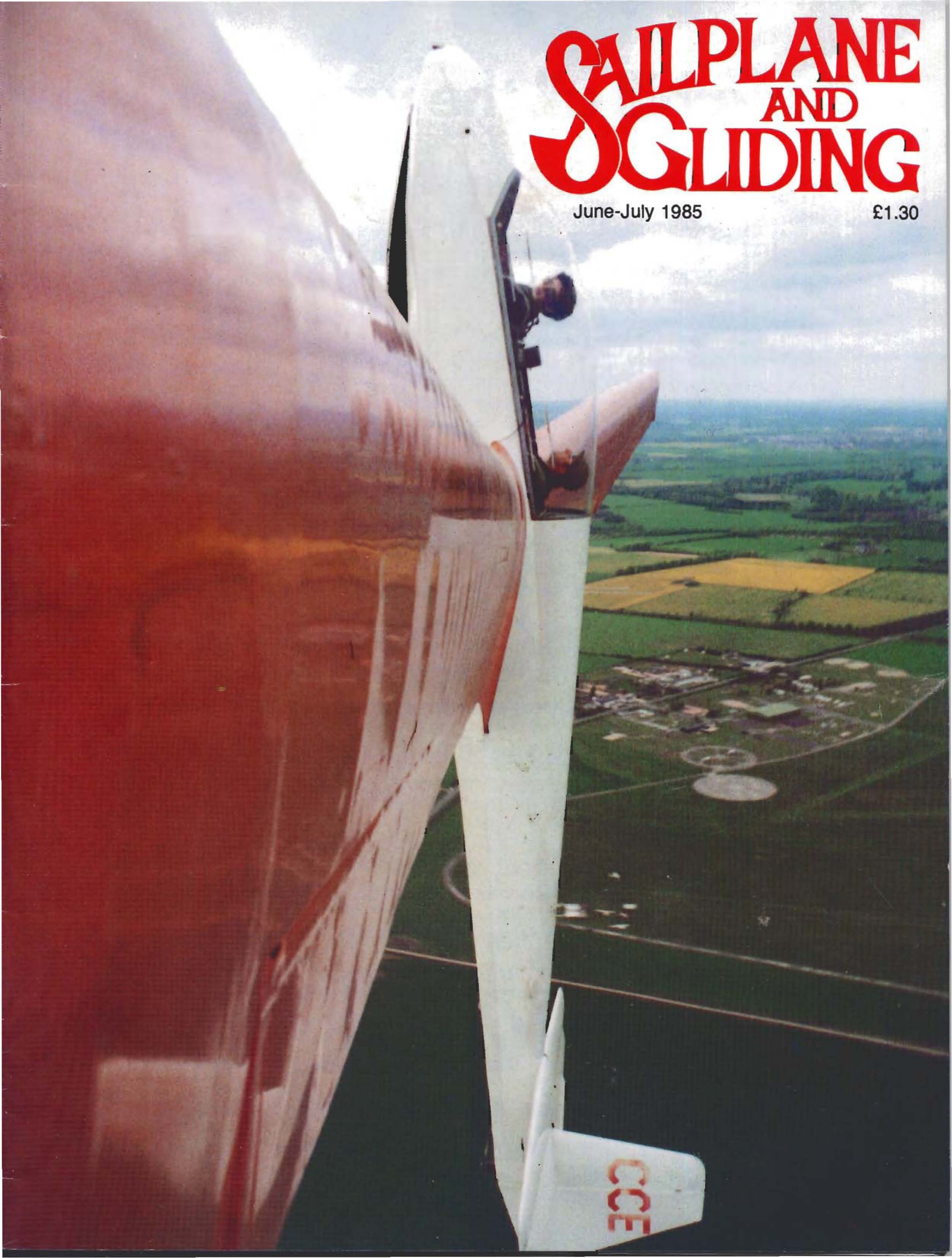
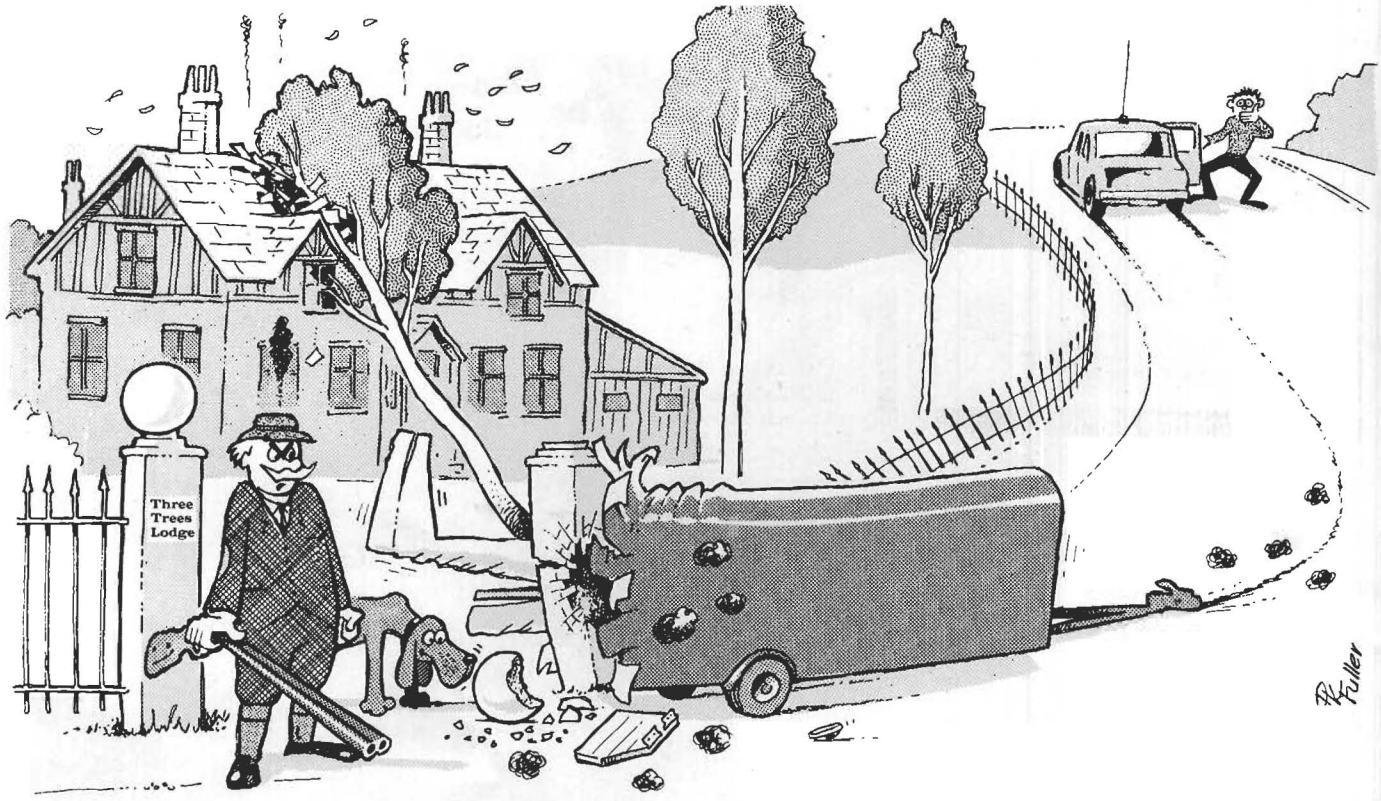

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Cover: A K-13 over Oxford GC's site, Weston-on-the-Green, flown by Richard Hall with Malcolm Moxon, co-pilot, operating the camera by remote control.



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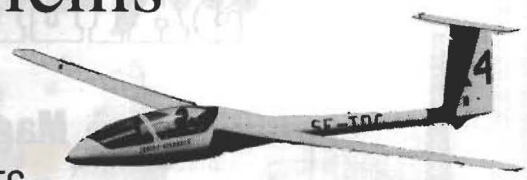
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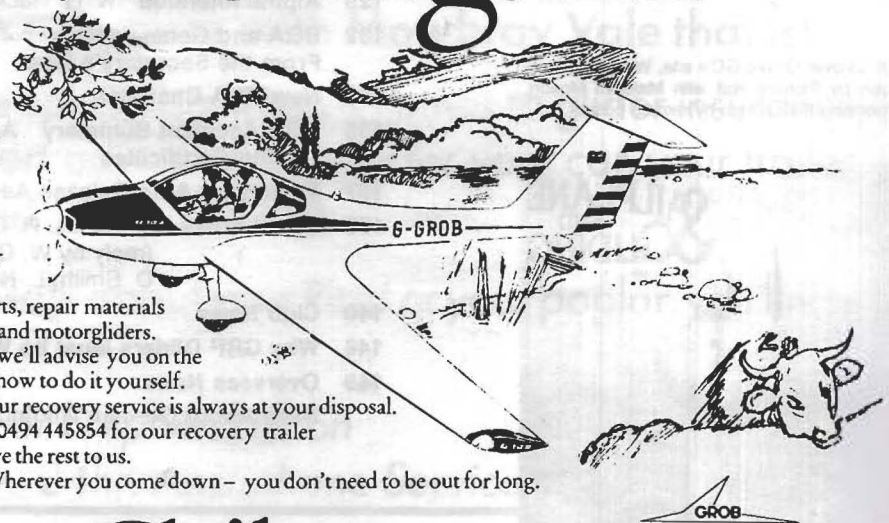
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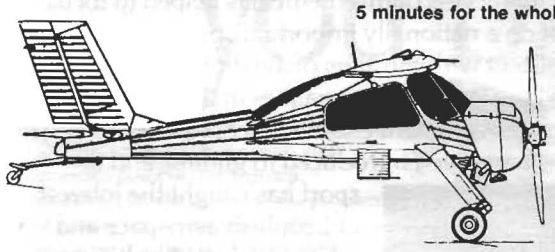
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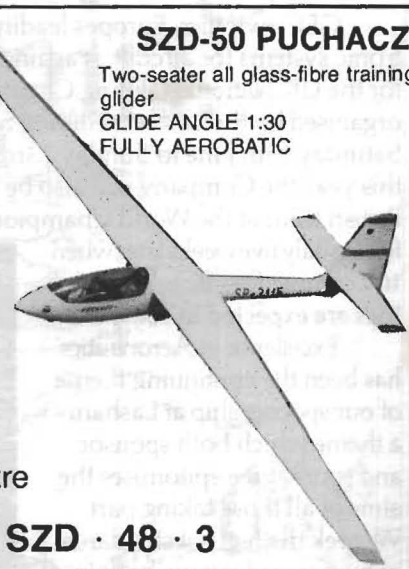
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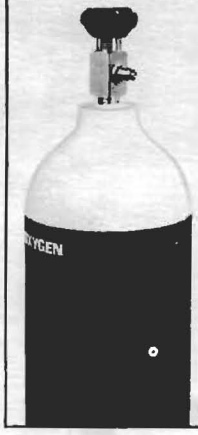
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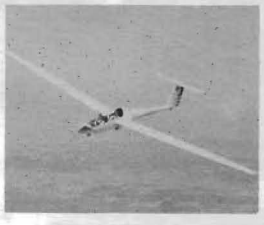
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BACK TO BASICS — Part 5

Circuit Planning — 1

DEREK PIGGOTT continues his widely read series for beginners and instructors

The aim in circuit planning is to bring the glider to a position where it can complete the final turn at a safe height to make an easily controlled approach into the chosen landing area. However, the ideal position and height for this turn varies considerably from day to day because of the variations in the wind, the type of glider and the location of the field. Before flying across country the glider pilot needs to be able to weigh up all these factors for the field he has chosen for a landing and this takes a considerable amount of experience and practice.

The final approach needs to be long enough to allow time to assess how it is going and yet still time to make corrections to the glide path. The faster the approach speed, the longer the approach will need to be to allow time for these adjustments. This is the main reason that the final turn heights have increased since faster, more modern two-seaters have replaced the old T-21s; a lower approach simply does not give you time to put things right during the approach. It may not be hazardous on a calm day to complete the last turn at 50ft, but it makes it very difficult to guarantee a spot landing.

In windy weather and particularly in the lee of hills where there may be severe downdraughts and turbulence, the final turn must be closer to the boundary of the field, but in normal conditions the turn really needs to be completed **at least** 3-400 yards behind the boundary of the landing area. (About the length of an average farmer's field in most parts of our country.)

The easy way to get into this ideal position for the final turn is to make sure that you arrive opposite the landing area at about 5-600ft. This ensures that you will not be embarrassed by being short of height and it enables you to sit out well to the side of the field giving you a fairly long base leg. To be sure of being able to put the final turn in the correct position and height, you need time on the base leg to assess whether you are rather high or low, or need to move further back or closer to the field. On a short base leg you may be able to see that things are going wrong but there is no time left to make an adjustment to put them right.

The position of the turn onto the base leg is critical in windy weather since, with the very high ground speed flying downwind, even a few seconds hesitation can put the base leg so far back that an undershoot may be inevitable. In windy conditions always turn early. It is then easy to allow the glider to drift back during the base leg until it is in an ideal position for the final turn.

During training and local soaring you are mainly concerned with landing back at the launch point of your gliding site so you need to have a realistic idea of how much height you will lose flying from one end to the other. If the best gliding angle of your glider is reputed to be 25:1, in the state that you fly it, with dirt and dust on the wings and a little slip and skid here and there, it will probably glide about three-and-a-half miles/1000ft in smooth, still air. This means that on a calm day you need to allow almost 300ft for each mile. If your winches are on the boundary and your field is 1200 yards long you will usually use up about 200ft on the downwind leg.

On a calm day you may only get 800ft on your winch launch and may need luck to get back comfortably.

However remember that on a calm day you will need to put your base leg much further back than the downwind boundary and also you may fly through some sink on the way. If the day is really calm you may only get 800ft on your winch launch, in which case you may need luck to get back comfortably, even if you turn onto the downwind leg immediately after release leaving retrimming until you are on the way back.

If you are always slightly on the low side for the final parts of the circuit, the problems multiply. You cannot sit well out to the side of the field and have a good base leg. If short of height you dare not put the final turn in an ideal position so that you have an adequate length of approach. The final turn will be on the low side and you will find yourself landing hundreds of yards into the field — a long push back when training but a disaster on a cross-country flight.

Although we may aim at these ideal situations, from time to time they will not be achievable and the essential thing is to recognise what is happening and to be able to deal with all the possibilities. This is far more important than learning to make circuits which are exactly square and look nice to the instructor.

Most gliding operations have their own rules for local soaring and for circuit procedures. If you share your site with a power flying club these rules will hope to separate the different kinds of traffic and make it easier for the power pilots to predict what you and your mates flying gliders are going to do. This makes attempting to thermal below a certain height or on the circuit taboo. Each site will be slightly different but there are points of general airmanship which should never normally be broken, whether the landing is at a gliding site or in a farmer's field at the end of a cross-country flight.

For example, once you have made the decision to make the landing do not attempt to use any lift encountered. Always judge your height but monitor the airspeed indicator when flying below 5-600ft and maintain your selected airspeed on the base leg, final turn and final approach. Never circle to use up height on or near the position for the base leg, or downwind of the landing area. Always choose a clear area for landing and never land directly in line with an obstruction relying on a perfect landing or on the wheel brake to stop in time.

Rules for joining the circuit pattern vary from site to site. Some places have a rigid rule about entering the pattern over a particular landmark at a particular height. Others allow the pilot more freedom and discretion suggesting that the minimum is to arrive opposite the landing area at an appropriate height. Good airmanship dictates that you are settled down ready for the landing and make a reasonable base leg before the final turn.

The key to good planning in the early stages is to be able to recognise a suitable position relative to the field by judging the angle. For example, as you turn downwind to commence the circuit you should be glancing out sideways and downwards towards the nearest part of the field. Except in very low performance machines such as the T-21, Schweizer 2-33 etc, an angle of 45° is far too steep unless the conditions are very severe or it is clear that you are short of

height for a normal circuit. It is always easier to be on a rather wide circuit moving closer than to be too close trying to move further out. This is because as you turn out to widen the circuit it becomes difficult to see the field and how far you have gone.

It is a simple matter to learn to recognise what an angle of about 30° looks like. Pace out four paces from a mark on the ground and then just raise your arm and point to the mark. That is about the angle that you should want to see the nearest edge of the airfield or the landing area as you arrive opposite it at about 5-600ft. However, this angle is only safe if you have at least a normal amount of height. If you were higher than normal, say 7-800ft you would be the appropriate distance further out giving you a longer base leg and more time to make adjustments.

Angles alone are not safe because if you are very low the angle may be right but you will collide with the ground during the final turn. Unfortunately altimeters are notorious for sticking so that they may indicate height that you haven't really got. Combined with the human tendency to be optimistic, this kind of error leads to many hairy final turns and the occasional wrecked glider. At heights of over 5-600ft, an error of 200ft will be relatively unimportant, provided that the angle is about right. **Never** trust the altimeter below that height and remember that on any landing away from the gliding site the ground level will almost always be different, giving a further error.

You may notice that I never actually mention the height for a final turn. For me heights in feet do not exist below about 500ft. Ideally for training, the altimeter should be blanked off between 200 and 600ft so that you just have to get into the habit of looking out and judging the final parts of the circuit and approach. Often in the past I have sneaked an extra 200ft on the altimeter in a side by side two-seater after the pilot has declared to me that he never uses it. The results are usually a dramatically low final turn to the bewilderment of the pilot. Often they quite genuinely believe that they ignore the instrument but their judgment is influenced by them unconsciously reading it.

One other fundamental. If during the circuit we find ourselves short of height, by the time we are down to about 500ft it is vital to pick up some extra speed and maintain it from then on until the round out for landing. When we are flying downwind it is tempting to continue flying slowly to conserve height but this can lead to situations from which an accident is almost unavoidable.

In order to make a safe final turn it is essential to have 10-12kt above the minimum cruising speed. Below this speed the handling is usually too poor to allow safe turning in the turbulence near the ground. But it is only too easy to be misled into flying slowly in an attempt to conserve height. Looking down from the glider it seems obvious that you are not really short of height, but at low speed any encounter with turbulence or an area of sinking air will result in a serious loss of height. Within seconds this loss of height will put you in an impossible position.

If you attempt a turn without increasing speed first you are liable to stall and spin as a result of turning at too low an airspeed in turbulent air. Alternatively, if you attempt to gain more speed, the height lost may leave you too low to complete the turn safely. This is the risk that you take **at any time** you are flying LOW and SLOW, whether you are on the downwind or base leg of the circuit. Moreover, the risks are seldom obvious at the time because looking down from 2-300ft there is still apparently plenty of height. Unfortunately quite a large amount of this height will inevitably be used up to gain speed for a safe final turn and this is easily forgotten in the anxiety of the moment. Combine this problem with a sticky altimeter and you can understand why so many people get caught making dangerously low and slow final turns.

To avoid the possibility of getting caught out like this, the first and most important thing is to acknowledge that you are running short of height and may have to turn in early or choose an alternative landing area. Plan for the worst situation that could happen. Where will you land if you hit further sink and lose more height? Get much closer to the field so that you do not have to waste height making a base leg. This is the occasion to fly within 45° of the boundary and to keep within that angle to a landable area. Make a deliberate point of lowering the nose and picking up an appropriate speed and keep checking the ASI every few seconds to make quite sure that you do not slow down again. Remember that if that happens, even for a few seconds, any patch of sink or turbulence could drop you into a position where you are LOW and SLOW and in real trouble.

Ignore the altimeter and try to judge whether you can continue to fly downwind further or should be making the final turn. Compare your height with any trees or buildings, judging the situation by remembering that you probably want to complete that final turn by at least two or three times their height. Usually you will be making a 180° turn in this situation and it will obviously use up more height than the normal turn of 90° from a base leg to finals. Since you will be turning in over the field instead of some distance behind it, you will want to get rid of height very quickly after completing the turn. Be ready to check the airspeed as you are completing the turn and if it is adequate, open full airbrake immediately to get rid of the excess height. Then, if there is still plenty of room left for the landing, you can reduce the amount of airbrake if you need to because of the high rate of sink or because of a loss of airspeed. More on planning in the next issue.

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IN PURSUIT OF A SILVER C

Part 2 – Made It!

In the February issue, p16, MARY MEAGHER described how she gained her distance in September though had little hope of completing the other legs in what was left of 1984.

I like Pete Clark. One of the best. When Pete is flying the tug he gives me confidence. Ready for launching at half-past eleven on what promised to be a really good day, I waved to Pete and pointed straight up over the airfield, indicating 2500ft. He nodded, waved, and we were off. On the only decent day in a month of wet ones, Wednesday, September 26, there was a ridge of high pressure amid encircling gloom. I'd been waiting for it, I was ready for it, I got to Wycombe early and ate bacon and eggs at the airfield restaurant. Spent the morning towing out planes. First my own K-8, the Mean Machine. Then the other K-8 for somebody else, and an Astir for Bruce Morrow, who was going to try for Silver distance.

I emerged from the clubhouse to note with surprise that they had changed the runway from 25 to 07. The wind was very light, almost no wind at all, and had been waffling around from south-west to north-west, but now seemed to be mostly north. Fine. I would attempt a modest triangle, say Didcot, Bicester and home. Even the K-8 could get somewhere on a day like this one promised to be. And if I got started early enough, perhaps, just perhaps, I could achieve five hours. Very unlikely, this late in the year. But perhaps. Of course, when they changed runways and everybody went down to the other end, there was my K-8 still sitting on the grass in the old place, all by its lonesome self, and I had to go out with the car and move it to the new launch point.

By the time I had all that sorted out, it was after eleven o'clock. The pundits were towing out their planes, but they were holding back, waiting until conditions were just right. I knew that if I waited until conditions were just right I would be stuck in the queue and possibly not get up until one or two o'clock, so we towed the Mean Machine right up to the line. I dashed over and parked the car by the hedge (paid a quick tribute to nature in a discreet location) and skedaddled back before anyone else could nip in ahead of me.

No need to release early. I could hang onto the tug for 2000 or 3000ft if need be. But at 1600ft there seemed to be a very decent bit of lift, so I pulled off. And didn't get it. Rats. Surely we had come through a substantial thermal? Couldn't find it. Couldn't find anything. The first lines of fluffy white cu were down over Marlow and I was already too low to go looking over there. What a dope, to pull off at 1600ft when I didn't have to! I would have to land and launch again. Oh well. Too late in the year to attempt five hours anyway, and I'd never get the gain of height.

I was downwind, over the dump as usual, and figured I could scrape down as low as 600ft and turn directly onto base if need be, but got lucky just in time and found a modest little thermal over the corner of the airfield. I hung in there, scraped away and got back to 1200ft. The other K-8 saw me turning, came over and joined in, above me, and I found the best bit, four up, turned tightly and corkscrewed right up through the middle while he was messing around the outer edges of the thermal. Very satisfying, that. Hot pilot, Mary! Like a good girl, I broke off at the statutory 2000ft (setting a good example), found a nice little cloud over Lane End, got up to cloudbase which was about 3200ft and set off for the ridge.

Convection clouds in neat little lines were set up over Henley and Marlow, there was another promising line of tropical white cu to the north over Bicester, but there was a large blue open space over the Thames Valley and I was too chicken to venture out into the blue. I shuttled back and forth along the ridge, nearly got into trouble at one point, but found six up over a pig farm. "Hello, pigs!" I hollered. "Thank's for the lift!" You could see all the piggies down on the field with their little tin shelters all neatly spaced out.

So far, so good. I remembered to look at my watch just before take-off, and that was eleven thirty — 12.30, 1.30, 2.30, 3.30, 4.30 would be five hours. If it didn't clag over in the afternoon, perhaps, just perhaps. Don't do anything stupid and throw it away. I hung about over the ridge for another hour, and then got up to 3800ft; it was now possible to cross over the blue as the line of tropical cu over Bicester had crept a bit closer. I got across all right, but the first cloud must have been on its last legs because all it had was sink. The next one was better and I was nicely established. I had a good idea by now which side had the energy, fortunately it was the sunny side or I would have frozen to death; came up without my jacket, just a track-suit, two pairs of socks and red leather shoes. I reached into the pocket of the glider and put on my hat and scarf.

"I was minding my own business when a Tomahawk jet fighter flashed past about 10ft away. Seemed like 10ft."

Climbing gently to one side of RAF Benson, I was minding my own business when a Tomahawk jet fighter flashed past about 10ft away. Seemed like 10ft. I hope he saw me first, because I sure as hell didn't see him! By the time the danger had come to my notice it was over already, I didn't even have time to freak out! (I suppose if he had actually hit me I wouldn't have time to freak out, so why worry!) I had a really good look at the Tomahawk, just like a painting in a book of aircraft, turned over on its side, black and khaki, all the little missiles glued on the bottom.

Next passer-by, still near Benson, was more discreet. Slow and stately. A bright red scarlet helicopter. Hey, I know what that is . . . that is the Queen's helicopter! Holy smokes! Nobody said anything about a purple airway before I left Booker. Of course the Queen's helicopter doesn't always have the Queen on board. Oh well, nothing I could do about it now, I just stayed put in my thermal and the red helicopter pottered on down to RAF Benson, keeping well clear. I suppose if it *was* a purple airway I will hear about it later. Small glider violating royal airspace, pilot remanded to dungeon.

My intention on setting out was to fly very slowly to Didcot, then to Bicester, but it didn't look too good over Didcot. I decided to play safe and in order to pass the time, fly over Oxford, my home town. It is truly fascinating to get a new perspective on a place you know well from the ground. Cowley works, the vast

British Leyland complex. Good place to look for lift, but I nearly got into trouble on the way. Serious trouble!

Okay, there was an extra 300ft or so on the clock, the difference between the height of the ground at Booker, and the ground at Oxford, but the ground was coming up and I was going down, and there wasn't anything useful at all. O Lord. Pick a field. Any field. Hells bells, they've all got high tension wires. High tension wires all over the place, striding over the fields in every direction. I never saw so many goddam wires. Reason was, of course, I was by now turning over a Central Electricity Board main station, the hub of the network. Must have been charged up with something, because that's where the lift was. I wondered whether all those condensers and generators and things were sending off invisible ions, but too late to quibble, the lift was directly over the power station and I needed it badly. Got away.

Spent the next two hours messing about over Oxford, and that was good fun. Port Meadow looks like a good place to land, but I know from experience it is full of holes and marshes and grotty little ponies. I got a good look at the ice rink and from the air it is really impressive. The colleges below, in golden stone, exposed their inner secret gardens to my interested observation. I could name every one; Christ Church, Merton, Queens, Exeter. And there's Joan Whear's house, down on Park Town Crescent. Hi, Joan. She can't hear me up here. That's the trouble, flying over your home town in a glider you don't make any noise so nobody looks up to see you. I wanted to show off, but nobody noticed. Oh well.

Cloudbase had moved up during the afternoon. By now it was 4000ft. When I got in trouble over Cowley I was down below 900ft on the clock. If I could only just make it up to 4200ft that would be Silver height! Time and again the lift pooped out at cloudbase. If only it would keep going I would take a chance and enter cloud.

The K-8 didn't have a turn and bank gyroscope, but it had the little ping pong ball in a tube that showed if your turn was slipping. It had an ASI, vario, altimeter and compass. If I got into trouble in the cloud I could open the airbrake and come down, but I thought I could manage to keep in a steady turn, if only the lift would go up in the cloud. I tried one, another, another, and yet another, before I coaxed the K-8 up to 4200ft. Marginal, but the best I could do on the day. Didn't get into any trouble, cloud flying. I was rather pleased about that. Should do even better with the proper instruments.

Time was three o'clock. Time to be thinking of getting back to Wycombe. It was surprisingly easy. Kept up under the edge of the cloud street and only needed to stop and turn once. Somewhat disconcerted when something dropped out of a cloud just ahead. Turned out to be Tony Bianci in his red and white stunt plane doing the falling leaf. Tony zipped up and over, couple of loops and a barrel roll; I kept well clear.

Back up over the ridge at 4000ft and holding! Only an hour to go! I was getting pretty tired. Cramped, stiff. I opened up the apple juice and took a swig and ate a fig roll. Time crawled. No problem staying up, but could I hold out? In more ways than one? I began to sing. Gilbert and Sullivan. Bach. Handel . . . "Oh, thou, that tellest good tidings to Zion, get thee up! unto the High Mountain!" and best of all, "Amazing Grace, how Sweet it is, to Save a Wretch like me! I once was *lost*, and now I'm Found, a Slave, but now I'm Free." Try it some time. Good and loud. Helps you to fly when the end is near!

The end was very near, 4.25. But I wouldn't land just yet. Make damn sure. Give it an extra fifteen minutes. And just over there some farmers were setting a field alight. Top off the day with a stubble fire! It was a good one. I've tried before to use stubble fires but didn't get much. This one was all mine and whammo! Ten up! In less time than it takes to tell it, I was up to 4600ft. No doubt about it now. Silver gain of height. And endurance. I flew down over Wycombe Air Park, waving my wings, but nobody noticed. I made a sloppy landing, way up the field, and got out of the plane creaking in every joint. Tired but happy.

★ ★ ★

Mary Meagher, Silver C.

A SHAGGY GLIDING STORY

Reported by MARY MEAGHER

Paul Ramford was telling us about his spectacular return from his five hours' endurance flight in the K-8. It seems that Paul had been voyaging back and forth between Bicester and Aylesbury for some time, when the day began to fade and he was caught short near Stokenchurch. Ron Hone and Toby Jones came round with the open trailer, and the three of them took all the pins out and Ron said (he was holding the fuselage and the others were holding the wings) "I'd better move that toolbox or something might fall on top of it and get damaged". He let go of the fuselage and the wings dropped off and it fell over on top of the toolbox and got damaged!

Well after that they loaded up the wings and body into the open trailer, stuffing some straw in here and there to make it fit comfortably, and they got all set to go back to Wycombe, only Ron's car was a little two-seater sports model Datsun, and there was no room for three. Only one place left. Paul had to get in the cockpit of the K-8.

He felt pretty silly sitting in there, as you can well imagine, riding along in the open trailer while the passers-by stared in wild surmise. Just then one screw dropped off the numberplate on the trailer, and it started to whirl around as they sped along. Paul was hoping they would notice, but they didn't and then he was hoping somebody overtaking would flash their lights to call this defect to the driver's attention, and much to his relief the next car to overtake did just that, only it began to flash some other lights as well, including a blue one that went round and round.

". . . felt pretty silly riding along in the open trailer while passers-by stared in wild surmise . . ."

Paul did his best to disappear completely from sight. He undid his straps and shrank down until he fetched up against the control stick, with only his eyes showing over the top, while the officers of the law came round to check on the numberplate.

"What's he doing in there?" one of the policemen inquired. "Oh," said Ron, ever a quick thinking fellow, "He has to stay in there to balance the load." "Pretty dangerous place to be, if there were an accident" said the officer. "Take it carefully, and you'd better fix that numberplate on the back." "Thank you very much, sir" said the eager crew, and hastened to oblige, while Paul sat doggo in the cockpit and tried to look vital and necessary.

They got back all right, but the story is still going the rounds and gets better in the telling, as all good gliding stories do. "I hardly recognised it last time I heard it" said Paul, blushing.

THE ARCTIC LITE PRIZE

CHRIS GARTON recalls what made him attempt the only intentional free distance flight of his gliding career.

The occasional Arctic Lite sticker can still be seen decorating a trailer here and there. Nowadays it probably only signifies that the trailer has not been repainted recently, yet five years ago Arctic Lite slogans were adorning gliding clubs the length of the country.

In 1980, Allied Breweries, the manufacturers of Arctic Lite lager, were sponsoring British gliding on an unprecedented scale. There was sponsorship for the World Championships British team, assistance for the clubs hosting that year's Nationals, and major cash prizes for the best flights of the year. It was the prospect of winning one of these prizes that lured me into attempting the only intentional free distance flight of my gliding career. With Arctic Lite safely off the market, this is the story of that flight.

The prizes were generous: £500 for the fastest 300km triangle, £1000 for the longest O/R and £1500 for the longest free distance flight. It was the spirit of 1976, though (as it transpired) without the 1976 weather.

As the holder of the British O/R record, I felt honour bound to win the Arctic Lite O/R prize. In fact, I almost felt I had a moral right to it. But by the end of June my attempts at achieving even a 500km flight had all failed and from then on I was heavily involved with competitions with little time for thoughts of the Arctic Lite prize.

At the end of August it was the Open Class Nationals at Lasham. Brian Spreckley was staying with me as he often did whilst running courses at Lasham, my house being conveniently close to the airfield. But the weather during the Nationals proved to be among the best of the year, and I soon found out that Brian was using Lasham as a base for his attempt on the O/R prize, coming back with longer and longer flights each day while I could only grit my teeth and carry on grinding round the Nationals' closed circuits. It was not lost on me that he was using my hospitality to win the prize that should have been mine! I considered throwing Brian out, but realised this might be misconstrued as bad sportsmanship and wouldn't stop him anyway.

So I confined myself to affecting disdain for his little O/Rs but, with the end of Nationals and September now upon us, I had to concede that my chances of beating his 530km flight were now exceedingly slim. On the other hand, there had been, as far as I knew, no claims for the biggest Arctic Lite prize, the longest straight distance award. It was beginning to look as though the £1500 might even go to an enterprising Silver C distance claimant.

Perhaps honour might be restored yet. But when the opportunity came, amazingly only a week after the end of the Nationals, I was totally unprepared and nearly missed it.

The Great Day came on Sunday, September 7. There was a fresh southerly wind with occasional scrappy pieces of cumulus forming under a low inversion. According to the forecast, a front was lying to the north, which appeared to rule out the prospect of a distance flight. But I was determined to achieve a good day's gliding in some form and spent much of the morning inquiring about the possibility of wave from the South Downs as the weather situation seemed potentially favourable.

The crew no doubt looked upon a retrieve from Scotland as good sport

It was past 11am when suddenly I made the decision to try for the distance prize. The clue came from the Volmet, which was giving the Manchester weather as clear skies and a southerly wind, not westerly as was forecast. Evidently the front to the north was not behaving as expected and the available weather area was much larger that I had thought. I rigged hurriedly. The word spread and in next to no time a volunteer retrieve crew had materialised, no doubt looking upon a retrieve from Scotland as good sport. I launched at 1210hrs and set off immediately.

My first need was to find out who, if anyone, was attempting a similar flight. I inquired on the radio and up came the inevitable Brian Spreckley in reply with the news that no one had launched from Booker or Dunstable but that Tim Macfadyen had set off from Aston Down some time earlier. Shortly after this Justin Wills announced he was off tow at Booker with similar intent. It was going to be a contest. Tim had the advantage of an early start but I expected his more northerly starting point would work against him. I was nervous of Justin because of his long experience of distance flights in this direction, but to compensate I had already reached Reading while he was still at Booker, and had the advantage of flying a Nimbus 2 against his Mosquito.

The conditions were not epic. The thermals were topping out at 2300ft above the ground and were none too regular at that. So it remained as I followed a track that took me over Kettering and Corby, influenced eastwards by the increasing blueness encroaching from the west. In Lincolnshire things improved, and I could reach 3500ft asl in good thermals. Passing Lincoln, I heard Tim announce he was near Leeds. My own speed I calculated at 110km/hr, which sounds impressive until you remember that at least a quarter of that was due to the tailwind component.

I followed the Humber bridge into Yorkshire, where the wind was more south-westerly and I realised that my track was converging with the coast too rapidly. There was now a large blue gap to cross towards some distant cumulus lying over the southern slopes of the Yorkshire Moors a few miles east of Sutton Bank. I reached these clouds at low altitude and could climb only slowly. There was no point in looking for a faster climb since to the north the sky was completely overcast, offering no prospect of any further lift.

Bereft of ideas, I decided to head back to the south-west into the sunshine beyond Sutton Bank, to hill soar if necessary and await developments. But just beyond Sutton Bank at only 1200ft I ran into an area of smooth weak lift in which I began to tack to and fro, climbing very slowly. It was the bottom of a wave; overhead a lenticular was forming. The lift improved gradually as I climbed. Other gliders were being towed out below from Sutton Bank and still more were visible above, all working the same area of lift. But the cloud was increasing too and by the time I reached the base there was only a narrow slot remaining open. I beat resolutely back and forth as the cloud engulfed me until finally at 5000ft the lift died. I turned north and with thoroughly wet wings from the cloud encounter sank rapidly at first, then broke through below the cloud layer and set off under an iron grey sky on what was plainly a glide out. Too late I spotted the telltale shaft of sunlight on the Pennines near Barnards Castle, the

sign of a new wave slot; by now it was out of range.

An industrial thermal at Teesside gave me a few hundred extra feet, then I crept off again along the coast with the realisation that although I might be the day's winner, I still needed to squeeze every available kilometre out of the glide to defend myself against future attempts. I knew by then that Tim had landed at Dishforth and Justin was down in the middle of the Yorkshire Moors.

The village of High Heselden is situated on the clifftop by the sea eight miles south-east of Durham, and it was clear from the reception I received after my arrival that a glider landing there was a great novelty. The friendliness and hospitality was the best I have experienced after a field landing. The villagers were amazed that I had flown all the way from the south of England. I tried to tell them that on a good day I would expect to fly there and back, but this left them totally unimpressed.

By the time the trailer had arrived, the glider been derigged and leave taken of our hosts, it was after 2am. I had been all for staying there the night, or at least stopping at a motel on the way back, but the crew were keen to drive on. I decided we would share out the driving; I drove for the first two hours, then handed over control, settled down in the back seat and went to sleep.

I must have slept for an hour or so before I was awakened by a sickening swaying of the car. It was yawing violently from side to side. The driver was trying desperately to correct but was applying the wrong inputs and making the situation worse. I realised instantly what was about to happen. I had been in a jack-knife before, only this time it was my car and my trailer, and we were travelling at speed in the middle lane of the M1.

All this happened within seconds. Before I could do or even say anything that might have helped, the inevitable jack-knife occurred. There was a crash, a screeching of tyres as the car was dragged round by the trailer, then a rending noise as we slid backwards along the central reservation crash barrier. We came to a stop in the fast lane, facing the wrong way, shaken but unhurt. Mercifully at 5am there was little other traffic on the motorway. We scooped up pieces of debris, then drove the car to the hard shoulder, the A-frame and the front bulkhead of the trailer still attached to it.

The trailer itself was nowhere to be seen. As we were careering along backwards in the car, I had last glimpsed it going past us, still in the centre lane, heading towards London.

A motorway police patrol was soon at the scene. By now the first thin grey light of dawn was appearing, and in the drizzle that had now started to fall we set off in search of the trailer. We soon found it. It had veered off the motorway and plunged down an embankment at the bottom of which it was arrested by a fence, that is excepting the fuselage which, lacking its forward restraint which had been torn away with the front bulkhead, had carried on.

Next came the motorway recovery crew to winch the trailer back up the embankment and remove it to the recovery yard. Relations between us quickly became strained and several times I had to intervene to prevent further damage to the glider. They for their part clearly resented any suggestion that would involve them in any extra time or effort in return for their £94 recovery fee. The presence of the police patrol was especially welcome at this stage.

The car proved drivable once the bodywork panelling had been prised free of the wheels. We drove slowly home, stopping on the way to phone a well-known glider repairer who we thought would be a match for the recovery outfit.

For me the remaining few months of the year were filled with the aggravation of repairs to glider, trailer and car, and the agony of knowing that if anyone achieved a longer flight before the year's end, all would have been for nothing, and I would have no chance at a second attempt. But the end of the year came, and despite the threat of wave flights southwards from Aboyne, there were no other claims.

The Arctic Lite distance prize had been conceived with the aim of encouraging outstanding flights to promote both gliding and Arctic Lite lager. Perhaps in retrospect there should have been a minimum qualifying distance, but as no such condition had been specified, my flight of 395km was adjudged the winner. There were no fanfares, no publicity. One day early in 1981 a cheque arrived in the post, with a compliments slip attached in a plain brown envelope. I banked it quickly. I needed that money to help pay for the repairs.

ON PARACHUTES AND KISSES

Surgeon MICHAEL THICK, who had to bale out of his ASW-20L during the 1984 Open Class Nationals, gives his account of the incident which has been much discussed during the last year.

Everyone must have heard of the game Chinese Whispers, where a simple statement like "send reinforcements, we are going to advance" becomes "send fourpence, we are going to a dance". Having had my adventures related back to me by several unsuspecting raconteurs, I now believe that gliding stories. are a very close second to fishing stories. I was even more alarmed to read about it in the Open Nationals report (December issue, p271) where some of the details were quite wrong.

The responsible reporter makes sure of his facts rather than producing good reading — a point well made by Dave Watt in his recent letter (February issue, p34). Ben Watson asked me to speak at the BGA Conference at Cardiff, but unfortunately I could not attend. However, I promised a written account of the events and my reflections, so here is a heartfelt though inadequate celebration of survival.

It is fashionable to admit to addictions, and I confess that mine is adrenalin. For this I blame both John Jeffries and my work (always blame the pusher, never your own weakness). Both have produced some very "interesting" flying situations, and since both my fiscal and corporeal survival depend (bad pun) on adrenalin, I have no intention of seeking a cure. Over the last year or so I have been using a heart rate recorder to investigate stress both at work and in competition flying, and I will report this soon. I wasn't recording heart rates at Lasham, as was reported in S&G, but I think that it did increase!

And so to the events of that day. The visibility on that Friday was undoubtedly appalling, but apparently VMC is not a factor considered when launching a competition grid. I do not believe that conducting a straw poll of passing power pilots is any way to establish conditions before launching a held start, but I do believe that accepting a launch or sticking with the conditions is entirely the responsibility of the pilot. Despite the heated discussions about this, I know of only one pilot who had the courage to admit that he did not wish to accept the risks, and so stayed on the ground.

How often have you been asked "what's it feel like to fly a glider"? I

usually answer this badly, or else brusquely as one does inquiries about deeply personal feelings. It is very difficult to describe the freedom of three dimensions, the inexorable awareness of gravity and the excitement of predicting and achieving a good thermal. After a while I become unaware of the physical constraints of the machine and its manipulation, and flying becomes an exciting interaction between what I see and what I plan to do next. Imagine then the horror of being wrenched out of this higher plane (dreadfully apposite pun) by the most deafening crash and violent jolt. I did not contemplate trying to fly it, which was just as well. Having been taken aback and below, there was very little flap left on one side. The flap is the principle pitch control on an ASW-20 as was so elegantly demonstrated by Peter Bourne, and so I very rapidly became upside down and travelling very fast.

Under these circumstances the canopy is extremely difficult to dislodge. No JW, the correct canopy procedure was used, and checked several times. I pushed it hard, and nothing happened. I hit it extremely hard with my fist, and broke my finger and nothing else. The ice in the veins began to melt a bit. Ah. Nothing for it but feet, and yes it is possible — I have scars on my shins to prove it. A blessed roar of fresh air; free fall then a very reassuring jerk. And there, in the sudden quiet, were the tree tops 400ft beneath my gently swaying feet, and happily enough wits left to keep the knees firmly together when going through them. After a short helicopter ride back to Lasham, an enormous kiss from Daphne (my crew) convinced me that I was very much alive.

Within an hour there were five offers of glass ships

The next few days, and particularly the next few hours, were very trying but convinced me that one of the main reasons I like gliding is the other people who glide. Within an hour of being on the ground five people had offered me glass ships in which to fly the next day's task. A whole host offered to help retrieve the wreckage, and did so. This task was made much less difficult by the efforts of Phil Phillips at Lasham, and Dan Air who lent us equipment and a truck. Peter and Daphne, by their enormous calm made clearing up after near tragedy seem much less awful than it might have been. I cannot thank enough the many friends who lent a hand.

Needless to say there was no shortage of bar-side suggestions about what I should have done. The most interesting of these was that I should have given up with the canopy and just gone through it. However, Perspex on a warm day is quite strong, and it withstood a desperate fist. I am not at all sure that it would have broken, but would be most interested to hear of anyone else's experience.

I gave my Caterpillar to my better half, Louise, because it has big eyes like she has. Also it pleases me to be able to see her wear it, since the ratio of eligibility to ownership is about three to one, and it reminds me that I should never take the next day for granted.

A NIGHTMARE RETRIEVE

AUDREY SANSOM describes her motorway accident with some thoughts of how it might have been prevented in the hope it will help others this season

I had a road accident during a trailer retrieve last year. Try to imagine your trailer swaying uncontrollably until you jack-knife on a busy motorway with headlights bearing down on you at 70mph, then multiply your horror by ten times and you might get some impression of how awful it was! I have since discovered that a jack-knife is a very common occurrence among gliding and boating people and I hope that a description of my accident and some thoughts on prevention will help some of you. It has taken me several months to recover confidence on the roads and I don't look forward to the next retrieve . . .

I was returning from retrieving Dave after his Silver distance from Lasham to Long Marston, with two friends who helped with the navigation, and was on the eastbound carriageway of the M4 at about 11.30pm when the trailer suddenly started snaking very badly for no apparent reason — a horrible feeling. Despite trying to lock my arms etc, I could not stop the car from violently swinging until I was pointing straight at the central crash barrier. I braked and we swung the rest of the way round until both car and trailer were pointing the wrong way in the fast lane parallel to the central reservation. When we came to a stop there seemed to be a wall of headlights coming towards us.

My passengers ran to the nearest phone box, while Dave and I sayed with the car flashing the headlights and hazard lights to try and alert traffic. Many vehicles went past without stopping or even slowing down, including a coach or two. We decided that the fuel tank was intact so tried to start the car, but before we managed it, a Scirocco drove into the offside rear of the trailer which was just jutting into the middle lane, and then bumped into the back of an Ambassador.

There was now a lot of debris on the road — bits of car, trailer and glider, but cars still drove past without stopping or slowing down until a Golf suddenly swerved (I am not sure why) and rolled up the bank. I have to admit that I went into a state of shock at this point, but Dave managed to get everyone safely up the bank out of the way. Luckily no one was seriously hurt, but several were suffering shock.

When the police arrived they pointed out that one of the trailer tyres had burst — presumably the cause of the jack-knife. The net result of the accident was four cars, a glider and trailer written off and two very minor injuries. And all this when I had been driving under 50mph.

Subsequent discussions about similar incidents have suggested several points to watch if you wish to prevent this type of accident.

a) Trailers are often left standing for weeks so that the weight is all on one small part of the tyre. This must increase the risk of splits in the tyres. I suggest that trailers should be moved every week or so to distribute the load. There should also be more emphasis placed on a regular check of tyres and suspension — easier to do on a duff day than just before a retrieve. Clubs should appoint someone in charge of fettling the trailer.

b) Buy and fit a stabiliser — it might have helped me to control the errant trailer.

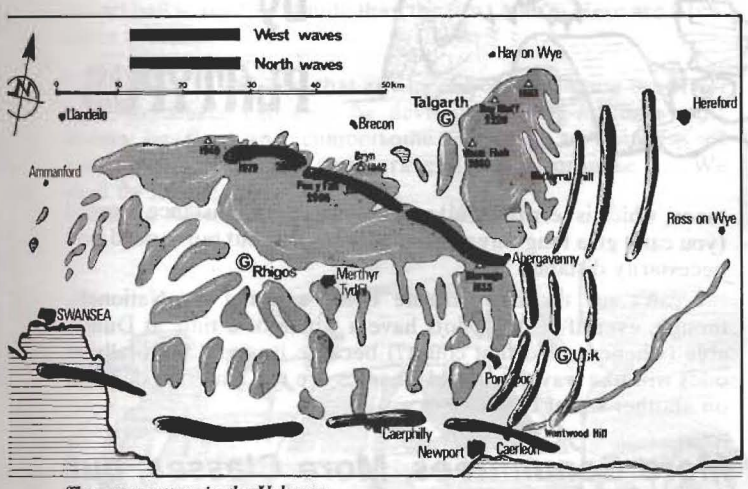
c) Make the trailer as visible as possible — ours was an unpainted aluminium one which must be fairly visible but the Scirocco driver obviously didn't think so. Perhaps lights on the sides?

d) If you see an accident please make sure that everyone is safely off the road, especially if they are in a state of shock. One policeman said that more people are injured because they are too dazed to notice traffic, than are injured in the actual accident.

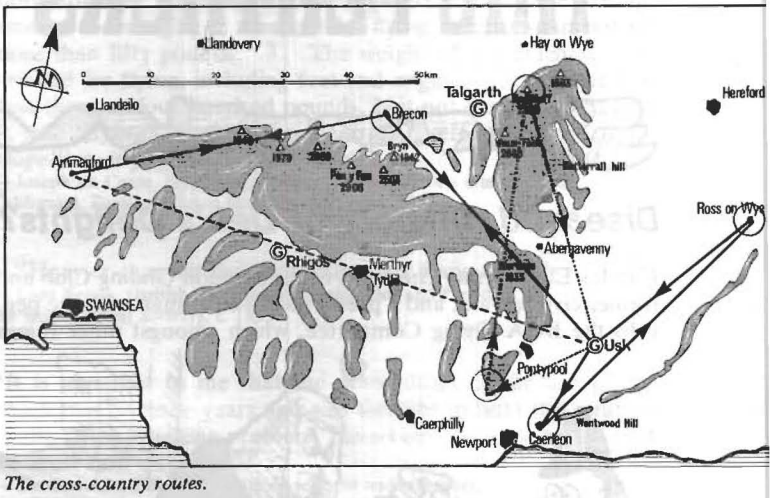
e) Try not to retrieve late on a Sunday on the M4!

Four Ways To Stay Up In Wales

IVOR SHATTOCK, the Welsh soaring wizard and author of "Soaring at Usk", has written this article based on the talk he gave at the BGA Conference.



The wave pattern in the Usk area.



The cross-country routes.

When I was asked by John Milsom to give a talk at Cardiff on "Soaring the Welsh hills" it seemed a good idea. After all the talk I'd given to the cubs the previous week went down well — free tea and biscuits too, so I agreed. "Make it light and funny — plenty of your funny (strange, peculiar) landing stories," he said. Didn't he realise everybody, but everybody, in the audience would be thoroughly versed in *their* landing out funnies?

Four ways to stay up I'd called it. Four wind directions if you like, or four ways of soaring. **Four!** Well let's say ridge, thermal, wave and sea breeze front. Then there's flying for height, speed (= distance), duration and for the view. We never got round to the glory, or the *bröckenspectre* but started on ridge soaring, never mind I will, I will one day.

In a northerly wind the whole of the Brecon range is soarable

From your map you can see that with the heights marked and the closeness of the contour lines, in a northerly wind the whole of the Brecon range from Abergavenny *via* Brecon to Ammanford is soarable. In fact, due to the shoulders, gulleys, spurs and sheer faces in parts, it's possible to use this entire range in winds ranging from NW round to NE.

Naturally strength of wind and sunshine play important roles in keeping the glider above the ridge as opposed to alongside it. Usk, Ammanford, Brecon is a 190km triangle whether you choose to return *via* the Brecon Beacons again or with the aid of any sea breeze front that appears to the south.

What sort of heights are we operating at? Well at the Blorenge (1900ft) we can start as low as 1200ft (off tow) and the maximum would be around 4000ft at Pen y Fan (2906ft).

If your partner in the glider has a day like that, when it's your turn you can bet the wind has changed. Never mind we'll do the easterly trip. Great fun this. Tow to a point downwind of the site where the hill looks roughly at right angles to the wind and off we go south to Cwmbran and beyond, then back up the same track to Abergavenny. (Blorenge is again working this time to the east!). There is a jump here to the steep faces leading to Llantony Abbey and Hatterell hill where you'll probably fly through a "cloud" of hang gliders. I thought it was exaggeration too when I first heard it but with twenty in the air, twenty on the ground and a similar number rigging you have to see it!

Should the wind be NE these faces still work as you go north but one jumps each finger after "stoking up" sufficiently. Hay Bluff is the end of the run, 100km in all back to Usk. You could of course just race up and down the whole length again "á la" mini Striedieck at VNE. Very rough ride it is too — following the last but one contour line! Should you not fancy this stuff, we have the nursery slopes to the SE of the site which go up to 1000ft, have large landable fields all along them and still make a 100km to Ross and Caerleon.

The NW wind that makes these slopes soarable usually produce thermals of course and with a backing wind, wave. Magic wave. With a westerly component in the wind wave occurs regularly from Newport (see the map) up to Hereford and beyond and because of the converging nature of the hills each side of the Usk valley, it is usual to find one of the waves coinciding with the Wentwood hill; 400ft up to 13 500ft over the same spot has been recorded.

Our site position allows us to remain airborne quite safely

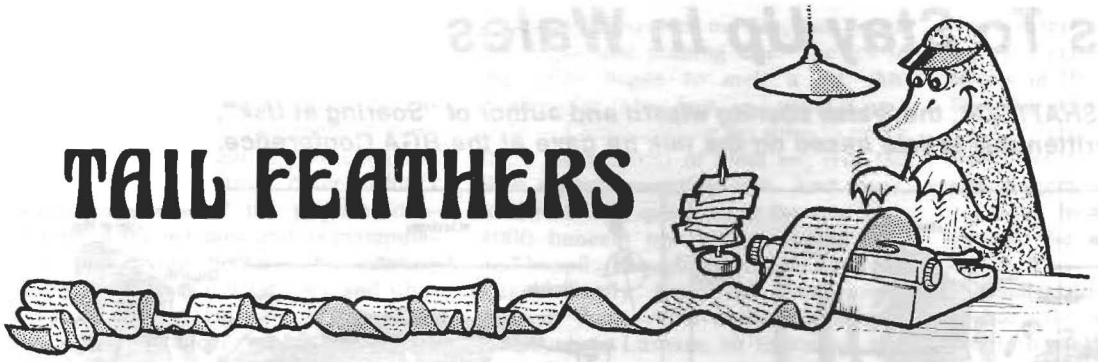
Whilst we are talking of wave I should say that our site position, smack in the centre of the main shadow area, allows us to remain airborne quite safely when all but a few slots have closed up. The last one or two are usually just upwind of the site, which at 82ft asl is always at least 1500ft below cloud. Any lower cloud than that and I'd call it fog.

For the northerly wave we often find the Crickhowell valley works on the south side allowing us to slide crosswind over the Aberdare GC site down as far as Swansea. Setting out over the sea is a little unnerving but one just reminds oneself of the altitude. More wave lying over Caerphilly parallel to the coast provides a safe route to Usk where it sometimes "turns the corner".

At the moment the official club height record is 20 000ft (mine, all mine) but 32 500ft has been photographed. No barograph you see!

All in all, we have soaring in the four winds, in four forms of lift, and for four goals — distance, height, time and looking at the sights. Join us sometime, but not in a southerly!

TAIL FEATHERS



by PLATYPUS

Diseased, Dilatory or Deb's Delights?

Charles Ellis, former chairman of the London Gliding Club and former civil servant, and a pretty good swordsman with the pen, calls the BGA Flying Committee, which amongst other things



A good swordsman with the pen.

determines how Comps should be run, "Parkinsonian". I haven't the faintest idea what he means, either because I'm too dumb or too clever.

Does he mean it suffers from Parkinson's Disease and has the uncontrollable shakes when it comes to taking any action? Or is he referring to Parkinson's Law, which states that work expands to fill the time available, especially amongst committees and bureaucratic organisations? Or is he referring to Cecil Parkinson, former Tory Party chairman, whose adventures and misadventures make him the butt of cruel, and undoubtedly envious, jokes about his fatal attraction for the ladies? Or all three? I think Mr Ellis should watch out in case an injunction is slapped on him to prevent the spread of foul rumours.

Support this Comp!

The readiness with which the BGA accepted the JJ Scheme for pilot-declared closed circuits at Dunstable in July this year reflects very well on them, however. No dithering there. I understand speed points will be about one third as important as distance, which is terrific. Quite right too; after all distance is speed (you can't go a long way unless you're quick) but pure speed isn't necessarily distance.



With the new Class you'd be able to buy an extra couple of metres and stick it on the tips.

I can't see the new scheme being adopted for Nationals, though, even if all the pilots have a whale of a time at Dunstable (whenever did that count?) because it would be totally at odds with the way the World Champs are run, and that depends on another set of committees . . .

More Committees, More Classes, but maybe More Fun

Another committee recommendation which I favour is that of CIVV to have an 18m Racing Class. Unfortunately that will make four Classes and it will become even more difficult to say who is the world's best pilot. That's the way all sports go, however, and it can't be helped. There's no world's best swimmer, but scores of champions at swimming sideways, backwards, upside down, etc, etc, etc.

Immediately my friends are saying that with the new Class of course, you'd be able to buy an extra couple of metres or so to stick on the tips, then you'd have a really *great* machine.

God, I feel a touch of Parkinson (Class I) coming on . . .

Crystal Balls



Muggers are the other deterrent.

In New York the rainfall is vastly greater than in London; the difference is that in London it descends in a fairly continuous dribble whereas in the Big Apple the heavens open for a few minutes and drench everyone foolish enough to be out on foot. (Muggers being the other deterrent.) Driven to shelter in a bookshop for half an hour, I felt morally obliged to buy a book. The one I chose was called **The Experts Speak*** which is a compendium of crass pronouncements uttered by able, intelligent and well-qualified authorities. The fact that some chap has a lifetime of creative achievement behind him does not mean his

* Written by Christopher Cerf and Victor Navasky, Pantheon Books, New York.

crystal ball is any less cloudy than the next man's. Here are a few about aviation:

"As it is not at all likely that any means of suspending the effect of air-resistance can ever be devised, a flying-machine must always be slow and cumbersome. ... But as a means of amusement, the idea of aerial travel has great promise. ... We shall fly for pleasure."
— T. Baron Russell, **A Hundred Years Hence,** 1905.



No hope of the aeroplane competing for racing speed with trains or cars.

"A popular fallacy is to expect enormous speed to be obtained. ... There is no hope of the airplane's competing for racing speed with either our locomotives or our automobiles."
— William Henry Pickering, (American astronomer at Harvard College Observatory), *Aeronautics,* 1908.

"The aeroplane . . . is not capable of unlimited magnification. It is not likely that it will ever carry more than five or seven passengers. High-speed monoplanes will carry even less."
— Waldemar Kaempfert, (Managing Editor of *Scientific American* and author of **The New Art of Flying**), **"Aircraft and the Future,"** *Outlook,* June 28, 1913.

"Gliders . . . will be the freight trains of the air. . . . We can visualise a locomotive plane leaving LaGuardia Field towing a train of six gliders in the very near future.

"By having the load thus divided it would be practical to unhitch the glider that must come down in Philadelphia as the train flies over that place — similarly unhitching the loaded gliders for Washington, for Richmond, for Charleston, for Jacksonville, as each city is passed."
— Grover Loening, (Grumman Aircraft 1944 Corp.).

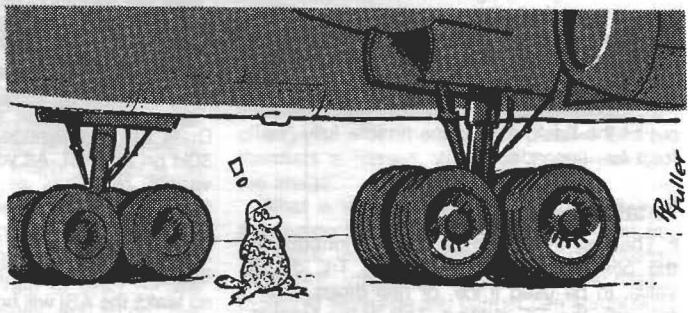
"It has been demonstrated by the fruitlessness of a thousand attempts that it is not possible for a machine, moving under its own power, to generate enough force to raise itself, or sustain itself, in the air."
— M. de Marles, Les Cents Merveilles des Sciences et des Arts, 1847.

"Put these three indisputable facts together:

"1. There is a low limit of weight, certainly not much beyond fifty pounds, beyond which it is impossible for an animal to fly. Nature has reached this limit, and with her utmost effort has failed to pass it. 2. The animal machine is far more effective than any we can hope to make; therefore the limit of the weight of a successful flying machine can not be more than fifty pounds. 3. The weight of any machine constructed for flying, including fuel and engineer, can not be less than three or four hundred pounds. Is it not demonstrated that *a true flying machine, self-raising, self-sustaining, self-propelling, is physically impossible?"*
— Joseph Le Conte, (Professor of Natural History at the University of California), *Popular Science Monthly,* November 1888.

"Heavier-than-air flying machines are impossible."
— Lord Kelvin, (British mathematician, physicist, and President of the British Royal Society), c. 1895.

"It is apparent to me that the possibilities of the aeroplane, which two or three years ago was thought to hold the solution to the flying machine problem, have been exhausted, and that we must turn elsewhere."
— Thomas Alva Edison, (American scientist and inventor), quoted in the *New York World,* November 17, 1895.



Heavy flying machines are an impossibility.

Getting The Willies

In my car boot there is this large hypodermic syringe (minus the needle) and assorted pieces of tubing in a plastic bag. I'm worried lest the police should stop me and suspect me of strange



They could suspect me of strange practices.

practices. Is it a drug-injecting or glue-sniffing outfit? A vet's artificial insemination kit? No, it's a John Willy "suss-out-your-variometer-leaks" gizmo. Try explaining that to the fuzz, though. I think I'd sooner say I was a AI vet except they might ask me to prove it, which could be embarrassing or even downright dangerous.

By the way, John Willy's gliding game for Sinclair Spectrum is a great leap forward in the art, with very witty and colourful graphics. Try it!

SIMPLE VARIOMETER SYSTEMS – Part 2

JOHN WILLIAMSON continues the feature started in the last issue, p70.

You may remember I asked five questions to test your understanding of the total energy (T/E) system described in the last issue. Here are the answers:

1. As your glider accelerates on tow, but before it has risen at all, the vario would read "up" — probably about 8kt. This proves that you are *gaining energy*. The *total* energy is increasing. (Thanks to the engine in the tug!)

2. Conversely as you slow to a stop after landing, and some seconds after you have stopped actually descending, the vario will read "*down*!" Maybe even more "down" than when you were approaching with the brakes out. You are still losing energy. The *total* is reducing and the vario records this.

3. If the probe gets iced up then no air can flow in or out of the system. No flow of air = no reading on the vario. Zero!

4. If you disconnect the T/E line because of the ice then air will rush into the system to establish cockpit pressure throughout. The mass of air filling the flask will be routed through the vario, driving it off-scale "down" for a few seconds.

5. Reconnecting the suction will draw air *out* of the flask, driving the needle fully "up" for a few seconds.

Total energy dump valve

The last three questions have introduced the possibility of some form of T/E dump valve, to be used if ice, or rain drops, interfere with the T/E suction. This is the biggest drawback of probes with small holes. Quite small water droplets creep back and cause very odd effects. The vario needle might develop a violent quiver; might record your climb and sink in great gulps; might go entirely on strike and record nothing at all. Remedy: open the T/E line to static, or to cockpit, until the crisis is over. A tee-piece into the system, an open-ended tube with a pencil stuck in it, will suffice. But most people prefer some sort of valve mounted on the panel.

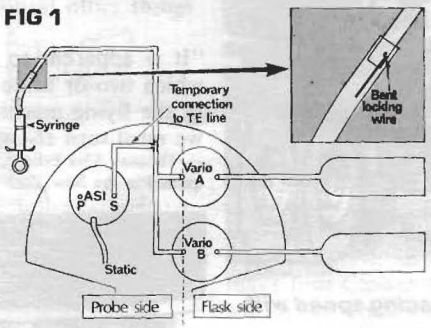
Static testing

I promised to tell you how to test your system on the ground. Let's assume that you did the airtest described last time and got one of the "Oh! dear!" symptoms. Now you must set about tracing the leak. It could be very expensive in time and cash to airtest each time you thought you might have fixed a potential leak. What is needed is a simple static test and a diagnostic logic chart. Here goes!

You will remember that leaks occur because there is a pressure drop in the system, applied initially at the probe. So let's start by causing a pressure drop. An ordinary 20ml hypodermic syringe applied to the T/E probe and carefully withdrawn will easily develop the equivalent of 70-80kt-worth of airspeed suction. The throwaway type of syringe used by doctors and hospitals are fine, if you can persuade someone to throw one your way. They tend to be a bit cagey about this because of certain modern social problems. When connecting to the probe you must allow access into one of the little holes or slots. This is most easily done with a short piece of locking wire bent over and laid so that an air passage is maintained.

How to measure the suction applied? Use your ASI! Disconnect the ASI static and connect it instead, *via* an extra bit of tubing and a temporary tee-piece, to the T/E line. (Fig 1)

FIG 1



Draw out the syringe until you reach, say, 50kt on the ASI. As you do this note that the vario(s) read "up" as air is sucked from the flask(s). This is the equivalent of accelerating to take-off speed on aerotow, and much cheaper! Having reached an arbitrary test figure, watch both ASI and vario. If there are no leaks the ASI will hold steady and the vario will return slowly to zero. Note the significant lag of mechanical varios in this respect, as the close-fitting vane is being drawn back to its central position in the chamber by very fine hair springs. Winter types take about 10 seconds; PZL rather longer. Electric varios, with no moving parts in the sensing department, should zero in 2-3 seconds.

If the ASI reading drifts slowly back to zero there is a slight leak somewhere. The coincident vario reading, up or down, gives the clue as to which half of the system has the leak. If no sensible ASI reading was achieved in the first place then there would have been a massive leak somewhere. Again, the coincident vario readings provide the clue as to where. It can get quite complicated when two varios are fitted so I have tabulated the symptoms and probable areas of leaks in the diagnostic logic chart below. The chart should be read with reference to Fig 1.

Next comes the sometimes exasperating business of carefully eliminating each possible leak source until the system is tight. Once it is, then *leave well alone*. You will, of course, have to reconnect the ASI to static and there is a faint chance that you could re-introduce a leak as you restore the T/E plumbing to normal, but this is a chance you will have to take, I'm afraid.

An airmass reading variometer

Right, let's assume we have cured all our leaks. The vario system is as tight as a drum and is giving truthful total energy indications and means "up" when it says "up".

At this point I want to introduce a vario which indicates *airmass* movement rather than the result of our sink rate superimposed on airmass. I'm not going to go into how airmass varios are used. Suffice to say that the method was devised by MacCready and others over thirty years ago and was resurrected in Germany in the late sixties and christened Netto by them. Nowadays virtually anyone who has used it, certainly in the high

STATIC TEST RESULTS

1 Connect as per Fig 1 2 Reduce pressure at T/E probe 3 Observe

ASI	VARIO A	VARIO B	RESULT MEANS: LEAK	LOCATION
Does not move much	Does not move much	Does not move much	Massive	Probe side of varios
	Reads massively up while test attempted	Does not move much	Massive	Flask side of vario A
	Does not move much	Reads massively up while test attempted	Massive	Flask side of vario B
Increases to test figure, then slowly returns to zero	Reads up while pressure reducing, then returns slowly to zero	Reads up while pressure reducing then quickly to *below* zero, then slowly to zero	Slight	Flask side of vario A
	Reads up while pressure reducing, then quickly to *below* zero, then slowly to zero	Reads up while pressure reducing then returns slowly to zero	Slight	Flask side of vario B
Increases to test figure, and holds	Reads up while pressure reducing, then returns to and holds at zero		No leaks! Congratulations! Now leave it alone!	

performance spectrum of soaring, wouldn't dream of being without it! So what is it? We want the vario to show airmass movement, which means that if we are gliding steadily downhill in still air the vario should read zero. To read zero, no air may flow through the instrument. But the increasing ambient pressure as you go downhill wants to force air into the flask. So, provide another way in! Add a carefully calibrated leak through which just the right amount of air will pass to keep the flask pressure in balance with the ambient. Air will flow in because of the pressure drop within the system which is, of course, still connected to the probe. The leak is usually provided through an extremely fine tube, called a capillary tube. It could perhaps be a piece of hypodermic needle.

Our example (Fig 2) shows 2kt sink at 60kt airspeed, typical of a Std Cirrus. If the Cirrus now flew through air sinking at, say, 3kt, then the total rate of sink would be 5kt. The flask now requires more air — 5kt-worth — to maintain pressure equilibrium. Two knots-worth is coming through the capillary and the balance of three knots-worth will be drawn through the instrument which will therefore read 3kt *down*. The air mass, the vario tells us, is sinking at 3kt. *Eureka!* Now fly through air *rising* at 3kt. Actual rate of climb is 1kt, isn't it? One knots-worth of air will now flow *out* of the flask. It, and the two knots-worth still coming through the capillary (we are still flying at 60kt, remember!) will be routed out through the instrument, to produce 3kt *up* on the dial. We have an airmass-reading variometer.

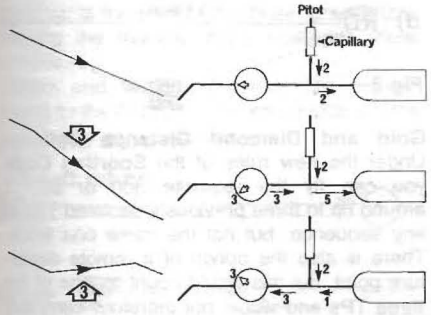


FIG 2

You will appreciate that correct calibration of the capillary tube is vital. It becomes easier if we also apply pitot pressure to the open end of the capillary. This doubles the pressure applied across the tube, means that the capillary must be longer to start with and is easier to adjust to exactly the right length. Calibration is a pernickity business and the capillaries are normally purchased ready-calibrated to a specific sailplane type and weight.

"But," you remark, "I have gone to a lot of trouble to organise total energy so that I can change speed as I fly in lift and sink, without upsetting my vario readings. What of your netto system at, say, 90kt? Do I need another capillary?" The answer is short — "No!" — and the reasoning elegant in the extreme. You see, the rate of sink represents our energy loss. The energy loss is due to drag. And the drag comes in two main forms. There is the drag caused by the wing going about its task of producing the lift to keep us up at all. This is called induced drag and sufficient to say that this element of drag gets greater the *slower* we fly. The other form of drag is caused by the very fact that we are sliding, moving, through the air at all. It's the sort of drag you feel if you put your hand out of the window of a car. It is called parasite drag, and gets greater the *faster* we fly.

". . . if you are in the habit of carrying lots of water you would have to have two capillaries . . ."

The two added together comprise the total drag, and the total drag is at a minimum when the two elements are equal. This occurs at the minimum drag speed, often referred to as the best glide speed. For our Cirrus this is at about 55kt. Above the best glide speed the *increase* in drag is due entirely to the parasitic element, which increases in proportion to the square of the speed. Don't be put off by the maths. This is the only bit, I promise! Square of the airspeed means that if you *double* the speed you would push up the parasite drag (and the rate of sink) by two squared (2×2) = *four* times. And so on. The elegance of the solution is that pitot pressure, *and* the T/E suction force, which together determine the amount of air fed through the capillary tube, each go up by the same factor — square of the airspeed. So that a capillary which allowed the correct amount of air through to give true airmass readings at 60kt does equally well at 80, 90 and 100kt. What a single capillary *can't* do is compensate for a glider at different weights. So if you are in the habit of carrying lots of water you would have to have two capillaries — one for when you had dumped the water and were flying a substantially different glider.

Finally, it is useful to be able to change back to normal vario mode when climbing in thermals. What you need to know now is whether you are **climbing** as effectively as possible. With the vario reading airmass you wouldn't know whether a steeper or shallower turn increased the rate of climb, and this you need to know if you are to use your thermals to best effect. So a cruise/climb valve is usually fitted.

Variometer recovery times

The final refinement to our simple variometer system is a little gimmick to help the vario recover quickly from sudden changes in altitude — for example, following a rapid pull-up when dolphin flying at speed. Imagine that the vario is confronted by a *sudden* change of altitude of 300ft. Naturally the needle will go hard up as air flows rapidly out of the flask. Now the pressure in the flask is going to drop to that outside and in so doing the air in the flask expands. Expanding air cools at a precise rate which, if it is not affected by any other factor, is just under 3°C/1000ft. Our sudden 300ft climb will have caused a drop in temperature inside the flask of nearly 1°C. But the flask walls, and the plastic tubes, won't have changed temperature, so that gradually the air inside the flask warms back up again — and as it does so it expands a little more, and more air flows out through the vario, delaying the return of the needle to zero even though the upward jump ended some time before. The recovery time, unaided, is more than a minute, following any sudden change in height. Any new inputs of lift or sink are going to be distorted by the lingering response to the original sharp change. It is as though our "picture" of the thermals is blurred. We need to sharpen up the image.

What is needed is a means of stabilising the temperature within the flask, at least in the short term, and this is done by adding "heat-sink" material to the inside of the flask. In simple language two copper pan scrubbers inserted into the flask will reduce the recovery time following a sudden upward (or downward) displacement, from over one minute to less than ten seconds. This has nothing whatever to do with the basic response rate of the vario. It applies to the fastest electric marvel as well as to the most lethargic mechanical type. Admittedly the improvement is more obvious with the faster varios. You must be sure to use *copper* pan scrubbers. Plastic ones won't work and steel goes rusty! How you get them into your flask is your problem!

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.

Sailplane & Gliding

The magazine can be obtained from most Gliding Clubs in Gt. Britain, alternatively send £9.50 postage included for an annual subscription to the British Gliding Association, Kimberley House, Vaughan Way, Leicester.

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BE A BETTER BADGE HUNTER — Part 2

In the second and final part of this article on the FAI gliding badges, GORDON CAMP discusses the requirements for barograph traces, photographic evidence and the various ways of tackling distance legs.

Barograph Traces. For every FAI badge claim (except in the particular case of duration legs flown locally under genuinely continuous surveillance) a trace must be produced from a serviceable barograph to show a continuous record of height and the duration of flight. The barograph must not be accessible to the pilot in flight.

Before take-off, an official observer marks the blank chart with his number and signed initials, then seals the case, usually with a complete wrap of gummed paper tape signed across the join with his signature, OO No. and the date. A pressure base line does not need to be applied at this stage and is usually best left to the moment of unsealing, which might be a day or two later when the atmospheric pressure could be different. After landing an OO (not necessarily the one who sealed it) unseals the instrument and must immediately ensure that the information listed in Fig 1 is marked on the chart and that a base line is inscribed over the full length of the chart.

Date of flight
Pilot
Glider type & No.
Barograph type & No.
OO signature & No.
OO name

Fig 1

The Oxford Gliding Club cleverly uses a rubber stamp made in the above format; when pressed onto the usual smoked chart prior to sealing, a clear imprint is left in the soot film to which the details can be added in manuscript with a fine ball-point pen.

Considering how vital the barograph trace is to any badge claim, it is amazing how often that smoked traces are carelessly fixed; smudging, crazing, creasing and even the complete eradication by the blast from an aerosol hairspray are common disasters. Still the best method is to slide the chart through a tray of shellac or thinned clear dope, then hang up to dry. Whatever your method, take care or a hard fought flight could be in vain!

Flight Declarations. Any distance attempt involving TPs must be pre-declared in writing, and if photographic evidence is used then the declaration must be legibly photographed before take-off. No declaration is needed, of course, for duration or gain of height attempts, nor for straight distance flights, which are still a valid option for Silver, Gold and Diamond distance.

A suitable declaration format is at Fig 2. The departure, turn and finish points must be defined as specific points of, say, no more than 100m across.

Photographic Evidence. For photographic evidence of reaching a TP, you can take pictures with any type of camera, colour or monochrome; a cine camera is also quite acceptable, and no doubt a video camera

Date of flight
Pilot
Glider type & No.
Departure point
TPs 1
2
3
Finish point
Pilot's signature
OO signature & No.
OO name
Date and time of declaration

Fig 2

could be used subject to satisfactory custody of the tape after flight. The essential requirement is to produce evidence in an unbroken sequence comprising the flight declaration, the TPs in order and a post landing picture.

To aid the interrogation of your film, do choose clearly discernible TPs. As a general guide, if a feature is easily recognisable at long range from the cockpit then it will make a satisfactory TP. Because they not only aid assessment but also make it easier for the pilot to align himself in the zone, intersecting line features such as motorway junctions and rail/river bridges are the best choice, whereas pin-point features such as castles and cathedrals seem to cause problems, even though the presence of tall structures helps the assessor determine the axis along which the glider was positioned.

After the flight hand the camera to an official observer to arrange developing, ensuring that the negative remains as an uncut length. The BGA requires two observers to check and certify the TP photos, and although the developed negative will normally suffice, for indistinct frames it is helpful to produce enlarged prints.

Silver Distance Options. The requirement for Silver distance remains, as it has always been, a straight flight of at least 50km. However, using the permitted options of a remote departure and/or a remote finish (which must be pre-declared) you can in practice fly an O/R or triangular course, although essentially the attempt relates to one leg, which must be over 50km, and to this leg apply the usual requirements of flight declaration, photographic evidence and the 1% "loss of height" rule. Note that, in the case of a Silver "triangle", the TP zones are aligned with the qualifying leg in isolation and not based on the bisector of the track angle as normally. For the purpose of the 1% rule with a remote departure, the release altitude is regarded as the starting height irrespective of the height at the remote departure point.

The usual way of employing the remote departure/remote finish option is to declare a remote finish over 50km away, and then it doesn't matter if you land out on the way back. However, when starting from a high altitude site, it could be better to declare a remote departure more than 50km away and claim the return leg. For instance, a pilot attempting Silver distance from the Long Mynd (1500ft amsl) to a remote finish at Worcester, say 50ft amsl, would be limited by the 1% rule to a 400ft launch (or take a bungy launch!); but by declaring a remote departure point at Worcester to claim the return leg he could take an aerotow to 1870ft above the Mynd. Alternatively a cunning pilot exploiting the rules to the full could declare instead the top of Malvern Beacon as his remote finish (1394ft amsl), in which case he could still be launched to about 1800ft above the Long Mynd. The permutations are numerous, and a summary of the main options for achieving Silver distance is illustrated in Fig 3.

SILVER DISTANCE OPTIONS

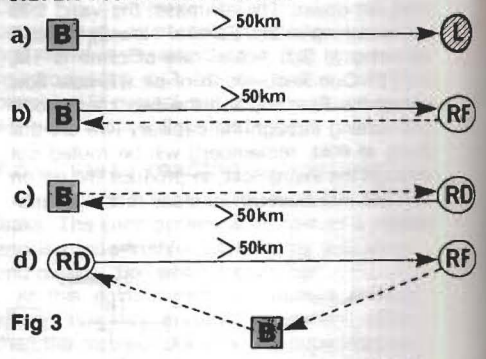


Fig 3

Gold and Diamond Distance Options. Under the new rules of the **Sporting Code** you can fly the requisite 300 or 500km around up to three previously declared TPs in any sequence, but not the same one twice. There is also the option of a remote departure point, but this would count as one of the three TPs and would not therefore carry any additional advantage. More significantly, however, not only can you round the TPs in any order decided in flight, but there is no obligation to go round all or any of them at all. With suitable choice of TPs this means you can fly your task as an O/R with two alternative TPs, or a triangle with an alternative TP, or effectively fly a double short O/R or 1½ times round a flat triangle. Typical options are shown in Fig 4. Incidentally the former rule requiring you to land within 10km of the last leg of an uncompleted triangle has been deleted.

Remember that the distance penalty rule applies if you land out at a place over 1000m below your release altitude. Also, when you take advantage of the flexibility of in-flight choice of the next TP, the photographic zones applicable will relate to the track you eventually claim — so if you might change your mind on which TP to round next, ensure you take sufficient photographs at each turn to cover the zones which will subsequently apply to the flight claimed.

Diamond Goal. Notwithstanding the flexibility now offered for Gold and Diamond distance,

GOLD AND DIAMOND DISTANCE
– Some typical options

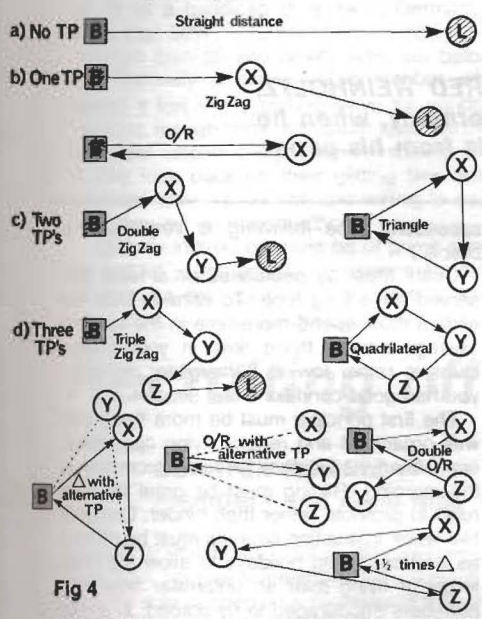


Fig 4

the requirement for Diamond goal is still the completion of a pre-declared 300km O/R, or a triangle in the designated sequence. However, when terrain or airspace restrictions dictate, you can declare a remote departure-cum-finish point, and as a variation of the same theme you can treat the base airfield as a remote departure and finish and fly round three separate TPs. In both cases the official distance is the sum of the three straight legs forming the triangle. Fig 5 illustrates these options.

750km and 1000km Awards. The requirements for the FAI 1000 kilometre Badge and the BGA's UK 750km Diploma are also amended in line with the new provisions for Gold and Diamond Distance.

Conclusion. This discussion does not seek to justify or challenge the greater flexibility introduced by the CIVV of FAI. Doubtless many traditionalists would prefer to keep the elegant simplicity of the old rules; on the other hand the new rules give pilots the encouragement to enjoy some purposeful flying with less risk of inconvenient outlandings miles from base. However, more flexibility does mean more complexity in the control and validation of badge flights, and I hope this article will help pilots and observers to follow the rules and avoid the disappointment of having a creditable flight rejected on a technicality.

DIAMOND GOAL OPTIONS

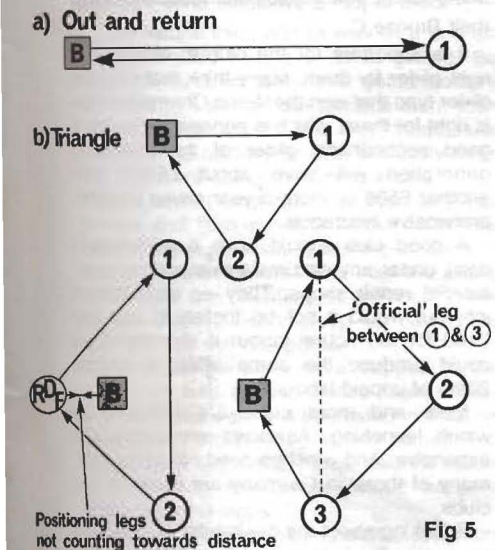
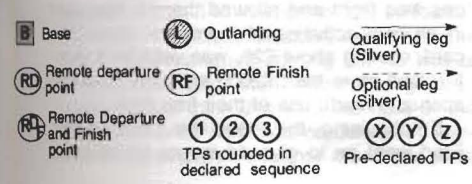


Fig 5

KEY TO FIGS 3, 4 & 5



"TRUANT"

DAWN BRADLEY slipped out of school on a Silver C distance day



Dawn, who flies an Astir, went solo on her 16th birthday in July 1983 and completed her Silver C last August. Her father, John, is a full Cat instructor at their club, Wyvern. Dawn is crewing for her uncle, Dick Bradley the current Standard Class Champion of South Africa, at the World Champs. After taking A levels this June she is having a year off before university to sample South African gliding.

In response to the humorous account of Mary Meagher's Silver distance in the February issue, p16, I should like to recount, being at the opposite end of the age scale, my little venture to Lasham last year which started on a 1210hrs from Marlborough.

"It's good," I said, gazing up at the late May morning sky. And so the cumulus lured me away from the sixth form common room. One lower-sixth student illegally sneaked out during the lunch hour, trying to avoid harsh glances and frowns from the staff room, not to return again that day. I was on to the bus and back to Pewsey by 1230hrs, hitched a lift home to change and to grab my soaring hat and sunglasses. Then it was out with the old bicycle — where's the pump? — and by 1300hrs a Bronze C pilot was seen to be pedalling madly nine miles to RAF Upavon in the heat of the Wednesday afternoon. On arriving at the camp the only people to be seen were Pete Cook and son. By this time the bell for afternoon lessons would have gone.

I really thought Pete was joking when he suggested a 50km attempt, but when the CFI gave his approval (he'd just turned up with his Army pilots) I knew they were serious, and I was game! I'd only come to get perhaps an hour's soaring.

The K-8 was dragged from its hangar gleaming with barograph signed and ready. The clouds were developing nicely, but I still didn't believe what was happening — I was supposed to be studying history back at school but my eagerness to get airborne overcame any feelings of guilt.

Was it to be Lasham or Yeovil? The former was agreed upon, and so one little truant and her K-8 were launched into the zenith, far from the claustrophobia of a stuffy summer classroom in which my earthbound friends would be suffering.

I hit 2kt up, struggled in 1kt down and managed to get myself down to a shaky 700ft! Suddenly the lift was strong and constant, as was some sink at 6/7 down. However, at 3500ft I was off on track for Andover, coping with a slight crosswind. Back where I should have been they'd be studying the Crimean war and the Treaty of Paris, but I was enjoying myself too much to bother.

"This is the life!" I thought as I saw the altimeter winding up — then just before Andover a huge blue patch loomed before me — 6 down — horrors — I'd have to deviate around the edge to keep near cloud. But with quite a lot of height I made the decision to dash straight across the middle. It seemed endless as the needles wound down and the radio moaned sadly at me — down to 2000ft, start thinking about field landings — curses — but again a wopper thermal pushed us back up a few thousand feet — in fact a good 5020ft to be precise, because I clinched my Silver height!

". . . waving at the odd Nimbus that raced past."

The K-8 passed over Andover, and we took the railway line that would lead to Basingstoke. By this time I was at 4500ft for most of the way, waving at the odd Nimbus that raced past. And so Basingstoke came into view, the cloud by now was quite dense above and visibility reducing.

It couldn't be over so soon? It had seemed no time or distance once I saw my destination — there to the right was Lasham. Down with the nose, up with the speed and a K-8 final glide to the airfield, aiming at 4700ft, then hitting fairly atrocious sink. So what! I'd done it, after 1¾hrs flying. (I was later to learn that Pete Cook had beaten me there in his Nimbus, *via* Hungerford of course, he claimed.)

And so I landed just before 1600hrs at the famous Lasham which I'd only seen before on television. By this time also my absence would have been noted from the classroom, my academic career possibly in jeopardy!

I was helped by Derek Piggott to park the K-8. He kindly suggested that I should drive to the office to get a claim form, to which I replied: "I can't drive, I'm only sixteen!"

After three hours of waiting, hot chips and coffee, my crew arrived, one of which was a rather amazed father curious to know why I was at Lasham and had not been at Marlborough!

SURVIVAL

"What can gliding do to secure its survival?" asked FRED WEINHOLTZ, president of the Oerlinghausen Gliding School, West Germany, when he spoke at the BGA Conference. The following are extracts from his paper.

There are a growing number of people — often with a lot of influence — who try to deny gliding the status of a sport, or at least to restrict it.

The airspace authorities see glider pilots solely as traffic and when gliders don't entirely fit into their complicated airspace structures they must go. There are the fanatic advocates of pure physical training who don't regard gliding as a sport but as an engineering-like technical activity and an intensified continuation of everyday stress. The environmentalists turn against us, claiming our sites destroy the environment, our launches pollute the air and our gliders disturb the balance of the bird world. And there are certain politicians who want to use gliding, as well as other sports, as a political weapon — for example South Africa.

We can face these dangers if we stick together and succeed in activating the giant army of our "silent friends" who look at our sport with interest and goodwill. If we really want them to speak for us one day, then we must present them with an advantageous picture of gliding and avoid making mistakes. Gliding must remain to them the beautiful, fascinating sport it really is and it must improve its reputation.

We must do our utmost to prevent my following look into the future — intentionally painted in provocative black and white — from coming true.

Let us visualise the year 1995 — only ten years from now. The gliding angles will increase to about 40:1 for two-seaters and a bit more than 60:1 for the high performance Open Class gliders. And please don't laugh when I predict the selling prices, because I have merely extended the curve on the graph of price increases from 1955. Ex works the new gliders will cost between £20 000 and £70 000.

Gliding too will be more expensive. It is a rule of thumb that a glider in normal use costs its owner approximately 20%/year of its value. Everything is included in this 20% from hull insurance to launching charges. If you don't believe me then ask your club treasurer to divide the annual club expenses by the number of your gliders and you will be astonished at the result. And if you divide the yearly costs of the gliders by the number of hours flown you will arrive at approximately £25, the cost of one gliding hour despite all the honorary work done in the clubs. If this trend continues, in ten years' time it will be £40.

By 1995 the high costs will mean a heavy decrease in the number of active glider pilots. We all know enthusiastic pilots give up because of the expense but other figures too should provide cause for reflection. If we follow statistical calculations in the next decade we must expect a decrease of nearly 20% in the number of pilots up to 18 years-old while pensioners will increase by about 15%.

The average age of members is rising in all the gliding associations in the western world. This is without doubt also a consequence of what I call the "Churchill Syndrome." In his old age your great statesman was asked by a reporter the reason for his remarkable physical and mental state of health. He answered briefly: "No sport!" Obviously my generation — and I'm at the end of my 50s — is exceptionally sports minded but our fathers were different and even our teenagers participate less in leisure and sporting activities.

". . . outdated pilots — whisky glasses in their hands — sit in the clubhouse, dreaming and talking of the past . . ."

When I imagine a gliding site in 1995 under these conditions I must paint a horror picture. The precious gliders are seldom in the air. Only a few incredibly rich youngsters wait for thermals. A group of outdated pilots — whisky glasses in their hands — sit in the clubhouse, dreaming and talking of the past, of better times.

Let us hope this will never come true. But as crazy and exaggerated as all this may sound, gliding is in danger of becoming a leisure activity for the privileged few and in so doing losing its present high reputation as a sport. We must try to find answers to my original question about survival.

We must first establish a model which must be fixed and clear but at the same time flexible, because the unpredictable influence of the future will certainly compel us to react and adapt to the situation. I visualise sound gliding in the year 2000 as follows:

1. The man in the street must be able to afford gliding. One flying hour must not cost a club member more than his net income for two working hours — all extras included.
2. We must see that the number of glider pilots compared with today does not decrease but possibly increase.
3. Gliding must arouse public attention and be regarded as the great sport it doubtless is.

I have deliberately left out the important question of airspace because it has separate problems and difficulties. But I am sure that if we succeed in keeping gliding strong and full of life we will also be able to solve the airspace problem.

(Fred, who started gliding when 14 years-old and in 1951, two weeks after the raising of the gliding ban by the allied governments, helped to start a gliding club, went on to put forward proposals and suggestions which have already been proved successful. The following is very much a precis.)

Costs must be decreased or at least preserved for a long time. To achieve this, our gliders must spend more time in the air. The average annual flying time in your civilian clubs is rather low at 83hrs/glider, although you had good conditions last season.

The first principle must be more flying with well organised and regular flying operations, even when the weather isn't very promising in the morning. Gliding must be great fun with rules to promote rather than hinder. Compact two week instruction courses must be offered as well as gliding holidays to allow the challenge of flying over an unfamiliar area with members encouraged to fly abroad. In winter there should be a booking list for members who want to hire club gliders for personal gliding holidays. Flying charges must be reasonable. No charges after the third or fourth hour of a flight is a tried and tested rule which encourages cross-countries. The annual subscription should be low enough not to deter anybody but high enough to keep flying charges modest.

An average of 200 flying hours/year and/glider can easily be achieved if intelligent rules are followed. A lot of money can be saved by clubs that pursue clever equipment policies. I think it is absolutely wrong if a club provides training gliders only and leaves members to join a syndicate once they have their Bronze C.

It is important for the club to choose the right glider for them. Many think that only the glider type that won the World Championships is right for them, which is nonsense. Buying a good secondhand glider of the preceding generation will save about £5000 with another £500 or more a year saved on comprehensive insurance.

A good club should have a workshop. I don't under any circumstances oppose commercial repair shops. They do an excellent job, but would it not be foolish to pay say £100 for ten hours' labour if club members could produce the same effect in maybe 20hrs of unpaid labour?

More and more clubs are switching to winch launching. Aerotows are simply too expensive. And winches need not be bought, many of those in Germany are made by the clubs.

Speaking about the desirability of attracting sponsors, Fred described how last year his club printed "Supporter of gliding" stickers and admission cards that entitled sponsors to one free flight and allowed them to take part in all club activities at members' rates. The card, costing about £25, was valid for a year. It raised more than £2000 and only 20 of the sponsors made use of their free flight.

Emphasising the need for contentment, Fred went on to give advice on taking good

care of club members with regard to flying.

I regard the British minimum solo flying age of 16 as a handicap (it is 14 in Germany). More than 30% of German club members are younger than 25 and nearly 20% are below 18. Naturally a considerable number who spend a few years gliding leave for various reasons, though some will return later. Others may hold responsible positions in society and if they look back on their gliding time with pleasure they will be only too willing to help us if they get an opportunity.

Ab-initio instruction must be of prime quality and let young people experience the fascination of the sport and become a little addicted before being given burdens as club members. Don't leave your junior pilots to themselves too early. They need your guidance and the Bronze C cannot be more than a first step. Help them convert to different gliders and prevent them from bungling their first cross-country attempts — two-seater or escorted distance flights are an obvious solution. Also encourage the young, whether they want to do cross-countries or prefer to stay in the vicinity of the airfield.

Talking about public relations, Fred said that accident prevention and air safety are effective means of good PR work, substantially influencing our public reputation. But when there is an accident, reporters must be given clear and correct information and let them know the hidden dangers in gliding if carelessness, lack of discipline and even unfairness occurs. Honesty always pays.

He advocated mixing more with the community to make contacts and build relationships, welcoming visitors to the airfield and finally gave some general tips on dealing with the press.

Obviously we haven't the space to print Fred's paper in full and this is just a brief précis, but copies of the full text are available from the BGA office if you enclose a sae.

Recruiting off the streets — literally

DERRICK RODDIE of the Wolds GC tells how he has made a personal effort to attract new members and keep their interest.

It isn't my intention to lecture you on how to look after your new members, but perhaps I may be able to open up a new field of thought within your club. Hopefully it may even enthuse one of your members to be a champion of the cause.

Last spring we launched a very successful local publicity drive resulting in an influx of visitors. However I noticed that beside these, more than the usual number of cars were stopping just to watch. It seemed a shame that people should think themselves worthy to only watch our fantastic sport, so I started my own personal recruiting campaign.

They obviously thought they were doing something wrong

The natural thing was to walk over and ask if they fancied having a go at gliding. But seven times out of ten I never got to the cars. As soon as I started out towards them there was a squeal of tyres and they disappeared in a cloud of rubbery smoke, obviously thinking they were doing something wrong.

So I waited until three or four cars had parked and then made a detour round the back of the clubhouse, appearing on the road so they wouldn't know I was from the gliding club. With this element of surprise in my favour, I could easily creep up behind the cars and zap the occupants.

Numerous people I have trapped in this way have had an experience flight. Those who didn't fly, were still interested in what we were doing and pleased to find someone to answer their questions. I must hold the record for answering the classic "What happens when the wind stops?"

The result of this ploy is that a few more people have a better idea about gliding and will be able to tell their friends it isn't just a rich man's sport. And the membership increased from 140 in 1983 to 180 in 1984.

The next problem I tackled was the usual one of new members coming out for two or three weeks and then never being seen again. I don't think this was the fault of the club as we pride ourselves on our warm, family atmosphere. Some further measures were needed to draw them into the club before they were allowed to escape.

I thought back to my early gliding days and remembered spending full days on a cold windswept airfield in the hope of getting three five minute flights, aiming to work my way towards going solo. Beyond that I had no real idea of what gliding was about. Sure enough I had heard the pundits talking in the bar but terms like cross-country, wave expedition and task weeks were lost on me. I actually thought a task week would be spent sweeping the runways or performing other menial tasks.

The next plan of action was to show new members that going solo was only the first step and that great personal satisfaction could be attained through their own goals, or at the other end of the spectrum, flying in competitions.

So we invited new members, and others who were interested, to a reception at the clubhouse. The idea was that they would be able to relax with a few drinks and listen to a light talk about gliding in general and our club in particular.

Now even attracting members' non-gliding friends

The first evening was a terrific success. I even managed to con one of the newcomers into crewing for me at our task week. Now we are getting members' non-gliding friends to the receptions to see what it is all about.

If readers like the sound of this campaign, then here are a few pointers to get you started:

1. Phone all the new members and invite them personally. This gets a better response than writing or catching them at the club because it shows you are going out of your way to get in touch with them.
2. Keep the talk light and instil the audience with your enthusiasm.
3. Remember that all new members want to be part of the club. Make them feel they are needed and you have won half the battle.

I can't claim that we retain 100% of our *ab-initios* but we have a lot of fun trying and if we only prevent one or two from leaving at this early stage, then it has been well worthwhile.

I have never been involved with any project remotely like this before and have a lot to learn. However, I hope that by publicising my efforts at this early stage some of you may get in touch with me to either glean ideas or to let me know of any similar operations in your club. Either telephone me at home — 0757 70736 — or at the gliding club — 07592 3579, or write to the Wolds Gliding Club, The Airfield, Pocklington. East Yorkshire.

Good hunting.

BOOK REVIEWS

Jane's All The World's Aircraft 1984-5 edited by John W. R. Taylor. Published by Jane's Publishing Co Ltd at £60.

This edition is as comprehensive, detailed and as beautifully produced as ever with some fine photographs and three view drawings. The price has again risen £5 and the sailplane section is slightly reduced, but it still remains incredible value in terms of sheer content and deserves its reputation as the ultimate in aviation literature.

G.B-S

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PAM'S WORLD RECORD

PAM HAWKINS, a veterinary surgeon who flies a Mini Nimbus at Booker, wen the 750km triangle world and British National feminine records previously account of her flight from Waikerie.

My 765km triangle on Saturday, November 17 was one flight I won't forget in a hurry — any more than my first solo when I remembered thinking "well now I'm up here, but I still have to get back down . . ."

When I went out to Waikerie I had great ambitions and wasted no time in setting about achieving them — no problem there as Waikerie is used to hosting overseas visitors and is superbly organised in this respect.

My check flight with the CFI, Maurie Bradney, on the Monday, November 5, consisted of a 135km triangle in a Twin Astir in difficult, windy conditions with blue thermals to 4500ft. The flat country and enormous fields of the task area make for safe flying and I found navigation straightforward, thanks to good visibility and some distinctive roads and railways, towns with prominent silos and the Murray river with its larger towns and irrigation areas which make a vivid green splash amongst the parched brown farmland.

Flew the ASW-17 on a 615km triangle with 7kt thermals and 8000ft cloudbase

On the second day I had a familiarisation flight in the ASW-17, and on the third day flew it on a 615km triangle with 7kt thermals to a 7000ft, and later 8000ft, cloudbase in an impressive cumulus sky.

The following week I was on a cross-country course and had two more dual flights, one with Maurie, who is a top Australian pilot and flies in international competitions, and one with another highly experienced pilot, Malcolm Jinks, who has flown two 1000kms from Waikerie. Our tasks were not long as the weather was back to being blue with 4-5000ft thermals.

I spent some time devising a 750km triangle round three TPs, not using the airfield as the apex of the triangle. With Maurie's help the latitudes and longitudes of the TPs were established from survey maps and great circle distances calculated. We had to make sure that the triangle complied with the 25%/45% rule — the longest leg was very close. This type of task is accepted for speed records so when planning long tasks, especially in a small country like England, it can give you a lot more scope in task setting.

On the Friday evening the weather prospects were promising and on the Saturday morning I listened to the 6am radio weather forecast — we could expect 38°C. The tug took off on its daily Met flight at 8am to plot the environmental lapse rate and Maurie phoned the Met office in Adelaide who prepare a forecast to a standard format worked out with the club. This sytem provides reliable Met information and a daily 10am weather and task briefing is a feature of Waikerie.

Meanwhile I washed and ballasted the ASW-17. This "beaut" glider, which is at the top of Waikerie's fleet, is a 19m version specially made for the great Hans-Werner Grosse who used it for many of his early long distance and record flights including his first 1000km triangle. As well as a Winter barograph, I carried an Aerograf from which I could make a detailed post-flight analysis.

I launched at 1130hrs when we knew we had the trigger temperature indicated by the forecast. Nevertheless the air felt ominously smooth until the last few hundred feet. I released at 3200ft, crossed the startline at 3000ft and immediately took a weak thermal, climbing to 4000ft before pressing on with a feeling of impatience to get going mixed with the fear of gliding straight into a field!

At 2800ft I connected cleanly with a powerful core giving 5kt to 9000ft and my fears turned to elation with the knowledge that I was on my way. It was a blue day with some cirrus visible to the south.

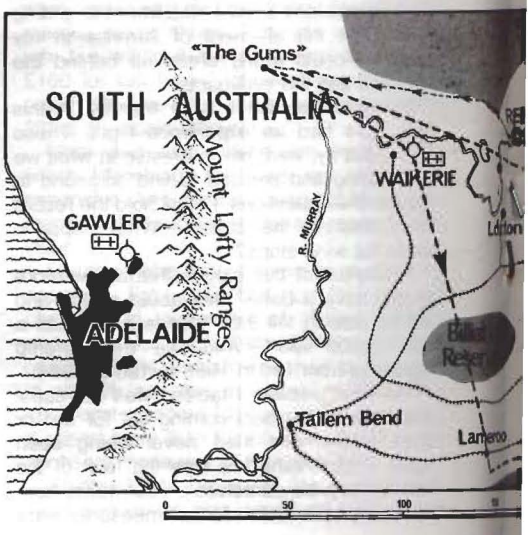
I motored along for 138km, not stopping to circle very often, to round the first TP, Austin Plain, at 4900ft; 115km/h for the first leg.

I was now under the thin cirrus I had seen earlier and this reduced the lift sufficiently to make the second leg the slowest part of the flight. It is a peculiarity of nature that the higher the thermals go the further apart they are, and I found I was going from 9000ft to 3000ft without finding anything worth pulling up in. When I did stop to circle I was having to work hard to achieve 4 to 5kt averages, so during one particularly frustrating climb I dumped half my water, only to spot a field fire starting up ahead — this gave me a genuine 10kt climb from 3900 to 9500ft, the highest I saw all day. I could speed up again now and after two more 5 to 6kt climbs, followed by a good one of 6 to 7kt, I rounded Anuello silo at 7200ft, having made 104km/h for 219km on this leg. It was now 1500hrs with 400km to go.



Pam photographed in Australia on another good day.

From the radio I had learnt that one of Waikerie's top pilots, David Jones, had set off behind me in his ASW-20 and this spurred me on. He was about 30km behind and we both made different decisions about the route to take to avoid some bad terrain to the north-west of the second TP. David went north first, crossing the Murray river, and told me later that he flew from 9000ft down to 2000ft without passing through any usable lift. He re-crossed the Murray near Mildura.



t to Australia this winter and collected held by Karla Karel. This is Pam's

I went west from Anuello and had a climbing run in a line of lift along a "scrub line" (*ie* the boundary between farmed country and an area of dense malee scrub), then flew north across some gypsum flats and was soon over good cultivated land again.

We had left the cirrus behind. Thermals were stronger, and another fire lured me on — this gave an 8kt climb to 9500ft and two more excellent climbs at lakes Cullulleraine and Walla Walla made this a very fast run. Then a long glide took me across the border from Victoria to South Australia (the border is clearly marked by a scrub line, being all farmed on the South Australian side), and I crossed the Murray to the Renmark irrigation area, which wasn't producing good thermals.

I lost about 20 minutes here, not making much progress, whilst some high-based cu to the north mocked me. These cu were at a base of 12 000ft, so I'm told, and were streeting with a NNW-SSE orientation, petering out just north of my track so I couldn't get to them. I dumped the remainder of my water as I was down to 3000ft and encountering weak and broken lift, before getting a climb to 7000ft; then I went under the cumulus but I was crossing the streets at 90° and still having difficulty getting good climbs, so couldn't go very fast. There were some cirrus patches ahead and on the final leg.

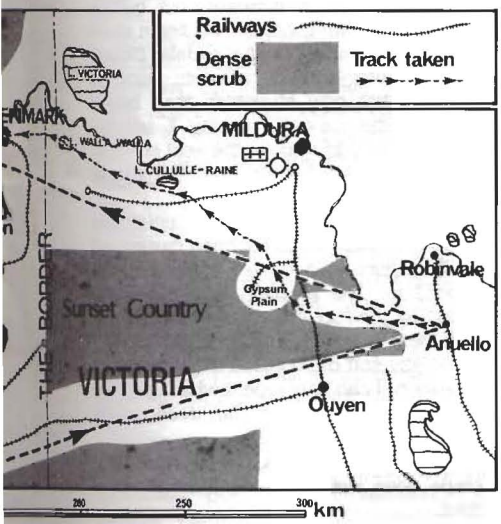
I rounded "The Gums" homestead at 9000ft — 3rd leg in exactly 3hrs — and was tempted to go home at best glide, just to be sure of completing the task. I carried on flying with the appropriate MacCready setting, taking one more climb, and finished, elated, after 6hrs 50 minutes. David finished as we were towing the ASW-17 to the hangar.

Greg Kennedy, a club member, flew his first 300km that day in less than 4hrs, stayed up to achieve his 5hrs and went northwards, getting to cloudbase for his Gold height.

My speed was 110.53km/h, giving a respectable margin over the previous record set at 95.42km/h. I checked it right away against the British record list but it was not until two hours later in the bar that I realised it was also a world record.



Waikerie town, on the Murray river, surrounded by irrigated citrus orchards and vineyards. Pam also caught a Twin Astir and ASW-17 in the photograph.



The Wren Story



Bill Manuel at the "controls" of his Crested Wren.

Bill Manuel, who has seen the evolution of the gliding movement during his 82 years, is again building a Crested Wren, the glider he designed and built in 1930.

John Lee, who is writing a book as a stage by stage guide in designing, building and flying ultralight wooden gliders, reminds us of Bill's background.

While working for Vickers at Weybridge in 1917 on the SE5 and Vimy, Bill met a Swiss immigrant worker who told him of gliding experiments in the Alps. This gave him an ambition to design and build a machine that would soar for an hour.

The fuselage he built in 1920 became his mother's chicken run, he joined the RAF a year later and in 1928 stood on a 15ft hill hopelessly trying to balance a Chanute-type hang glider in gusty conditions.

(Continued on p137.)

ARE YOU SITTING COMFORTABLY?

Then I'll begin, writes PETER DISDALE. As a follow-up to Tony Segal's informative article in the February issue, p12, I thought it might be useful to let you know how Lasham is tackling the problem of spinal survivability with its K-13s.

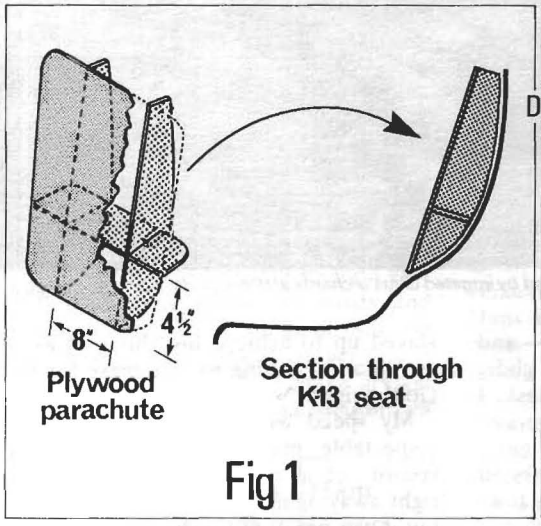


Fig 1



Fig 2

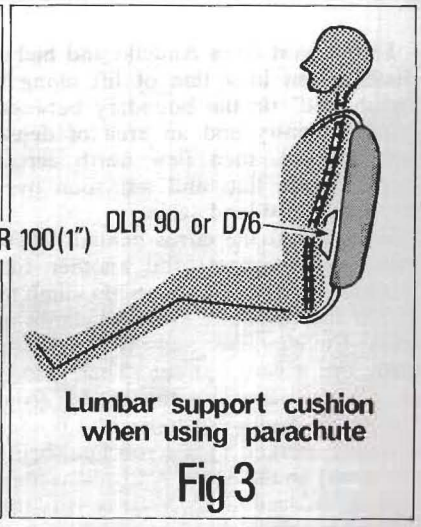


Fig 3

I write not as a medical man, but as an instructor who has sat through more "firm landings" and spinal jolts than I care to remember. And while it is important to make our cockpits as crash-proof as possible, the fact that back and spinal injury is cumulative means that it is equally important to consider proper seating support for everyday flying. If you do a lot of landings or operate from a rough, hard surface (me on both counts!) you could be doing just as much damage to your back as during a real bone-cruncher of a landing/crash.

The Seat Back. The seat shape of the K-13 is, unless you happen to wear the correct German static-line parachute, a disaster. The lump at the base of the seatback is in just the wrong place (K-6/7/8s are just the same) unless the upper part of the spine is properly supported. Whilst the ideal solution would be to re-mould the seat (not practical anyway for the rear seat), we have effectively removed the lump by making plywood seat backs (Fig 1) which sit snugly into the recess, and can be removed easily if a parachute is being worn. These "plywood parachutes" as they have become known are easy to construct and the idea is readily adaptable to most gliders with similar seating problems. Ours are painted bright red for conspicuity and varnished for weatherproofing.

The next task is to convert the flat back into one that will shape the spine correctly. This we have done by means of a back cushion of hard chip foam (Dunlopillo D76), behind which a lumbar support strip of DLR 100 has been glued (Fig 2). This is actually very comfortable! Shorter pilots (who need more padding) can be accommodated by using flat, chipfoam cushions between this lumbar cushion and the seat back.

Assuming that your spine is now correctly shaped and supported, all those landing loads in your body should get transferred properly to the . . .

Seat Cushion. The watchword here is **firm.** The soft foam cushions that we have all used for years are worse than no cushion at all. As the foam compresses during a heavy landing, your body is still going *down* as the glider has rebounded and going *up,* thereby virtually doubling the impact when both parties meet. The correct cushion should collapse progressively, and if it recovers its original shape, should do so *very slowly.* Such a foam is DLR 100, its other main application being in ejector seat cushioning. A 1in thick cushion of this is ideal.

As mentioned in Tony's previous article, a cushion full of expanded polystyrene beads could be used with equal effectiveness but the beads would need replacing frequently and after every firm landing, so we decided this was not a practical proposition for intensive club use. However, the cushion must be properly secured to the seat — such a firm material could cause a control jam if it slid out towards the stick. Press studs sewn onto the cushion cover, and araldited onto the seat base (at the edges!) seem a good solution.

Parachutes. So far so good, but what when you wear a parachute? The seat cushion solution is still valid, but if your parachute pack is not fitted with a lumbar support built in (Lasham's are not) it is a good idea to make and wear one. Again referring to the previous article, Dr Stedtfeld's solution of a 3mm moulded polypropylene sheet inserted between yourself and the parachute is probably the best solution, but such a support should ideally be moulded for each individual pilot and as such is rather impracticable. A lumbar support cushion appears to be a simpler immediate solution (Fig 3) made from DLR 90 *or* chipfoam, the actual choice of size and thickness to suit the pilot's comfort. However, bearing in mind that these small lumps would either not be used or get lost if they were loose, it might make more sense to attach them to the parachute pack with velcro, or even have them sewn on.

Effect on the Pilot. I have been quite astonished by students' reactions to using these cushions. Because they are firm, pilots have said how they feel much more part of the glider, probably because the harness once tightened stays tight. One pilot who used to be prone to airsickness can now cope in rough air with no adverse reaction!

One other difference as far as the student is concerned is the apparent attitude of the glider — because one is sitting straighter and higher the relative position of the glider's nose and horizon is different, but quickly assimilated. Shorter pilots too will find it much easier to reach and use the pedals, though there is one problem with tall pilots. Because their backs are now straighter, their heads may touch the canopy, making it unfortunately necessary to remove the seat cushion. They will however benefit from the proper lumbar support.

Solo gliders. Here we are on untrodden ground — no trials have yet been carried out on modern glass gliders with a very reclined pilot position. The problem is further compounded by the fact that quite often in these aircraft there is precious little headroom anyway and any sort of cushions might be out of the question. I can only repeat what Tony has told me, summarised in the three points below:

— use a lumbar support pad if your parachute does not have one fitted as standard.

— if you have room for a cushion, make it entirely of DLR 90.
— most importantly, if you have trouble reaching the controls or instruments *do not use* soft foam cushions for padding — support your entire back.

Making the Cushions. All you really need is an electric carving knife (unused wedding present?) adhesive (Thixofix) and some covering material, too, if you want the cushions to look pretty and wear well.

As regards acquiring the foam, Dunlopillo have contacted us and would prefer to supply in quantity to Lasham rather than in small orders to individuals. By the time you read this we should have a reasonable supply line going!

For your information, Dunlopillo supply the foams in the following sizes:

DLR 100, 24in x 24in x 1in. DLR 90, 24in x 24in x 1in. D76 (chip foam, hard), 79in x 56in x various thickness.

★ ★ ★

Also if anyone wants templates for "plywood parachutes" for a K-13 send a large sae to Lasham.

ALPINE INTERLUDE

NICK HACKETT recalls the 1984 Allgau Mountain Competition and in a few days' time is making a return visit

After the 1983 soaring feast at Füssen, (see the April 1984 issue, p74) I was eager to take part again in the Alpine Competition, this time held at the alternative site at Kempten. This stunningly beautiful field is 10-15 miles north of the alpine foothills, sometimes making the first transition from the start difficult, and indeed on the second day I had to make an ignominious straight-in belly landing into a paddock two miles from the airfield, when a marginal attempt to return for a relight was foiled by a solidly built farmhouse in the only gap in the final ridge.

Nevertheless the rest of my stay provided the usual exhilarating soaring, including some enjoyable flying during the week before the contest. One flight was memorable — no set task — just a stroll — *ein Spaziergang* — through the mountains. Having flown down to Innsbruck and along to the south end of the Achensee, I returned along the north side of the Inn valley, *via* the usual mind-bending thermal at the west end of the Tschirgant, to Landeck. To the south the Engadine looked appetising, so I flew down its western flank, the bases as usual in this area rising dramatically, and I climbed to 14 000ft without entering cloud, with half of Switzerland visible to the west. Over to the east beyond the Glockturm the brilliant white expanse of the Lago Bianco and the eternal snows of the Gepatschferner beckoned. I flew over to it, sinking down towards the surface until the entire horizon was brilliant smooth rolling snowfields below the clear blue firmament above.

Turning along the glacier I gently skied in a lazy aerial slalom down the incline, curling effortlessly up the moraines, and jumping lightly down into the hollows beyond! At the bottom of the glacier I pointed my skis — sorry, nose — along the western edge of the Kaunser Grat back to the Engadine, and returning to reality, turned back north to the Venatberg, over the top of the Lechtaler Alpen, and back to Kempten. 470km or thereabouts in five hours. An interesting factor in high altitude alpine flying is the loss of body fluid. Despite always taking a bottle of *Mineralwasser* with me, my average weight loss during flying was a pound per hour — never entirely made up in the bar in the evenings.

My dress for alpine flying is usually on the same lines — sun hat, wetted before and repeatedly during flight, reactolite sunglasses, barrier cream, long-sleeved lightweight shirt, warmish trousers and wool socks. The insolation in this environment has to be experienced to be believed, but anything in shadow remains very cold, hence the marked difference between upper and lower bodywear. In case of emergency I also carry in the back fur-lined snow boots, insulated ski dungarees, spare jersey and anorak, all brightly coloured, and a stock of dried fruit, nuts and chocolate. Since a white glider in snow is worse than invisible, a coloured parachute canopy is both an excellent marker and first class protection against the elements should the need arise.

The competition period was marked by a new meteorological twist that I had not experienced the previous year — a northerly drift to the wind that required a totally different assessment of thermal search and use of topography, and the old adage of picking your thermals off the south-facing slopes proved in more cases than not to be an empty chalice. In these conditions the thermals could be found rising from the bases of south-facing slopes, sometimes even from the centres of the valleys, but increasingly predictably from the often shadow-covered slopes on the south sides of the valleys.

The secret of flying fast is to do so as close into the crack between each rising ridge and the cloud above as one can

These conditions were particularly evident on the two long days both to TPs towards the east of Austria down the Salzacher valley past Zell am See. Instead of the usual 60km standing cloud street above the north slopes, huge cloud banks hung along the "Alpenhauptkamm" to the south. This spine, running east-west, has a number of sharp ridges pointing north and at right angles to one's track into the Salzacher valley, and the secret of flying fast is to do so as close into the crack between each rising ridge and the cloud above, obviously getting as near to the strongest lift as one can.

As everyone else is doing the same thing in both directions there tends to be a sort of venturi effect as gliders accelerate rapidly in the rising air above each spine in order not to be sucked into cloud: not the time for map-reading. On one occasion however I did stop to join five eagles in a thermal. Despite the occasional diversion for a bit of mirror-flying (touching claws momentarily) they outsoared me slowly and as they approached cloudbase I pondered their next move. The answer was as dramatic as it was flamboyant. — close wings, drop 2-300ft honeypot fashion, and then pull out into a fast glide to the next thermal. Their aspect ratio didn't look designed for the manoeuvre, and their L/D at that speed must have been parlous. Nevertheless it was pleasing to see that even these regal aviators had time for the occasional frivolity between snatch-launching marmots off the rocks below. One thing you notice when circling in close company with them is the little feathers rising in the break-away just above their leading edges, so unless they know something we don't there's still another million years or so development needed on their profiles.



To return to the tasks, these tend to be somewhat predictable in the mountains because of the topography — a) because the run of the alpine ranges in this region is predominantly east-west, thus dictating the best soaring/racing routes, and b) because if you have to land out, these routes give more opportunity to do so, and the road retrieves, while exhausting, are infinitely preferable to the alternative of, say, failing to return from a TP beyond the main spine to the south, and having to fly right down into Italy to find a landing spot — if you are lucky. You then start talking about a two-day retrieve, which can be as exhausting to one's car and wallet as it is to pilot and crew.

Thus, from a soaring point of view, the Arlberg Pass at Zürs forms a natural barrier to the west; to the south-west, topographically, the Bernina massif, with the airfield at Samedan below, forms another, while to the east there is nothing to stop you this side of the Hungarian border. In this direction you either take the Inn valley northerly towards Salzburg, or take the southern, classic raceway

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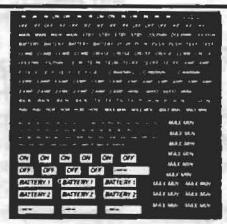
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along the Salzacher valley to Zell am See, or further to Radstadt, Liezen, Leoben, or ultimately Vienna. The beauty of any task that has TPs in the Engadine, and somewhere beyond Zell am See to the east is not only the superb soaring along the valley routes, but also the ultimate experience if weather conditions permit of soaring the Hauptkamm, which from Rèsia in the west commences with the Palla Blanca, along the Weisskamm to the Wildspitze, over the Brenner Pass and along the Austro-Italian border to the Gran Pilastro, and then along the Grossvenediger range to the Grossglöckner — all peaks and ranges in the 12 000ft range, culminating in the latter at 12 457ft. Depending on snow conditions, this route is not really advisable until late June, but cloudbases up to 16 000ft are not unknown. From a pure racing point of view this route is a non-starter because of the poor thermals off the upper snow fields, but as an experience it is in a class of its own. From the Grossglöckner it is less than 100km to the Yugoslavian border, and the Adriatic is only 170km or so to the south, so if you fail to get back over the top and can't find Cortina, you could always make the grand gesture and glide out to Venice.

The Competition itself followed the general precepts outlined above, culminating in three consecutive tasks of 440km, 617km and 498km. The first — Zell am See — St Anton am Arlberg — was memorable for a timed 12kt thermal off the Tschirgant (again), and an interesting final glide over the ski circuses of Zürs and Lech, thence a close scrape over the very menacing east ridge of the Mädelegabel into the Kleinwalsertal for the run home, and the view of the Lake of Constance shimmering golden in the late afternoon sun to the west.

"With some canny task setting and an earlier start the 1000km begins to seem a feasible dream."

The big one next day — Radstadt, on the edge of Styria to the east — Zernez in Switzerland, and back: as flown 700km, 7hrs duration, 7lbs loss of body weight; Max height 13 000ft, lowest scrape almost on the deck of the Olperer Glacier after an ill-considered glide from Gerlos to a supposedly marked thermal that had gone by the time I got there. Landing at 6pm the last gliders to finish the task were still returning two hours later. The conditions had been good, but not optimum. I pondered what might have been: 900km would have been no problem. With some canny task setting and an earlier start the 1000km suddenly begins to seem a feasible dream. And only two days' drive from England. Do people really know what they are missing?

The last day's task: Lago di Rèsia in Italy — Rauris, hidden in a valley beyond Zell am See; set this way round to miss a possible storm front approaching from the west later in the day: 13 000ft bases in the Engadine, which I cling to religiously. There is nowhere, but nowhere, to land in the Engadine between Samedan and the Inn valley to the east of Landeck — something over 100km. The



A strong thermal coming off the Kellerjoch ridge. The Achensee is beyond the gap in the mountains on the right. Photo: Nick.

ground is of course a lot closer than the altitude suggests. The second leg to Rauris was a straight race — not a turn for the last 120km, classic *Hammerwetter* and at this speed the Hungarian border less than two hours away. Imagine then my surprise on turning Rauris to be faced with a dying sky and an ominous gloom cutting off the return. Passing Zell am See with difficulty, I took a final agonising climb under the last thermal at the Thurn Pass, to the south of Kitzbühel, with Gerlos cut off in front. I decided I might just get across to the Inn valley by cutting straight across the mountains south of Westendorf in a line for the bottom end of the Achensee. Gliding slowly and with no little trepidation, I was given succour by the sudden and almost biblical appearance of a shaft of sunlight, laser fine, beaming onto a mountain 10km in front. As though it were a magnifying glass, by the time I reached it a wisp had appeared above it, and miraculous, if gentle, lift took me up again. I could now see the Nordkette above Innsbruck, and headed gingerly over the valley floor with 4000ft in hand.

At Innsbruck airport I could see, and hear, the other Competitors landing; the Tower was warning of severe thunderstorms in the Fernpass. The way back was closed. With the gentle warmth rising up the incredible rock wall of the Nordkette from the valley below, I had however increased my height to 5000ft as I flew along it, so I decided to continue as far as I could towards the murk, photograph an identifiable point (allowable in the Competition), and return to land at the airport. Twelve kilometres further, on the high plateau of Seefeld at the entrance to the pass, I took my photo and with the first raindrops smacking on the canopy turned out over the Inn valley for a gentle float back.

Without warning the glider dropped from the sky, the vario clicking loudly against the down-stop. Despite the rate of descent — the altimeter was going round like a bicycle wheel — the wings were obviously in place and I still had 4000ft agl to cover 10km or so, so I was more startled than disturbed, particularly as the dust blowing in the fields below indicated that I had a strong tailwind. I radioed the Tower to report my imminent arrival. Nevertheless my rate of descent down the mountain side if anything increased, and I realised my predicament. The thunderstorm downdraught which had been hurtling along the Fernpass, and momentarily horizontally across the Seefeld plateau, was curling over the lip and down the 3000ft into the main valley below. By turning out towards the latter, I had unwittingly turned into its path of descent.

Three kilometres short of the airport, with a high rate of knots, no sink, but only 100ft of height, I did not need the river, wood and power lines ahead to prove that I was not going to get in. The high incidence of the latter makes a copybook circuit in the Inn valley impractical, so with a definitely non-standard but exciting turn up over and through the wires and back into wind I landed safely in a field of carrots at the side of the autobahn.

There are two corollaries to this experience. First, 4000ft height loss at Max rough air speed in less than 7km (including maybe 2km of flare-out along the valley bottom), amounts to a relative rate of descent of 1 in 4, about that of a well-fettled piano in still air, and gives an indication of the forces in motion in the vicinity of mountain storms. The second consideration, which you either understand or you don't, was that the extra 12km flown made up three places in the final listings. Of such decisions are competitions made.

BOOK REVIEW

The Book of Flight Tests by Alan Bramson. Published by Martin Dunitz at £12.95.

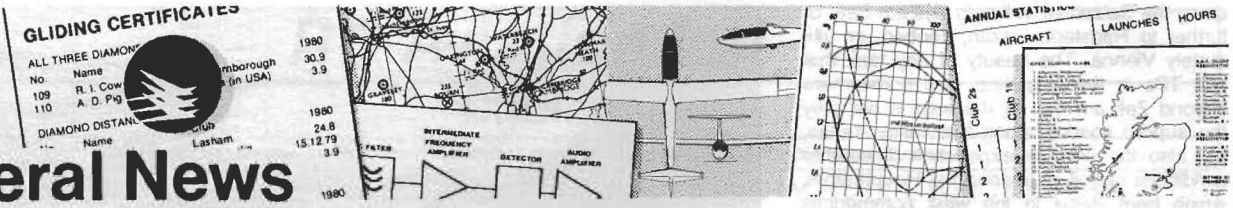
I always read avidly the flight test reports that appear in *Pilot* even though there is little chance of ever getting the opportunity to fly in some of the aircraft described. Now Alan Bramson has collected together forty of them for this book.

It is well presented with a handy glossary of the more familiar terms and bits of equipment and more than 100 super photographs showing the planes on the ground and in flight.

The nearest aircraft to a glider featured is the Grob G109, and this receives great acclaim, but the whole book is well worth reading, especially if you are considering buying any of the aircraft included.

B.H. BRYCE-SMITH

BGA and General News



ACCIDENTS THAT SHOULDN'T HAPPEN!

Two mid-air collisions and two take-offs with elevators disconnected — none with serious consequences for pilots — represent a bad start to the season.

The elevator-disconnected cases were both ASW-19s; one on a winch launch and the other an aerotow. The winch launch was to a sufficient height for the pilot to bale out. The aerotow was potentially more serious. After a longer than usual ground run (7th flight on type) the glider lifted off and sank back a couple of times. The next time it climbed steeply and put the tug onto the ground in a nose-down attitude. The tug bounced and the rope broke. The glider pilot experienced a series of stalls before his arrival in a field some distance from the site (only possible due to the lie of the land). The consequences for the tug pilot could easily have been serious. Both cases emphasise the need for a DI after rigging which should include the stick being moved while the control surfaces are held to ensure connection.

The margin that separates a serious collision from a relatively minor one is probably small and down to an element of luck rather than having much to do with the skill of the pilots involved. The first one was between a Pirat and a Libelle: Apparently the conflict arose because the Pirat had turned towards the ridge. Although the Libelle pilot took avoiding action there was contact between wings with the Pirat losing a wingtip. Both were able to land safely.

The other collision was in the final phase of approach at round-out height. A K-13, landing in the more usual direction, had its tail hit by an Astir which was landing towards the trailer park. The difference of heading was 60° or so and the message from this accident is loud and clear. Landings in different directions incur a high risk due to conflict of circuit patterns and approaches. In such circumstances much more care is required and CFIs might like to consider whether different landing directions are acceptable at all (except in emergencies of course).

W. G. Scull, *BGA director of operations*

UK TEAM FOR EUROPEAN CHAMPIONSHIPS

The agreed method of evolving the UK team for the European Championships is that the pilots wishing to be considered for the team need to apply to the BGA by the end of October of the pre Championship year. The places will be allocated using priority lists established from that year's Nationals.

The details are as follows:

* There will be three self-standing priority lists for each of the Classes.
* The priority list for each Class shall be the same as the previous year's Nationals results for that Class.
* There will be no crossover of pilots from one Class to another: to qualify for the European Championships in a given Class it is necessary to fly a UK Nationals in that Class.
* There will be no cut-off point in any given Class, *ie* if the top ten in a given Class are unable to attend the No. 11 is offered a place even though, for example, No. 3 in another Class is not offered a place because the top two are able to take part.

Our team for the European Championships may qualify for a Sports Council grant covering up to 75% of travelling costs, leaving the pilot, or sponsor (if any) to pay the remainder.

The next European Championships will be held in 1986 in West Germany. More information in the next issue.

Ted Lysakowski,
chairman, BGA Competitions Committee

FLYING SCHOLARSHIPS

Applications are invited from men and women who are UK citizens and will be between 17 and 21 years-old on May 31, 1986, for the Air League Educational Trust Flying Scholarships sponsored by Esso Petroleum Co Ltd, *Flight International,* Flight Refuelling Ltd, Marshall of Cambridge (Engineering) Ltd, Martin-Baker Aircraft Co Ltd and the Air League Educational Trust.

Scholarship winners, who will be entitled to 15 hours flying instruction, will be selected on the basis of interviews, aptitude and medical tests.

Write to the Secretary, The Air League Educational Trust, 4 Hamilton Place, London WiV 0BQ for application forms which must be returned to him by September 23.

DOC SLATER RETIRES

Doc Slater, who is now 90 years-old, has reluctantly decided to give up as Overseas Editor through ill health, although we hope he will still be able to write for us from time to time. We know all his many friends will join us

FROM THE SECRETARY's DESK

Barry Rolfe, BGA administrator



Can I start by asking you to give some thought to the future of the BGA annual Conference — do you want one or not? If you haven't attended one before what can we do about the venue, the accommodation or the programme to persuade you to give it a try? An ex-chairman of the BGA once told me that there are people who glide and there are people who talk about gliding, and the implication was that the majority of members are not interested in taking a day or two to talk and listen to other glider pilots. I'm sure that if we can get the right balance for an annual get together then we should be able to attract more than a couple of hundred people. The Executive Committee want to hear from you before we decide on a programme for 1986 and we are sending questionnaires to a random sample of subscribers, but if you have not received a copy you can still let me have your views by writing to Kimberley House.

I am delighted to report that Tom Zealley and Jack Minshall have been honoured by the Royal Aero Club and received awards from Her Majesty The Queen at a presentation ceremony in London on May 1. Tom received a Silver Medal in recognition of his outstanding contribution to the work of this Association and Jack received a Bronze Medal for his devoted service to the Midland Club at Long Mynd. We are also to be honoured with the presence of HRH The Duke of Edinburgh, our Patron, at Lasham this year when he will be presenting the prizes to the winners at the conclusion of the Open Class Nationals.

At the AGM earlier this year it was decided to make second-seat insurance cover mandatory for all two-seater gliders operating from BGA clubs and sites. The Executive have now decided that the *minimum* amount of cover required shall be £250 000 and that this operational regulation will have effect from the first insurance renewal due for a glider after June 30, 1985. Many clubs and private owners already hold cover for larger amounts, and this may well be prudent, but we are setting a minimum requirement which for the time being is at the same level as the mandatory third party cover — both amounts will probably be reviewed on a regular basis in future. If in doubt, consult with your insurance broker.

Finally congratulations are due to Pam Hawkins for breaking the world and British national feminine records for speed round a 750km triangle at 110.53km/h in Australia recently. (See Pam's account in this issue.)

in sending our best wishes and hopes for a speedy recovery.

We would be grateful if overseas news and exchange copies of journals are sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH.

THE BGA CONFERENCE

The BGA Conference was held in the centre of Cardiff at the Crest Hotel from March 2-3 and organised admirably by the South Wales GC, led by John Milson.

The programme of lectures, chaired by Michael Bird, was suitably diverse and has inspired three articles in this issue — John Williamson's "Simple variometer systems" (see also the April issue, p70), a précis of the paper "What can gliding do to secure its survival" given by Fred Weinholtz, president of the Oerlinghausen Gliding School, West Germany and "Four ways to stay up in Wales" by Ivor Shattock, the pioneer of soaring the Brecon Beacons and Black Mountains.

Charles Shea-Simonds, vice-president of the British Parachute Association and survivor of 1800 parachute jumps, gave a useful talk in which he went over the correct procedure if you do have to bale out, stressing that in his opinion it is wise to deploy the parachute as soon as possible instead of waiting until clear of the glider.

Roger Green, an aviation psychologist, was entertaining and Bill Scull frightening with his slick "It can't happen to me" presentation emphasising that 1984 was the worst year for fatal accidents in British gliding.

Frederico Blätter, a member of the Swiss National team, came at short notice to talk about "Soaring the Alps" and included some beautiful slides in his instructive lecture.

At the AGM, Tom Zealley handed over as chairman to Ben Watson and was formally thanked for his splendid five years by Alan Yates and Basil Meads, BGA president, welcomed Ben.

Chris Nicholas is the new vice-chairman with Max Bishop, Bill Dean and Don Spottiswood joining the executive.

BGA diplomas were presented to Bill May and Alan Yates. Bill's award was for long service over 25 years to the Coventry GC as an instructor, tug pilot and club manager whose enthusiasm has been such an example to other members both on the flying and social side. Alan's diploma was for his long service with many gliding clubs, in particular the London GC, for chairing the BGA Technical Committee from 1981-1984 and for representing the gliding movement internationally on the board of OSTIV for ten years.

When you cross the border to Wales you expect some culture and music and the lively entertainment by a quartet from the Welsh National Opera Group after the dinner and before the dancing was an inspired touch.

The trophies were awarded on handicap as follows: **Seager** cup (longest distance in a two-seater): shared by Mike Throssell and ATC Cadet Peter Powell and Robin Miller and ATC Cadet Andrew Oultram for 405km triangles, Lasham, Bradford-on-Avon, Leicester, in a Janus C on August 11; **California in England** (longest distance by a female): Geralyn Macfadyen (Cotswold) for a 314km triangle, Aston Down, M1/M45 junction, Lasham in a K-6CR on August 11; **Furlong** trophy (for largest triangle) and the **Rex Pilcher** trophy (earliest pre-declared 500km of the year by a pilot completing this task for the first time): Paul Steiner (RAFGSA) for a 517km triangle, Talgarth, Basingstoke, Ashbourn Airfield in a Janus C on April 12; **Volk** cup (longest O/R): Mike Jefferyes (Essex) for a 507km O/R, North Weald to east of Leeds, in a DG-202 on May 12; **De Havilland** cup (maximum gain of height): Adrian Hatton (Yorkshire) for 27 800ft at Sutton Bank on August 31; **Manlo** cup (fastest 300km with one or two TPs) and the Firth Vickers trophy (second on the National Open Ladder), Robin May, (London), the 300km being flown from Dunstable to Stratford and Belvoir Castle in an ASW-20 at 102.2km/h on August 1; **Enigma** trophy (winner of the National Open Ladder): Tim Macfadyen (Cotswold); **L. du Garde Peach** trophy (winner of the National Club Ladder): Chris Starkey (Surrey & Hants) and the **Slingsby** trophy (second on the National Club Ladder): Steve Longland (Cambridge University).

To sum up, a successful conference in a good setting with a worthwhile exhibition which spilled over into the car park when John Ellis of DG Powered Sailplanes rigged a DG-400. The only disappointment is that the weekend still only attracts a handful of the under 25 year-olds, however star-studded the programme.

G. B-S.

THE NEW BGA CHAIRMAN



Tom Zealley, the retiring BGA chairman, on the left with Ben. Photo: B. H. Bryce-Smith.

Ben Watson started gliding in 1952 with the Cambridge University GC, then moved to the London GC and since 1959 has been a member of Lasham. He has All Three Diamonds, flying his 500km at Narromine the same day as Trish, his wife, both in LS-4s.

Trish gave up horses for gliding when she married and they share an enthusiasm for Comps. Ben first competed at Derby & Lancs in a Sky in 1961, crewed by Ann Welch. Since then he has entered at least one Comp a year including Enterprise but insists his only successes are winning the odd days, although he has won Mynd and Aboyne task weeks.

He has a Nimbus 2B and a third share in a Std Cirrus in New Zealand, though has also flown in Australia and on the Continent. The couple have a son and daughter who have flown and crewed but Ben says they are too busy with their social lives to take it up at present.

Ben, a retired businessman and chartered accountant, was managing director of Courage Breweries until their merger with the Imperial Group when he became Imps' development director, leaving in 1977 with a golden bowler. He then did five years as secretary-general of the British Ski Federation, leaving in 1982 to devote more time to gliding and travel.

Asked for his main aims during his time as chairman, Ben said "to fight controls and bureaucracy so that pilots have freedom to fly as they wish. The BGA is the servant of its members and should react to their needs.

"The BGA should be as efficient and effective as we can make it and that means all the voluntary workers on committees as well as the permanent staff. I favour the five-year rule whereby committee members retire at least for a year in order to let others have a go".

"Basically," Ben stressed, "our job is to try to create the environment under which gliding can flourish from its own grass roots."

HELP DERBY & LANCS CELEBRATE

The Derbyshire & Lancashire GC are celebrating their Golden Jubilee this year with an open weekend on July 13-14 to which members past and present, old friends and anyone who has enjoyed flying at the club during the last 50 years are invited. They will also be welcoming members from the Troyes GC in France and the Darmstadt GC in Germany with whom they are twinned.

As well as flying there will be a celebration dinner at the club on the Saturday evening (but book early) and a buffet lunch on Sun-

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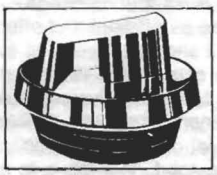
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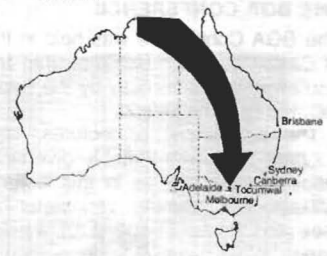
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day. Accommodation is already taken but there will be space for tents and caravans, there are good ablution facilities together with a clubroom, mess room and bar and meals will be available.

Their president, Basil Meads, his wife Queenie, and Dorothy Kaye are believed to be the only founder members though there are some near misses like Laurence Robertson and Bernard Thomas who are only one year short and still active members.

For further details telephone their resident stewards, Ray or Ann Hamshaw, on 0298 871 270 or write to the club, Camphill, Gt Hucklow, Derbyshire, marking your envelope "Golden Jubilee".

INTER-UNIVERSITY TASK WEEK

This year Edinburgh are the hosts at Portmoak from July 7 when it is hoped to give a taste of ridge and wave flying. The competition is open to those at UK universities, colleges and polytechnics. For further details, contact Greville Earle, 41A Broughton St, Edinburgh, tel 031 556 6689.

A NEW FLYING ASSOCIATION

The newly formed Lawyers' Flying Association has 67 members, 43 are PPL holders, 12 student pilots, there are a few glider pilots and one microlight owner.

The objectives are, first, to encourage all types of light aviation all over Britain among those working professionally in law, and secondly, to provide consultation and advice to the light aviation community which is not at present available from existing organisations.

The annual subscription is £25, reduced to £15 for articled clerks, bar pupils and student pilots. Law pilots and enthusiasts from every branch of sporting flying are welcome. Inquiries to Tim Scorer, 1 Finsbury Avenue, London EC2M 2PJ, tel 01-377 9191.

GLIDING CERTIFICATES

DIAMOND HEIGHT

No.	Name	Club	1984
3/693	J. Patchett	Bristol & Glos	13.10

GOLD C COMPLETE

No.	Name	Club	1984
1067	J. Patchett	Bristol & Glos	13.10
1068	S. M. Brownlow	Clevelands	2.2.85

GOLD C HEIGHT

Name	Club	1984
D. G. King	Four Counties	25.11
K. C. Henderson	Booker	22.10
S. J. Welsh	Wyvern	27.10
R. Kalin	Hambletons	23.2.85
P. W. Greenway	Herefordshire	2.2.85
J. Patchett	Bristol & Glos	13.10
R. E. Neal	Booker	23.10
J. Warren	Booker	27.10
S. M. Brownlow	Clevelands	2.2.85

SILVER BADGE

No.	Name	Club	1985
6890	A. T. Mellor	Four Counties	28.4.85
6891	A. P. Meredith	Ouse	18.3.85

STRUCTURE OF THE BGA

The membership structure of the BGA is now made up of 83 full member clubs, three of whom have affiliated clubs as follows: Army Gliding Association with two clubs, RAF Gliding and Soaring Association with 11 clubs and

BGA ACCIDENT SUMMARY

Compiled by KEITH MITCHELL, Chairman, BGA Safety Panel

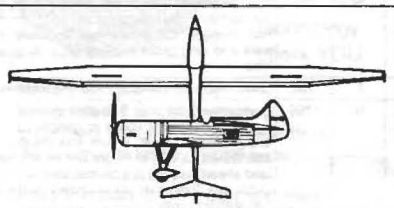
Ref. No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew Age	Injury	Pl/Hrs	
154	Siebert 3	2730	W/O	26.8.84 17.45	Little Tew	26	M	143	Pilot on final glide in competition, finding he had insufficient height to reach airfield, selected cut crop field for landing. Realised while on downwind leg that proposed landing run would in fact be downwind and attempted 360° turn to land in field over which he was flying. As turn was completed starboard wingtip touched the ground and aircraft cartwheeled, smashing cockpit and damaging both wings.
155	Pirat	1485	S	30.8.84 12.45	Bridge Farm, Forncett St Peter	22	M	44	Pilot on first cross-country selected a field with into wind approach over grid power cables. A steep approach was made with full airbrake and excess speed. To avoid running into downwind boundary a ground loop was attempted. Port wing struck tree in hedge and swung glider over ditch onto minor road beyond.
156	Pirat	1735	S	23.6.84 15.30	Ringmer	52	N	23.49	Pilot underestimated wind gradient on approach over trees. Insufficient speed resulted in lack of round out and very heavy landing breaking the fuselage behind the wing trailing edge.
157	DG-400		M	5.8.84 15.45	Ringmer	54	N	306	Pilot decided to land across the field in an area not normally used because the wind direction had changed. On ground run starboard wing went into long grass causing glider to ground loop.
158	Dart 17R	1314	W/O	1.9.84 12.30	Charing	40	F	135	Glider broke up in mid-air. AIB investigating.
159	DG-202	2869	M	16.7.84	Dunstable	37	N	1765	Competition pilot after final glide crossed finish line with insufficient speed to complete pull-up and a flexible circuit. A turn was initiated but abandoned for lack of height and an attempt to land ahead resulted in a bounce from which the glider was flown over the boundary hedge and into standing crop.
160	Torva Sprite Series 2	1701	S	19.8.84 15.08	RAF Wattisham	26	N	809	As glider entered a strong thermal in a climbing turn the airbrakes flew open and could not be closed. Aileron control was found to be jammed solid. An approach was made into a little used corner of the airfield, with use of rudder as ailerons and airbrakes remained jammed. During ground run a concealed depression caused undercarriage collapse. Examination showed that airbrake torque tube had travelled past the closed and locked position.
161	Kestrel 20		M	12.8.84 13.00	Lasham	50	N	625	Starboard aileron drive failed due to lack of maintenance (no other information on incident report).
162	Ventus		N	14.8.84 16.00	SW Down Ampney	28	N	400	Pilot saw power wires at his height on approach for field landing. Managed to dive between wires and hedge. Landed safely.
163	Capstan T-49A	1009	M	20.8.84 18.30	Husbands P1 Bosworth P2	54 18	N N	1509 —	The glider was rigged by two very experienced pilots and was taken to the launch point. During the ground run on the first flight of the day the glider bounced some 2ft into the air, hit the ground and bounced to about 20ft. Pilot released from tow but found he could not round out. Glider struck the ground in a nose down attitude. Subsequent examination showed elevator had not been connected. A formal DI had not been carried out.
164	Swallow	1339	M	31.8.84 11.00	Middleton	52	M	14	Approach was made in gusty conditions with a high airspeed and airbrakes closed. Pilot experienced difficulty due to gusts and an oscillation in pitch developed resulting in a heavy impact on the nose, damaging the nose and breaking the skid.
165	K-2B	2662	W/O	9.9.84 14.42	RAF P1 Upwood P2	41 21	N M	430 —	During winch launch power dropped when glider was at 10-15ft and cable back released. Pupil partly lowered nose but speed decayed and before instructor could take over the glider fell in a semi-stalled condition from about 20ft.
166	PIK 20D	2416	M?	30.8.84 14.50	Hempnall, Norfolk	45	N	765	During field landing into cut cornfield a normal approach and touchdown was made into wind and along the lines of straw. Port wing caught a line of straw and glider groundlooped, becoming partly airborne and rotating. Nose struck the ground before main wheel and tail. Rear fuselage was cracked and canopy broken.
167	K-8	2563	M	27.8.84	Carlton Bank	28	N	½	Early solo pilot started circuit too high. Realised it and despite doing a 360° on base leg he overshot the end of the runway.
168	K-6BR	2658	W/O	16.9.84	Ringmer	28	M	29	Starboard wing broke off during 3rd loop due to excessive g forces. Pilot parachuted to safety.
169	Astir CS	2185	N	13.9.84 16.27	Lasham	38	N	81	Starboard airbrake open in flight due to failure of geometric overcentre lock. Pilot opened other airbrake fully and landed safely in field straight ahead.
170	Super Falke SF-25E	G-FHAS	N	15.9.84	Lasham	39	N	71	Pilot landed by car headlights after an evening flight which was pushed beyond the limits of daylight.
171	K-13	2256	M	12.9.84 15.30	Saltby P1 P2	37 20	N N	380 20	The pupil had made a good approach, but in spite of prompts from instructor, did not round out. Instructor failed to take over in time to prevent the nose-skid striking the ground but from the bounce he completed a "normal" landing. Minor damage to front skid mounting.
172	Skylark 4	1162	S	19.9.84 12.00	SGU	29	M	34	Pilot made non-airbrake approach at 75kt in 25kt wind. Encountered turbulence and wind gradient and failed to round out. Hit ground and bounced into the air coming down again causing substantial damage to the glider and minor injury to himself.

the Royal Naval Gliding and Soaring Association with three clubs.

Operations. During the year ending September 30, 1984 (1983 figures in brackets), member clubs (civilian and combined services) flew a total of 145 526 (123 347) hours and 1180 943 (691 544) kilometres cross-country from 457 120 (402 488) launches from club sites. Club owner gliders total 435 (444) and privately owned gliders 1180 (1189).

Certificates. Certificates were issued as follows: A endorsements 1859 (1898), B endorsements 243 (251), Bronze C 446 (430), Silver C 296 (223), Gold C 76 (58), Diamond goal 100 (64), Diamond height 59 (58) and Diamond distance 26 (20).

A certificates were applied for by 1000 (1239) holders of the ATC proficiency certificate.



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B.G.A., C.A.A., P.F.A. APPROVALS

Ref. No.	Glider Type	BGA No.	Damage	Date Time	Place	Pilot/Crew Age	Pilot/Crew Injury	Pilot/Crew Pl/Hrs	Summary
173	K-13	1481	S	20.8.84	North Hill	59	N	1	Pilot on an early solo flight set up a good approach but appeared to let speed decay then over-reacted recovery, causing glider to strike ground heavily.
174	K-8	2778	M	6.9.84 11.20	Challock	40	N	2	After normal approach glider was allowed to balloon during the round out. A heavy landing resulted causing damage to the lower forward port side of the cockpit structure.
175	Libelle	1598	M	29.8.84 16.00	Challock	28	N	243	Pilot landed short of the main landing area. During the ground run glider ran through a shallow pot hole. Rim of wheel struck a large flint and was fractured.
176	Astir CS	2186	M	12.8.84 18.18	South Marston	25	N	95	After what the pilot describes as a normal touchdown the undercarriage collapsed causing damage to underside of fuselage.
177	K-8	2083	M	29.6.84 16.56	SGU	38	N	250	Pilot distracted by glider on finals ahead of him. Failed to monitor approach and hit perimeter fence while trying to pull up over it.
178	Blanik	2121	W/O	26.9.84 16.09	Manston P1 P2	36 64	S F	1013 0	Simulated cable break at about 250ft. The glider turned left, then left again. The second turn was slow and over-ruddered and the glider entered an incipient spin to the left. The instructor took over, regained flying speed and levelled the wings, but was too low to pull out of the dive. The glider struck the ground at an angle of about 45° at 45-50kt. The instructor remembers having difficulty in regaining control from the pupil.
179	Bocian		N	9.9.84	Dallachy	40	N	900	Cable break towards top of launch caused the parachute and a length of cable to drift crosswind onto high voltage cables.
180	K-7	2223	M	15.8.84	Winthorpe	28	N	20 Mins.	Early solo pilot on second solo flight of the day failed to make sufficient allowance for crosswind while on the approach. A late correction was attempted, during which speed decayed and glider stalled from approx 10ft to a heavy landing.
181	Jantar 1	2079	N	27.9.84 9.20	Essex GC	29	N	500	On aerotow pilot found he could not retract undercarriage. Operating undercarriage lever caused stick to move to the right. Undercarriage was retracted (after some difficulty) at high altitude. On examination on the ground it was found that the undercarriage control rod had been forcing the waterballast tube against the aileron control linkages.
182	Olympia 463	1201	S	10.6.84 15.40	Bignor Hill, Sussex	64	N	271	After soaring a sea breeze front for about ½hr pilot experienced strong sink. Because of poor visibility pilot did not fly directly back towards airfield and was forced to land in a crop field. Tailplane damaged.
1	K-6CR	?	S	10.10.84 17.50	Portmoak	39	M	45	Failed to round out on fast approach — 20kt wind and severe wind gradient. Bounced to height of about 25ft, hit the ground again after about 50yds, and bounced a further 25yds, scattering debris from the forward fuselage and with the pilot hanging down below the remains of the cockpit.
2	K-13	2739	S	21.10.84 12.32	North Hill	44	N	20 min	Early solo pilot failed to correct for crosswind drift and ran into parked vehicles on ground run.
3	Blanik	2067	M	21.10.84	Sandown		N	3¼	Glider veered to the left on landing run and struck tail fin of parked glider.
4	Blanik	1830	S	1.11.84 9.45	Talgarth P1 P2	38 58	N N	1502 810	With an experienced pilot as P2 flying on a site check an unsuccessful search had been made for wave. At 1700ft and 4 miles downwind P1 decided to return to airfield. At 500ft available fields were rejected in favour of a marginal glide for the airfield. At 250ft P1 took over and increased airspeed, but pulling up to clear boundary fence resulted in stalling to a heavy landing.
5	Bocian	2734	M	11.11.84 11.20	Dallachy P1 P2	40 48	N N	540 62	90° crosswind. P1 took over for satisfactory landing, but was unable to prevent slight into wind veer. Glider ran over rough grass to tarmac junction with damage to the undercarriage region.
6	Olympia 460	1201	N	1.9.84 12.00	Parham	50	N	720	Unusual stick load noticed during lift-off during winch launch. Power was stopped. Pilot was unable to get the nose down using stick. Glider then descended steeply (probably stalled) but pilot was able to regain control and land safely. Starboard tailplane had not been connected. Winch launch was stopped at 50ft when tailplane was seen to hinge upwards.
7	Specht	2586	M	28.10.84 15.30	Middleton a/f	39	N	—	Pilot on first solo completed satisfactory circuit and approach, but the roundout was late and touchdown on the skid caused the aircraft to balloon. A heavy landing followed.
8	K-13	1448	N	4.11.84 13.00	Kirton in Lindsey	39	N	250	Air experience flight. Aircraft was being taxied towards ground handler beside control van but was moving too quickly and wingtip struck van without damaging it.
9	K-13	1448	S	10.11.84 16.15	Kirton in Lindsey P1 P2	39 31	N N	250 5	Hangar flight. After satisfactory landing by pupil, P1 took over and attempted to taxi through various obstructions to get closer to the hangar. Hit car with port wing, damaging D box and trailing edge.
10	Blanik		M	24.11.84 16.20	Lasham P1 P2	43	N N	1000 0	Instructor was demonstrating the landing and attempting to land close to the hangar. Failed to select a clear landing area and collided with a parked motor glider. Both aircraft were damaged. Action to avoid a collision was taken too late.

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

Testing an Auto-Release Aerotow Hook

BRIAN SPRECKLEY, manager of Booker, reports on testing Dick Green's tug aerotow release hook. It was first tried out some years ago but this time Chris Rollings was the pilot in all but seven of the flights which were shared between John Ellis and Dave Watt. Brian flew the Super Cub 180 tug with full tanks.

The first series of tests used a K-13 and a 140ft rope with the auto-release hook previously fitted to another Super Cub which on static test (no significant load) released at 15°, Attached at the nose hook, it was possible to climb slowly behind the tug until the auto-release hook released the cable at an angle of approximately 30°. The same exercise was repeated with a shorter rope with much the same result.

We then tried a slow climb out of position using the belly hook with much the same results, followed by a more rapid climb using the belly hook resulting in the hook releasing on about 40% of the attempts and the rope breaking on all the others. The tug pitched slightly nose down prior to either release or rope break.

We graduated to a more rapid climb behind the tug and in every case the rope broke at the glider weak link. On some occasions, the tug pitched slightly nose down prior to the rope breaking — the angle between the glider and tug did not exceed 20% on these tests. We then repeated these exercises with a hook that released on the ground at 12°, but there was no apparent difference on test to the 15° hook.

We then started using a K-8 and repeated the exercise sequence tried on the K-13 with the same results until we tried the rapid upward displacement. Using a K-8 on the C of G hook, a climb was initiated at about the same rate as the beginning of an autotow. The results were:

The climb was almost impossible to stop once started; full forward stick only reduced the rate at which it increased.

There was a significant increase in speed in the K-8 during the climb reaching 70 to 80kt.

The tug pitched nose down very rapidly and the engine stopped due to fuel starvation as a result of the negative *g*.

There was a rapid deceleration in the tug with it ending up pointing vertically down at an indicated speed of 40kt.

Once the tug had pitched nose down the pilot was unable to release.

As the speed in the K-8 was reaching 80kt and the pilot had the distinct sensation of being pulled down, he went to release but the weak link broke just before he pulled the release.

The tug took 200ft to regain proper control with the bottom of the dive being 400 to 500ft below the height at which the exercise started.

Conclusions

On every occasion that a very rapid ascent was attempted the rope broke at the 1000lb weak link. This must reinforce the need to use weak links whatever type of rope is used, (we use 1in diameter polypropylene with Mitty weak links).

The deceleration effect created by the glider's extra lift is as significant a factor as the angle the glider may attain in disrupting the tug's flight.

The American Schweitzer hook does not release under severe load even with a 190lb adult pulling as hard as he can. This may be mainly due to the angle of the pull but nevertheless a modification* to reduce the release loads is urgently required.

Any auto-release that uses angle of pull only would not work in an emergency as it requires a load input to detect the true emergency.

Towing K-8 style gliders on belly hooks is not to be recommended.

The saga continues with a new hook being designed by Dick Green which we hope to start before the end of April.

*A BGA mod is available. See the BGA Technical Newsheet 3/4/85.

THE WREN STORY

(Continued from p.127)

Then in 1929 his new biplane was towed across the airfield at Hawkinge to be followed a year later by his primary glider. He started building the Crested Wren at the end of 1930, it was test flown the following July and soared for over an hour that November on the hills above Folkestone.

The Wren was sold in 1932 for about £70 with the Willow Wren being test flown that December, sporting internal cables in a deeper fuselage. In March 1934, in company with a Professor and a Kassel, the Crested Wren set out on the first cross-country flight in England, having already set an endurance record of 7hrs in 1933. A dozen sets of plans were sold and seven were built, one in Australia.

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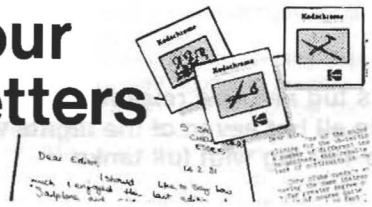
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Your Letters



ANOTHER LOOK AT GC ECONOMICS

Dear Editor,

As a former club treasurer I was intrigued by the method of calculating the value to a club of each glider flying there as explained by Gordon Peters in "Economics of a Gliding Club" in the last issue, p69, obviously the result of many hours with a calculator.

I am also a firm believer in the idea that statistics can prove anything, so may I use the figures given to show the other side of the coin?

It is, of course, the individual members who pay the bills rather than the gliders themselves, so if the figures given for income and for profit for each glider are divided by the number of members deemed to be flying it, then the cash spent by the average member and his contribution to the club's profits can be calculated.

This alone rather changes the picture. However, although the income from each launch has been apportioned to a glider, it would appear that the cost of giving the launch has not. If we assume an (arbitrary) cost to the club of £1.00 for each £1.50 launch taken, the difference is even more marked.

Glider	No. of pilots	Income/ pilot £	Gross profit/pilot £	Net profit/pilot £
K-13 (2)	73	178	101	32
K-8	12	203	103	28
K-6	24	121	76	55
Astir	6	264	118 (loss)	162 (loss)
Private	2.7	123	123	93

So it seems that at North Hill at least, the average private owner makes the club a lot more profit than anyone else, because although he doesn't pay a great deal (to the club, anyway!) he doesn't cost it much either. That it may well cost him a good deal to have his own glider does not affect the club, and is after all his own choice.

As for club single-seaters, the key to profitability is utilisation. Unfortunately, this inevitably means that there will be queues sometimes — there is just no way round that.

If a club chooses to run more single-seaters at the expense of profitability, or to charge less to fly them, perhaps to encourage younger pilots, so be it.

But that is more a matter of philosophy than of economics.

ALAN SANDS, **Banbridge, Co. Down.**

HOW ABOUT GLIDING IN THE OLYMPICS?

Dear Editor,

I understand that in 1938 the International Olympic Committee decided to recognise gliding as an Olympic sport — a decision which led to Hans Jacob's Meise being selected as the Olympic sailplane for the 1940 games and Elliot's of Newbury calling their post-war copy of the Meise the Olympia.

Can anyone therefore explain why gliding didn't become an Olympic sport once it was back on its feet again? Surely if gliding were to be in the Olympics we would get much more publicity than we do with our relatively private World Championships, especially if Britain won medals. Think how many more of the British public would have noticed had George Lee picked up three consecutive gold medals at the Olympics. As the Olympics are every four years we could hold the World Champs as usual in between.

I'll no doubt be shot down on my other little idea but no other serious sport competes with different types of machine. In sailing, for example, most boats race against their own kind with the handicap fleet generally consisting of the few oddballs who insist on being different and don't really take racing seriously.

If instead of having a mixed bag of gliders falling into one of the three Classes we were to have one glider per Class, then the winning order would be **totally** unconnected with the type of machine the pilot can afford.

Such an idea isn't new. As I have pointed out, the Meise was chosen after a design competition to be the **one** type to fly in the Olympics. Unfortunately this idea if implemented would raise howls of protest from the unlucky manufacturers of the wrong types and even louder howls from the pilots owning the wrong types.

ROB CRONK, **Reading, Berks.**

THAT AIRWAY

Dear Editor,

The airline for whom I fly operates several flights a day between Aberdeen and Edinburgh. The airways routeing is excessively lengthy. So my company has taken the sensible step of making our standard routeing a straight line. Several other airlines do the same. We operate with radar cover from Aberdeen, Leuchars and Edinburgh and stay well to the east of Portmoak and Aboyne. Everybody is happy.

Then I put on my gliding hat. If as a professional, I ignore the useless airway, how do I explain to my fellow glider pilots that they must pay it the appropriate respect?

JACK HARRISON, **Banchory, Kincardineshire.**

TOW ROPES TOO SHORT FOR SAFETY

Dear Editor,

Following recent accidents there have been investigations and advice by the BGA about aerotowing in the December issue, p259, and the February issue, p10.

Years ago, the Leicestershire GC at Rearsby sent about 20 people on their first aerotows. The pilots had about three hours solo and 50 winch launches. The "tow rope" was a length of winch cable, the glider a home-built Grunau with a non Ottfur belly hook. The people had no dual — we had no two-seaters. The tug, a Tiger, was flown by that great enthusiast, Jack Rice. None of these people experienced any difficulty on the first or subsequent tows.

I believe, but have no proof, that the tow rope was about twice the present normal length. The tugs in those days having completed the launch made a low pass, dropped the rope, went round again and landed. The procedure, although inconvenient, seems to have been safe and I cannot recall any accidents. The most difficult on tow was the home-built Dickson Primary with a nose hook!

I know this is history but are we now flying on ropes which are too short for safety. It seems axiomatic that the longer the tow rope (within reason) the less disturbance the glider will create at the tug end. The fatality rate seems to have increased as the rope has become shorter.

It is generally accepted that these accidents happen extremely rapidly. Could it be that by flying lower and closer to the slipstream, as now recommended, we are eliminating a further safety margin? A combination of gusts, slipstream and increased angle of attack could put the glider into the critical unstable position.

Should not the low tow position also be evaluated?

DENNIS DAWSON, **Goring-on-Thames, Berks.**

Bill Scull, BGA director of operations, replies: In days of yore many people did their first solo aerotows without dual instruction. The combined factors of low performance tugs, long ropes and a cautious approach to the task did not, evidently, give rise to any problems. However the process of evolution has brought about a number of changes. It is no longer considered economic or even good practice for the tug to drop the tow rope and to avoid problems with boundary fences a shorter rope is common. The risk to the tug pilot is relatively low — in the order of one fatal accident/200 000 aerotows at a conservative estimate — which compares with one fatality/100 000 launches in gliding.

As to flying lower and closer to the slipstream, I cannot see how this contributes to the critical circumstances. So far as evaluating low tow I feel this might create a lack of standardisation since not everyone would agree to it and, unless it were low tow from take-off, would not eliminate the risk in the critical phase.

WE'RE STILL KILLING TUG PILOTS

Dear Editor,

Reading Bill Scull's article on aerotowing accidents I had the feeling that we had been here before, and sure enough, turning back to the August 1978 issue, p162, there was a similar article by the very same author, yet we still go on killing our tug pilots with tragic regularity.

Turning the pages to the chief technical officer's item on nose hooks (p26), I was astonished by his comment — "the probability that the installation of nose hooks **may well** become a prerequisite **in the future** . . ." How many more tug pilots need to die before mandatory action is taken or before the CAA, alarmed by the carnage, decides to ban aerotowing of gliders?

May I also ask all of you out there who own gliders without nose hooks, would you really rather risk a tug pilot than go to the bother of fitting one?
BILL EVANS, **Minehead, Somerset.**

WEIGHING IS OFTEN SLIPSHOD

Dear Editor,

After reading Bill Dean's letter in the last issue, p84, about his K-18, I strongly recommend that the commendable action by Derek Piggott of putting up its Min cockpit load for aerotow is extended to wire launching also. The handling on the wire launch which he describes is literally out of control, and the only explanation for it that I can find is that with light pilots it is balanced aft of its CG limit. There is no way that the stick should be forward of a normal flight position during the full climb.

It is true that while accelerating after take-off there is less surplus nose down control to resist the cable pulling the nose up into the climb at aft CG than at forward CG, and of course it is not uncommon to have the stick on the stop initially to keep the rotation under control, but in the climb it is different. Assuming a 40° climb with the cable 20° below the horizontal, the wing lift is 2 times and the cable tension is 1.4 times the weight. The 2*g*'s worth of lift at say 50 to 55 kt needs the same angle of attack as 1*g* level flight at 36 to 39kt, so the stick will be at the corresponding position plus any correction for the cable pitching the nose up or down.

Schleicher's policy, stated 20 years ago, was to place the hook 60° down from the CG so that the cable force passed close to it in the climb so that little stick compensation was needed. With the CG further aft the cable pulls the nose *down* and the stick needs to be pulled *back*. I don't know exactly where the K-18 hook is but assuming it is in the normal place, then the only way the stick can be on the front stop in this climb is if the glider is unstable.

Our experience in recent years leads us to the conclusion that weighing in this country is often slipshod. The worst we found were a private Swallow, flown 2in behind the aft limit, and a Cirrus with Min pilot weight 20lbs too low. Both were flown to the placards they were bought with and both had poor or unpleasant handling. I calculate that were I to weigh my glider by improper and careless but plausible methods I could reduce its placard Min by 50lbs but put the CG 2.4in aft of the limit. Since the whole approved CG range is 4.1in it would be definitely unstable.

If many gliders do behave this way, their owners should at once have them weighed very accurately, but whatever the reason for it such handling is wrong and wholly unacceptable. Get those Min weights up!
JOHN GIBSON, **Lytham St Annes, Lancs.**

THE PROBLEM WITH MATZ

Dear Editor,

Chris Terry in his article in the February issue, p21, is right to draw our attention to the risks for us and his colleagues when we soar the extended centre line of the runway in use on the periphery of a MATZ. Though the preample to the article suggests he has a foot in both camps, it is apparent that he does not understand the underlying problem. It is that MATZs were designed with safety as an objective, but in practice they compromise safety.

They are at the smallest 5nm radius and 3000ft high. Cloudbases being what they are in the UK, most glider pilots elect to go around rather than being seen near the airfield. This occurs at the planning stage and also when the unexpected turns up. The direct and inevitable result is that glider traffic is concentrated on the periphery, just where the collision risk is highest.

Added to this, is the other high speed traffic also hugging the periphery. An accident here will be no less expensive.

A real easement to this problem would be to maintain MATZs in their present form but encourage overflying, not lower than 2000ft, providing it was roughly square to the runway in use.

After all the safest place in the air, even at Heathrow, would be overhead the terminal building at 2000ft.
V. C. CARR, **Wrexham, Clwyd.**

MARY CORRECTED

Dear Editor,

The article by Mary Meagher in the December issue, p267 confirms my long-held thought that colonials have never been in possession of a sense of history.

Bletchley is not "one of those vast sprawling new towns", we've had a railway station since 1834 — the adjacent mess of Milton Keynes only got a railway station in 1981.
Disgusted of Bletchley (alias DAVID SMITH).

USE AND CARE OF PARACHUTES

Dear Editor,

I was interested in Karen Fitzgerald's experiences in the use of parachutes in other gliding clubs (April issue p85) which is quite the opposite in my club, Yorkshire GC, so much so that I can honestly say we must be a forerunner in the appreciation and use of parachutes. As a qualified packer I'm responsible for seeing that all club 'chutes are in an airworthy condition and each (we have ten) are inspected and repacked at least three times a year.

In the last nine years all our 'chutes have been replaced by steerable canopies. I have also lectured on the care and use of parachutes and YGC pilots have become so 'chute orientated that when a DI shows the "red tag" broken (which could mean the ripcord has moved) the 'chute is withdrawn from service.

Karen's other statement that the canopy won't open if damp, isn't altogether correct. From my personal experience in HM Forces Airborne, a military PX parachute was deliberately submerged in water for 24 hours and then tested satisfactorily. I also did some training with the Army Red Devils and the standard method of drying a washed canopy was to pack it and jump it. Both these examples were under controlled conditions by experienced personnel and a glider 'chute must definitely not be treated this way.

The enemy of the parachute is the environment. It should be neither damp nor too dry and never be left in the sunlight, *ie* on a wingtip. Dampness creates mildew which will attack the material of the 'chute and stitching. Excessive dryness creates a build up of a static charge which on deployment causes burning. Sunlight, ultra violet, very quickly diminishes the strength of a 'chute by a dramatic amount. So in an emergency situation, with the 'chute which has been incorrectly stored, the choice is (1) mildew has rotted the material — so on opening the canopy falls to pieces, or (2) a static discharge has burnt the canopy in half, or (3) the canopy is so weakened by ultra violet light that the opening shock bursts the canopy like a paper bag. Either way a fatality is the result. Stored properly the 'chute should be in a cool room having no direct sunlight and a humidity of about 50-55°, certainly **not** in an airing cupboard.

Finally, I can certainly agree with Karen's penultimate paragraph; on occasions there have been 'chutes I have seen for the first time which did not work for various reasons. Apart from protecting the 'chute from its enemies it is also imperative that the repacking is carried out to the manufacturer's laid down specifications. Visiting pilots often take advantage of the repacking facilities available to YGC members.
LES NICHOLSON, **Billingham, Cleveland.**

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Cranwell GC have claimed four RAFGSA awards. Our photograph shows, from left to right, Sqd Ldr Roger Smith, Officer in Charge of gliding; Sqd Ldr George Foster, who won the trophy for the most meritorious flight, a 508km triangle; Iain Barrow, who at 24 gained the award for being the youngest RAFGSA assistant instructor; Cpl Mick Lee, the winner of the trophy for the fastest 100km triangle and Grp Capt Mike Smith, chairman.

CLUB NEWS

Copy and photographs for the August-September 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 June 6 and for the October-November issue not later than August 6.

April 6, 1985 GILLIAN BRYCE-SMITH

ANGUS (Arbroath)

Our Bocian is having an extensive renovation and being given a new high visibility colour scheme. The Vega syndicate's old trailer is being converted to fit our club SF-34 ready for cross-country flights.

Our private owner fleet is again expanding with a Pirat syndicate formed by Mike Davidson, Malcolm McKinnon and Bob Kenneth.

Congratulations to Doug Rodgers and his 17 year-old daughter Karen who both went solo on the same day. (Karen also passed her driving test that week.)

The first cross-country this year was flown from Condor to Aboyne by Tom Docherty in his new Nimbus 3 and he retrieved the "tea pot" trophy which plies between the Angus and Deeside clubs.

The annual dinner-dance at the end of March was a tremendous success with the awards going to Ron Davidson, Ron Smith and Mike Davidson. Mike also won first prize in our club ladder competition.

B.J.M.

BATH & WILTS (Keevil Airfield)

After many years as CFI Ron Lynch has handed over to Stuart North. Our thanks to Ron for his hard work and dedication.

The new Auster tug has returned sporting RAF colours. Our K-6E has also rejoined the fleet giving us three single-seaters.

Alas, flying charges have increased and it now costs £7.00 for a 2000ft tow.

Visitors are most welcome — bring your own glider! We fly every weekend and Bank Holiday and are holding an *ab-initio* course from July 29-August 2.

P.D.

BICESTER (RAFGSA Centre)

The start of the season has seen Bronze legs by Kev Wild and Steve Whitworth, and a rush of first solos. Well done to Mike Partridge, Gary Binnie, Shane Bull, Andy Watson, Phil Woodruff, Russ Leaper, Tim Freegarde, and our favourite, Becky Bush. The influx of *ab-initios* is a reassuring sign after declining figures over the last couple of years. Partly responsible for this is our new "package deal" of a flat £45 payment which covers *all* training up to solo standard.

Congratulations also to Lyn Norman, our first female to fly the G109 on her own, and well done to Terry Pitts and Des Gilmore who have become instructors. Des has been posted in to look after the MT. We say goodbye to Stu Simpson, and thank him for all his work, and hello to Bob Spiller who replaces him.

Pete Abbey is still keeping busy. Not content with building his own biplane, he is now restoring to flying condition a written-off Libelle.

S.&J.

BOOKER (Wycombe Air Park)

A more or less scientific poll has revealed the immense popularity of the Booker GC news, hence our reappearance following a regrettable absence. The latest additions to the fleet are an ASW-20 and a Prefect for those who prefer more relaxed flying.

Work is proceeding apace on the one-time badminton hangar, shortly to become a tug/glider workshop and mega office block.

P.R.

BRISTOL & GLOUCESTERSHIRE (Nympsfield)

We started 1985 well with a full day's ridge soaring on New Year's day, but since then there have been only three exceptional days, all in March. Congratulations to Martin Walker on getting a Bronze leg on his first solo.

The orange K-13 has been re-covered and given an overhaul but we still haven't been able to buy a third K-13. If anyone has one for sale, please let us know. The new Grob trailer has been fitted out and the clubhouse extension/bunkroom is virtually finished with other bedrooms being decorated.

Our thanks to Bernard Smyth, retiring secretary, for all his work. Phil Andrews has taken over with Dave Jefferson in charge of the bar management.

A few members have made forays to Talgarth this year and trips are planned to Sutton Bank and Portmoak over Easter. Mike Woollard and Pete Mallison are about to go on instructors' courses.

L.C.B.

BURN (Burn Airfield, Nr Selby)

The first official function in our new clubhouse, which like the hangar is virtually finished, was a disco at which solo certificates were presented to all the Burn trained pilots. We are now focusing attention on runway repairs.

Our winching operation appears to have settled on cable laying as giving the best compromise between launch rate and knot/wire wear. We are trying to optimise the use of four cables from two winches to exceed 100 launches on an average day which, due to planning regulations, is limited to nine hours. This, together with aerotows from our two tugs, should meet peak demands.

The private fleet is being increased by a K-6CR, SHK and a PIK 20E.

V.F.F.

CAMBRIDGE UNIVERSITY (Cambridge and Duxford)

Wave soaring occurred at Duxford on February 2 due to a strong W to NW wind carrying lee waves from the Welsh mountains. Steve Longland managed to soar from 4000ft to 7000ft in 1kt lift.

A very successful Golden Jubilee dinner was held in Caius College on March 16 with many former members enjoying meeting old friends again. Trophies were awarded to Steve Longland, Peter O'Donald, Sigfrid Neumann and Mike Foreman. (Incidentally, Steve received four trophies!).

Those weddings. *We regret we just haven't space to mention all the weddings and births reported in the club news contributions. The exceptions are when there is a strong gliding link such as a honeymoon at the Regionals or a reception at the club, see this issue.*

The first 100km triangle from Duxford in 1985 was flown by Peter Baker on March 17 in excellent conditions with up to 4kt lift to a 4100ft cloudbase. During the afternoon our first Silver C visitor arrived from Crowland.

Congratulations to Peter Whitmore and Robert Bryce-Smith on successfully completing an instructors' course at Lasham.

The club fleet has now moved into glass with the addition of an Astir CS.

G.K.F.

CLEVELANDS (RAF Dishforth)

The closure and civilianisation of local RAF bases has hit our membership figures, so we are keen to play host to visiting Service clubs. There has already been some response.

The only non achievement this year was a Diamond distance attempt of 414km in February, using nothing better than 2kt wave lift. Yes, it was YT again. Why doesn't somebody else do something?

P.W.

COVENTRY (Husbands Bosworth)

Our manager, Bill May, who was awarded a BGA diploma (see BGA news), is retiring this summer after 14 years assisted by his wife, Elsie, who retired recently. Our thanks to them for a job well done and we hope to see them around for many years to come. We would like to welcome our new manager and his wife, Harry and Cynthia Middleton, who have been popular club members for a long time, Harry being chairman for three years.



Bill and Elsie in the Capstan.

The season started well with a dinner-dance and a couple of unexpectedly good gliding days. Alan Kangurs claimed the first 100km of the season.

A group, organised by Derek Abbey, took a Bocian to Camphill in search of wave but while good conditions were reported there were no spectacular achievements.

N.B.



A Swallow on "all out" at Dartmoor GC with Bob Peake at the controls. Photo: Geoff Thain.

CRANWELL (RAFGSA)

Mick Lee (K-6) flew a cross-country in thermals in February and in the same month we reached wave from a winch launch when Norman Quirke, Meryl Jenkinson and "Ski" Ustinovski flew to around 4000ft.

Bob Glennie and Tony Benstead have gone solo, Tony converting to the K-8 as well as Andy Radley to the motor glider and K-8 and Pauline Hewitt to the Weihe.

Gary Moxham had a successful instructors' course at Bicester and we have another Falke instructor now that Mick Lee has his restricted instructor rating on motor gliders.

We enjoyed seeing Dick Cole back at Cranwell again for a few weeks and thank him for his help instructing and towing. We welcome Mick Simmonds from Fulmar GC and are looking forward to him being joined by Carol, another full Cat instructor.

Our Twin Astir has been sold and we are soon to have a new Janus C.

J.L.

CULDROSE (RN & RMGSA)



Terina Wood's 16th birthday was on Boxing Day but that didn't stop her enlisting enough members for her to go solo.

DARTMOOR (Brentor)

As well as maintaining the winch and aircraft, other projects have been undertaken. Thanks to the generosity of our landlord and president, Brian Bickell, our runway has been extended to approximately 1400m and the additional anticipated launch height will be of great value as being within the Dartmoor National Park we are limited to winch launching.

We are seeking planning permission to put in a cross-runway as during last year, our first season, the crosswind often limited flying, particularly as we are almost exclusively *ab-initio*.

We have bought a K-7 to replace our T-31 which is now being converted into a motor

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glider by its new owner. At the AGM in February, Colin Sanders, chairman, John Bolt, treasurer and Keith Fletcher, secretary, were re-elected. At the end of last season we had 50 members which we hope to double this year.

Congratulations to our chairman who re-soloed after a number of years' absence and our thanks to the instructors last season, particularly Ivor Philips who has recovered from an illness this winter.

Visitors from other clubs are more than welcome.

N.P.

DEESIDE (Aboyne)

The AGM was told of a most satisfactory increase in launches and hours, and a sound financial position. The second runway was finally given the go-ahead after some heated opposition. There was concern about the complications of operating different runways for take-off and landing. Indeed, operations will have to be more tightly controlled. For example, normally landing will be on the new grass strip. Meanwhile, the tug and glider can be ready on the tarmac for take-off as soon as the landing aircraft is safely down. A much quicker launch rate should be possible.

Several new syndicates have been formed, easing the demand for the club Vega. Spring wave has been disappointing, although on one March day, a senior pilot from "the other place" arrived overhead in his new Nimbus 3. While he sank unintentionally to earth at Aboyne, local pilots in their aged 15 metre ships crept away into the wave and then on to Aviemore and return.

K.A.H.

DERBYSHIRE & LANCASHIRE (Camphill)

February and March, like early winter, gave us few west wind days and only mediocre wave; however there were plenty of training days and Robin Pike and Frank Odell went solo.

About half the members have bought identical royal blue flying suits with their names embroidered on the front, so there appears to be a new breed of penguins flocking on the airfield.

An expedition was again made to Aboyne at Easter and as last year there were several notable wave climbs with Gold heights and a possible Diamond being claimed.

J.R.H.

DEVON & SOMERSET (North Hill)

A good group of volunteers ensured we were ready for the season with our particular thanks to Dave Reilly for C of A work and repairs, especially for a splendid re-cover and respray for the K-6, and to Eddie Bromwell for organising the new workshop doors.

To keep abreast of our increase in launches, soaring and book-keeping, Terry Jenvey has been doing much night-flying to computerise the accounts.

I.D.K.

ENSTONE EAGLES (Enstone Airfield)

With the soaring season upon us, Cs of A on our club fleet are being rapidly completed.

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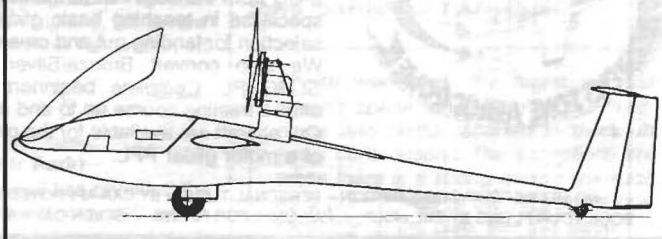
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Our thanks again to Tony Cox, resident inspector, for all his hard work. The clubhouse now sports a new bar with room for an expanded range of refreshments.

With one exception, all the solo gliders have appeared this spring with either a new coat of paint or a layer of polish, a trend perhaps started by Peter Wells with his shiny rebuilt PIK 20B.

G.D.

ESSEX (North Weald)

Our courses, which started on April 1, are well booked and we are fortunate to have John Mitchell back with us. Anyone interested in a course should contact Gary Giles, tel 0245 87446.

John Williamson, national coach, is bringing the Falke at the end of April for cross-country and field landing checks. Alan Vincent has arranged a series of lectures for aspiring cross-country pilots. Our "spare" K-13 has returned from its winter flying at Duxford. Congratulations to Chris Nicholas for his appointment as BGA vice-chairman.

P.W.B.

ESSEX & SUFFOLK (Whatfield)

Congratulations to new solo pilot Peter Codd and to Mervyn Gooch for gaining his Bronze C.

New officers elected at the AGM were Steve Hornung, treasurer, and Paul Robinson, membership secretary. It was noted that there was a decrease in soaring but an increase in flying, an increase in insurance and tug overhauls, a doubling of ground rent but some optimism of site tenure after September 1988 and membership had topped 100.

Eric Richards, president, presented the following trophies: Instructors' cup, Claire Thornton; 100km triangle trophy, Peter Wilby; Members' cup, Liz Gilbert; Jeff Cork trophy, Tristram Llewellyn-Jones; Ladder trophy, Colin Smith with a special commemoration to Peter and Sylvie Wilby for their seven years as Mr and Mrs CFI.

R.C.A.

FENLAND (RAF Marham)

We made a fine start to the season with the committee deciding we could manage without soaring charges.

Chris Joblin and Dave (Woodstock) Gordon are now instructors and we have said goodbye to Dick and Julie Hunt, "Porki" Conyers, Pete Burns and Simon Ludlow.

Our aircraft member is working overtime on the fleet and our vintage section will be airborne this year, the Prefect having been re-covered and the Weihe's restoration under Tony Steel well advanced.

We have bought a new Wild winch and our third bus winch is progressing courtesy of station workshops and MT flight RAF Coltishall.

Major changes and improvements to our accommodation have been forced on us to meet fire regulations but the station is being extremely helpful and it will mean better facilities, which is just as well as we have joined the Eastern League and will be hosting a meeting.

After last year's successful *ab-initio* course at RAF Swanton Morley, we are planning at least two more this year and will be housing equipment there during summer for mid-week flying.

We have a club reunion this year, possibly in September, but more details later.

K.R.J.R.

FULMAR (RAF Kinloss)

Winter had Kinloss in its grasp almost up to Easter and the wave and thermal activity has been disappointing.

Fiona Gillespie has gone solo and John Laurie re-soloed before departing for Goose Bay. John Daly rounded off his training at Fulmar and went solo at Bicester.

W.G.

HAMBLETONS (RAF Dishforth)

We enjoyed our first thermals in mid-February, a day which coincided with Brian Anderson's first solo. Since then the wave has put in an appearance, with Richard Kalin gaining Gold height and his duration on consecutive days.

At the AGM we were pleased to hear that differences with our sister club Clevelands had been resolved. Awards went to Gillian Kendrew (best *ab-initio*) and Harry Birch (best cross-country), also to the writer to mark her 1000hrs.

Finally, congratulations to Mandy (née Edis) and Colin Walker on their wedding, celebrated in suitable style with a mutual in the Falke followed by a reception in the bar.

J.P.

Please note that the next deadline is August 6.

KENT (Challock)

The first day of spring produced a ridge wind and strong thermals causing the appearance of many members and aircraft from winter hibernation — a promising start after a long wet winter.

Our pundits have booked their competitions and many expeditions to other sites are planned. New gliders on site include a Vega, LS-3, Skylark 2 and an Olympia.

At our AGM in March Philip Holliday was elected onto the committee and Mike Kemp and Geoff Avis were re-elected for another two years.

J.B.

LAKES (Walney Airfield)



This photograph of Percy, with his guide dog Josh looking on, is reproduced by permission of the North-Western Evening Mail.

Blind Percy Moorby fulfilled an ambition when he flew for the first time with instructor Jack Paley. Percy was sponsored for the flight to raise money for the Guide Dogs for the Blind.

Our crop of new official observers are eagerly awaiting their first customers and have been seen pacing about the launch point, clutching batches of green forms.

E.K.

LONDON (Dunstable)

We welcome Graham Stone as tug pilot, and Peter and Mary Johnson — Peter is our third resident full-time instructor.

Among the prizes awarded at the annual dinner that for best *ab-initio* was particularly well deserved as Kate Topham persevered through dreadul winter weather.

Our re-equipping has continued with a Robin as our number one tug and although it has had some teething troubles, we expect its good climb performance will help increase the launch rate.

An encouraging trend is our increasing involvement in BGA courses. John Williamson and Ken Stuart used the BGA's Super Falke for a field landing course and we are to host the BGA soaring and instructors' course.

Our season began on March 5 when Trevor Stuart flew a 100km triangle which he has followed up with various other cross-countries.

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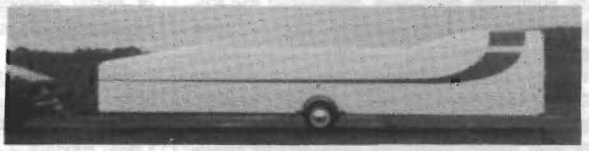
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We have been changing our single-seater fleet from K-18s to K-23s and have five of the latter with several of the K-18s still for sale. The first person in the country to do a first solo in a K-23 was Sarah Cross, to whom double congratulations.

D.S.

MENDIP (Weston-Super-Mare)

Many members, past and present, attended our 10th anniversary dinner in March and we were pleased to welcome Naomi Christy and John Williamson. Ray Snelling, aircraft member, was presented with an oil painting of his beloved Oly and Barry Hogarth, CFI, with a fish tank!

We have an expedition to Sutton Bank in April.

H.P.

MIDLAND (Long Mynd)



Jack in his familiar seat.

Jack Minshall, our senior professional instructor, retired in January after 27 years of service to the club. After 85 000 launches and 15 000hrs, Jack has earned a well deserved rest. A party was held in his honour in the clubhouse and we wish him and Ruth a long and happy retirement and hope to see him around the club. Ron Hawkes has taken over as senior course instructor.

The effects of the cold weather have been greatly reduced this year as our newly insulated bunkhouse now has central heating. Members have taken advantage of this to enjoy some winter soaring with a number of westerlies and wave flights, the first cross-country of 1985 being flown on February 2.

Congratulations to Kevin Parkes, Paul Garnham, Harry Lowe and Simon Adlard on going solo and to Neil Backes and Alistair Lewis on their Silver heights and durations.

Our task week will be from August 17-26 and anyone interested should contact the club as soon as possible for further details.

N.B.

NORTHUMBRIA (Currock Hill)

Our thanks to Yvonne and Bill Scull, who drove in terrible weather to be with us for our prizegiving which was coupled with a very successful dinner-dance.

We have lost three instructors — Graham McAndrew has an instructors' job at Booker, and we wish him every success, and Jack Little and John Westwood have given up for health reasons though remain club members.

We have had some excellent winter wave days with John Pegman gaining his Silver height.

S.H.

PEGASUS (RAF Gütersloh)

The winter was cold but we did quite a lot of flying. "Jackie" Barley converted to the Astir and congratulations also to Chris Hill and Paul "Arfur" English who went solo.

We hosted the GGA AGM at which we were presented with the NATO challenge cup for the increase in flying over the year.

The K-7 is back in line after a major service and we took delivery of the K-4 from Benbecula.

R.D.G.H.

RATTLESDEN (Rattlesden Airfield)

We have had a spattering of soaring flights this spring. Plans for our new winch are well under way with the purchase of a double decker bus.

The annual dinner-dance in March was its usual success thanks to Andrea Arnold. Guests included John Williamson, who gave an amusing speech, and Bryce and Gillian Bryce-Smith.

Trophies were awarded to: Humfrey Chamberlain (most kilometres flown); Andy Day (Chairman's cup for the most progress); Roger Davis (Numb Bum cup for his Gold distance and Diamond goal) and Bob White (President's cup for service to the club). Ernie Cunningham, a much respected friend from Essex & Suffolk GC, presented us with a superb trophy, henceforth called the Cunningham speed trophy for the fastest set triangle.

Roger Davis and Rob Smith have set up cross-country lecture evenings on Fridays and Saturdays in the hope of swelling the ranks of our competition team and have had a good response.

R.W.

SCOTTISH GLIDING UNION (Portmoak)

Congratulations to Brian Scougal (assistant CFI) and Fiona McEwan who, in true gliding style, are honeymooning at the Northern Regionals, Brian competing and Fiona crewing. Congratulations also to Paul Copeland on going solo only hours into his 16th birthday.

Mr and Mrs Penswick have very kindly given their son Andy's DG-200 to the club to help finance a glass-fibre two-seater in his memory. The DG has been sold and negotiations are under way to buy a Janus which will be used to encourage cross-country flying.

The new club K-6E has been in great demand with the excellent spring thermals.

A.G.I.D.

SOUTHDOWN (Parham Airfield)

At the well attended AGM in March Joan Cloke retired as chairman after many years of devoted service and was promptly elected president. Our new chairman is Brian Bateson. Richard Almond, senior air traffic controller at Shoreham, gave a slide presentation on the history of Shoreham.

The newly acquired ex-Bückeburg K-8 is being well used after much extra work by Steve Turner and team.

The club received a Good Citizens' award, well reported in the press, from the West Sussex police for our assistance when a policeman was shot and his car hijacked. We were asked to search the area at low level from our tug which Angus Buchanan, our tugmaster, did until darkness without success.

Congratulations to Ian Ashdown on completing his Gold C and to Chris Foss for gaining his PPL.

R.A.W.

SOUTH WALES (Usk)

Due to the appalling spring our earliest flights, apart from three outlandings which didn't really count, were on Sunday, March 17. John Sorrell, Angelos Yorkas and Ivor Shattock flew O/Rs in severe snowstorms to Lentwardine, Shropshire. They were surprised to see the rest of the country covered in snow and owing to a lowering cloudbase returned to Usk and a 5000ft cloudbase.

Flights have continued across the Severn estuary to Cirencester and Avonmouth with 200km plus triangles completed, Steve Reed finding lift to 9000ft outside of cloud.

Our annual dinner was a Turkish affair at which various trophies were distributed to Messrs H. Evans, I. Shattock, A. Yorkas and J. Fitzgerald.

This season we are as full-time as we can manage, but please check on Raglan 690536. Earl Duffin's task week starts on August 5.

I.H.S. & P.F.

STAFFORDSHIRE (Morridge)

Following our AGM, Phil Barnshaw, John Graham and Alan Jones continue as chairman, treasurer and secretary, respectively and Roy Goodwin has joined the Committee to replace Mike Pepper who retired this year. Annual fees are unchanged based on £60 for flying membership with a modest increase to 10p/min for flying time.

Vice-chairman, Peter Lowe received the Chairman's cup for service to the club whilst the two Boomerang trophies went to Tony Boyce (O/R) and David Ruttle (best height).

We are delighted the Sports Council have offered us grant and loan aid towards a second two-seater.

There is an increased interest in cross-country flying and we are even hopeful, this year, of persuading pilots to record their kilometres for the BGA statistics.

B.G.

Obituary — Ken Lane

It was with great shock that we learned of the death on March 20 of Ken Lane whose huge Welsh frame and matching enthusiasm had been a feature of our club until a serious operation two years ago limited his flying.

Ken's typically positive approach to life carried on beyond his passing, as he specified that club members were to act as his bearers to get him aloft for the last time, with an additional instruction that they were to be adequately refreshed with food and drink before departing on their long, homeward journey.

He will long be remembered and missed as a powerful contributor, a hard task master and a person of great magnanimity.

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STRATFORD ON AVON (Bidford on Avon)

Other activities have rendered Long Marston unsuitable for gliding from April to September so we are flying alongside Avon Soaring at Bidford. It is strongly recommended that Long Marston is avoided by visiting pilots who will of course be welcome at Bidford.

Both the special club meeting in February and the AGM in March were very well attended with the following trophies awarded: most progress, Chris Morris; Club Ladder — pundit, Dave Findon; intermediate, Peter Kenealy; novice, Bill Bugh; Tom Smith memorial cup for cross-country achievement, Colin Bushell; John Simonite trophy, Chris Roberts and the Fred Haines memorial shield for long service, Gerald and Bernard Kelly.

Committee members elected were Ian Taylor and Chris Morris with Reg Stokes retiring but carrying on with recording club flying statistics.

The K-18 and K-13 have been completely refurbished, the Pirat trailer is being modified for the K-8 and a programme of air experience evenings and summer courses is now finalised.

Congratulations to Andrew Glazzard on going solo. Finally we welcome seven new members and hope others will join us this season, despite our temporary site problems.

H.G.W.

SURREY & HANTS (Lasham Airfield)

Hugh Hilditch and Alan Purnell declared the season open on March 5 with a pair of 200km triangles. Alan then went off to do another 110km. March 18 was also good with cloudbase rising to 6000ft. There were a number of good flights including three of more than 300km.

The winter has seen considerable soaring activity with two more thoroughly successful trips to Talgarth, at Christmas and in late March. Our thanks to Chris Bryant for organising a visit to Parham. North-easterly winds thwarted our intentions of ridge soaring training and experience but the strong SW day gave excellent training value.

Our thanks to Trevor Fox and John Bastin for many long hours revamping the trailer fleet. The new DG-101 looks to be an excellent extension to the Sport Vega section of the club fleet. This year will again see the club machines contesting in the Nationals and Regionals.

C.G.S.

TRENT VALLEY (Kirton In Lindsey)

The AGM in March was well attended and everyone agreed with the CFI's decision to add a glass ship to the club fleet.

The annual dinner-dance was also well supported and our thanks to our guest, Bill Scull, for his interesting speech and to the organisers, Chris and Brian Griffin. Trophies went to Mick Wood, John Williams, Andrew Cullum and Linda Woolard.

Bob Baines, CFI, has got the season more organised with lectures, instruction courses and flying weeks which has already paid off with Norman Bulter, Brian Guest, Mark Innes and Tim Woolard completing Bronze Cs by April. Visiting pilots are welcome to our flying weeks beginning on May 27 and August 5.

R.H.

ULSTER (Bellarena)

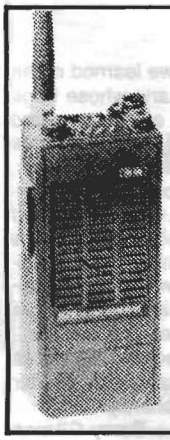
Our British national record holder and 1000km diploma man, Alan Sands, set a new all-Ireland altitude record on February 24. In his first flight in a borrowed Libelle he reached 22 750ft in wave off the Sperrins. With more O2-equipped sailplanes around now we don't expect this record to stand as long as the previous mark, set by his cousin Jeremy Bryson in 1975. It's still about 10 000ft lower than Alan has reached over the Rockies.

The cross-country season started on March 10, a day earlier than last year, with two pilots tasked for a 150km O/R. Alan McKillen turned at Dungannon and landed out on the second leg and Bob Rodwell aborted and returned after about 30km.

This was written on the eve of our nine-day Easter camp and national coach Ken Stewart was on his way with the Super Falke. His exposure to relentless Ulster hospitality was due to start with a civic reception in Limavady town hall on Good Friday.

The return to its native shores of our old Short Nimbus was also imminent. This huge, low gull-winged two-seater, built in the immediate post-war years and the lineal descendant of Stirlings and Sunderlands, has been bought from Russavia at Duxford by the Ulster Transport Museum. We hope to have it on the field for our May 6 open day before it goes for restoration. Those of us who've flown it remember it fondly, unlike those who were ever coerced into helping rig the beast.

R.R.R.



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WOLDS (Pocklington)
The club fleet is looking good with the Falke and K-8 refurbished and our third K-7 should be back soon as a K-13 "standard". Incidentally, we have 12 syndicate aircraft, not two as stated in the last issue.

Development of the site continues, the latest addition being a gate, errected in the interest of security. We have also bought some comfy seating for the clubhouse.

The social season opens in May with a barbecue and dance on the same weekend as a memorial to the 405 and 102 squadrons will be placed on the airfield.

Congratulations to Derrick Roddie who has become an instructor.

T.H.

WREKIN (RAF Cosford)
Very few winter flying days were lost due to bad weather. Sharon Morgan and John O'Leary have recently gone solo.

Our bar has been given an uplift and the tug a new engine. The first hour's soaring from the winch this year goes to Griff Griffiths who wave flew to 7000ft proving we are a wave club!

We had a superb expedition to Portmoak in March during which two gliders flew 86hrs in nine days with John Olejnik gaining his five hours on Bishop Hill.

Mick Greenway has completed his instructors' course and at the moment there is an expedition to Aboyne.

M.J.D.

WYVERN (RAF Upavon)
We were sad to hear at our AGM that John Hawkins has to resign as chairman due to a posting. We wish him all the best for the future and welcome Alan Thompson as his successor. Awards were presented to Bob Lloyd, Martin Hardy, Mike Dicken, Ken Moules and John Bradley.

Several members visited Odiham one snowy weekend to try their K-23 and were favourably impressed. Thanks Kestrel for your hospitality.

P.A.S.

YORKSHIRE (Sutton Bank)
Early good soaring conditions produced a number of good flights and already the competition for ladder points and other trophies is hotting up.

Further substantial investment in club facilities has been made. In spite of very reasonable charges, we have again managed to generate sufficient funds from gliding operations to meet the heavy costs.

The clubhouse extension is complete giving much needed storage space and a better briefing room. Toilets and showers are splendid after much hard work by Colin and his helpers. There is new carpeting in the dormitory block.

Recent glider acquisitions include a Pegasus and a DG-101. These complete an impressive single-seater fleet which also include a DG-200 and an Astir.

Finally the replacement computer is installed with multiple screens and other clever gadgets. Our old computer system — hardware and software — is now redundant. If your club is interested let us know.

P.L.

Make sure of getting your copy of S&G by taking out a subscription. See p121.

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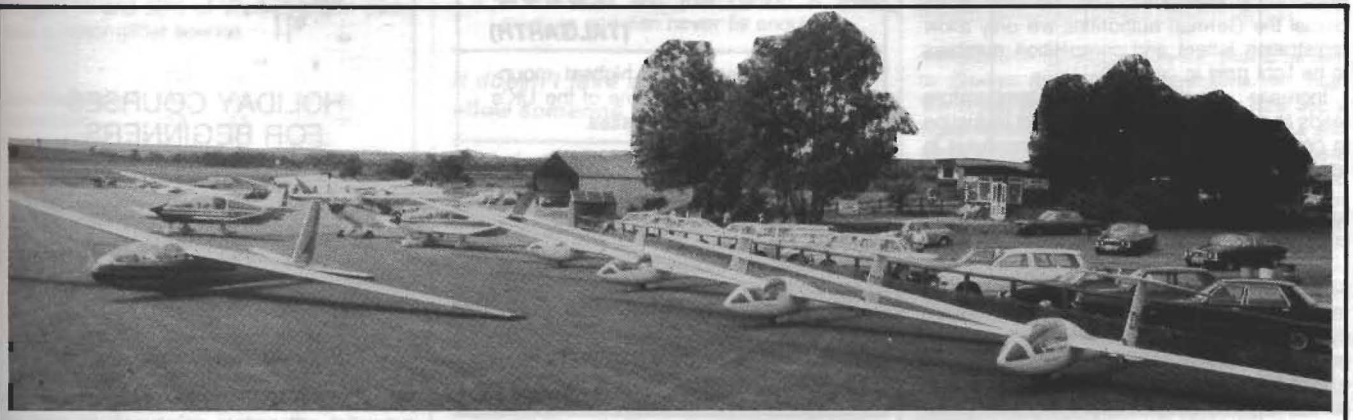
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WHY GRP GLIDERS MUST BE WHITE

A technical summary of the reasons why gliders constructed of glass, kevlar or carbon fibre stabilised with thermosetting resins are coloured white.

When the Germans exploited the application of these materials in the late 1950s a significant proportion of the research work was done by the aeronautical technical institutes. Evaluation of the materials and physical properties coupled with manufacturing methods ultimately led, in conjunction with the German Airworthiness Authorities (the LBA — equivalent to CAA), to the formulation of design requirements for sailplanes.

An important feature of these requirements relate to limiting temperature criteria, in that design properties are appropriate to a Max temperature of +54°C. This is primarily due to the fabrication methods and associated economies as sailplanes are mainly hand-fabricated with room-temperature thermosetting resins whose temperature operating limit is +54°C (known as the critical operating temperature). Use of higher temperature resins necessitate considerably more expensive plant which is not economically compatible with production quantities and product cost.

The net result is that in order to satisfy the overall criteria all sailplanes embody a white-pigmented gel coat, which rules out the use of contrasting colours since white is the only colour which will constrain the structure to the limiting temperature under worldwide pan-climatic conditions. This situation is so crucial the German authorities will only allow registration letters and competition numbers to be light grey in colour.

Increase above this critical temperature leads to progressive and significant reduction in compressive strength, Youngs modulus in tension/compression and shear modulus. Each of these properties is critical to structural integrity both in terms of velocity/gust criteria and flutter characteristics.

The modern generation of all-composite sailplanes incorporate the latest developments in materials, structural and aerodynamic design and, to this end, there is a greater tendency to operate them at the extremities of the permitted flight envelope particularly in Championship flying worldwide.

For example when operating in, say, Texas, Australia and other hot climates it would be possible for the structure to heat up to well above the critical temperature if the sailplane were any colour other than white. Shortly after take-off the sailplane crosses the startline at its VNE and it would be quite possible for a sailplane in a colour other than white to heat up to, say, 80-100°C on the top of the wing after exposure to two or three hours in the sun which could lead to wing compressive failure (top surface) or wing flutter.

These conditions could also apply to the empennage and fuselage since certain flutter modes can be appropriate to these elements of the structure.

Doug Jones, *chairman, BGA Technical Committee.*

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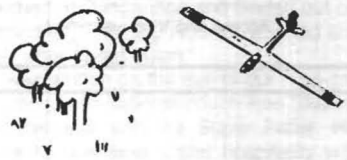
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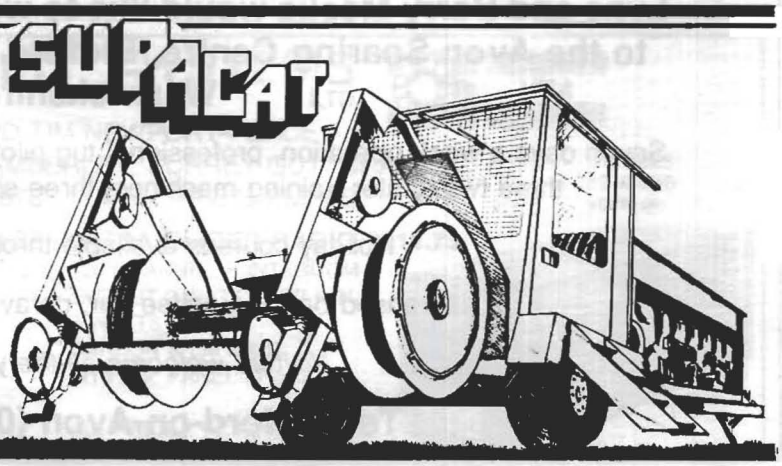
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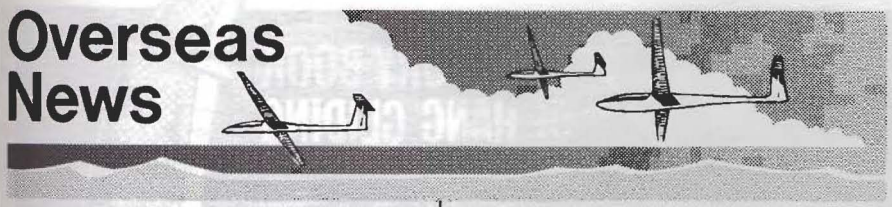
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SUPACAT



Overseas News



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

The Australian Nationals are at Gawler, South Australia, from December 28 to January 12, with 15 places for international pilots, and the Australian Championships and Australian Interstate Championships are at Benalla, 200km north of Melbourne. Visiting pilots are also welcome at Benalla and as this is the site for the 1987 World Championships, it will be a preview and practice for the following year.

★ ★ ★

MORE ABOUT GERMAN GLIDING

We tend to look towards Germany as the mecca of gliding. It generates the world's gliding equipment, has a large gliding community and a healthy 23% of its glider pilots are under 21 years of age. But Albert Hengelaar, a Dutch glider pilot, has been making some interesting comparisons between the gliding activities in West Germany, Holland and Great Britain and produced the following table based on statistics of (mainly) 1979, 1982 and 1983. Motor glider statistics are in brackets — and 38% of West German pilots have a motor glider licence.

	GB	NL	D
Launches/member	42	38	25 (32)
Hrs/member	13	11	10 (14)
Members/glider	6	8	7 (6)
Members/club glider	22	15	10 (9)
Average membership/club	97	98	48
Gliders/club	17	12	8 (9)
Club gliders/club	5	7	5 (5)
Ratio (%) club: private glider	27/73	56/44	60/40 (61/39)
Launches/glider	246	308	155 (178)
Hrs/glider	60	88	65 (79)

Albert says that it may be hazardous to draw conclusions from these figures but for the sake of discussion makes the following points:

1. West German glider pilots don't fly more than their colleagues elsewhere. In fact they fly less. Only by adding the motor glider figures do the average hours/pilot amount to slightly more than the figure for Britain and account for 40% of the total gliding hours. It seems likely that motor gliding keeps older members within the clubs with the additional benefit that they contribute their resources and experience.

2. The heavy use of gliders doesn't pay off. Germany scores significantly when it comes to launch/glider while the Netherlands wins outright with hrs/glider, yet the size of the Dutch gliding movement is more comparable with Britain than to Germany. The high number of hours/glider flown in Holland is presumably due to them having an all-in club subscription and an extensive use of winches, as well as a generous number of club gliders. It keeps the ships aloft at less expense. Note the relatively low number of members/club gliders in Germany. This shows that private ownership does nothing for the size of the gliding movement.

3. The one very striking difference in the figures is the number of pilots/club in each country. German clubs are half the size of British and Dutch clubs. It isn't easy to draw conclusions from this. Small gliding clubs are not necessarily a big success, as the article in the December 1983 issue of S&G, "The Future of Gliding", p267, pointed out. Nevertheless I would attribute some importance to this when seen in perspective.

Gliding is essentially a team sport which operates on a voluntary basis in Western Europe which saves high labour costs and capital investment, so keeping it within the financial possibility of a large enough potential membership. Also it is a sport which demands a long and complicated training period.

It attracts roughly three kinds of people:

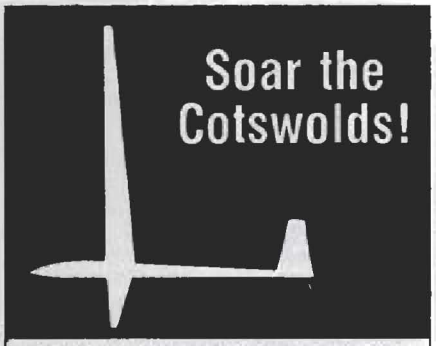
1. Those who leave soon after joining/soloing.
2. Those who want to be part of gliding/flying but are low-key users.
3. Those who find that gliding is their medium and can never fly enough.

It doesn't take a lot of resources to allow someone to fly ten hours a year

Success in achieving growth in the movement or keeping it at a stand-still depends on keeping category 2 and 3 within the sport. When flight and ground operations are well organised it doesn't take a lot of resources to allow someone to fly ten hours or so each year and the busiest person can spare this amount of time. So how do the smaller clubs keep their membership?

Gliding clubs are a social set-up so it is a benefit when membership isn't too high. The threat that low membership presents to operational bottle-necks is met in Germany in different ways. Sometimes there is financial help through wealthy members or subsidies and sometimes clubs have joint operations. They don't unite because often their roots go back to a local community or a corporate company. Also the clubs are given good local publicity which brings in sponsorship and subsidies.

It is a social advantage when members know each other before they join the club and it solves travelling problems, particularly for the young members, when they can pool transport. Yes, the membership of some German clubs might be low but the density of glider pilots in each town is high. So the public know all about the sport. We can learn a great deal from the Germans in how to make gliding grow.



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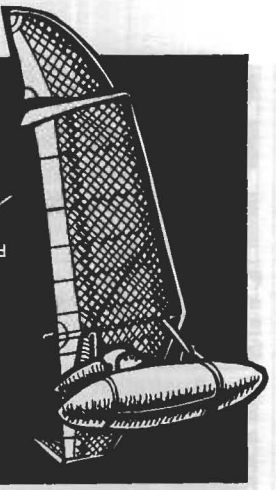
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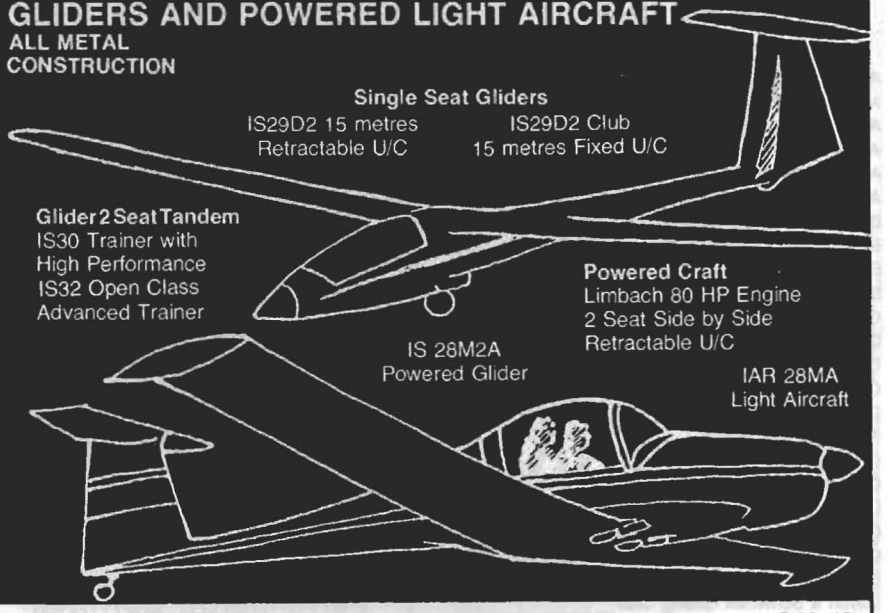
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