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## ATMOSPHERIC OSCILLATIONS OVER BOMBAY ON 24 JANUARY 1963

Gravitational waves were theoretically discussed by Helmholtz (1889) and later by Goldie (1925). In the ideal theoretical case, such waves are believed to originate at nearly horizontal interface between two stably stratified air currents of different densities and velocities, the motion of air being mainly horizontal. The formation and growth of such waves to perceptible magnitudes is favoured by stable lapse rates preferably in the form of an inversion in the first one or two kilometres above the ground.

Such waves have been observed at the Blue Hill Observatory by Haurwitz (1935), Stone (1935) and Brooks (1935). In India and neighbourhood, these oscillations have been studied by Barkat Ali (1931) and Asnani (1959). One remarkable and clear instance of atmospheric oscillations was recorded at the Colaba Observatory, Bombay, on 24 January 1963. Instances of gravitational waves affecting meteorological elements have been very rare for Colaba (Bombay); in fact an examination of charts of meteorological instruments for the previous 10 years did not bring out any clear instance. An examination of the charts of 24 January 1963 for Santa Cruz (21 km from Colaba) showed minor oscillations but there were no oscillations of this type at all at Poona (about 100 km from Colaba) on that day, indicating the local nature of the phenomenon.

The first wind oscillation which was recorded on the anemograph at 0350 IST on 24 January 1963 had a clear sharp beginning with a double amplitude of 9 km/hr. In the beginning of this oscillation, the wind direction suddenly veered from SSE to NNW and oscillated between NNW and NNE during the next 45 minutes for which the phenomenon lasted. During this period, six major oscillations were recorded giving the period of oscillations of the order of 7-8 minutes. There were simultaneous oscillations on the microbarogram, the peaks in the anemogram generally corresponding with peaks

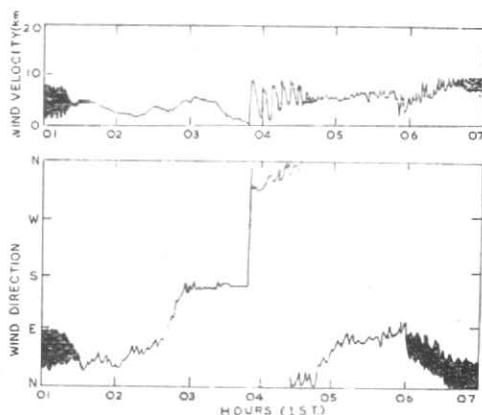


Fig. 1(a). Wind velocity and direction on the morning of 24 January 1963

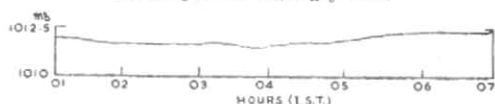


Fig. 1(b). Microbarograph record showing pressure oscillations on the morning of 24 January 1963

in the microbarogram. Double amplitude of the pressure oscillations was about 0.2 mb. Dry and Wet Bulb temperatures and Relative Humidity did not show any perceptible oscillations during the period. The relevant portions of anemogram and the microbarogram of the Colaba Observatory, Bombay are given in Fig. 1.

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March 1, 1963

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