

LOOKING FOR THERMALS?

Some of us are, some are not. As a predominantly scale flyer of modest ability, your editor could use a thermal now and then, for sure. Anyhow, this is the title of an article that appeared in a 1954 issue of Flying Models. (Gone are the days when aeromodeling magazines tried harder to enlighten our minds than to sell us high-tech, high price tag products.) This article was written by Lawrence H. Conover, a colleague of Dr. Alexander Lippisch, the German scientist well known for exotic aircraft designs and rocket development. Following are pertinent points taken from the article.

"...A thin layer of air is being heated by contact with the ground...Soon (it) has become a 3-foot layer of shimmering heat waves and tiny turbulence eddies...wind velocity is low...It wants to move upward, but cannot...Then suddenly...a disturbance from the outside...cold air mass creeping in under the warm turbulent layer, a modeler running by, a bird flying low...In but a few seconds...the whole is a racing whirlpool of hot air which has energy and power...(It) draws air from outside as it goes up, expanding all the way. Cold air rushing in causes a downdraft where the thermal was a short time before. ...If conditions are right, the warm moist air condenses and forms a small cumulus cloud...Heat gain through condensation causes the already turbulent air to become even more violent. A growing cloud is an aerial roller coaster!...By flying early (between ten and eleven a.m.)your model has picked up a strong ground riser. This is actually the initial upward movement of a thermal...I have walked along the ground inside a thermal vortex. I could see the grass blown into a spiraling shape, feel the rushing turbulent air as it picked up leaves and dust, hear it whistle, it was so violent. Inside, the winds were 40 mph. I stopped walking. The thermal vortex passed on down the field. No wind. ..Watch for: gusty air on a calm day, thermal going up! Sudden about-face of the wind tee. Follow the great thermal rider, the hawk.(Doesn't it seem at times that those big birds are riding around on something other than thermals?...Editor)...Mid-morning till noon is the hot time of thermal action...Light colored, dry fields, runways (black or white), beaches, sand, roads, buildings, the windward side of hills, these are the breeding grounds of thermals. There are special places. The green, moist cornfield, or the dry, hot cornfield...act as a barrier against heat loss to a side wind. The turbulence eddies gather in an almost endless cycle and the thermals go up strong...There are quiet places in the evening which, after a long day of warming, have absorbed a large amount of heat. When the sun sets and the air becomes cooler, these places create risers. Then you get small lifts over marshes, ponds, trees...you find buildings, runways, roads that produce the same...This has been the story of the thermal, an invisible tornado vortex whose high top is a cumulus cloud. Dr. Alexander Lippisch, the original "Vortex Spinner," directed my interest in this research. From our experiments with man-made thermals came the photos showing the secrets of vortex formation."

At left and top right are the core of a thermal vortex. Note the turbulent, wisp-like motion at the base, the ground layer which is being fed into the vortex. At bottom right is the beginning of the thermal vortex. The two mounds of air are about to start twisting upwards. They are so close together that they will later combine into one large thermal. This is how weak "risers" look in the morning, before clouds form. .

