

The FOX CLOUD-BASE Predictor

Reprinted from the *Sailplane*



This instrument is a new device from which a direct reading of the height of low-lying cloud can be taken above any observation point. Its advantage over some of the existing and elaborate methods is obvious, particularly when it is remembered that the condensation-level of clouds often rises and varies during the course of a day.

The amount of low cloud in the sky, and also the height at which its daily condensation is likely to take place, is naturally dependent on the humidity of the air; and since low clouds are almost invariably caused by the cooling and condensing of moist air which has risen from the warm ground, it is therefore possible, by testing the condition of the air before it starts on its upward journey, to assess with considerable accuracy the height to which such air must rise for its natural condensation to take place.

The Predictor is, in effect, a wet and dry bulb hygrometer, and is influenced both by the temperature and the humidity of the air surrounding it.

Instead, however, of being used to indicate the relative humidity of the air, readings are obtained from a chart which has been developed from available data correlating this factor with the altitude at which condensation occurs.

This chart is arranged on the drum situated behind the wet bulb thermometer, so that using the dry bulb temperature scale around its bottom edge the drum can be set to a position at which a fixed index coincides with the dry bulb temperature, as determined by a reading of the dry bulb thermometer. The cloud-base height can then be directly determined by observing the relationship of the chart with the meniscus of the mercury in the stem of the wet bulb thermometer.

The Predictor relies on the daily function of rising air currents which, in their turn, regularly condense into cloud.

Whereas it was originally expected, however, to be reliable only on days when strong up-currents were present, it has since been shown to be reliable on almost every kind of day, even when cloud condensation is being caused by the very weakest of rising currents.

Beyond its capacity for direct reading of the height of the cloud base, it can, if correctly understood, be put to other purposes of considerable value, in connection with which Mr. J. S. Fox, the inventor of the instrument, has written the following notes:—

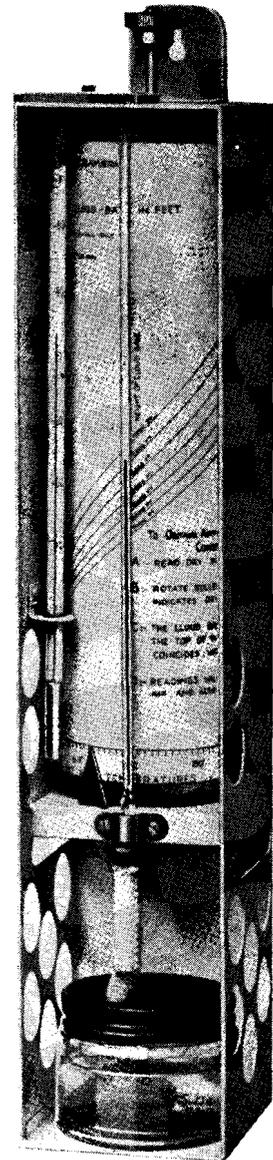
THE VALUE OF THE INSTRUMENT AS A PROPHET.—“Fine before seven—rain before eleven” is an old

slogan, and often a true one. If, for example, on a bright cloudless sunny morning the humidity of the air happens to be considerable, and the instrument gives a cloud-condensation reading at, say, 1,000 or 1,500 ft., one can then only expect, when the sun's warmth causes the usual morning convection currents to start rising, that this damp air will quickly reach its condensation height, and soon cover the blue sky with a low layer of grey cloud. The result may be a rainy morning, instead of the hoped-for fine one.

AS AN INDICATOR OF AN INVERSION.—Supposing cloud-condensation level is predicted at, say, 2,000 ft., this then means that condensation will take place at this altitude only in so far as the rising currents succeed in reaching this 2,000 ft. height.

If, as the day goes on, no cloud-formation takes place, and the sky still remains clear blue, it is then obvious that no rising currents have been able to reach the required height. This, to the meteorologist, indicates the certain presence of an “inversion,” or layer of warm air which checks the rise of all convection currents.

RELATIVE HUMIDITY.—A scale for wet bulb temperature is provided on the chart drum, and by turning the latter to bring the scale adjacent to the wet bulb thermometer, this temperature can be easily determined. In conjunction with the temperature indicated by the dry bulb thermometer from its own scale, this permits the relative humidity to be readily ascertained from suitable tables.



Cloud Base Predictor



Invention of the Month

J. Owen Eames, “The man with the red pants” of the 1936 and 1937 national meets, has solved the problem of man-made thermals. A cake of ice is tied on the bottom of the glider. The air underneath is cooled and starts a down draught. The reaction of pushing this air down makes the glider go up.