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A HIGH ALTITUDE RADIOSONDE ASCENT AT DUM DUM

During the I.G.Y. period (1957-58), attempts are being made to make radiosonde-rawin ascents as high as possible. It is interesting to note in this connection that the 0000 GMT radiosonde ascent at Dum Dum on 6 July 1957 reached 4 mb, though the rawin went only upto 400 mb. The radiosonde instrument employed on this routine flight was I.M.D. Chronometric radiosonde model III.

2. The temperature distribution computed from the sounding is shown in Fig. 1. For the sake of comparison the normal temperature distribution over Dum Dum in July upto 100 mb and also the actual winds as obtained from the rawin ascent at 0000 GMT at Dum Dum on 6 July 1957 are shown in Fig. 1.

3. The record has been scrutinised and it has been confirmed that the balloon did reach 4-mb level as is evident from the displacements of temperature and pressure elements. The instrument was calibrated only upto 25 mb, but considering the almost linear relation between the pressure and displacement from 50 to 25 mb, a linear extrapolation of the same for getting the pressure values at higher levels has been done.

4. With regard to the behaviour of the temperature element it is seen that the temperature decreased uniformly upto about 19.5 km after which it remained more or less constant. This ascent, therefore, suggests the height of the tropopause at 19.5 km and the existence of an isothermal layer between 19.5 km and 36 km. On this occasion the height of the tropopause is rather high and the presence of the isothermal region from 19.5 to 36 km seems unusual. The functioning of the temperature pen of the bimetallic element was critically looked into and there was no reason to believe that the temperature pen was either arrested at the lowest point reached or was incapable of returning in the

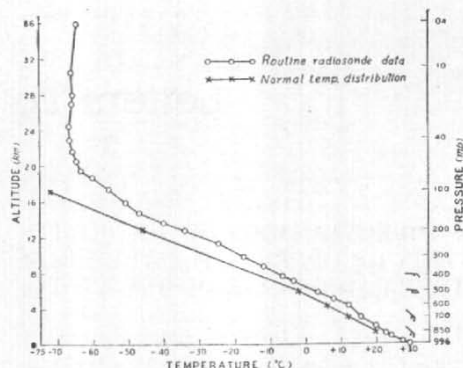


Fig. 1. Temperature-Altitude curve for the radiosonde ascent at Dum Dum on 6 July 1957 at 0530 IST. Normal temperature distribution over Dum Dum in July and also the winds as obtained from the rawin ascent at 0530 IST on 6 July 1957 are also shown.

regions of increasing temperature. In fact after the bursting of the balloon, it was noticed that for a short period the temperature pen retraced the course.

5. It will be interesting to examine data from more high altitude ascents in this region in summer and it is hoped that IGY ascents would provide such an opportunity.

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