SAILPLANE & GLIDING

February-March 1997 £2.50

Evolution of the High Performance Glider

Which Glider? Met Way Off Track

ISSN 0036-7230

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Cover: Jochen Ewald's photo of the Fox he test flew at Bruchsal, Germany. See p16 for his report.

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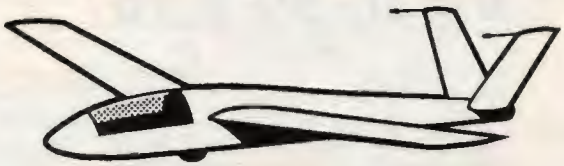

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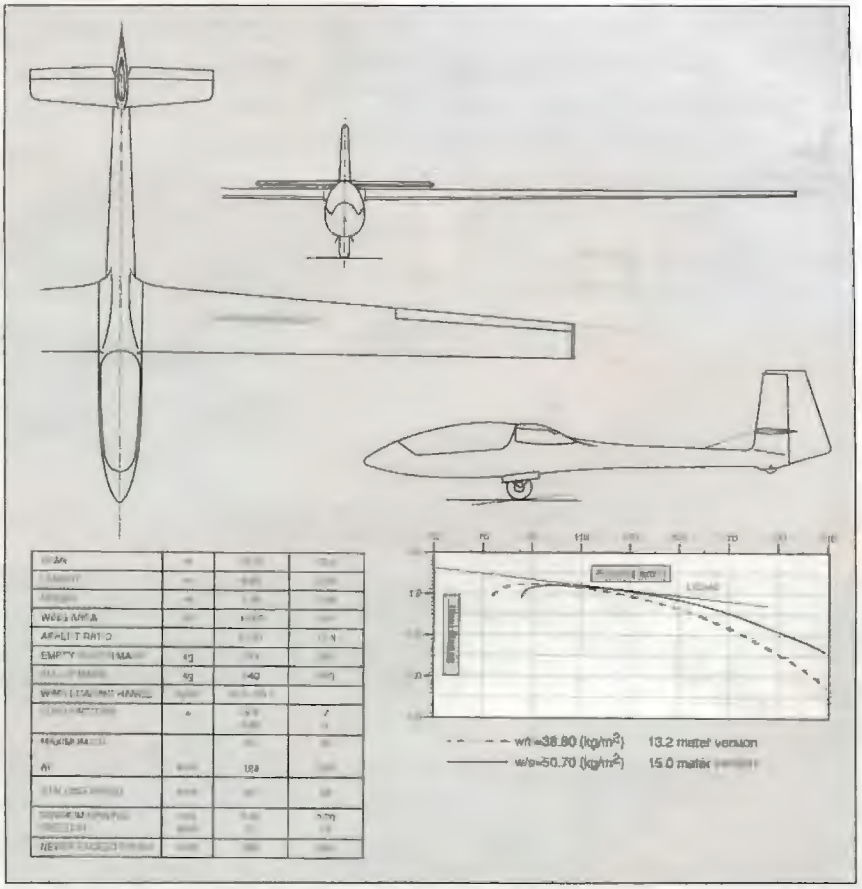

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YOUR LETTERS

COMMENTS FROM ACCUSED PILOTS

Dear Editor,

The last 18 months have been eye-opening in many respects. Neither of us having any previous experience of the criminal legal process, the miraculous escape from our stricken glider has been overshadowed by feelings of dismay and, latterly, anger at the way our case is being treated.

Three separate appeals were made to reopen the initial judicial investigation: all three were rejected. We do not believe that the French have any desire to reopen an investigation which, if it considered all the factors, would be critical of both the gliding and parachuting movements in France. The practices of jumping through cloud and using dropping zones as turning points seems, in particular, to be causing most embarrassment.

The briefing given on our arrival at St Auban has been a source of much controversy. So aggrieved were we at the lies concerning the content of this briefing that a criminal complaint was made by us against the club official concerned. Despite all those present at the briefing corroborating our claim, no action is being taken against him.

It would be nice to think that all our fears are groundless and that the trial on June 25 will weigh up all the evidence in a fair and balanced way. With the events of the last 18 months in mind, it is obviously essential that we are well represented.

We are both extremely grateful for the continued support given by the BGA Executive in our fight for justice. We hope that the appeal recently launched will allow us to defend ourselves in June.

JONATHAN MAY & PHIL WOODRUFFE

(See also BGA News, p38, and Way Off Track, p23.)

NEW SITE FOR WORLD CHAMPS

Dear Editor,

Might I add to Moragh Gee's appeal in the last issue, p319, for a change of venue for the World Championships.

Most French glider pilots of my acquaintance admit that St Auban has been nominated by France partly as a means of ensuring that the French team, which trains almost on a full time sponsored professional basis from the site, will have the best chance of victory across the board this year.

I have been most surprised that the more independent minded nations in IGC have not protested at this choice which, apart from safety concerns, favours the host nation so unfairly in what is obviously not a "level playing field" situation.

The US switch from Minden to Uvalde shows that late changes can be made where necessary. A solid push from concerned IGC nations, who should demand at least a special postal vote on the matter, could well achieve a shift to more suitable sites such as Chateauroux or Brienne le Chateau near Troyes.

PETER HEARNE, *Wateringbury, Kent*

Dear Editor,

I feel I must comment on some of the concerns expressed by Moragh Gee. I do not fly competitions though am considered to be competent in cross-country soaring and have spent many enjoyable holidays flying out of Sisteron, just up the road from St Auban. I therefore feel able to put some sort of perspective on the appalling accident rate suffered in the Alps during 1996.

There is no question that anyone flying in the Alps with the attitude that "it's a bit like England with fewer landing sites and higher hills" risks losing more than their glider when (not if) they get it wrong. The mountains, the weather, extreme conditions and the number of gliders in the area must all be treated with enormous respect and a thorough, realistic assessment must be made of one's own abilities and limitations before even considering flying here.

However, the mountains themselves do not kill pilots - rather, with a very few tragic exceptions, it is the pilot's decision to ignore the rules clearly laid down and available to all which lead to these accidents. During my last visit to Sisteron I tried to get some further information about how some of the accidents occurred (these are not official accident reports but are as close to any official view as I could get).

- A motor glider took off for a photographic session to a local hilltop village, not more than ten miles from the site and therefore in terrain not significantly different to that of any hill in the UK. It flew into the hillside. It was concluded that both were taking photographs at the same time and no-one was actually flying the aircraft when control was lost. Conclusion - pilot error unrelated to mountain flying.
- A Pegasus departed from a local hill to try to reach a higher mountain a few miles away and flew into power wires. Its departure altitude from the local hill was far lower than that proscribed for the attempted transit. The power wires were not hidden and are clearly visible from the club itself. Conclusion - pilot error in ignoring the rules relating to transit heights.
- A Discus with a highly experienced instructor on board attempted a field landing in an area where fields were not available. From his last reported position it became clear that the pilot had chosen to fly past a number of known, perfectly landable fields (for which full details are available in a club supplied handbook) in an attempt to reach an airfield. Conclusion - pilot error in ignoring the rules relating to assumed glide angle.
- Jean-Pierre Gillies, the CFI at La Motte killed with two others during August, was an exceptionally gifted pilot and a personal friend and the circumstances surrounding their accident are as far as we know unresolved, although it has been suggested that as the two-seater was new to the site and relatively prone to spinning, pilot error (possibly by the P2) may again have been the cause. This accident could have happened anywhere and is therefore not directly mountain-related.

In my view mountain flying is not inherently dangerous - pilot training and first solos are made here as in any other club. There are no unnatural conditions waiting to hurl your glider without warning on to the rocks. It is pilot attitude to mountain flying that causes concern and therein lies the risk for some competitors in this year's Championships. Those who have never flown in mountains should think very, very carefully about how far they would be willing to commit themselves in pursuit of points over safety - it is possible that the rules can on occasion be compromised but in my view the penalty for getting it wrong is just too great.

Perhaps walking away from the competition before it starts should not be ruled out as a viable, honourable option. Those who have mountain experience but not in the French Alps will have a greater appreciation of the problems but, lacking the knowledge so vital in this area, may yield to temptation in pressing on when they should really hold back.

In my view the real reason the World Championships should not be held at St Auban is that the enormous advantage held by those with intimate local knowledge of the area, far greater than the home advantage enjoyed over non-mountainous terrain, makes the competition inherently unfair (indeed, some of the French themselves share this view).

I, like many others, would be very surprised if the French (or perhaps another nationality based there for significant periods during the year) did not win all three Classes. Let us hope that all those who start the competition will demonstrate sufficient airmanship that they will also attend the closing ceremony.

JOHN BRIDGE, *Barley, Herts*

PENGUIN AIDS FLIGHT SAFETY

Dear Editor,

I would like to comment on Way Off Track in the last issue, p331, on the Flight Safety Survey conducted by the Centre for Human Sciences at DRA (Defence Research Agency). Perhaps if I explain some of the background and objectives of this survey it will lessen the suspicion expressed by Penguin and, possibly, felt by others.

I attended a meeting in August at the Aircraft Accident Investigation Branch (AAIB) headquarters at Farnborough. A presentation was given by Dr John Chappelow from the DRA Centre for Human Sciences on their current, MoD sponsored, study of the "See and Avoid Principle" as applied to the avoidance of mid-air collisions between aircraft. He explained phase one of this study involved the collection of data for both military and civil users of the lower airspace. These data allowed the design of a mathematical model of this traffic and enables the current UK low flying system, and the effects of changes to the system, to be evaluated analytically and so quantify the risk of collision in the air.

Dr Chappelow reported that 427 survey responses from general aviation pilots (including many glider pilots, Penguin and myself!) had provided valuable data for this analysis. He presented many interesting slides illustrating some preliminary results, showing aerial activity by hour, day, month and season. One could clearly see a dip in the amount of military flying at lunchtime except, oddly, on Tuesdays! There was another dip at teatime as well as the expected seasonal variations of general aviation (which includes gliding) and for night flying.

This is an ongoing study which will enable a more precise forecast of potential geographic ➡

danger spots, danger times and danger altitudes. This should result in safer flying for military and civil aircraft in UK airspace.

I hope I have allayed any suspicions felt by Penguin or anyone else, and encourage everyone in the gliding world to respond to any future requests from DRA for data. The more accurate data collected the more precise will be the final outcome of this study which will affect the future safety of our pilots. Penguin may rest assured that his (her?) completed questionnaire has helped Flight Safety and has no other purpose.

JOHN STEWART-SMITH, *GASCo Flight Safety bulletin*

GLIDER INSURANCE

Dear Editor,

Dominic Conway is not alone in being frustrated and angry at the cavalier approach to customer care he has suffered at the hands of his broker. (See last issue p319.) Over the years I have suffered a great many similar frustrations and have often ended up fighting my own case. One broker said "David you know more about aeroplanes than I do so why don't you speak to the loss adjuster direct?" This I did with some success.

My dissatisfaction with this sort of service was one of the factors that led me to join the aviation insurance industry to try and do better.

By maintaining the pressure it is possible to achieve some improvement.

For example on our first claim we were able to get underwriters' authority for the repair work to proceed within one hour of being notified of the accident. In another case we were able to speed things up by collecting the glider from one repair agent and taking it, ourselves, for the second repair quotation demanded by the underwriter.

In a third case we were able to persuade the underwriter that he was being unduly harsh on the insured by insisting on having a second quotation by a repairer, who was not the agent for that glider, as it would adversely effect the resale price if he were to do the repair work.

Four golden rules:-

1. Use brokers that fly and own gliders and aeroplanes. They will know more about the problems than anyone else.
2. Treat any quotation that is more than 20% cheaper than the rest with the contempt it almost certainly deserves. Ask where the risk is underwritten. If it is outside the UK be very careful.
3. By all means get two quotations but not more than two. Your brokers will have covered the market between them, use any more and you may spoil the market against yourself. I don't expect anyone to believe this, I never did when I was the insured but now that I am in the industry I am beginning to understand why.
4. Insure for the "agreed value" that really will cover the cost of replacing the glider.

DAVID INNES, *Joint Aviation Services Ltd*

TURBO ENGINE WINDMILLING

Dear Editor,

I read the BGA accident investigator's brief but pertinent article on turbo glider failed-engine-start-field-landings in the last issue, p328, with a wry smile (I now fly an LS-6).

When I flew a Ventus CT I accumulated more experience of these things than anyone I've met will admit to. There was a rumour that my syndicate partner was trying to claim on the life insurance - he did the maintenance, rewired the panel from time to time etc.

The reason for writing, though, is to say that the author missed out the most difficult configuration - engine out but windmilling. If the decision to land is left too late there may not be time to slow down and partially retract the engine to stop it, or if the fuse blows there is no power for the retraction mechanism. The windmilling propeller gives you the effect of unclosable airbrakes which are exquisitely speed-sensitive; each extra knot sends you plummeting yet faster towards the ground. Circuit and landing with the engine out and windmilling could be a useful additional exercise.

For those who haven't tried it, do believe what they say about the workload if the engine doesn't start.

ANNE STOTTER, *Leicester*

TOST WEAK LINKS

Dear Editor,

I cannot let Chris Chapman's letter in the last issue, p321, go without comment. If he feels at risk of an accident from a failing weak link (and by implication any other form of winch launch failure) then he either has a problem with his launch technique or his pre flight checks. (Eventualities.)

I don't know if anyone has tested old links for reduction in breaking strain but I suspect this is not significant until the link loses its elasticity and all its strength. By that point it is unlikely that the link would remain identifiable by colour. Since my club started using Tost links we have used just one link and I can't recall a single case of failure attributable to old age etc.

As for Chris's suggestion of modifying the round hole links to make them more identifiable there are two problems:-

1. It would be very difficult to get all clubs to adopt the same convention and harder to get all pilots to understand it.
2. It has been proved on several occasions that what might appear impossible just takes longer to get wrong, and this is by no means impossible to get wrong.

The BGA advice is simple and as far as possible foolproof. The only thing which needs to be added is that if a link is worn to the point where imminent failure is suspected then replace it.

RICHARD DANN, *Thatcham, Berks*

GPS IN STANDARD CLASS NATIONALS

Dear Editor,

We now have five years' experience in UK competitions on the use of GNSS for primary flight data. It is therefore disappointing to read of problems in the recent Standard Class Nationals (October issue, p275 under "Scoring Data, GPS Problems"). However, the piece raises more questions than it gives answers.

With my IGC hat on*, I understand that no IGC approved flight recorders (FR) were involved. Not, of course, than an IGC approved recorder can never fail. But before approval can be given there is much testing and evaluation in the UK, Australia, Germany, Spain and the USA. If there are any doubtful points, we employ independent experts and laboratory facilities from these or other nations. Testing for electromagnetic interference (EMI) is part of ➡

this progress. Six models of FR are currently IGC approved and more are being tested.

However, I am sympathetic to the makers of any non IGC approved FRs which may have been used in this competition. The piece concentrated on alleged failings without attempting to give reasons other than general warnings about RF interference.

The integrity of GNSS data is an important issue in Comps and generally. Now that the issue has been raised, the circumstances which prompted the remarks concerned should be explained in more detail. The account on p275 seems to run counter to past experience in UK Comps and for GNSS FRs generally.
IAN STRACHAN, *Lasham*

*(*Ian is chairman of the IGC GNSS Flight Recorder Approval Committee (GFAC). See the April 1996 issue, p82, and GPS Jottings in the last issue, p334. Ed.)*

Wendy Durham replies: I appreciate the contents of Ian Strachan's letter, however, I was on site and involved in most instances of failure, due to the ensuing need for me to process and assess films, and to the best of my knowledge, every instance of EW logger failure during the Nationals was brought to the notice of the manufacturer at the time - sometimes fairly forcibly!

I fully agree that it would have been unfair to be non-specific about the reasons for the several failures (actual, not "alleged" - ask the pilots concerned) if the manufacturer had not already been fully in the picture. But as he was, yet could give no unequivocal reasons himself, it would have been difficult for me to do better!

The whole point of reporting the matter - which Ian seems to have missed - was that now that GPS is compulsory at Nationals level, many more people will be tempted to forgo - or be cursory with - backup evidence. It is clear that this is not, as yet, a safe course of action, no matter what brand of logger is used. Until more is known, I would repeat the adage: Don't despise a Winter, and use your cameras wisely.

Wayne Richards of EW Avionics comments: With our EW hat on, yes we're guilty, we do have equipment failures and openly admit them. However, we're quite proud of the small number of units returned for repair. The less than 0.5% we see on average each year for electronic component failure is about as good as you can get by using the commercial based ICs and techniques that we employ. By using a military specification you may see an improvement to approximately 0.1% but this would add one zero to its price. Would you pay this extra amount for 0.4% increase in reliability?.

One has to remember that only a few years ago people carried two cameras and two barographs but still competition results were littered with penalty points for photography and barograph problems. Since the advent of the EW type electronic recording systems the number of penalties have been dramatically reduced, even though many pilots have only one system.

We agree with Ian that no amount of testing by IGC will eliminate flight recorder failure. This has been proved by IGC approved units failing at recent competitions, both in the UK and abroad and in a number of record claims. In many cases a backup EW was used to supply the data required.

Wendy's comments are very valid about carrying backup. Perhaps with the success and reliability of electronic data collection devices we have been lulled into a false sense of security, No manufacturer can guarantee 100% reliability. ■

We welcome your letters but please keep them as concise as possible and include your full name, address and tel/fax number. We reserve the right to edit and select but point out that the views expressed in letters and articles are not necessarily those held by the BGA.

EVOLUTION OF THE HIGH PERFORMANCE GLIDER

PART 1

This paper was published in the Royal Aeronautical Society's Journal for June/July 1995 and won the John Britten prize for the best paper on light aviation. We are reprinting it in three parts by kind permission of the Society. Part 1 takes us up to the Second World War

Unlike commercial air transport and military aircraft, the high performance glider was developed as an end in itself so that individual pilots could achieve extended flights using only energy present in the air. From modest beginnings in the first two decades of this century the best gliders available today are able to fly 60 miles from a height of about 6000ft in no wind and without upcurrents. Using thermals and other available lift in the air these gliders are capable of flying a distance of 1000 miles in a day.

The realisation of such performance efficient gliders was possible because the design problems attracted top quality aerodynamicists. Germany led, and still leads, because German universities saw, in glider development, a fine training ground for young aeronautical engineers - initially encouraged, of course, by the Versailles Treaty which forbade the manufacture of powered aircraft at the end of WW1.

Now superb gliders exist but because of their cost, complexity and size they can be afforded and/or flown by only a relatively small number of pilots. This paper follows the historical development of gliders, the arrival of hang gliders and paragliders and considers the way forward for motorless flight.

History, the first decade

Although, throughout history, there have been people who observed the birds and wanted to

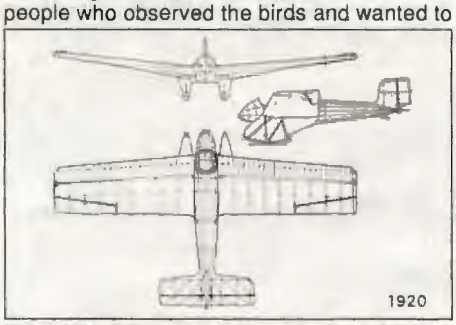


Fig 1. The 9.3m span Schwarze Teufel FVA-1 of 1920.

Fig 2. The FVA-2 Blaue Maus in which Wolf Klemperer gained the world distance record of 5km on August 30, 1921.

be able to fly as they could, the pioneers of the last century, whose work made flight by humans possible, were more concerned with powered flight than with soaring. Even Lilienthal, who made some 2000 flights in his hang gliders during the 1890s had in mind the use of an engine of some sort.

Gliding as a sport began around 1911, by which time there were aeroplane rallies all over Europe, for no better reason than a few German

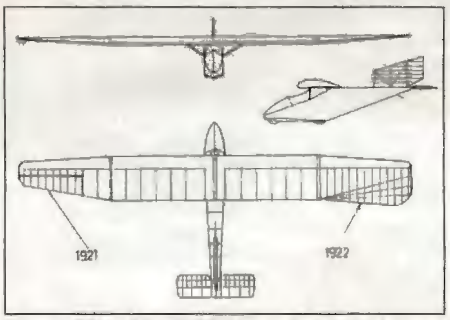


Fig 3. The 12.6m Vampyr from Hannover Technical University.

schoolboys wanted to fly but had no money. They built very crude gliders and launched themselves off hills to glide down into the valley below; but they enjoyed themselves.

Shortly after the end of WW1, gliding started again in Germany as a continuation of the pre-war "hops and flops" in the Rhön mountains, but there was now greater incentive because of the prohibition on building powered aircraft in the Treaty of Versailles. This encouraged technical schools and universities to design and build gliders, which led in turn to the formation of Akafliegs (Akademische Fliegegruppe) in which engineering students were allowed to take longer over obtaining a degree if they fully involved themselves in glider design and construction in the Akaflieg. The Schwarze Teufel of 1920, Figs 1 and 2, was, in fact, the FSA1 from Akaflieg Aachen.

The Akaflieg Hannover was instrumental in the design of Arthur Martens' Vampyr (Figs 3

Fig 4. The Vampyr attained a world distance record of 7.5km flown by Arthur Martens on September 5, 1921.

and 4) - the first glider with a torsion box leading edge - but it was Darmstadt which led progress with the Konsul of 1923, Fig 5. Between 1920 and 1980 the Akaflieg Darmstadt designed, built and test flew no less than 40 aircraft, mostly gliders, all in some way advancing existing aeronautical technology.

Gliders were still crude but their slightly improving performance enabled them to fly quite long distances out into the valley - which increased the tedium of carrying them back up the mountain after flights which lasted barely minutes. Competitions were introduced to get enthusiasts together and find a way to progress. At the first in 1920, 24 turned up with a variety of home built gliders and hang gliders. Soon some pilots noticed that their glider would rise a little after its launch into wind, which led the bolder ones, when this occurred, to turn along the ridge to try to gain more height. It was not important at

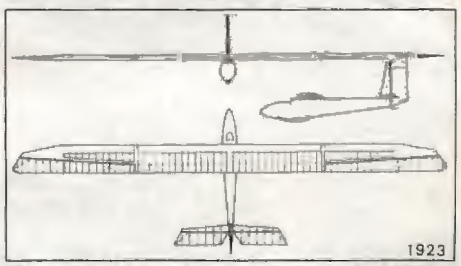


Fig 5. The 18.7m Darmstadt Konsul of 1923.

this stage that neither pilot nor glider could turn well as usually only a 45° change of direction was needed to stay in the hill lift. With the chance now of extended flights and the opportunity to land back on the mountain top the simple gliders began their evolution towards their present performance with glide ratios of 60:1.

Slope soaring was quickly explored and exploited, with pilots endeavouring to use every scrap of lift to extend the distance they could fly along the ridges. In 1923 the Konsul flew a distance of 18.7km. It had an aspect ratio of 17, which was quite a structural achievement for a lightweight wooden wing at the time. Glide ratio was 21:1 at a speed of around 50km/h. Successors to the Konsul were the Darmstadt 1 and 2 of 1927 and 1928, Figs 6 and 7. The span of the latter had been increased to 18m with aspect ratio 19:4 and an empty weight of only

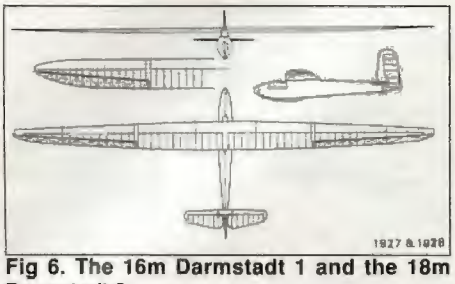


Fig 6. The 16m Darmstadt 1 and the 18m Darmstadt 2.

Fig 7. The Darmstadt Akaflieg D-15 "Westpreussen" of 1926 developed the classic configuration of the high performance glider.

Fig 8. The start of the thunderstorm flight by Max Kegel on August 12 1926 which gave him the world distance record of 55.3km. This was double the previous record distance in 1925.

162kg. L/D was 22. The large span, high aspect ratio and minimum weight led to the first concentration on design direction. Hill soaring distance was now the objective with new gliders mostly copies of the existing best. Pilots were happy to wander slowly among the hills though some younger ones were becoming impatient for something more challenging. Then in 1926 Max Kegel launched into an approaching thunderstorm and was sucked up into it. When he finally fell out of cloud from some undetermined height and still miraculously intact, he set off downwind to fly just over 55km to double the existing world distance record. Fig 8.

Fig 9. Robert Kronfeld's diagram of the thunderstorm front on which he flew a world distance record of 143km on July 29 1929 in his Wien.

By the late twenties gliding had developed a following and a momentum of its own with effective gliders and experienced pilots who were ambitious for greater achievements. It was fortunate, therefore, that scientist and meteorologist Professor Walter Georgii interested himself in this new soaring. He knew that birds found upcurrents under cumulus clouds, though he considered that these "thermals" would be too small to be of use to gliders. Nevertheless pilots discovered that they gained height when cumulus clouds drifted overhead and used the cloud lift to help them cross gaps in the hills to fly longer distances. In 1928 Johannes Nehring, flying a Darmstadt, flew a new world record distance this way of 71.2km.

There was a reluctance, a conservatism, among many pilots to change their way of flying. Pilots who had become extremely good at slope soaring had little interest in flying out over the valley - and probably landing there - just to discover if any lift might be present, especially on days with little or no cumulus. They remained convinced that it was the power of the cloud alone which provided the convenient upcurrent to help them on their way. They were prepared to fly out to meet an approaching cumulus and as soon as they encountered its lift would drift back with it, often still headed into wind.

Once more above the hill they would subside into the slope lift and wait for the arrival of another cumulus - although air circulation in a thermal had been postulated by Alphonse Penaud in about 1875, some 80 years were to pass before his theory was rediscovered, Fig 13. Then in the summer of 1929 Kronfield flew his Wien 143km for a new world record, Figs 9-12. Starting from the Wasserkuppe he flew into the lift on the leading edge of a thunderstorm, rose with it and used the storm front as an aerial hill.

Although glider configuration and the use of wood for construction was becoming technically quite advanced, the gliders of the 1920s were operationally simple and light. Apart from stick and rudder and a very few basic instruments there was no need for launch release mechanisms as gliders were launched by bungy from an external open hook. There was no need for flaps or airbrakes as such slow gliders were easy to land with, in any breeze, a short landing run: they also mostly sideslipped well. Because they were light in weight there was as yet no need to replace the simple ash skid with wheels - several strong young men under the wings could carry it to the launch point. These gliders were quick to repair.

Distance flying on thermals

The year 1930 was important for two reasons. Wolf Hirth took his Musterle (similar to the Darmstadt 2) to the USA and soared in blue thermals over flat land and Kronfield made himself a practical variometer on the vacuum flask principle.

As a result of Hirth's American flights younger pilots set out to explore the air away from the hills and discovered that pure distance flying was more possible than they had thought. In 1931 Groenhoff soared his Fafnir, Figs 14 and 15, for a new record distance of 272km largely in thermals.

Both the Wien and the Fafnir were, as usual at the time, one offs made to the personal needs of their pilots. The Wein had a 19m span with an ➡

Fig 10. Robert Kronfeld in his Wien. The double curvatures of the cockpit were made by skinning with small pieces of plywood.

Fig 11. The Wien being bungy launched. Normally four to six runners would pull on each end of the rope.

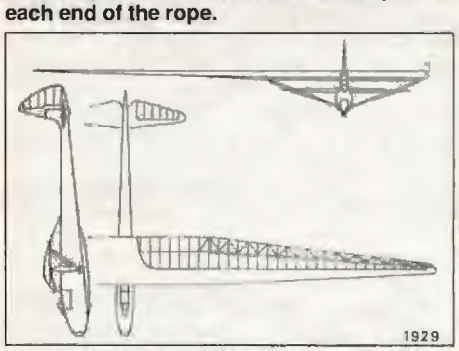


Fig 12. The 19.1m Wien designed by Alexander Lippisch.

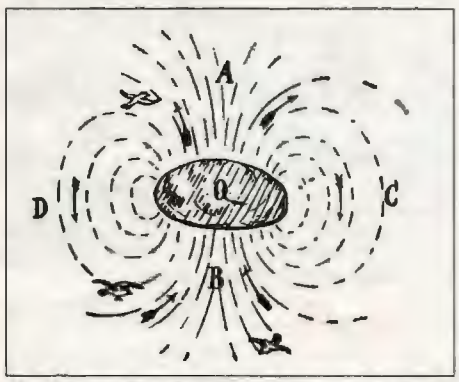


Fig 13. A drawing by Alphonse Penaud (c1875) of air circulating in a thermal.

Fig 14. Gunter Groenhoff in his Fafnir. Note the pilot's lack of view and quantity of venturis.

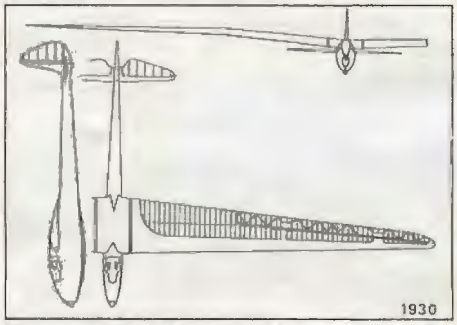


Fig 15. The 19m Fafnir designed by Alexander Lippisch.

aspect ratio 19.9 and empty weight of 158kg - still lightly loaded in the tradition of the great hill soarers. The Fafnir also had 19m but with the greater empty weight of 220kg. The L/D of both was around 25. The wood used for their construction was high grade spruce skinned with, usually, 2mm birch plywood. Not amenable to double curvature, the complex shapes demanded to obtain the smoothest possible airflow were produced by glueing small pieces of ply over a light framework. The nose of the Fafnir, for example, was enormously exacting to build, but good carpenters were not then in short supply. The glue used was casein, not renowned for its damp resistance (the first synthetic glues were not available for gliders until WW2). The extreme glider built at this time was Kronfeld's Austria, Fig 16.

Fig 16. The cockpit and wing root of Kronfeld's giant 30m span Austria.

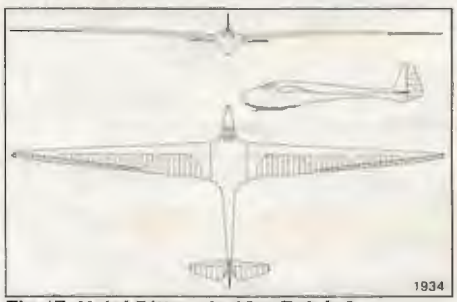


Fig 17. Heini Dittmar's 19m Fafnir 2.

It was thermal soaring which brought the next real change in design direction because of the need to circle as near as possible to the thermal core, plus being able to fly faster from one thermal to the next. To achieve these objectives wing spans were reduced and wing loadings increased. This was not difficult as for many reasons gliders were now becoming heavier. Simple ash skids were discarded for wheels, quick release hooks were needed for aerotowing and winch launching and some form of control over the increasingly flat and faster glide path was becoming necessary. All added weight.

The 1930s were the golden years of distance flying. In good summer weather pilots flew as far as possible each day, retrieving by car - often an open tourer - all night and setting off again as soon as thermals began. In 1934 Heini Dittmar flew his Fafnir 2 (Sao Paolo), Fig 17, 375km from the Wasserkuppe to Liban in the former Czechoslovakia and almost exactly one year later, in July 1935, four pilots flew the first 500km distance to Brno, also in Czechoslovakia.

This achievement was of special interest in that the gliders were of four different types: the

Fig 18. The Rhönadler being bungy launched. It was one of four gliders to fly the first 500km on July 19, 1932.

Darmstadt DB-10, the Condor, the Rhönsperber of 15.2m span designed by Hans Jacobs and his older Rhönadler of 17.5m span, Fig 18. This had a glide ratio of only 20, while that of the Condor was 25 at 60km/h.

It was also in these years that high performance gliders began to be produced in series, if not in quantity (Fig 19). Distance flying had sparked off the need for more gliders for the increasing numbers of new, younger pilots who were without the time or knowledge to design and build for themselves. Associated with this was the elementary gliding provided for the Hitler Youth. This not only meant a greater public awareness of gliding but, usefully, a good supply of bungy crews to launch the famous pilots into the air. These faster gliders now needed some means of steepening the glide path. The earliest spoiler brakes were developed by Hans Jacob of the Deutsches Forschungsinstitute für Segelflug (DFS), the German Research Institute for Soaring Flight, in 1935. To begin with simple top surface spoilers were used which could relatively easily be fitted to existing gliders. For example, the Condor 1 had no spoilers but the more heavily loaded Condor 2 did. Jacobs built

Fig 19. The Rhönbussard, designed by Hans Jacobs, was one of the first "production" gliders.

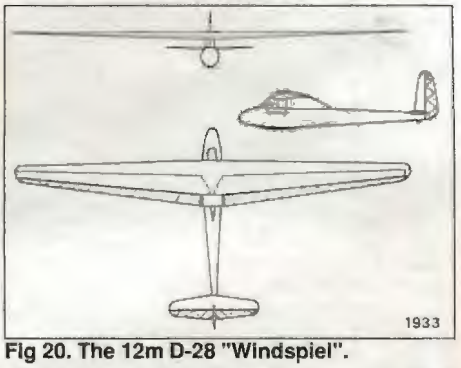


Fig 20. The 12m D-28 "Windspiel".

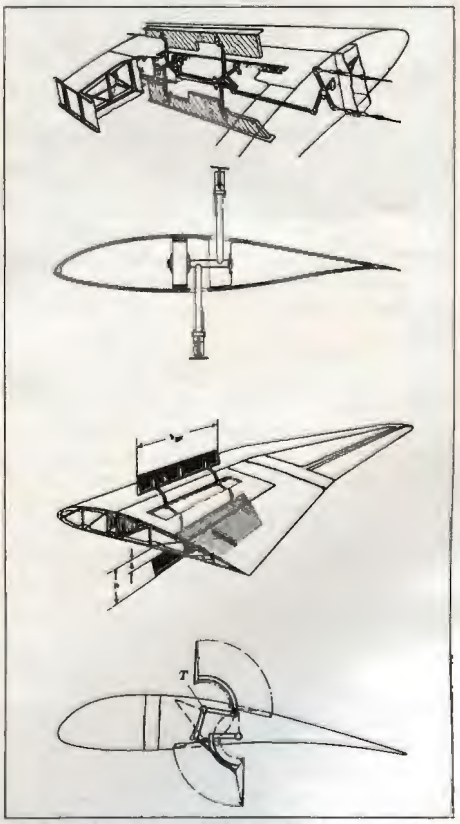


Fig 21. Airbrakes: a) Vertical movement top and bottom airbrakes. The brake caps lie flush with the wing surface. b) Rotating top and bottom airbrakes where the whole brake surface lies flush with the wing surface. On opening, the lower brake helps pull out the top surface brake.

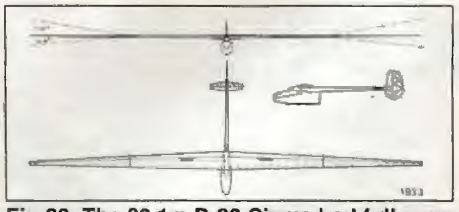


Fig 22. The 20.1m D-30 Cirrus had full span ailerons.

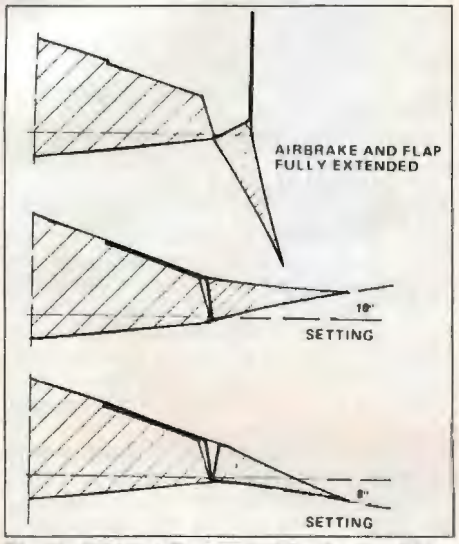


Fig 23. Camber flap and airbrake combination. The raised setting is used when flying faster.

them in to his gliders, after the Rhönadler, and so did Wolf Hirth. Top surface spoilers were only moderately effective, and some would blow flat if the pilot came in with too much speed. Answers were produced by Martin Schempp and Wolf Hirth with vertically opening top and bottom surface airbrakes. These had to be well designed and fitted so that when closed there were no leaks into or out of the wings. Their value was that they could powerfully reduce the glide ratio from say 30:1 down to 8 or 10 and could also be used to limit airspeed so the VNE would not be exceeded, Fig 21

Fig 24. Wolf Hirth's Minimoa. Its gull wings gave good tip clearance for landing but heavy lateral control. Photo: Ann Welch.

Many varieties of camber changing flaps have been tried out on gliders. The Austria of 1930 with its 30m span and very slow high lift wing section had the ailerons arranged so that they could be raised for improving the speed as well as being drooped.

The Austria also had rudder airbrakes. The D-30 (Fig 22) had full span ailerons on its 20m wing which could be used as camber flaps (Fig 23). For obvious reasons such devices were mainly used on extreme gliders at the time. For more conventional high performance gliders such as the Minimoa (Figs 24 and 25) they would have been unnecessarily expensive.

Designers who were producing the new gliders - Wolf Hirth with the Minimoa, and Jacobs with his Rhön series - were tailoring their designs to the increased need for manoeuvrability for circling in thermals, and the acceptance of higher wing loadings for better inter-thermal speeds. The Minimoa of 1936 was successful in these respects, no less than 15 being entered for the 1938 International Competitions - the last before WW2.

While the endless pursuit of pure distance was exciting, some pilots realised that this could not continue for ever. One or two considered reaching a suitable hill as thermals finished, slope soaring all night and continuing on next day.

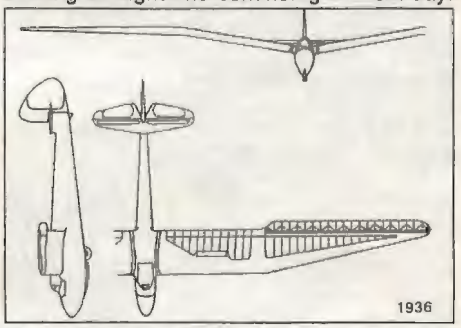


Fig 25. Schempp-Hirth's 17m Minimoa.

Others, more practical, introduced the extra discipline of goal flights and out to a declared goal and return.

In 1936 Lajos Rotter of Hungary flew his heavy 20m span Nemere from Berlin to his goal at Kiel, 336km away and the last record before WW2 was in May 1939 by Kurt Schmidt in his little Mu-13, Fig 26, made in association with Akaflieg Munich, from Trebbin to Holz Kirchen 482km. The Mu-13 was a departure from standard progress being smaller - span 16m and lighter with an empty weight of 180kg. L/D was just on 25 at 62km/h but it gained by being easy to circle tightly in thermals. It also departed from tradition in having a welded steel tube fuselage.

In 1938 there was a competition for a 15m span glider intended for production - the first concept of a Standard Class. Eight gliders were entered of which three were outstanding: the Meise Olympia (Fig 27), the Mu-17 and the Polish Orlik. The Meise and Orlik had almost identical empty weights of 165kg, wing loadings of just over 17kg/m² and L/Ds of 25. WW2 arrested their development, but the desire for a good glider for the ordinary pilot had begun, though another 15 years would go by before the introduction of an official Standard Class.

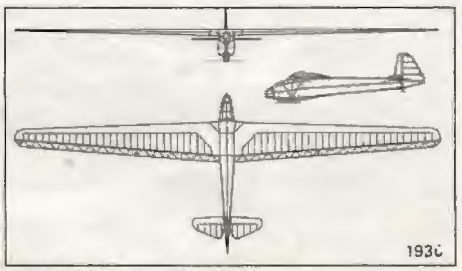


Fig 26. The 16m Mu-13 Atalante.

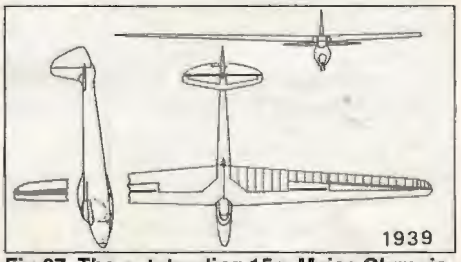


Fig 27. The outstanding 15m Meise Olympia.

By 1939 gliding was well established as a serious form of sporting flying all over the world, with many countries designing and manufacturing their own products. In Britain Slingsby was producing gliders, initially mainly modified German designs of medium performance such as the Falke and Grunau Baby, but these led to the Kirby Kite and Gull - the first glider to soar across the English Channel. With this support and a few imported high performance gliders the British gliding movement flourished.

Table 1 compares the characteristics of gliders from 1921 until 1942.

Table 1 – Gliders 1921-1942

Year	*Glider*	*Span (m)*	*Aspect ratio*	*Wing loading (kg/m²)*	*Emp wt (kg)*	*AUW (kg)*	*L/D*
1921	Harth	14	10.3	7.9	80	150	
1921	FVA-2	9.7	6	8.28	53	128	13
1921	Vampyr	12.6	9.95	12	120	195	16
1923	Konsul	18.7	16.7	9.1	185	270	23
1926	Darmstadt 2	18	19.4	14.3		252	
1929	Wien	19.1	19.6	13.8	158	248	
1930	Fafnir	19	20	16.9	220	25	
1931	Condor 2	17.3	14.64	16.25		330	25 @ 60
1932	Rhönadler	17.5	15.8	13.9	170	250	20
1933	Rhönbuzzard	14.3	14.6	17.1	135	240	19.8 @ 67
1934	Fafnir 2	19	20.4	21.6	270	382	26 @ 65
1935	Rhönsperber	15.2	15.3	19	183	288	21.6 @ 63
1935	Minimoa	17	15.2	17.5	228	353	25.7 @ 89
1936	Nemere	20	17.4	19.15	340	440	25
1937	Rheinland RVA-10	16	21.9	20.5	142	240	28 @ 85
1938	Reiher	19	18.64	17	235	330	33 @ 72
1938	Weihe	18	18.2	18.4	215	335	29
1942	Moswey 3	14	15	17.8	130	233	25

Part 2 will be in the next issue when Ann traces the development of gliders from 1945 to the present day. She shows how new materials were able to advance the L/D of 30 which seemed to be about the limit achievable with wood because of the difficulty of obtaining - and maintaining - a fair surface finish.

AN AEROBATIC DREAM - THE FOX

Jochen assess the aerobatic glider featured on the cover

For a long time glider pilots have dreamt of a two-seater for teaching aerobatics. Now they have the Polish Fox which is more than just a trainer. With the single-seater Swift, it is the most successful aerobatic competition glider and was flown by Jerzy Makula to win the 1993 World Aerobatic Championships. Both gliders were designed by by Edvard Marganski.

Although this 14m glider weighs more than the Swift, it can still compete well as a single-seater with the added bonus of being invaluable for training aerobatic pilots.

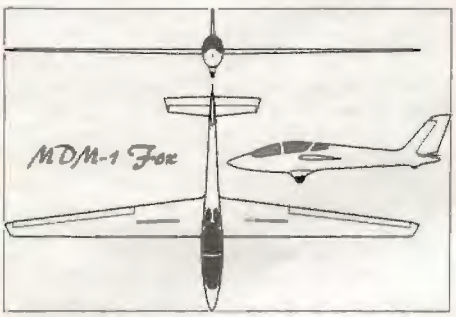
I flew the first Fox brought to Germany by the dealer, Güntert & Kohlmetz of Bruchsal. In the meantime this glider has been bought by the Förderverein Segelkunstflug (glider aerobatics support club) which promotes aerobatic gliding in Germany.

The Fox is similar to the Swift to rig and the 75kg wings aren't too heavy for a two-seater. The two-part canopy swings to the right side and each section may be opened separately. The canopy locking levers go through the canopy frame and can be operated from in and outside. They also serve as grips to open and close the canopy without the risk of damaging it by pushing the arm through the window, as you have to with most other gliders.

Small gas pressure springs keep the canopies in the open position. Together with the red emergency canopy jettison levers on the right-hand side of the canopy frame, the opening levers allow a safe canopy jettison with both hands.

Cockpit visibility is good and both seats give plenty of room for tall pilots. The upright seat position is excellent, allowing the pilot to have a good judgment of the glider's position and the *g* forces. The controls are well placed and designed with space allowed for ballast weights in front of the front seat.

It has an aerotow hook below the front of the fuselage and a winch hook in front of the big wheel. Both seats have double fixing points for the lower seat belts so they can be fixed to the most comfortable position or you can fly with a second safety belt.



I had an aerotow and as this is an aerobatic glider, the wing's angle of attack to the fuselage is low so that the glider looks attractive while flying upside down. Even with the large wheel the wing has the minimum angle to produce lift during take-off - the stick has to be kept back until airborne to avoid a long ground run. The ailerons are very effective so there is no worry about dropping the wing on the early part of the ground run. It is stable and easy to fly on aerotow with well co-ordinated and effective control forces which is not a bad characteristic for the inexperienced aerobatic pilot.

While the cockpit ventilation is acceptable, on a hot day I would like the option of more air.

After releasing I checked the stall. At about 80 km/h it starts buffeting but it will spin by using the rudder. The spin is steep though controllable and it will stop quickly. If the nose is held higher it enters a stable stall at a slightly higher speed and the ailerons are still effective but not the rudder. When you ease the stick forward it immediately unstalls the glider.

I was astonished that the response was the same in inverted flight. At the stall it behaved the same at around 110km/h and the inverted spin was as easy to control as the normal one. This makes it useful for standard spin training and also helps to demonstrate the results of mishandling during the recovery, especially for pilots who learned on modern GRP two-seaters which are reluctant to spin.

The Fox is delightful to handle with a roll rate at 105km/h of 1.8sec from 45° to 45° and 3.5sec for the complete 360° roll at 200km/h. With the fast roll rate and the stable flying characteristics, it is easy to carry out 4 or 8 point hesitation rolls. The high maximum (293 km/h) and manoeuvring (214km/h) speeds allow safe stall turns, tailslides and vertical rolls.

The aircraft is stressed for +7/-5*g* when dual and +9/-6*g* when flown solo. The glide performance hasn't been measured but is likely to be similar to present two-seater club GRP gliders.

Normal landing speed is 110km/h but when deploying the Schempp-Hirth airbrakes there is a strong nose down moment, so it makes sense to pull the trim lever back a bit for the approach. Because of the wing's angle of attack the glider can't be stalled on the landing roundout. It must not be held off fully otherwise the tail will touch the ground some time before the main wheel which has no shock absorption.

The disc brake, connected to the airbrake lever, is effective with no tendency for the nose to be forced down.

The Fox will cost DM90 000 plus VAT and including instruments.

JOHN STOCKWELL

JOHN'S BLUE WOODY

John, a former RAF navigator and civil pilot who is a ground examiner with the civil aviation department of Hong Kong, writes about building a Woodstock in his flat and the first flights in England last summer. John has over 600 gliding hours with a Diamond goal

A new C of A and just raring to go.

From coming off tow at 3000ft everything had gone as planned, but I'd descended to 1900ft before the Cambridge CAV 11 emitted two bleeps and, for the first time in her short certified life, my Blue Woody had rising air under her wings. Responding quickly with a snappy roll she centred and we were rewarded with the audio singing away merrily as we smoothly ascended under a clear blue sky to the 3800ft Inversion.

It was one of those days when the inversion was unmarked and the visibility seemed unlimited. We spent a few minutes playing in the top of this thermal which seemed to be hurtling itself at the invisible inversion barrier with the climb stopping quite abruptly.

Was it only yesterday morning I was outside the BGA office at 9am with all my paperwork and cheque in hand for the issue of the C of A for Hotel Papa Golf, as my Blue Woody is officially known. Thanks Dick (BGA chief technical officer) and the BGA girls for being so efficient that only half an hour or so later I was heading back to Tatenhill with the C of A, logbook, DI book plus T-shirts, caps and stickers I bought from the BGA shop whilst waiting for the paperwork.

In the distance the Blanik was marking another blue thermal, so I increased speed and headed in its direction where we joined underneath. With short (12 metre) high lift wings, efficient thermalling means winding into small tight circles which Woody took to but which was completely at variance to the Blanik's way of flying.

On Sunday we had a visit from Rosemary and Richard Harvey: he is the only other builder of a Woodstock in the UK (see the August issue of *S&G*, 1993, p214) and one of his recommendations was to tape the controls which I did before the first flight. Consequently they couldn't be a better mix of lightness coupled with quick response and this made thermalling so easy. I'd also disenabled the elevator trim, but the control forces are so light I'm not sure that a trim is necessary in future. It was good to see you Richard and one day we'll get our Woodys flying together for one of the best cover photos *S&G* has ever had!

Singing Patsy Cline's "Crazy" in tune with the vario (well, it seemed to be in tune to me!) we climbed again. Yes everyone said I was crazy to start building Woody four and a half years ago, but they should have seen me on that first flight.

I felt I had breathed life into this concatenation of plywood, spruce and nylon and now she was repaying me with the flight of my life. The day before I'd planned to do a series of low hops just to check as much as a I could as low as I could, which seemed a sound philosophy. The first hop to about 10ft, landing straight ahead, went so well I could see no point in prolonging the agony so went for a 3200ft tow.

After discussion I decided 55kt would be a good tow out speed, which in retrospect I thought was slow, so today I towed to 3000ft at 60kt. On the maiden flight I'd explored the speed range from cruise downwards, then turns in both directions. Very gently at first, then increasing up to about 45° of bank, after which I'd exercised the spoilers, increased the speed and flew for a bit in the approach configuration. Everything went so well there is little to comment on. Was I elated when we landed? You've no idea. I had a beer or two after that.

Today I'd approached the stall, gone to V_{NE}, used more bank in the turns and generally been a bit more aggressive on the controls.

Woody arrived in the UK some six weeks earlier in the large plywood box I had built for the journey and was taken to Tatenhill by my son. She had survived the flight well except for the capsule blowing in the altimeter (If only I had anticipated that I could have saved £200) and a small nick in the rudder.

Alan Roberts started the C of A inspection and faxed me the points needing attention which I set myself four days to complete. David Schofield made a zinc coated chassis to my measurements which turned the travelling box into a neat little (20ft) trailer. There's still a bit of work to do but she has a dry, snug home for the winter.

I digress. We're still flying at 3500ft after which we joined the DG-500 which we quickly outclimbed in our tight circles and I then recognised the tartan shorted figure in the front seat as my better half (who was as excited as me as she saw HPG circling above her) and we exchanged waves. Pat, how can I thank you enough? Woody was a long time being built, a competitor for your attention and a lot of inconvenience, but fun with much to discuss when construction finished for the day. After the DG had shot off a roll of film they flew off leaving me standing. Well I suppose you must get something in the way of performance when you spend all that money.

Woody's second flight was just under 90min. After 1800hrs in the making, was it worth it? You bet it was. It's absolutely fantastic to soar in a machine you have built from plans. It beats any other flying I've done. This wasn't test flying. It was built to plan and it flew to plan.

When Jim Maupin designed the Woodstock in the late 1970s he had a few basic principles in mind.

1. Use the least expensive materials available for each job.
2. Use as little of them as possible to keep it light.
3. Keep it simple.
4. Use common parts for as many jobs as possible.

As an example of these principles my Woodstock used the same extruded aluminium piano hinge for the elevator, ailerons, spoilers, rudder pedals and even the bottom seat hinges. I could go on, but suffice to say that you end up with a neat little machine that as far as fun is concerned competes with nothing but affluence.

Richard Havey estimated it cost about £7000 to build his Woodstock and I would say mine was about the same with £1500 for the trailer.

These days every gliding magazine bemoans declining membership and asks what is the cause. Surely you only have to look at the price lists? With all the research done at the top end for competition plots to fly faster and further, even a club buying a basic two-seater has to go far higher up the market than is really necessary to meet the aspirations of your average club pilot.

The PW-5 concept might help, but even that's more than twice what your average pilot will be paying for an essential item like a car. If you've got spare time, I am sure you can find three others who have as well, and I bet one has a large garage. Keep out of the cold and wet during winter months and build you own glider. You'll never join the ranks of those leaving the movement.

One and a half hours later.

WINNING AND THE WEAKER SEX

Wendy puts forward reasons why few women are near the top in competitive gliding or stay as active pilots at club level

Much has been written in the past about the apparent inability of the fairer sex to succeed in cross-country competition; in fact, even more has been written about their inability to achieve sustainable success at any level within the sport of gliding. The subject has reared its head once again in recent issues of *S&G*, with the current discussion of women's records and so time - I thought - for my twopenn'orth.

On the surface, women's records appear to be a nonsense, as indeed do women's competitions. Unlike many other male-dominated sports, gliding does not require physical strength, merely intelligence and a modicum of stamina. And any woman who juggles work, home, husband and children knows all about both! So women would appear, at first sight, to be at no disadvantage when it comes to succeeding as cross-country soaring pilots. Why is it, then, that so few of us face the challenge?

Even when we do take up the gauntlet, why do so few of us want to persist?

As an ex-glider pilot and long-lapsed instructor, I can quote my own experience: a gradual - and at first imperceptible - erosion of confidence to the point where I no longer enjoyed what I was doing. My feelings of inadequacy slowly transformed what had been one of the joys of my life into a burden I began to dread as each weekend approached.

So I quite simply admitted it and eventually stopped doing it. I no longer wanted to feel responsible for my own survival, let alone that of the poor benighted student in the front seat.

I must hasten to add that I was not incompetent; if anything, the reverse was true. I was a tidy pilot and a good teacher, both aloft and on the deck; "Wendy's Patent Diagrams" helped many an *ab-initio* through the complexities of Met and the theory of flight.

The loss of confidence didn't happen overnight, but at length, after a few false restarts, I cravenly retreated to the only arena where my skill and supremacy were unchallengeable - the club kitchen. As a soup dragon - eventually one of renown - I could feel fully a part of the gliding world, without having to do any of the hard or dangerous bits. Unless you count hefting scalding hot soup for 40 on to an airfield bus single-handed!

I volunteered for many other ground-based tasks: statistics, computers, photo interpreting, competition scoring, startline - all without the slightest desire to climb back into a single-seater. I take my gliding pleasures vicariously now, from the ground, and enjoy them mightily.

But that's just my story, and loss of confidence is far from the only explanation of female frailty when faced with the challenge of becoming a successful and committed glider pilot.

Now this is where I have to start generalising horribly, and no doubt, dear readers, many of you will shoot me down in flames by gleefully quoting exceptions to everything I am about to propound. Nevertheless, when comparing the average female with the average male, several factors stand out like the proverbial.

First and foremost, women are indeed less confident than men. This basic fact of life is exacerbated in gliding by the inherent danger of the sport, and by the fact that even if Mr Average should begin to doubt himself, or his skill, he would rather bale out without a parachute at 3000ft than admit it to his peers - leaving Ms Average feeling even more inadequate than nature dictated.

Secondly, while the last couple of generations pay lip service to equality, thousands of years of history and sexual conditioning cannot be overcome in what is, after all, only a blink of time's eye. Man is the hunter, the bread (or hairy mammoth) winner, the dominant sex, whose sole instinct is to successfully reproduce himself and feed and protect the dependants that arise. Woman is not only - crucially - one of those dependants, but has what is universally accepted as the subordinate role(s).

To her fall the tasks of cleaning, skinning and cooking the hairy mammoths, bearing and rearing still more dependent mouths to feed, nursing, clothing, entertaining and clearing up after everyone. Her lot is to juggle with the myriad necessities of civilised life, leaving her man free to concentrate on gliding - whoops, sorry, I mean providing.

Her lot is to juggle with the myriad necessities of civilised life

Hence it is not difficult for Mr Average to develop the single-minded concentration that cross-country and competition flying demand. For Ms Average, it's virtually impossible: her conditioning means that following the energy must fight for its share of the grey cells, competing with little Fred's poor school report, who'll cook dinner if she lands out, whether to put *ab-initio* teenage daughter on the pill, how to tell ma-in-law that her proposed visit clashes with the 15 Metre Nationals, and omigod! - did the crew switch the barograph on? Did I check the elevator connection? What's that funny noise?

A new acronym arises: LC^2 = Lapsed concentration loses contests! And that other well-known acronym TINSFOS (apologies to Platypus) has a different meaning here: There is no substitute for single-mindedness - and like talent, you can't buy single-mindedness either.

Following on from this is its natural concomitant: women think "What if..?" - conjuring up horrendous disasters that scare them s---less. Men don't - or at least would rather bale out, etc (see earlier).

Again, due to the pressures of bringing home the bacon (hairy mammoths are hard to find these days) man is naturally competitive. You name it, he'll turn it into a competitive sport, just to hone his aggressive skills. You only have to watch world snooker competitions to see what I mean... But woman by nature is a pacifier, a tender, a mediator.

Many women have fought back: Dido of Carthage, Boudicca, Joan of Arc, Elizabeth I - but no woman ever started a war. Unless you count Maggie Thatcher, but she was one of the exceptions to the average that I am willing to acknowledge before you, dear readers, thrust her down my throat in the next issue! They didn't call her the best "man" in Europe for nothing.

Careers also make an impact. Many current national - and world - level contest pilots are commercial fliers. Several are, or have been, servicemen - air and ground crew. These are people to whom the notion of flight is common or garden: flying is merely what they - or people they know - do for a living. They love it, but it holds no secrets, and has as much charisma as driving a well designed bus. Yet for Ms Average, deprived until recently of a like means of earning her crust, flying has, still, an aura of magic, and like magic, is full of tricks and illusions to trap the unwary.

Neither should we forget the financial considerations. Women earn less, and a single woman will find her circumstances straitened if she chooses to embroil herself fully in competitive gliding. For the marrieds, there are few male/female partnerships where the wherewithal permits equality of gliding opportunity. Sailplanes are not cheap, and to own two shares can be an unacceptable burden on a couple. If it should come to "There's only enough cash left for one aerotow, darling", who goes flying? And as the Deutschmark goes from strength to strength, in whose name is that single affordable share in the new LS-8?

You will, I hope, note that I have not trotted out many of the usual arguments. That's because I believe that they are for the most part merely excuses. You can always find someone to look after the kids while you fly: I did - gliding's like that. I don't believe that the lack of an effective female pee-tube is a deterrent: few contest flights are longer than 3-4hrs, and many are blisteringly fast 2-2.5hr affairs. I don't believe that physiology or weight are problems: average women are built far more for comfort in the narrow confines of the modern cockpit than average men, and an aft C of G - within limits - can give better performance in the climb!

No - in my opinion (not necessarily that of anyone else!) it's all down to mentality. To be successful in gliding, you need to *want* to be successful in gliding. Men are equipped by nature, history, conditioning and aptitude to want

to be competitive glider pilots. Women, who are often better handling pilots, are not! No-one is to "blame" for this state of affairs - it's only human nature, and it will take more than a generation or two to bring the situation into balance. Social evolution is a long drawn out process...

Meanwhile, let us support those exceptions to the rule, the women pilots who truly want to be successful; let us maintain the female records and competitions for those who want or need them; let us acknowledge, accept and understand that women and men are different gliding animals; but let us not rush about forming women's groups to make life easier for the ladies - what can you do that is constructive in the face of nature, after all? In time, changing lifestyles, attitudes and environment may gradually aid Ms Average to overcome her inherent handicaps, to the point where she will rival her mate in aggression and competitive spirit.

In the meantime, there are no obstacles in the way of her non-average sisters: women who are keen, talented, committed and really want to become successful glider pilots will find a way. Maybe we'll yet read in *The Times* how Rory Wells' granddaughter is wiping the floor with the rest of the World Championships in 2060, 2062, 2064...

European Mountain Gliding Centre

Jacques Noel, director of the European Mountain Gliding Centre, visited Lasham and Aston Down recently while in the UK with his wife Genevive, who runs the Met office at St Auban, France. Both clubs had participated in 1996 in the club programme now offered at Gap.

Jacques' talk on "Flight safety in the Southern Alps" stressed the fact that the significant increase in the 1996 accident rate came after quite a few years of below average incidents.

The lessons remain the same.

1. When close to the mountain keep your speed well above the stall to avoid being stalled inadvertently by gusts with a serious risk of a classic stall spin event ensuing.
2. Keep your stress level down by being certain at all times of your position and gliding range relative to fields and aerodromes so you can stay relaxed if conditions deteriorate.

On every good day in July and August there are at least 500 gliders airborne in an area some 125 miles square, most concentrated on a limited number of routes. The importance of flight safety and proper instruction in mountain flying techniques cannot be overemphasised.

Plans for the future include having more single-seaters for hire and an innovative time share scheme for Standard Class gliders with no annual running cost payments.

Contact Jacques Noel on 0033 4 92 64 2863 fax 4 92 640712 or Peter Hearne in the UK on 01622 812385 fax 813073.

Correction: Due to duff information, in the report on the Inter-Club League Final, p336, in the December issue we claimed that Andy Sanderson was Andrew Wilson (overall top Novice). Sorry to them both!

Let's Learn From This

Another in the series of true accounts written by members of the recently formed team of accident investigators

In the good old days before motor gliders, field landing practice and training used to take place in odd corners of the airfield, fields off the site that we could winch out of and at the end of a Silver distance attempt. As CFI I would make pilots land in confined spaces such as the road through the wood and in the car-park outside the clubhouse. The best glider for the job was the T-21 because you could fly the approach at 40-45kt and "parachute" it into stupid places using the spoilers (well that's what it felt like).

Now the story

The first solo went very well but the second launch went wrong at about 300ft. A new winch driver had decided to drag the T-21 into the air at 70kt. My young female tyro abandoned the launch and executed an S-turn to land towards the winch. This came as a bit of a shock to me having just given her a low launch failure on her pre-solo check from which she landed straight ahead. Shock turned to horror when the S-turn hesitated at the half way point and instead of reversing she continued the turn and rolled out pointing downwind.

RAF Lightning bases in the early 1970s had tall concrete blast walls dotted around the perimeter track and my new solo pilot was now heading straight for one at about a 70kt groundspeed and descending through 50ft. She had full spoiler out and was rapidly running out of room to do anything but total herself and the T-21 against the concrete.

I closed my eyes and waited for the crunch, but nothing happened - the T-21 had disappeared. A group of us ran to the expected crash site and, finding nothing, looked behind the wall for a pile of wreckage. Still nothing!

The T-21 had come to rest 100 yards down the road through the wood, still pointing downwind with both wingtips just clear of the trees. The pilot was amazingly calm about the whole incident. She explained that she had touched down before the blast wall and then, realising she would hit it, put the spoilers away, took off again and cleared the wall quite easily.

She had expected to flop gently into the wood but then decided to land properly on the road in front. There was virtually no wind in the lee of the blast wall or between the trees and, in spite of having to avoid a set of traffic lights and steer between the trees, she pulled off a nice landing.

Having extracted the glider from its unorthodox landing site, I launched my new hero on her third solo flight after a quick rebrief on low cable breaks.

Launch failure

- Select approach **attitude**.
- Achieve approach **speed**.
- **Land ahead** is the first option.
- Turn only if you can't land ahead.

Have **you** got a launch failure plan **before** you take-off?

BUBBLES OR COLUMNS

Some thoughts on the shape of thermals and how they show up when cumulus clouds develop

Nearly half a century ago the "bubble theory" of convection was introduced to explain the shape of thermals. It was not universally accepted and still produces protests from some pilots. The idea was disputed by some meteorologists too who preferred the idea of a "thermal plume", which is another way of describing the thermal as a column.

The bubble theory arose from studies of a water tank in which a dense salt solution (marked with a white precipitate) was allowed to sink through the less dense pure water. The difference in densities produced much the same motions as in a thermal which rises through a colder denser atmosphere. The time lapse photos looked remarkably like real cumulus clouds when the picture was inverted so that the salt cloud appeared to rise.

This picture of a thermal bubble appeared partly because the initial watery thermal was released as a cup shaped mass in the first place. However, the majority of real thermals grow from a wide area above which the warm air exists initially as a shallow layer. As part of this air rises it forms a tall column which is fed by an inflow of surface air. On calm days windsocks often reveal where a thermal has lifted off.

The bubble shape first appears at the top of the column. This column probably remains intact until the supply of warm air is cut off. Thus thermals can be both columns and bubbles, but they usually begin as a column and develop the bubble circulation at the top.

Stubble fire illustration

Photo A shows stubble fire smoke forming a column which changed into a bubble shape at the top where a small cumulus formed. Although the stubble fire supplies more concentrated heat than is available for most thermals the shape of the lift is probably similar. While the fire continues the smoky column has fairly parallel sides. When the fire dies out the base of the column narrows and breaks off; the remaining smoke is drawn up into the bubble and soon spreads out under the inversion.

Simple thermal structure

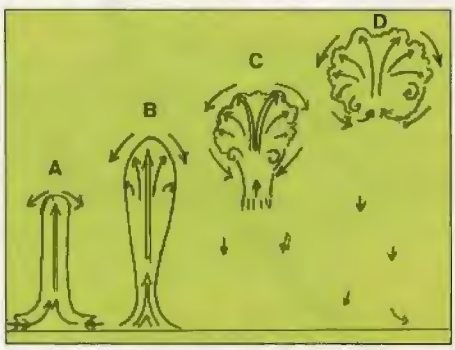


Fig 1. The sequence A to D shows how a thermal column can evolve from a layer of warm surface air. Exhaustion of the supply first produces a neck in the column. When this breaks the bubble structure takes over.

It seems likely that many thermals have the same structure as in Fig 1. At A the column has just begun and the top is pushing the air aside initiating the outflow of a bubble. At B the column broadens at the top and the edges are developing the outward curving motion typical of a forming bubble. The column also develops a neck near the base where the air is accelerating up. In C the supply of warm surface air has ceased and the column is drawn up into the expanding bubble. The final stage is shown in D. It is likely that the bubble, which is expanding as it draws in cooler air, loses so much heat that only its momentum keeps it still rising.

Many bubbles come to rest soon after stage D but in very unstable air a few continue to shoot up leaving a trail like a rocket. Wind shear eventually blows them to one side leaving a slanting spur to evaporate in the dry air.

Photo A. Stubble fire showing parallel sides to the smoke column until it reaches cloudbase.

Vortex rings

The extreme case of a bubble is the vortex ring. A fully formed natural vortex ring is probably rare. It can be observed when the thermal starts as an explosion, for example when a petrol tank blows up after an aircraft crash. Then the hot air is hurled up instead of rising naturally and instead of a column you get a vortex ring. The column forms later when the system settles down into a long lasting fire. Old fashioned steam locomotives occasionally puffed out vortex rings from their funnels. Early atomic bomb tests also produced vortex rings.

There is a tendency for vortex ring structure to appear in strong thermals. It shows up in growing cumulus. The core of the thermal rises at about twice the speed of the summit. The upper edges of the cloud move outwards from the axis of lift and slow down. Fig 2 A shows how the profile of a growing thermal expands with small bulges moving outwards as the cloud ascends. Seen through a theodolite these edges sink relative to the summit. Some actually are in sink. This sink can often be found just before you reach a thermal. Thus a thermal bubble contains the initial stages of a vortex ring but it seldom develops fully.

Fig 2 B shows a true vortex ring puffed from a funnel. It is given a boost before it emerges and friction from the inside of the funnel helps create the spin which keeps the ring intact as it rises. Vortex rings do not all rise like this. Skillful pipe smokers can emit them at any angle.

Some visual indications of thermal structure

Blue thermals remain essentially invisible until they pass the condensation level. Sometimes they carry up dust which forms a visible haze cap which shows up well when viewed through

Above: Photo B. Very short lived puff of cu formed where a strong thermal penetrated an inversion. Below: Photo C. Very flat cu with cloudbase just below the inversion.

Left: Photo E. Wind shear effect. Old unsupported bubble blown off to left, new active bubble forming on right. Right: Photo F. Decay of an unsupported bubble (left) leaving only cloud tendril where the moist core had been.

polaroid glasses. Lasers have been used to track the dust in a rising blue thermal. An American helicopter pilot equipped with infra-red goggles said desert thermals appeared as snaky columns.

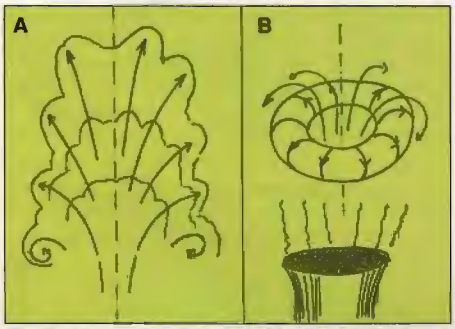


Fig 2. Air motions in a rising thermal showing in A how features move outward from the main axis. In B the bubble is hurled upwards (by an explosion or from a funnel) and a vortex ring can form.

Thermals start to rise because they are warmer and lighter than their environment but once in motion they develop a momentum which can carry them up even when they have lost their excess temperature. A strong inversion halts most thermals within a few hundred feet. Little puffs of cloud occasionally mark the peak of a thermal which penetrates the inversion. These puffs appear when the condensation level is above the inversion. They are formed by an overshooting thermal thrusting into the dry stable air aloft. These puffs are extremely short lived and do not look much like bubbles. Their motion is chiefly horizontal showing that the upward momentum of the rising column has been diverted

Photo D. Deep convection. The thermal column under the main dome had ceased and there is no flat base. New lift likely to be developing further to the right.

sideways. Photo B shows such a puff rising into a wind shear which pulled the tendrils of cloud over towards the left. It was one of a number of very brief puffs formed in strong thermals over a sun facing slope. They were the only clouds on an otherwise blue day.

When the condensation level is just below the inversion one gets typical shallow cumulus. (Photo C). Any bubble which had formed lower down is flattened out under the inversion. In calm conditions one can see the elements of cloud moving out from the core in different directions before evaporating. A good time to watch this is when lying on the ground at the launch point waiting for one's turn. Strong thermals produce marked horizontal movements in several opposing directions where the air is deflected by the inversion. Small hook shapes may appear if the clouds are deeper. These are caused by the wind shear trying to roll up the cloud. I have seen a complete hoop formed this way but it evaporated too rapidly for a photo.

In less stable air when the inversion is high above the condensation level clouds grow large enough to show the structure of the thermal more clearly. While the thermal column lasts the cloudbase is usually flat and well defined. When the thermal column ends the cloudbase gradually loses its sharpness but the top may go on rising.

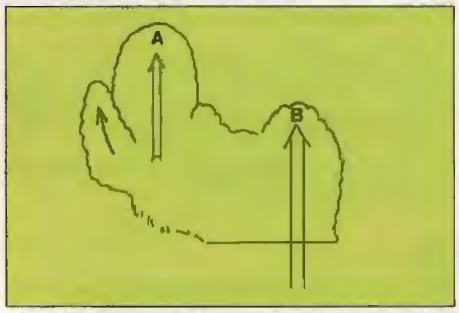


Fig 3. Simplified cloud outlines to accompany photo D. Thermal A is turning into a bubble with no supporting column below but the new cell B shows where useful lift occurs. ➡

Left: Photo G. A three bubble cloud; oldest top right, youngest just starting bottom left. Right: Photo H. Decay due to ending of thermal column below cloud.

An active bubble is marked by a clearly defined dome shaped top.

Rising domes show the outline of the thermal bubble for some time after it has lost its supporting column. At this stage it is probably a true bubble very like the laboratory model. There is seldom any useful lift below such a bubble. One has to move upwind to locate a fresh column of lift where the next thermal enters. Fig 3 is a simplification of photo D which illustrates this effect. The original thermal is at A where it is still rising with a well formed dome but the decayed cloudbase beneath it shows there is no longer a column of lift entering the cloud directly under the dome. The new thermal at B is more recent and had lift below cloudbase at that time.

Wind shear pushes dying bubbles aside

A long lasting cumulus may be seen to have formed from several columns which broke off into individual bubbles of cloud. As the supporting column dies the dome shaped bubble goes on rising for a time but is apt to be drifted sideways by any wind shear. Photo E shows the old bubble blown aside to the left and a new cell forming to the right. Photo F illustrates the fate of such unsupported bubbles. The first sign of decay is a loss of definition at the cloud edge.

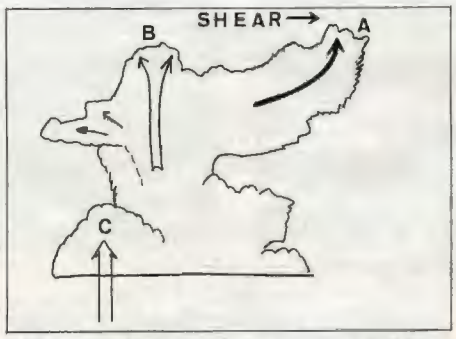


Fig 4. Cloud outlines of a three cell cumulus in a weak wind shear from right to left. Cell A is dying and being blown sideways. Cell B is reaching its maximum height but the incoming lift is being transferred to the small cell C.

Active domes often have many smaller bulges growing out of them. When a dome decays the outline becomes flabby. The edges are first to be eroded by mixing with the surrounding dry air. The old core is last to go. Photo F shows the last shreds of a dead thermal blowing off to the left.

Photos G and H show the collapse of bubbles in a cloud which lost its feeder column of lift underneath. The wind shear was from right to left. Fig 4 shows how the cloud in G evolved. The first and oldest bubble at A had already begun to lose shape on the right, a slightly younger bubble B appears at top left while a new and much smaller cell C is forming bottom left. Unfortunately the feeder column was dying and the third cell C did not grow much larger. Photo H shows the result a few minutes later. Some much smaller cu had by then begun to form well to the left of the original cloud.

Effect of strong winds

Long lasting thermal columns form best in very light winds. Strong winds tend to break up most thermal columns. The turbulence caused by strong winds prevents large reservoirs of warm air from developing over the ground. Instead the turbulence tends to pull broken rough bubbles of rising air off the warm surface. These are extremely hard to work at low levels.

Higher up the rising air seems to merge into larger volumes of lift and near cloudbase the soaring becomes easier. A big cumulus moving quickly downwind seldom has long lasting roots reaching right down to the ground. However, strong winds often produce cloud streets which have a different and longer lasting helical circulation under them.

GPS JOTTINGS

Edited by DICKIE FEAKES

This issue I am going to cover two topics; the recent press story that during August 1999 GPS will fail; and some further discussion on its accuracy, particularly in relation to differential GPS (DGPS).

A few months ago a widely published press story forecast that during August 1999 the GPS system would fail. The basis behind the story is that GPS uses weeks to keep track of time, with week 1 being the time that the first satellite was placed in orbit. During August 1999, the week count since that time will have reached 1024, which in computer binary notation is the highest that the GPS system can apparently cope with. Hence the suggestion was when the week count reached this figure, the system would crash. In reality, the designers of GPS software have long realised this limitation and taken steps to prevent any disaster.

Notwithstanding the above, if you are planning to celebrate the millennium by visiting Australia to do your 1000km triangle, it may be unwise to rely on the system correctly operating your IGC approved logger at millenium rollover, 0001hrs UTC (GMT) on January 1, 2000, which will occur just about as you go through the start gate Australian local time...

Much uninformed comment is heard in the bazaars regarding the basic accuracy of GPS and one particular story often heard says that in gliding we will all be using DGPS within a year! As outlined in a earlier "GPS Jottings" (June issue, p170), the basic accuracy of the GPS system to which we have regular access is around ten metres. This level of accuracy is degraded artificially by the US military by means of a system called Selective Availability (S/A). S/A degrades the system accuracy to a maximum of 100 metres by altering the clock timing on which the sytem relies.

The effect of S/A can easily be seen by coupling a logger to a static GPS and analysing the resulting trace. It will be seen that the apparent position follows a geometric pattern over a period of some hours rather than a totally random scatter. Furthermore, if two systems are set up side by side, the pattern will be identical in both units. This fact is used by DGPS to calculate a correction at any given time so that the position error due to the incorrect timing signal can be corrected.

This is achieved by positioning a master GPS, combined with simple data link transmitter, at an accurately surveyed position. Every second, this master GPS compares the calculated GPS position with its known accurate position and produces an position error. This position error is then transmitted by the datalink, together with data which identifies which satellites (or constellation) were used to calculate the position.

A GPS coupled to a suitable datalink receiver uses this information first to select the same constellation with which to calculate its position, and then uses the received error signal to correct that position. The result is that extremely high degrees of accuracy can now be achieved, typically better than one metre horizontally and three metres vertically.

In many countries, some FM broadcasters transmit this differential information on a sub carrier. This means that it does not interfere with the normal radio programme being broadcast but can be decoded by a suitable receiver. In the UK, Classic FM already broadcasts differential information and by paying a licence fee, it is possible to extract this DGPS information and feed it to your handheld or glider mounted GPS receiver to give it a high degree of accuracy.

However, it is difficult to see why in gliding, even in World Championships, accuracies of this order are required. The straightforward S/A signal is mind bendingly accurate for most of us, and if the US miltary turn off the S/A, as they have indicated they might, it is difficult to see why gliding needs to get involved in the complexities of DGPS.

WAY OFF TRACK

Obituary - Bill Bedford

I was immensely saddened to hear, on October 21, of the death the day before of Bill Bedford shortly before his 76th birthday. In the 1950s and 60s he became virtually a household name and one of the most famous test pilots the British aircraft industry has ever seen. Bill was certainly one of the most consummate aviators ever to have graced British gliding's ranks.

My sadness at Bill's death was heightened by surprise, as I had last run into him at the Farnborough show only about six weeks before. Then he seemed to be in as fine fettle as any man in his mid-70s can expect to be.

His name will ever be remembered for the key pioneering role he played in the development of practical V/STOL flight, from the first tethered flight of the Hawker P.1127 technology demonstrator to the operational Harrier fighters of today.

His place in British gliding history largely hangs on a flight he made on August 24, 1950, while a student at the Empire Test Pilots' School at Farnborough. There, in an Olympia 2B - a hot ship in those days - so burdened with an ex-Heinkel 111 artificial horizon and inverter that he could not carry oxygen, he climbed repeatedly in a cu-nim to set the British absolute height record of 21 338ft, setting the gain of height record too and landing at Driffield in Yorkshire to gain also his Gold distance. More than 70 percent of the 193 mile, 3hr 50min flight had been spent in cloud.

His contemporary account of this literally hair-raising climb was an *S&G* Classic in the August 1991 issue, p192. Read it: it will make your hair stand on end too. Static electricity was jumping from the locking pin of his Sutton harness to his neck, and from the inverter to his bum.

Later, Bill went on to set a British goal distance record of 257 miles.

Because he was involved in both his wartime operational flying and, later, service and industry test flying almost solely with single-seat fighters, relatively few people will ever have flown with Bill Bedford.

I count myself lucky that I first flew supersonically with him in a dive in a Hunter T.7A over the English Channel on May 10, 1957. As I have previously recalled in *Way Off Track*, we then returned from somewhere south of Brighton to Dunsfold in Surrey in a virtually continuous eight point hesitation roll. A picture marking this event hangs above my desk as I write.

As a *display* pilot, in the widest sense, the long histories of the Farnborough and Paris shows have never seen a better performer than Bill.

In December 1961 he ejected at only 200ft from an early P.1127 which, with minimal control, he was nursing towards an emergency landing at RNAS Yeovilton. The crashing aircraft went on to destroy an ill-placed barn, which the Fleet Air Arm had long wanted to see razed. So thereby he earned the Navy's thanks.

Long after he had retired to desk jobs with Hawker and, latterly, BAe, his gliding background earned him an unexpected return to flying duties. BAe asked him to evaluate the then new PIK 20 as potential "offset" goods when the Finnish Air Force order for BAe Hawk trainers was being set up.

Bill Bedford was one of *Flight's* "total aviation persons." He was not, however, an aeronautical "anorak" but a 150 per cent contributor to the community at large, so much so that, among all his many honours, his home town elected him Esher's Citizen of the Year for 1995.

In any celestial competition, I know which angel will now be flying the longest, best positioned and most elegantly terminated spins.

Tragic - but truly an accident

My aversion to technology is well known among my peers. Some even claim to remember the evident reluctance with which I updated from candles to oil lamps.

Very few years ago, I finally bit the bullet and came to terms with a computer - but *only* for word processing, all its other arcane and more complex capabilities still being a closed book to me. And, significantly, my computer and printer are on a side table, my main desk being occupied by a large, upright manual typewriter on which I bang out draft copy twice as accurately and three times as fast, but for which servicing is now very hard to find.

The only innovation of the last 15 years which I have warmly welcomed is the fax machine: pagers, personal stereos and particularly mobile phones are all, in my view, blessings from Hell.

In the soaring context my Jantar, built in September 1976, has an instrument panel entirely appropriate for that age. And I'm such a hotshot map reader - and so mean - that I haven't
resorted to a GPS. So I am not, yet, a surfer on the Internet. I do not use e-mail, a development which moves me to despair when e-mailers use their incomprehensible addresses to have letters published in the press while giving no clue to readers about where they're actually coming from.

It was only after a strong complaint from Penguin that the *Guardian* - which unfailingly comes out as the *Grauniad* whether I type it manually or electronically - abandoned this infuriating technological snobbery and demanded that e-mail contributors to its letters page should give their *real* addresses too. The *Independent* then followed suit. But the benefits of the Internet were brought home to me very forcefully recently by Jonathan May and Phil Woodruffe.

They are the two Bicester pilots who, flying from the French national gliding centre at St Auban - this year's World Champs venue - had their Janus downed near Gap-Tallard in June 1995. A novice skydiver emerged, in free fall, from the cloud sheet just above them to take three metres off their port wing.

Tragically, he was killed; it was only with great difficulty and some luck that Jonathan and Phil baled out and survived.

Charged by the French authorities with involuntary manslaughter for their innocent involvement in a million-to-one misfortune, the hapless Jonathan and Phil appealed on the Internet for first-hand information about both ➡

gliding andparachuting practices in the southern French Alps and the tendency, there and elsewhere, for skydivers to drop through cloud cover whatever the rules and commonsense may say.

Their numerous responses, with compelling first-hand testimony, came from as far afield as Berlin, Dublin and southern California, Canada, New Zealand, Finland, Switzerland, the Netherlands, Denmark and elsewhere in Europe.

Replies provided apparent support for their allegation of perjury by a senior St Auban official and their contention that no prohibited zone for gliders has been promulgated around Gap-Tallard and that, indeed, its hangars are listed and frequently designated as TPs.

With Jonathan and Phil facing up to three years' chokey and an unpleasant suspicion that both the French gliding and parachuting federations would prefer that to happen rather than question their own practices, Penguin would urge his three known readers and others to support the fund being raised, with BGA Executive endorsement, to aid their defence. (See BGA News.)

The investigating magistrate has apparently chosen to ignore the findings of his own questionnaire: that none of the British and Dutch pilots then flying from St Auban had heard a word in any briefing about a 5km no-go zone around Gap-Tallard. None is shown on any charts.

Faced with the sheaf of multi-national evidence collected through the Internet, one can't avoid the feeling that the local French authorities have prepared something for which I don't know the appropriate gallic phrase but which ('ow do you say eet?) might be called a stitch-up here.

Now listed to take place on June 25, the week before the start of the World Championships, Jonathan and Phil's trial at Gap is unlikely to contribute to a happy fraternal atmosphere at St Auban, little more than 30 miles away.

INTERNATIONAL VINTAGE RALLY

The Vintage GC's 24th Rally was held at Farkashegy, Hungary in August. The 30 glider entry was smaller than usual, partly because of the long journey and the fact that the rally had been held there twice before. However, Britain was well represented by Carol and Malcolm Wilton-Jones (Prefect); Margaret James and David Shrimpton (Swallow), Vernon Jennings and Peter Chamberlain (L-Spatz); David Jones (King Kite) and Chris Wills (Kranich 2B-1).

There was good soaring weather on three days with thermal and hill soaring to modest heights on another. But the Hungarians said it was the worst summer for 30 years.

On one of the good days with a high cloudbase the little Vöcsök, a nacelled primary flown by Hungary's Basti Jozsef, outclimed everyone to stay up for half the day. Could this be a record for the type?

The gypsy orchestras and the sight of Budapest from low altitude was a wonderful, never to be forgotten experience.

(Extracts from a report by Chris Wills.)

The "3 into 1" T-21

Our photo by Ian Dunkley of Derby & Lancs GC shows the test rig of the T-21 they are restoring from three wrecked gliders. The fuselage has almost been restored with the wings from two aircraft and the tail from the third. The work is being done in the club's well equipped vintage workshop. Offers of help with the project will be welcome.

THE EARLY BIRD CATCHES THE WORM

Awake! For morning in the Bowl of Night
Has flung the Stone that puts the Stars to Flight.
And Lo! the Hunter of the East has caught
The Sultan's Turret in a Noose of Light *The Rubáiyát of Omar Khayyám*

Roger's photograph of Balmoral Castle.

Westercoull Farmhouse, Tarland, Aberdeenshire. Six o'clock in the morning and the first glimmer of light was beginning to show through the undrawn curtains. Across the fields, on the lochs, wild geese were clamouring and it was freezing. Lying on the floor in my sleeping bag, I was wearing a thick sweater over my pyjamas and I was freezing too.

Might as well get up! Away in the west the dark sky showed a pink break in the first light of dawn. Today could be good, but an early start would be vital to catch the laminar flow of the wave before it broke or got too high to contact.

Forget shaving. Quick breakfast and get going. Before 7am I was driving towards Dinnet. Ahead, the morning light showed the top half of Morven was white with snow, I began to recall something long forgotten...

"...and the first September snow
Doth white the top of the bleak grey moor
And blacken the loch below..."

At the airfield people were busily rigging in the early light. By getting my fuselage out quickly, I claimed priority and soon had help to rig my DG-300. A quick DI, barograph sealed and ticking, oxygen ready, dry towel over the canopy to prevent icing, tail dolly on and roll to the launch queue. The first tug was already taking off.

"This could be your lucky day." Mike Law, looking for all the world like a Walter Scott character, shoved his great bushy beard against the clear vision panel.

"You always say that, Mike."

And we were on our way. Climbing sweetly past the clubhouse, silent and grey in the early morning. Up into the turbulence of the rotor-flow and out over the lochs. The tug was bucking about but not too badly. The vario was all over the place. Then, at 2000ft, everything went calm.

The vario went to 10kt up and stayed there. We had contacted wave. I pulled off and the vario continued to squeal. Half-heartedly, I stuffed the nose down and held it there for a moment. At 100kt I pulled up and raised the undercarriage. At 45kt I was climbing away with a notched low point on my barograph trace.

I set up a beat on the downwind side of Morven. There was about a mile of good lift at a steady 5kt. Soaring it like a ridge, we soon reached 5000ft. All a bit boring really! - 7000, 8000, 9000ft, all in the same place over the lochs. Hat off, oxygen on, two litres a minute flow. Hat on again and nicely established. Out in front to the west was solid cloud but by then I was looking down on it. Behind was Aberdeen and the coast, with the sun just coming up over the horizon and catching the tips of the snow covered Cairngorms to the north-west. It was an amazing view with half the world in bright sunlight and the other half still in shadow.

At 12 000ft the rate of climb petered out and I was prepared for yet another unsuccessful attempt at Diamond height. After eleven trips to Aboyne, one gets used to disappointment.

"Don't just sit there. Use your head."

To the south-west was a solid blanket of cloud but on the downwind side there appeared to be an open slot over Loch Muick. I decided to investigate. It was less than 15 miles but I lost over 3000ft in getting there. Arriving with oxygen off, I tried to locate the primary wave. Just as I was beginning to think I had got it all wrong again, I found myself back in weak lift. I set up a beat and it steadily improved. Then, quite suddenly, it got much better.

At 5kt, going up through 9000ft again, I hung my hat on the brake lever and started to replace my oxygen mask. I tried to fasten the little plastic hooks behind my neck but they were missing. I could not go any further without oxygen. With surprising calmness, I trimmed out the glider, vario screaming, at 45kt. Then I removed the whole mask and laid it on my lap. The offending toggle was there but the straps were all unthreaded.

With freezing fingers, I fumbled to rethread the straps and finally donned the mask and took another gulp of oxygen. I was at 12 000ft again and climbing fast but the canopy was icing up badly. With my moist breath contained by the mask and condensing in a steady dribble down my chin, I rubbed a hole in the frost on the inside of the canopy and opened the air vent to full. The choice was easy - frozen feet or frozen canopy. I chose frozen feet.

By then we were established in a steady 5kt climb and the length of beat in good lift was also increasing. On my left- hand beat I was heading 270° and on my right-hand beat, due north. That kept me on a steady track as we rose higher. Ahead were jagged mountains, all in snow. To the south I could see the Forth and Tay estuaries, Edinburgh and away down the coast to St Abbs Head and the Cheviots. On my north beat I could see the NE coast, Fraserborough, Lossiemouth and then more cloud. Between me and Aberdeen I could see the "vision splendid of the sunlit plains extended", Grampian and Tayside, where the harvest comes late and winter comes early, all green and gold in the morning sun. No need to worry about cloud forming underneath. The view was as clear as crystal and the canopy was no worse. At last, in the high, dry air, the sun was keeping it clear.

The next part was the real nail-biter. I had been over 16 000ft on several previous occasions and the last time I missed Diamond height by only 100ft. Could this possibly hold out? Another 10min in this lift and I would be at Diamond height. With the oxygen flow raised to four litres/min, I started doing the sums: 2500 plus 16 400 = 18 900, say 19 000ft. Slowly, desperately slowly, the altimeter wound up but the rate of climb had dropped to 2kt at 18 000ft. I had so often imagined this moment but now it all seemed unreal. With one more beat to go suddenly the lift returned to 5kt.

At 19 000ft we were there! After staying with it for another 1000ft to make sure, I held the oxygen mask aside and radioed back to base "411 20 000ft over Loch Muick". Then I continued the beat towards Ballater and watched all the little white dots converging underneath.

At 20 200ft I pulled the airbrakes, lowered the undercarriage and started the long let-down. That took another 30min, after deliberately allowing the gel coat to warm up for a while in the sunshine at about 7000ft.

Several gliders went well above 20 000ft that morning, but I had my Diamond and that was good enough for me.

JUST ANOTHER DAY

Geoff, an assistant instructor at Bowland Forest Gliding Club, has 600hrs and recently came back to instructing.

A midweek in February and I arrived at the club about 9.30am. I would be the only instructor, but that was no problem on a Wednesday - it would be just another day in the back seat. Oh, except that Mark and Phil wanted check rides.

What an easy life we instructors have. The others had arrived an hour before me, herded the sheep off the field, got everything out and DI'd. For a change that winter it wasn't a 90° crosswind, so there was no agonising over from which end to fly. Good viz, wind 280/15 so the west bowl should be working nicely. No useful thermal of course.

After reminding Mark, who was trying to start one of the tractors, that on Wednesdays we are BGFC, Bowland Gentlemen's Flying Club, and only the duty instructor is allowed to use foul and abusive language, we got started.

A couple of normal training flights, two or three cable breaks (it was that time of year) and Phil and I went off for his check flight. In my briefing in the clubhouse I'd explained that as we (the Instructors' Committee) knew they could fly, the object of these flights was to see how they coped under pressure. Also, they were not to assume that I could get us out of any situation; it wasn't a very big step from their limits to my own, so my ineptitude could quite easily drop us in the mire.

They looked suitably solemn, but I think they were just humouring me really. I hoped I wouldn't be proved right.

I had Phil do a few lowish hill entries and then we started on the character building stuff. My aim was to steadily increase the work load and, hopefully, the anxiety level, and see what happened. I decided to start with a few spins.

I'm a very timid instructor and so built up to the spins gradually, even though I'd done Phil's annual spin checks a few weeks previously. This was perhaps counter-productive in the context of the flight, but I firmly believe that flying vertically downwards 10sec from impact is not the time to find out that the guy in the front seat is having an off-day. So we did a few stalls (which in themselves can be very revealing), a spin half turn left, then half turn right, and back to the hill to get some height to start the grand finale.

We were getting to about 1400ft so I reckoned about two turns in a spin was all my nerves could take. I didn't tell Phil this of course; I just said he was to hold it in until I told him to recover and we were to finish up flying towards Beacon Fell (a local pimple). Also from now on he was to give me a running commentary until we landed.

"OK. Spin left now."

He had a marginal preference for spinning right.

"Hold it in."

With our weight, if he flinched in the slightest, the K-13 would come out of the spin.

"Hold it."

He was too. It was going well.

"Hold it."

The ground was beginning to look interestingly close.

"Hold it."

I couldn't take much more of that even if Phil could.

"Recover."

As Phil started the recovery, I told him what I wanted next, just to keep him busy. In spite of this he recovered really well, with maxima of 65kts and just over 2*g*, and about on the correct heading, so he had to turn 180° to take us back to the hill (you see how devious this instructing makes us).

Although, as Phil pointed out, we were down to the minimum entry height, we were still too high to be really uncomfortable so, after warning Phil, I pulled the brakes as he turned into the bowl. Five seconds later he mentioned that we were, in his opinion, very low, getting lower, flying away from the site, and on the whole he would much rather be somewhere else. Anywhere else. As I was beginning to agree, I closed the brakes and told him to take us home.

Once we were going in the other direction I reckoned that I'd got it about right, as we were so low that Phil would have to fly round the green knoll. This meant flying away from the hill and, although we couldn't yet see it, away from the site, which shoves up the anxiety quotient nicely.

Phil, by tucking in close enough to make the odd sheep hurdle the port wingtip, gained height again, even with the extra knots that I require when we're that close. He then said we were high enough to get over the saddle between the knoll and the main hill. Dammit, he was right. It was too dangerous to pull the brakes on him just there, so I said nothing, hoping he would think I'd passed out with fright.

Once over the saddle we could see the site, and although we were still quite close to the ground it's downhill all the way, and in the conditions that day there wasn't the slightest doubt that we could get back safely. As Phil told me about the circuit he was going to set up I thought he was relaxing a bit, perhaps thinking the worst was over. Poor sucker; he was about to find his options disappearing.

Phil positioned us on a close-in downwind leg, from which he would soon be able to turn in whenever he wanted, with lots of options. When he got as far as "undercarriage" in his downwind checks, I pulled the brakes. He edged in towards the field. I closed the brakes, he straightened up. We ran into weak lift (!), he edged out. All good stuff, but too easy. Why, this would be a standard circuit at Camphill from what I'd been told, so I pulled the brakes again and held them for a bit.

Well, that certainly changed things. We were suddenly down to 30sec flying time and three options, excluding the controlled crash. This could become a fairly frenetic 30sec.

Option 1 was OK if flown well, option 2 was safe but had to be flown very precisely while option 3 wasn't as nice as the other two. Phil had gone totally silent apart from the whirring and clanking from his brain; well, I could live with that for the time being but I wondered if he was tightening up?

I put one finger on top of the stick to check, but found he was still nice and relaxed. Just very quiet. I could also see he was setting us up for option 1, and had even trimmed for our approach speed, which I thought was pretty cool in the circumstances.

By now I felt I was performing pretty well myself. The desire to survive was making the old cogs churn round fast enough to produce that illusion of time slowing down, so you see the world in super detail. It can make you think you live most of your life in a fog, but really means you're near your own limits, so you must be careful not to get carried away by your own brilliance.

But I had enough left to pull the brakes again. Goodbye option 1. I closed them and told Phil I wouldn't touch them again; no answer, but things were getting tight now with only about 20sec to arrival and only two options left. There was no room for any misunderstanding so I had to know what Phil was thinking.

"Talk to me Phil."

"Oh sorry. I could go almost straight and aim to the right of the launch point but it's downhill as well as downwind so I'll turn right even though we're low and land towards the winch."

I relaxed. But only a little. It still had to be flown very well; if his speed varied by the 2kts I was provisionally allowing him, or if the turn was less than perfect, I'd take it off him.

Anticlimax. We stopped and I dragged myself out of the cockpit, wishing I'd not given up smoking. Phil, running on a 50/50 blood/adrenaline mix, leapt out grinning like a lunatic.

"Sorry I stopped talking, but suddenly I didn't have enough brain to talk and fly."

Good, I'd got it right then.

John arrived with the tractor. "That looked very interesting" he said, "but I'm afraid Mark's finally taken leave of his senses - he's smoking two cigarettes at once."

Mark? Hell's teeth, now I had to do it all again with Mark.

Chris Pullen, chairman of the BGA Instructors' Committee, adds: Who says instructing is easy? I think Geoff's article goes some way to illustrate just how demanding instructing can be. Instructors need to plan their lessons in order to develop their students. This often requires very careful thought to make the exercises realistic and useful without putting the glider into a difficult situation. These demands on the brain cell can leave instructors exhausted, even though they may never have touched the controls.

For those of you who think we instructors just sit in the back for the ride, take heed.

It's no wonder that I look older than my years!!

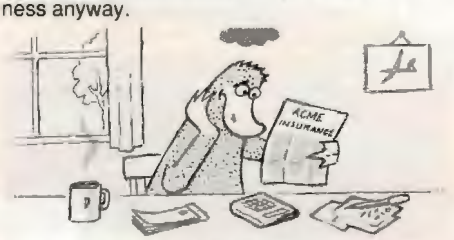
TAIL FEATHERS

Wintry thoughts about policies, premiums and six point print

It's perishing cold as I write this at the beginning of December 1996, and it'll probably still be perishing cold as you read this around the beginning of February 1997. But at least the days will be getting longer and a general feeling of happy anticipation will be suffusing your stiff joints and congealed bloodstream. From my present standpoint all I anticipate is Christmas, to which I say "Bah, humbug!" Great man,

"Bah, humbug!"

Ebenezer Scrooge, a grouch after my own heart. Then the long, long winter lies ahead. For family health reasons the expedient of heading for Australia is not on this year. I have resorted to work, the ultimate four letter word, to keep my mind from idleness and decay. Well, from idleness anyway.



A gloomy seasonal item.

A gloomy seasonal item to contemplate is insurance. The Africans have a useful saying "Never throw stones at the crocodiles while fording a river" and since insurers are the biggest crocodiles in my particular creek, I am not going to bait them. Indeed, I think insurers of light aircraft and gliders are absolute saints. When I am inclined to grumble about underwriters I remind myself that I would not insure glider pilots or their kit at any price. So the three following items are just observations rather than whinges.

First I was impressed in 1995 by how much cheaper glider insurance is in America than in Britain. To insure an ASH-25 to the same value cost £1000 less in the USA. That saving paid a large portion of the cost of ferrying the beast over the Atlantic to Florida. (Wish I hadn't mentioned Florida now. It's *really* cold today.) It could just

It's *really* cold today.

be that American pilots are safer than ours - a hypothesis for which I saw not a trace of evidence. Or their outlanding places are safer. Sorry, but that's unbelievable. Or that they enjoy economies of scale in that vast country. Maybe,

Searching for logbooks.

but would that account for our insurance costing 50% more?

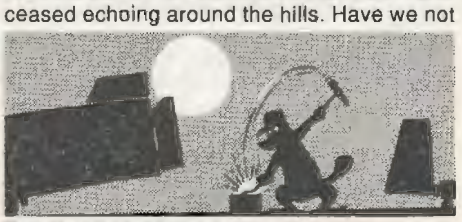
Then after 11 years without incident, I had not one but two belly landings in 1996. The second of these disfigured a handsome asphalt runway with a long and very expensive white streak. And disfigured a handsome ASH-25 with a short and very expensive black streak. As Lady Bracknell would have said "To have one belly landing in a fortnight is a misfortune, but to have two seems very much like carelessness." Leave aside the fact that Lady B would hardly have said *belly*. Soon I was being politely but very insistently asked by the loss adjuster to furnish my personal pilot's logbooks for the last 39 seasons, otherwise I was not complying with the fine print in the contract, and would not get paid until I did. Of course I had not read the fine print out of customary terminal laziness but also because if I did read it I wouldn't understand it. So with a very ill grace I spent ages searching for old logbooks in my loft, copying competition results from ancient editions of *S&G* and calculating the flight times from the speeds, and badgering my partners to lend me the computer discs on which we have put nine years of Peschges data but with several individuals' figures all mixed up.

Finally, exhausted, I called three of Britain's most famous glider pilots to get their opinion about how to escape this quandary. The two famousest both said "We've never kept regular logbooks since we got our Silver badge. Wish we had. Don't worry, the BGA doesn't require it after your Silver." I was quite flabbergasted as well as relieved. I thought that I was always supposed to keep a proper logbook, and that by not

Twenty-two years' gliding.

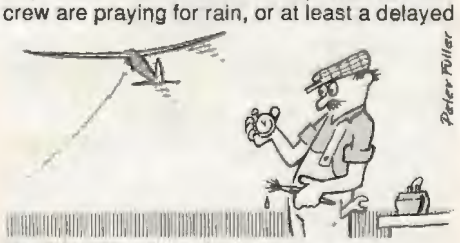
keeping one and staying quiet about it I was not just being an idle slob but a sneaky and dishonest one, too. The third famous pilot let me down disgracefully as a witness for the defence: unlike the more famous two, he had recorded every minute of 22 years' gliding in a series of logbooks as immaculate as his moustache, but he was an RAF type, so what can you expect?

So I sent off my 39 seasons' rough calculations to the adjustor and said wearily that that was all I could manage, expecting the roof to fall in at any moment through the combined wrath of God and Lloyds. Nothing untoward happened in fact, and the repairers did get paid. But, and this brings me to our third item, I did get a courteous but firm warning, not about logbooks, but about the need to hold back any repair work till a detailed inspection had been done by the underwriters' appointed agents. I think they are absolutely entitled to make that point (Ain't that big of him? Ed) but strict adherence to such requirements will put an end to one of the most hallowed traditions of competition flying, namely the frantic all-night repair job which is quoted for even before the dust and debris are settling, and commenced before the sounds of the crash have ceased echoing around the hills. Have we not



Frantic all-night repair.

all witnessed, or participated in, that dramatic scene, like a Victorian narrative painting? Dawn glimmers faintly on the horizon, promising, or rather threatening, an early start to a perfect soaring day: in the workshop, silhouetted against harsh lights, Ralph Jones and his sons sweat over glass-cloth and resin. Huddled under the limp windsock the ashen faced pilot and tearful crew are praying for rain, or at least a delayed



Don't land for three hours.

start, so as to keep the once stricken but now convalescent craft in the contest with a sporting chance.

But that will become just a treasured memory, along with other romantic legends. If Lloyds have their way, never again will we see the repairers, in the absence of proper drawings and jigs, simply pull the severed tail back until the rudder cables go taut and then fill in the gap with plywood: nor shall we hear again that advice famously delivered by the craftsman to the pilot as he waited for a bungy launch in his heavily bandaged Olympia in a Regionals on a blustery northern crag some forty years ago, "She'll fly alreet, lad. But mind you don't land in t'next three hours; t'glue's still wet."

A CLOSER LOOK AT THREE COMPETITIONS

With plans being made for the coming season we have drawn attention to three very different competitions

JUNIOR CHAMPIONSHIPS - past, present and future - NEIL GOUDIE

Neil, who flies at the Scottish Gliding Union, went solo in 1990, flew in the 1995 Junior Championships and crewed for his brother Gavin last year. He has a Gold badge, a Diamond and 400hrs.

The Junior Championships is fast becoming the most competitive event in the British soaring calendar having developed from its conception in 1988. Since then some of its winners have become Nationals Champions as well as members of the British team at World and European events.

But this wasn't the first time junior pilots were introduced to competitive gliding. In the late 1970s British squad training was run for small groups by BGA national coaches helped by notable competition pilots. This encouraged the development of competition orientated pilots between the ages of 16 and 25. It became clear in the mid 1980s that the demand for squad training was exceeding available resources and so the Junior Championships was born.

For the first couple of years the results were fairly predictable even before the entry lists were posted! However, the early 1990s saw a drastic increase in the field and of the competitive spirit. Soon we had new names on the cup with some winners with only two or three years' cross-country experience.

The 1995 competition was a real turning point in the standard of junior flying with exceptional weather producing speeds which would have graced any senior Championships. And the results from the Standard Class Nationals at Dunstable last summer have shown that junior pilots like Henry Rebbeck and Dave Allison are biting at the tails of some very experienced competitors. The presence of Justin Wills at the evening de-brief was beneficial and along with a spirit of camaraderie between the pilots and crews led to an excellent week.

Last season the Mobil Junior Championships were again a huge success, aided not only by the organisation, sponsorship and the pilots and crews, but also by home club committees who lent club gliders to some of their younger pilots. Many, however, talked of the reluctance to allow club gliders to be taken away for ten days and the difficulty in hiring or borrowing equipment for competition flying.

Perhaps many clubs believe that losing a glider for a week would be a tremendous waste of income. But if these same clubs truly believe that gliding is to continue as a sport in Britain they must develop their young pilots' skills and not throw them to the side after their cadet schemes have been completed.

Gliding should not be limited to the fortunate few who have been brought up on a diet of Discus, LS-8 and ASW-24s, but to the large number of young pilots who use club gliders and whose skill is kept away from competition. At a competition forum at Lasham it was noted that clubs should make a strong effort to have gliders available for this and other competitions. Until clubs help their Silver badge cadet to get to the Junior Championships they may never realise the hidden talent that exists in their ranks. They may even have the next Lee, Wills, Spreckley or Davis and not even know it.

If you are a new Silver badge pilot, or expect to gain it by this summer, and are wanting to see what competition gliding is all about, and your 25th birthday was not before January 1, ask the BGA for an entry form for the 1997 Junior Championships to be held at Bidford between August 25-September 2.

COMPETITION ENTERPRISE - NICK GAUNT, a regular competitor, gives a flavour of the event

Nick, who flies his LS-7 at Sutton Bank, went solo at just 15 years-old in 1951 and believes the solo age went up to 16 the following year. He has all three Diamonds and this was his 3rd win at Enterprise.

I enjoy competition gliding but I hate sitting on the ground with gliders on the grid when it's flyable. Competition Enterprise is the only competition that utilises everything the weather gives. The flying is structured, competitive and demanding. I had seven memorable competition days in Enterprise 96 and here are two of them.

The first day at North Hill was 25kt north-west with a 2500ft cloudbase rising to 3500ft. The task was an O/R or run between goals. Downwind was The Park at 80kt and upwind Eaglescott at 50km and the Dartmoor GC at Brentor, 60km. No other plan made sense to me than downwind to The Park and possibly some way back. No held starts, muscle into the queue and go.

The first hour was a simulation of ballooning with dreadful broken thermals, continuous field selection and retreating back up wind to find the lift again. At best 6kt up and 5 down. On the radio I heard a lady in Wales who must have had one of their tall hats and a broomstick controlling an entire coven at 10 to 15 000ft in wave.

Wave? There was no wave in Devon and Dorset but I pretended and worked the upwind side of the clouds. Maybe it would work and it did. At 3500ft it seemed promising. At 4000ft the frenetic bouncing surges gave way to smooth 4kt then 6kt lift. Bishop and Crossfell eat your heart out! Chard Pond is the place to be at 12 000ft asl.

Once up the pattern of wave was plain to see with cumulus bars stretching north to the horizon. Getting to The Park was easy. Each downwind bar was as good as the last. The photo was tricky but patience paid off. I wasn't sure if John Fielden would accept a photo of the GPS reading. The gap at 10 000ft asl showed tiny gliders on the ground, so it was away west with even better lift to the north.

Being the first day of Enterprise I'd forgotten the sunglasses, water and hat, so I flew with my map on my head, my eyes half shut and, having no oxygen, as low as I dared in the wave. Better lift to the north soon put me over the Bristol Channel at Weston Super Mare. Then further west over the Welsh coast until I could see Lundy Island in a setting south-west sun. One wave bar south across the Channel to photo Eaglescott and then home feeling a whimp because I hadn't had a go at Brentor which I knew was beyond a jumble of broken cloud over Dartmoor. Four hours at over 8000ft was more than enough for my first day of Enterprise!

Six competition days later I was suffering from the battle fatigue of being hounded by Jay Rebbeck who was 100pts behind me and 40 years younger. It meant another day of flying my socks off.

The day looked impossible. Again there was a 2500ft cloudbase and squally rain showers and anvils forming on clouds to the south-west. Gerry Martin reckoned after all these years that he knew what Diamond goal days looked like and they didn't look like that.

John Fielden had set alternative O/Rs of about 325km - one to Lasham and one to Broadway in the Cotswolds.

I took off in a gap between showers, with Jay over half an hour ahead doing intrepid cloud climbs. Suddenly it looked promising. There was a sea breeze front along the coast with a classic curtain cloud above a dappled azure sea. At Chesil beach, Portland Bill seemed to be in the foreground.

Within minutes, the way to Lasham was blocked by an impossible wall of cu-nim. At that

point I wasn't to know that the next "proper" thermal with a sensible top was 150km away.

I struggled north to the Somerset flats. At least near the sea every cloud doesn't try to be a thunderstorm. I made the obligatory diversion inland to avoid Filton and back into a dull rain sodden countryside. The only patch of sun shone on a field of cut silage offering a chance of lift or a safe landing. Just before I dropped the wheel on the crosswind leg God lent a hand, gave me a circling crow, a thermal, a rainbow and a somewhat soggy street to Stroud.

At last it was good. There were cloud shadows ahead and sun. The only showers were to the west in Wales. I dolphined up to Broadway and climbed in that "proper" thermal to 5000ft, photographed the town and straighten up for the long flight home.

Cheltenham, rain and hail. Prodigious sink before equally frightening lift. Flashes of lightning and dodging storms until they became so impenetrable the only escape was west to the Somerset levels again.

For the second time that day I made for the curtain cloud and sea breeze front. Very odd! That front was going out to sea. The penny dropped in my addled brain that that must have been the same south coast front that moved so far north it looked back to front.

Weak though it was, it eked out the performance of my LS-7 to nearly 70:1. At about 500ft over Taunton all the fish and chip shops combined to give enough lift to put us 200ft *under* the glide path for North Hill.

North Hill was only 14 miles away, looking impossible. Little evening burbles just lifted us to Dunkerswell. Courage, stupidity and ground effect somehow got us in to North Hill

Two memorable flights totalling nearly 600km and 12hrs of flying. Neither would have been competition days in anything but Enterprise, the most rewarding competition of the year.

NATIONAL GLIDER AEROBATIC CHAMPIONSHIPS - CHRIS POLLARD writes about the state of aerobatic gliding in the UK and gives the results of the1996 competition

Chris flies a Pilatus B-4 at Tibenham GC and instructs cross-country and aerobatics. He started gliding in 1981 and also occasionally flies power aerobatics.

I had better start with an apology. I had fully intended to write a full report of the 1996 National Glider Aerobatic Championships, but time and tide didn't wait - so my apologies to the competitors, and especially the winners who were looking forward to seeing their names in lights, and I hope the summary at the end of this piece will suffice.

The Aerobatic winners from left to right:- Ian Tunstall (2nd Unlimited Class), Guy Westgate (1st Unlimited), Lionel Sole (3rd Unlimited), John Gilbert (2nd Intermediate Class), Mark Davies, (1st Intermediate), James Allen (3rd Intermediate), Deborah Bilham (1st Sports Class), Rob Thompson (2nd Sports) and Chris Cain (3rd Sports).

Instead, here are some thoughts, observations and impressions about not only the Aerobatic Championships - for many the highlight of the aerobatics year - but also the other things that went on, and some thoughts on where we are going.

Although there is an undoubted curiosity regarding aerobatics in gliders amongst the mainstream gliding fraternity, very few pilots ever progress beyond recreational aerobatics - loops and chandelles at the end of the soaring day. I suppose it is something to do with the cross-country and duration culture in which most of us were brought up.

Yet competition aerobatics - or at least the techniques and disciplines required for aerobatics at a competition standard - are a separate set of skills requiring no less dedication and determination than cross-country flying. Most people who come along to the twice-yearly weekend workshops find the whole experience to be stimulating and challenging - even those who thought they already knew all there is to know about gliding!

Last year's workshops were held, as before, at Lasham. I wish it were closer - but there is no denying the fact that Lasham has been prepared to take glider aerobatics seriously and commit resources to its development.

As a result, the workshops are popular, well attended and successful - and, other clubs please note, lucrative. One encouraging point was the progression which a number of pilots had made, and their desire to refine their skills to competition level. This is the just the kind of breeding ground which will be essential if we are to progress from being close to the bottom of the world league in international competition glider aerobatics, a position to which we can certainly lay claim at present.

So to the Aerobatic Championships. To try to avoid the weather delays which have dogged us in previous years, the 1996 Comp was a four day event. In the end, we flew on only two of the four days, but this was enough to put together a fine contest. Some of the previous year's Novices competed in the next higher Class, showing an encouraging progression, and that same was true of the more difficult move from the Intermediate to Unlimited Classes.

It was certainly good to see some new faces, although a few more would have been encouraging. It was also entertaining to see such a large collection of Pilatus B-4 gliders in one place, in a variety of odd colours - the advantage of a metal glider! Of particular interest was the long-awaited SZD 59 dual purpose glider, which was flown with gusto by Lionel Sole.

As a compromise design (with basically a soaring section, a redesigned rear fuselage to withstand flick manoeuvres, and removable tips), the early fears had been that it would be the worst of both worlds - but it turns out to be a very capable aerobatic aeroplane indeed, with Lionel expressing the view that its capabilities approach those of the uncompromising Swift. Food for thought for any syndicates wanting to combine competition level aerobatics with more conventional soaring activities.

So 1996 showed some progress in this admittedly minority aspect of the sport. More people, more venues, perhaps more competitions and, with luck, new equipment should mean that the steady progress continues in 1997.

Final results: Sports Class,1.Debbie Bilham; 2. Rob Thompson; 3. Chris Cain. Intermediate Class, 1. Mark Davies; 2. John Gilbert; 3. Jamie Allen. Unlimited Class, 1. Guy Westgate; 2. Ian Tunstall; 3; Lionel Sole.

HELP WITH CHOOSING YOUR NEXT GLIDER

DEREK PIGGOTT has updated his article which first appeared in the 1991 Yearbook and added a section on two-seaters for instructing

Photos: Robert Bryce-Smith

Pilots often come to me for an opinion on their possible choice of glider and it is obvious they could save themselves quite a lot of time by doing their selection systematically.

These notes should be of help to those trying to decide on which glider to buy. Eventually the choice for a secondhand machine evolves around what is available at the time more than exactly what it costs. Prices can be estimated from the current and recent issues of *S&G*.

In looking at the scoring, remember that much of it is just a matter of opinion. Some assessments will be inaccurate, especially since some aircraft were last flown 20 or 30 years ago. Where I have not flown the type the assessment is based on the views of other experienced pilots.

General scoring:-1-2 poor or inadequate; 3-4 average-good; 5 very good; R reported, not known or flown; O optional equipment.

Competition Class:- - non competitive; S Standard Class; 15 15 Metre flapped; 15/17 15 metre-17 metres Open Class with tips fitted; O Open Class, unlimited span; Sp Sport Class.

Construction:- C carbon fibre incorporated in the structure; F fabric covered surfaces; G glass-fibre; M metal skins; ST steel tube structure; W wood.

Type of airbrakes:- SH Shempp-Hirth; DFS DFS type; TE trailing edge; TF trailing edge combined with flap; O other types or manufacturers' own design.

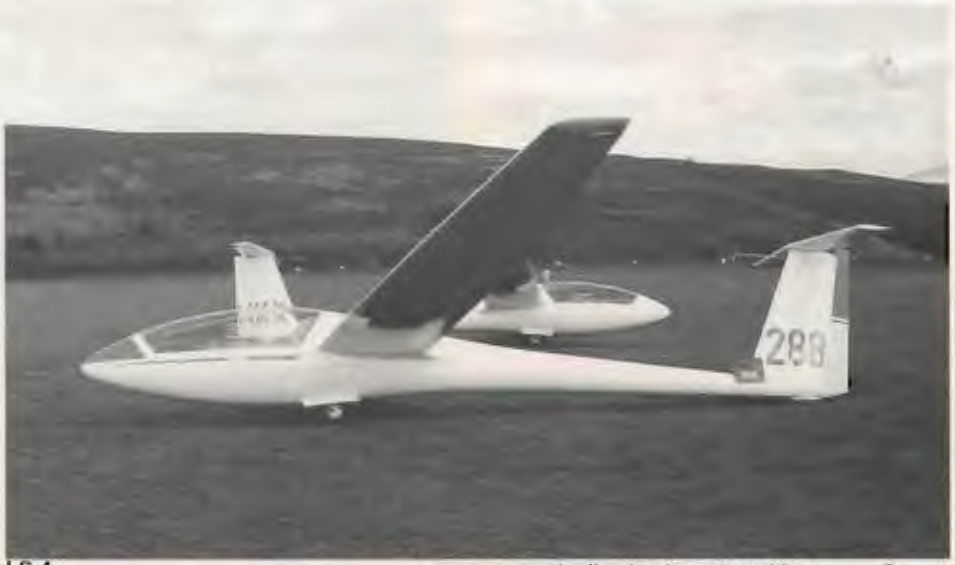
Cockpit size;- 1-3 small or restricted in height or width; 4-5 large.

Rigging;- A average; H heavy or not easy to rig; G good.

Ground handling;- A average; G good - tail handle provided; VH very heavy.

Stalling characteristics 1-5;- 2 wing drop without warning buffet; 3 reasonable warning, average stall; 4-5 very docile with good warning.

General handling 1-5;- 2 poor harmony, poor rate of roll or inadequate rudder power; 3 average handling; 4-5 good in all respects - excellent.



LS-4.

Manufacturer	Type	Date of first flight	Class Std/15m Open/Sport	Span (m)	Construction of Fuselage	Wings etc	Type of airbrake	Flaps	Retractable wheel	Waterballast	Cockpit size	Rigging	Ground handling	Best L/D ratio at knots	Stalling characteristics	General handling	Special features etc.
SINGLE-SEATERS																	
CZECHOSLOVAKIA LET	L33	–	Sp	14.2	MM		SH	–	–	–	4	A	A	33/45	3	5	Nice all metal club glider.
FINLAND PIK	PIK 20B	– –	15	15	G	G	–	✔	✔	✔	4	A	A	38/55	4	4	No airbrakes. Very effective flaps for approach control. Experts only.
	PIK 20D	–	15	15	G	G	SH	✔	✔	✔	4	A	A	38/55	4	4	Good airbrakes combine with flaps.
FRANCE Centrair	Pegasus	–	S	15	G	G	SH	–	✔	✔	4	A	A	39/58	4	5	Very nice in all respects. Similar in performance to ASW-19 but more feel to ailerons.
GERMANY Bölkow	Phoebus C	68	0	17	G	G	SH	–	✔	0	2	H	A	42/50	3	3	High performance with big span handling. Restricted cockpit. Very poor airbrakes.
Glaser-Dirks	DG-100/101	73	S	15	G	G	SH	–	✔	✔	2/4	A	A	38/58	4	5	DG-100 originally had all moving stabiliser. Rather narrow cockpit – good handling. DG-101 had larger cockpit and normal tail.
	DG-200/202	77	15/0	15/17	G	GC	SH	✔	✔	✔	4	A	A	42/60	4	5	Excellent handling.

Manufacturer	Type	Date of first flight	Class Std/15m Open/Sport	Span (m)	Construction of Fuselage	Wings etc	Type of airbrake	Flaps	Retractable wheel	Waterballast	Cockpit size	Rigging	Ground handling	Best L/D ratio at knots	Stalling characteristics	General handling	Special features etc.
	DG-300	82	S	15	G	G	SH	–	✔	✔	4	A	A	40/60	4	5	Blown wing turbulators. Excellent.
	DG-303	–	S	15	GC	CG	SH	–	✔	✔	5	A	A	42/55	R5	R5	Updated DG-300. Winglets reported to further improve handling and stalling. Not flown by me.
	DG-400	–	15/0	15/17	G	GC	SH	✔	✔	✔	4	A	A	42/60	4	5	SLMG version similar to DG-202 with very good power and glider performance.
	DG-600	–	15/0	15/17	GC	GC	SH		✔	✔	4	A	A	45/60	2	5	Very high performance but sharp wing drop at the stall spoils excellent machine.
	DG-800	–	0/S	18/15	GC	CG	SH	✔	✔	✔	5	A	A	48/60	5	5	Exceptional handling and performance. Ailerons excellent with take-off and flaps easy.
Glasflügel	Libelle	67	S	15	G	G	SH	–	✔	✔	2	G	A	38/50	4	3	Superb rigging. Handling good but not easy to fly accurately. Very poor airbrakes.
	Club Libelle	73	S	15	G	G	TE	–	–	–	3	A	A	35/50	3	4	Powerful trailing edge airbrakes. Good handling.
	Hornet	73	S	15	G	GC	TE	–	✔	✔	4	A	A	38/55	4	4	Late versions with carbon spar to reduce weight. Good handling and performance.
	Mosquito	76	15	15	G	G	TF	✔	✔	✔	4	A	A	40/60	4	4	Wing similar to Mini Nimbus with combined airbrakes/flaps.
	Kestrel	68	0	17/20	G	G	SH	✔	✔	✔	4	GH	A	42-45/55	3	3	Complicated cockpit with two flap levers, tail parachute and airbrakes and retractable undercarriage. 19m version made by Slingsby.
Grob	Astir CS	74	S	15	G	G	SH	–	✔	✔	5	A	A	36/55	4	4	Good beginners' machine, but many metal castings used instead of welded steel in early aircraft.
	Astir 77	77	S	15	G	G	SH	–	✔	✔	3	A	A	36/55	4	3	Slightly slimmer cockpit than CS and not so nice lateral control and handling.
	G102	78	S	15	G	G	SH	–	–	–	4	A	G	34/50	4	5	Excellent beginners' machine. Nose wheel version available.
	Speed Astir	78	15	15	G	G	SH	✔	✔	✔	3	A	A	39/60	R4	R4	Not flown.
Rolladen-Schneider	LS-1	72	S	15	G	G	SH	–	✔	✔	3	A	A	38/50	4	4	Assessed in 1974 – recollections are good handling but rather small cockpit.
	LS-3	76	15	15	G	G	SH	✔	✔	✔	4	AH	A	40/60	4	4	Several versions. Excellent performance. Full span flaperons – later with separate ailerons and flaps.
	LS-4B	80	S	15	G	G	SH	–	✔	✔	4	A	A	40/55	5	5	Excellent in all respects.
	LS-6C	–	15/0	15/17.5	GC	GC	SH	✔	✔	✔	4	A	A	42-46/60	4	R5	Excellent.
	LS-7	–	S	15	GC	GC	SH	–	✔	✔	4	A	A	42/60	4	R5	Excellent.
	LS-8	–	S	15	GC	C	SH	–	✔	✔	5	A	A	42/60	R5	R5	Reported excellent in all respects.
Scheibe	SF-27	57	S	15	WF	WF	SH	–	–	–	4	A	G	34/45	3	2	K-6E performance with poor elevator feel.

Std Cirrus.

Olympia 2B.

Manufacturer	Type	Date of first flight	Class Std/15m Open/Sport	Span (m)	Construction of Fuselage	Wings etc	Type of airbrake	Flaps	Retractable wheel	Waterballast	Cockpit size	Rigging	Ground handling	Best L/D ratio at knots	Stalling characteristics	General handling	Special features etc.
Schempp-Hirth	Austria	59	S	15	W	W	SH	–	0	–	3	H	A	34/50	3	3	V-tail. Rather ineffective airbrakes on early version.
	SHK	61	0	16.5	W	W	SH	–	✔	–	4	H	A	36/50	3	3	Big span version of Austria. Complicated rigging but good performer.
	Open Cirrus	68	0	17.6	G	G	SH	–	✔	✔	5	A	A	42/50	4	4	High performance beginners' glider with big cockpit.
	Std Cirrus	75	S	15	G	G	SH	–	✔	✔	5	A	A	38/50	4	4	All moving stabiliser makes elevator very light at high speeds.
	Mini Nimbus	76	15	15	G	G	TF	✔	✔	✔	5	A	A	40/60	4	4	Early versions with all moving stabiliser – handling poor. Later version with tailplane and elevator excellent.
	Discus	–	S	15	G	GC	SH	–	✔	✔	5	A	A	41/58	5	5	Superb in all aspects – a beginners' glider.
	Ventus B	–	15/0	15/17	GC	GC	TF	✔	✔	✔	5	A	A	44/65	3	4	Very high performance but rather sharp tip stall in some situations.
	Nimbus 1 & 2	71	0	22	G	GC	SH/TF	✔	✔	✔	5	A	A	48/60	4	3	Big glider handling.
	Nimbus 3	81	0	24.5	GC	C	SH	✔	✔	✔	5	A	A	55/60	4	3	Big glider handling. Two-seater version greatly improved.
	Ventus C	–	0	15	GC	CG	SH	✔	✔	✔	5	A	A	40+/60	5	5	Full span flaperons, improved stalling and handling.
	Ventus 2c	– –	0 S	18 15	GC GC	CG CG	SH SH	4 4	4 4	4 4	5 5	A A	A A	48/60 44/60	R5	R5	Reported as having exceptional handling and performance.
Schleicher	K-8	57	–	15	ST	WF	SH	–	–	–	3	G	G	25/40	3	4	Excellent rough site and beginners' glider but cockpit rather small for tall pilots.

Pirat with a K-8 in the background.

Sport Vega.

Skylark 3G.

Manufacturer	Type	Date of first flight	Class Std/15m Open/Sport	Span (m)	Construction of Fuselage	Wings etc	Type of airbrake	Flaps	Retractable wheel	Waterballast	Cockpit size	Rigging	Ground handling	Best L/D ratio at knots	Stalling characteristics	General handling	Special features etc.
	K-6CR	55	S	15	W	WF	SH	–	–	–	2	G	H	28/45	3	4	Excellent first cross-country machine. Very limited cockpit.
	K-6E	65	S	15	W	WF	SH	–	–	–	2	G	H	34/45	3	4	High performance version of K-6CR. All moving stabiliser makes very light elevator. Small cockpit.
	K-18	74	–	16.5	ST	WF	SH	–	–	–	4	G	H	34/45	3	4	K-6E performance. The ideal first cross-country and club glider. Larger cockpit.
	ASW-12	65	0	18	G	G	–	✔	✔	✔	4	AH	A	46/55	4	3	Relies entirely on tail parachute and sideslipping for approach control.
	ASW-15	68	S	15	G	G	SH	–	0	–	3	A	A	38/48	4	4	Good airbrakes. Offset tow hook induces swing in crosswind.
	ASW-17	71	0	20	G	G	SH	✔	✔	✔	3	AH	A	48/56	4	4	Large glider with easy handling and good airbrakes. Rigging very heavy.
	ASW-19	76	S	15	G	G	SH	–	✔	✔	4	A	A	39/58	4	5	Very nice in all respects. Very light ailerons.
	ASW-20	77	15/0	15/17	G	G	SH	✔	✔	✔	4	A	A	42/58	3	4	Very competitive still, with good airbrakes.
	ASW-22	–	0	22/24	GC	GC	SH	✔	✔	✔	4*	A	A	55/60	R4	R5	Not flown. Reported very good handling.
	K-23	84	S	15	G	G	SH	–	–	–	4	A	G	34/50	5	5	Excellent beginners and first cross-country machine.
	ASW-24	–	S	15	GC	GC	SH	–	✔	✔	R4	A	A	42/55	R4	5	Not flown. Reported excellent.
	ASH-26	–	S	15	GC	CG	SH	✔	✔	✔	5	A	A	42/60	5	5	Exceptional handling and performance.

Phoebus.

Manufacturer	Type	Date of first flight	Class Std/15m Open/Sport	Span (m)	Construction of Fuselage	Wings etc	Type of airbrake	Flaps	Retractable wheel	Waterballast	Cockpit size	Rigging	Ground handling	Best L/D ratio at knots	Stalling characteristics	General handling	Special features etc.
LITHUANIA LAK	LAK-12	–	0	20	G	GC	SH	✔	✔	✔	4	H	A	46/55	5	5	Very good handling and performance – similar in many respects to ASW-17.
ITALY Morelli	M100	60	S	15	W	WF	0	–	–	–	R3	A	A	28/45	R2	R3	Not flown by me. Unusual airbrake design.
POLAND SZD	Mucha Std	53	S	15	W	WF	SH	–	–	–	4	A	G	26/42	2	5	Superb handling but sharp wing drop at the stall.
	Pirat	66	S	15	W	WF	SH	–	–	–	5	H	G	32/45	3	3	Heavy centre-section, three-piece wings, very big cockpit and good airbrakes.
	Foka	60	S	15	W	WF	SH	–	–	–	3	H	G	34/50	3	5	Heavy rigging. Good handling and airbrakes. Lie down seating position.
	Cobra	70	S	15	W	WF	SH	–	✔	–	4	H	A	36/50	3	5	As for Foka, but seating more normal and retractable undercarriage.
	Jantar 1 & 2	76	0	19/20	G	G	SH	✔	✔	✔	4	A	A	45/48	4	3	Large span handling with large adverse yaw, but very high performance.
	Jantar Std	73	S	15	G	G	SH	–	✔	✔	4	A	A	40/60	4	4	Various versions. Good all round.
	Junior	–	S	15	G	G	SH	–	–	–	5	A	G	34/42	5	5	Superb beginners' club glider. Huge main wheel, good airbrakes and lower flying and landing speeds than others.
	PW-5	–	Sp	13.2	G	G	SH	–	–	–	5	G	G	32/50	5	5	Excellent first class club glider. Small glider but big cockpit. Feather light rigging.
RUMANIA Brasov	IS-29D	70	15	15	M	M	DFS	✔	✔	–	4	H	A	35/50	2	4	Nice handling but early version had no stall warning and very sharp wing drop. Club version has warning buffet. Not for inexperienced pilots.
RUSSIA	AC4 or Me7 Mechta	–	Sp	12	G	G	SH	–	–	–	4	G	G	32/50	4	4	Very light glider with K-6 performance and much larger cockpit. Feather light rigging.
SWITZERLAND Pilatus	B-4	72	S	15	M	M	SH	–	✔	–	4	A	A	34/45	3	5	Excellent metalwork. Fully aerobatic. Good first cross-country glider.
UK Birmingham Guild/Swales	BG 100/135	70	–	13.5	M	M	TE	–	–	–	3	G	G	28-30/45	3	4	Flown in 1970 – recollections vague. Quite good handling.
Elliots of Newbury (EoN)	Olympia 2B	47	–	15	W	WF	SH	–	–	–	5	G	G	21/40	3	3	1938 design with good handling and airbrakes.
	Olympia 463	65	S	15	WF	WF	SH	–	–	–	4	G	G	27/45	2	4	K-6CR performance with larger cockpit. Wing drop at stall.
Slingsby	Swallow	57	–	13	WF	WF	SH	–	–	–	2	G	G	22/43	3	4	Cockpit limited in height. Good handling but disappointing performance.
	Sky	50	–	18	W	WF	DFS	–	–	–	3	H	H	27/45	3	2	Limited shoulder width in cockpit. Big and rather heavy handling and rigging.
	Skylark 2	54	S	15	W	WF	SH	–	–	–	3	H	A	25/48	3	3	Heavy centre-section three piece wings.
	Skylark 3/4	55	–	18	W	WF	SH	–	–	–	5	H	G	30-32/48	3	2	Heavy centre-section, poor rate of roll, very stable.
	Dart 15/17	63	–	15 or 17	W	WF	SH	–	0	–	4	G	G	32-35/48	2	4	Unpredictable stall in turns, otherwise good handling. 15m version poor in climb.
	Vega	77	15	15	G	GC	TF	✔	✔	✔	3	A	A	41/60	5	3	Combine flaps/trailing edge airbrake all worked by one lever. Cockpit a little cramped. 17m version now around with improved performance.

Manufacturer	Type	Date of first flight	Class Std/15m Open/Sport	Span (m)	Construction of Fuselage	Wings etc	Type of airbrake	Flaps	Retractable wheel	Waterballast	Cockpit size	Rigging	Ground handling	Best L/D ratio at knots	Stalling characteristics	General handling	Special features etc.
	Sport Vega	79	S	15	G	G	TE	–	–	–	3	A	G	36/55	5	4	Club version with improved ailerons, fixed wheel and improved cockpit.
USA Schweizer	1-26	54	–	12.2	M	M	O	–	–	–	4	A	G	21/42	3	4	Light but complex rigging. Spoilers.
	1-34	69	S	15	M	M	O	–	O	–	4	A	A	32/45	3	4	All metal. Similar to Dart in many respects. Rather high wing loading.
	1-35	73	15	15	M	M	–	✔	O	–	4	A	A	35/50	3	4	No airbrakes, uses flaps only. Good handling.
	1-36	79	S	14	M	M	SH	–	–	–	4	G	G	30/50	4	4	Designed to be ideal for club use. Good airbrakes.
	TWO SEATERS FOR INSTRUCTION																
CZECHOSLOVAKIA	L-13 Blanik	56	–	16.2	M	M	DFS	✔	✔	–	3	A	A	27/50	5	5	Good handling but restricted cockpits.
LET	L-23 Super Blanik	–	–	16.2/18.2	M	M	DFS	–	✔	–	4	A	A	27/50	5	4	Super Blanik – no flaps, rather high elevator forces. Wingtip extensions available for increased performance.
GERMANY	DG-505	–	–	17.2	G	CG	SH	–	✔	✔	5	G	G	35+/60	R5	R5	Fully aerobatic trainer.
DG-Flugzeugbau	Orion	–	0	18	G	CG	SH	–	✔	✔	5	G	G	40+/60	5	5	Normal basic trainer. Excellent stall/spin and handling.
		–	0	20	G	CG	SH	–	✔	✔	5	G	G	44/60	R5	R5	20m with winglets configuration becomes 17.2 with winglets removed. No flaps.
	DG-500	–	0	22	G	CG	SH	✔	✔	✔	5	G	G	48/60	5	5	Flapped version – excellent handling.
Grob	Twin Astir	76	0	17.5	G	G	SH	–	✔	✔	4	H	H	36/60	5	3	Rather uncomfortable cockpit. Heavy ground handling and aileron control.
	Acro 2 G103	–	0	17.5	G	G	SH	–	–	–	5	H	G	33/55	5	5	Very docile stall detracts from otherwise good all round trainer. Better low speed performance than Twin.
	Twin Acro 3	–	0	18.5	GC	GC	SH	–	–	–	5	H	G	38/55	5	5	Improved performance from increase in span and Discus type wing planform. Slightly better stalling for instruction.
Scheibe	Bergfalke 2	51	–	16.3	ST	WF	DFS	–	–	–	3	A	A	26/45	4	3	Difficult for *ab-initios* due to bad overbalance of rudder. Weak airbrakes.
	Bergfalke 3	–	–	16.3	ST	WF	SH	–	–	–	4	A	A	26/45	4	4	Very docile stall in turns make it doubtful as basic trainer. Improved handling and airbrakes.
	Bergfalke 4	–	–	17	ST	WF	SH	–	–	–	4	A	A	30+/55	4	4	Laminar aerofoil. Greatly improved aircraft in all respects.
	SF34	78	–	15.8	G	G	SH	–	–	–	4	A	G	34/55	5	5	Good handling, stall and spin characteristics for training.
Schempp-Hirth	Janus A	74	–	18.2	G	G	SH	✔	–	–	5	A	G	38/60	5	5	Good handling with light elevator (all moving versions).
	Janus C	–	–	20	G	GC	SH	✔	–	–	5	H	G	44/60	5	2	Good performance, poor handling – serious overbalance of rudder. New model with longer fuselage and large fin reported excellent.
	Nimbus 3b	–	–	24	GC	CG	SH	✔	✔	✔	5	A	G	55+/60	5	4	Very good handling for large span glider. Vast improvement on early Nimbus 3.
	Duo Discus	–	–	20	GC	CG	SH	–	✔	✔	5	A	G	45/60	5	5	Superb handling. Good in all respects. Suitable for basic and cross-country training.

➡

Bianik.

IS-28B2.

Manufacturer	Type	Date of first flight	Class Std/15m Open/Sport	Span (m)	Construction of Fuselage	Wings etc	Type of airbrake	Flaps	Retractable wheel	Waterballast	Cockpit size	Rigging	Ground handling	Best L/D ratio at knots	Stalling characteristics	General handling	Special features etc.
Schleicher	K-7	59	–	16	ST	WF	SH	–	–	–	3	A	G	26/45	5	3	Bad overbalance of rudder and snatchy, over-powerful airbrakes. Restricted view from rear seat. Good basic trainer.
	K-13	66	–	16	ST	WF	SH	–	–	–	4	A	G	26/45	5	4	Less overbalance than K-7 otherwise similar handling and performance. Excellent trainer.
	K-21	78	–	17	G	G	SH	–	–	–	5	A	G	34/50	3	5	Innocuous stalling makes it poor for basic training. Fully aerobatic with excellent handling.
	ASH-25	–	0	25	GC	CG	SH	✔	✔	✔	4	G	A	55+/60	5	5	Very good handling for 25m span.
POLAND SZD	Bocian	52	–	18.1	W	W	SH	–	–	–	4	A	A	26/40	5	4	Good but rather old fashioned handling (heavy).
	Puchacz	77	–	16.7	G	G	SH	–	–	–	5	A	A	30/50	5	4	Good for stall/spin training. Strong longitudinal stability detracts from use as a pre-single-seater glider.
ROMANIA	IS-28B2	73	0	17	M	M	SH	–	✔	✔	–	H	H	32/55	4	4	Sturdy all metal. Good handling and stalling for basic training. Tailwheel but heavy tail to lift.
USA Schweizer	2-33	66	–	15.5	ST	M	DFS	–	–	–	4	A	G	22/40	4	4	Strutted high shoulder wing all metal trainer. Immensely strong. Supersedes the 2-22 which had less span and parallel chord wing.
	2-32	62	–	17.4	M	M	DFS	–	–	–	5	H	H	32/50	5	4	All metal monocoque – seats 3! Good stall/spin and aerobatic trainer. Rather poor climber.

Schweizer 2-33.

Acro 2 G103.

TWO RETIREMENTS

We feature two well known members of the gliding community who have recently retired from prominent positions in their clubs

PHIL (D.J.) PHILLIPS

Phil Phillips retired in October after nearly 15 years as general manager of Lasham Gliding Society.

Phil joined the RAF is 1957 for National Service. He stayed on and having graduated as a mechanical engineer, he became a pilot, flying Jet Provosts and the like before going to Central Flying School as an instructor. On leaving the RAF as a Wing Commander he became manager of Coventry Airport. Throughout his time in the RAF he instructed in civilian aeroplanes such as Tiger Moths.

When he came to Lasham in 1984 Phil had done very little gliding but soon took to it and by 1990 had all three Diamonds, a full instructor rating and was a tug pilot. His enthusiasm was, and still is, boundless to the extent that he has been acting CFI and routinely took charge of the airfield.

The love of his life, apart from his wife Kathy, is his aeroplane - a Sirocco. Phil acquired this part built and in his limited spare time finished the construction and the certification through the Popular Flying Association (PFA). He flies it whenever he can and has found time to serve on the PFA Executive. A moment that I know thrilled him beyond measure was a fly-past, led by the Sirocco, at their garden party wedding reception. Another great occasion was when he led the fly-past of 38 tugs and gliders on tow over the Solent for the 50th anniversary of the Battle of Britain.

He has made a significant contribution to the BGA serving as co-chairman of the Safety Committee and investigating fatal accidents. His strengths in this area being as a chartered engineer, as an experienced pilot and having an excellent critical faculty when it comes to writing or editing sensitive reports.

As you read this Kathy and Phil are on a world tour. Phil's dedication to his various roles has been exceptional; his will be a hard act to follow. I doubt we have seen the last of them - even a house in France won't keep him away from Lasham, gliding and his beloved Sirocco.

BILL SCULL

ROY "WOODY" WOODHOUSE

This is a tribute to a man who has been a leading light in the fortunes of the Norfolk GC. Woody retired recently as CFI to spend more time with his K-6E and to enjoy flying without the constant pestering and heavy responsibility all CFIs have to endure. It is right, I think, that these stalwarts of the gliding world should be celebrated whilst still active.

Woody, as he is always known to his Norfolk GC friends and the many who have come to know him through his involvement in competitions, especially the Eastern Regionals, is Norfolk born and bred. He has the accent and a stock of local stories in the native patois to prove it. His family, still scattered round the county, have been employed to good effect during our Regionals. If the Met man wants to know where the rain belt has got to Woody simply rings round his relations.

He possesses the three essential qualities for a CFI - flying skill, authority and the third I'll come to later. Service in the Fleet Air Arm (where he flew amongst other things the tricky Corsair) laid the foundation for the first and the second stemmed from his police career which he ended as a chief inspector. He has devoted much of his retirement to the club and been involved in its development from a two glider operation to its present large, sophisticated outfit.

He was our CFI for 17 years and so to his third quality - his love of teaching. He has the ability to give confidence and pleasure. Learning to fly with him is to catch the love of flying.

His easy, relaxed style and articulate delivery have made him something of a TV pilot, both with the BBC and Anglia TV.

He is keen cross-country pilot with a Gold badge and Diamond goal plus numerous local successes in his relatively modest K-6E. When not flying he spends much of his time working for local charities.

There must be many like Woody in our movement who form the backbone of club life. It would be pleasant to hear of them.

GEOFF HAWORTH

Yes, we agree with Geoff. If you have someone in your club who has given exceptional service, then please let us know.

BGA & GENERAL NEWS

FROM THE BGA CHAIRMAN

We live in rapidly changing times. In almost every aspect of life, be it political, economic, social, environmental or regulatory, change is coming about at, it seems, an ever increasing rate. However much we would like gliding to be immune from all this, we have to accept that in order to survive and prosper we must adapt.

Your Executive Committee is very much aware of this need to be alive to the changing environment in which we operate and devotes a great deal of its time at its meetings, and through sub-committee, to planning for, and reacting to, those changes which impinge either directly or indirectly on our sport.

Mention of the sub-committees reminds me that I have been intending for some time to write a few words about how your Executive Committee is structured and how it operates.

The Executive consists of a group of individuals who are nominated by the clubs and elected at the BGA AGM which is usually at the end of February. The next one will be at Hopcrofts Holt Hotel, near Oxford, on February 22.

The Executive meets on seven or eight evenings a year in London, generally on the first Wednesday of the month. There is always a very full agenda and I sometimes have a real challenge to bring the proceedings to a close in time for the secretary to catch his last train back to Leicester!

Clearly it would be verging on the impossible for all the multitude of areas which have to be considered in the administration of gliding in the UK to be dealt with within these plenary sessions. So the Executive appoints a number of sub-committee chairmen who are specialists in their own particular aspect of the sport, and who generally gather around them a group of like minded people, forming sub-committees.

Examples of these sub-committees are (in no particular order) the Instructors and Examiners Panel, Safety, Technical, Airspace, Competitions and Awards, Development, Magazine and Staff and Admin. In addition the BGA appoints a representative to the International Gliding Commission (IGC) and may, from time to time, appoint other specialist working parties to cover particular issues.

In future I will be telling you a little more about the operations of individual sub-committees and how they work to anticipate change, react to trends and develop all aspects of our sport so that the British gliding movement can continue to be a world leader in our sport.

For now I do just want to draw your attention to a situation which is causing so many of us a great deal of concern. This is the ordeal facing two of our glider pilots, Jonathan May and Phil Woodruffe, as a result of a tragic accident near Gap, France, in June 1995.

A dozen parachutists in free fall emerged from cloudbase not far from their height. One struck the port wing of the Janus they were flying from St Auban at about 5000ft agl and was killed. The British pilots baled out with difficulty and were not badly hurt. They have been accused of involuntary homicide and currently face trial which is scheduled to take place on June 25, the week before the World Championships.

From the information to hand as I write it seems possible that the scene is being set for, to say the least, a very dubious administration of "justice" (see "Way off Track", p23). Legal costs have already reached £50 000 and if convicted it is understood that each pilot could face up to three years' imprisonment and certain bankruptcy.

Convinced that British soaring pilots would want to give their support, the BGA Executive has launched a fighting fund to help meet legal costs. Immediate objectives are to ensure continuing access to legal representation in France, and to help with the ongoing efforts to secure justice for our two colleagues.

I do hope the fund will be strongly supported by both clubs and individual pilots. There is absolutely no doubt this accident was just that, a one in a million chance accident. So please chip in and help our two pilots in their fight for justice in the French courts. Cheques should be made payable to the "BGA Alps Defence Appeal" and sent to the BGA office.

Dick Dixon

ALPS DEFENCE APPEAL

On December 9 the BGA had received generous donations to the Alps Defence Appeal Fund from the following:-

E. Arthur, M.F.Brook, Dr G.H.N. Chamberlain, R.B. Coppell, R. Hudson, T. Joint, M.J. Shaw, The Motor Glider Centre, P.& M. Wells, M. Wood, Borders GC, R. Chappell, R. Coote, P. Gill, D. Innes, Dr A.M.Segal, D. Smith, H.A. Torode, R.F.Warren, C. Withall and M.G.Woollard.

Barry Rolfe, *BGA secretary*

Platypus adds:-There but for the grace of God goes everyone. Having just taken £50 off a distinguished former BGA chairman (well, they are all extremely disguished, I suppose) at the Dunstable poker school, I have decided to spend half of it on a thick garment to keep me warm in the T-21 this spring. The other £25 I am sending to the Alps Defence Appeal to help Jonathan and Phil in the forthcoming court battle.

I have no fixed opinions on the rights and wrongs of the matter and am waving no flags, but justice is expensive, not to say ruinous, at the best of times; you can say I am sending my modest cheque in the spirit of enlightened self-interest.

DEVELOPMENT NEWS

Two exciting new developments have increased the scope of the Lottery Sports Fund in supporting gliding.

Revenue Funding

To date, the Lottery Sports Fund has only been able to offer grant aid for capital projects. The Sports Council, in its role as administrator of the Fund, has just announced the first stages of Lottery Sports Fund Revenue Funding. This covers four separate programmes with announcement dates as follows:-

Development of talented individuals - November 1996; Major international events - January 1997; Coaching and leadership - April 1997 and Talent identification - September 1997.

The main purpose of these new programmes is to enable British athletes and competitors to achieve higher rankings at international level. The proposed revenue funding is essentially using "new money" and is not intended to substitute for or supplant grants already provided by the Sports Council from government funds.

The "World Class Performance Application Pack" is now available and the first requirement is for governing bodies to provide the Sports Council with a "Performance Plan", setting out their objectives and nominating their national squads.

The funding will be directed towards the employment of new world class coaches and directors of performance and contributing up to 90% of the cost of national squad training programmes.

At individual level, funding is available for subsistence allowances to compensate for periodic loss of earnings and even to cover pension, insurance and National Insurance contributions and the cost of dependants.

So what is the BGA doing about it?

A Performance Plan for gliding is currently being prepared and an application for Lottery Sports Fund revenue funding will be submitted to the Sports Council early this year.

The Priority Areas Initiative

Seven member clubs have so far been identified as eligible to receive up to 90% grant aid from the Lottery Sports Fund, instead of the standard 65%.

This new development under the Priority Areas initiative, which formerly was only for deprived inner city areas, now applies to Rural Development Areas as designated by the Rural Development Commission and covers about 35% of rural England.

Some clubs which previously found themselves in a "poverty trap" unable to apply to the Lottery Sports Fund because of their inability to raise the necessary 35% partnership funding, are now able to plan for more ambitious projects with only 10% of the cost to be found from their own resources.

I am sure there are still more eligible clubs as yet unaware of their good fortune. If you believe your club might qualify, then either contact the Sports Council's Regional Officer or give me a ring on 01273 515373.

Roger Coote, *BGA development officer*

NATIONAL LADDER

Peter Baker from Cambridge GC takes the honours in the Open Ladder, just ahead of Steve Crabb from The Soaring Centre, each flying baby Standard Class machines. The fact that neither was able to provide photographic or logger evidence for one of their four flights does not detract from their great performances throughout the season, although it does allow Tim Macfadyen from Bristol & Gloucestershire GC to claim the Enigma trophy while I, following at a respectful distance, claim the Firth Vickers trophy.

Steve Crabb would also have taken the Weekend Ladder but for the lack of the same vital piece of evidence which robbed him in the Open Ladder and, as no pilot may claim more

than one ladder prize per season, Steve Mynott, also of Cambridge GC, wins the L du Garde Peach trophy while Dave Caunt from Booker GC wins the Slingsby trophy with 7909pts. Well done to the winners and to all those who took part during last season.

Please supply your next submissions by the end of March.

Open Ladder

Pilot	*Club*	*Pts*	*Flts*
1. P.E.Baker	Cambridge	11 965	4
2. S.J.Crabb	The Soaring Centre	11 775	4
3. T.M.Macfadyen	Bristol & Glos	11 686	4
4. J.L.Bridge	Cambridge	10 361	4

Weekend Ladder

Pilot	*Club*	*Pts*	*Flts*
1. S.J.Crabb	The Soaring Centre	10 028	4
2. J.L.Bridge	Cambridge	9214	4
3. S.J.Mynott	Cambridge	9165	4
4. T.M.Macfadyen	Bristol & Glos	8823	4
5. D.Caunt	Booker	7909	4

John Bridge, *National Ladder steward*

JUNIOR CHAMPIONSHIPS

Applications forms for the Junior Championships at Bidford GC from August 25-September 2 are available from the BGA office and should be returned by March 31. Later entries will be considered subject to available positions. Any queries to Martyn Wells, tel 01608 685790.

BGA 1997 COACHING PROGRAMME

All of you who came on our courses at Bicester last year will agree the experiment worked. You enjoyed the facilities offered at Bicester - the efficient and competitively priced launch system and the pleasure of free accommodation in a BGA caravan!

In addition, the coaching operation saved a large amount of time by not having to transport the kit all around the country, giving us the opportunity to run more courses than ever before. Therefore we intend to continue with the same plan this year and, despite recent changes, we have increased the course programme accordingly.

This centralisation has resulted in an increase in glider usage, therefore flying revenue and a reduction in transport costs. You will be pleased to learn that the 1996 course charges, including the flying and launch charges, are held for 1997. The instructors' courses will be £195, including the two day completion course fee; the wave, soaring and full rating courses £10 a day with the DG-500, Duo Discus and Discus at £24/hr, Puchacz £18/hr and Motor Falke £42/hr.

During 1996 we were able to offer free course places, free launches and no flying charges to all pilots under 21 or still in full time education, thanks to Mobil Oil sponsorship and Sports Match. If all else fails, we fall back to our 75% discount for 1997 but we already have good indications that something similar will be offered again this year.

We will be running 16 assistant instructors' courses. To add further to your enjoyment we have extended them from seven to nine days. These additional two days replace the theory weekend, so you can get it all over with in the one go.

It also gives us a better chance to complete the flying within the weather window. We will only be accepting four candidates per course thus giving us more flying time and the opportunity to turn well prepared candidates into assistant instructors of a higher standard.

Completion courses are to be run throughout the year, mainly by regional examiners. These two days are an essential part of our assistant instructors' course, so please ensure you book one of these weekends after instructing for about a year.

For assistant rated instructors who may want a little help and guidance to move up to a full rating, come and join a full rating preparation course. Here we will show you what is needed from today's fully rated instructors and give you all the training we can to bring you up to standard. With the possibility of being awarded the rating at the end, what more could you ask for? Remember to ask your CFI before booking.

You can't have failed to see a flying charge for a Duo Discus. Thanks to some careful "organising", the BGA received a significant contribution towards the cost of a new Duo Discus just in time for delivery in late spring. Although flying will again dominate these courses, I am planning to give much more structure to the soaring courses, especially if we have poor soaring weather.

A few soaring courses will be run especially for younger pilots. However we will be happy to accept a wide range of age and experience levels on all our other courses. The BGA gliders are insured for Bronze badge upwards with the motor glider available for field landing training etc. We aim to teach you how to go further and faster.

The soaring courses have been reduced to five mid week days. This should make it easier for you to use a club glider and therefore attend a course. Those able to stay longer will be welcome to extend their course at Bicester and fly there during the final weekend.

With big expensive changes due in 1998 for training CAA rated SLMG flying instructors, we need to make the most of the short time left before the price leaps up. Accordingly Jack Alcock, our senior regional examiner for motor gliders, has kindly agreed to run some special courses for this CAA qualification.

We will only charge flying fees at the normal rate of £42/hr. This ten day course is free but there will be charges for the CAA exam, medical, licence charges etc. Jack may be contacted on 01869277065 and 0385393747 for dates and venues.

Meanwhile I have programmed in two ten day courses so that pilots with no experience can gain a motor glider licence. This is a CAA course and requires a minimum of 40hrs power flying or, if you have a Silver badge, a minimum of 15hrs. I have also arranged three courses for these more experienced pilots.

Once you have a motor glider licence, and if you already hold a full instructor rating, you may wish to use a motor glider for training gliding exercises.

The BGA issues a restricted motor glider instructors' rating to those suitably qualified pilots which has three sections. The first deals with upper air exercises; the second with take-off, landing and circuit planning and the third with field selection, field landing and navigation.

We have one day courses throughout the year when these sections can be taught. The first two can be covered in one day but the third section will need another day. Again there are no course fees, only standard flying fees. You can expect the first two sections to take about 2hrs flying time but probably more for the third.

We are also offering field landing and navigation training for the Bronze badge and the cross-country endorsement to help pilots from clubs who have difficulty in getting a motor glider. But we will be pleased to come to clubs with sufficient candidates.

There will only be flying fees on all the motor glider courses.

Our coaching programme finishes with three weeks searching for Gold and Diamonds over the hills of Deeside. This is a chance to extend your flying year and learn about a totally different sort of gliding.

All dates are inclusive.

Assistant instructors' courses (4 candidates) at Bicester:- 1. March 8-16; 2. March 22-30; 3. April 3-11; 4. April 19-27; 5. May 3-11; 6. May 17-25; 7. June 14-22; 8. June 28-July 6; 9. July 12-20; 10. July 26-August 3; 11. August 23-31; 12. September 6-14; 13. September 20-28; 14. October 4-12; 15. October 18-26; 16. November 15-23.

Completion courses (3 candidates). Various dates and locations throughout the entire year.

Full rating preparation courses (6 candidates) at Bicester:- 1. February 24-2; 2. June 2-6.

Soaring courses (6 candidates) at Bicester:- 1. May 12-16; 2. May 26-30; 3. June 23-27; 4. July 7-11 (for young people); 5. July 21-25; 6. August 4-8; 7. September 15-19.

Soaring courses for young pilots: 1. July 28-August 3 at Staffordshire GC; 2. August 18-24 at Bidford GC.

Junior Championships: August 25-September 2 at Bidford.

Wave courses (6 candidates) at Aboyne:- 1. October 12-18; 2. October 19-25; 3. October 26-November 1.

Motor glider PPL (no previous experience), 10 days;- 1. February 3-7 and February 10-14; 2. December 1-5 and 8-12. (Weekend off!)

Motor glider PPL (Silver badge conversions) 5 days;- 1. February 17-24; 2. November 3-7; 3. December 15-19.

Field selection/landing, Navigation course, Motor glider courses for Bronze badge or cross-country endorsement (2 candidates);- 16 one day courses.

BGA restricted motor glider instructors' rating course (2 candidates):- 16 one day courses.

Bookings. Please book through Ruth at the BGA office. She has the dates and venues of all the courses.

Chris Pullen, *chairman of the BGA Instructors' Committee*

INTERNET

There has been an Email facility at the BGA office in Leicester for some while now and for those of you who wish to send messages in that manner the address is Bgahq@aol.com The original BGA home page on the web went ➡

missing recently when the providing company disappeared!

We are delighted that new and improved home pages are now back in action and contain general information about the sport together with a list of all member clubs. For members it also provides information on competition dates, safety articles and the list of turning points.

The new home page address is http://www.u-net.com/~blotuk/BGA/BGA.html

Our grateful thanks go to Le Forbes of Blot Publishing who has got the new pages up and running with a great deal of speed and a minimum cost.

Barry Rolfe, *BGA secretary*

(This only applies to the BGA office at Leicester. S&G's editorial office at Cambridge hasn't this facility.)

BGA 1000 CLUB LOTTERY

The **November** draw results are: First prize - C. Garton (£49.50) with the runners up - M. Pleasance, G.H.N. Chamberlain, A. Blackburn, R.A. Bickers and P. Gresham - each winning £9.90. **October**: First prize - B. Bateson (£48.75) with the runners up - M. Pleasance, J. Staley, Mrs E.A. Dawkins, D.W. Bayliss and C.J. Walker - each winning £9.75.

S&G SUBSCRIBERS

If you have a change of address please contact Bev Russell at the BGA office and not ID Mailing Services in Wellingborough, Northants.

Limited Liability Protection for Gliding Clubs. A lawyer has criticised the article written by Neil Martin-Kaye and myself in the October issue, p272, on the grounds that ordinary club members cannot be held liable for a club's debts. This is not entirely the case.

Unless stated otherwise in the club's rules, only trustees and committee members are liable for a club's debts or for claims made against it. However, whilst trustees and committee members are prima facie liable, the liability of ordinary members will vary according to circumstances and is governed by the principles of agency.

Anyone wishing to bring an action against a club for the supply of goods can only proceed against the person who authorised the order for that supply and would have to prove that ordinary members, either by themselves or by their agent, had entered into the contract. The trustees and committee have only the authority to enter into contract as provided in the club's rules.

British Gliding Association

THE 1000 CLUB MONTHLY LOTTERY

A great chance to win substantial cash prizes and at the same time enable the Philip Wills Memorial Fund to make loans to clubs for site purchase and development.

1000 is the target number of members to participate in this monthly lottery which started in July 1992. When 1000 members subscribe £1.00 a month each then the monthly first cash prize will be £250.00.

HALF of the proceeds go to the Philip Wills Memorial Fund to help with its work in developing BGA clubs and the other HALF is distributed each month in the form of 6 CASH PRIZES. The more participants we have, the greater the prize money pool.

1st PRIZE – 50% of the prize money pool.
5 Runner Up Prizes of 10% each of the prize money pool.

Chances/numbers can only be bought from the BGA at £1.00 each. Those whose money has been received at the BGA by the end of each month will then participate in the draw on the first Wednesday of each following month. Tickets will not be issued in order to keep the administrative costs low but each member will purchase a "number" which will go into the draw. It is hoped that members will purchase 12 months' worth of tickets at a time. Winners will receive their prizes direct from the BGA and a list of their names will be published in S&G.

Please complete the form below and return it to the BGA with your payment. Please note that only BGA members and their families may participate and that the BGA is registered under the Lotteries And Amusements Act 1976 with Leicester City Council.

Barry Rolfe
Promoter

To: Barry Rolfe, British Gliding Association, Kimberley House, Vaughan Way, Leicester LE1 4SE

Please include me in the "1000 club" and I enclose £12.00 (payable to BGA) for twelve months of entries, or multiples thereof.

Name ..... Signed .....

Address .....

.....

.....

The purpose of our article was to emphasise the dangers of members' liability where a claim is brought against a club for personal injury. If, for example, an action was brought against a club for a breach of its duties under the Occupier's Liability Act, all members of a club are prima facie in occupation and therefore each could become liable.
Gurcharan Bhakar, *Bhakar Tomlinson, solicitors*

GLIDING CERTIFICATES

ALL THREE DIAMONDS

No.	*Name*	*Club*	*1996*
510	Maskell, Richard	Cambridge	4.8
511	Evans, Stephen	Oxford	30.9
512	Blows, Leslie	Southdown	27.9
513	Tribe, Allan	Wyvern	19.10
514	Clempson, David	SGU	5.10
515	Meagher, Mary	Shenington	27.9
516	Lee, Michael	Cranwell	2.11
517	Dale, Gerrard	Booker	23.10

DIAMOND DISTANCE

No.	*Name*	*Club*	*1996*
1/750	Cottingham, Iain	Bicester	13.6
1/751	Maskell, Richard	Cambridge	4.8
1/752	Clempson, David	SGU	5.10
1/753	Carruthers, Michael	SGU	29.10

DIAMOND GOAL

No.	*Name*	*Club*	*1996*
2/2515	Atherton, Ian	Shenington	18.8
2/2516	le Roux, Damien	Lasham	23.6
2/2517	Pigden, Mark	Lasham	13.6
2/2518	Doig, Margaret	SGU	5.10
2/2519	Noonan, Paul	Enstone	13.6
2/2520	Brown, Anthony	SGU	5.10
2/2521	Murphy, Paul	Enstone	19.8
2/2522	Birtison, Brian	Cotswold	16.8
2/2523	Richardson, Michael	Booker	10.8

DIAMOND HEIGHT

No.	*Name*	*Club*	*1996*
3/1325	Burden, Robert	Kent	4.10
3/1326	Evans, Stephen	Oxford	30.9
3/1327	Drury, Graham	Kent	30.9
3/1328	Foreman, Neil	Cambridge	4.10
3/1329	Hughes, Nicholas	Lasham	4.10
3/1330	Ireland, Christopher	Kent	30.9

MARGARET KAHN - AN APPRECIATION

It is with great sadness that we record the death of Margaret Kahn, a much admired aviation painter who was a founder member of the Guild of Aviation Artists. Her experience as a glider pilot undoubtedly was a great source of inspiration and as well as being one of the few painters to catch the mood and feel of flight, her work was instantly recognisable by the beauty of the cloudscapes. The painting we have reproduced above is very typical and was chosen by her husband Wally for a limited edition which has raised more than £2000, shared equally by the Philip Wills Fund and the Lasham Trust.

3/1331	Blows, Leslie	Southdown	27.9
3/1332	Brook, Anthony	Essex	4.10
3/1333	Underhill, Richard	Oxford	30.9
3/1334	Aitken, Paul	Kent	4.10
3/1335	Harrison, John	Staffordshire (in USA)	5.3
3/1336	Graham, Timothy	Trent Valley	27.9
3/1337	Nicholson, Peter	Aquila	4.10
3/1338	Roberts, Alan	Bowland Forest	20.9
3/1339	Evans, Darren	Bowland Forest	19.9
3/1340	Myers, Alison	Bowland Forest	20.9
3/1341	Martindale, John	Lakes	9.10
3/1342	Gee, Michael	Lasham	30.9
3/1343	Bates, Stephen	Aquila	4.10
3/1344	Tribe, Allan	Wyvern	19.10
3/1345	Meagher, Mary	Shenington	27.9
3/1346	Webb, Anthony	Mendip	29.10
3/1347	Tanner, David	Portsmouth Naval	19.10
3/1348	Perkins, Andrew	Upward Bound	29.10
3/1349	Ayres, Steven	Bannerdown	23.10
3/1350	Marpole, Derek	Heron	27.9
3/1351	Tucker, Graham	Portsmouth Naval	23.10
3/1352	Clark, Geoffrey	Portsmouth Naval	1.11
3/1353	Lee, Michael	Cranwell	2.11
3/1354	Knight, Martin	Highland	14.10
3/1355	Mellor, Paul	Booker	4.10
3/1356	Fear, Kevin	P'boro & Spalding	23.10
3/1357	Hackett, Peter	Clevelands	26.10
3/1358	Downing, Roger	Lasham	27.9
3/1359	Luck, Jefferson	Aquila	4.10
3/1360	Pacey, Steven	Heron	27.9
3/1361	Matson, David	Wyvern	19.10
3/1362	Dale, Gerrard	Booker	23.10
3/1363	Armstrong, Susan	Four Counties	8.11
3/1364	Thelwall, Peter	Four Counties	1.11
3/1365	Sanderson, Peter	Four Counties	29.10
3/1368	Lovegrove, Richard	Four Counties	1.11
3/1367	Brunning, Serena	Bicester	18.10
3/1368	Foster, Simon	Bannerdown	29.10

GOLD BADGE

No.	*Name*	*Club*	*1996*
1943	Woodage, Laurence	London	19.8
1944	Hitchcock, Julian	Southdown	27.9
1945	Williams, Stephen	Southdown	20.9
1946	Hughes, Nicholas	Lasham	4.10
1947	Walker, John	Vale of White Horse	27.9
1948	Pigden, Mark	Lasham	13.6
1949	Pretty, John	Vectis	9.10
1950	Nicholson, Peter	Aquila	4.10
1951	Doig, Margaret	SGU	5.10
1952	Brown, Anthony	SGU	5.10
1953	Leutfeld, Werner	Welland	7.10
1954	Tribe, Allan	Wyvern	17.10
1955	Wales, Roland	Booker	9.10
1956	Ayres, Steven	Bannerdown	23.10
1957	Raistrick, Philip	Bannerdown	29.10
1958	Fear, Kevin	P'boro & Spalding	23.10
1959	Kronfeld, Simon	Lasham	9.10
1960	Sanderson, Peter	Four Counties	29.10
1961	McNamara, Alan	Bicester	23.10
1962	Morris, John	Cambridge	5.10

GOLD HEIGHT

Name	*Club*	*1996*
Hitchcock, Julian	Southdown	27.9
Ambler, Richard	Ex Pat (in USA)	24.7
Jones, Nigel	South Wales	29.6
Williams, Stephen	Southdown	20.9
Hughes, Nicholas	Lasham	4.10
Walker, John	Vale of White Horse	27.9
Brook, Anthony	Essex	29.9
Bill, Nicholas	Deeside	7.10
Bayford, Julian	Cambridge	12.9
Graham, Timothy	Trent Valley	29.9
Pretty, John	Vectis	9.10
Nicholson, Peter	Aquila	4.10
Hinley, Richard	Midland	9.10
Starkey, David	Upward Bound	21.10
Wheeler, Timothy	Aquila	9.10
Chichester, Keith	Aquila	9.10
Bone, Peter	Cornish	4.10
Hopkins, Steven	Ouse	29.9
Knowles, Mark	Bowland Forest	20.9
Roberts, Alan	Bowland Forest	18.9
Gray, Roger	Welland	7.10
Wilson, Peter	Northumbria	12.10
Martindale, John	Lakes	9.10
Neal, Michael	Welland	9.10
Bates, Stephen	Aquila	4.10
Leutfeld, Werner	Welland	7.10

➡

Evans, Philip	Booker	9.10
Tribe, Allan	Wyvern	17.10
Allison, John	Chilterns	18.10
Wales, Roland	Booker	9.10
Mavor, Richard	Bannerdown	30.10
Webb, Anthony	Mendip	29.10
Tanner, David	Portsmouth Naval	19.10
Cuthbert, Roger	Borders	29.10
Perkins, David	Upward Bound	30.10
Ayres, Steven	Bannerdown	23.10
Filipkiewicz, Richard	Lasham	9.10
Ralstrick, Philip	Bannerdown	29.10
Fogden, David	Booker	5.10
Holley, David	Bannerdown	29.10
Stagg, Alan	Booker	5.10
Davis, Andrew	Marchington	29.10
Fear, Kevin	P'boro & Spalding	23.10
Herring, John	Lasham	17.10
Scott-Murray, Amy	Deeside	26.10
Simmonds, John	Lasham	5.10
Gilbert, Christopher	Lasham	5.10
Pridal, Jaromir	Lasham	4.10
Kronfeld, Simon	Lasham	9.10
Crow, Brian	South Wales	29.6
Matson, David	Wyvern	19.10
Skinner, Ian	Glyndwr	3.11
Thelwall, Peter	Four Counties	1.11
Hood, Jeremy	Four Counties	30.10
Sanderson, Peter	Four Counties	29.10
Cruickshank, Derek	Deeside	19.10
McNamara, Alan	Bicester	23.10
Roberts, Valerie	Marchington	29.10
Jude, Andrew	Cambridge	7.10
Morris, John	Cambridge	5.10
Summerell, Gavin	621 VGS	29.10
Hirst, Paul	Leicester Univ	29.10
Alvey, David	Newark & Notts	1.11
Roberts, Luke	Devon & Somerset	26.10

GOLD DISTANCE

Name	*Club*	*1996*
Kronfeld, Simon	Lasham	4.8
Warner, Philip	London	22.8
Sneddy, Thomas	Ulster	19.8
Standen, David	London	19.8
Hicks, Ian	London	19.8
Woodage, Laurence	London	19.8
Heath, John	London	19.8
Oliver, Richard	London	19.8
Miller, David	London	22.8
Hitchcock, Julian	Southdown	19.8
Atherton, Ian	Shenington	16.8
Doig, Margaret	SGU	5.10
Noonan, Paul	Enstone	13.6
Brown, Anthony	SGU	5.10
Murphy, Paul	Enstone	19.8
Birtison, Brian	Cotswold	16.8

SILVER BADGE

No.	*Name*	*Club*	*1996*
10 157	Sutherns, Timothy	Midland	13.9
10 158	Ball, Simon	Two Rivers	7.9
10 159	Howarth, Gordon	Chilterns	15.9
10 160	McNicholas, Anthony	Vale of White Horse	31.8
10 161	John, Robert	London	14.9
10 162	Orozco, Maria	Bristol & Glos	13.9
10 163	Goffin, Philippe	ESC	3.6
10 164	Davey, Keith	Ex Pat	17.1
10 165	Armitage, Simon	Derby & Lancs	26.7
10 166	Ambler, Richard	Ex Pat	25.7
10 167	Rowley, Kenneth	Pocklington	1.9
10 168	Robinson, Mark	Cambridge	6.5
10 169	Ferguson, Roddy	SGU	5.10
10 170	Leishman, Simon	Kent	2.10
10 171	Burkhardt, Ian	Booker	3.8
10 172	Wiggins, Andrew	Yorkshire	30.9
10 173	Sanson, Michael	Devon & Somerset	1.9
10 174	Sulivan, James	Kent	5.9
10 175	Vallis, Andy	Vale of White Horse	1.9
10 176	Allison, John	Chilterns	18.10
10 177	Joynes, Frederic	SGU	12.9
10 178	Turner, Mark	Southdown	5.10
10 179	Flewelling, Andrew	Cotswold	21.10
10 180	Holley, David	Bannerdown	29.10
10 181	Cockburn, Shaun	Booker	3.8
10 182	Coutts, Charles	Booker	2.10
10 183	Blair, Peter	Stratford	13.9

UK CROSS-COUNTRY DIPLOMA

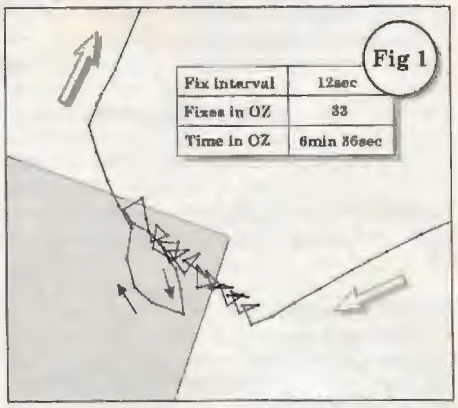
Part 1

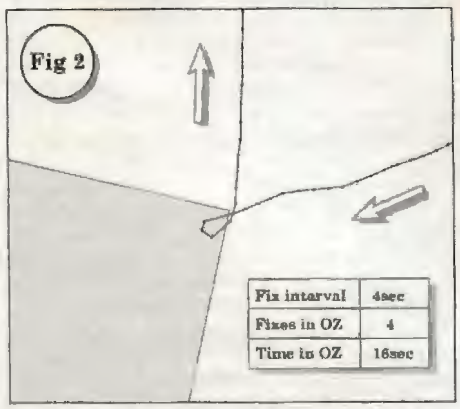
Name	*Club*	*1996*
Wakefield, David	Yorkshire	31.8

A TALE OF TWO TURNING POINTS

Or, it's faster with GPS

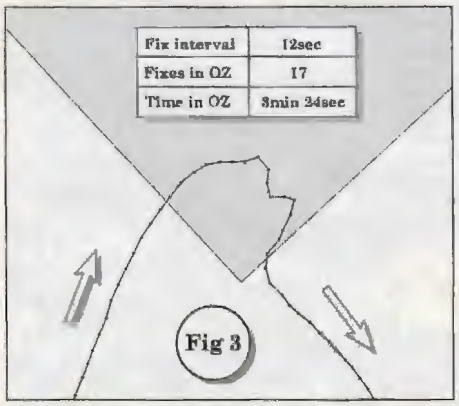
Compare Fig 1 and 2. Same TP, different circumstances. Fig 1 shows thermalling upwind and through the observation zone. Why then did Simon Marriott and I fly back to the south having already logged many fixes in the zone? Reason, photography. Well I reckoned when we were thermalling that we were too tight on the TP to get good photos, hence the awkward and time-consuming back-track. Six minutes 36sec in the zone, 33 fixes at 12sec intervals.



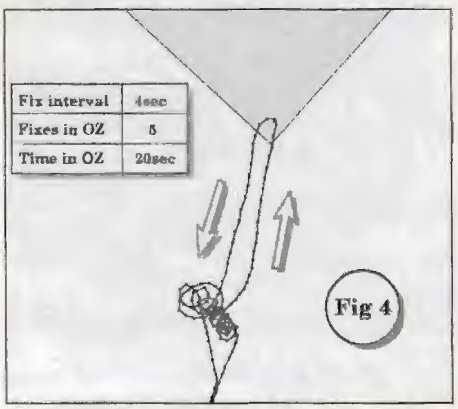


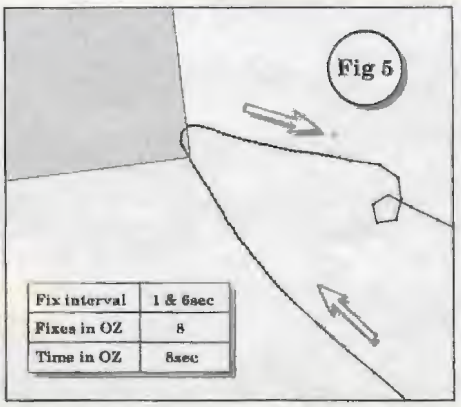
Now look at Fig 2, the same TP a year later. Sixteen seconds into the zone from four fixes at 4sec intervals. The fundamental difference? GNSS Flight Recorder (FR) evidence was allowed for the later flight (a record attempt using IGC rules).

OK, the need to thermal in the zone exaggerates the point. However, Fig 3 is the second TP on the earlier flight. Three minutes 24sec in the zone, from 17 fixes at 12sec intervals. And the wiggly track while in the zone? Photography again!



And the future? Fig 5 is from a GNSS FR capable of fast fixing at TPs while allowing a longer fix interval for normal flight. Only 8sec in the zone, eight fixes at 1sec intervals. Saved even more time! The base rate outside rapid fixing in this case was 6sec. These fix intervals can be set by the pilot before flight. Having played around with various settings I would use 2sec fast rate, 12sec for normal cruise and spend a little longer in the zone. However, the minimum requirement is one valid fix in the zone, so more practice and more time saved.

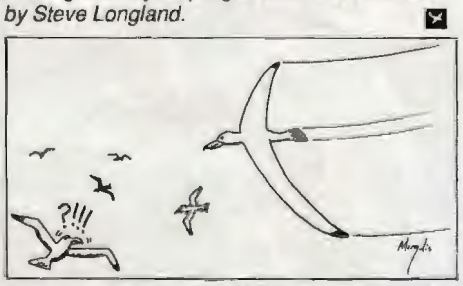




To do this you have to be sure that the FR is really producing fixes in the zone. A cockpit read-out is needed from the GNSS FR itself which uses the correct TP co-ordinates, has a sterling bug to the TP and preferably an indication of entering the IGC 90° zone itself. Without such a cockpit indication, the amount of zone penetration is up to you but may approach that needed for good photos.

Yes, the BGA did accept the evidence for both triangles. But for the first flight I had to get my old enlarger down from the loft to make special blow-ups of the photos at the second TP before the BGA would approve it. By contrast, the GPS evidence for the second flight was accepted very quickly. Ironically the earlier flight was faster, but it was a better day and for the second flight I did not have Simon with me to do the flying up the Cotswold Edge!.

Figs from Specialist Systems Ltd FC96 IGC-format flight analysis programme and enhanced by Steve Longland.



Over the winter Jonathan reprofiled his wings. By Mike Morgolis.

Dave Sarney with one of Booker GC's Super Cubs celebrating its claimed 10 000hrs.

Mike Cohler's photo taken at 11 500ft in Feshiebridge during York GC's expedition showing stacked lenticulars over Cairngorm.

Above: DCFI of Derby & Lancs GC, Ian Dunkley, is in the centre by the tail with Camphill instructors on a full Cat and assistant rating preparation course he ran at Camphill and Wolds GC. They are, from l to r:- Stuart MacArthur, Mel Wilkinson (crew), Don McKenzie, Ian Thompson and Darrell Athey. Below: Members of the Oxford University GC, based at Bicester, braving the cold during their annual winter winching week for the latest intake of new *ab-initios*. Photo: Pete Stratten.

CLUB NEWS

Copy and photographs for the April-May issue of *S&G* should be sent to the Editor, 281 Queen Edith's Way, Cambridge CB1 4NH, tel 01223 247725, fax 01223 413793, to arrive not later than February 11 and for the June-July issue to arrive not later than April 8.

GILLIAN BRYCE-SMITH *December 4*

BATH, WILTS & NORTH DORSET (The Park)
Today, November 30, we have had an interesting day's wave soaring. Several gliders contacted wave and Bob Bromwich took his LS-6 to 10 000ft and did a short O/R.

Our annual dinner in the clubhouse was organised by Sue Cutler and helpers with 72 attending this informal but well run occasion. Trophies were presented to Alastair Macgregor, Stuart North and Mark Hawkins. Ken Stephens, our very efficient secretary, was presented with a trophy for his untiring work for the club despite a serious operation and illness at the beginning of the year.
J.L.

BICESTER (RAFGSA Centre)
The year ended on a high with a mini wave expedition to Dishforth. The University club winching week in December went well and the last Service *ab-initio* course of 1996 produced eight solos.

The latest refurbished Supermunk is looking superb and our MT is getting some well earned TLC after a fairly busy year. Two lucky pilots head for Chile in early February and a larger group are bound for Sisteron in March.
P.S.

BOOKER (Wycombe Air Park)
Gerry Leech and his small band of dedicated helpers are out at first light on Saturday mornings, year in year out, getting the club fleet ready. It always amazes the rest of the club.

Amongst the new arrivals are two more unusual gliders, a flapped Libelle bought by Barry Amos, and a Czech Lunak wooden single-seater built in 1950 and imported and owned by Graham Saw and Sid Davis. This is believed to be one of only five in existence, and was built to be fully aerobatic as well as a good thermal soaring machine. Its original VNE was 470km/h (!), but test pilots "Rocky" Stone and Dave Richardson are applying for a BGA aerobatic C of A with a limit of probably 260km/h.

The end of season party not only celebrated our lady tuggies Karina and Edwina achieving their hours but one of Booker's 180 Super Cubs (Mike Fox) claiming to have reached 10 000hrs.

Gee Dale, having gained Diamond height at Aboyne, has now left Booker's staff, at least for a while, to exploit conditions in Australia. We wish him well.
R.N.

BRISTOL & GLOUCESTERSHIRE (Nympsfield)
We welcomed our new staff instructor, David Bland, ex-Pershore CFI and Bidford tug pilot. Les Bradley left the post with our thanks for years of service.

The club looks set to take delivery of a new glass two-seater. Ring Pat White (01452 864332) or the club to book for the Western Regionals (June 21-29).
B.F.R.S.

BURN (Burn Airfield)
We had a very enjoyable bonfire/solo night in November with certificates going to those who soloed last year and some who soloed some time ago. Also a presentation of a splendid painting of a Halifax bomber went to Mel Morris in appreciation of his hard work during many years as CFI. Mel retired earlier this year.

Thanks go yet again to a team of members headed by Steve Naylor, for their work on the new "tea trailer" which replaces our exhausted "tea bus". Dick Dixon gave an interesting talk at our annual dinner-dance and Dave Johnson was awarded the cup for the pilot making the most progress. Paul Wrightson has gone solo and Steve Martin is an assistant instructor.
A.J.

CAMBRIDGE (Gransden Lodge)
At our fireworks evening trophies were awarded to Peter Baker, Malte Grosche, Keitha Bryce-Smith, Rob Welford, John Birch and Phil Jeffrey

Colin Smithers has an impressive list of speakers for the winter lectures including Gerhard Waibel (Schleicher's designer), Andy Davis, John Simpson (see breeze fronts), Victoria Sowden (Met Office), Mike Woollard and Bill Scull (airspace). Contact the club on 01767677077 for details. Visitors welcome.
K.B-S.

CHILTERNS (RAF Halton)
At our AGM in November awards were presented to Paul Wilford, Keith Beattie, Ian Petman, Gordon Howarth, Don Knight, Bernie Anson and Terry Lacey. Ian Harman and Nigel Wright have gone solo, John Alison and Dave Sale have Gold heights and Ed Weaver Diamond height whilst at Aboyne.
D.S.

CLEVELANDS (RAF Dishforth)
Between the gales and the snow we have had some wave to provide Gold and Diamond heights for several members and visitors. Willy Hackett has Diamond height but Jim McLean missed his by 164ft. Kev Peard has gone solo, Fiona Hackett has resoloed and Polly Whitehead is an assistant instructor.

CFI Derek Smith came 3rd in the Blue Class in the Inter-Services Regionals. Other pilots representing us at Comps were Willy Hackett, Dave Moss, Dick Cole and Paul Whitehead.

We are sorry to lose two of our most experienced full Cats, George Brindle and Jack Clark. Jack had instructed for our club since its inception in 1957! We hope he will enjoy some peaceful solo flying with us in his retirement.
J.P.

CORNISH (Perranporth Airfield)
Chris Willey completed his Silver distance in a Skylark 3F from Perranporth in November - very unusual for this time of year!

This is a very special year - our 40th anniversary. We will be celebrating with a long open weekend (May 24-26) and invite past members and visitors to fly with us at Perranporth. We can't offer hangarage but there is ample parking space if you wish to fly in. Prior permission is required for powered aircraft.

Ian Harman of Chilterns GC who went solo the day after his 16th birthday.

Cliff Kindell, East Sussex GC's treasurer for many years, on his 80th birthday.

Above: George Salt (right) of Kent GC being presented with the *Ab-initio* shield by CFI Alan Garside. George was recently 82. Below: George Cole who went solo at Buckminster GC.

For further details contact Gordon Hunter, 3 Trelispen Park Drive, Gorran Haven, St Austell, Cornwall PL26 6HX, tel 01726 842798. Book your Bank Holiday with us!
S.S.

CRANWELL (RAF Cranwell)
At our recent AGM trophies were awarded to Ian Mountain, Nobby Clarke, Dave Fidler, Stephen Benn, Theresa Browne, Al Docherty, Steve Langford and Mark Heselwood. Mike Broom and Bryan Rundle have gone solo.

Our site record was broken recently by Nobby Clarke, who flew to 14 000ft in wave. Mick Lee reached 21 000ft at Dishforth for Diamond height.

The loaned K-21 from Brüggen will be returning to Germany shortly and we are looking forward to receiving the Janus C from Bicester.
L.F.

DEESIDE (Aboyne Airfield)
At our annual dance and prizegiving awards were presented to Peter Coward, Neil Forman, Susan Waring, Lemmy Tanner, Grant Williams and Jamie Hunter.

Expeditions are welcome throughout the spring and summer, however we are virtually full for October. There are still places available during September for the autumn wave. Contact Mary Rose-Smith on 01569 730687 for availability of places. We were at 26 700ft in October and 24 500ft in November.

The Scottish Sports Council Lottery Fund has approved our application for grant assistance for re-instrumenting all club gliders and have offered us £13 000 which is 50% of the cost. Our local enterprise company has also contributed £5000 towards the project.
G.D.

DERBY & LANCS (Camphill)
Hugh McNamee has resoloed after a break. At the moment we have a crew filming an episode of the "Dalziel and Pascoe" detective series due to be screened in March - not to be missed. (Lot's of gliding, Intrigue and more!!)

The Christmas party was, as ever, a great success. Our thanks to Sylvia and her team for their continuing hard work. Ian Dunkley is running preparation courses for full Cat and assistant ratings which are very successful.

We are offering Vintage GC members free day membership for up to 28 days a year with camping/caravan space or clubhouse accommodation at club rates. If planning to come as a group or with an aircraft, ring John McKenzie on 01298 871270. There is winter undercover storage less than a mile from Camphill and aircraft can be stored in their trailers. For details of VGC membership contact Ian Dunkley c/o of the club.

We are also hosting the 1997 Vintage Rally from May 24 to June 1. Another possibility is to organise a "Wooden Competition", 1950s style if 1950s retrieves are attractive, or based on a closed circuit if not. Comments on this idea would be welcome.
W.T. & I.D.

DUKERIES (Gamston Airfield, Retford)
We had a successful expedition to Portmoak in October with a lot of enjoyable flying including Bob Staveley's 5hrs.

We are planning to extend the hangar.
J.C.P.

EAST SUSSEX (Ringmer)
Nick Reeves, Matt McCulloch, Karl King and Ron Simpson have gone solo and Harry Wainwright resoloed after a 16 year gap. Mike Macefield and Richard Tingle have Bronze badges and Les Groves and John Williams have their 5hrs.

We are making a lottery application to improve our club fleet. Earlier this year, Tony Kerwin-Nye took over as chairman from Fred Bishop and Roger Warren as CFI from Dave Felix.
J.W.

ESSEX (North Weald & Ridgewell)
Our foray to the Long Mynd during the last two weekends in November was very enjoyable. Many thanks to the Midland GC for their hospitality and assistance. Both weekends were successful, with ridge and wave lift experienced.

George Booth has his instructor rating.
L.M.

FOUR COUNTIES (RAF Syerston)
We had many height claims from our Aboyne expedition with Diamonds going to Pete Sanderson, Pete Thelwall, Richie Lovegrove and Sue Armstrong and Golds to Derek Coker, Bob Rae and Jeremy Hood.

At our AGM trophies were presented to Pete Dixon, Colin Davey, Gary Bridgeman, John Wilton, Rose Thompson, Richard and Jeremy Hood, Tony Povey, Mark Davies and Guy Roberts (Notts University). Ian Tunstall has taken over as aircraft member from Mark Davies - we thank Mark for all his hard work.
D.M.R.

GLYNDWR (Lleweni Parc)
We continue to improve our site with the addition of a more luxurious clubhouse which includes a clubroom, briefing/lecture room, kitchen and office. The toilets and showers are nearing completion.

Thanks to a generous donation of a pool table, TV and video for the clubhouse, and the excellent wave at Lleweni, we are ready for an influx of spring visitors who can now join us at a much reduced rate of £20 for nine days. Bookings for the 1997 wave to Mike Osborn on 01745 813774.

Arthur Isaac has gone solo; Derek Heaton and Ian Hurle gained their 5hrs and Arthur Carpenter, Julian Anderson and Ian Skinner achieved Gold heights. Rod Witter flew an O/R to Builth Wells in wave achieving 19 000ft.

Our regular visitors from East Sussex, Terry Banks and John Williams, spent many happy hours in wave between 11 000 and 15 000ft. Our 28km long ridge continues to give members a 3000ft springboard into the wave.
M.P.Q.

HEREFORDSHIRE (Shobdon)
We have recently had some good wave. On October 26 three visitors flew to 12 000ft and a fourth to 15 000ft. Early in November Phil King found wave to the SW over the Wye, 3 to 4kts to 12 000ft then a reduced rate to 22 000ft. He popped over to Welshpool on the way down.

On the same day the Falke soared engine off at 2 to 3kts to 10 000ft then 4kts to 12 000ft, terminating the climb for want of oxygen. On the last day of the month John Evans climbed from 1700ft to 6500ft in a 3½hr flight and there were a number of prolonged flights on the local hills.
R.P.

LAKES (Walney Airfield)
Our recent annual dinner/prizegiving was one of the best ever. Trophies went to John and Lyn Martindale, Roger Copley, Stella Colcombe, Brenda Mason, Graham Welch and Roy Jones.

In October a number of members went to Portmoak and although the weather was relatively unkind, everyone had some memorable flying with Graham Welch achieving Gold height.
A.D.

LASHAM (Lasham Airfield)
Wave expeditions to Aboyne, led by Malcolm Hook and Phil Phillips, resulted in Diamond heights for Andrew Hall, Roger Downing, Nick Hughes and Mike Gee, and Gold heights for Kim Tipple, Chris Gilbert, John Simmonds, Joe Pridal, Simon Kronfeld, John Herring and Rich Filipkiewicz.

Our Duo Discus, having recovered from an adolescent tendency to land in fields and do slow rolls with its trailer on French Autoroutes, has settled down into maturity and is fully occupied converting pilots ready for the soaring season.

Half the total membership of Lasham attended

a leaving party in honour of our retired manager, Phil Phillips. (See p37.)

Twelve of our 19 cadets have gone solo.

Surrey and Hants GC supported the Lasham Regionals with all the solo fleet flying. David Masson (Ventus) came 10th in Group A and Alistair Nunn 7th in Group B, winning two days. Peter Masson came 6th in the Junior Nationals and won two days. He was also 19th in the Standard Class Nationals while still a junior.

We give our condolences to Wally Kahn on the sad death of his wife, Margaret Kahn, after a long illness. (See p41).
A.M.S.

MARCHINGTON (Tatenhill Airfield)
The planning decision for the new field has been postponed to December.

The annual trip to Portmoak produced Gold heights for our chairman, Val Roberts, and secretary, Andy Davis. With regard to the Gold distance completed from Bicester by our CFI, Sid Brixton (as reported last month), I omitted to mention that this was the first to be ratified with an electronic data logger.

At the Christmas dinner awards were presented to John Garrett, Phil Pritchard, Alan Roberts, Bob Thacker and Gareth Lawley.

We will be flying throughout the winter on Wednesdays and weekends and as usual welcome all visitors with no reciprocal charge to BGA members.
I.N.R.

MIDLAND (Long Mynd)
We have had some good late cross-countries with Roger Andrews completing 240km in thermals on October 2 and Nick Heriz-Smith 323km around the Welsh coast in wave at the end of the month. Rose Johnson has flown 500km and Simon Adlard has become a regional examiner.

We have new caterers from the local pub The Inn on the Green, the westerlies are back and visitors from Essex, Dunstable and Nympsfield have enjoyed some excellent winter soaring. Why don't you join them?
P.A.S.

NENE VALLEY (RAF Upwood)
Visitors to our current RAF Upwood base please beware. The airfield now has grazing rights for sheep and there is an electric fence on the site (extremely difficult to see from the air) which is moved around at regular intervals.

Sixteen year-old Sarah Nason has gone solo. Sarah is our 1996 Kittyhawk scholarship student and the second female member to solo this year. Chris Hill has an AEI rating.

The November AGM marked the end of a successful year with a very promising outlook for our new site in 1997. The committee thanks all members for their valuable help and support throughout 1996.
A.F.

NORFOLK (Tibenham Airfield)
Our winter programme of talks and lectures, with subjects ranging from basic radio techniques to advanced soaring, is in full swing. There have been various expeditions to Sutton Bank and Aboyne, where Mark Manning got Gold height. Geoff Tilley has two Bronze legs and Steve Cattermole and Richard Harvey have Bronze badges with cross-country endorsements.
B.W.

NORTH WALES (Bryn Gwyn Bach)
Strong westerly winds during October gave wave conditions most weeks with several flights from the winch to well over 10 000ft (including our CFI's check flight with the regional examiner!). November offered a choice of rain or snow or both, but failed to dampen our bonfire night fireworks and barbecue, thanks particularly to the efforts of Lyn and Dave Stephenson and Jan and Keith Lewis.

We continue to fly every weekend and most Wednesdays, and visiting pilots are very welcome any time, especially before our course season starts in May. However, before travelling any distance it is sensible to check conditions by 'phone (Tel 01745 582286).
N.D.J.C.

PETERBOROUGH & SPALDING (Crowland)
Poor weather has restricted flying locally, however full Cat Kevin Fear took advantage of a trip to Aboyne to complete his Gold badge and achieve Diamond height.
F.R.P.

SHENINGTON (Shenington Airfield)
The seven day week operation continues to run successfully. A surprise party was held for Paul Gibbs and John Harwood in October to show our appreciation of all their hard work through the year. We had a large turn out with standing room only.

We are buying the motor glider (Falke) based on the site which proved very popular last year.

The varied weather has caused the winter maintenance programme to start early and we have winter lectures and the usual seasonal parties at the clubhouse over the next two months. Visitors are welcome.
T.G.W.

TRENT VALLEY (Kirton in Lindsey)
Steve Wilkinson has become DCFI - our thanks to Cliff Whitwell for past services. Paul Holland has a full Cat while Tim Graham achieved Diamond height at Aboyne. Bill Dziadkiewicz has gone solo and Mark Elland has resoloed after 20 years.

We have a Christmas party and in January a BGA safety evening.
J.A.T.

SCOTTISH GLIDING UNION (Portmoak)
Our Christmas dinner with awards was a great success with Derek Piggott as guest speaker. The trophy for the most improved pilot went to Kevin Dillon.

We have flown throughout the winter with some exceptional wave flights. Mike Carruthers flew Diamond distance and the Allcoats in the family DG-500 achieved another 500 at 130km/h. (See p55.) Fred Joynes has his 100km diploma and Kevin Hook completed 620km of a 750km attempt. Jim Porteus has soloed and Ian Trotter and Joe Fisher are assistant instructors.

Our thanks to Ken Moffat for organising a trip to the CAA ATC Tower at Edinburgh Airport.

We are celebrating our 40th year being based at Portmoak.
N.F.G.

SHALBOURNE (Rivar Hill)
At our AGM in November proposals to amend the constitution and become a limited liability company were discussed. Hopefully the planned changes will give better prospects of securing Lottery and Sports Council funding to improve our facilities and the club fleet.

Our October expeditions resulted in plenty of wave flying at Aboyne but only one useful day at the Long Mynd. Dave Draper and Richard Newton have resoloed and Alan Sparrow achieved his first Bronze leg in unexpected thermal conditions in the middle of November.
C.N.H.

SOUTHDOWN (Parham Airfield)
Winter soaring conditions are more suited to early spring. Hill soaring and wave with good visibility has brought out the hibernators with thermal activity impossible to resist in mid November sunshine.

Our Avgas installation is now fully operational and the feeder road two thirds tarmac surfaced. Jim Allin, Jim Heath and Jim Tucker are fully certificated to run the facility.

Stuart Ross is the new PR officer and Phil Kirk our magazine editor. Angus Buchanan is taking over as tug master, assisted by Andy Taylor.

A competition to be started this season between Bath, Wilts & North Dorset GC has a tro- ➡

Two Cambridge GC members who have gone solo:- Sam McQuaide (left) and John Dadson.

phy presented by our CFI Brian Bateson.

We are contemplating a scheme to encourage the young. If agreed five local youngsters will be given a year's flying tuition and membership of the club. In contrast, George Elliott proposed that reduced soaring rates should be introduced for OAP members. But it has not been accepted by the committee!
P.J.H.

SOUTH WALES (Usk)
We are delighted to report success in our lottery application - nearly £59 000. The club is to have a new winch, a new retrieve vehicle and a hangar extension. Our special thanks to Lyn and Joan Bennett for the huge effort they made in preparing the business plan, and to all the others who helped.

At the recent AGM, trophies were awarded to Dave Jobbins, Dave Jeffries, Brian Crow, Simon France, Harold Armitage, Maureen Weaver, Keith Jones and Lyn and Joan Bennett.
M.P.W.

ULSTER (Bellarena)
At press time we were heading for our second busiest year in terms of launches, on December 3 seeming unlikely quite to reach the 1995 figure of 1689 which was inflated by the Vintage GC rally.

But activity remained buoyant, November 30 giving us an overdue return of good westerly wave which Jim Weston used for a 100km O/R, and we had a heartening number of *ab-initios* in training.

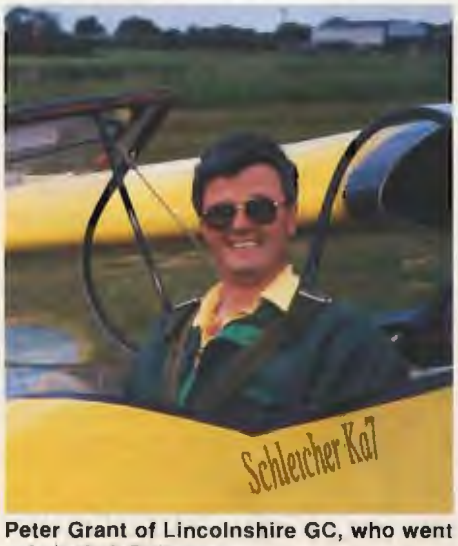
Our latest soloists are fifth-former Rachel Neill (see p24) and Queen's student Ross Donnell. He made his maiden solo off Shenington's winch but was quickly aerotow qualified on returning home.

When this appears, our tug should be flying with its brand new ex-works Lycoming, to be fitted during a short January stand-down. Big sodium vapour units obtained as salvage from a redundant factory now light our big hangar brilliantly, aiding such work.

We read of other clubs' safaris with interest. Why doesn't your club think of coming here.
R.R.R.

WELLAND (Lyveden)
At our recent dinner-dance trophies were presented to Roger Gray, Greg Taffs, Ken Wells, Gerald Dexter, Rosemary Amatt and Robert Leacroft.

Werner Leutfeld takes over as CFI from Barry Chadwick.
R.H.S.



Peter Grant of Lincolnshire GC, who went solo in their Buttercup.

WOLDS (Pocklington)
Our dinner-dance went well with prizes awarded to Chris Collins, Steve Wilson, Mike Fox (2), Bob Fox, Alan McWurter, Ken Rowley, Alan Hunter and Dereck Roddie.

A new prize was awarded by Bob Walker for the best pre-solo progress, in memory of his wife Barbara who was tragically killed in a car crash. Barbara was learning to fly at the club. This award went to Duncan Bradshaw. Thanks Bob.

The club Pawnee is having its fuselage recovered and is well on the way to completion, with Eddy Room doing much of the work.

We are now open on Thursdays as well as Wednesdays and Fridays in the week, with our new DCFI Alan McWurter helping to make this possible.
M.F.

YORK (Rufforth)
Derek Moore has retired as an instructor after more than 30 years, although on occasions he will be at the club to participate in hangar flying. Andy Marvin is now an assistant instructor.

Father Christmas arrived in a T-21 bearing gifts to the delight of many local children, some of whom had the opportunity to join Santa for a local sleigh-barge ride.

The unusable, boggy, north-west area of the airfield has been reclaimed by soil filling and will soon be available for take-off and landing.

Last year was the most productive cross-country season on record, the longest flight being a 614km O/R by John Ellis flying a DG-500. Cross-country and advanced courses in instrument flying and aerobatics will be continued this season due to popular demand.

Half a dozen pilots joined the October expedition to Feshiebridge and enjoyed thermal, ridge and wave flights.
M.D.C.

YORKSHIRE (Sutton Bank)
We have had an excellent response to the winter membership scheme and welcome members from other clubs who have taken advantage of the chance to fly here during the winter months.

John Carter has his 5hrs, Malcolm Winter Gold height and Mark Irving Gold distance.

At the annual dinner-dance trophies were awarded to Andy Wright, Phil Lazenby, Steve Hill, Mark Irving, Mike Brook, Paul Foster and Barry Ogleby. A presentation was made and honorary life membership awarded to Mike Wood to mark his retirement after 25 years at Sutton Bank.

We are pleased that Ritchie Toon has joined us as a full time instructor.
C.L.

GLIDING EVENT OF THE YEAR

BRITISH GLIDING ASSOCIATION ANNUAL CONFERENCE & AGM

Saturday 22nd February 1997 • 10.30am – 5.30pm, Hopcrofts Holt Hotel, Nr Oxford

Starting at 10.30am, and continuing until 5.30pm, the 1997 Annual BGA Conference is packed full of interesting talks, discussions and events. What is more, it is FREE! Yes, there is no cost!

Lunch will be available at a small cost. For £10 per person, a finger buffet can be ordered (pre-bookings are required). Alternatively, sandwiches can be arranged at the BGA reception desk when you check in.

Dinner £16.00 per person • Accommodation from £22.50 per person

Following the Conference, there will be a dinner at only £16 per person. This will include entertainment in the form of a comedy act, followed by a live band until the small hours. For those wishing to make a night of it, the hotel offers excellent accommodation, at a reduced rate of £22.50 per person (based on two sharing, £30 per person single).

CONFERENCE PROGRAMME includes . . .

MORNING

- **"Schleicher – The design of Gliders":** *First of two talks given by Mr Gerhard Weibel.*
- **AEI & Instructors Meeting:** *Everyone is welcome!*
- **"Aerobatics":** *A short session given by Sam Mummery*

AFTERNOON

- **British Gliding Association AGM:** *Everyone is encouraged to attend.*
- **"The Future of Gliding In the Year 2020":** *The second of two talks given by Mr Gerhard Weibel.*

A few gliding videos will be shown throughout the day until 7pm, courtesy of BGA and RD Aviation.

For more information, or to order your tickets and lunch requirements, contact: Claire Thorne on (01280) 705741/(0836) 512857, or Sylvia Bateman on (01509) 415710

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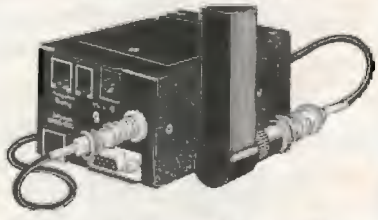

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A WEEKEND AWAY

It seemed a good idea but it was not without its problems

So you fancy flying somewhere else for a change. You can't afford the South of France and are not competition minded, nor do you own a glider, so what do you do? My son and I both fly and normally have a weekend camping trip each year so the logical thing was to find a one day course, preferably at a weekend.

After scouring the pages of various publications we chose a club which seemed to offer the best value - a one day course on the Saturday with eight flights guaranteed. We arrived on the Friday and the first impressions were of very friendly, helpful people and a large flat field with some tarmac runways, making a change from our field which is decidedly humped in the middle and with trees on all sides.

Saturday

The flying was interesting because I had just realised somewhere along the line the system is falling short. I presented myself as a newly soloed pilot and hoped to be let off the leash after a few orientation flights. I found a great reluctance to do this and a chat with one of the instructors later revealed why.

Because of problems in the past where people have not been up to standard, although signed up competent, they are now cautious to the point where I am not sure that they would let the World Champion go solo! This is understandable but if true, then the BGA have a major problem as someone is signing people off when they are not competent. That does nothing for anyone and can only increase the accident rate for pilots with low hours. It also leads to frustration when visiting other clubs. So if you are in this category don't go elsewhere - you will only get frustrated and possibly confused.

Why confused? Well, for example, having been taught very carefully about launching speeds I was criticised for waving for excess speed at 70kt in a K-13. My son was told not to wave off at 80kt! On one flight I signalled at 60kt, the speed settled at 55kt and I achieved exactly the same height as before. So please will all you instructors decided what is correct so we lesser mortals know what to do. Perhaps the BGA should consider snap inspections of instructors so that not too much local bias creeps in.

An incident on the Saturday summed up everything. The first launch was taken by my son who went off in one direction as the winch went in the opposite. The winch driver had forgotten to set the brakes.

The other point that shows up was that we all think our field has problem areas and quite often modify procedures to cope. As a visiting pilot this can be difficult to assimilate, but on the other hand your home field may be even worse and you may be able to deal competently where you are. Try and convince somebody of that.

The actual hands on flying was good, when I got it. There is nothing more irritating than constantly feeling the instructor interfering with your control inputs when they have said that you have control. The CFI later admitted that this instructor was known for this habit. Not a good advert for a visitor.

Saturday produced some lovely thermals (and some rain storms). Had I been at my own club I could have flown my first Bronze leg as we had 8kt thermals and gained 1000ft off the launch in a very short time.

Sunday

Because we couldn't complete the flying for various reasons on Saturday it was extended to Sunday. What were those reasons? The usual problems of weather made for some delay, but some were self induced. There was only one winch cable. This problem was known about during the week so had I been warned it would have made me think about coming at that time. There was a constant struggle to get in enough flights .

This was even worse for my son and we constantly asked when they were going to slot in the rest of his flying. No instructor was allocated to him and the one with me could only fly with solo rated pilots for medical reasons. Then a club K-7 was damaged on take-off and grounded.

Finally

Yes I learned a lot from our weekend but unfortunately not about flying. Many clubs are moving more towards holiday courses so here is my own list of points they should be implementing.

1. Be helpful when people ring and find out what they are after.
2. Don't promise anything you can't deliver. It is better to say no than leave someone else in the club to sort out a problem.
3. If you offer accommodation or camping facilities make sure everything you promise is available like electrical hook ups. Little things like cutting the grass on camp sites makes a difference.
4. Be friendly and welcoming when visitors arrive and make them feel at home.
5. Allocate an instructor and aircraft to the course and that instructor shouldn't be used for anything else.
6. Make sure that everything you use is in perfect working order and available. It leaves a bad impression when a visitor has to point out that there is a defect on your club aircraft. (The airbrakes were too stiff for my son to close.)

Conclusion

Did I enjoy the weekend away? Yes and no. I didn't get anything out of the flying but my son did. It was good to talk to people from another club and share views and news, but at my stage I should have stayed at home.

Ken's son Daniel comments: Their attitude to juniors was great. Not only did I fly but I was asked to drive the jeeps pulling out the cables - something I'm not allowed to do at my own club where they are very strict about the jobs younger members may do. I learned how to take-off and how not to take-off - all the instructors said different things - and I did my first landings. Personally I want to go back later.

Late News: We were sad to hear of the death of Louis de Lange, former president of OSTIV, who died on December 4 in Voorburg, near The Hague. He was 87 years-old. He formed the first gliding club in Holland in 1929 and was active in Dutch gliding over many years.

WE TOOK THE HIGH ROAD

The story of a speedy autumn 500km declared by a father and son in a DG-500 with winglets

Neville and Richard with their DG-500.

The alarm clock rattled away and one eye opened to see a sky full of wave clearly marked and beckoning. Was it a glider pilot's dream or nightmare? Both eyes confirmed the best sky I have seen at Portmoak for some time. Panic set in because my son Richard and I had boxed our DG-500 (with winglets) due to forecasted gale force winds, so now it meant rigging.

It was Tuesday, October 29, and we were still rigging when we heard other members already at 10 000ft. At 10.25am we were going for it. A low point of 700ft on Bishop Hill, then at 9000ft 15min after take off and still climbing at 10kt we were able to take stock of the conditions and get our breath back.

It was time now to dip our toes and jump a bar towards our first TP 82km away at Edzell. A clearly defined cloud street marked the way so at 90kt in 2kt of lift we sped along aiming to maintain between 8000-10 000ft. This level appeared to give us the strongest lift, but cloud tops were at 7000ft where visibility of cloud formation ahead was obscured.

We were taking it in turns to operate our miniature video to give us something to view during the long winter evenings. Dundee moved behind on our right, then Forfar and Brechin with the Montrose Basin in the distance. We turned fast round Edzell into sun for the 159km leg to Helensborough away on the other side of Scotland. Overhead Perth we were down to 7000ft so slowed down in strong lift, then pushed forward again to fly at 100kts maintaining 10 000ft. With Stirling on our left, Lake of Menteith ahead, Callender and Loch Katrine, phew!, we were really scorching along. Good lift over Loch Lomond and with only 11km to run to Gare Loch, we got ready for more filming and a TP photo of Helensborough.

Our next leg to Aboyne, a distance of 166km with a 90° crosswind of 25/30kt, was fairly uneventful. Having covered 241km to Helensborough in exactly 2hrs we knew that a fast time was on, if only...

Outside temperature was about -20°C and we only had "in flight" Yorkie bars and orange juice for sustenance. Cloud street wave formations were breaking up now with ragged cumulus masking the wave systems. Jumping these ragged areas proved no problem by flying even faster through the sink and then slowly gaining height while flying fast in the subsequent good lift. A dusting of snow on Glen Shee told us that winter was approaching. Then a quick call over the radio to our pals at the Deeside GC and we were turning for home 103km away.

Now grateful for the sunshine on our faces and with an excess of 4000ft on the C3 we high tailed it for Portmoak. With Fife set out on our left, Dundee on the river Tay and the Forth of Firth shimmering in the distance, a 100kt airspeed giving a groundspeed of 132kt, we were soon back home.

Having encountered very little sink between wave bars we airbraked off our excess over Loch Leven and the Scottish Gliding Union airfield and landed 3hrs 54min after take-off. The average speed was 130km/h over 510km, flown between 8000-10 000ft.

We parked the glider, thawed out the feet and drank a welcome cup of coffee. Looking at the sky with lovely wave bars still evident and 2hrs 30min of daylight left, should we have set the alarm an hour earlier and declared 750km?

Our first attempt with the video camera was a great success giving us a 35min film of superb wave conditions.

ANNUAL STATISTICS OCTOBER 1, 1995 TO SEPTEMBER 30, 1996

GLIDING CLUBS	AIRCRAFT				ALL LAUNCHES	NO. OF AEROTOWS	HOURS FLOWN	KMS FLOWN	MEMBERSHIP		
	Club 2s	Club 1s	PO	Tugs					Full Flying	Estimated No. of Temporary Members	No. of Female Members
CIVILIAN											
ANGUS	3	1	4	0	1298	0	186	105	35	158	2
AQUILA	3	4	29	2	2160	1817	1390	30 860	81	373	3
BATH WILTS & NORTH DORSET	4	3	26	1	3542	941	1562	16 000	126	206	6
BIDFORD GLIDING CENTRE	4	2	34	3	2747	2747	2040	15 000	126	630	3
BLACK MOUNTAINS	3	1		1	1883	1883	2596	19 500	65	153	9
BOOKER	7	7	85	4	9928	9928		350 000	277	1300	27
BORDERS	3	1	22	2	1681	1604	1093	3550	74	190	2
BOWLAND FOREST	2	3	24	0	5682	0	2255	1000	115	150	8
BRISTOL & GLOUCESTERSHIRE	4	4	62	2	8351	2565	6044	85 000	309	476	25
BUCKMINSTER	3	2	19	2	2283	1805	1260	5300	72	257	7
BURN	4	3	20	1	5732	1642	2020	2800	125	395	4
CAIRNGORM	1	0	10	0	1100	250	0	0	35	76	2
CAMBRIDGE UNIVERSITY	4	6	64	3	10 110	2030	6400	213 000	211	1233	21
CARLTON MOOR	1	1	2	0	696	0	155		13	18	1
CHANNEL	3	1	7	0	4849	0	604		46	480	4
CONNEL	3	0	6	0	522	221	272	2985	19	113	0
CORNISH	2	2	10	1	2414	2213	924	4000	33	405	3
COTSWOLD	3	4	42		10 913	101	4003	52 300	170	847	11
DARTMOOR GLIDING SOCIETY	4	3		0	4461	0	768		80	380	11
DEESIDE	2	3	21	3	4919	4885	4938		144	685	14
DERBY & LANCS	4	3	34	0	7202	0	3297	20 135	194	919	21
DEVON & SOMERSET	4	3	39	1	8059	915	3215	22 332	186	822	12
DORSET	2	3	5	1	3367	653	429		68	415	3
DRA FARNBOROUGH	2	2	5	1	719	403	293		33	67	2
DUKERIES	2	2	10	0	3442	0	720	1695	44	101	6
DUMFRIES & DISTRICT	1	1	3	0	580	0	212	475	16	16	0
EAST SUSSEX	4	4	18	0	6188	123	1801	5600	131	1071	7
ENSTONE EAGLES	2	1	7	0	2590	122	999	5000	48	324	3
ESSEX & SUFFOLK	3	3	21	0	5276	0	1790		100	215	8
ESSEX	3	2	28	1	1758	765			94	270	3
GLYNDWR SOARING CLUB	4		14	1	3683	658	1449	12 900	32	40	4
HIGHLAND	1	1	11	0	2353	487	952	2217	66	130	19
IMPERIAL COLLEGE	1	2	0	0	30 000	5000	10 000	50 000	24	120	2
ISLANDERS LIMITED	0	0	2	1	373	29	36	37	21	21	2
KENT	4	3	28	1	7268	2433			144	871	29
LAKES	3	3	7	1	1371	1270	483	5190	41	146	3
LASHAM GLIDING SOCIETY	12		165	5	28 176	10 733	10 300	283 900	459	2657	149
LINCOLNSHIRE	2	0	8	0	4335	37	618	292	74	147	13
LONDON	6	4	78	4	40 123	13 630	14 090	166 000	350	2800	31
MARCHINGTON	3	1	13	2	1632	1632	917	0	85	230	3
MENDIP	3	2	11	0	2737	11	713	1500	76	500	4
MIDLAND	3	4	39	1	12 304	706	5303	43 808	195	1082	20
NENE VALLEY	2	2		0	3189	0	656	2583	43	215	4
NEWARK & NOTTS	2	3	13	0	5151		1071		62	480	7
NORFOLK	4	2	34	2	4240	2741	2246	42 610	197	684	14
NORTH DEVON	1	6	0	1	298	298	275	750	12	52	
NORTH WALES	2	3	51	0	2270	0	357		49	317	2
NORTHUMBRIA	3	2	14	1	2431	525	594	2000	69	313	2
OXFORD	4	3	16	0	3343	26	1353	8650	108	297	15
OXFORDSHIRE SPORTSFLYING CLUB	0	0		0	0	0	1200		35	22	4
PETERBOROUGH & SPALDING	3	3	18	2	2114	2114	1288	6800	75	260	5
RAE BEDFORD FLYING CLUB	1	0	9	0	527	0			16	20	0
RATTLESDEN	5	2	19	1	3363	380	1181	7200	69	380	14
SACKVILLE	2	2	9	1	950	660	1440	10 000	31	15	6

GLIDING CLUBS	AIRCRAFT				ALL LAUNCHES	NO. OF AEROTOWS	HOURS FLOWN	KMS FLOWN	MEMBERSHIP		
	Club 2s	Club 1s	PO	Tugs					Full Flying	Estimated No. of Temporary Members	No. of Female Members
SCOTTISH GLIDING UNION	3	3	38	1	9630	488	4900		204	750	11
SHALBOURNE SOARING SOCIETY	3	2	25	0	4636	0	1392	4000	107	746	15
SHENINGTON	5	3	14	1	8781	719	2082	25 665	122	432	19
HEREFORDSHIRE	1	1	8	1	663	663			20	85	
SHROPSHIRE SOARING GROUP	0	0	9	1	330	330	623		22	0	1
SOUTH WALES	2	3	17	1	2633	1750	1146	8000	82	460	4
SOUTHDOWN	3	3	37	3	6413	4489	3935	33 290	254	690	22
STAFFORDSHIRE	3	4	13	0	6478	115	1204	4000	131	380	8
STRATFORD ON AVON	4	3	23	0	7966	0	2350	10 455	125	925	10
STRATHCLYDE	1	2	6	1	477	126	83	0	20	43	1
SURREY & HANTS	0	12							180		
SURREY HILLS	4	3	2	0	3891		580		184	296	2
THE MOTOR GLIDER CENTRE	0	0		0			536	2500	20	35	3
THE SOARING CENTRE	5	7	86	4	16 021	8526	8691	132 031	321	1250	23
TRENT VALLEY	3	2	14	1	4291	1139	1705	9850	61	235	7
ULSTER	2	1	17	1	1709	1689	1300	400	46	300	1
UPWARD BOUND TRUST	2	1	5	0	2793	0	558	1930	25	30	4
VALE OF NEATH	1	1	4	1	459	268	190		25	21	1
VALE OF WHITE HORSE	2	2	14	1	1790	541	770	9847	58	180	4
VECTIS	1	1	5	1	778	778	306		32	135	3
WELLAND	3	3	14	1	4212	323	1053	4300	69	252	7
WOLDS	4	2	31	1	10 905	1180	2868	21 000	197	1100	19
YORK GLIDING CENTRE	3	3	24	1	4405	2230	1545	12 000	149	705	12
YORKSHIRE	3	5	40	3	6680	4331	2401	25 792	274	1042	9
CIVILIAN CLUB TOTAL	219	190	1662	77	392 624	111 668	148 668	1808 134	8131	34 636	766
SERVICE											
ANGLIA	3	3	1	0	2334	29	649	4177	41		
BANNERDOWN	3	2	4	2	4800	100	1600	14 100	60	150	5
EAGLE	52	59	100	15	75 835	10 143	25 613	283 498	1278	3015	125
CHILTERNS	3	4	10	0	7847	45	2428	14 292	110	140	14
CLEVELANDS	2	4	11	2	4882	2059	2028	24 241	80	330	9
CRANWELL	3	3	10	1	5969	594	1728	16 780	101		16
CRUSADERS	3	1	0	0	3178		372		39	830	4
FENLAND	2	3	10	0	4004		1160	11 720	64	250	6
FOUR COUNTIES	3	4	16	1	7567	611	2929	42 430	92	150	6
FULMAR	2	2	1	1	830	460	489	2000	43	68	9
HERON	2	3	5	0	1350	24	430		58	52	4
KESTREL	2	2	3	0	3060	96	948	2950	39	175	5
PHOENIX	4	4	1	0	2281	0	441	1416	47	215	7
PORTSMOUTH NAVAL	5	5	5	3					148	297	6
RAF GSA CENTRE BICESTER	6	4	13	3	14 500	5500	6500	120 000	150		8
SEAHAWK	3	3			1700	32	320	100	50	103	10
TWO RIVERS	2	4	3	0	2917	92	922	13 148	30	155	6
WREKIN	2	4		1	3822	476	1500	4144	59	100	4
WYVERN	2	4	7	1	4794	25	1169	12 000	67	0	6
SERVICE CLUB TOTAL	52	59	100	15	75 835	10 143	25 613	283 498	1278	3015	125
CIVILIAN CLUB TOTAL	219	190	1662	77	392 624	111 668	148 668	1808 134	8131	34 636	766
GRAND TOTAL	271	249	1762	92	468 459	120 811	173 619	2091 632	9409	37 651	891

BGA ACCIDENT SUMMARY

Ref. No.	Glider Type	Date BGA No.	Damage	Time	Pilot/Crew Place	Age	Injury	Hrs
46	Discus	4242	Subst	8.5.96 1020	Sutton Bank	71	None	147

On his first flight on type the pilot found he could not lower the undercarriage. While operating the u/c lever with his right hand the pilot induced a pitch oscillation. Rather than abandoning his attempts and landing wheel up, he persisted throughout the landing and crashed from about 30ft after dropping a wing.

47	Carlson Sparrow		Minor	–.5.96	Incident Report	–	None	?pwr

The winch cable was laid out on the airfield and being inspected and tensioned by the safety officer in a vehicle with a flashing beacon on. During this time a power aircraft landed on the runway then turned across the wire, picking it up with its propeller. The engine was shock loaded and the propeller gashed.

48	K-7/13	–	None	17.5.96	Incident Report	48	None	–
						P2 33	None	–

During the winch take-off ground run the student reported that the airbrake lever had just fallen off. P1 abandoned the launch and stopped safely. It had broken at the lower pivot. The club had previously reported a failure on a K-8 lever and recommends close inspection of similar controls, possibly removing paint in the bearing areas.

49	ASH-25	3909	Minor	19.5.96 1145	Nr Connel	51 P2 70	Minor None	1800 400

The pilots were aiming to ridge soar but found a heavy shower in the area selected. In heavy sink they attempted to return to the site but found they could not make it. P1 chose the best field available and made a full airbrake, sideslip approach. The glider landed 70 paces into the field and, despite braking, skidded into the far fence at low speed.

50	PA25 Pawnee tug	–	Minor	–.5.96	Incident Report	57	None	1230pwr

The tug was pointing into wind when it was started up. The pilot increased power to taxy away but failed to notice that the brakes were on. As a result the tail lifted and despite cutting the throttle the propeller hit the ground before the tail fell back down.

51	K-13	1608	W/O	21.4.98 1300	Ridgewell	52 P2 42	Serious Serious	707 135

The glider was winch launched and P2 attempted to find lift. At 550ft he abandoned this and started his circuit. P1 waited for him to turn base leg as the height was reducing rapidly but he did not until it was too late. The glider hit a tree which spun it into an earth bank. Both pilots were seriously injured in the impact.

52	Astir CS	2200	Minor	24.5.96	Connel	42	None	11.5

The pilot, who had been trained on fixed wheel gliders, was making his second flight in this retractable wheel glider. In his downwind checks he omitted the gear lowering action and the glider landed wheel up, damaging the gel coat. This glider had no undercarriage warning device.

53	K-13	–	None	–	Incident Report	0 P20	None None	

While practising a steep dive response to a simulated winch launch faulure P2 moved the stick sharply forward causing reduced g. Despite tight straps P1 left his seat and the loose energy absorbing cushion moved forward against the stick. The cushion was moved back quickly to allow dive recovery. This club now secured the cushions.

54	Skylark 3F	957	Minor	11.5.96 1558	Landrake, Cornwal	51	None	23

At the end of the pilot's first cross-country flight he decided to land in a field another glider had just landed in. In calm conditions he cramped the circuit and then, finding himself too high, lowered the nose and landed heavily on the upsloping field. The left wing dropped and the glider groundlooped.

55	K-18	2791	Minor	28.4.96 1625	Seighford	66	None	701

During the winch launch the pilot yawed the glider to signal "too fast". The canopy flew open but the pilot was able to catch it, release the cable and land safely. He was certain that he had checked the lock before launch and so the mechanism will be examined carefully following repair to the strained hinges.

56	Venture M/G	G-BUJI	Subst	30.5.96 1550	Rufforth	56 P2 42	Minor None	192pwr 0

The motor glider pilot made a normal approach but landed heavily and bounced back into the air. The impact knocked his headset and glasses off and winded him. The stick was moved rather too far forward to compensate for the bounce and the aircraft impacted nose down, damaging the propeller.

57	Puchacz	3949	Minor	5.5.96 1711	Camphill	50 P2 36	None None	1880 0

After a normal touchdown the glider ran over a tarmac road that crossed the airfield. The mainwheel dropped into a slight gully prior to the road causing the nose wheel to impact the edge of the road, cracking the glider's floor. The club are levelling the roadways.

58	Vega	2611	Subst	1.6.96	Aston Down	60	None	612

The pilot was approaching through turbulence and failed to monitor the speed while keeping the wings level. Just before touchdown the right wing dropped and hit the ground causing a severe groundloop that damaged the tailplane and detached the canopy.

59	Olympia 403	1278	Minor	9.6.96 1300	Long Mynd	64	None	562

At 40ft on the winch launch the canopy flew off. As he did not hear any impact with the airframe the pilot chose to continue the launch and fly a normal circuit to a safe landing. It appears that the pilot had not carefully checked that the canopy retaining bolt was not fully home. This will now have position marks painted on to aid checking.

60	K 13	1536	Subst	2.6.96 1530	Nympsfield	32 P2 25	None None	612 0

During an *ab-initio* training flight the instructor tried to reach a downwind cumulus but found no lift. He decided to return to the airfield but encountered sink so decided to land in a good, known field. He found a thermal and changed his mind and drifted away from this. He was then unable to reach either landing spot and crashed into trees.

61	DG -500 Elan	4061	Subst	12.6.96 1056	Camphill P2	50 0	None None	 650

The glider was being winch launched and the wingtip holder had just released the wingtip with the wings level. The wing almost immediately dropped to the ground and the glider started gradually turning to the left until the right wing rose higher, causing a severe groundloop which broke the fuselage in two places.

62	ASW-22	3261	Minor	20.5.96 1600	March	37	None	3300

The very experienced pilot had to make a field landing in a suitable wide but "not too long" field. Rather tense, as it was his first field landing in the 22m glider, he lined up too high so made a 360° turn and tried again. At about 7ft over the undershoot field the flap lever moved and the glider dropped into the crop and groundlooped.

63	ASW-19B	3752	Subst	18.6.96 1500	Exton, Leics	56	None	239

The pilot selected a field from 2000ft then found it had sheep in it. The best alternate field was cropped but into wind. After hitting sink he became rather low in the circuit then made a fast final approach before holding off above the crop. A wingtip caught in the bean crop and groundlooped the glider, breaking the fuselage.

64	Not applicable	–	None	–.6.96	Incident Report	17 P2 0	Minor Minor	– –

While two club members were repairing a broken winch cable it suddenly started moving as a tractor had accidently picked up the wire. The cable press being used flew past the head of one of the men as they were knocked aside. They were lucky to only suffer minor cuts.

65	ASH-25	3909	Minor	14.6.96 1245	Enstone	36 P2 0	None None	1700 ?

On a downwind competition take-off the glider's wing dropped on to the runway and could not be lifted so the pilot pulled off. By this time the wingtip had entered the long grass at the side of the runway and a groundloop developed. The glider narrowly missed a one metre deep drainage ditch before coming to a halt.

66	Open Cirrus	1822	Minor	9.4.96 1600	Chipping	57	None	259

The pilot flew a normal circuit in light rain and flew the approach at 60kts then deployed the tail 'chute. The combination of wet wings and tail 'chute caused the glider to stall at about 5ft in the flare damaging the glider and causing the pilot to bite his tongue.

67	Grob Astir CS77	2351	Minor	5.6.96 1600	Chipping	33	None	64

Returning to the airfield after the local ridge had stopped working, the pilot followed a K-13 which, because of the tailwind now present, landed well up the field. Having to land beyond this glider, the pilot landed long and had to groundloop to avoid a ditch.

68	Super Falke	M/G –	Minor	–.6.96	Incident Report	0	None	–

The motor glider was securely picketed as flying was stopped due to a passing cu-nim. The cloud passed overhead and, along with severe gusts of over 50kt, there was heavy rain and hailstones of up to 1.5in diameter. This caused serious damage to the whole aircraft and gust damaged the ailerons despite the column being strapped.

69	L-Spatz	3267	Subst	25.5.96	Brentor	41	None	33.5

After two good dual checks and two solo launches, the first of which was abandoned as too slow, the pilot took a third solo launch. The glider was launched too fast (90kts) then after reducing speed to normal accelerated again. The pilot, now disorientated, decided he could not land ahead and turned to land downwind in a field, breaking a wing.

70	K-21	2871	Subst	5.6.96 1630	Dunstable	59 P2 53	None None	530 0

P1 flew an extended circuit to keep clear of another glider ahead. Because the glider had become low the pilot decided to land short between the launch point caravan and a parked tug. While in the flare, a tractor drove into the gap then stopped, the pilot then had no escape options left. The wingtip hit the tractor and spun the glider around.

71	ASH-25	4026	W/O	31.5.96 1845	Lahti, Finland	34 P2 36	None Minor	1629 301

This accident occurred at the end of a practice competition cross-country flight in Finland. Becoming low the pilot thermalled near a suitable field then decided to land. The circuit was flown too close in and, finding he was too high on finals, the pilot made a wide crosswind turn, with the landing flap still selected and mushed/stalled into trees.

72	Bocian 1E	–	None	–.6.96	Incident Report	30 P2 0	None None	– –

As the glider was rotated by the student into the full winch launch climb, P1 noticed that the stick was oscillating backwards and forwards. She took control and felt severe elevator flutter so released and made an expeditious landing. The elevator trim cable was found to have broken where it connected to the trim tab.

73	Std Cirrus	3798	Subst	19.6.96 1302	Parham	61	Serious	800

The pilot was flying his glider for the first time since an airbrake improvement modification. After high level tests he started a circuit and turned finals much higher than normal. He found he could not lose height and, too late to side-slip, decided to fly a 180° turn and land downwind. During the turn a wingtip hit the ground and the glider crashed.

74	T-1B	1000	Minor	23.6.96 1158	Gamston	30	None	1

The early solo pilot made a normal approach until the roundout when the glider ballooned about 5ft into the air. The pilot closed the spoilers but moved the stick forward causing the glider to fly into the ground.

75	Bocian	2013	W/O	13.6.96 1500	Halesland	59	None	2.5

The inexperienced pilot made an approach at about 55kts in calm conditions. After initially opening the brakes he partially closed them and bounced back into the air again. He was running out of airfield so decided to close them and "hop into the next field". The glider hit a tree and crashed causing considerable damage but no injuries.

76	DG-300	3519	Minor	13.6.96 1735	Basingstoke	39	None	110

During a cross-country flight the pilot had to land out and chose a field. It appears that he only viewed it during the downwind leg and failed to notice a shallow bank across his landing run. The glider hit this at 35kt and the glider bounced 5ft into the air before landing heavily, breaking the undercarriage.

77	Vega Sport	2616	Subst	13.7.96 1259	Crowland	49	None	45

The pilot encountered lift on the downwind leg so widened the circuit. On finals turbulence and sink was hit and the pilot did not reduce the slight amount of brake selected "not wanting to lose the flap effect" in the wind gradient. The wingtip caught in the tall wheat crop in the undershoot area and spun into the ground.

78	Astir CS77	W/O		20.7.96 1530	Grantham	32	None	148

On a cross-country the pilot hit strong sink and selected two possible fields. The first had power lines on the approach so the second was chosen. After a cramped circuit he was too high and found the field sloped downhill so started a very low turn during which a wingtip touched, causing a groundloop breaking the fuselage.

79	Olympia 460	1154	W/O	13.7.96 1509	Seighford	0	Fatal	?

This fatal accident occurred during the glider's second winch launch of the day. At about 700ft the glider was seen to oscillate in pitch and the wings flexed abnormally. The right wing then failed upwards causing the glider to fall to the ground. AAIB and BGA inspections revealed severe wing strap corrosion. A doubled weak link was also fitted.

80	K-8B	4037	Subst	18.7.96 1430	Chedworth	52	None	21

Three hot hours into a 50km cross-country attempt the pilot decided to land at a disused airfield. While focusing on the surface condition he allowed the glider to get too low and, conscious of his speed falling on his crosswind leg, lowered the nose and drifted towards some trees. A wingtip hit one tree and spun the glider into another.

81	SHK 1	–	Subst	–.7.96	Incident Report	52	None	274 –

Whilst the glider was being towed out at walking pace, the wingtip dolly caught in long grass, forcing the tail sideways and buckling the tailplane.

82	K-7	1031	Minor	13.7.96	Ringmer	39	None	1hr

After two good check flights and one solo, the early solo pilot flew another launch. After a normal circuit the pilot failed to maintain sufficient speed to roundout. This, combined with the wind gradient, resulted in a very heavily landing seriously damaging the fuselage.

83	Ventus CT	S/S 3279	Minor	14.7.96 1610	Marsh Farm, Shrop	29	None	284

After gliding for 4hrs in hot conditions, the pilot, although very low, elected to retract the engine and fly home. The extra drag from the engine made an urgent field landing inevitable. On approach, the pilot started the engine which ran just long enough to overfly the good landing field. The glider made a wheels up landing in a wheat field.

84	Astir CS	2446	Subst	17.7.96 1435	Kinross	18	None	80

During the final glide from a cross-country over unfamiliar countryside the glider became very low. The best option left was to land diagonally across a rugby field with houses and trees on the boundary. To avoid running on into fences and trees the pilot caused a groundloop, breaking the undercarriage and fuselage.

85	K-13	1446	Minor	19.5.96 1430	Kirton-in-Lindsey	16	None	?

During a winch launch in gusty wind the pilot twice had to signal "too fast". On the second occasion, while climbing steeply, there was a loud bang as the weak link broke. After a normal circuit the pilot landed then found that the long strop had hit the tailplane tearing off the tip.

86	K-7/13	2810	Subst	29.7.96 1145	Bidford	45 P2 48	None None	183 0

P2, a hang glider pilot, recovered correctly from the training spin until, during the ensuing dive, pushed the stick forward instead of pulling out. Before P1 could grab the controls the glider had accelerated to over 100kts and the whole glider was heavily overstressed during the recovery.

SOMETHING SPECIAL

Donald describes ridge soaring cliffs in the north-east of England

During my bi-annual visit to Cornwall in which a day at Perranporth is compulsory, I speculated as usual how nice it would be to ridge soar the cliffs. Previously I had found thermals but never ridge soared. Two months later my chance came though it wasn't the Cornish coast but that of my native north-east of England.

Turning up early as usual at Sutton Bank one Saturday I noticed the windsock in the inevitable easterly direction - it seems to have been like this for the past year with high pressure over Scandinavia predominating.

Another awkward day seemed in prospect since easterlies mean little soaring and turbulence from nearby woods. However Dave Hayes, CFI, who had soared the cliffs near Scarborough the previous week in the motor glider, was considering aerotowing there in his DG-500 and agreed to share the trip with me.

After some delay due to showers passing through, the day improved with some cloud streets forming though the cloudbase was low. We set off on the 30min aerotow with Steve Rickett doing well to keep us out of cloud, though the coast was marked by clear sky.

We released at 4000ft just north of Scarborough and descended slowly with no great sink on the vario. The views were outstanding with Bridlington to the south and Whitby and beyond to the north. The sea was rough with white horses and great breakers in the surf.

The descent stopped at about 1000ft above the cliffs with the vario showing healthy lift. This part is a heritage coast and associated with old tales of smugglers and dramatic sea rescues. It also includes the Cleveland Way path - having taken ten hours to walk it a couple of years ago I smiled at the thought of the 20min or so it took us to run between Scarborough and Robin Hood's Bay. The area around must be a geologist's paradise with layers of strata, innumerable old alum workings and the old coastal railway clearly visible. We waved to walkers on the cliff tops, looking down at their astonished faces.

As the afternoon progressed thermals formed over the sea indicating the unstable air. After 3hrs we reluctantly decided to head for home. Having a positive wind fix from a fire, we headed up the Vale of Pickering taking advantage of any lift we could find. Just short of Sutton Bank a shower dumped us into a field but the memory of that trip will remain for a long time with the hope of repeating it.

CLASSIFIED SECTION

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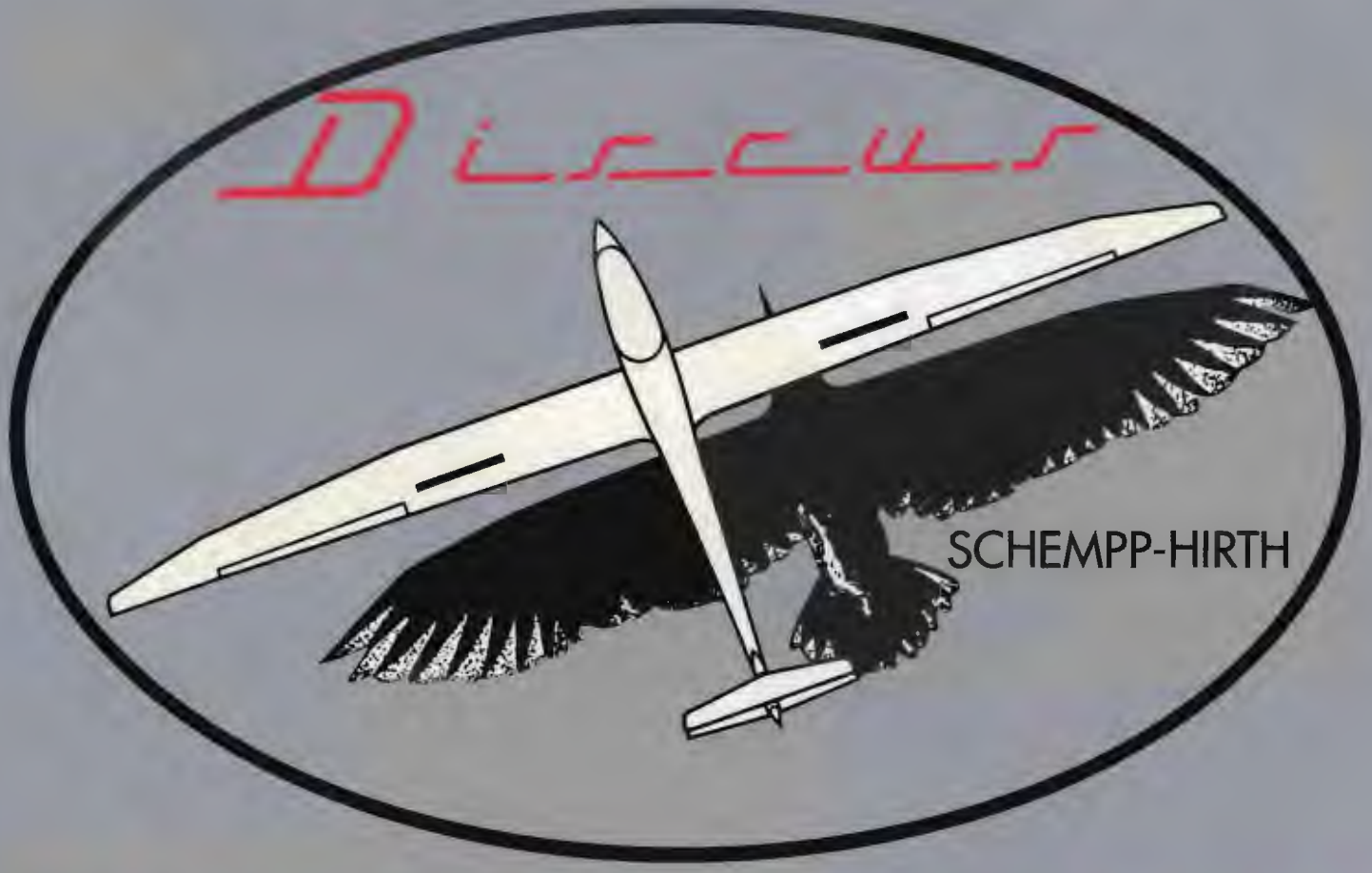

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