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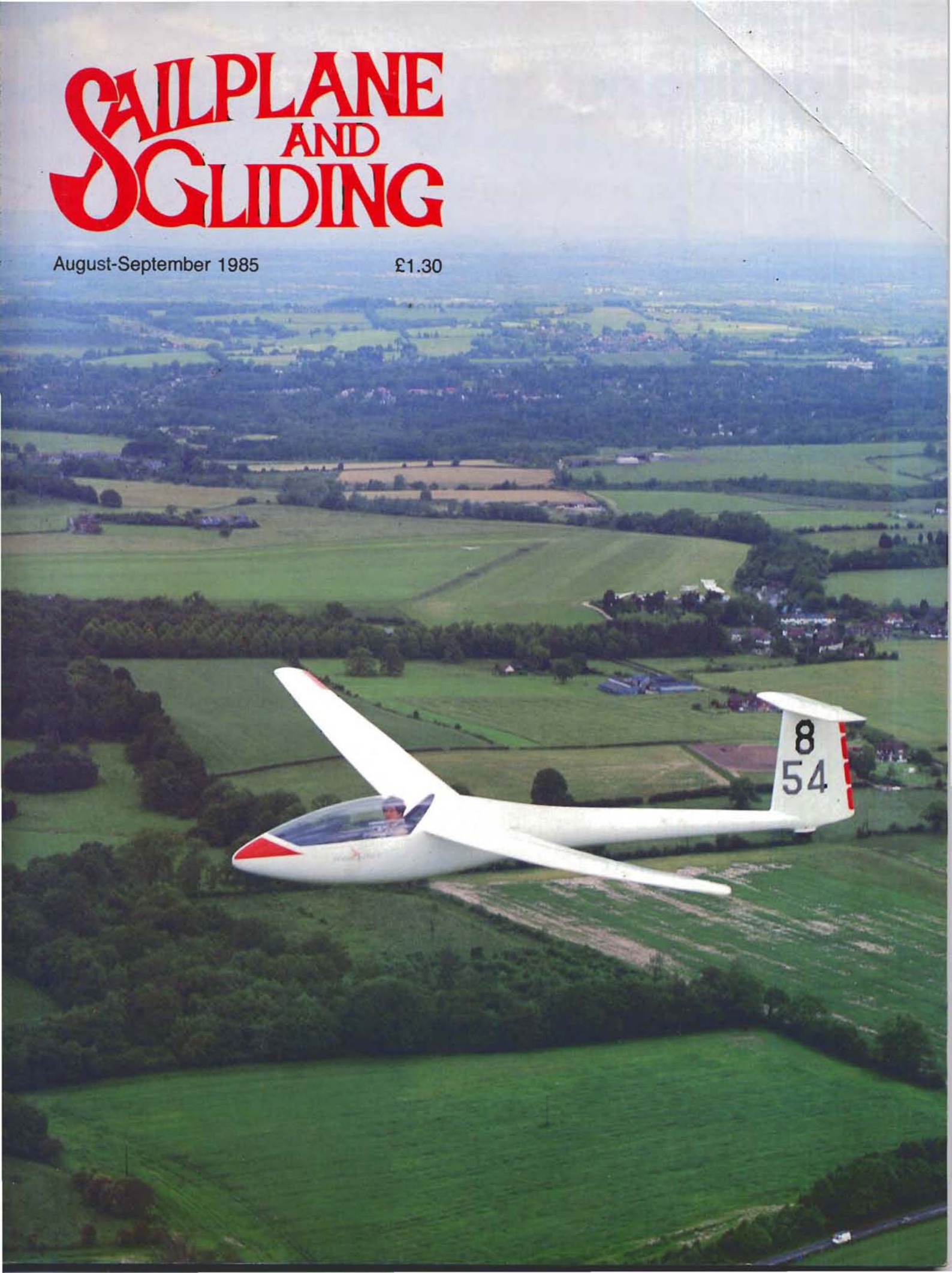
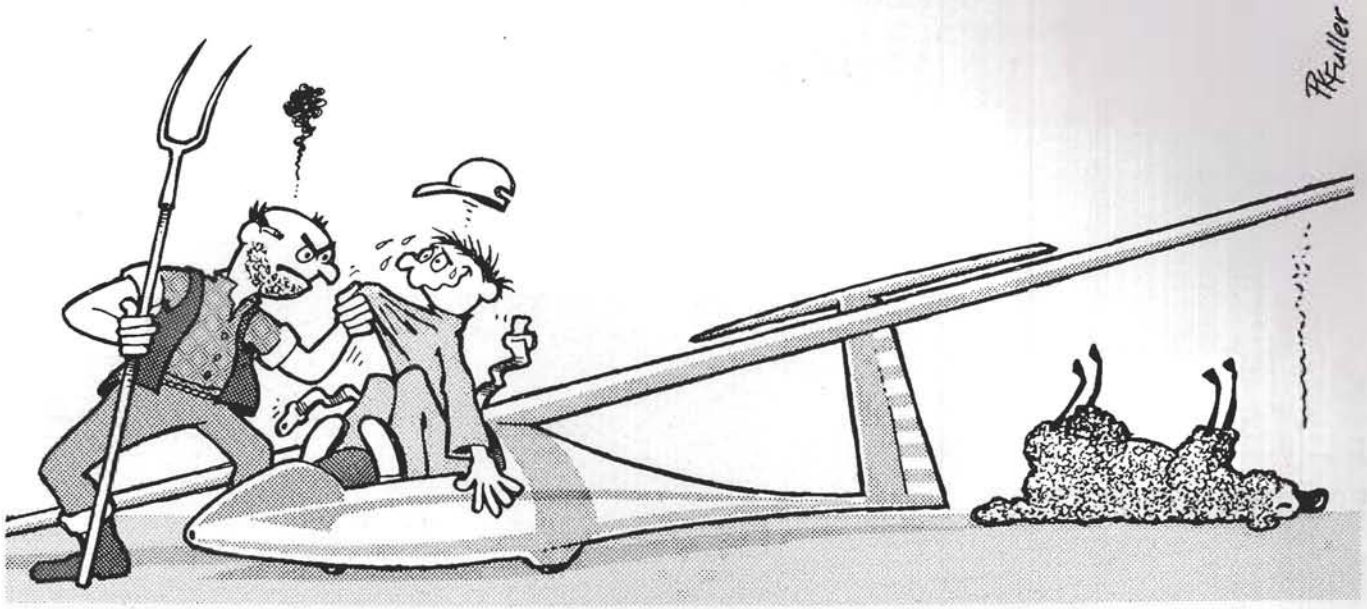


Landing out can be exciting!



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SAILPLANE & GLIDING

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BACK TO BASICS — Part 6

Circuit Planning — 2

DEREK PIGGOTT is writing mainly for beginners and instructors although this popular series is being widely read

It would be impossible to cover all the special conditions which have to be taken into account at different gliding sites. Each has its peculiarities and traps for the unwary which need to be understood by everyone flying there. However, it is important to realise that in a different location procedures designed to cater for a particular hazard on one site may themselves create a problem elsewhere.

For example, the effects of a strong curl over in the lee of a ridge of hills may necessitate keeping very close to the field on the base leg to avoid the risk of an under-shoot. The same positioning on a field landing in open country would almost certainly result in a dangerous over-shoot.

It is important, therefore, not only to learn how to get down safely and accurately on your own site, but to understand any special circumstances which apply there. Experience flying at other sites is invaluable because of the need to consider the special circumstances and to modify your planning accordingly. However, it is important to realise that it is only on the first circuit and landing that you make in a new place or on the first flight of the day at your home site that you use your judgment. On subsequent flights you simply compare your positioning with that on the first flight. So on your first flight you should make a special point of landing accurately on a chosen spot to test your judgment and ability. Then if you land several hundred yards further on it is conclusive proof that you cannot yet rely on your judgment or flying for an accurate landing. It is no good thinking or claiming that you could have landed on the spot if you had really wanted to. You didn't make it and you are not so clever as you should be.

With a car or winch launch, the need to think and plan the circuit quickly becomes apparent. The pilot is often faced with unavoidable problems such as cable breaks or abnormally low launches when it becomes impossible to join the circuit at a pre-determined height. But no matter what type of launch is being used it is still vital to have experience of planning from various positions and heights.

It is always easiest to start the circuit with a downwind leg and with sufficient height to guarantee being opposite the landing area with at least 500ft. Running short of height is an embarrassment but it is ridiculous to start the downwind leg with so much height that you are bound to arrive back to this position at more than 700 or 800ft. Normally you would be searching for thermals or practising turns etc with any spare height and it is just a matter of turning onto the downwind leg at a suitable height. Whenever possible this practice flying and searching for lift should be done upwind and to the side of the field. If a thermal is found this enables you to climb well up before having to give up because of drifting too far downwind of the field.

Most beginners tend to fly on a converging course to the field as they fly back downwind. Make a point of checking and rechecking that you are not converging and that the angle between you and the nearest landing area is still about 30°, unless you think you are running short of height. If the angle is getting too steep, make a definite, well banked turn and steer off to improve the position as soon as you can. A gentle gradual turn circling you will find that you are still positioned badly and have a problem getting into an ideal position for your approach.

"If it would leave you in a difficult or marginal position do not circle. Use some other way to use up the height . . ."

Perhaps you have a little too much height and are thinking about doing a 360° turn to use it up. Although a well banked turn will normally use up 50 to 100ft, if you happen to turn into an area of sink this may easily be 200ft or more. This is most likely to be the case when you hit an obviously strong bit of lift and try to use it. As you start the turn you fall into that very strong sink close by and within seconds you are several hundred feet worse off. This means that you should always think quickly before you make a 360° turn, "Can I afford to lose 200ft and drift back"? If it would leave you in a difficult or marginal position do not circle. Use some other way to use up the height, widening the circuit or even using the airbrakes. Above all, if you do decide to circle, make it a well banked turn. This will reduce the time you spend in the turn and minimise the height lost if you are in sink.

Provided that you are not being drifted away from the field by a crosswind, it is quite all right to turn away from the field and the choice of turning right or left should depend on your position at the time. If you are already rather close and are looking down at a steep angle, turn away to improve your positioning slightly. At every stage of the flight try to improve your positioning first and then worry about getting rid of any excess height. If you are obviously too high and too close, move away to improve your position first and then, if you are still too high, use up the height. If you try to use up the height first by will not help much and you will find yourself still too close by the time you have to turn onto the base leg.

Somewhere along the downwind leg, depending on your site, the weather, and various other factors including the whims of your instructor, you must prepare for the landing. There are several recognised pre-landing checks but the most vital items are to put the wheel down, if it is retractable, to pick up speed and retrim, to put you hand on the airbrakes ready to use them and to disregard that altimeter from then on. Whatever happens these must be done by about 500ft and from then on the important things are to judge the heights for the rest of the circuit and to keep monitoring the airspeed indicator and maintaining your chosen speed. Make sure that you have looked for and seen any other traffic on the circuit and have checked that the wind has not changed and that you have a clear landing area available.

The last part of the downwind leg, the base leg and the final approach are the busiest times of all for the pilot. Any over-concentration on one item will result in something going wrong. The art is to keep checking everything continuously like this: —

Going downwind — speed OK? Angle to the nearest landing area OK? *Looks a bit close, turn out quickly.* Landing area clear? *No, one glider on the right hand edge, but I can land well clear of it on the left.* Wind sock? *Still the same slight crosswind from the left.* Height OK? *Plenty, going to be a little high, but the*

angle is about right now. Speed up to 55kt and retrimmed. Other traffic? *Nothing near, K-8 just launching.* Hand on brakes and last glance at altimeter. *Says 600ft so probably about 500ft so height OK.* Angle about right? Speed still OK? *Angle looks OK but speed down to 50kt, lower the nose a little.* Light wind so position of the turn onto base needs to be just after the boundary of the landing area passes the wingtip; turning now. *Angle looks steep, stop the turn early to move back further.* Speed? Does it look as though I will be much too high for the final turn? *Move back a little more and open the airbrakes to get down a bit, speed down to 50 again. Low enough now so close the brakes again.* When should I start the final turn? *Start banking now, well banked turn, speed 55.* Will I need the airbrakes on immediately the turn is finished? *Yes, still rather high so full brake immediately, speed 52, nose down a little, etc, etc.*

Trying to write all those thoughts down makes one realise what a very high work load the pilot has on a normal approach and landing. If you can manage to be thinking one stage ahead all the time, it can all be kept under control. But once you get behind the action all you can do is to try and extricate yourself from the awkward situations which will keep occurring and to bodge up the mess as best you can.

Although at first you need guidance and help with the planning, after a few circuits and a comprehensive briefing about it, you will learn very little if your instructor keeps telling you "Turn onto the base leg now." "Open the airbrakes now" etc, etc. You need to be left to make your own decisions as far as is practical and safe. Often he can help by suggesting to you what you ought to be thinking, like this : "Remember, if you think you are much higher than you need to be, either use up the height with the airbrakes or move further back, **you decide**." Or "Think ahead during this final turn so that you can decide when and how much airbrake you will need on the approach, **you decide.**"

If the conditions are unstable, areas of lift and sink will upset your planning so that you may have to change your plans quickly to prevent things getting right out of hand. Ideally you need experience dealing with "situations" rather than practice at "perfect" circuits in stable conditions. In addition to experience of running out of height situations, it is important to learn to join the circuit after soaring flights where you may have gained little or no height yet have drifted back behind the landing area. This is likely to happen on early soaring flights from a car or winch launch and often leads to dangerously bad planning if you haven't done it several times before.

If the height permits always try to work back up wind and join the circuit normally. When less height is available try to move well out to one side of the landing area first so that you will have at least a good base leg to adjust your height and position. But **never** circle to try to thermal or to use up height on or near the downwind boundary. If you hit sink and drift back when circling you can easily find yourself unable to get back against the wind to the landing area. Remember that on many occasions you may be operating in a crosswind so that the "downwind" boundary will be on one side of the field. Circling on the downwind side to use up height or to try to use lift is dangerous.

If you are already established in lift and drift back it is relatively safe to continue as long as you are still within easy gliding reach of the field. But always allow for the possibility of meeting sinking air as well as having the headwind to contend with. Until you are experienced and are flying gliders with a good performance, an angle of about 30° is a sensible limit. Avoid flying over the landing area. This is an awkward position to escape from because as you fly away from it you cannot see how far you have flown. If the height permits, fly well off to the side to give you a long base leg. This will give you time to reposition yourself for the final turn and to use up any excess height with the airbrakes on the base leg.

Only a few seconds to be critically near to stalling

Fundamentally, there is nothing against using the airbrakes in the final turn provided that the speed is monitored frequently and maintained and, of course, provided that there will still be more height than is necessary to be able to complete the turn by a safe height. However, it is probably wise for the inexperienced pilot to avoid suddenly opening them during the turn unless it is ridiculously high. Opening the airbrakes will cause a loss of speed unless the nose is lowered the appropriate amount and if this is not done it will only take a few seconds to lose enough speed to be critically near to stalling, a very serious situation when turning finals. Therefore unless the height is really excessive it is advisable to finish the turn first before opening the brakes fully to use up that height. If on the other hand you are on the base leg with the airbrakes already out and it is clear that the turn will still be very high, provided that you are careful to monitor the airspeed and maintain it in the turn, it would be reasonable to continue the turn with the airbrakes out. But watch out. The rate of descent will be very high so you need to be ready to close them if you find you have used up your excess.

Never use the airbrakes before or during a final turn unless you can see that otherwise you will have excess height by the time you have completed it. Many marginal situations and dangerously low final turns occur because the pilot automatically opens the brakes without considering how high the turn will be completed. Always try to compare your height with nearby trees or buildings so that you are not mislead into using the airbrakes because your angle to the landing area looks steep. Remember that a steep angle could mean either that you are too high or that you are not high but are far too close to the landing area. Make sure that you can always finish the final turn at a safe height. If it looks a little on the low side, close the brakes immediately until the turn has been completed.

In some ways flying from a large gliding site is a disadvantage during basic training because the seriousness of poor planning is not always apparent. Running short of height simply means turning in to land further up the field and a longer push back for the next launch. This would never do on a field landing where a poorly planned approach might result, at best, in a badly damaged glider. So normally it is a bad habit to gamble by trying to soar in lift low down and to rely on not meeting any sink on the way back downwind.

In reality, every circuit should be made with sufficient reserve of height to ensure that an area of sink cannot seriously upset the planning or positioning for a good approach. Somewhere on the base leg this reserve of height must be reduced by using the airbrakes so that by the final turn the height and position allows an accurate and controllable approach. Obviously any approach with little or no airbrake is dangerously low. However, any approach requiring full airbrake continuously is dangerously high except in very windy weather. It will result in an over-shoot if any lift is encountered on the approach. When landing in a restricted area, anytime full airbrake is being required for more than a few seconds, it would be wise to start sideslipping. This will usually get you down quickly to a position where less than full airbrake is needed so that the situation is once more under control.

Every cross-country pilot should be capable of making safe and accurate full airbrake sideslips for this purpose. It is little use being able to get into a sideslip of sorts after a delay of some seconds

(Continued on p167.)

MARY TAKES TO POWER — Part 1

Now MARY MEAGHER has her Silver C, she decided to take the opportunity to get her PPL and signed on for a course in ground studies at Booker

Paid a visit to Aviation House, 129 Kingsway, in London last week to pick up my PPL. Paid a lot more than a visit, actually. Nobody happened to mention the fee until I was sent round to the cashier, and when she said "Eighty pounds, please," I nearly dropped my chequebook. I had thought it might be £18, or £20 thereabouts. "The licence is good for life, you know" said the kind lady, noticing my ashen hue and trembling hand as I signed a cheque for £80 payable to the CAA. "Well," said I, "that may be a bargain for a 21 year-old, but it sounds like a lot of money for one of middle years" — but I paid it. Having got this far, what's another £80? Didn't want a new car anyway.

My old Ford Escort has worn a groove in the M40 between Oxford and Wycombe this winter, but the trip into London was nearly too much for both of us, traffic was blocked up for miles, and the Ford developed blind staggers and a severe case of carburettor icing on the Marylebone flyover. Finding the Pilot Licence Office in Aviation House itself is yet another test of navigation, through the maze of corridors, clutching logbook, forms and documents. John MacDonald works here, someplace, and had promised my test papers would be waiting at the desk, and they were, just as he said.

It all started last October. Notice on the board said John MacDonald was giving a course in ground studies for those glider pilots at Booker who wished to convert the Silver C to a PPL. Subjects to be covered, aviation law, navigation and meterology, and aeroplanes part I (I just *love* the way you Brits spell Airplane!). Places on the course were limited to 15. I put my name down, No. 18 on the list, hoping someone would drop out. Sure enough, someone did. I was accepted on the course and duly purchased textbooks, protractor, computer, rule and a brand new 1:500,000. What happened next was most unkind. All eager student, I sat through John Mac's first lecture, taking notes on the meaning of the ISA, the QFE, VNE, RAS, VDF, GNP and XYZ. At the end of the evening I was truly knackered. Burnt out, Brain shut down altogether. I left my books in the car, my car in the drive and somebody stole it!

Why would anyone want to steal a rusty old Ford Escort with 93 000 miles on the clock? We found it next day wide open, the stereo ripped out and **all my books gone!** Two pairs of spectacles, notes, books, the lot. And worst of all, the absolute worst of all, my *logbook*. I really, really cared about my logbook. If the house had burned down I would have rescued the logbook first and then the kids. Anything else could be replaced, but not my logbook! First flight, first solo, Bronze C, Silver C, it was all in there, in several colours, remarks by instructors, a note from the folks at RAE Bedford, my heart's blood! Gone. Irretrievably gone. Vanity, after all. Only vanity. Didn't really need the logbook. I can live without it. Even though the original barograph trace was in it from my Silver C, I *did* have a copy. Lay not your treasures up on earth, all that is vanity. There's a lesson here somewhere, but if I ever get my hands on the dirty thief who stole my car and chucked my logbook in the ditch, I'll murder him!

Most glider pilots had the same opinion of this versatile gadget

Anyway, Julia Isted let me have a copy of her notes. I began again with a new set of books, maps, rule and computer. And buckled down to hard work. To calculate track and groundspeed, set wind direction under true heading index, read off track on circular scale beneath drift on drift scale, read off ground speed beneath wind dot. Exactly. I asked Brian Spreckley if he could explain how to calculate the drift and he said he hadn't used a computer since he passed his exam. Most of the other glider pilots who also flew the tug expressed the same opinion of this versatile gadget. Nevertheless it all seemed useful knowledge, especially the navigation and the Met, and I set myself most earnestly to absorb it.

The primary difference between a glider and a power plane is, of course, the active presence of a propeller up front, with a lot of heavy, smelly, noisy machinery to make it go, and just over your head, cutting off the view, two fat stubby wings full of inflammable fluid. An understanding of the machinery is useful in order to persuade it to function and to continue in good health while *en route*.

Some of us had a little difficulty in grasping the concepts. John Mac was explaining to us the principles of the four stroke reciprocating engine one memorable evening. "It's perfectly easy to remember" he declaimed with vigour. "Induction, compression, expansion, and exhaust. All you have to remember is *suck, squeeze, bang* and *blow*." We all thought that one over for a moment of silence, till one of the girls said, softly and reverently, "Wow"! General collapse.

I don't think having girls in the class cramped his style very much. Though John Mac took the mickey from time to time (especially out of me because of my transatlantic origins) he did not hesitate to recommend that ancient salacious mnemonic for True, Variation, Magnetic Drift, Compass that has stood the test of time. Basic drill and hard study was certainly required, we dared not miss a single lecture. Each one began with a written test and if you didn't score 18 out of 20 you were in trouble. "I've never had a failure yet" said John Mac, "though some do not complete the course."

By December 12 we were saturated in detail, filled to the brim with points of law, principles of flight and the practice of navigating across the 1:500 000 in inches, feet and millibars. I still felt a little shaky in execution and went the day before to take a practice paper. Made several stupid mistakes, *ie* put the protractor down on the map with 360° pointing west, and forgetting whether the wind backs or veers before a cold front. I was careful not to make any stupid mistakes on the examination proper, and achieved a very decent pass, which surprised some people.

Thus encouraged, I decided to go whole hog, and get the PPL. Think of the money you save, doing a Silver C conversion. Only seven hours are required instead of the normal minimum 38. I didn't honestly expect to do it in only seven hours, nobody does, and I'm not that good a pilot. But I had flown a bit in the good old USA. Ten hours in a Cessna 152 at the Chesapeake Bay Bridge Airport Flying School, CFI and sole instructor John Cumberpatch. Back in 1983 that was, when I was trying to learn to land a glider and having a lot of problems.

Visiting my Dad in Maryland, struck by a powerful impulse to levitate from time to time, the only way they levitate over there, mostly, is with a propeller on the front. So I signed up with John Cumberpatch for a bit of circuit bashing. Trouble

was he only had one airplane, and it was his pride and joy and he was exceedingly careful of it. Out of 21 circuits that week, only once did John actually let me do the touchdown; every other time we got near the ground, John took over at the last minute. I did learn to land a glider eventually, by squinting at the blades of grass and when I could distinguish one blade from the next it was time to round out. This method does not work for a paved runway.

Booker GC has a peculiar reputation in gliding circles. We have been called "The Booker Mafia", and it is implied our behaviour is less than sedate and orderly at all times. I can't understand why people say things like that, we only start drinking when flying is ended for the day, and we have to have our wits about us as we share Wycombe Air Park with *two* power flying clubs, and a helicopter training facility.

Brian Spreckley had recommended either John Mac himself or Richard Bird, CFI at Wycombe Air Centre, as extremely well qualified to speed my progress. But having wrestled with John Mac every week in ground school, I didn't think it wise to overstrain our friendship and elected to present myself for instruction to Richard Bird. He is called "Dicky Bird". I didn't dare and I still find it difficult to casually say, "Hi, Dicky" to the CFI. CFI's intimidate me.

I should have known better than to insist that he take me on personally as a student, when obviously he had more important things to tend to like running the flying school, but I said that Brian had recommended him and I would prefer to learn with himself, and furthermore could I please learn on the new syllabus which did not include the spin? (Stall and spin awareness is now taught by slow flying practice, as experience in the US showed that more people were killed practising spins than were killed by avoiding the situation of ever getting into a potential spin.)

Well enough. I was duly accepted and signed up for a first lesson the following week. It was pretty awful. First of all, the weather was grot. And when I got in I didn't realise you had to fly holding onto the throttle knob the whole dang time, so my seat was back too far and I could hardly reach the throttle. I couldn't see out because I was too low down, and we flew through the clouds for yonks and finally got up top and found a clear space and did slow flying and stall recovery, and that was okay.

Dicky Bird sat there like the Great Stone Face and never cracked a smile at all until we had done all that and he said, as we were floundering along at 42kt "now what happens if I over-rudder the turn?". I said "I know what happens and I don't want to" . . . and he booted in the rudder and we flipped over and round and round we went. I recovered with too much power, and he did it again, and I said rude words and for the first time Dicky grinned. The sadist! They're all sadists! After this abrupt and cruel descent, we flew back and I did a deplorable landing. I had a lot to learn.

Competition Training Course

Have you ever wondered what these BGA courses are like and if they are worthwhile? BRENDA (NICK) SNOOK found out at Lasham in April and gives her impressions.

I saw the BGA's advertisement in S&G — "Competition Training Courses". One of my many problems is flying too slowly to get 300km and this course must be about faster flying. I sent my money.

There were 12 of us on the course — most of the members seemed to be about 20 years-old and as fit as commandos — the Junior Training Squad! If you are under 25 and have made incredibly fast progress to Silver C, the Sports Council *via* BGA may assist with some expenses. (For full details about the Squad write to John Williamson, c/o the BGA office.) The instructors were John Williamson, Ken Stewart and Lee Hood.

Monday brought rain. We had an explanation of "lead and follow" techniques and a film on field landings. In the afternoon J.W. told us about varios.

Tuesday's weather looked more hopeful, dry with westerly wind 12-20kt. We were set a 140km triangle, Hungerford, Headington (Oxford), which was shortened as (a) the weather deteriorated and (b) I took forever to reach a reasonable height at Lasham.

"Don't worry about it, it could happen to anyone," said Ken. Maybe it could, but I was first down, on the Gallops at Kingsclere, all of 22km from home.

Three got back, having found most of the lift over sog.

Wednesday morning we had a lecture on turning point photography, then were set a 137km triangle Thruxton, Wantage. No rain was forecast and the wind was light southerly. The viz was poor, so we had smaller gaggles of three, with the rest going independently. I was with Ken's lot again, and determined to stay up.

We flew the first leg without too much hassle, with me going through my usual Red Arrows programme at the TP — I *must* get a fixed camera! After that the lift was weak and we were faintly desperate in the area of Rivar Hill. On our way once more, we saw Harwell to the right and made for the obvious hot spot downwind from Wantage. However, for me it was as cold as charity and I sank slowly into my twelfth field and watched the boys scratch on their way. Half of the course got back to Lasham.

On **Thursday** morning we had a lecture on starting techniques which sounded quite terrifying. I was relieved to hear that there was an alternative way to start — timed from take-off!

The task was a 123km Stockbridge, Goring. The wind was ESE 5-10kt, with viz 10-20km. I decided that following roads was easier than keeping in a gaggle in that murk, and lurched off on my own into the west.

I was very surprised to stumble upon Stockbridge, and lost my usual 1000ft photographing it. After that I spent an age scratching around Middle Wallop and Andover, hearing the boys drawing away over the RT. Later conditions improved and I missed the worst of things over Goring. I managed to fairly crackle along to average 29.1km/h back to Lasham! About three quarters of us got back.

On **Friday** a lecture on thermal entry gave me hope of improving my time, and poor blue conditions gave me an opportunity to practise John Willy's theory in the afternoon. Did it work? — of course! but you must join a BGA course to find out the magic formula.

I had to return home on Saturday, leaving the boys to ridge soar an O/R to Fovant Badges, under cloud, in a sharp north-westerly.

The whole course was a great success, with theoretical and practical aspects well pitched. All the instructors were splendid: cheerful with the despondent, teasing with the over-competitive, compassionate and practical at the sad splinter of wood and encouraging to us all. My abiding memory will be Ken's repeated call of "What's your height, Brenda?" like a solicitous border collie with a stumbling old sheep!

A splendid course — why don't you try it?

GLIDING RULES OK — or are they?

A *cri de coeur* from an average club member, GEOFFREY HAWORTH

Quarrying through some back numbers of S&G I chanced upon Dave Watt's admirably trenchant article (See S&G, December 1977, p254) in which he took a sideswipe at those whom God hath set in authority over us, mainly the BGA, and, principally, at their compulsive obsession with the making of rules. It appears there is a Parkinsonian tendency for rules to expand in number to fill the time available to the rule makers. I confess to being drawn the more to his article after the complimentary remarks in his opening paragraph about an article of mine of the same year, similarly iconoclastic, but that time on the subject of instructors.

Dave Watt's flying career is well chronicled; my own less so. Ten years after my experiences at the hands of those instructors I have a Bronze C and own one sixth of a Skylark 2. Progress, you might say, has been steady rather than spectacular. I have not yet achieved a single Silver C leg. A disillusioned, disappointed, disenchanted failure on the point of leaving the sport? Not on your life. Happily I have retained that childlike, almost childish, enthusiasm for flying that I can still recall from my wartime ATC days.

A take-off remains the thrill it always was and a thermal is still cause for sheer wonder and joy. I feel so sorry for those for whom such have become commonplace. I still like to touch aeroplanes, be near to them and even smell them and, in this, I suggest I share the feelings of thousands of fellow enthusiasts. I have no need of an O/R to the Orkneys to get my kicks. An hour's local soaring will suffice to put me on cloud 9 for a fortnight and provides me with enough material to bore my non-flying friends for a month, (most of them believe me to be one of the country's leading pilots but they tend not to read S&G).

Your pages quite properly highlight the "daring do's" of our experts who ever strive to fly further, higher and, certainly, faster in their ever sleaker, more slippery and more expensive machines which, according to your most recently published accident reports, they seem increasingly disposed to wrap catastrophically and irreparably around unseen telegraph poles in some distant field of this green and pleasant land, presumably to the detriment of all our insurance premiums — including we less ambitious mortals. But these experts form a distinct minority. Using your own club statistics and making due allowances for double counting, temporary membership and some hyperbole on the part of club secretaries, it appears that the average flying time/member is about 14 hours. That makes me an archetypal average club member qualified to speak on their behalf.

The average club member (hereafter ACM) pays his* subscription and flying fees willingly (and, sometimes on time), performs club chores and makes himself useful. What does he expect in return? He will not, if he is wise, calculate the cost/min of his flying time; remember ACM pays for all his air time. Gliding days are not easily come by and he will be lucky to attend on more than 25 or 30 days/year. During the week he will be kind to his wife though from time to time with outbursts of irritation which he ascribes to the harassment at work, until she says "Oh, for heaven's sake what you need is a day's gliding". He will rise early and take tea to his wife, kiss her and say goodbye. "Goodbye darling and do be careful" she replies. What a superfluous caution that is. Dry mouthed and white knuckled he may be but, by god, he'll be careful. He will arrive at the club, still quite early (some experts tend to arrive rather later have you noticed), have a natter, drag out gliders, tugs and/or winches, DI, knot cables, tow to the launch point and begin the days operations.

Much of the day is spent "messing about with gliders"

During the day ACM will log, signal, attach tow hooks, hold wings and talk . . . and talk . . . and talk. At some point in the day he will fly perhaps for half an hour or so and this will be the highspot. Not being too flush with the ready he is likely, at several quid a throw, to fly only once. He may like to shed some expense by sharing a flight if he has the energy to sort out with his partner the local by-laws on who is qualified to fly in which seat with whom. But after his flight he will continue his chores and return home thoroughly contented with his day and in time for tea. Although flying is central to our enjoyment, in practice much of the day is spent "messing about with gliders".

So ACM does not expect too much. I suspect that the overwhelming majority of our members are content simply to get into the air fairly regularly for the sheer joy of it, not necessarily to practise something, improve some technique or achieve some goal for some certificate or other, and certainly not to be checked for something — especially something he has no burning desire to do in the first place. What's so reprehensible about enjoyment anyway? There can surely be no sport in which members are ruled so closely and checked so frequently. But, you say, gliding is a risk sport and I agree — I am not arguing for no checks but fewer.

Climbing is a high risk sport but the mountaineering fraternity has firmly set its face against certification (except for instructor qualifications) prefering to rely on advice and the good sense of climbers who do not have to belong to any club and who, however inexperienced, can undertake any climb however difficult. The gliding world has substituted rules for judgment. Instead of inventing rules about who should fly together and how many hours PI each or both should possess, it would be possible in fairly closed clubs for the duty instructor simply to ask the question "can these two be trusted to fly together".

I think I could go happily from the cradle to the grave flying close to my home airfield, taking off from it and returning to it. Whilst not entirely ruling out the possibility of Silver C attempts, such are not essential to my enjoyment. I am not by nature disposed to landing in some unknown field, possibly to a hostile reception, followed by the hassle and labour of a field derig and late arrival home. But the pressures are there. Quite apart from the jibes of friends (which we can take in good humour) there is the club ladder but, more significantly, there are organisational pressures. A sub Silver C pilot cannot be considered for an instructor's course nor even carry air experience passengers, yet the very prudence and caution which have so far inhibited Silver C attempts may be precisely the qualities which fit him for passenger flying. Insurance restrictions preclude entry to certain syndicates and some clubs heap humiliation on the unambitious by regarding all sub Silver C pilots, however otherwise experienced, as u/t pilots. It seems to have been overlooked that gliding badges were origi-

I have no wish to offend the females amongst us but, so far, the English language has failed to cope with the "his or her" problem so in the interests of brevity I hope they will forgive me.

nally intended to commemorate achievement — not necessarily synonymous with competence. But these certificates are now misused as licences.

The purpose of this polemic has been to point out that the backbone of our movement is that solid core of thousands of ordinary club members. People who are keen on but not obsessed by the sport, who have limited time available for it, who have other interests and perhaps interesting jobs and wives and families. They love flying but are unimpressed by certificates, club ladders and certainly competitive flying. For them the natural challenge of the elements is sufficient stimulus. The gliding movement relies on these thousands for without them there would be little money either to sustain the few expert representatives or the governing bureaucracy.

The average club member admires the former and respects the latter, but only as long as they are seen to have him in mind as they enact their laws and rules. He does not wish to have his enjoyment restricted and his activities circumscribed by stultifying and increasing rules and regulations.

Oh that Dave Watt's article be reprinted and read before any meeting of our legislature, national and local. Perhaps they will ask themselves — is this rule really necessary? Is it not simply part of general airmanship? Are we thinking only of the few, be they our experts or the few idiots amongst us? How will it affect the sensible ordinary club member? Does every eventuality require a new rule? If they cannot read Dave Watt's entire article let them read the final paragraph which, paraphrased, says "If he is enjoying himself and doing no harm to others **leave him alone".**

SATISFACTION — a (highly) personal view

STEVE LYNN

I am writing this at the end of a gliding Saturday. I know I have enjoyed my day — I flew for some four hours, shared one of those hours with my six year-old son and was delirious with pride when he shouted from the back "Daddy, you found a thermal", just before either I or the PZL happened to twig. It was a good day.

I adore my flying. However, I have to admit I am a mediocre glider pilot. I achieve 200km in 5hrs on days when others do 300km+ in 4.5hrs. That gets the confessions out of the way.

I am the first to accept that one of the great virtues of our sport is it has something for everyone: if you want to build winches, fine, if you want to be a teacher, OK, etc. But I am unlucky. I have never settled at a given level of achievement. I do remember most vividly my early days when it was an achievement to experience a circuit in a damp T-21 just to know **"I have flown."** Naturally I wanted more from my flying, through solo, Bronze etc.

I am grateful to the badge system for helping to formalise my goals, but my problem is that I have no sooner attained a goal than the next looms into threatening view. (Is this starting to sound neurotic?) Many readers of S&G will, some years ago, have found Steve Longland's article about a 500km in a Skylark very disturbing. (See S&G August 1974, p157.) Having achieved this laudable feat, he was left, not with a feeling of elation, but, if my interpretation was correct, of "That was fine for yesterday — now, what about today." Isn't that awful? Mmmm, me too.

I can't add to the emotions expressed in that article; I can only sympathise. On the other hand I have met pilots who, on a day that I have struggled to complete 220km in difficult blue conditions in N hours, tell me "Well, Steve, I'm retired and don't want to race around triangles. I've just been pottling about over the countryside looking at disused railway lines". I then work out that they have done 250km in N-1 hours.

The thing is this retired bloke is the same sort of person who builds winches and loves it. He does what he wants to do, achieves the goals that he sets himself and, or so I believe, gets a feeling of completeness or satisfaction. Whereas I set myself a goal which I believe to be much more than I can possibly achieve, achieve it and then instead of getting a big kick out of it, feel I should have done better. Oh no! Don't you start feeling sorry for me because 50% of you lot are the same — insatiable.

I don't feel I owe it to readers of S&G to explain this frustration further, except to say that undoubtedly like many of my gliding friends I spend my non-gliding life with goals of achieving and hopefully succeeding. It's only gliding that upsets what would otherwise be a perfectly satisfactory way of life. But I suppose one of the requirements of any sport must be the facility to push one's personal limits ever further, and I believe that some of my golf playing friends feel the same sort of frustrations.

I reiterate that I adore my sport, but I can only look forward to that day when I decide that the goal of a 100km or building winches will satisfy me, that I achieve it, and I ask no more.

(Continued from p163)

while you think about it and which rudder you will need. Sideslip approaches need to be practised regularly. On almost every approach I make in a solo glider on my home site I do a few seconds of sideslipping so that I never get out of practice at it. This does not mean slipping near the ground. The sideslip should only be necessary to get rid of any excess height that is beyond the power of the airbrakes and the need to do it should be apparent shortly after opening the brakes, high up on the approach.

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If Birds Use Feathers, Why Don't We?

BRENNIG JAMES suggests a change of direction for glider design

It is pretty obvious that birds and glider pilots faced with the same aerodynamic problems solve them in a different manner. Birds use a tree-like geometry which hinges at the base of the branches, while aircraft change their geometry with door-like hinges.

Over the past few years improvements in materials enable us to take another look at the problem. With carbon fibre, kevlar and light alloys how well could we imitate a bird's wing? First, what about feathers? They are small airfoils with a tubular main spar which is extended as a stub at the root. The spar is slightly ahead of the locus of the centres of pressure so that when over-loaded it twists and spills load by reducing the angle of attack.

Suppose we tried to make one out of carbon fibre with various reinforcements, kevlar light alloy and the like?

They could be trimmed to shape with scissors

Probably three or four basic varieties, left or right for the wings and two varieties for the tail. Since they would be very thin around the wingtips and edges, they could be trimmed to shape with scissors so that a wide range of sizes and shapes would be made available in this way. The root stubs would plug into sockets attached *via* hinges to the airframe which is a tubular structure rather like a bicycle or hang glider.

One major problem is that birds fly in a state of disequilibrium, but the characteristics of their control loops are faster than the part controlled, rather like a walking man who corrects his balance before he falls over. Since the average pilot will die several times before he learns to fly such a device, simulators may be necessary or some variety of electronics would need to be incorporated into the control loop.

Elevator control seems to be achieved by sweeping the wings forward and back. The pictures of gannets landing with all airfoils at a very high angle of attack illustrates a remarkable balancing act, probably helped a great deal by a profusion of strain gauges all over the body. In advanced fighter design the fly by wire system can make every airfoil work positively since the electronic control loop takes care of the stability.

Hang gliders, which are dangerous enough already, rely to a good deal on pendulum stability and clearly any recreational aircraft should have hands off, power off, stability. However, there are a good many mad fools about whose flying might be fun to watch in hairy feathered aircraft. The trouble with gliders is that you have to be launched to a considerable altitude to have much of a flight and if you get into difficulties it's a long way to fall.

With an engine you can fly for a long time within 20ft of the ground, but on the other hand if you stick a limb through the arc of a prop it's worse than a Flymo. The age of heroes is over so far as I am concerned.

Built-in dynamic stability needs about 1kw of power to move the airfoils fast enough, so a power supply and store is essential. A chain saw engine and a shrouded prop should give a reasonable prime mover with a generator and an accumulator to carry the juice. Microprocessors are all the rage these days so we'll have one of them with a forest of strain gauges to keep it occupied.

Ankles heal nicer than skulls and legs make a useful undercarriage

Prone position is strictly for the birds, ankles heal nicer than skulls, but on the other hand hang gliders do it very nicely, and legs make a useful undercarriage, so on second thoughts, let's do that. That's our basic specification — now let's throw it together.

First, a central T consisting of a tubular frame to carry the loads, engine and pilot. This is faired in and hinges at the end to carry sockets into which the feathers plug. The controls are directly operated by the pilot using pushrods onto which electric force generators are mounted. These have variable authority depending on the pilot's inclination and level of skill. They should be able to fly the aircraft straight and level on their own without interference if required. The pilot should carry a chute and should be afforded some protection by a crash helmet and thorax cage built into the airframe. Roller skates are optional.

What do we hope to achieve by this? A better cost performance ratio, since such an aircraft might lie mid-way between current Standard Class glass ships and hang gliders. A change in effective wing area of about 100% should be achieved so that the speed range is better. With all feathers tucked away, the aircraft would be a hot ship — with all devices deployed it should scratch very well and land at low speed. It might be possible to fold the wings and walk home wearing it. It would certainly form a stimulus for a more detailed study of bird flight and an outlet for the design talents of aeronautical students in a field that does not extend immediately into the financial stratosphere.

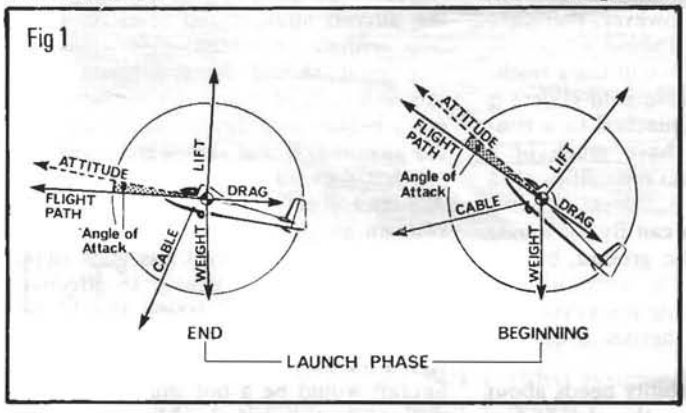
A feather can be regarded as an aeronautical module which is worthy of detailed study and simulation. A feather of about one metre span would be an interesting item to manufacture and test in a wind tunnel since it poses several structural and aerodynamic problems which can be studied without a great deal of expenditure. If feathers need to be manufactured, the relatively small size makes the cost of tooling reasonable. ■

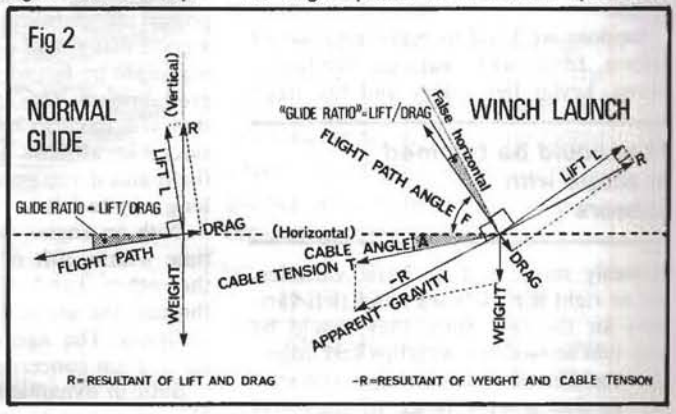
A Look at Winch Launching

By JOHN GIBSON, who has worked at British Aerospace, Warton, since 1952, mostly on flight control systems and is now specialising in handling qualities of aircraft with advance fly-by-wire controls. He began gliding in 1947, has been a member of Blackpool & Fylde GC since 1954 and chairman since 1971. With Pat Moore and Keith Emslie, John designed the BG-135 and the later SD.3 series and has had a quarter share of the prototype 13.5m SD.3 since 1975.

Even though several million winch launches have taken place, mostly successfully, there is always room for improvement. It is little discussed in textbooks or training theory and it seems to be something one just does. Now that there is so much renewed interest in modern winches, it seems appropriate to review the subject in some detail.

The first part of this article examines the system of loads which produces the climb and shows why weak links should be related to the glider weight. The second half examines the winch power and torque requirements and the management of the launch by the pilot and winch driver. It has been compressed of necessity and some paragraphs could be expanded into full articles themselves.





Launching Loads

Fig 1 shows pictures of a glider near the beginning and end of a launch. The usual lift, drag and weight forces are present, and one extra, the cable tension at the hook which can also produce nose up or down moments. The glider must fly at higher speed than normal so that the extra load can be supported.

For this article the loads have been simplified by the omission of cable weight and drag, catenary bow, etc. The cable force is taken to pass through the CG, near enough correct for most modern gliders in the climb. The glider drag is represented by a constant lift/drag ratio of 28.65, arbitrarily chosen to give a 2° glide angle. The calculated climb angle would change by less than 1° if exact drag values were to be used.

The system of forces can be made to look very familiar, as shown in Fig 2. In the normal glide the single gravity force, or weight, is balanced by the resultant of the lift and drag, and both are vertical. The flight path angle below the horizontal is the same as the lift/drag ratio.

In the launch, the cable tension and gravity force can be combined into a single reaction, balanced by the aerodynamic resultant force. This is the same system but rotated nose up through the climb angle. The flight path is inclined downwards from the "false horizontal" by the lift/drag ratio angle.

For any assumed value of cable tension T and cable angle A the resulting wing lift L and flight path angle F can be calculated. Expressing the forces as proportions of the glider weight, Fig 3 shows the results for cable tensions between 0.2 and 2.0 and cable angles between 0 and 80°. In this form they are applicable to any glider. The launch conditions commence at the right hand end of the figure and progress to the left at release.

These simple assumptions give broadly correct results which are adequate for the purpose of understanding most of what goes on in the launch. More complete equations are given in Ref 1. As a rough approximation, cable windage and weight can be represented by an increase in cable angle of some 5 to 10° for any given launch position.

A steady wind does not alter these loads but obviously affects the launch. A headwind is like having the winch moving away from the glider and winding in the cable more slowly, which reduces the bhp but not the torque required. The launch height increases because more time is available for the climb and the cable length is greater at the finish.

The tailwind launch is doubly penalised, with the winch effectively moving towards the glider. Not only is the cable being wound in more quickly but the extra cable speed needs more bhp at the same torque. If the winch has not got it then the climb attitude has to be reduced giving an even lower height.

While the pilot can control the normal climb loads by attitude, there is nothing he can do about gust loads. These result from the change in airspeed and angle of attack in proportions depending on the glider attitude and gust direction. These are most likely to break the weak link at the top of the launch where the highest cable loads are likely, but of course can occur anytime after the climb is established.

We can see a number of basic facts in Fig 3, not all self-evident.

— For any value of cable tension, the highest wing load occurs at the top of the launch, and is least at the beginning of the launch.

— For any value of wing lift, the highest cable tension occurs at the start of the launch, reducing as the launch progresses.

— The steepest climb angle is achievable at the start of the launch, where a 5° difference in climb angle has quite a small effect on cable tension.

— There is negligible climb at the end of the launch, where a 5° difference in climb angle can double the cable tension. The glider will almost certainly be descending before it is overhead the winch.

Three overriding factors put limits on the actual conditions. The weak link limits the cable tension, the stall limits the wing lift and the engine power limits both the speed and the possible cable tension. A secondary effect with a forward hook may limit the lift because the elevator has insufficient power to achieve a high angle of attack against the nose down cable pull, but this is now quite rare.

Airspeed has quite small effects on the loads. A K-13 climbing at 45° and 55kt needs 130bhp to lift its mass, and only another 10bhp to overcome the drag. As the bhp is applied *via* the cable load, the part of the wing load related to the drag is small. Different speeds and drags modify the achieved climb angle by less than a degree as noted at the beginning. However, Ref 1 notes that because of the effect of cable drag which is greater than the glider drag, slower speeds give better heights.

Fig 3 shows that at low cable angles near the start of the launch this example requires a wing lift only 50% more than normal. Even though launching loads cause more wing bending stress than free flight loads, because the extra is concentrated at the centre line, this is still a very modest loading case. For this or any other glider of similar weight the cable tension is about 1200lb, which would obviously break the standard UK 1000lb weak link. This and not the wing strength is the justification for not climbing at this angle.

Many winches in this country, of around 120bhp or less, also lack the power to achieve this climb without a generous helping of wind power.

A single-seater with about 65% of the weight will need only 90bhp in the same 45° climb. Needing about 800lb cable tension there is little risk of cable break. At this tension the K-13 would have to start the climb at 30° though at 55kt it still needs about 100bhp at the glider. Some reduction in power required results from launching more slowly. At 45kt and 30° the K-13 needs only about 80bhp. Clearly it is the 1000lb weak link which has sustained the existence of such low powered winches for so long.

Weak Link Strengths

For any climb angle the cable load is proportional to the glider weight. Since the design wing bending moments are very closely related to the central non-lifting mass of the fuselage and crew, which is much the same proportion of the total mass in all gliders, the extra bending stress induced by the cable load is relatively the same for all types. Given a weak link of the same fraction of the glider weight the protection is similar.

Launch heights have been limited for heavier gliders by the use of a common 1000lb weak link. Although it has become normal to expect two-seaters to achieve lower heights than single-seaters, there is really no sound reason why this should be so. In these expensive days, the most flight for the launch fee is almost an economic imperative.

Ref 1 shows that with the wing lift limited to a value typically less than 2*g*, zero wind launch heights of 1250ft and 1500ft are possible from a 3000ft field with a Max cable load equal to the glider weight or 1.5 times the weight respectively. The initial climb angles are probably a bit steep for UK tastes but it shows what is possible.

There is a more important aspect to weak link strength than climb performance, and that is safety. Two-seaters load the 1000lb weak link to near breaking, resulting in rapid fatigue and regular breaks with further fumbles as the cable suffers. Consequently these can occur at any time, even to an innocent single-seater at a perfectly legitimate climb angle with a cable load well below 1000lb.

Breaks have become accepted in the belief that glider structures are being protected from damage, but if they occur at loads far below safe limits then they are a safety hazard. Failed launches feature significantly in accident statistics and their number should not be increased unncessarily. Some years ago at one site the landing risks after a cable break were so high that no weak link at all was used; in my view a justifiable choice in the circumstances. A more reasonable weak link policy would have allowed safe launches while retaining structural protection.

In 1982, questions about the torque needed for a new winch led to answers of the kind presented here. It was obvious that no justification could be found for the fumbles and risks of 1000lb weak links for two-seaters. Knowing that stronger links had been authorised for some heavier new types, and having calculated the relatively innocuous loads for steeper climbs indicated above, I got Dick Stratton's permission to use the weak link permitted by the makers of the K-13. This turned out to have a Min value of 1850lb and a Max of 2350lb, a bit different from 1000lb!

To distinguish between the links we use the Tost 850kg metal strip and a 1000lb wire shear type. Members soon learn to include a check for weak link selection in the preflight procedure and there have been no problems of misuse. It has been a great success, with no link breaks and better launches with the K-13s, and very few breaks with the 1000lb links relieved of the K-13 loads.

The BGA Technical Committee have now introduced a general provision for a second weak link of 1600lb strength. This is a very welcome improvement but I strongly believe it should be extended to allow the use of the links approved in operating manuals, on the basis that the stronger they are within the glider strength limits the greater the safety in launching. Our experience shows that it is perfectly feasible to use different links and with clear identification it is no more difficult to use three than two, for example. Pilots who know that the links will not break needlessly will not be tempted to use links that are too strong.

The Winch

Once an adequate weak link system is in operation, the need for higher power winches becomes more obvious. The expressions in Fig 4 give the relationships between engine bhp and rpm, cable tension and speed, and drum diameter, though no allowance is made here for transmission losses. It is assumed that the engine is not to be operated beyond its rated bhp and rpm, and that this endpoint is tied to the Max desired cable speed. If this is chosen to be 55kt, the power curves of a number of engines translate into the fixed gear cable tension and speed curves in Fig 5.

It can be seen that for fixed ratios an engine of at least 180bhp is needed to get near the launches discussed earlier, and 240bhp for a modern heavyweight with all losses allowed for. Fig 6 shows the effects of a number of lower gear ratios for the Ford F.110. A torque convertor can provide it with a 55kt take-off speed and a climb with more cable tension at low speeds than a fixed gear 180bhp engine at low speeds but cannot make up for lack of power at higher cable speeds.

There is no technical reason why a petrol engine should not be used but in this country most winches have diesel engines. They are readily available, extremely robust and the fuel costs only half as much as petrol.

The simplest arrangement is certainly a diesel of 180bhp or more at a fixed ratio driving through a fluid coupling (which is not a torque converter). This offers plenty of cable tension from take-off right down to zero or negative cable speeds for kiting in strong winds. It also lends itself to some rather simple principles of control of both cable speed and tension for the optimum launch. The need for this is discussed later.

Fig 3

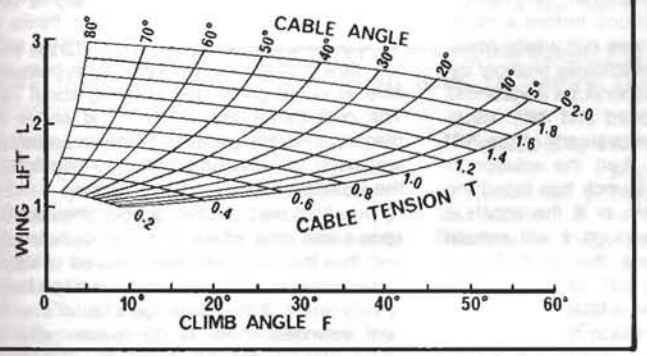


Fig 4

$$\text{ENGINE TORQUE} = \frac{\text{BHP}}{\text{RPM}} \times 5250 \text{ lb ft}$$

$$\text{CABLE TENSION} = \frac{\text{BHP}}{\text{RPM}} \times 550 \text{ k lb}$$

$$k = \frac{\text{RPM}}{\text{CABLE SPEED (ft/sec)}}$$

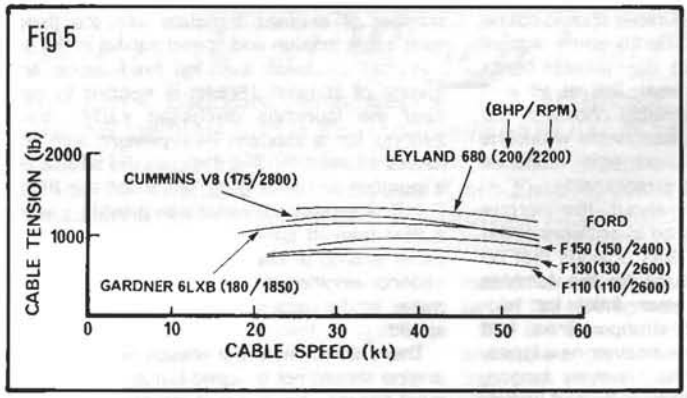
$$\text{DRUM RATIO} = \frac{550\,k}{5250}$$

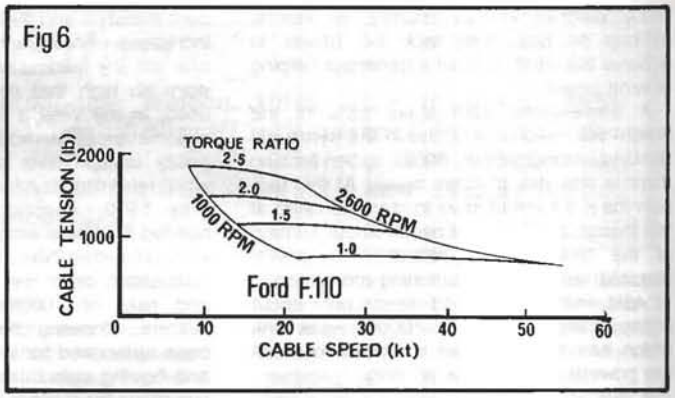
$$\text{DRUM DIAMETER} = \frac{\text{AXLE RATIO}}{\text{DRUM RATIO}} \times 24 \text{ inches}$$

Large diesels are controlled by an rpm governor which regulates the fuel flow through the injectors. Provided the torque required by the load is less than that available, the engine speed will be held about constant whether the load increases or decreases. When the winch driver opens the throttle wide the speed error is large and the governor demands full torque to accelerate the engine and the load to the demanded speed. As this is approached the torque will reduce until it matches the load at the final steady speed.

The obvious and widely used mounting for the cable drums is a lorry axle. Fig 7 shows the wide range of drum diameters and axle ratios at different peak rpm for a Max cable speed of 55kt, derived from Fig 4. The trick is to match all these numbers to suit what is readily available in building your winch, and this does need to be done quite accurately for a low powered winch.

The common arrangement is to drive through the differential with one drum braked. This halves the axle ratio to typically 3.5 or 4 to 1. As is well known this method may wreck the plain thrust washers in the differential and they have to be replaced by roller or needle washers. The resulting drum diameter for the Gardner example engine is from 35 to 45in.





Hub reduction axles step down most of the ratio in the wheel hubs. A typical example is the Beaver axle with three very small differential ratios. If the differential is welded up, the hub gears replaced by fixed splines and the drums selected by engaging one or other half shaft, then for the Gardner engine the ratio of 1.75 and the standard 20in wheels as drum cores exactly match the required 55kt at 1850rpm.

It is not important that the effective drum diameter increases more rapidly on a small drum than on a large one as the cable winds on, reducing the available tension as the launch progresses. It is very desirable to reduce the cable tension gradually in order to maintain constant glider lift conditions, as shown later. The main reason for using a large drum is for solid wire, essential on a hard runway site.

Stranded cable can have a long life despite the use of fairly small diameter side guide rollers if it pays on round a large fixed axis pulley. Nevertheless it is clearly desirable to use a fully-swivelling twin pulley head to eliminate all sliding contact on the wire. The ends of a Transit type twin wheel axle form a good basis because the removable half shaft leaves a hollow passage for the cable with the pulleys mounted on the wheel hub. The layout is a Tost patent so don't try to sell one!

The cable guillotine is usually the least well designed, worst functioning and sometimes totally absent device on too many winches. I hope that someone will offer to collate all available designs that work for this and all the other features of club-built winches.

Managing the launch

The data given above can be put together to see how a launch happens and how it can go wrong. There are two distinct phases of the launch with different characteristics: (1) the initial take-off and rotation into the climb; (2) the steady climb itself.

Phase 1: In the ideal launch the glider is accelerated rapidly and is held level briefly after lift-off until the pilot is assured that the airspeed is increasing through a predetermined value below which no climb will be attempted at all, typically 7kt or so above the stall. If the airspeed continues to increase the pilot commences a steady rotation over some three or four seconds, so that by the time the launch speed is reached the glider is at the full climb attitude.

This technique ensures that the pilot is safely away from the ground before a steep attitude is reached but does not waste precious launch space in a needlessly shallow initial climb. It requires a continuous awareness of the attitude and airspeed and most especially its trend from the movement of the ASI needle — if this stops then the rotation is stopped instantly. If the launch has failed the speed will start to decay, or if the winch is simply not going fast enough it will remain constant. In either case the pilot knows exactly what is going on and can take appropriate action without a fatal delay, never being at too steep an attitude for the current speed.

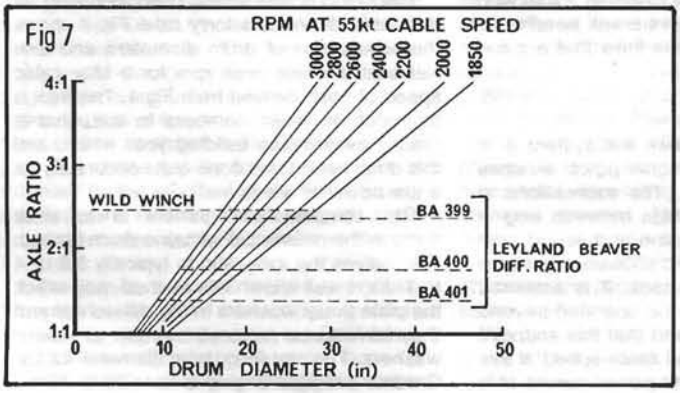
Phase 2: Some selected curves from Fig 3 are repeated in Fig 8, which assumes a winch capable of giving a constant 1100lb cable tension. The start of Phase 2 is at the lower right, from which several paths are possible. If the tension is kept constant a 700lb single-seater can keep climbing at 45° for a while before pitching over slowly, the wing lift increasing to 2.5 times its weight. Obviously if it is using a 1000lb weak link this will break at a few hundred feet, a familiar experience for the pole bender. A 1000lb two-seater must start pitching down at once and finishes with a wing lift twice its weight. Both must therefore continously increase their angle of attack, or speed, or both.

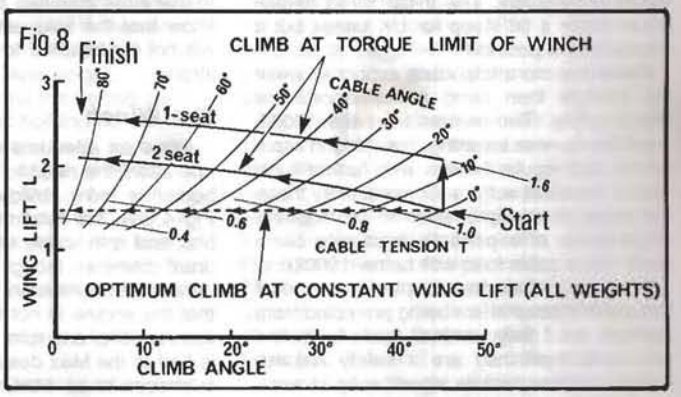
While very high launches are possible this way, a less stressful and more controlled launch results from using constant wing lift, angle of attack and airspeed, giving the same launch for both weights. The cable tension must be reduced as the climb proceeds until it is down to about half the weight at the end. The wing lift is now only 1.5 times the weight. This is exactly the technique evolved many years ago for the pulley launch system.

When pilot and winch driver both lack proper information, confusion reigns. The pilot is slow to get the nose up, or thinks he should hold it down. The driver thinks he is too slow and opens up wide. With help of a little wind the glider now is doing about 70kt. The pilot thinks that at even 1kt above the placard limit the glider is being overstressed and casts off, whizzing down the field fighting the brakes and the ground together.

The first part of this article showed that speed has little effect on basic launch loads and that the cable tension required to keep a glider going at a shallow angle at a low height is very small. If the speed gets faster than the pilot intended there is no reason why the climb should not be smoothly steepened, allowing the winch driver to get things adjusted for the climb. If the speed is still a little too high then the conventional yawing signal can be used. A general licence to exceed the placard limit is certainly not advocated, but no harm ensues while getting the climb established. The problem can be avoided altogether if the driver has cable speed instrumentation, adequately represented by engine rpm in a direct drive winch even with a fluid coupling.

One may sometimes hear a story about a glider being pulled up uncontrollably into a





very steep climb by a powerful winch, perhaps associated with the idea that T-tail gliders can be deep stalled by such events. The latter is not possible with sailplanes, none having the swept wings and rear mounted engines which created the classic deep stall. Conventional tail stall could occur if badly designed, but not because it is a T-tail. Fig 1 shows that once in a normal climb attitude the cable produces little pitching moment, except for the older forward hooks. Any angle steeper than about 45° occurs because the pilot commands it.

Since it is usual to design a glider to be unstalled in the ground attitude and the glider cannot leave the ground until it has more lift than its weight, it cannot take off until the stall speed is exceeded. It is certainly not unusual for a strong pull then to overpower the nose down pitch control, but it also accelerates the glider at probably more than 20kt/second. While the glider is being rotated by the pull the speed cannot remain at the lift-off value, making a stall an impossibility unless the pilot also pulls the stick back.

Torque control is highly desirable for accurate launches with powerful winches. The initial acceleration can be controlled if the tension is known, for which the engine torque is sufficient measure with direct drive. The driver can advance the throttle to a pre-set stop for the required take-off speed minus surface wind, at a rate respecting a Max torque related to the glider weight. He can also reduce the torque during the launch as specified above. Another device is an adjuster for the Max fuel injector opening set by the governor, as on the Supacat winch. This limits the Max possible torque without affecting the Max speed. The driver can then push the throttle to the stop without finesse regardless of glider type.

The angle of attack required at normal launch speeds to produce a lift of 1.5 to 2 times the weight is in the normal Min sink to best glide range. The stick position is therefore close to the normal free flight condition, with whatever additional input is needed to balance the usually small cable pitching moment. Some gliders at aft CG are reputed to need the stick on the forward stop for much of the full climb, but if they are their balance should be checked, as this is an out of control situation and should not be so if correctly balanced.

Pilots' perception of attitude is often very inexact, and simple guidance can be applied. For a 45° climb the wing chord line is typically about 50° above the horizontal. The correct body attitude for this climb can be marked by a line on the canopy side. If a Min of 1.5 times the stall speed is observed for this attitude, only 60% of the available lift is needed.

Such a guide can only be used to set the initial climb. Angle of attack information is of greater value in launch control (as well as in optimising thermal circling). It is easily provided using a pair of strings on the canopy sides, needing only the stall and minimum sink angles to be marked. With these a slowish launch can be managed with confidence, and throughout a launch the margin from the stall can be seen clearly. Vibration thought to be due to rough cable sometimes turns out to be pre-stall buffet!

This article has shown a variety of techniques which can be used to improve the efficiency and safety of winch launching, if we choose to use them.

Ref 1: "Towards Optimisation of Ground-Powered Glider Launch" by J. V. Byrne, Aero-Revue 4/1966 (10th OSTIV Congress, June 1965).

SPEED-TO-FLY THEORY

By MICHAEL SMITH, a lecturer in mathematics at York University, who flies an LS-4 at the Ouse and Yorkshire Gliding Clubs.

Dunstable, 1983, Day 3. At 1200ft No. 152 slides carefully (60kt with full water) through uncertain air west of Reading; rags of cloud above produce no lift — time stretches — a long minute later the LS-4 is firmly lifted and a slightly delayed but steep turn yields an immediate 6kt.

No. 323, circling in a weak thermal, is about to press gently on at 1500ft when he notices the probing 152 ahead and below. 323 briefly postpones leaving his thermal and watches; as 152 turns steeply and climbs rapidly, 323 dives to cruise at 90kt toward the obviously good thermal ahead.

The above is a real, rather extreme, example of a pilot changing his view of conditions ahead. It shows that the best speed to fly must depend on a *current* view of conditions ahead and that such a current view can change abruptly. (If 152 had informed 323 of the strength of his thermal, 323 could, in theory at least, have immediately reset his MacCready ring to that figure and cruised at the optimum speed instead of at the rough and ready but entirely satisfactory 90kt.)

The main drawback of the current speed-to-fly theory

Current speed-to-fly theory, if it is to be applied optimally on a good day, often requires that the MacCready ring be set to the rate of climb which will be achieved at the start of the next climb. Yet it is clear that, barring unusual circumstances such as that described above, a pilot will only be able to estimate very roughly the strengths of the thermals within reach ahead. This discrepancy is, I think, the main inadequacy of current speed-to-fly theory.

Of course, on a poor day the pilot needs to be concerned primarily with the existence and location of the next thermal; Anthony Edwards, in 1963, considered the effect on speed-to-fly theory of uncertainty in the existence and location of thermals (See the February issue of S&G for that year p12). So this sort of uncertainty has already received some appropriate theoretical attention.

In this article I consider a different sort of uncertainty. I shall here suppose that there is uncertainty only in the strength, and not in the existence or location, of thermals. What should the ring setting be if the strength (only) of the thermal ahead is not precisely known? Presumably, the ring should be set to some sort of average of the pilot's estimate of the range within which the next rate of climb is likely to lie. The question is: *from the range of possible next thermal strengths envisaged by the pilot, which one should be chosen as the ring setting?* Should it be the smallest? (Probably not.) Or the largest? (Certainly not!) Or the average? (It turns out that this is wrong too.)

Seeking an answer to the question above leads to a new probabilistic speed-to-fly theory appropriate for days with clearly and reliably marked thermals.

The probabilistic theory applied to a simple case

You are flying on a good (English) day. Small cumuli lie temptingly on your chosen route and there is a guaranteed thermal beneath each one. But the thermals are a fair distance apart — a glide from the top of any thermal (at cloudbase) will reach just one of the thermals on your route ahead; on the other hand, this next thermal is well within reach. You have just left a 6kt thermal at cloudbase. What ring setting should you use? In this simple case, where you must climb in the next thermal, and the next thermal is well within reach, the correct rule is:

Let r knots be the unknown rate of climb in the next thermal; take the average or likely or (in probability parlance) expected *value of* 1/r *— call this* t *— and then set the MacCready ring to* 1/t.

If we let E(1/r) stand for the expected value of 1/r, the ring setting 1/t above may be written

$$\frac{1}{E(1/r)}.$$

Provided there is some chance variation in rate of climb from one thermal to another, this is smaller than the expected value of r itself.

Although this rule for calculating the best ring setting may appear complicated even on the ground, a few simple examples reveal the spirit of the thing; after that the best setting may be estimated without detailed calculation. I shall now consider one such simple example.

The 2kt/6kt example

The example is obtained by making our simple case more specific. We now suppose that, at the top of your 6kt climb, you judge that the next thermal is equally likely to be weak, giving 2kt climb to cloudbase; or strong, giving 6kt climb to cloudbase. (Perhaps you have found this to be roughly the case so far on this flight.)

Thus you reckon that r is equally likely to be 2 or 6; in this case, 1/r is equally likely to be 1/2 or 1/6 and the expected value of 1/r is

$$(1/2 + 1/6)\ 1/2 = 1/3,$$

the average of 1/2 and 1/6. Hence t is 1/3 here and the setting should be 1/t or 3kt.

The calculation above shows that, even when there is no doubt about the existence of the next thermal, you should take more note of the weak possibility than the strong (3 is closer to 2 than it is to 6).

While 3kt is here the correct setting at cloudbase (where, at this setting, you can certainly reach the next thermal) 3kt is not always correct. How, then, does the optimum setting vary as the flight proceeds? The answer to this question is bound up with the need to take weak thermals high enough to reach the next thermal. The right setting should fix the correct moment to leave a weak thermal as well as the correct airspeed for the ensuing glide. *We need a more general rule.*

A more general rule for determining the MacCready ring setting

It is convenient to let $\bar{r}$ stand, as shorthand, for

$$\frac{1}{E(1/r)}.$$

Now we can easily state the following more general rule:

Choose the largest s *such that a cruise following the ring set to* s *knots would, if started now, reach the next thermal safely at a point at which the rate of climb* r *knots satisfies:* $\bar{r}$ *is greater than or equal to* s.

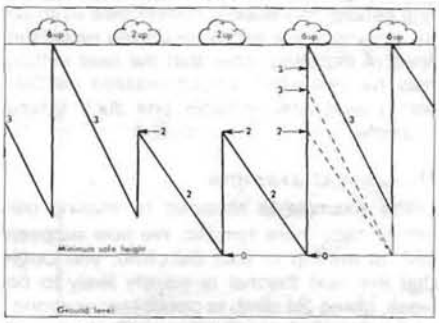
If there is no thermal within reach, set the ring to 0kt.

Only *estimates* of future conditions are required by this rule; so although it may appear to be rather complicated to apply in practice, it is at heart a practical rule.

The rule given above allows properly for the variation, with height, of the rate of climb in the next thermal, and for the need to sometimes reduce the ring setting to reach a thermal above a safe height. But it is only correct if the next thermal on your route is the one you reckon to be easily the best one within reach ahead.

The 2kt/6kt example revisited

In this example, I shall now assume that you are able to judge accurately the height required to reach the next thermal at any ring setting. Then, for a flight path *via* thermals which in the event yield 6,2,2,6,6kt, the adjacent figure gives the settings derived from our more general rule.



The numbers show the ring settings which arise, in the example, if the pilot follows the more general rule above.

In this example, the ring setting drops sharply to zero as each thermal is reached, because at these moments there is suddenly no thermal within reach ahead. During each climb, as soon as it becomes possible to reach the next thermal, the ring setting increases as height is gained; a weak thermal is left as soon as the ring setting equals the current rate of climb. (There is no need to keep adjusting the setting on the actual variometer during the climb; it is sufficient to update the setting in your head only, as thermals ahead come within range at higher ring settings.)

Extending the rule

If you can reach more than one thermal ahead, on your chosen route, the rule above may be applied to each thermal separately; then choose the largest of the resulting possible settings. Our more general rule, extended in this way, will then slightly underestimate the optimal ring setting. The extended rule is now a guide for calculating or estimating Edwards' *critical rate of climb* or Platypus' *minimum acceptable instantaneous rate of climb.*

A practical way of using the rule

From the look of the sky ahead, keep estimating $\bar{r}$ for the best looking thermal ahead within reach of a cruise following the ring set to your current setting s; if you think that s is significantly less than $\bar{r}$ increase s a little; if you think that s is significantly greater than $\bar{r}$ decrease s a little. (Often, your $\bar{r}$ will depend on s.) Reducing somewhat the rate of climb you would expect to achieve initially in the best looking thermal within reach ahead will often give a reasonable estimate of $\bar{r}$.

An important property of the rule

As you reach your "best thermal ahead" this thermal becomes the current thermal and the sky *ahead* is suddenly improverished; accordingly, the ring setting jumps downwards at the same moment. The current thermal, which has only just been reached, should not be rejected unless it gives a rate of climb which is less than the *new,* reduced, ring setting.

It follows that, often, a thermal should be used even though the rate of climb it gives is less than the ring setting on the glide towards it. This happens in the 2kt/6kt example (see the second thermal in the figure). This is a feature of the probabilistic speed-to-fly theory which is not present in the usual deterministic theory.

Conclusion

Of course, the most important tasks during a competition flight are:

1. To avoid collision.
2. To find the best energy route.

Compared to these two tasks, using the right MacCready ring setting is of slight importance. Nonetheless it is of interest to have theories which take some account of uncertainties which are inherent in any soaring day. Finally, it should be emphasised that this theory does not allow for uncertainty in the existence or location of thermals; it only allows for uncertainty in their strength.

NB. Will Platypus explode? (See Tail Feathers, August 1982, p156.)

Computer Program Review

GLIDER PILOT by Dick Brisbourne for the Commodore 64 (CRL Group plc)

This well packaged tape comes complete with instruction book and colour poster showing our grim faced pilot, wearing crash helmet, about to land in a burning stubble field! The program loads in about 2½min and after a soulful little tune the user can choose the various weather factors for the flight. Only British values are allowed — no Australian thermals here! Next we can choose a held startline and finally the simulation speed, from real time to four times normal.

Press the button (surely the easiest way of getting launched!) and we find ourselves at 2000ft in an LS-4 about to set off on a 160km triangle. We have an altimeter, a vario (which is the "wrong way round"), flight director, compass and map which can be switched between different scales. Control is by joystick or keyboard along with the f3 and f5 keys for the director and the f1 and f7 keys for the airbrakes, which is incorrectly printed in the instructions — also the more key presses the more brake.

The program gives us a simple view out of the cockpit of a uniform green land and blue sky full of inviting cumulus clouds. The only ground features are the TPs, something like a railway line which suddenly appears at the halfway stage and a little square field which pops up when you are grovelling at 300ft. Although flying the simulator is nothing like the real thing there are some realistic touches — thermal centring techniques work but not all the clouds do. The air does seem a bit too friendly — there are no large areas of horrendous sink and it never rains! My only serious criticism of the program is that there is only one glider and one task — it would have been nice to have a choice here. However, Dick Brisbourne, a northern glider pilot, must be commended for the thought and effort he has put into writing the program and for getting it into the High Street shops. It will never be a hit with trigger happy 12 year-olds but for less than the price of an aerotow I would thoroughly recommend it to the Commodore-owning glider pilot.

MARTIN JUDKINS

Book Review

Sky Lights — the 1985-6 Sport Aviation Handbook edited by Stan Abbott and published by Ian Allan at £4.95.

This is thought to be the first time a book has been aimed at the entire range of sporting aviation activities. Giving a comprehensive directory of clubs and businesses as well as features and attractive photographs, **Sky Lights** would be useful if you weren't committed to one particular sport and looking for ideas.

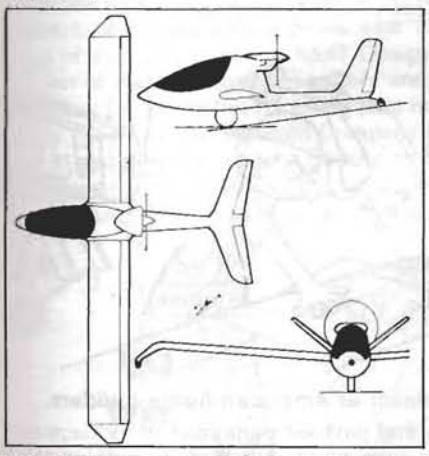
The handbook is well organised and presented but my only criticism is that details of my own club are incorrect. We are listed as flying from Cambridge Airport whereas we mainly operate from Duxford.

G.B-S.

SAILPLANE NEWS

MAX BISHOP

Marco — J5



This single-seater glass-fibre motor glider, produced in kit form by a private Polish company, is being marketed by a German firm, Thewa-Technics, Dorfstrasse 77, D-8939 Marktwald.

The 8.1m span rectangular plan wing has tips deflected downward at 45° and equipped with small wheels. There are full span flaperons. Each wing weighs only about 65lb. There is a one-piece V-tail held in place by two bolts. The rectractable central wheel can optionally be replaced by a conventional fixed undercarriage with two wheels mounted on flexible plastic legs. The tailwheel is connected to the rudder.

The main feature of the cockpit is the side-mounted control column. The two-stroke 30hp engine drives a twin-bladed wooden propeller of 85cm diameter. The fuel tank has a capacity of 30 litres. Some 500 man-hours are required to assemble the kit and the price is likely to be about £7500.

Technical data

Empty weight (kg)	*140*
AUW (kg)	*250*
Take-off distance (m)	*180*
Rate of Climb (m/s)	*3*
Max speed (km/h)	*210*
Cruising speed (km/h)	*160*
Range (km)	*700*
Glide angle	*1:21*

"Top" Bolt-on Auxiliary Engine

A small Munich based firm (Fischer Entwicklungen, Gentestrasse 6, D-8000 München 40) has produced a revolutionary bolt-on unit which can instantly convert almost any modern plastic glider into a motor glider. It consists of a 24hp König engine fitted with a folding three-blade propeller. The two-stroke, three cylinder engine operates at 4200rpm, and a belt reduction gear with a ratio of 1:1.7 drives the plastic propeller.

When the engine is retracted, springs automatically fold the prop blades back. The engine is mounted on a tubular pylon and is raised and lowered vertically by an electric motor.

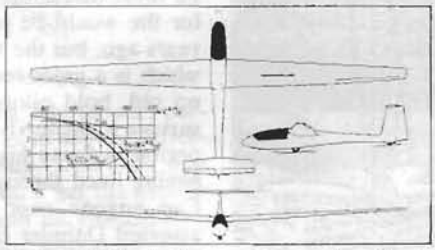
The whole unit is encased in fairings which give it a very aerodynamic shape and minimise the drag penalty. At normal cruising speeds, the penalty is only about two points. The wide fairings are in fact fuel tanks with a capacity of eight litres, giving an endurance of two hours.

The "Top" unit is attached to the fuselage by four bolts. The area of the fuselage on which it is mounted may need to be reinforced, although for some gliders (Kestrels, Grob) this will probably not be necessary.

The total weight of the unit, including battery and fuel, is just under 50kg. It gives a fully laden Standard Class glider a rate of climb of over 3kt. The price? DM22 000.

SZD 51-1 "Junior"

A new Polish Club Class glass-fibre glider has appeared to challenge the monopoly enjoyed by Schleicher with their K-23.



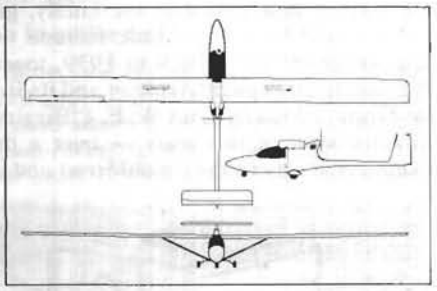
The SZD Junior is a very conventional looking 15M glider with only one unusual constructional feature: the centresection of the fuselage is reinforced by a welded steel tubular structure which connects the wing mountings to the undercarriage. The ailerons and airbrakes connect automatically but the elevator has to be connected manually.

Performance figures:

Glide angle (at 80km/h)	*1:35*
Min sink (at 70km/h) (mis)	*0.6*
V_{NE} (km/h)	*220*
V-stall (km/h)	*61*

It is likely to cost in the region of £9000 basic.

Piccolo



The high price of conventional motor gliders has persuaded a German engineer, Falk Borcowski, to develop a more modestly priced alternative. The Piccolo is derived from Albert Neukom's AN-20B microlight and is a strutted high-wing single-seater with a fixed engine (folding propeller) and tricycle undercarriage.

Technical data

Span (m)	*13.3*
Wing area (m^2)	*10.64*
Empty weight (kg)	*165*
Max AUW (kg)	*285*
Climb rate (m/s)	*2*
V-stall (km/h)	*54*
V_{NE} (km/h)	*170*
Min sink (m/s)	*0.95*
Glide angle (at 75km/h)	*1:20*

The price is about DM40 000.

UK'S FIRST MONERAI

The first Monnett Monerai to be completed in the UK is tried for size at Larne, Co Antrim, before being painted and fitted out for its maiden flight. Ulster GC members Louden Blair, in cockpit, and Mervyn Farrell built the surprisingly spacious and comfortable aircraft, of only 11 metres span and 245lb empty weight, over three years at Louden's house, which he also built himself. In the less-than-Californian conditions prevailing in the British Isles, obtaining and maintaining the tightly controlled, warm dry atmosphere necessary for metal bonding processes took a lot of time and money, they report. They question designer John Monnett's claim that the aircraft can be built in only 800 working hours. The Ulster Monerai is being followed by another south of the Irish border, which Dublin GC pilot Larry Kelly has underway. — Bob Rodwell with the photograph by Crispin Rodwell.

TAIL FEATHERS

by PLATYPUS

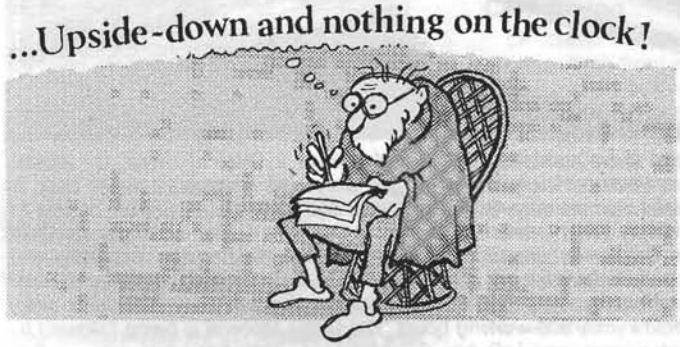
12 O'Clock High In A Model T

When I was a boy a friend of my father's, wanting to make room for a new arrival in the family, gave me a present that today would be worth a little fortune — every copy of *Flight* and *Aeroplane* from 1929 to 1939, together with hundreds of the American *Popular Aviation* and its British equivalent *Popular Flying*, edited by Capt W. E. ("Biggles") Johns. Sadly, I had to store most of this mass — over a thousand mags — in a damp cellar where they mouldered and eventually, after years

Stored in a damp cellar.

of browsing, were finally lost to posterity. No thanks, I don't want to know what they would fetch today. Before they went to the great aviation library in the sky I had learnt the names, lines and specifications of every aeroplane ever built before World War II. Nostalgia was just as strong as it is now, so the aircraft of The Great War, as World War I was called then, and of the Twenties, were featured in loving detail. Those were the days — when every word in an aviation magazine was comprehensible to any keen schoolboy.

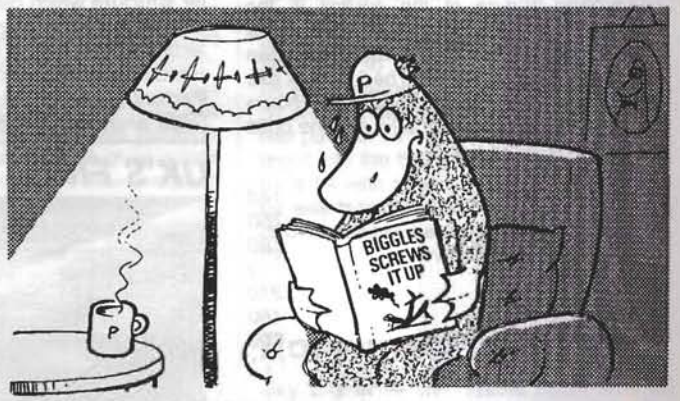
Now, *Flight International* is mostly for military and civil professionals with the occasional, though much-appreciated, gesture to General Aviation and Flying for Fun. Block diagrams



Quite a few pilots survive to write vividly.

Do-it-yourself enthusiasm of American home-builders.

showing the passenger and payload economics of airliners may be meat and drink for accountants but they do nothing much for the would-be pilot in short trousers. *Aeroplane* died many years ago, but the title has been revived in *Aeroplane Monthly*, which is a great read. Thank heavens the saying that there are no old, bold pilots is not entirely true: quite a few of them survive to write vividly of the late twenties and early thirties, a period in flying history of which I am a great deal fonder (not having lived through it) than I am of the Second World War. Can anyone over 50 hear the distant throb of a hundred assorted Daimler Benzes and Junkers Jumos, accompanied by the rising and falling wail of air raid sirens, without a hideous prickling of primitive animal fur all the way up the spine? You can keep it. The days when Amy Johnson flew to Australia with 25 hours in her logbook have much more charm.

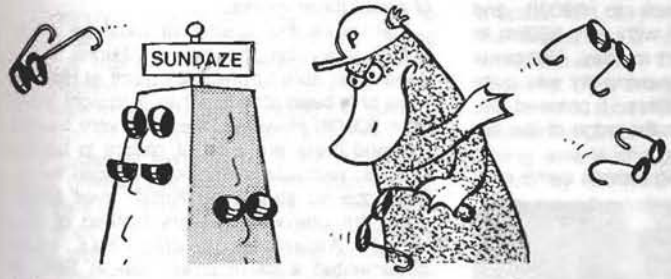


Aviation nostalgia is great.

What I loved about *Popular Aviation* was the tremendous do-it-yourself enthusiasm of the young American homebuilders. Against a vast backdrop of prairie and cloudless sky, proud and hopeful teenage faces smiled cockily at us from behind Ford model T engines to which propellers had been bolted. Each picture was captioned with glowing promises of what Ed or Art or Al were going to do when the new ship was rolled out. But you hardly ever saw one of those overweight and underpowered crates (literally in some instances) in "Full Flight" as anything with the Wyoming daylight below the wheels, however momentary, was described. Just as well, for their mothers' sakes. So Ed and Art and Al were spared a while, to get chewed up over Schweinfurt twelve years later. Aviation nostalgia is great, up to a point.

Shades of Genius

It's getting quite difficult to find proper polarizing specs these days. I've often searched unsuccessfully and irritably through half a dozen of those revolving racks offering hundreds of pairs of dark glasses. You can get lots of the Reactolite kind that vary in density; then there are those mirror-finish ones that make one look like a Mafia hood — they are best for that corny gimmick of photographing pilots with reflections of clouds in place of eyeballs, to put in S&G Comps' reports when you've run out of things to say. Then there are Edna Everage fashion specs, not for seeing but for being seen in — if you're a woman, that is. I believe the Polaroid Company sold off its specs business to another firm which continues to make them, so you can still get them if you are determined. Why bother? Well, you must all know how the colour of the sky and the outline of the

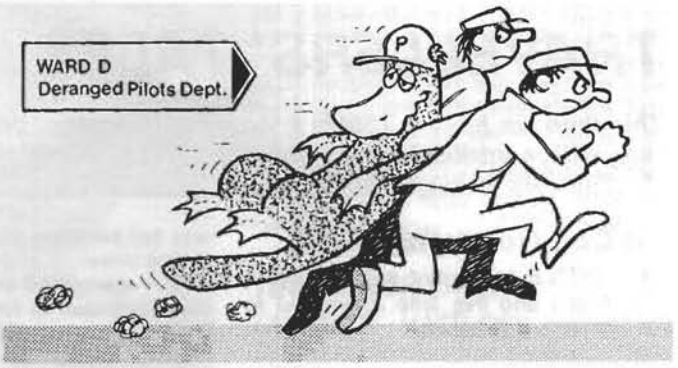


Platypus searches unsuccessfully and irritably.

clouds change when you roll your head from side to side, particularly if you also swivel on your heels so as to see the different effect when looking upsun then downsun. Don't try that outside Boot's on a busy shopping day or you'll get the men in white coats coming for you; I suggest you wait till you are on a gliding site, where weird behaviour goes quite unnoticed. Certainly there are blue or nearly blue days when polarizing specs suddenly make wisps of vapour visible. I always feel naked flying without my Polaroids.

There is a snag. (There's always a snag.) Depending entirely on the angle of your head to the horizon, you may or may not be able to see this useful phenomenon at work. A pilot circling to the right might not get such a good view of incipient clouds on track as another pilot circling to the left. (As long as they each have a good view of **each other,** who cares? ED.) Perhaps that helps to explain the anti-social circling habits of some contest pilots . . .

Dr Tom Zealley, who is not a famous scientist for nothing, some years ago devised a solution to this problem which puts



Be careful of the men in white coats.

Heath Robinson and Rube Golberg in the shade. Or in the shades. Discs of polarized glass are rotatable in circular frames, each disc having a tiny knob attached to it so that you can turn it until the optimum cloud-revealing effect is achieved, regardless of the angle of your head. It occurs to me that you could, deliberately or inadvertently, set the discs at different angles, so the left and right eyes would get quite different information. What that does to the brain I can't imagine, but it might explain why Tom occasionally crosses the finish line before everyone else and on other days hits the ground before everyone else. I don't think we all appreciate the sacrifices some people make in the name of science.

Platypus doing his bit for science.

A Glider Logbook Program for the Spectrum Computer: Kenneth Holburn, "Llanrwst, Lidgate Lane, Wolsingham, Co Durham.

For people who like computers, that are too lazy to fill in their logbook properly, here is the solution: a glider logbook program by Kenneth Holburn.

Poets' Corner

The urge to write limericks about gliding clubs is upon us again, partly sparked off by submissions sent in by readers. The editor has included a (mercifully small) selection of these offerings.

Why are people always trying to muscle in on my act? (you *did* invite them to submit poems, you know. ED.) Did I? Can I say, the secret of writing limericks is to get the *scansion* right. Even a feeble rhyme is OK if the thing is rhythmically on the rails. Otherwise, kindly leave the stage. A cautious welcome, however, to Mary Meagher, whose prose in earlier S&G's is pretty good, indeed very good, leaving the men stranded. Judge for yourself whether her other, poetic, muse is equally well-endowed.

There was a young novice at Booker
Who was such a stunning good looker
All the pundits who taught her
Flew worse than they oughter
Till at last the poor girl's nerve forsook her

There was an old pilot of Lasham
Who found a brand new way to crashem
On the way back from France
Stopped to do up his pants
And bailed out in spectacular fashion

Said a PPL full of despair
After watching a glider prepare
"I don't think you oughter
Run that thing on water
You'll never stay up in the air . . ."

Now Platypus has the last hundred words or so.

And Ah'll Tak the Low Road
A mickle wee Scot frae Portmoak
Built a muckle great glider of oak
As it sank o'er the loch
He radio'd "Och!
Ma sporran is in for a soak!"

There I was, nothing on the clock
On a scorching hot day at North Weald
The young lady pilots just peeled
Their state of undress
Caused much male distress
And wreckage all over the field

Diamonds aren't a girl's best friend!
A wave-soaring whiz from HusBoz
Is now in the doghouse because,
Says his soon-to-be-wife,
"Height's the bane of my life —
Your marital prospects are froz!"

TRAVELLERS' TALES

This time we have a 760km triangle in Australia, go to Israel and have more news of gliding the American way with contributions from PAUL LITTLE, JOHN HOLLAND and LAURENCE MATTHEWS.

If It Can Go Wrong It Will

PAUL LITTLE has spent another winter in Australia and this time attempted to join the record breakers.

I was avoiding another English winter, this time by instructing and towing at the Waikerie GC in South Australia. It was the weekend and the chance to get into a single-seater. I was up at 0630hrs and the ASW-17 was still free — the main competition for it was from Pam Hawkins, another sensible Pom avoiding an English winter (see the June issue, p126).

The task had been planned for weeks, an 892km triangle, Bordertown, Balranald which would break the existing British National triangle distance record standing at 840.2km.

Paul in the ASW-17.

The temperature flight was done and conditions didn't look stunning, but "well maybe it's on", so the preparations continued. At 1045hrs the temperature was high enough to give thermals to 2000ft, so it was time to go. The Pawnee started up but didn't sound too good — its got lots of valves and it turned out that one of them was just along for the ride. By 1115 the other tug was ready and took me to 3000ft straight off on track.

Trying to ignore cirrus

As I flew towards the south I noticed a band of cirrus out to the north, but soon forgot it as conditions began to improve. Anyway the Met man hadn't mentioned any cirrus, so I wasn't going to look at it!

Thermals were now going to 3000ft and with the slight tail wind progress was about 90km/h for the first hour. Conditions were slowly getting better and I managed to climb to 6000ft before starting off across some 60km of unlandable scrub, running into the first TP. However the thermals over the scrub were good and I needn't have worried.

All was going well into the TP, 2½hrs gone and 242km flown with 321km to the next TP. The thermals were now going to 8000ft and the time schedule was looking good as I passed the half way mark on the second leg now making 120km/h. The only worry at this stage was that the cirrus out to the north-west was getting closer.

As I approached the second TP the first cumulus began to form which should have improved things, but under the first one and nothing. On to the next one and again nothing. I was now at 2500ft and having to take weak lift. I didn't want to land there, it was 300km from home.

I worked myself back to 6000ft and rounded the second TP with only 329km to go, but it definitely wasn't my day. The cirrus had thickened and was moving my way quite quickly and it was 1700hrs. I pressed on, climbed to 9000ft just on the edge of the cirrus and under I went.

A number of outlanding reports came over the radio from people closer to Waikerie and I was beginning to give up hope of getting home. With MacCready set to zero, I cruised on over 30km of scrub and the Murray River, crossing back from New South Wales into Victoria.

I was down to 3500ft with 200km to go and complete cirrus cover above. I flew into 1kt lift which slowly became 2kt and took me to 7000ft. It was after 1900hrs and I flew on at best glide through silk smooth air and under a complete blanket of cirrus. Calculations showed that I should make more than 750km, so it wasn't so bad.

I was down to 1500ft over good fields, but decided I'd better try and find a farm that looked inhabited. It would be dark within half an hour and landing in the middle of nowhere at dusk could mean a long night. I found a farmhouse with a couple of cars in the drive and landed in the field next to it. Within minutes a pickup drove across and the farmer pulled up alongside and handed me a cold Fosters saying "You'll be needing this." He was right and it didn't last long. I went back to the farm to phone, more Fosters and roast duck, almost as though they were expecting me!

I was 8½hrs in the air, had flown 760km and had a lot of fun. I will have to go back next year for another go at 892km. Many thanks to Maurie Bradney and the Waikerie GC for a very enjoyable season.

Gliding in the USA and Israel

JOHN HOLLAND started the season early by gliding abroad while Britain was under snow.

I was fortunate enough, this year, to sample gliding in California and Israel within the space of about three weeks.

I am sure that California must be great, unfortunately on the two occasions that I have been able to present myself at Hemet I have only been able to achieve straight glides from 3000ft! However, they are very friendly folk and there are a lot of gliders to have a look at, particularly all the American home-built jobs so strange to British eyes (especially the one with spoilers instead of ailerons). American gliding has been documented a lot of times now in S&G so there is little I can add except that, with the dollar and the pound approaching unity whilst I was there, you had to have a lie down after paying for four launches (my partner had a couple as well) to 3000ft!

We had a heart stopping experience on the drive back to Orange County from Hemet. Coming up the side of the mountains after skirting Lake Elsinore we stopped to watch the score or more hang gliders that were enjoying the solid lift of the beautiful ridge. Some were having a go at semi aerobatics which was interesting . . . especially the guy who got it wrong and spun out. The sight of a hang glider spinning down with the pilot mixed up in the tangle is enough to make you give up flying! Fortunately, before the inevitable end (and low it was too) a parachute broke clear and hang glider and pilot descended onto the mountain top at what looked like a fair rate of knots. Presumably the pilot was OK since the other hang gliders that clustered over him did not land.

★ ★ ★

I have visited Israel for about the last 25 years at something like two year intervals and it has been fascinating to watch the almost aggressive way in which a 20th Century civilisation has been carved out of what looks like most unpromising land. In the whole of this time I have made a lot of inquiries about gliding and all I have ever achieved has been that tolerant smile reserved for children and glider pilots.

I did actually meet someone at a wedding on one occasion who was the father of an Airforce pilot and he actually reckoned that his son had done some gliding in the desert, but he seemed very vague about where. I returned from a kibbutz at the foot of the Golan on another occasion, after receiving the same negative stories, to read an article in a newly arrived *Soaring*, about someone flying at a club not ten or fifteen miles from where I had been.

Laurence photographed this Schweitzer 2-33 at Mansfield.

However, in March this year I managed to get it all together and in a typically gliding way. A member of an Israeli gliding club approached a company, and hence a friend of mine, in an attempt to scrounge enough material for a new hangar, and this, just shortly before I arrived out there. Friends in Haifa greeted me with "I don't suppose you will want to drive all the way to Beersheva just to go gliding, will you?" Would I indeed!! So it was I found myself calling at the Co-operative Farm of Meir Ariel, looking at his sheep and a Slingsby T-53 in his barn and then going on to the Negev Gliding Centre.

Can't fly solo until you've lived there two years

You can't really recommend Israel for a gliding holiday since you can't fly solo there until you have been resident for at least two years. However, if you ever find yourself driving down the Ashkelon/Beersheva road it is very well worth turning into the gateway of the Negev Gliding Centre on an airfield that lies just a few miles short of Beersheva.

Would-be glider pilots have a tough time in Israel. Because of military requirements they can only fly on Friday (a half day), Shabat (Saturday) and public holidays. Cross-country flights must be notified to Air Traffic Control 48 hours previously (but perhaps this is not the hardship that it would be to us!). Cross-countries are a bit limited but you can do 300km. Navigation is a little easier than ours but the penalties for getting it wrong can be a bit hard, I would have thought. There are no subsidies for gliding and whilst the Negev Gliding Centre received some help from industry last year, recent increases in taxation have put a stop to it. So gliding clubs are on their own and something less than 150 people were gliding last year.

That is the gloomy side. However, you will find it hard to better the very nice crowd of people they have at the Negev Centre or their enthusiasm. The guiding star there is Michael Pinkus who has done a lot of flying in Europe and flew at Rieti last year. The club is forty strong with a fleet of ten gliders in immaculate condition. There are no privately owned aircraft. Launching is with a Super Cub (rebuilt from four wrecked aircraft given to the club) off a runway about half a mile long. Training is in a couple of K-7s and the T-53 is reserved for passenger flying. Of seven single-seaters they grade up from an L-Spatz, K-8, Skylark 2, K-6cR, Std Austria, Eidelweiss and a Speed Astir. The charges levied are unusual to British ears and quite interesting. They charge an entry fee of $30 followed by a subscription of $20/month and a payment of $100 is made after the first solo. Flying time is charged at $1/min on tow followed by $4 for the first hour and $2 every hour thereafter.

I was able to enjoy an hour's flying with Michael and, after having withdrawal symptoms for goodness knows how many weeks, it was great to be winding up at 5m/sec to 4500ft in glorious warm sunshine (snow at home!). The view is a lot different from what I am used to. Desert stretches from horizon to horizon tinged here and there with green that the summer sun has yet to burn off. The city of Beersheva, with its high tower blocks rising from the sand and the old town with its red pantile roofs, huddles in one corner. I was amazed at the lush green of the fields in the midst of the desert, irrigated by the sewage farm on the outskirts of town and also the discovery that the desert is far from empty. You can still see the old Turkish railway that used to wind its way round the large towns of the old Ottoman Empire, still stretching off into the distant sand, the new dual carriageway of the Beersheva/Tel Aviv road, the pipeline that runs for miles, experimental farms and airfields, military installations and even an air museum. Quite a busy place.

The K-7 we were flying was quite an interesting aeroplane — immaculate like all the other aircraft and with a modified nose housing a wheel in lieu of the skid. The slightly modified line made it very attractive and of course it sits on its nose with the pilot in. Flying it seemed very quiet compared with our K-7s and apparently they have saved a lot of maintenance often needed with the skid. This was probably worse for them because of the abrasive sand and rock on the runway threshold on which they often land to roll up to the launch point. Instrumentation seemed good with a well compensated vario. Of course all calibrations were metric and all club aircraft are equipped with radio. Israeli pilots seem to use the radio rather as they use their car horns. That is to say, a lot! Much Hebrew flies back and forth but I nearly jumped out when an absolute barrage was shouted at the young lady who came skimming into our thermal just over our heads in the Skylark 2.

I had pinched an aircraft for an hour in the middle of the club's gliding day and I felt a bit guilty as we returned to the circuit, but it was sad to leave so many thermals on such a cracking day! Nevertheless it was nice to join club members round their lunch time barbecue and a very tasty beefburger and salad it was. (The barbecue was lit in seconds with a large magnifying glass!)

I hope that they get the steel for their hangar. **Toda Raba* Negev Gliding Centre!

* *Hebrew for thank you.*

The American Way

LAURENCE MATTHEWS cycles from Boston to sample some soaring at Mansfield, Massachusetts.

There's something appealingly friendly about the airfield. Two dozen light planes sit anchored at tie-downs before the wooden office/snackbar. A drinking fountain at the snackbar is a welcome relief after the long cycle ride out through endless early morning suburbs and undulating countryside with the temperature already 70°F and climbing.

Someone directs me over to the glider trailers where they are about to tow a 1-26 down to launchpoint. It's just been rigged; there are no hangars here and the gliders are derigged or just tied down each night. A Blanik tied down, its nose dismantled, looks a bit sorry for itself.

This is Mansfield, Massachusetts and home of the MIT Soaring Association: at 30 miles to the south-west of Boston, the closest gliding club to where I'm staying. A chance for a pre Silver pilot to sample a day of soaring, American-style.

The Schweitzer 1-26 is a metal one-seater, a fairly rugged early solo machine with performance apparently approaching that of a K-8. Wide bodied, a bit like a miniature Blanik with mid-set wings. I walk at the nose as the car rolls down the taxiway over the giant yellow letters announcing the airport to anyone overhead. Halfway along we have to pull off to let a Cessna taxy past us; another light plane lands on the runway to our right; overhead an autogyro is buzzing about. The sailplanes aren't going to have the sky to themselves here.

Tug ventures onto the main runway with glider

We join the MIT Soaring Association clustered around the end of the runway, which is shared with the powered traffic. Aerotows only; the tug is an adapted Cessna 150. All the gliders are parked on the grass beyond the taxiway until needed, and to launch one it is pulled out to the side of the runway while the tug approaches up the taxiway. After hooking on, the tug ventures out onto the main runway pulling the glider out onto the runway too at the beginning of its ground run.

The tug and other assorted light planes land on the runway. You can always tell which is the tug coming in: it's the one which banks to 40° on its final turn and comes in on a steepish approach; by comparison everything else seems to struggle in with lots of power, on 3° approaches from miles out. The tug drops the rope on the threshold where it is immediately reclaimed by a zealous club member who

(Continued on p180.)

1985 International Gliding Commission Meeting

Brief extracts from a report by Tom Zealley, BGA delegate, who attended the Commission International de Vol á Voile (CIVV) meeting in Paris on March 21. Ben Watson attended as British team manager, Bill Scull as chairman of the International Coaches Conference and Chris Wills as chairman of the Vintage Glider Club.

Motor Gliders. Per Weishaupt, Denmark, reported on motor gliding activities and described the successful motor gliding Championships in Finland in 1984. The 1986 European Motor Gliding Championships was likely to be at either Aosta or Zell am See.

Airspace and ICAO. Bill Paris, Canada, who is replacing Bob Buck as the FAI delegate to ICAO, commented on the ICAO panel studying visual flight operations. Tom Zealley commented on the need for CIVV to co-ordinate its views on gliding airspace needs and problems and the next day chaired a special meeting to discuss a wide range of points including the withdrawal of glider right of way over powered aircraft, radio frequencies, transponders, strobe lights and the 3000ft limit for VFR clearance from cloud.

Future World Championships' Bids. F. Romig of Austria presented the bid from his country for their Nationals site at Wiener Neustadt in the east. Flying across the Hungarian border was unlikely and tasks would be mostly in the mountains, but it was claimed there were good fields in the valleys and good motorways for retrieving. The USA bid, presented by Carl Herold, related to Minden near Reno in Nevada. There was a substantial vote in favour of Austria and with no other bids for 1991, USA will be the site for that year.

European Championships. Proposals for the 1986 Championships were considered from West Germany at Mengen near Ravensburg in the south and from Yugoslavia at Lesce Bled in the north-west. There was a heavy majority in favour of West Germany, the proposed date being June 7-21. The Yugoslav representative was uncertain whether he could transfer his bid to 1988 so that year is still open.

Glider Classes. The lengthy and extensive discussion was introduced by the chairman, Bill Ivans (USA), who had received numerous messages urging that there should be no change to the existing CIVV Class structure. This view was not seriously challenged and the point was made that if an additional Class was added (such as an 18m Class) there would be no natural death of any existing Class because a few pilots would always enter a Class so long as there was a prospect of gaining a World Champion title.

There was a brief discussion (prompted by the USSR) of a one-design Class in the interests of cheapness, but most regarded this as impractical. Most time was spent on the possible introduction of a two-seater Class in World Championships, introduced by Helmut Reichman (West Germany) with a lengthy and carefully prepared statement. The chairman had recommended that no detailed final decision on the introduction of a new Class should be made until the next CIVV meeting in a year's time. A German motion declaring that a two-seater Class (of a detailed specification to be agreed next year) "would" be introduced by CIVV was lost on a vote. However, another motion stating that CIVV was "contemplating the introduction of a two-seater Class" was carried by a moderate majority.

After some haggling, a motion was carried declaring that CIVV had "discontinued the study of" the introduction of a 17 or 18m Class.

Flight Training and Safety. There had been a previously circulated proposal to form a sub committee of CIVV to discuss and review flight training and safety standards. An amendment had been circulated by the UK suggesting that the existing International Coaches Conference should retain an independent constitution and be affiliated to FAI and/or CIVV, rather than become a sub-committee of either CIVV or OSTIV. At the suggestion of the chairman, who expressed sympathy and support for the coaches conference, a formal decision on the constitutional status of the body was deferred until the 1986 meeting.

Baron Hilton Cup. Helmut Reichman spoke on the success of the competition and asked that delegates should give it publicity so it might continue to flourish in the coming season.

Vintage Glider Club. Chris Wills, at the chairman's invitation, spoke about the history and objects of the club and his request for more formal CIVV/FAI recognition was noted and suggestions were made about publicity for their international rallies. ■

(Continued from p179.)

scampers out and back before somebody else lands on top of him. The sailplanes generally land on the grass between the taxiway and runway, although this sometimes means overflying powered planes doing their engine runups. All good fun.

So into the usual ritual of pushing gliders around and chatting, and my name goes down on the list. In use today are the 1-26, two 2-33 trainers, a 1-34 and Astir, the last privately owned. There are about twenty people, a dog, six automobiles and six coolboxes gathered around the sailplanes.

For take-off: one wingtip holder with bat, who scans the approach for aircraft sneaking in. Take-up slack is our pendulum signal, decreasing in amplitude as the slack is taken up; then a vertical arm to signal that the rope is taut. The tug pilot now checks whether the glider pilot is awake by waggling his rudder and waiting for the glider pilot to respond in kind. On seeing this the wingtip holder signals for all out with a circular motion of the bat as if exhorting the tug to get going; the bat is then cast aside à la baseball as the glider begins to move. Finally, after running with the wing, the wingtip holder discovers that he is now in the middle of the main runway, so collects the bat and beats a hasty retreat.

Very hot: it's 95 to 100°F by now and everyone tends to stay in the shade as much as possible. Some have brought small deckchairs and these are often to be seen lined up under a glider wing. Cans of coke and bottles of water keep emerging from coolboxes. During the day the weather cycles from clear blue to cumulus then overdeveloping; three or four cycles during the afternoon. Fresh wind, a bit cross, gusty at times.

My turn in the yellow 2-33 comes at 4 o'clock. It's a huge lumbering thing with high wings braced to the lower fuselage. It towers above anyone standing beside it (imagine a sort of double-decker K-7), and the pupil has a step built into the side of the fuselage to help him or her clamber in. This is much too undignified for the instructor, so the rear cockpit actually has a door in the side. Inside, lots of space, as if American automobile design has filtered through to sailplanes. Without the air-conditioning alas.

Anyway, we're off. Launch is OK through the crosswind, but it's very bumpy up to 1200ft. As per the briefing there is some sensitivity in pitch but not in roll, and very large control movements on the rudder and ailerons are called for. From full-left to full-right the stick seems to move about two feet: feels like wrestling a snake.

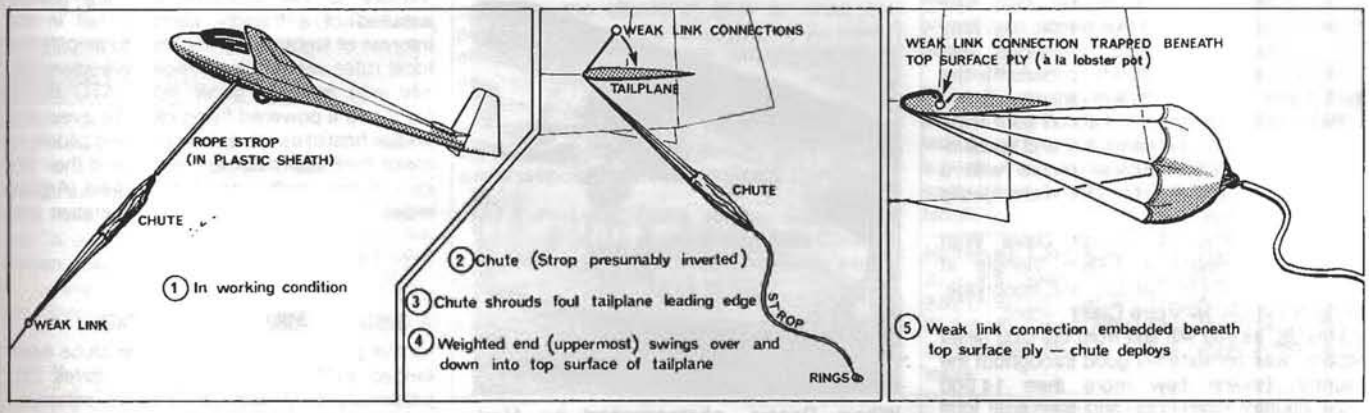
Things settle down a bit after 1200ft, and I'm just beginning to relax when we hit some lift at 1800ft. T-Guy, the instructor, says to pull off, "to the right, remember, to the right." So to the right we go. Tows to 3000ft are the norm here so I hope we haven't blown it, but no, the thermal is still there and we're on our way up. The instruments read miles/hr and ft/min; we have lift of 400 to 500fpm up to 3000ft where it peters out. Gradually down to 1800ft again while we practise stalls and admire the view, and T-Guy points out local landmarks.

Another thermal; the 1-26 comes in below us, but we easily out-climb him and reach 4000ft this time. Silver heights must be trivially easy here: we nearly did one just now. T-Guy reckons it is an "average" day. From 4000ft we can see Norwood airport, and beyond in the haze rise the topless towers of downtown Boston. A further half hour at 3000ft and our allotted time is up.

The present MIT Soaring Association is the latest in a series of gliding clubs at MIT, the first being founded in 1908. It is run very much like a British club, with everyone helping out and reaping the consequent benefit of low charges in contrast to the more commercial operations at some of the bigger gliderports. A 3000ft tow is of the order of $10, there are no soaring fees, and the annual sub is around $200 and less for students at MIT. Around 100 members. A nice feature is the answerphone line on which they record a message at 7am every flying day so you can ring in to check if there are any problems, who's on duty and so on. ■

FLYING CABLE PARACHUTES – 2

Following Nigel Pringle's vivid first-hand description of Trevor Fox's quick thinking and handling of that most dangerous of wire-launch "nasties", a winch launch hang-up with strop wrapped around the mainwheel (S&G December 1983, p256) and Bill Scull's cautionary note on '"Flying" Cable Parachutes' fouling gliders (S&G October 1984, p211), a further variant on this theme is recounted by TONY GEE.



Coming on first duty as instructor at our (autotow) site on a mid-November day, I saw that, abnormally for the time of year, conditions appeared highly convective with 3/8ths cu. The windspeed was little short of 20kt and on the ground it was obviously gusty, so, as is customary at our club, I took a first, "sampling" launch and climbed readily from 1200ft to 1800ft, just below cloudbase. However I was then promptly downed by powerful sink.

After briefing the solo pilots generally about conditions, I switched to the K-13. My first pupil, of some 40 launches experience, settled into a well-executed first launch when, nearing the top at about 1500ft, the cable weak-link broke, the glider pitched up and there followed a second (muffled) report.

Thinking that the cable chute/strop might possibly have fouled the glider, I took over and checked the handling, particularly of the elevator and rudder, whilst the glider was headed upwind under a large cumulus cloud (and climbing at about 1kt). Satisfied that all appeared well from the viewpoint of handling (and lack of sink), I handed back to the pupil who proceeded to circle in the lift.

Altimeter proceeded to unwind alarmingly

Gradually the lift appeared to die away to be replaced by increasing sink (still under the upwind edge of the cloud) and so after another turn we straightened up downwind at 1000ft, with the vario now indicating off the clock down. I suggested we should speed up so the P2 lowered the nose appreciably, with little effect on penetration and the altimeter proceeded to unwind alarmingly.

It was now apparent the glider had developed a particular affinity for *terra-firma*, as the aiming point was amongst trees halfway along the downwind leg, so I hurriedly took over, turned, scraped around a cursory base leg cum final turn (at height and speed rather lower than appropriate) and touched down diagonally across the intowind runway, the descent from 1000ft having taken no more than one minute!

We discovered that the cable weak link connector had embedded itself into the top surface of the starboard tailplane and the attached cable 'chute was draped over the leading edge.

On discussing the incident with the towbar crew and pilots who had watched the proceedings, it seems that after fouling the tail the 'chute did not initially billow, probably due to its having been twisted by the launch. It then apparently unwound, opening fully only after a minute or more.

The damage to the tailplane was relatively slight and the glider lost only a couple of flying days before it was serviceable again. However, given the prevailing gusty conditions and trailing a fairly large parachute, the result might easily have been otherwise. Plainly earlier correct identification of the problem would have enabled those valuable parameters, height and time, to have been conserved for an emergency landing.

Despite being familiar with the type of glider, launching system, site etc (500hrs/1000+ K-13 launches, 2500 aerotow launches from site) and despite having had initial (accurate) suspicions, the problem remained largely undetected until almost too late, masked by the unimpaired handling (when specifically tested), and the expectation of abnormally high sink rates.

As it happens, this particular glider is quite regularly flown on cross-countries (Enterprise, task weeks etc) and has a radio installed with controls in the front cockpit, but it is only used on training flights when certain powered traffic is anticipated. This seems to be the case for many other training gliders (and indeed some instructors find the radio to be distracting to pupils at critical stages of circuits/landings).

The CFI who witnessed this flight is an aerospace scientist not inclined to let the grass grow under his feet. He promptly set to organising a test rig, based on a gantry hoist and balance, to tension the strop-chute combination under controlled conditions. Initial tests on the "low-stretch" synthetic fibre strops used showed that occasionally the elastic energy might be sufficient to cause the 'chute shrouds to spring back, on weak link failure, high enough to foul the glider.

This would account for the way events occurred rapidly

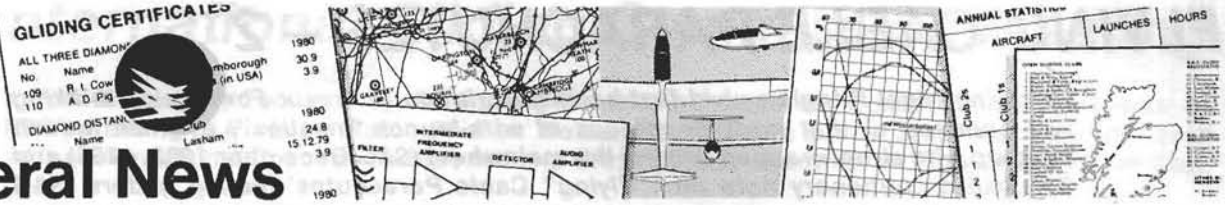
Although I was familiar with using a tail chute for approach control in a 20m "plastic" machine, the fouled cable 'chute was somewhat larger and the K-13 considerably more sensitive to towing a tail 'chute. It is estimated that it caused a still air sink rate of the order of 10kt when fully deployed. On this particular day, the glider probably encountered another 10kt of air sink downwind of the thermal and the resultant 20kt (2000ft/minute) down would certainly account for the rapidity with which events occurred.

Having got into a difficult and rapidly deteriorating situation, a factor considered to have helped save matters was the use of "aiming point" technique so sense just how bad the glide angle had become. This was a legacy of earlier days endeavouring to coax first a Kranich and then an Olympia 2B across blue holes into wind. (It should, however, be remembered that even with zero headwind a Nimbus 3 would make a glide angle of no better than 1:10 if it encountered 10kt air sink or 1:5 in 20kt sink.)

It is hoped that this little tale will enlarge upon the few details appearing in the BGA Accident Summary. It is offered as a contribution to learning beyond experience *normally* reproducible in a two-seater, by someone who has on several occasions been saved embarrassment (or worse) by having read other pilots' write-ups of "how not to do it" in the columns of this journal.

In future I intend to keep the radio on and to watch the cable 'chute fall!

BGA and General News



MAY RECORDS

Chris Rollings, CFI of Booker GC, flew 778km in a Jantar 2B on that classic day, May 28, turning at Petersfield, Welshpool and York at a speed of 77km/h to become the third holder of the UK 750km diploma.

Ralph Jones (Nimbus 3) took off from Avon Soaring Centre on the same day and is claiming the UK 300km triangle record with a speed of 115.8km/h. His TPs were Birdlip and Northampton.

The day after at Booker Dave Watt (ASW-20) achieved a 400km triangle at 96km/h, with TPs at Oakham and Ironbridge, to claim the UK 15 Metre Class record.

May 28, as you will see from the club news reports, was consistently good throughout the country. Booker flew more than 14 000 cross-country kilometres, and their final total is likely to be far in excess of this, and includes 15 500kms.

★ ★ ★

Over in the USA Alan Sands (Ulster GC) was also breaking records. He is claiming a new National O/R record of 1127km in his Nimbus 3 on May 7. The flight from Lock Haven, Pennsylvania, turning at Tazewell, Virginia, took 10hrs 40min and used ridge, wave and thermals. He has promised to write it up for a future issue.

NEW APPOINTMENT FOR DICK

Dick Stratton, BGA chief technical officer, has recently been elected chairman of the Royal Aeronautical Society's Rotorcraft Committee and an *ex officio* member of the Council.

BGA TECHNICAL NEWSSHEET EXTRACTS

Gap sealing tape restricts elevator control movement from 50mm to 24mm. This was found by John Scott on a Pegasus 101 after a change of tape. Non-heat stable tape applied to top surfaces will shrink and restrict control deflections. Sealing tapes should be as specified by the manufacturer and applied to prevent restrictions.

Schweitzer (latch-over-type) tug tow hooks. This type of banner towing hook has been found to have very high release loads when the tow rope loads are also high. Alan Unwin, Borders GC, has developed a product improvement (minor) modification to introduce a sealed ball race over the latch. Copies of the CAA minor mod application form with details are available from the BGA office and strongly recommended.

Nose related tow hook installations. The BGA will not make these mandatory but strongly recommend their embodiment in new gliders and rebuilds where the option is practicable.

Dick Stratton, *BGA Chief technical officer.*

Quite an Introduction to Gliding

Willem Daams, photographed by Mary Meagher in the T-31, was at a start of an adventure. His friend, Friedrich Wevers, a Dutch aerobatic power pilot, thought he would like to take up gliding and bought the T-31 from RAF Upavon. Chris Willis did the C of A at Booker and helped launch Willem behind a Cessna 172 flown by Friedrich on what Mary described as "a horrible, horrible May day with high winds and lousy visibility". The first stop was Southend and then the glider was towed across the Channel to Calais, where they were grounded by the weather and had to return later for the last lap of the trip to Holland.

A PLEA FOR PHOTOGRAPHS

S&G's picture file, particularly of black and white photographs for illustrating articles, is deplorably thin. Nikki Campbell, BGA publicity officer, says she has the same problem and is often stuck for photographs to issue to the press and to accompany articles.

If anyone has any prints of gliders and gliding activities they can spare, we would be most grateful and promise they will be given a credit on publication. Please send them to S&G, 281 Queen Edith's Way, Cambridge CB1 4NH, and we will make sure Nikki has a share.

THEIR OWN VIDEO

Andrew Mather sent us a copy of the video he made of Booker GC's recent visit to France and as well as giving an excellent record, it is ideal material for open evenings and likely to inspire other members to enlist for an expedition another year.

But making a video is a commitment in time and money. Andrew estimates the equipment cost in the region of £2000-£2500 and he recorded some 15hrs which means considerable editing.

However, it resulted in a very worthwhile and enjoyable tape and has encouraged Andrew to film the 15 Metre Class Nationals.

ADVICE ON VISITING CHILTERNS

Visitors to the Chilterns GC are always assured of a friendly welcome but in the interest of flight safety we wish to amplify the local rules around the airfield. We share the site with an ATC glider flight, ATC SLMG flight and a powered flying club. To avoid any undue hostilities we ask any visiting gliders to make their approach to the site and their circuit on the south side of the airfield (Argosy side!). Thank you for your co-operation and we look forward to seeing you.

Trev Sadler, *Chilterns GC.*

A DISUSED AIRFIELD TO AVOID

In the past several gliders from clubs have landed at Royal Ordnance Explosives Ltd, previously a Ministry of Defence establishment, at Westcott, Berks.

The runways are in a very poor condition and a large number of the buildings which surround or encroach onto the perimeter track contain hazardous materials. It might be almost impossible to recover a glider from some parts of the establishment and could be very expensive to do so.

OBITUARY

Franz Xaver Wortmann

The soaring community will be saddened to learn that Professor F. X. Wortmann died on January 16 at the age of 64.

He is famous as the designer of a series of wing sections which, in conjunction with the accuracy and surface finish obtained with FRP structures, were a major contribution to the remarkable performance improvements of sailplanes during the last quarter-century. Not only did he have a profound knowledge of aerodynamic theory but also a remarkable degree of intuition, so that his wing sections were something more than mathematical constructions: there seemed to be an element of art in choosing appropriate pressure distributions, leading to "tolerant" sections conferring good flying qualities, well matched to the political requirements of the pilot.

Less well known were his activities in designing sections for helicopter blades and windmills, and his considerable researches into boundary-layers. He was also greatly interested in yachting and some of his symmetrical sections were first conceived for use in the design of keels. He himself designed a successful trimaran with several novel features. When he was at the tiller of a yacht, there was no doubt as to who was in command: it was a surprising transformation from the quiet and gentle academic figure.

After the 1974 MIT Symposium, Sam Francis of SSA arranged for various delegates to go sailing in a magnificent ketch in Buzzards Bay. The crew included at least half-a-dozen

current or former World Gliding Champions (with A. J. Smith consigned to the galley) and there was FX at the helm and very much in charge, although relying on Paul MacCready at the sharp end to provide warnings of incipient hazards, whilst accusing at least one eminent pilot of stalling the genoa. It was a memorable and happy day.

We will miss not only his expertise but also the charm of his company. We offer our sincere condolences to his widow, his son and his daughters.

F. G. IRVING

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	Name	Club	1984
176	G. G. P. Coppen	Lasham (in Spain)	4.7

DIAMOND DISTANCE

No.	Name	Club	1984
1/258	G. G. P. Coppen	Lasham (in Spain)	4.7

DIAMOND GOAL

No.	Name	Club	1985
2/1374	Cynthia Chambers	Surrey & Hants (in Australia)	2.2
2/1375	C. J. Mayhew	Lasham (in France)	16.7.84
2/1376	M. J. Seseman	Kent (in Australia)	4.2
2/1377	P. N. Atkin	Southdown	2.5
2/1378	R. D. Carswell	(in USA)	19.2

DIAMOND HEIGHT

No.	Name	Club	1985
3/694	P. B. Gray	Derby & Lancs	3.4
3/695	J. W. Le Coyte	Swindon	6.5

GOLD BADGE

No.	Name	Club	1985
1069	J. R. Humpherson	Derby & Hants	3.4
1070	J. S. Weston	Ulster	14.4
1071	I. Ashdown	Southdown	31.3
1072	C. J. Mayhew	Lasham	16.7
1073	D. J. Reilly	Devon & Somerset	14.4
1074	J. W. Le Coyte	Swindon	6.5

GOLD HEIGHT

Name	Club	1985
G. Hall	Vale of Neath	16.3
J. R. Humpherson	Derby & Lancs	3.4
J. S. Weston	Ulster	14.4
A. C. M. Fleming	Connel	14.4
B. J. Fantham	Vale of Neath	16.3
D. King	Vale of Neath	16.3

SCOTTISH AIRWAY BLUE 22 — PRESENT STATUS

Two years after the introduction of the new Scottish Airway, Blue 22 in spring 1983, National Air Traffic Services (NATS) has conducted a further review of its implications on the Scottish Gliding Union. The SGU had operated freely in the region of the airway since 1934.

The NATS review included a firsthand visit to the SGU's site to understand the gliding operation, the effects of Blue 22 since its promulgation, and the alleviation of its worst effects at weekends which would arise from alternative locations for the airway.

After full consultations with the other affected parties, NATS has now obtained agreement from all those directly interested to a new proposal for weekend airway operation:

- A new airway, B226, will be notified for weekend use by Scottish Air Traffic Control Centre when SGU Portmoak requests wave flying in a defined area of B22.
- The new arrangement will come into effect at the end of August.

The new arrangement, while still representing a considerable restriction on the SGU gliding amenity compared with its former freedom, once again opens it as a weekend wave soaring site. There is reason to hope the sharp decline in the gliding club's membership and activity, which coincided with the introduction of Blue 22 and from which there has already been a partial recovery, will now be wholly overcome.

The BGA has thanked NATS and the other affected bodies for their intensive efforts in readdressing our concern, and finding compromises to alleviate the gliding position to this extent.

The BGA and the SGU are also most grateful to the many people who have given the problem their active attention, most particularly government ministers, members of parliament and, especially, the parliamentary spokesman for gliding, Bill Walker (Tayside North).

Nationals Late News. Ken Hartley (Nimbus 3) is the Open Class Champion with Alistair Kay (ASW-22) 2nd and Ralph Jones (Nimbus 3) 3rd after four contest days at Lasham with a 600km task on Day 1. Full report in the next issue.

BGA ACCIDENT SUMMARY — Compiled by KEITH MITCHELL, Chairman, BGA Safety Panel

Ref. No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew Age	Injury	Pl/Hrs	Summary
11	K-6CR	1098	N	2.12.84 14.00	Keevil	42	N	18	Pilot failed to ensure that canopy was closed securely. Canopy opened during launch. Pilot pulled off and attempted to close canopy. Decided to land ahead in a field rather than attempt to turn. Landed safely.
12	Pirat	1933	N	27.10.84 16.00	Connel	45	N		Pilot saw large bird above and in front. Severe impact near tail of aircraft thought to be attack by bird. Body of golden eagle later found on ground. No damage to aircraft.
13	Grob G109	G-BKNJ	M	1.11.84 14.00	Enstone a/f	44	N	15	After completing a series of successful circuits, and during what appeared a normal landing, the port undercarriage leg failed during the ground run. Detailed examination pointed to a fracture resulting from a fatigue defect.
14	Blanik	1713	S or W/O	2.12.84 11.55	Talgarth P1 a/f	55	N	1120	With P2 flying, and with airbrakes open after final turn, an undershoot situation developed. P1 failed to take over and the aircraft struck the boundary fence of posts and wire.

N. A. Warburton		631 VGS	31.3
I. Ashdown		Southdown	31.3
Rosemary Pozerskis		Coventry	14.4
G. Falcke		London	25.8.84
R. Johnson		Bicester	14.4
D. J. Reilly		Devon & Somerset	14.4
J. W. Le Coyte		Swindon	6.5
G. Terry		N'castle & Teesside	24.12.84
M. R. T. Howe		(in USA)	11.4

GOLD DISTANCE

Name	Club	1985
Cynthia Chambers	Surrey & Hants	2.2
C. J. Mayhew	Lasham	16.7.84
R. D. Carswell	(in USA)	19.2

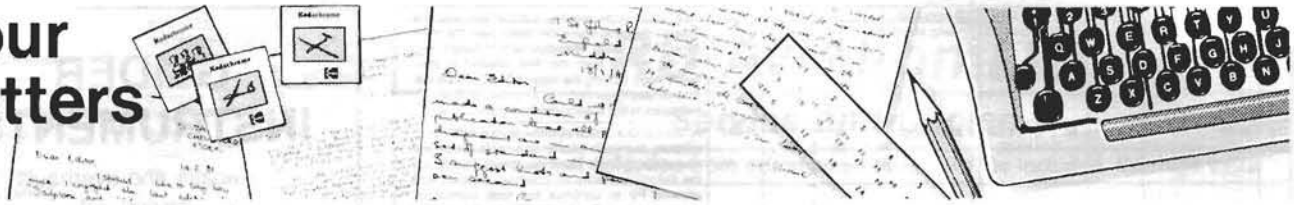
SILVER BADGE

No.	Name	Club	1985
6892	W. N. N. Newbigging	Cotswold	1.8.84
6893	S. Tromans	Bristol & Glos	31.3
6894	V. D. Blaxhill	London	13.4
6895	N. M. Davidson	Dorset	21.4
6896	S. M. Partridge	Wyvern	28.4
6897	T. R. Summers	London	28.4
6898	T. W. Muncaster	Wyvern	5.4
6899	P. L. Howe	Southdown	28.4
6900	J. R. Mabey	Booker	20.4
6901	W. D. Morgan	Black Mountains	23.4
6902	Gillian Dalgleish	Booker	2.5
6903	S. J. Unsworth	Coventry	6.5
6904	K. Brown	Burn	6.5
6905	M. P. Blake	London	6.5
6906	P. J. Treadaway	Cambridge Univ	6.5
6907	J. Johnson	Blackpool & Fylde	6.5
6908	M. A. Taylor	Rattlesden	6.5
6909	J. N. Mills	Shalbourne	6.5
6910	J. F. Niman	Hambletons	6.5
6911	N. D. Thomas	London	6.5
6912	L. W. Kelly	Eagle	6.5
6913	P. K. J. Spencer	Coventry	6.5
6914	M. E. Margolis	Lasham	6.5
6915	Anne Stotter	London	6.5
6916	M. Ainley	Peterboro' & Spalding	6.5
6917	J. L. McIver	Dumfries	6.5
6918	R. C. Cannon	Surrey & Hants	6.5
6919	S. R. Domoney	Southdown	3.5
6920	J. R. Shiner	Surrey & Hants	2.5
6921	M. A. Holmes	Booker	6.5
6922	P. G. Spencer	Avon Soaring	16.5
6923	I. S. Smith	Pegasus	16.5

15	PIK 20	2302	M	9.12.84 15.40	2 miles SE Long Marston	32	N	350	Pilot, after ridge soaring a small hill near the airfield, dived to make low pass over the front edge of the ridge. Misjudgement of height during the pull-up from the dive resulted in starboard wing striking the tops of trees on the hill. Aircraft was flown home to a normal landing with two holes in the leading edge of starboard wing.
16	K-13		M	24.11.84 12.08	Farnborough P1 P2	42 28	N N	1066	At the top of a 1500ft autotow launch with P2 on controls, instructor heard/felt a cable break and suspected that the cable parachute had struck the tailplane. Instructor checked controls and allowed P2 to continue but took control on downwind leg. On inspection on the ground parachute/cable swivel was embedded in tailplane with parachute draped over leading edge of tailplane.
17	Bocian	?	M	23.12.84 14.30	Millfield	48	N	42	Very rough conditions with rotor turbulence misled pilot into flying circuit and approach at an excessive speed culminating in no roundout. Rear fuselage and fin damage.
18	Pilatus B-4	1820	M	1.1.85 13.05	Rhigos	52	N	56	Pilot on downwind leg encountered heavy sink when about to turn onto base leg. He prepared to land in field adjacent to the airfield. At the last moment he changed his mind and landed into the airfield to one side of the runway. During the ground run the underside of the port wing struck a fence post.
19	Grob G109	G-BJZX	M	5.1.85 14.20	Enstone	32	N	5½	Pilot of motor glider, while practising circuits with engine on, found an undershoot situation developing, closed airbrakes and opened throttle. Rate of descent increased and aircraft struck ground short of airfield boundary breaking undercarriage and propeller, bounced and landed on runway with further damage to starboard wing. Airbrakes had not been locked and had sucked out as throttle was opened.
20	K-13	2944	S	3.11.84 10.20	Nr Duxford P1 P2	37 24	M M	890 0	P2 on fourth flight was flying the circuit with verbal assistance and was approaching at 60kt when wind gradient effect was noted. P2 pushed column fully forward and aircraft rotated into steep nosedown attitude. Instructor regained control just in time to rotate before a heavy impact on motorway crossing the approach path.
21	Bocian	1550	M	1.12.84 15.15	Crowland	32	N	First solo	Pilot on first solo flew satisfactory circuit and approach but bounced on touch down. Brakes were closed and nose lowered. A second heavy touch-down resulted in pitching between nose and tail. Frame was fractured behind trailing edge of wings and members loosened near the stern post.
22	Kestrel 17m	1720	M	29.4.84 16.15	Nympsfield	40	N	314	Pilot landed normally, using flaps and tail 'chute. As speed of ground run dropped off and left wing touched the ground the pilot, reaching for brake lever, pulled flap lever by mistake. Aircraft ground looped 90° and ran downhill, coming to rest with the nose against a stone wall.
23	K-6E	2430	M	13.5.84 16.00	Frocester, Nr Nympsfield	35	N	210	Pilot on downwind leg found he had insufficient height to reach airfield and decided to land in valley, selecting what appeared a suitable field. He then attempted to soar, but had to return to selected field which proved to be ridge and furrow. Tailskid hit one ridge, pitching nose into another ridge.
24	LS-4	2755	M	8.6.84 17.15	Craswell, Hereford	36	N	324	After a map reading error in a mountainous area pilot selected small field with up-hill slope and flew a circuit. Approach speed proved insufficient for round-out onto up-hill slope and a heavy landing resulted.
25	ASW-19	2354	S	17.3.85 11.15	Talgarth	37	N	776	Glider aerotow launched on belly-hook. Glider swooped up into air and weak link of rope broke. Tug bounced onto ground then managed to stagger over boundary. Glider stalled at about 125ft and dived. As ground was falling away, glider had enough height to recover on its own. Pilot realised that he lacked elevator control, and directed aircraft towards valley. Aircraft continued with reducing oscillations in pitch before landing itself in a field about 2½ miles from airfield. Pilot used full rudder to make wing take initial impact. Elevator not connected, and missed a control check.
26	Grob G102	2741	N	27.12.84 13.00	Nympsfield	40	N	64	Instructor on the ground noticed a rather ragged performance of aerobatics and questioned the pilot when he landed. As the pilot had pulled almost 4g, the instructor ordered examination of the aircraft before it was flown again. During the examination a flat file 8in x ¼in was discovered among the controls beneath the seat, probably left at the last C of A and disturbed during a slow loop.
27	Pegasus	?	N	1.1.85 13.30	Parham	41	N	50	Pilot carried out normal downwind checks but took hold of u/c rather than airbrake lever. Realised her mistake but was forced to land in field adjoining airfield. (No damage.)
28	Bocian	2143	S	26.1.85 15.00	Dallachy P1 P2	43 49	N N	750 33	Check flight with solo pilot. Satisfactory landing but suspension bottomed heavily during ground run. Wheel box area found to have collapsed with damage which on further examination was found to be more extensive than originally thought.
29	K-13	2405	M	23.2.85 12.00	Parham P1 P2	58 40	N N	507 12	Simulated winch launch cable break at 60-70ft. P2 put glider into correct attitude then lowered nose to a steep dive. P1 rounded out the glider but P2 pulled out the airbrakes sharply. A heavy landing resulted.

S = serious; W/O = write-off; M = minor; N = nil.

Your Letters



COULD BE THE WRONG APPROACH

Dear Editor,

I believe that aerotow tug hooks have been studied for some time with a view to making them release automatically if the rope angle became dangerous. It is of course difficult to quantify an angle appropriate to all circumstances.

It has occurred to me that concentration on the rope angle or force may be the wrong approach. The true requirement is to release if the tug is becoming uncontrollable, and this can readily be detected from the position of the controls. For the case of the glider getting too high, it would appear possible to arrange that release would be triggered by full backward movement of the control column.

The two key advantages of this technique are 1) the natural reaction of pulling back on the stick in an induced dive is all that is necessary to release, and 2) the release system is not dependent solely on the angle of the rope to the tug, but takes account also of the tension, using the response of the tug and pilot to assess the need for release. I would also expect that this method would not require such fine adjustment as a hook which releases at a specific angle of pull.

G. H. BAILEY, **Northwich, Cheshire.**

CAN ANYONE HELP?

Dear Editor,

I have just purchased the unique Gull 3 made by Slingsby's in 1939. It is in better condition than I dared hope and a restoration to full flying condition will be starting in late summer and hopefully it will be flying in the autumn of 1986.

The glider was sold by Fred Slingsby in October 1944 to Prince Bira and he flew it for some time — I know at Sutton Bank around 1945.

I wish to restore the glider to the state it was in when Prince Bira owned it and would be grateful for the loan of any photographs taken of the Gull around 1939 to 1949 or any articles written about it during those ten years.

MIKE BEACH, **24 Cole Park Road, Twickenham, Middx.**

CHECK FLIGHT

Dear Editor,

It sometimes happens that an experienced pilot turns up at a new site and is given a check flight by the resident instructor who fails him. This can cause a good deal of bad feeling on both sides, often without good reason since there may have been a genuine misunderstanding. What can be done about it?

First, if you are the visiting pilot never object to a check, even if you last flew at the site a year ago. Make sure you are adequately briefed so you know exactly what is expected of you. Different instructors have different likes and dislikes so it is helpful to know in advance what they are.

If you are the instructor, similarly make it quite clear to the candidate what is required by a thorough pre-flight briefing. If the flight is not to your satisfaction, be brief and offer to give another check. Carefully re-brief and make a second flight or offer a check with another instructor.

Correct procedures vary considerably from site to site. When in Greece do as the Greeks, but sometimes it takes a little time to learn.

BRENNIG JAMES, **Marlow, Bucks.**

GLIDING SHOULD BE IN OLYMPICS

Dear Editor,

I entirely agree with Rob Cronk's letter in the last issue, p138. Gliding is just as valid a sport as sailing, windsurfing, shooting, equestrian events or even swimming sideways, backwards and upside, so why can't it be included in the Olympics?

Although the existing Classes could be retained, the competition would be much fairer (and probably much cheaper) if a simple, one design, mass produced Olympic Class sailplane could be adopted. To cut down on design, tooling, testing and certification costs, this could be based on a satisfactory existing design with some form of licensing to permit its manufacture by other firms, thereby encouraging competition (in the business sense) which could further reduce costs and might even revive the British glider industry!

The advantages to the gliding community should be obvious. Now that glider performance is reaching the realms of greatly diminishing returns, the competition minded pilot would no longer have to spend thousands to get that fraction of a point on the glide angle. The up and coming pilot would (eventually) be able to buy a several years old sailplane and compete on a more or less equal basis. More importantly, more people would be attracted to gliding, rather than sailing or windsurfing, if it can be seen to be a fair and cost effective sport.

DEREK COPELAND, **Rickmansworth, Herts.**

TURN OFF THE ENGINE

Dear Editor,

I read with amazement the article by Douglas Donald in the April issue, p97, "Safety of the Public". That a so-called safety officer should witness a potential fatality and still persist with the policy of keeping the engine running astounds me. Starting a Falke takes perhaps 30 seconds; at £18/hr this amounts to 15p. What price a human life?

Come on Douglas, you can't get in or out of a Falke without getting near the engine, escorted or not, so for goodness sake **turn it off.**

KEITH TAYLOR, **Shipley, W. Yorks.**

PROPELLERS ARE KILLERS

Dear Editor,

I was amazed to read Douglas Donald's article. Surely everybody knows that in an aircraft where people get in and out in front of the leading edge of the wing, you **do not** have the engine running. Passengers should be strapped in before the engine is started and the engine should be switched off before they are unstrapped. Propellers are killers.

KAREN FITZGERALD, **Angus, Scotland.**

WORRIED ABOUT PREVENTION MEASURES

Dear Editor,

I was very worried by Douglas Donald's report concerning motor glider safety. What worried me was not the accident itself, although obviously it could have been far more serious than it was, but the measures adopted in the hope of preventing a similar accident.

Whilst the suggestions made seem very good, there was no indication that the club has also adopted the system of stopping the engine whilst passengers are entering or leaving the aircraft. If the new measures introduced do include stopping the engine, can I suggest that this should have been made clear. To have two people approaching an aircraft in the limited space between the wing and a turning propeller seems to be inviting disaster; another accident might not have such a fortunate outcome.

The difficulty of re-starting the Falke engine, which is sometimes given as an excuse for keeping it ticking over, is simply not a sufficent reason for taking unnecessary safety risks. The only safe procedure is to stop the engine whenever anyone (whoever they are, and however experienced they may be) approaches the aircraft.

I should be interested to know the views of the Safety Committee on the subject.

DIANA KING, **Solihull, W. Midlands.**

Bill Scull, BGA director of operations, replies: I must endorse the views expressed. My own practice is to stop the engine if anyone approaches the motor glider. Even the modified practice of helping a passenger into and out of the motor glider is still potential

fraught. What about the risks to the helper? However careful he or she may be it only requires a momentary lapse of concentration or a distraction for the accident to happen!

GLIDING CLUB ECONOMICS CONTINUED

Dear Editor,

I am surprised that Alan Sands thinks his rejuggling of the North Hill income and expenditure figures "disproves" the points made in the April issue, p69, and invalidates statistics in general. (See Alan's letter in the last issue, p138.)

His sums are correct and simply quantify the assertion that the private owner subsidises the club pilot which formed paragraph two of my article. I am unhappy that a misunderstanding of those figures is driving British gliding down a narrow road.

Our club members complain that they want to spend more money flying but cannot because there are not enough gliders. To argue that we should not buy another single-seater because they don't spend enough money is an abuse, not a use of statistics, when you realise that the purchase of that glider would enable them to spend the money which would justify the purchase.

Analysing detailed receipts and bills identifies the profitable areas. Concentrating investment in these must result in cheaper flying for all. Is that an unworthy aim?

By all means deduct the cost of launching from the figures but that would not alter the conclusion that a K-6 can with quite low charges be a profitable investment for a club. More such investments remain profitable until you reach eight pilots/glider. Understanding this is buried by only looking at profit/member.

The bonus is indeed for the younger pilots who need to cut their milk teeth on cheap flying. It is the clubs' role to find and train a mass of youngsters and pass the talented few on to the BGA for subsidised intensive finishing — that's how the RAF produced its World Champion.

So why does Alan Sands dismiss provision of cheap flying for the young as philosophy? It is and a darned good philosophy too. What's more it's a philosophy that can be indulged — because it's self financing.

I also agree with his winch costings. Including capital and interest our new winch will be launching members for about £1. Why are there so few four or six line set-ups and even fewer of the most time efficient system of all — the retrieve winch?

So arise all you amateur statisticians with calculators in hand, you have nothing to lose but low launch rates and excessive charges.

GORDON PETERS, **Wellington, Somerset.**

EVALUATING CONTEST SOARING PERFORMANCE

Dear Editor,

I have been asked to review contest scoring for future guidance. I have some qualifications from having scored at least one National contest by two systems simultaneously, and I have no prejudices in that I only fly a K-8s in small time contests and none of the systems in question are any help to me.

This letter is a request for help from competition pilots. After I have explained how I see the relation between competition attitude, the peculiarities of the sport and the evaluation system used to declare Champions, I hope you will write and tell me which direction you feel suits your competitive attitude.

Of all the sports in which a Championship is decided by a number of individual tasks, grand prix auto racing is probably most like soaring. The races are basically for speed, non-completions are relatively common and the races are of different lengths and are run under many different conditions. The scoring system is purely competitive — X points are awarded for a win, Y points for second place and so on. The third place winner will get Z points, whether he finished or not. The measure of performance or the relative quality of the performance is not transferred from day to day.

In golf performance is measured in each round and the Champion has the lowest overall score. I will call that purely quantitative.

Other sports which are purely competitive are tennis, sailing and even football (over a season). The purely quantitatively scored sports are much rarer and include the Olympic decathlon and ski slalom, as well as golf.

It is obvious that sports in which competitors conflict, interact or compete are most likely to be scored purely competitively. The three sports cited as examples of quantitative scoring are individualistic where competitors execute the event at different times.

Soaring has many elements in common with the competitively scored sports. It is competitive and pilots interact. For instance, a pilot sensing himself well ahead, having passed his chief rivals, will often fly conservatively while a pilot who had a bad start may fly very aggressively. At the same time, soaring to some competitors is very individualistic and, as with golf, competitors do not start at exactly the same time. Some pilots analyse their average lift to see whether their speed was as good as the aeroplane could perform. These pilots are quantitative in their attitudes and would probably prefer a quantitative scoring system.

Before I mention scoring systems, let me quickly develop one for soaring which would be purely competitive. If we simply rank pilots in order of speed first and then distance, we can assign day points equal to the number of pilots beaten. If you win the day, you get 60pts, if you don't do better than anybody, you get no points. Let that be our model for a purely competitive system.

The Total Elapsed Time system, on the other hand, at least for those pilots who finished all tasks, is the ideal purely quantitative system.

The 1000pt system (without devaluations) carries equal day weight for a win, but transfers relative performance on the other competitors from day to day. It is our mixed system.

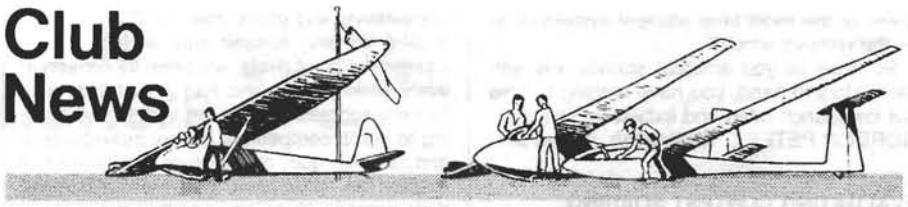
For me, it is not whether a system is better or more just, but a question of what are the competitive attitudes of the participants. Think back to your feelings about competitions and answer these questions:

1. Do you try to remember the Competition Nos of pilots just above you in the ranking so you can try to beat them? (C if true.)
2. Do you keep track of your racing speed and average lift and analyse your performance in the race? (Q)
3. Do you feel better having won a long task than having won a short task? (Q)
4. Is winning the important thing, or is it the only thing? (C)
5. Do you start to ease off when you have caught your main competitor? (C)

There are many similar questions you can ask which will tell me if you are more on the competitive or the quantitative side. I would welcome your reaction and would like your name, rating, if any, number of contests in the last five years and any comments you might have on my way of looking at the problem.

WOLF ELBER, *213 Anne Burras Lane, Newport News, VA 23606, USA.*

Club News



Copy and photographs for the October-November issue of S&G should be sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, telephone 0223 247725, to arrive not later than August 6 and for the December-January issue to arrive not later than October 8.

June 7, 1985 GILLIAN BRYCE-SMITH

ANGUS (Arbroath)
The weather ruined the first week of our April flying fortnight but the second half made up for this with Ron Smith and Martin Davies gaining Bronze legs and Carol Horribine a Silver height in the club Pirat.

Midweek flying has again started with Monday evenings for visiting groups. Our thanks to instructor, Ally Eddie, and CFI, Les Joiner, for their excellent lectures on cross-country flying and circuit planning. Future lectures are particularly for those attempting Bronze C examinations.

Congratulations to Bryan Morris on his Bronze C and to Norma Ballingall, "senior canteen manageress", on joining the committee.

B.J.M.

AQUILA (Hinton-in-the-Hedges)
Our second K-7 now rises like a Phoenix having had an extensive two-year rebuild and is finished in resplendent red and blue. It is now the best K-7 flying (prospective members please note) and joins its sister ship and the K-8 to make up our fleet. Our Auster tug performs beautifully with its new engine and prop, giving meteoric launches to both club and the numerous private aircraft.

We put on a good display at the Banbury Leisure Centre's Sports Exhibition resulting in quite a few new members. However, we would be pleased to increase our membership from any source and welcome visitors by road and air.

J.R.

BANNERDOWN (RAF Hullavington)
The first ever 500km triangle from Hullavington was flown by Gerry Odell (Vega). Congratulations Gerry and to our three new assistant Cat instructors. Max Kirschner, John Joiner and Mark Desmond; to Derek Findlay, Ben Bennett and Mel Dawson for 300km triangles and to Maurice Lowes, Clive Joossee and Geoff Stinchcombe on going solo.

Our CFI, Pat Rowney, has left for the Falklands followed by a posting to Germany, and Ray Brownrigg, DCFI, is at Enstone instructing and maintaining motor gliders having left the RAF. Many thanks to both for their hard work. John Charlett-Green has taken over as CFI with Den Britton and Ben Bennett as joint DCFIs.

The 25th birthday party at Easter was a great success with lots of old friends arriving. The bar was redecorated and re-carpeted just in time.

"Nipper" Stonebanks and "Noddy" Williams are joining the staff at Bicester while "Bic" Smith is back from Germany.

V.R.D.

BATH & WILTS (Keevil Airfield)
We had a successful soaring week at the end of May with Jim Gardiner achieving Gold distance and Bob Clark gaining 5hrs, as well as members claiming numerous Bronze legs in the club K-6CRs. Congratulations also to John Paisley, David Mogg and Ron Sexby on going solo, to Graham Kehilly on his Silver distance and to Ron Bevan on completing his Bronze C.

It was a delight to see the Discus put through its paces by Andrew Davis. With the addition of a "new" Cirrus as well, that puts the number of private gliders at 24.

P.D.

BICESTER (RAFGSA Centre)
Despite a slow start to the season, it provided well achieved badges on the few good days. Richard Delafield and Eddy Johnson got Bronze legs and there were numerous Silver legs including 50km by Steve Winkworth, Chris Rowley and Danny McElvin. Chris managed to complete all three Silver legs in a two-week period. Three 500km Diamonds were flown by Keith Buckner, Steve Hymers and Terry Joint. Terry flew a double O/R to avoid going around the wrong way, again. Roy Johnson got his Gold height during the Talgarth expedition and we have three new solo pilots, Paul Welch, Eddy Johnson and Dave Northgraves. Well done all.

"Nipper" Stonebanks has been posted here and Ken Stephenson has left for the far north. Many thanks for all your work Ken, especially on the fleet's oxygen systems.

The club found itself without a single Astir for the summer, but a few members went to Germany in search of a second-hand one and came back with a superb CS plus trailer. The previous owner is moving upmarket, having flown his 750km in it!

We are on the lookout for a new airfield bus at the moment. When it rains the present bus holds nearly as much water as the Nimbus 3! If anyone knows of a suitable bus for sale, please let us know.

S. & J.

BLACK MOUNTAINS (Talgarth)
Pete Johnson, our first full-time tug pilot, has moved on to Dunstable together with Mary who did our book-keeping. The farewell party was a great success. We shall miss them both and wish them the best of luck. We welcome Dave Macaulay who will be tugging for us until the autumn.

The Sports Council grant and loan have enabled us to expand the club fleet with an IS-30 and a K-18. Acquiring an improved performance two-seater should mean that check-flights, including the Brecon Beacons, should become more commonplace.

So far this year we have hosted expeditions from Odiham, North Hill, Dunstable, Lasham and Bicester. Despite indifferent thermal conditions, there have been some good ridge and wave days. Two Lasham pilots each climbed to 17 000ft in WSW wave at the end of March. Bill Morgan completed his Silver C with a climb to 10 500ft in NE wave during April.

Our next social event will be a barn dance over the August Bank Holiday weekend.

W.D.M.

BORDERS (Milfield)
Many thanks to Jim Hogarth for his term as chairman, also congratulations to Colin Sword who takes over at a very crucial and difficult time owing to the pressures of moving our site. Phil Marks takes over from Peter Johnston as flight engineer. We thank Peter for his patient work over the past few years.

Sadly our landlord, Bill Brodie, has died. He was always very helpful and tolerant and our sympathies go to his wife and family.

T.P.

BURN (Burn Airfield, Nr Selby)
Our new clubhouse was officially opened on May 12 by Coun. M. Johnson, chairman of Selby District Council, with Mr C. Villiers, representing the Sports Council, presenting us with a plaque which acknowledged their financial aid.

The poor start to the season affected our early Comps and courses but was good enough for Joanne Spencer to go solo on her 16th birthday. The weather improved in time for our cross-country course enabling Keith Taylor (SHK) and Vic Fielding (K-6CR) to complete 320km tasks from late starts on the Tuesday and Vic to do another 300km O/R on the Wednesday. The week was a great success enabling R. Moxon, D. Peters, W. Shaw and M. Wakefield to complete their Silver Cs, J. Bourne to gain 5hrs and Silver height and for D. Wilson to fly Silver distance.

We are running second by one point to Kirton Lindsey in the Northern Inter-Club League. A club expedition to the French Alps this summer consists of an ASW-19, PIK 20 and a PIK 20E.

V.F.F.

CAMBRIDGE UNIVERSITY (Cambridge and Duxford)
Cross-countries and badge attempts have dramatically increased during May after weeks of wet and windy weather. Bronze legs were flown by Chris Glover, Terry Slipper and Don Lees. Peter Treadaway Jnr and Brian Watt completed their Silver Cs, Peter going to Crowland and Brian to Cranfield, claiming his height on the flight and his 5hrs over Duxford ten days later. Paul O'Donald flew Silver distance to Husbands Bosworth and Paul Rance gained his 5hrs.

Tuesday, May 28, was a classic day with Gold distances flown by John McNamee and

Richard Maskell and Diamond distances by John Evans and Peter O'Donald. Congratulations to them all.

Malcolm Farrell photographed this swarm of bees which completely covered the red nose of a Libelle parked at Duxford.

Our marathon AGM in May lasted nearly four hours. The Inter-Club League weekend of May 25-26 was won by Cambridge and finished with a successful barbecue and barn dance attended by 140.

We were sorry to hear of the sudden death of Bill Dainty in May. Bill was a syndicate member of 518 Libelle and will be missed by us all. We send our sympathy to his wife and family.

G.K.F.

CHANNEL (Waldershare Park, Nr Dover)
Having settled in at Waldershare Park in April, and now dried out from the early weeks of ankle-deep mud, the advantages of our new site are very apparent — freedom of movement away from RAF control and real thermals.

Ron Armitage achieved a Bronze leg on his first flight in our newly acquired Spatz. Congratulations also to David Goldin on completing his MGPPL, to Colin Harwood on going solo and to Alan McGarrigle on his MGPPL when he flew his Grob in from Amsterdam for his GFT.

We are using a three-wheeled ATV cycle "buggy" for cable retrieve and glider towing which is a great success and economical

L.S.

CHILTERNS (RAF Halton)
Yes we still fly despite our long absence from these pages. To bring you up to date, we now fly at Halton. Although our sky is a busy piece of airspace we have good thermals and the ridge gives us a winter bonus in good conditions.

Our team includes Oscar Constable, CFI, Tim Dickinson, DCFI and Q. Oswell, "Mr Fixit". The club fleet consists of a K-7, K-13, K-8, Vega and Astir. Thanks to many hours' labour by Andy Roberts we have two good winches.

Congratulations to John Harber for his assistant Cat rating, Andy Roberts for his 5hrs and James Allison and Trev Sadler on gaining Bronze Cs. We welcome John Allison and family from Laarbruch, W. Germany.

Membership is growing and visitors will be made most welcome.

T.S.

CLEVELANDS (RAF Dishforth)
Our beloved ASW-20 has been sold to a good home and Comp No. 24 is now worn on our Ventus B.

Simon Faulkener has gone solo, but the major achievement is Steve Olander's Diamond distance of 503km with an out and almost return from Dunstable in his DG-202.

P.W.

CORNISH (Perranporth)
The season got off to a bad start as we had neglected to C of A all but one of the club gliders. We are keeping fingers crossed that the solitary serviceable two-seater holds up for the duration of the courses. Our main winch was abandoned outside the hangar for most of the winter and is now unserviceable due to frost damage, so we are trying to keep things going with our single drum back-up winch.

Committee member Nigel Davey looks set to break the "most launches without going solo" record — some experts are predicting that he may even pass the three hundred mark!

T.C.P.

COVENTRY (Husbands Bosworth)
After a slow start to the season we had a successful task week at the end of May and were pleased to welcome members of the Lakes GC. Although we had a wet start, we achieved over 12 000km in four flying days. Malc Guard won Group A in his Libelle, having won every task day. Group B (two-seaters) was won by Ron Davidson and his team in the Pucatz, Group B (single-seaters) by Derek Abbey in the SB-5B and Group C (vintage) by Pete Martin and Chris Rodwell in the Oly 2B. Roger Goodman, Frank Stevens, Ron Asplin and Jonathan Walker completed their 300km Diamond goals, with Jonathan's flight of 381km being awarded the most meritorious performance of the week. The champion "bumbler" on a non-task day was Tony Pozerskis, who managed to stay up for 2hrs 45min and won plenty of beer money.

The Inter-Club League was held here during the May Day Bank Holiday weekend and ended with an excellent flying day on the Monday.

Congratulations to Rosemary Pozerskis who gained her Gold height at Shobdon in April.

D.L.S.

CRANWELL (RAFGSA)
After a promising start to the season the cold wet spring prevented many long cross-countries from Cranwell; however a flurry of badge flights indicate that summer is now here. Colin Mitchell Smith flew to Nether-thorpe for Silver distance; Jim Mills and Sue Hutchings achieved their first Bronze leg and Silver height and Meryl Jenkinson and Liam McErlean Bronze legs.

Angus Watson got special treatment on his 16th birthday in May when we set up the airfield on a Wednesday evening just so he could go solo. Since then he has converted to the K-8 and gained two Bronze legs. Mick Smith has also gone solo.

Steve Benn spent most of the winter refurbishing the Oly 2B which is now flying again with Gary Moxham, Sue Hutchings and Claire Evans making up the syndicate.

Three members flew 26hrs between them on the Talgarth expedition in April. Chris Terry flew twice to over 11 000ft and Simon Hutchinson and Claire Evans also had ridge and wave soaring.

We joined in the "Comp Kitty" weekend at Four Counties in June with Mick Lee, Barrie Briggs, Don Beech, Norman Quirke and Pauline Hewitt enjoying flying competition tasks for fun, not to mention the social side of the event!

In May we said goodbye to Chris McQuigg, posted to Kinloss. We thank him for his hard work as an instructor, tug pilot and secretary.

Mick Mahon is now an instructor and the Janus, our second two-seater, should arrive in late July.

J.L.

DEESIDE (Aboyne Airfield)
Four hundred kilometres in wave, 450 in thermal, 21 000ft on the only non-contest day. That was our task week at the end of May. Up to eight TPs were set (in pairs on wave days in case one was under cloud), distances being added up. Bonuses were given for the remote TPs such as Loch Lomond, and on occasions for return to Aboyne at the end of the day. The flying area covered most of the Highlands south of the Great Glen.

The wave days were superb, with off the clock lift in the primary to the north of the Cairngorms. The thermal flying often involved crossing the most desolate and rugged mountains in Britain. The views from 1000ft above the Lairig Ghru will long be remembered. Pinpoint navigation and faith in glide angles was essential, especially as the safety of the valleys was often out of sight. Although considerable experience was necessary for this sort of flying, the less experienced could shuttle between Tomintoul, Huntly and the Linn of Dee.

Aboyne is not just about Diamond heights in October. Nor is it about record breaking 750km triangles. But where in Britain is there such a variety of spectacular soaring? Ask Ben Watson. He won yet again.

K.A.H.

DERBYSHIRE & LANCASHIRE (Camphill)
Spring was notable by its absence and the annual visit in late May by Trevor Fox and his colleagues from Lasham was spoiled by fairly solid rain.

Summer finally arrived on May 28, with four consecutive days of good thermals for our club week which was combined with a BGA lead-and-follow course when tasks from 100 to 300km were completed each day. Dave Smith (Astir) achieved Diamond goal the day after following John Williamson round the same course, and though Peter Roberts (Mosquito) fell short of his 300km he logged 900km in the four days. Thanks to the generosity of the K-21 syndicate, several benefited from dual tasks with JSW.

We are liaisoning with Marchington GC for aerotow training weekends.

Congratulations to Brian Allen and Peter

Siddal on going solo, and to Peter Gray our chairman who did indeed gain his Diamond height at Aboyne in April.

J.R.H.

DEVON & SOMERSET (North Hill)

Dave Reilly (Libelle) gained 10 800ft to complete his Gold C at Talgarth. Simon Minson and Ian Mitchell soared their Eagle through 12 000ft, returning badgeless but ecstatic. Height of a different kind is a 2200ft K-13 winch launch recently reported.

In late May John Brown (B-4) completed his Silver C with a duration and Peter Moverly (K-6E), with distance and height. Barry Gage (Oly 463) also has Silver distance and height and Phil Whitehead his Bronze C. Bill Hatch, Bob Chant and Trevor Senatore have soloed — Trevor pilots the Exeter-Speke night mail.

An Extra-Ordinary General Meeting was called on May 4 to increase the club's borrowing powers, following the sudden realisation that land on the north of the site was for sale. We immediately started negotiating for eight acres to widen the east end of the site for increased safety margins when operating at that end. That lovely beech hedge — and its associated turbulence — will go and its replacement will be ours to grow to our requirements, not our neighbour's. Hopefully we will be able to secure this site extension in time to complete essential works for the 1986 season.

The Husky is back after its C of A, and an expensive fuselage recover and respray.

"North Hill News" has reappeared in style under the editorship of Phil Talbot, who has taken over from Gordon Peters. Thanks, Gordon — unsung hero of the Spreadsheets!

I.D.K.

EAST SUSSEX (Ringmer)

The year started slowly with the field partly waterlogged. Our new Tost two-drum winch is giving better launches. After using the old barrage balloon type winch for ten years, the new powerful torque converter drive winch makes launches so much smoother and winch drivers have an easier time.

Some ridge flying on the South Downs has been possible in northerlies and we have contacted wave. Summer courses, started last year, are continuing and give members the opportunity of flying throughout the week as well as providing additional income.

The new clubhouse venture is under way and it should be ready by the autumn.

M.K.

ENSTONE EAGLES (Enstone Airfield)

In May we were not only host to the first leg of the Midland Inter-Club League, but had the added pleasure of providing a site for the Southern Inter-Club League in lieu of South Marston. The weather was indifferent for cross-countries, except for a downwind dash, however the visitors made good use of our carlow facility.

Fed up with the lack of weekend soaring, two of our members took a day off work and completed 300km triangles. Well done Jonathan Kingerlee and Tony Cox. Also congratulations to Jane Nash on going through to stage two of the BGA squad training scheme.

G.D.

ESSEX (North Weald)

With several 500km tasks and an attempt at 750km by Mike Jefferyes, our cross-country kilometre total exceeded 10 000km by the end of May.

We may have set a new record on May 25 when five *ab-initios* went solo. Congratulations to Paul Regeli, Ruth Faiers, Julian Old, "Uncle Clive" and George Booth. Ken Pearson has also solo'ed and Jeff Baker has a new Bronze C.

Several new aircraft have appeared on site recently, including another Pirat, a Skylark 3F, and an ASW-15.

P.W.B.

ESSEX & SUFFOLK (Whatfield)

Our planning permission allows only two flying weeks in the year. Unusually this years' coincided with good sunbathing weather and searched out pilots who could latch onto blue thermals — Paul Robinson, Colin Smith, Peter Wilby, Paul Rice and Robbie Hatwell, as our ladder confirms. Congratulations also to Brian Hill and Martin Langford on their 5hrs and to Peter Joslin for completing his Bronze C and on a Silver distance (new style O/R).

BBC viewers may have seen our youngest regular member, Johnny Gilbert, flying a British Airways 737 simulator on Breakfast TV for a training film. He impressed the staff sufficiently to be offered a flight deck return trip to Sweden. But we're not letting him solo for at least a couple of years — till he's 16.

R.C.A

FOUR COUNTIES (RAF Syerston)

Poor conditions have dented the statistics. Stu Mulholland has left for Brüggen — our loss is their gain. Contrary to reports in the RAF News, we were the first RAFGSA club to introduce the package-deal and have sent three pilots solo. Hopefully the other 12 will follow suit.

Jed Edyvean, the club stalwart, completed his Diamonds with a 500km triangle. Competition Kitty produced £70 for the British Team fund with Bob Spiller and Hamish Brown the outright winners on days 1 and 2 respectively. Day 2 produced a crop of plastic in the fields surrounding Bottesford.

We are holding our traditional longest day on June 22.

A.F.M.D.

FULMAR (RAF Kinloss)

We had our first wave for months on May 26 when Bill Gordon (Astlr) went to 13 000ft.

We welcome Chris McQuigg to supplement the tug drivers and to assist with the students.

Members did a superb job on a winch engine one rainy weekend, stripping it down and re-building it after a seizure, only to have it seize again after six launches. Offers of reasonable winch engines to the winch member please!

W.G.

HAMBLETONS (RAF Dishforth)

May 5 marked the culmination of the saga of our winch, a day few thought to see. Some 15yrs ago (memories begin to fade after so long) a Leeds Corporation bus made its way to Dishforth, destined for winchdom. Winter after winter work proceeded under a series of hopeful groups of stalwarts, while members continued to launch behind the tugs or on the Clevelands winches. Finally last March our winch was pronounced ready for service, and duly made its way towards its station. Unfortunately it fell foul of a large muddy area, and when released after several hours it was too late to do anything but trundle ignominiously back to the hangar.

A week later, further progress was made: a cable was towed out, whereupon the fuel pump failed and it had to be wound in by hand. Undeterred, in May we tried again and after a minor hiccup on the first attempt the Swallow was triumphantly launched to a great height amid great celebration. Thanks to Simon Jackson, John Jones, Don Langley, Pat Rowell, Bill Jaques and all who went before — your efforts were not in vain!

The winch continues to give good service. Several members have had cross-country flights, Steve Olender taking his DG-200 round 500km and Jerry Niman and Polly Watson gaining Silver distances in the K-6.

J.P.

HEREFORDSHIRE (Shobdon Airfield)

The summer is seeing changes with a new caravan site under construction with hitherto unimagined amenities as proper toilet blocks. New drains have gone under the grass runway which should help keep gliders clean next winter.

The fleet has expanded with a Blanik and there are plans for an on-site back-up for the Super Cub.

Congratulations to Rod Hawley on his 300km and condolences to Simon Duxbury for under-declaring the same day. Nigel Frost has achieved Bronze C after 10 months with us and Peter Greenway got his Gold height in the club's Vega.

D.J.

HUMBER (RAF Scampton)

We have several achievements to report. Tim Doyle (not Tom as in the last issue) and Andy Welburn have completed their Bronze Cs, while Darren Wheeler has gone solo and gained one Bronze leg and a Silver height. Our only Servicewoman, Jo Scrase, has converted to the K-8 and Al Brown has two Bronze legs.

Phil Hutchison did quite well at Bicester, and we are looking forward to the Inter-Services. We welcome back Mick Logan from the Falklands, and also congratulate John Jenkins on becoming CFI due to the resignation of Roger Hanson. Unfortunately Dave Cockburn will be leaving us soon, so we will be a bit thin on full Cat instructors again.

K.M.G.

LAKES (Walney Airfield)

The single-seater safari was to Husbands Bosworth this year where Rod Murfitt completed his Silver C with a distance flight.

The new clubhouse is taking shape fast. It'll be fine when we have the plumbing, drains and electrics in.

All the club gliders and the Super Cub were cleaned free of charge by Cub Scouts during a Unipart sponsored job week.

E.K.

Please note that the next club news deadline is August 6.

LONDON (Dunstable)
The atrocious weather early in the season suddenly cleared at the end of May to enable Dunstable pilots to fly 4750 cross-country kilometres on two weekdays, including five 500km triangles. Robin May managed 1100km on two successive days, Trevor Stuart achieved his 500km Diamond, and Eric Hamill completed 592km of a 630km triangle.

Other achievements have included Silver distances by Tony Danbury, Ken Maynard, Kay Harris, Nick Thomas and Roger Hurley.

LGC is back in contention for the Inter-Club League; Alex Evans as team manager has gingered us up considerably. We are currently lying equal first and are determined to recover our ascendency as of previous years. So just watch out, Inter-clubbers!

D.S.

MIDLAND (Long Mynd)
Despite a heavy snowfall, 62 members attended the very enjoyable and well organised annual dinner-dance at the Long Mynd Hotel on March 16 when recently retired Jack Minshall presented the trophies.

Many of the trophy winning flights of last year have already been surpassed. The arctic like spring hasn't helped with the clubhouse being snowed in several times, but for the hardy the flying has been superb at times with Malcolm Allen whispering up to 16 000ft in north-westerly wave and several flights of over 10 000ft.

More recently the weather has given good thermal soaring with Chris Alldis, CFI, and Peter Taylor achieving 320km triangles. The badge claims are too numerous to mention but congratulations to Sue Trinder on going solo.

N.B

NEWCASTLE & TEESSIDE (Carlton Moor)
A string of northerly and north-westerly winds gave us interesting ridge soaring in April. On April 12, the last day of the Easter course which had been plagued by poor weather, we soared the NW ridge and Dave Ward (M100) flew Silver distance.

The next day visitors from Mendip GC seemed impressed with the soaring capabilities and flew their Dart and Astir while conditions held.

We hope to replace our recently sold K-7 with a SF-25B Motor Falke, joining our club fleet of a K-13 and K-8B.

The annual dinner-dance was a huge success and our thanks to the organisers.

M.J.N.

NORFOLK (Tibenham Airfield)
It is quite some time since you have heard from us but we are continuing to thrive with a healthy membership and fully booked courses from May to September. After a bleak winter the season had a good start with the first task week in May producing over 6500 cross-country kilometres and convincingly won by Tony Walsh (Mosquito). We are hoping Tony can repeat the performance in the Northerns.

Alf Warminger has taken delivery of his tipped Ventus and a new syndicate has formed to buy the Dart 15. Our cross-country pilots are delighted at the new rules for badge claims as this will be a definite help to us as we are frequently shot down by sea air on our return home.

B.S.

NORTHUMBRIA (Currock Hill)
Only weeks before his instructors' course at Portmoak, Alan Scott fell from a ladder and broke his arm. With his arm on the mend and having suffered much leg pulling, he is now our newest instructor.

On his way north, to the instructors' course, Bill Scull kindly stopped off to give the excellent BGA talk and films on cross-country flying.

Rain plagued our Easter week visit to Portmoak but when the sun came out on our last day David Moss gained his 5hrs.

We are now flying on Wednesdays with Ken Holborn and Ernie Moore on duty until tea-time when Lyn Greenwood and Rob Thompson take over.

S.M.H.

NORTH WALES (Pen-y-Parc, Nr Holywell)
The lambing has finished and we are back on the field, endeavouring to fly on Wednesdays as well as the weekends.

The winch has had a face lift and been redesigned, thanks to Gerry Maddock and his team of Dave Sprake, Bill Winstanley and Keith Lewis.

The recent club week at Aston Down was probably our most successful ever. Keith Lewis, Gerry Maddock and Brian Sedgwick did their 5hrs (two of them are considering making Silver height claims); Bill Winstanley flew Silver distance by crossing the Bristol Channel and landing in the South Wales' mountains; Graham Mitchel went solo and with Geof Belshaw and John McCormick got a Bronze leg, this making John's second. Dick Moore, our oldest member and retired some years ago, converted to the K-8.

J.J.M.

PEGASUS (RAF Gütersloh)
The weather has improved and there is a resolution about this year which is paying off. We congratulate Terry Ackerman, Chris Milton and Allen Jones on Silver height and distance; Ian Smith on distance; Chris Milton for 5hrs; Chris Hill, Silver height, Arthur English, Bronze leg and Dave Cook on going solo.

Our expedition to Paderborn-Haxterberg, W. Germany was enjoyable with lots of flying. The Benbecular K-4 is now with us and we have had quite a few conversions.

We are sad to say goodbye to Mick and Jackie Boydon and girls on their posting to the UK and to Simon Marsden, but say hello to Gary Moon, Yasmin Stockwell, Tim Gatt and many others.

Pip Barley has taken over from Jeff Mecham as CFI.

R.D.G.H.

PETERBOROUGH & SPALDING (Crowland Airfield)
Our AGM was in April and we thank the retiring committee members and wish good luck to Kelvin Davis, our new chairman.

The Inter-Club League was scrubbed due to bad weather though the many visitors had an enjoyable weekend.

April and May were good months. Richard Kilham and Toni Ainley went solo and in May Mike Ainley completed his Silver C which he started in March with the club's first cross-country of the season. Mike re-soloed 13 months ago after a break of 19 years. John Palmer has also completed his Silver C.

Tony Gent proved once again he has the instincts of a homing pigeon by landing out in his own field.

T.A.

OXFORD (Weston on the Green)
We have had several recent successes and congratulate our new Bronze C pilots, Carole Broad, Rad Babic, Simon Fathers and Hilarie Smith. John Hanlon flew Silver distance and Phil Gascoigne and Tom Lamb achieved Gold heights at Talgarth. Condolences to Chris Emson on his "Gold height" — remember your barograph next time Chris!

Chris, with Phil Barlow, has an assistant instructors' rating and John Giddins, chairman, his full Cat rating. Well done folks!

There is now a possibility we can erect the hangar on our own site, though this has to be confirmed.

Club social life has ranged from ice skating to clay pigeon shooting. We thank Christine Hanlon and Carole Broad for the excellent barbecue, not forgetting Rad Babic's spit roasted lamb — a gift from Rad to celebrate his Bronze C.

H.J.S.

SCOTTISH GLIDING UNION (Portmoak)
The Janus C arrived in April making it the club's first glass-fibre glider. "Z" Goudie flew it for the first cross-country and now several pre Bronze C pilots have had their first taste of cross-country flying at our task weekend.

Doug Wylie and Alastair Dodds are now setting tasks every weekend, always with a pre-set Silver distance option to encourage competitive flying. Philip Lever Jnr went solo on his 16th birthday. A larger than usual contingent are entering the Northern Regionals.

A.G.I.D.

SOUTHDOWN (Parham Airfield)
Bad weather for three weekends running prevented any flights in the Inter-Club at Challock, Ringmer and Parham. Most frustrating.

Since then conditions improved greatly and on May 28 we had our first 500km from the site only to find subsequently that it was short by 15km, the pilot having forgotten he should have done a remote start/finish.

Congratulations on completing their Silver Cs to Rod Little, Steve Domoney, Alan

Cuthell, Peter Howe and Bob Burns and to G. Ansell, R. Bray, G. Sparks and R. Bucham for completing their Bronze C.

After several attempts at 300km Heather Bateson and Richard Hawkins were successful at the end of May.

Our new double width operating area is great but we still have a footpath somewhere down the middle. Any visitors, please land on the old area (east side) as the new part is for take-offs only till the footpath is diverted.

We are having a barn dance and barbecue/farmers' party on August 17. Tickets are from the bar and all are welcome.

R.A.W.

SOUTH WALES (Usk)

We have bought our field! With the help of the Sports Council for Wales, the Philip Wills Fund and the Midland Bank, our president, Denis Bryan, finally wrote the cheque that should make us a permanent asset to South Wales.

It is 25 years since Ivor Shattock started the club on an inaccessible hilltop near Caerphilly and 15 years since we moved to Usk.

Our spring task week and the Bank Holiday were a complete washout. Tuesday was much better!

Des Winser and Mike Shoukris have gone solo and Louis Chicot (Oly 2) flew the first Silver distance of the year.

P.F.

SURRY & HANTS (Lasham Airfield)

The season has started slowly but the May Bank Holiday brought six O/Rs to Leicester (320km), the fastest being by Chris Garton (Ventus) at 94km/h with John Taylor (ASW-20) not far behind at 90km/h. Only the wily Chris Lovell read the weather well enough to predeclare the flight and earn a good score for the National Ladder. The remaining three were John Bastin, George Metcalfe and Chris Starkey.

The new DG-101 club is proving very popular. Its crisp low speed handling makes it an unusually pleasant thermalling machine.

At the AGM the Duckinfield-Jones trophy was awarded to Annabel Lucas for the fastest 300km by a pilot who hadn't flown a 300km at the start of the year.

C.G.S.

SWINDON (South Marston Airfield)

All flying has ceased at South Marston Airfield on which a car factory is being built. Our clubhouse and hangar are still there but, for the moment, we are having to rely for launches on the hospitality of other nearby clubs, for which we are most grateful.

In spite of these upheavals, we **do** still exist and are participating in the Southern Inter-Club League as normal. We remain optimistic of flying from a site of our own next year, if not sooner.

P.M.

ULSTER (Bellarena)

Eighty-seven first-timers were carried on the Bellarena Airlift, our first open day on May 6 which will now probably become an annual Bank Holiday event. About 600 people in nearly 200 cars attended despite foul weather which only slowly cleared. Numerous visitors chose to defer their flight to a better day; heightened demand for air-experience flights has persisted since.

We gained some new recruits and summer course bookings. Dublin loaned their K-13 to supplement our four resident two-seaters and a Chipmunk was hired in as a second tug.

For the first time in seven years our Easter camp was less than favoured, weatherwise, but national coach Ken Stewart's visit with the Super Falke left many members in better shape and eager for cross-country flying after extensive field-selection exercises. Ken also did some valuable lobbying work on our behalf among parties whose support is vital in our bid to obtain site security, as has Bill Scull since.

On April 14 our chairman, Jim Weston, completed his Gold C, so often denied him by barograph failures and other hitches, climbing out of ridge lift into scrappy wave to 12 400ft. DGC visitor Kevin Houlihan followed him up

for his Gold C climb after DCG instructor Cecily Begley had shown them both the lift was there. It was a good week for Kevin — he'd done his 5hrs two days before.

In May spraygun artist Eddie Leech soloed on his 26th flight — fitting reward for the work he's already done on our aircraft finishes.

R.R.R.

WOLD (Pocklington)

We now have a fine memorial on site dedicated to the 405 and 102 squadrons. The memorial dance was well attended and enjoyed and hopefully will become an annual event.

At last the task week during the Spring Bank Holiday brought excellent weather. After previous poor years, four good competition days were very welcome. The winner was Tony Acey (K-6E).

We now have our K-7 to K-13 conversion and all club aircraft are getting full use, particularly the K-8 with many conversions. Congratulations to Alan Campion on going solo.

T.H.

WYVERN (RAF Upavon)

We were visited in April by Austrian pilot Toni Kahlbacher who broke the world duration record in 1938 with a flight of 40hrs 51min. He showed he was very much in practice by flying our chairman around in the K-21 before entertaining us at the local hostelry where many gliding stories, old and new, were exchanged.

More members have been trying Odiham's K-23 and are looking forward to when we have our own. Huish ridge continues to be popular and Tom Muncaster, Paul Cook and Ephy Darnbrook know every contour of the hill having completed their 5hrs. Congratulations also to John Ashcroft on his 300km and Pete Howarth on becoming a passenger carrier.

P.A.S.

YORKSHIRE (Sutton Bank)

The omens for the 1985 season are looking good. Strong thermal conditions with cloudbases over 6000ft provided excellent soaring in early June. Two flights in excess of 500km were completed on successive days, one of which provided Mike Carter with his third Diamond, all flown from our site.

Many pilots sampled the rare delights of north-easterly wave on a Sunday most of us had written off after hearing the forecast. However, an excellent wave system developed providing interesting flights over a wide area of Yorkshire. Visibility wasn't all that good though — ask the local pundit who claimed he was at York and landed at Catterick.

As usual, we are playing host to many visitors who seem to appreciate the gliding facilities on offer. Its always nice to see new faces and gliders — come and join us for a few days, you will be welcome.

P.L.

Please send all contributions to S&G to the editorial office, 281 Queen Edith's Way, Cambridge CB1 4NH and not to the BGA office.

THE PRICE

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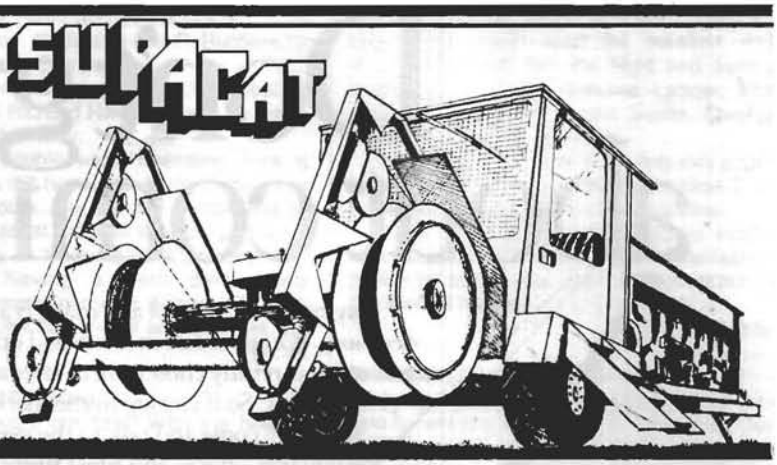

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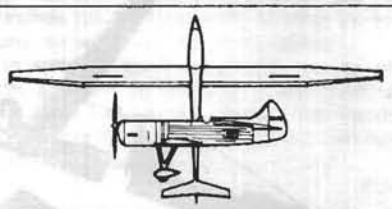
Avon Soaring Centre together with the Cairngorms Gliding Club can provide you with a great opportunity to explore the wave conditions from Freshiebridge Airfield for the whole month of October.

Tug facilities will be available, also our Club single and two-seaters, or bring your own machine.

Organise a club expedition, or just bring the family.

For further details, contact Barry or Dave Bidford on Avon 772606



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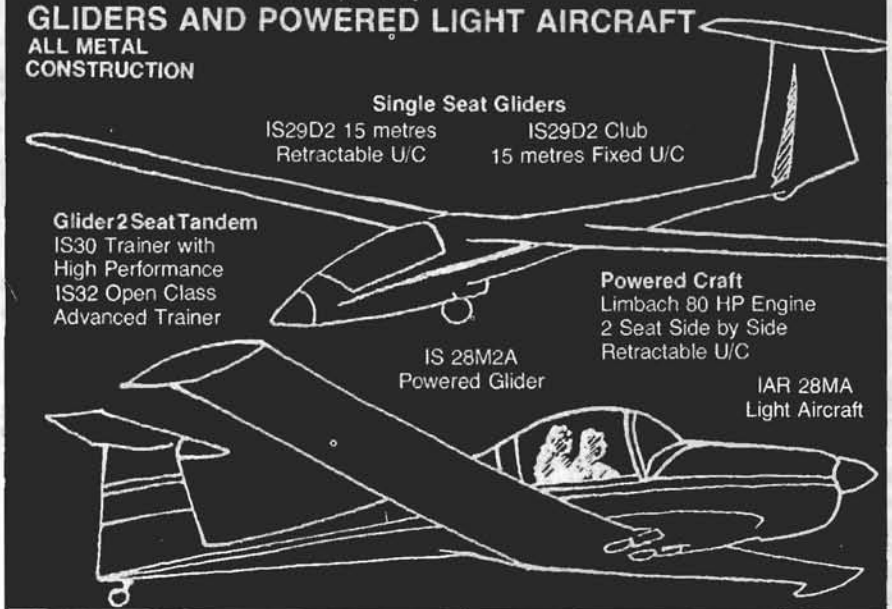

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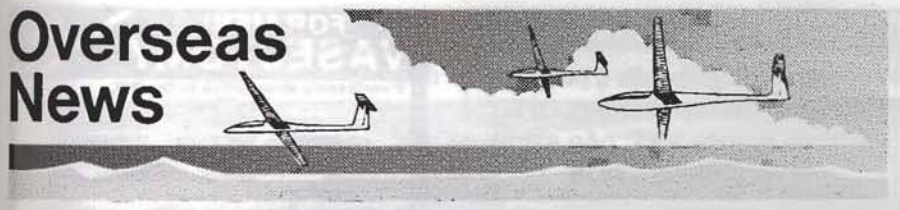

Please send news and exchange copies of journals to the Editor, 281 Queen Edith's Way, Cambridge CB1 3NH, England.

Beat Bunzli, from Switzerland set world single-seater motor glider records in his DG-400 at Bitterwasser, SW Africa, in December. He flew a 500km triangle at 148.26km/h, a 300km triangle at 165.51km/h and a 1004km triangle at 139.96km/h.

SMALLEST 747 ALONGSIDE BIG BROTHER

Hans Disma, a KLM Boeing 747 pilot, is photographed with his Ventus T which has been given the registration PH-747 by the Dutch Department of Civil Aviation.

Akaflieg Munich have produced an automatic flap adjustment system for their Mü 28 aerobatic glider. The flaps vary automatically between +20° and −20° as the load factor changes. Positive *g* causes the flaps to be lowered, and the flaps go negative in inverted flight and whenever negative *g* is applied.

The 1st World Glider Aerobatic Championships will be held at Mautendorf, near Salzburg, Austria, from August 28-September 3.

The youngest pilot in the world to hold all Three Diamonds is Franck Verneuil of Bailleau near Paris. He earned his Diamond height at Vinon in January, three months before his 18th birthday!

CROSS-COUNTRY (with a little help)

F. Dunmore

Could it be but ten minutes ago
On singing uplifted wings,
Triumphantly brushing the streeting clouds
I rode the invisible springs?

Now, 20km out and a thousand feet up
In a bowl of arid blue,
Lord of the Skies,
Give me just one more
And tonight I'll drink to you.

When did elation fade?
Becoming bleak despair.
As steady sink replaced wild rush
Thro' buoyant air.

Dull, lifeless, flat, like long poured beer!
What causes the air to die?
Lord of the Skies,
Breathe life again
Into this turgid sky.

A murmur – a lift – a cautious turn
A rising joyful shout!
Lord of the Skies,
(Just between you and me)
Thank you! Over and out.

PORTRAIT OF A GLIDER PILOT *WENDY DARTER*

Joyrider

Joins for one day, arrives at midday on a sunny day, is upset when clouds cover the sun, takes three flights, pays immediately and leaves before bar opens.

Does not recognise God.

Beginner

Wants to learn to fly, arrives after breakfast, has heard clouds have something to do with gliding, knows cockpit checks by heart, comes to bar to buy logbook and pay flying fees.

Recognises God.

Near Solo Pilot

Arrives at dawn, can fly a circuit, lands several times, "knows everything". Thinks all clouds are cu. Comes to bar to write up logbook and collect instructors' comments.

Prefers other instructors to God.

Early Solo Pilot

Arrives in time to get aircraft out, knows Air Law, but now thinks he may not know everything. Doesn't care about clouds. Is delighted to land on the airfield. Comes to bar to buy round.

Avoids God.

A & B Pilot

Arrives on Friday to stay for weekend. Tries to stay up half an hour, disbelieves log keeper. Recognises cu but cannot use them. Knows Met and theory of flight. Comes to bar to study Bronze C papers.

Follows God everywhere.

Bronze C Pilot

Takes the occasional day off if weather is unsuitable. Has forgotten Met and theory of flight. Uses cu and has frequent siting of wave. Usually remembers barograph, prefers not to land out within 50km. Always goes to loo before flying. Comes to bar to tell stories of his flying experiences.

Talks to God.

Silver C Pilot

Takes leave at Zell-am-See, helps rig K-6E, attempts 100km triangles when weather is good, tries back seat for size when it's not. Carries barograph everywhere, lands in suitable fields, away from civilisation. Comes to bar to count hours in logbook.

Asks God about instructors' courses.

Gold C Pilot

Enters Inter-Services Regionals, has assistant instructors' rating, takes passport, plastic bag and oxygen, disappears into cloud, lands by a main road. Comes to bar to impart superior knowledge.

Chats to God.

Diamond Pilot

Works in glider workshops all weekend, attempts records midweek. Enters Nationals, builds own aircraft. Knows every glider pilot in Europe. Lands beside pre-arranged telephone box. Comes to bar to drink.

Argues with God.

(NB. CFI is God!)

CLASSIFIED SECTION

Advertisements, with remittance, should be sent to Cheiron Press Ltd, 7 Amersham Hill, High Wycombe, Bucks. Tel 0494 442423. Rate 35p a word. Minimum £7.00. We can accept black and white photographs at £3.00 extra. Box numbers £2.40 extra. Replies to box numbers should be sent to the same address, the closing date for classified advertisements for the October/November issue is September 2, a.m.

FOR SALE

SD315T, low hrs, new C of A, basic panel. Complete outfit with aluminium trailer, rigging aids etc. All in excellent condition. £4350. Tel (0983) 872966 or 524562.

OLY 2B, good condition. 1 year's C of A. Basic panel, £1300. For further details tel Jane Austin, 0347 810255 (after 6pm).

LIBELLE, excellent condition, under 800hrs, 2 owners only, aircraft well instrumented and complete with parachute, barograph and radio. 1 year's C of A, Speedwell trailer. £7500 neg. 056 881 368.

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LS-4, complete 1984 outfit includes first class trailer, towing-out gear, superb instrumentation with latest Cambridge Mk IV Nav system, Bohli, Dittel 720 etc, 'timed camera' mounts and new C of A. Available immediately, all ready for the Nationals! Tel Richard Aldous 06284 6848 or David Hill 01 370 2901.

SUPERB recently resprayed K-6E. Full panel, A/H, Storcomm, trailer, C of A May 86. £5000. Parachute, barograph, oxygen, negotiable. Hunter 0377 70221.

EoN BABY, semi aerobatic. £850ovno. Enclosed trailer £200ono. Specht basic trainer, offers. Both C of A 16.4.86. Clarke 085883 284.

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COBRA 15, new C of A, very comprehensive panel includes Burton and PZL varios with Dolphin, horizon. Also radio, oxygen and parachute. Reason for sale: 3/4 of the syndicate no longer gliding. Tel 0977 683330 or 0532 719507.

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K-6E, excellent condition, well equipped panel including oxygen control fittings. Clock and temperature indicator. Superb ride open trailer. 825hrs, 600 launches, full C of A. £5300. Tel 0664 822131 or 0623 651960 (evenings).

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AT END of season, Libelle or similar, outfit or hull only, must be vgc. Details to G. Dale, 16 Windermere Road, Bournemouth, Dorset BH3 7LF. Tel 0202 528370.

PARACHUTE CANOPIES required. 1.24, T10A etc. 1962 onwards. Details of type, age, condition and modifications to J. Barnes, 34 Willowtree Ave, Durham. Tel (0385) 65315.

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NOTICES

FENLAND GLIDING CLUB (RAFGSA) at RAF Marham, are holding a REUNION WEEKEND, 14/15 September

All ex-Fenlanders (even if now civilian) are welcome. Contact Martin Durham at RAF Wyton, ext 249/446 or 0480 59027.

PS John Whitworth is still here!

The Inter-Club League final will be at Booker on the August Bank holiday weekend, August 24-26.

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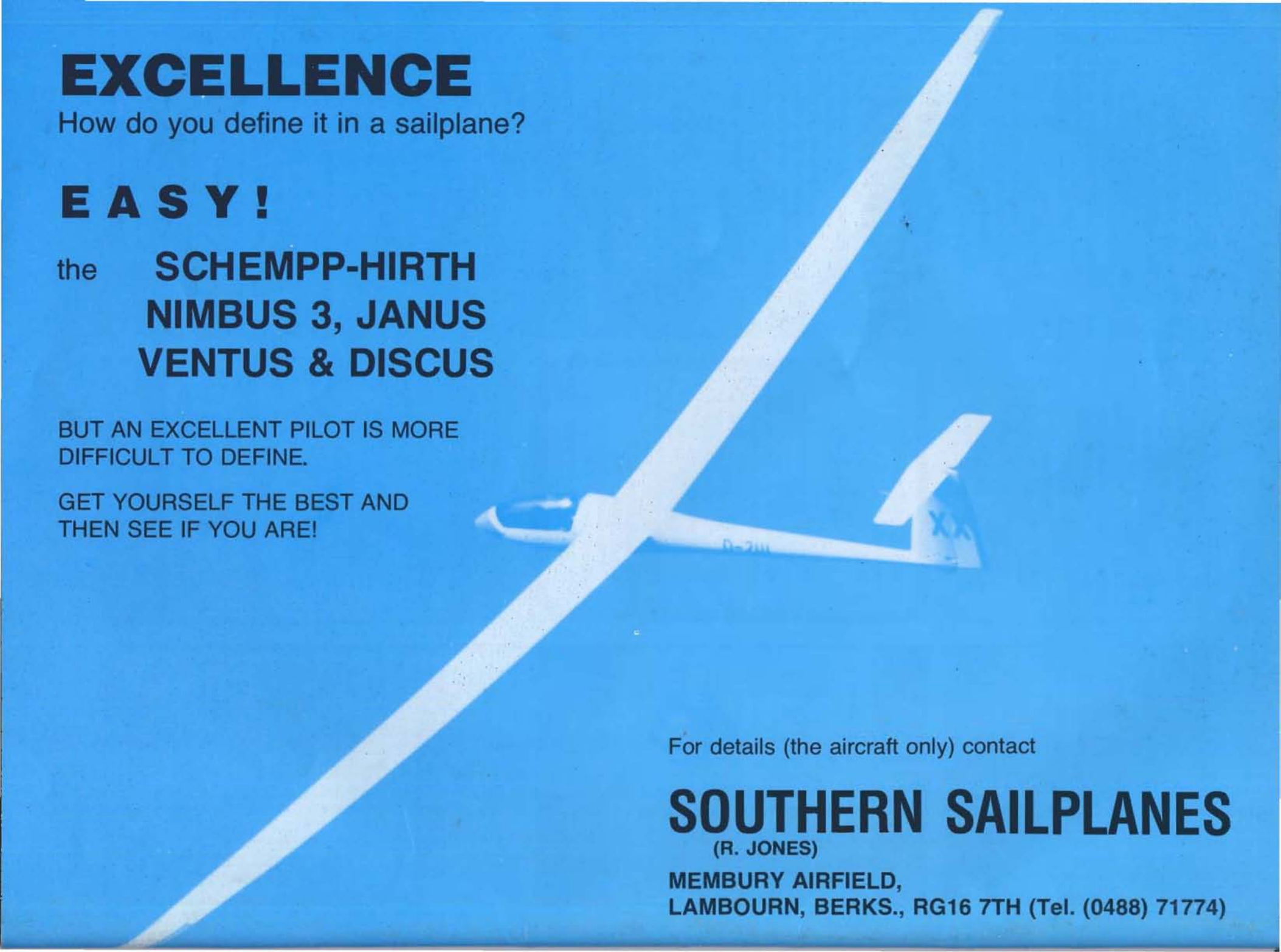

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