SHEAR WIND CALCULATOR

In most of the forecasting offices, the shear wind vector is worked out and used in medium range forecasting. The shear wind is taken as the shear of the wind at 2000/3000 ft a.s.l. in relation to the wind at 15000/20000 ft at the same station.

The process of working out the shear wind component, in most of the forecasting offices, is presently, by the straight-forward method. The vectors of the 2000-ft and

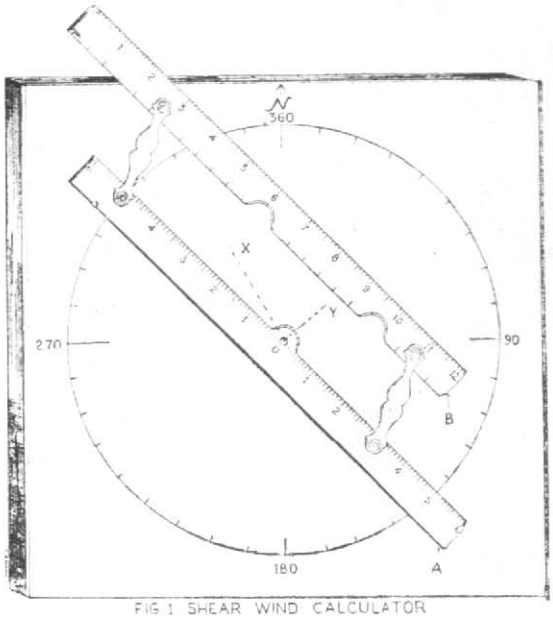

FIG 1 SHEAR WIND CALCULATOR

20000-ft levels are plotted on plain paper with the help of the protractor and the resultant component measured by shifting the potractor and keeping it approximately to the same true directions as originally kept and the bearing of resultant vector read out. This method is reasonably accurate within 10°/20°. The vector points are then erased and that of another station plotted and worked out. The time taken normally for working out shear wind for all pibal stations in and near India is about 60/80 minutes. To facilitate the above, a simple and ready shear wind calculator is suggested and explained below.

A thin perspex sheet (12″×12″), unglazed on one side, is mounted on a wooden board, with a polar diagram placed between the perspex and board. In the middle of the frame (and the polar diagram) a slot is made to carrying an inch* graduated (from the middle) perspex scale A (12″), so that it rotates freely. This scale has on it a light parallel scale B linked by a two aluminium strip sleeves. The second scale is graduated from one side. The simple gadjet is now ready for use. The vectors (X, Y) of the 2000 and 20000 ft are marked by using the scale A (scale: 10 kt=1″). Then the scales are turned round so that the parallel scale B is positioned to read the distance XY, and at the same time the direction of the shear wind component is read off by the bearing of scale A. By this method, it is felt that the time taken for working the data for all stations will be reduced by 60-75 per cent.

Some improvements to make the equipment quicker in operation are—

(1) The scale B to have a small knob at the middle to facilitate its movements.

(2) On underside of the scale B, slots are made so that it can be pulled close to the scale A.

(3) Provision of a cursor line arrangement on scale B, so that the distance XY can be read out by shifting of the cursor line.

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*The scale can be made in metric units