

# THERMAL MARKING

by DAVE LOBMASTER

Soaring pilots are similar to blind men. They can feel a thermal and can measure it in some respects but a thermal can't be seen. In describing the same thermal one pilot will say it was circular while another says no, it was bone-shaped. The first observer says it fizzled out at four-thousand-two-hundred feet and another man says no, it really went to six-thousand feet because he rode it up there. Of course usually it is not possible to compare experiences because there is seldom more than one sailplane in a given thermal except during a contest and then it is easy to stay in the thermal (if there is room) because the other ships mark the thermal for each other. Other ships circling in the same thermal give one another a reference as to their own efficiency in utilization of the thermal insofar as one ship's relative altitude gain in a given thermal compares with others. But it is not always easy to stay oriented as to the thermal location unless there are other ships in the same thermal or unless one whirls about doing precise 360-degree turns and even then there is some drift from one side to another. Frequently the lift that gives out doesn't really give out but is only lost—this situation is aggravated in weaker, dry thermals especially.

For years there have been sporadic articles written by those who have tried new ways to find and even mark thermals. There have been pilots who have advocated polaroid glasses that under certain conditions might even enable a thermal to be seen. There have been humidity sniffers. There have been differential temperature measurement devices out on wingtips but the opinion has always seemed to be that these approaches weren't really practical. Coloring agents have been mentioned to make thermals visible. None of these ideas or systems have seemed to amount to much or if they have the persons in possession of these techniques have been reticent about mentioning it to the soaring community.

What is needed is a method of marking, especially when no other sailplanes are soaring the same area.

In addition, any marking method should furnish an index of efficiency so that the thermal is not only marked but the marker can be used to measure how well the sailplane is taking advantage of the rising air column.

In St. Louis, dry thermals are occasionally marked by floating cornstalk leaves, paper, or even birds that feed on insects. Usually these markers are at the very top of well-developed thermals and then are only occasionally noticed. Of course they are least useful to the soaring pilot at the top of a good thermal.

After a search for the right material or technique it seemed that the ideal marker might be facial tissues such as Kleenex. They are large enough to be seen for several hundred feet and have an approximate sink rate through calm air of 2.5 feet per second. They are cheap and are boxed so as to be easy to dispense. A small window or vent on the canopy is the only necessity insofar as the sailplane is concerned. Tissues come in a variety of colors.

This spring this technique has been given several serious trials. Results appear encouraging. For one thing it is easy to drop the tissues out. Just hold a tissue near the vent or window and they are sucked out by the airstream without effort other than turning the tissue loose. They are not hard to see and if several are released while circling a thermal they will first float in the circle in which they were released but gradually working themselves toward a common center that seems to be the point of greatest activity of that thermal. When they center at the thermal core you have what at sea would be called a "dye marker" that enables you to take your eyes off the instruments and watch the thermal visually as well as with the variometer.

If it seems that better lift might be found to one side you can now go there with absolute certainty of finding your way back to the thermal you left if the area of search was poor. No longer is it absolutely necessary to stay in constant 360-degree turns to stay oriented—you could find that a particular thermal

might be soared more efficiently in ellipses or back and forth along a given line. A visual marker makes this possible. Otherwise it is easy to get lost.

As an efficiency yardstick you will know that the tissues are sinking at about the same speed of the sailplane so if the tissues gain altitude above the ship it is a warning to the pilot that he isn't getting maximum lift out of the energy available.

Ultimately these tissues will disperse or pass out of sight. Then it is time to release another ten or so. (Cost of ten at our current drug store price would be one and one-half cents.) If the thermal is well-defined and strong the average soaring pilot would not be concerned about marking it but if the lift is weak and uncertain or he is looking for better lift or finding it hard to hold on to what he has these visual references will help.

A beginning soaring pilot will find a thermal easier to visualize if he can see it. During a recent weekend an instructor was taking a final ride with a student nearing solo. Tissues were released upon contact with a modest thermal and the student and instructor felt that the sailplane had the thermal centered. After a slow climb from two- to three-thousand feet the thermal seemed to expire and the student observed that they had reached the top of the thermal. It was a dry thermal and the instructor agreed until they noticed some of the tissues they had released floating several hundred feet off to one side. When they turned and flew over to the tissues released ten minutes before they found strong lift once again and climbed on up to above four-thousand feet demonstrating to the student and the instructor that somewhere during the climb they had lost the original body of the thermal and had climbed at reduced efficiency in a smaller outcropping of lift.

Safety is enhanced if the pilot can glance outside the cockpit more and scan instruments less. It is more fun and less tiresome to fly this way. It is doubtful that a few dozen tissues floating down at random over the countryside will bring the citizens up in arms. Why not try this idea and see if it has anything to offer in efficiency, safety, training or even comfort? It will cost you less than a quarter to see for yourself.