FOREWORD

One of the great joys of gliding is that it is many things to many people. Whilst our first steps typically revolve around learning to fly the glider, we soon start to set ourselves ever more challenging goals. Whether that be flying our first cross-country flight or entering our first competition, to setting a new national record or winning an international medal. Put simply, gliding is far more than just a form of aviation. For many people, it is a high-performance sport.

Within any high-performance sport, you find great sports men and women working alongside great coaches. But it is exceedingly rare to find someone who genuinely wears both these roles quite so comfortably as G Dale. G has been operating as a professional gliding coach for over 25 years, and racing gliders for over three decades! He is a multiple-time British National champion and current European silver medallist. I have been privileged in recent years to get to know G as a coach, a competitor, a teammate, and a friend. I have raced with him, and against him, and I can think of few people better qualified to educate others on the art of high-performance soaring.

In the first two volumes of The Soaring Engine, G explored the phenomenon of Thermal, Ridge, Wave and Convergence lift. Now, in this third volume, G introduces us to the techniques and processes required to extract performance from the atmosphere. In other words, now we understand how the Soaring Engine works, we need to learn to drive it. Fast, consistently, and in all conditions.

G will freely admit himself that he was not a natural born racing pilot. He has worked hard at developing his skills over a long period of time. But these are skills that you can learn, and that you can practice. With motivation, dedication, and armed with the right information and processes, you can achieve your goals. This book will help you identify your own strengths and weaknesses and give you the ability to improve your own flying.

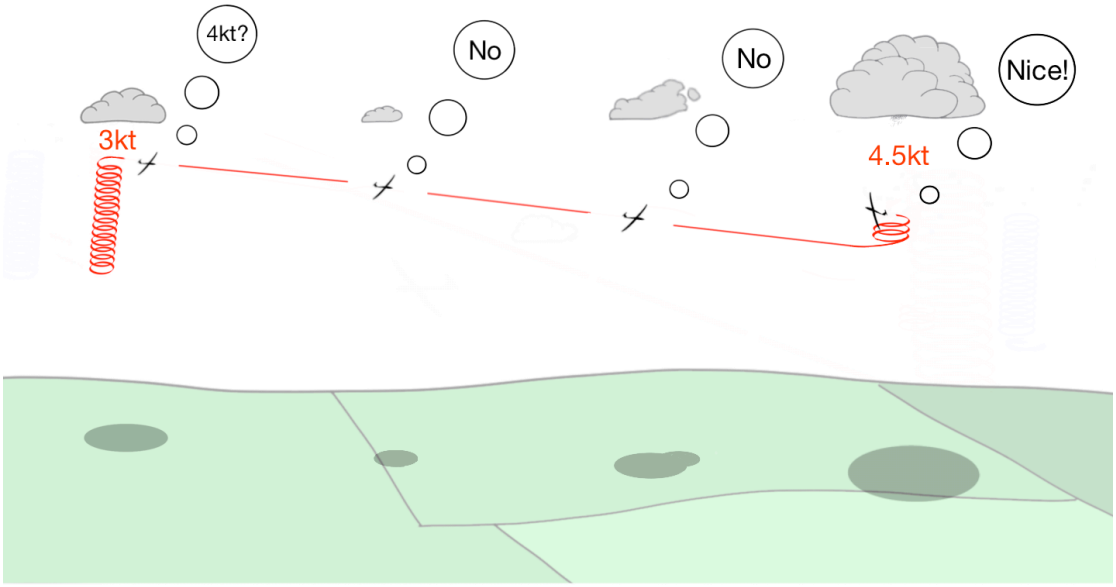
As anyone who has ever had the privilege of listening to one of G's lectures will know, he is incredibly passionate about his students and has an enviable ability to deliver key information precisely and eloquently. His coaching style is exciting and energetic, driven by a deep understanding after decades of asking himself 'why things happen'. This latest book is no different. G has taken traditional theory and broken it down by way of simple, clear diagrams, and concise language. Throughout the book, you will find intriguing examples from throughout G's international flying career, and he will suggest simple methods that you can use and practice.

Soaring pilots of all levels will be able to learn something from this book. From those embarking on their first badge flights, to pundits looking for that next international medal. I can certainly speak from personal experience of the benefit of G's coaching. It was only a few years ago that I was sat in the front of a two-seater as an early cross-country Junior pilot with THE G Dale!

The climb/cruise threshold

Thermal selection is about improving your average rate of climb by using the best thermals. You need to know when to stop for a climb and when to leave it. It's vital to think ahead. Therefore, when cruising you must know how strong a thermal you can expect to find. When climbing you must monitor the rate of climb and leave when you think you can find better. This figure is your climb/cruise threshold.

Threshold four knots



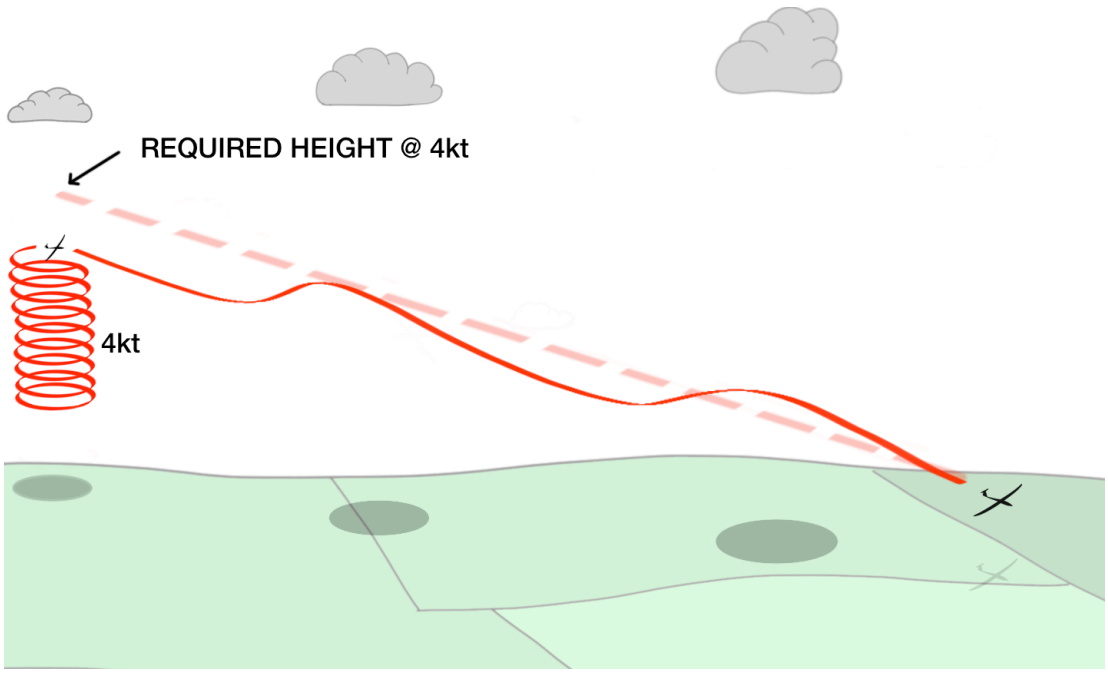
Continually assess the conditions ahead. What are the climb rates that you might achieve? If you have several chances to climb at four knots or more then that's your threshold. Leave the current thermal if it's less than four knots average and don't stop until you hit a four-knot climb. If you suspect that the thermals are dying then revise your threshold. Wind it down a bit and accept weaker climbs. Or if you get to good thermals without losing much height, and it looks even better ahead, then raise your threshold value and carry on.

This climb/cruise threshold not only functions as a decision-making tool for accepting or rejecting climbs, it also defines many of your soaring strategies. It sums up in one figure what you expect of the lift ahead, how fast you might cruise, the maximum deviation away from track you can afford, and how you should handle the glider as you pass through thermals. I know that's a lot of information to cram into one figure but bear with me for a while; we'll get back to those ideas later. Meanwhile, try to imagine how you'd set your threshold to do well in the following situations.

Lift en-route

Your average cross-country speed is controlled not only by the rate of climb in thermals but also by the lift and sink between them. This applies to the final glide. If you can fly in lift between the last thermal and the goal you can improve your glide angle. You could set off below your optimum final glide and make up the height on the way, improving your overall speed.

Dolphin flying up onto glide



Look at the sky along the route of the final glide and add up the extra bits of energy you can see. “Three nice clouds, they’re all working well today, that’s got to be 200’ under each one. I’ll set off 600’ under glide.” This can be very effective if your predictions of lift ahead are accurate.

You might even decide to stop for another climb. Speed flying theory tells us that if you’re gliding with a three knot MacCready setting and then you run into a much stronger thermal, say a six-knot climb, you’ll be faster if you take the climb, re-set your MacCready speed to six knots, climb to the required height for the faster glide and set off again. This leads back to a fundamental dynamic of final glides: in theory, the stronger the last thermal, the faster you should glide. Even though the glide angle is steeper at the higher speed and you must therefore climb higher before setting off, you’ll still get to the finish line sooner.

In practise this doesn’t always work, but putting this aside for a moment, there are other reasons for climbing a little higher. Extra height in hand can be useful.