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A Science Service Feature

WHY THE
? WHY THE WEATHER ?

Dr. Charles F. Brooks,
Secretary, American Meteorological Society,
tells of:

THE AIRMAN'S HOLES AND BUMPS

Good air for flying must be free from "holes" and "bumps". When he strikes a "hole" his plane drops suddenly. A "bump" acts on it as a raised place on a smooth highway acts on a rapidly moving motorcar.

A "hole in the air" is not a vacuous space, nor one in which the density of air is appreciably less than that around it. It is merely a spot of decreased support. Sometimes it is a downdraught, sometimes it is still air, neither descending nor ascending, and sometimes it is a gust from the rear. When a plane passes from an area of updraught into one of still air or a downdraught, it falls. The supporting current has been suddenly withdrawn. The same thing happens when a plane passes from still air into a downdraught. As it flies from still air or a downdraught into an updraught it strikes a tangible obstacle and is bounced upward, and the same is true when it passes from a downdraught into still air.

Thus if an airplane is flying over hot, bare ground, where the heated air is ascending rapidly, and then passes over a cool forest where there is no updraught it finds a hole. Speeding onward, when the forest ends and bare plain is again below him, it strikes another uprushing current and gets a bump.

Ordinary updraughts have a vertical velocity of about five miles an hour, but in a thundercloud vertical velocities exceeding 30 miles an hour sometimes occur

Downdraughts are usually weaker. On cloudy days there are few bumps and holes, because there is little difference in local heating. The airman's worst time in the lower mile or two of air is on still, warm, sunny days, in the hottest hours, when turbulence reaches its maximum of violence.

(Monday: Winds for Gliding)

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