16	30	-	25.4
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20:1	8.0
	Milne-Shaw	N	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0

* Nizamiah Observatory.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
May 1948						
1				0 = 01h. 38m. 32s. (Poona).		
	Calcutta	E	eP	01 42 17	1665	Slight
			IS	01 45 13		
			ISS	01 45 40		
			M	01 47 26		
	Hyderabad	N	eP	01 43 20	2760	Slight
			S	01 47 38		
			M	01 52 21		Per. = 12 secs.
						$\mu = 4$
	Bombay	N	e	01 48 45		Tremor
		N	e	01 53 14		
		E	M	01 55 36		Per. = 11 secs.
						$\mu = 3$
		N	M	01 56 47		Per. = 10 secs.
						$\mu = 4$
2	Dehra Dun	N	i	08 30 36		
			M	08 30 45?		Amp. = 0.5"
3	Epc:- 50° S, 0° E (0 = 11h. 59m. 36s. (B.C.I.S.)					
	Bombay	N	e	12 04 57		Feeble.
		E	e	12 11 53		
13						
3	Epc:- 50° S, 0° E. 0 = 13h. 42m. 48s. (B.C.I.S.)					
	Bombay	N	e	13 55 29		Feeble.
		E	e	14 05 53		
		N	e	14 06 04		
	Kodaikanal	E	e	14 04 54		
4	Bombay	N,E	e	19 51 --		Feeble surface waves.
5	Epc:- 79.8° E, 31.6° N. 0 = 08h. 31m. 26s. (Poona) Felt at Simla and Dehra Dun.					
	Hyderabad	N	eP	08 34 50	1590	
		N	M	08 39 51		Per. = 10 secs.
						$\mu = 8$
	Bombay	N	eP	08 34 52	1590	Slight.
		E	ePP	08 34 59		
		N,E	LQ	08 37 19		
			eS	08 37 32		
		N,E	LR	08 38 23		
	Calcutta	E	eS	08 36 52	1400	Slight.
			i	08 38 03		
			i	08 38 25		
			i	08 38 40		
	Kodaikanal	E	e	08 41 21		Short distance earthquake of slight intensity.
			e	08 43 43		
			L	08 44 31		
			M	08 45 14		
						Per. = 8 secs. $\mu = 2$.
8	Epc:- 46.5° N, 151.0° E. 0 = 02h. 46m. 30s. (U.S.C.G.S.)					
	46.3° N, 150.5° E. 0 = 02h. 46m. 29s. (B.C.I.S.)					

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Kms.	
<u>May</u>						
1948						
8 (contd.)	Epc:-	45°8 N, 150°4 E.		0 = 02h. 46m. 41s.	h = 250 kms.	(J.S.A.)
		45°0 N, 150°0 E.		0 = 02h. 46m. 41s.	h = 250 Kms.	(C.M.O. Japan).
	Bombay	N,E	eP	02 57 26	7265	Slight.
		E	eS	03 06 11		
		N	eS	03 06 16		
9	Epc:-	30°0 N, 130°8 E.		0 = 02h. 09m. 15s.	h = 150± Kms.	(J.S.A.)
		30°0 N, 129°0 E,		0 = 02h. 08m. 48s.		(U.S.C.G.S.)
		29°7 N, 130°7 E.		0 = 02h. 08m. 52s.		(B.C.I.S.)
		32°0 N, 131°5 E				(C.M.O. Japan)
	Hyderabad	N	eP	02 17 59	5710	
			PP	02 20 00		
			S	02 25 19		
			ScS	02 28 03		
			L	02 33 12		
			M	02 37 58		Per. = 18 secs. u = 46
	Bombay	N,E	eP	02 18 32	6335	Moderate.
		E	IS)	02 26 27		
		N	eS)			
		E	SS	02 31 00		
		NE	L	02 37 30		
		E	L M	02 44 10		Per. = 17 secs. u = 31
		N	M	02 51 33		Per. = 16 secs. u=10.
	*Colombo	E	P	02 18 43	*	
	Dehra Dun	N	e	02 27 42		Slight
			e	02 32 24		
			M ₁	02 37 06		Per. = 30 secs. Amp. = 0.2"
			M ₂	02 43 00		
9	Bombay	N,E	e	08 42 --		Feeble.
10	Bombay	N,E	e	09 25 39		Very feeble.
11	Kodaikanal	Epc:-	17°2 S, 69°8 W,	0 = 08h. 55m. 50s.	h = 100 ± Kms.	(J.S.A.)
	1		17°0 S, 71°0 W.	0 = 08h. 55m. 42s.		(U.S.C.G.S.)
			17°0 S, 71°0 W.	0 = 08h. 55m. 45s.	h = 50.75 Kms.	(B.C.I.S.)
				0 = 08h. 55m. 41s.		(Poona).
9*	Colombo	E	S	02 26 21 *		
			L	02 37 46		
			M	02 41 20		Amp. = 0.9 m.

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Kms.	
May 1948						
11 (contd.)	Kodaikanal	E	i ? i e e e PPS? L M	09 14 00 09 17 17 09 24 07 09 24 20 09 24 50 09 25 55 09 32 40 09 46 25 09 53 27		Moderate. Per. = 30 secs. μ = 29
	Bombay	N, E	1PKP	09 15 18	16665	Moderate △ from PP - P
		E	1PP	09 18 57		
		N	e	09 37 22		
		E	SS	09 38 08		
		N	L	09 51 15		
		E	L	09 52 29		
		E	M	10 22 36		Per. = 19 secs. μ = 7
	Colombo	E	PKP SKKS L M	09 15 29 09 26 19 10 08 49 10 16 49	17200	Moderate. Amp. = 0.2 mm.
	Hyderabad	N	ePKP L M	09 15 34 09 59 43 10 12 09		Slight Per. = 24 secs. μ = 13
	Calcutta	E o.K.	ePKP	09 15 42		Slight. Very distant
			e	09 20 03		
			e	09 31 09		
			e	09 39 49		
			Mn	10 26 09		
11	Calcutta	E	e e e	18 08 41 18 13 23 18 23 39		Tremor.
12	Epc:- 38.0° N, 142.0° E. 0 = 00h. 57m. 03s. (J.S.A.)					
	38.0° N, 142.5° E. 0 = 00h. 56m. 54s. (U.S.C.G.S.)					
	38.2° N, 142.5° E. 0 = 00h. 56m. 56s. (B.C.I.S.)					
	37.8° N, 147.3° E. h = 40 Kms. (C.M.O. Japan)					
	Calcutta	E	iP iPP iS iSS L M Mn	01 05 41 01 07 26 01 12 37 01 15 59 01 20 53 01 24 23 01 28 37	5310	Moderate. Per. = 20secs μ = 178.
	Kodaikanal	E	eP PP eS SS L M	01 06 00 01 08 10 01 14 36 01 18 36 01 26 41 01 31 46	7110	Long distance earthquake of moderate intensity Per. = 20 secs. μ = 27.

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Kms.	
May 12 (contd.)	Hyderabad	N	P	01 07 00	6630	
			PP	01 09 10		
			S	01 15 11		
			M	01 31 56		Per. = 16 secs. μ = 22
	Bombay	1P	1P	01 07 25	6980	Moderate
			eS	01 15 55		
		E	1PS	01 16 12		
		N	L	01 28 18		
		E	L	01 29 03		
		E	M	01 37 00		Per. = 15 secs.
		N	M	01 40 14		μ = 20
		N	M	01 40 14		Per. = 15 secs. μ = 15
	Colombo	E	P	01 07 34	7830	
			S	01 16 47		
			L	01 35 04		
			M	01 40 59		Amp. = 1.03.
12	Dehra Dun	N	e	03 12 12		
			e	03 21 51		
			e	03 25 18		
			M	03 30 00		Per. = 18 secs. μ = 0.2"
13	Calcutta	E	e	23 57 13		Tremor
	Bombay	N	e	23 59 31		Feeble
		E	e	23 59 44		
		E	e	00 06 55		
14	Calcutta	E	e	00 03 05		
14	Epc:- 37.9° N, 142.1° E.			h = 40 Kms. (C.M.O. Japan)		
	38.2° N, 142.5° E			O = 13h. 19m.06s. (B.C.I.S.)		
	Calcutta	E	e	13 27 26		Slight, distant.
			eS?	13 27 40		
			Mn	13 53 52		
	Bombay	N	eP	13 29 36	6980	Slight
		E	e P	Lost in hour break		
		N	eS	13 38 06		
		E	eS	13 38 28		
		E	M	13 59 39		Per. = 15 secs. μ = 5
	Kodaikanal	E	eP	13 29 37		Feeble shock
	Hyderabad	N	M	13 51 38		Per. = 15 secs. μ = 6
14	Epc:- 43.0° N, 148.5° E.			O = 18h. 39m. 40s. (J.S.A.)		
	44.5° N, 148.5° E			O = 18h. 39m. 40s. (B.C.I.S.)		
	Calcutta	E	eP	18 49 00		Slight. Distant.
			PcP	18 56 21		
			e	19 04 46		
			Mn	19 17 16		
	Hyderabad	N	eP	18 50 26	7110	
			S	18 59 02		
			L	19 10 28		
			M	19 16 00		Per. = 17 secs. μ = 8

May
1948.

h. m. s. Kms.

14 (contd.)

Station	Dir.	Type	h. m. s.	Kms.	Remarks
Bombay	N, E	eP	18 50 35		Slight
	E	M	19 21 20		Slight Per. = 12 secs. $\mu = 4$
Kodaikanal	E	eP	18 50 43		✓ Feeble.
14-15	Epc:- 54° 5' N, 161° 0' W.		0 = 22h. 31m. 42s.		(U.S.C.G.S.)
	54° 5' N, 161° 5' W.		0 = 22h. 31m 41s.		(B.C.I.S.)
	54° 7' N, 160° 2' W.		0 = 22h. 31m. 49s.		(J.S.A.)
	53° 8' N, 161° 0' W.		0 = 22h. 31m. 41s.		(Poona)
Dehra Dun	N	eP	22 42 46	3416	Very great.
		eS	22 52 42		
		M	23 22 56		
Calcutta	E	iP	22 44 10	9210	Great. First movement East.
		iPP	22 47 23		
		iPPP	22 49 14		
		iS	22 54 30		
		iPS	22 55 18		
		iSS	23 00 06		
		iSSS	23 03 18		
		eL	23 11 38		
		M	23 18 08		
		Mn	23 22 48		Per. = 20 secs. $\mu = 580.$
Hyderabad	N	P	22 44 57	9730	✓
		PP	22 48 35		
		S	22 55 42		
		L	23 14 18		
		M	23 20 49		Per. = 16 secs. $\mu = 175.$
Bombay	N, E	eP	22 45 03	10700	✓ Great.
	E	iPP	22 48 49		
	N	iPP	22 48 52		
	E	iSKS	22 55 39		
	N	iSKS?	22 55 56		
	E	iS)	22 56 27		
	N	eS)			
	E	iSS	23 03 01		
	E	L	23 16 42		
	N	L	23 17 56		
	E	M	23 30 13		Per. = 19 secs. $\mu = 165$
	N	M	23 30 37		✓ Per. = 22 secs. $\mu = 249.$
Kodaikanal	E	eP	22 45 25	10920	✓ Very long distance earthquake of great intensity.
		PP	22 49 20		
		SKS	22 55 55		
		SKKS	22 56 25		
		eS	22 56 58		
		eS	22 58 23		
		SS	23 03 43		
		L	23 19 28		
		M	23 27 03		Per. = 21 secs. $\mu = 58?$
Colombo	E	P	22 45 35		
		i	22 56 19		
		L	23 26 17		
		M	23 35 30		Amp. = 9.8 m.m.

DATE	STATION	COMPT.	PHASE	G. M. T.	Kms.	REMARKS.
				h. m. s		
May 1948						
15	Calcutta	E	eP iS iS* iS	00 10 38 00 11 34 00 11 50 00 12 00	533	Slight. Phases masked by the coda of the 14th earthquake. Surface waves.
15	Bombay	E N	e e	18 49 -- 19 01 --		
16	Bombay	N E	e e	21 27 23 21 35 42		Feeble.
17	Bombay	N N,E	e e	13 53 05 13 56 11		Very feeble. Times approx- imate as time marks are absent
17	Calcutta	E	eP iS iS* iS	17 05 53 17 07 12 17 07 37 17 07 58	766	Slight
17	Epc:- 55.0° N, 161.0° W. 0 = 17h. 46m. 36s. (U.S.C.G.S.)					
	Calcutta	E	e e Mn	18 01 11 18 11 31 18 11 31		Slight
	Bombay	N	e	18 01 29		Very feeble, distant.
	Kodaikanal	E	e	18 12 05		Slight shock
	Hyderabad	N	e	18 12 34		
22	Epc:- 42.0° S, 173.0° E. 0 = 19h. 21m. 29s. (Aloutial Islands) (J.S.A.)					
	42.5° S, 172.9° E 0 = 19h. 21m. 30s. (Wellington)					
	Calcutta	E	i L M	19 38 50 20 07 55 20 17 25		Amp. = 0.5 m.m. Slight
	Bombay	N E E	e e M	19 41 23 19 41 39 20 34 53		Per. = 22 secs. $\mu = 9$
	Hyderabad	N	e M	19 46 23 20 15 02		Per. = 17 secs. $\mu = 10$
	Calcutta	E	e Mn	19 46 37 20 22 07		Slight, Distant Phases masked by microseisms.
23	Epc:- 16.5° S, 168.5° E. 0 = 04h. 12m. 26s. (J.S.A.)					
	18.0° S, 169.0° E. 0 = 04h. 12m. 30s. h = 20 Kms. (U.S.C.G.S.)					
	Celombo	E	e i	04 30 30 04 35 30		
	Bombay	N,E E N	e i e	04 30 37 04 36 21		Slight, Distant
	Calcutta	E	i i	04 35 07 04 36 35		Slight, near.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
May 1948.						
23	Calcutta	E	e	09 27 22		Slight. Distant.
			e	09 32 52		
	Bombay	N, E	e	09 28 40		Slight.
	Hyderabad	N	M	09 41 57		Per. = 15 secs. $\mu = 4$.
24	Bombay	E	e	04 30 47		Feeble.
		N	e	04 30 56		
	Calcutta	E	e	04 34 24		Slight, near
			i	04 35 42		
25	Epc: - 30° N, 100° E.			O = 07h. 11m. 27s. (J.S.A.)		
	30° N, 99½° E.			O = 07h. 11m. 18s. (U.S.C.G.S.)		
	30.5° N, 100° E			O = 07h. 11m. 23s. (B.C.I.S.)		
	29° N, 99° E			C.M.O. Japan.		
	99.5° N, 91° E					
	31° N, 99.5° E			O = 07h. 11m. 23s. (Poona)		
	Calcutta	E	eP	07 14 17	1290	Great.
			iS	07 16 37		
			iSS	07 16 59		
			M	07 18 --		
	Dehra Dun	N	eP	07 15 30?	962	Very great.
			eS	07 18 36?		
			M	07 23 36		Per. 12 secs. $\mu = 4$
	Hyderabad	N	P	07 16 43	2680	
			PP	07 17 26		
			S	07 20 56		
			i	07 21 10		
			M	07 24		Per. = 12 secs. $\mu = 245$
	Bombay	N, E	eP	07 17 08	3010	Great Δ from
		N	eS	07 21 45		N component.
		N, E	iS?	07 22 07		Probable
		E	L	07 23 07		epicentre in
						China
		N	M	07 26 28		Per. 13 secs. $\mu = 320$.
		E	M	07 28 30		Per. = 15 secs. $\mu = 403$
	Kodaikanal	E	iP	07 17 30	3335	Fairly short
			iS	07 22 27		distance earth-
			SS	07 23 52		quake of great
			L	07 26 07		intensity.
			M	07 28 40		Per. = 12 secs. $\mu = 31.0 ?$
	Colombo	E	P	07 17 41		
			i	07 23 01		
			L	07 32 21		
			M	07 37 36		Amp. = 21.0 mm.

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Kms.	
May 1948						
25	Calcutta	E	e	16 26 02		Slight, near
			i	16 27 39		
	Bombay	N,E	eP	16 30 57	2845	Slight.
		N,E	eS	16 35 22		
	Hyderabad	N	M	16 36 29		Per. = 9 secs. $\mu = 3$
25	C Epc:- Probly Sikang Province, China. 0 = 18h. 43m. 30s. (Poona).					
	0 = 18h. 43m. 30s. (Poona)					
	Calcutta	E	eP	18 46 20	1200	Slight
			iS	18 48 32		
			iSS	18 49 00		
	Hyderabad	N	eP	18 48 36	2660	
			S	18 52 47		
			M	18 55 59		Per. = 11 secs. $\mu = 7$
	Bombay	N,E	eP	18 49 31	2900	Slight
			eS	18 54 00		
		E	M	19 00 00		Per. = 11 secs. $\mu = 3$
26	Calcutta	E	e	02 50 02		Tremor.
26	Bombay	N,E	e	02 53 21		Feeble.
			e	02 57 35		
26	Epc:- 55.8° N, 152.6° W. 0 = 09h. 16m. 58s. (J.S.A.)					
	56.0° N, 156.0° W. 0 = 09h. 16m. 42s. (U.S.C.G.S.)					
	56.5° N, 154.0° W. 0 = 09h. 16m. 52s. (B.C.I.S.)					
26	Bombay	N,E	e	09 34 09		
		N	e	09 40 54		
26	Hyderabad	N	M	10 07 46		Per. = 18 secs. $\mu = 8$
	Kodaikanal	E	e	10 08 07		
26	Calcutta	E	e	13 46 33		Slight. Distant.
			e	13 47 23		
			i	13 48 38		
	Bombay	N,E	e	13 49 37		Feeble.
		N	e	13 55 19		
29	Calcutta	E	e	14 13 49		Tremor
			i	14 18 51		
	Bombay	N,E	e	14 15 38		Feeble.
		N,E	e			
	Hyderabad	N	M	14 26 01		Per. = 12 secs. $\mu = 3$

M. L. P.
22-9-52.

MAR 3 1961

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

June 1948.

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

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 Curator of the Nizamiah Observatory, Hyderabad, and of the Superintendent, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Stations.

Station	Latitude	Longitude	Height above M.S.L. 'meters'	Lithologic Foundation	Officer-in- Charge of the Observatory during that period.
Bombay	18° 54' N	72° 49' E	6	Deccan Trap	Director.
Calcutta	22° 32' N	88° 22' E	(i) 7 (ii) 6	Alluvium	Director.
Colombo	06° 54' N	79° 52' E	7	Beach sand	Supdt.
Dehra Dun	30° 19' N	78° 03' E	682	Gravel	President.
Hyderabad	17° 26' N	78° 27' E	528	Granite	Curator, Nizamiah Observatory.
Kodaikanal	10° 14' N	77° 28' E	2343	Rock	Director.
New Delhi	28° 35' N	77° 12' E	207	Massive Quartzites	Dy. Director General of Observatories (I & S)
Poona	18° 32' N	73° 51' E	560	Deccan Trap	Dy. Director General of Observatories (C & G).

i) Milne-Shaw

ii) Omori-Ewing

TABLE II.

Instruments and their Constants.

Station	Instrument	Compt.	Period in seconds	Static Magni- fication	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	20:1	16.0
	Milne-Shaw	E	12	350	14:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	15	32	-	25.4
	Omori-Ewing	E	16	30	-	25.4
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Kodaikanal	Milne-Shaw	E	10.5	250	20:1	8.0

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.			
<u>June</u> 1948.				h. m. s.	Kms.				
1	Colombo	E	P	03 23 26	2255	$\mu = 0.5$ m.m. Tremor.			
			L	03 28 31					
	Kodaikanal	E	M	03 30 00					
			e	03 23 59					
	Hyderabad	N	P	03 24 18					
			S	03 28 01					
				L			03 30 18		
				M			03 32 30		
		Bombay	N	e			03 25 34		Per. = 15 secs. $\mu = 6$ Slight
	1	Epc:- 7.4° N, 96.3° E, in the Molacca Strait.					O = 18h. 55m. 55s. (Poona).		
	Colombo	E	P	18 59 41	2100	$\mu = 7.0$ Several maxima occur.			
			S	- - -					
			L	19 04 01					
			M	19 05 36					
	Kodaikanal	E	iP	19 00 19					
			iS	19 03 47					
			L	19 05 31					
			M	19 07 09					
		Hyderabad	N	P			19 00 38	2230	Per. = 17 secs. $\mu = 82.5$ Shock of moderate intensity.
	S			19 04 16					
	Bombay	N,E	M	19 08 38		Per. = 15 secs. $\mu = 35$ Moderate.			
eP			19 01 37						
	Bombay	N,E	eS	19 06 01		Per. = 15 secs. $\mu = 3a$ Per. = 1b sec $\mu = 28$			
N			L	19 09 05					
E			L	19 09 13					
E			M	19 13 41					
	Dehra Dun	N	M	19 15 47					
			e	19 04 15					
1	Bombay	E	e	22 39 --		Very feeble.			
		N	e	22 39 40					
8	Epc:- 35.0° S, 55.0° E.			O = 03h. 12m. 24s. (B.C.I.S.). (Indian Ocean).					
	Bombay	E	eP	03 23 36	6360	Slight. Beginning of 'P' not clear in N component due to microseisms.			
	Kodaikanal	E	e	03 27 22					
10	Bombay	N,E	eP?	18 41 20	1902	Slight			
			iS?	18 42 00					
	Calcutta	E	eS	18 42 10					
			eP	18 43 39					
			iS	18 45 37	1170	Slight			

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ Kms.	REMARKS.	
				h. m. s.			
June							
1948.							
10 (contd.)							
	Calcutta	E	PcP	18 49 49			
	(contd.)		ScS	18 56 49			
	Hyderabad	N	S	18 43 45			
			M	18 45 17		Per. = 8 secs. $\mu = 10$	
	Kodaikanal	E	e	18 44 54			
15	Epc:- 33.5° N, 136.0° E.			0 = 11h. 44m. 42s. (U.S.C.G.S.)			
	33.2° N, 135.8° E.			0 = 11h. 44m. 44s. (J.S.A.)			
	Calcutta	E	eP	11 52 43	4635	Moderate.	
			ePP	11 54 13		Epc: Southern coast of Japan.	
			iS	11 59 13			
			iSS	12 02 13			
			iSSS	12 02 54			
			L	12 05 28			
			M	12 09 03			
			Mn	12 13 53		Per. = 15 secs. $\mu = 114$	
	Hyderabad	N	P	11 54 10	5700	Microseisms.	
			S	12 01 29			
			ScS	12 03 47			
			SS	12 05 02			
			L	12 10 02			
			M	12 13 53		Per. = 15 secs. $\mu = 23$	
	Bombay	N	eP	11 54 36	6220	Moderate.	
		E	iP				
		E	iPP	11 56 46			
		E	eS	12 02 25			
		N	eS	12 02 28			
		E	SS	12 06 13			
		N,E	L	12 11 22			
		E	M	12 21 04		Per. = 15 secs. $\mu = 15$	
		N	M	12 22 05		Per. = 14 secs. $\mu = 8$	
	Kodaikanal	E	iP	11 54 37		Moderate.	
			iS	12 02 44			
			PS	12 02 48			
			ScS	12 04 24			
			L	12 12 37			
			M	12 17 12	6555	Per. = 15 secs. $\mu = 19.2$	
	Dehra Dun	N	eP?	11 57 55			
			eS?	12 01 24			
			L	12 07 18			
			M	12 09 20		Per. = 24 secs. Amp. = 11.	
	Colombo	E	PPP	12 02 49			
			S	- - -			
			L	12 13 50			
			M	12 22 20		Amp. = 0.7	
15	Bombay	E	e	21 00 --		Feeble tremors.	
		N	Pronounced microseisms through out record.				

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
June 1948.				h. m. s.	Kms.	
17	Calcutta	E	e e	14 21 22 14 26 27		Tremor
18	Epc:-			0 = 00h. 53m. 58s.		h = 50 ± Kms. (J.S.A.)
				0 = 00h. 53m. 54s.		(U.S.C.G.S.)
	Calcutta	E	eP iS	01 05 14 01 14 36	8010	Slight. Deep focus
	Kodaikanal	E	iP PP iS PS L M	01 05 53 01 08 52 01 15 48 01 16 19 01 31 45 01 37 47	8665	Shock of slight intensity.
	Bombay	N,E	iP iS L	01 06 41 01 17 06 01 32 13	9345	Per. = 17 secs. $\mu = 4.5$ Slight.
	Hyderabad	N	S? M	01 15 54 01 47 19		Per. = 15 secs.
18	Hyderabad	N	eP S	07 32 32 07 36 51	2720	$\mu = 4$
	Dehra Dun	N	e	07 35 30		
	Bombay	N,E	eP? eS	07 38 06 07 42 23	2665?	Slight.
18	Bombay	N,E	eP? eS N E N	18 49 37 18 53 45 18 53 53 18 57 46 18 00 23	2620?	Slight
		E	M	19 00 43		Per. = 15 secs. $\mu = 8$ Per. = 11 secs. $\mu = 4$
	Dehra Dun	N	eP eS M	18 50 30 18 53 03 19 12 --		
	Calcutta	E	e i i i Mn	18 52 23 18 56 23 18 58 58 18 59 35 19 07 43		Slight. Distant.
	Hyderabad	N	S M	18 55 14 19 01 44		Per. = 12 secs. $\mu = 7$
21	Epc:-			0 = 12h. 05m. 24s.		(J.S.A.)
				0 = 12h. 05m. 24s.		(U.S.C.G.S.)
	Calcutta	E	eP iPPP iS iSSS L M Mn	12 13 22 12 15 04 12 19 26 12 22 24 12 24 34 12 27 59 12 39 04	4400	Moderate Epc: Celebes Sea. Per. = 15 secs. $\mu = 39$

DATE	STATION	Compt.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
June 1948. 21 (contd.)	Colombo	E	P	12 13 47	4890	
			S	12 20 20		
			L	12 33 35		
	Kodaikanal	E	M	12 35 15		
			iP	12 14 07	5365	Amp. = 0.7 Moderate
			PP	12 15 58		
			iS	12 21 06		
			SS	12 24 11		
			L	12 28 37		
			M	12 32 38		
	Bombay	N,E	eP	12 14 49	5935	Per. = 17 secs. $\mu = 19.6$ Moderate.
		E	iS	12 22 22		
		N	SS	12 26 07		
		E	SS	12 26 11		
		N	L	12 31 48		
		E	L	12 32 00		
	Hyderabad	N	M	12 43 10		
			S?	12 21 00		Per 18 secs. $\mu = 9.$
			M	12 34 54		
21	Bombay	E	eP?	14 07 03		Per. = 15 secs. $\mu = 10$
		N,E	e	14 14 37		Slight. Pronounced microseisms in N component.
22	Bombay	E	e	21 26 --		Slight.
	Hyderabad	N	M	22 07 31		Per. = 16 secs. $\mu = 6$
26	Dehra Dun	N	i	14 41 30		Per. = 30 secs. Amp. = 0.5'
			M	14 48 04		
27	Epc: - 25.8° N, 100.6° E.			0 = 00h. 08m. 13s. GMT. (Poona)		
	Hyderabad	N	P	00 12 09	2510	
			S	00 17 12		
			SS	00 17 37		
			M	00 22 05		
	Bombay	N,E	iP	00 13 58	2910	Per. = 12 secs. $\mu = 15$ Moderate.
		N	eS)	00 18 28		
		E	iS)			
		N	i	00 18 36		
		N	L	00 21 21		
		E	L	00 21 21		
		E	L	00 21 45		
		N	M	00 23 04		
		E	M	00 24 10		Per. = 6 secs. $\mu = 13$
	Kodaikanal	E	iP	00 13 58	3010	Per. = 11 secs. $\mu = 7.$ Slight.
			iS	00 18 36		
			SS	00 19 49		
			L	00 21 50		
			M	00 24 14		Per. = 10 secs. $\mu = 5.6$

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
June 1948						
27 (contd.)	Colombo	E	P?	00 14 48	3020	
			S	00 18 58		
			L	-- -- --		L and M not distinct.
			M	-- -- --		
27	Bombay	E	eP?	13 22 45		Feeble, distant.
27	Bombay	N,E	e	21 56 37		Slight.
		E	M	22 37 21		Per. = 18 secs.
	Calcutta	E	e	22 25 17		$\mu = 4$
			e	22 28 32		Slight. Distant.
						Phases masked in strong microseisms.
	Kodaikanal	E	e	22 30 38		Tremor.
	Hyderabad	N	M	22 35 56		Per. = 13 secs.
						$\mu = 7$.
28	Epc:- 36° 5' N, 136° 0' E.			0 = 07h. 13m. 30s. (U.S.C.G.S.)		
	35° 8' N, 136° 2' E			0 = 07h. 13m. 32s. (J.S.A.)		
	40° 5' N, 139° 0' E			(Japan).	(Poona)	
	Calcutta	E	eP	07 21 30	5220	Great. Epc: West Honshu Japan.
			iPP	07 23 13		Caused heavy casualties and severe property damage in and around Fukui.
			iS	07 28 27		
			iSS	07 31 37		
			iSSS	07 32 50		
			L	07 35 37		
			M	07 39 17		
			Mn	07 40 37		Per. = 15 secs.
						$\mu = 400$.
	Hyderabad	N	P	07 22 58	5900	
			PP	07 24 41		
			S	07 30 28		
			M	07 41 28		Per. = 26 secs.
	Bombay	N,E	eP	07 23 18	6555	$\mu = 269$
			eS	07 31 24		Moderate
	Kodaikanal	E	iP	07 23 32	6610	Moderate.
			PP	07 25 32		
			iS	07 31 41		
			SS	07 35 24		
			L	07 41 49		
			M	07 45 37		
	Colombo	E	P	07 23 31	6645	
			S	07 31 42		
			L	07 42 24		
			M	07 52 34		Amp. 4.5 mm

DATE	STATION	COMPT.	PHASE	G. M. T.		REMARKS.
				h. m. s.		
June 1948						
29	Epc:-	16.0 S, 172.0 W.		0 = 10h. 28m. 30s. (U.S.C.G.S.).		
		15.5 S, 174.0 W.		0 = 10h. 28m. 37s. (Pasadena)		
				h = 60 Kms.)		
		16.1 S, 172.9 W.		0 = 10h. 28m. 42s. h = 100 Kms. (J.S.A.)		
	Kodaikanal	E	e	10 48 06		
	Calcutta	E	e	10 47 08		Slight. Distant
			IS?	10 53 18		Deep focus.
	Hyderabad	N	SKS	11 55 45		Phases masked
			M	12 32 18		by microseisms.
						Times approxi-
						mate. No time
						marks.
						Per. = 15 secs.
						$\mu = 4$
29	Kodaikanal	E	e	14 23 55		Tremor
29	Epc:-	43.0 N, 47.0 E.		0 = 16h. 06m. 30s. (U.S.C.G.S.)		
		43.1 N, 47.7 E		0 = 16h. 06m 35s. h = 75 Kms. \pm (J.S.A.).		
	Bombay	N	eP	16 13 02	3580	Slight
			PP	16 14 13		
			eS	16 18 15		
			LQ	16 20 00		
			LR	16 21 41		
			M	16 23 30		
	Calcutta	E	e	16 13 58	4335	Slight. Distant.
			IS	16 19 58		
	Hyderabad	N	e	16 14 23		
			S	16 20 06		
			M	16 33 33		
						Per. = 14 secs.
						$\mu = 7$
	Colombo	E	eP	16 14 31	5170	
			S?	16 21 24		
				- - -		
	Dehra Dun	N	M	16 32 19		Amp. = Very small.
			eP	16 14 45		
			e	16 17 18		
			eS	16 20 30		
29	Kodaikanal	E	e	21 14 56		Tremor.
30	Bombay	E	e	00 22 30		Feeble, near.
		N, E	e	00 27 09		
30	Epc:-	38.5 N, 20.5 E.		0 = 12h. 21m. 12s. (U.S.C.G.S.)		
		38.5 N, 20.4 E		(B.C.I.S.)		
		38.9 N, 20.4 E.		0 = 12h. 21m. 18s. (J.S.A.)		
	Bombay	N, E	eP	12 30 06	5445	Moderate.
			eS	12 37 09		
		N	L	12 45 17		
		E	L	12 45 31		
			M	12 54 04		
						Per. = 14 secs.
						$\mu = 7.$

DATE	STATION	COMPT.	PHASE	G. M. T.	REMARKS.
				h. m. s.	Km.
June 1948					
30 (contd.)	Kodaikanal	E	e	12 30 53	Distant shock. Phases not clear.
	Colombo	E	P? S L? M	12 40 30 -- -- -- 12 55 49 13 02 37	Amp. = 0.3 m.m.
30	Bombay	E N	e	19 42 55	Feeble tremor. Microseisms through out the record.

The following table contains a list of earthquakes reported by voluntary observers from various stations for the period April - June 1948.

Table

Station	Date	G.M.T of Earthquake h. m.	Dura- tion secs.	Intensity R.F.Scale	No. of Number of shocks	Remarks.
Cooch- Behar	8-4-48	05 40	10-18	IV	6	-
Srinagar	23-4-48	11 30	3	V	2	-
Simla	5-5-48	08 31	2	III	3	-
Dehra Dun	5-5-48	08 32	10	III	1	-
Ghatsila (Bihar)	7-5-48	05 46	6	III	1	-
Jaipur	26-5-48	16 25	10	IV	1	-
Srinagar	27-6-48	15 55	1½	VI	1	-
Gauhati	30-6-48	00 20	5	V	2	-
Tezpur	30-6-48	00 07	30	IV	2	-

M.L.P.
8-11-52.

2nd half
1948

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

July - 1948.

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

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 1933, the data were being published in the form of 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 Curator of the Nizamiah Observatory, Hyderabad, and of the Superintendent, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Station.

Station	Latitude	Longitude	Height above M.S.L. 'meters'	Lithologic Foundation	Officer-in-Charge during that period.
Bombay	18° 34'N	72° 49'E	6	Deccan Trap	Director.
Calcutta	22° 32'N	88° 22'E	(i)7 (ii)6	Alluvium	Director.
Colombo	06° 54'N	79° 52'E	7	Beach sand	Director.
Dehra Dun	30° 19'N	78° 03'E	682	Gravel	President.
Hyderabad	17° 26'N	78° 27'E	528	Granite	Curator, Nizamiah Observatory.
Kodaikanal	10° 14'N	77° 28'E	2343	Rock	Director.
New Delhi	28° 35'N	77° 12'E	207	Massive Quartzites	Dy. Director, General of Observatories (I & S)
Poona	18° 32'N	73° 51'E	560	Deccan Trap	Dy. Director, General of Observatories (C &)

Instruments and their Constants.

Station	Instrument	Compt.	Period in seconds	Static Magnification	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	20:1	16.0
	Milne-Shaw	E	12	350	14:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	15	32	-	25.4
Colombo	Omori-Ewing	E	16	30	-	25.4
	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20:1	8.0
	Milne-Shaw	N	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
July				h. m. s.	Kms.	
1948						
14-15	Epc:- 4.0° S, 143.0° E.		O =	22h. 28m. 55s.		(J.S.A.)
	4.0° S, 142.0° E		O =	22h. 29m. 54s.		(U.S.C.G.S.)
	Colombo	E	P	22 40 10	7555	
			S	22 49 10		
			L	-- -- --		
	Bombay	E	eP	22 40 40	8610	pronounced, Slight
			PP	22 42 52		
			S	22 50 31		
			SS	22 55 37		
			SSS	22 59 15		
			LQ	23 02 28		
	Calcutta	E	eP?	22 40 19	6665	Slight.
			eS	22 48 31		
			ISS	22 51 15		
			L	22 55 26		
	Hyderabad	N	PPS?	22 49 39		
			M	23 15 21		Per. = 13 secs. $\mu = 4$
	Kodaikanal	E	1P?	23 40 44	7510	
			SS	23 49 44		
			Mn	00 11 29		Per. = 40 secs. $\mu = 60$
16	Epc:- 14.0° N, 92.0° W.		O =	07h. 12m. 30s.		h = 100 Kms. (U.S.C.G.S.)
	14.0° N, 91.0° W.		O =	07h. 19m. 39s.		(J.S.A.)
	Bombay	E	e	07 54 --		Slight.
		N				Pronounced microseisms.
	Kodaikanal	E	e	08 30 11		Tremor
	Calcutta	N	M	08 43 15		Per. = 20 secs. $\mu = 6$
18	Epc:- 02.0° N, 121.0° E,		O =	06h. 43m. 30s.		(B.C.I.S.)
	Calcutta	E	eP	06 51 06	4160	Slight
			1PPP	06 52 41		
			1S	06 56 56		
			1SS	06 59 04		
			1SSS	06 59 30		
			L	07 01 42		
			M	07 05 46		
	Colombo	E	P	06 51 26	4800	
			S	06 57 48		
			L	07 06 40		
			M	07 08 20		
	Kodaikanal	E	eP	06 51 38	5280	Amp. = 0.9 m.m.
			1S	06 58 33		
			SS	07 01 38		
			L	07 06 18		
			M	07 10 18		Per. = 20 secs. $\mu = 32.$

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
July				h. m. s.	Kms.	
1948						
5	Epc:-	30°0 N, 56°0 E.		0 = 13h. 53s. 24s.		(J.S.A.)
		30°5 N, 58°5 E.		0 = 13h. 53m. 6s.		(B.C.I.S.)
		28°8 N, 57°5 E.				(U.S.C.G.S.)
	Dehra Dun	N	e	13 55 57?		Moderate.
			e	14 00 12		
	Bombay	N,E	1P	13 57 16	2040	Moderate.
		E	eS)	14 00 38		
		N	1S)			
		E	L	14 02 24		
		E	M	14 07 50		Per. = 15 secs.
		N	M	14 10 14		μ = 37
						Per. = 11 secs.
						μ = 11
	Hyderabad	N	P	13 58 13	2625	
			S	14 02 25		
			L	14 04 55		
			M	14 06 45		Per. = 18 secs.
						μ = 88
	Kodaikanal	E	1P	13 58 56	3045	
			1S	14 03 36		
			SS	14 04 56		
			L	14 06 56		
			M	14 09 30		Per. = 24 secs.
						μ = 81
	Calcutta	E	eP	13 59 12	3180	Great.
			1PP	14 00 09		
			1PPP	14 00 23		
			1S	14 04 06		
			1SSS	14 05 59		
			LR	14 06 45		
			M	14 09 00		
	Colombo	E	P	13 59 34	3630	
			S?	14 05 34		
			L	14 11 19		
			M	14 14 39		Amp. = 1.9 m.m.
7	Epc:-	33°0 N, 136°0 E,		0 = 02h. 19m. 14s.		(J.S.A.)
		33°0 N, 136°0 E		0 = 02h. 19m. 6s.		(U.S.C.G.S.)
	Dehra Dun	N	e	02 22 40?		
			e	02 30 00		
	Bombay	N,E	eP	02 29 16	6310	Moderate.
			eS	02 37 10		
		E	L	02 46 08		
		N	L	02 46 18		
		E	M	02 55 19		Per. = 15 secs.
		N	M	02 58 44		μ = 10
						Per. = 11 secs.
						μ = 7
	Kodaikanal	E	e	02 51 34		Tremor.
8	Bombay	E	e	11 54 33		Feeble.

DATE	STATION	COMPT.	PHASE	G. M. T.	Kms.	REMARKS.
July				h. m. s.		
1948.						
18 (contd.)	Hyderabad	N	e S SSS L M	06 51 59 06 58 28 07 02 02 07 07 37 07 11 59	4815	Per. = 15 secs. $\mu = 11$. Slight.
	Bombay	N,E E N N,E N E E	eP iPP) ePP) eS eSS iSS L M	06 52 30 06 54 32 06 59 45 07 03 30 07 03 42 07 09 04 07 15 53	5625	Per. = 19 secs. $\mu = 9$ Slight
	Dehra Dun	N	e e	07 00 45 07 05 21 ?		
18	Bombay	E	eP? eS	022 48 02 22 48 36	2965?	Feeble.
20	Kodaikanal Bombay	E E N E N	e eP P eS? eS	01 17 53 00 54 07 Mixed up with microseisms. 01 04 28 01 04 31	9200	Tremor Slight
20	Epc:: - 16° 0 S, 73° 0 W. O = 11h. 02m. 30s. h = 100 Kms. + (J.S.A.) 17° 0 S, 74° 5 W. O = 11h. 02m. 24s. h = 100 Kms. + (U.S.C.G.S.).					
	Bombay	N,E E	PKP M	11 22 06 12 28 20	16380	Slight, distant Per. = 23 secs. $\mu = 8$
	Calcutta	E	PKP PP e SKKS ₁ Mn	11 22 29 11 26 53 11 32 31 11 34 11 11 37 29	18056	Slight, distant.
	Hyderabad	N	SS? M	11 45 24 12 26 40	17056	Per. = 21 secs. $\mu = 11$ Tremor.
	Kodaikanal	E	e	12 16 53		
21	Calcutta	E	e i	16 03 26 16 07 06		Slight, near.
23	Calcutta	E	eP iS iSS L M	12 31 44 12 40 07 12 44 18 12 50 54 12 55 54	6735	Slight
	Bombay	E	eP e	12 32 36 12 42 10	8255	Slight
	Colombo	E	P	12 41 30		

DATE	STATION	COMPT.	PHASE	G. M. T.	Kms.	REMARKS.	
July				h. m. s.			
1948							
23 (contd.)							
	Kodaikanal	E	i	12 41 37		Distant.	
	Hyderabad	N	L	12 56 33			
			M	13 07 05		per. = 15 secs. $\mu = 4$	
23	Bombay	E	e	20 47 53		Feeble, distant.	
		N		Pronounced microseisms through out the record.			
24	Epc:- 35.0° N, 24.0° E.			O = 06h. 03m. 12s. (U.S.C.G.S.)			
	34.5° N, 24.5° E.						
	Bombay	E	eP	06 11 35	4900	Moderate.	
		N	iP	06 11 38			
		E	PP	06 13 26			
		N	PP	06 13 31			
		N,E	iS	06 18 08			
		E	SS	06 21 23			
		N	SS	06 21 37			
		E	L	06 29 35			
		N	L	06 30 12			
		E	M	06 34 46		Per. = 18 secs. $\mu = 12$	
	Calcutta	N	P	06 12 14	5920		
			PP	06 14 26			
			e	06 19 22			
			SS	06 19 45			
			L	06 28 23			
			M	06 33 37		Per. = 15 secs. $\mu = 10$	
	Kodaikanal	E	iP	06 12 47	5590		
			i	06 20 00			
			e	06 23 47			
			L	06 28 50			
			M	06 33 16		Per. = 17 secs. $\mu = 22.$	
	Colombo	E	e	06 14 --			
			e	06 21 --			
			L	06 38 --			
			M	06 45 --			
	Dehra Dun	N	e	06 14 40?		Slight	
			e	06 17 54			
24	Bombay	E	e	15 37 51		Feeble.	
		N	Microseisms through out the record.				
	Kodaikanal	E	e	15 55 --		Tremor.	
29	Bombay	E	e	00 39 24		Feeble.	
30	Bombay	N,E	iP	03 35 35	2820	Moderate.	
			eS	03 39 58			
		E	SS	03 41 25			
			L	03 43 17			
			M	03 49 23		Per. = 11 secs. $\mu = 2.$	

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Kms.	
July 1948						(.53nob) 88
30 (contd.)	Kodaikanal	E	e	03 42 44		Distant.
	Calcutta	E	e	03 42 52	2955	Slight
			1?	03 47 12		
			IS	03 47 32		
			ISS	03 48 44		
			M	03 52 42.		

M. L. P.
7-10-52.



MAR 3 1953

GOVERNMENT OF INDIA
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULEETIN

August - 1948.

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

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 Curator of the Nizamiah Observatory, Hyderabad, and of the Superintendent of the Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Stations.

Station	Latitude	Longitude	Height above M. S. L. 'meters'	Lithologic Foundation	Officer-in-Charge of Observatory during that period
Bombay	18° 54'N	72° 49'E	6	Deccan Trap	Director.
Calcutta	22° 32'N	88° 22'E	(1) 7 (11) 6	Alluvium	Director.
Colombo	06° 54'N	79° 52'E	7	Beach sand	Superintendent.
Dehra Dun	30° 19'N	78° 03'E	682	Gravel	President.
Hyderabad	17° 26'N	78° 27'E	528	Granite	Curator, Nizamiah Observatory.
Kodaikanal	10° 14'N	77° 28'E	2343	Rock	Director.
New Delhi	28° 35'N	77° 12'E	207	Massive Quartzites	Dy. Director General of Observatories (I & S)
Poona	18° 32'N	73° 51'E	560	Deccan Trap	Dy. Director General of Observatories (C & G).

(i) Milne-Shaw

(ii) Omori-Ewing.

TABLE II.

Instruments and their constants.

Station	Instrument	Compt.	Period in seconds	Static Magnification	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	20:1	16.0
	Milne-Shaw	E	12	350	14:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	15	32	-	25.4
	Omori-Ewing	E	16	30	-	25.4
Colombo	Milne-Shaw	E	12	250	16:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20:1	8.0
	Milne-Shaw	N	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0

DATE	STATION	COMPT.	PHASE	G.	M.	T.	Δ	Kms.	REMARKS.
				h.	m.	s.			
AUG. 1948.									
4	Calcutta	E	e	14	04	20			Tremor
			e	14	06	38			
4	Calcutta	E	e	23	26	00			Tremor
	Bombay	N,E	e	23	29	50			
			e	23	33	15			Feeble.
7	Epc:- 34.0° N, 142.0° E.			0 = 14h. 40m. 12s. (U.S.C.G.S.)					
	34.0° N, 142.0° E.			0 = 14h. 40m. 12s. (J.S.A.)					
	Hyderabad	N	e	14	50	16			
			M	15	12	23			Per. = 18 secs.
	Bombay	N,E	eP	14	50	43	6780		μ = 13
			eS	14	59	02			Slight
		E	M	15	21	31			Per. = 17 secs.
		N	M	15	24	45			μ = 9
	Kodaikanal	E	eP	14	50	43	6520		Per. = 13 secs.
			PcP	14	51	36			μ = 3
			PP	14	52	53			Slight, distant.
			eS	14	58	58			
			PS	14	59	10			
			ScS	15	00	33			
			SS	15	03	03			
			L	15	09	48			
			M	15	14	48			Per. = 19 secs.
	Colombo	E	i	14	53	22			μ = 9.4
			M	15	22	02			Amp. = 0.5m.m.
11	Epc:- 17.5° N, 95.5° W.			0 = 10h. 36m. 12s. h = 50 Kms.					
				(U.S.C.G.S.)					
	Felt at Vera Cruz Mexico								
	17.7° N, 95.1° W.			0 = 10h. 36m. 17s. (J.S.A.)					
	Bombay	E	eP?	10	57	37			Feeble, distant.
		N		Pronounced microseisms throughout the record.					
	Calcutta	E	e	10	59	47			Slight, distant.
			e	11	03	06			
			e	11	16	51			
	Kodaikanal	E	e	11	12	42			Slight, distant,
	Hyderabad	N	M	11	56	46			phases not clear.
				Per. = 22 secs.					
				μ = 8					
12	Hyderabad	N	M	23	19	27			Per. = 17 secs.
				μ = 4					
13	Calcutta	E	e	08	25	36			Slight, near.
				Phases masked in microseism.					
13	Calcutta	E	e	12	25	19			Slight, near.
			i	12	27	21			Phases obscured in microseisms.

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS
				h. m. s.	Kms.	
Aug. 1948						
14	Bombay	E N	e Pronounced	17 14 37		Feeble. microseisms throughout the record.
17	Calcutta	E	e	05 10 11		Slight, near
	Bombay	E	eP? M	05 11 39 05 12 37 05 19 47		Per. = 8 secs. $\mu = 1$
		N	Pronounced			microseisms throughout the record.
17	Epc:- 35.2° N, 142.8° E.			h = 50 Kms. (C.M.O) O = 17h. 08m. 48s.		
	Calcutta	E	e	17 16 26		Slight, distant
			e	17 20 44		
			Mn	17 19 21		
	Bombay	E	e	17 19 13		Very feeble.
		N	Pronounced			microseisms throughout record.
19	Bombay	N,E	eP	11 12 29	2435	Slight.
			IS	11 16 22		
		E	M	11 19 33		Per. = 11 secs. $\mu = 4$
	Kodaikanal	E	eP?	11 12 42		Slight. Distant. Phases not clear.
	Colombo	E	e	11 14 21		
			e	11 16 49		
	Hyderabad	N	le	11 14 46		
			S	11 16 27		
			L	11 17 22		
			M	11 18 03		Per. = 10 secs. $\mu = 7$
20	Epc:- 7.0° N, 127.5° E.			O = 18h. 45m. 54s. (B.C.I.S.)		
	Hyderabad	N	eP	18 54 33	5330	Slight.
			S	19 01 35		
			M	19 14 24		Per. = 12 secs. $\mu = 3$
	Bombay	E	eP	18 55 24	5900	Slight
			IS	19 02 54		
		N	Pronounced			microseisms throughout the record.
24	DehraDun	E	P	07 17 56		Slight
			S	07 22 42		
			L	07 27 18		
			M	07 28 30		Per. = 24 secs.
24	Epc:- 5.3° N, 98.8° E.			O = 08h. 03m. 42s. (Poona).		

DATE	STATION	COMPT.	PHASE	G. M. T.			REMARKS.
				h.	m.	s.	Kms.
Aug. 1948.							
24 (contd.)	Colombo	E	P	08	07	59	
			S	08	11	26	
			L	08	15	41	
	Calcutta	E	M	08	17	31	Amp. = 0.8 m.m.
			eP	08	08	23	Slight
			iS	08	12	07	" 2235
	Kodaikanal	E	M	08	15	55	
			iP	08	08	34	2465 Slight.
			PP	08	08	56	
			iS	08	12	30	
			SS	08	12	58	
			L	08	14	35	
			M	08	16	29	Per. = 12 secs.
	Bombay	N,E	eP	08	09	46	2845 $\mu = 7$ Slight.
			eS	08	14	11	
		E	L	08	18	51	
		N	L	08	19	00	
		E	M	08	24	48	Per. = 15
	Hyderabad	N	P	08	08	48	2560 $\mu = 6$
			S	08	12	51	
			M ₁	08	17	01	Per. = 9 secs.
			M ₂	08	22	29	$\mu = 5$ Per. = 10 secs. $\mu = 5$
25	Epc:- 24°0 S, 63°8 W. O = 06h. 09m. 24s. (U.S.C.G.S.)						
	23°2 S, 64°6 W. O = 06h. 09m. 47s. h = 150 Kms. \pm (J.S.A.)						
	Dehra Dun	N	i	06	25	06	Slight
			e	06	30	00	
			e	06	30	55	
			L	06	39	18	
			M ₁	06	43	12	Per. = 21 secs.
			M ₂	06	45	21	Amp. = 0.2" Per. = 24 secs.
	Bombay	N,E	ePKP ₁	06	28	46	15690 Amp. 0.2" Moderate.
			ePP	06	31	52	
			ePS	06	42	04	
		E	eSS	06	50	34	
			SSS	06	55	26	
			L	07	11	00	
			M	07	30	18	Per. = 18 sec
		N	M	07	30	26	$\mu = 9$ 50 Per. = 19
	Colombo	E	PKP	06	28	51	$\mu = 9$
			L	07	18	51	
			M	07	30	56	
	Hyderabad	N	PKP	06	29	01	
			SS?	07	05	46	
			M	07	18	19	Per. = 19 secs.
	Kodaikanal	E	PKP ₂	06	29	05	13135 $\mu = 28$ Moderate.
			PP	06	31	40	
			FKS	06	32	38	

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
Aug.				h. m. s.	Kms.	
1948						
25 (contd.)	Kodaikanal	E	SKKS PS S Mn	06 37 38 06 40 58 06 42 39		
	Calcutta	E	ePP eSKP ISKS eSKKS ePPS IS ISS M Mn	06 29 25 06 29 50 06 33 20 06 36 15 06 42 10 06 48 07 06 54 00 07 26 25 07 39 05	15890	Moderate. Per. = 16 secs. $\mu = 55$
28	Hyderabad	N	M	01 14 58		Per. = 14 secs. $\mu = 8$
28	Bombay	N,E E	e M	02 49 21 03 16 46		Tremor Per. = 15 secs. $\mu = 4$
	Calcutta	E	e Mn	02 51 17 03 11 42		Slight, distant.
29	Calcutta Bombay	E N,E N	e e M	16 25 30 16 27 39 16 32 07		Tremor Feeble. Per. = 8 secs. $\mu = 2$
		E	M	16 32 08		Per. = 10 secs. $\mu = 2$
29	Calcutta Bombay	E E	e e	18 01 46 18 03 39		Slight, distant. Slight, distant.
30	Epc:- 30°2 N, 132°2 E (C.M.O.)					
	28°0 N, 132°0 E. O = 23h. 29m. 42s. (B.C.I.S.)					
	Calcutta	E	e e Mn	23 37 22 23 45 56 23 59 38		Slight, Distant.
	Hyderabad	N	eP S M	23 38 27 23 45 36 23 59 35	5520	Slight. Per. = 15 secs. $\mu = 3$
	Bombay	E	e e	23 39 09 23 46 41		Feeble.
		N		Pronounced microseisms.		

M. L. P.
10-10-52.

GOVERNMENT OF INDIA
METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

September - 1948.

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

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 Curator of the Nizamiah Observatory, Hyderabad, and of the Superintendent, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Stations.

Station	Latitude	Longitude	Height above M.S.L. 'meters'	Lithologic Foundation	Officer-in-Charge of Observatory.*
Bombay	18° 54'N	72° 49'E	6	Deccan Trap	Director.
Calcutta	22° 32'N	88° 22'E	(i)7 (ii)6	Alluvium	Director.
Colombo	06° 54'N	79° 52'E	7	Beach sand	Superintendent.
Dehra Dun	30° 19'N	78° 03'E	682	Gravel	President
Hyderabad	17° 26'N	78° 27'E	528	Granite	Curator, Nizamiah Observatory.
Kodaikanal	10° 14'N	77° 28'E	2343	Rock	Director.
New Delhi	28° 35'N	77° 12'E	207	Massive Quartzites	Dy. Director General of Observatories (I & S)
Poona	18° 32'N	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	Compt.	Period in seconds	Static magnification	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	20:1	16.0
	Milne-Shaw	E	12	350	14:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	15	32	25:1	25.4
Colombo	Omori-Ewing	E	16	30	-	25.4
	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20:1	8.0
	Milne-Shaw	N	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0

*During that period.

DATE	STATION	COMPT.	PHASE	G. M. T.	Kms.	REMARKS
				h. m. s.		
Sept. 1948						
2	Calcutta	E	i	01 27 20		Slight.
			i	01 27 36		
						0 = 23h. 34m. 42s. (U.S.C.G.S.)
						0 = 23h. 34m. 50s. (Pasadena)
	Calcutta	E	iP	23 42 02	4120	Moderate.
			iPP	23 43 17		First move-
			iPP.	23 43 42		ment West.
			iS	23 47 49		
			iSSS	23 50 44		
			L	23 53 02		
			M	23 56 12		
			Mn	00 00 30		
	Colombo	E	P	23 43 05	5110	Per. = 17 secs.
			S1	23 49 50		$\mu = 23$
			S2	23 53 35		
			L	00 02 37		
	Kodaikanal	E	M	00 07 25		
			iP?	23 43 07	5255	Amp. = 1.3 m.m.
			PP	23 44 56		Moderate.
			PS	23 50 00		
			ScS	23 52 48		
			SS	23 53 19		
			L	23 58 05		
			M	00 03 03		
	Hyderabad	N	eP?	23 43 33	4790	Per. = 20 secs.
			S	23 49 59		$\mu = 65$
			SS	23 53 32		P in micro-
			L	23 56 18		seisms
			M	23 59 54		
	Bombay	E	eP	23 43 55	5680	Per. = 20 secs.
		N	eP	23 43 58		$\mu = 37$
		E	iPP	23 46 02		Moderat
		N	iS	23 51 13		
		E	iS	23 51 17		
		N	iSS } eSS }	23 55 18		
		E	L	23 59 36		
		E	L	23 59 56		
		E	M	00 04 02		
		N	M	00 08 22		
	Dehra Dun	N	e	23 49 24		Per. = 18 secs.
			e	23 53 03		$\mu = 16$
			e	23 53 32		Per. 18 secs.
			i	00 07 45		$\mu = 9$
			e	00 11 21		Slight.
4						0 = 15h. 09m. 00s. (B.C. (B.C.I.S.))
	Colombo	E	e	15 17 26		
			e	15 25 16		
			e	15 29 51		Amp. = 0.4 m.m.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
Sept. 1948				h. m. s.	Kms.	
4 (contd.)						
Bombay	N,E	eP	eS	15 19 00	6465	Slight.
				15 27 02		
Hyderabad	N	e	S	15 19 02	6475	Per. = 17 secs. $\mu = 6.0$
				15 27 04		
				15 37 33		
Calcutta	E	e	e	15 20 03		Per. = 15 secs. $\mu = 10$
Kodaikanal	E	e	eS	15 29 03	5575	Slight, distant.
				15 22 29		
				15 25 34		
				15 25 42		
				15 26 12		
				15 27 08		
		M		15 28 33		Per. = 20 secs. $\mu = 24$
6 Epc:- 24.5° S, 68.5° W, O = 08h. 10m 12s. h = 100 Kms. (U.S.C.G.S.).						
Bombay	N,E	eP'	PSKS?	08 29 59	16200?	Slight Δ from PSKS - P'. PSKS and M phases not identifiable in N component due to microseisms.
				08 43 36		
Calcutta	E	e	Mn	09 37 20		
				08 30 26		Slight, distant.
				08 42 16		
Kodaikanal	E	e	e	08 43 50		
Hyderabad	N	e	e	09 23 08		Tremor.
				09 32 41		Per. = 18 secs. $\mu = 8$
7 Epc:- 36.5° N, 70.5° E. (Hindukush) O = 08h. 15m. 20s. h = 220 Kms. (U.S.C.G.S.).						
Bombay	N	1P	eP	08 19 15	1955	Moderate.
				08 19 18		
				08 20 03		
				08 22 26		
Hyderabad	N	P	i	08 19 36	2260	Per. = 8 secs. $\mu = 6$
				08 20 37		
				08 23 17		
				08 27 20		
Calcutta	N	eP?	iS	08 20 22	2350	Slight
Kodaikanal	E	e	e	08 24 04	3000	Slight
				08 21 50		
				08 24 00		
Colombo	E	e	e	08 26 04		Per. = 6 secs. $\mu = 4$
				08 22 16		
				08 27 50		Other phases obscured by microseisms.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
Sept. 1948						
7 (contd.)	Dehra Dun	N	e e i e	08 22 36 08 23 15 08 24 06 08 24 18		Slight
7	Hyderabad	N	e M	15 35 58 15 38 37		Per. = 9 secs. $\mu = 4$
	Calcutta	E	e i	15 37 26 15 40 08		
8	Epc:- 21°0 S, 174°0 W.		0 =	15h. 09m. 12s.		(U.S.C.G.S.)
	21°0 S, 174°0 W.		0 =	15h. 09m. 11s.		(U.S.C.G.S.)
	21°0 S, 174°2 W.		0 =	15h. 09m. 14s.		(J.S.A.)
	Colombo	E	e e PPS e i e	15 23 21 15 34 16 15 37 33 15 43 46 15 54 01 16 11 01	11780	
	Calcutta	E	PKP 1PP 1SKS 1SKKS 1S 1PPS 1SS L M Mn	15 23 22 15 27 37 15 33 57 15 34 50 15 35 25 15 37 50 15 42 45 15 59 35 16 07 10 16 09 25	11755	Amp. = 13.5 m.m. Great
	Kodaikanal	E	e e PP e PPS SS L? Mn	15 23 50 15 27 23 15 28 27 15 34 16 15 37 38 15 43 13 15 56 05 16 09 08	12170	Per. = 22 secs. $\mu = 253$. Great.
	Hyderabad	N	e PP SKS PS SSP L M	15 23 59 15 28 28 15 34 35 15 38 02 15 44 02 15 54 21 16 05 28	12220	Per. = 24 secs. $\mu = 407$
	Dehra Dun	N	e i e e	15 27 20 15 31 58 15 36 02 15 54 30	Moderate	Per. = 25 secs. $\mu = 167$.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
Sept.				h. m. s.	Kms.	
1948.						
7 (contd.)						
	Dehra Dun	N	i	16 14 02		
			M	16 17 00		
			M	16 21 30		
	Bombay	N	ePP	15 29 14	13145	Great Δ from SKS - PP. 'P' Not identifiable in both compt. due to micro- seisms.
		E	1PP			
		N,E	1SKS	15 35 01		
		E	1PS	15 38 59		
		N	ePS	15 39 02		
			eSS	15 45 37		
		E	1SS	15 46 13		
		E	1SSS	15 51 00		
		N	eSSS			
		E	L?	16 00 01		
		N	L	16 00 29		
		E	M	16 09 27		
		N	M	16 15 56		Per. = 25 secs. $\mu = 217$
10	Bombay	N,E	eP	12 07 51	2620	Slight
			eS	12 11 59		
			L	12 14 18		
			M	12 16 01		
	Hyderabad	N	P	12 08 06	2910	
			S	12 12 36		
			L	12 15 50		
			M	12 17 53		Per. = 14 secs. $\mu = 12$
	Kodaikanal	E	e	12 13 10		Short distant shock not Phases not clear
10	Epc:-	42 ^o .0 N, 147 ^o .0 E, to the N-E of Japan (Poona).				
		44 ^o .0 N, 146 ^o .5 E. 0 = 13h. 48m. 30s. (U.S.C.G.S.)				
		42 ^o .8 N, 147 ^o .5 E. C.M.O.				
		43 ^o .5 N, 147 ^o .0 E. 0 = 13h. 48m. 34s. h = 40 Kms. (Pasadena)				
		43 ^o .3 N, 146 ^o .6 E. 0 = 13h. 48m. 35s. (J.S.A.)				
	Dehra Dun	N	P	13 57 55		Slight
			S	14 05 27		
			L	14 12 35		
			M	14 23 35		Amp. = 0.2"
	Colombo	E	eP?	13 58 51		
			S	14 08 49		
			L	14 31 01		
			M	14 36 31		Amp. = 1.0 m.m.
	Hyderabad	N	P	13 58 57	6860	
			PP	14 01 05		
			S	14 07 21		
			SS	14 11 11		
			M	14 23 55		Per. = 19 secs. $\mu = 47$

DATE	STATION	COMPT	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
Sept. 1948 10 (contd.)	Bombay	N E N,E	eP) iP) ePP	13 59 22	7310	Moderate.
		E N	eS SS	14 01 52 14 08 09 14 12 21		
		E	L	14 12 27		
		E	L	14 21 01		
			M	14 21 52		
				14 31 03		Per. = 18 secs. $\mu = 45$
		N	M	14 31 05		Per. = 16 secs. $\mu = 52.42$
	Kodaikanal	E	iP iS PS SS L M	13 59 36 14 08 49 14 09 13 14 13 14 14 22 13 14 27 43	7810	Moderate. Per. = 16 secs. $\mu = 27$
11		Epc:- 37.7° N, 23.2° E. 0 = 03h. 52m. 41s. (B.C.I.S.)			h = 130 Kms.	
	Bombay	N,E	eP iS	09 01 06 09 07 50	5090	Slight
	Hyderabad	N	e M	09 08 50 09 13 56		Per. = 12 secs. $\mu = 4$
12	Bombay	E N	e	04 09 --		Movements very feeble.
12	Hyderabad	N	M	14 00 26		Per. = 12 secs. $\mu = 4$
14	Calcutta	E	e i	18 13 19 18 53 59		Slight, near.
15		Epc:- 3290 N, 86.0° E in Tibet. 0 = 03h. 52m. 18s. (Poona).				
	Bombay	N,E	eP iS) eS) L L M	03 56 35 04 00 06 04 01 11 04 01 37 04 03 35	2165	Moderate. Times approximate as time marks π were absent at the time. Per. = 10 sec. $\mu = 16$
		N	M	04 04 33		Per. = 8 secs. $\mu = 11$
	Calcutta	E	e e i i e L M	03 57 03 03 58 03 03 58 20 03 58 32 04 01 41 04 03 41 04 04 40 04 05 38	1200	Slight. Per. = 9 secs. $\mu = 8$
16	Bombay	E N	e e	08 36 -- 08 38 --		Feeble, surface waves.

DATE	STATION	COMPT.	PHASE	G. M. T.	REMARKS.
Sept.				h. m. s.	kms.
19	Epc:- 52.0° N, 178.0° W.			0 = 06h. 14m. 6s. (U.S.C.G.S.)	
	49.3° N, 179.5° W.			0 = 06h. 14m. 02s. (J.S.A.)	
	Hyderabad	N	e	06 26 31	
			e	06 36 53	
			M	07 03 07	Per. = 18 secs.
	Bombay	E	eP	06 26 50	$\mu = 9$ Feeble, distant.
			e	06 37 08	
			M	06 07 23	
		N		Movements not identifiable.	
21	Epc:- 6.2° N, 95.6° E.			Near Sumatra. 0 = 17h. 33m. 30s. (Poona)	
	Kodaikanal	E	iP	17 37 49	2045 Slight.
			eS	17 41 12	
			L	17 42 20	
			M	17 43 48	Per. = 20 secs.
	Calcutta	E	eP	17 38 05	1960 $\mu = 28$ Slight
			ePP	17 38 15	
			iS	17 41 20	
			iSS	17 41 36	
			iScS	17 50 05	
	Hyderabad	N	P	17 38 06	2200
			S	17 41 44	
			L	17 43 58	
			M	17 48 02	Per. = 15 secs.
	Bombay	N, E	eP	17 39 10	2845 $\mu = 9$ Moderate.
		E	iS	17 43 35	
		N	eS	17 43 39	
			L	17 45 18	
		E	L	17 45 23	
		E	M	17 51 19	Per. = 15 secs. $\mu = 6$
23	Hyderabad	N	e	01 10 41	
			L	01 23 15	
			M	01 29 24	Per. = 16 secs.
	Bombay	N, E	e	01 11 47	$\mu = 6$ Slight.
23	Bombay	E	e	14 40 --	
		N		Pronounced microseisms throughout the record.	
24	Epc:- 8.6° S, 143.0° E, in New Guinea.			0 = 20h. 41m. 41s. (Poona)	
	Calcutta	E	eP	20 51 54	6645 Slight
			iS	20 00 12	
			M	20 16 12	
	Colombo	E	eP	20 52 30	7180
			S	20 01 10	Amp. small. L and M not pronounced

DATE	STATION	COMPT.	PHASE	G. M. T.	REMARKS.
				h. m. s. kms.	
Sept. 1948.					
24 (contd.)	Bombay	E	eP	20 53 24	8145 Slight.
		N	P		Not identifiable due to pronounced microseisms.
		N,E	IS	21 02 54	
	Hyderabad	N	S	21 01 37	7555
			M	21 29 18	Per. = 19 secs. $\mu = 12$
	Kodaikanal	E	e	21 01 55	
24	Calcutta	E	e	23 35 59	Slight, distant
			i	23 40 24	
			e	23 43 14	
			Mn	23 49 09	
	Bombay	N.E	e	23 22 29	Slight.
	Hyderabad	N	eP	23 38 25	P in microseisms.
			L	23 50 55	
			M	23 54 24	Per. = 15 secs. $\mu = 6$
	Kodaikanal	E	e	23 49 55	Tremor.
25	Calcutta	E	e	03 19 11	Slight, distant.
	Bombay	E	eP	03 21 04	5955 Slight.
			IS?	03 28 37	
26	Hyderabad	N	M	01 22 32	Per. = 9 secs. $\mu = 4$
26	Bombay	E	e	08 06 53	
		N,E	e	08 08 15	
		N	e	08 09 21	
			M	08 12 05	
	Hyderabad	N	S	08 10 02	
			M	08 11 50	Per. = 10 secs. $\mu = 9$.
	Calcutta	E	eP	08 10 12	Slight
			S?	08 12 16	
	Kodaikanal	E	P?	08 10 52	1645 Slight.
			L	08 13 34	
			M	08 14 50	
				08 16 07	Per. = 4 secs. $\mu = 4$
27	Epc:- Probable 5.0° S. 110.0° E. 0 = 21h. 14m. 42s. h = 600 Kms. (Pasadena)				
	Kodaikanal	E	iP	21 21 14	3380 Slight
			IS	21 26 14	
	Hyderabad	N	P	21 21 13	3570
			S	21 26 26	
			M	21 34 23	Per. = 12 secs. $\mu = 4$
	Bombay	N,E	eP	21 22 09	4080 Slight.
		E	eS	21 27 53	
		N	eS	21 27 55	

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
Sept. 1948.						
28	Epc:- 22°9 N, 94°4 E.			Or. = 21h. 36m. 53s. (J.S.A.)		
	22°0 N, 94°0 E. Near S-E Border of Assam					(Poona)
	Calcutta	N	eP i iS	21 39 02 21 40 00 21 40 53	1100	Felt locally and at Shillong, Cooch Behar, Berhampur, Krishnagar and Contai (Midnapur)
	Hyderabad	N	P S L M	21 40 11 21 42 52 21 44 14 21 46 14	1620	Per. = 6 secs. $\mu = 65$
	Dehra Dun	N	e e M	21 40 30 21 43 02 21 44 12		
	Bombay	N,E	iP iS L M	21 41 22 21 45 09 21 47 11 21 48 46	2345	Moderate.
		N	M	21 52 00		
	Kodaikanal	E	iP? iS? L M	21 41 23 21 44 54 21 46 22 21 47 55	2165	$\mu = 112$ Moderate. Per. = 7 secs. $\mu = 54$.
30	Dehra Dun	N	P S M	03 38 40 03 41 30 03 45 51		Slight. Per. = 18 secs. Amp. 0.1"

The following table contains a list of earthquakes reported by voluntary observers from various stations, for the period July - Sept. 48.

TABLE

Place at which felt	Date	G.M.T. of Earthquake		Duration	Intensity R.F. Scale	No. of Shocks	Remarks.
		h.	m.				
Tezpur	2-7-48	20	45	2	IV	1	-
Calinga-pattam	9-7-48	09	20	2	II	1	-
Ghatsila (Bihar)	2-9-48	01	25	90	IV	-	Continuous rolling.
Srinagar	7-9-48	08	18	8	VI	3	-
Gauhati	13-9-48	21	59	20	III	1	-
Yatung	24-9-48	06	19	2	II	Several	-
Yatung	27-9-48	02	52	3	III	3	-
Yatung	28-9-48	21	46	10	III	Several	-
Tezpur	28-9-48	21	34	65	III	3	-
Darjeeling	28-9-48	21	40	4	III	7	-
Barhampur	28-9-48	21	33	60	III	2	-
Gauhati	28-9-48	21	40	60	IV	2	-
Krishnagar	28-9-48	21	40	20	III	2	-
Dibrugarh	28-9-48	21	42	30	III	2	-
Dibrugarh	28-9-48	21	39	20	IV	8	-

M. L. P.

16-10-52

STATION

DATE

The following table contains a list of earthquake events

detected by observers from various stations, for the period

1911

Station	Date	Time	Latitude	Longitude	Intensity	Remarks
1	12	10	30	120	IV	
2	12	10	30	120	IV	
3	12	10	30	120	IV	
4	12	10	30	120	IV	
5	12	10	30	120	IV	
6	12	10	30	120	IV	
7	12	10	30	120	IV	
8	12	10	30	120	IV	
9	12	10	30	120	IV	
10	12	10	30	120	IV	
11	12	10	30	120	IV	
12	12	10	30	120	IV	
13	12	10	30	120	IV	
14	12	10	30	120	IV	
15	12	10	30	120	IV	
16	12	10	30	120	IV	
17	12	10	30	120	IV	
18	12	10	30	120	IV	
19	12	10	30	120	IV	
20	12	10	30	120	IV	

GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

October 1948.

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



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 Curator of the Nizamiah Observatory, Hyderabad, and the Superintendent, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Stations.

Station	Latitude	Longitude	Height above M. S. L. 'meters'	Lithologic Foundation	Officer -in- Charge of Observatory. *
Bombay	18 54 N	72 49E	6	Deccan Trap	Director.
Calcutta	22 32 N	88 22E	(i)7 (ii)6	Alluvium	Director.
Colombo	06 54 N	79 52E	7	Beach sand	Supdt.
Dehra Dun	30 19 N	78 03E	682	Gravel	President.
Hyderabad	17 26 N	78 27E	528	Granite	Curator. Nizamiah Observatory.
Kodaikanal	10 14 N	77 28E	2343	Rock	Director.
New Delhi	28 35 N	77 12E	207	Massive Quartzites	Dy. Director General of Observatories (I & S).
Poona	18 32 N	73 51E	560	Deccan Trap	Dy. Director General of Observatories (C & G).

(i) Milne-Shaw

(ii) Omori-Ewing.

TABLE II.


Instruments and their Constants.

Station	Instrument	Compo- nent.	Period in seconds	Static Magni- fication.	Damping Ratio	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	24:1 from	16.0, 1st 1 to 5 to 15th
					7:1 from	6th 8.0, 16th to 31st to 31st.
Calcutta	Milne-Shaw	E	12	350	14:1	8.0
	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	15	32	-	25.4
	Omori-Ewing	E	16	30	-	25.4
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20:1	8.0
	Milne-Shaw	N	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0

*During that period.

DATE	STATION	COMPT.	PHASE	G. M. T.			Kms.	REMARKS.
				h.	m.	s.		
Oct. 1948								
1	Bombay	E	e	03	19	22		Feeble.
	Hyderabad	N	M	03	36	45		Record mixed up with microseisms. Per. 14 secs. $\mu = 3$.
2	Bombay	E	e	15	18	--		Feeble surface waves
		N						Movements weak.
4	Epc:- 21.4° N, 122.5° E to the S.E. of Formosa							
	Calcutta	E	eP	06	03	10	3520	Slight.
			e	06	05	37		
			eS	06	08	21		
			eSS	06	10	06		
	Kodaikanal	E	M	06	15	05		
			eP	06	05	05	5020	
			PP	06	06	55		
			S	06	11	45		
			L	06	18	30		
			Mn	06	22	25		
	Bombay	N,E	eP	06	05	17	5220	Per. = 15 secs. $\mu = 7$ Slight.
			e	06	07	10		
		N	e	06	12	09		
		E	e	06	12	35		
	Colombo	E	M	06	26	30		
			P?	06	09	?		
			L	06	22	10		
			M	06	26	05		
	Hyderabad	N	S	06	10	51	4610	Amp. = 0.5 m.m. Trace over lapping.
			M	06	20	57		Per. = 15 secs. $\mu = 10$
5	Epc:- 41.2° N, 63.0° E. O = 20h. 11m. 58s. (Poona).							
	Dehra Dun	N	eP?	20	17	00	1655	Great
			eS?	20	20	18		
			eL	20	22	05		
			M	20	24	--		
	Bombay	N	iP	20	17	09	2600	Amp. = 1.5" Very great E record congested.
			iS	20	21	20		
			M	20	27	21?		
	Hyderabad	N	P	20	17	50	3000	
			S	20	22	26		
			M	20	28	14		
	Calcutta	E	iP	20	18	10	3165	Per. = 12 secs. $\mu = 423$ Very great. First movement West
			i	20	19	05		
			iS	20	22	45		
	Kodaikanal	E	P	20	18	40	3690	
			PP	20	19	45		
			S ?	20	23	40		

DATE	STATION	COMPT.	PHASE	G. M. T.		REMARKS.
Oct. 1948.				h. m. s.	Kms.	
5 (contd.)	Colombo	E	P	20 19 08		
			i	20 23 50		
			S ₂	20 24 53		
			M	20 39 ? --		Amp. = Very large and trace faint.
5	Hyderabad	N	PP	22 44 53	8150	
			S	22 51 46		
			SS	22 56 34		
			L	23 06 40		
			M	23 11 59		
6	Epc: - Probably in Russian Turkestan. 0 = 01h. 24m. 32s. (Poona).					
Bombay	N	iP)	01 29 46	2700	Slight,	
		eP)				
		N, E	eS			01 34 00
Hyderabad	N	M	01 42 46	3070	Per. = 10 secs.	
		eP	01 30 23			
		eS	01 35 03			
Kodaikanal	E	P	01 31 15	3720	Per. = 13 secs. $\mu = 6$ Tremor.	
		e	01 35 45			
		e	01 19 57			
Bombay	N, E	i	01 21 38	1390	Slight.	
		eP	01 23 04			
		i	01 26 42			
Hyderabad	N	M	01 30 13		Slight	
		e	01 26 40			
		M	01 27 51			Per. = 14 secs. $\mu = 6.$
Kodaikanal	E	e	01 27 15		Possibly an after-shock of the previous great shock.	
		i	01 35 45			
Calcutta	E	i	01 40 20			
7						
8	Epc: - 28.0° N, 105.0° E. 0 = 19h. 01m. 54s. (B.C.I.S.)					
Calcutta	E	eP	19 05 24	1720	Moderate	
		iS	19 08 27			
		eSS	19 09 26			
		M	19 11 50			
Hyderabad	N	P	19 07 23	2800		
		S	19 11 45			

DATE	STATION	COMPT.	PHASE	G. M. T.		REMARKS.
Oct. 1948.				h. m. s.	Kms.	
8 (contd.)	Kodaikanal	E	e	19 07 55		Lost in the preliminary phases of next earthquake. Moderate.
	Bombay	N,E	eP	19 08 04	3335	
		E	iS	19 13 01		
		N	eS			
		N	M	19 20 08		
	Colombo	E	M	19 21 36		
		E	eP	19 08 17		
			S	19 13 19		Amp. = 0.1 mm. Other phases not distinct.
	Dehra Dun	N	e	19 10 55		
			e	19 14 05		
10	After shock of the previous one.					
	Calcutta	E	eP	02 10 15	2035	Slight.
			eS	02 13 43		
			eSS	02 14 20		
	Hyderabad	N	P	02 12 13	2900	
			S	02 16 42		
			L	02 19 45		
			M	02 22 45		Per. = 11 secs.
	Bombay	N,E	eP	02 12 54	3145	$\mu = 7$ Slight
			eS	02 17 39		
		B N	M	02 25 23		Per. = 14 secs. $\mu = 10$
	Kodaikanal	E	M	02 26 24		
		E	e	02 13 --		Long distance shock. Phases not clear.
10	Epc:- 34.8 N, 22.9 E. O = 17h. 43m. 08s. (J.S.A.)					
	Bombay	N,E	eP?	17 51 34	5135	Slight.
			eS	17 58 20		
	Kodaikanal	E	e	18 01 56		
		E	e	17 52 --		Distant. Phases not clear.
12	Calcutta	E	e	01 34 00		Slight, near.
			e	01 35 46		
	Hyderabad	N	e	01 38 19		
			M	01 42 55		Per. = 8 secs.
12	Bombay	N,E	eP	10 08 15	855	$\mu = 3$ Slight.
			iS	10 09 42		
	Hyderabad	N	S	10 10 33		
			M	10 11 45		Per. = 9 secs
	Kodaikanal	E	e	10 12 32		$\mu = 9$ Short distance. Phases not clear.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
Oct. 1948.				h. m. s.	Kms.	
12	Hyderabad	N	M	17 36 14		Per. = 15 secs. $\mu = 4$
12	Bombay	N,E	e	21 30 36		feeble.
	Kodaikanal	E	e	21 34 45		Tremor.
	Hyderabad	N	e	21 35 06		
			M	21 39 33		Per. = 12 secs. $\mu = 3$
13	Kodaikanal	E	e	08 23 45		Tremor
15	Kodaikanal	E	e	20 55 20		Tremor.
15	Hyderabad	N	eP	23 03 49	8070	
			S	23 12 15		
			M	23 32 39		Per. = 15 secs. $\mu = 5$.
	Calcutta	E	e	23 03 53		Slight, distant.
			e	23 11 03		
			e	23 13 37		
			e	23 20 13		
			Mn	23 45 23		
	Kodaikanal	E	e	23 08 00		Distant. Phases not clear.
16	Bombay	N,E	eP	00 02 54		Slight
		E	e	00 09 09		
18	Epc:- 36° N, 28° E. O = 08h. 39m. 52s. (J.S.A.)					
	Hyderabad	N	eP	09 08 44	5330	
			S	09 15 41		
21	Epc:- 8° S, 155° E. O = 05h. 01m. 48s. (Pasadena).					
	7.2° S, 156° E. O = 05h. 01m. 40s. (J.S.A.).					
	Kodaikanal	E	e	05 12 20	8765	Phases uncertain.
			PPS	05 24 00		
			e	05 31 15		
			L	05 47 30		
			M	05 56 00		Per. = 20 secs. $\mu = 13$.
	Colombo	E	P	05 13 34	8445	
			S?	05 23 19		
			L	05 41 49		Amp. = 0.1 m.m. M not certain.
	Hyderabad	N	eP	05 14 05	8780	
			S	05 24 03		
			SS	05 29 18		
			L	05 39 27		
			M	05 45 33		Per. = 15 secs. $\mu = 4$.
21	Bombay	N,E	e	07 41 --		Surface waves.

DATE	STATION	COMPT.	PHASE	G. M. T.	Kms.	REMARKS.
Oct.				h. m. s.		
1948.						
23	Kodaikanal	E	e	04 48 30		Distant. Phases not clear.
	Bombay	E	eP?	04 55 29		
		N	M	05 14 12		
		E	M	05 16 37		
	Hyderabad	N	ePP	04 56 45		
			S	05 01 00		
			SS	05 04 22		
			M	05 11 10		Per. = 12 secs. $\mu = 7$
23	Bombay	N,E	e	16 25 --		
	Kodaikanal	E	e	16 26 45		
	Hyderabad	N	M	16 30 24		Tremor. Per. = 12 secs. $\mu = 4$.
26	Bombay	N,E	e	20 24 --		Feeble, surface waves.
27	Bombay	N,E	e	23 49 12		
	Kodaikanal	E	e	00 47 30		Feeble. Tremor.
28	Epc: - $37^{\circ}6'N$, $141^{\circ}1'E$, $\Delta = 20h. 45m. 38s.$ $h = 100$ Km (J.S.A.)					
	Calcutta	E	eP	20 53 59	5280	Slight.
			IS	21 00 49		
			I?	21 01 15		
			iSS	21 04 14		
			"	21 09 09		
	Hyderabad	N	P	20 55 19	6390	
			S	21 03 17		
			L	21 14 27		
			M	21 19 33		
	Kodaikanal	E	P	20 55 45	7265	Per. = 18 secs. $\mu = 7$
			PP	20 58 00		
			SS	21 04 30		
			SS	21 08 30		
			M	21 21 30		
	Bombay	N,E	e	20 55 49		Per. = 20 secs. $\mu = 12$ Slight.
			e	21 04 10		
		N	M	21 24 38		
		E	M	21 25 12		
	Colombo	E	P	20 55 53		
			S	21 04 20		
			M	21 25 30		
29	Hyderabad	N	M	12 52 17		Amp. = 0.2 m.m.
30	Calcutta	E	e	02 04 39		Per. = 10 secs. $\mu = 2$.
			S	02 05 51		Slight, near

M. L. P.
28-10-52.

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

November 1948.

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

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 Curator of the Nizamiah Observatory, Hyderabad and of the Superintendent, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Stations.

Station	Latitude	Longitude	Height above M.S.L. 'meter'	Lithologic Foundation	Officer-in- Charge of Observatory.
Bombay	18° 54' N	72° 49' E	6	Deccan Trap	Director.
Calcutta	22° 32' N	88° 22' E	(i) 7 (ii) 6	Alluvium	Director.
Colombo	06° 54' N	79° 52' E	7	Beach sand	Supdt.
Dehra Dun	30° 19' N	78° 03' E	682	Gravel	President.
Hyderabad	17° 26' N	78° 27' E	523	Granite	Curator, Niza- miah Observa- tory.
Kodaikanal	10° 14' N	77° 28' E	2343	Rock	Director.
New Delhi	28° 35' N	77° 12' E	207	Massive Quartzites	Dy. Director General of Observatories (I & S).
Poona	18° 32' N	73° 51' E	560	Deccan Trap	Dy. Director General of Observatories (C & G).

i) milne-Shaw

ii) Omori-Ewing.

TABLE II.

Instruments and their Constants.

Station	Instrument	Compt.	Period in seconds	Static Magni- fication	Damping Ratio.	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	7:1 *) 20:1 * .)	8.0
Calcutta	Milne-Shaw	E	12	250	15:1	8.0
	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	15	32	-	25.4
	Omori-Ewing	E	16	30	-	25.4
Colombo	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20:1	8.0
	Milne-Shaw	N	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0

* From 1st to 6th November 1948.

*, From 7th to 30th November 1948.

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
Nov.				h. m. s.	Kms.	
1948.						
1	Epc:- 56°0 N,	162.8E.	0 = 12h. 06m. 00s.		h = 50 Kms.	(J.S.A.)
	57°0 N,	161°0E.	0 = 12h. 05m. 48s.			(U.S.C.G.S.)
	56°0 N,	161°0E	(C.M.O.)			
	57°0 N,	163°0E.	0 = 12h. 05m. 55s.			(B.C.I.S.)
	Calcutta	E	eP	12 16 24	7350	Slight, distant.
			eS	12 25 12		
			M	12 42 12		
	Hyderabad	N	Mn	12 48 22		
			P	12 17 19	8150	
			S	12 26 49		
			L	12 42 25		
			M	12 46 19		Per. = 15 secs. $\mu = 10$
	Bombay	N,E	eP	12 17 33	8710	
			eS	12 27 19		
		N	M	12 53 25		Per. = 15 secs. $\mu = 8.$
		E	M	12 56 31		Per. = 14 secs. $\mu = 7$
2			0 = 09h. 19m. 25s.	(Poona)		
	Bombay	N,E	e	09 23 57		Feeble.
	Hyderabad	N	eP	09 24 32	2600	
			eS	09 28 39		
			M	09 32 15		Per. = 9 secs. $\mu = 2$
	Kodaikanal	E	e	09 24 44		Slight.
2	Epc:- Probably	S.E.	Bay of Bengal	(Poona).		
	Kodaikanal	E	iP	09 57 17	1535	Slight.
			iS	09 59 49		
			L	10 00 54		
			M	10 01 54		Per. = 10 secs. $\mu = 4$
	Bombay	E	iP)	09 57 25		Moderate.
		N	eP)			
		E	M	10 02 52		Per. = 16 secs. $\mu = 12$
		N	M	10 05 08		Per. = 15 secs. $\mu = 13$
	Hyderabad	N	e	09 58 01		
			M	10 04 50		Per. = 12 secs. $\mu = 8$
	Calcutta	E	e	10 00 30		Slight, distant.
			e	10 05 00		
			Mn	10 11 15		
2	Bombay	N,E	e	15 34 --		Feeble tremors.

DATE	STATION	COMPT.	PHASE	G. M. T.	△	REMARKS.
				h. m. s.	Kms.	
Nov. 1948.						
3	Epc:- 20°5S, 169°5E.			0 = 05h. 18m. 54s.	(U.S.C.G.S.)	
	19°0S, 169°0E.			0 = 05h. 18m. 54s.	(J.S.A.)	
	Calcutta	E	e	05 32 50		Slight, distant.
			e	05 42 56		
	Kodaikanal	E	e	05 33 08		Moderate.
			eS?	05 43 40		
			PS	05 44 25		
			SS	05 49 01		
			L	06 02 31		
			M	06 07 31		Per. = 14 secs. $\mu = 5$.
	Bombay	N,E	e	05 36 17		Moderate.
			eS?	05 44 05		
		E	M	06 23 06		Per. = 15 secs. $\mu = 6$.
		N	M	06 31 23		Per. = 18 secs. $\mu = 6$.
	Hyderabad	N	M	06 19 10		Per. = 18 secs. $\mu = 8$.
3	Kodaikanal	E	eP	16 12 56	545	Slight.
			eS	16 13 52		
			L	16 14 17		
			M	16 14 42		Per. = 11 secs. $\mu = 5$
	Hyderabad	N	M	16 20 45		Per. = 9 secs. $\mu = 3$
4						
	Hyderabad	N	S?	13 38 41		
			M	14 00 20		Per. = 15 secs. $\mu = 8$
	Calcutta	E	e	13 52 59		Tremor.
			Mn	13 53 27		
	Bombay	N,E	e	13 57 --		Feeble, surface waves
6	Bombay	N,E	e	14 57 --		Feeble surface waves.
8	Hyderabad	N	M	05 22 10		Per. = 15 secs. $\mu = 4$.
10	Calcutta	E	e	03 30 19		Slight, distant.
			e	03 32 14		
			e	03 36 44		
	Hyderabad	N	P	03 31 15	5190	
			S	03 38 04		
			SS	03 41 36		
			M	02 51 44		Per. = 15 secs. $\mu = 4$.
	Bombay	N,E	eP	03 31 43	5900	Slight.
			iS	03 39 23		
11	Hyderabad	N	M	08 15 01		Per. = 15 secs. $\mu = 4$

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
Nov. 12	Calcutta	E	e	10 59 18		
13	Bombay	N,E	e	11 01 38		Tremor.
			e	03 58 45		
			e	03 59 45		Feeble.
13	Bombay	N,E	eP	06 19 23		
13	Epc:- 19°6 S, 175°1 W.			O = 07h. 00m. 30s. (J.S.A.)		
	Kodaikanal	E	e	07 19 42		Tremor.
13	Kodaikanal	E	e	23 12 52		Tremor.
14	Bombay	E	e	05 46 --		Feeble.
19	Epc:- 9°8 N, 83°9 W, 9°0 N, 84°0 W			O = 01h. 04m. 26s. h = 100 Kms. (J.S.A.) O = 01h. 04m. 35s. h = 100 Kms. (U.S.C.G.S.)		
	Hyderabad	N	e	01 24 08		
			M	02 36 35		
	Bombay	N,E	e	01 28 43		Per. = 16 secs.
	Kodaikanal	E	e	02 15 00		$\mu = 4$. Slight.
19	Colombo	E	P	12 47 28		
	Kodaikanal	E	M	12 57 20		Phases not clear
			eP	12 48 45		Amp. = 0.2 m.m.
			eS	12 52 23	2235	Slight.
			L	12 53 43		
			M	12 55 12		
	Bombay	N,E	e	12 54 31		Per. = 14 secs.
	Hyderabad	N	M	13 02 56		$\mu = 4$ Slight.
						Per. = 12 secs.
21	Calcutta	E	eP?	09 23 12		$\mu = 3$
			i	09 24 34		
			eS?	09 32 52		Slight, phases not clear due to microseisms
21	Epc:- 13°1 S, 166°4 E.			O = 19h. 10m. 34s. h = 200 Kms. (J.S.A.)		
	14°0 S, 167°0 E.			O = 19h. 10m. 31s. h = 200 Kms.		
	Colombo	E	P	19 23 49		
			S	19 33 19		
	Kodaikanal	E	M	20 02 --		
			e	19 24 00		Amp. = 0.1 m.m. Tremor.
23	Colombo	E	P	14 44 34		
			S	14 48 49		
			L	14 50 59		
	Kodaikanal	E	M	14 53 19		
			e	14 49 12		
			eS?	14 50 46		Amp. = 1.0 m.m. Slight.
			L	14 51 21		
			Mn	14 51 58		Per. = 9 secs. $\mu = 7$.

DATE	STATION	COMPT.	PHASE	G. M. T.	Δ	REMARKS.
				h. m. s.	Kms.	
Nov. 1948.						
23 (contd.)						
	Calcutta	E	e	14 53 27		Slight, distant.
			e	14 56 23		
			e	15 01 03		
25	Calcutta	E	i	13 28 45		Slight, near.
25	Calcutta	E	i	13 36 45		Slight, near.
25	Calcutta	E	e	18 55 05		Tremor.
			Mn	18 58 00		
	Bombay	N,E	e	18 56 00		
			M	19 02 11		
26	Epc:- 5.0 S, 145.8 E.		O = 05h. 36m. 36s. (J.S.A.)			
	5.0 S, 145.0 E.		O = 05h. 36m. 30s. (U.S.C.G.S.)			
	Calcutta	E	eP	05 46 54	7090	Slight, focal depth about 220 Kms.
			eS	05 55 16		
			iSS	05 56 41		
	Colombo	E	P	05 47 21		Amp. = 0.4 mm Moderate.
			S	05 56 06		
			L	06 10 36		
			M	06 15 36		
	Kodaikanal	E	iP	05 47 35	7620	
			PcP	05 47 59		
			PP	05 50 05		
			iS	05 56 38		
			PS	05 56 56		
			ScS	05 57 20		
			SS	06 00 52		
			L	06 09 32		
			M	06 15 01		Per. = 29 secs. $\mu = 24$.
	Bombay	N,E	eP	05 48 16	8165	Slight
		N	iS)	05 57 47		
		E	eS)			
			M	06 23 07		Per. = 28 secs. $\mu = 8$.
27	Calcutta	E	e	17 55 56		Tremor.
			e	17 08 06		
			Mn	17 10 06		
27	Bombay	N,E	e	18 09 52		Feeble.
		E	M	18 14 12		Per. = 12 secs. $\mu = 2$
28	Epc:- 27.0 N, 94.0 E.		O = 21h. 43m. 6s. (U.S.C.G.S.)			
	Upper Assam.		O = 21h. 42m. 50s. (Poona).			
	Calcutta	E	eP	21 44 49	789	Moderate.
			iS	21 46 11		

DATE STATION COMPT. PHASE G. M. T. Δ REMARKS.

Nov.
1948.

h. m. s. Kms.

28 (contd.)

Hyderabad N
P 21 47 02 2040
S 21 50 21
SS 21 50 35
M 21 53 05

Kodaikanal E
1P 21 48 07 2665
PP 21 48 37
1S 21 52 19
SS 21 53 01
L 21 54 41
M 21 56 51

Per. = 10 secs.
 $\mu = 26$
Slight.

Bombay N,E
E 1P 21 48 11 2265
N 1S 21 51 52
eS)
L 21 53 53
E L 21 54 01
N M 21 57 53

Per. = 9 secs.
 $\mu = 3$
Moderate.

Colombo E
E M 22 00 02
P 21 48 20
S 21 52 52
L 21 57 12

Per. = 7 secs.
 $\mu = 11$
Per. = 9 secs.
 $\mu = 7.$

29 Calcutta E
e 14 48 20

Slight, near.

M. L. P.
1-11-1952

1970

1971

1972



GOVERNMENT OF INDIA

METEOROLOGICAL DEPARTMENT

SEISMOLOGICAL BULLETIN

December 1948.

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



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 Curator of the Nizamiah Observatory, Hyderabad, and of the Superintendent of Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Stations.

Station	Latitude	Longitude	Height above M.S.L. 'meters'	Lithologic Foundation	Officer-in- Charge of Observatory. *
Bombay	18 54 N	72 49 E	6	Deccan Trap	Director.
Calcutta	22 32 N	88 22 E	(i) 7 (ii) 6	Alluvium	Director.
Colombo	06 54 N	79 52 E	7	Beach sand	Superintendent
Dehra Dun	30 19 N	78 03 E	682	Gravel	President.
Hyderabad	17 26 N	78 27 E	528	Granite	Curator, Nizamiah Observatory.
Kodaikanal	19 14 N	77 28 E	2343	Rock	Director.
New Delhi	28 35 N	77 12 E	207	Massive Quartzites	Dy. Director General of Observa- tories (I & S).
Poona	18 32 N	73 51 E	560	Deccan Trap	Dy. Director General of Observa- tories (C & G).

(i) Milne-Shaw

(ii) Omori-Ewing.

TABLE II.

Instruments and their Constants.


Station	Instruments	Compt.	Period in Seconds	Static Magni- fication	Damping Ratio.	Paper Speed mm/min.
Bombay	Milne-Shaw	N	12	250	21:1	8.0
	Milne-Shaw	E	12	350	15:1	8.0
Calcutta	Milne-Shaw	E	12	250	20:1	8.0
	Omori-Ewing	N	15	32	-	25.4
Colombo	Omori-Ewing	E	16	30	-	25.4
	Milne-Shaw	E	12	250	20:1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20:1	8.0
	Milne-Shaw	N	12	250	20:1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20:1	8.0

* During that period.

DATE	STATION	COMPT.	PHASE	G. M. T.			△	REMARKS.
				h.	m.	s.	Kms.	
Dec. 1948.								
1	Hyderabad	N	M	19	00	46		Per. = 18 secs $\mu = 7$
4	Epc:- 21.5° N, 106.5° W.			0	00	48		(U.S.C.G.S.)
	22.0° N, 106.5° W.			0	00	48		(Pasadena).
	21.5° N, 106.1° W.			0	00	47		(J.S.A.)
	Hyderabad	N	e	00	42	10		Tremor.
			M	01	41	28		Per. = 19 secs.
	Bombay	N,E	e	00	42	11		$\mu = 14$
		E	M	01	37	37		Tremor
	Kodaikanal	E	e	00	42	32		Per. = 29 secs.
								$\mu = 18$
	Calcutta	E	e	00	44	35		Distant.
			i	00	54	55		Phases not clear.
			Mn	01	39	45		Slight, distant.
	Colombo	E	L	01	37	12		
			M	01	56	07		Tremor.
4	Calcutta	E	e	10	23	57		
			i	10	23	07		Slight, distant.
4	Bombay	E	e	17	04	30		Feeble.
4	Epc:- Off West Sumatra.			0	20	18		36s. (Poona).
	Colombo	E	P	20	23	22		Slight
			S	20	27	10		
	Kodaikanal	E	iP	20	24	01		
			iS	20	28	06		
	Hyderabad	N	eP	20	24	18	3070	
			S	20	28	58		
			M	20	35	37		
	Bombay	N,E	e	20	25	05		Per. = 9 secs.
		E	e	20	29	08		$\mu = 2$
			M	20	32	27		Slight.
		N	M	20	32	30		Per. = 7 secs.
								$\mu = 2$
								Per. = 7 secs.
								$\mu = 4$
5	Bombay	E	e	00	21	--		Feeble.
5	Dehra Dun	N	P?	05	51	20		
			S?	05	58	03		Slight.
			e?	06	13	20		
			M	06	26	20		
								Per. = 42 secs.
								Amp. = 2"
5	Epc:- 57.0° S, 162.0° E.			0	06	25		37s. (J.S.A.)
	Hyderabad	N	e	06	35	33		Feeble.
			L	07	05	45		
			M	07	12	39		Per. = 21 secs. $\mu = 23$.

DATE	STATION	COMPT.	PHASE	G. M. T.			△	REMARKS.
Dec.				h.	m.	s.	Kms.	
1948.								
5 (contd.)								
	Kodaikanal	E	e	06	38	55		Slight
			i	06	50	20		
			e	06	56	23		
	Colombo	E	e	07	03	20		
			e	06	39	20		
			e	06	49	35		
			L	07	03	20		
	Bombay	E	M	07	09	50		
			e	06	41	16	9400	Amp. = 0.9 m.m.
			e	06	51	46		Slight,
			e	06	53	30		distant.
		N	L	07	08	38		
		E	L	07	08	50		
			M	07	10	46		
		N	M	07	20	30		Per. = 26 secs.
								μ = 28
								Per. = 17 secs.
								μ = 23
6	Bombay	E	e	12	32	--		Tremor.
	Colombo	E	P	12	33	42		Other phases not clear.
6	Hyderabad	N	M	13	11	24		Per. = 15 secs.
								μ = 3.
6	Calcutta	E	e	14	20	42		Tremor.
			e	14	24	28		
	Bombay	E	e	14	25	18		Feeble.
	Hyderabad	N	M	14	35	13		Per. = 4 secs.
								μ = 2
7	Epc:- 27.5° N, 87.0° E, (in East Nepal). 0 = 23h. 19m. 46s. (Poona)							
	Calcutta	N	eP	23	20	45	500	Slight.
			IS	23	21	29		
	Hyderabad	N	eP	23	23	06	1620	
			e	23	25	30		
			S	23	25	47		
			M	23	27	37		
	Bombay	N,E	eP	23	24	04	2000	Per. = 7 secs.
			eS	23	27	19		μ = 15.
			i	23	28	47		Moderate.
	Colombo	E	P	23	24	42		
			S	23	28	38		
			M	23	33	40		
8	Hyderabad	N	M	17	12	39		Amp. = 0.4 m.m.
9	Bombay	E	e	11	15	--		Per. = 15 secs.
								μ = 3
10	Bombay	E	e	10	03	00		Feeble.
			M	10	29	21		
	Kodaikanal	E	e	10	20	00		Per. = 16 secs.
	Hyderabad	N	M	10	27	26		μ = 2
								Tremor.
								Per. = 12 secs.
								μ = 3

DATE	STATION	COMPT.	PHASE	G. M. T.		REMARKS.
1948.				h. m. s.	Kms.	
12	Epc:- 52°0 N, 178°2 E. 0 = 13h. 17m. 32s. (J.S.A.)					
	Calcutta	E	e	13 28 45		Slight.Distant.
	Hyderabad	N	Mn	14 04 25		
			P	13 29 40	9330	
			SKS	13 29 53		
			S	13 40 07		
			SS	13 45 18		
			M	13 03 22		
	Bombay	N,E	eP	13 29 52	9135	Per.= 15 secs. μ = 6.
		E	eS	13 40 10		Slight.
			M	14 06 07		Per.= 22 secs. μ = 6
10	Kodaikanal	E	e	13 30 02		
12	Kodaikanal	E	e	15 16 52		
14	Calcutta	E	e	10 40 03	1200	Slight.
	Bombay	N,E	i	10 42 03		Slight
		N	e	10 45 08		Per.= 5 secs.
			M	10 49 13		μ = 2
		E	M	10 51 36		Per.= 11 secs.
	Hyderabad	N	M	10 47 24		μ = 2
						Per.= 11 secs.
14	Calcutta	E	e	16 22 38		μ = 4
			e	16 27 43		Tremor.
15	Hyderabad	N	e	18 21 08	6420	
			e	18 29 08		
15	Epc:- 22°0 N, 142°4 E. h = 250 ± Kms. 0 = 19h. 11m. 50s. (J.S.A.)					
	Calcutta	E	e	19 20 05		Slight, distant.
			e	19 21 25		
	Kodaikanal	E	e	19 26 45		
	Bombay	N,E	e	19 20 37	6800	Slight.
			eP	19 21 48		
			iS	19 30 08		
16	Bombay	E	e	07 38 46		Slight.
			M	08 28 26		Per.= 19 secs.
	Kodaikanal	E	e	07 43 16		μ = 2.
18	Bombay	E	e	14 32 00		Tremor.
20	Dehra Dun	N	P	08 38 06		Feeble.
			S	08 45 50		
			e	08 54 30		
			M	09 05 36		
20	Bombay	N,E	e	23 17 38		Feeble.
	Calcutta	E	e	23 18 50		Tremor.
			e	23 22 40		
			Mn	23 29 50		

DATE	STATION	COMPT.	PHASE	G. M. T.		REMARKS.
				h. m. s.	Kms.	
Dec. 1948.						
20 (contd.)	Hyderabad	N	M	23 33 13		Per. = 11 secs. $\mu = 3$.
23	Bombay	N,E	e	07 41 37		Feeble.
23	Epc:- 55°4 N, 16 166°7 E.			0 = 08h. 41m. 25s.		h = 100 Kms. (J.S.A.)
	Hyderabad	N	P	08 52 50	8150	Moderate.
			PP	08 55 41		
			S	09 02 20		
			SS	09 07 20		
			M	09 22 10		Per. = 18 secs. $\mu = 24$
	Bombay	N,E	eP	08 53 04	8380	Moderate
			eS	09 02 45		
		N	M	09 25 14		Per. = 20 secs. $\mu = 40$
		E	M	09 31 00		Per. = 15 secs. $\mu = 15$
	Kodaikanal	E	iP	08 53 25		Moderate.
			iPP	08 56 35		
			SKS	09 03 33		
			PS	09 04 31		
			SS	09 11 05		
			L	09 22 27		
	Colombo	E	P	08 53 --		
			L	09 26 50		
			M	09 32 08		Amp. = 0.5 m.m.
23	Bombay	N,E	e	15 58 --		Feeble surface waves.
26	Bombay	N,E	e	07 35 32		Tremor
26	Bombay	N,E	e	10 37 --		Tremor.
29	Kodaikanal	E	e	01 22 45		Tremor.
	Bombay	N,E	e	01 26 09		Tremor.
	Hyderabad	N	M	01 27 48	Feeble	Per. = 12 secs. $\mu = 3$
	Colombo	E	L	01 25 00		
			M	01 26 30		P and S lost in microseisms.
29	Bombay	N,E	e	06 11 30		Slight.
	Hyderabad	N	M	06 40 43	Feeble	Per. = 18 secs. $\mu = 5$.
31	Bombay	N	e	00 11 39		Slight.
		E	e	00 15 47		
			M	00 52 04		Per. = 24 secs. $\mu = 6$
		N	M	00 56 17		Per. = 19 secs. $\mu = 2$
	Calcutta	E	e	00 14 37		Slight. Distant
			e	00 22 07		
			Mn	00 50 52		
	Kodaikanal	E	e	00 24 59		Tremor.
	Hyderabad	N	M	00 55 44	Per. = 16	secs. $\mu = 6$

The following table contains a list of earthquakes reported by voluntary observers from various stations during October-December 1948.

Table

Place at which felt	Date	G.M.T. of earthquake	Duration. Seconds	Intensity	No. of shocks	Remarks
Silchar	28-11-48	h. m. 21 43	7	III	2	-
Tezpur	28-11-48	21 44	75	III	-	-
Silchar	7-12-48	07 15	6	III	2	-

M.L.P.
18-12-52.

INTERNATIONAL SEISMOLOGICAL CENTRE

INTERNATIONAL SEISMOLOGICAL CENTRE
INTERNATIONAL SEISMOLOGICAL CENTRE

INTERNATIONAL SEISMOLOGICAL CENTRE

INTERNATIONAL SEISMOLOGICAL CENTRE
INTERNATIONAL SEISMOLOGICAL CENTRE
INTERNATIONAL SEISMOLOGICAL CENTRE



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 1949.

Published under the direction of
S. K. BANERJI, D.Sc., F.N.I.
Director General of Observatories.



I N T R O D U C T I O N .

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 cooperation of the Surveyor-General of India, the Curator of the Nizamiah Observatory, Hyderabad, and of the Superintendent, Colombo Observatory, it has been possible to incorporate in the Bulletin the seismic data of their respective observatories viz. Dehra Dun, Hyderabad and Colombo. The instrumental and non-instrumental voluntary observations are collected and edited at the Meteorological Office, Poona.

TABLE I.

List of Seismograph Stations.

Station	Latitude	Longitude	Height above M.S.L. 'meters'	Lithologic Foundation	Officer-in-charge of Observatory.
Bombay	18°54'N.	72°49'E	6	Deccan Trap	Director
Calcutta	22°32'N.	88°22'E	(i)7 (ii)6	Alluvium	Director.
Colombo	06°54'N	79°52'E	7	Beach-sand	Superintendent.
Dehra Dun	30°19'N.	78°03'E	682	Gravel	Director.
Hyderabad	17°26'N	78°27'E	528	Granite	Curator, Nizamiah Observatory.
Kodaikanal	10°14'N.	77°28'E.	2343	Rock	Director
New Delhi	28°35'N	77°12'E	207	Massive Quartzite	Dy. Director General of Observatories (I. & S.)
Poona	18°32'N	73°51'E	560	Deccan-Trap.	Dy. Director General of Obser- vatories (C&G)
(i) Milne-Shaw.	(ii) Omori-Ewing.				

TABLE II.

Instruments and their constants.

Station	Instrument.	Compt.	Period in Secs.	Static magni- fica- tion.	Damping Ratio.	Paper speed mm/min.
Bombay	Milne-Shaw	N	12	250	24 : 1 From 1st to 13th 13 : 1 From 14th to 31st.	8.0
Calcutta	Milne-Shaw	E	12	350	14 : 1	8.0
	Omori-Ewing	N	15	32	-	25.4
	Omori-Ewing	E	16	30	-	25.4
	Milne-Shaw	E	12	250	20 : 1	8.0
Colombo	Milne-Shaw	E	12	250	20 : 1	8.0
Dehra Dun	Omori	N	30	12	-	-
Hyderabad	Milne-Shaw	E	12	250	20 : 1	8.0
	Milne-Shaw	N	12	250	20 : 1	8.0
Kodaikanal	Milne-Shaw	E	10	250	20 : 1	8.0
Poona	Milne-Shaw	N	12	250	20 : 1	8.0
	Wood-Anderson	E	4	1100	20 : 1	16.0
	Wood-Anderson	N	2	1900	30 : 1	60.0

DATE	STATION	COMPT.	PHASE	G.M.T. h.m.s.	△	REMARKS	
January 1949							
1	Kodaikanal	E	e	19 40 02		Tremor	
	Poona	E,N	i	19 41 25			
	Hyderabad	N	e	19 45 26			
		N	eP	19 46 30	2590		
			S	19 41 34			
			L	19 45 40			
	Bombay	N,E	M	19 47 36			
			e	19 48 30		Per.=15 secs. $\mu=4$	
				19 45 30		Feeble	
2	Epicentre 4°N, 97°E, in the North Sumatra. 0 = 04 h.44 m.20s (Poona)						
	Colombo	E	P	04 48 -			
			S	04 52 -			
			L	04 55 -			
	Kodaikanal	E	M	04 55 -		Trace overlapping	
			iP	04 48 55	2200	Slight	
			iS	04 52 32			
			SS	04 53 02			
	Calcutta	E	L	04 54 22			
			M	04 56 17		Per.=15 secs. $\mu=4$	
			eP	04 48 57	2253	Slight	
			ePP?	04 49 56			
	Bombay	E,N	eS	04 52 43			
			ScS	05 02 14			
			P	04 49 07	2335	Slight	
			S	04 52 57			
	Hyderabad	N	SS	04 57 52			
			P	04 49 13	2445		
			S	04 53 12			
			SS	54 14			
	Poona	N,E	M	04 56 49		Per.=16 secs. $\mu=9$	
			eP	04 49 59	2858	Slight	
			iS	04 54 26			
			SS	04 55 34			
			SSS	04 55 55			
			M	04 58 30		Per.=23 secs. $\mu=30$	
2	Epicentre 25°N, 147°E, 0=08h. 49m. 51s h = 100 ± kms. (J.S.A.)						
	Poona	E	iP	09 00 02	7110	h= 100 ± kms. 0 = 08h.49m.41s. (Poona)	
			pP	09 00 23			
			iS	09 08 26			
			sS	09 09 19			
			i(;	09 09 31			
2	Epicentre 25.5°N, 64°E, on the coast of Baluchistan. 0=12h.50 m.30s. (Poona)						
	Poona	N,E	iP	12 53 04	1165	Slight.	
			P*	12 53 37			
			Pg	12 54 05			
			iS	12 55 00			
	Hyderabad	N	iS	12 55 03			
			N,E	S*	12 55 25		
				SG	12 55 57		
	Hyderabad	N	P	12 54 04	1890		
			S	12 57 09			
			SS	12 57 43			
			M	13 01 22		Per.=12 secs. $\mu=55$	

DATE	STATION	COMPT.	PHASE	G.M.T. h.m.s.	△ Km.	REMARKS
<u>January 1949</u>						
2	Contd.	Kodaikanal	E	iP iS L M	12 55 02 12 58 45 13 00 35 13 02 30	2300
		Calcutta	E	iP	12 55 24	2610
				iPP iS iSS M M _n P ⁿ L M	12 55 56 12 59 35 13 00 23 13 03 01 13 06 16 12 55 25 13 05 03 13 09 38	
		Colombo	E			
		Dehra Dun	N	e M	12 58 04 13 00 06	
3		Calcutta	E	e i	09 41 51 09 42 41	Slight, Near.
3		Hyderabad	N	eP S L M	18 16 37 18 21 43 18 26 15 18 28 02	3460
		Poona	N	i e e e	18 21 32 18 24 41 18 26 15 18 27 30	Per.=14secs. $\mu=4$
		Bombay	E	e	19 21 33	Feeble
4		Calcutta	E	e e	02 34 12 02 40 22	Tremor
		Bombay	N	e	02 40 48	Feeble
		Poona	N,E	e	02 48 05	Feeble surface waves
				Earlier Phases lost while changing paper.		
6		Bombay	E	e	02 27 -	Feeble surface wave waves.
7		Poona	N,E	e(P)	17 32 37	8510 Slight. Phases masked by micro-seisms.
		Bombay	E	i e(S) eP e eS L	17 33 12 17 42 24 17 32 46 17 33 08 17 42 38 17 58 16	8600 Slight.
		Hyderabad	N	e S	17 33 31 17 41 34	
		Calcutta	E	e e	17 40 04 17 42 26	Tremor
7		Calcutta	E	e	18 14 48	Tremor
9		Bombay	E	eP	16 44 09	Feeble
		Poona	N	i	16 47 26	
		Calcutta	E	e e M	16 48 58 16 53 23 17 01 37	Tremor
		Hyderabad	N			Per.=11 Secs. $\mu=2$

DATE	STATION	COMPT.	PHASE	G.M.T. h,m,s.	△	REMARKS.
						Km.
January 1949.						
13	Poona	E	eP	09 05 35	3445	h=180 kms.±
			pP	09 06 11		
			sP	09 06 30		
			PcP(?)	09 08 02		
			iS	09 10 34		
			sS	09 11 38		
			ScS(?)	09 15 31		
	Bombay	E	eP	09 05 45		Slight
			i	09 10 43		
14	Calcutta	E	e	02 31 49		Slight distant,
			eS?	02 35 59		
	Bombay	N	P	Movement		not clear. Slight.
		E	eP	02 32 50		
		N	M	02 45 35		Per.=11 secs.μ=2
		E	M	02 47 13		Per.=13 secs.μ=3
	Poona	N	M	02 48 -		Slight
			Other phases lost while changing shaft.			
14	Bombay	N,E	e	16 09 06		Feeble
	Poona	N,E	e	16 09 18		Slight. Other phases masked by micro-seisms.
	Calcutta	E	e	16 11 48		Slight, distant.
			Mn	16 32 28		
18	Hyderabad	N	P	12 28 17	2600	
			PP	12 28 43		
			S	12 32 24		
			L	12 34 14		
			M	12 35 20		Per.=15 secs.μ=3
19	Calcutta	E	e	13 52 29		Tremor
			e	13 57 29		
	Hyderabad	N	M	14 03 07		Per.=14 secs.μ=3
	Poona	E	e	14 46 34		
19	Epicentre 25.5°N, 121°E, North of Formosa Island.					0=15h.0.3 m(B.C.I.S.)
						0=15h.00m.07s.
						(Poona)
	Calcutta	E	eP	15 06 20	3335	Moderate.
			PP	15 07 14		
			eS	15 11 18		
			iSS	15 14 16		
			M	15 18 46		
			Mn	15 21 44		Per.=15 secs.μ=75
	Poona	E	eP	15 08 22	4945	
			eP	15 08 24		
			i	15 08 52		
			PP	15 10 10		
			PcP(?)	15 10 32		
			eS	15 14 58		
		N	eS	15 15 00		
			SS	15 17 46		
		E	ScS(?)	15 18 17		
		N	LQ	15 18 41		
			LR	15 21 04		
			M	15 25 34		Per.=20 secs.μ=2
	Bombay	E	eP	15 08 27	5035	Moderate
		N	P			Movement not clear.
		N,E	PP	15 10 20		
			eS	15 15 08		
		N	M	15 28 36		Per.=15 secs.μ=11
		E	M	15 29 39		Per.=16 secs.μ=6

DATE	STATION	COMPT.	PHASE	G.M.T. h.m.s.	Δ Km.	REMARKS.
<u>January 1949</u>						
<u>19 (Contd.)</u>						
	Hyderabad	N	eP	15 07 28	4220	
			PP	16 08 49		
			S	15 13 21		
			SS	15 16 31		
			L	15 19 25		
			M	15 23 20		
	Colombo	E	i	15 08 40		Per.=15 secs. $\mu=10$
			M	15 29 22		
	Kodaikanal	Overlapping of lines.				
20	Poona	E	i	00 42 32		
20	Poona	E	i	03 40 17		
			e	03 41 46		
			i	03 42 31		
20	Epicentre 35.6°N, 134.6°E (C.M.O.) O=13h.25.0m B.C.I.S.)					
	Bombay	N,E	e	13 39 -		Feeble
		N	e	13 42 36		
		E	M	14 01 34		Per.=14 secs. $\mu=1$
		N	M	14 02 19		Per.=13 secs. $\mu=1$
	Calcutta	E	e	13 42 07		Tremor
			Mn	13 54 40		
	Poona	N	Mn	13 57 30		Feeble surface wave.
21	Kodaikanal	E	e	17 34 04		Slight
22	Poona	E	eP	03 53 16		
			i	03 55 37		
			S(?)	03 55 58		
			SS(?)	03 26 08		
	Bombay	N,E	e	03 54 06		Feeble
			e	03 55 30		
	Calcutta	N	M	04 02 17		Per.=8 secs. $\mu=1$
		E	eP	03 57 24	690	Slight
			eS	03 58 36		
			eS*	03 58 59		
			iS	03 59 16		
	Hyderabad	N	S	03 57 29		
			M	03 59 25		
	Kodaikanal	E	e	03 58 02		Per.=8 secs. $\mu=4$ Slight
23	Epicentre 10.5°S, 96°E, near Cocos Island in the Indian Ocean					
						O=06h.30m.55s. (Poona)
		8°S, 95°E	h = 100 kms ±			O=06h.31m.15s. (BCIS)
		9°S, 94°E	h = 100 kms ±			O= 06h.31.2m. (U.S.C.G.S.)
		7°S, 96°E	h = 200 kms ±			O=06h.31m.34s. (J.S.A.)
	Kodaikanal	E	iP	06 36 37	3000	Moderate
			iS	06 41 13		
			SS	06 42 15		
			L	06 45 12		
			Mn	06 46 02		
	Colombo	E	P	06(37)-		Per.=10.5secs. $\mu=13$
			S	06(41)-		
			M	06 44 -		
	Hyderabad	N	P	06 37 34	3660	
			PP	06 38 36		
			S	06 42 52		
			SS	06 44 12		
			L	06 46 45		
			M	06 49 53		Per.=18 secs. $\mu=79$

DATE	STATION	COMPT.	PHASE	G.M.T. h,m,s.	△ Km.	REMARKS.
January 1949						
23 (Contd.)						
	Poona	N,E	iP	06 37 59	4011	Moderate.
		E	PP	06 39 23		
		N	PP	06 39 19		
		E	PcP	06 40 20		
		N	PcP	06 40 52		
		E	iS	06 43 39		
		N	iS	06 43 38		
		E	SS	06 46 13		
		E	L	06 48 13		
		N	Mn	06 51 30		
	Calcutta	E	eP	06 38 01	4000	Per.=17 secs, $\mu=213$ Great
			iS	06 43 40		
			iSS	06 45 26		
			L	06 46 46		
			M	06 49 46		
			Mn	06 59 31		
	Bombay	N	iP)	06 38 09	4080	Moderate
		E	eP)			
		N	PP	06 39 20		
		E	PP	06 39 27		
		N	i	06 39 44		
		N,E	iS	06 43 53		
			iSS	06 46 42		
		N	L	06 48 23		
			M	06 51 30		Per.=16secs, $\mu=22$
	Dehra Dun	N	e	06 44 45		
			e	06 52 15		
			M ₁	06 53 45		
			M ₂	06 57 50		
24	Bombay	N,E	e	01 22 57		Feeble
			e	01 27 00		
24	Epicentre	22°S, 176°W, O=09h.15.7m. h=100 kms.± (U.S.C.G.S.)				
		22.9°S, 176°W; O=09h.15m.51s. h=150kms.± (J.S.A.)				
		23°S, 176°W; O=09h.15m.39s. h=100kms.± (B.C.I.S.)				
	Calcutta	E	e	09 33 20		Slight, distant.
			iS(?)	09 40 08		
	Kodaikanal	E	e	09 34 21		Feeble
	Bombay	E	e	09 35 21		
		N	e)	09 41 03		
		E	i)			
		N,E	e	09 45 13		
	Poona	E	e	09 38 00		
			i	09 40 53		
			i	09 41 46		
	Hyderabad	N	S	09 40 35		
			M	10 19 37		Per.=20 secs, $\mu=7$
26	Poona	E	e	00 11 23		
			e	00 12 05		
27	Bombay	N	e	05 58 56		Feeble surface wave
		E	e	06 02 -		
	Hyderabad	N	M	06 09 28		Per.=16 secs, $\mu=4$
27	Epicentre:	3°S, 152°E; O=07h.18.2m. (U.S.C.G.S. & B.C.I.S.)				
		4°S, 151°.7E; O=07h.18m.10s. (J.S.A.)				
	Poona	E	e	07 30 00		

DATE	STATION	COMPT.	PHASE	G.M.T. h:m:s	Δ	REMARKS
3333						
January 1949						
27 (Contd)						
	Hyderabad	N	e	07 30 23		
			S	07 39 21		
			L	07 49 45		
	Bombay	E	M	07 54 46	8745	Per.=16 secs, $\mu=4$
		N	eP	07 30 24		Slight
		N,E	e	07 30 41		
		E	eS	07 40 23		
		N	L	07 57 21		
	Calcutta	E	L	07 58 17		
		E	e	07 37 42		Slight, distant.
27 Epicentre: $55^{\circ}N, 164^{\circ}E$ O=11h.00.0m.(U.S.C.G.S.) & B.C.I.S.)						
$53^{\circ}.1N, 162^{\circ}.3E$ O=11h.00m.13s. h=150 kms \pm (J.S.A.)						
	Poona	E	e	11 11 35		
	Calcutta	E	e	11 21 14		
			Mn	11 41 57		Slight, distant.
	Bombay	E	e	11 19 31		
		L	e	11 21 12		
			M	11 47 30		Per.=15 secs, $\mu=3$
	Hyderabad	E	M	11 48 09		Per.=17 secs, $\mu=3$
		N	e	11 20 54		
			M	11 41 57		Per.=12 secs, $\mu=5$
27.	After shock of the shock (U.S.C.G.S.)				at 07h.18m. on 27th	
	Poona	E	e	15 10 41		
	Bombay	E	eP	15 10 54	8755	Slight.
		N,E	eS	15 20 54		
	Calcutta	E	e	15 11 07		Slight, distant.
			e	15 18 20		
27	Calcutta	E	e	16 45 43		Slight, distant
			e	17 45 23		
28	Hyderabad	N	M	08 26 49		Per.=15 secs, $\mu=4$