Thermalling

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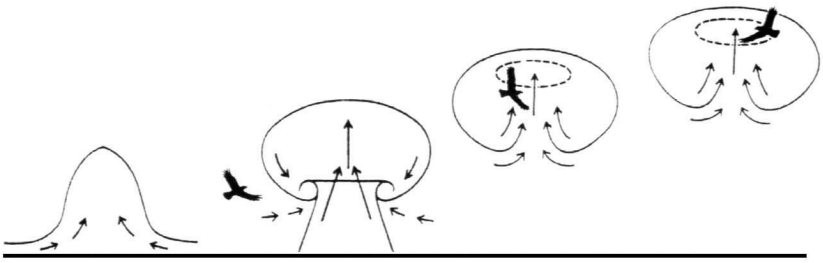

How do you do that then mister?

Whilst talking to a chap that I met last year he mentioned that he did a little sport thermal soaring with a 2-metre glider and an electroslot model. He said that he was becoming a little disillusioned with these machines and could I recommend something that would climb in lift. When I suggested that almost anything would go up in lift, he told me that he had never, to his knowledge, caught a patch of lift or a thermal during any of his flights. His next question was of course, how can you tell if you are in lift and how do you stay in it once you have found it.

Now let me say at this point that I am not the best person to answer that question. I have difficulty deciding when I am in lift, especially if the model is very close to me or directly overhead. I suspect that many of my soaring colleagues are much better at making this sort of judgement than I. On the other hand, as I have won the thermal league for the last two years I must be doing something right. So where do we start?

There are three main factors involved here —

- the manner in which you fly your aircraft
- staying out of sink and
- recognising lift.

All have a major bearing on the length of flight which you can expect and I will deal with them in order.

Being able to tell whether your aircraft is in lift or sink depends on your ability to discern what it is doing in the air. If you are constantly giving inputs which alter the aircraft's course and attitude you will never be able to tell which changes are caused by you and which are caused by variations in the air itself. You must set the aircraft to fly on a course and then leave it strictly alone, watching closely for deviations in its course or attitude. If your aircraft will not fly straight and level for any length of time you must start from scratch and trim it to do so. Even in quite breezy conditions a glider will maintain a fairly steady course within the general mass of air.

Leaving your aircraft's controls alone has the secondary effect of allowing it to fly more efficiently. Every time you move a control surface you create drag of some form or other and that is bad for duration. If you don't move the surfaces you stay up longer – simple isn't it?

If you feel that the course that you have set is taking the aircraft uncomfortably far away then make a change to a new heading then leave the controls alone. Under these conditions, if your aircraft suddenly turns right or left, or pitches up or down, you can bet your bottom dollar that it is due to some disturbance

in the air mass and that is going toaaffect your flight duration.
Okay, so the aircraft has been moved from it's allotted course — so now what?

You must try to discern whether the aircraft is sinking or not. It is one of the soaring truisms that if you can avoid sinking air you will get much longer flights. Therefore much of your time in the air must be devoted to avoiding sinking air. If you manage to hit lifting air whilst you are doing so, then that's a bonus!

So how do you know that your aircraft is in sink? Well the obvious answer is that it is getting lower, but there are much earlier telltale signs which will allow us to take avoiding action. Unless you are unlucky enough to hit a microburst then most sink that you will encounter will be fairly gentle in its nature, to the point that it may take you several minutes to realise that the model is actually descending. However as soon as the aircraft enters sink you will perhaps notice that the tail end starts to sag in the air and as a consequence the aircraft slows down. This is the point at which you must act quickly. You must raise the tail with a hefty application of down elevator, thus lowering the nose and increasing the flying speed. You must now get out of the sink area as quickly as possible. The best way to do this is by changing direction by 90 degrees to your original track and keep up the flying speed until you can see from the attitude of the model that you are out of the sink. Once clear of the sink re-establish your cruising flight pattern taking care to avoid that big nasty patch from which you have just escaped.

Okay, we have escaped the sink but what about the lift? Well you may be lucky enough to have it marked for you by other gliders, or a stack of seagulls or a buzzard or two, but more likely than not you will blunder into it. So how will you recognise this fabled gift of lift? The magazines and textbooks wax lyrical about the wings of your aircraft being tipped vigorously to one side and the aircraft being swept upwards as if on an invisible escalator. Of course this can happen but normally the indications are rather more subtle. If you notice your wings being tipped slightly, in either direction, rattled about, or the tail rising slightly and the aircraft accelerating then you can guarantee that you are in some form of lift. This can vary in degree from a very gentle disturbance to a major divergence from the aircraft's course.

So if you have found a patch of lift you are now presented with the problem of keeping your aircraft in it. The accepted wisdom is to perform consecutive 360 degree turns, thereby keeping the aircraft in the same patch of sky. To be honest I cannot argue with this approach — it's the one I use myself. But the question is, how tight should these turns be? . . . in which direction? . . . and with how much bank? There are no easy answers to these questions, it is very much a case of suck it and see. There are however one or two guidelines which will help.

In general, the closer to the ground that you contact lift the smaller and weaker it is likely to be. Conversely the higher you get in a true thermal the wider it appears to become. From this we can see that a 100 metre wide, flat circle is not going to keep you in the lift which you entered only 10 metres off the ground. You will need to keep the model well banked and turning tightly to climb away in this type of lift. As your aircraft climbs higher it is usually possible to flatten the angle of bank and widen the turns, thereby increasing the rate of climb.

If your first indication of lift is the aircraft banking or turning off it's set course, it is a fair assumption that it is turning away from the lift. This is because there was more up-going air under one wing than the other. In this case you must reverse this turn, banking the aircraft as quickly as possible into the rising wing and once again performing consecutive 360 degree turns.

It will be unusual if you manage to get the aircraft centred in the lift at your first attempt. You will often find that the aircraft is climbing on one side of the circle and falling on the other. Try opening and tightening your circles in order to move the aircraft towards the side of the circle where it is consistently

climbing. You will probably require several attempts at this before the aircraft is climbing steadily all round your circle.

You must also allow your thermal circles to drift with the wind — the lift does. Do not be afraid to follow lift down wind. So long as your aircraft is still rising you will be gaining altitude, which can be used to return to the field.

All models can find and make use of thermals — I have even thermalled a DB Mascot power trainer. Some models are more suited to the task than others. Lightweight hand launch models will climb away on the merest whisper of lift whilst heavily loaded scale gliders require a good thermal to get them going. The important thing to remember is that they are all capable of using lift if you are.

The main points to remember are —

- trim your aircraft to fly "hands off.
- fly as smoothly as possible in a search pattern.
- if you encounter sink fly away from it as fast as you can.

If you encounter what looks like lift, get round into it as quickly as possible.

If you follow these general rules you will find that your flight times will gradually increase as you gain experience.

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Question

Hi Guys ,
I am looking in some information about thermals (finding it , ride ...)
Maybe some one knows interesting sources with info about this topic ?

Answer 1
Here are 2 great places to start; depending on if you prefer books or video.

Book: http://www.carstens -publications. com/hangar/ a11560.html
Video: http://www.radiocar bonart.com/ Pages/asectherma lmain.html

Can't go wrong with either.

Answer 2
Best book I've read on the subject was Dave Thornburg's Old Buzzard Soaring book. I believe Northeast Sailplanes has (or at least had) it. No, my copy is not for sale.