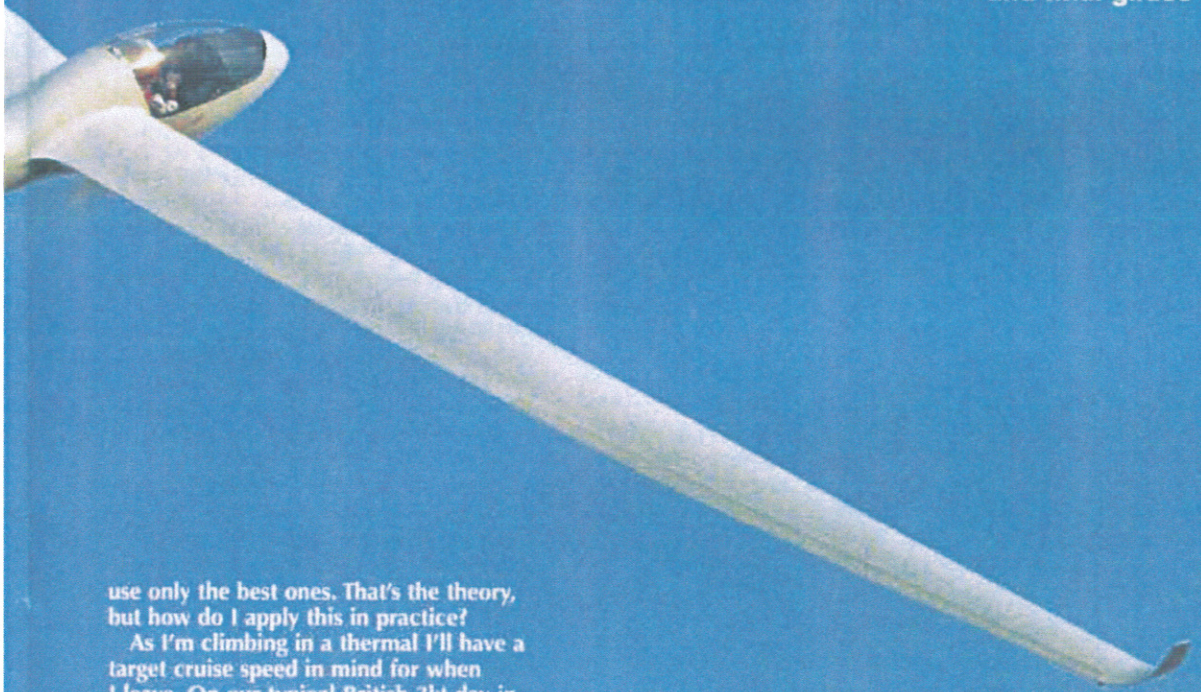
# Getting your soaring up to speed

**In the last article of his series, British Junior Champion Jay Rebbeck explains why slower can be faster in speed-to-fly and final glides**



use only the best ones. That's the theory, but how do I apply this in practice?

As I'm climbing in a thermal I'll have a target cruise speed in mind for when I leave. On our typical British 3kt day in an LS8, let's say 80kts. However, it's horribly inefficient to accelerate in sink, so get the stick forward as you roll out of the thermal and dive to your target cruise speed.

While cruising with my MacCready set on, say, 1.5kts, I adjust my speed only by around 10kts either side of my target of 80kts. Only if there is very good lift will I slow right down to 55kts and then maybe even weave in the lift. Personally, I don't choose to frantically dolphin in every scrap of lift, because you are increasing the distance you fly.

## Speed-to-fly myths

Flying at the right speed is all well and good, but let's get our priorities sorted. To achieve fast average speeds, it is far more important to climb in strong thermals than to stick to the perfect speed.

I remember overhearing, in the bar one evening, a pilot chatting with a fellow competitor: "Initially, I couldn't work out how you overtook me, but then I realised I had my MacCready set up wrong," he said. In response, his competitor

The white planes picture co

RACING PILOTS love flying fast. When you're in a contest there's nothing better than cruising past a competitor as if they're standing still. Sadly, the secret to beating that glider home is very rarely as simple as flying faster. There is a science underlying your optimal speed to fly.

Imagine this scenario. You've just climbed an LS8 in a 5kt thermal to 5,000ft, and level your wings at cloudbase ready to start cruising. At what speed do you leave? 60kts? 100kts? The answer has nothing to do with the climb you've just had – that's history now – and everything to do with deciding how strong your next climb will be.

## MacCready made simple

Based on this central tenet – that your cruise speed depends on your next climb – Paul MacCready evolved an entirely mathematical model that tells you what speed you should fly at any given moment. It takes into account the following three factors:

■ *the predicted climb rate of your next thermal.* If you reckon it's going up like a rocket, then you want to get there as fast as you can – even if you lose a few thousand feet getting there. On the other hand, if it's 8pm and you're venturing out into dying evening thermals, you'll want to glide cautiously to minimise the height required in your next weak thermal.

■ *the performance of the glider you are flying.* In general, the better your glider's performance, the faster your optimal glide speed becomes.

■ *how much sink or lift you are currently flying through.* The theory of dolphin flying says that we should slow up to our minimum sink rate of, say, 55kts in good lift, but that the stronger the sink we encounter, the faster we should fly so we spend the least time possible suffering from it.

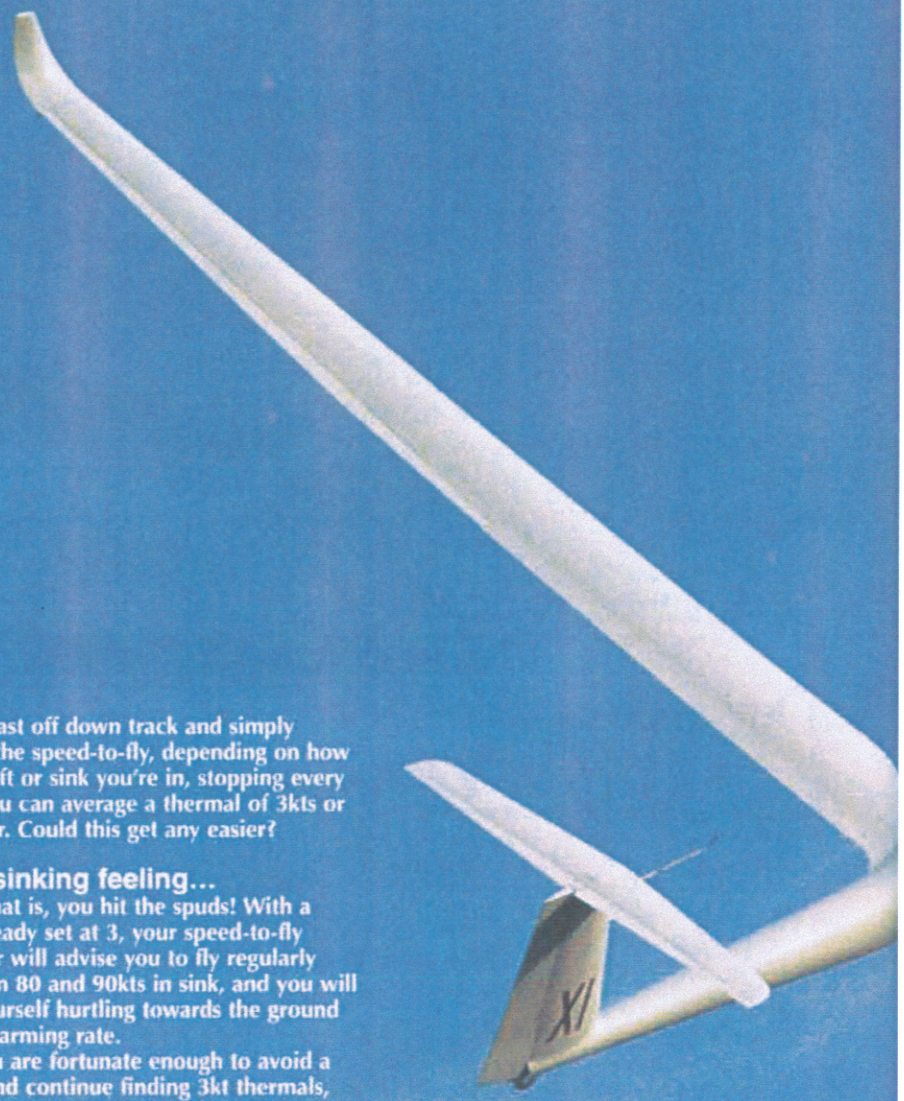
Right, we can see why these factors are all important. How does MacCready handle them?

The beauty of his theory is the simplicity of applying it. Just jump into your glider, wind the MacCready ring on your vario up to the average climb rate you expect to achieve (or type it into your electronic Cambridge, or whatever) and you're away.

What MacCready has done is to work out that for a given rate of climb there is an optimal speed to fly your particular glider. This is the most efficient speed, taking into account the balance between getting there fast to exploit good climbing potential, but not so quickly that you lose valuable height that takes too long to regain.

Furthermore, he has calculated how that speed must be varied to compensate for associated lift and sink *en route*.

For example, assume it's a nice British day, with a 3,000ft cloudbase and good 3kt climbs. So you set your MacCready to 3, blast off down track and simply follow the speed-to-fly, depending on how much lift or sink you're in, stopping every time you can average a thermal of 3kts or stronger. Could this get any easier?



## That sinking feeling...

Until that is, you hit the spuds! With a MacCready set at 3, your speed-to-fly director will advise you to fly regularly between 80 and 90kts in sink, and you will find yourself hurtling towards the ground at an alarming rate.

If you are fortunate enough to avoid a field, and continue finding 3kt thermals, you might complete the task, at the expense of winding up a sweaty, adrenalin-filled, palpitating nervous wreck. "But Paul told me it was efficient," you mutter as you sidle back to the bar...

So, where's the catch?

Very simply, MacCready doesn't allow for the fact that often we don't actually know how strong the next thermal is going to be.

In order to fly the fastest cross-country speed, the trick is to climb in thermals that are unusually strong for the day, and avoid climbing in any particularly weak ones. This is where MacCready theory leads us into two problems.

Firstly, what happens if you are forced to take a thermal weaker than your MacCready setting? Your average speed plummets. What your MacCready ring doesn't tell you is that your average speed dips only slightly if you fly 10kts too slowly to a good climb, but takes a battering if you fly 10kts too fast to a weak climb.

Secondly, although you may feel very content having flown at a 3kt MacCready setting into a 3kt climb, what if that next climb is 6kts? You have to climb in your 3kt thermal anyway to gain back all that height you've burnt off.

If you fly at more cautious MacCready settings, you can sample more thermals before you're forced to take one, so your chances of finding the unusually strong climb are also higher.

## How fast should I fly?

Where does this leave us? Well, although MacCready theory isn't perfect, we can adapt it easily to create a solid basis for choosing our speed to fly. A good working rule that I often use is simply this: I look at the sky ahead, think what thermal strength I would be prepared to stop and climb in, halve it and that's my MacCready setting. Easy! I am gearing my speed to my expected climb rate while flying slowly enough to sample more thermals. This means I can