

## Letters To The Editor

551·508·822 : 551·524·7

### PERFORMANCE OF THE FAN IN THE F-TYPE RADIOSONDE IN SOME SHARP TEMPERATURE CHANGES IN THE ATMOSPHERE

On some occasions it has been observed that the T- $\phi$  grams obtained with the F-type radiosonde flights at Poona show certain characteristics which made one doubt whether the feature was due to defective performance of the instrument. In the morning of 7 June 1952, for instance, an inversion at about 400 mb was immediately followed by a steep super-adiabatic lapse rate and a very sharp kink on the T- $\phi$  gram was the result (Fig. 1).

In order to check up the genuineness of the data obtained on such occasions, the records of the Fan-type radiosonde flights at Poona with similar feature were examined. It was, then, found that corresponding to sharp variations of temperature there were characteristic changes in the

rate of rotation of the fan of the instrument also. It is noticed from Fig. 1 that on 7 June 1952 there was an inversion of nearly 2°C within a thickness of about 15 mb followed by a drop in temperature of 7°C in a layer of 20 mb depth. The rate of rotation of the fan is almost the same above and below these layers. There is,

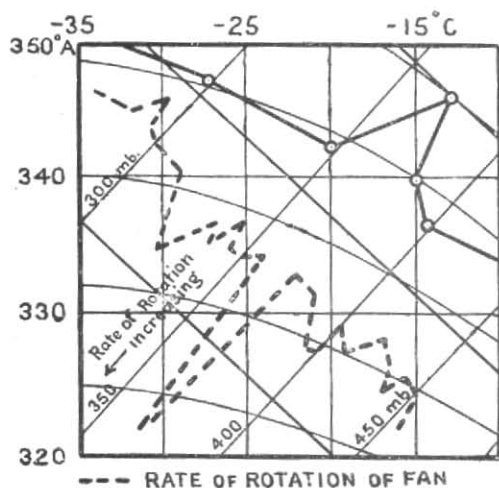


Fig. 1. Poona T- $\phi$  gram at 0808 IST on 7 June 1952

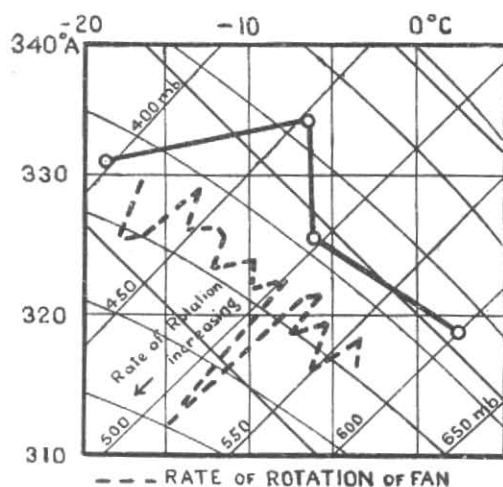


Fig. 2. Poona T- $\phi$  gram at 2000 IST on 24 February 1952

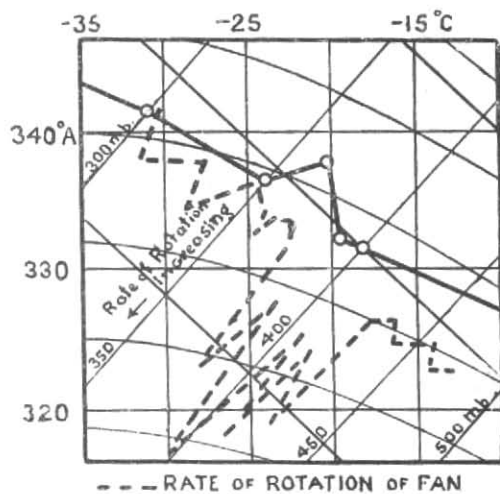


Fig. 3. Poona T- $\phi$  gram at 2000 IST on 17 January 1952

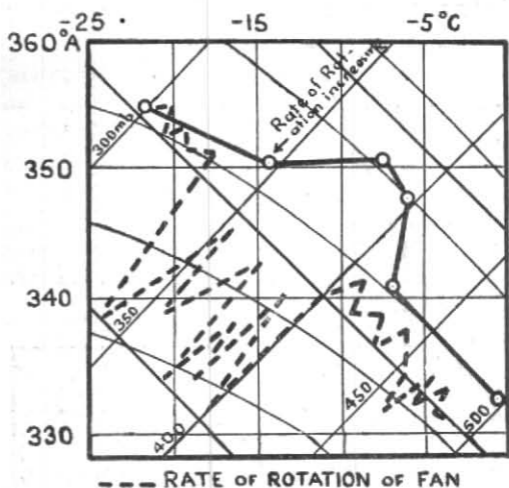


Fig. 4. Poona T- $\phi$  gram at 2000 IST on 15 June 1951 however, a sharp rise in the rate of rotation of the fan in the super-adiabatic layer. In Figs. 2 and 3 the sharp increase in the rate of rotation is indicated in the layers immediately below the inversion, while in Fig. 4 this feature is observed in the whole layer of temperature discontinuity.

These fluctuations in the rate of rotation of the fan may be either due to turbulence or changes in the rate of ascent of the balloon depending on the eddy viscosity of the air layers through which the balloon is passing.

A. P. JAYARAJAN

*Meteorological Office,  
Poona  
June 23, 1952.*