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By Charles Fitzhugh Talman,
Authority on Meteorology

SPOT-LIGHTING THE CLOUDS

Numerous airway weather stations in the United States have recently been equipped with ceiling lights for use in measuring the height of low clouds. The type of projector adopted for this purpose by the Airway Division of the U. S. Lighthouse Service is a silico-aluminum drum mounted on a pedestal and trunnion, so that the light can be elevated at any angle desired. The drum supports a 14-inch parabolic mirror, at the focus of which is a 250-watt electric lamp. A suitable shield confines the beam of light to a narrow diameter and causes a brilliant spot of light to be projected on the clouds.

If the ceiling light is elevated 45 degrees, the shaft of light forms the hypotenuse of a right-angle triangle, the other two sides of which are equal to each other. The height of the cloud on which the spot of light is seen is therefore equal to the distance from the projector to a point on the ground directly below this spot. The distance can be paced off and thus roughly determined, and this has been until recently the usual method of measuring ceiling.

A plan now preferred, however, is to set the projector at an angle of 63 degrees 26 minutes above the horizon. At a distance of 500 feet and in the direction (in azimuth) toward which the projector points is installed an instrument known as an "alidade". This is a large bronze quadrant, with a movable arm which can be pointed toward the spot of light, and an arc graduated to show the height of the spot directly in feet. The use of this combination of ceiling light and alidade does away with the necessity of measuring distances along the ground at the time of observation and thus saves much time.

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